CNC 8070

CNC variables.

(Ref: 1709)

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FAGOR AUTOMATION

TRANSLATION OF THE ORIGINAL MANUAL

This manual is a translation of the original manual. This manual, as well as the documents derived from it, have been drafted in Spanish. In the event of any contradictions between the document in Spanish and its translations, the wording in the Spanish version shall prevail. The original manual will be labeled with the text "ORIGINAL MANUAL".

MACHINE SAFETY

It is up to the machine manufacturer to make sure that the safety of the machine is enabled in order to prevent personal injury and damage to the CNC or to the products connected to it. On start-up and while validating CNC parameters, it checks the status of the following safety elements. If any of them is disabled, the CNC shows the following warning message.

- Feedback alarm for analog axes.
- Software limits for analog and sercos linear axes.
- Following error monitoring for analog and sercos axes (except the spindle) both at the CNC and at the drives.
- Tendency test on analog axes.

FAGOR AUTOMATION shall not be held responsible for any personal injuries or physical damage caused or suffered by the CNC resulting from any of the safety elements being disabled.

HARDWARE EXPANSIONS

FAGOR AUTOMATION shall not be held responsible for any personal injuries or physical damage caused or suffered by the CNC resulting from any hardware manipulation by personnel unauthorized by Fagor Automation.

If the CNC hardware is modified by personnel unauthorized by Fagor Automation, it will no longer be under warranty.

COMPUTER VIRUSES

FAGOR AUTOMATION guarantees that the software installed contains no computer viruses. It is up to the user to keep the unit virus free in order to guarantee its proper operation. Computer viruses at the CNC may cause it to malfunction.

FAGOR AUTOMATION shall not be held responsible for any personal injuries or physical damage caused or suffered by the CNC due a computer virus in the system.

If a computer virus is found in the system, the unit will no longer be under warranty.

DUAL-USE PRODUCTS

Products manufactured by FAGOR AUTOMATION since April 1st 2014 will include "-MDU" in their identification if they are included on the list of dual-use products according to regulation UE 428/2009 and require an export license depending on destination.

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It is possible that CNC can execute more functions than those described in its associated documentation; however, Fagor Automation does not guarantee the validity of those applications. Therefore, except under the express permission from Fagor Automation, any CNC application that is not described in the documentation must be considered as "impossible". In any case, Fagor Automation shall not be held responsible for any personal injuries or physical damage caused or suffered by the CNC if it is used in any way other than as explained in the related documentation.

The content of this manual and its validity for the product described here has been verified. Even so, involuntary errors are possible, hence no absolute match is guaranteed. However, the contents of this document are regularly checked and updated implementing the necessary corrections in a later edition. We appreciate your suggestions for improvement.

The examples described in this manual are for learning purposes. Before using them in industrial applications, they must be properly adapted making sure that the safety regulations are fully met.

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ABOUT THE PRODUCT - CNC 8070

BASIC CHARACTERISTICS.

Basic characteristics.	·BL·	·OL·	·L·
Number of axes.	3 to 7	3 to 31	3 to 31
Number of spindles.	1	1 to 6	1 to 6
Number of tool magazines.	1	1 to 4	1 to 4
Number of execution channels.	1	1 to 4	1 to 4
Number of interpolated axes (maximum).	4	3 to 31	3 to 31
Number of handwheels.	1 to 12		
Type of servo system.	Analog / Digital Sercos Digital Mechatrolink		Analog Sercos Digital
Communications.	RS485 / RS422 / RS232 Ethernet		
PCI expansion.	No	Option	No
Integrated PLC. PLC execution time. Digital inputs / Digital outputs. Marks / Registers. Timers / Counters. Symbols.	 < 1ms/K 1024 / 1024 8192 / 1024 512 / 256 Unlimited		
Block processing time.	< 1 ms		< 1 ms

Remote modules.	RIOW	RIO5	RIO70	RIOR	RCS-S
Valid for CNC.	8070 8065 8060	8070 8065 8060	8070 8065 - - -	8070 8065 8060	8070 8065 8060
Communication with the remote modules.	CANopen	CANopen	CANfagor	CANopen	Sercos
Digital inputs per module.	8	24 / 48	16	48	- - -
Digital outputs per module.	8	16 / 32	16	32	- - -
Analog inputs per module.	4	4	8	- - -	- - -
Analog outputs per module.	4	4	4	- - -	4
Inputs for PT100 temperature sensors.	2	2	- - -	- - -	- - -
Feedback inputs.	- - -	- - -	4 (*)	- - -	4 (**)

DISCONTINUED

(*) Differential TTL / Sinusoidal 1 Vpp (**) TTL / Differential TTL / Sinusoidal 1 Vpp / SSI protocol / FeeDat / EnDat

Customizing.
PC-based open system, fully customizable. INI configuration files. Tool for display configuration FGUIM. Visual Basic®, Visual C++®, etc. Internal databases in Microsoft® Access. OPC compatible interface

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CNC 8070

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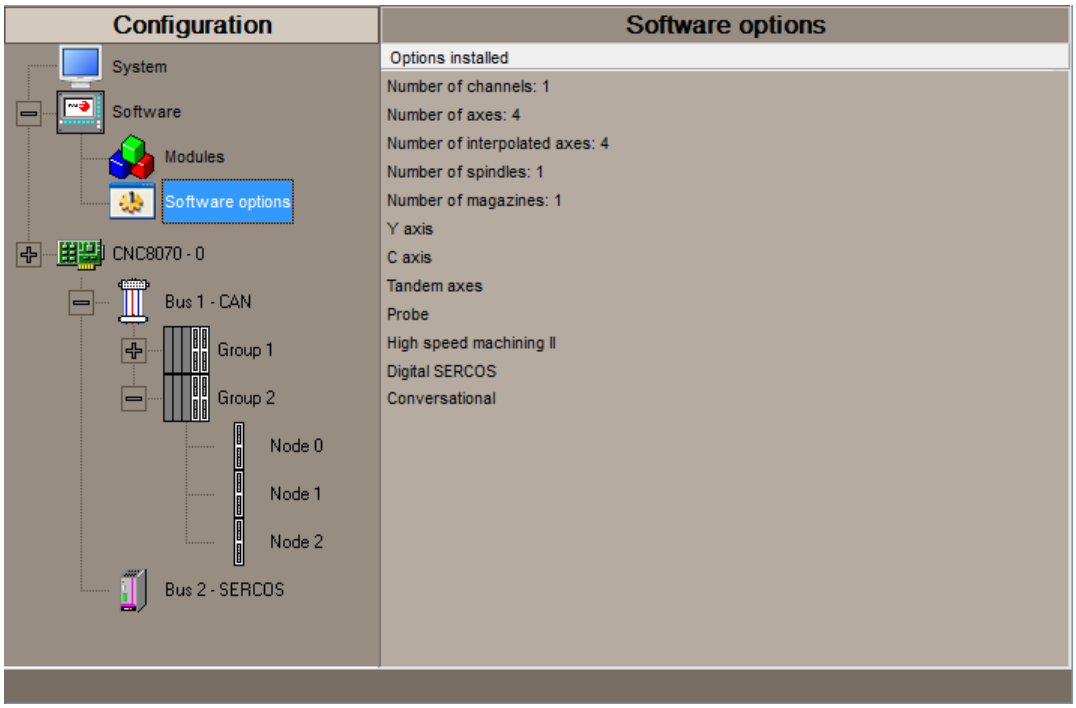
SOFTWARE OPTIONS.

Some of the features described in this manual are dependent on the acquired software options. The active software options for the CNC can be consulted in the diagnostics mode (accessible from the task window by pressing [CTRL] [A]), under software options.



Consult the ordering handbook for information on the software options available for your model.

SOFT ADDIT AXES
Additional shaft.
Add axes to the default configuration.

SOFT ADDIT SPINDLES
Additional spindle.
Add spindles to the default configuration.

SOFT ADDIT TOOL MAGAZ
Additional tool magazine.
Add tool magazines to the default configuration.

SOFT ADDIT CHANNELS
Additional channel.
Add channels to the default configuration.

SOFT 4 AXES INTERPOLATION LIMIT
Limited to 4 interpolated axes.
It limits the number of axes to 4, where the CNC can also interpolate these at the same time.

SOFT OPEN SYSTEM
Open system.
The CNC is a closed system that offers all the features needed to machine parts. Nevertheless, at times there are some customers who use third-party applications to take measurements, perform statistics or other tasks apart from machining a part.
This feature must be active when installing this type of application, even if they are Office files. Once the application has been installed, it is recommended to close the CNC in order to prevent the operators from installing other kinds of applications that could slow the system down and affect the machining operations.

SOFT DIGITAL SERCOS
Sercos digital bus.
Sercos digital bus.

SOFT DIGIT NO FAGOR
Non-Fagor digital servo system.
Mechatrolink digital bus.

SOFT EDIT/SIMUL
EDISIMU mode (editing and simulation).
It allows for the editing, modification and simulation of a part-program.

SOFT IEC 61131 LANGUAGE
IEC 61131 language
IEC 61131 is a PLC programming language that is very popular in alternative markets, which is slowly entering into the machine-tool market. With this feature, the PLC may be programmed either in the usual Fagor language or in IEC 61131 format.

SOFT TOOL RADIUS COMP
Compensación de radio.
Tool compensation allows programming the contour to be machined based on part dimensions of the and without taking into account the dimensions of the tool that will be used later on. This avoids having to calculate and define the tool path based on the tool radius.

SOFT PROFILE EDITOR
Profile editor.
Allows for the part profiles to be edited graphically and to import dxf files.

SOFT RTCP

Dynamic RTCP (Rotating Tool Center Point).

The dynamic RTCP option is required for interpolation machining with 4, 5 or 6 axis.

SOFT C AXIS

C axis.

It activates the kinematics for working with the C axis and the associated canned cycles. The CNC can control several C axes. The parameters of each axis indicate if it will function as a C axis or not, where it will not be necessary to activate another axis for the machine parameters.

SOFT TANDEM AXES

Tandem axes.

A tandem axis consists in two motors mechanically coupled (slaved) and making up a single transmission system (axis or spindle). A tandem axis helps provide the necessary torque to move an axis when a single motor is not capable of supplying enough torque to do it.

When activating this feature, it should be kept in mind that for each tandem axis of the machine, another axis must be added to the entire configuration. For example, on a large 3-axis lathe (X Z and tailstock), if the tailstock is a tandem axis, the final purchase order for the machine must indicate 4 axes.

SOFT SYNCHRONISM

Synchronization of axes and spindles.

The axes and ballscrews may be synchronized in two ways: in terms of speed or position. The CNC configuration takes into consideration the synchronization of 2 axes or 2 spindles. Once synchronized, only the master displays and programs the element.

SOFT HSSA II MACHINING SYSTEM

HSSA-II machining system.

This is the new version of algorithms for high speed machining (HSC). This new HSSA algorithm allows for high speed machining optimization, where higher cutting speeds, smoother contours, a better surface finishing and greater precision are achieved.

SOFT TANGENTIAL CONTROL

Tangential control.

"Tangential Control" maintains a rotary axis always in the same orientation with respect to the programmed tool path. The machining path is defined on the axes of the active plane and the CNC maintains the orientation of the rotary axis along the entire tool path.

SOFT DRILL CYCL OL

Drilling ISO cycles for the OL model.

Drilling ISO cycles for the OL model (G80, G81, G82, G83).

SOFT PROBE

Probing canned cycles.

The CNC may have two probes; usually a tabletop probe to calibrate tools and a measuring probe to measure the part.

This option activates the functions G100, G103 and G104 (for probe movements); probe canned cycles are not included.

SOFT THIRD PARTY CANOPEN

Third-party CANopen.

Enables the use of non-Fagor CANopen modules.

SOFT FVC UP TO 10m3

SOFT FVC MORE TO 10m3

Medium and large volumetric compensation.

5-axis machines are generally used during the manufacturing of large parts. The accuracy of the parts is limited by the machine manufacturing tolerances and is effected by temperature variations during machining.

In sectors such as the aerospace industry, machining demands mean that classic compensation tools are becoming suboptimal. Volumetric compensation FVC comes in to complement the machine adjusting tools. When mapping the total work volume of the machine, the CNC knows the exact position of the tool at all times. After applying the required compensation, the resulting part is made with the desired precision and tolerance.

There are 2 choices, which depend on the size of the machine, being up to 10 m^3 and over 10 m^3.

SOFT 60 PWM CONTROL

Pulse-Width Modulation.

This function is only available for Sercos bus controlled systems. It is mostly oriented toward laser machines for the cutting of very thick sheets, where the CNC generates a series of PWM pulses to control the power of the laser when drilling the starting point.

This feature is essential for cutting very thick sheets and it requires two quick digital outputs located on the central unit. With this new feature, the OEM does not need to install or program any external device, which reduces machine costs and installation times. The end user also benefits, since the “Cutting with PWM ” feature is much easier to use and program.

SOFT 60 GAP CONTROL

Gap control.

This is mostly oriented toward laser machines. Gap control makes it possible to maintain a set distance between the laser nozzle and the surface of the sheet. This distance is calculated by a sensor connected to the CNC, so that the CNC offsets the sensor variations on the distance programmed with additional movements in the axis programmed for the gap.

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DECLARATION OF CE CONFORMITY AND WARRANTY CONDITIONS

DECLARATION OF CONFORMITY

The declaration of conformity for the CNC is available in the downloads section of FAGOR'S corporate website. http://www.fagorautomation.com. (Type of file: Declaration of conformity).

WARRANTY TERMS

The warranty conditions for the CNC are available in the downloads section of FAGOR's corporate website. http://www.fagorautomation.com. (Type of file: General sales-warranty conditions.

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VERSION HISTORY - CNC 8070

Here is a list of the features added to each manual reference.

Ref. 1704

First version.

Software V05.50.51	
Gap control. The machine parameter GAPSENSORDELAY is no longer functional.	• Variables: (V.)MPG.GAPSENSORDELAY
Gap control. Dynamic response during the final part of the movement approaching the plate.	• Variables: (V.)MPG.GAPAPPROACHDYN

Ref. 1707

Software V05.50.53	
Leapfrog. Variable associated with the command TIME of the instruction #LEAP.	• Variables: (V.)G.LEAPTIME
Leapfrog. PLC mark to enable or disable the active leapfrog.	• Variables: (V.)PLC.ENABLELEAP
Technological tables (common parameters). Variable associated with the sheet metal thickness.	• Variables: (V.)TT.THICKNESS
Active canned cycles.	• Variables: (V.)G.ACTIVECYLE

Ref. 1709

Software V05.60.00	
Variable associated with machine parameter TPROGAIN. Variable with write permission from the PLC.	• Variables: (V.)MPG.TPROGAIN[nb]
Variable associated with machine parameters VMOVAXIS1, VMOVAXIS2 and VMOVAXIS3.	• Variables: (V.)MPG.VMOVAXIS1[tbl] (V.)MPG.VMOVAXIS2[tbl] (V.)MPG.VMOVAXIS3[tbl]
Variable associated with machine parameters NPOINTSAX1, NPOINTSAX2 and NPOINTSAX3.	• Variables: (V.)MPG.NPOINTSAX1[tbl] (V.)MPG.NPOINTSAX2[tbl] (V.)MPG.NPOINTSAX3[tbl]
Variable associated with machine parameters INIPOSAX1, INIPOSAX2 and INIPOSAX3.	• Variables: (V.)MPG.INIPOSAX1[tbl] (V.)MPG.INIPOSAX2[tbl] (V.)MPG.INIPOSAX3[tbl]
Variable associated with machine parameters INCREAX1, INCREAX2 and INCREAX3.	• Variables: (V.)MPG.INCREAX1[tbl] (V.)MPG.INCREAX2[tbl] (V.)MPG.INCREAX3[tbl]
Variable associated with machine parameter G0MODAL.	• Variables: (V.)[ch].MPG.G0MODAL
Variable associated with machine parameter G2G3MODAL.	• Variables: (V.)[ch].MPG.G2G3MODAL
Variable associated with marks LCOUNTALARMOFF1 y LCOUNTALARMOFF2.	• Variables: (V.)PLC.LCOUNTALARMOFF1 (V.)PLC.LCOUNTALARMOFF2
Logic number of the axes and channel.	• Variables: (V.)[ch].G.NLOGAXIS1 (V.)[ch].G.NLOGAXIS2 .. (V.)[ch].G.NLOGAXIS32
Logic number of the spindles of the channel.	• Variables: (V.)[ch].G.NLOGSPDL1 (V.)[ch].G.NLOGSPDL2 .. (V.)[ch].G.NLOGSPDL6
License status with regard to the operating terms.	• Variables: (V.)G.CNCDISSTAT
Status of the CNC during the power-up and power-down process.	• Variables: (V.)E.CNCLOGST

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SAFETY CONDITIONS

Read the following safety measures in order to prevent harming people or damage to this product and those products connected to it. Fagor Automation shall not be held responsible of any physical or material damage originated from not complying with these basic safety rules.

Before start-up, verify that the machine that integrates this CNC meets the 2006/42/EC Directive.

PRECAUTIONS BEFORE CLEANING THE UNIT

Do not get into the inside of the unit.	Only personnel authorized by Fagor Automation may access the interior of this unit.
Do not handle the connectors with the unit connected to AC power.	Before handling these connectors (I/O, feedback, etc.), make sure that the unit is not powered.

PRECAUTIONS DURING REPAIRS

In case of a malfunction or failure, disconnect it and call the technical service.

Do not get into the inside of the unit.	Only personnel authorized by Fagor Automation may access the interior of this unit.
Do not handle the connectors with the unit connected to AC power.	Before handling these connectors (I/O, feedback, etc.), make sure that the unit is not powered.

PRECAUTIONS AGAINST PERSONAL HARM

Interconnection of modules.	Use the connection cables provided with the unit.
Use proper cables.	To prevent risks, only use cables and Sercos fiber recommended for this unit. To prevent a risk of electrical shock at the central unit, use the proper connector (supplied by Fagor); use a three-prong power cable (one of them being ground).
Avoid electric shocks.	To prevent electrical shock and fire risk, do not apply electrical voltage out of the indicated range.
Ground connection.	In order to avoid electrical discharges, connect the ground terminals of all the modules to the main ground terminal. Also, before connecting the inputs and outputs of this product, make sure that the ground connection has been done. In order to avoid electrical shock, before turning the unit on verify that the ground connection is properly made.
Do not work in humid environments.	In order to avoid electrical discharges, always work with a relative humidity (non-condensing).
Do not work in explosive environments.	In order to avoid risks, harm or damages, do not work in explosive environments.

PRECAUTIONS AGAINST DAMAGE TO THE PRODUCT

Work environment.

This unit is ready to be used in industrial environments complying with the directives and regulations effective in the European Community.

Fagor Automation shall not be held responsible for any damage suffered or caused by the CNC when installed in other environments (residential, homes, etc.).

Install this unit in the proper place.

It is recommended, whenever possible, to install the CNC away from coolants, chemical product, blows, etc. that could damage it.

This unit meets the European directives on electromagnetic compatibility. Nevertheless, it is recommended to keep it away from sources of electromagnetic disturbance such as:

- Powerful loads connected to the same mains as the unit.
- Nearby portable transmitters (radio-telephones, Ham radio transmitters).
- Nearby radio / TC transmitters.
- Nearby arc welding machines.
- Nearby high voltage lines.

Enclosures.

It is up to the manufacturer to guarantee that the enclosure where the unit has been installed meets all the relevant directives of the European Union.

Avoid disturbances coming from the machine.

The machine must have all the interference generating elements (relay coils, contactors, motors, etc.) uncoupled.

Use the proper power supply.

Use an external regulated 24 Vdc power supply for the keyboard, operator panel and the remote modules.

Connecting the power supply to ground.

The zero Volt point of the external power supply must be connected to the main ground point of the machine.

Analog inputs and outputs connection.

Use shielded cables connecting all their meshes to the corresponding pin.

Ambient conditions.

Maintain the CNC within the recommended temperature range, both when running and not running. See the corresponding chapter in the hardware manual.

Central unit enclosure.

To maintain the right ambient conditions in the enclosure of the central unit, it must meet the requirements indicated by Fagor. See the corresponding chapter in the hardware manual.

Power switch.

This switch must be easy to access and at a distance between 0.7 and 1.7 m (2.3 and 5.6 ft) off the floor.

SAFETY SYMBOLS

Symbols that may appear in the manual.

Danger or prohibition symbol.
This symbol indicates actions or operations that may hurt people or damage products.

Warning or caution symbol.
This symbol indicates situations that certain operations could cause and the suggested actions to prevent them.

Obligation symbol.
This symbol indicates actions and operations that must be carried out.

Information symbol.
This symbol indicates notes, warnings and advises.

Symbol for additional documentation.
This symbol indicates that there is another document with more detailed and specific information.

Symbols that the product may carry.

Ground symbol.
This symbol indicates that that point must be under voltage.

ESD components.
This symbol identifies the cards as ESD components (sensitive to electrostatic discharges).

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RETURNING CONDITIONS

Pack it in its original package along with its original packaging material. If you do not have the original packaging material, pack it as follows:

1. Get a cardboard box whose 3 inside dimensions are at least 15 cm (6 inches) larger than those of the unit itself. The cardboard being used to make the box must have a resistance of 170 Kg (375 lb.).
2. Attach a label to the device indicating the owner of the device along with contact information (address, telephone number, email, name of the person to contact, type of device, serial number, etc.). In case of malfunction also indicate symptom and a brief description of the problem.
3. Protect the unit wrapping it up with a roll of polyethylene or with similar material. When sending a central unit with monitor, protect especially the screen.
4. Pad the unit inside the cardboard box with polyurethane foam on all sides.
5. Seal the cardboard box with packaging tape or with industrial staples.

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CNC MAINTENANCE

CLEANING

The accumulated dirt inside the unit may act as a screen preventing the proper dissipation of the heat generated by the internal circuitry which could result in a harmful overheating of the unit and, consequently, possible malfunctions. Accumulated dirt can sometimes act as an electrical conductor and short-circuit the internal circuitry, especially under high humidity conditions.

To clean the operator panel and the monitor, a smooth cloth should be used which has been dipped into de-ionized water and /or non abrasive dish-washer soap (liquid, never powder) or 75º alcohol. Never use air compressed at high pressure to clean the unit because it could cause the accumulation of electrostatic charges that could result in electrostatic shocks.

The plastics used on the front panel are resistant to grease and mineral oils, bases and bleach, dissolved detergents and alcohol. Avoid the action of solvents such as chlorine hydrocarbons, venzole, esters and ether which can damage the plastics used to make the unit's front panel.

PRECAUTIONS BEFORE CLEANING THE UNIT

Fagor Automation shall not be held responsible for any material or physical damage derived from the violation of these basic safety requirements.

- Do not handle the connectors with the unit supplied with power. Before handling these connectors (I/O, feedback, etc.), make sure that the unit is not powered.
- Do not get into the inside of the unit. Only personnel authorized by Fagor Automation may access the interior of this unit.

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CNC VARIABLES.

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1.1 Understanding how variables work.

Accessing the variables.

The internal CNC variables may be accessed from the part program, MDI/MDA, PLC and from any application or external interface (for example FGUIM). Each variable must indicate whether it can only be read or read and written.

Access the variables from a part-program. Accessing during execution or during block preparation.

The CNC reads several blocks ahead of the one being executed in order to calculate in advance the path to follow. This prior reading is known as "block preparation".

The CNC checks certain variables during block preparation and others during execution. The variables that use the execution value interrupt block preparation temporarily and the CNC resumes it when it is done reading/writing the variable. Accessing the variables from the PLC or from an external interface never interrupts block preparation.

Be careful with the variables that interrupt block preparation because when they are inserted between machining blocks with compensation may cause undesired profiles. Interrupting block preparation may result in compensated paths different from the one programmed, undesired joints when working with very short moves, etc.

In any case, it is possible to use the #FLUSH instruction to force the evaluation of a variable when it is being executed. This instruction interrupts block preparation in advance, executes the last prepared blocs, synchronizes the preparation and execution of blocks and then goes on with the execution of the program and block preparation.

Accessing the variables. from the PLC. Synchronous or asynchronous access.

PLC access to the variable, both for reading and writing, may be either synchronous or asynchronous. A synchronous access is resolved immediately whereas an asynchronous access takes several PLC cycles to resolve.

The tool variables will be read asynchronously when the tool is neither the active one nor in the magazine. The tool variables will be written asynchronously whether the tool is the active one or not.

Example of how to access asynchronous variables.
Reading of the radius value of offset ·1· of tool ·9· when it is not in the tool magazine.

```
<condition> AND NOT M11 = CNCRD (TM.TORT.[9][1], R11, M11)
```

The PLC activates mark M11 when the operation begins and keeps it active until the operation ends.

```
DFD M11 AND CPS R11 EQ 3 = ···
```

It waits for the consultation to end before evaluating the data.

Example of how to access synchronous variables.

Reading the actual (real) feedrate.

```
<condition> = CNCRD (G.FREAL, R12, M12)
```

The PLC activates mark M12 when the operation begins and keeps it active until the operation ends.

```
CPS R12 GT 2000 = ···
```

There is no need to wait for consulting the data because the synchronous variables are resolved immediately.

It resets the clock enabled by the PLC with the value contained in register R13.

```
<condition> = CNCWR (R13, PLC.TIMER, M13)
```

Accessing the variables. from the PLC. Accessing numeric variables

When the PLC accesses numeric variables that can have decimals, the values will be given in PLC units.

1.1.1 Accessing numeric variables from the PLC.

When the PLC accesses numeric variables that can have decimals, the values will be given as follows.

- The coordinates will be given in ten-thousandths if they are in mm or hundred-thousandths if they are in inches.

Units.	Reading from the PLC.
1 millimeter.	10000.
1 inch.	100000.
1 degree.	10000.

- The feedrate of the axes is given in tenth-thousandths if mm or in hundred-thousandths if inches.

Units.	Reading from the PLC.
1 millimeter/minute.	10000.
1 inch/minute.	100000.
1 degree/minute.	10000.

- The spindle speed will be given in ten-thousandths.

Units.	Reading from the PLC.
G97. 1 rpm.	10000.
G96. 1 meter/minute.	10000.
G96. 1 foot/minute.	10000.
G192. 1 rpm.	10000.
M19. 1 degree/minute.	10000.

- The percentages will be given with the real value, in tenths or in hundredths depending on the variable. If not indicated otherwise, the PLC will read the actual value. If not so, it will indicate if the variable will be read in tenths (x10) or in hundredths (x100).

Units.	Reading from the PLC.
1 %.	1.
1 % (x10).	10.
1 % (x100).	100.

- Time will be given in thousandths.

Units.	Reading from the PLC.
1 second.	1000.

- Voltage will given as follows. The variables associated with the machine parameter table return the actual value (in millivolts). For the rest of the variables (in volts), the reading will appear in ten-thousandths.

Units.	Reading from the PLC.
1 volt.	10000.

1.2 Variables in a single-channel system.

The generic mnemonic associated with the variables is written as follows.

(V.){prefix}.{variable}
(V.){prefijo}.{variable}.{eje/cabezal}

The –V.– indicator.

Programming the -V.- indicator depends on where the variable is used. To access the variables from the part-program or in MDI/MDA mode, the mnemonic begins with the indicator -V.- Accessing the variables from the PLC or from an external interface requires NOT using the -V.- indicator.

All mnemonics in this manual show this indicator as (V.), indicating that it must only be programmed when necessary.

Mnemoni.	Part-program. MDI/MDA mode.	PLC. External interface.
(V.)MPG.NAXIS	V.MPG.NAXIS	MPG.NAXIS

Prefixes of the variables.

The prefix must always be programmed. Prefixes make it possible to easily identify the group the variable belongs to.

Prefix.	Meaning.
A	Axis and/or spindle variables.
C	Canned cycle or subroutine calling parameters.
E	Interface related variables.
G	General variables.
MPA	Variables related to axis and/or spindle machine parameters.
MPG	Variables related to general machine parameters.
MPK	Variables related to kinematic machine parameters.
MPM	Variables related to machine parameters for M functions.
MPMAN	Variables related to machine parameters for JOG mode.
MTB	Variables related to OEM machine parameters.
P	User local variables.
PLC	PLC related variables.
S	User global variables.
SP	Spindle related variables.
TM	Variables related to tools or tool magazines.

Axis and spindle variables.

Axis and spindle variables are identified with the prefix –A.–. When these variables refer to a spindle, they may also be accessed with the prefix –SP.–.

(V.)A.{variable}.{axis/spindle}
(V.)SP.{variable}.{spindle}
(V.)SP.{variable}

The variables of the axis machine parameters (–MPA.– prefix) can also be accessed using the –SP– prefix when referring to a spindle.

(V.)MPA.{variable}.{axis/spindle}
(V.)SP.{variable}.{spindle}
(V.)SP.{variable}

Identifying the axes and the spindles in the variables.

In these variables one must indicate which axis or spindle they refer to. The axis may be referred to by its name or logic number; the spindle may be referred to by its name, logic number or index in the spindle system.

In these variables one must indicate which axis or spindle they refer to. In variables with the prefix –A.– and –MPA.–, the axes and the spindles are identified with their name or logic number. In variables with the prefix –SP.–, the spindles are identified with their name or spindle index. If no spindle is selected in the variables with -SP.- prefix, the variable refers to the master spindle.

Mnemoni.	Meaning when the variable is executed by the part-program, the MDI/MDA mode or the PLC.
V.MPA.variable.Z V.A.variable.Z	Z axis.
V.MPA.variable.S V.A.variable.S V.SP.variable.S	Spindle S.
V.MPA.variable.4 V.A.variable.4	Axis or spindle with logic number ·4·.
V.SP.variable.2	Spindle with index ·2· in the system.
V.SP.variable	Master spindle.

Mnemoni.	Meaning when the variable is executed by an external interface.
V.MPA.variable.Z V.A.variable.Z	Z axis.
V.MPA.variable.S V.A.variable.S V.SP.variable.S	Spindle S.
V.MPA.variable.4 V.A.variable.4	Axis with logic number ·4·.
V.SP.variable.2	Spindle with index ·2· in the system.
V.SP.variable	Master spindle.

The logic number of the axes is determined by the order in which they have been defined in the machine parameter table (AXISNAME). The first axis of the table will be logic axis -1- and so on.

The logic number of the spindles is determined by the order in which they have been defined in the machine parameter table (NAXIS + SPDLNAME). The logic numbering of the spindles continues from the last logic axis; hence, in a 5-axis system, the first spindle of the table will be logic spindle ·6· and so on.

The index of a spindle in the system is determined by the order in which they have been defined in the machine parameter table (SPDLNAME). The index of the first spindle of the table will be ·1· and so on.

AXISNAME	SPDLNAME	Logic order.	Index of the spindle in the system.
AXISNAME 1		Logic number 1.	
AXISNAME 2		Logic number 2.	
AXISNAME 3		Logic number 3.	
AXISNAME 4		Logic number 4.	
AXISNAME 5		Logic number 5.	
	SPDLNAME 1	Logic number 6.	Index 1.
	SPDLNAME 2	Logic number 7.	Index 2.

Variables of the master spindle.

In a multi-spindle system, the master spindle is the main spindle, the one receiving the commands when no specific spindle is mentioned. In a single-spindle channel, that will be its master spindle.

The variables of the master spindle are identified with the prefix –SP.– but without indicating the spindle. These variables may be used to access the data of the master spindle without knowing its name or logic number. These variables are meant for displaying data and programming cycles.

1.3 Variables in a multi-channel system.

The generic mnemonic associated with the variables is written as follows.

(V.)[channel].{prefix}.{variable}
(V.)[canal].{prefix}.{variable}.{axis/spindle}

The –V.– indicator.

Programming the -V.- indicator depends on where the variable is used. To access the variables from the part-program or in MDI/MDA mode, the mnemonic begins with the indicator -V.- Accessing the variables from the PLC or from an external interface requires NOT using the -V.- indicator.

All mnemonics in this manual show this indicator as (V.), indicating that it must only be programmed when necessary.

Mnemoni.	Part-program. MDI/MDA mode.	PLC. External interface.
(V.)[2].MPG.NAXIS	V.[2].MPG.NAXIS	[2].MPG.NAXIS

Programming the channel.

Programming the channel makes it possible to access the variables of the channel itself or another channel from a channel. The first channel is identified with the number 1, "0" is not a valid number.

Programming the channel number is optional; if not programmed, it works as follows depending on who executes the variable. The following table does not apply to the axis and spindle variables.

Where they are executed.	Meaning when no channel has been programmed.
Part-program. MDI/MDA mode.	Channel that is executing the variable.
PLC	First channel or main channel.
External interface.	Active channel.

Prefixes of the variables.

The prefix must always be programmed. Prefixes make it possible to easily identify the group the variable belongs to.

Prefix.	Meaning.
A	Axis and/or spindle variables.
C	Canned cycle or subroutine calling parameters.
E	Interface related variables.
G	General variables.
MPA	Variables related to axis and/or spindle machine parameters.
MPG	Variables related to general machine parameters.
MPK	Variables related to kinematic machine parameters.
MPM	Variables related to machine parameters for M functions.
MPMAN	Variables related to machine parameters for JOG mode.
MTB	Variables related to OEM machine parameters.
P	User local variables.
PLC	PLC related variables.

Prefix.	Meaning.
S	User global variables.
SP	Spindle related variables.
TM	Variables related to tools or tool magazines.

Axis and spindle variables.

Axis and spindle variables are identified with the prefix –A.–. When these variables refer to a spindle, they may also be accessed with the prefix –SP.–.

(V.)[channel].A.{variable}.{axis/spindle}
(V.)[channel].SP.{variable}.{spindle}
(V.)[channel].SP.{variable}

The variables of the axis machine parameters (–MPA.– prefix) can also be accessed using the –SP– prefix when referring to a spindle.

(V.)[channel].MPA.{variable}.{axis/spindle}
(V.)[channel].SP.{variable}.{spindle}
(V.)[channel].SP.{variable}

Identifying the axes and the spindles in the variables.

In these variables one must indicate which axis or spindle they refer to. In variables with the prefix –A.– and –MPA.–, the axes and the spindles are identified with their name, logic number or index in the channel. In variables with the prefix –SP.–, the spindles are identified with their name, index in the channel or spindle index. If no spindle is selected in the variables with -SP.- prefix, the variable refers to the master spindle.

Mnemoni.	Meaning when the variable is executed by the part-program, the MDI/MDA mode or the PLC.
V.MPA.variable.Z V.A.variable.Z	Z axis.
V.MPA.variable.S V.A.variable.S V.SP.variable.S	Spindle S.
V.MPA.variable.4 V.A.variable.4	Axis or spindle with logic number ·4·.
V.[2].MPA.variable.4 V.[2].A.variable.4	Axis with index ·4· in the channel ·2·.
V.SP.variable.2	Spindle with index ·2· in the system.
V.[2].SP.variable.1	Spindle with index ·1· in the channel ·2·.
V.SP.variable	Master spindle of the channel. If the variable is executed by the PLC, spindle master of the first channel.
V.[2].SP.variable	Master spindle of channel ·2·.

Mnemoni.	Meaning when the variable is executed by an external interface.
V.MPA.variable.Z V.A.variable.Z	Z axis.
V.MPA.variable.S V.A.variable.S V.SP.variable.S	Spindle S.
V.MPA.variable.4 V.A.variable.4	Axis with logic number ·4·.
V.[2].MPA.variable.4 V.[2].A.variable.4	Axis with index ·4· in the channel ·2·.
V.SP.variable.2	Spindle with index ·2· in the active channel.
V.[2].SP.variable.1	Spindle with index ·1· in the channel ·2·.
V.SP.variable	Master spindle of the active channel.
V.[2].SP.variable	Master spindle of channel ·2·.

When referring to the axis or spindle by its name, programming the channel they are in is not a determining factor; thus, programming them in this case is irrelevant. When programming the channel, if the axis or spindle is not in it, its programming is ignored.

The logic number of the axes is determined by the order in which they have been defined in the machine parameter table (AXISNAME). The first axis of the table will be logic axis -1- and so on.

The logic number of the spindles is determined by the order in which they have been defined in the machine parameter table (NAXIS + SPDLNAME). The logic numbering of the spindles continues from the last logic axis; hence, in a 5-axis system, the first spindle of the table will be logic spindle ·6· and so on.

The index of a spindle in the system is determined by the order in which they have been defined in the machine parameter table (SPDLNAME). The index of the first spindle of the table will be ·1· and so on.

AXISNAME	SPDLNAME	Logic order.	Index of the spindle in the system.
AXISNAME 1		Logic number 1.	
AXISNAME 2		Logic number 2.	
AXISNAME 3		Logic number 3.	
AXISNAME 4		Logic number 4.	
AXISNAME 5		Logic number 5.	
	SPDLNAME 1	Logic number 6.	Index 1.
	SPDLNAME 2	Logic number 7.	Index 2.

The index of an axis in the channel is determined by the order in which they have been defined in the machine parameter table (CHAXISNAME). The index of the first axis of the table will be ·1· and so on.

The index of a spindle in the channel is determined by the order in which they have been defined in the machine parameter table (CHSPDLNAME). The index of the first spindle of the table will be ·1· and so on.

CHAXISNAME CHSPDLNAME	Index of the axis in the channel.	Index of the spindle in the channel.
CHAXISNAME 1	Index 1.	
CHAXISNAME 2	Index 2.	
CHAXISNAME 3	Index 3.	
CHSPDLNAME 1		Index 1.
CHSPDLNAME 2		Index 2.

Variables of the master spindle.

In a multi-spindle system, the master spindle is the main spindle of the channel, the one receiving the commands when no specific spindle is mentioned. Each channel has a master spindle. In a single-spindle channel, that will always be the master spindle.

The variables of the master spindle are identified with the prefix –SP.– but without indicating the spindle. These variables may be used to access the data of the master spindle without knowing its name or logic number. These variables are meant for displaying data and programming cycles.

Programming the channel number is optional; if not programmed, it works as follows depending on who executes the variable.

Where they are executed.	Meaning when no channel has been programmed.
Part-program. MDI/MDA mode.	Channel that is executing the variable.
PLC	First channel or main channel.
External interface.	Active channel.

1.

CNC VARIABLES.

Variables in a multi-channel system.

FAGOR

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

VARIABLES RELATED TO MACHINE PARAMETERS.

2

2.1 Variables related to general machine parameters.

2.1.1 Channel configuration.

(V.)MPG.NCHANNEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of CNC channels.

V.MPG.NCHANNEL

2.1.2 Configuring the axes of the system.

(V.)MPG.NAXIS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of axes governed by the CNC (spindles not included).

V.MPG.NAXIS

(V.)MPG.AXISNAMEn

Variable to be read via interface.

Name of logic axis "n".

Syntax.

Replace the "n" letter with the axis logic number.

MPG.AXISNAME2	Axis with logic number ·2·.

Remarks.

The logic number of the axes is determined by the order in which the axes have been defined in the machine parameter table. The first axis of the table will be logic axis -1- and so on.

2.1.3 Configuration of a tandem system.

(V.)MPG.TMASTERAXIS[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Tandem pair [nb]. Logic number of the master axis/spindle.

If no axis has been defined, the variable will return a ·0· value.

Syntax.

·nb· Number of the tandem pair

V.MPG.TMASTERAXIS[2]	Second tandem pair.

(V.)MPG.TSLAVEAXIS[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Tandem pair [nb]. Logic number of the slave axis/spindle.

If no axis has been defined, the variable will return a ·0· value.

Syntax.

·nb· Number of the tandem pair

V.MPG.TSLAVEAXIS[2]	Second tandem pair.

(V.)MPG.TORQDIST[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Tandem pair [nb]. Torque distribution (percentage required from the master motor).

By torque distribution, we mean the torque percentage supplied by each motor to obtain the total necessary torque in the tandem. This variable shows the percentage of the total torque to be supplied by the master axis. The difference between this value and 100% will be the percentage to be supplied by the slave motor.

Syntax.

·nb· Number of the tandem pair

V.MPG.TORQDIST[2]	Second tandem pair.

Remarks.

The reading from the PLC will be given in hundredths (x100); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·1000·.

(V.)MPG.PRELOAD[nb]

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
The variable returns the execution value; reading it interrupts block preparation.

Tandem pair [nb]. Preload between both motors.

Preload is the torque difference to be applied between the master motor and the slave motor. The preload sets a traction between both motors in order to eliminate the backlash when the tandem is in rest position. This variable shows the percentage of the rated torque of the master motor that is applied as preload.

If the variable returns a ·0· value, it means that preload is disabled.

Syntax.

·nb· Number of the tandem pair

V.MPG.PRELOAD[2]	Second tandem pair.

Remarks.

The reading from the PLC will be given in hundredths (x100); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·1000·.

(V.)MPG.PRELFITI[nb]

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
The variable returns the execution value; reading it interrupts block preparation.

Tandem pair [nb]. Filter time to apply the preload.

This filter sets the time during which preload is applied gradually. If the variable returns a ·0· value, it means that the filter is disabled.

Syntax.

·nb· Number of the tandem pair

V.MPG.PRELFITI[2]	Second tandem pair.

(V.)MPG.TPROGAIN[nb]

Variable that can be read from the program and interface and read from the PLC.
Variable that may be modified from the environment of the oscilloscope and setup.
The variable returns the execution value; reading it interrupts block preparation.

Tandem pair [nb]. Proportional gain (Kp) for the tandem.

The proportional controller generates an output proportional to the torque error between the two motors. If the variable returns a ·0· value, it means that no proportional gain is applied.

Syntax.

·nb· Number of the tandem pair

V.MPG.TPROGAIN[2]	Second tandem pair.

Remarks.

If the variable with value ·0· is defined from the PLC, no integral gain is applied.

The reading from the PLC will be given in hundredths (x100); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·1000·.

(V.)MPG.TINTIME[nb]

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
The variable returns the execution value; reading it interrupts block preparation.

Tandem pair [nb]. Integral gain (Ki) for the tandem.

The integral controller generates an output proportional to the integral of the torque error between the two motors. If the variable returns a ·0· value, it means that no integral gain is applied.

Syntax.

·nb· Number of the tandem pair

V.MPG.TINTIME[2]	Second tandem pair.

(V.)MPG.TCOMPLIM[nb]

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
The variable returns the execution value; reading it interrupts block preparation.

Tandem pair [nb]. Compensation limit.

Syntax.

·nb· Number of the tandem pair

V.MPG.TCOMPLIM[2]	Second tandem pair.

Remarks.

The reading from the PLC will be given in hundredths (x100); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·1000·.

(V.)MPG.TORQMODE[nb]

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
The variable returns the execution value; reading it interrupts block preparation.

Tandem pair [nb]. Torque control mode.

Syntax.

·nb· Number of the tandem pair.

V.MPG.TORQMODE[2]	Second tandem pair.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	With torque control.
1	Without torque control.

2.1.4 Configuration of a gantry axis..

(V.)MPG.MASTERAXIS[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Gantry axis [nb]. Logic number of the master axis.

If no axis has been defined, the variable will return a ·0· value.

Syntax.

·nb· Number of the gantry pair

V.MPG.MASTERAXIS[2]	Second gantry pair.

(V.)MPG.SLAVEAXIS[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Gantry axis [nb]. Logic number of the slave axis.

If no axis has been defined, the variable will return a ·0· value.

Syntax.

·nb· Number of the gantry pair

V.MPG.SLAVEAXIS[2]	Second gantry pair.

(V.)MPG.WARNCOUPE[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Gantry axis [nb]. Difference between the following errors of both axes for issuing a warning.

This variable shows the maximum difference allowed between the following errors of both axes for issuing a warning.

Syntax.

·nb· Number of the gantry pair

V.MPG.WARNCOUPE[2]	Second gantry pair.

(V.)MPG.MAXCOUPE[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Gantry axis [nb]. Maximum difference allowed between the following errors of both axes.

This variable shows the maximum difference allowed between the following errors of both axes.

Syntax.

·nb· Number of the gantry pair

V.MPG.MAXCOUPE[2]	Second gantry pair.

(V.)MPG.DIFFCOMP[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Gantry axis [nb]. Compensate for the coordinate (position) difference between the two axes after G74.

Syntax.

·nb· Number of the gantry pair

V.MPG.DIFFCOMP[2]	Second gantry pair.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)MPG.MAXDIFF[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Gantry axis [nb]. Maximum position value (coordinate) difference between both axes to compensate for.

Syntax.

·nb· Number of the gantry pair

V.MPG.MAXDIFF[2]	Second gantry pair.

2.1.5 Configuration of a multi-axis group.

(V.)MPG.MULNGROUP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of multi-axis groups in the system.

V.MPG.MULNGROUP

(V.)MPG.MULNAXIS[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of axes and/or spindles making up the multi-axis group.

Syntax.

·nb· Multi-axis group number.

V.MPG.MULNAXIS[2]	Second multi-axis group.

(V.)MPG.MULAXISNAMExn[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Name of the axes and/or spindles that make up the multi-axis group.

Syntax.

·nb· Multi-axis group number.

·xn· Name of the axis and/or spindle within the multi-axis group.

V.MPG.MULAXISNAME4[2]	Fourth axis of the second multi-axis group.

Values of the variable.

The values returned by this variable are encoded as follows.

X=10	X1=11	X2=12	X3=13	X4=14	... X9=19
Y=20	Y1=21	Y2=22	Y3=23	Y4=24	... Y9=29
Z=30	Z1=31	Z2=32	Z3=33	Z4=34	... Z9=39
U=40	U1=41	U2=42	U3=43	U4=44	... U9=49
V=50	V1=51	V2=52	V3=53	V4=54	... V9=59
W=60	W1=61	W2=62	W3=63	W4=64	... W9=69
A=70	A1=71	A2=72	A3=73	A4=74	... A9=79
B=80	B1=81	B2=82	B3=83	B4=84	... B9=89
C=90	C1=91	C2=92	C3=93	C4=94	... C9=99
S=100	S1=101	S2=102	S3=103	S4=104	... S9=109

(V.)MPG.KEEPPOSxn[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

The deactivated axis maintains its coordinate regardless of the active axis.

Syntax.

·nb· Multi-axis group number.

·xn· Name of the axis and/or spindle within the multi-axis group.

V.MPG.KEEPPOS4[2]	Fourth axis of the second multi-axis group.

2.1.6 Configuring the spindles of the system

(V.)MPG.NSPDL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of spindles governed by the CNC.

V.MPG.NSPDL

(V.)MPG.SPDLNAMEn

Variable to be read via interface.

Name of logic spindle "n".

Syntax.

Replace the "n" letter with the spindle logic number.

MPG.SPDLNAME2	Spindle with logic number ·2·.

Remarks.

The logic number of the spindles is determined by the order in which they have been defined in the machine parameter table. The logic numbering of the spindles continues from the last logic axis; hence, in a 5-axis system, the first spindle of the table will be logic spindle ·6· and so on.

2.1.7 Time setting (system).

(V.)MPG.LOOPTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

CNC cycle (loop) time in milliseconds.

V.MPG.LOOPTIME

(V.)MPG.PRGFREQ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Frequency of the PLC's PRG module (in cycles).

The frequency of the module means how often (every how many CNC cycles) a full scan of the PLC program is executed.

V.MPG.PRGFREQ

2.1.8 Sercos bus configuration

(V.)MPG.SERBRATE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Sercos transmission speed

V.MPG.SERBRATE

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	4 Mbps.
1	2 Mbps.
2	16 Mbps.
3	8 Mbps.

(V.)MPG.SERPOWSE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Sercos optical power.

V.MPG.SERPOWSE

2.1.9 Mechatrolink bus configuration.

(V.)MPG.MLINK

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Mechatrolink mode.

V.MPG.MLINK

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Mlink-I
2	Mlink-II

(V.)MPG.DATASIZE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Telegram size in Mlink-II mode.

V.MPG.DATASIZE

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	17 bytes.
1	32 bytes.

2.1.10 CAN bus configuration.

(V.)MPG.CANMODE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

CAN bus protocol.

V.MPG.CANMODE

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	CANfagor protocol.
1	CANopen protocol.

(V.)MPG.CANLENGTH

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

CANfagor bus cable length (in meters)

V.MPG.CANLENGTH

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.	Value.	Meaning.
0	Up to 20 meters.	7	Up to 90 meters.
1	Up to 30 meters.	8	Up to 100 meters.
2	Up to 40 meters.	9	Up to 110 meters.
3	Up to 50 meters.	10	Up to 120 meters.
4	Up to 60 meters.	11	Up to 130 meters.
5	Up to 70 meters.	12	More than 130 meters.
6	Up to 80 meters.		

(V.)MPG.CANOPENFREQ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

CANopen bus communication frequency.

V.MPG.CANOPENFREQ

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	1 Mbps.
2	800 kbps.
3	500 kbps.
4	250 kbps.

2.1.11 Serial line configuration.

(V.)MPG.RSTYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Type of serial line.

V.MPG.RSTYPE

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	RS232.
2	RS485.
3	RS422.

2.1.12 MODBUS.

(V.)MPG.MODBUSSVRTCP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Activate the ModBUS sever on TCP.

(V.)MPG.MODBUSSVRTCP

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)MPG.MODBUSSVRRS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Activate the ModBUS sever on RS485.

(V.)MPG.MODBUSSVRRS

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)MPG.MODSVRID

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Identifier of the ModBUS sever on RS485.

(V.)MPG.MODSVRID

(V.)MPG.MODBRATE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Communication speed of the ModBUS sever on RS485.

(V.)MPG.MODBRATE

2.1.13 Default conditions (sytem).

(V.)MPG.INCHES

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Default measuring units.

V.MPG.INCHES

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Millimeters.
1	Inches.

(V.)MPG.PRESSURE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Default pressure units.

V.MPG.PRESSURE

Values of the variable.

Value.	Meaning.
0	Bar.
1	Psi.

2.1.14 Arithmetic parameters.

(V.)MPG.MAXLOCP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Upper limit for local arithmetic parameters.

V.MPG.MAXLOCP

(V.)MPG.MINLOCP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Lower limit for local arithmetic parameters.

V.MPG.MINLOCP

(V.)MPG.MAXGLBP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Upper limit for global arithmetic parameters.

V.MPG.MAXGLBP

(V.)MPG.MINGLBP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Lower limit for global arithmetic parameters.

V.MPG.MINGLBP

(V.)MPG.ROPARMIN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Lower limit for global read-only arithmetic parameters.

The variable will return a ·0· if no range has been defined or the range is wrong.

V.MPG.ROPARMIN

(V.)MPG.ROPARMAX

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Upper limit for global read-only arithmetic parameters.

The variable will return a ·0· if no range has been defined or the range is wrong.

V.MPG.ROPARMAX

(V.)MPG.MAXCOMP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Upper limit for common arithmetic parameters.

V.MPG.MAXCOMP

(V.)MPG.MINCOMP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Lower limit for common arithmetic parameters.

V.MPG.MINCOMP

(V.)MPG.BKUPCUP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of common non-volatile arithmetic parameters.

V.MPG.BKUPCUP

2.1.15 Cross compensation table.

(V.)MPG.MOVAXIS[tbl]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Cross compensation table [tbl]. Logic number of the master axis.

The variable will return a ·0· value if the table has not been defined.

Syntax.

·tbl· Table number.

V.MPG.MOVAXIS[3]	Third cross compensation table.

(V.)MPG.COMPAXIS[tbl]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Cross compensation table [tbl]. Logic number of the compensated axis.

The variable will return a ·0· value if the table has not been defined.

Syntax.

·tbl· Table number.

V.MPG.COMPAXIS[3]	Third cross compensation table.

(V.)MPG.NPCROSS[tbl]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Cross compensation table [tbl]. Number of points in the table.

Syntax.

·tbl· Table number.

V.MPG.NPCROSS[3]	Third cross compensation table.

(V.)MPG.TYPCROSS[tbl]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Cross compensation table [tbl]. Type of compensation (type of coordinates).

Syntax.

·tbl· Table number.

V.MPG.TYPCROSS[3]	Third cross compensation table.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Compensation is applied using real coordinates.
1	Compensation is applied using theoretical coordinates.

(V.)MPG.BIDIR[tbl]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Cross compensation table [tbl]. Bi-directional compensation.

When using bi-directional compensation, the table permits using a different compensation for each moving direction. If the compensation is not bidirectional, it applies the same compensation in both directions.

Syntax.

·tbl· Table number.

V.MPG.BIDIR[3]	Third cross compensation table.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)MPG.REFNEED[tbl]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Cross compensation table [tbl]. Both axes must be homed in order to apply the compensation.

Syntax.

·tbl· Table number.

V.MPG.REFNEED[3]	Third cross compensation table.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)MPG.POSITION[tbl][pt]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Cross compensation table [tbl]; point [pt] Position of the master axis.

Syntax.

·tbl· Table number.

·pt· Point in the table.

V.MPG.POSITION[3][14]	Point 14 of the third cross compensation table.

(V.)MPG.POSERROR[tbl][pt]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Cross compensation table [tbl]; point [pt] Amount of error to compensate when moving in the positive direction.

If there is no bi-directional, it indicates the amount of error to compensate in both directions.

Syntax.

·tbl· Table number.

·pt· Point in the table.

V.MPG.POSERROR[3][14]	Point 14 of the third cross compensation table.

(V.)MPG.NEGERROR[tbl][pt]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Cross compensation table [tbl]; point [pt] Amount of error to compensate when moving in the negative direction.

Syntax.

·tbl· Table number.

·pt· Point in the table.

V.MPG.NEGERROR[3][14]	Point 14 of the third cross compensation table.

2.1.16 Volumetric compensation tables.

(V.)MPG.VMOVAXIS1[tbl]
(V.)MPG.VMOVAXIS2[tbl]
(V.)MPG.VMOVAXIS3[tbl]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Basic volumetric compensation table [tbl]. Name of the axis that generates changes when moved.

Syntax.

·tbl· Table number.

V.MPG.VMOVAXIS2[1]	Name of the second axis on the first volumetric compensation table.

(V.)MPG.NPOINTSAX1[tbl]
(V.)MPG.NPOINTSAX2[tbl]
(V.)MPG.NPOINTSAX3[tbl]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Basic volumetric compensation table [tbl]. Number of points of basic volumetric compensation on each axis.

Syntax.

·tbl· Table number.

V.MPG.NPOINTAX2[1]	Number of points from the first basic volumetric compensation on the second axis.

(V.)MPG.INIPOSAX1[tbl]
(V.)MPG.INIPOSAX2[tbl]
(V.)MPG.INIPOSAX3[tbl]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Basic volumetric compensation table [tbl]. Initial position of the basic volumetric compensation on each axis.

Syntax.

·tbl· Table number.

V.MPG.INIPOSAX2[1]	Initial position of the first basic volumetric compensation on the second axis.

(V.)MPG.INCREAX1[tbl]
(V.)MPG.INCREAX2[tbl]
(V.)MPG.INCREAX3[tbl]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Interval between basic volumetric compensation points on each axis.

Syntax.

·tbl· Table number.

V.MPG.INCREAX2[1]	Interval between points from the first basic volumetric compensation on the second axis.

(V.)MPG.VCOMPAXIS1[tbl]
(V.)MPG.VCOMPAXIS2[tbl]
(V.)MPG.VCOMPAXIS3[tbl]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Volumetric compensation table [tbl]. Axis to be compensated.

Syntax.

·tbl· Table number.

V.MPG.VCOMPAXIS2[1]	Second axis to be compensated in the first volumetric compensation table.

(V.)MPG.VCOMPFILE[tbl]

Variable to be read via interface.
The variable returns the value of block preparation.

Volumetric compensation table [tbl]. File containing volumetric compensation data.

Syntax.

·tbl· Table number.

V.MPG.VCOMPFILE[1]	File for defining the first volumetric compensation.

2.1.17 Execution times.

(V.)MPG.MINAENDW

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Minimum duration of the AUXEND signal (in milliseconds).

V.MPG.MINAENDW

(V.)MPG.REFTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Estimated home searching time (in milliseconds).

V.MPG.REFTIME

(V.)MPG.HTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Estimated time for an "H" function (in milliseconds).

V.MPG.HTIME

(V.)MPG.DTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Estimated time for an "D" function (in milliseconds).

V.MPG.DTIME

(V.)MPG.TTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Estimated time for an "T" function (in milliseconds).

V.MPG.TTIME

2.1.18 Numbering of the digital inputs (CANfagor bus).

(V.)MPG.NDIMOD

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Total number of digital input modules.

V.MPG.NDIMOD

(V.)MPG.DIMODADDR[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Base address of the digital input modules.

Syntax.

·nb· Module number.

V.MPG.DIMODADDR[4]	Fourth digital input module.

2.1.19 Numbering of the digital outputs (CANfagor bus).

(V.)MPG.NDOMOD

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Total number of digital output modules.

V.MPG.NDOMOD

This variable indicates the number of these modules connected to the same CAN bus. In remote modules with CANopen protocol each double module of digital inputs and outputs counts as two.

(V.)MPG.DOMODADDR[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Base address of the digital output modules.

Syntax.

·nb· Module number.

V.MPG.DOMODADDR[4]	Fourth digital output module.

2.1.20 Numbering of the digital inputs (CANopen bus).

(V.)MPG.NDIMOD

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Total number of digital input logic blocks.

V.MPG.NDIMOD	

(V.)MPG.DIMODNODE[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Node number of the header to which the I/O logic block belongs.

Syntax.

·nb· Number of the logic block.

V.MPG.DIMODNODE[nb]	Fourth digital input logic block.

(V.)MPG.DIMODBLOCK[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of the logic block.

Syntax.

·nb· Number of the logic block.

V.MPG.DIMODBLOCK[nb]	Fourth digital input logic block.

(V.)MPG.DIMODADDRESS[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Base address of the logic block.

Syntax.

·nb· Number of the logic block.

V.MPG.DIMODADDRESS[nb]	Fourth digital input logic block.

(V.)MPG.DIMODNDI[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of digital inputs of the logic block.

Syntax.

·nb· Number of the logic block.

V.MPG.DIMODNDI[nb]	Fourth digital input logic block.

2.1.21 Numbering of the digital outputs (CANopen bus).

(V.)MPG.NDOMOD

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Total number of digital output logic blocks.

V.MPG.NDOMOD

(V.)MPG.DOMODNODE[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Node number of the header to which the I/O logic block belongs.

Syntax.

·nb· Number of the logic block.

V.MPG.DOMODNODE[nb]	Fourth digital output logic block.

(V.)MPG.DOMODBLOCK[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of the logic block.

Syntax.

·nb· Number of the logic block.

V.MPG.DOMODBLOCK[nb]	Fourth digital output logic block.

(V.)MPG.DOMODADDRESS[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Base address of the logic block.

Syntax.

·nb· Number of the logic block.

V.MPG.DOMODADDRESS[nb]	Fourth digital output logic block.

(V.)MPG.DOMODNDO[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of digital outputs of the logic block.

Syntax.

·nb· Number of the logic block.

V.MPG.DOMODNDO[nb]	Fourth digital output logic block.

2.1.22 Numbering of analog inputs for temperature sensors PT100.

(V.)MPG.NPT100

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Total number of active PT100 inputs.

V.MPG.NPT100

(V.)MPG.PT100[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Analog input associated with the PT100 input.

Syntax.

·nb· PT100 input number.

V.MPG.PT100[3]	Third PT100 input.

2.1.23 Probe setting.

(V.)MPG.PROBE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

There is a probe.

V.MPG.PROBE

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)MPG.PROBETYPE1

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Probe type 1, depending on where it is connected.

V.MPG.PROBETYPE1

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Remote probe.
1	Local probe.

(V.)MPG.PROBETYPE2

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Probe type 2, depending on where it is connected.

V.MPG.PROBETYPE2

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Remote probe.
1	Local probe.

(V.)MPG.PRBDI1

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of the input associated with probe 1.

For remote probes, this parameter indicates the digital input number; for local probes, it indicates the local probe input number. The variable will return a ·0· value if no digital input has been defined.

V.MPG.PRBDI1

(V.)MPG.PRBDI2

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of the input associated with probe 2.

For remote probes, this parameter indicates the digital input number; for local probes, it indicates the local probe input number. The variable will return a ·0· value if no digital input has been defined.

V.MPG.PRBDI2

(V.)MPG.PRBPULSE1

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Logic level to activate probe 1.

V.MPG.PRBPULSE1

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Low logic level (0 V).
1	High logic level (5 V / 24 V).

(V.)MPG.PRBPULSE2

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Logic level to activate probe 2.

V.MPG.PRBPULSE2

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Low logic level (0 V).
1	High logic level (5 V / 24 V).

2.1.24 Shared PLC memory.

(V.)MPG.PLCDATASIZE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Size (in bytes) of the PLC's shared data area.

V.MPG.PLCDATASIZE

2.1.25 Management of local I/O.

(V.)MPG.NLOCOUT

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of local digital outputs.

V.MPG.NLOCOUT

(V.)MPG.EXPSCHK

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Activate the 24 V monitoring at the local digital outputs.

V.MPG.EXPSCHK

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.1.26 Synchronized switching.

(V.)MPG.SWTOUTPUT

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: - .

Local digital output associated with synchronized switching.

V.MPG.SWTOUTPUT

(V.)MPG.SWTDELAY

Variable that can be read and written from the interface and read from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.
Variable modifiable from the oscilloscope.
Units: Milliseconds.

Delay of the device associated with synchronized switching.

V.MPG.SWTDELAY

(V.)MPG.SWTG0FEED

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: - .

Observe the G00 feedrate during synchronized switching.

V.MPG.SWTG0FEED

Values of the variable.

Value.	Meaning.
0	No. The cut is made at a constant feedrate (with the feedrate of the previous G1/G2/G3), without accelerating in the G0 sections.
1	Yes. Movements in G0 are carried out at a rapid feedrate (parameter G00FEED).

Remarks.

The behavior can be modified from the part program with the instruction #SWTOUT.

2.1.27 PWM (Pulse-Width Modulation).

(V.)MPG.PWMOUTPUT

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Local digital output associated with the PWM.

V.MPG.PWMOUTPUT

Values of the variable.

Value.	Meaning.
0	PWM missing.
1	Local output 1 (pin LI/O1).
2	Local output 2 (pin LI/O2).

(V.)MPG.PWMCANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Cancel the PWM after an M30 or a reset.

V.MPG.PWMCANCEL

Values of the variable.

Value.	Meaning.
0	No.
1	Yes.

2.1.28 Power control.

(V.)MPG.PWRCTRLACT

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Managing power based on the actual feed.

V.MPG.PWRCTRLACT

Values of the variable.

Value.	Meaning.
0	No. The CNC manages the power based on the theoretical feed.
1	Yes. The CNC manages the power based on the actual feed.

(V.)MPG.PWRCTRLCANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Canceling power control with reset/M2/M30.

V.MPG.PWRCTRLCANCEL

Values of the variable.

Value.	Meaning.
0	No.
1	Yes.

2.1.29 Gap control.

(V.)MPG.GAPANAINTYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Type of analog input connected to the sensor.

V.MPG.GAPANAINTYPE

Values of the variable.

Value.	Meaning.
0	Remote CAN.
2	Drive.

(V.)MPG.GAPANAINID

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Number of the analog input connected to the sensor.

V.MPG.GAPANAINID

Values of the variable.

Value.	Meaning.
1 - 60	The analog input is in the remote modules. The variable returns the number of the analog output.
101 -132 201 - 232	The analog input is in a Sercos drive. The first digit indicates the analog output to be used (1 or 2) and the other two digits indicate the logic address of the drive (1 through 32).

(V.)MPG.GAPDISTLIMIT

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Distance corresponding to the limit analog signal of the sensor.

V.MPG.GAPDISTLIMIT

(V.)MPG.GAPVOLTLIMIT

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Millivolts.

Voltage (in millivolts) corresponding to the limit path of the sensor (parameter GAPDISTLIMIT).

V.MPG.GAPVOLTLIMIT

(V.)MPG.GAPSENSOROFFSET

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Millivolts.

Offset (in millivolts) to apply to the sensor from the CNC.

V.MPG.GAPSENSOROFFSET

(V.)MPG.GAPSENSORCH

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Change the sensor signal sign.

V.MPG.GAPSENSORCH

Values of the variable.

Value.	Meaning.
0	No.
1	Yes.

(V.)MPG.GAPGAIN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: - .

Proportional gain applied to the signal sensor, in position.

V.MPG.GAPGAIN

(V.)MPG.ORDER

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: - .

Sensor filter. The higher the order number, the greater the slope of attenuation. An order 2 is recommended.

V.MPG.ORDER

(V.)MPG.TYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: Value listed.
Sensor filter. Filter type.

Values of the variable.

Value.	Meaning.
1	Low Passing.

(V.)MPG.FREQUENCY

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: Herz.

Sensor filter. Filter cutoff frequency. A value of 30 Hz is recommended.

V.MPG.FREQUENCY

(V.)MPG.GAPSENSORDELAY

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Milliseconds.

Delay (in milliseconds) of the sensor signal regarding the axis position.

V.MPG.GAPSENSORDELAY

(V.)MPG.GAPERRORCANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Canceling the gap error outside the range defined by GAPMIN/GAPMAX.

V.MPG.GAPERRORCANCEL

Values of the variable.

Value.	Meaning.
0	No.
1	Yes.

(V.)MPG.GAPMIN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Minimum sensor limit.

V.MPG.GAPMIN

(V.)MPG.GAPMAX

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Maximum sensor limit.

V.MPG.GAPMAX

(V.)MPG.GAPTOLCANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Canceling the gap error outside the range defined by GAPTOL.

V.MPG.GAPTOLCANCEL

Values of the variable.

Value.	Meaning.
0	No.
1	Yes.

(V.)MPG.GAPTOL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Error tolerance margin.

V.MPG.GAPTOL

(V.)MPG.GAPCOLLISIONMODE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

CNC behavior in the event of a sensor collision.

V.MPG.GAPCOLLISIONMODE

Values of the variable.

Value.	Meaning.
0	Not displaying an error.
1	Displaying an error.

(V.)MPG.GAPTONEG

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Movement block in #GAPCTRL towards descending coordinate.

V.MPG.GAPTONEG

Values of the variable.

Value.	Meaning.
0	No. The positive direction of the Z axis is down and the negative direction is up (inverted Z axis). The axis moves in a positive direction (down) to reach the gap.
1	Yes. The positive direction of the Z axis is up and the negative is down (under normal conditions). The axis moves in the negative direction (down) to reach the gap.

2.1.30 Leapfrog.

(V.)MPG.LEAPDYNOVR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Percentage.

Dynamic response of the leap during the leapfrog.

V.MPG.LEAPDYNOVR

2.1.31 CO2 laser path dispersion compensation.

(V.)MPG.LASERFOLLOWAXIS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: - .

Logic number of the slave axis to which the #FOLLOW is applied.

V.MPG.LASERFOLLOWAXIS

(V.)MPG.LASERFOLLOWOFFSET

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Source offset of the X Y Z axes regarding the slave axis.

V.MPG.LASERFOLLOWOFFSET

(V.)MPG.LASERFOLLOW1

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Effect of the first of the X Y Z axes on the slave axis.

V.MPG.LASERFOLLOW1

Values of the variable.

Value.	Meaning.
-1	Negative.
0	Not affected.
1	Positive.

(V.)MPG.LASERFOLLOW2

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Effect of the second of the X Y Z axes on the slave axis.

V.MPG.LASERFOLLOW2

Values of the variable.

Value.	Meaning.
-1	Negative.
0	Not affected.
1	Positive.

(V.)MPG.LASERFOLLOW3

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Effect of the third of the X Y Z axes on the slave axis.

V.MPG.LASERFOLLOW3

Values of the variable.

Value.	Meaning.
-1	Negative.
0	Not affected.
1	Positive.

2.1.32 Backup of non-volatile data.

(V.)MPG.BKUPREG

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of non-volatile PLC registers.

V.MPG.BKUPREG

(V.)MPG.BKUPCOUN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of non-volatile PLC counters.

V.MPG.BKUPCOUN

2.1.33 Tool offset and wear.

(V.)MPG.TOOLOFSG

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Sign criteria for tool offsets and tool wear.

The offsets are used to define the tool dimensions in each axis. The dimensions of the turning tools are defined using these offsets; either these offsets or tool length and radius may be used for the dimensions of the rest of the tools.

V.MPG.TOOLOFSG

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Positive.
1	Negative.

2.1.34 Spindle synchronization.

(V.)MPG.SYNCCANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Cancel the spindle synchronization.

V.MPG.SYNCCANCEL

This parameter indicates whether the CNC cancels spindle synchronization or not after executing M02, M30 or after an error or reset.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.1.35 Define the number of jog panels and their relationship with the channels.

(V.)MPG.NKEYBD

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of jog panels.

V.MPG.NKEYBD

(V.)MPG.KEYBDCH[jog]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel to which the jog panel is assigned.

Syntax.

·jog· Number of jog panel.

V.MPG.KEYBDCH[2] Jog panel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Active channel.
1	Channel ·1·.
2	Channel ·2·.
3	Channel ·3·.
4	Channel ·4·.

Remarks.

The CNC numbers the operator panels following the order (sequence) that they occupy in the CAN bus (Address switch). The first jog panel will be the one with the lowest number and so on.

2.1.36 PLC type.

(V.)MPG.PLCTYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

PLC type.

V.MPG.PLCTYPE

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	IEC.
1	IEC+Fagor.
2	Fagor.

2.1.37 Rename the axes and the spindles.

(V.)MPG.RENAMECANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Cancel the name change for the axes and the spindles.

V.MPG.RENAMECANCEL

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.1.38 Zero offsets.

(V.)MPG.FINEORG

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Fine definition of zero offsets.

V.MPG.FINEORG

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.1.39 Remote module RCS-S (Sercos Counter).

(V.)MPG.NSERCOUNT

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of RCS-S modules in the bus.

V.MPG.NSERCOUNT

(V.)MPG.SERCOUNTID[num]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Thumbwheel identifiers associated with Sercos counters.

Syntax.

·num· RCS-S module number.

V.MPG.SERCOUNTID[2]	Module RCS-S ·2·.

2.2 Variables related to the machine parameters of the channels.

2.2.1 Channel configuration.

(V.)[ch].MPG.GROUPID

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Group the channel belongs to.

If the variable returns a ·0· value, it means that the channel is not associated with any group.

Syntax.

·ch· Channel number.

V.[2].MPG.GROUPID	Channel ·2·.

(V.)[ch].MPG.CHTYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Channel type.

A channel may be governed from the CNC, from the PLC or from both. Channels governed by the PLC are not displayed in automatic, jog or edisimu modes. The tables can be accessed.

Syntax.

·ch· Channel number.

V.[2].MPG.CHTYPE	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	CNC channel.
1	PLC channel.
2	CNC and PLC channel.

(V.)[ch].MPG.HIDDENCH

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Hidden channel.

Hidden channels are not displayed and cannot be selected.

Syntax.

·ch· Channel number.

V.[2].MPG.HIDDENCH	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.2.2 Configuring the axes of the channel.

(V.)[ch].MPG.CHNAXIS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Number of the channel axes without including spindles.

It is possible to change the configuration of the axes of a channel via part-program, (defining a new configuration, adding or removing axes) using the instructions #SET AX, #FREE AX and #CALL AX.

Syntax.

·ch· Channel number.

V.[2].MPG.CHNAXIS	Channel ·2·.

(V.)[ch].MPG.CHAXISNAMEn

Variable to be read via interface.

Channel [ch]. Name the "n" axis of the channel.

Syntax.

·ch· Channel number.

·n· Index of the axis in the channel.

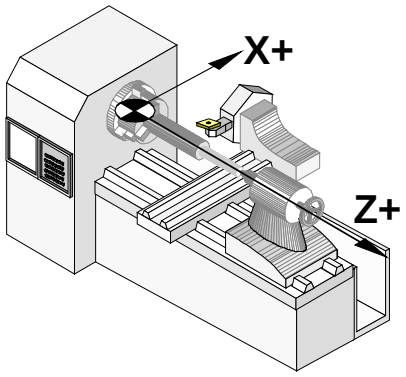
[2].MPG.CHAXISNAME4	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPG.GEOCONFIG

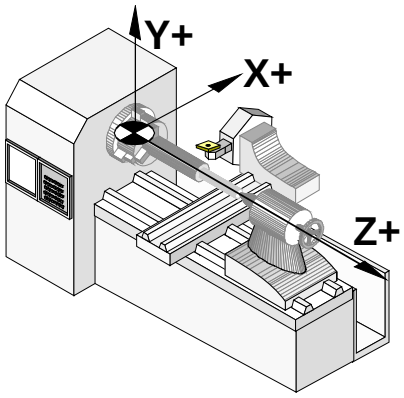
Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Geometrical configuration of the axes of the channel.

On the lathe model, the geometric configuration of the axes may be a "trihedron" type or a "plane" type.



Configuration of "plane" type axes.



Configuration of "trihedron" type axes.

Syntax.

·ch· Channel number.

V.[2].MPG.GEOCONFIG	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Configuration of "plane" type axes.
1	Configuration of "trihedron" type axes.

Remarks.

Configuration.	Configuration properties.
"Trihedron" type.	In this configuration, there are three axes forming a Cartesian XYZ type trihedron like on a milling machine. There may be more axes besides those forming the trihedron. With this configuration, the planes behave in the same way as on a milling machine except that the usual work plane will be G18 (if it has been configured like that).
"plane" type.	In this configuration, there are two axes forming the usual work plane. There may be more axes, but they cannot be part of the trihedron; there must be auxiliary, rotary, etc. With this configuration, the work plane is always G18 and will be formed by the first two axes defined in the channel. In this configuration, the second axis of the channel is considered as longitudinal axis. If the X (first) and Z (second) axes have been defined, the work plane will be the ZX (Z as abscissa and X as ordinate) and Z the longitudinal axis. Tool length compensation is applied on this longitudinal axis when using milling tools. With lathe tools, tool length compensation is applied on all the axes where a tool offset has been defined.

2.2.3 Configuring the spindles of the channel.

(V.)[ch].MPG.CHNSPDL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Number of spindles of the channel.

It is possible to change the configuration of the spindles of a channel via part-program, (defining a new configuration, adding or remove spindles) using the instructions #SET SP, #FREE SP and #CALL SP.

Syntax.

·ch· Channel number.

V.[2].MPG.CHSPDL	Channel ·2·.

(V.)[ch].MPG.CHSPDLNAMEn

Variable to be read via interface.

Channel [ch]. Name the "n" spindle of the channel.

Syntax.

·ch· Channel number.

·n· Index of the spindle in the channel.

[2].MPG.CHSPDLNAME1	Spindle with index ·1· in the channel ·2·.

2.2.4 Configuration of the C axis.

(V.)[ch].MPG.CAXNAME

Variable to be read via interface.

Channel [ch]. Name of the axis working as "C" axis (by default).

When setting more than one C axis, use the program instruction #CAX to indicate the one that is active. Only one C axis may be active in each channel.

Syntax.

·ch· Channel number.

[2].MPG.CAXNAME	Channel ·2·.

(V.)[ch].MPG.ALIGNC

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. "C" axis alignment for diametrical machining.

This parameter indicates whether the C axis must be aligned for diameter machining (ALIGNC = Yes) or the tool can machine the whole surface diametrically in a single fixturing operation (ALIGNC = NO).

Syntax.

·ch· Channel number.

V.[2].MPG.ALIGNC	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.2.5 Time setting (channel).

(V.)[ch].MPG.PREPFREQ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum number of blocks to prepare per cycle.

Syntax.

·ch· Channel number.

V.[2].MPG.PREPFREQ	Channel ·2·.

(V.)[ch].MPG.ANTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Anticipation time.

Syntax.

·ch· Channel number.

V.[2].MPG.ANTIME	Channel ·2·.

2.2.6 Configuration of the HSC mode (channel).

(V.)[ch].MPG.FEEDAVRG

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Calculating feedrate average.

Syntax.

·ch· Channel number.

V.[2].MPG.FEEDAVRG	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.SMOOTHFREQ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Smoothing frequency in the interpolation.

Syntax.

·ch· Channel number.

V.[2].MPG.SMOOTHFREQ	Channel ·2·.

(V.)[ch].MPG.CORNER

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum angle of the corner to machine it in square corner mode.

Syntax.

·ch· Channel number.

V.[2].MPG.CORNER	Channel ·2·.

(V.)[ch].MPG.HSCFILTFREQ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Filter frequency (CONTERROR mode).

Syntax.

·ch· Channel number.

V.[2].MPG.HSCFILTFREQ	Channel ·2·.

(V.)[ch].MPG.FASTFACTOR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Default aceleration percentage (FAST mode).

Syntax.

·ch· Channel number.

V.[2].MPG.FASTFACTOR	Channel ·2·.

(V.)[ch].MPG.FTIMELIM

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Time difference permitted in feedrate interpolation (FAST and SURFACE modes).

Syntax.

·ch· Channel number.

V.[2].MPG.FTIMELIM	Channel ·2·.

(V.)[ch].MPG.MINCORFEED

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Minimum feedrate at the corners.

Syntax.

·ch· Channel number.

V.[2].MPG.MINCORFEED	Channel ·2·.

(V.)[ch].MPG.FSMOOTHFREQ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Smoothing frequency in the interpolation (FAST and SURFACE modes).

Syntax.

·ch· Channel number.

V.[2].MPG.FSMOOTHFREQ	Channel ·2·.

(V.)[ch].MPG.FASTFILTFREQ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Filter frequency (FAST mode).

Syntax.

·ch· Channel number.

V.[2].MPG.FASTFILTFREQ	Channel ·2·.

(V.)[ch].MPG.FREQRES

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. First resonance frequency of the machine.

Syntax.

·ch· Channel number.

V.[2].MPG.FREQRES	Channel ·2·.

(V.)[ch].MPG.SOFTFREQ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Path filter frequency for profiles of linear acceleration.

Syntax.

·ch· Channel number.

V.[2].MPG.SOFTFREQ	Channel ·2·.

(V.)[ch].MPG.HSCROUND

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Default value of the maximum path error in HSC.

Syntax.

·ch· Channel number.

V.[2].MPG.HSCROUND	Channel ·2·.

(V.)[ch].MPG.SURFFILTFREQ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Axis filter frequency (SURFACE mode).

Syntax.

·ch· Channel number.

V.[2].MPG.SURFFILFREQ	Channel ·2·.

(V.)[ch].MPG.HSCDEFAULTMODE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Default mode when programming #HSC ON.

Syntax.

·ch· Channel number.

V.[2].MPG.HSCDEFAULTMODE	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	SURFACE
1	CONTERROR
2	FAST

(V.)[ch].MPG.ORISMOOTH

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Orientation smoothing of the rotary axes working with RTCP.

Syntax.

·ch· Channel number.

V.[2].MPG.ORISMOOTH	Channel ·2·.

2.2.7 Virtual tool axis.

(V.)[ch].MPG.VIRTAXISNAME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Name of the virtual tool axis.

Syntax.

·ch· Channel number.

```
V.[2].MPG.VIRTAXISNAME          Channel ·2·.
```

Values of the variable.

The values returned by this variable are encoded as follows.

X=10	X1=11	X2=12	X3=13	X4=14	... X9=19
Y=20	Y1=21	Y2=22	Y3=23	Y4=24	... Y9=29
Z=30	Z1=31	Z2=32	Z3=33	Z4=34	... Z9=39
U=40	U1=41	U2=42	U3=43	U4=44	... U9=49
V=50	V1=51	V2=52	V3=53	V4=54	... V9=59
W=60	W1=61	W2=62	W3=63	W4=64	... W9=69
A=70	A1=71	A2=72	A3=73	A4=74	... A9=79
B=80	B1=81	B2=82	B3=83	B4=84	... B9=89
C=90	C1=91	C2=92	C3=93	C4=94	... C9=99

(V.)[ch].MPG.VIRTAXCANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Cancel the virtual tool axis after an M30 and reset.

Syntax.

·ch· Channel number.

```
V.[2].MPG.VIRTAXCANCEL          Channel ·2·.
```

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.2.8 Default conditions (channel).

(V.)[ch].MPG.KINID

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Default kinematics number.

The channel assumes the default value on power-up, after executing an M02 or M30 or after a reset. To select another kinematics from the part-program, use the #KIN ID instruction.

Syntax.

·ch· Channel number.

V.[2].MPG.KINID	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	The CNC restores the last kinematics active.
1··6	Default kinematics number.
255	There is no default kinematics.

(V.)[ch].MPG.CSCANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Cancel the inclined plane on start-up.

This parameter indicates whether on start-up the CNC cancels the inclined plane (#CS/#ACS) that was active when the CNC was turned off.

Syntax.

·ch· Channel number.

V.[2].MPG.CSCANCEL	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.LINKCANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Cancel axis coupling by default.

The channel assumes the default value after executing an M02 or M30, after an emergency or a reset. To couple axes from the part-program, use the #LINK instruction.

Syntax.

·ch· Channel number.

V.[2].MPG.LINKCANCEL	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.MIRRORCANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Cancel mirror image (G11/G12/G13/G14) after M30 and reset.

Syntax.

·ch· Channel number.

```
V.[2].MPG.MIRRORCANCEL          Channel ·2·.
```

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.SLOPETYPE

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Default acceleration type.

It indicates the type of acceleration applied by default in automatic movements. When working in manual (JOG) mode, the CNC always applies linear acceleration.

The channel assumes the default value on power-up, after executing an M02 or M30 or after a reset. To select another acceleration from the part-program, use the #SLOPE instruction.

Syntax.

·ch· Channel number.

```
V.[2].MPG.SLOPETYPE             Channel ·2·.
```

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Linear acceleration.
2	Trapezoidal acceleration.
3	Square sine (bell shaped) acceleration.

(V.)[ch].MPG.IPLANE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Main work plane (G17/G18) by default.

The channel assumes the default value on power-up, after executing an M02 or M30 or after a reset. To change the work plane via part-program, use function G17, G18, G19 or G20.

Syntax.

·ch· Channel number.

V.[2].MPG.IPLANE	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	G17.
1	G18.

(V.)[ch].MPG.ISYSTEM

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Default type of coordinates (G90/G91).

The coordinates of a point may be defined either in absolute coordinates (G90) referred to part zero or in incremental coordinates (G91) referred to the current position.

The channel assumes the default value on power-up, after executing an M02 or M30 or after a reset. To change the type of coordinates via part-program, use function G90 or G91.

Syntax.

·ch· Channel number.

V.[2].MPG.ISYSTEM	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	G90.
1	G91.

(V.)[ch].MPG.IMOVE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Default type of movement (G0/G1).

The channel assumes the default value on power-up, after executing an M02 or M30 or after a reset. To change the type of movement via part-program, use function G0 or G1.

Syntax.

·ch· Channel number.

V.[2].MPG.IMOVE	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	G00.
1	G01.

(V.)[ch].MPG.G0MODAL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Programming for G0 remains as modal.

Syntax.

·ch· Channel number.

V.[2].MPG.G0MODAL	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.G2G3MODAL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Programming in G2/G3 remains as modal.

Syntax.

·ch· Channel number.

V.[2].MPG.G2G3MODAL	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.IFEED

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Default type of feedrate (G94/G95).

The channel assumes the default value on power-up, after executing an M02 or M30 or after a reset. To change the type of feedrate via part-program, use function G93 or G94.

Syntax.

·ch· Channel number.

V.[2].MPG.IFEED	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	G94.
1	G95.

(V.)[ch].MPG.FPRMAN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Function G95 admitted in jog mode.

Syntax.

·ch· Channel number.

V.[2].MPG.FPRMAN	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.LCOMPTYP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Keep the longitudinal axis when changing planes (G17/G18/G19).

Syntax.

·ch· Channel number.

V.[2].MPG.LCOMPTYP	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.PLANECANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Assume IPLANE as active plane after M30/RESET or keep the active one.

Syntax.

·ch· Channel number.

V.[2].MPG.PLANECANCEL	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	On power-up, the CNC assumes the plane defined in parameter IPLANE; after executing an M02 or M30, and after a reset, the CNC maintains the main active plane.
1	On power-up, after executing an M02 or M30, and after a reset, the CNC assumes the plane defined in parameter IPLANE.

(V.)[ch].MPG.ICORNER

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Default type of corner (G5/G7/G50).

The channel assumes the default value on power-up, after executing an M02 or M30 or after a reset. To change the type of corner via part-program, use function G5, G7 or G50.

Syntax.

·ch· Channel number.

V.[2].MPG.ICORNER	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	G50.
1	G05.
2	G07.

(V.)[ch].MPG.IRCOMP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Tool radius compensation mode (G136/G137) by default

The channel assumes the default value on power-up, after executing an M02 or M30 or after a reset. To change the type of tool radius compensation via part-program, use function G136 or G137.

Syntax.

·ch· Channel number.

V.[2].MPG.IRCOMP	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	G136.
1	G137.

(V.)[ch].MPG.COMPCANCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. How to cancel tool radius compensation.

This parameter indicates whether tool radius compensation is canceled in the first motion block, even if the plane axes are not involved, or if it requires a movement of the plane axes.

Syntax.

·ch· Channel number.

V.[2].MPG.COMPCANCEL	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Without moving the plane axes.
1	Moving the plane axes.

(V.)[ch].MPG.G00COMP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Apply tool radius compensation in G00.

Syntax.

·ch· Channel number.

```
V.[2].MPG.G00COMP                Channel ·2·.
```

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.ROUNDTYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Default rounding type in G5.

The rounding may be executed by limiting the chordal error or the feedrate. The chordal error (#ROUNDPAR [1]) defines the maximum deviation allowed between the programmed point and the resulting profile. The feedrate (#ROUNDPAR [2]) defines the percentage of the active feedrate to be used for machining.

The channel assumes the default value on power-up, after executing an M02 or M30 or after a reset. To change the type of rounding via program, use the #ROUNDPAR instruction.

Syntax.

·ch· Channel number.

```
V.[2].MPG.ROUNDTYPE              Channel ·2·.
```

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Chordal error.
1	Percentage of feedrate.

(V.)[ch].MPG.MAXROUND

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum rounding error in G5.

Syntax.

·ch· Channel number.

V.[2].MPG.MAXROUND	Channel ·2·.

(V.)[ch].MPG.ROUNDFEED

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Percentage of feedrate in G5.

Syntax.

·ch· Channel number.

V.[2].MPG.ROUNDFEED	Channel ·2·.

2.2.9 Arc center correction.

(V.)[ch].MPG.CIRINERR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum absolute radius error permitted.

Syntax.

·ch· Channel number.

V.[2].MPG.CIRINERR	Channel ·2·.

(V.)[ch].MPG.CIRINFACT

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum relative radius error permitted.

The relative error is given as a percentage over the radius.

Syntax.

·ch· Channel number.

V.[2].MPG.CIRINFACT	Channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

2.2.10 Behavior of the feedrate and the feedrate override.

(V.)[ch].MPG.MAXOVR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum override (%) permitted.

Syntax.

·ch· Channel number.

V.[2].MPG.MAXOVR	Channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

(V.)[ch].MPG.RAPIDOVR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Override acts in G00 (from 0 to 100%).

This parameter indicates whether the feedrate % may be modified (between 0% and 100%) or not when working in G0; if not possible, it will stay fixed at 100%.

Regardless of the value assigned to this parameter, the override always attends to the 0% position and never acts over 100%. It is always possible to change the % of feedrate when moving in jog mode.

Syntax.

·ch· Channel number.

V.[2].MPG.RAPIDOVR	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.FEEDND

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Apply the programmed feedrate to all the axes of the channel

This parameter indicates whether the programmed feedrate is applied to all the axes of the channel or only to the main axes. If it is only applied to the main axes, the rest of the axes move at their corresponding feedrate to end the movement of them all at the same time.

Syntax.

·ch· Channel number.

V.[2].MPG.FEEDND	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No. The programmed feedrate is only applied to the main axes.
1	Yes. The programmed feedrate is applied to all the axes of the channel.

2.2.11 Override of the dynamics for HSC.

(V.)[ch].MPG.MINDYNOVR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Minimum override for the dynamics in HSC.

Syntax.

·ch· Channel number.

V.[2].MPG.MINDYNOVR	Channel ·2·.

(V.)[ch].MPG.MAXDYNOVR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum override for the dynamics in HSC.

Syntax.

·ch· Channel number.

V.[2].MPG.MAXDYNOVR	Channel ·2·.

2.2.12 Movement of the independent axes.

(V.)[ch].MPG.IMOVEMACH

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Movement of the independent axis referred to machine coordinates.

Syntax.

·ch· Channel number.

V.[2].MPG.IMOVEMACH	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.XFITOIND

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. The transfer inhibit of the channel affects the independent axes.

This parameter indicates whether the transfer inhibit of the channel (_XFERINH mark) affects the independent axis or not.

Syntax.

·ch· Channel number.

V.[2].MPG.XFITOIND	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.2.13 Definition of the subroutines.

(V.)[ch].MPG.TOOLSUB
Variable to be read via interface.

Channel [ch]. Subroutine associated with "T".

Syntax.

·ch· Channel number.

[2].MPG.TOOLSUB	Channel ·2·.

(V.)[ch].MPG.REFPSUB
Variable to be read via interface.

Channel [ch]. Subroutine associated with function G74.

Syntax.

·ch· Channel number.

[2].MPG.REFPSUB	Channel ·2·.

(V.)[ch].MPG.INT1SUB
..
(V.)[ch].MPG.INT4SUB
Variable to be read via interface.

Channel [ch]. Interruption subroutines.

Syntax.

·ch· Channel number.

[2].MPG.INT1SUB	Channel ·2·.

(V.)[ch].MPG.INITIALSUB
Variable to be read via interface.
Units: Text.

Channel [ch]. Subroutine associated with the command #INITIALSUB.

Syntax.

·ch· Channel number.

[2].MPG.INTIALSUB	Channel ·2·.

(V.)[ch].MPG.PIERCING
Variable to be read via interface.
Units: Text.

Channel [ch]. Subroutine associated with the command #PIERCING.

Syntax.

·ch· Channel number.

[2].MPG.PIERCING	Channel ·2·.

(V.)[ch].MPG.CUTTINGON
Variable to be read via interface.
Units: Text.

Channel [ch]. Subroutine associated with the command #CUTTING ON.

Syntax.

·ch· Channel number.

[2].MPG.CUTTINGON	Channel ·2·.

(V.)[ch].MPG.CUTTINGOFF

Variable to be read via interface.
Units: Text.

Channel [ch]. Subroutine associated with the command #CUTTING OFF.

Syntax.

·ch· Channel number.

[2].MPG.CUTTINGOFF	Channel ·2·.

(V.)[ch].MPG.FINALSUB

Variable to be read via interface.
Units: Text.

Channel [ch]. Subroutine associated with the command #FINALSUB.

Syntax.

·ch· Channel number.

[2].MPG.FINALSUB	Channel ·2·.

(V.)[ch].MPG.OEMSUB1
..
(V.)[ch].MPG.OEMSUB10

Variable to be read via interface.

Channel [ch]. Subroutines associated with G180 through G189.

Syntax.

·ch· Channel number.

[2].MPG.OEMSUB1	Channel ·2·.

(V.)[ch].MPG.OEMSUB11
..
(V.)[ch].MPG.OEMSUB30

Variable to be read via interface.

Channel [ch]. Subroutines associated with G380 through G399.

Syntax.

·ch· Channel number.

[2].MPG.OEMSUB11	Channel ·2·.

(V.)[ch].MPG.SUBPATH

Variable to be read via interface.

Channel [ch]. Path of the program subroutines.

Syntax.

·ch· Channel number.

[2].MPG.SUBPATH	Channel ·2·.

2.2.14 Tabletop probe position.

(V.)[ch].MPG.PRB1MIN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Minimum probe coordinate (abscissa axis).

Syntax.

·ch· Channel number.

V.[2].MPG.PRB1MIN	Channel ·2·.

(V.)[ch].MPG.PRB1MAX

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum probe coordinate (abscissa axis).

Syntax.

·ch· Channel number.

V.[2].MPG.PRB1MAX	Channel ·2·.

(V.)[ch].MPG.PRB2MIN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Minimum probe coordinate (ordinate axis).

Syntax.

·ch· Channel number.

V.[2].MPG.PRB2MIN	Channel ·2·.

(V.)[ch].MPG.PRB2MAX

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum probe coordinate (ordinate axis).

Syntax.

·ch· Channel number.

V.[2].MPG.PRB2MAX	Channel ·2·.

(V.)[ch].MPG.PRB3MIN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Minimum probe coordinate (axis perpendicular to the plane).

Syntax.

·ch· Channel number.

V.[2].MPG.PRB3MIN	Channel ·2·.

(V.)[ch].MPG.PRB3MAX

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum probe coordinate (axis perpendicular to the plane).

Syntax.

·ch· Channel number.

V.[2].MPG.PRB3MAX	Channel ·2·.

2.2.15 Block search.

(V.)[ch].MPG.FUNPLC

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Send the M, H, S functions to the PLC during block search.

Syntax.

·ch· Channel number.

V.[2].MPG.FUNPLC	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.2.16 Interruption subroutines.

(V.)[ch].MPG.SUBINTSTOP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Execute interruption subroutines while the program is stopped or while no program is in execution.

Syntax.

·ch· Channel number.

V.[2].MPG.SUBINTSTOP	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.2.17 Machining feedrate.

(V.)[ch].MPG.MAXFEED

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum machining feedrate.

If the variable returns a ·0· value, the machining feedrate is not limited, the CNC assumes for all the movements the one set in machine parameter G00FEED as the maximum feedrate.

Syntax.

·ch· Channel number.

V.[2].MPG.MAXFEED	Channel ·2·.

(V.)[ch].MPG.DEFAULTFEED

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Assume MAXFEED for movements in G1/G2/G3 without active feedrate

If parameter MAXFEED = 0, the variable will always return a 0 value.

Syntax.

·ch· Channel number.

V.[2].MPG.DEFAULTFEED	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.2.18 Rapid traverse for the automatic mode.

(V.)[ch].MPG.RAPIDEN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. It may be used to enable the rapid traverse for the automatic mode while executing a program.

Syntax.

·ch· Channel number.

V.[2].MPG.RAPIDEN	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Disabled. Rapid traverse is not available for the automatic mode.
1	EXRAPID or rapid key. To activate the rapid feed, just activate the PLC mark EXRAPID or press the "rapid" key of the jog panel.
2	EXRAPID and rapid key. To activate the rapid feed, just activate the PLC mark EXRAPID and press the "rapid" key of the jog panel.

(V.)[ch].MPG.FRAPIDEN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Rapid traverse in the channel when rapid traverse for the automatic mode is active (parameter RAPIDEN). If the parameter is set with a "0" value, the feedrate is not limited.

This parameter does not the movements programmed in G00 or the threads. Movements in G0 are carried out at the feedrate set in parameter G00FEED. The threads are executed at the programmed feedrate.

Syntax.

·ch· Channel number.

V.[2].MPG.FRAPIDEN	Channel ·2·.

Remarks.

Rapid traverse cannot exceed the value set in axis parameters G00FEED and FRAPIDEN or the maximum feedrate set by PLC (variable (V.)PLC.G00FEED). Rapid traverse cannot exceed the value set in axis parameter MAXFEED of the channel and the active feedrate set by PLC (variable (V.)PLC.F).

2.2.19 Maximum acceleration and jerk on the tool path.

(V.)[ch].MPG.MAXACCEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum acceleration on the machining path.

Syntax.

·ch· Channel number.

V.[2].MPG.MAXACCEL	Channel ·2·.

(V.)[ch].MPG.MAXJERK

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum jerk on the machining path.

Syntax.

·ch· Channel number.

V.[2].MPG.MAXJERK	Channel ·2·.

2.2.20 Maximun frequency on the tool path.

(V.)[ch].MPG.MAXFREQ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum frequency generated on the machining path.

Syntax.

·ch· Channel number.

V.[2].MPG.MAXFREQ	Channel ·2·.

2.2.21 Resonance frequency of the machine.

(V.)[ch].MPG.CURVFREQRES

Possible values: From 0 to 500.0000 Hz
Default value: 0.
Associated variable: (V.)[ch].MPG.CURVFREQRES

Channel [ch]. First resonance frequency of the machine in the arcs.

Syntax.

·ch· Channel number.

V.[2].MPG.CURVFREQRES	Channel ·2·.

2.2.22 "Retrace" function.

(V.)[ch].MPG.RETRACAC

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Permit enabling the "retrace" function

Syntax.

·ch· Channel number.

V.[2].MPG.RETRACAC	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPG.NRETBLK

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Maximum number of blocks allowed for the "retrace" function.

Syntax.

·ch· Channel number.

V.[2].MPG.NRETBLK	Channel ·2·.

(V.)[ch].MPG.RETMFUNC

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Treatment of the M functions with the "retrace" function.

This parameter sets the behavior of the "retrace" function when executing M functions. When the CNC finds an M function, it can either ignore it and keep executing blocks in retrace or cancel the "retrace" function.

Syntax.

·ch· Channel number.

V.[2].MPG.RETMFUNC	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Ignore the M function and go on.
1	Turn the retrace function off.

Remarks.

This parameter does not affect the following "M" functions.

- Functions M00 and M01 are always executed; they are sent to the PLC and [CYCLE START] must be pressed to resume execution in retrace.
- Functions M03 and M04 are always ignored; the CNC does not start the spindle nor does it change its turning direction.
- Function M05 cancels the "retrace" function; the CNC does not stop the spindle.

2.2.23 Tool withdrawal.

(V.)[ch].MPG.RETRACTTHREAD

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Enable tool withdrawal (retraction) in threading.

This parameter defines the CNC behavior when interrupting a threading ([STOP] key or PLC mark _FEEDHOL).

Syntax.

·ch· Channel number.

V.[2].MPG.RETRACTTHREAD	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	The CNC stops the axes at the end of the pass.
1	• In electronic threading (G33/G34), function G233 defines the distance that the axes withdraw from the part. If G233 is not active, the axes stop at the end of the pass. • In threading canned cycles, (-T- model), both ISO and conversational, the CNC withdraws the axes from the part. The distance that the tool withdraws depends on how the cycle is programmed.

2.2.24 Master spindle.

(V.)[ch].MPG.MASTERSPDL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Master spindle maintained.

This parameter indicates whether the master spindle of a channel maintains its master condition or not after executing M02, M30 or after an emergency or reset or restarting the CNC.

Syntax.

·ch· Channel number.

V.[2].MPG.MASTERSPDL	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Temporary.
1	Maintained.

2.3 Variables related to axis and spindle machine parameters.

2.3.1 Belonging to the channel.

(V.)[ch].MPA.AXISEXCH.xn
(V.)[ch].MPA.AXISEXCH.sn
(V.)[ch].SP.AXISEXCH.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Channel change permission.

This variable shows whether it is possible for the axis or spindle to change channels via part-program and, if so, whether the change is temporary or permanent; in other words, whether the change is maintained after an M02, M30 or a reset.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.AXISEXCH.Z	Z axis.
V.MPA.AXISEXCH.S	Spindle S.
V.SP.AXISEXCH.S	Spindle S.
V.SP.AXISEXCH	Master spindle.
V.MPA.AXISEXCH.4	Axis or spindle with logic number ·4·.
V.[2].MPA.AXISEXCH.1	Axis with index ·1· in the channel ·2·.
V.SP.AXISEXCH.2	Spindle with index ·2· in the system.
V.[2].SP.AXISEXCH.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	It is not possible to change the axis or the spindle of the channel.
1	The change is temporary.
2	The change is permanent.

2.3.2 Type of axis and drive.

(V.)[ch].MPA.AXISTYPE.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Type of axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.AXISTYPE.Z	Z axis.
V.MPA.AXISTYPE.4	Axis with logic number ·4·.
V.[2].MPA.AXISTYPE.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Linear axis.
2	Rotary axis.
4	Spindle.

(V.)[ch].MPA.DRIVETYPE.xn
(V.)[ch].MPA.DRIVETYPE.sn
(V.)[ch].SP.DRIVETYPE.sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for an analog, position-Sercos, velocity-Sercos and Mechatrolink drive.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Type of drive.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DRIVETYPE.Z	Z axis.
V.MPA.DRIVETYPE.S	Spindle S.
V.SP.DRIVETYPE.S	Spindle S.
V.SP.DRIVETYPE	Master spindle.
V.MPA.DRIVETYPE.4	Axis or spindle with logic number ·4·.
V.[2].MPA.DRIVETYPE.1	Axis with index ·1· in the channel ·2·.
V.SP.DRIVETYPE.2	Spindle with index ·2· in the system.
V.[2].SP.DRIVETYPE.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Analog drive.
2	Sercos drive.
16	Simulated drive.
32	Mechatrolink drive.

(V.)[ch].MPA.POSUNITS.xn
(V.)[ch].MPA.POSUNITS.sn
(V.)[ch].SP.POSUNITS.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for a position-Sercos, velocity-Servos and Mechatrolink drive.
The variable returns the value of block preparation.

Channel [ch]. Units systgen used by the feedback system.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.POSUNITS.Z	Z axis.
V.MPA.POSUNITS.S	Spindle S.
V.SP.POSUNITS.S	Spindle S.
V.SP.POSUNITS	Master spindle.
V.MPA.POSUNITS.4	Axis or spindle with logic number ·4·.
V.[2].MPA.POSUNITS.1	Axis with index ·1· in the channel ·2·.
V.SP.POSUNITS.2	Spindle with index ·2· in the system.
V.[2].SP.POSUNITS.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Measurement (mm or degrees).
1	Pulses.

2.3.3 Configuring a Sercos drive.

(V.)[ch].MPA.DRIVEID.xn
(V.)[ch].MPA.DRIVEID.sn
(V.)[ch].SP.DRIVEID.sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for a position-Sercos, velocity-Servos and Mechatrolink drive.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Address (node) of the drive.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DRIVEID.Z	Z axis.
V.MPA.DRIVEID.S	Spindle S.
V.SP.DRIVEID.S	Spindle S.
V.SP.DRIVEID	Master spindle.
V.MPA.DRIVEID.4	Axis or spindle with logic number ·4·.
V.[2].MPA.DRIVEID.1	Axis with index ·1· in the channel ·2·.
V.SP.DRIVEID.2	Spindle with index ·2· in the system.
V.[2].SP.DRIVEID.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.OPMODEP.xn
(V.)[ch].MPA.OPMODEP.sn
(V.)[ch].SP.OPMODEP.sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for a position-Sercos, velocity-Servos and Mechatrolink drive.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Main operating mode of the Sercos drive or Mechatrolink device.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.OPMODEP.Z	Z axis.
V.MPA.OPMODEP.S	Spindle S.
V.SP.OPMODEP.S	Spindle S.
V.SP.OPMODEP	Master spindle.
V.MPA.OPMODEP.4	Axis or spindle with logic number ·4·.
V.[2].MPA.OPMODEP.1	Axis with index ·1· in the channel ·2·.
V.SP.OPMODEP.2	Spindle with index ·2· in the system.
V.[2].SP.OPMODEP.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Sercos drive or Mechatrolink servo. Position command.
1	Sercos drive or Mechatrolink servo. Velocity command.
2	Inverter Mechatrolink.

(V.)[ch].MPA.OPTION.xn
(V.)[ch].MPA.OPTION.sn
(V.)[ch].SP.OPTION.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for Mechatrolink drive.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Activate the drive options.

The drive options are coded in 16-bit format. Refer to the drive manual for the meaning of each bit.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.OPTION.Z	Z axis.
V.MPA.OPTION.S	Spindle S.
V.SP.OPTION.S	Spindle S.
V.SP.OPTION	Master spindle.
V.MPA.OPTION.4	Axis or spindle with logic number ·4·.
V.[2].MPA.OPTION.1	Axis with index ·1· in the channel ·2·.
V.SP.OPTION.2	Spindle with index ·2· in the system.
V.[2].SP.OPTION.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.FBACKSRC.xn
(V.)[ch].MPA.FBACKSRC.sn
(V.)[ch].SP.FBACKSRC.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for position-Sercos drives and velocity-Sercos drives.
The variable returns the value of block preparation.

Channel [ch]. Type of feedback.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FBACKSRC.Z	Z axis.
V.MPA.FBACKSRC.S	Spindle S.
V.SP.FBACKSRC.S	Spindle S.
V.SP.FBACKSRC	Master spindle.
V.MPA.FBACKSRC.4	Axis or spindle with logic number ·4·.
V.[2].MPA.FBACKSRC.1	Axis with index ·1· in the channel ·2·.
V.SP.FBACKSRC.2	Spindle with index ·2· in the system.
V.[2].SP.FBACKSRC.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Internal feedback (motor feedback).
1	External feedback (direct feedback).
2	Combined feedback (internal + external).

(V.)[ch].MPA.FBACKDIFF.xn
(V.)[ch].MPA.FBACKDIFF.sn
(V.)[ch].SP.FBACKDIFF.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for position Sercos drives.
The variable returns the value of block preparation.

Channel [ch]. Maximum difference between feedbacks.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FBACKDIFF.Z	Z axis.
V.MPA.FBACKDIFF.S	Spindle S.
V.SP.FBACKDIFF.S	Spindle S.
V.SP.FBACKDIFF	Master spindle.
V.MPA.FBACKDIFF.4	Axis or spindle with logic number ·4·.
V.[2].MPA.FBACKDIFF.1	Axis with index ·1· in the channel ·2·.
V.SP.FBACKDIFF.2	Spindle with index ·2· in the system.
V.[2].SP.FBACKDIFF.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.FBMIXTIME.xn
(V.)[ch].MPA.FBMIXTIME.sn
(V.)[ch].SP.FBMIXTIME.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for position Sercos drives.
The variable returns the value of block preparation.

Channel [ch]. Time constant for combined feedback.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FBMIXTIME.Z	Z axis.
V.MPA.FBMIXTIME.S	Spindle S.
V.SP.FBMIXTIME.S	Spindle S.
V.SP.FBMIXTIME	Master spindle.
V.MPA.FBMIXTIME.4	Axis or spindle with logic number ·4·.
V.[2].MPA.FBMIXTIME.1	Axis with index ·1· in the channel ·2·.
V.SP.FBMIXTIME.2	Spindle with index ·2· in the system.
V.[2].SP.FBMIXTIME.1	Spindle with index ·1· in the channel ·2·.

2.3.4 Hirth axis configuration.

(V.)[ch].MPA.HIRTH.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Hirth toothed axis.

A Hirth axis is the one that can only be positioned at positions multiple of a given value.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.HIRTH.Z	Z axis.
V.MPA.HIRTH.4	Axis with logic number ·4·.
V.[2].MPA.HIRTH.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.HPITCH.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Hirth axis pitch.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.HPITCH.Z	Z axis.
V.MPA.HPITCH.4	Axis with logic number ·4·.
V.[2].MPA.HPITCH.1	Axis with index ·1· in the channel ·2·.

2.3.5 Axis configuration for lathe type machines.

(V.)[ch].MPA.FACEAXIS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Cross axis on a lathe.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.FACEAXIS.Z	Z axis.
V.MPA.FACEAXIS.4	Axis with logic number ·4·.
V.[2].MPA.FACEAXIS.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.LONGAXIS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Longitudinal axis on a lathe.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.LONGAXIS.Z	Z axis.
V.MPA.LONGAXIS.4	Axis with logic number ·4·.
V.[2].MPA.LONGAXIS.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.3.6 Configuration of the rotary axes.

(V.)[ch].MPA.AXISMODE.xn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Working method with the rotary axis.

This variable indicates how the rotary axis will behave in relation to the number of turns and position display.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.AXISMODE.Z	Z axis.
V.MPA.AXISMODE.4	Axis with logic number ·4·.
V.[2].MPA.AXISMODE.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	"Module" type rotary axis.
1	"Linearlike" type rotary axis.

(V.)[ch].MPA.UNIDIR.xn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Unidirectional rotation.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.UNIDIR.Z	Z axis.
V.MPA.UNIDIR.4	Axis with logic number ·4·.
V.[2].MPA.UNIDIR.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.SHORTESTWAY.xn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Positioning via shortest way.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.SHORTESTWAY.Z	Z axis.
V.MPA.SHORTESTWAY.4	Axis with logic number ·4·.
V.[2].MPA.SHORTESTWAY.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.3.7 Module configuration (rotary axes and spindle).

(V.)[ch].MPA.MODCOMP.xn
(V.)[ch].MPA.MODCOMP.sn
(V.)[ch].SP.MODCOMP.sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary axes and spindles.
Variable valid for analog drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Module compensation.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MODCOMP.Z	Z axis.
V.MPA.MODCOMP.S	Spindle S.
V.SP.MODCOMP.S	Spindle S.
V.SP.MODCOMP	Master spindle.
V.MPA.MODCOMP.4	Axis or spindle with logic number ·4·.
V.[2].MPA.MODCOMP.1	Axis with index ·1· in the channel ·2·.
V.SP.MODCOMP.2	Spindle with index ·2· in the system.
V.[2].SP.MODCOMP.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.3.8 Configuration of the C axis.

(V.)[ch].MPA.CAXIS.xn
(V.)[ch].MPA.CAXIS.sn
(V.)[ch].SP.CAXIS.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary axes and spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Possibility of working as C axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.CAXIS.Z	Z axis.
V.MPA.CAXIS.S	Spindle S.
V.SP.CAXIS.S	Spindle S.
V.SP.CAXIS	Master spindle.
V.MPA.CAXIS.4	Axis or spindle with logic number ·4·.
V.[2].MPA.CAXIS.1	Axis with index ·1· in the channel ·2·.
V.SP.CAXIS.2	Spindle with index ·2· in the system.
V.[2].SP.CAXIS.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.CAXSET.xn
(V.)[ch].MPA.CAXSET.sn
(V.)[ch].SP.CAXSET.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary axes and spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Set of parameters for working as C axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.CAXSET.Z	Z axis.
V.MPA.CAXSET.S	Spindle S.
V.SP.CAXSET.S	Spindle S.
V.SP.CAXSET	Master spindle.
V.MPA.CAXSET.4	Axis or spindle with logic number ·4·.
V.[2].MPA.CAXSET.1	Axis with index ·1· in the channel ·2·.
V.SP.CAXSET.2	Spindle with index ·2· in the system.
V.[2].SP.CAXSET.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.PERCAX.xn
(V.)[ch].MPA.PERCAX.sn
(V.)[ch].SP.PERCAX.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary axes and spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. C axis kept active after end of program, emergency or reset.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.PERCAX.Z	Z axis.
V.MPA.PERCAX.S	Spindle S.
V.SP.PERCAX.S	Spindle S.
V.SP.PERCAX	Master spindle.
V.MPA.PERCAX.4	Axis or spindle with logic number ·4·.
V.[2].MPA.PERCAX.1	Axis with index ·1· in the channel ·2·.
V.SP.PERCAX.2	Spindle with index ·2· in the system.
V.[2].SP.PERCAX.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.3.9 Configuration of the spindle.

(V.)[ch].MPA.AUTOGEAR.sn
(V.)[ch].SP.AUTOGEAR.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Automatic gear change.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.AUTOGEAR.S	Spindle S.
V.SP.AUTOGEAR.S	Spindle S.
V.SP.AUTOGEAR	Master spindle.
V.MPA.AUTOGEAR.4	Spindle with logic number ·4·.
V.SP.AUTOGEAR.2	Spindle with index ·2· in the system.
V.[2].SP.AUTOGEAR.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.LOSPDLIM.sn
(V.)[ch].SP.LOSPDLIM.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Lower "rpm OK" percentage.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.LOSPDLIM.S	Spindle S.
V.SP.LOSPDLIM.S	Spindle S.
V.SP.LOSPDLIM	Master spindle.
V.MPA.LOSPDLIM.4	Spindle with logic number ·4·.
V.SP.LOSPDLIM.2	Spindle with index ·2· in the system.
V.[2].SP.LOSPDLIM.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

(V.)[ch].MPA.UPSPDLIM.sn
(V.)[ch].SP.UPSPDLIM.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Upper "rpm OK" percentage.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.UPSPDLIM.S	Spindle S.
V.SP.UPSPDLIM.S	Spindle S.
V.SP.UPSPDLIM	Master spindle.
V.MPA.UPSPDLIM.4	Spindle with logic number ·4·.
V.SP.UPSPDLIM.2	Spindle with index ·2· in the system.
V.[2].SP.UPSPDLIM.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

(V.)[ch].MPA.SPDLTIME.sn
(V.)[ch].SP.SPDLTIME.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Estimated time for an S function.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.SPDLTIME.S	Spindle S.
V.SP.SPDLTIME.S	Spindle S.
V.SP.SPDLTIME	Master spindle.
V.MPA.SPDLTIME.4	Spindle with logic number ·4·.
V.SP.SPDLTIME.2	Spindle with index ·2· in the system.
V.[2].SP.SPDLTIME.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.SPDLSTOP.sn
(V.)[ch].SP.SPDLSTOP.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Functions M2 and M30, an error or a reset stop the spindle.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.SPDLSTOP.S	Spindle S.
V.SP.SPDLSTOP.S	Spindle S.
V.SP.SPDLSTOP	Master spindle.

V.MPA.SPDLSTOP.4	Spindle with logic number ·4·.
V.SP.SPDLSTOP.2	Spindle with index ·2· in the system.
V.[2].SP.SPDLSTOP.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.SREVM05.sn
(V.)[ch].SP.SREVM05.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. With G84, the spindle must be stopped to change the turning direction.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.SREVM05.S	Spindle S.
V.SP.SREVM05.S	Spindle S.
V.SP.SREVM05	Master spindle.
V.MPA.SREVM05.4	Spindle with logic number ·4·.
V.SP.SREVM05.2	Spindle with index ·2· in the system.
V.[2].SP.SREVM05.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.M19SPDLEREV.sn
(V.)[ch].SP.M19SPDLEREV.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drives.
The variable returns the value of block preparation.

Channel [ch]. The SPDLEREV mark (reverse turning direction) affects the spindle in M19.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.M19SPDLEREV.S	Spindle S.
V.SP.M19SPDLEREV.S	Spindle S.
V.SP.M19SPDLEREV	Master spindle.
V.MPA.M19SPDLEREV.4	Spindle with logic number ·4·.
V.SP.M19SPDLEREV.2	Spindle with index ·2· in the system.
V.[2].SP.M19SPDLEREV.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.STEPOVR.sn
(V.)[ch].SP.STEPOVR.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Spindle override step.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.STEPOVR.S	Spindle S.
V.SP.STEPOVR.S	Spindle S.
V.SP.STEPOVR	Master spindle.
V.MPA.STEPOVR.4	Spindle with logic number ·4·.
V.SP.STEPOVR.2	Spindle with index ·2· in the system.
V.[2].SP.STEPOVR.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

(V.)[ch].MPA.MINOVR.sn
(V.)[ch].SP.MINOVR.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Minimum override (%) permitted for the spindle.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.MINOVR.S	Spindle S.
V.SP.MINOVR.S	Spindle S.
V.SP.MINOVR	Master spindle.
V.MPA.MINOVR.4	Spindle with logic number ·4·.
V.SP.MINOVR.2	Spindle with index ·2· in the system.
V.[2].SP.MINOVR.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

(V.)[ch].MPA.MAXOVR.sn
(V.)[ch].SP.MAXOVR.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum override (%) permitted for the spindle.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.MAXOVR.S	Spindle S.
V.SP.MAXOVR.S	Spindle S.
V.SP.MAXOVR	Master spindle.
V.MPA.MAXOVR.4	Spindle with logic number ·4·.
V.SP.MAXOVR.2	Spindle with index ·2· in the system.
V.[2].SP.MAXOVR.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

2.3.10 Synchronization of axes and spindles.

(V.)[ch].MPA.SYNCSET.xn
(V.)[ch].SP.SYNCSET.sn
(V.)[ch].SP.SYNCSET.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary axes and spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Set of parameters for synchronization.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SYNCSET.Z	Z axis.
V.MPA.SYNCSET.S	Spindle S.
V.SP.SYNCSET.S	Spindle S.
V.SP.SYNCSET	Master spindle.
V.MPA.SYNCSET.4	Axis or spindle with logic number ·4·.
V.[2].MPA.SYNCSET.1	Axis with index ·1· in the channel ·2·.
V.SP.SYNCSET.2	Spindle with index ·2· in the system.
V.[2].SP.SYNCSET.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Do not force the parameter set.
1 to 4	Parameter set.

(V.)[ch].MPA.DSYNCVELW.xn
(V.)[ch].SP.DSYNCVELW.sn
(V.)[ch].SP.DSYNCVELW.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Velocity synchronization window.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DSYNCVELW.Z	Z axis.
V.MPA.DSYNCVELW.S	Spindle S.
V.SP.DSYNCVELW.S	Spindle S.
V.SP.DSYNCVELW	Master spindle.
V.MPA.DSYNCVELW.4	Axis or spindle with logic number ·4·.
V.[2].MPA.DSYNCVELW.1	Axis with index ·1· in the channel ·2·.
V.SP.DSYNCVELW.2	Spindle with index ·2· in the system.
V.[2].SP.DSYNCVELW.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.DSYNCPOSW.xn
(V.)[ch].SP.DSYNCPOSW.sn
(V.)[ch].SP.DSYNCPOSW.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Position synchronization window.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DSYNCPOSW.Z	Z axis.
V.MPA.DSYNCPOSW.S	Spindle S.
V.SP.DSYNCPOSW.S	Spindle S.
V.SP.DSYNCPOSW	Master spindle.
V.MPA.DSYNCPOSW.4	Axis or spindle with logic number ·4·.
V.[2].MPA.DSYNCPOSW.1	Axis with index ·1· in the channel ·2·.
V.SP.DSYNCPOSW.2	Spindle with index ·2· in the system.
V.[2].SP.DSYNCPOSW.1	Spindle with index ·1· in the channel ·2·.

2.3.11 Software axis limits.

(V.)[ch].MPA.POSLIMIT.xn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Positive software limit.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.POSLIMIT.Z	Z axis.
V.MPA.POSLIMIT.4	Axis with logic number ·4·.
V.[2].MPA.POSLIMIT.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.NEGLIMIT.xn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Negative software limit.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.NEGLIMIT.Z	Z axis.
V.MPA.NEGLIMIT.4	Axis with logic number ·4·.
V.[2].MPA.NEGLIMIT.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.SWLIMITTOL.xn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Software limit tolerance.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.SWLIMITTOL.Z	Z axis.
V.MPA.SWLIMITTOL.4	Axis with logic number ·4·.
V.[2].MPA.SWLIMITTOL.1	Axis with index ·1· in the channel ·2·.

2.3.12 Work zones.

(V.)[ch].MPA.ZONELIMITTOL.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Safety distance (set in parameter ZONELIMITTOL) applied by the CNC to the axis with respect to the limit of the work zone.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.ZONELIMITTOL.Z	Z axis.
V.MPA.ZONELIMITTOL.4	Axis with logic number ·4·.
V.[2].MPA.ZONELIMITTOL.1	Axis with index ·1· in the channel ·2·.

2.3.13 Override change while threading.

(V.)[ch].MPA.THREADOVR.sn
(V.)[ch].SP.THREADOVR.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum variation allowed for the override while threading.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.THREADOVR.S	Spindle S.
V.SP.THREADOVR.S	Spindle S.
V.SP.THREADOVR	Master spindle.
V.MPA.THREADOVR.4	Spindle with logic number ·4·.
V.SP.THREADOVR.2	Spindle with index ·2· in the system.
V.[2].SP.THREADOVR.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.OVRFILTER.sn
(V.)[ch].SP.OVRFILTER.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Time to make the override change effective.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.OVRFILTER.S	Spindle S.
V.SP.OVRFILTER.S	Spindle S.
V.SP.OVRFILTER	Master spindle.
V.MPA.OVRFILTER.4	Spindle with logic number ·4·.
V.SP.OVRFILTER.2	Spindle with index ·2· in the system.
V.[2].SP.OVRFILTER.1	Spindle with index ·1· in the channel ·2·.

2.3.14 Runaway protection and tendency test.

(V.)[ch].MPA.TENDENCY.xn
(V.)[ch].SP.TENDENCY.sn
(V.)[ch].SP.TENDENCY.sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Activation of tendency test.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.TENDENCY.Z	Z axis.
V.MPA.TENDENCY.S	Spindle S.
V.SP.TENDENCY.S	Spindle S.
V.SP.TENDENCY	Master spindle.
V.MPA.TENDENCY.4	Axis or spindle with logic number ·4·.
V.[2].MPA.TENDENCY.1	Axis with index ·1· in the channel ·2·.
V.SP.TENDENCY.2	Spindle with index ·2· in the system.
V.[2].SP.TENDENCY.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.TENDTIME.xn
(V.)[ch].SP.TENDTIME.sn
(V.)[ch].SP.TENDTIME.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Time to detect axis runaway.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.TENDTIME.Z	Z axis.
V.MPA.TENDTIME.S	Spindle S.
V.SP.TENDTIME.S	Spindle S.
V.SP.TENDTIME	Master spindle.
V.MPA.TENDTIME.4	Axis or spindle with logic number ·4·.
V.[2].MPA.TENDTIME.1	Axis with index ·1· in the channel ·2·.
V.SP.TENDTIME.2	Spindle with index ·2· in the system.
V.[2].SP.TENDTIME.1	Spindle with index ·1· in the channel ·2·.

2.3.15 PLC offset.

(V.)[ch].MPA.PLCOINC.xn
(V.)[ch].MPA.PLCOINC.sn
(V.)[ch].SP.PLCOINC.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. PLC offset increment per cycle.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.PLCOINC.Z	Z axis.
V.MPA.PLCOINC.S	Spindle S.
V.SP.PLCOINC.S	Spindle S.
V.SP.PLCOINC	Master spindle.
V.MPA.PLCOINC.4	Axis or spindle with logic number ·4·.
V.[2].MPA.PLCOINC.1	Axis with index ·1· in the channel ·2·.
V.SP.PLCOINC.2	Spindle with index ·2· in the system.
V.[2].SP.PLCOINC.1	Spindle with index ·1· in the channel ·2·.

2.3.16 Dwell for dead axes.

(V.)[ch].MPA.DWELL.xn
(V.)[ch].MPA.DWELL.sn
(V.)[ch].SP.DWELL.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Dwell for dead axes.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DWELL.Z	Z axis.
V.MPA.DWELL.S	Spindle S.
V.SP.DWELL.S	Spindle S.
V.SP.DWELL	Master spindle.
V.MPA.DWELL.4	Axis or spindle with logic number ·4·.
V.[2].MPA.DWELL.1	Axis with index ·1· in the channel ·2·.
V.SP.DWELL.2	Spindle with index ·2· in the system.
V.[2].SP.DWELL.1	Spindle with index ·1· in the channel ·2·.

2.3.17 Programming in radius or diameters.

(V.)[ch].MPA.DIAMPROG.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Programming in diameters.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.DIAMPROG.Z	Z axis.
V.MPA.DIAMPROG.4	Axis with logic number ·4·.
V.[2].MPA.DIAMPROG.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.3.18 Home search.

(V.)[ch].MPA.REFDIREC.xn
(V.)[ch].MPA.REFDIREC.sn
(V.)[ch].SP.REFDIREC.sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Direction of the search.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.REFDIREC.Z	Z axis.
V.MPA.REFDIREC.S	Spindle S.
V.SP.REFDIREC.S	Spindle S.
V.SP.REFDIREC	Master spindle.
V.MPA.REFDIREC.4	Axis or spindle with logic number ·4·.
V.[2].MPA.REFDIREC.1	Axis with index ·1· in the channel ·2·.
V.SP.REFDIREC.2	Spindle with index ·2· in the system.
V.[2].SP.REFDIREC.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Movement in the negative direction.
1	Movement in the positive direction.

(V.)[ch].MPA.REFMODE.xn
(V.)[ch].MPA.REFMODE.sn
(V.)[ch].SP.REFMODE.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for position Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Home search mode.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.REFMODE.Z	Z axis.
V.MPA.REFMODE.S	Spindle S.
V.SP.REFMODE.S	Spindle S.
V.SP.REFMODE	Master spindle.
V.MPA.REFMODE.4	Axis or spindle with logic number ·4·.
V.[2].MPA.REFMODE.1	Axis with index ·1· in the channel ·2·.
V.SP.REFMODE.2	Spindle with index ·2· in the system.
V.[2].SP.REFMODE.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Drive.
1	CNC.

(V.)[ch].MPA.DECINPUT.xn
(V.)[ch].MPA.DECINPUT.sn
(V.)[ch].SP.DECINPUT.sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. The axis/spindle has a home switch.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DECINPUT.Z	Z axis.
V.MPA.DECINPUT.S	Spindle S.
V.SP.DECINPUT.S	Spindle S.
V.SP.DECINPUT	Master spindle.
V.MPA.DECINPUT.4	Axis or spindle with logic number ·4·.
V.[2].MPA.DECINPUT.1	Axis with index ·1· in the channel ·2·.
V.SP.DECINPUT.2	Spindle with index ·2· in the system.
V.[2].SP.DECINPUT.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.REFINI.sn
(V.)[ch].SP.REFINI.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Home search in the first movement

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.REFINI.S	Spindle S.
V.SP.REFINI.S	Spindle S.
V.SP.REFINI	Master spindle.
V.MPA.REFINI.4	Spindle with logic number ·4·.
V.SP.REFINI.2	Spindle with index ·2· in the system.
V.[2].SP.REFINI.1	Spindle with index ·1· in the channel ·2·.

2.3.19 Configuration of the probing movement.

(V.)[ch].MPA.PROBEAXIS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. The axis can participate in probing movements.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.PROBEAXIS.Z	Z axis.
V.MPA.PROBEAXIS.4	Axis with logic number ·4·.
V.[2].MPA.PROBEAXIS.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.PROBERANGE.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum braking distance.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.PROBERANGE.Z	Z axis.
V.MPA.PROBERANGE.4	Axis with logic number ·4·.
V.[2].MPA.PROBERANGE.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.PROBEFEED.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum probing feedrate.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.PROBEFEED.Z	Z axis.
V.MPA.PROBEFEED.4	Axis with logic number ·4·.
V.[2].MPA.PROBEFEED.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.PROBEDELAY.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Delay for the "probe 1" signal.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.PROBEDELAY.Z	Z axis.
V.MPA.PROBEDELAY.4	Axis with logic number ·4·.
V.[2].MPA.PROBEDELAY.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.PROBEDELAY2.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Delay for the "probe 2" signal.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.PROBEDELAY2.Z	Z axis.
V.MPA.PROBEDELAY2.4	Axis with logic number ·4·.
V.[2].MPA.PROBEDELAY2.1	Axis with index ·1· in the channel ·2·.

2.3.20 Repositioning of the axes in tool inspection.

(V.)[ch].MPA.REPOSFEED.xn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Maximum repositioning feedrate.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.REPOSFEED.Z	Z axis.
V.MPA.REPOSFEED.4	Axis with logic number ·4·.
V.[2].MPA.REPOSFEED.1	Axis with index ·1· in the channel ·2·.

2.3.21 Configuration of the independent axis.

(V.)[ch].MPA.POSFEED.xn
(V.)[ch].MPA.POSFEED.sn
(V.)[ch].SP.POSFEED.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Positioning feedrate

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.POSFEED.Z	Z axis.
V.MPA.POSFEED.S	Spindle S.
V.SP.POSFEED.S	Spindle S.
V.SP.POSFEED	Master spindle.
V.MPA.POSFEED.4	Axis or spindle with logic number ·4·.
V.[2].MPA.POSFEED.1	Axis with index ·1· in the channel ·2·.
V.SP.POSFEED.2	Spindle with index ·2· in the system.
V.[2].SP.POSFEED.1	Spindle with index ·1· in the channel ·2·.

2.3.22 Configure the maximum safety limit for the feedrate and for the speed.

(V.)[ch].MPA.FLIMIT.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum safety limit for axis feedrate.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.FLIMIT.Z	Z axis.
V.MPA.FLIMIT.4	Axis with logic number ·4·.
V.[2].MPA.FLIMIT.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.SLIMIT.sn
(V.)[ch].SP.SLIMIT.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum safety limit for spindle speed.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.MPA.SLIMIT.S	Spindle S.
V.SP.SLIMIT.S	Spindle S.
V.SP.SLIMIT	Master spindle.
V.MPA.SLIMIT.4	Spindle with logic number ·4·.
V.SP.SLIMIT.2	Spindle with index ·2· in the system.
V.[2].SP.SLIMIT.1	Spindle with index ·1· in the channel ·2·.

2.3.23 JOG mode. Continuous jog.

(V.)[ch].MPA.JOGFEED.xn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Feedrate in continuous jog.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.JOGFEED.Z	Z axis.
V.MPA.JOGFEED.4	Axis with logic number ·4·.
V.[2].MPA.JOGFEED.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.JOGRAPFEED.xn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Rapid feedrate in continuous jog.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.JOGRAPFEED.Z	Z axis.
V.MPA.JOGRAPFEED.4	Axis with logic number ·4·.
V.[2].MPA.JOGRAPFEED.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.MAXMANFEED.xn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Maximum feedrate in continuous jog.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.MAXMANFEED.Z	Z axis.
V.MPA.MAXMANFEED.4	Axis with logic number ·4·.
V.[2].MPA.MAXMANFEED.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.MAXMANACC.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum acceleration in continuous JOG.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.MAXMANACC.Z	Z axis.
V.MPA.MAXMANACC.4	Axis with logic number ·4·.
V.[2].MPA.MAXMANACC.1	Axis with index ·1· in the channel ·2·.

2.3.24 JOG mode. Incremental jog.

(V.)[ch].MPA.INCJOGDIST[pos].xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Distance to move in incremental jog, [pos] dial position.

pos=1 for position ·1·, pos=2 for position ·10· and so on.

Syntax.

·ch· Channel number.

·pos· Position of the switch on the operator panel for incremental jog.

·xn· Name, logic number or index of the axis..

V.MPA.INCJOGDIST[4].Z	Z axis.
V.MPA.INCJOGDIST[4].4	Axis with logic number ·4·.
V.[2].MPA.INCJOGDIST[4].1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.INCJOGFEED[pos].xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Feedrate in incremental jog, [pos] dial position.

pos=1 for position ·1·, pos=2 for position ·10· and so on.

Syntax.

·ch· Channel number.

·pos· Position of the switch on the operator panel for incremental jog.

·xn· Name, logic number or index of the axis.

V.MPA.INCJOGFEED[4].Z	Z axis.
V.MPA.INCJOGFEED[4].4	Axis with logic number ·4·.
V.[2].MPA.INCJOGFEDD[4].1	Axis with index ·1· in the channel ·2·.

2.3.25 JOG mode. Handwheels.

(V.)[ch].MPA.MPGRESOL[pos].xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Resolution of the handwheel, in the [pos] position.

pos=1 for position ·1·, pos=2 for position ·10· and pos=3 for ·100·.

Syntax.

·ch· Channel number.

·pos· Position of the switch on the operator panel for the handwheel mode.

·xn· Name, logic number or index of the axis.

V.MPA.MPGRESOL[2].Z	Z axis.
V.MPA.MPGRESOL[2].4	Axis with logic number ·4·.
V.[2].MPA.MPGRESOL[2].1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.MPGFILTER.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Filter time for the handwheel.

Syntax.

·ch· Channel number.

·pos· Position of the switch on the operator panel for the handwheel mode.

·xn· Name, logic number or index of the axis.

V.MPA.MPGFILTER[2].Z	Z axis.
V.MPA.MPGFILTER[2].4	Axis with logic number ·4·.
V.[2].MPA.MPGFILTER[2].1	Axis with index ·1· in the channel ·2·.

2.3.26 JOG mode. Manual intervention.

(V.)[ch].MPA.MANPOSSW.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum positive travel with G201.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.MANPOSSW.Z	Z axis.
V.MPA.MANPOSSW.4	Axis with logic number ·4·.
V.[2].MPA.MANPOSSW.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.MANNEGSW.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum negative travel with G201.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.MANNEGSW.Z	Z axis.
V.MPA.MANNEGSW.4	Axis with logic number ·4·.
V.[2].MPA.MANNEGSW.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.MANFEEDP.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum % of jog feedrate in G201.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.MANFEEDP.Z	Z axis.
V.MPA.MANFEEDP.4	Axis with logic number ·4·.
V.[2].MPA.MANFEEDP.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.IPOFEEDP.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum % of execution feedrate in G201.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.IPOFEEDP.Z	Z axis.
V.MPA.IPOFEEDP.4	Axis with logic number ·4·.
V.[2].MPA.IPOFEEDP.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.MANACCP.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum % of jog acceleration in G201.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.MANACCP.Z	Z axis.
V.MPA.MANACCP.4	Axis with logic number ·4·.
V.[2].MPA.MANACCP.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].MPA.IPOACCP.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum % of execution acceleration in G201.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.MPA.IPOACCP.Z	Z axis.
V.MPA.IPOACCP.4	Axis with logic number ·4·.
V.[2].MPA.IPOACCP.1	Axis with index ·1· in the channel ·2·.

2.3.27 Leadscrew error compensation.

(V.)[ch].MPA.LSCRWCOMP.xn
(V.)[ch].MPA.LSCRWCOMP.sn
(V.)[ch].SP.LSCRWCOMP.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Leadscrew error compensation.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.LSCRWCOMP.Z	Z axis.
V.MPA.LSCRWCOMP.S	Spindle S.
V.SP.LSCRWCOMP.S	Spindle S.
V.SP.LSCRWCOMP	Master spindle.
V.MPA.LSCRWCOMP.4	Axis or spindle with logic number ·4·.
V.[2].MPA.LSCRWCOMP.1	Axis with index ·1· in the channel ·2·.
V.SP.LSCRWCOMP.2	Spindle with index ·2· in the system.
V.[2].SP.LSCRWCOMP.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.NPOINTS.xn
(V.)[ch].MPA.NPOINTS.sn
(V.)[ch].SP.NPOINTS.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Number of points in the table.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.NPOINTS.Z	Z axis.
V.MPA.NPOINTS.S	Spindle S.
V.SP.NPOINTS.S	Spindle S.
V.SP.NPOINTS	Master spindle.
V.MPA.NPOINTS.4	Axis or spindle with logic number ·4·.
V.[2].MPA.NPOINTS.1	Axis with index ·1· in the channel ·2·.
V.SP.NPOINTS.2	Spindle with index ·2· in the system.
V.[2].SP.NPOINTS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.TYPLSCRW.xn
(V.)[ch].MPA.TYPLSCRW.sn
(V.)[ch].SP.TYPLSCRW.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Type of compensation (type of coordinates).

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.TYPLSCRW.Z	Z axis.
V.MPA.TYPLSCRW.S	Spindle S.
V.SP.TYPLSCRW.S	Spindle S.
V.SP.TYPLSCRW	Master spindle.
V.MPA.TYPLSCRW.4	Axis or spindle with logic number ·4·.
V.[2].MPA.TYPLSCRW.1	Axis with index ·1· in the channel ·2·.
V.SP.TYPLSCRW.2	Spindle with index ·2· in the system.
V.[2].SP.TYPLSCRW.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Compensation is applied using real coordinates.
1	Compensation is applied using theoretical coordinates.

(V.)[ch].MPA.BIDIR.xn
(V.)[ch].MPA.BIDIR.sn
(V.)[ch].SP.BIDIR.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Bi-directional compensation.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.BIDIR.Z	Z axis.
V.MPA.BIDIR.S	Spindle S.
V.SP.BIDIR.S	Spindle S.
V.SP.BIDIR	Master spindle.
V.MPA.BIDIR.4	Axis or spindle with logic number ·4·.
V.[2].MPA.BIDIR.1	Axis with index ·1· in the channel ·2·.
V.SP.BIDIR.2	Spindle with index ·2· in the system.
V.[2].SP.BIDIR.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.REFNEED.xn
(V.)[ch].MPA.REFNEED.sn
(V.)[ch].SP.REFNEED.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. The axis must be homed in order to apply the compensation.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.REFNEED.Z	Z axis.
V.MPA.REFNEED.S	Spindle S.
V.SP.REFNEED.S	Spindle S.
V.SP.REFNEED	Master spindle.
V.MPA.REFNEED.4	Axis or spindle with logic number ·4·.
V.[2].MPA.REFNEED.1	Axis with index ·1· in the channel ·2·.
V.SP.REFNEED.2	Spindle with index ·2· in the system.
V.[2].SP.REFNEED.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.POSITION[pt].xn
(V.)[ch].MPA.POSITION[pt].sn
(V.)[ch].SP.POSITION[pt].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Master axis position for point [pt]

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

·pt· Point in the table.

V.MPA.POSITION[13].Z	Z axis.
V.MPA.POSITION[13].S	Spindle S.
V.SP.POSITION[13].S	Spindle S.
V.SP.POSITION[13]	Master spindle.

V.MPA.POSITION[13].4	Axis or spindle with logic number ·4·.
V.[2].MPA.POSITION[13].1	Axis with index ·1· in the channel ·2·.
V.SP.POSITION[13].2	Spindle with index ·2· in the system.
V.[2].SP.POSITION[13].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.POSERROR[pt].xn
(V.)[ch].MPA.POSERROR[pt].sn
(V.)[ch].SP.POSERROR[pt].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Amount of error at point [pt] in the positive direction

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

·pt· Point in the table.

V.MPA.POSERROR[13].Z	Z axis.
V.MPA.POSERROR[13].S	Spindle S.
V.SP.POSERROR[13].S	Spindle S.
V.SP.POSERROR[13]	Master spindle.
V.MPA.POSERROR[13].4	Axis or spindle with logic number ·4·.
V.[2].MPA.POSERROR[13].1	Axis with index ·1· in the channel ·2·.
V.SP.POSERROR[13].2	Spindle with index ·2· in the system.
V.[2].SP.POSERROR[13].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.NEGERROR[pt].xn
(V.)[ch].MPA.NEGERROR[pt].sn
(V.)[ch].SP.NEGERROR[pt].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Amount of error at point [pt] in the negative direction.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

·pt· Point in the table.

V.MPA.NEGERROR[13].Z	Z axis.
V.MPA.NEGERROR[13].S	Spindle S.
V.SP.NEGERROR[13].S	Spindle S.
V.SP.NEGERROR[13]	Master spindle.
V.MPA.NEGERROR[13].4	Axis or spindle with logic number ·4·.
V.[2].MPA.NEGERROR[13].1	Axis with index ·1· in the channel ·2·.
V.SP.NEGERROR[13].2	Spindle with index ·2· in the system.
V.[2].SP.NEGERROR[13].1	Spindle with index ·1· in the channel ·2·.

2.3.28 Filters to eliminate frequencies.

(V.)[ch].MPA.ORDER[nb].xn
(V.)[ch].MPA.ORDER[nb].sn
(V.)[ch].SP.ORDER[nb].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Filter order.

Syntax.

·ch· Channel number.

·nb· Filter number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ORDER[3].Z	Z axis.
V.MPA.ORDER[3].S	Spindle S.
V.SP.ORDER[3].S	Spindle S.
V.SP.ORDER[3]	Master spindle.
V.MPA.ORDER[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ORDER[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ORDER[3].2	Spindle with index ·2· in the system.
V.[2].SP.ORDER[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.TYPE[nb].xn
(V.)[ch].MPA.TYPE[nb].sn
(V.)[ch].SP.TYPE[nb].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Type of filter.

Syntax.

·ch· Channel number.

·nb· Filter number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.TYPE[3].Z	Z axis.
V.MPA.TYPE[3].S	Spindle S.
V.SP.TYPE[3].S	Spindle S.
V.SP.TYPE[3]	Master spindle.
V.MPA.TYPE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.TYPE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.TYPE[3].2	Spindle with index ·2· in the system.
V.[2].SP.TYPE[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Low passing filter.
2	Anti-resonance Filter.
3	FAGOR low passing filter.

(V.)[ch].MPA.FREQUENCY[nb].xn
(V.)[ch].MPA.FREQUENCY[nb].sn
(V.)[ch].SP.FREQUENCY[nb].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Cutoff or center frequency

Syntax.

·ch· Channel number.

·nb· Filter number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FREQUENCY[3].Z	Z axis.
V.MPA.FREQUENCY[3].S	Spindle S.
V.SP.FREQUENCY[3].S	Spindle S.
V.SP.FREQUENCY[3]	Master spindle.
V.MPA.FREQUENCY[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.FREQUENCY[3].1	Axis with index ·1· in the channel ·2·.
V.SP.FREQUENCY[3].2	Spindle with index ·2· in the system.
V.[2].SP.FREQUENCY[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.NORBWIDTH[nb].xn
(V.)[ch].MPA.NORBWIDTH[nb].sn
(V.)[ch].SP.NORBWIDTH[nb].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Normal bandwidth.

Syntax.

·ch· Channel number.

·nb· Filter number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.NORBWIDTH[3].Z	Z axis.
V.MPA.NORBWIDTH[3].S	Spindle S.
V.SP.NORBWIDTH[3].S	Spindle S.
V.SP.NORBWIDTH[3]	Master spindle.
V.MPA.NORBWIDTH[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.NORBWIDTH[3].1	Axis with index ·1· in the channel ·2·.
V.SP.NORBWIDTH[3].2	Spindle with index ·2· in the system.
V.[2].SP.NORBWIDTH[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.SHARE[nb].xn
(V.)[ch].MPA.SHARE[nb].sn
(V.)[ch].SP.SHARE[nb].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Percentage of signal going through the filter.

Syntax.

·ch· Channel number.

·nb· Filter number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SHARE[3].Z	Z axis.
V.MPA.SHARE[3].S	Spindle S.
V.SP.SHARE[3].S	Spindle S.
V.SP.SHARE[3]	Master spindle.
V.MPA.SHARE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SHARE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SHARE[3].2	Spindle with index ·2· in the system.
V.[2].SP.SHARE[3].1	Spindle with index ·1· in the channel ·2·.

2.3.29 Parameter sets.

(V.)[ch].MPA.NPARSETS.xn
(V.)[ch].MPA.NPARSETS.sn
(V.)[ch].SP.NPARSETS.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Number of parameter sets available.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.NPARSETS.Z	Z axis.
V.MPA.NPARSETS.S	Spindle S.
V.SP.NPARSETS.S	Spindle S.
V.SP.NPARSETS	Master spindle.
V.MPA.NPARSETS.4	Axis or spindle with logic number ·4·.
V.[2].MPA.NPARSETS.1	Axis with index ·1· in the channel ·2·.
V.SP.NPARSETS.2	Spindle with index ·2· in the system.
V.[2].SP.NPARSETS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.DEFAULTSET.xn
(V.)[ch].MPA.DEFAULTSET.sn
(V.)[ch].SP.DEFAULTSET.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Default parameter set on power-up.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DEFAULTSET.Z	Z axis.
V.MPA.DEFAULTSET.S	Spindle S.
V.SP.DEFAULTSET.S	Spindle S.
V.SP.DEFAULTSET	Master spindle.
V.MPA.DEFAULTSET.4	Axis or spindle with logic number ·4·.
V.[2].MPA.DEFAULTSET.1	Axis with index ·1· in the channel ·2·.
V.SP.DEFAULTSET.2	Spindle with index ·2· in the system.
V.[2].SP.DEFAULTSET.1	Spindle with index ·1· in the channel ·2·.

2.4 Variables related to the sets of machine parameters.

2.4.1 Feedback resolution.

(V.)[ch].MPA.PITCH[set].xn
(V.)[ch].MPA.PITCH[set].sn
(V.)[ch].SP.PITCH[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Leadscrew pitch.

Depending on the type of feedback, this parameter means the following.

- On a linear axis with a rotary encoder and leadscrew, it defines the leadscrew pitch.
- On a linear axis with a linear encoder (scale), it defines the pitch of the scale.
- On a rotary axis, it sets the number of degrees per turn of the encoder.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.PITCH[3].Z	Z axis.
V.MPA.PITCH[3].S	Spindle S.
V.SP.PITCH[3].S	Spindle S.
V.SP.PITCH[3]	Master spindle.
V.MPA.PITCH[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.PITCH[3].1	Axis with index ·1· in the channel ·2·.
V.SP.PITCH[3].2	Spindle with index ·2· in the system.
V.[2].SP.PITCH[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.INPUTREV[set].xn
(V.)[ch].MPA.INPUTREV[set].sn
(V.)[ch].SP.INPUTREV[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Gear ratio; turns of the motor shaft.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.INPUTREV[3].Z	Z axis.
V.MPA.INPUTREV[3].S	Spindle S.
V.SP.INPUTREV[3].S	Spindle S.
V.SP.INPUTREV[3]	Master spindle.
V.MPA.INPUTREV[3].4	Axis or spindle with logic number ·4·.

V.[2].MPA.INPUTREV[3].1	Axis with index ·1· in the channel ·2·.
V.SP.INPUTREV[3].2	Spindle with index ·2· in the system.
V.[2].SP.INPUTREV[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.OUTPUTREV[set].xn
(V.)[ch].MPA.OUTPUTREV[set].sn
(V.)[ch].SP.OUTPUTREV[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Gear ratio; turns of the machine shaft.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.OUTPUTREV[3].Z	Z axis.
V.MPA.OUTPUTREV[3].S	Spindle S.
V.SP.OUTPUTREV[3].S	Spindle S.
V.SP.OUTPUTREV[3]	Master spindle.
V.MPA.OUTPUTREV[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.OUTPUTREV[3].1	Axis with index ·1· in the channel ·2·.
V.SP.OUTPUTREV[3].2	Spindle with index ·2· in the system.
V.[2].SP.OUTPUTREV[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.NPULSES[set].xn
(V.)[ch].MPA.NPULSES[set].sn
(V.)[ch].SP.NPULSES[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Number of encoder pulses.

With linear encoders (scales), this parameter will be set to ·0·. When using a gear reduction on the axis, the whole assembly must be taken into account when defining the number of pulses per turn.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.NPULSES[3].Z	Z axis.
V.MPA.NPULSES[3].S	Spindle S.
V.SP.NPULSES[3].S	Spindle S.
V.SP.NPULSES[3]	Master spindle.
V.MPA.NPULSES[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.NPULSES[3].1	Axis with index ·1· in the channel ·2·.
V.SP.NPULSES[3].2	Spindle with index ·2· in the system.
V.[2].SP.NPULSES[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.PITCH2[set].xn
(V.)[ch].MPA.PITCH2[set].sn
(V.)[ch].SP.PITCH2[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for position-Sercos drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Leadscrew pitch (external feedback).

Depending on the type of feedback, this parameter means the following.

- On a linear axis with a rotary encoder and leadscrew, it defines the leadscrew pitch.
- On a linear axis with a linear encoder (scale), it defines the pitch of the scale.
- On a rotary axis, it sets the number of degrees per turn of the encoder.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.PITCH2[3].Z	Z axis.
V.MPA.PITCH2[3].S	Spindle S.
V.SP.PITCH2[3].S	Spindle S.
V.SP.PITCH2[3]	Master spindle.
V.MPA.PITCH2[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.PITCH2[3].1	Axis with index ·1· in the channel ·2·.
V.SP.PITCH2[3].2	Spindle with index ·2· in the system.
V.[2].SP.PITCH2[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.INPUTREV2[set].xn
(V.)[ch].MPA.INPUTREV2[set].sn
(V.)[ch].SP.INPUTREV2[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for position-Sercos drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Gear ratio; turns of the motor shaft (external feedback).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.INPUTREV2[3].Z	Z axis.
V.MPA.INPUTREV2[3].S	Spindle S.
V.SP.INPUTREV2[3].S	Spindle S.
V.SP.INPUTREV2[3]	Master spindle.
V.MPA.INPUTREV2[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.INPUTREV2[3].1	Axis with index ·1· in the channel ·2·.
V.SP.INPUTREV2[3].2	Spindle with index ·2· in the system.
V.[2].SP.INPUTREV2[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.OUTPUTREV2[set].xn
(V.)[ch].MPA.OUTPUTREV2[set].sn
(V.)[ch].SP.OUTPUTREV2[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for position-Sercos drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Gear ratio; turns of the machine shaft (external feedback).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.OUTPUTREV2[3].Z	Z axis.
V.MPA.OUTPUTREV2[3].S	Spindle S.
V.SP.OUTPUTREV2[3].S	Spindle S.
V.SP.OUTPUTREV2[3]	Master spindle.
V.MPA.OUTPUTREV2[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.OUTPUTREV2[3].1	Axis with index ·1· in the channel ·2·.
V.SP.OUTPUTREV2[3].2	Spindle with index ·2· in the system.
V.[2].SP.OUTPUTREV2[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.NPULSES2[set].xn
(V.)[ch].MPA.NPULSES2[set].sn
(V.)[ch].SP.NPULSES2[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for position-Sercos drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Number of pulses per turn of the encoder (external feedback).

With linear encoders (scales), this parameter will be set to ·0·. When using a gear reduction on the axis, the whole assembly must be taken into account when defining the number of pulses per turn.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.NPULSES2[3].Z	Z axis.
V.MPA.NPULSES2[3].S	Spindle S.
V.SP.NPULSES2[3].S	Spindle S.
V.SP.NPULSES2[3]	Master spindle.
V.MPA.NPULSES2[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.NPULSES2[3].1	Axis with index ·1· in the channel ·2·.
V.SP.NPULSES2[3].2	Spindle with index ·2· in the system.
V.[2].SP.NPULSES2[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.SINMAGNI[set].xn
(V.)[ch].MPA.SINMAGNI[set].sn
(V.)[ch].SP.SINMAGNI[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Multiplying factor for sinusoidal feedback signal.

For square feedback signals, it will be set to ·0·; the CNC applies a x4 factor.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SINMAGNI[3].Z	Z axis.
V.MPA.SINMAGNI[3].S	Spindle S.
V.SP.SINMAGNI[3].S	Spindle S.
V.SP.SINMAGNI[3]	Master spindle.
V.MPA.SINMAGNI[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SINMAGNI[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SINMAGNI[3].2	Spindle with index ·2· in the system.
V.[2].SP.SINMAGNI[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.ABSFEEDBACK[set].xn
(V.)[ch].MPA.ABSFEEDBACK[set].sn
(V.)[ch].SP.ABSFEEDBACK[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Absolute feedback system.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ABDFEEDBACK[3].Z	Z axis.
V.MPA.ABDFEEDBACK[3].S	Spindle S.
V.SP.ABDFEEDBACK[3].S	Spindle S.
V.SP.ABDFEEDBACK[3]	Master spindle.
V.MPA.ABDFEEDBACK[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ABDFEEDBACK[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ABDFEEDBACK[3].2	Spindle with index ·2· in the system.
V.[2].SP.ABDFEEDBACK[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

Value.	Meaning.
0	No.
1	Yes.

2.4.2 Feedback alarm.

(V.)[ch].MPA.FBACKAL[set].xn
(V.)[ch].MPA.FBACKAL[set].sn
(V.)[ch].SP.FBACKAL[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives.
The variable returns the execution value; reading it interrupts block preparation.

Activate feedback alarm.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FBACKAL[3].Z	Z axis.
V.MPA.FBACKAL[3].S	Spindle S.
V.SP.FBACKAL[3].S	Spindle S.
V.SP.FBACKAL[3]	Master spindle.
V.MPA.FBACKAL[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.FBACKAL[3].1	Axis with index ·1· in the channel ·2·.
V.SP.FBACKAL[3].2	Spindle with index ·2· in the system.
V.[2].SP.FBACKAL[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.4.3 Loop setting.

(V.)[ch].MPA.LOOPCH[set].xn
(V.)[ch].MPA.LOOPCH[set].sn
(V.)[ch].SP.LOOPCH[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Velocity command sign change.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.LOOPCH[3].Z	Z axis.
V.MPA.LOOPCH[3].S	Spindle S.
V.SP.LOOPCH[3].S	Spindle S.
V.SP.LOOPCH[3]	Master spindle.
V.MPA.LOOPCH[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.LOOPCH[3].1	Axis with index ·1· in the channel ·2·.
V.SP.LOOPCH[3].2	Spindle with index ·2· in the system.
V.[2].SP.LOOPCH[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.AXISCH[set].xn
(V.)[ch].MPA.AXISCH[set].sn
(V.)[ch].SP.AXISCH[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Feedback sign change.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.AXISCH[3].Z	Z axis.
V.MPA.AXISCH[3].S	Spindle S.
V.SP.AXISCH[3].S	Spindle S.
V.SP.AXISCH[3]	Master spindle.
V.MPA.AXISCH[3].4	Axis or spindle with logic number ·4·.

V.[2].MPA.AXISCH[3].1	Axis with index ·1· in the channel ·2·.
V.SP.AXISCH[3].2	Spindle with index ·2· in the system.
V.[2].SP.AXISCH[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.INPOSW[set].xn
(V.)[ch].MPA.INPOSW[set].sn
(V.)[ch].SP.INPOSW[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

In-position zone.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.INPOSW[3].Z	Z axis.
V.MPA.INPOSW[3].S	Spindle S.
V.SP.INPOSW[3].S	Spindle S.
V.SP.INPOSW[3]	Master spindle.
V.MPA.INPOSW[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.INPOSW[3].1	Axis with index ·1· in the channel ·2·.
V.SP.INPOSW[3].2	Spindle with index ·2· in the system.
V.[2].SP.INPOSW[3].1	Spindle with index ·1· in the channel ·2·.

2.4.4 Backlash compensation.

(V.)[ch].MPA.BACKLASH[set].xn
(V.)[ch].MPA.BACKLASH[set].sn
(V.)[ch].SP.BACKLASH[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Amount of backlash to be compensated in movement reversal.

With linear encoders (scales), this parameter will be set to ·0·.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.BACKLASH[3].Z	Z axis.
V.MPA.BACKLASH[3].S	Spindle S.
V.SP.BACKLASH[3].S	Spindle S.
V.SP.BACKLASH[3]	Master spindle.
V.MPA.BACKLASH[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.BACKLASH[3].1	Axis with index ·1· in the channel ·2·.
V.SP.BACKLASH[3].2	Spindle with index ·2· in the system.
V.[2].SP.BACKLASH[3].1	Spindle with index ·1· in the channel ·2·.

2.4.5 Backlash compensation with an additional command pulse.

(V.)[ch].MPA.BAKANOUT[set].xn
(V.)[ch].MPA.BAKANOUT[set].sn
(V.)[ch].SP.BAKANOUT[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Additional velocity command pulse.

- With digital drives, the additional velocity command is given in rpm.
- With an analog drive, the additional velocity command is given in units of the D/A converter with an integer within ± 32767. - 10 V for a value of -32767 and +10V for a value of 32767.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.BAKANOUT[3].Z	Z axis.
V.MPA.BAKANOUT[3].S	Spindle S.
V.SP.BAKANOUT[3].S	Spindle S.
V.SP.BAKANOUT[3]	Master spindle.
V.MPA.BAKANOUT[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.BAKANOUT[3].1	Axis with index ·1· in the channel ·2·.
V.SP.BAKANOUT[3].2	Spindle with index ·2· in the system.
V.[2].SP.BAKANOUT[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.BAKTIME[set].xn
(V.)[ch].MPA.BAKTIME[set].sn
(V.)[ch].SP.BAKTIME[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Duration of the additional velocity command pulse.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.BAKTIME[3].Z	Z axis.
V.MPA.BAKTIME[3].S	Spindle S.
V.SP.BAKTIME[3].S	Spindle S.
V.SP.BAKTIME[3]	Master spindle.
V.MPA.BAKTIME[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.BAKTIME[3].1	Axis with index ·1· in the channel ·2·.
V.SP.BAKTIME[3].2	Spindle with index ·2· in the system.
V.[2].SP.BAKTIME[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.ACTBAKAN[set].xn
(V.)[ch].MPA.ACTBAKAN[set].sn
(V.)[ch].SP.ACTBAKAN[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Application of the additional velocity command pulse.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ACTBAKAN[3].Z	Z axis.
V.MPA.ACTBAKAN[3].S	Spindle S.
V.SP.ACTBAKAN[3].S	Spindle S.
V.SP.ACTBAKAN[3]	Master spindle.
V.MPA.ACTBAKAN[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ACTBAKAN[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ACTBAKAN[3].2	Spindle with index ·2· in the system.
V.[2].SP.ACTBAKAN[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	In G02 / G03 positioning.
1	Always.

(V.)[ch].MPA.PEAKDISP[set].xn
(V.)[ch].MPA.PEAKDISP[set].sn
(V.)[ch].SP.PEAKDISP[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Backlash peak cuttoff distance.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.PEAKDISP[3].Z	Z axis.
V.MPA.PEAKDISP[3].S	Spindle S.
V.SP.PEAKDISP[3].S	Spindle S.
V.SP.PEAKDISP[3]	Master spindle.
V.MPA.PEAKDISP[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.PEAKDISP[3].1	Axis with index ·1· in the channel ·2·.
V.SP.PEAKDISP[3].2	Spindle with index ·2· in the system.
V.[2].SP.PEAKDISP[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.REVEHYST[set].xn
(V.)[ch].MPA.REVEHYST[set].sn
(V.)[ch].SP.REVEHYST[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Hysteresis for applying the additional command pulse in movement reversals.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.REVEHYST[3].Z	Z axis.
V.MPA.REVEHYST[3].S	Spindle S.
V.SP.REVEHYST[3].S	Spindle S.
V.SP.REVEHYST[3]	Master spindle.
V.MPA.REVEHYST[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.REVEHYST[3].1	Axis with index ·1· in the channel ·2·.
V.SP.REVEHYST[3].2	Spindle with index ·2· in the system.
V.[2].SP.REVEHYST[3].1	Spindle with index ·1· in the channel ·2·.

2.4.6 Adjustment of rapid traverse G00 and maximum speed.

(V.)[ch].MPA.G00FEED[set].xn
(V.)[ch].MPA.G00FEED[set].sn
(V.)[ch].SP.G00FEED[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Feedrate in G00.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.G00FEED[3].Z	Z axis.
V.MPA.G00FEED[3].S	Spindle S.
V.SP.G00FEED[3].S	Spindle S.
V.SP.G00FEED[3]	Master spindle.
V.MPA.G00FEED[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.G00FEED[3].1	Axis with index ·1· in the channel ·2·.
V.SP.G00FEED[3].2	Spindle with index ·2· in the system.
V.[2].SP.G00FEED[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.MAXFEED[set].xn
(V.)[ch].MPA.MAXFEED[set].sn
(V.)[ch].SP.MAXFEED[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Channel [ch]. Maximum axis machining feedrate.

If the variable returns a ·0· value, the machining feedrate is not limited, the CNC assumes for all the movements the one set in machine parameter G00FEED as the maximum feedrate.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MAXFEED[3].Z	Z axis.
V.MPA.MAXFEED[3].S	Spindle S.
V.SP.MAXFEED[3].S	Spindle S.
V.SP.MAXFEED[3]	Master spindle.
V.MPA.MAXFEED[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MAXFEED[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MAXFEED[3].2	Spindle with index ·2· in the system.
V.[2].SP.MAXFEED[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.MAXVOLT[set].xn
(V.)[ch].MPA.MAXVOLT[set].sn
(V.)[ch].SP.MAXVOLT[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Velocity command to reach G00FEED

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MAXVOLT[3].Z	Z axis.
V.MPA.MAXVOLT[3].S	Spindle S.
V.SP.MAXVOLT[3].S	Spindle S.
V.SP.MAXVOLT[3]	Master spindle.
V.MPA.MAXVOLT[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MAXVOLT[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MAXVOLT[3].2	Spindle with index ·2· in the system.
V.[2].SP.MAXVOLT[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.MAXFREQ[set].sn
(V.)[ch].SP.MAXFREQ[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for spindles.
Variable valid for Mechatrolink drive.
The variable returns the execution value; reading it interrupts block preparation.

This is the frequency the CNC must provide for the spindle to reach the maximum speed set by parameter G00FEED.

Syntax.

·ch· Channel number.

·set· Parameter set.

·sn· Name, logic number or index of the spindle.

V.MPA.MAXFREQ[3].S	Spindle S.
V.SP.MAXFREQ[3].S	Spindle S.
V.SP.MAXFREQ[3]	Master spindle.
V.MPA.MAXFREQ[3].4	Spindle with logic number ·4·.
V.SP.MAXFREQ[3].2	Spindle with index ·2· in the system.
V.[2].SP.MAXFREQ[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.MAXRPM[set].xn
(V.)[ch].MPA.MAXRPM[set].sn
(V.)[ch].SP.MAXRPM[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for Mechatrolink drive.
The variable returns the execution value; reading it interrupts block preparation.

Maximum motor rpm.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MAXRPM[3].Z	Z axis.
V.MPA.MAXRPM[3].S	Spindle S.
V.SP.MAXRPM[3].S	Spindle S.
V.SP.MAXRPM[3]	Master spindle.
V.MPA.MAXRPM[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MAXRPM[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MAXRPM[3].2	Spindle with index ·2· in the system.
V.[2].SP.MAXRPM[3].1	Spindle with index ·1· in the channel ·2·.

2.4.7 Rapid traverse for the automatic mode.

(V.)[ch].MPA.FRAPIDEN[set].xn
(V.)[ch].MPA.FRAPIDEN[set].sn
(V.)[ch].SP.FRAPIDEN[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Rapid traverse of the axis when the rapid traverse for the automatic mode is active (parameter RAPIDEN). If the parameter is set with a "0" value, the feedrate is not limited.

This parameter does not the movements programmed in G00 or the threads. Movements in G0 are carried out at the feedrate set in parameter G00FEED. The threads are executed at the programmed feedrate.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FRAPIDEN[3].Z	Z axis.
V.MPA.FRAPIDEN[3].S	Spindle S.
V.SP.FRAPIDEN[3].S	Spindle S.
V.SP.FRAPIDEN[3]	Master spindle.
V.MPA.FRAPIDEN[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.FRAPIDEN[3].1	Axis with index ·1· in the channel ·2·.
V.SP.FRAPIDEN[3].2	Spindle with index ·2· in the system.
V.[2].SP.FRAPIDEN[3].1	Spindle with index ·1· in the channel ·2·.

Remarks.

The rapid traverse cannot exceed the value set in axis parameters G00FEED or FRAPIDEN of the channel or the maximum feedrate set by PLC (variable (V.)PLC.G00FEED). Rapid traverse cannot exceed the value set in axis parameter MAXFEED of the channel and the active feedrate set by PLC (variable (V.)PLC.F).

Variable.	**Machine parameters.**		**Rapid feed.**	
(V.)PLC.G00FEED	G00FEED (axis)	FRAPIDEN (axis)	G00	G01, G02, ···
0	10000	0	10000	10000
0	10000	6000	10000	6000
4000	10000	6000	4000	4000
7000	10000	6000	7000	6000
12000	10000	6000	10000	6000

2.4.8 Gain setting.

(V.)[ch].MPA.PROGAIN[set].xn
(V.)[ch].MPA.PROGAIN[set].sn
(V.)[ch].SP.PROGAIN[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Proportional gain. It sets the following error (difference between the theoretical instantaneous position and the actual - real - axis position) for a particular feedrate.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.PROGAIN[3].Z	Z axis.
V.MPA.PROGAIN[3].S	Spindle S.
V.SP.PROGAIN[3].S	Spindle S.
V.SP.PROGAIN[3]	Master spindle.
V.MPA.PROGAIN[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.PROGAIN[3].1	Axis with index ·1· in the channel ·2·.
V.SP.PROGAIN[3].2	Spindle with index ·2· in the system.
V.[2].SP.PROGAIN[3].1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in thousandths (x1000); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·10000·.

(V.)[ch].MPA.FFWTYPE[set].xn
(V.)[ch].MPA.FFWTYPE[set].sn
(V.)[ch].SP.FFWTYPE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Pre-control type

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FFWTYPE[3].Z	Z axis.
V.MPA.FFWTYPE[3].S	Spindle S.
V.SP.FFWTYPE[3].S	Spindle S.
V.SP.FFWTYPE[3]	Master spindle.
V.MPA.FFWTYPE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.FFWTYPE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.FFWTYPE[3].2	Spindle with index ·2· in the system.
V.[2].SP.FFWTYPE[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Without pre-control.
1	Feed forward.
2	AC-forward
3	Feed-Forward and AC-Forward.

(V.)[ch].MPA.FFGAIN[set].xn
(V.)[ch].MPA.FFGAIN[set].sn
(V.)[ch].SP.FFGAIN[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of Feed-Forward in automatic.

It sets the part of the velocity commmand that is proportional to the programmed feedrate. The rest will be proportional to the following error.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FFGAIN[3].Z	Z axis.
V.MPA.FFGAIN[3].S	Spindle S.
V.SP.FFGAIN[3].S	Spindle S.
V.SP.FFGAIN[3]	Master spindle.
V.MPA.FFGAIN[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.FFGAIN[3].1	Axis with index ·1· in the channel ·2·.
V.SP.FFGAIN[3].2	Spindle with index ·2· in the system.
V.[2].SP.FFGAIN[3].1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in hundredths (x100); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·1000·.

Although the parameter may be set with up to 4 decimals, only 2 decimals will be used when reading the variable.

(V.)[ch].MPA.MANFFGAIN[set].xn
(V.)[ch].MPA.MANFFGAIN[set].sn
(V.)[ch].SP.MANFFGAIN[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of Feed-Forward in JOG

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MANFFGAIN[3].Z	Z axis.
V.MPA.MANFFGAIN[3].S	Spindle S.
V.SP.MANFFGAIN[3].S	Spindle S.
V.SP.MANFFGAIN[3]	Master spindle.
V.MPA.MANFFGAIN[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MANFFGAIN[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MANFFGAIN[3].2	Spindle with index ·2· in the system.
V.[2].SP.MANFFGAIN[3].1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in hundredths (x100); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·1000·.

Although the parameter may be set with up to 4 decimals, only 2 decimals will be used when reading the variable.

(V.)[ch].MPA.ACFWFACTOR[set].xn
(V.)[ch].MPA.ACFWFACTOR[set].sn
(V.)[ch].SP.ACFWFACTOR[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Acceleration time constant.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ACFWFACTOR[3].Z	Z axis.
V.MPA.ACFWFACTOR[3].S	Spindle S.
V.SP.ACFWFACTOR[3].S	Spindle S.
V.SP.ACFWFACTOR[3]	Master spindle.
V.MPA.ACFWFACTOR[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ACFWFACTOR[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ACFWFACTOR[3].2	Spindle with index ·2· in the system.
V.[2].SP.ACFWFACTOR[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.ACFGAIN[set].xn
(V.)[ch].MPA.ACFGAIN[set].sn
(V.)[ch].SP.ACFGAIN[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of Feed-Forward in automatic.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ACFGAIN[3].Z	Z axis.
V.MPA.ACFGAIN[3].S	Spindle S.
V.SP.ACFGAIN[3].S	Spindle S.
V.SP.ACFGAIN[3]	Master spindle.
V.MPA.ACFGAIN[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ACFGAIN[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ACFGAIN[3].2	Spindle with index ·2· in the system.
V.[2].SP.ACFGAIN[3].1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

Although the parameter may be set with up to 4 decimals, only the first decimal will be used when reading the variable.

(V.)[ch].MPA.MANACFGAIN[set].xn
(V.)[ch].MPA.MANACFGAIN[set].sn
(V.)[ch].SP.MANACFGAIN[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of Feed-Forward in jog mode.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MANACFGAIN[3].Z	Z axis.
V.MPA.MANACFGAIN[3].S	Spindle S.
V.SP.MANACFGAIN[3].S	Spindle S.
V.SP.MANACFGAIN[3]	Master spindle.
V.MPA.MANACFGAIN[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MANACFGAIN[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MANACFGAIN[3].2	Spindle with index ·2· in the system.
V.[2].SP.MANACFGAIN[3].1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

Although the parameter may be set with up to 4 decimals, only the first decimal will be used when reading the variable.

2.4.9 Linear acceleration.

(V.)[ch].MPA.LACC1[set].xn
(V.)[ch].MPA.LACC1[set].sn
(V.)[ch].SP.LACC1[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Acceleration of the first section.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.LACC1[3].Z	Z axis.
V.MPA.LACC1[3].S	Spindle S.
V.SP.LACC1[3].S	Spindle S.
V.SP.LACC1[3]	Master spindle.
V.MPA.LACC1[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.LACC1[3].1	Axis with index ·1· in the channel ·2·.
V.SP.LACC1[3].2	Spindle with index ·2· in the system.
V.[2].SP.LACC1[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.LACC2[set].xn
(V.)[ch].MPA.LACC2[set].sn
(V.)[ch].SP.LACC2[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Acceleration of the second section.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.LACC2[3].Z	Z axis.
V.MPA.LACC2[3].S	Spindle S.
V.SP.LACC2[3].S	Spindle S.
V.SP.LACC2[3]	Master spindle.
V.MPA.LACC2[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.LACC2[3].1	Axis with index ·1· in the channel ·2·.
V.SP.LACC2[3].2	Spindle with index ·2· in the system.
V.[2].SP.LACC2[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.LFEED[set].xn
(V.)[ch].SP.LFEED[set].sn
(V.)[ch].SP.LFEED[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Change speed.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.LFEED[3].Z	Z axis.
V.MPA.LFEED[3].S	Spindle S.
V.SP.LFEED[3].S	Spindle S.
V.SP.LFEED[3]	Master spindle.
V.MPA.LFEED[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.LFEED[3].1	Axis with index ·1· in the channel ·2·.
V.SP.LFEED[3].2	Spindle with index ·2· in the system.
V.[2].SP.LFEED[3].1	Spindle with index ·1· in the channel ·2·.

2.4.10 Trapezoidal and square sine acceleration.

(V.)[ch].MPA.ACCEL[set].xn
(V.)[ch].MPA.ACCEL[set].sn
(V.)[ch].SP.ACCEL[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Acceleration.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ACCEL[3].Z	Z axis.
V.MPA.ACCEL[3].S	Spindle S.
V.SP.ACCEL[3].S	Spindle S.
V.SP.ACCEL[3]	Master spindle.
V.MPA.ACCEL[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ACCEL[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ACCEL[3].2	Spindle with index ·2· in the system.
V.[2].SP.ACCEL[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.DECEL[set].xn
(V.)[ch].MPA.DECEL[set].sn
(V.)[ch].SP.DECEL[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Deceleration.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DECEL[3].Z	Z axis.
V.MPA.DECEL[3].S	Spindle S.
V.SP.DECEL[3].S	Spindle S.
V.SP.DECEL[3]	Master spindle.
V.MPA.DECEL[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.DECEL[3].1	Axis with index ·1· in the channel ·2·.
V.SP.DECEL[3].2	Spindle with index ·2· in the system.
V.[2].SP.DECEL[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.ACCJERK[set].xn
(V.)[ch].MPA.ACCJERK[set].sn
(V.)[ch].SP.ACCJERK[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Acceleration Jerk.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ACCJERK[3].Z	Z axis.
V.MPA.ACCJERK[3].S	Spindle S.
V.SP.ACCJERK[3].S	Spindle S.
V.SP.ACCJERK[3]	Master spindle.
V.MPA.ACCJERK[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ACCJERK[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ACCJERK[3].2	Spindle with index ·2· in the system.
V.[2].SP.ACCJERK[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.DECJERK[set].xn
(V.)[ch].MPA.DECJERK[set].sn
(V.)[ch].SP.DECJERK[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Deceleration Jerk.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DECJERK[3].Z	Z axis.
V.MPA.DECJERK[3].S	Spindle S.
V.SP.DECJERK[3].S	Spindle S.
V.SP.DECJERK[3]	Master spindle.
V.MPA.DECJERK[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.DECJERK[3].1	Axis with index ·1· in the channel ·2·.
V.SP.DECJERK[3].2	Spindle with index ·2· in the system.
V.[2].SP.DECJERK[3].1	Spindle with index ·1· in the channel ·2·.

2.4.11 Enable specific acceleration values for movements in G0.

(V.)[ch].MPA.G0ACDCJERK[set].xn
(V.)[ch].MPA.G0ACDCJERK[set].sn
(V.)[ch].SP.G0ACDCJERK[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

More parameters if G0.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.G0ACDCJERK[3].Z	Z axis.
V.MPA.G0ACDCJERK[3].S	Spindle S.
V.SP.G0ACDCJERK[3].S	Spindle S.
V.SP.G0ACDCJERK[3]	Master spindle.
V.MPA.G0ACDCJERK[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.G0ACDCJERK[3].1	Axis with index ·1· in the channel ·2·.
V.SP.G0ACDCJERK[3].2	Spindle with index ·2· in the system.
V.[2].SP.G0ACDCJERK[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.4.12 Linear acceleration (G0 movements).

(V.)[ch].MPA.LACC1G0[set].xn
(V.)[ch].MPA.LACC1G0[set].sn
(V.)[ch].SP.LACC1G0[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Acceleration of the first section (G0 movements).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.LACC1G0[3].Z	Z axis.
V.MPA.LACC1G0[3].S	Spindle S.
V.SP.LACC1G0[3].S	Spindle S.
V.SP.LACC1G0[3]	Master spindle.
V.MPA.LACC1G0[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.LACC1G0[3].1	Axis with index ·1· in the channel ·2·.
V.SP.LACC1G0[3].2	Spindle with index ·2· in the system.
V.[2].SP.LACC1G0[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.LACC2G0[set].xn
(V.)[ch].MPA.LACC2G0[set].sn
(V.)[ch].SP.LACC2G0[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Acceleration of the second section (G0 movements).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.LACC2G0[3].Z	Z axis.
V.MPA.LACC2G0[3].S	Spindle S.
V.SP.LACC2G0[3].S	Spindle S.
V.SP.LACC2G0[3]	Master spindle.
V.MPA.LACC2G0[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.LACC2G0[3].1	Axis with index ·1· in the channel ·2·.
V.SP.LACC2G0[3].2	Spindle with index ·2· in the system.
V.[2].SP.LACC2G0[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.LFEEDG0[set].xn
(V.)[ch].SP.LFEEDG0[set].sn
(V.)[ch].SP.LFEEDG0[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Acceleration changing speed (G0 movements).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.LFEEDG0[3].Z	Z axis.
V.MPA.LFEEDG0[3].S	Spindle S.
V.SP.LFEEDG0[3].S	Spindle S.
V.SP.LFEEDG0[3]	Master spindle.
V.MPA.LFEEDG0[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.LFEEDG0[3].1	Axis with index ·1· in the channel ·2·.
V.SP.LFEEDG0[3].2	Spindle with index ·2· in the system.
V.[2].SP.LFEEDG0[3].1	Spindle with index ·1· in the channel ·2·.

2.4.13 Trapezoidal and square sine acceleration (G0 movements).

(V.)[ch].MPA.ACCELG0[set].xn
(V.)[ch].MPA.ACCELG0[set].sn
(V.)[ch].SP.ACCELG0[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Acceleration (G0 movements).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ACCELG0[3].Z	Z axis.
V.MPA.ACCELG0[3].S	Spindle S.
V.SP.ACCELG0[3].S	Spindle S.
V.SP.ACCELG0[3]	Master spindle.
V.MPA.ACCELG0[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ACCELG0[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ACCELG0[3].2	Spindle with index ·2· in the system.
V.[2].SP.ACCELG0[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.DECELG0[set].xn
(V.)[ch].MPA.DECELG0[set].sn
(V.)[ch].SP.DECELG0[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Deceleration (G0 movements).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DECELG0[3].Z	Z axis.
V.MPA.DECELG0[3].S	Spindle S.
V.SP.DECELG0[3].S	Spindle S.
V.SP.DECELG0[3]	Master spindle.
V.MPA.DECELG0[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.DECELG0[3].1	Axis with index ·1· in the channel ·2·.
V.SP.DECELG0[3].2	Spindle with index ·2· in the system.
V.[2].SP.DECELG0[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.ACCJERKG0[set].xn
(V.)[ch].MPA.ACCJERKG0[set].sn
(V.)[ch].SP.ACCJERKG0[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Acceleration jerk (G0 movements).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ACCJERKG0[3].Z	Z axis.
V.MPA.ACCJERKG0[3].S	Spindle S.
V.SP.ACCJERKG0[3].S	Spindle S.
V.SP.ACCJERKG0[3]	Master spindle.
V.MPA.ACCJERKG0[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ACCJERKG0[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ACCJERKG0[3].2	Spindle with index ·2· in the system.
V.[2].SP.ACCJERKG0[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.DECJERKG0[set].xn
(V.)[ch].MPA.DECJERKG0[set].sn
(V.)[ch].SP.DECJERKG0[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Deceleration jerk (G0 movements).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DECJERKG0[3].Z	Z axis.
V.MPA.DECJERKG0[3].S	Spindle S.
V.SP.DECJERKG0[3].S	Spindle S.
V.SP.DECJERKG0[3]	Master spindle.
V.MPA.DECJERKG0[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.DECJERKG0[3].1	Axis with index ·1· in the channel ·2·.
V.SP.DECJERKG0[3].2	Spindle with index ·2· in the system.
V.[2].SP.DECJERKG0[3].1	Spindle with index ·1· in the channel ·2·.

2.4.14 Configuration of the HSC mode.

(V.)[ch].MPA.CORNERACC[set].xn
(V.)[ch].MPA.CORNERACC[set].sn
(V.)[ch].SP.CORNERACC[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Maximum acceleration permitted at the corners.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.CORNERACC[3].Z	Z axis.
V.MPA.CORNERACC[3].S	Spindle S.
V.SP.CORNERACC[3].S	Spindle S.
V.SP.CORNERACC[3]	Master spindle.
V.MPA.CORNERACC[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.CORNERACC[3].1	Axis with index ·1· in the channel ·2·.
V.SP.CORNERACC[3].2	Spindle with index ·2· in the system.
V.[2].SP.CORNERACC[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.CURVACC[set].xn
(V.)[ch].MPA.CURVACC[set].sn
(V.)[ch].SP.CURVACC[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Maximum contouring acceleration permitted.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.CURVACC[3].Z	Z axis.
V.MPA.CURVACC[3].S	Spindle S.
V.SP.CURVACC[3].S	Spindle S.
V.SP.CURVACC[3]	Master spindle.
V.MPA.CURVACC[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.CURVACC[3].1	Axis with index ·1· in the channel ·2·.
V.SP.CURVACC[3].2	Spindle with index ·2· in the system.
V.[2].SP.CURVACC[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.CORNERJERK[set].xn
(V.)[ch].MPA.CORNERJERK[set].sn
(V.)[ch].SP.CORNERJERK[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Maximum Jerk permitted at the corners.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.CORNERJERK[3].Z	Z axis.
V.MPA.CORNERJERK[3].S	Spindle S.
V.SP.CORNERJERK[3].S	Spindle S.
V.SP.CORNERJERK[3]	Master spindle.
V.MPA.CORNERJERK[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.CORNERJERK[3].1	Axis with index ·1· in the channel ·2·.
V.SP.CORNERJERK[3].2	Spindle with index ·2· in the system.
V.[2].SP.CORNERJERK[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.CURVJERK[set].xn
(V.)[ch].MPA.CURVJERK[set].sn
(V.)[ch].SP.CURVJERK[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Maximum contouring Jerk permitted.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.CURVJERK[3].Z	Z axis.
V.MPA.CURVJERK[3].S	Spindle S.
V.SP.CURVJERK[3].S	Spindle S.
V.SP.CURVJERK[3]	Master spindle.
V.MPA.CURVJERK[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.CURVJERK[3].1	Axis with index ·1· in the channel ·2·.
V.SP.CURVJERK[3].2	Spindle with index ·2· in the system.
V.[2].SP.CURVJERK[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.FASTACC[set].xn
(V.)[ch].MPA.FASTACC[set].sn
(V.)[ch].SP.FASTACC[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Maximum acceleration permitted (FAST mode).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FASTACC[3].Z	Z axis.
V.MPA.FASTACC[3].S	Spindle S.
V.SP.FASTACC[3].S	Spindle S.
V.SP.FASTACC[3]	Master spindle.
V.MPA.FASTACC[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.FASTACC[3].1	Axis with index ·1· in the channel ·2·.
V.SP.FASTACC[3].2	Spindle with index ·2· in the system.
V.[2].SP.FASTACC[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.MAXERROR[set].xn
(V.)[ch].MPA.MAXERROR[set].sn
(V.)[ch].SP.MAXERROR[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Maximum axis position error in HSC when working outside the plane/trihedron.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MAXERROR[3].Z	Z axis.
V.MPA.MAXERROR[3].S	Spindle S.
V.SP.MAXERROR[3].S	Spindle S.
V.SP.MAXERROR[3]	Master spindle.
V.MPA.MAXERROR[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MAXERROR[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MAXERROR[3].2	Spindle with index ·2· in the system.
V.[2].SP.MAXERROR[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.CONTERROR[set].xn
(V.)[ch].MPA.CONTERROR[set].sn
(V.)[ch].SP.CONTERROR[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Tolerance per axis for smoothing the generated n-dimensional path.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.CONTERROR[3].Z	Z axis.
V.MPA.CONTERROR[3].S	Spindle S.
V.SP.CONTERROR[3].S	Spindle S.
V.SP.CONTERROR[3]	Master spindle.
V.MPA.CONTERROR[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.CONTERROR[3].1	Axis with index ·1· in the channel ·2·.
V.SP.CONTERROR[3].2	Spindle with index ·2· in the system.
V.[2].SP.CONTERROR[3].1	Spindle with index ·1· in the channel ·2·.

2.4.15 Home search.

(V.)[ch].MPA.I0TYPE[set].xn
(V.)[ch].MPA.I0TYPE[set].sn
(V.)[ch].SP.I0TYPE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Reference mark (I0) type

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.I0TYPE[3].Z	Z axis.
V.MPA.I0TYPE[3].S	Spindle S.
V.SP.I0TYPE[3].S	Spindle S.
V.SP.I0TYPE[3]	Master spindle.
V.MPA.I0TYPE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.I0TYPE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.I0TYPE[3].2	Spindle with index ·2· in the system.
V.[2].SP.I0TYPE[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Incremental (Not distance-coded)
1	Increasing distance-coded reference mark.
2	Decreasing distance-coded reference mark.

(V.)[ch].MPA.REFVALUE[set].xn
(V.)[ch].MPA.REFVALUE[set].sn
(V.)[ch].SP.REFVALUE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Home position.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.REFVALUE[3].Z	Z axis.
V.MPA.REFVALUE[3].S	Spindle S.
V.SP.REFVALUE[3].S	Spindle S.

V.SP.REFVALUE[3]	Master spindle.
V.MPA.REFVALUE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.REFVALUE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.REFVALUE[3].2	Spindle with index ·2· in the system.
V.[2].SP.REFVALUE[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.REFSHIFT[set].xn
(V.)[ch].MPA.REFSHIFT[set].sn
(V.)[ch].SP.REFSHIFT[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Offset of the reference point (home)

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.REFSHIFT[3].Z	Z axis.
V.MPA.REFSHIFT[3].S	Spindle S.
V.SP.REFSHIFT[3].S	Spindle S.
V.SP.REFSHIFT[3]	Master spindle.
V.MPA.REFSHIFT[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.REFSHIFT[3].1	Axis with index ·1· in the channel ·2·.
V.SP.REFSHIFT[3].2	Spindle with index ·2· in the system.
V.[2].SP.REFSHIFT[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.REFFEED1[set].xn
(V.)[ch].MPA.REFFEED1[set].sn
(V.)[ch].SP.REFFEED1[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Fast home searching feedrate.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.REFFEED1[3].Z	Z axis.
V.MPA.REFFEED1[3].S	Spindle S.
V.SP.REFFEED1[3].S	Spindle S.
V.SP.REFFEED1[3]	Master spindle.
V.MPA.REFFEED1[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.REFFEED1[3].1	Axis with index ·1· in the channel ·2·.
V.SP.REFFEED1[3].2	Spindle with index ·2· in the system.
V.[2].SP.REFFEED1[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.REFFEED2[set].xn
(V.)[ch].MPA.REFFEED2[set].sn
(V.)[ch].SP.REFFEED2[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Slow home searching feedrate.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.REFFEED2[3].Z	Z axis.
V.MPA.REFFEED2[3].S	Spindle S.
V.SP.REFFEED2[3].S	Spindle S.
V.SP.REFFEED2[3]	Master spindle.
V.MPA.REFFEED2[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.REFFEED2[3].1	Axis with index ·1· in the channel ·2·.
V.SP.REFFEED2[3].2	Spindle with index ·2· in the system.
V.[2].SP.REFFEED2[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.REFPULSE[set].xn
(V.)[ch].MPA.REFPULSE[set].sn
(V.)[ch].SP.REFPULSE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Type of I0 pulse.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.REFPULSE[3].Z	Z axis.
V.MPA.REFPULSE[3].S	Spindle S.
V.SP.REFPULSE[3].S	Spindle S.
V.SP.REFPULSE[3]	Master spindle.
V.MPA.REFPULSE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.REFPULSE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.REFPULSE[3].2	Spindle with index ·2· in the system.
V.[2].SP.REFPULSE[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Negative pulse.
1	Positive pulse.

(V.)[ch].MPA.POSINREF[set].xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Home search moving the axis to the reference point.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

V.MPA.POSINREF[3].Z	Z axis.
V.MPA.POSINREF[3].4	Axis with logic number ·4·.
V.[2].MPA.POSINREF[3].1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.MAXDIFREF[set].xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Maximum position difference allowed to consider that there is no need to home again.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

V.MPA.MAXDIFREF[3].Z	Z axis.
V.MPA.MAXDIFREF[3].4	Axis with logic number ·4·.
V.[2].MPA.MAXDIFREF[3].1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].MPA.ABSOFF[set].xn
(V.)[ch].MPA.ABSOFF[set].sn
(V.)[ch].SP.ABSOFF[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Offset with respect to the distance-coded ref. mark.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ABSOFF[3].Z	Z axis.
V.MPA.ABSOFF[3].S	Spindle S.
V.SP.ABSOFF[3].S	Spindle S.
V.SP.ABSOFF[3]	Master spindle.
V.MPA.ABSOFF[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ABSOFF[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ABSOFF[3].2	Spindle with index ·2· in the system.
V.[2].SP.ABSOFF[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.EXTMULT[set].xn
(V.)[ch].MPA.EXTMULT[set].sn
(V.)[ch].SP.EXTMULT[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives.
The variable returns the value of block preparation.

External factor for distance-coded reference marks.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.EXTMULT[3].Z	Z axis.
V.MPA.EXTMULT[3].S	Spindle S.
V.SP.EXTMULT[3].S	Spindle S.
V.SP.EXTMULT[3]	Master spindle.
V.MPA.EXTMULT[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.EXTMULT[3].1	Axis with index ·1· in the channel ·2·.
V.SP.EXTMULT[3].2	Spindle with index ·2· in the system.
V.[2].SP.EXTMULT[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.I0CODDI1[set].xn
(V.)[ch].MPA.I0CODDI1[set].sn
(V.)[ch].SP.I0CODDI1[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Pitch between 2 fixed distance-coded reference marks.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.I0CODDI1[3].Z	Z axis.
V.MPA.I0CODDI1[3].S	Spindle S.
V.SP.I0CODDI1[3].S	Spindle S.
V.SP.I0CODDI1[3]	Master spindle.
V.MPA.I0CODDI1[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.I0CODDI1[3].1	Axis with index ·1· in the channel ·2·.
V.SP.I0CODDI1[3].2	Spindle with index ·2· in the system.
V.[2].SP.I0CODDI1[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.I0CODDI2[set].xn
(V.)[ch].MPA.I0CODDI2[set].sn
(V.)[ch].SP.I0CODDI2[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Pitch between 2 variable distance-coded reference marks.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.I0CODDI2[3].Z	Z axis.
V.MPA.I0CODDI2[3].S	Spindle S.
V.SP.I0CODDI2[3].S	Spindle S.
V.SP.I0CODDI2[3]	Master spindle.
V.MPA.I0CODDI2[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.I0CODDI2[3].1	Axis with index ·1· in the channel ·2·.
V.SP.I0CODDI2[3].2	Spindle with index ·2· in the system.
V.[2].SP.I0CODDI2[3].1	Spindle with index ·1· in the channel ·2·.

2.4.16 Following error.

(V.)[ch].MPA.FLWEMONITOR[set].xn
(V.)[ch].MPA.FLWEMONITOR[set].sn
(V.)[ch].SP.FLWEMONITOR[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Type of monitoring of the following error (axis lag).

The CNC offers two types of monitoring of the following error (axis lag). The "standard" monitoring type performs a continuous supervision of the following error whereas the "linear" monitoring performs a dynamic supervision

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FLWEMONITOR[3].Z	Z axis.
V.MPA.FLWEMONITOR[3].S	Spindle S.
V.SP.FLWEMONITOR[3].S	Spindle S.
V.SP.FLWEMONITOR[3]	Master spindle.
V.MPA.FLWEMONITOR[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.FLWEMONITOR[3].1	Axis with index ·1· in the channel ·2·.
V.SP.FLWEMONITOR[3].2	Spindle with index ·2· in the system.
V.[2].SP.FLWEMONITOR[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No monitoring.
1	Standard monitoring.
2	Linear monitoring.

(V.)[ch].MPA.MINFLWE[set].xn
(V.)[ch].MPA.MINFLWE[set].sn
(V.)[ch].SP.MINFLWE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Maximum following error when stopped.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MINFLWE[3].Z	Z axis.
V.MPA.MINFLWE[3].S	Spindle S.
V.SP.MINFLWE[3].S	Spindle S.

V.SP.MINFLWE[3]	Master spindle.
V.MPA.MINFLWE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MINFLWE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MINFLWE[3].2	Spindle with index ·2· in the system.
V.[2].SP.MINFLWE[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.MAXFLWE[set].xn
(V.)[ch].MPA.MAXFLWE[set].sn
(V.)[ch].SP.MAXFLWE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Maximum following error when moving.

With "standard" monitoring, this variable indicates the maximum amount of following error allowed when the axis is moving; with "linear" monitoring, it indicates when dynamic supervision begins (starting at which amount of following error).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MAXFLWE[3].Z	Z axis.
V.MPA.MAXFLWE[3].S	Spindle S.
V.SP.MAXFLWE[3].S	Spindle S.
V.SP.MAXFLWE[3]	Master spindle.
V.MPA.MAXFLWE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MAXFLWE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MAXFLWE[3].2	Spindle with index ·2· in the system.
V.[2].SP.MAXFLWE[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.FEDYNFAC[set].xn
(V.)[ch].MPA.FEDYNFAC[set].sn
(V.)[ch].SP.FEDYNFAC[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of following error deviation allowed.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FEDYNFAC[3].Z	Z axis.
V.MPA.FEDYNFAC[3].S	Spindle S.
V.SP.FEDYNFAC[3].S	Spindle S.
V.SP.FEDYNFAC[3]	Master spindle.
V.MPA.FEDYNFAC[3].4	Axis or spindle with logic number ·4·.

V.[2].MPA.FEDYNFAC[3].1	Axis with index ·1· in the channel ·2·.
V.SP.FEDYNFAC[3].2	Spindle with index ·2· in the system.
V.[2].SP.FEDYNFAC[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.ESTDELAY[set].xn
(V.)[ch].MPA.ESTDELAY[set].sn
(V.)[ch].SP.ESTDELAY[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Following error delay.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ESTDELAY[3].Z	Z axis.
V.MPA.ESTDELAY[3].S	Spindle S.
V.SP.ESTDELAY[3].S	Spindle S.
V.SP.ESTDELAY[3]	Master spindle.
V.MPA.ESTDELAY[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ESTDELAY[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ESTDELAY[3].2	Spindle with index ·2· in the system.
V.[2].SP.ESTDELAY[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.INPOMAX[set].xn
(V.)[ch].MPA.INPOMAX[set].sn
(V.)[ch].SP.INPOMAX[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Time to get in position.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.INPOMAX[3].Z	Z axis.
V.MPA.INPOMAX[3].S	Spindle S.
V.SP.INPOMAX[3].S	Spindle S.
V.SP.INPOMAX[3]	Master spindle.
V.MPA.INPOMAX[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.INPOMAX[3].1	Axis with index ·1· in the channel ·2·.
V.SP.INPOMAX[3].2	Spindle with index ·2· in the system.
V.[2].SP.INPOMAX[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.INPOTIME[set].xn
(V.)[ch].MPA.INPOTIME[set].sn
(V.)[ch].SP.INPOTIME[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Minimum time to stay in position.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.INPOTIME[3].Z	Z axis.
V.MPA.INPOTIME[3].S	Spindle S.
V.SP.INPOTIME[3].S	Spindle S.
V.SP.INPOTIME[3]	Master spindle.
V.MPA.INPOTIME[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.INPOTIME[3].1	Axis with index ·1· in the channel ·2·.
V.SP.INPOTIME[3].2	Spindle with index ·2· in the system.
V.[2].SP.INPOTIME[3].1	Spindle with index ·1· in the channel ·2·.

2.4.17 Axis lubrication.

(V.)[ch].MPA.DISTLUBRI[set].xn
(V.)[ch].MPA.DISTLUBRI[set].sn
(V.)[ch].SP.DISTLUBRI[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Distance to move to lubricate the axis.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DISTLUBRI[3].Z	Z axis.
V.MPA.DISTLUBRI[3].S	Spindle S.
V.SP.DISTLUBRI[3].S	Spindle S.
V.SP.DISTLUBRI[3]	Master spindle.
V.MPA.DISTLUBRI[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.DISTLUBRI[3].1	Axis with index ·1· in the channel ·2·.
V.SP.DISTLUBRI[3].2	Spindle with index ·2· in the system.
V.[2].SP.DISTLUBRI[3].1	Spindle with index ·1· in the channel ·2·.

2.4.18 Module configuration (rotary axes and spindle).

(V.)[ch].MPA.MODUPLIM[set].xn
(V.)[ch].MPA.MODUPLIM[set].sn
(V.)[ch].SP.MODUPLIM[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary axes and spindles.
Variable valid for analog drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Upper limit of the module.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MODUPLIM[3].Z	Z axis.
V.MPA.MODUPLIM[3].S	Spindle S.
V.SP.MODUPLIM[3].S	Spindle S.
V.SP.MODUPLIM[3]	Master spindle.
V.MPA.MODUPLIM[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MODUPLIM[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MODUPLIM[3].2	Spindle with index ·2· in the system.
V.[2].SP.MODUPLIM[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.MODLOWLIM[set].xn
(V.)[ch].MPA.MODLOWLIM[set].sn
(V.)[ch].SP.MODLOWLIM[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary axes and spindles.
Variable valid for analog drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Lower limit of the module.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MODLOWLIM[3].Z	Z axis.
V.MPA.MODLOWLIM[3].S	Spindle S.
V.SP.MODLOWLIM[3].S	Spindle S.
V.SP.MODLOWLIM[3]	Master spindle.
V.MPA.MODLOWLIM[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MODLOWLIM[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MODLOWLIM[3].2	Spindle with index ·2· in the system.
V.[2].SP.MODLOWLIM[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.MODNROT[set].xn
(V.)[ch].MPA.MODNROT[set].sn
(V.)[ch].SP.MODNROT[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary axes and spindles.
Variable valid for analog drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Module error. Number of turns.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MODNROT[3].Z	Z axis.
V.MPA.MODNROT[3].S	Spindle S.
V.SP.MODNROT[3].S	Spindle S.
V.SP.MODNROT[3]	Master spindle.
V.MPA.MODNROT[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MODNROT[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MODNROT[3].2	Spindle with index ·2· in the system.
V.[2].SP.MODNROT[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.MODERR[set].xn
(V.)[ch].MPA.MODERR[set].sn
(V.)[ch].SP.MODERR[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified during setup.
Variable valid for rotary axes and spindles.
Variable valid for analog drives and velocity-Sercos drives.
The variable returns the execution value; reading it interrupts block preparation.

Module error. Number of increments.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MODERR[3].Z	Z axis.
V.MPA.MODERR[3].S	Spindle S.
V.SP.MODERR[3].S	Spindle S.
V.SP.MODERR[3]	Master spindle.
V.MPA.MODERR[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MODERR[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MODERR[3].2	Spindle with index ·2· in the system.
V.[2].SP.MODERR[3].1	Spindle with index ·1· in the channel ·2·.

2.4.19 Spindle speed.

(V.)[ch].MPA.SZERO[set].sn
(V.)[ch].SP.SZERO[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for position-Sercos drives and velocity-Sercos drives.
The variable returns the value of block preparation.

Speed considered "0 rpm".

Syntax.

·ch· Channel number.

·set· Parameter set.

·sn· Name, logic number or index of the spindle.

V.MPA.SZERO[3].S	Spindle S.
V.SP.SZERO[3].S	Spindle S.
V.SP.SZERO[3]	Master spindle.
V.MPA.SZERO[3].4	Spindle with logic number ·4·.
V.SP.SZERO[3].2	Spindle with index ·2· in the system.
V.[2].SP.SZERO[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.POLARM3[set].sn
(V.)[ch].SP.POLARM3[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Sign of the velocity command for M3.

Syntax.

·ch· Channel number.

·set· Parameter set.

·sn· Name, logic number or index of the spindle.

V.MPA.POLARM3[3].S	Spindle S.
V.SP.POLARM3[3].S	Spindle S.
V.SP.POLARM3[3]	Master spindle.
V.MPA.POLARM3[3].4	Spindle with logic number ·4·.
V.SP.POLARM3[3].2	Spindle with index ·2· in the system.
V.[2].SP.POLARM3[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Negative.
1	Positive.

(V.)[ch].MPA.POLARM4[set].sn
(V.)[ch].SP.POLARM4[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Sign of the velocity command for M4.

Syntax.

·ch· Channel number.

·set· Parameter set.

·sn· Name, logic number or index of the spindle.

V.MPA.POLARM4[3].S	Spindle S.
V.SP.POLARM4[3].S	Spindle S.
V.SP.POLARM4[3]	Master spindle.
V.MPA.POLARM4[3].4	Spindle with logic number ·4·.
V.SP.POLARM4[3].2	Spindle with index ·2· in the system.
V.[2].SP.POLARM4[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Negative.
1	Positive.

2.4.20 Analog command setting.

(V.)[ch].MPA.SERVOOFF[set].xn
(V.)[ch].MPA.SERVOOFF[set].sn
(V.)[ch].SP.SERVOOFF[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives.
The variable returns the execution value; reading it interrupts block preparation.

Offset compensation.

The velocity command is given in D/A converter units which could be any integer within ±32767 where a value of ±32767 corresponds to ±10V.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SERVOOFF[3].Z	Z axis.
V.MPA.SERVOOFF[3].S	Spindle S.
V.SP.SERVOOFF[3].S	Spindle S.
V.SP.SERVOOFF[3]	Master spindle.
V.MPA.SERVOOFF[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SERVOOFF[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SERVOOFF[3].2	Spindle with index ·2· in the system.
V.[2].SP.SERVOOFF[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.MINANOUT[set].xn
(V.)[ch].MPA.MINANOUT[set].sn
(V.)[ch].SP.MINANOUT[set].sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the environment of the oscilloscope and setup.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives.
The variable returns the execution value; reading it interrupts block preparation.

Minimum velocity command.

The velocity command is given in D/A converter units which could be any integer within ±32767 where a value of ±32767 corresponds to ±10V.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MINANOUT[3].Z	Z axis.
V.MPA.MINANOUT[3].S	Spindle S.
V.SP.MINANOUT[3].S	Spindle S.
V.SP.MINANOUT[3]	Master spindle.
V.MPA.MINANOUT[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.MINANOUT[3].1	Axis with index ·1· in the channel ·2·.
V.SP.MINANOUT[3].2	Spindle with index ·2· in the system.
V.[2].SP.MINANOUT[3].1	Spindle with index ·1· in the channel ·2·.

2.4.21 Number of the analog output and of the feedback input associated with the axis.

(V.)[ch].MPA.ANAOUTTYPE[set].xn
(V.)[ch].MPA.ANAOUTTYPE[set].sn
(V.)[ch].SP.ANAOUTTYPE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives.
The variable returns the value of block preparation.

Type of analog output associated with the axis.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ANAOUTTYPE[3].Z	Z axis.
V.MPA.ANAOUTTYPE[3].S	Spindle S.
V.SP.ANAOUTTYPE[3].S	Spindle S.
V.SP.ANAOUTTYPE[3]	Master spindle.
V.MPA.ANAOUTTYPE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ANAOUTTYPE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ANAOUTTYPE[3].2	Spindle with index ·2· in the system.
V.[2].SP.ANAOUTTYPE[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	The analog output is in the remote modules.
1	The analog output is in a Sercos drive.
2	The analog output is in a RCS-S module.

(V.)[ch].MPA.ANAOUTID[set].xn
(V.)[ch].MPA.ANAOUTID[set].sn
(V.)[ch].SP.ANAOUTID[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives.
The variable returns the value of block preparation.

Number of the analog output associated with the axis.

The velocity command for an analog axis may be taken from an analog output of the remote modules or of the Sercos drive.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.ANAOUTID[3].Z	Z axis.
V.MPA.ANAOUTID[3].S	Spindle S.
V.SP.ANAOUTID[3].S	Spindle S.

V.SP.ANAOUTID[3]	Master spindle.
V.MPA.ANAOUTID[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.ANAOUTID[3].1	Axis with index ·1· in the channel ·2·.
V.SP.ANAOUTID[3].2	Spindle with index ·2· in the system.
V.[2].SP.ANAOUTID[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1 - 16	The analog command is taken from the remote modules. The variable returns the number of the analog output.
101 -132 201 - 232	The analog command is taken from a Sercos drive. The first digit indicates the analog output to be used (1 or 2) and the other two digits indicate the logic address of the drive (1 through 32).
1 - 32	The analog command is taken from an RCS-S module.. The variable returns the number of the analog output.

(V.)[ch].MPA.COUNTERTYPE[set].xn
(V.)[ch].MPA.COUNTERTYPE[set].sn
(V.)[ch].SP.COUNTERTYPE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives and velocity-Sercos drives.
The variable returns the value of block preparation.

Type of feedback input for the axis.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.COUNTERTYPE[3].Z	Z axis.
V.MPA.COUNTERTYPE[3].S	Spindle S.
V.SP.COUNTERTYPE[3].S	Spindle S.
V.SP.COUNTERTYPE[3]	Master spindle.
V.MPA.COUNTERTYPE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.COUNTERTYPE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.COUNTERTYPE[3].2	Spindle with index ·2· in the system.
V.[2].SP.COUNTERTYPE[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Remote feedback input.
1	Local feedback input.
2	Feedback input of a Sercos drive.
3	Feedback input of an RCS-S module.

(V.)[ch].MPA.COUNTERID[set].xn
(V.)[ch].MPA.COUNTERID[set].sn
(V.)[ch].SP.COUNTERID[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drives and velocity-Sercos drives.
The variable returns the value of block preparation.

Number of the feedback input associated with the axis.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.COUNTERID[3].Z	Z axis.
V.MPA.COUNTERID[3].S	Spindle S.
V.SP.COUNTERID[3].S	Spindle S.
V.SP.COUNTERID[3]	Master spindle.
V.MPA.COUNTERID[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.COUNTERID[3].1	Axis with index ·1· in the channel ·2·.
V.SP.COUNTERID[3].2	Spindle with index ·2· in the system.
V.[2].SP.COUNTERID[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1 - 40	Number of the remote feedback input.
1 - 32	Address of the Sercos drive (always the second feedback input).
1 - 2	Number of the local feedback input.
1 - 32	Number of the RCS-S module input.

2.4.22 Set the drive associated with the axes of a multi-axis group.

(V.)[ch].MPA.DRIVESET[set].xn
(V.)[ch].MPA.DRIVESET[set].sn
(V.)[ch].SP.DRIVESET[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for position-Sercos drives and velocity-Sercos drives.
The variable returns the value of block preparation.

At the axes that belong to a multi-axis group, parameter DRIVESET indicates the set to be activated at the drive after a set or gear change at the CNC (G112 and M41 to M44).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.DRIVESET[3].Z	Z axis.
V.MPA.DRIVESET[3].S	Spindle S.
V.SP.DRIVESET[3].S	Spindle S.
V.SP.DRIVESET[3]	Master spindle.
V.MPA.DRIVESET[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.DRIVESET[3].1	Axis with index ·1· in the channel ·2·.
V.SP.DRIVESET[3].2	Spindle with index ·2· in the system.
V.[2].SP.DRIVESET[3].1	Spindle with index ·1· in the channel ·2·.

2.4.23 Feedback type of the RCS-S module.

(V.)[ch].MPA.FEEDBACKTYPE[set].xn
(V.)[ch].MPA.FEEDBACKTYPE[set].sn
(V.)[ch].SP.FEEDBACKTYPE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Feedback type of the RCS-S module.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.FEEDBACKTYPE[3].Z	Z axis.
V.MPA.FEEDBACKTYPE[3].S	Spindle S.
V.SP.FEEDBACKTYPE[3].S	Spindle S.
V.SP.FEEDBACKTYPE[3]	Master spindle.
V.MPA.FEEDBACKTYPE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.FEEDBACKTYPE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.FEEDBACKTYPE[3].2	Spindle with index ·2· in the system.
V.[2].SP.FEEDBACKTYPE[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.SSITYPE[set].xn
(V.)[ch].MPA.SSITYPE[set].sn
(V.)[ch].SP.SSITYPE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Feedback type connected to the corresponding feedback.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SSITYPE[3].Z	Z axis.
V.MPA.SSITYPE[3].S	Spindle S.
V.SP.SSITYPE[3].S	Spindle S.
V.SP.SSITYPE[3]	Master spindle.
V.MPA.SSITYPE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SSITYPE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SSITYPE[3].2	Spindle with index ·2· in the system.
V.[2].SP.SSITYPE[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Fagor LA
1	Fagor GA SA SVA
2	Fagor HA-27-D200
3	Fagor HA-23-D90 SA-23-D90 SA-23-D170
4	ABSIND (inductosyn LIN+ABS)
5	ABSIND (inductosyn ROT+ABS)
6	ABSIND (resolver)
7	ABSIND (inductosyn LIN)
8	ABSIND (inductosyn ROT)
9	G user
10	User

(V.)[ch].MPA.SSICLKFREQ[set].xn
(V.)[ch].MPA.SSICLKFREQ[set].sn
(V.)[ch].SP.SSICLKFREQ[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

SSI communication frequency.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SSICLKFREQ[3].Z	Z axis.
V.MPA.SSICLKFREQ[3].S	Spindle S.
V.SP.SSICLKFREQ[3].S	Spindle S.
V.SP.SSICLKFREQ[3]	Master spindle.
V.MPA.SSICLKFREQ[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SSICLKFREQ[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SSICLKFREQ[3].2	Spindle with index ·2· in the system.
V.[2].SP.SSICLKFREQ[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.SSIDATALENGTH[set].xn
(V.)[ch].MPA.SSIDATALENGTH[set].sn
(V.)[ch].SP.SSIDATALENGTH[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Number of bits of the SSI transmission that make up the position value (coordinate).

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SSIDATALENGTH[3].Z	Z axis.
V.MPA.SSIDATALENGTH[3].S	Spindle S.
V.SP.SSIDATALENGTH[3].S	Spindle S.
V.SP.SSIDATALENGTH[3]	Master spindle.
V.MPA.SSIDATALENGTH[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SSIDATALENGTH[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SSIDATALENGTH[3].2	Spindle with index ·2· in the system.
V.[2].SP.SSIDATALENGTH[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.SSIPACKFORMAT[set].xn
(V.)[ch].MPA.SSIPACKFORMAT[set].sn
(V.)[ch].SP.SSIPACKFORMAT[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SSIPACKFORMAT[3].Z	Z axis.
V.MPA.SSIPACKFORMAT[3].S	Spindle S.
V.SP.SSIPACKFORMAT[3].S	Spindle S.
V.SP.SSIPACKFORMAT[3]	Master spindle.
V.MPA.SSIPACKFORMAT[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SSIPACKFORMAT[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SSIPACKFORMAT[3].2	Spindle with index ·2· in the system.
V.[2].SP.SSIPACKFORMAT[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Data.
1	Data-CRC.
2	CRC-Data.
3	Data-Alarm.
4	Alarm-Data.
5	Data-CRC-Alarm
6	Alarm-Data-CRC.
7	Data-Alarm-CRC.
8	Alarm-CRC-Data.
9	CRC-Data-Alarm.
10	CRC-Alarm-Data.

(V.)[ch].MPA.SSICRCTYPE[set].xn
(V.)[ch].MPA.SSICRCTYPE[set].sn
(V.)[ch].SP.SSICRCTYPE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

CRC type.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SSICRCTYPE[3].Z	Z axis.
V.MPA.SSICRCTYPE[3].S	Spindle S.
V.SP.SSICRCTYPE[3].S	Spindle S.
V.SP.SSICRCTYPE[3]	Master spindle.
V.MPA.SSICRCTYPE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SSICRCTYPE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SSICRCTYPE[3].2	Spindle with index ·2· in the system.
V.[2].SP.SSICRCTYPE[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	"Do not calculate CRC"
1	Fagor checksum.
2	INDUCTOSYN checksum.

(V.)[ch].MPA.SSICRCBITS[set].xn
(V.)[ch].MPA.SSICRCBITS[set].sn
(V.)[ch].SP.SSICRCBITS[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Number of CRC bits of the SSI transmission to check that the transmission is valid.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SSICRCBITS[3].Z	Z axis.
V.MPA.SSICRCBITS[3].S	Spindle S.
V.SP.SSICRCBITS[3].S	Spindle S.
V.SP.SSICRCBITS[3]	Master spindle.
V.MPA.SSICRCBITS[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SSICRCBITS[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SSICRCBITS[3].2	Spindle with index ·2· in the system.
V.[2].SP.SSICRCBITS[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.SSISTARTBITS[set].xn
(V.)[ch].MPA.SSISTARTBITS[set].sn
(V.)[ch].SP.SSISTARTBITS[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Number of start bits.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SSISTARTBITS[3].Z	Z axis.
V.MPA.SSISTARTBITS[3].S	Spindle S.
V.SP.SSISTARTBITS[3].S	Spindle S.
V.SP.SSISTARTBITS[3]	Master spindle.
V.MPA.SSISTARTBITS[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SSISTARTBITS[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SSISTARTBITS[3].2	Spindle with index ·2· in the system.
V.[2].SP.SSISTARTBITS[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.SSIALARMBITS[set].xn
(V.)[ch].MPA.SSIALARMBITS[set].sn
(V.)[ch].SP.SSIALARMBITS[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Number of alarm bits.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SSIALARMBITS[3].Z	Z axis.
V.MPA.SSIALARMBITS[3].S	Spindle S.
V.SP.SSIALARMBITS[3].S	Spindle S.
V.SP.SSIALARMBITS[3]	Master spindle.
V.MPA.SSIALARMBITS[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SSIALARMBITS[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SSIALARMBITS[3].2	Spindle with index ·2· in the system.
V.[2].SP.SSIALARMBITS[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.SSIALARMLEVEL[set].xn
(V.)[ch].MPA.SSIALARMLEVEL[set].sn
(V.)[ch].SP.SSIALARMLEVEL[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Level of the alarm bits to issue an error.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SSIALARMLEVEL[3].Z	Z axis.
V.MPA.SSIALARMLEVEL[3].S	Spindle S.
V.SP.SSIALARMLEVEL[3].S	Spindle S.
V.SP.SSIALARMLEVEL[3]	Master spindle.
V.MPA.SSIALARMLEVEL[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SSIALARMLEVEL[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SSIALARMLEVEL[3].2	Spindle with index ·2· in the system.
V.[2].SP.SSIALARMLEVEL[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.SSIDATAMODE[set].xn
(V.)[ch].MPA.SSIDATAMODE[set].sn
(V.)[ch].SP.SSIDATAMODE[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Transmission mode.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SSIDATAMODE[3].Z	Z axis.
V.MPA.SSIDATAMODE[3].S	Spindle S.
V.SP.SSIDATAMODE[3].S	Spindle S.
V.SP.SSIDATAMODE[3]	Master spindle.
V.MPA.SSIDATAMODE[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SSIDATAMODE[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SSIDATAMODE[3].2	Spindle with index ·2· in the system.
V.[2].SP.SSIDATAMODE[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	The LSB (Least Significant Bit) is the first one.
1	The MSB (Most Significant Bit) is the first one.

(V.)[ch].MPA.STARTDELAY[set].xn
(V.)[ch].MPA.STARTDELAY[set].sn
(V.)[ch].SP.STARTDELAY[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Number of clocks to wait between the first down flank and the first up flank.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.STARTDELAY[3].Z	Z axis.
V.MPA.STARTDELAY[3].S	Spindle S.
V.SP.STARTDELAY[3].S	Spindle S.
V.SP.STARTDELAY[3]	Master spindle.
V.MPA.STARTDELAY[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.STARTDELAY[3].1	Axis with index ·1· in the channel ·2·.
V.SP.STARTDELAY[3].2	Spindle with index ·2· in the system.
V.[2].SP.STARTDELAY[3].1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].MPA.SSIRESOL[set].xn
(V.)[ch].MPA.SSIRESOL[set].sn
(V.)[ch].SP.SSIRESOL[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for velocity-Sercos drives.
The variable returns the value of block preparation.

Digital counting (feedback) resolution.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.SSIRESOL[3].Z	Z axis.
V.MPA.SSIRESOL[3].S	Spindle S.
V.SP.SSIRESOL[3].S	Spindle S.
V.SP.SSIRESOL[3]	Master spindle.
V.MPA.SSIRESOL[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.SSIRESOL[3].1	Axis with index ·1· in the channel ·2·.
V.SP.SSIRESOL[3].2	Spindle with index ·2· in the system.
V.[2].SP.SSIRESOL[3].1	Spindle with index ·1· in the channel ·2·.

2.4.24 Delay estimate at the drive.

(V.)[ch].MPA.AXDELAY[set].xn
(V.)[ch].MPA.AXDELAY[set].sn
(V.)[ch].SP.AXDELAY[set].sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the value of block preparation.

Parameter AXDELAY is an estimate of the drive's delay when applying the velocity command sent by the CNC.

Syntax.

·ch· Channel number.

·set· Parameter set.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.AXDELAY[3].Z	Z axis.
V.MPA.AXDELAY[3].S	Spindle S.
V.SP.AXDELAY[3].S	Spindle S.
V.SP.AXDELAY[3]	Master spindle.
V.MPA.AXDELAY[3].4	Axis or spindle with logic number ·4·.
V.[2].MPA.AXDELAY[3].1	Axis with index ·1· in the channel ·2·.
V.SP.AXDELAY[3].2	Spindle with index ·2· in the system.
V.[2].SP.AXDELAY[3].1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
Standard.	For Fagor drives, that do not require any delay compensation.
0.	The CNC does not apply delay compensation at the drive.
1 to 127.	Delay cycles at the drive. The CNC automatically compensates for the delay differences between the axes of the channel.

2.5 Variables related to machine parameters for JOG mode.

2.5.1 Handwheel configuration.

(V.)MPMAN.NMPG

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of handwheels connected to the CNC.

V.MPMAN.NMPG

(V.)MPMAN.COUNTERTYPE[hw]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Handwheel [hw]. Type of handwheel feedback input.

Syntax.

·hw· Handwheel number.

V.MPMAN.COUNTERTYPE[1] Handwheel ·1·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Handwheel connected to the remote feedback modules.
1	Handwheel connected to the keyboards.
2	Handwheel connected to the local feedback inputs.
3	Handwheel connected to an RCS-S module.

(V.)MPMAN.COUNTERID[hw]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Handwheel [hw]. Feedback input associated with the handwheel.

Syntax.

·hw· Handwheel number.

V.MPMAN.COUNTERID[1] Handwheel ·1·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
-1 -2 -3	Handwheel connected to the first keyboard.
-4 -5 -6	Handwheel connected to the second keyboard.
-7 -8 -9	Handwheel connected to the third keyboard.
1 ·· 40	Feedback input of the remote modules.
1 ·· 2	Local feedback input.
1 ·· 32	Feedback input of the RCS-S module.

(V.)MPMAN.HWFBTYPE[hw]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Possible values: TTL / TTLDIFF.

Handwheel [hw]. Feedback type associated with the handwheel input,

Syntax.

·hw· Handwheel number.

V.MPMAN.HWFBTYPE[1]	Handwheel ·1·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	TTL.
1	TTLDIFF.

(V.)MPMAN.MPGAXIS[hw]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Handwheel [hw]. Logic number of the axis associated with the handwheel.

If the variable returns a ·0· value, it means that it is a general handwheel that may be used to move any axis.

Syntax.

·hw· Handwheel number.

V.MPMAN.MPGAXIS[1]	Handwheel ·1·.

Remarks.

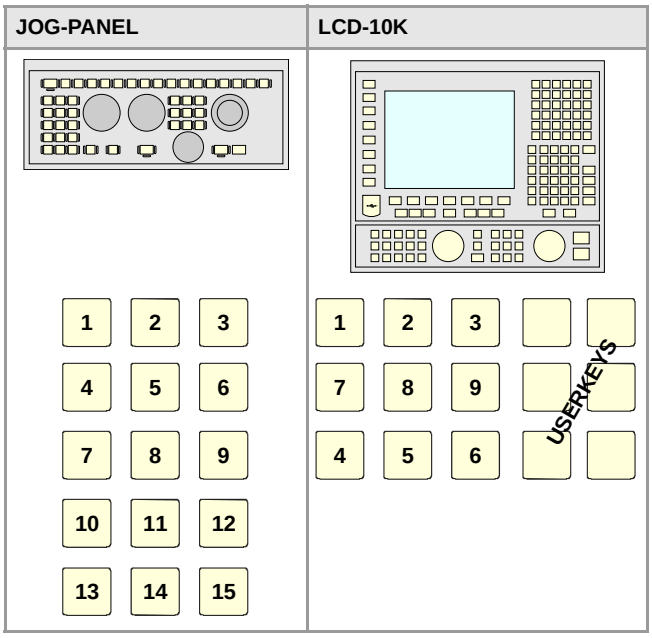
The logic number of the axes is determined by the order in which the axes have been defined in the machine parameter table. The first axis of the table will be logic axis -1- and so on.

2.5.2 Configure the jog keys.

(V.)MPMAN.JOGKEYDEF[jk]
(V.)MPMAN.JOGKEYBD1DEF[jk]
(V.)MPMAN.JOGKEYBD2DEF[jk]
..
(V.)MPMAN.JOGKEYBD8DEF[jk]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Jog key [jk]. Axis and moving direction.



Syntax.

·jk· Jog key number.

V.MPMAN.JOGKEYDEF[11]	Jog key ·11· of first keyboard.
V.MPMAN.JOGKEYBD3DEF[11]	Jog key ·11· of third keyboard.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	The key has no function assigned to it.
1 ·· 16	The key is assigned to the logic axis 1, 2, ··, 16 for movements in the positive direction.
-1 ·· -16	The key is assigned to the logic axis 1, 2, ··, 16 for movements in the negative direction.
101 ·· 116	The key is assigned to the logic axis 1, 2, ··, 16.
300	The key is assigned to the rapid movement.
301	The key is assigned to the movement in the positive direction.
302	The key is assigned to the movement in the negative direction.

Remarks.

The logic number of the axes is determined by the order in which the axes have been defined in the machine parameter table. The first axis of the table will be logic axis -1- and so on.

(V.)MPMAN.JOGTYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Behavior of the JOG keys.

V.MPMAN.JOGTYPE

Values of the variable.

This variable returns one of the following values.

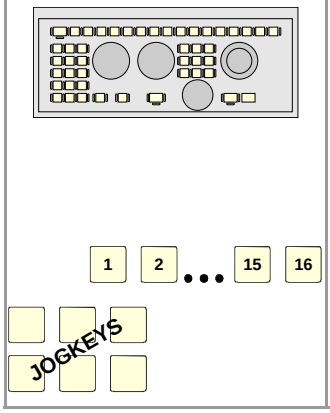
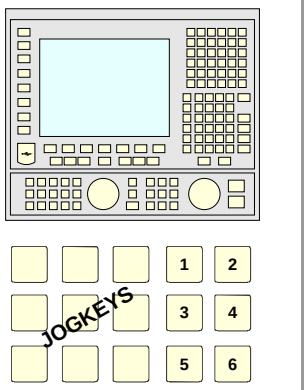
Value.	Meaning.
0	Pressed axis. The axis will move while both keys are pressed, the axis key and the direction key.
1	Selected axis. Pressing the axis key selects the axis. The axis will move while the direction key is kept pressed.

2.5.3 Configure the user keys as jog keys

(V.)MPMAN.USERKEYDEF[uk]
(V.)MPMAN.USERKEYBD1DEF[uk]
(V.)MPMAN.USERKEYBD2DEF[uk]
..
(V.)MPMAN.USERKEYBD8DEF[uk]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

User key [uk] as jog key.

JOG-PANEL	LCD-10K
	

Syntax.

·uk· User key number.

V.MPMAN.USERKEYDEF[7]	User key ·7· of first keyboard.
V.MPMAN.USERKEYBD3DEF[7]	User key ·7· of third keyboard.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	The key has no function assigned to it.
1 ·· 16	The key is assigned to the logic axis 1, 2, ··, 16 for movements in the positive direction.
-1 ·· -16	The key is assigned to the logic axis 1, 2, ··, 16 for movements in the negative direction.
101 ·· 116	The key is assigned to the logic axis 1, 2, ··, 16.
300	The key is assigned to the rapid movement.
301	The key is assigned to the movement in the positive direction.
302	The key is assigned to the movement in the negative direction.

Remarks.

The logic number of the axes is determined by the order in which the axes have been defined in the machine parameter table. The first axis of the table will be logic axis -1- and so on.

(V.)MPMAN.HBLS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

This parameter indicates whether there is a portable panel HBLS connected to the CNC through the serial line or not.

V.MPMAN.HBLS

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.6 Variables related to machine parameters for M functions.

(V.)MPM.MTABLESIZE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

"M" function table. Number of table elements.

V.MPM.MTABLESIZE	

(V.)MPM.MNUM[pos]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Position [pos] of the "M" function table. "M" function number.

If the variable returns a ·-1· value, it means that no "M" function has been defined in that position.

Syntax.

·pos· Position inside the "M" function table.

V.MPM.MNUM[12]	Position ·12· of the "M" function table.

(V.)MPM.SYNCHTYPE[pos]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Position [pos] of the "M" function table. Type of synchronism.

Since the M functions may be programmed together with the movement of the axes, in the same block, it must be indicated when the function is to be sent out to the PLC and when it will be checked that it has been already executed (synchronization). The M functions may be sent and/or synchronized before or after the movement.

Syntax.

·pos· Position inside the "M" function table.

V.MPM.SYNCHTYPE[12]	Position ·12· of the "M" function table.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Without synchronization.
2	The M function is both sent to the PLC and synchronized before the movement.
4	The M function is sent to the PLC before the movement and synchronized after the movement.
8	The M function is both sent to the PLC and synchronized after the movement.

(V.)MPM.MPROGNAME[pos]

Variable to be read via interface.

Position [pos] of the "M" function table. Name of the associated subroutine.

MPM.MPROGNAME[12]	Position ·12· of the "M" function table.

(V.)MPM.MTIME[pos]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Position [pos] of the "M" function table. Estimated execution time (in milliseconds).

Syntax.

·pos· Position inside the "M" function table.

V.MPM.MTIME[12]	Position ·12· of the "M" function table.

(V.)MPM.MPLC[pos]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Position [pos] of the "M" function table. Send the M function to the PLC during block search.

Syntax.

·pos· Position inside the "M" function table.

V.MPM.MPLC[12]	Position ·12· of the "M" function table.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

2.7 Variables related to kinematic machine parameters.

2.7.1 Kinematics configuration.

(V.)MPK.NKIN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics table. Number of kinematics defined.

```
V.MPK.NKIN
```

(V.)MPK.TYPE[kin]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Kinematics type.

Syntax.

·kin· Number of the kinematics.

```
V.MPK.TYPE[3]                    Kinematics ·3·.
```

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Orthogonal or spherical spindle head YX.
2	Orthogonal or spherical spindle head ZX.
3	Orthogonal or spherical spindle head XY.
4	Orthogonal or spherical spindle head ZY.
5	Swivel (angular) spindle XZ.
6	Swivel (angular) spindle YZ.
7	Swivel (angular) spindle ZX.
8	Swivel (angular) spindle ZY.
9	Rotary table AB.
10	Rotary table AC.
11	Rotary table BA.
12	Rotary table BC.
13	Spindle - table AB.
14	Spindle - table AC.
15	Spindle - table BA.
16	Spindle - table BC.
17	Orthogonal spindle with three rotary axes ABA.
18	Orthogonal spindle with three rotary axes ACA.
19	Orthogonal spindle with three rotary axes ACB.
20	Orthogonal spindle with three rotary axes BAB.
21	Orthogonal spindle with three rotary axes BCA.
22	Orthogonal spindle with three rotary axes BCB.
23	Orthogonal spindle with three rotary axes CAB.
24	Orthogonal spindle with three rotary axes CBA.
41	"C" axis. Machining on the face of the part when ALIGNC = YES.
42	"C" axis. Machining on the face of the part when ALIGNC = NO.

Value.	Meaning.
43	"C" axis. Machining of the turning side of the part.
50	Vectorial definition of spindle kinematics.
51	Vectorial definition of table kinematics.
52	Vectorial definition of spindle-table kinematics.
100 ·· 105	OEM Kinematics.

(V.)MPK.TDATAkin[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Value of parameter TDATA [nb].

Syntax.

·kin· Number of the kinematics.

·nb· Parameter number.

V.MPK.TDATA2[34]	Kinematics ·2·. Value of parameter TDATA34.

(V.)MPK.TDATAFkin[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Value of parameter TDATA [nb] (value x10000).

Syntax.

·kin· Number of the kinematics.

·nb· Parameter number.

V.MPK.TDATAF2[34]	Kinematics ·2·. Value of parameter TDATA34.

(V.)MPK.TDATA_Ikin[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Value of parameter TDATA_I [nb].

Syntax.

·kin· Number of the kinematics.

·nb· Parameter number.

V.MPK.TDATA_I2[23]	Kinematics ·2·. Value of parameter TDATA_I23.

(V.)MPK.MAXOFTDATAkin[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Maximum offset allowed for parameter TDATA [nb].

Syntax.

·kin· Number of the kinematics.

·nb· Parameter number.

V.MPK.MAXOFTDATA2[34]	Kinematics ·2·. Parameter TDATA34.

(V.)MPK.MAXOFTDATAFkin[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Maximum offset allowed for parameter TDATA [nb] (value x10000).

Syntax.

·kin· Number of the kinematics.

·nb· Parameter number.

V.MPK.MAXOFTDATAF2[34]	Kinematics ·2·. Parameter TDATA34.

(V.)MPK.MAXOFTDATA_Ikin[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Maximum offset allowed for parameter TDATA_I [nb].

Syntax.

·kin· Number of the kinematics.

·nb· Parameter number.

V.MPK.MAXOFTDATA_I2[34]	Kinematics ·2·. Parameter TDATA34.

(V.)MPK.NKINAX[kin]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Number of axes of the kinematics.

Syntax.

·kin· Number of the kinematics.

V.MPK.NKINAX[2]	Kinematics ·2·.

(V.)MPK.PARAM_D_SIZE[kin]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Number of parameters in decimal format

Syntax.

·kin· Number of the kinematics.

V.MPK.PARAM_D_SIZE[2]	Kinematics ·2·.

(V.)MPK.PARAM_I_SIZE[kin]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Number of parameters in integer format.

Syntax.

·kin· Number of the kinematics.

V.MPK.PARAM_I_SIZE[2]	Kinematics ·2·.

(V.)MPK.AUXCTE_SIZE[kin]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Size of the area of auxiliary variables.

Syntax.

·kin· Number of the kinematics.

V.MPK.AUXCTE_SIZE[2]	Kinematics ·2·.

(V.)MPK.KINDATA_SIZE[kin]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Kinematics [kin]. Size of the area for general purpose data.

Syntax.

·kin· Number of the kinematics.

V.MPK.KINDATA_SIZE[2]	Kinematics ·2·.

2.7.2 Configuration of angular transformations.

(V.)MPK.NANG

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of angular transformations defined.

V.MPK.NANG

(V.)MPK.ANGAXNA[ang]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Angular transformation [ang]. Logic number of the angular axis.

Syntax.

·ang· Number of the angular transformation.

V.MPK.ANGAXNA[2]	Angular transformation ·2·.

Remarks.

The logic number of the axes is determined by the order in which the axes have been defined in the machine parameter table. The first axis of the table will be logic axis -1- and so on.

(V.)MPK.ORTAXNA[ang]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Angular transformation [ang]. Logic number of the orthogonal axis.

Syntax.

·ang· Number of the angular transformation.

V.MPK.ORTAXNA[2]	Angular transformation ·2·.

Remarks.

The logic number of the axes is determined by the order in which the axes have been defined in the machine parameter table. The first axis of the table will be logic axis -1- and so on.

(V.)MPK.ANGANTR[ang]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Angular transformation [ang]. Angle between the Cartesian axis and the incline axis.

Syntax.

·ang· Number of the angular transformation.

V.MPK.ORTAXNA[2]	Angular transformation ·2·.

(V.)MPK.OFFANGAX[ang]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Angular transformation [ang]. Offset of the origin of the angular transformation.

Syntax.

·ang· Number of the angular transformation.

V.MPK.OFFANGAX[2]	Angular transformation ·2·.

2.8 Variables related to machine parameters for the tool magazine.

(V.)TM.NTOOLMZ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of tool magazines.

V.TM.NTOOLMZ

(V.)TM.MZGROUND

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Ground tools are permitted (manual load).

V.TM.MZGROUND

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)TM.MZSIZE[mz]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Tool magazine [mz]. Size of the tool magazine (number of pockets).

Syntax.

·mz· Type of tool magazine.

V.TM.MZSIZE[2]	Magazine ·2·.

(V.)TM.MZRANDOM[mz]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Tool magazine [mz]. Random magazine.

In a random tool magazine, the tools can occupy any position. In a non-random tool magazine, the tools always occupy the same position.

Syntax.

·mz· Type of tool magazine.

V.TM.MZRANDOM[2]	Magazine ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	It is not a random tool magazine.
1	It is a random tool magazine.

(V.)TM.MZTYPE[mz]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Tool magazine [mz]. Type of magazine.

Syntax.

·mz· Type of tool magazine.

V.TM.MZTYPE[2]	Magazine ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Asynchronous.
2	Synchronous.
3	Turret
4	Synchronous with 2 arms.
5	Synchronous with 1 arm.

(V.)TM.MZCYCLIC[mz]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Tool magazine [mz]. Cyclic tool changer.

A cyclic tool changer requires a tool change command (function M06) after searching a tool and before searching the next one. In a non-cyclic magazine, it is possible to perform several consecutive tool searches without necessarily having to change the tool.

Syntax.

·mz· Type of tool magazine.

V.TM.MZCYCLIC[2]	Magazine ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	It is not a cyclic tool magazine.
1	It is a cyclic tool magazine.

(V.)TM.MZOPTIMIZED[mz]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Tool magazine [mz]. Tool management.

When programming several T's in a row without M06, a magazine with optimized management only looks for the tool to be changed; a magazine without optimized management looks for all the tools.

Syntax.

·mz· Type of tool magazine.

V.TM.MZOPTIMIZED[2]	Magazine ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	The tool magazine has no optimized management.
1	The tool magazine has optimized management.

(V.)TM.MZRESPECTSIZES[mz]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Tool magazine [mz]. In the random magazine, look for pockets of the same size.

Syntax.

·mz· Type of tool magazine.

V.TM.MZRESPECTSIZES[2]	Magazine ·2·.

(V.)TM.MZM6ALONE[mz]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Tool magazine [mz]. Action after executing an M6 without having selected a tool.

Syntax.

·mz· Type of tool magazine.

V.TM.MZM6ALONE[2]	Magazine ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No action is carried out.
1	The CNC issues a warning.
2	The CNC issues an error message.

2.9 Variables related to OEM machine parameters.

2.9.1 Generic OEM parameters.

(V.)MTB.SIZE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of OEM parameters.

V.MPB.SIZE

(V.)MTB.P[i]

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Value of the OEM parameter [nb]

Syntax.

·nb· Parameter number.

V.MTB.P[10]	Value of the OEM parameter P10.

Remarks.

When reading this variable from the PLC, it truncates the decimal side. If the value of the parameter is 54.9876, when read from the PLC, it will return the value 54.

Machine parameter.	Reading from the PLC. MTB.P[0]	Reading from the PLC. V.MTB.PF[0]
P0 = 54.9876	54	549876
P0 = -34.1234	-34	-341234

It must be borne in mind that reading and writing these variables interrupts block preparation affecting program execution time. If the value of the parameter is not going to be changed during execution, it is recommended to read the MTB variables at the beginning of the program using arithmetic parameters (local or global) and use the global ones throughout the program.

(V.)MTB.PF[i]

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Value of the OEM parameter [nb] Value per 10000.

Syntax.

·nb· Parameter number.

V.MTB.PF[10]	Value of the OEM parameter P10.

Remarks.

When reading this variable from the PLC, it returns the value in ten-thousandths. If the value of the parameter is 54.9876, when read from the PLC, it will return the value 549876.

Machine parameter.	Reading from the PLC. MTB.P[0]	Reading from the PLC. V.MTB.PF[0]
P0 = 54.9876	54	549876
P0 = -34.1234	-34	-341234

It must be borne in mind that reading and writing these variables interrupts block preparation affecting program execution time. If the value of the parameter is not going to be changed during execution, it is recommended to read the MTB variables at the beginning of the

program using arithmetic parameters (local or global) and use the global ones throughout the program.

2.9.2 Reading drive variables.

(V.)DRV.SIZE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of variables to be consulted at the drive.

V.DRV.SIZE

(V.)DRV.name
(V.)DRV.name.xn
(V.)DRV.name.sn

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Variables defined in parameter DRIVEVAR that grant access to the variables and/or parameters of the digital drives.

- Sercos. DRV variables can access the variables of the drive. These variables may be read-only or read and written.
- Mechatrolink. DRV variables can access the variables and/or parameters of the drive. The variables of the drive can only be read, whereas the parameters may be read or written.

Syntax.

·name·Mnemonic name set at the machine parameters.

·xn· Axis name.

·sn· Spindle name.

V.DRV.FEED	Value of the variable defined as FEED.
V.DRV.AXISFEED.Z	Value of the variable defined as AXISFEED for the Z axis.
V.DRV.AXISFEED.S	Value of the variable defined as AXISFEED for the spindle S.

PLC RELATED VARIABLES.

3

3.1 Variables associated with the status and resources of the PLC.

3.1.1 PLC status.

(V.)PLC.STATUS

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

PLC status.

```
V.PLC.STATUS
```

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	PLC stopped.
1	PLC running.

3.1.2 PLC resources.

(V.)PLC.I[nb]

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of PLC digital input [nb].

Syntax.

·nb· Number of the digital input.

V.PLC.I[122]	Status of PLC digital input ·122·.

(V.)PLC.O[nb]

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of PLC digital output [nb].

Syntax.

·nb· Number of the digital output.

V.PLC.O[243]	Status of PLC digital output ·243·.

(V.)PLC.LI[nb]

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of PLC local digital input [nb].

Syntax.

·nb· Number of the digital input.

V.PLC.LI[2]	Status of PLC local digital input ·2·.

(V.)PLC.LO[nb]

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of PLC local digital output [nb].

Syntax.

·nb· Number of the digital output.

V.PLC.LO[3]	Status of PLC local digital output ·3·.

(V.)PLC.M[nb]

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of PLC mark [nb].

Syntax.

·nb· Mark number.

V.PLC.M[111]	Status of PLC mark ·111·.

(V.)PLC.R[nb]

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of PLC register [nb].

Syntax.

·nb· Register number.

V.PLC.R[200]	Status of PLC register ·200·.

(V.)PLC.T[nb]

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.

Status of PLC timer [nb]

Syntax.

·nb· Timer number.

V.PLC.T[8]	Status of PLC timer ·8·.

(V.)PLC.C[nb]

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.

Status of PLC counter [nb].

Syntax.

·nb· Counter number.

V.PLC.C[16]	Status of PLC counter ·16·.

3.1.3 PLC messages.

(V.)PLC.MSG[msg]

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of PLC message [msg].

Syntax.

·msg· Message number.

V.PLC.MSG[87]	Status of message 87.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Message off.
1	Message on.

(V.)PLC.PRIORMSG

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Active message with the highest priority (the one with the lowest number among the active ones).

V.PLC.PRIORMSG

(V.)PLC.EMERGMSG

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Active emerging message (the one shown at full screen).

V.PLC.EMERGMSG

3.1.4 PLC errors.

(V.)PLC.ERR[err]

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of PLC error [err].

Syntax.

·err· Error number.

V.PLC.ERR[62]	Status of error 62.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Error off.
1	Error on.

(V.)PLC.PRIORERR

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Active error with the highest priority (the one with the lowest number among the active ones).

V.PLC.PRIORERR

3.1.5 PLC clocks.

(V.)PLC.TIMER

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Value of the freely available clock (in seconds).

V.PLC.TIMER

This variable may be used to consult and/or modify the timing of the clock. Value in seconds.

Remarks.

The PLC "TIMER" is enabled or disabled with the PLC mark TIMERON. This clock is timing when TIMERON=1.

(V.)PLC.CLKnb

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of PLC clock nb.

V.PLC.CLK128

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Clock off.
1	Clock on.

3.2 PLC consulting logic signals; general.

(V.)PLC.CNCREADY

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates the mark when it is not in an error state.

V.PLC.CNCREADY

(V.)PLC.READY

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when it is not in an error state.

V.PLC.READYC1	Channel ·1·.
V.PLC.READYC2	Channel ·2·.
V.PLC.READYC3	Channel ·3·.
V.PLC.READYC4	Channel ·4·.

(V.)PLC.SERCOSRDY

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates the mark when the Sercos ring has been initialized properly.

V.PLC.SERCOSRDY

(V.)PLC.START

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates this mark when the [START] key has been pressed.

V.PLC.START	Channel ·1·.
V.PLC.STARTC1	Channel ·1·.
V.PLC.STARTC2	Channel ·2·.
V.PLC.STARTC3	Channel ·3·.
V.PLC.STARTC4	Channel ·4·.

(V.)PLC.RESETOUT

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

When pressing the [RESET] key or when the PLC activates the RESETIN mark, the CNC assumes the initial conditions and activates the RESETOUT mark.

V.PLC.RESETOUT	Channel ·1·.
V.PLC.RESETOUTC1	Channel ·1·.
V.PLC.RESETOUTC2	Channel ·2·.
V.PLC.RESETOUTC3	Channel ·3·.
V.PLC.RESETOUTC4	Channel ·4·.

(V.)PLC.FHOUT

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC channel activates this mark when the execution of the part-program is interrupted.

V.PLC.FHOUT	Channel ·1·.
V.PLC.FHOUTC1	Channel ·1·.
V.PLC.FHOUTC2	Channel ·2·.
V.PLC.FHOUTC3	Channel ·3·.
V.PLC.FHOUTC4	Channel ·4·.

(V.)PLC._ALARM

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel turns this mark off when there is an alarm or an emergency in the channel.

V.PLC._ALARM	Channel ·1·.
V.PLC._ALARMC1	Channel ·1·.
V.PLC._ALARMC2	Channel ·2·.
V.PLC._ALARMC3	Channel ·3·.
V.PLC._ALARMC4	Channel ·4·.

(V.)PLC.MANUAL

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when the jog mode is selected.

V.PLC.MANUAL	Channel ·1·.
V.PLC.MANUALC1	Channel ·1·.
V.PLC.MANUALC2	Channel ·2·.
V.PLC.MANUALC3	Channel ·3·.
V.PLC.MANUALC4	Channel ·4·.

(V.)PLC.AUTOMAT

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when the automatic mode is selected.

V.PLC.AUTOMAT	Channel ·1·.
V.PLC.AUTOMATC1	Channel ·1·.
V.PLC.AUTOMATC2	Channel ·2·.
V.PLC.AUTOMATC3	Channel ·3·.
V.PLC.AUTOMATC4	Channel ·4·.

(V.)PLC.MDI

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when the MDI/MDA mode is selected.

V.PLC.MDI	Channel ·1·.
V.PLC.MDIC1	Channel ·1·.
V.PLC.MDIC2	Channel ·2·.
V.PLC.MDIC3	Channel ·3·.
V.PLC.MDIC4	Channel ·4·.

(V.)PLC.SBOUT

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when the single-block mode is selected.

V.PLC.SBOUT	Channel ·1·.
V.PLC.SBOUTC1	Channel ·1·.
V.PLC.SBOUTC2	Channel ·2·.
V.PLC.SBOUTC3	Channel ·3·.
V.PLC.SBOUTC4	Channel ·4·.

(V.)PLC.INCYCLE

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when it is executing a block or moving an axis.

V.PLC.INCYCLE	Channel ·1·.
V.PLC.INCYCLEC1	Channel ·1·.
V.PLC.INCYCLEC2	Channel ·2·.
V.PLC.INCYCLEC3	Channel ·3·.
V.PLC.INCYCLEC4	Channel ·4·.

(V.)PLC.RAPID

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when it is executing a rapid positioning (G00).

V.PLC.RAPID	Channel ·1·.
V.PLC.RAPIDC1	Channel ·1·.
V.PLC.RAPIDC2	Channel ·2·.
V.PLC.RAPIDC3	Channel ·3·.
V.PLC.RAPIDC4	Channel ·4·.

(V.)PLC.ZERO

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates this mark when searching home (G74).

V.PLC.ZERO	Channel ·1·.
V.PLC.ZEROC1	Channel ·1·.
V.PLC.ZEROC2	Channel ·2·.
V.PLC.ZEROC3	Channel ·3·.
V.PLC.ZEROC4	Channel ·4·.

(V.)PLC.PROBE

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when it is executing a probing movement (G100).

V.PLC.PROBE	Channel ·1·.
V.PLC.PROBEC1	Channel ·1·.
V.PLC.PROBEC2	Channel ·2·.
V.PLC.PROBEC3	Channel ·3·.
V.PLC.PROBEC4	Channel ·4·.

(V.)PLC.THREAD

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when it is executing an electronic threading (G33).

V.PLC.THREAD	Channel ·1·.
V.PLC.THREADC1	Channel ·1·.
V.PLC.THREADC2	Channel ·2·.
V.PLC.THREADC3	Channel ·3·.
V.PLC.THREADC4	Channel ·4·.

(V.)PLC.TAPPING

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when it is executing a tapping canned cycle.

V.PLC.TAPPING	Channel ·1·.
V.PLC.TAPPINGC1	Channel ·1·.
V.PLC.TAPPINGC2	Channel ·2·.
V.PLC.TAPPINGC3	Channel ·3·.
V.PLC.TAPPINGC4	Channel ·4·.

(V.)PLC.RIGID

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when it is executing a rigid tapping cycle (G63).

V.PLC.RIGID	Channel ·1·.
V.PLC.RIGIDC1	Channel ·1·.
V.PLC.RIGIDC2	Channel ·2·.
V.PLC.RIGIDC3	Channel ·3·.
V.PLC.RIGIDC4	Channel ·4·.

(V.)PLC.CSS

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates this mark when constant surface speed (G96) is active.

V.PLC.CSS	Channel ·1·.
V.PLC.CSSC1	Channel ·1·.
V.PLC.CSSC2	Channel ·2·.
V.PLC.CSSC3	Channel ·3·.
V.PLC.CSSC4	Channel ·4·.

(V.)PLC.INTEREND

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when the theoretical movement of the axes is completed.

V.PLC.INTEREND	Channel ·1·.
V.PLC.INTERENDC1	Channel ·1·.
V.PLC.INTERENDC2	Channel ·2·.
V.PLC.INTERENDC3	Channel ·3·.
V.PLC.INTERENDC4	Channel ·4·.

(V.)PLC.INPOSI

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when the axes are in position. This mark also remains active during the movement of independent axes.

V.PLC.INPOSI	Channel ·1·.
V.PLC.INPOSIC1	Channel ·1·.
V.PLC.INPOSIC2	Channel ·2·.
V.PLC.INPOSIC3	Channel ·3·.
V.PLC.INPOSIC4	Channel ·4·.

(V.)PLC.SPN1
(V.)PLC.SPN2
(V.)PLC.SPN3
(V.)PLC.SPN4
(V.)PLC.SPN5

(V.)PLC.SPN6
(V.)PLC.SPN7

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel indicates in these registers which spindle of the channel the M functions pending execution are addressed to.

There is a register for each channel. The mnemonics for each channel are the following. Here is an example of the mnemonics for SPN1; it is the same for the rest of the registers.

V.PLC.SPN1C1	Channel ·1·.
V.PLC.SPN1C2	Channel ·2·.
V.PLC.SPN1C3	Channel ·3·.
V.PLC.SPN1C4	Channel ·4·.

(V.)PLC.MFUN1
(V.)PLC.MFUN2
(V.)PLC.MFUN3
(V.)PLC.MFUN4
(V.)PLC.MFUN5
(V.)PLC.MFUN6
(V.)PLC.MFUN7

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel indicates in these registers the H functions pending execution.

There is a register for each channel. The mnemonics for each channel are the following. Here is an example of the mnemonics for MFUN1; it is the same for the rest of the registers.

V.PLC.MFUN1	Channel ·1·.
V.PLC.MFUN1C1	Channel ·1·.
V.PLC.MFUN1C2	Channel ·2·.
V.PLC.MFUN1C3	Channel ·3·.
V.PLC.MFUN1C4	Channel ·4·.

(V.)PLC.HFUN1
(V.)PLC.HFUN2
(V.)PLC.HFUN3
(V.)PLC.HFUN4
(V.)PLC.HFUN5
(V.)PLC.HFUN6
(V.)PLC.HFUN7

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel indicates in these registers the H functions pending execution.

There is a register for each channel. The mnemonics for each channel are the following. Here is an example of the mnemonics for HFUN1; it is the same for the rest of the registers.

V.PLC.HFUN1	Channel ·1·.
V.PLC.HFUN1C1	Channel ·1·.
V.PLC.HFUN1C2	Channel ·2·.
V.PLC.HFUN1C3	Channel ·3·.
V.PLC.HFUN1C4	Channel ·4·.

(V.)PLC.MSTROBE

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates this mark to indicate to the PLC that it must execute the M functions indicated in MFUN1 through MFUN7.

V.PLC.MSTROBE	Channel ·1·.
V.PLC.MSTROBEC1	Channel ·1·.
V.PLC.MSTROBEC2	Channel ·2·.
V.PLC.MSTROBEC3	Channel ·3·.
V.PLC.MSTROBEC4	Channel ·4·.

(V.)PLC.HSTROBE

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates this mark to indicate to the PLC that it must execute the H functions indicated in HFUN1 through HFUN7.

V.PLC.HSTROBE	Channel ·1·.
V.PLC.HSTROBEC1	Channel ·1·.
V.PLC.HSTROBEC2	Channel ·2·.
V.PLC.HSTROBEC3	Channel ·3·.
V.PLC.HSTROBEC4	Channel ·4·.

(V.)PLC.SFUN1
(V.)PLC.SFUN2
(V.)PLC.SFUN3
(V.)PLC.SFUN4

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel indicates in these registers the speed programmed in each spindle.

V.PLC.SFUN1	Spindle ·1·.
V.PLC.SFUN2	Spindle ·2·.
V.PLC.SFUN3	Spindle ·3·.
V.PLC.SFUN4	Spindle ·4·.

(V.)PLC.SSTROBE

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates this mark to indicate to the PLC that a new spindle speed has been selected in registers SFUN1 through SFUN4.

V.PLC.SSTROBE	Channel ·1·.
V.PLC.SSTROBE1	Channel ·1·.
V.PLC.SSTROBE2	Channel ·2·.
V.PLC.SSTROBE3	Channel ·3·.
V.PLC.SSTROBE4	Channel ·4·.

(V.)PLC.DM00
(V.)PLC.DM01
(V.)PLC.DM02
(V.)PLC.DM06
(V.)PLC.DM08

(V.)PLC.DM09
(V.)PLC.DM30

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC indicates in these marks the status of the M functions. This mark is active if the M function is active.

Each one of functions M00, M01, M02, M06, M08, M09, M30 has a mark for each channel. Here is an example of the mnemonics for DM00; it is the same for the rest of the marks (DM01, DM02, DM06, DM08, DM09, DM30).

V.PLC.DM00	Channel ·1·.
V.PLC.DM00C1	Channel ·1·.
V.PLC.DM00C2	Channel ·2·.
V.PLC.DM00C3	Channel ·3·.
V.PLC.DM00C4	Channel ·4·.

(V.)PLC.DM03
(V.)PLC.DM04
(V.)PLC.DM05
(V.)PLC.DM19
(V.)PLC.DM41
(V.)PLC.DM42
(V.)PLC.DM43
(V.)PLC.DM44

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC indicates in these marks the status of the spindle M functions. This mark is active if the M function is active.

Each one of functions M03, M04, M05, M19, M41, M42, M43, M44 has a mark for each spindle. Here is an example of the mnemonics for DM03; it is the same for the rest of the marks (DM04, DM05, DM19, DM41, DM42, DM43, DM44).

V.PLC.DM03	Spindle ·1·.
V.PLC.DM03SP1	Spindle ·1·.
V.PLC.DM03SP2	Spindle ·2·.
V.PLC.DM03SP3	Spindle ·3·.
V.PLC.DM03SP4	Spindle ·4·.

(V.)PLC.BLKSEARCH

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when the block-search mode is active.

V.PLC.BLKSEARCH	Channel ·1·.
V.PLC.BLKSEARCHC1	Channel ·1·.
V.PLC.BLKSEARCHC2	Channel ·2·.
V.PLC.BLKSEARCHC3	Channel ·3·.
V.PLC.BLKSEARCHC4	Channel ·4·.

(V.)PLC.ADVINPOS

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates a certain amount of time before the axes reach position. The amount of time is set by parameter ANTIME.

V.PLC.ADVINPOS	Channel ·1·.
V.PLC.ADVINPOSC1	Channel ·1·.
V.PLC.ADVINPOSC2	Channel ·2·.
V.PLC.ADVINPOSC3	Channel ·3·.
V.PLC.ADVINPOSC4	Channel ·4·.

(V.)PLC.CAXIS

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC channel sets this mark when there is a spindle working as C axis. This mark is kept active while any of the functions #CAX, #FACE or #CYL are kept active.

V.PLC.CAXIS	Channel ·1·.
V.PLC.CAXISC1	Channel ·1·.
V.PLC.CAXISC2	Channel ·2·.
V.PLC.CAXISC3	Channel ·3·.
V.PLC.CAXISC4	Channel ·4·.

(V.)PLC.FREE

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when it can accept a block sent with CNCEX.

V.PLC.FREEC1	Channel ·1·.
V.PLC.FREEC2	Channel ·2·.
V.PLC.FREEC3	Channel ·3·.
V.PLC.FREEC4	Channel ·4·.

(V.)PLC.WAITOUT

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when it is waiting for a synchronism signal.

V.PLC.WAITOUTC1	Channel ·1·.
V.PLC.WAITOUTC2	Channel ·2·.
V.PLC.WAITOUTC3	Channel ·3·.
V.PLC.WAITOUTC4	Channel ·4·.

(V.)PLC.MMCWDG

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates this mark when the operating system is locked up.

V.PLC.MMCWDG

(V.)PLC.RETRAEND

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates this mark to cancel the retrace function.

V.PLC.RETRAENDC1	Channel ·1·.
V.PLC.RETRAENDC2	Channel ·2·.
V.PLC.RETRAENDC3	Channel ·3·.
V.PLC.RETRAENDC4	Channel ·4·.

(V.)PLC.TANGACTIV

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The channel activates the mark when a tangential control is active.

V.PLC.TANGACTIVC1	Channel ·1·.
V.PLC.TANGACTIVC2	Channel ·2·.
V.PLC.TANGACTIVC3	Channel ·3·.
V.PLC.TANGACTIVC4	Channel ·4·.

(V.)PLC.PSWSET

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates this mark when there is an OEM password.

V.PLC.PSWSET

(V.)PLC.DINDISTC1
(V.)PLC.DINDISTC2
(V.)PLC.DINDISTC3
(V.)PLC.DINDISTC4

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These marks are related to the dynamic machining distribution between channels (#DINDIST instruction), for the option to distribute passes between channels. During the roughing operation of the cycle, the CNC channel activates these marks to indicate which channel has the cycle been programmed in and which are the channels involved in the distribution of the passes. During the finishing operation, the CNC channel cancels all these marks.

(V.)PLC.DINDISTC1
(V.)PLC.DINDISTC2
(V.)PLC.DINDISTC3
(V.)PLC.DINDISTC4

(V.)PLC.SERPLCAC

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

This mark is related to the change of the work set or of the parameter set of a Sercos drive (variable (V.)[ch].A.SETGE.xn). The CNC activates the mark to indicate that the requested change is being carried out.

V.PLC.SERPLCAC

(V.)PLC.OVERTEMP

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

This mark indicates the temperature status of the CNC. This mark is deactivated while the CNC temperature is correct. When the CNC temperature exceeds the maximum allowed (60 ºC, 140 ºF), the CNC activates this mark and issues a warning to indicate this situation. The CNC will deactivate this mark when the temperature of the unit goes below the maximum allowed. The CNC checks its temperature every minute.

V.PLC.OVERTEMP

(V.)PLC.MLINKRDY

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates the mark when the Mechatrolink bus has been initialized properly.

V.PLC.MLINKRDY

3.3 PLC consulting logic signals; axes and spindles.

(V.)PLC.ENABLExn
(V.)PLC.ENABLEsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates this mark to allow moving the axis or the spindle.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.ENABLEX	X axis.
V.PLC.ENABLES	Spindle S.
V.PLC.ENABLE3	Axis or spindle with logic number ·3·.

(V.)PLC.DIRxn
(V.)PLC.DIRsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC turns this mark on when moving the axis in the negative direction and turns it off when moving the axis in the positive direction. When the axis is stopped, the mark keeps its last value.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.DIRX	X axis.
V.PLC.DIRS	Spindle S.
V.PLC.DIR3	Axis or spindle with logic number ·3·.

(V.)PLC.REFPOINxn
(V.)PLC.REFPOINsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates this mark after a home search.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.REFPOINX	X axis.
V.PLC.REFPOINS	Spindle S.
V.PLC.REFPOIN3	Axis or spindle with logic number ·3·.

(V.)PLC.DRSTAFxn
(V.)PLC.DRSTAFsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC uses these marks to indicate the drive status.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.DRSTAFX	X axis.
V.PLC.DRSTAFS	Spindle S.
V.PLC.DRSTAF3	Axis or spindle with logic number ·3·.

(V.)PLC.DRSTASxn
(V.)PLC.DRSTASsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC uses these marks to indicate the drive status.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.DRSTASX	X axis.
V.PLC.DRSTASS	Spindle S.
V.PLC.DRSTAS3	Axis or spindle with logic number ·3·.

(V.)PLC.INPOSxn
(V.)PLC.INPOSsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates the mark when the axis or the spindle is in position.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.INPOSX	X axis.
V.PLC.INPOSS	Spindle S.
V.PLC.INPOS3	Axis or spindle with logic number ·3·.

(V.)PLC.LUBRxn
(V.)PLC.LUBRsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates the mark when the axis or the spindle must be lubricated.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.LUBRX	X axis.
V.PLC.LUBRS	Spindle S.
V.PLC.LUBR3	Axis or spindle with logic number ·3·.

(V.)PLC.HIRTHONxn
(V.)PLC.HIRTHONsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates the mark when the axis or the spindle works as Hirth axis.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.HIRTHX	X axis.
V.PLC.HIRTHS	Spindle S.
V.PLC.HIRTH3	Axis or spindle with logic number ·3·.

(V.)PLC.MATCHxn
(V.)PLC.MATCHsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates the mark when the Hirth axis or spindle is positioned properly.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.MATCHX	X axis.
V.PLC.MATCHS	Spindle S.
V.PLC.MATCH3	Axis or spindle with logic number ·3·.

(V.)PLC.PARKxn
(V.)PLC.PARKsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates the mark when it is parking the axis or the spindle.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.PARKX	X axis.
V.PLC.PARKS	Spindle S.
V.PLC.PARK3	Axis or spindle with logic number ·3·.

(V.)PLC.UNPARKxn
(V.)PLC.UNPARKsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates the mark when it is unparking the axis or the spindle.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.UNPARKX	X axis.
V.PLC.UNPARKS	Spindle S.
V.PLC.UNPARK3	Axis or spindle with logic number ·3·.

(V.)PLC.ACTFBACKxn
(V.)PLC.ACTFBACKsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

In systems with external+internal feedback, the CNC turns this mark on when it is using the external feedback and turns it off when it is using the internal feedback.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.ACTFBACKX	X axis.
V.PLC.ACTFBACKS	Spindle S.
V.PLC.ACTFBACK3	Axis or spindle with logic number ·3·.

(V.)PLC.TANGACTxn
(V.)PLC.TANGACTsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates the mark when tangential control is active on the axis or spindle.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.TANGACTX	X axis.
V.PLC.TANGACTS	Spindle S.
V.PLC.TANGACT3	Axis or spindle with logic number ·3·.

(V.)PLC.LOPENxn
(V.)PLC.LOPENsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The CNC activates this mark to inform the PLC that the axis position loop is open.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.LOPENX	X axis.
V.PLC.LOPENS	Spindle S.
V.PLC.LOPEN3	Axis or spindle with logic number ·3·.

(V.)PLC.MAXDIFFxn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

The CNC cannot correct the position difference between the master axis and the slave axis.

3.4 PLC consulting logic signals; spindles.

(V.)PLC.REVOK

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The spindle turns this mark on when it reaches the programmed rpm.

The mark is also on when the spindle is stopped (M05) or in position (M19, G63).

V.PLC.REVOK	Spindle ·1·.
V.PLC.REVOK1	Spindle ·1·.
V.PLC.REVOK2	Spindle ·2·.
V.PLC.REVOK3	Spindle ·3·.
V.PLC.REVOK4	Spindle ·4·.

(V.)PLC.SYNCMASTER

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The master spindle activates this mark when it has a spindle synchronized using #SYNC.

V.PLC.SYNCHRON1	Spindle ·1·.
V.PLC.SYNCHRON2	Spindle ·2·.
V.PLC.SYNCHRON3	Spindle ·3·.
V.PLC.SYNCHRON4	Spindle ·4·.

(V.)PLC.SYNCHRON

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The slave spindle activates this mark at the beginning of a synchronization using #SYNC.

V.PLC.SYNCHRON1	Spindle ·1·.
V.PLC.SYNCHRON2	Spindle ·2·.
V.PLC.SYNCHRON3	Spindle ·3·.
V.PLC.SYNCHRON4	Spindle ·4·.

(V.)PLC.SYNCHRONP

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The slave spindle activates this mark at the beginning of a synchronization in position.

V.PLC.SYNCHRONP1	Spindle ·1·.
V.PLC.SYNCHRONP2	Spindle ·2·.
V.PLC.SYNCHRONP3	Spindle ·3·.
V.PLC.SYNCHRONP4	Spindle ·4·.

(V.)PLC.SYNSPEED

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The slave spindle activates this mark when it is synchronized in velocity.

V.PLC.SYNSPEED1	Spindle ·1·.
V.PLC.SYNSPEED2	Spindle ·2·.
V.PLC.SYNSPEED3	Spindle ·3·.
V.PLC.SYNSPEED4	Spindle ·4·.

(V.)PLC.SYNCPOSI

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The slave spindle activates this mark when it is synchronized in position.

V.PLC.SYNCPOSI1	Spindle ·1·.
V.PLC.SYNCPOSI2	Spindle ·2·.
V.PLC.SYNCPOSI3	Spindle ·3·.
V.PLC.SYNCPOSI4	Spindle ·4·.

(V.)PLC.GEAROK

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The spindle activates this mark when the parameter set selected at the CNC and at the PLC are the same.

V.PLC.GEAROK	Spindle ·1·.
V.PLC.GEAROK1	Spindle ·1·.
V.PLC.GEAROK2	Spindle ·2·.
V.PLC.GEAROK3	Spindle ·3·.
V.PLC.GEAROK4	Spindle ·4·.

3.5 PLC consulting logic signals; independent interpolator.

(V.)PLC.IBUSYxn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The interpolator is active when there is an instruction pending execution.

Syntax.

·xn· Name or logic number of the axis.

V.PLC.IBUSYX	X axis.
V.PLC.IBUSY3	Axis with logic number ·3·.

(V.)PLC.IFREExn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The interpolator turns this mark on when it is ready to accept a motion block.

Syntax.

·xn· Name or logic number of the axis.

V.PLC.IFREEX	X axis.
V.PLC.IFREE3	Axis with logic number ·3·.

(V.)PLC.IFHOUTxn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The interpolator turns this mark on when the execution is interrupted.

Syntax.

·xn· Name or logic number of the axis.

V.PLC.IFHOUTX	X axis.
V.PLC.IFHOUT3	Axis with logic number ·3·.

(V.)PLC.IENDxn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The interpolator turns this mark on when the axis movement has finished and it has reached its the final position.

Syntax.

·xn· Name or logic number of the axis.

V.PLC.IENDX	X axis.
V.PLC.IEND3	Axis with logic number ·3·.

(V.)PLC.INSYNCxn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The interpolator turns this mark on when the axis or the cam has reached synchronism.

Syntax.

·xn· Name or logic number of the axis.

V.PLC.INSYNCX	X axis.
V.PLC.INSYNC3	Axis with logic number ·3·.

3.6 PLC consulting logic signals; laser.

3.6.1 Piercing enabled.

(V.)PLC.PIERCING

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: Value listed.

Piercing enabled. The status of this variable is displayed in the PIERCING mark of the PLC.

```
V.PLC.PIERCING
```

Values of the variable.

Value.	Meaning.
0	Not active.
1	Active.

Remarks.

The OEM can use this variable in the subroutine associated with piercing (by default, Piercing.fst) to change the status of the PIERCING mark and indicate to the PLC when to start (value 1) and end (valor 0) the piercing operation. Entering this variable interrupts the block preparation.

The instruction #PLC also enables a PLC mark to be managed from the part program or subroutine without interrupting the block preparation.

3.6.2 Active cutting.

(V.)PLC.CUTTING

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: Value listed.

Active cutting. The status of this variable is displayed in the CUTTING mark of the PLC.

```
V.PLC.CUTTING
```

Values of the variable.

Value.	Meaning.
0	Not active.
1	Active.

Remarks.

The OEM can use this variable in the subroutines associated with cutting (by default, Cutting.fst / Cuttingoff.fst) to change the status of the CUTTING mark and indicate to the PLC when to start (value 1) and end (valor 0) the cutting operation. Entering this variable interrupts the block preparation.

The instruction #PLC also enables a PLC mark to be managed from the part program or subroutine without interrupting the block preparation.

3.6.3 Technology tables.

(V.)PLC.COMVARACT

The CNC activates this mark when the user validates the common parameters of the active piercing or cutting table. The PLC should disable this mark when management with these variables is complete.

V.PLC.COMVARACT

(V.)PLC.CUTVARACT

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

The CNC activates this mark when the user validates the cutting parameters of the active table. The PLC should disable this mark when management with these variables is complete.

V.PLC.CUTVARACT

Remarks.

When the subroutine Cuttingon.fst changes the cutting type (#CUTTING ON), the CNC does not activate this mark, as the synchronization with the PLC is implemented through M functions.

(V.)PLC.PIRVARACT

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

The CNC activates this mark when the user validates the piercing parameters of the active table. The PLC should disable this mark when management with these variables is complete.

V.PLC.PIRVARACT

Remarks.

When the subroutine Piercing.fst changes the piercing type (#PIERCING), the CNC does not activate this mark, as the synchronization with the PLC is implemented through M functions.

3.6.4 Gap control.

(V.)PLC.INPOSGAP

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

The CNC activates this mark if the gap is within the range defined by the parameters GAPMIN-GAPMAX.

```
V.PLC.INPOSGAP
```

(V.)PLC.INTOL

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

The CNC activates this mark if the gap is within the tolerance limit defined by the parameter GAPTOL regarding the gap value programmed.

```
V.PLC.INTOL
```

3.6.5 Leapfrog.

(V.)PLC.INPOSLIMIT

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: - .

The CNC activates this mark (changes from 0 to 1) when the leap programmed with a #LEAP reaches the highest point (POSLIMIT command). The CNC deactivates this mark (changes from 1 to 0) when the leap starts to lower from this point.

```
V.PLC.INPOSLIMIT
```

Remarks.

If the leap does not reach the highest point due to lack of space, the CNC will not activate this mark. In the event of any error, the CNC will deactivate this mark.

3.7 PLC consulting logic signals; tool manager.

(V.)PLC.TMOPERATION

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The manager indicates in this register the type of operation to be carried out by the PLC.

V.PLC.TMOPERATION	Channel ·1·.
V.PLC.TMOPERATIONC1	Channel ·1·.
V.PLC.TMOPERATIONC2	Channel ·2·.
V.PLC.TMOPERATIONC3	Channel ·3·.
V.PLC.TMOPERATIONC4	Channel ·4·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Do nothing.
1	Take a tool from the magazine and insert it in the spindle.
2	Leave the spindle tool in the magazine.
3	Insert a ground tool in the spindle.
4	Leave the spindle tool on the ground.
5	Leave the spindle tool in the magazine and take another one from the magazine.
6	Leave the spindle tool in the magazine and take another one from ground.
7	Leave the spindle tool on the ground and take another one from the magazine.
8	Leave the spindle tool on the ground and take another one from ground.
9	Take a ground tool to the magazine going through the spindle.
10	Take a tool from the magazine and leave on the ground going through the spindle.
11	Orient the magazine.
12	Leave the spindle tool in the magazine and take another one from the same magazine. Special for a synchronous magazine in the following cases: • Non-random having a tool changer arm with two claws. • Random when having special tools.
13	Orienting two magazines
14	Leave the spindle tool in a magazine and take another one from another magazine.

(V.)PLC.TMOPSTROBE

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The manager turns this mark on to let the PLC know that it must execute the operation indicated by TMOPERATION.

V.PLC.TMOPSTROBE	Channel ·1·.
V.PLC.TMOPSTROBEC1	Channel ·1·.
V.PLC.TMOPSTROBEC2	Channel ·2·.
V.PLC.TMOPSTROBEC3	Channel ·3·.
V.PLC.TMOPSTROBEC4	Channel ·4·.

(V.)PLC.LEAVEPOS

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The manager indicates in this register the magazine position to leave the tool.

V.PLC.LEAVEPOS	Magazine ·1·.
V.PLC.LEAVEPOSMZ1	Magazine ·1·.
V.PLC.LEAVEPOSMZ2	Magazine ·2·.
V.PLC.LEAVEPOSMZ3	Magazine ·3·.
V.PLC.LEAVEPOSMZ4	Magazine ·4·.

(V.)PLC.TAKEPOS

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The manager indicates in this register the magazine position of the tool to be picked up.

V.PLC.TAKEPOS	Magazine ·1·.
V.PLC.TAKEPOSMZ1	Magazine ·1·.
V.PLC.TAKEPOSMZ2	Magazine ·2·.
V.PLC.TAKEPOSMZ3	Magazine ·3·.
V.PLC.TAKEPOSMZ4	Magazine ·4·.

(V.)PLC.NEXTPOS

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The manager indicates in this register the magazine position of the next tool.

V.PLC.NEXTPOS	Magazine ·1·.
V.PLC.NEXTPOSMZ1	Magazine ·1·.
V.PLC.NEXTPOSMZ2	Magazine ·2·.
V.PLC.NEXTPOSMZ3	Magazine ·3·.
V.PLC.NEXTPOSMZ4	Magazine ·4·.

(V.)PLC.TWORNOUT

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The manager turns this mark on when it has rejected the tool.

V.PLC.TWONRNOUT	Channel ·1·.
V.PLC.TWONRNOUTC1	Channel ·1·.
V.PLC.TWONRNOUTC2	Channel ·2·.
V.PLC.TWONRNOUTC3	Channel ·3·.
V.PLC.TWONRNOUTC4	Channel ·4·.

(V.)PLC.TMINEM

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The manager activates the mark when it is in an error state.

V.PLC.TMINEM	Magazine ·1·.
V.PLC.TMINEMZ1	Magazine ·1·.
V.PLC.TMINEMZ2	Magazine ·2·.
V.PLC.TMINEMZ3	Magazine ·3·.
V.PLC.TMINEMZ4	Magazine ·4·.

(V.)PLC.MZID

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The manager indicates in this register the magazine that has the requested tool. When two magazines are involved in a tool change, the lower portion of this register indicates the destination magazine for the tool and the higher portion the source magazine for the tool.

V.PLC.MZID	Channel ·1·.
V.PLC.MZIDC1	Channel ·1·.
V.PLC.MZIDC2	Channel ·2·.
V.PLC.MZIDC3	Channel ·3·.
V.PLC.MZIDC4	Channel ·4·.

3.8 PLC consulting logic signals; keys.

(V.)PLC.KEYBD1
(V.)PLC.KEYBD2
(V.)PLC.KEYBD3

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These registers are a copy of the map of the keys pressed on the last keyboard used. These registers indicate which key has been pressed (bit=1).

V.PLC.KEYBD1
V.PLC.KEYBD2
V.PLC.KEYBD3

(V.)PLC.KEYBD1_1
(V.)PLC.KEYBD2_1
(V.)PLC.KEYBD3_1
..
(V.)PLC.KEYBD1_8
(V.)PLC.KEYBD2_8
(V.)PLC.KEYBD3_8

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These registers indicate (bit=1) which key has been pressed on each operator panel. Registers KEYBD1_1 and KEYBD2_1 correspond to the first jog panel, KEYBD1_2 and KEYBD2_2 to the second one and so on.

V.PLC.KEYBD1_1
V.PLC.KEYBD2_1
V.PLC.KEYBD3_1

3.9 PLC modifiable logic signals; general.

(V.)PLC._EMERGEN

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark off, the channel stops the axes and spindles and issues an error message.

While the mark is off, the channel does not allow executing programs and aborts attempt to move the axes or start the spindle.

V.PLC._EMERGEN	Channel ·1·.
V.PLC._EMERGENC1	Channel ·1·.
V.PLC._EMERGENC2	Channel ·2·.
V.PLC._EMERGENC3	Channel ·3·.
V.PLC._EMERGENC4	Channel ·4·.

(V.)PLC._STOP

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark off, the channel stops the execution of the program, but keeps the spindles turning. The status of this mark does not affect the independent axes.

V.PLC._STOP	Channel ·1·.
V.PLC._STOPC1	Channel ·1·.
V.PLC._STOPC2	Channel ·2·.
V.PLC._STOPC3	Channel ·3·.
V.PLC._STOPC4	Channel ·4·.

(V.)PLC._XFERINH

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark off, the prevents the execution of the next block, but it lets complete the execution of the current block.

V.PLC._XFERINH	Channel ·1·.
V.PLC._XFERINHC1	Channel ·1·.
V.PLC._XFERINHC2	Channel ·2·.
V.PLC._XFERINHC3	Channel ·3·.
V.PLC._XFERINHC4	Channel ·4·.

(V.)PLC._FEEDHOL

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark off, the channel stops the axes, but keeps the spindles turning. The status of this mark does not affect the independent axes.

V.PLC._FEEDHOL	Channel ·1·.
V.PLC._FEEDHOLC1	Channel ·1·.
V.PLC._FEEDHOLC2	Channel ·2·.
V.PLC._FEEDHOLC3	Channel ·3·.
V.PLC._FEEDHOLC4	Channel ·4·.

(V.)PLC.CYSTART

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the execution of the part-program begins.

V.PLC.CYSTART	Channel ·1·.
V.PLC.CYSTARTC1	Channel ·1·.
V.PLC.CYSTARTC2	Channel ·2·.
V.PLC.CYSTARTC3	Channel ·3·.
V.PLC.CYSTARTC4	Channel ·4·.

(V.)PLC.SBLOCK

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the channel activates the single-block mode.

V.PLC.SBLOCK	Channel ·1·.
V.PLC.SBLOCKC1	Channel ·1·.
V.PLC.SBLOCKC2	Channel ·2·.
V.PLC.SBLOCKC3	Channel ·3·.
V.PLC.SBLOCKC4	Channel ·4·.

(V.)PLC.MANRAPID

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the CNC selects the rapid traverse for jog movements.

V.PLC.MANRAPID	Channel ·1·.
V.PLC.MANRAPIDC1	Channel ·1·.
V.PLC.MANRAPIDC2	Channel ·2·.
V.PLC.MANRAPIDC3	Channel ·3·.
V.PLC.MANRAPIDC4	Channel ·4·.

(V.)PLC.OVRCAN

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the channel applies 100% of the feedrate in all work mode.

V.PLC.OVRCAN	Channel ·1·.
V.PLC.OVRCANC1	Channel ·1·.
V.PLC.OVRCANC2	Channel ·2·.
V.PLC.OVRCANC3	Channel ·3·.
V.PLC.OVRCANC4	Channel ·4·.

(V.)PLC.LATCHM

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

With this mark, it is possible to select how the JOG keys will work in JOG mode.

If this mark is off, the axes will move while the corresponding JOG key kept pressed. If this mark is on, the axes will move from the instant the JOG key is pressed until the software

limits are reached or the [STOP] key is pressed or another JOG key is pressed (in this case the new axis will start moving).

V.PLC.LATCHM	

(V.)PLC.RESETIN

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the channel assumes the initial conditions.

V.PLC.RESETIN	Channel ·1·.
V.PLC.RESETINC1	Channel ·1·.
V.PLC.RESETINC2	Channel ·2·.
V.PLC.RESETINC3	Channel ·3·.
V.PLC.RESETINC4	Channel ·4·.

(V.)PLC.AUXEND

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC uses this mark when executing functions S and M with synchronization.

V.PLC.AUXEND	Channel ·1·.
V.PLC.AUXENDC1	Channel ·1·.
V.PLC.AUXENDC2	Channel ·2·.
V.PLC.AUXENDC3	Channel ·3·.
V.PLC.AUXENDC4	Channel ·4·.

(V.)PLC.BLKSKIP1

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the channel considers the block-skip condition.

V.PLC.BLKSKIP1	Channel ·1·.
V.PLC.BLKSKIP1C1	Channel ·1·.
V.PLC.BLKSKIP1C2	Channel ·2·.
V.PLC.BLKSKIP1C3	Channel ·3·.
V.PLC.BLKSKIP1C4	Channel ·4·.

(V.)PLC.M01STOP

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the channel considers the block-skips.

V.PLC.M01STOP	Channel ·1·.
V.PLC.M01STOPC1	Channel ·1·.
V.PLC.M01STOPC2	Channel ·2·.
V.PLC.M01STOPC3	Channel ·3·.
V.PLC.M01STOPC4	Channel ·4·.

(V.)PLC.TIMERON

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the CNC enables the freely available clock.

V.PLC.TIMERON

(V.)PLC.PLCREADY

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark off, it interrupts the execution of the PLC program and issues an error message.

V.PLC.PLCREADY

(V.)PLC.NOWAIT

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC turns this mark on to cancel the channel synchronizations programmed with #WAIT.

V.PLC.NOWAITC1	Channel ·1·.
V.PLC.NOWAITC2	Channel ·2·.
V.PLC.NOWAITC3	Channel ·3·.
V.PLC.NOWAITC4	Channel ·4·.

(V.)PLC.DISCROSS1
..
(V.)PLC.DISCROSS17

Variable that can only be read from the program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC this mark on to disable the cross compensation table.

V.PLC.DISCROSS1	Cross compensation table ·1·.
V.PLC.DISCROSS2	Cross compensation table ·2·.

(V.)PLC.PLCABORT

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the channel aborts the CNCEX command launched from the PLC. This mark does not set the initial conditions in the channel and keeps the history.

V.PLC.PLCABORT	Channel ·1·.
V.PLC.PLCABORTC1	Channel ·1·.
V.PLC.PLCABORTC2	Channel ·2·.
V.PLC.PLCABORTC3	Channel ·3·.
V.PLC.PLCABORTC4	Channel ·4·.

(V.)PLC.NEXTMPGAXIS

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Every time the PLC turns this mark on, the CNC selects an axis to be moved with the handwheel.

V.PLC.NEXTMPGAXIS

(V.)PLC.PANELOFF1
..
(V.)PLC.PANELOFF8

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC activates one of these marks the CNC disables the corresponding jog panel.

V.PLC.PANELOFF1	Disable operator panel ·1·.
V.PLC.PANELOFF8	Disable operator panel ·8·.

(V.)PLC.SYNC

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC indicates in this register the spindle to be used for synchronization. The channel uses this spindle with function G33 to thread a particular spindle and with G95 to program the feedrate according to a particular spindle.

V.PLC.SYNC1	Channel ·1·.
V.PLC.SYNC2	Channel ·2·.
V.PLC.SYNC3	Channel ·3·.
V.PLC.SYNC4	Channel ·4·.

(V.)PLC.RETRACE

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on while a program is being executed, the channel turns the retrace function on.

V.PLC.RETRACEC1	Channel ·1·.
V.PLC.RETRACEC2	Channel ·2·.
V.PLC.RETRACEC3	Channel ·3·.
V.PLC.RETRACEC4	Channel ·4·.

(V.)PLC.PRGABORT

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the channel aborts the execution of the program but without affecting the spindle, initializes the program history and resumes the execution in the point indicated by the #ABORT instruction active in the part-program.

V.PLC.PRGABORT	Channel ·1·.
V.PLC.PRGABORTC1	Channel ·1·.
V.PLC.PRGABORTC2	Channel ·2·.
V.PLC.PRGABORTC3	Channel ·3·.
V.PLC.PRGABORTC4	Channel ·4·.

(V.)PLC.CNCOFF

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the CNC starts the shut-down sequence.

V.PLC.CNCOFF	

(V.)PLC.INHIBITMPG1
...
(V.)PLC.INHIBITMPG12

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns one of these marks on, it disables the corresponding handwheel. The PLC has a mark for each handwheel, the INHIBITMPG1 mark disables the first handwheel, the INHIBITMPG2 mark the second one and so on.

V.PLC.INHIBITMPG1	Handwheel ·1·.
V.PLC.INHIBITMPG2	Handwheel ·2·.

(V.)PLC.EXRAPID

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC activates this mark, the CNC channel enables rapid traverse during the execution of a program for the programmed movements. The behavior of this mark depends on how parameter RAPIDEN has been set.

V.PLC.EXRAPIDC1	Channel ·1·.
V.PLC.EXRAPIDC2	Channel ·2·.
V.PLC.EXRAPIDC3	Channel ·3·.
V.PLC.EXRAPIDC4	Channel ·4·.

(V.)PLC.KEYBD1CH
..
(V.)PLC.KEYBD8CH

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These registers may be used to change the default behavior of the keyboards with respect to the channels, set by machine parameters.

V.PLC.KEYBD1CH	Operator panel ·1·.
V.PLC.KEYBD2CH	Operator panel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Configuration defined in the machine parameters.
1	Jog panel assigned to channel 1.
2	Jog panel assigned to channel 2.
3	Jog panel assigned to channel 3.
4	Jog panel assigned to channel 4.
FF	Jog panel assigned to the active channel.

(V.)PLC.VOLCOMP1
..
(V.)PLC.VOLCOMP4

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These variables reflect the status of the marks VOLCOMP1 to VOLCOMP4. If the PLC activates one of these marks (changing it from 0 to 1), the CNC activates the corresponding volumetric compensation (parameter VOLCOMP).

V.PLC.VOLCOMP1	Volumetric compensation ·1·.
V.PLC.VOLCOMP2	Volumetric compensation ·2·.
V.PLC.VOLCOMP3	Volumetric compensation ·3·.
V.PLC.VOLCOMP4	Volumetric compensation ·4·.

(V.)PLC.QWERTYOFF1
..
(V.)PLC.QWERTYOFF8

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns one of these marks on, it disables the corresponding alphanumeric keyboard.

V.PLC.QWERTYOFF1	Disable keyboard ·1·.
V.PLC.QWERTYOFF2	Disable keyboard ·2·.

(V.)PLC.FLIMITAC

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC activates this mark, the CNC activates the feedrate safety limits (parameter FLIMIT) on all the axes of the system.

V.PLC.FLIMITAC

(V.)PLC.FLIMITACCH

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC activates this mark, the CNC activates the feedrate safety limits (parameter FLIMIT) on all the axes of the channel.

V.PLC.FLIMITAC	Channel ·1·.
V.PLC.FLIMITACCH1	Channel ·1·.
V.PLC.FLIMITACCH2	Channel ·2·.
V.PLC.FLIMITACCH3	Channel ·3·.
V.PLC.FLIMITACCH4	Channel ·4·.

(V.)PLC.SLIMITAC

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC activates this mark, the CNC activates the speed safety limits (parameter SLIMIT) on all the spindles of the system.

V.PLC.SLIMITAC

(V.)PLC.INT1
..
(V.)PLC.INT4

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC activates one of these marks, the channel executes the corresponding interruption subroutine.

V.PLC.INT1	Channel ·1·.
V.PLC.INT1C1	Channel ·1·.
V.PLC.INT1C2	Channel ·2·.
V.PLC.INT1C3	Channel ·3·.
V.PLC.INT1C4	Channel ·4·.

(V.)PLC.PWMON

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

This mark may be used to activate and deactivate the PWM via PLC.

V.PLC.PWMON

(V.)PLC.PROBE1ENA
(V.)PLC.PROBE2ENA

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These are active marks by default. These mark indicate that the probe has is enabled. When executing a G100 or G103 command, the CNC will issue an error message if the mark of the active probe (the one selected with #SELECT PROBE) is not enabled. These marks do not limit the monitoring of the safe mode.

V.PLC.PROBE1ENA	Enable probe·1·.
V.PLC.PROBE2ENA	Enable probe ·2·.

(V.)PLC.PROBE1MONIT
(V.)PLC.PROBE2MONIT

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These marks are associated with the safe mode of the probe. If the mark is active, the probe is in safe mode monitoring collisions.

V.PLC.PROBE1ENA	Probe 1·in safe mode.
V.PLC.PROBE2ENA	Probe 2·in safe mode.

(V.)PLC.PT100OFF1
..
(V.)PLC.PT100OFF20

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC activates one of these marks, the CNC disables the corresponding sensor (parameter PT100 n).

V.PLC.PT100OFF1	Disable the PT100·1·sensor.
V.PLC.PT100OFF2	Disable the PT100 ·2· sensor.

(V.)PLC.LCOUNTALARMOFF1
(V.)PLC.LCOUNTALARMOFF2

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These variables reflect the status of the marks LCOUNTALARMOFF1 and LCOUNTALARMOFF2. If the PLC activates one of these marks (by changing it from 0 to 1), it disables the corresponding local feedback input. If the PLC deactivates one of these marks (by changing it from 1 to 0), it enables the feedback alarms.

V.PLC.LCOUNTALARMOFF1	Local input ·1·.
V.PLC.LCOUNTALARMOFF2	Local input ·2·.

3.10 PLC modifiable logic signals; axes and spindles.

(V.)PLC.LIMITPOSxn
(V.)PLC.LIMITPOSsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on to indicate that the axis or the spindle has exceeded the positive travel limit.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.LIMITPOSX	X axis.
V.PLC.LIMITPOSS	Spindle S.
V.PLC.LIMITPOS3	Axis or spindle with logic number ·3·.

(V.)PLC.LIMITNEGxn
(V.)PLC.LIMITNEGsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on to indicate that the axis or the spindle has exceeded the negative travel limit.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.LIMITNEGX	X axis.
V.PLC.LIMITNEGS	Spindle S.
V.PLC.LIMITNEG3	Axis or spindle with logic number ·3·.

(V.)PLC.DECELxn
(V.)PLC.DECELsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on to indicate that the home switch is pressed.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.DECELX	X axis.
V.PLC.DECELS	Spindle S.
V.PLC.DECEL3	Axis or spindle with logic number ·3·.

(V.)PLC.INHIBITxn
(V.)PLC.INHIBITsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the CNC inhibits any movement of the axis or spindle.

For independent axes and electronic cam, if the PLC turns this mark on, it interrupts the synchronization movement switching to zero speed. The system waits for the signal to deactivate before resuming the execution and the movement from the interruption point.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.INHIBITX	X axis.
V.PLC.INHIBITS	Spindle S.
V.PLC.INHIBIT3	Axis or spindle with logic number ·3·.

(V.)PLC.AXISPOSxn
(V.)PLC.AXISPOSsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on while the CNC is in jog mode, the CNC moves the axis or the spindle in the positive direction.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.AXISPOSX	X axis.
V.PLC.AXISPOSS	Spindle S.
V.PLC.AXISPOS3	Axis or spindle with logic number ·3·.

(V.)PLC.AXISNEGxn
(V.)PLC.AXISNEGsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on while the CNC is in jog mode, the CNC moves the axis or the spindle in the positive direction.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.AXISNEGX	X axis.
V.PLC.AXISNEGS	Spindle S.
V.PLC.AXISNEG3	Axis or spindle with logic number ·3·.

(V.)PLC.SERVOxnON
(V.)PLC.SERVOsnON

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on to allow moving the axis or the spindle.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.SERVOXON	X axis.
V.PLC.SERVOSON	Spindle S.
V.PLC.SERVO3ON	Axis or spindle with logic number ·3·.

(V.)PLC.DROxn
(V.)PLC.DROsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on for the axis or the spindle to work in DRO mode.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.DROX	X axis.
V.PLC.DROS	Spindle S.
V.PLC.DRO3	Axis or spindle with logic number ·3·.

(V.)PLC.SPENAxn
(V.)PLC.SPENAsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on to enable the speed enable signal of the drive.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.SPENAX	X axis.
V.PLC.SPENAS	Spindle S.
V.PLC.SPENA3	Axis or spindle with logic number ·3·.

(V.)PLC.DRENAxn
(V.)PLC.DRENAsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on to enable the drive enable signal of the drive.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.DRENAX	X axis.
V.PLC.DRENAS	Spindle S.
V.PLC.DRENA3	Axis or spindle with logic number ·3·.

(V.)PLC.LIMxnOFF
(V.)PLC.LIMsnOFF

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the CNC ignores the software travel limits.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.LIMXOFF	X axis.
V.PLC.LIMSOFF	Spindle S.
V.PLC.LIM3OFF	Axis or spindle with logic number ·3·.

(V.)PLC.PARKEDxn
(V.)PLC.PARKEDsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC turns this mark on when the axis or the spindle is parked.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.PARKEDX	X axis.
V.PLC.PARKEDS	Spindle S.
V.PLC.PARKED3	Axis or spindle with logic number ·3·.

(V.)PLC.LUBRENAxn
(V.)PLC.LUBRENAsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC turns this mark on to enable the lubrication of the axis or the spindle.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.LUBRENAX	X axis.
V.PLC.LUBRENAS	Spindle S.
V.PLC.LUBRENA3	Axis or spindle with logic number ·3·.

(V.)PLC.LUBROKxn
(V.)PLC.LUBROKsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC turns this mark on to indicate that the axis lubrication is done.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.LUBROKX	X axis.
V.PLC.LUBROKS	Spindle S.
V.PLC.LUBROK3	Axis or spindle with logic number ·3·.

(V.)PLC.DIFFCOMPxn
(V.)PLC.DIFFCOMPsn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC uses this mark on Gantry axes to correct the position difference between the two axes.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.DIFFCOMPX	X axis.
V.PLC.DIFFCOMPS	Spindle S.
V.PLC.DIFFCOMP3	Axis or spindle with logic number ·3·.

(V.)PLC.FBACKSELxn
(V.)PLC.FBACKSELsn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

In systems with external+internal feedback, the PLC turns this mark on to use the external feedback and turns it off to use the internal feedback.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.FBACKSELX	X axis.
V.PLC.FBACKSELS	Spindle S.
V.PLC.FBACKSEL3	Axis or spindle with logic number ·3·.

(V.)PLC.DEADxn
(V.)PLC.DEADsn

Variable that can be read and written from the program and interface and read from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

In systems with dead axes, the PLC uses this mark to indicate to the CNC how to handle the path joints when a dead axis is involved.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.DEADX	X axis.
V.PLC.DEADS	Spindle S.
V.PLC.DEAD3	Axis or spindle with logic number ·3·.

(V.)PLC.SWITCHxn
(V.)PLC.SWITCHsn

Variable that can be read and written from the program and interface and read from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

When the system has multi-axis groups, this mark may be used to toggle between the various axes or spindles of the group.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.SWITCHX	X axis.
V.PLC.SWITCHS	Spindle S.
V.PLC.SWITCH3	Axis or spindle with logic number ·3·.

(V.)PLC.TANDEMOFFxn
(V.)PLC.TANDEMOFFsn

Variable that can be read and written from the program and interface and read from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

This mark may be used to temporarily decouple (unslave) the loop of the axes or spindles involved in the tandem so they can be move separately.

Syntax.

·xn· Name or logic number of the axis.

·sn· Name or logic number of the spindle.

V.PLC.TANDEMOFFX	X axis.
V.PLC.TANDEMOFFS	Spindle S.
V.PLC.TANDEMOFF3	Axis or spindle with logic number ·3·.

3.11 PLC modifiable logic signals; spindles.

(V.)PLC.GEAR1
(V.)PLC.GEAR2
(V.)PLC.GEAR3
(V.)PLC.GEAR4

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn on the mark corresponding to the selected speed range.

There is a mark for each spindle. The mnemonics for each channel are the following. Here is an example of the mnemonics for GEAR1; it is the same for the rest of the registers.

V.PLC.GEAR1	Spindle ·1·.
V.PLC.GEAR1SP1	Spindle ·1·.
V.PLC.GEAR1SP2	Spindle ·2·.
V.PLC.GEAR1SP3	Spindle ·3·.
V.PLC.GEAR1SP4	Spindle ·4·.

(V.)PLC.PLCCNTL

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on when the spindle is controlled by the PLC.

V.PLC.PLCCNTL	Spindle ·1·.
V.PLC.PLCCNTL1	Spindle ·1·.
V.PLC.PLCCNTL2	Spindle ·2·.
V.PLC.PLCCNTL3	Spindle ·3·.
V.PLC.PLCCNTL4	Spindle ·4·.

(V.)PLC.SANALOG

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

When the spindle is controlled by the PLC, the PLC must indicate in this register the velocity command to be applied to the spindle.

V.PLC.SANALOG	Spindle ·1·.
V.PLC.SANALOG1	Spindle ·1·.
V.PLC.SANALOG2	Spindle ·2·.
V.PLC.SANALOG3	Spindle ·3·.
V.PLC.SANALOG4	Spindle ·4·.

(V.)PLC.SPDLEREV

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the CNC inverts the spindle turning direction.

V.PLC.SPDLEREV	Spindle ·1·.
V.PLC.SPDLEREV1	Spindle ·1·.
V.PLC.SPDLEREV2	Spindle ·2·.
V.PLC.SPDLEREV3	Spindle ·3·.
V.PLC.SPDLEREV4	Spindle ·4·.

(V.)PLC.PLCM3
(V.)PLC.PLCM4
(V.)PLC.PLCM5

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC turns this mark on to let the CNC know that it must execute the corresponding M function at the indicated spindle.

V.PLC.PLCM3	Spindle ·1·.
V.PLC.PLCM3SP1	Spindle ·1·.
V.PLC.PLCM3SP2	Spindle ·2·.
V.PLC.PLCM3SP3	Spindle ·3·.
V.PLC.PLCM3SP4	Spindle ·4·.

(V.)PLC.SLIMITACSPDL

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

There is a mark for each spindle. The mnemonics for each spindle are the following:

SLIMITACSPDL1 (can also be programmed as SLIMITACSPDL)

SLIMITACSPDL2 SLIMITACSPDL3 SLIMITACSPDL4

If the PLC activates this mark, the CNC activates the speed safety limits (parameter SLIMIT) on the indicated spindle.

V.PLC.SLIMITACSPDL	Spindle ·1·.
V.PLC.SLIMITACSPDL1	Spindle ·1·.
V.PLC.SLIMITACSPDL2	Spindle ·2·.
V.PLC.SLIMITACSPDL3	Spindle ·3·.
V.PLC.SLIMITACSPDL4	Spindle ·4·.

3.12 PLC modifiable logic signals; independent interpolator.

(V.)PLC._IXFERINHxn

If the PLC deactivates this mark, the movements of the independent axis remain waiting for the PLC to activate this mark again.

Syntax.

·xn· Name or logic number of the axis.

V.PLC._IXFERINHX	X axis.
V.PLC._IXFERINH3	Axis with logic number ·3·.

(V.)PLC.IRESETxn

Variable that can be read and written from the program and interface and read from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the independent interpolator interrupts the instruction being executed and eliminates the instructions pending execution.

Syntax.

·xn· Name or logic number of the axis.

V.PLC.IRESETX	X axis.
V.PLC.IRESET3	Axis with logic number ·3·.

(V.)PLC.IABORTxn

Variable that can be read and written from the program and interface and read from the PLC.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

If the PLC turns this mark on, the independent interpolator interrupts the positioning block being executed (if any) eliminating also the rest of the positioning blocks pending execution.

Syntax.

·xn· Name or logic number of the axis.

V.PLC.IABORTX	X axis.
V.PLC.IABORT3	Axis with logic number ·3·.

3.13 PLC modifiable logic signals; laser.

3.13.1 Laser status.

(V.)PLC.LASERON

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

The PLC activates this mark to indicate that the laser is on.

V.PLC.LASERON

(V.)PLC.SHUTTERON

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

The PLC activates this mark to indicate that the laser source shutter is open.

V.PLC.SHUTTERON

(V.)PLC.LASERREADY

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

The PLC activates this mark to indicate that the laser is ready.

V.PLC.LASERREADY

3.13.2 PWM active from the PLC.

(V.)PLC.PWMON

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

This mark may be used to activate and deactivate the PWM via PLC. Activating the PWM via PLC has priority over activating it from the CNC.

V.PLC.PWMON

(V.)PLC.PWMFREQ

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: Herz.

PWM frequency, when the PWM has been activated via PLC. This variable only works when the Laser has been activated via PLC.

V.PLC.PWMFREQ

Remarks.

The changes from the variable are updated (refreshed) in the next loop; the intermediate times between loops will be ignored.

(V.)PLC.PWMDUTY

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: Percentage.

PWM duty cycle, when the PWM has been activated via PLC. This variable only works when the Laser has been activated via PLC.

V.PLC.PWMDUTY

Remarks.

The changes from the variable are updated (refreshed) in the next loop; the intermediate times between loops will be ignored.

The reading from the CNC will be divided by 10; i.e. for the value of ·1·, the CNC reading will return a value of ·0.1·.

3.13.3 Power control.

(V.)PLC.ENABLEPWROUT

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

This mark is active by default. This mark is associated with the power control via an analog output associated with the spindle (#PWRCTRL ON [OUT]). The PLC deactivates this mark to disable the active power control. The PLC activates this mark to enable the active power control in the CNC; if no power control is active, this mark does nothing.

V.PLC.ENABLEPWROUT

(V.)PLC.ENABLEPWRDUTY.

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

This mark is active by default. This mark is associated with the power control via a PWM duty (#PWRCTRL ON [DUTY]). The PLC deactivates this mark to disable the active power control. The PLC activates this mark to enable the active power control in the CNC; if no power control is active, this mark does nothing.

V.PLC.ENABLEPWRDUTY

3.13.4 Gap control.

(V.)PLC.ENABLEGAP

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

This mark is active by default. The PLC deactivates this mark to disable the active gap control. The PLC activates this mark to enable the active gap control in the CNC; if no gap control is active, this mark does nothing.

V.PLC.ENABLEGAP

(V.)PLC.GAPCOLLISION

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

The PLC activates this mark to indicate that the collision sensor has been activated. This mark is not kept in memory. With this mark active, the CNC behavior depends on the machine parameter GAPCOLLISION.

V.PLC.GAPCOLLISION

3.13.5 Leapfrog.

(V.)PLC.ENABLELEAP

Variable that can be read and written via program and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).
Units: - .

The PLC deactivates this mark to disable the active leapfrog. The PLC activates this mark to enable the active leapfrog in the CNC; if no gap control is active, this mark does nothing.

V.PLC.ENABLELEAP

3.14 PLC modifiable logic signals; tool manager.

(V.)PLC.SETTMEM

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on to activate the emergency of the tool manager.

V.PLC.SETTMEM	Magazine ·1·.
V.PLC.SETTMEMZ1	Magazine ·1·.
V.PLC.SETTMEMZ2	Magazine ·2·.
V.PLC.SETTMEMZ3	Magazine ·3·.
V.PLC.SETTMEMZ4	Magazine ·4·.

(V.)PLC.RESTMEM

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on to cancel the emergency of the tool manager.

V.PLC.RESTMEM	Magazine ·1·.
V.PLC.RESTMEMZ1	Magazine ·1·.
V.PLC.RESTMEMZ2	Magazine ·2·.
V.PLC.RESTMEMZ3	Magazine ·3·.
V.PLC.RESTMEMZ4	Magazine ·4·.

(V.)PLC.CUTTINGON

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on to indicate that the tool is machining (cutting).

V.PLC.CUTTINGON	Channel ·1·.
V.PLC.CUTTINGON1	Channel ·1·.
V.PLC.CUTTINGON2	Channel ·2·.
V.PLC.CUTTINGON3	Channel ·3·.
V.PLC.CUTTINGON4	Channel ·4·.

(V.)PLC.TREJECT

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on to reject the tool.

V.PLC.TREJECT	Channel ·1·.
V.PLC.TREJECTC1	Channel ·1·.
V.PLC.TREJECTC2	Channel ·2·.
V.PLC.TREJECTC3	Channel ·3·.
V.PLC.TREJECTC4	Channel ·4·.

(V.)PLC.MZTOCH1

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on after taking the tool from the magazine to the claw 1 of the tool changer arm.

V.PLC.MZTOCH1	Magazine ·1·.
V.PLC.MZTOCH1MZ1	Magazine ·1·.
V.PLC.MZTOCH1MZ2	Magazine ·2·.
V.PLC.MZTOCH1MZ3	Magazine ·3·.
V.PLC.MZTOCH1MZ4	Magazine ·4·.

(V.)PLC.CH1TOSPDL

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on after taking the tool from the claw 1 of the tool changer arm to the spindle.

V.PLC.CH1TOSPDL	Magazine ·1·.
V.PLC.CH1TOSPDLMZ1	Magazine ·1·.
V.PLC.CH1TOSPDLMZ2	Magazine ·2·.
V.PLC.CH1TOSPDLMZ3	Magazine ·3·.
V.PLC.CH1TOSPDLMZ4	Magazine ·4·.

(V.)PLC.SPDLTOCH1

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on after taking the tool from the spindle to the claw 1 of the tool changer arm.

V.PLC.SPDLTOCH1	Magazine ·1·.
V.PLC.SPDLTOCH1MZ1	Magazine ·1·.
V.PLC.SPDLTOCH1MZ2	Magazine ·2·.
V.PLC.SPDLTOCH1MZ3	Magazine ·3·.
V.PLC.SPDLTOCH1MZ4	Magazine ·4·.

(V.)PLC.SPDLTOCH2

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on after taking the tool from the spindle to the claw 2 of the tool changer arm.

V.PLC.SPDLTOCH1	Magazine ·1·.
V.PLC.SPDLTOCH2MZ1	Magazine ·1·.
V.PLC.SPDLTOCH2MZ2	Magazine ·2·.
V.PLC.SPDLTOCH2MZ3	Magazine ·3·.
V.PLC.SPDLTOCH2MZ4	Magazine ·4·.

(V.)PLC.CH1TOMZ

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on after taking the tool from the claw 1 of the tool changer arm to the magazine.

V.PLC.CH1TOMZ	Magazine ·1·.
V.PLC.CH1TOMZ1	Magazine ·1·.
V.PLC.CH1TOMZ2	Magazine ·2·.
V.PLC.CH1TOMZ3	Magazine ·3·.
V.PLC.CH1TOMZ4	Magazine ·4·.

(V.)PLC.CH2TOMZ

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on after taking the tool from the claw 2 of the tool changer arm to the magazine.

V.PLC.CH2TOMZ	Magazine ·1·.
V.PLC.CH2TOMZ1	Magazine ·1·.
V.PLC.CH2TOMZ2	Magazine ·2·.
V.PLC.CH2TOMZ3	Magazine ·3·.
V.PLC.CH2TOMZ4	Magazine ·4·.

(V.)PLC.SPDLTOGR

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on after taking the tool from the spindle to ground.

V.PLC.SPDLTOGR	Channel ·1·.
V.PLC.SPDLTOGRC1	Channel ·1·.
V.PLC.SPDLTOGRC2	Channel ·2·.
V.PLC.SPDLTOGRC3	Channel ·3·.
V.PLC.SPDLTOGRC4	Channel ·4·.

(V.)PLC.GRTOSPDL

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on after taking the tool from the ground to the spindle.

V.PLC.GRTOSPDL	Channel ·1·.
V.PLC.GRTOSPDLC1	Channel ·1·.
V.PLC.GRTOSPDLC2	Channel ·2·.
V.PLC.GRTOSPDLC3	Channel ·3·.
V.PLC.GRTOSPDLC4	Channel ·4·.

(V.)PLC.MZTOSPDL

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on after taking the tool from the magazine to the spindle.

V.PLC.MZTOSPDL	Magazine ·1·.
V.PLC.MZTOSPDLMZ1	Magazine ·1·.
V.PLC.MZTOSPDLMZ2	Magazine ·2·.
V.PLC.MZTOSPDLMZ3	Magazine ·3·.
V.PLC.MZTOSPDLMZ4	Magazine ·4·.

(V.)PLC.SPDLTOMZ

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on after taking the tool from the spindle to the magazine.

V.PLC.SPDLTOMZ	Magazine ·1·.
V.PLC.SPDLTOMZ1	Magazine ·1·.
V.PLC.SPDLTOMZ2	Magazine ·2·.
V.PLC.SPDLTOMZ3	Magazine ·3·.
V.PLC.SPDLTOMZ4	Magazine ·4·.

(V.)PLC.MZROT

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on to rotate the turret.

V.PLC.MZROT	Magazine ·1·.
V.PLC.MZROTMZ1	Magazine ·1·.
V.PLC.MZROTMZ2	Magazine ·2·.
V.PLC.MZROTMZ3	Magazine ·3·.
V.PLC.MZROTMZ4	Magazine ·4·.

(V.)PLC.TCHANGEOK

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must turn this mark on when the tool change is done.

V.PLC.TCHANGEOK	Magazine ·1·.
V.PLC.TCHANGEOKMZ1	Magazine ·1·.
V.PLC.TCHANGEOKMZ2	Magazine ·2·.
V.PLC.TCHANGEOKMZ3	Magazine ·3·.
V.PLC.TCHANGEOKMZ4	Magazine ·4·.

(V.)PLC.MZPOS

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

The PLC must indicate the current magazine position in this register.

V.PLC.MZPOS	Magazine ·1·.
V.PLC.MZPOSMZ1	Magazine ·1·.
V.PLC.MZPOSMZ2	Magazine ·2·.
V.PLC.MZPOSMZ3	Magazine ·3·.
V.PLC.MZPOSMZ4	Magazine ·4·.

3.15 PLC modifiable logic signals; keys.

(V.)PLC.KEYLED1
(V.)PLC.KEYLED2

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These registers control the LED's (lamps) of the keys of all the operator panels at the same time.

V.PLC.KEYLED1
V.PLC.KEYLED2

(V.)PLC.KEYLED1_1
(V.)PLC.KEYLED2_1
..
(V.)PLC.KEYLED1_8
(V.)PLC.KEYLED2_8

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These registers control the LED's (lamps) of the keys of each operator panel. Registers KEYLED1_1 and KEYLED2_1 correspond to the first jog panel, KEYLED1_2 and KEYLED2_2 to the second one and so on.

V.PLC.KEYLED1_1
V.PLC.KEYLED2_1

(V.)PLC.KEYDIS1
..
(V.)PLC.KEYDIS4

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These registers inhibit (bit=1) the keys and the switches on all operator panels at the same time.

V.PLC.KEYDIS1

(V.)PLC.KEYDIS1_1
(V.)PLC.KEYDIS2_1
(V.)PLC.KEYDIS3_1
(V.)PLC.KEYDIS4_1
..
(V.)PLC.KEYDIS1_8
(V.)PLC.KEYDIS2_8
(V.)PLC.KEYDIS3_8
(V.)PLC.KEYDIS4_8

Variable that can be read and written from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

These registers inhibit (bit=1) the keys and the switches on each operator panel. Registers KEYDIS1_1 to KEYDIS3_1 correspond to the first jog panel, KEYDIS1_2 to KEYDIS3_2 to the second one and so on.

V.PLC.KEYDIS1_1
V.PLC.KEYDIS2_1
V.PLC.KEYDIS3_1
V.PLC.KEYDIS4_1

3.

PLC RELATED VARIABLES.

PLC modifiable logic signals; keys.

FAGOR

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

VARIABLES RELATED TO THE MACHINE CONFIGURATION. 4

4.1 Variables related to the machine configuration.

4.1.1 Axes and spindles of the system.

(V.)G.GAXISNAMEn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Name of logic axis "n".

Syntax.

Replace the "n" letter with the axis logic number.

V.G.GAXISNAME2	Axis with logic number ·2·.

Values of the variable.

The values returned by this variable are encoded as follows.

X=10	X1=11	X2=12	X3=13	X4=14	... X9=19
Y=20	Y1=21	Y2=22	Y3=23	Y4=24	... Y9=29
Z=30	Z1=31	Z2=32	Z3=33	Z4=34	... Z9=39
U=40	U1=41	U2=42	U3=43	U4=44	... U9=49
V=50	V1=51	V2=52	V3=53	V4=54	... V9=59
W=60	W1=61	W2=62	W3=63	W4=64	... W9=69
A=70	A1=71	A2=72	A3=73	A4=74	... A9=79
B=80	B1=81	B2=82	B3=83	B4=84	... B9=89
C=90	C1=91	C2=92	C3=93	C4=94	... C9=99

Remarks.

The logic number of the axes is determined by the order in which the axes have been defined in the machine parameter table. The first axis of the table will be logic axis -1- and so on.

When some axes are parked, it is a good idea to know which axes are available. This variable indicates which axes are available, if an axis is not available, this variable returns a "?".

(V.)G.GSPDLNAMEn

Variable that can only be read from the program, PLC and interface.
The variable returns the value of execution or preparation depending on the spindle.
Report variable (to be used from the scripts).

Name of logic spindle "n".

Syntax.

Replace the "n" letter with the spindle logic number.

V.G.GSPDLNAME2	Spindle with logic number ·2·.

Values of the variable.

The values returned by this variable are encoded as follows.

S=100 S1=101 S2=102 S3=103 S4=104 ... S9=109

Remarks.

The variable returns the value of execution or preparation as follows. If the spindle belongs to the channel requesting the variable, it returns the preparation value; if the spindle belongs to a different channel, the variable returns the execution value and interrupts block preparation.

The logic number of the spindles is determined by the order in which they have been defined in the machine parameter table. The logic numbering of the spindles continues from the last logic axis; hence, in a 5-axis system, the first spindle of the table will be logic spindle ·6· and so on.

(V.)[ch].A.ACTCH.xn
(V.)[ch].A.ACTCH.sn
(V.)[ch].SP.ACTCH.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the value of execution or preparation depending on the axis or spindle.

Current channel of the axis or of the spindle.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.ACTCH.Z	Z axis.
V.A.ACTCH.S	Spindle S.
V.SP.ACTCH.S	Spindle S.
V.SP.ACTCH	Master spindle.
V.A.ACTCH.4	Axis or spindle with logic number ·4·.
V.[2].A.ACTCH.1	Axis with index ·1· in the channel ·2·.
V.SP.ACTCH.2	Spindle with index ·2· in the system.
V.[2].SP.ACTCH.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The variable returns the value of execution or preparation as follows. If the spindle belongs to the channel requesting the variable, it returns the preparation value; if the axis or spindle belongs to a different channel, the variable returns the execution value and interrupts block preparation.

(V.)[ch].A.ACTIVSET.xn
(V.)[ch].A.ACTIVSET.sn
(V.)[ch].SP.ACTIVSET.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the value of execution or preparation depending on the axis or spindle.

Parameter set active at the axis or spindle.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.ACTIVSET.Z	Z axis.
V.A.ACTIVSET.S	Spindle S.
V.SP.ACTIVSET.S	Spindle S.
V.SP.ACTIVSET	Master spindle.
V.A.ACTIVSET.4	Axis or spindle with logic number ·4·.
V.[2].A.ACTIVSET.1	Axis with index ·1· in the channel ·2·.
V.SP.ACTIVSET.2	Spindle with index ·2· in the system.
V.[2].SP.ACTIVSET.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The variable returns the value of execution or preparation as follows. If the spindle belongs to the channel requesting the variable, it returns the preparation value; if the axis or spindle belongs to a different channel, the variable returns the execution value and interrupts block preparation.

4.1.2 Channels, axes and spindles.

(V.)G.NUMCH

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of channels.

V.G.NUMCH	

(V.)[ch].G.AXIS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).

Number of axes of the channel.

Syntax.

·ch· Channel number.

V.[2].G.AXIS	Channel ·2·.

(V.)[ch].G.NAXIS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).

Number of axes of the channel including the empty positions of the yielded axes.

Syntax.

·ch· Channel number.

V.[2].G.NAXIS	Channel ·2·.

(V.)[ch].G.NSPDL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).

Number of spindles of the channel.

Syntax.

·ch· Channel number.

V.[2].G.NSPDL	Channel ·2·.

(V.)[ch].G.AXISCH

Variable to be read via interface.
Report variable (to be used from the scripts).

Axes of the system that belong to the channel.

Syntax.

·ch· Channel number.

[2].G.AXISCH	Channel ·2·.

Values of the variable.

The variable returns a 32-bit value where each bit represents one axis; the least significant bit corresponds to the axis with the lowest logic number. Each bit indicates whether the axis belongs to the channel (bit = 1) or not (bit = 0).

AXISNAME.	Channel ·1·.	Channel ·2·.	Reading the variables.
X (Logic axis ·1·.) Y (Logic axis ·2·.) Z (Logic axis ·3·.) X2 (Logic axis ·4·.) Y2 (Logic axis ·5·.) Z2 (Logic axis ·6·.)	X Y Z	X2 Y2 Z2	[1].G.AXISCH = $7 [2].G.AXISCH = $38

(V.)[ch].G.AXISNAMEn

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).

Name of the axis with n index in the channel.

Syntax.

·ch· Channel number.

```
V.[2].G.AXISNAME1                    Channel ·2·.
```

Values of the variable.

The values returned by this variable are encoded as follows.

X=10	X1=11	X2=12	X3=13	X4=14	... X9=19
Y=20	Y1=21	Y2=22	Y3=23	Y4=24	... Y9=29
Z=30	Z1=31	Z2=32	Z3=33	Z4=34	... Z9=39
U=40	U1=41	U2=42	U3=43	U4=44	... U9=49
V=50	V1=51	V2=52	V3=53	V4=54	... V9=59
W=60	W1=61	W2=62	W3=63	W4=64	... W9=69
A=70	A1=71	A2=72	A3=73	A4=74	... A9=79
B=80	B1=81	B2=82	B3=83	B4=84	... B9=89
C=90	C1=91	C2=92	C3=93	C4=94	... C9=99

Remarks.

When some axes are parked, it is a good idea to know which axes are available. This variable indicates which axes are available, if an axis is not available, this variable returns a "?".

(V.)[ch].G.SPDLNAMEn

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).

Name of the spindle with n index in the channel.

Syntax.

·ch· Channel number.

```
V.[2].G.SPDLNAME1                    Channel ·2·.
```

Values of the variable.

The values returned by this variable are encoded as follows.

S=100	S1=101	S2=102	S3=103	S4=104	... S9=109

(V.)[ch].G.MASTERSP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Logic number of the master spindle of the channel.

Syntax.

·ch· Channel number.

V.[2].G.MASTERSP	Channel ·2·.

4.1.3 Logic number of the axis, according to its order in the channel.

(V.)[ch].G.NLOGAXIS1
(V.)[ch].G.NLOGAXIS2
..
(V.)[ch].G.NLOGAXIS32

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Logic number of the axes and channel.

Syntax.

·ch· Channel number.

(V.)[2].G.NLOGAXIS1	Channel ·2·. Logic number of the first axis of the channel.
(V.)[2].G.NLOGAXIS3	Channel ·2·. Logic number of the third axis of the channel.

(V.)[ch].G.NLOGSPDL1
(V.)[ch].G.NLOGSPDL2
..
(V.)[ch].G.NLOGSPDL6

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Logic number of the spindles of the channel.

(V.)[2].G.NLOGSPDL1	Channel ·2·. Logic number of the first spindle of the channel.
(V.)[2].G.NLOGSPDL3	Channel ·2·. Logic number of the third spindle of the channel.

4.1.4 Travel limits of linear and rotary axes.

(V.)[ch].G.SOFTLIMIT

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Software limits reached.

Syntax.

·ch· Channel number.

V.[2].G.SOFTLIMIT	Channel ·2·.

(V.)[ch].A.POSLIMIT.xn
(V.)[ch].A.NEGLIMIT.xn

Variable that can be read and written from the program and read from the PLC and from the interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Positive and negative software limit.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.POSLIMIT.Z	Z axis.
V.A.POSLIMIT.4	Axis with logic number ·4·.
V.[2].A.POSLIMIT.1	Axis with index ·1· in the channel ·2·.

Remarks.

These variables correspond to the limits set by machine parameters. When modifying these variables, the CNC assumes those values as the new limits from then on.

These variables keep their value after a reset, they are initialized with the values of the machine parameters when validating them and when turning the CNC on.

(V.)[ch].A.RTPOSLIMIT.xn
(V.)[ch].A.RTNEGLIMIT.xn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Second positive and negative software limit.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.RTPOSLIMIT.Z	Z axis.
V.A.RTPOSLIMIT.4	Axis with logic number ·4·.
V.[2].A.RTPOSLIMIT.1	Axis with index ·1· in the channel ·2·.

Remarks.

There are two software limits; the CNC always applies the most restrictive one.

These variables keep their value after a reset, they are initialized with the maximum value possible when turning the CNC on.

4.1.5 Kinetimatics dimensions.

(V.)[ch].A.HEADOF.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution or preparation value.

Dimension in each axis of the kinematics.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.HEADOF.Z	Z axis.
V.A.HEADOF.4	Axis with logic number ·4·.
V.[2].A.HEADOF.1	Axis with index ·1· in the channel ·2·.

Remarks.

The variable returns the value of execution or preparation as follows. If the axis is consulted through its logic number, the variable always returns the preparation value. In the rest of the cases, if the axis belongs to the channel requesting the variable, it returns the preparation value; if the axis belongs to a different channel, the variable returns the execution value and interrupts block preparation.

This variable returns the resulting measurement of the active kinematics on that axis. It may be a particular value of TDATA (kinematics table) or the combination of several of them depending on the type of kinematics.

4.1.6 Change the turning direction assigned to M3 and M4.

(V.)[ch].A.POLARITY.sn
(V.)[ch].SP.POLARITY.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

This variable may be used to reverse the meaning of spindle parameters POLARM3 and POLARM4 that set the spindle turning direction for M3 and M4. The variable does not modify the values of the machine parameters.

If the spindle is turning in open loop (M3/M4), the CNC does not apply the changes of this variable immediately; the CNC applies the changes the next time a speed or an M3/M4 is programmed.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.POLARITY.S	Spindle S.
V.SP.POLARITY.S	Spindle S.
V.SP.POLARITY	Master spindle.
V.A.POLARITY.4	Spindle with logic number ·4·.
V.SP.POLARITY.2	Spindle with index ·2· in the system.
V.[2].SP.POLARITY.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

Value.	Meaning.
0	For the M3/M4 functions, the CNC applies parameters POLARM3 and POLARM4.
1	For the M3/M4 functions, the CNC reverses the meaning of parameters POLARM3 and POLARM4.

Remarks.

The variable keeps its value between programs and after a reset; it is initialized to ·0· when turning the CNC on.

Every time the part-program writes or reads this variable, the CNC synchronizes the block preparation and the execution. If it is the PLC who modifies the variable, it must be borne in mind that block preparation takes its value into account every time it detects a change in the spindle movement (Function G63, change of speed or of the turning direction, etc.); therefore, before preparing those blocks, the PLC must have written this variable.

4.1.7 Number of pulses sent by the handwheel.

(V.)G.HANDP[hw]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Number of pulses sent by the handwheel since the system was started up. While the handwheel is disabled from the PLC (marks INHIBITMPG1 through INHIBITMPG12), the variable does not save the pulses sent by the handwheel.

Syntax.

·hw· Handwheel number.

(V.)G.HANDP[1]	Handwheel ·1·.

Remarks.

The PLC can use these variables to control the machining feedrate depending on how fast the handwheel is turned, for example when machining a part for the first time or to move back in the machining operation when the retrace function is active. Depending on the handwheel pulses read by the variable, it is possible to calculate from the PLC the right feedrate override percentage and set it for the machining operation. This handwheel mode is known as "feed handwheel".

4.1.8 Change the simulation speed from the PLC.

(V.)PLC.SIMUSPEED

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Percentage of simulation speed (between 0% and 100%).

V.PLC.SIMUSPEED

Currently, the simulation displays a horizontal bar on the screen to change the simulation speed. This variable may be used to change its value via PLC. In some cases, the OEM can transfer via PLC the feedrate override value to this variable to control the simulation speed.

The execution and simulation channels can work simultaneously in which case, the feedrate override switch will affect both. It is up to the OEM to use this variable in the right contexts so it only affects one of the channels.

4.2 Variables related to volumetric compensation.

(V.)[ch].A.VOLCOMP.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Value that the volumetric compensation is adding to the axis. If the volumetric compensation is not active or the axis is outside the volume to be compensated, the variable returns the value to 0 (zero).

Reading this variable from the oscilloscope allows watching the evolution of the volumetric compensation.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.VOLCOMP.Z	Z axis.
V.A.VOLCOMP.3	Axis with logic number ·3·.
V.[2].A.VOLCOMP.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.PIVOT.xn

Variable that can only be read from the program, PLC and interface.
Parameter valid for linear and rotary axes and spindles.
Variable valid for analog drive, position Sercos and velocity Sercos.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Distance from the pivot center to the tool tip in machine coordinates. This variable returns the sum of the spindle offsets (parameters TDATA) and the tool offset.

This variable is only valid for the medium and large volumetric compensations; it has no function on the basic volumetric compensation.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.PIVOT.Z	Z axis.
V.A.PIVOT.3	Axis with logic number ·3·.
V.[2].A.PIVOT.3	Axis with index ·3· in the channel ·2·.

4.3 Variables associated with the Mechatrolink bus.

4.3.1 Status of communication and of the Mechatrolink devices.

(V.)[ch].A.MSTATUS.xn
(V.)[ch].A.MSTATUS.sn
(V.)[ch].SP.MSTATUS.sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the oscilloscope environment.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for servo and Mechatrolink inverter.
The variable returns the execution value; reading it interrupts block preparation.

Information on the status of the execution of the command and of the device according to Mechatrolink specifications. Refer to the documentations of the device.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MSTATUS.Z	Z axis.
V.MPA.MSTATUS.S	Spindle S.
V.SP.MSTATUS.S	Spindle S.
V.SP.MSTATUS	Master spindle.
V.MPA.MSTATUS.4	Axis or spindle with logic number ·4·.
V.[2].MPA.MSTATUS.1	Axis with index ·1· in the channel ·2·.
V.SP.MSTATUS.2	Spindle with index ·2· in the system.
V.[2].SP.MSTATUS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.MSUBSTAT.xn
(V.)[ch].A.MSUBSTAT.sn
(V.)[ch].SP.MSUBSTAT.sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the oscilloscope environment.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for servo and Mechatrolink inverter.
The variable returns the execution value; reading it interrupts block preparation.

Information on the status of the execution of the subcommand and of the device according to Mechatrolink specifications. Refer to the documentations of the device.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MSUBSTAT.Z	Z axis.
V.MPA.MSUBSTAT.S	Spindle S.
V.SP.MSUBSTAT.S	Spindle S.
V.SP.MSUBSTAT	Master spindle.
V.MPA.MSUBSTAT.4	Axis or spindle with logic number ·4·.
V.[2].MPA.MSUBSTAT.1	Axis with index ·1· in the channel ·2·.
V.SP.MSUBSTAT.2	Spindle with index ·2· in the system.
V.[2].SP.MSUBSTAT.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.MALARM.xn
(V.)[ch].A.MALARM.sn
(V.)[ch].SP.MALARM.sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the oscilloscope environment.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for servo and Mechatrolink inverter.
The variable returns the execution value; reading it interrupts block preparation.

Alarm or error code of the device. Refer to the documentations of the device.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MALARM.Z	Z axis.
V.MPA.MALARM.S	Spindle S.
V.SP.MALARM.S	Spindle S.
V.SP.MALARM	Master spindle.
V.MPA.MALARM.4	Axis or spindle with logic number ·4·.
V.[2].MPA.MALARM.1	Axis with index ·1· in the channel ·2·.
V.SP.MALARM.2	Spindle with index ·2· in the system.
V.[2].SP.MALARM.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.MIOMON.xn
(V.)[ch].A.MIOMON.sn
(V.)[ch].SP.MIOMON.sn

Variable that can only be read from the program, PLC and interface.
Variable that may be modified from the oscilloscope environment.
Variable valid for rotary and linear axes as well as for spindles.
Variable valid for Mechatrolink servo.
The variable returns the execution value; reading it interrupts block preparation.

Status of the device inputs and outputs.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.MPA.MIOMON.Z	Z axis.
V.MPA.MIOMON.S	Spindle S.
V.SP.MIOMON.S	Spindle S.
V.SP.MIOMON	Master spindle.
V.MPA.MIOMON.4	Axis or spindle with logic number ·4·.
V.[2].MPA.MIOMON.1	Axis with index ·1· in the channel ·2·.
V.SP.MIOMON.2	Spindle with index ·2· in the system.
V.[2].SP.MIOMON.1	Spindle with index ·1· in the channel ·2·.

VARIABLES RELATED TO LASER.

5

5.1 Active material.

(V.)[ch].G.ACTIVEMATERIAL
Variable to be read via interface.
Units: Text.

Name of the active technological table.

Syntax.

·ch· Channel number.

V.[2].G.ACTIVEMATERIAL	Channel ·2·.

5.2 Active cutting.

(V.)[ch].G.CUTTINGTYPE
Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).
Units: - .

Cutting type.

Syntax.

·ch· Channel number.

V.[2].G.CUTTINGTYPE	Channel ·2·.

Remarks.

- If there is no active material, the variable will return a ·0· value.
- After powering up the CNC, if there is any active material, the variable will return a 1 value.
- After a reset or M30, the variable maintains its value.

5.3 Active piercing.

(V.)[ch].G.PIERCINGTYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).
Units: - .

Piercing type.

Syntax.

·ch· Channel number.

V.[2].G.PIERCINGTYPE	Channel ·2·.

Remarks.

- If there is no active material, the variable will return a ·0· value.
- After powering up the CNC, if there is any active material, the variable will return a 1 value.
- After a reset or M30, the variable maintains its value.

5.4 Laser power. Power programming.

(V.)[ch].A.SREAL.sn
(V.)[ch].SP.SREAL.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: Watts.

Channel [ch]. Actual power.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.SREAL.S	Spindle S.
V.SP.SREAL.S	Spindle S.
V.SP.SREAL	Master spindle.
V.A.SREAL.5	Spindle with logic number ·5·.
V.SP.SREAL.2	Spindle with index ·2· in the system.
V.[2].SP.SREAL.1	Spindle with index ·1· in the channel ·2·.

5.5 Laser power. Power in G97.

(V.)[ch].A.SPEED.sn
(V.)[ch].SP.SPEED.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: Watts.

Channel [ch]. Active power in G97.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.SPEED.S	Spindle S.
V.SP.SPEED.S	Spindle S.
V.SP.SPEED	Master spindle.
V.A.SPEED.5	Spindle with logic number ·5·.
V.SP.SPEED.2	Spindle with index ·2· in the system.
V.[2].SP.SPEED.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The power may be set by program or by PLC; the one set by PLC has the highest priority.

Defined power.	(V.)PLC.S.sn	(V.)A.PRGS.sn	(V.)A.SPEED.sn
By program; S5000. By PLC; none.	0	5000	5000
By program; S5000. By PLC; S9000.	9000	5000	9000
By program; S5000. By PLC; S3000.	3000	5000	3000
By program; S5000. By PLC; none. By MDI; S8000.	0	8000	8000
By program; S5000. By PLC; S9000. By MDI; S8000.	9000	8000	9000
By program; S5000. By PLC; S3000. By MDI; S8000.	3000	8000	3000

(V.)[ch].PLC.S.sn

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: Watts.

Channel [ch]. Active power by PLC for G97.

The power programmed by PLC prevails over the one programmed by program or MDI. To cancel the power by PLC, set the variable to ·0·; the CNC applies the power active by program.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.PLC.S.S2	Spindle S2.
V.PLC.S.5	Spindle with logic number ·5·.
V.[2].PLC.S.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.PRGS.sn
(V.)[ch].SP.PRGS.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Watts.

Channel [ch]. Active power by program for G97.

With G97 active, programming in MDI mode of the new power updates the value of this variable.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.PRGS.S	Spindle S.
V.SP.PRGS.S	Spindle S.
V.SP.PRGS	Master spindle.
V.A.PRGS.5	Spindle with logic number ·5·.
V.SP.PRGS.2	Spindle with index ·2· in the system.
V.[2].SP.PRGS.1	Spindle with index ·1· in the channel ·2·.

5.6 Laser power. Power limit.

(V.)[ch].A.SLIMIT.sn
(V.)[ch].SP.SLIMIT.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: Watts.

Channel [ch]. Active power limit.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.SLIMIT.S	Spindle S.
V.SP.SLIMIT.S	Spindle S.
V.SP.SLIMIT	Master spindle.
V.A.SLIMIT.5	Spindle with logic number ·5·.
V.SP.SLIMIT.2	Spindle with index ·2· in the system.
V.[2].SP.SLIMIT.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The maximum speed may be set by program or by PLC; the one set by PLC has the highest priority.

(V.)[ch].PLC.SL.sn

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: Watts.

Channel [ch]. Active power limit by PLC.

The power programmed by PLC prevails over the one programmed by program or MDI. To cancel the power by PLC, set the variable to ·0·; the CNC applies the power active by program.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.PLC.SL.S2	Spindle S2.
V.PLC.SL.5	Spindle with logic number ·5·.
V.[2].PLC.SL.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.PRGSL.sn
(V.)[ch].SP.PRGSL.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Watts.

Channel [ch]. Active power limit by program.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.PRGSL.S	Spindle S.
V.SP.PRGSL.S	Spindle S.
V.SP.PRGSL	Master spindle.
V.A.PRGSL.5	Spindle with logic number ·5·.
V.SP.PRGSL.2	Spindle with index ·2· in the system.
V.[2].SP.PRGSL.1	Spindle with index ·1· in the channel ·2·.

5.7 Laser power. Power percentage (override).

(V.)[ch].A.SSO.sn
(V.)[ch].SP.SSO.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: Percentage.

Channel [ch]. Active power percentage.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.SSO.S	Spindle S.
V.SP.SSO.S	Spindle S.
V.SP.SSO	Master spindle.
V.A.SSO.5	Spindle with logic number ·5·.
V.SP.SSO.2	Spindle with index ·2· in the system.
V.[2].SP.SSO.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The power speed (override) percentage may be set by program, by PLC or from the control panel; the one set by program has the highest priority and the one selected from the control panel has the lowest.

(V.)A.PRGSSO.sn (V.)SP.PRGSSO.sn	(V.)PLC.SSO.sn	(V.)A.CNCSSO.sn (V.)SP.CNCSSO.sn	(V.)A.SSO.sn (V.)SP.SSO.sn
0	0	100 %	100 %
0	80 %	100 %	80 %
110 %	80%	100 %	110 %
70 %	80 %	100 %	70 %
70 %	0	100 %	70 %

(V.)[ch].PLC.SSO.sn

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: Percentage.

Channel [ch]. Power percentage by PLC.

The percentage set by PLC has higher priority than the one set from the control panel, but lower priority than the one set by program.. To cancel the value set by PLC, set the variable to ·0·.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.PLC.SSO.S2	Spindle S2.
V.PLC.SSO.5	Spindle with logic number ·5·.
V.[2].PLC.SSO.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.PRGSSO.sn
(V.)[ch].SP.PRGSSO.sn

Variable that can be read and written from the program and read from the PLC and from the interface.
The variable returns the value of block preparation.
Units: Percentage.

Channel [ch]. Power percentage by program.

The percentage set by program has higher priority than the one set by PLC or from the control panel. To cancel the value set by program, set the variable to ·0·.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.PRGSSO.S	Spindle S.
V.SP.PRGSSO.S	Spindle S.
V.SP.PRGSSO	Master spindle.
V.A.PRGSSO.5	Spindle with logic number ·5·.
V.SP.PRGSSO.2	Spindle with index ·2· in the system.
V.[2].SP.PRGSSO.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.CNCSSO.sn
(V.)[ch].SP.CNCSSO.sn

Variable that can be read and written (asynchronous writing) from the interface and read from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.
Units: Percentage.

Channel [ch]. Power percentage on the control panel.

The percentage set from the control panel has lower priority than the one set by PLC or by program.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.CNCSSO.S	Spindle S.
V.SP.CNCSSO.S	Spindle S.
V.SP.CNCSSO	Master spindle.
V.A.CNCSSO.5	Spindle with logic number ·5·.
V.SP.CNCSSO.2	Spindle with index ·2· in the system.
V.[2].SP.CNCSSO.1	Spindle with index ·1· in the channel ·2·.

5.8 PWM (pulse-width modulation).

(V.)G.PWMON

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

PWM status, when it has been activated via CNC.

Syntax.

```
V.G.PWMON
```

Values of the variable.

Value.	Meaning.
0	PWM off.
1	PWM active.

Remarks.

Activating the Laser via PLC has priority over activating it from the CNC.

PWM status from the CNC.	PWM status from the PLC.	PWM status.
Off.	Off.	PWM off.
Active.	Off.	PWM active from the CNC.
Off.	Active.	PWM active from the PLC.
Active.	Active.	PWM active from the PLC.

(V.)G.PWMFREQ

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Herz.

PWM frequency, when the PWM has been activated via CNC. Variable associated with the command PWMFREQ of the instruction #PWMOUT. This variable only works when the Laser is active via CNC.

Syntax.

```
V.G.PWMFREQ
```

(V.)G.PWMDUTY

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Percentage.

PWM duty cycle, when the PWM has been activated via CNC. Variable associated with the command PWMFREQ of the instruction #PWMOUT. This variable only works when the Laser is active via CNC.

Syntax.

```
V.G.PWMDUTY
```

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. for a value ·0.1·, the PLC reading will return a value of ·1·. For a value of ·100·, the reading from the PLC will return a value of ·1000·.

(V.)G.PWMBTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Milliseconds.

Amount of time (in ms rounded up to loop units) that PWM stays active in burst mode. Variable associated with the command PWMBTIME of the instruction #PWMOUT.

V.G.PWMBTIME

(V.)G.PWMBEND

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

PWM status after completing the burst mode. Variable associated with the command PWMBEND of the instruction #PWMOUT.

V.G.PWMBEND

Values of the variable.

Value.	Meaning.
0	PWM off.
1	PWM active.

5.9 Power control via an analog output.

(V.)G.PWROUTON

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Power control status (#PWRCTRL ON [OUT]). This variable is also affected by the mark ENABLEPWROUT of the PLC.

V.G.PWROUTON

Values of the variable.

Value.	Meaning.
0	Not active.
1	Active.

(V.)G.PWROUTOVRMIN

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the value of block preparation.
Units: Percentage.

Minimum percentage to be applied. Variable associated with the command OVRMIN of the instruction #PWRCTRL ON [OUT].

V.G.PWROUTOVRMIN

Remarks.

- The variable assumes the values programmed in the instruction #PWRCTRL during block preparation. If the PLC modifies these variables during the execution of a program, the CNC maintains the values calculated during block preparation.
- This variable is activated when programming the command #PWRCTRL from the program. When the power control is activated from the PLC (CNCEX command), this variable does not update its value.

(V.)G.PWROUTOVRMAX

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the value of block preparation.
Units: Percentage.

Maximum percentage to be applied. Variable associated with the command OVRMAX of the instruction #PWRCTRL ON [OUT].

V.G.PWROUTOVRMAX

Remarks.

- The variable assumes the values programmed in the instruction #PWRCTRL during block preparation. If the PLC modifies these variables during the execution of a program, the CNC maintains the values calculated during block preparation.
- This variable is activated when programming the command #PWRCTRL from the program. When the power control is activated from the PLC (CNCEX command), this variable does not update its value.

(V.)G.PWROUTFMIN

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the value of block preparation.
Units: In millimeters/minute or inches/minute.

Feed below which the CNC applies the OVRMIN percentage to the power. Variable associated with the command FMIN of the instruction #PWRCTRL ON [OUT].

V.G.PWROUTFMIN

Remarks.

- The variable assumes the values programmed in the instruction #PWRCTRL during block preparation. If the PLC modifies these variables during the execution of a program, the CNC maintains the values calculated during block preparation.
- This variable is activated when programming the command #PWRCTRL from the program. When the power control is activated from the PLC (CNCEX command), this variable does not update its value.

(V.)G.PWROUTFMAX

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the value of block preparation.
Units: In millimeters/minute or inches/minute.

Feed above which the CNC applies the OVRMIN percentage to the power. Variable associated with the command FMAX of the instruction #PWRCTRL ON [OUT].

V.G.PWROUTFMAX

Remarks.

- The variable assumes the values programmed in the instruction #PWRCTRL during block preparation. If the PLC modifies these variables during the execution of a program, the CNC maintains the values calculated during block preparation.
- This variable is activated when programming the command #PWRCTRL from the program. When the power control is activated from the PLC (CNCEX command), this variable does not update its value.

5.10 Power control via the PWM duty cycle.

(V.)G.PWRDUTYON

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Power control status (#PWRCTRL ON [DUTY]). This variable is also affected by the mark ENABLEPWRDUTY of the PLC.

V.G.PWRDUTYON

Values of the variable.

Value.	Meaning.
0	Not active.
1	Active.

Remarks.

The variable assumes the values programmed in the instruction #PWRCTRL during block preparation. If the PLC modifies these variables during the execution of a program, the CNC maintains the values calculated during block preparation.

(V.)G.PWRDUTYOVRMIN

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the value of block preparation.
Units: Percentage.

Minimum percentage to be applied. Variable associated with the command OVRMIN of the instruction #PWRCTRL ON [DUTY].

V.G.PWRDUTYOVRMIN

Remarks.

- The variable assumes the values programmed in the instruction #PWRCTRL during block preparation. If the PLC modifies these variables during the execution of a program, the CNC maintains the values calculated during block preparation.
- This variable is activated when programming the command #PWRCTRL from the program. When the power control is activated from the PLC (CNCEX command), this variable does not update its value.

(V.)G.PWRDUTYOVRMAX

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the value of block preparation.
Units: Percentage.

Maximum percentage to be applied. Variable associated with the command OVRMAX of the instruction #PWRCTRL ON [DUTY].

V.G.PWRDUTYOVRMAX

Remarks.

- The variable assumes the values programmed in the instruction #PWRCTRL during block preparation. If the PLC modifies these variables during the execution of a program, the CNC maintains the values calculated during block preparation.
- This variable is activated when programming the command #PWRCTRL from the program. When the power control is activated from the PLC (CNCEX command), this variable does not update its value.

(V.)G.PWRDUTYFMIN

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the value of block preparation.
Units: In millimeters/minute or inches/minute.

Feed below which the CNC applies the OVRMIN percentage to the power. Variable associated with the command FMIN of the instruction #PWRCTRL ON [DUTY].

V.G.PWRDUTYFMIN

Remarks.

- The variable assumes the values programmed in the instruction #PWRCTRL during block preparation. If the PLC modifies these variables during the execution of a program, the CNC maintains the values calculated during block preparation.
- This variable is activated when programming the command #PWRCTRL from the program. When the power control is activated from the PLC (CNCEX command), this variable does not update its value.

(V.)G.PWRDUTYFMAX

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the value of block preparation.
Units: In millimeters/minute or inches/minute.

Feed above which the CNC applies the OVRMIN percentage to the power. Variable associated with the command FMAX of the instruction #PWRCTRL ON [DUTY].

V.G.PWRDUTYFMAX

Remarks.

- The variable assumes the values programmed in the instruction #PWRCTRL during block preparation. If the PLC modifies these variables during the execution of a program, the CNC maintains the values calculated during block preparation.
- This variable is activated when programming the command #PWRCTRL from the program. When the power control is activated from the PLC (CNCEX command), this variable does not update its value.

5.11 Leapfrog.

(V.)[ch].G.LEAPON

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Channel [ch]. Leapfrog status.

Syntax.

·ch· Channel number.

V.[2].G.LEAPON	Channel ·2·.

Values of the variable.

Value.	Meaning.
0	Inactive.
1	Active.

Remarks.

The variable assumes value 1 only during the movement associated with the block.

(V.)[ch].G.LEAPG91

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Channel [ch]. Type of coordinates for the leap coordinate, absolute (if G90) or incremental (if G91).

Syntax.

·ch· Channel number.

V.[2].G.LEAPG91	Channel ·2·.

Values of the variable.

Value.	Meaning.
0	G90.
1	G91.

(V.)[ch].G.LEAPPOS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Channel [ch]. Longitudinal axis position (usually Z) at the end of the leap.

Syntax.

·ch· Channel number.

V.[2].G.LEAPPOS	Channel ·2·.

(V.)[ch].G.LEAPPOSLIMIT

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Channel [ch]. Maximum coordinate to be reached by the longitudinal axis (usually Z) during the leap.

Syntax.

·ch· Channel number.

V.[2].G.LEAPPOSLIMIT	Channel ·2·.

(V.)[ch].G.LEAPTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Seconds.

Channel [ch]. Dwell before the leap.

Syntax.

·ch· Channel number.

V.[2].G.LEAPTIME	Channel ·2·.

5.12 Synchronized switching.

(V.)[ch].G.TON

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading/writing it interrupts block preparation.
Units: Milliseconds.

Time shift (milliseconds) to anticipate the activation of the digital output. Variable associated with the command TON of the instruction #SWTOUT.

Syntax.

·ch· Channel number.

V.[2].G.TON	Channel ·2·.

Remarks.

See *"(V.)[ch].G.POF"* on page 332.

(V.)[ch].G.TOF

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading/writing it interrupts block preparation.
Units: Milliseconds.

Time shift (milliseconds) to anticipate the deactivation of the digital output. Variable associated with the command TOF of the instruction #SWTOUT.

Syntax.

·ch· Channel number.

V.[2].G.TOF	Channel ·2·.

Remarks.

See *"(V.)[ch].G.POF"* on page 332.

(V.)[ch].G.PON

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading/writing it interrupts block preparation.
Units: mm or inches.

Distance shift (offset, mm(inches) to anticipate the activation of the digital output. Variable associated with the command PON of the instruction #SWTOUT.

Syntax.

·ch· Channel number.

V.[2].G.PON	Channel ·2·.

Remarks.

See *"(V.)[ch].G.POF"* on page 332.

(V.)[ch].G.POF

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading/writing it interrupts block preparation.
Units: mm or inches.

Distance shift (offset, mm(inches) to anticipate the deactivation of the digital output. Variable associated with the command POF of the instruction #SWTOUT.

Syntax.

·ch· Channel number.

V.[2].G.POF	Channel ·2·.

Remarks.

(V.)[ch].G.TON (V.)[ch].G.TOF (V.)[ch].G.PON (V.)[ch].G.POF

The value of these variables is equivalent to the one programmed in the parameters of the instruction #SWTOUT. When executing the instruction without parameters and the variables have a value assigned to it, the CNC assumes these latter values as active. Likewise, when programming the parameters of the instruction, the variables assume these values as their own.

On CNC power-up, the offset wears are set to zero. After power-up, the values programmed for the offsets (using the instruction #SWTOUT or the variables) are maintained even after an error, a reset or an M30.

These variables interrupt block preparation. To modify the offset values without interrupting block preparation, change these values from the PLC or use the parameters of the instruction #SWTOUT. If these variables are changed from the PLC, the new values are assumed when executing the instruction #SWTOUT. If the instruction is active when changing the values from the PLC, it assumes the new values.

(V.)[ch].G.LASEROTMON

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading/writing it interrupts block preparation.
Units: 0.5 µs cycles.

Time remaining (0.5 µs cycles) to activate the laser output.

Syntax.

·ch· Channel number.

V.[2].G.LASEROTMON	Channel ·2·.

(V.)[ch].G.LASEROTMOFF

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading/writing it interrupts block preparation.
Units: 0.5 µs cycles.

Time remaining (0.5 µs cycles) to deactivate the laser output.

Syntax.

·ch· Channel number.

V.[2].G.LASEROTMOFF	Channel ·2·.

5.13 CO2 laser dispersion compensation.

(V.)[ch].A.FLWMASTER.xn

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Units: - .

Generic variable for an axis follow-up.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.FLWMASTER.Z	Z axis.
V.A.FLWMASTER.4	Axis with logic number ·4·.
V.[2].A.FLWMASTER.1	Axis with index ·1· in the channel ·2·.

Remarks.

When the CNC uses this variable to compensate the laser dispersion, the CNC updates it in each position loop.

If the CNC uses this variable for other applications, by entering its valor from the PLC, the update will be defined by the PLC times. If you wish to set the update for each loop, program the PLC to enter each loop or use a periodic period subroutine equal to the cycle time of the CNC (parameter LOOPTIME). In these cases, after reaching the slave axis, the initial synchronization attempts to follow the variable values in each loop. The axis follows the variable without any filtering process, so if these values are not filtered when the PLC enters them, the slave axis may move abruptly.

5.14 Gap control.

(V.)G.GAPCTRLON

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading/writing it interrupts block preparation.
Units: Value listed.

Gap control status. This variable is also affected by the mark ENABLEGAP of the PLC.

```
V.G.GAPCTRLON
```

Values of the variable.

Value.	Meaning.
0	Not active.
1	Active.

Remarks.

During tool inspection with the active gap control, when moving the axis associated with the sensor (MDI or manual mode), the CNC deactivates it (the variable assumes value 0). The CNC reactivates the gap control (the variable assumes value 1) when completing inspection, after completing repositioning of the axis associated with the sensor.

During the leapfrog, the CNC deactivates the gap control and reactivates it after the leap.

(V.)[ch].G.GAPAXISPOS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Approach coordinate. Variable associated with the command X..C of the instruction #GAPCTRL.

Syntax.

·ch· Channel number.

```
V.[2].G.GAPAXISPOS                Channel ·2·.
```

(V.)[ch].G.GAPPRG

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Distance (gap) to be kept from the surface. Variable associated with the command GAP of the instruction #GAPCTRL.

Syntax.

·ch· Channel number.

```
V.[2].G.GAPPRG                    Channel ·2·.
```

(V.)G.GAP

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading/writing it interrupts block preparation.
Units: mm or inches.

Actual gap value, detected by the sensor.

```
V.G.GAP
```

(V.)[ch].A.GAPCOMP.xn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading/writing it interrupts block preparation.
Units: Millivolts.

Value that the gap compensation is adding to the axis. Compensation (offset) applied to the axis associated with the sensor to control the GAPCTRL.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.GAPCOMP.Z	Z axis.
V.A.GAPCOMP.4	Axis with logic number ·4·.
V.[2].A.GAPCOMP.1	Axis with index ·1· in the channel ·2·.

5.

VARIABLES RELATED TO LASER.
Gap control.

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VARIABLES RELATED TO CYCLE TIME.

6

6.1 Analysis of the loop time (cycle time) at the CNC.

(V.)G.NCTIMERATE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of loop time (cycle time) used by the real time portion of the CNC.

V.G.NCTIMERATE

This variable serves to evaluate the load of the system and the time that the periodic interruption that controls the movement of the axes leaves the operating time to manage other applications that may be executed in parallel with the CNC. Applications that need time of the operating system are, for example, displaying the screens, user interface applications, refreshing variables on the screen, file management (subroutines or programs that are opened and closed while machining), etc.

If there isn't enough free time for the applications, it is possible to decrease parameter PREPFREQ, increase parameter LOOPTIME, group the subroutines in a the same file or reduce the number of external applications

(V.)G.LOOPTIMERATE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of loop time (cycle time) used by the position loop.

V.G.LOOPTIMERATE

This variable serves as reference to know whether the consumption of interruption time is due to the number of axes or to the path preparation process itself.

If the position loop uses most of the interruption time, it means that the system is overloaded by the axes and, therefore, you will have to evaluate the possibility to increase the LOOPTIME parameter.

(V.)G.PLCTIMERATE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of loop time (cycle time) used by the PLC.

V.G.PLCTIMERATE

If the time used by the PLC is too long, depending on the particular requirements of the PLC, it is possible increase parameter PRGFREQ or LOOPTIME.

6.2 Analysis of the loop time (cycle time) in the channel.

(V.)[ch].G.CHTIMERATE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of loop time (cycle time) used by the channel.

This variable helps determine whether the particular execution of a channel is taking up too much time.

Syntax.

·ch· Channel number.

V.[2].G.CHTIMERATE	Channel ·2·.

(V.)[ch].G.PREPTIMERATE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of loop time (cycle time) used by the channel for block preparation.

This variable serves to evaluate the load in path preparation and to know whether it is possible to increase the PREPFREQ parameter or not.

Syntax.

·ch· Channel number.

V.[2].G.PREPTIMERATE	Channel ·2·.

(V.)[ch].G.IPOTIMERATE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of loop time (cycle time) used by the interpolator of the channel.

This variable serves to evaluate the overload in the path generating algorithm and the smoothing algorithm.

Syntax.

·ch· Channel number.

V.[2].G.IPOTIMERATE	Channel ·2·.

(V.)[ch].G.TRAYTIMERATE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of loop time (cycle time) used by the dynamic preparation of the tool path.

Syntax.

·ch· Channel number.

V.[2].G.TRAYTIMERATE	Channel ·2·.

VARIABLES ASSOCIATED WITH THE FEEDBACK INPUTS FOR ANALOG AXES.

7

7.1 Feedback inputs associated with the analog axes.

(V.)[ch].A.COUNTERST.xn
(V.)[ch].A.COUNTERST.sn
(V.)[ch].SP.COUNTERST.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Status of the feedback input.

For a feedback input to be active, it must have an analog axis associated with it.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.COUNTERST.Z	Z axis.
V.A.COUNTERST.S	Spindle S.
V.SP.COUNTERST.S	Spindle S.
V.SP.COUNTERST	Master spindle.
V.A.COUNTERST.4	Axis or spindle with logic number ·4·.
V.[2].A.COUNTERST.1	Axis with index ·1· in the channel ·2·.
V.SP.COUNTERST.2	Spindle with index ·2· in the system.
V.[2].SP.COUNTERST.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.COUNTER.xn
(V.)[ch].A.COUNTER.sn
(V.)[ch].SP.COUNTER.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Feedback input pulses (integer side + fraction side).

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.COUNTER.Z	Z axis.
V.A.COUNTER.S	Spindle S.
V.SP.COUNTER.S	Spindle S.
V.SP.COUNTER	Master spindle.
V.A.COUNTER.4	Axis or spindle with logic number ·4·.

V.[2].A.COUNTER.1	Axis with index ·1· in the channel ·2·.
V.SP.COUNTER.2	Spindle with index ·2· in the system.
V.[2].SP.COUNTER.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.ASINUS.xn
(V.)[ch].A.ASINUS.sn
(V.)[ch].SP.ASINUS.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Fraction side of the A signal.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.ASINUS.Z	Z axis.
V.A.ASINUS.S	Spindle S.
V.SP.ASINUS.S	Spindle S.
V.SP.ASINUS	Master spindle.
V.A.ASINUS.4	Axis or spindle with logic number ·4·.
V.[2].A.ASINUS.1	Axis with index ·1· in the channel ·2·.
V.SP.ASINUS.2	Spindle with index ·2· in the system.
V.[2].SP.ASINUS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.BSINUS.xn
(V.)[ch].A.BSINUS.sn
(V.)[ch].SP.BSINUS.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Fraction side of the B signal.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.BSINUS.Z	Z axis.
V.A.BSINUS.S	Spindle S.
V.SP.BSINUS.S	Spindle S.
V.SP.BSINUS	Master spindle.
V.A.BSINUS.4	Axis or spindle with logic number ·4·.
V.[2].A.BSINUS.1	Axis with index ·1· in the channel ·2·.
V.SP.BSINUS.2	Spindle with index ·2· in the system.
V.[2].SP.BSINUS.1	Spindle with index ·1· in the channel ·2·.

7.2 Local feedback inputs (ICU/MCU).

(V.)G.LCOUNTER1

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Value of the local count-up 1 input.

V.G.LCOUNTER1

(V.)G.LCOUNTER2

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Value of the local count-up 2 input.

V.G.LCOUNTER2

7.

VARIABLES ASSOCIATED WITH THE FEEDBACK INPUTS FOR

Local feedback inputs (ICU/MCU).

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(REF: 1709)

VARIABLES ASSOCIATED WITH THE ANALOG INPUTS AND OUTPUTS.

8

8.1 Remote analog inputs and outputs.

(V.)G.ANAI[n]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Voltage in volts of analog input [n] or temperature in tenths of a degree if it is a temperature sensor PT100.

Syntax.

·n· Number of the analog input.

V.G.ANAI[3]	Voltage of the analog input ·3·.

(V.)G.ANAO[n]

Variable that can be read from the interface and written from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.

[n] output voltage (in volts).

Syntax.

·n· Number of the analog input.

V.G.ANAO[3]	Voltage of the analog output ·3·.

8.2 Remote module RCS-S (Sercos counter).

(V.)G.ANASO[n]

Variable that can be read from the interface and written from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.

Volts of output [n] of the RCS-S module. Analog outputs are numbered according to parameter SERCOUNTID.

Syntax.

·n· Number of the analog input.

V.G.ANASO[3]	Voltage of the analog output ·3·.

8.

VARIABLES ASSOCIATED WITH THE ANALOG INPUTS AND

Remote module RCS-S (Sercos counter).

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(REF: 1709)

VARIABLES ASSOCIATED WITH THE VELOCITY COMMAND AND THE FEEDBACK OF THE DRIVE.

9

9.1 Velocity command and torque for Sercos axes.

(V.)[ch].A.FTEO.xn
(V.)[ch].A.FTEO.sn
(V.)[ch].SP.FTEO.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Velocity command for Sercos (in rpm).

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.FTEO.Z	Z axis.
V.A.FTEO.S	Spindle S.
V.SP.FTEO.S	Spindle S.
V.SP.FTEO	Master spindle.
V.A.FTEO.4	Axis or spindle with logic number ·4·.
V.[2].A.FTEO.1	Axis with index ·1· in the channel ·2·.
V.SP.FTEO.2	Spindle with index ·2· in the system.
V.[2].SP.FTEO.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.POSCMD.xn
(V.)[ch].A.POSCMD.sn
(V.)[ch].SP.POSCMD.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Position command for Sercos.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.POSCMD.Z	Z axis.
V.A.POSCMD.S	Spindle S.
V.SP.POSCMD.S	Spindle S.
V.SP.POSCMD	Master spindle.
V.A.POSCMD.4	Axis or spindle with logic number ·4·.
V.[2].A.POSCMD.1	Axis with index ·1· in the channel ·2·.
V.SP.POSCMD.2	Spindle with index ·2· in the system.
V.[2].SP.POSCMD.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.TORQUE.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Current torque in Sercos.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.TORQUE.Z	Z axis.
V.A.TORQUE.S	Spindle S.
V.SP.TORQUE.S	Spindle S.
V.SP.TORQUE	Master spindle.
V.A.TORQUE.4	Axis or spindle with logic number ·4·.
V.[2].A.TORQUE.1	Axis with index ·1· in the channel ·2·.
V.SP.TORQUE.2	Spindle with index ·2· in the system.
V.[2].SP.TORQUE.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

9.2 Feedback of the analog or Sercos drive.

(V.)[ch].A.POSNC.xn
(V.)[ch].A.POSNC.sn
(V.)[ch].SP.POSNC.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Position feedback.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.POSNC.Z	Z axis.
V.A.POSNC.S	Spindle S.
V.SP.POSNC.S	Spindle S.
V.SP.POSNC	Master spindle.
V.A.POSNC.4	Axis or spindle with logic number ·4·.
V.[2].A.POSNC.1	Axis with index ·1· in the channel ·2·.
V.SP.POSNC.2	Spindle with index ·2· in the system.
V.[2].SP.POSNC.1	Spindle with index ·1· in the channel ·2·.

9.

VARIABLES ASSOCIATED WITH THE VELOCITY COMMAND

Feedback of the analog or Sercos drive.

FAGOR

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

VARIABLES RELATED TO THE CHANGE OF GEAR AND SET OF THE SERCOS DRIVE. 10

10.1 Change of gear and set of the Sercos drive.

(V.)[ch].A.SETGE.xn
(V.)[ch].A.SETGE.sn
(V.)[ch].SP.SETGE.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Select the set and the gear at the drive. Only one change can be taking place at a time. If other gear or set changes are programmed during this process, even if they are at different drives, the CNC only keeps the one programmed last and ignores the rest of the intermediate changes.

The drive can have 8 work ranges or gears identified from 0 through 7 (drive parameter GP6) and 8 sets of parameters (drive parameter GP4) identified from 0 through 7.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.SETGE.Z	Z axis.
V.A.SETGE.S	Spindle S.
V.SP.SETGE.S	Spindle S.
V.SP.SETGE	Master spindle.
V.A.SETGE.4	Axis or spindle with logic number ·4·.
V.[2].A.SETGE.1	Axis with index ·1· in the channel ·2·.
V.SP.SETGE.2	Spindle with index ·2· in the system.
V.[2].SP.SETGE.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

The 4 least significant bits indicate the work range and the 4 most significant bits indicate the set of parameters. If the value of any 4-bit set is ·0·, the CNC does not change the active gear or set at the drive. Example of some values of the variable.

Value.	Meaning.
$21	First range or gear (gear ·0·). Second set of parameters (set ·1·).
$40	The drive maintains the active gear. Fourth set of parameters (set ·3·).
$07	Seventh range or gear (gear ·6·). The drive maintains the active parameter set.

Remarks.

The CNC keeps the SERPLCAC mark active during the change process.

10.

VARIABLES RELATED TO THE CHANGE OF GEAR AND SET OF

Change of gear and set of the Sercos drive.

FAGOR

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

VARIABLES RELATED TO LOOP ADJUSTMENT.

11

11.1 Coordinate related variables.

(V.)[ch].A.IPOPOS.xn
(V.)[ch].A.IPOPOS.sn
(V.)[ch].SP.IPOPOS.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Theoretical position value (coordinate) at the output of the interpolator, before the transformation; i.e. in part coordinates.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.IPOPOS.Z	Z axis.
V.A.IPOPOS.S	Spindle S.
V.SP.IPOPOS.S	Spindle S.
V.SP.IPOPOS	Master spindle.
V.A.IPOPOS.4	Axis or spindle with logic number ·4·.
V.[2].A.IPOPOS.1	Axis with index ·1· in the channel ·2·.
V.SP.IPOPOS.2	Spindle with index ·2· in the system.
V.[2].SP.IPOPOS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.FILTERIN.xn
(V.)[ch].A.FILTERIN.sn
(V.)[ch].SP.FILTERIN.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Theoretical coordinate of the interpolator before the filter.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.FILTERIN.Z	Z axis.
V.A.FILTERIN.S	Spindle S.
V.SP.FILTERIN.S	Spindle S.
V.SP.FILTERIN	Master spindle.
V.A.FILTERIN.4	Axis or spindle with logic number ·4·.
V.[2].A.FILTERIN.1	Axis with index ·1· in the channel ·2·.
V.SP.FILTERIN.2	Spindle with index ·2· in the system.
V.[2].SP.FILTERIN.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.FILTEROUT.xn
(V.)[ch].A.FILTEROUT.sn
(V.)[ch].SP.FILTEROUT.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Theoretical coordinate of the interpolator after the filter.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.FILTEROUT.Z	Z axis.
V.A.FILTEROUT.S	Spindle S.
V.SP.FILTEROUT.S	Spindle S.
V.SP.FILTEROUT	Master spindle.
V.A.FILTEROUT.4	Axis or spindle with logic number ·4·.
V.[2].A.FILTEROUT.1	Axis with index ·1· in the channel ·2·.
V.SP.FILTEROUT.2	Spindle with index ·2· in the system.
V.[2].SP.FILTEROUT.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.LOOPTPOS.xn
(V.)[ch].A.LOOPTPOS.sn
(V.)[ch].SP.LOOPTPOS.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Theoretical coordinate at the input of the position loop.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.LOOPTPOS.Z	Z axis.
V.A.LOOPTPOS.S	Spindle S.
V.SP.LOOPTPOS.S	Spindle S.
V.SP.LOOPTPOS	Master spindle.
V.A.LOOPTPOS.4	Axis or spindle with logic number ·4·.
V.[2].A.LOOPTPOS.1	Axis with index ·1· in the channel ·2·.
V.SP.LOOPTPOS.2	Spindle with index ·2· in the system.
V.[2].SP.LOOPTPOS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.LOOPPOS.xn
(V.)[ch].A.LOOPPOS.sn
(V.)[ch].SP.LOOPPOS.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Real coordinate at the input of the position loop.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.LOOPPOS.Z	Z axis.
V.A.LOOPPOS.S	Spindle S.
V.SP.LOOPPOS.S	Spindle S.
V.SP.LOOPPOS	Master spindle.
V.A.LOOPPOS.4	Axis or spindle with logic number ·4·.
V.[2].A.LOOPPOS.1	Axis with index ·1· in the channel ·2·.
V.SP.LOOPPOS.2	Spindle with index ·2· in the system.
V.[2].SP.LOOPPOS.1	Spindle with index ·1· in the channel ·2·.

11.2 Position increment and sampling period.

(V.)[ch].A.POSINC.xn
(V.)[ch].A.POSINC.sn
(V.)[ch].SP.POSINC.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Real position increment of the current sampling period.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.POSINC.Z	Z axis.
V.A.POSINC.S	Spindle S.
V.SP.POSINC.S	Spindle S.
V.SP.POSINC	Master spindle.
V.A.POSINC.4	Axis or spindle with logic number ·4·.
V.[2].A.POSINC.1	Axis with index ·1· in the channel ·2·.
V.SP.POSINC.2	Spindle with index ·2· in the system.
V.[2].SP.POSINC.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.TPOSINC.xn
(V.)[ch].A.TPOSINC.sn
(V.)[ch].SP.TPOSINC.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Theoretical position increment of the current sampling period.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.TPOSINC.Z	Z axis.
V.A.TPOSINC.S	Spindle S.
V.SP.TPOSINC.S	Spindle S.
V.SP.TPOSINC	Master spindle.
V.A.TPOSINC.4	Axis or spindle with logic number ·4·.
V.[2].A.TPOSINC.1	Axis with index ·1· in the channel ·2·.
V.SP.TPOSINC.2	Spindle with index ·2· in the system.
V.[2].SP.TPOSINC.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.PREVPOSINC.xn
(V.)[ch].A.PREVPOSINC.sn
(V.)[ch].SP.PREVPOSINC.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Real position increment of the previous sampling period.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.PREVPOSINC.Z	Z axis.
V.A.PREVPOSINC.S	Spindle S.
V.SP.PREVPOSINC.S	Spindle S.
V.SP.PREVPOSINC	Master spindle.
V.A.PREVPOSINC.4	Axis or spindle with logic number ·4·.
V.[2].A.PREVPOSINC.1	Axis with index ·1· in the channel ·2·.
V.SP.PREVPOSINC.2	Spindle with index ·2· in the system.
V.[2].SP.PREVPOSINC.1	Spindle with index ·1· in the channel ·2·.

11.3 Fine adjustment of feedrate, acceleration and jerk.

(V.)[ch].A.TFEED.xn
(V.)[ch].A.TFEED.sn
(V.)[ch].SP.TFEED.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Instantaneous theoretical speed value at the input of the position loop.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.TFEED.Z	Z axis.
V.A.TFEED.S	Spindle S.
V.SP.TFEED.S	Spindle S.
V.SP.TFEED	Master spindle.
V.A.TFEED.4	Axis or spindle with logic number ·4·.
V.[2].A.TFEED.1	Axis with index ·1· in the channel ·2·.
V.SP.TFEED.2	Spindle with index ·2· in the system.
V.[2].SP.TFEED.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.FEED.xn
(V.)[ch].A.FEED.sn
(V.)[ch].SP.FEED.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Instantaneous real speed value at the input of the position loop.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.FEED.Z	Z axis.
V.A.FEED.S	Spindle S.
V.SP.FEED.S	Spindle S.
V.SP.FEED	Master spindle.
V.A.FEED.4	Axis or spindle with logic number ·4·.
V.[2].A.FEED.1	Axis with index ·1· in the channel ·2·.
V.SP.FEED.2	Spindle with index ·2· in the system.
V.[2].SP.FEED.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.TACCEL.xn
(V.)[ch].A.TACCEL.sn
(V.)[ch].SP.TACCEL.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Theoretical instantaneous acceleration value.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.TACCEL.Z	Z axis.
V.A.TACCEL.S	Spindle S.
V.SP.TACCEL.S	Spindle S.
V.SP.TACCEL	Master spindle.
V.A.TACCEL.4	Axis or spindle with logic number ·4·.
V.[2].A.TACCEL.1	Axis with index ·1· in the channel ·2·.
V.SP.TACCEL.2	Spindle with index ·2· in the system.
V.[2].SP.TACCEL.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.ACCEL.xn
(V.)[ch].A.ACCEL.sn
(V.)[ch].SP.ACCEL.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Real instantaneous acceleration value.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.ACCEL.Z	Z axis.
V.A.ACCEL.S	Spindle S.
V.SP.ACCEL.S	Spindle S.
V.SP.ACCEL	Master spindle.
V.A.ACCEL.4	Axis or spindle with logic number ·4·.
V.[2].A.ACCEL.1	Axis with index ·1· in the channel ·2·.
V.SP.ACCEL.2	Spindle with index ·2· in the system.
V.[2].SP.ACCEL.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.TJERK.xn
(V.)[ch].A.TJERK.sn
(V.)[ch].SP.TJERK.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Theoretical instantaneous jerk value.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.TJERK.Z	Z axis.
V.A.TJERK.S	Spindle S.
V.SP.TJERK.S	Spindle S.
V.SP.TJERK	Master spindle.
V.A.TJERK.4	Axis or spindle with logic number ·4·.
V.[2].A.TJERK.1	Axis with index ·1· in the channel ·2·.
V.SP.TJERK.2	Spindle with index ·2· in the system.
V.[2].SP.TJERK.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.JERK.xn
(V.)[ch].A.JERK.sn
(V.)[ch].SP.JERK.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Real instantaneous jerk value.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.JERK.Z	Z axis.
V.A.JERK.S	Spindle S.
V.SP.JERK.S	Spindle S.
V.SP.JERK	Master spindle.
V.A.JERK.4	Axis or spindle with logic number ·4·.
V.[2].A.JERK.1	Axis with index ·1· in the channel ·2·.
V.SP.JERK.2	Spindle with index ·2· in the system.
V.[2].SP.JERK.1	Spindle with index ·1· in the channel ·2·.

11.4 Gain setting via PLC.

(V.)[ch].A.PLCFFGAIN.xn
(V.)[ch].A.PLCFFGAIN.sn
(V.)[ch].SP.PLCFFGAIN.sn

Variable that can be read and written from the PLC and read from the program and from the interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of feed-forward programmed from the PLC.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.PLCFFGAIN.Z	Z axis.
V.A.PLCFFGAIN.S	Spindle S.
V.SP.PLCFFGAIN.S	Spindle S.
V.SP.PLCFFGAIN	Master spindle.
V.A.PLCFFGAIN.4	Axis or spindle with logic number ·4·.
V.[2].A.PLCFFGAIN.1	Axis with index ·1· in the channel ·2·.
V.SP.PLCFFGAIN.2	Spindle with index ·2· in the system.
V.[2].SP.PLCFFGAIN.1	Spindle with index ·1· in the channel ·2·.

Remarks.

In order for the feed-forward and the AC-forward defined this way to be taken into account, they must be active by machine parameter; i.e. by means of machine parameter FFWTYPE if it is an analog drive or a simulated drive or parameter OPMODEP if it is a Sercos drive.

The values defined by these variables prevail over the ones defined by machine parameters or by program. Setting the variables with a negative value cancels their effect ("0" is a valid value). These variables are initialized neither by a reset nor when validating the parameters.

The reading from the PLC will be given in hundredths (x100); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·1000·.

(V.)[ch].A.PLCACFGAIN.xn
(V.)[ch].A.PLCACFGAIN.sn
(V.)[ch].SP.PLCACFGAIN.sn

Variable that can be read and written from the PLC and read from the program and from the interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of AC-forward programmed from the PLC.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.PLCACFGAIN.Z	Z axis.
V.A.PLCACFGAIN.S	Spindle S.
V.SP.PLCACFGAIN.S	Spindle S.
V.SP.PLCACFGAIN	Master spindle.
V.A.PLCACFGAIN.4	Axis or spindle with logic number ·4·.
V.[2].A.PLCACFGAIN.1	Axis with index ·1· in the channel ·2·.
V.SP.PLCACFGAIN.2	Spindle with index ·2· in the system.
V.[2].SP.PLCACFGAIN.1	Spindle with index ·1· in the channel ·2·.

Remarks.

In order for the feed-forward and the AC-forward defined this way to be taken into account, they must be active by machine parameter; i.e. by means of machine parameter FFWTYPE if it is an analog drive or a simulated drive or parameter OPMODEP if it is a Sercos drive.

The values defined by these variables prevail over the ones defined by machine parameters or by program. Setting the variables with a negative value cancels their effect ("0" is a valid value). These variables are initialized neither by a reset nor when validating the parameters.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

(V.)[ch].A.PLCPROGAIN.xn
(V.)[ch].A.PLCPROGAIN.sn
(V.)[ch].SP.PLCPROGAIN.sn

Variable that can be read and written from the PLC and read from the program and from the interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Proportional gain programmed from the PLC.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.PLCPROGAIN.Z	Z axis.
V.A.PLCPROGAIN.S	Spindle S.
V.SP.PLCPROGAIN.S	Spindle S.
V.SP.PLCPROGAIN	Master spindle.
V.A.PLCPROGAIN.4	Axis or spindle with logic number ·4·.
V.[2].A.PLCPROGAIN.1	Axis with index ·1· in the channel ·2·.
V.SP.PLCPROGAIN.2	Spindle with index ·2· in the system.
V.[2].SP.PLCPROGAIN.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The values defined by these variables prevail over the ones defined by machine parameters or by program. Setting the variables with a negative value cancels their effect ("0" is a valid value). These variables are initialized neither by a reset nor when validating the parameters.

11.5 Variables related to the loop of the axis or of the tandem spindle.

(V.)[ch].A.TPIIN.xn
(V.)[ch].A.TPIIN.sn
(V.)[ch].SP.TPIIN.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Input of the PI of the master axis of the tandem (in rpm).

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.TPIIN.Z	Z axis.
V.A.TPIIN.S	Spindle S.
V.SP.TPIIN.S	Spindle S.
V.SP.TPIIN	Master spindle.
V.A.TPIIN.4	Axis or spindle with logic number ·4·.
V.[2].A.TPIIN.1	Axis with index ·1· in the channel ·2·.
V.SP.TPIIN.2	Spindle with index ·2· in the system.
V.[2].SP.TPIIN.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.TPIOUT.xn
(V.)[ch].A.TPIOUT.sn
(V.)[ch].SP.TPIOUT.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Output of the PI of the master axis of the tandem (in rpm).

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.TPIOUT.Z	Z axis.
V.A.TPIOUT.S	Spindle S.
V.SP.TPIOUT.S	Spindle S.
V.SP.TPIOUT	Master spindle.
V.A.TPIOUT.4	Axis or spindle with logic number ·4·.
V.[2].A.TPIOUT.1	Axis with index ·1· in the channel ·2·.
V.SP.TPIOUT.2	Spindle with index ·2· in the system.
V.[2].SP.TPIOUT.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.TFILTOUT.xn
(V.)[ch].A.TFILTOUT.sn
(V.)[ch].SP.TFILTOUT.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Output of the pre-load filter of the tandem.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.TFILTOUT.Z	Z axis.
V.A.TFILTOUT.S	Spindle S.
V.SP.TFILTOUT.S	Spindle S.
V.SP.TFILTOUT	Master spindle.
V.A.TFILTOUT.4	Axis or spindle with logic number ·4·.
V.[2].A.TFILTOUT.1	Axis with index ·1· in the channel ·2·.
V.SP.TFILTOUT.2	Spindle with index ·2· in the system.
V.[2].SP.TFILTOUT.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.PRELOAD.xn
(V.)[ch].A.PRELOAD.sn
(V.)[ch].SP.PRELOAD.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Preload in the tandem.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

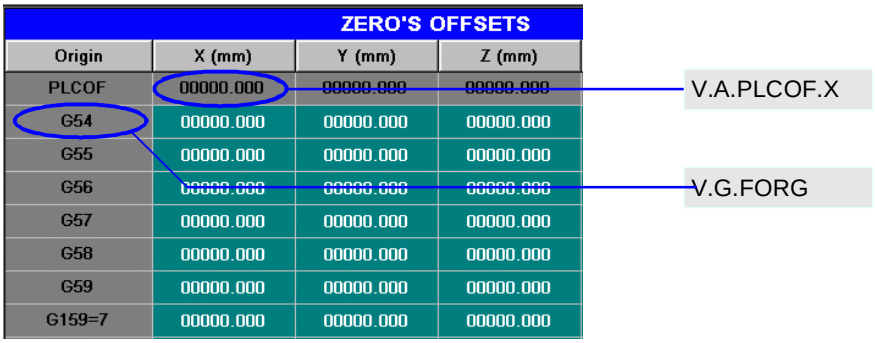
·sn· Name, logic number or index of the spindle.

V.A.PRELOAD.Z	Z axis.
V.A.PRELOAD.S	Spindle S.
V.SP.PRELOAD.S	Spindle S.
V.SP.PRELOAD	Master spindle.
V.A.PRELOAD.4	Axis or spindle with logic number ·4·.
V.[2].A.PRELOAD.1	Axis with index ·1· in the channel ·2·.
V.SP.PRELOAD.2	Spindle with index ·2· in the system.
V.[2].SP.PRELOAD.1	Spindle with index ·1· in the channel ·2·.

VARIABLES RELATED TO USER TABLES.

12

12.1 Zero offset table.



(V.)G.FORG

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

First zero offset in the table.

V.G.FORG

(V.)G.NUMORG

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of zero offsets in the table.

V.G.NUMORG

(V.)[ch].A.PLCOF.xn
(V.)[ch].A.PLCOF.sn
(V.)[ch].SP.PLCOF.sn

Variable that can be read and written from the program and from the PLC and read from the interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

xn axis. Offset of the zero offset set by PLC.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.PLCOF.Z	Z axis.
V.A.PLCOF.S	Spindle S.
V.SP.PLCOF.S	Spindle S.
V.SP.PLCOF	Master spindle.

V.A.PLCOF.4	Axis or spindle with logic number ·4·.
V.[2].A.PLCOF.1	Axis with index ·1· in the channel ·2·.
V.SP.PLCOF.2	Spindle with index ·2· in the system.
V.[2].SP.PLCOF.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.ACTPLCOF.xn
(V.)[ch].A.ACTPLCOF.sn
(V.)[ch].SP.ACTPLCOF.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

xn axis. Accumulated PLC offset.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.ACTPLCOF.Z	Z axis.
V.A.ACTPLCOF.S	Spindle S.
V.SP.ACTPLCOF.S	Spindle S.
V.SP.ACTPLCOF	Master spindle.
V.A.ACTPLCOF.4	Axis or spindle with logic number ·4·.
V.[2].A.ACTPLCOF.1	Axis with index ·1· in the channel ·2·.
V.SP.ACTPLCOF.2	Spindle with index ·2· in the system.
V.[2].SP.ACTPLCOF.1	Spindle with index ·1· in the channel ·2·.

12.1.1 Zero offset table (without fine setting of the absolute zero offset).

The fine setting of the absolute zero offset is enabled via machine parameters (parameter FINEORG)

ZERO'S OFFSETS			
Origin	X (mm)	Y (mm)	Z (mm)
PLCOF	00000.000	00000.000	00000.000
G54	00000.000	00000.000	00000.000
G55	00000.000	00000.000	00000.000
G56	00000.000	00000.000	00000.000
G57	00000.000	00000.000	00000.000
G58	00000.000	00000.000	00000.000
G59	00000.000	00000.000	00000.000
G159=7	00000.000	00000.000	00000.000

V.A.ORGT[6].Y

(V.)[ch].A.ORG.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

xn axis. Value of the active zero offset (absolute G159 + incremental G158).

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.ORG.Z	Z axis.
V.A.ORG.3	Axis with logic number ·3·.
V.[2].A.ORG.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.ADDORG.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

xn axis. Value of the active incremental zero offset (G158).

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.ADDORG.Z	Z axis.
V.A.ADDORG.3	Axis with logic number ·3·.
V.[2].A.ADDORG.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.ORGT[nb].xn

Variable that can be read and written from the program and from the PLC and read from the interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

xn axis. Offset set in the zero offset [nb].

Syntax.

·ch· Channel number.

·nb· Zero offset number.

·xn· Name, logic number or index of the axis.

V.A.ORGT[1].Z	Zero offset G54 (G159=1). Z axis.
V.A.ORGT[4]0.3	Zero offset G57 (G159=4). Axis with logic number ·3·.
V.[2].A.ORGT[9].3	Zero offset G159=9. Axis with index ·3· in the channel ·2·.

Remarks.

The numbering of zero offsets G54 through G59 is always the same; G54=1, G55=2, G56=3, G57=4, G58=5, G59=6.

12.1.2 Zero offset table (with fine setting of the absolute zero offset).

The fine setting of the absolute zero offset is enabled via machine parameters (parameter FINEORG)

(V.)[ch].A.ORG.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

xn axis. Value of the active zero offset (coarse absolute G159 + fine absolute G159 + incremental G158).

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.ORG.Z	Z axis.
V.A.ORG.3	Axis with logic number ·3·.
V.[2].A.ORG.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.ADDORG.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

xn axis. Value of the active incremental zero offset (G158).

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.ADDORG.Z	Z axis.
V.A.ADDORG.3	Axis with logic number ·3·.
V.[2].A.ADDORG.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.COARSEORG.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

xn axis. Value of the active absolute zero offset (G159), coarse part.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.COARSEORG.Z	Z axis.
V.A.COARSEORG.3	Axis with logic number ·3·.
V.[2].A.COARSEORG.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.FINEORG.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

xn axis. Value of the active absolute zero offset (G159), fine part.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.FINEORG.Z	Z axis.
V.A.FINEORG.3	Axis with logic number ·3·.
V.[2].A.FINEORG.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.ORGT[nb].xn

Variable that can be read and written from the program and from the PLC and read from the interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

xn axis. Offset set in the zero offset [nb]; coarse part plus fine part.

When writing this variable, the value is assigned to the coarse part deleting the fine part.

Syntax.

·ch· Channel number.

·nb· Zero offset number.

·xn· Name, logic number or index of the axis.

V.A.ORGT[1].Z	Zero offset G54 (G159=1). Z axis.
V.A.ORGT[4]0.3	Zero offset G57 (G159=4). Axis with logic number ·3·.
V.[2].A.ORGT[9].3	Zero offset G159=9. Axis with index ·3· in the channel ·2·.

Remarks.

The numbering of zero offsets G54 through G59 is always the same; G54=1, G55=2, G56=3, G57=4, G58=5, G59=6.

(V.)[ch].A.COARSEORGT[nb].xn

Variable that can be read and written from the program and from the PLC and read from the interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

xn axis. Offset set in the zero offset [nb]; coarse part.

Syntax.

·ch· Channel number.

·nb· Zero offset number.

·xn· Name, logic number or index of the axis.

V.A.COARSEORGT[1].Z	Zero offset G54 (G159=1). Z axis.
V.A.COARSEORGT[4].3	Zero offset G57 (G159=4). Axis with logic number ·3·.
V.[2].A.COARSEORGT[9].3	Zero offset G159=9. Axis with index ·3· in the channel ·2·.

(V.)[ch].A.FINEORGT[nb].xn

Variable that can be read and written from the program and from the PLC and read from the interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

xn axis. Offset set in the zero offset [nb]; fine part.

Syntax.

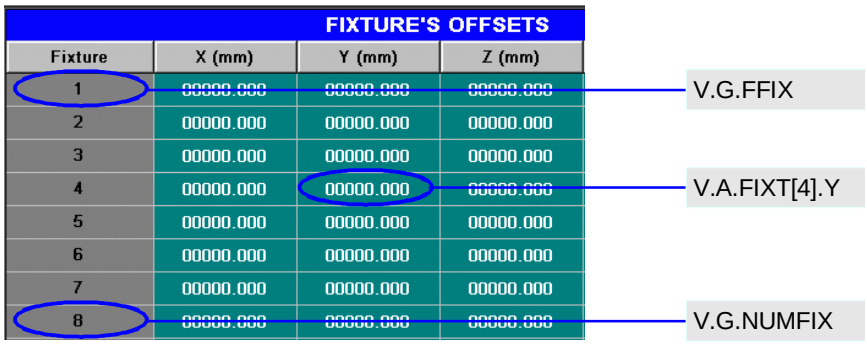
·ch· Channel number.

·nb· Zero offset number.

·xn· Name, logic number or index of the axis.

V.A.FINEORGT[1].Z	Zero offset G54 (G159=1). Z axis.
V.A.FINEORGT[4].3	Zero offset G57 (G159=4). Axis with logic number ·3·.
V.[2].A.FINEORGT[9].3	Zero offset G159=9. Axis with index ·3· in the channel ·2·.

12.2 Variables related to user tables (fixture table).



(V.)G.FFIX

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

First fixture of the table.

V.G.FFIX

(V.)G.NUMFIX

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of fixtures in the table.

V.G.NUMFIX

(V.)[ch].G.FIX

Variable that can be read and written from the program and read from the PLC and from the interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).

Number of current fixture.

Syntax.

·ch· Channel number.

V.[2].G.FIX	Channel ·2·. Number of current fixture.

(V.)[ch].A.FIX.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

xn axis. Offset set in the current fixture.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.FIX.Z	Z axis.
V.A.FIX.3	Axis with logic number ·3·.
V.[2].A.FIX.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.FIXT[nb].xn

Variable that can be read and written from the program and from the PLC and read from the interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

xn axis. Offset set in the [nb] fixture.

Syntax.

·ch· Channel number.

·nb· Fixture offset number.

·xn· Name, logic number or index of the axis.

V.A.FIXT[1].Z	First zero offset. Z axis.
V.A.FIXT[4].3	Fourth zero offset. Axis with logic number ·3·.
V.[2].A.FIXT[9].3	Ninth zero offset. Axis with index ·3· in the channel ·2·.

12.3 Variables related to user tables (arithmetic parameters table).

12.3.1 Local arithmetic parameters.

(V.)[ch].G.LUPACT[nb]

Variable that can be read and written via PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Value of local arithmetic parameter [nb] of the current nesting level.

Syntax.

·ch· Channel number.

·nb· Parameter number.

[2].G.LUPACT[14]	Channel ·2·. Value of parameter ·14·.

(V.)[ch].G.LUP1[nb]
..
(V.)[ch].G.LUP7[nb]

Variable that can be read and written via PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Value of local arithmetic parameter [nb] of nesting level 1 through 7.

Syntax.

·ch· Channel number.

·nb· Parameter number.

[2].G.LUP1[14]	Channel ·2·. Value of parameter ·14· of nesting level ·1·.
[2].G.LUP7[6]	Channel ·2·. Value of parameter ·6· of nesting level ·7·.

Remarks.

When reading this variable from the PLC, it truncates the decimal side. If the value of the parameter is 54.9876, when read from the PLC, it will return the value 54.

Value of the parameter.	Reading from the PLC.
P14 = 23.1234	G.LUP1[14] = 23 G.LUP1F[14] = 231234
P22 =-12.0987	G.LUP1[22] = -12 G.LUP1F[22] = -120987

(V.)[ch].G.LUP1F[nb]
..
(V.)[ch].G.LUP7F[nb]

Variable that can be read and written via PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Value of local arithmetic parameter [nb] of nesting level 1 through 7 (value x10000).

Syntax.

·ch· Channel number.

·nb· Parameter number.

[2].G.LUP1F[14]	Channel ·2·. Value of parameter ·14· of nesting level ·1·.
[2].G.LUP7F[6]	Channel ·2·. Value of parameter ·6· of nesting level ·7·.

Remarks.

Reading these variables from the PLC returns the parameter value multiplied by 10000. If the value of the parameter is 54.9876, when read from the PLC, it will return the value 549876.

Value of the parameter.	Reading from the PLC.
P14 = 23.1234	G.LUP1[14] = 23 G.LUP1F[14] = 231234
P22 =-12.0987	G.LUP1[22] = -12 G.LUP1F[22] = -120987

12.3.2 Global arithmetic parameters.

(V.)[ch].G.GUP[nb]

Variable that can be read and written via PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Value of the global arithmetic parameter [nb].

Syntax.

·ch· Channel number.

·nb· Parameter number.

[2].G.GUP[114]	Channel ·2·. Value of parameter ·114·.

Remarks.

When reading this variable from the PLC, it truncates the decimal side. If the value of the parameter is 54.9876, when read from the PLC, it will return the value 54.

Value of the parameter.	Reading the variable.
P114 = 124.4567	G.GUP[114] = 124 G.GUPF[114] = 1244567
P200 =-12.0987	G.GUP[200] = -12 G.GUPF[200] = -120987

(V.)[ch].G.GUPF[nb]

Variable that can be read and written via PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Value of the global arithmetic parameter [nb] (value x10000).

Syntax.

·ch· Channel number.

·nb· Parameter number.

[2].G.GUP[114]	Channel ·2·. Value of parameter ·114·.

Remarks.

Reading these variables from the PLC returns the parameter value multiplied by 10000. If the value of the parameter is 54.9876, when read from the PLC, it will return the value 549876.

Value of the parameter.	Reading the variable.
P114 = 124.4567	G.GUP[114] = 124 G.GUPF[114] = 1244567
P200 =-12.0987	G.GUP[200] = -12 G.GUPF[200] = -120987

12.3.3 Common arithmetic parameters.

(V.)G.CUP[nb]

Variable that can be read and written via PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Value of the common arithmetic parameter [nb].

Syntax.

·nb· Parameter number.

[2].G.CUP[10014]	Channel ·2·. Value of parameter ·10014·.

Remarks.

When reading this variable from the PLC, it truncates the decimal side. If the value of the parameter is 54.9876, when read from the PLC, it will return the value 54.

Value of the parameter.	Reading the variable.
P10014 = 124.4567	G.CUP[10014] = 124 G.CUPF[10014] = 1244567
P10200 =-12.0987	G.CUP[10200] = -12 G.CUPF[10200] = -120987

(V.)G.CUPF[nb]

Variable that can be read and written via PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Value of the common arithmetic parameter [nb] (value x10000).

Syntax.

·nb· Parameter number.

[2].G.CUPF[10014]	Channel ·2·. Value of parameter ·10014·.

Remarks.

Reading these variables from the PLC returns the parameter value multiplied by 10000. If the value of the parameter is 54.9876, when read from the PLC, it will return the value 549876.

Value of the parameter.	Reading the variable.
P10014 = 124.4567	G.CUP[10014] = 124 G.CUPF[10014] = 1244567
P10200 =-12.0987	G.CUP[10200] = -12 G.CUPF[10200] = -120987

12.

VARIABLES RELATED TO USER TABLES.

Variables related to user tables (arithmetic parameters table).

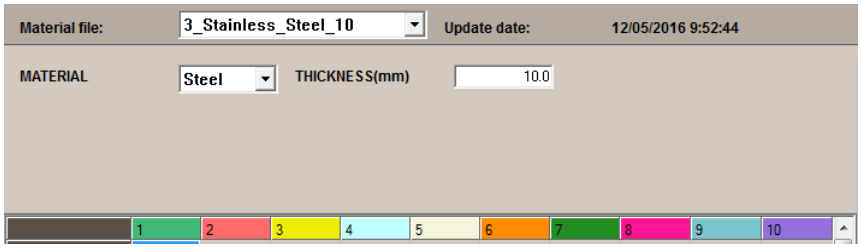
FAGOR AUTOMATION

CNC 8070

(REF: 1709)

VARIABLES ASSOCIATED WITH THE TECHNOLOGICAL TABLES. 13

13.1 Variables associated with the technological tables (common parameters).



(V.)TT.name

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Common parameter defined by the OEM. Replace "name" with the parameter name.

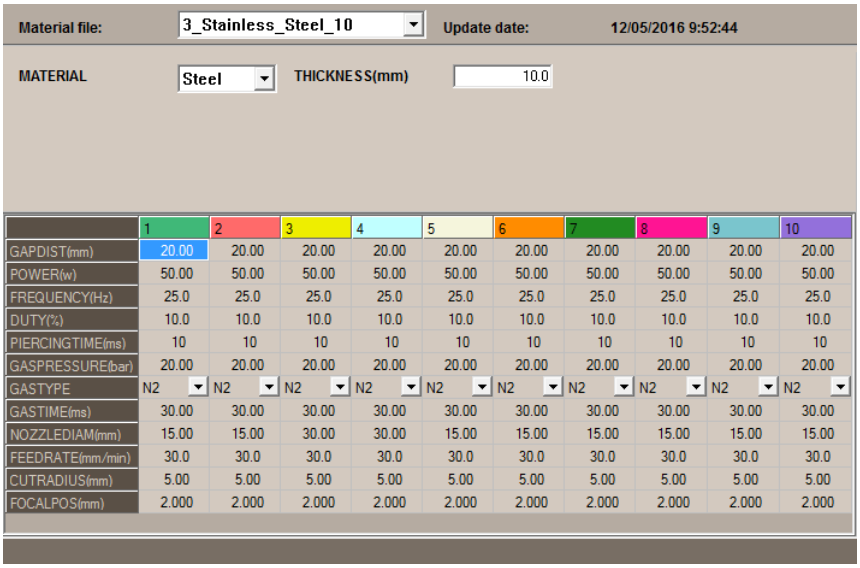
(V.)TT.THICKNESS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Sheet metal thickness.

```
V.TT.THICKNESS
```

13.2 Variables associated with the technological tables (piercing).



Material file: 3_Stainless_Steel_10 Update date: 12/05/2016 9:52:44

MATERIAL: Steel THICKNESS(mm): 10.0

	1	2	3	4	5	6	7	8	9	10
GAPDIST(mm)	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
POWER(w)	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
FREQUENCY(Hz)	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
DUTY(%)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
PIERCINGTIME(ms)	10	10	10	10	10	10	10	10	10	10
GASPRESSURE(bar)	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
GASTYPE	N2	N2	N2	N2	N2	N2	N2	N2	N2	N2
GASTIME(ms)	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
NOZZLEDIAM(mm)	15.00	15.00	30.00	30.00	15.00	15.00	15.00	15.00	15.00	15.00
FEEDRATE(mm/min)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
CUTRADIUS(mm)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
FOCALPOS(mm)	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000

(V.)TTPIR.name

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Technological parameters for the piercing.

- Parameters set by Fagor. Replace "name" with the parameter name.
- Parameter set by the OEM or the user. Replace "name" with the name of the variable associated with the parameter, set by the OEM.

(V.)TTPIR.GAPDIST

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Part gap or distance.

V.TTPIR.GAPDIST

(V.)TTPIR.POWER

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Watts.

Power.

V.TTPIR.POWER

(V.)TTPIR.FREQUENCY

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Herz.

Frequency.

V.TTPIR.FREQUENCY

(V.)TTPIR.DUTY

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Percentage.

Duty cycle.

V.TTPIR.DUTY

(V.)TTPIR.PIERCINGTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Milliseconds.

Piercing duration.

V.TTPIR.PIERCINGTIME

(V.)TTPIR.GASPRESSURE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Bar or psi.

Gas pressure.

V.TTPIR.GASPRESSURE

(V.)TTPIR.GASTYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Type of gas.

V.TTPIR.GASTYPE

Values of the variable.

Value.	Meaning.
10	N2.
20	O2.
30	Air.

(V.)TTPIR.GASTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Milliseconds.

Dwell time after activating the gas.

V.TTPIR.GASTIME

(V.)TTPIR.NOZZLEDIAM

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Nozzle diameter.

V.TTPIR.NOZZLEDIAM

(V.)TTPIR.FEEDRATE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: In millimeters/minute or inches/minute.

Work feedrate.

V.TTPIR.FEEDRATE

(V.)TTPIR.CUTRADIUS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Laser radio.

V.TTPIR.CUTRADIUS

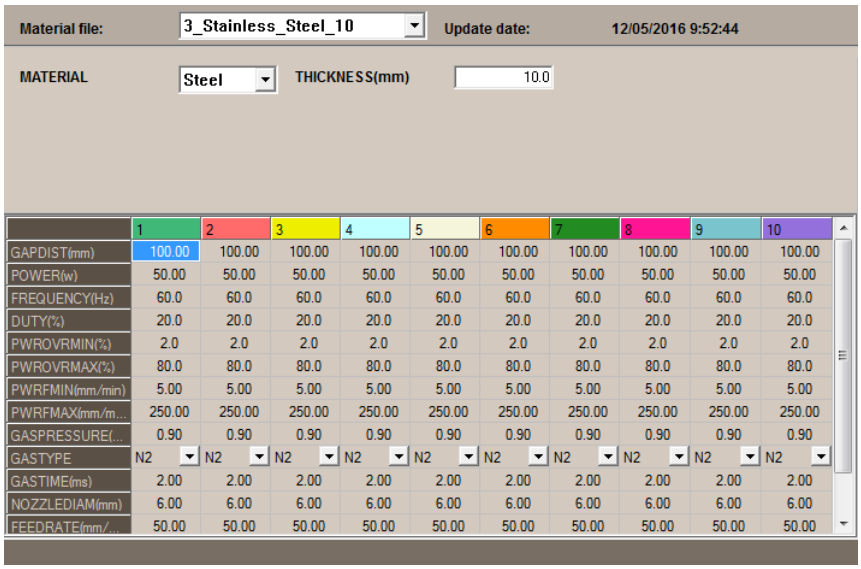
(V.)TTPIR.FOCALPOS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Laser focus position regarding the sheet surface. With a positive value, the focus is above the sheet; with a negative value, the focus is under or inside the sheet.

V.TTPIR.FOCALPOS

13.3 Variables associated with the technological tables (cutting).



	1	2	3	4	5	6	7	8	9	10
GAPDIST(mm)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
POWER(w)	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
FREQUENCY(Hz)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
DUTY(%)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
PWROVRMIN(%)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PWROVRMAX(%)	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
PWRFMIN(mm/min)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
PWRFMAX(mm/m...	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00	250.00
GASPRESSURE(...	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
GASTYPE	N2	N2	N2	N2	N2	N2	N2	N2	N2	N2
GASTIME(ms)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
NOZZLEDIAM(mm)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
FEEDRATE(mm/...	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00

(V.)TTCUT.name

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Technological parameters for the cutting.

- Parameters set by Fagor. Replace "name" with the parameter name.
- Parameter set by the OEM or the user. Replace "name" with the name of the variable associated with the parameter, set by the OEM.

(V.)TTCUT.GAPDIST

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Part gap or distance.

```
V.TTCUT.GAPDIST
```

(V.)TTCUT.POWER

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Watts.

Power.

```
V.TTCUT.POWER
```

(V.)TTCUT.FREQUENCY

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Herz.

Frequency.

```
V.TTCUT.FREQUENCY
```

(V.)TTCUT.DUTY

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Percentage.

Duty cycle.

V.TTCUT.DUTY

(V.)TTCUT.PWROVRMIN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Percentage.

Minimum power percentage for power control. Power percentage for a feed greater than or equal to the minimum (PWRFMIN).

V.TTCUT.PWOVRMIN

(V.)TTCUT.PWROVRMAX

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Percentage.

Maximum power percentage for power control. Power percentage for a feed greater than or equal to the maximum (PWRFMAX).

V.TTCUT.PWOVRMAX

(V.)TTCUT.PWRFMIN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: In millimeters/minute or inches/minute.

Minimum feed for power control. Feed below which the CNC applies the minimum power percentage (PWROVRMIN). Between the minimum and maximum feeds, power is proportional to the feed.

V.TTCUT.PWRFMIN

(V.)TTCUT.PWRFMAX

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: In millimeters/minute or inches/minute.

Maximum feed for power control. Feed above which the CNC applies the maximum power percentage (PWROVRMAX). Between the minimum and maximum feeds, power is proportional to the feed.

V.TTCUT.PWRFMAX

(V.)TTCUT.GASPRESSURE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Bar or psi.

Gas pressure.

V.TTCUT.GASPRESSURE

(V.)TTCUT.GASTYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Value listed.

Type of gas.

V.TTCUT.GASTYPE

Values of the variable.

Value.	Meaning.
10	N2.
20	O2.
30	Air.

(V.)TTCUT.GASTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: Milliseconds.

Dwell time after activating the gas.

V.TTCUT.GASTIME

(V.)TTCUT.NOZZLEDIAM

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Nozzle diameter.

V.TTCUT.NOZZLEDIAM

(V.)TTCUT.FEEDRATE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: In millimeters/minute or inches/minute.

Work feedrate.

V.TTCUT.FEEDRATE

(V.)TTCUT.CUTRADIUS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Laser radio.

V.TTCUT.CUTRADIUS

(V.)TTCUT.FOCALPOS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Units: mm or inches.

Laser focus position regarding the sheet surface. With a positive value, the focus is above the sheet; with a negative value, the focus is under or inside the sheet.

V.TTCUT.FOCALPOS

13.

VARIABLES ASSOCIATED WITH THE TECHNOLOGICAL

Variables associated with the technological tables (cutting).

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

VARIABLES RELATED TO THE POSITION OF THE AXES.

14

There are real and theoretical coordinates corresponding to the tool base and tool tip. All of them may be referred to Machine Zero or to the current Part Zero.

A theoretical coordinate is the position that the axis must occupy at all times, a real coordinate is the one it actually occupies and the difference between these two is called "following error".

14.1 Programmed coordinates.

(V.)[ch].A.PPOS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Channel [ch]. Programmed part coordinates (tool tip).

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.PPOS.Z	Z axis.
V.A.PPOS.3	Axis with logic number ·3·.
V.[2].A.PPOS.3	Axis with index ·3· in the channel ·2·.

Remarks.

This variable returns the target coordinate, in part coordinates and referred to the tool tip, in the current reference system; i.e. taking into consideration the coordinate rotation, scaling factor, active inclined plane, etc.

Programmed movements.	Returned values.
G1 X10	V.A.PPOS.X = 10
#SCALE [2] G1 X10	Scaling factor of ·2·. V.A.PPOS.X = 20
G73 Q90 G1 X10	Coordinate system rotation. V.A.PPOS.Y = 20 The Y axis is the one that moves

The values read from a program or from the PLC and the interface will be different when the coordinate is affected by tool compensation or when machining in round corner mode. The value read by program will be the programmed coordinate whereas the value read from the PLC or interface will be the real (actual) coordinate considering tool radius compensation and corner rounding.

(V.)[ch].G.PLPPOS1

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Channel [ch]. Coordinate programmed in the first axis of the channel (tool tip).

Syntax.

·ch· Channel number.

V.[2].G.PLPPOS1	Channel ·2·.

(V.)[ch].G.PLPPOS2

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Channel [ch]. Coordinate programmed in the second axis of the channel (tool tip).

Syntax.

·ch· Channel number.

V.[2].G.PLPPOS2	Channel ·2·.

(V.)[ch].G.PLPPOS3

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Channel [ch]. Coordinate programmed in the third axis of the channel (tool tip).

Syntax.

·ch· Channel number.

V.[2].G.PLPPOS3	Channel ·2·.

14.2 Position in part coordinates.

(V.)[ch].A.APOS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Real part coordinates of the tool base.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.APOS.Z	Z axis.
V.A.APOS.3	Axis with logic number ·3·.
V.[2].A.APOS.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.ATPOS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Theoretical part coordinates of the tool base.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.ATPOS.Z	Z axis.
V.A.ATPOS.3	Axis with logic number ·3·.
V.[2].A.ATPOS.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.ATIPPOS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Real part coordinates of the tool tip.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.ATIPPOS.Z	Z axis.
V.A.ATIPPOS.3	Axis with logic number ·3·.
V.[2].A.ATIPPOS.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.ATIPTPOS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Theoretical part coordinates of the tool tip.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.ATIPTPOS.Z	Z axis.
V.A.ATIPTPOS.3	Axis with logic number ·3·.
V.[2].A.ATIPTPOS.3	Axis with index ·3· in the channel ·2·.

14.3 Position in machine coordinates.

(V.)[ch].A.POS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Real machine coordinates of the tool base.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.POS.Z	Z axis.
V.A.POS.3	Axis with logic number ·3·.
V.[2].A.POS.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.TPOS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Theoretical machine coordinates of the tool base.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.TPOS.Z	Z axis.
V.A.TPOS.3	Axis with logic number ·3·.
V.[2].A.TPOS.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.TIPPOS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Real machine coordinates of the tool tip.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.TIPPOS.Z	Z axis.
V.A.TIPPOS.3	Axis with logic number ·3·.
V.[2].A.TIPPOS.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.TIPTPOS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Theoretical machine coordinates of the tool tip.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.TIPTPOS.Z	Z axis.
V.A.TIPTPOS.3	Axis with logic number ·3·.
V.[2].A.TIPTPOS.3	Axis with index ·3· in the channel ·2·.

14.4 Position read in the internal feedback (motor feedback).

(V.)[ch].A.POSMOTOR.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Value of the internal feedback (motor feedback).

When the combined feedback is active (parameter FBMIXTIME), the variable returns the value of the internal feedback (motor feedback). If there is no feedback combination, the value of the variable coincides with (V.)[ch].A.POS.xn.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.POSMOTOR.Z	Z axis.
V.A.POSMOTOR.3	Axis with logic number ·3·.
V.[2].A.POSMOTOR.3	Axis with index ·3· in the channel ·2·.

14.5 Following error of the axis.

(V.)[ch].A.FLWE.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Following error, lag (difference between the theoretical position value and the actual, real, position value of the axis).

If there is no feedback combination, the CNC reads the actual (real) position from either the internal or the external feedback (parameter FBACKSRC). If feedback combination is active (parameter FBMIXTIME), the CNC calculates the following error (lag) using the combined feedback.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.FLWE.Z	Z axis.
V.A.FLWE.3	Axis with logic number ·3·.
V.[2].A.FLWE.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.FLWACT.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Following error (lag) with respect to the external feedback (direct feedback).

When the combined feedback is active (parameter FBMIXTIME), the variable returns the following error (axis lag) with respect to the external feedback (direct feedback). If there is no feedback combination, the variable returns the following error (lag) with respect to the active feedback (parameter FBACKSRC), same as the variable "(V.)[ch].A.FLWE.xn".

Active feedback.	V.A.FLWE.xn	V.A.FLWACT.xn
Internal	Following error (lag) with respect to the internal feedback (motor feedback).	
External	Following error (lag) with respect to the external feedback (direct feedback).	
Feedback combination.	Following error (lag) with respect to the combined feedback.	Following error (lag) with respect to the external feedback.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.FLWACT.Z	Z axis.
V.A.FLWACT.3	Axis with logic number ·3·.
V.[2].A.FLWACT.3	Axis with index ·3· in the channel ·2·.

(V.)[ch].A.FLWEST.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Linear estimate of the following error (lag).

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.FLWE.Z	Z axis.
V.A.FLWE.3	Axis with logic number ·3·.
V.[2].A.FLWE.3	Axis with index ·3· in the channel ·2·.

14.6 Distance left (to go) for the axis to reach the programmed coordinate.

(V.)[ch].A.TOGO.xn

Variable that can only be read from the PLC and interface.
Variable valid for rotary and linear axes.

Channel [ch]. Distance left (to go) for the axis to reach the programmed coordinate.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.TOGO.Z	Z axis.
V.A.TOGO.3	Axis with logic number ·3·.
V.[2].A.TOGO.3	Axis with index ·3· in the channel ·2·.

VARIABLES RELATED TO SPINDLE POSITION.

15

The following are used when the spindle is working in closed loop, it behaves like an axis. A theoretical coordinate is the position that the spindle must occupy at all times, a real coordinate is the one it actually occupies and the difference between these two is called "following error".

15.1 Spindle position.

(V.)[ch].A.PPOS.sn
(V.)[ch].SP.PPOS.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Programmed spindle position.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.PPOS.S	Spindle S.
V.SP.PPOS.S	Spindle S.
V.SP.PPOS	Master spindle.
V.A.PPOS.5	Spindle with logic number ·5·.
V.SP.PPOS.2	Spindle with index ·2· in the system.
V.[2].SP.PPOS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.POS.sn
(V.)[ch].SP.POS.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Real spindle position.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.POS.S	Spindle S.
V.SP.POS.S	Spindle S.
V.SP.POS	Master spindle.
V.A.POS.5	Spindle with logic number ·5·.
V.SP.POS.2	Spindle with index ·2· in the system.
V.[2].SP.POS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.TPOS.sn
(V.)[ch].SP.TPOS.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Theoretical spindle position.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.TPOS.S	Spindle S.
V.SP.TPOS.S	Spindle S.
V.SP.TPOS	Master spindle.
V.A.TPOS.5	Spindle with logic number ·5·.
V.SP.TPOS.2	Spindle with index ·2· in the system.
V.[2].SP.TPOS.1	Spindle with index ·1· in the channel ·2·.

15.2 Spindle following error.

(V.)[ch].A.FLWE.sn
(V.)[ch].SP.FLWE.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Spindle following error.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.FLWE.S	Spindle S.
V.SP.FLWE.S	Spindle S.
V.SP.FLWE	Master spindle.
V.A.FLWE.5	Spindle with logic number ·5·.
V.SP.FLWE.2	Spindle with index ·2· in the system.
V.[2].SP.FLWE.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.FLWEST.sn
(V.)[ch].SP.FLWEST.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Linear estimate of the spindle following error (lag).

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.FLWEST.S	Spindle S.
V.SP.FLWEST.S	Spindle S.
V.SP.FLWEST.S	Master spindle.
V.A.FLWEST.5	Spindle with logic number ·5·.
V.SP.FLWEST.2	Spindle with index ·2· in the system.
V.[2].SP.FLWEST.1	Spindle with index ·1· in the channel ·2·.

15.

VARIABLES RELATED TO SPINDLE POSITION.

Spindle following error.

FAGOR

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

FEEDRATE RELATED VARIABLES. 16

16.1 Feedrate active in the channel.

(V.)[ch].G.FREAL

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Real filtered feedrate on the tool path.

Syntax.

·ch· Channel number.

V.[2].G.FREAL	Channel ·2·.

Remarks.

This variable takes into account the accelerations and decelerations of the machine. When the axes are stopped, it returns a value of ·0· and when moving it returns the value corresponding to the feedrate in mm (inches) per minute. On laser cutting machines, it is recommended to use this variable so the laser power is proportional to the feedrate.

Use the oscilloscope to compare the real and theoretical feedrates along the path and detect adjustment problems when both are different at specific points. Also, using variables V.G.LINEN and V.G.BLKN, it is possible to associate these feedrate changes with the program blocks or lines where they occur.

(V.)[ch].G.FREALPR

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Actual (real) CNC feedrate in G95.

Syntax.

·ch· Channel number.

V.[2].G.FREALPR	Channel ·2·.

Remarks.

This variable takes into account the accelerations and decelerations of the machine. When the axes are stopped, it returns a value of ·0· and when moving it returns the value corresponding to the feedrate in mm (inches) per turn.

(V.)[ch].G.PATHFEED

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Theoretical feedrate on the tool path.

Syntax.

·ch· Channel number.

V.[2].G.PATHFEED	Channel ·2·.

Remarks.

Use the oscilloscope to compare the real and theoretical feedrates along the path and detect adjustment problems when both are different at specific points. Also, using variables V.G.LINEN and V.G.BLKN, it is possible to associate these feedrate changes with the program blocks or lines where they occur.

(V.)[ch].G.ACTFEED

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Real feedrate on the tool path.

Syntax.

·ch· Channel number.

V.[2].G.ACTFEED	Channel ·2·.

Remarks.

This variable takes into account the accelerations and decelerations of the machine. When the axes are stopped, it returns a value of ·0· and when moving it returns the value corresponding to the feedrate type G94/G95. On laser cutting machines, it is recommended to use this variable so the laser power is proportional to the feedrate.

Use the oscilloscope to compare the real and theoretical feedrates along the path and detect adjustment problems when both are different at specific points. Also, using variables V.G.LINEN and V.G.BLKN, it is possible to associate these feedrate changes with the program blocks or lines where they occur.

(V.)[ch].PLC.G00FEED

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Maximum feedrate permitted in the channel.

This variable may be used to limit any time, in real time, the maximum feedrate in the channel for any type of movement (G00, G01, etc). The CNC assumes the change immediately and stays active until the variable takes a value of ·0· restoring the limit set by machine parameter.

Syntax.

·ch· Channel number.

V.[2].PLC.G00FEED	Channel ·2·.

Remarks.

Regardless of the value assigned to this variable, the feedrate will never exceed the limits set by parameters G00FEED and MAXFEED.

Variable.	**Machine parameters.**		**Feedrate active in the channel.**	
(V.)[ch].PLC.G00FEED	G00FEED	MAXFEED	G00	G01, G02, ···
3000	10000	5000	3000	3000
7000	10000	5000	7000	5000
12000	10000	5000	10000	5000

16.2 Feedrate active in the block.

(V.)[ch].G.IPOFEED

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Feedrate active in the block.

Syntax.

·ch· Channel number.

V.[2].G.IPOFEED	Channel ·2·.

16.3 Programming the feedrate in G94.

(V.)[ch].G.FEED

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Feedrate active in G94.

Syntax.

·ch· Channel number.

V.[2].G.FEED	Channel ·2·.

Remarks.

The feedrate in G94 may be set by program or by PLC; the one set by PLC has the highest priority.

Feedrates set.	(V.)[ch].PLC.F	(V.)[ch].G.PRGF	(V.)[ch].G.FEED
By program; F2000. By PLC; none.	0	2000	2000
By program; F2000. By PLC; F4000.	4000	2000	4000
By program; F2000. By PLC; F500.	500	2000	500
By program; F2000. By PLC; none. By MDI; F3000.	0	3000	3000
By program; F2000. By PLC; F6000. By MDI; F3000.	6000	3000	6000
By program; F2000. By PLC; F500. By MDI; F3000.	500	3000	500

(V.)[ch].PLC.F

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Feedrate by PLC in G94.

The feedrate programmed by PLC prevails over the one programmed by program or MDI. To cancel the feedrate by PLC, set the variable to ·0·; the CNC applies the feedrate active by program.

Syntax.

·ch· Channel number.

V.[2].PLC.F	Channel ·2·.

(V.)[ch].G.PRGF

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Feedrate by program in G94.

Being G94 active, programming a new feedrate in MDI mode updates the value of this variable.

Syntax.

·ch· Channel number.

V.[2].G.PRGF	Channel ·2·.

16.4 Programming the feedrate in G95.

(V.)[ch].G.FPREV

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Feedrate active in G95.

Syntax.

·ch· Channel number.

V.[2].G.FPREV	Channel ·2·.

Remarks.

The feedrate in G95 may be set by program or by PLC; the one set by PLC has the highest priority.

Feedrates set.	(V.)[ch].PLC.FPR	(V.)[ch].G.PRGFPR	(V.)[ch].G.FPREV
By program; F0.5. By PLC; none.	0	0.5	0.5
By program; F0.5. By PLC; F0.7.	0.7	0.5	0.7
By program; F0.5. By PLC; F0.12.	0.12	0.5	0.12
By program; F0.5. By PLC; none. By MDI; F1.8.	0	1.8	1.8
By program; F0.5. By PLC; F2.5. By MDI; F1.8.	2.5	1.8	2.5
By program; F0.5. By PLC; F0.7. By MDI; F1.8.	0.7	1.8	0.7

(V.)[ch].PLC.FPR

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Feedrate by PLC in G95.

The feedrate programmed by PLC prevails over the one programmed by program or MDI. To cancel the feedrate by PLC, set the variable to ·0·; the CNC applies the feedrate active by program.

Syntax.

·ch· Channel number.

V.[2].PLC.FPR	Channel ·2·.

(V.)[ch].G.PRGFPR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Feedrate by program in G95.

Being G95 active, programming a new feedrate in MDI mode updates the value of this variable.

Syntax.

·ch· Channel number.

V.[2].G.PRGFPR	Channel ·2·.

16.5 Programming the machining time.

(V.)[ch].G.FTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Machining time in G93 (in seconds).

Syntax.

·ch· Channel number.

V.[2].G.FTIME	Channel ·2·.

16.6 Percentage of feedrate (feedrate override).

(V.)[ch].G.FRO

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Channel [ch]. Feedrate percentage active in the channel.

Syntax.

·ch· Channel number.

V.[2].G.FRO	Channel ·2·.

Remarks.

The Feedrate override percentage may be set by program, by PLC or with the selector switch; the one set by program has the highest priority and the one selected with the switch the lowest.

(V.)[ch].G.PRGFRO	(V.)[ch].PLC.FRO	(V.)[ch].G.CNCFRO	(V.)[ch].G.FRO
0	0	70 %	70 %
0	40 %	70 %	40 %
85 %	40 %	70 %	85 %
20 %	90 %	70 %	20 %
20 %	0	70 %	20 %

(V.)[ch].G.PRGFRO

Variable that can be read and written from the program and read from the PLC and from the interface.
The variable returns the value of block preparation.

Channel [ch]. Percentage of feedrate by program.

The percentage set by program has higher priority than the one set by PLC or by the switch. To cancel the value set by program, set the variable to ·0·.

Syntax.

·ch· Channel number.

V.[2].G.PRGFRO	Channel ·2·.

(V.)[ch].PLC.FRO

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Percentage of feedrate by PLC.

The percentage set by PLC has higher priority than the one set by the switch, but lower priority than the one set by program.. To cancel the value set by PLC, set the variable to ·0·. To set a 0% value set by PLC, set the variable to -1.

Syntax.

·ch· Channel number.

V.[2].PLC.FRO	Channel ·2·.

(V.)[ch].G.CNCFRO

Variable that can be read and written (asynchronous writing) from the interface and read from the program and from the PLC.

The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Feedrate percentage at the switch of the operator panel.

The percentage set by the switch of the operator panel has lower priority than the one set by PLC or by program.

Syntax.

·ch· Channel number.

V.[2].G.CNCFRO	Channel ·2·.

VARIABLES ASSOCIATED WITH ACCELERATION AND JERK ON THE TOOL PATH. 17

17.1 Acceleration on the tool path.

(V.)[ch].G.MAXACCEL

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Modify the maximum acceleration allowed on the machining path.

The maximum acceleration allowed on the machining path is set by parameter MAXACCEL and this variable may be used to change this value temporarily at a particular time and in real time. The CNC assumes the change immediately and stays active until M30 or reset is executed, in which case the CNC restores the value set by the machine parameter. If the variable takes the value of ·0·, the CNC does not apply any acceleration limit on the tool path, not even the one set by machine parameter.

The CNC always respects the dynamics of the axes involved in the path; i.e. regardless of the maximum acceleration allowed on the path, the movement will respect the acceleration set for each axis.

Syntax.

·ch· Channel number.

V.[2].G.MAXACCEL	Channel ·2·.

17.2 Jerk on the tool path.

(V.)[ch].G.MAXJERK

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Modify the maximum jerk on the machining path.

The maximum jerk allowed on the machining path is set by parameter MAXJERK and this variable may be used to change this value temporarily at a particular time and in real time. The CNC assumes the change immediately and stays active until M30 or reset is executed, in which case the CNC restores the value set by the machine parameter. If the variable takes the value of ·0·, the CNC does not apply any jerk limit on the tool path, not even the one set by machine parameter.

The CNC always respects the dynamics of the axes involved in the path; i.e. regardless of the maximum jerk allowed on the path, the movement will respect the jerk set for each axis.

Syntax.

·ch· Channel number.

V.[2].G.MAXJERK	Channel ·2·.

17.

VARIABLES ASSOCIATED WITH ACCELERATION AND JERK

Jerk on the tool path.

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

VARIABLES RELATED TO MANAGING THE HSC MODE.

18

18.1 Variables related to block preparation.

(V.)[ch].G.PERFRATE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of blocks managed by the CNC in block preparation, with respect to the best possible to reach the maximum feedrate in each section.

Syntax.

·ch· Channel number.

V.[2].G.PERFRATE	Channel ·2·.

Remarks.

This variable can return a value close to 100; if the percentage of blocks is lower than 100%, the HSC might be losing room to increase the feedrate, respecting the available room to brake. To know if this is the case, it will be necessary to analyze the V.G.DROPRATE variable because the reason the feedrate is not increasing might be geometrical and not due to the number of blocks available.

(V.)[ch].G.DROPRATE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Percentage of reduction of the maximum feedrate possible.

Feedrate reduction may be due to an improper supply of blocks or because a feedrate lower than possible has been programmed.

Syntax.

·ch· Channel number.

V.[2].G.DROPRATE	Channel ·2·.

Remarks.

This variable can return a value close to 100; if the value is lower than 100%, the CNC may increase the feedrate if it has more blocks. To know whether the CNC can supply more blocks or not, it will be necessary to analyze the V.G.PERFRATE variable.

If both variables have a value lower than 100, parameter PREPFREQ may be increased to increase the supply of blocks as long as the system has enough time; in other words, the percentage of cycle time used by the CNC is not too close to the total cycle time (about 50%). This information may be checked in the V.G.NCTIMERATE variable.

18.2 Analysis of the programmed error.

(V.)[ch].G.LIMERROR

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Value of the error that cancels the splines (CONTERROR mode).

This variable may be used to evaluate whether the program is generated with more error than we demand from the HSC mode or not.

Syntax.

·ch· Channel number.

V.[2].G.LIMERROR	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
-1	The generated profile does not exceed the programmed error. The programmed error does not limit the maximum feedrate of the axis.
###	Value of the error that cancels the splines (CONTERROR mode).

(V.)[ch].G.ACTROUND

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Error programmed in HSC mode.

This variable may be used to optimize the OEM subroutines by cancelling the HSC mode and activating G5 with another error to save time and restore the previous execution mode later one.

Syntax.

·ch· Channel number.

V.[2].G.ACTROUND	Channel ·2·.

(V.)[ch].A.ACTROUND.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Amount of error allowed on the axis for the HSC mode.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.ACTROUND.Z	Z axis.
V.A.ACTROUND.3	Axis with logic number ·3·.
V.[2].A.ACTROUND.3	Axis with index ·3· in the channel ·2·.

18.3 Feedrate limitation at the block being executed.

(V.)[ch].G.AXLIMF

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Logic number of the axis that limits the feedrate at the block being executed.

Together with the V.G.PARLIMF variable, it may be used to evaluate the behavior of the machining operation in a particular section where the feedrate decreases too much or is irregular.

Syntax.

·ch· Channel number.

V.[2].G.AXLIMF	Channel ·2·.

(V.)[ch].G.PARLIMF

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Cause that limits the feedrate at the block being executed.

Syntax.

·ch· Channel number.

V.[2].G.PARLIMF	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Maximum feedrate of the axis.
2	Acceleration due to curvature (parameter CURVACC).
3	Jerk due to curvature (parameter CURVJERK).
6	Error committed by the spline.
7	Insufficient memory due to very small blocks and/or buffer full.
10	Maximum axis feedrate in transformations.
11	Maximum axis acceleration in transformations.

18.4 Limitation of the feedrate at the corner.

(V.)[ch].G.AXLIMC

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Logic number of the axis that limits the feedrate at the corner, in the block being executed.

Together with the V.G.PARLIMC variable, it may be used to evaluate the behavior of the machining operation at a particular corner where the feedrate decreases too much or is irregular.

Syntax.

·ch· Channel number.

V.[2].G.AXLIMC	Channel ·2·.

(V.)[ch].G.PARLIMC

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Cause that limits the feedrate at the corner in the block being executed.

Syntax.

·ch· Channel number.

V.[2].G.PARLIMC	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Maximum feedrate of the axis.
4	The acceleration at the corner (parameter CORNERACC).
5	The jerk at the corner (parameter CORNERJERK).
8	The chordal error at the corner (CONTERROR).
9	Geometry at the corner (FAST mode).

18.5 Modify the dynamics of all the axes of the channel.

(V.)[ch].G.DYNOVR

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Percentage applicable to all the dynamics variables of all the axes of the channel.

This variable may be used to make changes in real time to the machining dynamics (ignoring look-ahead blocks). The dynamics can also be changed from the interface using the dynamic-override bar of the HSC.

The upper and lower limits (range) for varying the value depends on machine parameters MINDYNOVR and MAXDYNOVR.

Syntax.

·ch· Channel number.

V.[2].G.DYNOVR	Channel ·2·.

18.

VARIABLES RELATED TO MANAGING THE HSC MODE.

Modify the dynamics of all the axes of the channel.

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

VARIABLES RELATED TO SPINDLE SPEED.

19

19.1 Programming the speed.

(V.)[ch].A.SREAL.sn
(V.)[ch].SP.SREAL.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Real spindle speed.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.SREAL.S	Spindle S.
V.SP.SREAL.S	Spindle S.
V.SP.SREAL	Master spindle.
V.A.SREAL.5	Spindle with logic number ·5·.
V.SP.SREAL.2	Spindle with index ·2· in the system.
V.[2].SP.SREAL.1	Spindle with index ·1· in the channel ·2·.

Remarks.

This variable takes into account the accelerations and decelerations of the machine. It returns a value of ·0· when the spindle is stopped, it returns the value in rpm when the spindle is in G96/G97 and in degrees/minute when the spindle is in M19.

19.2 Spindle speed in G97.

(V.)[ch].A.SPEED.sn
(V.)[ch].SP.SPEED.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Active spindle speed in G97.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.SPEED.S	Spindle S.
V.SP.SPEED.S	Spindle S.
V.SP.SPEED	Master spindle.
V.A.SPEED.5	Spindle with logic number ·5·.
V.SP.SPEED.2	Spindle with index ·2· in the system.
V.[2].SP.SPEED.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The speed may be set by program or by PLC; the one set by PLC has the highest priority.

Speed set.	V.PLC.S.sn	V.A.PRGS.sn	V.A.SPEED.sn
By program; S5000. By PLC; none.	0	5000	5000
By program; S5000. By PLC; S9000.	9000	5000	9000
By program; S5000. By PLC; S3000.	3000	5000	3000
By program; S5000. By PLC; none. By MDI; S8000.	0	8000	8000
By program; S5000. By PLC; S9000. By MDI; S8000.	9000	8000	9000
By program; S5000. By PLC; S3000. By MDI; S8000.	3000	8000	3000

(V.)[ch].PLC.S.sn

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Speed active by PLC for G97.

The speed programmed by PLC prevails over the one programmed by program or MDI. To cancel the speed by PLC, set the variable to ·0·; the CNC applies the speed active by program.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.PLC.S.S2	Spindle S2.
V.PLC.S.5	Spindle with logic number ·5·.
V.[2].PLC.S.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.PRGS.sn
(V.)[ch].SP.PRGS.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Speed active by program for G97.

Being G97 active, programming a new speed in MDI mode updates the value of this variable.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.PRGS.S	Spindle S.
V.SP.PRGS.S	Spindle S.
V.SP.PRGS	Master spindle.
V.A.PRGS.5	Spindle with logic number ·5·.
V.SP.PRGS.2	Spindle with index ·2· in the system.
V.[2].SP.PRGS.1	Spindle with index ·1· in the channel ·2·.

19.3 Spindle speed in G96 (CSS).

(V.)[ch].A.CSS.sn
(V.)[ch].SP.CSS.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Active spindle speed in G96.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.CSS.S	Spindle S.
V.SP.CSS.S	Spindle S.
V.SP.CSS	Master spindle.
V.A.CSS.5	Spindle with logic number ·5·.
V.SP.CSS.2	Spindle with index ·2· in the system.
V.[2].SP.CSS.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The speed may be set by program or by PLC; the one set by PLC has the highest priority.

Speed set.	V.PLC.CSS.sn	V.A.PRGCSS.sn	V.A.CSS.sn
By program; S150. By PLC; none.	0	150	150
By program; S150. By PLC; S250.	250	150	250
By program; S150. By PLC; S100.	100	150	100
By program; S150. By PLC; none. By MDI; S300.	0	300	300
By program; S150. By PLC; S250. By MDI; S200.	250	200	250
By program; S150. By PLC; S100. By MDI; S200.	100	200	100

(V.)[ch].PLC.CSS.sn

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Speed active by PLC for G96.

The speed programmed by PLC prevails over the one programmed by program or MDI. To cancel the speed by PLC, set the variable to ·0·; the CNC applies the speed active by program.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.PLC.CSS.S2	Spindle S2.
V.PLC.CSS.5	Spindle with logic number ·5·.
V.[2].PLC.CSS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.PRGCSS.sn
(V.)[ch].SP.PRGCSS.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Speed active by program for G96.

Being G96 active, programming a new speed in MDI mode updates the value of this variable.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.PRGCSS.S	Spindle S.
V.SP.PRGCSS.S	Spindle S.
V.SP.PRGCSS	Master spindle.
V.A.PRGCSS.5	Spindle with logic number ·5·.
V.SP.PRGCSS.2	Spindle with index ·2· in the system.
V.[2].SP.PRGCSS.1	Spindle with index ·1· in the channel ·2·.

19.4 Spindle speed in M19.

(V.)[ch].A.SPOS.sn
(V.)[ch].SP.SPOS.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Active spindle speed in M19 .

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.SPOS.S	Spindle S.
V.SP.SPOS.S	Spindle S.
V.SP.SPOS	Master spindle.
V.A.SPOS.5	Spindle with logic number ·5·.
V.SP.SPOS.2	Spindle with index ·2· in the system.
V.[2].SP.SPOS.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The speed may be set by program or by PLC; the one set by PLC has the highest priority.

Speed set.	V.PLC.SPOS.sn	V.A.PRGSPOS.sn	V.A.SPOS.sn
By program; S.POS=180. By PLC; none.	0	180	180
By program; S.POS=180. By PLC; S.POS=250.	250	180	250
By program; S.POS=180. By PLC; S.POS=90.	90	180	90
By program; S.POS=180. By PLC; none. By MDI; S.POS=200.	0	200	200
By program; S.POS=180. By PLC; S.POS=250. By MDI; S.POS=200.	250	200	250
By program; S.POS=180. By PLC; S.POS=100. By MDI; S.POS=200.	100	200	100

(V.)[ch].PLC.SPOS.sn

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Speed active by PLC for M19.

The speed programmed by PLC prevails over the one programmed by program or MDI. To cancel the speed by PLC, set the variable to ·0·; the CNC applies the speed active by program.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.PLC.SPOS.S2	Spindle S2.
V.PLC.SPOS.5	Spindle with logic number ·5·.
V.[2].PLC.SPOS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.PRGSPOS.sn
(V.)[ch].SP.PRGSPOS.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Speed active by program for M19.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.PRGSPOS.S	Spindle S.
V.SP.PRGSPOS.S	Spindle S.
V.SP.PRGSPOS	Master spindle.
V.A.PRGSPOS.5	Spindle with logic number ·5·.
V.SP.PRGSPOS.2	Spindle with index ·2· in the system.
V.[2].SP.PRGSPOS.1	Spindle with index ·1· in the channel ·2·.

19.5 Speed limit.

(V.)[ch].A.SLIMIT.sn
(V.)[ch].SP.SLIMIT.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Active spindle speed limit.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.SLIMIT.S	Spindle S.
V.SP.SLIMIT.S	Spindle S.
V.SP.SLIMIT	Master spindle.
V.A.SLIMIT.5	Spindle with logic number ·5·.
V.SP.SLIMIT.2	Spindle with index ·2· in the system.
V.[2].SP.SLIMIT.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The maximum speed may be set by program or by PLC; the one set by PLC has the highest priority.

(V.)[ch].PLC.SL.sn

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Spindle speed limit active by PLC.

The speed programmed by PLC prevails over the one programmed by program or MDI. To cancel the speed by PLC, set the variable to ·0·; the CNC applies the speed active by program.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.PLC.SL.S2	Spindle S2.
V.PLC.SL.5	Spindle with logic number ·5·.
V.[2].PLC.SL.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.PRGSL.sn
(V.)[ch].SP.PRGSL.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Spindle speed limit active by program.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.PRGSL.S	Spindle S.
V.SP.PRGSL.S	Spindle S.
V.SP.PRGSL	Master spindle.
V.A.PRGSL.5	Spindle with logic number ·5·.
V.SP.PRGSL.2	Spindle with index ·2· in the system.
V.[2].SP.PRGSL.1	Spindle with index ·1· in the channel ·2·.

19.6 Percentage of spindle speed (spindle speed override).

(V.)[ch].A.SSO.sn
(V.)[ch].SP.SSO.sn

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Active spindle speed override.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.SSO.S	Spindle S.
V.SP.SSO.S	Spindle S.
V.SP.SSO	Master spindle.
V.A.SSO.5	Spindle with logic number ·5·.
V.SP.SSO.2	Spindle with index ·2· in the system.
V.[2].SP.SSO.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The spindle speed override percentage may be set by program, by PLC or with the selector switch; the one set by program has the highest priority and the one selected with the switch the lowest.

V.A.PRGSSO.sn V.SP.PRGSSO.sn	V.PLC.SSO.sn	V.A.CNCSSO.sn V.SP.CNCSSO.sn	V.A.SSO.sn V.SP.SSO.sn
0	0	100 %	100 %
0	80 %	100 %	80 %
110 %	80%	100 %	110 %
70 %	80 %	100 %	70 %
70 %	0	100 %	70 %

(V.)[ch].A.PRGSSO.sn
(V.)[ch].SP.PRGSSO.sn

Variable that can be read and written from the program and read from the PLC and from the interface.
The variable returns the value of block preparation.

Channel [ch]. Percentage of spindle speed by program.

The percentage set by program has higher priority than the one set by PLC or by the switch. To cancel the value set by program, set the variable to ·0·.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.PRGSSO.S	Spindle S.
V.SP.PRGSSO.S	Spindle S.
V.SP.PRGSSO	Master spindle.
V.A.PRGSSO.5	Spindle with logic number ·5·.
V.SP.PRGSSO.2	Spindle with index ·2· in the system.
V.[2].SP.PRGSSO.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].PLC.SSO.sn

Variable that can be read and written from the PLC and read from the program and from the interface. The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Percentage of spindle speed by PLC.

The percentage set by PLC has higher priority than the one set by the switch, but lower priority than the one set by program.. To cancel the value set by PLC, set the variable to ·0·.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.PLC.SSO.S2	Spindle S2.
V.PLC.SSO.5	Spindle with logic number ·5·.
V.[2].PLC.SSO.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.CNCSSO.sn
(V.)[ch].SP.CNCSSO.sn

Variable that can be read and written (asynchronous writing) from the interface and read from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Spindle speed percentage at the switch of the operator panel.

The percentage set by the switch of the operator panel has lower priority than the one set by PLC or by program.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.A.CNCSSO.S	Spindle S.
V.SP.CNCSSO.S	Spindle S.
V.SP.CNCSSO	Master spindle.
V.A.CNCSSO.5	Spindle with logic number ·5·.
V.SP.CNCSSO.2	Spindle with index ·2· in the system.
V.[2].SP.CNCSSO.1	Spindle with index ·1· in the channel ·2·.

VARIABLES ASSOCIATED WITH TOOL MAGAZINE AND TOOLS. 20

20.1 Variables associated with the tool manager.

(V.)[ch].TM.MZSTATUS

Variable that can be read from the PLC and from the interface.

Tool manager status.

Syntax.

·ch· Channel number.

[2].TM.MZSTATUS	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Normal.
1	Tool manager error.
2	Error at the tool manager; waiting to complete the maneuver in progress.
4	Tool manager emergency.

(V.)[ch].TM.MZRUN

Variable that can be read from the PLC and from the interface.

Tool manager running.

Syntax.

·ch· Channel number.

[2].TM.MZRUN	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	There is no maneuver in progress.
1	There is a maneuver in progress.

(V.)[ch].TM.MZWAIT

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Tool manager processing a maneuver.

Syntax.

·ch· Channel number.

V.[2].TM.MZWAIT	Channel ·2·.

Remarks.

From software version V2.01 on, there is no need to use this variable in the subroutine associated with M06. The subroutine itself waits for the manager's maneuvers to finish and it does not interrupt block preparation.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No need to wait.
1	It has to wait.

(V.)[ch].TM.MZMODE

Variable that can be read and written from the program and interface and read from the PLC.
The variable returns the execution value; reading and writing it interrupt block preparation.

Operating mode of the tool manager.

This variable may be used to set the magazine in load or unload mode.

Syntax.

·ch· Channel number.

V.[2].TM.MZMODE	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Regular work mode.
1	Magazine in load mode.
2	Magazine in unload mode.

20.2 Variables related to managing the tool magazine and the tool changer arm.

20.2.1 Relationship between the tool magazine and the channel.

(V.)[ch].TM.ACTUALMZ

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Tool Magazine being used by the [ch] channel.

Syntax.

·ch· Channel number.

V.[2].TM.ACTUALMZ	Channel ·2·.

(V.)TM.MZACTUALCH[mz]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel that is using tool magazine [mz].

Syntax.

·mz· Type of tool magazine.

V.TM.MZACTUALCH[2]	Magazine ·2·.

20.2.2 Tool location in the magazine.

(V.)TM.T[mz][pos]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Tool in the [pos] position of the [mz] magazine.

Syntax.

·mz· Type of tool magazine.

·pos· Tool position in the magazine.

V.TM.T[2][15]	Magazine ·2·. Position ·15·.

Remarks.

If the variable is missing the offset number, the variable will then refer to the first one. This variable returns 0 if the tool is not in the magazine.

(V.)TM.P[mz][tl]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Position of the [t] tool in the [mz] magazine.

Syntax.

·mz· Type of tool magazine.

·tl· Tool number.

V.TM.P[2][15]	Magazine ·2·. Position ·15·.

Remarks.

If the variable is missing the offset number, the variable will then refer to the first one.

20.2.3 Tool location in the tool changer arm.

(V.)TM.TOOLCH1[mz]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

Tool in the first claw of the magazine arm [mz].

Syntax.

·mz· Type of tool magazine.

V.TM.TOOLCH1[2]	Magazine ·2·.

(V.)TM.TOOLCH2[mz]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

Tool in the second claw of the magazine arm [mz].

Syntax.

·mz· Type of tool magazine.

V.TM.TOOLCH2[2]	Magazine ·2·.

20.3 Variables related to the active tool and to the next one.

Variables related to the active tool are always read synchronously. The writing of these variables is always asynchronous, be it for the active tool or not.

20.3.1 Tool and active offset.

(V.)[ch].TM.TOOL

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Number of the active tool.

Syntax.

·ch· Channel number.

V.[2].TM.TOOL	Channel ·2·. Active tool.

(V.)[ch].TM.TOD

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Number of the active tool offset.

Syntax.

·ch· Channel number.

V.[2].TM.TOD	Channel ·2·. Active tool offset.

20.3.2 Next tool and tool offset.

(V.)[ch].TM.NXTOOL

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Number of the next tool.

The "next tool" is the one already selected but waiting to be activated by executing an M06.

Syntax.

·ch· Channel number.

V.[2].TM.NXTOOL	Channel ·2·. Next tool.

Remarks.

Although the variable has writing permission, the value of 0 (zero) cannot be written.

(V.)[ch].TM.NXTOD

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Number of the next tool offset.

Syntax.

·ch· Channel number.

V.[2].TM.NXTOD	Channel ·2·. Next tool offset.

20.3.3 Status of the active tool.

(V.)[ch].TM.TSTATUS

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Active tool. Tool status.

Syntax.

·ch· Channel number.

V.[2].TM.TSTATUS	Channel ·2·. Active tool.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Tool available.
1	Tool available.
2	Tool worn out.

20.3.4 Family of the active tool.

(V.)[ch].TM.TLFF

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Active tool. Family code.

Syntax.

·ch· Channel number.

V.[2].TM.TLFF	Channel ·2·.

20.3.5 Active tool monitoring.

(V.)[ch].TM.TOMON[ofd]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Type of tool life monitoring.

Syntax.

[odf] Tool offset; if missing, the active tool offset.

·ch· Channel number.

V.[2].TM.TOMON	Channel ·2·. Active tool offset.
V.[2].TM.TOMON[3]	Channel ·2·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Without tool life monitoring.
1	Tool life monitoring; machining time.
2	Tool life monitoring; number of operations.

(V.)[ch].TM.TLFN[ofd]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Nominal life.

Syntax.

[odf] Tool offset; if missing, the active tool offset.

·ch· Channel number.

V.[2].TM.TLFN	Channel ·2·. Active tool offset.
V.[2].TM.TLFN[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.TLFR[ofd]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Real (actual) life.

Syntax.

[odf] Tool offset; if missing, the active tool offset.

·ch· Channel number.

V.[2].TM.TLFR	Channel ·2·. Active tool offset.
V.[2].TM.TLFR[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.REMLIFE

Variable that can be read from the PLC and from the interface.

Active tool. Remaining life.

Syntax.

·ch· Channel number.

[2].TM.REMLIFE	Channel ·2·.

20.3.6 "CUSTOM" data of the active tool.

(V.)[ch].TM.TOTP1
(V.)[ch].TM.TOTP2
(V.)[ch].TM.TOTP3
(V.)[ch].TM.TOTP4

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

Active tool. Custom parameters.

Syntax.

·ch· Channel number.

V.[2].TM.TOTP1	Channel ·2·. Custom parameter ·1·.
V.[2].TM.TOTP2	Channel ·2·. Custom parameter ·2·.
V.[2].TM.TOTP3	Channel ·2·. Custom parameter ·3·.
V.[2].TM.TOTP4	Channel ·2·. Custom parameter ·4·.

20.3.7 Tool geometry.

(V.)[ch].TM.NUMOFD

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Active tool. Number of tool offsets.

Syntax.

·ch· Channel number.

V.[2].TM.NUMOFD	Channel ·2·.

(V.)[ch].TM.TOOLTYP[ofd]
(V.)[ch].TM.DTYPE[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

Active tool. Code of the tool offset type.

Syntax.

·ch· Channel number.

·ofd· Tool offset; if missing, the active tool offset.

V.[2].TM.DTYPE	Channel ·2·. Active tool offset.
V.[2].TM.TOOLTYP	Channel ·2·. Active tool offset.
V.[2].TM.DTYPE[3]	Channel ·2·. Tool offset ·3·.
V.[2].TM.TOOLTYP[3]	Channel ·2·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Milling tool..
2	Drilling tool.
3	Surface milling tool.
4	Reaming tool.
5	Boring tool.
6	Threading tool.
7	Grooving or cut-off tool.
8	Turning tool.
9	Other.
10	Measuring probe.

(V.)[ch].TM.DSUBTYPE[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

Active tool. Code of the tool offset subtype.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.DSUBTYPE	Channel ·2·. Active tool offset.
V.[2].TM.DSUBTYPE[3]	Channel ·2·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Without type
1	Flat endmill.
2	Ball endmill.
3	Toric endmill.
4	Tap.
5	Thread cutter.
6	Disk endmill.
7	Drill bit.
8	Surface milling endmill.
9	Reamer.
10	Boring tool.
11	Diamond shaped cutter for turning.
12	Square cutter for turning, grooving or cut-off.
13	Round cutter for turning.
14	Measuring probe (milling machine).
15	Measuring probe (lathe).

1	2	3	4	5	6	7
						
8	**9**	**10**	**11**	**12**	**13**	**14/15**
						

(V.)[ch].TM.TURNCONFIG[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Axis orientation.

Only for turning tools. The orientation of the axes is determined by the type of lathe (horizontal or vertical), the position of the turret and the spindle position (on the right or on the left).

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.TURNCONFIG	Channel ·2·. Active tool offset.
V.[2].TM.TURNCONFIG[3]	Channel ·2·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Axis orientation.	Value.	Axis orientation.
0		4	
1		5	
2		6	
3		7	

(V.)[ch].TM.LOCODE[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Location code (shape) or tool calibration point.

Only for turning tools. The location code indicates which is the calibrated tool tip and, therefore, the point controlled by the CNC to apply radius compensation. The location code depends on the orientation of the machine axes.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.LOCODE	Channel ·2·. Active tool offset.
V.[2].TM.LOCODE[3]	Channel ·2·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.								
0								
1								
2								
3								
4								
5								
6								

Value.								
7								
8								
9								

(V.)[ch].TM.FIXORI[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Tool-holder orientation.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.FIXORI	Channel ·2·. Active tool offset.
V.[2].TM.FIXORI[3]	Channel ·2·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Face axis.
1	Longitudinal axis.

(V.)[ch].TM.SPDLTURDIR[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Spindle turning direction.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.SPDLTURDIR	Channel ·2·. Active tool offset.
V.[2].TM.SPDLTURDIR[3]	Channel ·2·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Undefined direction.
1	Right-hand machining direction.
2	Left-hand machining direction.

(V.)[ch].TM.TOR[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Radius.

This variable is not valid for turning tools.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.TOR	Channel ·2·. Active tool offset.
V.[2].TM.TOR[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.TOI[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface. The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Radius wear.

This variable is not valid for turning tools.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.TOI	Channel ·2·. Active tool offset.
V.[2].TM.TOI[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.TOL[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface. The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Length.

This variable is not valid for turning tools.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.TOL	Channel ·2·. Active tool offset.
V.[2].TM.TOL[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.TOK[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface. The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Length wear.

This variable is not valid for turning tools.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.TOK	Channel ·2·. Active tool offset.
V.[2].TM.TOK[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.TOAN[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface. The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Penetration angle.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.TOAN	Channel ·2·. Active tool offset.
V.[2].TM.TOAN[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.TOTIPR[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface. The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Tip radius.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.TOTIPR	Channel ·2·. Active tool offset.
V.[2].TM.TOTIPR[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.TOWTIPR[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface. The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Tool tip radius wear.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.TOWTIPR	Channel ·2·. Active tool offset.
V.[2].TM.TOWTIPR[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.TOCUTL[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface. The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Cutting length.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.TOCUTL	Channel ·2·. Active tool offset.
V.[2].TM.TOCUTL[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.NOSEA[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface. The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Cutter angle.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.NOSEA	Channel ·2·. Active tool offset.
V.[2].TM.NOSEA[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.NOSEW[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Cutter width.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.NOSEW	Channel ·2·. Active tool offset.
V.[2].TM.NOSEW[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.CUTA[ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Cutting angle of the cutter.

Syntax.

·ch· Channel number.

[odf] Tool offset; if missing, the active tool offset.

V.[2].TM.CUTA	Channel ·2·. Active tool offset.
V.[2].TM.CUTA[3]	Channel ·2·. Tool offset ·3·.

(V.)[ch].TM.TOFL[ofd].xn

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Tool length offset on the xn axis.

The offsets are used to define the tool dimensions in each axis. The dimensions of the turning tools are defined using these offsets; either these offsets or tool length and radius may be used for the dimensions of the rest of the tools.

On tools that are not just for turning, e.g. endmills and drill bits, the offsets may also be used to define the tool position when using a tool holder or an intermediate tool. In this case, the tool dimensions are defined with the radius and the length.

Syntax.

·ch· Channel number.

·ofd· Tool offset.

·xn· Name, logic number or index of the axis.

V.TM.TOFL[3].Z	Tool offset ·3·. Z axis.
V.TM.TOFL[3].4	Tool offset ·3·. Axis with logic number ·4·.
V.[2].TM.TOFL[3].1	Tool offset ·3·. Axis with index ·1· in the channel ·2·.

(V.)[ch].TM.TOFLW[ofd].xn

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the active tool. Tool length offset wear on the xn axis.

Syntax.

·ch· Channel number.

·ofd· Tool offset.

·xn· Name, logic number or index of the axis.

V.TM.TOFLW[3].Z	Tool offset ·3·. Z axis.
V.TM.TOFLW[3].4	Tool offset ·3·. Axis with logic number ·4·.
V.[2].TM.TOFLW[3].1	Tool offset ·3·. Axis with index ·1· in the channel ·2·.

Remarks.

The value of these variables depends on the active units (radius or diameter). In order for these variables to return the value in diameter, these units must be enabled by machine parameter and function G151 must be active.

(V.)[ch].TM.TOFL1
(V.)[ch].TM.TOFL2
(V.)[ch].TM.TOFL3

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Active offset of the active tool. Tool length offset on the first axes of the channel.

On turning tools, it is used to define the tool length in each axis. On milling tools, it is used to define the tool position when using a tool holder or an intermediate tooling.

Syntax.

·ch· Channel number.

V.[2].TM.TOFL1	Channel ·2·. First axis of the channel.
V.[2].TM.TOFL2	Channel ·2·. Second axis of the channel.
V.[2].TM.TOFL3	Channel ·2·. Third axis of the channel.

(V.)[ch].TM.TOFLW1
(V.)[ch].TM.TOFLW2
(V.)[ch].TM.TOFLW3

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Active offset of the active tool. Tool length offset wear on the first axes of the channel.

Syntax.

·ch· Channel number.

V.[2].TM.TOFLW1	Channel ·2·. First axis of the channel.
V.[2].TM.TOFLW2	Channel ·2·. Second axis of the channel.
V.[2].TM.TOFLW3	Channel ·2·. Third axis of the channel.

Remarks.

The value of these variables depends on the active units (radius or diameter). In order for these variables to return the value in diameter, these units must be enabled by machine parameter and function G151 must be active.

20.3.8 Cancel the preset turning direction of the tool.

(V.)G.SPDLTURDIR

Variable that can be read and written from the program and read from the PLC (asynchronous) and from the interface.
The variable returns the execution value; reading it interrupts block preparation.

Modify the preset turning direction for the active tool.

The preset turning speed of the active tool may be temporarily canceled from the part-program. This is done by setting this variable to ·0·. The variable does not modify the tool table. When changing a tool, this variable will take the corresponding value according to what has been set in the tool table.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Without preset turning direction.
1	Turning direction M03.
2	Turning direction M04.

20.4 Variables associated with any tool.

The variables referred to a tool other than the active one are for synchronous reading if the tool is in the magazine and for asynchronous reading if otherwise. The writing of these variables is always asynchronous, be it for the active tool or not.

20.4.1 Tool status.

(V.)TM.TSTATUST[tl]

Variable that can be read from the PLC and from the interface.

Tool [tl]. Tool status.

Syntax.

·tl· Tool number.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Tool available.
1	Tool available.
2	Tool worn out.

20.4.2 Family of the tool.

(V.)TM.TLFFT[tl]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

Tool [tl]. Family code.

Syntax.

·tl· Tool number.

V.TM.TLFFT[23]	Tool ·23·.

20.4.3 Tool monitoring.

(V.)TM.TOMONT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Type of tool life monitoring.

Syntax.

·tl· Tool number.

·ofd· Tool offset.

V.TM.TOMONT[23][3]	Tool ·23·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Without tool life monitoring.
1	Tool life monitoring; machining time.
2	Tool life monitoring; number of operations.

(V.)TM.TLFNT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Nominal life.

Syntax.

·tl· Tool number.

·ofd· Tool offset.

V.TM.TLFNT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.TLFRT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Real (actual) life.

Syntax.

·tl· Tool number.

·ofd· Tool offset.

V.TM.TLFRT[23][3]	Tool ·23·. Tool offset ·3·.

20.4.4 "CUSTOM" data of the tool.

(V.)TM.TOTP1T[tl]
(V.)TM.TOTP2T[tl]
(V.)TM.TOTP3T[tl]
(V.)TM.TOTP4T[tl]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

Tool [tl]. Custom parameters.

Syntax.

·tl· Tool number.

V.TM.TOTP1T[23]	Tool ·23·. Custom parameter ·1·.
V.TM.TOTP2T[23]	Tool ·23·. Custom parameter ·2·.
V.TM.TOTP3T[23]	Tool ·23·. Custom parameter ·3·.
V.TM.TOTP4T[23]	Tool ·23·. Custom parameter ·4·.

20.4.5 Tool geometry.

(V.)TM.NUMOFDT[tl]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

Tool [tl]. Number of tool offsets.

Syntax.

·tl· Tool number.

V.TM.NUMOFDT[23]	Tool ·23·.

(V.)TM.DTYPET[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Code of the tool offset type.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.DTYPET[23]	Tool ·23·. Active tool offset.
V.TM.DTYPET[23][3]	Tool ·23·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Milling tool..
2	Drilling tool.
3	Surface milling tool.
4	Reaming tool.
5	Boring tool.
6	Threading tool.
7	Grooving or cut-off tool.
8	Turning tool.
9	Other.
10	Measuring probe.

(V.)TM.DSUBTYPET[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Code of the tool offset subtype.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.DSUBTYPET[23]	Tool ·23·. Active tool offset.
V.TM.DSUBTYPET[23][3]	Tool ·23·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Without type
1	Flat endmill.
2	Ball endmill.
3	Toric endmill.
4	Tap.
5	Thread cutter.
6	Disk endmill.
7	Drill bit.
8	Surface milling endmill.
9	Reamer.
10	Boring tool.
11	Diamond shaped cutter for turning.
12	Square cutter for turning, grooving or cut-off.
13	Round cutter for turning.
14	Measuring probe (milling machine).
15	Measuring probe (lathe).

1 	2 	3 	4 	5 	6 	7 
8 	9 	10 	11 	12 	13 	14/15 

(V.)TM.TURNCONFIGT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Axis orientation.

Only for turning tools. The orientation of the axes is determined by the type of lathe (horizontal or vertical), the position of the turret and the spindle position (on the right or on the left).

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.TURNCONFIGT[23]	Tool ·23·. Active tool offset.
V.TM.TURNCONFIGT[23][3]	Tool ·23·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Axis orientation.	Value.	Axis orientation.
0		4	
1		5	
2		6	
3		7	

(V.)TM.LOCODET[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Location code (shape) or tool calibration point.

Only for turning tools. The location code indicates which is the calibrated tool tip and, therefore, the point controlled by the CNC to apply radius compensation. The location code depends on the orientation of the machine axes.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.LOCODET[23]	Tool ·23·. Active tool offset.
V.TM.LOCODET[23][3]	Tool ·23·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.								
0								
1								
2								
3								
4								
5								
6								

Value.								
7								
8								
9								

(V.)TM.FIXORIT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Tool-holder orientation.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.FIXORIT[23]	Tool ·23·. Active tool offset.
V.TM.FIXORIT[23][3]	Tool ·23·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Face axis.
1	Longitudinal axis.

(V.)TM.SPDLTURDIRT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Spindle turning direction.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.SPDLTURDIRT[23]	Tool ·23·. Active tool offset.
V.TM.SPDLTURDIRT[23][3]	Tool ·23·. Tool offset ·3·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Undefined direction.
1	Right-hand machining direction.
2	Left-hand machining direction.

(V.)TM.TORT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Radius.

This variable is not valid for turning tools.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.TORT[23]	Tool ·23·. Active tool offset.
V.TM.TORT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.TOIT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Radius wear.

This variable is not valid for turning tools.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.TOIT[23]	Tool ·23·. Active tool offset.
V.TM.TOIT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.TOLT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Length.

This variable is not valid for turning tools.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.TOLT[23]	Tool ·23·. Active tool offset.
V.TM.TOLT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.TOKT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Length wear.

This variable is not valid for turning tools.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.TOKT[23]	Tool ·23·. Active tool offset.
V.TM.TOKT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.TOANT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Penetration angle.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.TOANT[23]	Tool ·23·. Active tool offset.
V.TM.TOANT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.TOTIPRT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Tip radius.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.TOTIPRT[23]	Tool ·23·. Active tool offset.
V.TM.TOTIPRT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.TOWTIPRT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Tool tip radius wear.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.TOWTIPRT[23]	Tool ·23·. Active tool offset.
V.TM.TOWTIPRT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.TOCUTLT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Cutting length.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.TOCUTLT[23]	Tool ·23·. Active tool offset.
V.TM.TOCUTLT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.NOSEAT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Cutter angle.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.NOSEAT[23]	Tool ·23·. Active tool offset.
V.TM.NOSEAT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.NOSEWT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Cutter width.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.NOSEWT[23]	Tool ·23·. Active tool offset.
V.TM.NOSEWT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.CUTAT[tl][ofd]

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Cutting angle of the cutter.

Syntax.

·tl· Tool number.

[odf] Tool offset; if missing, the active tool offset.

V.TM.CUTAT[23]	Tool ·23·. Active tool offset.
V.TM.CUTAT[23][3]	Tool ·23·. Tool offset ·3·.

(V.)TM.TOFLT[tl][ofd].xn

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Tool length offset on the xn axis.

On turning tools, it is used to define the tool length in each axis. On milling tools, it is used to define the tool position when using a tool holder or an intermediate tooling.

Syntax.

·ofd· Tool offset.

·xn· Name or logic number of the axis.

V.TM.TOFL[23].Z	Tool ·23·. Z axis.
V.TM.TOFL[23][3].4	Tool ·23·. Axis with logic number ·4·.

(V.)TM.TOFLWT[tl][ofd].xn

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

[odf] offset of the [tl] tool. Tool length offset wear on the xn axis.

Syntax.

·ofd· Tool offset.

·xn· Name or logic number of the axis.

V.TM.TOFLWT[23].Z	Tool ·23·. Z axis.
V.TM.TOFLWT[23][3].4	Tool ·23·. Axis with logic number ·4·.

Remarks.

The value of these variables depends on the active units (radius or diameter). In order for these variables to return the value in diameter, these units must be enabled by machine parameter and function G151 must be active.

20.5 Variables associated with the tool being prepared.

The CNC reads several blocks ahead of the one being executed in order to calculate in advance the path to follow.

As can be seen in the following example, the block being prepared is calculated with the tool T6; whereas the tool T1 is the one currently selected.

```
G1 X100 F200 T1 M6          (Block in execution)
Y200
G1 X20 F300 T6 M6
X30 Y60                     (Block being prepared)
```

There are specific variables for consulting and/or modifying the values being used in the preparation. These variables can only be accessed from the program and are evaluated during block preparation. Writing these variables does not modify the tool table; the new value is only used during block preparation.

20.5.1 Tool and active offset.

(V.)[ch].G.TOOL

Variable that can be read from the program.
The variable returns the value of block preparation.

Number of the tool being prepared.

Syntax.

·ch· Channel number.

```
V.[2].G.TOOL                Channel ·2·.
```

(V.)[ch].G.TOD

Variable that can be read from the program.
The variable returns the value of block preparation.

Number of tool offset being prepared.

Syntax.

·ch· Channel number.

```
V.[2].G.TOD                 Channel ·2·.
```

20.5.2 Next tool and tool offset.

(V.)[ch].G.NXTOOL

Variable that can be read from the program.
The variable returns the value of block preparation.

Number of the next tool being prepared.

Syntax.

·ch· Channel number.

V.[2].G.NXTOOL	Channel ·2·.

(V.)[ch].G.NXTOD

Variable that can be read from the program.
The variable returns the value of block preparation.

Number of the next tool offset being prepared.

Syntax.

·ch· Channel number.

V.[2].G.NXTOD	Channel ·2·.

20.5.3 Tool status.

(V.)[ch].G.TSTATUS

Variable that can be read from the program.
The variable returns the value of block preparation.

Tool being prepared. Tool status.

Syntax.

·ch· Channel number.

V.[2].G.TSTATUS	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Tool available.
1	Tool available.
2	Tool worn out.

20.5.4 Family of the tool.

(V.)[ch].G.TLFF

Variable that can be read from the program.
The variable returns the execution value; reading it interrupts block preparation.

Tool being prepared. Family code.

Syntax.

·ch· Channel number.

V.[2].G.TLFF	Channel ·2·.

20.5.5 "CUSTOM" data of the tool.

(V.)[ch].G.TOTP1
(V.)[ch].G.TOTP2
(V.)[ch].G.TOTP3
(V.)[ch].G.TOTP4

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Custom parameters.

Syntax.

·ch· Channel number.

V.[2].G.TOTP1	Channel ·2·. Custom parameter ·1·.
V.[2].G.TOTP2	Channel ·2·. Custom parameter ·2·.
V.[2].G.TOTP3	Channel ·2·. Custom parameter ·3·.
V.[2].G.TOTP4	Channel ·2·. Custom parameter ·4·.

20.5.6 Tool monitoring.

(V.)[ch].G.TOMON

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool offset being prepared. Type of tool life monitoring.

Syntax.

·ch· Channel number.

V.[2].G.TOMON	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Without tool life monitoring.
1	Tool life monitoring; machining time.
2	Tool life monitoring; number of operations.

(V.)[ch].G.TLFN

Variable that can be read from the program.
The variable returns the value of block preparation.

Tool offset being prepared. Nominal life.

Syntax.

·ch· Channel number.

V.[2].G.TLFN	Channel ·2·.

(V.)[ch].G.TLFR

Variable that can be read from the program.
The variable returns the value of block preparation.

Tool offset being prepared. Real (actual) life.

Syntax.

·ch· Channel number.

V.[2].G.TLFR	Channel ·2·.

(V.)[ch].G.REMLIFE

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool offset being prepared. Remaining life.

Syntax.

·ch· Channel number.

V.[2].G.REMLIFE	Channel ·2·.

20.5.7 Tool geometry.

(V.)[ch].G.TOOLTYP

Variable that can be read from the program.
The variable returns the value of block preparation.

Tool being prepared. Code of the tool offset type.

Syntax.

·ch· Channel number.

V.[2].G.TOOLTYP	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Milling tool..
2	Drilling tool.
3	Surface milling tool.
4	Reaming tool.
5	Boring tool.
6	Threading tool.
7	Grooving or cut-off tool.
8	Turning tool.
9	Other.
10	Measuring probe.

(V.)[ch].G.DSUBTYPE

Variable that can be read from the program.
The variable returns the value of block preparation.

Tool being prepared. Code of the tool offset subtype.

Syntax.

·ch· Channel number.

V.[2].G.DSUBTYPE	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Without type
1	Flat endmill.
2	Ball endmill.
3	Toric endmill.
4	Tap.
5	Thread cutter.
6	Disk endmill.
7	Drill bit.
8	Surface milling endmill.
9	Reamer.
10	Boring tool.

Value.	Meaning.
11	Diamond shaped cutter for turning.
12	Square cutter for turning, grooving or cut-off.
13	Round cutter for turning.
14	Measuring probe (milling machine).
15	Measuring probe (lathe).

1	2	3	4	5	6	7
						
8	9	10	11	12	13	14/15
						

(V.)[ch].G.LOCODE

Variable that can be read from the program.
The variable returns the value of block preparation.

Tool being prepared. Location code (shape) or tool calibration point.

Only for turning tools. The location code indicates which is the calibrated tool tip and, therefore, the point controlled by the CNC to apply radius compensation. The location code depends on the orientation of the machine axes.

Syntax.

·ch· Channel number.

V.[2].G.LOCODE	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.								
0								
1								
2								
3								
4								
5								
6								

Value.								
7								
8								
9								

(V.)[ch].G.FIXORI

Variable that can be read and written via program, PLC(asynchronous writing) and interface.
The variable returns the execution value; reading it interrupts block preparation.

Tool being prepared. Tool-holder orientation.

Syntax.

·ch· Channel number.

V.[2].G.FIXORI	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Face axis.
1	Longitudinal axis.

(V.)[ch].G.TOR

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Radius.

This variable is not valid for turning tools.

Syntax.

·ch· Channel number.

V.[2].G.TOR	Channel ·2·.

(V.)[ch].G.TOI

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Radius wear.

This variable is not valid for turning tools.

Syntax.

·ch· Channel number.

V.[2].G.TOI	Channel ·2·.

(V.)[ch].G.TOL

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Length.

This variable is not valid for turning tools.

Syntax.

·ch· Channel number.

V.[2].G.TOL	Channel ·2·.

(V.)[ch].G.TOK

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Length wear.

This variable is not valid for turning tools.

Syntax.

·ch· Channel number.

V.[2].G.TOK	Channel ·2·.

(V.)[ch].G.TOAN

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Penetration angle.

Syntax.

·ch· Channel number.

V.[2].G.TOAN	Channel ·2·.

(V.)[ch].G.TOTIPR

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Tip radius.

Syntax.

·ch· Channel number.

V.[2].G.TOTIPR	Channel ·2·.

(V.)[ch].G.TOWTIPR

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Tool tip radius wear.

Syntax.

·ch· Channel number.

V.[2].G.TOWTIPR	Channel ·2·.

(V.)[ch].G.TOCUTL

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Cutting length.

Syntax.

·ch· Channel number.

V.[2].G.TOCUTL	Channel ·2·.

(V.)[ch].G.NOSEA

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Cutter angle.

Syntax.

·ch· Channel number.

V.[2].G.NOSEA	Channel ·2·.

(V.)[ch].G.NOSEW

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Cutter width.

Syntax.

·ch· Channel number.

V.[2].G.NOSEW	Channel ·2·.

(V.)[ch].G.CUTA

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Tool being prepared. Cutting angle of the cutter.

Syntax.

·ch· Channel number.

V.[2].G.CUTA	Channel ·2·.

(V.)[ch].A.TOFL.xn

Variable that can be read and written from the program.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Tool being prepared. Tool length offset on the xn axis.

On turning tools, it is used to define the tool length in each axis. On milling tools, it is used to define the tool position when using a tool holder or an intermediate tooling.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.TOFL.Z	Z axis.
V.A.TOFL.4	Axis with logic number ·4·.
V.[2].A.TOFL.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].A.TOFLW.xn

Variable that can be read and written from the program.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Tool being prepared. Tool length offset wear on the xn axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.TOFLW.Z	Z axis.
V.A.TOFLW.4	Axis with logic number ·4·.
V.[2].A.TOFLW.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].G.TOFL1
(V.)[ch].G.TOFL2
(V.)[ch].G.TOFL3

Variable that can be read and written from the program.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Tool being prepared. Tool length offset on the first axes of the channel.

On turning tools, it is used to define the tool length in each axis. On milling tools, it is used to define the tool position when using a tool holder or an intermediate tooling.

Syntax.

·ch· Channel number.

V.[2].G.TOFL1	Channel ·2·. First axis of the channel.
V.[2].G.TOFL2	Channel ·2·. Second axis of the channel.
V.[2].G.TOFL3	Channel ·2·. Third axis of the channel.

(V.)[ch].G.TOFLW1
(V.)[ch].G.TOFLW2
(V.)[ch].G.TOFLW3

Variable that can be read and written from the program.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Tool being prepared. Tool length offset wear on the first axes of the channel.

Syntax.

·ch· Channel number.

V.[2].G.TOFLW1	Channel ·2·. First axis of the channel.
V.[2].G.TOFLW2	Channel ·2·. Second axis of the channel.
V.[2].G.TOFLW3	Channel ·2·. Third axis of the channel.

20.

VARIABLES ASSOCIATED WITH TOOL MAGAZINE AND

Variables associated with the tool being prepared.

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

VARIABLES RELATED TO JOG MODE.

21

21.1 Movement allowed in jog mode.

(V.)[ch].G.INTMAN

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Movements in jog mode are allowed.

Syntax.

·ch· Channel number.

V.[2].G.INTMAN	Channel ·2·.

Remarks.

Jog movements are allowed when the jog mode or the TEACH-IN mode is active, during tool inspection and when functions G200 and G201 are active.

21.2 Type of movement active in the channel.

(V.)G.MANMODE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Type of movement active for all the axes.

V.G.MANMODE

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Handwheel mode.
2	Continuous jog mode.
3	Incremental jog mode.

Remarks.

The type of movement may be set by the switch of the operator panel or by PLC; the one set by PLC has the highest priority.

(V.)G.CNCMANMODE

Variable that can be read and written from the interface and read from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Type of movement selected at the switch for all the axes.

The value set by the switch of the operator panel has lower priority than the one set by PLC.

V.G.CNCMANMODE

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Handwheel mode.
2	Continuous jog mode.
3	Incremental jog mode.

(V.)PLC.MANMODE

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Type of movement selected by PLC for all the axes.

The value selected by PLC prevails over the one selected on the operator panel. To cancel the feedrate set by PLC, set the variable to ·0·.

V.PLC.MANMODE

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Nothing has been selected by PLC.
1	Handwheel mode.
2	Continuous jog mode.
3	Incremental jog mode.

21.3 Type of movement active on an axis.

(V.)[ch].A.MANMODE.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Type of movement active for all the ·xn· axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.MANMODE.Z	Z axis.
V.A.MANMODE.4	Axis with logic number ·4·.
V.[2].A.MANMODE.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Handwheel mode.
2	Continuous jog mode.
3	Incremental jog mode.
4	Handwheel mode without selected axis. The handwheel mode has been selected but the axis to be moved has not been selected.

Remarks.

The type of movement may be set by the switch of the operator panel or by PLC; the one set by PLC has the highest priority.

(V.)[ch].A.CNCMMODE.xn

Variable that can be read and written from the interface and read from the program and from the PLC.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Type of movement selected at the switch for the ·xn· axis.

The value set by the switch of the operator panel has lower priority than the one set by PLC.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.CNCMMODE.Z	Z axis.
V.A.CNCMMODE.4	Axis with logic number ·4·.
V.[2].A.CNCMMODE.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Handwheel mode.
2	Continuous jog mode.
3	Incremental jog mode.

(V.)[ch].A.PLCMMODE.xn

Variable that can be read and written from the PLC and read from the program and from the interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Type of movement selected by PLC for the ·xn· axis.

The value selected by PLC prevails over the one selected on the operator panel. To cancel the feedrate set by PLC, set the variable to ·0·.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.PLCMMODE.Z	Z axis.
V.A.PLCMMODE.4	Axis with logic number ·4·.
V.[2].A.PLCMMODE.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Nothing has been selected by PLC.
1	Handwheel mode.
2	Continuous jog mode.
3	Incremental jog mode.

Remarks.

If an axis has been set in handwheel mode from the PLC, it can only be deactivated from the PLC; a reset does not deactivate it.

21.4 Switch position in handwheel mode.

(V.)G.MPGIDX

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Active position for all the handwheels.

V.G.MPGIDX

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Position 1.
2	Position 10.
3	Position 100.

Remarks.

The value may be set by the switch of the operator panel or by PLC; the one set by PLC has the highest priority.

(V.)G.CNCMPGIDX

Variable that can be read and written from the interface and read from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Position selected at the switch.

The value set by the switch of the operator panel has lower priority than the one set by PLC.

V.G.CNCMPGIDX

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Position 1.
2	Position 10.
3	Position 100.

(V.)PLC.MPGIDX

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Position selected by PLC.

The value selected by PLC prevails over the one selected on the operator panel. To cancel the feedrate set by PLC, set the variable to ·0·.

V.PLC.MPGIDX

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Position 1.
2	Position 10.
3	Position 100.

21.5 Switch position in incremental jog mode.

(V.)G.INCJOGIDX

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Active position for all the axes.

V.G.INCJOGIDX

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Position 1.
2	Position 10.
3	Position 100.
4	Position 1000.
5	Position 10000.

Remarks.

The value may be set by the switch of the operator panel or by PLC; the one set by PLC has the highest priority.

(V.)G.CNCINCJOGIDX

Variable that can be read and written from the interface and read from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Position selected by the switch.

The value set by the switch of the operator panel has lower priority than the one set by PLC.

V.G.CNCINCJOGIDX

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Position 1.
2	Position 10.
3	Position 100.
4	Position 1000.
5	Position 10000.

(V.)PLC.INCJOGIDX

Variable that can be read and written from the PLC and read from the program and from the interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Position selected by PLC.

The value selected by PLC prevails over the one selected on the operator panel. To cancel the feedrate set by PLC, set the variable to ·0·.

V.PLC.INCJOGIDX

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Position 1.
2	Position 10.
3	Position 100.
4	Position 1000.
5	Position 10000.

21.6 JOG feedrates.

(V.)[ch].G.FMAN

Variable that can be read and written from the program and interface and read from the PLC.
The variable returns the execution value; reading it interrupts block preparation.

Jogging feedrate in G94.

Syntax.

·ch· Channel number.

V.[2].G.FMAN	Channel ·2·.

Remarks.

This variable also updates its value when setting a new feedrate ("F" field on the screen for jog mode) or MDI/MDA mode and function G94 is active.

(V.)[ch].G.MANFPR

Variable that can be read and written from the program and interface and read from the PLC.
The variable returns the execution value; reading it interrupts block preparation.

Jogging feedrate in G95.

Syntax.

·ch· Channel number.

V.[2].G.MANFPR	Channel ·2·.

Remarks.

This variable also updates its value when setting a new feedrate ("F" field on the screen for jog mode) or MDI/MDA mode and function G95 is active.

VARIABLES RELATED TO THE PROGRAMMED FUNCTIONS.

22

22.1 Movement of axes and spindles.

(V.)[ch].A.INPOS.xn
(V.)[ch].A.INPOS.sn
(V.)[ch].SP.INPOS.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Axis or spindle in position.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.INPOS.Z	Z axis.
V.A.INPOS.S	Spindle S.
V.SP.INPOS.S	Spindle S.
V.SP.INPOS	Master spindle.
V.A.INPOS.4	Axis or spindle with logic number ·4·.
V.[2].A.INPOS.1	Axis with index ·1· in the channel ·2·.
V.SP.INPOS.2	Spindle with index ·2· in the system.
V.[2].SP.INPOS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.DIST.xn
(V.)[ch].A.DIST.sn
(V.)[ch].SP.DIST.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Distance traveled by the axis or spindle.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.DIST.Z	Z axis.
V.A.DIST.S	Spindle S.
V.SP.DIST.S	Spindle S.
V.SP.DIST	Master spindle.
V.A.DIST.4	Axis or spindle with logic number ·4·.
V.[2].A.DIST.1	Axis with index ·1· in the channel ·2·.
V.SP.DIST.2	Spindle with index ·2· in the system.
V.[2].SP.DIST.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.ACCUDIST.xn
(V.)[ch].A.ACCUDIST.sn
(V.)[ch].SP.ACCUDIST.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Distance traveled by the axis or spindle since the last coordinate latching. This variable is initialized to ·0· when a latching event takes place. To add a position offset to this variable at the latch point, just add it from the PLC in a later cycle. This variable may be initialized in a sampling period and keep counting from the initialized value on.

- A particular example of how to use it could be the treatment of a rotary axis as an infinite axis making it possible to increase the feedback count of the axis indefinitely (without limits) regardless of the value of the module.

  For example, for a rotary axis that moves an endless conveyor belt on where the part is. The infinite axis treatment allows synchronizing the coordinate of the conveyor belt with an external event and, this way, count the moving distance of the part beyond the value of the module of the rotary axis that moves the belt.

- Another example of how to use it would be the possibility of synchronizing a "physical" or "real" slave axis with the variable A.ACCUDIST.xn of a "virtual" master axis. The PLC can refresh/write in every cycle the contents of the variable A.ACCUDIST.xn of the virtual axis with any data combination, the sum of the paths of several real axes with their corresponding coefficients, etc. Since it is a virtual axis, not physical, writing from the PLC is not altered in every cycle with the accumulated movement (travel) of that axis.

  This possibility offers great flexibility to the CNC because it allows synchronizing a slave axis not only with a single master axis, but also with a path or a combination of several master axes.

The CNC can use this variable, that can write at any time, to follow up on an axis with a synchronization movement (#FOLLOW ON, #TFOLLOW ON) or a position-cam (#CAM ON, #TCAM ON). The way to use it is programming the master axis with the prefix ACCU.

```
#FOLLOW ON [ACCUX, Y, N1, D1]
#TFOLLOW ON [ACCUX, Y, N1, D1]
#CAM ON [1, ACCUX, Y, 30, 0, 100, 100]
#TCAM ON [1, ACCUX, Y, 30, 0, 100, 100]
```

In these examples, the Y axis follows up on the X axis with the variable V.A.ACCUDIST.X.

The following table shows, for each case, what the slave axis synchronizes with, whether with the real position, the theoretical position or the variable A.ACCUDIST.xn of the master programmed in each instruction.

Instruction.	Synchronization.
#FOLLOW ON [X, Y, N1, D1]	Real position.
#FOLLOW ON [ACCUX, Y, N1, D1]	Variable A.ACCUDIST.xn
#TFOLLOW ON [X, Y, N1, D1]	Theoretical position.
#TFOLLOW ON [ACCUX, Y, N1, D1]	Variable A.ACCUDIST.xn
#CAM ON [1, X, Y, 30, 0, 100, 100]	Real position.
#CAM ON [1, ACCUX, Y, 30, 0, 100, 100]	Variable A.ACCUDIST.xn
#TCAM ON [1, X, Y, 30, 0, 100, 100]	Theoretical position.
#TCAM ON [1, ACCUX, Y, 30, 0, 100, 100]	Variable A.ACCUDIST.xn

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.ACCUDIST.Z	Z axis.
V.A.ACCUDIST.S	Spindle S.
V.SP.ACCUDIST.S	Spindle S.

V.SP.ACCUDIST	Master spindle.
V.A.ACCUDIST.4	Axis or spindle with logic number ·4·.
V.[2].A.ACCUDIST.1	Axis with index ·1· in the channel ·2·.
V.SP.ACCUDIST.2	Spindle with index ·2· in the system.
V.[2].SP.ACCUDIST.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.PREVACCUDIST.xn
(V.)[ch].A.PREVACCUDIST.sn
(V.)[ch].SP.PREVACCUDIST.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Distance traveled by the axis or spindle between the last two coordinate latchings. This variable updates (refreshes) its value at every latching event; that's why the variable will have a ·0· value until the first one takes place.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.PREVACCUDIST.Z	Z axis.
V.A.PREVACCUDIST.S	Spindle S.
V.SP.PREVACCUDIST.S	Spindle S.
V.SP.PREVACCUDIST	Master spindle.
V.A.PREVACCUDIST.4	Axis or spindle with logic number ·4·.
V.[2].A.PREVACCUDIST.1	Axis with index ·1· in the channel ·2·.
V.SP.PREVACCUDIST.2	Spindle with index ·2· in the system.
V.[2].SP.PREVACCUDIST.1	Spindle with index ·1· in the channel ·2·.

22.2 Work plane and axes.

(V.)[ch].G.PLANE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Axes making up the work plane.

Syntax.

·ch· Channel number.

V.[2].G.PLANE	Channel ·2·.

Values of the variable.

X=10	X1=11	X2=12	X3=13	X4=14	... X9=19
Y=20	Y1=21	Y2=22	Y3=23	Y4=24	... Y9=29
Z=30	Z1=31	Z2=32	Z3=33	Z4=34	... Z9=39
U=40	U1=41	U2=42	U3=43	U4=44	... U9=49
V=50	V1=51	V2=52	V3=53	V4=54	... V9=59
W=60	W1=61	W2=62	W3=63	W4=64	... W9=69
A=70	A1=71	A2=72	A3=73	A4=74	... A9=79
B=80	B1=81	B2=82	B3=83	B4=84	... B9=89
C=90	C1=91	C2=92	C3=93	C4=94	... C9=99

Main axes.	Main plane.	Reading the variable.
X-Y-Z	G17 (XY)	V.[1].G.PLANE = 1020 V.[1].G.LONGAX = 30 V.[1].G.TOOLDIR = 2
X-Y-Z	G18 (ZX)	V.[1].G.PLANE = 3010 V.[1].G.LONGAX = 20 V.[1].G.TOOLDIR = 2
X-V1-Z3	G17 (X-V1) #TOOL AX [V1-]	V.[1].G.PLANE = 1051 V.[1].G.LONGAX = 33 V.[1].G.TOOLDIR = 1

(V.)[ch].G.LONGAX

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Longitudinal axis.

Syntax.

·ch· Channel number.

V.[2].G.LONGAX	Channel ·2·.

Values of the variable.

X=10	X1=11	X2=12	X3=13	X4=14	... X9=19
Y=20	Y1=21	Y2=22	Y3=23	Y4=24	... Y9=29
Z=30	Z1=31	Z2=32	Z3=33	Z4=34	... Z9=39
U=40	U1=41	U2=42	U3=43	U4=44	... U9=49
V=50	V1=51	V2=52	V3=53	V4=54	... V9=59
W=60	W1=61	W2=62	W3=63	W4=64	... W9=69
A=70	A1=71	A2=72	A3=73	A4=74	... A9=79
B=80	B1=81	B2=82	B3=83	B4=84	... B9=89
C=90	C1=91	C2=92	C3=93	C4=94	... C9=99

(V.)[ch].G.TOOLDIR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Tool orientation.

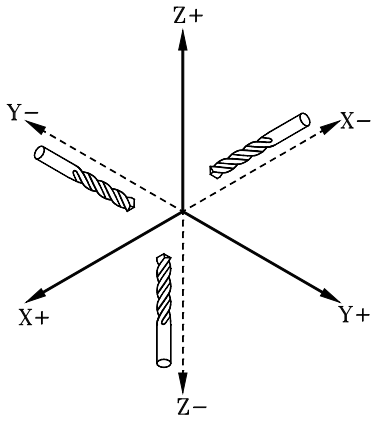
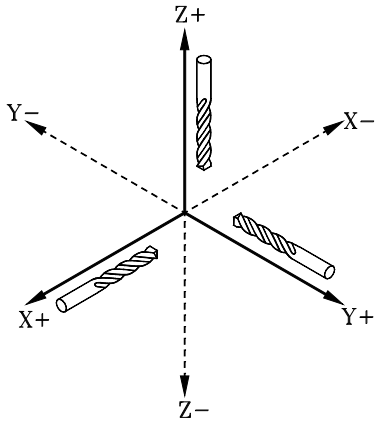
Syntax.

·ch· Channel number.

V.[2].G.TOOLDIR	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	The tool is positioned in the positive direction of the axis. 
2	The tool is positioned in the negative direction of the axis. 

(V.)[ch].G.PLAXNAME1
(V.)[ch].G.PLAXNAME2
(V.)[ch].G.PLAXNAME3

Variable to be read via interface.

Name the main axes of the channel.

Syntax.

·ch· Channel number.

[2].G.PLAXNAME1	Channel ·2·. Abscissa axis.
[2].G.PLAXNAME2	Channel ·2·. Ordinate axis.
[2].G.PLAXNAME3	Channel ·2·. Third main axis.

(V.)[ch].G.PLANELONG

Variable to be read via interface.

Index of the tool in the axis channel.

Syntax.

·ch· Channel number.

[2].G.PLANELONG	Channel ·2·.

Remarks.

In this variable, the index in the channel of the first axis will be ·0·, that of the second axis will be ·1· and so on.

22.3 "G" and "M" functions.

22.3.1 Status of the functions "G" and "M".

(V.)[ch].G.GS[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).

Status of the requested "G" function.

Syntax.

·ch· Channel number.

·nb· Function number.

V.[2].G.GS[3]	Channel ·2·. Function G3.

Values of the variable.

Each function has a bit that indicates whether the relevant function is active (=1) or not (=0).

(V.)[ch].G.MS[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).

Status of the requested "M" function.

Syntax.

·ch· Channel number.

·nb· Function number.

V.[2].G.MS[5]	Channel ·2·. M5 function.

Values of the variable.

Each function has a bit that indicates whether the relevant function is active (=1) or not (=0).

(V.)[ch].G.HGS1
..
(V.)[ch].G.HGS10

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Status of the requested "G" (32 bit) functions.

Syntax.

·ch· Channel number.

V.[2].G.HGS1	Channel ·2·.

Remarks.

Every variable corresponds to a range of 32 G functions and returns a 32-bit value; 1 bit per function. Each bit indicates whether the function is active (bit = 1) or not (bit = 0). The least significant bit corresponds to the lowest function of the range.

Variable.	G function range.	
(V.)[ch].G.HGS1	G0 - G31.	Bit 0 corresponds to G0.
(V.)[ch].G.HGS2	G32 - G63	Bit 0 corresponds to function G32.
(V.)[ch].G.HGS3	G64 - G95	Bit 0 corresponds to function G64.

Variable.	G function range.	
(V.)[ch].G.HGS4	G96 - G127	Bit 0 corresponds to function G96.
(V.)[ch].G.HGS5	G128 - G159	Bit 0 corresponds to function G128.
(V.)[ch].G.HGS6	G160- G191	Bit 0 corresponds to function G160.
(V.)[ch].G.HGS7	G192 - G223	Bit 0 corresponds to function G192.
(V.)[ch].G.HGS8	G224 - G255	Bit 0 corresponds to function G224.
(V.)[ch].G.HGS9	G256 - G287	Bit 0 corresponds to function G256.
(V.)[ch].G.HGS10	G288 - G319	Bit 0 corresponds to function G288.

To check the status of function G08 from the part-program.

```
$IF [V.[1].G.HGS1 & [2**8]] == 2**8
```

To check the status of function G101 from the part-program.

```
$IF [V.[1].G.HGS4 & [2**5]] == 2**5
```

To check the status of function G08 from the PLC.

```
DFU B0KEYBD1 = CNCRD(G.HGS1, R100, M100)
B8R100 = ···
```

To check the status of function G101 from the PLC.

```
DFU B0KEYBD1 = CNCRD(G.HGS4, R101, M100)
B5R101 = ···
```

22.3.2 Functions "G" and "M" to be displayed in the history.

(V.)[ch].G.HGS
Variable to be read via interface.
Report variable (to be used from the scripts).

"G" functions to be displayed in the history.

[2].G.HGS	Channel ·2·.

Remarks.

This variable returns a binary value. Each function has a bit that indicates whether the relevant variable will be displayed (=1) or not (=0). Bit 0, the least significant bit, corresponds to G0, bit 1 to G1 and so on.

(V.)[ch].G.HMS
Variable to be read via interface.
Report variable (to be used from the scripts).

"M" functions of the master spindle to be displayed in the history.

[2].G.HMS	Channel ·2·. Master spindle.

Values of the variable.

This variable returns a hexadecimal value with the following meaning. Each bit represents an M function and indicates whether that function must be displayed (bit=1) or not (bit=0).

Value.	Meaning.
$1	M0
$2	M1
$4	M2
$8	M3
$10	M4
$20	M5
$40	M6
$80	M8
$100	M19
$200	M30
$800	M41
$1000	M42
$2000	M43
$4000	M44

(V.)[ch].G.HMS1
(V.)[ch].G.HMS2
(V.)[ch].G.HMS3
(V.)[ch].G.HMS4
Variable to be read via interface.
Report variable (to be used from the scripts).

"M" functions of spindle 1 through 4 to be displayed in the history.

[2].G.HMS2	Channel ·2·. Spindle ·2·.

Values of the variable.

This variable returns a hexadecimal value with the following meaning. Each bit represents an M function and indicates whether that function must be displayed (bit=1) or not (bit=0).

Value.	Meaning.
$1	M0
$2	M1
$4	M2
$8	M3
$10	M4
$20	M5
$40	M6
$80	M8
$100	M19
$200	M30
$800	M41
$1000	M42
$2000	M43
$4000	M44

22.3.3 Subroutine associated with M3, M4, M5, M19 and M41-M44.

(V.)[ch].G.SUBMSPDL

Variable that can be read from the program.
The variable returns the value of block preparation.

System spindles involved in the subroutine associated with M3, M4, M5, M19 and M41-M44.

The variables only have meaning inside the subroutine associated with the M functions of the spindle; i.e. in the block where the M function is programmed and, therefore, there is a call to the subroutine. Outside these subroutines, the value of the variable will be 0.

Syntax.

·ch· Channel number.

V.[2].G.SUBMSPDL	Channel ·2·.

Remarks.

The variable returns a 4-bit value where each bit represents one spindle; the least significant bit corresponds to spindle 1. Each bit indicates whether the spindle is selected (bit = 1) or not (bit = 0).

Value.	Meaning.	
0	0000	No spindle.
1	0001	Spindle 1.
2	0010	Spindle 2.
3	0011	Spindles 1 and 2.
4	0100	Spindle 3.
5	0101	Spindles 1 and 3.
6	0110	Spindles 2 and 3.
7	0111	Spindles 1, 2 and 3.
8	1000	Spindle 4.
9	1001	Spindles 1 and 4.
10	1010	Spindles 2 and 4.
11	1011	Spindles 1, 2 and 4.
12	1100	Spindles 3 and 4.
13	1101	Spindles 1, 3 and 4.
14	1110	Spindles 2, 3 and 4.
15	1111	Spindles 1, 2, 3 and 4.

22.4 Canned cycles.

(V.)[ch].G.CYCLETYPEON

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Type of canned cycle active

Syntax.

·ch· Channel number.

V.[2].G.CYCLETYPEON	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Milling cycles.
1	Turning cycles.

(V.)[ch].G.ACTIVECYLE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Active canned cycle.

Syntax.

·ch· Channel number.

V.[2].G.ACTIVECYCLE	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

- Milling cycles: ISO cycles (1 - 99).

Value / Meaning.	
0	No active cycle.
1	G81
2	G82
3	G83
4	G84
5	G85
6	G86
7	G87
8	G88
11	G210
12	G211
13	G212
21	G66
31	G160
32	G161
33	G162
34	G163

Value / Meaning.	
41	#PROBE 1
42	#PROBE 2
43	#PROBE 3
44	#PROBE 4
45	#PROBE 5
46	#PROBE 6
47	#PROBE 7
48	#PROBE 8
49	#PROBE 9
50	#PROBE 10
51	#PROBE 11
52	#PROBE 12
61	G8078
62	G8079
63	G8724
64	G8728
65	G8734

Value / Meaning.	
35	G164
36	G165

Value / Meaning.	
66	G8738
67	G8753
68	G8778

- Milling cycles: Cycle editor (100 - 199).

Value / Meaning.	
101	Center punching.
102	Drilling.
103	Deep hole drilling.
104	Bore milling.
105	Tapping.
106	Thread milling.
107	Reaming.
108	Boring.
109	Boring with spindle orientation.
121	Simple rectangular pocket.
122	Rectangular pocket with rounding.
123	Circular pocket.
124	Pre-emptied circular pocket.
125	2D profile pocket.
126	3D profile pockets with islands.
127	Rectangular boss.
128	Circular boss.

Value / Meaning.	
131	Free profile milling.
132	Point-to-point profile milling.
133	Surface milling.
134	Slot milling.
141	Simple positioning.
142	Positioning and M funcions.
151	Tool calibration.
152	Probe calibration.
153	Tabletop probe calibration.
154	Surfacing measuring.
155	Outside corner measuring.
156	Inside corner measuring.
157	Angle measurement on the abscissa axis.
158	Outside corner and angle measurement.
159	Hole measuring.
160	Circular boss measuring.
161	Rectangular or circular part/pocket centering.

- Turning cycles: ISO cycles (1000 - 1099).

Value / Meaning.	
1001	G81
1002	G82
1003	G83
1004	G84
1005	G85
1006	G86
1007	G87
1008	G88
1009	G89
1011	G66

Value / Meaning.	
1012	G68
1013	G69
1021	G160
1022	G161
1023	G162
1024	G163
1031	#PROBE 1
1032	#PROBE 2
1033	#PROBE 3
1034	#PROBE 4

- Turning cycles: Cycle editor (1100 - 1199).

Value / Meaning.	
1101	Simple turning.
1102	Turning with vertex rounding.
1103	Simple facing.
1104	Facing with vertex rounding.

Value / Meaning.	
1152	Drilling.
1153	Tapping.
1161	Multiple center-punching.
1162	Multiple drilling.

Value / Meaning.	
1105	Corner chamfering 1.
1106	Corner chamfering 2.
1107	Chamfer between points.
1108	Vertex rounding.
1109	Rounding between points.
1121	Longitudinal threading.
1122	Taper threading.
1123	Face threading.
1124	Thread repair.
1125	Multi-entry (start) threading
1131	Simple longitudinal grooving.
1132	Simple face grooving.
1133	Inclined (angled) longitudinal grooving.
1134	Inclined face grooving.
1135	Cut-off.
1141	Point-to-point turning.
1142	Profile turning.
1143	Profile in the ZC/YZ plane.
1144	Profile in the XC/XY plane.
1151	Center punching.

Value / Meaning.	
1163	Multiple tapping.
1164	Multiple reaming.
1165	Multiple boring.
1166	Multiple bore milling.
1167	Multiple thread milling.
1168	Multiple slot milling.
1171	Simple positioning.
1172	Positioning with M functions.
1181	Rectangular pocket in the ZC/YZ plane.
1182	Rectangular pocket in the XC/XY plane.
1183	Circular pocket in the ZC/YZ plane.
1184	Circular pocket in the XC/XY plane.
1185	Circular pre-emptied pocket in the ZC/YZ plane.
1186	Circular pre-emptied pocket in the XC/XY plane.
1187	2D profile pocket in the ZC/YZ plane.
1188	2D profile pocket in the XC/XY plane.
1191	Tool calibration.
1192	Tabletop probe calibration.
1193	Part measurement along the ordinate axis.
1194	Part measurement along the abscissa axis.

22.5 Canned cycle calling parameters.

(V.)C.A··Z

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Value of the ISO canned cycle calling parameter.

Syntax.

·A··Z· Call parameter.

V.C.F	"F" parameter.

Remarks.

Calling a canned cycle.	Reading the variable.
G90 G81 Z0 I-15	V.C.Z = 0 V.C.Z = -15

(V.)C.name

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Value of the parameters that call upon the canned cycles of the editor.

Syntax.

·name·Call parameter.

V.C.MROUGHING	Parameter MROUGHING.

(V.)C.CALLP_A··Z

Variable that can be read from the program.
The variable returns the value of block preparation.

Parameter programmed in the call to a canned cycle.

Syntax.

·A··Z· Call parameter.

V.C.CALLP_F	"F" parameter.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	It has not been programmed.
1	It has been programmed.

Remarks.

Calling a canned cycle.	Reading the variable.
G90 G81 Z0 I-15	V.C.CALLP_Z = 1 V.C.CALLP_I = 1 V.C.CALLP_K = 0

(V.)C.P_A··Z

Variable that can be read and written from the program.
The variable returns the value of block preparation.

Value of the positioning cycle calling parameter.

Syntax.

·A··Z· Call parameter.

V.C.P_F	"F" parameter.

Remarks.

Calling a canned cycle.	Reading the variable.
G160 A30 X100 K10 P6	V.C.P_A = 30 V.C.P_X = 100

(V.)C.P_CALLP_A··Z

Variable that can be read from the program.
The variable returns the value of block preparation.

Parameter programmed in the call to a positioning cycle.

Syntax.

·A··Z· Call parameter.

V.C.P_CALLP_F	"F" parameter.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	It has not been programmed.
1	It has been programmed.

Remarks.

Calling a canned cycle.	Reading the variable.
G160 A30 X100 K10 P6	V.C.P_CALLP_A = 1 V.C.P_CALLP_K = 1 V.C.P_CALLP_R = 0

22.6 Subroutine calling parameters.

(V.)C.PCALLP_A
...
(V.)C.PCALLP_Z

Variable that can be read from the program.
The variable returns the value of block preparation.
Units: Value listed.

Parameter programmed in the call for a subroutine or in instructions #CUTTING and #PIERCING. This variable is valid for OEM subroutines (G180-G189 and G380-G399) and for subroutines called upon using #PCALL or #MCALL.

Syntax.

V.C.PCALLP_A	Parameter "A".
V.C.PCALLP_F	"F" parameter.

Values of the variable.

Value.	Meaning.
0	It has not been programmed.
1	It has been programmed.

Remarks.

Call to a subroutine.	Reading the variable.
#PCALL sub.nc A12.56 D3	V.C.PCALLP_A = 1 V.C.PCALLP_D = 1
G180 A12 B34.5667	V.C.PCALLP_A = 1 V.C.PCALLP_B = 1
#CUTTING [T3]	V.C.PCALLP_T = 1

(V.)G.CALLP

Variable that can be read from the program.
The variable returns the value of block preparation.
Units: - .

Local parameters programmed in the call for a subroutine or in #CUTTING and #PIERCING instructions.

Syntax.

V.G.CALLP

Values of the variable.

The variable returns a value coded in bits, in which each bit represents a parameter; the bit with the lowest weight (bit 0) corresponds to parameter P0, bit 1, to parameter P1, and so on. Each bit indicates whether the parameter is programmed (bit=1) or not (bit=0).

22.7 Arc related.

(V.)[ch].G.R

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Radius of the arc.

Syntax.

·ch· Channel number.

V.[2].G.R	Channel ·2·.

(V.)[ch].G.I
(V.)[ch].G.J
(V.)[ch].G.K

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Coordinates referred to the arc center.

Syntax.

·ch· Channel number.

V.[2].G.I	Channel ·2·. First axis of the channel.
V.[2].G.J	Channel ·2·. Second axis of the channel.
V.[2].G.K	Channel ·2·. Third axis of the channel.

Remarks.

Being G20 active, parameters "I", "J" and "K" are associated with the abscissa axis, ordinate axis and the axis perpendicular to the work plane respectively.

(V.)[ch].G.CIRERR[1]
(V.)[ch].G.CIRERR[2]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Arc center correction in the first axes of the channel.

Syntax.

·ch· Channel number.

V.[2].G.CIRERR[1]	Channel ·2·. First axis of the channel.
V.[2].G.CIRERR[2]	Channel ·2·. Second axis of the channel.

Remarks.

Being function G265 active, the CNC recalculates the center if the arc is not exact but it is within tolerance.

Part-program.	Reading the variable.
G00 X0 Y0 G2 X120 Y120.001 I100 J20	V.G.R = 101.980881 V.G.I = 100.0004 V.G.J = 20.0004 V.G.CIRERR[1] = -0.000417 V.G.CIRERR[2] = -0.000417

Being function G264 active, if the arc is not exact, but it is within tolerances, the CNC executes an arc with the radius calculated from the starting point. The CNC maintains the position of the center.

Part-program.	Reading the variable.
G00 X0 Y0 G2 X120 Y120.001 I100 J20	V.G.R = 101.981371 V.G.I = 100 V.G.J = 20 V.G.CIRERR[1] = 0 V.G.CIRERR[2] = 0

22.8 Polar origin.

(V.)[ch].G.PORGF

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Position of the polar origin referred to part zero (abscissa).

Syntax.

·ch· Channel number.

V.[2].G.PORGF	Channel ·2·.

(V.)[ch].G.PORGS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Position of the polar origin referred to part zero (ordinate).

Syntax.

·ch· Channel number.

V.[2].G.PORGS	Channel ·2·.

22.9 Geometric assistance. Mirror image.

(V.)[ch].G.MIRROR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Active mirror images.

Syntax.

·ch· Channel number.

V.[2].G.MIRROR	Channel ·2·.

Remarks.

This variable returns the result in the least significant bits, one per axis (1= active and 0=not active). The least significant bit is for the first axis, the next one for the second axis and so on.

(V.)[ch].G.MIRROR1
(V.)[ch].G.MIRROR2
(V.)[ch].G.MIRROR3

Variable that can be read from the program.
The variable returns the value of block preparation.

Mirror image active on the first axes of the channel.

Syntax.

·ch· Channel number.

V.[2].G.MIRROR1	Channel ·2·. First axis of the channel.
V.[2].G.MIRROR2	Channel ·2·. Second axis of the channel.
V.[2].G.MIRROR3	Channel ·2·. Third axis of the channel.

22.10 Geometric assistance. Scaling factor.

(V.)[ch].G.SCALE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

It indicates the active general scaling factor.

Syntax.

·ch· Channel number.

V.[2].G.SCALE	Channel ·2·.

22.11 Geometric assistance. Coordinate system rotation.

(V.)[ch].G.ROTPF

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Position of the rotation center referred to part zero (abscissa).

Syntax.

·ch· Channel number.

V.[2].G.ROTPF	Channel ·2·.

(V.)[ch].G.ROTPS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Position of the rotation center referred to part zero (ordinate).

Syntax.

·ch· Channel number.

V.[2].G.ROTPS	Channel ·2·.

(V.)[ch].G.ORGROT

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Rotation angle of the coordinate system.

Syntax.

·ch· Channel number.

V.[2].G.ORGROT	Channel ·2·.

22.12 Block repetition.

(V.)[ch].G.PENDRPT

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of pending repetitions with #RPT.

Syntax.

·ch· Channel number.

V.[2].G.PENDRPT	Channel ·2·.

Remarks.

This variable indicates the number of repetitions left to execute. In the first execution, its value is the programmed number of repetitions minus one and in the last one, its value is zero.

(V.)[ch].G.PENDNR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of pending repetitions with NR.

Syntax.

·ch· Channel number.

V.[2].G.PENDNR	Channel ·2·.

Remarks.

This variable indicates the number of repetitions left to execute. In the first execution, its value is the programmed number of repetitions minus one and in the last one, its value is zero.

22.13 Axis slaving.

(V.)[ch].G.LINKACTIVE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Axis slaving (coupling) status.

Syntax.

·ch· Channel number.

V.[2].G.LINKACTIVE	Channel ·2·.

22.14 HSC function.

(V.)[ch].G.HSC

Variable that can be read from the program.
The variable returns the value of block preparation.

HSC function active.

Syntax.

·ch· Channel number.

V.[2].G.HSC	Channel ·2·.

22.15 Active probe.

(V.)[ch].G.ACTIVPROBE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of the active probe.

Syntax.

·ch· Channel number.

V.[2].G.ACTIVPROBE	Channel ·2·.

22.16 Status of the local probes.

(V.)G.PRBST
(V.)G.PRBST1

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of probe ·1·.

V.G.PRBST
V.G.PRBST1

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	The probe is not making contact or has not been initialized.
1	The probe is making contact.

(V.)G.PRBST2

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of probe ·2·.

V.G.PRBST2

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	The probe is not making contact or has not been initialized.
1	The probe is making contact.

22.17 Probing (G100/G101/G102).

(V.)[ch].G.MEASOK

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Probing completed properly.

Syntax.

·ch· Channel number.

V.[2].G.MEASOK	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No. The probe has reached the programmed coordinate.
1	Yes. The probe has made contact (G100) or stopped making contact (G103).

(V.)[ch].A.MEASOK.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Probing done on the axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.MEASOK.Z	Z axis.
V.A.MEASOK.S	Spindle S.
V.SP.MEASOK.S	Spindle S.
V.SP.MEASOK	Master spindle.
V.A.MEASOK.4	Axis or spindle with logic number ·4·.
V.[2].A.MEASOK.1	Axis with index ·1· in the channel ·2·.
V.SP.MEASOK.2	Spindle with index ·2· in the system.
V.[2].SP.MEASOK.1	Spindle with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].G.PLMEASOK1
(V.)[ch].G.PLMEASOK2
(V.)[ch].G.PLMEASOK3

Variable that can be read from the program.
The variable returns the execution value; reading it interrupts block preparation.

Probing on the plane axes completed.

Syntax.

·ch· Channel number.

V.[2].G.PLMEASOK1	Channel ·2·. First axis of the plane.
V.[2].G.PLMEASOK2	Channel ·2·. Second axis of the plane.
V.[2].G.PLMEASOK3	Channel ·2·. Third axis of the plane.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

(V.)[ch].A.MEAS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Measured value. Machine coordinates of the tool base.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.MEAS.Z	Z axis.
V.A.MEAS.S	Spindle S.
V.SP.MEAS.S	Spindle S.
V.SP.MEAS	Master spindle.
V.A.MEAS.4	Axis or spindle with logic number ·4·.
V.[2].A.MEAS.1	Axis with index ·1· in the channel ·2·.
V.SP.MEAS.2	Spindle with index ·2· in the system.
V.[2].SP.MEAS.1	Spindle with index ·1· in the channel ·2·.

Remarks.

Part-program.	Reading the variable.
G00 X0 Y0 G100 X100 F100	V.A.MEAS.X = 95 V.A.MEASOF.X = -5 V.A.MEASOK.X = 1

(V.)[ch].A.ATIPMEAS.xn

Variable that can be read from the program.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Measured value. Part coordinates of the tool tip.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.ATIPMEAS.Z	Z axis.
V.A.ATIPMEAS.S	Spindle S.
V.SP.ATIPMEAS.S	Spindle S.
V.SP.ATIPMEAS	Master spindle.

V.A.ATIPMEAS.4	Axis or spindle with logic number ·4·.
V.[2].A.ATIPMEAS.1	Axis with index ·1· in the channel ·2·.
V.SP.ATIPMEAS.2	Spindle with index ·2· in the system.
V.[2].SP.ATIPMEAS.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].G.PLMEAS1
(V.)[ch].G.PLMEAS2
(V.)[ch].G.PLMEAS3

Variable that can be read from the program.
The variable returns the value of block preparation.

Value measured on the first axes of the channel. Part coordinates of the tool tip.

Syntax.

·ch· Channel number.

V.[2].G.PLMEAS1	Channel ·2·. First axis of the channel.
V.[2].G.PLMEAS2	Channel ·2·. Second axis of the channel.
V.[2].G.PLMEAS3	Channel ·2·. Third axis of the channel.

(V.)[ch].G.PLMEAS4

Variable that can be read from the program.
The variable returns the value of block preparation.

Value measured at the master spindle of the channel. Part coordinates of the tool tip.

Syntax.

·ch· Channel number.

V.[2].G.PLMEAS4	Channel ·2·. Master spindle of the channel.

(V.)[ch].A.MEASOF.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Difference with respect to programmed point.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.MEASOF.Z	Z axis.
V.A.MEASOF.S	Spindle S.
V.SP.MEASOF.S	Spindle S.
V.SP.MEASOF	Master spindle.
V.A.MEASOF.4	Axis or spindle with logic number ·4·.
V.[2].A.MEASOF.1	Axis with index ·1· in the channel ·2·.
V.SP.MEASOF.2	Spindle with index ·2· in the system.
V.[2].SP.MEASOF.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.MEASIN.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Coordinate that includes a measurement offset.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.MEASIN.Z	Z axis.
V.A.MEASIN.S	Spindle S.
V.SP.MEASIN.S	Spindle S.
V.SP.MEASIN	Master spindle.
V.A.MEASIN.4	Axis or spindle with logic number ·4·.
V.[2].A.MEASIN.1	Axis with index ·1· in the channel ·2·.
V.SP.MEASIN.2	Spindle with index ·2· in the system.
V.[2].SP.MEASIN.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The CNC only refreshes this variable when probing with G101.

22.18 Manual intervention.

(V.)[ch].A.MANOF.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Distance moved in jog mode or tool inspection.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.MANOF.Z	Z axis.
V.A.MANOF.4	Axis with logic number ·4·.
V.[2].A.MANOF.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].A.ADDMANOF.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Distance moved with G200 or G201.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.ADDMANOF.Z	Z axis.
V.A.ADDMANOF.4	Axis with logic number ·4·.
V.[2].A.ADDMANOF.1	Axis with index ·1· in the channel ·2·.

Remarks.

The value of this variable is maintained during the execution of the program even when canceling manual intervention.

22.19 Status of the angular transformation.

(V.)[ch].G.ANGAXST

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Overall status of the angular transformation of the channel.

Syntax.

·ch· Channel number.

V.[2].G.ANGAXST	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Off.
1	On.
2	Frozen (suspended).

(V.)G.ANGIDST[nb]

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Status of the angular transformation [nb] of the machine parameters.

Syntax.

·nb· Number of the angular transformation in the order defined in the machine parameters.

V.G.ANGIDST[1]	Angular transformation ·1·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Off.
1	On.
2	Frozen (suspended).

22.20 Tangential control status.

(V.)[ch].G.TGCTRLST

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Status of tangential control in the channel.

Syntax.

·ch· Channel number.

V.[2].G.TGCTRLST	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Off.
1	On.
2	Frozen (suspended).

(V.)[ch].A.TGCTRLST.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Status of tangential control in the axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.TGCTRLST.Z	Z axis.
V.A.TGCTRLST.4	Axis with logic number ·4·.
V.[2].A.TGCTRLST.1	Axis with index ·1· in the channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Off.
1	On.
2	Frozen (suspended).

(V.)[ch].A.TANGAN.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Angle programmed on the axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.TANGAN.Z	Z axis.
V.A.TANGAN.4	Axis with logic number ·4·.
V.[2].A.TANGAN.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].G.TANGFEED

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Positioning feedrate for tangential control.

Syntax.

·ch· Channel number.

V.[2].G.TANGFEED	Channel ·2·.

22.21 Synchronization of channels.

(V.)[ch].G.MEETST[mk]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of the MEET type mark [mk] in the [ch] channel.

Syntax.

·ch· Channel number.

·mk· Number of the synchronization mark.

V.[2].G.MEETST[4]	Channel ·2·. Mark ·4·.

(V.)[ch].G.WAITST[mk]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of the WAIT type mark [mk] in the [ch] channel.

Syntax.

·ch· Channel number.

·mk· Number of the synchronization mark.

V.[2].G.WAITST[4]	Channel ·2·. Mark ·4·.

(V.)[ch].G.MEETCH[nch]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

MEET type mark originated in channel [nch] and expected by channel [ch].

Syntax.

·ch· Channel number.

·nch· Channel that originates the synchronization mark.

V.[2].G.MEETCH[4]	Channel ·2·. Channel ·4·.

(V.)[ch].G.WAITCH[nch]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

WAIT type mark originated in channel [nch] and expected by channel [ch].

Syntax.

·ch· Channel number.

·nch· Channel that originates the synchronization mark.

V.[2].G.WAITCH[4]	Channel ·2·. Channel ·4·.

22.22 Feed-Forward and AC-Forward.

(V.)[ch].A.FFGAIN.xn
(V.)[ch].A.FFGAIN.sn
(V.)[ch].SP.FFGAIN.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Active percentage of feed-forward.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.FFGAIN.Z	Z axis.
V.A.FFGAIN.S	Spindle S.
V.SP.FFGAIN.S	Spindle S.
V.SP.FFGAIN	Master spindle.
V.A.FFGAIN.4	Axis or spindle with logic number ·4·.
V.[2].A.FFGAIN.1	Axis with index ·1· in the channel ·2·.
V.SP.FFGAIN.2	Spindle with index ·2· in the system.
V.[2].SP.FFGAIN.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

(V.)[ch].A.ACFGAIN.xn
(V.)[ch].A.ACFGAIN.sn
(V.)[ch].SP.ACFGAIN.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Active percentage of AC-forward.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.ACFGAIN.Z	Z axis.
V.A.ACFGAIN.S	Spindle S.
V.SP.ACFGAIN.S	Spindle S.
V.SP.ACFGAIN	Master spindle.
V.A.ACFGAIN.4	Axis or spindle with logic number ·4·.
V.[2].A.ACFGAIN.1	Axis with index ·1· in the channel ·2·.
V.SP.ACFGAIN.2	Spindle with index ·2· in the system.
V.[2].SP.ACFGAIN.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in tenths (x10); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·100·.

(V.)[ch].A.ACTFFW.xn
(V.)[ch].A.ACTFFW.sn
(V.)[ch].SP.ACTFFW.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Instant feed-forward.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.ACTFFW.Z	Z axis.
V.A.ACTFFW.S	Spindle S.
V.SP.ACTFFW.S	Spindle S.
V.SP.ACTFFW	Master spindle.
V.A.ACTFFW.4	Axis or spindle with logic number ·4·.
V.[2].A.ACTFFW.1	Axis with index ·1· in the channel ·2·.
V.SP.ACTFFW.2	Spindle with index ·2· in the system.
V.[2].SP.ACTFFW.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.ACTACF.xn
(V.)[ch].A.ACTACF.sn
(V.)[ch].SP.ACTACF.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Instant AC-forward.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.ACTACF.Z	Z axis.
V.A.ACTACF.S	Spindle S.
V.SP.ACTACF.S	Spindle S.
V.SP.ACTACF	Master spindle.
V.A.ACTACF.4	Axis or spindle with logic number ·4·.
V.[2].A.ACTACF.1	Axis with index ·1· in the channel ·2·.
V.SP.ACTACF.2	Spindle with index ·2· in the system.
V.[2].SP.ACTACF.1	Spindle with index ·1· in the channel ·2·.

22.23 Errors and warnings.

(V.)[ch].G.CNCERR

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of the error with highest priority in the indicated channel.

Syntax.

·ch· Channel number.

V.[2].G.CNCERR	Channel ·2·.

Remarks.

This variable is initialized with a reset. If several channels are in the same group, the reset of a channel means resetting all of them, thus initializing the variables of all the channels of the group.

If several channels are in the same group, an error in a channel causes the same error in all of them; in this case, this variable will have the same value for all the channels of the group.

(V.)[ch].G.CNCWARNING

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Number of warning displayed in the indicated channel.

Syntax.

·ch· Channel number.

V.[2].G.CNCWARNING	Channel ·2·.

Remarks.

This variable is initialized with a reset. If several channels are in the same group, the reset of a channel means resetting all of them, thus initializing the variables of all the channels of the group.

If there are several warnings, the value of the variable is updated as they are eliminated. When the last warning is eliminated, this variable is initialized to zero.

22.24 Repositioning of axes and spindles.

(V.)[ch].G.ENDREP

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

All the axes are repositioned.

Syntax.

·ch· Channel number.

V.[2].G.ENDREP	Channel ·2·.

(V.)[ch].G.SPDLREP[sn]

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

M function to be used to reposition the spindle after a tool inspection.

Syntax.

·ch· Channel number.

·sn· Name, logic number or index of the spindle.

V.[2].G.SPDLREP[S]	Channel ·2·. Spindle S.

(V.)[ch].G.ENDREPINI

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Repositioning of axes and spindle at the starting point completed.

Syntax.

·ch· Channel number.

V.[2].G.ENDREPINI	Channel ·2·.

(V.)[ch].G.ENDREPINT

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Repositioning of axes and spindle at the interruption point completed.

Syntax.

·ch· Channel number.

V.[2].G.ENDREPINT	Channel ·2·.

22.25 Active zero offset.

(V.)[ch].G.EXTORG

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Function that defines the zero offset (zero offset or coordinate preset).

Syntax.

·ch· Channel number.

V.[2].G.EXTORG	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	G53. There is no zero offset.
1 - 99	G159. Zero offset (99 available). If 1, G159=1; if 2, G159=2 and so on.
255	G92. Coordinate preset.

Remarks.

The numbering of zero offsets G54 through G59 is always the same; G54=1, G55=2, G56=3, G57=4, G58=5, G59=6.

22.26 Withdraw the axes after interrupting a threading.

(V.)[ch].G.RETREJ

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

The user has interrupted a thread and the CNC has withdrawn the axes from the thread.

Syntax.

·ch· Channel number.

V.[2].G.RETREJ	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	The CNC has resumed execution, or M30 or reset.
1	The axes have reached the programmed distance.

22.27 Work zones.

22.27.1 Safety distance of the limits of the work zones.

(V.)[ch].A.ZONELIMITTOL.xn

Variable that can be read and written from the program and PLC.
The variable returns the value of block preparation.

Channel [ch]. Safety distance of the limits of the work zones.

Safety distance applied by the CNC to the axis with respect to the limit of the work zone. When a work zone is active, the CNC stops the axes when one of them reaches the safety distance. The safety distance is defined per axis and each axis will have the same safety distance for all the zones.. On CNC power-up, this variable assumes the value of parameter ZONELIMITTOL.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.ZONELIMITTOL.Z	Z axis.
V.A.ZONELIMITTOL.4	Axis with logic number ·4·.
V.[2].A.ZONELIMITTOL.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].G.ZONEWARN[k]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Channel [ch]. Some axis has reached the limit of work zone [k].

Syntax.

·ch· Channel number.

·k· Zone number.

V.[2].G.ZONEWARN[1]	Channel ·2·. Zone 1.

22.27.2 Set lower and upper limits of a work zone.

(V.)[ch].A.ZONELOWLIM[k].xn

Variable that can be read and written from the PLC and read from the program.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Channel [ch]. Lower limit of zone [k].

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·k· Zone number.

V.A.ZONELOWLIM[1].Z	Z axis. Zone 1.
V.A.ZONELOWLIM[1].4	Axis with logic number ·4·. Zone 1.
V.[2].A.ZONELOWLIM[1].1	Axis with index ·1· in the channel ·2·. Zone 1.

(V.)[ch].A.ZONEUPLIM[k].xn

Variable that can be read and written from the PLC and read from the program.
Variable valid for rotary and linear axes.
The variable returns the value of block preparation.

Channel [ch]. Upper limit of zone [k].

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·k· Zone number.

V.A.ZONEUPLIM[1].Z	Z axis. Zone 1.
V.A.ZONEUPLIM[1].4	Axis with logic number ·4·. Zone 1.
V.[2].A.ZONEUPLIM[1].1	Axis with index ·1· in the channel ·2·. Zone 1.

22.27.3 Set circular limits of the work zone.

(V.)[ch].G.ZONECIRAX1[k]

Variable that can be read and written from the PLC and read from the program.
The variable returns the value of block preparation.

Channel [ch]. Logic axis corresponding to the first coordinate of the center of zone [k].

Syntax.

·ch· Channel number.

·k· Zone number.

V.[2].G.ZONECIRAX1[1]	Channel ·2·. Zone 1.

(V.)[ch].G.ZONECIRAX2[k]

Variable that can be read and written from the PLC and read from the program.
The variable returns the value of block preparation.

Channel [ch]. Logic axis corresponding to the second coordinate of the center of zone [k].

Syntax.

·ch· Channel number.

·k· Zone number.

V.[2].G.ZONECIRAX2[1]	Channel ·2·. Zone 1.

(V.)[ch].G.ZONECIR1[k]

Variable that can be read and written from the PLC and read from the program.
The variable returns the value of block preparation.

Channel [ch]. Center coordinate of zone [k] along the first axis that defines the circular zone.

Syntax.

·ch· Channel number.

·k· Zone number.

V.[2].G.ZONECIR1[1]	Channel ·2·. Zone 1.

(V.)[ch].G.ZONECIR2[k]

Variable that can be read and written from the PLC and read from the program.
The variable returns the value of block preparation.

Channel [ch]. Center coordinate of zone [k] along the second axis that defines the circular zone.

Syntax.

·ch· Channel number.

·k· Zone number.

V.[2].G.ZONECIR2[1]	Channel ·2·. Zone 1.

(V.)[ch].G.ZONER[k]

Variable that can be read and written from the PLC and read from the program.
The variable returns the value of block preparation.

Channel [ch]. Radius of zone [k] (circular zone).

Syntax.

·ch· Channel number.

·k· Zone number.

V.[2].G.ZONER[1]	Channel ·2·. Zone 1.

22.27.4 Monitoring of a work zone.

(V.)[ch].G.ZONETOOLWATCH[k]

Variable that can be read and written from the PLC and read from the program.
The variable returns the value of block preparation.

Channel [ch]. Monitor the tool tip or tool base in work zone [k].

Syntax.

·ch· Channel number.

·k· Zone number.

V.[2].G.ZONETOOLWATCH[1]	Channel ·2·. Zone 1.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Monitor the tool tip.
1	Monitor the tool base.
2	Monitor the tool tip and the tool base.

22.27.5 Enable and disable the work zones.

(V.)[ch].G.ZONEST[k]

Variable that can be read and written from the PLC and read from the program.
The variable returns the value of block preparation.

Channel [ch]. Status of work zone [K].

Syntax.

·ch· Channel number.

·k· Zone number.

V.[2].G.ZONEST[1]	Channel ·2·. Zone 1.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Disabled zone.
1	Work zone enabled as no-entry.
2	Work zone enabled as no-exit.

VARIABLES RELATED TO THE ELECTRONIC CAM.

23

23.1 Electronic cam.

(V.)G.CAMST[cam]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Cam status.

Use this variable in the PLC program to condition the cam operations to the right status and consequently prevent execution errors. The operations of the cam from the part-program stay in execution, without issuing an error message, waiting for the right cam status.

Syntax.

·cam· Cam number.

V.G.CAMST[2]	Cam ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	**CAM_NULL** The cam does not exist. The cam is not defined in the machine parameters and there is no file cam available, the CNC or the PLC have not selected it (SELECT) or they have deselected it (DESELECT). • This state only allows loading one file cam from the CNC or PLC. • This status does not allow activating the cam, either from the CNC or from the PLC.
1	**CAM_LOADING** The CNC or the PLC is loading the file that defines the cam. • This state only allows activating the cam from the CNC, where the CNC will remain in execution until the cam reaches the CAM_READY state. The cam cannot be activated from the PLC.
2	**CAM_READY** Cam ready. The CNC has validated the cam defined in the machine parameters or is done loading the cam from a file. • This state allows any cam operation, either from the CNC or from the PLC.
3	**CAM_START** The cam is activated, but it has not entered the range of the master axis yet. In this situation, if the CNC or the PLC cancels the cam, the cam will not reach the CAM_READY state as long as it does not go into and out of the range of the master axis at least once. • This state allows canceling the cam, either from the CNC or from the PLC. • This state allows deselecting the cam, but only from the CNC.

Value.	Meaning.
4	**CAM_RUNNING_OUTSIDE** The cam is active and in execution out of the range of the master axis. In this state, the cam has been inside the range of the master axis at least once. If the CNC or the PLC cancel the cam, the cam will go into CAM_READY state. • This state allows canceling the cam, either from the CNC or from the PLC. • This state allows deselecting the cam, but only from the CNC.
5	**CAM_RUNNING_INSIDE** The cam is active and in execution inside the range of the master axis. If the CNC or the PLC cancel the cam, the cam will go into CAM_FINISH state. • This state allows canceling the cam, either from the CNC or from the PLC. • This state allows deselecting the cam, but only from the CNC.
6	**CAM_FINISH** The CNC or the PLC has canceled the cam, but it keeps executing until the cam goes out of the range of the master axis. This situation occurs when the CNC or the PLC cancel a cam that was in CAM_RUNNING_INSIDE state; if they cancel a cam that was in CAM_RUNNING_OUTSIDE state, the cam reaches the CAM_READY state. • This state only allows deselecting the cam, but only from the CNC.

Remarks.

To switch from CAM_READY to CAM_NULL, just deselect the file cam and make sure that the cam is not in the machine parameters. If the dam is defined in the machine parameters, it maintains the CAM_READY state, but the cam data will be defined in the machine parameters.

- To select a file cam, the cam status (state) must be either CAM_NULL or CAM_READY.
- To select a file cam from the PLC, preventing execution errors, the cam status (state) must be CAM_READY. If the cam is activated from the CNC, the channel will remain in execution until the cam reaches the CAM_READY state.
- To deselect a file cam from the PLC, preventing execution errors, the cam status (state) must be CAM_READY. If the cam is deselected from the CNC, the channel will remain in execution until the cam reaches the CAM_READY state.

(V.)G.CAM[cam][index]

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Factor to be applied to the range of the slave axis when activating the cam.

Syntax.

·cam· Cam number (between 1 and 16).

·index· Point of the cam. For the cams defined in the machine parameters, a value between 1 and 1024. For the file cams, the line number.

```
V.G.CAM[2][123]                    Cam ·2·. Point or line of file ·123·
```

VARIABLES RELATED TO THE INDEPENDENT AXES. 24

24.1 Independent interpolator.

(V.)[ch].A.INDPOS.xn
(V.)[ch].A.INDPOS.sn
(V.)[ch].SP.INDPOS.sn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Theoretical coordinate of the independent interpolator.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.INDPOS.Z	Z axis.
V.A.INDPOS.S	Spindle S.
V.SP.INDPOS.S	Spindle S.
V.SP.INDPOS	Master spindle.
V.A.INDPOS.4	Axis or spindle with logic number ·4·.
V.[2].A.INDPOS.1	Axis with index ·1· in the channel ·2·.
V.SP.INDPOS.2	Spindle with index ·2· in the system.
V.[2].SP.INDPOS.1	Spindle with index ·1· in the channel ·2·.

24.2 Independent axis in execution.

(V.)[ch].G.IBUSY

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

An independent axis is in execution.

Syntax.

·ch· Channel number.

V.[2].G.IBUSY	Channel ·2·.

24.3 Percentage of feedrate (feedrate override).

(V.)[ch].A.FRO.xn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Channel [ch]. Feedrate percentage active on the axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index in the channel of the axis.

V.A.FRO.Z	Z axis.
V.A.FRO.4	Axis with logic number ·4·.
V.[2].A.FRO.1	Axis with index ·1· in the channel ·2·.

24.4 Positioning move.

(V.)[ch].A.IPPOS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Coordinate programmed for the independent axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index in the channel of the axis.

V.A.IPPOS.Z	Z axis.
V.A.IPPOS.4	Axis with logic number ·4·.
V.[2].A.IPPOS.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].A.ITPOS.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Theoretical coordinate of the independent axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index in the channel of the axis.

V.A.ITPOS.Z	Z axis.
V.A.ITPOS.4	Axis with logic number ·4·.
V.[2].A.ITPOS.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].A.IPRGF.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Feedrate programmed in the independent axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index in the channel of the axis.

V.A.IPRGF.Z	Z axis.
V.A.IPRGF.4	Axis with logic number ·4·.
V.[2].A.IPRGF.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].A.IORG.xn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Offset for the independent axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index in the channel of the axis.

V.A.IORG.Z	Z axis.
V.A.IORG.4	Axis with logic number ·4·.
V.[2].A.IORG.1	Axis with index ·1· in the channel ·2·.

24.5 Synchronization movement.

(V.)[ch].A.SYNCTOUT.xn
(V.)[ch].A.SYNCTOUT.sn
(V.)[ch].SP.SYNCTOUT.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Maximum time to establish synchronism.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.SYNCTOUT.Z	Z axis.
V.A.SYNCTOUT.S	Spindle S.
V.SP.SYNCTOUT.S	Spindle S.
V.SP.SYNCTOUT	Master spindle.
V.A.SYNCTOUT.4	Axis or spindle with logic number ·4·.
V.[2].A.SYNCTOUT.1	Axis with index ·1· in the channel ·2·.
V.SP.SYNCTOUT.2	Spindle with index ·2· in the system.
V.[2].SP.SYNCTOUT.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.SYNCVEL.xn
(V.)[ch].A.SYNCVEL.sn
(V.)[ch].A.SYNCVEL.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Synchronization speed.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.SYNCVEL.Z	Z axis.
V.A.SYNCVEL.S	Spindle S.
V.SP.SYNCVEL.S	Spindle S.
V.SP.SYNCVEL	Master spindle.
V.A.SYNCVEL.4	Axis or spindle with logic number ·4·.
V.[2].A.SYNCVEL.1	Axis with index ·1· in the channel ·2·.
V.SP.SYNCVEL.2	Spindle with index ·2· in the system.
V.[2].SP.SYNCVEL.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.SYNCPOSW.xn
(V.)[ch].A.SYNCPOSW.sn
(V.)[ch].SP.SYNCPOSW.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Maximum position difference to start correcting it.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.SYNCPOSW.Z	Z axis.
V.A.SYNCPOSW.S	Spindle S.
V.SP.SYNCPOSW.S	Spindle S.
V.SP.SYNCPOSW	Master spindle.
V.A.SYNCPOSW.4	Axis or spindle with logic number ·4·.
V.[2].A.SYNCPOSW.1	Axis with index ·1· in the channel ·2·.
V.SP.SYNCPOSW.2	Spindle with index ·2· in the system.
V.[2].SP.SYNCPOSW.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.SYNCVELW.xn
(V.)[ch].A.SYNCVELW.sn
(V.)[ch].A.SYNCVELW.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Maximum velocity difference to start correcting it.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.SYNCVELW.Z	Z axis.
V.A.SYNCVELW.S	Spindle S.
V.SP.SYNCVELW.S	Spindle S.
V.SP.SYNCVELW	Master spindle.
V.A.SYNCVELW.4	Axis or spindle with logic number ·4·.
V.[2].A.SYNCVELW.1	Axis with index ·1· in the channel ·2·.
V.SP.SYNCVELW.2	Spindle with index ·2· in the system.
V.[2].SP.SYNCVELW.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.SYNCPOSOFF.xn
(V.)[ch].A.SYNCPOSOFF.sn
(V.)[ch].SP.SYNCPOSOFF.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Position offset for synchronization.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.SYNCPOSOFF.Z	Z axis.
V.A.SYNCPOSOFF.S	Spindle S.
V.SP.SYNCPOSOFF.S	Spindle S.
V.SP.SYNCPOSOFF	Master spindle.
V.A.SYNCPOSOFF.4	Axis or spindle with logic number ·4·.
V.[2].A.SYNCPOSOFF.1	Axis with index ·1· in the channel ·2·.
V.SP.SYNCPOSOFF.2	Spindle with index ·2· in the system.
V.[2].SP.SYNCPOSOFF.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.SYNCVELOFF.xn
(V.)[ch].A.SYNCVELOFF.sn
(V.)[ch].SP.SYNCVELOFF.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Velocity offset for synchronization.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.SYNCVELOFF.Z	Z axis.
V.A.SYNCVELOFF.S	Spindle S.
V.SP.SYNCVELOFF.S	Spindle S.
V.SP.SYNCVELOFF	Master spindle.
V.A.SYNCVELOFF.4	Axis or spindle with logic number ·4·.
V.[2].A.SYNCVELOFF.1	Axis with index ·1· in the channel ·2·.
V.SP.SYNCVELOFF.2	Spindle with index ·2· in the system.
V.[2].SP.SYNCVELOFF.1	Spindle with index ·1· in the channel ·2·.

(V.)[ch].A.GEARADJ.xn
(V.)[ch].A.GEARADJ.sn
(V.)[ch].SP.GEARADJ.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Fine adjustment of the gear ratio during synchronization.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.GEARADJ.Z	Z axis.
V.A.GEARADJ.S	Spindle S.
V.SP.GEARADJ.S	Spindle S.
V.SP.GEARADJ	Master spindle.
V.A.GEARADJ.4	Axis or spindle with logic number ·4·.
V.[2].A.GEARADJ.1	Axis with index ·1· in the channel ·2·.
V.SP.GEARADJ.2	Spindle with index ·2· in the system.
V.[2].SP.GEARADJ.1	Spindle with index ·1· in the channel ·2·.

Remarks.

The reading from the PLC will be given in hundredths (x100); i.e. if the parameter value is ·10·, the PLC reading will return a value of ·1000·.

(V.)[ch].A.SYNCERR.xn
(V.)[ch].A.SYNCERR.sn
(V.)[ch].SP.SYNCERR.sn

Variable that can be read and written via program, PLC and interface.
Variable valid for rotary and linear axes as well as for spindles.
The variable returns the execution value; reading it interrupts block preparation.

Synchronization error.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

·sn· Name, logic number or index of the spindle.

V.A.SYNCERR.Z	Z axis.
V.A.SYNCERR.S	Spindle S.
V.SP.SYNCERR.S	Spindle S.
V.SP.SYNCERR	Master spindle.
V.A.SYNCERR.4	Axis or spindle with logic number ·4·.
V.[2].A.SYNCERR.1	Axis with index ·1· in the channel ·2·.
V.SP.SYNCERR.2	Spindle with index ·2· in the system.
V.[2].SP.SYNCERR.1	Spindle with index ·1· in the channel ·2·.

24.6 Coordinate latching with the help of a probe or a digital input.

(V.)[ch].A.LATCH1.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Machine coordinate obtained from latching probe 1 on the ·xn· axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.LATCH1.Z	Z axis.
V.A.LATCH1.4	Axis with logic number ·4·.
V.[2].A.LATCH1.1	Axis with index ·1· in the channel ·2·.

(V.)[ch].A.LATCH2.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for rotary and linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Machine coordinate obtained from latching probe 2 on the ·xn· axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.LATCH2.Z	Z axis.
V.A.LATCH2.4	Axis with logic number ·4·.
V.[2].A.LATCH2.1	Axis with index ·1· in the channel ·2·.

24.

VARIABLES RELATED TO THE INDEPENDENT AXES.

Coordinate latching with the help of a probe or a digital input.

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

VARIABLES ASSOCIATED WITH THE VIRTUAL TOOL AXIS.

25

25.1 Virtual tool axis.

(V.)[ch].G.VIRTAXIS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Logic number of the virtual tool axis.

Syntax.

·ch· Channel number.

V.[2].G.VIRTAXIS	Channel ·2·.

(V.)[ch].G.VIRTAXST

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel [ch]. Status of the virtual tool axis: activated/deactivated.

Syntax.

·ch· Channel number.

V.[2].G.VIRTAXST	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Virtual tool axis deactivated.
1	Virtual tool axis activated.

(V.)[ch].A.VIRTAXOF.xn

Variable that can only be read from the program, PLC and interface.
Variable valid for linear axes.
The variable returns the execution value; reading it interrupts block preparation.

Distance traveled by the axis, due to the movement of the virtual tool axis.

Syntax.

·ch· Channel number.

·xn· Name, logic number or index of the axis.

V.A.VIRTAXOF.Z	Z axis.
V.A.VIRTAXOF.4	Axis or spindle with logic number ·4·.
V.[2].A.VIRTAXOF.1	Axis with index ·1· in the channel ·2·.

25.

VARIABLES ASSOCIATED WITH THE VIRTUAL TOOL AXIS.

Virtual tool axis.

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

VARIABLES RELATED TO THE KINEMATICS.

26

26.1 Selection of the kinematics.

(V.)[ch].G.KINID

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of the active kinematics.

If no kinematics is active, the variable will return a ·0· value.

Syntax.

·ch· Channel number.

V.[2].G.KINID	Channel ·2·.

26.2 Variables related to the active kinematics.

(V.)[ch].G.KINTYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Type of the active kinematics.

Syntax.

·ch· Channel number.

V.[2].G.KINTYPE	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	Orthogonal or spherical spindle head YX.
2	Orthogonal or spherical spindle head ZX.
3	Orthogonal or spherical spindle head XY.
4	Orthogonal or spherical spindle head ZY.
5	Swivel (angular) spindle XZ.
6	Swivel (angular) spindle YZ.
7	Swivel (angular) spindle ZX.
8	Swivel (angular) spindle ZY.
9	Rotary table AB.
10	Rotary table AC.
11	Rotary table BA.
12	Rotary table BC.
13	Spindle - table AB.
14	Spindle - table AC.
15	Spindle - table BA.
16	Spindle - table BC.
17	Orthogonal spindle with three rotary axes ABA.
18	Orthogonal spindle with three rotary axes ACA.
19	Orthogonal spindle with three rotary axes ACB.
20	Orthogonal spindle with three rotary axes BAB.
21	Orthogonal spindle with three rotary axes BCA.
22	Orthogonal spindle with three rotary axes BCB.
23	Orthogonal spindle with three rotary axes CAB.
24	Orthogonal spindle with three rotary axes CBA.
41	C axis. Machining on the face of the part when ALIGNC = YES.
42	C axis. Machining on the face of the part when ALIGNC = NO.
43	"C" axis. Machining of the turning side of the part.
50	Vectorial definition of spindle kinematics.
51	Vectorial definition of table kinematics.
52	Vectorial definition of spindle-table kinematics.
100 ·· 105	OEM Kinematics.

(V.)[ch].G.NKINAX

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of axes of the active kinematics.

Syntax.

·ch· Channel number.

V.[2].G.NKINAX	Channel ·2·.

(V.)G.OFTDATAkin[nb]

Variable that can be read and written from the program and read from the PLC and from the interface.
The variable returns the value of block preparation.

Kinematics [kin]. Offset of parameter TDATA [nb].

Syntax.

·kin· Number of the kinematics.

·nb· Parameter number.

V.G.OFTDATA2[13]	Kinematics ·2·. Offset of parameter TDATA13.

(V.)G.OFTDATAFkin[nb]

Variable that can be read and written from the program and read from the PLC and from the interface.
The variable returns the value of block preparation.

Kinematics [kin]. Offset of parameter TDATA [nb] (value x10000).

Syntax.

·kin· Number of the kinematics.

·nb· Parameter number.

V.G.OFTDATAF2[13]	Kinematics ·2·. Parameter TDATA13.

(V.)G.OFTDATA_Ikin[nb]

Variable that can be read and written from the program and read from the PLC and from the interface.
The variable returns the value of block preparation.

Kinematics [kin]. Offset of parameter TDATA_I [nb].

Syntax.

·kin· Number of the kinematics.

·nb· Parameter number.

V.G.OFTDATA_I2[13]	Kinematics ·2·. Offset of parameter TDATA_I13.

26.3 Position of the rotary axes of the kinematics.

(V.)[ch].G.POSROTF
(V.)[ch].G.POSROTS
(V.)[ch].G.POSROTT
(V.)[ch].G.POSROTO

Variable that can be read and written via program, PLC and interface.
The variable returns the value of block preparation.

Current position of the rotary axes of the kinematics.

Syntax.

·ch· Channel number.

V.[2].G.POSROTF	Current position of the first rotary axis of the kinematics.
V.[2].G.POSROTS	Current position of the second rotary axis of the kinematics.
V.[2].G.POSROTT	Current position of the third rotary axis of the kinematics.
V.[2].G.POSROTO	Current position of the fourth rotary axis of the kinematics.

(V.)[ch].G.TOOLORIF1
(V.)[ch].G.TOOLORIS1
(V.)[ch].G.TOOLORIT1
(V.)[ch].G.TOOLORIO1

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Position to be occupied by the rotary axes of the kinematics (solution 1) in order to position the tool perpendicular to the inclined plane. Position in machine coordinates.

Syntax.

·ch· Channel number.

V.[2].G.TOOLORIF1	Target position for the first rotary axis of the kinematics.
V.[2].G.TOOLORIS1	Target position for the second rotary axis of the kinematics.
V.[2].G.TOOLORIT1	Target position for the third rotary axis of the kinematics.
V.[2].G.TOOLORIO1	Target position for the fourth rotary axis of the kinematics.

Remarks.

These variables that indicate the position the rotary axes of the kinematics must occupy in order for the tool to be perpendicular to the define inclined plane. These variables are very useful when the spindle is not fully motorized (mono-rotary or manual spindles). The CNC updates these variables every time a new plane is selected, using the instruction #CS or #ACS.

On angular (swivel) spindle heads, there are 2 possible solutions when calculating this target position. These variables indicate the solution that involves the shortest movement of the main rotary axis with respect to the zero position.

(V.)[ch].G.TOOLORIF2
(V.)[ch].G.TOOLORIS2
(V.)[ch].G.TOOLORIT2
(V.)[ch].G.TOOLORIO2

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Position to be occupied by the rotary axes of the kinematics (solution 2) in order to position the tool perpendicular to the inclined plane. Position in machine coordinates.

Syntax.

·ch· Channel number.

V.[2].G.TOOLORIF2	Target position for the first rotary axis of the kinematics.
V.[2].G.TOOLORIS2	Target position for the second rotary axis of the kinematics.
V.[2].G.TOOLORIT2	Target position for the third rotary axis of the kinematics.
V.[2].G.TOOLORIO2	Target position for the fourth rotary axis of the kinematics.

Remarks.

These variables that indicate the position the rotary axes of the kinematics must occupy in order for the tool to be perpendicular to the define inclined plane. These variables are very useful when the spindle is not fully motorized (mono-rotary or manual spindles). The CNC updates these variables every time a new plane is selected, using the instruction #CS or #ACS.

On angular (swivel) spindle heads, there are 2 possible solutions when calculating this target position. These variables indicate the solution that involves the longest movement of the main rotary axis with respect to the zero position.

(V.)[ch].G.TORISOL2

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Solution 2 is selected in instruction #CS or #ACS.

Syntax.

·ch· Channel number.

V.[2].G.TORISOL2	Channel ·2·.

26.4 Selecting the positioning rotary axes in type-52 kinematics.

(V.)[ch].G.SELECTORI

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Rotary axes selected for positioning the tool (instruction #SELECT ORI)

Syntax.

·ch· Channel number.

```
V.[2].G.SELECTORI          Channel ·2·.
```

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	First and second axis of the spindle.
2	First axis of the spindle and first axis of the table.
3	First axis of the spindle and second axis of the table.
4	Second axis of the spindle and first axis of the table.
5	Second axis of the spindle and second axis of the table.
6	First and second axis of the table.

VARIABLES RELATED TO THE COORDINATE TRANSFORMATION. 27

27.1 Inclined planes.

(V.)[ch].G.CS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).

Number of the active CS function.

Syntax.

·ch· Channel number.

V.[2].G.CS	Channel ·2·.

(V.)[ch].G.ACS

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.
Report variable (to be used from the scripts).

Number of the active ACS function.

Syntax.

·ch· Channel number.

V.[2].G.ACS	Channel ·2·.

27.2 Active tool length compensation.

(V.)[ch].G.TOOLCOMP

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Longitudinal compensation function active.

Syntax.

·ch· Channel number.

```
V.[2].G.TOOLCOMP          Channel ·2·.
```

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
1	RTCP.
2	TLC.
3	None.

27.3 Variables related to the CSROT option.

(V.)[ch].G.CSROTST

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Status of the #CSROT function.

Syntax.

·ch· Channel number.

V.[2].G.CSROTST	Channel ·2·.

Values of the variable.

Value.	Meaning.
0	Off.
1	On.

(V.)[ch].G.CSROTF1[1]
(V.)[ch].G.CSROTS1[1]
(V.)[ch].G.CSROTT1[1]
(V.)[ch].G.CSROTO1[1]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Position (machine coordinates) calculated for the rotary axis of the kinematics at the beginning of the block, for solution 1 of the #CSROT mode.

Syntax.

·ch· Channel number.

V.[2].G.CSROTF1[1]	Target position for the first rotary axis of the kinematics.
V.[2].G.CSROTS1[1]	Target position for the second rotary axis of the kinematics.
V.[2].G.CSROTT1[1]	Target position for the third rotary axis of the kinematics.
V.[2].G.CSROTO1[1]	Target position for the fourth rotary axis of the kinematics.

(V.)[ch].G.CSROTF1[2]
(V.)[ch].G.CSROTS1[2]
(V.)[ch].G.CSROTT1[2]
(V.)[ch].G.CSROTO1[2]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Position (machine coordinates) calculated for the rotary axis of the kinematics at the end of the block, for solution 1 of the #CSROT mode.

Syntax.

·ch· Channel number.

V.[2].G.CSROTF1[2]	Target position for the first rotary axis of the kinematics.
V.[2].G.CSROTS1[2]	Target position for the second rotary axis of the kinematics.
V.[2].G.CSROTT1[2]	Target position for the third rotary axis of the kinematics.
V.[2].G.CSROTO1[2]	Target position for the fourth rotary axis of the kinematics.

(V.)[ch].G.CSROTF2[1]
(V.)[ch].G.CSROTS2[1]
(V.)[ch].G.CSROTT2[1]
(V.)[ch].G.CSROTO2[1]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Position (machine coordinates) calculated for the rotary axis of the kinematics at the beginning of the block, for solution 2 of the #CSROT mode.

Syntax.

·ch· Channel number.

V.[2].G.CSROTF2[1]	Target position for the first rotary axis of the kinematics.
V.[2].G.CSROTS2[1]	Target position for the second rotary axis of the kinematics.
V.[2].G.CSROTT2[1]	Target position for the third rotary axis of the kinematics.
V.[2].G.CSROTO2[1]	Target position for the fourth rotary axis of the kinematics.

(V.)[ch].G.CSROTF2[2]
(V.)[ch].G.CSROTS2[2]
(V.)[ch].G.CSROTT2[2]
(V.)[ch].G.CSROTO2[2]

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Position (machine coordinates) calculated for the rotary axis of the kinematics at the end of the block, for solution 2 of the #CSROT mode.

Syntax.

·ch· Channel number.

V.[2].G.CSROTF2[2]	Target position for the first rotary axis of the kinematics.
V.[2].G.CSROTS2[2]	Target position for the second rotary axis of the kinematics.
V.[2].G.CSROTT2[2]	Target position for the third rotary axis of the kinematics.
V.[2].G.CSROTO2[2]	Target position for the fourth rotary axis of the kinematics.

(V.)[ch].G.CSROTF[1]
(V.)[ch].G.CSROTS[1]
(V.)[ch].G.CSROTT[1]
(V.)[ch].G.CSROTO[1]

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Position (machine coordinates) to be occupied by the rotary axis of the kinematics at the beginning of the block, for the #CSROT mode.

Syntax.

·ch· Channel number.

V.[2].G.CSROTF[1]	Target position for the first rotary axis of the kinematics.
V.[2].G.CSROTS[1]	Target position for the second rotary axis of the kinematics.
V.[2].G.CSROTT[1]	Target position for the third rotary axis of the kinematics.
V.[2].G.CSROTO[1]	Target position for the fourth rotary axis of the kinematics.

(V.)[ch].G.CSROTF[2]
(V.)[ch].G.CSROTS[2]
(V.)[ch].G.CSROTT[2]
(V.)[ch].G.CSROTO[2]

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Position (machine coordinates) to be occupied by the rotary axis of the kinematics at the end of the block, for the #CSROT mode.

Syntax.

·ch· Channel number.

V.[2].G.CSROTF[2]	Target position for the first rotary axis of the kinematics.
V.[2].G.CSROTS[2]	Target position for the second rotary axis of the kinematics.
V.[2].G.CSROTT[2]	Target position for the third rotary axis of the kinematics.
V.[2].G.CSROTO[2]	Target position for the fourth rotary axis of the kinematics.

27.4 Variables related to the KINORG option.

(V.)[ch].G.KINORG1
(V.)[ch].G.KINORG2
(V.)[ch].G.KINORG3
Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Position of the part zero transformed by the instruction #KINORG, considering the table position, on the first three axes of the channel.

Syntax.

·ch· Channel number.

V.[2].G.KINORG1	Part zero position on the first axis of the channel.
V.[2].G.KINORG2	Part zero position on the second axis of the channel.
V.[2].G.KINORG3	Part zero position on the third axis of the channel.

27.5 Die resulting from the inclined plane.

(V.)[ch].G.CSMAT1
..
(V.)[ch].G.CSMAT9
Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Die resulting from the inclined plane. These variables correspond to the transformation matrix from theoretical reference system to the real reference system.

Syntax.

·ch· Channel number.

V.[2].G.CSMAT1	Channel ·2·. Element row 1 column 1.
V.[2].G.CSMAT2	Channel ·2·. Element row 1 column 2.
V.[2].G.CSMAT3	Channel ·2·. Element row 1 column 3.
V.[2].G.CSMAT4	Channel ·2·. Element row 2 column 1.
V.[2].G.CSMAT5	Channel ·2·. Element row 2 column 2.
V.[2].G.CSMAT6	Channel ·2·. Element row 2 column 3.
V.[2].G.CSMAT7	Channel ·2·. Element row 3 column 1.
V.[2].G.CSMAT8	Channel ·2·. Element row 3 column 2.
V.[2].G.CSMAT9	Channel ·2·. Element row 3 column 3.

(V.)[ch].G.CSMAT10
(V.)[ch].G.CSMAT11
(V.)[ch].G.CSMAT12
Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Offset of the current coordinate system referred to machine zero on the first axes. These variables correspond to the transformation matrix from theoretical reference system to the real reference system.

Syntax.

·ch· Channel number.

V.[2].G.CSMAT10	Channel ·2·. Offset on the first axis.
V.[2].G.CSMAT11	Channel ·2·. Offset on the second axis.
V.[2].G.CSMAT12	Channel ·2·. Offset on the third axis.

VARIABLES DEFINED BY THE USER. 28

28.1 User local variables.

(V.)P.var_name

Variable that can be read and written from the program.
The variable returns the execution value; reading it interrupts block preparation.

User local variables.

Syntax.

·var_name· Name of the variable.

V.P.myvar	Variable with the name of "myvar".

Remarks.

These variables maintain their value in local and global subroutines called upon from the program.

28.2 User global variables.

(V.)S.var_name

Variable that can be read and written from the program.
The variable returns the execution value; reading it interrupts block preparation.

User global variables.

Syntax.

·var_name· Name of the variable.

V.S.myvar	Variable with the name of "myvar".

Remarks.

These variables maintain their value between programs and after a reset. Variables are deleted when the CNC is turned off and they can also be deleted from the part-program using the #DELETE instruction.

```
#DELETE V.S.myvar1 V.S.myvar2
```

28.

VARIABLES DEFINED BY THE USER.

User global variables.

FAGOR AUTOMATION

CNC 8070

(REF: 1709)

GENERAL VARIABLES OF THE CNC. 29

29.1 CNC model.

(V.)G.CNCMODEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

CNC model.

V.G.CNCMODEL

Values of the variable.

Value.	Meaning.
0	8070 M
1	8070 T
2	8070 GP
3	8070 MC
4	8065 M
5	8065 T
6	8065 TT
7	8070 BL
8	8065 M_POWER
9	8065 T_POWER
10	8060 M
11	8060 T

29.2 Hardware type.

(V.)G.HARDTYPE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Hardware type.

V.G.HARDTYPE

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Simulator
1	PC104 or PC104 central unit.
2	MCU or ICU central unit.

29.3 Emergency relay.

(V.)G.ERELAYST

Variable that can only be read from the program, PLC (asynchronous) and interface.
The variable returns the execution value; reading it interrupts block preparation.

Status of the emergency relay.

V.G.ERELAYST

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	Open relay.
1	Closed relay.

29.4 Software version.

(V.)G.VERSION

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

CNC version and release number.

V.G.VERSION

Values of the variable.

This variable returns a decimal value; to understand the meaning of the variables, resource to their hexadecimal format. The high portion of this variable contains the software version and its low portion the release.

V.G.VERSION	Hexadecimal value.	Meaning.
778	$30A	Version 3.10 Software version: $300 Software release: $0A

(V.)G.SUBVERSION

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

CNC sub-version number (decimal value).

V.G.SUBVERSION

29.5 Date, time and amount of time of turned on.

(V.)G.DATE

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Date in year-month-day format.

V.G.DATE

Values of the variable.

If the date is "April 25th 1999", the returned value will be 990425.

Remarks.

This variable updates its value every hour.

(V.)G.TIME

Variable that can only be read from the program, PLC (asynchronous) and interface.
The variable returns the execution value; reading it interrupts block preparation.

Time in hours-minutes-seconds format.

V.G.TIME

Values of the variable.

If the time is "18hr 22min 34s", the returned value will be 182234.

(V.)G.CLOCK

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Seconds since the CNC was turned on.

V.G.TIME

29.6 Information about the channels.

(V.)G.CNCHANNEL

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Channel which executes the instruction containing the variable.

V.G.CNCHANNEL

(V.)G.FOCUSCHANNEL

Variable that can be read and written from the PLC and from the interface and read from the program.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Channel with active focus.

V.G.FOCUSCHANNEL

29.7 Key simulation.

(V.)G.KEY

Variable that can be read and written from the PLC and read from the program and from the interface. The variable returns the execution value; reading it interrupts block preparation.

Code of the last key accepted by the CNC.

V.G.KEY

Remarks.

To read the last key that has been accepted by the CNC or simulate the keyboard from the PLC by writing in it the code of the desired key.

VARIABLES RELATED TO CNC STATUS.

30

30.1 Status of the temporary user license.

G.CNCDISSTAT

Variable that can be read from the PLC.

License status with regard to the operating terms.

G.CNCDISSTAT

Values of the variable.

Value.	Meaning.
0	The operating terms have not deactivated the temporary user license. Program execution is available.
Not equal to 0	The operating terms have not deactivated the temporary user license. The program execution is not available.

30.2 CNC status.

(V.)[ch].G.STATUS

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

CNC status (brief).

Syntax.

·ch· Channel number.

V.[2].G.STATUS	Channel ·2·.

Values of the variable.

This variable returns a decimal value; to understand the meaning of the variables, resource to their hexadecimal format. The list of codes is the following.

Decimal.	Hexadecimal.	Meaning.
0	$0	Not Ready
1	$1	Ready.
2	$2	In execution.
4	$4	Interrupted.
8	$8	In error.

(V.)[ch].G.FULLSTATUS

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

CNC status (detailed).

Syntax.

·ch· Channel number.

V.[2].G.FULLSTATUS	Channel ·2·.

Values of the variable.

This variable returns a decimal value; to understand the meaning of the variables, resource to their hexadecimal format. The high portion of this variable contains the information of the STATUS variable and its low portion provides the substate of the CNC; FULLSATUS = (STATUS)(substate). Thus, if the variable returns a value of 514, it means the following.

Decimal.	Hexadecimal.	Status.	Substate.
514	$0202	$0200 In execution.	$02 In MDI.

The list of codes for the low portion of FULLSTATUS is: In reset state, the low portion of FULLSTATUS is $0, in jog mode is $1, in simulation mode is $D and so on.

Decimal.	Hexadecimal.	Meaning.
0	$0	In reset
1	$1	In manuanl (jog) mode
2	$2	In MDI mode
3	$3	In program
4	$4	Stopped by an M0
5	$5	Stopped with CYCLE STOP
6	$6	Stopped in Single block mode

Decimal.	Hexadecimal.	Meaning.
9	$9	Syntax checks.
10	$A	Block search (without moving the axes)
11	$B	Block search finished. In stand by
12	$C	Execution time estimate.
13	$D	In simulation.

Example of some values of the FULLSTATUS variable.

Decimal.	Hexadecimal.	Status.	Substate.
521	$209	$200 In execution.	$09 Syntax checks.
522	$20A	$200 In execution.	$0A Block search.
524	$20C	$200 In execution.	$0C Execution time estimate.
525	$20D	$200 In execution.	$0D In simulation.
515	$203	$200 In execution.	$03 In program.

30.3 Selected axes.

(V.)G.SELECTEDAXIS

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Axes selected for home search, repositioning, coordinate preset or movement to a coordinate.

V.G.SELECTEDAXIS

Values of the variable.

The variable returns a 32-bit value where each bit represents one axis; the least significant bit corresponds to the axis with the lowest logic number. Each bit indicates whether the axis is selected (bit = 1) or not (bit = 0).

30.4 Detailed CNC status in jog mode.

(V.)[ch].G.CNCMANSTATUS

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Detailed CNC status in jog mode.

Syntax.

·ch· Channel number.

V.[2].G.CNCMANSTATUS	Channel ·2·.

Values of the variable.

This variable returns a hexadecimal value with the following meaning.

Value.	Meaning.
$1	Manual (jog) mode.
$2	Jog or handwheel movements.
$4	Manual tool calibration.
$8	Part centering (mill model).
$10	Home search with subroutine. The variable takes this value when pressing the [ZERO] key and maintains it until the CNC returns to the READY state after the home search.
$20	Home search on an axis. The variable takes this value when pressing the [ZERO] key with an axis selected and maintains it until the CNC returns to the READY state after the home search.
$40	"T" field selected. The variable removes the bit when the CNC returns to the READY state after pressing [START].
$80	"F" field selected. The variable removes the bit when the CNC returns to the READY state after pressing [START].
$100	"S" field selected. The variable removes the bit when the CNC returns to the READY state after pressing [START].
$200	Axis ready for coordinate preset or for movement to a coordinate. Axis selected and coordinate set, waiting for [ENTER] or [START].
$400	Conversational mode. "D" field selected.
$1000	Conversational mode. Program selected.
$2000	Conversational mode. Cycle selected.
$4000	Conversational mode. Cycle editor mode.
$8000	Conversational mode. "Execute Cycle" softkey pressed.
$10000000	MDI/MDA mode.
$20000000	CNCEX.
$40000000	CNC in conversational mode.

Example of some values of the variable.

CNC status.	Variables.
Tool calibration screen is active.	V.G.CNCMANSTATUS = $5
An axis has been selected for home search, but [START] has not been pressed.	V.G.CNCMANSTATUS = $21 V.G.STATUS = $1 (READY)
A home search is in progress on an axis.	V.G.CNCMANSTATUS = $21 V.G.STATUS = $2 (IN EXECUTION)
Home search on an axis has been interrupted.	V.G.CNCMANSTATUS = $21 V.G.STATUS = $4 (INTERRUPTED)
The CNC is executing a block in MDI/MDA from jog mode.	V.G.CNCMANSTATUS=$10000001 V.G.STATUS = $2 (IN EXECUTION)
The execution of a block in MDI/MDA from jog mode has been interrupted.	V.G.CNCMANSTATUS=$10000001 V.G.STATUS = $4 (INTERRUPTED)

30.5 Detailed CNC status in automatic mode.

(V.)[ch].G.CNCAUTSTATUS

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Detailed CNC status in automatic mode.

Syntax.

·ch· Channel number.

V.[2].G.CNCAUTSTATUS	Channel ·2·.

Values of the variable.

This variable returns a hexadecimal value with the following meaning.

Value.	Meaning.
$1	Automatic mode or MDI/MDA mode over the automatic mode.
$2	First block selected.
$4	Stop condition selected.
$8	The option to execute the blocks of the program independently (EXBLK softkey) is active.
$10	Block search is selected.
$20	The M H F S function display is selected (during block search or tool inspection).
$40	The M H F S function selection is active (during tool inspection).
$80	Tool inspection is selected.
$100	The "cancel and resume" option is active.
$200	Axis repositioning is selected (during block search or tool inspection).
$400	An axis has been selected for repositioning.
$800	The CNC is executing an interruption subroutine.
$1000	Simulated execution is active. Theoretical travel.
$2000	Simulated execution is active. G functions.
$4000	Simulated execution is active. GMST functions.
$8000	Simulated execution is active. Main plane.
$10000	Simulated execution is active. Rapid.
$20000	Simulated execution is active. Rapid S=0.
$40000	The cycle editor is executing a cycle.
$80000	The cycle editor is simulating a cycle.
$100000	Withdrawal from the thread (since [STOP] until [START] to resume).
$10000000	MDI/MDA mode active over the automatic mode.
$20000000	The PLC is executing a CNCEX command.

Example of some values of the variable.

CNC status.	Variables.
There is a program in execution.	V.G.CNCAUTSTATUS = $1 V.G.STATUS = $2 (IN EXECUTION)
The execution has been interrupted and tool inspection is active.	V.G.CNCAUTSTATUS = $81 V.G.STATUS = $4 (INTERRUPTED)
Tool inspection is active and there is a jog movement.	V.G.CNCAUTSTATUS = $81 V.G.CNCMANSTATUS = $2 V.G.STATUS = $2 (IN EXECUTION)
Tool inspection is active and an axis has been selected for repositioning.	V.G.CNCAUTSTATUS = $681 V.G.STATUS = $4 (INTERRUPTED)
The CNC is executing a block in MDI/MDA from automatic mode.	V.G.CNCAUTSTATUS = $10000001 V.G.STATUS = $2 (IN EXECUTION)
The execution of a block in MDI/MDA from automatic mode has been interrupted.	V.G.CNCAUTSTATUS=$10000001 V.G.STATUS = $4 (INTERRUPTED)

VARIABLES ASSOCIATED WITH THE PART-PROGRAM BEING EXECUTED. 31

31.1 Part-program information.

(V.)[ch].G.FILENAME

Variable to be read via interface.
Report variable (to be used from the scripts).

Name of the program in execution.

Syntax.

·ch· Channel number.

[2].G.FILENAME	Channel ·2·.

(V.)[ch].G.PRGPATH

Variable to be read via interface.
Report variable (to be used from the scripts).

Path of the program in execution.

Syntax.

·ch· Channel number.

[2].G.PRGPATH	Channel ·2·.

(V.)[ch].G.CURSORLINE

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of the line of the program where the cursor is.

Syntax.

·ch· Channel number.

V.[2].G.CURSORLINE	Channel ·2·.

(V.)[ch].G.FILEOFFSET

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of characters up to the line being executed or prepared.

Syntax.

·ch· Channel number.

V.[2].G.FILEOFFSET	Channel ·2·.

Remarks.

The variable returns the value of execution or preparation as follows. Reading the variable from the PLC or from the interface returns the value of the program being executed; reading it from the part-program or MDI returns the program being prepared.

(V.)[ch].G.BLKN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Last block executed (number).

If no label has been executed, the variable will return a -1 value.

Syntax.

·ch· Channel number.

V.[2].G.BLKN	Channel ·2·.

(V.)[ch].G.LINEN

Variable that can only be read from the program, PLC and interface.
The variable returns the value of block preparation.

Number of program blocks executed or prepared.

Syntax.

·ch· Channel number.

V.[2].G.LINEN	Channel ·2·.

Remarks.

The variable returns the value of execution or preparation as follows. Reading the variable from the PLC or from the interface returns the number of blocks executed; reading it from the part-program or MDI returns the number of blocks prepared.

31.2 Information on program execution.

(V.)[ch].G.FIRST

Variable that can be read and written from the interface and read from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.

First time a program is executed.

Syntax.

·ch· Channel number.

V.[2].G.FIRST	Channel ·2·.

Values of the variable.

This variable returns one of the following values.

Value.	Meaning.
0	No.
1	Yes.

Remarks.

First time execution means every time a new program is selected. This variable is initialized when changing the program being executed in the channel, even with the #EXEC instruction.

When the instruction #EXEC is involved in a program, the variable behaves as follows:

1. The variable is initialized when selecting and executing the program.
2. When executing the #EXEC instruction, the variable is re-initialized because the program in execution has changed.
3. If then, this program is executed again, the program in execution changes again and the variable is updated.

(V.)[ch].G.PARTC

Variable that can be read and written via program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

Parts counter.

Syntax.

·ch· Channel number.

V.[2].G.PARTC	Channel ·2·.

Remarks.

This variable is initialized when changing the program being executed and it increments its value every time an M02 or M30 is executed. This variable is initialized when changing the program being executed in the channel, even with the #EXEC instruction.

When the instruction #EXEC is involved in a program, the variable behaves as follows:

1. The variable is initialized when selecting and executing the program.
2. When executing the #EXEC instruction, the variable is re-initialized because the program in execution has changed.
3. If then, this program is executed again, the program in execution changes again and the variable is updated.

In this case, to keep track of how many times the program has been executed, it is recommended to use an arithmetic parameter at the end of the program like a counter.

(V.)[ch].G.CYTIME

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.

Part-program execution time (in hundredths of a second).

Syntax.

·ch· Channel number.

V.[2].G.CYTIME	Channel ·2·.

Remarks.

This variable is set to 0 at every new execution even of the same program. It does not measure the time that execution has been stopped.

31.3 Executing options; single block, rapid, etc..

(V.)[ch].G.SBOUT

Variable that can only be read from the program, PLC and interface.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

"Single block" function activated.

Syntax.

·ch· Channel number.

V.[2].G.SBOUT	Channel ·2·.

Remarks.

The single block function may be activated or canceled from the keyboard or from the PLC (SBLOCK mark). To activate it, just set one of them high (=1), but to cancel it both must be low (=0).

(V.)[ch].G.SBLOCK

Variable that can be read and written from the interface and read from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.

"Single block" function requested via keyboard.

Syntax.

·ch· Channel number.

V.[2].G.SBLOCK	Channel ·2·.

(V.)[ch].G.BLKSKIP

Variable that can be read and written from the interface and read from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.

Block skip function (\ ) activated.

Syntax.

·ch· Channel number.

V.[2].G.BLKSKIP	Channel ·2·.

Remarks.

The "block skip" function is selected from the PLC using the BLKSKIP1 mark.

(V.)[ch].G.M01STOP

Variable that can be read and written from the interface and read from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.

Conditional stop function (M01) activated.

Syntax.

·ch· Channel number.

V.[2].G.M01STOP	Channel ·2·.

Remarks.

The "conditional stop" function is activated from the PLC using the M01STOP mark.

(V.)[ch].G.RAPID

Variable that can be read and written from the interface and read from the program and from the PLC.
The variable returns the execution value; reading it interrupts block preparation.
Report variable (to be used from the scripts).

"Rapid traverse" function activated.

V.[2].G.RAPID	Canal ·2·.

Remarks.

The "rapid traverse" function is selected from the PLC using the MANRAPID mark.

INTERFACE RELATED VARIABLES. 32

32.1 Status of the power-up and power-down process.

(V.)E.CNCLOGST

Variable to be read via interface.
Report variable (to be used from the scripts).

Status of the CNC during the power-up and power-down process.

E.CNCLOGST

Values of the variable.

Value.	Meaning.
1	CNC starting up.
2	CNC running.
3	CNC powering-down.

32.2 Interface.

(V.)[ch].E.PROGSELECT

Variable that can be read and written via program, PLC and interface.
Report variable (to be used from the scripts).

Name of the program selected in automatic.

This variable can only be written with the value of ·0· to eliminate the program selected in automatic mode. When simulating the program, writing this variable has no effect.

Syntax.

·ch· Channel number.

[2].E.PROGSELECT	Channel ·2·.

(V.)E.COMPONENTNAME

Variable to be read via interface.
Report variable (to be used from the scripts).

Component name.

E.COMPONENTNAME

(V.)[ch].E.MMCMODE

Variable to be read via interface.
Report variable (to be used from the scripts).

Mode that the interface is in.

Syntax.

·ch· Channel number.

[2].E.MMCMODE	Channel ·2·.

Values of the variable.

Value.	Meaning.
0	Automatic mode.
1	Manual (jog) mode.
2	MDI/MDA mode.

(V.)E.NERRORS

Variable to be read via interface.
Report variable (to be used from the scripts).

Number of errors at the CNC.

E.NERRORS

(V.)E.ERRORPRI

Variable to be read via interface.
Report variable (to be used from the scripts).

Error priority.

E.ERRORPRI

(V.)[ch].E.MANUALMODE

Variable to be read via interface.
Report variable (to be used from the scripts).

Exclusive jog mode active.

Syntax.

·ch· Channel number.

[2].E.MANUALMODE	Channel ·2·.

(V.)E.CALCRESUL

Variable to be read via interface.
Report variable (to be used from the scripts).

Result of the calculator.

E.CALCRESULT

(V.)E.NUMJOGPANELS

Variable to be read via interface.

Number of jog panels.

E.NUMJOGPANELS

(V.)E.HELPDATA

Variable that can be read and written from the interface.
Report variable (to be used from the scripts).

Mark of the help file corresponding to the help page.

E.HELPDATA

(V.)[ch].E.CNCMSG

Variable to be read via interface.
Report variable (to be used from the scripts).

Text of the message programmed in the #MSG instruction.

Syntax.

·ch· Channel number.

[2].E.CNCMSG	Channel ·2·.

(V.)[ch].E.PATHSELECT

Variable to be read via interface.
Report variable (to be used from the scripts).

Path of the program selected in automatic.

Syntax.

·ch· Channel number.

[2].E.PATHSELECT	Channel ·2·.

(V.)[ch].E.CMPNTNUMBER

Variable to be read via interface.
Report variable (to be used from the scripts).

Component where the channel is.

Syntax.

·ch· Channel number.

[2].E.CMPNTNUMBER	Channel ·2·.

(V.)[ch].E.PAGENUMBER

Variable to be read via interface.
Report variable (to be used from the scripts).

Page where the channel is.

Syntax.

·ch· Channel number.

[2].E.PAGENUMBER	Channel ·2·.

(V.)[ch].E.GRAPHTYPE

Variable to be read via interface.
Report variable (to be used from the scripts).

Graphics configuration selected in parameter GRAPHTYPE.

Syntax.

·ch· Channel number.

[2].E.GRAPHTYPE	Channel ·2·.

User notes:

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