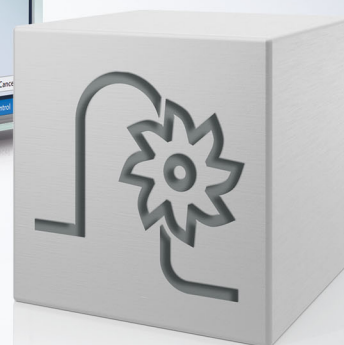
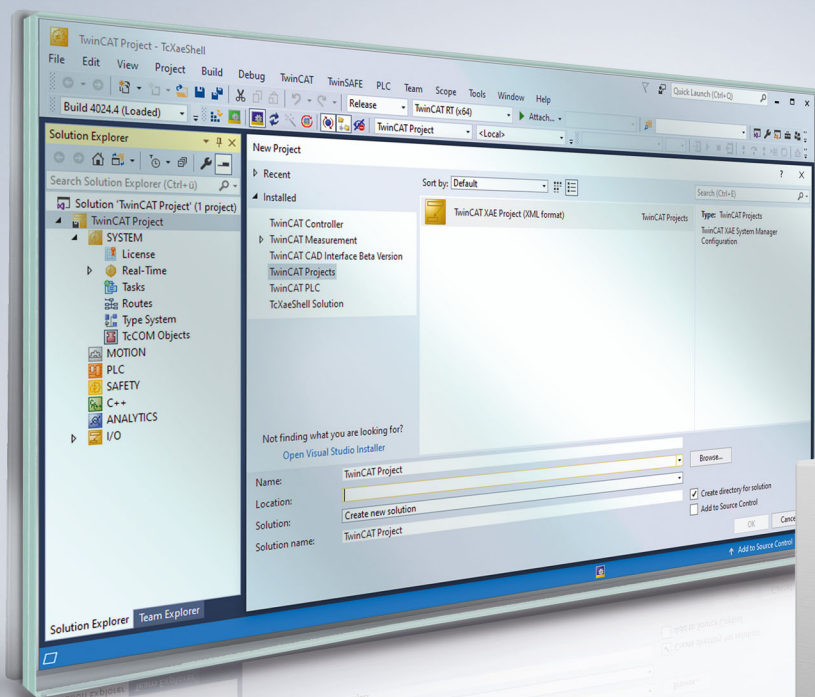


Manual | EN

TF5200 | TwinCAT 3 CNC

Start-up list



Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with the applicable national standards.

It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components.

It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.

We reserve the right to revise and change the documentation at any time and without prior announcement.

No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

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EP1590927, EP1789857, EP1456722, EP2137893, DE102015105702

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General and safety instructions

Icons used and their meanings

This documentation uses the following icons next to the safety instruction and the associated text. Please read the (safety) instructions carefully and comply with them at all times.

Icons in explanatory text

1. Indicates an action.
- ⇒ Indicates an action statement.

DANGER

Acute danger to life!

If you fail to comply with the safety instruction next to this icon, there is immediate danger to human life and health.

CAUTION

Personal injury and damage to machines!

If you fail to comply with the safety instruction next to this icon, it may result in personal injury or damage to machines.

NOTICE

Restriction or error

This icon describes restrictions or warns of errors.

Tips and other notes

This icon indicates information to assist in general understanding or to provide additional information.

General example

Example that clarifies the text.

NC programming example

Programming example (complete NC program or program sequence) of the described function or NC command.

Specific version information

Optional or restricted function. The availability of this function depends on the configuration and the scope of the version.

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1 Overview of start-up parameters

The overview of start-up parameters offsets is sorted into a 4-column table.

- Column 1 contains the unambiguous identifier of the start-up parameter called the “ID” which consists of the prefix “P-STUP” and a unique 5-digit number, e.g. P-STUP-00018.
- Column 2 represents the data structure which defines the parameters, e.g. p_{fad}[i]
The structure is a categorisation aid and is described in the following section. If an entry is missing in ‘structure’, this is not an error. The parameter in column 3 is then only valid on its own.
- Column 3 contains the “parameter” with its exact name, e.g. p_{rg}[j]
The important thing is that “structure”+“parameter” always belong together and must be configured in exactly the same way in the start-up parameter list, e.g. p_{fad}[i]. p_{rg}[j]
- Column 4 contains the “functionality” in a summarised term/short description, e.g. Program path.

ID	Structure	Parameter	Functionality/ short description
P-STUP-00001 ▶ 14		kanal_anzahl	Number of configured channels
P-STUP-00002 ▶ 14		sercos_hochlauf	SERCOS start-up
P-STUP-00003 ▶ 14		sercos_ring_anzahl	Number of SERCOS rings
P-STUP-00005 ▶ 14		m _{ds} _time_slots	SERCOS time slot calculation
P-STUP-00006 ▶ 15		at_tslot_type	SERCOS-AT time slot calculation
P-STUP-00007 ▶ 15		konfiguration	Topology selected
P-STUP-00008 ▶ 15		listen	List type
P-STUP-00009 ▶ 16		s _{da} _m _{ds} [i]	List file name for default channel parameters
P-STUP-00010 ▶ 16		w _{rkz} _data[i]	Name of the tool data list file
P-STUP-00011 ▶ 17		nullp_data[i]	Name of the list file for zero point data
P-STUP-00012 ▶ 17		p _{zv} _data[i]	Name of the list files for clamp position offset data
P-STUP-00013 ▶ 17		hand_m _{ds}	Name of the list file for manual mode parameters
P-STUP-00014 ▶ 17		zahl_m _{ds}	Number of axis machine data records
P-STUP-00015 ▶ 18		achs_m _{ds} [i]	Name of the list file for axis parameters
P-STUP-00016 ▶ 18		zahl_kw	Number of offset value lists
P-STUP-00017 ▶ 19		achs_kw[i]	Name of the list files for offset values
P-STUP-00018 ▶ 20	p _{fad} [i].	p _{rg} [j]	Path specification
P-STUP-00019 ▶ 20	p _{fad} [i].	log_nr[j]	Logical path number
P-STUP-00020 ▶ 20	p _{fad} [i].	typ[j]	Path type
P-STUP-00021 ▶ 21	p _{fad} [i].	prioritaet[j]	Priority
P-STUP-00022 ▶ 48		online_prod_time_opt	Time-optimised setting for online machining time calculation simulation

ID	Structure	Parameter	Functionality/ short description
P-STUP-00024 ▶ 23	hmi[i].	objects	Name of the list file
P-STUP-00025 ▶ 23	hmi[i].	mode	Mode of the list file
P-STUP-00026 ▶ 25	channel[i].	objects	Name of the list file
P-STUP-00027 ▶ 25	channel[i].	mode	Mode of the list file
P-STUP-00031 ▶ 15		optical_intensity	SERCOS Master transmit power
P-STUP-00033 ▶ 25		fb_storage_size[i]	Memory size for backward motion
P-STUP-00034 ▶ 16		default_sda_mds	Name of the list file for default channel parameters
P-STUP-00035 ▶ 18		default_achs_mds	Name of the list file for default axis parameters
P-STUP-00036 ▶ 19		achs_kw_log_ax_nr[i]	Axis assignment of the offset value list
P-STUP-00037 ▶ 25		ext_var_max	Memory size for external variables
P-STUP-00039 ▶ 26		contour_visu_ifc_version	Version identifier of visualisation data
P-STUP-00040 ▶ 27		single_protocol_fifo	Global or channel-specific output of display data
P-STUP-00042 ▶ 31	configuration.position_controller.	log_entry_number	Maximum number of entries in the history buffer
P-STUP-00043 ▶ 31	configuration.position_controller.	log_level	Defining the type of logged events
P-STUP-00091 ▶ 31	configuration.axes_manager.	log_entry_number	Maximum number of entries in the history buffer
P-STUP-00092 ▶ 32	configuration.axes_manager.	log_level	Defining the type of logged events
P-STUP-00100 ▶ 36	vol_comp[i].	max_records	Number of records to be read in
P-STUP-00101 ▶ 36	vol_comp[i].	file_name	Configuration file for Volumetric Compensation
P-STUP-00110 ▶ 27		enable_external_compensation_ifc	Enabling the external compensation
P-STUP-00111 ▶ 22	configuration.diagnosis_upload.	path	File path for diagnosis upload
P-STUP-00112 ▶ 22	configuration.diagnosis_upload.	default_file	Filename for diagnosis upload
P-STUP-00113 ▶ 22	configuration.diagnosis_upload.	startup_file	Filename for upload file – start-up
P-STUP-00114 ▶ 22	configuration.diagnosis_upload.	history_nbr	Number of diagnosis data output files to be stored
P-STUP-00115 ▶ 23	configuration.diagnosis_upload.	topics	Identifier to specify the diagnosis upload
P-STUP-00117 ▶ 23	configuration.diagnosis_upload.	mode	Diagnosis upload mode
P-STUP-00120 ▶ 37	customer.	val[i]	Free values
P-STUP-00130 ▶ 28		cam_table_loader	Name of the list file for cam tables
P-STUP-00131 ▶ 28		cam_table_storage_size	Size of cam table memory
P-STUP-00132 ▶ 29		trace_function	Enabling/disabling the trace function

ID	Structure	Parameter	Functionality/ short description
P-STUP-00133 ▶ 29		trace_buffer_size	Defining the ring buffer size
P-STUP-00134 ▶ 29		scheduling_position_controller	Parameterising scheduling controller
P-STUP-00135		rtconf_lis	Name of the list file for CNC real-time settings
P-STUP-00136		hw_configuration_list	Name of the list file for the device configuration
P-STUP-00137 ▶ 45		scene_mds	Name of the list file for scene
P-STUP-00138 ▶ 45		enable_scene	Enable the scene function
P-STUP-00145 ▶ 27		ext_var_struct_member_alignment	Alignment of external variables
P-STUP-00146 ▶ 26		ve_var[i]	Name of the list file for external variables
P-STUP-00158		error_message_texts	Name of error message text file
P-STUP-00166 ▶ 40		no_error_message_at_reset	Logging a CNC reset as event in error message output
P-STUP-00167 ▶ 38		error_protocol_mode	Logging mode of error output
P-STUP-00168 ▶ 38		error_text_of_id	Name of the file for error message texts
P-STUP-00169 ▶ 39		error_text_user_of_id	Name of the file for user-specific error message texts
P-STUP-00170 ▶ 39		error_log_file_name	Name of the error log file
P-STUP-00171 ▶ 40		error_log_file_max_size	Maximum size of the error log file in bytes
P-STUP-00172 ▶ 40		error_plc_wait_cycles	Waiting cycles before evaluation of PLC activation
P-STUP-00173 ▶ 40		error_ao_name	Additional descriptive text (AO name)
P-STUP-00175 ▶ 37		ads_32_bit_comp_mode	32-bit compatibility mode for CNC display data
P-STUP-00183	configuration.channel[0].decoder.	vi_memory	Maximum V.I. user memory in bytes
P-STUP-00184	configuration.channel[0].decoder.	vi_maximal_var_count	Maximum number of creatable V.I. variables
P-STUP-00186 ▶ 41	error_filter[i].	reason	Cause of error
P-STUP-00187 ▶ 42	error_filter[i].	action	Error action
P-STUP-00188 ▶ 42	error_filter[i].	conditional_activation	Conditional activation
P-STUP-00189 ▶ 42	error_filter[i].	conditional_action	Conditional action
P-STUP-00190 ▶ 43	error_filter[i].	conditional_param	Conditional filter activation
P-STUP-00191 ▶ 43	error_filter[i].	conditional_output	Output of additional error information
P-STUP-00192 ▶ 45	plcopen_unit.linear.	position	Setting the units of linear axis positions for PLCopen
P-STUP-00193 ▶ 46	plcopen_unit.linear.	velocity	Setting the linear axis velocity unit for PLCopen
P-STUP-00194 ▶ 46	plcopen_unit.linear.	acceleration	Setting the linear axis velocity unit for PLCopen
P-STUP-00195 ▶ 46	plcopen_unit.linear.	jerk	Setting the linear axis jerk unit for PLCopen

ID	Structure	Parameter	Functionality/ short description
P-STUP-00196 [▶ 46]	plcopen_unit.rotatory.	position	Setting the units of rotary axis positions for PLCopen
P-STUP-00197 [▶ 47]	plcopen_unit.rotatory.	velocity	Setting the units of rotary axis speeds for PLCopen
P-STUP-00198 [▶ 47]	plcopen_unit.rotatory.	acceleration	Setting the units of rotary axis speed for PLCopen
P-STUP-00199 [▶ 48]	plcopen_unit.rotatory.	jerk	Setting the units of rotary axis jerk for PLCopen
P-STUP-00200 [▶ 41]		error_text_cycles_of_id	Name of the file for error message texts of CNC cycles

1.1 Migrated start-up parameters

i The following start-up parameters are available as channel parameters as of Versions V2.11.2040.04 ; V2.11.2810.02 ; V3.1.3079.17 ; V3.1.3107.10. The reason for this is improved configurability of the NC channel

The previous start-up parameters can still be used for compatibility reasons.

Meaning of the parameter	Previous start-up parameter	New channel parameter
decoder.function	P-STUP-00050	P-CHAN-00500
decoder.log_entry_number	P-STUP-00054	P-CHAN-00501
decoder.log_level	P-STUP-00055	P-CHAN-00502
decoder.max_cache_number	P-STUP-00051	P-CHAN-00503
decoder.max_cache_size	P-STUP-00052	P-CHAN-00504
decoder.max_local_subroutine_definitions	P-STUP-00053	P-CHAN-00505
decoder.max_vol_comp_measurement_records	P-STUP-00185	P-CHAN-00506
tool_radius_comp.function	P-STUP-00080	P-CHAN-00550
tool_radius_comp.log_entry_number	P-STUP-00081	P-CHAN-00551
tool_radius_comp.log_level	P-STUP-00082	P-CHAN-00552
path_preparation.function	P-STUP-00060	P-CHAN-00600
path_preparation.log_entry_number	P-STUP-00063	P-CHAN-00601
path_preparation.log_level	P-STUP-00064	P-CHAN-00602
path_preparation.m_pre_output_lookahead	P-STUP-00061	P-CHAN-00603
path_preparation.m_pre_output_max_distance	P-STUP-00062	P-CHAN-00604
interpolator.function	P-STUP-00070	P-CHAN-00650
interpolator.log_entry_number	P-STUP-00072	P-CHAN-00651
interpolator.log_level	P-STUP-00073	P-CHAN-00652
interpolator.parameter, parameter_number_blocks_lah	P-STUP-00071	P-CHAN-00653
interpolator.blocks_per_call	P-STUP-00075	P-CHAN-00654
interpolator.dyn_cs_history_max	P-STUP-00074	P-CHAN-00657
interpolator.contour_lookahead_log_max	P-STUP-00076	P-CHAN-00658

2 Description of elements



The TwinCAT System Manager enters or changes a variety of parameters automatically. A manual change is overwritten when the configuration is activated.

Parameters that are automatically changed are marked accordingly.

2.1 Number of configured channels (P-STUP-00001)

P-STUP-00001	Number of configured channels
Description	Application-specific definition of the number of NC channels. The number specified in this parameter must correspond to the configured channels. This parameter informs the systems sequence controller of the number of NC channels. This topology description compiled in binary lists must correspond to this data item.
Parameter	kanal_anzahl
Data type	SGN16
Data range	1 - 12
Dimension	----
Default value	0
Remarks	This parameter ist used automatically in TwinCAT systems.

2.2 SERCOS start-up (P-STUP-00002)

P-STUP-00002	SERCOS start-up
Description	This parameter defines whether SERCOS drives should also be run up at start-up.
Parameter	sercos_hochlauf
Data type	SGN16
Data range	0 or .1
Dimension	----
Default value	0
Remarks	A SERCOS card must be installed. TwinCAT: SERCOS parameter without effect.

2.3 Number of SERCOS rings (P-STUP-00003)

P-STUP-00003	Number of SERCOS rings
Description	This parameter defines the number of SERCOS rings in the system.
Parameter	sercos_ring_anzahl
Data type	UNS16
Data range	0 or .1
Dimension	----
Default value	0
Remarks	

2.4 SERCOS time slot calculation (P-STUP-00005)

P-STUP-00005	SERCOS time slot calculation
Description	Option to select a SERCOS time slot calculation mode.
Parameter	mds_time_slots

Data type	SGN16
Data range	0: internal calculation 1: Adopting predefined values from axis / device lists
Dimension	----
Default value	0
Remarks	

2.5 SERCOS AT time slot calculation (P-STUP-00006)

P-STUP-00006	SERCOS AT time slot calculation
Description	Option to select an AT time slot calculation mode.
Parameter	at_tslot_type
Data type	STRING
Data range	DEFAULT / OPTION1
Dimension	----
Default value	DEFAULT:
Remarks	

2.6 SERCOS Master transmit power (P-STUP-00031)

P-STUP-00031	SERCOS Master transmit power
Description	This parameter adjusts the light intensity of the SERCOS master hardware transmitter diode. A reduction in transmit power can, for example, prevent a receiver diode overload in the downstream SERCOS ring user.
Parameter	optical_intensity
Data type	UNS16
Data range	1 ... 6
Dimension	----
Default value	6
Remarks	

2.7 Topology selected (P-STUP-00007)

P-STUP-00007	Topology selected
Description	This parameter is used to select a topology description (configuration) for the NC kernel. The selected configuration must be contained in the code in the form of a binary file.
Parameter	konfiguration
Data type	STRING
Data range	EIN_KANAL_KONFIGURIERUNG / ... / ACHT_KANAL_KONFIGURIERUNG
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.8 List type (P-STUP-00008)

P-STUP-00008	List type
---------------------	------------------

Description	This parameter is used to define whether start-up is performed using binary lists or ASCII lists.
Parameter	listen
Data type	STRING
Data range	ASCII / BINAER
Dimension	----
Default value	ASCII
Remarks	TwinCAT: Entry may not be changed.

2.9 List file name for channel parameters (P-STUP-00009)

P-STUP-00009	List file name for default channel parameters
Description	This parameter is used cross-channel to define the name of the file containing channel parameters.
Parameter	sda_mds[i] where i = 0 ... 11 (maximum number of channels: 12, application-specific)
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.9.1 List file name for default channel parameters (P-STUP-00034)

P-STUP-00034	List file name for default channel parameters
Description	This parameter is used cross-channel to define the name of the file containing channel parameters assigned with default values.
Parameter	default_sda_mds
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.10 Name of the tool data list file (P-STUP-00010)

P-STUP-00010	Name of the tool data list file
Description	This parameter defines for each channel the name of the file containing tool data.
Parameter	werkz_data[i] where i = 0 ... 11 (maximum number of channels: 12, application-specific)
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.11 Name of the list file for zero point data (P-STUP-00011)

P-STUP-00011	Name of the list file for zero point data
Description	This parameter defines for each channel the name of the file containing zero point data.
Parameter	nullp_data[i] where i = 0 ... 11 (maximum number of channels: 12, application-specific)
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.12 Name of the list files for clamp position offset data (P-STUP-00012)

P-STUP-00012	Name of the list files for clamp position offset data
Description	This parameter defines for each channel the name of the file containing clamp position offset data.
Parameter	pzv_data[i] where i = 0 ... 11 (maximum number of channels: 12, application-specific)
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.13 Name of the list file for axis parameters (P-STUP-00013)

P-STUP-00013	Name of the list file for manual mode parameters
Description	This parameter is used cross-channel to define the name of the file containing manual mode parameters.
Parameter	hand_mds
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.14 Number of axis machine data records (P-STUP-00014)

P-STUP-00014	Number of axis machine data records
Description	This parameter determines the number of axis data records that are to be interpreted and this defines the number of axes in the system.
Parameter	zahl_mds

Data type	SGN16
Data range	1 ... 32
Dimension	----
Default value	0
Remarks	This parameter ist used automatically in TwinCAT systems.

2.15 Name of the list file for axis parameters (P-STUP-00015)

P-STUP-00015	Name of the list file for axis parameters
Description	This parameter is used cross-channel to define the names of axis parameter data files. The number of axis parameter data files must correspond to the number of axis parameter data records. If more files are specified than are contained in <u>P-STUP-00014</u> [► 17] (zahl_mds), the excess files are not considered. Vice versa, if the system attempts to open unknown files, error messages are output and controller start-up is aborted.
Parameter	achs_mds[i] where i = 0 ... 31 (maximum number of axes in the system: 32, application-specific)
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.15.1 Name of the list file for default axis parameters (P-STUP-00035)

P-STUP-00035	Name of the list file for default axis parameters
Description	This parameter is used cross-channel to define the name of the file containing the axis parameters assigned with default values.
Parameter	default_achs_mds
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.16 Number of offset value lists (P-STUP-00016)

P-STUP-00016	Number of offset value lists
Description	This parameter determines the number of offset value lists to be interpreted. The number of offset value lists may not be greater than the number of axes. An offset value list may exist for each axis.
Parameter	zahl_kw
Data type	SGN16
Data range	1 ... 32

Dimension	----
Default value	0
Remarks	This parameter ist used automatically in TwinCAT systems.

2.17 Name of the list files for offset values (P-STUP-00017)

P-STUP-00017	Name of the list files for offset values
Description	This parameter is used cross-channel to define the names of offset value files. The number of offset value lists must correspond to the number of list files. If more files are specified than are contained in P-STUP-00016 [► 18] (zahl_kw), the excess files are not considered. Vice versa, if the system attempts to open unknown files, error messages are output and controller start-up is aborted.
Parameter	achs_kw[i] where i = 0 ... 31 (maximum number of axes in the system: 32, application-specific)
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.17.1 Axis assignment of the offset value list (P-STUP-00036)

P-STUP-00036	Axis assignment of the offset value list
Description	The logical axis number is used cross-channel to define the assignment between axes and offset value lists.
Parameter	achs_kw_log_ax_nr[i] where i = 0 ... 31 (maximum number of axes in the system: 32, application-specific)
Data type	UNS16
Data range	1 ... MAX(UNS16)
Dimension	----
Default value	0
Remarks	This parameter ist used automatically in TwinCAT systems.

2.18 NC program paths (path[i].*)

This structure element defines the paths to the NC programs for each channel. The path string, the logical path number, the path type and priority must be specified for each program path.

i As of CNC Build V3.1.3025.05, program paths can also be defined in the channel parameters. In this case, the program paths are removed from the start-up parameters.

Further information on program paths in the channel: [CHAN//NC program paths (path[i].*)]

Structure name	Index
pfad[i]	i = 0 ... 11 (channel index, e.g. Channel 1 -> Index 0, maximum number of channels: 12, application-specific)

2.18.1 Path specification (P-STUP-00018)

P-STUP-00018	Path name
Description	This parameter defines the path to the NC programs. The CNC employs this path to open an NC program.
Parameter	pfad[i].prg[j] where j = 0 ... 11 (maximum number of program paths in the system: 12, application-specific)
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	* Note: The default value of variables is a blank string.

2.18.2 Logical path number (P-STUP-00019)

P-STUP-00019	Logical path number
Description	This parameter defines a logical path number for the program path. Logical path numbers must be unique within the system.
Parameter	pfad[i].log_nr[j] where j = 0 ... 11 (maximum number of program paths in the system: 12, application-specific)
Data type	UNS16
Data range	1 ... MAX(UNS16)
Dimension	----
Default value	0
Remarks	

2.18.3 Path type (P-STUP-00020)

P-STUP-00020	Path type
Description	This parameter defines the type of the program path bit-encoded. A path specification may also be used for several path types.
Parameter	pfad[i].typ[j] where j = 0 ... 11 (maximum number of program paths in the system: 12, application-specific)
Data type	UNS16

Data range	0x01 (main program path) 0x02 (subroutine path) 0x04 (path for #MSG SAVE) 0x08 (path for storing debug data *.dbg) <u>Combinations:</u> 0x03 (main prog.+ subroutine path) 0x05 (main prog. path + path for #MSG SAVE) 0x06 (subroutine path + path for #MSG SAVE) 0x07 (main prog. + subroutine path + path for #MSG SAVE) 0x0B (main prog. path + subroutine path + path for debug data) 0x0F (main prog. path + subroutine path + path for #MSG SAVE and debug data)
Dimension	----
Default value	0
Remarks	

2.18.4 Priority (P-STUP-00021)

P-STUP-00021	Priority
Description	This parameter defines the priority of the program path. Priority determines the sequence of the directories of the corresponding path types when a search is made for the NC program file. The highest priority level is '0'. If a priority is not specified for a given program path, the path is initialised with priority '0'. An error message is output if the same priority is specified for a program path of the same path type.
Parameter	pfad[i].prioritaet[j] where j = 0 ... 11 (maximum number of program paths in the system: 12, application-specific)
Data type	UNS16
Data range	0 ... MAX(UNS16)
Dimension	----
Default value	0
Remarks	When the path types 0x04 and 0x08 are set as actual program paths, the priorities must be continued based on the sub program paths.

2.19 Parameter for diagnosis upload

2.19.1 File path for diagnosis upload (P-STUP-00111)

P-STUP-00111	File path for diagnosis upload
Description	This parameter defines the file path for writing the diagnosis data upload file.
Parameter	configuration.diagnosis_upload.path
Data type	STRING
Dimension	---
Default value	
Remarks	

2.19.2 Filename for diagnosis upload (P-STUP-00112)

P-STUP-00112	Filename for diagnosis upload
Description	This parameter specifies the filename of the diagnosis data upload file. The file path is defined by P-STUP-00111 [▶ 22] .
Parameter	configuration.diagnosis_upload.default_file
Data type	STRING
Dimension	---
Default value	diag_data.txt
Remarks	

2.19.3 Filename for upload file – start-up (P-STUP-00113)

P-STUP-00113	Name of the upload file of the diagnosis data at start-up
Description	This parameter specifies the name of the diagnosis data upload file at start-up. The file path is defined by P-STUP-00111 [▶ 22] .
Parameter	configuration.diagnosis_upload.startup_file
Data type	STRING
Dimension	---
Default value	
Remarks	Note: If P-STUP-00113 is unassigned, no diagnosis upload can be commanded at start-up.

2.19.4 Number of diagnosis data output files to be stored (P-STUP-00114)

P-STUP-00114	Number of diagnosis data output files to be saved
Description	This parameter defines the number of diagnosis data output files to be saved. The file path is defined by P-STUP-00111 [▶ 22] .
Parameter	configuration.diagnosis_upload.history_nbr
Data type	UNS16
Dimension	----
Default value	1
Remarks	

2.19.5 Identifier to specify the diagnosis upload (P-STUP-00115)

P-STUP-00115	Identifier to specify the diagnosis upload
Description	This parameter defines the identifiers to specify the diagnosis upload. For an overview of possible identifiers, see TOPICS table.
Parameter	configuration.diagnosis_upload.topics
Data type	STRING
Dimension	----
Default value	MAX
Remarks	

2.19.6 Diagnosis upload mode (P-STUP-00117)

P-STUP-00117	Diagnosis upload mode
Description	This parameter defines the mode for a diagnosis upload. For an overview of the possible settings, see the Mode Table
Parameter	configuration.diagnosis_upload.mode
Data type	STRING
Dimension	---
Default value	STANDARD
Remarks	Parameter available as of CNC Build V2.11.2059, V2.11.2830, V3.1.3079.43 or V3.1.3107.33.

Diagnosis upload mode	Meaning
STANDARD	Default upload with no further functions
REGRESSION	Formatting for regression test
PROTOCOL_INFO	Additional information about the upload procedure
MSG_FLUSH_OFF	Deactivate automatic flush for messages to ISG_DIAG_BED at the start of the diagnosis upload.

2.20 HMI objects (hmi[i].*)

2.20.1 Name of the list file (P-STUP-00024)

P-STUP-00024	Name of the list file
Description	This parameter defines the cross-channel name of the HMI object list.
Parameter	hmi[i].objects
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.20.2 Mode of the list file (P-STUP-00025)

P-STUP-00025	Mode of the list file
Description	This parameter defines the mode for loading the HMI object list.

Parameter	hmi[i].mode
Data type	STRING
Data range	write: The existing list is only read in. write+: The list is first created, then read in. default: The internal default list is used. No lists are generated externally.
Dimension	----
Default value	*
Remarks	This parameter is used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.21 Parameters for the BF Channel (channel[i].*)

2.21.1 Mode of the list file (P-STUP-00027)

P-STUP-00027	Mode of the list file
Description	This parameter defines the mode for loading the BF Channel object list.
Parameter	channel[i].mode
Data type	STRING
Data range	write: The existing list is only read in. write+: The list is first created, then read in. default: The internal default list is used. No lists are generated externally.
Dimension	----
Default value	*
Remarks	This parameter is used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.21.2 Name of the list file (P-STUP-00026)

P-STUP-00026	Name of the list file
Description	This parameter defines the cross-channel name of the BF Channel object list.
Parameter	channel[i].objects
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	* Note: The default value of variables is a blank string.

2.22 Memory size for backward motion (P-STUP-00033)

P-STUP-00033	Memory size for backward motion
Description	This parameter defines the memory size in bytes used for backward motion on the path. During start-up, the NC checks whether the required minimum size is available. If this is not the case, a warning is output and the memory size is set to the required minimum value. If the size is set to 0, the "forward/ backward motion on the path" function is not available. The maximum size is only limited by the resources available on the PC.
Parameter	fb_storage_size[i] where i = 0 to 11 (maximum number of channels: 12, application-specific)
Data type	UNS32
Data range	0 ... MAX(UNS32)
Dimension	----
Default value	0
Remarks	

2.23 Memory size for external variables (P-STUP-00037)

P-STUP-00037	Memory size for external variables
--------------	------------------------------------

Description	This parameter dimensions the memory area available for the external variables of each channel on the HLI. A separate memory area of this size is created for global external variables. The number defined here determines the number of 24-byte blocks of which each of these V.E. memory areas consists.
Parameter	ext_var_max
Data type	UNS16
Data range	0 ... MAX(UNS16)
Dimension	----
Default value	0
Remarks	This parameter ist used automatically in TwinCAT systems.

2.24 Name of the list file for external variables (P-STUP-00146)

P-STUP-00146	Name of the list file for external variables
Description	This parameter defines for each channel the name of the file containing the external variables.
Parameter	ve_var[i] where i = 0 ... 11 (maximum number of channels: 12, application-specific)
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	This parameter ist used automatically in TwinCAT systems. * Note: The default value of variables is a blank string.

2.25 Version identifier of visualisation data (P-STUP-00039)

P-STUP-00039	Version identifier of visualisation data	
Description	The parameter sets the type of data structure which the contour visualisation ([FCT-C17]) supplies. Depending on the setting selected, more or less visualisation data is generated. An overview of existing data structures is contained in [FCT-C17].	
Parameter	contour_visu_ifc_version	
Data type	UNS32	
Data range	contour_visu_ifc_version	Data structure
	0	SOLLKONT_VISU_DATA_V0 (default)
	1	SOLLKONT_VISU_DATA_V1
	2	SOLLKONT_VISU_DATA_V2
	3	SOLLKONT_VISU_DATA_V3
	4	SOLLKONT_VISU_DATA_V4
	5	SOLLKONT_VISU_DATA_V5
	6	SOLLKONT_VISU_DATA_V6
	7	SOLLKONT_VISU_DATA_V7
	8	SOLLKONT_VISU_DATA_V8
	9	SOLLKONT_VISU_DATA_V9
	10	SOLLKONT_VISU_DATA_V10
	11	SOLLKONT_VISU_DATA_V11
Dimension	----	
Default value	0	

Remarks	
---------	--

2.26 Global or channel-specific output of display data (P-STUP-00040)

P-STUP-00040	Global or channel-specific output of display data
Description	This parameter defines whether visualisation data is written to a FIFO output for each channel or whether the visualisation data of all channels is written to a global FIFO output.
Parameter	single_protocol_fifo
Data type	BOOLEAN
Data range	0: Channel-specific output of visualisation data 1: Common output of visualisation data.
Dimension	----
Default value	0 *
Remarks	* 1 as of CNC Build V3.1.3038

2.27 Alignment of external variables (P-STUP-00145)

P-STUP-00145	Alignment of external variables
Description	This parameter defines the alignment of external variables in the CNC ([EXTV]). IMPORTANT: They must correspond to the alignment setting used in the PLC.
Parameter	ext_var_struct_member_alignment
Data type	UNS08
Data range	Permissible values for this parameter are: 0: The CNC automatically defines the alignment of variables depending on the target platform 1: 1-byte alignment (pragma pack) is used for external variables. No alignment bytes are added. 2: 2-byte alignment is used 4: The CNC uses 4-byte alignment 8: The CNC uses 8-byte alignment
Dimension	----
Default value	0
Remarks	This parameter is only available as of CNC Build V3.1.3019.00 and higher. IMPORTANT: The alignment setting defined here must correspond to the alignment setting used in the PLC. Otherwise, no or incorrect values can be transferred if there is shared access to external variables. This parameter may only be changed in consultation with the controller manufacturer.

The following difference exists for TwinCAT systems:

TwinCAT2 -> 1-byte alignment

TwinCAT3 -> 8-byte alignment

2.28 Enabling the external compensation (P-STUP-00110)

P-STUP-00110	Enabling the external compensation
Description	This parameter enables the function in the NC channel.

Parameter	enable_external_compensation_ifc
Data type	BOOLEAN
Data range	0/1
Dimension	----
Default value	0
Remarks	This parameter can only be used with TwinCAT3. This is because of the use of the McCOM interface that is only available with TwinCAT3. This parameter is available as of CNC Build V3.1.3074

2.29 Parameters for camming

2.29.1 Name of the list file for cam tables (P-STUP-00130)

P-STUP-00130	Name of the list file for cam tables
Description	This parameter defines the name and path of the parameter file specifying the cam table file entries.
Parameter	cam_table_loader
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	----
Default value	*
Remarks	* Note: The default value of variables is a blank string.

2.29.2 Size of cam table memory (P-STUP-00131)

P-STUP-00131	Size of cam table memory
Description	This parameter defines the size of the cam table memory in bytes.
Parameter	cam_table_storage_size
Data type	UNS32
Data range	0 ... MAX(UNS32)
Dimension	----
Default value	50000
Remarks	

2.30 Parameter to trace position and dynamic data

2.30.1 Enabling/disabling the trace function (P-STUP-00132)

P-STUP-00132	Enabling/disabling the trace function
Description	This parameter enables or disables the trace function of the NC kernel.
Parameter	trace_function
Data type	BOOLEAN
Data range	0/1
Dimension	----
Default value	0
Remarks	

2.30.2 Defining the ring buffer size (P-STUP-00133)

P-STUP-00133	Defining the ring buffer size
Description	This parameter defines the size of the ring buffer for the trace function. The size indicates the number of buffer locations.
Parameter	trace_buffer_size
Data type	UNS32
Data range	0 ... MAX(UNS32)
Dimension	----
Default value	20000
Remarks	

2.31 Parameterising scheduling (P-STUP-00134)

P-STUP-00134	Parameterising scheduling
Description	<p>This parameter controls CNC scheduling. A distinction is made between 2 methods:</p> <p>Method 1: Control runs in the CNC for at least one axis. Scheduling executes the following sequence:</p> <ul style="list-style-type: none"> - Read actual values - Calculate position lags - Write velocity command values <p>Method 2: All axes are position-controlled. Scheduling automatically executes the following changed sequence:</p> <ul style="list-style-type: none"> - Read actual values - Write position command values - Calculate position for next cycle
Parameter	scheduling_position_controller
Data type	STRING
Data range	<p>DEFAULT: Depending on axis control, the CNC decides on which scheduling mode is selected (mode 1 or 2).</p> <p>OPT_CNC_POS_CONTROL: Control in CNC; scheduling acc. to mode 1.</p> <p>OPT_DRIVE_POS_CONTROL: Control in the drives; scheduling acc. to mode 2</p>
Dimension	----

Default value	DEFAULT
Remarks	

2.32 Parameter for configuration (configuration.*)

2.32.1 Platform scaling

2.32.1.1 Position control (configuration.position_controller.*)

2.32.1.1.1 Maximum number of logged events (P-STUP-00042)

P-STUP-00042	Maximum number of entries in the history buffer
Description	The CNC offers the options of filing events in a history memory (logging entries). This parameter defines the maximum number of logged events. If there are more entries, the oldest one is overwritten.
Parameter	configuration.position_controller.log_entry_number
Data type	UNS32
Data range	0 ... MAX(UNS32)
Dimension	----
Default value	0
Remarks	

2.32.1.1.2 Defining the type of logged events (P-STUP-00043)

P-STUP-00043	Defining the type of logged events
Description	The CNC offers the options of filing events in a history memory (logging entries). The parameter permits the user-specific definition of CNC logging entries to be logged. Depending on troubleshooting or the analysis requirement, event logging can be filtered in order to reduce the number of entries to be logged or analysed right from the outset.
Parameter	configuration.position_controller.log_level
Data type	UNS32
Data range	0 ... MAX(UNS32)
Dimension	----
Default value	0
Remarks	

2.32.1.2 Axis management (configuration.axes_manager.*)

2.32.1.2.1 Maximum number of logged events (P-STUP-00091)

P-STUP-00091	Maximum number of entries in the history buffer
Description	The CNC offers the options of filing events in a history memory (logging entries). This parameter defines the maximum number of logged events. If there are more entries, the oldest one is overwritten.
Parameter	configuration.axes_manager.log_entry_number
Data type	UNS32
Data range	0 ... MAX(UNS32)
Dimension	----
Default value	0
Remarks	

2.32.1.2.2 Defining the type of logged events (P-STUP-00092)

P-STUP-00092	Defining the type of logged events
Description	The CNC offers the options of filing events in a history memory (logging entries). The parameter permits the user-specific definition of CNC logging entries to be logged. Depending on troubleshooting or the analysis requirement, event logging can be filtered in order to reduce the number of entries to be logged or analysed right from the outset.
Parameter	configuration.axes_manager.log_level
Data type	UNS32
Data range	0 ... MAX(UNS32)
Dimension	----
Default value	0
Remarks	

2.32.2 General scaling

2.32.2.1 Logging entries of the CNC

The CNC offers the possibility of storing events in a history memory. If requested, these entries can be read out. When diagnostic data is requested, the entries are stored in a file, for example. Recording of events is currently possible in the following CNC architecture models:

- Decoder
- Path preparation
- Tool radius compensation
- Interpolation
- Axis driver (position control)
- Axis management

i The controller manufacturer must already have planned for recording of individual CNC events.

The **log_entry_number** parameter defines the maximum number of recorded events. If more entries occur, the oldest entry is overwritten.

The **log_level** parameter enables users to specifically define the CNC's logging entries to be recorded. Depending on troubleshooting or the requirement for an analysis, recording of events can be filtered to already reduce the number of entries to be recorded/analysed from the outset.

Example parameters

```
configuration.channel[0].decoder.log_level 0x1010102f
configuration.channel[0].decoder.log_entry_number 256

configuration.channel[0].tool_radius_comp.log_entry_number 128
configuration.channel[0].path_preparation.log_entry_number 64

configuration.channel[0].interpolator.log_entry_number 150

configuration.position_controller.log_entry_number 32
configuration.position_controller.log_level 0x10ff20ff

configuration.axes_manager.log_entry_number 20
configuration.axes_manager.log_level 0x000000ff
```

Output example

```

PATH LOGGING CHANNEL NO.: 1
=====
BF 8 logging : 13/150, level ffffffff, index 13

time level message
-----
200852 00020000 1) UPLOAD-ind: start size=748
200856 00020000 1) UPLOAD-ind: data received, pos 0 + 748
200856 00020000 1) UPLOAD-ind: finished : position 748, cb lize
272901 00000001 BAHN restart... start
272904 00000001 BAHN restart...finished
279541 00000001 BAHN abort...start
279551 00000001 BAHN abort...finished
...
280622 00000001 BAHN restart...finished

BAVO LOGGING CHANNEL NO.: 1
=====
BF 11 logging : 10/64, level ffffffff, index 10

time level message
-----
200851 00020000 1) UPLOAD-req: start size=748, cb=size, name=
200855 00020000 1) UPLOAD-req: start ackn : size=748
200855 00020000 1) UPLOAD-req: sent data : 0+748
200859 00020000 1) UPLOAD-req: sent data ackn, fini : 0+748=748
272899 00000001 BAVO reset start
...
280641 00000001 BAVO reset finished (no axes returned to AXV)

DECODER LOGGING CHANNEL NO.: 1
=====
BF 10 logging : 0/0, level 1010102f, index 0

time level message
-----

LR LOGGING CHANNEL NO.: 1
=====
BF 5 logging : 22/32, level 10ff20ff, index 22

time level message
-----
272907 00000001 lr_abort_axis() ok: axis=6
272907 00000001 lr_abort_axis() ok: axis=11
...
279600 00000001 lr_abort_axis() ok: axis=4
-----
279600 00000001 lr_abort_axis() ok: axis=5
... 280620 00000001 lr_abort_axis() ok: axis=5

```

2.32.2.2 CNC logging events**2.32.2.2.1 Defining logging levels**

Bit 31 to Bit 16 for cross-BF log level classes	Description
0x00010000 BF_LOG_STD	Default BF events
0x00020000 BF_LOG_UPLOAD	#COLL/SCENE RESTORE
0x40000000 BF_LOG_HIGH	High priority events
0x80000000 BF_LOG_RESET	Events at BF reset
0xFFFFFFFF BF_LOG_ALL	All BF log entries are logged.

Bit 15 to Bit 0 for BF-specific log level classes	Description
0x00000001 BAHN_LOG_STD	Default Interpolator
0x00000002 BAHN_LOG_DDTG_	Events at "Delete distance to go"

0x00000004 BAHN_LOG_FBC_	Forward/backward motion
0x00000008 BAHN_LOG_BS_	Block search
0x00000001 BAVO_LOG_STD	Default Bavo
0x00000001 DEC_LOG_STD	Default decoder
0x00000002 DEC_LOG_EXAMPLE_	---
0x00000004 DEC_LOG_VI	Interchannel variables
0x00000001 AXV_LOG_STD	Default axis exchange
0x00000001 LR_LOG_STD	Default position controller
0x00000002 LR_LOG_ALNK	Axis link from IPO to LR during channel output
0x00000004 LR_LOG_BODE_PLOT	Bode plot logging

2.33 Parameters for Volumetric Compensation (vol_comp[i].*)

For every controller, up to five records of compensation settings can be configured. Configuration of more than only one compensation makes sense on multi-channel machines, for example.

Structure name	Index
vol_comp[i]	i = 0 ... 5

2.33.1 Number of records to be read in (P-STUP-00100)

P-STUP-00100	Number of records to be read in
Description	This parameter specifies an upper limit for the number of parameter data records to be read in. It serves to allocate memory during controller start-up. An error is issued if this number is exceeded while reading in the records.
Parameter	vol_comp[i].max_records
Data type	SGN32
Data range	0 ... MAX(SGN32)
Dimension	----
Default value	0
Remarks	

2.33.2 Configuration file for Volumetric Compensation (P-STUP-00101)

P-STUP-00101	Configuration file for Volumetric Compensation
Description	The path specified in this parameter refers to a list file which contains the main ith configuration of the volumetric compensation 'i'.
Parameter	vol_comp[i].file_name
Data type	STRING
Data range	<Path to the configuration file>
Dimension	----
Default value	*
Remarks	Parameterisation example: The row vol_comp[0].file_name C:\volcomp\vol_comp_0.lis defines the path to the configuration file. * Note: The default value of variables is a blank string.

2.34 User-specific data (customer.*)

2.34.1 Free values (P-STUP-00120)

P-STUP-00120	Free values
Description	The user can enter any values in this array. The values are not displayed in the controller, only on the HLI in the element gpPform^.nc_config.customer_val_r[] (see [HLI]). This permits the user to transfer configuration data to the PLC or HMI.
Parameter	customer.val[i] where i = 0 (maximum number of free values 1, application-specific)
Data type	UNS32
Data range	0 ... MAX(UNS32)
Dimension	----
Default value	0
Remarks	

2.35 32-bit compatibility mode for CNC display data (P-STUP-00175)

P-STUP-00175	32-bit compatibility mode for CNC display data
Description	As of CNC Build 2807 and CNC Build 3039.06 and higher, the CNC position controller uses 64-bit integer variables with a finer resolution for command and actual positions. To ensure downward compatibility, this data is downscaled for display data in CNC objects and continue to be supplied as 32-bit values. Conversion can be deactivated by setting the ads_32_bit_comp_mode parameter to the value 0. High-resolution position controller variables are then transferred via CNC objects as 64-bit integer values.
Parameter	ads_32_bit_comp_mode
Data type	BOOLEAN
Data range	0: No conversion; high-resolution 64-bit variable. 1: Downward compatibility, conversion and supply of 32-bit integer variables
Dimension	----
Default value	1
Remarks	This parameter is available as of CNC Builds 2.11.2027.01 and V3.1.3039.06 or higher.

2.36 Parameters for error message output

2.36.1 Logging mode (P-STUP-00167)

P-STUP-00167	Logging mode of error output	
Description	This parameter controls the output and scope of the error output.	
Parameter	error_protocol_mode	
Data type	STRING	
Data range	Flag	Meaning
	FILTER_OFF	No filters are evaluated
	VERBOSE	Extended internal diagnostics
	WITHOUT_ERROR_MANAGER	Direct output without error management
	PRINT	Execute print output
	LOG	Log output to log file
	REPORT	Log output to log file
	SEND_TO_PLC_NONE	Suppress output to the PLC
	PRINT_EXTENDED	Extended print output
	LOG_EXTENDED	Extended log output
	REPORT_EXTENDED	Extended application-specific output
	PRINT_NO_WARNINGS	Warnings are suppressed in the print output
	LOG_NO_WARNINGS	Warnings are suppressed in the log output
	REPORT_NO_WARNINGS	Warnings are suppressed in the report output
	SEND_TO_PLC_NO_WARNINGS	Suppress warnings to PLC
	STARTUP_NO_WARNINGS	Suppress warnings during controller start-up
	NO_WARNINGS	Suppress all warnings
	TC3_EVENT_LOGGER	Output to TC3 Event Logger
	TC3_EVENT_LOGGER_CONFIRMED	Output to TC3 Event Logger, automatic confirmation (state confirmed) on deletion of error message
	TC3_EVENT_LOGGER_NO_CONFIRMATION	Output to TC3 Event Logger without confirmation request
Dimension	----	
Default value	LOG PRINT REPORT	
Remarks	<p>Note:</p> <p>For example, to suppress warnings in the print output, the entire mode must be set accordingly.</p> <p>error_protocol_mode LOG PRINT REPORT PRINT_NO_WARNINGS</p>	



This parameter is provided with reduced scope in the Version V2.2810.xx. The following setting can be made:

error_protocol_mode NO_WARNINGS

Therefore, only warnings can be suppressed.

2.36.2 Name of text file containing error message texts (P-STUP-00168)

P-STUP-00168	Name of the file for error message texts
---------------------	---

Description	Name of the file containing the error message texts which belong to the ID (error number). These can be used for output to the log file. This file is used to assign an error number to the related error message text. The file contains one line in the following format for each error ID: <Error-ID> TABULATOR <Error-Text> The default file 'err_text_version_eng.txt' is assumed if no file is specified.
Parameter	error_text_of_id
Data type	STRING
Data range	Maximum 256 characters
Dimension	----
Default value	err_text_version_eng.txt
Remarks	

2.36.3 Name of text file containing user-specific error message texts (P-STUP-00169)

P-STUP-00169	Name of the file for user-specific error message texts
Description	Comparable to default error texts (see P-STUP-00168 [▶ 38]), you can also specify user-specific texts in this file. These texts are for error IDs in the range [1;1000] which the user can define himself with the NC command #ERROR and they are used for errors in the McCOM interfaces. This file is used to assign an error number to the related user-specific error message text. The file contains one line in the following format for each error ID: <Error-ID> TABULATOR <user_specific_error-text> The filename is configured with relative or absolute path name. For further information see (FCT-M7// Outputting user error messages)
Parameter	error_text_user_of_id
Data type	STRING
Data range	Maximum 256 characters
Dimension	----
Default value	*
Remarks	* Note: The default value of variables is a blank string. The returned error IDs of the McCOM methods are resolved for error values 292030-292033 (ERR_KIN_TRAFO_CONFIG/ -INITIALIZE/ -FORWARD/ -BACKWARD).

2.36.4 Name of error log file (P-STUP-00170)

P-STUP-00170	Name of the error log file
Description	Name of the error log file (including directory and path information). If no complete name is specified, no log file is generated and the error message ID 296000 is output. If the parameter is not configured, the error log file is generated with the default file name.
Parameter	error_log_file_name
Data type	STRING
Data range	Maximum 256 characters
Dimension	----
Default value	\error.log
Remarks	The default filename and the associated path are application-dependent.

If no path is specified in TwinCAT systems, the configured NC program path is used.

2.36.5 Maximum size of the error log file (P-STUP-00171)

P-STUP-00171	Maximum size of the error log file in bytes
Description	This parameter defines the maximum size of the error log file.
Parameter	error_log_file_max_size
Data type	SGN32
Data range	> 0 :maximum size of the error log file. If this size is exceeded, the original file is copied to a backup file (extension: <name>.bak) and the contents of the original file are deleted. == 0 : no backup file is created.
Dimension	----
Default value	100000
Remarks	

2.36.6 Waiting cycles before evaluation of PLC activation (P-STUP-00172)

P-STUP-00172	Waiting cycles before evaluation of PLC activation
Description	Waiting cycles in CNC ticks after an error has occurred before the PLC's activation mask for the filter rules is evaluated.
Parameter	error_plc_wait_cycles
Data type	UNS32
Data range	0 ... MAX(UNS32)
Dimension	----
Default value	-
Remarks	

2.36.7 Additional descriptive text (AO name) (P-STUP-00173)

P-STUP-00173	Additional descriptive text (AO name)
Description	Descriptive text (architecture object) that is additionally appended in the event of an error message.
Parameter	error_ao_name
Data type	STRING
Data range	Maximum 83 characters
Dimension	----
Default value	*
Remarks	* Note: The default value of variables is a blank string.

2.36.8 Logging a CNC resets (P-STUP-00166)

P-STUP-00166	Logging a CNC reset as event in error message output
Description	This parameter defines whether the CNC reset triggered by the user is included as an event in the error message log. Previous error messages are acknowledged when the CNC is reset. This always occurs regardless of the setting of P-STUP-00166.
Parameter	no_error_message_at_reset
Data type	BOOLEAN
Data range	0: a CNC reset is logged as warning ID 270076 in the error message output. 1 a CNC reset is not logged
Dimension	----

Default value	0
Remarks	

2.36.9 Name of the file for error message texts of CNC cycles

P-STUP-00200	Name of the file for error message texts of CNC cycles
Description	Name of the file containing the error message texts which belong to the ID (error number). These can be used for output to the log file. This file is used to assign an error number to the related error message text. The file contains one line in the following format for each error ID: <Error-ID> TABULATOR <Error-Text>
Parameter	error_text_cycles_of_id
Data type	STRING
Data range	Maximum 256 characters
Dimension	----
Default value	err_text_cycles_eng.txt
Remarks	

2.37 Filter parameters for error handling on the platform (error_filter[i].*)

Users/machine manufacturers parameterise the required actions or filtering operations for error messages for each platform/channel/axis. For more information, see [FCT-M7// Error management]

Structure name	Index
error_filter[i]	0 ≤ i ≤ 3 (maximum number of error filters: 4)

2.37.1 Error cause (P-STUP-00186)

P-STUP-00186	Cause of error
Description	The individual error codes can be listed as numbers or texts, whereby the entire row must comply with the following syntax: (number text) { , (number text) } where: number:= CNC error number text:=" error-specific text " Example: error_filter[0].reason "D012:", 123000, 123001 If an error is logged, the program looks in the defined platform/channel/axis filters whether a user-specific filter rule is defined for it.
Parameter	error_filter[i].reason where i = 0 ... 3 (maximum number of filters, application-specific)
Data type	STRING
Data range	Maximum of 96 characters
Dimension	----
Default value	*
Remarks	* Note: The default value of variables is a blank string.

2.37.2 Error action (P-STUP-00187)

P-STUP-00187	Error action
Description	Action that is to be performed if an error occurs.
Parameter	error_filter[i].action where i = 0 ... 3 (maximum number of filters, application-specific)
Data type	STRING
Data range	ACTION = NONE DRIVE_STATE_REQ PRE_RUN_STATE_REQ RUN_STATE_REQ NONE: No action DRIVE_STATE_REQ: Read out drive status PRE_RUN_STATE_REQ: Error at start-up of the controller bus in PRE-run state RUN_STATE_REQ: Error at start-up of the controller bus in Run state
Dimension	----
Default value	*
Remarks	For SERCOS drive profiles: DRIVE_STATE_REQ: S-0-0095 diagnostic PRE_RUN_STATE_REQ: S-0-0021: list of unknown operation data in CP2 -> CP3, command 127 RUN_STATE_REQ: S-0-0022: list of unknown operation data in CP3 -> CP4, command 128 For ProfiDrive profiles: <all actions> Parameter 945 For CANopen profiles <all actions> Parameter ID603F * Note: The default value of variables is a blank string.

2.37.3 Conditional activation (P-STUP-00188)

P-STUP-00188	Conditional activation
Description	This filter rule is activated when the corresponding bit is set via the user interface or the PLC (HLI::ControlUnit- Activating error filter rules - Platform).
Parameter	error_filter[i].conditional_activation where i = 0 ... 3 (maximum Number of filters, application-specific)
Data type	UNS32
Data range	32-bit
Dimension	----
Default value	0
Remarks	Parameterisation example: <i>error_filter[0].conditional_activation 0x2</i> An activation bit = 0 means that the action is always executed.

2.37.4 Conditional action (P-STUP-00189)

P-STUP-00189	Conditional action
Description	Action that is to be executed if an error occurs and if the condition applies.
Parameter	error_filter[i].conditional_action where i = 0 ... 3 (maximum number of filters, application-specific)

Data type	STRING
Data range	ACTION = NONE ([HIDE] [FORCE]) FORCE = F_WARNING F_SYNTAX F_ERROR F_SEVERE F_FATAL HIDE = [HIDE] [HIDE_LOG] [HIDE_PRINT] [HIDE_REPORT] NONE: no action HIDE: Suppress every error output HIDE_LOG: Error output to error log file is suppressed HIDE_DISPLAY: Error output is suppressed HIDE_REPORT: Application-specific error output is suppressed F_WARNING: Error is output as a WARNING (remedy class = 0) F_SYNTAX: Error is output as a syntax error (remedy class = 2) F_ERROR: Error due to NC program or other operator action (error remedy class = 5) F_SEVERE: Severe error, requires a warm start (remedy class = 6) F_FATAL: Severe error, requires a complete cold start (remedy class = 7)
Dimension	----
Default value	*
Remarks	* Note: The default value of variables is a blank string.

2.37.5 Conditional filter activation (P-STUP-00190)

P-STUP-00190	Conditional filter activation
Description	The individual error codes can be listed as numbers or texts, whereby the entire row must comply with the following syntax: (number text) { , (number text) } where: number:= CNC error number text := " error-specific text "
Parameter	error_filter[i].conditional_param where i = 0 ... 3 (maximum number of filters, application-specific)
Data type	STRING
Data range	Maximum of 96 characters
Dimension	----
Default value	*
Remarks	Parameterisation example: <i>error_filter[0].conditional_param "D012:", 123, 1001</i> Individual error texts are only checked when the SERCOS drive error S95 is read out. Error numbers are only checked in case of SERCOS drive errors (S21 and S22) and in case of ProfiDrive drive errors (parameter 945). * Note: The default value of variables is a blank string.

2.37.6 Output of additional error information (P-STUP-00191)

P-STUP-00191	Output of additional error information
---------------------	---

Description	This text is forwarded transparently via the CNC_ERROR_INFO data structure if the filter condition applies, i.e. users have a possibility of conditionally also including additional error information in the output.
Parameter	error_filter[i].conditional_output where i = 0 ... 3 (maximum number of filters, application-specific)
Data type	STRING
Data range	Maximum 32 characters
Dimension	----
Default value	*
Remarks	* Note: The default value of variables is a blank string.

2.38 Parameter for scene presentation

2.38.1 Enable scene functionality (P-STUP-00138)

P-STUP-00138	Enable scene functionality
Description	This parameter can enable the scene functionality. The required memory for the scene database is created.
Parameter	enable_scene
Data type	BOOLEAN
Data range	TRUE/ FALSE
Dimension	---
Default value	FALSE
Remarks	

2.38.2 Name of the list file for scene presentation (P-STUP-00137)

P-STUP-00137	Name of the list file for scene presentation
Description	This parameter defines the path and filename of the configuration file for scene presentation.
Parameter	scene_mds
Data type	STRING
Data range	Maximum 256 characters (application-specific)
Dimension	---
Default value	*
Remarks	* Note: The default value of variables is a blank string.

2.39 Setting units for PLCopen



These functions are available as of CNC Build V2.11.2808.02.

2.39.1 Positions for linear axes (P-STUP-00192)

P-STUP-00192	Setting the units of linear axis positions for PLCopen
Description	This parameter can be set for PLCopen function blocks and transfers the unit of linear axis position specifications to the function block.
Parameter	plcopen_unit.linear.position
Data type	STRING
Data range	um Positions in μm mm Positions in mm m Positions in m
Dimension	----
Default value	*
Remarks	If none of the above mentioned unit specifications is configured, positions are specified in the unit 0.1 μm * Note: The default value of variables is a blank string.

2.39.2 Velocities for linear axes (P-STUP-00193)

P-STUP-00193	Setting the linear axis velocity unit for PLCopen
Description	This parameter can be set for PLCopen function blocks and transfers the unit of linear axis velocity specifications to the function block.
Parameter	plcopen_unit.linear.velocity
Data type	STRING
Data range	um/s Velocity specifications in $\mu\text{m/s}$ mm/min Velocity specifications in mm/min mm/min Velocity specifications in m/min m/s Velocity specifications in m/s mm/s Velocity specifications in mm/s
Unit	----
Default value	um/s
Remarks	

2.39.3 Velocities for linear axes (P-STUP-00194)

P-STUP-00194	Setting the linear axis velocity unit for PLCopen
Description	This parameter can be set for PLCopen function blocks and transfers the unit of linear axis velocity specifications to the function block.
Parameter	plcopen_unit.linear.acceleration
Data type	STRING
Data range	mm/s ² Acceleration in mm/s ² m/s ² Acceleration in m/s ² mm/min ² Acceleration in mm/min ²
Unit	----
Default value	mm/s ²
Remarks	

2.39.4 Jerk for linear axes (P-STUP-00195)

P-STUP-00195	Setting the linear axis jerk unit for PLCopen
Description	This parameter can be set for PLCopen function blocks and transfers the unit of linear axis jerk specifications to the function block.
Parameter	plcopen_unit.linear.jerk
Data type	STRING
Data range	mm/s ³ Jerk in mm/s ³ m/s ³ Jerk in m/s ³ mm/min ³ Jerk in mm/min ³
Unit	----
Default value	mm/s ³
Remarks	

2.39.5 Positions for rotary axes (P-STUP-00196)

P-STUP-00196	Setting the units of rotary axis positions for PLCopen
Description	This parameter can be set for PLCopen function blocks and transfers the unit of rotary axis position specifications to the function block.

Parameter	plcopen_unit.rotatory.position
Data type	STRING
Data range	mdeg Positions in mil° deg Positions in ° rev Positions in revolutions U Positions in revolutions
Dimension	----
Default value	*
Remarks	If none of the above mentioned unit specifications is configured, positions are specified in the unit 10 ⁻⁴ ° * Note: The default value of variables is a blank string.

2.39.6 Speeds for rotary axes (P-STUP-00197)

P-STUP-00197	Setting the units of rotary axis speeds for PLCopen
Description	This parameter can be set for PLCopen function blocks and transfers the unit of rotary axis speed specifications to the function block.
Parameter	plcopen_unit.rotatory.speed
Data type	STRING
Data range	mdeg/s Speeds in milli°/s U/min Speeds in revolutions/s U/s Speeds in revolutions/s rpm Speeds in revolutions/min rev/min Speeds in revolutions/min rev/s Speeds in revolutions/s deg/min Speeds in °/min deg/s Speeds in °/s
Unit	----
Default value	mdeg/s
Remarks	

2.39.7 Speeds for rotary axes (P-STUP-00198)

P-STUP-00198	Setting the units of rotary axis speed for PLCopen
Description	This parameter can be set for PLCopen function blocks and transfers the unit of rotary axis speed specifications to the function block.
Parameter	plcopen_unit.rotatory.acceleration
Data type	STRING
Data range	m/s ² Acceleration in m/s ² rev/s ² Acceleration in revolutions/s ² U/s ² Acceleration in revolutions/s ² deg/min ² Acceleration in °/s ²
Unit	----
Default value	deg/s ²
Remarks	

2.39.8 Jerk for rotary axes (P-STUP-00199)

P-STUP-00199	Setting the units of rotary axis jerk for PLCopen
Description	This parameter can be set for PLCopen function blocks and transfers the unit of rotary axis jerk specifications to the function block.
Parameter	plcopen_unit.rotatory.jerk
Data type	STRING
Data range	deg/s ³ Jerk in °/s ³ rev/s ³ Jerk in revolutions/s ³ U/s ³ Jerk in revolutions/s ³ deg/min ³ Jerk in °/min ³
Unit	----
Default value	deg/s ³
Remarks	

2.40 Time-optimised setting for the simulation of online machining time calculation (P-STUP-00022)

P-STUP-00022	Time-optimised setting for channel mode of the simulation of online machining time calculation
Description	This parameter enables the time-optimised setting for the channel mode Simulation of online production time calculation in the channel. When the parameter is enables, functionalities not required in the NC channel are disabled and the supply of display data and control units of the PLC are reduced to the required data.
Parameter	online_prod_time_opt
Data type	BOOLEAN
Data range	0 – No time optimisation 1 – Time optimisation enabled
Dimension	----
Default value	0
Remarks	The parameter is available as of V3.1.3079.19.

3 Example of assigning the start-up list

Configuration with 2 channels and a total of 6 axes:

```

# *****
# *****
configuration TWO_CHANNEL_CKONFIGURATION
kanal_anzahl 2
ext_var_max 200
plc_mode 0
sercos_hochlauf 1
listen_ASCII
# *****
# Lists of 1st channel
# *****
default_sda_mds ..\listen\default_sda.lis
sda_mds[0] ..\listen\sda_mds1.lis
werkz_data[0] ..\listen\werkz_d1.lis
nullp_data[0] ..\listen\nullp_d1.lis
pzb_data[0] ..\listen\pzb_d1.lis
ve_var[0] ..\listen\ext_var1.lis
fb_storage_size[0] 0x200000
# *****
# Lists of 2nd channel
# *****
sda_mds[1] ..\listen\sda_mds2.lis
werkz_data[1] ..\listen\werkz_d2.lis
nullp_data[1] ..\listen\nullp_d2.lis
pzb_data[1] ..\listen\pzb_d2.lis
ve_var[1] ..\listen\ext_var2.lis
fb_storage_size[1] 0x200000
# *****
# Channel-independent lists
# *****
hand_mds ..\listen\hand_mds.lis
hmi[0].objects ..\listen\objects1.lis
hmi[0].mode write+
hmi[1].objects ..\listen\objects2.lis
hmi[1].mode write+
channel[0].objects ..\listen\channel1.lis
channel[0].mode write+
channel[1].objects ..\listen\channel2.lis
channel[1].mode write+
rtconf_lis ..\listen\rtconf.lis
konf_path ..\listen
#
# *****
# Axis machine data
# *****
zahl_mds 6
default_achs_mds ..\listen\default_mds.lis
achs_mds[0] ..\listen\achsmds1.lis
achs_mds[1] ..\listen\achsmds2.lis
achs_mds[2] ..\listen\achsmds3.lis
achs_mds[3] ..\listen\achsmds4.lis
achs_mds[4] ..\listen\achsmds5.lis
achs_mds[5] ..\listen\achsmds6.lis
#
# *****
# Offset value lists
# (masked by comment characters)
# *****
# zahl_kw 4
# achs_kw[0] ..\listen\achskw1.lis
# achs_kw_log_ax_nr[0] 1
# achs_kw[1] ..\listen\achskw2.lis
# achs_kw_log_ax_nr[1] 2
# achs_kw[2] ..\listen\achskw3.lis
# achs_kw_log_ax_nr[2] 3
# achs_kw[3] ..\listen\achskw4.lis
# achs_kw_log_ax_nr[3] 4
#
# *****
# Program paths:
# *****
# path[ <channel_number> ].prg[ <Index> ]
# prg -> Program path specification
# log_nr -> logical program path number

```

```
# typ -> Program path type ( 0x01 main program path )
# ( 0x02 Subroutine path )
# ( 0x03 main program and subroutine path )
# priority -> Specifies the program path priority if
# several program paths of the same type are specified.
#
# Program path Channel 1
pfad[0].prg[0]      x:\nc_prg
pfad[0].log_nr[0]  1
pfad[0].typ[0]     0x03 # Main program and subroutine path
pfad[0].prioritaet[0] 1
#
pfad[0].prg[1]     x:\nc_prg\cycles
pfad[0].log_nr[1]  2
pfad[0].typ[1]     0x02 # Subroutine path
pfad[0].prioritaet[1] 2
#
pfad[0].prg[2]     x:\test
pfad[0].log_nr[2]  3
pfad[0].typ[2]     0x03 # Main program and subroutine path
pfad[0].prioritaet[2] 3
#
# Program path Channel 2
pfad[1].prg[0]     ..\prg
pfad[1].log_nr[0]  1
pfad[1].typ[0]     0x01 # Main program path
pfad[1].prioritaet[0] 1
#
pfad[1].prg[1]     ..\prg\sub
pfad[1].log_nr[1]  2
pfad[1].typ[1]     0x02 # Subroutine path
pfad[1].prioritaet[1] 2
#
End
```

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P-STUP-00113	22		
P-STUP-00114	22		
P-STUP-00115	23		
P-STUP-00117	23		
P-STUP-00120	37		
P-STUP-00130	28		
P-STUP-00131	28		
P-STUP-00132	29		
P-STUP-00133	29		
P-STUP-00134	29		
P-STUP-00137	45		
P-STUP-00138	45		
P-STUP-00145	27		
P-STUP-00146	26		
P-STUP-00166	40		
P-STUP-00167	38		

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