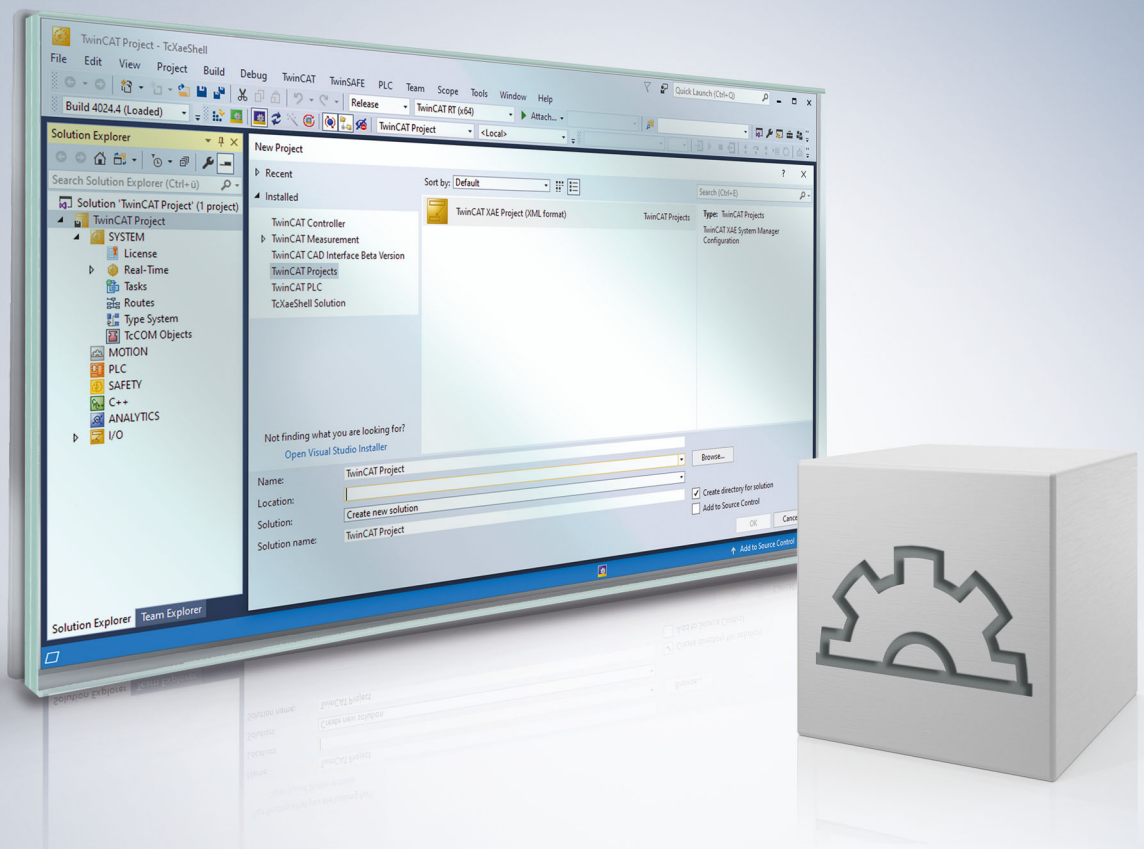
BECKHOFF New Automation Technology

Manual | EN

NC Errors

TwinCAT 3 | Motion



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1 Foreword

1.1 Notes on the documentation

This description is intended exclusively for trained specialists in control and automation technology who are familiar with the applicable national standards.
The documentation and the following notes and explanations must be complied with when installing and commissioning the components.
The trained specialists must always use the current valid documentation.

The trained specialists must ensure that the application and use of the products described is in line with all safety requirements, including all relevant laws, regulations, guidelines, and standards.

Disclaimer

The documentation has been compiled 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 notice.
Claims to modify products that have already been supplied may not be made on the basis of the data, diagrams, and descriptions in this documentation.

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1.2 For your safety

Safety regulations

Read the following explanations for your safety.
Always observe and follow product-specific safety instructions, which you may find at the appropriate places in this document.

Exclusion of liability

All the components are supplied in particular hardware and software configurations which are appropriate for the application. Modifications to hardware or software configurations other than those described in the documentation are not permitted, and nullify the liability of Beckhoff Automation GmbH & Co. KG.

Personnel qualification

This description is only intended for trained specialists in control, automation, and drive technology who are familiar with the applicable national standards.

Signal words

The signal words used in the documentation are classified below. In order to prevent injury and damage to persons and property, read and follow the safety and warning notices.

Personal injury warnings

⚠ DANGER
Hazard with high risk of death or serious injury.

⚠ WARNING
Hazard with medium risk of death or serious injury.

⚠ CAUTION
There is a low-risk hazard that could result in medium or minor injury.

Warning of damage to property or environment

NOTICE
The environment, equipment, or data may be damaged.

Information on handling the product

This information includes, for example:
recommendations for action, assistance or further information on the product.

1.3 Notes on information security

The products of Beckhoff Automation GmbH & Co. KG (Beckhoff), insofar as they can be accessed online, are equipped with security functions that support the secure operation of plants, systems, machines and networks. Despite the security functions, the creation, implementation and constant updating of a holistic security concept for the operation are necessary to protect the respective plant, system, machine and networks against cyber threats. The products sold by Beckhoff are only part of the overall security concept. The customer is responsible for preventing unauthorized access by third parties to its equipment, systems, machines and networks. The latter should be connected to the corporate network or the Internet only if appropriate protective measures have been set up.

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Beckhoff products and solutions undergo continuous further development. This also applies to security functions. In light of this continuous further development, Beckhoff expressly recommends that the products are kept up to date at all times and that updates are installed for the products once they have been made available. Using outdated or unsupported product versions can increase the risk of cyber threats.

To stay informed about information security for Beckhoff products, subscribe to the RSS feed at https://www.beckhoff.com/secinfo.

2 Overview of NC Errors

Error code (hex)	Description
0x4000 - 0x4FFF: NC error code range	
0x40nn	General errors [▶ 8]
0x41nn	Channel Errors [▶ 10]
0x42nn	Group Errors [▶ 14]
0x43nn	Axis Errors [▶ 36]
0x44nn	Encoder Errors [▶ 44]
0x45nn	Controller Errors [▶ 51]
0x46nn	Drive Errors [▶ 57]
0x4Ann	Table Errors [▶ 62]
0x4Bnn	NC PLC errors [▶ 65]
0x4Cnn	Kinematic Transformation [▶ 72]
0x8000 … 0x8FFF: New extended NC error code range	
0x81nn - 0x811F	Bode plot (diagnosis) [▶ 73]
0x8120 - 0x8FFF	further errors [▶ 75]

See also:

- ADS Return Codes

2.1 General NC Errors

Error(Hex)	Error(Dec)	Error type	Description
4000	**16384**	Internal	**Internal error** Internal system error in the NC on ring 0, no further details.
4001	**16385**	Memory	**Memory error** The ring-0 memory management is not providing the required memory. This is usually a result of another error, as a result of which the controller will halt normal operation (now if not before).
4002	**16386**	Internal	**NC Retain data error (persistent data)** An error occurred when loading the NC Retain data, so that the affected axes are no longer referenced (status bit "Homed" is FALSE). This error can have the following reasons: - no NC Retain data were found - only old NC Retain data were found (old backup data set) - the NC Retain data are corrupt or inconsistent.
4003	**16387**	Parameter	**Parameter for monitoring the NC setpoint output is invalid** The parameter for activating or deactivating the "cyclic monitoring of NC setpoint output for steadiness and consistency" function is invalid. (Special function)
4004	**16388**	Internal	**External error** This error code can be set by an external module (e.g. third-party module) or can be set if an external module has an error.

Error(Hex)	Error(Dec)	Error type	Description
4010	**16400**	Parameter	**Channel identifier not allowed** Either an unacceptable value (not 1...255) has been used, or a channel that does not exist in the system has been named.
4011	**16401**	Parameter	**Group identifier not allowed** Either an unacceptable value (not 1...255) has been used, or a group that does not exist in the system has been named.
4012	**16402**	Parameter	**Axis identifier not allowed** Either an unacceptable value (not 1...255) has been used, or an axis that does not exist in the system has been named.
4013	**16403**	Parameter	**Encoder identifier not allowed** Either an unacceptable value (not 1...255) has been used, or a encoder that does not exist in the system has been named.
4014	**16404**	Parameter	**Controller identifier not allowed** Either an unacceptable value (not 1...255) has been used, or a controller that does not exist in the system has been named.
4015	**16405**	Parameter	**Drive identifier not allowed** Either an unacceptable value (not 1...255) has been used, or a drive that does not exist in the system has been named.
4016	**16406**	Parameter	**Table identifier not allowed** Either an unacceptable value (not 1...255) has been used, or a table that does not exist in the system has been named.
4020	**16416**	Internal	**Missing process image** There is no PLC-axis interface when creating an axis.
4021	**16417**	Internal	**Missing process image** There is no axis-PLC interface when creating an axis.
4022	**16418**	Internal	**Missing process image** There is no encoder-I/O interface when creating an axis.
4023	**16419**	Internal	**Missing process image** There is no I/O-encoder interface when creating an axis.
4024	**16420**	Internal	**Missing process image** There is no drive-I/O interface when creating an axis.
4025	**16421**	Internal	**Missing process image** There is no I/O-drive interface when creating an axis.
4030	**16432**	Internal	**Coupling type not allowed** The master/slave coupling type is not allowed.
4031	**16433**	Internal	**Axis type not allowed** The type specification in the axis generation is inadmissible.
4032	**16434**	Parameter	**Unknown channel type** The NC channel type is unknown. Known types are e.g. an NCI channel, a FIFO channel, etc.
4040	**16448**	Internal	**Axis is incompatible**

Error(Hex)	Error(Dec)	Error type	Description
			The axis is not suitable for the intended purpose. A high speed/low speed axis, for example, cannot function as a slave in an axis coupling.
4050	**16464**	Internal	**Channel not ready to operate** The channel is not complete, and is therefore not ready for operation. This is usually a consequence of problems at system start-up.
4051	**16465**	Internal	**Group not ready to operate** The group is not complete, and is therefore not ready for operation. This is usually a consequence of problems at system start-up.
4052	**16466**	Internal	**Axis not ready to operate** The axis is not complete, and is therefore not ready for operation. This is usually a consequence of problems at system start-up.
4060	**16480**	Internal	**Channel exists** The channel that is to be created already exists.
4061	**16481**	Internal	**Group exists** The group that is to be created already exists.
4062	**16482**	Internal	**Axis exists** The axis that is to be created already exists.
4063	**16483**	Internal	**Table exists** The table that is to be created already exists, or attempts are made to use an already existing table id internally (e.g. for the universal flying saw).
4070	**16496**	Internal	**Axis index not allowed** The location within the channel specified for an axis is not allowed.
4071	**16497**	Internal	**Axis index not allowed** The location within the group specified for an axis is not allowed.

2.2 Channel Errors

Error(Hex)	Error(Dec)	Error type	Description
4101	**16641**	Parameter	**Group index not allowed** The location within the channel specified for a group is not allowed.
4102	**16642**	Address	**Null pointer** The pointer to the group is invalid. This is usually a consequence of an error during system start.
4103	**16643**	Internal	**Missing process image** It is not possible to exchange data with the PLC. Possible causes: 1. The channel has no interface (no interpreter available). 2. The connection to the PLC is faulty.
4104	**16644**	Parameter	**M-function index not allowed** Unacceptable M-function (not 0...159) detected at the execution level.
4105	**16645**	Memory	**No memory**

Error(Hex)	Error(Dec)	Error type	Description
			There is no more system memory available. This is usually the result of another error.
4106	**16646**	Function	**Not ready** The function is not presently available, because a similar function is already being processed. Usually this is a result of access conflicts: more than one instance wants to issue commands to the channel. This can, for example, be the consequence of an incorrect PLC program.
4107	**16647**	Function	**Function/command not supported** A requested function or command is not supported by the channel.
4108	**16648**	Parameter	**Invalid parameter while starting** Parameters to start the channel (TwinCAT-Start) are invalid. Typically there is an invalid memory size or channel type requested.
4109	**16649**	Function	**Channel function (command) is not executable.** A channel function e.g. interpreter start is not executable because the channel is already busy, no program is loaded or in an error state.
410A	**16650**	Function	**ItpGoAhead is not executable.** The requested ItpGoAhead command is not executable because the interpreter is not executing a decoder stop.
4110	**16656**	Parameter	**Error opening a file** The specified file does not exist. Example: NC program unknown.
4111	**16657**	NC programming	**Syntax error when loading** The NC found a syntax error when loading an NC program.
4112	**16658**	NC programming	**Syntax error when interpreting** The NC found a syntax error when processing an NC program.
4113	**16659**	NC programming	**Missing subroutine** The NC found a missing subroutine while loading.
4114	**16660**	Memory	**Loading buffer of interpreter is too small** The capacity of the interpreter loading buffer has been exceeded.
4115	**16661**	Internal	**Symbolism** Reserved, not currently used
4116	**16662**	Internal	**Symbolism** Reserved, not currently used
4117	**16663**	NC programming	**Subroutine incomplete** The header of the subroutine is missing.
4118	**16664**	NC programming	**Error while loading the NC program** The maximum number of loadable NC programs has been reached. Possible cause: Too many subprograms have been loaded from a main program.
4119	**16665**	NC programming	**Error while loading the NC program** The program name is too long.

Error(Hex)	Error(Dec)	Error type	Description
4120	**16672**	NC programming	**Divide by Zero** The NC encountered a computation error during execution: division by 0.
4121	**16673**	NC programming	**Invalid circle parameterization** The NC detected a calculation error during processing: the specified circle is not calculable.
4122	**16674**	NC programming	**Invalid FPU-Operation** The NC encountered an invalid FPU-Operation during execution. This error occurs e.g. by calculating the square root of a negative number.
4130	**16688**	NC programming	**Stack overflow: Subroutines** The NC detected a stack overflow while processing: Too many subroutine levels.
4131	**16689**	NC programming	**Stack underflow: Subroutines** The NC detected a stack underflow while processing: Too many subroutine return commands. **A main program must not be terminated with a return command.**
4132	**16690**	NC programming	**Stack overflow: Arithmetic unit** The NC detected a stack overflow during processing: the calculation is too complex or is not written correctly.
4133	**16691**	NC programming	**Stack underflow: Arithmetic unit** The NC detected a stack underflow during processing: The calculation is too complex or is not written correctly.
4140	**16704**	Parameter	**Register index not allowed** The NC detected an invalid register index during processing: The program contains an invalid specification (not R0...R999) or a pointer register contains an invalid value.
4141	**16705**	NC programming	**G-function index not allowed** The NC encountered an unacceptable G-function (not 0...159) during execution.
4142	**16706**	NC programming	**M-function index not allowed** The NC encountered an unacceptable M-function (not 0...159) during execution.
4143	**16707**	NC programming	**Extended address specification not allowed** The NC encountered an unacceptable extended address (not 1...9) during execution.
4144	**16708**	NC programming	**Index to the internal H-function not allowed** The NC encountered an unacceptable internal H-function in the course of processing. This is usually a consequence of an error during loading.
4145	**16709**	Parameter	**Machine data value not allowed** While processing instructions the NC detected an impermissible value for the machine data (MDB) (not 0…7).
4150	**16720**	Parameter	**Tool compensation parameters cannot be changed here.**

Error(Hex)	Error(Dec)	Error type	Description
			The NC encountered an unacceptable change of parameters for the tool compensation during execution. This can be, for example, a changed tool radius while a circle was programmed.
4151	**16721**	Parameter	**Cannot calculate tool compensation.** The NC encountered an error in the calculation of the tool compensation.
4152	**16722**	NC programming	**Tool compensation** The plane for the tool compensation cannot be changed here. This error occurred for instance by changing the plane when the tool radius compensation is turned on or active.
4153	**16723**	NC programming	**Tool compensation** The D-Word is missing or invalid by turning on the tool compensation.
4154	**16724**	NC programming	**Tool compensation** The specified tool radius is invalid because the value is less or equal zero.
4155	**16725**	NC programming	**Tool compensation** The tool radius cannot be changed here.
4156	**16726**	Internal	**Tool compensation** The collision detection table is full.
4157	**16727**	Internal	**Tool compensation** An internal error occurred when switching on the bottleneck detection.
4158	**16728**	Internal	**Tool compensation** An internal error occurred in the bottleneck detection: Update Reversed Geo failed.
4159	**16729**	NC programming	**Tool compensation** An unexpected combination of geometry types with bottleneck detection turned on was detected.
415A	**16730**	NC programming	**Tool compensation** The programmed inner circle is smaller than the cutter radius.
415B	**16731**	NC programming	**Tool compensation** The bottleneck detection recognized a contour violation.
415C	**16732**	Memory	**No memory** The table for corrected entries is full.
415D	**16733**	Memory	**No memory** The input table for tangential following is full.
415E	**16734**	Memory	**No memory** The executing table for tangential following is full.
415F	**16735**	Internal	**Geometry calculation** The geometric entry for the tangential following cannot be calculated.
4160	**16736**	Internal	**Reserved** Reserved, not currently used
4161	**16737**	Internal	**Reserved** Reserved, not currently used

Error(Hex)	Error(Dec)	Error type	Description
4162	**16738**	Parameter	**Interpolation rules can not be determined** The actual active interpolation rules (G-Code), zero offset shifts or rotation cannot be detected.
4170	**16752**	NC programming	**Error loading: invalid parameter** The NC found an invalid parameter while loading an NC program.
4171	**16753**	Internal	**Invalid contour start position** The NC detected a calculation error during processing: The specified contour cannot be calculated because the start position is not on the contour.
4172	**16754**	Internal	**Reverse: invalid table index** The NC encountered an invalid internal entry index during execution of the retrace function.
4173	**16755**	NC programming	**Invalid G code** Invalid default G code/Wrong expression/syntax in the default G code
4174	**16756**	NC programming	**Error opening the G code file** Error opening the default G code file

2.3 Group Errors

Error(Hex)	Error(Dec)	Error type	Description	
4200	**16896**	Parameter	**Group ID not allowed** The value for the group ID is not allowed because, for example, it has already been assigned, is less than or equal to zero or is greater than 255.	
			Value range: [1 ... 255]	Unit: 1
4201	**16897**	Parameter	**Group type not allowed** The value for the group type is unacceptable because it is not defined. Type 1: PTP group with slaves (servo) Type 4: DxD group with slaves (3D group) Type 5: fast/creep group Type 6: stepper motor group Type 9: encoder group with slaves (servo) …	
			Value range: [1 ... 12]	Unit: 1
4202	**16898**	Initialization	**Master axis index not allowed** The value for the master axis index in an interpolating 3D group is not allowed, because, for example, it has left the value range. Index 0: x-axis (first master axis) Index 1: Y axis (second master axis) Index 2: Z axis (third master axis)	
			Value range: [0, 1, 2]	Unit: 1
4203	**16899**	Initialization	**Slave axis index not allowed (internal error)** The value for the slave axis index in a group is not allowed, because, for example, it has left the value range, the slave position to be used when inserting a new slave connection is already occupied, or because no slave is present when such a connection is being removed.	

Error(Hex)	Error(Dec)	Error type	Description	
			Index 0: first slave axis Index 1: second slave axis Index 2: etc.	
			Value range: [0 ... 7]	Unit: 1
4204	**16900**	Initialization	**Internal error** An unexpected internal error has occurred. The following situations could be the cause: Not enough TC router memory or Windows memory available to build the internal NC objects, internal NC structures and links (pointers between the NC objects) are faulty or missing, a fatal internal error has occurred in the calculation for a stop command, internal checks of the NC own logic and algorithms (self-monitoring software), unexpected modes and cases that are not regularly foreseen but are detected as erroneous. **Often in such an error situation an additional error message is output in the logger (Windows Event Viewer), which can be helpful for more detailed analysis by Beckhoff or the user.**	
4205	**16901**	Parameter	**Cycle time for set execution task (SAF) not allowed** The value of the cycle time for the NC set execution task (SAF 1/2) is not allowed, because it has left the value range.	
			Value range: [0.001 ... 0.1]	Unit: s
4206	**16902**	Initialization	**"**GROUPERR_RANGE_MAXELEMENTSINAXIS **"**	
4207	**16903**	Parameter	**Cycle time for the set preparation task (SVB) not allowed** The value of the cycle time for the NC set preparation task (SVB 1/2) is not allowed, because it has passed outside the value range.	
			Value range: [0.001 ... 1.0]	Unit: s
4208	**16904**	Parameter	**Single step mode not allowed** The flag for the activation or deactivation of single step mode is not allowed. Value 0: passive (buffer mode) Value 1: active (single step mode)	
			Value range: [0, 1]	Unit: 1
4209	**16905**	Parameter	**Group (de)activation invalid (internal error)** The flag for (de)activating the full group is invalid. Value 0: group active Value 1: group passive	
			Value range: [0, 1]	Unit: 1
420A	**16906**	Initialization	**Set execution state (SAF state) not allowed (internal error)** The value for the state of the set execution state machine (SAF state) is not allowed. This error occurs on passing outside the range of values, or if the state machine enters an error state.	
			Value range: [0 ... 5]	Unit: 1
420B	**16907**	Address	**Channel address** The group does not have a channel, or the channel address has not been initialized.	

Error(Hex)	Error(Dec)	Error type	Description
420C	**16908**	Address	**Axis address (master axis)** The group does not have a master axis (or axes) or the axis address(es) has (have) not been initialized.
420D	**16909**	Address	**Master axis address** A master/slave coupling is to be inserted into the group, but there is no valid address for the leading master axis.
420E	**16910**	Address	**Slave axis address** A master/slave coupling is to be inserted into the group, but there is no valid address for the slave axis.
420F	**16911**	Address	**Slave setpoint generator address** A master/slave coupling is to be inserted into the group, but there is no valid address for the slave setpoint generator.
4210	**16912**	Address	**Encoder address** An axis in the group does not have an encoder, or the encoder address has not been initialized.
4211	**16913**	Address	**Controller address** An axis in the group does not have a controller, or the controller address has not been initialized.
4212	**16914**	Address	**Drive address** An axis in the group does not have a drive, or the drive address has not been initialized.
4213	**16915**	Address	**Master setpoint generator address** A group (e.g. FIFO group) does not have a master setpoint generator or the setpoint generator address has not been initialized. There may not be enough memory available.
4214	**16916**	Address	**Axis interface NC to PLC address** Group/axis does not have an axis interface from the NC to the PLC, or the axis interface address has not been initialized.
4215	**16917**	Address	**Slave axis address** An existing master/slave coupling is to be removed from the group, but there is no valid address for the slave axis.
4216	**16918**	Address	**Table unknown** The table, respectively the table ID, is unknown. This table is used for the master/slave coupling or for the characteristic curve.
4217	**16919**	Address	**NcControl address** The NcControl address has not been initialized.
4218	**16920**	Initialization	**Command lock because persistent NC data is waiting to be transferred** Axis is blocked for commands while waiting for valid I/O data to accept the queued persistent NC data.
4219	**16921**	Function	**The scaling mode MASTER-AUTOOFFSET is invalid because no reference table was found.** The scaling mode MASTER-AUTOOFFSET used is invalid in this context because no reference to an existing reference table can be established. This error can occur, for example, when tables are added if no unique reference to an existing reference table can be established (e.g. because the reference is not unique, etc.).
421A	**16922**	Parameter	**The master axis start position does not permit synchronization**.

Error(Hex)	Error(Dec)	Error type	Description
			When a slave axis is being coupled on, the position of the master axis does not permit synchronization at the given synchronization positions.
421B	**16923**	Parameter	**Slave coupling factor (gear ratio) of 0.0 is not allowed.** A master/slave coupling with a gear ratio of 0.0 is being created. This value is not allowed, since it does not correspond to any possible coupling, and division will generate an FPU exception.
421C	**16924**	Function	**Insertion of master axis into group is not allowed.** A master axis is to be inserted into a group at a location that is already occupied by another master axis. Maybe the reconfiguration cannot be done, because this axis has got an existing slave coupling. This master/slave coupling must be revoked before.
421D	**16925**	Function	**Deletion of master axis from group not allowed (internal error).** A master axis is to be removed from a location in a group that is not in fact occupied by master axis.
421E	**16926**	Function	**Function/feature is not supported from the setpoint generator.** A function or feature is not supported from the setpoint generation (e.g. PTP master setpoint generator). This can be in general or only in a special situation.
421F	**16927**	Initialization	**Group initialization** The group has not been initialized. Although the group has been created, the rest of the initialization has not been performed (1. initialization group I/O, 2. initialization group, 3. reset group).
4220	**16928**	Monitoring	**Group not ready / group not ready for new task** The group is being given a new task while it is still in the process of executing an existing task. This request is not allowed because it would interrupt the execution of the previous task. The new task could, for example, be a positioning command, or the "set actual position" function. Precisely the converse relationships apply for the "set new end position" function. In that case, the group/axis must still be actively moving in order to be able to cause a change in the end position.
4221	**16929**	Monitoring	**Requested target velocity is not allowed.** The value requested for the target velocity of a positioning task is less than or equal to zero, larger than the "maximum velocity" (see axis parameters), or, in the case of servo drives, is larger than the "reference velocity" of the axis (see drive parameters).
4222	**16930**	Monitoring	**Requested target position is not allowed (master axis).** The requested value for the target position of a positioning task is not within the software end positions. In other words, it is either less than the minimum software end position or larger than the maximum software end position. This check is only carried out if the relevant end position monitoring is active.
4223	**16931**	Monitoring	**No enable for controller and/or feed (master axis)** The axis enables for the master axis needed for positioning are not present. This can involve the controller enable and/or the relevant, direction-dependent feed enable (see axis interface PlcToNc).

Error(Hex)	Error(Dec)	Error type	Description
4224	**16932**	Monitoring	**Travel path smaller than one encoder increment (internal error)** The travel path that a group/axis is supposed to move is smaller than the physical significance of one encoder increment. In other words the movement is smaller than the scaling factor of the axis. The reaction to this is that the axis is reported as having logically finished without having actively moved. This means that an external error is not generated for the user. This error is also issued for rapid/slow traverse axes if a looping distance with nonzero parameters is smaller than the sum of the creeping and braking distances. In such a case it is not meaningful to either exceed or to fail to reach the target position.
4225	**16933**	Monitoring	**Drive hardware not ready to operate at axis start** During an axis start it is ascertained that the drive hardware is not ready to operate. This can be caused by the following reasons: - the drive is in error state (hardware error) - the drive is in the start-up phase (e.g. after an axis reset preceded by a hardware error) - the drive lacks the controller enable (ENABLE) **The time required for the "start-up" of a drive after a hardware error can be in the range of several seconds.**
4226	**16934**	Monitoring	**The parameters of the emergency stop are invalid.** Either, both, the deceleration and the jerk are less than zero or one of the parameters is weaker than the corresponding parameter of the start data.
4227	**16935**	Function	**Setpoint generator not active** The setpoint generator is inactive such that no instructions are accepted.
4228	**16936**	Monitoring	**Requested travel path/looping distance is not allowed** The requested travel path or looping distance is smaller than the braking distance of the rapid/slow traverse axis.
4229	**16937**	Monitoring	**Requested target position is not allowed (slave axis)** The value for the target position of a positioning task when calculated for the slave axis is not within the software end positions. In other words, it is either less than the minimum software end position or larger than the maximum software end position. This check is only carried out if the relevant end position monitoring is active.
422A	**16938**	Monitoring	**No enable for controller and/or feed (slave axis)** The axis enables for one or more coupled slave axes needed for positioning are not present. This can involve the controller enable and/or the relevant, direction-dependent feed enable (see axis interface PlcToNc).
422B	**16939**	Parameter	**The activation position (position threshold) is out of range of the actual positioning** The activation position (position threshold) of a new axis command (e.g. "new velocity activated at a position") is out of range. E.g. the activation position is before the actual position or behind the target position.
422C	**16940**	Parameter	**The start or activation data of the external setpoint generation are not valid**

Error(Hex)	Error(Dec)	Error type	Description
			This may be caused through: 1. The external setpoint generation is active and a new activation with a start type (1: absolute, 2: relative) unequal to the current one is send. 2. The internal setpoint generation is active (e.g. PTP) and the external one is activated with the start type absolute (2 setpoint generators of the type absolute are not possible).
422D	**16941**	Parameter	**Velocity is not constant** For changing the dynamic parameter 'acceleration' und 'deceleration' the axis has to be in dynamic state without acceleration and deceleration (that means constant velocity).
422E	**16942**	Parameter	**Jerk less than or equal to 0.0 is not allowed** A value less than or equal to 0.0 for the jerk (PTP and CNC) is not allowed, since the jerk is by definition positive, and with a jerk of 0.0, division will generate an FPU exception.
422F	**16943**	Parameter	**Acceleration less than or equal to 0.0 is not allowed** A value less than or equal to 0.0 for the acceleration (PTP and CNC) is not allowed, since the acceleration is positive by definition, and an acceleration of 0.0 will not allow a motion to be generated.
4230	**16944**	Parameter	**Absolute deceleration value less than or equal to 0.0 is not allowed** A value less than or equal to 0.0 for the absolute value of the deceleration (PTP and CNC) is not allowed, since the absolute value of the deceleration is positive by definition, and an absolute value of the deceleration of 0.0 will not allow a motion to be generated.
4231	**16945**	Parameter	**Target velocity less than or equal to 0.0 is not allowed** A value less than or equal to 0.0 or outside the range from 10^{-3} up to 10^{+10} for the target velocity (PTP and CNC) is not allowed, since the target velocity is by definition strictly positive, and with a target velocity of 0.0, division will generate an FPU exception.
4232	**16946**	Monitoring	**Loss of resolution accuracy for requested positioning** The positioning is so long in space or time that decimal places become irrelevant and inaccuracies may occur during positioning (LOSS_OF_PRECISION).
4233	**16947**	Parameter	**Cycle time less than or equal to 0.0 is not allowed** A value less than or equal to 0.0 for the cycle time (PTP and CNC) is not allowed, since the cycle time is by definition strictly positive, and with a cycle time of 0.0, division will generate an FPU exception.
4234	**16948**	Internal	**PTP data type <intasdouble> range exceeded** Such extreme parameters have been supplied for the start task, the override or the new target position that the internal data type loses its precision.
4235	**16949**	Function	**PTP LHL velocity profile cannot be generated (internal error)** Such extreme parameters have been supplied for the start task, the override or the new target position that it is not possible to generate a velocity profile of the type LHL (Low-High-Low).
4236	**16950**	Function	**PTP HML velocity profile cannot be generated (internal error)**

Error(Hex)	Error(Dec)	Error type	Description
			Such extreme parameters have been supplied for the override or the new target position that it is not possible to generate a velocity profile of the type HML (High-Middle-Low).
4237	**16951**	Address	**Start data address is invalid** The address of the start data is invalid.
4238	**16952**	Parameter	**Velocity override (start override) is not allowed** The value for the velocity override is not allowed, because it is less than 0.0% or more than 100.0% (see axis interface PlcToNc). Here, 100.0 % corresponds to the integral value 1000000 in the axis interface. Value range: [0 ... 1000000]
4239	**16953**	Parameter	**Start type not allowed** The start type supplied does not exist.
423A	**16954**	Monitoring	**Velocity overshoot** The new dynamics with the parameterized jerk is so weak that a velocity overshoot is imminent under given boundary conditions. The command is therefore not supported.
423B	**16955**	Parameter	**Start parameter for the axis structure is invalid** External or internal parameters for the start structure for a positioning task are invalid. Thus, for instance, the scaling factor, the SAF cycle time or the requested velocity may be less than or equal to zero, which is not allowed.
423C	**16956**	Parameter	**Override generator initialization parameter invalid** One of the override generator (re)initialization parameters is invalid.
423D	**16957**	Monitoring	**Slave axis has not setpoint generator (internal error)** It is found that a slave axis within a group does not have a valid slave generator (setpoint generator). A slave axis and a slave setpoint generator must always be present as a pair. This is an internal error.
423E	**16958**	Function	**Table is empty** Either the SVB table or the SAF table does not contain any entries.
423F	**16959**	Function	**Table is full** The SVB table or the SAF table has no more free lines.
4240	**16960**	Memory	**No memory available** The SVB memory allocation for the dynamic entry in SAF table has failed.
4241	**16961**	Function	**Table already contains an entry (internal error)** The SAF table entry was canceled because an entry already exists by mistake.
4242	**16962**	Function	**Stop is already active** The stop instruction is not forwarded, because it has already been activated.
4243	**16963**	Function	**Compensation has not been carried out over the full compensation section** The compensations start parameters do not permit compensation over the full section to be compensated. For this reason the compensation will be carried out over a smaller section.
4244	**16964**	Parameter	**Internal parameters for the compensation are invalid (internal error)**

Error(Hex)	Error(Dec)	Error type	Description
			Invalid internal parameters or start parameters of the lower-level generator
4245	**16965**	Function	**Compensation active** The start of the compensation was refused, because the compensation is already active or the master/slave axis is not moved actively at all, which makes an execution of the compensation impossible.
4246	**16966**	Function	**Compensation not active** The stop of the compensation was denied because the compensation is not active.
4247	**16967**	Function	**Compensation type invalid** The type supplied for the section compensation is invalid. At the present time only compensation type 1 (trapezoidal velocity profile) is allowed.
4248	**16968**	Function	**Axis address for compensation invalid (internal error)** The address of the master of slave axis on which the section compensation is to act is invalid. This is an internal error.
4249	**16969**	Address	**Invalid slave address (internal error)** The specified slave address for online coupling/decoupling is invalid.
424A	**16970**	Function	**Coupling velocities not allowed** The velocity of what is to become the master axis is 0, which means that online coupling is not possible.
424B	**16971**	Function	**Coupling velocities not constant** The velocity of what is to become the master axis and the velocity of what is to become the slave axis are not constant, so that on-line coupling is not possible.
424C	**16972**	Parameter	**Cycle time less than or equal to 0.0 is not allowed** A value less than or equal to 0.0 for the cycle time (Slave) is not allowed, since the cycle time is by definition strictly positive, and with a cycle time of 0.0, division will generate an FPU exception.
424D	**16973**	Function	**Decoupling task not allowed** The slave axis is of such a type (e.g. a table slave) or is in such a state (master velocity 0) that online decoupling is not possible.
424E	**16974**	Function	**Function not allowed** The function cannot logically be executed, e.g. some commands are not possible and not allowed for slave axes.
424F	**16975**	Parameter	**No valid table weighting has been set** The weighting factor of each table is 0, so that no table can be read.
4250	**16976**	Function	**Axis start type, actual position type or end position type not allowed** The start type for a positioning task in invalid. Valid start types are: ABSOLUTE (1), RELATIVE (2), ENDLESS POSITIVE (3), ENDLESS NEGATIVE (4), MODULO (5),

Error(Hex)	Error(Dec)	Error type	Description
			, etc. Furthermore, it is possible that the types for setting a new actual position or moving to a new end position are invalid.
4251	**16977**	Function	**Function is not supported** An NC function has been activated that is currently not released for use, or which is not even implemented. This can be a command which is not possible or not allowed for master axes.
4252	**16978**	Monitoring	**State of state machine invalid (internal error)** The state for one of the internal state machines is invalid. This is an internal error.
4253	**16979**	Monitoring	**PLC reference cam became free too soon** During the referencing process for an axis it is moved in the direction of the PLC referencing cam, and is only stopped again when the cam signal is reached. After the axis has then also physically stopped, the referencing cam must remain occupied until the axis subsequently starts back down from the cam in the normal way.
4254	**16980**	Monitoring	**Distance monitoring between activation of the hardware latch and appearance of the I/O sync pulse** When the distance monitoring is active, a check is kept on whether the number of increments between activation of the hardware latch and occurrence of the sync pulse (zero pulse) has become smaller than a pre-set value. If this case has occurred, this error will be generated (see parameters for the incremental encoder).
4255	**16981**	Memory	**No memory available** The dynamic memory allocation for the setpoint generator, the SVB table or the SAF table has failed.
4256	**16982**	Monitoring	**The table slave axis has no active table** Although the table slave axis has tables, none of the tables is designated as active. If this occurs during the runtime the whole master/slave group is stopped by a runtime error.
4257	**16983**	Function	**Function not allowed** The requested function or the requested task is not logically allowed. An example for such an error message would be "set an actual position" for an absolute encoder (M3000, KL5001, etc.).
4258	**16984**	Function	**Stopping compensation not allowed** It is not possible to stop the compensation, since compensation is already in the stopping phase.
4259	**16985**	Function	**Slave table is being used** The slave table cannot be activated, because it is currently being used.
425A	**16986**	Function	**Master or slave axis is processing a task (e.g. positioning command) while coupling is requested** A master/slave coupling of a certain slave type (e.g. linear coupling) cannot be executed, because either the master axis or the future slave axis is not at standstill, but executes a task (e.g. a positioning) at the coupling time. For this couple type this is not allowed.
425B	**16987**	Parameter	**Slave (start) parameter is incorrect**

Error(Hex)	Error(Dec)	Error type	Description
			One of the slave start/coupling parameters is not allowed (Coupling factor is zero, the master position scaling of a cam plate is zero, etc.).
425C	**16988**	Parameter	**Slave type is wrong** The slave type does not match up to the (SVB) start type.
425D	**16989**	Function	**Axis stop is already active** The axis stop/Estop is not initiated, because the stop is already active.
425E	**16990**	Function	**Maximum number of tables per slave generator reached** The maximum number of tables per slave generator is reached (e.g. "MC_MultiCamIn" is limited to 4 tables).
425F	**16991**	Function	**The scaling mode is not allowed** The used scaling is invalid in this context. Either the mode is not defined or not yet implemented or it cannot be implemented in this constellation. For example, the MASTER-AUTOOFFSET mode cannot be used if relative coupling is performed, since there is a contradiction here. Furthermore, the MASTER-AUTOOFFSET mode cannot be used when coupling for the first time, since no reference to an existing reference table coupling (reference table) can be established here.
4260	**16992**	Monitoring	**Controller enable** The controller enable for an axis or for a coupled slave axis is not present (see axis interface PlcToNc). This error occurs if the controller enable is withdrawn while an axis or a group of axes (also a master/slave group) is being actively positioned. The error also occurs if a PTP axis or a coupled slave axis is started without controller enable.
4261	**16993**	Function	**Table not found** No table exists with the ID prescribed or the table ID is not unique.
4262	**16994**	Function	**Incorrect table type** The table referred to in the function is of the incorrect type.
4263	**16995**	Function	**Single step mode** This error occurs if single step mode is selected for a group or axis and a new task is requested while one of the individual tasks is still being processed.
4264	**16996**	Function	**Group task unknown (asynchronous table entry)** The group has received a task whose type or sub-type is unknown. Valid tasks can be single or multi-dimensional positioning tasks (Geo 1D, Geo 3D), referencing tasks, etc.
4265	**16997**	Function	**Group function unknown (synchronous function)** The group has received a function whose type is unknown. Valid functions are "Reset", "Stop", "New end position", "Start/stop section compensation", "Set actual position", "Set/reset calibration state" etc.
4266	**16998**	Function	**Group task for slave not allowed** Group tasks are usually only possible for master axes, not for slave axes. A slave axis only moves as an indirect result of a positioning task given to its associated master axis. A slave cannot therefore receive an order directly. Exception: see axis parameter "Allow motion commands for slave axes"

Error(Hex)	Error(Dec)	Error type	Description
4267	**16999**	Function	**Group function for slave not allowed** Group functions are in principle only possible for master axes, not for slave axes. The only exception is represented by the "Start/stop section compensation" function, which is possible both for masters and for slaves. A slave cannot directly execute any other functions beyond this.
4268	**17000**	Function	**NCI setpoint generator is inactive** An NCI command such as "StopAndKeep" is sent to a logically inactive DXD group or to a group with the channel override state zero. However, it is expected that the NCI group is actively in setpoint generation for the implementation of this command. This error can occur in connection with the functions "delete distance to go" and "measurement event (latch actual position)".
4269	**17001**	Parameter	**Start position = target position** Invalid position parameters.
426A	**17002**	Parameter	**Parameters of the delay-generator are invalid** Invalid external/internal parameters of the delay generator (delay time, cycle time, tics)
426B	**17003**	Parameter	**External parameters of the compensation are invalid** Invalid external parameters of the superimposed functionality (acceleration, deceleration, velocity, process velocity, length)
426C	**17004**	Parameter	**Invalid override type** The selected override type is invalid.
426D	**17005**	Function	**Activation position under/overrun** The requested activation position is located in the past of the master (e.g. when exchanging a cam plate).
426E	**17006**	Function	**Activation impossible: Master at standstill** The required activation of the correction is impossible since the master axis is not moving. An accurate synchronization is not possible, because the master axis is at standstill and the slave axis is not yet synchronized.
426F	**17007**	Function	**Activation mode not possible** The requested activation mode is not possible when the slave axis is moving. Otherwise, the slave dynamics would be abruptly set to zero.
4270	**17008**	Parameter	**Start parameter of the compensation invalid** One of the dynamic parameters of the compensation is invalid (necessary condition): acceleration (>0) deceleration (>0) process velocity (>0)
4271	**17009**	Parameter	**Start parameter of the compensation invalid** Velocity overshoot is negative.
4272	**17010**	Parameter	**Start parameter of the compensation invalid** The section on which the compensation is to occur is not positive.
4273	**17011**	Monitoring	**Target position under/overrun (internal error)** The position (calculated from the modulo target position) where the axis should stand at end of oriented stop has been run over.
4274	**17012**	Monitoring	**Target position will be under/overrun (internal error)**

Error(Hex)	Error(Dec)	Error type	Description
			The position designated for the end of the oriented stop (calculated from the modulo target position) is too close and will be overrun.
4275	**17013**	Parameter	**Group parameter is invalid** A group parameter is invalid. This can be, for example, a parameterized velocity, acceleration, deceleration, jerk or NC cycle time whose value has been parameterized to be less than or equal to zero.
4276	**17014**	Monitoring	**Group error at the start of the setpoint generation** When starting the setpoint generation, e.g. for the flying saw, different parameters or states can lead to this error. For example, dynamic parameters such as acceleration, deceleration and jerk may be invalid (less than or equal to zero), or the NC cycle time or the override value may be outside the range of 0-100 % at the start.
4277	**17015**	Monitoring	**Dynamic parameters not permitted (internal error)** The dynamic parameters resulting from internal calculation like acceleration, deceleration and jerk are not permitted.
4279	**17017**	Monitoring	**New target position is invalid or cannot be reached** A newly commanded target position is invalid, since it has either already been passed over or is passed over during a stop with the momentarily acting dynamics.
427A	**17018**	Monitoring	**New travel velocity or final velocity is invalid** For a new command, either the required travel velocity or the required final velocity (target velocity in the target position) is invalid. The travel velocity must always be greater than zero and the final velocity must always be greater than or equal to zero (default case is zero).
427B	**17019**	Monitoring	**New final velocity or new target position is invalid** For a new command, either the requested final velocity (target velocity in the target position) or the requested target position is invalid. The final velocity must always be greater than or equal to zero (default case is zero).
427C	**17020**	Monitoring	**New travel velocity is invalid** A newly commanded travel velocity is invalid because it is either less than or equal to zero or other reasons do not allow this velocity.
427D	**17021**	Monitoring	**Internal start mode is invalid** The start mode is invalid for a new command or is not permitted in this travel situation. A user cannot directly influence the start mode.
427E	**17022**	Monitoring	**A requested movement command could not be realized (BISECTION)** A requested movement command could not be realized using the requested parameters. The movement command has been executed best possible and this message is therefore to be understood just as a warning. Examples: An axis start is requested in motion in an unfavorable dynamic situation (acceleration phase) in which the travel distance is too short or the velocity is significantly too high. Another possibility is a slave axis that is decoupled during movement in an unfavorable dynamic situation and then given a start command, as in the previous case.
427F	**17023**	Monitoring	**The new target position either has been overrun or will be overrun**

Error(Hex)	Error(Dec)	Error type	Description
			The new target position either has been overrun or will be overrun, since until there it is impossible to stop. An internal stop command is commended.
4280	**17024**	Monitoring	**Group not ready / group not ready for new task (internal error / information)** The group is being given a new task while it is still in the process of executing an existing task. This request is not allowed because it would interrupt the execution of the previous task. The new task could, for example, be a positioning command, or the "set actual position" function. Precisely the converse relationships apply for the "set new end position" function. In that case, the group/axis must still be actively moving in order to be able to cause a change in the end position.
4281	**17025**	Parameter	**Parameters of the oriented stop are not allowed.** The modulo target position must not be lower than zero and not greater than or equal to the encoder modulo period (e.g. in the interval [0.0,360.0]). **Even in case of an error, the axis is stopped safely, but then it is not at the desired oriented position afterwards.**
4282	**17026**	Monitoring	**The modulo target position of the modulo-start is invalid.** The modulo target position is outside of the valid parameter range. So the position value should not be lower than zero and not greater or equal than the encoder modulo-period (e.g. in the interval [0.0,360.0] for the modulo start type "SHORTEST_WAY" (261)).
4283	**17027**	Parameter	**The activation mode is not allowed.** The activation mode may have been used for online change, scaling, as well as for online change of the motion function. However, the activation mode used is not valid in this context. Either the mode is not defined or not yet implemented or it cannot be implemented in this constellation (e.g. if linear tables with an illegal cyclic activation mode NEXTCYCLE or NEXTCYCLEONCE are used). In other cases the mode is valid in principle, but the command cannot be implemented because the function already executes a task.
4284	**17028**	Parameter	**The parameterized jerk rate is not allowed.** The jerk rate is smaller than the minimum jerk rate. The minimum jerk rate is 1.0 (e.g. mm/s^3).
4285	**17029**	Parameter	**The parameterized acceleration or deceleration is not permitted.** The parameterized acceleration or deceleration is lower than the permitted minimum acceleration. The value for minimum acceleration is calculated from minimum jerk rate and NC cycle time (minimum jerk rate multiplied with NC cycle time). The unit for example is mm/s^2.
4286	**17030**	Parameter	**The parameterized velocity is not permitted.** The parameterized target velocity is lower than the minimum velocity (but the value zero is permitted). The value for minimum velocity is calculated from the minimum jerk rate and the NC cycle time (minimum jerk rate multiplied with the square of the NC cycle time). The unit for example is mm/s.
4287	**17031**	Monitoring	**Activation cannot be executed due to a pending activation.**

Error(Hex)	Error(Dec)	Error type	Description
			An activation, such as "CamIn", "CamScaling" or "WriteMotionFunction" cannot be executed due to a pending activation (e.g. "CamIn", "CamScaling", "WriteMotionFunction"). There can only be one activation at a time.
4288	**17032**	Monitoring	**Illegal combination of different cycle times within an axis group** Within a logical axis group, different cycle times have been recognized for the common setpoint generation or for the I/O processing of an axis. This situation can occur both when creating a master/slave coupling and when configuring a 3D or FIFO group (inserting main, additional or slave axes).
4289	**17033**	Monitoring	**Invalid axis motion reversal** Due to the current dynamic state (current velocity, acceleration and jerk) a motion reversal would be caused. To avoid this motion reversal the axis command is not performed and the previous system state restored.
428A	**17034**	Monitoring	**Illegal command timing, because another instruction with future activation position is active.** A command cannot be accepted because another command with a future activation position is already valid at this time (e.g. "Approaching a new velocity from an activation position" or "Reaching a new velocity at an activation position").
428B	**17035**	Monitoring	**Stop-calculation routine (internal error)** Due to an internal error in the stop-calculation routine the current commando cannot be performed. The previous system state is restored.
428C	**17036**	Monitoring	**A command with activation position cannot fully be performed because the remaining path is too short.** A command with activation position (threshold) like "approaching a new velocity at a position" can be just partially executed because the path from the actual position to the activation position is too short.
428D	**17037**	Monitoring	**Invalid decouple type** The command to release a slave coupling with subsequent restart command has been called with an invalid decoupling or restart type.
428E	**17038**	Monitoring	**Illegal target velocity when decoupling a slave axis** The command to release a slave coupling with subsequent restart command has been called with an impermissible target velocity [1 < V < Vmax].
428F	**17039**	Monitoring	**Activation new dynamic parameters cannot be performed.** The command to activate new dynamic parameters such as acceleration, deceleration and jerk cannot be executed, as this would require a new assigned travel velocity. This error situation can occur, for example, if the axis is close to the target position in the accelerated state and the dynamics parameters are reduced.
4290	**17040**	Monitoring	**A command with activation position cannot be executed because the axis is already in the brake phase.**

Error(Hex)	Error(Dec)	Error type	Description
			A command with activation position (threshold) e.g. "approaching new velocity at position" cannot be executed because the axis is already in the brake phase and the remaining path from the actual position to the activation position is too short.
4291	**17041**	Monitoring	**Jerk scaling of the decouple routine when decoupling a slave axis cannot find a valid solution.** Internal jerk scaling of decouple routine cannot evaluate a valid solution (decoupling slave axis and transform to master axis). Otherwise, an unexpected velocity overshoot, motion reversal or exceeding of the target position could occur.
4292	**17042**	Monitoring	**Command cannot be executed because the command buffer is full.** The command is rejected because the command buffer is full filled.
4293	**17043**	Internal	**Command is rejected due to an internal error in the Look Ahead (internal error).** The command is rejected due to an internal error in the "look ahead".
4294	**17044**	Monitoring	**Command is rejected because the new travel velocity cannot be implemented.** The command is rejected, because the new travel velocity (target velocity) *Vrequ* is not realizable and an internal optimizing is impossible.
4295	**17045**	Monitoring	**Successive commands have the same end position.** Successive commands have the same end position. So the travel path is zero.
4296	**17046**	Monitoring	**Logical direction of travel of the axis is inconsistent with the parameterized direction of travel of the buffer command.** In the extended buffer mode, where the actual end position is replaced by the new buffer start position, the logical positioning direction is inconsistent with the direction of the buffer command (=> contradiction). A buffered command (*BufferMode, BlendingLow, BlendingPrevious, BlendingNext, BlendingHigh*) is rejected with error 0x4296 if the command is using the Beckhoff specific *optional BlendingPosition* but the blending position is located beyond the target position of the previous motion command.
4297	**17047**	Monitoring	**Command is rejected because the remaining distance in the current segment is too short.** The remaining distance for positioning is not sufficient, therefore the command cannot be executed. This can be the case, for example, in the BufferMode (BlendingMode), if the remaining distance in the current segment is not sufficient to travel without acceleration and to have reached a specified velocity at the segment change (depending on the BufferMode).
429A	**17050**	Function	**Restart failed.** There is already a motion command in the PTP command buffer and another new motion command, which should modify the existing command by a restart, has failed.
429B	**17051**	Monitoring	**Group error for invalid start parameters**

Error(Hex)	Error(Dec)	Error type	Description
			This error refers to a wrong parameterization of the user (group error). For example, dynamic parameters such as Velo, Acc or Dec could be less than or equal to zero. Other error cases: - BaseFrequence < 0.0 - StartFrequence < 1.0 - StepCount < 1, StepCount > 200 - BaseAmplitude <= 0.0 - StepDuration <= 0.0 - StopFrequence >= 1/(2*CycleTime)
429C	**17052**	Monitoring	**PLC referencing cam is not found.** During the referencing process for an axis it is moved in the direction of the PLC referencing cam. This referencing cam, however, was not found as expected (=> leads to the abortion of the referencing procedure).
429D	**17053**	Monitoring	**PLC referencing cam has not been released again.** During the referencing process for an axis it is moved in the direction of the PLC referencing cam, and is only stopped again when the cam signal is reached. After the axis has also come to a physical standstill, the axis is subsequently started regularly from the cam again. In this case, the reference cam did not become free again as expected when driving down (=> leads to the abortion of the referencing procedure).
429E	**17054**	Monitoring	**I/O sync pulse was not found (only when using hardware latch).** If the hardware latch is activated, a sync pulse (zero pulse) is expected to be found and a sync event triggered following the expiry of a certain time or a certain distance. If this is not the case, the reaction is an error and the abortion of the referencing procedure.
429F	**17055**	Function	**The used buffer mode is unknown or not supported in this context.** The buffer mode used for a PTP command (e.g. ABORTING, etc.) is unknown or not supported in this context.
42A0	**17056**	Internal	**Group/axis consequential error** Consequential error resulting from another causative error related to another axis within the group. Group/axis consequential errors can occur in relation to master/slave couplings or with multiple axis interpolating DXD groups. If, for example, it is detected that the lag error limit of a master axis has been exceeded, then this consequential error is assigned to all the other master axes and slave axes in this group.
42A1	**17057**	Parameter	**Velocity reduction factor for C0/C1 transition is not allowed** A C0 transition describes two geometries which, while they are themselves continuous, no not have either continuous first or second differentials. The velocity reduction factor C0 acts on such transitions. **A C1 transition is characterized by the fact that the two geometries have a continuous course, but are continuously differentiable only once. The velocity reduction factor C1 acts on such transitions.** Value range: [0.0 ... 1.0] — Unit: 1
42A2	**17058**	Parameter	**Critical angle at segment transition not allowed**

Error(Hex)	Error(Dec)	Error type	Description	
			The angle at the segment transition is not allowed.	
			Value range: [0.0 ... 180.0]	Unit: degrees
42A3	**17059**	Parameter	**Radius of the tolerance sphere** The radius of the tolerance sphere is outside the permitted range of values.	
			Value range: [0.0 ... 100.0]	Unit: e.g. mm
42A4	**17060**	Parameter	**Reserved** Reserved, not currently used	
42A5	**17061**	Parameter	**Start type**	
			Value range: [0,1]	Unit: 1
42A6	**17062**	Parameter	**Reserved** Reserved, not currently used	
42A7	**17063**	Parameter	**Blending** Blending is not possible with the given parameters.	
42A8	**17064**	Parameter	**Reserved** Reserved, not currently used	
42A9	**17065**	Parameter	**Curve velocity reduction method not allowed (internal error)** The curve velocity reduction method does not exist.	
42AA	**17066**	Parameter	**Minimum velocity not allowed** The minimum velocity that has been entered is less than 0.0.	
42AB	**17067**	Parameter	**Power function input not allowed (internal error)** The input parameters in the power_() function lead to an FPU exception.	
42AC	**17068**	Parameter	**Dynamic change parameter not allowed** A parameter that regulates the change of dynamics is invalid. Parameter: 1. Absolute path dynamics change: all parameters must be strictly positive. 2. Relative reduction c_f: 0.0 < c_f <= 1.0	
42AD	**17069**	Memory	**Memory allocation error (internal error)** An error occurred during memory allocation.	
42AE	**17070**	Function	**End position (internal error).** The calculated end position differs from the end position in the NC block	
42AF	**17071**	Parameter	**Calculate remaining path length** invalid value Value range: [0,1]	
42B0	**17072**	Function	**Setpoint generator SVB active** Starting the setpoint generator (SVB, SAF) has been refused, since the SVB task is already active.	
42B1	**17073**	Parameter	**SVB parameter not allowed (internal error)** A parameter related to the internal structure of the setpoint generator (SVB) results in logical errors and/or to an FPU exception. Affects these parameters: Minimum velocity (>0.0), TimeMode, ModeDyn, ModeGeo, StartType, DistanceToEnd, TBallRadius.	
42B2	**17074**	Parameter	**Velocity reduction factor not allowed**	

Error(Hex)	Error(Dec)	Error type	Description
			A parameter that regulates the reduction of velocity at segment transitions is invalid. Parameter: 1. Once continuously differentiable transitions: VeloVertexFactorC1 2. Not continuously differentiable transitions: VeloVertexFactorC0 CriticalVertexAngleLow, CriticalVertexAngleHigh.
42B3	**17075**	Parameter	**Helix is a circle** The helix has degenerated to a circle, and should be entered as such.
42B4	**17076**	Parameter	**Helix is a straight line** The helix has degenerated to a straight line, and should be entered as such.
42B5	**17077**	Parameter	**Guider parameter not allowed** One of the guider's parameters leads to logical errors and/or to an FPU exception.
42B6	**17078**	Address	**Invalid segment address (internal error)** The geometry segment does not have a valid geometry structure address or does not have a valid dynamic structure address.
42B7	**17079**	Parameter	**Not parameterized generator (internal error)** The SVB generator is not yet parameterized and is therefore unable to operate.
42B8	**17080**	Address	**Not parameterized table (internal error)** The table has no information concerning the address of the corresponding dynamic generator.
42BA	**17082**	Internal	**Arc length of the smoothed path (internal error)** The calculation of the arc length of the smoothed path.
42BB	**17083**	Parameter	**Tolerance sphere** The radius of the tolerance sphere is too small (smaller than 0.1 mm).
42BC	**17084**	Internal	**DXD software end positions (internal error)** An error has occurred in the calculation of the DXD software end positions.
42BD	**17085**	Function	**NC block violates software end positions of the group.** At least one path axis with active software end position monitoring has violated the limit switches. Therefore the geometric entry is denied with an error.
42BE	**17086**	Parameter	**A path axis violates the end position.** At least one path axis with active position limit monitoring violates the limit switches.
42BF	**17087**	Parameter	**Reference velocity type is invalid.**
42C0	**17088**	Internal	**Interpolating group contains axes of an incorrect axis type.** An interpolating 3D group may only contain continuously guided axes of axis type 1 (SERVO).
42C1	**17089**	Internal	**Scalar product cannot be calculated** The length of one of the given vectors is 0.0.
42C2	**17090**	Internal	**Inverse cosine cannot be calculated** The length of one of the given vectors is 0.0.

Error(Hex)	Error(Dec)	Error type	Description
42C3	**17091**	Parameter	**Table entry type invalid** The given table entry type is unknown.
42C4	**17092**	Parameter	**Invalid DIN66025 information type (internal error)** The given DIN66025 information type is unknown. Known types: G0, G1, G2, G3, G17, G18, G19.
42C5	**17093**	Parameter	**Dimension invalid (internal error)** The CNC dimension is unknown. Known dimensions: 1, 2, 3. Or: The CNC dimension is invalid for the given geometrical object. For a circle the dimension must be 2 or 3, while for a helix it must be 3.
42C6	**17094**	Parameter	**Geometrical object is not a straight line.** The given object, interpreted as a straight line, has a length of 0.0.
42C7	**17095**	Parameter	**Geometrical object is not a circle.** Interpreted as a circular arc, the given object has a length of 0.0, or an angle of 0.0 or a radius of 0.0.
42C8	**17096**	Parameter	**Geometrical object is not a helix.** Interpreted as a circular arc, the given object has a length of 0.0, an angle of 0.0, a radius of 0.0 or a height of 0.0.
42C9	**17097**	Parameter	**Target velocity less than or equal to 0.0 is invalid.** A value less than or equal to 0.0 for the target velocity (CNC) is not allowed, since the target velocity is positive by definition, and a target velocity of 0.0 cannot generate any motion.
42CA	**17098**	Address	**Address for look-ahead invalid (internal error)** The address supplied for the look-ahead is invalid.
42CB	**17099**	Function	**SAF setpoint generator already active** Starting the setpoint generator (SAF) has been refused, since the SAF task is already active.
42CC	**17100**	Function	**CNC setpoint generation not active** The stop or override change was denied because the setpoint generation is not active.
42CD	**17101**	Function	**CNC setpoint generation in the stop phase** The stop or override change was denied because the setpoint generation is in the stop phase.
42CE	**17102**	Parameter	**Override not allowed** An override of less than 0.0 % or more than 100.0 % is invalid.
42CF	**17103**	Address	**Table address invalid (internal error)** The table address given for the initialization of the setpoint generator is invalid, or no valid logger connection (report file) is present.
42D0	**17104**	Parameter	**Table entry type invalid** The given table entry type is unknown.
42D1	**17105**	Memory	**Memory allocation failed** The memory allocation for a table failed.
42D2	**17106**	Memory	**Memory allocation failed** The memory allocation for a filter failed.
42D3	**17107**	Parameter	**Parameter invalid** Filter parameter is not allowed.

Error(Hex)	Error(Dec)	Error type	Description
42D4	**17108**	Function	**Delete Distance to go not possible** Delete Distance to go (only interpolation) failed. This error occurred, if e.g. the command 'DelDTG' was not programmed in the actual movement of the NC program.
42D5	**17109**	Internal	**The setpoint generator of the flying saw generates incompatible values (internal error).**
42D6	**17110**	Function	**Axis will be stopped since otherwise it will overrun its target position (old PTP setpoint generator).** If, for example, in case of a slave to master transformation for the new master a target position is commanded that will be overrun because of the actual dynamics the axis will be stopped internally to guarantee that the target position will not be overrun (old PTP setpoint generator).
42D7	**17111**	Function	**Internal error in the transformation from slave to master**
42D8	**17112**	Function	**Wrong direction in the transformation of slave to master**
42DA	**17114**	Parameter	**Parameters of Motion Function (MF) table incorrect.** The parameters of the Motion Function (MF) are invalid. This may refer to the first time created data set or to online changed data.
42DB	**17115**	Parameter	**Parameters of Motion Function (MF) table incorrect** The parameters of the Motion Function (MF) are invalid. This can refer to the data set created for the first time or to data changed online. The cause of the error may be that, for example, an active MF point (i.e. not an IGNORE point) points to a passive MF point (i.e. IGNORE point).
42DC	**17116**	Monitoring	**Internal error by using Motion Function (MF)** An internal error occurs by using the Function (MF). This error cannot be solved by the user. Please ask the TwinCAT Support.
42DD	**17117**	Function	**Axis coupling with synchronization generator declined because of incorrect axis dynamic values** The axis coupling with the synchronization generator has been declined, because one of the slave dynamic parameter (machine data) is incorrect. Either the maximum velocity, the acceleration, the deceleration or the jerk is smaller or equal to zero, or the expected synchronous velocity of the slave axis is higher as the maximum allowed slave velocity.
42DE	**17118**	Function	**Coupling conditions of synchronization generator not allowed.** If the direction of travel of the master axis is positive, the master synchronous position must be greater than the master coupling position ("i.e. lie in the future"). With negative master travel direction, the master synchronous position must be smaller than the master coupling position.
42DF	**17119**	Monitoring	**Motion profile of synchronization generator declines dynamic limit of slave axis or required characteristic of profile.** One of the parameterized checks has detected an exceeding of the dynamic limits (max. velocity, max. acceleration, max. deceleration or max. jerk) of the slave axis or a profile property (e.g. overshoot or undershoot in

Error(Hex)	Error(Dec)	Error type	Description	
			position or velocity) is not allowed. See also additional/further messages in the Windows Event Viewer and in the message window of the TwinCAT development environment.	
42E0	**17120**	Parameter	**Parameter invalid** The encoder generator parameter is not allowed.	
42E1	**17121**	Parameter	**Parameter invalid** The external (FIFO) generator parameter is not allowed.	
42E2	**17122**	Function	**External generator is active.** The external generator cannot be started, as it is already active.	
42E3	**17123**	Function	**External generator is not active.** The external generator cannot be stopped, as it is not active.	
42E4	**17124**	Function	**NC block with auxiliary axis violates software limit switches of the group.** At least one auxiliary axis with active software end position monitoring has violated the limit switches. Therefore the geometric entry is denied with an error.	
42E5	**17125**	Function	**NC block of Bezier curve (Bezier spline) type contains a singularity** The Bezier curve (Bezier spline) has a peak, i.e. at an inner point both the curvature and the magnitude of the velocity strive towards zero in such a way that the radius of curvature is infinite. **The Bezier curve should be divided at exactly this point according to the "Casteljau algorithm". This preserves the geometry and eliminates the interior singularity.**	
42E7	**17127**	Parameter	**Value for dead time compensation not allowed** The value for the dead time compensation in seconds for a slave coupling to an encoder axis (virtual axis) is not allowed.	
			Value range: [0.0 ... 60.0]	Unit: s
42E8	**17128**	Parameter	**Internal error** GROUPERR_RANGE_NOMOTIONWINDOW	
			Value range: [0.0 ... 1000.0]	Unit: e.g. mm/s
42E9	**17129**	Parameter	**Internal error** GROUPERR_RANGE_NOMOTIONFILTERTIME	
			Value range: [0.0 ... 60.0]	Unit: s
42EA	**17130**	Parameter	**Internal error** GROUPERR_RANGE_TIMEUNITFIFO	
			Value range: [0.0 ... 1000.0]	Unit: s
42EB	**17131**	Parameter	**Internal error** GROUPERR_RANGE_OVERRIDETYPE	
			Value range: [1, 2]	Unit: 1
42EC	**17132**	Parameter	**Internal error** GROUPERR_RANGE_OVERRIDECHANGETIME	
			Value range: [0.0 ... 1000.0]	Unit: s
42ED	**17133**	Parameter	**Internal error** GROUPERR_FIFO_INVALIDDIMENSIO	

Error(Hex)	Error(Dec)	Error type	Description
			The FIFO dimension (number of axes) has been increased from 8 to 16 from TwinCAT 2.11 Build 1547.
			Value range: [1 ... 8] resp. [1 ... 16] / Unit: 1 (number of axes)
42EE	**17134**	Address	**Internal error** GROUPERR_ADDR_FIFOTABLE
42EF	**17135**	Monitoring	**Axis is locked for motion commands because a stop command is still active.** The axis/group is locked for motion commands because a stop command is still active. This lock can be released by calling the stop command with Execute=FALSE or by an axis reset (see also *MC_Stop* and *MC_Reset* in *TcMC2.Lib*).
42F0	**17136**	Parameter	**Number of auxiliary axes invalid** The local number of auxiliary axes does not tally with the global number of auxiliary axes.
42F1	**17137**	Parameter	**Reduction parameter for auxiliary axes invalid** The velocity reduction parameters for the auxiliary axes are inconsistent.
42F2	**17138**	Parameter	**Dynamic parameters for auxiliary axes invalid** The dynamic parameters for the auxiliary axes are inconsistent.
42F3	**17139**	Parameter	**Coupling parameters for auxiliary axes invalid** The coupling parameters for the auxiliary axes are inconsistent.
42F4	**17140**	Parameter	**Auxiliary axis entry invalid** The auxiliary axis entry is empty (no axis motion).
42F6	**17142**	Parameter	**Parameter invalid** The limit for velocity reduction of the auxiliary axes is invalid. It has to be in the interval [0..1].
42F8	**17144**	Parameter	**BlockSearch - segment not found** The segment specified as parameter could not be found until the end of the NC program. Possible cause: - nBlockId is not specified in the mode described by eBlockSearchMode. - 0 is not a valid nBlockId.
42F9	**17145**	Parameter	**Blocksearch - Invalid remaining segment length** The remaining distance in the fLength parameter is incorrectly parameterized.
42FB	**17147**	Internal	**Internal error in connection with coupled axes (slave axes)** Internal fatal error when using coupled axes (slave axes). Inconsistent internal state. Please contact our Support.
42FC	**17148**	Parameter	**Parameter for maximum number of jobs (entries) to be transferred is invalid** The parameter describing the maximum number of entries to be transferred from the SVB to the SAF table per NC cycle is invalid.
			Value range: [1, 20] / Unit: 1
42FF	**17151**	Monitoring	**Customer-specific error** This is a customer-specific monitoring function.

2.4 Axis Errors

Error(Hex)	Error(Dec)	Error type	Description	
4300	**17152**	Parameter	**Axis ID not allowed** The value for the axis ID is not allowed, e.g. because it has already been assigned, is less than or equal to zero, is greater than 255, or does not exist in the current configuration.	
			Value range: [1 ... 255]	Unit: 1
4301	**17153**	Parameter	**Axis type not allowed** The value for the axis type is not allowed because it is not defined. Type 1: servo Type 2: fast/creep Type 3: stepper motor	
			Value range: [1 ... 3]	Unit: 1
4306	**17158**	Parameter	**Slow manual velocity not allowed** The value for the slow manual velocity is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. m/min
4307	**17159**	Parameter	**Fast manual velocity not allowed** The value for the fast manual velocity is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. m/min
4308	**17160**	Parameter	**Rapid traverse velocity not allowed** The value for the rapid traverse velocity is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. m/min
4309	**17161**	Parameter	**Axis acceleration not allowed** The value for the axis acceleration is not allowed.	
			Value range: [0.0, 1000000.0]	Unit: e.g. m/s/s
430A	**17162**	Parameter	**Axis deceleration not allowed** The value for the axis deceleration is not allowed.	
			Value range: [0.0, 1000000.0]	Unit: e.g. m/s/s
430B	**17163**	Parameter	**Axis jerk not allowed** The value for the axis jerk is not allowed.	
			Value range: [0.0, 1000000.0]	Unit: e.g. m/s/s/s
430C	**17164**	Parameter	**Delay time between position and velocity is not allowed (dead time compensation).** The value for the delay time between position and velocity ("dead time compensation") is not allowed.	
			Value range: [0, 0.1]	Unit: s
430D	**17165**	Parameter	**Override type not allowed** The value for the velocity override type is not allowed as it is not defined. Type 1: Related to internal reduced velocity (default value) Type 2: Related to original external start velocity	
			Value range: [1 ... 4]	Unit: 1
430E	**17166**	Parameter	**NCI: Velo-Jump-Factor not allowed** The value for the velo-jump-factor ("VeloJumpFactor") is not allowed. This parameter only works for TwinCAT NCI.	

Error(Hex)	Error(Dec)	Error type	Description	
			Value range: [0, 1000000]	Unit: 1
430F	**17167**	Parameter	**NCI: Radius of tolerance sphere for the auxiliary axis is invalid** It was tried to enter an invalid value for the size of the tolerance sphere. This sphere affects only auxiliary axes!	
			Value range: [0, 1000]	Unit: e.g. mm
4310	**17168**	Parameter	**NCI: Value for maximum deviation for the auxiliary axis is invalid** It was tried to enter an invalid value for the maximum allowed deviation. This parameter affects only auxiliary axes!	
			Value range: [0, 10000]	Unit: e.g. mm
4312	**17170**	Parameter	**Referencing velocity in direction of cam not allowed** The value for the referencing velocity in the direction of the referencing cam is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. m/min
4313	**17171**	Parameter	**Referencing velocity in sync direction not allowed** The value for the referencing velocity in the direction of the sync pulse (zero track) is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. m/min
4314	**17172**	Parameter	**Pulse width in positive direction not allowed** The value for the pulse width in the positive direction is not allowed (pulsed operation). The use of the pulse width for positioning is chosen implicitly through the axis start type. Pulsed operation corresponds to positioning with a relative travel path that corresponds precisely to the pulse width.	
			Value range: [0.0, 1000000.0]	Unit: e.g. mm
4315	**17173**	Parameter	**Pulse width in negative direction not allowed** The value for the pulse width in the negative direction is not allowed (pulsed operation). The use of the pulse width for positioning is chosen implicitly through the axis start type. Pulsed operation corresponds to positioning with a relative travel path that corresponds precisely to the pulse width.	
			Value range: [0.0, 1000000.0]	Unit: e.g. mm
4316	**17174**	Parameter	**Pulse time in positive direction not allowed** The value for the pulse width in the positive direction is not allowed (pulsed operation).	
			Value range: [0.0, 600.0]	Unit: s
4317	**17175**	Parameter	**Pulse time in negative direction not allowed** The value for the pulse width in the negative direction is not allowed (pulsed operation).	
			Value range: [0.0, 600.0]	Unit: s
4318	**17176**	Parameter	**Creep distance in positive direction not allowed** The value for the creep distance in the positive direction is not allowed.	
			Value range: [0.0, 100000.0]	Unit: e.g. mm
4319	**17177**	Parameter	**Creep distance in negative direction not allowed**	

Error(Hex)	Error(Dec)	Error type	Description	
			The value for the creep distance in the negative direction is not allowed.	
			Value range: [0.0, 100000.0]	Unit: e.g. mm
431A	**17178**	Parameter	**Braking distance in positive direction not allowed** The value for the braking distance in the positive direction is not allowed.	
			Value range: [0.0, 100000.0]	Unit: e.g. mm
431B	**17179**	Parameter	**Braking distance in negative direction not allowed** The value for the braking distance in the negative direction is not allowed.	
			Value range: [0.0, 100000.0]	Unit: e.g. mm
431C	**17180**	Parameter	**Deceleration time in positive direction not allowed** The value for the deceleration time in the positive direction is not allowed.	
			Value range: [0.0, 60.0]	Unit: s
431D	**17181**	Parameter	**Deceleration time in negative direction not allowed** The value for the deceleration time in the negative direction is not allowed.	
			Value range: [0.0, 60.0]	Unit: s
431E	**17182**	Parameter	**Switching time from rapid to slow traverse not allowed** The value for the time to switch from rapid to slow traverse is not allowed.	
			Value range: [0.0, 60.0]	Unit: s
431F	**17183**	Parameter	**Creep distance for stop not allowed** The value for the creep distance for an explicit stop is not allowed.	
			Value range: [0.0, 100000.0]	Unit: e.g. mm
4320	**17184**	Parameter	**Motion monitoring not allowed** The value for the activation of the motion monitoring is not allowed.	
			Value range: [0, 1]	Unit: 1
4321	**17185**	Parameter	**Position window monitoring not allowed** The value for the activation of the position window monitoring is not allowed.	
			Value range: [0, 1]	Unit: 1
4322	**17186**	Parameter	**Target window monitoring not allowed** The value for the activation of target window monitoring is not allowed.	
			Value range: [0, 1]	Unit: 1
4323	**17187**	Parameter	**Loop not allowed** The value for the activation of loop movement is not allowed.	
			Value range: [0, 1]	Unit: 1
4324	**17188**	Parameter	**Motion monitoring time not allowed** The value for the motion monitoring time is not allowed.	

Error(Hex)	Error(Dec)	Error type	Description	
			Value range: [0.0, 600.0]	Unit: s
4325	**17189**	Parameter	**Target window range not allowed**	
			The value for the target window is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. mm
4326	**17190**	Parameter	**Position window range not allowed**	
			The value for the position window is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. mm
4327	**17191**	Parameter	**Position window monitoring time not allowed**	
			The value for the position window monitoring time is not allowed.	
			Value range: [0.0, 600.0]	Unit: s
4328	**17192**	Parameter	**Looping distance not allowed**	
			The value for the looping distance is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. mm
4329	**17193**	Parameter	**Axis cycle time not allowed**	
			The value for the axis cycle time is not allowed.	
			Value range: [0.001, 0.1]	Unit: s
432A	**17194**	Parameter	**Operation mode stepper motor not allowed**	
			The value for the stepper motor operating mode is not allowed.	
			Value range: [1, 2]	Unit: 1
432B	**17195**	Parameter	**Displacement per stepper motor step not allowed**	
			The value for the displacement associated with one step of the stepper motor is not allowed (step scaling).	
			Value range: [0.000001, 1000.0]	Unit: e.g. mm/ STEP
432C	**17196**	Parameter	**Minimum velocity for stepper motor set value profile not allowed**	
			The value for the minimum velocity of the stepper motor velocity profile is not allowed.	
			Value range: [0.0, 1000.0]	Unit: e.g. m/min
432D	**17197**	Parameter	**Stepper motor stages for one velocity level not allowed**	
			The value for the number of steps for each velocity level in the setpoint generation is not allowed.	
			Value range: [0, 100]	Unit: 1
432E	**17198**	Parameter	**DWORD for the interpretation of the axis units not allowed**	
			The value that contains the flags for the interpretation of the position and velocity units is not allowed.	
			Value range: [0, 0xFFFFFFFF]	Unit: 1
432F	**17199**	Parameter	**Maximum velocity not allowed**	
			The value for the maximum permitted velocity is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. m/min
4330	**17200**	Parameter	**Motion monitoring window not allowed**	
			The value for the motion monitoring window is not allowed.	

Error(Hex)	Error(Dec)	Error type	Description	
			Value range: [0.0, 10000.0]	Unit: e.g. mm
4331	**17201**	Parameter	**PEH time monitoring not allowed** The value for the activation of the PEH time monitoring is not allowed (PEH: positioning end and halt).	
			Value range: [0, 1]	Unit: 1
4332	**17202**	Parameter	**PEH monitoring time not allowed** The value for the PEH monitoring time (timeout) is not allowed (PEH: positioning end and halt). Default value: 5 s	
			Value range: [0.0, 600.0]	Unit: s
4333	**17203**	Parameter	**Parameter "Brake Release Delay" is invalid** The parameter for the brake release delay of a rapid/slow traverse axis is invalid.	
			Value range: [0.0, 60.0]	Unit: s
4334	**17204**	Parameter	**Parameter NC Data Persistence is invalid** The boolean parameter NC Data Persistence of an axis is invalid.	
			Value range: [0, 1]	Unit: 1
4335	**17205**	Parameter	**Parameter for the error reaction mode is invalid.** The parameter for the error reaction mode of the axis is invalid (instantaneous, delayed).	
			Value range: [0, 1]	Unit: 1
4336	**17206**	Parameter	**Parameter for the error reaction delay is invalid** The parameter for the error reaction delay of the axis is invalid.	
			Value range: [0.0, 1000.0]	Unit: s
4337	**17207**	Parameter	**Parameter "Use actual values in deactivated state" is invalid.** The parameter "Use actual values in deactivated state" is invalid.	
			Value range: [0, 1]	Unit: 1
4338	**17208**	Parameter	**Parameter "Allow motion commands for slave axes" is invalid.** The boolean parameter "Allow motion commands for slave axes" is invalid. This parameter determines whether a motion command may be sent to a slave axis or whether this is rejected with an NC error 0x4266 or 0x4267.	
			Value range: [0, 1]	Unit: 1
4339	**17209**	Parameter	**Parameter "Allow motion commands for axis in external setpoint generation" is invalid.** The boolean parameter "Allow motion commands for axis in external setpoint generation" is invalid. This parameter determines whether a motion command may be sent to an axis in the external setpoint generation state or whether this is rejected with an error 0x4257.	
			Value range: [0, 1]	Unit: 1
433A	**17210**	Parameter	**Parameter "Fading Acceleration" is invalid.**	

Error(Hex)	Error(Dec)	Error type	Description	
			The "Fading Acceleration" parameter for the fading profile from SET to ACTUAL values is invalid. This parameter defines how to fade from a setpoint based axis coupling to an actual value based coupling (indirectly results in a time for the fading). **The value 0.0 causes the minimum of the default acceleration and default deceleration to be used internally in the NC as the fading acceleration.**	
			Value range: [0; 0.01 .. 1.0e+20]	Unit: e.g. mm/s^2

Error(Hex)	Error(Dec)	Error type	Description
433B	**17211**	Parameter	**Fast Axis Stop signal type not allowed** The value for the Signal Type of the 'Fast Axis Stop' is not allowed [0...5].
433C	**17212**	Parameter	**ADS index offset not allowed** New value for the 'ADS offset (axis state) ' for user-defined parameter named 'UserData' in AxisRef is invalid.
4340	**17216**	Initialization	**Axis initialization** The axis has not been initialized. Although the axis has been created, the rest of the initialization has not been performed (1. Initialization of axis I/O, 2. Initialization of axis, 3. Reset axis).
4341	**17217**	Address	**Group address** The axis does not have a group, or the group address has not been initialized (group contains the setpoint generation).
4342	**17218**	Address	**Encoder address** The axis does not have an encoder, or the encoder address has not been initialized.
4343	**17219**	Address	**Controller address** The axis does not have a controller, or the controller address has not been initialized.
4344	**17220**	Address	**Drive address** The axis does not have a drive, or the drive address has not been initialized.
4345	**17221**	Address	**Axis interface PLC to NC address** The axis has no axis interface from the PLC to the NC (PlcToNc) or the axis interface address has not been initialized.
4346	**17222**	Address	**Axis interface NC to PLC address** The axis has no axis interface from the NC to the PLC (NcToPlc) or the axis interface address has not been initialized.
4347	**17223**	Address	**Size of the axis interface NC to PLC is not allowed (internal error)** The size of the axis interface from NC to PLC (NcToPlc) is not allowed.
4348	**17224**	Address	**Size of the axis interface PLC to NC is not allowed (internal error)** The size of the axis interface from PLC to NC (PlcToNc) is not allowed.

Error(Hex)	Error(Dec)	Error type	Description
4356	**17238**	Monitoring	**Controller enable** The controller enable for the axis is not available (see axis interface PlcToNc). This enable is required, for instance, for an axis positioning task.
4357	**17239**	Monitoring	**Feed enable minus** A feed enable for movement in the negative direction is not available (see axis interface PlcToNc). This enable is required, for instance, for an axis positioning task in the negative direction.
4358	**17240**	Monitoring	**Feed enable plus** A feed enable for movement in the positive direction is not present (see axis interface PlcToNc). This enable is required, for instance, for an axis positioning task in the positive direction.
4359	**17241**	Monitoring	**Target velocity not allowed** The target velocity requested for a positioning task is not allowed. This can happen if the velocity is less than or equal to zero, larger than the maximum permitted axis velocity, or, in the case of servo drives, is larger than the reference velocity of the axis (see axis and drive parameters).
435A	**17242**	Monitoring	**Movement smaller than one encoder increment (internal error)** The movement required of an axis is, in relation to a positioning task, smaller than one encoder increment (see scaling factor). This information is, however, handled internally in such a way that the positioning is considered to have been completed without an error message being returned.
435B	**17243**	Monitoring	**Set acceleration monitoring (internal error)** The set acceleration has exceeded the maximum permitted acceleration or deceleration parameters of the axis.
435C	**17244**	Monitoring	**PEH time monitoring** The PEH time monitoring has detected that, after the PEH monitoring time that follows a positioning has elapsed, the target position window has not been reached. The following points must be checked: Is the PEH monitoring time, in the sense of timeout monitoring, set to a sufficiently large value (e.g. 1-5 s)? The PEH monitoring time must be chosen to be significantly larger than the target position monitoring time. Have the criteria for the target position monitoring (range window and time) been set too strictly? **The PEH time monitoring only functions when target position monitoring is active!**
435D	**17245**	Monitoring	**Motion Monitoring** The actual position of the axis has not changed or has changed only slightly during the motion monitoring time. To avoid an error, the axis must change by more than the parameterized motion monitoring window in at least one NC cycle during the monitoring time. => Check, whether axis is mechanically blocked, or the encoder system failed.

Error(Hex)	Error(Dec)	Error type	Description
435E	**17246**	Monitoring	**Looping distance smaller than braking distance** The absolute value of the looping distance is less or equal than the positive or negative braking distance. This is not allowed.
435F	**17247**	Monitoring	**Starting velocity not allowed** The required starting velocity for a positioning task is not allowed (normally the starting velocity is zero). This can happen if the velocity is less than or equal to zero, larger than the maximum permitted axis velocity, or, in the case of servo drives, is larger than the reference velocity of the axis (see axis and drive parameters).
4360	**17248**	Monitoring	**Final velocity not allowed** The required final velocity for a positioning task is not allowed (normally the final velocity is zero). This can happen if the velocity is less than or equal to zero, larger than the maximum permitted axis velocity, or, in the case of servo drives, is larger than the reference velocity of the axis (see axis and drive parameters).
4361	**17249**	Monitoring	**Time range exceeded (future)** The calculated position lies too far in the future (e.g. when converting from a position to an associated DC time).
4362	**17250**	Monitoring	**Time range exceeded (past)** The calculated position lies too far in the past (e.g. when converting from a position to an associated DC time).
4363	**17251**	Monitoring	**Position cannot be determined** The requested position cannot be determined mathematically because a) it has never been reached in the past or b) it will never be reached in the future (e.g. if the axis velocity is zero or if a motion reversal occurs due to an acceleration).
4364	**17252**	Monitoring	**Position cannot be determined (conflicting direction of travel)** The direction of travel expected by the caller of the function deviates from the actual direction of travel (conflict between PLC and NC view, for example when converting a position to a DC time).
4365	**17253**	Monitoring	**Position not convertible** When converting the position to the incremental position, the maximum range of the encoder is violated.
4370	**17264**	Monitoring	**No slave coupling possible (velocity violation)** A slave coupling to a master axis (e.g. by a universal flying saw) is rejected because otherwise the maximum velocity of the slave axis would be exceeded (a velocity monitoring has been selected).
4371	**17265**	Monitoring	**No slave coupling possible (acceleration violation)** A slave coupling to a master axis (e.g. by a universal flying saw) is rejected because otherwise the maximum acceleration of the slave axis would be exceeded (an acceleration monitoring has been selected).
4372 - 438B	**17266 - 17291**		See TF5055 NC Flying Saw - Error Codes

Error(Hex)	Error(Dec)	Error type	Description
43A0	**17312**	Internal	**Axis consequential error** Consequential error resulting from another causative error related to another axis. Axis consequential errors can occur in relation to master/slave-couplings or with multiple axis interpolating DXD groups.

2.5 Encoder Errors

Error(Hex)	Error(Dec)	Error type	Description	
4400	**17408**	Parameter	**Encoder ID not allowed** The value for the encoder ID is not allowed, e.g. because it has already been assigned, is less than or equal to zero, or is greater than 255.	
			Value range: [1 ... 255]	Unit: 1
4401	**17409**	Parameter	**Encoder type not allowed** The value for the encoder type is not allowed as it is not defined. Type 1: Simulation (incremental) Type 2: M3000 (24 bit absolute) Type 3: M31x0 (24 bit incremental) Type 4: KL5101 (16 bit incremental) Type 5: KL5001 (24 bit absolute SSI) Type 6: KL5051 (16 bit BISSI)	
			Value range: [1 ... 6]	Unit: 1
4402	**17410**	Parameter	**Encoder mode** The value for the encoder mode (operation mode) is invalid. Mode 1: Determination of actual position Mode 2: Determination of actual position and actual velocity (filter)	
			Value range: [1, 2]	Unit: 1
4403	**17411**	Parameter	**Encoder count direction** The flag for the encoder counting direction is not allowed. Flag 0: Positive encoder count direction Flag 1: Negative encoder count direction	
			Value range: [0, 1]	Unit: 1
4404	**17412**	Initialization	**Calibration state** The flag for the calibration state is not allowed. Flag 0: Axis has is not referenced. Flag 1: Axis is referenced.	
			Value range: [0, 1]	Unit: 1
4405	**17413**	Parameter	**Encoder increments per physical encoder revolution** The value for the number of encoder increments for each physical rotation of the encoder is not allowed. This value is used by the software for the calculation of encoder overruns and underruns.	
			Value range: [255, 0xFFFFFFFF]	Unit: INC
4406	**17414**	Parameter	**Scaling factor**	

Error(Hex)	Error(Dec)	Error type	Description	
			The value for the scaling factor is not allowed. This scaling factor provides the weighting for the conversion of an encoder increment (INC) to a physical unit such as millimeters or degrees.	
			Value range: [0.000001, 100.0]	Unit: e.g. mm/INC
4407	**17415**	Parameter	**Position offset (zero point offset)** The value for the position offset of the encoder is not allowed. This value is added to the calculated encoder position, and is interpreted in the physical units of the encoder.	
			Value range: [-1000000.0, 1000000.0]	Unit: e.g. mm
4408	**17416**	Parameter	**Modulo factor** The value for the encoder's modulo factor is not allowed.	
			Value range: [1.0, 1.0E+9]	Unit: e.g. mm or degrees
4409	**17417**	Parameter	**Position filter time** The value for the actual position filter time is not allowed (P-T1 filter).	
			Value range: [0.0, 60.0]	Unit: s
440A	**17418**	Parameter	**Velocity filter time** The value for the actual velocity filter time is not allowed (P-T1 filter).	
			Value range: [0.0, 60.0]	Unit: s
440B	**17419**	Parameter	**Acceleration filter time** The value for the actual acceleration filter time is not allowed (P-T1 filter).	
			Value range: [0.0, 60.0]	Unit: s
440C	**17420**	Initialization	**Cycle time not allowed (internal error)** The value of the SAF cycle time for the calculation of actual values is not allowed (e.g. is less than or equal to zero).	
440D	**17421**	Initialization	**Setting of the selected units is invalid** Settings for modulo position, velocity etc. lead to an error.	
440E	**17422**	Parameter	**Actual position correction / measurement system error correction** The value for the activation of the actual position correction ("measuring system error correction") is not allowed.	
			Value range: [0, 1]	
440F	**17423**	Parameter	**Filter time actual position correction** The value for the actual position correction filter time is not allowed (P-T1 filter).	
			Value range: [0.0, 60.0]	Unit: 1
4410	**17424**	Parameter	**Search direction for referencing cam inverted** The value of the search direction of the referencing cam in a referencing procedure is not allowed. Value 0: Positive direction Value 1: Negative direction	

Error(Hex)	Error(Dec)	Error type	Description	
			Value range: [0, 1]	Unit: 1
4411	**17425**	Parameter	**Search direction for sync pulse (zero pulse) inverted** The value of the search direction of the sync pulse (zero pulse) in a referencing procedure is not allowed. Value 0: Positive direction Value 1: Negative direction	
			Value range: [0, 1]	Unit: 1
4412	**17426**	Parameter	**Reference position** The value of the reference position in a referencing procedure is not allowed.	
			Value range: [-1000000.0, 1000000.0]	Unit: e.g. mm
4413	**17427**	Parameter	**Distance monitoring between activation of the hardware latch and occurrence of the sync pulse (obsolete)** The flag for the distance monitoring between activation of the hardware latch and occurrence of the sync/zero pulse ("latch valid") is not allowed. Value 0: Passive Value 1: Active	
			Value range: [0, 1]	Unit: 1
4414	**17428**	Parameter	**Minimum gap between activation of the hardware latch and occurrence of the sync pulse (obsolete)** The value for the minimum gap in increments between activation of the hardware latch and occurrence of the sync/zero pulse ("latch valid") during a referencing procedure is not allowed.	
			Value range: [0, 65536]	Unit: INC
4415	**17429**	Parameter	**External sync pulse (obsolete)** The value of the activation or deactivation of the external sync pulse in a referencing procedure is not allowed. Value 0: Passive Value 1: Active	
			Value range: [0, 1]	Unit: 1
4416	**17430**	Parameter	**Scaling of the noise rate is not allowed** The value of the scaling (weighting) of the synthetic noise rate is not allowed. This parameter exists only in the simulation encoder and serves to produce a realistic simulation.	
			Value range: [0, 1000000]	Unit: 1
4417	**17431**	Parameter	**Tolerance window for modulo-start** The value for the tolerance window for the modulo-axis-start is invalid. The value must be greater or equal than zero and smaller than the half encoder modulo-period (e.g. in the interval [0.0,180.0]).	
			Value range: [0.0, 180.0], Max: 0.5*modulo period	Unit: e.g. mm or degrees
4418	**17432**	Parameter	**Encoder referencing mode**	

Error(Hex)	Error(Dec)	Error type	Description	
			The value for the encoder reference mode is not allowed, resp. is not supported for this encoder type.	
			Value range: [0, 5]	Unit: 1
4419	**17433**	Parameter	**Encoder evaluation direction** The value for the encoder evaluation direction (log. counting direction) is not allowed.	
			Value range: [0, 3]	Unit: 1
441A	**17434**	Parameter	**Encoder absolute dimensioning system** The value for the encoder reference system is invalid: 0: INCREMENTAL 1: ABSOLUTE 2: ABSOLUTE+MODULO	
			Value range: [0, 2]	Unit: 1
441B	**17435**	Parameter	**Encoder position initialization mode** When starting the TC system the value for the encoder position initialization mode is invalid.	
			Value range: [0, 1]	Unit: 1
441C	**17436**	Parameter	**Encoder sign interpretation (UNSIGNED / SIGNED data type)** The value for the encoder sign interpretation (data type) for the encoder the actual increment calculation is invalid: 0: default/not defined 1: UNSIGNED 2: SIGNED	
			Value range: [0, 2]	Unit: 1
441D	**17437**	Parameter	**Homing Sensor Source** The value for the Encoder Homing Sensor Source is invalid or not supported for this encoder type.	
			Value range: [0, 16]	Unit: 1
4420	**17440**	Parameter	**Software end position monitoring minimum not allowed** The value for the activation of the software end position monitoring minimum is not allowed.	
			Value range: [0, 1]	Unit: 1
4421	**17441**	Parameter	**Software end position monitoring maximum not allowed** The value for the activation of the software end position monitoring maximum is not allowed.	
			Value range: [0, 1]	Unit: 1
4422	**17442**	Function	**Actual value setting is outside the value range.** The "Set actual value" function cannot be executed because the new actual position is outside the intended value range.	
			Value range: [-1.0E10, 1.0E10]	Unit: e.g. mm
4423	**17443**	Parameter	**Software end position minimum not allowed** The value for the software end position minimum is not allowed.	

Error(Hex)	Error(Dec)	Error type	Description	
			Value range: [-1000000000.0, 1000000000.0]	Unit: e.g. mm
4424	**17444**	Parameter	**Software end position maximum not allowed** The value for the software end position maximum is not allowed.	
			Value range: [-1000000000.0, 1000000000.0]	Unit: e.g. mm
4425	**17445**	Parameter	**Filter mask for the encoder raw value not allowed** The value for the filter mask of the encoder raw value in increments is not allowed.	
			Value range: [0x0, 0xFFFFFFFF]	Unit: 1
4426	**17446**	Parameter	**Reference mask for the encoder raw value not allowed** The value for the reference mask (increments per encoder revolution, absolute resolution) of the encoder raw value in increments is not allowed. This value is used, for example, for referencing an axis with the "Software Sync" referencing mode.	
			Value range: [0x0000000F, 0xFFFFFFFF]	Unit: 1
4427	**17447**	Parameter	**Parameter "Dead time compensation mode" (encoder) is invalid.** The parameter for the dead time compensation mode on the NC encoder is invalid (OFF, ON with velocity, ON with velocity and acceleration).	
			Value range: [0, 1, 2]	Unit: 1
4428	**17448**	Parameter	**Parameter 'Control bits of the dead time compensation' (encoder) is invalid.** The parameter for the control bits of the dead time compensation at the encoder is invalid (e.g. relative or absolute time interpretation).	
			Value range: [>0]	Unit: 1
4429	**17449**	Parameter	**Parameter 'time shift of dead time compensation mode' (encoder) is invalid.** The parameter for the time shift of the dead time compensation (Time Shift in nanoseconds) at the encoder is invalid.	
			Value range: [-1.0E9 .. 1.0E9]	Unit: ns
4430	**17456**	Function	**Hardware latch activation (encoder)** Activation of the encoder hardware latch was implicitly initiated by the referencing procedure. If this function has already been activated but a latch value has not yet become valid ("latch valid"), another call to the function is refused with this error.	
4431	**17457**	Function	**Activation of external hardware latch / touch probe function (encoder)**	

Error(Hex)	Error(Dec)	Error type	Description
			The activation of the external hardware latch (only available for KL5101, SERCOS, AX2xxx) is initiated explicitly by an ADS command (called from the PLC program of the Visual Basic interface). If this function has already been activated, but the latch value has not yet been made valid by an external signal ("external latch valid" or "touch probe latched" or "real-time status bit"), another call to the function is refused with this error. It is also possible that this function cannot be executed because of another simultaneous function, such as referencing an incremental encoder axis.
4432	**17458**	Function	**External hardware latch activation (encoder)** If a referencing procedure has previously been initiated and the hardware still signals a valid latch value ("latch valid"), this function must not be called. However, this error can never actually occur in practice.
4433	**17459**	Function	**Activation of external hardware latch / touch probe function (encoder)** This function has been activated before and has not been finished since (the internal handshake communication between NC and I/O device is still active). In the meantime, a renewed activation is not allowed and is therefore rejected with an error. If this function has already been triggered before and the hardware still signals that the external latch value is already valid ("external latch valid" or "touch probe" or "real-time status bit"), a renewed activation must not be executed. In this case, the validity of the external hardware latch would be signaled immediately by mistake (but still with an old latch value).
4434	**17460**	Monitoring	**Encoder function is not supported** An encoder function has been activated that is currently not released for use, or which is not even implemented.
4435	**17461**	Monitoring	**Encoder function is already active** An encoder function cannot been activated because this functionality is already active.
4440	**17472**	Initialization	**Encoder initialization** Encoder has not been initialized. Although the axis has been created, the rest of the initialization has not been performed: 1. Initialization of axis I/O 2. Initialization of axis 3. Reset axis
4441	**17473**	Address	**Axis address** The encoder does not have an axis, or the axis address has not been initialized.
4442	**17474**	Address	**Address I/O input structure** Drive has no valid I/O input address in the process image.
4443	**17475**	Address	**Address I/O output structure**

Error(Hex)	Error(Dec)	Error type	Description
			The encoder does not have a valid I/O output address in the process image.
4450	**17488**	Monitoring	**Encoder counter underflow monitoring** The encoder's incremental counter has underflowed.
4451	**17489**	Monitoring	**Encoder counter overflow monitoring** The encoder's incremental counter has overflowed.
4460	**17504**	Monitoring	**Minimum software position limit (axis start)** While monitoring for the minimum software position limit is active, an axis start has been performed on a position that is below the minimum software position limit.
4461	**17505**	Monitoring	**Maximum software position limit (axis start)** While monitoring for the maximum software position limit is active, an axis start has been performed on a position that is above the maximum software position limit.
4462	**17506**	Monitoring	**Minimum software position limit (positioning process)** While monitoring for the minimum software position limit is active, the actual position has fallen below the minimum software position limit. For servo axes - they are continuously guided - this limit is extended by the amount of the parameterized lag error window.
4463	**17507**	Monitoring	**Maximum software position limit (positioning process)** While monitoring for the maximum software position limit is active, the actual position has exceeded the maximum software position limit. For servo axes - they are continuously guided - this limit is extended by the amount of the parameterized lag error window.
4464	**17508**	Monitoring	**Encoder hardware error** The drive resp. the encoder system reports a hardware error of the encoder. An optional error code can probably be found in the message in the event display.
4465	**17509**	Monitoring	**Position initialization error at system startup** When the actual position was initialized for the first time, it was outside the minimum and maximum end positions for all three initialization attempts (without overflow/underflow, with underflow/overflow).
4466	**17510**	Monitoring	**Invalid I/O data for more than n continuous NC cycles (encoder)** The axis (encoder) has detected invalid encoder I/O data for more than n continuous NC cycles (NC SAF task) (e.g. n=3). Typically, an EtherCAT device is a "Working Counter Error" (WcState), which shows that the data transmission between I/O device and controller is disturbed.

Error(Hex)	Error(Dec)	Error type	Description
			If this error is continuously present for a longer period of time, then this can lead to the loss of the referencing of the axis (the "Homed" flag is reset and the encoder gets the state "unreferenced"). Possible reasons for this error: An EtherCAT slave may have left its OP state, the real-time load on the controller is too high or the real-time jitter is too high.
4467	**17511**	Monitoring	**Invalid actual position (encoder)** The I/O device returns an invalid actual position (for CANopen/CoE see bit 13 of encoder state "TxPDO data invalid" or "invalid actual position value").
4468	**17512**	Monitoring	**Invalid I/O input data (error type 1)** The monitoring of the "cyclic I/O input counter" (2-bit counter) has detected an error. The input data has not been updated for at least 3 NC-SAF cycles (the 2-bit counter shows a constant value for several NC-SAF cycles instead of increasing by exactly 1 from cycle to cycle).
4469	**17513**	Monitoring	**Invalid I/O input data (error type 2)** The monitoring of the "cyclic I/O input counter" (2-bit counter) has detected an error. The quality of the input data, based on the 2-bit counter, is not sufficient (there is a simple statistical evaluation here that evaluates both GOOD cases and BAD cases and leads to an error if a specific threshold value is exceeded).
4470	**17520**	Monitoring	**SSI transformation faulty or not finished** The SSI transformation of the FOX 50 module was faulty for some NC-cycles or did not finished respectively.
44A2	**17570**	Monitoring	**Internal error** ENCERR_ADDR_CONTROLLER
44A3	**17571**	Monitoring	**Internal error** ENCERR_INVALID_CONTROLLERTYPE

2.6 Controller Errors

Error(Hex)	Error(Dec)	Error type	Description
4500	**17664**	Parameter	**Controller ID not allowed** The value for the controller ID is not allowed, e.g. because it has already been assigned, is less than or equal to zero, or is greater than 255. Value range: [1 ... 255] | Unit: 1
4501	**17665**	Parameter	**Controller type not allowed** The value for the controller type is unacceptable because it is not defined. Type 1: P-controller (position) Type 7: Fast/creep controller Type 8: Stepper motor controller Type 9: Sercos controller

Error(Hex)	Error(Dec)	Error type	Description	
			Value range: [1 ... 9]	Unit: 1
4502	**17666**	Parameter	**Operation mode controller not allowed** The value for the controller operating mode is not allowed.	
			Value range: [1]	Unit: 1
4503	**17667**	Parameter	**Weighting of the velocity pre-control not allowed** The value for the percentage weighting of the velocity pre-control is not allowed. The parameter is pre-set to 1.0 (100%) as standard.	
			Value range: [0.0 ... 1.0]	Unit: %
4504	**17668**	Parameter	**Lag error monitor (position) not allowed** The value for the activation of the lag error monitor is not allowed.	
			Value range: [0, 1]	Unit: 1
4505	**17669**	Parameter	**Lag monitoring (velocity) not allowed** The value for the activation of the lag error monitoring (velocity) is not allowed.	
			Value range: [0, 1]	Unit: 1
4506	**17670**	Parameter	**Lag error window (position) not allowed** The value for the lag error window (maximum allowable lag error) is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. mm
4507	**17671**	Parameter	**Lag error filter time (position) not allowed** The value for the lag error filter time (position) is not allowed.	
			Value range: [0.0, 600.0]	Unit: s
4508	**17672**	Parameter	**Lag error window (velocity) not allowed** The value for the lag error window (velocity) is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. m/min
4509	**17673**	Parameter	**Lag error filter time (velocity) not allowed** The value for the lag error filter time (velocity) is not allowed.	
			Value range: [0.0, 600.0]	Unit: s
450A	**17674**	Parameter	**Controller output limitation (output limitation) not allowed** The value for the output limitation of the controller at the total manipulated variable is invalid. The default setting is 0.5 (50 percent). Typically, this parameter is effective if the velocity interface has been parameterized for the drive unit and the NC executes the position control of the position on the controller.	
			Value range: [0.0, 1.0]	Unit: %
4510	**17680**	Parameter	**Proportional gain Kv or Kp (controller) not allowed** *Position* The value for the proportional gain (Kv factor or Kp factor) is not allowed.	

Error(Hex)	Error(Dec)	Error type	Description	
			Value range: [0.0, 10000.0]	Unit: e.g. mm/s/mm
4511	**17681**	Parameter	**Integral action time Tn (controller) not allowed** *Position* The value for the integral action time is not allowed (I part of the PID T1 controller).	
			Value range: [0.0, 60.0]	Unit: s
4512	**17682**	Parameter	**Rate time Tv (controller) not allowed** *Position* The value for the derivative action time is not allowed (D part of the PID T1 controller).	
			Value range: [0.0, 60.0]	Unit: s
4513	**17683**	Parameter	**Damping time Td (controller) not allowed** *Position* The value for the damping time is not allowed (D part of the PID T1 controller).	
			Value range: [0.0, 60.0]	Unit: s
4514	**17684**	Function	**Activation of the automatic offset calibration not allowed** Activation of the automatic offset calibration is only possible for certain types of controller (with no I component).	
4515	**17685**	Parameter	**Additional proportional gain Kv or Kp (controller) not allowed** *Position* The value for the second term of the proportional gain (Kv factor or Kp factor) is not allowed.	
			Value range: [0.0, 10000.0]	Unit: e.g. mm/s/mm
4516	**17686**	Parameter	**Reference velocity for additional proportional gain Kv or Kp (controller) not allowed** *Position* The value for the reference velocity percentage data entry, to which the additional proportional gain is applied, is not allowed. The standard setting for the parameter is 0.5 (50%).	
			Value range: [0.0 ... 1.0]	Unit: %
4517	**17687**	Parameter	**Proportional gain Pa (proportion) not allowed** *Acceleration* The value for the proportional gain (Pa factor) is not allowed.	
			Value range: [0.0, 1000000.0]	Unit: s
4518	**17688**	Parameter	**Proportional gain Kv (controller) not allowed** *Velocity* The value for the proportional gain (Kv factor) is not allowed.	
			Value range: [0.0, 10000.0]	Unit: 1
4519	**17689**	Parameter	**Integral action time Tn (controller) not allowed** *Velocity* The value for the integral action time is not allowed (I part of the PID T1 controller).	
			Value range: [0.0, 60.0]	Unit: s
451A	**17690**	Parameter	**Reserved** Reserved, currently not used.	

Error(Hex)	Error(Dec)	Error type	Description	
451B	**17691**	Parameter	**Reserved** Reserved, currently not used.	
451C	**17692**	Parameter	**Velocity filter time not allowed** The parameter for the velocity filter time in seconds is invalid (`P-T1` filter). This filter can be used in the `NC` for filtering an actual velocity or a velocity difference (`Geschwindigkeitsfehler = Soll-Geschwindigkeit - Ist-Geschwindigkeit`) in special `NC` controllers (e.g. in the torque interface).	
			Value range: [0.0, 60.0]	Unit: s
451D	**17693**	Parameter	**Dead range not allowed** The value for the dead range (neutral zone) of the position error or the velocity error (control deviation) is not allowed (applies to more complex controllers with velocity or torque interface).	
			Value range: [0.0, 10000.0]	Unit: mm or mm/s
451F	**17695**	Parameter	**Proportional gain Kcp not allowed** The parameter for the proportional gain `Kcp` of the slave coupling difference control is invalid.	
			Value range: [0.0, 10000.0]	Unit: e.g. mm^2/mm
4520	**17696**	Parameter	**Rate time Tv (controller) not allowed** *Velocity* The value for the derivative action time is not allowed (D part of the PID T1 controller).	
			Value range: [0.0, 60.0]	Unit: s
4521	**17697**	Parameter	**Damping time Td (controller) not allowed** *Velocity* The value for the damping time is not allowed (D part of the PID T1 controller). Suggested value: 0.1 * Tv	
			Value range: [0.0.. 60.0]	Unit: s
4522	**17698**	Parameter	**Limitation of the I part not allowed** The parameter for limiting the `I`-part of a `PI`- or `PID`-controller is not allowed. This internal state variable can be limited in percentage (`1.0` corresponds to `100` percent).	
			Value range: [0.0 .. 1.0]	Unit: %
4523	**17699**	Parameter	**Limitation of the D part not allowed** The parameter for limiting the `D`-part of a `PI`- or `PID`-controller is not allowed. This internal state variable can be limited in percentage (`1.0` corresponds to `100` percent).	
			Value range: [0.0 .. 1.0]	Unit: %
4524	**17700**	Parameter	**Parameter 'Deactivation of the I part during travel' not allowed** The boolean parameter for switching off the `I`-part during active positioning is invalid.	
			Value range: [0, 1]	Unit: 1

Error(Hex)	Error(Dec)	Error type	Description
4525	**17701**	Parameter	**Parameter 'Filter time for P-T2 filter' not allowed** The time `T0` in seconds is not permissible as a filter time for the `P-T2` element of the velocity controller. The filter time must be less than twice the NC SEC cycle time. Value range: [0.0, 60.0] — Unit: s
4526	**17702**	Parameter	**Velocity observer: 'Parameterized mode' is not allowed** The parameterized mode (`0=OFF`, `1=LUENBERGER`) for the velocity observer of the special `NC` controller in the torque interface is not permitted. Value range: [0, 1] — Unit: 1
4527	**17703**	Parameter	**Velocity observer: 'Motor torque constant Kt or Kf' is not allowed** The parameter for the motor torque constant `Kt` (rotary motor) or `Kf` (linear motor) of the velocity observer of the special NC controller in the torque interface is invalid. Value range: [0.0 .. 100000.0] — Unit: Nm/A or N/A
4528	**17704**	Parameter	**Velocity observer: 'Motor moment of inertia JM' is not allowed** The parameter for the motor moment of inertia J_M of the velocity observer of the special NC controller in the torque interface is invalid. Value range: [0.0001 .. 100000.0] — Unit: kg cm^2
4529	**17705**	Parameter	**Velocity observer: 'Bandwidth f0' is not allowed** The parameter for the bandwidth f_0 of the velocity observer of the special NC controller in the torque interface is invalid. The bandwidth must be less than the reciprocal of 6 times the NC cycle time ($f_0 < 1/(6*T)$). Value range: [0.0 .. 10000.0] — Unit: Hz
452A	**17706**	Parameter	**Velocity observer: 'Correction factor kc' is not allowed** The parameter for the correction factor k_c of the velocity observer of the special NC controller in the torque interface is invalid. The correction factor k_c establishes the relationship between current and acceleration or angular acceleration. Value range: [0.0 .. 100.0] — Unit: s
452B	**17707**	Parameter	**Velocity observer: 'Time constant T for 1st order filter' is not allowed** The time constant `T` for the 1st order velocity filter (PID-T_2 or "Lead Lag") of the velocity observer of the special NC controller in the torque interface is not allowed. The correction

Error(Hex)	Error(Dec)	Error type	Description
			factor k_c establishes the relationship between current and acceleration or angular acceleration.
			Value range: [0.0 .. 100.0] Unit: s
452C	**17708**	Parameter	**Velocity observer: 'Amplitude damping d for 2nd order filter' is not allowed** The high-pass/low-pass amplitude attenuation d_{HP} or d_{TP} for the 2nd order velocity filter ("bi-quad") of the velocity observer of the special NC controller in the torque interface is not allowed.
			Value range: [0.2 .. 10.0] Unit: 1
452D	**17709**	Parameter	**Velocity observer: 'Frequency fHP or fTP for 2nd order filter' is not allowed** The high-pass/low-pass frequency f_{HP} or f_{TP} for the 2nd order velocity filter ("bi-quad") of the velocity observer of the special NC controller in the torque interface is not allowed.
			Value range: [0.0, ... 10000.0] Unit: Hz
4540	**17728**	Initialization	**Controller initialization** The controller has not been initialized. Although the controller has been created, the rest of the initialization has not been performed (1. Initialization of controller, 2. Reset of controller).
4541	**17729**	Address	**Axis address** The controller does not know its axis, or the axis address has not been initialized.
4542	**17730**	Address	**Drive address** The controller does not know its drive, or the drive address has not been initialized.
4550	**17744**	Monitoring	**Lag error monitor (position)** While the lag error monitor was active (position), the lag error was exceeded by an amount greater than the lag error window and which lasting longer than the parameterized lag error filter time.
4551	**17745**	Monitoring	**Lag monitoring (velocity)** With active lag error monitoring (velocity) a velocity lag error exceedance has occurred, whose magnitude is greater than the lag error window, and whose duration is longer than the parameterized lag error filter time.
45A0	**17824**	Monitoring	**Internal error** CONTROLERR_RANGE_AREA_ASIDE
45A1	**17825**	Monitoring	**Internal error** CONTROLERR_RANGE_AREA_BSIDE
45A2	**17826**	Monitoring	**Internal error** CONTROLERR_RANGE_QNENN
45A3	**17827**	Monitoring	**Internal error** CONTROLERR_RANGE_PNENN
45A4	**17828**	Monitoring	**Internal error** CONTROLERR_RANGE_AXISIDPRESP0

2.7 Drive error

Error(Hex)	Error(Dec)	Error type	Description	
4600	**17920**	Parameter	**Drive ID not allowed** The value for the drive ID is not allowed, e.g. because it has already been assigned, is less than or equal to zero, or is bigger than 255.	
			Value range: [1 ... 255]	Unit: 1
4601	**17921**	Parameter	**Drive type not allowed** The value for the drive type is not allowed as it is not defined.	
			Value range: [1, 20]	Unit: 1
4602	**17922**	Parameter	**Drive operation mode not allowed** The value for the drive operation mode is not allowed (mode 1: default).	
			Value range: [1]	Unit: 1
4603	**17923**	Parameter	**Motor polarity not allowed** The flag for the motor polarity is invalid. Flag 0: Positive motor polarity Flag 1: Negative motor polarity	
			Value range: [0, 1]	Unit: 1
4604	**17924**	Parameter	**Drift compensation/velocity offset (DAC offset)** The value for the drift compensation (DAC offset) is impermissible.	
			Value range: [-100.0, 100.0]	Unit: e.g. m/min
4605	**17925**	Parameter	**Reference velocity (velocity pre-control)** The value for the reference velocity (also called velocity pre-control) is impermissible.	
			Value range: [0.0, 10000.0]	Unit: e.g. m/min
4606	**17926**	Parameter	**Reference output in percent** The value for the reference output in percent is impermissible. The value 1.0 (100 %) usually corresponds to a voltage of 10.0 V.	
			Value range: [0.0, 5.0]	Unit: %
4607	**17927**	Parameter	**Quadrant compensation factor not allowed** The value for the quadrant compensation factor is impermissible.	
			Value range: [0.0, 100.0]	Unit: 1
4608	**17928**	Parameter	**Velocity reference point in percent** The value for the velocity reference point in percent is impermissible. The value 1.0 corresponds to 100 percent.	
			Value range: [0.01, 1.0]	Unit: %
4609	**17929**	Parameter	**Output reference point** The value for the output reference point in percent is impermissible. The value 1.0 corresponds to 100 percent.	
			Value range: [0.01, 1.0]	Unit: %
460A	**17930**	Parameter	**Minimum or maximum output limits (output limitation)** The value for the minimum and/or maximum output limit is impermissible. This will happen if the value range is exceeded, the maximum limit is smaller than the minimum limit, or the distance between the minimum and maximum limits is zero. The minimum limit is initially set to –1.0 (-100 percent) and the maximum limit to 1.0 (100 percent).	
			Value range: [-1.0, 1.0]	Unit: %

Error(Hex)	Error(Dec)	Error type	Description
460B	**17931**	Parameter	**Parameter 'Maximum value for output' is not allowed** The value for the maximum number of output digits of the drive (maximum output value) is not allowed. Depending on the interface used (e.g. position, velocity or torque/current). For a velocity interface this is often a signed 16 bit output value (± 32767). Value range: [0x000000FF .. 0xFFFFFFFF] — Unit: INC or Digits
460C	**17932**	Parameter	**Parameter 'Internal Drive Control Word' is not allowed** The value as internal Drive Control Word for the NC is not allowed. This contains information from the development environment to the NC, which is evaluated by the NC at the TC start. Value range: [>0] — Unit: 1
460D	**17933**	Parameter	**Parameter 'Internal timer for RESET behavior Drive' is not allowed** The special parameter that influences the internal time behavior between NC Drive and the IO Drive (servo drive) is not allowed. Value range: [>5] — Unit: 1 (NC SEC cycles)
460E	**17934**	Parameter	**Parameter 'Master Motion Controller ID' is not allowed** The "Master Motion Controller ID" parameter is not allowed for a further NC Motion Controller in slave mode. An additional NC Motion Controller in slave mode can be used if it is one and the same drive device to which different NC information for different operation modes is connected (e.g. velocity mode and torque mode). **This parameter is not directly accessible by the user, but can only be influenced indirectly by configuring additional NC motion controllers underneath the NC axis.** Value range: [0 .. 255] — Unit: 1
460F	**17935**	Parameter	**Drive torque output scaling is not allowed** The value is shown as Drive torque output scaling (rotary motor) or as force output scaling (linear motor). Value range: [0, 1000000] — Unit: 1
4610	**17936**	Parameter	**Drive velocity output scaling is not allowed** The value for the drive velocity output scaling is not allowed. Value range: [0, 1000000] — Unit: 1
4611	**17937**	Parameter	**Profi Drive DSC proportional gain Kpc (controller) not allowed** *Position* The value for the Profi Drive DSC position control gain (Kpc factor) is impermissible. Value range: [0, 0xFFFFFF] — Unit: 0.001 * 1/s
4612	**17938**	Parameter	**Table ID is not allowed** The value for the table ID is impermissible. Value range: [0, 255] — Unit: 1
4613	**17939**	Parameter	**Table interpolation type is not allowed** The value is impermissible as the table interpolation type. Value range: 0 (LINEAR), 2 (SPLINE) — Unit: 1
4614	**17940**	Parameter	**Output offset in percent is not allowed** The value is impermissible as an output offset in percent (+/- 1.0).

Error(Hex)	Error(Dec)	Error type	Description	
			Value range: [-1.0, 1.0]	Unit: %
4615	**17941**	Parameter	**Profi Drive DSC scaling for calculation of 'Xerr' (controller) not allowed** *Position* The value is impermissible as Profi Drive DSC scaling for the calculation of 'Xerr'.	
			Value range: [0, 1000000]	Unit: 1
4616	**17942**	Parameter	**Drive acceleration output scaling not allowed** The value is impermissible as drive acceleration/deceleration output scaling.	
			Value range: [0, 1000000]	Unit: 1
4617	**17943**	Parameter	**Drive position output scaling not allowed** The value is impermissible as drive position output scaling.	
			Value range: [0, 1000000]	Unit: 1
4618	**17944**	Parameter	**Parameter 'Dead time compensation mode' (Motion Controller) is invalid** The parameter for the dead time compensation mode of the NC Motion Controller is invalid (OFF, ON with velocity, ON with velocity and acceleration).	
			Value range: [0, 1, 2]	Unit: 1
4619	**17945**	Parameter	**Parameter 'Control bits of dead time compensation' (motion controller) is invalid** The parameter for the "Control bits of the dead time compensation" of the NC motion controller is invalid (e.g. relative or absolute time interpretation).	
			Value range: [>0]	Unit: 1
461A	**17946**	Parameter	**Parameter 'Time shift of dead time compensation mode' (motion controller) is invalid** The parameter for the time shift of the dead time compensation (Time Shift in nanoseconds) of the NC Motion Controller is invalid.	
			Value range: [-1.0E9 .. 1.0E9]	Unit: ns
461B	**17947**	Parameter	**Parameter 'Output delay velocity interface Motion Controller' is invalid** The parameter for an optional output delay in the velocity interface to the Motion Controller is invalid (Delay Generator Velocity). The maximum permitted delay time must be less than 100 times the NC SEC cycle time.	
			Value range: [0.0 .. 0.1]	Unit: s
461C	**17948**	Parameter	**Drive filter type not allowed for command variable filter for the output position** The value is impermissible as a drive filter type for the smoothing of the output position (command variable filter for the setpoint position).	
			Value range: [0, 2]	Unit: 1
461D	**17949**	Parameter	**Drive filter time not allowed for command variable filter for the output position** The value is impermissible as a drive filter time for the smoothing of the output position (command variable filter for the setpoint position).	
			Value range: [0.0, 1.0]	Unit: s
461E	**17950**	Parameter	**Drive filter order not allowed for command variable filter for the output position**	

Error(Hex)	Error(Dec)	Error type	Description	
			The value is impermissible as a drive filter order (P-Tn) for the smoothing of the output position (command variable filter for the setpoint position).	
			Value range: [0, 10]	Unit: 1
4620	**17952**	Parameter	**Bit mask for stepper motor cycle not allowed** A value of the different stepper motor masks is impermissible for the respective cycle.	
			Value range: [0, 255]	Unit: 1
4621	**17953**	Parameter	**Bit mask for stepper motor holding current not allowed** The value for the stepper motor holding mask is impermissible.	
			Value range: [0, 255]	Unit: 1
4622	**17954**	Parameter	**Scaling factor for actual torque (actual current) not allowed** The value is impermissible as a scaling factor for the actual torque (or actual current).	
			Value range: [0, 1E+30]	Unit:
4623	**17955**	Parameter	**Filter time for actual torque not allowed** The value is impermissible as a filter time for the actual torque (or the actual current) (P-T1 filter).	
			Value range: [0.0, 60.0]	Unit: s
4624	**17956**	Parameter	**Filter time for the time derivative of the actual torque not allowed** The value as filter time for the time derivative of the actual torque (or the actual current) is not allowed (P-T1 filter).	
			Value range: [0.0, 60.0]	Unit: s
4625	**17957**	Parameter	**Parameter 'Drive operation mode' invalid** The parameter for the drive operation mode (motion controller operation mode: position mode, velocity mode, torque mode, ...) is invalid. It is possible that an NC operation mode changeover has been attempted or that an attempt was made to activate a preconfigured operation mode during the TC system startup. **The generic operation modes defined in the NC are implemented by the NC in a drive-specific manner, i.e. in particular for the SERCOS/ SoE and CANopen/ CoE (DS402) protocols.** Here, protocol-specific, drive-specific or even vendor-specific features must be taken into account (e.g. with SERCOS/ SoE, predefined operation modes can only be activated at runtime in the SERCOS parameters S-0-0032 to S-0-0035). Furthermore, not every generic NC operation mode can be converted into a drive-specific operation mode (there may be gaps in the specification here). The generic NC operation mode 0 is a special case. This value is used as an identifier to activate an NC default mode (if this identifier is known to the NC).	
			Value range: [0, >=1]	Unit: 1
4626	**17958**	Monitoring	**Motion Controller function is not supported.** A Motion Controller functionality has been triggered that is not enabled for use or is not implemented (e.g. writing or reading a drive operation mode that is not supported by certain Motion Controllers). It is also possible that this functionality is only temporarily unavailable (e.g. because the drive device is in error state or a drive enable is missing).	
4627	**17959**	Function	**DRIVEOPERATIONMODEBUSY** The activation of the drive operation mode failed, because another object with OID… is already using this interface.	

Error(Hex)	Error(Dec)	Error type	Description
4628	**17960**	Monitoring	**Drive operation mode changeover is not configured or the desired drive operation mode cannot be found.** No drive operation mode changeover has been configured, and in this respect no reading or writing of a drive operation mode is possible. Or the desired drive operation mode has not been found in the list of predefined drive operation modes (e.g. for SoE/ SERCOS). Note for CoE Motion Controllers: Reading or writing the CoE Motion Controller operation mode is only possible if the CoE objects 0x6060 "Modes of operation" and 0x6061 "Modes of operation display" are in the cyclic process data (PDO list) and a valid default operation mode has been configured. Note for SoE Motion Controllers: Reading or writing the current SoE Motion Controller operation mode is only possible if this operation mode has been predefined in one of the SoE parameters S-0-0032 to S-0-0035.
4629	**17961**	Monitoring	**Feedback drive operation mode changeover** During drive operation mode changeover, the requested operation mode was not consistently reported back within the monitoring time of 8 cycles. **CoE-Motion Controllers:** Reading or writing the CoE Motion Controller operation mode is only possible if the CoE objects 0x6060 "Modes of operation" and 0x6061 "Modes of operation display" are in the cyclic process data (PDO list) and a valid default operation mode has been configured. **SoE-Motion Controllers:** Reading or writing the current SoE Motion Controller operation mode is only possible if this operation mode has been predefined in one of the SoE parameters S-0-0032 to S-0-0035.
0x4630 … 0x463F: Error codes are reserved for external drive errors (e.g. stepper motor terminal or MC_PowerStepper function block).			
4630	**17968**	Monitoring	**Overtemperature** Overtemperature was detected or reported in the drive or terminal.
4631	**17969**	Monitoring	**Undervoltage** Undervoltage was detected or reported in the drive or terminal.
4632	**17970**	Monitoring	**Wire break in phase A** A wire break in phase A was detected or reported in the drive or terminal.
4633	**17971**	Monitoring	**Wire break in phase B** A wire break in phase B was detected or reported in the drive or terminal.
4634	**17972**	Monitoring	**Overcurrent in phase A** Overcurrent was detected or reported in phase A in the drive or terminal.
4635	**17973**	Monitoring	**Overcurrent in phase B** Overcurrent was detected or reported in phase B in the drive or terminal.
4636	**17974**	Monitoring	**Torque overload (stall)** A torque overload (stall) was detected or reported in the drive or terminal.
4640	**17984**	Initialization	**Drive initialization**

Error(Hex)	Error(Dec)	Error type	Description
			Drive has not been initialized. Although the drive has been created, the rest of the initialization has not been performed: 1. Initialization drive I/O 2. Initialization drive 3. Reset drive
4641	**17985**	Address	**Axis address** The drive does not know its axis, or the axis address has not been initialized.
4642	**17986**	Address	**Address I/O input structure** The drive has no valid I/O input address in the process image.
4643	**17987**	Address	**Address I/O output structure** The drive has no valid I/O output address in the process image.
4650	**18000**	Monitoring	**Drive hardware not ready to operate** The drive hardware is not ready for operation. This can be caused by the following reasons: - the drive is in error state (hardware error) - the drive is in the start-up phase (e.g. after an axis reset preceded by a hardware error) - the drive lacks the controller enable (ENABLE). **The time required for the "start-up" of a drive after a hardware error can be in the range of several seconds.**
4651	**18001**	Monitoring	**Error in the cyclic communication of the drive (Life Counter)** Reasons for this could be an interrupted fieldbus or a drive that is in the error state.
4652	**18002**	Monitoring	**Changing the table ID with active controller enable not allowed** Changing (deselecting, selecting) the characteristic curve table ID is not permissible when the controller enable for the axis is active.
4655	**18005**	Monitoring	**I/O data for more than 'n' continuous NC cycles invalid** The axis (encoder or drive) has detected invalid I/O data for more than 'n' continuous NC cycles (NC SAF task) (e.g. n=3). As a consequence it is possible that the encoder referencing flag is reset to FALSE (i.e. the encoder gets the state "unreferenced"). EtherCAT fieldbus: "working counter error ('WCState')" Lightbus fieldbus: "CDL state error ('CdlState')"

2.8 Table Errors

Error(Hex)	Error(Dec)	Error type	Description	
4A00	**18944**	Parameter	**Table ID not allowed** The value for the table ID is not allowed, e.g. because it has already been assigned - is less than or equal to zero - or is greater than 255.	
			Value range: [1 ... 255]	Unit: 1
4A01	**18945**	Parameter	**Table type not permitted** The value for the table type is not allowed as it is not defined.	
			Value range: [1]	Unit: 1
4A02	**18946**	Parameter	**Number of lines in the table not allowed**	

Error(Hex)	Error(Dec)	Error type	Description	
			The value of the number of lines in the table is not allowed, because, for example, it is smaller than two at linear interpolation and smaller than four at spline interpolation.	
			Value range: [2, 0xFFFF]	Unit: 1
4A03	**18947**	Parameter	**Number of columns in the table is not allowed** The value of the number of columns in the table is not allowed, because, for example, it is less than or equal to zero (depends upon the type of table or slave).	
			Value range: [1, 0xFFFF]	Unit: 1
4A04	**18948**	Parameter	**Step size (position delta) not allowed** The value for the step size between two lines (position delta) is not allowed, because, for example, it is less than or equal to zero.	
			Value range: [0.001, 1.0E+6]	Unit: e.g. mm
4A05	**18949**	Parameter	**Period not allowed** The value for the period is not allowed, because, for example, it is less than or equal to zero.	
			Value range: [0.001, 1.0E+9]	Unit: e.g. mm
4A06	**18950**	Parameter	**Table is not monotonic.** The value for the step size is not allowed, because, for example, it is less than or equal to zero.	
4A07	**18951**	Initialization	**Table sub type not allowed** The value for the table sub-type is unacceptable because it is not defined. Or the table sub-type and the table class (slave type) do not match. Table sub-types: (1) equidistant linear position table, (2) equidistant cyclic position table, (3) non-equidistant linear position table, (4) non-equidistant cyclic position table	
			Value range: [1, 4]	Unit: 1
4A08	**18952**	Initialization	**Table interpolation type not allowed** The value for the table interpolation type is invalid because it is not defined. Table interpolation types: (0) linear interpolation, (1) 4-point interpolation, (2) spline interpolation	
			Value range: [0, 2]	Unit: 1
4A09	**18953**	Initialization	**Incorrect table main type** The table main type is not allowed because it is not defined. Or the table main type and the table class (slave type) do not match. Table main types: (1) cam plate table (camming), (10) characteristic table, (16) 'motion function' table (MF)	
4A10	**18960**	Initialization	**Table initialization** The table has not been initialized. Although the table has been created, the rest of the initialization has not been performed. For instance, the number of lines or columns may be less than or equal to zero.	
4A11	**18961**	Initialization	**Not enough memory** The table could not be created, since there is not enough memory.	
4A12	**18962**	Function	**Function not executed, function not available**	

Error(Hex)	Error(Dec)	Error type	Description
			The function has not been implemented, or cannot be executed, for the present type of table.
4A13	**18963**	Function	**Line index not allowed** The start line index or the stop line index to be used for read or write access to the table is not allowed. For instance, the line index is greater than the total number of lines in the table.
4A14	**18964**	Function	**Column index not allowed** The start column index or the stop column index to be used for read or write access to the table in not allowed. For instance, the column index is greater than the total number of columns in the table.
4A15	**18965**	Function	**Number of lines not allowed** The number of lines to be read from or written to the table is not allowed. The number of lines must be an integer multiple of the number of elements in a line (n * number of columns).
4A16	**18966**	Function	**Number of columns not allowed** The number of columns to be read from or written to the table is not allowed. The number of columns must be an integer multiple of the number of elements in a column (n * number of lines).
4A17	**18967**	Function	**Error in scaling or in range entry** The entries in the table header are inconsistent, e.g. the scope is empty. If the error is generated during the runtime it is a runtime error and stops the master/slave group.
4A18	**18968**	Function	**Multi table slave out of range** The slave master position is outside the table values for the master. The error is a runtime error, and stops the master/slave group.
4A19	**18969**	Function	**Solo table underflow** The slave master position is outside the table values for the master. The master value of the equidistant table, to be processed linearly, lies under the first table value. The error is a runtime error, and stops the master/slave group.
4A1A	**18970**	Function	**Solo table overflow** The slave master position is outside the table values for the master. The master value of the equidistant table, to be processed linearly, lies above the first table value. The error is a runtime error, and stops the master/slave group.
4A1B	**18971**	Parameter	**Incorrect execution mode** The cyclic execution mode can only be "TRUE" or "FALSE".
4A1C	**18972**	Parameter	**Invalid parameter** The Fifo parameter is not allowed.
4A1D	**18973**	Parameter	**Fifo is empty** The Fifo of the external generator is empty. This can signify an end of track or a runtime error.
4A1E	**18974**	Parameter	**Fifo is full** The Fifo of the external generator is full. It is the user's task to continue to attempt to fill the Fifo with the rejected values.
4A1F	**18975**	Parameter	**Point index of the motion function is invalid.** The point index of a Motion Function Point of a Motion Function Table is invalid. First, the point index must firstly be greater than zero and secondly, it must be numerically consecutive for a

Error(Hex)	Error(Dec)	Error type	Description
			column of a Motion Function Table (e.g. 1,2,3,... or 10,11,12,...). **Note: The point index must not be changed online, but must be kept constant.**
4A20	**18976**	Initialization	**No diagonalization of matrix** The spline cannot be calculated. The master positions are not correct.
4A21	**18977**	Initialization	**Number of spline points too small** The number of points of a cubic spline must be at least three. Therefore, the number of lines must be at least three.
4A22	**18978**	Initialization	**Fifo must not be overwritten.** The Fifo of the external generator must not be overwritten, otherwise it would be written over the active processing line. It is up to the user to make sure that no changes or deletions are requested across the active line.
4A23	**18979**	Function	**Motion Function has too few points** The number of valid points defining a Motion Function is less than two. Either the total number is too low or the point type of many points is set to *Ignore Point*.
4A25	**18981**	Initialization	**Master start position of the table is invalid.** For a periodic position table, it is mandatory that the master position of the table starts at zero. For a periodic motion function, the first master position must be greater than zero but not greater than the period of the table.

2.9 NC-PLC Errors

Error(Hex)	Error(dec)	Error type	Description
4B00	**19200**	Parameter	**Axis was stopped.** The axis was stopped during travel to the target position. The axis may have been stopped with a PLC command via ADS, a call via AXFNC, or by the TwinCAT development environment.
4B01	**19201**	Parameter	**The axis cannot be started.** The axis cannot be started because: • the axis is in error state, • the axis is executing another command, • the axis is in protected mode, • the axis is not ready for operation.
4B02	**19202**	Parameter	**Control mode not permitted** No target position control, and no position area control.
4B03	**19203**	Parameter	**Axis is not moving.** The position and velocity can only be restarted while the axis is physically in motion.
4B04	**19204**	Parameter	**Mode invalid** Examples: Invalid Direction with MC_MoveModulo. Inactive axis parameter Position correction with MC_BacklashCompensation.
4B05	**19205**	Parameter	**Command not permitted** • Continuous motion in an unspecified direction • Read/Write parameter: unsuitable type

Error(Hex)	Error(dec)	Error type	Description
4B06	**19206**	Parameter	**Parameter is not correct** • Incorrect override: > 100 % or < 0 % • Incorrect gear ratio: RatioDenominator = 0
4B07	**19207**	Parameter	**Timeout axis function block** After positioning all "MC_Move..."function blocks, check whether positioning was completed successfully. In the simplest case, the "AxisHasJob" flag of the NC axis is checked, which initially signifies that positioning was logically completed. Depending on the parameterization of the NC axis, further checks (quality criteria) are used: • "Position range monitoring": If position range monitoring is active, the system waits for feedback from the NC. After positioning, the axis must be within the specified positioning range window. If necessary, the position controller ensures that the axis is moved to the target position. If the position controller is switched off (Kv=0) or weak, the target may not be reached. • "Target position monitoring": If target position monitoring is active, the system waits for feedback from the NC. After positioning, the axis must be within the specified target position window for at least the specified time. If necessary, the position controller ensures that the axis is moved to the target position. If the position controller is switched off (Kv=0) or weak, the target may not be reached. Floating position control may lead to the axis oscillating around the window but not remaining inside the window. If the axis is logically at the target position (logical standstill) but the parameterized position window has not been reached, monitoring of the above-mentioned NC feedback is aborted with error 19207 (0x4B07) after a constant timeout of 6 seconds.
4B08	**19208**	Parameter	**Axis is in protected mode.** The axis is in protected mode (e.g. coupled) and cannot be moved.
4B09	**19209**	Parameter	**Axis is not ready.** The axis is not ready and cannot be moved.
4B0A	**19210**	Parameter	**Error during referencing** Referencing (homing) of the axis could not be started or was not successful.
4B0B	**19211**	Parameter	**Incorrect definition of the trigger input** The definition of the trigger signal for function block MC_TouchProbe is incorrect. The defined encoder-ID, the trigger signal or the trigger edge are invalid.
4B0C	**19212**	Function	**Position latch was disabled.** The function block MC_TouchProbe has detected that a touch probe cycle it had started was disabled. The reason may be an axis reset, for example.
4B0D	**19213**	Function	**NC state feedback timeout** A function was successfully sent from the PLC to the NC. An expected feedback in the axis status word has not arrived.
4B0E	**19214**	Function	**Additional product not installed.**

Error(Hex)	Error(dec)	Error type	Description
			The function is available as a supplement but is not installed on the system.
4B0F	**19215**	Function	**No NC Cycle Counter Update** The NcToPlc Interface or the NC Cycle Counter in the NcToPlc Interface was not updated.
Error numbers 0x4B10 .. 0x4B2F are used in *TwinCAT NCI* context:			
4B10	**19216**	Function	**M-function query missing.** This error occurs if the M-function was confirmed, but the request bit was not set.
4B11	**19217**	Parameter	**Zero shift index is outside the range.** The index of the zero offset shift is invalid.
4B12	**19218**	Parameter	**R parameter index or size is invalid.** This error occurs if the R parameters are written or read but the index or size are outside the range.
4B13	**19219**	Parameter	**Index for tool description is invalid.** The index for the tool description is invalid.
4B14	**19220**	Function	**Version of the cyclic channel interface does not match the requested function or the function block.** This error occurs if an older TwinCAT version is used to call new functions of a later TcNci.lib version.
4B15	**19221**	Function	**Channel is not ready for the requested function.** The requested function cannot be executed, because the channel is in the wrong state. This error occurs during reverse travel, for example, if the axis was not stopped with ItpEStop first.
4B16	**19222**	Function	**Requested function is not activated.** The requested function requires explicit activation.
4B17	**19223**	Function	**Axis is already in another group** The axis has already been added to another group.
4B18	**19224**	Function	**Block search could not be executed successfully.** The block search has failed. Possible causes: • Invalid block number
4B19	**19225**	Parameter	**Blocksearch parameter invalid** This error occurs if the function block ItpBlocksearch is called with invalid parameters (e.g. E_ItpDryRunMode, E_ItpBlockSearchMode).
4B20	**19232**	Function	**Cannot add all axes** This error occurs if an auxiliary axis is to be added to an interpolation group, but the function fails. It is likely that a preceding instruction of an auxiliary axis was skipped.
Error numbers 0x4B30 .. 0x4B3F are used in the *TcMcCam-Lib* (MC_NC_TableErrorCodes):			
4B30	**19248**	Parameter	**Pointer is invalid.** A pointer to a data structure is invalid, e.g. Null. • Data structure MC_CAM_REF was not initialized.
4B31	**19249**	Parameter	**Memory size invalid** The specification of the memory size (SIZE) for a data structure is invalid. • Memory size is 0 or smaller than an element of the addressed data structure.

Error(Hex)	Error(dec)	Error type	Description
			• Memory size is smaller than the requested amount of data. • Memory size does not match other parameters, such as number of points, number of rows or number of columns.
4B32	**19250**	Parameter	**Cam plate ID is invalid.** The ID of a cam plate is not between 1 and 255.
4B33	**19251**	Parameter	**Point ID is invalid.** The ID of a point (interpolation point) of a motion function is less than 1.
4B34	**19252**	Parameter	**Number of points is invalid.** The number of points (interpolation points) of a cam plate to be read or written is less than 1.
4B35	**19253**	Parameter	**MC table type is invalid.** The type of a cam plate does not match the definition *MC_TableType.*
4B36	**19254**	Parameter	**Number of rows invalid** The number of rows (interpolation points) of a cam plate is less than 1.
4B37	**19255**	Parameter	**Number of columns invalid** The number of columns of a cam plate is invalid. • The number of columns of a motion function is not equal 1. • The number of columns of a standard cam plate is not equal 2. • The number of columns does not match another parameter (ValueSelectMask).
4B38	**19256**	Parameter	**Step size invalid** The step size for the interpolation is invalid, e.g. less than or equal to zero.
Error numbers 0x4B0F, 0x4B40 .. 0x4B4F are used in several libraries (*TcNc-Lib / Tc2_MC2_XFC-Lib)*:			
4B40	**19264**	Monitoring	**Terminal type not supported** The terminal used is not supported by this function block.
4B41	**19265**	Monitoring	**Register read/write error** This error implies a validity error.
4B42	**19266**	Monitoring	**Axis is enabled.** The axis is enabled but should not be enabled for this process.
4B43	**19267**	Parameter	**Incorrect size of the compensation table** The specified table size (in bytes) does not match the actual size.
4B44	**19268**	Parameter	**Positional deviation** The minimum/maximum position in the compensation table does not match the position in the table description (ST_CompensationDesc).
4B45	**19269**	Parameter	**Not implemented** The requested function is not implemented in this combination.
4B46	**19270**	Parameter	**Window not in the specified modulo range** The parameterized min or max position is not in the specified modulo range.

Error(Hex)	Error(dec)	Error type	Description
4B47	**19271**	Monitoring	**Buffer overflow** The number of events has led to an overflow of the buffer and not all events could be acquired.
Error numbers 0x4B50 .. 0x4B5F are used in the *TcMcCam-Lib* :			
Error numbers 0x4B60 .. 0x4B6F are used in the *TcMc2-Lib* in the *buffered commands* context:			
4B60	**19296**	Monitoring	**Motion command did not become active.** A motion command has been started and has been buffered and confirmed by the NC. Nevertheless, the motion command did not become active (possibly due to a termination condition or an internal NC error).
4B61	**19297**	Monitoring	**Motion command could not be monitored by the PLC.** A motion command has been started and has been buffered and confirmed by the NC. The PLC has not been able to monitor the execution of this command and the execution status is unclear since the NC is already executing a more recent command. The execution state is unclear. This error may come up with very short buffered motion commands which are executed during one PLC cycle.
4B62	**19298**	Monitoring	**Buffered command was terminated with an error.** A buffered command was terminated with an error. The error number is not available, because a new command is already being executed.
4B63	**19299**	Monitoring	**Buffered command was completed without feedback** A buffered command was completed but there was no feedback to indicate success or failure.
4B64	**19300**	Monitoring	**'BufferMode' is not supported by the command.** The 'BufferMode' is not supported by this command.
4B65	**19301**	Monitoring	**Command number is zero.** The command number for queued commands managed by the system unexpectedly has the value 0.
4B66	**19302**	Monitoring	**Function block was not called cyclically.** The function block was not called cyclically. The command execution could not be monitored by the PLC, because the NC was already executing a subsequent command. The execution state is unclear.
Error numbers 0x4B70 .. 0x4B8F are used in the *TcPlcInterpolation-Lib* :			
4B71	**19313**	Parameter	**NCI Entry type invalid** The FB FB_NciFeedTablePreparation was called with an unknown nEntryType.
4B72	**19314**	Function	**NCI feed table full** The table is full and therefore the entry is not accepted. Remedy: Transfer the contents to the NC kernel with the function block FB_NciFeedTable. If bFeedingDone = TRUE, the table can be reset in FB_NciFeedTablePreparation with bResetTable and then filled with new entries.
4B73	**19315**	Function	**Internal error**
4B74	**19316**	Parameter	**ST_NciTangentialFollowingDesc: Tangential axis is not an auxiliary axis.** The entry for tangential following contains a tangential axis that is not an auxiliary axis.

Error(Hex)	Error(dec)	Error type	Description
4B75	**19317**	Parameter	**ST_NciTangentialFollowingDesc** nPathAxis1 or nPathAxis2 is not a path axis. It is therefore not possible to determine the plane.
4B76	**19318**	Parameter	**ST_NciTangentialFollwoingDesc** nPathAxis1 and nPathAxis2 are the same. It is therefore not possible to determine the plane.
4B77	**19319**	Parameter	**ST_NciGeoCirclePlane** Circle incorrectly parameterized
4B78	**19320**	Function	**Internal error** An internal error has occurred in the calculation of the tangential following.
4B79	**19321**	Monitoring	**Tangential following** Monitoring of the deviation angle was activated during activation of tangential following (E_TfErrorOnCritical1), and an excessively large deviation angle was detected in the current segment.
4B7A	**19322**	Function	**Reserved** Reserved, currently not used.
4B7B	**19323**	Parameter	**Tangential following** The radius of the current arc is too small.
4B7C	**19324**	Parameter	**FB_NciFeedTablePreparation** pEntry is NULL
4B7D	**19325**	Parameter	**FB_NciFeedTablePreparation** The specified nEntryType does not match the structure type.
4B7E	**19326**	Parameter	**ST_NciMFuncFast and ST_NciMFuncHsk** The requested M-function is not between 0 and 159.
4B7F	**19327**	Parameter	**ST_NciDynOvr** The requested value for the dynamic override is not between 0.01 and 1
4B80	**19328**	Parameter	**ST_NciVertexSmoothing** Invalid parameter. This error is generated if a negative smoothing radius or an unknown smoothing type is encountered.
4B81	**19329**	Parameter	**FB_NciFeedTablePrepartion** The requested velocity is not in the valid range.
4B82	**19330**	Parameter	**ST_Nci*** Invalid parameter
Error numbers 0x4B90 .. 0x4B9F are used in the *Tc3_MC2_AdvancedHoming-Lib* **(PLCopen Part 5: Homing Procedures):**			
4B90	**19344**	Parameter	**Drive type** The determined drive type is not supported.
4B91	**19345**	Parameter	**Direction** The direction is impermissible.
4B92	**19346**		**SwitchMode** The SwitchMode is impermissible.
4B93	**19347**		**Mode** The mode for the parameter handling is impermissible.
4B94	**19348**		**Torque limits**

Error(Hex)	Error(dec)	Error type	Description
			The parameterization of the torque limits is inconsistent.
4B95	**19349**		**Lag error limit** The parameterization of the position lag limit is impermissible (<=0).
4B96	**19350**		**Distance limit** The parameterization of the distance limit is impermissible (<0).
4B97	**19351**		**Saving parameters** An attempt was made to back up parameters again, although they have already been backed up.
4B98	**19352**		**Restoring parameters** An attempt was made to restore parameters, although none have been backed up.
4B9F	**19359**		**Cancellation of a homing** The abortion of a homing has failed.
Error numbers 0x4BA0 .. 0x4BAF are used in the *TcNcKinematicTransformation-Lib* **:**			
4BA0	**19360**	Function	**KinGroup error** The kinematic group is in an error state. This error may occur if the kinematic group is in an error state or an unexpected state when it is called (e.g., simultaneous call via several function block instances).
4BA1	**19361**	Function	**KinGroup timeout** Timeout during call of a kinematic block
Error numbers 0x4BB0 .. 0x4BBF are used in the *Tc2_MC2_Drive-Lib* **:**			
4BB0	**19376**	Function	**Invalid axis position** The current axis position or the axis position resulting from the new position offset exceeds the valid range of values.
4BB1	**19377**	Function	**Position offset invalid** The new position offset exceeds the valid range of values [AX5000: 2^31].
4BB2	**19378**	Function	**Invalid axis position** The current axis position or the axis position resulting from the new position offset falls below the valid range of values.
4BB3	**19379**	Function	**Position offset invalid** The new position offset falls below the valid range of values [AX5000: -2^31].
4BB4	**19380**	Function	**Deviation of the activated feedback and/or storage location** The activated feedback and/or storage location (AX5000: P-0-0275) differ from the parameterization on the function block.
4BB5	**19381**	Function	**Reinitialization of the NC actual position has failed.** The reinitialization of the actual NC position has failed, e.g., reference system = "ABSOLUTE (with single overflow)" & software end position monitoring is disabled.
4BB6	**19382**	Function	**The setting or deletion of a position offset was rejected.**

Error(Hex)	Error(dec)	Error type	Description
			The command to set or delete a position offset was rejected without feedback data, e.g., if the drive controller's firmware does not support the corresponding command.
4BB7	**19383**	Function	**The setting or deletion of a position offset was rejected.** The command to set or delete a position offset was rejected with feedback data. The information in the feedback data may contain further clues to the cause, e.g. if the firmware of the drive controller does not support the corresponding command.
4BB8	**19384**	Function	**Firmware version invalid** A firmware version >= 19 is required for the servo terminal.
4BB9	**19385**	Function	**Different modulo settings** The modulo settings on the drive controller and in the NC are different.
4BBA	**19386**	Function	**Brake test failed** The brake test has failed.
4BBB	**19387**	Function	**Drive type not supported** The determined drive or axis type is not supported.
4BBC	**19388**	Function	**Command was aborted.** The command was aborted by another command.
4BBD	**19389**	Function	**Timeout** The command was aborted due to timeout.
Error numbers 0x4BC0 .. 0x4BCF are used in the *Tc3_DriveMotionControl-Lib* :			
4BC2	**19394**		**Position offset invalid** The new position offset exceeds the valid value range.
4BC3	**19395**		**I/O data invalid** I/O data are invalid or the terminal is in an error state.
4BC4	**19396**		**ADS port not linked in the interface** The ADS port variable of the terminal was not linked to the axis interface of the PLC and parameters of the terminal are to be changed.

2.10 Kinematic Transformation

Error(Hex)	Error(Dec)	Error type	Description
4C00	**19456**		**Transformation failed** The calculation of the transformation failed.
4C01	**19457**		**Ambiguous solution** The solution for the transformation is not unique.
4C02	**19458**		**Invalid axis position** The transformation cannot be calculated with the current position data. Possible causes: • The position is outside the working area of the kinematics.
4C03	**19459**	Configuration	**Invalid dimension**

Error(Hex)	Error(Dec)	Error type	Description
			The dimension of the parameterized input parameter does not match the dimension expected by the kinematic object. Possible causes: • Too many position values are supplied for this configuration. Check the number of parameterized axes.
4C04	**19460**		**Internal error** NCERR_KINTRAFO_REGISTRATION
4C05	**19461**	Internal	**Newton iteration failed** The Newton iteration does not converge.
4C06	**19462**	Internal	**Jacobi matrix cannot be inverted** The Jacobi matrix cannot be inverted.
4C07	**19463**	Configuration	**Invalid cascade** This kinematic configuration is not permitted.
4C08	**19464**	Programming	**Singularity** The machine configuration results in singular axis velocities.
4C0B	**19467**	Internal	**No metainfo** The metainfo pointer is null.
4C13	**19475**	Internal	**NCERR_RBTFRAME_INVALIDWCSTOMCS** The WcsToMcs component used leads to positions that the selected kinematics cannot assume. It is necessary to adjust the WcsToMcs parameters.
4C20	**19488**	Internal	**Transformation failed** The call of the extended kinematics model has failed.
4C30	**19504**	Programming	**Invalid input frame** The programmed Cartesian position cannot be approached in the ACS configuration.
4C50	**19536**	Internal	**Invalid offset** An access violation was detected in the observer.

2.11 Bode Return Codes

The following bode plot specific error codes are used in the bode plot server:

Code (Hex)	Code (Dec)	Symbol	Description
0x8100	33024	INTERNAL	Internal error
0x8101	33025	NOTINITIALIZED	Not initialized (e.g. no nc axis)
0x8102	33026	INVALIDPARAM	Invalid parameter
0x8103	33027	INVALIDOFFSET	Invalid index offset
0x8104	33028	INVALIDSIZE	Invalid parameter size
0x8105	33029	INVALIDSTARTPARAM	Invalid start parameter (set point generator)
0x8106	33030	NOTSUPPORTED	Not supported
0x8107	33031	AXISNOTENABLED	Nc axis not enabled
0x8108	33032	AXISINERRORSTATE	Nc axis in error state
0x8109	33033	DRIVEINERRORSTATE	IO drive in error state
0x810A	33034	AXISANDDRIVEINERROR-STATE	Nc axis AND IO drive in error state

Code (Hex)	Code (Dec)	Symbol	Description
0x810B	33035	INVALIDDRIVEOPMODE	Invalid drive operation mode active or requested (no bode plot mode)
0x810C	33036	INVALIDCONTEXT	Invalid context for this command (mandatory task or windows context needed)
0x810D	33037	NOAXISINTERFACE	**Missing TCom axis interface (axis null pointer).** There is no connection to the NC axis. Either no axis (or axis ID) has been parameterized, or the parameterized axis does not exist.
0x810E	33038	INPUTCYCLECOUNTER	**Invalid input cycle counter from IO drive (e.g. frozen).** The cyclic drive data are backed up by an 'InputCycleCounter' during the bode plot recording. This allows firstly the detection of an unexpected communication loss (keyword: LifeCounter) and secondly a check for temporal data consistency to be performed. **Example 1:** This error can occur if the cycle time of the calling task is larger than the assumed drive cycle time (in this case, however, the error occurs right at the start of the recording). **Example 2:** This error can occur if the calling task has real-time errors (e.g. the "Exceed Counter" of the task increments or the task has a lower priority, as is often the case, for example, with the PLC). In this case the error can also occur at any time during the recording. **Example 3:** This error can occur more frequently if the real-time load on the computer is quite high (>50 %). **Note:** Refer also to the corresponding AX5000 drive error code F440.
0x810F	33039	POSITION MONITORING (=> NC Runtime Error)	**Position monitoring: Axis position is outside of the maximum allowed moving range.** The axis has left the parameterized position range window, whereupon the recording was aborted and the NC axis was placed in the error state 0x810F (with standard NC error handling). The position range window acts symmetrically around the start position of the axis (see also parameter description *Position Monitoring Window*). Typical error message in the logger: *"BodePlot: 'Position Monitoring' error 0x%x because the actual position %f is above the maximum limit %f of the allowed position range (StartPos=%f, Window=%f)"*

Code (Hex)	Code (Dec)	Symbol	Description
0x8110	33040	DRIVELIMITATIONDETECTED	**Driver limitations detected (current or velocity limitations) which causes a nonlinear behavior and invalid results of the bode plot.** A bode plot recording requires an approximately linear transmission link. If the velocity or current is limited in the drive device, however, this non-linear behavior is detected and the bode plot recording is aborted. Reasons for these limitations can be: choosing too large an amplitude for the position, velocity or torque interface, or an unsuitable choice of amplitude scaling mode (see also parameter description *Amplitude Scaling Mode, Base Amplitude, Signal Amplitude*). Typical error message in the logger: *"BodePlot: Sequence aborted with error 0x%x because the current limit of the drive has been exceeded (%d times) which causes a nonlinear behavior and invalid results of the bode plot"*
0x8111	33041	LIFECOUNTERMONITORING (=> NC Runtime Error)	**Life counter monitoring (heartbeat): Lost of communication to GUI detected after watchdog timeout is elapsed.** The graphical user interface from which the bode plot recording was started is no longer communicating with the bode plot driver in the expected rhythm (keyword: 'Life Counter'). Therefore the recording is terminated immediately and the NC axes are placed in the error state 0x8111 (with standard NC error handling). Possible reasons for this can be an user interface crash or a major malfunction of the Windows context. Typical error message in the logger: *"BodePlot: Sequence aborted with GUI Life Counter error 0x%x because the WatchDog timeout of %f s elapsed ('%s')"*
0x8112	33042	NCERR_BODEPLOT_WCSTATE	**WC state error (IO data working counter)** IO working counter error (WC state), for example due to real-time errors, EtherCAT CRC errors or telegram failures, EtherCAT device not communicating (OP state), etc.
0x8113-0x811F	33043-33055	RESERVED	**Reserved range**

2.12 Further Error Codes

Table 1:

Error(Hex)	Error(Dec)	ErrorType	Description
0x8120	**33056**	Environment	**Invalid configuration for Object (e.g. in TwinCAT 3 Engineering (XAE)).**

Error(Hex)	Error(Dec)	ErrorType	Description
0x8121	**33057**	Environment	**Invalid environment for Object (e.g. TcCom-Object's Hierarchy or missing/faulty Objects).**
0x8122	**33058**	Environment	**Incompatible Driver or Object.**
0x8124	**33060**	Function Block	**Command execution does not terminate (e. g. MC_Reset does not signal DONE).**
0x8130	**33072**	Communication	**Invalid ObjectID of Communication Target.**
0x8131	**33073**	Communication	**Communication Target expects Call in different Context.**
0x8132	**33074**	Communication	**Invalid State of Communication Target.**
0x8134	**33076**	Communication	**Communication with Communication Target cannot be established.**
0x813b	**33083**	Parameter	**Transition Mode is invalid.**
0x813c	**33084**	Parameter	**BufferMode is invalid.**
0x813d	**33085**	Function Block	**Only one active Instance of Function Block per Group is allowed.**
0x813e	**33086**	State	**Command is not allowed in current group state.**
0x813f	**33087**	Function Block	**Slave cannot synchronize.** The slave cannot reach the SlaveSyncPosition with the given dynamics.
0x8140	**33088**	Parameter	**Invalid value for one or more of the dynamic parameters (Acceleration, Deceleration, Jerk).**
0x8141	**33089**	Parameter	**IdentInGroup is invalid.**
0x8142	**33090**	Parameter	**The number of axes in the group is incompatible with the axes convention.**
0x8143	**33091**	Communication	**Function Block or respective Command is not supported by Target.**
0x8144	**33092**	State	**Command queue full.** Command queue is completely filled up and cannot accept additional commands until some commands are fully processed.
0x8145	**33093**	Function Block	**Mapping of Cyclic Interface between NC and PLC is missing (e.g. AXIS_REF, AXES_GROUP_REF, ...).**
0x8146	**33094**	Function Block	**Invalid Velocity Value.** The velocity was not set or the entered value is invalid.
0x8147	**33095**	Parameter	**Invalid Coordinate Dimension.** The dimension of the set coordinate interpretation does not meet the requirements.
0x8148	**33096**	Function Block	**Invalid Input Value.**
0x8149	**33097**	Parameter	**Unsupported Dynamics for selected Group Kernel.**
0x814a	**33098**	Parameter	**The programmed position dimension is incompatible with the axes convention.**
0x814b	**33099**	Function Block	**Path buffer is invalid. For example because provided buffer has invalid address or is not big enough.**
0x814c	**33100**	Function Block	**Path does not contain any element.**
0x814d	**33101**	Function Block	**Provided Path buffer is too small to store more Path Elements.**
0x814e	**33102**	Parameter	**Dimension or at least one Value of Transition Parameters is invalid.**

Error(Hex)	Error(Dec)	ErrorType	Description
0x814f	**33103**	Function Block	**Invalid or Incomplete Input Array.**
0x8150	**33104**	Function Block	**Path length is zero.**
0x8151	**33105**	State	**Command is not allowed in current axis state.** If the axis has no controller enable, is in error or has been added to a group, some commands are not permitted.
0x8152	**33106**	State	**TwinCAT System is shutting down and cannot complete request.**
0x8153	**33107**	Parameter	**Configured axes convention and configured axes do not match.**
0x8154	**33108**	Initialization	**Invalid Number of ACS Axes.** The number of ACS input axes does not match the number of ACS input axes expected by the kinematic transformation.
0x8155	**33109**	Initialization	**Invalid Number of MCS Data.** The number of MCS input data does not match the number expected by the kinematic transformation.
0x8156	**33110**	Initialization	**Invalid Value Set for Kinematic Parameters.** The numeric value set for the parameter does not reside within the respective definition range.
0x8158	**33112**	NC Programming	**The given ACS Values Cannot be Reached.** The given ACS values result in an invalid machine configuration.
0x8159	**33113**	NC Programming	**The set Target Positions Cannot be Reached.** The set target positions reside outside the admissible working space.
0x815d	**33117**	NC Programming	**Discontinuity in ACS axes detected.**
0x8160	**33120**	NC Programming	**Circle Specification in Path is invalid.** The specification of a circle segment in the programmed interpolated path (e.g. via MC_MovePath) has an invalid or ambiguous description. Probably its center cannot be determined reliably.
0x8161	**33121**	NC Programming	**Maximum stream lines reached.** The maximum number of stream lines is limited. Please refer to function block documentation for details.
0x8163	**33123**	Function Block	**Invalid First Segment.** The corresponding element can only be analyzed with a well-defined start point.
0x8164	**33124**	Function Block	**Invalid auxiliary point.** The auxiliary point is not well-defined.
0x8166	**33126**	Function Block	**Invalid parameter for GapControlMode.** Invalid parameter for GapControlMode, most likely in combination with the group parameter GapControlDirection.
0x8167	**33127**	External	**Group got unsupported Axis Event (e.g. State Change).** Group got unsupported Axis Event (e.g. State Change e.g. triggered by a Single Axis Reset).
0x8168	**33128**	Parameter	**Unsupported Compensation Type.** The compensation type was either not set or is not supported by the addressed object.
0x8169	**33129**	Function Block	**Master axis does not exist or cannot be used.**

Error(Hex)	Error(Dec)	ErrorType	Description
0x816a	**33130**	External	**Invalid or Missing Tracking Transformation.** This error occurs at MC_TrackConveyorBelt if at the CoordTransform input an invalid object ID is used or the object ID points to an object that is not supported as coordinate transformation.
0x816b	**33131**	Function Block	**Position is not on Track.** Either Track cannot be activated because Actual Position is not on Track, or Target Position is not on Active Track or TrackPart.
0x816c	**33132**	Function Block	**Axis does not have an activated track.**
0x816d	**33133**	NC Programming	**Invalid Compensation ObjectId.** An Object with this ObjectId does not exist or it is not of the right type (has to be a compensation).
0x816e	**33134**	Monitoring	**Axis is in error because axis was not in Target when InTargetAlarm Timer expired.**
0x816f	**33135**	State	**Coupling would cause a cyclic dependency of axis (e.g. via MC_GearInPos).**
0x8170	**33136**	Function Block	**Axis was not added to an axes group. The command is not valid.**
0x817e	**33150**	State	**Enabling of the mover is not allowed.** Enabling of the mover is not allowed, because the mover is not present on the system. Check the state of the mover.
0x817f	**33151**	State	**Drive has invalid State.**
0x8181	**33153**	Function Block	**Parameter for gap control are invalid with the current configuration.** Function block with gap control was issued to an axis that is not in a CA group.
0x8182	**33154**	Monitoring	**Software position limit violation.** Software position limits of at least one axis have been or would have been violated by a command.
0x8183	**33155**	NC Programming	**Target position is not reachable.** There is no path available to the target position or target position is unreachable in general.
0x8185	**33157**	NC Programming	**The mover or one of its relevant coordinates is busy.** Either the whole mover or at least of its coordinates relevant to the command are busy.
0x8186	**33158**	NC Programming	**A collision has occurred or would occur.** Either a collision has occurred or would occur if the command was executed.
0x8187	**33159**	NC Programming	**Invalid Track Specification.** The geometric extension of this track is incompatible with the already existing geometry of this or the other tracks.
0x8188	**33160**	NC Programming	**Command not allowed in track state.**
0x8189	**33161**	Function Block	**Invalid Reference passed to Function Block.** An invalid reference (or pointer) was used in a function block call. This can happen if a reference type is used before it was initialized.
0x818a	**33162**	NC Programming	**Path is locked against modifications.** The path was locked to further changes. However, it might be resettable.
0x818c	**33164**	Parameter	**Position is out of modulo range.** Position must be larger or equal to zero and less or equal to the modulus when using modulo positioning. When using

Error(Hex)	Error(Dec)	ErrorType	Description
			modulo positioning, the target position is interpreted in consideration of the AdditionalTurns variable at the Options input.
0x818d	**33165**	Parameter	**The specified value AdditionalTurns at the Options input is not allowed.** The parameter AdditionalTurns must be zero for the specified value of the parameter Direction.
0x818e	**33166**	Function Block	**Master/Slave sync position incompatible with sync direction.** The given sync positions require the slave moving in a direction which is not allowed while in synchronization phase.
0x8191	**33169**	State	**Unexpected axis state.** At least one axis has an unexpected state. This may occur if a group reset is active and an axis error occurs after the respective axis was successfully reset.
0x8192	**33170**	State	**Invalid reference system.** The reference system is unknown or invalid for this application.
0x8193	**33171**	State	**Position not in reference system.** The position is outside of the specified reference system.
0x8194	**33172**	State	**A previous command is blocking execution.** A previous command is still ongoing and simultaneous execution of both commands is impossible.
0x8198	**33176**	Parameter	**Invalid index.** The used index does not exist or is invalid.
0x8199	**33177**	Function Block	**Command not allowed.** The command is not allowed in the current configuration.
0x819c	**33180**	NC Programming	**Invalid path parametrization.** A path was parametrized incorrectly.
0x81a0	**33184**	Function Block	**Invalid path sequence.** Commands may not be added to a path in this order.
0x8f2f - 0x8f50	**36655 - 36688**	Internal	**Internal Error.**
0x8f56	**36694**	Internal	**Internal Error.**
0x8f59	**36697**	Internal	**Internal Error.**
0x8f5c - 0x8f62	**36700 - 36706**	Internal	**Internal Error.**
0x8f65	**36709**	Internal	**Internal Error.**
0x8f68 - 0x8fce	**36712 - 36814**	Internal	**Internal Error.**
0x8fd0 - 0x8fff	**36816 - 36863**	Internal	**Internal Error.**

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