

Diagnostics and Support

## E°CONTROL



## Error Messages CNC Controllers xNC55 EXC66 EXC88 EXC880 EXC89

Description of Error Messages and Appropriate Solutions

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Technical changes and errors excepted

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## 1.1 GTW module

This module reports errors from the MMIGTWAY, which is responsible for communication between the HMI and the controller.

Contents of the additional information:

Logical number (=PNC0) of the controller from the HMI gateway.



## 1.1.10 Download: firmware file does not match current controller

### Cause

- EXC66 export version  
No firmware for an EXC66 (=EXC66H13EW) can be loaded onto the export version of the EXC66 (=EXC66H13EX or also called EXC66e), which is not intended for export and vice versa.
- EXC880 export version  
No firmware for an EXC880 (=EXC88000EW) can be loaded onto the export version of the EXC880 (=EXC88000EX), which is not intended for export and vice versa.
- EXC89 export version  
No firmware for an EXC89 (=EXC89H00EW) can be loaded onto the export version of the EXC89 (=EXC89H00EX), which is not intended for export and vice versa.

### Solution

Use the correct firmware.

Controller	File name firmware
EXC66H00EX, EXC66H13EX, EXC66H43EX (export versions)	ENC66e.rsc
All other EXC66	ENC66.rsc
EXC88000EX, EXC88200EX	ExC880e.rsc (CODESYS V2) oder ExC880x.rsc (CODESYS V3)
EXC88000EW	ExC880.rsc
EXC89H00EX	EXC89.rsc
EXC89H00EW	EXC89x.rsc

Copy the correct firmware version to the .\Bin directory of the StdHMI installation. Change the entry "entry1" in the download section of the file Delphmmi.ini (old name: Delphmmi.ini).

- Handling the export controller of EXC66 (EXC66H00EX, EXC66H13EX, EXC66H43EX)  
Entry in the HMI\_Config.ini file:

```
[download]
entry1=tnc; .\bin\ENC66e.rsc;
```

- Handling of all other EXC66 versions  
Entry in the HMI\_Config.ini file:

```
[download]
entry1=tnc; .\bin\ENC66.rsc;
```

- Handling of export controllers of EXC880 (EXC88000EX, EXC88200EX)  
Entry in the HMI\_Config.ini file for CODESYS V2 Runtime System:

```
[download]
entry1=tnc; .\bin\EXC880e.rsc;
```

- Entry in the HMI\_Config.ini file for CODESYS V3 Runtime System:

```
[download]
entry1=tnc; .\bin\EXC880x.rsc;
```

- Entry in the HMI\_Config.ini file for all other EXC880:

```
[download]
entry1=tnc; .\bin\EXC880.rsc;
```

- Handling of EXC89 export controllers  
Entry in the HMI\_Config.ini file:

```
[download]
entry1=tnc; .\bin\EXC89x.rsc;
```

- Handling of all other EXC89 versions  
Entry in the HMI\_Config.ini file:

```
[download]
entry1=tnc; .\bin\EXC89.rsc;
```

## 1.1.22 Download: syntax error in configuration file

### Cause

The HMI software creates a file `.\log\Downlog.cfg` from the section `[download]` of the configuration file (`HMI_Config.ini`, former name `Delphmml.ini`).

### Solution

Search the error in the configuration file. A correct entry looks like this:

`[download]`

`entry1=tnc; .\bin\ENC66.rsc;`

`entry2=ncr; .\bin\PLC.prg;`

### 1.1.101 Controller not initialized, message not sent

#### Cause

The HMI gateway has detected that the controller is not initialized because no firmware is running on the controller. A message from the HMI to the controller could not be passed on.

A look at the controller indicates that it has a running light in the 7-segment display. (Two adjacent segments that rotate clockwise indicate an active boot monitor).

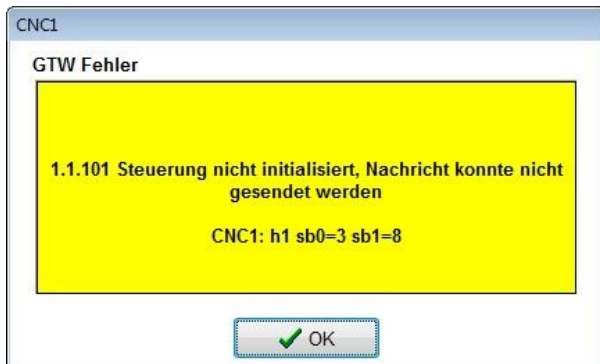
#### Solution

The cause may be that the controller was restarted by power failure, user intervention or a fatal error. However, the HMI was not terminated or the IPC is still running.

#### Example

In the specific case, the HMI tries to send the message

- **sb0=3** "initiating a subfunction" and
- **sb1=8** "MMI -> ZST request content of p-fields (index, index, ...)"



## 1.1.102 MMI->NC message buffer timeout

### Cause

The HMI gateway can't transfer a message from the HMI to the controller or the controller doesn't retrieve the message.

### Solution

The error may be caused by

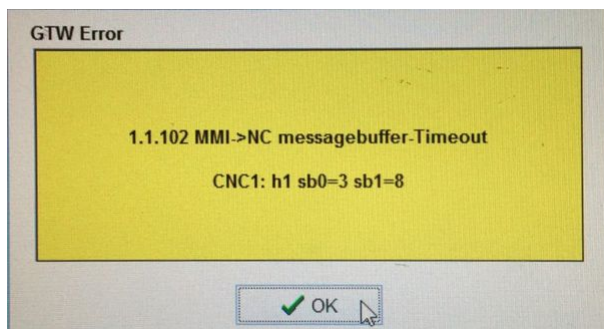
- the connection to the controller has been interrupted
- too many messages are received in a relatively short period of time
- the controller can't fetch the messages because of an error

### Example

The HMI tries to send the Message sb0=3: and sb1=8 in this specific case:

- sb=0 "initiating a single command"
- sb=1 "MMI --> ZST request content of p-fields (index, index, ...)"

A p-field can not be read.



### 1.1.103 Controller reset

#### Possible causes

- Voltage dip:
  - Power supply unit of the controller temporarily overloaded
  - Power supply unit defective
  - Wiring defective
- EMC disturbance
  - Defective grounding. Check ground connection at ENC66!
  - Interference sources in the immediate environment.
- Error state of the Controller
  - After a fatal error in the controller, it performs a reset.

#### Solution

- Check the power supply (for PNC55: power supply of the PC). Otherwise, check the power supply of the controller.
- Check the location of the PC (EMC interference sources in the surrounding?).
- Check ground connection at the controller.
- You can use the monitor command "Trap" to find out when the last exception occurred and what caused it.

## 1.2 DLL module

This module reports errors in mmictrl.dll, which encapsulates the interface between the HMI and the controller.



### **1.2.102 Could not open specified NC**

#### **Cause**

An attempt was made to establish a connection to a controller whose name is unknown (not configured in MMIGTWAY) or to which no connection can be established.

#### **Solution**

- Check the controller name (case sensitive)
- Check the connection to the controller
- Check the HMI installation

## 1.2.401 Timeout during ncrWriteParamList

### Cause

Connection to the controller interrupted

### Solution

- Check network connection/cabling or network equipment (switch/hub etc.).
- Check utilization of the network.
- Check utilization of the PC (system performance).
- Controller has crashed (caused by the PLC program or EMC problems)

### **1.2.403 Timeout during ncrReadParamList**

#### **Cause**

The connection to the controller has been interrupted

#### **Solution**

- Check network connection / cabling or the network components (e.g. switch, hub)
- Check the network utilization
- Check the PC utilization (system performance)
- Crash of the controller (by the PLC program or caused by EMC problems)

## 1.11 Win

System error codes from the Win32 programming interface are passed from this module.

### **1.11.xxx Windows message**

#### **Cause**

This error is triggered by the Windows operating system. The error number is defined by Windows. The meaning can be found in the Win32 error database (error handling reference / debug system error codes). The Windows error text is displayed in the additional error information.

#### **Example**

xxx=233

In this example no process is on the other end of the pipe. The two processes are the HMI and the HMIGtway. Because the HMI is still running and it displays the error message, the other process (HMIGtway) has been terminated in the meantime.

## 1.15 HMI

Errors that occur in the HMI software are reported via this module.

### **1.15.22 Syntax error in configuration file**

This error message has been replaced by the error message [1.1.22](#).

The file name and location were changed in this context (in the past: .\cfg\Download.txt, now: .log\Download.cfg)

## **1.15.23 Error in Dual-Port-RAM writing**

This error occurs with ISA or PCI plug-in boards:

- The boards were configured incorrectly or
- the boards have been moved to a new PC which is not compatible.



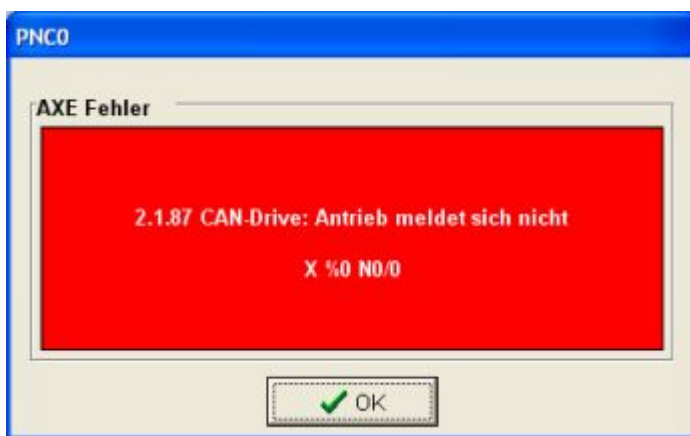
## 2.1 AXE module - axis computer

This module includes error messages that can occur when configuring, switching on/off and moving CNC and motion axes.

Content: additional information of a typical error message of a CNC axis:

- Axis letter (=X),
- Last position in DIN program: Program number (= %0), block (=N0/0).
- Na/b with a= programmed block number, b = logical block number (line starting with the programmed block number a, beginning with 1)

Example:



## **2.1.1 Pos. following error: excessive set-point difference**

Description see [2.1.2 Neg. following error: excessive set-point difference](#)

### 2.1.2 Neg. following error: excessive set-point difference

This is not a lag error due to a too large setpoint/actual value difference, but due to a too large distance between the old and the new position setpoint. This means that the resulting setpoint velocity exceeds the configured maximum velocity of the axis.

The corresponding monitoring is a protective mechanism within the controller that is intended to detect possible programming errors at an early stage.

Since this does not necessarily have to be a programming error, but also a deliberate or unavoidable brief exceeding of the maximum velocity, the monitoring can be switched off via the machine constant MK\_AXIS\_PROPERTIES / MK\_ACHSENART. This may be necessary, for example, to ensure the "abrupt feed of the C axis" function in the SCHNEIDEN compensation module. If the connected servo drives provide a sufficiently good designed position lag monitoring, the monitoring in the controller is not absolutely necessary and can be disabled. As a precaution, check the settings of the position lag monitoring at the connected servo drives.

The causes for an excessive position setpoint difference can be very varied and they often can only be analyzed with detailed trace recordings:

- Trace: 6 9 10 28 29 35 38 40 41 56 57 58 60 66 79 83 87 89 93 255

The most frequent causes are:

- Wrong settings of MK\_NC\_LOOKAHEAD\_THRESHOLD\_ANGLE / MK\_LAH\_GRENZWINKEL or MK\_TECH\_TANGENTIAL\_THRESHOLD\_ANGLE / MK\_WLK\_C\_GRENZWINKEL
- Non-restoration or faulty restoration of coordinates in interrupt programs (see G99)
- Removing the controller enable in the running NC program without adequate synchronization mechanisms (see G161)
- Path speed is too high for transformations without speed limit (see G60)
- Superimposed movements from modal travel jobs and NC program
- Single block execution or program start while axes are in motion
- Illegal time synchronization while enabled correction module (see G41/G42)

## **2.1.3 Pos. following error: mechanism does not follow input**

Description see [2.1.4 Neg. following error: mechanism does not follow input](#)

### **2.1.4 Neg. following error: mechanism does not follow input**

This lag error monitoring is active in the controller exclusively for analog axes, and in exceptional cases for drive controllers with Ethercat interface, which do not generate a lag error message if an error occurs.

#### **Cause**

For analog axes, this error occurs when the setpoint-actual value difference exceeds the value in  $\text{MK\_AXIS\_LAG\_DISTANCE\_ERROR\_LIMIT} / \text{MK\_SCHLEPPABSTAND}$ .

#### **Solution**

- Check axis for sluggishness
- Check axis settings
- Check wiring of encoder signals

## **2.1.5 Positive hardware limit switch active**

Description see [2.1.6 Negative hardware limit switch active](#)

### **2.1.6 Negative hardware limit switch active**

One of the hardware limit switches of an axis connected to the drive controller has been triggered. Which axis is affected can be determined via the additional information on the error.

This error is only reported via this error number if the limit switch reaction of the controller (MK\_AXIS\_PROPERTIES / MK\_ACHSENART bit 1) is enabled for the respective axis. Otherwise, the manufacturer-specific error code of the drive controller (module 2.18ff) is reported for fieldbus axes.

## 2.1.7 Positive software limit switch active

Description see [2.1.8 Negative software limit switch active](#)



### **2.1.8 Negative software limit switch active**

One of the software limit switches of an axis configured in the controller has been triggered. Which axis is affected can be determined via the additional information on the error.

The behavior of the axes when approaching the software limit switch can be configured via MK\_CFG\_SOFTWARE\_LIMIT\_MODE / MK\_SW\_ENDS\_MIT\_RAMPE. The travel range limits are configured via MK\_AXIS\_SOFTWARE\_LIMIT\_POSITIVE / MK\_SW\_ENDS\_PLUS and MK\_AXIS\_SOFTWARE\_LIMIT\_NEGATIVE / MK\_SW\_ENDS\_MINUS and can be changed during operation via G24 and G25. The software limit switches are activated with G26. Without previous call of G26 there is no error message and no reaction to the software limit switches.

## 2.1.14 Missing 24V process power supply on axis interface

### Cause

The 24V power supply of the axis interface (expansion board of the EXC882/EXC883 or LBMARI module on the EXC66) has failed.

### Solution

Check the wiring, especially of the supply voltage. If this is in order, it could be a hardware defect.

### **2.1.23 Cable breakage in the case of UA0**

Description see [2.1.25: Cable breakage in the case of UA2](#)

## **2.1.24 Cable breakage in the case of UA1**

Description see [2.1.25: Cable breakage in the case of UA2](#)

### 2.1.25: Cable breakage in the case of UA2


#### Cause

The **encoder monitoring for an analog axis** checks the signals of the encoder interface. For this reason the negated signals of UA0, UA1 and UA2 are checked to be present in the right polarity.

If a check fails the corresponding error 2.1.23, 2.1.24 or 2.1.25 is generated.

#### Solutions

- Check all connections of the encoder signals while commissioning. There might be one or more connections missing
- An encoder cable might be broken. Cables, running through a drag chain, might break after several years of usage.
- The motor encoder might be broken (only might occur in a certain temperature range)
- The contacts in the encoder connector might be corroded (motor-> servo controller, servo controller-> nc controller)
- The axis interface of the controller might be broken
- Check for electromagnetic interferences that might distort the signals and trigger the error message

-  Encoder monitoring can be switched off. In this case wrong positing might occur.
- Use MK\_AXIS\_ENCODER\_MONITORING\_UA1\_UA2 / MK\_UA12 to switch off the monitoring for the signals UA1 and UA2
  - Use MK\_AXIS\_ENCODER\_MONITORING\_UA0 / MK\_UA0 to switch off the monitoring for the signal UA0.

## **2.1.27: EC-AR 01 and EC-AR 02 cannot be used together on one bus**

### **Cause**

One of the extension cards in a CNC55 rack comes up with a wrong identifier (possibly a short circuit).

### **Solution**

Remove one extension card after the other (after power has been switched off) to find out which card is erroneous. Replace this card.

## 2.1.42 Following error: excessive synchronisation deviation

### Complete error message:

*2.1.42 Following error: excessive synchronisation deviation*

*A' 126 > 113 m-101477; -101672*

*s-101603; -101603*

### Description of the individual parameters:

- 126 is the measured synchronous deviation (=distance of actual master axis position to slave axis position)
- 113 is the allowed maximum synchronous deviation (configured in MK\_SYNCHRON DEVIATION)
- m-101477; -101672 are the current and the last actual position of the master axis (from the current and the previous coarse interpolation cycle)
- s-101603; -101603 are the current and the last actual position of the slave axis (from the current and the previous coarse interpolation cycle)

All values are given in increments - conversion to millimeters must be done using the values configured in MK\_IMPULSE and MK\_WEG.

### Cause

The error message shows that the slave axis (apparently) did not move at the time of the error, while the master axis moved 195 increments. With a permitted deviation of 113 increments, this inevitably leads to a synchronization error.

The question of how exactly this is achieved can only be answered with additional data:

- Did the error occur during start-up or deceleration?
- The machine constants must be considered, because without their recognition we do not know the encoder resolution and transmission ratio, and therefore cannot determine the size of the covered distances.

### Possible solution

A possible explanation would be a lost actual value packet. Even in standstill an actual value slightly moves forward and backward. Exactly the same actual value twice in succession is rather unusual, even with a axis in standstill.

If the error occurs more often, it can be visualized well in the AXSCOPE tool (in case of a lost actual value packet, you can see an outlier in the velocity to 0 and then double the previous speed (or vice versa). The PDO trace does not help in this case because the temporal resolution is much too low.

## **2.1.44 No reference points, synchronous axis must not be moved**

### **Cause**

Controller does not accept travel commands for synchronous axis. Only after homing is it permitted to move the axes.

### **Solution**

Perform a reference point run.



## **2.1.80 CAN-Drive: Drive not ready for release for operation**

### **Causes**

The drive controller refuses to change to the Operation Enabled state. There may be several reasons for this:

- Error in Wiring
- Voltage supply for the DC link not switched on
- External enable signal missing
- Subsequent error after another error message from the drive

### **Solution**

First, fix any other previously reported errors. If the problem persists, check the wiring and the presence of all the conditions necessary to enable the power.

## 2.1.81 CAN-Drive: No processing data received from drive

### Cause and solution

If this error message occurs while commissioning of an axis, check

- if the node number and baud rate are configured correctly
- if the power supply is available

If this error occurs sporadically while the axis is in operation

- set MK\_CFG\_INTERPOLATION\_CYCLE\_TIME (old syntax: MK\_DELTAT) to a higher value, because the servo controller doesn't deliver the actual position within the configured time.
- If this doesn't solve the problem, please contact the manufacturer of the servo drive.

### **2.1.95 CAN-Drive: Error while writing a data object in drive**

#### **Possible causes**

- Drive is not supported
- Firmware version of the drive is not supported
- Drive is in the wrong state

#### **Solution**

- Only use supported servo drives
- Only use a supported firmware version

## **2.1.106 CAN-Drive: Last reported axis error is still active**

### **Cause**

An attempt was made to acknowledge an error message from the drive controller, but the acknowledgement failed because the causal problem still exists. This concerns a consequential error.

### **Solution**

Fix the previously reported error.

### **2.1.107 CAN-Drive: Drive should be operating and is not yet ready**

This error message can occur when starting the traverse movement of the drive (homing, modal travel, AUTOMATIC mode).

#### **Cause**

- The external hardware enable (ENABLE signal) is not set. You can see the affected axis in the additional information (see [2.1 AXE module - axis computer](#)).

#### **Solution**

Set external hardware enable (ENABLE signal).

## 2.1.110 CAN-Drive: Internal drive limit active. Please contact your servo manufacturer.

### Cause

The corresponding bit in the status word is set (Bit 11 Internal limit active in object 6041h

Further information can be found in the CANopen documentation from the CiA.

<http://www.can-cia.org/standardization/specifications/>

Documentation DSP402\_V2.pdf page 51 table 6.

Bit	Description	M / O
0	Ready to switch on	M
1	Switched on	M
2	Operation enabled	M
3	Fault	M
4	Voltage enabled	M
5	Quick stop	M
6	Switch on disabled	M
7	Warning	O
8	Manufacturer specific	O
9	Remote	M
10	Target reached	M
11	<b>Internal limit active</b>	<b>M</b>
12 - 13	Operation mode specific	O
14 - 15	Manufacturer specific	O

### Solution

Please ask the servo manufacturer for further information.

### 2.1.112 CAN-Drive: Timeout while switching mode of operation. The drive signals a wrong mode

The objects 6060h/6061h, 6860h/6861h, 7060h/7061h to 9860h/9861h are used to switch the modes of operation in the CANopen DS402 Drive Profile:

- Object 6060h+n\*800h: Modes of operation
- Object 6061h+n\*800h: Modes of operation display  
with n=MDM-Unit (0..7), MDM stands for Multi-Device-Module

The NC controller supports the following modes of operation:

- Mode 3 = Profile Velocity Mode
- Mode 6 = Homing Mode
- Mode 7 = Interpolated Position Mode
- Mode 8 = Cyclic Synchronous Position Mode (only for particular servo drives)

The mode of operation is changed, when

- the controller release is set for the first time
- *homing* is performed and the mode of operation is switched back to *Interpolated Positioning Mode* again
- a change from position to speed control is performed

### Examples

#### Example 1

Additional information for the example: OBJ6061/0=3 (7) Err0

In this issue the expected mode of operation is 7 (*Interpolated Position Mode*). But the controller reads out a 3 (*Profile Velocity Mode*). So the servo controller didn't change the mode of operation as expected.

#### Example 2

The displayed error occurs when switching from *Profile Velocity Mode* to *Interpolated Position Mode*. The servo controller won't switch to this mode or the time-out period is too short. E.g. if you have a spindle that takes a long time to stop the time-out period might be too short.

## 2.1.115 CAN-Drive: Configured CAN-Bus-Interface is not available

A CAN axis was mapped to a CAN interface, that is not available

### Cause

- Configuration error: The used controller only has two CAN interfaces, a node ID was configured in MK\_CANDRIVES, that refers to CAN3 or CAN4
- Insufficient activation code: a node ID was configured in MK\_CANDRIVES that refers to a CAN bus that is physically available, but that is locked via the activation code
- Hardware defect: the expansion board of the EXC66H13 could not be found.

### Solution

- Map CAN axes only to interfaces that are available and that are not locked by the activation code (Caution: Please note the fixed mapping of CAN node IDs to the CAN buses of the controller)
- In case of a hardware defect return the device to the manufacturer.



### **2.1.139 EtherCAT: Drive reports referencing error. Reference point traverse has been aborted.**

#### **Cause**

An error was reported by the drive controller during homing. Homing cannot be completed successfully for this reason and is aborted.

#### **Solution**

Fix the previously reported error.

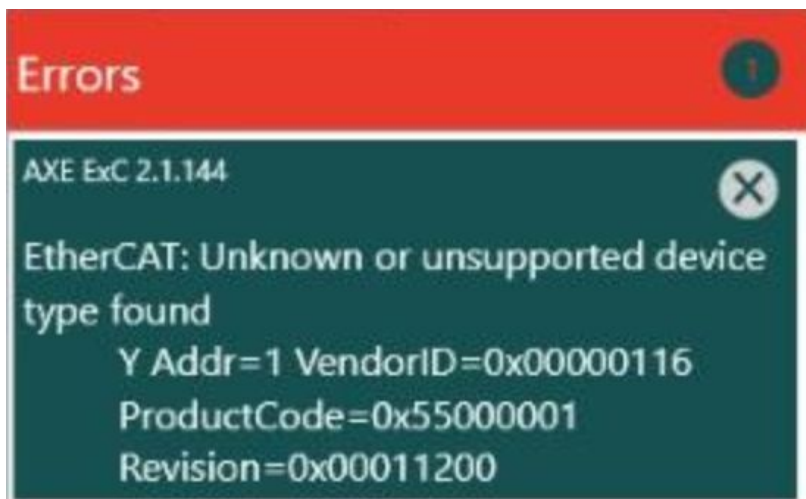
## 2.1.144 EtherCAT: Unknown or unsupported device type found

### Cause

An EtherCAT device configured as an axis is not a supported drive controller.

### Solution

- Only use drive controllers approved by Eckelmann as CNC or motion axes.
- Check the EtherCAT configuration in the machine constants. Are the specified addresses correct?
- With topological addressing the logical EtherCAT address 1 is reserved for the internal bus coupler of the EXC89. The first device after EXC89 is addressed via the second index in MK\_DRV\_ETHERCAT\_AXES / MK\_ETHERCATDRIVES. Especially this has to be considered if you want to migrate from another controller type to the EXC89 (or vice versa).



## 2.3 INT module - Interpreter

This module reports errors that occur during the interpretation of a DIN program.

Contents of the additional information:

- CNC channel (=CH0)
- Program number (=%0)
- Block (=N0/0)
  - Na/b with a= programmed block number, b = logical block number (line starting with the programmed block number a, beginning with 1)
- Incorrect character / axis letter (=U)

Example:



Further explanations for this error can be found in the individual [description](#).

## 2.3.102 Block without G function while unknown modal G function

### Cause

If an instruction without a G-function (except addresses S/T/M/H/Q or P) is programmed in a DIN program, an attempt is made to assign it to the last modal G-function (G0-G3 or G100-G103). If none of these functions is active, the error is reported.

### Solution

Correct the line in the DIN program specified in the additional information.

### Example

The programming of the complained address may not have been intended at all. For example, the error may be reported due to the following incorrect code line:

*P1246=-4.54747350886464E-13*

If floating point numbers are to be specified in the DIN program, the exponent must be separated with the lowercase letter e. The notation with capital letter E for the exponent is not allowed. Instead, the E is interpreted as an address, which is assigned the value -13 in the example. Since no G-function is called in the block, and no modal function was executed before, the error is reported.

The correct spelling would be as follows:

*P1246=-4.54747350886464e-13*

### **2.3.213 G1: programmed path speed must be greater than 0**

#### **Cause**

There was no speed assigned to G1.

#### **Solution**

Program feed rate with parameter F (also see CNC programming manual for G01).

## 2.3.276 G22: invalid target channel entry

### Cause

In G22 (subroutine call), an impermissible NC channel was specified in parameter K. This can have several reasons:

- The controller is not enabled for the use of the specified channel
- MK\_NC\_MAX\_CHANNELS / MK\_KANALANZAHL is set to a too low value
- Necessary information for opening a new NC channel in the G22 call has been omitted

### Solution

The solution depends on the cause.

- Only use NC channels that are enabled on your controllers. If the number of activated channels is not sufficient, please contact your sales consultant.
- Increase the MK\_NC\_MAX\_CHANNELS / MK\_KANALANZAHL
- When calling G22 with parameter K, always also specify a value for L and the axes to be transferred to the new channel

### **2.3.292 Too many axes addressed in one block**

#### **Cause**

In a DIN block, more than the maximum permitted number of simultaneously programmable axes (6) are addressed.

#### **Solution**

- Program a maximum of six axes in one geometry block.
- If the block that was specified in the additional information for the error is not a geometry block (e.g. subroutine call G22 with generation of a new NC channel and transfer of more than 6 axes), you can update the controller firmware to at least V2.65beta1. As of this version, the specification of more than six axes is supported in non-geometry blocks.

## 2.3.293 Axis is not configured



### Cause

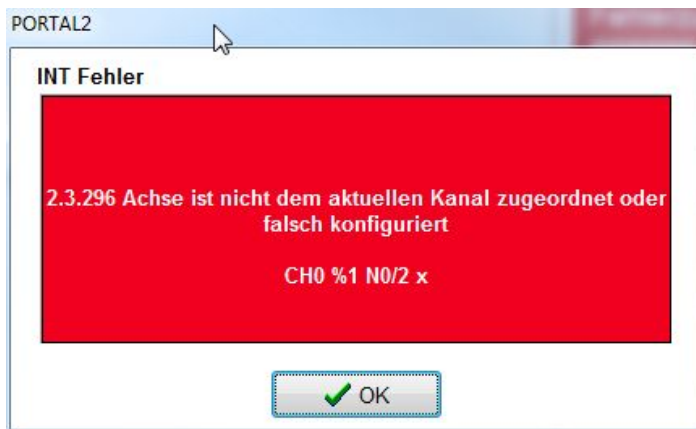
An axis identifier has been programmed in a DIN block that is not assigned to any configured axis. The affected block and the axis identifier can be found in the additional information.

### Solution

- Correct the DIN program or configure the missing axis in the machine constants.



### 2.3.296 Axis is not assigned to the current channel



#### Structure of the additional info:

*Ch*<Number of the NC channel in which the error occurred>

*%*<Program number of the program in which the error occurred>

*N*<Block number in which the error occurred>/<Logical block number in which the error occurred>

*<Incorrect axis designation>*

#### Cause

The controller cannot evaluate the programmed axis, i.e. it is either incorrectly configured or not programmed at all, or assigned to the wrong NC channel.

Possible causes:

- Axis was programmed incorrectly, e.g. x was programmed instead of X
- Axis is not configured at all or is configured incorrectly
  - Check machine constants
  - Is the axis letter assigned to the correct axis?
  - Does the axis have an axis letter?
- Axis is assigned to the wrong channel (axis is to be moved in channel 0, but is assigned to channel 1)
- Axis is configured as handwheel, measuring axis and/or spindle and cannot execute the single block / DIN command

#### Solution

Change programming according to the listed causes.

## 2.3.402 G88/G89: too many simultaneously active rotations

### Cause

As of firmware version V2.68, the G88/G89 supports up to 8 simultaneously active rotations with different major/minor axis participation. For this, the axis assignment programmable with G16 is taken into account. Overlapping axis participations with simultaneously active rotations are generally not allowed. When programming the G88/G89, previously switched-on rotations are assigned by comparing the current G16 configuration with the configuration that has been active since switch-on, whereby the configuration, i.e. all involved axes and their assignment to the major and minor axes, must match completely. In the case of rotations that are not clearly assigned, a corresponding error is reported. This also applies when switching off via G89 without parameters.

### Solution

- Before calling G88/G89, make sure that the axis assignment selected via G16 is correct. In particular, it must be ensured that an exactly matching axis assignment is used in each case when the same rotation is changed several times.

To switch off all active rotations without taking the axis assignment into account, you can use the G87 function .

## 2.3.420 G99 not allowed at HP level

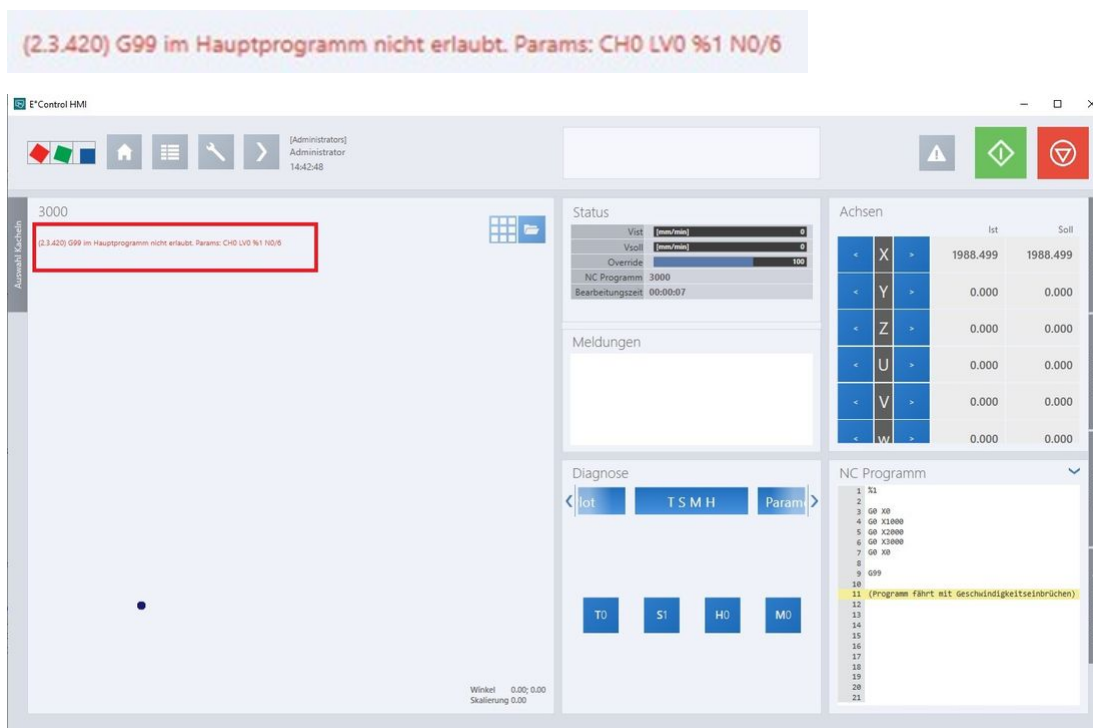
### Cause

An attempt was made to start a DIN program containing a call to G99 as the main program. Main programs must end with M30, subroutines with G99.

### Solution

- Do not call subroutines directly, but start the associated main program. If it is a main program, change G99 to M30.

If the error occurs in the Graphic tile of the E°Cut HMI, the cause may be in the configuration parameter UseInternalProgramNumber.



### UseInternalProgNumber

TRUE: The number of the main program (e.g. 1) is used instead of the start program (e.g. 9000).

FALSE: The start program (e.g. 9000) is used.

## Service

- Administration
- Benutzerverwaltung
- Tasten
- Konfiguration HMI**
- Sprachverwaltung
- Einrichten
- Diagnose
- Konfiguration

## Konfiguration HMI

Verfügbare Stylevorlagen  
Light

Custom Settings
Runtime Settings

▼ HmiBaseSection

AllowWorkpieceDescription	💡	<input type="checkbox"/>
CyclesPath	💡	<input type="text" value=""/> ...
PlcExecutePath	💡	<input type="text" value=""/> ...
EnableIoForcing	💡	<input checked="" type="checkbox"/>
CycleProgrammingAvailable	💡	<input type="checkbox"/>
IsHmiLockRequestEnabled	💡	<input type="checkbox"/>
JobManagement	💡	<input checked="" type="checkbox"/>
JobManagementItems	💡	<input type="checkbox"/> OnlineDownload <input type="checkbox"/> WorkpieceSystem <input type="checkbox"/> XYStartPoint <input type="checkbox"/> CorrectionValues <input type="checkbox"/> TechnologyParameter <input type="checkbox"/> OptionalPFields <input type="checkbox"/> Material
MinimumEpsilon	💡	<input type="text" value="1E-05"/>
PFieldIndexOfCustomStartProgramNumber	💡	<input type="text" value="0"/>
PFieldTimeoutCheckInterval	💡	<input type="text" value="2000"/>
PFieldUpdateInterval	💡	<input type="text" value="250"/>
ProgramFileExtensions	💡	<input type="text" value="*.DIN"/>
ProgramNumberToPlc	💡	<input type="checkbox"/>
UseInternalProgNumber	💡	<input type="checkbox"/>

### **2.3.434 G92: S0 cannot be shifted**

#### **Cause**

An attempt is made to move the zero point of the base coordinate system S0 by G92, although this was forbidden by machine constant MK\_CFG\_ENABLE\_S0T0\_OFFSET / MK\_S0T0\_VERSATZ\_ERLAUBT.

#### **Solution**

- Correct the G92 call to use a different coordinate system, or enable MK\_CFG\_ENABLE\_S0T0\_OFFSET / MK\_S0T0\_VERSATZ\_ERLAUBT..

## **2.3.546 G153: displayed channel is not a child process of this channel**

### **Cause**

The G153 function was called for synchronizing NC channels, although no child channel was created.

### **Solution**

Create a child channel before using G153. Also see the description of the G153 in the NC programming manual with the corresponding example program.

### **2.3.728 No parameter identifiers found on compensation data transfer**

#### **Cause**

An invalid compensation file was loaded to the controller.

#### **Solution**

- Make sure that only valid compensation files are loaded.

## 2.3.737 2D/3D compensation file: unconfigured axis specified in the header

### Cause

An attempt was made to load a compensation file containing an axis that is not present in the machine constants.

### Solution

- Make sure that loaded compensation files match the machine configuration.



### **2.3.832 MK\_CFG\_PRESETS: illegal G code**

This error message can occur in the following form: "2.3.832", "MK\_CFG\_PRESETS: Not allowed G-Code", "" - G163

#### **Cause**

- The quoted G function is not implemented in the firmware version on your controller or
- The quoted G function can't be used in the machine constant MK\_CFG\_PRESETS (former syntax: MK\_VOREINSTELLUNG). Check the listing of the appropriate functions in the description of the machine constant MK\_CFG\_PRESETS / MK\_VOREINSTELLUNG in the NC configuration manual.

#### **Solution**

- Use a more current firmware version, if the G function is not available in the version on your controller
- Remove the G function from the machine MK\_CFG\_PRESETS, if the G function can't be used with it.

## 2.3.916 WLK: illegal G function (only allowed during idle travel)

### Cause

An attempt was made to call a G function with active tool compensation (G41/G42), which is only permitted in empty runs. For example, transformations cannot be activated or deactivated with compensation turned on.

### Solution

If a transformation is to be switched on or off during workpiece machining, the compensation must first be switched off with G40.

### Example

Additional error description: CH0 %9901 N0/5 115

Incorrect program code:

```
.... M14 (CAM ON-High) G01X313.4Y877.7 G01X313.4Y988.5 G01X1425.0Y988.5 G01X1425.0Y876.9  
G01X314.2Y876.9 M15 G99
```

Correct program code:

```
.... M14 (CAM ON-High) G01X313.4Y877.7 G01X313.4Y988.5 G01X1425.0Y988.5 G01X1425.0Y876.9  
G01X314.2Y876.9 M15 G40 E1 G99
```

Before the end of the program (G99), the tool compensation (G40 E1) must be switched off.

### **2.3.986 WRK: tool radius is too great for the programmed contour**

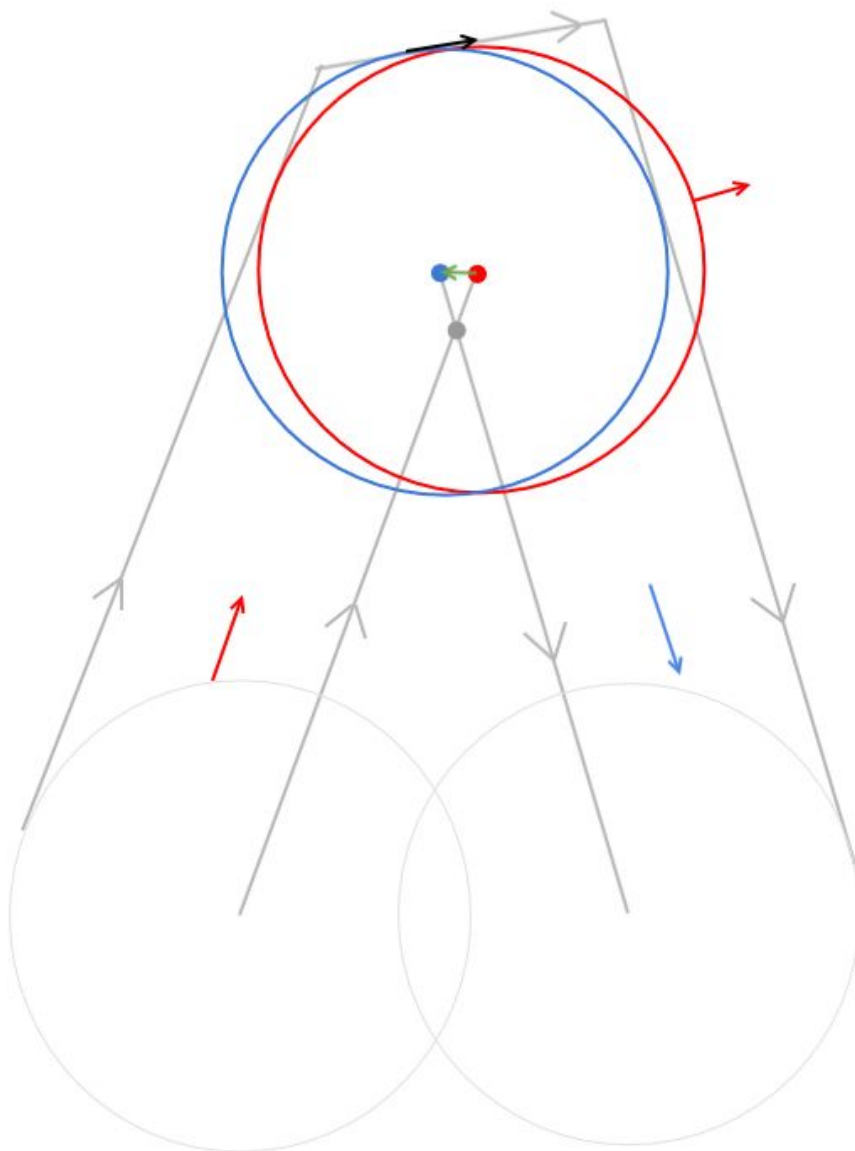
Description see [2.3.1209: WOK: Tool radius too large for the programmed contour](#)

## 2.3.1209 WOK: Tool radius too large for the programmed contour

### Cause

This error is reported if a contour is to be executed with active tool radius compensation and the tool does not fit into this contour. This is determined by a travel direction change of the tool center point (see figure).

In the example, the contour is executed in a clockwise direction along the black arrow. When approaching the corner (tool is shown in red), the tool center point still moves clockwise as well. For the further path (shown in red), the direction would have to be reversed because the corner is too tight, and the center of the tool would move to the left. Due to the changed travel direction, the error is reported.



## Solution

- Use another tool that fits the contour.
- Manually modify the contour (it may have to be taken into account in the postprocessor).
- Adapt the contour automatically via parameter D of function G41/G42.

G41/42 → D Behavior in case of contour damage:

0 = ignore (test mode)

1 = report immediately if detectable

2 = eliminate max. one block (default)

3 = eliminate max. two blocks

4 = eliminate max. three blocks

### Example:

A rectangular hole 4 mm x 4.4 mm and a the kerf that is 2 mm. This error occurs. Why?

The error occurs because a change of direction has been detected. Often the deviation is in the micrometer range.

With a kerf of 1.99 instead of 2.00, the error no longer occurs in this case.

## 2.3.1210 WOK: G41/G42: C-axis should be traced and is not configured

### Cause

When switching on the tool radius compensation with G41/G42, it was specified in parameter E that the C axis should be traced tangentially. However, no C axis is configured in the machine constants and no transformation is active to create a "virtual" C axis.

### Solution

- Check the machine constants and the call sequence of transformations and tool compensation in DIN program/cycles.

### Further documentation

G41 Cutter compensation - left (see also [CNC Programming Manual in E°EDP](#))

G42 Cutter compensation - right (see also [CNC Programming Manual in E°EDP](#))

### If the error occurs with the E°CUT application package:

In bevel cutting, there are kinematics with A and B axis. The C axis is not configured in the machine constants. G114 6-axis transformation (RTCP) (see also [CNC Programming Manual in E°EDP](#))

In the DIN program a G41 R=P1500 E1 is written. Here, "E1 = tangential tracking on". The C axis is to be tracked in this case. If the message appears directly after START, the corresponding head on the machine panel (S8) may not be selected.

### **2.3.1502 G2/G3: no level programmed**

#### **Cause**

No plane was selected where the circular interpolation should be performed.

#### **Solution**

Before programming a circle / arc with G2/G3 you have to select a plane with G17 (X-Y) G18 (X -Z) or G19 (Y-Z).

## **2.3.1504 G2/G3: invalid lead programmed**

### **Cause**

When using G2 or G3 to program a helix or spiral, an invalid number of additional full circles was specified. The number of full circles must be positive and integer.

### **Solution**

- Check the call of G2/G3, especially the parameters I/J/K.



### 2.3.1516 G2/G3: start-destination distance > (Radius + dRadius)

The error message indicates that the circle center point for a programmed arc cannot be determined because the target point (taking into account the position tolerance threshold MK\_EPSILONMM) is further away than the circle diameter from the starting point. The target point can therefore not be reached with the programmed radius.

#### Cause

- Wrong radius or wrong target point programmed
- Rounding error and MK\_EPSILONMM = 0
- Start position was changed (e.g. by an interrupt program)

#### Solution

- Make sure that the start and target points are located actually on an arc of the programmed radius.
- Raise MK\_EPSILONMM to a value >0.
- Make sure that interrupt programs leave all axis positions as they were before.

**CAUTION:** Not only the movement of axes changes the axis positions. Also the (G161) function for actual position transfer provides a minimal change of the axis positions, which can lead to this error without countermeasure (move to the initially found position at the end of the interrupt program).

## **2.3.1518 G2/G3: distance between starting and destination center points is implausible with regard to the other entries**

### **Cause**

The arc is programmed inaccurately. The radius of the arc at the starting point differs from the radius at the target point.

### **Solution**

There are two possible solutions, either:

- Program circular arc correctly in CAD/CAM system, or
- increase the tolerance to the programmed inaccuracy (see machine constant MK\_CFG\_POSITION\_TOLERANCE\_MM , old notation: MK\_EPSILONMM)

### **2.3.1520 G2/G3: circle radius is too small**

#### **Cause**

The radius of the programmed circle (or arc) is smaller than the tolerance defined in MK\_CFG\_POSITION\_TOLERANCE\_MM (old name: MK\_EPSILONMM).

#### **Solution**

There are two possible solutions:

- Define an arc / circle with a larger radius in the CAD/CAM system or
- set the tolerance in MK\_CFG\_POSITION\_TOLERANCE\_MM (old name: MK\_EPSILONMM) to a smaller value

## **2.3.1582 G231: The configured maximum speed of the virtual axis (E) exceeds the defined limit of the distance controlled axis**

### **Cause**

The error occurs if parameter E (virtual control) has been programmed on the G231. The maximum speed of the virtual axis must not be higher than 80 % of the maximum speed of the height-controlled axis so that the controller has sufficient control reserve for the height control.

### **Solution**

Change the machine constant MK\_VMAX so that the maximum speed of the virtual axis is at most 80 % of the maximum speed of the height-controlled axis.

### **Example**

Error message:

*2.3.1582 G231: The configured maximum speed of the virtual axis (E) exceeds the defined limit of the distance controlled axis*

Example of additional info:

*CH0 %9010 N25/1 Vmax: 5 > 0.8 \* 5 [m/min]*

Explanation:

In the above example MK\_VMAX for the virtual axis was equal to MK\_VMAX for the real axis.

However, it may be max. 4m/min instead of 5 m/min ( $5 * 0.8 = 4$ ).

### **2.3.1583 G231: The configured maximum acceleration of the virtual axis (E) exceeds the defined limit of the distance controlled axis**

#### **Cause**

The error occurs if the parameter E (virtual control) has been programmed at G231. The maximum acceleration of the virtual axis must not be higher than 80 % of the maximum acceleration of the height-controlled axis so that the controller has sufficient control reserve for the height control.

#### **Solution**

Change the machine constant MK\_BESCHL so that the maximum acceleration of the virtual axis is at most 80 % of the maximum acceleration of the height-controlled axis.

#### **Example**

Error message:

2.3.1583 G231: The configured maximum acceleration of the virtual axis (E) exceeds the defined limit of the distance controlled axis

Additional information:

CH0 %9010 N25/1 Amax:  $1.5 > 0.8 * 1.5 \text{ [m/s}^2\text{]}$

Explanation:

In the above example MK\_BESCHL/MK\_BREMS for the virtual axis was equal to MK\_BESCHL/MK\_BREMS for the real axis.

However, instead of  $1.5 \text{ m/s}^2$  it may be max.  $1.2 \text{ m/s}^2$  ( $1.5 * 0.8 = 1.2$ ).

## **2.3.1584 G231: The configured maximum deceleration of the virtual axis (E) exceeds the defined limit of the distance controlled axis**

### **Cause**

The error occurs if the parameter E (virtual control) has been programmed at G231. The maximum delay of the virtual axis must not be higher than 80 % of the maximum delay of the height-controlled axis so that the controller has sufficient control reserve for the height control.

### **Solution**

- Change the machine constant MK\_BREMS so that the maximum delay of the virtual axis is at most 80 % of the maximum delay of the height-controlled axis.

### **Example**

Error message:

2.3.1584 G231: The configured maximum deceleration of the virtual axis (E) exceeds the defined limit of the distance controlled axis

Additional information:

CH0 %9010 N25/1 Amax:  $1.5 > 0.8 * 1.5 \text{ [m/s}^2\text{]}$

Explanation:

In the above example MK\_BESCHL/MK\_BREMS for the virtual axis was equal to MK\_BESCHL/MK\_BREMS for the real axis.

However, instead of  $1.5 \text{ m/s}^2$  it may be max.  $1.2 \text{ m/s}^2$  ( $1.5 * 0.8 = 1.2$ ).

### 2.3.1602 G233: specified 2D/3D compensation table not loaded

#### Cause

When the G233 was switched on, a correction table was specified for one or more axes which had not previously been loaded into the controller.

The number of the missing compensation table can be taken from the additional information (last number, in the example 1).



#### Solution

- Check the call of G233. Make sure that all required compensation tables are loaded into the controller before use.

## 2.3.1611 G252: destination address for import missing

### Cause

Parameter C is missing when G252 is used.

### Solution

Wrong:

```
N20 G252 F="Continue program?" E90
```

Correct:

```
N20 G252 F="Continue program?" E90 C1201
```



### 2.3.1633 G231: specified digital measured value channel not configured


#### Cause

A digital measured value channel was configured when the height control was switched on, which is not configured in the machine constants.

In demo mode (enabled MK\_CFG\_AXIS\_EMULATION / MK\_TEST\_OHNEMECHANIK) only analog measurement channels are simulated, but no digital channels.

#### Solution

- When using an incremental or absolute encoder input, the assigned axis must be configured as a measuring axis (see CNC Configuration Manual MK\_AXIS\_PROPERTIES / MK\_ACHSENART).
- In demo mode, configure an analog input instead of a digital input for height control with the G231. This one can then be simulated. For this purpose use parameter J1 at G231 (e.g. G231 Z1 J1 K0.5 F600 L2).

 The simulation of the analog measurement channels is available from CNC firmware version 2.09beta3.

## **2.3.1809 G236: At least one of the required axes is not configured**

### **Cause**

The error indicates that at least one of the major and minor axes configured by G16 is not present when G236 is called. G236 requires equivalents of the X, Y, C and B axes.

### **Solution**

- Make sure that the required axis configuration has been set via G16 before calling G236.

### **2.3.2xxx application-specific errors reported via G253**

#### **Cause**

An application-specific error has been reported via G253 (see CNC Programming Manual, G253).

#### **Solution**

- Error specific - if in doubt, contact the application creator.

## **2.3.9900 No text found for the error number**

Please contact us for further information.

### **2.3.9902 Program structure error too many blocks without geometry**

#### **Cause**

If the tool compensation is enabled, only a limited number of blocks without geometric information can be buffered.

#### **Solution**

- Switch off the tool compensation in the meantime
- Reduce the number of blocks without geometric information

## 2.4 RTS module - CODESYS V3 runtime system

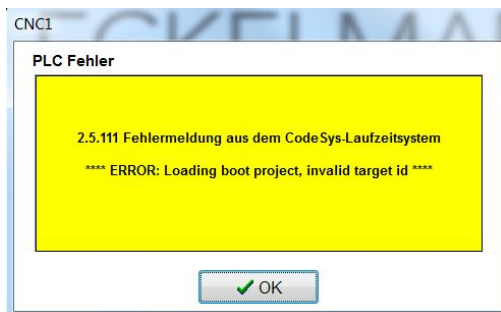
This module contains errors from the CODESYS V3 runtime system that can be reported by function blocks in the PLC application.

Also see [CODESYS V3.x Libraries for E°Control](#)

## **2.5 PLC module - PLC error messages from firmware**

This module contains errors that may occur when loading a PLC application (CODESYS V2 or V3).

## 2.5.111 Error message from the CodeSys run-time system



### Cause

The CODESYS runtime system has reported an error. This can have different causes. The additional information contain the error text.

Error cause in the example: The PLC boot project does not match the controller.

### Solution

The solution depends on the reported error.

In the example: Use a boot project that matches the controller (or a controller that matches the boot project).



### 2.5.112 No CMOS-RAM available: RETAIN data will not be saved

The error message is displayed while starting a controller without CMOS ram and as an additional condition if there are PLC retain variables declared.

The error can occur with an EXC66 compact (=EXC66H00) or with a PNC55.

#### Controller EXC66

##### Cause EXC66 compact

ExC66 compact has no buffered RAM.

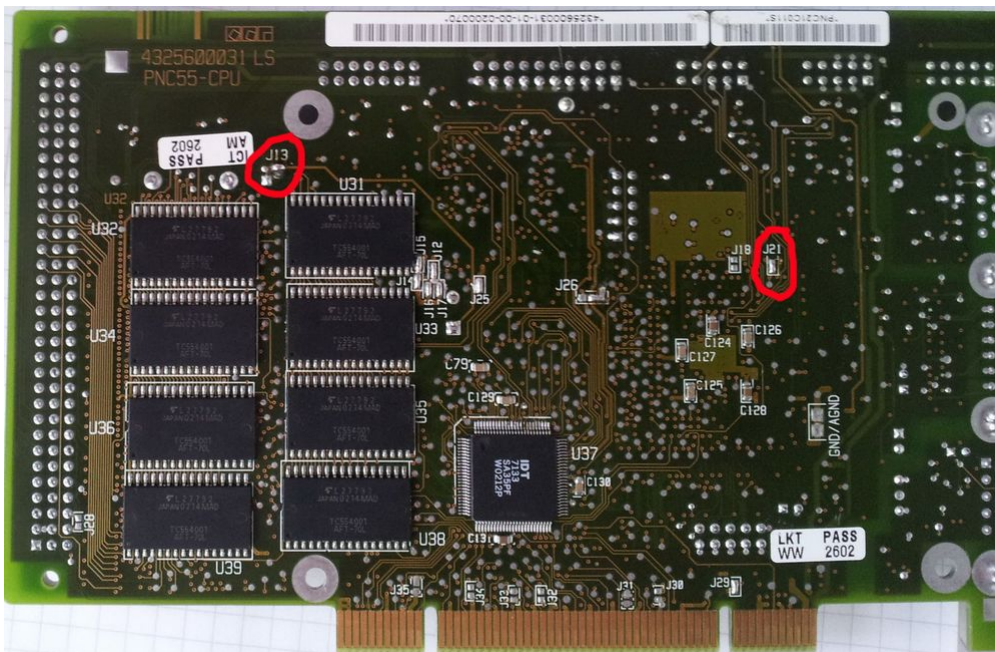
##### Solution EXC66 compact

Set MK\_CFG\_SAVE\_ORIGINS / MK\_NULLPUNKTE\_SPEICHERN to 0 (zero).

#### Controller PNC55

##### Cause PNC55

The solder bridge J21 is missing on the back of the PNC55.



##### Solution PNC55

Check if the necessary solder bridges exist on the back of the PNC55 (J13 & J21).

## **Additional Information PNC55**

J13 connects the battery to the controller

J21 informs the processor via processor pin C20 that CMOS ram is available.

### **2.5.502 No controller release**

Also see [2.5.503 No controller release for controller-moved axis](#)

#### **Cause**

The error occurs if an axis is to be moved implicitly (e.g. due to a transformation), but no controller enable is active for this axis.

#### **Solution**

- Switch on the controller enable for all axes that are to be moved.

## 2.5.503 No controller release for controller-moved axis

### Cause

The error message *2.5.503 No controller release for controller-moved axis* always occurs if an axis without controller enable is to be moved exclusively due to participation in a transformation. The additional information indicates which axis is involved.

### Solution

The controller enable is only active when the corresponding signal is present in NC\_GlobalControl.dwDriveEnable (CODESYS V2: D1\_005\_CONTROLLER\_ENABLE\_W) and this state has been acknowledged by the relevant axis. It should be noted that a controller enable switching process in the drive controller can take some time, whereby the time can differ greatly even with identical controller types on different axes on a system.

In order to exclude this error possibility, it is recommended to switch the controller enables selectively in the PLC, starting with the axes that are not involved in an interpolation at the time of the switching process. In case of missing controller enable this can be recognized by the set bits in NC\_GlobalControl.dwMovingActive (CODESYS V2: D1\_134\_AXIS\_MOVING\_W). The end of the switch-on process of the controller enable can be recognized at NC\_GlobalControl.dwDriveEnabled (CODESYS V2: D1\_186\_CONTROLLER\_ENABLED).

### Example

The related additional information from the error log is: *X rfg=1 vfg=1 enabled=0*. I.e. the X axis (X) was meant, controller enable (rfg=1) and feed enable signal (vfg=1) of the PLC for the X axis were 1 and the switching operation of the controller enable was not yet completed (enabled=0).

Example of a similar error situation with other axes:

```
G233 Z1 ( Transformation: Korrektur der Z-Achse in Abhängigkeit von X und Y ) G1 X10  
Y50 ( Interpolation in der X/Y-Ebene )
```

In the G1 set above, the previously inserted transformation results in an additional motion component of the Z axis, whereby this is not involved in the interpolation. If in this case the controller enable is active for the X and Y axis and this is not valid for the Z axis, then the mentioned error occurs. This situation can only occur if controller enables are switched on the PLC side during the running program or during a running modal travel movement.

### **2.5.504 Invalid travel mode in the case of travel key from MMI**

#### **Cause**

An invalid or unsupported travel mode was requested by the HMI via one of the jog keys of the virtual keyboard.

Possible reasons:

- The travel mode is not supported by the currently used firmware version
- Error in the HMI or during data transmission

#### **Solution**

Make sure that a current controller firmware is used.

All supported travel modes can be found in the documentation [PC Interface for E°EXC Controllers](#) in chapter Assignment of the Jog Keys.

## **2.5.601 Incorrect IO basis address configured for CAN module**

### **Cause**

Error in the CODESYS controller configuration.

### **Solution**

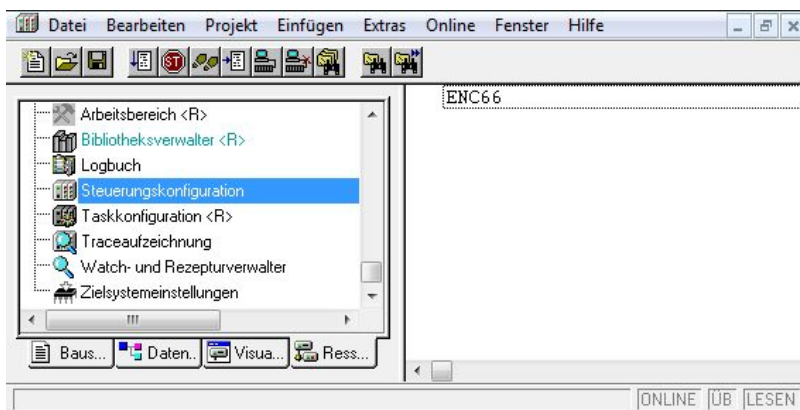
The error occurs if the process data of a configured CAN node no longer fit into the process image (configured base address + length > process image size 1024 bytes) - affects CODESYS V2 only.

### 2.5.705 Generating of hmi information failed

#### Cause

The error message may occur when loading a CODESYS V2.3 PLC project if the controller configuration was empty. The error occurs only between EXC firmware version V2.60beta1 and V2.62.

The following screenshot excerpt shows an empty controller configuration. For example, LBM or other modules are missing.



#### Solution

The error can be acknowledged and has no further effect.

To prevent the error, use

- a firmware higher than version V2.62 / 01-10-2015
- a firmware prior version V2.60beta1

## **2.6 POS module - Interpolator**

This module contains error messages that may occur during coarse interpolation of CNC programs.



## **2.6.2001: No controller release during reference point travel**

### **Cause**

While starting the homing procedure, the controller release of the PLC program was not set.

### **Solution**

Check the conditions for setting / resetting the feed enable in the PLC program.

### **Example**

Additional information for the example: CH0 LV0 %9074 N85/1 3

The last number in the additional information is the number of the application axis.

## **2.6.2002: No feed release during reference point travel**

### **Cause**

While starting the homing procedure, the feed enable was not set.

### **Solution**

Check the conditions for setting / resetting the feed enable in the PLC program.

## **2.6.2004: No feed release during reference point travel**

### **Cause**

During a homing procedure, the feed enable was disabled by the PLC program.

### **Solution**

Check the conditions for setting / resetting the feed enable in the PLC program.

## **2.6.7501 Q tab full: too many modal Q bits active simultaneously**

### **Cause**

The error is reported if too many modal comparisons are active at the same time. 7 modal comparisons can be managed simultaneously.

### **Solution**

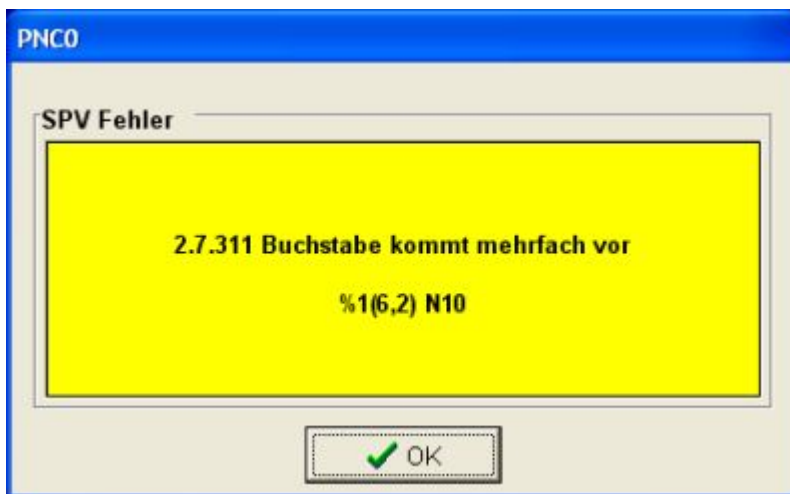
- Sign out modal comparisons that are no longer required per G131 or G150.
- In EXC firmware V2.64beta1 this error may have been reported incorrectly. Use a different firmware version.

## 2.7 SPV module - Memory management

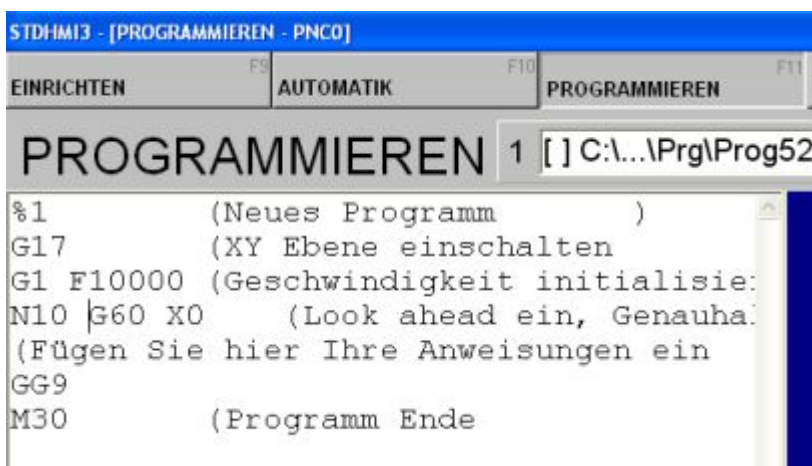
This module reports errors that occur when reading in a DIN program.

Contents of the additional information:

- Program number (=%1)
- Line No (=%6),
- Column number (=%2),
- programmed block (=%N10)



Cause: Indicates the faulty position in the DIN program from block number N10 up to the next block number. Here the second G is wrong, because there is no function with GG.



Further explanations for this error can be found in the individual [description](#).

## **2.7.103: Program is still open for reading**

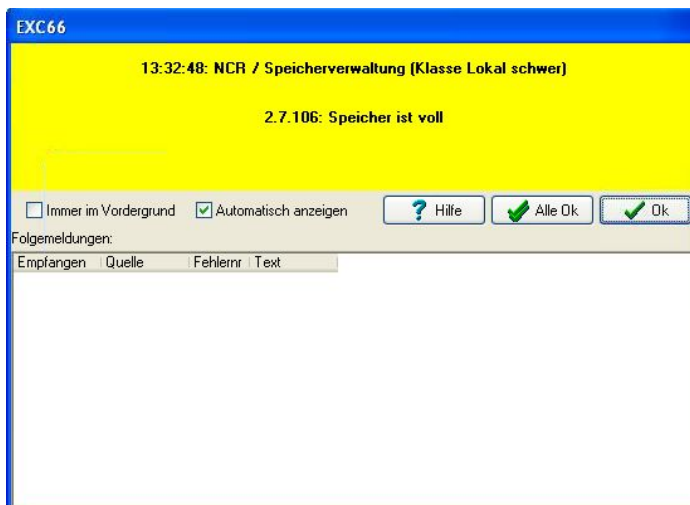
### **Cause**

A DIN program should be uploaded to the NC controller. At this time a program with the same program number is active on the NC controller. The upload fails because of this reason.

### **Solution**

Cancel the execution of the DIN program before replacing it.

### 2.7.106 Program memory is full



#### Cause

The error occurs, if loading a DIN program leads to a full program memory.

#### Solution

- Execute very large DIN programs as online programs.


## 2.7.108: Block numbers not ascending

### Cause

- Block numbers are not in an ascending order
- Block numbers are larger than 65535

### Solution

- Use block numbers in an ascending order
- Limit the block numbers to 65535. E.g. N65580 is not allowed.

 Starting with firmware V2.50beta2 the maximum number of blocks is  $2^{32}-2$  (4.294.967.294).



### 2.7.311 Letter occurs multiply

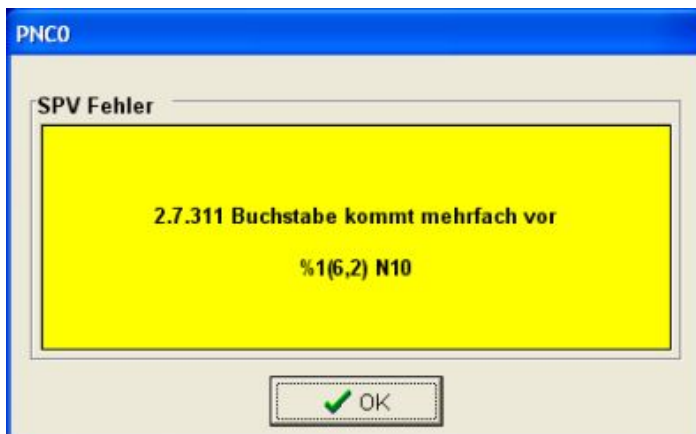
#### Cause

In a DIN block, an identification letter has been programmed more than once. The program number, block number and position of the erroneous character can be found in the additional information.

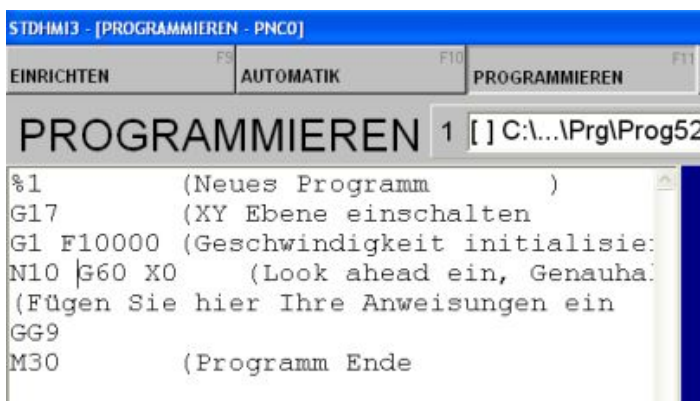
#### Solution

- Correct the indicated DIN block.

#### Example



The additional information indicates the faulty position in the DIN program from block number N10 up to the next block number. In this case the second G is wrong, because no function with GG exists.



## 2.7.332 Format string too long

### Cause

G252, G253 may not contain more than 127 characters.

### Solution

- Organize text via language files.

### **2.7.344 Syntax error: real number expected**

#### **Cause**

The letter O and the number 0 have been confused.

#### **Solution**

- Pay attention to the use of the digit 0 for numbers.

## 2.7.358 Syntax error: Symbol is at this point prohibited

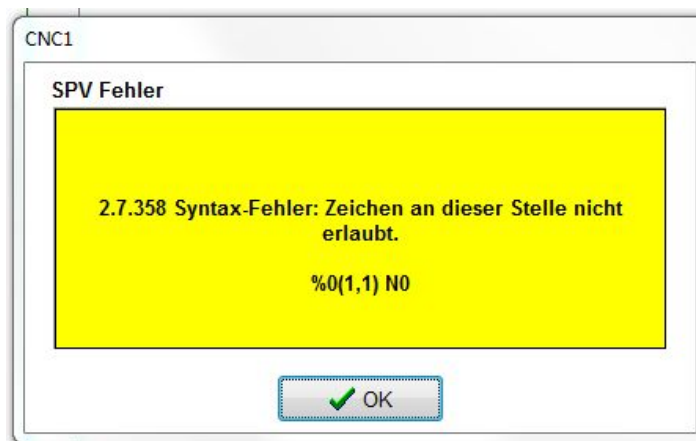
### Cause

The DIN program contains an error. The position of the first character that cannot be interpreted by the controller is indicated in the additional information.

### Solution

- Correct the indicated position in the DIN program.

### Example



In the example, a file of a different type was loaded as a DIN program. The very first character is invalid. %0 means that the controller could not yet interpret the program number. (1,1) denotes the first character of the first line. N0 means that no block number was found before the error.

### **2.7.401 No further block available**

#### **Cause**

The error occurs if a M30 is missing in the main program or a G99 is missing in the subroutine.

#### **Solution**

- Check if M30 or G99 is missing in the DIN program, that is displayed in the additional information.

## **2.7.404 No further block available**

### **Cause**

The error occurs if a M30 is missing in the main program or a G99 is missing in the subroutine.

### **Solution**

- Check whether M30 or G99 is missing in the DIN program specified in the additional info.

## **2.7.409 Program not available**

### **Cause**

The error message 2.7.x is caused by the memory management. If a non-existing subroutine is called by the G22 function, an error 2.7.409 is displayed. The program number of the missing subroutine is displayed in the additional information.

### **Solution**

- Load the subroutine in the controller.
- Check the number of the subroutine that is called.

## 2.7.414 Block jump not allowed in online program

### Cause

Online programs are processed during transmission. They must be sequential in structure and may not contain jumps or other branching. Subroutine calls with G22 Lxxx are allowed.

### Solution

- If possible, replace the jump with a subroutine call or execute the program as an offline program.



## **2.8 LBM module - LBM driver**

This module contains errors that may occur when operating LBM modules on the EXC66 or when using the axis or PWM interfaces of the EXC882 or EXC883.

## 2.8.205 LocalBus: user flash memory CRC error

### Cause

There is invalid data in the flash memory of an LBM module.

The additional information about the error contains the module index (counted from 0). For example, the additional information "lbm\_read\_all\_config(10)" indicates that module 10, counting the 11th module starting from the controller, is affected.

### Solution

- Replace faulty LBM module.

#### **2.8.402 LocalBus: error counter reaching error level**

##### **Cause**

If the error occurs sporadically while machine operation, the reason is most probably an EMC problem.

If the error occurs directly after a re-start, the reason is most probably a problem at the LocalBus (e.g. over voltage). When using an EXC66, E-FBM NT02/03 (power supply for field bus modules) might have been connected to the LocalBus by chance, because different voltages are used for the bus supply.

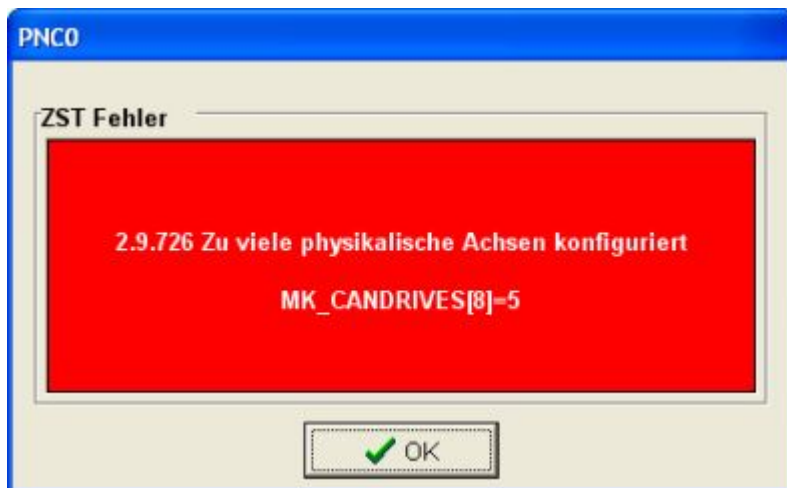
##### **Solution**

- In case of EMC problems identify the source of interference and eliminate it. In case of bus problems check the modules at the LocalBus.

## 2.9 ZST module - central controller

This module reports errors from the higher-level state machine of the CNC/motion kernel that may occur during initialization and operation of the controller.

Example:



Further explanations for this error can be found in the individual [description](#).

### 2.9.201 Invalid state for the requested job, single function actually not allowed

#### Cause

A single block requested by the HMI is not executed because the controller is not in the IDLE state.

#### Solution

Either an emergency stop is pending or the stop button is permanently on.

Other conceivable reasons are:

- Running DIN program or single block
- Global error not acknowledged
- Machine constants are being loaded
- Controller has not finished booting

The state of the central controller at the time the single block is called up is stored in the additional error information. The error reason can be derived from this.

Possible states:

Z\_ZST\_NOT\_INIT\_E  
Z\_ZST\_INIT\_E  
Z\_ZST\_WAIT\_Z\_POS\_KALTSTART\_E  
Z\_ZST\_WAIT\_Z\_POS\_WARMSTART\_E  
Z\_ZST\_MK\_UPDATE\_E  
  
Z\_ZST\_WAIT\_Z\_POS\_IDLE\_E  
Z\_ZST\_IDLE\_E  
Z\_ZST\_IDLE\_UB\_SOLL\_AUS\_E  
Z\_ZST\_WAIT\_Z\_POS\_RUN\_E  
Z\_ZST\_RUN\_E  
Z\_ZST\_RUN\_UB\_SOLL\_EIN\_E  
  
Z\_ZST\_WAIT\_Z\_POS\_FEHLER\_HALT\_E  
Z\_ZST\_FEHLER\_HALT\_E  
Z\_ZST\_WAIT\_Z\_POS\_FEHLER\_FREI\_E  
Z\_ZST\_FEHLER\_FREI\_E  
Z\_ZST\_WAIT\_FEHLER\_FREI\_UB\_SOLL\_EIN\_E  
Z\_ZST\_WAIT\_Z\_POS\_RESTART\_K0\_E  
Z\_ZST\_WAIT\_Z\_POS\_IDLE\_OR\_RUN\_E  
  
Z\_ZST\_WAIT\_Z\_POS\_FEHLER\_ABBRUCH\_E  
Z\_ZST\_FEHLER\_ABBRUCH\_E

## 2.9.223 NC->MMI: message buffer overflow

### Cause

The messages sent by the controller are not retrieved by the HMI in time.

The message type is stored in the additional information. The meaning of the controller blocks specified as sb0 and sb1 can be found in the chapter Messages in Detail in the documentation PC interface for E°EXC controllers.

### Solution

Either the controller sends a lot of messages within a short time, or the HMI does not retrieve any more messages. Thus the message buffer overflows.

- Check that the HMI is still working properly. If this is the case, check which system component is sending the message and make sure that not too many messages are sent.

### Example

Additional information: sb0=14 sb1=101 module=5

In the present case it has to be checked within the PLC project (CODESYS) why the message 101 (=SB1) is sent. It is likely that the PLC sends this message every cycle.

### **2.9.505 Transfer of compensation data only allowed in the IDLE state**

#### **Cause**

While a NC program is executed (Z\_ZST\_RUN\_E), no axis corrections can be transferred.

#### **Solution**

The transfer is initiated by the PC application. In case of this error the transfer starts at the wrong time.

Also the PLC application can cause this error, if it initiates a program start before the axis corrections are transferred after system start. Check the timing and the dependency of PC and PLC application in detail.

## 2.9.701 Machine constant identifier not available

### Cause

An attempt was made to load a machine constant file containing a machine constant with an unknown name.

Possible reasons:

- Typing error when editing the MK file manually.
- The file was created with a newer controller firmware and contains one or more machine constants that have been added in the meantime.
- The loaded file is not a machine constant file at all.

The machine constant identifier in question can be found in the additional information to the error message.

### Solution

- Correct the MK file or use a valid MK file.



## 2.9.702 Too many parameters for machine constant

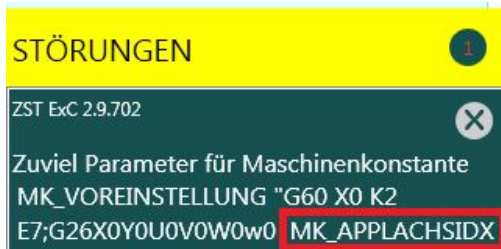
### Cause

- Cause A: The MK file from a different controller has been used, which was configured with more axes. The error is displayed for several parameters in the MK file because axes are missing.
- Cause B: The value of a machine constant doesn't end with a semicolon

In a MK file the machine constant MK\_VOREINSTELLUNG isn't terminated with a semicolon. Excerpt from the MK file:

```
MK_VOREINSTELLUNG      "G60 X0 K2 E7;G26X0Y0U0V0W0w0"  
MK_APPLACHSIDX        0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,-1,-1;
```

The error message shows the identifier of the next machine constant (in this case MK\_APPLACHSIDX, see red marking):



### Solution

For **cause A**:

- Save the old MK file.
- Go to Diagnostics > Machine Constants > MC Configurator, execute "Save + load" once.

Only axes parameters are transferred that refer to activated / existing axes.

For **cause B**:

- Add the missing semicolon!

## 2.9.726 Too many physical axes configured

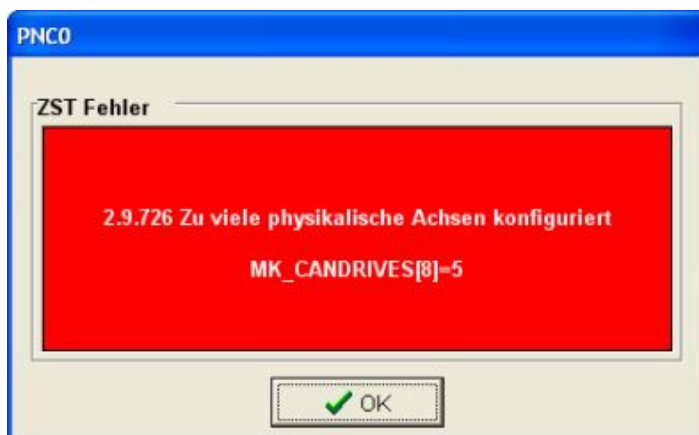
### Cause

More axes were configured on a controller than permitted due to the customer configuration.

### Solution

- Configure fewer axes or contact our sales department for an upgrade.

### Example



Contents of the additional information:

incorrect axis index (=8).

Cause: The axis is parameterized in the machine constants (here MK\_CANDRIVES). The CAN node (=5) was configured for the axis with the corresponding index (=8), although only eight axes (corresponding to index 0..7) are permitted with this controller.

## 2.9.732 CAN-Drive: Configured CAN-Bus-Interface is not available

### Cause

A CAN drive interface is configured in the machine constants, which is not available at the controller.

This can have several reasons:

- An MK file was loaded that does not match the controller type (the original controller had more CAN interfaces)
- The configured CAN interface is available on the hardware side, but not enabled via the customer configuration
- An optional expansion device is missing that provides the configured CAN interface (e.g. CAN88 for EXC88)
- There may be a hardware defect

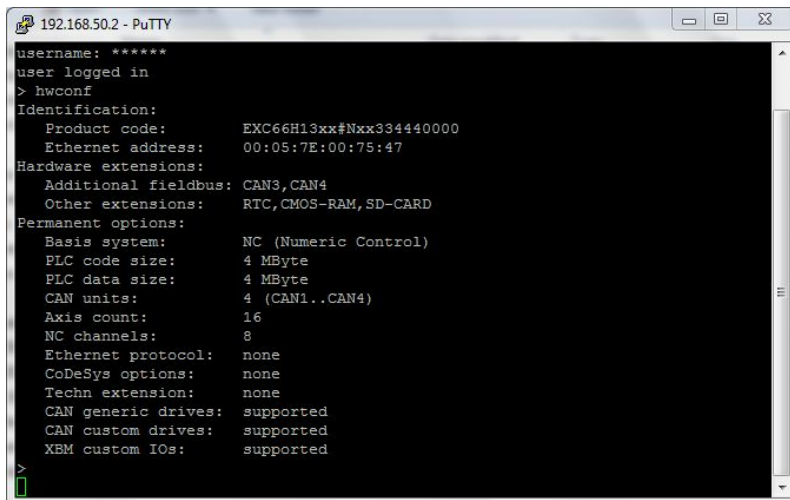
### Solution

- Check whether the interface specified in the additional error information exists on your controller and that it is enabled, and adjust the machine constants if necessary.
  - If the interface is not enabled and an upgrade is desired, please contact our sales department.
  - If the interface is present and enabled on the hardware side, it is probably a hardware defect. In this case, after making sure that it is not the enable after all, send the controller in for repair.

### Example

A possible error case with an EXC66

hwconf with error-free controller:



```
192.168.50.2 - PuTTY
username: *****
user logged in
> hwconf
Identification:
  Product code:      EXC66H13xx#Nxx334440000
  Ethernet address:  00:05:7E:00:75:47
Hardware extensions:
  Additional fieldbus: CAN3,CAN4
  Other extensions:  RTC,CMOS-RAM,SD-CARD
Permanent options:
  Basis system:      NC (Numeric Control)
  PLC code size:     4 MByte
  PLC data size:     4 MByte
  CAN units:         4 (CAN1..CAN4)
  Axis count:        16
  NC channels:        8
  Ethernet protocol: none
  CoDeSys options:   none
  Techn extension:   none
  CAN generic drives: supported
  CAN custom drives: supported
  XBM custom IOs:    supported
```

hwconf at the controller with this error message:

```
=== Telnet login ===
username: *****
user logged in
> hwconf
identification:
  product code:      EXC66H00xx#Nxx332440000
  ethernet address:  00:05:7E:02:12:EF
hardware extensions:
  additional fieldbus: none
  other extensions:  none
permanent options:
  basis system:      NC (Numeric Control)
  plc code size:      4 MByte
  plc data size:      4 MByte
  can units:          2 (CAN1=CAN-IO; CAN2=CAN-Drive)
  axis count:         16
  nc channels:         8
  ethernet prot:      none
  techn extension:    none
>
```

---

CAN3, CAN4, RTC, the buffered CMOS RAM and the SD card are located on the expansion board of the controller, which is no longer displayed by HWCONF in the reported error for this controller.

In this case, the controller must be sent in and replaced. The cause must be determined by the manufacturer.

### **2.9.733 EtherCAT interface is not available or has not been unlocked**

#### **Cause**

EtherCAT axes are configured in the machine constants, although no EtherCAT interface is available at the controller.

This can have several reasons:

- An MK file was loaded that does not match the controller type (the previous controller had more CAN interfaces)
- The CAN interface is available on the hardware side, but not enabled via the customer configuration
- There may be a hardware defect

#### **Solution**

- Check whether the EtherCAT interface exists on your controller and that it is enabled, and adjust the machine constants if necessary.
  - If the interface is not enabled and an upgrade is desired, please contact our sales department.
  - If the interface is present and enabled on the hardware side, it is probably a hardware defect. In this case, after making sure that it is not the enable after all, send the controller in for repair.

## 2.9.902 Control system not ready, single block not executable

### Cause

A single block requested by the PLC is not executed because the controller is not in the IDLE state.

### Solution

Possible reasons:

- Running DIN program or single block
- Global error not acknowledged
- Machine constants are being loaded
- Controller has not finished booting

The state of the central controller at the time the single block is called up is stored in the additional error information. The error reason can be derived from this.

Possible states:

Z\_ZST\_NOT\_INIT\_E  
Z\_ZST\_INIT\_E  
Z\_ZST\_WAIT\_Z\_POS\_KALTSTART\_E  
Z\_ZST\_WAIT\_Z\_POS\_WARMSTART\_E  
Z\_ZST\_MK\_UPDATE\_E  
  
Z\_ZST\_WAIT\_Z\_POS\_IDLE\_E  
Z\_ZST\_IDLE\_E  
Z\_ZST\_IDLE\_UB\_SOLL\_AUS\_E  
Z\_ZST\_WAIT\_Z\_POS\_RUN\_E  
Z\_ZST\_RUN\_E  
Z\_ZST\_RUN\_UB\_SOLL\_EIN\_E  
  
Z\_ZST\_WAIT\_Z\_POS\_FEHLER\_HALT\_E  
Z\_ZST\_FEHLER\_HALT\_E  
Z\_ZST\_WAIT\_Z\_POS\_FEHLER\_FREI\_E  
Z\_ZST\_FEHLER\_FREI\_E  
Z\_ZST\_WAIT\_FEHLER\_FREI\_UB\_SOLL\_EIN\_E  
Z\_ZST\_WAIT\_Z\_POS\_RESTART\_K0\_E  
Z\_ZST\_WAIT\_Z\_POS\_IDLE\_OR\_RUN\_E  
  
Z\_ZST\_WAIT\_Z\_POS\_FEHLER\_ABBRUCH\_E  
Z\_ZST\_FEHLER\_ABBRUCH\_E

## **2.9.1108 PLC reports emergency stop**

### **Cause**

The message appears when the emergency stop bit is set by the PLC.

With CODESYS V3: Input XEmergencyStop on the function block NC\_GlobalControl

With CODESYS V2: DB1 Bit 0 D1\_000\_0\_EMERGENCYSTOP\_BIT resp. DB1\_SPS2NC\_NOTAUS\_BI

### **Solution**

Eliminate the reason why the emergency stop was triggered.

## **2.9.1115 Invalid travel mode in the case of travel key from MMI**

See [2.5.504 Invalid travel mode in the case of travel key from MMI](#)



### **2.9.1121 Stop signal present, program start not possible**

#### **Cause**

An attempt was made to start a DIN program via the start key while the stop key was active.

#### **Solution**

Do not press Start and Stop at the same time. If the stop button was not pressed, it may be a wiring error or a hardware problem.

## 2.9.1122 Control system is not ready, program start not possible

### Cause

A program startup requested by the PLC is not executed because the controller is not in the IDLE state.

### Solution

Possible reasons:

- Running DIN program or single block
- Global error not acknowledged
- Machine constants are being loaded
- Controller has not finished booting

The state of the central controller at the start of the program is stored in the additional error information. The error reason can be derived from this.

Possible states:

Z\_ZST\_NOT\_INIT\_E  
Z\_ZST\_INIT\_E  
Z\_ZST\_WAIT\_Z\_POS\_KALTSTART\_E  
Z\_ZST\_WAIT\_Z\_POS\_WARMSTART\_E  
Z\_ZST\_MK\_UPDATE\_E  
  
Z\_ZST\_WAIT\_Z\_POS\_IDLE\_E  
Z\_ZST\_IDLE\_E  
Z\_ZST\_IDLE\_UB\_SOLL\_AUS\_E  
Z\_ZST\_WAIT\_Z\_POS\_RUN\_E  
Z\_ZST\_RUN\_E  
Z\_ZST\_RUN\_UB\_SOLL\_EIN\_E  
  
Z\_ZST\_WAIT\_Z\_POS\_FEHLER\_HALT\_E  
Z\_ZST\_FEHLER\_HALT\_E  
Z\_ZST\_WAIT\_Z\_POS\_FEHLER\_FREI\_E  
Z\_ZST\_FEHLER\_FREI\_E  
Z\_ZST\_WAIT\_FEHLER\_FREI\_UB\_SOLL\_EIN\_E  
Z\_ZST\_WAIT\_Z\_POS\_RESTART\_K0\_E  
Z\_ZST\_WAIT\_Z\_POS\_IDLE\_OR\_RUN\_E  
  
Z\_ZST\_WAIT\_Z\_POS\_FEHLER\_ABBRUCH\_E  
Z\_ZST\_FEHLER\_ABBRUCH\_E

### **2.9.1403: The actual controller has no CNC or Motion activation code !!!**

#### **Cause**

This error occurs, if you try to load a NC or Motion firmware on a controller that is only enabled as a PLC controller

#### **Solution**

Use a controller with the correct activation code.

## **2.9.1406 Realtime-Ethernet: Missing or not supported activation code**

### **Cause**

An incorrect customer configuration was activated.

### **Solution**

Verify the unlocking according to the type key. See Technical Manual of the respective controller, chapter *Type Key*.

## 2.10 PLC module - PLC application

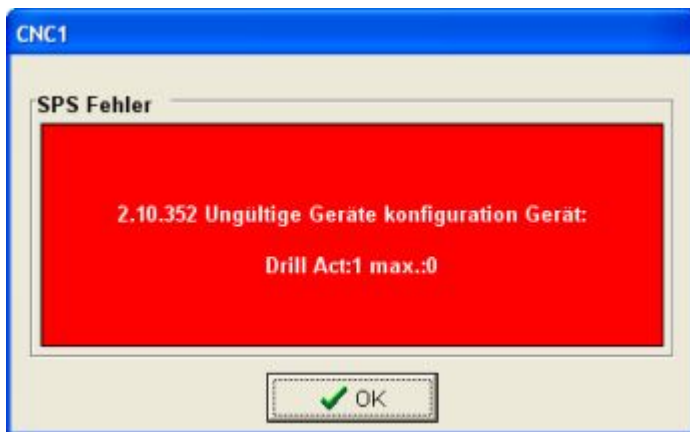
This module contains errors that are reported from the PLC application.


The error number, the error text and the additional information describe an application-specific error from the PLC program

Content additional information: application-specific information (created by the programmer of the PLC application)

-  The Eckelmann AG application packages E°CUT ECO or E°CUT PRO report various errors via this module. The listed errors are specific to these applications.

Example:



-  The error messages of the PLC module are created by the programmer of the PLC application and stored in the "sps\_fehl\_xx.db" file.  
The additional information is also created by the programmer of the PLC application.

## 2.11 SYS module - operating system

Errors from system components and drivers are reported from this module. In addition, emergency messages can be reported by CAN nodes that have not been configured as axes or have not yet been recognized as axes. These error messages are specified via the additional error message information. In such a case, contact the manufacturer of the module (see also e.g. [2.11.10322](#)).

## 2.11.1021 CAN-Bus: BUSOFF-Interrupt

### Cause

The CAN communication is terminated.

The hex value in the additional error information contains the content of the interrupt state register of the CAN controller:

State	Symbol	ExC55 CAN1/2	ExC66 CAN1/2 or EXC8x / EXC88x	ExC66 CAN3/4	Meaning
0x20000	CAN_TRANSMIT_OVERRUN	x			
0x10000	CAN_OVERRUN	x	x	x	
0x08000	CAN_BIT1ERR	x		x	Bit Error (*)
0x04000	CAN_BIT0ERR	x		x	Bit Error (*)
0x02000	CAN_ACKERR	x		x	Acknowledgement Error (*)
0x01000	CAN_CRCERR	x		x	CRC Error (*)
0x00800	CAN_FORMERR	x		x	Form Error (*)
0x00400	CAN_STUFERR	x		x	Stuff Error (*)
0x00200	CAN_TXWARN	x	x	x	Tx Error Counter >= 96
0x00100	CAN_RXWARN	x	x	x	Rx Error Counter >= 96
0x00080	CAN_IDLE	x			
0x00040	CAN_TXRX	x			
0x00020	CAN_FCS_ERROR_BUSOFF	x		x	Fault Confinement State (*)
0x00010	CAN_FCS_ERROR_PASSIVE	x			Fault Confinement State (*)
0x00004	CAN_BOFFINT	x	x	x	Rx/Tx Error Counter >= 256
0x00002	CAN_ERRINT	x	x		Rx/Tx Error Counter >= 128

State	Symbol	ExC55 CAN1/2	ExC66 CAN1/2 or EXC8x / EXC88x	ExC66 CAN3/4	Meaning
0x00001	CAN_WAKEINT	x			

(\*) according to CAN specification 2.0, Part B, see annex.

The x in the table shows if an appropriate function is implemented.

The signal CAN\_WAKEINT has no meaning for the controller.

## Example

```

0x00200      CAN_TXWARN
+ 0x00100      CAN_RXWARN
+ 0x00020      CAN_FCS_ERROR_BUSOFF
+ 0x00010      CAN_FCS_ERROR_PASSIVE
+ 0x00004      CAN_BOFFINT
+ 0x00002      CAN_ERRINT
+ 0x00001      CAN_WAKEINT
= 0x00336

```

## Solution

- Baud rates must be the same in the servo and in the machine constant MK\_CFG\_CANOPEN\_BITRATE (old syntax: MK\_CANOPEN\_BAUDRATE).
- Termination or cabling is erroneous



## 2.11.1022 CAN-Bus: Error- Interrupt

### Cause

The error is triggered by the error interrupted of the CAN controller. There are too many disturbed CAN frames. The data transmission is disturbed on the CAN bus.

The hex value in the additional error information contains the content of the interrupt state register of the CAN controller:

State	Symbol	ExC55 CAN1/2	ExC66 CAN1/2 or EXC8x / EXC88x	ExC66 CAN3/4	Meaning
0x20000	CAN_TRANSMIT_OVERRUN	x			
0x10000	CAN_OVERRUN	x	x	x	
0x08000	CAN_BIT1ERR	x		x	Bit Error (*)
0x04000	CAN_BIT0ERR	x		x	Bit Error (*)
0x02000	CAN_ACKERR	x		x	Acknowledgement Error (*)
0x01000	CAN_CRCERR	x		x	CRC Error (*)
0x00800	CAN_FORMERR	x		x	Form Error (*)
0x00400	CAN_STUFERR	x		x	Stuff Error (*)
0x00200	CAN_TXWARN	x	x	x	Tx Error Counter >= 96
0x00100	CAN_RXWARN	x	x	x	Rx Error Counter >= 96
0x00080	CAN_IDLE	x			
0x00040	CAN_TXRX	x			
0x00020	CAN_FCS_ERROR_BUSOFF	x		x	Fault Confinement State (*)
0x00010	CAN_FCS_ERROR_PASSIVE	x			Fault Confinement State (*)
0x00004	CAN_BOFFINT	x	x	x	Rx/Tx Error Counter >= 256
0x00002	CAN_ERRINT	x	x		Rx/Tx Error Counter >= 128

State	Symbol	ExC55 CAN1/2	ExC66 CAN1/2 or EXC8x / EXC88x	ExC66 CAN3/4	Meaning
0x00001	CAN_WAKEINT	x			

(\*) according to CAN specification 2.0, Part B, see annex.

The x in the table shows if an appropriate function is implemented.

The signal CAN\_WAKEINT has no meaning for the controller.

## Solution

Check the following reasons:

- Bus termination (120 Ohm at both ends of the bus)
- Shielding / shield connection
- disturbances on the wiring, ground loops
- too long wiring, too many stubs or stubs are too long
- defective bus devices or wrong baud rates configured

## 2.11.1023 CAN-Bus: Reception error, Error counter exceeds error limit

### Cause

This error occurs, if the number of erroneous messages in the receive buffer, exceed a certain limit.  
The hex value in the additional error information contains the interrupt status register of the CAN controller:

State	Symbol	ExC55 CAN1/2	ExC66 CAN1/2 or EXC8x / EXC88x	ExC66 CAN3/4	Meaning
0x20000	CAN_TRANSMIT_OVERRUN	x			
0x10000	CAN_OVERRUN	x	x	x	
0x08000	CAN_BIT1ERR	x		x	Bit Error (*)
0x04000	CAN_BIT0ERR	x		x	Bit Error (*)
0x02000	CAN_ACKERR	x		x	Acknowledgement Error (*)
0x01000	CAN_CRCERR	x		x	CRC Error (*)
0x00800	CAN_FORMERR	x		x	Form Error (*)
0x00400	CAN_STUFERR	x		x	Stuff Error (*)
0x00200	CAN_TXWARN	x	x	x	Tx Error Counter >= 96
0x00100	CAN_RXWARN	x	x	x	Rx Error Counter >= 96
0x00080	CAN_IDLE	x			
0x00040	CAN_TXRX	x			
0x00020	CAN_FCS_ERROR_BUSOFF	x		x	Fault Confinement State (*)
0x00010	CAN_FCS_ERROR_PASSIVE	x			Fault Confinement State (*)
0x00004	CAN_BOFFINT	x	x	x	Rx/Tx Error Counter >= 256
0x00002	CAN_ERRINT	x	x		Rx/Tx Error Counter >= 128
0x00001	CAN_WAKEINT	x			

(\*) according to CAN specification 2.0, Part B, see appendix

The x in the table shows if the appropriate function is implemented.  
The signal CAN\_WAKEINT has no meaning for the controller.

## Solution

Check the following sources of error:

- wrong baud rate (Machine constant MK\_CFG\_CANOPEN\_BITRATE, old syntax: MK\_CANOPEN\_BAUDRATE)
- erroneous device
- cabling
- bus termination
- EMC (shielding)
- topology of the bus

## 2.11.1024 CAN-Bus: Transmission error, Error counter exceeds error limit

### Cause

This error occurs, if the number of erroneous messages in the transmit buffer, exceed a certain limit.  
The hex value in the additional error information contains the interrupt status register of the CAN controller:

State	Symbol	ExC55 CAN1/2	ExC66 CAN1/2 or EXC8x / EXC88x	ExC66 CAN3/4	Meaning
0x20000	CAN_TRANSMIT_OVERRUN	x			
0x10000	CAN_OVERRUN	x	x	x	
0x08000	CAN_BIT1ERR	x		x	Bit Error (*)
0x04000	CAN_BIT0ERR	x		x	Bit Error (*)
0x02000	CAN_ACKERR	x		x	Acknowledgement Error (*)
0x01000	CAN_CRCERR	x		x	CRC Error (*)
0x00800	CAN_FORMERR	x		x	Form Error (*)
0x00400	CAN_STUFERR	x		x	Stuff Error (*)
0x00200	CAN_TXWARN	x	x	x	Tx Error Counter >= 96
0x00100	CAN_RXWARN	x	x	x	Rx Error Counter >= 96
0x00080	CAN_IDLE	x			
0x00040	CAN_TXRX	x			
0x00020	CAN_FCS_ERROR_BUSOFF	x		x	Fault Confinement State (*)
0x00010	CAN_FCS_ERROR_PASSIVE	x			Fault Confinement State (*)
0x00004	CAN_BOFFINT	x	x	x	Rx/Tx Error Counter >= 256
0x00002	CAN_ERRINT	x	x		Rx/Tx Error Counter >= 128
0x00001	CAN_WAKEINT	x			

(\*) according to CAN specification 2.0, Part B, see appendix


The x in the table shows if the appropriate function is implemented.  
The signal CAN\_WAKEINT has no meaning for the controller.

## Solution

Check the following sources of error:

- wrong baud rate (Machine constant MK\_CFG\_CANOPEN\_BITRATE, old syntax: MK\_CANOPEN\_BAUDRATE)
- erroneous device
- cabling
- bus termination
- EMC (shielding)
- topology of the bus

### 2.11.1025: CAN2: Incorrect baud rate

 Starting with the NC firmware V2.30 this error message was replaced by the new message [2.11.1104](#) (refers to IO and drive CAN).

#### Cause

The baud rate, configured at a CAN device, doesn't correspond to the configuration of the controller (MK\_CFG\_CANOPEN\_BITRATE / MK\_CANOPEN\_BAUDRATE). The error occurs at CAN2-4 (drive bus) of the EXC66.

#### Solution

Set MK\_CFG\_CANOPEN\_BITRATE / MK\_CANOPEN\_BAUDRATE to the right value or change the baud rate configuration of the CAN device.

## 2.11.1026: CAN2: BUSOFF-Interrupt

 The error message is replaced by the message [2.11.1021](#) since firmware V2.30 (applies to both IO- and Drive-CAN).

See error description [2.11.1021](#). The error applies to CAN bus CAN2, CAN3 or CAN4 of the EXC66.




### **2.11.1027: CAN2: Error-Interrupt**

 The error message is replaced by the message [2.11.1022](#) since firmware V2.30 (applies to both IO- and Drive-CAN).


See error description [2.11.1022](#). The error applies to CAN bus CAN2, CAN3 or CAN4 of the EXC66.

## 2.11.1028: CAN2: Reception error, Error counter exceeds error limit

 The error message is replaced by the message [2.11.1023](#) since firmware V2.30 (applies to both IO- and Drive-CAN).

See error description [2.11.1023](#). The error applies to CAN bus CAN2, CAN3 or CAN4 of the EXC66.

### **2.11.1029: CAN2: Transmission error, Error counter exceeds error limit**

 The error message is replaced by the message [2.11.1024](#) since firmware V2.30 (applies to both IO- and Drive-CAN).

See error description [2.11.1024](#). The error applies to CAN bus CAN2, CAN3 or CAN4 of the EXC66.

## 2.11.1101: CANopen: module status error

### Cause

A CAN participant has reported an unexpected node state.

### Solution

Determine why the actual state differs from the expected state. The states can be found in the additional error information.

### Example

Additional error message information: no2 nmt=5 nst=0x0c

### Explanation

The CAN node with the node ID 2 is in an undefined state (0x0c) although it should be in state Operational (0x05). The controller cyclically monitors the node state with means of the CANopen node guarding protocol. This error occurs if the monitored state of the module (nst=node state) deviates from the NMT state (nmt= node management), that was activated by the controller.

If the node state changes from 0x05 (Operational) to 0x7f (PreOperational), this usually indicates an unexpected module reset. The state 0x0c is undefined.

Defined states are:

- 0x00 Bootup
- 0x04 Stopped
- 0x05 Operational
- 0x7F PreOperational

Bit 7 is a toggle bit and doesn't belong to the NMT state.

### 2.11.1104: CANopen: not a valid baud rate

 The error message exists since CNC firmware version V2.30.

#### Cause

The baud rate configured on the CAN node does not match the configuration in the controller (MK\_CANOPEN\_BAUDRATE).

#### Solution

Adapt the machine constant MK\_CFG\_CANOPEN\_BITRATE (old syntax: MK\_CANOPEN\_BAUDRATE) or configure the CAN station differently.

## **2.11.1109: CANOpen: unexpected module restart**

### **Cause**

A CAN device that was already present on the bus and at least in the PreOperational state has sent a new boot-up message.

### **Solution**

Determine what caused the device to restart. It is possible, for example, that there was a brief power supply loss to the device or that there was a software error in the device. It is also possible that the restart was explicitly requested by the PLC application.

## 2.11.1111 CANopen: connected device doesn't fit to the PLC controller configuration

### Cause

In the PLC controller configuration in CODESYS, in the *General* tab, in the *Checks at Startup* area, checks are enabled for the CAN node mentioned that failed. See [Introduction Manual E°EXC 880, E°EXC 89](#).

Additional information:

- Case 1: Vendor IDs do not match
  - CANx: Affected CAN bus
  - NodeID: Node number of the affected node
  - found: Vendor ID (hexadecimal) of the node found on the bus (object 1018h, subindex 1)
  - expected: Vendor ID (hexadecimal) of the node in the controller configuration (taken from the EDS file)
- Case2: Product codes do not match
  - CANx: Affected CAN bus
  - NodeID: Node number of the affected node
  - found: Product code (hexadecimal) of the node found on the bus (object 1018h, subindex 2)
  - expected: Product code (hexadecimal) of the node in the controller configuration (taken from the EDS file).
- Case 3: Revision do not match
  - CANx: Affected CAN bus
  - NodeID: Node number of the affected node
  - found: Revision (hexadecimal) of the node found on the bus (object 1018h, subindex 3)
  - expected: Revision (hexadecimal) of the node in the controller configuration (taken from the EDS file).

### Solution

In the PLC controller configuration, use the EDS files that match the used node or disable the respective check.

## 2.11.1149 CANopen: wrong multiplexer in SDO response

### Cause

Instead of the expected segment of a segmented CAN SDO transmission, a response was received that refers to a completely different object.

### Solution

The cause of the error message is difficult to determine without a detailed analysis of the process. One possible explanation is that a previous transfer timed out on the controller side, but the CAN device then responded to the old request after the controller had already triggered the next transfer from the queue. Other explanations are transmission errors on the CAN bus or a software error in the CAN device.



### 2.11.1151: CANopen: Invalid SDO command

- before NC firmware version V2.30 this error occurs for CAN1
- Since NC firmware version V2.30 this error can occur for all CAN buses

#### Cause

This error messages occurs if the order of messages is not correct, while a SDO transfer takes place (read or write CANopen objects).

There can be two reasons for this behavior:

1. A message got lost in consequence of a transmission failure
2. A message was received twice.

In most cases, the second point is the reason. This happens if there are two CANopen devices with the same ID on the bus.

#### Solution

1. Check wiring (shielding, bus termination)
2. Check the CAN IDs of al connected devices.

## 2.11.1263: CANdrive: A node floods the CAN-bus with emergency messages

### Cause

Certain errors occur more than once. This behavior floods the CAN bus. This is a consequential error.

### Solution

Evaluate the additional error information (in the example "node 1 error 3210") to identify the CAN node and the error number.

- Eliminate the determined error at the CAN device.
- In many cases, only a hardware reset of the CAN device will help after the original error has been eliminated.

### Example of an error message:



### **2.11.1602 CANdrive: CAN interface is already in use by the PLC and is therefore not available for axes**

#### **Cause**

A machine constant file has been loaded in which CAN axes are defined for a CAN bus that has already been defined as I/O CAN in the PLC application and thus reserved for use with PLC participants. CNC/motion axes and PLC participants cannot be mixed on the same CAN bus.

The information which CAN bus is affected can be taken from the additional error information.

The assignment of CAN node numbers to CAN buses for CNC and motion axes is controller-specific and can be found in chapter MK\_DRV\_CAN\_AXES / MK\_CANDRIVES of the [CNC Configuration Manual \(Machine Constants\)](#).

#### **Solution**

Make sure that PLC application and machine constants fit to each other (and to the actual setup of the machine). Use a different CAN bus for the axes by changing the node numbers accordingly, or define the CAN bus in the PLC as Drive-CAN.

**2.11.1603 no text found**

## **Solution**

Use a current controller firmware version.

## **2.11.10322 CANopen: Emergency Message: Internal voltage too low**

### **Cause**

A CAN participant reports an undervoltage error. You can identify the station by the additional error information.

### **Solution**

Check the power supply of the relevant device.

#### **Structure of the additional information:**

CAN%d NodeID=%u EEC=%04X ER=%02X MSEF=%02X,%02X,%02X,%02X,%02X

CANx: Corresponding CAN bus

NodeID: Node ID of the device that reports the error

EEC: Error number in hexadecimal notation (for 2.11.10322 it results in 10322 as hexadecimal notation = 0x2852)

ER: Error register

MSEF: Manufacturer specific error code

## **2.11.64526 ExC880: Found unknown or unsupported extension card!**

### **Cause**

The extension card of the EXC88x was not recognized by the controller firmware. Possible causes are firmware that is too old or a hardware defect.

### **Solution**

- Make sure that a current EXC controller firmware is used.

### **2.11.64793 RTC: backup power lost: realtime clock has no valid time**

#### **Cause**

The controller has a battery-backed real-time clock. If the battery has been removed or is empty, the controller loses the current time.

#### **Solution**

- Make sure that there is a full battery in the controller. Instructions for changing the battery can be found in the relevant Technical Manual for the controller.
- Set Date and time after battery change with the monitor command "date" or the corresponding function in E°ConSet or your HMI.

## **2.11.65135: CMOS-RAM invalid: residual data will be deleted**

If this error occurs, invalid CMOS RAM data has been detected by the firmware.

### **Cause**

The CMOS RAM of the controller is used to store coordinate systems and other data. The data is buffered with means of a battery, even if no external power is supplied to the controller.

The battery might be empty (also has a separate error message) or has been recently changed (The battery exchange is buffered by a capacitor, but this buffering only covers a short period). The Data might be corrupted by other influences.

### **Solution**

In this case you have to transfer the user defined coordinate systems and zero points once again to the controller. Otherwise DIN program might not be executed correctly.



## **2.11.65315 File system: unsupported media format**

### **Cause**

The file system of an external drive cannot be read.

### **Solution**

Check the corresponding data medium.

If the problem occurs in connection with the NetDisk (drive nd:), either set the working directory before accessing the NetDisk for the first time by calling SetCurrentPath in the PLC application with "nd:<IP address>". Alternatively, use a controller firmware v2.29.3.4 or later, and configure the IP address of the Netdisk server using the machine constant MK\_CFG\_NETDISK\_SERVER\_IP\_ADDRESS / MK\_NETDISK\_SRVADDR (see [CNC Configuration Manual](#)).

## 2.11.65426: Unknown device name

### Cause

A file system access was performed to a non-existing drive.

### Solution

- Access the right drive
- Special case EXC66H00 / EXC66 compact (see the following example)

### Example

#### Special case EXC66H00 / EXC66 compact

Error when switching from S0 to S1


#### Cause

EXC66 compact as CNC -> ENC66 compact has no buffered RAM

#### Solution

Set MK\_CFG\_SAVE\_ORIGINS / MK\_NULLPUNKTE\_SPEICHERN to 0 (zero).

### **2.11.65445: RAM-Disk: XT3 expansion card not responding**

 The error only occurs with a CPU04 controller.

#### **Cause**

This error occurs when the controller is started. XT3 extension board contains the CAN bus and the RAM disk. If the board does not respond, the hardware might be defective.

#### **Solution**

Exchange the extension board and / or the controller.

## **2.13 UTI module - auxiliary functions**

Errors from system components and drivers are reported from this module.

### **2.13.501: Loss of power to real-time clock. Time has been set back**

This error occurs after battery exchange, if

- the old battery was totally discharged  
or
- the period of time between removing the old battery and inserting the new battery was too long. The battery exchange has to be performed within 15 minutes after switching of the power supply of the controller and inserting the new battery.

### **Solution**

Reset date and clock with the monitor-command "date" after the exchange of the battery. Otherwise the error-message 2.13.501 will appear with starting the controller.

Syntax: date [yyyy-mm-dd] [hh:mm:ss], e.g.

```
> date 2013-09-01 15:32:48
```

## **2.13.601: CMOS-RAM contains invalid data: retain data has been lost**

### **Cause**

The back-up battery is empty.

### **Solution**

Exchange the battery - see the technical manual of the rspective controller.

### **2.13.602 CMOS-RAM: battery is empty, please change**

#### **Cause**

Battery is empty.

#### **Solution**

- Make sure that there is a full battery in the controller. Instructions for changing the battery can be found in the relevant Technical Manual for the controller.
- Set Date and time after battery change with the monitor command "date" or the corresponding function in E°ConSet or your HMI.

## **2.13.603: CMOS-RAM failure: PLC retain data lost**

Description see [2.13.606: CMOS-RAM failure: tool coordinate system lost](#)



#### **2.13.604: CMOS-RAM failure: PLC file data lost (cr:plcfile.dat)**

Description see [2.13.606: CMOS-RAM failure: tool coordinate system lost](#)

## **2.13.605: CMOS-RAM failure: workpiece coordinate system lost**

Description see [2.13.606: CMOS-RAM failure: tool coordinate system lost](#)

### **2.13.606: CMOS-RAM failure: tool coordinate system lost**

For the error message 2.13.606 the file data of the PLC in the CMOS RAM is corrupted. For other error messages (2.13.603 to 2.13.605) other data areas are corrupted.

#### **Cause**

Breakdown of battery: The CMOS RAM is a battery buffered memory. If the battery fails or the battery is removed for a too long period, the content of the RAM gets lost. If the battery is removed for a short time, the data doesn't get corrupted (e.g. while exchanging the battery).

Hardware defect: The CMOS RAM of the EXC66H13 and EXC66H43 is located on the expansion board together with additional field bus interfaces (CAN3 and CAN4 or EtherCAT or Sercos). The error message might also occur if the expansion board is defective. Typically other error messages are displayed in connection with this one e.g. 2.1.115.

#### **Solution**

Breakdown of battery: Exchange the battery and handle the controller as if it was a new one without any persistent data in the CMOS RAM.

Hardware defect: Return the controller to the manufacturer.

## **2.13.607: All offsets and tool data have been deleted due to a firmware upgrade!**

### **Cause**

Beginning with starting with the EXC66e firmware version V2.75 for export controllers, the number of configurable application axes has been increased. As a result, the CMOS RAM layout has changed. All previously saved data is no longer valid

### **Solution**

Handle the controller as if it was a new one without any persistent data in the CMOS RAM.

## **2.16 SCS module (Sercos III)**

Errors concerning Sercos 3 are reported from this module (only EXC66H43 with Sercos enable).

## **2.16.30126: SERCOS: SVC Timeout, BusyAT not set**

### **Cause**

This error message indicates, that after the master has sent a request to the slave on the service channel (communication between controller (Master) and servo controller (slave)), no answer is received from the slave.

### **Solution**

The firmware, that is executed on the controller, is too old (V2.29.x.x).

Use a firmware version V2.29.3.3 or newer.

### **2.16.31011: SERCOS not configured or not supported**

This error occurs when the controller (EXC66H43) is started.

#### **Cause**

The firmware doesn't match the installed sercos board of the controller. There are two different hardware revisions of the board, containing different FPGAs.

#### **Solution**

Use at least firmware version V2.23beta3.

## 2.26 ECAT module - EtherCAT

This module reports errors from the EtherCAT master.

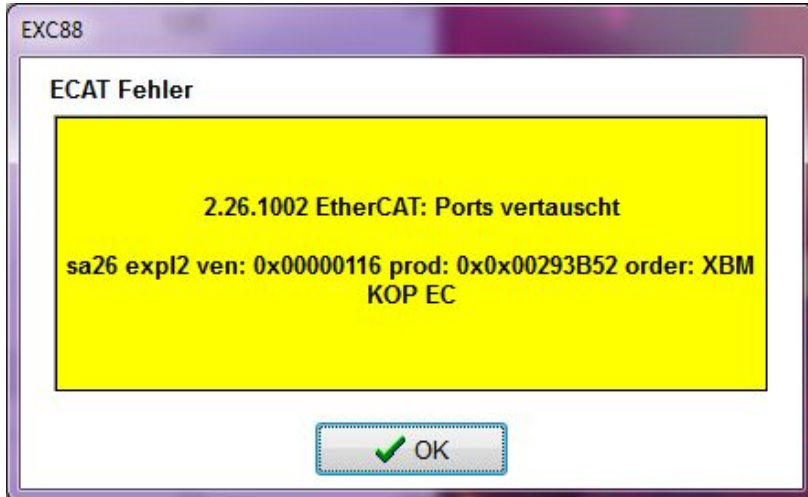
In the additional information on the error messages, the following abbreviations can be found, among others:

- sa: Slave address:
  - Configuration in the PLC:
    - Normal configurator or Eckelmann CNC axis - > EtherCAT address from the configurator
    - Easy-Master nodes: 200 + position within all Easy master devices in the device tree starting with 1
  - Configuration only by MK:
    - Topological address
- st: Slave state or state transition
- expl: Explicit device address of the slave
- alias: Alias address of the slave (from the SII)
- mod: Module index (e.g. for a bus coupler)
- axe: Application axis number



### 2.26.1002: EtherCAT: EtherCAT: ports are mixed up

Complete error message:



#### Description of the individual parameters:

- sa: Topological slave address
- expl: Explicit device address of the slave (if available)
- ven: Vendor ID of the slave
- prod: Product code of the slave
- order: Device designation from the SII of the slave (Device Order Number)

#### Cause

The additional information indicate that ports have been incorrectly connected to the slave. Input and output ports are mixed up. Input port is not port 0.

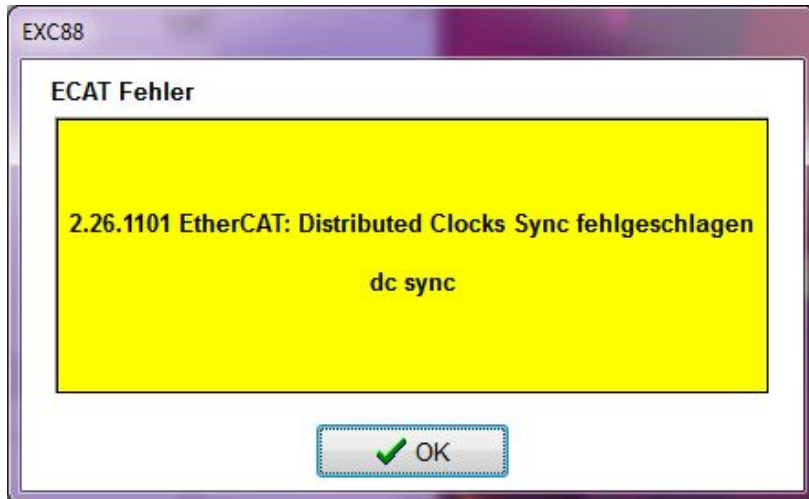
#### Possible solution

Check wiring:

- Check the input and output ports at the displayed slave. If necessary, refer to the slave documentation to find out what the input ports are and what the output ports are. Port 0 must be the first input port.

## 2.26.1101: EtherCAT: Distributed Clocks sync failed

Complete error message:



### Cause

The Distributed Clocks synchronization has failed. The maximum permissible sync difference to the reference time was exceeded several times during synchronization and was therefor aborted.

### Possible solution

No generally applicable solution. Try to reset all slaves and restart EtherCAT. It could be a problem in wiring or an EMC problem. At which position in the topology such a problem may occur can be limited by reading out the error counters in the EtherCAT devices (monitor command `ecat errcnt`).

### 2.26.1102: EtherCAT: Distributed Clocks sync lost

Complete error message:



Description of the individual parameters:

- global syncdiff: Maximum value from all slave registers 0x092C in ns

#### Cause

The sync deviation in at least one slave is higher than the allowed value across several clocks. Possibly the slave has not received a DC packet with the reference time. This can occur due to a loose cable contact, cable break or similar. The error message normally does not appear alone but in conjunction with other error messages such as [2.26.5117: EtherCAT: Statepolling: No response from slave. Check wiring and reload machineconstants/PLC](#), [2.26.4019: EtherCAT: Slave reported errorstate](#), [2.26.4018: EtherCAT: Unexpected slave state detected](#).

#### Possible solution

Check wiring und restart EtherCAT:

- Do the RJ45 connectors sit firmly in the EtherCAT socket of the slaves?
- Are the latches properly engaged or broken off?
- Reload machine constants or reload PLC for systems without axes
- At which position in the topology such a problem may occur can be limited by reading out the error counters in the EtherCAT devices (monitor command `ecat errcnt`).

## 2.26.3001: EtherCAT: Timeout waiting for PLC

### Cause

The PLC does not acknowledge the **EVENT\_ECAT\_ADDITIONAL\_INIT** event of the EXC\_EtherCAT library (see Events of the EtherCAT Library). This interrupts the initialization of EtherCAT and thus no communication to the EtherCAT devices is established.

### Possible solution

- In MK\_CFG\_PLC\_EVENT\_ECAT\_PREOP / MK\_SPS\_ECAT\_KONFEVENT a value > 0 was entered by mistake, so set the value to 0.
- Implement an event handler for the **EVENT\_ECAT\_ADDITIONAL\_INIT** event in the PLC (see Events of the EtherCAT Library).

## **2.26.4018: EtherCAT: Unexpected slave state detected**

### **Complete error message:**

*2.26.4018 EtherCAT: Unexpected slave state detected*

*sa1001 st=op->safeop*

### **Description of the individual parameters:**

- sa: Slave address:
  - Configuration in the PLC:
    - Normal configurator or Eckelmann CNC axis - > EtherCAT address from the configurator
    - Easy-Master nodes: 200 + position within all Easy master devices in the device tree starting with 1
  - Configuration only by MK:
    - Topological address
- st: Last known state -> new unexpected state

### **Cause**

Something caused the slave to leave its state and change to the indicated new state.

Possible changes and associated possible causes:

- op->preop: DC lost
- safeop->preop: Invalid PDO configuration or invalid process data sync manager configuration
- preop->init: Illegal mailbox sync manager configuration

### **Possible solution**

Check configuration and reinitialize EtherCAT.

## 2.26.4019: EtherCAT: Slave reported errorstate

Complete error message:



### Description of the individual parameters:

- sa: Slave address:
  - Configuration in the PLC:
    - Normal configurator or Eckelmann CNC axis - > EtherCAT address from the configurator
    - Easy-Master nodes: 200 + position within all Easy master devices in the device tree starting with 1
  - Configuration only by MK:
    - Topological address
- st: Current slave state
- err: Error number from AL status register including plain text description from specification (if known).

Error messages from the AL status register (register 0x0134, see also ETG1000\_6, or ETG\_1020):

Code	Description (ETG)	Current state (or state change)	Resulting state	Notes
0x0000	No error	Any	Current state	
0x0001	Unspecified error	Any	Any + E	
0x0002	No Memory	Any	Any + E	
0x0003	Invalid Device Setup	P → S	P + E	
0x0004	Invalid Revision	P → S	I + E	
0x0005	Reserved due to compatibility reasons			

Error Messages CNC Controllers  
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Code	Description (ETG)	Current state (or state change)	Resulting state	Notes
0x0006	SII/EEPROM information does not match firmware	I → P	I + E	
0x000E	License Error	Any	I + E	
0x0011	Invalid requested state change	I → S, I → O, P → O, O → B, S → B, P → B	Current state + E	The slave probably does not support the requested state. Check which state change failed and check the slave documentation whether the state is supported by the slave.
0x0012	Unknown requested state	Any	Current state + E	
0x0013	Bootstrap not supported	I → B	I + E	The slave does not support bootstrap mode. Consult slave documentation and contact slave manufacturer.
0x0014	No valid firmware	I → P	I + E	
0x0015	Invalid mailbox configuration	I → B	I + E	Mailbox configuration at state change Init → Boot invalid. Check configured mailbox sizes and types and compare with slave documentation.
0x0016	Invalid mailbox configuration	I → P	I + E	Mailbox configuration at state change Init → PreOp invalid. Check configured mailbox sizes and types and compare with slave documentation.
0x0017	Invalid sync manager configuration	P → S, S → O	Current state + E	Process data sync manager configuration invalid. Detected when switching from PreOp to SafeOp or from SafeOp to Op. Check configuration of process data sync manager and PDO mapping.
0x0018	No valid inputs available	O, S → O	S + E	
0x0019	No valid outputs	O, S → I	S + E	
0x001A	Synchronization after error	O, S → O	S + E	
0x001B	Sync manager watchdog	O, S	S + E	Appears on some slaves in case of DC problems. If necessary, reconfigure Sync manager watchdog.
0x001C	Invalid Sync Manager Types	O, S, P → S	S + E	Check configured sync manager types.

Code	Description (ETG)	Current state (or state change)	Resulting state	Notes
0x001D	Invalid Output Configuration	O, S, P → S	S + E	Check PDO mapping and PDO assignment
0x001E	Invalid Input Configuration	O, S, P → S	P + E	Check PDO mapping and PDO assignment
0x001F	Invalid Watchdog Configuration	O, S, P → S	P + E	Check watchdog configuration
0x0020	Slave needs cold start	Any	Current state + E	
0x0021	Slave needs INIT	B, P, S, O	Current state + E	Slave needs initialization data, reload machine constants
0x0022	Slave needs PREOP	S, O	S + E, O + E	
0x0023	Slave needs SAFEOP	O	O + E	
0x0024	Invalid Input Mapping	P → S	P + E	Check PDO mapping and PDO assignment
0x0025	Invalid Output Mapping	P → S	P + E	Check PDO mapping and PDO assignment
0x0026	Inconsistent Settings	P → S	P + E	
0x0027	FreeRun ist not supported	P → S	P + E	DC mode FreeRun configured, but not supported by the slave. Configure other DC mode (see "Distributed clocks" in CODESYS).
0x0028	SyncMode not supported	P → S	P + E	Configured DC mode is not supported (see "Distributed clocks" in CODESYS).
0x0029	FreeRun needs 3Buffer Mode	P → S	P + E	
0x002A	Background watchdog	S, O	P + E	
0x002B	No Valid Inputs and Outputs	O, S → O	S + E	
0x002C	Fatal Sync Error	O	S + E	Sync deviation in slave too large. Reboot EtherCAT (DC synchronization must be done again). Check wiring.
0x002D	No Sync Error	S → O	S + E	



Error Messages CNC Controllers  
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Code	Description (ETG)	Current state (or state change)	Resulting state	Notes
0x002E	Cycle time too small	S → O	S + E	
0x0030	Invalid DC SYNC Configuration	O, S → O, P → S	P + E, S + E	Invalid DC configuration (see "Distributed clocks" in CODESYS).
0x0031	Invalid DC Latch Configuration	O, S → O, P → S	P + E, S + E	
0x0032	PLL Error	O, S → O	S + E	Often occurs in the context of a DC error in the slave. Reboot EtherCAT (DC synchronization must be done again). Check wiring.
0x0033	DC Sync IO Error	O, S → O	S + E	
0x0034	DC Sync Timeout Error	O, S → O	S + E	
0x0035	DC Invalid Sync Cycle Time	P → S	P + E	Slave does not support the configured master cycle time (MK_DELTAT or master cycle time from CODESYS).
0x0036	DC Sync0 Cycle Time	P → S	P + E	Check Sync0 Cycle Time (see "Distributed Clocks" in CODESYS).
0x0037	DC Sync1 Cycle Time	P → S	P + E	Check Sync1 Cycle Time (see "Distributed Clocks" in CODESYS).
0x0041	MBX_AOE	B, P, S, O	Current state + E	Mailbox error AoE - protocol
0x0042	MBX_EOE	B, P, S, O	Current state + E	Mailbox error EoE - protocol
0x0043	MBX_COE	B, P, S, O	Current state + E	Mailbox error CoE - protocol
0x0044	MBX_FOE	B, P, S, O	Current state + E	Mailbox error FoE - protocol
0x0045	MBX_SOE	B, P, S, O	Current state + E	Mailbox error SoE - protocol
0x0046	MBX_VOE	B, P, S, O	Current state + E	Mailbox error VoE - protocol
0x0050	EEPROM no access	Any	Any + E	

Code	Description (ETG)	Current state (or state change)	Resulting state	Notes
0x0051	EEPROM Error	Any	Any + E	
0x0052	External hardware not ready	Any	Any + E (not O +E)	
0x0060	Slave restarted locally	Any	I	
0x0061	Device Identification value updated	P	P + E	
0x0070	Detected Module Ident List does not match	P → S	P + E	
0x0080	Supply voltage too low	Any	Any + E (not O +E)	
0x0081	Supply voltage too high	Any	Any + E (not O +E)	
0x0082	Temperature too low	Any	Any + E (not O +E)	
0x0083	Temperature too high	Any	Any + E (not O +E)	
0x00F0	Application controller available	I	I + E	
0x8000 .. 0xFFFF	Vendor specific			

Abbreviations:

Abbreviation	Description
I	Init
P	Pre-Operational
S	Safe-Operational
O	Operational
B	Boot or Bootstrap
E	Error bit in AL status register

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Abbreviation	Description
MBX	Mailbox
DC	Distributed Clocks

## 2.26.4020: EtherCAT: Unable to quit slave error

### Complete error message:

*2.26.4020: EtherCAT: Unable to quit slave error*

*sa1001 st=preop*

### Description of the individual parameters:

- sa: Slave address:
  - Configuration in the PLC:
    - Normal configurator or Eckelmann CNC axis - > EtherCAT address from the configurator
    - Easy-Master node: 200 + position within all Easy master devices in the device tree starting with 1
  - Configuration only by MK:
    - Topological address
- st: Current slave state

### Cause

The error condition of the slave still exists.

### Possible solution

Analyze previous error message from AL status register (see [2.26.4019: EtherCAT: Slave reported errorstate](#)), identify and, if possible, eliminate error cause. If necessary, reboot EtherCAT.

## 2.26.5012: EtherCAT-Konfiguration: Error while SDO initialisation

Complete error message:



### Description of the individual parameters:

- sa: Slave address:
  - Configuration in the PLC:
    - Normal configurator or Eckelmann CNC axis - > EtherCAT address from the configurator
    - Easy-Master node: 200 + position within all Easy master devices in the device tree starting with 1
  - Configuration only by MK:
    - Topological address
- AbortCode:
  - CoE abort code according to CiA 301

### Cause

During initialization of an EtherCAT device an error in service data communication occurred. Possible causes are wiring issues or a misconfiguration of an EtherCAT device.

### Possible solution

Check the configuration of the device in CODESYS and correct if necessary.

## **2.26.5016: EtherCAT-IO-configuration: configuration has fatal error(s) and cannot be used**

### **Cause**

The PLC configuration is faulty. The determined error is output in a preceding error message. The error that has occurred is fatal so that the complete configuration cannot be accepted because it is no longer unique (e.g. in the case of address conflicts).

### **Possible solution**

Correct the configuration in the PLC according to the previous error message and reload the PLC.

## **2.26.5100: EtherCAT-Config: vendor id doesn't match**

### **Cause**

An EtherCAT device is configured in the PLC that was not found on the bus or at whose address another device was found. The assignment of the detected device to the configured device is done via the EtherCAT vendor ID. Which vendor ID was configured and which was detected instead can be seen in the additional information to the error message.

### **Solution**

Compare and then correct EtherCAT devices added in the CODESYS device tree with the actual configuration on the bus. The monitor commands `ecat conf` (display configuration from CODESYS) and `ecat show` (display real bus stations) may be helpful.

If the found device is from the same manufacturer even though it has a different vendor ID (e.g. OEM version), you can disable the vendor ID check in CODESYS. However, if there are differences between the detected and configured device, this will lead to further errors.

## 2.26.5103: EtherCAT-Config: configured node not found

### Cause

This error message indicates an address conflict or a problem with the assignment of application axis numbers to EtherCAT nodes.

Possible errors:

- The units of a multi-axis controller were assigned to an EtherCAT node in the machine constants with different address modes (e.g. unit 1 via topological address, unit 2 via explicit address).
- When assigning application axis numbers to the units of an EtherCAT node and addressing via explicit addresses, gaps were generated (e.g. addressing via explicit addresses and unit 1 does not get an application address, but unit 2 gets one)

### Possible solution

Check entries in the machine constants MK\_DRV\_ETHERCAT\_AXES / MK\_ETHERCATDRIVES and MK\_DRV\_ETHERCAT\_ADDRESSES/MK\_ETHERCATADDRESSES.



## 2.26.5110: EtherCAT-ESM: timeout while state change

Complete error message:



Description of the individual parameters:

- sa: Slave address:
  - Configuration in the PLC:
    - Normal configurator or Eckelmann CNC axis - > EtherCAT address from the configurator
    - Easy-Master node: 200 + position within all Easy master devices in the device tree starting with 1
  - Configuration only by MK:
    - Topological address
- st: Current slave state -> requested state of the slave where the timeout occurred

### Cause

A timeout occurred during the state change, the target state was not reached.

Possible causes:

- Slave no longer responds at all (wiring loose, loose contact in cable connector, slave has frozen, slave is in error state). At which position in the topology such a problem may occur can be limited by reading out the error counters in the EtherCAT devices (monitor command `ecat errcnt`).
- Configured timeout too short

### Possible solution

Depending on the situation, check wiring or increase timeout in the PLC for the requested state change. If this error was preceded by another error situation, it must be resolved first (e.g. slave reports error status, invalid input configuration).

## 2.26.5113: EtherCAT-AL: Working counter too low

### Cause

An EtherCAT device that should be present has repeatedly not processed an EtherCAT packet addressed to it.

### Definition Working Counter

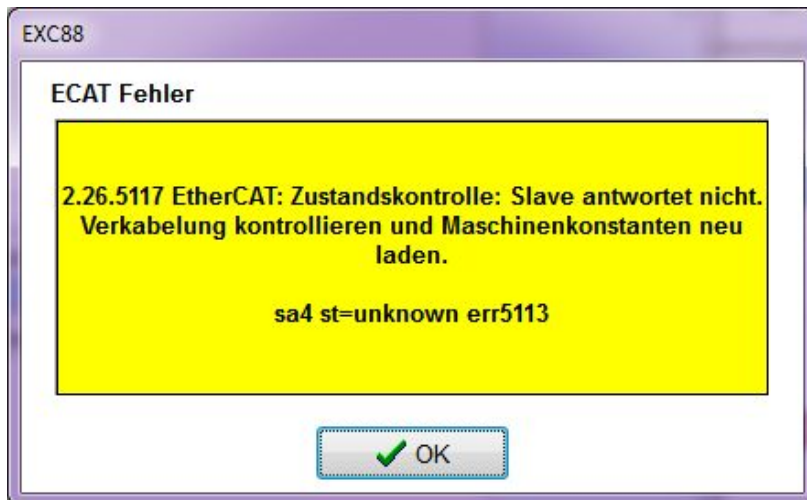
- Each EtherCAT sub-telegram contains a so-called working counter which is 0 when sending off the master.
- Each slave, which considers the packet as addressed for itself and can process it (in case of broadcast all, otherwise exactly one) and reads or writes the data, counts this up.
- If the master repeatedly receives packets where the working counter does not correspond to the expected value, the master will report an error.

### Possible solution

Check wiring. Check the power supply of the EtherCAT device. Check the functionality of the EtherCAT device. At which position in the topology such a problem may occur can be limited by reading out the error counters in the EtherCAT devices (monitor command `ecat errcnt`).

## 2.26.5117: EtherCAT: Statepolling: No response from slave. Check wiring and reload machineconstants/PLC

Complete error message:



Description of the individual parameters:

- sa: Slave address:
  - Configuration in the PLC:
    - Normal configurator or Eckelmann CNC axis - > EtherCAT address from the configurator
    - Easy-Master node: 200 + position within all Easy master devices in the device tree starting with 1
  - Configuration only by MK:
    - Topological address
- st: Current slave state (if known)
- err: Additional information about the occurred error. Error number corresponds to the error from the ecatsubsystem, 5113 e.g. 2.26.5113: EtherCAT-AL: Working counter too low.

### Cause

For configured EtherCAT devices the current state is checked every 500ms. If an error occurs during this check, this collective error message is displayed (details of the error that occurred can be taken from the additional information, but this only plays a minor role). Since the slave state is unclear at this point, "unknown" is displayed.

### Possible solution

Check wiring:

- Do the RJ45 connectors sit firmly in the EtherCAT socket of the controller?
- Are the latches properly engaged or broken off?
- At which position in the topology such a problem may occur can be limited by reading out the error counters in the EtherCAT devices (monitor command `ecat errcnt`).

Replace cable if necessary.

Reboot EtherCAT (reload machine constants or reload PLC).

## 2.26.5121: EtherCAT: No or incomplete processing data received

### Cause

An error occurred in the EtherCAT process data communication. No process data has been received from one or more EtherCAT devices.

### Possible solution

Check wiring und restart EtherCAT:

- Do the RJ45 connectors sit firmly in the EtherCAT socket of the slaves?
- Are the latches properly engaged or broken off?
- Reload machine constants or reload PLC for systems without axes
- At which position in the topology such a problem may occur can be limited by reading out the error counters in the EtherCAT devices (monitor command `ecat errcnt`).

## **2.26.5126: EtherCAT-Config: Node already defined as axis**

### **Complete error message:**

*2.26.5126 EtherCAT-Config: Node already defined as axis*

*sa1001 axe1*

### **Description of the individual parameters:**

- sa: Slave address:
  - Configuration in the PLC:
    - Normal configurator or Eckelmann CNC axis - > EtherCAT address from the configurator
    - Easy-Master node: 200 + position within all Easy master devices in the device tree starting with 1
  - Configuration only by MK:
    - Topological address
- axe: Application axis number

### **Cause**

The specified application axis number (additional information) is already assigned to the slave with the EtherCAT address (additional information).

### **Possible solution**

Check the controller configuration in the PLC. If necessary, correct the addressing or insert placeholders for the CNC or motion axis so that the automatic addressing of the configurator works.

## 2.26.5128: EtherCAT: Fieldbus couldn't be started

### Cause

An error occurred during the initial bus scan or the basic configuration of the slaves, which results in the bus not being able to be started. As a consequence neither EtherCAT axes will work nor PLC nodes can be configured.

Possible causes:

- Error when switching to Init (e.g. a single slave reports an error in the AI status register that cannot be reset)
- Error when reading the SII

### Possible solution

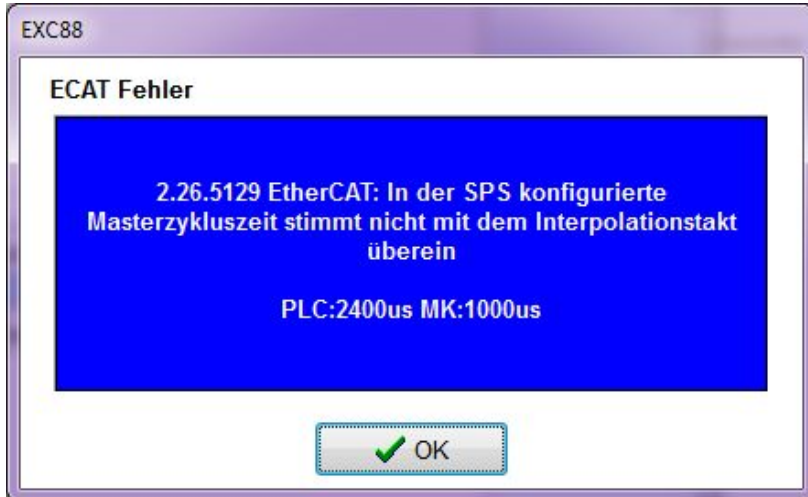
- Reset slaves

Check wiring und restart EtherCAT:

- Do the RJ45 connectors sit firmly in the EtherCAT socket of the slaves?
- Are the latches properly engaged or broken off?
- Reload machine constants or reload PLC for systems without axes
- At which position in the topology such a problem may occur can be limited by reading out the error counters in the EtherCAT devices (monitor command `ecat errcnt`).

## 2.26.5129: EtherCAT: PLC master cycle time doesn't match to interpolation cycle time

Complete error message:



### Description of the individual parameters:

PLC: Value from the CODESYS project in  $\mu\text{s}$  (cycle time in master settings)

MK: Value from the machine constants in  $\mu\text{s}$  ( $\text{MK\_CFG\_INTERPOLATION\_CYCLE\_TIME} / \text{MK\_DELTAT}$ )

### Cause

The values from  $\text{MK\_CFG\_INTERPOLATION\_CYCLE\_TIME} / \text{MK\_DELTAT}$  and the master cycle time from CODESYS must match as soon as at least one CNC or motion axis is configured. This is due to the fact that CODESYS determines the DC parameters of the slaves from the master cycle time. The value from the machine constants is completely unknown to CODESYS during this offline calculation and cannot be communicated to it. If the DC parameters of the slaves are based on an incorrect master cycle time, then DC may not work properly.

### Possible solution

Enter the same value for the master cycle time in CODESYS as in the MK file and recompile and load the PLC or vice versa.

## **2.26.5179: EtherCAT-Config: Optional module configuration in the UBM BK EC faulty**

### **Cause**


In the currently running PLC application the handling for optional modules is deactivated in the device configuration of the EtherCAT master. A different module configuration is stored on the UBM BK EC. The controller does not delete it automatically.

### **Solution:**

Manually delete module configuration in the UBM BK EC or activate optional modules in the device configuration of the PLC.



## Error messages third-party drives

-  Please use the technical documentation of the respective drive supplier to eliminate the error cause. Our controller only displays the error messages of the respective supplier known to us!