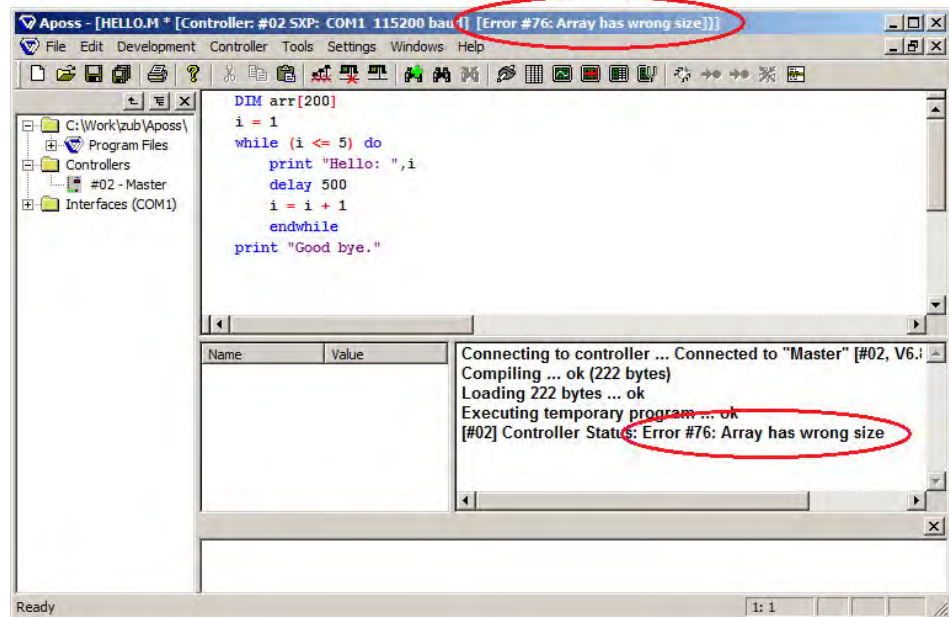


## Error Reference and Messages

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## Error Reference and Messages ♦ Overview APOSS error messages

The error number and the meaning is shown in the APOSS window title and in the communication window:



Starting with firmware version 6.6.20, the last 50 errors since power up are stored internally. This information is not stored in flash. It can be read out by APOSS (see Error History) or by SDO access. For every error, not only time and axis are stored, but also additional error information. This information is error specific.

### Overview APOSS error messages

Error#	APOSS error message	
2	There are no more CAN objects available (CANINI).	F_CANMEM
3	Axis not in system.	F_NOAXES
5	Error not cleared.	F_ERR
6	Failed to move to HOME position.	F_NOMNU
7	Home velocity 0.	F_MNU
8	Position error.	F_SCHLEPP
9	Index pulse (encoder) not found.	F_NIO
10	Unknown command.	F_UNBEK
11	Software end limit activated.	F_GRENZE
12	Illegal parameter number.	F_PARNUM
14	Too many nested loops.	F_NOCHZ
15	INLONG command got an illegal string.	F_NUMFORMAT
16	Parameters in memory are corrupted.	F_CRCPAR
17	Programs in memory are corrupted.	F_CRCPRG
18	Reset by CPU.	F_WDT
19	User abort.	F_ABBRUCH
20	FC communication error.	F_VLTCOM
21	Number of SDO channels exceeded.	F_SDOCHN

Error#	APOSS error message	
25	Limit switch activated.	F_ENDSCHALT
49	Too many interrupt functions.	F_NOINTLEFT
51	Too many nested GOSUB commands.	F_STACK
52	Too many RETURN commands.	F_RETURN
56	A floating point function was called with an invalid argument.	F_MATHERR
60	Interrupt happened, but interrupt address is no longer valid.	F_INTPTR
62	Error in verifying.	F_MEEP
63	Path control only: Path error.	F_PATHERR
64	Path control only: Time out in V24 path control.	F_TIMEOUT
65	Path control only.	F_PATHINT
70	Too many DIM arrays defined.	F_DIM
71	Array too small.	F_ARRBDS
73	Array number does not exist.	F_LTARRAY
74	Array is empty.	F_NOARRAY
75	No more memory space for the new array defined by DIM.	F_NOSPACE
76	Array size does not correspond to the size of the existing array.	F_ARRSIZERR
77	Maximum temperature of the amplifier has been exceeded.	F_TEMP
78	Maximum voltage of the amplifier has been exceeded.	F_UMAX
79	Timeout while waiting for index.	F_TNDX
83	Invalid argument in TESTSTOP command.	F_CMDERR
84	Too many ONTIME or ONPERIODS interrupts.	F_TIM
87	Not enough memory for variables.	F_NOVARMEM
88	CAN guarding error.	F_CANGUARD
89	CAN send or receive error.	F_CANIO
90	Memory locked.	F_MEMLOCK
91	Illegal curve array in SETCURVE.	F_CURARR
92	Encoder error.	F_ENCERR
93	Stack overflow: Too many local variables or nested function calls.	F_DYNSTACK
94	Out of dynamic memory.	F_DYNMEM
95	Too many test indices in data logging command.	F_OPALINDX
96	Code is too old for the current firmware.	F_ILLGLCODE
97	Internal overcurrent detection of power stage.	F_IMAX
98	Wrong direction after limit switch tripped and error reset.	F_LIMIT_VIOLATION
99	I <sup>2</sup> T Limit exceeded.	F_I2TLIMIT
xx	Internal error ##.	

### Error Reference

#### Error\_2 There are no more CAN objects available.

CANINI guarding reports an error because there are no more CAN objects available. The optional error information (see Error History) is used as follows:

CN_TIMEOUT	-2	// timeout of CAN commands when sending or reading telegrams
NO_HARDWARE	-6	// no CAN hardware present
NO_MEMORY	-7	// no more entries available (mailboxes or lists)
NO_CANMEMORY	-10	// no more mailboxes available for define command
NO_MOBJ	-11	// the demanded mailbox is not available
CN_CANERROR	-12	// a CAN bus error is detected (low level bus error)
CN_MOBJ_DIRERR	-13	// direction of mailbox is wrong (try to read a write box or vice versa)
NO_USER	-33	// return value for SDO state (SDOSTATE).
<hr/>		
SDO_ABORT	-50	// has to be higher than the CN_ error messages
SDO_ID_NOT_IN_USE	-33	// return value for SDO state (SDOSTATE)
SDO_SEG_ARRAY_TOO_SMALL	-51	
SDO_SEG_TOGGLE_ERROR	-52	
SDO_SEG_TOO_MUCH_DATA	-53	
SDO_SEG_NOT_ENOUGH_DATA	-54	
SDO_SEG_ARRAY_WRITE_ERROR	-55	
<hr/>		
GUARD_ERROR_NOT_OPERATIONAL	-101	// was -1 before version 6.6.74
GUARD_ERROR_TOGGLE	-102	// was -2 before version 6.6.74
GUARD_ERROR_MODULE_NOT_RESPONSE	-103	// was -3 before version 6.6.74
GUARD_ERROR_NO_MODULE	-104	// was -4 before version 6.6.74

#### Error\_3 Axis not in system.

An attempt has been made to find an axis which does not exist in the controller.

Check to see if the program axis command has an invalid number or a general axis command (...X(\*)).

When using general axis commands, the setting 'number of the axes' should be checked in the menu **Settings → Compiler**. If this value is changed, then the program must be recompiled and downloaded to the controller again.

#### Error\_5 Error not cleared.

An attempt has been made to execute a motion command when an existing error message has not been cleared.

#### Error\_6 Failed to move to HOME position.

According to the axis parameter HOME\_FORCE (3), a forced move to the machine zero-point is mandated before other motion commands can be executed. This move to the machine zero-point has not been executed.

#### Error\_7 Home velocity 0.

HOME was executed with HOME\_VEL set to zero.

### Error\_8 Position error.

The distance between the set and the real position was greater than the *Maximum Tolerated Position Error* defined in POSERR (15).

Causes:

- Mechanically blocked or overloaded drive,
- *Tolerated Position Error* POSERR (15) too small,
- commanded speed too great,
- commanded acceleration too great,
- *Proportional factor* KPROP (11) too small, or
- amplifier not enabled.

### Error\_9 Index pulse (encoder) not found.

At reference or index search, the encoder index pulse could not be found within a motor rotation.

Causes:

- An encoder without an index pulse has been used,
- index pulse not connected correct,
- index pulse incorrect (all three channels must have a simultaneous low), or
- the parameter *Encoder counts* ENCODER (2) is set too low.

### Error\_10 Unknown command.

A communication or program error occurred.

The program must be recompiled and downloaded again.

### Error\_11 Software end limit activated.

A motion command will cause or has caused the software end limit to be activated.

Identification of attainment of software limit at a motion in the speed mode will only be made after the current position is identical to the software limit switch.

Starting with firmware 6.6.60, it is possible to clear a software limit error and then drive in the opposite direction. But if you try again to move in the wrong direction, then error\_98 F\_LIMIT\_VIOLATION is generated.

Handling of hardware limit switches is the same.

In positioning mode, it is known before motion start that the target position lies outside the path. In this case, the movement will not be executed and the error message can be cleared.

Limit switches and reference switches allow the usage of any input. That means not only 1-8 are supported but also larger numbers as well as virtual inputs or outputs.

- !!! Using virtual inputs as limit switches is dangerous because it eliminates the direct connection between the limit switch and the controller. That may introduce a time delay (or other failure scenarios) which will limit the controller's ability to respond quickly to the switch.

Software-limit error handling a up to firmware version < 6.6.60:

A Software-Limit error cannot be cleared: Either the control unit must be switched off and the drive manually moved back to within the admissible area or the monitoring of the software limit switch must be temporarily de-activated the *Negative and Positive Software End Limit* in axis parameters SWNEGLIMACT (19) and SWPOSLIMACT (20). Only then is it possible to clear the error.

**Error\_12** Illegal parameter number.

An attempt has been made to change a parameter (SET command) which does not exist.

**Error\_14** Too many nested loops.

Too many nested LOOP commands exist in the executed program.

**Error\_15** INLONG command got an illegal string.

The INLONG command has been used to read a long value from the serial line. If the string which arrives does not represent a valid number, then this error will be generated.

**Error\_16** Parameters in memory are corrupted.

The parameters in EPROM are no longer correct as a result of

- defective EPROM or
- power outage while saving.

Please note that you must re-initialize the parameters with **Controller → Parameters → Reset** and then overwrite these parameters again with your own user parameters.

Otherwise, motion programs which require user parameters will no longer function correctly.

!!! If this error appears frequently, then the technical service department should be notified.

**Error\_17** Programs in memory are corrupted.

The program data stored in EPROM cannot be found or are no longer correct because of

- defective EPROM or
- power outage while saving.

Delete the EPROM with **Controller → Memory → Delete EPROM** and then re-load the programs and parameters.

!!! If this error appears frequently, then the technical service department must be notified.

**Error\_18** Reset by CPU.

The processor has been stopped and a reset has automatically been executed (watchdog).

Causes could be:

- Short term voltage drop,
- voltage peak, or
- short circuit.

**Error\_19** User abort.

The Autostart program has been aborted by the user.

**Error\_20** FC communication error.

A VLTREAD, VLTWRITE, or VLTCOMM command failed.

**Error\_21** Number of SDO channels exceeded.

If an SDOREAD or SDOWRITE is used with a negative index, then the command returns immediately and stores the running SDO in a channel. It is freed when the result is read. There is a maximum of 5 channels.

**Error\_25** Limit switch activated.

A motion command has caused an axis limit switch to be activated.

Through activation of an end limit switch, the controller – depending on the parameter ENDSWMOD (44) – is automatically switched off and the drive must be manually moved out of this position before the error message can be cleared (up to versions < 6.6.60).

The behavior in case of hard and software limit switches has been improved starting with firmware 6.6.60: It is possible to clear a limit error and then drive in the opposite direction. But if you try again to move in the wrong direction, then error 98 occurs.

Limit switches and reference switches allow the usage of any input. That means not only 1-8 are supported but also larger numbers as well as virtual inputs or outputs.

!!! Using virtual inputs as limit switches is dangerous because it eliminates the direct connection between the limit switch and the controller. That may introduce a time delay (or other failure scenarios) which will limit the controller's ability to respond quickly to the switch.

**Error\_49** Too many interrupt functions.

Cause: More interrupt functions than the maximum possible number were used.

Permitted are:

32	ON INT
32	ON STATBIT
32	ON COMBIT
10	ON PARAM
20	ON posint GOSUB: ON APOS, ON IPOS, ON MAPOS, ON MCPOS, ON MIPOS

**Error\_51** Too many nested GOSUB commands.

The program has executed too many calls from one subroutine to another subroutine. The error usually occurs when subroutine calls are nested too deeply (the maximum is 10) or when subroutines call themselves (recursive subroutine procedures).

**Error\_52** Too many RETURN commands.

Either a RETURN command has been executed that does not correspond to a GOSUB command in the program or there is a direct jump from a subroutine with a GOTO command.

Only one RETURN is allowed per subprogram.

It is always better to jump to the beginning of a subprogram and then to jump with IF... to a previously defined label.

**Error\_56** A floating point function was called with an invalid argument.

Mathematical error: Illegal arguments were passed to one of the “double” functions. For example, sqrt was called with a negative number or asin or acos were called with an argument larger than 1.

Double functions are available starting with version 6.5.01.

**Error\_60** Interrupt happened, but interrupt address is no longer valid.

An interrupt happened but interrupt address is no longer valid. (Internal error which should not ever happen.)

**Error\_62** Error in verifying.

After saving data in the EPROM (a program or parameters), an error was detected during verification.

Delete the EEPROM with **Controller → Memory → Delete EPROM** and try to save the program or parameters again.

If this is not successful, then please call the technical service department.

**Error\_70** Too many DIM arrays defined.

Too many DIM arrays are defined. There is a maximum of 200 Arrays.

**Error\_71** Array too small.

An attempt was made to access an array element that is located outside of the defined array limits.

Cause might be

- an error in the APOSS program. Array sizing does not agree with the space required (e.g. due to an incorrectly programmed loop).
- Or the array is too small for the number of test drives triggered by TESTSTART.
- Or you have exceeded the maximum length of the bits *len* of 8 byte with LINKSDO or LINKPDO.
- Check loop variables.

**Error\_73** Array number does not exist.

Only occurs in conjunction with APOSS communication.

**Error\_74** Array is empty.

Only occurs in conjunction with APOSS communication.

**Error\_75** No more memory space for the new array defined by DIM.

There is no more memory space available for the new array defined by a DIM command.



**Error\_76** Array size does not correspond to the size of the existing array.

The size in a DIM command does not correspond to the size of the existing array.

Cause might be that the arrays in the controller are from older APOSS programs while the current program has other definitions.

Either correct the DIM command or delete existing arrays with **Controller → Memory → Delete EPROM** or with **Controller → Reset → Arrays**.

!!! Remember to follow the recommendations concerning saving programs and parameters before deleting the EPROM.

**Error\_77** Maximum temperature of the amplifier has been exceeded.

Only with MK1 or amplifiers: Temperature warning or overtemperature error (hardware dependent).

**Error\_78** Maximum voltage of the amplifier has been exceeded.

Only with MK1 or amplifiers: Overvoltage

**Error\_79** Timeout while waiting for index.

The command WAITNDX was executed and the specified timeout was exceeded.

The timeout is probably too short or the index impulse was not found (see also Error\_9).

**Error\_83** Invalid argument in TESTSTOP command.

This command error indicates that a TESTSTOP command contained an invalid argument.

Or a compiler error in other commands like invalid parameter value, format, or range. (Internal error which should not occur)

**Error\_84** Too many ONTIME or ON PERIOD interrupts.

Too many interrupts (ON TIME or ON PERIOD commands) were used within the program.

A maximum of 12 ON TIME and/or ON PERIOD commands are allowed within one program.

**Error\_87** Not enough memory for variables.

When an APOSS program is started, the space for the necessary variables is reserved dynamically. Not enough free space is available.

You may have selected a maximum number of variables which is too high. Reduce the maximum number in **Settings → Compiler** (Standard = 92).

Or the memory available is occupied with programs or arrays. Delete the programs with **Controller → Programs → Delete all**

or delete both the programs and arrays, i.e. by deleting the entire memory with **Controller → Memory → Delete EPROM**.

!!! Remember to follow the recommendations concerning saving programs and parameters before deleting the EPROM.

### Error\_88 CAN guarding error.

A guarding error occurred. This happens either when requesting guarding messages from slaves or if guarding was done by a master. In both cases, it is caused by a time out. The additional error information indicates whether it was an error caused by a master guarding. The information (see Error History) is:

CN_TIMEOUT	-2	// timeout of CAN commands when sending or reading telegrams
NO_HARDWARE	-6	// no CAN hardware present
NO_MEMORY	-7	// no more entries available (mailboxes or lists)
NO_CANMEMORY	-10	// no more mailboxes available for define command
NO_MOBJ	-11	// the demanded mailbox is not available
CN_CANERROR	-12	// a CAN bus error is detected (low level bus error)
CN_MOBJ_DIRERR	-13	// direction of mailbox is wrong (try to read a write box or vice versa)
NO_USER	-33	// return value for SDO state (SDOSTATE).
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SDO_ABORT	-50	// has to be higher than the CN_ error messages
SDO_ID_NOT_IN_USE	-33	// return value for SDO state (SDOSTATE)
SDO_SEG_ARRAY_TOO_SMALL	-51	
SDO_SEG_TOGGLE_ERROR	-52	
SDO_SEG_TOO_MUCH_DATA	-53	
SDO_SEG_NOT_ENOUGH_DATA	-54	
SDO_SEG_ARRAY_WRITE_ERROR	-55	
<hr/>		
GUARD_ERROR_NOT_OPERATIONAL	-101	// was - 1 before version 6.6.74
GUARD_ERROR_TOGGLE	-102	// was - 2 before version 6.6.74
GUARD_ERROR_MODULE_NOT_RESPONSE	-103	// was - 3 before version 6.6.74
GUARD_ERROR_NO_MODULE	-104	// was - 4 before version 6.6.74

Portability: Starting with version 6.6.18, the internal error numbers for guarding errors have been corrected (they overlapped with other CAN errors).

### Error\_89 CAN send or receive error.

This error is a send or receive error caused by an SDOREAD or SDOWRITE, by a CANIN or CANOUT, or by an IN or OUT command using CAN I/O.

The optional error information either contains the CAN ID which produced the error (IN, OUT, SDO, ...) or the object number (handle) which was used (CANIN, CANOUT).

### Error\_90 Memory locked.

The program memory is write-protected and cannot be altered.

This means that autostart cannot be set or deleted and programs cannot be saved or deleted. As well, → **Save RAM** and → **Delete EPROM** cannot be executed

### **Error\_91** Illegal curve array in SETCURVE.

An incorrect or old array is defined in the DIM instruction for SETCURVE.

An old array may exist if the zbc (or cnf) file containing all parameters and arrays, has not been loaded from the CAM-Editor.

An incorrect array could be caused by the following:

- It was not created by the CAM-Editor.
- Previous version of a curve editor. Such an array must first be converted by the current CAM-Editor (→ **load** and **save**).
- or the order of the arrays in the DIM instruction does not match the order in the zbc file. Refer to the number of the array in the title bar of the CAM-Editor to identify this problem.

### **Error\_92** Encoder error.

Encoder error (Hardware) (only with sine / cosine encoders);  
(illegal voltage combination).

### **Error\_93** Stack overflow : Too many local variables or nested function calls.

Internal error. A dynamic stack overflow was caused by too many local variables or too many nested function calls.

Increase the stack size in **Settings** → **Compiler**.

### **Error\_94** Out of dynamic memory.

There is not enough dynamic memory for the requested data log (TESTSETP). Either a TESTSTART has requested too much dynamic memory or is called repeatedly.

### **Error\_95** Too many test indices in data logging command.

The data logging command (TESTSETP) contains too many indices. There is an actual limit of 20 indices.

### **Error\_96** Code is too old for the current firmware.

Program code is being downloaded to a controller but the code was created by a compiler that is too old for this controller.

This can happen if an old version of APOSS is used to compile and download a program to a controller containing new firmware (i.e. firmware too new to be supported by the old APOSS). It can also happen if an old version of APOSS is used to compile and save a binary file and then that file is subsequently downloaded to a controller containing new firmware. This can be corrected by installing the newest version of the APOSS-IDE (available from the zub website) and recompiling the original program source.

**Error\_97** Internal overcurrent detection of power stage.

At least one of the onboard amplifier power stages has detected an overcurrent state or even just a short overcurrent pulse. This overcurrent detection is completely independent of the configured software-based maximum current (parameter AMPMAXCUR). The internal overcurrent protection of the power stage cannot be configured and cannot be switched off. This low-level overcurrent detection is active in any operating mode and protects the internal power components. If this overcurrent protection takes place, the error 97 "Overcurrent" is generated.

Additional note:

The parameter AMPMAXCUR is only relevant in cases of operating modes with an activated current control loop. In this case, AMPMAXCUR limits the current command value of the control loop but does not result in overcurrent errors. Nevertheless, the overcurrent error #97 can still take place due to short overcurrent pulses or control oscillations detected by the low-level overcurrent detection of the power stage.

**Error\_98** Wrong direction after limit switch tripped and error reset.

After reaching the limit switch and clearing the error, there was the attempt to move again into wrong direction. This is valid for both software and hardware limit switches.

**Error\_99** I<sup>2</sup>T Limit exceeded.

The I2TVALUE parameter limit has been exceeded (SDO 0x2700 Subindex 27); see also parameter I2TLIMIT.

**Error\_xx** Internal error ##.

If such an error occurs, please contact your dealer and report the error number displayed to the technical service department.

### **APOSS Software Messages**

Most of the APOSS software messages are self explanatory by means of tool tips. You will find some important messages below:

Compilation error(s): program not saved!	A file is always compiled first and then saved. If you want to save the program using <b>Controller → Programs → Save</b> and a syntax error is found during compilation, then this message will be displayed.  Execute <b>Syntax Check</b> in the menu <b>Development</b> , correct the syntax error, and then save the program.
Connection to .. already exists - change to new Window?	When opening a new window or when trying to connect a window with a controller that is already linked to a window.  Yes – The controller is disconnected from the old window and linked to the new window.  No – The controller stays connected to the old window, the new window is not linked to a controller.
Connector pin is not valid in line .. column ..	An illegal combination or a pin number which cannot be set is used with the OUT command.
Controller is executing a program or command!	The controller is executing a command or program and is not available for additional commands. Either wait for the current execution to complete or execute <b>→ Break Esc</b> to terminate the current execution. Then retry the request.
Lost connection to ..!	If the controller is turned off or the plug is pulled, etc. the window is disconnected from the controller and the lost connection error is displayed.
Timeout: no reply from controller	The controller did not answer; check the connection.