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SYNAX200
Decentralized System for the Synchronization of Machine Axes

Troubleshooting Guide: Version 08

DOK-SYNAX*-SY*-08VRS**-WA01-EN-P

Rexroth
Indramat

SYNAX200

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Purpose of Documentation This documentation supports trained maintenance personnel

- in the rapid identification of faults
- outlining carefully-directed steps for the quick elimination of faults
- to quickly and effectively take up contact with either the manufacturer of the machine or INDRAMAT customer service

Editing sequence

Document designation of previous editions	Status	Comments
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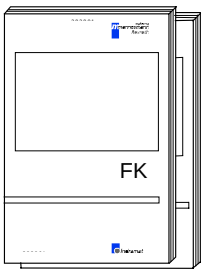
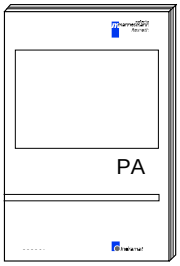
Summary of Documentation - Overview



Functional Description; Interfaces:

Help familiarize the user with SYNAX200
and the functions of SYNAX200

Order designation:
DOK-SYNAX*-SY*-08V*1/2-FK01-EN-P
DOK-SYNAX*-SY*-08V*2/2-FK01-EN-P



Parameter Description:

Description of the SYNAX200 system parameters

Order designation:
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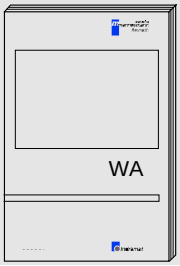
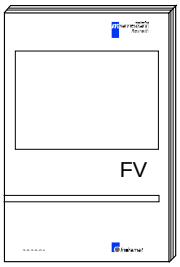


Trouble Shooting Guide:

Explanation of the diagnostics states
How to proceed when eliminating faults

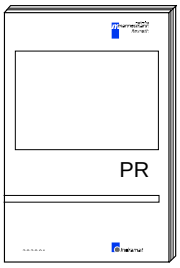
Order designation:
DOK-SYNAX*-SY*-08VRS**-WA01-EN-P



Firmware Version Notes:

Description of the new and changed
functions between SYNAX200 version 08VRS
and previous SYNAX200 07VRS

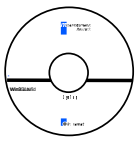
Order designation:
DOK-SYNAX*-SY*-08VRS**-FV01-EN-P



Project Planning:

Selection of units and hardware components
Basic control in cabinet construction

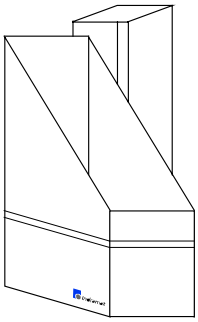
Order designation:
DOK-SYNAX*-SY*-08VRS**-PR01-EN-P



CD: SynTop

Collection of Windows help systems
SynTop, user interface for SYNAX200

Order designation:
SWD-SYNTOP-INB-06VRS-MS-CD600



Order designation:
DOK-SYNAX*-SY*-08VRS**-4001-EN-P

Contents

1 SYNAX200 diagnosis

1.1 Summary of SYNAX200 diagnosis

The diagnosis system of the PPC breaks down as follows:

- There are entities (master axes, system management, etc.) that can, independent of each other, identify errors.
- These entities can directly overwrite binary inputs which are **exclusively** allocated to them.
- They can simultaneously send diagnoses to the diagnosis system.

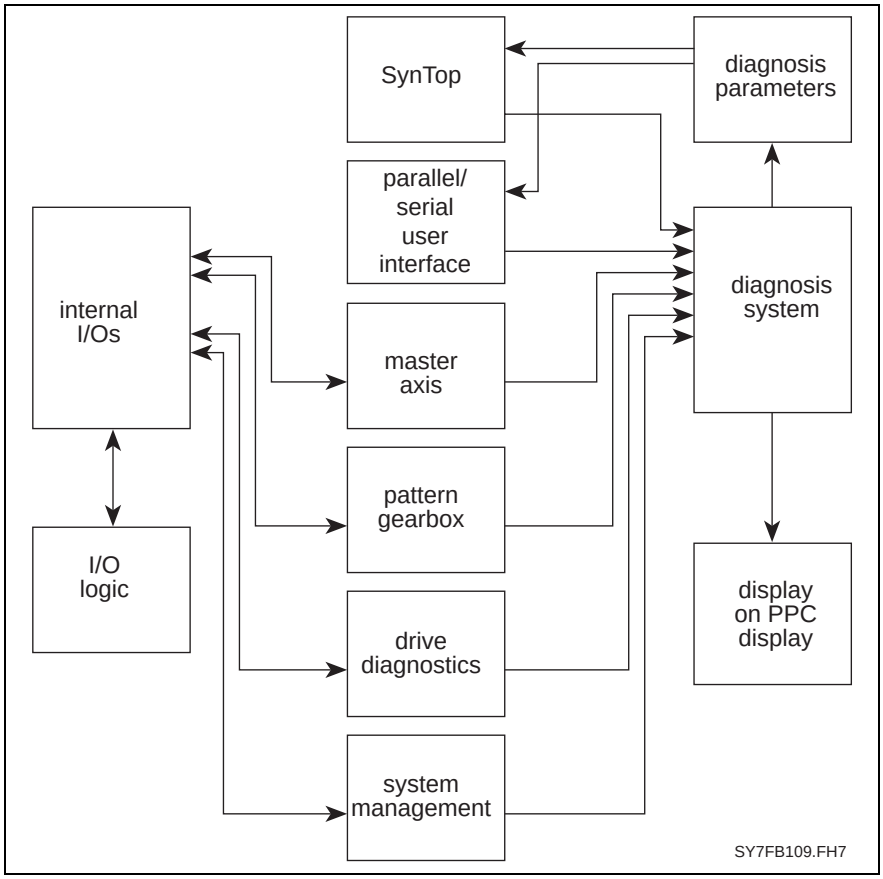


Fig. 1-1: Diagnosis overview on the PPC

1.2 Global SYNAX200 diagnosis

SynTop: Connection

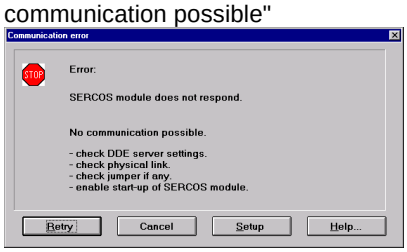
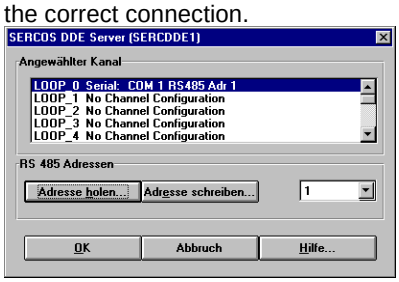
The standard display in the SYNAX200 system is the 4 place display. SynTop may have to be connected in order to be able to read diagnosis parameters. This requires a serial cable and a PC (e.g., Notebook).

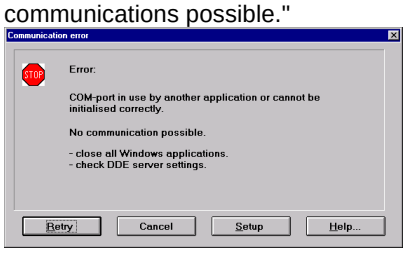
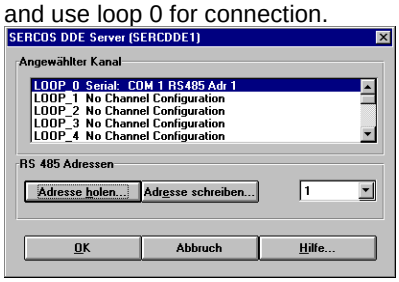
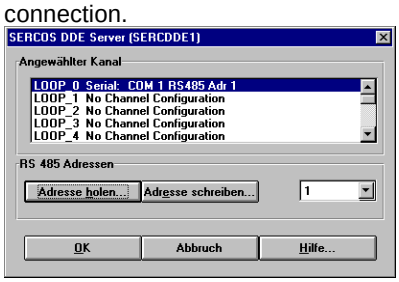
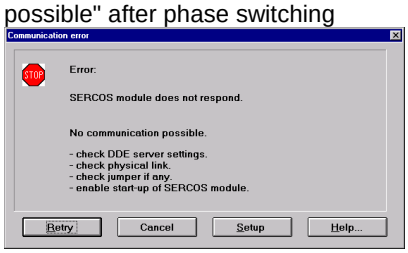
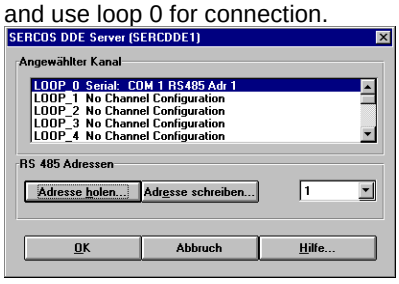
SynTop: Fault finding

The following is the procedure for finding faults:

1. read display H1 on the PPC
2. read display H1 on the DIAX03/DIAX04/ECODRIVE03 drive controller
3. locate the relevant entry in diagnosis in section 4.

If the error has not been cleared with steps 1 to 3, then it is necessary to read the diagnosis parameters (see page 1-15) .

Fault	Cause	Remedy
SynTop signals, at program start, the message "SERCOS module does not respond"..."no communication possible" 	Service cable not plugged, not correctly plugged.	Check whether the connector of the service cable has been plugged into the correct interface.
	Service cable defective	With the help of Fig. 1-1 of the SynTop description check to make sure the service cable has no breaks.
	Incorrect interface parametrization in SynTop	In upcoming dialog box, press button "setup" and check whether the selected loop is configured for the correct connection. 
	Incorrect interface parametrized to PPC	Put the PPC in the idle state. Press and hold the S1 button, and switch the PPC on again. Connect the service cable to X10. Check the parameters using SynTop: Pressing and holding the S1 button after the PPC has been switched on will cause a default setting of the communication parameters C-0-0011, C-0-0033, and C-0-0104. As a result, SynTop communicates at X10 with RS232 and at 19200 baud. The parameters C-0-0011, C-0-0033, and C-0-0104 must then be reparameterized using SynTop.

SynTop signals, at program start, the message "COM-Port... in use or cannot be initialized correctly"...."No communications possible." 	The selected part B is already in use by another windows application.	End all applications except SynTop and press the button "Retry". - or - press button "Setup" in dialog box and use loop 0 for connection. 
	The interface configured in SynTop does not exist.	In the dialog box, press the button "setup" and use loop 0 for connection. 
SynTop signals back the message "SERCOS module does not respond"...."No Communication possible" after phase switching 		Put the PPC in the idle state. Press and hold the S1 button, and switch the PPC on again. Connect the service cable to X10. Check the parameters using SynTop: Pressing and holding the S1 button after the PPC has been switched on will cause a default setting of the communication parameters C-0-0011, C-0-0033, and C-0-0104. As a result, SynTop communicates at X10 with RS232 and at 19200 baud. The parameters C-0-0011, C-0-0033, and C-0-0104 must then be reparameterized using SynTop.
At program start, SynTop signals message "hardware device is not a SERCOS module" ... "Communication telegrammes contain strange data"	The selected part is already in use by another hardware device. This device responds with correct protocol syntax.	End all applications except SynTop and then press the "Retry" button - or press button "setup" in dialog box and use loop 0 for connection. 

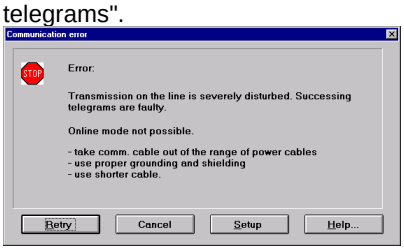
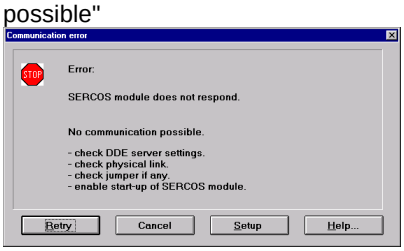
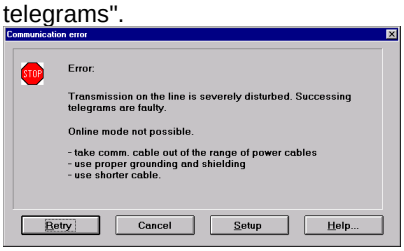
SynTop suddenly signals during operation the message "transmission on the line disturbed"..."faulty communication telegrams". 	Individual bits in transmission protocol have been changed so that the checksums are incorrect. SynTop recognizes this and has requested the repeat telegrams which were also faulty.	Increase resistance to interference of transmission path, e.g., by using a service cable that is both grounded and shielded
SynTop signals during operation the message "SERCOS module does not respond"...."No communication possible" 	Service cable no longer correctly plugged.	Check whether the connector of the service cable is correctly plugged.
	During a parameter request, the drive was switched off or the fiber optic cable removed.	Execute PPC reset and then press "Retry" button in dialog window.
SynTop signals at program start the message "transmission on the line disturbed"..."faulty communication telegrams". 	Wrong interface parametrization on the PPC. Internal PPC user interface on this interface.	Connect service cable on the other interfave (X10/X16).

Fig. 1-2: Fault clearance

Diagnosis system

The diagnosis system is active in every mode of the PPC.

Error messages to the diagnosis system

Every entity that detects an error, signals this to the diagnosis system. An error is a **negative diagnosis**.

A message contains

- an internal diagnosis number
- the drive number (0 = PPC-System, 1..n = drive)
- a diagnosis text

The diagnosis system describes the diagnosis parameters C-0-0046, C-0-0047, C-0-0048 and C-0-0163 with the relevant entries of the **first error to be generated**. This first error is then also entered into the error storage.

If this error is allocated to a drive, then the address of the drive is entered in parameter "SYNAX - error source" (C-0-0046).

If this error must be allocated to the PPC system, the diagnosis information always contains the value 10000h.

Further incoming errors do not overwrite the above referenced parameters, but are rather immediately written into the error storage.

Overwriting, i.e., deleting, an entry of the diagnosis parameters is only possible with a positive diagnosis.

Positive diagnosis signalled to the diagnosis system

A positive diagnosis overwrites an existing error message, i.e., the error message is cleared. Various entities produce positive diagnoses, e.g.:

- system management (e.g., "PPC parametrization mode")
- ...

A positive diagnosis is identified in terms of error number 0. A message containing error number 0 means

- a positive operating mode has been achieved
- an error message has been cleared
- a cleared error message

for either an axis or the PPC system.

The diagnosis system then corrects the diagnosis parameters.

Overview of the diagnosis system

The following depicts the logical sequence of the diagnosis system:

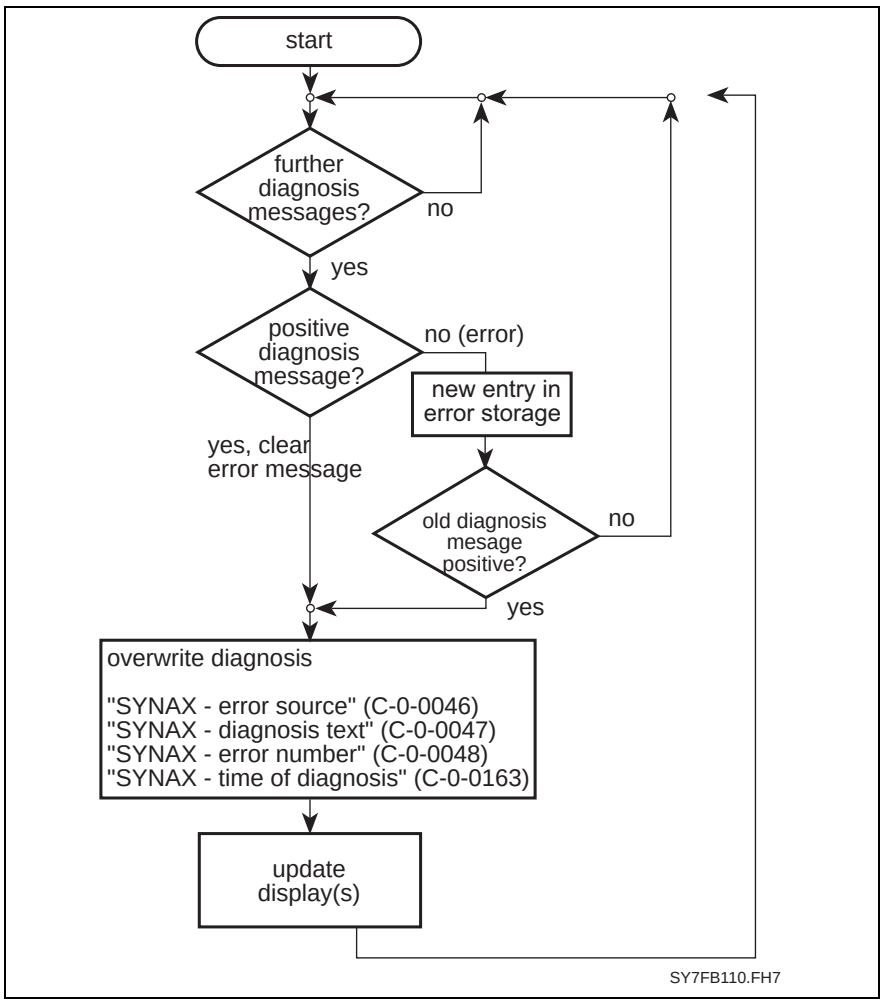


Fig. 1-3: Messages to the diagnosis system

Errors occuring before reaching operating mode

Errors that occur prior to reaching operating mode and can cause the system to fail are primarily configuration errors, for example:

- hardware (connector not attached, no external voltage, etc.)
- parameter (incorrect number of drives or addresses, unacceptable mode, etc.)

This type of error message means that the PPC cannot switch into an operating mode.

The entity which detects the error also signals it to the diagnosis system.

The diagnosis system

- issues an error message using the available display media of the PPC
- describes the diagnosis parameter giving detailled information.

A re-start is necessary once the error is cleared.

Re-start can be initiated by:

- switching supply voltage on and off
- switching into parameter mode and then back into operating mode

If additional configuration errors are still present after the re-start, then these are signalled. Otherwise, the PPC will now assume operating mode.

Error in operating mode

Once in operating mode, the occurrence of an error also means

- a binary output will be set,

in addition to the behavior just described. This can lead to a quick reaction on the part of the entire system.

These outputs are set directly by the relevant entity. Every entity has I/Os on which **exclusively** it may write.

Drive error

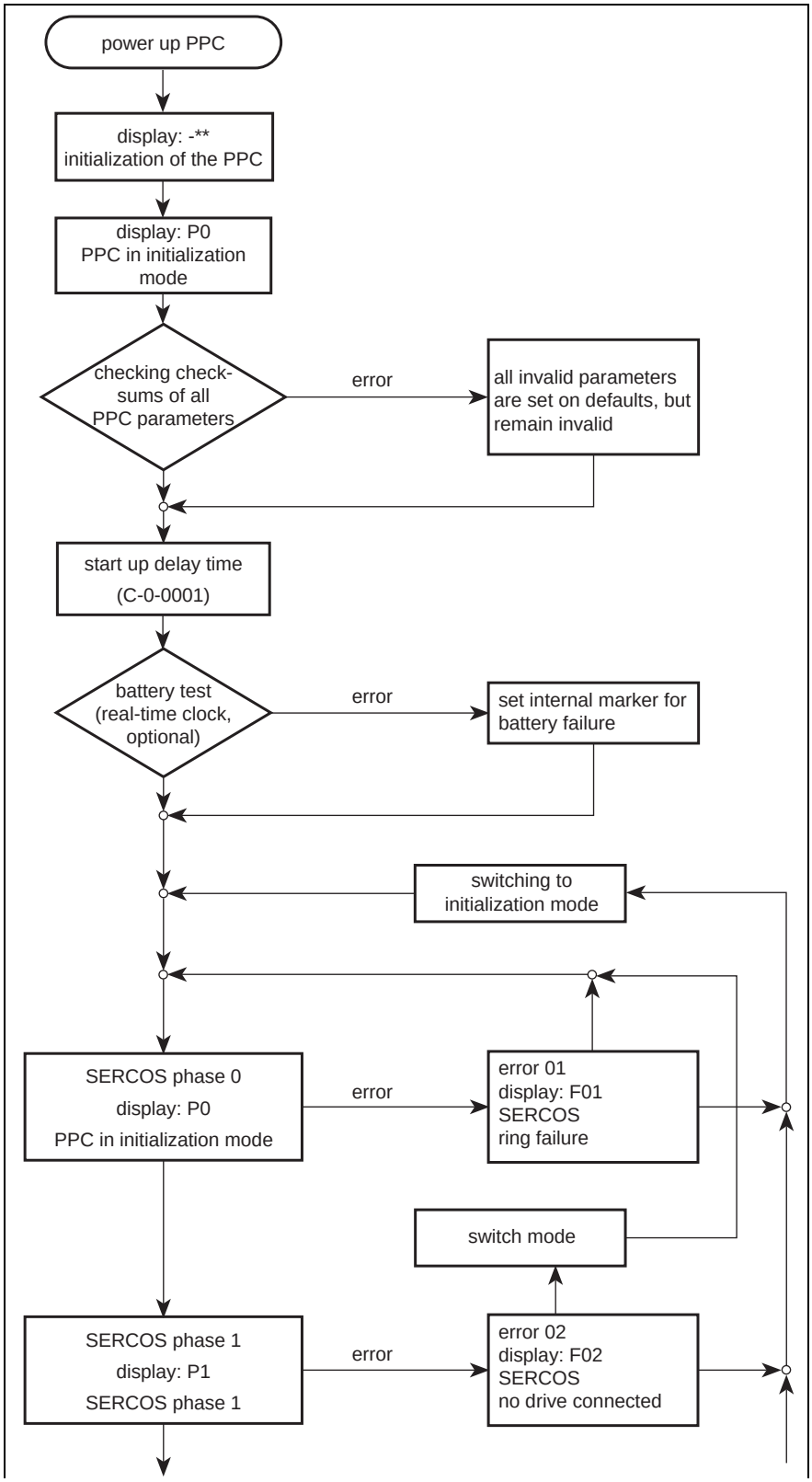
If the drive signals an error, of the SERCOS status class 1, then the following ensues:

- the diagnosis system is activated
- the number of the drive issuing the first error is written into parameter C-0-0046
- parameter "diagnostic message" (S-0-0095) of the relevant drive is copied into parameter C-0-0047
- parameter "error message number" (P-0-0009) is copied, after receiving an offset of 3000, into parameter C-0-0048
- system time (C-0-0159) is written into parameter C-0-0163
- output drive error is set

Note: Only the error to occur first during fault-free operations is entered into the diagnosis parameter. Only after this error has been cleared a new entry in the diagnosis parameters is possible.

Initialization sequence of the PPC system

The following figure depicts the initialization sequence of the PPC system. The corresponding diagnosis which appear on the display are also shown:



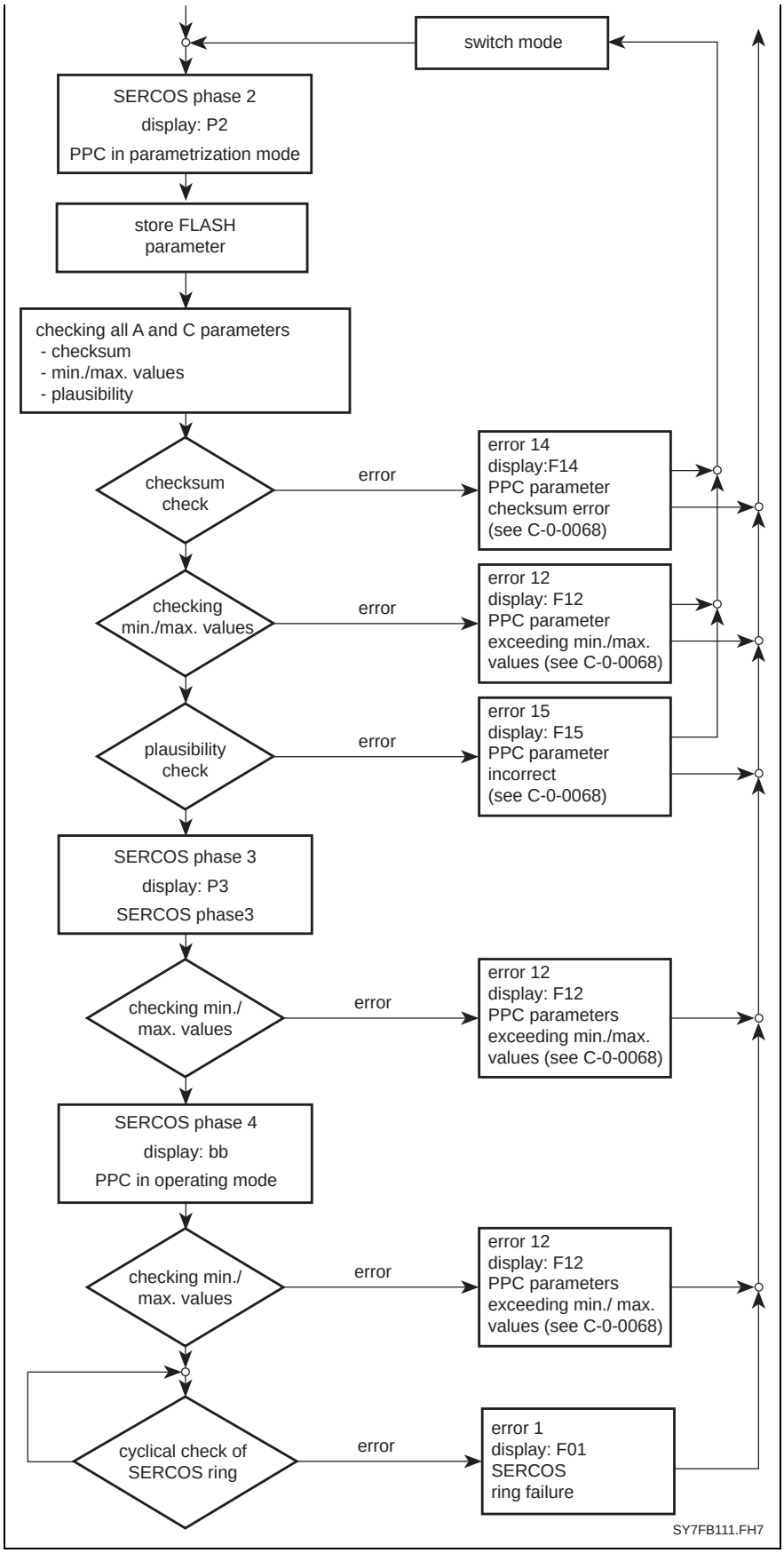


Fig. 1-4: Initialization of a PPC

Overview of the diagnosis displays

The system displays diagnoses at the following positions:

- display H1 on the PPC (four-digit)
- 7-segment display H1 on the DIAX03/DIAX04/ECODRIVE03 drive controller (two-digit)
- SYNAX200 system parameter (visible via various bus systems or auxiliary commissioning aids)

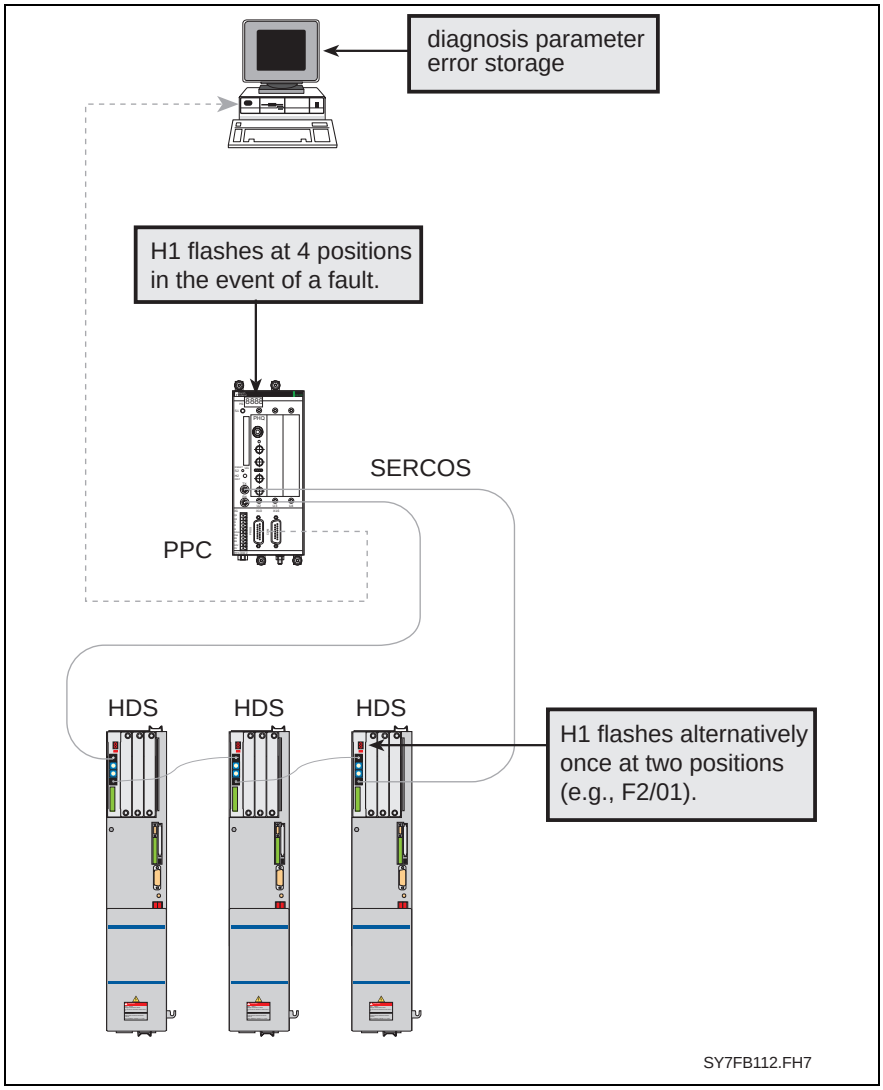


Fig. 1-5: Diagnosis displays

Interpreting the PPC diagnosis parameters

See following figure.

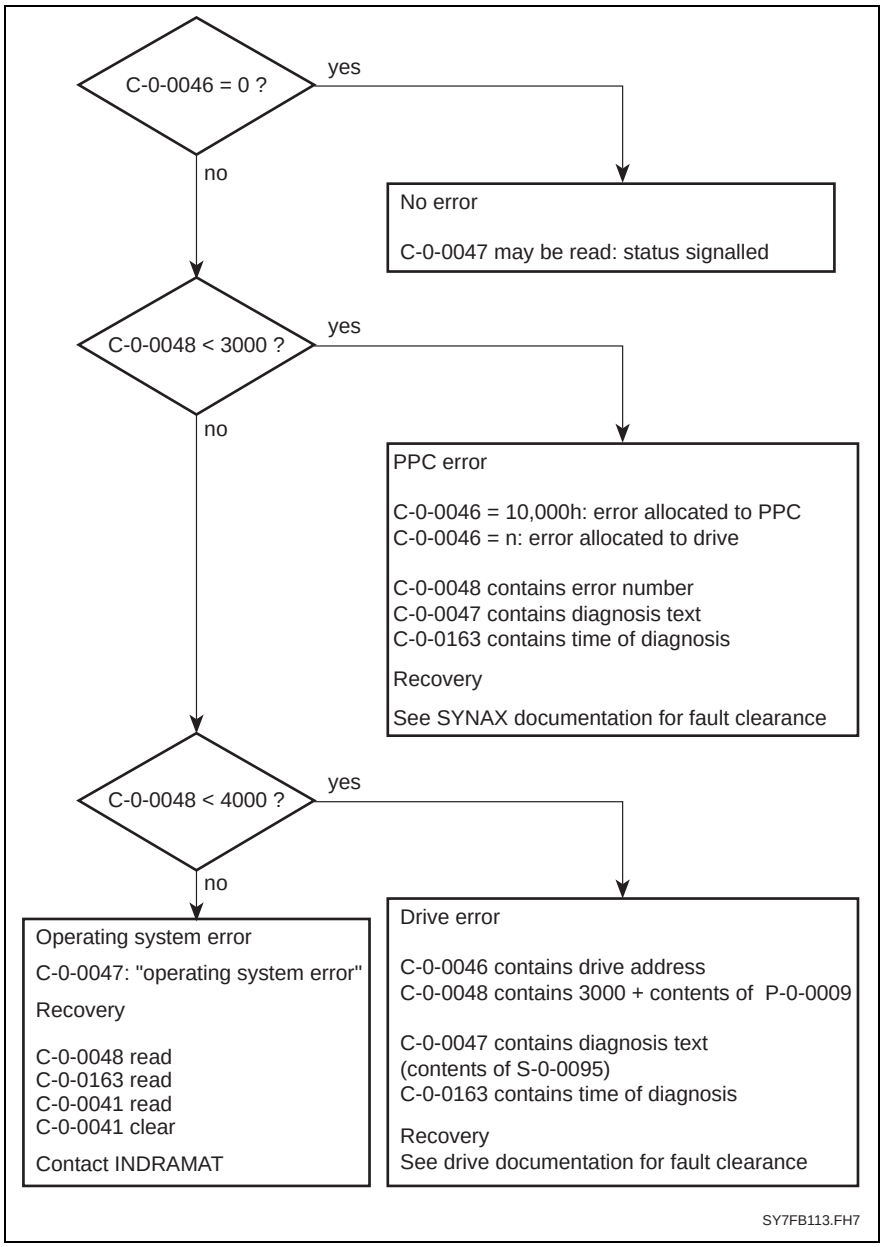


Fig. 1-6: Sequence diagram for PPC diagnosis

Clearing an error

Clearing a configuration error

If a configuration error occurs, then the PPC will not assume operating mode (ready for operation, PPC display "bb").

Depending on the error, the PPC remains

- in initialization,
- in parametrization mode or
- in operating mode, but before the state of ready in operation.

The user must go through the following steps:

- the cause(s) of the configuration error must be eliminated
- with a hardware error, the machine must be turned on and off once
- if a parameter was corrected, then it is necessary to switch into operating mode

Overview:

Causes	Action to be taken
Parameter faulty	- correct parameter - switch into operating mode
Hardware configuration error (cable not connected, etc.)	- eliminate error - switch power on and off

Fig. 1-7: Table overview

Clearing errors with an error in operating mode

If the PPC is in operating mode, then it is certain that a configuration error did not cause the error message.

In operating mode, errors are eclusively cancelled via the relevant clear error inputs which are ready by that entity that signalled the error.

Cause	Clear error input	Procedure
Master axis error	_E:L01.16	Input clears master axis error. If a master axis error was active in the diagnosis, then it is cleared as well.
Drive error	_E:F#.14	Input clears the drive error with address #. If a drive error with address ’ was active in the diagnosis, then it is cleared as well.
System error	_E:C01.01	system error see table in section 2
Communication error (interfaces)	_E:C01.03	Errors associated with external communications (e.g., 3964R, fieldbusses) can be cleared via this input.
PPC link	_E:C01.04	This error serves to clear or acknow-ledge a PPC link error on the PPC.
Pattern control error	_E:M01.01	Input clears error of the pattern control function. If a pattern control error was active in the diagnosis, then it is cleared as well.

Fig. 1-8: Table: clearing errors

PPC ready to operate

The system output **"PPC ready timing signal"** (_A:C01.01) is on the PPC. It signals when the PPC is ready to operate. This signal is cyclically toggled by the PPC once the PPC is ready to operate.

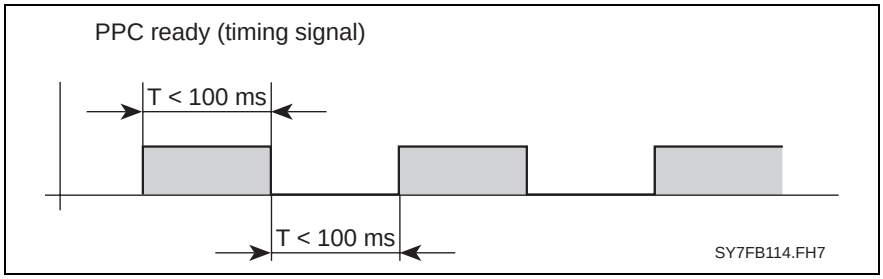


Fig. 1-9: PPC ready to operate (timing signal)

In addition, the potential-free contact of a relay is coming out at X1, pins 8 and 9. As soon as the PPC is ready for operation, the contact is closed.

The toggling of the signal or the contact assembly is interrupted, for example, if:

- the PPC is not in operating mode (PPC display "bb")
- there is a break in the Sercos ring (PPC error reaction F01)
- there is a double drive telegram failure (PPC error reaction F05)
- there is an operating system error (PPC error reaction F95)

A detailed description about when this clocking signal or the contact assembly is deactivated (or not even activated) is outlined in the tables in section 2.

There is a circuit on the DEA04 (starting with circuit board 06) and on the DEA08 which monitors this toggling on the hardware. The output of this circuit is designated **PPC ready to operate**.

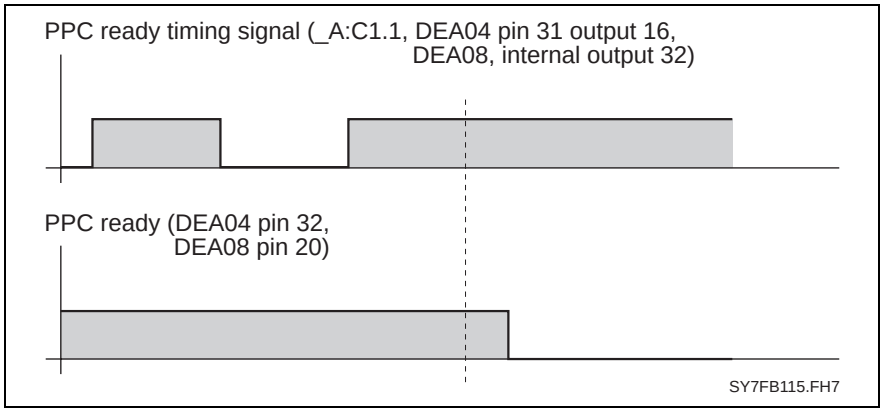


Fig. 1-10: PPC ready to operate (functional principle)

Emergency reaction

Some occuring errors force a SERCOS emergency reaction. It contains:

- Switching SERCOS phase to phase 0
- Opening the ready to operate relay (only if closed before)

Examples for causing the emergency reaction are double AT failure, fibre optic ring break.

Note: After the emergency reaction (without MTS-R) a warm re-start is executed when switching again, that means after leaving phase 0. The system is completely initialized. This causes a re-initialization of all communication interfaces, that means, it can cause a break down of the communication via fieldbus.

PPC watchdog

There is a watchdog on the PPC. It monitors microprocessor functions. if a processor error is signalled, then two dots - as seen below - appears on the display of the PPC:

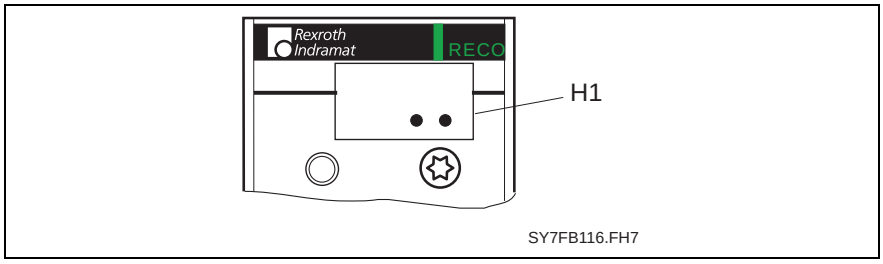


Fig. 1-11: Watchdog message on the PPC

1.3 Error storage

How error storage works

All generated error messages are stored on the PPC in a ring-shaped error memory. The maximum number of entries equals 31, this means that the "oldest" error message is always overwritten.

The error storage entries are only cleared by loading the basic parameters of the PPC.

The following describes the sturcture of the error memory:

No.	Date / time 4 bytes	msec 4 bytes	Error number 4 bytes	Error source 4 bytes	Diagnosis text variable length
31					
30					
...					
2					
1					

The errors are stored chronologically in the ring memory whereby the last signalled error is always in the last line (index no. 1).

Reading the memory contents

Using the commissioning software "SynTop" (from version 04V03) the entire contents of the error storage can be displayed via parameter C-0-0156.

The contents of the memory can be read out a line at a time via the SPS as well. The following parameters can be used for this purpose:

- "Error recorder - index" (C-0-0153)
- "Error recorder - diagnosis message" (C-0-0154)
- "Error recorder - diagnosis text" (C-0-0155)

The data in parameter C-0-0153 determines the line to be read. Index "1" always is the most recent entry, index "31" the oldest. The structure of a line looks like this:

C-0-0153	C-0-0154				C-0-0155
Index-no.	Date / time	msec	Error number	Error source	Diagnosis text

For detailed information on the format of stored data, see document "SYNAX200 Parameter Description", DOK-SYNAX*-SY*-08VRS**-PA01-EN-P.

System time

In diagnosis parameter C-0-0163 and in error storage, the system time of the PPC is supplied in addition to the error message.

This system time can be read or set via parameter C-0-0159 by the higher-ranking SPS or via SynTop (from version 04V03). The date and time formats correspond to the time format of MS-Windows:

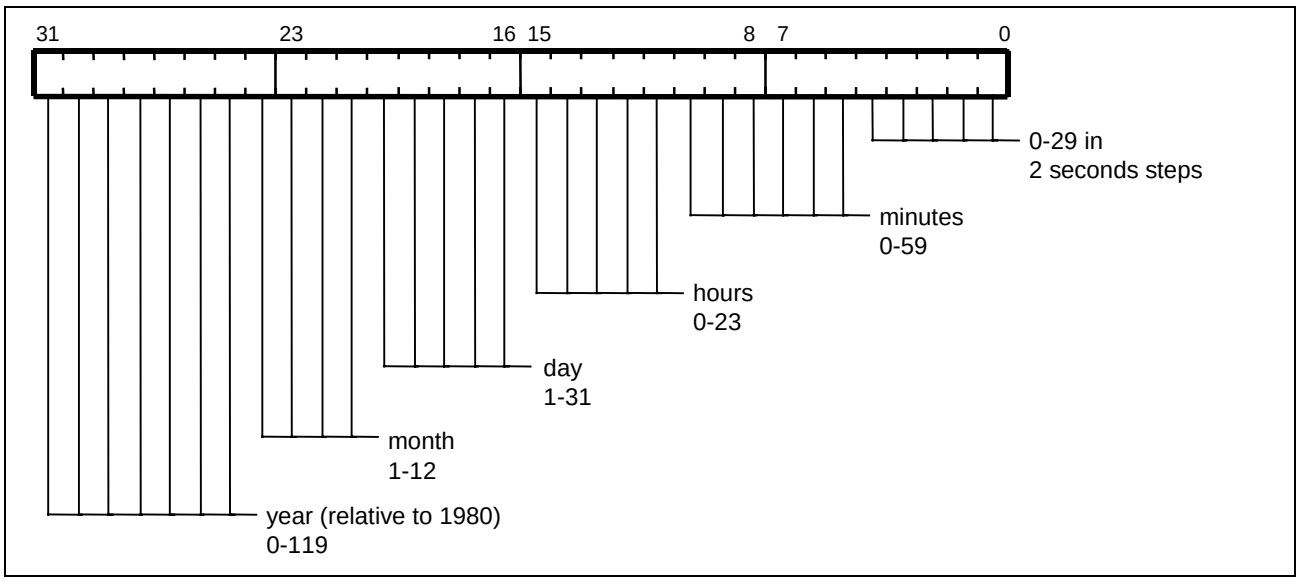


Fig. 1-12: Structure C-0-0159

As a result of this format, the resolution of the inputs and outputs is limited to 2 seconds.

The PPC internal resolution equals:

Standalone PPC:	2 ms
PPC link:	8 ms

Given a PPC link, the "SYNAX - system time" (C-0-0159) can only be changed or set in the link master. All link slaves then automatically synchronize to this time.

Switching the PPC on and off

With a shutdown, the PPC (master and slaves) stores the system time, i.e., there is no real-time clock function with a shutdown.

PPC link With the next powering up, all PPCs first generate an internal system time which is asynchronous to the link. With the first valid MDT of the link master, the slave PPCs synchronize to the system time of the link master.

Note: As soon as the PPC is switched off the system time stands still. The system time can be updated after powering up by a higher-ranking SPS real time clock as needed.

PPC clock pulse in seconds (_A:C01.09)

SYNAX200 uses an internal clock to record events. It can be read with the help of parameter "SYNAX - system time" (C-0-0159) in Windows time format.

As the transmission of the time value read by the PPC comes time delayed to a higher ranking control via a fieldbus connection by 2 second steps (Windows time format), this output "PPC clock pulse in seconds" (_A:C01.09) can be used to follow the actual course of the SYNAX200 system clock. Given an uneven number of seconds, the PPC output is set, in the reverse case it is deleted.

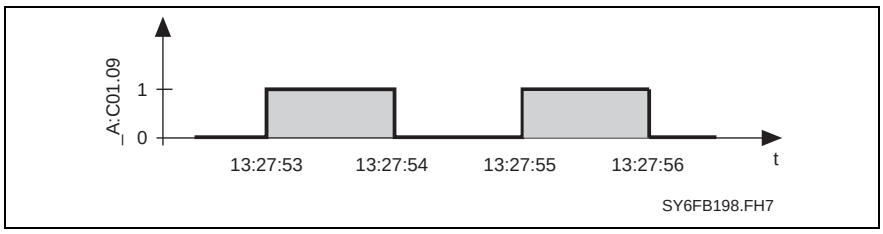


Fig. 1-13: PPC clock in seconds (funktional principle)

1.4 Diagnosis display on the PPC

Display

There is a display (H1) on the PPC. It displays the current operating state.

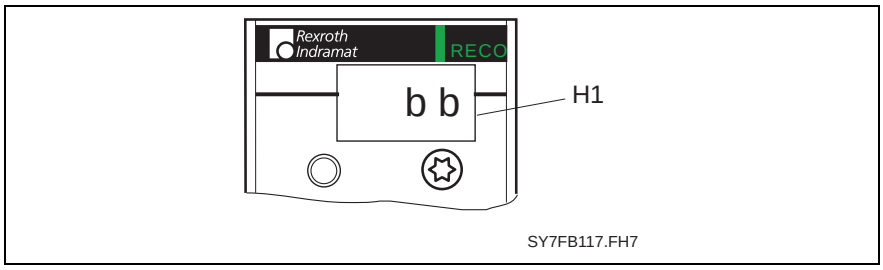


Fig. 1-14: 7-segment display on the PPC

A differentiation is made between two types of displays which depict the current operating state:

- the display of a static, **four**-position display (normal operating state)
- the display of a flashing, **four**-position display (error state)

Normal operating mode display

If the PPC is in a normal operating state, then there are four positions in the display which

- does not flash but remains static.

Example:

Display	Definition
P2	PPC in parametrization mode
P3	SERCOS interface - phase 3
bb	PPC in operating mode (ready for operation)
P0	PPC in initialization mode
P1	SERCOS interface - phase 1

Fig. 1-15: Table of a normal operating state

Displaying a faulty operating mode

The PPC indicates an error by issuing a **four**-digit error number on the display.

The displays are listed in the tables in section .

1.5 Diagnosis on the serial interface

Diagnosis on 3964R

The interface 3964R represents a point-to-point connection between the PPC and an external NC control unit. A reaction telegram follows every command telegram.

Local error message on 3964R

There is no global error message on the PPC in the presence of a communications error at the 3964R interface. There is an error number in each reaction telegram (byte no. 4). The error is signalled to the external NC control.

This error number is stored in parameter C-0-0057 for diagnosis purposes. This parameter is cleared upon successful completion of transmision

In this case, the display of the PPC does not display an error.

Error number 3964R (local error)

C-0-0057 Error	Cause
1	the telegram head does not agree with the specification
2	a following telegram was received, but not expected or a following telegram was expected but a normal telegram received
3	the number of usable data does not agree with: the anticipated number (as is the case with following telegrams) or the block length signalled (as is the case with normal telegrams)
4	the following applies to the demand specified in the usable data head: the demand is unknown or it is not yet supported
5	the demand cannot presently be performed, as the required data queue is occupied
6	error upon accessing A/C parameters
7	error upon accessing S/P parameters
9	the data block indicated is not available
10	the length of the data block does not agree with the specification
14	error when writing I/O data (too man inputs)

Fig. 1-16: Error number 3964R (local error)

Global error messages on 3964R

If the communication is disturbed on the hardware level, the parameter "host communication error counter transmission line" (C-0-0147) is incremented by 1 whenever an error is detected. At the same time, an error message is emitted if the following conditions are fulfilled.

Overrun error

An overrun of the character buffer of the serial interface immediately causes emission of the error message "3964R Serial interface overrun".

Parity error, frame error

In case of failures on the serial line, one of the following error messages is displayed if at least two failures have occurred within 200 ms: "3964R Serial interface parity error" or "3964R Serial interface transmission error (frame)".

No interface error

To be able to recognize a global error via the serial interface, which has not affected serial communications (e.g., a drive error), it is necessary

- to read parameter C-0-0046 cyclically or after every transmission or
- to read error outputs via the serial interface.

If an error has occurred, then further information can be obtained via the diagnosis parameter, after parameter C-0-0046 has been analyzed.

Diagnosis on ARCNET

ARCNET interface has a bus structure. In other words, the arrival of received data is immediately either positively or negatively acknowledged by the PPC. This makes the bus immediately available again.

Local error messages on ARCNET

If errors occur in the sequence, then these are stored in parameter "serial interface error number" (C-0-0057). This parameter always contains the status of the most recent transmission. It can also be read by the external NC control unit.

It does not, however, have to be read.

- If the telegram received is correct, then there is a response telegram with positive acknowledgement or, if necessary, with the requested data.
  $\Rightarrow$ C-0-0057 = 0
- If the telegram received is not correct, then there is no response telegram.
  $\Rightarrow$ C-0-0057 $\neq$ 0
- If a following error is discovered after a write command (e.g., S or P parameters write protected), then there is no message.
  $\Rightarrow$ Parameter C-0-0057 is set to $\neq$ 0.

Error number ARCNET (local error)

C-0-0057 Error	Cause
4	the following applies to the demand specified in the user data head, namely, the demand is unknown or it is not supported
5	the demand cannot presently be executed because the queue is full
6	error upon accessing A/C parameters
7	error upon accessing S/P parameters
8	switch mode not successful
9	the data block given is not available
10	data block length does not agree with the specification
14	error when writing I/O data (too many inputs)
21	the telegram header does not agree with the specification
22	a following telegram was received, but not expected or a following telegram was expected but a normal telegram received (Note: support of following telegrams)
23	the number of usable data does not agree with the expected number (as is the case with following telegrams) or the expected block length (as is the case with normal telegrams)
24	the ARCNET partner is sending excessive NAKs
25	the selected partner is not an ARCNET participant

Fig. 1-17: ARCNET error number (local error)

Global error messages on ARCNET

If the ARCNET node of the PPC is an active participant in the bus, the "fieldbus - real-time channel active” (_A:C01.08) PPC output indicates the state of the ARCNET interface. This output is cleared in case of failures on the transmission line.

This output can be used to selectively switch off the drive enable signal of individual axes in case of fatal failures in the combinational logic system.

Reconfiguration

If there is a failure in the communication on the hardware level, the ARCNET bus is reconfigured. The degree of the failure can be measured on the basis of the reconfigurations within a defined time interval.

Measurement method for failure analysis

If there is a permanent failure, such as a cable that has been pulled off, the ARCNET controller runs through a reconfiguration cycle. The controller triggers a reconfiguration every 840 µs.

The measurement method for failure analysis takes a fixed time interval of 8 reconfiguration cycles (6720 µs) into consideration and counts the number of reconfigurations within this time interval.

The following three failure states are generated:

- uncritical (1-2 reconfigurations)
- critical (3-4 reconfigurations)
- fatal (5-8 reconfigurations)

Uncritical failure

If no more than 2 reconfigurations are occuring during the measurement, this state is considered to be uncritical. This state neither affects error messages nor error counters.

This type of failure can be detected only by the toggling PPC output "fieldbus - real-time channel active” (_A:C01.08).

Critical failure

Whenever a critical failure of 3 to 4 reconfigurations per measurement is detected, the error counter "Host communication error counter transmission line" (C-0-0147) is incremented by 1.

Fatal failure

If more than 4 reconfigurations are occurring during the measurement, the transmission line is seriously disturbed. In addition to the error counter C-0-0147 being incremented, SYNAX200 generates the error message "ARCNET - excessive bus reconfiguration”.

No interface error

To be able to recognize a global error via the serial interface, which has not affected serial communications (e.g., a drive error), it is necessary

- to read parameter C-0-0046 cyclically or after every transmission or
- to read error outputs via the serial interface.

If an error has occurred, then further information can be obtained via the diagnosis parameters, after parameter C-0-0046 has been analyzed.

Diagnosis on the fieldbus

The PPC diagnoses the following failures and errors, which may occur in connection with the fieldbus interface, thus permanently preventing the bus communication:

PPC output "fieldbus - real-time channel active"

If the PPC is in the operating mode and data is not received via the fieldbus within the fieldbus timeout, the PPC clears the output "fieldbus - real-time channel active” (_A:C01.08).

This output can be used to selectively switch off the drive enable signal of individual axes in case of a bus failure in the combinational logic system.

Initialization error

The PPC monitors the initialization of the fieldbus communication task and the device driver, in order to detect a fatal failure of the fieldbus interface.

If problems arise during the initialization of the fieldbus communication task, which prevent the fieldbus slave connection from functioning properly, the PPC displays the following diagnosis after a waiting time of no more than 12 seconds:

F33 (150) "Communication via the fieldbus is impossible"

Thereafter, the run-up will be stopped; the PPC remains in the parameterization mode.

After the fieldbus communication task has been started successfully, the PPC continues to run up until it enters the operating mode. Here, it is checked whether the device driver of the slave connection is able to correctly access the hardware. If the address or interrupt setting on the fieldbus board is not correct, the PPC display the following diagnosis:

F33 (151) "Fieldbus: incorrect jumper setting on fieldbus board"

In either case, it is not possible to operate the SYNAX200 application via the fieldbus interface. It is not possible to clear the diagnosis messages. Please contact the Indramat Service to eliminate the failure.

Errors in the configuration of the process data

If the configuration of the process data is impermissible, the PPC displays one of the following diagnoses:

F15 (152) "Interbus: Process data length is not suported (C-0127/128)"

F15 (153) "Parameter channel: Is supported by Profibus only (C-33/129)"

F15 (154) "PCP channel: Is supported by Interbus only (C-33/129)"

F15 (280) "Parameter C-0-0127 not correct. Line nbr.: xxx"

F15 (281) "Parameter C-0-0188 not correct. Line nbr.: xxx"

F15 (282) "Parameter C-0-0189 not correct. Line nbr.: xxx"

F15 (283) "Parameter C-0-0190 not correct. Line nbr.: xxx"

F15 (284) "Parameter C-0-0128 not correct. Line nbr.: xxx"

F15 (285) "Parameter C-0-0185 not correct. Line nbr.: xxx"

F15 (286) "Parameter C-0-0186 not correct. Line nbr.: xxx"

F15 (287) "Parameter C-0-0187 not correct. Line nbr.: xxx"

The PPC stops running up and remains in the parameterization mode until the configuration is a permissible one.

Note: This error state can also be detected by the fieldbus master by evaluating the diagnosis objects 5FF5 and 5FF6.

1.6 Diagnosis parameters

Parameter number	Parameter name
C-0-0041	Indramat service information
C-0-0046	SYNAX - error source
C-0-0047	SYNAX - diagnosis text
C-0-0048	SYNAX - error number
C-0-0057	Serial interface error number
C-0-0068	List of invalid A and C parameters
C-0-0071	SYNAX - current mode
C-0-0105	PPC link - MDT error counter
C-0-0126	Operation time counter
C-0-0147	Host communication: error counter transmission line
C-0-0153	Error recorder - index
C-0-0154	Error recorder - diagnosis message
C-0-0155	Error recorder - diagnosis text
C-0-0156	Error recorder
C-0-0157	Data blocks - configurable S-/P-parameters, ID-number
C-0-0159	SYNAX - system time
C-0-0160	Operation time counter
C-0-0163	SYNAX - time of diagnosis
C-0-0175	PPC - control unit temperature
C-0-0176	PPC - maximum control unit temperature
A-0-0095	Drive type
A-0-0108	AT error counter
S-0-0021	IDN list of invalid operating data for communications phase 2
S-0-0022	IDN list of invalid operating data for communications phase 3
S-0-0095	Diagnostics message
S-0-0390	Diagnostics number
P-0-0009	Error number

Fig. 1-18: Diagnosis parameters

2 Diagnoses and fault numbers arranged as per the display on the PPC

2.1 Overview

Dis-play	C-0-0048 error number	C-0-0047 diagnosis text of PPC system	C-0-0046 Diagnosis info	Binary output	Clear with
-01	--	"FLASH check sum test"	--	--	--
-02	--	"SDRAM test"	--	--	--
-04	--	"Extended check sum test (CRC32)"	--	--	--
-05	--	"Copying the firmware from Flash to SDRAM"	--	--	--
-06	--	"Initialization of the hardware"	--	--	--
-07	--	"Initialization of the operation system"	--	--	--
-20 to -2x	--	"Initialization of the SYNAX system"	--	--	--
P0	0	"PPC in initialization mode"	0	A:C01.01	--
P1	0	"SERCOS interface - phase 1"	0	A:C01.01	--
P2	0	"PPC in parameter mode"	0	A:C01.01	--
P3	0	"SERCOS interface - phase 3"	0	A:C01.01	--
bb	0	"PPC in operation mode"	0	A:C01.01	--
¥01¥ to ¥14¥	--	"Hardware error"	--	--	--
F HW	18	"PPC/DAQ Hardware defective: CON_CYC-Signal faulty"	10000h	A:C01.01	--
F HW	19	"PPC hardware defective"	10000h	--	--
F TN	25	"PPC in test mode zero bit stream"	10000h	A:C01.01	--
F ON	26	"PPC in test mode continuous light"	10000h	A:C01.01	--
F01	01	"SERCOS interface - ring break"	10000h	A:C01.01	--
F02	02	"SERCOS interface - no drive connected"	10000h	A:C01.01	--
F03	03	"Error on switching to phase 3"	n = address	A:C01.01	--
F04	04	"Error on switching into operating mode"	n = address	A:C01.01	--
F05	05	"SERCOS interface - double drive telegram failure"	n = address	A:C01.01	--
F06	06	"Fiber optic ring not closed"	10000h	A:C01.01	--
F07	07	"Drive addresses not correct (see C-0-0002, C-0-0086)"	10000h	A:C01.01	--
F08	08	"Max. number of drives exceeded"	10000h	A:C01.01	--
F09	09	"Fatal error occured - PPC reset necessary"	10000h	A:C01.01	--
F10	10	"PPC-internal memory error"	10000h	_A:C01.02	--
F12	12	"PPC parameter exceeds min/max value (see C-0-0068)"	10000h	A:C01.01	--
F14	14	"PPC checksum error" (see C-0-0068)"	10000h	A:C01.01	--
F15	15	"PPC parameter not correct (see C-0-0068)"	10000h	A:C01.01	--
F15	22	"Parameter value limits: min-limit > max-limit (see C-0-0068)"	n = address	--	--

F15	34	"C-0-0013: Local bus input module missing. Slot-nr: xx"	10000h	--	--
F15	35	"C-0-0013: Local bus output module missing. Slot-nr: xx"	10000h	--	--
F15	144	"C-0-0157/C-0-0158: Number of entries not equal"	10000h	--	--
F15	145	"C-0-0157: Ident-number exists twice"	10000h	--	--
F15	152	"Interbus: Process data length is not suported (C-0127/128)"	10000h	DIAG A:C01.01	--
F15	153	"Parameter channel: Is supported by Profibus only (C-33/129)"	10000h	DIAG A:C01.01	--
F15	154	"PCP channel: Is supported by Interbus only (C-33/129)"	10000h	DIAG A:C01.01	
F15	160	"More than one register controller per axis not possible"	n = address	--	--
F15	161	"Winding axis must be in speed synchronization (A-0-0003, A-0-0146)"	n = address	--	--
F15	162	"Electronic gear ratio must be 1:1 (see S-0-0236, S-0-0237)"	n=address	--	--
F15	165	"C-0-0039/C-0-0040: Number of entries not equal"	10000h	DIAG A:C01.01	--
F15	166	"A-0-0008/C-0-0039: Activated analogue channel not linked"	n = address	DIAG A:C01.01	--
F15	167	"More than one process controller per axis not possible"	n = address	--	--
	172-173	reserved			
F15	174	"A-0-0146: Master drive gear not available (P-0-0156/P-0-0157)"	n = address	--	--
F15	175	"A-0-0030: Process control P-Gain too high"	n = address	DIAG A:C01.01	--
F15	176	"A-0-0146: Analogue channel for process control not defined"	n = address	DIAG A:C01.01	--
F15	177	"A-0-0146: Analogue channel for process control not activated"	n = address	DIAG A:C01.01	--
F15	178	"Tension controlled axis must be speed synch. (A-0-0003, A-0-0087, A-0-0146)"	n = address	--	--
F15	179	"More than one tension controller per axis not possible"	n = address	--	--
F15	180	"Parameter A-0-0038 not correct"	n = address	DIAG A:C01.01	--
F15	181	"C-0-0013: Non-permissible DEA address (see C-0-0002)"	n = address	DIAG A:C01.01	--
F15	182	"C-0-0013: Synchronization mode not permissible (A-0-0003)"	n = address	DIAG A:C01.01	--
F15	183	"C-0-0013: Adressed X-I/O not permissible (see C-0-0024/C-0-0033)"	10000h	DIAG A:C01.01	--
F15	184	"C-0-0013: Idle mode not permissible (see A-0-0009)"	n = address	DIAG A:C01.01	--
F15	185	"C-0-0013: Set-up mode not permissible (see A-0-0009)"	n = address	DIAG A:C01.01	--
F15	186	"C-0-0013: Special mode not permissible (see A-0-0070)"	n = address	DIAG A:C01.01	--
F15	187	"C-0-0013: Non-permissible version of PARA.EXE"	10000 h	DIAG A:C01.01	--
F15	188	"C-0-0013: Data integry violated"	10000 h	DIAG A:C01.01	--

F15	189	"C-0-0013: Non-permissible DEA address (e.g. ECODRIVE)"	n = address	A:C01.01	--
F15	190	"PPC link - other link master already active"	10000 h	A:C01.01	--
F15	192	"C-0-0013: PLC-interface not allowed on PPC-R without ISP"	10000h	A:C01.01	--
F15	193	"No different feedbacks selectable (A-0-0003/A-0-0009/A-0-0070)"	n = address	A:C01.01	--
F15	194	"Phase synchr. & absolute format not possible (see A-0-0001/A-0-0003)"	n = address	A:C01.01	--
F15	195	"A-0-0003: Drive does not support selected sync. mode"	n = address	A:C01.01	--
F15	196	"A-0-0070: Drive does not support selected special mode"	n = address	A:C01.01	--
F15	197	"S-0-0103: Modulo value = 0 is invalid (see A-0-0001)"	n = address	A:C01.01	--
F15	198	"Special mode only with PPC-P possible (A-0-0070/A-0-0071/A-0-0072/A-0-0073)"	n = address	A:C01.01	--
F15	199	"Pattern control & modulo format not permissible (see A-0-0001/A-0-0003)"	n = address	A:C01.01	--
F15	212	"Pattern control with ELS masterposition additiv impossible (A-0-0003, A-0-0159)"	n = address	--	--
F15	217	"Too many parameters in MDT configured"	n = address	A:C01.01	--
F15	218	"Too many parameters in AT configured"	n = address	A:C01.01	--
F15	220	"A-0-0025: Too many register controllers activated"	n = address	A:C01.01	--
F15	221	"Port A (X10) multiple assigned (C-0-0011/C-0-0033/C-0-0104)"	10000 h	A:C01.01	--
F15	222	"Port B (X16) multiple assigned (C-0-0011/C-0-0033/C-0-0104)"	10000 h	A:C01.01	--
F15	223	"Cam and register control not possible (see A-0-0003/A-0-0025)"	n = address	A:C01.01	--
F15	224	"Register cont. and oscilloscope not possible (see A-0-0025/C-0-0107)"	n = address	A:C01.01	--
F15	225	"Cam/register/osci. not possible (see A-0-0003/A-0-0025/C-0-0107)"	n = address	A:C01.01	--
F15	226	"Drive does not support oscilloscope-function"	n = address	A:C01.01	--
F15	232	"A-0-0009: Drive does not support selected set up mode"	n = address	A:C01.01	--
F15	233	"Drive locked with password (S-0-0267)"	n = address	--	--
F15	234	"Electr. gear ratio not possible (S-0-0236, S-0-0237)"	n = address	--	--
F15	235	"A-0-0107: Master drive gear not available (P-0-0156/P-0-0157)"	n = address	--	--
F15	236	"Register control only possible with modulo axis (A-0-0001, A-0-0025)"	n = address	--	--
F15	237	"Register controlled axis without synchronization (see A-0-0003)"	n = address	--	--
F15	240	"HS waypoints and I/O to DEA4.1 not possible (C-0-0013, C-0-0049, A-0-0036)"	n = address	--	--
F15	241	"HS waypoints and I/O not possible (C-0-0013, C-0-0049) slot-nr: xx"	10000h	A:C01.01	--
F15	243	"Drive does not support DEA8.1 card"	n = address	--	--

F15	244	"Combination of used functions not possible (relative bits)"	n = address	--	--
F15	245	"C-0-0013: Drive waypoints not possible (e. g. ECODRIVE)"	n = address	--	--
F15	250	"Target axis must be phase sync or cam axis (A-0-0133, A-0-0156)"	n = address	--	--
F15	251	"Too many group parameters of one group per axis"	n = address	--	--
F15	263	"Parameter C-0-0131 not correct. Line nbr.: xxx"	10000h	DRK A:C01.01	--
F15	264	"Parameter C-0-0132 not correct. Line nbr.: xxx"	10000h	DRK A:C01.01	--
F15	270	"A-0-0013: Master drive gear not available (P-0-0156, P-0-0157)"	n = address	--	--
F15	271	"A-0-0153: Master drive gear not available (P-0-0156, P-0-0157)"	n = address	--	--
F15	280	"Parameter C-0-0127 not correct. Line nbr.: xxx"	10000h	DRK A:C01.01	--
F15	281	"Parameter C-0-0188 not correct. Line nbr.: xxx"	10000h	DRK A:C01.01	--
F15	282	"Parameter C-0-0189 not correct. Line nbr.: xxx"	10000h	DRK A:C01.01	--
F15	283	"Parameter C-0-0190 not correct. Line nbr.: xxx"	10000h	DRK A:C01.01	--
F15	284	"Parameter C-0-0128 not correct. Line nbr.: xxx"	10000h	DRK A:C01.01	--
F15	285	"Parameter C-0-0185 not correct. Line nbr.: xxx"	10000h	DRK A:C01.01	--
F15	286	"Parameter C-0-0186 not correct. Line nbr.: xxx"	10000h	DRK A:C01.01	--
F15	287	"Parameter C-0-0187 not correct. Line nbr.: xxx"	10000h	DRK A:C01.01	--
F16	20	"Non-supported drive type "	n = address	DRK A:C01.01	--
F16	21	"Non-supported drive firmware"	n = address	DRK A:C01.01	--
F17	105	"Master position value corrupted"	10000h	_A:L01.03 _A:L01.01	_E:L01.16
F17	106	"Virtual master speed limit to high (see C-0-0030, C-0-0031)"	10000h	--	--
F17	107	"Virtual master speed limit to high (see C-0-0055, C-0-0056)"	10000h	--	--
F17	110	"C-0-0050 too short for selected high speed cams (C-0-0049)"	10000h	--	--
F17	111	"Too many DEA cards for HS-waypoints activated (C-0-0049, A-0-0036)"	10000h	DRK A:C01.01	--
F17	112	"HS-cam switch - parameters C-49 and A-36 not ok"	10000h	DRK A:C01.01	--
F18	100	"Real master axis - master encoder error"	10000h	_A:C01.02	_E:L01.16
F18	101	"Real master axis - redundant encoder error"	10000h	_A:C01.02	_E:L01.16
F18	102	"RM - Drive with master axis encoder is missing"	10000h	--	--
F21	230	"SERCOS transmission error (no drive responds)"	1000h	_A:C01.02 DRK A:C01.01	--
F21	231	"SERCOS interface - transmission error during initialization"	n = address	DRK A:C01.01	--
F32	140	"3964R serial interface overrun"	10000h	_A:C01.03	_E:C01.03
F32	141	"3964R serial interface parity error"	10000h	_A:C01.03	_E:C01.03
F32	142	"3964R serial interface transmission error (frame)"	10000h	_A:C01.03	_E:C01.03
F32	143	"ARCNET - excessive bus reconfiguration"	10000h	_A:C01.03	_E:C01.03
F33	150	"Communication via the fieldbus is impossible"	10000h	_A:C01.03	--
F33	151	"Fieldbus: Incorrect jumper setting on fieldbus board"	10000h	_A:C01.03	--

F36	36	"Local bus module - External power supply error. Slot-nr: xx"	10000h	--	--
F40	40	"PPC link - link defective"	10000h	_A:C01.04 _A:C01.05	_E:C01.04
F42	42	"PPC link - master position fault (MDT)"	10000h	_A:C01.04	_E:C01.04
F43	43	"PPC link - master position fault (AT)"	n = Adresse	_A:C01.04	_E:C01.04
F44	44	"PPC link - selected link address not permitted"	10000h	⊓⊔ A:C01.01	--
F81	81	"DAQ-borad not correct (address-mapping)"	10000h	--	--
F90	200	"Pattern control serial interface overrun"	10000h	_A:M01.01	_E:M01.01
F90	201	"Pattern control serial interface parity error"	10000h	_A:M01.02	_E:M01.01
F90	202	"Pattern control serial interface frame error"	10000h	_A:M01.03	_E:M01.01
F90	203	"Pattern control data buffer overrun"	10000h	_A:M01.04	_E:M01.01
F90	204	"Pattern data start byte faulty"	10000h	_A:M01.05	_E:M01.01
F90	205	"Pattern data undefined target position"	10000h	_A:M01.06	_E:M01.01
F90	206	"Pattern data error in number of axes"	10000h	_A:M01.07	_E:M01.01
F90	207	"Pattern data checksum error"	10000h	_A:M01.08	_E:M01.01
F90	208	"Pattern data not in order"	10000h	_A:M01.09	_E:M01.01
F90	209	"Pattern data positive pattern limit exceeded"	n = address	_A:M01.10	_E:M01.01
F90	210	"Pattern data negative pattern limit exceeded"	n = address	_A:M01.11	_E:M01.01
F90	211	"Pattern data limits between received target pos. exceeded"	n = address	_A:M01.12	_E:M01.01
F91	91	"SERCOS interface - ASIC: Initialization error"	10000h	⊓⊔ A:C01.01	--
F92	92	"PPC - DUAL PORT RAM error"	10000h	⊓⊔ A:C01.01	--
F93	93	"DAQ: SERCOS interface - ASIC: intialization error"	10000h	⊓⊔ A:C01.01	--
F94	94	"PPC hardware version incorrect"	10000h	⊓⊔ A:C01.01	_E:C01.01
F95	4000 + x	"Operating system error" (x = error number)	10000h	⊓⊔ A:C01.01	--
F97	260	"SPS - Firmware version incompatible"	10000h	⊓⊔ A:C01.01	--
F97	261	"SPS - Cycle-counter is dead"	10000h	⊓⊔ A:C01.01	--
F97	262	"SPS reports an error"	10000h	⊓⊔ A:C01.01	--
F98	3000 + y	"Drive error"	n = address	_A:F#.10	_E:F#.14

Comments:

⊓⊔ A:C01.01: PPC operating ready timing signal does not toggle (= 0 or = 1 static)

⊓⊔ A:C01.01: PPC operating ready timing signal toggles

(PPC ready on DEA responds, if _A:C01.01 is on the DEA output _A:D#.16)

3 Diagnoses and fault numbers arranged as per fault number (parameter C-0-0048)

3.1 Overview

C-0-0048 error number	Dis-play	C-0-0047 diagnosis text of PPC system	C-0-0046 diagnosis info	Binary output	Clear with
--	-01	"FLASH check sum test"	--	--	--
--	-02	"SDRAM test"	--	--	--
--	-04	"Extended check sum test (CRC32)"	--	--	--
--	-05	"Copying the firmware from Flash to SDRAM"	--	--	--
--	-06	"Initialization of the hardware"	--	--	--
--	-07	"Initialization of the operation system"	--	--	--
--	-20 to -2x	"Initialization of the SYNAX system"	--	--	--
0	P0	"PPC in initialization mode"	0	A:C01.01	--
0	P1	"SERCOS interface - phase 1"	0	A:C01.01	--
0	P2	"PPC in parameter mode"	0	A:C01.01	--
0	P3	"SERCOS interface - phase 3"	0	A:C01.01	--
0	bb	"PPC in operation mode"	0	A:C01.01	--
--	¥01¥ to ¥14¥	"Hardware error"	--	--	--
01	F01	"SERCOS interface - ring break"	10000h	A:C01.01	--
02	F02	"SERCOS interface - no drive connected"	10000h	A:C01.01	--
03	F03	"Error on switching to phase 3"	n = address	A:C01.01	--
04	F04	"Error on switching into operating mode"	n = address	A:C01.01	--
05	F05	"SERCOS interface - double drive telegram failure"	n = address	A:C01.01	--
06	F06	"Fiber optic ring not closed"	10000h	A:C01.01	--
07	F07	"Drive addresses not correct (see C-0-0002, C-0-0086)"	10000h	A:C01.01	--
08	F08	"Max. number of drives exceeded"	10000h	A:C01.01	--
09	F09	"Fatal error occured - PPC reset necessary"	10000h	A:C01.01	--
10	F10	"PPC-internal memory error"	10000h	_A:C01.02	--
12	F12	"PPC parameter exceeds min/max value (see C-0-0068)"	10000h	A:C01.01	--
14	F14	"PPC checksum error (see C-0-0068)"	10000h	A:C01.01	--
15	F15	"PPC Parameter not correct (see C-0-0068)"	10000h	A:C01.01	--
18	F HW	"PPC/DAQ Hardware defective: CON_CYC-Signal faulty"	10000h	A:C01.01	--
19	F HW	"PPC hardware defective"	10000h	--	--
20	F16	"Non-supported drive type "	n = address	A:C01.01	--
21	F16	"Non-supported drive firmware"	n = address	A:C01.01	--
22	F15	"Parameter value limits: min-limit > max-limit (see C-0-0068)"	n = address	--	--

25	F TN	"PPC in test mode zero bit stream"	10000h	A:C01.01	--
26	F ON	"PPC in test mode continuous light"	10000h	A:C01.01	--
34	F15	"C-0-0013: Local bus input module missing. Slot-nr: xx"	10000h	--	--
35	F15	"C-0-0013: Local bus output module missing. Slot-nr: xx"	10000h	--	--
36	F36	"Local bus module - External power supply error. Slot-nr: xx"	10000h	--	--
40	F40	"PPC link - link defective"	10000h	_A:C01.04 _A:C01.05	_E:C01.04
42	F42	"PPC link - master position fault (MDT)"	10000h	_A:C01.04	_E:C01.04
43	F43	"PPC link - master position fault (AT)"	n = address	_A:C01.04	_E:C01.04
44	F44	"PPC link - selected link address not permitted"	10000h	A:C01.01	--
81	F81	"DAQ-board not correct (address-mapping)"	10000h	--	--
91	F91	"SERCOS interface - ASIC: Initialization error"	10000h	A:C01.01	--
92	F92	"PPC - DUAL PORT RAM error"	10000h	A:C01.01	--
93	F93	"DAQ: SERCOS interface - ASIC: intialization error"	10000h	A:C01.01	--
94	F94	"PPC hardware version incorrect"	10000h	A:C01.01	_E:C01.01
100	F18	"Real master axis - master encoder error"	10000h	_A:C01.02	_E:L01.16
101	F18	"Real master axis - redundant encoder error"	10000h	_A:C01.02	_E:L01.16
102	F18	"RM - Drive with master axis encoder is missing"	10000h	--	--
105	F17	"Master position value corrupted"	10000h	_A:L01.03 _A:L01.01	_E:L01.16
106	F17	"Virtual master speed limit to high (see C-0-0030, C-0-0031)"	10000h	--	--
107	F17	"Virtual master speed limit to high (see C-0-0055, C-0-0056)"	10000h	--	--
110	F17	"C-0-0050 too short for selected high speed cams (C-0-0049)"	10000h	--	--
111	F17	"Too many DEA cards for HS-waypoints activated (C-0-0049, A-0-0036)"	10000h	A:C01.01	--
112	F17	"HS-cam switch - parameters C-49 and A-36 not ok"	10000h	A:C01.01	--
140	F32	"3964R serial interface overrun"	10000h	_A:C01.03	_E:C01.03
141	F32	"3964R serial interface parity error"	10000h	_A:C01.03	_E:C01.03
142	F32	"3964R serial interface transmission error (frame)"	10000h	_A:C01.03	_E:C01.03
143	F32	"ARCNET - excessive bus reconfiguration"	10000h	_A:C01.03	_E:C01.03
144	F15	"C-0-0157/C-0-0158: Number of entries not equal"	10000h	--	--
145	F15	"C-0-0157: Ident-number exists twice"	10000h	--	--
150	F33	"Communication via the fieldbus is impossible"	10000h	_A:C01.03	--
151	F33	"Fieldbus: Incorrect jumper setting on fieldbus board"	10000h	_A:C01.03	--
152	F15	"Interbus: Process data length is not suported (C-0127/128)"	10000h	A:C01.01	--
153	F15	"Parameter channel: Is supported by Profibus only (C-33/129)"	10000h	A:C01.01	--
154	F15	"PCP channel: Is supported by Interbus only (C-33/129)"	10000h	A:C01.01	

160	F15	"More than one register controller per axis not possible"	n = address	--	--
161	F15	"Winding axis must be in speed synchronization (A-0-0003, A-0-0146)"	n = address	--	--
162	F15	"Electronic gear ratio must be 1:1 (see S-0-0236, S-0-0237)"	n = address	--	--
165	F15	"C-0-0039/C-0-0040: Number of entries not equal"	10000h	DIAGNOSTIC A:C01.01	--
166	F15	"A-0-0008/C-0-0039: Activated analogue channel not linked"	n = address	DIAGNOSTIC A:C01.01	--
167	F15	"More than one process controller per axis not possible"	n = address	--	--
172-173		reserved			
174	F15	"A-0-0146: Master drive gear not available (P-0-0156/P-0-0157)"	n = address	--	--
175	F15	"A-0-0030: Process control P-Gain too high"	n = address	DIAGNOSTIC A:C01.01	--
176	F15	"A-0-0146: Analogue channel for process control not defined"	n = address	DIAGNOSTIC A:C01.01	--
177	F15	"A-0-0146: Analogue channel for process control not activated"	n = address	DIAGNOSTIC A:C01.01	--
178	F15	"Tension controlled axis must be speed synch. (A-0-0003, A-0-0087, A-0-0146)"	n = address	--	--
179	F15	"More than one tension controller per axis not possible"	n = address	--	--
180	F15	"Parameter A-0-0038 not correct"	n = address	DIAGNOSTIC A:C01.01	--
181	F15	"C-0-0013: Non-permissible DEA address (see C-0-0002)"	n = address	DIAGNOSTIC A:C01.01	--
182	F15	"C-0-0013: Synchronization mode not permissible (A-0-0003)"	n = address	DIAGNOSTIC A:C01.01	--
183	F15	"C-0-0013: Adressed X-I/O not permissible (see C-0-0024/C-0-0033)"	10000h	DIAGNOSTIC A:C01.01	--
184	F15	"C-0-0013: Idle mode not permissible (see A-0-0009)"	n = address	DIAGNOSTIC A:C01.01	--
185	F15	"C-0-0013: Set-up mode not permissible (see A-0-0009)"	n = address	DIAGNOSTIC A:C01.01	--
186	F15	"C-0-0013: Special mode not permissible (see A-0-0070)"	n = address	DIAGNOSTIC A:C01.01	--
187	F15	"C-0-0013: Non-permissible version of PARA.EXE"	10000 h	DIAGNOSTIC A:C01.01	--
188	F15	"C-0-0013: Data integry violated"	10000 h	DIAGNOSTIC A:C01.01	--
189	F15	"C-0-0013: Non-permissible DEA address (e.g. ECODRIVE)"	n = address	DIAGNOSTIC A:C01.01	--
190	F15	"PPC link - other link master already active"	10000 h	DIAGNOSTIC A:C01.01	--
192	F15	"C-0-0013: PLC-interface not allowed on PPC-R without ISP"	10000h	DIAGNOSTIC A:C01.01	--
193	F15	"No different feedbacks selectable (A-0-0003/A-0-0009/A-0-0070)"	n = address	DIAGNOSTIC A:C01.01	--
194	F15	"Phase synchr. & absolute format not possible (see A-0-0001/A-0-0003)"	n = address	DIAGNOSTIC A:C01.01	--
195	F15	"A-0-0003: Drive does not support selected sync. Mode"	n = address	DIAGNOSTIC A:C01.01	--
196	F15	"A-0-0070: Drive does not support selected special mode"	n = address	DIAGNOSTIC A:C01.01	--

197	F15	"S-0-0103: Modulo value = 0 is invalid (see A-0-0001)"	n = address	DK A:C01.01	--
198	F15	"Special mode only with PPC-P possible (A-0-0070/A-0-0071/A-0-0072/A-0-0073)"	n = address	DK A:C01.01	--
199	F15	"Pattern control & modulo format not permissible (see A-0-0001/A-0-0003)"	n = address	DK A:C01.01	--
200	F90	"Pattern control serial interface overrun"	10000h	_A:M01.01	_E:M01.01
201	F90	"Pattern control serial interface parity error"	10000h	_A:M01.02	_E:M01.01
202	F90	"Pattern control serial interface frame error"	10000h	_A:M01.03	_E:M01.01
203	F90	"Pattern control data buffer overrun"	10000h	_A:M01.04	_E:M01.01
204	F90	"Pattern data start byte faulty"	10000h	_A:M01.05	_E:M01.01
205	F90	"Pattern data undefined target position"	10000h	_A:M01.06	_E:M01.01
206	F90	"Pattern data error in number of axes"	10000h	_A:M01.07	_E:M01.01
207	F90	"Pattern data checksum error"	10000h	_A:M01.08	_E:M01.01
208	F90	"Pattern data not in order"	10000h	_A:M01.09	_E:M01.01
209	F90	"Pattern data positive pattern limit exceeded"	n = address	_A:M01.10	_E:M01.01
210	F90	"Pattern data negative pattern limit exceeded"	n = address	_A:M01.11	_E:M01.01
211	F90	"Pattern data limits between received target pos. exceeded"	n = address	_A:M01.12	_E:M01.01
212	F15	"Pattern control with ELS masterposition additiv impossible (A-0-0003, A-0-0159)"	n = address	--	--
217	F15	"Too many parameters in MDT configured"	n = address	DK A:C01.01	--
218	F15	"Too many parameters in AT configured"	n = address	DK A:C01.01	--
220	F15	"A-0-0025: Too many register controllers activated"	n = address	DK A:C01.01	--
221	F15	"Port A (X10) multiple assigned (C-0-0011/C-0-0033/C-0-0104)"	10000 h	DK A:C01.01	--
222	F15	"Port B (X16) multiple assigned (C-0-0011/C-0-0033/C-0-0104)"	10000 h	DK A:C01.01	--
223	F15	"Cam and register control not possible (see A-0-0003/A-0-0025)"	n = address	DK A:C01.01	--
224	F15	"Register cont. And oscilloscope not possible (see A-0-0025/C-0-0107)"	n = address	DK A:C01.01	--
225	F15	"Cam/register/osci. Not possible (see A-0-0003/A-0-0025/C-0-0107)"	n = address	DK A:C01.01	--
226	F15	"Drive does not support oscilloscope-function"	n = address	DK A:C01.01	--
230	F21	"SERCOS transmission error (no drive responds)"	1000h	_A:C01.02 DK A:C01.01	--
231	F21	"SERCOS interface - transmission error during initialization"	n = address	DK A:C01.01	--
232	F15	"A-0-0009: Drive does not support selected set up mode	n = address	DK A:C01.01	--
233	F15	"Drive locked with password (S-0-0267)"	n = address	--	--
234	F15	"Electr. Gear ratio not possible (S-0-0236, S-0-0237)"	n = address	--	--
235	F15	"A-0-0107: Master drive gear not available (P-0-0156/P-0-0157)"	n = address	--	--
236	F15	"Register control only possible with modulo axis (A-0-0001, A-0-0025)"	n = address	--	--
237	F15	"Register controlled axis without synchronization (see A-0-0003)"	n = address	--	--

240	F15	"HS waypoints and I/O to DEA4.1 not possible (C-0-0013, C-0-0049, A-0-0036)"	n = address	--	
241	F15	"HS waypoints and I/O not possible (C-0-0013, C-0-0049) slot-nr: xx"	10000h	⊓⊔ A:C01.01	--
243	F15	"Drive does not support DEA8.1 card"	n = address	--	--
244	F15	"Combination of used functions not possible (relative bits)"	n = address	--	--
245	F15	"C-0-0013: Drive waypoints not possible (e. g. ECODRIVE)"	n = address	--	--
250	F15	"Target axis must be phase sync or cam axis (A-0-0133, A-0-0156)"	n = address	--	--
251	F15	"Too many group parameters of one group per axis"	n = address	--	--
260	F97	"SPS - Firmware-version incompatible"	10000h	⊓⊔ A:C01.01	--
261	F97	"SPS - Cycle-counter is dead"	10000h	⊓⊔ A:C01.01	--
262	F97	"SPS reports an error"	10000h	⊓⊔ A:C01.01	--
263	F15	"Parameter C-0-0131 not correct. Line nbr.: xxx"	10000h	⊓⊔ A:C01.01	--
264	F15	"Parameter C-0-0132 not correct. Line nbr.: xxx"	10000h	⊓⊔ A:C01.01	--
270	F15	"A-0-0013: Master drive gear not available (P-0-0156/P-0-0157)"	n = address	--	--
271	F15	"A-0-0153: Master drive gear not available (P-0-0156/P-0-0157)"	n = address	--	--
280	F15	"Parameter C-0-0127 not correct. Line nbr.: xxx"	10000h	⊓⊔ A:C01.01	--
281	F15	"Parameter C-0-0188 not correct. Line nbr.: xxx"	10000h	⊓⊔ A:C01.01	--
282	F15	"Parameter C-0-0189 not correct. Line nbr.: xxx"	10000h	⊓⊔ A:C01.01	--
283	F15	"Parameter C-0-0190 not correct. Line nbr.: xxx"	10000h	⊓⊔ A:C01.01	--
284	F15	"Parameter C-0-0128 not correct. Line nbr.: xxx"	10000h	⊓⊔ A:C01.01	--
285	F15	"Parameter C-0-0185 not correct. Line nbr.: xxx"	10000h	⊓⊔ A:C01.01	--
286	F15	"Parameter C-0-0186 not correct. Line nbr.: xxx"	10000h	⊓⊔ A:C01.01	--
287	F15	"Parameter C-0-0187 not correct. Line nbr.: xxx"	10000h	⊓⊔ A:C01.01	--
3000 + y	F98	"Drive error"	n = address	_A:F#.10	_E:F#.14
4000 + x	F95	"Operating system error" (x = error number)	10000h	⊓⊔ A:C01.01	--

Comments:

⊓⊔ A:C01.01: PPC operating ready timing signal does not toggle (= 0 or = 1 static)

⊓⊔ A:C01.01: PPC operating ready timing signal toggles

(PPC ready on DEA responds, if _A:C01.01 is on the DEA output _A:D#.16)

4 Definition of the error messages

-01 to -2x Initialization messages

During initialization of the PPC, the numbers -01 to -2x are run through. If an error occurs during the initialization, the initialization message remains on the display.

Remedy:

- Contact Indramat customer servcie.

¥01¥ to ¥14¥ Hardware error

Remedy:

- Replace PPC or PSM and send it to Indramat customer service.

F HW (18) "PPC/DAQ Hardware defective: CON_CYC-Signal faulty"

C-0-0048: 18 During the internal hardware check, the PPC detected that the CON_CYC signal was incorrect.

Cause:

- Hardware defective.

Remedy:

- Replace PPC and DAQ and send it to Indramat customer service.

F HW (19) "PPC hardware defective"

C-0-0048: 19 The hardware test of the PPC resulted in an error.

Remedy:

- Replace PPC and send it to Indramat customer service.

F TN (25) "PPC in test mode zero bit stream"

C-0-0048: 25 The test mode "zero bit stream" was selected in parameter "SERCOS interface - configuration" (C-0-0038). The PPC then sends zero bit current and prevents progression.

Remedy:

- Correct C-0-0038 and enter intialization mode.

F ON (26) "PPC in test mode continuous light"

C-0-0048: 26 The test mode "continuous light" was selected in parameter "SERCOS interface - configuration" (C-0-0038). The PPC then generates a steady light and thus prevents progression.

Remedy:

- Correct C-0-0038 and enter initialization mode.

F01 (01) "SERCOS interface - ring break"

C-0-0048: 01 There is a break in the SERCOS interface fiber optic cable ring.

Remedy:

- Switch machine off
- Repair SERCOS interface ring
- Switch machine on

F02 (02) "SERCOS interface - no drives connected"

C-0-0048: 02 After powering up or progression into operating mode, the PPC attempts to contact the drives via the SERCOS interface (LWL) ring. In this case, the attempt was not successful. The LWL ring is, however, closed.

Cause:

- there is no drive in the LWL ring
- drive address(es) is (are) set to "0"

F03 (03) "Error on switching to phase 3"

C-0-0048: 03 ***Example:*** "Parameter incomplete (-> S-0-0021)":

An error occurred when running up the LWL (fiber optic cable) ring prior to reaching an intermediate stage of communications phase 3. The drive diagnoses the error and signals this diagnosis to its parameter "diagnostic message" (S-0-0095). The PPC then reads this parameter and copies it into parameter "SYNAX - diagnosis text" (C-0-0047).

Note: "Error on switching to phase 3" is then in parameter "SYNAX - diagnosis text" (C-0-0047) instead of, e.g., "parameter incomplete" (-> S-0-0021)".

Remedy:

- See drive command error C1/xx

F04 (04) "Error on switching into operating mode"

C-0-0048: 04 ***Example:*** "Error master encoder":

An error occurred when running up the LWL ring prior to reaching operating mode. The drive affected diagnosis of the error and signals it to its parameter "diagnostic message" (S-0-0095). The PPC reads this parameter and copies it into parameter "SYNAX - diagnosis text" (C-0-0047).

Remedy:

- See drive command error C2/xx.

Note: "Error when switching into operating mode" will be in parameter "SYNAX - diagnosis text" (C-0-0047) instead of, e.g., "error master encoder".

F05 (05) "SERCOS interface - double drive telegram failure"

C-0-0048: 05 The telegram of a drive has failed at least twice.

Cause:

- LWL ring is defective
- drive is defective

Remedy:

- repair SERCOS interface ring or
- replace the respective drive

F06 (06) "Fiber optic ring not closed"

C-0-0048: 06 SYNAX200 checks, prior to phase progression, whether the LWL (fiber optic cable) ring is closed or not. This diagnosis can only take place during phase progression. SYNAX200 waits until (without timeout) the LWL ring is closed.

If the LWL ring has closed once, then a break is evaluated as a failure. In this case, the error message "SERCOS interface - ring break" (01) is generated.

Cause:

- The LWL ring is not closed.

Remedy:

- Drive controller not on, check power supply unit.
- Check fiber optic cable ring, make necessary adjustments.

F07 (07) "Drive addresses not correct (see C-0-0002, C-0-0086)"

C-0-0048: 07 The list of drive addresses in C-0-0002 does not agree with the addresses of the drive that are in the ring.

Cause:

- The connected drive addresses do not correspond to the projected drive addresses (C-0-0002).
- All projected drive addresses (C-0-0002) were deactivated (C-0-0086).

Remedy:

- Correct the number of drives of the drive addresses set.
- Correct the drive addresses set in C-0-0002.
- Check the addresses set in C-0-0086 (generally an empty list!)
- Switch into initialization mode.
- Switch into operating mode.

F08 (08) "Max. number of drives exceeded"

C-0-0048: 08 The parametrization has brought about a state where even an increase in the SERCOS interface cycle time does not suffice to operate the number of drives with the functions which have been set.

Remedy:

- Reduce the number of drives or
- reduce the functions of the drive, i.e., no setup mode, no tension controller, no idle, fewer analogue channels, fewer process controllers, etc.).

F09 (09) "Fatal error occured - PPC reset necessary"

C-0-0048: 09 A serious SERCOS interface error or an operating system error has previously occurred. Any further SYNAX200 mode progressions are not possible.

A progression is now only possible by switching the PPC off and on or reset the PPC.

Cause:

- SERCOS interface - ring interrupt
- SERCOS interface - double drive telegram failure (e.g., due to loose fiber optic cable connection, a too tight bend radius or a fiber optic cable that is too long and so on.)
- operating system error

Remedy:

- See error 01, error 05 or error 95
- PPC must be turned off and on or reset!

F10 (10) "PPC-internal memory error"

C-0-0048: 10 The PPC monitors the areas of the RAM on a cyclical basis when in operation mode. This error message is set when an invalid storage entry is detected.

Cause:

- The PPC internal storage monitor detects an invalid entry in the RAM.

Remedy:

- Replace PPC and send it to Indramat customer service.

F12 (12) "PPC parameter exceeds min./max. value (see C-0-0068)"

C-0-0048: 12 The value of a parameter exceeds its defined min./max. input value. The affected parameters will be entered into the "list of invalid A and C parameters" (C-0-0068).

Remedy:

- Read out parameter C-0-0068
- Correct the input value of the respective parameter.

F14 (14) "PPC checksum error (see C-0-0068)"

C-0-0048: 14 The PPC checks the validity of all A/C parameters by means of a checksum. Every parameter that is challenged during this sum is entered in the "list of invalid A and C parameters" (C-0-0068).

Cause:

- New programming module PSM, parameter was not yet inscribed.
- Parameter loss.

Remedy:

- Load the parameter.
- Write into the challenged parameter, e.g., via SynTop.

F15 General procedure with this PPC display

A list of errors indicating faulty parametrization is a series of subdisplays to this display.

In this case, it is necessary to alter one or more parameters. To do so requires connecting a user interface, e.g., SynTop.

The diagnosis parameters C-0-0046 through C-0-0048 specify those parameters which must be changed.

F15 (15) "PPC parameter not correct (see C-0-0068)"

C-0-0048: 15 A number of parameters are acknowledged as invalid during the plausibility check. The relevant parameters are entered into the "list of invalid A and C parameters" (C-0-0068).

Remedy:

- Read out parameter C-0-0068.
- Correct the input value of the relevant parameter.

F15 (22) "Parameter value limits: min-limit > max-limit (see C-0-0068)"

C-0-0048: 22 The parameter value for the minimum limit value exceeds the value for the maximum limit value.

Remedy:

- Minimum and maximum limit values must be changed.

F15 (34) "C-0-0013: Local bus input module missing. Slot-nr: xx"

C-0-0048: 34 In the I/O logic, the inputs (e.g., _E:Zxx.01) of a non-existent local input modules are used. "xx" are the slot numbers 1 through 15.

Remedy:

- Insert the local bus input module or
- remove the relevant instruction out of the I/O logic.

F15 (35) "C-0-0013: Local bus output module missing. Slot-nr: xx"

C-0-0048: 35 In the I/O logic, outputs (e.g., _A:Zxx.01) of a non-existent local bus output module are used. "xx" are the slot numbers 1 through 15.

Remedy:

- Insert the local bus output module or
- remove the relevant instructions out of the I/O logic

F15 (144) "C-0-0157/C-0-0158: Number of entries not equal"

C-0-0048: 144 For the transmission of data blocks accessing drive parameters of deactivated drives, the user can extend the PPC-internal S/P priority list using the parameters C-0-0157 and C-0-0158.

While switching from phase 2 to 3, the PPC checks the number of entries in C-0-0157 and C-0-0158. Given an unequal number of entries, this error message is generated.

Cause:

- Number of entries in C-0-0157 and C-0-0158 not equal.

Remedy:

- To each in C-0-0157 entered ID number, the corresponding data length must be entered in C-0-0158 and converted.

F15 (145) "C-0-0157: Ident-number exists twice"

C-0-0048: 145

For the transmission of data blocks accessing drive parameters of deactivated drives, the user can extend the PPC-internal S/P priority list using the parameters C-0-0157 and C-0-0158.

While switching from phase to 3 the PPC internally sorts the number of entries in "data blocks - configurable S-/P-parameters, ID-number" (C-0-0157). If the PPC discovers a double number of ID numbers, then this error message is generated.

Cause:

- ID number double in C-0-0157.

Remedy:

- Clear the double ID numbers in C-0-0157.
- If needed, match number and allocation of entries in "data blocks - configurable S-/P-parameters, ID-number" (C-0-0157).

F15 (152) Interbus: Process data length is not supported (C-127/128)

C-0-0048: 152

The established lengths for the process input (C-0-0127) and output data (C-0-0128) are not permissible for the Interbus interface.

According to the Interbus standard, the following is not permissible:

- Unequal lengths of process input and output data
- Process data lengths of:
  - 0 words
  - 11 words
  - 13 words
  - 15 words
- more than 16 words (not possible because of the IBS hardware)

Remedy:

- The process data lengths in C-0-0127 and C-0-0128 must be configured under observation of the permissible values.

F15 (153) Parameter channel: Is supported by Profibus only (C-33/129)

C-0-0048: 153 In the "field bus - control bits" (C-0-0129), the parameter channel is configured though no Profibus interface has been parameterized in the "host communication - control word" (C-0-0033).

Remedy:

- The parameters C-0-0033 and C-0-0129 must be tuned to each other.

F15 (154) PCP channel: Is supported by Interbus only (C-33/129)

C-0-0048: 154 In the "field bus - control bits" (C-0-0129), the PCP channel is configured though no Interbus interface has been parameterized in the "host communication - control word" (C-0-0033).

Remedy:

- The parameters C-0-0033 and C-0-0129 must be adjusted to each other

F15 (160) "More than one register controller per axis not possible"

C-0-0048: 160 More than one register controller is working the specified axis.

Remedy:

- Deactivate register controller (A-0-0025)
- Correct register controlled axes (A-0-0087)

F15 (161) "Winding axis must be in speed synchronization (A-0-0003, A-0-0146)"

C-0-0048: 161 The winding function (see "process control - control word 2", A-0-0146) for the specified axis (see C-0-0046) is activated.

This winding axis must be speed synchronous.

Remedy:

- Deactivate the winding ("process control - control word 2", A-0-0146) or
- parametrize the winding axis as a speed synchronous axis ("synchronization mode", A-0-0003).

F15 (162) "Elelctronic gear ratio must be 1:1 (see S-0-0236, S-0-0237)"

C-0-0048: 162 The parametrization of the electronic gear is not permissible.

For winding control with dancer the parameters S-0-0236 and S-0-0237 must be parametrized to 1.

Remedy:

- Change parameter S-0-0236 or S-0-0237.

F15 (165) "C-0-0039/C-0-0040: Number of entries not equal"

C-0-0048: 165 The parameters
"analogue channels - select source parameters" (C-0-0039) and
"analogue channels - select target parameters" (C-0-0040)
are of unequal length.

Remedy:

- Correct the input value of the parameter.

F15 (166) "A-0-0008/C-0-0039: Activated analogue channel not linked"

C-0-0048: 166 An analogue input activated in parameter "analogue channels - analogue input control word" (A-0-0008) is not linked to parameter "analogue channels - select source parameters" (C-0-0039).

Remedy:

- Deactivate the channel in "analogue channels - analogue input control word" (A-0-0008) or
- Change "analogue channels - select source parameters" (C-0-0039).

F15 (167) "More than one process controller per axis not possible"

C-0-0048: 167 More than one process controller has been activated, see "process control - control word 1" (A-0-0025) or "process control - control word 2" (A-0-0146).
Each slave axis may only activate one process controller.

Remedy:

- Deactivate process controller ("process control - control word 1" (A-0-0025) or "process control - control word 2" (A-0-0146)).

F15 (174) "A-0-0146: Master drive gear not available (P-0-0156/ P-0-0157)"

C-0-0048: 174 The master axis gear has been set as the target parameter for the tension control with load cell in parameter "process control - control word 2" (A-0-0146).
This is not available in the drive (e.g., drive firmware ELS 04VRS).

Remedy:

- Replace drive.
- Replace drive firmware.
- Change A-0-0146.

F15 (175) "A-0-0030: Process control P-gain too high"

C-0-0048: 175 An error in calculation would result from the value set in "process controller - proportional gain 1" (A-0-0030) (value too big).

Remedy:

- Reduce parameter "process controller - proportional gain 1" (A-0-0030).

F15 (176) "A-0-0146: Analogue channel for process control not defined"

C-0-0048: 176 A process controller has been set in the relevant axis (for address see "SYNAX - error source" (C-0-0046)).

Via parameter "analogue channels - select target parameters" (C-0-0040) the actual value for the process controller "process actual value" (A-0-0027) must be allocated to an analogue input.

Remedy:

- Define an analogue input for the parameter "process actual value" (A-0-0027) or
- Deactivate the process controller in "process control - control word 2" (A-0-0146).

F15 (177) "A-0-0146: Analogue channel for the process control not activated"

C-0-0048: 177 A process controller has been set in the relevant axis (for address see "SYNAX - error source" (C-0-0046)).

An analogue channel must be activated via parameter

- "analogue channels - analogue input control word" (A-0-0008),
- "analogue channels - select source parameters" (C-0-0039) or
- "analogue channels - select target parameters" (C-0-0040).

Remedy:

- Activate an analogue input for parameter "process actual value" (A-0-0027) or
- Deactivate process controller in "process control - control word 2" (A-0-0146).

F15 (178) "Tension controlled axis must be speed synch. (A-0-0003, A-0-0087, A-0-0146)"

C-0-0048: 178 A tension controller (see "process control - control word 2", A-0-0146) is activated for the specified address (see C-0-0046). The axes controlled by this tension controller must be speed synchronous.

Remedy:

- Deactivate tension controller ("process control - control word 2", A-0-0146)
- Parametrize the tension-controlled axes as speed synchronous axes ("synchronization mode", A-0-0003)

F15 (179) "More than one tension controller per axis not possible"

C-0-0048: 179 More than one tension controller is working the specified axis.

Remedy:

- Deactivate tension controller ("process control - control word 2", A-0-0146)
- Correct tension controlled axes ("process control - drive addresses", A-0-0087)

F15 (180) "Parameter A-0-0038 not correct"

C-0-0048: 180 When switching from parametrization into operating mode, the PPC transmits the parameter "bipolar torque limit" (A-0-0038) into the drive parameter "bipolar torque/force limit value" (S-0-0092). If this should fail, then the above error message is generated.

Remedy:

- Read out parameter "bipolar torque/force limit value" (S-0-0092) from drive.
- If parameter S-0-0092 is in the drive, then note the min./max. of this value. Correct operating data of A-0-0038 and "bipolar torque limit - reduced" (A-0-0037).
- If parameter S-0-0092 is not in drive, then contact Indramat customer service.

F15 (181) "C-0-0013: Non-permissible DEA address (see C-0-0002)"

C-0-0048: 181 There are inputs and outputs of the DEA in the I/O logic, e.g., _E:D03.01) which point to addresses of drives not accomodated for in the ring, see "addresses projected drives" (C-0-0002).

Remedy:

- Remove the respective inputs in the I/O logic.
- Generate a configuration which contains the required addresses.

F15 (182) "C-0-0013: Synchronization mode not permissible (A-0-0003)"

C-0-0048: 182 Input "synchronization mode" (_E:F#.05) is not in the I/O logic, but the synchronization mode of the relevant drive is deactivated (A-0-0003).

Remedy:

- Remove the respective inputs from the I/O logic.
- Activate synchronization mode.

F15 (183) "C-0-0013: Addressed X-I/O not permissible (see C-0-0024/C-0-0033)"

C-0-0048: 183 X I/Os have been used in the I/O logic, but none of the following conditions have been met:

- The PPC is a PC plug-in card (PPC-P). The X I/Os, in this case, are on the dual port RAM.
- Transmission via a serial interface (legal only with PPC-R) has been set in "host communication - control word" (C-0-0033). The X I/Os, in this case, are on the serial interface.

Parameter "PPC - hardware version" (C-0-0024) will tell whether this is a PPC-P or PPC-R.

Remedy:

- Remove the relevant inputs from the I/O logic.
- If necessary, correct parameter "host comumunication - control word" (C-0-0033).
- Contact Indramat customer service.

F15 (184) "C-0-0013: Idle mode not permissible (see A-0-0009)"

C-0-0048: 184 The input "idle mode" (_E:F#.06) is in the I/O logic, but the idle mode of the relevant drive has been deactivated (A-0-0009).

Remedy:

- Remove the relevant input in the I/O logic.
- Activate idle mode.

F15 (185) "C-0-0013: Setup mode not permissible (see A-0-0009)"

C-0-0048: 185 Input "setup mode" (_E:F#.04) is in the I/O logic, but the setup mode of the relevant drive has been deactivated (A-0-0009).

Remedy:

- Remove the respective input in the I/O logic.
- Activate setup mode.

F15 (186) "C-0-0013: Special mode not permissible (see A-0-0070)"

C-0-0048: 186 Input "special mode" (_E:F#.23) is in the I/O logic, but no special mode has been set for the relevant drive (A-0-0070 = 0).

Remedy:

- Remove the relevant input in the I/O logic.
- Activate special mode.

F15 (187) "C-0-0013: Non-permissible version of PARA.EXE"

C-0-0048: 187 The source file of the I/O logic (*.TXT) was translated with the wrong program (PARA.EXE). The file thus translated (*.ASC) will not run.

Remedy:

- Use the correct PARA.EXE version.

F15 (188) "C-0-0013: Data integrity violated"

C-0-0048: 188 The I/O logic contains false data and cannot run.

Cause:

- The I/O logic was not successfully loaded.
- Parameter "I/O assignment of internal/external I/Os" (C-0-0013) was manually altered.

Remedy:

- Retranslate the I/O logic (*.TXT) with PARA.EXE.
- Load the translated I/O logic (*.ASC).

F15 (189) "C-0-0013: Non-permissible DEA address (e.g., ECODRIVE)"

C-0-0048: 189 Inputs and outputs are in the I/O logic, e.g., _E:D03.01 which point to addresses of drives which do not contain a DEA.

Remedy:

- Remove the relevant inputs in the I/O logic or
- generate a configuration with a drive with DEA at the respective address.

F15 (190) "PPC-link - other link master already active"

C-0-0048: 190 There are several link masters in the master axis link.

Cause:

- Each link participant parametrized as a link master checks whether another link master is already present or not. If there is, then this error message is generated and the PPC remains passive within the PPC link.

Remedy:

- Check parameter C-0-0102 of all the PPCs. The LED H11 and H12 displays whether a DAQ has been configured as a link master or slave.

F15 (192) "C-0-0013: PLC-Interface not allowed on PPC-R without ISP"

C-0-0048: 192 **Cause:**

The functions are only available if the PPC-R is linked to an Indramat SPS (MTS-R).

Remedy:

- Change the I/O logic: C-0-0013 renew load.

F15 (193) "No different feedbacks selectable (A-0-0003/A-0-0009/A-0-0070)"

C-0-0048: 193 It is not permitted to use different encoders to position control the drive.

Example: phase synchronization on the external encoder (A-0-0003 = 0x900B) and set-up on the motor controller (A-0-0009 = 0x13)

Remedy:

- Correct A-0-0003, A-0-0009 and A-0-0070.

F15 (194) "Phase synchronization & absolute format not possible (see A-0-0001/A-0-0003)"

C-0-0048: 194 Combining angle synchronization and a translatory format is illegal.

Remedy:

- Change parameter "axis type" (A-0-0001) or "synchronization mode" (A-0-0003).

F15 (195) "A-0-0003: Drive does not support selected sync. mode"

C-0-0048: 195 The relevant drive will not support the synchronization mode specified in A-0-0003 although the value parameterized in A-0-0003 was acknowledged as correct by the PPC.

Example: An application of the external encoder was parametrized although there is no external encoder.

Remedy:

- Check and change parameter "synchronization mode" (A-0-0003).

F15 (196) "A-0-0070: Drive does not support selected special mode"

C-0-0048: 196 The relevant drive does not support the special mode entered in A-0-0070 although the parametrized value in A-0-0070 was acknowledged as correct by the PPC.

Example: An application of the external encoder was parametrized although there is no external encoder.

Remedy:

- Check and change parameter "special operation mode" (A-0-0070).

F15 (197) "S-0-0103: Modulo value = 0 is invalid (see A-0-0001)"

C-0-0048: 197 The modulo value in the drive may not equal 0 if modulo axis (A-0-0001) is set.

Remedy:

- Check and change the parameter "modulo value" (S-0-0103).

F15 (198) "Special mode only with PPC-P possible (A-0-0070/A-0-0071/A-0-0072/A-0-0073)"

C-0-0048: 198 A PPC-P is needed for the selected configuration of the special operating modes.

Cause:

- If special operating modes with real-time data exchange are parametrized via the DUAL port RAM, then a PPC-P is needed.

Remedy:

- Correct parameters A-0-0070, A-0-0071, A-0-0072 and A-0-0073.
- Use a PPC-P.

F15 (199) "Pattern control & modulo format not permissible (see A-0-0001/A-0-0003)"

C-0-0048: 199 It is illegal to combine pattern control and modulo weighting.

Remedy:

- Change parameter "axis type" (A-0-0001) or "synchronization mode" (A-0-0003).

F15 (212) "Pattern control with ELS masterposition additiv impossible (A-0-0003, A-0-0159)"

C-0-0048: 212 The simultaneous use of a pattern control gear and master axis command value additive is not allowed.

Remedy:

- Change parameter A-0-0003 and A-0-0159.

F15 (217) "Too many parameters in MDT configured"

C-0-0048: 217 The number of the parameters configured in the MDT (S-0-0024) is too big.

Cause:

- Too many functions have been activated for this axis.

Remedy:

Minimize configuration of this axis with the following functions:

- register control
- winding control
- operating mode selection
- DEA04/DEA08

F15 (218) "Too many parameters in AT configured"

C-0-0048: 218 The number of the parameters configured in the AT (S-0-0016) is too big.

Cause:

- Too many functions have been activated for this axis.

Remedy:

Minimize configuration of this axis with the following functions:

- register control
- winding control
- analog channels
- drive cams
- DEA04/DEA08

F15 (220) "A-0-0025: Too many register controllers activated"

C-0-0048: 220 Too many register controllers have been activated.

Remedy:

- Deactivate register controller (see A-0-0025).
- Runup into operating mode again.

F15 (221) "Port A (X10) multiple assigned (C-0-0011/C-0-0033/C-0-0104)"

C-0-0048: 221 There is a multiple allocation of serial interface A (X10) due to incorrect parametrization.

Note: Pressing and holding the S1 button after the PPC has been switched on will cause a default setting of the communication parameters C-0-0011, C-0-0033, and C-0-0104. As a result, SynTop communicates at X10 with RS232 and at 19200 baud. The parameters C-0-0011, C-0-0033, and C-0-0104 must then be reparameterized using SynTop**.**

Remedy:

Change the parameters:

- "host communication - control word" (C-0-0033) or
- "serial service interface - control word" (C-0-0104) or
- "pattern data - source" (C-0-0011).

F15 (222) "Port B (X16) multiple assigned (C-0-0011/C-0-0033/C-0-0104)"

C-0-0048: 222 There is multiple allocation of serial interface B (X16) due to faulty parametrization.

Note: Also via jumper S1 and display H1 of the PPC settings of the serial interface can be made.

Remedy:

Change parameters:

- "host communication - control word" (C-0-0033) or
- "serial service interface - control word" (C-0-0104) or
- "pattern data - source" (C-0-0011).

F15 (223) "Cam and register control not possible (see A-0-0003/A-0-0025)"

C-0-0048: 223 The functions cam and register controller with time measurement cannot be conducted simultaneously.

Remedy:

Change parameter:

- "operating mode" (A-0-0003) and
- "process control - control word 1" (A-0-0025).

F15 (224) "Register cont. and oscilloscope not possible (see A-0-0025/C-0-0107)"

C-0-0048: 224 The functions register controller with time measurement and oscilloscope function cannot be conducted simultaneously.

Remedy:

Change parameters:

- "process control - control word 1" (A-0-0025) and
- "oscilloscope function - control word" (C-0-0107)

F15 (225) "Cam/register/osci. not possible (see A-0-0003/A-0-0025/C-0-0107)"

C-0-0048: 225 The functions cam, register controller and oscilloscope cannot be conducted simultaneously.

Remedy:

Change parameters:

- "synchronization mode" (A-0-0003),
- "process control - control word 1" (A-0-0025) and
- "oscilloscope function - control word" (C-0-0107).

F15 (226) "Drive does not support oscilloscope function"

C-0-0048: 226 A drive was configured in parameter "oscilloscope function - drive addresses" (C-0-0108) which does not support the oscilloscope function.

Remedy:

- Remove the address entered in "SYNAX - error source" (C-0-0046) from the parameter "oscilloscope function - drive addresses" (C-0-0108).

F15 (232) "A-0-0009: Drive does not support selected set up mode"

C-0-0048: 232 The relevant drive does not support the set-up parametrized in A-0-0009.

Remedy:

- Check and change parameter "configuration idle mode / set up mode" (A-0-0009).

F15 (233) "Drive locked with password (S-0-0267)"

C-0-0048: 233 Using parameter "password" (S-0-0267) the drive can be locked against parameter changes.

SYNAX200 needs drives that are not locked.

Remedy:

- Unlock password, see "password" (S-0-0267).
- Call Indramat.

F15 (234) "Electr. gear ratio not possible (s. S-0-0236, S-0-0237)"

C-0-0048: 234 It is not allowed to parametrize the electronic gear ratio.

The quotient $\frac{S-0-0237}{S-0-0236}$ is either too small ($\rightarrow 0$) or too large ($\rightarrow \infty$).

Remedy:

- Change parameter S-0-0236 or S-0-0237.

F15 (235) "A-0-0107: Master drive gear not available (P-0-0156/P-0-0157)"

C-0-0048: 235 In parameter "register control - target parameter selection" (A-0-0107) the master drive gear has been selected as target parameter of the register controller.

This is not available in the drive (e.g., drive firmware ELS04VRS).

Remedy:

- Replace drive.
- Replace drive firmware.
- Change A-0-0107.

F15 (236) "Register control only possible with modulo axis (see A-0-0001, A-0-0025)"

C-0-0048: 236 A register controller axis (see A-0-0025) must be a modulo axis (see A-0-0001).

Remedy:

- A-0-0001 or A-0-0025 must be re-parametrized

F15 (237) "Register controlled axis without synchronization (see A-0-0003)"

C-0-0048: 237 The specified axis is controlled by the register controller. This necessitates the parametrization of a synchronization operating mode.

Remedy:

- Change the "Process control - drive addresses" (A-0-0087) of the register controller axis.
- Change the "Synchronization mode" (A-0-0003) of the specified axis.

F15 (240) "HS waypoints and I/O to DEA4.1 not possible (C-0-0013, C-0-0049, A-0-0036)"

C-0-0048: 240 High speed cams and I/O logic outputs were used on the same DEA04 drive.

Remedy:

- Deactivate high speed waypoints (parameter "high speed cam switches - control word", C-0-0049).
- Output high speed waypoints at different DEA04, DEA08 or local RECO I/Os (parameter "digital I/O - configuration", A-0-0036; parameter "high speed cam switches - control word", C-0-0049).
- Output I/O logic outputs to different DEA04, DEA08 or local RECO I/Os (parameter "I/O - assignment of internal/external I/Os", C-0-0013).

F15 (241) "Hs waypoints and I/O not possible. (C-0-0013, C-0-0049) slot-nr: xx"

C-0-0048: 241 High-speed cams and I/O logic outputs were used on the local bus output module. "xx" are the slot numbers 1 through 15.

Remedy:

- Deactivate high speed waypoints (parameter "high speed cam switches - control word", C-0-0049).
- Output the outputs of the high speed waypoints on a different local bus output module (parameter "high speed cam switches - control word", C-0-0049).
- Output the outputs of the high speed waypoints on drive DEA (parameter "digital I/O - configuration", A-0-0036; parameter "high speed cam switches - control word", C-0-0049).
- Output the outputs of the I/O logic on other DEA04, DEA08 or a different local output module (parameter "I/O - assignment of internal/external I/Os", C-0-0013).

F15 (243) "Drive does not support DEA8.1 card"

C-0-0048: 243 A DEA08 card was used for the specified drive in the I/O logic or in the high-speed cam switch group.

The drive does not support this DEA08 however.

Remedy:

- Change I/O logic (e.g., DEA04) or
- do not parametrize the high-speed cam switch group to the DEA08.

F15 (244) "Combination of used functions not possible (real time bits)"

C-0-0048: 244 Socalled real-time bits are needed via functions

- cam axis (A-0-0003)
- oscilloscope functions (C-0-0108)
- register controller (A-0-0025)
- relative set-up (A-0-0070)

Of these, only two are present.

Too many of the listed functions were activated for the specified drive address.

Only a maximum of two functions may be activated.

Remedy:

- Deactivate functions not required.

F15 (245) "C-0-0013: Drive waypoints not possible (e. g. ECODRIVE)"

C-0-0048: 245 The I/O logic (VKL) is trying to actuate drive cams (A:Wxx.yy). They are not available in the drive (P-0-0135).

Remedy:

- Change VKL.

F15 (250) "Target axis must be phase sync or cam axis (A-0-0133, A-0-0156)"

C-0-0048: 250 The group command value additive 1 (A-0-0132) or the group command value additive 2 (A-0-0155) can only affect phase-synchronous axes and cam axes.

Axes have, however, been entered in parameter "group command value 1 - drive addresses" (A-0-0133) or "group command value 2 - drive addresses" (A-0-0156) that do not meet this condition.

Remedy:

- Correct the addresses in A-0-0133 or A-0-0156 or
- change synchronization mode in A-0-0003.

F15 (251) "Too many group parameters of one group per axis"

C-0-0048: 251 Only one group parameter per group can effect an axis.

More than one group parameter link per group (one or two) is, however, present for the specified drive address.

Remedy:

- Check parameter "Group command value 1 - drive addresses" (A-0-0133) and "group command value 2 - drive addresses" (A-0-0156) of all axes and ensure that no drive address has been entered or is listed twice.
  There are group parameters of group 1 and group 2 at one axis possible.

F15 (263) "Parameter C-0-0131 not correct. Line nbr.: xxx"

C-0-0048: 263 There´s a parameter entered in C-0-0131 that is not permissible for the following reasons:

1. list parameter ,
2. using S or P parameters the data length must be known by the PPC internal preferred list or by parameters C-0-0157/C-0-0158,
3. the configuration of the parameters C-0-0200 to C-0-0463 is not useful and therefore not permitted.

"xxx" in the error number stands for the line number in parameter C-0-0131

Remedy:

- Parametrize C-0-0131 correctly or make the data length known with C-0-0157/C-0-0158 when using S and P parameters.

F15 (264) "Parameter C-0-0132 not correct. Line nbr.: xxx"

C-0-0048: 263 There´s a parameter entered in C-0-0132 that is not permissible for the following reasons:

1. list parameters,
2. parameter write protected in operating mode,
3. using S or P parameters the data length must be known by the PPC internal preferred list or by parameters C-0-0157/C-0-0158.
4. the configuration of the parameters C-0-0200 to C-0-0463 is not useful and therefore not permitted.

"xxx" in the error number stands for the line number in parameter C-0-0132.

Remedy:

- Parametrize C-0-0132 correctly or make the data length known with C-0-0157/C-0-0158 when using S and P parameters.

F15 (270) "A-0-0013: Master drive gear not available (P-0-0156/ P0-0157)"

C-0-0048: 270 The master axis gears have been set in parameter "jogging mode with speed synchronization" (A-0-0013) as the jog variable.

This is not available in the drive (e. g. drive firmware ELS 04VRS).

Remedy:

- Replace drive.
- Replace drive firmware.
- Change A-0-0013.

F15 (271) "A-0-0153: Master drive gear not available (P-0-0156/ P0-0157)"

C-0-0048: 271 The master axis gears have been set in parameter "jogging mode with phase synchronization" (A-0-0153).

This is not available in the drive (e.g., drive firmware ELS 04VRS).

Remedy:

- Replace drive.
- Replace drive firmware.
- Change A-0-0153.

F15 (280) "Parameter C-0-0127 not correct. Line nbr.: xxx"

C-0-0048: 280 The content of the configuration list C-0-0127 for the process input data is not correct. The fault identified first appears in line xxx. The following faults can occur:

- **No line number xxx is shown:**
  The process data length is greater than the permissible 32 words.
- **Line number xxx points out the element behind the last list entry:**
  The configuration element for the end of the static part (C-0-0197) or the end of a multiplex level (C-0-0198) as termination of the configuration list is missing.
- **Configuration element C-0-0197 is shown in line xxx:**
  In the parameter list for the static part of the process data channel, there is already a configuration element for the end of a multiplex level (C-0-0198).
- **Configuration element C-0-0198 is shown in line xxx :**
  Too many multiplex levels have been configured.
- **In line xxx, a parameter (and no configuration element) is shown**
  The parameter configured in line xxx does not exist or is not permissible (e.g. list parameter). With S and P parameters, the data length must be known via the PPC-internal preferred list, or by means of C-0-0157/C-0-0158.

Remedy:

- Parameterize C-0-0127 correctly, respectively with S or P parameters, make known the data lengths by the user-defined lists C-0-0157 and C-0-0158.

F15 (281) "Parameter C-0-0188 not correct. Line nbr.: xxx"

C-0-0048: 281 The content of the configuration list C-0-0188 for the process input data is not correct. The fault identified first appears in line xxx. The following faults can occur:

- **No line number xxx is shown:**
  The process data length is greater than the permissible 32 words.
- **Line number xxx points out the element behind the last list entry:**
  The configuration element for the end of the static part (C-0-0197) or the end of a multiplex level (C-0-0198) as termination of the configuration list is missing.
- **Configuration element C-0-0197 is shown in line xxx:**
  In the parameter list for the static part of the process data channel, there is already a configuration element for the end of a multiplex level (C-0-0198).
- **Configuration element C-0-0198 is shown in line xxx :**
  Too many multiplex levels have been configured.
- **In line xxx, a parameter (and no configuration element) is shown**
  The parameter configured in line xxx does not exist or is not permissible (e.g. list parameter). With S and P parameters, the data length must be known via the PPC-internal preferred list, or by means of C-0-0157/C-0-0158.

Remedy:

- Parameterize C-0-0188 correctly, respectively with S or P parameters, make known the data lengths by the user-defined lists C-0-0157 and C-0-0158.

F15 (282) "Parameter C-0-0189 not correct. Line nbr.: xxx"

C-0-0048: 282 The content of the configuration list C-0-0189 for the process input data is not correct. The fault identified first appears in line xxx. The following faults can occur:

- **No line number xxx is shown:**
  The process data length is greater than the permissible 32 words.
- **Line number xxx points out the element behind the last list entry:**
  The configuration element for the end of the static part (C-0-0197) or the end of a multiplex level (C-0-0198) as termination of the configuration list is missing.
- **Configuration element C-0-0197 is shown in line xxx:**
  In the parameter list for the static part of the process data channel, there is already a configuration element for the end of a multiplex level (C-0-0198).
- **Configuration element C-0-0198 is shown in line xxx :**
  Too many multiplex levels have been configured.
- **In line xxx, a parameter (and no configuration element) is shown**
  The parameter configured in line xxx does not exist or is not permissible (e.g. list parameter). With S and P parameters, the data length must be known via the PPC-internal preferred list, or by means of C-0-0157/C-0-0158.

Remedy:

- Parameterize C-0-0189 correctly, respectively with S or P parameters, make known the data lengths by the user-defined lists C-0-0157 and C-0-0158.

F15 (283) "Parameter C-0-0190 not correct. Line nbr: xxx"

C-0-0048: 283

The content of the configuration list C-0-0190 for the process input data is not correct. The fault identified first appears in line xxx. The following faults can occur:

- **No line number xxx is shown:**
  The process data length is greater than the permissible 32 words.
- **Line number xxx points out the element behind the last list entry:**
  The configuration element for the end of the static part (C-0-0197) or the end of a multiplex level (C-0-0198) as termination of the configuration list is missing.
- **Configuration element C-0-0197 is shown in line xxx:**
  In the parameter list for the static part of the process data channel, there is already a configuration element for the end of a multiplex level (C-0-0198).
- **Configuration element C-0-0198 is shown in line xxx :**
  Too many multiplex levels have been configured.
- **In line xxx, a parameter (and no configuration element) is shown**
  The parameter configured in line xxx does not exist or is not permissible (e.g. list parameter). With S and P parameters, the data length must be known via the PPC-internal preferred list, or by means of C-0-0157/C-0-0158.

Remedy:

- Parameterize C-0-0190 correctly, respectively with S or P parameters, make known the data lengths by the user-defined lists C-0-0157 and C-0-0158.

F15 (284) "Parameter C-0-0128 not correct. Line nbr.: xxx"

C-0-0048: 284

The content of the configuration list C-0-0128 for the process output data is not correct. The fault identified first appears in line xxx. The following faults can occur:

- **No line number xxx is shown:**
  The process data length is greater than the permissible 32 words.
- **Line number xxx points out the element behind the last list entry:**
  The configuration element for the end of the static part (C-0-0197) or the end of a multiplex level (C-0-0198) as termination of the configuration list is missing.
- **Configuration element C-0-0197 is shown in line xxx:**
  In the parameter list for the static part of the process data channel, there is already a configuration element for the end of a multiplex level (C-0-0198).
- **Configuration element C-0-0198 is shown in line xxx :**
  Too many multiplex levels have been configured.
- **In line xxx, a parameter (and no configuration element) is shown**
  The parameter configured in line xxx does not exist or is not permissible (e.g. list parameter). With S and P parameters, the data length must be known via the PPC-internal preferred list, or by means of C-0-0157/C-0-0158.

Remedy:

- Parameterize C-0-0128 correctly, respectively with S or P parameters, make known the data lengths by the user-defined lists C-0-0157 and C-0-0158.

F15 (285) "Parameter C-0-0185 not correct. Line nbr.: xxx"

C-0-0048: 285

The content of the configuration list C-0-0185 for the process output data is not correct. The fault identified first appears in line xxx. The following faults can occur:

- **No line number xxx is shown:**
  The process data length is greater than the permissible 32 words.
- **Line number xxx points out the element behind the last list entry:**
  The configuration element for the end of the static part (C-0-0197) or the end of a multiplex level (C-0-0198) as termination of the configuration list is missing.
- **Configuration element C-0-0197 is shown in line xxx:**
  In the parameter list for the static part of the process data channel, there is already a configuration element for the end of a multiplex level (C-0-0198).
- **Configuration element C-0-0198 is shown in line xxx :**
  Too many multiplex levels have been configured.
- **In line xxx, a parameter (and no configuration element) is shown**
  The parameter configured in line xxx does not exist or is not permissible (e.g. list parameter). With S and P parameters, the data length must be known via the PPC-internal preferred list, or by means of C-0-0157/C-0-0158.

Remedy:

- Parameterize C-0-0185 correctly, respectively with S or P parameters, make known the data lengths by the user-defined lists C-0-0157 and C-0-0158.

F15 (286) "Parameter C-0-0186 not correct. Line nbr.: xxx"

C-0-0048: 286

The content of the configuration list C-0-0186 for the process output data is not correct. The fault identified first appears in line xxx. The following faults can occur:

- **No line number xxx is shown:**
  The process data length is greater than the permissible 32 words.
- **Line number xxx points out the element behind the last list entry:**
  The configuration element for the end of the static part (C-0-0197) or the end of a multiplex level (C-0-0198) as termination of the configuration list is missing.
- **Configuration element C-0-0197 is shown in line xxx:**
  In the parameter list for the static part of the process data channel, there is already a configuration element for the end of a multiplex level (C-0-0198).
- **Configuration element C-0-0198 is shown in line xxx :**
  Too many multiplex levels have been configured.
- **In line xxx, a parameter (and no configuration element) is shown**
  The parameter configured in line xxx does not exist or is not permissible (e.g. list parameter). With S and P parameters, the data length must be known via the PPC-internal preferred list, or by means of C-0-0157/C-0-0158.

Remedy:

- Parameterize C-0-0186 correctly, respectively with S or P parameters, make known the data lengths by the user-defined lists C-0-0157 and C-0-0158.

F15 (287) "Parameter C-0-0187 not correct. Line nbr.: xxx"

C-0-0048: 287 The content of the configuration list C-0-0187 for the process output data is not correct. The fault identified first appears in line xxx. The following faults can occur:

- **No line number xxx is shown:**
  The process data length is greater than the permissible 32 words.
- **Line number xxx points out the element behind the last list entry:**
  The configuration element for the end of the static part (C-0-0197) or the end of a multiplex level (C-0-0198) as termination of the configuration list is missing.
- **Configuration element C-0-0197 is shown in line xxx:**
  In the parameter list for the static part of the process data channel, there is already a configuration element for the end of a multiplex level (C-0-0198).
- **Configuration element C-0-0198 is shown in line xxx :**
  Too many multiplex levels have been configured.
- **In line xxx, a parameter (and no configuration element) is shown**
  The parameter configured in line xxx does not exist or is not permissible (e.g. list parameter). With S and P parameters, the data length must be known via the PPC-internal preferred list, or by means of C-0-0157/C-0-0158.

Remedy:

- Parameterize C-0-0187 correctly, respectively with S or P parameters, make known the data lengths by the user-defined lists C-0-0157 and C-0-0158.

F16 (20) "Non-supported drive type"

C-0-0048: 20 A connected drive could not be identified.

The address of the relevant drive is specified in parameter "SYNAX - error source" (C-0-0046).

Remedy:

- IMPORTANT: Read out the text of parameter "manufacturer version" (S-0-0030) and make a note of it, e.g., "DSM2.3-ELS-02V03".
- Contact Indramat customer service.

F16 (21) "Non-supported drive firmware"

C-0-0048: 21 The SYNAX200 firmware used is not compatible with the firmware in the drive.

The address of the relevant drive is in parameter "SYNAX - error source" (C-0-0046).

Remedy:

- IMPORTANT: Read out the text of parameter "manufacturer version" (S-0-0030) and make a note of it, e.g., "DSM2.3-ELS-02V03").
- Contact Indramat customer service.

F17 (105) "Master position value corrupted"

C-0-0048: 105 The master axis position of the virtual master axis is checked but once for validity upon reaching master axis mode (checksum).

Cause:

- A new PPC was used with a non-initialized programming module.
- Data integrity was lost, e.g., as a result of a faulty programming module.

Remedy:

- "Real/Virt master - clear error" (_E:L01.16).
- If necessary, set position of the virtual master axis with "virtual master enable" (_E:L01.06) or "VM preset position" (_E:L01.20).

F17 (106) "Virtual master speed limit to high (see C-0-0030, C-0-0031)"

C-0-0048: 106 The maximum allowable velocity command value of the master axis is fixed with

$$\text{MAX} = \frac{1000 \times 0{,}45 \times 60}{\text{SERCOS cycle time}}.$$

The SERCOS cycle time is displayed in parameter S-0-0002.

At least one limit value of the velocity command value (C-0-0030 or C-0-0031) is greater than the maximum allowable velocity command value as per the above formula.

Remedy:

- C-0-0030 or C-0-0031 must be decreased as per formula above.

F17 (107) "Virtual master speed limit to high (see C-0-0055, C-0-0056)"

C-0-0048: 107 The maximum allowable velocity command value of the master axis is fixed with

$$\text{MAX} = \frac{1000 \times 0{,}45 \times 60}{\text{SERCOS cycle time}}.$$

The SERCOS cycle time is displayed in parameter S-0-0002.

At least one limit value of the velocity command value (C-0-0055 or C-0-0056) is greater than the maximum allowable velocity command value as per the above formula.

Remedy:

- C-0-0055 or C-0-0056 must be decreased as per formula above.

F17 (110) "C-0-0050 too short for selected HS-waypoints (C-0-0049)"

C-0-0048: 110 The parameter "high speed cam switches - ON/OFF angle" (C-0-0050) is checked for required length when progressing from parametrization mode into operating mode.

Cause:

- The parameter "high speed cam switches - ON/OFF angle" (C-0-0050) is not as long as required by parameter "high speed cam switches - control word" (C-0-0049).

Remedy:

- Enter a sufficient number of angles in parameter C-0-0050.
- Deactivate high speed cam in parameter C-0-0049.

F17 (111) "Too many DEA cards for HS waypoints activated (C-0-0049, A-0-0036)"

C-0-0048: 111 The cam function is activated in parameter "high speed cam switches - control word" (C-0-0049). DEA cards are allocated to these cams in parameter "digital I/O - configuration" (A-0-0036).

Too many DEA cards have been allocated to the number of cams selected.

Remedy:

- Change C-0-0049.
- Change A-0-0036.

F17 (112) HS cam switch - parameters C-49 and A-36 not ok

C-0-0048: 112 In parameter "high speed cam switches - control word" (C-0-0049) the HS cam function is activated. In the parameter "digital I/O - configuration" (A-0-0036), the DEA cards are assigned to this cam.

The combination of those two parameters is not permissible.

Cause:

- With an activated HS cam switch (C-0-0049, bit 0,1) no DEA card has been activated in parameter A-0-0036.
- With an activated HS cam switch (C-0-0049, bit 0,1) too many DEA cards have been activated in parameter A-0-0036 on different axes.
- Drive with DEA card (bit 1 set in A-0-0036) has been deactivated.

Remedy:

- Check the parameterization of C-0-0049 and A-0-0036 (potentially of all axes).

F18 (100) "Real master axis - master encoder error"

C-0-0048: 100 The encoder monitoring device was actuated with the use of a redundant encoder for the real master axis. The master encoder is hunting.

Cause:

- The coupling unit is defective.
- The encoder is defective.
- The encoder cable is defective.
- Monitoring window "real master - redundant encoder monitoring window" (C-0-0073) too small.

Remedy:

- Check both encoders.
- Correct the parameter by using the parameter "real master - redundant encoder max. position difference" (C-0-0074), if necessary.
- The error can only be reset with input "real/virtual master - clear error" (_E:L01.16).

F18 (101) "Real master axis - redundant encoder error"

C-0-0048: 101 The encoder monitoring device was actuated with the use of a redundant encoder for the real master axis. The master encoder is hunting.

Cause:

- The coupling unit is defective.
- The encoder is defective.
- The encoder cable is defective.
- Monitoring window "real master - redundant encoder monitoring window" (C-0-0073) too small.

Remedy:

- Check both encoders.
- Correct the parameter by using the parameter "real master - redundant encoder max. position difference" (C-0-0074), if necessary.
- The error can only be reset with input "real/virtual master - clear error" (_E:L01.16).

F18 (102) "RM - Drive with master axis encoder is missing"

C-0-0048: 102 The drive to which the master axis encoder for the real master axis is connected was not detected during transition from initialization into parameter mode in the SERCOS ring.

The drive is either not projected or deactivated.

Remedy:

- Drive in SERCOS ring projected (change parameter C-0-0002)
- Activate drive (change parameter C-0-0086).

F21 (230) "SERCOS transmission error (no drive responds)"

C-0-0048: 230

A SERCOS interface transmission could not be successfully concluded (time out monitoring).

At the time of this transmission, one or several axes would not respond.

The SYNAX200 ring remains in initialization mode. A progression is now only possible by switching the PPC off and on or reset the PPC.

Cause:

- Fiber optic cable ring defective -or-
- Drive was switched off.

Remedy:

- Switch drive and PPC off.
- Check fiber optic cable ring.
- Contact Indramat customer service.

F21 (231) "SERCOS interface - transmission error during initialization"

C-0-0048: 231-299

An error occurred during the transmission of a parameter to the drive while initializing the SERCOS interface ring and drives.

This error may not occur with a system that is already successfully operating. There is a problem in the transmission path, i.e., LWL ring, if it does.

This error can occur during startup if, for example, a drive used

- does not support a specific parameter or
- it does not permit the value of a parameter that is to be transmitted.

In this case, it is possible to start up the system by changing parametrization.

Remedy:

- IMPORTANT: Read out the number from parameter "SYNAX - error number" (C-0-0048) and make a note of it (e.g., 231).
- Contact Indramat customer service.

F32 (140) "3964R Serial interface overrun"

C-0-0048: 140

An overrrun error has occurred at the interface.

Remedy:

- Clear error, restart transmission.
- If the error occurs again, contact Indramat customer service.

F32 (141) "3964R Serial interface parity error"

C-0-0048: 141 A parity error occurred at the serial interface.

Cause:

- First failure (e.g., due to EMC)
- Repetitive failure, e.g., due to faulty transmission path (e.g., defective line).

Remedy:

- Check transmission path.
- Clear error.
- Restart transmission.

F32 (142) "3964R Serial interface transmission error (Frame)"

C-0-0048: 142 A frame error has occurred at the serial interface.

Cause:

- Incorrectly set data rate, parity and so on.

Remedy:

- Set data transmission correct, also see "Host communication - control word" (C-0-0033).

F32 (143) "ARCNET - excessive bus reconfiguration"

C-0-0048: 143 The ARCNET bus connection has completely broken down.

Cause:

- The ARCNET bus connection has been interrupted.
- Strong EMC interference.

Remedy:

- - Check plug-in contacts for seating.
  - Ensure that the end resistors (93 Ω) are in at both bus ends.
- In a highly polluted EMC environment, use cable RG 71 (in lieu of RG 62).

F33 (150) "Communication via the fieldbus is impossible"

C-0-0048: 150 The fieldbus comunication task on the PPC could not be started successfully.

Cause:

- PPC internal error.

Remedy:

- Contact Indramat customer service.

F33 (151) "Fieldbus: Incorrect jumper setting on fieldbus board"

C-0-0048: 151 The jumper setting for the interrupt number and/or the address offset is not correct.

Remedy:

- Contact Indramat customer service.

F36 (36) "Local bus module - External power supply error. Slot-Nr: xx"

C-0-0048: 36 The local bus output module has galvanically separated outputs. For a proper operation of these outputs, an external voltage source must be applied. "xx" are the slot numbers 1 through 15.

Cause:

- The external voltage source is outside of the limits of $+19{,}5V < U_i < +31V$.

Remedy:

- Check external voltage source.

F40 (40) "PPC-link - link defective"

C-0-0048: 40 The link participant has detected an LWL break in the link ring.

Cause:

- Each DAQ monitors its optical inputs. With missing signals, an LWL break is detected.

Remedy:

- Check LED H17 and H18 on the DAQ (warped display, LWL break display).
- The LWL break is physically "before" that subscriber that signals this error.

F42 (42) "PPC-link - master position fault (MDT)"

C-0-0048: 42 The transmission of the master axis position by the link master to the link subscriber is experiencing problems.

Cause:

- Data transmission interference (bit error) link MDT of two sequential cycles is faulty.

Remedy:

- Check LED H17 (DAQ) and LWL, if necessary.

F43 (43) "PPC-link - master position fault (AT)"

C-0-0048: 43 The transmission of the master axis position by the link slave to the link master is experiencing interference.

The parameter "SYNAX - error source" (C-0-0046) contains the affected link address.

Only those master axis positions are monitored that are used in the own SYNAX200 ring.

Cause:

- Data transmission interference (bit error), link AT of a link slave of two sequential cycles is faulty.

Remedy:

- Check LED H17 (DAQ) and LWL, if necessary.

F44 (44) "PPC-link - selected link address not permitted"

C-0-0048: 44 In the case of the PPC link, the link address set on the DAQ may only range between 1 and 32.

Cause:

- In paramter C-0-0179 the default value is still 0.

Remedy:

- Change DAQ address.

F81 (81) "DAQ-board not correct (address-mapping)"

C-0-0048: 81 The "address-mapping" of hte DAQ has been changed. The available DAQ is not supported by the firmware any more.

Cause:

- DAQ with an old adress-mapping is used.

Remedy:

- Replace DAQ-board. DAQ-board with a new address-mapping is required.

F90 General procedure with this PPC display

This displays a series of errors that only occur in conjunction with the electronic pattern control.

The diagnosis parameters C-0-0046 through C-0-0048 supply more precise information about the nature of these errors.

F90 (200) "Pattern control serial interface overrun"

C-0-0048: 200 Overflow occurred at the serial interface to the electronic pattern control.

Remedy:

- Contact Indramat customer service.

F90 (201) "Pattern control serial interface parity error"

C-0-0048: 201 A parity error occurred at the serial interface to the electronic pattern control.

Cause:

- Defective line.
- Interference.

Remedy:

- Check the line.

F90 (202) "Pattern control serial interface frame error"

C-0-0048: 202 A frame error occurred at the serial interface to the electronic pattern control.

Cause:

- Incorrectly set data rate, parity and so on.

Remedy:

- Set data transmission correctly, see "pattern data - source" (C-0-0011).

F90 (203) "Pattern control data buffer overrun"

C-0-0048: 203 The internal data buffer on the PPC has overflowed.

Remedy:

- Contact Indramat customer service.

F90 (204) "Pattern data start byte faulty"

C-0-0048: 204

Remedy:

- Correct the pattern data.

F90 (205) "Pattern data undefined target position"

C-0-0048: 205

Remedy:

- Correct the pattern data.

F90 (206) "Pattern data error in number of axes"

C-0-0048: 206

Remedy:

- Correct the pattern data.

F90 (207) "Pattern data checksum error"

C-0-0048: 207 Over all of the data of a pattern data telegram, a longitudinal parity is generated. The parity does not agree with the parity received by the PPC.

Cause:

- Pattern computer has generated faulty parity.
- Transmission error.

F90 (208) "Pattern data not in order"

C-0-0048: 208

Remedy:

- Correct the pattern data.

F90 (209) "Pattern data positive pattern limit exceeded"

C-0-0048: 209 The value in the pattern data is greater than the value in "negative pattern limit" (A-0-0039).

Remedy:

- Correction in pattern computer.

F90 (210) "Pattern data negative pattern limit exceeded"

C-0-0048: 210 The value in the pattern data is greater than the value in "positive pattern limit" (A-0-0040).

Remedy:

- Correction in pattern computer.

F90 (211) "Pattern data limits between received target pos. exceeded"

C-0-0048: 211 The increment widths specified in the pattern data have exceeded the limits specifed in "pattern control - limits between received target positions" (A-0-0049).

Remedy:

- Correction in pattern computer.

F91 (91) "SERCOS interface - ASIC: initialization error"

C-0-0048: 91 The check of the SERCOS interface - ASIC produced an error.

Cause:

- The dual port RAM is defective.
- A time out error with a reset of the SERCOS interface - ASIC.

Remedy:

- Replace the PPC.

F92 (92) "PPC - DUAL PORT RAM error"

C-0-0048: 92 The check of the dual port RAM of the PPC generated an error.

Cause:

- The dual port RAM is defective.
- The PC wrote into the dual port RAM during the check.

Remedy:

- Replace the PPC.
- Change the PC program so that the PC cannot write during the dual port RAM test.

F93 (93) "DAQ: SERCOS interface - ASIC: initialization error"

C-0-0048: 93 Once the PPC/DAQ is switched on

- a software reset and
- a dual port ram test

are exected.

If one of these operations should fail, then this error is generated.

Cause:

- A hardware error occurred during the initialization of the DAQ.

Remedy:

- Replace DAQ.

F94 (94) "PPC hardware version incorrect"

C-0-0048: 94 The hardware identification on the PPC is wrong.

Cause:

- PPC hardware defective.

Remedy:

- Replace PPC card (hardware version higher or equal to 2.2).
- Contact Indramat customer service.
- PPC-card may have to be sent back to Indramat.

F95 (4000+x) "Operating system error"

C-0-0048: 4000+x An operating systems error has occurred in the PPC system.

Remedy:

- IMPORTANT: Note number (e.g., 4001).
- Contact Indramat customer service.

F97 (260) "SPS - firmware-version incompatible"

C-0-0048: 260 SYNAX200 is trying to detect an Indramat SPS during runup.

Cause:

- Firmware version of the PPC and that of the Indramat SPS are not compatible.

Remedy:

- Replace PPC and Indramat SPS firmware.

F97 (261) "SPS - cycle-counter is dead"

C-0-0048: 261 SYNAX200 is monitoring the cycle counter of a closed Indramat SPS.

Cause:

- The Indramat SPS is not running.

F97 (262) "SPS reports an error"

C-0-0048: 262 **Cause:**

- The closed Indramat SPS is signalling an error.

F98 (3000+y) "Drive error"

C-0-0048: 3000+y

Example: "Motor overtemperature":

An error has occurred in the drive. The diagnosis parameter (S-0-0095) of the relevant drive is copied into "SYNAX - diagnosis text" (C-0-0047). The "error message number" (P-0-0009) = y plus 3000 is copied into parameter "SYNAX - error number" (C-0-0048). The address of the drive is listed in parameter "SYNAX - error source" (C-0-0046).

Note: In parameter "SYNAX - diagnosis text" (C-0-0047) "drive error" will not be listed but rather, e.g., "motor overtemperature".

5 SYNAX200 Reference List

5.1 Referenced firmware

Control firmware

Product:	Product firmware (order designation):	Printed board firmware (Flash module labeling):
PPC-R	FWA-PPCR0*-SY*-08VRS-MS-XXXXXX	FWB-PSM01*-SY*-08VRS-MS
PPC-R + Interbus-Slave	FWA-PPCR0*-SY*-08VRS-MS-B2XXXX	FWB-PSM01*-SY*-08VRS-MS FWC-IBS03*-PHB-01VRS-NN
PPC-R + Profibus-Slave	FWA-PPCR0*-SY*-08VRS-MS-P2XXXX	FWB-PSM01*-SY*-08VRS-MS FWC-DPS01*-PHP-02VRS-NN
PPC-R + DeviceNet-Slave	FWA-PPCR0*-SY*-08VRS-MS-V2XXXX	FWB-PSM01*-SY*-08VRS-MS FWC-DNS01*-PHV-01VRS-NN
PPC-R + Ethernet	FWA-PPCR0*-SY*-08VRS-MS-T2XXXX	FWB-PSM01*-SY*-08VRS-MS FWC-ETH01*-PHT-01VRS-NN
PPC-R + Interbus-Slave + Ethernet	FWA-PPCR0*-SY*-08VRS-MS-B2T2XX	FWB-PSM01*-SY*-08VRS-MS FWC-IBS03*-PHB-01VRS-NN FWC-ETH01*-PHT-01VRS-NN
PPC-R + Profibus-Slave + Ethernet	FWA-PPCR0*-SY*-08VRS-MS-P2T2XX	FWB-PSM01*-SY*-08VRS-MS FWC-DPS01*-PHP-02VRS-NN FWC-ETH01*-PHT-01VRS-NN
PPC-R + DeviceNet-Slave + Ethernet	FWA-PPCR0*-SY*-08VRS-MS-V2T2XX	FWB-PSM01*-SY*-08VRS-MS FWC-DNS01*-PHV-01VRS-NN FWC-ETH01*-PHT-01VRS-NN

Fig. 5-1: Control firmware

SPS firmware/software

Product:	Product firmware (order designation):	Printed board firmware (Flash-module-/CD- labeling):
ISP200-R	FWA-MTSR0*-P07-03VRS-NN-NNNNNN	FWC-PLC07*-005-21VRS-NN
WinPCL-Software	SWA-WINPCL-P0*-03VRS-MS-CD650-WIN*NT	SWD-WINPCL-P0*-03VRS-MS-FILE*

Fig. 5-2: SPS Firmware/software

Drive firmware

Product:	Product firmware (order designation):	Printed board firmware (EPROM-/Flash-module- labeling):
Drive family DIAX03	FWA-DIAX03-ELS-05VRS-MS	FWC-DSM2.3-ELS-05VRS-MS
Drive family DIAX04	FWA-DIAX04-ELS-05VRS-MS	FWC-HSM1.1-ELS-05VRS-MS
Drive family Ecodrive03	FWA-ECODR3-SGP-01VRS-MS	FWC-ESM2.1-SGP-01VRS-MS
	FWA-ECODR3-SGP-03VRS-MS	FWC-ESM2.1-SGP-03VRS-MS

Fig. 5-3: Drive firmware

Firmware download

Product:	Product software (order designation):	CD labeling
DOLFI tool for download of firmware	SWA-DOL*PC-INB-01VRS-MS-C1,44-COPY	SWD-DOL*PC-INB-01VRS-MS-C1,44

Fig. 5-4: Firmware download

Commissioning interface

Product:	Product software (order designation):	CD labeling
User interface SynTop	SWA-SYNTOP-INB-06VRS-MS-CD650-COPY	SWD-SYNTOP-INB-06VRS-MS-CD650

Fig. 5-5: User Software

Note: The software with suffix -COPY may be copied.

5.2 System documentation

Control components

Order designation	Title:
DOK-SYNAX*-SY*-08V*1/2-FK01-EN-P	SYNAX200 - Functional Description
DOK-SYNAX*-SY*-08V*2/2-FK01-EN-P	SYNAX200 - Interfaces
DOK-SYNAX*-SY*-08VRS**-PA01-EN-P	SYNAX200 - Parameter Description
DOK-SYNAX*-SY*-08VRS**-PR01-EN-P	SYNAX200 - Project Planning
DOK-SYNAX*-SY*-08VRS**-WA01-EN-P	SYNAX200 - Trouble Shooting Guide
DOK-SYNAX*-SY*-08VRS**-FV01-EN-P	SYNAX200 - Versions Description
DOK-SYNAX*-SY*-08VRS**-4001-EN-P	SYNAX200 - Box 40-08V
SWD-SYNTOP-INB-06VRS-MS-CD650	General support for SYNAX version 08VRS
DOK-SYNAX*-WINPCL*3VRS-AW01-EN-P	Integration of the ISP with the system solution SYNAX - Application description
DOK-CONTRL-WINPCL*3VRS-AW01-EN-P	Programming Guide for WinPCL
DOK-CONTRL-PPC-R0*.2**-PR02-EN-P	PPC-R0*.2 - Project Planning Manual
DOK-CONTRL-MTS-R0*.2**-PR01-EN-P	RECO-SPS ISP200-R - Project Planning Manual
DOK-CONTRL-MTS-P0*.2**-PR01-EN-P	SPS-Modules MTS-P01.2 and MTS-P02.2 - Project Planning
DOK-CONTRL-RECO02.2***-PR01-EN-P	SERCOS I/O-Unit RECO02.2 - Configuration
DOK-CONTRL-RECO12.2***-PR02-EN-P	INTERBUS I/O-Unit RECO12.2 - Configuration
DOK-CONTRL-R-IL*INLINE-KB01-DE-P	RECO-Inline - Kurzbeschreibung
DOK-CONTRL-SM*12.1****-PRJ2-EN-P	Interbus Sensor-Actuator Boxes SM*12.1 in IP65 rating - Configuration

Fig. 5-6: Control components

Miniature control panels

Order designation	Title:
DOK-SUPPL*-BTV04.2****-FK01-EN-P	System 200 BTV04.2 - Description of functions
DOK-SUPPL*-BTV05.2****-FK02-EN-P	System 200 BTV05.2 - Functional Description
DOK-SUPPL*-BTV06.1****-PR01-EN-P	System 200 BTV06.1 - Project Planning Manual
DOK-SUPPL*-BTC06******-PR02-EN-P	System 200 BTC06 - Project Planning Manual
DOK-SUPPL*-SCM*BEDIEN*-AW03-EN-P	SCREENMANAGER for Small HMIs - Application Description
DOK-SUPPL*-SCM*PROG*V3-FK01-EN-P	SCREENMANAGER 03VRS - Functional Description

Fig. 5-7: Miniature control panels

Drive components

Order designation	Title:
DOK-DIAX03-DKR********-PR02-EN-P	DKR02, DKR03 and DKR04 Drive Controllers - Project Planning Manual
DOK-DIAX04-HDD+HDS**G2-PR03-EN-P	DIAX04 HDD and HDS Controllers 2nd Generation - Project Planning Manual
DOK-ECODR3-DKC**.3****-PR04-EN-P	ECODRIVE03 Drive controllers -Project Planning Manual
DOK-DIAX03-ELS-05VRS**-5001-EN-P	DIAX03 - Box 50-05V
DOK-DIAX04-ELS-05VRS**-6002-EN-P	DIAX04 - Box 60-05V
DOK-ECODR3-SGP-01VRS**-7201-EN-P	ECODRIVE03 - Box 72-01V
DOK-GENERL-DRIVEHELP**-GN07-MS-D0600	Drive Help

Fig. 5-8: Drive components

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7 Service & Support

7.1 Helpdesk

Unser Kundendienst-Helpdesk im Hauptwerk Lohr am Main steht Ihnen mit Rat und Tat zur Seite. Sie erreichen uns

- telefonisch: **+49 (0) 9352 40 50 60**
  über Service Call Entry Center Mo-Fr 07:00-18:00
- per Fax: **+49 (0) 9352 40 49 41**
- per e-Mail: **service@indramat.de**

Our service helpdesk at our headquarters in Lohr am Main, Germany can assist you in all kinds of inquiries. Contact us

- by phone: **+49 (0) 9352 40 50 60**
  via Service Call Entry Center Mo-Fr 7:00 am - 6:00 pm
- by fax: **+49 (0) 9352 40 49 41**
- by e-mail: **service@indramat.de**

7.2 Service-Hotline

Außerhalb der Helpdesk-Zeiten ist der Service direkt ansprechbar unter

+49 (0) 171 333 88 26
oder **+49 (0) 172 660 04 06**

After helpdesk hours, contact our service department directly at

+49 (0) 171 333 88 26
or **+49 (0) 172 660 04 06**

7.3 Internet

Weitere Hinweise zu Service, Reparatur und Training finden Sie im Internet unter

www.indramat.de

Außerhalb Deutschlands nehmen Sie bitte zuerst Kontakt mit Ihrem lokalen Ansprechpartner auf. Die Adressen sind im Anhang aufgeführt.

- Verkaufsniederlassungen
- Niederlassungen mit Kundendienst

Additional notes about service, repairs and training are available on the Internet at

www.indramat.de

Please contact the sales & service offices in your area first. Refer to the addresses on the following pages.

- sales agencies
- offices providing service

7.4 Vor der Kontaktaufnahme... - Before contacting us...

Wir können Ihnen schnell und effizient helfen wenn Sie folgende Informationen bereithalten:

1. detaillierte Beschreibung der Störung und der Umstände.
2. Angaben auf dem Typenschild der betreffenden Produkte, insbesondere Typenschlüssel und Seriennummern.
3. Tel.-/Faxnummern und e-Mail-Adresse, unter denen Sie für Rückfragen zu erreichen sind.

For quick and efficient help, please have the following information ready:

1. Detailed description of the failure and circumstances.
2. Information on the type plate of the affected products, especially type codes and serial numbers.
3. Your phone/fax numbers and e-mail address, so we can contact you in case of questions.

7.5 Kundenbetreuungsstellen - Sales & Service Facilities

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