

Catálogos

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# Rexroth IndraDrive

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## Troubleshooting Guide



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# 1 Basics on Device Diagnosis

## 1.1 Diagnostic System

### Coded Diagnostic Drive Messages

#### Brief Description

The drive provides a diagnostic system including different possibilities that are basically divided into two groups:

- recognizing and displaying the current drive status by means of drive-internal, priority-dependent generation of diagnostic messages
- collective messages for diverse status messages

Additionally, there are parameters for all important operating data the values of which can be transmitted both via master communication (e.g. SERCOS) and a parameterization interface (RS-232/485 in the ASCII protocol or SIS protocol; see "Serial Communication").

#### Pertinent Parameters

- **S-0-0030, Manufacturer version**
- **S-0-0095, Diagnostic message**
- **S-0-0140, Controller type**
- **S-0-0142, Application type**
- **S-0-0375, List of diagnostic numbers**
- **S-0-0390, Diagnostic message number**
- **P-0-0009, Error number**
- **P-0-0478, Logbook event**
- **P-0-0479, Logbook time stamp**

#### Drive-Internal Generation of Diagnostic Messages

Operating states, activities and reactions of the drive controller are detected by drive-internal generation of diagnostic messages and appear in coded form on the display of the control panel. In addition, these diagnostic messages can be transmitted to the master (control unit or commissioning software, e.g. DriveTop).

The following categories of diagnostic messages are differentiated (kinds of diagnostic messages):

- errors
- warnings
- commands/command errors
- status displays/operating states

Generally, the current diagnostic message with the highest priority is displayed or stored at the following locations in the drive:

- **Display of the control panel**

The diagnostic message number appears on the 8-digit display of the standard control panel.

- **S-0-0095, Diagnostic message**

This parameter contains the operating status of the drive at present relevant in the form of a plain text. Preceding the text is the respective content of parameter S-0-0390.

- **S-0-0390, Diagnostic message number**

The diagnostic message number shown on the display is stored in this parameter.

When a diagnostic message of the "error" category occurs, the corresponding diagnostic message number is stored in the **P-0-0009, Error number** parameter. When there isn't any error present, the value of parameter P-0-0009 equals zero.

In the **S-0-0375, List of diagnostic numbers** parameter the last 50 diagnostic message numbers of parameter S-0-0390 are recorded in chronological order. When reading this list, the number of the diagnostic message that last occurred is displayed as parameter element 1.

**Priorities of Display** The following priorities apply for displaying the current diagnostic message:

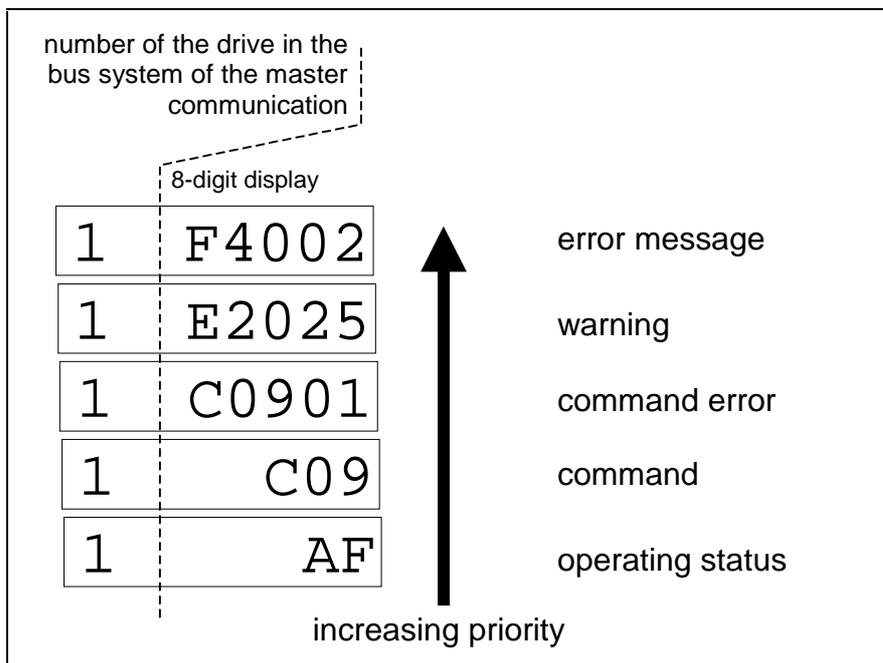


Fig. 1-1: Priorities of displays (with example displays)

An overview of all diagnostic messages and their meanings is included in the documentation "Troubleshooting Guide" (description of diagnostic messages).

### Structure of a Diagnostic Message

Every diagnostic message consists of

- diagnostic message number and
- diagnostic text.

The diagnostic message for the non-fatal error "Excessive deviation", for example, has the following structure:

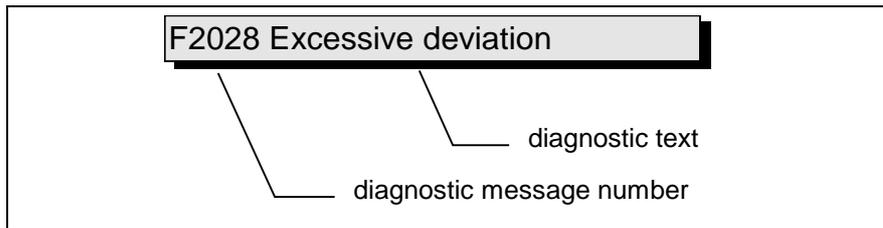


Fig. 1-2: Structure of a diagnostic message

"F2028" flashes on the display of the control panel. The diagnostic message number is contained in the **S-0-0390, Diagnostic message number** parameter in hexadecimal form (for this example: 0x00F2028). The diagnostic message number and the diagnostic text are contained as string **F2028 Excessive deviation** in the **S-0-0095, Diagnostic message** parameter. "2028" (dec) is written to the **P-0-0009, Error number** parameter because it is an error diagnosis.

### Diagnostic Message on the Control Panel Display

The diagnostic message number appears on the 8-digit display of the standard control panel. This allows recognizing the current operating status of the drive quickly and without using a communication interface.

As a matter of principle, the following applies:

- status displays (P0, Ab, AF ...) are displayed in right-aligned form
- warnings, command errors and other error messages are flashing

Kind of diagnostic message	Diagnostic message number	Display
error	F2xxx	F2xxx
command	C0200	C02
command error	C02xx	C02xx
warning	E2xxx	E2xxx
communication phase e.g. communication phase 1	A0001	P1
drive ready for operation	A0012	Ab
operating mode e.g. velocity control	A0101	AF

Fig. 1-3: Overview of diagnostic messages displayed

The current operating mode is not shown on the display. When the drive follows the preset operating mode and no command was activated, the display reads "AF".

### Diagnostic Messages in Plain Text

The diagnostic message in plain text contains the diagnostic message number followed by the diagnostic text. It can be read via the **S-0-0095, Diagnostic message** parameter and directly displayed on an operator interface as a language-dependent description of the drive status.

The diagnostic message in plain text is switched to the selected language via the **S-0-0265, Language selection** parameter.

### Diagnostic Message Number

The diagnostic message number contains only the diagnostic number without the diagnostic text. It can be read with the **S-0-0390, Diagnostic**

**message number** parameter and is a language-independent possibility of determining and displaying the drive status on an operator interface.

### Error Number

The error number contains only the error number without the diagnostic text. It can be read with the **P-0-0009, Error number** parameter and is a language-independent possibility of determining and displaying an error condition on an operator interface. This parameter only contains a value unequal zero when an error is present in the drive.

The error number is generated from the lowest 4 digits of the diagnostic message number. For example, the **F2028 Excessive deviation** error with the diagnostic message number "(0x)F2028" would produce the error number "2028."

### List of Diagnostic Numbers

The last 50 diagnostic message numbers displayed are stored in chronological order in the **S-0-0375, List of diagnostic numbers** parameter. Every change in the content of **S-0-0390, Diagnostic message number** means that the old content is transferred to S-0-0375. When reading S-0-0375 the last transferred diagnostic message number appears in the first element of the parameter, the diagnostic message number transferred before from S-0-0390 in the second element etc.

### Language Selection

Via parameter **S-0-0265, Language selection** it is possible to define or switch the language of diagnostic message texts.

## Status Classes, Status Displays, Control Parameters

In the drive there are many parameters with important status information (bit lists). Some of the bits contained in these lists can be used for configuring real-time status bits and additionally can be assigned to digital outputs or to the configurable signal status word.

See "Digital Inputs/Outputs" in chapter "Extended Drive Functions" and "Configurable Signal Status Word" in chapter "Master Communication"

### Status Classes

#### Brief Description

The drive differentiates between 3 states (error, warning and message) for which there is status information. To make the status information available there are so-called status class parameters (S-0-0011, S-0-0012, S-0-0013) that contain the respective status bits.

In addition to these status class parameters there are change bits contained in the status word of the field bus (e.g. S-0-0135 in the case of SERCOS) that display changes in one of the above-mentioned status class parameters (collective information).

- Features**
- status class parameter for **errors** (cf. S-0-0011)
  - status class parameter for **warnings** (cf. S-0-0012)
  - status class parameter for **messages** (cf. S-0-0013)
  - **change bits in status word** of master communication (e.g. S-0-0135 in the case of SERCOS)
  - **change bits** of class 2 and 3 diagnostics (S-0-0097 and S-0-0098) **can be masked** in status word of master communication (e.g. S-0-0135 in the case of SERCOS) to suppress individual bits or status messages

- Pertinent Parameters**
- **S-0-0011, Class 1 diagnostics**
  - **S-0-0012, Class 2 diagnostics**
  - **S-0-0013, Class 3 diagnostics**
  - **S-0-0097, Mask class 2 diagnostics**
  - **S-0-0098, Mask class 3 diagnostics**
  - **S-0-0135, Drive status word**

#### Functional Description

- Status Class Parameters**
- **S-0-0011, Class 1 diagnostics** (status parameter for drive errors)
    - In case a drive error occurs, the bit assigned to the error is set in parameter S-0-0011. A separate bit is assigned in S-0-0011 to errors defined according to SERCOS. Manufacturer-specific errors cause bit 15 to be set in S-0-0011.
    - In case a drive error occurs, bit 13 (drive interlock; error in class 1 diagnostics) is simultaneously set in the status word of the field bus (S-0-0135 in the case of SERCOS).

---

**Note:** All bits in class 1 diagnostics are cleared by executing the command **C0500** (reset class 1 diagnostics).  
See also Parameter Description "**S-0-0099, C0500 Reset class 1 diagnostics**"

---

- **S-0-0012, Class 2 diagnostics** (status parameter for drive warnings)
  - In case a drive warning occurs, the bit assigned to the warning is set in parameter S-0-0012. A separate bit is assigned in S-0-0012 to warnings defined according to SERCOS. Manufacturer-specific warnings cause bit 15 to be set in S-0-0012.
  - In case a drive warning occurs, bit 12 (change bit class 2 diagnostics) is simultaneously set in the status word of the field bus (S-0-0135 in the case of SERCOS) when the content of S-0-0012 changes (i.e. at least one bit toggles).
  - The bits in parameter S-0-0012 are automatically cleared when the warning disappears. The change bit in the status word of the master communication (S-0-0135 in the case of SERCOS) remains set, however, until parameter S-0-0012 has been read once.

---

**Note:** Via parameter **S-0-0097, Mask class 2 diagnostics** warnings can be masked in terms of their effect on the change bit.

---

- **S-0-0013, Class 3 diagnostics** (status parameter for drive messages)
  - Messages of the drive are listed in parameter S-0-0013. A separate bit is assigned in S-0-0013 to messages defined according to SERCOS.
  - In the case of a drive message, bit 11 (change bit class 3 diagnostics) is simultaneously set in the status word of the field bus (S-0-0135 in the case of SERCOS).

---

**Note:** Each of these messages is stored in a separate parameter (S-0-0330 to S-0-0342).

---

- The bits in parameter S-0-0013 are automatically cleared when the message disappears. The change bit in the status word of the

master communication (S-0-0135 in the case of SERCOS) remains set, however, until parameter S-0-0013 has at least been read once.

#### Change Bits in Drive Status Word

If the status of a bit in **S-0-0012, Class 2 diagnostics** or **S-0-0013, Class 3 diagnostics** changes, the change bit for class 2 or 3 diagnostics is set in the field bus status word (e.g. S-0-0135 in the case of SERCOS). A change bit in the status word (bit 11 or 12) is always set due to a change of the parameter content of S-0-0012 or S-0-0013. This enables the master to recognize very quickly whether a change occurred in S-0-0012 or S-0-0013.

A read access to one of the two parameters clears the respective change bit again.

#### Masking the Change Bit

By means of the parameters **S-0-0097, Mask class 2 diagnostics** and **S-0-0098, Mask class 3 diagnostics** it is possible to mask out certain bits in terms of their effect on the change bit of the status word (bit 12 or bit 11).

The figure below illustrates the principle of masking by means of an example:

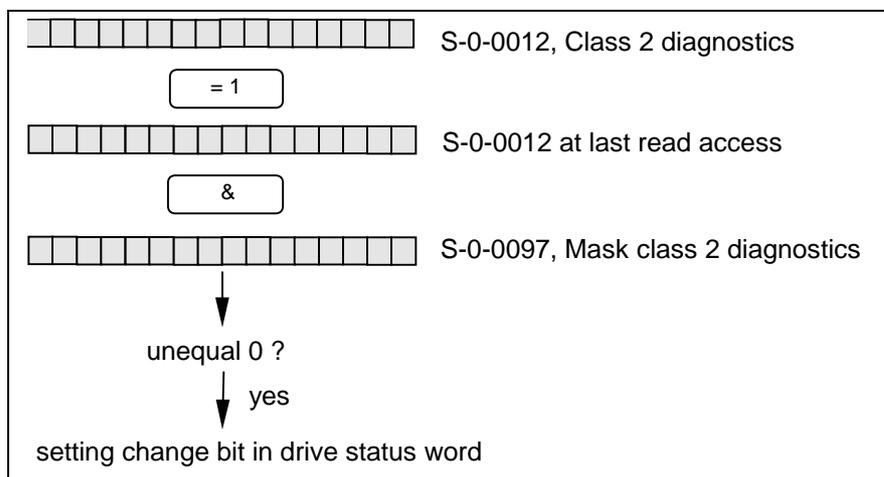


Fig. 1-4: Generating the change bit of class 2 diagnostics

#### Notes on Commissioning

The figure below illustrates the handling of the change bits in the status word and of the status class parameters:

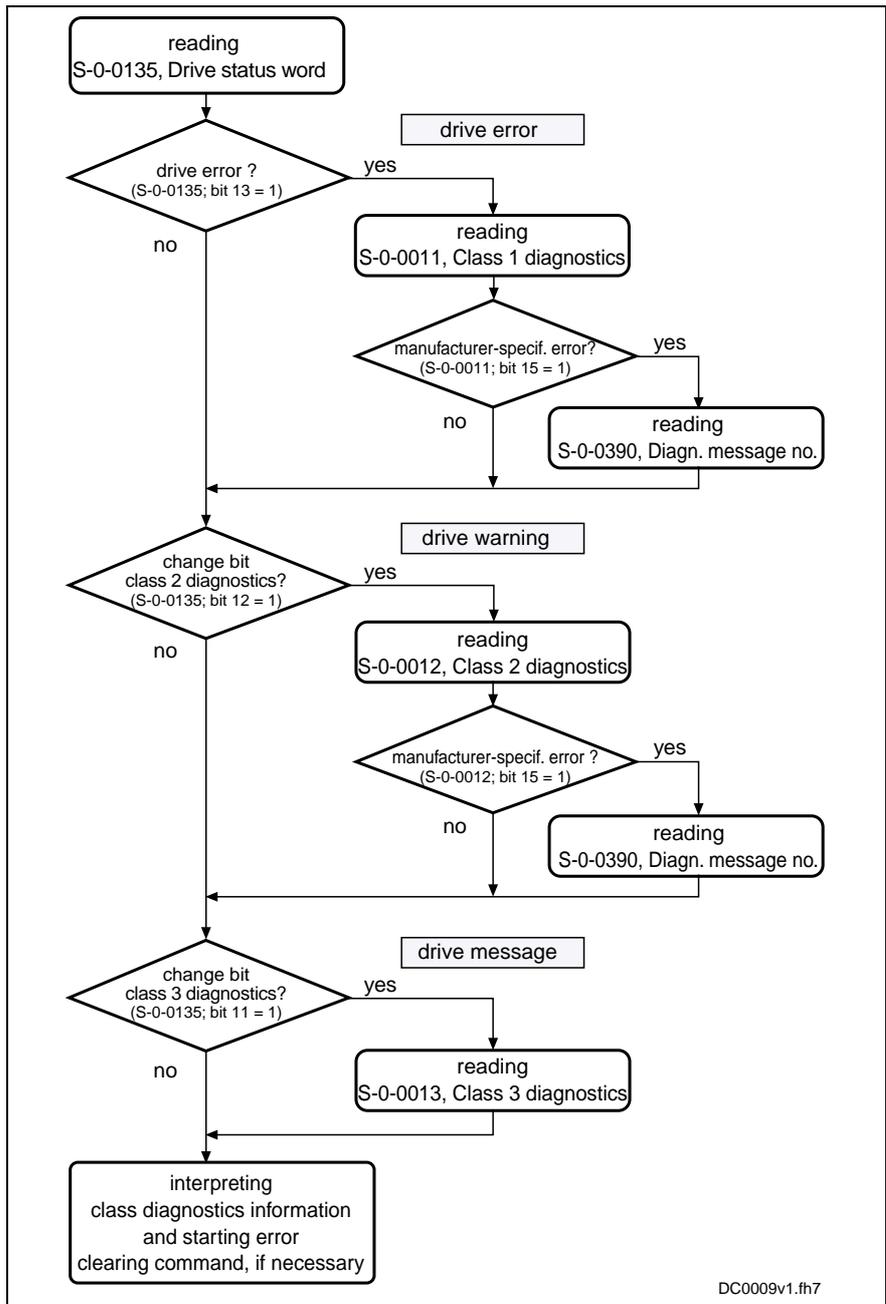


Fig. 1-5: Handling the change bits and status class parameters

### Fixed Status Displays

#### Function-Related Status Parameters

In the drive there are parameters the content of which has a direct relation to the status of the sequence of different drive functions. These parameters are used to display the current status information of the assigned function.

The following parameters are available for function-related status display:

- **S-0-0014, Interface status**  
This parameter displays the status of the communication phase transition and the cyclic communication.
- **S-0-0135, Drive status word**  
This is the status word of the master communication (SERCOS) and contains all essential status information for the master.
- **S-0-0403, Position feedback value status**  
This parameter contains status bits for the position data reference of the individual measuring systems.
- **S-0-0419, Positioning command acknowledge**  
This status information is used for acknowledgment in the "drive-controlled positioning" mode.
- **P-0-0046, Status word of current controller**  
This parameter contains status bits of the internal motor control (e.g. overvoltage in DC bus).
- **P-0-0115, Status word of system control**  
This parameter contains status bits of device control (see also "Device Control").
- **P-0-0188, Status word positioning generator**  
This parameter contains status bits for the positioning behavior of the drive (e.g. "In target position").
- **P-0-0222, Travel range limit inputs**  
This parameter displays the status of the travel range limit switch inputs (see also "Travel Range Limit Switches").
- **P-0-0223, E-Stop input**  
This parameter displays the status of the E-Stop input (see also "E-Stop Function").
- **P-0-0445, Status word torque/current limit**  
This parameter contains status bits to display the activation of torque/current limitation (see also "Torque/Current Limit").
- **P-0-0539, Holding brake status word**  
This parameter contains status bits for the status of the motor holding brake (see also "Motor Holding Brake").
- **P-0-0555, Controller status word**  
This parameter displays messages with regard to velocity and limits that have been reached.
- **P-0-4029, SCSB diagnostics**  
Parameter for reading master communication settings and states (with SERCOS interface).
- **P-0-4086, Master communication status**  
This parameter displays control information of the master communication for handling phase switch, drive enable etc., defined during initialization.

#### Status Parameters for Real-Time Status Bits

The following list contains status parameters that only contain one bit and can therefore be used for configuring real-time status bits (see "Master Communication: SERCOS interface"):

- **S-0-0330, Message 'n\_actual = n\_command'**
- **S-0-0331, Status 'n\_feedback = 0'**
- **S-0-0332, Message 'nactual < nx'**
- **S-0-0333, Message 'T >= Tx'**
- **S-0-0334, Message 'T >= Tlimit'**
- **S-0-0335, Message 'n command > n limit'**

- **S-0-0336, Message In position**
- **S-0-0337, Message 'P >= Px'**
- **S-0-0341, In-Position coarse message**
- **S-0-0342, Target position reached**
- **S-0-0343, Status "Interpolator halted"**
- **S-0-0409, Probe 1 positive latched**
- **S-0-0410, Probe 1 negative latched**
- **S-0-0411, Probe 2 positive latched**
- **S-0-0412, Probe 2 negative latched**

### **Control Parameters**

Apart from the parameters for status display, there are parameters available in the drive that are used to control the drive functions (see also corresponding parameter description):

- **P-0-0045, Control word of current controller**
- **P-0-0427, Control parameter of analog output**
- **P-0-0522, Commutation setting control word**
- **P-0-0556, Control word of axis controller**
- **P-0-0612, Control word for setting absolute measuring**
- **P-0-4028, Device control word**

## **1.2 Control Panel of the IndraDrive Controllers**

### **Brief Description**

The standard design of IndraDrive controllers includes a control panel with an 8-digit display and four buttons located underneath it.

The display shows operating states, command and error diagnoses, as well as present warnings.

Using the four buttons, the commissioning engineer or service technician can opt to display extended diagnostic messages at the drive controller and to activate simple commands (in addition to master communication using the commissioning tool or NC control unit).

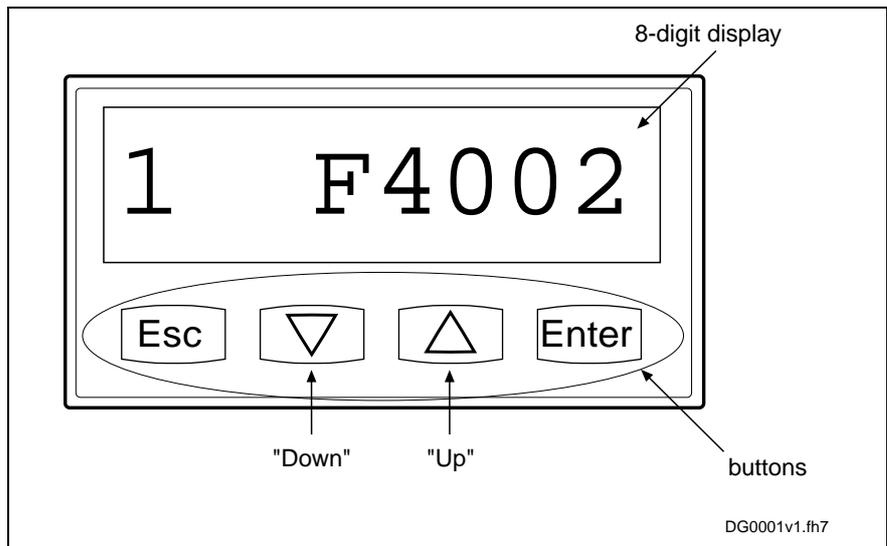


Fig. 1-6: Standard control panel with display and control elements (example of display)

## Functional Description

**Standard Displays** The display of the IndraDrive controller automatically shows:

- status of the master communication
- operating status
- activated commands and command diagnoses
- warnings and error diagnoses

The displays have priorities because it is impossible to have various displays at the same time.

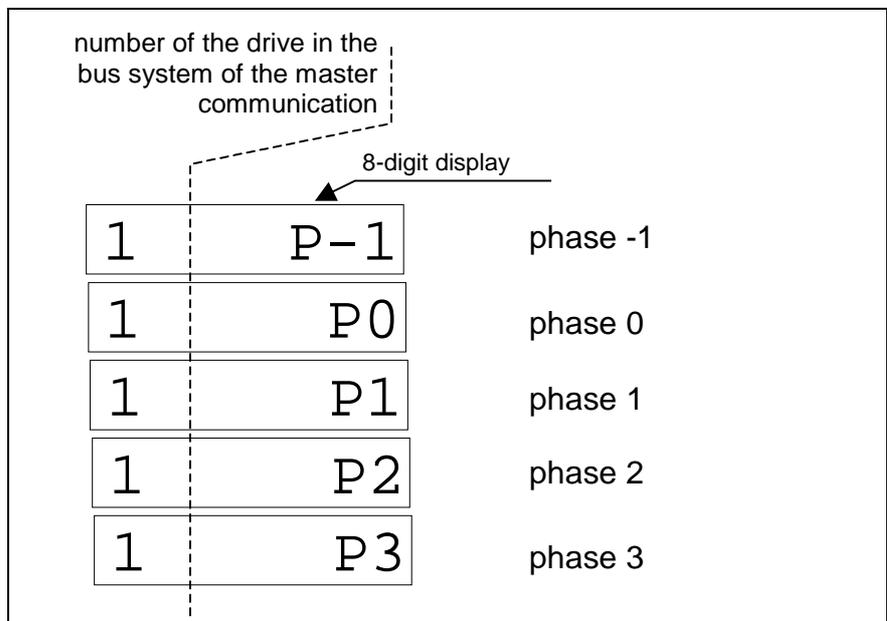


Fig. 1-7: Displays during phase progression of the master communication

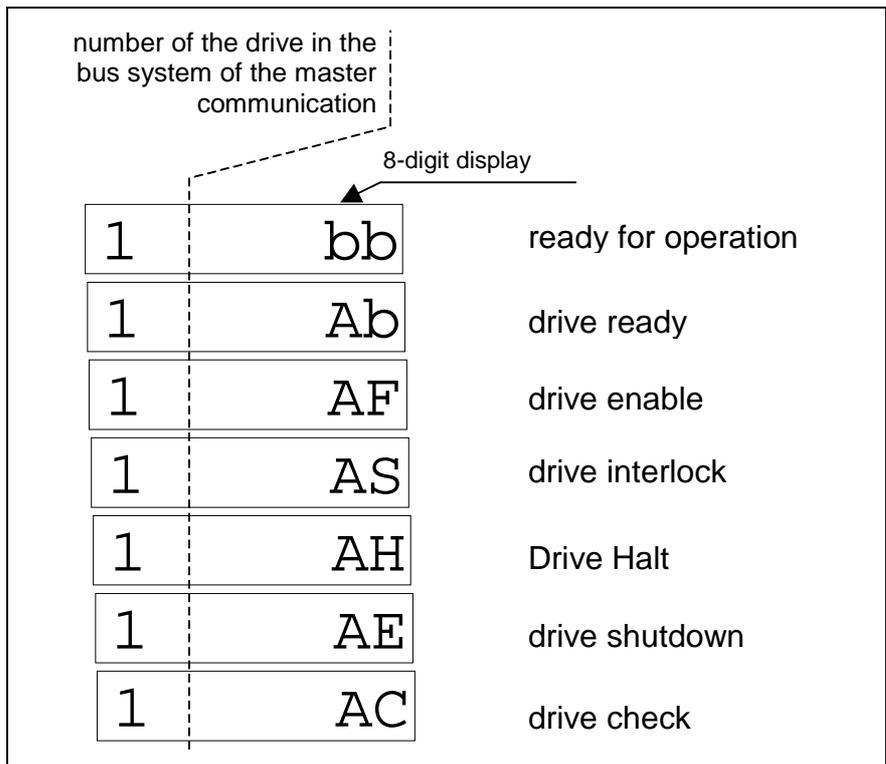


Fig. 1-8: Operating status displays

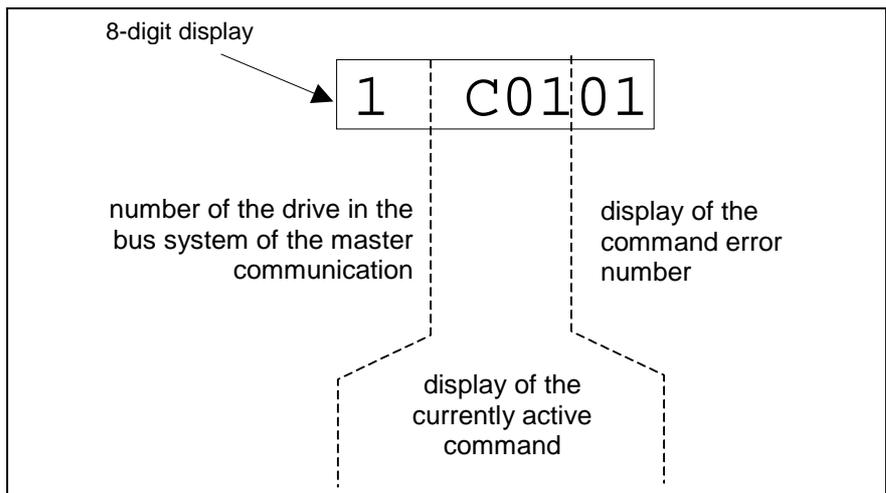


Fig. 1-9: Explanation of command error displays

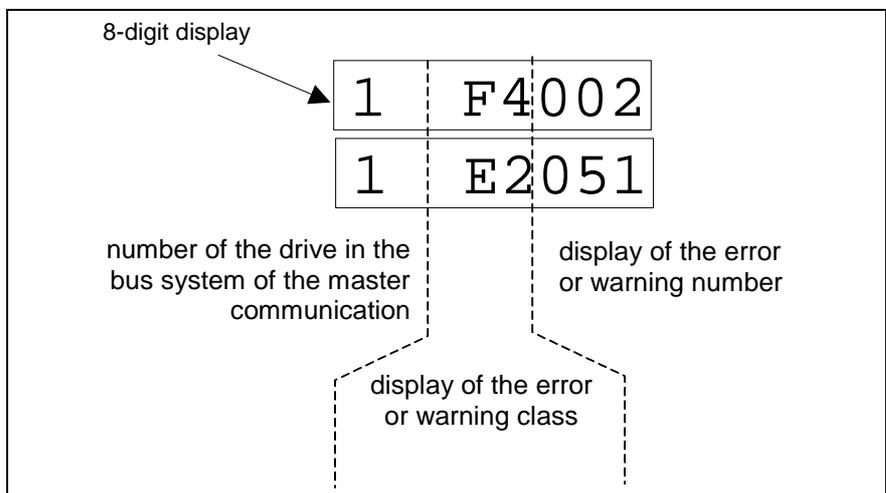


Fig. 1-10: Explanation of error and warning displays

**Priorities of Display** The current drive status is displayed with highest priority.

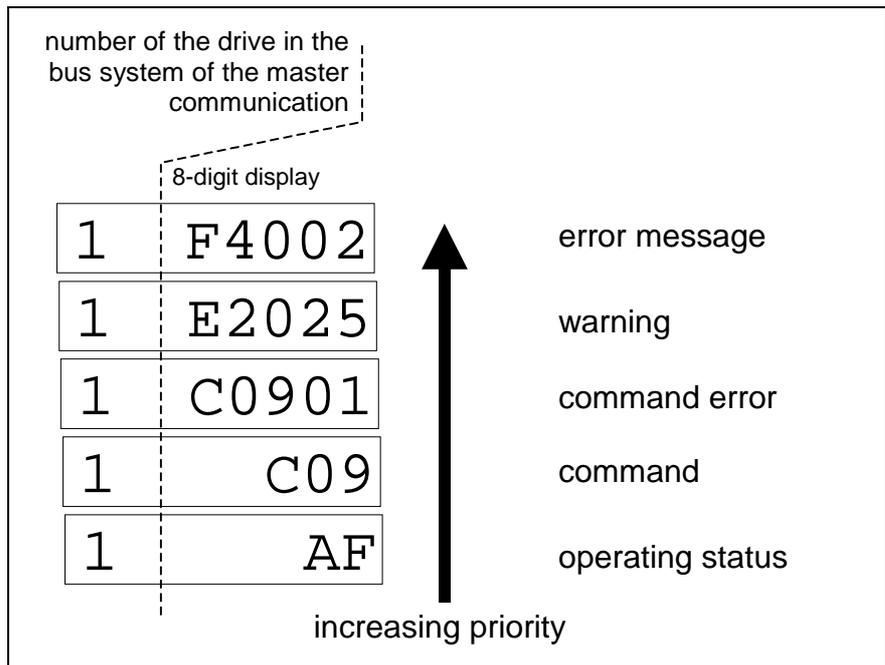


Fig. 1-11: Priority of displays with examples

**Activating Extended Display and Command Input**

By simultaneously pressing the "Enter" and "Esc" buttons (for 8 s!) you can call up extended displays; subsequently pressing the "Up" button activates the command input.

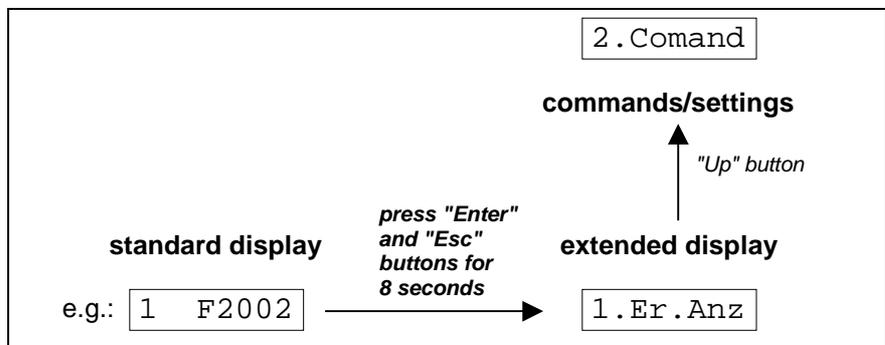


Fig. 1-12: Activating the extended display and the command input

**Extended Displays** By means of the extended displays it is possible to additionally call up the contents of certain parameters:

- error memory
- diagnostic message memory
- operating hours counter control section
- operating hours counter power section
- type designation of the firmware active in the device
- safety technology code, if safety technology option available

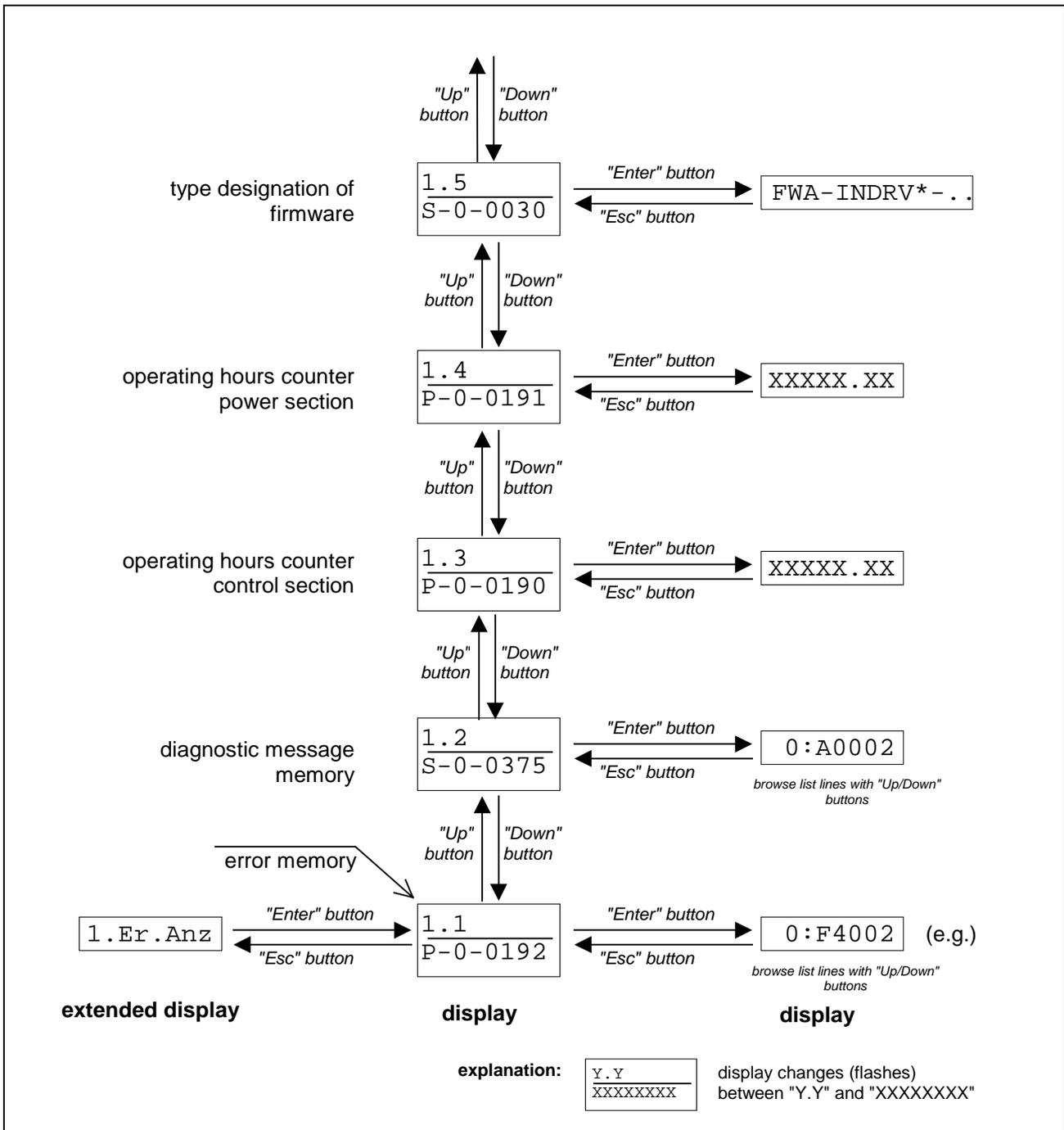


Fig. 1-13: Activating the extended display

For more details on diagnostic messages, error messages and operating hours counters see the respective chapters of the present documentation.

- Command Inputs** Starting from the extended display it is possible to activate commands and make settings:
- set the drive address (drive number in the bus system of the master communication)
  - set the length of the fiber optic cable
  - activate the "analog mode" master communication
  - C07\_x load defaults procedure command (loading controller parameters resp. base parameters)
  - other commands like
    - **C2200 Backup working memory procedure command**
    - **C2300 Load working memory command**
    - **C2500 Copy IDN from optional memory to internal memory**
    - **C2600 Copy IDN from internal memory to optional memory**
    - **C2900 Firmware update from MMC**

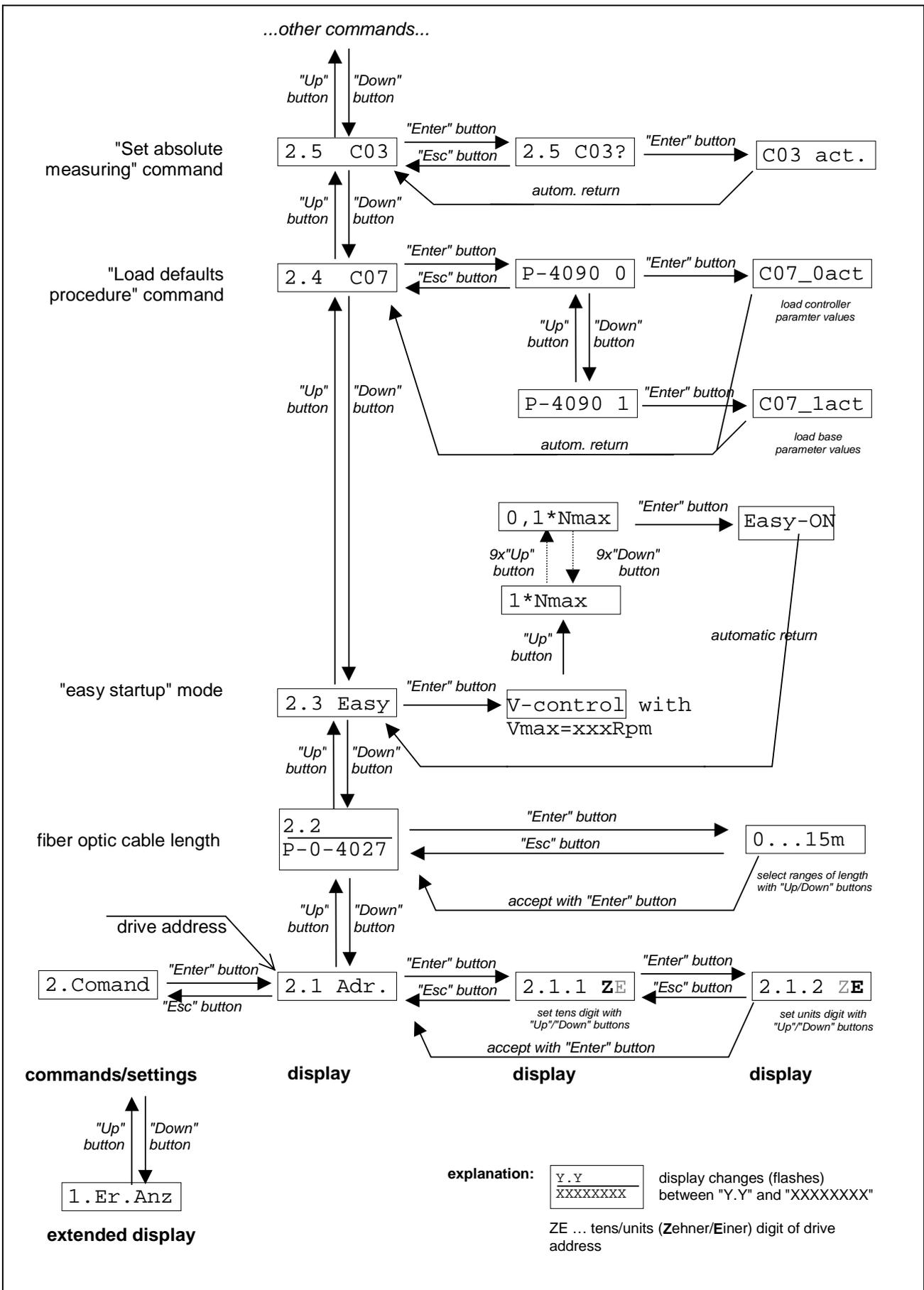


Fig. 1-14: Activating settings and commands that can be accessed via the control panel

## Notes on Commissioning



**CAUTION**

**Property damage caused by command-dependent activation of motors and moving elements!**

⇒ Bring axis resp. moving parts in safe initial position; limit travel range and drive power!

**Note:** By pressing the "Esc" button again the standard display will reappear.

**Note:** The input via the buttons is polled in an 8 ms-cycle, the display is updated in an 8 ms-cycle, too.

## 1.3 Extended Diagnostic Possibilities

The firmware provides further possibilities of diagnosis. For the description please see the Functional Description of the Firmware.

## 1.4 Kinds of Diagnostic Messages

### Error

Depending on the operating mode that is used and some parameter settings, the drive controller carries out monitoring functions. An error message is generated by the drive controller, if a status is detected that no longer allows correct operation.

**Error Classes** Errors can be divided into several error classes. The error class is represented by the first two digits of the diagnostic message number.

**Drive Error Reaction** If the drive controller is in control (drive enable was set) and an error occurs, the drive controller automatically starts a drive error reaction.

The reaction to errors of certain classes can be influenced by the **P-0-0119, Best possible deceleration** parameter.

At the end of each error reaction, the drive is torque-free.

Diagnostic message number	Error class	Drive reaction
F2xxx	non-fatal error	as set in <b>P-0-0119, Best possible deceleration</b>
F3xxx	non-fatal safety technology error	as set in <b>P-0-0119, Best possible deceleration</b>
F4xxx	interface error	as set in <b>P-0-0119, Best possible deceleration</b>
F6xxx	travel range error	speed command value reset
F7xxx	safety technology error	<b>Closed Loop:</b> speed command value reset <b>Open Loop:</b> deceleration under compliance with <b>P-0-0569, Maximum stator frequency change</b>
F8xxx	fatal error	torque disable
F9xxx and E-xxxx	fatal system error	torque disable

Fig. 1-15: Error classes and drive reaction

**Clearing Errors**

Errors are not automatically cleared; they have to be cleared by:

- the control unit by activating the **S-0-0099, C0500 Reset class 1 diagnostics** command or
- by the user via the control panel

---

**Note:** Some errors can only be cleared in communication phase 2.

---

If the error status persists the drive controller generates the error message again.

**Booting and Firmware Download Errors**


---

**Note:** Apart from the mentioned error classes that can occur during operation, errors can occur when the devices are booted and during firmware download. These errors are not displayed at the control panel with a diagnostic message number of the "Fxxx" pattern, but with a short text. Booting and firmware download errors are described separately.

---

**Warnings**

While in operation the drive controller carries out monitoring functions. Some monitoring functions depend on the operating mode that is used and/or parameter settings. If a status is detected that still allows correct operation but persists, which would then cause an error to be generated, a warning is generated.

---

**Note:** Some warnings won't result in an error if they are ignored.

---

**Warning Classes** Warnings can be divided into two classes:

- without drive reaction (E1xxx ..E7xxx)
- with drive reaction (E8xxx)

Warnings cannot be cleared externally.

## Commands

Commands are used to control complex functions in the drive. The command execution is displayed in a diagnostic message.

By means of the respective parameter that is assigned to the command, a higher-level control unit can start, interrupt and clear commands. In addition, some selected commands can be directly started via the control panel of the drive controller.

There are 3 command types:

**Drive Control Commands** Drive control commands can only be started when drive enable was set. They might possibly cause automatic drive motion and deactivate the active operating mode during its execution.

**Monitoring Commands** Executing monitoring commands activates or deactivates monitors and functions.

**Administration Commands** Administration commands execute administration tasks. They cannot be interrupted.

---

**Note:** Command errors are displayed with a diagnostic message, too. By means of the first three digits (Cxx) of the diagnostic message number it is possible to recognize which command caused the command error.

---

## States/Operating States

The diagnostic status messages display the phases of communication build-up and initialization (boot phase), operating states or the currently active operating mode.

---

**Note:** In the case of some diagnostic status messages the diagnostic message number contained in parameter **S-0-0390, Diagnostic message number** differs from the display at the drive controller (see also "Operating States").

---

## 2 Important directions for use

### 2.1 Appropriate use

#### Introduction

Rexroth products represent state-of-the-art developments and manufacturing. They are tested prior to delivery to ensure operating safety and reliability.

The products may only be used in the manner that is defined as appropriate. If they are used in an inappropriate manner, then situations can develop that may lead to property damage or injury to personnel.

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**Note:** Bosch Rexroth, as manufacturer, is not liable for any damages resulting from inappropriate use. In such cases, the guarantee and the right to payment of damages resulting from inappropriate use are forfeited. The user alone carries all responsibility of the risks.

---

Before using Rexroth products, make sure that all the pre-requisites for an appropriate use of the products are satisfied:

- Personnel that in any way, shape or form uses our products must first read and understand the relevant safety instructions and be familiar with appropriate use.
- If the product takes the form of hardware, then they must remain in their original state, in other words, no structural changes are permitted. It is not permitted to decompile software products or alter source codes.
- Do not mount damaged or faulty products or use them in operation.
- Make sure that the products have been installed in the manner described in the relevant documentation.

## Areas of use and application

Drive controllers made by Bosch Rexroth are designed to control electrical motors and monitor their operation.

Control and monitoring of the motors may require additional sensors and actors.

---

**Note:** The drive controllers may only be used with the accessories and parts specified in this document. If a component has not been specifically named, then it may not be either mounted or connected. The same applies to cables and lines.

Operation is only permitted in the specified configurations and combinations of components using the software and firmware as specified in the relevant function descriptions.

---

Every drive controller has to be programmed before starting it up, making it possible for the motor to execute the specific functions of an application.

The drive controllers of the IndraDrive family are designed for use in single or multiple-axis drive and control applications.

To ensure an application-specific use, the drive controllers are available with differing drive power and different interfaces.

Typical applications of drive controllers belonging to the IndraDrive family are:

- handling and mounting systems,
- packaging and foodstuff machines,
- printing and paper processing machines and
- machine tools.

The drive controllers may only be operated under the assembly, installation and ambient conditions as described here (temperature, system of protection, humidity, EMC requirements, etc.) and in the position specified.

## 2.2 Inappropriate use

Using the drive controllers outside of the above-referenced areas of application or under operating conditions other than described in the document and the technical data specified is defined as "inappropriate use".

Drive controllers may not be used if

- they are subject to operating conditions that do not meet the above specified ambient conditions. This includes, for example, operation under water, in the case of extreme temperature fluctuations or extremely high maximum temperatures or if
- Rexroth has not specifically released them for that intended purpose. Please note the specifications outlined in the general safety instructions!

### 3 Safety Instructions for Electric Drives and Controls

#### 3.1 Introduction

Read these instructions before the initial startup of the equipment in order to eliminate the risk of bodily harm or material damage. Follow these safety instructions at all times.

Do not attempt to install or start up this equipment without first reading all documentation provided with the product. Read and understand these safety instructions and all user documentation of the equipment prior to working with the equipment at any time. If you do not have the user documentation for your equipment, contact your local Bosch Rexroth representative to send this documentation immediately to the person or persons responsible for the safe operation of this equipment.

If the equipment is resold, rented or transferred or passed on to others, then these safety instructions must be delivered with the equipment.



**Improper use of this equipment, failure to follow the safety instructions in this document or tampering with the product, including disabling of safety devices, may result in material damage, bodily harm, electric shock or even death!**

#### 3.2 Explanations

The safety instructions describe the following degrees of hazard seriousness in compliance with ANSI Z535. The degree of hazard seriousness informs about the consequences resulting from non-compliance with the safety instructions.

Warning symbol with signal word	Degree of hazard seriousness according to ANSI
	Death or severe bodily harm will occur.
	Death or severe bodily harm may occur.
	Bodily harm or material damage may occur.

Fig. 3-1: Hazard classification (according to ANSI Z535)

### 3.3 Hazards by Improper Use



**DANGER**

**High voltage and high discharge current!  
Danger to life or severe bodily harm by electric shock!**



**DANGER**

**Dangerous movements! Danger to life, severe bodily harm or material damage by unintentional motor movements!**



**WARNING**

**High electrical voltage due to wrong connections! Danger to life or bodily harm by electric shock!**



**WARNING**

**Health hazard for persons with heart pacemakers, metal implants and hearing aids in proximity to electrical equipment!**



**CAUTION**

**Surface of machine housing could be extremely hot! Danger of injury! Danger of burns!**



**CAUTION**

**Risk of injury due to improper handling! Bodily harm caused by crushing, shearing, cutting and mechanical shock or incorrect handling of pressurized systems!**



**CAUTION**

**Risk of injury due to incorrect handling of batteries!**

## 3.4 General Information

- Bosch Rexroth AG is not liable for damages resulting from failure to observe the warnings provided in this documentation.
- Read the operating, maintenance and safety instructions in your language before starting up the machine. If you find that you cannot completely understand the documentation for your product, please ask your supplier to clarify.
- Proper and correct transport, storage, assembly and installation as well as care in operation and maintenance are prerequisites for optimal and safe operation of this equipment.
- Only persons who are trained and qualified for the use and operation of the equipment may work on this equipment or within its proximity.
  - The persons are qualified if they have sufficient knowledge of the assembly, installation and operation of the equipment as well as an understanding of all warnings and precautionary measures noted in these instructions.
  - Furthermore, they must be trained, instructed and qualified to switch electrical circuits and equipment on and off in accordance with technical safety regulations, to ground them and to mark them according to the requirements of safe work practices. They must have adequate safety equipment and be trained in first aid.
- Only use spare parts and accessories approved by the manufacturer.
- Follow all safety regulations and requirements for the specific application as practiced in the country of use.
- The equipment is designed for installation in industrial machinery.
- The ambient conditions given in the product documentation must be observed.
- Use only safety features and applications that are clearly and explicitly approved in the Project Planning Manual.

For example, the following areas of use are not permitted: construction cranes, elevators used for people or freight, devices and vehicles to transport people, medical applications, refinery plants, transport of hazardous goods, nuclear applications, applications sensitive to high frequency, mining, food processing, control of protection equipment (also in a machine).
- The information given in the documentation of the product with regard to the use of the delivered components contains only examples of applications and suggestions.

The machine and installation manufacturer must

  - make sure that the delivered components are suited for his individual application and check the information given in this documentation with regard to the use of the components,
  - make sure that his application complies with the applicable safety regulations and standards and carry out the required measures, modifications and complements.
- Startup of the delivered components is only permitted once it is sure that the machine or installation in which they are installed complies with the national regulations, safety specifications and standards of the application.

- Operation is only permitted if the national EMC regulations for the application are met.  
The instructions for installation in accordance with EMC requirements can be found in the documentation "EMC in Drive and Control Systems".  
The machine or installation manufacturer is responsible for compliance with the limiting values as prescribed in the national regulations.
- Technical data, connections and operational conditions are specified in the product documentation and must be followed at all times.

## 3.5 Protection Against Contact with Electrical Parts

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**Note:** This section refers to equipment and drive components with voltages above 50 Volts.

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Touching live parts with voltages of 50 Volts and more with bare hands or conductive tools or touching ungrounded housings can be dangerous and cause electric shock. In order to operate electrical equipment, certain parts must unavoidably have dangerous voltages applied to them.

---



**DANGER**

### High electrical voltage! Danger to life, severe bodily harm by electric shock!

- ⇒ Only those trained and qualified to work with or on electrical equipment are permitted to operate, maintain or repair this equipment.
  - ⇒ Follow general construction and safety regulations when working on high voltage installations.
  - ⇒ Before switching on power the ground wire must be permanently connected to all electrical units according to the connection diagram.
  - ⇒ Do not operate electrical equipment at any time, even for brief measurements or tests, if the ground wire is not permanently connected to the points of the components provided for this purpose.
  - ⇒ Before working with electrical parts with voltage higher than 50 V, the equipment must be disconnected from the mains voltage or power supply. Make sure the equipment cannot be switched on again unintended.
  - ⇒ The following should be observed with electrical drive and filter components:
    - ⇒ Wait five (5) minutes after switching off power to allow capacitors to discharge before beginning to work. Measure the voltage on the capacitors before beginning to work to make sure that the equipment is safe to touch.
    - ⇒ Never touch the electrical connection points of a component while power is turned on.
    - ⇒ Install the covers and guards provided with the equipment properly before switching the equipment on. Prevent contact with live parts at any time.
    - ⇒ A residual-current-operated protective device (RCD) must not be used on electric drives! Indirect contact must be prevented by other means, for example, by an overcurrent protective device.
    - ⇒ Electrical components with exposed live parts and uncovered high voltage terminals must be installed in a protective housing, for example, in a control cabinet.
-

To be observed with electrical drive and filter components:



**DANGER**

**High electrical voltage on the housing!  
High leakage current! Danger to life, danger of  
injury by electric shock!**

- ⇒ Connect the electrical equipment, the housings of all electrical units and motors permanently with the safety conductor at the ground points before power is switched on. Look at the connection diagram. This is even necessary for brief tests.
- ⇒ Connect the safety conductor of the electrical equipment always permanently and firmly to the supply mains. Leakage current exceeds 3.5 mA in normal operation.
- ⇒ Use a copper conductor with at least 10 mm<sup>2</sup> cross section over its entire course for this safety conductor connection!
- ⇒ Prior to startups, even for brief tests, always connect the protective conductor or connect with ground wire. Otherwise, high voltages can occur on the housing that lead to electric shock.

### 3.6 Protection Against Electric Shock by Protective Low Voltage (PELV)

All connections and terminals with voltages between 0 and 50 Volts on Rexroth products are protective low voltages designed in accordance with international standards on electrical safety.



**WARNING**

**High electrical voltage due to wrong  
connections! Danger to life, bodily harm by  
electric shock!**

- ⇒ Only connect equipment, electrical components and cables of the protective low voltage type (PELV = Protective Extra Low Voltage) to all terminals and clamps with voltages of 0 to 50 Volts.
- ⇒ Only electrical circuits may be connected which are safely isolated against high voltage circuits. Safe isolation is achieved, for example, with an isolating transformer, an opto-electronic coupler or when battery-operated.

### 3.7 Protection Against Dangerous Movements

Dangerous movements can be caused by faulty control of the connected motors. Some common examples are:

- improper or wrong wiring of cable connections
- incorrect operation of the equipment components
- wrong input of parameters before operation
- malfunction of sensors, encoders and monitoring devices
- defective components
- software or firmware errors

Dangerous movements can occur immediately after equipment is switched on or even after an unspecified time of trouble-free operation.

The monitoring in the drive components will normally be sufficient to avoid faulty operation in the connected drives. Regarding personal safety, especially the danger of bodily injury and material damage, this alone cannot be relied upon to ensure complete safety. Until the integrated monitoring functions become effective, it must be assumed in any case that faulty drive movements will occur. The extent of faulty drive movements depends upon the type of control and the state of operation.

**DANGER**

**Dangerous movements! Danger to life, risk of injury, severe bodily harm or material damage!**

- ⇒ Ensure personal safety by means of qualified and tested higher-level monitoring devices or measures integrated in the installation. Unintended machine motion is possible if monitoring devices are disabled, bypassed or not activated.
- ⇒ Pay attention to unintended machine motion or other malfunction in any mode of operation.
  
- ⇒ Keep free and clear of the machine's range of motion and moving parts. Possible measures to prevent people from accidentally entering the machine's range of motion:
  - use safety fences
  - use safety guards
  - use protective coverings
  - install light curtains or light barriers
- ⇒ Fences and coverings must be strong enough to resist maximum possible momentum, especially if there is a possibility of loose parts flying off.
- ⇒ Mount the emergency stop switch in the immediate reach of the operator. Verify that the emergency stop works before startup. Don't operate the machine if the emergency stop is not working.
- ⇒ Isolate the drive power connection by means of an emergency stop circuit or use a starting lockout to prevent unintentional start.
- ⇒ Make sure that the drives are brought to a safe standstill before accessing or entering the danger zone. Safe standstill can be achieved by switching off the power supply contactor or by safe mechanical locking of moving parts.
- ⇒ Secure vertical axes against falling or dropping after switching off the motor power by, for example:
  - mechanically securing the vertical axes
  - adding an external braking/ arrester/ clamping mechanism
  - ensuring sufficient equilibration of the vertical axes

The standard equipment motor brake or an external brake controlled directly by the drive controller are not sufficient to guarantee personal safety!

- ⇒ Disconnect electrical power to the equipment using a master switch and secure the switch against reconnection for:
    - maintenance and repair work
    - cleaning of equipment
    - long periods of discontinued equipment use
  - ⇒ Prevent the operation of high-frequency, remote control and radio equipment near electronics circuits and supply leads. If the use of such equipment cannot be avoided, verify the system and the installation for possible malfunctions in all possible positions of normal use before initial startup. If necessary, perform a special electromagnetic compatibility (EMC) test on the installation.
- 

### 3.8 Protection Against Magnetic and Electromagnetic Fields During Operation and Mounting

Magnetic and electromagnetic fields generated near current-carrying conductors and permanent magnets in motors represent a serious health hazard to persons with heart pacemakers, metal implants and hearing aids.

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**WARNING**

#### **Health hazard for persons with heart pacemakers, metal implants and hearing aids in proximity to electrical equipment!**

- ⇒ Persons with heart pacemakers, hearing aids and metal implants are not permitted to enter the following areas:
    - Areas in which electrical equipment and parts are mounted, being operated or started up.
    - Areas in which parts of motors with permanent magnets are being stored, operated, repaired or mounted.
  - ⇒ If it is necessary for a person with a heart pacemaker to enter such an area, then a doctor must be consulted prior to doing so. Heart pacemakers that are already implanted or will be implanted in the future, have a considerable variation in their electrical noise immunity. Therefore there are no rules with general validity.
  - ⇒ Persons with hearing aids, metal implants or metal pieces must consult a doctor before they enter the areas described above. Otherwise, health hazards will occur.
-

### 3.9 Protection Against Contact with Hot Parts



CAUTION

**Housing surfaces could be extremely hot!  
Danger of injury! Danger of burns!**

- ⇒ Do not touch housing surfaces near sources of heat! Danger of burns!
- ⇒ After switching the equipment off, wait at least ten (10) minutes to allow it to cool down before touching it.
- ⇒ Do not touch hot parts of the equipment, such as housings with integrated heat sinks and resistors. Danger of burns!

### 3.10 Protection During Handling and Mounting

Under certain conditions, incorrect handling and mounting of parts and components may cause injuries.



CAUTION

**Risk of injury by incorrect handling! Bodily harm caused by crushing, shearing, cutting and mechanical shock!**

- ⇒ Observe general installation and safety instructions with regard to handling and mounting.
- ⇒ Use appropriate mounting and transport equipment.
- ⇒ Take precautions to avoid pinching and crushing.
- ⇒ Use only appropriate tools. If specified by the product documentation, special tools must be used.
- ⇒ Use lifting devices and tools correctly and safely.
- ⇒ For safe protection wear appropriate protective clothing, e.g. safety glasses, safety shoes and safety gloves.
- ⇒ Never stand under suspended loads.
- ⇒ Clean up liquids from the floor immediately to prevent slipping.

### 3.11 Battery Safety

Batteries contain reactive chemicals in a solid housing. Inappropriate handling may result in injuries or material damage.



#### Risk of injury by incorrect handling!

- ⇒ Do not attempt to reactivate discharged batteries by heating or other methods (danger of explosion and cauterization).
- ⇒ Never charge non-chargeable batteries (danger of leakage and explosion).
- ⇒ Never throw batteries into a fire.
- ⇒ Do not dismantle batteries.
- ⇒ Do not damage electrical components installed in the equipment.

**Note:** Be aware of environmental protection and disposal! The batteries contained in the product should be considered as hazardous material for land, air and sea transport in the sense of the legal requirements (danger of explosion). Dispose batteries separately from other waste. Observe the legal requirements in the country of installation.

### 3.12 Protection Against Pressurized Systems

Certain motors and drive controllers, corresponding to the information in the respective Project Planning Manual, must be provided with pressurized media, such as compressed air, hydraulic oil, cooling fluid and cooling lubricant supplied by external systems. Incorrect handling of the supply and connections of pressurized systems can lead to injuries or accidents. In these cases, improper handling of external supply systems, supply lines or connections can cause injuries or material damage.



#### Danger of injury by incorrect handling of pressurized systems !

- ⇒ Do not attempt to disassemble, to open or to cut a pressurized system (danger of explosion).
- ⇒ Observe the operation instructions of the respective manufacturer.
- ⇒ Before disassembling pressurized systems, release pressure and drain off the fluid or gas.
- ⇒ Use suitable protective clothing (for example safety glasses, safety shoes and safety gloves)
- ⇒ Remove any fluid that has leaked out onto the floor immediately.

**Note:** Environmental protection and disposal! The media used in the operation of the pressurized system equipment may not be environmentally compatible. Media that are damaging the environment must be disposed separately from normal waste. Observe the legal requirements in the country of installation.

## Notes

## 4 Diagnostic Messages when Booting the Devices

### 4.1 Devices with Valid Firmware

When a valid firmware is available in the control section, the texts

*BOOT1.1*

*BOOT1.2*

*BOOT1.3*

are displayed on the control section display after the control voltage is switched on ("booting"). The controller first goes through the boot phases in which the basic initialization of the processor takes place.

In the following boot phases the basic initialization of the hardware configuration, the peripherals, the parameters, the master communication etc. takes place:

*BOOT2.1*

*BOOT2.2*

...

*BOOT2.9*

Finally, the initialization results are controlled. If initialization errors occurred they are output via the display. After initialization without errors the controller goes through the communication phases and, where required, switches to "ready for operation" ("bb"):

*BOOT3.0*

*BOOT3.1*

### 4.2 Devices without Valid Firmware

In case the device does not detect valid firmware, neither in the non-volatile memory (flash) nor in the MultiMediaCard (MMC), the so-called "loader" is started. The "loader" is an auxiliary program used to load firmware to the flash memory. When the "loader" is activated the controller goes through several initialization phases:

*LOAD1*

*LOAD2*

*LOAD3*

*LOAD4*

The *LOADER* display signals that the auxiliary program for loading ("download") firmware is ready for operation.

## 4.3 Error Messages when Booting the Devices

### PLC ?

**Brief Description:** PLC start dialog

Before "Boot 2.9" was displayed on the control panel the buttons "ESC" and "ENTER" had been simultaneously pressed and kept pressed on the control panel.

As the functional package "Motion Logic" (drive PLC and technology functions) has been enabled, the display reads "PLC ?". The automatic start of a PLC boot project was prevented.

By pressing the arrow buttons (arrow down or arrow up) the display changes between "Run PLC" and "Stop PLC".

### Stop PLC

**Brief Description:** Do not start PLC after booting

Pressing the "ENTER" button on the control panel prevents the start of a PLC boot project.

### Run PLC

**Brief Description:** Start PLC after booting

When the "ENTER" button is pressed on the control panel, the drive PLC and a possibly available boot project are started after the booting process.

### No IDN on MMC !

**Brief Description:** MMC was not formatted correctly

#### Cause

Content of MMC is incorrect. Parameter (\*.pbf) or retain file (\*.rbf) is missing

MMC was not formatted correctly

#### Remedy

Switch drive off and plug in MMC with correct content

Switch drive off and plug in appropriate MMC

– or –

Switch drive off and format MMC again on PC and plug it in again

## Load new Param. ?

**Brief Description:** MMC plugged, changed or removed => different parameter file

### Cause

Active, non-volatile memory (**P-0-4065, Non-volatile memory active**) has changed while drive was switched off, because

- an MMC was plugged (before switching drive off, device-internal memory had been active) or
- MultiMediaCard (MMC) was replaced (other MMC was active) or
- MMC was removed (before switching drive off, MMC was active)

### Remedy

Confirm diagnostic message with "ENTER" and start loading of new parameters

– or –

Switch drive off and insert active, non-volatile memory again that was used before drive was switched off, by either plugging in MMC / old MMC or removing MMC again (device-internal memory was active). Then switch drive on again

## End C29

**Brief Description:** Command C29 successfully completed

The command **C2900 Command Firmware update from MMC** was successfully completed. The firmware was copied from the MultiMediaCard (MMC) to the drive-internal memory.

## MMC not correct!

**Brief Description:** MMC incorrectly formatted

### Cause

MMC was not formatted correctly

No IBF file or several IBF files on MMC

No appropriate parameter file and retain data file on MMC

### Remedy

Switch drive off and plug in appropriate MMC

– or –

Switch drive off and format MMC again on PC and plug it in again

Switch drive off and plug in appropriate MMC

Switch drive off and plug in appropriate MMC

## IBF not correct!

**Brief Description:** Content of IBF file not correct

### Cause

IBF file on MMC is not okay

### Remedy

Switch drive off and install MMC with appropriate IBF file in drive

– or –

On PC copy appropriate IBF file to MMC

## Firmware update ?

**Brief Description:** Different firmware in device and on MMC

During the booting process with the MMC plugged in, a check is run by means of the release version to find out whether the firmware (FW) on the flash is identical to the one on the MMC.

### Cause

---

Check showed that firmware on flash and on MMC are not identical

### Remedy

---

Switch drive off and install MMC in drive with the same release version as on flash

– or –

Confirm diagnostic message with "ENTER" and start firmware update

## Update Error !

**Brief Description:** Firmware update error during booting process

### Cause

---

Firmware update was not carried out correctly

### Remedy

---

Reboot device and start firmware update

– or –

Switch drive off, remove MMC and carry out firmware update on PC via auxiliary program "Dolfi"

## 5 Operating States

In the following, the possible operating states are listed in alphabetical order. The operating states are displayed on the control panel of the device:

### Ab

"drive ready" (Antrieb bereit)

see also: **A0012 Control and power sections ready for operation**

### AC

see also: **A0400 Automatic drive check and adjustment**

### AE

see also: **A0401 Drive deceleration to standstill**

### AF

"drive enable" (Antrieb Freigabe)

Depending on the operating mode used you can find a detailed description of the "AF" display under the respective diagnostic status message.

### AH

"Drive Halt" (Antrieb Halt)

see also: **A0010 Drive HALT**

### AS

see also: **A0011 Starting lockout active**

### ASP

see also: **A0014 Drive interlock active**

### AU

see also: **A0402 Drive in automatic mode**

### bb

"ready for operation" (betriebsbereit)

see also: **A0013 Ready for power on**

**charg**

see also: **A0503 DC bus charging active**

**LB**

see also: **A0500 Supply module in voltage control** resp. **A0503 Supply module in operation**

**P0**

"Phase 0" (only with SERCOS master communication)

see also: **A0000 Communication phase 0**

**P-1**

"Phase -1"

see also: **A0009 Automatic baud rate detection for SERCOS Interface**

**P1**

"Phase 1"

see also: **A0001 Communication phase 1**

**P2**

"Phase 2"

see also: **A0002 Communication phase 2**

**P3**

"Phase 3"

see also: **A0003 Communication phase 3**

**PL**

"parameter load with basic values"

see also: **F2009 PL Load parameter default values**

**RL**

see also: **F2008 RL The motor type has changed**

**SBB**

see also: **A0017 Special mode motion active**

**SBH**

see also: **A0016 Safety related operational stop active**

**SH**

see also: **A0015 Safety related standstill active**

## ZKS

see also: **A0520 DC bus quick discharge active**



## 6 Status Diagnostic Messages

### A0000 Communication phase 0

<b>Supported by Firmware Variant:</b>	FWA-INDRV*- <b>MPH02</b> VRS-MS FWA-INDRV*- <b>MPB02</b> VRS-MS FWA-INDRV*- <b>MPD02</b> VRS-MS
<b>Supported by Supply Unit:</b>	<b>HMV01</b>

The communication between master and slaves via SERCOS interface is established in four communication phases:

The communication phases 0 and 1 are used to recognize the bus nodes. In the communication phase 2 the time and data build-up of the protocols are prepared for the communication phases 3 and 4.

The phase progression takes place in ascending order. The communication phase is set by the master. Switching to communication phase 4 completes the initialization and allows power input.

If the phase progression is interrupted, the status display remains in the communication phase that has been reached.

When the **A0000 Communication phase 0** diagnostic message is active the drive is in phase 0 and waits for the master's phase switch from communication phase 0 to 1.

During the communication phase 0 the control panel of the drive reads "P0".

#### A0000 - Attributes

<b>Display:</b>	P0
<b>Mess. no.:</b>	A0000 (hex)

## A0001 Communication phase 1

<b>Supported by Firmware Variant:</b>	FWA-INDRV*- <b>MPH02</b> VRS-MS FWA-INDRV*- <b>MPB02</b> VRS-MS FWA-INDRV*- <b>MPD02</b> VRS-MS
<b>Supported by Supply Unit:</b>	<b>HMV01</b>

The communication between master and slaves via SERCOS interface is established in four communication phases:

The communication phases 0 and 1 are used to recognize the bus nodes. In the communication phase 2 the time and data build-up of the protocols are prepared for the communication phases 3 and 4.

The phase progression takes place in ascending order. The communication phase is set by the master. Switching to communication phase 4 completes the initialization and allows power input.

If the phase progression is interrupted, the status display remains in the communication phase that has been reached.

When the **A0001 Communication phase 1** diagnostic message is active the drive is in phase 1, the master has not yet activated the phase switch from phase 1 to 2.

During the communication phase 1 the control panel of the drive reads "P1".

### A0001 - Attributes

<b>Display:</b>	P1
<b>Mess. no.:</b>	A0001 (hex)

## A0002 Communication phase 2

<b>Supported by Firmware Variant:</b>	FWA-INDRV*- <b>MPH02</b> VRS-MS FWA-INDRV*- <b>MPB02</b> VRS-MS FWA-INDRV*- <b>MPD02</b> VRS-MS
<b>Supported by Supply Unit:</b>	<b>HMV01</b>

Communication phase 2 means that the drive is in the parameterization mode. In this mode many parameters can be written that cannot be written any more in communication phase 4 (operating mode).

In communication phase 2

- the communication parameters are usually transmitted from the master to the drive (in the case of field bus and SERCOS devices) and
- the "Load drive parameters" and "Save drive parameters" ("file service") functions are carried out, if required.

During the communication phase 2 the control panel of the drive reads "P2".

In order to get to communication phase 2 the master, in the case of drives with field bus and SERCOS interfaces, sets "communication phase 2" via the master communication interface. Another possibility to switch to communication phase 2 is to execute the **P-0-4023, C0400 Communication phase 2 transition** command.

### Communication Phase 3

Before it is possible to switch to communication phase 3 it is necessary to execute the **S-0-0127, C0100 Communication phase 3 transition check** command. Among other things the drive, during the transition check, checks the parameters required for communication phase 3 for validity.

After successful execution of the transition check command the master switches the drive to communication phase 3 (in the case of field bus and SERCOS devices) or the drive automatically switches to phase 3 at the end of the transition check command.

### A0002 - Attributes

<b>Display:</b>	P2
<b>Mess. no.:</b>	A0002 (hex)

## A0003 Communication phase 3

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

Communication phase 3 means that the drive is in the **restricted** parameterization mode. In this mode, as in the parameterization mode (phase 2), many parameters can still be written that cannot be written any more in communication phase 4 (operating mode). Communication parameters cannot be written in phase 3.

During the communication phase 3 the control panel of the drive reads "P3".

In order to get to communication phase 3 the master, in the case of drives with field bus and SERCOS interfaces, sets "communication phase 3" via the master communication interface. Another possibility to switch to communication phase 3 is to execute the **S-0-0127, C0100 Communication phase 3 transition check** command.

### Communication Phase 4

Before it is possible to switch to communication phase 4 it is necessary to execute the **S-0-0128, C0200 Communication phase 4 transition check** command. Among other things the drive, during the transition check, checks the parameters required for communication phase 4 for validity.

After successful execution of the transition check command the master switches the drive to communication phase 4 (in the case of field bus and SERCOS devices) or the drive automatically switches to phase 4 at the end of the transition check command.

### A0003 - Attributes

**Display:** P3  
**Mess. no.:** A0003 (hex)

## A0009 Automatic baud rate detection for SERCOS interface

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The communication between master and slaves via SERCOS interface is established in four communication phases:

The communication phases 0 and 1 are used to recognize the bus nodes. In the communication phase 2 the time and data build-up of the protocols are prepared for the communication phases 3 and 4.

The phase progression takes place in ascending order. The communication phase is set by the master. Switching to communication phase 4 completes the initialization and allows power input.

If the phase progression is interrupted, the status display remains in the communication phase that has been reached.

If the **A0009 Automatic baud rate detection for SERCOS interface** diagnostic message is active, the drive is in phase 0 - 1, the progression to phase 0 is carried out at the moment when the correct baud rate is detected.

During the **A0009 Automatic baud rate detection for SERCOS interface** diagnostic message the control panel of the drive reads "P-1".

### A0009 - Attributes

**Display:** P -1  
**Mess. no.:** A0009 (hex)

## A0010 Drive HALT

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The Drive HALT function is activated by the master via the master communication interface by clearing the Drive HALT bit in the **S-0-0134, Master control word** parameter or by interrupting a drive control command (e.g. Drive controlled homing procedure).

When the Drive HALT function is active the control panel of the drive reads "AH".

The Drive HALT function is used to shut down an axis with defined acceleration and defined jerk.

In the case of **speed control** and **torque control** the drive is shut down by means of velocity command value reset with maximum torque.

See also Functional Description "The Functional Principle of Drive Halt"

### A0010 - Attributes

**Display:** AH  
**Mess. no.:** A0010 (hex)

## A0011 Starting lockout active

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

As an option, certain digital drive controllers can be equipped with a drive interlock. The drive interlock prevents the unintended start of a servo axis. This is realized by separating the electronic control system of the power output stage from the power output stage by means of a relay contact.

When the drive interlock is active the control panel of the drive reads "AS".

See also Project Planning Manual Control Section, keyword "Drive interlock"

### A0011 - Attributes

**Display:** AS  
**Mess. no.:** A0011 (hex)

## A0012 Control and power sections ready for operation

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

**For HMS, HMD, HCS** The **A0012 Control and power sections ready for operation** diagnostic message signals that the drive is provided with control voltage and the power has been switched on. The drive is ready for power output.

---

**Note:** This status is displayed on the control panel of the drive with "Ab" ("**A**ntrieb **b**ereit" = Drive ready).

---

**For HMV** The diagnostic message **A0012 Control and power sections ready for operation** signals that the supply unit is ready for switching in the mains contactor.

---

**Note:** This status is displayed on the control panel of the device with "Bb" ("**b**etriebs**b**ereit" = ready for operation).

---

### A0012 - Attributes

**Display:** Ab  
**Mess. no.:** A0012 (hex)

## A0013 Ready for power on

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The **A0013 Ready for power on** diagnostic message signals that the drive is provided with control voltage and that there isn't any error present in the drive.

The drive is ready for power on.

---

**Note:** This status is displayed on the control panel of the drive with "bb" ("**b**etriebs**b**ereit" = ready for operation).

---

### A0013 - Attributes

**Display:** bb  
**Mess. no.:** A0013 (hex)

## A0014 Drive interlock active

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the "special mode standstill". The active safety function is "safety related drive interlock".

---

**Note:** If the safety function "safety related drive interlock" is active, this is displayed on the control panel of the drive with "ASP" (**Antriebssperre** = drive interlock).

Bit 1 is set in parameter **P-0-3213, Safety technology status**.

---

The drive has come to standstill, the power supply has been interrupted via two channels (output stage locked).



**DANGER**

**Dangerous movements! Danger to life, danger of injury, severe bodily injury or property damage!**

⇒ After the output stage has been locked, standstill monitoring is not active. If external force influences are to be expected, e.g. in the case of a vertical axis, this motion has to be safely prevented by additional measures, e.g. a mechanical brake or weight compensation.

---

The safety function "safety related drive interlock" cannot be deselected by the enabling control but only by resetting the selection.

### A0014 - Attributes

**Display:** ASP  
**Mess. no.:** A0014 (hex)

## A0015 Safety related standstill active

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the "special mode standstill". The active safety function is "safety related standstill".

---

**Note:** If the safety function "safety related standstill" is active, this is displayed on the control panel of the drive with "SH" (**S**icherer **H**alt = safety related standstill).

Bit 2 is set in parameter **P-0-3213, Safety technology status**.

---

The drive has come to standstill, the power supply has been interrupted via two channels (output stage locked).

If the drive is still in motion when "safety related standstill" is selected, there first is a stopping process, then the power supply is interrupted via two channels (output stage locked).

---



**DANGER**

**Dangerous movements! Danger to life, danger of injury, severe bodily injury or property damage!**

⇒ After the output stage has been locked, standstill monitoring is not active. If external force influences are to be expected, e.g. in the case of a vertical axis, this motion has to be safely prevented by additional measures, e.g. a mechanical brake or weight compensation.

---

### A0015 - Attributes

**Display:** SH  
**Mess. no.:** A0015 (hex)

## A0016 Safety related operational stop active

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the "special mode standstill". The active safety function is "safety related operational stop".

---

**Note:** If the safety function "safety related operational stop" is active, this is displayed on the control panel of the drive with "SBH" (Sicherer Betriebshalt = safety related operational stop).  
 Bit 2 is set in parameter **P-0-3213, Safety technology status**.

---

The drive has come to standstill, the power supply has not been interrupted, all control loops are active, the standstill monitors are active.

If the drive is still in motion when "safety related operational stop" is selected, there first is a stopping process, then the standstill monitors become active (axis/spindle cannot be moved). When the drive leaves the standstill position, the output stage is locked via two channels.



**DANGER**

**Dangerous movements! Danger to life, danger of injury, severe bodily injury or property damage!**

⇒ After the output stage has been locked, standstill monitoring is not active. If external force influences are to be expected, e.g. in the case of a vertical axis, this motion has to be safely prevented by additional measures, e.g. a mechanical brake or weight compensation.

---

### A0016 - Attributes

**Display:** SBH  
**Mess. no.:** A0016 (hex)

## A0017 Special mode motion active

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is in one of up to four operating states "special mode motion" that can be differently configured and selected.

By means of the parameters

- **P-0-3240, Control word for safety related motion 1**
- **P-0-3250, Control word for safety related motion 2**
- **P-0-3260, Control word for safety related motion 3**
- **P-0-3270, Control word for safety related motion 4**

It is possible to configure different characteristics of the special mode motion.

When a limit value of the configured and selected safety functions has been exceeded, the drive system is brought to standstill in a safety-related way, then the power supply is interrupted via two channels (output stage locked).



**DANGER**

**Dangerous movements! Danger to life, danger of injury, severe bodily injury or property damage!**

⇒ After the output stage has been locked, standstill monitoring is not active. If external force influences are to be expected, e.g. in the case of a vertical axis, this motion has to be safely prevented by additional measures, e.g. a mechanical brake or weight compensation.

**Note:** The "special mode motion" can only be selected for the time limited by **P-0-3222, Max. activation time of enabling control**.

According to selection, bit 3, 4, 5 or 6 is set in parameter **P-0-3213, Safety technology status**.

### Safety Functions and their Limit Value Monitors

<b>Safety Related Reduced Speed</b>	With the safety function "safety related reduced speed" selected, the drive moves at reduces speed. The speed monitors are active.
<b>Safety Related Direction of Rotation</b>	With the safety function "safety related direction of rotation" selected, the drive can only move in a determined direction with reduced speed. The speed monitors are active.
<b>Safety Related Limited Increment</b>	With the safety function "safety related limited increment" selected, the drive may only travel a maximum of one fixed increment after a travel command was executed. The drive moves at reduced speed. The speed and position monitors are active.
<b>Safety Related Limited Absolute Position</b>	With the safety function "safety related limited absolute position" selected, the drive is under control loop control. The absolute position monitors are active. The drive may only move within the range limits.

---

**Note:** Before the safety function "safety related limited absolute position" selected, the "safety related homing procedure" has to be carried out.

---

**Safety Related Homing Procedure**

Even if an absolute measuring system is used, it is necessary to carry out the homing procedure for safely determining the "reference position channel 2". The "reference position channel 2" is determined via cam/switch at a separate input on channel 2.

### A0017 - Attributes

**Display:** SBB  
**Mess. no.:** A0017 (hex)

## A0100 Drive in TORQUE control

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the "Torque control" mode. It follows the torque command value characteristic set by the master.

See also Functional Description "Torque/Force Control"

### A0100 - Attributes

**Display:** AF  
**Mess. no.:** A0100 (hex)

## A0101 Drive in VELOCITY control

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the "Velocity control" mode. It follows the speed command value characteristic set by the master. The speed control loop is closed in the drive.

See also Functional Description "Velocity Control"

### A0101 - Attributes

**Display:** AF  
**Mess. no.:** A0101 (hex)

## A0102 Position mode with encoder 1

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. The master only specifies the position command value characteristic, the drive follows the command value with a lag error.

"Encoder 1" means that the encoder assigned by means of **P-0-0077, Assignment motor encoder->optional slot** is used as a control encoder.

See also Functional Description "Position Control with Cyclic Command Value Input"

### A0102 - Attributes

**Display:** AF  
**Mess. no.:** A0102 (hex)

## A0103 Position mode with encoder 2

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. The master only specifies the position command value characteristic, the drive follows the command value with a lag error.

"Encoder 2" means that the encoder assigned by means of **P-0-0078, Assignment optional encoder->optional slot** is used as a control encoder.

See also Functional Description "Position Control with Cyclic Command Value Input"

### A0103 - Attributes

**Display:** AF  
**Mess. no.:** A0103 (hex)

## A0104 Position mode lagless, encoder 1

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. The master only specifies the position command value characteristic, the drive follows the command value laglessly (prerequisite: **P-0-0040, Velocity feedforward evaluation=100%**).

"Encoder 1" means that the encoder assigned by means of **P-0-0077, Assignment motor encoder->optional slot** is used as a control encoder.

See also Functional Description "Position Control with Cyclic Command Value Input"

### A0104 - Attributes

**Display:** AF  
**Mess. no.:** A0104 (hex)

## A0105 Position control lagless, encoder 2

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. The master only specifies the position command value characteristic, the drive follows the command value laglessly (prerequisite: **P-0-0040, Velocity feedforward evaluation=100%**).

"Encoder 2" means that the encoder assigned by means of **P-0-0078, Assignment optional encoder->optional slot** is used as a control encoder.

See also Functional Description "Position Control with Cyclic Command Value Input"

### A0105 - Attributes

**Display:** AF  
**Mess. no.:** A0105 (hex)

## A0106 Drive controlled interpolation, encoder 1

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

From the control unit the drive receives a position command value identical to the target position of the distance to be traveled. The drive then generates (interpolates) an internal position command value characteristic that complies with the maximum values for the jerk, acceleration and velocity characteristic determined by the master.

With a lag error the drive moves to the target position.

"Encoder 1" means that the encoder assigned by means of **P-0-0077**, **Assignment motor encoder->optional slot** is used as a control encoder.

See also Functional Description "Drive Internal Interpolation"

### A0106 - Attributes

**Display:** AF  
**Mess. no.:** A0106 (hex)

## A0107 Drive controlled interpolation, encoder 2

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

From the master the drive receives a position command value identical to the target position of the distance to be traveled. The drive then generates (interpolates) an internal position command value characteristic that complies with the maximum values for the jerk, acceleration and velocity characteristic determined by the master.

With a lag error the drive moves to the target position.

"Encoder 2" means that the encoder assigned by means of **P-0-0078**, **Assignment optional encoder->optional slot** is used as a control encoder.

See also Functional Description "Drive Internal Interpolation"

### A0107 - Attributes

**Display:** AF  
**Mess. no.:** A0107 (hex)

## A0108 Drive controlled interpolation, lagless, encoder 1

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

From the master the drive receives a position command value identical to the target position of the distance to be traveled. The drive then generates (interpolates) an internal position command value characteristic that complies with the maximum values for the jerk, acceleration and velocity characteristic determined by the master.

The drive laglessly moves to the target position (prerequisite: **P-0-0040, Velocity feedforward evaluation=100%**).

"Encoder 1" means that the encoder assigned by means of **P-0-0077, Assignment motor encoder->optional slot** is used as a control encoder.

See also Functional Description "Drive Internal Interpolation"

### A0108 - Attributes

**Display:** AF  
**Mess. no.:** A0108 (hex)

## A0109 Drive controlled interpolation, lagless, encoder 2

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

From the master the drive receives a position command value identical to the target position of the distance to be traveled. The drive then generates (interpolates) an internal position command value characteristic that complies with the maximum values for the jerk, acceleration and velocity characteristic determined by the master.

The drive laglessly moves to the target position (prerequisite: **P-0-0040, Velocity feedforward evaluation=100%**).

"Encoder 2" means that the encoder assigned by means of **P-0-0078, Assignment optional encoder->optional slot** is used as a control encoder.

See also Functional Description "Drive Internal Interpolation"

### A0109 - Attributes

**Display:** AF  
**Mess. no.:** A0109 (hex)

## A0110 Velocity synchronization, virtual master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in velocity control. Taking the gear ratio and the master axis position into account, the command speed is determined in the drive.

Virtual master axis means that the master axis position is calculated by the control unit.

See also Functional Description "Velocity Synchronization with Real/Virtual Master Axis"

### A0110 - Attributes

**Display:** AF  
**Mess. no.:** A0110 (hex)

## A0111 Velocity synchronization, real master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in velocity control. The speed command value is derived from the master axis position. The master axis position is generated by the measuring encoder.

See also Functional Description "Velocity Synchronization with Real/Virtual Master Axis"

### A0111 - Attributes

**Display:** AF  
**Mess. no.:** A0111 (hex)

## A0112 Phase synchronization, encoder 1, virtual master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. Taking the gear ratio and the master axis position into account, the position command value is determined in the drive.

The drive follows the command value with a lag distance.

Encoder 1 means that the position encoder is mounted to the motor shaft (indirect measuring of the axis position). Virtual master axis means that the master axis position is calculated by the control unit.

See also Functional Description "Phase Synchronization with Real/Virtual Master Axis"

### A0112 - Attributes

**Display:** AF  
**Mess. no.:** A0112 (hex)

## A0113 Phase synchronization, encoder 2, virtual master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. Taking the gear ratio and the master axis position into account, the position command value is determined in the drive.

The drive follows the command value with a lag distance.

Encoder 2 means that the position encoder is mounted to the machine axis (direct measuring of the axis position). Virtual master axis means that the master axis position is calculated by the control unit.

See also Functional Description "Phase Synchronization with Real/Virtual Master Axis"

### A0113 - Attributes

**Display:** AF  
**Mess. no.:** A0113 (hex)

## A0114 Phase synchronization, encoder 1, real master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. Taking the gear ratio and the master axis position into account, the position command value is determined in the drive. The drive follows the command value with a lag distance.

Encoder 1 means that the position encoder is mounted to the motor shaft (indirect measuring of the axis position). Real master axis means that the master axis position is derived from the incremental encoder signals.

See also Functional Description "Phase Synchronization with Real/Virtual Master Axis"

### A0114 - Attributes

**Display:** AF  
**Mess. no.:** A0114 (hex)

## A0115 Phase synchronization, encoder 2, real master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. Taking the gear ratio and the master axis position into account, the position command value is determined in the drive. The drive follows the command value with a lag distance.

Encoder 2 means that the position encoder is mounted to the machine axis (direct measuring of the axis position). Real master axis means that the master axis position is derived from the measuring encoder.

See also Functional Description "Phase Synchronization with Real/Virtual Master Axis"

### A0115 - Attributes

**Display:** AF  
**Mess. no.:** A0115 (hex)

## A0116 Phase synchr. lagless, encoder 1, virtual master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. Taking the gear ratio and the master axis position into account, the position command value is determined in the drive.

The drive follows the command value without any lag error.

Encoder 1 means that the position encoder is mounted to the motor shaft (indirect measuring of the axis position). Virtual master axis means that the master axis position is calculated by the control unit.

See also Functional Description "Phase Synchronization with Real/Virtual Master Axis"

### A0116 - Attributes

**Display:** AF  
**Mess. no.:** A0116 (hex)

## A0117 Phase synchr. lagless, encoder 2, virtual master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. Taking the gear ratio and the master axis position into account, the position command value is determined in the drive.

The drive follows the command value without any lag error.

Encoder 2 means that the position encoder is mounted to the machine axis (direct measuring of the axis position). Virtual master axis means that the master axis position is calculated by the control unit.

See also Functional Description "Phase Synchronization with Real/Virtual Master Axis"

### A0117 - Attributes

**Display:** AF  
**Mess. no.:** A0117 (hex)

## A0118 Phase synchr. lagless, encoder 1, real master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in lagless position control. The position command value is calculated by the master axis position. The master axis position is derived from the measuring encoder.

See also Functional Description "Phase Synchronization with Real/Virtual Master Axis"

### A0118 - Attributes

**Display:** AF  
**Mess. no.:** A0118 (hex)

## A0119 Phase synchr. lagless, encoder 2, real master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in lagless position control. The position command value is calculated by the master axis position. The master axis position is derived from the measuring encoder.

See also Functional Description "Phase Synchronization with Real/Virtual Master Axis"

### A0119 - Attributes

**Display:** AF  
**Mess. no.:** A0119 (hex)

## A0128 Cam shaft, encoder 1, virtual master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the cam shaft mode. The function has been derived from the principle of the mechanical cam shaft. There is a fixed position relation between master axis and slave axis. The position command values are taken from a table that is accessed by means of the master axis position.

The drive follows the command value with a lag distance.

Encoder 1 means that the position encoder is mounted to the motor shaft (indirect measuring of the axis position). Virtual master axis means that the master axis position is calculated by the control unit.

See also Functional Description "Electronic Cam Shaft with Real/Virtual Master Axis"

### A0128 - Attributes

**Display:** AF  
**Mess. no.:** A0128 (hex)

## A0129 Cam shaft, encoder 2, virtual master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the cam shaft mode. The function has been derived from the principle of the mechanical cam shaft. There is a fixed position relation between master axis and slave axis. The position command values are taken from a table that is accessed by means of the master axis position.

The drive follows the command value with a lag distance.

Encoder 2 means that the position encoder is mounted to the machine axis (direct measuring of the axis position). Virtual master axis means that the master axis position is calculated by the control unit.

See also Functional Description "Electronic Cam Shaft with Real/Virtual Master Axis"

### A0129 - Attributes

**Display:** AF  
**Mess. no.:** A0129 (hex)

## A0130 Cam shaft, encoder 1, real master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the cam shaft mode. The function has been derived from the principle of the mechanical cam shaft. There is a fixed position relation between master axis and slave axis. The position command values are taken from a table that is accessed by means of the master axis position.

The drive follows the command value with a lag distance.

Encoder 1 means that the position encoder is mounted to the motor shaft (indirect measuring of the axis position). Real master axis means that the master axis position is derived from the measuring encoder.

See also Functional Description "Electronic Cam Shaft with Real/Virtual Master Axis"

### A0130 - Attributes

**Display:** AF  
**Mess. no.:** A0130 (hex)

## A0131 Cam shaft, encoder 2, real master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the cam shaft mode. The function has been derived from the principle of the mechanical cam shaft. There is a fixed position relation between master axis and slave axis. The position command values are taken from a table that is accessed by means of the master axis position.

The drive follows the command value with a lag distance.

Encoder 2 means that the position encoder is mounted to the machine axis (direct measuring of the axis position). Real master axis means that the master axis position is derived from the measuring encoder.

See also Functional Description "Electronic Cam Shaft with Real/Virtual Master Axis"

### A0131 - Attributes

**Display:** AF  
**Mess. no.:** A0131 (hex)

## A0132 Cam shaft, lagless, encoder 1, virt. master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the cam shaft mode. The function has been derived from the principle of the mechanical cam shaft. There is a fixed position relation between master axis and slave axis. The position command values are taken from a table that is accessed by means of the master axis position.

The drive follows the command value without any lag error.

Encoder 1 means that the position encoder is mounted to the motor shaft (indirect measuring of the axis position). Virtual master axis means that the master axis position is calculated by the control unit.

See also Functional Description "Electronic Cam Shaft with Real/Virtual Master Axis"

### A0132 - Attributes

**Display:** AF  
**Mess. no.:** A0132 (hex)

## A0133 Cam shaft, lagless, encoder 2, virt. master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the cam shaft mode. The function has been derived from the principle of the mechanical cam shaft. There is a fixed position relation between master axis and slave axis. The position command values are taken from a table that is accessed by means of the master axis position.

The drive follows the command value without any lag error.

Encoder 2 means that the position encoder is mounted to the machine axis (direct measuring of the axis position). Virtual master axis means that the master axis position is calculated by the control unit.

See also Functional Description "Electronic Cam Shaft with Real/Virtual Master Axis"

### A0133 - Attributes

**Display:** AF  
**Mess. no.:** A0133 (hex)

## A0134 Cam shaft, lagless, encoder 1, real master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the cam shaft mode. The function has been derived from the principle of the mechanical cam shaft. There is a fixed position relation between master axis and slave axis. The position command values are taken from a table that is accessed by means of the master axis position.

The drive follows the command value without any lag error.

Encoder 1 means that the position encoder is mounted to the motor shaft (indirect measuring of the axis position). Real master axis means that the master axis position is derived from the incremental encoder signals.

See also Functional Description "Electronic Cam Shaft with Real/Virtual Master Axis"

### A0134 - Attributes

**Display:** AF  
**Mess. no.:** A0134 (hex)

## A0135 Cam shaft, lagless, encoder 2, real master axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in the cam shaft mode. The function has been derived from the principle of the mechanical cam shaft. There is a fixed position relation between master axis and slave axis. The position command values are taken from a table that is accessed by means of the master axis position.

The drive follows the command value without any lag error.

Encoder 2 means that the position encoder is mounted to the machine axis (direct measuring of the axis position). Real master axis means that the master axis position is derived from the measuring encoder.

See also Functional Description "Electronic Cam Shaft with Real/Virtual Master Axis"

### A0135 - Attributes

**Display:** AF  
**Mess. no.:** A0135 (hex)

## A0150 Drive-controlled positioning, encoder 1

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

From the master the drive receives a position command value in the **S-0-0282, Positioning command value** parameter. This position/distance, when the status of bit 0 of parameter **S-0-0346, Positioning command strobe** changes, is copied to **S-0-0258, Target position** or, in the case of a relative input, added to the value in **S-0-0430, Effective target position**. The drive then generates (interpolates) an internal position command value characteristic in order to get from the current position to this target position. This is done considering the limit values for velocity, acceleration and jerk in the following parameters:

- **S-0-0193, Positioning Jerk,**
- **S-0-0259, Positioning Velocity,**
- **S-0-0260, Positioning Acceleration** and
- **S-0-0359, Positioning Deceleration.**

With a lag error proportional to the velocity the drive moves to the target position.

"Encoder 1" means that the encoder assigned by means of **P-0-0077, Assignment motor encoder->optional slot** is used as a control encoder.

See also Functional Description "Drive Controlled Positioning"

### A0150 - Attributes

Display: AF  
Mess. no.: A0150 (hex)

## A0151 Drive-controlled positioning, encoder 1, lagless

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

From the master the drive receives a position command value in the **S-0-0282, Positioning command value** parameter. This distance, when the status of bit 0 of parameter **S-0-0346, Positioning command strobe** changes, is copied to **S-0-0430, Effective target position** or, in the case of a relative input, added to the value in **S-0-0430, Effective target position**. The drive then generates (interpolates) an internal position command value characteristic in order to get from the current position to this target position. This is done considering the limit values for velocity, acceleration and jerk in the following parameters:

- **S-0-0259, Positioning Velocity,**
- **S-0-0260, Positioning Acceleration,**
- **S-0-0359, Positioning Deceleration** and
- **S-0-0193, Positioning Jerk.**

The drive laglessly moves to the target position (prerequisite: **P-0-0040, Velocity feedforward evaluation=100%**).

"Encoder 1" means that the encoder assigned by means of **P-0-0077, Assignment motor encoder->optional slot** is used as a control encoder.

See also Functional Description "Drive Controlled Positioning"

### A0151 - Attributes

Display: AF  
Mess. no.: A0151 (hex)

## A0152 Drive-controlled positioning, encoder 2

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

From the master the drive receives a position command value in the **S-0-0282, Positioning command value** parameter. This distance, when the status of bit 0 of parameter **S-0-0346, Positioning command strobe** changes, is copied to **S-0-0430, Effective target position** or, in the case of a relative input, added to the value in **S-0-0430, Effective target position**. The drive then generates (interpolates) an internal position command value characteristic in order to get from the current position to this target position. This is done considering the limit values for velocity, acceleration and jerk in the following parameters:

- **S-0-0259, Positioning Velocity,**
- **S-0-0260, Positioning Acceleration,**
- **S-0-0359, Positioning Deceleration** and
- **S-0-0193, Positioning Jerk.**

With a lag error proportional to the velocity the drive moves to the target position.

"Encoder 2" means that the encoder assigned by means of **P-0-0078, Assignment optional encoder->optional slot** is used as a control encoder.

See also Functional Description "Drive Controlled Positioning"

### A0152 - Attributes

Display: AF  
Mess. no.: A0152 (hex)

## A0153 Drive-controlled positioning, encoder 2, lagless

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

From the master the drive receives a position command value in the **S-0-0282, Positioning command value** parameter. This distance, when the status of bit 0 of parameter **S-0-0346, Positioning command strobe** changes, is copied to **S-0-0430, Effective target position** or, in the case of a relative input, added to the value in **S-0-0430, Effective target position**. The drive then generates (interpolates) an internal position command value characteristic in order to get from the current position to this target position. This is done considering the limit values for velocity, acceleration and jerk in the following parameters:

- **S-0-0259, Positioning Velocity,**
- **S-0-0260, Positioning Acceleration,**
- **S-0-0359, Positioning Deceleration** and
- **S-0-0193, Positioning Jerk.**

The drive laglessly moves to the target position (prerequisite: **P-0-0040, Velocity feedforward evaluation=100%**).

"Encoder 2" means that the encoder assigned by means of **P-0-0078, Assignment optional encoder->optional slot** is used as a control encoder.

See also Functional Description "Drive Controlled Positioning"

### A0153 - Attributes

Display: AF  
Mess. no.: A0153 (hex)

## A0154 Position mode with encoder 1 drive controlled

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. The drive presets the position command value characteristic internally and follows the command value with a lag distance.

"Encoder 1" means that the encoder assigned by means of **P-0-0077**, **Assignment motor encoder->optional slot** is used as a control encoder.

See also Functional Descriptions "Drive-Internal Interpolation" and "Drive-Controlled Positioning"

### A0154 - Attributes

**Display:** AF  
**Mess. no.:** A0154 (hex)

## A0155 Position mode with encoder 2 drive controlled

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. The drive presets the position command value characteristic internally and follows the command value with a lag distance.

"Encoder 2" means that the encoder assigned by means of **P-0-0078**, **Assignment optional encoder->optional slot** is used as a control encoder.

See also Functional Descriptions "Drive-Internal Interpolation" and "Drive-Controlled Positioning"

### A0155 - Attributes

**Display:** AF  
**Mess. no.:** A0155 (hex)

## A0156 Position mode lagless, encoder 1 drive controlled

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. The drive presets the position command value characteristic internally and follows the command value without any lag error. (Prerequisite: **P-0-0040, Velocity feedforward evaluation= 100%**).

"Encoder 1" means that the encoder assigned by means of **P-0-0077, Assignment motor encoder->optional slot** is used as a control encoder.

See also Functional Descriptions "Drive-Internal Interpolation" and "Drive-Controlled Positioning"

### A0156 - Attributes

**Display:** AF  
**Mess. no.:** A0156 (hex)

## A0157 Position control lagless, encoder 2 drive controlled

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The drive is in position control. The position control loop is closed by means of a position encoder in the drive. The drive presets the position command value characteristic internally and follows the command value without any lag error. (Prerequisite: **P-0-0040, Velocity feedforward evaluation= 100%**).

"Encoder 2" means that the encoder assigned by means of **P-0-0078, Assignment motor encoder->optional slot** is used as a control encoder.

See also Functional Descriptions "Drive-Internal Interpolation" and "Drive-Controlled Positioning"

### A0157 - Attributes

**Display:** AF  
**Mess. no.:** A0157 (hex)

## A0206 Positioning block mode, encoder 1

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control with systematic lag distance. Encoder 1 (motor encoder) provides the actual value. The command value profile is generated in the drive. Target position, velocity, acceleration and jerk are determined by a previously programmed positioning block. According to the parameterization of **P-0-4019, Positioning block mode**, the target position shall be understood as being absolute or as relative distance.

See also Functional Description "Positioning Block Mode"

### A0206 - Attributes

**Display:** AF  
**Mess. no.:** A0206 (hex)

## A0207 Positioning block mode lagless, encoder 1

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control without lag distance. Encoder 1 (motor encoder) provides the actual value. The command value profile is generated in the drive. Target position, velocity, acceleration and jerk are determined by a previously programmed positioning block. According to the parameterization of **P-0-4019, Positioning block mode**, the target position shall be understood as being absolute or as relative distance.

See also Functional Description "Positioning Block Mode"

### A0207 - Attributes

**Display:** AF  
**Mess. no.:** A0207 (hex)

## A0210 Positioning block mode, encoder 2

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control with systematic lag distance. Encoder 2 provides the actual value. The command value profile is generated in the drive. Target position, velocity, acceleration and jerk are determined by a previously programmed positioning block. According to the parameterization of **P-0-4019, Positioning block mode**, the target position shall be understood as being absolute or as relative distance.

See also Functional Description "Positioning Block Mode"

### A0210 - Attributes

**Display:** AF  
**Mess. no.:** A0210 (hex)

## A0211 Positioning block mode lagless, encoder 2

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is in position control without lag distance. Encoder 2 provides the actual value. The command value profile is generated in the drive. Target position, velocity, acceleration and jerk are determined by a previously programmed positioning block. According to the parameterization of **P-0-4019, Positioning block mode**, the target position shall be understood as being absolute or as relative distance.

See also Functional Description "Positioning Block Mode"

### A0211 - Attributes

**Display:** AF  
**Mess. no.:** A0211 (hex)

## A0500 Supply module in voltage control

**Supported by Supply Unit:** HMV01

The mains contactor has been switched in, the DC bus has been charged, the DC bus voltage is regulated to 750 V direct voltage.

### A0500 - Attributes

**Display:** Lb  
**Mess. no.:** A0500 (hex)

## A0501 Supply module in current control

**Supported by Supply Unit:** HMV01

The mains contactor has been switched in, the DC bus has been charged, the DC bus current is regulated with regard to a preset command value.

---

**Note:** This operating status is only available for manufacturer-side testing and developing purposes!

---

### A0501 - Attributes

**Display:** I Lb  
**Mess. no.:** A0501 (hex)

## A0502 Supply module in operation

**Supported by Supply Unit:** HMV01

The mains contactor has been switched in, the DC bus has been charged and is ready for power output.

### A0502 - Attributes

**Display:** Lb  
**Mess. no.:** A0502 (hex)

## A0503 DC bus charging active

**Supported by Supply Unit:** HMV01

The DC bus is presently charged to the crest value of the mains voltage ("soft start"). When the voltage in the DC bus has reached the crest value of the mains voltage, the mains contactor is switched in.

### A0503 - Attributes

**Display:** charg  
**Mess. no.:** A0503 (hex)

## A0510 Test run for voltage control

**Supported by Supply Unit:** HMV01

The mains contactor has been switched in, the DC bus is regulated to 65 V. All monitoring thresholds have been adjusted for a test run at 43 V mains voltage.

---

**Note:** This operating status is only available for manufacturer-side testing and developing purposes!

---

### A0510 - Attributes

**Display:** lb  
**Mess. no.:** A0510 (hex)

## A0511 Test run for current control

**Supported by Supply Unit:** HMV01

The mains contactor has been switched in, the DC bus current is regulated with regard to a preset command value. All monitoring thresholds have been adjusted for a test run at 43 V mains voltage.

---

**Note:** This operating status is only available for manufacturer-side testing and developing purposes!

---

### A0511 - Attributes

**Display:** i lb  
**Mess. no.:** A0511 (hex)

## A0512 Test run active

**Supported by Supply Unit:** HMV01

The mains contactor has been switched in. DC bus voltage is available. All monitoring thresholds have been adjusted for a test run at 43 V mains voltage.

---

**Note:** This operating status is only available for manufacturer-side testing and developing purposes!

---

### A0512 - Attributes

**Display:** lb  
**Mess. no.:** A0512 (hex)

## A0520 DC bus quick discharge active

**Supported by Supply Unit:** HMV01

The braking resistor is presently short-circuiting the DC bus in order to reduce the DC bus voltage as quickly as possible.

---

**Note:** The "DC bus short circuit" function (ZKS) was activated via the terminal strip X32 at the HMV.

---

### A0520 - Attributes

**Display:** ZKS  
**Mess. no.:** A0520 (hex)

## A0800 Unknown operating mode

**Supported by Supply Unit:** HMV01

There isn't any diagnostic message existing for the activated operating mode.

### A0800 - Attributes

**Display:** AF  
**Mess. no.:** A0800 (hex)

## A4000 Automatic drive check and adjustment

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The A4000 diagnostic message is a collective diagnostic message for different system states. It is used for drive check and adjustment. When enabling and disabling the drive enable this diagnosis is automatically activated. The following system states that are processed independent of the parameterization are counted among the drive checks and adjustments:

- the holding brake delay times (**S-0-0206, Drive on delay time, S-0-0207, Drive off delay time**)
- build-up of the air-gap field (in the case of asynchronous motors)
- automatic determination of the commutation offset (in the case of synchronous motors with incremental measuring system)

Depending on the parameterization the automatic brake check is displayed with the A4000 diagnostic message, too (see **P-0-0525, Holding brake control word**).

### A4000 - Attributes

**Display:** AC  
**Mess. no.:** A4000 (hex)

## A4001 Drive deceleration to standstill

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive

- is decelerated to standstill as set in the **P-0-0119, Best possible deceleration** parameter

- or -

- conducts a speed command value reset.

---

**Note:** This status is displayed on the control panel of the drive with "AE".

---

See also Functional Description "Error"

### A4001 - Attributes

**Display:** AE  
**Mess. no.:** A4001 (hex)

## A4002 Drive in automatic mode

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS

The drive-internal PLC moves the drive in the automatic mode.

See also Application Manual "Rexroth IndraMotion MLD"

### A4002 - Attributes

**Display:** AU  
**Mess. no.:** A4002 (hex)

## 7 Error Messages

### 7.1 Fatal System Errors (F9xxx and E-xxxx)

#### Behavior in the Case of Fatal System Error

In the case of fatal system errors there is a grave problem in the drive system (e.g. watchdog error, processor crash, ...) which does no longer allow regular operation of the drive. Due to a hardware or firmware error, the drive firmware is no longer operable; clearing an error is no longer possible.

In this case the drive reacts automatically as follows:

##### Drive Behavior

- All digital outputs are set to "0".  
Safety technology: safety related feedback is deactivated!
- The "ready for operation" relay opens, this also switches power off in case the wiring is correct.
- The output stage is locked, this disables the drive torque.
- The brake output is deactivated; if a self-holding brake is used, it is applied!
- One of the following diagnostic messages is output at the display:
  - F9xxx (fatal system errors),
  - E8xxx (exceptions),
  - or E-0800 (watchdog)
- An English diagnostic message text is output via the serial interface.

##### Steps of Commissioning

After a fatal system error has occurred, the drive can only be commissioned again when:

1. the 24 V supply is completely switched off and on so that a restart of the drive is carried out (incl. booting process and initialization).
2. the drive is run up to the operating mode again.
3. power is switched on again (as the "ready for operation" relay has opened before and power was switched off in case the wiring is correct).

---

**Note:** In case fatal system errors are occurring repeatedly, contact our service department as operating the drive then is no longer possible.

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## E-0000 Processor exception error

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Cause:**

An error occurred in the firmware (general software error). The drive was switched off by the firmware.

---

**Note:** The display varies according to the interrupt or processor exception that occurred.

---

**Remedy:**

Please contact our service department.

### E0000 - Attributes

**Display:** E-XXXX  
**Mess. no.:** E0000 (hex)

## F9001 Error internal function call

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The device was switched off by the firmware.

### Cause

Undefined cause

An error occurred in firmware (general software error)

### Remedy

Switch device off/on. If error persists, replace device

Please contact our service department

### F9001 - Attributes

**Display:** F9001

**Mess. no.:** F9001 (hex)

## F9002 Error internal RTOS function call

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

### Cause:

An error occurred in the firmware (general software error). The drive was switched off by the firmware.

### Remedy:

Please contact our service department.

### F9002 - Attributes

**Display:** F9002

**Mess. no.:** F9002 (hex)

## F9003 Watchdog

<b>Supported by Firmware Variant:</b>	FWA-INDRV*- <b>MPH02</b> VRS-MS FWA-INDRV*- <b>MPB02</b> VRS-MS FWA-INDRV*- <b>MPD02</b> VRS-MS
<b>Supported by Supply Unit:</b>	<b>HMV01</b>

### Cause

---

Firmware-side watchdog timer was triggered (general firmware error). Drive was switched off by firmware.

### Remedy

---

Replace device, contact our service department

### F9003 - Attributes

<b>Display:</b>	F9003
<b>Mess. no.:</b>	F9003 (hex)

## F9004 Hardware trap

<b>Supported by Supply Unit:</b>	<b>HMV01</b>
----------------------------------	--------------

An internal firmware error has occurred. The device was switched off by the firmware.

### Cause

---

An error occurred in firmware

### Remedy

---

Please contact our service department

### F9004 - Attributes

<b>Display:</b>	F9004
<b>Mess. no.:</b>	F9004 (hex)

## 7.2 Fatal Errors (F8xxx)

### Behavior in the Case of Fatal Error

Basically there are 2 kinds of fatal errors (F8-errors):

- fatal errors during initialization (initialization errors) (e.g. F8201 and F8203, F8118, F8120, ...)
- fatal errors during operation (e.g. F8060, F8022, ...)

---

**Note:** Fatal initialization errors cannot be cleared, they require the drive to be switched off completely.

In addition to completely switching off the drive, fatal errors associated with the safety technology (e.g. F8201 and F8203) require safety technology to be completely recommissioned.

---

#### Drive Behavior

In the case of fatal errors, closed-loop control (or open-loop U/f control) of the drive is no longer ensured; with these errors the drive, independent of the setting in **P-0-0119, Best possible deceleration** and **P-0-0117, Activation of NC reaction on error**, therefore is immediately switched off, i.e. it goes torque-free (see also Functional Description "Error Reaction").

---

**Note:** In the case of fatal errors, the settings in **P-0-0118, Power supply, configuration** still are taken into account.

---

#### Steps of Commissioning

After a fatal error has occurred, the drive can only be commissioned again when:

1. the error message was cleared by the error clearing command (cf. **S-0-0099, C0500 Reset class 1 diagnostics**) [to do this it might possibly be necessary to switch to the parameter mode or switch the drive off completely].
2. the actual cause of the error was recognized and removed. This might possibly imply the replacement of an entire component (e.g. motor or drive controller).
3. the drive is in the operating mode again and power was switched on again ("Ab").
4. drive enable was switched on again (0-1 edge).

---

**Note:** In case fatal errors are occurring repeatedly, contact our service department as operating the drive then is no longer possible.

---

## F8010 Autom. commutation: max. motion range when moving back

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When moving back to the initial position at which it was before commutation setting (only in the case of sine-wave method with motion), the axis left the allowed actual position value range.

### Cause

Positive feedback of motor; commutation offset determination generated incorrect value for **P-0-0521, Effective commutation offset**

Positive feedback of motor after axis was mounted, in spite of successful initial commissioning before axis was dismounted

During commutation setting process, axis got into resonance

### Remedy

Check motor encoder signals. To do this move motor knowing manufacturer-side setting for sense of rotation or velocity polarity and check actual position values with regard to polarity and plausibility.  
 If necessary, invert polarity of motor encoder or invert two motor phases. Carry out commutation setting again

Check whether direction of motion (sense of rotation) of motor complies with that of motor encoder. If not, invert direction of motion of motor (invert phases) or of motor encoder

Set "search direction for sine-wave method" to "increase of frequency with priority" in **P-0-0522, Control word for commutation setting**

- or -

Reduce value in **P-0-0507, Test frequency for angle acquisition** in order modify excitation frequency for sine-wave method compared to resonance frequency of axis

### F8010 - Attributes

**Display:** F8010

**Mess. no.:** F8010 (hex)

## F8011 Commutation offset could not be determined

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The sine-wave method for commutation setting could not determine any value for the commutation offset.

### Cause

Axis could not carry out required motion

During commutation setting process, axis got into resonance

Motor has not been supplied with current

Sine-wave method without success, although axis has required freedom of motion and doesn't show any resonance phenomena

Signals of motor encoder do not reflect motion process of axis; encoder cables of 2 drives possibly mixed up

- or -

Incorrect polarity of encoder signals

### Remedy

Check axis for stiffness or blocking; if necessary, reduce friction (lubrication, guiding device of trailing cable installation) or remove blocking

- or -

Set "search direction for sine-wave method" to "increase of amplitude with priority" in **P-0-0522, Control word for commutation setting**

- or -

Increase value in **P-0-0506, Amplitude for angle acquisition**, in order to increase excitation amplitude for sine-wave method compared to frictional force of axis

Set "search direction for sine-wave method" to "increase of frequency with priority" in **P-0-0522, Control word for commutation setting**

- or -

Reduce value in **P-0-0507, Test frequency for angle acquisition** in order to modify excitation frequency for sine-wave method compared to resonance frequency of axis

Check motor connection

Try with manually input values if automatic search for motor-specific values for **P-0-0506, Amplitude for angle acquisition** and **P-0-0507, Test frequency for angle acquisition** doesn't provide any result in spite of several repetitions

Check motor encoder signals. To do this move motor knowing manufacturer-side setting for sense of rotation or velocity polarity and check actual position values with regard to polarity and plausibility.

### F8011 - Attributes

**Display:** F8011

**Mess. no.:** F8011 (hex)

## F8012 Autom. commutation: max. motion range

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During commutation setting (sine-wave method) the axis left the allowed actual position value range.

### Cause

Heavy axis motion due to too high drive torque or force generation during commutation setting

External forces or torques cause axis to move out of allowed actual position value range

Detent force or torque causes axis to move out of allowed actual position value range

### Remedy

Reduce value contained in **P-0-0506, Amplitude for angle acquisition**  
 - and / or -  
 Increase value contained in **P-0-0507, Test frequency for angle acquisition**

Check mechanical axis system for occurrence of external forces, e.g. due to trailing cable installation, vertical load etc.

Make sure that, during commutation setting by means of sine-wave method, detent forces of motor do not cause position limits to be exceeded near limits of actual position value range

### F8012 - Attributes

**Display:** F8012

**Mess. no.:** F8012 (hex)

## F8013 Automatic commutation: current too low

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The actual current value amplitude resulting from commutation setting with the saturation method is monitored. When it does not exceed a minimum threshold, the error F8013 is generated.

### Cause

Actual current value amplitude is not sufficient for exact determination of commutation offset

### Remedy

Increase signal voltage (**P-0-0506, Amplitude for angle acquisition**) or reduce signal frequency (**P-0-0507, Test frequency for angle acquisition**) and restart commutation setting process

- or -

Enter value "0" in **P-0-0506, Amplitude for angle acquisition**. Appropriate value for P-0-0506 is thereby automatically determined during commutation setting process

- or -

Reduce value of **P-0-0517, Commutation: required harmonics component**, if approx. 30 similar values are determined for **P-0-0521, Effective commutation offset** with repeated commutation setting for different motor positions (drive remains in "Ab"). Reduce **P-0-0517, Commutation: required harmonics component** until command error F8013 no longer occurs; finally check function several times!

---

**Note:** If error occurs repeatedly, please contact our service department.

---

### F8013 - Attributes

**Display:** F8013  
**Mess. no.:** F8013 (hex)

## F8014 Automatic commutation: overcurrent

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The actual current value amplitude resulting from automatic commutation offset determination is monitored. When a maximum value is exceeded, the error F8014 is generated.

### Cause

Amplitude of actual current value is higher than allowed maximum current

### Remedy

Reduce signal voltage (**P-0-0506, Voltage amplitude for angle acquisition**) or increase signal frequency (**P-0-0507, Test frequency for angle acquisition**)

- or -

With **P-0-0506, Voltage amplitude for angle acquisition=0** start automatic determination of appropriate values

---

**Note:** If error occurs repeatedly, please contact our service department.

---

### F8014 - Attributes

**Display:** F8014

**Mess. no.:** F8014 (hex)

## F8015 Automatic commutation: timeout

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Saturation Method** During the execution of the automatic commutation offset determination (after drive enable) an error was detected.

### Cause

An error occurred in internal signal generator used for determining commutation offset

### Remedy

Switch the drive off and on again. If the error continues to be signaled, contact our service department.

**Sine-Wave Method** The commutation setting with motion by means of the sine-wave method is completed when the axis, after commutation offset determination, has been moved back to the initial position at which it was before the start. If this is impossible, the error F8015 is generated.

### Cause

Axis cannot be moved back to position at which it was at beginning of commutation determination

### Remedy

Check mechanical axis system, remove blocking or stiffness

## F8015 - Attributes

**Display:** F8015

**Mess. no.:** F8015 (hex)

## F8016 Automatic commutation: iteration without result

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the automatic commutation offset determination (after drive enable) it has been impossible to find appropriate values for **P-0-0506, Voltage amplitude for angle acquisition** and **P-0-0507, Test frequency for angle acquisition** with which it would be possible to determine a useful commutation offset of the connected motor.

### Cause

Current generated during automatic commutation offset determination could not produce any saturation effect in motor.  
 Required maximum current is approx. 1.5-fold continuous current at standstill (**S-0-0111, Motor current at standstill**).

### Remedy

Check whether controller can supply motor with sufficiently high current (cf. **S-0-0111, Motor current at standstill** and **S-0-0110, Amplifier peak current**). If maximum controller current is too low, drive controller has to be replaced by a bigger one  
 - or -  
 Change position of movable part of motor with regard to its rigid part restart command **P-0-0524, C1200 Commutation offset setting command**  
 - or -  
 Contact our service department and, if necessary, use an absolute measuring system, because motor characteristics do not allow automatic commutation

See also Functional Description "Commutation Setting"

### F8016 - Attributes

**Display:** F8016  
**Mess. no.:** F8016 (hex)

## F8022 Enc. 1: enc. signals incorr. (can be cleared in ph. 2)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The signals of the measuring system (encoder 1) are monitored with regard to their amplitudes and signal shape. If a signal (e.g. sin or cos) leaves the thresholds monitored by the hardware or if the signals are disturbed in such a way that a position error occurs, the error F8022 is generated.

---

**Note:** As the position of the measuring system is no longer generated correctly when the error F8022 is detected, it is necessary to initialize the encoder again.  
 The error can only be cleared in communication phase 2 (parameter mode).

---

### Cause

Defective encoder cable or cable shielding

Measuring system defective

Faulty mounting of measuring head in the case of linear measuring systems

Measuring system dirty

Hardware defect on control section of drive

### Remedy

Check cable to measuring system and replace it, if necessary

Check measuring system and replace it, if necessary

Check mounting of measuring head and correct it, if necessary

Clean or replace measuring system

Replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

See also **E2074 Encoder 1: encoder signals disturbed**

### F8022 - Attributes

**Display:** F8022  
**Mess. no.:** F8022 (hex)

## F8023 Error mechanical link of encoder or motor connection

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The controller is monitoring the motor, among other things, by means of a model calculation. The input values required for the model calculation are checked for plausibility. If the check is negative, this error message is generated.

### Cause

Mechanical connection between rotor of motor and motor encoder is loose or broken

Phase break in motor feed wire

### Remedy

Check connection and fix or repair it

- Check motor feed wire for continuity. Take possible "loose contacts" into account.
- Check connection of motor feed wire at controller.
- Check connection of motor feed wire at motor.
- Line break in motor. Replace motor.
- Line break in controller. Replace controller.

### F8023 - Attributes

**Display:** F8023  
**Mess. no.:** F8023 (hex)

## F8027 Starting lockout while drive enabled

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In the drive a monitoring function ensures that the starting lockout cannot be set with control being active.

**Note:** When the error occurs, the drive immediately becomes torque-free!

### Cause

Starting lockout was activated with drive enable having been set

### Remedy

Check control and connection of starting lockout input

### F8027 - Attributes

**Display:** F8027  
**Mess. no.:** F8027 (hex)

## F8057 Device overload shutdown

Supported by Supply Unit: **HMV01**

The device was switched off due to overload.

### Cause

Power demanded by drives is too high

Power demanded by drives is too high

### Remedy

Use drives with lower peak current

Reduce allowed acceleration of axis or reduce final velocity to which acceleration takes place

### F8057 - Attributes

Display: F8057

Mess. no.: F8057 (hex)

## F8060 Overcurrent in power section

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The current in the power transistors has exceeded the maximum allowed device peak current (cf. **S-0-0110, Amplifier peak current**).

**Note:** In the case of an internal signal voltage error in the power section, this error message is directly generated when the device is switched on, before power was demanded from the power section.

### Cause

Short circuit in motor or motor cable

Power section of drive controller is defective

Current loop parameterized differently

### Remedy

Check motor cable and motor for short circuit

Replace drive controller

Check current loop parameterization (cf. motor data sheet) and correct it if necessary after having contacted our service department

### F8060 - Attributes

Display: F8060

Mess. no.: F8060 (hex)

**F8069 +/-15Volt DC error****Supported by Supply Unit: HMV01**An error has occurred in the internal  $\pm 15$  V supply of the supply unit.

<b>Cause</b>	<b>Remedy</b>
Supply unit defective	Replace supply unit

**F8069 - Attributes**

**Display:** F8069  
**Mess. no.:** F8069 (hex)

**F8070 +24Volt DC error**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit: HMV01**

The operation of IndraDrive devices requires an external 24 V control voltage supply. This voltage is monitored with regard to the allowed tolerance.

**Note:** When the error F8070 occurs, the motors within the drive system are immediately go torque-free. Apply possibly existing self-holding motor holding brakes.

<b>Cause</b>	<b>Remedy</b>
Supply cable for control voltages defective	Check and, if necessary, replace supply cable for control voltages and connector
Overload of 24 V power supply unit	Check 24 V supply voltage at power supply unit
Power supply unit defective	Check and, if necessary, replace power supply unit
Short circuit in 24 V supply wiring	Check 24 V supply wiring for short circuit

**F8070 - Attributes**

**Display:** F8070  
**Mess. no.:** F8070 (hex)

## F8078 Speed loop error

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The speed loop monitor is activated if the following conditions occur simultaneously:

- Parameter **S-0-0080, Torque/force command value** is at the torque/force limit.
- **S-0-0080, Torque/force command value** and actual velocity have different signs.
- The actual velocity is higher than 20 rpm or 20 mm/min.
- Actual acceleration and control deviation have different signs.

### Cause

Motor phases (U, V, W) interchanged so that commutation of motor is incorrect

Incorrect encoder arrangement

Speed loop setting incorrect

Commutation offset incorrect

Motor encoder defective

### Remedy

Check motor cable connection and correct phase assignment, if necessary

Correct encoder arrangement (inverting rotational direction of encoder can possibly resolve problem)

Check speed loop setting according to Application Manual

Replace motor (in the case of MHD, MKD, MKE motors); in the case of kit motors, make commutation settings

Replace motor encoder (or motor)

### F8078 - Attributes

**Display:** F8078

**Mess. no.:** F8078 (hex)

## F8079 Velocity limit S-0-0091 exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

### Cause

**S-0-0040, Velocity feedback value** has exceeded 1.125-fold value of **S-0-0091, Bipolar velocity limit value**

Velocity control loop instable or too heavily oscillating due to incorrect parameterization

Preset velocity command value too high (cf. P-0-0048 = **S-0-0036, Velocity command value** + **S-0-0037, Additive velocity command value**)

### Remedy

Check and, if necessary, correct parameterization of **S-0-0091, Bipolar velocity limit value**

Check and, if necessary, correct parameterization of velocity loop

Reduce **P-0-0048, Effective velocity command value** by adjusting **S-0-0036, Velocity command value** or **S-0-0037, Additive velocity command value**

See also Functional Description "Control Loop Structure"

### F8079 - Attributes

**Display:** F8079  
**Mess. no.:** F8079 (hex)

## F8091 Power section defective

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

### Cause

After control voltage had been switched on, an error was detected in power section of drive controller

### Remedy

Replace power section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the power section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### F8091 - Attributes

**Display:** F8091  
**Mess. no.:** F8091 (hex)

## F8100 Error during initialization of control section

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the initialization of the drive the control section is checked for correct function. An error was detected during this check.

### Cause

Control section configuration not allowed because an optional module (e.g. optional module 1...4, master communication,...) is not supported by firmware

Firmware used is not suitable (e.g. MPH02VRS for double-axis control section), i.e. hardware and software do not match

Hardware defect on control section

### Remedy

Switch drive off and on again. If error occurs again, replace control section (e.g. CSH01.1 or CDB01.1) by different control section with appropriate configuration. If necessary, contact our service department

Select suitable firmware by means of Functional Description or Version Notes/Release Notes (see "supported control section configurations")

Switch drive off and on again. If error still occurs, contact our service department and, if necessary, replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

See also Functional Description "System Overview"

See also Project Planning Manual for control section, keyword "Type Code"

### F8100 - Attributes

**Display:** F8100  
**Mess. no.:** F8100 (hex)

## F8102 Error when initializing power section

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the initialization of the drive the power section is checked for correct function. An error was detected during this check.

### Cause

Hardware and firmware do not match

Parameter **P-0-1510, Circuit board code power section** stored on power section is invalid or was incorrectly written

Hardware defect on power section

### Remedy

Check Firmware Release Notes or Firmware Version Notes and, if necessary, use latest firmware release

Switch drive off and on again. If error occurs again, check content of **P-0-1510, Circuit board code power section** and contact our service department!  
 Maybe you have to replace power section or entire drive controller

Replace power section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### F8102 - Attributes

**Display:** F8102  
**Mess. no.:** F8102 (hex)

## F8118 Invalid power section/firmware combination

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The power section is incompatible with the firmware used.

### Cause

Inappropriate firmware

Inappropriate power section

### Remedy

Use firmware that matches power section

Use power section that matches firmware

### F8118 - Attributes

**Display:** F8118  
**Mess. no.:** F8118 (hex)

## F8120 Invalid control section/firmware combination

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The control section is incompatible with the firmware used.

### Cause

Inappropriate firmware

Inappropriate control section

### Remedy

Use firmware that matches control section

Use control section that matches firmware

### F8120 - Attributes

**Display:** F8120

**Mess. no.:** F8120 (hex)

## F8122 Control section defective

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the initialization of the control section an error occurred.

### Cause

Hardware of control section is defective

### Remedy

Replace control section or entire drive controller; use hardware configuration of same type

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### F8122 - Attributes

**Display:** F8122

**Mess. no.:** F8122 (hex)

## F8129 Firmware of option 1 of safety technology defective

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The firmware of the optional safety technology module is defective.

### Cause

---

Programming of firmware for optional safety technology module is invalid

---

An error occurred during firmware update

### Remedy

---

Make firmware update

---

Restart firmware update.  
 If error message is displayed again, replace control section with control section of same type, if you are authorized to do this! Otherwise entire drive controller has to be replaced.

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

### F8129 - Attributes

**Display:** F8129  
**Mess. no.:** F8129 (hex)

## F8130 Firmware of option 2 of safety technology defective

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The firmware of the optional safety technology module is defective.

### Cause

Programming of firmware for optional safety technology module is invalid

An error occurred during firmware update

### Remedy

Make firmware update

Restart firmware update.  
 If error message is displayed again, replace control section with control section of same type, if you are authorized to do this! Otherwise entire drive controller has to be replaced.

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

### F8130 - Attributes

**Display:** F8130  
**Mess. no.:** F8130 (hex)

## F8133 Error when checking interrupting circuits

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In order to lock the output stage in a safety related way when the safety technology has detected an error, the correct functioning of the interrupting circuit is cyclically checked. This is done on the one hand during the actions "release output stage" and "lock output stage", on the other hand statically while the output stage is being released or locked. The corresponding hardware realization ensures that this is possible without repercussion on the PWM control signals.

The drive torque is immediately disabled. The drive automatically switches to "safety related standstill" and the output stage is switched off via one channel. All poles of the mains contactor are switched off.

---

**Note:** Safety is not acknowledged; i.e. "safety technology status output controller" was cleared/reset in **P-0-3214, Safety technology signal status word, channel 1** or the diagnosis input/output I/O10n (channel 2) was set depending on the parameterization in **P-0-3210, Safety technology control word**.

---

### Cause

An error was detected during check of interrupting circuit

### Remedy

Error cannot be cleared. Switch power supply off and on again.  
 If error occurs repeatedly, replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

### F8133 - Attributes

**Display:** F8133  
**Mess. no.:** F8133 (hex)

## F8201 Safety command for basic initialization incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In the booting phase of the drive a basic initialization is carried out on both safety technology channels. The initialization sequence on channel 2 is started via an internal command.

### Cause

Basic initialization on channel 2 is incorrect or internal command was aborted with timeout

### Remedy

Carry out load defaults procedure for safety technology (**S-0-0262, C07\_x Load defaults procedure command** with **P-0-4090, Index for C07 Load defaults procedure = 165**) and reset module (switch control voltage off and on again).

**Note:**

If necessary, repeat procedure if **P-0-3207, Safety technology password level** is unequal 1.

Incompatible firmware releases on channel 1 and channel 2

Establish compatible firmware releases on channel 1 and channel 2

If the error occurs repeatedly, the hardware has to be replaced.

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section or the safety technology module. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### F8201 - Attributes

**Display:** F8201  
**Mess. no.:** F8201 (hex)

## F8203 Safety technology configuration parameter invalid

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

All safety technology parameters are protected against incorrect input – which is similar to the use of a password – because they have to be input twice.

The time and control word parameters required for initialization are read from their parameter memory after the drive has been switched on and the two double elements are compared.

- **P-0-3210, Safety technology control word**
- **P-0-3211, Safety technology I/O control word, channel 2**
- **P-0-3220, Tolerance time transition from normal operation**
- **P-0-3221, Max. tolerance time for different channel states**
- **P-0-3222, Max. activation time of enabling control**
- **P-0-3223, Time interval for dynamization of safety function selection**
- **P-0-3224, Duration of dynamization pulse of safety function selection**
- **P-0-3225, Tolerance time transition from safety rel. oper.**
- **P-0-3240, Control word for safety related motion 1**
- **P-0-3250, Control word for safety related motion 2**
- **P-0-3260, Control word for safety related motion 3**
- **P-0-3270, Control word for safety related motion 4**

The comparison showed that not all of the double elements are identical.

---

**Note:** Switching to the operating mode is impossible.

---

### Cause

A memory cell was overwritten by mistake

Firmware defect on optional safety technology module

Hardware defect on optional safety technology module

### Remedy

Command **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)** and reset optional safety technology module (switch control voltage off and then on again)  
**Note:** The command **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)** overwrites user-defined safety technology settings! Only use this command if you want to commission safety technology again

If command error occurs repeatedly, safety technology firmware has to be replaced

If command error occurs repeatedly, optional safety technology module has to be replaced

---

**Note:** The command **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)** is started by parameter **S-0-0262, C07\_x Load defaults procedure command** with the respective setting in **P-0-4090, Index for C07 Load defaults procedure**.

---

**F8203 - Attributes**

**Display:** F8203  
**Mess. no.:** F8203 (hex)

**F8806 Timeout during loading process**

**Supported by Supply Unit:** **HMV01**

During the loading of the DC bus before switching on the power supply ("soft start") the expected DC bus voltage could not be reached within a time window.

**Cause**

Too many additional capacitances were connected

There is short circuit or load of low impedance in DC bus

**Remedy**

Reduce number of additional capacitance modules

Check wiring of DC bus connection

**F8806 - Attributes**

**Display:** F8806  
**Mess. no.:** F8806 (hex)

**F8813 Connection error mains choke**

**Supported by Supply Unit:** **HMV01**

After the power supply had been switched on a wiring error of the mains choke (e.g. incorrect phase sequence of the mains phases) was detected.

**Cause**

Mains choke was incorrectly connected

**Remedy**

Check and correct connection of mains choke

**F8813 - Attributes**

**Display:** F8813  
**Mess. no.:** F8813 (hex)

## F8838 Overcurrent external braking resistor

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The error F8838 is generated when the current in the braking resistor circuit is rising in an inadmissible way.

### Cause

Resistance value of connected braking resistor is too low

Short circuit at braking resistor connection

### Remedy

Connect braking resistor unit with higher resistance value (take specification into account!)

Remove short circuit

See also Functional Description "Power Supply"

### F8838 - Attributes

**Display:** F8838

**Mess. no.:** F8838 (hex)

## 7.3 Safety Technology Errors (F7xxx)

### Behavior in the Case of Safety Technology Error

In the case of safety technology errors (F7xxx), the drive, independent of the setting in **P-0-0119, Best possible deceleration** and **P-0-0117, Activation of NC reaction on error**, is shut down as fast as can; the drive is stopped by a velocity command value reset (see also Functional Description "Error Reaction{").

---

**Note:** NC-controlled deceleration is no longer possible in the case of safety technology errors (F7xxx).

---

At the end of the error reaction the drive goes torque-free and the output stage is locked via two channels after the time entered in **P-0-3220, Tolerance time transition from normal operation** or **P-0-3225, Tolerance time transition from safety rel. oper.** is over.

Then the power is switched off depending on the setting in **P-0-0118, Power supply, configuration**.

The drive can only be commissioned again when:

#### Steps of Commissioning

1. the error message was cleared by the error clearing command (cf. **S-0-0099, C0500 Reset class 1 diagnostics**).
2. the actual cause of the error was recognized and removed (e.g. incorrect parameterization of velocity thresholds or time windows).
3. the drive is in the operating mode again and power was switched on again ("Ab").
4. drive enable was switched on again (0-1 edge).

---

**Note:** In case safety technology errors are occurring repeatedly, contact our service department as operating the drive then is no longer allowed.

---

## F7010 Safety related limited increment exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause:

In safety function "special mode motion", position range defined in parameter

- **P-0-3243, Safety related limited increment 1** or
- **P-0-3253, Safety related limited increment 2** or
- **P-0-3263, Safety related limited increment 3** or
- **P-0-3273, Safety related limited increment 4**

has been exceeded.

### Remedy:

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

### F7010 - Attributes

**Display:** F7010  
**Mess. no.:** F7010 (hex)

## F7011 Safety rel. position limit val., exc. in pos. dir.

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause:

In safety function "special mode motion", value in parameter

- **P-0-3241, Safety related limited absolute position 1, positive** or
  - **P-0-3251, Safety related limited absolute position 2, positive**
- has been exceeded.

### Remedy:

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

### F7011 - Attributes

**Display:** F7011  
**Mess. no.:** F7011 (hex)

## F7012 Safety rel. position limit val., exc. in neg. dir.

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause:

In safety function "special mode motion", value in parameter

- **P-0-3242, Safety related limited absolute position 1, negative** or
  - **P-0-3252, Safety related limited absolute position 2, negative**
- has been exceeded.

### Remedy:

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

### F7012 - Attributes

**Display:** F7012  
**Mess. no.:** F7012 (hex)

## F7013 Velocity threshold exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause:

In safety function "special mode motion", velocity threshold parameterized in parameter

- **P-0-3244, Safety related reduced speed 1** or
- **P-0-3254, Safety related reduced speed 2** or
- **P-0-3264, Safety related reduced speed 3** or
- **P-0-3274, Safety related reduced speed 4**

has been exceeded.

### Remedy:

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

### F7013 - Attributes

**Display:** F7013

**Mess. no.:** F7013 (hex)

## F7014 Acceleration threshold exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause:

In safety function "special mode motion", threshold parameterized in parameter

- **P-0-3245, Safety related deceleration/acceleration ramp 1** or
- **P-0-3255, Safety related deceleration/acceleration ramp 2** or
- **P-0-3265, Safety related deceleration/acceleration ramp 3** or
- **P-0-3275, Safety related deceleration/acceleration ramp 4**

has been exceeded.

### Remedy:

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

## F7014 - Attributes

**Display:** F7014

**Mess. no.:** F7014 (hex)

## F7020 Safety related maximum velocity exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

When the drive is in a safety function, it is automatically switched to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

Velocity threshold parameterized in **P-0-3234**, **Safety related maximum velocity** has been exceeded

### Remedy

Start command **S-0-0099**, **C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again

### F7020 - Attributes

**Display:** F7020  
**Mess. no.:** F7020 (hex)

## F7021 Safety related end position exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

Position parameterized in **P-0-3235**, **Safety related end position, positive** or **P-0-3236**, **Safety related end position, negative** has been exceeded

### Remedy

Start command **S-0-0099**, **C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again

### F7021 - Attributes

**Display:** F7021  
**Mess. no.:** F7021 (hex)

## F7030 Pos. window for safety rel. operational stop exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

In safety function "safety related operational stop", position window defined in **P-0-3230, Monitoring window for safety related operational stop** has been exceeded

### Remedy

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.  
If necessary, change parameterization of **P-0-3230, Monitoring window for safety related operational stop** in useful way

### F7030 - Attributes

**Display:** F7030

**Mess. no.:** F7030 (hex)

## F7031 Incorrect direction of motion

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause:

In safety function "special mode motion", axis was moved in different direction than the one parameterized in

- **P-0-3240, Control word for safety related motion 1** or
- **P-0-3250, Control word for safety related motion 2** or
- **P-0-3260, Control word for safety related motion 3** or
- **P-0-3270, Control word for safety related motion 4**

Motion in incorrect direction was carried out with velocity greater than parameterized velocity threshold **P-0-3232, Monitoring window for safety related direction of motion**.

Parameterization of **P-0-3232, Monitoring window for safety related direction of motion** possibly not useful.

### Remedy:

If necessary, change parameterization of **P-0-3232, Monitoring window for safety related direction of motion** in useful way.

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

## F7031 - Attributes

**Display:** F7031

**Mess. no.:** F7031 (hex)

## F7040 Plausibility error parameterized - effective threshold

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

In corresponding monitoring function a check is run to find out whether both channels are working with the same internal safety parameter values (errors caused by accidental overwriting are detected). Values are required for all safety monitoring functions and are of fundamental importance for functioning of safety technology

### Remedy

Execute **P-0-3204, Synchronize and store safety technology IDN command** (channel 2 accepts parameters of channel 1; internal values are recalculated and loaded).  
Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again

### F7040 - Attributes

**Display:** F7040  
**Mess. no.:** F7040 (hex)

## F7041 Plausibility error actual position value

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

Actual position values determined on channel 1 and channel 2 are differing

### Remedy

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.  
 If error occurs repeatedly, replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

### F7041 - Attributes

**Display:** F7041  
**Mess. no.:** F7041 (hex)

## F7042 Plausibility error safety related operating mode

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

Plausibility comparison of active safety function of channel 1 and channel 2 shows difference for more than 5 seconds

### Remedy

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again

### F7042 - Attributes

**Display:** F7042  
**Mess. no.:** F7042 (hex)

## F7043 Error of output stage interlock

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The axis was already shut down before in order to then lock the output stage or has been shut down in order to then activate the output stage.

After selecting "safety related drive interlock" or "safety related standstill" the output stage cannot be switched off. The output stage is only switched off via one channel.

If the drive already is in "safety related drive interlock" or "safety related standstill", the output stage cannot be switched on via channel 2.

### Cause

Error occurred when activating or deactivating output stage interlock; e.g. error in output stage or feedback

### Remedy

Replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

### F7043 - Attributes

**Display:** F7043  
**Mess. no.:** F7043 (hex)

## F7050 Time for stopping process exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down with velocity command value reset.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

During transition to safety function "special mode standstill", transition time is monitored. If transition takes place from normal operation, time **P-0-3220, Tolerance time transition from normal operation** is used. If transition takes place from safety related operation, time **P-0-3225, Tolerance time transition from safety rel. oper.** is used. If actual velocity greater than value parameterized in **P-0-3233, Velocity threshold for safety related stopping process** is detected after tolerance time is over, error F7050 is generated. Parameterization of **P-0-3233, Velocity threshold for safety related stopping process** does not make sense

### Remedy

Change parameterization of **P-0-3233, Velocity threshold for safety related stopping process** in useful way.  
 Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again

### F7050 - Attributes

**Display:** F7050  
**Mess. no.:** F7050 (hex)

## 7.4 Travel Range Errors (F6xxx)

### Behavior in the Case of Travel Range Error

Travel range errors are errors associated with exceeding a travel range previously defined via hardware or software switches; independent of the settings in **P-0-0119, Best possible deceleration** and **P-0-0117, Activation of NC reaction on error** the drive therefore is stopped as fast as can.

The kind of deceleration depends on the control mode:

- **closed Loop**: velocity command value reset
- **open Loop**: under compliance with **P-0-0569, Maximum stator frequency change**

See also Functional Description "Error Reaction"

---

**Note:** In the case of travel range errors, the settings in **P-0-0118, Power supply, configuration** still are taken into account.

---

At the end of each error reaction, the drive goes torque-free.

#### Steps of Commissioning

The drive can only be commissioned again when:

1. the error reaction has been completed, i.e. the drive has stopped ( $v=0!$ ).
2. the error message was cleared by the error clearing command (cf. **S-0-0099, C0500 Reset class 1 diagnostics**).
3. the cause of the error was removed.
4. the drive is in the operating mode again and power was switched on ("Ab").
5. drive enable was switched on again (0-1 edge).

## F6024 Maximum braking time exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive checks automatically whether the motor, after drive enable has been switched off or when an error occurs, was shut down within the delay time parameterized in **S-0-0273, Maximum drive off delay time**. If not, the error F6024 is generated.

### Cause

**S-0-0273, Maximum drive off delay time** incorrectly parameterized

Brake defective or brake control resp. brake cable defective

Hardware defect on power section

### Remedy

Check parameterization of **S-0-0273, Maximum drive off delay time** and, if necessary, increase parameter content in order to extend delay time and avoid incorrect reaction

Check brake function and brake connection (cabling)

Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Motor Holding Brake"

### F6024 - Attributes

**Display:** F6024

**Mess. no.:** F6024 (hex)

## F6029 Positive travel limit exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive provides a function for monitoring an allowed travel range by means of software limit switches that can be parameterized.

---

**Note:** The travel range monitor has to be activated and parameterized via **S-0-0049, Positive position limit value, S-0-0050, Negative position limit value** and **S-0-0055, Position polarities**.

The drive reaction (fatal warning or error) in case the travel range is exceeded has to be parameterized in **P-0-0090, Travel range limit parameter**.

---

### Cause

Command value set for drive causes axis position outside of positive travel range/position limit value (**S-0-0049, Positive position limit value**)

### Remedy

1. Clear error and switch power on  
 2. Set drive enable and preset command value that leads back to the allowed travel range  
 Contact machine manufacturer in order to clarify cause of incorrect command value

**S-0-0049, Positive position limit value** incorrectly parameterized

Check and, if necessary, correct parameterization of **S-0-0049, Positive position limit value**

---

**Note:** The **S-0-0057, Position window** parameter is used to realize a hysteresis function for evaluating the position limit values.

---

See also Functional Description "Position Limitation/Travel Range Limit Switch"

### F6029 - Attributes

**Display:** F6029  
**Mess. no.:** F6029 (hex)

## F6030 Negative travel limit exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive provides a function for monitoring an allowed travel range by means of software limit switches that can be parameterized.

---

**Note:** The travel range monitor has to be activated and parameterized via **S-0-0049, Positive position limit value, S-0-0050, Negative position limit value** and **S-0-0055, Position polarities**.

The drive reaction (fatal warning or error) in case the travel range is exceeded has to be parameterized in **P-0-0090, Travel range limit parameter**.

---

### Cause

Command value set for drive causes axis position outside of positive travel range/position limit value (**S-0-0050, Negative position limit value**)

**S-0-0050, Negative position limit value** incorrectly parameterized

### Remedy

1. Clear error and switch power on  
 2. Set drive enable and preset command value that leads back to the allowed travel range  
 Contact machine manufacturer in order to clarify cause of incorrect command value

Check and, if necessary, correct parameterization of **S-0-0050, Negative position limit value**

---

**Note:** The **S-0-0057, Position window** parameter is used to realize a hysteresis function for evaluating the position limit values.

---

See also Functional Description "Position Limitation/Travel Range Limit Switch"

### F6030 - Attributes

**Display:** F6030  
**Mess. no.:** F6030 (hex)

## F6034 Emergency-Stop activated

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive provides a function for monitoring an E-Stop input (connection of an external hardware switch).

---

**Note:** This monitor has to be activated and parameterized via **P-0-0008, Activation E-Stop function**.

When the error F6034 occurs, the axis is shut down as fast as can with velocity command value reset.

---

### Cause

E-Stop input was controlled (0 V at digital input)

Incorrect parameterization of digital inputs and outputs on control section

E-Stop switch or cable connection defective or incorrectly wired

Control section or digital inputs on control section defective

### Remedy

Remove failure that caused E-Stop to be triggered and clarify cause of triggering

Correct configuration of digital inputs/outputs and correct it, if necessary

Check function and wiring of E-Stop switch

Replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

See also Functional Descriptions:

- "E-Stop Function"
- "Digital Inputs/Outputs"
- "Velocity Command Value Reset"

### F6034 - Attributes

**Display:** F6034

**Mess. no.:** F6034 (hex)

## F6042 Both travel range limit switches activated

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The compliance with the allowed travel range of linear axes is monitored on the hardware side via two travel range limit switches. When the travel range has been exceeded, one of the two limit switches is activated, if the limit switches were correctly mounted.

The error F6042 is generated, if

- the controller detects that both travel range limit switches have been simultaneously activated and
- exceeding the travel range is handled as an error (setting in **P-0-0090, Travel range limit parameter**).

### Cause

Due to incorrect mounting, axis activates both travel range limit switches simultaneously

Travel range limit switches were incorrectly connected

Switching logic of travel range limit switches does not correspond to realized wiring

### Remedy

Mount travel range limit switches in such a way that they are activated shortly before axis end position is reached. Make sure the braking distance is sufficient

Connect travel range limit switches correctly; check compliance with switching logic set in **P-0-0090, Travel range limit parameter**

Check switching logic with regard to realized wiring, adjust it in **P-0-0090, Travel range limit parameter**, if necessary

### F6042 - Attributes

**Display:** F6042  
**Mess. no.:** F6042 (hex)

## F6043 Positive travel range limit switch activated

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive provides a function for monitoring travel range limit switches (external hardware limit switches).

---

**Note:** This monitor has to be activated and parameterized via **P-0-0090, Travel range limit parameter.**

When the error F6043 occurs, the axis is shut down with velocity command value reset.

---

### Cause

Travel range limit switch situated in positive direction (see Project Planning Manual for motor) was activated because axis is outside of travel range that was defined by means of travel range limit switches

Incorrect parameterization of digital inputs and outputs on control section

Travel range limit switch or cable is defective or incorrectly wired

Control section or digital inputs on control section defective

### Remedy

1. Clear error (reset button or error clearing command) and switch power on  
 2. Set drive enable and preset command value that leads back to the allowed travel range

Correct configuration of digital inputs/outputs and correct it, if necessary

Check function and wiring of travel range limit switch

Replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

See also Functional Descriptions:

- "Position Limitation/Travel Range Limit Switch"
- "Digital Inputs/Outputs"

### F6043 - Attributes

**Display:** F6043

**Mess. no.:** F6043 (hex)

## F6044 Negative travel range limit switch activated

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive provides a function for monitoring travel range limit switches (external hardware limit switches).

---

**Note:** This monitor has to be activated and parameterized via **P-0-0090, Travel range limit parameter.**

When the error F6044 occurs, the axis is shut down with velocity command value reset.

---

### Cause

Travel range limit switch situated in negative direction (see Project Planning Manual for motor) was activated because axis is outside of travel range that was defined by means of travel range limit switches

Incorrect parameterization of digital inputs and outputs on control section

Travel range limit switch or cable is defective or incorrectly wired

Control section or digital inputs on control section defective

### Remedy

1. Clear error (reset button or error clearing command) and switch power on  
 2. Set drive enable and preset command value that leads back to the allowed travel range

Correct configuration of digital inputs/outputs and correct it, if necessary

Check function and wiring of travel range limit switch

Replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

See also Functional Descriptions:

- "Position Limitation/Travel Range Limit Switch"
- "Digital Inputs/Outputs"

### F6044 - Attributes

**Display:** F6044

**Mess. no.:** F6044 (hex)

## 7.5 Interface Errors (F4xxx)

### Behavior in the Case of Interface Error

The user can influence the drive behavior in the case of interface errors by means of the parameterization of **P-0-0118, Power supply, configuration** and **P-0-0119, Best possible deceleration** (see also Functional Description "Error Reaction").

---

**Note:** In the case of an interface error, activating the NC reaction via **P-0-0117, Activation of NC reaction on error** is no longer possible!

---

At the end of each error reaction, the drive goes torque-free.

#### Steps of Commissioning

The drive can only be commissioned again when:

1. the error reaction has been completed, i.e. the drive has stopped ( $v=0!$ ).
2. the error message was cleared by the error clearing command (cf. **S-0-0099, C0500 Reset class 1 diagnostics**).
3. the cause of the error was removed.
4. the drive is in the operating mode again and power was switched on ("Ab").
5. drive enable was switched on again (0-1 edge).

## F4001 Double MST failure shutdown

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The **master synchronization telegram (MST)** was not received in the drive in two successive SERCOS cycles.

### Cause

Disturbance in the optic fiber transmission line

Attenuation of light signals too high

Different SERCOS cycle times in master and slave

Disturbance in SERCOS interface (general)

### Remedy

Check all optic fiber connections in the SERCOS ring and replace them, if necessary

Measure attenuation of optic fiber cables again. Maximum attenuation between TX and RX mustn't exceed 12.5 dB!

Check SERCOS cycle times in master and slave and adjust them, if necessary

Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Interface Errors and Diagnostic Possibilities"

### F4001 - Attributes

**Display:** F4001

**Mess. no.:** F4001 (hex)

## F4002 Double MDT failure shutdown

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The **master data telegram (MDT)** was not received in the drive in two successive SERCOS or field bus cycles. The drive goes back to communication phase 0.

### Cause

Bus master does not send any more cyclic telegrams to the drive. These, however, are expected in communication phase 4

Fiber optic cable bus: disturbance in fiber optic transmission line

Fiber optic cable bus: Input power of light signals too low  
 Light power to be measured at receiver (with test mode: continuous light) must be between -20 dBm (10  $\mu$ W) and -5 dBm (320  $\mu$ W)

Disturbance in SERCOS interface (general)

Different transmission times of master data telegrams in master and slave

### Remedy

Switch master on and start cyclic communication; see manual for control unit

Check all fiber optic cable connections in SERCOS ring

Adjust transmitting power or check attenuation of fiber optic cable.  
 Maximum attenuation between TX and RX mustn't exceed 12.5 dB

Replace control section or entire drive controller

Synchronize transmission times of master data telegrams in master and slave

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Interface Errors and Diagnostic Possibilities"

### F4002 - Attributes

**Display:** F4002

**Mess. no.:** F4002 (hex)

## F4003 Invalid communication phase shutdown

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

An invalid communication phase (phase > 4) was set by the SERCOS master module.

### Cause

Error in SERCOS master module of control unit

### Remedy

Error can only be corrected after consultation with control unit manufacturer

See also Functional Description "Interface Errors and Diagnostic Possibilities"

### F4003 - Attributes

**Display:** F4003  
**Mess. no.:** F4003 (hex)

## F4004 Error during phase progression

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The compulsory order was not followed during the phase progression.

### Cause

Error in SERCOS master module of control unit

### Remedy

Error can only be corrected after consultation with control unit manufacturer

See also Functional Description "Interface Errors and Diagnostic Possibilities"

### F4004 - Attributes

**Display:** F4004  
**Mess. no.:** F4004 (hex)

## F4005 Error during phase regression

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When regressing from a communication phase the drive wasn't switched to communication phase 0.

### Cause

Error in SERCOS master module of control unit

### Remedy

Error can only be corrected after consultation with control unit manufacturer

See also Functional Description "Interface Errors and Diagnostic Possibilities"

### F4005 - Attributes

**Display:** F4005  
**Mess. no.:** F4005 (hex)

## F4006 Phase switching without ready signal

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The SERCOS master tried to carry out a phase switch without waiting for the ready signal from the drive.

### Cause

Error in SERCOS master module of control unit

### Remedy

Error can only be corrected after consultation with control unit manufacturer

See also Functional Description "Interface Errors and Diagnostic Possibilities"

### F4006 - Attributes

**Display:** F4006  
**Mess. no.:** F4006 (hex)

## F4009 Bus failure

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

Communication via the field bus has failed. After the field bus had been initialized and put into operation, the field bus watchdog reacted, i.e. not telegram was received within the monitoring time stored in **P-0-4075, Field bus: watchdog**.

Cause	Remedy
Master does not exchange any cyclic data	Check master status
Field bus cable not correctly connected	Check connection of field bus cable
Bad transmission performance	Check terminating resistors
Field bus: bus connection interrupted/blocked longer than watchdog time	Check watchdog time parameterized in <b>P-0-4075, Field bus: watchdog</b> and field bus connector, as well as cable connection

### F4009 - Attributes

**Display:** F4009  
**Mess. no.:** F4009 (hex)

## F4012 Incorrect I/O length

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The master tries to establish communication with an I/O length that does not correspond to the I/O length parameterized in the drive.

Cause	Remedy
Different length for input data or output data than drive expects in <b>P-0-4071, Field bus: length of cyclic command value data channel</b> and <b>P-0-4082, Field bus: length of cyclic actual value data channel</b> was configured in master	- Check parameter set in drive – Adjust master configuration

### F4012 - Attributes

**Display:** F4012  
**Mess. no.:** F4012 (hex)

## F4014 PLC watchdog

**Supported by Firmware Variant:** FWA-INDRV\*-MPH02VRS-MS

The controller is monitoring the runtime of the PLC tasks.

### Cause

Controller has detected that runtime of PLC program has been exceeded

### Remedy

Check task settings via IndraLogic programming user interface

### F4014 - Attributes

**Display:** F4014

**Mess. no.:** F4014 (hex)

## F4034 Emergency-Stop

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive provides a function for monitoring an E-Stop input (connection of an external hardware switch).

---

**Note:** This monitor has to be activated and parameterized via **P-0-0008, Activation E-Stop function**.

The axis is shut down as parameterized in **P-0-0119, Best possible deceleration**.

---

### Cause

E-Stop input was controlled (0 V at digital input)

Incorrect parameterization of digital inputs and outputs on control section

E-Stop switch or cable connection defective or incorrectly wired

Control section or digital inputs on control section defective

### Remedy

Remove failure that caused E-Stop to be triggered and clear error (reset button or error clearing command). Then switch power on again and clarify cause of E-Stop triggering.

Correct configuration of digital inputs/outputs on control section and correct it, if necessary

Check function and wiring of E-Stop switch

Replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

See also Functional Descriptions:

- "E-Stop Function"
- "Digital Inputs/Outputs"
- "Best Possible Deceleration"

### F4034 - Attributes

**Display:** F4034

**Mess. no.:** F4034 (hex)

## 7.6 Non-Fatal Safety Technology Errors (F3xxx)

### Behavior in the Case of Non-Fatal Safety Technology Error

Non-fatal safety technology errors are errors that are still allowing a freely definable, variable error reaction.

**Drive Behavior** The user can define the drive behavior for the case of non-fatal safety technology errors occurring via the setting in **P-0-0119, Best possible deceleration**.

---

**Note:** NC-controlled deceleration activated via **P-0-0117, Activation of NC reaction on error** or en error reaction set via **P-0-0119, Best possible deceleration** is only possible for the duration entered in **P-0-3220, Tolerance time transition from normal operation** or **P-0-3225, Tolerance time transition from safety rel. oper.!** In case the time is exceeded the error **F7050 Time for stopping process exceeded** is generated.

---

At the end of the error reaction the drive goes torque-free and power is switched off depending on the setting in **P-0-0118, Power supply, configuration**.

**Steps of Commissioning** The drive therefore can only be commissioned again when:

1. the error reaction has been completed, i.e. the drive has stopped ( $v=0!$ ).
2. the error message was cleared by the error clearing command (cf. **S-0-0099, C0500 Reset class 1 diagnostics**).
3. the cause of the error was removed.
4. the drive is in the operating mode again and power was switched on ("Ab").
5. drive enable was switched on again (0-1 edge).

---

**Note:** In case non-fatal safety technology errors are occurring repeatedly, contact our service department as operating the drive then is no longer allowed.

---

## F3111 Refer. missing when selecting safety related end pos.

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

Acceleration threshold parameterized in **P-0-3245, Safety related deceleration/acceleration ramp 1** has been exceeded

### Remedy

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.  
 If necessary, increase value for parameter **P-0-3245, Safety related deceleration/acceleration ramp 1**

### F3111 - Attributes

**Display:** F3111  
**Mess. no.:** F3111 (hex)

## F3112 Reference missing when selecting safety related pos.

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When a "safety related motion" safety function with configured safety related absolute position monitor is selected, a check is run to find out whether "safety related reference" has been established.

The drive is decelerated according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped, the axis signals safety; i.e. "safety technology status output controller" was set in **P-0-3214, Safety technology signal status word, channel 1** or the diagnosis input/output I/O10n (channel 2) was set depending on the parameterization in **P-0-3210, Safety technology control word**.

### Cause

A "safety related motion" safety function with configured safety related absolute position was selected without "safety related reference" having been established on channel 2 of safety technology

### Remedy

Undo selection of safety related position and start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error.  
 Set drive enable and establish "safety related reference" on channel 2, see **P-0-3228, C4000 Homing procedure command channel 2**

### F3112 - Attributes

**Display:** F3112  
**Mess. no.:** F3112 (hex)

## F3117 Plausibility error of actual position values

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When both safety technology channels have been homed (confer **S-0-0403, Position feedback value status** for channel 1 and **P-0-3213, Safety technology status** for channel 2), their actual position values are cyclically checked for plausibility.

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to "safety related standstill" and the output stage is switched off via two channels.

As soon as the axis has stopped, the axis signals safety; i.e. "safety technology status output controller" was set in **P-0-3214, Safety technology signal status word, channel 1** or the diagnosis input/output I/O10n (channel 2) was set depending on the parameterization in **P-0-3210, Safety technology control word**.

### Cause

Implausible values on channel 1 and 2 resulted from cyclic comparison of actual position values

### Remedy

Check parameterization. Then execute command **P-0-3228, C4000 Homing procedure command channel 2**

### F3117 - Attributes

**Display:** F3117  
**Mess. no.:** F3117 (hex)

## F3130 Error when checking input signals

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

When using optional module **starting lockout**:

During plausibility check of selection signals AS\_A or AS\_B and ASn, selection signal states that are not allowed were detected (contact error or cable break)

When using optional module **safety technology I/O**:

During dynamization of safety function selection not all input signals are zero. Cause can be error in wiring of input signals or short circuit of switch contacts with positive supply voltage

### Remedy

Remove cause of error in wiring of inputs or replace switch.

Then start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again

Remove cause of error in wiring of inputs or replace switch.

Then start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again

### F3130 - Attributes

**Display:** F3130

**Mess. no.:** F3130 (hex)

## F3131 Error when checking acknowledgment signal

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

When using optional module **starting lockout**:

Channel 1 monitors status of acknowledgment relay. If normal condition of relay is detected in spite of activated starting lockout function or if operated condition is detected with starting lockout not active, error message F3131 is generated. Error in wiring of acknowledgment signal (contact error or cable break)

When using optional module **safety technology I/O**:

During acknowledgment signal check a static high level (short circuit with V+) or a static low level (cable break) was detected

### Remedy

Remove cause of error in wiring of acknowledgment signal.

Then start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again

Remove cause of error in wiring of acknowledgment signal.

Then start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again

### F3131 - Attributes

**Display:** F3131  
**Mess. no.:** F3131 (hex)

## F3132 Error when checking diagnostic output signal

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

When bit 1 and bit 2 have been set in **P-0-3210, Safety technology control word**:

- a) After transition to safety function, feedback at check input E10 is missing
- b) At end of transition from safety function to normal operation, feedback is still present at check input E10

Error in wiring of diagnostic output

Error in parameterization of digital I/Os

Relay on channel 2 defective

### Remedy

Remove error(s) in wiring of diagnostic output

Control and, if necessary, correct parameterization of digital I/Os in the following parameters:  
**P-0-0300, Digital I/Os, assignment list,**  
**P-0-0301, Digital I/Os, bit numbers**  
**P-0-0302, Digital I/Os, direction**

Replace hardware

After trouble shooting start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

### F3132 - Attributes

**Display:** F3132

**Mess. no.:** F3132 (hex)

## F3133 Error when checking interrupting circuits

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In order to lock the output stage in a safety related way when the safety technology has detected an error, the correct functioning of the interrupting circuit is cyclically checked. This is done on the one hand during the actions "release output stage" and "lock output stage", on the other hand statically while the output stage is being released or locked. The corresponding hardware realization ensures that this is possible without repercussion on the PWM control signals.

---

**Note:** When the safety technology has been activated, the error F3133 only occurs in normal operation. When a safety function is selected, the cause of the error causes the error **F8133 Error when checking interrupting circuit** to be triggered.

---

The drive is decelerated according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to "safety related standstill" and the output stage is switched off via one channel.

---

**Note:** Safety is not acknowledged; i.e. "safety technology status output controller" was cleared/reset in **P-0-3214, Safety technology signal status word, channel 1** or the diagnosis input/output I/O10n (channel 2) was set depending on the parameterization in **P-0-3210, Safety technology control word**.

---

### Cause

An error was detected during check of interrupting circuit

### Remedy

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.  
 If error occurs repeatedly, replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

## F3133 - Attributes

**Display:** F3133  
**Mess. no.:** F3133 (hex)

## F3134 Dynamization time interval incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

Cause	Remedy
Error in wiring of dynamization	Remove error in wiring of dynamization
Error in signal shape of dynamization signal in the case of external dynamization	Use appropriate signal source in the case of external dynamization
Parameterization of <b>P-0-3210, Safety technology control word</b> does not make sense	In the case of internal dynamization, per safety zone configure one axis as master for dynamization (set bit 3 in <b>P-0-3210, Safety technology control word</b> )

After having removed the cause start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

**Note:** If error message occurs repeatedly, safety technology firmware has to be replaced.

- or -

Control section (only by Rexroth service engineers or especially trained users) or entire drive controller has to be replaced. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### F3134 - Attributes

**Display:** F3134  
**Mess. no.:** F3134 (hex)

## F3135 Dynamization pulse width incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

Error in wiring of dynamization

Error in signal shape of dynamization signal in the case of external dynamization

### Remedy

Remove error in wiring of dynamization

Use appropriate signal source in the case of external dynamization

After having removed the cause start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

**Note:** If error message occurs repeatedly, safety technology firmware has to be replaced.

- or -

Control section (only by Rexroth service engineers or especially trained users) or entire drive controller has to be replaced. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

## F3135 - Attributes

**Display:** F3135

**Mess. no.:** F3135 (hex)

## F3140 Plausibility error of safety parameters

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

A comparison has shown that channel 1 and channel 2 are not working with the same safety parameters

### Remedy

Execute command **P-0-3204, Synchronize and store safety technology IDN command**; channel 2 thereby accepts parameters of channel 1

### F3140 - Attributes

**Display:** F3140  
**Mess. no.:** F3140 (hex)

## F3141 Plausibility error of selection

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the monitoring process the input signals of channel 1 and channel 2 were detected not to be identical.

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

Error in wiring of input signals or switch defective

### Remedy

Remove cause of error in wiring of input signals or replace switch

**P-0-3221, Max. tolerance time for different channel states** incorrectly parameterized

Change parameterization of **P-0-3221, Max. tolerance time for different channel states**

After having removed the cause start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

### F3141 - Attributes

**Display:** F3141  
**Mess. no.:** F3141 (hex)

## F3142 Activation time of enabling control exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The parameterized maximum time for the activation of the enabling control (**P-0-3222, Max. activation time of enabling control**) has been exceeded.

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

Parameterized activation time has been exceeded.  
 Parameterization of **P-0-3222, Max. activation time of enabling control** does not make sense

Enabling control is defective or incorrectly wired

### Remedy

Change parameterization of **P-0-3222, Max. activation time of enabling control** in useful way

Check and, if necessary, replace/correct enabling control and wiring

After having removed the cause start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

### F3142 - Attributes

**Display:** F3142  
**Mess. no.:** F3142 (hex)

## F3143 Safety command for clearing errors incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

Axis is in "safety related standstill". The output stage has been switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

Execution of internal command was aborted with timeout

### Remedy

Reset module by switching control voltage on and off.  
If error occurs repeatedly, replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

### F3143 - Attributes

**Display:** F3143

**Mess. no.:** F3143 (hex)

## F3145 Error when unlocking the safety door

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is decelerated according to the setting in **P-0-0119, Best possible deceleration**

- or -

the axis already is in "safety related standstill".

The output stage is switched off via two channels.

### Cause

Error in mechanical system of safety door

Error in wiring of safety door, e.g. short circuit between I/O10n and 24 V or O10n and 0 V; driver at output of O10n defective

### Remedy

Check mechanical system of safety door

Check wiring of safety door

Then start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.

### F3145 - Attributes

**Display:** F3145

**Mess. no.:** F3145 (hex)

## F3146 System error channel 2

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

System error on channel 2

### Remedy

Reset module by switching control voltage on and off.  
Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.  
If error occurs repeatedly, replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

### F3146 - Attributes

**Display:** F3146

**Mess. no.:** F3146 (hex)

## F3147 System error channel 1

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The operatability of safety monitoring functions is cyclically checked in normal operation.

A system error occurred in channel 1. The drive is decelerated according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

Cyclic test of monitoring functions of safety technology channel 1 is faulty

### Remedy

Reset module by switching control voltage on and off.  
 If error occurs repeatedly, replace firmware and/or hardware

**Note:** Only Rexroth service engineers are allowed to replace optional modules of the control section.

Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### F3147 - Attributes

**Display:** F3147  
**Mess. no.:** F3147 (hex)

## F3150 Safety command for system start incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

When switching to operating mode – and therefore when activating safety technology functions – error occurred in channel 2

### Remedy

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.  
 If necessary, reset module by switching control voltage on and off

### F3150 - Attributes

**Display:** F3150  
**Mess. no.:** F3150 (hex)

## F3151 Safety command for system halt incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is shut down according to the setting in **P-0-0119, Best possible deceleration**.

The drive automatically switches to safety related standstill and the output stage is switched off via two channels.

As soon as the axis has stopped the safety door can be opened.

### Cause

When switching to parameter mode – and therefore when deactivating safety technology functions - error occurred in channel 2 (e.g. output stage cannot be switched on/off via channel 2)

### Remedy

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.  
 If necessary, reset module by switching control voltage on and off

### F3151 - Attributes

**Display:** F3151  
**Mess. no.:** F3151 (hex)

## F3152 Incorrect backup of safety technology data

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

### Cause

---

When switching to parameter mode – and therefore when deactivating safety technology functions - error occurred in channel 2 (e.g. output stage cannot be switched on/off via channel 2)

### Remedy

---

Start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error and then set drive enable again.  
If necessary, reset module by switching control voltage on and off

### F3152 - Attributes

**Display:** F3152  
**Mess. no.:** F3152 (hex)

## 7.7 Non-Fatal Errors (F2xxx)

### Behavior in the Case of Non-Fatal Error

Non-fatal errors are errors that are still allowing a freely definable, variable error reaction.

**Drive Behavior** The user can define the drive behavior for the case of non-fatal errors occurring via the setting of the parameters **P-0-0117, Activation of NC reaction on error** and **P-0-0119, Best possible deceleration**.

**Steps of Commissioning** The drive can only be commissioned again when:

1. the error reaction has been completed, i.e. the drive has stopped ( $v=0!$ ).
2. the error message was cleared by the error clearing command (cf. **S-0-0099, C0500 Reset class 1 diagnostics**).
3. the cause of the error was removed.
4. drive enable was switched on again (0-1 edge).

### F2005 Cam shaft invalid

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When the cam shaft mode is active, the drive monitors whether one of the cam shaft profiles contains invalid elements or is incomplete.

#### Cause

One of cam shaft profiles is invalid

#### Remedy

Check cam shaft profiles and, if necessary, reload them (**P-0-0072, Cam shaft profile1, P-0-0092, Cam shaft profile 2, P-0-0780, Cam shaft profile3 or P-0-0781, Cam shaft profile4**).  
In case of doubt contact installation programmer or machine manufacturer

See also Functional Description "Electronic Cam Shaft with Real/Virtual Master Axis"

### F2005 - Attributes

**Display:** F2005  
**Mess. no.:** F2005 (hex)

## F2006 MMC was removed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive monitors whether the MMC is available when it is used as an active memory, i.e. when the parameters are stored in the MMC.

### Cause

The MMC is used as active memory and was removed from the drive controller under voltage

Loose contact in MMC slot or MMC incorrectly plugged

MMC defective

MMC slot defective

### Remedy

Put MMC in its slot at the drive controller again and then start command **S-0-0099, C0500 Reset class 1 diagnostics** in order to clear error

Check fixing of MMC and, if necessary, plug it in correctly

Replace MMC

Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### F2006 - Attributes

**Display:** F2006

**Mess. no.:** F2006 (hex)

## F2007 Switching to non-initialized operating mode

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When switching the active operating mode the drive was switched to a non-initialized operating mode.

For the operating modes that can be selected please see Parameter Description for the operating mode parameters:

- **S-0-0032, Primary mode of operation**
- **S-0-0033, Secondary operating mode 1**
- **S-0-0034, Secondary operating mode 2**
- **S-0-0035, Secondary operating mode 3**

### Cause

Via **S-0-0134, Master control word** (for SERCOS) or **P-0-4077, Field bus: control word** (for field bus) an operating mode was selected that had not been initialized (e.g. S-0-0032="0")

### Remedy

Enter the desired operating mode in the selected operating mode parameter

See also Functional Description "Operating Mode Selection"

### F2007 - Attributes

**Display:** F2007  
**Mess. no.:** F2007 (hex)

## F2008 RL The motor type has changed.

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In the initialization phase (after the drive has been switched on) the controller checks whether the connected motor type corresponds to the type designation in **S-0-0141, Motor type**. If this is not the case, the error F2008 is generated and the controller demands loading the motor-specific control loop parameter values from the encoder memory of the motor (the display of the control panel reads "RL").

### Cause

Motor was replaced by different motor type  
 - or -  
 A parameter file was loaded to drive controller in which parameter **S-0-0141, Motor type** differs from connected motor type  
 - or -  
 Drive controller was switched on for the first time. Motor type stored in **S-0-0141, Motor type** differs from connected motor type.

### Remedy

Clear error by means of  
 - **S-0-0099, C0500 Reset class 1 diagnostics**  
 - or -  
 - Press "ESC" button at control panel of controller

**Note:** If the error is cleared, command **S-0-0262, C07\_x Load defaults procedure command** is then automatically executed, unless this was deactivated in **P-0-0556, Control word of axis controller**.

**Attention:** By command execution, previous control loop settings are overwritten with default control loop settings from encoder memory!

See also Functional Description "Control Panel"

### F2008 - Attributes

**Display:** RL  
**Mess. no.:** F2008 (hex)

## F2009 PL Load parameter default values

<b>Supported by Firmware Variant:</b>	FWA-INDRV*- <b>MPH02</b> VRS-MS FWA-INDRV*- <b>MPB02</b> VRS-MS FWA-INDRV*- <b>MPD02</b> VRS-MS
<b>Supported by Supply Unit:</b>	<b>HMV01</b>

When the firmware is replaced (firmware update) the non-volatile memory (internal memory or MMC) is automatically analyzed; during the analysis an error was detected.

---

**Note:** When the **S-0-0262, C07\_x Load defaults procedure command** is started directly with the "Load basic parameters" option the F2009 error is automatically cleared.

---

During the transition checks for the communication phases 3 and 4 the operating data (parameter values) are verified; parameters with invalid operating data (normally only all new parameters) are output in the **S-0-0021, IDN list of invalid operating data for communication phase 2** or **S-0-0022, IDN list of invalid operating data for communication phase 3** parameters.



**CAUTION**

### Material damage caused by unintended overwriting of parameters and positioning blocks!

⇒ Before executing the command for loading the parameter default values by "clear errors" you should save the current parameter set.

#### Cause

Drive was started with new firmware for the first time or a version update was carried out due to which number of non-volatile parameters has changed

Parameter memory (MMC or internal memory) is defective so that error F2009 keeps reappearing

#### Remedy

By clearing error via control panel all parameter values are cleared and set to original values (default values)  
- or -

Error is cleared by starting command **S-0-0099, C0500 Reset class 1 diagnostics**. Parameters that can be read from memory remain with their last stored value, all parameters that cannot be read from the memory (new parameters) are set to default values and marked as being invalid

Check MMC and replace it, if necessary, or replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

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See also Functional Description "Control Panel"

**F2009 - Attributes**

**Display:** PL  
**Mess. no.:** F2009 (hex)

**F2010 Error when initializing digital inputs/outputs**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

An error occurred during the first initialization of the drive (initialization of digital inputs/outputs).

**Cause**

Conflict with last stored parameters of digital inputs/outputs

**Remedy**

Check following parameter contents and correct them, if necessary:

- **P-0-0300, Digital I/Os, assignment list**
- **P-0-0301, Digital I/Os, bit numbers**
- **P-0-0302, Digital I/Os, direction**

**F2010 - Attributes**

**Display:** F2010  
**Mess. no.:** F2010 (hex)

**F2011 PLC - Error nr. 1**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS

In conjunction with technology functions the PLC integrated in the drive (optional expansion package "drive PLC") allows the user generating error messages (F2011...F2014) within the PLC program.

The causes of the error are depending on the respective PLC project (or the active technology function). If the error message is generated by a technology function made available by Bosch Rexroth, the causes and remedies are contained in the description of the technology function.

See also documentation "Rexroth IndraMotion MLD-S"

**F2011 - Attributes**

**Display:** F2011  
**Mess. no.:** F2011 (hex)

## F2012 PLC - Error nr. 2

**Supported by Firmware Variant:** FWA-INDRV\*-MPH02VRS-MS

In conjunction with technology functions the PLC integrated in the drive (optional expansion package "drive PLC") allows the user generating error messages (F2011...F2014) within the PLC program.

The causes of the error are depending on the respective PLC project (or the active technology function). If the error message is generated by a technology function made available by Bosch Rexroth, the causes and remedies are contained in the description of the technology function.

See also documentation "Rexroth IndraMotion MLD-S"

### F2012 - Attributes

**Display:** F2012  
**Mess. no.:** F2012 (hex)

## F2013 PLC - Error nr. 3

**Supported by Firmware Variant:** FWA-INDRV\*-MPH02VRS-MS

In conjunction with technology functions the PLC integrated in the drive (optional expansion package "drive PLC") allows the user generating error messages (F2011...F2014) within the PLC program.

The causes of the error are depending on the respective PLC project (or the active technology function). If the error message is generated by a technology function made available by Bosch Rexroth, the causes and remedies are contained in the description of the technology function.

See also documentation "Rexroth IndraMotion MLD-S"

### F2013 - Attributes

**Display:** F2013  
**Mess. no.:** F2013 (hex)

## F2014 PLC - Error nr. 4

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS

In conjunction with technology functions the PLC integrated in the drive (optional expansion package "drive PLC") allows the user generating error messages (F2011...F2014) within the PLC program.

The causes of the error are depending on the respective PLC project (or the active technology function). If the error message is generated by a technology function made available by Bosch Rexroth, the causes and remedies are contained in the description of the technology function.

See also documentation "Rexroth IndraMotion MLD-S"

### F2014 - Attributes

**Display:** F2014

**Mess. no.:** F2014 (hex)

## F2018 Device overtemperature shutdown

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The heat sink temperature of the device is monitored by a temperature sensor and a temperature model. When the heat sink temperature has reached the maximum value, the device is switched off in order to protect it against destruction.

---

**Note:** Before the error F2018 is triggered, the warning **E2050 Device overtemp. prewarning** is output for 30 s.

---

### Cause

Overtemperature (heat sink) due to overload of device

Ambient temperature too high. Specified performance data are valid up to an ambient temperature of 40 C.

Heat sink of device is dirty

Convection is prevented by other components or mounting position of control cabinet

Failure of internal blower

Failure of air conditioning for control cabinet

Incorrect dimensioning of control cabinet with regard to heat discharge

### Remedy

Switch drive off and let it cool down. Check mechanical system and drive dimensioning (working power mustn't exceed, on average, continuous power of drive).

Reduce ambient temperature, e.g. by cooling the control cabinet

Clean heat sink

Mount device vertically and provide sufficient space for ventilating heat sink

If blower fails, replace device or power section

Check air conditioning of control cabinet

Check dimensioning of control cabinet

See also Functional Description "Current Limitation"

### F2018 - Attributes

**Display:** F2018

**Mess. no.:** F2018 (hex)

## F2019 Motor overtemperature shutdown

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The motor temperature is monitored by a temperature sensor and a temperature model. As soon as the maximum allowed motor temperature (**S-0-0204, Motor shutdown temperature**) has been reached, the drive is shut down immediately according to the selected error reaction (**P-0-0119, Best possible deceleration**) and then switched off.

---

**Note:** Before the error F2019 is triggered, the warning **E2050 Motor overtemp. prewarning** is output for 30 s.

---



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**Note:** In the case of MHD, MKD, MKE and LSF motors, the motor overtemperature prewarning cannot be used due to the temperature sensor characteristic.  
 For MSK and MLF motors the prewarning function can be used because an appropriate temperature sensor is used for these motors.

---

### Cause

Motor shutdown temperature incorrectly parameterized

The motor is overloaded. Effective torque demanded from motor was above allowed torque for a too long time

Line interruption, ground fault or short circuit in line for motor temperature monitoring

Instability in speed control loop

### Remedy

Check and correct parameterization of **S-0-0204, Motor shutdown temperature** by means of motor or temperature sensor data sheet

Check dimensioning of motor. In the case of installations that have been operated for a long time, check whether drive conditions have changed (with regard to dirt accumulation, friction, moved masses etc.).

Check line for motor temperature monitoring for line interruption, ground fault or short circuit

Check parameterization of speed control loop

See also Functional Description "Motor Temperature Monitoring"

### F2019 - Attributes

**Display:** F2019  
**Mess. no.:** F2019 (hex)

## F2021 Motor temperature monitor defective

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The function of the temperature sensor used for motor temperature monitoring is cyclically monitored by the drive.

When a temperature equal to or less than -20 °C has been measured for 30 seconds, a defect is supposed to have occurred and the F2021 error is output.

### Cause

Interruption or short circuit in line for motor temperature monitoring

Sensor in motor is defective

Drive controller defective

### Remedy

Check motor connection and cable for interruption and short circuit

Use replacement sensor or replace motor

Replace drive controller or power section

See also Functional Description "Motor Temperature Monitoring"

### F2021 - Attributes

**Display:** F2021

**Mess. no.:** F2021 (hex)

## F2022 Device temperature monitor defective

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The function of the temperature sensor used for device temperature monitoring is cyclically monitored.

When a temperature equal to or less than -20 °C has been measured for 30 seconds, a defect is supposed to have occurred and the F2022 error is output.

### Cause

Sensor in drive controller is defective

### Remedy

Replace drive controller or power section

### F2022 - Attributes

**Display:** F2022

**Mess. no.:** F2022 (hex)

## F2026 Undervoltage in power section

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The DC bus voltage value is monitored by the drive controller and the supply unit.

### Drive Controllers HMS, HMD, HCS

If the DC bus voltage falls below the minimum value determined for the drive (see value of **P-0-0114, Undervoltage threshold**) or it reacts to "DC bus not ok" of the module bus, the device generates the error message F2026 if "non-fatal warning" has been set with regard to the reaction to undervoltage in **P-0-0118, Power supply, configuration**.

### Supply Unit HMV01.1

If the DC bus voltage falls below 75% of the mains voltage crest value that was detected when the mains contactor had been switched on, the error F2026 is displayed at the device. Power is switched off!

### Cause

Power is switched off without previous drive deactivation by means of drive enable ("AF")

Failure in power supply or overload of power supply

Mains failure

### Remedy

Check logic for activating drive in connected control unit

Check power supply

Check cause of mains failure, switch mains voltage on again

See also Functional Description "Power Supply"

## F2026 - Attributes

**Display:** F2026

**Mess. no.:** F2026 (hex)

## F2028 Excessive deviation

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When the position control loop is closed the drive monitors whether it can follow the preset position command value. To do this a actual model position value is calculated in the drive and compared with the real actual position value. If the difference of calculated and real actual position value exceeds the value entered in parameter **S-0-0159, Monitoring window** it is obvious that the drive cannot follow the preset command value and the error F2028 is generated.

**Note:** The maximum deviation between calculated and real actual position value can be read from **P-0-0098, Max. model deviation**.

### Cause

Parameterized monitoring window too small

---

Too high command acceleration due to incorrect command value set by control unit

---

Numeric value in **S-0-0092, Bipolar torque/force limit value** too low

---

Axis is blocked or sluggish

---

Incorrect or non-optimized control loop parameters

---

Acceleration capacity of drive was exceeded

### Remedy

Check and, if necessary, correct content of **S-0-0159, Monitoring window**

---

Reduce acceleration value set by the control unit (see control unit manual)

---

Check content of parameter **S-0-0092, Bipolar torque/force limit value** and set it to maximum value allowed for application

---

Check mechanical system and remove axis blocking

---

Check control loop setting (e. g. **S-0-0104, Position loop Kv-factor**, **S-0-0100, Velocity loop proportional gain**, **P-0-0556, Control word of axis controller**)

---

Check drive dimensioning

## F2028 - Attributes

**Display:** F2028  
**Mess. no.:** F2028 (hex)

## F2032 Plausibility error during commutation fine adjust

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When a synchronous motor with incremental measuring system is homed, the value of **P-0-0521, Effective commutation offset** is converted to the home point reference and compared to the optimized commutation offset in **P-0-0508, Commutation offset**. If the deviation determined due to this comparison is too great, the error F2032 is generated and the drive is shut down.

---

**Note:** If the deviation is too great, the operational safety of the motor is no longer guaranteed because a "runaway effect" of the motor can occur.

---

### Cause

Initial commissioning was not or incompletely carried out

Motor encoder was replaced

Motor connections (U, V, W) were mixed up

Values in **P-0-0508, Commutation offset** and/or **P-0-3008, Commutation offset, encoder memory** were manipulated

### Remedy

Carry out initial commissioning

Carry out initial commissioning

Check and if necessary correct motor connection

Check value stored in **P-0-0508, Commutation offset**; carry out initial commissioning again, if required

See also Functional Description "Establishing the Position Data Reference (Drive-Controlled Homing)"

### F2032 - Attributes

**Display:** F2032

**Mess. no.:** F2032 (hex)

## F2033 External power supply X10 error

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

If the X10 interface at the IndraDrive M controller has been equipped with a digital I/O extension, this requires an external 24 V power supply.

### Cause

Voltage externally applied is outside of allowed range [and temporary failures (voltage peaks) are detected]

At least one of the inputs was connected with reversed polarity

At least one of the outputs has short circuit

At least one of the outputs is overloaded

### Remedy

Supply interface with controlled power supply unit

Check wiring

Check wiring

Supply motor brake and interface with different power supply units, especially in the case of long motor cables

### F2033 - Attributes

**Display:** F2033

**Mess. no.:** F2033 (hex)

## F2036 Excessive position feedback difference

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In cyclic operation the difference between actual position value 1 and position value 2 (see also **P-0-0391, Actual position value difference encoder1 - encoder2**) is compared to **S-0-0391, Monitoring window feedback 2**. If the absolute value of the difference is greater than the monitoring window and both encoders have been homed, the error F2036 is generated.

The drive carries out the error reaction parameterized in **P-0-0119, Best possible deceleration** and the reference bits of both encoders are cleared (**S-0-0403, Position feedback value status**).

---

**Note:** The monitoring function is inactive if the value "0" was entered in the **S-0-0391, Monitoring window feedback 2** parameter.

---

### Cause

Parameters for encoder 2 incorrect

Mechanical system between motor shaft and encoder 2 incorrectly parameterized

Mechanical system between motor shaft and encoder 2 is not rigid (e.g. gear play, slip) and monitoring window is too small

Encoder cable defective

Maximum input frequency of encoder interface exceeded

Encoder 2 was not mounted to driven axis

Incorrect encoder gear settings

Position data reference of an absolute encoder incorrect

### Remedy

Check **S-0-0115, Position feedback 2 type** and **S-0-0117, Feedback 2 Resolution**

Check **S-0-0121, Input revolutions of load gear**, **S-0-0122, Output revolutions of load gear**, and **S-0-0123, Feed constant**

Increase **S-0-0391, Monitoring window feedback 2**, switch off in the case of gear with slip

Replace encoder cable

Reduce velocity

Set **S-0-0391, Monitoring window feedback 2** to "0" (switch monitoring function off)

Check relevant encoder parameters and correct them, if necessary:

**P-0-0121, Gear 1 motor-side (motor encoder) / P-0-0122, Gear 1 encoder-side (motor encoder)**

**P-0-0124, Gear 2 load-side (optional encoder) / P-0-0125, Gear 2 encoder-side (optional encoder)**

**S-0-0121, Input revolutions of load gear / S-0-0122, Output revolutions of load gear**

Execute **P-0-0012, C0300 Command Set absolute measuring**

See also Functional Description "Velocity Control with Cyclic Command Value Input"

### F2036 - Attributes

**Display:** F2036

**Mess. no.:** F2036 (hex)

## F2037 Excessive position command difference

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When the drive is running in the operating mode "position control with cyclic command value input", the incoming position command values (cf. **S-0-0047, Position command value**) are monitored. If the position difference between two successive position command values is greater than or equal to the value in **S-0-0091, Bipolar velocity limit value**, the position command value monitor is activated and the error F2037 is generated.

The excessive position command value is stored in parameter **P-0-0010, Excessive position command value**.

The last valid position command value is stored in parameter **P-0-0011, Last valid position command value**.

### Cause

Value in **S-0-0091, Bipolar velocity limit value** too low

Incorrect command value set by control unit

### Remedy

Check and, if necessary, correct parameterization of **S-0-0091, Bipolar velocity limit value**

Contact control unit manufacturer or programmer

See also Functional Description "Velocity Control with Cyclic Command Value Input"

### F2037 - Attributes

**Display:** F2037

**Mess. no.:** F2037 (hex)

## F2039 Maximum acceleration exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In cyclic position control the allowed acceleration limit value was exceeded.

---

**Note:** The acceleration monitor can be switched off by means of **P-0-0556, Control word of axis controller**.

---

### Cause

Value in **S-0-0138, Bipolar acceleration limit value** too low

Incorrect command values set by control unit (position command values)

Preset acceleration value was greater than value parameterized in **S-0-0138, Bipolar acceleration limit value**

### Remedy

Check and, if necessary, correct parameterization of **S-0-0138, Bipolar acceleration limit value**

Contact control unit manufacturer or programmer

Reduce acceleration value used  
 - **S-0-0042, Homing acceleration**  
 - **S-0-0260, Positioning acceleration**  
 - **P-0-0057, Return acceleration**

### F2039 - Attributes

**Display:** F2039

**Mess. no.:** F2039 (hex)

## F2040 Device overtemperature 2 shutdown

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

A switch-off value for the second temperature sensor is stored in element 3 of parameter **P-0-4059, Electric type data of power section**.

If parameter **P-0-0816, Amplifier temperature 2** exceeds the switch-off value, the error F2040 is generated and the device is switched off.

### Cause

Ambient temperature too high. Specified performance data are valid up to an ambient temperature of 40 C.

Heat sink of device is dirty

Convection is prevented by other components or mounting position in control cabinet

Blower of device is defective

### Remedy

Reduce ambient temperature, e.g. by cooling the control cabinet

Clean heat sink

Mount device vertically and provide sufficient space for ventilating heat sink

Replace device

### F2040 - Attributes

**Display:** F2040

**Mess. no.:** F2040 (hex)

## F2042 Encoder 2: encoder signals incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The signals of the measuring system (encoder 2) are monitored with regard to their amplitudes and signal shape. If a signal (sin or cos) leaves the allowed range or if the signals are disturbed in such a way that a position error occurs, this error is generated.

---

**Note:** As the position is no longer generated correctly when this error is detected, it is necessary to initialize the encoder again.

---

### Cause

Defective encoder cable or cable shielding

Encoder defective

Faulty mounting of measuring head in the case of linear measuring systems

Measuring system dirty

Hardware defect on control section of drive

### Remedy

Check cable to measuring system and replace it, if necessary

Check measuring system and replace it, if necessary

Check mounting of measuring head and correct it, if necessary

Replace measuring system

Replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---



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**Note:** When using an incremental encoder with square-wave signals, monitoring is carried out with regard to an unallowed edge. With regard to the software the signals of a resolver are monitored for their level.

---

See also **E2075 Encoder 2: encoder signals disturbed**

### F2042 - Attributes

**Display:** F2042

**Mess. no.:** F2042 (hex)

## F2043 Measuring encoder: encoder signals incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The signals of the measuring system (measuring encoder) are monitored with regard to their amplitudes and signal shape. If a signal (e.g. sin or cos) leaves the allowed range or if the signals are disturbed in such a way that a position error occurs, this error is generated.

---

**Note:** As the position is no longer generated correctly when this error is detected, it is necessary to initialize the encoder again.

---

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Encoder defective	Check measuring system and replace it, if necessary
Faulty mounting of measuring head in the case of linear measuring systems	Check mounting of measuring head and correct it, if necessary
Measuring system dirty	Replace measuring system
Hardware defect on control section of drive	Replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---



---

**Note:** When using an incremental encoder with square-wave signals, monitoring is carried out with regard to an unallowed edge.

---

See also **E2076 Measuring encoder: encoder signals disturbed**

### F2043 - Attributes

**Display:** F2043  
**Mess. no.:** F2043 (hex)

## F2044 External power supply X15 error

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The external 24 V power supply for the digital I/Os at the optional module (HCC01) is monitored by the drive.

If the 24 V power supply is outside of the range of 19 V to 30 V, the error F2044 is generated.

### Cause

Temporary failures (voltage peaks) or voltage drops

At least one of the inputs was connected with reversed polarity

At least one of the outputs has short circuit or is overloaded

Voltage drops because motor brake applied

### Remedy

Use controlled power supply unit

Check wiring incl. cable and correct it, if necessary

Check wiring incl. cable and remove short circuit, if necessary

Supply motor brake and interface with different power supply units, especially with long motor cables

### F2044 - Attributes

**Display:** F2044

**Mess. no.:** F2044 (hex)

## F2048 Low battery voltage

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

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**Note:** The battery was designed for a service life of 10 years in its installed state.

---

In the case of Rexroth motors of the MKD/MKE line, the absolute position information is maintained, by means of battery-buffered electronics in the motor feedback, even when the drive controller has been switched off. The battery voltage is checked in the transition command from parameter to operating mode during the initialization of the drive.

---

**Note:** As long as the drive is locked with a customer password, the error F2048 cannot be cleared!

---



**CAUTION**

### Error when controlling motors and moving parts!

- ⇒ When the error occurs for the first time, the absolute encoder function is only guaranteed for approx. another **2 weeks!**
- ⇒ **Replace battery** immediately!

#### Cause

Battery voltage has fallen below 3.1 V

#### Remedy

Clear error and immediately arrange for and prepare replacement of battery (see instructions in Project Planning Manual for respective motor). **For replacement of battery observe warning notice below!**

Battery voltage has fallen below 2.8 V

Error cannot be cleared any longer. Battery must be replaced immediately (see instructions in Project Planning Manual for respective motor). **For replacement of battery observe warning notice below!**



**DANGER**

### Lethal electric shock caused by live parts with more than 50 V!

- ⇒ The battery must be replaced with the control voltage switched on. The replacement of the battery may only be carried out by a qualified electrician.

---

**Note:** If the control voltage is switched off after the battery was removed, the absolute position data reference gets lost. The position data reference then has to be reestablished.

---

See also Functional Description "Establishing the Position Data Reference"

### F2048 - Attributes

**Display:** F2048  
**Mess. no.:** F2048 (hex)

## F2050 Overflow of target position preset memory

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In the case of drive-controlled positioning it is possible to preset a new positioning command value  $x(k+1)$  while the drive is moving to the target position of the last positioning command value  $x(k)$ . The new positioning command value is stored in an input buffer (target position preset memory) and is not cleared until it has been accepted.

### Cause

There was an attempt to preset a new positioning command value  $x(k+2)$  while drive was moving to target position of positioning command value  $x(k)$

Incorrect command value acceptance (toggling of **S-0-0346, Positioning control word**) in control unit causes positioning command value to be accepted several times

Incorrect positioning mode for "approaching target" was set in **S-0-0346, Positioning control word**

### Remedy

Check command value in control unit and make sure that new positioning command value  $x(k+2)$  is only preset when positioning command value  $x(k+1)$  was accepted and drive moves to corresponding target position

Check control program and only toggle bit 0 of **S-0-0346, Positioning control word** once for each new positioning command value, because every change of the bit causes current positioning command value to be accepted

Set positioning mode "immediately moving to new target" for "approaching target" in **S-0-0346, Positioning control word**

See also Functional Description "Drive-Controlled Positioning"

### F2050 - Attributes

**Display:** F2050  
**Mess. no.:** F2050 (hex)

## F2051 No sequential block in target position preset memory

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In the case of the positioning block mode "sequential block without intermediate stop" the drive is monitoring whether a new positioning block is available in the target position preset memory when the target position has been reached.

### Cause

When target position of a sequential block has been reached, there is no new positioning block in target position preset memory

Positioning block mode by mistake set to "sequential block without intermediate stop"

### Remedy

Preset sequential block in time (before target position has been reached)

Check positioning block mode and switch off sequential block processing, if necessary (**S-0-0346, Positioning control word**)

See also Functional Description "Drive-Controlled Positioning"

See also Functional Description "Positioning Block Mode"

### F2051 - Attributes

**Display:** F2051

**Mess. no.:** F2051 (hex)

## F2053 Incr. encoder emulator: pulse frequency too high

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The number of increments or lines output within the position loop cycle (basic: TA = 500  $\mu$ s, advanced: TA = 250  $\mu$ s) is monitored in the drive in order to make sure that the maximum allowed frequency of the incremental encoder signals of 1024 kHz is not exceeded; otherwise a position offset would be produced due to "lost increments".

---

**Note:** The maximum allowed frequency of the incremental encoder signals also has to be taken into account for dimensioning the subsequent evaluation electronics in the control unit!

---

### Cause

Resolution set in **P-0-0903, Encoder emulation resolution** is too high for existing travel velocity

### Remedy

Reduce number of increments of incremental encoder emulator in **P-0-0903, Encoder emulation resolution - or -**  
Reduce travel velocity

See also Functional Description "Incremental Encoder Emulation"

### F2053 - Attributes

**Display:** F2053  
**Mess. no.:** F2053 (hex)

## F2054 Incr. encoder emulator: hardware fault

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In the case of incremental encoder emulation, a check is run at the end of each output interval (= position loop clock) to find out whether all increments to be output have been output before the next increment output is started. Exceeding the run time or hardware errors can cause overlapping that is detected during the check and signaled by the error message F2054.

### Cause

Run time internally exceeded

### Remedy

Switch off all functions not required (e.g. analog output). If this does not remove error, replace control section or entire drive controller and contact our service department

Hardware error

Replace control section or entire drive controller and contact our service department

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**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

See also Functional Description "Incremental Encoder Emulation"

### F2054 - Attributes

**Display:** F2054  
**Mess. no.:** F2054 (hex)

## F2067 Synchronization to master communication incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive control is synchronized to the bus interface (SERCOS, Profibus, Interbus, ...) via two phase control loops (**Phase Locked Loop** - PLL). The correct function of the synchronization is monitored by monitoring the respective control deviation of the two PLLs for an allowed threshold. When the threshold is exceeded this error message is generated.

### Cause

Interference injection due to incorrect connection of master communication cause synchronization problems

Synchronization clock of master oscillates very much due to software or hardware error in master (e.g. jitter of MST with SERCOS)

Master communication hardware of drive controller is defective (e.g. optional SERCOS card)

### Remedy

Check connection of master communication (incl. shield connection) and correct it, if necessary

Check field bus master and make sure synchronization clock is good and constant

Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Master Communication"

### F2067 - Attributes

**Display:** F2067  
**Mess. no.:** F2067 (hex)

## F2069 Error when releasing the motor holding brake

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the automatic check of the holding brake (**P-0-0525, Holding brake control word**), after drive enable or after the start of the **P-0-0541, C2100 Brake check command** the motor did not move, although half the holding torque was produced.

---

**Note:** The result of the brake check is displayed in **P-0-0539, Holding brake status word**.

---

### Cause

Motor brake (servo brake) was not or incorrectly connected

Axis is mechanically blocked

Brake is defective

Brake supply error

Friction torque of axis is greater than test torque of drive

### Remedy

Connect brake or correct connection

Check mechanical system and remove blocking

Check and, if necessary, replace brake

Check voltage

Deactivate brake check (**P-0-0525, Holding brake control word**) because it cannot be used due to mechanical properties

## F2069 - Attributes

**Display:** F2069

**Mess. no.:** F2069 (hex)

## F2074 Actual pos. value 1 outside absolute encoder window

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When turning off a drive with an encoder that can be evaluated in absolute form, the current actual position will be stored in the drive. When switching the drive on again the current position is compared with the position stored when the drive was switched off the last time. If the deviation is greater than the value in **P-0-0095, Absolute encoder monitoring window for motor encoder** the F2074 error message is generated.

**Note:** The monitoring function can be switched off by **P-0-0095, Absolute encoder monitoring window for motor encoder = "0"**.

### Cause

While turned off, axis was moved further than distance contained in **P-0-0095, Absolute encoder monitoring window for motor encoder**

Value entered in **P-0-0095, Absolute encoder monitoring window for motor encoder** is too low for existing encoder resolution so that normal encoder jitter will already cause monitor to be triggered

Switching on without reference (in the case of initial commissioning or caused, for example, by changing parameters that characterize mechanical system or influence position evaluation)

Switching on without reference (after replacing motor or motor encoder)

Amplifier replaced without parameter update

Parameters of mechanical system changed (gear, feed constant, ...)

Motor encoder defective

### Remedy

Make sure displayed position is correct in relation to machine zero point Then clear error and, if necessary, reestablish position data reference

Check parameterization of **P-0-0095, Absolute encoder monitoring window for motor encoder** and increase monitoring window

Clear error and establish position data reference

Replace motor or motor encoder



**WARNING**

### Danger of accident by unintended axis motion!

⇒ Check position data reference. The encoder is defective if the position data reference is incorrect! Replace the motor and send it to the manufacturer's service department for inspection.

### F2074 - Attributes

**Display:** F2074

**Mess. no.:** F2074 (hex)

## F2075 Actual pos. value 2 outside absolute encoder window

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When turning off a drive with an external encoder that can be evaluated in absolute form, the current actual position will be stored in the drive. When switching the drive on again the current position is compared with the position stored when the drive was switched off the last time. If the deviation is greater than the value in **P-0-0096, Absolute encoder monitoring window for opt. encoder** the F2075 error message is generated.

---

**Note:** The monitoring function can be switched off by **P-0-0096, Absolute encoder monitoring window for opt. encoder**.

---

### Cause

While turned off, axis was moved further than distance contained in **P-0-0096, Absolute encoder monitoring window for opt. encoder**

Value entered in **P-0-0096, Absolute encoder monitoring window for opt. encoder** is too low for existing encoder resolution so that normal encoder jitter will already cause monitor to be triggered

Switching on without reference (in the case of initial commissioning or caused, for example, by changing parameters that characterize mechanical system or influence position evaluation)

Encoder defective or encoder replacement

Amplifier replaced without parameter update

Parameters of mechanical system changed (gear, feed constant, ...)

### Remedy

Make sure displayed position is correct in relation to machine zero point Then clear error and, if necessary, reestablish position data reference

Check parameterization of **P-0-0096, Absolute encoder monitoring window for opt. encoder** and increase monitoring window

Clear error and establish position data reference

Replace encoder, clear error and establish position data reference

Clear error and establish position data reference

Clear error and establish position data reference



**WARNING**

### Danger of accident by unintended axis motion!

⇒ Check position data reference. The encoder is defective if the position data reference is incorrect! Replace the encoder and send it to the manufacturer's service department for inspection.

### F2075 - Attributes

**Display:** F2075  
**Mess. no.:** F2075 (hex)

## F2076 Actual pos. value 3 outside absolute encoder window

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When turning off a drive with a measuring encoder that can be evaluated in absolute form, the current actual position will be stored in the drive. When switching the drive on again the current position is compared with the position stored when the drive was switched off the last time. If the deviation is greater than the value in **P-0-0097, Absolute encoder monitoring window for measuring encoder** the F2076 error message is generated.

**Note:** The monitoring function can be switched off by **P-0-0097, Absolute encoder monitoring window for measuring encoder = "0"**.

### Cause

While turned off, axis was moved further than distance contained in **P-0-0097, Absolute encoder monitoring window for measuring encoder**

Value entered in **P-0-0097, Absolute encoder monitoring window for measuring encoder** is too low for existing encoder resolution so that normal encoder jitter will already cause monitor to be triggered

Switching on without reference (in the case of initial commissioning or caused, for example, by changing parameters that characterize mechanical system or influence position evaluation)

Encoder defective or encoder replacement

Amplifier replaced without parameter update

Parameters of mechanical system changed (gear, feed constant, ...)

### Remedy

Make sure displayed position is correct in relation to machine zero point Then clear error and, if necessary, reestablish position data reference

Check parameterization of **P-0-0097, Absolute encoder monitoring window for measuring encoder** and increase monitoring window

Clear error and establish position data reference

Replace encoder, clear error and establish position data reference

Clear error and establish position data reference

Clear error and establish position data reference



**WARNING**

### Danger of accident by unintended axis motion!

⇒ Check position data reference. The encoder is defective if the position data reference is incorrect! Replace the encoder and send it to the manufacturer's service department for inspection.

### F2076 - Attributes

**Display:** F2076  
**Mess. no.:** F2076 (hex)

## F2077 Current measurement trim wrong

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The current measurement in the drive controller is adjusted in operation. The adjust values are checked for compliance with the allowed tolerance. If the values are higher the error message F2077 is generated.

### Cause

Hardware of control section or power section defective

### Remedy

Replace power section or control section resp. entire drive controller

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**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section or the power section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

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### F2077 - Attributes

**Display:** F2077  
**Mess. no.:** F2077 (hex)

## F2086 Error supply module

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

This error is signaled by the supply to the drives via the module bus. It has high priority and...

- causes error reaction in the drives in operation. The error message is displayed at these drives.
- causes power of the supply unit to be switched off or the Bb contact of converters to open (requires assignment of respective bit **P-0-0861**, **Status word of power section** to digital output!) and possibly causes DC bus short circuit (requires corresponding wiring!).

This error can also have been caused by a fatal drive error that was signaled to the supply via the module bus. The respective settings must be made in **P-0-0118**, **Power supply, configuration**.

### Cause

Failure in power supply or overload of power supply

Fatal error message of one or several drives of a drive system and message signaled to supply (configuration P-0-0118)

### Remedy

Check power supply

Identify drive or drives signaling a fatal error. Remove cause of error at respective drive or drives

See also Functional Description "Power Supply"

### F2086 - Attributes

**Display:** F2086  
**Mess. no.:** F2086 (hex)

## F2087 Module group communication error

<b>Supported by Firmware Variant:</b>	FWA-INDRV*- <b>MPH02</b> VRS-MS FWA-INDRV*- <b>MPB02</b> VRS-MS FWA-INDRV*- <b>MPD02</b> VRS-MS
<b>Supported by Supply Unit:</b>	<b>HMV01</b>

### Cause

Failure of control voltage supply of a module bus node while the "drive system" is ready for power output or in operation

Disturbance on module bus

Incorrect signal timing on module bus

Module bus cable defective

### Remedy

Supply all devices of "drive system" with control voltage

Identify and remove sources of disturbance

Identify and replace faulty device

Identify and replace defective module bus cable, replace device, if necessary

See also Functional Description "Power Supply"

### F2087 - Attributes

<b>Display:</b>	F2087
<b>Mess. no.:</b>	F2087 (hex)

## F2100 Incorrect access to command value memory

<b>Supported by Firmware Variant:</b>	FWA-INDRV*- <b>MPH02</b> VRS-MS FWA-INDRV*- <b>MPB02</b> VRS-MS FWA-INDRV*- <b>MPD02</b> VRS-MS
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An error occurred when accessing the flash/internal memory.

### Cause

Failure occurs sporadically (firmware error)

Should error occur repeatedly, Hardware in control section is defective

### Remedy

Clear error and contact our service department for firmware update

Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### F2100 - Attributes

<b>Display:</b>	F2100
<b>Mess. no.:</b>	F2100 (hex)

## F2101 It was impossible to address MMC

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When accessing the Multi Media Card (MMC) an error occurred.

### Cause

Failure occurs sporadically (firmware error)

MMC has not been plugged in correctly or is defective

MMC slot in control section is defective

### Remedy

Clear error and contact our service department in order to get a firmware update

Clear error and check MMC or plug it in correctly. If error occurs again when MMC is accessed, MMC has to be replaced

Clear error and check MMC slot. If error occurs again when MMC is accessed, control section or entire drive controller has to be replaced

See also Functional Description "MultiMediaCard (MMC)"

## F2101 - Attributes

**Display:** F2101

**Mess. no.:** F2101 (hex)

## F2102 It was impossible to address I2C memory

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When addressing a memory via the I<sup>2</sup>C bus an error occurred.

Cause	Remedy
Failure occurs sporadically (firmware error)	Clear error and contact our service department in order to get a firmware update
Encoder cable defective or bad shielding	Clear error. Replace defective encoder cable or improve shielding
Encoder memory or encoder electronics is defective	Clear error. Replace encoder or motor
Hardware defect on control section	Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Measuring Systems"

### F2102 - Attributes

**Display:** F2102  
**Mess. no.:** F2102 (hex)

## F2103 It was impossible to address EnDat memory

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When addressing a memory via the EnDat bus an error occurred.

<b>Cause</b>	<b>Remedy</b>
Failure occurs sporadically (firmware error)	Clear error and contact our service department in order to get a firmware update
Encoder cable defective or bad shielding	Clear error. Replace defective encoder cable or improve shielding
Encoder memory or encoder electronics is defective	Clear error. Replace encoder or motor
Hardware defect on control section	Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Measuring Systems"

### F2103 - Attributes

**Display:** F2103  
**Mess. no.:** F2103 (hex)

## F2104 Commutation offset invalid

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The commutation offset value stored in the motor encoder memory was detected to be invalid.

---

**Note:** The motor mustn't be operated without valid commutation offset!

---

### Cause

Failure occurs sporadically (firmware error)

Encoder memory or encoder electronics is defective

### Remedy

Clear error. Then execute command **P-0-0524, C1200 Commutation offset setting command**; if error occurs again contact our service department in order to get a firmware update

Clear error. Replace encoder or motor. Then execute command **P-0-0524, C1200 Commutation offset setting command**.

See also Functional Description "Commutation Setting"

## F2104 - Attributes

**Display:** F2104  
**Mess. no.:** F2104 (hex)

## F2110 Error in non-cyclical data communic. of power section

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

An error occurred in the communication between control section and power section.

### Cause

Failure occurs sporadically (firmware error)

Hardware defective

### Remedy

Clear error and contact our service department for firmware update

Should error occur repeatedly, control section or entire device has to be replaced

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### F2110 - Attributes

**Display:** F2110  
**Mess. no.:** F2110 (hex)

## F2174 Loss of motor encoder reference

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In the case of absolute encoder evaluation, the plausibility of the initialized absolute position is checked during position initialization. If the controller detects that the position data reference of the encoder cannot be established any more due to changes of the mechanical system parameters or due to replacement of encoder or device, the actual position value status (**S-0-0403, Position feedback value status**) goes to "relative" and the error F2174 is generated.

### Cause

Switching on without reference  
 (in the case of initial commissioning or caused, for example, by changing parameters that characterize mechanical system or influence position evaluation)

Switching on without reference  
 (after replacing motor or motor encoder)

Motor encoder defective

Parameters of mechanical system changed (gear, feed constant, ...)

Amplifier replaced without parameter update

Switching on without reference after replacement of device with loaded axis-specific parameter values (according to list from **S-0-0192, IDN-list of backup operation data**)

### Remedy

Clear error and reestablish position data reference

Clear error and establish position data reference

Replace motor or motor encoder, clear error and establish position data reference

Clear error and establish position data reference

Clear error and establish position data reference

Clear error and establish position data reference  
 - or -  
 Clear error, then load parameter values of **P-0-0195, IDN list of retain data (replacement of devices)**, if it was possible to save them immediately before device was replaced. Check reestablished position data reference for correctness

### F2174 - Attributes

**Display:** F2174

**Mess. no.:** F2174 (hex)

## F2175 Loss of optional encoder reference

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In the case of absolute encoder evaluation, the plausibility of the initialized absolute position is checked during position initialization. If the controller detects that the position data reference of the encoder cannot be established any more due to changes of the mechanical system parameters or due to replacement of encoder or device, the actual position value status (**S-0-0403, Position feedback value status**) goes to "relative" and the error F2175 is generated.

### Cause

Switching on without reference  
 (in the case of initial commissioning or caused, for example, by changing parameters that characterize mechanical system or influence position evaluation)

Switching on without reference  
 (after replacement of encoder)

Optional encoder defective

Parameters of mechanical system changed (gear, feed constant, ...)

Amplifier replaced without parameter update

Switching on without reference after replacement of device with loaded axis-specific parameter values (according to list from **S-0-0192, IDN-list of backup operation data**)

### Remedy

Clear error and reestablish position data reference

Clear error and establish position data reference

Replace encoder, clear error and establish position data reference

- or -

Clear error, then load parameter values of **P-0-0195, IDN list of retain data (replacement of devices)**, if it was possible to save them immediately before device was replaced. Check reestablished position data reference for correctness

## F2175 - Attributes

**Display:** F2175

**Mess. no.:** F2175 (hex)

## F2176 Loss of measuring encoder reference

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When the controller is switched on, it determines, in the case of absolute encoder evaluation, the initial position of the measuring system (position initialization) and checks its plausibility. If the controller detects that the position data reference of the encoder cannot be established any more due to changes of the mechanical system parameters or due to replacement of encoder or device, the actual position value status (**S-0-0403, Position feedback value status**) goes to "relative" and this diagnostic message is generated.

### Cause

Switching on without reference  
 (in the case of initial commissioning or caused, for example, by changing parameters that characterize mechanical system or influence position evaluation)

Encoder defective

Switching on without reference  
 (after replacement of measuring encoder)

Controller replaced without parameter update

### Remedy

Clear error and establish position data reference

Replace measuring encoder, clear error and establish position data reference

Clear error and establish position data reference

Clear error and establish position data reference

### F2176 - Attributes

**Display:** F2176  
**Mess. no.:** F2176 (hex)

## F2177 Modulo limitation error of motor encoder

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

With active modulo scaling the drive limits its actual position values to the values parameterized in **S-0-0103, Modulo value**, otherwise to the value parameterized in **S-0-0278, Maximum travel range**. As these values possibly cannot be exactly displayed, the corresponding recalculation of the systematic errors in the case of position overflow takes place in the drive.

---

**Note:** In the ideal case **S-0-0278, Maximum travel range** is set in such a way that the drive always is within the defined travel range and there is no overflow.

---

### Cause

**S-0-0103, Modulo value** or **S-0-0278, Maximum travel range** have been incorrectly parameterized and not adjusted to the application

Drive was moved as rapidly that recalculation no longer works correctly

### Remedy

Check and, if necessary, correct **S-0-0103, Modulo value** or **S-0-0278, Maximum travel range**

Reduce drive velocity at position overflow

### F2177 - Attributes

**Display:** F2177  
**Mess. no.:** F2177 (hex)

## F2178 Modulo limitation error of optional encoder

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

According to scaling, the drive limits the actual position values to the maximum travel range or to the modulo value. As these values possibly cannot be exactly displayed the corresponding recalculation of the errors takes place in the drive.

### Cause

Encoder speed was so high that recalculation no longer works correctly

### Remedy

Reduce encoder speed  
 - or -  
 change **S-0-0103, Modulo value**

### F2178 - Attributes

**Display:** F2178  
**Mess. no.:** F2178 (hex)

## F2179 Modulo limitation error of measuring encoder

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

With active modulo scaling the drive limits its actual position values to the values parameterized in **S-0-0103, Modulo value**, otherwise to the value parameterized in **S-0-0278, Maximum travel range**. As these values possibly cannot be exactly displayed, the corresponding recalculation of the systematic errors in the case of position overflow takes place in the drive.

**Note:** In the ideal case **S-0-0278, Maximum travel range** is set in such a way that the drive always is within the defined travel range and there is no overflow.

### Cause

**S-0-0103, Modulo value** or **S-0-0278, Maximum travel range** have been incorrectly parameterized and not adjusted to the application

Drive was moved as rapidly that recalculation no longer works correctly

### Remedy

Check and, if necessary, correct **S-0-0103, Modulo value** or **S-0-0278, Maximum travel range**

Reduce drive velocity at position overflow

### F2179 - Attributes

**Display:** F2179  
**Mess. no.:** F2179 (hex)

## F2802 PLL is not synchronized

**Supported by Supply Unit:** **HMV01**

Synchronization to the mains voltage is impossible.

### Cause

At least one phase is missing

Mains voltage is too low

Mains frequency is outside of specified range

### Remedy

Check and, if necessary, replace mains circuit breakers

Measure mains voltage and compare it to allowed value range

Measure mains frequency and compare it to allowed value range

### F2802 - Attributes

**Display:** F2802  
**Mess. no.:** F2802 (hex)

## F2814 Undervoltage in mains

Supported by Supply Unit: **HMV01**

The crest value of the mains voltage has fallen below the allowed minimum value (connection voltage range see documentation for HMV01.1).

### Cause

---

Mains voltage below minimum value

### Remedy

---

Use matching transformer

See also Functional Description "Power Supply"

### F2814 - Attributes

Display: F2814

Mess. no.: F2814 (hex)

## F2815 Overvoltage in mains

Supported by Supply Unit: **HMV01**

### Cause

---

Mains voltage is greater than maximum specified value (500 V+10%)

### Remedy

---

Check mains voltage. If necessary, use matching transformer

### F2815 - Attributes

Display: F2815

Mess. no.: F2815 (hex)

## F2816 Softstart fault power supply unit

<b>Supported by Firmware Variant:</b>	FWA-INDRV*- <b>MPH02</b> VRS-MS FWA-INDRV*- <b>MPB02</b> VRS-MS FWA-INDRV*- <b>MPD02</b> VRS-MS
<b>Supported by Supply Unit:</b>	<b>HMV01</b>

During the soft start process (loading of DC bus capacitance) the DC bus voltage curve is monitored. Great deviations suggest a defect in the power section and are diagnosed with the error F2816.

Cause	Remedy
Short circuit in DC bus	Check DC bus wiring, remove if there is a short circuit
Load on DC bus	Check DC bus wiring; if an external braking resistor has been incorrectly connected, connect it correctly
Insulation error in DC bus	Check DC bus wiring; if wiring is alright, there can be an insulation error within device or other devices connected to DC bus. To find defective device take connected devices out of drive system step by step (remove wiring)
Final value of DC bus voltage is not reached within a maximum time	Check whether there is defect at load externally connected to DC bus
Inadmissible voltage fluctuations in supply mains. Mains voltage has inadmissibly dropped during soft start process	Check mains voltage
Device is defective	Replace device

### F2816 - Attributes

<b>Display:</b>	F2816
<b>Mess. no.:</b>	F2816 (hex)

## F2817 Overvoltage in power section

<b>Supported by Supply Unit:</b>	<b>HMV01</b>
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If the warning **E8025 Overvoltage in power section** persists for more than 2 seconds, the error F2817 is generated and power is switched off.

Cause	Remedy
See <b>E8025 Overvoltage in power section</b>	See <b>E8025 Overvoltage in power section</b>

### F2817 - Attributes

<b>Display:</b>	F2817
<b>Mess. no.:</b>	F2817 (hex)

## F2818 Phase failure

**Supported by Supply Unit:** **HMV01**

A single-phase mains failure of more than 2 seconds was detected. The device was switched off.

### Cause

Mains circuit breaker defective

Incorrect wiring

### Remedy

Replace mains circuit breaker

Check and correct wiring

### F2818 - Attributes

**Display:** F2818

**Mess. no.:** F2818 (hex)

## F2819 Mains failure

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The mains has failed. The DC bus voltage has fallen below a threshold value so that a new soft start process is required.

### Cause

Mains failure (permanent or temporary)

### Remedy

Search and remove cause of mains failure

See also Functional Description "Power Supply"

### F2819 - Attributes

**Display:** F2819

**Mess. no.:** F2819 (hex)

## F2820 Braking resistor overload

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

Power was switched off due to overload of the braking resistor.

---

**Note:** After having eliminated the cause of the error check the braking resistor for operatability!

---

### Cause

Allowed deceleration of connected drives too high

Energy absorption capacity of braking resistor is exhausted

Regenerated energy in machining cycle is too high

Continuous regenerative power and/or rotary drive energy is too high

Device is defective

### Remedy

Reduce deceleration of connected drives

Switch power supply off with a delay in the case of drive OFF or E-STOP (for regenerative supplies) or reduce velocity

Increase cycle time or reduce maximum velocity

Reduce maximum velocity or check dimensioning of braking resistor and, if necessary, increase dimensioning

Replace device

See also Functional Description "Power Supply"

### F2820 - Attributes

**Display:** F2820

**Mess. no.:** F2820 (hex)

## F2821 Error in control of braking resistor

<b>Supported by Firmware Variant:</b>	FWA-INDRV*- <b>MPH02</b> VRS-MS FWA-INDRV*- <b>MPB02</b> VRS-MS FWA-INDRV*- <b>MPD02</b> VRS-MS
<b>Supported by Supply Unit:</b>	<b>HMV01</b>

---

**Note:** The error can occur for devices of both the HCS and the HMV type. There are different causes and remedies for both device types!

---

### Devices of the HCS type:

An error has occurred in the control of the **external** braking resistor.

#### Cause

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Control of braking resistor has detected inadmissibly high current

---

Terminal connectors for external braking resistor have been short-circuited

#### Remedy

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Check braking resistor for correct resistance value. If necessary, use braking resistor with higher resistance value

---

Remove short circuit, connect braking resistor correctly, if necessary

### Devices of the HMV type:

An error has occurred in the control of the **internal** braking resistor.

#### Cause

---

Device is defective

#### Remedy

---

Replace device

## F2821 - Attributes

<b>Display:</b>	F2821
<b>Mess. no.:</b>	F2821 (hex)

## F2825 Switch-on threshold braking resistor too low

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

For devices of the HCS type this error message is generated when the parameterized braking resistor reference switch-on voltage is too low. The braking resistor would already be active with correct DC bus voltage.

### Cause

This error message is generated for devices of type HCS when the value of the braking resistor reference switch-on voltage (list element 4 of **P-0-0858, Data of external braking resistor**) activated via **P-0-0860, Control word of power section** is too low

### Remedy

Increase value of 4<sup>th</sup> list element in **P-0-0858, Data of external braking resistor**  
 - or -  
 Select different reference value for ON-OFF switching voltage of braking resistor in **P-0-0860, Control word of power section**

### F2825 - Attributes

**Display:** F2825  
**Mess. no.:** F2825 (hex)

## F2833 Ground fault in motor line

**Supported by Supply Unit:** **HMV01**

During the loading process of the DC bus a ground fault was detected in the motor line of one of the connected converters/inverters.

### Cause

Ground fault in a motor line within drive system  
 - or -  
 Ground fault in a controller of drive system

### Remedy

Take controllers of drive system successively out of device group on control voltage and power voltage side, until error no longer occurs. By doing this identify faulty drive.  
 Check insulation of motor cable with measuring device.  
 If motor cable is not defective, there is a device or connection error

### F2833 - Attributes

**Display:** F2833  
**Mess. no.:** F2833 (hex)

## F2834 Contactor control error

**Supported by Supply Unit:** **HMV01**

The mains contactor could not be switched on or dropped out during operation.

<b>Cause</b>	<b>Remedy</b>
Mains contactor could not be switched	Replace device
Contactor monitor has detected an error	Replace device

### F2834 - Attributes

**Display:** F2834  
**Mess. no.:** F2834 (hex)

## F2836 Error balancing monitor/ground fault

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

Unbalance was detected for supply unit HMV01.1 / converter HCS03 during the loading of the DC bus capacitances.

<b>Cause</b>	<b>Remedy</b>
F2836 is signaled during loading of DC bus ("soft start")	Replace device

### F2836 - Attributes

**Display:** F2836  
**Mess. no.:** F2836 (hex)

## F2840 Error supply shutdown

Supported by Supply Unit:

HMV01

### Cause

A second supply unit or converter connected in parallel signals a supply error

### Remedy

Remove cause of error at respective supply unit / converter and clear error

### F2840 - Attributes

Display: F2840

Mess. no.: F2840 (hex)

## F2860 Overcurrent in mains-side power section

Supported by Supply Unit:

HMV01

For HCS, HMS, HMD

The current in the power transistor bridge has exceeded the maximum allowed device peak current. The drive is immediately de-energized, the motor coasts to stop.

For HMV01.1R

The current in the mains-side power bridge has exceeded the maximum allowed value. The power supply is switched off.

### Cause

Short circuit in motor or motor cable

Device defective

Current loop parameterized differently (not for HMV01.1R)

### Remedy

Check motor cable and motor for short circuit

Replace device

Check current loop parameters to see whether they differ from the parameters on the motor data sheet; correct them if necessary

### F2860 - Attributes

Display: F2860

Mess. no.: F2860 (hex)

## F2890 Invalid device code

Supported by Supply Unit:

HMV01

### Cause

Device defective

### Remedy

Replace device

### F2890 - Attributes

Display: F2890

Mess. no.: F2890 (hex)

## F2891 Incorrect interrupt timing

Supported by Supply Unit: **HMV01**

---

**Cause**

Device defective

---

**Remedy**

Replace device

### F2891 - Attributes

**Display:** F2891

**Mess. no.:** F2891 (hex)

## F2892 Hardware variant not supported

Supported by Supply Unit: **HMV01**

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**Cause**

Device defective

---

**Remedy**

Replace device

### F2892 - Attributes

**Display:** F2892

**Mess. no.:** F2892 (hex)

## 7.8 SERCOS error codes / Error messages in service channel

The error codes defined in the SERCOS interface specification are used. (See SERCOS Interface specification, sec. 4.3.2.3 "Error messages in service channel"). These codes are also used with faulty accessing of control and systems parameters.

<b>Error code</b>	<b>Explanation</b>
0x1001	IDN not available
0x1009	element 1 incorrectly accessed
0x2001	name not available
0x2002	name transmission too short
0x2003	name transmission too long
0x2004	name cannot be changed
0x2005	name presently write protected
0x3002	attribute transmission too short
0x3003	attribute transmission too long
0x3004	attribute cannot be changed
0x3005	attribute presently write protected
0x4001	unit not available
0x4002	unit transmission too short
0x4003	unit transmission too long
0x4004	unit cannot be changed
0x4005	unit presently write protected
0x5001	minimum input value not available
0x5002	minimum input value transmission too short
0x5003	minimum input value transmission too long
0x5004	minimum input value cannot be changed
0x5005	minimum input value presently write protected
0x6001	maximum input value not available
0x6002	maximum input value transmission too short
0x6003	maximum input value transmission too long
0x6004	maximum input value cannot be changed

-> continuation...

<b>Error code</b>	<b>Explanation</b>
0x6005	maximum input value presently write protected
0x7002	data transmission too short
0x7003	data transmission too long
0x7004	data cannot be changed
0x7005	data presently write protected
0x7006	data smaller than minimum input value
0x7007	data greater than maximum input value
0x7008	data not correct
0x7009	data password protected
0x700A	Operation data is write protected, it is configured cyclically
0x700B	Invalid indirect addressing (e.g. data container, list handling)
0x700C	Operation data is write protected, due to other settings (e.g., parameter, operation mode, drive enable, drive on etc.)
0x7010	procedure command already active
0x7011	procedure command not interruptible
0x7012	procedure command at this time not executable (e.g., in this phase the procedure command cannot be activated)
0x7013	procedure command not executable (invalid or false parameters)

Fig. 7-1: Error specification per SERCOS

## 8 Warning Diagnostic Messages (Exxxx)

### 8.1 Fatal Warning Diagnostic Messages (E8xxx)

#### E8025 Overvoltage in power section

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The DC bus voltage is monitored. When the allowed maximum value is exceeded, the fatal warning E8025 is generated.

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**Note:** The controller switches the motor to torque-free state in the case of overvoltage. If the DC bus voltage falls below the allowed maximum value again, the motor is switched on again.

---



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**Note:** *Only for HMV:* If the warning E8025 persists for more than 2 seconds, the error **F2817 Overvoltage in power section** is generated.

---

#### Cause

Energy regenerated to DC bus by mechanical machine system during braking process was so high that supply unit couldn't dissipate it during regeneration time. This caused DC bus voltage to rise to inadmissible value

---

Mains supply voltage (alternating input voltage) too high

---

No braking resistor connected or connection or cable defective

#### Remedy

Reduce regenerative power by lower acceleration values

– or –

Correct drive dimensioning

– or –

Dimension supply unit sufficiently with regard to braking energy requirements; if dimensioning of available braking resistor is insufficient, use additional braking resistor, if necessary

---

Check mains supply voltage (alternating voltage/3-phase)

---

Connect braking resistor or check connection

#### E8025 - Attributes

**Display:** E8025  
**Mess. no.:** E8025 (hex)

## E8028 Overcurrent in power section

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

The controller monitors the motor current (= controller output current) supplied by the power section.

- If the controller output current is higher than the 1.2-fold of **S-0-0110, Amplifier peak current**  
 - or -
- if the controller output current is higher than the product of **P-0-4013, Current limit value of demagnetization** and **S-0-0109, Motor peak current**,

the output stage of the power section is locked until the controller output current has fallen to allowed values again; during this time the warning E8028 is output.

### Cause

Current loop incorrectly parameterized

In the case of Bosch Rexroth motors with encoder data memory (MHD, MKD, MKE), values for current loop parameterization do not correspond to values in encoder data memory

In the case of Rexroth motors without encoder data memory, values for current loop parameterization do not correspond to manufacturer-side specifications

In the case of third-party motors, output data for calculating parameter values are not correct

### Remedy

Check current loop setting (**S-0-0106, Current loop proportional gain 1**, **S-0-0107, Current loop integral action time 1**) and, if necessary, correct it after having contacted our service department

Check whether values in **S-0-0106, Current loop proportional gain 1** and **S-0-0107, Current loop integral action time 1** correspond to values in encoder data memory (**P-0-2106, Current loop proportional gain 1, encoder memory** and **P-0-2107, Current loop integral-action time 1, encoder memory**)

**Attention:** Calculation of **S-0-0106, Current loop proportional gain 1** depends on **P-0-0001, Switching frequency of the power output stage** and **P-0-0556, Control word of axis controller!**

Check whether values in **S-0-0106, Current loop proportional gain 1** and **S-0-0107, Current loop integral action time 1** correspond to manufacturer-side specifications (see DriveTop)

Check whether output data for calculating parameter values are correct

### E8028 - Attributes

**Display:** E8028  
**Mess. no.:** E8028 (hex)

## E8029 Positive position limit exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive provides a function for monitoring an allowed travel range by means of software limit switches that can be parameterized.

**Note:** The travel range monitor has to be activated and parameterized via **S-0-0049, Positive position limit value, S-0-0050, Negative position limit value** and **S-0-0055, Position polarities**.  
 The drive reaction (fatal warning or error) in case the travel range is exceeded has to be parameterized in **P-0-0090, Travel range limit parameter**.

### Cause

A command value was set for the drive that causes an axis position outside the positive travel range/position limit value

Positive travel range/position limit value incorrectly parameterized

### Remedy

Set command value that leads back to the allowed travel range.  
 Contact machine manufacturer in order to find out cause of incorrect command value

Check and, if necessary, correct parameterization of **S-0-0049, Positive position limit value**

**Note:** The **S-0-0057, Position window** parameter is used to realize a hysteresis function for evaluating the position limit values.

See also Functional Description "Position Limitation/Travel Range Limit Switch"

### E8029 - Attributes

**Display:** E8029  
**Mess. no.:** E8029 (hex)

## E8030 Negative position limit exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive provides a function for monitoring an allowed travel range by means of software limit switches that can be parameterized.

**Note:** The travel range monitor has to be activated and parameterized via **S-0-0049, Positive position limit value, S-0-0050, Negative position limit value** and **S-0-0055, Position polarities**.  
 The drive reaction (fatal warning or error) in case the travel range is exceeded has to be parameterized in **P-0-0090, Travel range limit parameter**.

### Cause

A command value was set for the drive that causes an axis position outside the negative travel range/position limit value

Positive travel range/position limit value incorrectly parameterized

### Remedy

Set command value that leads back to the allowed travel range.  
 Contact machine manufacturer in order to find out cause of incorrect command value

Check and, if necessary, correct parameterization of **S-0-0050, Negative position limit value**

**Note:** The **S-0-0057, Position window** parameter is used to realize a hysteresis function for evaluating the position limit values.

See also Functional Description "Position Limitation/Travel Range Limit Switch"

### E8030 - Attributes

**Display:** E8030  
**Mess. no.:** E8030 (hex)

## E8034 Emergency-Stop

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The drive provides a function for monitoring an E-Stop input (connection of an external hardware switch). This monitor has to be activated and parameterized via **P-0-0008, Activation E-Stop function**.

**Note:** When the warning E8034 occurs, the axis is shut down as fast as can with velocity command value reset.  
There isn't any message transmitted to the control unit.

### Cause

E-Stop input was controlled (0 V at digital input)

Incorrect parameterization of digital inputs and outputs on control section

E-Stop switch or cable connection defective or incorrectly wired

Control section or digital inputs on control section defective

### Remedy

Remove failure that caused E-Stop to be triggered and clarify cause of triggering

Correct configuration of digital inputs/outputs on control section and correct it, if necessary

Check function and wiring of E-Stop switch

Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "E-Stop Function"

See also Functional Description "Digital Inputs/Outputs"

See also Functional Description "Velocity Command Value Reset"

### E8034 - Attributes

**Display:** E8034

**Mess. no.:** E8034 (hex)

## E8040 Torque/force actual value limit active

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The warning E8040 is generated when the "stall protection loop" takes effect and changes the working point of the machine for its relief.

**Note:** The axis is shut down as fast as can with velocity command value reset. There isn't any message transmitted to the control unit.

### Cause

Load torque is too high  
Torque limit values incorrectly parameterized

### Remedy

Reduce load torque  
Check parameters **S-0-0082, Torque/force limit value positive; S-0-0083, Torque/force limit value negative; S-0-0092, Bipolar torque/force limit value** and **P-0-0109, Torque/force peak limit** and increase limits, if necessary

See also Functional Description "Voltage-Controlled Operation"

### E8040 - Attributes

**Display:** E8040  
**Mess. no.:** E8040 (hex)

## E8041 Current limit active

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The warning E8041 is generated when the current limitation loop takes effect and reduces the output voltage due to overvoltage.

**Note:** The axis is shut down as fast as can with velocity command value reset. There isn't any message transmitted to the control unit.

### Cause

**S-0-0109, Motor peak current** incorrectly parameterized  
Short circuit at output of power output stage (e.g. in motor cable or in motor)  
Power output stage in drive controller defective

### Remedy

Check content of **S-0-0109, Motor peak current** and increase it, if necessary  
Check motor connection and motor for short circuit and replace cable or motor, if necessary  
Replace drive controller

**Note:** The replacement of the drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Voltage-Controlled Operation"

### E8041 - Attributes

**Display:** E8041  
**Mess. no.:** E8041 (hex)

## E8042 Both travel range limit switches activated

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The compliance with the allowed travel range of linear axes is monitored on the hardware side via two travel range limit switches. When the travel range has been exceeded, one of the two limit switches is activated, if the limit switches were correctly mounted.

The warning E8042 is generated, if

- the controller detects that both travel range limit switches have been simultaneously activated and
- exceeding the travel range is handled as a fatal warning (setting in **P-0-0090, Travel range limit parameter**).

---

**Note:** Unless the cause of E8042 has not been removed the controller does not accept any command value!

---

### Cause

Due to incorrect mounting, axis activates both travel range limit switches simultaneously

Travel range limit switches were incorrectly connected

Switching logic of travel range limit switches does not correspond to realized wiring

### Remedy

Mount travel range limit switches in such a way that they are activated shortly before axis end position is reached. Make sure the braking distance is sufficient

Connect travel range limit switches correctly; check compliance with switching logic set in **P-0-0090, Travel range limit parameter**

Check switching logic with regard to realized wiring, adjust it in **P-0-0090, Travel range limit parameter**, if necessary

### E8042 - Attributes

**Display:** E8042  
**Mess. no.:** E8042 (hex)

## E8043 Positive travel range limit switch activated

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive provides a function for monitoring travel range limit switches (external hardware limit switches). This monitor has to be activated and parameterized via **P-0-0090, Travel range limit parameter**.

**Note:** When the warning E8043 occurs, the axis is shut down with velocity command value reset.

### Cause

Travel range limit switch situated in positive direction (see Project Planning Manual for motor) was activated because axis is outside of travel range that was defined by means of travel range limit switches

Incorrect parameterization of digital inputs and outputs on control section

Travel range limit switch or cable is defective or incorrectly wired

Control section or digital inputs on control section defective

### Remedy

Set drive enable and input a command value leading back to allowed travel range

Correct configuration of digital inputs/outputs on control section and correct it, if necessary

Check function and wiring of travel range limit switch

Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Travel Range Limits"  
 See also Functional Description "Digital Inputs/Outputs"

### E8043 - Attributes

**Display:** E8043  
**Mess. no.:** E8043 (hex)

## E8044 Negative travel range limit switch activated

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive provides a function for monitoring travel range limit switches (external hardware limit switches). This monitor has to be activated and parameterized via **P-0-0090, Travel range limit parameter**.

**Note:** When the warning E8044 occurs, the axis is shut down with velocity command value reset.

### Cause

Travel range limit switch situated in negative direction (see Project Planning Manual for motor) was activated because axis is outside of travel range that was defined by means of travel range limit switches

Incorrect parameterization of digital inputs and outputs on control section

Travel range limit switch or cable is defective or incorrectly wired

Control section or digital inputs on control section defective

### Remedy

Set drive enable and input a command value leading back to allowed travel range

Correct configuration of digital inputs/outputs on control section and correct it, if necessary

Check function and wiring of travel range limit switch

Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Travel Range Limits"  
 See also Functional Description "Digital Inputs/Outputs"

### E8044 - Attributes

**Display:** E8044  
**Mess. no.:** E8044 (hex)

## E8055 Motor overload, current limit active

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

In order to protect the motors against thermal destruction in the case of peak loads occurring for a very short time, the thermal work load of the motor is continuously calculated in the controller by means of a motor temperature model.

If the maximum possible motor current is reduced, due to the current thermal motor load, compared to the content of **S-0-0109, Motor peak current**, the drive generated the warning E8055. As a consequence thereof the drive can no longer follow the command values preset by a control unit.

---

**Note:** When the E8055 warning is active, bit 0 (overload warning) is additionally set in **S-0-0012, Class 2 diagnostics**.

---

### Cause

Too high acceleration torque/too high acceleration force demanded

Overload of drive by too high continuous load

Too high process or machining force (e.g. infeed)

Mechanical changes in axis (e.g. friction, load conditions,...)

### Remedy

Reduce acceleration by adjusted command value profile

Reduce overload in the case of long machining phases

Reduce process or machining force

Check mechanical system and, if necessary, optimize load conditions and/or friction conditions

See also Functional Description "Current Limitation"

### E8055 - Attributes

**Display:** E8055

**Mess. no.:** E8055 (hex)

## E8057 Device overload, current limit active

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

In order to protect the devices against thermal destruction, the thermal load of the output stage in devices with digital current control is continuously calculated by a temperature model, depending on the measured current.

**For HCS, HMS, HMD**

If the thermal load exceeds 97% (displayed in **P-0-0141, Thermal drive load**), the continuous current limitation is activated and the warning E8057 is generated. As a consequence thereof the drive can no longer follow the command values preset by a control unit.

**Note:** When the E8057 warning is active, bit 0 (overload warning) is additionally set in **S-0-0012, Class 2 diagnostics**.

**For HMV01.1R**

When the thermal load has reached 100%, the continuous current limitation is activated and the warning E8057 is generated. As a consequence thereof the available DC bus power is reduced and especially drives that require high power can no longer follow the preset command values.

### Cause

Device is not adjusted to requirements of application or motor

Too high acceleration torque/too high acceleration force demanded

Overload of drive by too high continuous load

Too high process or machining force (e.g. infeed)

Mechanical changes in axis (e.g. friction, load conditions,...)

### Remedy

Check dimensioning of drive and, if necessary, use more powerful device

Reduce acceleration by adjusted command value profile

Reduce overload in the case of long machining phases

Reduce process or machining force

Check mechanical system and, if necessary, optimize load conditions and/or friction conditions

See also Functional Description "Current Limitation"

### E8057 - Attributes

**Display:** E8057

**Mess. no.:** E8057 (hex)

## E8058 Drive system not ready for operation

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

This fatal warning can occur for drive controllers in operation that are interconnected via the module bus. If one of these drive controllers in operation signals an error via the module bus, the drives that are to react to signaled errors ("package reaction") react with shutdown. The reacting drives display the warning E8058, the supply unit displays **E2810 Drive system not ready for operation**.

The settings for error messages and error reactions for devices that are interconnected via the DC bus and module bus are made in **P-0-0118, Power supply, configuration**.

### Cause

Error message of one or several drives of a drive system

### Remedy

Identify drive or drives signaling an error. Remove cause of error at respective drive or drives

See also Functional Description "Power Supply"

### E8058 - Attributes

**Display:** E8058  
**Mess. no.:** E8058 (hex)

## E8260 Torque/force command value limit active

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

Apart from the dynamic actual torque/force value limitation by means of a motor or amplifier temperature model there also are parameterizable limitations of the torque/force command value. One or several limit values have been reached.

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**Note:** For the occurrence of warning E8260 there are different causes and remedies for "closed-loop operation" and "open-loop operation"!

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### Cause

#### "Closed-loop operation"

Acceleration capability of drive has been exceeded. In "position control" mode this means that there is an ever-increasing position deviation between command and actual value (lag error)

#### "Closed-loop operation"

Torque/force limit values incorrectly parameterized

#### "Open-loop operation"

Acceleration capability of controlled drive has been exceeded (velocity command value ramp too steep)

### Remedy

In position control, reduce the preset acceleration value or velocity value so that the drive can follow the position command value characteristic

Increase values of **S-0-0082, Torque/force limit value positive; S-0-0083, Torque/force limit value negative; S-0-0092, Bipolar torque/force limit value** and **P-0-0109, Torque/force peak limit**, if necessary

Maximum change of velocity with which drive can follow command values is determined by the motor. This possibly requires adjustment of **P-0-0569, Maximum stator frequency change**

## E8260 - Attributes

**Display:** E8260  
**Mess. no.:** E8260 (hex)

## 8.2 Non-Fatal Safety Technology Warning Diagnostic Messages (E31xx)

### E3100 Error when checking input signals

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When the safety technology has been activated, this warning only occurs in normal operation. When a safety related operation is selected, the cause of the error causes the error **F3130 Error when checking input signals** or **F3141 Plausibility error of selection** to be triggered.

#### Cause

During dynamization of safety function selection not all input signals are zero. Cause can be error in wiring of input signals or short circuit of switch contacts with positive supply voltage

There are unequal channel states between channel 1 and 2. Cause can be error in wiring of input signals or defective switch

**P-0-3221, Max. tolerance time for different channel states** incorrectly parameterized

#### Remedy

Remove cause of error in wiring of input signals or replace switch

Remove cause of error in wiring of input signals or replace switch

Change parameterization of **P-0-3221, Max. tolerance time for different channel states**

### E3100 - Attributes

**Display:** E3100  
**Mess. no.:** E3100 (hex)

## E3101 Error when checking acknowledgment signal

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

When the safety technology has been activated, this warning only occurs in normal operation. When a safety related operation is selected, the cause of the error causes the error **F3131 Error when checking acknowledgment signal** to be triggered.

### Cause

Error in wiring of acknowledgment signals (contact error or cable break)

### Remedy

Remove error in wiring of acknowledgment signals

### E3101 - Attributes

**Display:** E3101  
**Mess. no.:** E3101 (hex)

## E3102 Plausibility error of actual position values

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

When both safety technology channels have been homed, their actual position values are cyclically checked for plausibility.

When the safety technology has been activated, this warning only occurs in normal operation. When a safety function is selected, the cause of the error causes the error **F3117 Plausibility error of actual position values** to be triggered.

### Cause

Implausible values on channel 1 and 2 resulted from cyclic comparison of actual position values

### Remedy

Establish safety related reference again (directly via **P-0-3228, C4000 Homing procedure command channel 2** or indirectly via **S-0-0148, C0600 Drive-controlled homing procedure command**).

**Note:** In the case of deviation of actual position values of channel 1 and channel 2, check parameterization with regard to "homing procedure channel 2" (actual position value of channel 1, depends on encoder assigned to optional slot 1;

**S-0-0051, Position feedback 1 value** or  
**S-0-0053, Position feedback 2 value**

and

**P-0-3280, Actual position value, channel 2)**

### E3102 - Attributes

**Display:** E3102  
**Mess. no.:** E3102 (hex)

## E3103 Dynamization failed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When the safety technology has been activated, this warning only occurs in normal operation. When a safety function is selected, the cause of the error causes the error **F3134 Dynamization time interval incorrect** or **F3135 Dynamization pulse width incorrect** to be triggered.

### Cause

There doesn't occur any dynamization pulse at the dynamization input within the time **P-0-3223, Time interval for dynamization of safety function selection** or the pulse width differs from the parameterized time **P-0-3224, Duration of dynamization pulse of safety function selection**

### Remedy

Remove cause of error in wiring of dynamization input

### E3103 - Attributes

**Display:** E3103  
**Mess. no.:** E3103 (hex)

## E3104 Plausibility error of safety parameters

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When the safety technology has been activated, this warning only occurs in normal operation. When a safety function is selected, the cause of the error causes the error **F3140 Plausibility error of safety parameters** to be triggered.

### Cause

A comparison has shown that channel 1 and channel 2 are not working with the same safety parameters

### Remedy

Execute command **P-0-3204, Synchronize and store safety technology IDN command**; channel 2 thereby accepts parameters of channel 1

### E3104 - Attributes

**Display:** E3104  
**Mess. no.:** E3104 (hex)

## E3105 Plausibility error of safety related operating mode

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When the safety technology has been activated, this warning only occurs in normal operation. When a safety function is selected, the cause of the error causes the error **F7042 Plausibility error safety related operating mode** to be triggered.

### Cause

During comparison of active safety function of channel 1 and channel 2 a difference was detected for more than 5 seconds

### Remedy

Reboot drive. If drive generates warning again, hardware has to be replaced

### E3105 - Attributes

**Display:** E3105  
**Mess. no.:** E3105 (hex)

## E3106 System error channel 2

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When the safety technology has been activated, this warning only occurs in normal operation. When a safety function is selected, the cause of the error causes the error **F3146 System error channel 2** to be triggered.

### Cause

System error on channel 2

### Remedy

Reset module, replace hardware if error occurs repeatedly

### E3106 - Attributes

**Display:** E3106  
**Mess. no.:** E3106 (hex)

## E3107 Error when unlocking the safety door

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When the safety technology has been activated, this warning only occurs in normal operation. When a safety function is selected, the cause of the error causes the error **F3145 Error when unlocking the safety door** to be triggered.

### Cause

In normal operation drive detected that safety door has been unlocked

### Remedy

Close safety door or check wiring of safety door

### E3107 - Attributes

**Display:** E3107  
**Mess. no.:** E3107 (hex)

## E3110 Time interval of forced dynamization exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

In parameter **P-0-0103, Time interval of forced dynamization** it is possible to set a time interval within which the starting lockout has to be activated. This time interval has been exceeded.

### Cause

Setting of time interval in parameter **P-0-0103, Time interval of forced dynamization** does not comply with requirements

Starting lockout has not been activated within time interval that was set

### Remedy

Set time interval in parameter **P-0-0103, Time interval of forced dynamization** according to requirements

Activate starting lockout with drive controller being active

### E3110 - Attributes

**Display:** E3110  
**Mess. no.:** E3110 (hex)

## 8.3 Non-Fatal Warning Diagnostic Messages (E2xxx)

### E2011 PLC - Warning no. 1

**Supported by Firmware Variant:** FWA-INDRV\*-MPH02VRS-MS

In conjunction with technology functions the drive-integrated PLC allows the user generating warnings (E2011 .. E2014) within the PLC program. Cause and remedy of a PLC warning depend on the respective PLC project (or the active Rexroth technology function) and are contained in the respective description of the technology function.

#### E2011 - Attributes

**Display:** E2011  
**Mess. no.:** E2011 (hex)

### E2012 PLC - Warning no. 2

**Supported by Firmware Variant:** FWA-INDRV\*-MPH02VRS-MS

In conjunction with technology functions the drive-integrated PLC allows the user generating warnings (E2011 .. E2014) within the PLC program. Cause and remedy of a PLC warning depend on the respective PLC project (or the active Rexroth technology function) and are contained in the respective description of the technology function.

#### E2012 - Attributes

**Display:** E2012  
**Mess. no.:** E2012 (hex)

### E2013 PLC - Warning no. 3

**Supported by Firmware Variant:** FWA-INDRV\*-MPH02VRS-MS

In conjunction with technology functions the drive-integrated PLC allows the user generating warnings (E2011 .. E2014) within the PLC program. Cause and remedy of a PLC warning depend on the respective PLC project (or the active Rexroth technology function) and are contained in the respective description of the technology function.

#### E2013 - Attributes

**Display:** E2013  
**Mess. no.:** E2013 (hex)

## E2014 PLC - Warning no. 4

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS

In conjunction with technology functions the drive-integrated PLC allows the user generating warnings (E2011 .. E2014) within the PLC program. Cause and remedy of a PLC warning depend on the respective PLC project (or the active Rexroth technology function) and are contained in the respective description of the technology function.

### E2014 - Attributes

**Display:** E2014  
**Mess. no.:** E2014 (hex)

## E2026 Undervoltage in power section

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The DC bus voltage value is monitored by the drive controller and the supply unit.

**Drive Controllers HMS, HMD,  
HCS**

If the DC bus voltage falls below the minimum value determined for the drive or it reacts to "DC bus not ok" of the module bus (see value of **P-0-0114, Undervoltage threshold**), the device generates the warning E2026 if "non-fatal warning" has been set with regard to the reaction to undervoltage in **P-0-0118, Power supply, configuration**.

**Supply Unit HMV01.1**

If the DC bus voltage falls by 80 V below the command value of 750 V direct voltage, the warning E2026 is displayed at the device. The circuit is not interrupted yet!

### Cause

Power is switched off without previous drive deactivation by means of drive enable ("AF")

Malfunction or overload of power supply

Mains failure

### Remedy

Check logic for activating drive in connected control unit

Check power supply

Check cause of mains failure, switch mains voltage on again

See also Functional Description "Power Supply"

### E2026 - Attributes

**Display:** E2026  
**Mess. no.:** E2026 (hex)

## E2040 Device overtemperature 2 prewarning

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

A switch-off value for the second temperature sensor is stored in element 3 of parameter **P-0-4059, Electric type data of power section**. If the parameter **P-0-0816, Amplifier temperature 2** exceeds a value that is 5 °C below this switch-off threshold, the warning E2040 is generated. Before the switch-off threshold has been reached and the device is switched off (F2040) it is possible to shut down the axis via the control unit in accordance with the process (e.g. terminate processing, leave collision area etc.) or to reduce the load of the drive controller.

### Cause

Ambient temperature too high. Specified performance data are valid up to an ambient temperature of 40 C

Heat sink of device is dirty

Convection is prevented by other components or mounting position of control cabinet

Blower of device is defective

### Remedy

Reduce ambient temperature, e.g. by cooling the control cabinet

Clean heat sink

Mount device vertically and provide sufficient space for ventilating heat sink

Replace device

### E2040 - Attributes

**Display:** E2040  
**Mess. no.:** E2040 (hex)

## E2047 Interpolation velocity = 0

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In operating states/ operating modes in which the drive-internal position command value interpolator is active, the preset velocity effective in the drive is monitored with regard to the value "0"; i.e. the monitor is active in the following operating modes or operating states:

**Operating Modes**

- drive-internal interpolation
- drive-controlled positioning
- positioning block mode
- Drive Halt

**Commands**

- position spindle
- drive-controlled homing
- automatic control loop setting
- ...

**Cause**

Incorrect velocity is preset (value = "0")  
 (cf. **S-0-0259, Positioning velocity, S-0-0041, Homing velocity, P-0-4007, Positioning block velocity[i], S-0-0222, Spindle positioning speed, S-0-0091, Bipolar velocity limit value**)

Analog input to which preset velocity was assigned is defective or not connected

**Remedy**

Check parameterization or cyclic command value of control unit and set value for preset velocity unequal zero

Check wiring and function of analog input and, if necessary, replace cable or control section, or the entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

**E2047 - Attributes**

**Display:** E2047  
**Mess. no.:** E2047 (hex)

## E2048 Interpolation acceleration = 0

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In operating states/ operating modes in which the drive-internal position command value interpolator is active, the preset acceleration effective in the drive is monitored with regard to the value "0" [without acceleration (deceleration) a preset velocity can never be reached; slowing down with a deceleration "0" isn't possible either].

**Note:** The input values of the parameters are converted to a drive-internal format. This is why input values > "0" can, internally, also cause an acceleration = "0". The parameter values which drive-internally still cause an acceleration > "0" can be calculated.  
 See also Functional Description "Drive-Internal Display of Position Data".

<b>Operating Modes</b>	The monitor is active in the following operating modes or operating states: <ul style="list-style-type: none"> <li>• drive-internal interpolation</li> <li>• drive-controlled positioning</li> <li>• positioning block mode</li> <li>• Drive Halt</li> </ul>
<b>Commands</b>	<ul style="list-style-type: none"> <li>• position spindle</li> <li>• drive-controlled homing</li> <li>• automatic control loop setting</li> <li>• ...</li> </ul>

### Cause

Incorrect acceleration is preset (value = "0")  
 (vgl. **S-0-0260, Positioning acceleration, S-0-0042, Homing acceleration, S-0-0138, Bipolar acceleration limit value, S-0-0359, Positioning deceleration**)

### Remedy

Check parameterization or cyclic command value of control unit and set value for preset acceleration > "0"

### E2048 - Attributes

**Display:** E2048  
**Mess. no.:** E2048 (hex)

## E2049 Positioning velocity >= S-0-0091

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In the operating modes in which the drive-internal command value interpolator is active, the velocity command value (positioning velocity) effective in the drive is limited to the value parameterized in **S-0-0091, Bipolar velocity limit value**.

This means that the monitor is active in the following operating modes or operating states:

### Operating Modes

- drive-internal interpolation
- drive-controlled positioning
- positioning block mode
- Drive Halt

### Commands

- position spindle
- drive-controlled homing
- automatic control loop setting
- ...

### Cause

Incorrect velocity is preset (parameterized or cyclically preset value is too high) (cf. **S-0-0259, Positioning velocity, S-0-0041, Homing velocity, P-0-4007, Positioning block velocity[i], S-0-0222, Spindle positioning speed, S-0-0091, Bipolar velocity limit value**)

**S-0-0091, Bipolar velocity limit value** incorrectly parameterized

Analog input to which **S-0-0091, Bipolar velocity limit value** was assigned is defective or not connected

### Remedy

Check parameterization or cyclic command value of control unit and set value for preset velocity higher than value for **S-0-0091, Bipolar velocity limit value**

Control parameter content of **S-0-0091, Bipolar velocity limit value** and check whether parameter has been assigned to an analog input or is contained in cyclic data

Check wiring and function of analog input and, if necessary, replace cable or control section, or the entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### E2049 - Attributes

**Display:** E2049  
**Mess. no.:** E2049 (hex)

## E2050 Device overtemp. Prewarning

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The heat sink temperature of the device is monitored by a temperature sensor and a temperature model. When the heat sink has become too hot, the device is switched off in order to protect it against destruction. Before the error **F2018 Device overtemperature shutdown** is triggered, the warning **E2050 Device overtemp. Prewarning** is output.

**Note:** When the warning E2050 appears, it is possible to stop the axis via the control unit in accordance with the process (e.g. terminate processing, leave collision area etc.) or to reduce the load of the drive controller.

### Cause

Amplifier overtemperature (heat sink) due to overload of drive (overcurrent)

Ambient temperature too high. Specified performance data are valid up to an ambient temperature of 40 C

Heat sink of device is dirty

Convection is prevented by other components or mounting position of control cabinet

Failure of internal blower

Failure of air conditioning for control cabinet

Incorrect dimensioning of control cabinet with regard to heat discharge

### Remedy

Switch drive off and let it cool down, check mechanical system as well as drive dimensioning (working power mustn't exceed, on average, continuous power of drive)

Reduce ambient temperature, e. g. by cooling the control cabinet

Clean heat sink

Mount device vertically and provide sufficient space for ventilating heat sink

If blower fails, replace device or power section

Check air conditioning of control cabinet

Check dimensioning of control cabinet

See also Functional Description "Current Limitation"

### E2050 - Attributes

**Display:** E2050  
**Mess. no.:** E2050 (hex)

## E2051 Motor overtemp. prewarning

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The motor temperature is monitored by a temperature sensor and a temperature model. As soon as the maximum allowed motor temperature (**S-0-0201, Motor warning temperature**) has been reached, the warning **E2051 Motor overtemp. prewarning** is output for 30 s. The drive is then switched off by the error **F2019 Motor overtemperature shutdown** being triggered.

**Note:** In the case of MHD, MKD, MKE and LSF motors, the motor overtemperature prewarning cannot be used due to the temperature sensor characteristic!  
 For MSK and MLF motors the prewarning function can be used because an appropriate temperature sensor is used for these motors.

### Cause

**S-0-0201, Motor warning temperature** incorrectly parameterized

The motor is overloaded. Effective torque demanded by the motor was above allowed torque for a too long time

Line interruption, ground fault or short circuit in line for motor temperature monitoring

Instability in speed control loop

### Remedy

Check and correct parameterization of **S-0-0201, Motor warning temperature** by means of motor or temperature sensor data sheet

Check motor dimensioning and reduce motor load, e.g. by reduced infeed velocity in the case of metal-cutting machining. In the case of installations that have been operated for a long time, check whether drive conditions have changed (with regard to dirt accumulation, friction, moved masses etc.).

Check line for motor temperature monitoring for line interruption, ground fault or short circuit

Check parameterization of speed control loop

See also Functional Description "Motor Temperature Monitoring"

### E2051 - Attributes

**Display:** E2051  
**Mess. no.:** E2051 (hex)

## E2053 Target position out of travel range

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

In operating modes with internal position command value generation a check is run, before a movement is carried out, in order to find out whether the preset target position (**S-0-0258, Target position, S-0-0282, Positioning command value** or **P-0-4006, Positioning block target position[i]**) is within the allowed travel range of the drive.

The allowed travel range of the drive is defined by

- **S-0-0049, Positive position limit value**
- **S-0-0050, Negative position limit value**

The position limit value monitor and thus the monitoring of the allowed travel range is activated in **S-0-0055, Position polarities**.

**Note:** When the position limit value monitor has been activated and the target position is outside the allowed travel range, the drive stops or it does not accept the target position or positioning block. In parameter **S-0-0012, Class 2 diagnostics** a warning bit is set.

### Cause

Position limit values (**S-0-0049, Positive position limit value, S-0-0050, Negative position limit value**) incorrectly parameterized

Position limit value monitor has been activated although it is not needed

In the case of relative interpolation, value for travel range was set too high or several travel ranges that are added cause effective target position (cf. **P-0-0050, Effective target position**) to be outside of position limits

In the case of absolute interpolation, preset target position is incorrect

In "positioning block mode" one or more target positions have been incorrectly parameterized or incorrect positioning block is selected

### Remedy

Check parameterization of position limit values and adjust it according to desired travel range (**S-0-0049, Positive position limit value** must be higher than **S-0-0050, Negative position limit value**)

Deactivate position limit value monitor if it is not needed (e. g. in modulo operation)

Check travel range (cf. **S-0-0258, Target position**) and, if necessary, adjust it in control unit program

Check preset target position (cf. **S-0-0258, Target position** or **S-0-0282, Positioning command value**) and, if necessary, adjust it in control unit program (only enter **S-0-0258, Target position** within position limit values)

Check parameterized target positions in **P-0-4006, Positioning block target position** and block selection (**P-0-4026, Positioning block selection**). In addition, check block selection via respective master communication (e. g. field bus or digital I/Os)

See also functional description "Position Limitation/Travel Range Limit Switch"

For "relative interpolation" see functional description "drive-controlled positioning"

For "absolute interpolation" see functional description "drive-internal interpolation"

### E2053 - Attributes

**Display:** E2053  
**Mess. no.:** E2053 (hex)

## E2054 Not homed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

Before a motion is carried out a check is run in the case of operating modes with drive-internal position command value generation (drive-internal interpolation, drive-controlled positioning and positioning block mode) to find out whether, with absolute target position preset (**S-0-0258, Target position** or **S-0-0282, Positioning command value**, or **P-0-4006, Positioning block target position**), the measuring system used for positioning (cf. operating mode selection) has been homed.

**Note:** When the warning E2054 appears, the drive stops or does not accept the target position or the positioning block. In parameter **S-0-0012, Class 2 diagnostics** a warning bit is set.

### Cause

Absolute positioning was started although position data reference of drive had not yet been established [drive has not been homed (cf. **S-0-0403, Position feedback value status**)]

### Remedy

Establish absolute position data reference by starting command **S-0-0148, C0600 Drive-controlled homing procedure command** or **P-0-0012, C0300 Command Set absolute measuring**

See also Functional Description "Establishing the Position Data Reference"

### E2054 - Attributes

**Display:** E2054  
**Mess. no.:** E2054 (hex)

## E2055 Feedrate override S-0-0108 = 0

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

By means of the **S-0-0108, Feedrate override** it is possible to make a proportional scaling for the travel velocity of drive-controlled travel commands (0..100 %).

A feedrate override of 0 % causes the effective travel velocity to become "0". In spite of velocity command value being present (e. g. **S-0-0259, Positioning velocity**), the drive remains stopped at the current position or brakes down until reaching standstill.

---

**Note:** The function of the feedrate override can be switched off by setting S-0-0108 = 100 %.  
 If S-0-0108 has been cyclically configured or assigned to an analog input, this configuration has to be changed.

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### Cause

Parameter **S-0-0108, Feedrate override** was set to "0"

For devices with analog inputs: feedrate override via analog input has been activated and voltage at analog input is "0"

Infeed potentiometer of connected control unit was set to "0" or is incorrectly evaluated

Analog input used for feedrate override or connecting cable is defective

### Remedy

Set feedrate override > "0" so that drive moves. Full velocity is reached with 100%.

Apply voltage > "0" proportionally to desired velocity (+10 V corresponds to 100% of velocity)  
 alternative: deactivate feedrate override

Carefully actuate infeed potentiometer, check analog signal and evaluation

Check and if necessary replace cable and control section

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

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### E2055 - Attributes

**Display:** E2055  
**Mess. no.:** E2055 (hex)

## E2056 Torque limit = 0

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

To protect the drive or the connected mechanical system against mechanical overload the maximum torque or the maximum force can be limited to allowed values.

Cause	Remedy
One of the torque-/force-limiting parameters has the value "0"	Check parameters <b>S-0-0082, Torque/force limit value positive; S-0-0083, Torque/force limit value negative; S-0-0092, Bipolar torque/force limit value</b> and <b>P-0-0109, Torque/force peak limit</b> and enter "correct" limit value (unequal "0")
One of the torque-/force-limiting parameters has been assigned to analog input and voltage at analog input is "0"	Apply voltage > 0 proportionally to desired torque/force limit value <b>Note:</b> Scaling of analog input defines scaling of analog input voltage (see also Functional Description "Analog Inputs")
Potentiometer of connected control unit was set to "0" or is incorrectly evaluated	Carefully actuate potentiometer, check analog signal and evaluation
Cable connected at analog input for torque/force limitation is defective	Check and, if necessary, replace cable
Analog input used for torque/force limitation is defective	Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Torque/Force Control"

### E2056 - Attributes

**Display:** E2056  
**Mess. no.:** E2056 (hex)

## E2058 Selected process block is not programmed.

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

In the "positioning block mode" the selected positioning block is checked so that only complete positioning blocks can be started.

**Note:** When the warning E2058 appears, the drive stops or does not accept the selected positioning block. In parameter **S-0-0012, Class 2 diagnostics** a warning bit is set.

### Cause

Positioning block data of currently selected block are not available

Incorrect positioning block selection via field bus or digital inputs

Incorrect configuration of digital inputs causes unwanted positioning block selection

### Remedy

Check positioning block data (**P-0-4006, Positioning block target position, P-0-4007, Positioning block velocity, P-0-4008, Positioning block acceleration, P-0-4009, Positioning block jerk, and P-0-4019, Positioning block mode**) and correct respective parameters

Check **P-0-4026, Positioning block selection** and control. If necessary, also check wiring and connection of digital I/Os

Check configuration of digital inputs and correct it accordingly

See also Functional Description "Digital Inputs/Outputs"  
See also Functional Description "Positioning Block Mode"

### E2058 - Attributes

**Display:** E2058  
**Mess. no.:** E2058 (hex)

## E2059 Velocity command value limit active

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The drive is constantly monitoring the effective velocity command value (sum of velocity command values at controller input) and is limiting it. If the effective velocity command value exceeds **S-0-0091, Bipolar velocity limit value**, the warning E2059 is output because for positioning tasks the lag error can be increased.

### Cause

Cyclic command value preset by control unit is incorrect or too high

Velocity limit value parameterized too low

### Remedy

Control cyclic command value and, if necessary, adjust control program

Check and correct parameterization of **S-0-0091, Bipolar velocity limit value**

See also Functional Description "Velocity Control"

### E2059 - Attributes

**Display:** E2059  
**Mess. no.:** E2059 (hex)

## E2061 Device overload prewarning

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

**Supported by Supply Unit:** **HMV01**

The work load of the device has exceeded a threshold and a message is generated that warns against overload which will occur if the load is not reduced.

Devices with digital control are monitored by means of a permanently processed temperature model. If the thermal work load approaches 100 % the continuous current limit is activated shortly after and the warning **E8057 Device overload, current limit active** appears.

When the current is limited the torque/force is reduced which is not wanted for machines and installations and can cause problems. A warning is therefore output before this situation occurs.

**For HCS, HMS, HMD**

The threshold value for the overload prewarning can be set in **P-0-0441, Overload warning**. If the thermal work load exceeds this value the E2061 warning is output. Useful values for **P-0-0441, Overload warning** are at 80-90% so that there still is a little reserve capacity until the actual thermal work load is reached (100%).

---

**Note:** The warning can be deactivated by the value "100%" in **P-0-0441, Overload warning** because in this case the fatal warning **E8057 Device overload, current limit active** warning is immediately generated!

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**For HMV01.1R**

The threshold value for the overload prewarning is fixed to 90%. If the thermal work load exceeds this value the E2061 warning is output. This threshold cannot be set and therefore the warning cannot be deactivated!

### Cause

Incorrect value of **P-0-0441, Overload warning**

Overload of drive (e.g. due to too high infeed during machining or too high acceleration to high speed)

Changes in mechanical system with regard to friction and moved masses

### Remedy

Increase value of **P-0-0441, Overload warning**, if necessary

Switch drive off and let it cool down. Check drive dimensioning and command value profile

In the case of installations that have been run for a long time, check drive conditions for changes in mechanical system

See also Functional Description "Current Limitation"

### E2061 - Attributes

**Display:** E2061  
**Mess. no.:** E2061 (hex)

## E2063 Velocity command value > limit S-0-0091

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The drive continuously monitors the effective velocity command value (**S-0-0036, Velocity command value**).

If the effective velocity command value exceeds the **S-0-0091, Bipolar velocity limit value**, the warning E2063 is output because for positioning tasks the lag error can be increased.

### Cause

Cyclic command value preset by control unit is incorrect or too high

Velocity limit value parameterized too low

### Remedy

Control cyclic command value and, if necessary, adjust control program

Check and correct parameterization of **S-0-0091, Bipolar velocity limit value**

See also Functional Description "Velocity Control"

### E2063 - Attributes

**Display:** E2063  
**Mess. no.:** E2063 (hex)

## E2064 Target position out of num. range

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The operating mode "drive-internal interpolation" or "drive-controlled positioning" was selected and the preset target position cannot be displayed in the internal position format.

### Cause

Incorrect target position or positioning command value was preset

An "infinitely turning axis" is not operated in modulo format

Selected **S-0-0278, Maximum travel range** too small

### Remedy

Check target position (**S-0-0258, Target position**) or positioning command value (**S-0-0282, Positioning command value**) preset by control unit (master) and, if necessary, correct control unit program

Check content of **S-0-0076, Position data scaling type** and change to "modulo format"

Increase value of **S-0-0278, Maximum travel range** in order to increase position that can be displayed internally in absolute form

See also Functional Description "Drive-Controlled Positioning"

See also Functional Description "Drive-Internal Interpolation"

### E2064 - Attributes

**Display:** E2064  
**Mess. no.:** E2064 (hex)

## E2069 Brake torque too low

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When the drive enable was switched off the motor moved during the automatic brake torque check (can be activated via **P-0-0525, Holding brake control word**). The motor holding brake therefore no longer provides the required holding torque (see also **P-0-0547, Test torque with holding brake applied**).

**Note:** The result of the brake check is displayed in **P-0-0539, Holding brake status word**.

### Cause

Due to storage, brake is covered with oxide layer  
 - or -  
 Brake is wetted with oil or grease

Brake is worn (see service life of brake in Project Planning Manual for motor)

Wiring or control error of brake  
 (hardware defect on control section)

### Remedy

If warning occurs when drive enable is switched off, start "brake check" command in order to abrade brake, if this setting was made in **P-0-0525, Holding brake control word**. Afterwards brake should be able to provide full torque again

If holding torque still isn't reached after repeated start of "brake check" command (abrasion cleaning processes of brake), motor holding brake or entire motor needs to be replaced

Check wiring and connection of brake (incl. brake relay). If brake control in controller (e.g. relay) is defective, entire drive controller or control section has to be replaced

See also Functional Description "Motor Holding Brake"

### E2069 - Attributes

**Display:** E2069  
**Mess. no.:** E2069 (hex)

## E2074 Encoder 1: encoder signals disturbed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The hardware checks the signals of the measuring system (encoder 1) for inadmissible signal dips. If a signal (e.g. sin or cos) leaves the thresholds monitored by the hardware, the warning E2074 is generated.

In the case of major failures or several signal dips in series, the error **F8022 Enc. 1: enc. signals incorr.** is generated and the drive is shut down. The warning E2074 therefore points at disturbed encoder signals before a breakdown occurs.

---

**Note:** The warning E2074 is only cleared by reinitialization of the encoder position; i. e. it is necessary to switch to communication phase 2.

---

### Cause

Defective encoder cable or cable shielding

Measuring system defective

Faulty mounting of measuring head in the case of linear measuring systems

Measuring system dirty

Hardware defect on control section of drive

### Remedy

Check cable to measuring system and replace it, if necessary

Check measuring system and replace it, if necessary

Check mounting of measuring head and correct it, if necessary

Clean or replace measuring system

Replace control section or entire drive controller

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**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

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### E2074 - Attributes

**Display:** E2074  
**Mess. no.:** E2074 (hex)

## E2075 Encoder 2: encoder signals disturbed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The hardware checks the signals of the measuring system (encoder 2) for inadmissible signal dips. If a signal (e.g. sin or cos) leaves the thresholds monitored by the hardware, the warning E2075 is generated.

In the case of major failures or several signal dips in series, the error **F2042 Encoder 2: encoder signals incorrect** is generated and the drive is shut down. The warning E2075 therefore points at disturbed encoder signals before a breakdown occurs.

---

**Note:** The warning E2075 is only cleared by reinitialization of the encoder position; i. e. it is necessary to switch to communication phase 2.

---

### Cause

Defective encoder cable or cable shielding

Measuring system defective

Faulty mounting of measuring head in the case of linear measuring systems

Measuring system dirty

Hardware defect on control section of drive

### Remedy

Check cable to measuring system and replace it, if necessary

Check measuring system and replace it, if necessary

Check mounting of measuring head and correct it, if necessary

Clean or replace measuring system

Replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

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### E2075 - Attributes

**Display:** E2075

**Mess. no.:** E2075 (hex)

## E2076 Measuring encoder: encoder signals disturbed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The hardware checks the signals of the measuring encoder for inadmissible signal dips. If a signal (e. g. sin or cos) leaves the thresholds monitored by the hardware, the warning E2076 is generated.

In the case of major failures or several signal dips in series, the error **F2043 Measuring encoder: encoder signals incorrect** is generated and the drive is shut down. The warning E2076 therefore points at disturbed encoder signals before a breakdown occurs.

---

**Note:** The warning E2076 is only cleared by reinitialization of the encoder position; i. e. it is necessary to switch to communication phase 2.

---

### Cause

Defective encoder cable or cable shielding

Measuring system defective

Faulty mounting of measuring head in the case of linear measuring systems

Measuring system dirty

Hardware defect on control section of drive

### Remedy

Check cable to measuring system and replace it, if necessary

Check measuring system and replace it, if necessary

Check mounting of measuring head and correct it, if necessary

Clean or replace measuring system

Replace control section or entire drive controller

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

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### E2076 - Attributes

**Display:** E2076  
**Mess. no.:** E2076 (hex)

## E2086 Prewarning supply module overload

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The supply signals a warning regarding imminent overload via the module bus. The warning is displayed at the drive controllers and can be evaluated by the control master via the master communication. If there is no relief, the module bus message "error supply module" and power off (F2086) can occur.

### Cause

Imminent overload of power supply

Max. energy absorption capacity of braking resistor almost reached

### Remedy

Reduce required power by lower infeed velocity of tools.  
 Check dimensioning of supply

Check dimensioning of braking resistor and, if necessary, increase dimensioning

See also Functional Description "Power Supply"

### E2086 - Attributes

**Display:** E2086  
**Mess. no.:** E2086 (hex)

## E2800 DC bus timeout

**Supported by Supply Unit:** **HMV01**

After a DC bus short circuit was triggered the DC bus voltage has not fallen below 25 Volt within 10 seconds.

### Cause

Braking energy of connected drives is too high

Braking resistor defective

### Remedy

Check application

Replace device

### E2800 - Attributes

**Display:** E2800  
**Mess. no.:** E2800 (hex)

## E2802 HW control braking resistor

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the braking process the increasing DC bus voltage is reduced by switching on the braking resistor. But when the regenerated braking power is too high the DC bus voltage keeps increasing. The warning E2802 is generated when the protective hardware circuit switches on the braking resistor in the case of high voltages (>900 V).

### Cause

DC bus voltage >900 V due to increased regenerated braking energy

Braking resistor defective or not correctly connected

Hardware defect in brake control

### Remedy

Check drive dimensioning and, if necessary, use additional capacitance

Check function of braking resistor (incl. cabling and connection)

Replace power section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the power section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Power Supply"

### E2802 - Attributes

**Display:** E2802  
**Mess. no.:** E2802 (hex)

## E2810 Drive system not ready for operation

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

One or several drives of a "drive system" (devices interconnected via DC bus and module bus) are signaling a drive error via the module bus and the supply is not yet ready for power output. As long as the error keeps being signaled, it is impossible to switch power on.  
 The supply unit or converter is signaling **E2810 Drive system not ready for operation** on the display.

### Cause

Error message of one or several drives of a drive system

One or several drives still are in communication phase 2

### Remedy

Identify drive or drives signaling an error. Remove cause of error at respective drive or drives

Switch drives to communication phase 4 ["ready for operation" (bb) or "drive ready" (Ab)]

See also Functional Description "Power Supply"

### E2810 - Attributes

**Display:** E2810  
**Mess. no.:** E2810 (hex)

## E2814 Undervoltage in mains

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

---

**Note:** This warning only occurs for drive controllers of the HCS03 type!

---

The crest value of the mains voltage during operation has fallen below the parameterized threshold value. The threshold value can be individually set by the user via **P-0-0810, Minimum mains crest value**.

### Cause

---

Mains voltage falls under load

---

Mains voltage too low at power on

### Remedy

---

Check dimensioning of mains connection, increase feed wire cross section or use matching transformer, if necessary

---

Use matching transformer

See also Functional Description "Power Supply"

### E2814 - Attributes

**Display:** E2814  
**Mess. no.:** E2814 (hex)

## E2815 Overvoltage in mains

Supported by Supply Unit: **HMV01**

### Cause

Due to mains failure, mains voltage is above allowed value

### Remedy

Check mains voltage conditions

See also Functional Description "Power Supply"

### E2815 - Attributes

Display: E2815  
Mess. no.: E2815 (hex)

## E2816 Undervoltage in power section

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The warning E2816 is generated with the respective setting in **P-0-0118, Power supply, configuration** when the DC bus voltage in operation falls below the values parameterized in **P-0-0114, Undervoltage threshold**.

**Note:** The parameter **P-0-0114, Undervoltage threshold** is preset with a default value and, if required, can be changed by the user.

### Cause

DC bus voltage drops due to temporary overload

Required acceleration currents are too high

Faulty mains connection (e.g. loose contact)

**P-0-0114, Undervoltage threshold** has not been adjusted to conditions in mains

### Remedy

Check drive dimensioning incl. devices connected at DC bus

Reduce command acceleration by adjusting travel profile

Check mains connection

Check and, if necessary, correct content of **P-0-0114, Undervoltage threshold**

See also Functional Description "Power Supply"

### E2816 - Attributes

Display: E2816  
Mess. no.: E2816 (hex)

## E2818 Phase failure

**Supported by Supply Unit:** **HMV01**

A single-phase mains failure was detected. Power is not switched off unless undervoltage occurs in the DC bus (F2026).

### Cause

Mains circuit breaker defective  
Incorrect wiring

### Remedy

Replace mains circuit breaker  
Check and correct wiring

### E2818 - Attributes

**Display:** E2818  
**Mess. no.:** E2818 (hex)

## E2819 Mains failure

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

A two-phase or three-phase mains failure was detected. Power is not switched off unless undervoltage occurs in the DC bus (F2026).

### Cause

Mains circuit breaker defective  
Incorrect wiring

### Remedy

Replace mains circuit breaker  
Check and correct wiring

### E2819 - Attributes

**Display:** E2819  
**Mess. no.:** E2819 (hex)

## E2820 Braking resistor overload prewarning

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

90% of the energy absorption capacity of the braking resistor have been reached.

### Cause

Allowed deceleration of connected drives too high

Energy absorption capacity of braking resistor is almost exhausted

Regenerated energy in machining cycle is too high

Continuous regenerative power and/or rotary drive energy is too high

### Remedy

Reduce deceleration of connected drives

Switch power off with a delay in the case of OFF or E-STOP (for regenerative supplies)

Increase cycle time or reduce maximum drive speed of application

Check dimensioning of braking resistor and, if necessary, increase dimensioning

### E2820 - Attributes

**Display:** E2820  
**Mess. no.:** E2820 (hex)

## E2829 Not ready for power on

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The mains voltage for power supply cannot yet be switched on for the HCS03 converter; the device is not yet ready for loading the DC bus capacitances.

### Cause

Resistors for loading DC bus capacitances still are thermally loaded due to last loading process

### Remedy

Wait until converter clears warning E2829

### E2829 - Attributes

**Display:** E2829  
**Mess. no.:** E2829 (hex)



## 9 Command Diagnostic Messages

### 9.1 Commands

---

**Note:** Each command that was started by a control unit must be actively cleared again.

---

See also "Basic Functions of Master Communication, Command Processing"

#### C0100 Communication phase 3 transition check

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The **S-0-0127, C0100 Communication phase 3 transition check** command was activated.

---

**Note:** This status is displayed on the control panel of the drive with "C01".

---

#### C0100 - Attributes

**Display:** C01  
**Mess. no.:** C0100 (hex)

#### C0200 Communication phase 4 transition check

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The **S-0-0128, C0200 Communication phase 4 transition check** command was activated.

---

**Note:** This status is displayed on the control panel of the drive with "C02".

---

#### C0200 - Attributes

**Display:** C02  
**Mess. no.:** C0200 (hex)

## C0300 Command Set absolute measuring

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command for setting the absolute measuring **P-0-0012, C0300 Command Set absolute measuring** was activated.

See also Functional Description "Set Absolute Measuring"

### C0300 - Attributes

**Display:** C03  
**Mess. no.:** C0300 (hex)

## C0400 Switching to parameter mode

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The command for switching to the parameter mode was started by means of the **P-0-4023, C0400 Communication phase 2 transition** parameter.

---

**Note:** This command has to be carried out before editing parameters that can only be written in the parameter mode.

---

### C0400 - Attributes

**Display:** C04  
**Mess. no.:** C0400 (hex)

## C0500 Reset class 1 diagnostics, error reset

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

The command for clearing errors, **S-0-0099, C0500 Reset class 1 diagnostics**, was activated. All drive-internal errors are cleared.

---

**Note:** Only those errors can be cleared that were removed! Errors that are still present after clearing will cause the error message to be generated again.

---

### C0500 - Attributes

**Display:** C05  
**Mess. no.:** C0500 (hex)

## C0600 Drive-controlled homing procedure command

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command for drive-controlled homing, **S-0-0148, C0600 Drive-controlled homing procedure command**, was activated.

See also Functional Description "Drive-Controlled Homing"

### C0600 - Attributes

**Display:** C06  
**Mess. no.:** C0600 (hex)

## C07\_0 Load defaults procedure com. (load controller param.)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The C07\_0 message on the display of the drive controller shows that the **C07\_0 Load defaults procedure command (load controller parameters)** command was activated.

The command can be started as follows:

- by means of the **S-0-0262, C07\_x Load defaults procedure command** parameter or
- by means of the control panel of the drive controller or
- by starting the **S-0-0099, C0500 Reset class 1 diagnostics** command if the drive controller displays "RL" (occurs if the **S-0-0141, Motor type** and **P-0-2141, Motor type, encoder memory** parameters are different).

---

**Note:** With parameter S-0-0262 it is possible to start another command, the **C07\_1 Load defaults procedure command (load base parameters)** command. In parameter **P-0-4090, Index for C07 Load defaults procedure** it is possible to set which of both commands is started.

---

The C07\_0 Load defaults procedure command (load controller parameters) can only be carried out in the case of motors of the MHD, MKD and MKE series. In the case of these motors, the controller parameters are loaded from the motor encoder data memory to the drive controller and some controller parameters are set to their default values.

---



**CAUTION**

**With the C07\_0 Load defaults procedure command (load controller parameters) command user-defined controller settings are overwritten!**

⇒ Only use this command if you want to load standard controller parameter values. For saving and then loading user-defined parameter values specific commands are available.

---

See also Functional Description "Loading, Storing and Saving Parameters"

See also Functional Description "Control Panel of the IndraDrive Controllers"

### C0700 - Attributes

**Display:** C07\_0  
**Mess. no.:** C0700 (hex)

## C07\_2 Load def. proc. com. (load def. pr. for safety techn.)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The C07\_2 message on the display of the drive controller shows that the **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)** command was activated.

The command can be started as follows:

1. Enter value 165 for "load defaults procedure for safety technology" in parameter **P-0-4090, Index for C07 Load defaults procedure**
2. Start **S-0-0262, C07\_x Load defaults procedure command**

---

**Note:** It is possible to start further commands with parameter S-0-0262. In parameter **P-0-4090, Index for C07 Load defaults procedure** it is possible to set which commands is started.

---

The command **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)** deactivates the safety technology and sets all safety technology parameters to their default value.

---



**The command C07\_2 Load def. proc. com. (load def. pr. for safety techn.) overwrites user-defined safety technology settings!**

⇒ Only use this command if you want to commission safety technology again.

---

### C0720 - Attributes

**Display:** C07\_2  
**Mess. no.:** C0720 (hex)

## C07\_1 Load defaults procedure com. (load basic parameters)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The basic parameter set (firmware-specific default values for all parameters) stored in the firmware is loaded. All previous parameters are overwritten.

### C0750 - Attributes

**Display:** C07\_1  
**Mess. no.:** C0750 (hex)

## C0800 Load basic parameters command

**Supported by Supply Unit:** HMV01

---

**Note:** This command is only available for manufacturer-side testing and developing purposes!

---

### C0800 - Attributes

**Display:** C08  
**Mess. no.:** C0800 (hex)

## C0900 Position spindle command

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS

Via the control unit the **S-0-0152, C0900 Position spindle command** parameter was activated.

See also Functional Description "Spindle Positioning"

### C0900 - Attributes

**Display:** C09  
**Mess. no.:** C0900 (hex)

## C1200 Commutation offset setting command

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command for setting the commutation offset, **P-0-0524**, **C1200 Commutation offset setting command**, was activated.  
Which one of the two methods with current (saturation or sine-wave method) is to be active has to be set in **P-0-0522**, **Control word for commutation setting** before.

---

**Note:** Correctly set commutation offset is obligatory for operating synchronous kit motors and synchronous third-party motors!

---

See also Functional Description "Commutation Setting"

### C1200 - Attributes

**Display:** C12  
**Mess. no.:** C1200 (hex)

## C1300 Positive stop drive procedure command

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command **S-0-0149**, **C1300 Positive stop drive procedure command** was activated.

See also Functional Description "Positive Stop Drive Procedure"

### C1300 - Attributes

**Display:** C13  
**Mess. no.:** C1300 (hex)

## C1400 Command Get marker position

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The **P-0-0014, C1400 Command Get marker position command** was started.

The "C14" display signals that the command is executed.  
In the case of incremental measuring systems, the reference mark is checked for correct detection.

See also Functional Description "Detect marker position"

### C1400 - Attributes

**Display:** C14  
**Mess. no.:** C1400 (hex)

## C1700 Command measuring wheel mode

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The **P-0-0240, C1700 Command measuring wheel mode** was started.

### C1700 - Attributes

**Display:** C17  
**Mess. no.:** C1700 (hex)

## C1800 Command automatic control loop setting

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

By starting the command **P-0-0162, C1800 Command Automatic control loop adjust** automatic control loop setting is carried out in the drive, if the drive is in control at the start of the command (i.e. drive enable must have been set).



- ⇒ Starting the command C1800 can immediately trigger a motion, if **drive enable and drive start** are set at the drive.
- ⇒ The drive **automatically** (i.e. without external command value input) carries out **motions** within the travel range defined before with the two limits (**P-0-0166, Lower limit for autom. control loop adjust** and **P-0-0167, Upper limit for autom. control loop adjust**).
- ⇒ Check and make sure that the E-Stop circuit and the travel range limit switches are working.

See also Functional Description "Safety Instructions"

See also Functional Description "Automatic Setting of Axis Control"

### C1800 - Attributes

**Display:** C18  
**Mess. no.:** C1800 (hex)

## C2000 Command Release motor holding brake

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The **P-0-0542, C2000 Command Release motor holding brake** command was started.

While the command is executed the motor holding brake is released. The "C2" display signals that the command is executed.

See also Functional Description "Motor Holding Brake"

### C2000 - Attributes

**Display:** C20  
**Mess. no.:** C2000 (hex)

## C2100 Brake check command

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The **P-0-0541, C2100 Brake check command** was activated.

See also Functional Description "Motor Holding Brake"

### C2100 - Attributes

**Display:** C21  
**Mess. no.:** C2100 (hex)

## C2200 Backup working memory procedure command

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The **S-0-0264, C2200 Backup working memory procedure command** was activated.

### C2200 - Attributes

**Display:** C22  
**Mess. no.:** C2200 (hex)

## C2300 Load working memory command

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The **S-0-0263, C2300 Load working memory procedure command** was activated.

### C2300 - Attributes

**Display:** C23  
**Mess. no.:** C2300 (hex)

## C2400 Selectively backup working memory procedure command

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The **S-0-0293, C2400 Selectively backup working memory procedure command** was activated.

### C2400 - Attributes

**Display:** C24  
**Mess. no.:** C2400 (hex)

## C2500 Copy IDN from optional memory to internal memory

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The command **P-0-4091, C2500 Copy IDN from optional memory to internal memory** was started.

All parameters are copied from the optional memory (MMC) to the internal memory (flash).

The display "C25" signals that the command is executed and the parameters are loaded from the MMC to the drive.

---

**Note:** The MMC can only be used as an optional memory for control sections with MMC slot.

---

See also Functional Description "Loading, Storing and Saving Parameters"

### C2500 - Attributes

**Display:** C25  
**Mess. no.:** C2500 (hex)

## C2600 Copy IDN from internal memory to optional memory

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command **P-0-4092, C2600 Copy IDN from internal memory to optional memory** was started.

All parameters are copied from the internal memory (flash) to the optional memory (MMC).

The display "C26" signals that the command is executed and the parameters are written from the drive to the MMC.

---

**Note:** The MMC can only be used as an optional memory for control sections with MMC slot.

---

See also Functional Description "Loading, Storing and Saving Parameters"

### C2600 - Attributes

**Display:** C26  
**Mess. no.:** C2600 (hex)

## C2800 Analog input adjust command

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

By executing the command **P-0-0220, C2800 Analog input adjust command** it is possible to carry out an automatic adjust (zero point and gain) of the analog input.

---

**Note:** The command is controlled by the settings in **P-0-0218, Analog input, control parameter**.

---

See also Functional Description "Analog Inputs"

### C2800 - Attributes

**Display:** C28  
**Mess. no.:** C2800 (hex)

## C2900 Command Firmware update from MMC

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command **P-0-4072, C2900 Command Firmware update from MMC** was started.

The firmware is copied from the MultiMediaCard (MMC) to the drive-internal memory.

---

**Note:** The MMC can only be used as an optional memory for control sections with MMC slot.

---

---

**Note:** Upon successful firmware update the drive has to be rebooted by switching it off and on again so that the firmware copied before becomes active. If you try to switch to the operating mode without the drive having been rebooted, there will either occur a switching command error or a system error (F8xxx) entered before the firmware update will be displayed again.

---

See also Functional Description "Firmware Update"

### C2900 - Attributes

**Display:** C29  
**Mess. no.:** C2900 (hex)

## C3000 Synchronize and store safety technology IDN

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

By execution of the command **P-0-3204, C3000 Synchronize and store safety technology IDN command** channel 2 accepts the safety parameters of channel 1 and stores them in the safety memory.

### C3000 - Attributes

**Display:** C30  
**Mess. no.:** C3000 (hex)

## C3100 Recalculate actual value cycle

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

When the command **P-0-0071, C3100 Recalculate actual value cycle** is executed, the modulo value for the actual value cycle is recalculated.

### C3100 - Attributes

**Display:** C31  
**Mess. no.:** C3100 (hex)

## C3200 Command Calculate data for asynchronous motor

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The command is started via the command parameter **P-0-4033, C3200 Command Calculate data for asynchronous motor**.

While the command is executed, the values in **P-0-4032, Type plate list asynchronous motor** are checked for plausibility and completeness. Then the motor parameters are calculated according to type plate data.

---

**Note:** To calculate the controller parameters the current settings is **P-0-0001, Switching frequency of the power output stage** and **P-0-0556, Control word of axis controller** (with regard to controller performance) are taken as basis. If one of these parameters is changed after the command has been started, the controller settings may not be correct any more.

---

### C3200 - Attributes

**Display:** C32  
**Mess. no.:** C3200 (hex)

## C3300 Set coordinate system procedure command

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The command for setting the coordinate system (**S-0-0197, C3300 Set coordinate system procedure command**) was activated.

See also Functional Description "Shifting the Position Data Reference for Relative and Absolute Measuring Systems"

### C3300 - Attributes

**Display:** C33  
**Mess. no.:** C3300 (hex)

## C3400 Shift coordinate system procedure command

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The command for shifting the coordinate system (**S-0-0199, C3400 Shift coordinate system procedure command**) was activated.

See also Functional Description "Shifting the Position Data Reference for Relative and Absolute Measuring Systems"

### C3400 - Attributes

**Display:** C34  
**Mess. no.:** C3400 (hex)

## C3500 Command Determine encoder correction

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

By executing the command **P-0-0340, C3500 Command Determine encoder correction values** signal shape errors of a measuring system with sinusoidal signals are determined and correction values are stored in **P-0-0342, Correction value table for encoder correction**.

The encoder the signal shape error of which is to be compensated has to be selected in **P-0-0341, Control word for encoder correction**.

### C3500 - Attributes

**Display:** C35  
**Mess. no.:** C3500 (hex)

## C3700 Manually unlocking the safety door

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When an encoder error has occurred with the safety function active, the drive goes to "safety related standstill" and switches the motor control off via two channels. The unlocking of the safety door, however, in this case is blocked. After previous visual check of the situation at the axis the safety door can be manually unlocked by the command C3700 (**P-0-3218, Manually unlocking the safety door**).

The command can be executed in the operating mode and is effective in a selected safety function.

### C3700 - Attributes

**Display:** C37  
**Mess. no.:** C3700 (hex)

## C3800 Command Apply motor holding brake

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command **P-0-0543, C3800 Command Apply motor holding brake** was started.

While the command is executed the motor holding brake is applied.

See also Functional Description "Motor Holding Brake"

### C3800 - Attributes

**Display:** C38  
**Mess. no.:** C3800 (hex)

## C3900 Command Abrasion of brake

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command **P-0-0544, C3900 Command Abrasion of brake** was activated.

See also Functional Description "Motor Holding Brake"

### C3900 - Attributes

**Display:** C39  
**Mess. no.:** C3900 (hex)

## C4000 Homing procedure command channel 2

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command **P-0-3228, C4000 Homing procedure command Channel 2** was started.

See also documentation "Integrated Safety Technology", keyword "Safety Related Homing Procedure"

### C4000 - Attributes

**Display:** C40  
**Mess. no.:** C4000 (hex)

## 9.2 Command errors

A command error can not be eliminated via "clear error", but only by terminating the associated command.

### C0101 Invalid parameters (-> S-0-0021)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

While the command **S-0-0127, C0100 Communication phase 3 transition check** is executed, internal variables are initialized and the available parameters are checked (e. g. for validity). An error was detected during the execution of the command.

#### Cause

Data block elements required in communication phase 3 are missing or invalid

A change was made in **P-0-2003, Selection of functional packages**. Then you failed to reboot before trying to switch to the operating mode.

A change of functional packages was made in **P-0-2003, Selection of functional packages** which has an effect on customer- and application-specific parameter lists (i. e. S-0-0279)

Internal data memory defective

#### Remedy

Write allowed operating data to the respective parameters (these parameters can be taken from the list **S-0-0021, IDN list of invalid operating data for communication phase 2**)

Check the content of **P-0-2003, Selection of functional packages** and reboot (i. e. switch device off and on again)

Correct respective list parameters (these parameters can be taken from the list **S-0-0021, IDN list of invalid operating data for communication phase 2**). Problem can also be remedied by loading basic parameters (**S-0-0262, C07\_x Load defaults procedure command** with respective setting in **P-0-4090, Index for C07 Load defaults procedure**).

Contact our service department

For removing command errors see "Command Errors"

### C0101 - Attributes

**Display:** C0101  
**Mess. no.:** C0101 (hex)

**C0102 Limit error in parameter (-> S-0-0021)**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

While the command **S-0-0127, C0100 Communication phase 3 transition check** is executed, the limit values (minimum/maximum value) are checked for some parameters. An error was detected during the execution of the command.

**Cause**

Parameter values required in communication phase 3 are outside their allowed range of values (minimum or maximum value)

**Remedy**

Write allowed values to parameters (cf. minimum/maximum value) (these parameters can be taken from list **S-0-0021, IDN list of invalid operating data for communication phase 2**)

For removing command errors see "Command Errors"

**C0102 - Attributes**

**Display:** C0102  
**Mess. no.:** C0102 (hex)

**C0103 Parameter conversion error (->S-0-0021)**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

While the command **S-0-0127, C0100 Communication phase 3 transition check** is executed, the internal parameter formats are checked in order to ensure the internal processing. An error was detected during the execution of the command.

**Cause**

Parameter values required in communication phase 3 cannot be processed

**Remedy**

Write allowed values to parameters (these parameters can be taken from list **S-0-0021, IDN list of invalid operating data for communication phase 2**)

For removing command errors see "Command Errors"

**C0103 - Attributes**

**Display:** C0103  
**Mess. no.:** C0103 (hex)

## C0104 Config. IDN for MDT not configurable

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the telegram configuration of the master communication was detected.

### Cause

in the **S-0-0015, Telegram type parameter** the telegram type 7 (configured telegram) was set

in **S-0-0024, Config. list of the master data telegram** there were some parameters entered that are not contained in **S-0-0188, List of configurable data in the MDT**

### Remedy

set priority telegram (telegram type = 0..6) in **S-0-0015, Telegram type parameter**

in **S-0-0024, Config. list of the master data telegram** those parameters have to be entered that are contained in **S-0-0188, List of configurable data in the MDT**

---

**Note:** List parameters are only allowed in the multiplex channel.

---

### C0104 - Attributes

**Display:** C0104  
**Mess. no.:** C0104 (hex)

## C0105 Maximum length for MDT exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the telegram configuration of the master communication was detected.

### Cause

In **S-0-0015, Telegram type parameter** telegram type 7 (configured telegram) was set

Length of configured data record in MDT that is determined by **S-0-0024, Config. list of the master data telegram** exceeds the maximum allowed value entered in **S-0-0186, Length of the configurable data record in the MDT**

### Remedy

Set priority telegram (telegram type = 0..6) in **S-0-0015, Telegram type parameter**

Reduce number of configured parameters in MDT (**S-0-0024, Config. list of the master data telegram**)

---

**Note:** List parameters are only allowed in the multiplex channel.

---

For removing command errors see "Command Errors"

### C0105 - Attributes

**Display:** C0105  
**Mess. no.:** C0105 (hex)

## C0106 Config. IDNs for AT not configurable

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the telegram configuration of the master communication was detected.

### Cause

in the **S-0-0015, Telegram type parameter** the telegram type 7 (configured telegram) was set

in **S-0-0016, Custom amplifier telegram configuration list** there were some parameters entered that are not contained in **S-0-0187, List of configurable data in the AT**

### Remedy

set priority telegram (telegram type = 0..6) in **S-0-0015, Telegram type parameter**

in **S-0-0016, Custom amplifier telegram configuration list** those parameters have to be entered that are contained in **S-0-0187, List of configurable data in the AT**

---

**Note:** List parameters are only allowed in the multiplex channel.

---

### C0106 - Attributes

**Display:** C0106  
**Mess. no.:** C0106 (hex)

## C0107 Maximum length for AT exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the telegram configuration of the master communication was detected.

### Cause

in the **S-0-0015, Telegram type parameter** the telegram type 7 (configured telegram) was set

the length of the configured data record in the AT that is determined by **S-0-0016, Custom amplifier telegram configuration list**, exceeds the maximum allowed value entered in **S-0-0185, Length of the configurable data record in the AT**

### Remedy

set priority telegram (telegram type = 0..6) in **S-0-0015, Telegram type parameter**

reduce the number of configured parameters in the AT in **S-0-0016, Custom amplifier telegram configuration list**

### C0107 - Attributes

**Display:** C0107  
**Mess. no.:** C0107 (hex)

## C0108 Time slot parameter > Sercos cycle time

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

While the command **S-0-0127, C0100 Communication phase 3 transition check** is executed, the timing setting for SERCOS communication are checked. An error was detected during the execution of the command.

### Cause

At least one of the following time slot parameters exceeds the SERCOS cycle time [**S-0-0002, SERCOS Cycle time (Tscyc)**]:

- **S-0-0006, AT Transmission starting time (T1)**
- **S-0-0007, Feedb. acquisition starting time (T4)**
- **S-0-0008, Command value valid time (T3)**
- **S-0-0089, MDT Transmit starting time (T2)**

### Remedy

Correct respective time slot parameter(s)  
Contact machine manufacturer or installation programmer

**Note:** The definition of the times for the time slot parameters is the responsibility of the control unit manufacturer and is specified by SERCOS interface.

For removing command errors see "Command Errors"

### C0108 - Attributes

**Display:** C0108  
**Mess. no.:** C0108 (hex)

## C0109 Position of data record in MDT (S-0-0009) even

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error was detected.

### Cause

Parameter **S-0-0009, Position of data record in MDT** contains an even value. This is not allowed.

### Remedy

Parameter **S-0-0009, Position of data record in MDT** must be parameterized with an odd value

**Note:** The definition of the S-0-0009 parameter is the responsibility of the control unit manufacturer and is specified by SERCOS.

For removing command errors see "Command Errors"

### C0109 - Attributes

**Display:** C0109  
**Mess. no.:** C0109 (hex)

## C0110 Length of MDT (S-0-0010) odd

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error was detected.

### Cause

Parameter **S-0-0010, Length of master data telegram** contains an odd value. This is not allowed.

### Remedy

Parameter **S-0-0010, Length of master data telegram** has to be parameterized with an even value

**Note:** The definition of the S-0-0010 parameter is the responsibility of the control unit manufacturer and is specified by SERCOS.

For removing command errors see "Command Errors"

### C0110 - Attributes

**Display:** C0110  
**Mess. no.:** C0110 (hex)

## C0111 ID9 + Record length - 1 > length MDT (S-0-0010)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error was detected.

The position of the data record in the master data telegram (MDT) (S-0-0009) plus the length of the data record in the MDT for the drive is greater than the total length of the MDT (S-0-0010).

### Ursache

Parameterization of **S-0-0009, Position of data record in MDT** and **S-0-0010, Length of master data telegram** is incorrect

### Abhilfe

Correct the parameterization of **S-0-0009, Position of data record in MDT** and **S-0-0010, Length of master data telegram**

**Note:** The definition of the S-0-0009 and S-0-0010 parameters is the responsibility of the control unit manufacturer and is specified by SERCOS.

### C0111 - Attributes

**Display:** C0111  
**Mess. no.:** C0111 (hex)

## C0112 TNcyc (S-0-0001) or TScyc (S-0-0002) error

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the SERCOS timing settings was detected.

### Cause

Setting of parameters **S-0-0001, NC Cycle time (TNcyc)** or **S-0-0002, SERCOS Cycle time (TScyc)** is incorrect

### Remedy

Correct parameters **S-0-0001, NC Cycle time (TNcyc)** and **S-0-0002, SERCOS Cycle time (TScyc)**.  
There are settings of 500 µs for control section ADVANCED (or 1 ms for control section BASIC) or integral multiples of 1 ms allowed.

**Note:** The definition of the S-0-0001 and S-0-0002 parameters is the responsibility of the control unit manufacturer and is specified by SERCOS.

For removing command errors see "Command Errors"

### C0112 - Attributes

**Display:** C0112  
**Mess. no.:** C0112 (hex)

## C0113 Relation TNcyc (S-0-0001) to TScyc (S-0-0002) error

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the SERCOS timing settings was detected.

### Cause

Setting of parameters **S-0-0001, NC Cycle time (TNcyc)** or **S-0-0002, SERCOS Cycle time (TScyc)** is incorrect

### Remedy

Value of **S-0-0001, NC Cycle time (TNcyc)** can only be equal to or a multiple of **S-0-0002, SERCOS Cycle time (TScyc)**.

Correct parameters **S-0-0001, NC Cycle time (TNcyc)** and **S-0-0002, SERCOS Cycle time (TScyc)**.

**Note:** The definition of the S-0-0001 and S-0-0002 parameters is the responsibility of the control unit manufacturer and is specified by SERCOS.

For removing command errors see "Command Errors"

### C0113 - Attributes

**Display:** C0113  
**Mess. no.:** C0113 (hex)

## C0114 T4 > TScyc (S-0-0002) - T4min (S-0-0005)

**Supported by Firmware Variant:** FWA-INDRV\*-MPH02VRS-MS  
FWA-INDRV\*-MPB02VRS-MS  
FWA-INDRV\*-MPD02VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the SERCOS timing settings was detected.

### Cause

Value for **S-0-0007, Feedback acquisition starting time (T4)** is incorrect

### Remedy

Correct **S-0-0007, Feedback acquisition starting time (T4)**.

Maximum allowed value for **S-0-0007, Feedback acquisition starting time (T4)** is calculated from **S-0-0002, SERCOS cycle time (TScyc)** and **S-0-0005, Minimum feedback acquisition time (T4min)** as follows:

**S-0-0007 > S-0-0002 – S-0-0005**

**Note:** The definition of the S-0-0007 parameter is the responsibility of the control unit manufacturer and is specified by SERCOS.

For removing command errors see "Command Errors"

### C0114 - Attributes

**Display:** C0114  
**Mess. no.:** C0114 (hex)

## C0115 T2 too small

**Supported by Firmware Variant:** FWA-INDRV\*-MPH02VRS-MS  
FWA-INDRV\*-MPB02VRS-MS  
FWA-INDRV\*-MPD02VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the SERCOS timing settings was detected.

### Cause

Value set for **S-0-0089, MDT Transmit starting time (T2)** is incorrect. Drive cannot run with this value

### Remedy

Correct **S-0-0089, MDT Transmit starting time (T2)**

**Note:** The definition of the S-0-0089 parameter is the responsibility of the control unit manufacturer and is specified by SERCOS.

For removing command errors see "Command Errors"

### C0115 - Attributes

**Display:** C0115  
**Mess. no.:** C0115 (hex)

**C0116 T3 (S-0-0008) within MDT (S-0-0089 + S-0-0010)**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the SERCOS timing settings was detected.

**Cause**

Value for **S-0-0008, Command valid time (T3)** is within value for **S-0-0089, MDT Transmit starting time (T2)**. This could cause access problems in SERCOS communication

**Remedy**

Check and if necessary correct setting of **S-0-0089, MDT Transmit starting time (T2)** and **S-0-0008, Command valid time (T3)**

**Note:** The definition of the SERCOS parameters is the responsibility of the control unit manufacturer and is specified by SERCOS.

For removing command errors see "Command Errors"

**C0116 - Attributes**

**Display:** C0116  
**Mess. no.:** C0116 (hex)

**C0119 Max. travel range too large**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the scaling of the drive was detected.

**Cause**

**S-0-0278, Maximum travel range** incorrectly parameterized The defined travel range is too large

**Remedy**

Check and, if necessary, reduce parameterization of S-0-0278. The value of **S-0-0278, Maximum travel range** is to be selected in such a way that the resulting internal position resolution guarantees a correct commutation of the motor.

Inappropriate measuring system (resolution) for maximum travel range to be displayed

Check resolution of measuring system and, if necessary, use a different measuring system

For removing command errors see "Command Errors"  
 See also Functional Description "Scaling of Physical Data"

**C0119 - Attributes**

**Display:** C0119  
**Mess. no.:** C0119 (hex)

## C0120 Error when reading encoder data => motor encoder

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error during the reading of the encoder data from the data memory of the motor encoder was detected.

**Note:** Measuring systems with their own data memory are DSF/HSF and resolvers, as well as measuring systems with EnDat interface (Heidenhain company) and HIPERFACE® interface (Stegmann company).

### Cause

Measuring system cable defective  
Measuring system defective  
Encoder interface card defective

### Remedy

Check measuring system cable  
Replace measuring system  
Replace encoder interface card

### C0120 - Attributes

**Display:** C0120  
**Mess. no.:** C0120 (hex)

## C0121 Incorrect parameterization of motor encoder (hardware)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the parameterization of the motor encoder hardware was detected.

### Cause

Parameterization **P-0-0074, Encoder type 1 (motor encoder)** does not match interface card (e.g. EN1 with EnDat encoder)

In the case of "current control with motor encoder" (see **P-0-0045, Control word of current controller**), "operation without encoder" was detected to have been set in **P-0-0074, Encoder type 1 (motor encoder)**

Parameterization in **P-0-0077, Assignment motor encoder->optional slot** is incorrect

### Remedy

Check whether parameterized encoder type matches interface card that has been plugged in

Enter value appropriate for motor encoder in **P-0-0074, Encoder type 1 (motor encoder)**

Correct assignment of motor encoder and optional slot in parameter **P-0-0077, Assignment motor encoder->optional slot**

### C0121 - Attributes

**Display:** C0121  
**Mess. no.:** C0121 (hex)

## C0122 Incorr. parameteriz. of motor enc. (mechanical system)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 2 to communication phase 3 (C0100) an error was detected with regard to scaling that was set and the selected motor encoder type (e.g. rotary scaling with linear motor).

### Cause

Incorrect encoder type (**S-0-0277, Position feedback 1 type**)

Parameterized scaling (**S-0-0076, Position data scaling type**) is incorrect

### Remedy

Check and, if necessary, correct **S-0-0277, Position feedback 1 type**

Check and, if necessary, correct **S-0-0076, Position data scaling type**

For removing command errors see "Command Errors"

### C0122 - Attributes

**Display:** C0122  
**Mess. no.:** C0122 (hex)

## C0123 Modulo value for motor encoder cannot be displayed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the modulo value for the motor encoder was detected.

### Cause

Parameterized value for **S-0-0103, Modulo value** is greater than maximum travel range (cf. **S-0-0278, Maximum travel range**)

Parameterized value for **S-0-0103, Modulo value** cannot be internally displayed with the gear ratios that have been set (S-0-0121/S-0-0122, P-0-0121/P-0-0122)

### Remedy

Correct the content of **S-0-0103, Modulo value** or the value of **S-0-0278, Maximum travel range**

Correct content of **S-0-0103, Modulo value** or the gear ratios that have been set [**S-0-0121, Input revolutions of load gear/S-0-0122, Output revolutions of load gear; P-0-0121, Gear 1 motor-side (motor encoder)/P-0-0122, Gear 1 encoder-side (motor encoder)**]

For removing command errors see "Command Errors"

### C0123 - Attributes

**Display:** C0123  
**Mess. no.:** C0123 (hex)

## C0124 Motor encoder unknown

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the motor encoder was detected. The content of **P-0-1000, Kind of encoder 1, encoder memory** is invalid and therefore the parameterized motor encoder is not allowed (e.g. rotary scaling with linear encoder).

### Cause

Encoder memory (feedback) is defective

Kind of motor encoder (**P-0-1000, Kind of encoder 1, encoder memory**) is not supported by the firmware

Detected kind of encoder does not match parameterized type of encoder

### Remedy

Encoder (or motor) must be replaced

Check content of **P-0-1000, Kind of encoder 1, encoder memory** and contact our service department

Check control section configuration and, if necessary, replace control section by a correctly configured control section or replace complete drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

For removing command errors see "Command Errors"

### C0124 - Attributes

**Display:** C0124  
**Mess. no.:** C0124 (hex)

## C0125 Error when reading encoder data => optional encoder

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error during the reading of the encoder data from the data memory of the optional encoder was detected.

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**Note:** Measuring systems with their own data memory are DSF/HSF and resolvers, as well as measuring systems with EnDat interface (Heidenhain company) and HIPERFACE® interface (Stegmann company).

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### Cause

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Measuring system cable defective

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Measuring system defective

---

Encoder interface card defective

### Remedy

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Check measuring system cable

---

Replace measuring system

---

Replace encoder interface card

### C0125 - Attributes

**Display:** C0125  
**Mess. no.:** C0125 (hex)

## C0126 Incorrect parameterization of optional enc. (hardware)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the parameterization of the hardware of the optional encoder was detected.

### Cause

The parameterization **P-0-0075, Encoder type 2 (optional encoder)** does not match the interface card (e.g. EN1 with EnDat encoder)

**P-0-0078, Assignment optional encoder->optional slot** incorrect

### Remedy

Correct the parameterization of **P-0-0075, Encoder type 2 (optional encoder)**

Correct the parameterization of **P-0-0078, Assignment optional encoder->optional slot**

See also Functional Description "Measurement Systems"

### C0126 - Attributes

**Display:** C0126  
**Mess. no.:** C0126 (hex)

## C0127 Incorr. parameteriz. of opt. enc. (mechanical system)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 2 to communication phase 3 (C0100) an error was detected with regard to scaling that was set and the selected motor encoder type (e.g. rotary scaling with linear optional encoder).

### Cause

Incorrect encoder type (**S-0-0115, Position feedback 2 type**)

Parameterized scaling (**S-0-0076, Position data scaling type**) is incorrect

### Remedy

Check and, if necessary, correct **S-0-0115, Position feedback 2 type**

Check and, if necessary, correct **S-0-0076, Position data scaling type**

For removing command errors see "Command Errors"

### C0127 - Attributes

**Display:** C0127  
**Mess. no.:** C0127 (hex)

## C0128 Modulo value for optional encoder cannot be displayed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the modulo value for the optional encoder was detected.

### Cause

Parameterized value for **S-0-0103, Modulo value** is greater than maximum travel range (cf. **S-0-0278, Maximum travel range**)

Parameterized value for **S-0-0103, Modulo value** cannot be internally displayed with the gear ratios that have been set (S-0-0121/S-0-0122, P-0-0121/P-0-0122)

Encoder resolution (**S-0-0117, Feedback 2 Resolution**) incorrectly parameterized

Resolution of encoder does not match required modulo range

### Remedy

Correct content of **S-0-0103, Modulo value** or value of **S-0-0278, Maximum travel range**

Correct content of **S-0-0103, Modulo value** or the gear ratios that have been set [**S-0-0121, Input revolutions of load gear/S-0-0122, Output revolutions of load gear; P-0-0121, Gear 1 motor-side (motor encoder)/P-0-0122, Gear 1 encoder-side (motor encoder)**]

Check and, if necessary, correct parameterization of **S-0-0117, Feedback 2 Resolution**

Replace encoder

For removing command errors see "Command Errors"  
See also Functional Description "Scaling of Physical Data"

### C0128 - Attributes

**Display:** C0128  
**Mess. no.:** C0128 (hex)

## C0129 Optional encoder unknown

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the optional encoder was detected. The content of **P-0-1010, Kind of encoder 2, encoder memory** is invalid and therefore the parameterized optional encoder is not allowed (e.g. rotary scaling with linear encoder).

### Cause

Encoder memory (feedback) is defective

Kind of motor encoder (**P-0-1010, Kind of encoder 2, encoder memory**) is not supported by the firmware

Detected kind of encoder does not match parameterized type of encoder

### Remedy

Encoder must be replaced

Check content of **P-0-1010, Kind of encoder 2, encoder memory** and contact our service department

Check control section configuration and, if necessary, replace control section by a correctly configured control section or replace complete drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

For removing command errors see "Command Errors"

### C0129 - Attributes

**Display:** C0129  
**Mess. no.:** C0129 (hex)

## C0130 Maximum travel range cannot be displayed internally

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

In the case of absolute scaling, the maximum travel range represents the overflow limit of the actual position values. If this travel range cannot be displayed correctly internally so that position generation without error is impossible, this error is generated.

### Cause

**S-0-0278, Maximum travel range** incorrectly parameterized

### Remedy

Check and if necessary reduce **S-0-0278, Maximum travel range**

See also Functional Description "Scaling of Physical Data"  
For removing command errors see "Command Errors"

### C0130 - Attributes

**Display:** C0130  
**Mess. no.:** C0130 (hex)

## C0131 Switching to phase 3 impossible

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) a forbidden attempt to switch to phase 3 was detected.

### Cause

during a firmware download there was an attempt to switch from communication phase 2 to communication phase 3

after a boot error (F81xx error) there was an attempt to switch from communication phase 2 to communication phase 3

### Remedy

wait until the firmware download is completed before switching to another communication phase

clear the error, remove its cause and then boot up the drive again

### C0131 - Attributes

**Display:** C0131  
**Mess. no.:** C0131 (hex)

## C0132 Invalid settings for controller cycle times

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error in the parameterization of controller cycle times or PWM switching frequencies was detected.

P-0-0556, Control word of axis controller, bit 2	P-0-0001, Switching frequency of the power output stage	TA position loop	TA velocity loop	TA current loop
0 (Basic)	16 kHz	500 $\mu$ s	250 $\mu$ s	62.5 $\mu$ s
0 (Basic)	12 kHz	500 $\mu$ s	250 $\mu$ s	83.3 $\mu$ s
0 (Basic)	8 kHz	500 $\mu$ s	250 $\mu$ s	125.0 $\mu$ s
0 (Basic)	4 kHz	500 $\mu$ s	250 $\mu$ s	125.0 $\mu$ s
1 (Advanced)	<b>16 kHz</b>	<b>250 <math>\mu</math>s</b>	<b>125 <math>\mu</math>s</b>	<b>62.5 <math>\mu</math>s</b>
1 (Advanced)	<b>8 kHz</b>	<b>250 <math>\mu</math>s</b>	<b>125 <math>\mu</math>s</b>	<b>62.5 <math>\mu</math>s</b>
1 (Advanced)	<b>4 kHz</b>	<b>250 <math>\mu</math>s</b>	<b>125 <math>\mu</math>s</b>	<b>125.0 <math>\mu</math>s</b>

TA: sampling time  
 Fig. 9-1: Possible controller cycle times depending on controller performance and switching frequency that have been set

### Cause

Parameterization of **P-0-0556, Control word of axis controller** does not comply with switching frequency of 12 kHz set in **P-0-0001, Switching frequency of the power output stage**

Incorrect parameterization of selected switching frequency in **P-0-0001, Switching frequency of the power output stage** with given controller performance (= sampling rate/time)

### Remedy

Select setting "Basic performance" (cf. bit 2) in **P-0-0556, Control word of axis controller**

In **P-0-0001, Switching frequency of the power output stage** select allowed switching frequency (see table)

See also Functional Description "Features of the Control Loops"  
 For removing command errors see "Command Errors"

### C0132 - Attributes

Display: C0132  
 Mess. no.: C0132 (hex)

**C0134 Invalid motor data in encoder memory (->S-0-0021)**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error during the reading of the motor data from the data memory of the motor encoder was detected. The respective parameters are entered in the **S-0-0021, IDN list of invalid operating data for communication phase 2** parameter.

**Cause**

Measuring system cable defective

Measuring system defective

Encoder interface defective

**Remedy**

Check measuring system cable

Replace measuring system

Replace control section or complete drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

For removing command errors see "Command Errors"

**C0134 - Attributes**

**Display:** C0134  
**Mess. no.:** C0134 (hex)

## C0135 Type of construction of motor P-0-4014 incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error in the parameterization of the kind of motor was detected.

In **P-0-4014, Kind of motor** a motor with encoder data memory was parameterized but there wasn't any known motor type designation recognized in the encoder.

### Cause

A motor without encoder data memory was connected

Encoder defective

### Remedy

Parameterize **P-0-4014, Kind of motor** correctly or connect a motor with encoder data memory

Replace encoder

For removing command errors see "Command Errors"

### C0135 - Attributes

**Display:** C0135  
**Mess. no.:** C0135 (hex)

## C0136 Several motor encoders connected

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** two motor encoders were detected during the encoder configuration check.

### Cause

Two encoders were detected; in their data memories a valid and known motor type string is contained in **P-0-2141, Motor type, encoder memory**

Encoder connectors of neighboring axes were interchanged

### Remedy

Replace one of encoders by encoder without valid motor type string

Check axis assignment of encoder connectors and assign to correct axis

For removing command errors see "Command Errors"

### C0136 - Attributes

**Display:** C0136  
**Mess. no.:** C0136 (hex)

## C0137 Error during initialization of motor data (->S-0-0021)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error during the initialization of motor data was detected. The respective parameters are entered in the list **S-0-0021, IDN list of invalid operating data for communication phase 2.**

Cause	Remedy
Invalid motor data stored in motor data memory	Replace motor or contact service department for correction of motor data
Encoder cable defective or bad shielding	Check encoder cable and shielding
Encoder memory or encoder electronics defective	Replace encoder
Hardware defect on control section	Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

For removing command errors see "Command Errors"

### C0137 - Attributes

**Display:** C0137  
**Mess. no.:** C0137 (hex)

## C0138 Invalid control section data (->S-0-0021)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 2 to communication phase 3 (C0100) an error during the initialization of the control section data was detected. The respective parameters are entered in the list **S-0-0021, IDN list of invalid operating data for communication phase 2.**

### Cause

Reading error from I<sup>2</sup>C-Prom due to hardware defect

### Remedy

For detailed error diagnosis contact our service department

For removing command errors see "Command Errors"

### C0138 - Attributes

**Display:** C0138  
**Mess. no.:** C0138 (hex)

## C0139 T2 (S-0-089) + length MDT (S-0-010) > TScyc (S-0-002)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the timing setting of the SERCOS interface was detected. The phase switch to communication phase 3 is prevented.

### Cause

Sum of transmit starting time of master data telegram set by master [**S-0-0089, MDT Transmit starting time (T2)**] and length of data record of master data telegram (**S-0-0010, Length of master data telegram**) exceeds SERCOS cycle time [**S-0-0002, SERCOS Cycle time (TScyc)**]. This means that master data telegram overlaps the master synchronization telegram (MST)

### Remedy

Parameterize smaller value for transmit starting time of master data telegram [**S-0-0089, MDT Transmit starting time (T2)**]

For removing command errors see "Command Errors"

### C0139 - Attributes

**Display:** C0139  
**Mess. no.:** C0139 (hex)

## C0140 Rotary scaling not allowed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error was detected with regard to scaling that was set and the selected motor type (e.g. rotary scaling although a linear motor is used). The phase switch to communication phase 3 is prevented.

### Cause

Although a linear motor is used, rotary scaling was selected in at least one of the following parameters:

**S-0-0044, Velocity data scaling type**

**S-0-0076, Position data scaling type**

**S-0-0086, Torque/force data scaling type**

**S-0-0160, Acceleration data scaling type**

### Remedy

Check and correct respective scaling parameter(s) or use a linear encoder

For removing command errors see "Command Errors"

### C0140 - Attributes

**Display:** C0140

**Mess. no.:** C0140 (hex)

## C0153 Error at init. of synchr. motor with reluctance torque

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** a plausibility error was detected during the initialization of a synchronous motor with reluctance torque.

**Note:** The initialization of a synchronous motor with reluctance torque is only run when this has been set in parameter **P-0-4014, Kind of motor**.

The initialization of a synchronous motor implies the following parameters:

- **S-0-0109, Motor peak current**
- **S-0-0110, Amplifier peak current**
- **S-0-0111, Motor current at standstill**
- **P-0-0018, Number of pole pairs/pole pair distance**
- **P-0-0051, Torque/force constant**
- **P-0-4002, Charact. of quadrature-axis induct. of motor, inductances**
- **P-0-4003, Charact. of quadrature-axis inductance of motor, currents**
- **P-0-4016, Direct-axis inductance of motor**
- **P-0-4017, Quadrature-axis inductance of motor**

### Cause

Incomplete or invalid entries in parameters for initialization of synchronous motor

Initialization for synchronous motor **with** reluctance torque was run although synchronous motor **without** reluctance torque is used

### Remedy

Check parameter contents and enter data supplied by motor manufacturer in above parameters. If error is generated in spite of correct data, please contact our service department

Correct setting in **P-0-4014, Kind of motor**

See also Functional Description "Third-Party Motors at IndraDrive Controllers"

For removing command errors see "Command Errors"

### C0153 - Attributes

**Display:** C0153  
**Mess. no.:** C0153 (hex)

## C0154 Field bus: IDN for cycl. command val. not configurable

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the telegram configuration of the master communication was detected.

### Cause

In operating data of **P-0-4081, Field bus: config. list of cyclic command value data ch.** there is an IDN that is not contained in **S-0-0188, List of configurable data in the MDT**

### Remedy

In **P-0-4081, Field bus: config. list of cyclic command value data ch.** enter allowed IDN (cf. **S-0-0188, List of configurable data in the MDT**)

For removing command errors see "Command Errors"

### C0154 - Attributes

**Display:** C0154  
**Mess. no.:** C0154 (hex)

## C0155 Field bus: max. length for cycl. command val. exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the telegram configuration of the master communication was detected.

### Cause

Sum of data widths of all IDNs entered in **P-0-4081, Field bus: config. list of cyclic command value data ch.** is exceeding max. value of **P-0-4071, Field bus: length of cyclic command value data channel**

### Remedy

Reduce number of IDNs entered in **P-0-4081, Field bus: config. list of cyclic command value data ch.**

### C0155 - Attributes

**Display:** C0155  
**Mess. no.:** C0155 (hex)

## C0156 Field bus: IDN for cycl. actual val. not configurable

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the telegram configuration of the master communication was detected.

### Cause

In operating data of **P-0-4080, Field bus: config. list of cyclic command value data ch.** there is an IDN that is not contained in **S-0-0187, List of configurable data in the AT**

### Remedy

In **P-0-4080, Field bus: config. list of cyclic command value data ch.** enter allowed IDNs (cf. **S-0-0187, List of configurable data in the AT**)

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**Note:** List parameters are only allowed in the multiplex channel.

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For removing command errors see "Command Errors"

### C0156 - Attributes

**Display:** C0156  
**Mess. no.:** C0156 (hex)

## C0157 Field bus: length for cycl. actual values exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the telegram configuration of the master communication was detected.

### Cause

Sum of data widths of all IDNs entered in **P-0-4080, Field bus: config. list of cyclic actual value data ch.** is exceeding max. value of **P-0-4082, Field bus: length of cyclic actual value data channel**

### Remedy

Reduce number of IDNs entered in **P-0-4080, Field bus: config. list of cyclic actual value data ch.**

### C0157 - Attributes

**Display:** C0157  
**Mess. no.:** C0157 (hex)

## C0158 Field bus: Tcyc (P-0-4076) incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-MPH02VRS-MS  
FWA-INDRV\*-MPB02VRS-MS  
FWA-INDRV\*-MPD02VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the timing settings of the master communication was detected.

### Cause

**P-0-4076, Field bus: cycle time (Tcyc)** is not an integral multiple of the position loop clock

### Remedy

Adjust **P-0-4076, Field bus: cycle time (Tcyc)** to position loop clock (control section ADVANCED: 500 µs or 250 µs, control section BASIC: 500 µs)

**Note:** The minimum field bus cycle time [**P-0-4076, Field bus: cycle time (Tcyc)**] is 500 µs for control section ADVANCED and 1000 µs for control section BASIC.

For removing command errors see "Command Errors"

### C0158 - Attributes

**Display:** C0158  
**Mess. no.:** C0158 (hex)

## C0159 Field bus: P-0-4077 missing for cycl. command values

**Supported by Firmware Variant:** FWA-INDRV\*-MPH02VRS-MS  
FWA-INDRV\*-MPB02VRS-MS  
FWA-INDRV\*-MPD02VRS-MS

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the telegram configuration of the master communication was detected.

### Cause

The operating data of **P-0-4081, Field bus: config. list of cyclic command value data ch.** contains neither **P-0-4077, Field bus: control word** nor **P-0-4068, Field bus: control word IO**. At least one control word has to be contained.

### Remedy

According to profile type configure one of both control words in **P-0-4081, Field bus: config. list of cyclic command value data ch.**

For removing command errors see "Command Errors"

### C0159 - Attributes

**Display:** C0159  
**Mess. no.:** C0159 (hex)

## C0160 Error when reading encoder data => measuring encoder

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

It was impossible to read the encoder data (**P-0-1020, Kind of encoder 3, encoder memory, P-0-1021, Encoder 3 resolution, encoder memory, P-0-1022, Absolute encoder offset 3, encoder memory**) correctly from the encoder memory during the initialization of the control section.

**Cause**

- Interference caused by incorrect shielding or defective encoder cable

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- Encoder defective

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- Measuring encoder option on control section is defective

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- Incorrect parameterization of **P-0-0076, Encoder type 3 (measuring encoder)**

**Remedy**

- Check encoder cable (incl. shielding) and, if necessary, replace or run it correctly

---

- Check encoder function and, if necessary, replace encoder

---

- Replace control section or entire drive controller

---

- Check content of **P-0-0076, Encoder type 3 (measuring encoder)** and correct it in such a way that measuring encoder is correctly assigned to optional slot

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Measuring Systems"

### C0160 - Attributes

**Display:** C0160  
**Mess. no.:** C0160 (hex)

## C0161 Incorr. parmeterization of measuring enc. (hardware)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the parameterization of the hardware of the measuring encoder was detected.

### Cause

Parameterization of **P-0-0076, Encoder type 3 (measuring encoder)** does not match interface card (e.g. EN1 with EnDat encoder)

**P-0-0079, Assignment measuring encoder ->optional slot** incorrectly parameterized

In the case of double-axis device (CDB control section) **P-0-0076, Encoder type 3 (measuring encoder)** was parameterized unequal "0" for both axes

### Remedy

Correct parameterization of **P-0-0076, Encoder type 3 (measuring encoder)**

Correct parameterization of **P-0-0079, Assignment measuring encoder ->optional slot** or change control section configuration (replacement of control section or drive controller)

Only one measuring encoder can be connected per double-axis device (CDB control section). **P-0-0076, Encoder type 3 (measuring encoder)** may only be unequal "0" for one axis

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

See also Functional Description "Measuring Systems"

### C0161 - Attributes

**Display:** C0161  
**Mess. no.:** C0161 (hex)

## C0162 Measuring encoder unknown

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 2 to communication phase 3 (C0100) an error with regard to the measuring encoder was detected. The content of **P-0-1020, Kind of encoder 3, encoder memory** is invalid and the measuring encoder therefore is not allowed.

### Cause

Encoder memory (feedback) is defective

Kind of motor encoder (**P-0-1020, Kind of encoder 3, encoder memory**) is not supported by the software

Detected kind of encoder does not match parameterized type of encoder (**P-0-0079, Assignment measuring encoder ->optional slot**)

### Remedy

Encoder must be replaced

Check content of **P-0-1020, Kind of encoder 3, encoder memory** and contact our service department

Check **P-0-0079, Assignment measuring encoder ->optional slot** and, if necessary, replace control section by correctly configured control section or replace complete drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### C0162 - Attributes

**Display:** C0162  
**Mess. no.:** C0162 (hex)

## C0163 Modulo value for measuring encoder cannot be displayed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 2 to communication phase 3 (C0100) an error was detected.

### Cause

Value parameterized for **P-0-0765, Modulo factor measuring encoder** cannot be displayed internally with gear that was set

**P-0-0327, Encoder resolution of measuring encoder** incorrectly parameterized

### Remedy

Correct content of **S-0-0103, Modulo value** or measuring gear settings (**P-0-0127, Input revolutions of measuring gear** and **P-0-0128, Output revolutions of measuring gear**)

Check and, if necessary, correct content of **P-0-0327, Encoder resolution of measuring encoder**

See also Functional Description "Scaling of Physical Data"

### C0163 - Attributes

**Display:** C0163  
**Mess. no.:** C0163 (hex)

## C0164 Incorrect measuring encoder configuration

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check** an error with regard to the measuring encoder configuration was detected.

### Cause

At least one of selected operating modes is synchronization mode (velocity synchronization, phase synchronization or electronic cam shaft) and control encoder of synchronization mode has simultaneously been configured as measuring encoder. This configuration is not useful.

### Remedy

Check and, if necessary, correct parameterization of operating mode parameters (**S-0-0032, Primary mode of operation; S-0-0033, Secondary operation mode 1; S-0-0034, Secondary operation mode 2;...**) if synchronization mode is not required.  
If synchronization mode is required, deactivate measuring encoder **or** use additional encoder as measuring encoder.

For removing command errors see "Command Errors"

### C0164 - Attributes

**Display:** C0164  
**Mess. no.:** C0164 (hex)

## C0199 Functional package selection changed. Restart

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **S-0-0127, C0100 Communication phase 3 transition check**, the drive detected that the functional package selection was changed in communication phase 2 but the drive was not rebooted.

### Cause

Parameter **P-0-2003, Selection of functional packages** contains functional package selection not corresponding to active functional package selection (cf. **P-0-2004, Active functional packages**)

Incorrect functional package selection in **P-0-2003, Selection of functional packages**

### Remedy

Switch drive off and on again in order to accept the functional package selection of **P-0-2003, Selection of functional packages** in **P-0-2004, Active functional packages**

Set value in **P-0-2003, Selection of functional packages** to value in **P-0-2004, Active functional packages**

See also Functional Description "Enabling of Functional Packages"  
For removing command errors see "Command Errors"

### C0199 - Attributes

**Display:** C0199  
**Mess. no.:** C0199 (hex)

## C0201 Invalid parameters (->S-0-0022)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

**Supported by Supply Unit:** **HMV01**

While the command **S-0-0128, C0200 Communication phase 4 transition check** is executed, internal variables are initialized and the available parameters are checked (e. g. for validity). An error was detected during the execution of the command.

### Cause

Data block elements required in communication phase 4 are missing or invalid

### Remedy

Write allowed operating data to respective parameters (these parameters can be taken from list **S-0-0022, IDN list of invalid operating data for communication phase 3**).

For removing command errors see "Command Errors"

### C0201 - Attributes

**Display:** C0201  
**Mess. no.:** C0201 (hex)

**C0202 Parameter limit error (->S-0-0022)**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

**Supported by Supply Unit:** **HMV01**

While the command **S-0-0128, C0200 Communication phase 4 transition check** is executed, the limit values (minimum/maximum value) are checked for some parameters. An error was detected during the execution of the command.

**Cause**

Parameter values required in communication phase 4 are outside their allowed range of values (minimum or maximum value)

**Remedy**

Write allowed values to parameters (cf. minimum/maximum value) (these parameters can be taken from list **S-0-0022, IDN list of invalid operating data for communication phase 3**).

For removing command errors see "Command Errors"

**C0202 - Attributes**

**Display:** C0202  
**Mess. no.:** C0202 (hex)

**C0203 Parameter calculation error (->S-0-0022)**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

**Supported by Supply Unit:** **HMV01**

While the command **S-0-0128, C0200 Communication phase 4 transition check** is executed, the internal parameter formats are checked in order to ensure the internal processing. An error was detected during the execution of the command.

**Cause**

Parameter values required in communication phase 3 cannot be processed

**Remedy**

Write allowed values to parameters (the respective parameters can be taken from list **S-0-0022, IDN list of invalid operating data for communication phase 3**).

For removing command errors see "Command Errors"

**C0203 - Attributes**

**Display:** C0203  
**Mess. no.:** C0203 (hex)

**C0212 Invalid control section data (->S-0-0022)**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

**For HMS, HMD, HCS** During the execution of the command **S-0-0128, C0200 Communication phase 4 transition check** an error during the initialization of amplifier data was detected. The respective parameters are entered in the list **S-0-0022, IDN list of invalid operating data for communication phase 3.**

**For HMV** During the initialization of the device data error was detected.

**Cause**

Reading error from I2C-Prom due to hardware defect

**Remedy**

If possible, replace hardware; otherwise contact our service department

For removing command errors see "Command Errors"

**C0212 - Attributes**

**Display:** C0212  
**Mess. no.:** C0212 (hex)

## C0220 Error when initializing position of encoder 1

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

While the command **S-0-0128, C0200 Communication phase 4 transition check** is executed, the following checks are carried out for initializing encoder 1 (motor encoder).

- offset between high-resolution and low-resolution track
- communication with encoder
- generation of position of an initialization track
- reading of analog signals of an initialization track

If the motor encoder is an HSF encoder, the following checks are additionally carried out

- access of angle correction data
- pointer length of analog signals of an initialization track

If one of the above checks fails, the transition command error C0220 is generated.

### Cause

Motor encoder cable defective

Motor encoder defective or error in micro controller of measuring system

Measuring system interface defective

### Remedy

Check and if necessary replace motor encoder cable

Replace motor

Have measuring system interface replaced by service department

For removing command errors see "Command Errors"

### C0220 - Attributes

**Display:** C0220

**Mess. no.:** C0220 (hex)

## C0221 Initialization velocity encoder 1 too high

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0128, C0200 Communication phase 4 transition check** an error in the initialization velocity of encoder 1 (motor encoder) was detected.

### Cause

Velocity for initialization of encoder 1 was too high

### Remedy

Reduce velocity for encoder initialization

For removing command errors see "Command Errors"

### **C0221 - Attributes**

**Display:** C0221  
**Mess. no.:** C0221 (hex)

## C0224 Error when initializing position of encoder 2

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

While the command **S-0-0128, C0200 Communication phase 4 transition check** is executed, the following checks are carried out for initializing encoder 2 (optional encoder).

- offset between high-resolution and low-resolution track
- communication with encoder
- generation of position of an initialization track
- reading of analog signals of an initialization track

If the optional encoder is an HSF encoder, the following checks are additionally carried out

- access of angle correction data
- pointer length of analog signals of an initialization track

If one of the above checks fails, the transition command error C0224 is generated.

### Cause

Encoder cable defective

Encoder defective or error in micro controller of measuring system

Measuring system interface defective

### Remedy

Check and if necessary replace encoder cable

Replace encoder

Have measuring system interface replaced by service department

For removing command errors see "Command Errors"

### C0224 - Attributes

**Display:** C0224

**Mess. no.:** C0224 (hex)

## C0225 Initialization velocity encoder 2 too high

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0128, C0200 Communication phase 4 transition check** an error in the initialization velocity of encoder 2 (optional encoder) was detected.

### Cause

Velocity for initialization of encoder 2 was too high

### Remedy

Reduce velocity for encoder initialization

For removing command errors see "Command Errors"

### **C0225 - Attributes**

**Display:** C0225  
**Mess. no.:** C0225 (hex)

## C0227 Error when initializing position of measuring encoder

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

While the command **S-0-0128, C0200 Communication phase 4 transition check** is executed, the following checks are carried out for initializing the measuring encoder.

- offset between high-resolution and low-resolution track
- communication with encoder
- generation of position of an initialization track
- reading of analog signals of an initialization track

If the measuring encoder is an HSF encoder, the following checks are additionally carried out:

- access of angle correction data
- pointer length of analog signals of an initialization track

If one of the above checks fails, the transition command error C0227 is generated.

### Cause

Encoder cable defective

Interference caused by incorrect shielding

Encoder defective or error in micro controller of measuring system

Measuring system interface defective

### Remedy

Check and if necessary replace encoder cable

Check and if necessary correct cable shielding

Replace encoder

Have measuring system interface replaced by service department

For removing command errors see "Command Errors"

### C0227 - Attributes

**Display:** C0227  
**Mess. no.:** C0227 (hex)

## C0228 Initialization velocity measuring encoder too high

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0128, C0200 Communication phase 4 transition check** an error in the initialization velocity of the measuring encoder was detected.

### Cause

Velocity for initialization of measuring encoder was too high

### Remedy

Reduce velocity for encoder initialization

For removing command errors see "Command Errors"

### **C0228 - Attributes**

**Display:** C0228  
**Mess. no.:** C0228 (hex)

## C0242 Multiple configuration of a parameter (->S-0-0022)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0128, C0200 Communication phase 4 transition check** an error was detected.

**Cause:**

For cyclic parameter write, a parameter was simultaneously configured in different interfaces. It is impossible, however, to simultaneously write data to the same parameter from different interfaces.

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**Note:** "Interfaces" means as well analog and digital inputs as complete bus systems.

---

**Remedy:**

All multiple configurations are listed in parameter **S-0-0022, IDN list of invalid operating data for communication phase 3**.

Each multiple configuration/each conflict is displayed in the following form:

The 1<sup>st</sup> entry contains the IDN of the parameter that was configured in a multiple way. The subsequent entries contain the IDNs of the parameters in which the multiple-configuration parameter was configured for cyclic parameter write. Up to 5 entries are displayed. In the IDN list, each conflict is concluded by the IDN S-0-0000. If several conflicts occur at the same time, they are represented one after the other in **S-0-0022, IDN list of invalid operating data for communication phase 3**, being separated by the IDN S-0-0000.

For each conflict, the configurations of the involved interfaces have to be modified in such a way that only one interface writes data to a parameter.

For removing command errors see "Command Errors"

### C0242 - Attributes

**Display:** C0242  
**Mess. no.:** C0242 (hex)

## C0243 Brake check function not possible

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

In the **P-0-0525, Holding brake control word** parameter the automatic brake check was selected/activated. When initializing the function an error occurred.

### Cause

Holding brake is not controlled

### Remedy

Activate control of holding brake in **P-0-0525, Holding brake control word**

**P-0-0540, Torque of motor holding brake** is 0

Parameterize **P-0-0540, Torque of motor holding brake** correctly by means of data sheet for brake or motor

For removing command errors see "Command Errors"

### C0243 - Attributes

**Display:** C0243  
**Mess. no.:** C0243 (hex)

## C0244 Act. modulo value cycle greater than max. travel range

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **S-0-0128, C0200 Communication phase 4 transition check** an error was detected.

### Cause

Calculated modulo value for actual value cycle is greater than value parameterized in **S-0-0278, Maximum travel range**

### Remedy

Check parameterization of **S-0-0278, Maximum travel range** and if necessary adjust it to modulo value for actual value cycle

– or –

Check parameterization of modulo value for actual value cycle and adjust it to **S-0-0278, Maximum travel range**

For removing command errors see "Command Errors"

### C0244 - Attributes

**Display:** C0244  
**Mess. no.:** C0244 (hex)

## C0245 Operating mode configuration (->S-0-0022) not allowed

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **S-0-0128, C0200 Communication phase 4 transition check** an invalid operating mode configuration was detected.

In the operating mode parameters it is not allowed to parameterize synchronization modes with outer position control loop (phase synchronization or electronic cam shaft) with different control encoders.

### Operating Mode Parameters

- **S-0-0032, Primary mode of operation**
- **S-0-0033, Secondary operating mode 1**
- **S-0-0034, Secondary operating mode 2**
- **S-0-0035, Secondary operating mode 3**
- etc.

### Cause

Operating mode configuration is invalid (phase synchronization or electronic cam shaft with different control encoders)

### Remedy

Parameter contents of operating mode parameters have to be changed in such a way that invalid operating mode configuration no longer occurs (the respective operating mode parameters are listed in **S-0-0022, IDN list of invalid operating data for communication phase 3**)

For removing command errors see "Command Errors"

### C0245 - Attributes

**Display:** C0245  
**Mess. no.:** C0245 (hex)

## C0246 Trav. range lim. switch not ass. to dig. input

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 3 to communication phase 4 (C0200) the configuration of the digital inputs with activated travel range limit switches is checked in order to ensure the function of the travel range limit switches that are relevant for machine safety.

### Cause

Travel range limit switches +/- have been activated in **P-0-0090, Travel range limit parameter** but not assigned to any digital input

Travel range limit switches +/- have been unintentionally activated in **P-0-0090, Travel range limit parameter**

### Remedy

Assign travel range limit switches to digital inputs via **P-0-0300, Digital I/Os, assignment list**

Deactivate travel range limit switches +/- in **P-0-0090, Travel range limit parameter**

For removing command errors see "Command Errors"  
See also Functional Description "Digital Inputs/Outputs"  
See also Functional Description "Position Limitation/Travel Range Limit Switch"

### C0246 - Attributes

**Display:** C0246  
**Mess. no.:** C0246 (hex)

## C0247 Dig. output already assigned to other axis

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 3 to communication phase 4 (C0200) digital outputs were detected to have been configured more than once.

### Cause

In the case of a double-axis device (HMD01.1), a digital output is used by both axes

### Remedy

Check parameterization of **P-0-0300, Digital I/Os, assignment list** in both axes and change it in at least one axis

For removing command errors see "Command Errors"  
See also Functional Description "Digital Inputs/Outputs"

### C0247 - Attributes

**Display:** C0247  
**Mess. no.:** C0247 (hex)

## C0248 Dig. input assigned differently to axes

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 3 to communication phase 4 (C0200) the configuration of the available digital inputs is checked with regard to inconsistent double assignment.

### Cause

In the case of a double-axis device (HMD01.1), a digital input was parameterized by both axes with different IDN (**P-0-0300, Digital I/Os, assignment list**) or bit number (**P-0-0301, Digital I/Os, bit numbers**)

### Remedy

Check parameterization of **P-0-0300, Digital I/Os, assignment list** or **P-0-0301, Digital I/Os, bit numbers** in both axes of double-axis device and change it in at least one axis

For removing command errors see "Command Errors"  
See also Functional Description "Digital Inputs/Outputs"

### C0248 - Attributes

**Display:** C0248  
**Mess. no.:** C0248 (hex)

## C0249 Dig. I/Os: bit number too large

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 3 to communication phase 4 (C0200) the configuration of the digital I/Os is checked with regard to the configured bit numbers.

### Cause

Bit number (**P-0-0301, Digital I/Os, bit numbers**) for an assigned IDN (**P-0-0300, Digital I/Os, assignment list**) is not available (e.g. bit number 25 but IDN only 2 bytes long)

### Remedy

Check parameterization of **P-0-0300, Digital I/Os, assignment list** and **P-0-0301, Digital I/Os, bit numbers** and adjust **P-0-0301, Digital I/Os, bit numbers** to data format of corresponding IDN

For removing command errors see "Command Errors"

### C0249 - Attributes

**Display:** C0249  
**Mess. no.:** C0249 (hex)

## C0250 Probe inputs incorrectly configured

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 3 to communication phase 4 (C0200) an error was detected.

### Cause

At least one of both probes was activated in **S-0-0169, Probe control parameter** but not assigned to any digital input

Probes were accidentally activated

### Remedy

Assign probes to digital inputs via **P-0-0300, Digital I/Os, assignment list, P-0-0301, Digital I/Os, bit numbers** and **P-0-0302, Digital I/Os, direction**

Deactivate probes in **S-0-0169, Probe control parameter**

See also Functional Description "Digital Inputs/Outputs"  
See also Functional Description "Probe Function"

### C0250 - Attributes

**Display:** C0250  
**Mess. no.:** C0250 (hex)

## C0251 Error during synchronization to master communication

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the transition check from communication phase 3 to communication phase 4 (C0200) the drive checks whether the drive control is synchronized to the bus interface (SERCOS, Profibus, Interbus,...) via two phase control loops. The synchronization process must have been completed until the end of the communication phase 4 transition check (C0200). If not, this error message is generated.

### Cause

Hardware defect on control section

### Remedy

Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

For removing command errors see "Command Errors"  
See also Functional Description "Master Communication"

### C0251 - Attributes

**Display:** C0251  
**Mess. no.:** C0251 (hex)

## C0255 Safety command for system init. incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 3 to communication phase 4 (C0200) the optional safety technology module is initialized and a timeout check is run for the module.

### Cause

Sporadic timeout error

Firmware defect on optional safety technology module

Hardware defect on optional safety technology module

### Remedy

Reset optional safety technology module and contact our service department

If command error occurs repeatedly, safety technology firmware has to be replaced

If command error occurs repeatedly, optional safety technology module has to be replaced

**Note:** Only Rexroth service engineers are allowed to replace optional modules of the control section.

For removing command errors see "Command Errors"

See also documentation "Integrated Safety Technology", keyword "Firmware Update"

### C0255 - Attributes

**Display:** C0255

**Mess. no.:** C0255 (hex)

## C0257 No encoder assigned to slot 1

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 3 to communication phase 4 (C0200) a check is run in closed-loop operation in order to find out whether an optional encoder module is available in optional slot 1.

### Cause

Command error occurs sporadically

No optional encoder module available in control section

Optional encoder module with incorrect hardware code or defective hardware

### Remedy

Restart transition command and contact our service department

Replace control section with control section configuration containing optional encoder module

Replace optional encoder module or entire drive controller and contact our service department

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.  
 Only Rexroth service engineers are allowed to replace the optional encoder module.

For removing command errors see "Command Errors"

### C0257 - Attributes

**Display:** C0257  
**Mess. no.:** C0257 (hex)

**C0258 Error in relation TNcyc (S-0-0001) to fine interpol.**

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the transition check from communication phase 3 to communication phase 4 (C0200) a check is run, when the cubic fine interpolator or the interpolator according to contour (**P-0-0187, Position command processing mode = 1 or 2**) is used, to find out whether the selected NC cycle time is supported by the respective fine interpolator.

**Cause**

**S-0-0001, NC cycle time (TNcyc)** incorrectly parameterized

Cubic fine interpolation or fine interpolation according to contour cannot be used with present NC cycle time (**S-0-0001, NC cycle time TNcyc**)

**Remedy**

Select appropriate **S-0-0001, NC cycle time TNcyc**.  
 Allowed NC cycle times, when using cubic fine interpolator or fine interpolator according to contour, are:  
 1, 2, 3, 4, 5, 6, 7, 8 ms for S-0-0001 <= 8 ms  
 10, 12, 14, 16 ms for S-0-0001 <= 16 ms  
 20, 24, 28, 32 ms for S-0-0001 <= 32 ms

Use linear fine interpolator (**P-0-0187, Position command processing mode = 0**)

For removing command errors see "Command Errors"

**C0258 - Attributes**

**Display:** C0258  
**Mess. no.:** C0258 (hex)

## C0260 Incremental enc. emulator resol. cannot be displayed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

In the case of incremental encoder emulation, inadmissible overflow can occur for increment output. In order to avoid this overflow, **P-0-0903, Encoder emulation resolution** has to be parameterized accordingly. In the case of modulo processing, the overflow takes place at the modulo value entered in **S-0-0103, Modulo value**:

$$P-0-0903 = \frac{S-0-0079}{S-0-0103} \times 2^{29}$$

S-0-0103: **S-0-0103, Modulo value**  
P-0-0903: **P-0-0903, Encoder emulation resolution**  
S-0-0079: **S-0-0079, Rotational position resolution**

Otherwise the overflow takes place at the value entered in **S-0-0278, Maximum travel range**:

$$P-0-0903 = \frac{S-0-0079}{S-0-0278} \times 2^{29}$$

P-0-0903: **P-0-0903, Encoder emulation resolution**  
S-0-0079: **S-0-0079, Rotational position resolution**  
S-0-0278 **S-0-0278, Maximum travel range**

### Cause

Resolution of emulated signal is not correct for modulo range / travel range

### Remedy

Reduce resolution entered in **P-0-0903, Encoder emulation resolution**  
- or -  
Reduce **S-0-0278, Maximum travel range**

See also Functional Description "Incremental Encoder Emulation"

### C0260 - Attributes

**Display:** C0260  
**Mess. no.:** C0260 (hex)

## C0301 Measuring system unavailable

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the "Set absolute measuring" command (C0300) the measuring system selected by parameter **P-0-0612, Control word for setting absolute measuring** was detected to be unavailable.

### Cause

The command was activated by mistake  
The measuring system has not been parameterized

### Remedy

Prevent the command from being activated  
Parameterize the measuring system

See also Functional Description "Set Absolute Measuring"

### C0301 - Attributes

**Display:** C0301  
**Mess. no.:** C0301 (hex)

## C0302 Absolute evaluation of measuring system impossible

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the "Set absolute measuring" command (C0300) it was detected that absolute evaluation of the selected measuring system is impossible.

**Note:** The "Set absolute measuring" command can only be executed if there is an absolute measuring system available (see **S-0-0277, Position feedback 1 type** respectively **S-0-0115, Position feedback 2 type**).

### Cause

The command was activated by mistake  
The motor encoder or the optional measuring system have not been designed as absolute encoders

### Remedy

Prevent the command from being activated  
Equip the motor or the optional measuring system with an absolute encoder function

See also Functional Description "Set Absolute Measuring"

### C0302 - Attributes

**Display:** C0302  
**Mess. no.:** C0302 (hex)

## C0303 Absolute encoder offset cannot be saved

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When executing the command for setting absolute measuring (C0300) the offset of the encoder zero point with regard to the machine zero point is determined and stored in the data memory of the encoder. It was impossible to store the offset correctly.

**Cause:**

The communication between encoder and drive is disturbed.

**Remedy:**

- check encoder cable and repair it, if necessary
- or -
- replace encoder

### C0303 - Attributes

**Display:** C0303  
**Mess. no.:** C0303 (hex)

## C0401 Drive active, switching not allowed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

**Supported by Supply Unit:** **HMV01**

When switching to communication phase 2 (C0400) an error was recognized.

**Cause**

Command for switching to parameter mode was started by means of parameter **P-0-4023, C0400 Communication phase 2 transition** although drive enable had been activated

**Remedy**

Complete command and switch drive enable off, then command can be started again

### C0401 - Attributes

**Display:** C0401  
**Mess. no.:** C0401 (hex)

## C0501 Error clearing only in parameter mode

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the error clearing command (C0500) an error was detected.

**Cause:**

There was an attempt to clear the **F8022 Enc. 1 error: sign. amplitude (can be cleared in ph.2)** error in communication phase 4 (operating mode). This is only possible in communication phase 2 (parameterization mode).

**Remedy:**

Switch the drive in communication phase 2 by means of the **P-0-4023, C400 Communication phase 2 transition** command and start the error clearing command again.

### C0501 - Attributes

**Display:** C0501  
**Mess. no.:** C0501 (hex)

## C0601 Homing only possible with drive enable

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the "Drive-controlled homing procedure" command (C0600) an error was detected.

**Cause:**

The command was started without drive enable. This is not allowed.

**Remedy:**

Enable the drive and start the command again.

See also Functional Description "Drive-Controlled Homing"

### C0601 - Attributes

**Display:** C0601  
**Mess. no.:** C0601 (hex)

## C0602 Distance home switch - reference mark erroneous

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command for drive-controlled homing (C0600) an error was detected.

**Cause:**

The evaluation of the home switch has been switched on (**S-0-0147, Homing parameter**). The distance between selected home switch edge and reference mark to be evaluated is outside the allowed range.

**Remedy:**

Read the value from parameter **S-0-0298, Reference cam shift** and take it over to parameter **S-0-0299, Home switch offset**

- or -

shift the reference cam.

See also Functional Description "Establishing Position Data Reference for Relative Measuring Systems"

### C0602 - Attributes

**Display:** C0602  
**Mess. no.:** C0602 (hex)

## C0604 Homing of absolute encoder not possible

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command for drive-controlled homing (C0600) an error was detected.

**Cause:**

By the encoder selection in **S-0-0147, Homing parameter** an absolute measuring system was selected. The command for drive-controlled homing can only be executed if the **P-0-0012, C0300 Command Set absolute measuring** command had been activated before.

**Remedy:**

First activate the **P-0-0012, C0300 Command Set absolute measuring** command and then start the **S-0-0148, C0600 Drive-controlled homing procedure command**. Doing this the absolute reference point is established.

### C0604 - Attributes

**Display:** C0604  
**Mess. no.:** C0604 (hex)

## C0606 Reference mark not detected

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command for drive-controlled homing (C0600) an error was detected.

**Cause:**

If a

- distance-coded measuring system or
- an incremental measuring system

are homed, the maximum travel distance during the homing procedure is known. If there isn't any reference mark detected within this distance, the **C0606 Reference mark not detected** error message is generated and the homing procedure is aborted with error.

---

**Note:** In the case of linear non-distance-coded measuring systems, the travel distance is unknown if "0" was entered in parameter **P-0-0153, Optimum distance home switch-reference mark**. This normally is the case if the linear scale does not have any reference marks in equal, known distances. In this case monitoring for faulty reference mark detection cannot be carried out.

---

**Remedy:**

- check the measuring system to be homed and its cabling
- check the parameterization
- in the case of incremental measuring systems, check the reference mark detection by executing the **P-0-0014, C1400 Command Get marker position** command

### C0606 - Attributes

**Display:** C0606  
**Mess. no.:** C0606 (hex)

## C0607 Reference cam input not assigned

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the "Drive-controlled homing procedure" command (C0600) an error was detected.

### Cause

Home switch hasn't been assigned to any digital input

### Remedy

Assign home switch (**S-0-0400, Home switch**) to a digital input via parameter **P-0-0300, Digital I/Os, assignment list**

### C0607 - Attributes

**Display:** C0607  
**Mess. no.:** C0607 (hex)

## C0702 Default parameters not available

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the **C07\_0 Load defaults procedure com. (load controller param.)** command an error occurred.

### Cause:

The control loops, in the case of motors of the MHD, MKD and MKE series, are adjusted to the connected digital drive by activating the controller parameters stored in the motor encoder data memory. The C0702 message on the display of the drive controller signals that there isn't any data memory available at the connected motor.

### Remedy:

Data sheets of Rexroth Indramat motors are made available by the service department. Enter the controller parameters.

See also Functional Description "Loading, Storing and Saving Parameters"

See also Functional Description "Rexroth Housing Motors with Encoder Data Memory"

### C0702 - Attributes

**Display:** C0702  
**Mess. no.:** C0702 (hex)

## C0703 Default parameters invalid

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the **C07\_0 Load defaults procedure com. (load controller param.)** command an error occurred.

**Cause:**

The default parameters are read from the motor encoder data memory. At least one of these parameters is invalid.

**Remedy:**

Check the connection to the motor encoder. Replace the motor, if necessary.

See also Functional Description "Loading, Storing and Saving Parameters"

See also Functional Description "Rexroth Housing Motors with Encoder Data Memory"

### C0703 - Attributes

**Display:** C0703  
**Mess. no.:** C0703 (hex)

## C0704 Parameters not copyable

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

An error occurred during the execution of the command **S-0-0262, C07\_x Load defaults procedure command** (load controller parameters; see also **P-0-4090, Index for C07 Load defaults procedure**).

### Cause

It was impossible to load the default values for the motor-specific control loop parameters, available in the encoder memory, to the respective parameters. Firmware version incompatible with motor or motor encoder

Performance and switching frequency setting do not match

### Remedy

Load appropriate firmware version to controller; observe motor type and motor encoder type

Correct performance setting in **P-0-0556, Control word of axis controller** and switching frequency setting in **P-0-0001, Switching frequency of the power output stage**

See also Functional Description "Loading, Storing and Saving Parameters")

### C0704 - Attributes

**Display:** C0704  
**Mess. no.:** C0704 (hex)

## C0706 Error when reading the controller parameters

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the **C07\_0 Load defaults procedure com. (load controller param.)** command an error occurred when reading the controller parameters from the feedback.

**Cause:**

Feedback defective

**Remedy:**

Replace feedback

### C0706 - Attributes

**Display:** C0706  
**Mess. no.:** C0706 (hex)

## C0722 Parameter default value incorrect (-> S-0-0021)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The **S-0-0262, C07\_x Load defaults procedure command** with the "load defaults procedure for safety technology" option was started. An error occurred when writing a default value.

---

**Note:** The faulty parameter is recorded in parameter **S-0-0021, IDN list of invalid operating data for communication phase 2.**

---

### C0722 - Attributes

**Display:** C0722  
**Mess. no.:** C0722 (hex)

## C0723 Safety command for load defaults procedure incorrect

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

With the command **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)** the safety parameters of channel 1 are set to default values and an internal command is started so that channel 2 accepts the default values. The safety technology is deactivated by the command because valid safety parameters are no longer available. The safety technology is in its condition as supplied.

### Cause

Internal command for channel 2 was incorrectly executed

Channel 2 is executing another internal command that mustn't be interrupted

Hardware defect on optional safety technology module

### Remedy

Clear command **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)** and then restart it. If error is signaled again, reset optional safety technology module (switch control voltage off and then on again)

Complete internal command that is still running

Restart **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)**. If command error occurs repeatedly, replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### C0723 - Attributes

**Display:** C0723  
**Mess. no.:** C0723 (hex)

## C0724 Timeout of safety command for load defaults procedure

**Supported by Firmware Variant:** FWA-INDRV\*-MPH02VRS-MS  
FWA-INDRV\*-MPB02VRS-MS  
FWA-INDRV\*-MPD02VRS-MS

Within the command **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)** an internal command for the safety technology channel 2 was started. The internal command was aborted with timeout.

**Note:** The command **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)** is started by parameter **S-0-0262, C07\_x Load defaults procedure command** with the respective setting in **P-0-4090, Index for C07 Load defaults procedure**.

### Cause

Sporadic timeout error

Firmware defect on optional safety technology module

Hardware defect on optional safety technology module

### Remedy

Reset optional safety technology module (switch control voltage off and then on again). Restart **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)**. If the command error occurs repeatedly, contact our service department

Restart **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)**. If command error occurs repeatedly, safety technology firmware has to be replaced

Restart **C07\_2 Load def. proc. com. (load def. pr. for safety techn.)**. If command error occurs repeatedly, replace control section or entire drive controller

**Note:** Only Rexroth service engineers are allowed to replace optional modules of the control section.  
Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

### C0724 - Attributes

**Display:** C0724  
**Mess. no.:** C0724 (hex)

## C0751 Parameter default value incorrect (-> S-0-0021)

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The **S-0-0262, C07\_x Load defaults procedure command** with the "load basic parameters" option was started. An error occurred when writing a default value. The faulty parameter is displayed in S-0-0021.

---

**Note:** The faulty parameter is recorded in the **S-0-0021, IDN list of invalid operating data for communication phase 2** parameter.

---

### C0751 - Attributes

**Display:** C0751  
**Mess. no.:** C0751 (hex)

## C0752 Locked with password

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the **C07\_1 Load defaults procedure com. (load basic parameters)** command an error occurred.

### Cause:

The drive parameters were write-protected by means of the **S-0-0267, Password** parameter. The C0752 diagnostic message signals that the **C07\_1 Load defaults procedure com. (load basic parameters)** command was started without first deactivating the customer password.

### Remedy:

Deactivate the write protection by entering the password. Start the command again.

See also Functional Description "Using a Password"

### C0752 - Attributes

**Display:** C0752  
**Mess. no.:** C0752 (hex)

## C0799 An invalid index was set

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

At the time the command **S-0-0262, C07\_x Load defaults procedure command** was started no valid value had been entered in **P-0-4090, Index for C07 Load defaults procedure**.

---

**Note:** The function of the command **S-0-0262, C07\_x Load defaults procedure command** can be set via **P-0-4090, Index for C07 Load defaults procedure**.  
After the command was cleared the value in **P-0-4090, Index for C07 Load defaults procedure** is automatically set to "0" again.

---

### C0799 - Attributes

Display: C0799  
Mess. no.: C0799 (hex)

## C0851 Parameter default value incorrect (-> S-0-0021)

Supported by Supply Unit: **HMV01**

---

**Note:** This command error can only occur as a result of the **C0800 Load basic parameters command** that can only be used by the manufacturer!

---

### C0851 - Attributes

Display: C0851  
Mess. no.: C0851 (hex)

## C0852 Locked with password

Supported by Supply Unit: **HMV01**

---

**Note:** This command error can only occur as a result of the **C0800 Load basic parameters command** that can only be used by the manufacturer!

---

### C0852 - Attributes

Display: C0852  
Mess. no.: C0852 (hex)

## C0902 Spindle positioning requires drive enable

Supported by Firmware Variant: FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS

During the execution of the command for spindle positioning (C0900) an error was detected.

**Cause:**

At the start of the **S-0-0152, C0900 Position spindle command** the drive was not yet in drive enable.

**Remedy:**

Set drive enable before starting the command.

### C0902 - Attributes

Display: C0902  
Mess. no.: C0902 (hex)

## C0903 Error during initialization

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS

During the execution of the command for spindle positioning (C0900) an error was detected.

### Cause

At start of **S-0-0152, C0900 Position spindle command**, respective encoder had not yet been initialized (homed)

### Remedy

In the case of *incremental measuring systems*, check whether **S-0-0400, Home switch** was assigned to a digital input. Assignment, connection and function of home switch must have been realized (only when home switch is evaluated)!

In the case of *absolute measuring systems*, check whether drive is in reference. If this is not the case, establish absolute position data reference, e.g. by **P-0-0012, C0300 Command Set absolute measuring**

### C0903 - Attributes

**Display:** C0903  
**Mess. no.:** C0903 (hex)

## C0906 Error during search for zero pulse

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS

During the execution of the command for spindle positioning (C0900) an error was detected.

### Cause:

Homing procedure integrated in spindle positioning was not executed successfully. Encoder zero mark was not found or it was impossible to assign it correctly.

### Remedy:

- Check parameterization of spindle positioning and of drive-controlled homing procedure, especially encoder and home switch combination used.
- Check encoder parameterization.
- Check distance zero pulse - home switch.
- Carry out drive-controlled homing in order to check homing procedure.

### C0906 - Attributes

**Display:** C0906  
**Mess. no.:** C0906 (hex)

## C1204 Error in offset calculation

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command for commutation offset determination (C1200) an error was detected.

**Cause:**

Due to incorrect measured values it was impossible to determine the commutation offset correctly.

### C1204 - Attributes

**Display:** C1204  
**Mess. no.:** C1204 (hex)

## C1208 No adjustment with asynchronous motor

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command for commutation offset determination (C1200) an error was detected.

**Cause:**

There was an attempt to carry out a commutation offset determination with an asynchronous motor. For asynchronous motors it is impossible to carry out a commutation offset determination.

### C1208 - Attributes

**Display:** C1208  
**Mess. no.:** C1208 (hex)

## C1209 Proceed to phase 4

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command for commutation offset determination (C1200) an error was detected.

**Cause:**

The drive controller is not in phase 4 (ready for operation, display: **bb**); the **P-0-0524, C1200 Commutation offset setting command** can only be executed in phase 4.

**Remedy:**

Switch the drive controller to phase 4 and execute the command **P-0-0524, C1200 Commutation offset setting command** again.

### C1209 - Attributes

**Display:** C1209  
**Mess. no.:** C1209 (hex)

## C1211 Commutation offset could not be determined.

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

An error has occurred during the execution of the command **P-0-0524, C1200 Commutation offset setting command** (in this case: sine-wave method).

---

**Note:** Simultaneously output Fxxxx error messages allow more precise diagnosis.

---

See also Functional Description "Commutation Setting"

### C1211 - Attributes

**Display:** C1211  
**Mess. no.:** C1211 (hex)

## C1214 Command only possible with linear synchronous motor

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

When executing the command for determining the commutation offset (C1200) with the currentless procedure (see **P-0-0522, Control word for commutation setting**) the condition for the motor type was detected not to have been fulfilled.

### Cause

The connected motor is not a synchronous linear motor

The connected motor is a synchronous linear motor, but the wrong motor type (P-0-4014) was selected or the pole pair distance (P-0-0018) was set to "0"

The connected motor is a synchronous linear motor, the motor type (P-0-4014) was correctly set, but there isn't any absolute encoder with EnDat interface available

### Remedy

-

If the connected motor is a synchronous linear motor with absolute measuring system, check the motor type that has been set (P-0-4014) and correct it, if necessary

If the connected motor is a synchronous linear motor with incremental measuring system or a rotary synchronous motor, then use the procedure with current to determine the commutation offset (see **P-0-0522, Control word for commutation setting**)

### C1214 - Attributes

**Display:** C1214  
**Mess. no.:** C1214 (hex)

## C1215 Command only possible in 'bb'

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When executing the command for determining the commutation offset (C1200) with the currentless procedure (see **P-0-0522, Control word for commutation setting**) the drive was detected not to be ready for operation ("bb").

**Cause:**

The drive isn't yet ready for operation ("bb")

- or -

the drive is already in drive enable ("AF")

**Remedy:**

Bring the drive to the ready for operation status ("bb")

### C1215 - Attributes

**Display:** C1215  
**Mess. no.:** C1215 (hex)

## C1216 Commutation determination not selected

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command for commutation offset determination (C1200) an error was detected.

**Cause:**

There wasn't any mode for commutation determination selected.

**Remedy:**

Set a mode for commutation determination in the **P-0-0522, Commutation setting control word** parameter.

### C1216 - Attributes

**Display:** C1216  
**Mess. no.:** C1216 (hex)

## C1217 Setting only possible in 'Ab'

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command for commutation offset determination (C1200) an error was detected.

### Cause

The drive was not ready at the start of the command, the display did not read "Ab"

### Remedy

1. Switch drive to communication phase 4, if there isn't any error present the display reads "bb" ("betriebsbereit" = ready for operation)
2. Switch power on, drive goes to operating mode, the display reads "Ab" ("Antrieb bereit" = drive ready)
3. Now start command C1200

### C1217 - Attributes

**Display:** C1217  
**Mess. no.:** C1217 (hex)

## C1218 Automatic commutation: current too low

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The actual current value amplitude resulting from commutation setting with the saturation method is monitored. If it does not exceed a minimum threshold when the command **P-0-0524, C1200 Commutation offset setting command** is executed, the command error C1218 is generated.

### Cause

Actual current value amplitude is not sufficient for exact determination of commutation offset

### Remedy

Increase signal voltage (**P-0-0506, Amplitude for angle acquisition**) or reduce signal frequency (**P-0-0507, Test frequency for angle acquisition**) and restart commutation setting process

- or -

Enter value "0" in **P-0-0506, Amplitude for angle acquisition**. Appropriate value for P-0-0506 is thereby automatically determined during commutation setting process

- or -

Reduce value of **P-0-0517, Commutation: required harmonics component**, if approx. 30 similar values are determined for **P-0-0521, Effective commutation offset** with repeated commutation setting for different motor positions (drive remains in "Ab"). Reduce **P-0-0517, Commutation: required harmonics component** until command error C1218 no longer occurs; finally check function several times!

**Note:** If error occurs repeatedly, please contact our service department.

See also Functional Description "Commutation Setting"

### C1218 - Attributes

**Display:** C1218  
**Mess. no.:** C1218 (hex)

## C1219 Automatic commutation: overcurrent

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command for commutation offset determination (C1200) an error was detected.

**Cause:**

The actual current is higher than the allowed maximum current.

**Remedy:**

Reduce the signal voltage (**P-0-0506, Voltage amplitude for angle acquisition**) or increase the signal frequency (**P-0-0507, Test frequency for angle acquisition**).

- or -

With P-0-0506 = 0 start the automatic determination of appropriate values.

### C1219 - Attributes

**Display:** C1219  
**Mess. no.:** C1219 (hex)

## C1220 Automatic commutation: timeout

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command for commutation offset determination (C1200) an error was detected.

**Cause:**

An error occurred in the signal generator.

**Remedy:**

Switch the drive off and on again. If the error continues to be signaled, contact the service department.

### C1220 - Attributes

**Display:** C1220  
**Mess. no.:** C1220 (hex)

## C1221 Automatic commutation: iteration without result

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The commutation offset determination (**P-0-0524, C1200 Commutation offset setting command**) was unsuccessful. It was impossible to find appropriate values for **P-0-0506, Amplitude for angle acquisition** and **P-0-0507, Test frequency for angle acquisition** with which it would have been possible to obtain sufficient magnetic saturation effects in the motor. It was therefore impossible to determine a functioning value for the commutation offset.

### Cause

Type current of controller too low

### Remedy

Use controller that can supply motor with sufficiently high current (for Rexroth kit motors, required minimum current for magnetic saturation effects is approx. 2.0...2.5-fold continuous current at standstill).  
 If without success, check whether sine-wave method can be used for commutation offset setting

Test current generated in motor is too low

Manually increase value of **P-0-0506, Amplitude for angle acquisition** or reduce value of **P-0-0507, Test frequency for angle acquisition** so that higher test current is generated.  
 If without success, check whether sine-wave method can be used for commutation offset setting

See also Functional Description "Commutation Setting"

### C1221 - Attributes

**Display:** C1221  
**Mess. no.:** C1221 (hex)

## C1222 Error when writing offset parameters

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When executing the command for determining the commutation offset (C1200) with the currentless procedure (see **P-0-0522, Commutation setting control word**) the determined commutation offset value is written to the P-0-0508, P-0-0521 and P-0-3008 parameters. When writing data to these parameters an error or a disorder occurred.

**Cause:**

For at least one of the parameters P-0-0508, P-0-0521 or P-0-3008 it was impossible to write the determined commutation offset value to it.

**Remedy:**

- execute the C1200 command again
- check wiring for noise immunity
- replace sensor of the encoder
- contact our service department, if necessary

### C1222 - Attributes

**Display:** C1222  
**Mess. no.:** C1222 (hex)

## C1301 Class 1 diagnostics error at command start

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command **S-0-0149, C1300 Positive stop drive procedure command** cannot be carried out as a class 1 diagnostics error has occurred.

See also Functional Description "Positive Stop Drive Procedure"

### C1301 - Attributes

**Display:** C1301  
**Mess. no.:** C1301 (hex)

## C1701 Measuring wheel operation not possible

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

The **P-0-0240, C1700 Command measuring wheel mode** cannot be executed.

### Cause

There aren't two encoders available

### Remedy

Connect measuring wheel encoder

### C1701 - Attributes

**Display:** C1701  
**Mess. no.:** C1701 (hex)

## C1801 Start requires drive enable

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

In order to make sure that the drive is in control when the command **P-0-0162, C1800 Command Automatic control loop adjust** is started, this is queried at the start of the command.

### Cause

Drive enable not set at start of command

### Remedy

Set drive enable and restart command **P-0-0162, C1800 Command Automatic control loop adjust**

See also Functional Description "Automatic Setting of Axis Control"

### C1801 - Attributes

**Display:** C1801  
**Mess. no.:** C1801 (hex)

## C1802 Motor feedback data not valid

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

At the beginning of the automatic control loop setting (**P-0-0162, C1800 Command Automatic control loop adjust**) the motor parameters

- torque constant and
  - device type current
- are read from the encoder data memory.

**Cause:**

- One of above-mentioned data stored in encoder has a value equal to or less than zero ( $\leq 0$ ) which would cause incorrect calculation of controller parameters.
- Motor without encoder data memory

**Remedy:**

If known, write correct values back to encoder data memory or contact Rexroth service department in order to get data valid for respective motor. If it is impossible to correct parameter values in encoder data memory, motor must be replaced!

See also Functional Description "Automatic Setting of Axis Control"

### C1802 - Attributes

**Display:** C1802  
**Mess. no.:** C1802 (hex)

## C1803 Inertia detection failed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

At the beginning of the automatic control loop setting the mass inertia is determined by a "pendulum test".

This means that the speed change and motor current during acceleration or deceleration have to exceed certain minimum values in order to guarantee useful and sufficiently exact calculation of the inertia.

**Causes:**

- drive acceleration too low
- load inertia too high
- motor speed too low
- not enough measured values for automatic control loop setting

**Remedies:**

- increase **S-0-0260, Positioning acceleration**
- increase **S-0-0092, Bipolar torque/force limit value**
- increase **S-0-0259, Positioning Velocity**
- increase **S-0-0108, Feedrate override**

See also Functional Description "Prerequisites for Starting the Automatic Control Loop Setting"

### C1803 - Attributes

**Display:** C1803  
**Mess. no.:** C1803 (hex)

## C1804 Automatic controller setting failed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

In exceptional cases difficulties can occur during automatic control loop setting. This means that automatic setting is impossible and the default or standard values are loaded to the drive again.

**Causes:**

- oscillating mechanical systems (resonances)
- highly noisy encoder signals

**Remedy:**

It is sometimes possible to achieve a satisfactory result by restarting the command **P-0-0162, C1800 Command Automatic control loop adjust** with a high **P-0-0163, Damping factor for autom. controller adjust**, i.e. a low degree of dynamic response.

This value then can still be reduced until the desired control loop behavior occurs.

See also Functional Description "Automatic Setting of Axis Control"

### C1804 - Attributes

**Display:** C1804  
**Mess. no.:** C1804 (hex)

## C1805 Travel range invalid

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

Before beginning the automatic control loop setting it is necessary to define both travel range limits (upper and lower).

When the command **P-0-0162, C1800 Command Automatic control loop adjust** is started, the numeric values are checked for validity. A check is run to find out whether the travel distance is big enough.

### Cause

Maximum travel distance (**P-0-0169, Travel distance for autom. controller adjust**) defined with **P-0-0166, Lower position limit for autom. control loop adjust** and **P-0-0167, Upper position limit for autom. control loop adjust** is smaller than 6 motor revolutions and therefore too small in order to be able to start automatic control loop setting.

### Remedy

1. Clear command error by completing the command
2. Define limits again so that defined travel range is bigger
3. Restart command with useful travel range

See also Functional Description "Prerequisites for Starting the Automatic Control Loop Setting"

### C1805 - Attributes

**Display:** C1805  
**Mess. no.:** C1805 (hex)

## C1806 Travel range exceeded

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the automatic control loop setting the travel range limits **P-0-0166, Lower limit for autom. control loop adjust** and **P-0-0167, Upper limit for autom. control loop adjust** are permanently monitored. If one of these limits is exceeded, the command error C1806 is output and the drive is shut down in a speed-controlled way.

### Cause

Actual position is outside defined travel range  
- or -  
Limits were defined again after start of command

### Remedy

1. Clear command error by completing the command
2. Define limits again so that actual position is within defined travel range
3. Restart command with useful travel range

See also Functional Description "Prerequisites for Starting the Automatic Control Loop Setting"

### C1806 - Attributes

**Display:** C1806  
**Mess. no.:** C1806 (hex)

## C1807 Determining travel range only via travel distance

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When parameterizing the travel range for the automatic control loop setting the modulo scaling was not taken into account.

### Cause

There was an attempt to parameterize travel range via **P-0-0166, Lower limit for autom. control loop adjust** / **P-0-0167, Upper limit for autom. control loop adjust**. In this case travel range can only be parameterized directly

### Remedy

Define travel range by parameterizing **P-0-0169, Travel distance for autom. controller adjust**

### C1807 - Attributes

**Display:** C1807  
**Mess. no.:** C1807 (hex)

## C2001 Command not enabled

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The execution of the "Release motor holding brake" command (C2000) was aborted by an error.

**Cause:**

The command can only be executed if it is allowed by bit 5 in the **P-0-0525, Holding brake control word** parameter.

**Remedy:**

Set bit 5 in parameter P-0-0525 to "allowed".

See also Functional Description "Motor Holding Brake"

### C2001 - Attributes

**Display:** C2001  
**Mess. no.:** C2001 (hex)

## C2101 Brake check only possible with drive enable

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

It is impossible to execute the "Brake check" command (C2100).

**Cause:**

The **P-0-0541, C2100 Brake check command** was activated but drive enable ("AF") had not been set.

**Remedy:**

Switch drive to "AF" ("Antriebsfreigabe" = drive enable), then start the C2100 command.

See also Functional Description "Motor Holding Brake"

### C2101 - Attributes

**Display:** C2101  
**Mess. no.:** C2101 (hex)

## C2103 Brake torque too low

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

When executing the "brake check" command (C2100) the holding torque of the brake was detected to be too low.

The command C2100 is aborted if the "abrasion" of the brake was deactivated via bit 4 in **P-0-0525, Holding brake control word**. Otherwise the drive tries to reestablish the brake torque by automatically starting the abrasion cleaning process and then checks the holding torque again.

**Cause:**

Due to storage brake is covered with an oxide layer.

- or -

Brake is wetted with oil or grease.

- or -

Brake is worn.

**Remedy:**

Start "Brake check" command again in order to reestablish full brake torque by repeated abrasion.

If brake torque is still too low after several attempts to reestablish it, brake or motor must be replaced.

See also Functional Description "Motor Holding Brake"

### C2103 - Attributes

**Display:** C2103  
**Mess. no.:** C2103 (hex)

## C2104 Command execution not possible

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

It was impossible to start the "Brake check" command (C2100).

### Cause

in the **P-0-0525, Holding brake control word** parameter the brake has not been activated  
 the value in **P-0-0540, Torque of motor brake** is 0

### Remedy

activate the brake in the **P-0-0525, Holding brake control word** parameter  
 enter the correct value for **P-0-0540, Torque of motor brake**

See also Functional Description "Motor Holding Brake"

### C2104 - Attributes

**Display:** C2104  
**Mess. no.:** C2104 (hex)

## C2202 Error when writing data to non-volatile memory

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the **S-0-0264, C2200 Backup working memory procedure command** an error occurred.

### Cause:

It was impossible to address the active, non-volatile memory (internal flash memory or MMC, if plugged in) without error.

### Remedy:

- First start the command **S-0-0264, C2200 Backup working memory procedure command** again. If the error occurs again, then
- replace MMC (if plugged in) if necessary, then start the command again. If the error occurs again,
- contact the service department.

### C2202 - Attributes

**Display:** C2202  
**Mess. no.:** C2202 (hex)

## C2301 Error when reading non-volatile memory

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the **S-0-0263, C2300 Load working memory procedure command** an error occurred.

**Cause:**

It was impossible to read the active, non-volatile memory [internal flash memory or MMC (if plugged in)] without error.

**Remedy:**

Restart the command. If the error occurs again contact the service department. Have the control section checked for functional safety.

### C2301 - Attributes

**Display:** C2301  
**Mess. no.:** C2301 (hex)

## C2302 Error when converting parameters

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the **S-0-0263, C2300 Load working memory procedure command** an error occurred.

**Cause:**

When reading the parameters from the active, non-volatile memory an error occurred.

**Remedy:**

Enter the faulty parameter values correctly by hand and save them again in the non-volatile memory.

### C2302 - Attributes

**Display:** C2302  
**Mess. no.:** C2302 (hex)

## C2402 Error when saving parameters

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the **S-0-0293, C2400 Selectively backup working memory procedure command** an error occurred.

**Cause:**

It was impossible to address the active, non-volatile memory (internal flash memory or MMC, if plugged in) without error.

**Remedy:**

- Start the **S-0-0293, C2400 Selectively backup working memory procedure command** again. If the error occurs again, then
- replace MMC (if plugged in) if necessary, then start the command again. If the error occurs again,
- contact the service department.

### C2402 - Attributes

**Display:** C2402  
**Mess. no.:** C2402 (hex)

## C2502 Error when accessing the MMC

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of **P-0-4091, C2500 Copy IDN from optional memory to internal memory** an error occurred.

**Note:** The MMC can only be used as an optional memory for control sections with MMC slot.

### Cause

MMC had not been active before, there haven't been any valid parameter contents stored on it

MMC has not (or not completely) been plugged in the MMC slot provided for this purpose

Error occurs sporadically due to voltage fluctuations in device

MMC was not or not correctly formatted

MMC is defective

MMC slot in control section is defective

### Remedy

Write parameter contents of internal memory to MMC by executing command **P-0-4092, C2600 Copy IDN from internal memory to optional memory**

Put MMC into controller. Then restart command **P-0-4091, C2500 Copy IDN from optional memory to internal memory**

Check power supply and then restart command **P-0-4091, C2500 Copy IDN from optional memory to internal memory**.

If error occurs repeatedly, you should contact our service department

Format MMC or contact our service department. Then restart command **P-0-4091, C2500 Copy IDN from optional memory to internal memory**

Check MMC and restart command **P-0-4091, C2500 Copy IDN from optional memory to internal memory**. If diagnostic message appears repeatedly: replace MMC

Check MMC slot and, if necessary, replace control section or complete drive controller

**Note:** If the MMC must be replaced, the values stored on it are lost.

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

For removing command errors see "Command Errors"  
See also Functional Description "MultiMediaCard (MMC)"

### C2502 - Attributes

**Display:** C2502  
**Mess. no.:** C2502 (hex)

## C2504 Error when writing data to internal memory

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the **P-0-4091, C2500 Copy IDN from optional memory to internal memory** an error occurred.

### Cause

Error when writing to the internal, non-volatile flash memory

### Remedy

Start the **P-0-4091, C2500 Copy IDN from optional memory to internal memory** again.  
If the diagnostic message is displayed repeatedly:  
contact the service department

### C2504 - Attributes

**Display:** C2504  
**Mess. no.:** C2504 (hex)

## C2602 Error when accessing the MMC

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **P-0-4092, C2600 Copy IDN from internal memory to optional memory** a check is run in order to find out whether a functioning MMC (MultiMediaCard) is available.

---

**Note:** The MMC can only be used as an optional memory for control sections with MMC slot.

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### Cause

---

MMC has not (or not completely) been plugged in the MMC slot provided for this purpose

---

MMC was not or not correctly formatted

---

MMC is defective

---

MMC slot in control section is defective

---

### Remedy

---

Put MMC into controller. Then restart command **P-0-4092, C2600 Copy IDN from internal memory to optional memory**

---

Format MMC or contact our service department. Then restart command **P-0-4092, C2600 Copy IDN from internal memory to optional memory**

---

Check MMC and restart command **P-0-4092, C2600 Copy IDN from internal memory to optional memory**. If diagnostic message appears repeatedly: replace MMC

---

Check MMC slot and, if necessary, replace control section or complete drive controller

---



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**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

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**Note:** If the MMC must be replaced, the values stored on it are lost.

---

See also Functional Description "MultiMediaCard (MMC)"

### C2602 - Attributes

**Display:** C2602  
**Mess. no.:** C2602 (hex)

## C2604 Error when reading the internal memory

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the **P-0-4092, C2600 Copy IDN from internal memory to optional memory** an error occurred.

### Cause

Error when reading the internal flash memory

### Remedy

Start the **P-0-4092, C2600 Copy IDN from internal memory to optional memory** again.  
 If the diagnostic message is displayed repeatedly: save the parameter values via the serial interface or the SERCOS interface, if required. In the medium term, have the control section checked for functional safety

### C2604 - Attributes

**Display:** C2604  
**Mess. no.:** C2604 (hex)

## C2802 Oscillations of input signal outside tolerance range

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

When the command **P-0-0220, C2800 Analog input adjust command** is executed, the quality of the reference signal used is checked.

### Cause

During **gain adjust**, reference voltage was used that fluctuates by more than 1% of input voltage range

During **zero point adjust**, input voltage is not exactly "0" and fluctuates by more than 1% of input voltage range

### Remedy

Check input signal used for precision; if necessary, use different calibration signal

Short circuit analog inputs by means of wire bridge

See also Functional Description "Analog Inputs"

### C2802 - Attributes

**Display:** C2802  
**Mess. no.:** C2802 (hex)

## C2803 Measured values at zero point and max. value identical

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **P-0-0220, C2800 Analog input adjust command** an error was detected. The execution of the command was aborted.

### Cause

During zero point and gain adjust, the same voltage value was provided at analog input

### Remedy

Voltage provided at input has to be modified between two steps of adjust (voltage value for zero adjust: 0 V, voltage value for gain adjust: maximum input voltage)

See also Functional Description "Analog Inputs"

### **C2803 - Attributes**

**Display:** C2803  
**Mess. no.:** C2803 (hex)

## C2804 Automatic adjust failed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command **P-0-0220, C2800 Analog input adjust command** was aborted due to an unspecified error. Please contact our service department.

### **C2804 - Attributes**

**Display:** C2804  
**Mess. no.:** C2804 (hex)

## C2903 Error when accessing the MMC

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the execution of **P-0-4072, C2900 Command Firmware update from MMC** a check is run to find out whether the firmware was correctly loaded.

### Cause

A transmission error occurred during transmission of firmware from MMC

Firmware file (ibf file) available on MMC is not correct (does not match control section)

### Remedy

Execute **P-0-4072, C2900 Command Firmware update from MMC** again.

If error occurs again, contact a Rexroth service engineer

Use different MMC with firmware file appropriate for control section

– control section CSH01.1C: firmware MPH

– control section CSB01.1x: firmware MPB

– control section CDB01.1x: firmware MPD

**Note:** If the command error occurs during the transmission of the firmware to an optional module, the respective system error (F8xxx) is displayed in addition to the command error C2903.

### C2903 - Attributes

**Display:** C2903

**Mess. no.:** C2903 (hex)

## C2904 Error when accessing the flash

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the **P-0-4072, C2900 Command Firmware update from MMC** an error occurred.

### Cause

Due to voltage fluctuations in device an active request was aborted

Control section is defective

### Remedy

Execute **P-0-4072, C2900 Command Firmware update from MMC** again

Replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

**Note:** If the command error occurs during the transmission of the firmware to an optional module, the respective system error (F8xxx) is displayed in addition to the command error C2904.

### C2904 - Attributes

**Display:** C2904  
**Mess. no.:** C2904 (hex)

## C2905 Programmed firmware defective

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the **P-0-4072, C2900 Command Firmware update from MMC** an error occurred.

### Cause

Firmware transfer from MMC was incorrect

Firmware available on MMC is not correct

An error was detected during check of flash

### Remedy

Execute **P-0-4072, C2900 Command Firmware update from MMC** again

Use a different MMC with the desired firmware

Execute **P-0-4072, C2900 Command Firmware update from MMC** again.

If error occurs repeatedly, replace control section or entire drive controller

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

**Note:** If the command error occurs during the transmission of the firmware to an optional module, the respective system error (F8xxx) is displayed in addition to the command error C2905.

### C2905 - Attributes

**Display:** C2905

**Mess. no.:** C2905 (hex)

## C3001 Synchronization and storage failed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command **P-0-3204, C3000 Synchronize and store safety technology IDN command** was not or incorrectly executed.

### Cause

Another safety technology command is still active, e.g. C07\_2 Load defaults procedure command (load defaults procedure for safety technology) or safety technology password writing

Hardware defect of optional module "safety technology I/O"

### Remedy

Wait until active command has been completed and restart command **P-0-3204, C3000 Synchronize and store safety technology IDN command**

Reset optional module "safety technology I/O" by a restart. If command error occurs repeatedly, hardware has to be replaced

### C3001 - Attributes

**Display:** C3001  
**Mess. no.:** C3001 (hex)

## C3101 Act. modulo value cycle greater than max. travel range

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The command error C3101 is generated when the calculated modulo value for the actual value cycle is greater than the maximum travel range (**S-0-0278, Maximum travel range**).

### C3101 - Attributes

**Display:** C3101  
**Mess. no.:** C3101 (hex)

## C3102 Drive is still in drive enable

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

### Cause

Drive enable has been set and command **P-0-0071**, **C3100 Recalculate actual value cycle** was started

### Remedy

To be able to carry out the command, drive enable has to be removed

### C3102 - Attributes

**Display:** C3102  
**Mess. no.:** C3102 (hex)

## C3201 Incorrect input for current

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
 FWA-INDRV\*-**MPB02**VRS-MS  
 FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **P-0-4033**, **C3200 Command Calculate data for asynchronous motor** an error was detected.

### Cause

List element 1 (rated current) in **P-0-4032**, **Type plate list asynchronous motor** is outside of useful limits

### Remedy

Value for rated current has to be inside of following limits:  
 rated current > 0.01 \* amplifier peak current  
**and**  
 rated current < 10 \* amplifier peak current

### C3201 - Attributes

**Display:** C3201  
**Mess. no.:** C3201 (hex)

## C3203 Incorrect input for voltage

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **P-0-4033, C3200 Command Calculate data for asynchronous motor** an error was detected.

### Cause

List element 2 (rated voltage) in **P-0-4032, Type plate list asynchronous motor** is outside of useful limits

### Remedy

Value for rated voltage has to be between 10 V and 2000 V

### C3202 - Attributes

**Display:** C3202  
**Mess. no.:** C3202 (hex)

## C3202 Incorrect input for frequency

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **P-0-4033, C3200 Command Calculate data for asynchronous motor** an error was detected.

### Cause

List element 3 (rated frequency) in **P-0-4032, Type plate list asynchronous motor** is outside of useful limits

### Remedy

Value for rated frequency has to be between 5 Hz and 3000 Hz

### C3203 - Attributes

**Display:** C3203  
**Mess. no.:** C3203 (hex)

## C3204 Incorrect input for speed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **P-0-4033, C3200 Command Calculate data for asynchronous motor** an error was detected.

### Cause

There is no useful relation between list element 4 (rated speed) in **P-0-4032, Type plate list asynchronous motor** and rated frequency, i.e. number of pole pairs cannot be calculated

### Remedy

Correct list element 4 (rated speed) in **P-0-4032, Type plate list asynchronous motor**

### C3204 - Attributes

**Display:** C3204  
**Mess. no.:** C3204 (hex)

## C3205 Incorrect input for power factor

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

During the execution of the command **P-0-4033, C3200 Command Calculate data for asynchronous motor** an error was detected.

### Cause

Power factor of motor is outside of useful limits

### Remedy

List element 5 (power factor  $\cos \varphi$ ) in **P-0-4032, Type plate list asynchronous motor** has to be between 0.5 and 0.999

### C3205 - Attributes

**Display:** C3205  
**Mess. no.:** C3205 (hex)

## C3206 Incorrect input for power

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **P-0-4033, C3200 Command Calculate data for asynchronous motor** an error was detected.

### Cause:

There is no useful relation between list element 6 (rated power) in **P-0-4032, Type plate list asynchronous motor** and electric power that results from the other rated data.

Effective electric power of an asynchronous motor results from

$$\text{rated current} \times \text{rated voltage} \times \cos \varphi \times 1.5$$

Fig. 9-2: Effective electric power of an asynchronous motor

Mechanical power output has to be smaller than above value because an efficiency of less than 1 is assumed. Furthermore a mechanical power output smaller than 40% of effective electric power is not plausible.

### Remedy:

Correct values in **P-0-4032, Type plate list asynchronous motor** and restart command **P-0-4033, C3200 Command Calculate data for asynchronous motor**.

### C3206 - Attributes

**Display:** C3206  
**Mess. no.:** C3206 (hex)

## C3207 Type plate list incomplete

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **P-0-4033, C3200 Command Calculate data for asynchronous motor** an error was detected.

### Cause

List length of parameter **P-0-4032, Type plate list asynchronous motor** is shorter than 6 elements or at least one element has value "0"

### Remedy

Please check: To calculate motor and controller parameters from type plate of an asynchronous motor, value higher than "0" has to be entered in all 6 list elements of **P-0-4032, Type plate list asynchronous motor**

### C3207 - Attributes

**Display:** C3207  
**Mess. no.:** C3207 (hex)

## C3208 Error when writing parameters

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **P-0-4033, C3200 Command Calculate data for asynchronous motor** an error occurred (e.g. violation of limit values) when a parameter for motor control was written.

### Cause

At least one list element in **P-0-4032, Type plate list asynchronous motor** has no useful value so that at least one parameter is outside of allowed limits when motor data are calculated

### Remedy

Correct values in **P-0-4032, Type plate list asynchronous motor** and restart command **P-0-4033, C3200 Command Calculate data for asynchronous motor**

### C3208 - Attributes

**Display:** C3208  
**Mess. no.:** C3208 (hex)

## C3501 Acquisition velocity not allowed

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **P-0-0340, C3500 Command Determine encoder correction values** an error was detected.

To acquire the signal shape the axis has to be moved at constant velocity; the velocity command value has to be within an allowed range of values. The controller monitors the velocity command value and, if necessary, signals inadmissible acquisition velocity.

### Cause

Acquisition velocity outside of allowed range of values

### Remedy

Check range of values for acquisition velocity (range of values relates to encoder shaft or sensor head)

"Acquisition velocity" see Functional Description "Encoder Correction"

### C3501 - Attributes

**Display:** C3501  
**Mess. no.:** C3501 (hex)

## C3502 Motor encoder not available

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **P-0-0340, C3500 Command Determine encoder correction values** an error was detected.

### Cause

Motor encoder does not supply any signal or is not recognized by controller

Motor encoder not available, not connected or not registered ("open-loop" operation)

### Remedy

Check whether signals of motor encoder are reaching controller. If necessary, replace motor encoder or motor encoder cable

Connect motor encoder and register it in **P-0-0074, Encoder type 1 (motor encoder)**

### C3502 - Attributes

**Display:** C3502  
**Mess. no.:** C3502 (hex)

## C3503 Optional encoder not available

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **P-0-0340, C3500 Command Determine encoder correction values** an error was detected.

### Cause

Optional encoder does not supply any signal or is not recognized by controller

Optional encoder not available, not connected or not registered

### Remedy

Check whether signals of optional encoder are reaching controller. If necessary, replace encoder or encoder cable

Connect optional encoder and register it in **P-0-0075, Encoder type 2 (optional encoder)**

### C3503 - Attributes

**Display:** C3503  
**Mess. no.:** C3503 (hex)

## C3504 Measuring encoder not available

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **P-0-0340, C3500 Command Determine encoder correction values** an error was detected.

### Cause

Measuring encoder does not supply any signal or is not recognized by controller

Measuring encoder not available, not connected or not registered

### Remedy

Check whether signals of measuring encoder are reaching controller. If necessary, replace encoder or encoder cable

Connect measuring encoder and register it in **P-0-0076, Encoder type 3 (measuring encoder)**

### C3504 - Attributes

**Display:** C3504  
**Mess. no.:** C3504 (hex)

## C3505 No encoder selected

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **P-0-0340, C3500 Command Determine encoder correction values** an error was detected.

### Cause

At start of command **P-0-0340, C3500 Command Determine encoder correction values** there hadn't any encoder been selected in **P-0-0341, Control word for encoder correction**

### Remedy

Select encoder in **P-0-0341, Control word for encoder correction**

### C3505 - Attributes

**Display:** C3505  
**Mess. no.:** C3505 (hex)

## C3506 Correction value table cannot be stored

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

During the execution of the command **P-0-0340, C3500 Command Determine encoder correction values** an error was detected.

### Cause

Determined correction value table (**P-0-0342, Correction value table for encoder correction**) is incomplete

Due to hardware problem, determined correction value table (**P-0-0342, Correction value table for encoder correction**) cannot be stored in drive

### Remedy

Execute command **P-0-0340, C3500 Command Determine encoder correction values** again, select different acquisition velocity

Replace device

### C3506 - Attributes

**Display:** C3506  
**Mess. no.:** C3506 (hex)

## C3701 Error when manually unlocking the safety door

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
FWA-INDRV\*-**MPB02VRS-MS**  
FWA-INDRV\*-**MPD02VRS-MS**

The command **C3700 Manually unlocking the safety door** was not or incorrectly executed.

### Cause

Drive still is in normal operation, there hasn't been any safety function activated yet

Error in command processing (time exceeded)

Command was started with safety function being active, but requirements for command execution are missing

### Remedy

Clear command **C3700 Manually unlocking the safety door**. Select safety function via operating mode switch

Switch control voltage of controller off and on. Execute command **C3700 Manually unlocking the safety door** again. If error is displayed again: replace controller

Clear command **C3700 Manually unlocking the safety door**

### C3701 - Attributes

**Display:** C3701  
**Mess. no.:** C3701 (hex)

## C3901 Abrasion of brake only possible with drive enable

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

It is impossible to execute the command **P-0-0544, C3900 Command Abrasion of brake**.

### Cause

Command was activated without drive enable ("AF") having been set

### Remedy

Switch drive to "AF", then start command **P-0-0544, C3900 Command Abrasion of brake**

See also Functional Description "Motor Holding Brake"

### C3901 - Attributes

**Display:** C3901  
**Mess. no.:** C3901 (hex)

## C3902 Error during abrasion of brake

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02**VRS-MS  
FWA-INDRV\*-**MPB02**VRS-MS  
FWA-INDRV\*-**MPD02**VRS-MS

The execution of the command "abrasion of brake" (**P-0-0544, C3900 Command Abrasion of brake**) was aborted by an error.

### Cause

Torque of the amplifier is reduced

Axis is mechanically blocked

Axis is at end stop or runs towards it

Abrasion of brake is impossible because motor generates less torque than holding torque of brake

Sum of weight load and brake torque is greater than motor peak torque

### Remedy

Remove reduction

Remove mechanical blocking

Choose axis position such that sufficient motion is possible

Check whether there are torque limitations active in drive or whether controller was sufficiently dimensioned

Reduce weight load, if possible

See also Functional Description "Motor Holding Brake"

### C3902 - Attributes

**Display:** C3902  
**Mess. no.:** C3902 (hex)

## C3903 Command execution impossible

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

It was impossible to start the command "abrasion of brake" (**P-0-0544, C3900 Command Abrasion of brake**).

### Cause

Brake control has not been activated in parameter **P-0-0525, Holding brake control word**

Value in **P-0-0540, Torque of motor holding brake** is 0

### Remedy

Activate brake control in parameter **P-0-0525, Holding brake control word**

Enter correct value for **P-0-0540, Torque of motor holding brake**

See also Functional Description "Motor Holding Brake"

### C3903 - Attributes

**Display:** C3903  
**Mess. no.:** C3903 (hex)

## C4001 Error during safety related homing procedure

**Supported by Firmware Variant:** FWA-INDRV\*-**MPH02VRS-MS**  
 FWA-INDRV\*-**MPB02VRS-MS**  
 FWA-INDRV\*-**MPD02VRS-MS**

The command **P-0-3228, C4000 Homing procedure command channel 2** was not or incorrectly executed.

### Cause

There hasn't been any home switch configured

Maximum allowed deviation of actual position values 1 and 2 was exceeded during command execution

### Remedy

Configure a home switch in **P-0-3211, Safety technology I/O control word, channel 2**

Check parameterization of **P-0-3229, Tolerance window for safety related homing procedure**; comply with parameterized tolerance window during command execution

**Note:** If necessary, reset the module (switch control voltage off and then on again) in addition to trouble shooting.

### C4001 - Attributes

**Display:** C4001  
**Mess. no.:** C4001 (hex)



# 10 Handling, Diagnostic and Service Functions

## 10.1 Firmware Update

See Functional Description "Firmware Update"

## 10.2 Firmware Download

The firmware download is carried out with the auxiliary "loader" program. The loader is either

- activated directly via the control section if there isn't any valid firmware available in the device

- or -

- activated via the valid firmware available in the device if a firmware update is to be carried out.

### Messages During the Firmware Download

The active loader appears on the display. It precedes the download status display:

- **LD: ??????**: the loader of the control section is active
- **FL: ??????**: the loader of the firmware is active

---

**Note:** Explanation of the messages displayed during firmware download:

**XX: ??????** = active loader:download status

---

During error-free firmware download the following diagnostic messages are displayed:

XX: DL

XX: ERASE

XX: PROG

XX: CKS

### XX: DL

**Brief Description:** Download -> Shutdown carried out successfully

A shutdown was carried out.

**FL: DL:** The firmware loader is active.

**LD: DL:** The loader in the control section is active.

---

**Note:** You can only exit the shutdown mode by rebooting (requested via the master communication or by switching the drive off).

---

**XX:ERASE****Brief Description:** Clearing active

The loader (**FL:ERASE** = firmware loader, **LD:ERASE** = loader in control section) is in the clearing mode. The requested memory range / module is being cleared.

**XX: PROG****Brief Description:** Programming active

The loader (**FL:PROG** = firmware loader, **LD:PROG** = loader in control section) is in the programming mode. The transmitted data are written to the requested address in the memory range / module.

**XX: CKS****Brief Description:** Checksum calculation active

The checksum calculation is active. Subsequent to the calculation a comparison with the stored checksums is run.

---

**Note:** "FL: CKS" means firmware loader and "LD: CKS" means loader in control section.

---

**XX:E ADR****Brief Description:** Warning: address error**Cause**


---

Address read from IBF file is outside of allowed range

**Remedy**


---

Please contact our service department

---

**Note:** "FL:E ADR" means firmware loader and "LD:E ADR" means loader in control section.

---

**XX:E SEC****Brief Description:** Warning: range error**Cause**


---

Data in IBF concerning memory range (firmware, loader, boot kernel) are incorrect

**Remedy**


---

Please contact our service department

---

**Note:** "FL: SEC" means firmware loader and "LD: SEC" means loader in control section.

---

**XX:E FW****Brief Description:** Warning: no valid firmware available**Cause**

Firmware module contained in internal memory is defective, therefore clearing of loader is impossible

**Remedy**

Carry out firmware update (by means of "Dolfi" program or by starting command **P-0-4072, C2900 Command Firmware update from MMC**)

**Note:** "FL:E FW" means firmware loader and "LD:E FW" means loader in control section.

**XX:E LD****Brief Description:** Warning: no valid loader available**Cause**

Firmware module contained in internal memory is defective, therefore clearing of loader is impossible

**Remedy**

Carry out firmware update (by means of "Dolfi" program or by starting command **P-0-4072, C2900 Command Firmware update from MMC**)

**ATTENTION:** If "Dolfi" is used for carrying out firmware update, it is first necessary to program loader before firmware module can be programmed

**Note:** "FL:E LD" means firmware loader and "LD:E LD" means loader in control section.

**XX:E SEQ****Brief Description:** Warning: sequence error**Cause**

Command order was not complied with when drive firmware was programmed

**Remedy**

Use auxiliary program "Dolfi" or command **P-0-4072, C2900 Command Firmware update from MMC** for firmware update

– or –

Carry out shutdown before clearing or programming drive firmware

You tried to write to a range with valid checksum

Before writing, clear range to which data are to be written

**Note:** "FL:E SEQ" means firmware loader and "LD:E SEQ" means loader in control section.

**XX:F9002**

**Brief Description:** Error: operating system error  
See **F9002 Error internal RTOS function call**

**XX:F2100**

**Brief Description:** Error: internal memory defective  
See **F2100 Incorrect access to command value memory**

**XX:F CKS**

**Brief Description:** Error: checksum error

**Cause**

Checksums of programmed modules are calculated after firmware update. Calculated and entered checksums were detected to be different

**Remedy**

Carry out firmware update again; should error occur again, please contact our service department

---

**Note:** "FL:F CKS" means firmware loader and "LD:F CKS" means loader in control section.

---

**XX:F ACC**

**Brief Description:** Error: access error

**Cause**

Several possibilities of firmware update (serial and MMC) were used **simultaneously**. An access conflict has occurred

**Remedy**

Restart firmware update using only one possibility (serial or MMC)

---

**Note:** "FL:F ACC" means firmware loader and "LD:F ACC" means loader in control section.

---

**XX:F2101**

**Brief Description:** Error: MMC defective  
See **F2101 It was impossible to address MMC**

**XX:F8122**

**Brief Description:** Error: control section defective  
An error occurred during firmware update.

**Cause**

Hardware of control section is defective

**Remedy**

Replace control section or entire drive controller; use hardware configuration of same type

---

**Note:** Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

---

Identical cause / remedy: **F8122 Control section defective**

**XX:F8129**

**Brief Description:** Error: optional safety module 1 incorrectly programmed  
See **F8129 Firmware of option 1 of safety technology defective**

**XX:F8130**

**Brief Description:** Error: optional safety module 2 incorrectly programmed  
See **F8130 Firmware of option 2 of safety technology defective**

**XX:F8120**

**Brief Description:** Error: firmware does not support hardware  
See **F8120 Invalid control section/firmware combination**

## 10.3 Replacing Devices, Cables and Motors

### Supply Units

The concept of Rexroth supply units includes safe, quick and uncomplicated replacement of devices. This allows reducing production downtimes, caused by failures of these devices, to a minimum.

Failures in the supply unit are displayed by means of diagnostic messages. According to the diagnostic error message, the measure "replacing the supply unit" can be indicated.

---

**Note:** The sequence of the replacement of devices is described in the supply unit documentation.

---

Immediately after having replaced the device the drive is operational again because it is not required to repeat the adjustment of the drive to the machine.

#### How to Replace Supply Units

- |                                   |  |
|-----------------------------------|--|
| <b>Procure Replacement Device</b> | Identify device to be replaced by means of type plate; procure supply unit of same type from Bosch Rexroth!<br>See also documentation of the respective supply unit  |
| <b>Fill Out Fault Report</b>      | A fault report form to be copied can be found in the documentation of the respective supply unit. Please copy this fault report, fill it out carefully and completely and enclose it to the defective device! The fault report filled out completely supports quick handling of repair and helps recognizing application-related failure causes. |
| <b>Replace Supply Unit</b>        | De-energize drive system; wait for DC bus to discharge!  |



**DANGER**

**Live conductor bars (higher than 50 V), even if mains voltage switched off!**

Electric shock when touching!

⇒ Wait for the DC bus (L+/L-) to discharge; before touching the conductor bar check whether below 50 V!

---

**Note:** Notes on how to mount and dismount the supply unit see documentation of the respective supply unit

---

- |  |  |
|--|--|
| <b>Put Drive System into Operation Again</b> | Put machine into operation again according to machine manufacturer's instructions! |
|--|--|

## Drive Controllers

The concept of Rexroth controllers includes safe, quick and uncomplicated replacement of devices. This allows reducing production downtimes, caused by failures of these devices, to a minimum.

Failures in the drive controller are displayed by means of diagnostic messages. According to the diagnostic error message, the measure "replacing the controller" can be indicated.

The sequence of the replacement of devices is described in the documentation "Project Planning Manual for Power Section".

---

**Note:** IndraDrive controllers are delivered completely with the control section and should be replaced completely, too. Only Bosch Rexroth service engineers or especially trained users are allowed to replace the control section separately. Only service engineers are allowed to replace optional modules of the control section.

---

Immediately after the device has been replaced and

- the operating data saved before have been loaded

- or -

- the MultiMediaCard (MMC) possibly plugged in the defective device has been plugged in the replacement device

the drive is operational again because it is not required to repeat the adjustment of the drive to the machine.

---

**Note:** When using the drive-internal safety technology, particular instructions have to be observed for replacing a device!  
See documentation "Integrated Safety Technology"

---

### How to Replace Controllers

#### Procure Replacement Device

Identify defective controller by means of type plates; procure controller of same type from Bosch Rexroth!

The following type designations have to match:

- type designation of power section
- type designation of control section

---

**Note:** Ideally the firmware type designation of the replacement device should also comply with that of the defective device.

If the available replacement device has a different firmware type designation (differences in version and release), the same firmware as the one active in the defective device has to be loaded to the replacement controller!

---

The type designations can be seen on the adhesive labels at the power section and control section (see also documentation for the respective device component).

The firmware type active in the device can be shown on the display of the control panel.

**Fill Out Fault Report** A fault report form to be copied can be found in the documentation "Project Planning Manual for Power Section or Control Section". Please copy this fault report, fill it out carefully and completely and enclose it to the defective device! The fault report filled out completely supports quick handling of repair and helps recognizing application-related failure causes.

### Replacing a Device with Stationarily Plugged MMC

**Saving Parameter Values** When the device having a stationarily plugged MMC is switched off (MMC used as "programming module"), the current parameter values are automatically saved on the MMC.

**Replace Controller** Replace the controller in the following steps:

1. De-energize drive; wait for DC bus to discharge!
2. Take MMC out of device to be replaced and plug it in new device!



**DANGER**

**Live conductor bars (higher than 50 V), even if mains voltage switched off!**

Electric shock when touching!

⇒ Wait for the DC bus (L+/L-) to discharge; before touching the conductor bar check whether below 50 V!

---

**Note:** Notes on how to mount and dismount the controller see documentation "Project Planning Manual for Power Section".

---

**Put Controller Into Ready-For-Operation Status Again** Put machine into ready-for-operation status again according to machine manufacturer's instructions; then switch on control voltage!

Depending on the previous configuration of the replacement device, the following messages can appear during the booting phase:

**Firmware Download** • "Firmware update?"

Acknowledge this message by pressing the "Enter" button of the control panel. The firmware download is then running, the respective messages are appearing.

The drive then is in the booting phase again and the display reads:

**Loading Parameter Values** • "Load new Param.?"

Acknowledge the message by pressing the "Enter" button of the control panel. The drive then completes the booting phase and in communication phase "P1" waits for further actions of the control master.

---

**Note:** The drive is now running again with the same firmware and the same parameter values as before the device was replaced. The absolute position data reference of measuring systems is maintained!

---

When the MMC was not plugged in the controller before the control voltage is switched on, the following message is displayed:

• "Load new Param.?"

In this case switch the control voltage off, plug the MMC of the defective device in the replacement device and then switch the control voltage on again.

---

**Note:** The message "Load new Param.?" does not always appear when the MMC hasn't been plugged (depending on the previous configuration of the replacement device)!

---

### Replacing a Device without Stationarily Plugged MMC

An MMC temporarily plugged in the controller can be used as update medium for firmware and as update and backup medium for parameter values.

#### Save Parameter Values

Before dismounting defective device save drive parameter values, if possible. To do this, switch drive off and on again, then save parameter values in communication phase "P2".

Parameter values of defective device can be saved via:

- **Control panel of the controller with temporarily plugged MMC ("hot plug")**  
By pressing the buttons on the control panel in a certain order **C2600 Copy data from flash to MMC command** (P-0-4092) can be started. By doing this the active parameter values [according to **S-0-0192, IDN-list of backup operation data** and **P-0-0195, IDN list of retain data (replacement of devices)**] are copied from the controller-internal memory to an MMC temporarily plugged in the controller.

---

**Note:** If the MMC does not remain stationarily (permanently) plugged in the device, it may be temporarily plugged **in the switched-on device after the booting phase** and removed again ("hot plug" or "hot unplug").

---

- **"DriveTop" commissioning tool**  
By selecting the respective menu item, the parameter values according to the list parameters S-0-0192 and P-0-0195 are stored on an external data carrier (hard disk, floppy disk or the like) [serial communication with the controller or via SYSDA/SERCOS interface].
- **Control master**  
The parameter values according to the list parameters S-0-0192 and P-0-0195 are stored on a master-side data carrier by the control master.

#### Replace Controller

De-energize drive; wait for DC bus to discharge!



**DANGER**

**Live conductor bars (higher than 50 V), even if mains voltage switched off!**

Electric shock when touching!

⇒ Wait for the DC bus (L+/L-) to discharge; before touching the conductor bar check whether below 50 V!

---

**Note:** Notes on how to mount and dismount the controller see documentation "Project Planning Manual for Power Section".

---

**Put Controller Into Ready-For-Operation Status Again**

Put machine into ready-for-operation status again according to machine manufacturer's instructions; then switch on control voltage!

Depending on the previous configuration of the replacement device, the following message can appear during the booting phase:

- "Load new Param.?"

Acknowledge this message by pressing the "Enter" button of the control panel. The drive then completes the booting phase and in communication phase "P1" waits for further actions of the control master.

**Load Firmware**

First load the same firmware as installed before replacing the device to the replacement device (if it is not already available there). The firmware can be loaded via:

- **Control panel of the controller with temporarily plugged MMC ("hot plug")**

---

**Note:** The MMC may only be plugged in its slot at the device when the booting process has been completed (communication phase > "P1"). Otherwise it is possible that axis-specific drive parameters are overwritten with incorrect values!

---

By pressing the buttons on the control panel in a certain order the command **C2900 Firmware update from MMC** (P-0-4072) can be started. By doing this the firmware is loaded from the plugged MMC to the controller. At the end of the loading process the display reads "End C29". Now switch the drive off and, after the MMC has been removed, switch it on again (without plugged MMC, see note!)

- **Service program "Dolfi"**

By selecting the respective menu item, the firmware stored on an external data carrier (hard disk, floppy disk or the like) is loaded to the controller (serial communication with the controller).

**Load Parameter Values (Saved Before Replacing Device)**

The axis-specific parameter values saved before replacing the device can be loaded via:

- **Control panel of the controller with temporarily plugged MMC ("hot plug")**

By pressing the buttons on the control panel in a certain order the command **C2500 Copy IDN from optional memory to internal memory** (P-0-4091) can be started. By doing this the parameter values stored on the MMC [according to **S-0-0192, IDN-list of backup operation data** and **P-0-0195, IDN list of retain data (replacement of devices)**] are loaded to the internal flash memory.

- **"DriveTop" commissioning tool**

By selecting the respective menu item, the parameter values stored on an external data carrier (hard disk, floppy disk or the like), immediately before the device was replaced, according to lists S-0-0192 and P-0-0195 are loaded to the controller (serial communication with the controller or via SYSDA/SERCOS interface).

- **Control master**

The parameter values saved immediately before the replacement of the device on a master-side data carrier (according to list parameters S-0-0192 and P-0-0195) are loaded to the controller by the control master.

**Load Parameter Values in Case of Total Breakdown of Device**

If it should have been impossible to save the parameter values according to the list parameters S-0-0192 and P-0-0195 immediately before replacing the device (total breakdown of device), the parameter values saved after initial commissioning have to be loaded.

---

**Note:** In the case of drives with absolute value encoder and modulo format, the position data reference has to be established again after having loaded the parameter values saved after initial commissioning, even if the actual position values are signaled to be valid via **S-0-0403, Position feedback value status!**

---

**WARNING**

**The parameter values saved after initial commissioning are not generally suited for reestablishing the operatability of the drive after replacement of devices!**

⇒ Check actual position values and active target position before drive enable!

---

**Put Machine Into Ready-For-Operation Status**

Reestablish ready-for-operation status of the machine:

- put machine into ready-for-operation status again according to machine manufacturer's instructions
- check functions of drive

**Control Section**

IndraDrive controllers are delivered completely with the control section and should be replaced completely, too. Only Bosch Rexroth service engineers or especially trained users are allowed to replace the control section separately.

**Optional Modules**

Only service engineers are allowed to replace optional modules of the control section.

## Replacing the Motor

- Switch main switch off.
- Make sure main switch cannot be switched on again.
- Disconnect plug-in connectors.

---

**Note:** When replacing the motor, cap open connector ends particularly if there might be the chance that they get in contact with coolant/lubricant or dirt (allowed level of contamination is 2 according to EN50178).

---

- Replace motor.

---

**Note:** To mechanically replace the AC servo motor, note the instructions of the machine manufacturer.

---

- Connect plug-in connectors.



### Danger caused by unwanted axis motion!

⇒ Servo axes with indirect path measuring system via the motor encoder will lose the reference dimension when the motor is replaced!  
This reference to the machine coordinate system must therefore be reestablished after replacement.

- Servo axes with absolute motor encoder: reestablish the reference dimension.

## Replacing Cables



### Lethal electric shock caused by live parts with more than 50 V!

⇒ Power connectors of the cables may only be separated or connected if the installation has been de-energized!

---

**Note:** When replacing cables, note the instructions of the machine manufacturer.

If you do not use standard cables from Rexroth, then check to ensure that the cables agree with the terminal diagram of the machine manufacturer!

---

- Switch main switch off.
- Make sure main switch cannot be switched on again.
- Disconnect plug-in connectors.

---

**Note:** When replacing cables, cap open connector ends particularly if there might be the chance that they get in contact with coolant/lubricant or dirt (allowed level of contamination is 2 according to EN50178).

---

- Replace cables.



**Material damage caused by bad power connectors!**

⇒ Connect power connectors only when they are dry and clean.

- 
- Connect plug-in connectors.

# 10.4 Fault Report

<b>Rexroth Bosch Group</b>	<b>Fault Report for Drive Systems</b>	Date: Report No.:	Page 1 of 2		
<p>This fault report is intended to help eliminate problems that might possibly be related to drive systems. Please fill it in carefully and send it, <b>together with the parameter file</b> with which the error occurred, to <b>Bosch Rexroth</b>.</p>					
Contact person: Customer(machine manufacturer): End customer: Branch of industry:		Telephone: Fax: E-mail:       @			
<p><b>System description:</b></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b><u>Firmware</u></b>                      Firmware version:                      FWA-       -   -   V   -MS</p> <p><b><u>Software:</u></b>                      DriveTop version: SWA-DTOP**-INB-   V   -MS                      Operating system:                          Service pack:                          Language:                      PC designation:                          Hardware configuration (system RAM, hard disk memory,...):</p> </td> <td style="width: 50%; vertical-align: top;"> <p><b><u>Drive system</u></b>  <b>Power section:</b>                          Type code:       -   -   -   -                          Serial number: SN                          Hardware index:</p> <p><b>Control section (only for IndraDrive):</b>                          Type code:       -   -   -   -   -   -                          Serial number: SN                          Hardware index:</p> <p><b>Supply module:</b>                          Type code:       -   -   -   -                          Serial number:</p> </td> </tr> </table>				<p><b><u>Firmware</u></b>                      Firmware version:                      FWA-       -   -   V   -MS</p> <p><b><u>Software:</u></b>                      DriveTop version: SWA-DTOP**-INB-   V   -MS                      Operating system:                          Service pack:                          Language:                      PC designation:                          Hardware configuration (system RAM, hard disk memory,...):</p>	<p><b><u>Drive system</u></b>  <b>Power section:</b>                          Type code:       -   -   -   -                          Serial number: SN                          Hardware index:</p> <p><b>Control section (only for IndraDrive):</b>                          Type code:       -   -   -   -   -   -                          Serial number: SN                          Hardware index:</p> <p><b>Supply module:</b>                          Type code:       -   -   -   -                          Serial number:</p>
<p><b><u>Firmware</u></b>                      Firmware version:                      FWA-       -   -   V   -MS</p> <p><b><u>Software:</u></b>                      DriveTop version: SWA-DTOP**-INB-   V   -MS                      Operating system:                          Service pack:                          Language:                      PC designation:                          Hardware configuration (system RAM, hard disk memory,...):</p>	<p><b><u>Drive system</u></b>  <b>Power section:</b>                          Type code:       -   -   -   -                          Serial number: SN                          Hardware index:</p> <p><b>Control section (only for IndraDrive):</b>                          Type code:       -   -   -   -   -   -                          Serial number: SN                          Hardware index:</p> <p><b>Supply module:</b>                          Type code:       -   -   -   -                          Serial number:</p>				
<p><b><u>Motor</u></b>                      Type designation:                      Serial number: S.No.                      Motor encoder:                      Mounting position:</p>		<p><b>Additional components</b> (e.g. control system involved, external encoder, filter, cooling system in control cabinet,...):</p>			
Fault description (detailed description of situation before, during and after fault occurred):					
To quickly resolve your problem we ask you to send us also the parameter set with which the error occurred. Name of parameter set file:					

Fig. 10-1: Fault Report (Page 1 of 2)





# 11 Notes for Machine Operators

## 11.1 General Information

Time-consuming debugging attempts and repair of drive components at the machine cannot be accepted due to the production downtimes this implicates.

The modularity of the Rexroth AC drives allows replacing individual drive components. In case servicing becomes necessary, you can confine yourself to locating errors at the motor, at the drive controller or at the supply unit and to replacing the respective component.

---

**Note:** Repeated adjustments are not required.

---

## 11.2 Diagnosing Failures and Removing Errors

**Diagnosing Failures** The supply unit signals operating states, warnings or errors via the display at the front of the device.

Prerequisites for diagnosing failures are that the control voltage +24 V is within tolerance and the processors in the supply unit and the drive controllers are working without error.

**Resetting an Error** Stored error messages have to be reset before the device is ready for operation again. An error can be reset by pressing the "ESC" button at the control panel for starting the RESET command (cf. **S-0-0099, C0500 Reset class 1 diagnostics**) or switching off the control voltage supply  
RESET command via the module bus (by drive)



**CAUTION**

### **Destruction of the supply unit when power is switched on and a drive controller is defective!**

⇒ After having reset an overcurrent error and after having replaced a defective supply unit, the error memories of the drive controllers have to be read before the supply unit is switched on again.

**Replacing Defective Drive Components** If a defective components has to be replaced, the following aspects have to be observed:

Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

Only Rexroth service engineers are allowed to replace optional modules of the control section.

The replacement of the supply unit is described in the Project Planning Manual for the supply unit.

In case devices fail within the warranty period, the defective components have to be returned to Bosch Rexroth; for addresses and telephone numbers please see the printed documentation (chapter "Service & Support") or the Internet (<http://www.boschrexroth.com>).

**Testing and Repairs** If tests or repairs are required, the following applies:

Tests and repairs may only be carried out by the Rexroth service department or by especially trained staff.

For tests at the installation the corresponding safety regulations have to be complied with.

Repair of drive components at the machine can be very time-consuming. For this reason, replace defective drive components completely.



**WARNING**

**Danger to persons and damage to machines can arise from the removal of failures!**

- ⇒ Only have failures removed by especially trained staff.
  - ⇒ Do not put protective devices out of operation.
  - ⇒ Observe the Safety Instructions for Electric Drives and Controls in the homonymous chapter.
- 

## 11.3 Contacting the Service Department

If you would like to contact our service department, we ask you to have the following information ready in order to facilitate quick and purposeful handling:

type data and serial numbers of devices and motors,  
failure condition,  
diagnostic display, if available, and  
software versions, if necessary.

For addresses and telephone numbers please see the printed documentation (chapter "Service & Support") or the Internet (<http://www.boschrexroth.com>).

## 12 Notes for Installation Programmers

### 12.1 How to Handle Command Errors

If an error occurs during the execution of a command, the respective command error is generated by the drive.

There are several possibilities of diagnosing a command error:

- evaluating the command change bit in **P-0-0115, Device control: status word**
- evaluating **S-0-0390, Diagnostic message number** which contains the error message as a number (e.g. C0201)
- evaluating **S-0-0095, Diagnostic message** which contains the error message as ASCII text (e.g. **C0201 Invalid parameters (->S-0-0022)**)
- evaluating the command status (see Functional Description "Command Processing")

---

**Note:** A command error cannot be removed by "clearing errors", but only by completing the corresponding command.

---

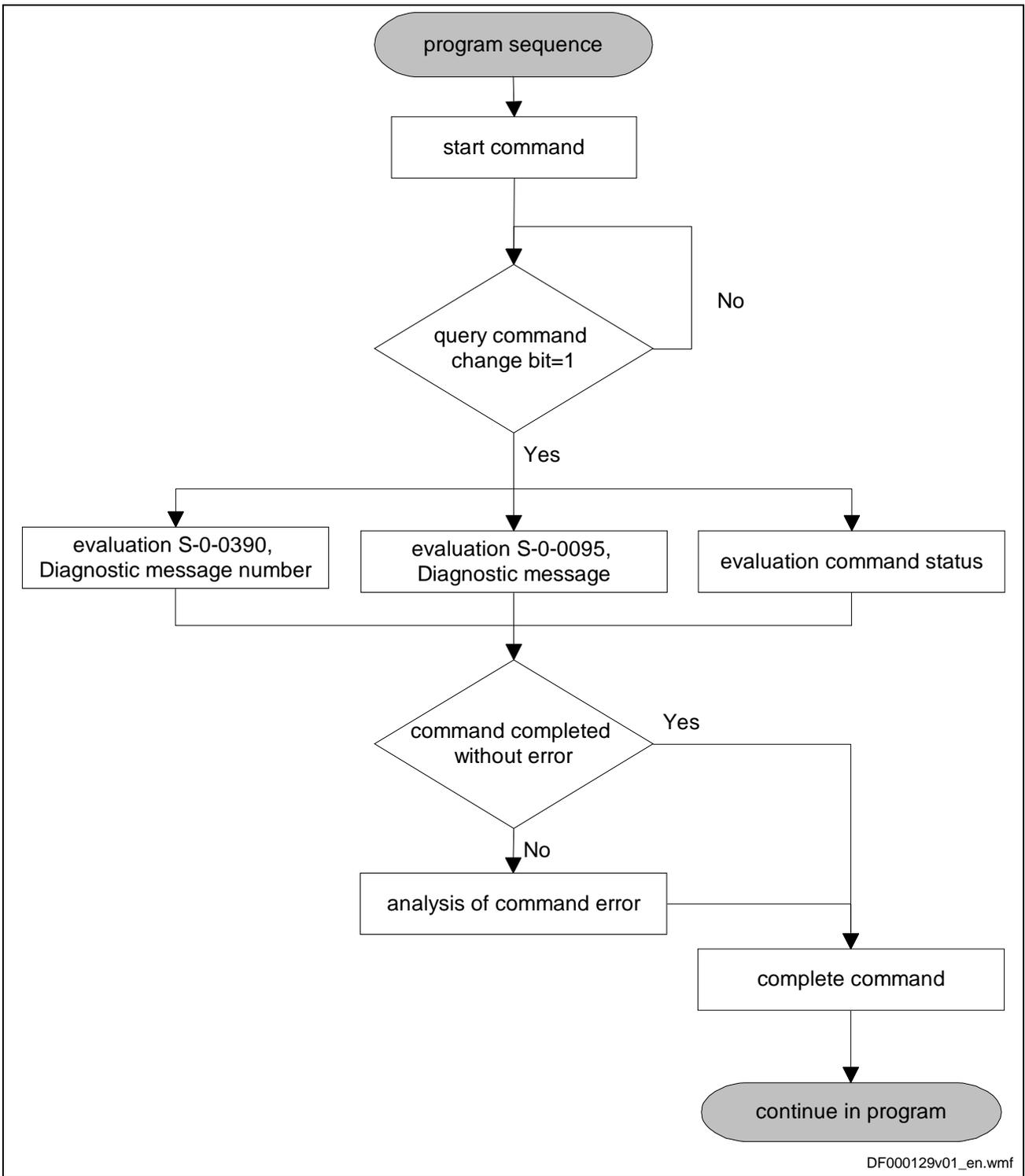


Fig. 12-1: Example of command handling

## 12.2 How to Handle Errors

If an error occurs while the drive is in operation, the corresponding error reaction is carried out.

There are several possibilities of diagnosing a drive error:

- evaluating the collective error bit (class 1 diagnostics bit) in the respective master communication status word (e.g. **S-0-0135, Drive status word**; **P-0-4078, Field bus: status word**; **P-0-4028, Device control word**)
- evaluating **S-0-0011, Class 1 diagnostics** in order to obtain the detailed information with regard to the cause of the error
- evaluating **S-0-0390, Diagnostic message number** which contains the error message as a number (e.g. F6034)
- evaluating **S-0-0095, Diagnostic message** which contains the error message as ASCII text (e.g. **F6034 Emergency-Stop activated**)

---

**Note:** Before a drive error is cleared, the cause for the occurrence of the error should be investigated and permanently removed.

---

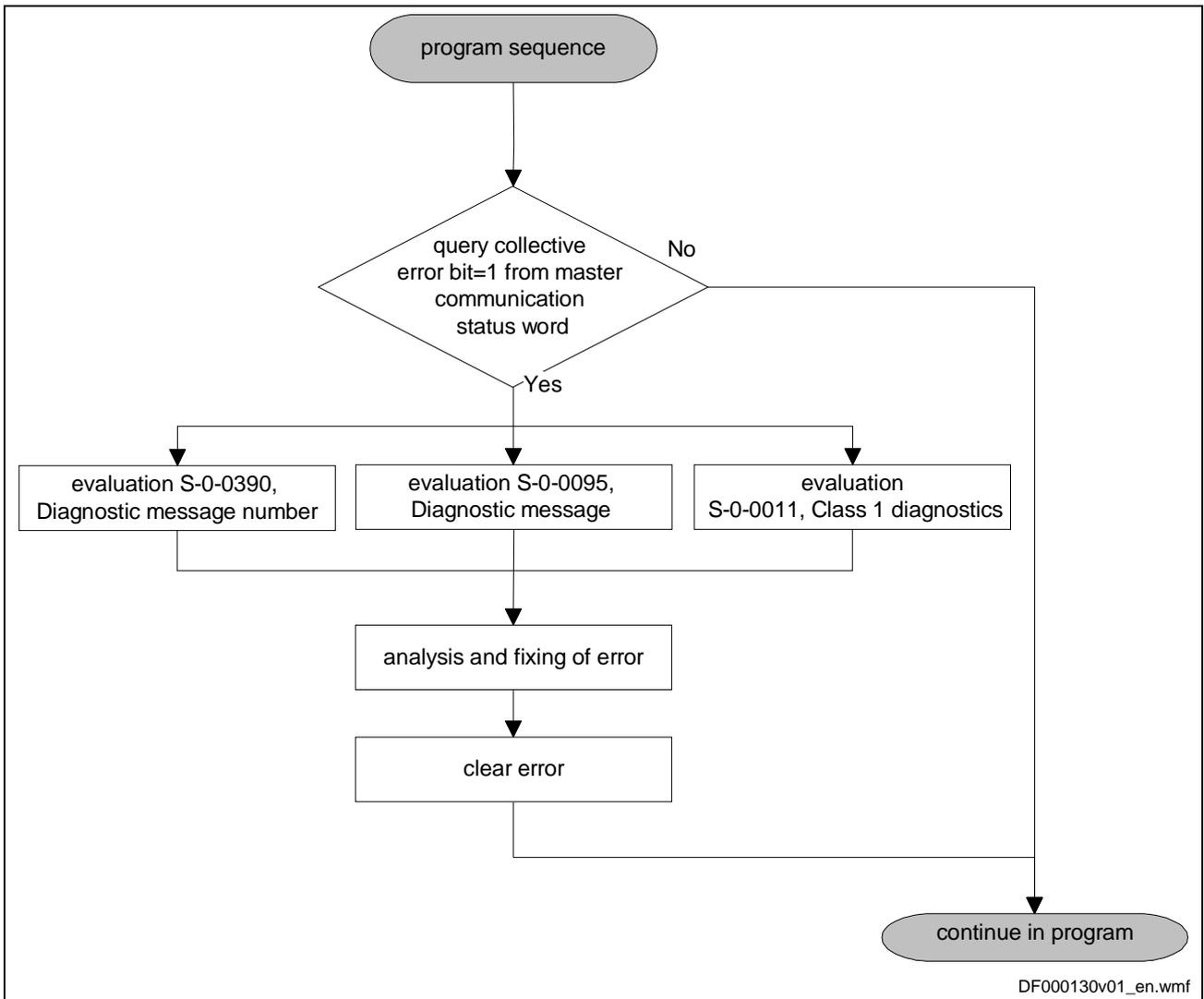


Fig. 12-2: Example of error handling

## 12.3 How to Handle Warnings

If a warning occurs while the drive is in operation, this diagnostic warning message is maintained as long as the condition for the warning has been fulfilled.

There are several possibilities of diagnosing a drive warning:

- evaluating the collective warning bit (class 2 diagnostics bit) in the respective master communication status word (e.g. **S-0-0135, Drive status word**; **P-0-4078, Field bus: status word**; **P-0-4028, Device control word**)
- evaluating **S-0-0012, Class 2 diagnostics** in order to obtain the detailed information with regard to the cause of the warning
- evaluating **S-0-0390, Diagnostic message number** which contains the warning message as a number (e.g. E2054)
- evaluating **S-0-0095, Diagnostic message** which contains the warning message as ASCII text (e.g. **E2054 Not homed**)

---

**Note:** Warnings cannot be cleared. They persist until the condition that activated the warning is no longer fulfilled. In order to remove the cause of the triggering of the warning, carry out the remedy specified in the description of the respective warning.

---

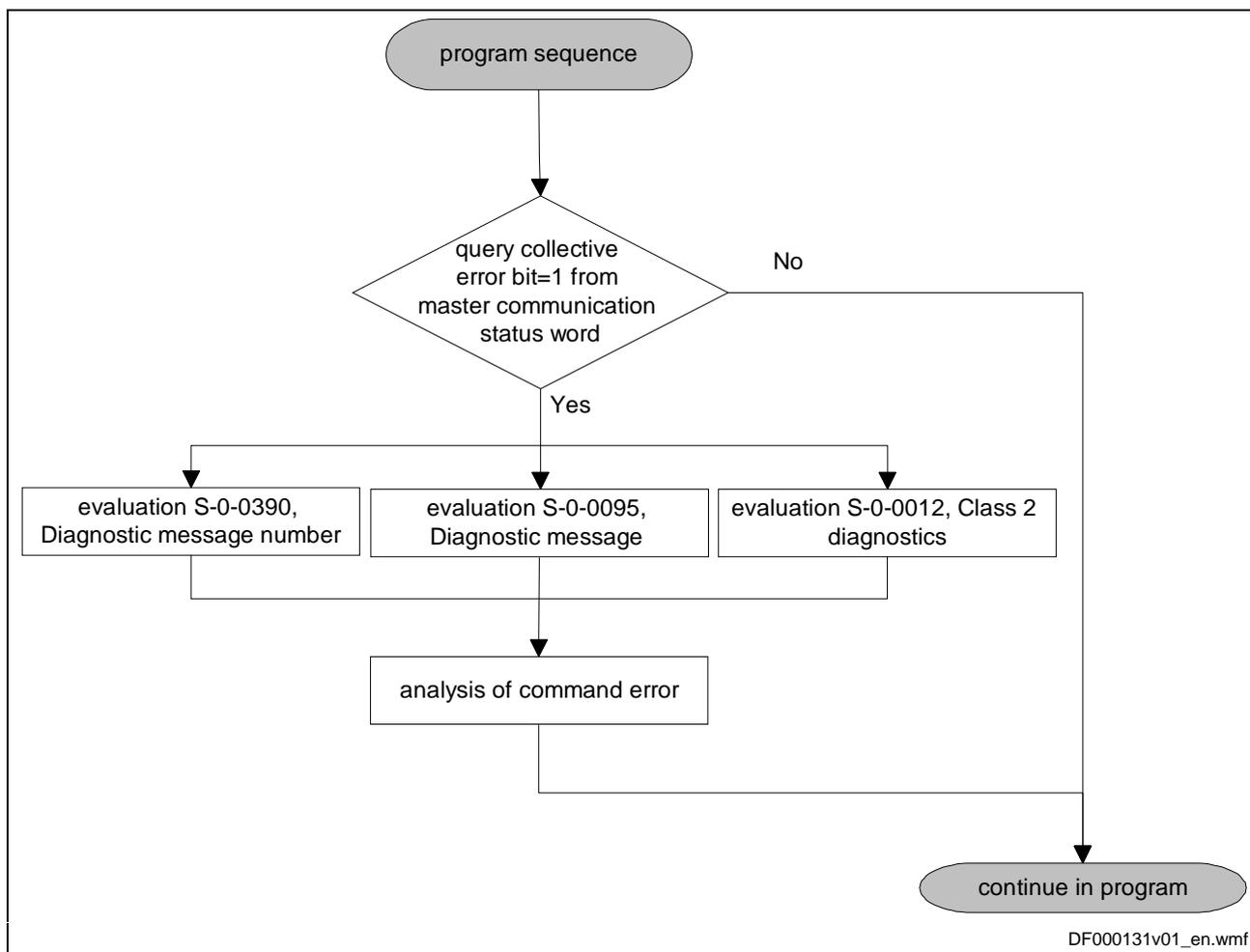


Fig. 12-3: Example of warning handling

**Note:** In the case of drives with SERCOS master communication, it is only possible to reset the collective warning bit (change bit of class 2 diagnostics) by read-accessing parameter **S-0-0012, Class 2 diagnostics**.

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## 14 Service & Support

### 14.1 Helpdesk

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über Service Call Entry Center  
- via Service Call Entry Center

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

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Mo-Fr 07:00-18:00  
Mo-Fr 7:00 am - 6:00 pm

- per Fax - by fax:

**+49 (0) 9352 40 49 41**

- per e-Mail - by e-mail: [service.svc@boschrexroth.de](mailto:service.svc@boschrexroth.de)

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Niederlassungen mit Kundendienst

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offices providing service

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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.

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