

Rexroth HydraulicDrive

HDS-16, HDx-17 to HDx-20
Diagnostic messages

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Purpose of Documentation	This documentation contains the descriptions of the diagnostic messages implemented in the following firmware types: • FWA-HYDRV*-HDS-16VRS • FWA-HYDRV*-HDx-17VRS • FWA-HYDRV*-HDx-18VRS • FWA-HYDRV*-HDx-20VRS It assists machine operators and installation programmers with troubleshooting.
Liability	The specified data only serve to describe the product. No statement concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgement and verification. It must be remembered that our products are subject to a natural process of wear and aging.
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Sample Configuration	The title page shows a sample configuration. The product supplied may therefore differ from the figure.
Original Operating Instructions	The original operating instructions were prepared in German.

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1 General information

1.1 About this documentation

Editions of this documentation

Edition	Release date	Note
RE 30330-WA	01/11/2013	First edition
RE 30330-WA/02.14	02/26/2014	Second edition, updated for HDx-18
RE 30330-WA/07.14	07/03/2014	Third edition, updated for HDx-19
RE 30330-WA/09.15	08/26/2015	Fourth edition, updated for HDx-20
RE 30330-WA/04.16	04/14/2016	Fifth edition, updated for HDx-20
RE 30330-WA/03.17	03/14/2017	Sixth edition, updated for HDx-20V12
RE 30330-WA/04.18	04/15/2018	Seventh edition, updated for HDx-20V16
RE 30330-WA/02.19	01/09/2019	Eighth edition, updated for HDx-20V18
RE 30330-WA/02.20	02/10/2020	Ninth edition, updated for HDx-20V20

Tab. 1-1: Record of revisions

1.2 Reference documentations

Only deal with the product when you have the documentation identified with the book symbol  at hand and have observed it.

All the documents can be downloaded on the Internet at www.boschrexroth.com.

Hardware

	Title	Document number	Document type
	Directional control valve, pilot operated, with integrated digital axis controller (IAC Multi-Ethernet), type 4WRLD	RE 29289	Technical data sheet
	Directional control valve, direct operated, with integrated digital axis controller (IAC Multi-Ethernet), type 4WRPDH	RE 29391	Technical data sheet
	High-response/proportional valve with Multi-Ethernet interface, type 4WRPD(H), type 4WRPQ(H), type 4WRPF(H), type 4WRLD, type 4WRLF, type 4WRLQ, type 5WRPF10, type 5WRPQ10	RE 29391-B	Operating instructions
	Pressure and flow control system, type SYDFED series 2X, 3X, type SYHDFED series 1X	RE 30017-B	Operating instructions
	Pressure and flow control system, type SYDFE1-2X, type SYDFEE-2X, type SYDFEC-2X, type SYDFEn-2X, type SYDFED-2X	RE 30030	Technical data sheet
	Pressure and flow control system, type SYDFE1, type SYDFEE, type SYDFEC, type SYDFEn, type SYDFED, type SYDFEF	RE 30630	Technical data sheet
	Pressure and flow control system, type SYHDFEE-1X, type SYHDFEC-1X, type SYHDFEn-1X, SYHDFED-1X	RE 30035	Technical data sheet

General information

	Digital control electronics for axial piston pumps, type VT-HPC	RE 30237	Technical data sheet Operating instructions
	Digital axis control, type VT-HMC	RE 30239	Technical data sheet Operating instructions
	Pressure and flow control system, type SYDFEF series 2X, 3X, type SYHDFEF series 1X	RE 30013	Operating instructions
	Directional high-response cartridge valve, pilot operated, with integrated electronics and analog or field bus interface, type 2WRCE and 2WRCE	RE 29406	Technical data sheet
	Directional control valve, direct operated, with integrated fieldbus (IFB Multi-Ethernet), type 4WRPFH	RE 29395	Technical data sheet
	Directional control valve, pilot operated, with integrated fieldbus (IFB Multi-Ethernet), type 4WRLF	RE 29293	Technical data sheet
	Control devices HM, HS, HS5 and EO	RE 92076	Technical data sheet
	Axial piston variable pump A4... with HS5E pilot control valve series 10, 11, and series 3x	RE 92076-01-B	Operating instructions

Tab. 1-2: Reference documentations

Software

	Title	Document number	Document type
	Rexroth HydraulicDrive HDS-16, HDx-17 to HDx-20	RE 30330-PA RE 30330-WA	Parameter description Description of diagnostic messages
	Rexroth HydraulicDrive HDx-18	RE 30331-FK	Functional description
	Rexroth HydraulicDrive HDx-19	RE 30337-FK	Functional description
	Rexroth Hydraulic Drive	RE 30336-RE	Library description
	Rexroth IndraMotion MLD (2G) HDx-18	RE 30336-AP	Application manual
	Rexroth HydraulicDrive HDS-20	RE 30335-FK	Functional description
	Rexroth HydraulicDrive HDx-20	RE 30338-FK	Functional description
	Rexroth HydraulicDrive HDx-20 pump control	RE 30237-Z	Supplementary information
	Rexroth HydraulicDrive HDx-20VRS Firmware for drive controllers	RE 30330-RN	Firmware Release Notes

Tab. 1-3: Reference documentations

1.3 Description of derivatives

HDB

Single-axis function for IAC devices (Integrated Axis Control) in IP67 design, which are mounted directly to the hydraulic actuator.

Compatible devices: High-response valves of series WRxD..., WRxQ..., variable displacement pumps of type SY(H)DFED and A4V..HS5E systems

HDE	Devices with Multi-Ethernet interface without axis control for IFB devices (Integrated Field Bus), which are mounted directly to the hydraulic actuator. Compatible devices: High-response valves of series WRxF..., WRxQ... and variable displacement pumps of type SY(H)DFEF
HDP	Single-axis function for IAC devices (Integrated Axis Control) in IP67 protection class, which are mounted directly to the hydraulic actuator, with PLC function integrated in the drive (MLD). Compatible devices: High-response valves of series WRxD... and variable displacement pumps of type SY(H)DFEDn
HDC	Single-axis function for hydraulic controllers in IP20 design for control cabinet installation. Compatible devices: VT-HMC... and VT-HPC...
HDM	Double-axis function for hydraulic controllers in IP20 design for control cabinet installation. Compatible devices: VT-HMC...

2 Important Directions for Use

2.1 Appropriate Use

2.1.1 Introduction

Rexroth products reflect state of the art in their development and manufacture. They are tested prior to delivery to ensure operating safety and reliability.

WARNING

Personal injury and property damage caused by incorrect use of the products!

The products have been designed for use in industrial environments and may only be used in the appropriate way. If they are not used in the appropriate way, situations resulting in property damage and personal injury can occur.



Rexroth as manufacturer is not liable for any damage 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 bears responsibility for the risks.

Before using Rexroth products, the following pre-requisites must be met to ensure appropriate use of the products:

- Personnel who use our products in any way or form must first read and understand the relevant safety instructions and be familiar with their appropriate use.
- If the products take 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.
- Damaged or faulty products may not be installed or put into operation.
- Make sure that the products have been installed in the manner described in the relevant documentation.

2.1.2 Areas of Use and Application

Drive controllers made by Rexroth are designed to control hydraulic drives and monitor their operation.

Control and monitoring of the drive controllers may require the connection of additional sensors and actuators.



The drive controllers may only be used with the accessories and parts specified in this documentation. If a component has not been specifically named, then it may neither be mounted nor 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 Functional Description.

Drive controllers have to be programmed before commissioning to ensure that the drive executes the specific functions of an application.

Drive controllers of the HydraulicDrive line have been developed for use in single- and multiple-axis drive and control tasks.

To ensure the application-specific use of drive controllers, device types of different drive powers and different interfaces are available.

Typical applications include, for example:

- Plastics machines,
- Presses,
- Printing and paper processing machines and
- Machine tools.

Drive controllers may only be operated under the assembly and installation conditions described in this documentation, in the specified position of normal use and under the ambient conditions described (temperature, protection class, humidity, EMC, etc.).

2.2 Inappropriate Use

Using the drive controllers outside the operating conditions described in this documentation and outside the technical data and specifications given is defined as "inappropriate use".

Drive controllers may not be used, if...

- they are exposed to operating conditions that do not meet the prescribed ambient conditions. This includes, for example, operation under water, under extreme temperature fluctuations or extremely high maximum temperatures.
- Furthermore, drive controllers may not be used in applications which have not been expressly authorized by Rexroth. Please strictly observe the specifications outlined in the general Safety Instructions!

3 Safety Instructions for Electric and Hydraulic Drives and Controls

3.1 Definitions of Terms

Installation	An installation consists of several devices or systems interconnected for a defined purpose and on a defined site which, however, are not intended to be placed on the market as a single functional unit.
Electric Drive System	An electric drive system comprises all components from mains supply to motor shaft; this includes, for example, electric motor(s), motor encoder(s), supply units and drive controllers, as well as auxiliary and additional components, such as mains filter, mains choke and the associated lines and cables.
Hydraulic Drive System	A hydraulic drive system comprises all components, starting with the pressure supply through to the actual drive. This includes, for example, hydraulic cylinders, hydraulic motors, hydraulic valves, hydraulic pumps, transducers and associated lines and cables.
User	A user is a person installing, commissioning or using a product which has been placed on the market.
Application Documentation	Application documentation comprises the entire documentation used to inform the user of the product about the use and safety-relevant features for configuring, integrating, installing, mounting, commissioning, operating, maintaining, repairing and decommissioning the product. The following terms are also used for this kind of documentation: User Guide, Operation Manual, Commissioning Manual, Instruction Manual, Project Planning Manual, Application Manual, etc.
Electrical Equipment	Electrical equipment encompasses all devices used to generate, convert, transmit, distribute or apply electrical energy, such as electric motors, transformers, switching devices, cables, lines, power-consuming devices, circuit board assemblies, plug-in units, control cabinets, etc.
Device	A device is a finished product with a defined function, intended for users and placed on the market as an individual piece of merchandise.
Manufacturer	The manufacturer is a natural or legal person bearing responsibility for the design and manufacture of a product which is placed on the market in his or her name. The manufacturer can use finished products, finished parts or finished elements, or contract out work to subcontractors. However, the manufacturer must always have overall control and possess the required authority to take responsibility for the product.
Component	A component is a combination of elements with a specified function, which are part of a piece of equipment, device or system. Components of the electric or hydraulic drive and control system are, for example, supply units, controllers, valves, motors, cables, etc.
Machine	A machine is the entirety of interconnected parts or units at least one of which is movable. Thus, a machine consists of the appropriate machine drive elements, as well as control and power circuits, which have been assembled for a specific application. A machine is, for example, intended for processing, machining, treatment, movement or packaging of a material. The term "machine" also covers a combination of machines which are arranged and controlled in such a way that they function as a unified whole.
Product	Examples of a product: Device, component, part, system, software, firmware, among other things.
Project Planning Manual	A project planning manual is part of the application documentation used to support the sizing and planning of systems, machines or installations.

- Qualified Persons** The activities described in this documentation require knowledge of the electrical installation, the control technology, programming and hydraulics as well as knowledge of the associated technical terms. To ensure safe usage, these activities may therefore only be carried out by qualified personnel or under the direction and supervision of qualified personnel. Qualified personnel are those who can recognize possible hazards and institute the appropriate safety measures due to their professional training, knowledge and experience, as well as their understanding of the relevant regulations pertaining to the work to be done. Qualified personnel must observe the rules relevant to the subject area.
- Control System** A control system comprises several interconnected control components placed on the market as a single functional unit.

3.2 General Information

3.2.1 Using the Safety Instructions and Passing Them on to Others

Do not install or operate the product unless you have thoroughly read all enclosed documents. Read and understand these safety instructions and all user information prior to working with these components. If you do not have the user documentation for the components, contact your responsible Bosch Rexroth sales partner. Ask for these documents to be sent immediately to the person or persons responsible for the safe operation of the components.

If the component is resold, rented and/or passed on to others in any other form, these safety instructions must be delivered with the component in the official language of the user's country.

Improper use of these components, failure to observe the safety instructions in this document or tampering with the product, including disabling of safety devices, could result in property damage, injury, electric shock or even death in the worst case.

3.2.2 Requirements for Safe Use

Read the following instructions before initial commissioning of the product components in order to eliminate the risk of injury and/or property damage. You must comply with these safety instructions.

- Bosch Rexroth is not liable for damage resulting from failure to observe the safety instructions.
- Read the operating, maintenance and safety instructions before commissioning. If you find that you cannot completely understand the application documentation in the available language, please ask your supplier to clarify.
- Proper and correct transport, storage, mounting and installation, as well as care in operation and maintenance, are prerequisites for optimal and safe operation of the component.
- Only qualified personnel are authorized to work on the product components or in their vicinity.
- Only use accessories and spare parts approved by Bosch Rexroth.
- Observe the safety regulations and stipulations of the country in which the components of the electric drive and control system are operated.
- Only use the product according to the intended use. See chapter "Appropriate Use".

- The ambient and operating conditions given in the available application documentation must be adhered to.
- Applications for functional safety are only allowed if clearly and explicitly specified in the application documentation "Integrated Safety Technology". If this is not the case, they are excluded. Functional safety includes parts of the overall safety concept, in which measures of risk reduction for personal safety depend on electrical, electronic or programmable control systems.
- The information given in the application documentation with regard to the use of the delivered components contains only application examples and suggestions.

The machine and installation manufacturers must

- make sure that the delivered components are suited for their individual application and check the information given in this application documentation with regard to the use of the components,
- make sure that the individual application complies with the applicable safety regulations and standards and carry out the required measures, modifications and complements.
- Commissioning of the delivered components is only allowed once it is sure that the machine or installation in which the components are installed complies with the national regulations, safety specifications and standards of the application.
- Operation is only allowed if the national EMC regulations for the application at hand are complied with.
- The instructions for installation in accordance with EMC requirements can be found in the section on EMC in the relevant application documentation.

The machine or installation manufacturer is responsible for compliance with the limit values as prescribed in national regulations.

- The technical data, connection and installation conditions of the components are specified in the respective application documentations and must be strictly observed at all times.
- Observe safety-relevant information and information on risks in the operating instructions of the manufacturer of the connected hydraulic system before you commission a control in conjunction with a hydraulic system.

National regulations which the user must take into account

- European countries: In accordance with European EN standards
- United States of America (USA):
 - National Electrical Code (NEC)
 - National Electrical Manufacturers Association (NEMA), as well as local engineering regulations
 - Regulations of the National Fire Protection Association (NFPA)
- Canada: Canadian Standards Association (CSA)
- Other countries:
 - International Organization for Standardization (ISO)
 - International Electrotechnical Commission (IEC)

3.2.3 Hazards by Improper Use

- High electrical voltage and high operating current! Danger to life or serious injury by electric shock!
- High electrical voltage by incorrect connection! Danger to life or injury by electric shock!
- Dangerous movements! Danger to life, serious injury or damage to property due to unintended movements of the drive resulting from misuse or incorrect actuation!
- Health hazard for persons with cardiac pacemakers, metal implants and hearing aids in close proximity to electric drive systems!
- Risk of burns by hot housing surfaces!
- Risk of injury by improper handling! Injury by crushing, shearing, cutting, hitting!
- Risk of injury by improper handling of batteries!
- Risk of injury by improper handling of pressurized lines and components!

3.3 Instructions with Regard to Specific Hazards

3.3.1 Protection Against Contact With Electrical Parts and Housings



This section is related to components of the electric drive and control system with voltages of **more than 50 volt**.

Contact with parts conducting voltages above 50 volt can be dangerous and lead to electric shock. When operating components of the electric drive and control system, it is unavoidable that some parts of these components conduct dangerous voltage.

High electrical voltage! Danger to life, risk of injury by electric shock or serious injury!

- Only qualified personnel are allowed to operate, maintain and/or repair the components of the electric drive and control system.
- Observe the general installation and safety regulations when working on high-voltage units.
- Before switching the machine on, the equipment grounding conductor must have been permanently connected to all electric components in accordance with the connection diagram.
- Even for brief measurements or tests, operation is only allowed if the equipment grounding conductor has been permanently connected to the points of the components provided for this purpose.
- Before accessing electrical parts with voltage potentials higher than 50 V, you must disconnect electric components from the mains or from the power supply unit. Secure the electric component against reconnection.
- For electric components, observe the following:
Always wait **30 minutes** after switching off power to allow live capacitors to discharge before accessing an electric component. Measure the electrical voltage of live parts before beginning to work to make sure that the equipment is safe to touch.
- Install covers and guards provided for this purpose before switching on.
- Never touch electrical connection points of the components while power is turned on.
- Do not remove or plug in connectors when the component is connected to the power supply.
- Under certain conditions, electric drive systems can be operated at mains protected by residual-current-operated circuit-breakers sensitive to universal current (RCDs/RCMs).
- For built-in devices, ensure protection against the ingress of foreign bodies and water as well as against direct contact by providing an external housing, for example a control cabinet.

High housing voltage and high leakage current! Danger to life, risk of injury by electric shock!

- Before switching on and before commissioning, ground or connect the components of the electric drive and control system to the equipment grounding conductor at the grounding points.

- Connect the equipment grounding conductor of the components of the electric drive and control system permanently to the main power supply. The leakage current is greater than 3.5 mA.
- Establish an equipment grounding connection with a minimum cross-section according to the table below. With an outer conductor cross section smaller than 10 mm² (8 AWG), the alternative connection of two equipment grounding conductors is allowed, each having the same cross-section as the external conductors.

Cross-section of the external conductor	Minimum cross-section of grounding conductor Leakage current ≥ 3.5 mA	
	1 protective earth conductor	2 protective earth conductors
1.5 mm ² (AWG 16)	10 mm ² (AWG 8)	2 × 1.5 mm ² (AWG 16)
2.5 mm ² (AWG 14)		2 × 2.5 mm ² (AWG 14)
4 mm ² (AWG 12)		2 × 4 mm ² (AWG 12)
6 mm ² (AWG 10)		2 × 6 mm ² (AWG 10)
10 mm ² (AWG 8)		-
16 mm ² (AWG 6)	16 mm ² (AWG 6)	-
25 mm ² (AWG 4)		-
35 mm ² (AWG 2)		-
50 mm ² (AWG 1/0)	25 mm ² (AWG 4)	-
70 mm ² (AWG 2/0)	35 mm ² (AWG 2)	-
...	...	...

Tab. 3-1: Minimum Cross-Section of the Grounding Conductor Connection

3.3.2 Protective Extra-Low Voltage as Protection Against Electric Shock

Protective extra-low voltage is used to allow connecting devices with basic insulation to extra-low voltage circuits.

All connections and terminals with voltages between 5 and 50 volt at the components of the drive and control systems from Bosch Rexroth are PELV ("Protective Extra-Low Voltage") systems. It is allowed to connect devices equipped with basic insulation (such as programming devices, PCs, notebooks, display units) to these connections.

Danger to life, risk of injury by electric shock! High electrical voltage by incorrect connection!

If extra-low voltage circuits of devices containing voltages and circuits of more than 50 volt (e.g., the mains connection) are connected to products from Bosch Rexroth, the connected extra-low voltage circuits must comply with the requirements for PELV ("Protective Extra-Low Voltage").

3.3.3 Protection Against Dangerous Movements

Dangerous movements can be caused by incorrect actuation of connected drives. Some common examples are:

- Improper or wrong wiring or cable connection
- Operator errors
- Wrong input of parameters before commissioning
- Errors in transducers and signal generators
- Defective components
- Software or firmware errors

These errors can occur immediately after the equipment is switched on or even after an unspecified time of trouble-free operation.

The monitoring functions in the components of the electric drive and control system will normally be sufficient to avoid malfunction in the connected drives. With regard to personal safety, especially the risk of injury and/or property damage, it is critical to rely on these monitoring functions alone to ensure complete safety. Until the integrated monitoring functions become effective, it must be assumed in any case that incorrect drive movements will occur. The extent of incorrect drive movements depends on the type of control and the operating state.

Dangerous movements! Danger to life, risk of injury, serious injury or property damage!

A **risk assessment** must be prepared for the installation or machine, with its specific conditions, in which the components of the electric drive and control system are to be installed.

Based on the risk assessment, the user must provide for monitoring functions and higher-level measures on the installation side for personal safety. The safety regulations applicable to the installation or machine must be taken into consideration. Unintended machine movements or other malfunctions are possible if safety devices are disabled, bypassed or not activated.

In case of malfunction impairing safety, immediately shut down the product and inform responsible personnel about the malfunction.

To avoid accidents, injury and/or property damage:

- Controls alone do not include safety functions for personnel safety and are not safety-relevant components
- Keep away from the machine's range of motion and moving machine parts. Prevent personnel from accidentally entering the machine's range of motion by using, for example:
 - Safety fences
 - Safety guards
 - Protective covers
 - Light barriers
- Ensure a sufficient stability of safety fences and protective covers against the maximum possible kinetic energy.
- Mount emergency stop switches in the immediate reach of the operator. Before commissioning, verify that the emergency stop equipment works. Do not operate the machine if the emergency stop switch is not working.

- Prevent unintended start-up. Isolate the drive power connection by means of OFF switches/OFF buttons, depressurize the hydraulic system or use a safety interlock.
- Make sure that the drives are brought to safe standstill before accessing or entering the danger zone.
- Additionally, secure vertical axes against falling or lowering after switching off the motor by, for example,
 - mechanical locking of the vertical axes,
 - an external braking/arrester/clamping mechanism or
 - ensuring sufficient counterbalancing of the vertical axes.
- The **motor holding brake**, which is part of the standard electric drive system, or an external holding brake activated by the drive controller is **not sufficient to guarantee personal safety!**
- Disconnect all relevant system parts via the main switch from the power supply, depressurize hydraulic systems and protect them against re-starting in the case of:
 - Maintenance and repair work
 - Cleaning of equipment
 - Long service interruptions
- Avoid the operation of high-frequency, remote control and radio equipment in the direct vicinity of components of the electric drive and control system and their supply leads. If the use of these devices cannot be avoided, check the machine or installation at initial commissioning of the electric drive and control system for possible malfunctions when operating such high-frequency, remote control and radio equipment in its possible positions of normal use. A special EMC test might be required.

3.3.4 Protection Against Magnetic and Electromagnetic Fields During Operation and Mounting

Magnetic and electromagnetic fields generated by current-carrying conductors or permanent magnets of electric motors can represent a serious risk to persons with cardiac pacemakers, metal implants and hearing aids.

Health hazard for persons with cardiac pacemakers, metal implants and hearing aids in the direct proximity to electric components!

- Persons with cardiac pacemakers and metal implants are not allowed to enter the following areas:
 - Areas in which components of the electric drive and control systems are mounted, commissioned and operated.
 - Areas in which parts of motors with permanent magnets are stored, repaired or mounted.
- If it is necessary for somebody with a cardiac pacemaker to enter such an area, a doctor must be consulted prior to doing so. The noise immunity of implanted cardiac pacemakers varies so widely that no general rules can be given.
- Persons with metal implants or metal fragments in their body or who use hearing aids must consult a doctor before they enter the areas described above.

3.3.5 Protection Against Contact With Hot Parts

Hot surfaces of components of the electric or hydraulic drive and control system. Risk of burns!

- Avoid touching hot surfaces! Depending on the operating conditions, temperatures of the surfaces can be **higher than 60 °C (140 °F)** during or after operation.
- Before touching motors after having switched them off, let them cool down sufficiently. Cooling down can take **up to 140 minutes!**
- Before touching components after having switched them off, wait **15 minutes** to allow them to cool down.
- Wear safety gloves or do not work on hot surfaces.
- For certain applications, measures to prevent burns in the final application have to be taken by the machine or system manufacturer in accordance with the safety regulations. These measures can be, for example: Warnings on the machine or installation, guards (shielding or barriers) or safety instructions in the application documentation.

3.3.6 Protection During Handling and Mounting

Risk of injury by improper handling! Injury by crushing, shearing, cutting, hitting!

- Observe the relevant statutory regulations of accident prevention.
- Use suitable equipment for mounting and transport.
- Avoid jamming and crushing by taking appropriate measures.
- Always use suitable tools. Use special tools if mandatory.
- Use lifting gear and tools in the correct manner.
- Use suitable protective equipment (hard hat, safety goggles, safety shoes, safety gloves, for example).
- Do not stand under suspended loads.
- Immediately clean up any spilled liquids from the floor due to risk of slipping!

3.3.7 Battery Safety

Batteries consist of active chemicals in a solid housing. Therefore, improper handling can cause injury or property damage.

Risk of injury by improper handling!

- Do not attempt to reactivate low batteries by heating or other methods (risk of explosion and cauterization).
- Do not attempt to recharge the batteries as this may cause leakage or explosion.
- Do not throw batteries into open flames.
- Do not dismantle batteries.
- When replacing the battery/batteries, do not damage the electrical parts installed in the devices.
- Only use the battery types specified for the product.



Environmental protection and disposal! The batteries contained in the product are considered hazardous goods in case of overland, air, or marine transport (risk of explosion) in the sense of legal regulations. Dispose of used batteries separately from other waste. Observe the national regulations of your country.

3.3.8 Protection Against Pressurized Lines

According to the information given in the Project Planning Manuals, motors and components cooled with liquids and compressed air as well as hydraulic components can be supplied with externally provided pressurized media such as compressed air, hydraulic oil, cooling liquids and cooling lubricants. Improper handling of the connected supply systems, supply lines or connections can cause injuries or property damage.

Risk of injury by improper handling of pressurized lines!

- Do not attempt to disconnect, open or cut pressurized lines (risk of ejecting oil jet).
- Observe the relevant manufacturer's operating instructions.
- Before disconnecting lines, depressurize the relevant system section and let the medium drain.
- Use suitable protective equipment (safety goggles, safety shoes, safety gloves, for example).
- Immediately clean up any spilled liquids from the floor due to risk of slipping!



Environmental protection and disposal! The media used for the operation of the product might not be environmentally friendly. Dispose of environmentally harmful media separately from other waste. Observe the national regulations of your country.

3.4 Explanation of signal words and the Safety alert symbol

The Safety Instructions in the available application documentation contain specific signal words (DANGER, WARNING, CAUTION or NOTICE) and, where required, a safety alert symbol (in accordance with ANSI Z535.6-2011).

The signal word is meant to draw the reader's attention to the safety instruction and identifies the hazard severity.

The safety alert symbol (a triangle with an exclamation point), which precedes the signal words DANGER, WARNING and CAUTION, is used to alert the reader to personal injury hazards.



In case of non-compliance with this safety instruction, death or serious injury will occur.

⚠ WARNING

In case of non-compliance with this safety instruction, death or serious injury could occur.

⚠ CAUTION

In case of non-compliance with this safety instruction, minor or moderate injury could occur.

NOTICE

In case of non-compliance with this safety instruction, property damage could occur.

4 Diagnostic status messages (Axxxx)

4.1 A0000 Communication phase 0

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The establishment of communication between master and slaves via sercos interface is subdivided into four communication phases:

The communication phases 0 and 1 are used to recognize the bus nodes. In 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 continues to show 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 switching from communication phase 0 to 1.

A0000 - Attributes

Diagnostic no.: A0000
Diagnostic no. as of 18VRS: C30A0000

4.2 A0001 Communication phase 1

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The establishment of communication between master and slaves via sercos interface is subdivided into four communication phases:

The communication phases 0 and 1 are used to recognize the bus nodes. In 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 continues to show the communication phase that has been reached.

When the diagnostic message "A0001 Communication phase 1" is active, the drive is in phase 1; the master has not yet triggered switching from phase 1 to 2.

A0001 - Attributes

Diagnostic no.: A0001
Diagnostic no. as of 18VRS: C30A0001

4.3 A0002 Communication phase 2

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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 functions "load drive parameters" and "save drive parameters" ("file service") are carried out, if required.

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 of switching to communication phase 2 is to execute the command "P-0-4023, C0400 Communication phase 2 transition".

Communication phase 3

Before it is possible to switch to communication phase 3, it is necessary to execute the command "S-0-0127, C0100 Communication phase 3 transition check". During the transition check, the drive checks, among other things, 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

Diagnostic no.:
Diagnostic no. as of 18VRS:

A0002
C30A0002

4.4 A0003 Communication phase 3

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

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.

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 of switching 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". During the transition check the drive checks, among other things, 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 servos devices) or the drive automatically switches to phase 4 at the end of the transition check command.

A0003 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

A0003
C30A0003

4.5 A0004 Initialization

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Initialization of the field bus.

Field bus	Meaning of the diagnostic message
PROFIBUS	"PROFIBUS" was recognized as master communication and hardware is checked.
PROFINET	The controller has not yet established a connection.
EtherNet/IP	The scanner has not yet established a connection.
EtherCAT	The initialization was run after switching on or after a reset.
VARAN	The initialization was run after switching on or after a reset.
Ethernet POWERLINK	The network functionalities are initialized (as of HDx20).

Tab. 4-1: Overview of diagnostic message "Initialization" for the various field buses

See also functional description of firmware "Device control and state machines"

A0004 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0004

000A0004

4.6 A0005 Pre-Operational

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is in the "Pre-Operational" communication phase.

Field bus	Meaning of the diagnostic message
CANopen	After the initialization the bus coupler automatically, i.e. without external command, changes over to the communication phase "Pre-Operational". It can be configured in this communication phase, for the service data objects (SDOs) are already active, whereas the process data objects (PDOs) are still disabled.
CAN application layer over EtherCAT Servodrive profile over EtherCAT	After the initialization the drive automatically, i.e. without external command, changes over to the communication phase "Pre-Operational". It can be configured in this communication phase, for the service data objects (SDOs) are already active, whereas the process data objects (PDOs) are still disabled.
Ethernet POWERLINK (as of firmware version 20)	After the initialization and the first receipt of an SoC or SoA telegram from the MN (managing node), the CN (controlled node) automatically switches to communication phase "Pre-Operational 1" or "Pre-Operational 2". Both states are indicated by diagnostic message "Pre-Operational". In this communication phase the CN can be configured from the MN, for the service data objects (SDOs) are already active, whereas the process data objects (PDOs) are still disabled.

Tab. 4-2: Overview of diagnostic message "Pre-Operational" for the various field buses

See also functional description of firmware "Device control and state machines"

A0005 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**A0005**
000A0005

4.7 A0006 Safe-Operational

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The field bus is in communication phase "Safe-Operational".

Field bus	Meaning of the diagnostic message
CAN Application Layer over EtherCAT	The producer data are generated by the drive and sent to the control. The consumer data are not assumed yet.
Servodrive profiles over EtherCAT	

Tab. 4-3: Diagnostic message "Safe-Operational"

See also Functional Description of firmware "Device control and state machines"

A0006 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**A0006**
000A0006

4.8 A0007 Operational

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The field bus is in the "Operational" communication phase.

See also functional description of firmware

- "Ethernet POWERLINK"
- "CANopen interface"

A0007 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**A0007**
000A0007

4.9 A0008 Sercos: NRT-Mode

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive controller is in the NRT mode.

The drive controller automatically goes to the NRT mode:

- After the drive controller has been switched on.
- When the communication phase has been incorrectly input.

The NRT mode can only be exited via the communication phase 0.

Explanation In the communication state machine of sercos, we distinguish between two communication phase types:

- Communication phases **with** IP telegrams **without** sercos telegrams (NRT mode)

- Communication phases **with** IP telegrams **and** sercos telegrams (communication phases 0 to 4)

See also Functional Description of firmware "sercos"

A0008 - Attributes

Diagnostic no.:

A0008

Diagnostic no. as of 18VRS:

C30A0008

4.10 A0009 Automatic baud rate detection for Sercos

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The communication phase between master and slaves via sercos is organized into four communication phases:

Communication phases 0 and 1 are used to detect the bus nodes. In communication phase 2, the time and data setup of the protocols for communication phases 3 and 4 are prepared.

The phase run-up takes place in ascending order. The communication phase is specified by the master. The switch into communication phase 4 completes the initialization and allows power to be connected.

If the phase progression is interrupted, the state display remains in the previous communication phase, which allows the interruption to be detected.

If the diagnostic message A0009 is active, the drive is in phase 0 - 1, the switch to phase 0 takes place when the correct baud rate has been detected.

A0009 - Attributes

Diagnostic no.:

A0009

Diagnostic no. as of 18VRS:

000A0009

4.11 A0010 Drive halt active

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Function "Drive Halt" is indirectly activated by the master via the master communication interface by deleting the Drive Halt bit in parameter "S-0-0134, Master control word" or by interrupting a drive control command (e.g., drive-controlled homing procedure).

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

Function "Drive Halt" can be executed as **quick stop** in **position control** or **velocity control** mode or as **operational stop** in the active operation mode with velocity command value reset [see configuration "Drive Halt" (P-0-0558)].

In **speed control** and **torque control** mode, the drive is shut down by velocity command value reset with maximum torque.

See also Functional Description of firmware "Drive Halt"

A0010 - Attributes

Diagnostic no.:

A0010

Diagnostic no. as of 18VRS:

C00A0010

4.12 A0012 Drive ready

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»

Contained in 18VRS: «HDB» «HDC» «HDS»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

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 hydraulic drive is ready for power output.

This means that both, the control electronics and the valve, are supplied with the required voltage.

This state is also called "drive ready (Ab)".

If the hardware enable is switched off, switching back to the status "ready for operation (bb)" takes place.



With the IAC, the HW enable must be set externally in order that the valve output stage is activated internally.

With the HMC, which is not equipped with an internal power section, the readiness of an external power section for power output can be signaled via parameter P-0-0861, bit 0, if required.

A0012 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:

A0012
 C00A0012

4.13 A0013 Ready for operation

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «HDB»
 Contained in 18VRS: «HDB» «HDC» «HDS»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The diagnostic message "A0013 Ready for power on" signals that the hydraulic drive has been provided with control voltage, but the valve is not yet ready.

This state is also called "ready for operation (bb)".

When the valve signals its readiness, changing over to the state "drive ready (Ab)" takes place.



With the IAC, the HW enable must be set externally in order that the valve output stage is activated internally.

With the HMC, which is not equipped with an internal power section, the readiness of an external power section for power output can be signaled via parameter P-0-0861, bit 0, if required.

A0013 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:

A0013
 C00A0013

4.14 A0022 WAIT_PRM

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «-»
 Contained in 18VRS: «-» «HDC» «-»
 Contained in 20VRS: «-» «HDC» «-» «-» «HDM» «-»

The field bus is in communication phase "Wait_PRM".

Field Bus	Meaning of the Diagnostic Message
PROFIBUS	The baud rate has been found, the drive is waiting for a parameterization telegram of the master that contains its IDN [contained in the device data sheet].

Tab. 4-4: Diagnostic message "Wait_PRM"

See also Functional Description of firmware "Device Control and State Machines".

A0022 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0022

000A0022

4.15 A0023 WAIT_CFG

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «-» «HDM» «-»

The field bus is in communication phase "Wait_CFG".

Field Bus	Meaning of the Diagnostic Message
PROFIBUS	The drive controller has received a valid parameterization telegram and is now waiting for the configuration telegram. In the configuration telegram, the master informs the drive which module it expected for the input/output configuration.

Tab. 4-5: Diagnostic message "Wait_CFG"

See also Functional Description of firmware "Device Control and State Machines".

A0023 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0023

000A0023

4.16 A0024 Connection established

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The field bus is in communication phase "Connection established" (CON).

Field Bus	Meaning of the Diagnostic Message
PROFINET	The connection to the controller has been established.
EtherNet/IP	The connection to the controller has been established.

Tab. 4-6: Overview of the Diagnostic Message "Connection established" (CON) for the Various Field Busses

See also Functional Description of firmware "Device Control and State Machines".

A0024 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0024

000A0024

4.17 A0025 Basic ethernet mode

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»

Contained in 18VRS:	«-»	«-»	«-»	«-»	«-»
Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»

The bus system is in the communication state "Basic Ethernet Mode". The drive can be operated directly in existing Ethernet networks, if real-time data transmission is not required. The communication state is activated directly after the drive was switched on until bus communication is started.

See also functional description of firmware "Ethernet POWERLINK"

A0025 - Attributes

Diagnostic no.:	A0025
Diagnostic no. as of 18VRS:	000A0025

4.18 A0026 Ready to operate

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The bus system is in the communication state "Ready To Operate". The drive provides cyclic actual values; cyclic command values are not yet processed.

See also functional description of firmware "Ethernet POWERLINK"

A0026 - Attributes

Diagnostic no.:	A0026
Diagnostic no. as of 18VRS:	000A0026

4.19 A0029 Bootstrap

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The device is in communication mode "Bootstrap".

In this communication mode, the transmission of the cyclic process data as well as all mailbox services are **not available**. The FoE service for updating the firmware is available.

This state can only be reached via the Init state and can only proceed to the Init.

See also Functional Description of firmware "EtherCAT"

A0029 - Attributes

Diagnostic no.:	A0029
Diagnostic no. as of 18VRS:	000A0029

4.20 A0030 Hot-plug phase 0

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is in hot plug phase 0.

In hot plug phase 0 the master has only a unidirectional communication channel to the slave. This channel is used for transmitting interface parameters that are necessary for communication.

During this phase the slave is not able to send data to the master.

As soon as the hot plug slave receives all the required parameters to be able to be hooked into the topology, it returns the sercos telegrams that it re-

ceived. This is recognized by the last slave in the line and hence by the master and the transition to hot plug phase 1 can take place.

A0030 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

[A0030](#)

C30A0030

4.21 A0031 Hot-plug phase 1

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

The drive is in hot plug phase 1.

In hot plug phase 1 there is a bidirectional communication connection between master and slave.

In this phase all hot plug slaves are scanned. Then, the parameters for accessing the service channel are transmitted to the slaves.

As soon as the transmission of parameters has been successfully completed, the transition to hot plug phase 2 can take place.

A0031 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

[A0031](#)

C30A0031

4.22 A0032 Hot-plug phase 2

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

The drive is in hot plug phase 2.

In hot plug phase 2 the service channel is available for further parameterization.

The configuration of the port and the further configuration of the slaves take place in this phase.

When hot plug phase 2 is completed, switching to further communication phases is initiated.

A0032 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

[A0032](#)

C30A0032

4.23 A0040 Communication phase 4

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

The device is in communication phase 4.

In communication phase 4 the initialization process is completed and the sercos network is ready to operate. Process data can now be exchanged via configured connections.

A0040 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

[A0040](#)

C30A0040

4.24 A0050 Parameterization level 1 active

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The drive is in the "Parameterization level 1" mode. In this status, the monitoring functions of the position encoders are deactivated. Although the master communication is in communication phase 4, the drive can be parameterized as in communication phase 3.



This status is displayed on the control panel of the drive with "PM".

See also Functional Description of firmware "Parking Axis".

See also Parameter Description "S-0-0420, C0400 Activate parameterization level 1 procedure command".

A0050 - Attributes

Diagnostic no.: [A0050](#)
Diagnostic no. as of 18VRS: 000A0050

4.25 A0051 Operating mode

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The axis was switched to the operating mode, but master communication is not yet in the cyclic data exchange. In this state axis control is not yet possible.

A0051 - Attributes

Diagnostic no.: [A0051](#)
Diagnostic no. as of 18VRS: 000A0051

4.26 A0100 Torque/Force control

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The drive is in the "torque/force control" operation mode. It follows the torque command value profile provided by the master.

See also functional description of firmware "Torque/force control"

A0100 - Attributes

Diagnostic no.: [A0100](#)
Diagnostic no. as of 18VRS: C00A0100

4.27 A0101 (Open/closed-loop) velocity control

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

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 of firmware "Velocity Control"

A0101 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0101

C00A0101

4.28 A0102 Position mode, encoder 1

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

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.

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

A0102 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0102

C00A0102

4.29 A0103 Position mode, encoder 2

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «HDS»
	Contained in 20VRS:	«-» «-» «-» «-» «-» «HDS»

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.

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

A0103 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0103

C00A0103

4.30 A0104 Position mode lagless, encoder 1

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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 %).

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

A0104 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0104

C00A0104

4.31 A0106 Drive-internal interpolation, encoder 1

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»

Contained in 18VRS:	«HDB»	«HDC»				«-»
Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

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 moves to the target position with a lag error.

A0106 - Attributes

Diagnostic no.:	A0106
Diagnostic no. as of 18VRS:	C00A0106

4.32 A0108 Drive controlled interpolation, lagless, encoder 1

Allocation	Contained in 16VRS:						«-»
	Contained in 17VRS:	«HDB»					
	Contained in 18VRS:	«HDB»	«HDC»				«-»
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

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 %).

A0108 - Attributes

Diagnostic no.:	A0108
Diagnostic no. as of 18VRS:	C00A0108

4.33 A0150 Drive-controlled positioning, encoder 1

Allocation	Contained in 16VRS:						«-»
	Contained in 17VRS:	«HDB»					
	Contained in 18VRS:	«HDB»	«HDC»				«-»
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

From the master the drive receives a position command value in the "S-0-0282, Positioning command value" parameter. When the status of bit 0 of parameter "S-0-0346, Positioning command strobe" changes, this position/distance 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 taking account of 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.

A0150 - Attributes

Diagnostic no.:	A0150
Diagnostic no. as of 18VRS:	C00A0150

4.34 A0151 Drive-controlled positioning, encoder 1, lagless

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

From the master the drive receives a position command value in the "S-0-0282, Positioning command value" parameter. When the status of bit 0 of parameter "S-0-0346, Positioning command strobe" changes, this distance is copied to 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 taking account of 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 %).

A0151 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0151

C00A0151

4.35 A0154 Position mode drive controlled, encoder 1

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is in position control. The position control loop is closed in the drive by means of a position encoder. The master only presets the position command value characteristic.

When the operation mode is activated, any possible difference between current actual position value and transmitted position command value is traveled in drive-controlled form **with a lag error**.

See also Functional Description of firmware "Position Control With Cyclic Command Value Input"

A0154 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0154

000A0154

4.36 A0156 Position mode lagless, encoder 1 drive controlled

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is in position control. The position control loop is closed in the drive by means of a position encoder. The master only presets the position command value characteristic.

When the operation mode is activated, any possible difference between current actual position value and transmitted position command value is traveled in drive-controlled form **without lag error**.

See also Functional Description of firmware "Position Control With Cyclic Command Value Input"

A0156 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

A0156
000A0156

4.37 A0158 Direct valve control

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The drive is in direct valve control. The master provides the valve command value.

A0158 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

A0158
C00A0158

4.38 A0160 Pos. ctrl drive-controlled with ctrl word of axis controller

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»



In MPx16, the name of this diagnostic message was "**A0160** Position mode drive controlled".

The drive is in position control. The position control loop is closed in the drive by means of a position encoder. The master only presets the position command value characteristic.

When the operation mode is activated, any possible difference between current actual position value and transmitted position command value is traveled under drive control.

Based on the axis control word (S-0-0520), the drive uses encoder 1 or encoder 2 to control for the target position to be approached, either lagless or with lag error (requirement: "P-0-0040, Velocity feedforward evaluation" = 100%).



Control with encoder 2 is only possible if encoder 2 is available.

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

A0160 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

A0160
000A0160

4.39 A0161 Drive-controlled posit. with ctrl word of axis controller

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»



In MPx16, the name of this diagnostic message was "A0161 Drive-controlled positioning".

The drive receives a position command value from the master in parameter "S-0-0282, Positioning command value". If bit 0 of parameter "S-0-0346, Positioning command value acceptance" changes its state, this distance is copied to the value in "S-0-0430, Effective target position" or added in case in relative specification. The drive now generates an internal position command value characteristic (interpolated) in order to reach this target position from the current position. This is achieved with the values parameterized for velocity, acceleration and jerk taken into consideration 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".

Based on the axis control word, the drive uses encoder 1 or encoder 2 to control for the target position to be approached, either lagless or with lag error (requirement: "P-0-0040, Velocity feedforward evaluation" = 100%).



Control with encoder 2 is only possible if encoder 2 is available.

See also Functional Description of firmware "Drive-Controlled Positioning"

A0161 - Attributes

Diagnostic no.:

A0161

Diagnostic no. as of 18VRS:

000A0161

4.40 A0162 Positioning block mode

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«HDB»					
	Contained in 18VRS:	«HDB»	«HDC»	«-»			
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

The command value profile is generated in the drive. Target position, velocity, acceleration and jerk are determined by a programmed positioning block. According to the parameterization of "P-0-4019, Positioning block mode", the target position is understood as an absolute or relative distance.

According to the axis controller control word, the drive controls with encoder 1 or encoder 2, laglessly or with lag error, with regard to the target position to be approached (prerequisite: "P-0-0040, Velocity feedforward evaluation"=100%).



Control with encoder 2 can only take place if encoder 2 is available.

See also Functional Description of firmware "Positioning Block Mode"

A0162 - Attributes

Diagnostic no.:

A0162

Diagnostic no. as of 18VRS:

000A0162

4.41 A0165 Position control with control word of axis controller

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«HDB»					
	Contained in 18VRS:	«HDB»	«HDC»	«-»			
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

The drive is in position control. The position control loop is closed in the drive by means of a position encoder. The master only presets the position command value characteristic.

Based on the axis control word (S-0-0520), the drive uses encoder 1 or encoder 2 to control for the target position to be approached, either lagless or with lag error (requirement: "P-0-0040, Velocity feedforward evaluation" = 100%).



Control with encoder 2 is only possible if encoder 2 is available.

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

A0165 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0165

000A0165

4.42 A0166 Drive-internal interpolat. with ctrl word of axis controller

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

The drive receives from the master a position command value which is identical with the target position of the travel path. The drive now generates an internal position command value characteristic (interpolated) which keeps to maximum values which have been defined by master for the jerk, acceleration and velocity characteristics.

Based on the axis control word (S-0-0520), the drive uses encoder 1 or encoder 2 to control for the target position to be approached, either lagless or with lag error (requirement: "P-0-0040, Velocity feedforward evaluation" = 100%).



Control with encoder 2 is only possible if encoder 2 is available.

See also Functional Description of firmware "Drive-Internal Interpolation".

A0166 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0166

000A0166

4.43 A0170 Pressure mode

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

The drive is in pressure control. The pressure control loop is closed in the drive by means of a pressure sensor. The master only presets the pressure command value characteristic.

When the operation mode is activated, any possible difference between the current actual pressure value and the transmitted pressure command value is corrected in drive-controlled form.

A0170 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0170

C00A0170

4.44 A0171 Flow (open-/closed-loop control)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is in flow control. The flow control loop is closed in the drive by means of the sandwich plate (contains several pressure sensors). The master only presets the flow command value characteristic.

When the operation mode is activated, any possible difference between the current actual flow value and the transmitted flow command value is corrected in drive-controlled form.

A0171 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0171
C00A0171

4.45 A0172 Pressure control/Flow (open-/closed-loop) control

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is in pressure/flow control. Both, the pressure and the flow control loop are closed in the drive via the pressure sensor sandwich plate. The master only presets the pressure/flow command value characteristic.

When the operation mode is activated, any possible difference between the current actual pressure value and the transmitted pressure command value is corrected in drive-controlled form.

A0172 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0172
C00A0172

4.46 A0173 Torque/Force control/Direct valve control

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is in closed-loop torque/force control/direct open-loop valve control. The force control loop is closed in the drive by means of the pressure/force sensors. The master only presets the force command value characteristic or the valve control value.

When the operation mode is activated while force control is active, any difference between the current actual force value and the transmitted force command value is corrected in a drive-controlled form.

A0173 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0173
000A0173

4.47 A0174 Pressure control/Direct valve control (p/Q)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is in closed-loop pressure control/direct open-loop valve control. The pressure control loop is closed in the drive by means of the pressure sensors. The master only presets the pressure command value characteristic or the valve control value.

When the operation mode is activated while pressure control is active, any possible difference between the current actual pressure value and the transmitted pressure command value is corrected in a drive-controlled form.

A0174 - Attributes

Diagnostic no.: [A0174](#)
Diagnostic no. as of 18VRS: 000A0174

4.48 A0175 Pressure/Swivel angle control

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is in pressure/swivel angle control. The pressure control loop is closed via the pressure sensor in the drive, the swivel angle control loop via the selected swivel angle sensor. The master presets the pressure or swivel angle command value course.

When the operation mode is activated, any possible difference between the transmitted command value and the current actual position value of pressure or swivel angle is corrected.

See also Functional Description of the firmware "Pump control".

A0175 - Attributes

Diagnostic no.: [A0175](#)
Diagnostic no. as of 18VRS: 000A0175

4.49 A0176 Torque/Force control/Flow (open-/closed-loop)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is in the operation mode "closed-loop torque/force control/flow (open-/closed-loop control)". A force command value and a flow command value are provided. The alternating control ensures changing over to closed-loop force control as soon as the set changeover condition is fulfilled. See also Functional Description of firmware, chapter "Torque/force control"

A0176 - Attributes

Diagnostic no.: [A0176](#)
Diagnostic no. as of 18VRS: 000A0176

4.50 A0206 Positioning block mode, encoder 1

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is in position control with systematic lag distance. Encoder 1 provides the actual value. The command value profile is generated in the drive. Target position, velocity, acceleration and jerk are determined by a pre-programmed positioning block. According to the parameterization of "P-0-4019, Positioning block mode", the target position will be interpreted as absolute or as relative distance.

See also Functional Description of firmware "Positioning Block Mode"

A0206 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0206

000A0206

4.51 A0403 Quick stop with probe detection is active

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The readiness for quick stop and the detection of the quick stop signal internally trigger a speed command value reset which causes the axis to be shut down. This happens taking account of the current limit value for torque/force of drives in closed loop.

In the case of quick stop, the drive ignores the setting of command values by the control master, decelerates in a drive-controlled way and remains in a drive-internal operation mode until the readiness for quick stop is reset.

A0403 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0403

000A0403

4.52 A0521 Power loss, switching back to bb

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive was switched back to the state "ready for operation (bb)" due to power loss.

The message appears only, if "F8282, Error: Hardware enable" was deactivated by error suppression in parameter P-0-2819.

A0521 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

A0521

000A0521

4.53 A4000 Switch-on/switch-off delay active

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The diagnostic message "A4000 Switch-on/switch-off delay active" serves to display an active delay time when setting or resetting the drive enable. The diagnostic message is shown in the following cases:

- Delay when setting the drive enable ("S-0-0206, Drive on delay time")
- Delay when directly resetting the drive enable or due to error reactions with drive deceleration F2, F4, F6 ("S-0-0207, Drive off delay time")

When setting the drive enable, P-0-0115, "Device Control: Status word" bit 14 becomes equal to 1 (Ab => AF). In addition, bit 1, "ready signal" is set. P-0-0115, bit 7, "Operation mode initialized" is set only after the delay time elapsed.

When the drive enable is withdrawn or an error reaction occurs (F2, F4, F6) the axis is stopped first. When the axis is at rest, P-0-0115, "Device Control: Status word" bit 7, "Operation mode initialized" and bit 1, "Drive ready" are

reset, but the drive still remains in AF. Only after the delay time elapsed is P-0-0115, bit 14 reset (AF=>Ab).

A4000 - Attributes

Diagnostic no.:

A4000

Diagnostic no. as of 18VRS:

C00A4000

4.54 A4001 Drive deceleration to standstill

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive

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

- or -

- conducts a speed command value reset.



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

See also Functional Description of firmware "Error"

A4001 - Attributes

Diagnostic no.:

A4001

Diagnostic no. as of 18VRS:

C00A4001

4.55 A4002 Drive in automatic mode

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «-»

The drive-integrated PLC (MLD) has permanent (or temporary) control over the drive; this means that the drive is controlled by the drive-integrated PLC.

See also Application Manual "Rexroth IndraMotion MLD"

A4002 - Attributes

Diagnostic no.:

A4002

Diagnostic no. as of 18VRS:

000A4002

4.56 A4003 Setting-up mode is active

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The "easy startup" mode is provided for controlling the drive manually.

In the "easy startup" mode, all motion commands of the PLC that is integrated in the drive (IndraMotion MLD) or the master communication are ignored.

The drive is in velocity control mode; command values are specified via "P-0-1460, PLC/setting-up mode, velocity command value".

A4003 - Attributes

Diagnostic no.:

A4003

Diagnostic no. as of 18VRS:

000A4003

4.57 A4004 Drive without drive enable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

A4004 is a diagnostic message which is only shown in the diagnostic message memory, but not on the device display.

When this diagnostic message is shown in the diagnostic message memory, the drive executed an action that led to the status "Drive has no controller enable". If communication is in the operating mode (e.g. phase 4 in the case of sercos), diagnostic message A4004 is followed by diagnostic message "A0012 Control and power sections ready for operation" or "A0013 Ready for power on".

A4004 - Attributes	Diagnostic no.:	A4004
	Diagnostic no. as of 18VRS:	000A4004

4.58 A4005 Drive deceleration to standstill

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive is shut down in response to an F8xxx error.

In this case, the axis is decelerated to standstill in open loop control.

A4005 - Attributes	Diagnostic no.:	A4005
	Diagnostic no. as of 18VRS:	000A4005

4.59 A4006 Drive decelerated in a controlled way

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Motor encoder monitoring has triggered (F8022) and controlled deceleration was selected in P-0-0119 as the deceleration reaction.

After the error had occurred, the drive was decelerated by a controlled procedure.

A4006 - Attributes	Diagnostic no.:	A4006
	Diagnostic no. as of 18VRS:	000A4006

4.60 A4007 "Drive on" delay time

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

When the drive enable is set, P-0-0115, bit 14 becomes equal to 1. In addition, bit 1, "drive ready" is set. The **switch-on delay** is started. P-0-0115, bit 7, "Operation mode initialized" is set only after the "drive on delay time" (S-0-0206) elapsed. It is only now that the drive follows the command value input.

A4007 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

A4007
000A4007

4.61 A4008 "Drive off" delay time

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»

When the drive is disabled or an error reaction occurs (F2, F4, F6) the axis is stopped first. When the axis is at rest, P-0-0115, bit 7, "Operation mode initialized", and bit 1, "Drive ready", are reset, but the drive still remains in AF. The **switch-off delay** is started. Only after the "drive off delay time" (S-0-0207) elapsed is P-0-0115, bit 14 reset. The drive is in status "drive ready" (Ab).

A4008 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

A4008
000A4008

4.62 A4010 Drive control command active

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»

A drive control command is active. A diagnostic command message is additionally present and shows which drive control command is active and what its state is.

A4010 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

A4010
000A4010

5 Error messages

5.1 Fatal system errors (F9xxx and E-0000)

5.1.1 Behavior in Case of Fatal System Errors

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".
- The output stage is switched off, which allows the valve to move to the failsafe position.

Commissioning Steps

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

1. The 24V 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 operation mode again.
3. Power is switched on again.



In case fatal system errors are occurring repeatedly, contact our service department as the drive can no longer be operated.

5.2 Fatal errors (F8xxx)

5.2.1 Behavior in Case of Fatal Errors (F8xxx)

Generally, there are 2 types of fatal errors (F8 errors):

- Fatal errors during initialization (e.g. F8120, F8122,...)
- Fatal errors during operation (e.g. F8022, F8069,...)

Fatal Errors During Initialization (Initialization Errors)

Fatal initialization errors cannot be cleared, they require that the drive be restarted.

Fatal Errors During Operation

When a fatal error occurs during operation, (open or closed-loop) controlling of the drive is no longer ensured; therefore, the drive enable is immediately removed in case of these errors.

Commissioning Steps

After a fatal error has occurred, the drive can only be put into operation again after the following steps were carried out:

1. The error message must be cleared by the error clearing command [cf. "S-0-0099, C0500 Reset class 1 diagnostics"] (for this purpose, it might possibly be necessary to switch to the parameterization mode or to switch the drive off completely).
2. The cause of the error must be detected and eliminated; this possibly means that an entire component (e.g. valve or drive controller) must be replaced.
3. The drive must be in operation mode again and power must be switched on again ("Ab").
4. Drive enable must be switched on again (0-1 edge).



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

5.2.2 F8022 Enc. 1: Enc. signals incorr. (can be cleared in PM)

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«HDS»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «HDS»

The signals of analog measuring systems (encoder 1) are monitored on hardware and software level 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.

For digital measuring systems (encoder 1), the transmission of the position is monitored by means of a checksum (CRC). If a checksum error is detected, this error is generated.



As the position is no longer generated correctly when this error is detected, the encoder must be re-initialized.



When using an incremental encoder with square-wave signals, monitoring is carried out with regard to an inadmissible edge.

On the software level, the signals of a resolver are monitored for their levels.

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
When operating a motor of "IndraDyn MSM" type: A fault has been detected in the sending telegram of the encoder; telegram failed twice	Faults such as an electrostatic discharge to the shaft of the motor may lead to failure of the encoder sending telegram. Prevent faults.
Measuring system dirty	Clean or replace measuring system
Hardware defect on control section of drive	Replace control section or entire drive controller

F8022 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F8022
C00F8022
7386
—

5.2.3 F8025 Overvoltage in power section

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«-» «-»

The DC bus voltage is monitored. When the allowed maximum value is exceeded, the error F8025 is triggered in the case of carrier-signal-based determination of the rotor position.

Cause	Remedy
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.	Reduce regenerative power by lower acceleration values. - or - Correct sizing of drive. - or - Sufficiently dimension supply unit as regards braking energy requirements; if necessary, use additional braking resistor if existing braking resistor has been under-dimensioned.
Mains supply voltage (alternating input voltage) too high.	Check mains supply voltage (alternating voltage/3-phase).
No braking resistor connected or connection or cable defective.	Connect braking resistor or check connection.
F8xxx error at high speed (field weakening range) of a synchronous motor.	Check whether braking resistance value in DC bus exceeds maximum value allowed for motor; if necessary, reduce braking resistance value to or below allowed value.
Incorrect parameterization of sensorless positioning of synchronous motors.	Check whether parameter values of sensorless positioning of synchronous motors correspond to specification.



If the error occurs repeatedly, please contact our service department.

F8025 - Attributes

Diagnostic no.:
Error can be cleared:

F8025
-

5.2.4 F8042 Encoder 2 error: Signal amplitude incorrect

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«HDS»		
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«HDS»



The error F8042 only occurs in conjunction with the function "redundant motor encoder".

The signals of analog measuring systems (encoder 2) are monitored on hardware and software level 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.

For digital measuring systems (encoder 2), the transmission of the position is monitored by means of a checksum (CRC). If a checksum error is detected, this error is generated.



As the position is no longer generated correctly when this error is detected, it is necessary to initialize the encoder again.



When using an incremental encoder with square-wave signals, monitoring is carried out with regard to an inadmissible edge.

On the software level, the signals of a resolver are monitored for their levels.

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

F8042 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F8042
000F8042
738A
—

5.2.5 F8055 Incorrect processing of diagnostic message

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
A problem occurred while processing the diagnostic messages of the drive. In too short a time too many diagnostic messages were reported which could not be processed by the diagnostic system.	1. Make a backup of all parameters. 2. Have a look at the diagnostic trace to find out which diagnostic messages were signaled last. A warning or an error is likely to have been cyclically signaled. This diagnostic message usually appears repeatedly in the diagnostic trace. 3. Now, switch the drive off and back on. During re-commissioning see to it that the relevant diagnostic message is not cyclically generated. Then get in contact with our service department and forward the parameter backup to them.

F8055 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F8055
000F8055
—

5.2.6 F8069 Error in device-internal power supply

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

On some HydraulicDrive devices, the device-internal voltage supply is monitored. In the event of a fault, the message "F8069 - Error in device-internal power supply" is generated with corresponding detailed diagnostics.

Detailed diagnostic message	Remedy
Fault in voltage supply of main stage or swivel angle sensor. (Connector X8A)	- Check pinout / cabling of connector X8A. - Replace device.
Fault in 24 V voltage supply of pressure transducer. (Connector X2N, pins 1 and 3)	- Check pinout / cabling of connector X2N. - Replace device.

F8069 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F8069
 C00F8069
 5183
 –

5.2.7 F8072 Control voltage failure

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Devices of the "Rexroth HydraulicDrive" family require an external control voltage supply for operation. This voltage is monitored in terms of permissible tolerances.

Error F8072 is signaled when the voltage fell below the minimum value.



This error shuts down the output stage of valves or of the VT-HPC, since proper controlling can no longer be ensured. In this case, the valve is in the failsafe position.

Cause	Remedy
Defective supply cable for control voltages.	Inspect and, if necessary, replace the supply cable for the control voltages and the plug-in connection
Overloading of the power supply pack for the control voltage.	Check supply voltage at the power supply pack
Power supply pack defective	Check and, if necessary, replace power supply pack
Short-circuit in the cabling of the supply voltage	Inspect cabling for short-circuit

F8072 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 Error can be cleared:

F8072
 000F8072
 –

5.2.8 F8079 Velocity limit value exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

Cause	Remedy
"S-0-0040, Velocity feedback value" has exceeded the 1.125- fold value of one of parameterized velocity limit values	Check and, if necessary, correct parameterization of "S-0-0091, Bipolar velocity limit value", "S-0-0038, Positive velocity limit value" and "S-0-0039, Negative velocity limit value". As of MPx06: Within parameterized standstill window (S-0-0124), actual velocity is not monitored for resulting limits from S-0-0091, S-0-0038 and S-0-0039.
Velocity control loop unstable or too heavily oscillating due to incorrect parameterization	Check and, if necessary, correct parameterization of velocity loop
Preset velocity command value too high (cf. P-0-0048 = "S-0-0036, Velocity command value" + "S-0-0037, Additive velocity command value")	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 of firmware "Control Loop Structure"

F8079 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F8079
 C00F8079
 8089
 –

5.2.9 F8100 Error when initializing the parameter handling

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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

Cause	Remedy
Special case for MPx16: Firmware upgrade to higher firmware version. This error occurs once at first start of drive after firmware upgrade.	According to instructions, put drive into ready-for-operation status again (see Application Manual "Firmware Replacement"). Drive can only be switched to operating mode again after control voltage once was switched off and on again.
Control section configuration not allowed, because an optional module is not supported by firmware	Switch drive off and on again. If error occurs again, replace control section by different control section with appropriate configuration. If necessary, contact our service department
Firmware used is not suitable, i.e. hardware and firmware do not match	Select suitable firmware by means of Functional Description or Version Notes / Release Notes (see index entry "Supported control sections")
Hardware defect on control section	Switch drive off and on again. If error still occurs, contact our service department and, if necessary, replace control section or entire drive controller



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 of firmware "System Overview"

See also Project Planning Manual for Control Section, index entry "Type code"

F8100 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F8100
 000F8100
 6381
 –

5.2.10 F8120 Invalid control section/firmware combination

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The control section is incompatible with the firmware used.

Cause	Remedy
During firmware replacement, there is an attempt to copy firmware to controller which does not match	Use firmware that matches control section
Inappropriate control section	Use control section that matches firmware
Safety technology incorrectly configured for double-axis device	Check control section configuration

F8120 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F8120
000F8120
6082
–

5.2.11 F8122 Control section defective

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the initialization of the control section an error occurred.

Cause	Remedy
Hardware of control section is defective	Replace control section or entire drive controller; use hardware configuration of same type



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

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F8122
000F8122
5083
–

5.2.12 F8129 Incorrect multi-ethernet firmware

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The firmware of the Multi-Ethernet sub-system is defective.

Cause	Remedy
Firmware of the Multi-Ethernet sub-system programmed in invalid form - or - An error occurred during firmware update	Carry out firmware update (again). If error occurs repeatedly, it is necessary to replace drive controller

F8129 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F8129
000F8129
5084
–

5.2.13 F8171 Incorrect initialization of a ControllerBase interface

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«HDS»

The interfaces "IModuleCotnrol", "IActualValue", "IOutputData", and "IOperationModeHandler" from the ML_ControllerBase libraries must be implemented in order that a controller axis can be correctly initialized. Please check that these interfaces are all implemented and called in the code.

F8171 - Attributes

Diagnostic no.: **F8171**
 Diagnostic no. as of 18VRS: 000F8171
 Error can be cleared: -

5.2.14 F8270 Sensor inputs, wire rupture

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«-»

The drive provides the function of monitoring the input value of analog inputs for wire rupture. The message to be output can be configured as warning or as error in "P-0-2900.0.7 Analog input, assignment, extended control word." .

Cause	Remedy
A cable break was detected at one of the analog inputs 3 to 7 (the input value is below the basic value set in the allocation "P-0-2900.0.7 Analog input, assignment, control word")	Check the allocation for correctness
Wiring of at least one of analog inputs 3 to 7 incorrect or defective	Check wiring of analog inputs

F8270 - Attributes

Diagnostic no.: **F8270**
 Diagnostic no. as of 18VRS: 000F8270
 Error can be cleared: -

5.2.15 F8271 Valve monitoring

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «HDS»

The error can occur in conjunction with 3 detailed diagnostic messages.

Detailed diagnostic message	Description
Excessive valve deviation	While valve monitoring is activated (see "P-0-2880.0.1, Valve monitoring control word, bit 0") a check is run to see that parameter "S-0-0862, Spool feedback value" follows "P-0-2914, Effective valve command value". If the deviation (see "S-0-0863, Spool control deviation") exceeds "P-0-2880.0.4, Valve monitoring threshold" after the defined time (see "P-0-2880.0.6, Valve monitoring delay") the error is issued. The maximum deviation is documented in "P-0-2880.0.5, Valve monitoring maximum valve error".
Insufficient pilot pressure	While pilot pressure monitoring is activated (see "P-0-2880.0.1, Valve monitoring control word, bit 1") a check is run to see that parameter "S-0-0815, Pilot pressure" does not fall below the "P-0-2880.0.9, Minimum pilot pressure". If it falls below, the error is output after the defined time (see "P-0-2880.0.10, Pilot pressure monitoring, delay time"). Is only applicable for IFB/IAC Multi-Ethernet and only in conjunction with pilot operated valves.
Excessive valve deviation and insufficient pilot pressure	Combination of both messages. Is only applicable for IFB/IAC Multi-Ethernet and only in conjunction with pilot operated valves.

Cause	Remedy
The system has run without any problems for a long time and the error "excessive valve deviation" occurs sporadically.	Check and, if necessary, replace valve
The error "excessive valve deviation" appears systematically during each run. "S-0-0862, Spool feedback value" has a fixed value (e.g. zero), although the axis is in operation.	Check the cabling (is the actual valve value fed back correctly, for example) In the case of HDS, check the setting of the axis properties in IndraWorks (is the actual valve value assigned correctly?)
The error "insufficient pilot pressure" is shown	Check pressure supply

F8271 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F8271
000F8271
—

5.2.16 F8281 Mainstage sensor input, wire rupture

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

An error was detected on the main stage sensor, which renders further controlling impossible. This monitoring function cannot be switched off.



This error shuts down the output stage of valves or of the VT-HPC, since proper controlling can no longer be ensured. In this case, the valve is in the failsafe position.

Cause	Remedy
The main stage sensor is incorrectly wired or defective	Check wiring of the main stage sensor
The connection cable of the main stage sensor is not connected to the M12 mating connector X8A.	Connect the connection cable of the main stage sensor to the lowest M12 mating connector X8A.

F8281 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F8281
000F8281
—

5.2.17 F8282 Error: Hardware enable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While drive was enabled, the hardware enable signal failed.

Cause	Remedy
Incorrect cabling of hardware enable	Check wiring of enable signal
External valve output stage failed	Check valve supply

F8282 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F8282
000F8282
—

5.2.18 F8283 Overload

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Too great a load is connected to the outputs of the encoder supply and/or the digital outputs.

Cause	Remedy
A short-circuit is present at one of the outputs	Check wiring of the outputs
Load at +5 Venc (pin a14) exceeds I = 400 mA	Check current consumption of connected devices; if required, disconnect devices
Combined load at Vencoder_ANA, Vencoder_SSI and digital outputs exceeds I = 600 mA	Check current consumption of connected devices; if required, disconnect devices

F8283 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F8283
000F8283
—

5.2.19 F8284 Error Analog output (controller)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Error at analog output that is used as controller output

Cause	Remedy
Overtemperature	Let cool down
Overcurrent or open terminal at current output	Check connection for short-circuit and cable break
Internal HW fault	If possible, change hardware; otherwise, contact after-sales service

F8284 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F8284
000F8284
—

5.2.20 F8285 Error: Output stage

Allocation

Contained in 16VRS:	«-»
Contained in 17VRS:	«-»
Contained in 18VRS:	«-» «-» «-»
Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Error of the integrated valve output stage of the VT-HPC (digital control electronics for axial piston pumps).



This error shuts down the output stage of valves or of the VT-HPC, since proper controlling can no longer be ensured. In this case, the valve is in the failsafe position.

Cause	Remedy
Proportional valve for adjusting the axial piston pump is not correctly connected to the VT-HPC.	Check that the proportional valve is correctly connected to the VT-HPC via pins a1 and a2 of connector XG21. Check that pins a1 and a2 on connector XG21 are not short-circuited.
Overloading of the valve output stage	Check the current consumption of the connected proportional valve.
Valve output stage is defective	If possible, change hardware; otherwise, contact after-sales service.

F8285 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F8285
000F8285
—

5.2.21 F8286 Pilot sensor input, wire rupture

Allocation

Contained in 16VRS:	«-»
Contained in 17VRS:	«-»
Contained in 18VRS:	«-» «-» «-»
Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

An error was detected on the pilot stage position transducer, which renders further controlling impossible. This monitoring function cannot be switched off.



This error shuts down the output stage of valves, since it can no longer be ensured that controlling is possible. In this case, the valve is in the failsafe position.

Cause	Remedy
Wire break on the pilot stage position transducer	Contact after-sales service

F8286 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F8286
000F8286
—

5.2.22 F8287 Midstage sensor input, wire rupture

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

An error was detected on the position transducer of the intermediate stage, which renders further controlling impossible. This monitoring function cannot be switched off.



This error shuts down the output stage of valves, since it can no longer be ensured that controlling is possible. In this case, the valve is in the failsafe position.

Cause	Remedy
The intermediate stage sensor is incorrectly wired or defective	Check wiring of the intermediate stage sensor

F8287 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F8287
000F8287
—

5.2.23 F8288 Fault in solenoid current cable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive signals this error if a short-circuit or a break of the solenoid current cable is detected



This error shuts down the output stage of valves or of the VT-HPC, since proper controlling can no longer be ensured. In this case, the valve is in the failsafe position.

Cause	Remedy
Valve with internal cables: Solenoid current cable damaged or torn	Please contact after-sales service.
Valve with external lines: Mating connector of solenoid loose	Please check mating connector. If the problem cannot be solved, please contact after-sales service.
VT-HPC: Cable or connector is damaged.	Check cable and, if required, replace.

F8288 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F8288
000F8288
—

5.3 Errors of category F6xxx**5.3.1 Behavior in Case of Errors of Category F6xxx**

Errors of category F6xxx are errors associated, for example, with the exceeding of a travel range previously defined via hardware or software switches. In

the case of errors of this category, the drive is therefore immediately stopped as fast as possible. An error reaction in the form of an active travel motion is excluded for errors of this category.

At the end of the error reaction, the valve standstill value is output.

See also Functional Description of firmware Best Possible Deceleration

Commissioning Steps

The drive can only be put into operation again when:

1. The error reaction has been completed, i.e. the drive has come to a standstill (v="0").
2. The cause of the error was eliminated.
3. The error message was cleared by the error clearing command (cf. "S-0-0099, C0500 Reset class 1 diagnostics").
4. The drive is in the operation mode again and power was switched on ("Ab").
5. Drive enable was switched on again (0-1 edge).

5.3.2 F6001 Non-fatal system error

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

A non-fatal system error has occurred. The drive is decelerated using the configured F6 error reaction.

Cause	Remedy
The diagnostic system has detected an undefined diagnostic message	Make a backup of all parameters. Then get in contact with our service department and forward the parameter backup to them.

F6001 - Attributes

Diagnostic no.:	F6001
Diagnostic no. as of 18VRS:	000F6001
Error can be cleared:	-

5.3.3 F6007 Switching to non-initialized operation mode

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

When switching the active operation mode, the drive was switched to a non-initialized operation mode.

For the operation modes that can be selected, please see descriptions of the operation mode parameters:

- S-0-0032, Primary operation mode
- S-0-0033, Secondary operation mode 1
- S-0-0034, Secondary operation mode 2
- S-0-0035, Secondary operation mode 3
- S-0-0284, Secondary operation mode 4
- S-0-0285, Secondary operation mode 5
- S-0-0286, Secondary operation mode 6
- S-0-0287, Secondary operation mode 7

Cause	Remedy
Via "S-0-0134, Master control word" (for sercos or "P-0-4077, Field bus: Control word" (for field bus), an operation mode was selected that had not been initialized (e.g., S-0-0032="0")	Enter desired operation mode in selected operation mode parameter

See also Functional Description of firmware "Selecting the Operation Mode".

F6007 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F6007
000F6007
F098
—

5.3.4 F6010 PLC runtime error

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «-»

The PLC integrated in the drive (Rexroth IndraMotion MLD) triggers error F6010 in the case of configuration errors, runtime errors or task watchdogs.



Up to MPx17: When connecting the programming system IndraLogic to the drive-internal PLC or when starting the simulation (IndraLogic: **Online ► Login**) the message window appears; it displays messages from the last compilation, check or comparison process.

As of MPx18: When connecting the programming system IndraWorks MLD to the drive-internal PLC (IndraWorks: **Debug ► Login**) the incorrect program line is highlighted in yellow, provided that error F6010 was caused by a runtime error.

Error reaction The PLC is not started or all tasks of the PLC are stopped. The drive is always decelerated by zeroing the velocity command value; that is, the error reaction cannot be set by the user.

Troubleshooting A more detailed diagnosis for narrowing the cause of error down is shown in "P-0-1365, PLC error message".

The following cases must be distinguished for troubleshooting:

- For removing the error in a **freely programmed application**, it is necessary to modify the PLC program or the task configuration with the programming system.
- For a **technology function** made available by Bosch Rexroth, please see the corresponding documentation for instructions on troubleshooting.

See also the IndraLogic or IndraWorks Online Help

See also the documentation on error handling of IndraMotion MLD "Rexroth IndraMotion MLD"

F6010 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F6010
000F6010
F099
✓

5.3.5 F6011 Synchronization, slave axis/axes cannot be controlled

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»

Contained in 18VRS:	«-»	«-»				«HDS»
Contained in 20VRS:	«-»	«-»	«-»	«-»	«-»	«HDS»

The synchronization controller lost control over at least one of its slave axes.

Cause	Remedy
A motion command was sent to a slave axis while the axis was in "ControlledMotion". For example an MC_MoveAbsolute or MC_Stop.	Check the PLC program to ensure that no other motion command is sent to a slave axis while synchronous operation is active.
The individual axis has a control error, because it could not follow the command value provided by the synchronization axis.	Optimize the control parameters of the individual axes.
The axis was switched to the power-free state.	Check the PLC program to ensure that no other motion command is sent to a slave axis while synchronous operation is active.

F6011 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F6011
000F6011
-

5.3.6 F6012 Synchronization, slave axis/axes cannot be reached

Allocation

Contained in 16VRS:	«-»
Contained in 17VRS:	«-»
Contained in 18VRS:	«-» «-» «HDS»
Contained in 20VRS:	«-» «-» «-» «-» «-» «HDS»

When power was applied to the synchronization axis, it was recognized that one of the axes "P-0-2860.0.x, List of slave axes" is not connected to its respective control.

Cause	Remedy
An axis was entered in list parameter "P-0-2860.0.x, Synchronization list slave axes", and its axis reference refers to another control.	Enter exclusively axes connected to the same control.

F6012 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F6012
000F6012
-

5.3.7 F6013 Synchronization, force mode not supported by slave axis

Allocation

Contained in 16VRS:	«-»
Contained in 17VRS:	«-»
Contained in 18VRS:	«-» «-» «HDS»
Contained in 20VRS:	«-» «-» «-» «-» «-» «HDS»

The slave axis does not support force.

Cause	Remedy
At least one of the slave axes does not support the selected force scaling.	Check scaling of the axes or change the setup of axes.

F6013 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F6013
000F6013
-

5.3.8 F6014 Operation mode not supported with rotary scaling

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The operation mode currently selected cannot be used, if the scaling system was set to "rotary". This error message is issued, if the drive is to be switched to closed-loop control in the operation mode that it does not support.

Cause	Remedy
An attempt was made to activate an operation mode that is not permissible with rotary scaling.	Configure a supported operation mode.



Rotary scaling cannot be combined with "torque/force control".

F6014 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F6014
000F6014
✓

5.3.9 F6024 Maximum braking time exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive automatically checks whether, after the drive enable was switched off or an error event of the drive occurred, it was shut down within the delay time parameterized in "S-0-0273, Maximum drive off delay time,".

If not, error F6024 is generated.

Closed loop "Shut down" means that the velocity of the drive is smaller than the standstill window (S-0-0124).

Open loop • Stopping is open-loop controlled. The maximum delay time is not evaluated!

Cause	Remedy
Incorrect parameterization of "S-0-0273, Maximum drive off delay time" or "S-0-0372, Drive Halt acceleration bipolar", respectively.	Adjust delay time (S-0-0273) or deceleration (S-0-0372) to the acceleration capacity of the drive.
Torque/force limitation incorrectly parameterized	Check torque/force limitation (see also functional description of firmware "Torque/force control")
Hardware defect	Replace drive controller



Only Rexroth service engineers or especially trained users are allowed to replace the drive controller.

F6024 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F6024
000F6024
8084
-

5.3.10 F6028 Position limit value exceeded (overflow)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive provides a function for monitoring an allowed travel range by means of software limit switches that can be parameterized.



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	Remedy
Command value set for drive causes axis position outside of positive travel range/position limit value ("S-0-0049, Positive position limit value" or "S-0-0050, Negative position limit value").	1. Clear error and switch power on. 2. Set drive enable and input a command value leading back to allowed travel range. Contact machine manufacturer in order to find out cause of incorrect command value.
"S-0-0049, Positive position limit value" or "S-0-0050, Negative position limit value" incorrectly parameterized	Check and, if necessary, correct parameter setting of "S-0-0049, Positive position limit value" or "S-0-0050, Negative position limit value".
When the position limit values are at the end of possible travel range (+/- "S-0-0278, Maximum travel range"), exceeding of travel range can no longer be unequivocally detected by means of actual position values. Therefore, overflow monitoring is carried out which generates error	Increase "S-0-0278, Maximum travel range" - or - Reduce position limit values so that defined deceleration is still possible within defined travel range.



The parameter "S-0-0057, Position window" is used to realize a hysteresis function for evaluating the position limit values.

See also Functional Description of firmware "Position Limitation/Travel Range Limit Switch".

F6028 - Attributes

Diagnostic no.:	F6028
Diagnostic no. as of 18VRS:	000F6028
CiA error code:	8081
Error can be cleared:	-

5.3.11 F6029 Positive position limit exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive provides a function for monitoring an allowed travel range by means of software limit switches that can be parameterized.



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	Remedy
Command value set for drive causes axis position outside of positive travel range/position limit value ("S-0-0049, Positive position limit value").	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".



The "S-0-0057, Position window" parameter is used to realize a hysteresis function for evaluating the position limit values.

See also Functional Description of firmware " Position Limitation/Travel Range Limit Switch".

F6029 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F6029
C00F6029
8082
–

5.3.12 F6030 Negative position limit exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive provides a function for monitoring an allowed travel range by means of software limit switches that can be parameterized.



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	Remedy
Command value set for drive causes axis position outside of negative travel range/position limit value ("S-0-0050, Negative position limit value").	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-0-0050, Negative position limit value" incorrectly parameterized	Check and, if necessary, correct parameterization of "S-0-0050, Negative position limit value".



The "S-0-0057, Position window" parameter is used to realize a hysteresis function for evaluating the position limit values.

See also Functional Description of firmware " Position Limitation/Travel Range Limit Switch".

F6030 - Attributes

Diagnostic no.: F6030
Diagnostic no. as of 18VRS: C00F6030
CiA error code: 8083
Error can be cleared: -

5.3.13 F6034 Emergency-Stop activated**Allocation**

Contained in 16VRS:	«-»
Contained in 17VRS:	«HDB»
Contained in 18VRS:	«HDB» «HDC» «-»
Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive provides a function for monitoring an E-Stop input (connection of an external hardware switch).

IndraDrive Mi: If "IndraDrive Mi" is used and the E-stop input is connected to the "KCU" electronic control system and parameter "P-0-0223, E-Stop input" is assigned to none of the digital inputs, the E-stop input of the "KCU" is monitored.



This monitor has to be activated and parameterized via "P-0-0008, Activation E-Stop function".

The error can only be cleared, when the selection of E-Stop is removed or the evaluation of E-Stop was switched off.

Cause	Remedy
E-Stop input was controlled (0 V at digital input)	Remove failure that caused E-Stop to be triggered and clarify cause of triggering
Incorrect parameterization of digital inputs and outputs on control section	Check configuration of digital inputs/outputs and correct it, if necessary
E-Stop switch or cable connection defective or incorrectly wired	Check function and wiring of E-Stop switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller



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 of firmware:

- "E-Stop Function"
- "Digital Inputs/Outputs"
- "Velocity Command Value Reset"

F6034 - Attributes

Diagnostic no.: F6034
Diagnostic no. as of 18VRS: C00F6034
CiA error code: F09B
Error can be cleared: -

5.3.14 F6042 Both travel range limit switches activated

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The compliance with the allowed travel range 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	Remedy
Due to incorrect mounting, axis simultaneously activates both travel range limit switches	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.
Travel range limit switches were incorrectly connected	Connect travel range limit switches correctly; check compliance with switching logic set in "P-0-0090, Travel range limit parameter"
Switching logic of travel range limit switches does not correspond to realized wiring	Check switching logic with regard to realized wiring, adjust it in "P-0-0090, Travel range limit parameter" if necessary

F6042 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F6042
C00F6042
8085
-

5.3.15 F6043 Positive travel range limit switch activated

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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".

When the error F6043 occurs, the axis is shut down with velocity command value reset.

Cause	Remedy
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.	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.
Incorrect parameterization of digital inputs and outputs on control section	Correct configuration of digital inputs/outputs and correct it, if necessary.

Cause	Remedy
Travel range limit switch or cable is defective or incorrectly wired	Check function and wiring of travel range limit switch.
Control section or digital inputs on control section defective	Replace control section or entire drive controller.



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 "E8043 Positive travel range limit switch activated".

See also Functional Description of firmware:

- " Position Limitation/Travel Range Limit Switch"
- " Digital Inputs/Outputs".

F6043 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

CiA error code:

Error can be cleared:

F6043

C00F6043

8086

—

5.3.16 F6044 Negative travel range limit switch activated

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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".

When the error F6044 occurs, the axis is shut down with velocity command value reset.

Cause	Remedy
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.	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.
Incorrect parameterization of digital inputs and outputs on control section.	Check configuration of digital inputs/outputs and correct it, if necessary.
Travel range limit switch or cable is defective or incorrectly wired.	Check function and wiring of travel range limit switch.
Control section or digital inputs on control section defective.	Replace control section or entire drive controller.



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 of firmware:

- " Position Limitation/Travel Range Limit Switch"
- " Digital Inputs/Outputs".

F6044 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F6044
 C00F6044
 8087
 –

5.3.17 F6058 Internal overflow by positioning input

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

In operation modes using the internal path generator (interpolation, positioning, positioning block mode and spindle positioning), the residual path to be traveled and the braking distance are monitored to find out whether they exceed the numeric range.

Cause	Remedy
Due to command value input, a residual path greater than 2^{31} has built up. Note: As the internal position resolution is determined by the travel range (the maximum distance resulting from -travel range to +travel range is less than 2^{31}), this can only occur for axes with modulo scaling. Even for axes with modulo scaling, the behavior is only possible if several relative distances are preset without the axis being able to follow.	Check command value input, positioning velocity or potentiometer value
Calculated braking distance is greater than 2^{31}	Increase "S-0-0278, Maximum travel range" - or - Increase deceleration in "S-0-0359, Positioning deceleration", "S-0-0372, Drive Halt acceleration bipolar" or "P-0-4063, Positioning block deceleration"

F6058 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F6058
 C00F6058
 8686
 –

5.3.18 F6059 Incorrect command value direction when positioning

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the operation modes "drive-controlled positioning" and "positioning block mode", it is possible to jog the axis in both directions and input relative distances in both directions.

When the position data of the axis are to be processed in the modulo format due to the setting in "S-0-0076, Position data scaling type" and positive or negative direction of rotation has been selected in "S-0-0393, Command value mode", a command value in the wrong direction causes the error F6059 to be generated.

Cause	Remedy
In "drive-controlled positioning" mode, target position points to wrong direction	Check relative positioning input (S-0-0282, Positioning command value)
Direction of rotation of "modulo axis" incorrectly parameterized for drive-controlled positioning processes	Check command value mode that has been set (S-0-0393, Command value mode)
In "positioning block mode", target position points to wrong direction	Check relative positioning input (P-0-4006, Positioning block target position)
There is an attempt to jog to the wrong direction	Jogging only in allowed direction of rotation (S-0-0346, Positioning control word)

See also *Functional Description of firmware*

- "Drive-Controlled Positioning"
- "Positioning Block Mode"

F6059 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F6059
000F6059
8688
—

5.4 Interface errors (F4xxx)

5.4.1 Behavior in Case of Interface Errors

The user can influence the behavior of the drive in case of interface errors by parameterization of "P-0-0119, Best possible deceleration" (see Functional Description "Error Reaction").

Commissioning Steps

The drive can only be put into operation again when:

1. The error reaction has been completed, i.e. the drive has come to a standstill ($v=0$!).
2. The cause of the error was eliminated.
3. The error message was cleared by the error clearing command (cf. "S-0-0099, C0500 Reset class 1 diagnostics").
4. The drive is in the operation mode again and power was switched on ("Ab").
5. Drive enable was switched on again (0-1 edge).

5.4.2 F4001 Sync telegram failure

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»



Up to MPx16, the name of this diagnostic message was "F4001 Double MST failure shutdown"

Master Communication sercos

The master synchronization telegram (MST) was not received in the drive in several successive sercos cycles. The number of allowed failures is set in S-0-1003.

Cause	Remedy
Different sercos cycle times in master and slave	Check sercos cycle times in master and slave and adjust them, if necessary
Disturbance in sercos interface (general)	Replace control section or entire drive controller

Master Communication CANopen The synchronization telegram was not received in the drive in two successive cycles.

Cause	Remedy
Sync master does not transmit Sync telegram	Check whether a bus node was configured as Sync master. Check Sync master to see whether it is in an error state
CAN bus interrupted	Check bus line
Disturbance in CANopen interface (general)	Replace control section or entire drive controller

See also Functional Description of firmware "Interface Errors and Diagnostic Possibilities"

F4001 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F4001
C30F4001
8282
—

5.4.3 F4002 RTD telegram failure

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Master communication sercos A consumer connection violates the selected monitoring criterion.

Cause	Remedy
Synchronous monitoring has been preset for a connection and NewData bit of connection does not toggle in preset cycle. The number of successive failures of a connection exceeded the limit value of "S-0-1050.x.11, sercos Connection: Allowed data losses". Too many telegrams fail due to disturbances.	- Check bus line and connector - Change line topology to ring topology - Increase value in "S-0-1050.x.11, sercos Connection: Allowed data losses"

**Master communication EtherCAT/
master communication VARAN** In the status "Operational" (OP) no (command value) telegram was received by the drive in two bus cycles in succession.



In the status "Operational" (OP), but **without** drive enable, the drive generates the warning E4005.

Cause	Remedy
Incorrect timing settings	Check settings in master
Incorrect settings of "distributed clocks"	Check settings in master

Cause	Remedy
Stop of cyclic telegrams in the master while the drive is still in AF	Withdraw the enable before the cyclic telegrams are stopped
Telegrams fail due to faults	Check bus line and connector

All master communications A consumer connection violates the requirement of an active operation mode.

Cause	Remedy
In some operation modes, only a single command value failure is allowed in the active state - irrespective of permissible failures of communication. Monitoring is carried out only in the operation modes "Closed-loop position control with cyclic command value provision" and "Position synchronization."	Check settings of the producer of the connection (can be the bus master or another slave): - Incorrect setting of the connection type (S-0-1050.x.1): Bit 1-0 = "00". - Incorrect producer cycle time: The cycle time set for the producer and the consumer of a connection must be the same.

F4002 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F4002
C30F4002
8250
-

5.4.4 F4003 Invalid communication phase shutdown

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The sercos master module specified an unallowed communication phase (phase >4).

Cause	Remedy
Error in sercos master module of control	Error can only be corrected after having consulted manufacturer of the control

See also Functional Description of firmware "Interface Errors and Diagnostic Possibilities"

F4003 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F4003
C30F4003
8181
-

5.4.5 F4004 Error during phase progression

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The specified order was not complied with during phase progression.

Cause	Remedy
Error in sercos master module of control	Error can only be corrected after having consulted manufacturer of the control

See also Functional Description of firmware "Interface Errors and Diagnostic Possibilities"

F4004 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F4004
 C30F4004
 8183
 –

5.4.6 F4005 Error during phase regression

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

When switching back from a communication phase, target communication phase failed to be communication phase 0.

Cause	Remedy
Error in sercos master module of control	Error can only be corrected after having consulted manufacturer of the control

See also Functional Description of firmware "Interface Errors and Diagnostic Possibilities"

F4005 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F4005
 C30F4005
 8185
 –

5.4.7 F4006 Phase switching without ready signal

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

An attempt was made from the sercos master to implement a phase switch without waiting for the drive to indicate readiness.

Cause	Remedy
Error in sercos master module of control	Error can only be corrected after having consulted manufacturer of the control

See also Functional Description of firmware "Interface Errors and Diagnostic Possibilities"

F4006 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F4006
 030F4006
 8187
 –

5.4.8 F4009 Bus failure

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The cyclic communication via the master communication interface failed after the master communication interface had been initialized and commissioned.

The drive generates this error in the following cases:

- Within the monitoring time entered in P-0-4075 no telegram with command values or heartbeat has been received (not with EtherCAT, Ethernet POWERLINK and sercos)

- or -

- The control was switched to "stop" and the drive is under torque.
- or -
- The control removed the drive from the master communication group and the drive is under torque.



F4009 can be suppressed by means of P-0-4088 (bits 2 and 1) in order to generate warning E4005 instead.

⚠ DANGER

Dangerous movements! Danger to life, risk of injury, serious injury or property damage by automatic restart after bus failure!

In the case of bus failure (message "F4009" or "E4005"), an error reaction must be carried out in the control unit, too, to prevent automatic restart after the bus has been reestablished. This means that the bits "Drive Halt", "drive enable" and "drive ON" (e.g. bits 13, 14 and 15 in parameter "P-0-4077, Field bus: Control word") should be reset in the control unit in the case of bus failure.

Ethernet POWERLINK

Cause	Remedy
The master does not send cyclic PReq telegrams (PReq=PollRequest)	Check state of master
The bus connection has been interrupted	Inspect cable and interface
EMC problems in the transmission path	Inspect shielding and routing of cables

EtherCAT

Cause	Remedy
Communication phase 0 was given, although the drive enable was set.	First remove drive enable and then set communication phase 0.
The Ethernet connection has been interrupted in phase "PreOp", "SafeOp" or "Op"	Check Ethernet cable/connector

EtherNet/IP Only class-1 connections are monitored, which means that no new output data were received from the master within the watchdog time.

Cause	Remedy
Master does not exchange cyclic output data.	Check master state.
The Ethernet connection has been interrupted	Check Ethernet cable and, if applicable, switch
EMC problems in the transmission path	Inspect shielding and routing
Network load too high	Switch off unnecessary Ethernet communication; if required, establish separate network for EtherNet/IP

CANopen Depending on the set type of node monitoring, the "node-guarding request" (cyclic node monitoring) or the "heartbeat telegram" is monitored.

Cause	Remedy
The master does not send a node monitoring telegram	Check master state.
The bus connection has been interrupted	Inspect cable and interface
EMC problems in the transmission path	Inspect shielding and routing
Bus load too high	Check communication settings (or communication load).
Bus terminating resistor defective	Check whether bus terminating resistors have been installed at the remotest bus nodes.

PROFIBUS The master must address the slave within the monitoring time.

Cause	Remedy
Master does not exchange cyclic output data.	Check master state.
The bus connection has been interrupted	Inspect cable and interface
EMC problems in the transmission path	Inspect shielding and routing
Bus terminating resistor defective	Check whether bus terminating resistors have been installed at the remotest bus nodes. Bus terminating resistors are not allowed to be installed at any of the other nodes

PROFINET The consumer (drive) monitors the reception of the cyclic data from the provider (control unit) by means of a monitoring interval.

Cause	Remedy
Master does not exchange any cyclic output data.	Check master state.
The Ethernet connection has been interrupted	Check Ethernet cable and, if applicable, switch
EMC problems in the transmission path	Inspect shielding and routing
Network load too high	Switch off unnecessary Ethernet communication; if required, establish separate network for PROFINET

sercos

Cause	Remedy
Communication phase 0 was given, although the drive enable was set.	First remove drive enable and then set communication phase 0.

F4009 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F4009
000F4009
8189
—

5.4.9 F4011 Communication watchdog: Overload of cyclic communication

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
The Multi-Ethernet interface is overloaded; the I/O data of cyclic communication cannot be forwarded to the drive.	Please contact after-sales service.
As of FW 20V08 with PROFIBUS: The internal communication with the PROFIBUS connection is disturbed or overloaded.	Increase the position controller clock cycle to at least 1 ms and/or reduce the data length of cyclic data. Should the error persist, please contact after-sales service.

F4011 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F4011
000F4011
8110
—

5.4.10 F4012 Incorrect I/O length

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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 "P-0-4071, Field bus: Length of cyclic command value data channel" and "P-0-4082, Field bus: Length of cyclic actual value data channel" was configured in master	- Check parameter set in drive - Adjust master configuration

F4012 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F4012
000F4012
8210
—

5.4.11 F4017 Sercos: Incorrect sequence during phase switch

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Error in the sercos master module of control; an attempt was made from the sercos master to implement a phase switch with a sequence that the drive detected as incorrect.

Cause	Remedy
A timeout occurred in the drive during phase switch (individual switching sections took too long) - or - The master switched the phase without prior announcement (new phase in MST without setting CPS bit). - or - Drive was switched on while sercos was already in a higher phase.	Error can only be corrected after having consulted manufacturer of the control

F4017 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F4017
C30F4017
818C
—

5.4.12 F4019 Sercos: Incorrect sequence upon phase start

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Error in the sercos master module of control; an attempt was made from the sercos master to implement a phase switch with a sequence that the slave detected as incorrect.

Cause	Remedy
After a phase switch the bus master does not start with the announced phase.	Error can only be corrected in consultation with the manufacturer of the control. The bus master does not behave in conformity with standards. No remedy possible in the slave

F4019 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F4019
C30F4019
-

5.4.13 F4020 Sercos: Cable break (L+F to NRT)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The sercos topology was changed from "Loop-back with Forward" (LF) to "NRT mode".



Any change in topology is also displayed in "S-0-1045, sercos: Device Status (S-Dev)" and at the LEDs of the Multi-Ethernet interface.

Cause	Remedy
Both sercos cables were simultaneously removed	Plug in sercos cables and restart phase progression by master
Cable break has occurred (defective cable)	Replace cable and restart phase progression by master

See also Functional Description of firmware "sercos"

F4020 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F4020
C30F4020
818E
-

5.4.14 F4034 Emergency-Stop activated

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive provides a function for monitoring an E-Stop input (connection of an external hardware switch).

IndraDrive Mi: If "IndraDrive Mi" is used and the E-stop input is connected to the "KCU" electronic control system and parameter "P-0-0223, E-Stop input" is assigned to none of the digital inputs, the E-stop input of the "KCU" is monitored.



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".

The error can only be cleared, when the selection of E-Stop is removed or the evaluation of E-Stop was switched off.

Cause	Remedy
E-Stop input was controlled (0 V at digital input)	Remove failure that caused E-Stop to be triggered and clear error (reset key or error clearing command). Afterwards switch power on again and clarify cause of triggering of E-Stop
Incorrect parameterization of digital inputs and outputs on control section	Check configuration of digital inputs/outputs on control section and correct it, if necessary
E-Stop switch or cable connection defective or incorrectly wired	Check function and wiring of E-Stop switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller



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 of firmware:

- "E-Stop Function"
- "Digital Inputs/Outputs"
- "Best Possible Deceleration"

F4034 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F4034
000F4034
F09A
-

5.4.15 F4038 Command value failure with synchronous master communication

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
In cyclic operation, the position command value is monitored for failure. The configured maximum number of consecutive failures has been exceeded. Note: The operation mode "Closed-loop position control with cyclic command value provision" was terminated with an error. The failed position command values were extrapolated, the traversing movement was not coupled to master communication during this time. If an axis was operated as master axis in synchronous operation, it was no longer evaluated.	Increase the number of allowed command value failures in "P-0-0187.0.1, Maximum allowed command value failures" - or - Determine and eliminate causes of command value failures

See also functional description of firmware "Closed-loop position control with cyclic command value provision"

F4038 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F4038
000F4038
✓

5.4.16 F4072 EtherCAT: EoE Error

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

A problem occurred while processing "Ethernet over EtherCAT (EoE)" telegrams.



The associated detailed diagnostic message may provide information on the cause/remedy.

Cause	Remedy
The MAC address set by the master is invalid	Make sure in the EtherCAT master that the MAC address is not 00-00-00-00-00-00 or that the "MultiCast Flag" is set in the MAC address
The IP address assigned by the master is invalid	Make sure in the EtherCAT master that the IP address is valid

F4072 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F4072
000F4072
✓

5.5 Non-fatal errors (F2xxx)

5.5.1 Behavior in Case of Non-Fatal Errors

Non-fatal errors are errors which still allow a freely definable, variable error reaction.

Drive Behavior Via the setting in "P-0-0119, Best possible deceleration" and "P-0-0117, Activation of NC reaction on error", the user can define the behavior of the drive when non-fatal errors occur.

Commissioning Steps The drive can only be put into operation again when:

1. The error reaction has been completed, i.e. the drive has come to a standstill (v="0").
2. The cause of the error was eliminated.
3. The error message was cleared by the error clearing command (cf. "S-0-0099, C0500 Reset class 1 diagnostics").
4. Drive enable was switched on again (0-1 edge).

5.5.2 F2009 PL Load parameter default values

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

When the firmware is replaced (firmware update), the non-volatile memory (internal memory or programming module) is automatically analyzed; during the analysis an error was detected.



When the command "S-0-0262, C07_x Load defaults procedure command" with the option "load basic parameters" is directly started, the error F2009 is automatically cleared.

During the transition checks for the communication phases 3 and 4, the operating data (parameter values) are subsequently verified; parameters with invalid operating data (normally only all new parameters) are output in the parameters "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".

NOTICE

Property 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	Remedy
Drive is 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.	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 at 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.
Parameter memory (programming module or internal memory) is defective so that error F2009 keeps reappearing.	Check programming module and replace it, if necessary, or replace control section or entire drive controller.



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 of firmware "Control Panels of the IndraDrive Controllers"

F2009 - Attributes

D diagnostic no.:	F2009
D diagnostic no. as of 18VRS:	000F2009
CiA error code:	FF13
Error can be cleared:	✓

5.5.3 F2010 Error when initializing digital I/O (-> S-0-0423)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

An error occurred during the first initialization of the drive (initialization of digital inputs/outputs).

Cause	Remedy
Conflict with last stored parameters of digital inputs/outputs	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

F2010 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F2010
 000F2010
 F084
 ✓

5.5.4 F2011 PLC - Error no. 1

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «HDS»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «HDS»

The drive-integrated PLC offers users the possibility of generating user-specific errors from the PLC program using the function MX_fSetDriveError(). With the help of function MX_fSetDriveError() it is possible to trigger the errors F2011 ... F2017.

Cause and remedy for the occurrence of such a user-specific PLC error depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of an error can be changed via the integrated PLC with the help of the function MX_fSetDriveErrorText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

F2011 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F2011
 000F2011
 F08C
 ✓

5.5.5 F2012 PLC - Error no. 2

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «HDS»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «HDS»

The drive-integrated PLC offers users the possibility of generating user-specific errors from the PLC program using the function MX_fSetDriveError(). With the help of function MX_fSetDriveError() it is possible to trigger the errors F2011 ... F2017.

Cause and remedy for the occurrence of such a user-specific PLC error depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of an error can be changed via the integrated PLC with the help of the function MX_fSetDriveErrorText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

F2012 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2012
000F2012
F08D
✓

5.5.6 F2013 PLC - Error no. 3

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«-»					
	Contained in 18VRS:	«-»	«HDC»	«HDS»			
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM»	«HDS»

The drive-integrated PLC offers users the possibility of generating user-specific errors from the PLC program using the function MX_fSetDriveError(). With the help of function MX_fSetDriveError() it is possible to trigger the errors F2011 ... F2017.

Cause and remedy for the occurrence of such a user-specific PLC error depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of an error can be changed via the integrated PLC with the help of the function MX_fSetDriveErrorText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

F2013 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2013
000F2013
F08E
✓

5.5.7 F2014 PLC - Error no. 4

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«-»					
	Contained in 18VRS:	«-»	«HDC»	«HDS»			
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM»	«HDS»

The drive-integrated PLC offers users the possibility of generating user-specific errors from the PLC program using the function MX_fSetDriveError(). With the help of function MX_fSetDriveError() it is possible to trigger the errors F2011 ... F2017.

Cause and remedy for the occurrence of such a user-specific PLC error depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of an error can be changed via the integrated PLC with the help of the function MX_fSetDriveErrorText(). This offers the

possibility of assigning expressive and language-related diagnostic messages.

F2014 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2014
000F2014
F08F
✓

5.5.8 F2015 PLC - Error no. 5

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»			«HDS»
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM»

The drive-integrated PLC offers users the possibility of generating user-specific errors from the PLC program using the function MX_fSetDriveError(). With the help of function MX_fSetDriveError() it is possible to trigger the errors F2011 ... F2017.

Cause and remedy for the occurrence of such a user-specific PLC error depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of an error can be changed via the integrated PLC with the help of the function MX_fSetDriveErrorText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

F2015 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2015
000F2015
F090
✓

5.5.9 F2016 PLC - Error no. 6

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»			«HDS»
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM»

The drive-integrated PLC offers users the possibility of generating user-specific errors from the PLC program using the function MX_fSetDriveError(). With the help of function MX_fSetDriveError() it is possible to trigger the errors F2011 ... F2017.

Cause and remedy for the occurrence of such a user-specific PLC error depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of an error can be changed via the integrated PLC with the help of the function MX_fSetDriveErrorText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

F2016 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F2016
 000F2016
 F091
 ✓

5.5.10 F2017 PLC - Error no. 7

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«-»					
	Contained in 18VRS:	«-»	«HDC»	«HDS»			
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM»	«HDS»

The drive-integrated PLC offers users the possibility of generating user-specific errors from the PLC program using the function MX_fSetDriveError(). With the help of function MX_fSetDriveError() it is possible to trigger the errors F2011 ... F2017.

Cause and remedy for the occurrence of such a user-specific PLC error depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of an error can be changed via the integrated PLC with the help of the function MX_fSetDriveErrorText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

F2017 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F2017
 000F2017
 F092
 ✓

5.5.11 F2025 Drive not ready for control

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«HDB»					
	Contained in 18VRS:	«HDB»	«HDC»	«-»			
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

When drive enable is set, the drive must be ready; i.e. it must signal drive status "Ab" [in device status word (P-0-0115) bit 15="1" and bit 14="0" must be set].

However, if the drive only signals "bb" (ready for operation), the drive generates this error message.

Cause	Remedy
Drive enable (AF) was indicated before power supply was switched on - or - Drive enable (AF) was indicated although drive is still in parameterization mode	Check logic for activating drive in connected control unit
E-Stop function is active as warning E4034.	First deselect E-Stop before drive enable is set

F2025 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:
 Error can be cleared:

F2025
 C00F2025
 FF14
 -

5.5.12 F2028 Excessive deviation

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«HDB»					
	Contained in 18VRS:	«HDB»	«HDC»	«HDS»			
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«HDS»

When the position control loop is closed, the drive monitors whether it can follow the given position command value. For this purpose, in the "model monitoring" mode (P-0-2820, bit 1 = 0) a model position feedback value is calculated in the drive and compared to the real actual position value. In the "following distance monitoring" mode (P-0-2820, bit 1 = 1) the "position command value of controller, delayed" (P-0-2831.0.6) is compared to the "actual position value".

If this deviation exceeds the value entered in parameter "S-0-0159, Monitoring window" apparently cannot follow the given command value and error F2028 is generated.



In the "model monitoring" mode, the parameter "P-0-0098, Max. model deviation" represents the maximum deviation between the calculated and the real actual position value. In the "following distance monitoring" mode it shows the maximum following distance.

Cause	Remedy
Monitoring window set too small	Check content of "S-0-0159, monitoring window" and correct, if necessary
Excessive command acceleration due to incorrect command value provision by the control	Reduce the acceleration input by the control (see control manual)
Too small a numerical value in "S-0-0092, Bipolar torque/force limit value"	Check the content of "S-0-0092, Bipolar torque/force limit value" and set it to the maximum value permitted for the application at hand.
The axis is blocked or stiff.	Check mechanical system and eliminate stiffness.
Control loop parameters incorrect or not optimized	Check control loop setting (e.g. "S-0-0104, Position loop Kv-factor", "P-0-0556, Config word of axis controller")
Acceleration capacity of drive exceeded	Check rating of the drive.

F2028 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2028
C00F2028
8582
—

5.5.13 F2031 Encoder 1 error: Signal amplitude incorrect

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«HDB»					
	Contained in 18VRS:	«HDB»	«HDC»	«-»			
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«-»	«-»

The signals of the measuring system (encoder 1) are monitored on hardware and software level 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, error F2031 is generated.



As the position of the measuring system is no longer generated correctly when error F2031 is detected, it is necessary to initialize the encoder again.

The error can only be cleared in the parameter mode (PM).

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Measuring system 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	Clean or replace measuring system
Hardware defect on control section of drive	Replace control section or entire drive controller

F2031 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2031
000F2031
7382
-

5.5.14 F2036 Excessive position feedback difference

Allocation

Contained in 16VRS:	«-»
Contained in 17VRS:	«HDB»
Contained in 18VRS:	«HDB» «HDC»
Contained in 20VRS:	«-» «-» «-» «-» «-» «-»

In cyclic operation, the difference between actual position value 1 and actual 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, 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")



The monitoring function is inactive if the value "0" was entered in the parameter "S-0-0391, Monitoring window feedback 2".

Cause	Remedy
Parameters for encoder 2 incorrect	Check "S-0-0115, Position feedback 2 type" and "S-0-0117, Resolution of feedback 2"
Mechanical system between drive shaft and encoder 2 incorrectly parameterized	Check "S-0-0121, Input revolutions of load gear", "S-0-0122, Output revolutions of load gear" and "S-0-0123, Feed constant"
Mechanical system between drive shaft and encoder 2 is not rigid (e.g., gear backlash, slip) and monitoring window is too small	Increase "S-0-0391, Monitoring window feedback 2", switch off in the case of gear with slip
Encoder cable defective	Replace encoder cable
Maximum input frequency of encoder interface exceeded	Reduce velocity
Encoder 2 not mounted to driven axis	Set "S-0-0391, Monitoring window feedback 2" to "0" (switch monitoring function off)

Cause	Remedy
Incorrect encoder gear settings	Check relevant encoder parameters and correct them, if necessary: "S-0-0121, Input revolutions of load gear" / "S-0-0122, Output revolutions of load gear"
Position data reference of an absolute encoder incorrect	Execute "P-0-0012, C0300 Set absolute position procedure command"

See also Functional Description of firmware "Position Control With Cyclic Command Value Input"

F2036 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2036
C00F2036
8583
—

5.5.15 F2037 Excessive position command difference

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

When the drive is running in the operation 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 error F2037 is generated, if this has been configured via the list parameter "P-0-0173, List of configurable axis-specific monitoring functions" in list element 1.



Firmware version 17 and above: As an alternative, warning "E2037 Excessive position command difference" can be configured for this error case (via P-0-0173, list element 1).



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	Remedy
Value in "S-0-0091, Bipolar velocity limit value" too low	Check and, if necessary, correct parameterization of "S-0-0091, Bipolar velocity limit value"
Drive does not yet follow the external command value input (P-0-0115, bit 3="0")	Enable change in command value only if P-0-0115, bit 3="1"
A drive-controlled operation mode was switched to NC-controlled position control without considering the position system of the drive.	Make sure that the position command value (S-0-0047) is related to the position system of the drive when the NC-controlled operation mode is activated.

Cause	Remedy
When the command for drive-controlled homing [C0600 (S-0-0148)] was started, NC-controlled position control was active. As a result of switching to the drive-internal actual value system, which is required for homing, the position command value (S-0-0047), which becomes valid again after homing, is so far away, that the command velocity that is required for reaching the position command value would exceed the velocity limit value (S-0-0091).	1. Before homing, switch to operation mode "velocity control". 2. After homing, set "position command value"="actual position value" (S-0-0047=S-0-0051). 3. Switch back to the desired operation mode - or - Only start the command for drive-controlled homing [C0600 (S-0-0148)] while a drive-controlled position control mode is active, in which the system travels the distance of the command value/actual value difference that arises during homing.
Incorrect command value set by control unit	Contact control unit manufacturer or programmer

See also functional description of firmware "Closed-loop position control with cyclic command value provision"

F2037 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2037
C00F2037
8584
-

5.5.16 F2050 Overflow of target position preset memory

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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	Remedy
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 $x(k)$	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
Incorrect command value acceptance (toggling of "S-0-0346, Positioning control word") in control unit causes positioning command value to be accepted several times	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.
Incorrect positioning mode for "approaching target" was set in "S-0-0346, Positioning control word".	Set positioning mode "immediately moving to new target" for "approaching target" in "S-0-0346, Positioning control word".

See also Functional Description of firmware "Drive-Controlled Positioning".

F2050 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2050
000F2050
8681
-

5.5.17 F2051 No sequential block in target position preset memory

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»

Contained in 18VRS: «HDB» «HDC» «-»
Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

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	Remedy
When target position of a sequential block has been reached, there is no new positioning block in target position preset memory	Preset sequential block in time (before target position has been reached)
Positioning block mode by mistake set to "sequential block without intermediate stop".	Check positioning block mode and switch off sequential block processing, if necessary ("S-0-0346, Positioning control word").

See also Functional Description of firmware

- "Drive-Controlled Positioning"
- "Positioning Block Mode"

F2051 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2051
 000F2051
 8683
 -

5.5.18 F2057 Target position out of travel range

Allocation	Contained in 16VRS: «-»
	Contained in 17VRS: «HDB»
	Contained in 18VRS: «HDB» «HDC» «-»
	Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

In operation 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 error F2057 was generated because the preset target position is outside of the allowed travel range.

The allowed travel range of the drive is defined by

- S-0-0049, Positive position limit value
- S-0-0050, Negative position limit value
- S-0-0278, Maximum travel range

The position limit value monitor and thus the monitoring of the allowed travel range can be activated / deactivated in "S-0-0055, Position polarities".

The reaction to a travel range error can be set in "P-0-0090, Travel range limit parameter".

Cause	Remedy
Position limit values ("S-0-0049, Positive position limit value", "S-0-0050, Negative position limit value") incorrectly parameterized	Check parameterization of position limit values and adjust it according to desired travel range ("S-0-0049, Positive position limit value" has to be greater than "S-0-0050, Negative position limit value")
Position limit value monitor has been activated although it is not needed	Deactivate position limit value monitor if it is not needed (e.g., in modulo operation)

Cause	Remedy
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. "S-0-0430, Effective target position") to be outside of position limits	Check preset travel range (cf. "S-0-0258, Target position") and, if necessary, adjust it in control unit program
In the case of absolute interpolation, preset target position is incorrect	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)
In "positioning block mode" one or more target positions have been incorrectly parameterized or incorrect positioning block is selected	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 of firmware "Position Limitation/Travel Range Limit Switches"

For "relative interpolation", see Functional Description of firmware "Drive-Controlled Positioning"

For "absolute interpolation", see Functional Description of firmware "Drive-Internal Interpolation"

F2057 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2057
C00F2057
8685
—

5.5.19 F2067 Synchronization to master communication incorrect

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Drive control is synchronized via two phase control loops (Phase Locked Loop - PLL) on the bus interface (sercos, PROFIBUS, INTERBUS,...). Monitoring the proper function of synchronization means monitoring the respective control deviation of the two PLLs for an allowable threshold. If it is exceeded, this error message is generated.

Cause	Remedy
Parasitic couplings due to faulty connection of master communication result in synchronization problems	Check and, if necessary, correct connection of master communication (including shield connection)
Synchronization cycle of master fluctuates severely due to software or hardware error in master (e. g. jittering of MST with sercos)	Check field bus master and ensure a clean, constant synchronization cycle
Master communication hardware of the drive controller is defective	Replace control section or entire drive controller

F2067 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2067
000F2067
F094
—

5.5.20 F2089 Synchronization, slave axis/axes multiply connected

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«HDS»		
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«HDM» «HDS»

When power was applied to the synchronization axis, it was recognized that one of the axes "P-0-2860.0.x, Synchronization list slave axes" was entered several times in the list.

Cause	Remedy
An axis was entered several times in parameter "P-0-2860.0.x, Synchronization list slave axes".	Check list of slave axes

F2089 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2089
000F2089
-

5.5.21 F2100 Incorrect access to command value memory

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«HDS»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «HDS»

An error occurred when the command value memory (flash/internal memory) was accessed.

Cause	Remedy
Sporadically occurring failure (firmware error)	Clear error and contact customer service to ask for firmware update
Hardware in control section defective	If error occurs repeatedly, replace control section or entire drive
Programming module defective	If error occurs repeatedly, replace programming module



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

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2100
000F2100
6380
-

5.5.22 F2101 File system structure error on the memory card

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«-»	«HDM» «-»

Access to the external memory card is not possible because the file system structure is defective.

Initialization was aborted; booting of the drive is continued.

Cause	Remedy
File system structure is defective. Following causes are possible: - Voltage was interrupted during write access to memory card - Memory card or control panel was removed during write access	NOTICE! The action described below may lead to data loss; the user is responsible for taking this action. Insert memory card in PC and execute <code>CHKDSK [drive:] /F</code> to correct error on memory card ([drive:] identifies drive containing memory card).

F2101 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2101
000F2101
7680
✓

5.5.23 F2111 Synchronization, slave axis/axes incorrectly scaled

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «HDS»
	Contained in 20VRS:	«-» «-» «-» «-» «HDM» «HDS»

The synchronization function recognized that at least one slave axis has no absolute linear scaling.

Cause	Remedy
At least one slave axis of the synchronized group has no absolute linear scaling. At present, only axes with absolute linear scaling are supported.	Set all axes to absolute linear scaling

F2111 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2111
000F2111
-

5.5.24 F2112 Synchronization, slave axis/axes unknown

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «HDS»
	Contained in 20VRS:	«-» «-» «-» «-» «-» «HDS»

When power was applied to the synchronization axis, it was recognized that the MLC has not recognized one of the axes in "P-0-2860.0.x, Synchronization list slave axes".

Cause	Remedy
This axis type is not recognized by the synchronization function today. The axis entered was deactivated in the project.	Check list of slave axes

F2112 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2112
000F2112
-

5.5.25 F2113 Maximum synchronization deviation exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «HDS»
	Contained in 20VRS:	«-» «-» «-» «-» «HDM» «HDS»

The maximum synchronization difference between the slave axes has been exceeded.

Error messages

Cause	Remedy
The synchronization function monitors the position of the slave axes. If the position difference between the axis with the smallest actual value and the axis with the greatest actual value exceeds the monitoring window, an error is generated.	- Optimize single-axis controller - Optimize synchronization control parameters - If permissible in mechanical terms, increase "P-0-2860.0.9, Synchronization monitoring window"

F2113 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2113
000F2113
–

5.5.26 F2114 Synchronization, slave axis/axes without power

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «HDS»
	Contained in 20VRS:	«-» «-» «-» «-» «HDM» «HDS»

Power was switched on for the synchronization function before power was switched on for all of the slave axes or all axes were in the "standstill" status.

Cause	Remedy
Power was not applied to at least one slave axis when synchronization was activated.	Before activating synchronization, check that all slave axes are in control and at standstill.
Power is applied to the slave axes, but at least one axis is not at standstill when synchronization is activated.	Before activating synchronization, check that all slave axes are in control and at standstill.

F2114 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2114
000F2114
–

5.5.27 F2115 Synchronization, slave axis/es Controlled Motion impossible

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «HDS»
	Contained in 20VRS:	«-» «-» «-» «-» «-» «HDS»

When power was applied to the synchronization axis, at least one axis was not switched to "Controlled Motion".

Cause	Remedy
During initialization, the slave axis reached a state, in which it is impossible to switch the axis to "Controlled Motion" (see PlcOpen state machine).	Check the PLC program to ensure that no motion command is sent to one of the slave axes while power is applied to the synchronization axis.
An error is present on the slave axis.	Check the PLC program to ensure that no motion command is sent to one of the slave axes while power is applied to the synchronization axis.
The slave axis lost power.	Check the PLC program to ensure that no motion command is sent to one of the slave axes while power is applied to the synchronization axis.
During initialization the slave axis received a motion command.	Check the PLC program to ensure that no motion command is sent to one of the slave axes while power is applied to the synchronization axis.

F2115 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2115
000F2115
–

5.5.28 F2116 Synchronization, slave axis/es already in Controlled Motion

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«HDS»		
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«HDS»

When power was applied to the synchronization axis, at least one axis was already in "Controlled Motion".

Cause	Remedy
At least one of the slave axes in parameter "P-0-2860.0.x, Synchronization list slave axes" is already in "Controlled Motion" while the synchronization axis is being activated. This means that the axis was already switched to this state by another synchronization controller.	Check that none of the slave axes is already in Controlled Motion while power is applied to the synchronization axis. If several synchronization axes were set up (to which the same axes were assigned in some cases), power may be applied only to one of the synchronization axes.
The axis was applicatively set to the "Controlled Motion" state by an ML_ControlOn block.	Check that none of the slave axes is already in Controlled Motion while power is applied to the synchronization axis. If several synchronization axes were set up (to which the same axes were assigned in some cases), power may be applied only to one of the synchronization axes.

F2116 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2116
000F2116
-

5.5.29 F2117 Synchronization, missing initialization (MH_HydrInit)

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«HDS»		
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«HDS»

Power was applied to the synchronization axis without calling the function block MH_InitHydr.

Cause	Remedy
The synchronization axis was activated without the function block MH_InitHydr having been called before.	During the phase startup to phase 2, call function block MH_InitHydr. For details, see documentation MH_InitHydr in the MH_TechHydrBase library.

F2117 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2117
000F2117
-

5.5.30 F2118 Synchronization, internal interpolator interface

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«HDS»		
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«HDS»

The interface for influencing the interpolator signals an error. This may happen, if the interface cannot control the synchronization axis or one of the slave axes.

Cause	Remedy
Conflicting use of the function block ML_IPOImpactControl in the PLC program for the synchronization axis or one of the slave axes.	Check (e.g. with the help of "Find all") that no ML_IPOImpactControl is used for the relevant axis in the user application and, if required, remove it.
The instance of function block ML_IPOImpactControl caused an internal error.	Please contact Bosch Rexroth Service.

F2118 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2118
000F2118
–

5.5.31 F2120 Memory card could not be initialized

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «-» «HDM» «-»

Access to the memory card is not possible.

Initialization was aborted; booting of the drive is continued.

Cause	Remedy
Memory card inserted incorrectly or defective	Clear error, check memory card or insert correctly, and re-boot drive. If error occurs again on access to memory card, replace memory card.
Memory card formatted incorrectly	1. Switch drive off. 2. Use PC to format memory card with FAT16. NOTICE! When memory card is formatted, all data stored on it is lost. Before formatting the memory card, save the data which has been stored on it. 3. Insert memory into the slot provided at the drive controller control panel.
Memory card used is no Rexroth card	Use a Rexroth memory card; foreign cards may cause driver failures on initialization.

F2120 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2120
000F2120
7684
✓

5.5.32 F2150 MLD motion function block error

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «-»

During command triggering with a motion function block an error occurred.



In the case of a motion function block, the reaction to an error can be configured. See parameter P-0-1367.

Cause	Remedy
With the MLD-S (single-axis application) command triggering for a motion function block is faulty (e.g. call of MC_MoveAbsolute while an MC_Stop is active).	Locate faulty function block and eliminate error by means of function block error outputs.

F2150 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2150
000F2150
FF17
—

5.5.33 F2174 Loss of encoder 1 reference

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

With absolute encoder evaluation, the plausibility of the initialized absolute position is checked during position initialization. If the controller recognizes that the position data reference of the encoder can no longer be established due to changes in the mechanical parameters or replacement of the encoder or the device, the position feedback value status (S-0-0403) goes to "relative" and error F2174 is generated.

Cause	Remedy
Switching on without reference (At initial commissioning or caused by changes to parameters that characterize the mechanical system or affect position evaluation, for example)	Clear error and establish position data reference again
Switching on without reference (after replacement of encoder in the case of EnDat 2.2 encoders)	Clear error and establish position data reference
Encoder 1 is defective	Replace encoder, clear error and establish position data reference
Change in parameters of mechanical system (gear, feed constant, ...)	Clear error and establish position data reference
Controller replaced without parameter update	Clear error and establish position data reference
Switching on without reference after a device change while axis-specific parameter values were loaded (according to list from "S-0-0192, IDN list of backup operation data")	Clear error and establish position data reference - or - Delete error, then load parameter values from "P-0-0195, IDN list of retain data (replacement of devices)", if it was possible to save them directly before the device replacement. Check correctness of restored position data reference

F2174 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2174
C00F2174
7383
✓

5.5.34 F2177 Modulo limitation error of encoder 1

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»



Up to firmware 19VRS this diagnostic message was "Modulo limitation error of motor encoder".

With active modulo scaling, the drive limits its actual position values to the value 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 represented, systematic errors of position overrun are corrected in the drive.



Ideally, "S-0-0278, Maximum travel range" is selected so that the drive is always within the defined travel range and there is no overrun.

Cause	Remedy
"S-0-0103, Modulo value" or "S-0-0278, Maximum travel range" have been incorrectly parameterized and not adjusted to the application.	Check and, if necessary, correct "S-0-0103, Modulo value" and "S-0-0278, Maximum travel range".
Drive was moved so rapidly that recalculation no longer works correctly.	Reduce drive velocity at position overrun.

F2177 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2177

000F2177
738E
—

5.5.35 F2190 Incorrect Ethernet configuration

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The parameterization of the Ethernet communication interfaces is checked when the drive is initialized. An error was detected during this check.

Cause	Remedy
Unallowed configuration of parameters for Ethernet communication (TCP/IP): IP address and gateway address are not in the same IP network - or - IP address and gateway address are identical	Set parameters for Ethernet communication (TCP/IP) to valid values: • P-0-4089.0.13, Master communication: IP address • P-0-4089.0.14, Master communication: Network mask • P-0-4089.00.15, Master communication: Gateway address • S-0-1020, Master comm. engineering over IP: IP address • S-0-1021, Master comm. engineering over IP: Network mask • S-0-1022, Master comm. engineering over IP: Gateway address
Due to storage problems, internal configuration of IP stack was inadmissibly terminated	Due to a hardware problem, it is necessary to replace control section

F2190 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2190

000F2190
7582
✓

5.5.36 F2270 Analog input, wire break

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«HDB»					
	Contained in 18VRS:	«HDB»	«HDC»	«HDS»			
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«HDS»

The drive provides the function of monitoring the input value of analog inputs for wire rupture. The message to be issued can be configured as warning or error in "P-0-2900.0.7 Analog input, assignment, extended control word".

Conditions for triggering this error:

- In "P-0-2900.0.1 Analog input, assignment, control word" wire rupture monitoring was activated (by determining the measuring range of analog inputs) and
- in "P-0-2900.0.7 Analog input, assignment, extended control word" it was declared that an error is generated when the input value at the analog input falls below the minimum value, and
- the current/voltage value at the selected analog input is less than the minimum value of the measuring range.



The value range of a voltage or current source that is connected to an analog input should be restricted to the permitted value range of the analog input.

Cause	Remedy
A cable rupture was detected at one of the analog inputs (the input value is below the base value set in assignment "P-0-2900.0.1 Analog input, assignment, control word").	Check the configuration of the allocation for correctness.
The wiring of at least one of the analog inputs is incorrect or defective	Check wiring of the inputs.

F2270 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:
Error can be cleared:

F2270
000F2270
F095
✓

5.5.37 F2280 Error wire rupture of swivel angle sensor

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«-»					
	Contained in 18VRS:	«-»	«-»	«-»			
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

The drive offers the function of monitoring the input value of the actual swivel angle value for cable break. This cable break detection cannot be switched off.

Cause	Remedy
The connection cable of the swivel angle sensor is not connected to the M12 mating connector X8A.	Connect the connection cable of the swivel angle sensor to the lowest M12 mating connector X8A.
Connector or cable damaged.	Inspect cable and connector
Swivel angle sensor defective.	Replace swivel angle sensor

See also Functional Description of firmware "Pump control".



With the help of parameter "P-0-2949.0.1, Swivel angle sensor configuration" the diagnostic message "Wire rupture of swivel angle sensor" can be configured as error or warning

F2280 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2280
000F2280
✓

5.5.38 F2281 Valve error pump controller

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

For the error "**F2281**, Valve error pump controller", "P-0-2914, Effective valve command value" and "S-0-0862, Spool feedback value" are compared. The diagnostic message is output, if a deviation of the actual valve value from the given command value persists for longer than a defined time (0.5 s).

Cause	Remedy
Valve spool jammed due to contamination	Replace pilot valve, see RE 30017-B; contact Rexroth Service
Internal electronics fault	Replace pilot valve, see RE 30017-B

F2281 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2281
000F2281
✓

5.5.39 F2290 Controlling not supported with rotary scaling

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Alternating control cannot be used, if the scaling system was configured to be "rotary".

Cause	Remedy
An attempt was made to activate alternating control with rotary scaling.	Deactivate alternating control.

See also functional description of firmware "Alternating control"

F2290 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2290
000F2290
✓

5.5.40 F2893 Incorrect initialization of scaling interface

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«-» «-» «-» «-» «-» «HDS»

Scaling was not correctly set for one controller axis

Cause	Remedy
Force reference value not set (see "A-0-0064, Torque/force reference value").	Check / adjust setting
Scaling types for position and velocity are inconsistent (see "A-0-0059, Scaling type for position data" and "A-0-0056, Scaling type for velocity data")	Check / adjust setting
Scaling type for valve control variable and force are inconsistent (see "A-0-0066, Scaling type for valve control values" und "A-0-0050, Scaling type for torque/force data")	The following valves are supported for valve control variables: +/-10 V, +/-20 mA, 0..10 V, 0..20 mA, 4..20 mA

F2893 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2893
000F2893
—

5.5.41 F2894 Operation mode not supported

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«-» «-» «-» «-» «-» «HDS»

An operation mode that is not supported was selected for this controller axis. A possible solution is to implement the suitable operation mode for this controller axis or check the selection of the operation mode.

F2894 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:

F2894
000F2894
—

6 Warnings (Exxxx)

6.1 Fatal warnings (E8xxx)

6.1.1 Behavior in the Case of Fatal Warnings

There are different drive reactions in the case of warnings of **category E8xxx**; they are described under the cause/remedy descriptions of the warnings.

6.1.2 E8022 Encoder 1: Encoder signals incorrect

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The signals of the measuring system (encoder 1) are monitored on hardware and software level with regard to their amplitudes and signal shape. If a signal exceeds the thresholds monitored by the hardware or if the signals are disturbed in such a way and error suppression for encoder signal 1 is activated (see P-0-2937, "Error suppression control word", bit 2) so that a position error occurs, error E8022 is generated.

Cause and remedy are identical to that for error F8022

E8022 - Attributes

Diagnostic no.: **E8022**
Diagnostic no. as of 18VRS: 000E8022

6.1.3 E8029 Positive position limit exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive provides a function for monitoring an allowable travel range by means of software limit switches that can be parameterized.



The travel range must 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 reaction of the drive to the travel range being exceeded (fatal warning or error) must be parameterized in "P-0-0090, Travel range limit switch parameter".

Cause	Remedy
A command value was specified for the drive, which results in a axis position outside of positive travel range/position limit	Specify a command value that moves back into allowable travel range. Contact machine manufacturer to clarify cause of incorrect command value
Faulty parameterization of positive travel range/position limit	Check and, if necessary, correct parameterization of "S-0-0049, Positive position limit value"



Parameter "S-0-0057, Position window" is used to realize a hysteresis function when evaluating position limit values.

E8029 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E8029
C00E8029
868A

6.1.4 E8030 Negative position limit exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive provides a function for monitoring an allowable travel range using software limit switches that can be parameterized.



The travel range must 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 reaction of the drive to the travel range being exceeded (fatal warning or error) must be parameterized in "P-0-0090, Travel range limit switch parameter".

Cause	Remedy
A command value was specified for the drive, which results in an axis position outside of negative travel range/position limit	Specify a command value that moves back into allowable travel range. Contact machine manufacturer to clarify cause of faulty command value
Faulty parameterization of positive travel range/position limit	Check and, if necessary, correct parameterization of "S-0-0050, Negative position limit value"



Parameter "S-0-0057, Position window" is used to realize a hysteresis function when evaluating position limit values.

E8030 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E8030
C00E8030
868B

6.1.5 E8034 Emergency-Stop activated

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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".



When the warning E8034 occurs, the axis is decelerated in accordance with the configured "best possible deceleration" (P-0-0119, bit 0 to 3) for switching off drive enable.

Cause	Remedy
E-Stop input was controlled (0 V at digital input)	Remove failure that caused E-Stop to be triggered and clarify cause of triggering
Incorrect parameterization of digital inputs and outputs on control section	Check configuration of digital inputs/outputs on control section and correct it, if necessary
E-Stop switch or cable connection defective or incorrectly wired	Check function and wiring of E-Stop switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller

E8034 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E8034
000E8034
FF0F

6.1.6 E8042 Both travel range limit switches activated

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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")



As long as the cause for E8042 is not eliminated, the controller does not accept any command values!

Cause	Remedy
Due to incorrect mounting, the axis simultaneously activates both travel range limit switches	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.
Travel range limit switches were incorrectly connected	Connect travel range limit switches correctly; check compliance with switching logic set in "P-0-0090, Travel range limit parameter"
Switching logic of travel range limit switches does not correspond to realized wiring	Check switching logic with regard to realized wiring, adjust it in "P-0-0090, Travel range limit parameter" if necessary

E8042 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E8042
C00E8042
8090

6.1.7 E8043 Positive travel range limit switch activated

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive provides a function for monitoring travel range limit parameters (external hardware limit switches). This monitor has to be activated and parameterized via "P-0-0090, Travel range limit parameter".



When the warning E8043 occurs, the axis is shut down with velocity command value reset.

Cause	Remedy
Travel range limit switch situated in positive direction (see Project Planning Manual for drive) was activated because axis is outside of travel range that was defined by means of travel range limit switches	Set drive enable and input a command value leading back to allowed travel range
Incorrect parameterization of digital inputs and outputs on control section	Check correct configuration of digital inputs/outputs on control section and correct it, if necessary
Travel range limit switch or cable is defective or incorrectly wired	Check function and wiring of travel range limit switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller

E8043 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E8043
C00E8043
8091

6.1.8 E8044 Negative travel range limit switch activated

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive provides a function for monitoring travel range limit parameters (external hardware limit switches). This monitor has to be activated and parameterized via "P-0-0090, Travel range limit parameter".



When the warning E8044 occurs, the axis is shut down with velocity command value reset.

Cause	Remedy
Travel range limit switch situated in negative direction (see Project Planning Manual for drive) was activated because axis is outside of travel range that was defined by means of travel range limit switches	Set drive enable and input a command value leading back to allowed travel range
Incorrect parameterization of digital inputs and outputs on control section	Check configuration of digital inputs/outputs on control section and correct it, if necessary
Travel range limit switch or cable is defective or incorrectly wired	Check function and wiring of travel range limit switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller

E8044 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E8044
C00E8044
8092

6.1.9 E8045 Encoder 2: Signal amplitude incorrect

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»

Contained in 18VRS:	«-»	«-»				«HDS»
Contained in 20VRS:	«-»	«-»	«-»	«-»	«-»	«HDS»

The signals of the measuring system (encoder 1) are monitored on hardware and software level with regard to their amplitudes and signal shape. If a signal 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 usually generated. However, if bit 2 of "P-0-2819, Error suppression control word", is set, the error is substituted by warning E8045.

⚠ CAUTION

Since the error case is configured as a warning, triggering of the monitoring function no longer results in a drive error reaction. If the user fails to react, the plant/machine may be damaged or destroyed!

The user has to react to triggering of monitoring (error) according to the specific requirements of the system.

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Measuring system defective	Check measuring system and replace it, if necessary
Incorrect mounting of measuring head in the case of linear measuring systems	Check mounting of measuring head and correct it, if necessary
Measuring system dirty	Clean or replace measuring system
Hardware defect on control section of drive	Replace control section or entire drive controller

See also "F8022 Encoder 1: Encoder signal incorrect"

E8045 - Attributes

Diagnostic no.:

E8045

Diagnostic no. as of 18VRS:

000E8045

6.1.10 E8071 Overvoltage of control voltage

Allocation

Contained in 16VRS:						«-»
Contained in 17VRS:	«HDB»					
Contained in 18VRS:	«HDB»	«HDC»				«-»
Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

Devices of the "Rexroth HydraulicDrive" family need an external control voltage supply for operation. This voltage is monitored with regard to the allowed tolerance.

Warning F8072 is reported, if the voltage exceeded the maximum value.

Cause	Remedy
Application error: Power supply unit not suited for control voltage supply	Use appropriate power supply unit for the device
Power supply unit defective	Replace power supply unit

E8071 - Attributes

Diagnostic no.:

E8071

Diagnostic no. as of 18VRS:

000E8071

6.1.11 E8079 Velocity limit value exceeded

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«HDS»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»

The signals of the measuring system (encoder 2) are monitored on hardware and software level with regard to their amplitudes and signal shape. If a signal (sin or cos) exceeds the thresholds monitored by the hardware or if the signals are disturbed in such a way that a position error occurs, error F8042 is usually generated. However, if bit 3 of "P-0-2819, Error suppression control word" is set the error is substituted by warning E8079.

⚠ CAUTION

Configuring an error as warning results in the fact that responding of the monitoring function will no longer cause an error reaction on the drive side. If the user fails to react, the plant/machine may be damaged or destroyed!

The user has to react to triggering of monitoring (error) according to the specific requirements of the system.

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Defective encoder	Check measuring system and replace it, if necessary
Incorrect 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

See also "F8042 Encoder 2: Signal amplitude incorrect"

E8079 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E8079
000E8079

6.1.12 E8270 Sensor inputs, wire rupture

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«-»

The drive provides the function of monitoring the input value of analog inputs for wire rupture. The message to be output can be configured as warning or as error in "P-0-2900.0.7 Analog input, assignment, extended control word" .

Cause	Remedy
A cable break was detected at one of the analog inputs 3 to 7 (the input value is below the basic value set in the allocation "P-0-2900.0.7 Analog input, assignment, control word").	Check the allocation for correctness
Wiring of at least one of analog inputs 3 to 7 incorrect or defective	Check wiring of analog inputs

E8270 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**E8270**
000E8270**6.1.13 E8271 Valve monitoring**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The warning can occur in conjunction with 3 detailed diagnostic messages.

Detailed diagnostic message	Description
Excessive valve deviation	While valve monitoring is activated (see "P-0-2880.0.1, Valve monitoring control word, bit 0") a check is run to see that parameter "S-0-0862, Spool feedback value" follows "P-0-2914, Effective valve command value". If the deviation (see "S-0-0863, Spool control deviation") exceeds "P-0-2880.0.4, Valve monitoring threshold" after the defined time (see "P-0-2880.0.6, Valve monitoring delay") the warning is issued. The maximum deviation is documented in "P-0-2880.0.5, Valve monitoring maximum valve error".
Insufficient pilot pressure	While pilot pressure monitoring is activated (see "P-0-2880.0.1, Valve monitoring control word, bit 1") a check is run to see that parameter "S-0-0815, Pilot pressure" does not fall below the "P-0-2880.0.9, Minimum pilot pressure". If it falls below, the warning is output after the defined time (see "P-0-2880.0.10, Pilot pressure monitoring, delay time"). Is only applicable for IFB/IAC Multi-Ethernet and only in conjunction with pilot operated valves.
Excessive valve deviation and insufficient pilot pressure	Combination of both messages. Is only applicable for IFB/IAC Multi-Ethernet and only in conjunction with pilot operated valves.

Cause	Remedy
The system has run without any problems for a long time and the warning "Excessive valve deviation" appears sporadically.	Check and, if necessary, replace valve.
The warning "Excessive valve deviation" appears systematically during each run. "S-0-0862, Spool feedback value" has a fixed value (e.g. zero), although the axis is in operation.	Check the cabling (is the actual valve value fed back correctly, for example) In the case of HDS, check the setting of the axis properties in IndraWorks (is the actual valve value assigned correctly?)
The warning "Insufficient pilot pressure" is shown	Check pressure supply

E8271 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**E8271**
000E8271**6.2 Warnings of category (E4xxx)****6.2.1 E4001 Sync telegram failure**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»

Contained in 18VRS: «HDB» «HDC» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

Master communication sercos

The master synchronization telegram (MST) was not received in the drive in several successive sercos cycles. The number of allowed losses is set in S-0-1003.



In "P-0-4088, Master communication: Drive configuration", you can configure the reaction to the failure of the cyclic communication as a warning or as an error.

Cause	Remedy
Different sercos cycle times in master and slave	Check sercos cycle times in master and slave and adjust them, if necessary
Fault in the sercos interface (general)	Replace drive controller

See also functional description of firmware "sercos"

E4001 - Attributes

Diagnostic no.: E4001
 Diagnostic no. as of 18VRS: C30E4001
 CiA error code: 8180

6.2.2 E4002 RTD telegram failure

Allocation

Contained in 16VRS: «-»
 Contained in 17VRS: «HDB»
 Contained in 18VRS: «HDB» «HDC» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»



In "P-0-4088, Master communication, configuration", you can configure the reaction to the failure of cyclic communication as a warning or as an error.

A consumer connection violates the selected monitoring criterion.

Cause	Remedy
Clock-synchronous monitoring has been preset for a connection and the NewData bit of the connection does not toggle within the preset cycle.	Producer of connection (can be bus master or another slave) does not work correctly.
Too many telegrams fail due to disturbances.	Check bus line and connector

See also functional description of firmware "sercos"

E4002 - Attributes

Diagnostic no.: E4002
 Diagnostic no. as of 18VRS: C30E4002
 CiA error code: 8182

6.2.3 E4005 No command value input via master communication

Allocation

Contained in 16VRS: «-»
 Contained in 17VRS: «HDB»
 Contained in 18VRS: «HDB» «HDC» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

There is no command value input via the master communication interface.

⚠ DANGER

Dangerous movements! Danger to life, risk of injury, serious injury or property damage by automatic restart after bus failure!

In the case of bus failure (message "F4009" or "E4005"), an error reaction must be carried out in the control unit, too, to prevent automatic restart after the bus has been reestablished. This means that the bits "Drive Halt", "drive enable" and "drive ON" (e.g. bits 13, 14 and 15 in parameter "P-0-4077, Field bus: Control word") should be reset in the control unit in the case of bus failure.

sercos The setting in parameter "P-0-4088, Master communication, configuration" is such that there won't be any drive error reaction initiated in case communication fails, but this warning will be displayed.

Cause	Remedy
Invalid communication phase was set by sercos master module (phase >4) (see also F4003)	Cause can only be remedied by consulting the control unit manufacturer
When the device had been switched back from a communication phase, it was not switched to communication phase 0 (error in sercos master module of control unit) (see also F4005)	Cause can only be remedied by consulting the control unit manufacturer

EtherCAT

Cause	Remedy
Double MDT failure in phase "Op" without enabling	Check bus timing Note: If the warning occurs when the phase is switched back from "Op", you can ignore the warning.
Double MDT failure in phase "Op" with enabling (warning is only generated when "P-0-4088, Master communication, configuration" has been parameterized such that a warning is to be generated instead of a drive error reaction initiated in case communication fails, otherwise F4002)	Check bus timing
Wiring of EtherCAT cables is not correct	Make sure that EtherCAT cable for incoming signals has been plugged in connection point X25 P1 [or X23 P1 (if available)] and EtherCAT cable for outgoing signals has been plugged in X24 P2 [or X22 P2 (if available)]

Other field buses (CANopen, PROFIBUS, ...)

In "P-0-4088, Master communication, configuration", bus failure was configured as a warning.

Warning E4005 is generated in the following cases:

- No telegram with command values was received within the monitoring time stored in P-0-4075.
- or -
- The control unit was switched to "Stop".
- or -
- The control unit took the drive out of the master communication group.

Cause	Remedy
See F4009	See F4009

E4005 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4005
000E4005
8184

6.2.4 E4006 Communication module overload

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The communication module is overloaded.

Cause	Remedy
High network load	Check network configuration

E4006 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4006
000E4006
8186

6.2.5 E4007 Sercos: Consumer connection failed

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

A consumer connection violates the selected monitoring criterion.

Cause	Remedy
Synchronous monitoring has been preset for a consumer connection and NewData bit of connection does not toggle in preset cycle	Producer of connection (can be bus master or another slave) does not work correctly
Too many telegrams fail due to disturbances	Check bus line and connector

E4007 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4007
C30E4007
8188

6.2.6 E4008 Invalid addressing command value data container A

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

An error is present while the index check is carried out in the multiplex channel. In the case of cyclic data exchange, the index is monitored for pointing to a non-initialized section in the list when the lists **Data container A: Configuration list command value-x** are accessed.

Cause	Remedy
Via "S-0-0368, Data container A: Addressing" an index (layer) was selected in which no parameters have been entered.	Select only indices (layers), in which parameters are entered, by means of the low-byte of "S-0-0368, Data container A: Addressing".
	"Fill" the configuration lists for command values (S-0-0370, S-0-0490, S-0-0491,..., S-0-0496) with parameters.

See also functional description of firmware "Multiplex channel"

E4008 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4008
000E4008
8280

6.2.7 E4009 Invalid addressing actual value data container A

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

An error is present while the index check is carried out in the multiplex channel. In the case of cyclic data exchange, the index is monitored for pointing to a non-initialized section in the list when the lists **Data container A: Configuration list command value-x** are accessed.

Cause	Remedy
Via "S-0-0368, Data container A: Addressing" an index (layer) was selected in which no parameters have been entered.	Select only indices (layers), in which parameters are entered, by means of the high-byte of "S-0-0368, Data container A: Addressing".
	"Fill" the configuration lists for actual values (S-0-0371, S-0-0500, S-0-0501,..., S-0-0506) with parameters.

See also functional description of firmware "Multiplex channel"

E4009 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4009
000E4009
8281

6.2.8 E4010 Slave not scanned or address 0

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the initialization of the sercos ring in communication phase 1, every slave that is to be part of the continuing phase run-up must be addressed by the sercos master. Slaves that are not addressed or for which the drive address 0 is set diagnose this with warning E4010. Communication with these slaves in higher communication phases is not possible; they function only in repeater mode.

Cause	Remedy
Slave was not scanned in phase 1 or address 0 is set	Set correct slave address
Slave was deactivate by control unit	Check sercos master configuration

See also Functional Description of firmware "sercos"

E4010 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4010
C30E4010
818A

6.2.9 E4011 Communication watchdog: Overload of cyclic communication

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
MultiEthernet interface is overloaded; I/O data of cyclic communication cannot be transmitted to drive	Please contact our service department

E4011 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4011
000E4011
818B

6.2.10 E4020 Sercos: Ring interruption (FF to LF)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The sercos ring was interrupted. The sercos topology was changed from "Fast Forward" (FF) to "Loop-back with Forward" (LF).



A change in topology is also displayed in the device status word (S-Dev) (S-0-1045) and at the LEDs of the Multi-Ethernet interface.

Cause	Remedy
Master has changed topology via Device Control (C-Dev) (S-0-1044) - or - A neighboring slave has changed its topology	Carry out ring recovery by master
One of the two sercos cables was removed	Plug in sercos cable and afterwards carry out ring recovery by master
Cable break has occurred (defective cable)	Replace cable and afterwards carry out ring recovery by master

See also Functional Description of firmware "sercos"

E4020 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4020
C30E4020
818D

6.2.11 E4040 Sercos: Hot-plug error

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

This diagnostic message is an acknowledgement message that is generated in the case of an incorrect hot plug phase startup.

Cause	Remedy
During the hot plug phase startup, an error occurred, which cannot be assigned to another, specific hot plug diagnostic message.	A remedy can only be provided in conjunction with the bus master.

E4040 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4040
C30E4040
818F

6.2.12 E4041 Sercos: HP0 Cycle Time invalid

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

This diagnostic message is an acknowledgement message that is generated in the case of an incorrect hot plug phase startup.

Cause	Remedy
The value parameterized in "S-0-1002, sercos cycle time (tScyc)" is not supported by the slave.	Parameterize a sercos cycle time (S-0-1002) in the bus master, which is supported by the slave.

E4041 - Attributes Diagnostic no.: **E4041**
Diagnostic no. as of 18VRS: C30E4041
CiA error code: 8190

6.2.13 E4042 Sercos: HP0 MDT length invalid

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

This diagnostic message is an acknowledgement message that is generated in the case of an incorrect hot plug phase startup.

Cause	Remedy
The value parameterized in "S-0-1010, sercos: Lengths of MDTs" is not supported.	Parameterize MDT lengths in the bus master that conform with standards (see description of S-0-1010).

E4042 - Attributes Diagnostic no.: **E4042**
Diagnostic no. as of 18VRS: C30E4042
CiA error code: 8191

6.2.14 E4043 Sercos: HP0 AT length invalid

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

This diagnostic message is an acknowledgement message that is generated in the case of an incorrect hot plug phase startup.

Cause	Remedy
The value parameterized in "S-0-1012, sercos: AT lengths" is not supported.	Parameterize AT lengths in the bus master that are in conformity with standards (see description of S-0-1012).

E4043 - Attributes Diagnostic no.: **E4043**
Diagnostic no. as of 18VRS: C30E4043
CiA error code: 8192

6.2.15 E4044 Sercos: HP0 MTU size invalid

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

This diagnostic message is an acknowledgement message that is generated in the case of an incorrect hot plug phase startup.

Cause	Remedy
The value parameterized in "S-0-1027.0.1, sercos: Requested MTU" is not supported.	Parameterize an MTU in the bus master ¹⁾ (S-0-1027.0.1), which is supported by the slave.

E4044 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4044
C30E4044
8193

6.2.16 E4045 Sercos: HP0 NRT window invalid

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

This diagnostic message is an acknowledgement message that is generated in the case of an incorrect hot plug phase startup.

Cause	Remedy
The value parameterized in "S-0-1017, sercos: NRT transmission time" is not supported.	Parameterize an NRT transmission time (S-0-1017) in the bus master, which is supported by the slave.

E4045 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4045
C30E4045
8194

6.2.17 E4046 Sercos: HP supported removed

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Acknowledgement diagnostics for change in the specified hot plug phase sequence.

Cause	Remedy
The bus master interrupted "hot plug" during the hot plug phase startup. The drive controller automatically switched back to the NRT mode.	A remedy can only be provided in the bus master, e.g. by re-starting the hot plug phase startup.

E4046 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4046
C30E4046
8195

6.2.18 E4047 Sercos: HP enabled removed

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Acknowledgement diagnostics for change in the specified hot plug phase sequence.

¹⁾ MTU: "Maximum Transmission Unit"

Cause	Remedy
During hot plug phase 1 or 2 the bus master requested the hot plug slave to jump back to hot plug phase 0 (HP0).	A remedy can only be provided in the bus master, e.g. by re-starting from hot plug phase 0.

E4047 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E4047
C30E4047
8196

6.2.19 E4070 EtherCAT Mailbox error

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While processing acyclic data, one of the following problems occurred:

- Master sends non-supported mailbox protocol
⇒ Check configuration on master side
- Invalid mailbox counter from master
- Timeout while sending mailbox data
- Error in internal buffer handling



The associated detailed diagnostic message may provide information on the cause/remedy.

E4070 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E4070
000E4070

6.2.20 E4071 EtherCAT SoE Mailbox error

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

A problem occurred while processing the acyclic parameter channel (SoE).



The associated detailed diagnostic message may provide information on the cause/remedy.

Cause	Remedy
"Cmd type" in the SoE header invalid	Invalid telegram from master; no remedy in the drive
Actual length in mailbox header invalid	Invalid telegram from master; no remedy in the drive
"Drive No" in the SoE header invalid	Check configuration in EtherCAT master
Invalid mailbox counter (from master)	The associated detailed diagnostic message may provide information on the cause/remedy.

E4071 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E4071
000E4071

6.2.21 E4072 EtherCAT EoE Mailbox error

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»

Contained in 18VRS: «-» «-» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

EtherCAT A problem occurred while processing "Ethernet over EtherCAT (EoE)" telegrams.



The associated detailed diagnostic message may provide information on the cause/remedy.

Cause	Remedy
Error while accepting the IP setting	Check whether IP address, network mask and gateway address are plausible
Master sends telegram with incorrect MAC address	Check configuration in EtherCAT master
"MAC filter settings request" received from master	Drive does not support "MAC filter settings"; check configuration in EtherCAT master
Timeout while processing EoE data	The associated detailed diagnostic message may provide information on the cause/remedy.
Invalid frame/fragment number	
Error in internal buffer handling	

E4072 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:

E4072
 000E4072

6.2.22 E4073 EtherCAT CoE Mailbox error

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «-»
 Contained in 18VRS: «-» «-» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

A problem occurred while processing the acyclic parameter channel (CoE):
 Invalid mailbox counter from master



The associated detailed diagnostic message may provide information on the cause/remedy.

E4073 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:

E4073
 000E4073

6.2.23 E4075 EtherCAT: Inconsistent configuration

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «-»
 Contained in 18VRS: «-» «-» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

Cause	Remedy
"Distributed Clocks (DC)" inconsistently configured.	Check configuration in EtherCAT master: In the "DC-Synchron" mode, "SYNC Out Unit" AND "SYNC1 generation" always have to be active.

E4075 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:

E4075
 000E4075

6.2.24 E4100 Error while initializing master communication

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While the drive is starting up, with master communication using Varan, the saved data of the license file are checked for validity.

Cause	Remedy
Internal data memory defective	Replace drive controller

E4100 - Attributes

Diagnostic no.:

E4100

Diagnostic no. as of 18VRS:

000E4100

6.3 Non-fatal warnings (E2xxx)

6.3.1 Behavior in Case a Non-Fatal Warning Occurs

In the case of warnings of category **E2xxx**, the drive normally does not carry out any drive reaction, unless the warning was generated due to a mains or undervoltage error.

A second group of warnings within this category signals that a limit value determined (parameterized) by the user has been exceeded.

A warning cannot be cleared; it disappears automatically after its cause was removed.

6.3.2 E2001 Diagnostic trace S-0-1303.0.10 overflow warning

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
A problem occurred while processing the diagnostic messages of the drive. In too short a time too many diagnostic messages are/were signaled so that the diagnostic trace became inconsistent. The warning does not have any direct influence on the drive function	1. Make a backup of all parameters. 2. Have a look at the diagnostic trace to find out which diagnostic messages were signaled last. A warning or an error is likely to have been cyclically signaled. This diagnostic message usually appears repeatedly in the diagnostic trace. 3. Now, switch the drive off and back on. During re-commissioning see to it that the relevant diagnostic message is not cyclically generated. Then get in contact with our service department and forward the parameter backup to them.

E2001 - Attributes

Diagnostic no.:

E2001

Diagnostic no. as of 18VRS:

000E2001

6.3.3 E2004 Performance load prewarning threshold exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Performance load prewarning threshold exceeded.



This warning can be cleared by switching over to the parameter mode or by changing the prewarning threshold for performance utilization (P-0-0322.0.2).

Cause	Remedy
The prewarning threshold set in P-0-0322.0.2 for performance utilization has been exceeded.	Increase the value of "P-0-0322.0.2, Prewarning threshold - performance utilization". Please note that in the case of a utilization of capacities > 90 % the reaction to acyclic communication requests may be slower, MLD computer assignments may be reduced and the processing times for commands increased. In the case of loading > 95 % trouble-free operation can no longer be ensured, through to possible CPU watchdogs (F9003). Tip: The averaged performance utilization is shown in P-0-0322, Performance load.
	Change the performance setting (P-0-0556, Config word of axis controller).
	Increase the master communication cycle time
	Reduce the configured cyclic process data
	Deactivate the optional firmware functions if not required (position switch, probe function, ...).

E2004 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E2004
000E2004

6.3.4 E2006 Too many write accesses to flash

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

As of firmware release HDx20V18, the frequency of parameter writing is monitored. It is to be avoided that the data flash memory, in which parameters are stored, is destroyed by excessive overwriting. To prevent this the time between two save processes to the data flash is adjusted in dependence on the frequency of writing parameters. The implemented functionality is as follows:

1. As long as not more than 6 write cycles take place per minute, saving parameters to the data flash is not delayed.
2. If more than 6 write cycles are detected per minute, saving of parameters is delayed by 10 seconds.
3. If more than 100 write cycles are detected per hour, saving of parameters is delayed by 10 minutes. Warning E2006 (excessive number of write accesses to flash) appears.

Warning E2006 is cleared automatically, if fewer than 6 write cycles are detected.

Cause	Remedy
Continuous acyclic writing of parameters over the bus systems VARAN, Sercos, PROFINET, EtherNet/IP, EtherCAT, PROFIBUS	Check whether the parameters have to be constantly written acyclically. Change storage mode via parameter S-0-0269 to the value 1 so that the parameters are not stored.
Continuous writing of parameters via the PLC program by means of the corresponding function blocks/functions for parameters, e.g. MB_WriteParameter, MB_WriteListParameter, MX_WriteParamDINT	Check whether the parameters have to be constantly written via the PLC program. Change storage mode via parameter S-0-0269 to the value 1 so that the parameters are not stored.

E2006 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**E2006**
000E2006

6.3.5 E2011 PLC - Warning no. 1

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM» «-»

The drive-integrated PLC offers users the possibility of generating application-specific warnings from the PLC program using the function MX_fSetDriveWarning(). With the help of function MX_fSetDriveWarning() it is possible to trigger errors E2011 ... E2017.

Cause and remedy for the occurrence of such an application-specific PLC warning depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of a warning can be changed via the integrated PLC with the help of function MX_fSetDriveWarningText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

E2011 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:**E2011**
000E2011
F085

6.3.6 E2012 PLC - Warning no. 2

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM» «-»

The drive-integrated PLC offers users the possibility of generating application-specific warnings from the PLC program using the function MX_fSetDriveWarning(). With the help of function MX_fSetDriveWarning() it is possible to trigger errors E2011 ... E2017.

Cause and remedy for the occurrence of such an application-specific PLC warning depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of a warning can be changed via the integrated PLC with the help of function MX_fSetDriveWarningText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

E2012 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2012
000E2012
F086

6.3.7 E2013 PLC - Warning no. 3

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»			«-»
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM» «-»

The drive-integrated PLC offers users the possibility of generating application-specific warnings from the PLC program using the function MX_fSetDriveWarning(). With the help of function MX_fSetDriveWarning() it is possible to trigger errors E2011 ... E2017.

Cause and remedy for the occurrence of such an application-specific PLC warning depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of a warning can be changed via the integrated PLC with the help of function MX_fSetDriveWarningText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

E2013 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2013
000E2013
F087

6.3.8 E2014 PLC - Warning no. 4

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»			«-»
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM» «-»

The drive-integrated PLC offers users the possibility of generating application-specific warnings from the PLC program using the function MX_fSetDriveWarning(). With the help of function MX_fSetDriveWarning() it is possible to trigger errors E2011 ... E2017.

Cause and remedy for the occurrence of such an application-specific PLC warning depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of a warning can be changed via the integrated PLC with the help of function MX_fSetDriveWarningText(). This offers the

possibility of assigning expressive and language-related diagnostic messages.

E2014 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2014
000E2014
F088

6.3.9 E2015 PLC - Warning no. 5

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM» «-»

The drive-integrated PLC offers users the possibility of generating application-specific warnings from the PLC program using the function MX_fSetDriveWarning(). With the help of function MX_fSetDriveWarning() it is possible to trigger errors E2011 ... E2017.

Cause and remedy for the occurrence of such an application-specific PLC warning depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of a warning can be changed via the integrated PLC with the help of function MX_fSetDriveWarningText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

E2015 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2015
000E2015
F089

6.3.10 E2016 PLC - Warning no. 6

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM» «-»

The drive-integrated PLC offers users the possibility of generating application-specific warnings from the PLC program using the function MX_fSetDriveWarning(). With the help of function MX_fSetDriveWarning() it is possible to trigger errors E2011 ... E2017.

Cause and remedy for the occurrence of such an application-specific PLC warning depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of a warning can be changed via the integrated PLC with the help of function MX_fSetDriveWarningText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

E2016 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2016
000E2016
F08A

6.3.11 E2017 PLC - Warning no. 7

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM»

The drive-integrated PLC offers users the possibility of generating application-specific warnings from the PLC program using the function MX_fSetDriveWarning(). With the help of function MX_fSetDriveWarning() it is possible to trigger errors E2011 ... E2017.

Cause and remedy for the occurrence of such an application-specific PLC warning depend on the individual PLC project.

Note:

As of firmware HDx-20 the diagnostic message name saved as **default text** is English in all language variants.

Tip:

The diagnostic message text of a warning can be changed via the integrated PLC with the help of function MX_fSetDriveWarningText(). This offers the possibility of assigning expressive and language-related diagnostic messages.

E2017 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2017
000E2017
F08B

6.3.12 E2030 Excessive deviation

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«HDS»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»

When the position control loop is closed, the drive monitors whether it can follow the given position command value. For this purpose, a model position feedback value is calculated in the drive and compared to the real actual position value. If this difference between the calculated and actual position value exceeds the value entered in parameter "S-0-0159, Monitoring window", the drive apparently cannot follow the given command value and usually error F2028 is generated. However, if bit 0 of "P-0-2819, Error suppression control word" is set, error F2028 is replaced by warning E2030.



The maximum deviation between the calculated and the real actual position value can be read in "P-0-0098, Max. model deviation".

⚠ CAUTION

Configuring an error as warning results in the fact that responding of the monitoring function will no longer cause an error reaction on the drive side. If the user fails to react, the plant/machine may be damaged or destroyed!

The user has to react to triggering of monitoring (error) according to the specific requirements of the system.

Cause	Remedy
Monitoring window set too small	Check content of "S-0-0159, monitoring window" and correct, if necessary
Excessive command acceleration due to incorrect command value provision by the control	Reduce the acceleration input by the control (see control manual)
Too small a numerical value in "S-0-0092, Bipolar torque/force limit value"	Check the content of "S-0-0092, Bipolar torque/force limit value" and set it to the maximum value permitted for the application at hand.
The axis is blocked or stiff.	Check mechanical system and eliminate stiffness.
Control loop parameters incorrect or not optimized	Check control loop setting (e.g. "S-0-0104, Position loop Kv-factor", "P-0-0556, Config word of axis controller")
Acceleration capacity of drive exceeded	Check rating of the drive.

E2030 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

E2030

000E2030

6.3.13 E2031 Encoder 1 warning: Signal amplitude incorrect

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«-» «-» «-» «-» «-» «-»

The signals of the measuring system (encoder 1) are monitored on hardware and software level 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 following takes place:

- In conjunction with the function "redundant encoder" warning E2031 is generated, if this has been configured via parameters S-0-0520 and P-0-2936. In this case, the controller follows the position of the 2nd encoder.

or

- In conjunction with error suppression (as far as provided in the devices), warning E2031 is generated instead of "F8022, Enc. 1: Enc. signals incorr."

CAUTION

When the error case has been configured as a warning, the triggering of the monitoring function no longer causes the drive-side error reaction. If the user does not react, the installation/machine can be damaged or destroyed!

The user must react in an installation-specific way to the triggering of the monitoring function (error case).

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Measuring system defective	Check measuring system and replace it, if necessary

Cause	Remedy
Faulty mounting of probe in the case of linear measuring systems	Check mounting of probe and correct it, if necessary
Measuring system dirty	Clean or replace measuring system
Hardware defect on control section of drive	Replace control section or entire drive controller

E2031 - Attributes

Diagnostic no.:

E2031

6.3.14 E2037 Excessive position command difference warning

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

When the drive is running in the operation 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 warning E2037 is generated, if this has been configured via the list parameter "P-0-0173, List of configurable axis-specific monitoring functions" in list element 1. The controller does not carry out any other error reaction. As an alternative, the error "F2037 Excessive position command difference" can be configured for this error case in the parameter P-0-0173 in list element 1.

CAUTION

When the error case has been configured as a warning, the triggering of the monitoring function no longer causes the drive-side error reaction. If the user does not react, the installation/machine can be damaged or destroyed!

The user must react in an installation-specific way to the triggering of the monitoring function (error case).

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".



The warning is cleared when exiting the operation mode "position control with cyclic command value input" or at the earliest 2 seconds after the error condition has stopped to exist.

Cause	Remedy
Value in "S-0-0091, Bipolar velocity limit value" too low	Check and, if necessary, correct parameterization of "S-0-0091, Bipolar velocity limit value"
Incorrect command value set by control unit	Contact control unit manufacturer or programmer

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

E2037 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2037
C00E2037
8581

6.3.15 E2042 Encoder 2 warning: Encoder signals incorrect

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»	«-»	«-»
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«-»

The signals of the measuring system (encoder 2) are monitored on hardware and software level 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 warning is generated, if this has been configured via the list parameter **"P-0-0173, List of configurable axis-specific monitoring functions" list element 2**. The controller does not carry out any other error reaction. As an alternative, the error "F2042 Encoder 2: Encoder signals incorrect" can be configured for this error case in the parameter P-0-0173 in **list element 2**.

⚠ CAUTION

When the error case has been configured as a warning, the triggering of the monitoring function no longer causes the drive-side error reaction. If the user does not react, the installation/machine can be damaged or destroyed!

The user must react in an installation-specific way to the triggering of the monitoring function (error case).



The warning is cleared when changing from the operating mode (OM) to the parameter mode (PM).

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



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.

E2042 - Attributes

Diagnostic no.:

E2042

6.3.16 E2049 Positioning velocity $\geq$ limit value

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				

Warnings (Exxxx)

Contained in 18VRS: «HDB» «HDC» «-»
Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the operation modes in which the drive-internal position command value interpolator is active, the velocity command value (positioning velocity) effective in the drive is limited to the smallest parameterized velocity limit value.

This means that the monitor is active in the following operation modes or operating states:

- Operation Modes**
- Drive-internal interpolation
 - Drive-controlled positioning
 - Positioning block mode
- Commands**
- Drive-controlled homing procedure
 - ...

Cause	Remedy
Incorrect velocity has been 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-0-0091, Bipolar velocity limit value", "S-0-0038, Positive velocity limit value", "S-0-0039, Negative velocity limit value")	Check parameterization or cyclic command value of control unit and set value for preset velocity smaller than value from "S-0-0091, Bipolar velocity limit value", "S-0-0038, Positive velocity limit value" or "S-0-0039, Negative velocity limit value" Note: The preset velocity is also influenced by S-0-0108; check S-0-0108.
"S-0-0091, Bipolar velocity limit value", "S-0-0038, Positive velocity limit value" or "S-0-0039, Negative velocity limit value" incorrectly parameterized	Check parameter contents of "S-0-0091, Bipolar velocity limit value", "S-0-0038, Positive velocity limit value" and "S-0-0039, Negative velocity limit value". Check whether parameter possibly has been assigned to an analog input or is contained in cyclic data
Analog input to which "S-0-0091, Bipolar velocity limit value", "S-0-0038, Positive velocity limit value" or "S-0-0039, Negative velocity limit value" was assigned is defective or not connected	Check wiring and function of analog input and, if necessary, replace cable or control section, or the entire drive controller

E2049 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2049
C00E2049
8680

6.3.17 E2053 Target position out of travel range

Allocation

Contained in 16VRS: «-»
Contained in 17VRS: «HDB»
Contained in 18VRS: «HDB» «HDC» «-»
Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the case of operation modes with drive-integrated generation of position command values, before a movement is performed, a check is run to ascertain whether the set 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 permissible travel range of the drive.

The permissible travel range of the drive is defined by

- S-0-0049, Positive position limit value
- S-0-0050, Negative position limit value

Monitoring of the position limit value and hence monitoring of the permissible travel range is activated in "S-0-0055, Position polarities". Monitoring of the position limit value is only active if the selected encoder is in reference.

The reaction to a travel range error can be set in "P-0-0090, Travel range limit parameter".



If monitoring of the position limit value has been activated and the target position is outside the permissible travel range, a warning bit is set in "S-0-0012, Class 2 Diagnostics". In addition, the message "S-0-0323, Target position outside of travel range" is set.

Cause	Remedy
Position limit values incorrectly parameterized ("S-0-0049, Positive position limit value", "S-0-0050, Negative position limit value")	Check the parameterization of the position limit values and adjust them according to the desired travel range ("S-0-0049, Positive position limit value" must be greater than "S-0-0050, Negative position limit value")
Monitoring of position limit values has been activated although it is not required.	If monitoring of position limit values is not required (e.g. in modulo operation), deactivate it.
In the case of relative interpolation, the travel distance was set too large or several travel distances that are added up lead to the fact that the effective target position (cf. "P-0-0050, Effective target position") is outside position limits.	Check and, if necessary, adjust the set travel distance (cf. "S-0-0258, Target position") in the control program.
In the case of absolute interpolation, the target position was set incorrectly.	Check and, if necessary, adjust the set target position (cf. "S-0-0258, Target position" or "S-0-0282, Positioning command value") in the control program (enter "S-0-0258, Target position" only within the position limit values).
In the operation mode "Positioning block mode" one or several target positions were incorrectly parameterized or the wrong positioning block is selected.	Check the target positions parameterized in "P-0-4006, Positioning block target position" as well as the block selection ("P-0-4026, Positioning block selection"). In addition, the block selection has to be checked via the relevant master communication (e.g. field bus or digital IOs).

See also functional description of firmware: "Open and closed-loop drive control"

For "relative interpolation", see functional description of firmware "Drive-controlled positioning"

For "absolute interpolation", see functional description of firmware "Drive-internal interpolation"

E2053 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2053
 C00E2053
 8682

6.3.18 E2054 Not homed

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

Before a motion is carried out, a check is run in the case of operation modes with drive-internal position command value generation (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. operation mode selection) has been homed.



When the warning E2054 appears, the drive stops or does not accept the target position or the positioning block. A warning bit is set in "S-0-0012, Class 2 diagnostics".

Cause	Remedy
Absolute positioning was started although the position data reference of the drive had not yet been established [drive has not been homed (cf. "S-0-0403, Position feedback value status")]	Establish the absolute position data reference by starting the command "S-0-0148, C0600 Drive-controlled homing procedure command" or "S-0-0447, C0300 Set absolute position procedure command"

See also Functional Description of firmware "Establishing the position data reference"

E2054 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2054
C00E2054
8684

6.3.19 E2055 Feedrate override S-0-0108 = 0

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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 decelerates to standstill.



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.

Cause	Remedy
Parameter "S-0-0108, Feedrate override" was set to "0"	Set feedrate override > "0" so that drive moves. Full velocity is reached with 100 %.
For devices with analog inputs: feedrate override via analog input has been activated and voltage at analog input is "0"	Apply voltage > "0" proportionally to desired velocity (+10 V corresponds to 100 % velocity) Alternative: deactivate feedrate override
Infeed potentiometer of connected control unit was set to "0" or is incorrectly evaluated	Carefully actuate infeed potentiometer, check analog signal and evaluation
Analog input used for feedrate override or connecting cable is defective	Check and if necessary replace cable and control section

E2055 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2055
C00E2055
8687

6.3.20 E2058 Selected positioning block has not been programmed

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»

Contained in 18VRS: «HDB» «HDC» «-»
Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the "positioning block mode" the selected positioning block is checked so that only complete positioning blocks can be started.



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	Remedy
Positioning block data of currently selected block are not available	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
Incorrect positioning block selection via field bus or digital inputs	Check "P-0-4026, Positioning block selection" and control. If necessary, also check wiring and connection of digital I/Os
Incorrect configuration of digital inputs causes unwanted positioning block selection	Check configuration of digital inputs and correct it accordingly

See also Functional Description of firmware

- "Digital Inputs/Outputs"
- "Positioning Block Mode"

E2058 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2058
000E2058
8689

6.3.21 E2059 Velocity command value limit active

Allocation

Contained in 16VRS: «-»
Contained in 17VRS: «HDB»
Contained in 18VRS: «HDB» «HDC» «-»
Contained in 20VRS: «-» «-» «-» «-» «-» «-»

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	Remedy
Cyclic command value preset by control unit is incorrect or too high	Control cyclic command value and, if necessary, adjust control program
Velocity limit value parameterized too low	Check and correct parameterization of "S-0-0091, Bipolar velocity limit value"

See also Functional Description of firmware "Velocity Control"

E2059 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E2059
000E2059

6.3.22 E2063 Velocity command value > limit value

Allocation

Contained in 16VRS: «-»
Contained in 17VRS: «HDB»

Contained in 18VRS: «HDB» «HDC» «-»
Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive continuously monitors the velocity command value (S-0-0036 or another parameterized command value input).

If the velocity command value exceeds the smallest parameterized velocity limit value, the lag error can be increased for positioning tasks.

Cause	Remedy
Cyclic command value preset by control unit is incorrect or too high	Check cyclic command value and, if necessary, adjust control program
Velocity limit value parameterized too low	Check and correct parameterization of "S-0-0091, Bipolar velocity limit value", "S-0-0038, Positive velocity limit value", "S-0-0039, Negative velocity limit value"

See also Functional Description of firmware "Velocity Control"

E2063 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:
CiA error code:

E2063
 C00E2063
 8481

6.3.23 E2065 Pressure command value > limit value

Allocation **Contained in 16VRS:** «-»
Contained in 17VRS: «-»
Contained in 18VRS: «HDB» «HDC» «-»
Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

An operation mode with pressure generator was selected (e.g. "A0172 Pressure control / Flow (open-/closed-loop) control") and the pressure command value is greater than the defined limit value.

Cause	Remedy
Incorrect pressure command value input	Check and adjust pressure command value.
Limit value set unfavorably.	Check and adjust limit values S-0-0802, S-0-0828 and S-0-0829.

See also functional description of firmware "Pressure/flow control"

E2065 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E2065
 C00E2065

6.3.24 E2066 Flow command value > limit value

Allocation **Contained in 16VRS:** «-»
Contained in 17VRS: «-»
Contained in 18VRS: «HDB» «HDC» «-»
Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

An operation mode with flow generator was selected (e.g. "A0171 Pressure control / Flow (open-/closed-loop) control") and the flow command value is greater than the defined limit value.

Cause	Remedy
Incorrect flow command value input.	Check and adjust flow command value.
Limit value set unfavorably.	Check and adjust flow limit values S-0-0850, S-0-0851 and S-0-0852.

See also functional description of firmware "Flow control".

E2066 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**E2066**
C00E2066**6.3.25 E2067 Synchronization to master communication incorrect**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Drive control is synchronized to the bus interface (Sercos, PROFIBUS,...) via two phase control loops (Phase Locked Loop PLL). The proper function of synchronization is monitored by monitoring the respective control deviation of the two PLL for an allowed threshold. If it is exceeded, this error message is generated.

Cause	Remedy
Interference injections due to faulty connection of master communication result in synchronization problems	Check and, if necessary, correct connection of master communication (incl. shield connection)
Synchronization clock cycle of master fluctuates heavily due to software or hardware error in master (e.g., jittering of MST in the case of Sercos)	Check communication master and ensure a stable, constant synchronization clock
Master communication hardware of the drive controller defective	Replace drive controller

E2067 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**E2067**
000E2067**6.3.26 E2072 Synchronization, velocity comm. value > limit value**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «HDS»
	Contained in 20VRS:	«-» «-» «-» «-» «-» «HDS»

A slave axis of the synchronized group has reached its maximum velocity limit value. In order to prevent errors in the slave axis, the velocity is limited to 99 % of the maximum velocity.

Cause	Remedy
The synchronization controller provided command values for the slave axis, which would result in a velocity greater than allowed by the velocity limit value.	Check and, if necessary, adjust velocity limit values of the slave axes.
Command velocity of the synchronization axis is greater than the velocity command value of the slave axes.	Reduce command velocity of the synchronization axis.
The integrator synchronization control is set too fast.	Check control parameters of synchronization control.
Proportional gain of synchronization is set too high.	Reduce proportional gain of synchronization.

E2072 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:
Error can be cleared:**E2072**
000E2072
-**6.3.27 E2073 Swivel angle command value > limit value**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»

Contained in 18VRS: «-» «-» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

An operation mode with swivel angle control was selected and the swivel angle command value is higher than the defined limit value.



The warning E2073 is not issued, if the swivel angle command value is entered in an assignment for an analog input.

Cause	Remedy
Incorrect swivel angle command value input.	Check and adjust swivel angle command value.
Limit value set unfavorably.	Check and, if necessary, adjust limit values "S-0-0884", "S-0-0885" and "S-0-0886"

See also functional description of firmware, "Pressure/swivel angle control"

E2073 - Attributes

Diagnostic no.:

E2073

Diagnostic no. as of 18VRS:

000E2073

6.3.28 E2074 Encoder 1: Encoder signals disturbed

Allocation	Contained in 16VRS: «-»
	Contained in 17VRS: «HDB»
	Contained in 18VRS: «HDB» «HDC» «-»
	Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»



Warning E2074 is only cleared through a re-initialization of the encoder position; i.e. it is necessary to switch to the parameter mode.

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Measuring system defective	Check measuring system and replace it, if necessary
Incorrect mounting of measuring head in the case of linear measuring systems	Check mounting of measuring head and correct it, if necessary
Measuring system dirty	Clean or replace measuring system
Encoder diagnostics set in the encoder	Read out the value transmitted by the encoder to the drive in parameter S-0-0603.x.5, Phys. encoder, extended diagnostics. For cause and possible remedy, refer to the documentation of the connected encoder.
Hardware defect on control section of drive	Replace control section or entire drive controller

E2074 - Attributes

Diagnostic no.:

E2074

Diagnostic no. as of 18VRS:

000E2074

CiA error code:

738B

6.3.29 E2077 Absolute encoder monitoring, encoder 1 (encoder alarm)

Allocation	Contained in 16VRS: «-»
	Contained in 17VRS: «HDB»
	Contained in 18VRS: «HDB» «HDC» «-»
	Contained in 20VRS: «-» «-» «-» «-» «-» «-»

The signals of an absolute measuring system (EnDat2.x) are monitored in the encoder.

In the drive controller, cyclic transmission of the absolute position is carried out. The error bit of the encoder is transmitted, too. The drive controller cyclically checks this error bit and outputs the warning E2077 when an error of the absolute position occurs.



The warning E2077 is only cleared by reinitialization of the encoder position; i.e. it is necessary to switch to communication phase 2.

Cause	Remedy
Measuring system 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	Clean or replace measuring system

E2077 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E2077
000E2077

6.3.30 E2080 Encoder out of monitoring window

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«HDS»		
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«HDS»

If two encoders with automatic changeover, see "S-0-0520 Axis control word" and "P-0-2936 Encoder control word extended" were activated, the actual positions provided by the two encoders are compared, see "S-0-0051 Position feedback value 1" and "S-0-0053 Position feedback value 2". If the difference between these two positions is greater than "S-0-0391 Monitoring window feedback 2", warning E2080 is issued. The encoder, the value of which is closer to the required setpoint position, is used for further controlling.

In this case, both encoders provide a valid actual value.

Cause	Remedy
The actual positions of encoder 1 and encoder 2 are mechanically not identical.	Check the physical position of the encoders.
The actual positions of encoder 1 and encoder 2 do not go with the mechanical system.	Check that the encoder parameters are correctly set and referenced. Check in particular the following parameters: "S-0-0116 Resolution of feedback 1" and "S-0-0117 Resolution of feedback 2" "S-0-0277 Position feedback 1 type" and "S-0-0115 Bit 5 Position feedback 2 type" "S-0-0177 Absolute offset 1" and "S-0-0178 Absolute offset 2"

E2080 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E2080
000E2080

6.3.31 E2092 Internal synchronization defective

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»

The drive is informed by the NC cycle time at which intervals new cyclic command values must have been received and processed. The warning E2092 is generated, if the parameterized processing clock cycle ["S-0-0001, NC cycle time (TNcyc)"] differs from the effective processing clock cycle of cyclic command values.

Cause	Remedy
Master communication with synchronization ability (EtherCAT) If the NC cycle time is greater than the sercos cycle time, the master communication master has to toggle the "IPO-SYNC" bit of the master the control word; if this is not the case or takes place incorrectly, warning E2092 is generated.	The master communication master has to toggle "IPO-SYNC" bit correctly (see description of master communication).
Master communication with synchronization ability (sercos) With synchronous consumer connection, the producer must transmit new data to the consumer at a defined point of time. The producer signals this to consumer by toggling bit1 ("new data" bit) of "S-0-1050.x.8, sercos connection: Connection control (C-Con)". The producer did not toggle this bit at point of time T_{Pcyc} .	The producer of the synchronous consumer connection has to toggle "new data" bit at point of time T_{Pcyc} .

E2092 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:
 CiA error code:

E2092
 000E2092
 FF01

6.3.32 E2260 Warning Defect of digital outputs

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The level according to "P-0-0304 Digital outputs, output image of device" was incorrectly output to one of the switching outputs of the drive controller.

Cause	Remedy
Switching output defective	Replace drive controller
Switching output overloaded	Check allowable loading of the switching output and, if necessary, change circuitry

E2260 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:

E2260
 000E2260

6.3.33 E2270 Analog input, wire break

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The drive provides the function of monitoring the input value of analog inputs for wire rupture. The message to be issued can be configured as warning or error in "P-0-2900.0.7 Analog input, assignment, extended control word".

Conditions for triggering this warning:

- In "P-0-2900.0.1 Analog input, assignment, control word" wire rupture monitoring was activated (by determining the measuring range of analog inputs) and

- in "P-0-2900.0.7 Analog input, assignment, extended control word" it was declared that a warning is generated when the input value at the analog input falls below the minimum value, and
- the current/voltage value at the selected analog input is less than the minimum value of the measuring range.

The warning remains present as long as this condition is fulfilled.



The value range of a voltage or current source that is connected to an analog input should be restricted to the permitted value range of the analog input.

Cause	Remedy
A cable rupture was detected at one of the analog inputs (the input value is below the base value set in assignment "P-0-2900.0.1 Analog input, assignment, control word").	Check the configuration of the allocation for correctness.
The wiring of at least one of the analog inputs is incorrect or defective	Check wiring of the inputs.

E2270 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E2270
000E2270

6.3.34 E2280 Warning: Wire rupture of swivel angle sensor

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The drive offers the function of monitoring the input value of the actual swivel angle value for cable break. This cable break detection cannot be switched off.

Cause	Remedy
The connection cable of the swivel angle sensor is not connected.	Connect the connection cable of the swivel angle sensor.
Connector or cable damaged.	Inspect cable and connector.
Swivel angle sensor defective.	Replace swivel angle sensor.

See also functional description of firmware "Pump controller".



With the help of parameter "P-0-2949.0.1, Swivel angle sensor configuration" the diagnostic message "Wire rupture of swivel angle sensor" can be configured as error or warning.

E2280 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E2280
000E2280

6.3.35 E2282 Warning: Control deviation pump controller

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

For the diagnostic message "E2282, Warning: Control deviation pump controller", the amount of the valve command value "P-0-2914, Effective valve

command value" is monitored. If the amount of the valve command value exceeds a defined threshold (50 %) for longer than a defined time (1.5 s), the diagnostic message "Control deviation pump controller" is output.

Cause	Remedy
No backpressure can build up (minimum pressure at pump 8 .. 10 bar)	Check that the hydraulic system is leak-free and there is no excessive oil consumption
Drive motor switched off or speed too low	Check electrical control and frequency converter
Valve spool does not move as a result of an electronics fault	Replace pilot valve, see RE 30017-B
Valve spool jammed due to contamination	Replace pilot valve, see RE 30017-B, contact Rexroth Service

E2282 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E2282
000E2282

6.3.36 E2291 No assignment of actual pressure value 2

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the operation mode "pressure/swivel angle control" and "closed-loop pressure control/flow (open-/closed-loop control)" the drive monitors the assignment for pressure feedback value 2. If no assignment has been made to the target "P-0-2941, pressure feedback value 2", and "P-0-2950, Pump controller control word" is used for switching to the second pressure feedback value, this diagnostic message is output. Pressure feedback value 2 is optional for the operation of the pump controller.

Cause	Remedy
No assignment has been made to the target "P-0-2941, pressure feedback value 2"	Provide an assignment with target parameter "P-0-2941, Pressure feedback value 2" in the configuration of the analog inputs

See also Functional Description of firmware "Pump control".

E2291 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E2291
000E2291

6.3.37 E2301 Diagnosis overload load compensation

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Load force exceeds the maximum force that the system can generate.

The value of parameter "P-0-2921, Load pressure" is established together with parameters "P-0-2917.0.7, Moved mass", "P-0-2919, Inclination angle of axis" and piston areas "S-0-0820, Piston area A" and "S-0-0821, Piston area B". If this calculated amount is greater than or equal to the amount of the difference between "S-0-0813, System pressure" and "S-0-0814, Tank pressure", warning "overload load compensation" is output.

E2301 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

E2301
000E2301

6.3.38 E2302 Analog output overload

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

Error at analog output that is not used as controller output.

Cause	Remedy
Overtemperature	Let cool down
Overcurrent or open terminal at current output	Check connection for short-circuit and cable break
Internal HW fault	If possible, change hardware; otherwise, contact after-sales service

E2302 - Attributes

Diagnostic no.:

E2302

Diagnostic no. as of 18VRS:

000E2302

6.3.39 E2667 Machine archive is not up-to-date

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«-»	«HDM» «-»

Cause	Remedy
Device data to backup were changed by command C6700. Machine archive on external memory card is no longer up-to-date.	Execute command C6500 for updating machine archive with device data from update. - or - Execute command C6600 to restore device data from machine archive.

E2667 - Attributes

Diagnostic no.:

E2667

Diagnostic no. as of 18VRS:

000E2667

CiA error code:

FF03

7 Diagnostic command messages

7.1 Commands

7.1.1 C0100 Communication phase 3 transition check

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The "S-0-0127, C0100 Communication phase 3 transition check" command was activated.

C0100 - Attributes Diagnostic no.: **C0100**
Diagnostic no. as of 18VRS: C30C0100

7.1.2 C0200 Exit parameterization level procedure command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command "S-0-0422, C0200 Exit parameterization level procedure command" has been activated.

C0200 - Attributes Diagnostic no.: **C0200**
Diagnostic no. as of 18VRS: C20C0200

7.1.3 C0300 Set absolute position procedure command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The command for setting the absolute position ("S-0-0447, C0300 Set absolute position procedure command") has been activated.

See also Functional Description of firmware "Establishing Position Data Reference for Absolute Measuring Systems"

C0300 - Attributes Diagnostic no.: **C0300**
Diagnostic no. as of 18VRS: C00C0300

7.1.4 C0400 Activate parameterization level 1 procedure command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The command for switching to the parameter mode was started via parameter "S-0-0420, C0400 Activate parameterization level 1 procedure command".

C0400 - Attributes Diagnostic no.: **C0400**
Diagnostic no. as of 18VRS: C20C0400

7.1.5 C0500 Reset class 1 diagnostics, error reset

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»

Contained in 18VRS: «HDB» «HDC» «HDS»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The command for clearing errors, "S-0-0099, C0500 Reset class 1 diagnostics", was activated. All drive-internal errors are cleared.



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.

⚠ CAUTION

Damage to the internal memory (flash) caused by too many write accesses!

⇒ During the execution of this command, data are written to the internal memory (flash). As each flash only allows a limited number of write accesses before its memory locations are destroyed, you should make sure that such write accesses won't be carried out too often.

C0500 - Attributes

Diagnostic no.: C0500
 Diagnostic no. as of 18VRS: C20C0500

7.1.6 C0600 Drive-controlled homing procedure command

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «HDB»
 Contained in 18VRS: «HDB» «HDC» «HDS»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

The command for drive-controlled homing, "S-0-0148, C0600 Drive-controlled homing procedure command", was activated.

See also Functional Description of firmware "Drive-Controlled Homing"

C0600 - Attributes

Diagnostic no.: C0600
 Diagnostic no. as of 18VRS: C00C0600

7.1.7 C0700 Load defaults proced. Command

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «HDB»
 Contained in 18VRS: «HDB» «HDC» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command can be started via the parameter "S-0-0262, C07_x Load defaults procedure command"



With the parameter S-0-0262, it is possible to start other commands. In parameter "P-0-4090, Configuration for loading default values", it is possible to set which command is started.

NOTICE

Command "C0700 Load defaults proced. command" overwrites user-defined parameter settings with factory settings!

Only use this command if you want to load default parameter values (factory settings). For saving and then loading user-defined parameter values, there are specific commands available.

NOTICE

Damage to the internal memory (flash) caused by too many write accesses!

During the execution of this command, data are written to the internal memory (flash). This memory, however, only allows a limited number of write accesses. For this reason, you should make sure that such write accesses are not carried out too often (a maximum of approx. 100,000 writing cycles).

C0700 - Attributes

Diagnostic no.:

C0700

Diagnostic no. as of 18VRS:

C20C0700

7.1.8 C0730 Load defaults procedure command (MLD)

Allocation

Contained in 16VRS:	«-»					
Contained in 17VRS:	«-»					
Contained in 18VRS:	«-»	«HDC»	«-»			
Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM»	«-»

The command can be started as follows:

1. Enter the value "0x0002" in "P-0-4090, Configuration for loading default values".
2. Start "S-0-0262, C07_x Load defaults procedure command".



With the parameter S-0-0262, it is possible to start other commands. In parameter "P-0-4090, Configuration for loading default values", it is possible to set which command is started.

CAUTION

Command "C0730 Load defaults procedure command (MLD)" deactivates the drive PLC and overwrites user-defined PLC settings!

Use this command only if you want to completely erase the PLC program and its parameters without programming system.

C0730 - Attributes

Diagnostic no.:

C0730

Diagnostic no. as of 18VRS:

020C0730

7.1.9 C0740 Command Activate field bus profile settings

Allocation

Contained in 16VRS:	«-»					
Contained in 17VRS:	«HDB»					
Contained in 18VRS:	«HDB»	«HDC»	«-»			
Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

The execution of this command sets user-defined field bus profile-dependent parameters to their default values.

The command can be started as follows:

1. Enter the value "0x0004" in the parameter P-0-4090, Configuration for loading default values
2. Start "S-0-0262, C07_x Load defaults procedure command"



With the parameter S-0-0262, it is possible to start other commands. In parameter "P-0-4090, Configuration for loading default values", it is possible to set which command is started.

C0740 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0740**
020C0740**7.1.10 C0750 Load defaults procedure command (factory settings)**

Allocation	Contained in 16VRS: «-»						
	Contained in 17VRS: «HDB»						
	Contained in 18VRS: «HDB» «HDC» «-»						
	Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»						



Up to MPx16V18, the name of this diagnostic message was "C0750 Load defaults procedure com. (load basic parameters)".

By executing command "C0750 Load defaults procedure command (factory settings)", the parameters stored in non-volatile form are reset to the factory settings. It is possible to exclude parameters of certain subfunctions from loading of default values (see "P-0-4090, Configuration for loading default values").

NOTICE

Damage to the internal memory (flash) caused by too many write accesses!

During the execution of this command, data are written to the internal memory (flash). This memory, however, only allows a limited number of write accesses. For this reason, you should make sure that such write accesses are not carried out too often (a maximum of approx. 100,000 writing cycles).

C0750 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0750**
020C0750**7.1.11 C0900 Position spindle command**

Allocation	Contained in 16VRS: «-»						
	Contained in 17VRS: «-»						
	Contained in 18VRS: «-» «HDC» «-»						
	Contained in 20VRS: «-» «HDC» «-» «-» «HDM» «-»						

Via the control unit the "S-0-0152, C0900 Position spindle command" parameter was activated.

See also Functional Description of firmware "Spindle Positioning"

C0900 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0900**
C00C0900**7.1.12 C1300 Positive stop drive procedure command**

Allocation	Contained in 16VRS: «-»						
	Contained in 17VRS: «HDB»						
	Contained in 18VRS: «HDB» «HDC» «-»						
	Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»						

The command "S-0-0149, C1300 Positive stop drive procedure command" was activated.

See also Functional Description of firmware "Positive Stop Drive Procedure"

C1300 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C1300**
C00C1300

7.1.13 C1400 Command Get marker position

Allocation	Contained in 16VRS: «-»					
	Contained in 17VRS: «HDB»					
	Contained in 18VRS: «HDB» «HDC» «-»					
	Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»					

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 of firmware "Detect marker position"

C1400 - Attributes

Diagnostic no.: C1400
Diagnostic no. as of 18VRS: 000C1400

7.1.14 C1500 Cancel reference point procedure command

Allocation	Contained in 16VRS: «-»					
	Contained in 17VRS: «HDB»					
	Contained in 18VRS: «HDB» «HDC» «HDS»					
	Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «HDS»					

The command "S-0-0191, C1500 Cancel reference point procedure command" was started.

The "C15" display signals that the command is executed.

The reference of the encoder selected via "S-0-0147, Homing parameter" is cleared.

See also Functional Description of firmware "Drive-Controlled Homing"

C1500 - Attributes

Diagnostic no.: C1500
Diagnostic no. as of 18VRS: C00C1500

7.1.15 C1600 Parking axis command

Allocation	Contained in 16VRS: «-»					
	Contained in 17VRS: «HDB»					
	Contained in 18VRS: «HDB» «HDC» «-»					
	Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»					

The command "S-0-0139, C1600 Parking axis command" has been activated.

See also Functional Description of firmware "Parking Axis"

C1600 - Attributes

Diagnostic no.: C1600
Diagnostic no. as of 18VRS: C00C1600

7.1.16 C1800 Axis optimization command

Allocation	Contained in 16VRS: «-»					
	Contained in 17VRS: «-»					
	Contained in 18VRS: «-» «-» «-»					
	Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»					

Depending on the settings in the control word of axis optimization (P-0-0165), an optimization function is started in the drive when command C1800 (P-0-0162) is executed.

Apart from measuring the valve characteristic curve it is also possible to merely determine the valve standard velocity and direction-dependent gain.

⚠ DANGER**Fatal injuries due to activation of the axis!**

⇒ If a **drive enable** is present, a movement can be initiated immediately after command C1800 is started.

⇒ The drive performs **movements independently** (that is, without external command value provision) within the two limits P-0-0166 and P-0-0167.

The function of the emergency stop chain and the travel range limit switches **must** be ensured and tested.

See also functional description "Axis optimization"

C1800 - Attributes

Diagnostic no.:

C1800

Diagnostic no. as of 18VRS:

000C1800

7.1.17 C2200 Backup working memory procedure command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command "S-0-0264, C2200 Backup working memory procedure command" was activated.

⚠ CAUTION**Damage to the internal memory (flash) caused by too many write accesses!**

⇒ During the execution of this command, data are written to the internal memory (flash). As each flash only allows a limited number of write accesses before its memory locations are destroyed, you should make sure that such write accesses won't be carried out too often.

C2200 - Attributes

Diagnostic no.:

C2200

Diagnostic no. as of 18VRS:

C20C2200

7.1.18 C2300 Load working memory procedure command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command "S-0-0263, C2300 Load working memory procedure command" was activated.

⚠ CAUTION**Damage to the internal memory (flash) caused by too many write accesses!**

⇒ During the execution of this command, data are written to the internal memory (flash). As each flash only allows a limited number of write accesses before its memory locations are destroyed, you should make sure that such write accesses won't be carried out too often.

C2300 - Attributes

Diagnostic no.:

C2300

Diagnostic no. as of 18VRS:

C20C2300

7.1.19 C2400 Selectively backup working memory procedure command

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

The "S-0-0293, C2400 Selectively backup working memory procedure command" was activated.

C2400 - Attributes	Diagnostic no.:	C2400
	Diagnostic no. as of 18VRS:	C20C2400

7.1.20 C2700 Command Adjust analog encoder input

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

The command for automatic adjustment of the analog inputs with regard to their allocations was activated.

C2700 - Attributes	Diagnostic no.:	C2700
	Diagnostic no. as of 18VRS:	000C2700

7.1.21 C3300 Set coordinate system procedure command

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

The command for setting the coordinate system ("S-0-0197, C3300 Set coordinate system procedure command") was activated.

See also Functional Description of firmware "Shifting the Position Data Reference for Relative and Absolute Measuring Systems"

C3300 - Attributes	Diagnostic no.:	C3300
	Diagnostic no. as of 18VRS:	C00C3300

7.1.22 C3400 Shift coordinate system procedure command

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

The command for shifting the coordinate system ("S-0-0199, C3400 Shift coordinate system procedure command") was activated.

See also Functional Description of firmware "Shifting the Position Data Reference for Relative and Absolute Measuring Systems"

C3400 - Attributes	Diagnostic no.:	C3400
	Diagnostic no. as of 18VRS:	C00C3400

7.1.23 C4100 Switch parameter set command

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

The command "S-0-0216, C4100 Switch parameter set command" was started.

See also Functional Description of firmware "Parameter Set Switching"

C4100 - Attributes

Diagnostic no.: [C4100](#)
Diagnostic no. as of 18VRS: C00C4100

7.1.24 C4200 Drive-controlled oscillation command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «-» «HDM» «-»

The command "S-0-0190, C4200 Drive-controlled oscillation command" was started.

See also Functional Description of firmware "Drive-Controlled Oscillation"

C4200 - Attributes

Diagnostic no.: [C4200](#)
Diagnostic no. as of 18VRS: C00C4200

7.1.25 C4300 NC-controlled homing procedure command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command for NC-controlled homing ("S-0-0146, C4300 NC-controlled homing procedure command") was activated. The master inputs the command values for moving the axis to the reference point and controls the homing procedure via commands and the respective parameters.



The control information for homing has to be defined in "S-0-0147, Homing parameter".

See also Functional Description of firmware "Establishing Position Data Reference for Relative Measuring Systems"

C4300 - Attributes

Diagnostic no.: [C4300](#)
Diagnostic no. as of 18VRS: C00C4300

7.1.26 C4400 Calculate displacement procedure command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command for calculating the displacement values ("S-0-0171, Calculate displacement procedure command") was activated.

See also "S-0-0175, Offset parameter 1" and "S-0-0176, Offset parameter 2"

See also Functional Description of firmware "Establishing Position Data Reference for Relative Measuring Systems"

C4400 - Attributes

Diagnostic no.: [C4400](#)
Diagnostic no. as of 18VRS: C00C4400

7.1.27 C4500 Displacement to referenced system procedure command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»

Contained in 18VRS:	«HDB»	«HDC»				«-»
Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

The command "S-0-0172, C4500 Displacement to referenced system procedure command" was activated.

See also Functional Description of firmware "Establishing Position Data Reference for Relative Measuring Systems"

C4500 - Attributes

Diagnostic no.:	C4500
Diagnostic no. as of 18VRS:	C00C4500

7.1.28 C4900 PLC command

Allocation	Contained in 16VRS:						«-»
	Contained in 17VRS:	«-»					
	Contained in 18VRS:	«-»	«HDC»				«-»
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM»	«-»

The command "P-0-1449, C4900 PLC command" for controlling a PLC program was started.

See also Application Manual "Rexroth IndraMotion MLD"

C4900 - Attributes

Diagnostic no.:	C4900
Diagnostic no. as of 18VRS:	000C4900

7.1.29 C5200 Communication phase 4 transition check

Allocation	Contained in 16VRS:						«-»
	Contained in 17VRS:	«HDB»					
	Contained in 18VRS:	«HDB»	«HDC»				«HDS»
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«HDS»

The command "S-0-0128, C5200 Communication phase 4 transition check" has been activated.



This status is displayed on the control panel of the drive with "C52".

C5200 - Attributes

Diagnostic no.:	C5200
Diagnostic no. as of 18VRS:	C30C5200

7.1.30 C5300 Sercos: Command SYNC delay measurement

Allocation	Contained in 16VRS:						«-»
	Contained in 17VRS:	«HDB»					
	Contained in 18VRS:	«HDB»	«HDC»				«-»
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

The command "S-0-1024, C5300 sercos: SYNC delay measuring procedure command" was activated.

C5300 - Attributes

Diagnostic no.:	C5300
Diagnostic no. as of 18VRS:	C30C5300

7.1.31 C6100 Command Activate IP settings

Allocation	Contained in 16VRS:						«-»
	Contained in 17VRS:	«HDB»					
	Contained in 18VRS:	«HDB»	«HDC»				«-»
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

Command "C6100 Command Activate IP settings" was started.

As of HDx-20 the command can be started by both, S-0-1048 and P-0-1534. Preferably, parameter S-0-1048 should be used. As of this firmware version, P-0-1534 only takes the function of a replacement parameter.

The settings of all existing parameters for IP communication are first checked in the drive for plausible and changed values.

Interface	IP address	Network mask	Gateway address
Engineering over IP (master communication)	S-0-1020	S-0-1021	S-0-1022
Master communication	P-0-4089.0.13	P-0-4089.0.14	P-0-4089.0.15

Tab. 7-1: Parameters for IP communication

If changes were made, the IP communication is aborted via the corresponding interface. The new settings are activated and communication with the new settings is started.



The IP communication via the interfaces for which the settings were not changed is not affected by the command and can continue without restrictions.



Before the command is executed, IP communication with the interfaces should be terminated by the IP client. Otherwise, error messages can occur in the corresponding clients due to missing communication.

C6100 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C6100

000C6100

7.1.32 C6300 Generate type plate command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Command "P-0-0660, C6300 Generate nameplate command" was started.

This command can be used to generate nameplate data, e.g.:

- Configurable factory default values (P-0-0660.0.1).
- Application data in encoder memory (with encoder memory version 7).
- Motor data for third-party motors (with encoder memory version 7).
- Motor data for motors from Bosch Rexroth (with encoder memory version 4.x or 7).

C6300 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C6300

000C6300

7.1.33 C6400 Reboot command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command for rebooting the drive (S-0-1350, Reboot command) was activated.



The command cannot be interrupted. While the command is executed, the parameters to be saved are stored and the drive is re-started with a delay of two seconds.

C6400 - Attributes

Diagnostic no.:

C6400

Diagnostic no. as of 18VRS:

000C6400

7.1.34 C6500 Archive device data**Allocation**

Contained in 16VRS:

«-»

Contained in 17VRS: «-»

Contained in 18VRS: «-» «-»

«-»

Contained in 20VRS: «-» «HDC» «-»

«-»

«HDM»

«-»

Command "**C6500**" signals that "P-0-0665, C6500 Command Archive device data" was started.

C6500 - Attributes

Diagnostic no.:

C6500

Diagnostic no. as of 18VRS:

000C6500

7.1.35 C6600 Restore device data**Allocation**

Contained in 16VRS:

«-»

Contained in 17VRS: «-»

Contained in 18VRS: «-» «-»

«-»

Contained in 20VRS: «-» «HDC» «-»

«-»

«HDM»

«-»

Command "**C6600**" signals that "P-0-0666, C6600 Command Restore device data" was started.

C6600 - Attributes

Diagnostic no.:

C6600

Diagnostic no. as of 18VRS:

000C6600

7.1.36 C6700 Update of device data**Allocation**

Contained in 16VRS:

«-»

Contained in 17VRS: «-»

Contained in 18VRS: «-» «-»

«-»

Contained in 20VRS: «-» «HDC» «-»

«-»

«HDM»

«-»

Command "**C6700**" signals that "P-0-0667, C6700 Command Update of device data" was started.

C6700 - Attributes

Diagnostic no.:

C6700

Diagnostic no. as of 18VRS:

000C6700

7.1.37 C6800 Control command device data archiving**Allocation**

Contained in 16VRS:

«-»

Contained in 17VRS: «-»

Contained in 18VRS: «-» «-»

«-»

Contained in 20VRS: «-» «HDC» «-»

«-»

«HDM»

«-»

Command "**C6800**" signals that "P-0-0664, C6800 Control command device data archiving" was started.

While the command is being executed, the comparative data of the device are read. These data are compared to the data stored in the machine archive to determine the status of the device data archive. The status is filed in "P-0-0669, Device data archiving, status".

C6800 - Attributes

Diagnostic no.:

C6800

Diagnostic no. as of 18VRS:

000C6800

7.1.38 C7900 Start selected calibration command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command "P-0-2990C79xx Calibration command parameter" has been started. This command starts the calibration function for the pump controller selected in "P-0-2991, Calibration command control word".

WARNING

Uncontrolled machine movements due to internal command values during calibration

While calibrating, internal command values are used for the controller. The calibration function has no influence on the command values (S-parameters) pre-set by the machine control. However, these are not used while a calibration is running. Before the calibration function is started, the system must therefore be brought to a safe state for calibrating.

See also Functional Description of firmware "Pump controller/calibration functions".

C7900 - Attributes

Diagnostic no.: C7900
Diagnostic no. as of 18VRS: 000C7900

7.1.39 C9000 Execute Condition Monitoring command

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command "P2887, C90xx Condition Monitoring" was started. This command starts the calibration function for the pump controller selected in "P-0-2888, Condition monitoring control word".

WARNING

Uncontrolled machine movements due to internal command values while executing condition monitoring function.

While the command function is being called up, the control switches to internal command values for the controller. The command values preset by the machine control are not influenced by the command. However, they are not used while the command is running. Therefore, before starting the command, bring the system to a state, which is safe for the monitoring function.

See also Functional Description of firmware "Condition monitoring"

C9000 - Attributes

Diagnostic no.: C9000
Diagnostic no. as of 18VRS: 000C9000

7.2 Command errors

7.2.1 Clearing Command Errors

A command error cannot be removed by "clearing errors", but only by completing the associated command.

7.2.2 C0101 Invalid parameters (-> S-0-0021)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While 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 execution of the command.

Cause	Remedy
Data block elements required in communication phase 3 are missing or invalid	Write allowed operating data to parameters affected. (Affected parameters can be taken from list "S-0-0021, IDN-list of invalid operation data for CP2")
A change was made in "P-0-2003, Selection of functional packages". Then you failed to reboot before trying to switch to operating mode.	Check content of "P-0-2003, Selection of functional packages" and reboot (i.e., switch device off and on again)
A change of functional packages was made in "P-0-2003, Selection of functional packages" which has an effect on customer- and application-specific parameters lists (e.g., S-0-0279)	Correct list parameters affected. (Affected parameters can be taken from list "S-0-0021, IDN-list of invalid operation data for CP2".) Problem can also be remedied by loading basic parameters ("S-0-0262, C07_x Load defaults procedure command" with appropriate setting in "P-0-4090, Configuration for loading default values")
Internal data memory defective	Contact our service department

For removing command errors see "[Command Errors](#)"

C0101 - Attributes

Diagnostic no.: C0101
Diagnostic no. as of 18VRS: C30C0101

7.2.3 C0102 Limit error in parameter (-> S-0-0021)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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	Remedy
Parameter values required in communication phase 3 are outside their allowed range of values (minimum or maximum value)	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

Diagnostic no.: C0102
Diagnostic no. as of 18VRS: 030C0102

7.2.4 C0103 Parameter conversion error (->S-0-0021)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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	Remedy
Parameter values required in communication phase 3 cannot be processed	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

Diagnostic no.: C0103
Diagnostic no. as of 18VRS: 030C0103

7.2.5 C0104 Config. IDN for MDT not configurable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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	Remedy
In "S-0-0015, Telegram type parameter", telegram type 7 (configured telegram) was set	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" there were some parameters entered that are not contained in "S-0-0188, List of configurable data in the MDT"	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"



List parameters are only allowed in the multiplex channel.

C0104 - Attributes

Diagnostic no.: C0104
Diagnostic no. as of 18VRS: C30C0104

7.2.6 C0105 Maximum length for MDT exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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	Remedy
In "S-0-0015, Telegram type parameter", telegram type 7 (configured telegram) was set	Set priority telegram (telegram type = 0..6) in "S-0-0015, Telegram type parameter"
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"	Reduce number of configured parameters in MDT ("S-0-0024, Config. list of the master data telegram")



List parameters are only allowed in the multiplex channel.

For removing command errors see "[Command Errors](#)"

C0105 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C0105

C30C0105

7.2.7 C0106 Config. IDNs for AT not configurable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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	Remedy
In "S-0-0015, Telegram type parameter", telegram type 7 (configured telegram) was set	Set priority telegram (telegram type = 0..6) in "S-0-0015, Telegram type parameter"
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"	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"



List parameters are only allowed in the multiplex channel.

C0106 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C0106

C30C0106

7.2.8 C0107 Maximum length for AT exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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	Remedy
In "S-0-0015, Telegram type parameter", telegram type 7 (configured telegram) was set	Set priority telegram (telegram type = 0..6) in "S-0-0015, Telegram type parameter"
Length of configured data record in AT that is determined by "S-0-0016, Custom amplifier telegram configuration list", exceeds maximum allowed value entered in "S-0-0185, Length of the configurable data record in the AT"	Reduce number of configured parameters in AT in "S-0-0016, Custom amplifier telegram configuration list"

C0107 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0107**
C30C0107**7.2.9 C0108 Time slot parameter > Sercos cycle time**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While the command "S-0-0127, C0100 Communication phase 3 transition check" is executed, the timing settings for sercos communication are checked. An error was detected during execution of the command.

Cause	Remedy
At least one of the following time slot parameters is not correct: - S-0-1006, sercos: AT0 transmission starting time (t1) - S-0-1007, sercos: Feedback acquisition starting time (t4) - S-0-1017, sercos: NRT transmission time	Correct the respective time slot parameter(s). Contact machine manufacturer or installation programmer MPx17V06 and above: The faulty parameter is shown in S-0-0021



The definition of the times for the time slot parameters is the responsibility of the control unit manufacturer and is specified by sercos.

For removing command errors see "[Command Errors](#)"**C0108 - Attributes**Diagnostic no.:
Diagnostic no. as of 18VRS:**C0108**
C30C0108**7.2.10 C0109 Telegram offset unsuitable**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0127, C0100 Communication phase 3 transition check" an error was detected.

Cause	Remedy
At least one parameterized telegram offset fails to meet the following criteria: - Telegram offset outside of telegram - Telegram offset and length outside of telegram - Telegram offset in prohibited range (e.g., hot plug field) - Telegram offset and length of several parameter overlap each other - Telegram offset fails to comply with 16-bit alignment	Check offsets in the following parameters: - S-0-1009, sercos: Device Control (C-Dev) offset in MDT - S-0-1011, sercos: Device Status (S-Dev) offset in AT - S-0-1013, sercos: SVC offset in MDT - S-0-1014, sercos: SVC offset in AT - S-0-1050.x.3, sercos connection: Telegram assignment Note: The definition of the telegram offsets is the responsibility of the control unit manufacturer. As of MPx17V06: The faulty parameter is shown in S-0-0021

For removing command errors see "[Command Errors](#)"

C0109 - Attributes

Diagnostic no.:

C0109

Diagnostic no. as of 18VRS:

C30C0109

7.2.11 C0110 Length of MDT (S-0-0010) odd

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0127, C0100 Communication phase 3 transition check" an error was detected.

Cause	Remedy
The parameter "S-0-0010, Length of master data telegram" contains an odd value. This is not allowed.	The parameter "S-0-0010, Length of master data telegram" must be parameterized with even values.



The definition of the parameter S-0-0010 is the responsibility of the control unit manufacturer and is specified by sercos.

For removing command errors see "[Command Errors](#)"

C0110 - Attributes

Diagnostic no.:

C0110

Diagnostic no. as of 18VRS:

030C0110

7.2.12 C0111 ID9 + Record length - 1 > length MDT (S-0-0010)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

An error was detected in the transition check from communication phase 2 to communication phase 3 (C0100).

The position of data record in MDT (MDT) (S-0-0009) plus the length of the data set in MDT for the drive is greater than the entire length of MDT (S-0-0010).

Cause	Remedy
Parameterization of "S-0-0009, Position of data record in MDT" and "S-0-0010, Length of master data telegram" is incorrect	Correct parameterization of "S-0-0009, Position of data record in MDT" and "S-0-0010, Length of master data telegram"



Parameter definition of "S-0-0009, Position of data record in MDT" and "S-0-0010, Length of master data telegram" is the responsibility of the control unit manufacturer and is specified by sercos.

C0111 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0111
030C0111

7.2.13 C0112 Set timing not permissible

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»



Up to HDx-17 this diagnostic message read "**C0112** TNcyc (S-0-0001) or TScyc (S-0-0002) error".

During execution of command "S-0-0127, C0100 Communication phase 3 transition check" an error of the sercos timing setting was detected.

Up to HDx-17

Cause	Remedy
Parameter "S-0-0001, NC cycle time (TNcyc)" and/or "S-0-0002, sercos cycle time (TScyc)" are set incorrectly.	Correct "S-0-0001, NC cycle time (TNcyc)" and/or "S-0-0002, sercos cycle time (TScyc)".

As of HDx-18

Cause	Remedy
The parameterized bus cycle time (S-0-1002 or S-0-0002) is not supported by the slave.	The parameterized bus cycle time in the bus master must be adjusted according to the given rules: See description of parameters S-0-1002 and/or S-0-0002.
The number of configured IDNs in the connections is not supported with the current setting of the slaves.	Reduce the number of IDNs in the connections.



The definition of parameters S-0-0001 und S-0-0002 is the responsibility of the control unit manufacturer and is specified by sercos.

For eliminating command errors, see "**Command errors**"

C0112 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0112
C30C0112

7.2.14 C0113 Relation TNcyc (S-0-0001) to TScyc (S-0-0002) error

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0127, C0100 Communication phase 3 transition check" an error or the sercos timing setting was detected.

Cause	Remedy
Parameters "S-0-0001, NC cycle time (TNcyc)" and/or "S-0-0002, sercos cycle time (TScyc)" are set incorrectly	The value of "S-0-0001, NC cycle time (TNcyc)" must be equal to or a multiple of "S-0-0002, sercos cycle time (TScyc)". Correct parameters "S-0-0001, NC cycle time (TNcyc)" and/or "S-0-0002, sercos cycle time (TScyc)" accordingly



The definition of the parameters S-0-0001 and S-0-0002 is the responsibility of the control unit manufacturer and is specified by sercos.

For removing command errors see "[Command Errors](#)"

C0113 - Attributes

Diagnostic no.:

C0113

Diagnostic no. as of 18VRS:

030C0113

7.2.15 C0114 T4 > TScyc (S-0-0002) - T4min (S-0-0005)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0127, C0100 Communication phase 3 transition check" an error or the sercos timing setting was detected.

Cause	Remedy
The value for "S-0-0007, Feedback acquisition starting time (T4)" is incorrect	Correct "S-0-0007, Feedback acquisition starting time (T4)". The maximum allowable 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: $S-0-0007 > S-0-0002 - S-0-0005$



The definition of the parameter S-0-0007 is the responsibility of the control unit manufacturer and is specified by sercos.

For removing command errors see "[Command Errors](#)"

C0114 - Attributes

Diagnostic no.:

C0114

Diagnostic no. as of 18VRS:

030C0114

7.2.16 C0115 T2 too small

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0127, C0100 Communication phase 3 transition check" an error or the sercos timing setting was detected.

Cause	Remedy
The value set for "S-0-0089, MDT Transmit starting time (T2)" is incorrect. The drive cannot function with this value	Correct "S-0-0089, MDT Transmit starting time (T2)"



The definition of the parameter S-0-0089 is the responsibility of the control unit manufacturer and is specified by sercos.

For removing command errors see "[Command Errors](#)"

C0115 - Attributes

Diagnostic no.: [C0115](#)
Diagnostic no. as of 18VRS: 030C0115

7.2.17 C0116 T3 (S-0-0008) within MDT (S-0-0089 + S-0-0010)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0127, C0100 Communication phase 3 transition check" an error or the sercos timing setting was detected.

Cause	Remedy
The value for "S-0-0008, Command value valid time (T3)" is within the value for "S-0-0089, MDT Transmit starting time (T2)". This can cause access problems in the sercos communication	Check the parameterization of "S-0-0089, MDT Transmit starting time (T2)" and "S-0-0008, Command value valid time (T3)" and correct, if necessary.



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

Diagnostic no.: [C0116](#)
Diagnostic no. as of 18VRS: 030C0116

7.2.18 C0118 Order of cyclic command value configuration incorrect

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The chronology of processing cyclic command value data in the drive has the order with which the configured IDNs have been entered in a configuration list:

- ServoDrive: "S-0-0024, Configuration list of MDT"
- sercos: "S-0-1050.x.6, sercos Connection: Configuration list"

The following parameters are available for using multiplex mode in the cyclic command value telegram:

- "S-0-0360, Data container A: command value 1",
- "S-0-0362, Data container A: list index command values" and
- "S-0-0368, Data container A: Addressing"

If more than one of these parameters have been configured in the cyclic command value telegram, their correct order is checked in command "S-0-0127, C0100 Communication phase 3 transition check".

Cause	Remedy
Incorrect order of relevant parameters in cyclic command value telegram	Keep correct order of parameters in cyclic command value telegram: Parameters S-0-0362, S-0-0366 and S-0-0368 must precede parameters S-0-0360 and S-0-0450 to S-0-0456 in cyclic command value telegram

See also Functional Description of firmware "Multiplex Channel"

C0118 - Attributes

Diagnostic no.:

C0118

Diagnostic no. as of 18VRS:

030C0118

7.2.19 C0133 Master communication: Address conflict

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the execution of command "C0100", an error was detected in slave addressing.

Cause	Remedy
With EtherCAT: "SII Configured Station Alias" from slave/device and "Device Identification Value" from P-0-4089.0.3 [or the address switches in the case of IndraDrive Mi (KSM/KMS)] are both unequal to "0".	1. Set "Device Identification Value" the P-0-4089.0.3 / address switch (value unequal to "0"). 2. Switch the EtherCAT phase back to "Init" via the EtherCAT master. 3. Switch to "PreOp". ⇒ The "SII Configured Station Alias" is set to "0". - or - Set P-0-4089.0.3 / address switch to "0".

For removing command errors, see "Command errors"

C0133 - Attributes

Diagnostic no.:

C0133

Diagnostic no. as of 18VRS:

000C0133

7.2.20 C0139 T2 (S-0-0089)+length MDT (S-0-0010)>TScyc (S-0-0002)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0127, C0100 Communication phase 3 transition check" an error or the timing setting of the sercos interface was detected. The phase switch into communication phase 3 is prevented.

Cause	Remedy
Sum of transmit starting time of master data telegram (S-0-0089, MDT Transmit starting time (T2)) specified by the master and data set length 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 master synchronization telegram (MST)	Parameterize a lower 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 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0139**
030C0139**7.2.21 C0151 IDN for command value data container not allowed**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0127, C0100 Communication phase 3 transition check" an error with regard to the command value configuration list was detected. The phase switch to communication phase 3 is prevented.

Cause	Remedy
A command value configuration list (S-0-0370 and S-0-0490 to S-0-0496) contains one or several IDNs that aren't existing or not contained in "S-0-0188, List of configurable data in the MDT"	Check parameters "S-0-0370, Data container A: configuration list command value-1" and "S-0-0490, Data container A: configuration list command value 2" to "S-0-0496, Data container A: configuration list command value 8" for incorrect IDNs and correct them

For removing command errors see "[Command Errors](#)"

See also Functional Description of firmware "Multiplex Channel"

C0151 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0151**
030C0151**7.2.22 C0152 IDN for actual value data container not allowed**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0127, C0100 Communication phase 3 transition check" an error with regard to the actual value configuration list was detected. The phase switch to communication phase 3 is prevented.

Cause	Remedy
An actual value configuration list (S-0-0371 and S-0-0500 to S-0-0506) contains one or several IDNs that aren't existing or not contained in "S-0-0187, List of configurable data in the AT"	Check parameters "S-0-0371, Data container A: configuration list feedback value-1" and "S-0-0500, Data container A: configuration list feedback value 2" to "S-0-0506, Data container A: configuration list feedback value 8" for incorrect IDNs and correct them

For removing command errors see "[Command Errors](#)"

See also Functional Description of firmware "Multiplex Channel"

C0152 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0152**
030C0152**7.2.23 C0170 Config. IDNs for connection not configurable**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
In configuration of sercos connections (S-0-1050.x.6, sercos connection: Configuration list) an inadmissible IDN was parameterized.	Allowed IDNs for consumer connections: "S-0-0134, Master control word" and all IDNs from "S-0-0188, List of configurable data in the MDT" Allowed IDNs for producer connections: "S-0-0135, Drive status" and all IDNs from "S-0-0187, List of configurable data in the AT"

C0170 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:C0170
C30C0170

7.2.24 C0171 Maximum length for connections exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
In configuration of sercos connections, allowed connection length was exceeded; i.e. total length of all configured IDNs in "S-0-1050.x.6, sercos connection: Configuration list" exceeds value in "S-0-1050.x.4, sercos connection: Max. length of connection".	Reduce number of IDNs in "S-0-1050.x.6, sercos connection: configuration list".

C0171 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:C0171
C30C0171

7.2.25 C0172 Delay measurement (S-0-1024) not carried out

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

A check run during the execution of the command "S-0-0127, C0100 Communication phase 3 transition check" showed that there is no correctly executed delay measurement with usable measured values available.

Cause	Remedy
Command "S-0-0127, C0100 Communication phase 3 transition check" was not carried out or was aborted with an error.	Carry out command "S-0-1024, C5300 sercos: SYNC delay measuring procedure command" and then restart command "S-0-0127, C0100 Communication phase 3 transition check".

C0172 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:C0172
C30C0172

7.2.26 C0173 Connections (number) not configurable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
Parameterized connections in S-0-1050 cannot be realized, because resources of sercos FPGA have been exceeded.	Arrange connections of slave better in telegram (put them one after another). (Can only be corrected by bus master or configurator.)

C0173 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0173
C30C0173

7.2.27 C0174 Connection configuration not allowed

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
For a sercos connection, a configuration has been set which is not supported by drive controller/firmware	"S-0-1050.x.1, sercos connection: Configuration" must be checked in all sercos connections and must be compared to allowed configurations in Parameter Description
As of MPx17V06: For the sercos connections, a connection capability was assigned too often.	"S-0-1050.x.7, sercos connection: check connection capability" in all sercos connections and compare with maximum allowed assignment "S-0-1060.x.3, sercos connection type: Max. quantity of this conn. capability"

C0174 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0174
C30C0174

7.2.28 C0175 Producer cycle time of a connection not correct

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
For a sercos connection, a producer cycle time has been set which is not supported by drive controller/firmware	"S-0-1050.x.10, sercos connection: Producer cycle time" must be checked in all sercos connections and compared with allowed producer cycle times in the Parameter Description

C0175 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0175
C30C0175

7.2.29 C0201 Invalid parameters (->S-0-0423)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While the command "S-0-0422, C0200 Exit parameterization level procedure command" 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	Remedy
Data block elements required in operating mode are missing or invalid	Write allowed operating data to respective parameters. (Respective parameters can be taken from list "S-0-0423, IDN-list of invalid op. data for parameterization level")

For removing command errors see "[Command Errors](#)"

C0201 - Attributes

Diagnostic no.:

C0201

Diagnostic no. as of 18VRS:

C20C0201

7.2.30 C0202 Parameter limit error (->S-0-0423)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While the command "S-0-0422, C0200 Exit parameterization level procedure command" is executed, the limit values (minimum/maximum value) are checked for some parameters. An error was detected during the execution of the command.

Cause	Remedy
Parameter values required in operating mode are outside of their allowed range of values (minimum or maximum value)	Write allowed values to parameters (cf. min./max. value). (Respective parameters can be taken from list "S-0-0423, IDN-list of invalid op. data for parameterization level")

For removing command errors see "[Command Errors](#)"

C0202 - Attributes

Diagnostic no.:

C0202

Diagnostic no. as of 18VRS:

C20C0202

7.2.31 C0203 Parameter conversion error (->S-0-0423)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While the command "S-0-0422, C0200 Exit parameterization level procedure command" 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	Remedy
Parameter values required in operating mode cannot be processed	Write allowed values to parameters. (Respective parameters can be taken from list "S-0-0423, IDN-list of invalid op. data for parameterization level")

For removing command errors see "[Command Errors](#)"

C0203 - Attributes

Diagnostic no.:

C0203

Diagnostic no. as of 18VRS:

C20C0203

7.2.32 C0206 Error when accessing machine archive

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the execution of command C6600 an error has occurred while accessing the machine archive on the external memory card.



The restored backup device data are incomplete or faulty!



For the error that has occurred, see the "Backup.log" or "Restore.log" text file; the text file can be found in the "Backup" directory on the external memory card.

Cause	Remedy
The external memory card has not (or improperly) been inserted into the slot provided for it	Insert external memory card into the device and execute command C6600 again.
Unable to unpack the files contained in the machine archive Insufficient memory on external memory card	Use memory card with more capacity or remove unnecessary files from the external memory card; then re-execute command C6600.
Machine archive is faulty This error occurs with a manually created or modified machine archive or when the machine archive is incorrectly moved to the external memory card.	Check the file "Backup\Archive\Backup.zip".
The machine archive is not available or improperly named.	Check, whether the file "Backup\Archive\Backup.zip" created by command C6500 is available
The external memory card is defective	Check memory card and execute command C6600 again In the case of repeated occurrence of the same diagnostic message: Change external memory card and create machine archive anew (execute command C6500)
The slot for the external memory card in the device is defective	Check slot and, if necessary, replace device

NOTICE

Property damage caused by data loss!

Before replacing or formatting the external memory card, save the data stored on it to avoid data loss.

C0206 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0206
000C0206

7.2.33 C0207 Machine archive is not up-to-date

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the execution of command C6700 an error occurred.

Cause	Remedy
No current machine archive available on the external memory card. Note: Updating of the device data has not been started. Further information: Updating of the device data saved requires that a current machine archive is available on the external memory card. This is required to be able to undo an update by means of command C6600.	1. Execute command C6500. 2. Execute command C6700.
When the parameterization level was exited, the machine archive was checked; no current machine archive available on the external memory card. Further information: In P-0-0668 you can parameterize that when the parameterization level is exited the device data are compared to the data saved in the machine archive. If the data are not identical, this command error is triggered.	<i>Restoring stored device data:</i> 1. Execute command C6600. 2. Execute transition command C0200. - or - <i>Update the machine archive:</i> 1. Execute command C6500. 2. Execute transition command C0200.

C0207 - Attributes

 Diagnostic no.:
 Diagnostic no. as of 18VRS:

 C0207
 000C0207

7.2.34 C0208 Combination of actuator syst./encoder scaling not supported

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
The configuration selected by the weighting or mechanical components is not permissible/not useful and is not supported by the drive.	Correct mechanical or weighting settings

C0208 - Attributes

 Diagnostic no.:
 Diagnostic no. as of 18VRS:

 C0208
 000C0208

7.2.35 C0209 Incorrect encoder configuration

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

When the drive was switched from the parameter to the operating mode, an incorrect position encoder configuration was recognized.



The parameters configured incorrectly are listed in S-0-0423.

Cause	Remedy
The current position encoder is incorrectly configured.	Set a valid configuration in the drive.
The configured position encoder does not work properly.	Check connection cable to the encoder or replace encoder.

C0209 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0209**
000C0209**7.2.36 C0212 Invalid control section data (->S-0-0423)**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During execution of command "S-0-0422, C0200 Exit parameterization level procedure command" an error was detected in the device data. The concerned parameters are entered in list "S-0-0423, IDN-list of invalid data for parameterization levels".

Cause	Remedy
Read error due to hardware defect	If possible, change hardware; otherwise, contact after-sales service

For removing command errors, see "[Command errors](#)"

C0212 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0212**
020C0212**7.2.37 C0219 Max. travel range too large**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While executing command "C0200", an error was detected in conjunction with scaling of the measuring system.

Cause	Remedy
"S-0-0278, Maximum travel range" incorrectly parameterized. Defined travel range is too large.	Check and, if necessary, reduce parameterization of S-0-0278. Select the value of "S-0-0278, Maximum travel range" so that the value range of internal position resolution is not exceeded.
Inappropriate measuring system (resolution) for maximum travel range to be displayed	Check resolution of measuring system and, if necessary, use a different measuring system

See also Functional Description of firmware "Scaling"

C0219 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0219**
020C0219**7.2.38 C0220 Error when initializing position of encoder 1**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of command "**C0200** Exit parameterization level procedure command" the following checks were made during the initialization of encoder 1:

- Communication with the encoder
- Correctness of absolute position

If one of the above checks fails, command error "**C0220**" is generated.

Cause	Remedy
Encoder cable defective	Check and, if necessary, replace encoder cable
Encoder defective or error in the microcontroller of the measuring system	Replace encoder
Measuring system interface defective	Have measuring system interface replaced by after sales service.

C0220 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0220**
020C0220**7.2.39 C0221 Initialization velocity encoder 1 too high**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of command "**C0200** Exit parameterization level procedure command" an error was detected regarding the initialization velocity of encoder 1 (motor encoder).

Cause	Remedy
The velocity during the initialization of encoder 1 was too high	Reduce velocity of encoder initialization [observe (encoder-related) initialization velocity].

For removing command errors, see "**Command errors**"

C0221 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0221**
020C0221**7.2.40 C0223 Invalid settings for controller cycle times**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "C0200" an error in the parameterization of controller cycle times or PWM switching frequencies was detected.

For cause and remedy see "C0132 Invalid settings for controller cycle times".

C0223 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0223**
020C0223**7.2.41 C0228 Initialization velocity measuring encoder too high**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«-» «-» «-» «-» «-» «-»

During the execution of the command "**C0200**" an error in the initialization velocity of the measuring encoder was detected.

Cause	Remedy
Velocity for initialization of measuring encoder was too high	Reduce velocity during encoder initialization [comply with initialization velocity (encoder-related); rotary : <30 rpm (for En-Dat with encoder resolution > 2048DP: <5 rpm), linear : <30 mm/min (MPx16) or <1000 mm/min (as of MPx17)]

DP Division periods

For removing command errors see "[Command Errors](#)"

C0228 - Attributes

Diagnostic no.:

C0228

Diagnostic no. as of 18VRS:

020C0228

7.2.42 C0229 Field bus: IDN for cycl. command val. not configurable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "C0200" an error with regard to the telegram configuration of master communication was detected.

Cause	Remedy
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"	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](#)"

C0229 - Attributes

Diagnostic no.:

C0229

Diagnostic no. as of 18VRS:

020C0229

7.2.43 C0230 Field bus: Length for cycl. command values exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "C0200" an error with regard to the axis-specific telegram configuration of a local axis of master communication was detected.

Cause	Remedy
Sum of data widths of all IDNs entered in "P-0-4081, Field bus: Config. list of cyclic command value data ch." exceeds maximum value	Reduce number of IDNs entered in "P-0-4081, Field bus: Config. list of cyclic command value data ch."

C0230 - Attributes

Diagnostic no.:

C0230

Diagnostic no. as of 18VRS:

020C0230

7.2.44 C0231 Field bus: IDN for cycl. actual val. not configurable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "C0200" an error with regard to the telegram configuration of master communication was detected.

Cause	Remedy
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"	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")



List parameters are only allowed in the multiplex channel.

For removing command errors see "[Command Errors](#)"

C0231 - Attributes

Diagnostic no.:

C0231

Diagnostic no. as of 18VRS:

020C0231

7.2.45 C0232 Field bus: Length for cycl. actual values exceeded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "[C0200](#) Exit parameterization level procedure command" an error with regard to the axis-specific telegram configuration of a local axis of master communication was detected.

Cause	Remedy
Sum of data widths of all IDNs entered in "P-0-4080, Field bus: Config. list of cyclic command actual data ch." exceeds maximum value	Reduce number of IDNs entered in "P-0-4080, Field bus: Config. list of cyclic actual value data ch."

C0232 - Attributes

Diagnostic no.:

C0232

Diagnostic no. as of 18VRS:

020C0232

7.2.46 C0233 Field bus: Tcyc (P-0-4076) incorrect

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Cause	Remedy
While command C0200 was executed, error in parameterization of P-0-4076 was detected.	Observe allowed input values (minimum/maximum values) of "P-0-4076, Field bus: Process data - updating clock"; step size of allowed input values: 1 ms

For removing command errors see "[Command Errors](#)"

C0233 - Attributes

Diagnostic no.:

C0233

Diagnostic no. as of 18VRS:

020C0233

7.2.47 C0234 Field bus: P-0-4077 missing for cycl. command values

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "C0200" an error with regard to the telegram configuration of master communication was detected.

Cause	Remedy
Operating datum of "P-0-4081, Field bus: config. list of cyclic command value data ch." does not contain the expected control word. At least one control word has to be contained.	Depending on the profile type, configure the following control word in "P-0-4081, Field bus: config. list of cyclic command value data ch." - "P-0-4077, Field bus: Control word" - "P-0-4068, Field bus: Control word IO" - "P-0-4094.0.1, Field bus: control word fluid power" - "S-0-0134, Master control word"

C0234 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0234**
020C0234

7.2.48 C0238 Order of cyclic command value configuration incorrect

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The chronology of the processing of cyclic command value data in the drive has the order in which the configured IDNs have been entered in the parameter for cyclic command value configuration. The following parameters are available for using the multiplex mode in the cyclic command value telegram:

- S-0-0360, Data container A: command value 1,
- S-0-0362, Data container A: list index command values and
- S-0-0368, Data container A: Addressing

If more than one of these parameters has been configured in the cyclic command value telegram, their correct order is checked in the command "S-0-0422, C0200 Exit parameterization level procedure command".

Cause	Remedy
Incorrect order of relevant parameters in cyclic command value telegram	Observe correct order of parameters in cyclic command value telegram: Parameters S-0-0362, S-0-0366 and S-0-0368 in cyclic command value telegram have to be located before parameters S-0-0360 and S-0-0450 to S-0-0456

See also Functional Description of firmware "Multiplex Channel"

C0238 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C0238**
020C0238

7.2.49 C0239 IDN for command value data container not allowed

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of command "S-0-0128, C0200 Communication phase 4 transition check" (02VRS / 03VRS) or "S-0-0422, C0200 Exit parameterization level procedure command" (as of 04VRS), an error with regard to the command value configuration list was detected.

Cause	Remedy
A command value configuration list (S-0-0370 and S-0-0490 to S-0-0496) contains one or several IDNs that aren't existing or not contained in "S-0-0188, List of configurable data in the MDT"	Check parameters "S-0-0370, Data container A: configuration list command value-1" and "S-0-0490, Data container A: configuration list command value 2" to "S-0-0496, Data container A: configuration list command value 8" for incorrect IDNs and correct them

For removing command errors see "[Command Errors](#)"

See also Functional Description of firmware "Multiplex Channel"

C0239 - Attributes

D diagnostic no.:

C0239

D diagnostic no. as of 18VRS:

020C0239

7.2.50 C0240 IDN for actual value data container not allowed

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

During the execution of command "S-0-0128, C0200 Communication phase 4 transition check"" (02VRS / 03VRS) or "S-0-0422, C0200 Exit parameterization level procedure command" (as of 04VRS), an error with regard to the actual value configuration list was detected.

Cause	Remedy
An actual value configuration list (S-0-0371 and S-0-0500 to S-0-0506) contains one or several IDNs that aren't existing or not contained in "S-0-0187, List of configurable data in the AT"	Check parameters "S-0-0371, Data container A: configuration list feedback value-1" and "S-0-0500, Data container A: configuration list feedback value 2" to "S-0-0506, Data container A: configuration list feedback value 8" for incorrect IDNs and correct them

For removing command errors see "[Command Errors](#)"

See also Functional Description of firmware "Multiplex Channel"

C0240 - Attributes

D diagnostic no.:

C0240

D diagnostic no. as of 18VRS:

020C0240

7.2.51 C0241 Incorrect parameterization of motion task

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«HDP»	«HDM» «-»

A motion task is of the type "externally event-controlled".

Two of these motion tasks are available:

- FKM-synchronous motion task which is synchronous to master communication (via the system event **FKM_SYNCHRONIZED_TASK**)
- CCD-synchronized motion task which is synchronous to CCD group (via the system event **CCD_SYNCHRONIZED_TASK**)

When switching from parameter mode to operating mode takes place, checks are run for a loaded boot project, with a motion task synchronous to master communication or CCD group, to find out whether the motion task can be operated with the settings made; an error was detected during this check. (See also Application Manual "Rexroth IndraMotion MLD", chapter "Basic Functions of Rexroth IndraMotion MLD", "Task System".)

Cause	Remedy
FKM-synchronous motion task: The motion task cycle time resulting from the configuration is not allowed.	The motion task cycle time corresponds to the NC cycle time (TNcyc) (S-0-0001): Minimum allowed cycle time is 1000 µs. Further values in 1000-µs steps are allowed. Exception: With master communication "sercos III" the motion task cycle time corresponds to the motion task cycle time of the "producer cycle time" (S-0-1050.x.10) of the connection, which was configured by the master in the MDT.
CCD-synchronous motion task: The motion task cycle time resulting from the configuration is not allowed.	With master communication sercos III, the motion task cycle time as well as the CCD cycle time correspond to the "producer cycle time" (S-0-1050.x.10) of the connection configured by the master in the MDT telegram, if this time is less than the value of "P-0-1610, CCD: Cycle time". With all other master communications, the motion task cycle time as well as the CCD cycle time correspond to the NC cycle time [S-0-0001, NC cycle time (TNcyc)], if the NC cycle time is less than the value of "P-0-1610, CCD: Cycle time". Otherwise, they correspond to the value of "P-0-1610, CCD: Cycle time". The active CCD cycle time is given in parameter "P-0-1602, CCD: Timing settings". When determining the CCD cycle time in conjunction with the use of the CCD-synchronous motion task, take the following into account: Basic Performance: Minimum allowed CCD cycle time is 1 ms. All integer multiples of the minimum allowed CCD cycle time are also allowed for CCD-synchronous motion tasks.

C0241 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:C0241
020C0241

7.2.52 C0242 Multiple configuration of a parameter (->S-0-0423)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0422, C0200 Exit parameterization level procedure command" an error was detected.

Cause	Remedy
For a multi-axis device, a device-specific function has been activated in more than one axis (e.g. position switch activated in two axes or encoder emulation activated in two axes)	Read IDNs entered in "S-0-0423, IDN-list of invalid op. data for parameterization level" to find out function activated in both axes. Then deactivate function in one of both axes
For cyclic parameter write, a parameter was simultaneously configured in different interfaces. It is impossible, however, to simultaneously write data to same parameter from different interfaces. Note: "Interfaces" means as well analog and digital inputs as complete bus systems.	Read IDNs entered in "S-0-0423, IDN-list of invalid op. data for parameterization level" to detect and remove multiple configuration.



Each multiple configuration/each conflict is listed in parameter "S-0-0423, IDN-list of invalid op. data for parameterization level" and displayed in the following form:

- The 1st 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.
- In the IDN list, each conflict is concluded by the IDN S-0-0000. If several conflicts occur at the same time, they are displayed one after the other in "S-0-0423, IDN-list of invalid op. data for parameterization level", 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

Diagnostic no.:

C0242

Diagnostic no. as of 18VRS:

020C0242

7.2.53 C0245 Operation mode configuration (->S-0-0423) not allowed

Allocation

Contained in 16VRS:	«-»				
Contained in 17VRS:	«HDB»				
Contained in 18VRS:	«HDB»	«HDC»	«-»		
Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

During the execution of the command "S-0-0422, C0200 Exit parameterization level procedure command" an inadmissible operation mode configuration was detected.

Operation mode parameters:

- S-0-0032, Primary operation mode
- S-0-0033, Secondary operation mode 1
- S-0-0034, Secondary operation mode 2
- S-0-0035, Secondary operation mode 3
- S-0-0284, Secondary operation mode 4
- S-0-0285, Secondary operation mode 5
- S-0-0286, Secondary operation mode 6
- S-0-0287, Secondary operation mode 7



The pertinent operation mode parameter is listed in "S-0-0423, IDN list of invalid data for parameterization levels"; if several operation modes are impermissible, only the first operation mode found is entered.

Cause	Remedy
An operation mode was configured for control with encoder 2; but encoder 2 does not exist or interface has not been assigned	Select control with encoder 1 (motor encoder) or connect encoder 2 and assign interface in P-0-0078.
The operation mode configured is not permissible in conjunction with the selected cycle time of master communication.	Increase cycle time of master communication: - Basic firmware: Synchronization operation modes ≥ 1 ms only - Economy firmware: Interpolation operation modes ≥ 2 ms only

See also functional description of firmware "Measuring systems"

For removing command errors, see "[Command errors](#)"

C0245 - Attributes

Diagnostic no.:

C0245

Diagnostic no. as of 18VRS:

020C0245

7.2.54 C0251 Error during synchronization to master communication

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

When command C0200 is executed a check is made to see if the drive control is synchronized with the bus interface via two phase control loops (sercos, PROFIBUS, ...). Synchronization must be completed by the end of the command. If this is not the case, this error message is generated.

Cause	Remedy
Hardware defect on control section	Replace control section or entire drive controller



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 of firmware "Master Communication"

C0251 - Attributes

Diagnostic no.:

C0251

Diagnostic no. as of 18VRS:

020C0251

7.2.55 C0252 Incorrect MLD initialization (write access->S-0-0423)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «-»

Due to an incorrect write access of the firmware (e.g. S-0-0269), switching from the parameter mode to the operating mode was prevented.



Parameter S-0-0423 displays the parameter for which write access has failed.

Cause	Remedy
Internal error or control section defective	Please contact our service department

For removing command errors see "[Command Errors](#)"

C0252 - Attributes

Diagnostic no.:

C0252

Diagnostic no. as of 18VRS:

020C0252

7.2.56 C0253 Error in combination operation mode - encoder (->S-0-0423)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While checking the operation mode and encoder, an error occurred.



"S-0-0423, IDN-list of invalid op. data for parameterization level" contains the faulty parameter.

Cause	Remedy
Operation modes were parameterized which obligatorily require an optional encoder or operation modes were parameterized for which a certain encoder must not be set	Check setting for primary and secondary modes of operation (S-0-0032 to S-0-0035 and S-0-0284 to S-0-0287)

C0253 - Attributes

Diagnostic no.:

C0253

Diagnostic no. as of 18VRS:

020C0253

7.2.57 C0258 Error in relation TNcyc (S-0-0001) to fine interpol.

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "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	Remedy
"S-0-0001, NC cycle time (TNcyc)" incorrectly parameterized	Select appropriate "S-0-0001, NC cycle time (TNcyc)". Allowed NC cycle times, when using cubic fine interpolator or fine interpolator according to contour, depend on relation of NC cycle time (S-0-0001) and position loop clock (P-0-0556, Control word of axis controller). Allowed clock relations: • From 1 to 8 in steps of one • From 10 to 16 in steps of two • From 20 to 32 in steps of four Example [allowed NC cycle times with Advanced performance (position loop clock=250 µs)]: • 250 µs to 2000 µs • 2500 µs to 4000 µs • 5000 µs to 8000 µs
Cubic fine interpolation or fine interpolation according to contour cannot be used with present NC cycle time ("S-0-0001, NC cycle time (TNcyc)")	Use linear fine interpolator ("P-0-0187, Position command processing mode" = "0")

For removing command errors see "[Command Errors](#)"

C0258 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0258
020C0258

7.2.58 C0259 MLD configuration error (->S-0-0423)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «-»

The execution of the command "[C0200](#)" (switching from parameter mode to operating mode) was impeded due to an incorrect MLD configuration.



The incorrectly configured parameters are listed in S-0-0423.

Cause	Remedy
In "P-0-1367, PLC configuration", permanent control was set, but in "P-0-4084, Field bus: Profile type" the "operating mode neutral" profile was not set (P-0-4084=FFFD))	(Local) axis can be controlled either via field bus (P-0-4084=FFFE) or via MLD (P-0-1367, bit 4=1); it is impossible to have both settings at the same time

C0259 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0259
020C0259

7.2.59 C0262 Synchronization, missing initialization (MH_HydrInit)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «HDS»
	Contained in 20VRS:	«-» «-» «-» «-» «HDM» «HDS»

Power was applied to the synchronization axis without calling function block "MH_InitHydr".

Cause	Remedy
The synchronization axis was activated without function block MH_InitHydr having been called before.	During the phase startup to phase 2, call function block MH_InitHydr. For details, see documentation MH_InitHydr in the MH_TechHydrBase library.

C0262 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0262
000C0262

7.2.60 C0270 Basic encoder evaluation not ready => encoder 1

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»



Up to firmware version 19 this diagnostic message read "C0270 Error when reading encoder data => motor encoder".

Up to firmware version 19

Encoder data ("P-0-1000, Kind of encoder 1, encoder memory"; "P-0-1001, Encoder 1 resolution, encoder memory"; "P-0-1002, Absolute encoder offset 1, encoder memory") were not correctly read from the encoder memory while the control section was being initialized.

Cause	Remedy
Parameterization "P-0-0074, encoder type 1 (motor encoder)" incorrect.	Check content of "P-0-0074, Encoder type 1 (motor encoder)" and make sure that the encoder type connected to the encoder interface has been parameterized.
Faults due to improper shielding or defective encoder cable.	Check encoder cable (including shielding) and, if necessary, replace or install correctly.
Encoder defective.	Check encoder for function and, if necessary, replace.
Encoder interface on the control section is defective.	Replace control section or entire drive controller.

Firmware version 20 and above

During the initialization, the extended encoder evaluation detected that basic encoder evaluation is not active for encoder 1, or a wrong encoder interface was entered in "P-0-0077, Assignment of encoder 1->interface".

Cause	Remedy
Incorrect parameterization of "P-0-0077, Assignment of encoder 1->interface"	Check content of "P-0-0077, Assignment of encoder 1->interface" and correct so that the encoder is correctly assigned to the interface
Incorrect parameterization of "S-0-0602.1.1, Phys. encoder type"	Check and correct content of "S-0-0602.1.1, Phys. encoder type" so that the assignment of the encoder to the interface is correct
Initialization error "Sercos encoder: No cyclic connection found".	Make sure that the cyclic connection for the Sercos encoder is configured as encoder. "S-0-0610.1.1, Encoder status (input)" and "S-0-0610.1.2, Position unscaled (input)" have to be configured.
Faults due to improper shielding or defective encoder cable. (See also "S-0-0610.1.1, Encoder status (input)" and "S-0-0600.1.1, Encoder status")	Check encoder cable (including shielding) and, if necessary, replace or install correctly.

Cause	Remedy
Encoder defective. (See also "S-0-0610.1.1, Encoder status (input)" and "S-0-0600.1.1, Encoder status")	Check encoder for function and, if necessary, replace.
Encoder interface option on the control section is defective. (See also "S-0-0610.1.1, Encoder status (input)" and "S-0-0600.1.1, Encoder status")	Replace control section or entire drive controller



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.

C0270 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0270
020C0270

7.2.61 C0271 Incorrect encoder 1 parameterization

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of command "C0200 Exit parameterization level procedure command" an error was detected regarding the parameterization of the hardware of encoder 1.

Up to and including HDx19:

Cause	Remedy
The parameterization of "P-0-0074, encoder 1" does not correspond to the encoder interface	Check that the parameterized encoder type and the encoder interface match.

As of HDx20:

Cause	Remedy
"P-0-0077, Assignment of encoder 1->interface" is incorrect	Correct the parameterization of "P-0-0077, Assignment of encoder 1->interface"

C0271 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0271
020C0271

7.2.62 C0272 Incorrect encoder 1 parameterization (mechanics)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of command "C0200 Exit parameterization level procedure command" an error was detected regarding the set scaling and the selected encoder type (e.g. rotary scaling with linear encoder).

Cause	Remedy
Wrong encoder type ("S-0-0277, position feedback type 1")	Check "S-0-0277, Position feedback type 1" and correct, if necessary.
Scaling (S-0-0076, Position data scaling type") has been incorrectly parameterized.	Check and, if required, correct "S-0-0076, Position data scaling type"
The motor type/cylinder type ("P-0-4014, Type of construction of motor / cylinder") has been incorrectly parameterized.	Correct "P-0-4014, Type of construction of motor / cylinder"
The maximum travel range ("S-0-0278, Maximum travel range") has been entered incorrectly.	Enter "S-0-0278, Maximum travel range" greater than "0"

For eliminating command errors, see "[Command errors](#)"

C0272 - Attributes

Diagnostic no.:

C0272

Diagnostic no. as of 18VRS:

020C0272

7.2.63 C0273 Modulo value for encoder 1 cannot be displayed

Allocation

Contained in 16VRS:

«-»

Contained in 17VRS: «HDB»

Contained in 18VRS: «HDB» «HDC»

«-»

Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of command "C0200 Exit parameterization level procedure command" an error was detected regarding the modulo value of encoder 1.

Cause	Remedy
The parameterized value for "S-0-0103, Modulo value" is greater than the maximum travel range (cf. "S-0-0278, Maximum travel range")	Correct the content of "S-0-0103, modulo value" or the value of "S-0-0278, Maximum travel range"
In conjunction with the set gear ratios (S-0-0121/S-0-0122, P-0-0121/P-0-0122) the value parameterized for "S-0-0103, Modulo value" cannot be realized internally	Correct the content of "S-0-0103, Modulo value" and/or the set gear ratios [S-0-0121, Input revolutions of load gear/ S-0-0122, Output revolutions of load gear; P-0-0121, Encoder 1 gearbox revolutions, mechanical side; P-0-0122, Encoder 1 gearbox revolutions, encoder side].

C0273 - Attributes

Diagnostic no.:

C0273

Diagnostic no. as of 18VRS:

020C0273

7.2.64 C0274 Encoder 1 unknown

Allocation

Contained in 16VRS:

«-»

Contained in 17VRS: «HDB»

Contained in 18VRS: «HDB» «HDC»

«-»

Contained in 20VRS: «-» «-» «-» «-» «-» «-»

During the execution of the command "C0200" an error with regard to encoder 1 was detected. The content of "P-0-1000, Kind of encoder 1, encoder memory" is invalid and therefore the parameterized encoder is not allowed (e.g. rotary scaling with linear encoder).

Cause	Remedy
Encoder memory (feedback) is defective	Encoder must be replaced
Kind of encoder ("P-0-1000, Kind of encoder 1, encoder memory") is not supported by the firmware	Check content of "P-0-1000, Kind of encoder 1, encoder memory" and contact our service department
Detected kind of encoder does not match parameterized type of encoder	Check device configuration and, if necessary, replace device by a correctly configured device

C0274 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0274
020C0274

7.2.65 C0280 Maximum travel range cannot be displayed internally

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

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	Remedy
"S-0-0278, Maximum travel range" incorrectly parameterized	Check and if necessary reduce "S-0-0278, Maximum travel range"
S-0-0116 / S-0-0117 incorrectly set (e.g. value "0")	Check and if necessary correct "S-0-0116, Feedback 1 Resolution" / "S-0-0117, Feedback 2 Resolution"
Value for "S-0-0278, Maximum travel range" is invalid although it might be within the respective absolute encoder range	Check "S-0-0278, Maximum travel range" and if necessary change value (take respective absolute encoder range into account!)

See also Functional Description of firmware "Scaling"

C0280 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0280
020C0280

7.2.66 C0288 Rotary scaling not allowed

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "C0200" 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 4 is prevented.

Cause	Remedy
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	Check and correct respective scaling parameter(s) or use a linear encoder

For removing command errors see "[Command Errors](#)"

C0288 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0288
020C0288

7.2.67 C0298 Impossible to exit parameterization level

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command "S-0-0422, C0200 Exit parameterization level procedure command" was started but cannot be executed.

Cause	Remedy
During firmware download there was an attempt to switch to operating mode	Wait until firmware download has been completed before switching to operating mode
After a boot error (F81xx error) there was an attempt to switch to operating mode	1. Terminate command 2. Clear boot error (F81xx error) 3. Remove cause 4. Reboot drive

C0298 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0298
020C0298

7.2.68 C0299 Configuration changed. Restart

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the execution of command "S-0-0422, C0200 Exit parameterization level procedure command", the configuration was detected to have been changed without the drive having been restarted.

Cause	Remedy
"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")	Restart drive in order to apply functional package selection of P-0-2003 to P-0-2004
Incorrect functional package selection in "P-0-2003, Selection of functional packages"	Set value in "P-0-2003, Selection of functional packages" to value in "P-0-2004, Active functional packages"
In "P-0-4089.0.1, Master communication: Protocol", selection of field bus protocol was changed	Switch drive off and on again to apply change in "P-0-4089.0.1, Master communication: Protocol"



The drive can be restarted either by removing the 24-V supply or (as of MPx17V08) by starting the "Reboot command" (C6400).

See also Application Manual "Enabling of Functional Packages"

For removing command errors see "[Command Errors](#)"

C0299 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0299
020C0299

7.2.69 C0301 Measuring system unavailable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "set absolute position" (C0300), the measuring system selected via parameter "S-0-0448, Set absolute position control" was detected to be unavailable.

Cause	Remedy
Command was activated by mistake	Prevent command from being activated
Measuring system has not been parameterized	Parameterize measuring system

See also Functional Description of firmware "Establishing Position Data Reference for Absolute Measuring Systems"

C0301 - Attributes

Diagnostic no.: C0301
Diagnostic no. as of 18VRS: C00C0301

7.2.70 C0302 Absolute evaluation of measuring system impossible

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the "Set absolute position" command (C0300) it was detected that absolute evaluation of the selected measuring system is impossible.



The "Set absolute position" 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	Remedy
Command was activated by mistake	Prevent command from being activated
Optional measuring system has not been designed as absolute encoder	Equip measuring system with absolute encoder function
The maximum travel range selected is too great	Check the value in parameter "S-0-0278, Maximum travel range"

See also Functional Description of firmware "Establishing Position Data Reference for Absolute Measuring Systems"

C0302 - Attributes

Diagnostic no.: C0302
Diagnostic no. as of 18VRS: C00C0302

7.2.71 C0303 Absolute encoder offset cannot be saved

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

When executing the command for setting absolute measuring (C0300) the offset of the encoder zero point with regard to the machine zero point is de-

terminated and stored in the data memory of the encoder. It was impossible to store the offset correctly.

Cause	Remedy
Communication between encoder and drive is disturbed	Check encoder cable and repair it, if necessary - or - Replace encoder

C0303 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0303
C00C0303

7.2.72 C0304 Command cannot be executed under drive enable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

During the execution of the command "setting absolute position" (C0300) an error occurred.

Cause	Remedy
Command was activated under drive enable	Deactivate drive enable. Then restart command. - or - If you want to execute command under drive enable, bit 2 must have been set in "S-0-0448, Set absolute position control".

See also Functional Description of firmware "Establishing Position Data Reference for Absolute Measuring Systems"

C0304 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0304
C00C0304

7.2.73 C0401 Switching not allowed

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

When switching to parameterization level 1 (C0400) an error was detected.

Cause	Remedy
Command for switching to parameterization level 1 was started via parameter "S-0-0420, C0400 Activate parameterization level 1 procedure command", although drive enable had been activated	Terminate command and switch drive enable off, then command can be started again

C0401 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0401
020C0401

7.2.74 C0501 Error clearing only in parameter mode

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the error clearing command (C0500) an error was detected.

Cause	Remedy
There was an attempt to clear error "F8022 Enc. 1 error: sign. amplitude (can be cleared in ph.2)" in communication phase 4 (operating mode). This is only possible in communication phase 2 (parameterization mode).	Switch drive to communication phase 2 by means of command "P-0-4023, C0400 Communication phase 2 transition" and start error clearing command again.

C0501 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0501
C20C0501

7.2.75 C0601 Homing only possible with drive enable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

During the execution of the "Drive-controlled homing procedure" command (C0600) an error was detected.

Cause	Remedy
Command was started without drive enable. This is not allowed.	Enable drive and start command again.

See also Functional Description of firmware "Drive-Controlled Homing"

C0601 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0601
C00C0601

7.2.76 C0602 Distance home switch - reference mark erroneous

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command for drive-controlled homing (C0600) an error was detected.

Cause	Remedy
Evaluation of home switch has been switched on ("S-0-0147, Homing parameter"). Distance between selected home switch edge and reference mark to be evaluated is outside of allowed range.	Read value from parameter "S-0-0298, Reference cam shift" and apply it to parameter "S-0-0299, Home switch offset" - or - Shift reference cam

See also Functional Description of firmware "Establishing Position Data Reference for Relative Measuring Systems"

C0602 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0602
C00C0602

7.2.77 C0604 Homing impossible with absolute encoder

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

When the command for drive-controlled homing (C0600) was executed, an error was detected.

Cause	Remedy
Via the encoder selection in "S-0-0147, Homing parameter", an absolute measurement system was selected. The command for drive-controlled homing can only be carried out if the "S-0-0447, C0300 Set absolute position procedure command" was activated beforehand.	First activate the "S-0-0447, C0300 Set absolute position procedure command" and then start the "S-0-0148, C0600 Drive-controlled homing procedure command"; this establishes the absolute position data reference.

C0604 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0604
C00C0604

7.2.78 C0606 Reference mark not detected

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command for drive-controlled homing (C0600) an error with regard to the reference marks of the encoder was detected.

If the reference marks of the relative encoder to be homed (selected in "S-0-0147, Homing parameter") occur cyclically over the travel range, the position difference of the reference marks detected by the controller is monitored. This requires the correct setting for "P-0-0153, Optimum distance home switch-reference mark".

Cause	Remedy
Reference marks do not occur in expected position difference	Check measuring system to be homed and corresponding wiring - or - Check and, if necessary, correct setting of "P-0-0153, Optimum distance home switch-reference mark"
Value set in "P-0-0153, Optimum distance home switch-reference mark" does not match encoder that is used	Correct setting of "P-0-0153, Optimum distance home switch-reference mark"

See also Functional Description of firmware "Establishing Position Data Reference for Relative Measuring Systems"

C0606 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0606
C00C0606

7.2.79 C0607 Reference cam input not assigned

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the "Drive-controlled homing procedure" command (C0600) an error was detected.

Cause	Remedy
Home switch hasn't been assigned to any digital input	Assign home switch ("S-0-0400, Home switch") to a digital input via parameter "P-0-0300, Digital I/Os, assignment list"

C0607 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0607
000C0607

7.2.80 C0608 Pos. stop a. HW lim. switch not allowed f. modulo axes

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «HDS»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «HDS»

During the execution of the command for drive-controlled homing (C0600) an error was detected.

Cause	Remedy
Drive-controlled homing at positive stop or travel range limit switch with modulo axes isn't a useful combination and therefore not allowed!	Modify control information for homing in "S-0-0147, Homing parameter" in a useful way

C0608 - Attributes

Diagnostic no.:

C0608

Diagnostic no. as of 18VRS:

000C0608

7.2.81 C0609 Different travel directions parameterized

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

When, in the case of modulo scaling, the homing direction parameterized in "S-0-0147, Homing parameter" and the positioning direction set for axis positioning in "S-0-0393, Command value mode" do not match, the command error C0609 is output during the execution of the command for drive-controlled homing (C0600).

Cause	Remedy
Travel directions for homing and positioning were differently parameterized	Parameterize travel directions in "S-0-0147, Homing parameter" and "S-0-0393, Command value mode" in such a way that they match

C0609 - Attributes

Diagnostic no.:

C0609

Diagnostic no. as of 18VRS:

000C0609

7.2.82 C0610 Absolute encoder offset could not be saved

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command for drive-controlled homing (C0600) an error occurred: In the case of a measuring system with feedback data memory evaluated in absolute form, the determined absolute encoder offset could not be saved in the feedback data memory.

Cause	Remedy
Cable defective	Check connection between encoder and drive controller
Feedback data memory defective	Replace encoder

C0610 - Attributes

Diagnostic no.:

C0610

Diagnostic no. as of 18VRS:

000C0610

7.2.83 C0611 Travel range greater than absolute range (distance-coded)

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»

When the command for drive-controlled homing (C0600) had been executed, an error with regard to the travel range was detected.



During drive-controlled homing, the travel range is only checked with distance-coded rotary encoders and absolute scaling.

Cause	Remedy
The effective travel range ($S-0-0278 \times 2$) is greater than the absolute encoder range; the unequivocal reference position cannot be determined with the homing procedure. NOTES: - If load gear (S-0-0121/S-0-0122) and feed constant (S-0-0123) were parameterized, this has an effect on the travel range (S-0-0278). In addition, the encoder gearboxes have to be taken into account (encoder 1: P-0-0121/P-0-0122, encoder 2: P-0-0124/P-0-0125). - The absolute encoder range furthermore depends on the following factors: - Type of scaling (rotary/linear) - Reference of scaling (at motor/at load) - Mounting position of encoder [encoder 1 (motor encoder) / encoder 2 (external encoder)]	Make sure that the effective travel range ($S-0-0278 \times 2$) is less than or equal to the absolute encoder range. The absolute encoder range is calculated as follows: Rotary scaling <i>Motor encoder with scaling at motor:</i> Absolute encoder range = 1 revolution = $360^\circ \times P-0-0121/P-0-0122$ <i>Motor encoder with scaling at load:</i> Absolute encoder range = $360^\circ \times P-0-0121/P-0-0122 \times S-0-0121/S-0-0122$ <i>External encoder:</i> Absolute encoder range = $360^\circ \times P-0-0124 / P-0-0125$ Linear scaling <i>Motor encoder with scaling at load:</i> Absolute encoder range = $S-0-0123 \times S-0-0121/S-0-0122 \times P-0-0121/P-0-0122$

See also Functional Description of firmware "Establishing position data reference for absolute measuring systems"

C0611 - Attributes

Diagnostic no.:

C0611

Diagnostic no. as of 18VRS:

000C0611

7.2.84 C0702 Default parameters not available

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«-»	«-»	«-»	«-»	«-»

While executing command "C0700 Load defaults proced. command" an error occurred.

C0702 - Attributes

Diagnostic no.:

C0702

7.2.85 C0703 Default parameters invalid

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				

Contained in 18VRS: «-» «-» «-» «-»
 Contained in 20VRS: «-» «-» «-» «-» «-» «-»

During the execution of the command "C0700 Load defaults proced. command (motor-spec. controller val.)" an error has occurred.

Cause	Remedy
Default parameters are read from motor encoder data memory. At least one of these parameters is invalid.	Check connection to motor encoder. Replace motor, if necessary.

See also *Functional Description of firmware*

- "Loading, Storing and Saving Parameters"
- "Rexroth Housing Motors with Encoder Data Memory"

C0703 - Attributes

Diagnostic no.:

C0703

7.2.86 C0704 Parameters not copyable

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «HDB»
 Contained in 18VRS: «-» «-» «-»
 Contained in 20VRS: «-» «-» «-» «-» «-» «-»

During the execution of the command "C0700 Load defaults proced. command (motor-spec. controller val.)" an error has occurred.

Cause	Remedy
It was impossible to load default values for motor-specific control loop parameters, available in encoder memory, to respective parameters. Firmware version is incompatible with motor or motor encoder	Load appropriate firmware version to controller; observe motor type and motor encoder type
Performance and switching frequency setting do not match	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 of firmware*

- "Loading, Storing and Saving Parameters"
- "Rexroth Housing Motors with Encoder Data Memory"

C0704 - Attributes

Diagnostic no.:

C0704

7.2.87 C0706 Error when reading the controller parameters

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «HDB»
 Contained in 18VRS: «-» «-» «-»
 Contained in 20VRS: «-» «-» «-» «-» «-» «-»

During the execution of the command "C0700 Load defaults proced. command (motor-spec. controller val.)" an error occurred when reading the controller parameters from the motor encoder data memory.

Cause	Remedy
Motor encoder data memory defective	Replace motor encoder

C0706 - Attributes

Diagnostic no.:

C0706

7.2.88 C0743 Error in activation of field bus profile settings

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command "S-0-0262, C07_x Load defaults procedure command" with the option "set field bus profile settings" was started. An error occurred in the process.

Cause	Remedy
Field bus is currently exchanging process data with field bus master/controller	Terminate cyclic process data exchange (example: CANopen master switches drive from "Operational" to "Pre-Operational")

C0743 - Attributes

Diagnostic no.:

C0743

Diagnostic no. as of 18VRS:

020C0743

7.2.89 C0751 Parameter default value incorrect (-> S-0-0423)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The command "C0750 Load defaults procedure command (factory settings)" was started. An error occurred when a default value was written.



The faulty parameter is recorded in the parameter "S-0-0423, IDN-list of invalid data for parameterization levels".

C0751 - Attributes

Diagnostic no.:

C0751

Diagnostic no. as of 18VRS:

020C0751

7.2.90 C0752 Locked with password

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "C0750 Load defaults procedure command (factory settings)" an error occurred.

Cause	Remedy
Drive parameters were write-protected by means of parameter "S-0-0267, Password". Diagnostic message C0752 signals that command C0750 was started without first deactivating customer password.	Deactivate write protection by entering the password. Then restart command.

See also Functional Description of firmware "Using a Password"

C0752 - Attributes

Diagnostic no.:

C0752

Diagnostic no. as of 18VRS:

020C0752

7.2.91 C0761 Factory default values incorrect (->S-0-0423)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»

Contained in 18VRS: «HDB» «HDC» «-»
Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0262, C07_x Load defaults procedure command (factory settings)" (see also "P-0-4090, Configuration for loading default values"), an error has occurred during the evaluation of the parameter "P-0-0660.0.1, Configurable factory default values".

Cause	Remedy
Content of parameter P-0-0660.0.1 could not be interpreted without error (data status valid, but content does not comply with required format, e.g. all list elements="0xffffffff").	Write content of a parameter backup to P-0-0660.0.1 to activate configurable factory default values. If there isn't any parameter backup available, P-0-0660.0.1 can be cleared (set actual length to "0"), but in this case the configurable factory default values aren't active anymore!

See also Functional Description of firmware "Loading, Storing and Saving Parameters"

C0761 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C0761

020C0761

7.2.92 C0799 An invalid index was set

Allocation	Contained in 16VRS: «-»
	Contained in 17VRS: «HDB»
	Contained in 18VRS: «HDB» «HDC» «-»
	Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

At the time the command "C0700 Load defaults proced. command (motor-spec. controller val.)" was started, no valid value had been entered in "P-0-4090, Configuration for loading default values".



Via "P-0-4090, Configuration for loading default values", the function of the command "C0700 Load defaults proced. command (motor-spec. controller val.)" can be set.

After the command was cleared, the value in "P-0-4090, Configuration for loading default values" is automatically set to "0" again.

C0799 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C0799

020C0799

7.2.93 C0902 Spindle positioning requires drive enable

Allocation	Contained in 16VRS: «-»
	Contained in 17VRS: «-»
	Contained in 18VRS: «-» «HDC» «-»
	Contained in 20VRS: «-» «HDC» «-» «-» «HDM» «-»

During the execution of the command for spindle positioning (C0900) an error was detected.

Cause	Remedy
At start of "S-0-0152, C0900 Position spindle command", drive was not yet in drive enable	Set drive enable before starting command

C0902 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C0902

C00C0902

7.2.94 C0903 Error during initialization

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«-»	«HDM» «-»

During the execution of the command for spindle positioning (C0900) an error was detected.

Cause	Remedy
At start of "S-0-0152, C0900 Position spindle command", respective encoder had not yet been initialized (homed)	For 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)! For absolute measuring systems , check whether drive is in reference. If this is not the case, establish absolute position data reference, e.g. by "S-0-0447, C0300 Set absolute position procedure command"

C0903 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0903
000C0903

7.2.95 C0906 Error during search for zero pulse

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«-»	«HDM» «-»

During the execution of the command for spindle positioning (C0900) an error was detected.

Cause	Remedy
Homing procedure integrated in spindle positioning was not executed successfully. Encoder zero mark was not found or it was impossible to assign it correctly.	Check parameterization of spindle positioning and of drive-controlled homing procedure, especially encoder and home switch combination used. - or - Check encoder parameterization. - or - Check distance zero pulse - home switch. - or - Carry out drive-controlled homing in order to check homing procedure.

C0906 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C0906
C00C0906

7.2.96 C1301 Class 1 diagnostics error at command start

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

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 of firmware "Positive Stop Drive Procedure"

C1301 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C1301
C00C1301

7.2.97 C1402 Faulty reference mark signal

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While command "P-0-0014, C1400 Command Get marker position" is being executed, the reference mark signal is checked for its permissible signal width and the assignment to track signals. If the signal is outside the permissible specification or disturbed, this error is generated.

Cause	Remedy
Incorrect value	Correct installation of the encoder sensor.
Reference mark signal disturbed	Check / correct wiring and shielding of the reference mark signal.

For removing command errors, see "Command errors"

C1402 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C1402
000C1402

7.2.98 C1801 Start requires drive enable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

When command "P-0-0162, C1800 Axis optimization procedure command" was started, the drive was not in closed-loop control.

Cause	Remedy
The drive enable was not set when the command was started	Set drive enable and re-start command C1800

See also functional description "Axis optimization"

C1801 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C1801
000C1801

7.2.99 C1808 Drive not homed

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

It was impossible to execute "P-0-0162, C1800 Axis optimization procedure command", since the drive has not been homed.

Cause	Remedy
The drive has not been homed	Establish reference;

C1808 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C1808
000C1808

7.2.100 C1810 Incorrect configuration of axis optimization

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«-»					
	Contained in 18VRS:	«-»	«-»	«-»			
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

When command "P-0-0162, C1800 Axis optimization procedure command" was started an incorrect parameterization of axis optimization was detected.

Cause	Remedy
When the command "C1800 Axis optimization" is started, a check is run to see whether the values set in parameters P-0-0165, P-0-0166, P-0-0167, P-0-0170, P-0-0171, and S-0-0193 are useful. This means that with the set velocity, the set acceleration and the set jerk, the optimization can be realized within the given traversing range.	Correct values and re-execute command "C1800 Axis optimization" via P-0-0162 or IndraWorks. Possible causes are: The stroke is too small, acceleration too small, jerk too small or velocity too high. Or an invalid configuration in control word P-0-0165.

See also functional description "Axis optimization"

C1810 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C1810

000C1810

7.2.101 C1811 Override unequal to 100 %

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«-»					
	Contained in 18VRS:	«-»	«-»	«-»			
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

The feedrate override (S-0-0108) overrate is checked for 100 % when "P-0-0162, C1800 Axis optimization procedure command" is started.

Cause	Remedy
Feedrate override unequal to 100 %	Set feedrate override (S-0-0108) to 100 % and re-start command C1800

See also functional description "Axis optimization"

C1811 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C1811

000C1811

7.2.102 C1840 Valve characteristic: measurement (coarse) active

Allocation	Contained in 16VRS:	«-»					
	Contained in 17VRS:	«-»					
	Contained in 18VRS:	«-»	«-»	«-»			
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM»	«-»

The sequence of command "C1800 Axis optimization" is divided into 2 steps: Coarse measurement and fine measurement.

The coarse measurement is carried out to detect any inflection points and thus to achieve a more precise result in the fine measurement.

During fine measurement, the measurement is more accurate, in particular at low velocities.

See also functional description "Axis optimization"

C1840 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C1840

000C1840

7.2.103 C1841 Axis optimization: calculation active

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The calculation is carried out for axis optimization.

Among others, the valve standard velocity (negative/positive), direction-dependent gain and valve offset are calculated and written.

For more detailed information, please refer to the following functional description:

See also functional description "Axis optimization"

C1841 - Attributes	Diagnostic no.:	C1841
	Diagnostic no. as of 18VRS:	000C1841

7.2.104 C1842 Axis optimization successful

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

After axis optimization has been completed successfully, the axis returns to the position at which the optimization was started.

See also functional description "Axis optimization"

C1842 - Attributes	Diagnostic no.:	C1842
	Diagnostic no. as of 18VRS:	000C1842

7.2.105 C1843 Axis optimization: calculation impossible

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

An error occurred while calculating axis optimization.

Cause	Remedy
Too few measured values available, since the maximum velocity was set too low in P-0-0171!	Increase the maximum velocity in P-0-0171!
Insufficient signal quality of the velocity signal!	Replace position encoder!

See also functional description "Axis optimization"

C1843 - Attributes	Diagnostic no.:	C1843
	Diagnostic no. as of 18VRS:	000C1843

7.2.106 C1844 Valve characteristic: measurement (fine) active

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The sequence of command "C1800 Axis optimization" is divided into 2 steps: Coarse measurement and fine measurement.

The coarse measurement is carried out to detect any inflection points and thus to achieve a more precise result in the fine measurement.

During fine measurement, the measurement is more accurate, in particular at low velocities.

See also functional description "Axis optimization"

C1844 - Attributes

Diagnostic no.: **C1844**
Diagnostic no. as of 18VRS: 000C1844

7.2.107 C1845 Valve standard velocity: measurement active

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The measurement for determining the valve standard velocity (positive/negative) is carried out.

See also functional description "Axis optimization"

C1845 - Attributes

Diagnostic no.: **C1845**
Diagnostic no. as of 18VRS: 000C1845

7.2.108 C2202 Error when writing data to non-volatile memory

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0264, C2200 Backup working memory procedure command" an error occurred.

Cause	Remedy
It was impossible to address active, non-volatile memory (internal flash memory or programming module) without error.	First restart command "S-0-0264, C2200 Backup working memory procedure command". If error occurs again, then replace programming module if necessary, then restart command. If error occurs again, contact our service department.

C2202 - Attributes

Diagnostic no.: **C2202**
Diagnostic no. as of 18VRS: 000C2202

7.2.109 C2301 Error when reading non-volatile memory

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0263, C2300 Load working memory procedure command" an error occurred.

Cause	Remedy
It was impossible to read active, non-volatile memory (internal flash memory or programming module) without error.	Restart command. If error occurs again, contact our service department. Have control section checked for functional safety.

C2301 - Attributes

Diagnostic no.: **C2301**
Diagnostic no. as of 18VRS: 000C2301

7.2.110 C2302 Error when converting parameters

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»

Contained in 18VRS: «HDB» «HDC» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the "S-0-0263, C2300 Load working memory procedure command" an error occurred.

Cause	Remedy
When reading parameters from active, non-volatile memory, an error occurred.	Enter faulty parameter values correctly by hand and save them again in non-volatile memory.

C2302 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:

C2302
 000C2302

7.2.111 C2402 Error when saving parameters

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «HDB»
 Contained in 18VRS: «HDB» «HDC» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0293, C2400 Selectively backup working memory procedure command" an error occurred.

Cause	Remedy
It was impossible to address active, non-volatile memory (internal flash memory or programming module) without error.	Restart command "S-0-0293, C2400 Selectively backup working memory procedure command". If error occurs again, then replace programming module, if necessary, and restart command. If error occurs again, contact our service department.

C2402 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:

C2402
 000C2402

7.2.112 C2701 Analog encoder input, not configured

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «HDB»
 Contained in 18VRS: «HDB» «HDC» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

After the command "P-0-2901.0.2 Analog input, assignment, adjustment command C2700" was started, the settings made by the user were checked.

Cause	Remedy
In the allocation selected in control parameter "P-0-2900.0.1 Analog input, adjustment control word" no analog input has been configured.	Select the analog input to be adjusted in the set assignment and restart the command.

C2701 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:

C2701
 000C2701

7.2.113 C2702 Analog encoder input, input signal out of tolerance

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «HDB»
 Contained in 18VRS: «HDB» «HDC» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

After the command "P-0-2901.0.2 Analog input, assignment, adjustment command C27000" was started, the settings made by the user were checked.

Cause	Remedy
The fluctuations of the analog signal at the analog input to be adjusted are outside tolerance.	Fluctuations at the analog input can be suppressed via the filtering stage of the set assignment "P-0-2900.0.5 Analog input, assignment, filter time".

C2702 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C2702
000C2702

7.2.114 C2703 Analog encoder input, zero pt & max measurement identical

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

After the command "P-0-2901.0.2 Analog input, assignment, adjustment command C2700" was started, the settings made by the user were checked.

Cause	Remedy
In "P-0-2900.0.1 Analog input, adjustment control word" the adjustment of the maximum value was set, but "P-0-2900.0.1 Analog input, assignment, maximum value for adjustment" is equal to zero.	"P-0-2900.0.1 Analog input, assignment, maximum value for adjustment" must be described with the nominal value to be used for adjustment and the command be restarted.
In "P-0-2900.0.1 Analog input, adjustment control word" the adjustment of the maximum value was set, but value measured at the analog input to be adjusted is equal to the measured value with zero.	Set the signal at the analog input to the nominal value relevant for the adjustment and restart the command.

C2703 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C2703
000C2703

7.2.115 C2704 Analog encoder input, automatic adjustment failed

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

After the command "P-0-2901.0.2 Analog input, assignment, adjustment command C2700" was started, internal errors occurred.

Cause	Remedy
Writing of the parameters involved in the assignment to be adjusted (offset, scaling, filtration) was not successful.	Check all settings and restart command.

C2704 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C2704
000C2704

7.2.116 C2705 Analog encoder input, incorrect control data

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

After the command "P-0-2901.0.2 Analog input, assignment, adjustment command C2700" was started, the settings made by the user were checked.

Cause	Remedy
The assignment to be adjusted as set in "P-0-2900.0.1 Analog input, adjustment control word" does not exist.	Check settings and restart command.

C2705 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C2705
000C2705

7.2.117 C4101 Switching only possible without AF

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0216, C4100 Switch parameter set command" an error occurred.

Cause	Remedy
Parameter set switching with parameter group "encoder parameters" was started although axis still is in "AF"	Remove drive enable ("AF") before starting command

See also Functional Description of firmware "Parameter Set Switching"

C4101 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C4101
C00C4101

7.2.118 C4103 Preselect parameter set forbidden value

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

"C4100 Switch parameter set command" couldn't be executed.

Cause	Remedy
Value entered in parameter "S-0-0217, Preselect parameter set command" is greater than value in "P-0-2217, Parameter set switching, preselection range"	Before starting "C4100 Switch parameter set command", set value in "S-0-0217, Preselect parameter set command" to valid value

See also Functional Description of firmware "Parameter Set Switching"

C4103 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C4103
C00C4103

7.2.119 C4104 Error during parameter set switching (->S-0-0423)

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

"C4100 Switch parameter set command" could not be executed.

Cause	Remedy
A calculation error occurred during parameter set switching	IDN of parameter which caused error is displayed in "S-0-0423, IDN-list of invalid data for parameterization levels". Write valid value to displayed parameter

See also Functional Description of firmware "Parameter Set Switching"

C4104 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C4104**
C00C4104**7.2.120 C4201 Oscillation requires drive enable**

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«-»	«HDM» «-»

During the execution of the command "S-0-0190, C4200 Drive-controlled oscillation command" an error was detected.

Cause	Remedy
At start of command, drive wasn't yet ready for power output	Before starting C4200 switch power on and set drive enable

See also Functional Description of firmware "Drive-Controlled Oscillation"

C4201 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C4201**
C00C4201**7.2.121 C4202 Oscillation command speed cannot be reached**

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«HDC»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«-»	«HDM» «-»

Five seconds after the start of "C4200 Drive-controlled oscillation command" the deviation of the actual velocity value from the oscillation start speed still is greater than or equal to the value of "S-0-0157, Velocity window".

Cause	Remedy
Value of "S-0-0157, Velocity window" is zero	Set "S-0-0157, Velocity window" to valid value greater zero
Motor is blocked or speed is too low due to high degree of friction	Check mechanical drive system for blocking or stiffness

See also Functional Description of firmware "Drive-Controlled Oscillation"

C4202 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C4202**
C00C4202**7.2.122 C4302 Distance home switch - reference mark erroneous**

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«HDB»				
	Contained in 18VRS:	«HDB»	«HDC»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

During the execution of the command for NC-controlled homing (C4300) an error was detected.

The axis is equipped with a home switch connected to the controller (see settings for home switch and reference mark in "S-0-0147, Homing parameter").

Cause	Remedy
Distance between home switch edge and next reference mark determined by controller is not inside allowed range	Read value from parameter "S-0-0298, Reference cam shift" and take it over to parameter "S-0-0299, Home switch offset" - or - Shift reference cam by value of "S-0-0299, Home switch offset"

See also Functional Description of firmware "Establishing Position Data Reference for Relative Measuring Systems"

C4302 - Attributes

Diagnostic no.: **C4302**
Diagnostic no. as of 18VRS: C00C4302

7.2.123 C4304 Homing impossible with absolute encoder

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command for NC-controlled homing (C4300) an error was detected:

NC-controlled homing is impossible with absolute measuring system.

C4304 - Attributes

Diagnostic no.: **C4304**
Diagnostic no. as of 18VRS: 000C4304

7.2.124 C4306 Reference mark not detected

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command for NC-controlled homing (C4300) an error with regard to the reference marks of the encoder was detected.

If the reference marks of the relative encoder to be homed (selected in "S-0-0147, Homing parameter") occur cyclically over the travel range, the position difference of the reference marks detected by the controller is monitored. This requires the correct setting for "P-0-0153, Optimum distance home switch-reference mark".

Cause	Remedy
Reference marks do not occur in expected position difference	Check measuring system to be homed and corresponding wiring - or - Check and, if necessary, correct setting of "P-0-0153, Optimum distance home switch-reference mark"
Value set in "P-0-0153, Optimum distance home switch-reference mark" does not match encoder that is used	Correct setting of "P-0-0153, Optimum distance home switch-reference mark"

See also Functional Description of firmware "Establishing Position Data Reference for Relative Measuring Systems"

C4306 - Attributes

Diagnostic no.: **C4306**
Diagnostic no. as of 18VRS: C00C4306

7.2.125 C4307 Reference cam input not assigned

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command "S-0-0146, C4300 NC-controlled homing procedure command" an error was detected.

Cause	Remedy
Home switch hasn't been assigned to any digital input	Assign home switch ("S-0-0400, Home switch") to a digital input via parameter "P-0-0300, Digital I/Os, assignment list"
Home switch was connected to NC but "S-0-0147, Homing parameter" was incorrectly parameterized	Correct setting of respective bit of "S-0-0147, Homing parameter"

See also Functional Description of firmware "Establishing Position Data Reference for Relative Measuring Systems"

C4307 - Attributes

Diagnostic no.: C4307
Diagnostic no. as of 18VRS: C00C4307

7.2.126 C4308 Pos. stop a. HW lim. switch not allowed f. modulo axes

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

During the execution of the command for NC-controlled homing (C4300) an error was detected:

Cause	Remedy
NC-controlled homing at positive stop or travel range limit switch with modulo axes isn't a useful combination and therefore not allowed!	Modify control information for homing in "S-0-0147, Homing parameter" in a useful way

C4308 - Attributes

Diagnostic no.: C4308
Diagnostic no. as of 18VRS: C00C4308

7.2.127 C4901 PLC command error no. 1

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «-»

The command "P-0-1449, C4900 PLC command" for controlling a PLC program was started.

Cause	Remedy
PLC program has generated "PLC command error no. 1"	Check in program description to see how to react to C4901

See also Application Manual "Rexroth IndraMotion MLD"

C4901 - Attributes

Diagnostic no.: C4901
Diagnostic no. as of 18VRS: 000C4901

7.2.128 C4902 PLC command error no. 2

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «-»

The command "P-0-1449, C4900 PLC command" for controlling a PLC program was started.

Cause	Remedy
PLC program has generated "PLC command error no. 2"	Check in program description to see how to react to C4902

See also Application Manual "Rexroth IndraMotion MLD"

C4902 - Attributes

Diagnostic no.: [C4902](#)
Diagnostic no. as of 18VRS: 000C4902

7.2.129 C4903 PLC command error no. 3

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «-»

The command "P-0-1449, C4900 PLC command" for controlling a PLC program was started.

Cause	Remedy
PLC program has generated "PLC command error no. 3"	Check in program description to see how to react to C4903

See also Application Manual "Rexroth IndraMotion MLD"

C4903 - Attributes

Diagnostic no.: [C4903](#)
Diagnostic no. as of 18VRS: 000C4903

7.2.130 C4904 PLC command error no. 4

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «-»

The command "P-0-1449, C4900 PLC command" for controlling a PLC program was started.

Cause	Remedy
PLC program has generated "PLC command error no. 4"	Check in program description to see how to react to C4904

See also Application Manual "Rexroth IndraMotion MLD"

C4904 - Attributes

Diagnostic no.: [C4904](#)
Diagnostic no. as of 18VRS: 000C4904

7.2.131 C4910 PLC command timeout

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «HDC» «-»
	Contained in 20VRS:	«-» «HDC» «-» «HDP» «HDM» «-»

The command "P-0-1449, C4900 PLC command" for controlling a PLC program was started. The command specification was not acknowledged by the PLC.

Cause	Remedy
PLC program was not started	Start PLC program and then execute "P-0-1449, C4900 PLC command" again
An incorrect PLC program was loaded	Correct PLC program, load it and then execute "P-0-1449, C4900 PLC command" again

See also Application Manual "Rexroth IndraMotion MLD"

C4910 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C4910

000C4910

7.2.132 C5301 Sercos: Delay measurement failed

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the execution of command "S-0-1024, C5300 sercos: SYNC delay measuring procedure command", an error occurred or the command could not be started.

Cause	Remedy
Parameterization for execution of command is incomplete; measurement cannot be started	Enter valid value in "S-0-1015, sercos: Ring delay"
Measurement was unsuitable, because deviations in measured values were too big	Repeat measurement
Measurement was unsuitable, because topology changed during measuring process	Repeat measurement

C5301 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C5301

C30C5301

7.2.133 C6101 Incorrect IP settings

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While command "C6100 Command Activate IP settings" is being executed (P-0-1534 / S-0-1048), the IP settings made by the user are checked.

Cause	Remedy
The settings for the IP address, network mask and gateway address for one or several interfaces do not match.	Correct modified settings of the IP communication for the relevant interfaces and execute command C6100 again.

C6101 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C6101

000C6101

7.2.134 C6301 Command is password-protected

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»

Contained in 18VRS: «-» «-» «-»
Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the execution of "P-0-0660, C6300 Command Generate nameplate", an error occurred.

Cause	Remedy
When nameplate data were being generated ("configurable factory default values" or "application data in the encoder memory" or "motor data for third-party motor") the control password was not entered.	Enter control password. (The control password is determined by the manufacturer and is valid for the individual firmware; it is available from the manufacturer only on demand).
When the nameplate data "motor data for a motor from Bosch Rexroth" were generated, the master password was not entered.	Enter master password. (The master password is determined by the manufacturer and is exclusively available to the Bosch Rexroth development and service staff).

For removing command errors, see "[Command errors](#)"

C6301 - Attributes

Diagnostic no.: C6301
Diagnostic no. as of 18VRS: 000C6301

7.2.135 C6302 IDN not permissible (->S-0-0423)

Allocation **Contained in 16VRS:** «-»
Contained in 17VRS: «-»
Contained in 18VRS: «-» «-» «-»
Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the execution of "P-0-0660, C6300 Command Generate nameplate", an error occurred.

Cause	Remedy
In S-0-1300.20.3 an impermissible manufacturer code was entered (must be >"0").	Enter permissible manufacturer code in S-0-1300.20.3.
In P-0-0660.0.3 the IDN of a nameplate parameter was entered.	Determine the incorrect IDN on the basis of S-0-0423 and remove it from P-0-0660.0.3.
In P-0-0660.0.3 the IDN of a non-existent parameter was entered.	Determine the incorrect IDN on the basis of S-0-0423 and remove it from P-0-0660.0.3.
In P-0-0660.0.3 the IDN of a write-protected parameter was entered.	Determine the incorrect IDN on the basis of S-0-0423 and remove it from P-0-0660.0.3.
In P-0-0660.0.3 the IDN of a non-buffered parameter was entered.	Determine the incorrect IDN on the basis of S-0-0423 and remove it from P-0-0660.0.3.
In P-0-0660.0.3 more IDNs were entered than can be processed.	Determine the incorrect IDN on the basis of S-0-0423 and remove this and the subsequent IDNs from P-0-0660.0.3
While generating the nameplate, a general error has occurred.	Check configuration in P-0-0660.0.3. P-0-0660.0.129 may contain notes on this problem.

For removing command errors, see "[Command errors](#)"

C6302 - Attributes

Diagnostic no.: C6302
Diagnostic no. as of 18VRS: 000C6302

7.2.136 C6303 Insufficient memory

Allocation **Contained in 16VRS:** «-»
Contained in 17VRS: «-»

Contained in 18VRS: «-» «-» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

An error occurred during the execution of the command "P-0-0660, C6300 Generate type plate command".

Cause	Remedy
The data volume of the type plate to be generated is greater than what the selected type plate parameter can accept.	Reduce number of parameters in P-0-0660.0.3. TIP: The size of the type plate memory can be determined on the basis of the maximum length of the type plate parameter (e.g., encoder with HIPERFACE® interface: 600 bytes, encoder with EnDat® 2.1, 2.2 and ACURO®link: 2.3 kB at most, application data 1 kB)

For removing command errors see "[Command errors](#)"

C6303 - Attributes

Diagnostic no.: C6303
 Diagnostic no. as of 18VRS: 000C6303

7.2.137 C6304 Type plate unknown

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «-»
 Contained in 18VRS: «-» «-» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the execution of "P-0-0660, C6300 Command Generate nameplate", an error occurred.

Cause	Remedy
In P-0-3100 an impermissible encoder memory version has been entered.	Enter a permissible encoder memory version in P-0-3100; at present, only encoder memory versions 4.1 to 4.6 and 7.1 are allowed.
In P-0-3100 encoder version 7.1 has been entered, but in P-0-0660.0.3, P-0-3071 has not been entered as first parameter.	Correct the order of the configuration parameters in P-0-0660.0.3.
Enter version 4.1 to 4.6 in P-0-3100. List P-0-0660.0.3 contains parameters that cannot be assigned to this memory version.	Read S-0-0423 and remove relevant parameter from list P-0-0660.0.3.

For removing command errors, see "[Command errors](#)"

C6304 - Attributes

Diagnostic no.: C6304
 Diagnostic no. as of 18VRS: 000C6304

7.2.138 C6305 General type plate generation error

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «-»
 Contained in 18VRS: «-» «-» «-»
 Contained in 20VRS: «HDB» «HDC» «HDE» «HDP» «HDM» «-»

In the execution of "P-0-0660, C6300 Command Generate nameplate", a general error occurred. For causes, please refer to detailed diagnostics.

Cause	Remedy
Internal problem while saving parameters	Execute command C6300 again. If this error occurs again, please contact our service department.

For removing command errors, see "[Command errors](#)"

C6305 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C6305

000C6305

7.2.139 C6401 reboot command impossible

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«HDB»
	Contained in 18VRS:	«HDB» «HDC» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While command "S-0-1350, C6400 reboot command" was executed, an error occurred.

Cause	Remedy
At least one axis of multi-axis device fails to be in "PM"	1. Reset command 2. Switch all axes of multi-axis device to "PM" 3. Restart command

C6401 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C6401

000C6401

7.2.140 C6402 Wait until PLC program is loaded

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Command "S-0-1350, C6400 reboot command" was triggered, while a PLC program is being loaded via parameters.

Cause	Remedy
Command "S-0-1350, C6400 reboot command" was triggered, while a PLC program is being loaded via parameters.	Command error C6402 appears as long as a PLC program is loaded to the flash memory via a parameter backup. After the PLC program was transmitted to the flash memory, re-booting is continued and diagnostic message C6400 is displayed again.

C6402 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C6402

000C6402

7.2.141 C6501 Error when creating machine archive

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«-» «HDC» «-» «-» «HDM» «-»

In the execution of command C6500 an error has occurred while creating the machine archive on the external memory card.



The **device data** have been saved incompletely or incorrectly!



For the error that has occurred, see the "Backup.log" or "Restore.log" text file; the text file can be found in the "Backup" directory on the external memory card.

Cause	Remedy
Insufficient memory on external memory card	Use memory card with more capacity or remove unnecessary files from the memory card; then re-execute command C6500.
The external memory card has not or improperly been formatted.	Format memory card and execute command C6500 again. CAUTION! When the memory card is formatted, all data stored on it are lost. Before formatting the memory card, save the data which have been stored on it.
The external memory card has not (or improperly) been inserted in the SD card slot provided for it.	Insert memory card into the device and execute command C6500 again.
The external memory card is defective	Check memory card and execute command C6500 again. In the case of repeated occurrence of the same diagnostic message: Change memory card
Memory card slot in the device is defective.	Check memory card slot and replace it, if necessary.

C6501 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C6501**
000C6501**7.2.142 C6502 Error when reading device data**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«-» «HDC» «-» «-» «HDM» «-»

In the execution of command C6500 an error has occurred while reading the device data to be saved.



The **device data** have been saved incompletely or incorrectly!



For the error that has occurred, see the "Backup.log" or "Restore.log" text file; the text file can be found in the "Backup" directory on the external memory card.

Cause	Remedy
Error while starting or stopping command C2200	Too many commands active. Stop all active commands on the device and execute command C6500 again.

C6502 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C6502**
000C6502**7.2.143 C6503 Inconsistent backup of machine archive**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«-» «HDC» «-» «-» «HDM» «-»

The command for archiving device data (C6500) was terminated with an error.

Cause	Remedy
Write access to one or several parameters while archiving the device data.	Execute command C6500 again.
While the device data were being archived, a PLC program was stopped or started, which resulted in a temporary change in the value of S-0-0531. PLC programs should be stopped or started before command C6500 is started.	Execute command C6500 again.
While device data were being archived, a PLC program was loaded to the drive.	Execute command C6500 again.

C6503 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C6503**
000C6503

7.2.144 C6504 MLD boot project not on memory card

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«-» «HDC» «-» «-» «HDM» «-»

Archiving of a boot project in the internal flash memory is not supported.

Cause	Remedy
The boot project is in the internal flash memory.	Move the boot project to the memory card (see parameter P-0-1367, bit 8).
The additional package MLD has been activated, but no boot project has been loaded.	Deactivate the additional package MLD (see parameter P-0-2003, bit 9).

C6504 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C6504**
000C6504

7.2.145 C6601 Error when accessing machine archive

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«-» «HDC» «-» «-» «HDM» «-»

In the execution of command C6600 an error has occurred while accessing the machine archive on the external memory card.



The restored backup device data are incomplete or faulty!



For the error that has occurred, see the "Backup.log" or "Restore.log" text file; the text file can be found in the "Backup" directory on the external memory card.

Cause	Remedy
The external memory card has not (or improperly) been inserted into the slot provided for it	Insert external memory card into the device and execute command C6600 again.
Unable to unpack the files contained in the machine archive Insufficient memory on external memory card	Use memory card with more capacity or remove unnecessary files from the external memory card; then re-execute command C6600.

Cause	Remedy
Machine archive is faulty This error occurs with a manually created or modified machine archive or when the machine archive is incorrectly moved to the external memory card.	Check the file "Backup\Archive\Backup.zip".
The machine archive is not available or improperly named.	Check, whether the file "Backup\Archive\Backup.zip" created by command C6500 is available
The external memory card is defective	Check memory card and execute command C6600 again In the case of repeated occurrence of the same diagnostic message: Change external memory card and create machine archive anew (execute command C6500)
The slot for the external memory card in the device is defective	Check slot and, if necessary, replace device

NOTICE**Property damage caused by data loss!**

Before replacing or formatting the external memory card, save the data stored on it to avoid data loss.

C6601 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C6601
000C6601

7.2.146 C6602 Error when writing device data

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«-» «HDC» «-» «-» «HDM» «-»

In the execution of command C6600 an error has occurred while writing the device data.



The restored backup device data are incomplete or faulty!



For the error that has occurred, see the "Backup.log" or "Restore.log" text file; the text file can be found in the "Backup" directory on the external memory card.

Cause	Remedy
Incorrect access to a parameter of the device	Determine incorrect parameter and cause of error, eliminate error and execute command C6600 again
Error while starting or stopping command C2200	Too many commands active. Stop all active commands on the device and execute command C6600 again

C6602 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C6602
000C6602

7.2.147 C6604 Error when reading device data

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»

Contained in 18VRS: «-» «-» «-»
 Contained in 20VRS: «-» «HDC» «-» «-» «HDM» «-»

In the execution of command C6600 an error has occurred while reading device data.



The restored backup device data are incomplete or faulty!



For the error that has occurred, see the "Backup.log" or "Restore.log" text file; the text file can be found in the "Backup" directory on the external memory card.

Cause	Remedy
Incorrect parameter access to the device	Determine incorrect parameter and cause of error, eliminate error and execute command C6600 again

C6604 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:

C6604
 000C6604

7.2.148 C6605 Device data incompletely restored

Allocation Contained in 16VRS: «-»
 Contained in 17VRS: «-»
 Contained in 18VRS: «-» «-» «-»
 Contained in 20VRS: «-» «HDC» «-» «-» «HDM» «-»

In the execution of command C6600 an error occurred; it was impossible to restore all of the device data saved.

Cause	Remedy
One or more parameter(s) contained in the machine archive are unknown in the device. Note: This cause usually has to be expected only in the case of a manipulated machine archive, if the individual parts of the machine archive are not compatible with each other.	1. Determine incorrect parameter 2. Check configuration of the device with regard to the incorrect parameter and correct it manually. 3. Save the file "Backup.zip" (directory "Backup \Archive"). 4. Execute command C6500. ⇒ The machine archive is created anew!
One or more parameter value(s) contained in the machine archive are impermissible . Note: This cause usually has to be expected only in the case of a manipulated machine archive, if the individual parts of the machine archive are not compatible with each other.	1. Determine incorrect parameter. 2. Check configuration of the device with regard to the incorrect parameter and correct it manually. 3. Save the file "Backup.zip" (directory "Backup \Archive"). 4. Execute command C6500. ⇒ The machine archive is created anew! In exceptional cases it may be required to write the parameter values in a certain order; this is not supported by command C6600. In this case, repeat command C6600 until it is completed without any errors.
Enabling of functional packages could not be activated.	The device must be restarted manually (command C6400).

C6605 - Attributes

Diagnostic no.:
 Diagnostic no. as of 18VRS:

C6605
 000C6605

7.2.149 C6606 PLC user program is active

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«-»	«HDM» «-»

The execution of command "C6600" was aborted.



Restoration of stored device data has not been started!

Cause	Remedy
PLC has been started; in this case, a PLC application program cannot be restored.	Stop PLC before starting command "C6600".

C6606 - Attributes

Diagnostic no.:

Diagnostic no. as of 18VRS:

C6606

000C6606

7.2.150 C6701 Error when accessing update archive

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«-»	«HDM» «-»

In the execution of command "C6700" an error has occurred while accessing the update archive or individual device data files.



The update of the backup device data is incomplete or faulty!



For the error that has occurred, see the "Backup.log" or "Restore.log" text file; the text file can be found in the "Backup" directory on the external memory card.

Cause	Remedy
The external memory card has not (or improperly) been inserted into the slot provided for it	Insert external memory card into the device and execute command C6700 again
The update archive is faulty	Check the file of type "*.zip" in directory "User\Update\Archive".
The files contained in the update archive could not be unpacked. Insufficient memory on external memory card	Use external memory card with more capacity or remove unnecessary files from the external memory card; then re-execute command C6700.
The external memory card is defective	Check external memory card and execute command C6700 again. In the case of repeated occurrence of the same diagnostic message: Change external memory card.
The slot for the external memory card in the device is defective	Check slot and, if necessary, replace device

NOTICE**Property damage caused by data loss!**

Before replacing or formatting the external memory card, save the data stored on it to avoid data loss.

C6701 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C6701
000C6701

7.2.151 C6702 Error when writing device data

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«-»	«HDM» «-»

In the execution of command "**C6700**" an error has occurred while writing the device data.



The update of the backup device data is incomplete or faulty!



For the error that has occurred, see the "Backup.log" or "Restore.log" text file; the text file can be found in the "Backup" directory on the external memory card.

Cause	Remedy
Incorrect access to a parameter of the device	Determine incorrect parameter and cause of error, eliminate error and execute command C6700 again.
Error while starting or stopping command C2200	Too many commands active. Stop all active commands on the device and execute command C6700 again

C6702 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C6702
000C6702

7.2.152 C6703 Warning - Incomplete update of device data

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«-»	«HDC»	«-»	«-»	«HDM» «-»

Updating of the **device data to be saved** (command "**C6700**") was not entirely completed.



The update of the backup device data is incomplete or faulty!



For the error that has occurred, see the "Backup.log" or "Restore.log" text file; the text file can be found in the "Backup" directory on the external memory card.

Cause	Remedy
One or more parameter(s) contained in the machine archive are unknown in the device. Note: This cause usually has to be expected only, if the device data in the update are not compatible with the current drive configuration.	Updating can be undone by calling command C6600. - or - 1. Determine incorrect parameter 2. Check configuration of the device with regard to the incorrect parameter and correct it manually.
One or more parameter value(s) contained in the machine archive are impermissible . Note: This cause usually has to be expected only, if the device data in the update are not compatible with the current drive configuration. In exceptional cases it may be required to write the parameter values in a certain order; this is not supported by command C6700.	Repeat command C6700. - or - Updating can be undone by calling command C6600. - or - 1. Determine incorrect parameter 2. Check configuration of the device with regard to the incorrect parameter and correct it manually.
Enabling of functional packages could not be activated.	The device must be restarted manually (command C6400).

C6703 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C6703
000C6703

7.2.153 C6706 PLC user program is active

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«-» «HDC» «-» «-» «HDM» «-»

The execution of command "C6700" was aborted.



Updating of the device data has not been started!

Cause	Remedy
PLC has been started; in this case, a PLC application program cannot be updated.	Stop PLC before starting command "C6700".

C6706 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C6706
000C6706

7.2.154 C7901 No drive enable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

For starting this auto-calibration function of the pump controller, the controller enable of the drive must be set.

Cause	Remedy
Controller enable not set by machine control	Set controller enable for the drive over connected field bus
Controller enable not set in Easy Startup Mode	Activate Easy Startup Mode and set controller enable

See also Functional Description of firmware "Pump controller/calibration functions".

C7901 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C7901**
000C7901**7.2.155 C7902 Pressure sensor offset value too high**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The pressure offset value established during the calibration is greater than the set maximum value of 10 bar.

Cause	Remedy
Hydraulic system not depressurized	Unload hydraulic system completely
Drive motor not switched off	Switch off drive motor
Defect in the connection of the pressure transducer	Check cabling of the pressure transducer
Pressure transducer defective	Replace pressure transducer

See also Functional Description of firmware "Pump controller/calibration functions".

C7902 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C7902**
000C7902**7.2.156 C7903 Calibration value too high for valve calibration**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The valve offset value established during the calibration is greater than the set maximum value of +/- 10 %.

Cause	Remedy
Excessive wear of the control lands in the pilot valve	Replace valve and check quality of the hydraulic fluid
Internal electronics fault of the pilot valve	Contact Rexroth Service and, if required, replace valve

See also Functional Description of firmware "Pump controller/calibration functions".

C7903 - AttributesDiagnostic no.:
Diagnostic no. as of 18VRS:**C7903**
000C7903**7.2.157 C7904 Pressure ctrl differential too high during valve calibration**

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Valve calibration was interrupted, because the permissible maximum pressure control difference of +/- 15 bar was exceeded during the calibration.

Cause	Remedy
Pressure control not active, because all consumers are disconnected from the pump	Disconnect all consumers from the pump and make sure that no oil flow is present in the hydraulic system during the calibration
Drive motor switched off	Switch on drive motor
Pressure controller not stable	Reach pressure rating manually and check control parameters for pressure controller
Internal fault in pilot valve	Contact Rexroth Service and, if required, replace valve

See also Functional Description of firmware "Pump controller/calibration functions".

C7904 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C7904
000C7904

7.2.158 C7905 Swivel angle zero point too great

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Swivel angle zero point calibration was interrupted, because the established swivel angle zero point is greater than the set maximum value of +20 %.

Cause	Remedy
Not all consumers are disconnected from the pump	Disconnect all consumers from the pump and make sure that no oil flow is present in the hydraulic system during the calibration
Incorrect connection of swivel angle sensor	Check connection of swivel angle sensor at XA8
Swivel angle sensor defective	Replace swivel angle sensor
internal electronics fault of the pilot valve	Contact Rexroth Service and, if required, replace valve
Pump defect	Contact Bosch Rexroth Service and, if required, replace valve

See also Functional Description of firmware "Pump controller/calibration functions".

C7905 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C7905
000C7905

7.2.159 C7906 Pressure feedback value invalid during calibration

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While the swivel angle zero point is being calibrated, the actual pressure value is monitored. If the actual pressure value is lower than 12 bar or rises above 28 bar, the calibration is interrupted

Cause	Remedy
Not all consumers are disconnected from the pump	Disconnect all consumers from the pump and make sure that no oil flow is present in the hydraulic system during the calibration
Drive motor switched off	Switch on drive motor
internal electronics fault of the pilot valve	Contact Rexroth Service and, if required, replace valve

See also Functional Description of firmware "Pump controller/calibration functions".

C7906 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C7906
000C7906

7.2.160 C7907 Pressure feedback value too high during calibration

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

While the zero point of the swivel angle is being calibrated, the actual pressure value is monitored. If the actual pressure value rises above 80 bar, the calibration is interrupted.

Cause	Remedy
No unloading valve open to tank	Open unloading valve to tank or direct full flow through a consumer

See also Functional Description of firmware "Pump controller/calibration functions".

C7907 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C7907
000C7907

7.2.161 C7908 Swivel angle factor invalid

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Swivel angle factor calibration was interrupted, because the established swivel angle factor is outside the valid range (0.5-2.0).

Cause	Remedy
Incorrect connection of swivel angle sensor	Check connection of swivel angle sensor at XA8
Swivel angle sensor defective	Replace swivel angle sensor
internal electronics fault of the pilot valve	Contact Bosch Rexroth Service and, if required, replace valve
Pump defect	Contact Bosch Rexroth Service and, if required, replace pump

See also Functional Description of firmware "Pump controller/calibration functions".

C7908 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C7908
000C7908

7.2.162 C7909 Leakage too high for calibration

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

Leakage calibration was interrupted, because the established leakage value is greater than the set maximum (+30 %).

Cause	Remedy
Not all consumers are disconnected from the pump	Disconnect all consumers from the pump and make sure that no oil flow is present in the hydraulic system during the calibration
Incorrect configuration of swivel angle sensor	Check configuration of swivel angle sensor and repeat calibration of swivel angle offset and factor
Pump defect	Contact Bosch Rexroth Service and, if required, replace pump

See also Functional Description of firmware "Pump controller/calibration functions".

C7909 - Attributes

Diagnostic no.:

C7909

Diagnostic no. as of 18VRS:

000C7909

7.2.163 C7910 Pressure differential too high during leakage calibration

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

Leakage calibration was interrupted, because the permissible maximum pressure control difference of +/- 15 bar was exceeded during the calibration.

Cause	Remedy
Not all consumers are disconnected from the pump	Disconnect all consumers from the pump and make sure that no oil flow is present in the hydraulic system during the calibration
Incorrect valve characteristic curve	Repeat valve characteristic curve calibration
internal electronics fault of the pilot valve	Contact Rexroth Service and, if required, replace valve

See also Functional Description of firmware "Pump controller/calibration functions".

C7910 - Attributes

Diagnostic no.:

C7910

Diagnostic no. as of 18VRS:

000C7910

7.2.164 C7911 Pressure level not reached during leakage calibration

Allocation	Contained in 16VRS:	«-»				
	Contained in 17VRS:	«-»				
	Contained in 18VRS:	«-»	«-»	«-»		
	Contained in 20VRS:	«HDB»	«HDC»	«HDE»	«HDP»	«HDM» «-»

Leakage calibration was interrupted, because for the 2nd pressure rating, the difference between actual pressure value and pressure command value is greater than 10 bar.

Cause	Remedy
Not all consumers are disconnected from the pump.	Disconnect all consumers from the pump and make sure that no oil flow is present in the hydraulic system during the calibration.
Incorrect valve characteristic curve	Repeat valve characteristic curve calibration.
Internal electronics fault of the pilot valve	Contact Bosch Rexroth Service and, if required, replace valve.

See also functional description of firmware "Pump controller/calibration functions".

C7911 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C7911
000C7911

7.2.165 C7912 Error message present during calibration

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The started calibration function has been interrupted, because an error message is present. In this case, the cause for the corresponding error message has to be eliminated first and the error has to be cleared, before the calibration function can be restarted.

Cause	Remedy
An Fxxx error message is present.	Eliminate cause of the error message and clear error.

C7912 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C7912
000C7912

7.2.166 C7913 Error during calibration, external command active

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The started calibration function has been interrupted, because a further command was started already. This command must be completed first before the calibration function can be started.

Cause	Remedy
A further command is active	Wait until the active command is completed or abort the active command.

C7913 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C7913
000C7913

7.2.167 C7914 Calibration control word contains invalid bit combination

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Calibrating was interrupted, because an invalid value had been entered in the calibration command control word P-0-2991.

Cause	Remedy
Invalid value entered in the calibration command control word.	Correct value entered in calibration command control word P-0-2991.

C7914 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C7914
000C7914

7.2.168 C7915 No assignment of actual pressure value

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

Calibrating was interrupted, since no valid assignment is available for a pressure feedback value to an analog input.

Cause	Remedy
No assignment available for actual pressure value.	Enter assignment for the actual pressure value.

C7915 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C7915
000C7915

7.2.169 C7916 Swivel angle zero point of slave pump too large

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The calibration of the swivel angle sensor for the slave pump was interrupted, since the established swivel angle zero point is greater than the preset maximum value of +/-20 %.

Cause	Remedy
Incorrect connection of swivel angle sensor	Check connection of swivel angle sensor at XA8
Swivel angle sensor defective	Replace swivel angle sensor
Internal electronics fault	Contact Bosch Rexroth Service and replace electronics or pilot valve, where necessary
Pump defective	Contact Bosch Rexroth Service and, if required, replace pump

See also functional description of firmware "Calibration functions of pump"

C7916 - Attributes

Diagnostic no.:
Diagnostic no. as of 18VRS:

C7916
000C7916

7.2.170 C9001 No drive enable

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

For starting this condition monitoring function, the controller enable of the drive must be set.

Cause	Remedy
Controller enable not set by machine control	Set controller enable for the drive over connected field bus
Controller enable not set in Easy Startup Mode	Activate easy startup mode and set controller enable

See also Functional Description of firmware "Condition monitoring"

C9001 - Attributes

Diagnostic no.:

C9001

Diagnostic no. as of 18VRS:

000C9001

7.2.171 C9002 Error message present during Condition Monitoring

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The condition monitoring function has been interrupted, because an error message is present. In this case, the cause for the corresponding error message has to be eliminated first and the error has to be cleared, before the condition monitoring function can be restarted.

Cause	Remedy
An Fxxx error message is present.	Eliminate cause of the error message and clear error.

C9002 - Attributes

Diagnostic no.:

C9002

Diagnostic no. as of 18VRS:

000C9002

7.2.172 C9003 Condition Monitoring error, other command active

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The started condition monitoring function has been interrupted, because a further command was started already. This command must be completed first before the condition monitoring function can be started.

Cause	Remedy
A further command is active	Wait until the active command is completed or abort the active command.

C9003 - Attributes

Diagnostic no.:

C9003

Diagnostic no. as of 18VRS:

000C9003

7.2.173 C9004 Error in pump Condition Monitoring, see detailed diagnostics

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

In conjunction with the condition monitoring function of the pump controller, various conditions are monitored. In the case of an error, the condition monitoring function is aborted and detailed diagnostics with a corresponding message are generated.

Detailed diagnostic message	Remedy
Actual swivel angle during condition monitoring of pump too large.	Disconnect all consumers from the pump
Pressure control difference too large during condition monitoring function	Check setting for pressure controller - Repeat calibration function, if necessary
Valve calibration value too large during condition monitoring function	Check setting for pressure controller - Repeat calibration function, if necessary
Leakage calibration value too large during condition monitoring function	Disconnect all consumers from the pump - Repeat calibration function, if necessary
Swivel angle offset too large during condition monitoring function	Disconnect all consumers from the pump - Repeat calibration function, if necessary

See also Functional Description of firmware "Condition monitoring"

C9004 - Attributes

Diagnostic no.:

C9004

Diagnostic no. as of 18VRS:

000C9004

7.2.174 C9005 Abort Condition Monitoring, incorrect memory access

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The data for the condition monitoring function are stored in the internal memory. If an error is detected while accessing condition monitoring data in the internal memory, this message is generated. In this case, the condition monitoring function can no longer be used.

Cause	Remedy
Internal electronics fault	Contact Bosch Rexroth Service and, if required, replace valve or system

C9005 - Attributes

Diagnostic no.:

C9005

Diagnostic no. as of 18VRS:

000C9005

7.2.175 C9006 CM control word contains invalid selection

Allocation	Contained in 16VRS:	«-»
	Contained in 17VRS:	«-»
	Contained in 18VRS:	«-» «-» «-»
	Contained in 20VRS:	«HDB» «HDC» «HDE» «HDP» «HDM» «-»

The condition monitoring function was interrupted, because an invalid value had been entered in the condition monitoring control word P-0-2888.

Cause	Remedy
Invalid value entered in the condition monitoring control word.	Correct value in condition monitoring control word P-0-2888.

See also Functional Description of firmware "Condition monitoring"

C9006 - Attributes

Diagnostic no.:

C9006

Diagnostic no. as of 18VRS:

000C9006

8 Service and Support

Contact for repairs

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E-mail: support.nc-system@boschrexroth.de

Helpful Information

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

- Detailed description of the fault and the circumstances
- Information on the nameplate of the affected products, especially type codes and serial numbers
- Your contact data (phone, fax number and e-mail address)

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