Rexroth

DIAX04
Drive With Electric Gear
Function

Troubleshooting Guide: ELS 06VRS

SYSTEM200

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Title	DIAX04 Drive With Electric Gear Function
Type of Documentation	Troubleshooting Guide: ELS 06VRS
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Purpose of Documentation   This documentation is designed to assist maintenance personnel in identifying errors with the machinery

- help in understanding error messages
- help in finding the causes of errors
- describe the procedure for trouble shooting
- simplify the process of establishing contact with the Rexroth Indramat Customer service department

Record of Revisions

Description	Release Date	Notes
DOK-DIAX04-ELS-06VRS**-WA01-EN-P	06.02	First edition

Validity   The specified data is for product description purposes only and may not be deemed to be guaranteed unless expressly confirmed in the contract. All rights are reserved with respect to the content of this documentation and the availability of the product.
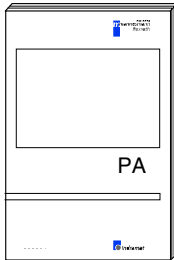
Note   This document has been printed on chlorine-free bleached paper.
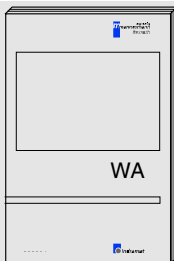
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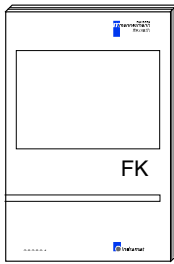
Functional Description:

Description of all implemented Function
based on SERCOS-Parameters
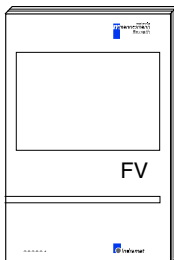
FK

Order designation:
DOK-DIAX04-ELS-06VRS**-FK01-EN-P

Parameter Description:

A description of all parameters
used in the firmware

PA

Order designation:
DOK-DIAX04-ELS-06VRS**-PA01-EN-P

Troubleshooting Guide:

-Explanation of the diagnostic states
-How to proceed when eliminating faults

WA

Order designation:
DOK-DIAX04-ELS-06VRS**-WA01-EN-P

Firmware Version Notes:

Description of new and changed functions
in terms of the derivatives:

-FWA-DIAX04-ELS-06VRS-MS

FV

Order designation:
DOK-DIAX04-ELS-06VRS**-FV01-EN-P
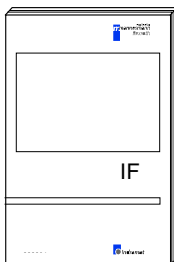
Drive Configuration:
-Determining the motor type
-Choosing the motor – motor feedback
 combination
-Choosing the desired function of the
 drive control device

IF

Order designation:
DOK-DIAX04-ELS-06VRS**-IF01-EN-P

CD: DRIVEHELP

Collection of Windows help systems which
contain documents on firmware derivatives

Order designation:
DOK-GENERL-DRIVEHELP**-GExx-MS-D0600
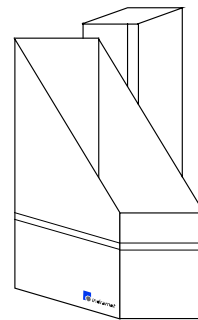
Order designation
DOK-DIAX04-ELS-06VRS**-6001-EN-P

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Contents

1   Diagnostic Message Descriptions

1.1   Overview of the Diagnostic Message Descriptions

Diagnostic Message Types

Each operational state of the drive will be characterized with a diagnostic message.

Differentiation will be made between:

- **Error diagnostic messages**
- **Warning diagnostic messages**
- **Command diagnostic messages**
- **Drive Mode diagnostic messages**
- **Operation status**

Construction of a Diagnostic Message

A diagnostic message consists of:

- **A diagnostic number** and a
- **diagnostic text**
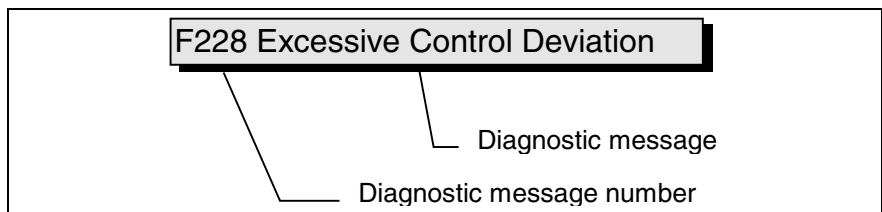
Fig. 1-1: Diagnostic message with a diagnostic number and text.

For the example in the graphic, "F2" and "28" are shown alternately on the H1-Display.

The control system can read out the diagnostic number in hexadecimal form with the **S-0-0390, Diagnostic Number** parameter.

In addition, the drive allocates to the control system the diagnostic number and diagnostic text as a string **F228, Excessive Deviation** with the **S-0-0095, Diagnostic Message** parameter.

Display

The H1 display is the visual representation the diagnosis of the drive controller. H2 serves two-axis units (HDD) as an addition display.
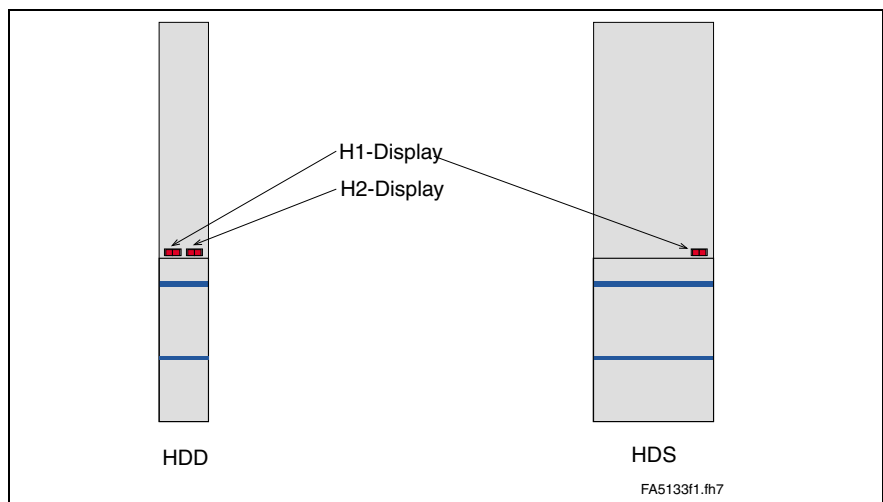
Fig. 1-2: H1 and H2 displays on the HDS and HDD controllers

The diagnostic number appears on this two-positional seven-segment display. The image can be seen on the "Diagnostic Message Priority Display".

This display quickly shows the current operation status without the use of a communications interface.

The operating mode cannot be seen from the H1-Display. If the drive follows the operating mode and no command was activated, then the symbol "AF" appears on the display.

Diagnostic Message Output Priority

If more than one diagnostic message is waiting, then the message with the highest priority will be displayed.

The following graphic classifies operation status in order of importance.
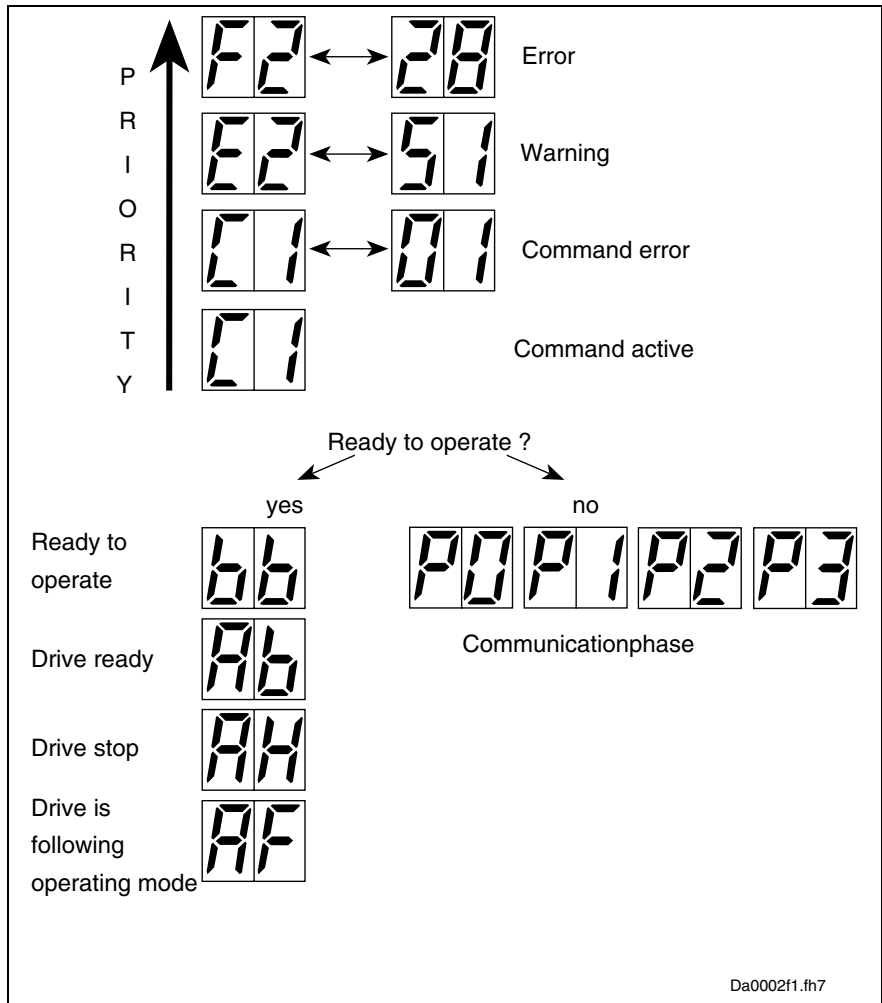
Fig. 1-3:   Diagnostic message priority diagram

Clear Coded Diagnostic Message

The clear coded diagnostic message contains the diagnostic number followed by the diagnostic text, as shown in the example, "Excessive Output Error" (Fig. 1-1). It can be read out with the **S-0-0095, Diagnostic message** parameter and directly displays the operation status on an operator surface.

The clear coded diagnostic message will be switched to the current language.

Notes

2   Important Directions for Use

2.1   Appropriate Use

Introduction

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

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

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

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

- Personnel that in any way, shape or form uses our products must first read and understand the relevant safety instructions and be familiar with appropriate use.

- If the product takes the form of hardware, then they must remain in their original state, in other words, no structural changes are permitted. It is not permitted to decompile software products or alter source codes.

- Do not mount damaged or faulty products or use them in operation.

- Make sure that the products have been installed in the manner described in the relevant documentation.

Areas of Use and Application

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

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

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

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

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

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

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

Typical applications of drive controllers are:

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

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

2.2   Inappropriate Use

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

Drive controllers may not be used if

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

3   Safety Instructions for Electric Drives and Controls

3.1   Introduction

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

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

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

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

3.2   Explanations

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

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

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

3.3 Hazards by Improper Use

DANGER

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

DANGER

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

WARNING

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

WARNING

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

CAUTION

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

CAUTION

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

CAUTION

Risk of injury due to incorrect handling of batteries!

3.4   General Information

- Rexroth Indramat GmbH is not liable for damages resulting from failure to observe the warnings provided in this documentation.

- Read the operating, maintenance and safety instructions in your language before starting up the machine. If you find that you cannot completely understand the documentation for your product, please ask your supplier to clarify.

- Proper and correct transport, storage, assembly and installation as well as care in operation and maintenance are prerequisites for optimal and safe operation of this equipment.

- Only persons who are trained and qualified for the use and operation of the equipment may work on this equipment or within its proximity.

  - The persons are qualified if they have sufficient knowledge of the assembly, installation and operation of the equipment as well as an understanding of all warnings and precautionary measures noted in these instructions.

  - Furthermore, they must be trained, instructed and qualified to switch electrical circuits and equipment on and off in accordance with technical safety regulations, to ground them and to mark them according to the requirements of safe work practices. They must have adequate safety equipment and be trained in first aid.

- Only use spare parts and accessories approved by the manufacturer.

- Follow all safety regulations and requirements for the specific application as practiced in the country of use.

- The equipment is designed for installation in industrial machinery.

- The ambient conditions given in the product documentation must be observed.

- Use only safety features and applications that are clearly and explicitly approved in the Project Planning Manual.
  For example, the following areas of use are not permitted: construction cranes, elevators used for people or freight, devices and vehicles to transport people, medical applications, refinery plants, transport of hazardous goods, nuclear applications, applications sensitive to high frequency, mining, food processing, control of protection equipment (also in a machine).

- The information given in the documentation of the product with regard to the use of the delivered components contains only examples of applications and suggestions.
  The machine and installation manufacturer must

  - make sure that the delivered components are suited for his individual application and check the information given in this documentation with regard to the use of the components,

  - make sure that his application complies with the applicable safety regulations and standards and carry out the required measures, modifications and complements.

- Startup of the delivered components is only permitted once it is sure that the machine or installation in which they are installed complies with the national regulations, safety specifications and standards of the application.

- Operation is only permitted if the national EMC regulations for the application are met.
  The instructions for installation in accordance with EMC requirements can be found in the documentation "EMC in Drive and Control Systems".
  The machine or installation manufacturer is responsible for compliance with the limiting values as prescribed in the national regulations.

- Technical data, connections and operational conditions are specified in the product documentation and must be followed at all times.

3.5 Protection Against Contact with Electrical Parts

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

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

⚠️ **DANGER**

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

⇒ Only those trained and qualified to work with or on electrical equipment are permitted to operate, maintain or repair this equipment.

⇒ Follow general construction and safety regulations when working on high voltage installations.

⇒ Before switching on power the ground wire must be permanently connected to all electrical units according to the connection diagram.

⇒ Do not operate electrical equipment at any time, even for brief measurements or tests, if the ground wire is not permanently connected to the points of the components provided for this purpose.

⇒ Before working with electrical parts with voltage higher than 50 V, the equipment must be disconnected from the mains voltage or power supply. Make sure the equipment cannot be switched on again unintended.

⇒ The following should be observed with electrical drive and filter components:

⇒ Wait five (5) minutes after switching off power to allow capacitors to discharge before beginning to work. Measure the voltage on the capacitors before beginning to work to make sure that the equipment is safe to touch.

⇒ Never touch the electrical connection points of a component while power is turned on.

⇒ Install the covers and guards provided with the equipment properly before switching the equipment on. Prevent contact with live parts at any time.

⇒ A residual-current-operated protective device (RCD) must not be used on electric drives! Indirect contact must be prevented by other means, for example, by an overcurrent protective device.

⇒ Electrical components with exposed live parts and uncovered high voltage terminals must be installed in a protective housing, for example, in a control cabinet.

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To be observed with electrical drive and filter components:

	High electrical voltage on the housing!
⚠	**High leakage current! Danger to life, danger of injury by electric shock!**
DANGER	⇒ Connect the electrical equipment, the housings of all electrical units and motors permanently with the safety conductor at the ground points before power is switched on. Look at the connection diagram. This is even necessary for brief tests.
	⇒ Connect the safety conductor of the electrical equipment always permanently and firmly to the supply mains. Leakage current exceeds 3.5 mA in normal operation.
	⇒ Use a copper conductor with at least 10 mm² cross section over its entire course for this safety conductor connection!
	⇒ Prior to startups, even for brief tests, always connect the protective conductor or connect with ground wire. Otherwise, high voltages can occur on the housing that lead to electric shock.

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

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

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

3.7   Protection Against Dangerous Movements

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

- improper or wrong wiring of cable connections

- incorrect operation of the equipment components

- wrong input of parameters before operation

- malfunction of sensors, encoders and monitoring devices

- defective components

- software or firmware errors

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

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

DANGER

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

⇒ Ensure personal safety by means of qualified and tested higher-level monitoring devices or measures integrated in the installation. Unintended machine motion is possible if monitoring devices are disabled, bypassed or not activated.

⇒ Pay attention to unintended machine motion or other malfunction in any mode of operation.

⇒ Keep free and clear of the machine's range of motion and moving parts. Possible measures to prevent people from accidentally entering the machine's range of motion:
  - use safety fences
  - use safety guards
  - use protective coverings
  - install light curtains or light barriers

⇒ Fences and coverings must be strong enough to resist maximum possible momentum, especially if there is a possibility of loose parts flying off.

⇒ Mount the emergency stop switch in the immediate reach of the operator. Verify that the emergency stop works before startup. Don't operate the machine if the emergency stop is not working.

⇒ Isolate the drive power connection by means of an emergency stop circuit or use a starting lockout to prevent unintentional start.

⇒ Make sure that the drives are brought to a safe standstill before accessing or entering the danger zone. Safe standstill can be achieved by switching off the power supply contactor or by safe mechanical locking of moving parts.

⇒ Secure vertical axes against falling or dropping after switching off the motor power by, for example:
  - mechanically securing the vertical axes
  - adding an external braking/ arrester/ clamping mechanism
  - ensuring sufficient equilibration of the vertical axes

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

⇒ Disconnect electrical power to the equipment using a master switch and secure the switch against reconnection for:

- maintenance and repair work

- cleaning of equipment

- long periods of discontinued equipment use

⇒ Prevent the operation of high-frequency, remote control and radio equipment near electronics circuits and supply leads. If the use of such equipment cannot be avoided, verify the system and the installation for possible malfunctions in all possible positions of normal use before initial startup. If necessary, perform a special electromagnetic compatibility (EMC) test on the installation.

3.8   Protection Against Magnetic and Electromagnetic Fields During Operation and Mounting

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

⚠️ **WARNING**

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

⇒ Persons with heart pacemakers, hearing aids and metal implants are not permitted to enter the following areas:

- Areas in which electrical equipment and parts are mounted, being operated or started up.

- Areas in which parts of motors with permanent magnets are being stored, operated, repaired or mounted.

⇒ If it is necessary for a person with a heart pacemaker to enter such an area, then a doctor must be consulted prior to doing so. Heart pacemakers that are already implanted or will be implanted in the future, have a considerable variation in their electrical noise immunity. Therefore there are no rules with general validity.

⇒ Persons with hearing aids, metal implants or metal pieces must consult a doctor before they enter the areas described above. Otherwise, health hazards will occur.

3.9   Protection Against Contact with Hot Parts

⚠️ **CAUTION**

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

⇒ Do not touch housing surfaces near sources of heat! Danger of burns!

⇒ After switching the equipment off, wait at least ten (10) minutes to allow it to cool down before touching it.

⇒ Do not touch hot parts of the equipment, such as housings with integrated heat sinks and resistors. Danger of burns!

3.10   Protection During Handling and Mounting

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

⚠️ **CAUTION**

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

⇒ Observe general installation and safety instructions with regard to handling and mounting.

⇒ Use appropriate mounting and transport equipment.

⇒ Take precautions to avoid pinching and crushing.

⇒ Use only appropriate tools. If specified by the product documentation, special tools must be used.

⇒ Use lifting devices and tools correctly and safely.

⇒ For safe protection wear appropriate protective clothing, e.g. safety glasses, safety shoes and safety gloves.

⇒ Never stand under suspended loads.

⇒ Clean up liquids from the floor immediately to prevent slipping.

3.11 Battery Safety

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

<table>
<tr>
<td>
⚠️
CAUTION
</td>
<td>
Risk of injury by incorrect handling!
⇒ Do not attempt to reactivate discharged batteries by heating or other methods (danger of explosion and cauterization).
⇒ Never charge non-chargeable batteries (danger of leakage and explosion).
⇒ Never throw batteries into a fire.
⇒ Do not dismantle batteries.
⇒ Do not damage electrical components installed in the equipment.
</td>
</tr>
</table>

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

3.12 Protection Against Pressurized Systems

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

<table>
<tr>
<td>
⚠️
CAUTION
</td>
<td>
Danger of injury by incorrect handling of pressurized systems !
⇒ Do not attempt to disassemble, to open or to cut a pressurized system (danger of explosion).
⇒ Observe the operation instructions of the respective manufacturer.
⇒ Before disassembling pressurized systems, release pressure and drain off the fluid or gas.
⇒ Use suitable protective clothing (for example safety glasses, safety shoes and safety gloves)
⇒ Remove any fluid that has leaked out onto the floor immediately.
</td>
</tr>
</table>

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

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Notes

4   Description of Diagnostic Letters F... and E...

4.1   Error Diagnostic Messages F...

Many functions are monitored subject to operating modes and parameter settings. An error message is generated if a condition is discovered which no longer allows proper operation.

Error Classes   The errors are separated into four different error classes. The error class is evident from the diagnostic message. They are determined with the drive's error response.

Error class	Diagnostic message	Drive reaction
Fatal	F8xx	Torque free switching
Travel range	F6xx	Speed command value-zero switch
Interface	F4xx	In accordance with "Best possible deceleration"
Non-fatal	F2xx	In accordance with "Best possible deceleration"

Fig. 4-1:   Error classes and drive reaction

Drive's Error Reaction   If an error state is detected in the drive then an automatic operation of the drive's error response will be started as long the drive is in control. The H1-Display blinks a Fx / xx. The drive's reaction can be parameterized by **P-0-0119, Best possible deceleration** with interface and non-fatal errors. At the end of each error reaction the drive is switched off.

Reset the Error   Errors will not be automatically deleted but must be:

- Reset from the control through the initialization of the command S-0-0099, Reset class 1 diagnostic or

- reset by pressing the "S1" button.

If the error state is still present then the error will be immediately detected again.

A positive edge bit on the control enable signal is necessary in order to turn on the drive again.

F207 Switching to uninitialized operation mode

Cause:

0 has been selected in at least one of the four mode operating mode parameters **S-0-0032…35**. This mode has been selected by the bits 8 and 9 in the master control word while the drive controller was on.

Remedy:

Enter the desired mode in the activated mode parameter.

Which operation modes can be selected in a certain device is written in the description for the operation mode parameters:

Parameter:	Primary mode of operation	S-0-0032
	Secondary operation mode 1	S-0-0033
	Secondary operation mode 2	S-0-0034
	Secondary operation mode 3	S-0-0035

See also the functional description: "Setting the operating mode parameters"

F208 UL The motor type has changed.

This indication happens when you power up for the first time with a new motor. The regulator settings for the current, velocity and position loops are stored in the feedback on the motor. After powering up, the drive compares the motor type stored in the parameter with the connected motor type. If the motor types do not match, basic control loop settings must be adapted, too.

With the Basic Load command, the default control loop settings are loaded from the feedback memory into the drive. The previous loop settings are overwritten. By pressing the S1 key, the command Basic Load is started.

Causes:

- The motor has been exchanged.
- A parameter file has been loaded, but the parameter **S-0-0141, Motor type** contained a motor type different from the present one.

Remedy:

Command **C700 Basic Load** or press the S1 button.

See also the functional description: "Automatic execution of the load default feature".

F209 PL Load parameter default values

After replacing the firmware version, the drive displays "**PL**", if the parameters have been changed in regards to the old product. By pressing the S1 button on the drive controller or by starting the command "load basic parameters", all the parameters will be erased and restored with the default (initial) values.

Cause:

The firmware has been exchanged; the number of parameters in comparison to the old product has changed.

Remedy:

Press S1 button on the drive controller, and all the parameters will be erased and restored with the factory preset default values

WARNING

$\Rightarrow$ This overwrites all parameters and positioning blocks.

See also the functional description: "Basic parameter block".

F218 Amplifier overtemperature shutdown

The temperature of the amplifier's heatsink is monitored. If the heatsink is too hot, the drive will power down in order to protect against damage.

Cause:

1. Ambient temperature is too high. The specified performance data are valid up to an ambient temperature of 45 °C.
2. The amplifier's heatsink is dirty.
3. Air flow is prevented by other assembly parts or the control cabinet assembly.
4. Blower defective.
5. E219: Sensor defective appears prior to shutdown of unit

For Remedy:

1. Reduce the ambient temperature, e.g. through cooling of the control cabinet.
2. Remove obstructions or dirt from the heatsink.
3. Install the device vertically and clear a large enough area for proper heatsink ventilation.
4. Exchange drive.
5. Exchange drive.

F219 Motor overtemperature shutdown

If the motor temperature exceeds the value in **S-0-0204, Motor shutdown temperature**, the drive will generate this error message. The value in **S-0-0204** is fixed at 150 °C for MDD-,MKD- and MKE motors. The appropriate value must be entered from the motor's technical specifications for all other types of motors.

For motors of series: 2AD, 1MB, LAF, LAR, and MBW, the current motor temperature can be called up with parameter **S-0-0383, Motor temperature**.

Cause:

1. The motor became overloaded. The effective torque demand on the motor was above its permissible continuous torque level for too long.
2. Short circuit or disconnection in the connection to motor temperature monitoring.
3. Instability in the velocity control loop.

Remedy:

For 1. Check the layout of the motor. For motors which have been in operation for longer periods of time, check to see if the operating conditions have changed (in regards to cleanliness, friction, moved components, etc.).

For 2. Check the wiring to the motor temperature monitor X6/1 and X6/2 for disconnection or short circuits.

For 3. Check the velocity control loop parameters (see the functional description).

See also the functional description: "Temperature monitoring"

F221 Motor temp. surveillance defective

Cause:

Wire break or interruption in the wires for the motor temperature monitoring.

Remedy:

Check the wiring for the motor temperature monitoring (signals MT(emp)+ and MT(emp)-) for interruption and short circuit.

See also the functional description: "Temperature monitoring".

F226 Undervoltage in power section

The level of the DC bus voltage is monitored by the drive controller. If the DC bus voltage falls below a minimal threshold, the drive independently shuts down according to the set error reaction.

Cause:

1. The power source has been interrupted without first switching off the drive enable (RF).

2. Disturbance in the power supply

Remedy for:

1. Check the logic regarding the activation of the drive within the connected control.

2. Check the power supply.

See also the functional description: "drive enable"

F227 Excessive oscillation of DC Bus

Excessive oscillation occurs in the DC bus. The DC bus voltage fluctuates very much over a longer period.

Cause:

1. The drive oscillates. The oscillation may be mechanically invisible. Therefore check the command torque.

2. The drive loads the DC bus impulsively.

Remedy:

1. Check the command torque to know whether it corresponds to the expected load cycle. Check the settings of velocity control loop and position control loop.

2. Check the application.

F228 Excessive deviation

When the position loop is closed, the drive monitors whether it is able to follow the specified command value. This is done by calculating a model position value in the drive and comparing that value with the actual feedback value. If the difference between theoretical and actual position value permanently exceeds the value of the **S-0-0159, Monitoring window** parameter, the drive obviously cannot follow the given command value. Then this error is generated.

Cause:

1. The drive's **acceleration** capacity has been exceeded.

2. The axis is **blocked**.

3. Incorrect parameter values set in the drive parameters.

4. Incorrect parameter values in **S-0-0159, Monitoring window**.

Remedy:

Ref. 1. Check the **S-0-0092, Bipolar torque/force limit value** parameter and set it to the maximum permissible value of the application. Reduce the specified acceleration value from the controller (see controller Manual).

Ref. 2. Check the mechanical system and eliminate jamming of the axis.

Ref. 3. Check the drive parameters (control loop tuning).

Ref. 4. Set the parameter values of **S-0-0159, Monitoring window**.

See also the functional description "Position control loop monitoring".

F229 Encoder 1 failure: quadrant error

With wrong signals in the encoder evaluation, a hardware error has been discovered in the encoder interface 1 being used.

Cause:

1. Defective encoder cable

2. Disruptive electro-magnetic interference on the encoder cable

3. Defective encoder interface

4. Defective drive controller

Remedy for:

1. Exchange the encoder cable.

2. Keep the encoder cable well away from the power cables.

3. Exchange the encoder interface.

4. Exchange the drive controller.

F233 External power supply error

Cause:

The DEA plug-in modules have isolated inputs and outputs. Proper operation of those inputs and outputs requires an external 24 volts to be applied. The drive monitors that voltage as soon as a DEA plug-in module has been installed.

Remedy:

Check the external 24-V power supply.

Name:	Unit:	min.:	typ.:	max.:
External operating voltage $+U_L$	V	18	24	32
External current consumption I_L	mA			100

Fig. 4-2:   External power supply

See also the functional description: "Digital I/O Functional Principle"

F236 Excessive position feedback difference

Cause:

In the communication phase 4 transition check command, position feedback value 1 and position feedback value 2 are set to the same value, and the cyclic evaluation of both encoders is started. In cyclic operation (phase 4), the position feedback difference of both encoders is compared with **S-0-0391, Monitoring window feedback 2**. If the amount of the difference exceeds the monitoring window, the error **F236 Excessive position feedback difference** is diagnosed, the parameter-selected error response is performed, and the reference bits of both encoders are cleared.

Notes: The monitoring is off, when the parameter **S-0-0391, Monitoring window feedback 2** is set to the value 0.

Possible Causes:

1. Incorrect parameter for encoder 2:
   - **S-0-0115, Position feedback 2 type**
   - **S-0-0117, Feedback 2 resolution**
2. Incorrect parameter setting of mechanical system between motor shaft and encoder 2:
   - **S-0-0121, Input revolutions of load gear**
   - **S-0-0122, Output revolutions of load gear**
   - **S-0-0123, Feed constant**
3. The mechanical system between motor shaft and encoder 2 is not rigid (e.g. gear play, slip).
4. Defective encoder cable
5. Maximum input frequency of the encoder interface exceeded
6. Encoder 2 (optional) is not mounted to the driven axis.
7. Incorrect reference measure of an absolute encoder

Remedy for:

1. Check **S-0-0115, Position feedback 2 type parameter** and **S-0-0117, Resolution of feedback 2**.

2. Check **S-0-0121, S-0-0122, Input/Output revolutions of load gear** and **S-0-0123, Feed constant**.

3. Increase **S-0-0391, Monitoring window feedback 2;** switch off when using a gearbox with a large amount of slip.

4. Replace encoder cable.

5. Reduce the velocity.

6. Set **S-0-0391, Monitoring window feedback 2** to 0 (de-activate monitoring function).

7. Perform **P-0-0012, C300 Command 'Set absolute measurement'**.

See also the functional description "Actual feedback value monitoring".

F237 Excessive position command difference

Cause:

When the drive is operating in position control, incoming position command values are monitored. If the velocity required of the drive by two successive position command values is greater than or equal to the value in **S-0-0091, Bipolar velocity limit value**, position command value monitoring is initiated. The **Excessive position command value** is stored in parameter **P-0-0010**. The **last valid position command value** is stored in parameter **P-0-0011**.

If position data are to be processed in modulo format, then the interpretation of the command is also dependent on the value set in **S-0-0393, Command value mode for modulo format.** The parameter should be set for the "shortest path" (0).

Remedy:

Compare S-0-0091, Bipolar velocity limit value with the velocity in the program and adjust to match it, if necessary.

F242 Encoder 2 failure: signal amplitude wrong

Cause:

The analog signals of the measuring system are monitored according to two criteria:

1. The pointer length of the amplified signals, which is calculated from the sine and cosine signals, must be > 1 V.

2. The maximum pointer length resulting from the sine and cosine signals must not exceed 11.8 V.

$$\text{pointerlength} = \sqrt{\sin^2 + \cos^2}$$

Fig. 4-3:   Pointer length

To check this, it is possible to transmit the encoder signals to the analog output of the controller. This is done by means of the following parameter setting:

Channel 1:

P-0-0420 = 0; P-0-0421 = 3 (sine encoder 2); P-0-0422 = 1.0

Channel 2:

P-0-0423 = 0; P-0-0424 = 4 (cosine encoder 2); P-0-0422 = 1.0

By means of the input amplifiers, the 1 Vpp encoder signal is amplified to the nominal pointer length of 0.5V * 13.3 = 6.65V (DLF) and output. With the corresponding setting (X-Y operation) of the oscilloscope, you will obtain the following signal shape.
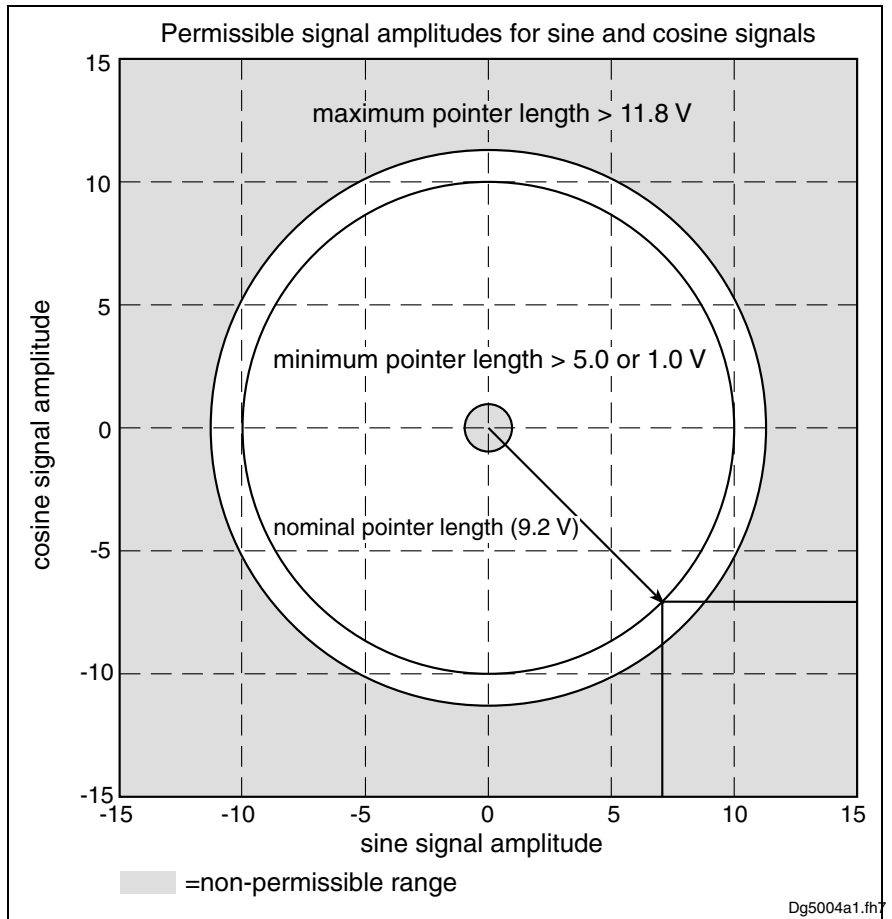
Fig. 4-4:   Correct signal amplitude

Note: When an incremental encoder with square-wave signals is used, the signals are <u>not</u> monitored.

Example:

Ucos = -6.5V

Usin =   6.5V

$$\text{pointerlength} = \sqrt{(-6.5V)^2 + 6.5V^2} \approx 9.2V$$

Remedy:

1.   Check the measuring system cable.

2.   Check the measuring system.

3.   In the case of linear measuring systems, check the mounting of the measuring head.

F245 Encoder 2 failure: quadrant error

The evaluation of the additional optional encoder (encoder 2) is active. In the evaluation of the sinusoidal input signals of the optional encoder, a plausibility check is performed between these signals and the counter fed by these signals. Doing this, an error has been encountered.

Cause:

1.   Defective encoder cable

2.   Disruptive electro-magnetic interference on the encoder cable

3.   Defective encoder interface

Remedy for:

1.   Exchange the encoder cable.

2.   Keep the encoder cable well away from power cables.

3.   Exchange the encoder interface.

F248 Low battery voltage

Cause:

For motors of series MKD and MKE, the absolute position information is stored by a battery-powered electronic in the motor feedback. The battery is designed for a 10-year life span. If the battery voltage falls below 3,1 V, this message appears. The absolute encoder function will still be preserved for about 2 weeks.

⚠ **CAUTION**	**Malfunction in the control of motors and moving elements** ⇒ Replace the battery as soon as possible.

Instructions for Exchanging Batteries

Have the following tools and accessories ready:

• Torx screwdriver size 10

• Needle-nose pliers, torque wrench

• New packaged battery

⚠ **CAUTION**	**Malfunction in the control of motors and moving elements** ⇒ Turn off the power supply. Make sure it will not be turned back on. Exchange the battery while the control voltage (24V) is turned on.

If the control voltage is turned off while the battery is taken out, the absolute **reference** point will be lost. Then, the reference point must be reestablished with the command "**Set absolute measuring**".

Removing the Battery

- Unscrew torx screws with size 10 screwdriver.
- Pull out the resolver feedback (RSF) lid by hand.
- Pull off the battery connector.
- Loosen battery clamp and remove the battery.
- Place the prepared battery in the housing and screw on the clamp. **Attention!** Do not kink or clamp the battery cable.
- Attach the connector of the battery.
- Close the resolver feedback lid, screw in 4 torx screws and tighten to 1.8 Nm with the torque wrench.

F249 Master drive encoder failure: signal too small

The signals of the master encoder are monitored. If its signal amplitude falls below a minimum threshold value, then this error message appears. The drive performs the best possible deceleration, as selected in the parameter P-0-0119.

Criteria for correct encoder signals:

1. The pointer addition of the sine and cosine signals must give at least 1 V.
2. The maximum pointer sum of the sine and cosine signals may not exceed 11.8 V.

Cause:

The analog signals of the measurement system at the master axis do not have the correct amplitude.

Remedy:

1.   Check the encoder cable.
2.   Check the encoder.

F252 Master drive encoder failure: quadrant error

A hardware error was discovered in the high resolution position interface for "DLF" sine signals of the external measurement system.

Cause:

1.   Defective encoder cable
2.   Insulation distrubance on the encoder cable
3.   Defective DLF plug-in card

Remedy:

For 1.   Exchange the encoder cable
For 2.   Separate the encoder cable from the power cables.
For 3.   Exchange the DLF plug-in card

F253 Incr. encoder emulator: pulse frequency too high

Cause:

The incremental encoder emulator can process a maximum of 1023 increments per sample period (250 µs); this value has been exceeded.

Remedial action:

1. Reduce the **number of lines** of the incremental encoder emulator (P-0-0502).

or

2. Reduce the travel **velocity**.

See function description: "Incremental Encoder Emulation"

F254 Incr. encoder emulator: hardware fault

Before the next increment output is started, the system checks at the end of each scan interval (250 µs) whether all increments have been output. this error is generated if the outputs overlap.

Cause:

• Internal run time exceeded

• Hardware error

Recovery:

Switch all functions off (e.g., analog outputs, etc.) that are not needed. If this does not clear the error, note the number of lines (use P-0-0502) and traversing speed at which error occurred and call Indramat customer service.

See function description: "Functional principle: Incremental Encoder Emulation"

F255 External power supply DAE 02 error

The analog interface DAE 02.1 requires an external 24-V power supply that must be connected to terminal X75, pin 8 (+24 V) and pin 9 (0 V). This error message is issued if the external power supply is missing or outside the range 18...32 V. This function also detects transient faults, caused by spikes, etc.

Remedial action:

1. Provide power to the interface from a regulated power supply unit.

2. Use different power supply units or motor brake and interface; in particular if long motor cables are used.

F267 Erroneous internal hardware synchronization

Cause:

The drive control is synchronized on the bus interface (SERCOS, Profibus, Interbus, ...). The correct function of the synchronization is monitored. If the average value of the deviation exceeds 5 µs, this error is generated.

Remedy:

Replace drive controller.

F268 Brake fault

The drive controller takes control of the brake for motors with an integrated holding brake. The braking current is monitored.
If the braking current is outside of the permissible range between:

0.4 -1.6 * **P-0-0511, Break current**

this error message will be generated.

Cause:

1. The power supply for the brake is not connected properly or is outside of the (24 V +/- 10%) tolerance.

2. The motor cable is incorrectly connected (wiring error).

3. Defective brake.

4. Defective drive controller.

Note: A connection between the 0V brake supply and the 0V of the drive controller is required.

Remedy:

For 1. Check the power supply.

For 2. Check the motor cable.

For 3. Exchange the motor.

For 4. Exchange the drive controller.

See also the functional description: "Motor Holding Brake"

F270 Error power supply home switch

To be able to monitor the home switch in drive-controlled homing, the DSS2.1 plug-in module requires an external 24-V power supply. The drive monitors the external 24-V power supply if homing with home switch has been selected via **S-0-0147, Homing parameter** (bit 5).

Cause:

The external 24-V power supply of the DSS2.1 plug-in module is missing.

Remedy:

1. Set **S-0-0147, Homing parameter** to "Homing without home switch" (bit 5 = 1).

2. Check the 24-V power supply at connector X12 of the DSS2.1 module.

Name:	Unit:	min.:	typ.:	max.:
External operating voltage $+U_L$	V	18	24	32
External current consumption I_L	mA			100

Fig. 4-5:   External power supply

See also the functional description: "Connection of the Home switch"

F271 Error power supply travel limit switch

To be able to monitor the travel limit switches, the DSS2.1 plug-in module requires an external 24-V power supply. The drive monitors the external 24-V power supply if the travel limit switches have been activated via the **P-0-0090, Travel limit parameter**.

Cause:

The external 24-V power supply of the DSS2.1 plug-in module is missing.

Remedy:

1. De-activate **P-0-0090, Travel limit parameter**.
2. Check the 24-V power supply at connector X12 of the DSS2.1 module.

See also the functional description: "Travel Zone End Switches - Activation and Polarity"

F272 Error power supply probe input

The probe inputs of the DSS2.1 plug-in module require an external 24-V power supply. The drive monitors the external 24-V power supply if the probes are activated via the **S-0-0170, Probing cycle procedure command**.

Cause:

The external 24-V power supply of the DSS2.1 plug-in module is missing.

Remedy:

Connect the 24-V power supply to the connector X12 of the DSS2.1 module.

See also the functional description: "Connecting the Probe Inputs"

F273 Error power supply E-Stop

The emergency stop input of the DSS2.1 plug-in module requires an external 24-V power supply. The drive monitors the external 24-V power supply if the emergency stop function is activated via the **P-0-0008, Activation E-Stop-Function** parameter.

Cause:

The external 24-V power supply of the DSS2.1 plug-in module is missing.

Remedy:

1. Connect 24-V power supply to the connector X12 of the DSS2.1 module.

2. Use the **P-0-0008, Activation E-Stop-function** parameter to de-activate the emergency stop function.

See also the functional description: "Connection of the Emergency-Stop Input"

F276 Absolute encoder out of allowed window

When turning off the drive controller with an absolute encoder, the actual feedback position will be stored. When powered up, the absolute position given by the encoder is compared with the stored position. If the divergence is greater than the parameterized **P-0-0097, Absolute encoder monitoring window**, the error **F276** is generated and transferred to the control unit.

Cause:

1. Turning on for the first time (invalid stored position).
2. While turned off, the axis was moved further than the distance parameterized in **P-0-0097, Absolute encoder monitoring window**.
3. Incorrect position initialization.

Remedy for:

1. Press S1 to reset the error and set the absolute position.
2. The axis was moved while turned off and sits outside of its permissible position. Check to see if the displayed position is correct in relation to the machine zero point. Then reset the error.
3. Check whether the error is generated again. If yes, the electronics module is possibly defective and will have to be replaced.

⚠ **WARNING**	**An accident may occur by accidental axis movement.** Check absolute position information. The feedback is defective if the absolute position information is wrong. The motor should be exchanged and sent to the Rexroth Indramat Customer Service.

Note: If a customer password is activated and the drive controller is locked, then error **F276 Absolute encoder out of allowed window** cannot be reset. The drive controller must be unlocked first.

See also the functional description "Absolute encoder monitoring".

F280 Short circuit to ground

Cause:

Ground short in the DC bus or in the motor.

This error is reported only in compact devices.

Remedy:

- Isolation test of the motor and motor power supply cable.

- Disconnect the power supply cable from the motor to the drive and turn on the drive and the power. If the error recurs, the drive should be exchanged.

F281 Mains fault

Cause:

The power supply voltage was not present during operation for at least 3 power periods. As a result, the drive controller was brought to a standstill according to the set error response.

Remedy:

Check the power supply connection according to the project planning specifications.

See also the functional description: "Current Limit"

F282 Phase loss fault

The power supply voltage is checked each time the control voltage is switched on and each time the controller enable is switched off. A phase error was found during this check.

Cause:

A power supply phase has failed or is outside of the permissible tolerance.

Remedy:

Check the power supply connection according to the project planning specifications of the drive controller being used.

F283 Line voltage fault

Cause:

The power supply voltage is above the permissible value > 460V+15%

Remedy:

Make sure the power supply is connected properly according to the project planning specifications of the drive controller being used.

F284 Main contactor off, low voltage

Cause:

When the main contactor was turned off, the DC bus voltage went below 400 V while controller enable was set.

Remedy:

Switch off the controller enable before switching off the main contactor.

F285 Mains current limit

During regenerative operation the integrated mains rectifier of the compact drives in the DKR is overloaded.

Cause:

- Regenerated power to high

Remedy:

- Reduce maximum torque level

- Use a step up (mains) transformer, to increase the mains supply voltage to the drive.

F316 Softstart fault power supply unit

The DC bus cannot be activated.

Cause:

1.   Short-circuit in power supply or drive controller.

2.   Too many additional capacitors have been connected.

3.   Interrupt in DC bus choke (only applies to HVE)

Remedy:

1.   Disconnect the servo drives from the power supply module. Apply power to the power supply. If the soft start error is still displayed, exchange the power supply module. Otherwise switch off the power and connect only the first drive to the power supply. Reapply power and determine if the error message returns. If so, exchange the drive, otherwise continue by connecting one drive at a time until the defective unit is determined. Once the defective unit is determined, exchange it.

2.   The number of additional capacitor must be reduced or a separate loading device must be used.

3.   Check the DC bus choke and input cables and replace if necessary.

F318 Heatsink overtemp. fault power supply unit

Power switched off due to excessive heatsink temperature.

Cause:

The unit is overloaded or ambient temperature is too high.

Remedy:

Check load and ambient temperature. Temperature pre-warning contact of the unit must be checked.

F320 Braking resistor overload

Power shutoff due to high bleeder load.

Cause:

1.   In the HVR, too much regenerated drive energy even with power off.

2.   In the HVE, continuous regenerated power or drive energy is too high.

3.   Unit is defective.

Remedy:

On 1:   Reduce drive speed. Delay power off in the case of Power Supply switch off or emergency stop.

On 2: Increase cycle time, reduce the speed of the drive, install additional bleeder.

On 3: Replace unit.

F360 Overcurrent power supply unit

With HVR only!

Cause:

Short-circuit in power supply unit, drive controller, motor or a cable.

Remedy:

Disconnect power supply lines on the drive controller one at a time. Replace a unit if it is defective.

F369 +24V/+-15V/+5V fault power supply unit

Control voltage interference.

Cause:

1.   Maximum permissible load has been exceeded

2.   Short-circuit in wiring if control voltage is used outside of drive system.

3.   Unit is defective.

Remedy

On 1: Remove control voltage bus connections to drive controllers one after the other.

On 2: Remove control voltage connections and check for short-circuits.

On 3: Replace unit.

F380 Short to ground power supply unit

Cause:

Ground short: in power supply unit

in drive controller

in motor or motor cable

Remedy:

Remove connections to motor and power supply unit one at a time. Replace defective drive components.

F381 Mains failure

With HVR only !

Cause:

At least one phase of the 3 phase power supply input is missing.

Remedy:

Check mains fuses and replace, if necessary.

F382 Mains phase loss fault

With HVE only !

Cause:

At least one phase of the 3 pjase power supply input is missing.

Remedy:

Check mains fuses and replace, if necessary.

F383 Line voltage fault

With HVR only !

Cause:

Mains voltage exceeds permissible tolerance (3x 380 ... 480V, $\pm$ 10 %).

Remedy:

Check mains voltage, use matching transformer, if necessary.

F384 Connection error at power supply unit

With HVR only !

Cause:

Power and control voltage connects are not in phase.

Remedy:

Check connection voltage. Terminals X5/U and X8/1, X5/V and X8/2, X5/W and X8/3 may not conduct voltage to each other.

F385 Line frequency fault

With HVR only !

Cause:

Mains frequency exceeds permissible tolerance ($\pm$ 2Hz).

F394 Checksum error power supply unit

With HVR only !

Cause:

Unit failure.

Remedy:

Replace unit.

F401 Double MST failure shutdown

The master sync telegram was not received in the drive controller in two successive SERCOS cycles.

Cause:

1.   Disruption in the fiber optic transmission line.
2.   Too much attenuation of the light signal.
3.   Malfunction in the SERCOS interface (general).

Remedy for:

1.   Check all fiber Optic connections in the SERCOS ring.
2.   Measure the attenuation in the fiber optic cable.
3.   The maximum attenuation between TX and RX must not fall below 12.5 dB.
4.   Exchange the SERCOS interface module in the drive controller.

See also the functional description: "SERCOS interface error"

F402 Double MDT failure shutdown

The master data telegram (MDT) has not been received in the drive over the course of two successive SERCOS or fieldbus cycles.

Cause:

1.   Fiber optic bus: interference in the fiber optic transmission
2.   Fiber optic bus: light signal input power too low
3.   SERCOS: problem in SERCOS interface (general)
4.   Fieldbus: bus connection terminated/blocked longer than watchdog duration
5.   The bus master is no longer sending cyclic telegrams to the drive, although they are expected in phase 4.

Remedy for:

1.   All fiber optic cable connections in SERCOS ring must be checked.
2.   The fiber optics power read at the receiver (test mode: continuous light) must lie between the range of –20dBm (10µW) and –5dBm (320µW). If it does not, then adjust transmission power or check attenuation of the fiber optic cable (maximum attenuation between TX and RX may not exceed 12.5 dB!)
3.   SERCOS interface module in drive has to be replaced.
4.   Check fieldbus connector and cable connections, signal level.
5.   Switch master on and start up cyclic communications, see Control Manual.

See also the functional description: "SERCOS Interface Error"

F403 Invalid communication phase shutdown

An invalid communications phase was given by the SERCOS master module (phase > 4).

Cause:

Error in the SERCOS master module of the control system.

Remedy:

Consult the control system manufacturer.

See also the functional description: "SERCOS interface error"

F404 Error during phase progression

The prescribed order was not maintained during phase progression.

Cause:

Error in the SERCOS master module of the control system.

Remedy:

Consult the control system manufacturer.

See also the functional description: "SERCOS interface error"

F405 Error during phase regression

Switching back from a communication phase did not switch to phase 0.

Cause:

Malfunction in the SERCOS master module of the controller.

Remedy:

Contact the controller manufacturer.

See also the functional description: "SERCOS interface error"

F406 Phase switching without ready signal

The SERCOS master attempted a phase switch without waiting for the drive controller's ready signal.

Cause:

Error in the SERCOS master module of the control system.

Remedy:

Consult the control system manufacturer.

See also the functional description: "SERCOS interface error"

F434 Emergency-Stop

Pressing the emergency stop switch (E-Stop) has caused the drive to perform the emergency stop function that was selected in the **P-0-0119, Best possible deceleration** parameter. Setting bit 15 of **S-0-0011, Class 1 diagnostics** causes an error message to be issued to the controller.

Cause:

The emergency stop switch has been pressed.

Remedy:

Eliminate the malfunction that has caused the emergency switch to be actuated, and clear the error.

See also the functional description: "Emergency stop feature".

F629 Positive travel limit exceeded

The drive has received a command value which has led to an axis position outside the positive travel range. The axis has been brought to a standstill with the error response "Set velocity command value to zero".

Bit 2 of paramater **P-0-0090, Travel limit parameter** is set for "Exceeding travel range is an error", or after exceeding the position limit a drive control command has been started (such as the drive-controlled homing procedure).

Cause:

S-0-0049, Positive position limit value exceeded.

Remedy:

1.   Check **S-0-0049, Positive position limit value**

2.   Check the software limits of the control system

3.   Activate the axis after the error response

Procedure:

- Clear the error.

- If the power supply was turned off, turn it back on.

- Move the axis into the permissible working range.

Note: Only command values which lead back into the allowed working range will be accepted. With other command values, the drive will stop again. - The parameter **S-0-0057, Position window** defines a tolerance for the travel limits.

See also the functional description: "Travel Range Limits ".

F630 Negative travel limit exceeded

The drive has received a command value which has led to an axis position outside the negative travel range. The axis has been brought to a standstill with the error response "Set velocity command value to zero".

Bit 2 of paramater **P-0-0090, Travel limit parameter** is set for "Exceeding travel range is an error", or after exceeding the position limit a drive control command has been started (such as the drive-controlled homing procedure).

Cause:

S-0-0050, Negative travel limit value exceeded.

Remedy:

1. Check **S-0-0050, Negative travel limit value**.

2. Check the software limits of the control system.

3. Activate the axis after the error response.

Procedure:

- Clear the error.

- If the power supply was turned off, turn it back on.

- Move the axis into the permissible working range.

Note: Only such command values which lead back into the allowed working range will be accepted. With other command values, the drive will stop again. - The parameter **S-0-0057, Position window** defines a tolerance for the travel limits.

See also the functional description: "Travel Range Limits".

F634 Emergency-Stop

Pressing the emergency stop (E-Stop) switch has caused the drive to stop by setting the velocity command value to zero. An error is reported in the **S-0-0011, Class 1 diagnostics** parameter.

Cause:

The emergency stop switch has been pressed.

Remedy:

Eliminate the malfunction that has caused the emergency switch to be actuated, and clear the error.

See also the functional description: "Emergency stop feature".

F643 Positive travel limit switch detected

The positive travel range limit switch has been activated. The axis was brought to a standstill with error reaction "Velocity command value to zero".

In **P-0-0090, Travel limit parameter** bit 2 has been set as "travel range overrun treated as error" or a drive control command was started after the end switch had been actuated (e.g., drive-controlled homing).

Cause:

The positive travel range limit switch has been activated.

Remedy:

1.   clear error

2.   turn power source back on

3.   move axis into the allowed travel range

Note: The drive will not accept command values which lead out of the permissible travel range. Entering these command values in the drive controller will result in this error.

See also the functional description: "Travel Range Limits".

F644 Negative travel limit switch detected

The negative travel limit switch has been activated. The axis has been brought to a standstill with the "Set velocity command value to zero" error response.

Bit 2 of parameter **P-0-0090, Travel limit parameter** is set for "Exceeding travel range as error", or a drive control command has been started (such as the drive-controlled homing procedure). with the limit switch already actuated.

Cause:

The negative travel limit switch has been activated.

Remedy:

1.   Reset the error.

2.   Turn the power supply on again.

3.   Move the axis into the permissible travel range.

Note: The drive will not accept command values which lead out of the permissible travel range. Entering these command values in the drive controller will result in this error.

See also the functional description: "Travel Range Limits".

F820 Braking resistor overload

Cause:

The energy of a braking motor cannot be converted quickly enough by the bleeder resistors.

The energy converted by the internal bleeder is analyzed. When the maximum energy capacity of the bleeder is exceeded, it is shut off. The bleeder overload error is generated.

Remedy:

The braking slope should have a flatter parameter, or the bleeder capacity can be increased by adding an additional bleeder.
The drive can be used again after the bleeder has cooled down.

F822 Encoder 1 failure: signal amplitude wrong

The analog signals of a motor measurement system are used for high resolution analysis of that measurement system. These are monitored according to two criteria:

1.   The pointer length, which is calculated from the amplified sine and cosine signals, must be >5 V while the encoder frequency is <10 kHz. Above that frequency it must be >1 V.

2.   The maximum pointer length resulting from the sine and cosine signals must not exceed 11.8 V.

$$[\text{V}] \quad \text{pointer length} = \sqrt{\sin^2 + \cos^2}$$

Fig. 4-6:   Pointer length

For checking purposes the encoder signals can be routed to the analog output of the controller. This is done through the following parameter setting:

Channel 1:

P-0-0420 = 0; P-0-0421 = 1 (SIN encoder 1); P-0-0422 = 1.0

Channel 2:

P-0-0423 = 0; P-0-0424 = 2 (COS encoder 1); P-0-0422 = 1.0

The input amplifier amplifies the 1Vss encoder signal to the nominal pointer size of

0.5V * 18.4 = 9.2V

which is then output. So with the appropriate setting of the oscilloscope (X-Y operation mode) the following signal wave form is produced:
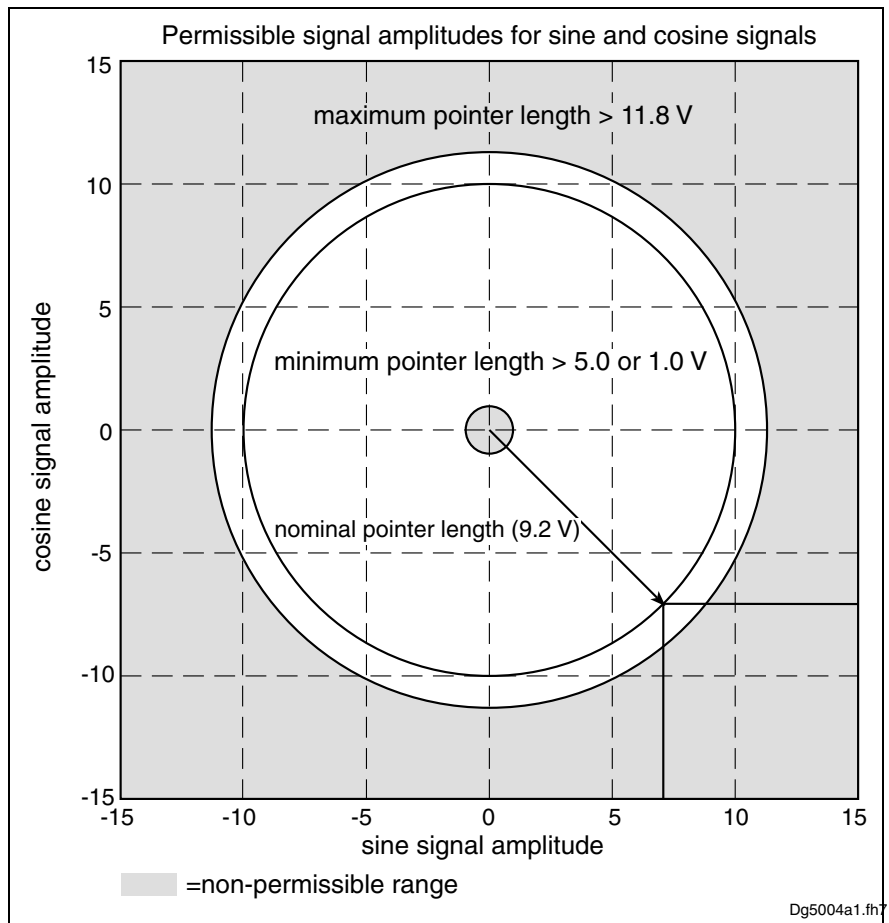
Fig. 4-7:　　　Correct signal amplitude

Example:

Ucos = -6,5 V

Usin =　6,5 V

$$\text{pointer length} = \sqrt{(-6.5V)^2 + 6.5V^2} \approx 9.2\ V$$

Note:　The error cannot be cleared in communications phase 4. Before clearing the error, switch to communications phase 2.

Note:　When an incremental encoder with squarewave signals is used, the signal is not monitored.

Cause:

1.　　　Defective encoder cable
2.　　　Disruptive electro-magnetic interference on the encoder cable
3.　　　Defective encoder

Remedy:

1.　Check the measurement system cable.
2.　Lay the feedback cable well away from the motor power cable. The cover must be placed over the drive controller (see drive controller project specifications.)
3.　Check the measurement system and exchange, if necessary.

F827 Drive interlock while drive activated

Cause:

The drive starting lockout was activated while controller enable was set. The drive controller switches to torque-free state immediately.

Remedy:

The drive interlock should not be activated when controller enable is set. Check the control system of the drive interlock input.

F860 Overcurrent: short in power stage

The transistor (IGBT) current has exceeded the allowed maximum peak value. The drive is immediately disabled, the motor freewheels to a stop.

Cause:

1. Short circuit in the motor or motor cable.

2. Defective power section of the drive controller

3. The current regulator was parameterized with wrong values.

Remedy:

For 1.   Check the motor cable for a short.

For 2.   Exchange the drive controller.

For 3.   Check that the current controller parameters are as given in the motor data sheet; if they differ, input the correct values.

F861 Overcurrent: short to ground

The phase current sum is monitored. Sum = 0 in normal mode. The ground-fault fuse responds if the current sum exceeds $0.5 \times I_N$.

Cause:

1.   Defective motor cable.

2.   Ground fault in the motor.

Remedy:

Check motor cable and motor for ground fault; replace if necessary.

F869 +/-15Volt DC error

The drive controller found a malfunction in the ± 15 V power supply.

Cause:

1.   Defective control voltage bus cable.

2.   Defective control voltage supply module.

Remedy:

For 1.   Check the control voltage bus cable or plug connection and exchange if necessary.

For 2.   Check control voltage supply module (see supply module instructions for use).

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F870 +24Volt DC error

The drive controller requires a 24V control voltage. The drive's torque is released immediately when the maximum permissible tolerance of +-20 % is exceeded. If an optional electrically released motor holding brake is present, then it is activated.

Cause:

1.   Defective **cable** for the control voltages.

2.   24V power supply **overload**.

3.   Defective power **supply unit**.

4.   **Short-circuit** in the emergency stop circuit.

Remedy:

Ref. 1. Check and, if necessary, replace the cable and connections of the control voltages.

Ref. 2. Check the 24V power at the power supply unit.

Ref. 3. Check the power supply unit.

Ref. 4. Check the emergency stop circuit for a short-circuit.

Note: This error can only be cleared in parameter mode (phase 2). As a result of this error, the encoder emulation is switched off.

F871 +10Volt DC error

The power supply voltage for the current sensors has been disrupted.

Cause:

A defect in the drive controller.

Remedy:

Exchange the drive controller.

F878 Velocity loop error

The velocity loop monitor will appear when the following conditions occur simultaneously:

•   The current command value is at the peak current limit.

•   Command accel and actual velocity have different qualifying signs

•   Actual velocity > 20 rpm or 20 mm/min

•   Command and actual acceleration have different qualifying (+/-)signs.

Cause:

1.   Motor cable is connected incorrectly.

2.   Defective controller section of the drive

3.   Defective feedback

4.   Velocity loop paramatrized incorrectly

5.   Incorrect commutation offset

Remedy:

For 1.   Check the motor cable connection.

For 2.   Exchange the drive controller.

For 3.   Exchange the motor.

For 4.   Check the velocity controller to see whether it is within operational parameters.

For 5.   Exchange the motor.

see also the functional description: "Determining the Velocity Controller Setting".

see also the functional description: "Determining commutation offset"

F879 Velocity limit S-0-0091 exceeded

In torque control, the actual velocity is monitored. This error is generated if the programmed velocity in the **S-0-0091, Bipolar velocity limit value** parameter is exceeded by the 1.125-fold value or a minimum of 100 rpm (rotary motor) or by 100 mm/min (linear motor).

Cause:

The torque command value was for too long a time greater than the load torque. This causes the actual speed to increase up to the maximum possible motor speed.

Remedy:

Assign the correct torque command value for the required task. Reduce the **S-0-0092, Bipolar torque/force limit value** parameter value.

See also the functional description "Limiting to bipolar velocity limit value".

F889 Regeneration overcurrent

Cause:

The feedback current of the drive is greater than 1.2 times the type current (with HDD only).

Remedy:

Replace the drive.

F890 Processor fault power supply unit

Cause:

The RSK processor on the plug-in storage card is not working.

Remedy:

Exchange drive controller or the plug-in storage card.

F891 Power stage fault

The DC bus voltage is not established after the main contactor has been switched on.

Cause:

If there is a short-circuit in the DC bus, voltage cannot build up after the drive has been switched on. This error is generated if the voltage remains under 100 V for approx. 200ms.

Remedy:

Exchange the drive controller.

F892 Wrong code of current measuring unit

A faulty current measuring unit was discovered after the control voltage was turned on.

Cause:

The current measuring unit has an incorrect code. The coding does not work with the RSK circuit board.

Remedy:

Exchange the current measuring unit.

F893 No regenerating current to mains

This error message is generated if the feedback current command value is at its maximum and no current is flowing for approx. 50ms.

Cause:

1.   Power supply not properly connected.

2.   Defective feedback.

Remedy:

For 1.   Check the power supply connection according to the project planning specifications.

For 2.   Exchange the drive controller.

4.2   Error Diagnostic Messages E...

E219 Warning Drive temp. surveillance defective

Temperature monitoring checks to see if the measured drive controller temperature is within reasonable bounds. If it determines that it is lower than -10 °C, then it is assumed the measuring unit is defective. Warning **E219 Warning Drive temp. surveillance defective** will appear for 30 seconds. Afterwards the drive will be brought to a standstill according to the selected error response and message **F218 Amplifier overtemp. shutdown** will be generated.

Cause:

Broken cable in the drive controller, or defective sensor.

Remedy:

Exchange or repair the drive controller.

E221 Warning Motor temp. surveillance defective

Temperature monitoring checks to see if the measured motor temperature is within reasonable bounds. If it determines that it is lower than -10 °C, then it is assumed the measuring unit is defective. Warning **E221 Warning Motor temp. surveillance defective** will appear for 30 seconds. Afterwards the drive controller will be brought to a standstill according to the selected error response and message **F221 Error Motor temp. surveillance defective** will be generated.

Cause:

1.   Motor temperature sensor not connected.
2.   Broken cable.
3.   Defective sensor.
4.   Broken cable in drive controller.

Remedy:

For 1.   Connect the sensor to the drive controller and to the motor (see project planning specifications for the motor).

For 2.   Exchange the wiring between the drive controller and the motor.

For 3.   Exchange the motor. Use second sensor in the motor if available.

For 4.   Exchange the drive controller.

See also the functional description: "Temperature monitoring".

E225 Motor overload

The maximum possible motor current is reduced in order to protect the motor from being destroyed.

If a current flows in the that is greater than 2.2 times the motor current at standstill S-0-0111, the maximum possible motor current **(S-0-0109, Motor peak current)** is reduced. With 4-fold motor current at standstill, the reduction starts after 400 ms. With 5-fold current it starts earlier, and with 3-fold current later. The **E225 Motor overload** warning is issued when the motor peak current is reduced by the limitation.

The reduction also has an effect on the **P-0-4046, Active permanent current**.

See also the functional description: "Current Limit"

E226 Undervoltage in power section

If bit 5 of the **P-0-0118, Power off on error** parameter has been set, an undervoltage condition will be handled as a nonfatal warning. The drive issues this warning if the drive enabling signal is present and the DC bus voltage message disappears.

Cause:

Power supply unit is switched off or mains failure occurs while the drive enabling signal is set.

Remedy:

Switch off the drive enabling signal before you switch off the power supply unit.

E247 Interpolation velocity = 0

The drive-internal position command value interpolator is active if

- the "drive-internal interpolation" mode
- drive-controlled homing
- jog
- drive halt

The **E247** warning is issued if the employed velocity specification is 0. Possible velocity specifications are:

- **S-0-0259, Positioning velocity**
- **S-0-0041, Homing velocity**
- **S-0-0091, Bipolar velocity limit value**
- **P-0-4030, Jog velocity**

Note:　　Warning **E247** is suppressed if **S-0-0259, Positioning Velocity** is cyclically configured.

See also the functional description: "Operating Mode: Drive Internal Interpolation"

E248 Interpolation acceleration = 0

Cause:

The drive internal position command interpolator (profile generator) is active. It has been given the acceleration = 0. Without acceleration, it can never reach a given speed.

Note:　　Input parameter values are converted into a drive internal format, so an input acceleration word > 0 can, when converted, result in an acceleration = 0. The parameter values which, internally, result in an acceleration > 0, can be calculated using the formulas found in the chapter entitled "**Drive-internal format of position data**"

Operation modes with drive internal position command generation:

1. Drive-internal interpolation

2. Drive-controlled homing

3. Drive Halt

4. Jog

Remedy:

Input a reasonable value > 0 for the employed acceleration. Possible acceleration specifications, depending from the operation mode, are:

For 1.and 4.:   **S-0-0260, Positioning acceleration**   **>0**

For 2.:   **S-0-0042, Homing acceleration**   **>0**

For 3.:   **S-0-0138, Bipolar acceleration limit value**   **>0**

See also the functional description: "Operating Mode: Drive Internal Interpolation"

E249 Positioning velocity >= S-0-0091

Cause:

Operating modes with internal interpolation limit the positioning speed to that set in **S-0-0091, Bipolar velocity limit value.**

This applies to the following modes:

1. Drive Internal Interpolation

2. Jogging

Remedy:

S-0-0259, Positioning Velocity or

P-0-4030, Jog velocity

must be reduced

See also functional description: "Operating Mode: Drive Internal Interpolation".

E250 Drive overtemp. prewarning

The temperature of the heatsink in the drive controller has reached the maximum permissible temperature. The drive controller follows the command value input for a period of 30 seconds. This makes it possible to bring the axis to a standstill with the control system while keeping true to the process (for example, close the operation, leave the collision area, etc.).

After 30 seconds, the response set in parameter **P-0-0119, Best possible deceleration** will be performed by the drive controller.

Cause:

1.   Failure of the drive's internal blower.

2.   Failure of the control cabinet's climate control.

3.   Incorrect control cabinet sizing in regards to heat dissipation.

Remedy for:

1.   If the blower fails, exchange the drive controller.

2.   Install climate control feature in the cabinet.

3.   Check the sizing of the control cabinet.

See also the functional description: "Current Limit"

E251 Motor overtemp. prewarning

The motor is too hot. If the motor temperature, which is displayed in parameter **S-0-0383, Motor temperature**, has exceeded the value in **S-0-0201, Motor warning temperature**, warning E251 is generated. If the temperature increases above the value in **S-0-0204, Motor shutdown temperature**, error **F219 Motor overtemp. shutdown** will be generated.

The values for parameters **S-0-0201, Motor warning temperature** and **S-0-0204, Motor shutdown temperature** are set at 145 °C and 155 °C respectively for MKD, MKE and MHD motors.

Cause:

1. The motor became overloaded. The effective torque required of the motor was above the permissible continuous standstill torque for too long.

2. Failure or contamination of motor cooling unit.

Remedy:

1. Check the layout of the motor. For systems which have been in use for a long time, check to see if the drive controller conditions have changed (in regards to pollution, friction, components which have been moved, etc.).

2. Check operation of cooling system, clean air ways.

See also the functional description: "Temperature monitoring"

E253 Target position out of travel range

In operation modes with drive controlled interpolation, the drive checks **before the move** whether the specified **S-0-0258, Target position**, is within the possible travel range of the drive. This range is defined by the parameters **S-0-0049, Positive position limit value** and **S-0-0050, Negative position limit value**. The position limit check is activated in the parameter **S-0-0055, Position polarities** with bit 4.

Cause:

The target position lies beyond the position limits, and the position limit check is activated.. The motion profile results in a target position greater than the maximum allowed position.

Results:

• This warning message, E253, appears.

• The **drive stops**.

• The drive does not accept the target position or the process block.

• In **S-0-0012, Class 2 diagnostic** warning bit 13 is set.

Remedy:

• For the Drive controlled interpolation mode, input the **S-0-0258, Target position** only within the position limits.

• Don't input moves which are greater than the maximum allowed position minus the current position.

• In positioning-sequence operating mode always set **S-0-4006, Command Targetposition** smaller than the maximum allowed position.

- The same holds for Relative Positioning commands, where the sum of the commanded positions + the start position should be less than the maximum allowed position.

- Check the **position limit values**. Moreover, the positive position limit value must be greater than the negative position limit value.

- If you don't need the position limit check, de-activate it, e.g. in modulo mode.

See also the functional description: "Mode: Drive Internal Interpolation".

E255 Feedrate-override S-0-0108 = 0

With the parameter **S-0-0108, Feedrate override**, the travel velocity of all drive-controlled travel commands can be changed proportionally (in %). If the value of this parameter is 0, the travel velocity is also 0. With velocity = 0, the motor remains stationary despite having a commanded value.

Cause:

1. The parameter **S-0-0108, Feedrate override** is 0.

2. For devices with analog inputs: Feedrate override via analog input is activated, and the voltage at the analog input is 0.

3. The **feed potentiometer** of the connected control system is at 0 or is being evaluated incorrectly.

Remedies for:

1. Set **Feedrate override > 0**, so that the drive moves. Full speed is attained with 100 %.

2. Apply a voltage > 0 proportional to the desired speed, +10 V corresponds to 100 % (full) speed. Alternative: De-activate Feedrate override.

3. Turn the feed potentiometer cautiously, check the analog signal and the evaluation for it.

See also the functional description: "Drive-Controlled Homing".

E257 Continuous current limit active

The thermal controller work load is monitored. If a command current profile is demanded from the drive controller and this profile is too high a load for the power transistors in the long run (too high temperature rise of the power output stage), the drive reacts by dynamically reducing the effective peak current. While doing this, this warning is output. The parameter **P-0-4046, Active peak current** is reduced. Before this real peak current limitation occurs, the pre-warning **E261 Continuous current limit pre-warning** should have been generated.

Cause:

The drive controller has been overloaded.

Remedy:

1. Check the amplifier dimensioning.

2. Reduce the acceleration.

3. Check the sense of rotation of the motor encoder.

In the case of installations that have been operated for a long time, check whether the drive conditions have changed with regard to:

- friction
- moved masses.

See also the functional description: "Current Limit").

E259 Command velocity limit active

In the position control and velocity control operating modes, the effective velocity command value is limited to the value in parameter **S-0-0091, Bipolar velocity limit value**. The warning is given if the resulting velocity command value reaches this limit.

Cause:

Parameter **S-0-0091, Bipolar velocity limit value** was set too low.

Remedy:

In normal operating conditions, set parameter **S-0-0091, Bipolar velocity limit value** to a value 10% greater than the NC maximum velocity.

See also the functional description: "Limiting to bipolar velocity limit value".

E261 Continuous current limit pre-warning

Digital drives are monitored by a continually operating temperature model. If the thermal load reaches 100%, the continuous current limit will be activated shortly thereafter and error **E257, Continuous Current Limit Active**, is displayed. Before the torque is reduced, a continuous current limit early warning is given via a switching threshold, which is determined by parameter **P-0-0127, Overload warning**. To deactivate the warning, enter **P-0-0127** = 100% into the parameter.

Cause:

The drive controller was overloaded.

Remedy:

1. Check the drive layout.
2. Reduce acceleration.
3. Increase the switching threshold in parameter **P-0-0127, Overload warning**
4. With systems which have been used for longer periods of time, check to see if drive controller conditions have changed in regards to:

   - Friction
   - Movements of the load
   - Feed during processing.

See also the functional description: "Current Limit"

E263 Velocity command value > limit S-0-0091

Cause:

S-0-0036, Velocity Command Value is outside the allowed range of values.

Remedy:

It is limited to **S-0-0091, Bipolar velocity limit value**.

See also the functional description: "Operating Mode: Velocity Control"

E324 Option module error power supply unit

Cause:

A component that is connected to the HVE or HVR power supply unit reports a malfunction.

Remedy:

Check the option module, and replace it if necessary.

E325 Recovery overload power supply unit

Cause:

The regenerated load of the drives is excessive.

Remedy:

Reduce allowable deceleration. Use a drive controller with a smaller peak currents.

E326 Bus power overload

Error will be stored for no more than 500 ms!

Cause:

The input power required by the drives is excessive.

Remedy:

Reduce the allowable acceleration. Use a drive controller a with smaller peak current.

E350 Heat sink overtemp. warning power supply unit

The permissible heatsink temperature has been reached. The temperature pre-warning contact is open. Power will be switched off after 30 s.

Cause:

1.   Load too high
2.   Ambient temperature too high
3.   Cooling air is blocked
4.   Blower in unit is defective

Remedy:

1.   Reduce load

2.   reduce control cabinet temperature

3.   check cooling air ducts

4.   replace unit.

E352 Braking resistor overload warning power supply unit

Cause:

75% of the permissible bleeder ON time has been reached due to excessive regenerated power.

Remedy:

• allowable acceleration deceleration must be reduced

• reduce drive speed

• reduce peak current of the drive

E353 Diagnostic message power supply erroneous

The power supply unit HVE or HVR cyclically sends status and error messages via a serial connection to the connected controller. If the controllers do not receive several sequential messages, then this warning is generated.

Cause:

1.   serial interface of power supply unit is defective

2.   break in serial connection lines

3.   serial interface of controller is defective

Remedy:

On 1.   replace power supply unit.

On 2.   check and replace bus cable, if necessary

On 3.   replace controller, if necessary

E387 Control voltage supply fault power supply unit

With HVE only !

Cause:

The power voltage supply in the HVE exceeds permissible tolerance (3x 380 ... 480V, $\pm$ 10 %).

Remedy:

Check mains fuse in control cabinet and replace, if necessary.

E410 Slave not scanned or address 0

While the SERCOS ring is being initialized in communications phase 1, each slave which is to participate in the additional phase uptake must be addressed by the SERCOS master. Slaves which are not addressed or which have been set to drive address "0" indicate this by generating

warning **E410**. Communication with these slaves in higher communications phases is not possible. They work only in pass through mode (i.e. they do not have an AT of their own, rather they serve only as a pass through for the SERCOS communication).

Cause:

- The slave was not scanned in phase 1, or address 0 is set.
- The slave is deactivated by the controller.

Remedy:

- Set the correct slave address.
- Check the SERCOS master configuration.

See also the functional description: "Adjustments of the SERCOS Interface"

E825 Overvoltage in power stage

The DC bus voltage is too high.

Cause:

1. During braking (decelerating): the energy regenerated from the mechanical system via the motor was so high for a moment that it could not be sufficiently dissipated to heat by the bleeder resistor. The regenerated current could not be dissipated and therefore charged the DC bus, so that the voltage has become too high.

2. The mains voltage (AC input) is too high.

Result:

In case of overvoltage, the motor is switched to torque-free operation. As soon as the DC Bus voltage falls again below the maximum allowable value, the controller will be turned on again.

Remedy:

For 1. Reduce the acceleration values.
Check the drive controller layout, if necessary.
Install an auxiliary bleeder, if necessary.

For 2. Check the mains supply voltage (AC/3phase).

⟹ Danger of high-voltage shock!
Care for protection against accidental touch.

WARNING

E826 Undervoltage in power section

If the bit 3 is set in the parameter **P-0-0118, Power off on error**, the undervoltage is treated as "fatal warning" with shutdown of the drive operation. If the drive enable is on at the same time, and the DC bus voltage indication goes down, the drive displays this warning.

Cause:

Switching off the power supply or a loss of mains while the drive enable is on.

Remedy:

Switch off the drive enable before switching off the supply unit.

E829 Positive position limit exceeded

The drive has received a command value which resulted in an axis position outside the positive travel range. The axis has been brought to a standstill by setting the velocity command to zero. A class 1 diagnostic error is not generated. The drive will automatically follow command values that lead back into the allowed range. "Handle travel range exceeded as warning" is set in bit 2 of parameter **P-0-0090, Command value transmit time (TMTSG)**.

Cause:

S-0-0049, Positive position limit value exceeded.

Remedy:

Enter command values which lead back into the allowed range.

Note:	Only such command values will be accepted that lead back into the allowed working range. With other command values, the drive will stop again. - The parameter **S-0-0057, Position window** defines a tolerance for the travel limits.

See also the functional description: "Travel Range Limits".

E830 Negative position limit exceeded

The drive has received a command value which resulted in an axis position outside the negative travel range. The axis has been brought to a standstill by setting the velocity command to zero. A class 1 diagnostic error is not generated. The drive will automatically follow command values which lead into the allowed range. "Handle travel range exceeded as warning" is set in bit 2 of parameter **P-0-0090, Travel limit parameter**.

Cause:

S-0-0050, Negative travel limit value exceeded.

Remedy:

Enter command values which lead back into the allowed range.

Note:	Only such command values will be accepted that lead back into the allowed working range. With other command values, the drive will stop again. - The parameter **S-0-0057, Position window** defines a tolerance for the travel limits.

See also the functional description: "Travel Range Limits".

E834 Emergency-Stop

Pressing the emergency stop switch has caused the drive to perform the error reaction that had been selected via the **P-0-0119, Best possible deceleration** parameter. There is no error message issued to the controller.

Cause:

The emergency stop switch was pressed.

Remedy:

Eliminate the malfunction that led to the activation of the emergency stop switch. The warning will then disappear.

See also the functional description: "Emergency stop feature".

E843 Positive limit switch activated

The drive has received a command value which resulted in an axis position outside the positive travel range. The axis has been brought to a standstill by setting the velocity command to zero. A class 1 diagnostic error is not generated. The drive will automatically follow command values that lead back into the allowed range. Bit 2 of **P-0-0090, Travel limit parameter** is set to "Overtravelling is handled as a warning".

Cause:

The positive limit switch has been activated.

Remedy:

Enter command values that lead back into the allowed range.

See also the functional description: "Travel Zone Limit Switch Monitoring".

E844 Negative limit switch activated

The drive has received a command value which resulted in an axis position outside the negative travel range. The axis has been brought to a standstill by setting the velocity command to zero. A class 1 diagnostic error is not generated. The drive will automatically follow command values that lead back into the allowed range. Bit 2 of **P-0-0090, Travel limit parameter** is set to "Overtravelling is handled as a warning".

Cause:

The negative limit switch has been activated.

Remedy:

Enter command values which lead back into the allowed range.

See also the functional description: "Travel Zone Limit Switch Monitoring".

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Notes

5 Description of Diagnostic Messages B…, C…, D… and A…

5.2 Command Diagnostic Messages B…, C… and D…

The commands are used for control of complex features in the drive. For example, the features "drive controlled homing procedure" or "Communication Phase 4 Transition Check" are defined as commands.

Commands can start, interrupt or erase a primary control. A parameter belongs to each command whereby the command can be controlled by the parameter. During the command operation, the diagnostic message "Cx" appears in the display where the x stands for the number of the command.

Command Types   It can distinguish between 3 types of commands:

- **Drive Commands**
  - Lead to an eventual automatic drive movement
  - Can be started only through an inputted control enable
  - Deactivates the active operating mode during its operation

- **Monitor Commands**
  - Activation or deactivation of monitors or features

- **Management Commands**
  - Lead management tasks that are not interruptable

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B100 Command Release motor holding brake

The command **P-0-0542, Command Release motor holding brake** has been activated.

See also the functional description: "Motor Holding Brake".

B101 Command not enabled

The command **P-0-0542, Command Release motor holding brake** has been activated without prior enabling via the parameter P-0-0538, Bit 9.

See also the functional description: "Motor Holding Brake".

C100 Communication phase 3 transition check

The command **S-0-0127, C1 Communication phase 3 transition check** has been activated.

See also the functional description: "S-0-0127, C100 Communication Phase 3 Transition Check"

C101 Invalid communication parameter (S-0-0021)

Cause:

Communications parameters which are needed to operate the drive in communication phase 3 are invalid.

Remedy:

A list of the invalid parameters can be seen in parameter **S-0-0021, List of invalid op. data for comm. ph. 2**. The invalid parameters must be rewritten so they are correct.

See also the functional description: "S-0-0127, C100 Communication Phase 3 Transition Check".

C104 Config. IDN for MDT not configurable

Cause:

Telegram type 7 was set in parameter **S-0-0015, Telegram type parameter**.

Parameters which are missing in **S-0-0188, List of configurable data in MDT** are kept in

S-0-0024, **Configuration list for the master data telegram**.

Remedy:

- set preferred telegram (telegram type = 0..6)

- You must either set a priority telegram (Telegram type = 0..6) or provide **S-0-0024, Config. list of master data telegram** with parameters. These parameters are also contained in **S-0-0188, List of configurable data in the MDT**.

Note: List parameters only allowed in multiplex channel.

See also the function description: "Configuration of telegram contents"

C105 Configurated length > max. length for MDT

Cause:

Telegram type 7 was set in parameter **S-0-0015, Telegram type parameter**.

The length of the configured data in MDT, which is determined by

S-0-0024, Configurations list of the master data telegram,

exceeds the maximum permissible length **S-0-0186, Length of the configurable data record in the MDT.**

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Remedy:

- set preferred telegram (telegram type = 0..6)

- number of configured parameters in MDT (S-0-0024) must be decreased

See also the functional description: "Configuration of telegram contents"

C106 Config. IDN for AT not configurable

Cause:

Telegram type 7 was set in parameter **S-0-0015, Telegram type parameter**.

Parameters which are not contained in **S-0-0187, List of configurable data in AT** can be seen in

S-0-0016, Custom amplifier telegram configuration list.

Remedy:

- set preferred telegram (telegram type = 0..6)

- **S-0-0016, Configuration list of drive telegrams** must have parameters that are also in **S-0-0187, List of configurable data in the AT**.

Note: List parameters only allowed in multiplex channel.

See also the function description: "Configuration of telegram contents"

C107 Configured length > max. length for AT

Cause:

Message frame type 7 has been selected in **S-0-0015, Telegram Type Parameter**.

The length of the configured data record in the AT, that is defined via

S-0-0016, Custom amplifier telegram configuration list,

exceeds the value maximum permissible **S-0-0185, Length of the configurable data record in the AT**.

Remedy:

- set preferred telegram (telegram type = 0..6)

- number of configured parameters in the AT (S-0-0016) must be decreased

See also the functional description: "Configuration of telegram contents"

C108 Time slot parameter > Sercos cycle time

Cause:

One of the time slot parameters:

- **S-0-0006, AT transmission starting time (T1)**
- **S-0-0007, Feedback acquisition starting time (T4)**
- **S-0-0008, Command valid time (T3)**
- **S-0-0089, MDT transmission starting time (T2)**

exceeds **S-0-0002, SERCOS Cycle time (Tscyc).**

Remedy:

Correct the appropriate parameter(s). These times are determined by the manufacturer of the control system and are specified by the SERCOS interface.

See also the functional description: "Configuration of the telegram send and receive times"

C109 Position of data record in MDT (S-0-0009) even

Cause:

Parameter **S-0-0009, Beginning address in master data telegram** contains an even value. This is not permitted.

Remedy:

Parameter **S-0-0009, Beginning address in master data telegram** must be set to an odd value. These parameters are determined by the manufacturer of the control system, and are specified by the SERCOS interface.

See also the functional description: "Configuration of the Telegram Send and Receive Times"

C110 Length of MDT (S-0-0010) odd

Cause:

Parameter **S-0-0010, Length of master data telegram** contains an odd value. This is not permitted.

Remedy:

Parameter **S-0-0010, Length of master data telegram** must be set to an even value. These parameters are determined by the manufacturer of the control system, and are specified by the SERCOS interface.

See also the functional description: "Configuration of the telegram send and receive times"

C111 ID9 + Record length - 1 > length MDT (S-0-0010)

Cause:

Parameter(s) are set incorrectly for **S-0-0009, Beginning address in master data telegram** and **S-0-0010, Length of master data telegram**. The length of the record in MDT for the drive plus the starting address in MDT is greater than the total length of the MDT.

Remedy:

The parameters for **S-0-0009, Beginning address in master data telegram** and **S-0-0010, Length of master data telegram** must be corrected. Those parameters are determined by the manufacturer of the control system and are specified by the SERCOS interface.

See also the functional description: "Configuration of the telegram send and receive times"

C112 TNcyc (S-0-0001) or TScyc (S-0-0002) error

Cause:

Only 500 µs or even multiples of 1ms are permitted as valid values for **S-0-0001, NC Cycle time (TNcyc)** and **S-0-0002, SERCOS Cycle time (Tscyc)**. Here, this is not the case.

Remedy:

S-0-0001, NC Cycle time (TNcyc) and **S-0-0002, SERCOS Cycle time (Tscyc)** must be corrected. These parameters are determined by the manufacturer of the control system and are specified by the SERCOS interface.

See also the functional description: "Configuration of the telegram send and receive times"

C113 Relation TNcyc (S-0-0001) to TScyc (S-0-0002) error

Cause:

The value of **S-0-0001, NC Cycle time (TNcyc)** can only be equal to or be a multiple of **S-0-0002, SERCOS Cycle time (Tscyc)**. Here this is not the case.

Remedy:

S-0-0001, NC Cycle time (Tncyc) and **S-0-0002, SERCOS Cycle time (Tscyc)** must be corrected. These parameters are determined by the manufacturer of the control system and are specified by the SERCOS interface.

See also the functional description: "Configuration of the telegram send and receive times"

C114 T4 > TScyc (S-0-0002) - T4min (S-0-0005)

Cause:

The maximum permissible value for **S-0-0007, Feedback acquisition starting time (T4)** is

S-0-0002, SERCOS Cycle time (Tscyc) -
          S-0-0005, Minimum feedback acquisition time(T4min)

The value for **S-0-0007, Feedback acquisition starting time (T4)** is incorrect.

Remedy:

Correct S-0-0007, Feedback acquisition starting time (T4). These parameters are determined by the manufacturer of the control system and are specified by the SERCOS interface.

See also the functional description: "Configuration of the telegram send and receive times"

C115 T2 too small

Cause:

The value set for **S-0-0089, MDT Transmit starting time (T2)** is incorrect. The drive cannot work with this value.

Remedy:

Correct S-0-0089, MDT Transmit starting time (T2).

These parameters are determined by the manufacturer of the control system, and are specified by the SERCOS interface.

See also the functional description: "Configuration of the telegram send and receive times"

C200 Communication phase 4 transition check

Meaning:

The command **S-0-0128, C200 Communication phase 4 transition check** has been activated.

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C201 Invalid parameter(s) (->S-0-0022)

Cause:

Parameters which will be necessary to operate the drive in communications phase 4 are invalid. The invalid parameters can be seen in **S-0-0022, IDN list of invalid op. data for comm. ph. 3**.

Remedy:

The parameters of **S-0-0022, IDN list of invalid op. data for comm. ph. 3** must be rewritten so they are correct.

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C202 Parameter limit error (->S-0-0022)

Cause:

Parameters which are necessary to operate the drive in communications phase 4 are outside of their minimum or maximum input values, or the entered value can't be processed (for bit bars). The incorrect parameters are listed in **S-0-0022, IDN list of invalid op. data for comm. ph. 3**.

Remedy:

The parameters of **S-0-0022, IDN list of invalid op. data for comm. ph. 3** must be rewritten with correct values.

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C203 Parameter calculation error (->S-0-0022)

Cause:

Parameters that are required for phase-4 operation (operating mode) cannot be processed in that way. The incorrect parameters are listed in **S-0-0022, IDN List of Invalid Op. Data for Comm. Ph. 3**.

Remedy:

Write correct values to the parameters in **S-0-0022, IDN List of Invalid Op. Data for Comm. Ph. 3**.

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C204 Motor type P-0-4014 incorrect

An MHD-, MKD or MKE motor (value 1 or 5) is entered into parameter **P-0-4014, Motor type**. The appropriate abbreviation "MHD", "MKD", or "MKE" however, was not found in parameter **S-7-0141, Motor type** in the motor feedback data memory.

Cause:

1. Incorrect parameter set for type of motor.
2. Motor feedback memory cannot be read.
3. Motor feedback - not connected

Remedy for:

1. Enter the type of motor used in parameter **P-0-4014, Motor type**
2. Check feedback connection. If feedback is defective, exchange motor.

See also the functional description: "Automatic setting of the motor type for motors with feedback memory".

C210 Feedback 2 required (->S-0-0022)

Cause:

Values that require an optional encoder have been entered in **S-0-0147, Homing parameter** or in the **S-0-0032...35, Mode of Operation** parameters. However, 0 (not available) has been entered in the **P-0-0075, Interface Feedback 2, optional** parameter.

The ident number of the parameter that requires the optional encoder is entered in **S-0-0022, IDN List of Invalid Op. Data for Comm. Ph. 3**.

Remedy:

Modify **S-0-0147, Homing parameter** or the **S-0-0032...35, Mode of Operation** parameters to utilization of the motor encoder instead of optional encoder or set **P-0-0075, Interface Feedback 2, optional** to a value different from 0 to activate the optional measuring system.

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C211 Invalid feedback data (->S-0-0022)

Invalid data has been encountered when the parameters stored in the motor feedback were read, or an error has occurred when the data was read.

Causes:

1. Motor feedback cable not connected or defective
2. Motor feedback defective
3. Drive controller defective

Remedy for:

1. Check motor feedback cable; connect both sides
2. Replace motor
3. Replace amplifier

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C212 Invalid amplifier data (->S-0-0022)

During drive initialization, the operating software accesses data from an EEPROM in the drive controller. This error message is generated if the attempt to read the data has failed.

Causes:

Defective hardware in the drive controller.

Remedy:

Replace drive controller.

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C213 Position data scaling error

Cause:

The scaling parameters for position data permit the position data display format to be selected. The drive-internal position data format depends on the employed motor encoder and the encoder resolution. The factor used for converting the position data from the drive-internal format into the display format or vice versa is outside the allowable range, because either

- linear motor and rotary position scaling with motor reference, or
- rotary motor and linear position scaling with motor reference, or
- linear motor with modulo scaling has been selected; or
- the determined factor used for converting the position data from the display format to the internal format, and vice versa, cannot be represented.

Remedy:

Checking and correcting the relevant parameters, such as

- **S-0-0076, Position data scaling type**
- **S-0-0077, Linear position data scaling factor**
- **S-0-0078, Linear position data scaling exponent**
- **S-0-0079, Rotational position resolution**
- **S-0-0116, Resolution of motor feedback**
- **S-0-0121, Input revolutions of load gear**
- **S-0-0122, Output revolutions of load gear**
- **S-0-0123, Feed constant**
- **P-0-0074, Interface feedback 1**
- **S-0-0277, Position feedback 1 type parameter**

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C214 Velocity data scaling error

Cause:

The scaling parameters for velocity data permit the velocity data display format to be selected. The drive-internal velocity data format depends on the employed motor encoder and the encoder resolution. The factor used for converting the velocity data from the drive-internal format into the display format or vice versa is outside the allowable range.

Remedy:

Checking and correcting the relevant parameters, such as

- **S-0-0044, Velocity data scaling type**
- **S-0-0045, Velocity data scaling factor**
- **S-0-0046, Velocity data scaling exponent**
- **S-0-0116, Resolution of motor feedback**
- **S-0-0121, Input revolutions of load gear**
- **S-0-0122, Output revolutions of load gear**
- **S-0-0123, Feed constant**
- **P-0-0074, Interface feedback 1**
- **S-0-0277, Position feedback 1 type parameter**

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C215 Acceleration data scaling error

Cause:

The display format of the acceleration data can be set using acceleration scaling parameters. The drive-controlled format of the acceleration data is dependent on what motor encoder and encoder resolution are used. The factor for converting acceleration data from internal drive format to display format (or vice-versa) is outside the allowable range.

Remedy:

Check and set the relevant parameters correctly as follows:

- **S-0-0160, Acceleration data scaling type**
- **S-0-0161, Acceleration data scaling factor**
- **S-0-0162, Acceleration data scaling exponent**
- **S-0-0116, Resolution of motor feedback**
- **S-0-0121, Input revolutions of load gear**
- **S-0-0122, Output revolutions of load gear**
- **S-0-0123, Feed constant**
- **P-0-0074, Interface feedback 1**
- **S-0-0277, Position feedback 1 type parameter**

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C216 Torque/force data scaling error

Cause:

The display format of the torque/force data can be set using torque/force scaling parameters. The factor for converting torque data from drive-controlled format to display format (or vice-versa) is outside the allowable area.

Remedy:

Check and set the relevant parameters correctly as follows:

- **S-0-0086, Torque/force data scaling type**
- **S-0-0093, Torque/force data scaling factor**
- **S-0-0094, Torque/force data scaling exponent**
- **S-0-0110, Amplifier peak current**
- **S-0-0111, Motor current at standstill**

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C217 Feedback1 data reading error

If you have entered these values into **P-0-0074, Interface feedback 1**:

- "1" for standard interface,
- "4" for DFF module, or
- "8" for DAG module (EnDat)

then the attached encoder must have a feedback data memory. The values for the encoder resolution and the feedback type are taken from there. An error was discovered while reading these values.

Cause:

1.   Defective motor feedback cable.
2.   Defective motor feedback.

Remedy:

For 1.   Check the motor feedback cable.

For 2.   Exchange the motor.

See also the functional description "S-0-0128, C200 Communication Phase 4 Transition Check".

C218 Feedback 2 data reading error

The initialization of the measuring systems is done in the command **S-0-0128, C200 Communication phase 4 transition check**. If the measuring system to initialize has an intrinsic data memory, this memory is read.

The error C218 Feedback 2 data reading error is generated, if an additional optional encoder (encoder 2) is present and being evaluated (**P-0-0075 Feedback 2 type** other than 0) and if an error is discovered while reading the data.

Measuring systems with intrinsic data memory are :

- DSF/HSF/LSF and resolver, as well as
- measuring systems with Endat interface (from Heidenhain)

Cause:

1.   Defective measurement system cable

2.   Defective measurement system

Remedy for:

1.   Check the measurement system cable.

2.   Exchange the measurement system.

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C220 Feedback 1 initializing error

A number of tests are performed when the motor encoder is initialized. An error was detected during this process. This error may be:

- Error while reading the angle rectification data
- Error while copying the angle rectification data
- Interruption of communication with the encoder
- Assembly error with the position of an initialization track
- Error while reading the analog signal of an initialization track
- Error in the pointer length of the analog signal of an initialization track
- Invalid offset between the high and low resolution track
- Error in the measuring system micro-controller

Cause:

1.   Defective motor feedback cable

2.   Defective motor feedback

3.   Defective measurement system interface

Remedy for:

1.   Check the motor feedback cable.

2.   Exchange the motor.

3.   Exchange the measuring system interface, if it is a module, or the complete drive controller.

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C221 Feedback 2 initializing error

Several checks are performed during the initialization of an optional encoder. An error has been detected during this process. This error may be:

- Error while reading the angle rectification data
- Error while copying the angle rectification data
- Interruption of communication with the encoder
- Assembly error with the position of an initialization track
- Error while reading the analog signal of an initialization track
- Error in the pointer length of the analog signal of an initialization track
- Invalid offset between the high and low resolution track
- Error in the measuring system micro-controller
- With DAG 1.2: external 24V set for SSI interface

Cause:

1.   External encoder cable defective.

2.   Defective feedback.

3.   Defective measurement system interface.

Note: If this warning occurs in combination with an EnDat feedback device then the feedback device is defective.

Remedy:

For 1.   Check the optional feedback cable.

For 2.   Exchange feedback.

For 3.   Exchange the measuring system interface (module).

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C223 Input value for max. range too high

Cause:

An internal position resolution has been selected via the **S-0-0278, Maximum travel range** parameter that no longer guarantees a correct commutation of the motor.

Remedy:

Select a smaller value for the **S-0-0278, Maximum travel range** parameter.

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C225 Coprocessor not ready for initialization

The drive controller has a coprocessor. This coprocessor is initialized during the transfer command. The coprocessor signals that it is ready for initialization. If it is not ready, this error is generated.

Cause:

Coprocessor failed.

Remedy:

Exchange the drive controller.

See also the functional description "S-0-0128, C200 Communication Phase 4 Transition Check".

C226 Coprocessor acknowledge failed

The drive controller has a coprocessor. This coprocessor is initialized during the transfer command. If the coprocessor does not confirm the initialization by the master processor, this error will be generated.

Cause:

The coprocessor failed.

Remedy:

Exchange the drive controller.

See also the functional description "S-0-0128, C200 Communication Phase 4 Transition Check".

C227 Modulo range error

Cause:

The marginal conditions for modulo processing were not maintained.

See functional description: "Modulo Processing-Limiting Conditions".

C228 Controller type S-0-0140 wrong

Several internal software settings are made based on parameter **S-0-0140, Controller type**. If the content of this parameter cannot be used, then this error will be generated.

Cause:

1.   The controller type cannot be processed by this software.
2.   Amplifier EEProm defective.

Remedy:

For 1.   Contact Indramat.

For 2.   Exchange/repair the control device.

See also the functional description "S-0-0128, C200 Communication Phase 4 Transition Check".

C231 Emulator not loadable

Cause:

The position emulator on the DAE02.1 interface is loaded from a ROM module according to the selection made in P-0-4020. With ELS firmware, the incremental encoder firmware is always loaded; P-0-4020 does not exist in this case. The loading process is monitored; this error message is generated in the event of a malfunction. The cause is a hardware defect on the DAE02.1 interface.

Remedy:

Replace the DAE02.1 interface.

C232 Encoder 1 interface not present

Cause:

The encoder interface that was selected in the **P-0-0074, Interface feedback 1** parameter has not been installed or cannot be found by the drive, due to a defect.

Remedy:

Install or replace the selected encoder interface.

See also the functional description: "S-0-0127, C100 Communication Phase 3 Transition Check"

C233 Encoder 2 interface not present

Cause:

The encoder interface that has been selected in the **P-0-0075, Interface Feedback 2, external** parameter has not been installed or is defective and can therefore not be recognized by the drive.

Remedy:

Install or replace the selected encoder interface.

See also the functional description: "S-0-0127, C100 Communication Phase 3 Transition Check"

C234 Encoder combination not possible

Cause:

The encoder interface that has been selected in the **P-0-0075, Interface Feedback 2, optional** parameter cannot be supported by the drive; it has already been allocated to the motor encoder.

Remedy:

Select another optional encoder.

See also the functional description: "Determining the encoder interface of the optional encoder"

C235 Load-side motor encoder with inductance motor only

Cause:

The functionality of the optional encoder can be defined in the **P-0-0185, Function of opt. encoder** parameter. If 'load-side motor encoder' has been selected as the function of the optional encoder, that function will only be supported for asynchronous motors.

Remedy:

Set the **P-0-4014, Motor type** parameter according to the employed motor type.

Check the **P-0-0185, Function of opt. encoder** parameter.

See also the functional description: "**S-0-0128, C200 Communication phase 4 transition check**".

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C236 Feedback 1 required (P-0-0074)

Cause:

A motor encoder is not required (P-0-0074 = 0) if a load-sided motor encoder has been selected via the **P-0-0185, Function of opt. encoder** parameter. However, **S-0-0147, Homing parameter** or the **S-0-0032...35, Mode of Operation** parameters contain values that require a motor encoder.

Remedy:

Change **S-0-0147, Homing parameter** or the **S-0-0032...35, Mode of Operation** parameters such that they are suitable for using an optional encoder.

Enter a value $\neq 0$ in the **P-0-0074, Interface feedback 1** parameter to activate the motor encoder.

See also the functional description "S-0-0128, C200 Communication phase 4 transition check".

C300 Command Set absolute measuring

Command **P-0-0012, C300 Command 'Set absolute measurement'** was activated by the control system in use.

See also the functional description: "Set absolute measuring"

C302 Absolute measuring system not installed

Command **P-0-0012, C300 Command 'Set absolute measurement'** was started without an absolute measuring system being present.

The command cannot be processed because no absolute measuring system is available.

Cause:

1. The command should not have been activated.
2. The contacted motor or the external measurement system was not executed as an absolute encoder.

Remedy for:

1. Stop execution of the command.
2. Equip the motor or external measurement system with an absolute encoder function.

See also the functional description: "Set Absolute Measuring"

C500 Reset class 1 diagnostic, error reset

The command for clearing errors, **S-0-0099, C500 Reset class 1 diagnostic** was activated by the control system in use. All drive internal errors are cleared. But before that happens, the cause of the error must have been cleared.

See also the functional description: "Clearing errors"

C501 Error delete only in parameter mode

Cause:

An attempt has been made of clearing the error **F822 Motor encoder failure: signal too small** in communication phase 4 (operating mode). This is only possible in communication phases < 4 (parameter setting mode).

Remedy:

1.   Switch back the communication phase.
2.   Activate the command again.

C600 Drive controlled homing procedure command

Command **S-0-0148, C600 Drive controlled homing procedure command** has been activated by the control system in use.

see also the functional description: "Drive-controlled homing"

C601 Homing only possible with drive enable

Cause:

The controller enabling signal was not active when the program was started. This is not permitted.

Remedy:

1.   Switch on the controller enable signal.
2.   Start the command again.

See also the functional description: "Control Functions during "Drive-Controlled Homing""

C602 Distance home switch - reference mark erroneous

Cause:

The evaluation of the homing switch has been activated. The distance between the positive homing switch edge and the reference mark that shall be interpreted is outside the valid range.

Remedy:

Read the value from the **S-0-0298, Reference cam shift by ...** parameter and enter it in the **S-0-0299, Home switch offset** parameter.

See also the functional description: "Connection of the Home switch"

C604 Homing of absolute encoder not possible

Command **S-0-0148, C600 Drive controlled homing procedure command** was activated. An absolute measuring system was selected using the encoder selection in **S-0-0147, Homing parameter**. This command can only run if command **P-0-0012, C300 Command 'Set absolute measurement'** has been previously activated.

Remedy:

First activate command **P-0-0012, C300 Command 'Set absolute measurement'**, and then start command **S-0-0148, C600 Drive controlled homing procedure command**. This procedure will define the absolute reference point.

See also the functional description: "Possible Error Messages During "Drive-Controlled Homing""

C700 Basic load

With motors of the MHD, MKD and MKE series, the controller parameters for the connected motor that are stored in the controller are set to their default values by activating the controller parameters that are stored in the motor feedback. The drive controller issues the C7 message to indicate that the **C700 Basic load** command has been activated via the command parameter **S-0-0262, C700 Command basic load**.

Cause:

The command **C700 Basic load** has been activated.

See also the functional description "Load Default"

C701 Basic load only possible when drive is not enabled

Cause:

Command **S-0-0262, C700 Command basic load** cannot be run if the controller enable is set.

Remedy:

1. Disable controller enable.
2. Start the command again.

See also the functional description: "Error Conditions of the Load Default Settings Procedure"

C702 Default parameters not available

With motors of the MHD, MKD and MKE series, adapting the control loops to the connected digital drive is done by activating the speed controller parameters that are stored in the motor feedback. The drive controller employs the **C702 Default parameters not available** message to signal that the **S-0-0262, C700 Command basic load** command has been activated, but that there is no data memory at the connected motor.

Remedy:

Order the parameter sheet of the employed motor from the INDRAMAT Service, and enter the parameters.

see also the functional description: "Error Conditions of the Load Default Settings Procedure"

C703 Default parameters invalid

Cause:

The default parameters are read from the motor feedback data memory. At least one of these parameters is invalid.

Remedy:

Check the connection to the motor feedback. Exchange the motor if necessary.

See also the functional description: "Error Conditions of the Load Default Settings Procedure"

C704 Parameters not copyable

Cause:

The default parameters in use are not compatible with this software version.

Remedy:

Please contact Rexroth Indramat. Explain, which software version, which device and which motor type you have.

See also the functional description: "Error Conditions of the Load Default Settings Procedure"

C705 Locked with password

The parameter **S-0-0267, Password** offers the possibility to set a **write protection** for the drive parameters. The diagnostic message **C705 Locked with password** indicates, that the command **C700 Basic Load** has been started, although the drive parameters are protected with the customer password.

See also the functional description: "Error Conditions of the Load Default Settings Procedure"

C800 Default parameter load

How to start the command:

This command can be started in 2 ways:

1. When "PL" is displayed on the drive controller (appears after a change in firmware version), by pressing the S1 button beneath the display.
2. By starting the **P-0-4094, C8 Default parameter load**

What the command does:

All the **parameters are** cleared and preset with their default (initial) value. Process blocks and control loop settings are **overwritten**, too.

Default parameters:

Default values are stored in the drive for all parameters which are listed in **S-0-0192, IDN-list of backup operation data**. They define a **basic state** of the drive that permits the drive to be switched "ready for operation" (display "bb"). Mechanical components like gear and load as well as the control loop settings therefore are not taken into consideration.

See also the functional description: "Basic parameter block".

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C801 Parameter default value erroneous (-> S-0-0021)

Cause:

During the execution of **P-0-4094, C800 Command Base-parameter load,** a default value that has been stored in the drive was recognized as incorrect. The related parameter is entered in the **S-0-0021, IDN-list of invalid op. data for comm. Ph. 2**.

See also the functional description: "Basic parameter block"

C802 Locked with password

The parameter **S-0-0267, Password** offers the possibility to set a **write protection** for the drive parameters. The diagnostic message **C705 Locked with password** indicates, that the command **P-0-4094, C800 Command Base-parameter load** has been started, although the drive parameters are protected with the customer password.

See also the functional description: "Basic parameter block"

D300 Command adjust commutation

A correctly adjusted commutation offset is mandatory for the operation of synchronous motors. The "D3" message indicates that the command has been activated, that is used for determining the commutation offset.

Cause:

The commutation setting command has been activated.

See also the functional description: "Determining commutation offset"

D301 Drive not ready for commutation command

Meaning:

The drive must be in torque control mode when the "D3" command is started.

Cause:

Activate torque control and start the command again.

See also the functional description: "Determining commutation offset"

D500 Command Get mark position

The **P-0-0014, D500 Command determine marker position** command can be used for checking the correct acquisition and position of the reference marker of an incremental measuring system. The "d5" display shows that the command has been activated.

Cause:

The **Determine marker position** command has been activated.

See also the functional description: "Functional principle of command detect marker position"

D501 Incremental encoder required

Cause:

The command has been started for a measuring system that does not possess real reference markers. These include measuring systems such as DSF, EnDat, SSI or resolver measuring systems.

Remedy:

Check whether the correct encoder has been selected in **S-0-0147, Homing parameter**.

Employ an encoder system with real reference markers.

See also the functional description: "Functional principle of command detect marker position"

D600 Cancel reference point procedure command

Meaning:

The reference of the encoder that has been selected via **S-0-0147, Homing parameter** is canceled.

Cause:

The **D600 Cancel reference point procedure command** has been activated.

See also the functional description: "Drive-Controlled Homing"

D700 Parking axis command

The command permits one or more drives of a drive package to be stopped without error messages being issued to the controller and/or the power supply module. The remaining drives of the package can be handled without any restrictions.

Cause:

The **S-0-0139, D700 Command parking axis** command has been activated.

See also the functional description: "Command Parking Axis"

D800 Command measuring wheel mode

Meaning:

The command is active.

The position loop is closed with encoder 1 and 2.

Control loop monitoring is de-activated.

Cause:

The **P-0-0220, D800 Command measuring wheel operation mode** command has been activated.

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D801 Measuring wheel operation not possible

Definition:

The measuring wheel mode command cannot be conducted.

Cause:

- Optional encoder not parametrized (P-0-0075)

- Use of optional encoders as measuring wheel encoder has not been parametrized (P-0-0185 =3).

5.3 Status Diagnostic Messages A...

A000 Communication phase 0

The communication process is divided into four communication phases: Phases 0 and 1 are used to recognize the participants. Phase 2 is used to prepare the time and data protocols for communication phases 3 and 4.

Initialization is performed in ascending order of the sequence. The defaults of the communication phase are set by the control system. When the switch to communication phase 4 takes place, initialization is completed and input power is enabled.

If the phase switch is interrupted, the status display remains in the communications phase which has already been reached.

If diagnostic message **A000 Communication phase 0** is active, the drive is in phase 0 and is waiting for a phase transfer to 1 by the control system.

See also the functional description: "Parametrization Mode - Operating Mode".

A001 Communication phase 1

The communication process is divided into four communication phases: Phases 0 and 1 are used to recognize the participants. Phase 2 is used to prepare the time and data protocols for communication phases 3 and 4.

Initialization is performed in ascending order of the sequence. The defaults of the communications phase are set by the control system. When the switch to communications phase 4 takes place, initialization is completed and input power is enabled.

If the delayed phase switch is interrupted, the status display remains in the communications phase which has already been reached.

If diagnostic message **A001 Communication phase 1** is active, the drive is in phase 1, and transfer from phase 1 to 2 has not yet been initiated by the control system.

See also the functional description: "Parametrization Mode - Operating Mode".

A002 Communication phase 2

For field bus and SERCOS devices, the control demands via the master communication "communication phase 2", or the drive has been switched to phase 2 by the command **P-0-4023, C400 Communication phase 2 transition**. Therefore, the drive is in the "parameter mode". In this mode, many parameters are editable, which can no more be edited in "communication phase 4" ("operation mode").

In this phase, usually

- for field bus and SERCOS devices, the communication parameters are transferred from the control to the drive and

- the functions Load and Save parameters ("file services") are performed when needed.

Before switching to communication phase 3 is possible, the command **S-0-0127, C100 Communication phase 3 transition check** must be

done. In this command, the drive checks e.g. the validity of the parameters needed for the communication phase 3.

After successful execution of the command, the control switches the drive to comm. phase 3 (with field bus and SERCOS devices), or the drive switches by itself to phase 3 at the end of the command.

See also the functional description: "Parametrization Mode - Operating Mode".

A003 Communication phase 3

For field bus and SERCOS devices, the control demands via the master communication "communication phase 3", or the drive has been switched to phase 3 by the command **S-0-0127, C100 Communication phase 3 transition check**. The drive is in the "restricted parameter mode". In this mode, still many parameters are editable too, which can no more be edited in "communication phase 4" ("operation mode").

Before switching to communication phase 4 is possible, the command **S-0-0128, C200 Communication phase 4 transition check** must be done. In this command, the drive checks e.g. the validity of the parameters needed for the communication phase 4 ("operation mode").

After successful execution of the command, the control switches the drive to comm. phase 4 (with field bus and SERCOS devices), or the drive switches by itself to phase 4 at the end of the command.

See also the functional description: "Parametrization Mode - Operating Mode".

A010 Drive HALT

The feature Drive-Halt (= contrary of Drive-Start) is activated by the applied control via the used interface through clearing the Drive-Halt bit (bit 13) in the master control word or by interrupting a drive control command (i.e. drive-controlled homing).

The Drive-Halt feature is for decelerating the axis to standstill at defined **acceleration and** defined **jerk**.

In **Jog mode S-0-0260**, **Positioning Acceleration** is used for **acceleration** and **S-0-0193**, **Positioning Jerk** is used.

In **Velocity control** and in Torque control mode, the drive is decelerated to standstill by setting the velocity command to 0 and using the max. torque.

See also the functional description: "The Functional Principle of Drive Halt".

A011 Drive interlock open

Digital drive controllers are equipped with a starting lockout device that prevents an unwanted start of a servo axis. Activating the starting lockout device separates the power stage control electronics from the power stage via a relay contact.

+24 V is applied across the AS+; AS– terminals of the X3 connector.

A012 Control and power sections ready for operation

The drive is supplied with **control voltage**, and the power is **switched on**. The drive is **ready** to deliver **power.**

A013 Ready for power on

The drive is supplied with a **control voltage**, and there are **no errors** in the drive controller.

The drive is **ready** to be turned **on with power**.

See also the functional description: "Parametrization Mode - Operating Mode".

A100 Drive in TORQUE control

The drive is in the torque control operating mode. It follows the torque command value sequence set by the control system.

See also the functional description: "Operating Mode: Torque Control".

A101 Drive in VELOCITY control

The drive is in the velocity control operating mode. It follows the velocity command value sequence set by the control system. The velocity control loop is closed in the drive.

See also the functional description: "Operating Mode: Velocity Control".

A102 Position mode with encoder 1

The drive is in **position control mode**. The position loop is closed in the drive by a position encoder. The control system only sets the position command value sequence; the drive follows the command value with a systematical **lag** (following error).

Encoder 1 indicates that the position encoder is installed on the motor shaft (indirect measurement of the axis position).

See also the functional description: "Operating Mode: Position Control".

A103 Position mode with encoder 2

The drive is in **position control mode**. The position loop is closed in the drive by a position encoder. The control system only sets the position command value sequence; the drive follows the command value with a systematical **lag** (following error).

Encoder 2 indicates that the position encoder is installed on the machine axis (direct axis position measurement).

See also the functional description: "Operating Mode: Position Control".

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A104 Position mode lagless, encoder 1

The drive is in **position control mode**. The position loop is closed in the drive by a position encoder. The control system only sets the position command value sequence; the drive follows the command value **without following error** (lagless)

Encoder 1 indicates that the position encoder is installed on the motor shaft (indirect measurement of axis position).

See also the functional description: "Operating Mode: Position Control".

A105 Position control lagless, feedback 2

The drive is in **position control mode**. The position loop is closed in the drive by a position encoder. The control system only sets the position command value sequence; the drive follows the command value **without following error** (lagless).

Encoder 2 indicates that the position encoder is installed on the machine axis (direct axis position measurement).

See also the functional description: "Operating Mode: Position Control".

A106 Drive controlled interpolation, encoder 1

The drive receives a position command value from the control system which is identical to the **target position** of the travel path. Then the drive generates (**interpolates**) an internal position command value sequence, which uses the control system to maintain maximum values for jerk, velocity and acceleration sequences.

The drive moves with a systematical lag (following error) to the target position.

Encoder 1 indicates that the position encoder is installed on the motor shaft (indirect measurement of the axis position).

See also the functional description: "Operating Mode: Drive Internal Interpolation".

A107 Drive controlled interpolation, encoder 2

The drive receives a position command value from the control system which is identical to the target position of the travel path. Then the drive generates (interpolates) an internal position command value sequence, which uses the control system to maintain maximum values for jerk, velocity and acceleration sequences. The drive moves with a systematical lag (following error) to the target position. Encoder 2 indicates that the position encoder is installed on the machine axis (direct axis position measurement).

See also the functional description: "Operating Mode: Drive Internal Interpolation".

A108 Drive controlled interpolation, lagless, encoder 1

The drive receives a position command value from the control system which is identical to the target position of the travel path. Then the drive generates (interpolates) an internal position command value sequence, which uses the control system to maintain maximum values for jerk, velocity and acceleration sequences.

The drive moves without following error (lagless) to the target position.

Encoder 1 indicates that the position encoder is installed on the motor shaft (indirect measurement of the axis position).

See also the functional description: "Operating Mode: Drive Internal Interpolation".

A109 Drive controlled interpolation, lagless, encoder 2

The drive receives a position command value from the control system which is identical to the target position of the travel path. Then the drive generates (interpolates) an internal position command value sequence, which uses the control system to maintain maximum values for jerk, velocity and acceleration sequences.

The drive moves without following error (lagless) to the target position.

Encoder 2 indicates that the position encoder is installed on the machine axis (direct axis position measurement).

See also the functional description: "Operating Mode: Drive Internal Interpolation".

A110 Velocity synchronization, virtual master drive

The drive is in **velocity control.** The command velocity is determined in the drive taking the ratio as well as master axis position into account.

Virtual master axis means that the master axis position is computed by the control.

See also the functional description: "Operating mode: Velocity synchronization with virtual master axis"

A112 Phase synchronization, encoder 1, virtual master drive

The drive is in **position control.** The position control loop is closed in the drive via a position encoder. The position command value is fixed in the drive taking ratio and master axis position into account. The drive follows the command value **with lag distance**. **Encoder 1** means that the position encoder is mounted on the motor shaft (indirect measurement of axis position). **Virtual master axis** means that the master axis position is fixed by the control.

See also the functional description: "Operating mode: Phase synchronization with virtual master axis"

A113 Phase synchronization, encoder 2, virtual master drive

The drive is in position control. The position control loop is closed in the drive via a position encoder. The position command value is fixed in the drive taking ratio and master axis position into account. The drive follows the command value with lag distance. Encoder 2 means that the position

encoder is mounted on the motor shaft (direct measurement of axis position). Virtual master axis means that the master axis position is fixed by the control.

See also the functional description: "Operating mode: Phase synchronization with virtual master axis"

A116 Phase synchr. lagless, encoder 1, virtual master drive

The drive is in **position control.** The position control loop is closed in the drive via a position encoder. The position command value is fixed in the drive taking ratio and master axis position into account. The drive follows the command value with lag distance. Encoder 1 means that the position encoder is mounted on the motor shaft (indirect measurement of axis position). Virtual master axis means that the master axis position is fixed by the control.

See also the functional description: "Operating mode: Phase synchronization with virtual master axis"

A117 Phase synchr. lagless, encoder 2, virtual master drive

The drive is in **position control.** The position control loop is closed in the drive via a position encoder. The position command value is fixed in the drive taking ratio and master axis position into account. The drive follows the command value with lag distance. Encoder 2 means that the position encoder is mounted on the motor shaft (direct measurement of axis position). Virtual master axis means that the master axis position is fixed by the control.

See also the functional description: "Operating mode: Phase synchronization with virtual master axis"

A128 Cam shaft, encoder 1, virtual master drive

The drive is **cam mode**. The function is derived from the mechanical cam principle. This includes a fixed position relationship between master and slave axes. The position command values are listed in the table and can be accessed using the master axis position. The drive complies with the command value with lag distance. Encoder 1 means that the position encoder is mounted to the motor shaft (indirect measurement of axis position).

Virtual master axis means that the master axis position is computed by the control.

See also the functional description: "Operating mode: Electronic cam shaft with virtual master axis"

A129 Cam shaft, encoder 2, virtual master drive

The drive is **cam mode**. The function is derived from the mechanical cam principle. This includes a fixed position relationship between master and slave axes. The position command values are listed in the table and can be accessed using the master axis position. The drive complies with the command value with lag distance. Encoder 2 means that the position encoder is mounted to the machine axis (direct measurement of axis position). Virtual master axis means that the master axis position is computed by the control.

See also the functional description: "Operating mode: Electronic cam shaft with virtual master axis"

A132 Cam shaft, lagless, encoder 1, virt. master drive

The drive is **cam mode**. The function is derived from the mechanical cam principle. This includes a fixed position relationship between master and slave axes. The position command values are listed in the table and can be accessed using the master axis position. The drive follows the command value without lag. Encoder 1 means that the position encoder is mounted to the motor shaft (indirect measurement of axis position). Virtual master axis means that the master axis position is computed by the control.

See also the functional description: "Operating mode: electronic cam shaft with virtual master axis"

A133 Cam shaft, lagless, encoder 2, virt. master drive

The drive is **cam mode**. The function is derived from the mechanical cam principle. This includes a fixed position relationship between master and slave axes. The position command values are listed in the table and can be accessed using the master axis position. The drive complies with the command value with lag distance. Encoder 2 means that the position encoder is mounted to the machine axis (direct measurement of axis position). Virtual master axis means that the master axis position is computed by the control.

See also the functional description: "Operating mode: Electronic cam shaft with virtual master axis"

A146 Relative drive controlled interpolation, encoder 1

In the **S-0-0282, Travel distance** parameter, the drive receives a distance specification from the controller. When bit 0 of the **S-0-0346, Setup flag for relative command values** parameter is toggled, this distance is summed up to the value in **S-0-0258, Target position**. In order to get from the current position to the new target position, the drive now generates (interpolates) an internal position command value curve. This is done taking the limit values of velocity, acceleration, and jerk in the parameters

- **S-0-0259, Positioning velocity**
- **S-0-0260**, **Positioning acceleration**
- **S-0-0193, Positioning jerk**

into account.

The drive approaches the target position with a position lag that is proportional to the velocity. Encoder 1 means that the position encoder is attached to the motor shaft (indirect measurement of the axis position).

See also the functional description: "Operating Mode: Relative drive-internal interpolation".

A147 Relative drive controlled interpolation, encoder 2

In the **S-0-0282, Travel distance** parameter, the drive receives a distance specification from the controller. When bit 0 of the **S-0-0346, Setup flag for relative command values** parameter is toggled, this distance is summed up to the value in **S-0-0258, Target position**. In order to get from the current position to the new target position, the drive now generates (interpolates) an internal position command value curve. This is done taking the limit values of velocity, acceleration, and jerk in the parameters

- **S-0-0259, Positioning velocity**
- **S-0-0260**, **Positioning acceleration**
- **S-0-0193, Positioning jerk**

into account.

The drive approaches the target position with a position lag that is proportional to the velocity. Encoder 2 means that the position encoder that is attached to the load is used for closing the position control loop (direct axis position measurement).

See also the functional description: "Operating Mode: Relative drive-internal interpolation".

A148 Relative drive contr. interpolation, enc. 1, lagless

In the **S-0-0282, Travel distance** parameter, the drive receives a distance specification from the controller. When bit 0 of the **S-0-0346, Setup flag for relative command values** parameter is toggled, this distance is summed up to the value in **S-0-0258, Target position**. In order to get from the current position to the new target position, the drive now generates (interpolates) an internal position command value curve. This is done taking the limit values of velocity, acceleration, and jerk in the parameters

- **S-0-0259, Positioning velocity**
- **S-0-0260**, **Positioning acceleration**
- **S-0-0193, Positioning jerk**

into account.

The drive approaches the target position of the travel path without a position lag. Encoder 1 means that the position encoder is attached to the motor shaft (indirect measurement of the axis position).

See also the functional description: "Operating Mode: Relative drive-internal interpolation".

A149 Relative drive contr. interpolation, enc. 2, lagless

In the **S-0-0282, Travel distance** parameter, the drive receives a distance specification from the controller. When bit 0 of the **S-0-0346, Setup flag for relative command values** parameter is toggled, this distance is summed up to the value in **S-0-0258, Target position**. In order to get from the current position to the new target position, the drive now generates (interpolates) an internal position command value curve. This is done taking the limit values of velocity, acceleration, and jerk in the parameters

- S-0-0259, Positioning velocity
- S-0-0260, Positioning acceleration
- S-0-0193, Positioning jerk

into account.

The drive approaches the target position of the travel path without a position lag.

Encoder 2 means that the position encoder that is attached to the load is used for closing the position control loop (direct axis position measurement).

See also the functional description: "Mode: Relative drive-internal interpolation".

A800 Unknown operating mode

There is no diagnosis for the activated operation mode.

5.4   Diagnostic Messages for Basic Initialization and After Fatal System Errors

Diagnostic Message Display: -0

Cause:

The data storage for the controller is tested for its functional capability.

If an error is detected, this display will remain.

Remedy:

The drive controller is defective (DRP3) and must be exchanged.

Diagnostic Message Display: -1

Cause:

The data storage for the DSS 2.1 Module is tested for its functional capability.

If an error is detected, this display will remain.

Remedy:

The DSS Module or the connection to the main device is defective.

- If DSS module is defective > exchange
- If drive controller is defective > exchange

Diagnostic Message Display: -2

Cause:

Makeup of the parameter structure.

If the EPROMS are exchanged for another version of the firmware, the parameter memory on the programming module is erased (duration appx. 5 sec.).

Diagnostic Message Display: -3

Cause:

The motor type and the type of the motor feedback are determined by reading their parameter storage areas.

Diagnostic Message Display: -5

During basic initialization, an error was reported by the coprocessor.

Cause:

1.   Control voltage error (+24 V or +/-15 V).

2. +/-10 V - error.

Remedy:

For 1.   Check the control voltage supply.

For 2.   Replace the drive.

Diagnostic Message Display: -6

Cause:

A fatal processor or program error was encountered.

Remedy:

The error in question is a system error. Please contact the appropriate software development company.

Diagnostic Message Display: Watchdog ◗◗

Cause:

A fatal processor or program error (Watchdog) was encountered.

Remedy:

Replace the drive.

5.5 Operation Status

bb

"read for operation"

The drive is ready to be turned on.

Diagnostic message text:

Ready to be turned on (ready for operation)

Ab

"Drive is ready"

The control and power components of the drive are ready for operation.

Diagnostic message text:

Control and power components are ready (drive is ready)

AF

"Drive enable"

The drive enable was issued and operated the activation of the drive. This follows a command value input.

Diagnostic message text:

according to selected operating mode.

AS

"Drive interlock"

The power output was locked. This signal serves the secured torque free switching of the drive independent from existing operating states of the drive packs.

Diagnostic message text:

Drive interlock

AH

"Drive Halt"

The drive will be stopped under the conditions of the acceleration parameter and stays in control.

P0

Phase 0

The drive is in phase 0 and is waiting on the phase transition from phase 0 to phase 1.

Diagnostic message text:

Phase 0

P1

Phase 1

The transition from phase 1 to phase 2 was still not initiated from the control system.

Remedy:

see the control handbook

P2

Phase 2

Before the control system switches in the communications phase 3, the controller checks inputted parameters for content of the input limits and for completeness. If invalid parameter values were found, the phase progression switch will stop the drive.

Note: The parameters are not checked for exactness.

Remedy:

In the parameter "Identification Number List Invalid Operating Data Communications Phase 2", the ID numbers S-0-0021 are recorded which were recognized as invalid from the drive before the phase progression switch in communications phase 3. The completion of this parameter is required in order for switching into communications phase 3.

P3

Phase 3

Before the control system switches in the communications phase 4, the controller checks inputted parameters for content of the input limits and for completeness. If invalid parameter values are recognized, the phase progression switch will be stopped by the controller.

Note: The parameters are not checked for exactness.

Remedy:

In the parameter "ID Number Lists of Invalid Operating Data Communications Phase 3", ID number S-0-0022 records the parameters which were recognized as invalid by the drive before the phase progression switch in communications phase 4. The completion of this parameter is required in order for switching into communications phase 4.

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W

7 Service & Support

7.1 Helpdesk

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

- telefonisch: **+49 (0) 9352 40 50 60**
  über Service Call Entry Center   Mo-Fr 07:00-18:00

- per Fax: **+49 (0) 9352 40 49 41**

- per e-Mail: **service@indramat.de**

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

- by phone: **+49 (0) 9352 40 50 60**
  via Service Call Entry Center Mo-Fr 7:00 am - 6:00 pm

- by fax: **+49 (0) 9352 40 49 41**

- by e-mail: **service@indramat.de**

7.2 Service-Hotline

Außerhalb der Helpdesk-Zeiten ist der Service direkt ansprechbar unter

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

After helpdesk hours, contact our service department directly at

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

7.3 Internet

Unter   **www.indramat.de**   finden Sie ergänzende Hinweise zu Service, Reparatur und Training sowie die **aktuellen** Adressen *) unserer auf den folgenden Seiten aufgeführten Vertriebs- und Servicebüros.

☐ Verkaufsniederlassungen
☐ Niederlassungen mit Kundendienst

Außerhalb Deutschlands nehmen Sie bitte zuerst Kontakt mit unserem für Sie nächstgelegenen Ansprechpartner auf.

*)   http://www.indramat.de/de/kontakt/adressen
   Die Angaben in der vorliegenden Dokumentation können seit Drucklegung überholt sein.

At **www.indramat.de** you may find additional notes about service, repairs and training in the Internet, as well as the **actual** addresses *) of our sales- and service facilities figuring on the following pages.

☐ sales agencies
☐ offices providing service

Please contact our sales / service office in your area first.

*)   http://www.indramat.de/en/kontakt/adressen
   Data in the present documentation may have become obsolete since printing.

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

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

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

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

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

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7.5 Kundenbetreuungsstellen - Sales & Service Facilities

Deutschland – Germany

vom Ausland: (0) nach Landeskennziffer weglassen!
from abroad: don't dial (0) after country code!

Vertriebsgebiet Mitte Germany Centre	SERVICE	SERVICE	SERVICE

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	    von 07:00 - 18:00 Uhr
	
	    from 7 am – 6 pm
	
	Tel. +49 (0) 9352 40 50 60
	service@indramat.de
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		MO – FR
		    von 17:00 - 07:00 Uhr
		    from 5 pm - 7 am
		+ SA / SO
		
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