

IndraDrive

MPB-16VRS
Firmware for Drive Controllers

Firmware Release Notes

2019-07-19



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1 General Information

1.1 Releases

Firmware designation	Release date	Change of version
FWA-INDRV*-MPB-16V04-D5	2009-03-18	Prototype release
FWA-INDRV*-MPB-16V06-D5	2009-06-10	V04 → V06
FWA-INDRV*-MPB-16V08-D5	2009-08-13	V06 → V08 General sales release
FWA-INDRV*-MPB-16V10-D5	2009-11-17	V08 → V10
FWA-INDRV*-MPB-16V12-D5	2010-04-14	V10 → V12
FWA-INDRV*-MPB-16V14-D5	2010-07-09	V12 → V14
FWA-INDRV*-MPB-16V16-D5	2010-08-03	V14 → V16
FWA-INDRV*-MPB-16V20-D5	2010-10-21	V16 → V20
FWA-INDRV*-MPB-16V22-D5	2010-12-10	V20 → V22
FWA-INDRV*-MPB-16V24-D5	2011-09-13	V22 → V24
FWA-INDRV*-MPB-16V26-D5	2012-05-29	V24 → V26
FWA-INDRV*-MPB-16V28-D5	2014-05-23	V26 → V28
FWA-INDRV*-MPB-16V30-D5	2015-02-06	V28 → V30
FWA-INDRV*-MPB-16V32-D5	2016-07-15	V30 → V32
FWA-INDRV*-MPB-16V34-D5	2017-10-18	V32 → V34
FWA-INDRV*-MPB-16V36-D5	2018-06-22	V34 → V36
FWA-INDRV*-MPB-16V38-D5	2019-07-19	V36 → V38

Tab. 1-1: Record of Revisions of Firmware FWA-INDRV*-MPB-16VRS

1.2 Firmware Variant

These firmware Release Notes relate to the following firmware variant:

<p>Rexroth IndraDrive Firmware for Drive Controllers FWA-INDRV*-MPB-16VRS-D5 (Single-Axis Firmware With Basic Performance and Functionality)</p>
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Tab. 1-2: Firmware Variant



For the explanation of the type code, see chapter "[Firmware Types](#)".

General Information

Firmware	Part No.	Remark
FWA-INDRV*-MPB-16VRS-D5-0-ALL-NN	R911325606	Due to the revision of the EU Dual-Use Regulation [Regulation (EC) No 428/2009], the technical property changes in accordance with the legal requirements: As of the release V30, the output frequency of the drive controllers is restricted to < 600 Hz in open-loop operation. As of the release V32 the output frequency of the drive controllers is restricted to < 600 Hz in closed-loop operation, too. As of these releases, these firmwares do not require export licenses .
FWA-INDRV*-MPB-16VRS-D5-0-MSP-NN	R911325607	
FWA-INDRV*-MPB-16VRS-D5-0-NNN-NN	R911325608	
FWA-INDRV*-MPB-16VRS-D5-0-SNC-NN	R911325609	
FWA-INDRV*-MPB-16VRS-D5-1-ALL-NN	R911325610	
FWA-INDRV*-MPB-16VRS-D5-1-MSP-NN	R911325611	
FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN	R911325612	
FWA-INDRV*-MPB-16VRS-D5-1-SNC-NN	R911325613	
FWA-INDRV*-MPB-16VRS-D5-1-SRV-NN	R911325614	
FWA-INDRV*-MPB-16V22-D5-1-NNN-NN	R911336252	
FWA-INDRV*-MPB-16V26-D5-1-NNN-NN	R911337962	
FWA-INDRV*-MPB-16V27-D5-1-NNN-NN	R911337889	
FWA-INDRV*-MPB-16VRS-D5-E-ALL-NN	R911369333	
FWA-INDRV*-MPB-16VRS-D5-E-MSP-NN	R911369334	
FWA-INDRV*-MPB-16VRS-D5-E-NNN-NN	R911369335	
FWA-INDRV*-MPB-16VRS-D5-E-SNC-NN	R911369336	
FWA-INDRV*-MPB-16VRS-D5-E-SRV-NN	R911369337	

Tab. 1-3: Type Codes of the Supported Firmware Variants

1.3 System Overview

1.3.1 Software

For engineering and servicing, it is recommended that you use the following software:

Software	Application	Properties
SWA-IWORKS-DS* ⁽¹⁾	Drive commissioning tool	<ul style="list-style-type: none"> No offline simulation No project administration View for single devices Without MLD programming
SWA-IWORKS-D** ⁽¹⁾	Drive engineering	<ul style="list-style-type: none"> Incl. offline simulation Incl. project administration Without MLD programming

(1) Version ≥ 08 is generally recommended; the firmware MPx16 is only supported as of version 09

Tab. 1-4: Software for Engineering and Servicing

1.3.2 Drive Controllers

The following converters can be operated with the firmware MPx-16VRS:

Product Series	Perfor- mance class		Design	Required Firmware version
HCS01.1E	- W0003	- A-02-	E-S3-EC-xx-xx-xx-xx	As of MPE-16VRS
			B-ET-EC-xx-xx-xx-xx	As of MPB-16VRS
			A-CD-EC-xx-xx-xx-xx	As of MPC-17VRS
	- W0006	- A-02-	E-S3-EC-xx-xx-xx-xx	As of MPE-16VRS
			B-ET-EC-xx-xx-xx-xx	As of MPB-16VRS
			A-CD-EC-xx-xx-xx-xx	As of MPC-17VRS
	- W0009	- A-02-	E-S3-EC-xx-xx-xx-xx	As of MPE-16VRS
			B-ET-EC-xx-xx-xx-xx	As of MPB-16VRS
			A-CD-EC-xx-xx-xx-xx	As of MPC-17VRS
	- W0013	- A-02-	E-S3-EC-xx-xx-xx-xx	As of MPE-16VRS
			B-ET-EC-xx-xx-xx-xx	As of MPB-16VRS
			A-CD-EC-xx-xx-xx-xx	As of MPC-17VRS
			A-CC-EC-xx-xx-xx-xx	As of MPx-17VRS
	- W0018	- A-02-	E-S3-EC-xx-xx-xx-xx	As of MPE-16VRS
			B-ET-EC-xx-xx-xx-xx	As of MPB-16VRS
			A-CD-EC-xx-xx-xx-xx	As of MPC-17VRS
	- W0005	- A-03-	E-S3-EC-xx-xx-xx-xx	As of MPE-16VRS
			B-ET-EC-xx-xx-xx-xx	As of MPB-16VRS
			A-CD-EC-xx-xx-xx-xx	As of MPC-17VRS
	- W0008	- A-03-	E-S3-EC-xx-xx-xx-xx	As of MPE-16VRS
			B-ET-EC-xx-xx-xx-xx	As of MPB-16VRS
			A-CD-EC-xx-xx-xx-xx	As of MPC-17VRS
	- W0018	- A-03-	E-S3-EC-xx-xx-xx-xx	As of MPE-16VRS
			B-ET-EC-xx-xx-xx-xx	As of MPB-16VRS
A-CD-EC-xx-xx-xx-xx			As of MPC-17VRS	
- W0028	- A-03-	E-S3-EC-xx-xx-xx-xx	As of MPE-16VRS	
		B-ET-EC-xx-xx-xx-xx	As of MPB-16VRS	
		A-CD-EC-xx-xx-xx-xx	As of MPC-17VRS	
- W0054	- A-03-	E-S3-EC-xx-xx-xx-xx	As of MPE-17VRS	
		B-ET-EC-xx-xx-xx-xx	As of MPB-17VRS	
		A-CD-EC-xx-xx-xx-xx	As of MPC-17VRS	

Tab. 1-5: Required Firmware Versions for Converters

Product Series	Type performance		Control section design	Master communication	Supported as of firmware version
HCQ02.1E	- W0025	- A-03-	-B-	ET	MPM-16VRS
HCT02.1E	- W0020	- A-03-	-B-	ET	MPM-16VRS

Tab. 1-6: Required Firmware Versions for Converters (Multi-Axis)

1.3.3 Supported Motors

The following table contains an overview of the Rexroth motors which can be operated at IndraDrive controllers.

Motor type	With encoder system	Firmware version	Notes
		From	
MHD		MPx-02VRS	
MKD		MPx-02VRS	
MKE		MPx-02VRS	
	A, C	MPx-16VRS	
MSK		MPx-02VRS	
MSM	M0	MPx-16VRS	
MAF		MPx-02VRS	
	M1, M2, M6, S1, S2, S6, N0	MPx-16VRS	
MAD		MPx-02VRS	
	M1, M2, M6, S1, S2, S6, N0	MPx-16VRS	
MSP		MPx-05VRS	
MSD		MPx-02VRS	
	M1, M2, S1, S2	MPx-16VRS	
IndraDyn L MLF		MPx-02VRS	
MBS			
IndraDyn H MBSxx2		MPx-02VRS	
IndraDyn T MBT		MPx-02VRS	

Tab. 1-7: Firmware Versions vs. Motors

1.3.4 Firmware Types

Structure of the Firmware Type Designation

The type designation of the IndraDrive firmware consists of the following type code elements:

IndraDrive-Firmware	Base package of variant ... (depending on control section)	Version	Release	Language	Firmware characteristic	Alternative expansion packages	Additive expansion packages
FWA-INDRV*	-MPB-	16	VRS-	D5-	x-	xxx-	xx

Tab. 1-8: Basic Structure of the Firmware Type Designation

Function-Specific Abbreviations in Type Designation of IndraDrive Firmware

Base package (application and performance):

- **MPB** → Single-axis firmware with Basic performance

Firmware characteristic:

- **0** → Open-Loop
- **1** → Closed-Loop
- **E** → CL/OL - restricted export

Alternative expansion packages:

- **NNN** → Without alternative expansion package
- **SRV** → Functional package "Servo function"
- **SNC** → Functional package "Synchronization"
- **MSP** → Functional package "Main spindle"
- **ALL** → All alternative expansion packages

Additive expansion packages:

- **NN** → Without additive expansion package







The sales representative in charge will help you with the current status of available firmware types.

2 Firmware Replacement

2.1 Brief Description

2.1.1 Basic Principles

Explanation of Terms	<p>The following cases are distinguished for firmware replacement:</p> <ul style="list-style-type: none"> • Release update An old firmware release (e.g. MPB16V02) contained in the device is replaced by a new firmware release (e.g. MPB16V04). • Version upgrade The old firmware version contained in the device is replaced by a new firmware version (example: MPB16V06 is replaced by MPB17V02). <hr/> <p> The following chapters with regard to the release update and firmware upgrade exclusively refer to devices of the IndraDrive Cs type. These pieces of information do not apply to IndraDrive HCQ / HCT, but are described in a separate documentation.</p> <hr/>
How to Replace the Firmware	<p>Firmware for IndraDrive can be replaced using the following hardware and software:</p> <ul style="list-style-type: none"> • Computer with software "IndraWorks" or • Computer with TFTP client or • Change of programming module <hr/> <p> The "IndraWorks" commissioning software can be ordered from Rexroth.</p> <p>The scope of supply of "IndraWorks" contains a documentation which describes the operation of the program.</p> <hr/>
To be Noticed	<p>After every firmware replacement (release update and version upgrade), check the following parameters for validity:</p> <ul style="list-style-type: none"> • P-0-2003, Selection of functional packages • P-0-4089.0.1, Master communication: Protocol <p>It might possibly be necessary that you set them valid during the first run-up after the firmware replacement.</p> <hr/> <p> If the master communication protocol is changed to EtherCAT® (P-0-4089.000.001), the drive, during phase progression with TwinCAT (BECKHOFF), will once generate the switching error "C0101 Invalid parameters (-> S-0-0021)". In this case, the parameters listed in "S-0-0021, IDN-list of invalid operation data for CP2" must be set to "valid" using IndraWorks.</p> <hr/>
IndraDrive HCQ / IndraDrive HCT	<p>The firmware replacement for "IndraDrive HCQ" / "IndraDrive HCT" is described in the documentation "Rexroth IndraMotion, MTX micro 10VRS, System Description" (DOK-MTXMIC-SYS*DES*V10-PR01-EN-P, part number R911330178).</p> <hr/> <p> For the firmware release update from MPM16V02 to MPM16V04, more device parameters are required that can only be entered by a Rexroth service technician!</p> <hr/>

2.1.2 Preparations and Conditions for Firmware Replacement

Preparing the Firmware Replacement

You have to make the following preparations for firmware replacement:

1. Drive controller must be on (24 V supply).
2. Drive controller **mustn't** be in operating mode (communication phase 4) (cf. P-0-0115).
3. It is recommended to save the backup parameters before replacing the firmware (see Functional Description "Loading, Storing and Saving Parameters").

General Notes on How to Carry Out Firmware Replacement

You have to observe the following points when carrying out the firmware replacement:

- For the firmware replacement via IndraWorks, the Ethernet communication to the drive must be possible.
- Do not switch off the 24 V control voltage while replacing the firmware.
- The firmware replacement always must be carried out completely.

Communication Types

The engineering communication works in different ways, depending on the activated bus system (cf. P-0-4089.0.1). Make the settings and comply with the requirements in accordance with the bus system used. For further information, see "chapter TCP/IP Communication".

Via the programming module, the active IP settings can be viewed or adjusted, if necessary (see Functional Description "Standard Control Panel").



After you have changed the IP settings, the device must be restarted for activating the settings. If several devices have been connected via the master communication bus, you have to make sure that an unequivocal IP address is assigned to each node.

IP Configuration in the Easy Menu

See Functional Description "Standard Control Panel"

IP Settings at the Computer

See Microsoft help, keyword "LAN connection"

2.2 Firmware Release Update

2.2.1 General Information

Before the firmware release update, it is recommended to save the backup parameters of the drive!

2.2.2 Firmware Release Update With Computer

1. Connect drive to computer (recommended: Cat5e Ethernet cables)
2. Load firmware

There are two possibilities of performing a firmware release update using a computer:

- By means of IndraWorks or
- with a TFTP client

1. *Firmware Release Update With IndraWorks*

- 1.1 Call "IndraWorks".
- 1.2 Load project for corresponding axis or create new project; to do this, address axis via Ethernet.
- 1.3 Switch project "online".
- 1.4 Select/highlight controller and call "Firmware Management" in context menu.

- A new window opens and firmware currently available in drive is displayed.
- 1.5 Highlight new firmware (*.ibf file) in upper part of dialog and start firmware download via "Download" button.
Firmware download runs automatically and all required firmware components are loaded to drive.
 - 1.6 After firmware download has been completed, close "Firmware Management" window.
2. *Firmware Release Update Using a TFTP Client*
 - 2.1 Firmware update service is made available via a TFTP server. Command for sending the firmware is "put" command.



It is possible with any TFTP client supporting this command (e.g. Windows command line program "tftp.exe") to carry out a firmware release update **without IndraWorks**.

Example (with "Microsoft Windows consoles TFTP client"):

To carry out a firmware release update, only a "put" request is transmitted. Do not use an optional alternative name for the file on the target system. For the host, the IP address of the device is to be specified (standard is 192.168.0.1):

```
tftp -i 192.168.0.1 put FWA-INDRV_-MPB-16V04-D5.ibf
```

See also Functional Description "Firmware Download via TFTP Server"

3. Restart drive
4. Put machine into ready-for-operation status again according to machine manufacturer's instructions.
5. Check functions of drive.

2.2.3 Firmware Release Update With Programming Module

On the programming module, the firmware and the user data used in the device are stored.



Before replacing the programming module, a programming module with the desired firmware must be ordered from Rexroth.

To replace the programming module, proceed as follows:

1. Switch drive off.
2. Remove old programming module.
3. Plug in new programming module.
4. Switch drive on.
5. Put machine into ready-for-operation status again according to machine manufacturer's instructions.
6. Check functions of drive.

2.3 Firmware Version Upgrade

2.3.1 General Information

When firmware in a drive controller is replaced by firmware of a **more recent version**, this is called firmware version upgrade (e.g., FWA-INDRV*-MPB-16V08-D5 replaced by FWA-INDRV*-MPB-17V02-D5).



Before carrying out the firmware version upgrade, you must save all parameters (e.g., with "IndraWorks"). **After** firmware replacement, the parameters must be restored, because the command "C07_1 Load defaults procedure command" is carried out automatically. After the desired parameter file was loaded, the drive controller is ready for operation again.

2.3.2 Saving Parameter Values

Before firmware upgrade, all application-specific parameter values must be saved on a data carrier. The parameter backup can be carried out by means of:

- **Commissioning software "IndraWorks"**
→ Saving parameter values on external data carrier
- or -
- **Control master**
→ Saving parameter values on master-side data carrier

2.3.3 Version Upgrade With "IndraWorks"

Requirements The following requirements should have been fulfilled in order that carrying out the firmware version upgrade with "IndraWorks" makes sense:

- Existing Ethernet connection between PC and drive controller
- Current parameter setting of axis was saved.



When upgrading from MPB16VRS to MPB17VRS, the error F8100 is generated once during the drive controller's first run-up phase. This error can be cleared via the display.

Firmware Upgrade With "IndraWorks"

Carrying out the firmware version upgrade with "IndraWorks" requires the following steps:

1. Load firmware

- 1.1 Call "IndraWorks".
- 1.2 Load project for corresponding axis or create new project; to do this, address axis via Ethernet.
- 1.3 Switch project "online".
- 1.4 Select/highlight controller and call "Firmware Management" in context menu.
A new window opens and firmware currently available in drive is displayed.
- 1.5 Highlight new firmware (*.ibf file) in upper part of dialog and start firmware download via "Download" button.

Firmware download runs automatically and all required firmware components are loaded to drive.

- 1.6 After firmware download has been completed, close "Firmware Management" window.
 - 1.7 Reboot drive controller
- 2. Put drive into ready-for-operation status**
- ⇒ Switch project "online".
- After switching "online", a message appears sometimes; it says that "IndraWorks" could not establish communication via Ethernet interface to drive, because drive-internal settings for Ethernet communication were reset.
- ⇒ In this case, reconfigure communication via button "Search for devices"!
- ⇒ As firmware in drive no longer complies with version stored in project, a corresponding message is displayed. Select desired option in dialog to make drive available in project again and allow reestablishing communication to device.
- ⇒ Manually set functional package and master communication protocol via corresponding parameters.
- ⇒ Activate command "C07_1 Load defaults procedure com. (load basic parameters)". All buffered parameters are thereby set to their default values.
- 3. Load parameter values**
- ⇒ Load parameter file which was saved.
- ⇒ Switch off drive and start it again so that the parameterization becomes active.
- 4. Put machine into ready-for-operation status**
- ⇒ Put machine into ready-for-operation status again according to machine manufacturer's instructions.
- ⇒ Check functions of drive.

2.4 Possible Problems During Firmware Replacement

General Information After an incomplete firmware update, the drive controller possibly is no longer operable.

Firmware replacement is carried out incompletely, if one of the following situations occurs during the sequence of firmware replacement:

- 24V supply of control section is switched off
- Connection to drive is interrupted (e.g., defective interface cable)
- Crash of update software / of computer

If there isn't any valid firmware available in the control section, the loader is started. The text "LOADER active! IP address: 192.168.0.1" appears on the display in light writing. With the loader, it is possible to replace the firmware of the control section.



Upon successful firmware replacement in the control section, a restart has to be carried out.

Firmware Replacement in Control Section in the Case of Error

The following steps are required for loading the firmware to the control section in the case of error:

1. Call "IndraWorks".

Firmware Replacement

2. In menu under **Tools Drive ► Firmware Management** call firmware management.
A new window opens in which firmware file last used is displayed on PC.
3. Select "Download via Ethernet" tab.
4. Set IP address "192.168.0.1".
5. Highlight desired firmware (*.ibf file) and start firmware download via **Download** button.
6. Firmware download runs automatically and all required firmware components are loaded to drive.
7. After firmware download has been completed, close "Firmware Management" window.
8. Restart drive.

3 Firmware-Release FWA-INDRV*-MPB-16Vnn-D5

3.1 Unresolved defects

3.1.1 Axis Control

Different commutation offsets for MCL motor with analog Hall sensor

CQ-ID:	Defdb00134897
Severity:	K3 - malfunction (no workaround)
Description:	In the case of an MCL motor with the primary part option „analog Hall sensor“, IndraWorks writes the correct value for the commutation offset of the motor (P-0-0508) to the controller when the motor and motor control parameters are loaded from the drive database. Without any further modification of the commutation offset value, this normally results in an immediately operational drive after AF has been set. But if the rotational direction of the motor encoder had to be inverted to be in the same direction as the motor's direction of motion, the commutation offset from the drive database can cause the error message F8078, speed loop error, during initial commissioning. Uncontrolled axis motion can only occur if velocity control loop monitoring was deactivated. This should absolutely be avoided for initial commissioning.
Description of fixing	For reasons of compatibility after a firmware update, the defect is not corrected in MPx16!
Workaround	If the rotational direction of the motor encoder had to be inverted to be in the same direction as the motor's direction of motion, the commutation offset from the drive database has to be modified by the value „512“ during initial commissioning of the drive (add it if the sum < 1024, subtract it from the drive database value if the sum > 1024)

Incorrect commutation (sine-wave method) for MCL motor

CQ-ID:	Defdb00134898
Severity:	K3 - malfunction (no workaround)
Description:	<p>MCL motors consist of the components MCP (ironless motor primary part with three-phase winding, temperature sensor and an optional Hall sensor unit) and MCS (U-shaped secondary part made of steel with permanent magnets). Mounting these components and a position encoder in the axis mechanics makes a functional Sy motor, if the commutation of the current in the primary part windings with the magnetic field of the secondary part causes the desired force action.</p> <p>If an absolute value encoder is used as the motor position encoder, the commutation has to be set once during the initial commissioning of the motor. If a relative position encoder (incremental encoder) is used, it is necessary to repeat the commutation setting for the motor every time the drive is switched on again. The commutation setting takes place automatically when drive enable is set for the first time („auto-commutation“). For motors with an ironless primary part, the „sine-wave method“ has to be configured for the commutation setting. The saturation method is not possible for lack of sheet iron in the primary part.</p> <p>If the standard configuration is used for the sine-wave method (value „0“ for P-0-0506/P-0-0507, Amplitude/Test frequency for angle acquisition), there are mechanical „start positions“ between primary part and secondary part at which the automatic commutation setting fails when AF is set. In this case, the motor cannot follow the command values and stops with the error message F8078, and is motionless at best (with monitoring of the velocity control</p>

	<p>loop active). However, the motor might also react with strong, undesired movements (it has a „runaway effect“ if the mentioned monitoring function was deactivated).</p>
Description of fixing	<p>For reasons of compatibility after a firmware update, the defect is not corrected in MPx16!</p>
Workaround	<p>During the initial commissioning of the motor, the values of P-0-0506/P-0-0507, Amplitude/Test frequency for angle acquisition have to be adjusted in the initial commissioning mode before AF is set for the first time: P-0-0506 should be set to „20“. Independent of the position, correct commutation offset values should now be found for the motor. During initial commissioning, check whether or not the commutation setting works correctly, independent of the position. Another improvement is to reduce (halve) the value of P-0-0507 automatically set after AF. At the end of the initial commissioning, deactivate the initial commissioning mode. The optimized values in P-0-0506/P-0-0507 remain unchanged when the axis is in operation and will be active with every auto-commutation after AF has been set. If problems keep occurring, use the firmware MPx18 that is provided with improvements!</p>

4 Firmware-Release FWA-INDRV*-MPB-16V38-D5

4.1 Resolved defects

4.1.1 Establishing the position reference

Position limit value monitoring does not take effect for homing WITHOUT mark and switch

CQ-ID: Defdb00206600

Severity: K2 - serious malfunction

Description: If the homing procedure had been carried out with mark evaluation deactivated and home switch deactivated in the case of a measuring system evaluated in incremental form, position limit value monitoring was switched off afterwards. No messages were generated when the limit values had been exceeded.

5 Firmware-Release FWA-INDRV*-MPB-16V36-D5

5.1 Resolved defects

5.1.1 Drive internal command generator

"Runaway effect"/F2028

CQ-ID: Defdb00200716

Severity: K2 - serious malfunction

Description: When a new set had been started, the time constant of the average value filter (P-0-0641) was changed. The filter order was changed to 226 cycles. Therefore, the filter was filled with new values. These values were calculated from position command value and command velocity. An incorrect velocity value was sporadically used for the calculation, since the value had not been safely written.

5.1.2 Parameter Handling

Invalid basic device parameters (P-0-0192, P-0-0193, ...)

CQ-ID: Defdb00198957

Severity: K3 - malfunction (no workaround)

Description: If a sector erasing procedure is aborted on the parallel onboard flash, this can cause invalid basic device parameters to be generated.

The following errors occurred sometimes:

- C0212 Invalid control section data (->S-0-0423)
- F8091 Power section defective
- F8122 Control section defective

6 Firmware-Release FWA-INDRV*-MPB-16V34-D5

6.1 Resolved defects

6.1.1 Motor Handling

Motor holding brake remains applied in spite of drive enable

- CQ-ID:** Defdb00187393
- Severity:** K3 - malfunction (no workaround)
- Description:** If the "Release motor holding brake" command had been reset at the same time as drive enable had been set, the holding brake sometimes remained applied in spite of drive enable and the drive subsequently moved against the applied brake. This caused heavy wear of the brake.

6.1.2 Operating modes single axis

Axis sometimes moves to target position incorrectly in drive-controlled positioning mode

- CQ-ID:** Defdb00186738
- Severity:** K2 - serious malfunction
- Description:** In the "drive-controlled positioning" mode with modulo scaling and the configuration "relative positioning with actual position used for position control in "S-0-0346, Positioning control word", the axis sometimes moved to the target position incorrectly.
- In the case of error, the actual travel distance was corrected by an additional travel distance of one modulo value (S-0-0103). Therefore, the axis either moved to the target position in the wrong direction or it moved to the target position in the correct direction, but with an additional distance of one modulo value.
- The error occurred if the actual velocity and the internally filtered velocity, when the operation mode had used the actual position for position control, had different signs and the absolute value of the filtered actual velocity was additionally greater than "S-0-0124, Standstill window".
- "S-0-0417, Positioning velocity threshold in modulo modet" in this case did not have any influence on the erratic behavior.

6.1.3 Operating modes synchronization

Exception if synchronous bit generation activated for MotionProfile and MotionProfile mode not active

- CQ-ID:** Defdb00180368
- Severity:** K4 - malfunction
- Description:** If the synchronous bit generation had been activated for the MotionProfile in parameter P-0-0088 and the synchronization mode had not been active, the exception E0800 occurred sometimes if the selected MotionProfile motion set was invalid.

6.1.4 Parameter Handling

Error F2100 "Incorrect access to command value memory" occurs sporadically

- CQ-ID:** Defdb00196497
- Severity:** K3 - malfunction (no workaround)

Description: When the drive had been switched off immediately after the run-up, F2100 sometimes occurred during the next run-up.

Transition command error C0212 due to invalid parameters

CQ-ID: Defdb00197384

Severity: K3 - malfunction (no workaround)

Description: In rare cases, due to invalid parameters (P-0-0198 and P-0-0479), a transition command error C0212 could occur.

7 Firmware-Release FWA-INDRV*-MPB-16V32-D5

7.1 Resolved defects

7.1.1 _Other

Velocity limit too low for linear motors

- CQ-ID:** Defdb00178541
Severity: K3 - malfunction (no workaround)
Description: The switch-off limit for linear motors was set to 250 m/min * 1.125. The error F8079 was therefore generated in the case of higher velocities.
Fixing: The limit for linear motors is increased to 1200 m/min * 1.125.

7.1.2 Master communication

Watchdog monitoring missing for acyclic writing of drive control word

- CQ-ID:** Defdb00175986
Severity: K3 - malfunction (no workaround)
Description: Drive enable did not switch off automatically in the drive when drive enable had been set via the parameter P-0-4028 drive control word and the communication to the drive had been aborted. It was impossible to switch off drive enable in any other way, the drive had to be switched off.
Fixing: If communication is aborted, drive enable switches off automatically after 2 seconds.

7.1.3 Parameters, basics

Content of "P-0-3000, Module code of motor, type plate" is not displayed

- CQ-ID:** Defdb00134490
Severity: K3 - malfunction (no workaround)
Description: With encoder data memory versions 3.1 and 4.5, the content of "P-0-3000, Module code of motor, type plate" was not displayed.
Fixing: The defect has been resolved.

Writing P-0-0002 can cause "F2009-PL"

- CQ-ID:** Defdb00180501
Severity: K3 - malfunction (no workaround)
Description: If a backup with all parameters including the retain data is imported via IndraWorks, this can cause "PL" after the reboot.

7.2 Functional enhancements

7.2.1 445_Limitations, monitoring

Considering the directives for products requiring export licenses, part 2 closed-loop operation as well

- CQ-ID:** Defdb00185425
Severity: K4 - malfunction

- Description:** The restrictions in accordance with "3A225 frequency converters requiring export licenses" are extended insofar as the maximum output frequency of 599 Hz also applies to closed-loop operation.
- Enhancement:** If the command velocity exceeds the threshold of 590 Hz (in relation to the output frequency)
in firmware variants not requiring export licenses (FD),
the warning E2059 is generated and the command velocity is restricted.
With an output frequency > 599 Hz, the error message
F8079 is generally generated and the drive is shut down accordingly.
The restriction does not apply to the firmware variant requiring export licenses (ER).

8 Firmware-Release FWA-INDRV*-MPB-16V30-D5

8.1 Resolved defects

8.1.1 Limitations/monitoring

F6030 or F6029 with C06 and positive stop as zero switch

- CQ-ID:** Defdb00169514
- Severity:** K4 - malfunction
- Description:** Initial situation: Homing at positive stop without a mark. Software limit switch before positive stop.
- In the case of homing at positive stop, the software limit switches became immediately active. The error F6029 or F6030 was output directly after the reference had been set.
- Fixing:** The software limit switches are only activated after the homing procedure has been completed. There is a waiting time for the drive to move away from the positive stop.

8.1.2 Motor control

In consideration of the amendment of Annex 1 to the EU Dual-Use Regulation on products requiring export licenses

- CQ-ID:** Defdb00175646
- Severity:** K6 - functional enhancement
- Description:** Drives not requiring export licenses may only be operated with < 600 Hz in open-loop operation.
- Fixing:** Firmware products not requiring export licenses are identified by the following functional packages:
- 0: "open-loop package" or
 - 1: "closed-loop package"
- When the velocity command values preset with these firmware products correspond to an inverter output frequency greater than or equal to 600 Hz, one of the following error messages is generated depending on the operation mode:
- E2059 Velocity command value limit active
 - E2063 Velocity command value > limit value
 - F8079 Velocity limit value exceeded
- Firmware products requiring export licenses are identified by the following functional package:
- E: "CL/OL – restricted export"
- These firmware products are not restricted to less than 600 Hz in open-loop operation. New material numbers were assigned to the firmware products.

9 Firmware-Release FWA-INDRV*-MPB-16V28-D5

9.1 Resolved defects

9.1.1 _Other

Scaling setting S-0-0045 > 32728 impossible

CQ-ID: Defdb00157662
Severity: K2 - serious malfunction
Description: The value "S-0-0045, Velocity data scaling factor" >= 32768 caused an internal overflow of the scaling calculation. It was impossible to use the scaling system. The limit values changed their sign. The same applied to the other scaling factors, such as position, acceleration, torque.

Bootling process ends with "BOOT 1.7"

CQ-ID: Defdb00151561
Severity: K4 - malfunction
Description: Sometimes, the drive only ran up to the "BOOT 1.7" display message after the control voltage had been switched on. Afterwards, the display jumped from BOOT 1.7 to F9100. The drive did not continue booting and was not ready for operation. After control voltage had been switched off and on again, the drive worked as normal.

9.1.2 Axis control

Velocity jump with "Drive Halt"

CQ-ID: Defdb00145837
Severity: K3 - malfunction (no workaround)
Description: The cubic fine interpolation is not active with a clock ratio 1:1, the command value should directly take effect. However, a delay by one position clock took effect.

Warning E8028 and warning E8260 accidentally displayed in V/Hz [U/f] operation

CQ-ID: Defdb00155195
Severity: K4 - malfunction
Description: When drive enable had been switched on for the first time after the bootling process in V/Hz [U/f] operation, the "E8028 Overcurrent in power section" message, and under certain circumstances when drive enable had been switched off the "E8260 Torque/force command value limit active" message, were displayed, although the corresponding states did not exist.

9.1.3 Error reactions

"F2818 Phase failure" when mains is switched into charged DC bus

CQ-ID: Defdb00150011
Severity: K3 - malfunction (no workaround)
Description: When the mains contactor had been repeatedly switched off and on again above the soft start threshold, misinterpretation and thereby the detection of a phase failure sometimes occurred.

9.1.4 Establishing the position data reference

Incorrect homing without drive enable

- CQ-ID:** Defdb00164158
- Severity:** K2 - serious malfunction
- Description:** The special case "homing without drive enable" worked even if the evaluation "limit switch as zero switch" or "positive stop as zero switch" had been configured in "S-0-0147, Homing parameter". In both cases, "homing without drive enable" is not allowed to be carried out.

9.1.5 Master communication

EtherCAT master signals timeout during booting process

- CQ-ID:** Defdb00146353
- Severity:** K3 - malfunction (no workaround)
- Description:** When the drive had been rebooted, it already signaled a connection (LINK) via EtherCAT before the firmware had been ready. This caused timeout in the control unit.

9.1.6 Motor control

Error in "C5600 Command subsequent optimization of commutation offset"

- CQ-ID:** Defdb00151171
- Severity:** K3 - malfunction (no workaround)
- Description:** If the commutation offset had been wrong by exactly 180° at the start of the command, the offset sometimes was not corrected. It remained wrong by 180°.

9.1.7 Om_position control with cyclic command value input

Negation problem with "cyclic position control, drive-controlled"

- CQ-ID:** Defdb00149433
- Severity:** K3 - malfunction (no workaround)
- Description:** With the operation mode "cyclic position control, drive-controlled", synchronization to a cyclic command value takes place; with negative position polarity, a jump occurred, the synchronization did not follow the preset value, the error "F2028 Excessive deviation" was sometimes generated.

9.1.8 Probe function

Quick stop with probe detection decelerates too slowly, with config. P-0-0119, bit 6 = 1, deceleration via ramp S-0-0138

- CQ-ID:** Defdb00145013
- Severity:** K2 - serious malfunction
- Description:** When the quick stop with probe detection function is triggered, the velocity command value reset or the velocity command value reset with ramp (S-0-0138, Bipolar acceleration limit value) is carried out depending on the setting of bit 6 in the parameter "P-0-0119, Best possible deceleration". When bit 6 "Error reaction for errors of category F6xxx/F7xxx, emergency halt with ramp and filter" of "P-0-0119, Best possible deceleration" had been set and the quick stop with probe detection function had been triggered, deceleration did not take place with the value "S-0-0138, Bipolar acceleration limit value" but was much slower.

Probe 2 with expectation window does not work after restart

CQ-ID: Defdb00164186

Severity: K4 - malfunction

Description: When an expectation window had been set for the probe 2 function, this worked until the drive was rebooted (control voltage switched off / on). After the reboot, the expectation window calculated for the probe 2 function was wrong.

10 Firmware-Release FWA-INDRV*-MPB-16V26-D5

10.1 Resolved defects

10.1.1 Measuring systems (mechanical axis system)

Transition command error C0281 is not generated

- CQ-ID:** Defdb00118953
Severity: K3 - malfunction (no workaround)
Description: When the redundant motor encoder has been set, the resolution of the external encoder is checked. If the resolution is too small, the transition command error "C0281 Commutation via encoder-2 impossible" is output. Due to the incorrect calculation of the resolution, the monitoring function did not trigger.

10.1.2 Motor control

F9003 when switching the PWM frequency from 12 to 8 kHz

- CQ-ID:** Defdb00119826
Severity: K4 - malfunction
Description: The drive crashed with "F9003 Watchdog" when the following operating sequence had been applied: In U/f operation, the drive was switched to OM (operating mode) with "P-0-0001, Switching frequency of the power output stage" = 12 KHz. Afterwards, the drive was switched to PM (parameter mode) again. In PM, "P-0-0001, Switching frequency of the power output stage" was set to 8 KHz and the drive was switched to OM again. The drive crashed and signaled F9003. After the control voltage had been switched off and on, the drive ran with 8 KHz.

10.1.3 _Other

"P-0-0100, Position command value extension" does not work with positive position polarity

- CQ-ID:** Defdb00140053
Severity: K3 - malfunction (no workaround)
Description: The parameter "P-0-0100, Position command value extension" did not take effect with positive position polarity.

"P-0-0152, Synchronization completed" sometimes not generated correctly

- CQ-ID:** Defdb00143353
Severity: K3 - malfunction (no workaround)
Description: In the operation mode "cyclic position control, drive-controlled", the end of the synchronization was not always displayed in the parameter "P-0-0152, Synchronization completed".

10.1.4 Axis control

"S-0-0349, Bipolar jerk limit" is incorrectly calculated with Drive Halt

- CQ-ID:** Defdb00139627
Severity: K4 - malfunction
Description: Internally, the parameter "S-0-0349, Bipolar jerk limit" was incorrectly calculated with Drive Halt in velocity control, the braking ramp was too short.

10.1.5 Brake

Test torque input for brake check

- CQ-ID:** Defdb00145193
Severity: K3 - malfunction (no workaround)
Description: When inputting the test torque, the load due to weight must be taken into account for axes without weight compensation. At the end of the first test step, the load due to weight had been taken into account too much so that an unnecessarily high test torque was input.

10.1.6 Diagnostic system

Circuit ist not interrupted after module group error reaction

- CQ-ID:** Defdb00135432
Severity: K3 - malfunction (no workaround)
Description: When the error reaction Power off in the case of non-fatal axis errors ("P-0-0118, Power supply, configuration", bit 7 = 1) had been configured in the converter, the circuit was not interrupted in the case of errors which were supposed to cause power off via the module bus. The Bb contact remained closed.

Warning E8260 with drive enable switched off

- CQ-ID:** Defdb00139123
Severity: K3 - malfunction (no workaround)
Description: When drive enable had been switched off, the warning "E8260 Torque/force command value limit active" sometimes kept being displayed. This was the case when drive enable had been removed with the warning being present, either by the occurrence of a fatal error or when torque disable had been set as the best possible deceleration.

10.1.7 Drive halt

"F2028 Excessive deviation" after Drive Halt has been activated

- CQ-ID:** Defdb00139514
Severity: K3 - malfunction (no workaround)
Description: When the operation mode "Drive Halt" had been activated, a command value jump occurred in the case of extremely high jerk values in "S-0-0349, Bipolar jerk limit"; this sometimes caused the error "F2028 Excessive deviation".

10.1.8 Master communication

TCl communication from Siemens PROFIBUS Master to IndraDrive Cs does not work

- CQ-ID:** Defdb00135155
Severity: K3 - malfunction (no workaround)
Description: It was impossible to establish the IndraWorks connection to the drive via the TCl interface.

10.1.9 Measuring wheel mode

Axis accelerates in an undefined way when measuring wheel mode is activated

- CQ-ID:** Defdb00134173
Severity: K3 - malfunction (no workaround)

Description: The axis accelerated in an undefined way when the measuring wheel mode had been activated in the operation mode "position control, drive-controlled (0x0305)".

10.1.10 Motor control

Error C0285 with MSM motor

CQ-ID: Defdb00144918

Severity: K3 - malfunction (no workaround)

Description: With MSM motors, the firmware sometimes did not recognize the motor. The drive signaled the error "C0285 Type of construction of motor P-0-4014 incorrect" when the checksum of the encoder data had been "0".

10.1.11 Oscilloscope feature

"P-0-0037, Oscilloscope: Internal trigger signal" is not generated

CQ-ID: Defdb00141962

Severity: K3 - malfunction (no workaround)

Fixing: The Boolean values of the parameters "P-0-0036, Oscilloscope: External trigger signal" and "P-0-0037, Oscilloscope: Internal trigger signal" are stored in a 16-bit value in the control unit.

11 Firmware-Release FWA-INDRV*-MPB-16V24-D5

11.1 Resolved defects

11.1.1 _Other

Incorrect behavior when operation mode activated and warning E2010 present

- CQ-ID:** Defdb00127440
- Severity:** K2 - serious malfunction
- Description:** When an operation mode had been activated in spite of the warning "E2010 Position control with encoder 2 not possible" being present, the axis moved in an undefined way.
- Fixing:** When no external encoder has been configured and the warning "E2010 Position control with encoder 2 not possible" is present, the motor encoder is used as control encoder when an operation mode is activated.

No error generated although effective master axis position incorrectly initialized

- CQ-ID:** Defdb00127493
- Severity:** K2 - serious malfunction
- Description:** When a synchronous operation mode is activated, "P-0-0776, Effective master axis position" is initialized in absolute form. For this purpose, "P-0-0775, Resulting master axis position" is multiplied with the electronic gear factor including fine adjustment. When the product of multiplication had been greater than $2^{31} - 1$ increments or smaller than -2^{31} increments, "P-0-0776, Effective master axis position" was incorrectly initialized.
- Fixing:** When the product of multiplication is greater than $2^{31} - 1$ increments or smaller than -2^{31} increments, the error "F6006 Incorrect initialization of effective master axis position" is generated.

PROFINET: The drive sporadically switches to AF

- CQ-ID:** Defdb00115870
- Severity:** K2 - serious malfunction
- Description:** When starting up, some controller send data telegrams with invalid content (data with value 0) and the data status "VALID". Due to the data that was incorrectly send to the controller, an 0->1 edge has been detected in the master communication control value and the drive is switched to "AF".
- Fixing:** The device now ignores the data that has been incorrectly set during the start up.

"P-0-4010, Load inertia" and "P-0-0510, Rotor inertia" are incorrectly converted

- CQ-ID:** Defdb00128238
- Severity:** K3 - malfunction (no workaround)
- Description:** The parameters "P-0-4010, Load inertia" and "P-0-0510, Rotor inertia" were incorrectly converted to the internal format.

11.1.2 Master communication

EtherCAT communication parameters are invalid

- CQ-ID:** Defdb00120672
- Severity:** K3 - malfunction (no workaround)

Description: When IndraDrive Cs devices had been supplied ex works with SERCOS III as master communication and master communication had been changed to EtherCAT, all master communication parameters were invalid. This resulted in the command error "C0202 Parameter block incomplete (->S-0-0423)". Only after the parameters had been set to valid via IndraWorks did the axis start up.

Fixing: Loading the default values using the command "C0750 Command load default values (default settings)" now sets all buffered parameters to default values even though they are part of a hardware that is currently not active in the device.

EtherCAT: Problem when reading of list parameters via the service channel

CQ-ID: Defdb00100824

Severity: K3 - malfunction (no workaround)

Description: List parameters of a length of exactly one integral multiple of 224 bytes (or 152 bytes), were incompletely transmitted when read via the EtherCAT parameter channel.

Master communication control/status word is incorrectly interpreted

CQ-ID: Defdb00120509

Severity: K3 - malfunction (no workaround)

Description: The master communication control/status word has to be at the first position to correctly process the MDT/AT data.

11.1.3 Motor control

"E8028 Overcurrent in power section"

CQ-ID: Defdb00127916

Severity: K3 - malfunction (no workaround)

Description: In case of Economy devices, overcurrents can sporadically occur in the motor. This resulted in the warning "E8028 Overcurrent in power section" or in the error "F8060 Overcurrent in power section".

"F9003 Watchdog" when switching to the operating phase

CQ-ID: Defdb00127088

Severity: K4 - malfunction

Description: When the drive had been switched from the parameter mode to the operating mode, the error "F9003 Watchdog" occurred sometimes. This happened under the condition that the drive had previously been in the operating mode already and the PWM frequency had been reduced in the parameter "P-0-0001, Switching frequency of the power output stage".

Workaround: Instead of carrying out the phase progression and phase regression, the drive can be rebooted.

Commutation problems with MPB16V20 and hall generator HALL-MCL-30-A1

CQ-ID: Defdb00127022

Severity: K4 - malfunction

Description: If the kinesthesia of a motor with analog hall generator ("S-0-0277, Position encoder type 1", bit 3) was negated, the commutation angle was calculated incorrectly. The motor could not be operated.

11.1.4 Parameter set switching

Loss of reference when only the parameter set of "control loop parameters" is switched

- CQ-ID:** Defdb00127901
- Severity:** K3 - malfunction (no workaround)
- Description:** When only the group of the control loop parameters had been active for parameter block switching (P-0-2216 = 0x0002), the reference at the motor was lost nevertheless.
- Fixing:** The motor encoder reference is retained if the group "Gear parameters" is disabled in case of parameter block switching.
- Workaround:** The error can be avoided in the functional package MSP, if the "load gear" group is additionally activated and the parameters of the gear group are entered as in set 0.

11.1.5 Parameters, basics

Parameter "S-0-0104, Position controller Kv factor" has an incorrect minimum value

- CQ-ID:** Defdb00127809
- Severity:** K5 - non critical problem
- Description:** The minimum value of "S-0-0104 Position controller Kv factor" was specified with "0,00" in the MPE firmware derivative, even though "0,00" is not a valid value.
- Fixing:** The minimum value of "S-0-0104, Position controller Kv factor" is "0,01" in case of the MPE firmware derivative.

11.1.6 _Other

Adjustment of motor temperature measurement extended

- CQ-ID:** Defdb00129644
- Severity:** K2 - serious malfunction
- Description:** The motor temperature display did not work exactly. In case of very sensitive sensors, the displayed temperatures were too high or too low. The defect monitoring sometimes did not work with these sensors either.

Command "Parking axis" does not work for CCD slaves

- CQ-ID:** Defdb00132387
- Severity:** K3 - malfunction (no workaround)
- Description:** If the "Parking axis" was enabled for a CCD slave in communication phase 2 and if subsequently the CCD master was switched to P4 or OM, the function "Parking axis" is exited in the CCD slave.
- Fixing:** If the "Parking axis" was enabled for a CCD slave in communication phase 2 and if subsequently the CCD master was switched to P4 or OM, the slave retains the state "Parking axis".

F8100 Voltage failure sporadically occurs during booting

- CQ-ID:** Defdb00135711
- Severity:** K3 - malfunction (no workaround)
- Description:** If a voltage failure occurs at a certain point during booting of the drive firmware, no retain data can be backed up and an error occurs "F8100 Error when initializing the parameter handling".

PROFINET: Individual axes do not go online or go online very late.

CQ-ID: Defdb00130026
Severity: K4 - malfunction
Description: PROFINET: Individual axes did not go online or went online very late.

11.1.7 Brake

The wire break monitoring of the brake cannot be disabled

CQ-ID: Defdb00130692
Severity: K4 - malfunction
Description: It was not possible to disable the wire break monitoring in case of an Open-Loop control.
Fixing: The defect has been resolved.

11.1.8 Diagnostic system

Incorrect diagnostic display in command "Load default values"

CQ-ID: Defdb00130166
Severity: K5 - non critical problem
Description: Number "C0700" was always displayed when executing the command "Load default values" in "S-0-0390, Diagnostic number".
Fixing: Now, the correct diagnostic number is displayed in S-0-0390, irrespective of the selected command:
Load default values (motor-spec. controller values) C0700
Load default values (default settings) C0750
Enable field bus profile settings C0740

11.1.9 Error reactions

Jerk filter does not take effect in the case of emergency stop with ramp and filter

CQ-ID: Defdb00128394
Severity: K3 - malfunction (no workaround)
Description: When the parameter "S-0-0138, Bipolar acceleration limit value" had been set to 0, the jerk filter did not work, even if the parameter "S-0-0429, Emergency halt deceleration" had been greater than 0.

11.1.10 Firmware update

Firmware update cannot always be completed successfully in the PROFINET FKM

CQ-ID: Defdb00131934
Severity: K4 - malfunction
Description: A firmware update could not always be completed successfully in case a PROFINET master communication was set in IndraWorks.

11.1.11 Master communication

Command value processing is not according to SERCOS III specification

CQ-ID: Defdb00122135
Severity: K3 - malfunction (no workaround)

- Description:** In the case of SERCOS III with CoSeMa timing model 1 (AT telegrams directly after the MDT telegrams), the command values were processed in the wrong position cycle time. This also blocked the oscilloscope function which is to start synchronously to the cycle in all IndraDrive devices.
- Fixing:** Due to the modification, command value processing is executed according to SERCOS III specification. However, this modification means that the command values are activated one SERCOS cycle later. To achieve consistent command value activation in the system, all firmware releases have to be updated to the latest release.
- Workaround:** Select a different timing model in the master and thereby increase "S-0-1007, SERCOS III: Measuring time actual values (t4)", increase synchronization point in time.

Control-side lag error monitor does not work with Advanced controller setting

- CQ-ID:** Defdb00130178
- Severity:** K3 - malfunction (no workaround)
- Description:** In the case of the operation mode "cyclic position control with cubic approximation" (S-0-0187 = 0x1), the position command value is output in the controller with a delay. The delay with relation to the point of time t4 takes effect one position cycle time too early. The comparison between position command value and actual position value in the control unit cannot correct the lag error, even if there is an offset by integral NC clocks.
- Fixing:** With cubic approximation, the position command value is additionally delayed in the controller by one position cycle time.

EtherNet/IP: Individual axes do not go online or go online very late

- CQ-ID:** Defdb00132732
- Severity:** K3 - malfunction (no workaround)
- Description:** EtherNet/IP: Individual axes did not go online or went online very late.

New data failure in CCon of the producer connection in case of too small t4min

- CQ-ID:** Defdb00123351
- Severity:** K3 - malfunction (no workaround)
- Description:** In case of high performance in the drive, the AT processing was sporadically only completed after the AT telegram has been sent. Consequently, the same content has been transmitted twice in the AT. Reason: A too small t4min which was shown in the drive in "S-0-1005, SERCOS III: Minimum time between t4 and t1 (t5)".
- Fixing:** The time t4min is now displayed with 155 us by the drive.

11.1.12 Om_positioning bloc mode

Operation mode "positioning block mode with block advance" does not work correctly

- CQ-ID:** Defdb00128823
- Severity:** K3 - malfunction (no workaround)
- Description:** In the operation mode "positioning block mode with block advance", the generated travel profile did not show the expected characteristic. The value of the parameter "S-0-0138, Bipolar acceleration limit value", taken into account for the calculation of the profile, had been too small so that switching to the next block took place too early.

11.1.13 Om_torque/force control

"Torque/force control" mode with active torque/force ramp does not work correctly

CQ-ID: Defdb00130151

Severity: K2 - serious malfunction

Description: When the "torque/force control" mode with active torque/force ramp had been used, the axis moved in an undefined way when negative torque/force polarity had been configured. This also occurred if the torque values were "S-0-0080, Torque/force command value" = 0 and "S-0-0081, Torque/Force command value additive" = 0.

-- Torque/Force polarity is negative ("S-0-0085, Torque/Force polarity parameter" bit 2...0 = 111) and

-- Torque/Force ramp is active ("S-0-0822, Torque/Force ramp" > 0 and "S-0-0823, Torque/Force ramp time" > 0)

11.1.14 Parameters, basics

P-0-0013 Maximum length too short for parameter set switching

CQ-ID: Defdb00128763

Severity: K3 - malfunction (no workaround)

Description: The parameter "P-0-0013, List of all IDNs not corresponding to default value" could display a maximum of 300 IDNs without error.

S/IP: Reading of P-0-2100.0.0 resulting in F9001 in case of MPE

CQ-ID: Defdb00134611

Severity: K4 - malfunction

Description: When reading the minimum value of parameter "P-0-2100, Velocity controller proportional amplification, encoder memory" via S/IP communication, a processor exception was reported ("F9001 Error in internal function call").

11.1.15 IndraDrive HCQ/T Firmware / Compensations/Corrections

Reversal clearance is activated in the wrong direction by overshooting in the command value input

CQ-ID: Defdb00132005

Severity: K3 - malfunction (no workaround)

Description: When a cyclic position command value is input by a control unit (MTX), the command value sometimes overshoots for one clock. When this happens, the position which is output is beyond the target position. The target position is set in the next cycle. The axis travels in the reversed direction of travel.

The command velocity of the control command value is interpreted as direction of interpolation in the drive. The direction is e.g. used to enable the backlash.

Due to the control overshoot, the drive detects a change of direction and the backlash cannot be calculated correctly.

Fixing: The drive only evaluates a change in direction, when this change is present for 2 clocks. A one-time exception will be ignored.

11.1.16 IndraDrive HCQ/T Firmware / Parameters, basics

Basic device parameters lost when updating from MPx16 to MPx17

- CQ-ID:** Defdb00135341
Severity: K2 - serious malfunction
Description: Due to an error in MPx16, the basic device parameters in individual cases were sometimes lost when MPx16 had been upgraded to MPx17.

11.2 Functional enhancements

11.2.1 Motor control

The parameter P-0-0578 was incorrectly not write-protected in OM

- CQ-ID:** Defdb00134613
Severity: K3 - malfunction (no workaround)
Description: The parameter "P-0-0578, Deceleration current, value" was not read-only in PM and OM. The fact that the parameter was not read-only in OM was incorrect.
Enhancement: The parameter P-0-0578 can only be changed in PM.

12 Firmware-Release FWA-INDRV*-MPB-16V22-D5

12.1 Resolved defects

12.1.1 Brake

Temporary control voltage failure with STO/SBC: Brake not immediately applied with torque disable

CQ-ID: Defdb00127323

Severity: K2 - serious malfunction

Description: When the supply voltage (24V) had temporarily dropped with safety technology (L4) being active, the error "F8070 +24Volt DC error" was generated, but the brake was not activated.

13 Firmware-Release FWA-INDRV*-MPB-16V20-D5

13.1 Resolved defects

13.1.1 _Other

V18: F2026 in the case of axis simulation

CQ-ID: Defdb00119055
Severity: K3 - malfunction (no workaround)
Description: In the simulation mode, the error "F2026 Undervoltage in power section" was sometimes output by mistake.

V18: F8091 and loss of basic device parameters during firmware downgrade

CQ-ID: Defdb00119906
Severity: K3 - malfunction (no workaround)
Description: The parameters "P-0-3902, Command values for power section adjustment" and "P-0-3903, Adjustment values of power section" were correctly written and saved in MPx17 for IndraDrive W54 devices or HCP02.1 drive controllers. The downgrade to MPx16 and the subsequent update to MPx17 caused these two parameters to be lost. The error "F8091 Power section defective" was signaled.

V18: LowByte and HighByte interchanged in the case of indexed access to parameter

CQ-ID: Defdb00118402
Severity: K3 - malfunction (no workaround)
Description: When a list parameter of 2 bytes length had been read via the multiplex channel, the HighByte and LowByte were interchanged in the transmission.

V18: E8057 is still present after drive enable has been switched off

CQ-ID: Defdb00115687
Severity: K4 - malfunction
Description: When the warning "E8057 Device overload, current limit active" had been present and drive enable had been switched off externally or by an error, the message sometimes remained present until the next time drive enable was switched on.

13.1.2 Analog input/output

V18: Analog channel assignment does not remove write protection

CQ-ID: Defdb00119731
Severity: K5 - non critical problem
Description: When a parameter had been entered for analog channel assignment (e.g. "S-0-0091, Bipolar velocity limit value" entered in "P-0-0213, Analog input, assignment A, target parameter"), the write protection was activated. When the assignment had been removed immediately afterwards (e.g. "S-0-0000, Dummy parameter" entered in P-0-0213), the write protection nevertheless remained.

13.1.3 Control panel

V18: Terminating easy startup mode via display causes F9003

CQ-ID: Defdb00115556

- Severity:** K4 - malfunction
- Description:** When the easy startup mode had been deactivated via the control panel of an Economy control section, "F9003 Watchdog" occurred.
- Workaround:** Activate and deactivate the easy startup mode via IndraWorks.

13.1.4 Firmware update

V18: Repeated update via TFTP is impossible after communication aborted during an update

- CQ-ID:** Defdb00119064
- Severity:** K4 - malfunction
- Description:** When the communication had been aborted during the firmware update, it was impossible to repeat the update. The drive signaled the error "05: Internal flash access error (driver assign)". Other flash accesses did not work either.

13.1.5 Limitations/monitoring

V20: Dynamic current limitation of amplifier does not work

- CQ-ID:** Defdb00120460
- Severity:** K2 - serious malfunction
- Description:** Due to incorrect initializations of the dynamic current limitation, the peak current was sometimes flowing for an inadmissibly long time. The device risked being destroyed. The error only occurred in MPB16V18.

V18: Incorrect "quick stop"

- CQ-ID:** Defdb00116888
- Severity:** K4 - malfunction
- Description:** When drive enable had been switched off by safety technology and in the case of the drive-controlled stopping process triggered by safety technology, the values were not switched to the machine limitation, but the process values "S-0-0082, Torque/force limit value positive", "S-0-0083, Torque/force limit value negative" and "S-0-0092, Bipolar torque/force limit value" still took effect.

13.1.6 Master communication

V18: F4009 when Ethernet line removed

- CQ-ID:** Defdb00116949
- Severity:** K3 - malfunction (no workaround)
- Description:** When the Ethernet line had been removed at the drive, "F4009 Bus failure" was generated. The error F4009 may only be generated at the drive when the PROFINET connection is interrupted (Ethernet line removed) in cyclic communication.

V18: F4011 with overload of the MultiEthernet Interface

- CQ-ID:** Defdb00119711
- Severity:** K3 - malfunction (no workaround)
- Description:** When the MultiEthernet Interface had not been able to transmit any MDT data to the drive due to overload problems, the error "F4011 Communication watchdog: Overload of cyclic communication" was displayed.

V18: F4012 not displayed in the case of configuration differences between Controller and IndraDrive

CQ-ID: Defdb00119138
Severity: K3 - malfunction (no workaround)
Description: Diagnostic message "F4012 Incorrect I/O length" was missing in the case of I/O configuration differences between Controller and Device.

V18: PROFINET device name P-0-4089.0.2 is not stored

CQ-ID: Defdb00119141
Severity: K3 - malfunction (no workaround)
Description: With a volatile memory (S-0-0269 == 1), the PROFINET device name (P-0-4089.0.2) was not stored.

V18: P-0-4089.0.1 shows inadmissible value

CQ-ID: Defdb00117056
Severity: K4 - malfunction
Description: With IndraDrive Cs Economy, the value "22" instead of the external value "6" was displayed for SERCOS III (P-0-4089.0.1, Master communication: Protocol).

13.1.7 Measuring wheel mode

V18: E2074/E2075 with "set absolute position procedure" command

CQ-ID: Defdb00115283
Severity: K3 - malfunction (no workaround)
Description: In the case of multiple evaluation of an encoder (EnDat or HIPERFACE), the warning "E2074 Encoder 1: Encoder signals disturbed" or "E2075 Encoder 2: Encoder signals disturbed" (absolute encoder monitoring) was sometimes generated, when the command "set absolute position procedure" had been executed.
Workaround: Deactivate absolute encoder monitoring by setting bit 15 of the position feedback type parameters:
Motor encoder: "S-0-0277, Position feedback 1 type", set bit 15 to "1"
Optional encoder: "S-0-0115, Position feedback 2 type", set bit 15 to "1"
Measuring encoder: "P-0-0328, Type of position encoder for measuring encoder", set bit 15 to "1"

13.1.8 Motor control

V18: Continuous current reduced too late

CQ-ID: Defdb00117728
Severity: K3 - malfunction (no workaround)
Description: In U/f operation or FXC operation, the continuous current was reduced too late to the continuous current at standstill (at a too low speed). This caused a higher thermal load to the output stage. Thus, it was sometimes damaged.

V18: No velocity search mode for U/f operation

CQ-ID: Defdb00111145
Severity: K3 - malfunction (no workaround)
Description: The velocity search mode had been deactivated.

13.1.9 Om_cam mode

V18: P-0-0086, bit 7, must not be changed in OM

CQ-ID: Defdb00119500

Severity: K4 - malfunction

Description: When the bit 7 "Cam table interpolation type" of "P-0-0086, Configuration word synchronous operation modes" had been changed in OM, AB, AF after the cam parameters had been loaded, this caused an erratic behavior in the operation mode "electronic cam" or "MotionProfile".

13.1.10 Om_velocity control

V18: PROFINET: Profile type FF82, operation mode monitoring inactive

CQ-ID: Defdb00119068

Severity: K4 - malfunction

Description: Only the positioning block mode should be allowed with PROFINET and profile FF82. By mistake, it was possible to set other operation modes, e.g. velocity control, without an error being output when switching to the operating mode.

13.1.11 Power Supply

V18: "F2818 Phase failure" in the case of temporary mains failure

CQ-ID: Defdb00120302

Severity: K4 - malfunction

Description: When the mains had been switched off and on again via three phases without the repeated soft start being necessary, the error "F2818 Phase failure" was generated by mistake.

13.2 Functional enhancements

13.2.1 Diagnostic system

V18: Extension SERCOS III GDP

CQ-ID: Defdb00115934

Severity: K6 - functional enhancement

Description: The implementation of the basic functions for SERCOS III GDP was completed.

13.2.2 Master communication

V18: MultiEthernet interface: Configuration error in the case of incorrect device name

CQ-ID: Defdb00115175

Severity: K3 - malfunction (no workaround)

Description: When the device name had contained incorrect characters, a configuration error (H30 flashing red/green) was signaled in the case of communication via MultiEthernet interface.

Enhancement: Comply with the following DNS conventions for the device name:

- Limited to a max. of 240 characters (letters, numerals, hyphen or dot)
- A part within the device name, i.e. a string between two dots, must not be longer than a max. of 63 characters.

- No special characters ("umlaut", bracket, underscore, slash, blank, etc.). The hyphen is the only special character allowed.
- The device name must neither begin nor end with the "-" character.
- The device name must not have the form n.n.n.n (n = 0...999).
- The device name must not begin with the string "port-xyz-" (x,y,z = 0...9).

13.2.3 Measuring systems (mechanical axis system)

V18: SEW motor with HIPERFACE encoder at IndraDrive

CQ-ID:	Defdb00120135
Severity:	K6 - functional enhancement
Description:	In the case of HIPERFACE encoders with an offset between the incremental tracks and absolute tracks, the error "C0220 Error when initializing position of encoder 1" occurred during position initialization.
Enhancement:	When there is an offset between the tracks, it is possible, via bit 14 of the position feedback type parameters, to parameterize the initialization by means of the absolute position, without fine correction, via the incremental track.

14 Firmware-Release FWA-INDRV*-MPB-16V16-D5

14.1 Resolved defects

14.1.1 Limitations/monitoring

Positive position limit value without effect

CQ-ID: Defdb00116041

Severity: K3 - malfunction (no workaround)

Description: When limit switch monitoring had been switched off and the limit switches had been parameterized as N/C contacts, the warning E8029 was generated when the drive had passed the positive position limit value (S-0-0049); the drive did not stop. It was still possible to move in positive direction, but it was no longer possible to move in negative direction.

14.1.2 Oscilloscope feature

Lists of measured oscilloscope values are empty after triggering

CQ-ID: Defdb00115059

Severity: K4 - malfunction

Description: SERCOS III: In phase 4, the oscilloscope cannot be started before the start of the master connections.

Workaround: SERCOS III: In phase 4, first start the master connections and then the oscilloscope.

15 Firmware-Release FWA-INDRV*-MPB-16V14-D5

15.1 Resolved defects

15.1.1 _Other

C2302 due to invalid parameters

- CQ-ID:** Defdb00114150
- Severity:** K3 - malfunction (no workaround)
- Description:** When parameters with the data status "invalid" had been available and "C2300 Load working memory procedure command" was started, the command was aborted with the error message "C2302 Error when converting parameters". It wasn't clear which parameters caused the error.
- Fixing:** When an error occurs, "C2301 Error when reading non-volatile memory" or C2302 is displayed; the command, however, is continued until all parameters have been loaded. The parameters which caused the error are entered in parameter "S-0-0423, IDN-list of invalid data for parameterization levels".

Axis motion when drive enable is switched on without command value input

- CQ-ID:** Defdb00115051
- Severity:** K4 - malfunction
- Description:** When drive enable had been switched on, a short axis motion occurred sometimes without a command value having been input by the control unit. This axis motion occurred when the encoder had a high velocity noise and the synchronization acceleration (P-0-0142) had been parameterized with a low value. The acceleration internally used for calculation was too low by the factor 8.

EtherCAT: Write-protected parameters can be changed in AF

- CQ-ID:** Defdb00099617
- Severity:** K4 - malfunction
- Description:** Parameters which are write-protected in OM (e.g. "P-0-4035, Thermal time constant of motor") could be written or changed in OM via the EtherCAT SoE parameter channel. Parameters which can only be changed in P0/P2 were not affected.

15.1.2 Analog input/output

When C2800 is started via display, the analog adjustment does not work

- CQ-ID:** Defdb00111408
- Severity:** K5 - non critical problem
- Description:** The adjustment for the analog input assignment via "C2800 Analog input adjustment command" did not work. The zero point adjustment did not work either, when C2800 had been executed via the control panel.

15.1.3 Axis control

MC_Power does not lead to drive enable

- CQ-ID:** Defdb00113987
- Severity:** K4 - malfunction
- Description:** Axis has stopped and signals error "F2028 Excessive deviation", for example. After "clear error", the error bit 13 in "S-0-0135, Drive status word" was reset.

When another drive error had been detected during the error clearing procedure, "S-0-0390, Diagnostic message number" sometimes signaled the error, but the error bit in "S-0-0135, Drive status word" had not been set. It was impossible to switch drive enable on.

Workaround: When "clear error" is carried out again, the diagnostic message number is cleared.

15.1.4 Control panel

Max. velocity not applied to P-0-1206 with the "easy startup" mode

CQ-ID: Defdb00105108

Severity: K4 - malfunction

Description: When the "easy startup" mode had been started via the display, the max. velocity 1x "S-0-0091, Bipolar velocity limit value" was not applied to the parameter "P-0-1206, Memory of velocity command values" by pressing the Enter key.

Workaround: Before confirming (Enter key), enter the value in P-0-1206 via the Up/Down key.

15.1.5 Drive halt

Drive Halt with P-0-0558, bit 0, in velocity control

CQ-ID: Defdb00115133

Severity: K2 - serious malfunction

Description: Drive Halt as operational stop ("P-0-0558, Drive Halt configuration"; bit 0 = "1") in velocity control mode did not lock the additive velocity command value (S-0-0037, Additive velocity command value). The "AF" display of the control panel was wrong.

Fixing: In the case of Drive Halt "operational stop", the additive velocity command value is not applied. The display shows AH.

15.1.6 Establishing the position data reference

Loss of reference after phase switch

CQ-ID: Defdb00113985

Severity: K3 - malfunction (no workaround)

Description: When an encoder gear had been activated and the bit 14 had not been set in "P-0-0522 Control word for commutation setting", the error "F2174 Loss of motor encoder reference" was generated with every switching from PM->OM in the case of active absolute encoder evaluation.

C0270 with HIPERFACE encoder

CQ-ID: Defdb00116978

Severity: K5 - non critical problem

Description: When a HIPERFACE encoder had been used, which was not of the SKS or SKM type and was manufactured after the date of manufacture 11/2008, the initialization error "C0270 Error when reading encoder data => motor encoder" occurred.

15.1.7 Master communication

PROFIBUS: E0800 instead of F4009 when bus connector is removed

CQ-ID: Defdb00115298

- Severity:** K3 - malfunction (no workaround)
- Description:** When the writing of a big list, e.g. "P-0-0072, Cam table 1", via the PROFIBUS parameter channel had been interrupted by removing the bus connector, this sometimes caused the error E0800 instead of "F4009 Bus failure".

15.1.8 Measuring systems (mechanical axis system)

P-0-0045, bit 0, is overwritten by encoder feedback memory

- CQ-ID:** Defdb00115144
- Severity:** K2 - serious malfunction
- Description:** In synchronous motors of the IndraDyn line as of encoder memory version 4.4, the motor encoder memory contains the parameters for the use and activation of field weakening. If a motor with the motor-type-specific field weakening parameter values had been supplied, the encoder memory contained an information which caused field weakening to be activated in the drive. If a motor had been supplied with only the default field weakening parameter values, this activation information was missing. During the progression to OM, field weakening was automatically activated or deactivated according to the information in the encoder memory, even if field weakening in PM had been changed by the customer as compared to the encoder memory data, e.g. by importing a parameter file with default values. This sometimes caused incorrect control behavior of the motor, when field weakening had been activated, but no correct control parameter values had been available.
- Fixing:** For synchronous motors of the IndraDyn line as of encoder memory version 4.4, the bit 0 in "P-0-0045, Control word of current controller" is only changed at the execution of the command "C07_0, Load defaults procedure com. (load controller param.)". For motors with an encoder memory version smaller than 4.4, the bit is not changed.
- Workaround:** When you intend to use field weakening, make sure that the motor-type-specific values of the field weakening parameters (P-0-0533...P-0-0536) are available in the drive and bit 0 von P-0-0045 has been activated.

Position offset in the case of a measuring encoder with absolute encoder range

- CQ-ID:** Defdb00114128
- Severity:** K2 - serious malfunction
- Description:** With modulo-scaled measuring encoders, i.e. the parameter "P-0-0765, Modulo factor measuring encoder" is greater than "0", the parameter "P-0-0052, Actual position value of measuring encoder" sometimes was incorrectly initialized, when the modulo value of the measuring encoder ($P-0-0765 * 2^{P-0084}$ increments) was greater than or equal to 2^{30} increments.

15.1.9 Motor control

Commutation setting saturation method: No moving back

- CQ-ID:** Defdb00115638
- Severity:** K3 - malfunction (no workaround)
- Description:** After the command "C1200 Commutation offset setting command" has been executed, or in the case of the automatic determination of the commutation offset when drive enable is switched on, the drive, upon successful commutation offset determination, is to be at approximately the same position as before the offset determination. For this purpose, the axis is actively moved to the position it had before the start of the function. This moving back did not work, when the saturation method had been set for the determination. The

drive behaved as if the moving back had been switched off in parameter "P-0-0522, Control word for commutation setting".

Motor at standstill is not recognized at a rotational frequency of ± 2 Hz -> no reduction to 115%!

CQ-ID: Defdb00110660
Severity: K3 - malfunction (no workaround)
Description: The stronger reduction of the current at standstill of the motor only took effect at 0.2 Hz instead of at 2 Hz, as required.

15.1.10 Parameters, basics

Incorrect display of P-0-4089.0.1

CQ-ID: Defdb00113854
Severity: K5 - non critical problem
Description: With SERCOS III, the value "6" instead of the value "22" was displayed in "P-0-4089.0.1, Master communication: Protocol".

Unit missing in S-0-1006

CQ-ID: Defdb00114152
Severity: K5 - non critical problem
Description: For the parameter "S-0-1006, SERCOS III: AT0 transmission starting time (t1)", the unit was missing.

15.1.11 Power Supply

Change in the default value in P-0-0118

CQ-ID: Defdb00115595
Severity: K4 - malfunction
Description: The default value of "P-0-0118, Power supply, configuration" in MPx1x no longer was the one of MPx0x. This change was undone; power off only takes place in the case of errors of the supply unit.

15.2 Functional enhancements

15.2.1 _Other

Command value generator deactivated

CQ-ID: Defdb00114972
Severity: K3 - malfunction (no workaround)
Description: When the command value generator control word is written with the value "0", the command value generator is immediately deactivated. The value before contained in the target parameter was not cleared so that the drive continued moving with this command value.

Cosine signal is set with the drive command value generator

CQ-ID: Defdb00115054
Severity: K6 - functional enhancement
Description: When a current command value or torque command value had been selected, a cosine signal was automatically set with the sine generator. When a velocity command value or position command value had been selected, a sine signal was always set.

Enhancement: When the signal selection is not active, the setting in the control parameter "P-0-1153, Command value generator, control word", bit 9, can be switched to a cosine signal.

15.2.2 Parameter set switching

Parameter set switching in the Servo and Sync package

CQ-ID: Defdb00093602

Severity: K6 - functional enhancement

Description: In the Servo and Sync package, it is impossible to switch quickly between two controller settings.

Enhancement: To switch quickly between two controller settings in the Servo and Sync package, the parameter set switching now is also available in these packages. You can select the groups "control loop parameters" and "application parameters" for switching.

16 Firmware-Release FWA-INDRV*-MPB-16V12-D5

16.1 Resolved defects

16.1.1 _Other

EtherNet/IP: Sporadically outdated process data

CQ-ID: Defdb00111131
Severity: K2 - serious malfunction
Description: IndraDrive sporadically transmitted outdated process data to the EtherNet/IP scanner.

Sporadic EtherNet/IP node failure in the case of line structure with 4 axes and 1 FlexIO

CQ-ID: Defdb00108826
Severity: K2 - serious malfunction
Description: The network topology "line structure" was impossible with EtherNet/IP.

"Engineering over IP" causes error F9002

CQ-ID: Defdb00111604
Severity: K3 - malfunction (no workaround)
Description: High network load with "Engineering over IP" sometimes caused the error "F9002 Error internal RTOS function call".

EtherNet/IP master communication not interrupted when MDT length reduced

CQ-ID: Defdb00110173
Severity: K3 - malfunction (no workaround)
Description: The configuration of the parameters to be cyclically transmitted can be changed in PM. The new process data configuration was not applied during the switching to OM. It was possible for IndraDrive to continue communicating with the EtherNet/IP scanner via the old process data configuration.

MAC addresses are not displayed with SERCOS

CQ-ID: Defdb00112402
Severity: K3 - malfunction (no workaround)
Description: With SERCOS III and deactivated card, the MAC addresses of the MultiEthernet interface (P-0-4089.0.10, -.11, -.12) were not displayed.

Mains measurement takes too long

CQ-ID: Defdb00111031
Severity: K3 - malfunction (no workaround)
Description: When IndraDrive Cs had been operated at the maximum allowed mains voltage, the braking resistor was sometimes overloaded when the mains voltage was switched on for the first time. This was caused by the braking resistor control, due to the system, after the control voltage had been switched on.

PROFINET IO and EtherNet/IP: LED H24 does not flash when bus is interrupted

CQ-ID: Defdb00108015
Severity: K3 - malfunction (no workaround)
Description: When a bus interruption had been detected with PROFINET or EtherNet/IP, IndraDrive Cs did not signal this via the H24 LED.

Sporadic failure of IP communication

CQ-ID: Defdb00111047
Severity: K3 - malfunction (no workaround)
Description: The IP communication sporadically failed with IndraDrive Cs.

Warning E8819 is not cleared

CQ-ID: Defdb00108033
Severity: K3 - malfunction (no workaround)
Description: When the warning "E8819 Mains failure" had been present and drive enable had not been removed, but the mains had been switched on again, the warning E8819 persisted.

C0244 with parking axis and modulo scaling

CQ-ID: Defdb00105783
Severity: K4 - malfunction
Description: With the "parking axis" command, the calculation for modulo limitation was carried out. This sometimes caused "C0244 Act. modulo value cycle greater than max. travel range".

Error when switching to P4 when probe enable had been set

CQ-ID: Defdb00107681
Severity: K4 - malfunction
Description: When "S-0-0405, Probe 1 enable" and/or "S-0-0406, Probe 2 enable" had been statically set to "1" via a digital input, "C0203 Parameter conversion error (->S-0-0423)" occurred during phase switch.
Fixing: The defect has been resolved.

EtherNet/IP: Communication impossible with MDT > AT

CQ-ID: Defdb00110170
Severity: K4 - malfunction
Description: The actual value data channel (P-0-4080) and the command value data channel (P-0-4081) had to have the same length. When the length differed, it was impossible to establish the connection between IndraDrive Cs and the EtherNet/IP scanner.

Invalid encoder parameters with MSM motor

CQ-ID: Defdb00108220
Severity: K4 - malfunction
Description: The encoder parameters P-0-1000 and P-0-1001 were correctly read from the MSM motor, but displayed as invalid.

Profibus_DP, parameter channel: List is set to actual length ="0"

CQ-ID: Defdb00111462
Severity: K4 - malfunction
Description: If a list parameter had been partly written via the field bus, the list length was set to "0" when the parameter was enabled.

16.1.2 Axis control

F2028 with hybrid position control

- CQ-ID:** Defdb00111134
Severity: K3 - malfunction (no workaround)
Description: With hybrid position control, the error "F2028 Excessive deviation" was sometimes generated after drive enable had been switched on for the first time. During the brake delay time, the drive showed an undefined speed command value.

16.1.3 Control panel

Incorrect running text output when opening the extended menu

- CQ-ID:** Defdb00109017
Severity: K4 - malfunction
Description: When you tried to open the extended menu during a warning/error message which could not be cleared, there were errors in the running text output. The last letter which had been output was permanently output. If you changed to the easy menu and back again with the ENTER key when a warning/error message (running text output) had been present, the running text was stopped.

16.1.4 Diagnostic system

P-0-1515 is not displayed

- CQ-ID:** Defdb00110204
Severity: K4 - malfunction
Description: It was possible to enter the parameter "P-0-1515, Circuit board code carrier board", but it was not displayed after a reboot.

Error memory power section activated

- CQ-ID:** Defdb00110261
Severity: K6 - functional enhancement
Description: The parameter "P-0-0194, Error memory power section" was contained in the firmware, but did not display any data.

16.1.5 Digital inputs/outputs

Problems when writing P-0-0300

- CQ-ID:** Defdb00104294
Severity: K5 - non critical problem
Description: The parameter "P-0-0300, Digital inputs, assignment list" must always have a defined number of elements. When less elements had been written, the message "Operation data transmission too short" was generated.

16.1.6 Error reactions

Inadmissible values can be entered in P-0-0119

- CQ-ID:** Defdb00108196
Severity: K3 - malfunction (no workaround)
Description: It was possible to enter inadmissible combinations for "P-0-0119, Best possible deceleration".

16.1.7 Establishing the position data reference

Position actual value in actual value cycle is incorrectly determined

- CQ-ID:** Defdb00110504
- Severity:** K3 - malfunction (no workaround)
- Description:** When the encoder replacement monitoring had been deactivated (S-0-0277, bit 13) and the absolute encoder range was an integer multiple of the modulo value (S-0-0103), the position actual value in actual value cycle was incorrectly determined in the case of encoder replacement.

16.1.8 Master communication

Error during synchronization to master communication

- CQ-ID:** Defdb00109158
- Severity:** K3 - malfunction (no workaround)
- Description:** With synchronous master communications (SERCOS III), the error message "C0251 Error during synchronization to master communication" was sporadically output.
- Fixing:** The different performance settings had not been taken into account in the PLL so that the PLL worked too slowly.

EtherNet/IP: Drive sporadically does not go online in the case of bus run-up

- CQ-ID:** Defdb00112404
- Severity:** K3 - malfunction (no workaround)
- Description:** The drive sporadically did not go online at the EtherNet/IP network. A double IP address was detected, although there hadn't been any other node with this IP address in the network.

Sampling time for position values (T4) not complied with

- CQ-ID:** Defdb00111549
- Severity:** K3 - malfunction (no workaround)
- Description:** The sampling of the actual position values, defined by T4, was not correctly processed. This caused a time offset of approx. 20usec.

SERCOS III: Real-time control bits cannot be cleared

- CQ-ID:** Defdb00098471
- Severity:** K3 - malfunction (no workaround)
- Description:** The real-time control bits of a SERCOS III connection could be set but not cleared.

Change in master communication cycle time is not applied at first run-up

- CQ-ID:** Defdb00108652
- Severity:** K4 - malfunction
- Description:** When the cycle time had been changed via the master communication (e.g. SERCOS III), the internal generator cycle time was not changed. Therefore, the parameters related to the generator clock (velocity, acceleration, jerk) were incorrectly calculated. The interpolation modes used wrong values.
- Workaround:** A second run-up with the same cycle time makes sure that the changes are correctly applied.

Multiplex channel must be initialized with SERCOS master communication

CQ-ID: Defdb00099449
Severity: K4 - malfunction
Description: With SERCOS master communication, the multiplex channel was not initialized in the transition command 2->3, S-0-0127, but during the PM->OM switching.

C0251 - switching error with analog devices

CQ-ID: Defdb00093122
Severity: K5 - non critical problem
Description: With CSB control sections with open-loop characteristic (option FC), the command switching error "C0251 Error during synchronization to master communication" was sporadically generated when the drive had been started.

16.1.9 Motor control

Overcurrent message E8028 or F8060 can occur with MSM motors

CQ-ID: Defdb00110672
Severity: K2 - serious malfunction
Description: With MSM motors MSM0x1, higher oscillation occurred in the actual current. The overcurrent message "E8028 Overcurrent in power section" or "F8060 Overcurrent in power section" (output stage locked) occurred sometimes, mainly during deceleration.
Fixing: The control behavior of the motors was improved. The current now oscillates less and no longer reaches the thresholds of the overcurrent messages.

Commutation angle of MSM motors is wrong

CQ-ID: Defdb00111157
Severity: K3 - malfunction (no workaround)
Description: For MSM motors of the MSM0x0 line, the commutation offset had been wrongly set by approx. 15%. This caused torque loss and stronger oscillation in the current.

FOCsl standstill message is incorrectly generated in velocity loop

CQ-ID: Defdb00087846
Severity: K3 - malfunction (no workaround)
Description: Internally, the control mode in P-0-0045 was incorrectly evaluated. This sometimes caused malfunctions in the control modes FXC and FOCsl.

16.1.10 Om_drive-internal interpolation

Parameter read function is wrong for acceleration with ramp time

CQ-ID: Defdb00108915
Severity: K5 - non critical problem
Description: When the scaling of the acceleration had been set to ramp time, the reading of acceleration data with individual read function did not work, e.g. acceleration feedback value (S-0-0164).

16.1.11 Parameters, basics

F9001 when encoder data are written in encoder memory

CQ-ID: Defdb00110606

- Severity:** K3 - malfunction (no workaround)
Description: When encoder data had been written by means of the master password, the system crashed, "F9001 Error internal function call".

Loading of basic parameters runs in parallel with "C0200 Exit parameterization level procedure command"

- CQ-ID:** Defdb00088712
Severity: K5 - non critical problem
Description: When the boot message "PL" was acknowledged with the ESC key immediately after it had appeared on the display, the message disappeared, but the command "C0700 Load defaults procedure com. (load controller param.)" possibly was not executed.

16.2 Functional enhancements

16.2.1 _Other

EtherCat: Command change bit supported in S-0-0135

- CQ-ID:** Defdb00099341
Severity: K5 - non critical problem
Description: The command change bit in the drive status word (S-0-0135) was described as "not used" in the SoE specification, because command changes in this case are signaled by a specific "Notify SSC Command Execution" telegram. For reasons of compatibility (with Sercos II), the command change bit in the status word is supported again.

Master password

- CQ-ID:** Defdb00111552
Severity: K5 - non critical problem
Description: A new master password was defined.

16.2.2 Axis control

Unipolar torque/force limitation for total command torque

- CQ-ID:** Defdb00107697
Severity: K6 - functional enhancement
Description: In the drive firmware, the component of the torque/force command values resulting from the acceleration feedforward was only limited by the bipolar torque/force limit value parameters S-0-0092 and P-0-0109. The unipolar torque/force limit value parameters S-0-0082 and S-0-0083 were not taken into account for the limitation of this component.
Enhancement: With bit 14 of the parameter "P-0-0556, Config word of axis controller", the unipolar torque limitation S-0-0082 and S-0-0083 can be activated for acceleration feedforward, too.

16.2.3 Motor control

Determination of commutation offset - saturation method

- CQ-ID:** Defdb00096212
Severity: K6 - functional enhancement

Description: The voltage value and frequency value determined for the saturation method during initial commissioning can sometimes cause the error message "C1218 Automatic commutation: Current too low".

Enhancement: The iteration now is always active. It starts with the stored voltage value and frequency value.

16.2.4 Oscilloscope feature

CCD system mode: Problems after changes from signal trigger to manual trigger

CQ-ID: Defdb00110623

Severity: K4 - malfunction

Description: P-0-0036 is used both for triggering the manual trigger and for synchronizing the axes. Therefore, the time offset between the internal and external trigger signal was not measured correctly in the master (triggering axis) and triggering sporadically did not work.

17 Firmware-Release FWA-INDRV*-MPB-16V10-D5

17.1 Resolved defects

17.1.1 _Other

Data transmission after "mains on" of the drive

- CQ-ID:** Defdb00105562
Severity: K2 - serious malfunction
Description: When the drive is switched off and on again in IO data exchange (PROFINET), the master must be switched to "PLC Run" twice.
This also applies when the control unit is switched off and on again together with the drive; in this case, the PLC must be switched to "Run" twice.

PROFINET IO: Abortion during firmware download

- CQ-ID:** Defdb00105560
Severity: K2 - serious malfunction
Description: In the case of high mains load (during firmware download, for example), the error "F9002 Error internal RTOS function call" was triggered in the drive.

PROFINET IO: Data transmission after mains interruption has been repaired

- CQ-ID:** Defdb00105561
Severity: K2 - serious malfunction
Description: After bus interruption and bus restart, the IO data are only applied when the PLC was switched to "Run" twice.

PROFINET IO: Drive signals station failure

- CQ-ID:** Defdb00105558
Severity: K2 - serious malfunction
Description: During cyclic data exchange, the error "F4009 Bus failure" occurred sporadically. Siemens S7 signals station failure for the corresponding drive.

F4009 is not triggered

- CQ-ID:** Defdb00093025
Severity: K3 - malfunction (no workaround)
Description: When SERCOS phase 0 had been set under drive enable (drive has torque), "F4009 Bus failure" was not triggered.

Clicking noise with the FXC method for synchronous motors

- CQ-ID:** Defdb00109371
Severity: K3 - malfunction (no workaround)
Description: Due to an internal timing problem, there sometimes was a clearly audible clicking noise during operation when synchronous motors had been controlled with FXC.

Parameter channel PROFIBUS-DP

- CQ-ID:** Defdb00096600
Severity: K3 - malfunction (no workaround)

- Description:**
1. In the parameter "S-0-0192, IDN-list of all backup operation data", the IDN "P-0-4079, Field bus: Baud rate" was contained by mistake.
 2. The Parameter "P-0-2207, Drive Off delay time, type plate" could only be modified with master password.

17.1.2 Axis control

Incorrect initialization of position command value delay

- CQ-ID:** Defdb00104636
- Severity:** K3 - malfunction (no workaround)
- Description:** When the position command value system is generated from the actual value system during interpolation, the command value delay is not taken into account which causes a jump in position.

17.1.3 Brake

C3900 does not work in every operation mode after switch-on

- CQ-ID:** Defdb00105574
- Severity:** K3 - malfunction (no workaround)
- Description:** When control voltage had been switched on and the command "C3900 Command Brake resurfacing" was started in a torque- or position-controlled operation mode, the command was not executed.

17.1.4 Control panel

Faulty password protection

- CQ-ID:** Defdb00106266
- Severity:** K3 - malfunction (no workaround)
- Description:** In spite of password protection for easy startup mode and transition command, it was possible to start commands via the control panel.

17.1.5 Diagnostic system

S-0-1035 cannot be reset

- CQ-ID:** Defdb00104894
- Severity:** K4 - malfunction
- Description:** The parameter "S-0-1035, SERCOS III: Error counter Port1 & Port2" could not be deleted.

17.1.6 Digital inputs/outputs

Digital output P-0-0304 cannot be written via control unit or engineering

- CQ-ID:** Defdb00106033
- Severity:** K3 - malfunction (no workaround)
- Description:** It was impossible to directly write the digital output via the parameter "P-0-0304, Digital outputs, output image of device".

17.1.7 Drive halt

Command value delay is not supported in the function "Drive HALT"

- CQ-ID:** Defdb00105530
- Severity:** K7 - product idea

Description: The position command value delay did not work with "Drive HALT".
When the drive had been switched from an interpolation mode with position command value delay (P-0-0456 > 0) to "Drive HALT", the position command value generator (P-0-0457) remained at the last position and was not generated again.

Fixing: When the drive is switched to "Drive HALT"; a check is run to find out whether the position command value delay was active in the previous operation mode. If this is the case, "Drive HALT" uses the position command value delay.

This only applies to "Drive HALT" in the "position control" mode.

17.1.8 Establishing the position data reference

S-0-0448 cannot be configured in signal control word

CQ-ID: Defdb00106101

Severity: K3 - malfunction (no workaround)

Description: The parameter "S-0-0448, Set absolute position control" could not be parameterized in the signal control word.

17.1.9 Master communication

E0800/F9003 during transition P2->P3 with EtherCAT

CQ-ID: Defdb00098367

Severity: K3 - malfunction (no workaround)

Description: A drive with EtherCAT master communication sporadically generated "F9003 Watchdog" during the transition from "PreOp" to "SafeOp" (P2->P3).

F4002 is not cleared (SERCOS III)

CQ-ID: Defdb00098415

Severity: K3 - malfunction (no workaround)

Description: In the case of connection failure, the error "F4002 RTD telegram failure" is correctly generated. This error can be cleared in phase 2, but often reappeared after run-up to phase 4 when SERCANS had been the master.

Incorrect behavior with bus failure and SERCOS III

CQ-ID: Defdb00103910

Severity: K3 - malfunction (no workaround)

Description: When the cable with SERCOS III telegrams (master communication) had been removed and a link still existed at the other connector (port), it was not the error "F4001 Sync telegram failure", but P-1 (NRT mode) which was displayed.

17.1.10 Measuring systems (mechanical axis system)

Loss of reference is not detected with MSM motors

CQ-ID: Defdb00107009

Severity: K2 - serious malfunction

Description: When the battery had been replaced for an MSM motor or a different motor had been connected, the firmware did not detect this. The reference was sometimes maintained (S-0-0403, Position feedback value status) although the position was wrong.

17.1.11 Motor control

Homing with 1Vpp encoder

- CQ-ID:** Defdb00105657
- Severity:** K2 - serious malfunction
- Description:** During homing with incremental sine encoders, the incorrect marker position was sometimes determined when a marker had not been completely passed before. The position was incorrect (and the error "F2032 Validation error during commutation fine adjustment" was sometimes generated).

Incorrect inductance and current loop proportional gain during determination of motor data

- CQ-ID:** Defdb00108848
- Severity:** K3 - malfunction (no workaround)
- Description:** With MPB-16 and MPM-16, the magnetizing inductance was incorrectly calculated after the command C4600 (motor data identification) had been executed; therefore, S-0-0106 (current loop proportional gain) was incorrectly calculated, too.

17.1.12 Om_cam mode

P-0-0158 too small

- CQ-ID:** Defdb00105475
- Severity:** K4 - malfunction
- Description:** When a master axis resolution greater than 2^{20} increments per master axis revolution had been configured in parameter "P-0-0084, Number of bits per master axis revolution", the parameterized velocity sometimes was not processed in parameter "P-0-0158, Angle offset change rate" with the preset value.

17.1.13 Oscilloscope feature

Multi-device measurement impossible with oscilloscope of IndraWorks

- CQ-ID:** Defdb00107457
- Severity:** K3 - malfunction (no workaround)
- Description:** The check of bit-configurable assignment lists for cyclic writing of parameters, which can be modified in communication phase 4 (S-0-0027, S-0-0329, S-0-1050.x.21 and S-0-1050.x.21 et seq.), was faulty. Thus, the message "Operation data is write protected, it is configured cyclically" was signaled by mistake.
- The message only occurs when a bit of a parameter was configured repeatedly or a parameter was configured in different lists (interfaces).

S-0-0144 incorrectly recorded with the oscilloscope function

- CQ-ID:** Defdb00106480
- Severity:** K5 - non critical problem
- Description:** S-0-0144 was incorrectly recorded with the oscilloscope function (resolution and time of triggering). When the list of measured values had been read (P-0-0023, P-0-0024, P-0-0147 or P-0-0148), the stored values were not read, but the values were generated again and/or subsequently recorded.
- Fixing:** In order that the recording of the signal status word S-0-0144 works, the parameter must be read by a cyclic function. This means that the parameter

must be cyclically read in the drive telegram. The functionality of S-0-0144 as trigger signal has not changed.

17.1.14 Parameters, basics

C0101 or C0201, sporadic parameter loss

- CQ-ID:** Defdb00106449
- Severity:** K3 - malfunction (no workaround)
- Description:** Voltage failure during run-up of the drive sometimes caused inconsistent data and parameter loss. The switching errors "C0101 Invalid parameters (-> S-0-0021)" or "C0201 Invalid parameters (->S-0-0423)" occurred.

17.2 Functional enhancements

17.2.1 CCD - Communication

Monitoring of cyclic data during progression to P4

- CQ-ID:** Defdb00105171
- Severity:** K3 - malfunction (no workaround)
- Description:** Cyclically configured data sometimes had such values in P4 which violated the limits. When the drive had been switched to P2 (PM) and then to P4 (OM) again with these values, the transition command error "C0202 Parameter limit error (->S-0-0423)" occurred.
- Enhancement:** Values which violate the limits in cyclically configured parameters are set to "0" when the drive is switched to P2.

17.2.2 Diagnostic system

Evaluation of switch contacts for motor temperature monitoring

- CQ-ID:** Defdb00107442
- Severity:** K6 - functional enhancement
- Description:** It is now possible to protect motors against overtemperature by means of switch contacts (e.g., bimetallic sensors).
To use the function, the value "6" must be entered for the corresponding sensor type in "P-0-0512, Temperature sensor".
After the switch-off threshold has been exceeded (sensor gets highly resistive), the warning "E2051 Motor overtemp. prewarning" is first of all output for one second. Afterwards, the drive switches off with "F2019 Motor overtemperature shutdown".

17.2.3 Master communication

SERCOS failure / switching back to P0

- CQ-ID:** Defdb00091565
- Severity:** K3 - malfunction (no workaround)
- Description:** When the drive recognized that phase 0 had been input, it switched drive enable off without generating an error. After drive-controlled deceleration, the drive switched to SERCOS phase 0.

17.2.4 Measuring systems (mechanical axis system)

Encoder supply must be switched off with parking axis

- CQ-ID:** Defdb00106450

- Severity:** K3 - malfunction (no workaround)
- Description:** When the command "parking axis" is activated, the supply of the encoders of the corresponding axis is deactivated so that the encoder can then be removed. The encoder supply is activated again when command is reset.

17.2.5 Motor control

Commutation for preadjusted encoder

- CQ-ID:** Defdb00106452
- Severity:** K6 - functional enhancement
- Description:** For synchronous third-party motors which have encoders with data memory, the automatic commutation setting always had to be carried out at initial commissioning.
- Enhancement:** For encoders mechanically adjusted to the commutation of the motor, the commutation offset can be directly entered. Thus, the automatic commutation setting at initial commissioning is not necessary.
- Activation takes place in bit 9 of the parameter "P-0-0522, Control word for commutation setting".
- Bit 9 = "0": For kit motors and third-party motors, the commutation offset is stored in the encoder memory, if an encoder memory exists.
- Bit 9 = "1": The commutation offset is not stored in the encoder memory, although the encoder memory exists. This can only be used for motors with mechanically adjusted commutation angle.

17.2.6 Power Supply

Change in soft start mechanism

- CQ-ID:** Defdb00107175
- Severity:** K6 - functional enhancement
- Description:** The previously used soft start mechanism could no longer be used with the extended product range.
- Enhancement:** Due to changes in the soft start mechanism, HLCs (increased capacitances in the DC bus) can now be used.

18 Firmware-Release FWA-INDRV*-MPB-16V08-D5

18.1 Functional enhancements

18.1.1 _Other

Default IP addresses with MPx16

- CQ-ID:** Defdb00105067
- Severity:** K6 - functional enhancement
- Description:** The IP addresses were not set automatically. Some interfaces were not taken into account.
- Enhancement:** The default value setting of the IP address for master communication engineering (Engineering over IP) is no longer fixed to 192.168.0.1; by analogy to MPx06, the default value is assigned automatically using the Slave Address. The mechanism is now used for the other existing IP interfaces, too.

18.1.2 Axis control

Activation of automatic determination of load due to weight

- CQ-ID:** Defdb00103653
- Severity:** K6 - functional enhancement
- Description:** The parameter "S-0-0163, Weight counterbalance" had to be parameterized by the customer and could not be automatically determined.
- Enhancement:** When drive enable is switched off, the current torque is written to parameter S-0-0163. The value is not stored. When drive enable is switched on, the speed loop I-component is then initialized with this value. The function is activated via bit 12 of "P-0-0556, Config word of axis controller".
- After having switched to the operating mode, the parameterized value then takes effect the first time drive enable is switched on.

18.1.3 Diagnostic system

Diagnostic message for 24V control voltage failure is missing

- CQ-ID:** Defdb00104796
- Severity:** K3 - malfunction (no workaround)
- Description:** At a temporary failure of the 24V supply, the diagnostic message "F8070 +24Volt DC error" was not output on the display.

18.1.4 Establishing the position data reference

Optimization for resolver evaluation

- CQ-ID:** Defdb00104623
- Severity:** K6 - functional enhancement
- Description:** To reduce the velocity noise, an amplitude and offset correction of the encoder signals was activated for the resolver.

18.1.5 Oscilloscope feature

Oscilloscope recording of parameter "P-0-0760, Virtual master axis, positioning control word"

- CQ-ID:** Defdb00093448
- Severity:** K6 - functional enhancement

Description: For better diagnostics, "P-0-0760, Virtual master axis, positioning control word" could be included in "P-0-0149, Oscilloscope: Signal selection list".

Enhancement: The parameter "P-0-0760, Virtual master axis, positioning control word" can be recorded with the internal oscilloscope function.

18.1.6 Error in "backup working memory procedure" command

CQ-ID: Defdb00087559

Severity: K3 - malfunction (no workaround)

Description: The "backup working memory procedure" command did not work correctly. Only those parameters were saved which had been modified via an "acyclic interface". When parameter changes had been made, for example, via the multiplex channel via cyclic data, those changes were lost.

18.1.7 Parameters, basics

Parameters for inertias

CQ-ID: Defdb00094083

Severity: K3 - malfunction (no workaround)

Description: It was impossible to enter values for very small motors, such as MSM motors, in the parameters "P-0-3003, Rotor inertia, type plate", "P-0-0510, Rotor inertia" and "P-0-4010, Load inertia".

Enhancement: The number of decimal places of the parameters "P-0-3003, Rotor inertia, type plate", "P-0-0510, Rotor inertia" and "P-0-4010, Load inertia" was changed from five to seven decimal places. This allows correctly entering the inertia values for very small motors.

Parameter loss when switching the master communication

CQ-ID: Defdb00098112

Severity: K5 - non critical problem

Description: When P-0-4089.0.1 had been changed from "3" (EtherNet/IP) to "2" (master communication deactivated) and back to "3" again (each time with a restart of the drive), the original settings of the parameters P-0-4080 and P-0-4081 were lost. The default values took effect instead.

Probe dead-time compensation cannot be changed

CQ-ID: Defdb00093397

Severity: K5 - non critical problem

Description: The parameters for probe dead-time compensation (S-0-0524 to S-0-0527) could not be changed in the operating mode (OM / bb / AB / AH / AF).

Enhancement: The parameters can always be written, even if the corresponding probe has not been enabled via the parameter "S-0-0405, Probe 1 enable" or "S-0-0406, Probe 2 enable".

19 Firmware-Release FWA-INDRV*-MPB-16V06-D5

19.1 Functional enhancements

19.1.1 _Other

S-0-0520 does not take effect with drive-internal command value box

- CQ-ID:** Defdb00101946
Severity: K6 - functional enhancement
Description: The drive-internal command value box only controlled with encoder 1 and with lagless position control.
Enhancement: The switching of position control and of the control encoder via the parameter "S-0-0520, Control word of axis controller" takes effect with the position-controlled, drive-internal command value box.

19.1.2 Axis control

Internal command value box for sensorless operation

- CQ-ID:** Defdb00101928
Severity: K6 - functional enhancement
Description: It was impossible to use the internal command value box for sensorless control.

19.1.3 Control panel

Show current field bus protocol on "modification level" in display menu

- CQ-ID:** Defdb00096389
Severity: K6 - functional enhancement
Description: On the level for setting a new field bus protocol it was always "not act" (=de-activate) which was displayed first. The active field bus protocol is shown first.

Write/apply Ethernet parameters with "Enter" key

- CQ-ID:** Defdb00096388
Severity: K6 - functional enhancement
Description: Changes in the Ethernet parameters were only activated by exiting ("ESC" key) the continuous text level.

19.1.4 Error reactions

FEAT 4.87 DC bus short circuit via output stage

- CQ-ID:** Defdb00102720
Severity: K6 - functional enhancement
Enhancement: For certain F8xxx errors, the motor can be decelerated more quickly if the motor phases are short-circuited.

19.1.5 Establishing the position data reference

Analog Hall sensors are supported

- CQ-ID:** Defdb00097348
Severity: K6 - functional enhancement

Description: Hall sensors with 12V supply are supported at optional slot X8 as combined encoders. Possible encoder types are P-0-0074 == 13 or 15.

Analog Hall sensors supported

CQ-ID: Defdb00096905

Severity: K6 - functional enhancement

Description: The firmware was expanded so that analog Hall sensors are supported, too.

19.1.6 Limitations/monitoring

Range of values extended for S-0-0082 and S-0-0083

CQ-ID: Defdb00087717

Severity: K3 - malfunction (no workaround)

Description: For the function "positive stop drive procedure" for axes with load due to weight and for axes for tensile stress control, it was necessary to compensate the load due to weight or the friction torque. For this purpose, it must be possible to enter negative values in parameter "S-0-0082, Torque/force limit value positive" and positive values in parameter "S-0-0083, Torque/force limit value negative".

As positive feedback in the speed control loop can occur when this functionality is incorrectly used, the extended range of values must first be enabled in parameter "P-0-0556, Config word of axis controller", bit 10.

19.1.7 Motor control

Command error C0253 with FXC operation

CQ-ID: Defdb00102880

Severity: K4 - malfunction

Description: When FXC operation had been selected as motor control mode, it was impossible to switch the drive to the operating mode if a position-controlled operation mode had been parameterized with the motor encoder. In FXC operation, only position control with external encoder was possible.

Stator resistance can only be input up to 650 ohm

CQ-ID: Defdb00101610

Severity: K6 - functional enhancement

Description: The maximum value for "P-0-4048, Stator resistance" had a maximum value of 650 ohm. This was not sufficient in all cases.

Enhancement: The maximum value of "P-0-4048, Stator resistance" is 2000 ohm.

Torque-dependance for synchronous motors

CQ-ID: Defdb00102139

Severity: K6 - functional enhancement

Description: The temperature dependance and the saturation dependance of the torque/force constant had not been taken into account up to now.

Enhancement: When the maximum torque is known for the cold motor (S-0-0534, Maximum torque/force of motor), the saturation-dependent correction of the torque/force constant can be carried out.

For Bosch Rexroth motors with KTY84 temperature sensor, the thermal correction of the torque/force constant can be activated (P-0-0556, Config word of axis controller, bit 11), when the parameters "P-0-0448, Temperature-de-

pendent torque/force coefficient" and "P-0-0449, Speed-dependent torque/force coefficient" are known.

19.1.8 Power Supply

IndraDrive Cs size 1 supported

CQ-ID: Defdb00096622

Severity: K6 - functional enhancement

Description: The size 1 devices of the IndraDrive Cs series are supported.

20 Firmware-Release FWA-INDRV*-MPB-16V04-D5

20.1 Functional enhancements

20.1.1 _Other

Optional cards ICI01 (multi-encoder interface) supported

CQ-ID: Defdb00096807

Severity: K6 - functional enhancement

Description: The optional card (ICI01) and the optional encoders (EnDat2.1, HIPERFACE, sine encoder, TTL encoder) are supported.

20.1.2 Establishing the position data reference

Resolver encoders with 8kHz excitation frequency are supported

CQ-ID: Defdb00093349

Severity: K6 - functional enhancement

Description: IndraDrive Cs supports third-party resolvers with an excitation frequency of 8kHz and a gain of 0.5 (transfer ratio).

20.1.3 Master communication

Activation of PROFIBUS Communication

CQ-ID: Defdb00096805

Severity: K6 - functional enhancement

Description: PROFIBUS is available in restricted form in MPx16. PROFIsafe is not supported. Acyclic parameter access via PROFIdrive (Base Mode Parameter Access) is no longer supported. Use the parameter channel instead of PROFIdrive.

20.1.4 Power Supply

Change in power off in the case of error (P-0-0118)

CQ-ID: Defdb00096157

Severity: K6 - functional enhancement

Description: Via bit 7 in P-0-0118 it is now possible to influence the behavior of the Bb contact.

The following applies:

P-0-0118, bit 7="0": Power off only in the case of converter errors (F28xx)

P-0-0118, bit 7="1": Power off in the case of all errors (F2xxx default value as of MPx16V04)

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