SEW EURODRIVE

Revision

Decentralized Drive and Application Controller

MOVIPRO® SDC with PROFINET Interface

Edition 02/2020

26606984/EN

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1 Revision

This revision applies to the manual "MOVIPRO® SDC with PROFINET interface", part number 16990412, edition 07/2010.

Replacements

- Chapter 1.6 "General safety notes for bus systems" is completely replaced by chapter 1.1 "Network security and access protection".
- Chapter 1.7 "Safety functions" is completely replaced by chapter 1.2 "Safety functions".
- Chapter 4.6 "Status and error messages" is completely replaced by chapter 1.3. "Status and error messages".
- Chapter 5.2.1 "Creating a new project" is completely replaced by chapter 1.4 "Creating a new project".
- Chapter 11.1 "Device replacement" is completely replaced by chapter 1.5 "Device replacement".

1.1 Network security and access protection

A bus system makes it possible to adapt electronic drive technology components to the particulars of the machinery within wide limits. There is a risk that a change of parameters that cannot be detected externally may result in unexpected but not uncontrolled system behavior and may have a negative impact on operational safety, system availability, or data security.

Ensure that unauthorized access is prevented, especially with respect to Ethernet-based networked systems and engineering interfaces.

Use IT-specific safety standards to increase access protection to the ports. For a port overview, refer to the respective technical data of the device in use.

1.2 Safety functions

The may not perform any safety functions unless they are described and expressly approved.

For safety applications, ensure that the information in the following publication is observed:

- – Functional safety / PROFIsafe option S11B

In safety applications, use only components that were explicitly designed for this purpose by SEW-EURODRIVE.

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1.3 Status and error messages

The status display on the device cover shows the current device status. In case of repeated malfunctions, contact the SEW-EURODRIVE Service.

If several statuses or faults are active at the same time, the status display shows the status or fault with the highest priority.

The device status display takes priority over the display of the internal "PFA-..." power section. If the maintenance switch is switched off or a fieldbus fault occurs, no power section status is displayed.

1.3.1 Display examples

The following examples show how the device usually displays status and fault messages.

Example 1: "Enable" of power section 1

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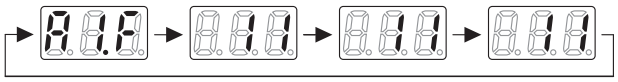
Example 2: "Overtemperature" fault of power section 1

If the display shows "A[Power section number].F", a power section fault occurred. The display switches between the number of the power section and the fault code.



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Refer to chapter List of power section faults for an overview of power section faults.

1.3.2 Status and error messages

If you use a parameterizable device, the following status messages are possible.

Code	Meaning	Measure
A1.0	DC 24 V operation, frequency inverter not ready	
A1.1	Controller inhibit active	
A1.2	No enable	
A1.3	Standstill current	
A1.4	Approval	
A1.5	n-control (speed control)	
A1.6	M-control (torque control)	
A1.7	Hold control	
A1.8	Factory setting	
A1.9	Limit switch hit	
A1.A	Technology option	
A1.c	Reference travel IPOS$^{plus®}$	
A1.D	Flying start	

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Code	Meaning	Measure
A1.E	Encoder calibration	
A1.F	Error info	
A1.U	"Safe Torque Off" active ⚠ **WARNING!** Risk of injury due to incorrectly interpreted display **U = "Safe Torque Off" active** – Severe or fatal injuries. The display **U = "Safe Torque Off"** active is not safety-related. Thus it must not be used safety-related.	
Flashing dot	Application module of the "PFA-..." power section is running.	
888 **S2:** Flashing green **S3:** Off	• No application module loaded	• Create a configuration with the Application Configurator and load the application into the device.
BUS ERR	Fault • Fault in fieldbus parameters or fieldbus stations incorrectly set	• Check the fieldbus wiring to the higher-level controller. • Check the fieldbus parameter setting of the device and the higher-level controller.
INI	Status • Initialization: A connection is established to all internal components. This can take several minutes after a device replacement.	• Wait several minutes.
OFF	Status • The maintenance switch is switched off.	• Switch on the maintenance switch. **Devices without power interface:** Check the DC 24 V cabling and the cabling of the switch feedback.

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Code	Meaning	Measure
OFL	Status • Internal communication error	**While backing up data or restoring a data backup:** Wait a few minutes until the display changes. **In normal operation:** • Disconnect the device from the AC 400 V supply and the DC 24 V supply voltage for at least 30 s. • Restart the device.
RUN	Status • Connection was successfully established. After 3 seconds, the component or application status is shown.	
SF1	Fault Communication error with the power section, caused by e.g.:	
	• Parameter channel 2 not activated *(P889)*	• Activate parameter channel 2.
	• Manual operation not finished	• Activate manual operation. Deactivate it afterwards.
	• Parameter lock power section activated *(P803)*	• Deactivate the parameter lock.
	• Configuration in the Application Configurator not completed or not completely loaded	• Create a configuration with the Application Configurator and load the application into the device. Other possible measures: • Disconnect the device from the AC 400 V supply and the DC 24 V supply voltage for at least 30 s. • Restart the device.
SF2	Fault • Error in external periphery	• Check the cabling of the digital inputs and outputs as well as the connections of the communication package.
SF3	Fault • Non-enabled application module loaded	• Load an enabled application module into the "PFA-..." power section • If you do not use an application module, set parameter P802 "Factory setting" of the "PFA-..." power section to "Delivery state". **NOTICE!** The device has to be started up again.

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Code	Meaning	Measure
SF10	Fault • Configuration with Application Configurator not completed.	• Complete the configuration with the Application Configurator. Load it into the device.
SF20	Warning • Error during data management, data backup on SD memory card failed	• Start the data management again.
SF21	Warning • Error during data management, data backup on SD memory card failed, SD memory card may be write protected.	• Switch off the device. Remove write protection from SD memory card. Switch on the device again.
SF22	Warning • Error during data management, data recovery to device failed	• Start the data management again.
SF23	Warning • Error during data recovery to device, controller inhibit not set	Set the device to one of the following states: • Controller inhibit (A1.1) • Safe Torque Off (A1.U)
SF24	Fault • Corrupt data backup detected	• Perform the data backup again.
SF25	Fault • Corrupt data backup detected	• Perform the data backup again.
SF99	• Internal system error	
SF110	Fault • Actuator voltage overload error	• Check the cabling of the digital inputs and outputs.
SF120	Fault • Error due to overload in sensor voltage of group 1	• Check the cabling of the digital inputs and outputs.
SF121	Fault • Error due to overload in sensor voltage of group 2	• Check the cabling of the digital inputs and outputs.
SF130	Fault • SNI fuse tripped	• Check the SNI fuse.
SF 881	• The SD memory card is not inserted. • The data system of the SD memory card is corrupt. • Boot process has failed.	• Switch the device off and back on again. If the system fault is displayed repeatedly, contact SEW-EURODRIVE Service.

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Code	Meaning	Measure
SF 888	• The device cannot boot after switch-on. The communication and control unit has a serious error.	• Please contact the SEW-EURODRIVE service.
NO_ → CNF **S2:** Flashing green **S3:** Lights up green	• No application module is loaded.	• Load your application module into the device.
SEW	• DC 24 V voltage supply is present. • The user program starts. This process can take up to 30 seconds. • No user program has been loaded or started.	• If the status message is shown for more than 30 s, load the user program into the device.
BtL	• The bootloader update is being executed.	• Do not switch off the device. • Wait until the bootloader update has been completed. If the device does not respond as expected after 5 minutes, proceed as described in chapter "SD memory card as spare part" (→ 🗎 15). • If the error occurs again, replace the device or contact SEW-EURODRIVE Service.
DAT	Status Data management active, triggered by e.g.: • Data is loaded to the SD memory card or into the device. • Previous device replacement • Automatic upload of the power section data • Data management started via fieldbus • Data management started via MOVITOOLS® MotionStudio	• Wait until data backup and restore has been completed.
Data	• Data backup is created. • Data is restored from a data backup.	• Wait until data backup and restore has been completed.

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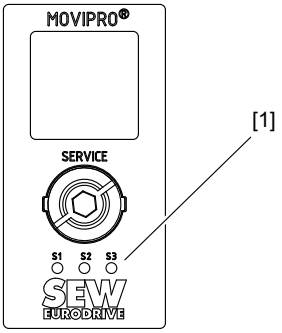
Code	Meaning	Measure
.....	• The user program has not updated the values of the status display within 3 s. An error has occurred in the user program, the device or the internal system bus.	• Restart the device. Check whether the device starts correctly. If the device does not start, reload the user program into the device. • If the status message is displayed repeatedly, contact SEW-EURODRIVE Service.

Status LEDs

The status LEDs are located on the service unit. They show the fieldbus and device status.



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[1] Status LEDs S1, S2, S3

Status LED S1 PROFINET IO

Status LED	Possible cause	Measure
Off	• PROFINET IO device is currently exchanging data with the PROFINET IO controller (Data Exchange).	-
Flashing green Flashing green/red	• The flashing function in the PROFINET IO controller configuration is activated to visually locate the stations.	-
Lights up red	• Connection to the PROFINET IO controller has failed. • PROFINET IO device does not detect a link. • Bus interruption • PROFINET IO controller is not in operation.	• Check the PROFINET connection of the device. • Check the PROFINET IO controller. • Check the cabling of your PROFINET network.
Flashing yellow Lights up yellow	• The STEP 7 hardware configuration contains a module that is not permitted.	• Set the STEP 7 hardware configuration to ONLINE. Analyze the component status of the slots in the PROFINET IO device.

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Status LED S2

Status LED	Possible cause	Measure
Flashing green	The firmware of the fieldbus gateway is running properly.	–
Flashing green/orange	Data backup is created/restored.	–
Lights up orange	Boot is active.	–
Flashing orange	Firmware is being updated.	–
Flashes red	• SD card is not inserted. • File system on the SC card is corrupt. • Boot process has failed.	Switch the device off and back on again. Contact SEW-EURODRIVE service if the error reoccurs.

Status LED S3

Status LED	Possible cause	Measure
Lit green	Program is running.	–
Off	No program is loaded.	Replace the SD card.

1.4 Creating a new project

Proceed as follows to create a new project:

1. Start the SIMATIC Manager and create a new project.

   Select your control type and add the required modules. The following modules in particular are useful:

   - **OB82 module:** This module makes sure that the controller does not trigger "STOP" in the event of so-called diagnostic alarms.
   - **OB86 module:** This module indicates the failure of a decentralized periphery.
   - **OB122 module:** This module is called if the controller cannot access data of a node of the decentralized periphery. This can occur when, for example, the MOVIPRO® unit is ready for operation later than the controller.
2. Start STEP 7 HW Config and select the PROFINET IO slot in the control rack.
3. Add a PROFINET IO system by clicking the context menu with your right mouse button.
4. Specify an IP address for the PROFINET IO controller when doing this.
5. Add a new PROFINET subsystem using the [Ethernet] button.
6. Open [PROFINET IO] / [Additional Field Devices] / [Drives] / [SEW] / [MOVIPRO] in the hardware catalog.

   3 entries are available:

   - MOVIPRO V1.0
   - MOVIPRO V1.0OLD

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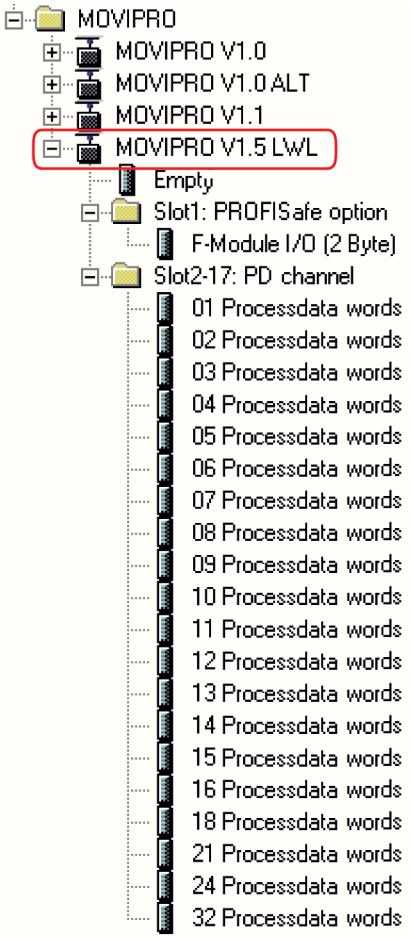
- MOVIPRO V1.1

For MOVIPRO® SDC, use entry "MOVIPRO V1.1".

7. Move the entry "MOVIPRO V1.1" to the PROFINET IO system with the mouse and assign a PROFINET station name. This name must correspond to the PROFINET device name specified in the MOVIPRO® unit.
8. Enter the IO and periphery addresses in slot 2 and save the configuration.

   The slot model is used for configuration with PROFINET. Each slot is assigned to a MOVIPRO® fieldbus interface. The following structure is used:



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9. Slot 1 is used for the PROFIsafe unit variant. Here, the F module is configured to switch the unit to the STO "Safe Torque Off" function via PROFIsafe. For detailed information, refer to the "MOVIPRO® SDC – Functional Safety / PROFIsafe option S11B" manual.

   Slots 2 – 17 are assigned process data channels of the drive. Slot 2 is assigned 10 process data by default.
10. Add data exchange with the new devices to your user program. Process data transfer is consistent. SFC14 and SFC15 can be used to transfer process data.

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1.5 Device replacement

The device allows for a quick device replacement. It is equipped with a replaceable SD memory card on which all device data is stored. If the device has to be replaced, the plant can be started up again quickly by simply exchanging the SD memory card.

1.5.1 Prerequisites for successful device replacement

Observe the following:

- The devices that you want to exchange must be identical. If the devices have different configurations, a successful device replacement cannot be guaranteed.
- You must save the data of the device to be replaced on the SD memory card **before** you replace the device. SEW-EURODRIVE recommends to always backup the data right after starting up a device.
- Insert or remove the SD memory card only when the device is switched off.
- With programmable devices, note that the status display depends on programming. The module for the data backup function (data management) must be integrated in the program.

1.5.2 Replacing the device

Proceed as follows:

1. Perform a data backup via MOVITOOLS® MotionStudio if you are not certain whether the current device parameterization is stored on the SD memory card.
2. Disconnect the device from the supply system.
3. Remove it from the system.
4. Remove the memory card cover from the housing cover.
5. To do so, remove the SD memory card from the device to be replaced.
6. Insert the SD memory card into the new device.
7. Install the new device in the plant. Connect it to the supply system.
8. Switch on the new device.

INFORMATION

The device performs several initialization steps. Do not switch off the device during this time.

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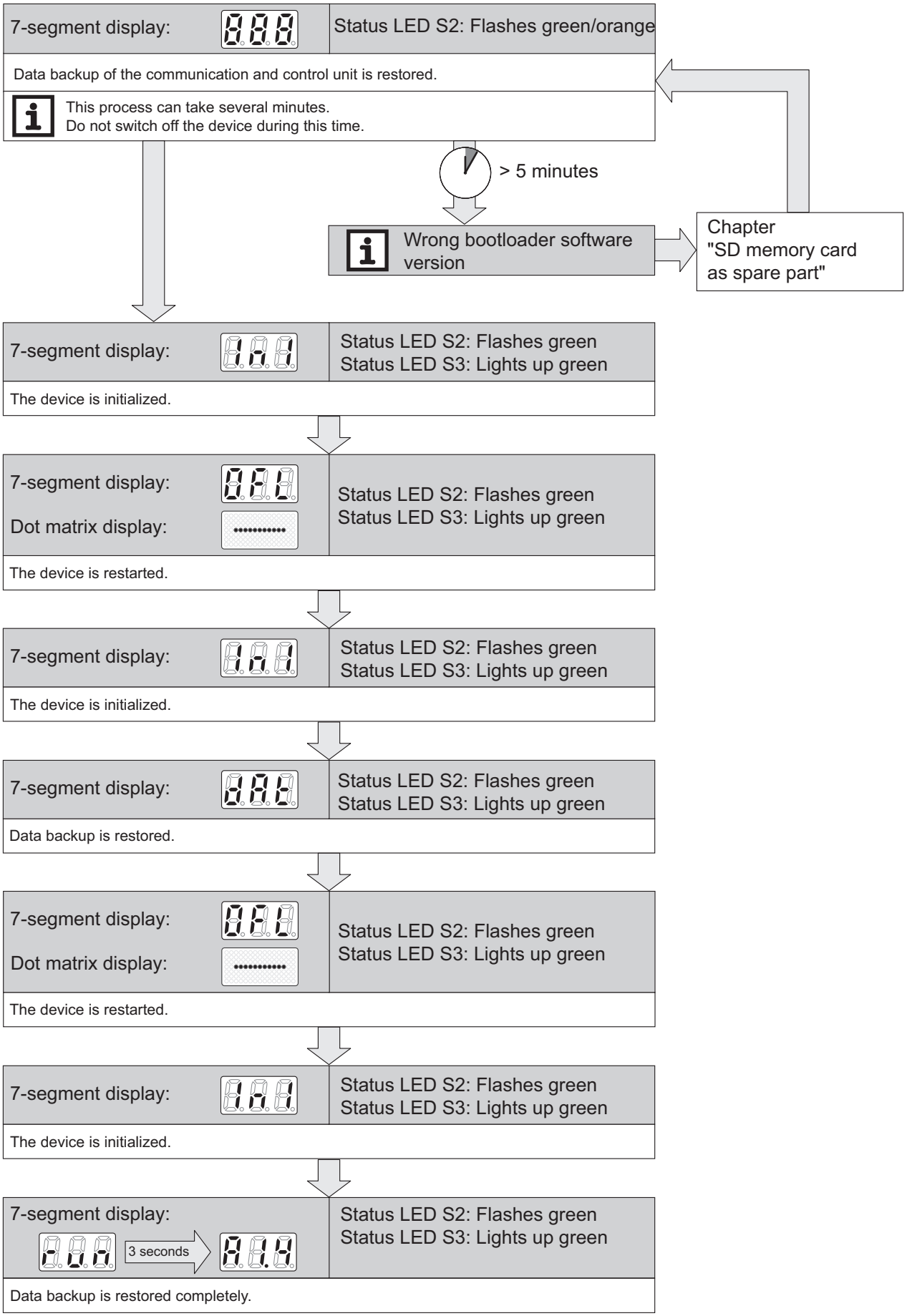

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- The parameters saved on the SD memory card are now available again. If a different parameter set is needed for the new device, change the parameter set now. Back up the changed data on the SD memory card again after startup.
- For applications with encoders, observe the chapter Reference travel after device or encoder replacement.

1.5.3 SD memory card as spare part

If you have ordered an SD card as spare part, it is possible that the versions of the bootloader software are different for the SD memory card and your device.

In this case, the device remains in the following state **for more than 5 minutes**:

7-segment display	Status LED S2
8.8.8 flashing	Flashing green/orange

Proceed as follows:

1. Disconnect the device from the supply system.
2. Unscrew the memory card cover.
3. Remove the SD memory card.
4. Connect an SD card reader to your PC.
5. Insert the SD memory card in the SD card reader. On your PC, go to [Computer] > [SD] > [System] > "BootConfig.cfg".
6. Open the file "BootConfig.cfg" with a text editor.
7. Search the file for the following expression:

   ```
   <!-- Confirm bootloader update with reset button? -->
   ```

   ```
   <ConfirmBlUpdateWithResetBtn>true</ConfirmBlUpdateWithReset-
   Btn>
   ```

8. Change the value `"true"` to the value `"false"` for the parameter.

   The expression must now be:

   ```
   <ConfirmBlUpdateWithResetBtn>false</ConfirmBlUpdateWithReset-
   Btn>
   ```

9. Save the file.
10. In the status bar, click [Safely remove hardware]. As soon as the PC confirms this, you can remove the SD memory card from the SD card reader.
11. Insert the SD memory card into the slot of the device and screw the memory card cover back on.
12. Connect the device to the supply system.
13. Observe the instructions in chapter "Device replacement" (→ 🗎 13) from step 8 onwards.

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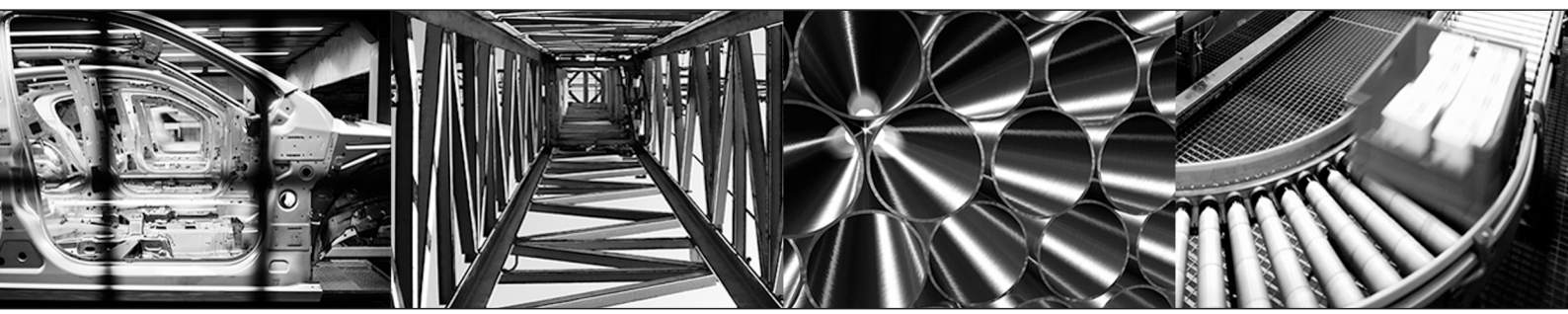

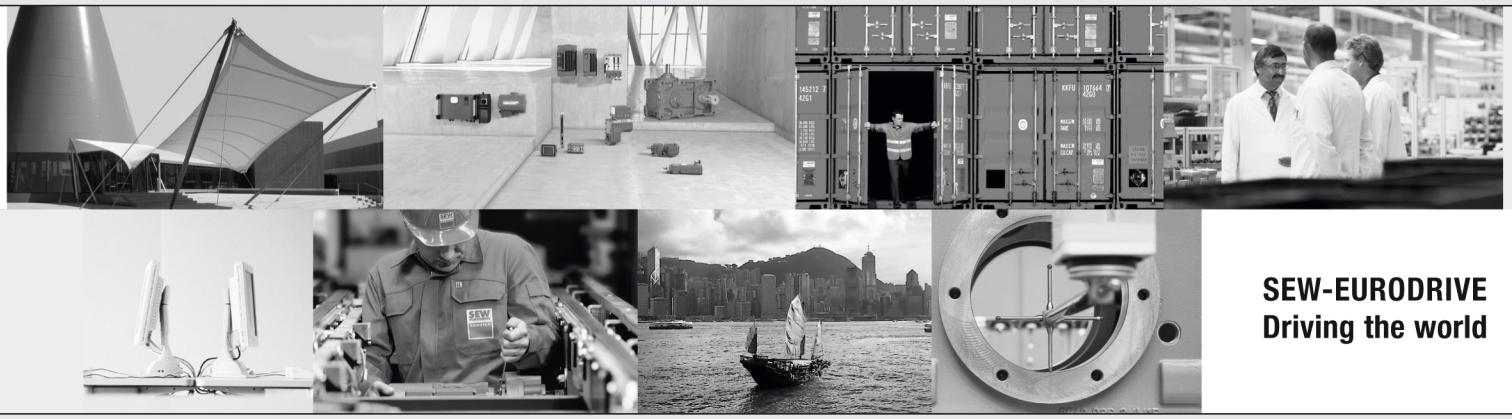

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