Motor controllers CMMS-ST, for stepper motors

FESTO

Motor controllers CMMS-ST, for stepper motors

Key features

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Comparison of motor controllers				
Motor controller for motor type	CMMD-AS Servo motor	CMMS-AS Servo motor	CMMP-AS Servo motor	CMMS-ST Stepper motor
Positioning records	2x 63	63	255	63
Measuring system	Incremental/absolute		Incremental/absolute	Incremental
Extended I/O interface	4 working modes		Flexibly configurable	4 working modes
Notification of remaining distance	1 for n		Separately for all positions	1 for n
Torque reduction	No		Separately for all positions	No
Set linking	Linear		With branching	Linear
STO/SS1	To EN 61800-5-2		To EN 61800-5-2	To EN 61800-5-2

Performance characteristics

Compactness

- Small dimensions
- Full integration of all components for controller and power section, including RS232 and CANopen interface
- Integrated brake chopper
- Integrated EMC filters

- Automatic actuation for a holding brake integrated in the motor
- Adheres to the current CE and EN standards without additional external measures (motor cable length of up to 15 m)

Motion control

- Can be operated as a torque, speed or position controller
- Integrated positioning controller
- Time-optimised (trapezoidal) or jerk-free (S-shaped) positioning
- Absolute and relative movements
- Point-to-point positioning with and without approximate positioning

- Position synchronisation
- Electronic gear unit
- 63 position sets
- 8 travel profiles
- Wide range of homing methods

Fieldbus interfaces

Integrated:

CANopen

Optional:

PROFI

DeviceNet

Input/output

- Freely programmable I/Os
- High-resolution 12-bit analogue input
- Jog/teach mode
- Simple linking to a higher-level controller via I/O or fieldbus
- Synchronous operation
- Master/slave mode

Integrated sequence control

- Automatic sequence of position sets without a higher-level controller
- Linear and cyclic position sequences
- Adjustable delay times

Integrated safety functions

- The motor controller CMMS-ST support "Safe Torque off (STO)" and "Safe Stop 1 (SS1)" functions with protection against unexpected startup in accordance with EN 61800-5-2

- Protection against unexpected start-up
- Two-channel disconnection of the output stage
- Shorter response times in the event of an error

Interpolating multi-axis movement

- With a suitable controller, the CMMS-ST can perform path movements with interpolation via CANopen. The controller specifies setpoint position values in a fixed

time pattern to this end. In between, the servo positioning controller independently interpolates the data values between two data points.

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Key features

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Performance characteristics
Servo mode

- "Servo Lite operation" (closed loop) thanks to encoder option, in other words no step losses, following errors are corrected

Travel program

- Linking of any number of position sets into a travel program
- Step criteria for the travel program possible via digital inputs, for example
  MC – motion complete
  I/O – digital inputs

Library for EPLAN	→ 11

ePLAN electric8

EPLAN macros for fast and reliable planning of electrical projects in combination with motor controllers, motors and cables. This enables a high level of planning reliability, standardisation of documentation, no need to create symbols, graphics and master data.

ePLAN® is a registered trademark of its respective trademark holder in certain countries.

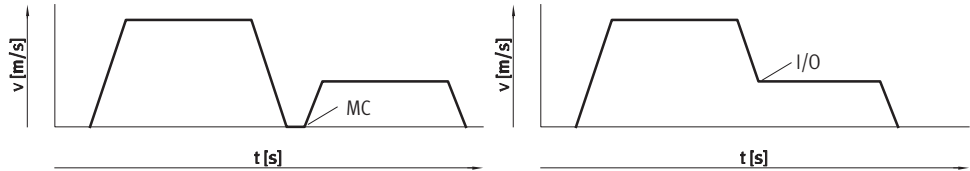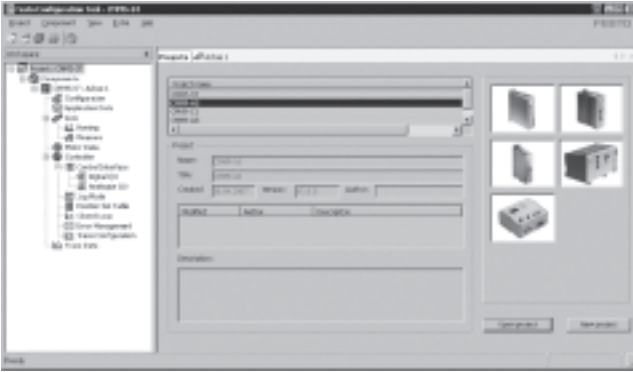# Motor controllers CMMS-ST, for stepper motors

Key features

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FCT software – Festo Configuration Tool

Software platform for electric drives from Festo

- All drives in a system can be managed and archived in a common project
- Project and data management for all supported device types
- Simple to use thanks to graphically-supported parameter entry

- Universal mode of operation for all drives
- Working offline at your desk or online at the machine

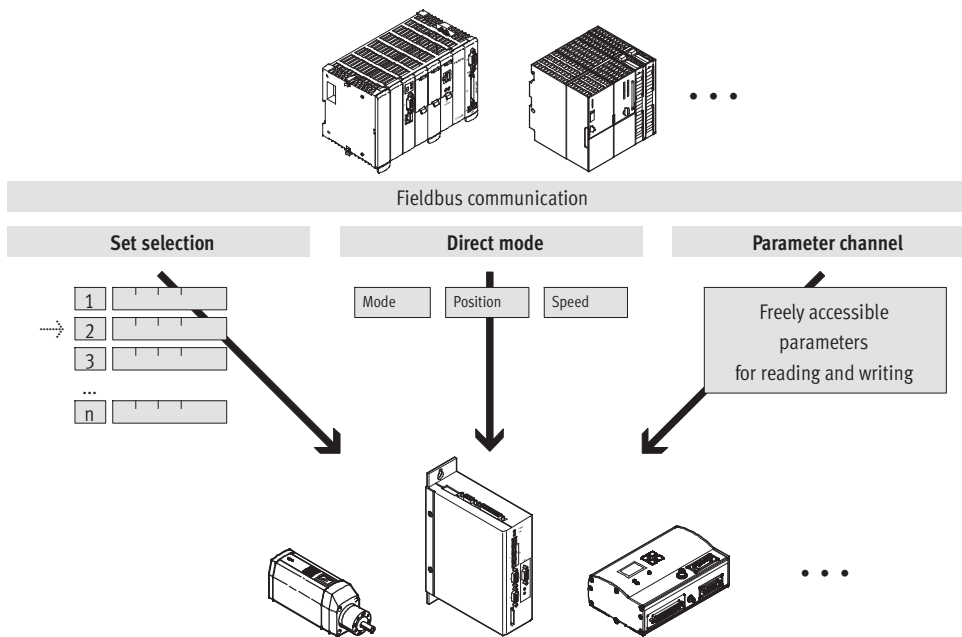**FHPP – Festo Handling and Positioning Profile**

Optimised data profile

Festo has developed an optimised data profile, the "Festo Handling and Positioning Profile (FHPP)", that is tailored to handling and positioning applications.

The FHPP data profile permits the actuation of Festo motor controllers, using a fieldbus interface, via standardised control and status bytes.
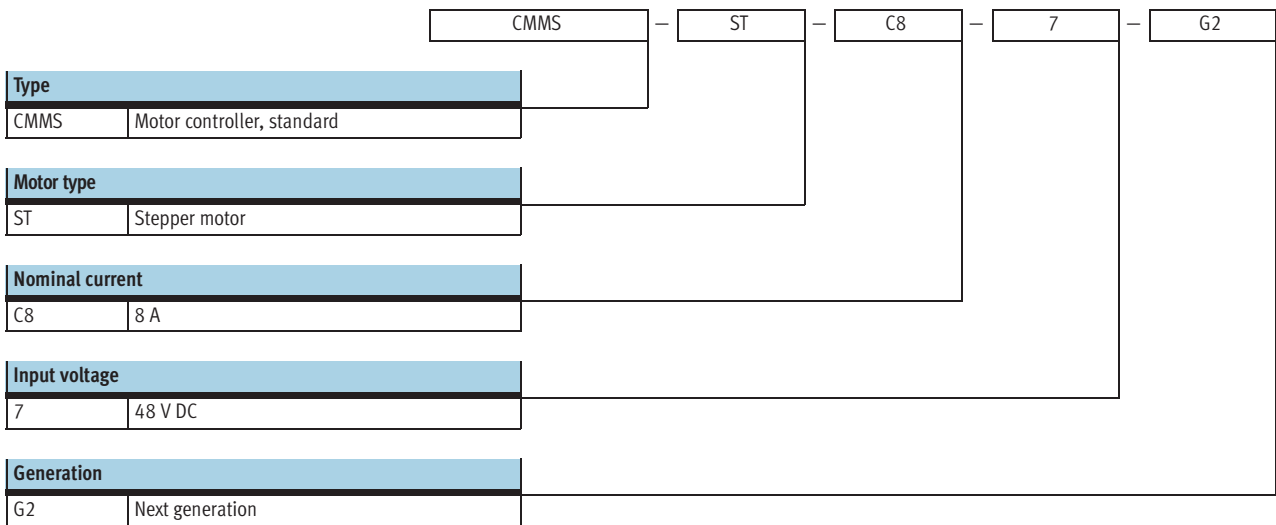
The following are defined, among others:
– Operating modes
– I/O data structure
– Parameter objects
– Sequence control

Fieldbus communication

Set selection	Direct mode	Parameter channel

Direct mode: Mode | Position | Speed

Parameter channel: Freely accessible parameters for reading and writing

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Motor controllers CMMS-ST, for stepper motors

Type codes

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	CMMS	–	ST	–	C8	–	7	–	G2

Type	
CMMS	Motor controller, standard

Motor type	
ST	Stepper motor

Nominal current	
C8	8 A

Input voltage	
7	48 V DC

Generation	
G2	Next generation

Motor controllers CMMS-ST, for stepper motors

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Technical data

Fieldbus interfaces

CANopen

PROFI

DeviceNet

General technical data		
Type of mounting		Screwed to a mounting plate
Operating mode		PWM MOSFET power amplifier
Motor actuation		Sinusoidal current impressing
Cycle rate	[kHz]	Constant 50
Rotary position generator		Encoder
Display		7-segment display
Parameterisation interface		RS232 (9,600 … 115,000 bits/s)
Encoder interface input		As speed/position specification for the slave drive in synchronous mode
		RS422
Encoder interface output		Setpoint specification for downstream slave drive
Brake resistor, integrated	[Ω]	17
Pulse power of braking resistor	[kVA]	0.5
Bus terminating resistor		Integrated
Impedance of setpoint input	[kΩ]	20
Number of analogue outputs		1
Operating range of analogue outputs	[V]	±10
Characteristics of digital logic outputs		Freely configurable in some cases
Number of analogue inputs		1
Operating range of analogue inputs	[V]	±10
Mains filter		Integrated
Product weight	[g]	900

Technical data – Fieldbus interface					
Interfaces		I/O	CANopen	Profibus DP	DeviceNet
Communication profile		–	DS301, FHPP	DP-V0 / FHPP	FHPP
		–	DS301, DSP402	–	
Max. fieldbus transmission rate	[Mbit/s]	–	1	12	0.5
Interface	Integrated	■	■	–	–
	Optional	–	–	■ ➜ 10	■ ➜ 10

Motor controllers CMMS-ST, for stepper motors
Technical data

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Function blocks for PLC programming				
Programming software	Controller manufacturer	Interfaces		
		CANopen	Profibus DP	DeviceNet
CoDeSys	Festo			
	Beckhoff	■	■	■
	Other manufacturers			
RSLogix5000	Rockwell Automation	–	–	■
Step 7	Siemens	–	■	–

Electrical data		
General		
Nominal current setting		Via software
Max. peak current duration	[s]	2
Max. intermediate circuit voltage	[V DC]	48
Load supply		
Nominal voltage	[V DC]	24 … 48
Nominal current	[A]	8
Peak current	[A]	12
Logic supply		
Nominal voltage	[V DC]	24 ±20%
Nominal current	[A]	0.3
Max. current of digital logic outputs	[mA]	100

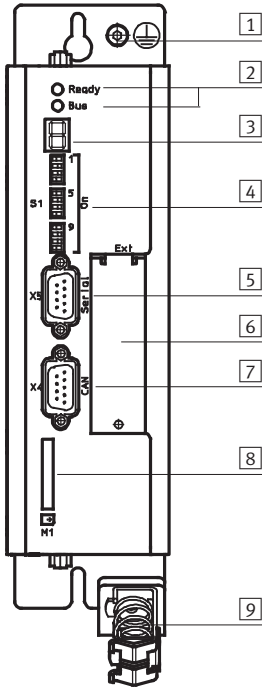| Operating and environmental conditions		
Digital logic outputs		Not electrically separated
Logic inputs		Electrically separated
Protection class		IP20
Protective function		I^2t monitoring
		Current monitoring
		Voltage failure detection
		Following error monitoring
		Temperature monitoring
Ambient temperature	[°C]	0 … +50
Storage temperature	[°C]	−25 … +70
Relative humidity	[%]	0 … 90 (non-condensing)
CE mark (see declaration of conformity)		To EU EMC Directive[1]
		To EU Machinery Directive
Certification		c UL us - Listed (OL)
		C-Tick
		BIA
Certificate issuing authority		BG MFS 09031
Safety function		Safe Torque off (STO)
Safety Integrity Level (SIL)		Safe Torque off (STO) / SIL 2
Performance Level (PL)		Safe Torque off (STO) / category 3, performance level d
Note on materials		RoHS-compliant

1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com ➔ Support ➔ User documentation.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

CoDeSys®, Rockwell Automation® is a registered trademark of its respective trademark holder in certain countries.

Motor controllers CMMS-ST, for stepper motors

Technical data

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View of motor controller

From the front

1	Earthing
2	Ready/bus LED
3	Status display
4	Fieldbus settings and boot loader
5	Interface: RS232/RS485
6	Technology module slot
7	Interface: CAN bus
8	SD memory card
9	Screened connection

From above
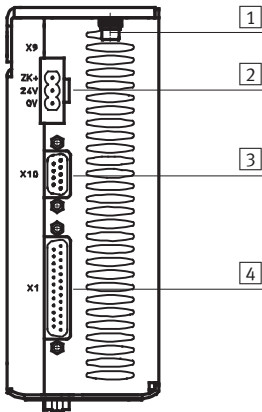
1	Earthing screw
2	Power supply
3	Incremental encoder interface (bidirectional)
4	I/O interface

From underneath
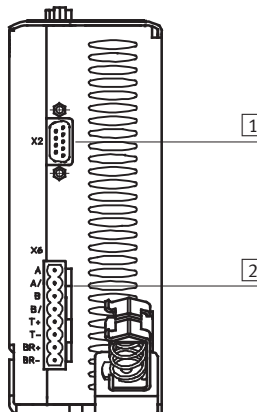
1	Increment encoder input for motor
2	Motor connection

→ **Internet: www.festo.com/catalogue/...**

Subject to change – 2011/03

Motor controllers CMMS-ST, for stepper motors

Technical data

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Installation clearance for motor controller
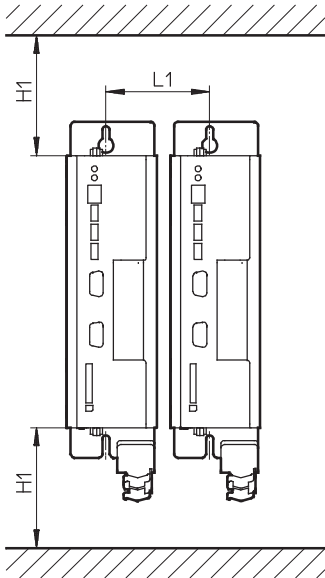
H1	L1
100	69

Dimensions

Download CAD data ➔ www.festo.com
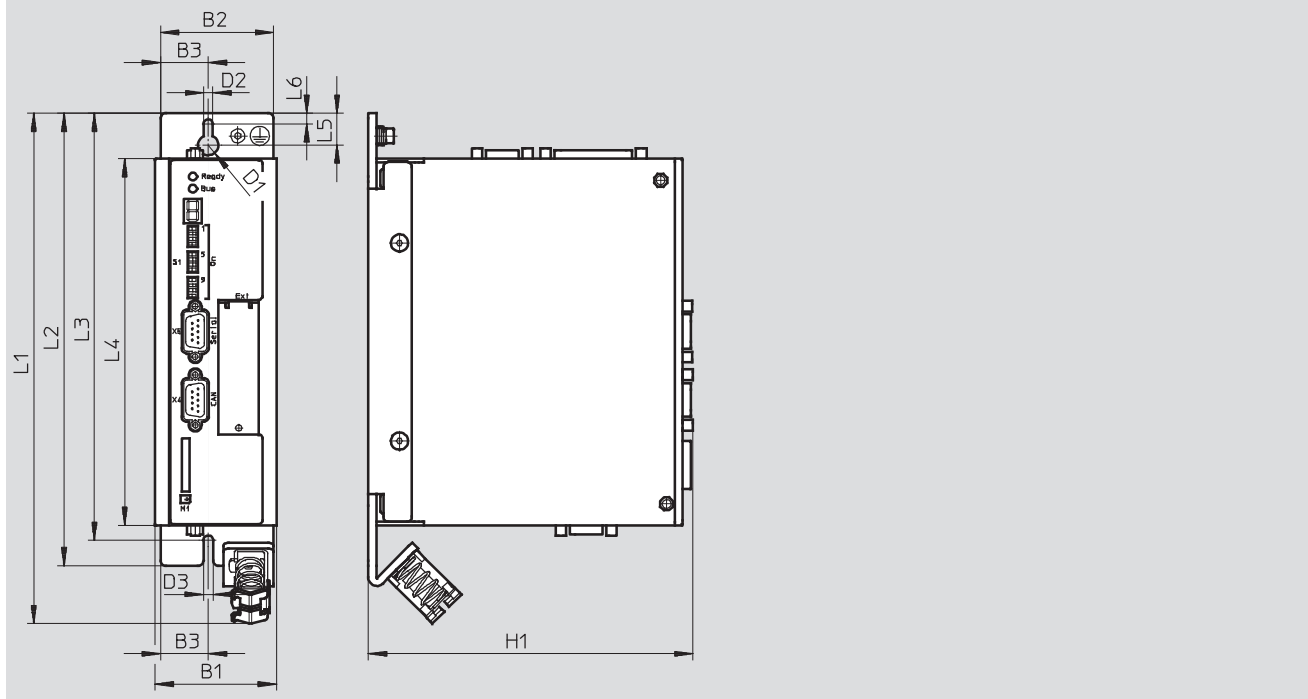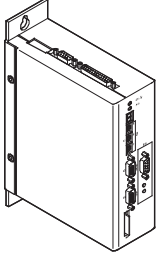
Type	B1	B2	B3	D1 ∅	D2 ∅	D3 ∅	H1
CMMS-ST	60	56	24	10	4.5	5	161
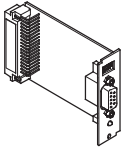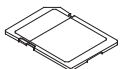
Type	L1	L2	L3	L4	L5	L6
CMMS-ST	252	224	211.5	181	15.75	5.25

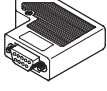➔ Internet: www.festo.com/catalogue/...
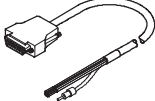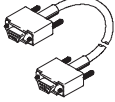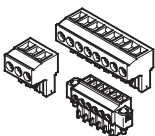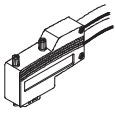
Motor controllers CMMS-ST, for stepper motors

Technical data and accessories

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Ordering data

	Brief description	Part No.	Type
	The plug range NEKM (➔ 10) and the operating package (➔ 11) are included in the scope of delivery	**572211**	**CMMS-ST-C8-7-G2**
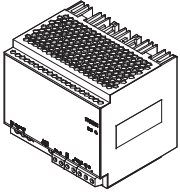
Accessories

Ordering data – Plug-in cards

	Brief description	Part No.	Type
	Interface, for Profibus interface	**547450**	**CAMC-PB**
	Interface, for DeviceNet interface	**547451**	**CAMC-DN**
	Memory card, for data backup and firmware downloads	**560626**	**CAMC-M-S-F1-V1**

Ordering data – Cables and plugs

	Brief description	Cable length [m]	Part No.	Type
	Control cable, for I/O interface to any controller	2.5	**552254**	**NEBC-S1G25-K-2.5N-LE26**
	Programming cable	1.5	**160786**	**PS1-ZK11-NULLMODEM-1,5M**
	Encoder plug, for incremental encoder interface	–	**564264**	**NECC-A-S-S1G9-C2M**
	The plug range is included in the scope of delivery	–	**547452**	**NEKM-C-1**
	Plug for Profibus interface	–	**533780**	**FBS-SUB-9-WS-PB-K**
	Plug for CANopen interface	–	**533783**	**FBS-SUB-9-WS-CO-K**
	Plug for DeviceNet interface	–	**525635**	**FBSD-KL-2X5POL**

Motor controllers CMMS-ST, for stepper motors

Accessories

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Ordering data – Power supply units						
	Brief description	Input voltage range [V AC]	Nominal output voltage [V DC]	Nominal output current [A]	Part No.	Type
	Power supply for motor controller	100 ... 240	24	5	547867	SVG-1/230VAC-24VDC-5A
				10	547868	SVG-1/230VAC-24VDC-10A
			48	5	542403	SVG-1/230VAC-48VDC-5A
				10	542404	SVG-1/230VAC-48VDC-10A
		400 ... 500		20	542405	SVG-3/400VAC-48VDC-20A

- ◌ - Note

If a common power supply unit is used to supply the power section and the control section, the voltage tolerances for the supply to the control section cannot be maintained at high braking power. This can result in damage to the control section. Always use separate power supply units to supply the power section and the control section.

Ordering data – Software and documentation			
	Brief description	Part No.	Type

	Operating package contains:
	 – CD-ROM
	   – with user documentation for CMMS-ST,
	     in de, en, es, fr, it, sv
	   – with FCT (Festo Configuration Tool) configuration software,
	     in de, en
	 – Brief description
	 This package is included in the scope of delivery
		573960	GSIB-CMMS-ST-G2-ML

Ordering data – Software for EPLAN			
	Brief description	Part No.	Type
	EPLAN macros for fast and reliable planning of electrical projects in combination with motor controllers, motors and cables. The CD-ROM is not included in the scope of delivery	572327	GSWC-CD-EP-MC-1-ML

Motor controllers CMMS-ST, for stepper motors

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Accessories

Ordering data – Documentation[1]					
	Language	Part No.	Type	Part No.	Type
		for motor controller		Festo Handling and Positioning Profile (FHPP) for the motor controller family CMM…	
	DE	573124	P.BE-CMMS-ST-G2-HW-DE	555695	P.BE-CMM-FHPP-SW-DE
	EN	573125	P.BE-CMMS-ST-G2-HW-EN	555696	P.BE-CMM-FHPP-SW-EN
	ES	573126	P.BE-CMMS-ST-G2-HW-ES	555697	P.BE-CMM-FHPP-SW-ES
	FR	573127	P.BE-CMMS-ST-G2-HW-FR	555698	P.BE-CMM-FHPP-SW-FR
	IT	573128	P.BE-CMMS-ST-G2-HW-IT	555699	P.BE-CMM-FHPP-SW-IT
	SV	573129	P.BE-CMMS-ST-G2-HW-SV	555700	P.BE-CMM-FHPP-SW-SV
		for CANopen interface		for Profibus interface	
	DE	554351	P.BE-CMMS-FHPP-CO-SW-DE	554345	P.BE-CMMS-FHPP-PB-SW-DE
	EN	554352	P.BE-CMMS-FHPP-CO-SW-EN	554346	P.BE-CMMS-FHPP-PB-SW-EN
	ES	554353	P.BE-CMMS-FHPP-CO-SW-ES	554347	P.BE-CMMS-FHPP-PB-SW-ES
	FR	554354	P.BE-CMMS-FHPP-CO-SW-FR	554348	P.BE-CMMS-FHPP-PB-SW-FR
	IT	554355	P.BE-CMMS-FHPP-CO-SW-IT	554349	P.BE-CMMS-FHPP-PB-SW-IT
	SV	554356	P.BE-CMMS-FHPP-CO-SW-SV	554350	P.BE-CMMS-FHPP-PB-SW-SV
		for DeviceNet interface			
	DE	554357	P.BE-CMMS-FHPP-DN-SW-DE		
	EN	554358	P.BE-CMMS-FHPP-DN-SW-EN		
	ES	554359	P.BE-CMMS-FHPP-DN-SW-ES		
	FR	554360	P.BE-CMMS-FHPP-DN-SW-FR		
	IT	554361	P.BE-CMMS-FHPP-DN-SW-IT		
	SV	554362	P.BE-CMMS-FHPP-DN-SW-SV		

1) User documentation in paper form is not included in the scope of delivery