Motor controllers CMMS-ST, for stepper motors

FESTO

New

Motor controllers CMMS-ST, for stepper motors

Key features

Comparison of motor controllers				
Motor controller For motor type		CMMS-ST Stepper motor	CMMS-AS Servo motor	CMMP-AS Servo motor
Torque at standstill	[Nm]	9.3	4.7	25
Peak torque	[Nm]	9.3	9.2	48
Speed	[rpm]	2,000	6,000	6,000
Position sets		63	63	255
Measuring system		Incremental	Incremental/absolute	Incremental/absolute
Extended I/O interface		4 working modes	4 working modes	Flexibly configurable
Notification of remaining distance		1 for n	1 for n	Separate for all positions
Torque reduction		No	No	Separate for all positions
Set linking		Linear	Linear	With branching
STO/SS1		To EN 61800-5-2 with external circuitry	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:

PROFIBUS

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 positioning controllers included in the CMMS-ST range 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.

Servo mode

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

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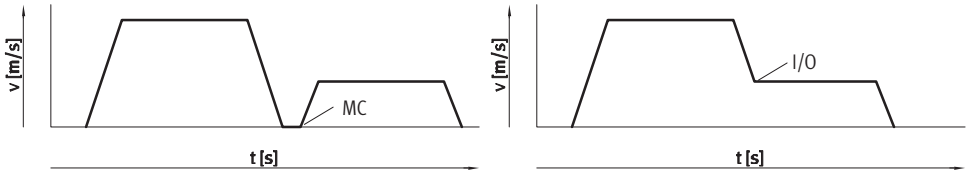
Key features

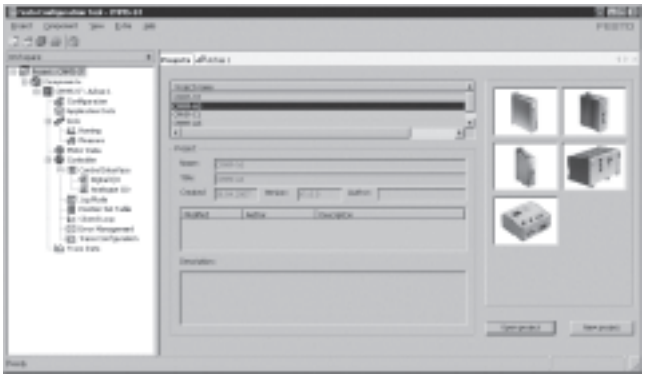
Travel program

- 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



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

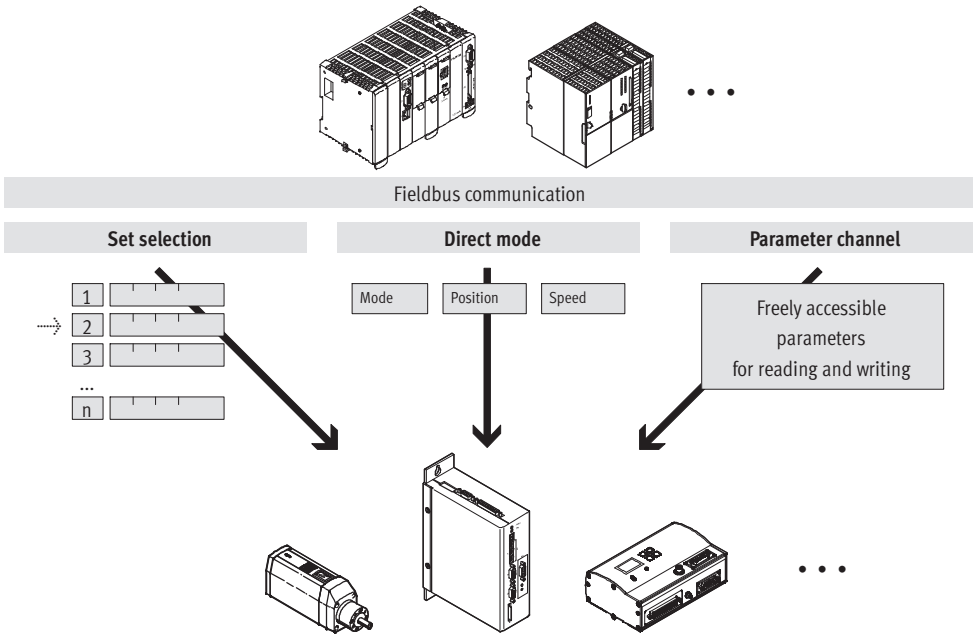
FHPP – Festo Handling and Positioning Profile

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



New

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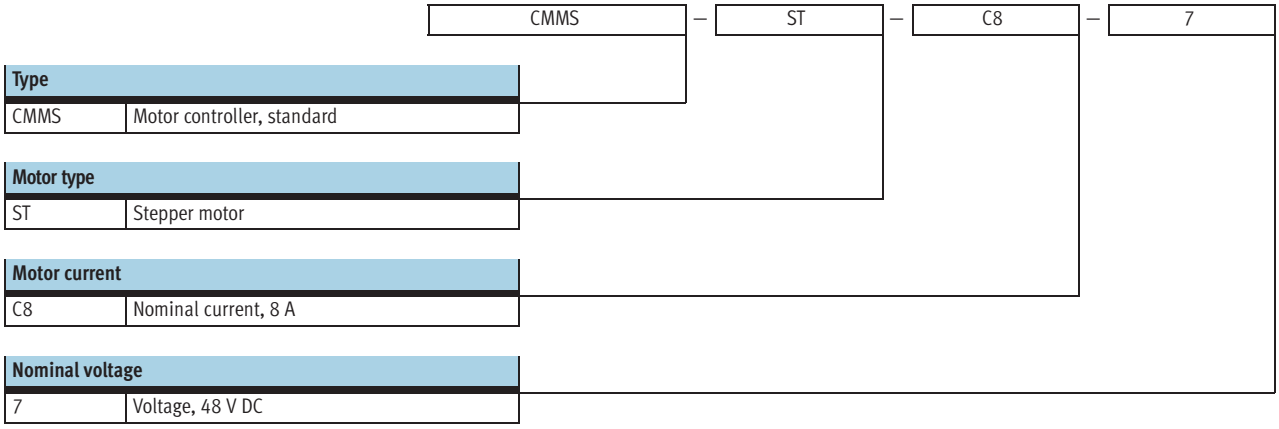
Type codes



Type	
CMMS	Motor controller, standard

Motor type	
ST	Stepper motor

Motor current	
C8	Nominal current, 8 A

Nominal voltage	
7	Voltage, 48 V DC

Motor controllers CMMS-ST, for stepper motors

Technical data

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Fieldbus interfaces

CANopen

PROFIBUS

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
Impedance of setpoint input	[kΩ]	20
Operating range of analogue outputs	[V]	±10
Operating range of analogue inputs	[V]	±10
Number of analogue outputs		1
Number of analogue inputs		1
Characteristics of digital logic outputs		Freely configurable in some cases
Mains filter		Integrated
Product weight	[g]	2,000

Technical data – Fieldbus interface					
Interfaces		I/O	CANopen	Profibus DP	DeviceNet
Communication profile		–	DS301, FHPP	DP-V0 / FHPP	FHPP
		–	DS301, DSP402	Step7 functional modules	
Max. fieldbus transmission rate	[Mbit/s]	–	1	12	0.5
Interface	Integrated	■	■	–	–
	Optional	–	–	■ → 8	■ → 8

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

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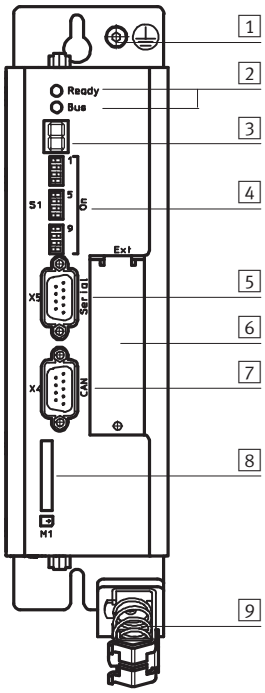
Operating and environmental conditions		
Digital logic outputs		Not electrically separated
Logic inputs		Electrically separated
Protection class		IP20
Protective function		I^2t monitoring
		Current monitoring
		Voltage failure detection
		Following error monitoring
		Temperature monitoring
Ambient temperature	[°C]	0 ... +50
Storage temperature	[°C]	–25 ... +70
CE mark (see declaration of conformity)		To EU EMC Directive
STO/SS1		To EN 61800-5-2 with external circuitry
Safety function		"Protection against unexpected start-up" to DIN EN ISO 13849-1, category 3, performance level d, SIL 2 to Table 4 with external circuitry
Relative humidity	[%]	0 ... 90 (non-condensing)
Certification		C-Tick

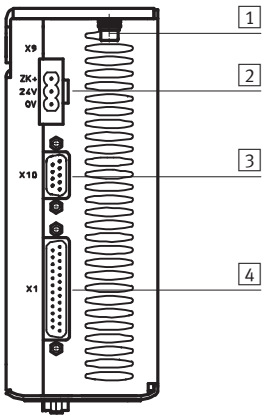
View of motor controller

From the front



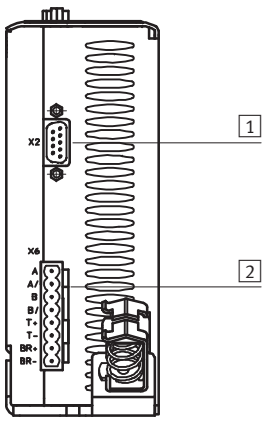
1 Earthing
2 Ready/bus LED
3 Status display
4 Fieldbus settings and boot loader
5 Interface: RS232/RS485
6 Technology module slot
7 Interface: CAN bus
8 SD memory card
9 Screened connection

From above



1 Earthing screw
2 Power supply
3 Increment generator output
4 I/O interface

From underneath



1 Increment generator input
2 Motor connection

Motor controllers CMMS-ST, for stepper motors

Technical data

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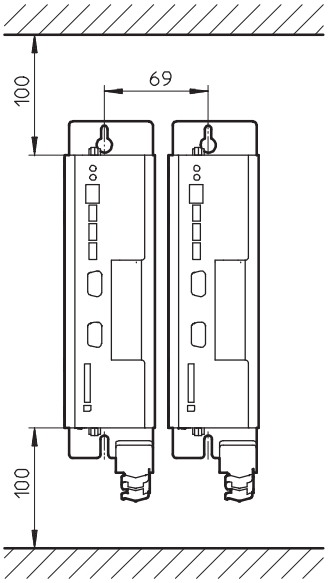
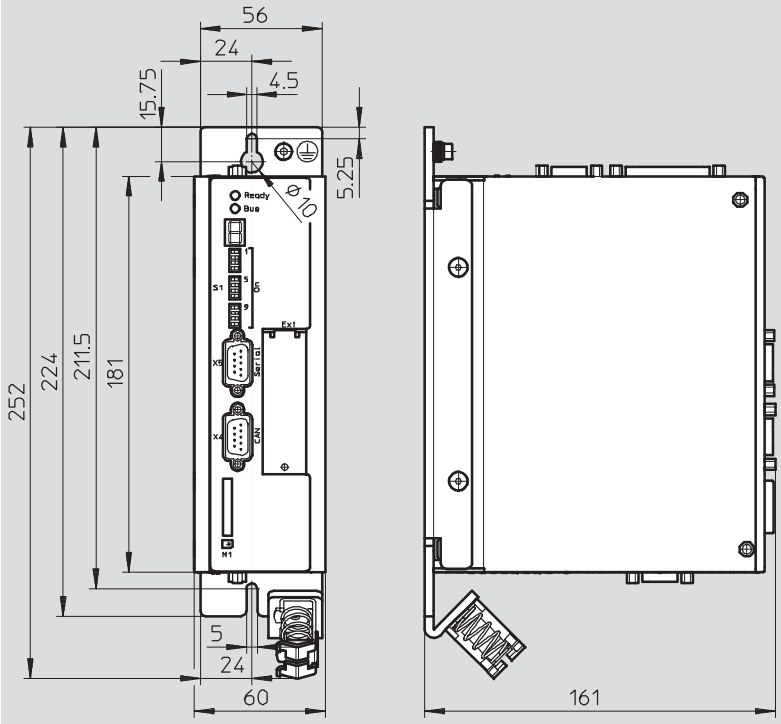
Installation clearance for motor controller

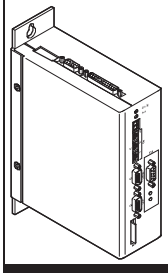


Dimensions

Download CAD data ➔ **www.festo.com**



Ordering data

	Brief description	Part No.	Type
	The plug range NEKM (➔ 8) and the operating package (➔ 9) are included in the scope of delivery.	**547 454**	**CMMS-ST-C8-7**

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Accessories

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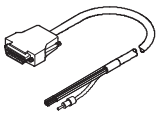
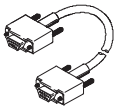
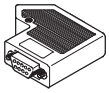
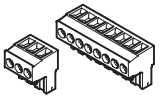
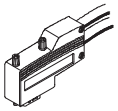
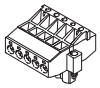
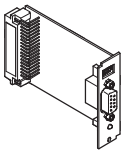
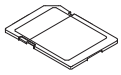
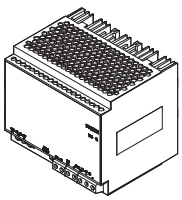
Ordering data – Cables and plugs

	Brief description	Cable length [m]	Part No.	Type
	Control cable, for I/O interface to any controller	2.5	**552 254**	**NEBC-S1G25-K-2.5N-LE26**
	Programming cable	1.5	**160 786**	**PS1-ZK11-NULLMODEM-1,5M**
	Encoder plug	–	**552 274**	**NECC-S-S1G9-C2M**
	Plug range, comprising plug for power supply and plug for motor connection. The plug range is included in the scope of delivery	–	**547 452**	**NEKM-C-1**
	Plug for Profibus interface	–	**533 780**	**FBS-SUB-9-WS-PB-K**
	Plug for DeviceNet interface	–	**525 635**	**FBSD-KL-2X5POL**

Ordering data – Plug-in cards

	Brief description	Part No.	Type
	Interface, for Profibus interface	**547 450**	**CAMC-PB**
	Interface, for DeviceNet interface	**547 451**	**CAMC-DN**
	Memory card, for data backup and firmware downloads	**560 626**	**CAMC-M-S-F1-V1**

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	**547 867**	**SVG-1/230VAC-24VDC-5A**
				10	**547 868**	**SVG-1/230VAC-24VDC-10A**
			48	5	**542 403**	**SVG-1/230VAC-48VDC-5A**
				10	**542 404**	**SVG-1/230VAC-48VDC-10A**
		400 … 500		20	**542 405**	**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.

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Accessories

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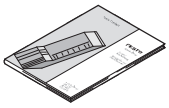
Ordering data – Software and documentation

	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	**558 330**	**P.BP-CMMS-ST**

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	**554 339**	**P.BE-CMMS-ST-HW-DE**		**555 695**	**P.BE-CMM-FHPP-SW-DE**
	EN	**554 340**	**P.BE-CMMS-ST-HW-EN**		**555 696**	**P.BE-CMM-FHPP-SW-EN**
	ES	**554 341**	**P.BE-CMMS-ST-HW-ES**		**555 697**	**P.BE-CMM-FHPP-SW-ES**
	FR	**554 342**	**P.BE-CMMS-ST-HW-FR**		**555 698**	**P.BE-CMM-FHPP-SW-FR**
	IT	**554 343**	**P.BE-CMMS-ST-HW-IT**		**555 699**	**P.BE-CMM-FHPP-SW-IT**
	SV	**554 344**	**P.BE-CMMS-ST-HW-SV**		**555 700**	**P.BE-CMM-FHPP-SW-SV**
		for CANopen interface			for Profibus interface	
	DE	**554 351**	**P.BE-CMMS-CO-SW-DE**		**554 345**	**P.BE-CMMS-FHPP-PB-SW-DE**
	EN	**554 352**	**P.BE-CMMS-CO-SW-EN**		**554 346**	**P.BE-CMMS-FHPP-PB-SW-EN**
	ES	**554 353**	**P.BE-CMMS-CO-SW-ES**		**554 347**	**P.BE-CMMS-FHPP-PB-SW-ES**
	FR	**554 354**	**P.BE-CMMS-CO-SW-FR**		**554 348**	**P.BE-CMMS-FHPP-PB-SW-FR**
	IT	**554 355**	**P.BE-CMMS-CO-SW-IT**		**554 349**	**P.BE-CMMS-FHPP-PB-SW-IT**
	SV	**554 356**	**P.BE-CMMS-CO-SW-SV**		**554 350**	**P.BE-CMMS-FHPP-PB-SW-SV**
		for DeviceNet interface				
	DE	**554 357**	**P.BE-CMMS-FHPP-DN-SW-DE**			
	EN	**554 358**	**P.BE-CMMS-FHPP-DN-SW-EN**			
	ES	**554 359**	**P.BE-CMMS-FHPP-DN-SW-ES**			
	FR	**554 360**	**P.BE-CMMS-FHPP-DN-SW-FR**			
	IT	**554 361**	**P.BE-CMMS-FHPP-DN-SW-IT**			
	SV	**554 362**	**P.BE-CMMS-FHPP-DN-SW-SV**			

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