

Motor controllers CMMS-ST, for stepper motors



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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	Motion control
<ul style="list-style-type: none"> • Small dimensions • Full integration of all components for controller and power section, including RS232 and CANopen interface • Integrated brake chopper • Integrated EMC filters 	<ul style="list-style-type: none"> • 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)
	<ul style="list-style-type: none"> • 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
	<ul style="list-style-type: none"> • Position synchronisation • Electronic gear unit • 63 position sets • 8 travel profiles • Wide range of homing methods

Fieldbus interfaces

Integrated:	Optional:
	 

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

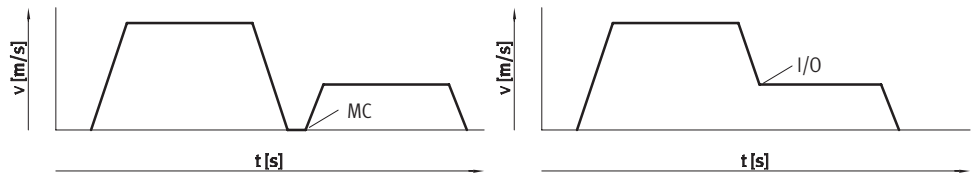
- "Servo Lite operation" (closed loop) thanks to encoder option, in other words no step losses, following errors are corrected

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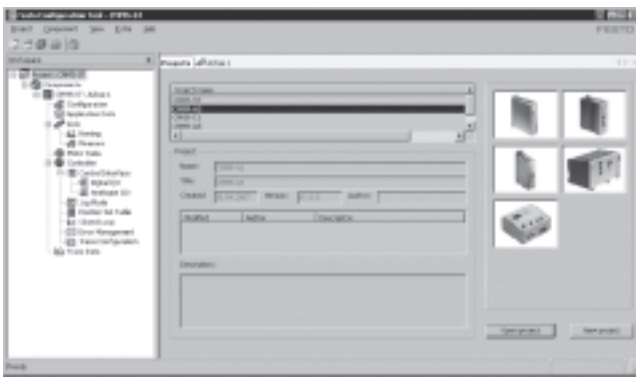
Travel program

- 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

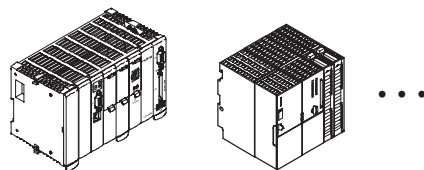
Optimised data profile

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

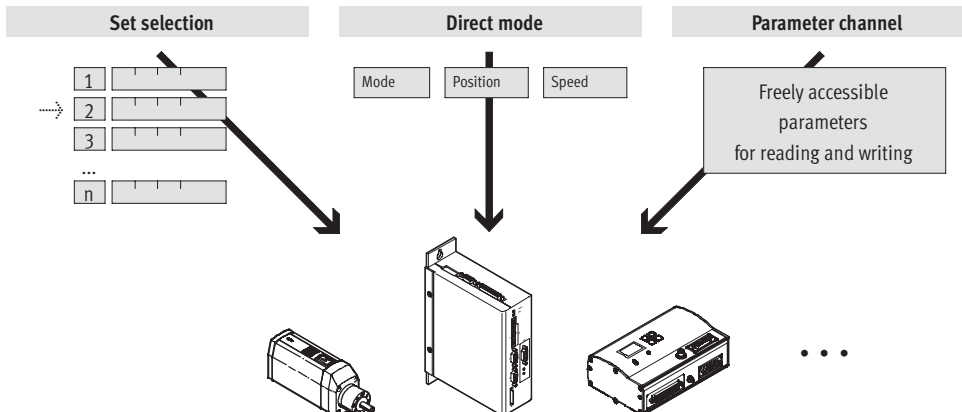
The FHPP data profile permits the actuation of Festo motor controllers, using a fieldbus interface, via standardised control and status bytes.

The following are defined, among others:

- Operating modes
- I/O data structure
- Parameter objects
- Sequence control

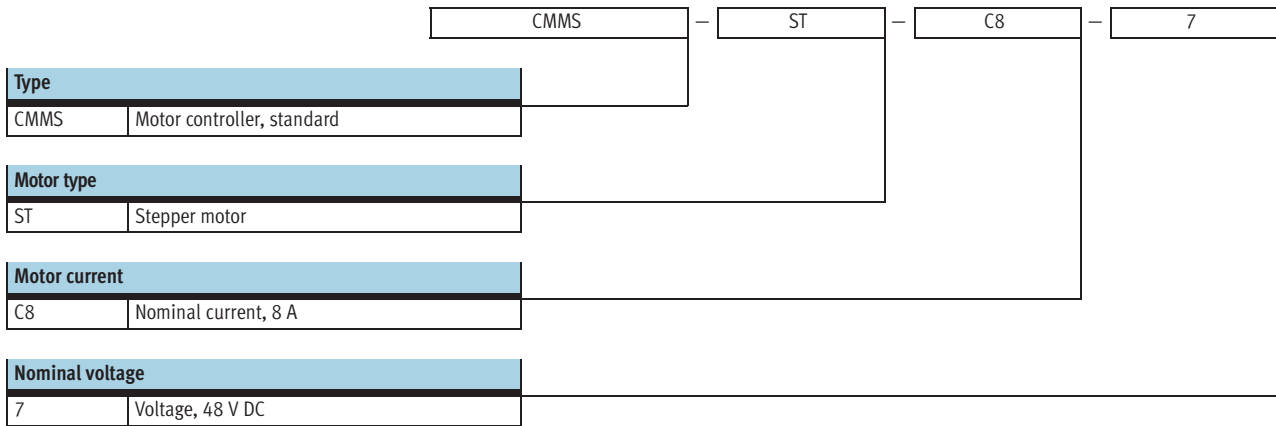


Fieldbus communication



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Type codes



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Technical data

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

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

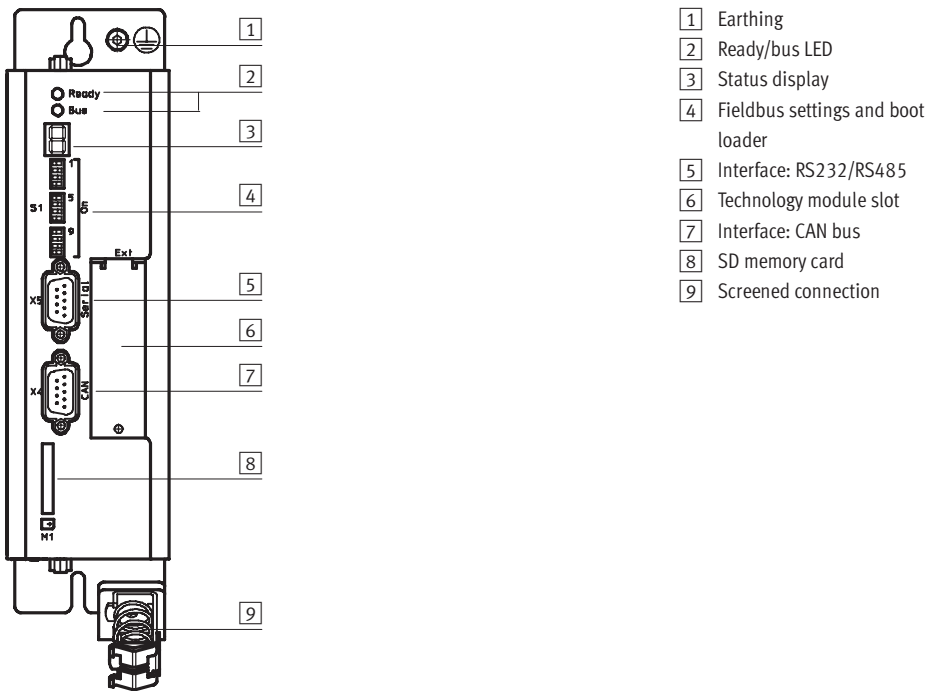
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Technical data

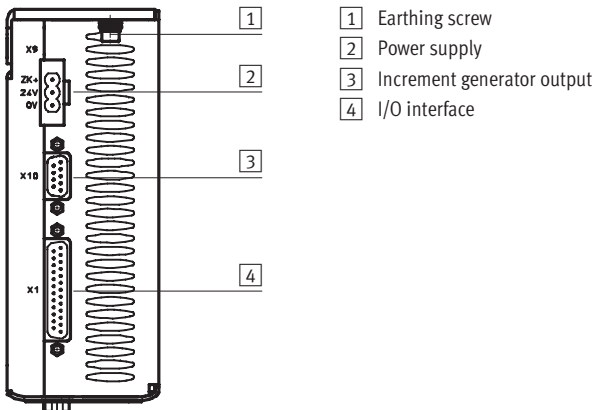
Operating and environmental conditions		
Digital logic outputs		Not electrically separated
Logic inputs		Electrically separated
Protection class		IP20
Protective function		I ² t monitoring
		Current monitoring
		Voltage failure detection
		Following error monitoring
		Temperature monitoring
Ambient temperature	[°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)

View of motor controller

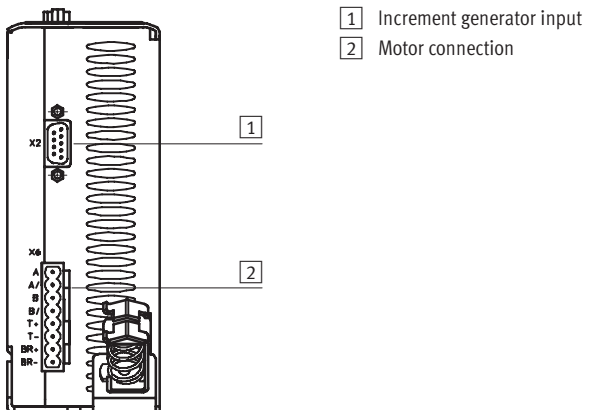
From the front



From above



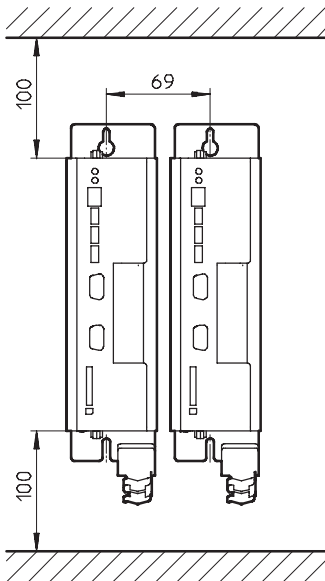
From underneath



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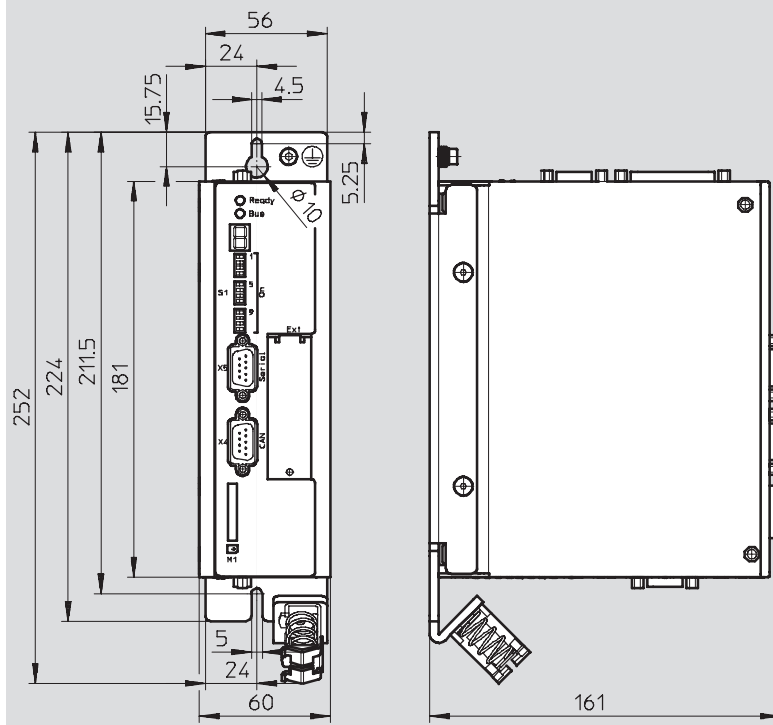
Technical data

Installation clearance for motor controller

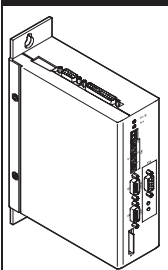


Dimensions

Download CAD data → www.festo.com

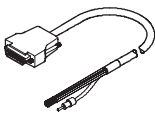
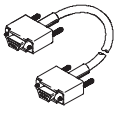
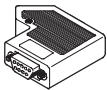
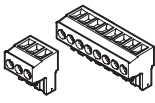
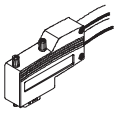



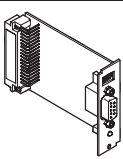
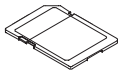
Ordering data

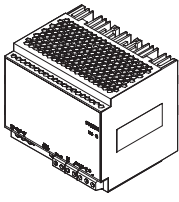
	Brief description	Part No.	Type
	The plug range NEKM (→ 8) and the operating package (→ 9) are included in the scope of delivery.	547 454	CMMS-ST-C8-7


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Accessories

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
		400 ... 500	48	5	542 403	SVG-1/230VAC-48VDC-5A
				10	542 404	SVG-1/230VAC-48VDC-10A
				20	542 405	SVG-3/400VAC-48VDC-20A


 **Note**

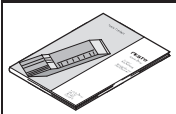
If a common power supply unit is used to supply the power section and the control section, the voltage tolerances for the supply to the control section cannot be maintained at high braking power. This can result in damage to the control section.

Always use separate power supply units to supply the power section and the control section.

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Accessories

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