Motor controllers CMMS-AS, for servo motors

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Motor controllers CMMS-AS, for servo motors

Key features

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Comparison of motor controllers				
Motor controller		CMMS-AS	CMMP-AS	CMMS-ST
For motor type		Servo motor	Servo motor	Stepper motor
Torque at standstill	[Nm]	4.7	25	9.3
Peak torque	[Nm]	9.2	48	9.3
Speed	[rpm]	6,000	6,000	2,000
Position sets		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	Separate for all positions	1 for n
Torque reduction		No	Separate 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 with external circuitry

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

- Digital absolute shaft encoder in single-turn and multi-turn versions
- 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-AS 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
- Less external circuitry
- Shorter response times in the event of an error
- Faster restart, intermediate circuit remains charged

Interpolating multi-axis movement

- With a suitable controller, the CMMS-AS 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.

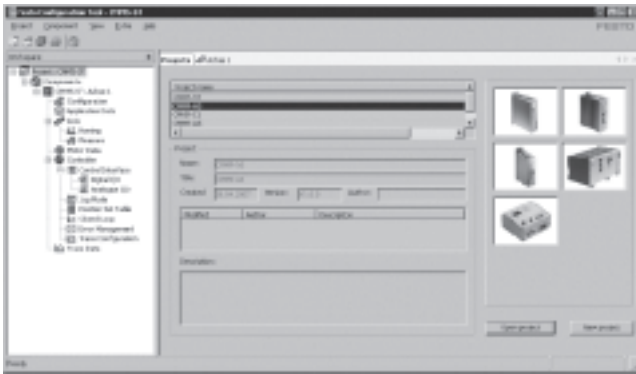# Motor controllers CMMS-AS, for servo motors

Key features

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Travel program

- Linking of any number of position sets into a travel program
- Further switching conditions for the travel program possible via digital inputs, for example
  MC – motion complete
  I/O – digital inputs
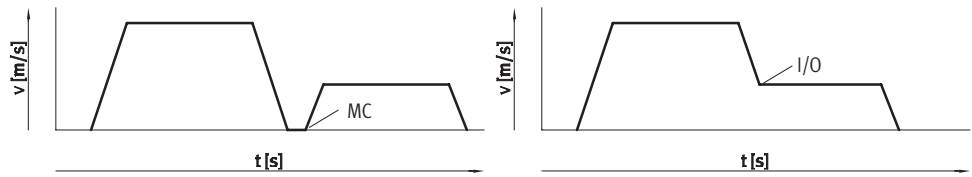
FCT software – Festo Configuration Tool

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

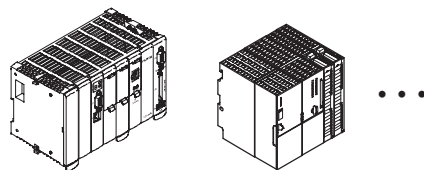## FHPP – Festo Handling and Positioning Profile

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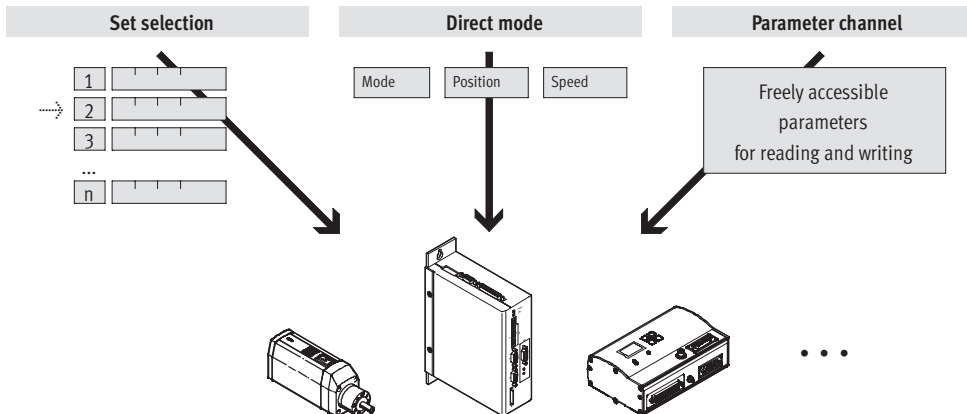
The FHPP data profile permits the actuation of Festo motor controllers, using a fieldbus interface, via standardised control and status bytes.

The following are defined, among others:
- Operating modes
- I/O data structure
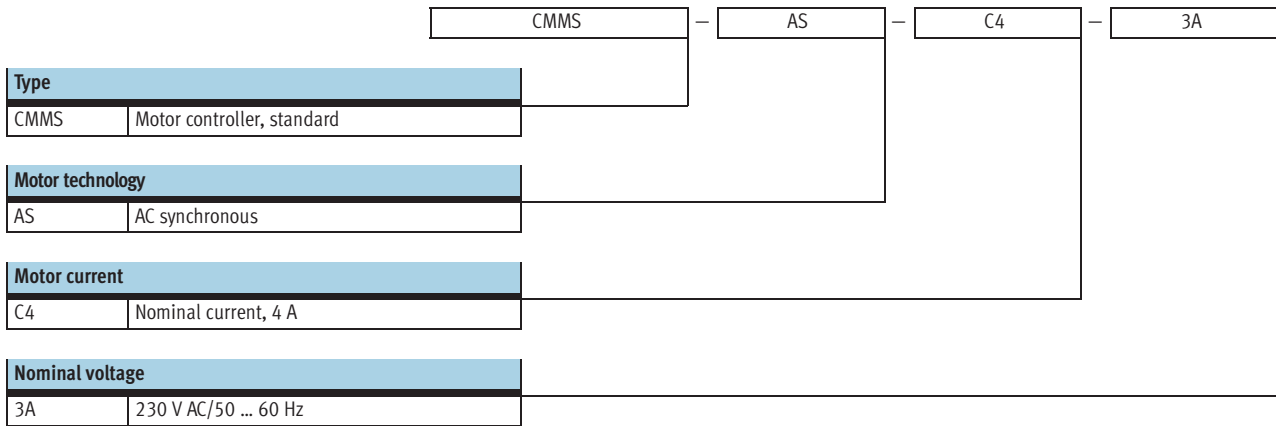- Parameter objects
- Sequence control

Fieldbus communication

Set selection	Direct mode	Parameter channel
1 2 3 ... n	Mode Position Speed	Freely accessible parameters for reading and writing

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

-◇- **New**

Motor controllers CMMS-AS, for servo motors

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Type codes

| | CMMS | — | AS | — | C4 | — | 3A |

Type	
CMMS	Motor controller, standard

Motor technology	
AS	AC synchronous

Motor current	
C4	Nominal current, 4 A

Nominal voltage	
3A	230 V AC/50 … 60 Hz

Motor controllers CMMS-AS, for servo motors

Technical data

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Fieldbus interfaces

CANopen

P R O F I

DeviceNet

General technical data		
Type of mounting		Screwed to a mounting plate
Display		7-segment display
Parameterisation interface		RS232 (9,600 … 115,000 bits/s)
Encoder interface input		Setpoint position value as encoder signal
		EnDat V2.2
Encoder interface output		Actual value feedback via encoder signals in speed control mode
		Setpoint specification for downstream slave drive
		Resolution 4,096 ppr
Braking resistor, integrated	[Ω]	230
Braking resistor, external	[Ω]	100
Impedance of setpoint input	[kΩ]	20
Pulse power of braking resistor	[kVA]	0.7
Operating range of analogue outputs	[V]	0 … 10
Number of analogue outputs		1
Characteristics of analogue outputs		Short circuit-proof
Operating range of analogue inputs	[V]	±10
Number of analogue inputs		1
Characteristics of analogue inputs		Differential inputs
		Configurable for speed
		Configurable for torque
Resolution of analogue outputs	[Bit]	8
Mains filter		Integrated
Max. length of motor cable without external mains filter	[m]	15
Product weight	[g]	2,500

Technical data – Fieldbus interface					
Interfaces		I/O	CANopen	Profibus DP	DeviceNet
Operating range of logic inputs	[V]	12 … 30	–		
Number of digital logic inputs		14	–		
Characteristics of logic inputs		Freely configurable	–		
Number of digital logic outputs		5			
Characteristics of digital logic outputs		Freely configurable in some cases			
Process coupling		For 63 position sets			
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	–	–	■ ➔ 9	■ ➔ 9

➔ **Internet: www.festo.com/catalogue/…**

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Technical data

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Electrical data		
Output connection data		
Output voltage range	[V AC]	0 ... 210
Nominal output current	[A]	4
Peak current	[A]	10
Max. peak current duration	[s]	2
Max. intermediate circuit voltage	[V DC]	380
Mains frequency	[Hz]	50 ... 60
Load supply		
Nominal voltage phases		1
Input voltage range	[V AC]	95 ... 255
Max. nominal input current	[A]	5
Rated output	[VA]	600
Peak output	[VA]	1,200
Logic supply		
Nominal voltage	[V DC]	24 ±20%
Nominal current	[A]	4 ... 5
Max. current of digital logic outputs	[mA]	100

| Operating and environmental conditions		
Digital logic outputs		Not electrically isolated
Logic inputs		Electrically isolated
Protection class		IP20
Protective function		I^2t monitoring
		Intermediate circuit over-/undervoltage
		Short circuit in output stage
		Standstill monitoring
		Temperature monitoring
Ambient temperature	[°C]	0 ... +50
Storage temperature	[°C]	−25 ... +70
Relative air humidity	[%]	0 ... 90 (non-condensing)
CE mark (see declaration of conformity)		To EU Low Voltage Directive
STO/SS1		To EN 61800-5-2
Safety function		"Protection against unexpected start-up" to DIN EN ISO 13849-1, category 3, performance level d, SIL 2 to Table 4

View of motor controller	
From the front	
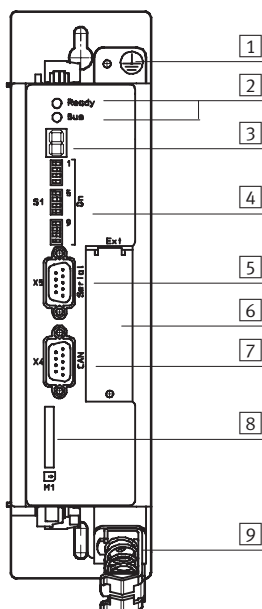
1 Earthing
2 Ready/bus LED
3 Status display
4 Fieldbus settings and boot loader
5 Interface: RS232/RS485
6 Technology module (optional)
7 Interface: CAN bus
8 SD memory card
9 Screened connection

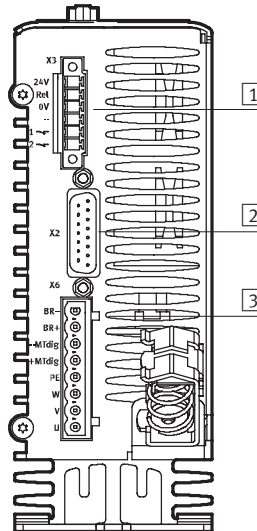# Motor controllers CMMS-AS, for servo motors

Technical data

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View of motor controller

From above
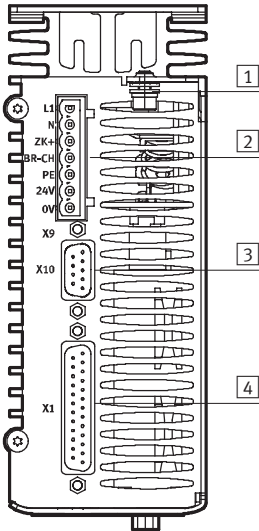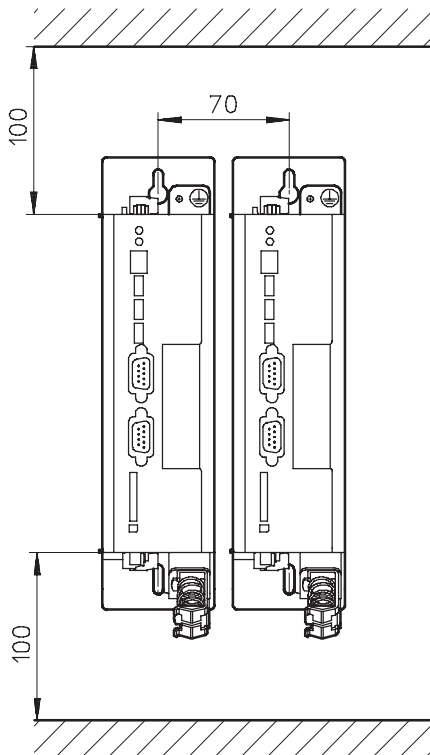

1 Earthing screw
2 Power supply
3 Increment generator output
4 I/O interface

From underneath

1 Safe stop
2 Increment generator input
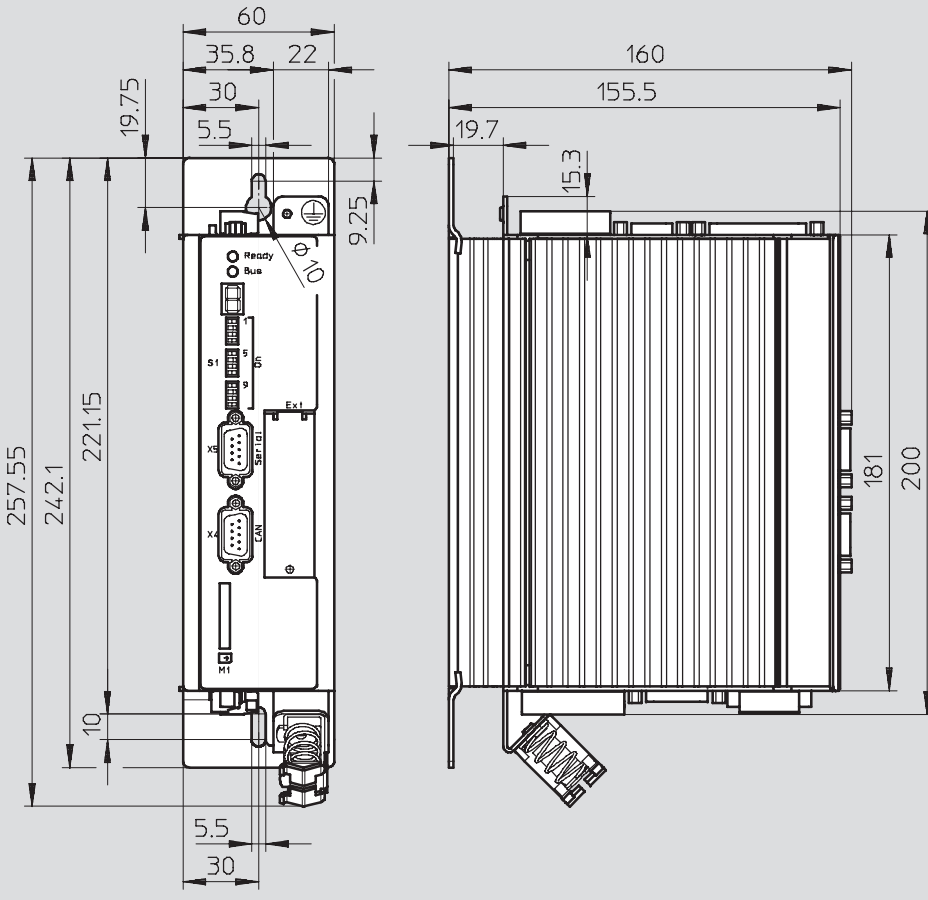3 Motor connection

Installation clearance for motor controller
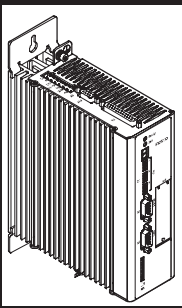
Motor controllers CMMS-AS, for servo motors

Technical data

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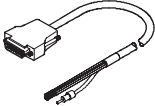**Dimensions**   Download CAD data ➔ **www.festo.com**
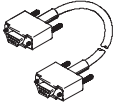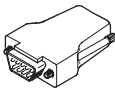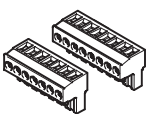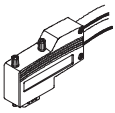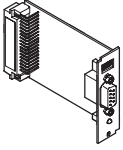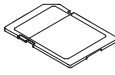
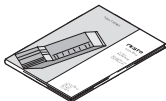| Ordering data			
	Brief description	Part No.	Type
	The plug assortment NEKM (➔ 9) and the operator package (➔ 10) are included in the scope of delivery.	**552 741**	**CMMS-AS-C4-3A**

Motor controllers CMMS-AS, for servo motors
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	–	**564 264**	**NECC-A-S-S1G9-C2M**
	Plug assortment, comprising plug for power supply and plug for motor connection. The plug assortment is included in the scope of delivery	–	**560 504**	**NEKM-C-4**
	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	**562 211**	**CAMC-M-S-F2-V1**

Motor controllers CMMS-AS, for servo motors

Accessories

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

	Operator package contains:
	– CD-ROM
	  – with manual for CMMS-AS,
	    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
		559 868	**GSIB-CMMS-AS**

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	**564 227**	**P.BE-CMMS-AS-3A-HW-DE**	**555 695**	**P.BE-CMM-FHPP-SW-DE**
	EN	**564 228**	**P.BE-CMMS-AS-3A-HW-EN**	**555 696**	**P.BE-CMM-FHPP-SW-EN**
	ES	**564 229**	**P.BE-CMMS-AS-3A-HW-ES**	**555 697**	**P.BE-CMM-FHPP-SW-ES**
	FR	**564 230**	**P.BE-CMMS-AS-3A-HW-FR**	**555 698**	**P.BE-CMM-FHPP-SW-FR**
	IT	**564 231**	**P.BE-CMMS-AS-3A-HW-IT**	**555 699**	**P.BE-CMM-FHPP-SW-IT**
	SV	**564 232**	**P.BE-CMMS-AS-3A-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) Manual in paper form is not included in the scope of delivery