

Servo drives CMMT-ST, for extra-low voltage



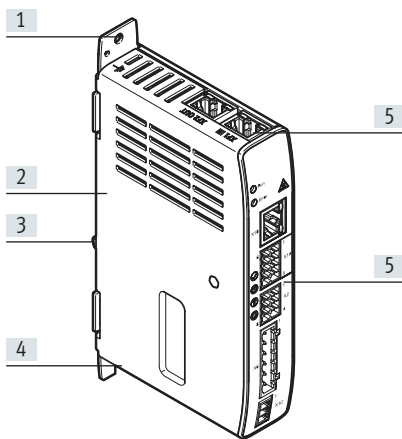
Key features

At a glance

- Space-saving servo drive for operating stepper motors and brushless direct current motors
- Extremely economical for positioning tasks and motion solutions with low power requirements up to 300 W
- Primary voltage from 24 ... 48 V DC
- Motor current up to 8 A (peak 10 A)
- 50% more compact than the smallest CMMT-AS
- Options for point-to-point and interpolating motion and for precise positioning
- Bus protocols
- Direct fieldbus integration to major controller manufacturers
- Auto-tuning supports simple commissioning of rotary and linear movements, using mechanical systems from Festo and third-party suppliers
- Integrated safety functions:
 - Safe torque off (STO) up to SIL3/Cat. 3 PL e
 - Safe stop 1 time controlled (SS1-t) when using a suitable external safety relay unit and suitable circuitry for the servo drive
- Can be easily combined with the servo drive CMMT-AS and axis mechanisms from Festo



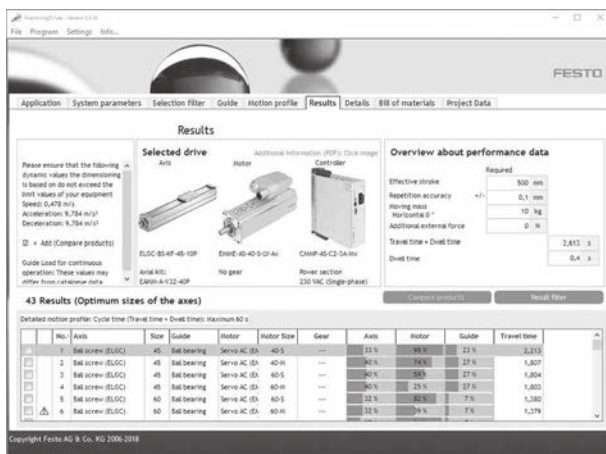
The technology in detail



- [1] Hole for mounting the servo drive on the control cabinet back wall
- [2] Housing
- [3] Standard mounting via H-rail clamp
- [4] Elongated hole for adjustment during mounting
- [5] Connections

PositioningDrives

Configuring electromechanical drives



Create the optimum drive package quickly and reliably. PositioningDrives calculates suitable combinations of electric axis, electric motor and servo drive using just a few application details. You can sort the results according to your specifications and obtain all the relevant data including the bill of materials and documentation for the selected combination. This avoids design errors and results in significantly improved energy efficiency for the system.

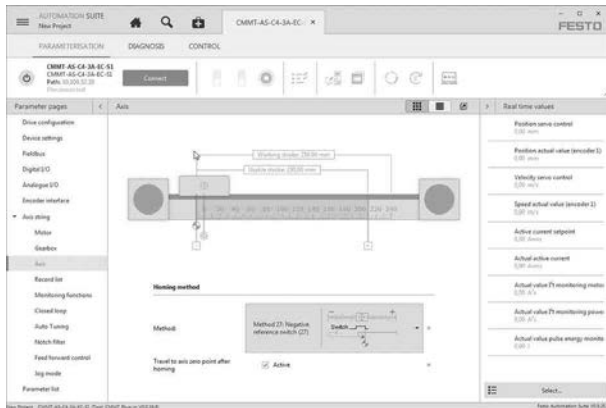
Key features

Library in EPLAN



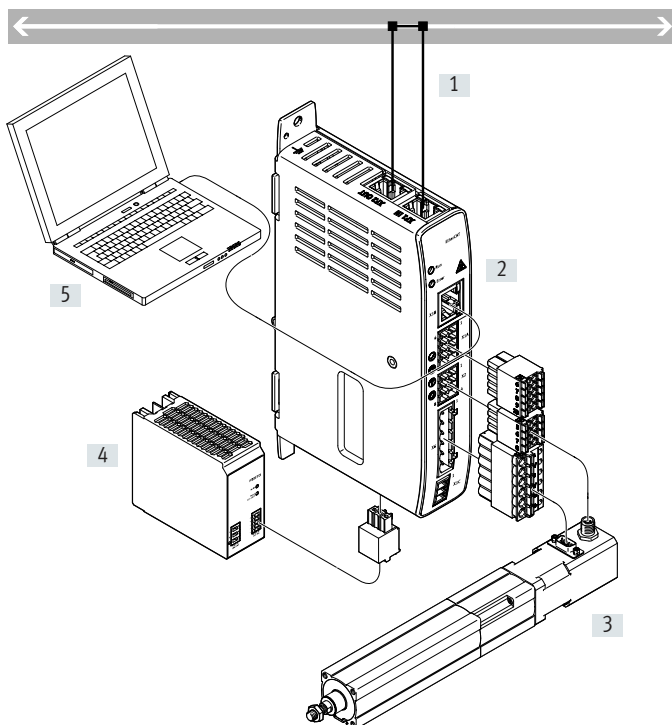
EPLAN macros for fast and reliable planning of electrical projects in combination with servo drives, motors and cables. This enables a high level of planning reliability and standardisation of documentation without the need to create symbols, graphics and master data.

Festo Automation Suite



- Parameterisation, programming and commissioning in a clear and user-friendly interface
- Optimum support for complex processes thanks to guided wizards (e.g. for commissioning, drive configuration, etc.)
- Fast access to the required documents and additional information
- Easy integration of electric drives in the controller programming

System overview



- [1] Bus/network
- [2] Servo drive CMMT-ST
- [3] Stepper motor or EC motor with drive
- [4] Power supply unit(s) for logic and load voltage (PELV)
- [5] PC with Ethernet connection for parameterisation

Type codes

001	Series
CMMT	Motor controller

002	Motor type
ST	Stepper motor ST

003	Nominal current
C8	8 A

004	Nominal input voltage
1C	24 - 48 V DC

005	Bus protocol/activation
EC	EtherCAT®
EP	EtherNet/IP
PN	Profinet

006	Safety function
S0	Basic safety

Data sheet

Bus protocols

EtherCAT

PROFI
NET

EtherNet/IP

Modbus



General technical data

Type of mounting	Mounting plate, screwed in With H-rail
Display	LED green/yellow/red
Controller operating mode	Cascade controller P position controller PI speed controller PI current regulator for F or M Profile operation with record and direct mode Interpolating operation via fieldbus Synchronised operating modes Homing Set up mode Auto-tuning Open-loop operation
Operating mode	Field-oriented closed-loop control Position resolution 24 bit/rev. Sampling rate 20 kHz PWM with 20 kHz Real-time data acquisition 2x input capture (x, v, F) 2x output trigger (x, v, F) 1x position encoder input
Adjustable current reduction	Via software
Protective function	I ² t monitoring Temperature monitoring Current monitoring Voltage failure detection Following error monitoring Software end-position detection
Mounting position	Free convection Vertical
Product weight [g]	350

Data sheet

Bus protocols				
Interface	EtherCAT	PROFINET RT/IRT	EtherNet/IP	Modbus TCP
Function	Bus connection incoming/outgoing			
Process interfacing	Interpolated mode CSP	AC1: adjustable-speed drives	Adjustable-speed drives	Adjustable-speed drives
	Interpolated mode CSV	AC3: drives with positioning function	Drives with positioning function	Drives with positioning function
	Interpolated mode CST	AC4: synchronous servo application		
	Point-to-point mode PP			
	Point-to-point mode PV			
	Point-to-point mode PT			
	Homing mode HM			
Record table with 128 entries				
Communication profile	CiA402	PROFIdrive	DriveProfile	DriveProfile
	CoE (CANopen over EtherCAT)	PROFInergy		
	EoE (Ethernet over EtherCAT)			
	FoE (File over EtherCAT)			
Max. fieldbus transmission rate	[Mbps]	100		
Connection type	2 x socket			
Connection technology	RJ45			

Electrical data		
Output connection data		
Output voltage range	[V AC]	0 – Input
Nominal output current	[A]	8
Nominal current per phase	[A]	8
Peak current per phase	[A]	10
Max. peak current duration	[s]	3
Nominal power	[W]	300
Peak power	[W]	400
Output frequency	[kHz]	0 ... 20
Max. motor cable length ¹⁾	[m]	25
Load voltage DC		
Load voltage range	[V DC]	24 –15% ... 48+15%
Max. DC link voltage	[V DC]	60
Logic supply		
Nominal voltage	[V DC]	24 ±15%
Max. current consumption		
Without locking brake	[A]	1
With locking brake	[A]	2
Holding brake		
Max. output current	[A]	1
Max. voltage drop	[V]	1

1) Without external mains filter

Data sheet

Interfaces	
Ethernet	
Function	Parameterisation and commissioning
Protocol	TCP/IP
Position encoder	
Function	Incremental encoder BISS-C
Input/output	
Digital inputs	
Number	6
Number of high-speed	2
Time resolution of high-speed [µs]	1
Switching logic	PNP NPN
Properties	Not galvanically isolated Freely configurable in some cases Safety inputs in some cases
Specification	Based on IEC 61131-2, type 3
Working area [V]	-3 ... +30
Digital outputs	
Number	2
Number of high-speed	2
Time resolution of high-speed [µs]	1
Switching logic	PNP NPN
Properties	Not galvanically isolated Configurable
Max. current [mA]	100
Floating switching outputs	
Number	1
Max. current [mA]	100

Data sheet

Safety data	
Safety function to EN 61800-5-2	Safe torque off (STO) Safe stop 1 (SS1-t)
Performance level (PL) to EN ISO 13849-1	
Safe torque off (STO)	Category 3, PLd (EC motor without diagnostics) Category 3, PLe (stepper motor/EC motor with diagnostics)
Safety integrity level (SIL) to EN 62061 and EN 61508	
Safe torque off (STO)	SIL 2 / SILCL 2 (EC motor without diagnostics) SIL 3 / SILCL 3 (stepper motor/EC motor with diagnostics)
Certificate issuing authority and no.	German Technical Control Board (TÜV Rheinland) 01/205/5696.00/19
Proof test interval	
Safe torque off (STO)	20 a (stepper motor/EC motor without diagnostics)
Hardware fault tolerance	1
Operating and environmental conditions	
Degree of protection	IP20
Ambient temperature [°C]	0 ... 50
Storage temperature [°C]	-25 ... +55
Note on ambient temperature	Observe derating with regard to mounting clearance and output current
Relative humidity [%]	5 ... 90 (non-condensing)
Protection class	III
Overvoltage category	I
Contamination level	2
Max. installation height [m]	2000
Shock and vibration resistance	To EN 61800-2 and EN 61800-5-1
CE marking (see declaration of conformity)	To EU EMC Directive ¹⁾ To EU Machinery Directive To EU RoHS Directive
Certification	c UL us - Listed (OL) RCM trademark
KC marking	KC-EMV
Note on materials	Contains paint-wetting impairment substances RoHS-compliant

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

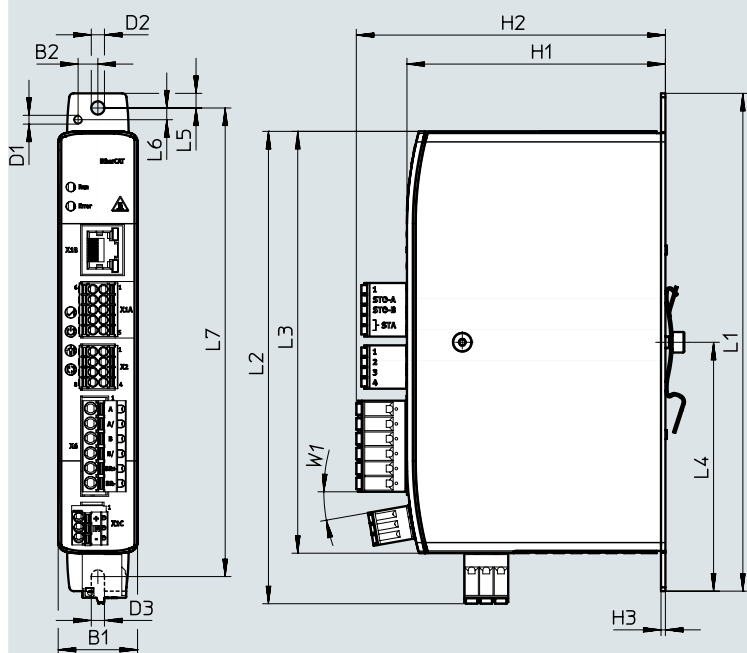
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Data sheet

Dimensions

Download CAD data → www.festo.com


CMMT-ST-C8



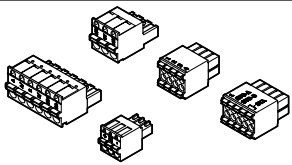
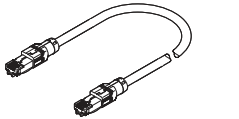
Type	B1	B2	D1	D2	D3	H1	H2	H3
CMMT-ST-C8-1C	27	6.8	M3x0.5	4.5	4.5	88.3	105.6	1.5

Type	L1	L2	L3	L4	L5	L6	L7	W1
CMMT-ST-C8-1C	170	161.3	144	85	5	4	160	10

Ordering data

	Description	Bus protocol	Part no.	Type
	The assortment of plugs NEKM (→ page 11) is included in the scope of delivery of the servo drive	EtherCAT	8084005	CMMT-ST-C8-1C-EC-S0
		PROFINET RT/IRT	8084004	CMMT-ST-C8-1C-PN-S0
		EtherNet/IP and Modbus TCP	8084006	CMMT-ST-C8-1C-EP-S0

Accessories

Ordering data – Accessories		Description	Part no.	Type
Assortment of plugs				
	<ul style="list-style-type: none"> • For single wiring connection with single-phase servo drives • Included in the scope of delivery of the servo drive 	8081885	NEKM-C-22	
Ordering data – Optional accessories		Description	Part no.	Type
Connecting cable				
	<ul style="list-style-type: none"> • Patch cable for the daisy-chain connection of the bus interfaces X19A/B • Ethernet category Cat 5e • Not included in the scope of delivery of the servo drive 	8082383	NEBC-R3G8-KS-0.2-N-S-R3G8-ET	