

Controllers CMXH-ST2

FESTO

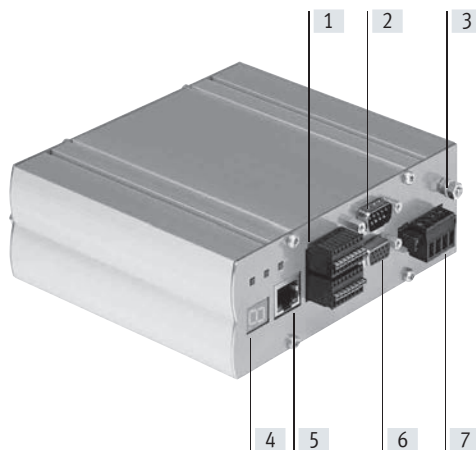


Key features

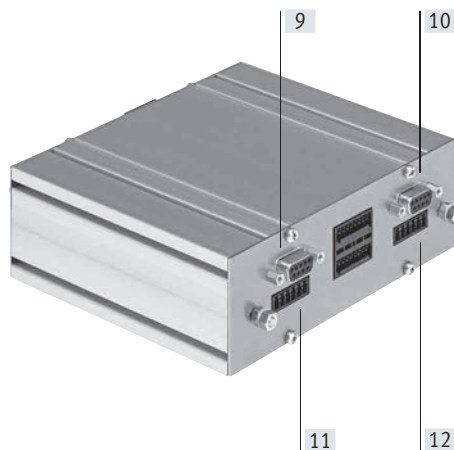
At a glance

- The controller controls two stepper motors in servo mode which drive an H-shaped recirculating toothed belt. The toothed belt moves a slide whose position is calculated by the controller using the encoder signals from the motors
 - The motors are not directly assigned to an axis (X- or Y-axis) of the planar surface gantry. Instead, the movement of the slide towards an axis is achieved through the interaction of the two motors, which is controlled by the controller
 - Supports the safe torque off (STO) safety function
 - Easy activation via:
 - Digital I/O interface
 - CAN interface
 - Ethernet TCP/IP – Modbus
 - H-rail mounting possible
- Parameterisation possible via:
- Configuration package FCT (Festo Configuration Tool)
 - Ethernet interface

Description of the interfaces



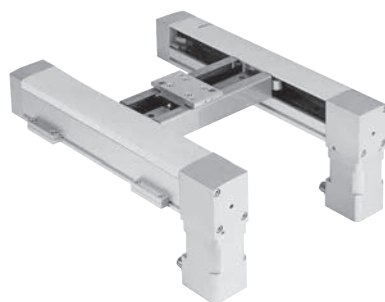
- [1] Switch-off functions
- [2] CAN interface
- [3] Functional earth
- [4] 7-segment display
- [5] Ethernet interface (RJ45)
- [6] I/O interface
- [7] Power supply



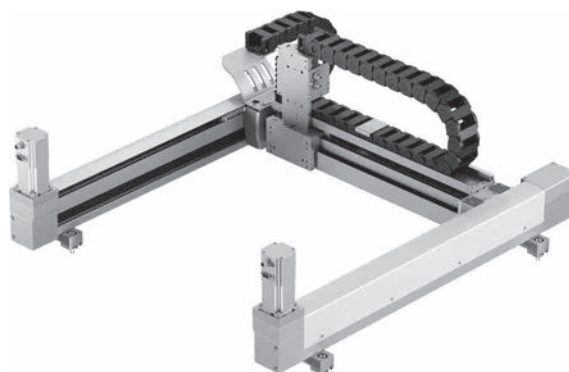
- [9] Encoder cable for motor 2
- [10] Encoder cable for motor 1
- [11] Motor cable 2
- [12] Motor cable 1

For controlling planar surface gantries

EXCM-30



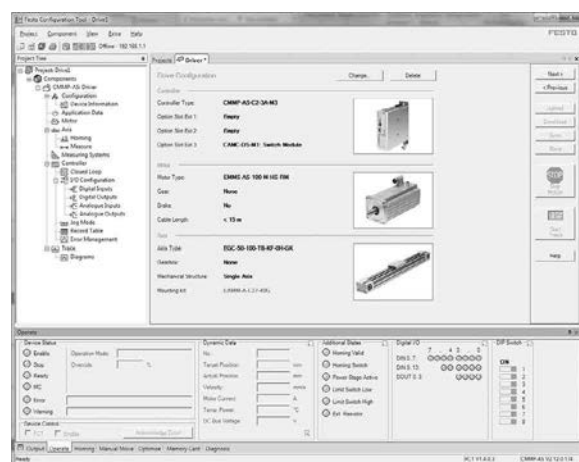
EXCM-40



Key features

FCT software – Festo Configuration Tool

Software platform for electric drives from Festo



Record table

- 31 records ensure flexible positioning
- The following parameters can be set flexibly for each application:
 - Position
 - Speed
 - Acceleration
 - Jerk (only with controller CMXH)
- Absolute or relative positioning values can be used
- Complete function test

- All drives in a system can be managed and saved in a common project
- Project and data management for all supported types of equipment
- Easy to use thanks to graphically supported parameter entry
- Universal mode of operation for all drives
- Work offline at your desk or online at the machine

Type codes

001	Series	
CMXH	Controller	

002	Motor type	
ST	Stepper motor ST	

003	Number of axes	
2	2 units	

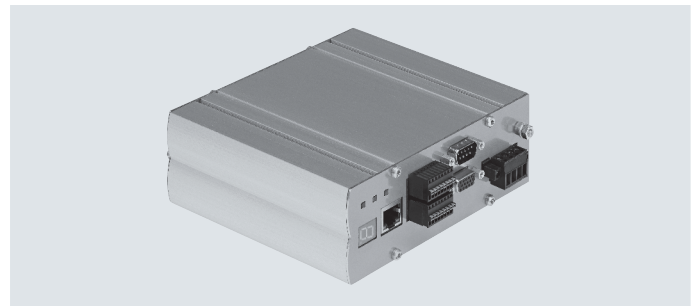
004	Nominal current	
C5	5 A	

005	Nominal input voltage	
7	48 V DC	

006	Bus protocol/activation	
DIO	Digital I/O interface	

007	Switching input/output	
P	PNP	

Data sheet



General technical data		
Supported kinematic systems	Planar surface gantry EXCM	
Total number of axes	2	
Operating mode	Direct operation	
	Record selection	
Status indication	7-segment display	
	LED	
Device-specific diagnostics	System- and motor-oriented diagnostics	
	Undervoltage, overvoltage, short circuit in motor winding	
	Diagnostic memory	
Rotor position encoder	Encoder	
Configuration support	FCT (Festo Configuration Tool)	
Braking resistor	[Ω]	15 (integrated)
Mains filter	Integrated	
Type of mounting	With screws in the mounting slots	
	With H-rail clip on H-rail	
Product weight	[g]	700

Electrical data		
Load supply		
Nominal voltage	[V DC]	24 ±10% or 48 ±10%
Nominal current	[A]	10
Maximum current	[A]	12
Logic supply		
Nominal voltage	[V DC]	24 ±15%
Maximum current		
Without brake	[A]	0.2
With brake	[A]	0.9
Maximum peak current per digital output	[A]	0.1
Mains buffering time ¹⁾	[ms]	10
Switching logic, input/output	PNP	

1) Use of a brake reduces the mains failure bridging time. To achieve that time, a switched-mode fixed power supply or a buffer module must be used in this case.

Data sheet

Technical data – Fieldbus interface			
Interfaces	I/O	CANopen	Ethernet
Number of digital logic outputs	5	–	–
Number of digital logic inputs	8	–	–
Process interfacing	31 records		
Communication profile	–	FHPP	FHPP (via TCP/IP – Modbus)
Max. fieldbus transmission rate [Mbps]	–	1	100
Bus connection	Socket, 15-pin, Sub-D	Plug, 9-pin, Sub-D	RJ45

Safety data	
Safety function to EN 61800-5-2	Safe torque off (STO)
Performance Level (PL) to EN ISO 13849-1	Category 3, Performance Level e
Safety Integrity Level (SIL) to EN 61800-5-2, EN 62061, EN 61508	SIL CL 3/ SC 3
Certificate issuing authority	TÜV 01/205/5519.00/16
Proof test interval	20a
PFH [1/hr]	2×10^{-9}
Diagnostic coverage [%]	90
Safe failure fraction (SFF) [%]	99
Hardware fault tolerance	1
CE marking (see declaration of conformity)	To EU EMC Directive ¹⁾
	To EU Machinery Directive
Resistance to shock	To EN 60068-2-27
Resistance to vibration	To EN 60068-2-6

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.

Operating and environmental conditions	
Characteristics of digital logic outputs	Not galvanically isolated
Degree of protection	IP20
Protection class	III
Ambient temperature [°C]	0 ... +50
Storage temperature [°C]	–25 ... +75
Relative humidity [%]	0 ... 90 (non-condensing)
CE marking (see declaration of conformity)	To EU EMC Directive ¹⁾
	To EU Machinery Directive
Certification	RCM compliance mark
Note on materials	RoHS-compliant

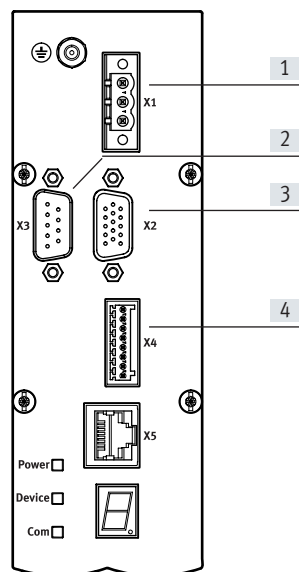
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If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

The EMC is only complied with in combination with the drive packages specified in the gantries (controller, motor and motor/encoder cable). The cables must not be extended and the cable length of 30 m must not be exceeded.

Data sheet

Pin allocation for front side



[1] Power supply

Pin	Function
1	0 V (reference potential for load voltage)
2	+24 V or +48 V (load)
3	0 V (reference potential for logic voltage)
4	+24 V (logic)

[2] CAN interface

Pin	Function
1	n.c.
2	CAN-L
3	0 V (GND)
4	n.c.
5	Shielding
6	n.c.
7	CAN-H
8	n.c.
9	n.c.

[3] I/O interface

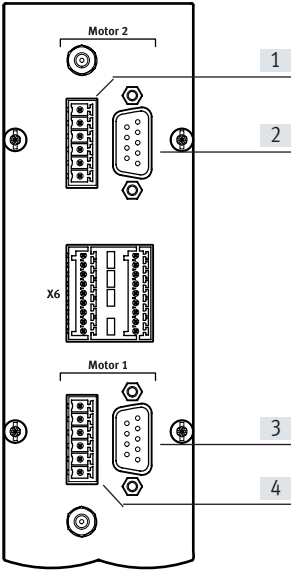
Pin	Function		
1	RDYEN	Output	Ready for enable
2	DIN1	Input	Record selection 1
3	DIN2	Input	Record selection 2
4	DIN3	Input	Record selection 3
5	DIN4	Input	Record selection 4
6	DIN5	Input	Record selection 5
7	+24 V	Voltage	Logic voltage output
8	START	Input	Start record
9	ENABLE	Input	Enable drive and operation
10	RESET	Input	Acknowledge errors
11	ENABLED	Output	Drive and operation are enabled
12	FAULT	Output	Fault present
13	ACK	Output	Acknowledgment for start signal
14	MC	Output	Motion complete
15	GND	Voltage	Reference potential

[4] Switch-off functions

Pin	Function	
1	+24 V	Logic voltage output
2	STO1	Safe torque off 1
3	STO2	Safe torque off 2
4	–	Reserved
5	FAULT	Fault present
6	DIAG1	Potential-free diagnostics contact 1
7	DIAG2	Potential-free diagnostics contact 2
8	GND	Reference potential
9	–	Reserved
10	–	Reserved
11	–	Reserved
12	TrOTF	Trigger on the fly
13	–	Reserved
14	RB	Release brake
15	ESTOP	External stop
16	+24 V	Logic voltage output

Data sheet

Pin allocation for front side



[1] Motor 2		
Pin	Function	
1	A	Motor winding A
2	A/	Motor winding A
3	B	Motor winding B
4	B/	Motor winding B
5	BR+	Brake +24 V (is switched)
6	BR-	Brake 0 V (GND)

[2] Encoder 2		
Pin	Function	
1	A	Encoder signal A+
2	B	Encoder signal B+
3	N	Encoder signal N+
4	GND	Reference potential
5	Vcc	Supply voltage (+5 V for encoder)
6	A/	Encoder signal A-
7	B/	Encoder signal B-
8	N/	Encoder signal N-
9	-	Reserved

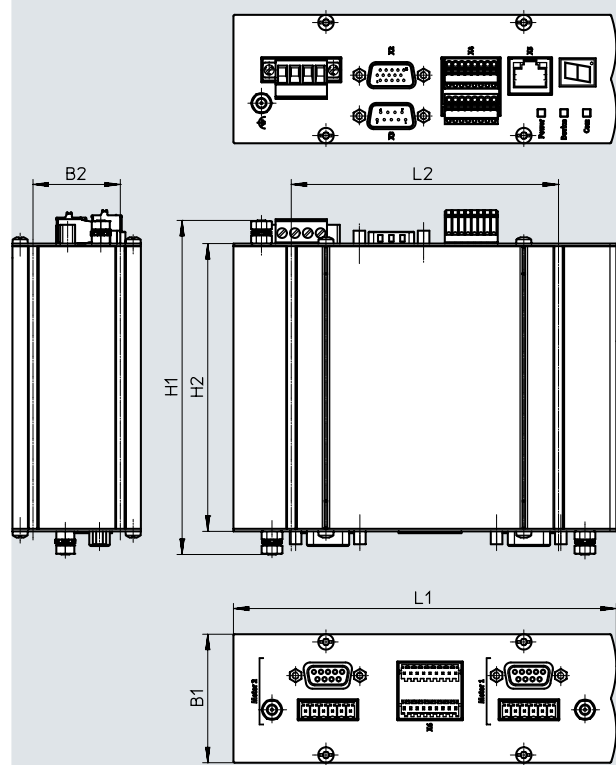
[3] Encoder 1		
Pin	Function	
1	A	Encoder signal A+
2	B	Encoder signal B+
3	N	Encoder signal N+
4	GND	Reference potential
5	Vcc	Supply voltage (+5 V for encoder)
6	A/	Encoder signal A-
7	B/	Encoder signal B-
8	N/	Encoder signal N-
9	-	Reserved

[4] Motor 1		
Pin	Function	
1	A	Motor winding A
2	A/	Motor winding A
3	B	Motor winding B
4	B/	Motor winding B
5	BR+	Brake +24 V (is switched)
6	BR-	Brake 0 V (GND)

Data sheet

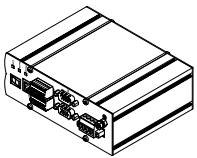
Dimensions

Download CAD data → www.festo.com



Type	B1	B2	H1	H2	L1	L2
CMXH-ST2	50	34	130	112	149	104

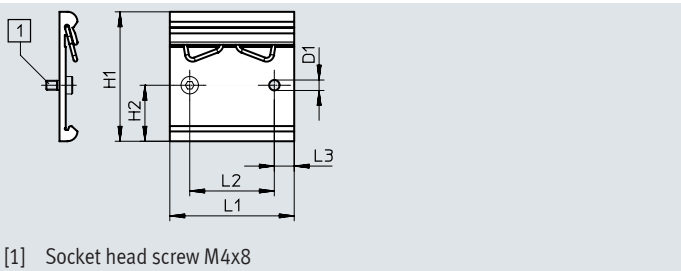
Ordering data

Controller	Description	Part no.	Type
	Switching input/output PNP	3605478	CMXH-ST2-C5-7-DIOP

Accessories

H-rail mounting CAFM
 For H-rail to EN 50022

Material:
 Anodised aluminium
 RoHS-compliant



Dimensions and ordering data								
D1 Ø	H1	H2	L1	L2	L3	Weight [g]	Part no.	Type
4.2	52	22.5	50	34	8	29	4135048	CAFM-D3-H

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