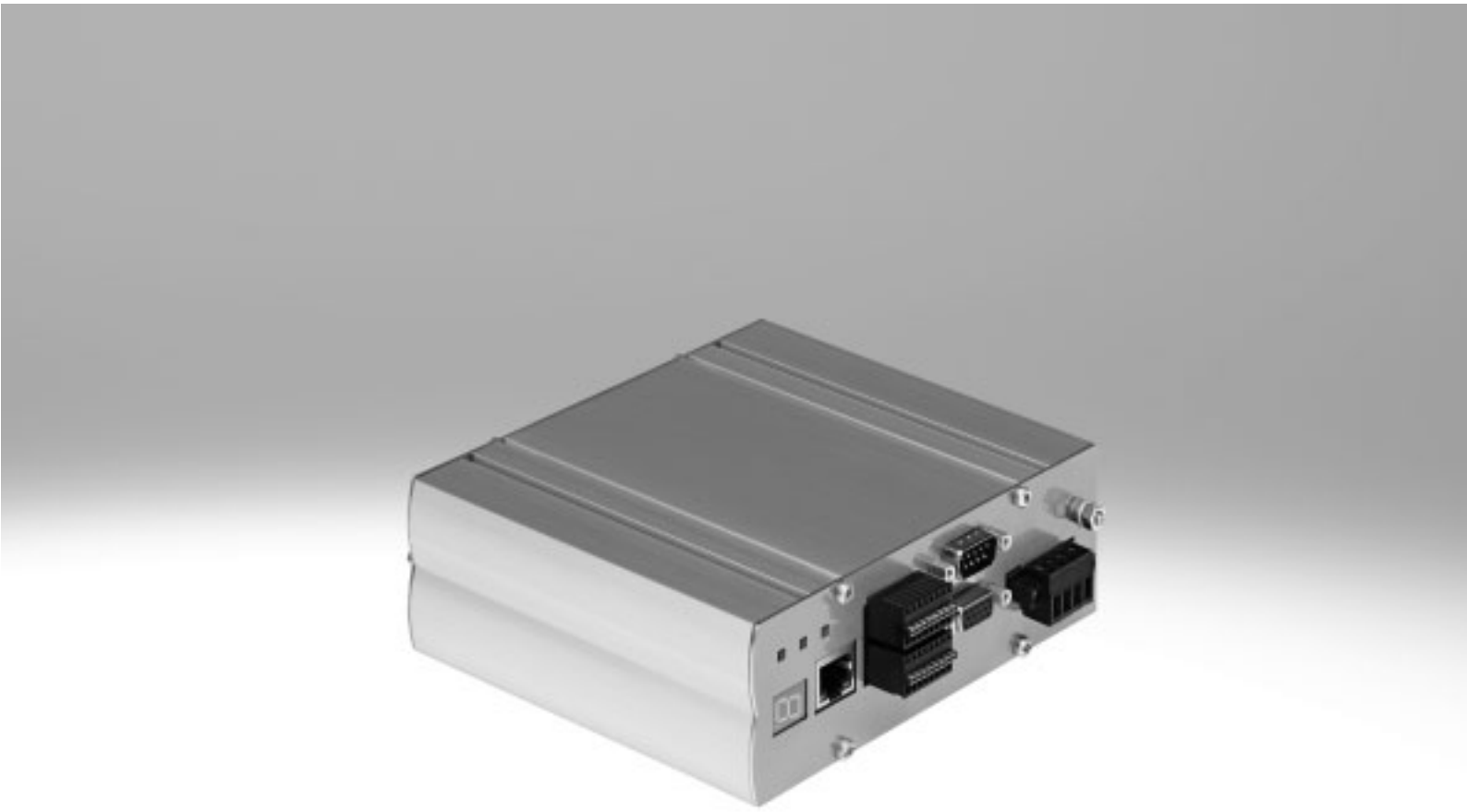
Controller CMXH-ST2

FESTO



Controller CMXH-ST2

Key features

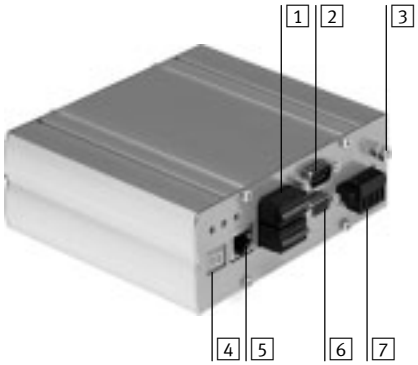
At a glance

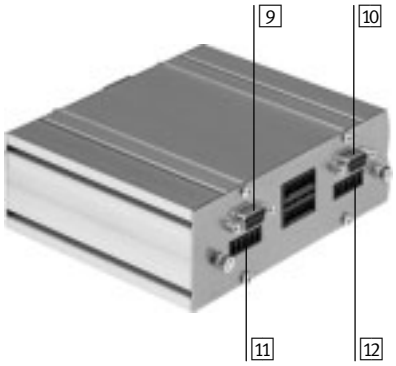
- The controller controls two servo motors which drive an H-shaped rotating toothed belt. The toothed belt moves a slide, whose position is calculated by the controller from the encoder signals of the motors
- The motors are not directly assigned to an axis (X- or Y-axis) of the planar surface gantry. 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 safety function “safe torque off” (STO)
- Easy actuation via:
  - Digital I/O interface
  - CAN interface
  - EtherNet TCP/IP
- 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

Controller CMXH-ST2

Key features

FCT software – Festo Configuration Tool

Software platform for electric drives from Festo

- All drives in a system can be managed and saved in a common project
- Project and data management for all supported device types
- 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

Mechanical reference positions and limit positions

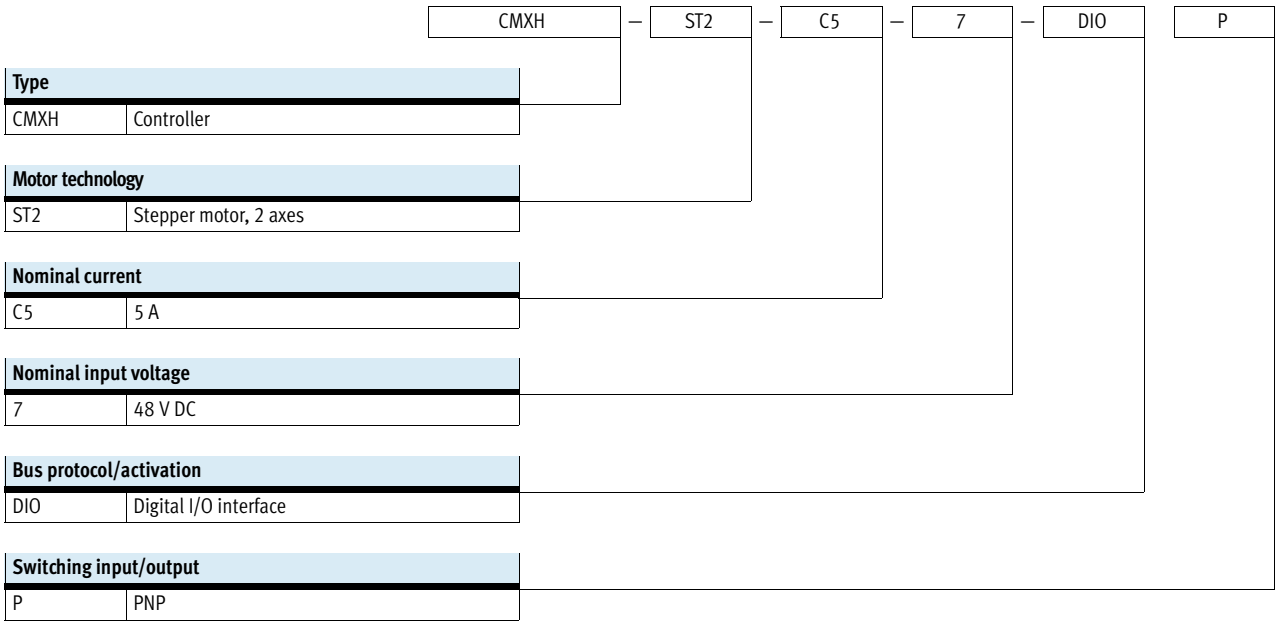
- Reference positions can be either edited or taught in
- Flexible adaptation to installation conditions
- Settings are displayed clearly

Record table

- 31 records ensure flexibility in positioning
- Absolute or relative positioning values can be used
- The following parameters can be set flexibly for each application:
  - Position
  - Speed
  - Acceleration
  - Jerk
- Complete function test

Controller CMXH-ST2

Type codes



Type	
CMXH	Controller

Motor technology	
ST2	Stepper motor, 2 axes

Nominal current	
C5	5 A

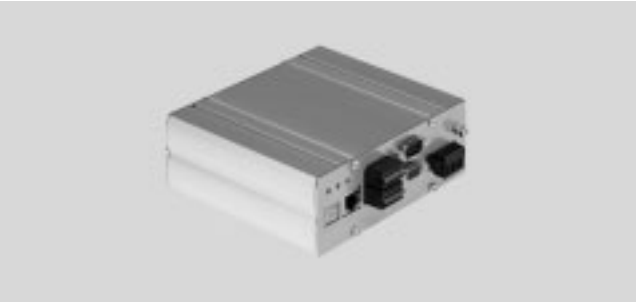
Nominal input voltage	
7	48 V DC

Bus protocol/activation	
DIO	Digital I/O interface

Switching input/output	
P	PNP

Controller CMXH-ST2

Technical data



General technical data		
Supported kinematic systems		Planar surface gantry EXCM
Total number of axes		2
Operating mode		Direct operation
		Record selection
Status display		7-segment display
		LED
Device-specific diagnostics		System- and motor-oriented diagnostics
		Undervoltage, overvoltage, short circuit in motor winding
		Diagnostic memory
Rotary 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 voltage		
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 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 buffering time. To achieve the time, a switched-mode power supply unit or a buffer module must be used in this case.

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 – CVE)
Max. fieldbus transmission rate	[Mbit/s]	–	1	100
Bus connection		Socket, 15-pin, Sub-D	Plug, 9-pin, Sub-D	RJ45

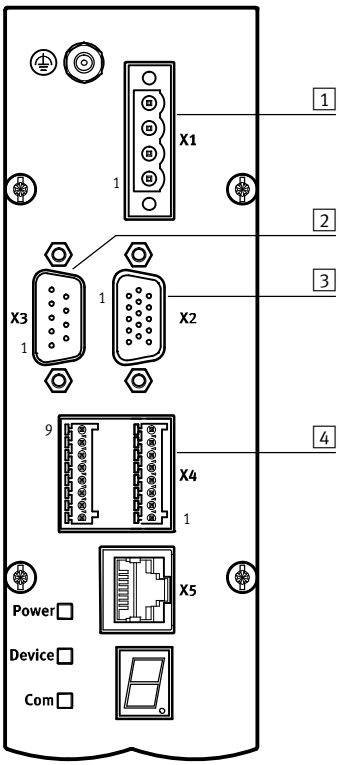
Safety data		
Safety function to EN 61800-5-2		Safe torque off (STO)
Performance Level (PL) to EN ISO 13849-1		Category 3, Performance Level e
Safety integrity level (SIL) to EN 61800-5-2, EN 62061, EN 61508		SIL CL 3/ SC 3
Certificate issuing authority		TÜV 01/205/5519.00/16
Proof test interval		20a
PFH	[1/hr]	2x 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 applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce 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 air humidity	[%]	0 ... 90 (non-condensing)
CE marking (see declaration of conformity)		To EU EMC Directive[1)]
		To EU Machinery Directive
Approval certificate		RCM trademark
Note on materials		RoHS-compliant

1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce 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.

Pin allocation for front side



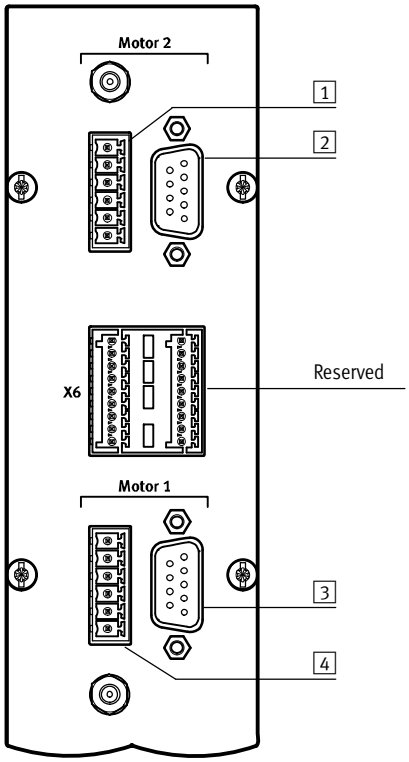
1 Power supply	
Pin	Function
1	0 V (reference potential for load voltage)
2	+24 V or +48 V (load)
3	0 V (reference potential for logic voltage)
4	+24 V (logic)

2 CAN interface	
Pin	Function
1	n.c.
2	CAN-L
3	0 V (GND)
4	n.c.
5	Screening
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 error
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

Pin allocation for reverse 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

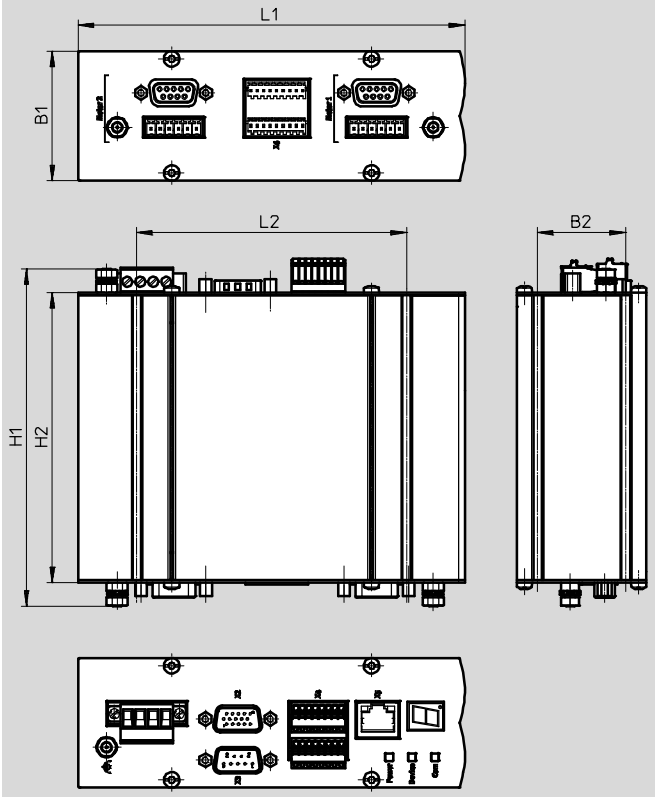
3 Encoder 1		
Pin	Function	
1	A	Encoder signal A+
2	B	Encoder signal B+
3	N	Encoder signal N+
4	GND	Reference potential
5	Vcc	Supply voltage (+5 V for encoder)
6	A/	Encoder signal A–
7	B/	Encoder signal B–
8	N/	Encoder signal N–
9	–	Reserved

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)

Controller CMXH-ST2

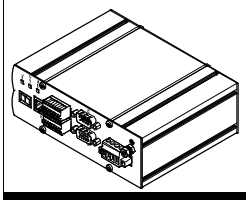
Technical data

Dimensions Download CAD data ➔ **www.festo.com**



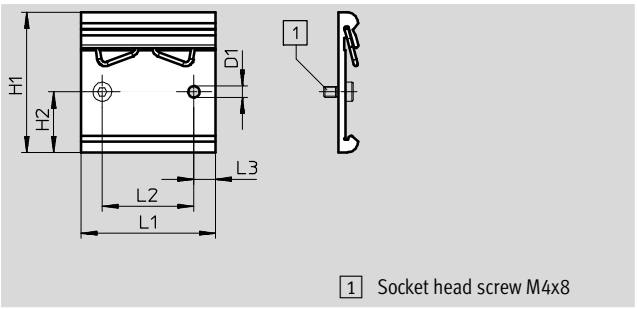
Type	B1	B2	H1	H2	L1	L2
CMXH-ST2	50	34	130	112	149	104

Ordering data

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

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

Materials:
Anodised aluminum
RoHS-compliant



1 Socket head screw M4x8

Dimensions and ordering data

D1 ∅	H1	H2	L1	L2	L3	Weight [g]	Part No.	Type
4.2	52	22.5	50	34	8	29	**4135048**	**CAFM-D3-H**