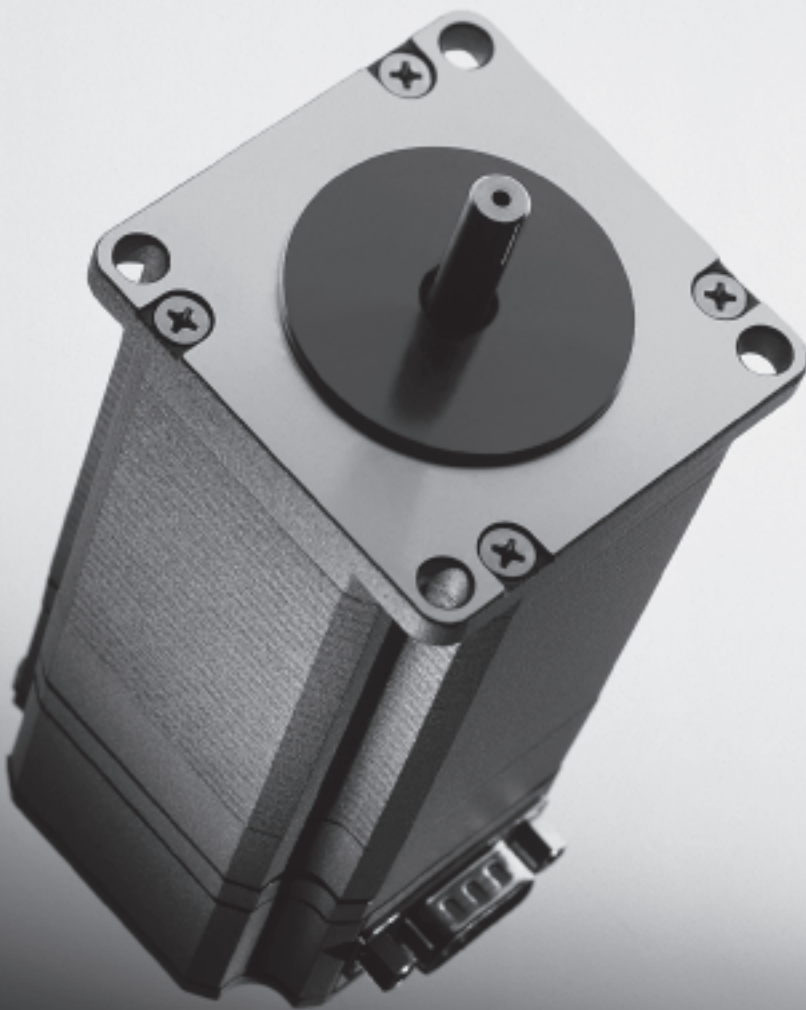


- 1 - Type discontinued  
Available up until 2008

## Stepper motors MTR-ST

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- Low-cost drive solutions
- Simple commissioning
- Co-ordinated motor controller combinations

- I - Type discontinued  
Available up until 2008

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## Stepper motors MTR-ST

Key features

### At a glance

Motor MTR-ST

→ 6

- System product for positioning applications
- Without/with brake
- Without/with gear unit
- Controlled operation
- High torque at low angle velocity or during single steps
- Step-accurate positioning through specified number of control pulses
- High holding torque and resolution



Motor flange MTR-FL

→ 10

- The right motor flange for every motor axis combination



Motor cable KMTR-ST

→ 11

- Screened cable
- Can be used at -40 ... +125 °C
- Suitable for chain link trunking
- Protection class IP67



Motor controller SEC-ST

→ 12

- System product for positioning applications
- Compact unit, ready for installation
- Adjustable power range for all motors
- Full, half, quarter, fifth, eighth, tenth, thirty-second step mode
- Selectable current reduction
- Pre-assembled electrical connection accessories



Power supply unit SVG

→ 13

- Robust hardware
- Input voltage 230 V AC/115 V AC
- Output voltage 48 V DC
- Nominal output current 5/10/20 A

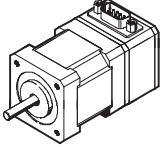


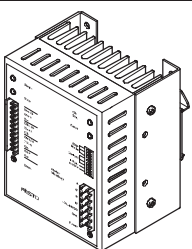
- 1 - Type discontinued  
Available up until 2008

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## Stepper motors MTR-ST

Selection aid

	Motor version	Holding torque $M_H$ in Nm	With integrated controller	With gear unit, unit ratio 4:1	With brake	→ Page/Internet
	MTR-ST-42-48S-AA	0.34	-	-	-	6
	MTR-ST-42-48S-AB	0.34	-	-	■	
	MTR-ST-57-48S-AA	1.27	-	-	-	
	MTR-ST-57-48S-AB	1.27	-	-	■	
	MTR-ST-87-48S-AA	6.47	-	-	-	
	MTR-ST-87-48S-AB	6.47	-	-	■	
	MTR-ST-87-48S-GA	23.29	-	■	-	
	MTR-ST-87-48S-GB	23.29	-	■	■	

	Motor controller version	Supply voltage	Nominal current	Operating mode	Interface	→ Page/Internet
	SEC-ST-48-6-P01	24 ... 48 V DC	1.25 ... 6 A	1/1; 1/2; 1/4; 1/5; 1/8, 1/10; 1/32	Pulse/direction	12

- I - Type discontinued  
Available up until 2008

## Stepper motors MTR-ST

Selection aid

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Permissible combinations			
Motor	MTR-ST-42-48S-AA <sup>1)</sup> MTR-ST-42-48S-AB <sup>1)</sup>	MTR-ST-57-48S-AA MTR-ST-57-48S-AB	→ Page/Internet
<b>Motor controller</b>			
SEC-ST-48-6-P01	■	■	12
<b>Cable</b>			
KMTR-ST-...	■	■	11
KMTRE-ST-...	-	-	
<b>Motor flange</b>			
MTR-FL28-ST42	■	-	10
MTR-FL30-ST42	■	-	
MTR-FL44-ST57	-	■	
<b>Electro-mechanical drive</b>			
DGE-8-...-ZR	■	-	dge-zr
DGE-12-...-ZR	■	-	
DGE-18-...-ZR	-	■	
DGE-25-...-ZR	-	■	
DGE-18-...-SP	■	-	dge-sp
DGE-25-...-SP	-	■	

- 1) The flange MTR-FL30-ST42 must be used in combination with the axis DGE-12-...-ZR  
The flange MTR-FL28-ST42 must be used in combination with the axis DGE-8-...-ZR or DGE-18-...-SP

Permissible combinations			
Motor	MTR-ST-87-48S-AA <sup>1)</sup> MTR-ST-87-48S-AB <sup>1)</sup>	MTR-ST-87-48S-GA MTR-ST-87-48S-GB	→ Page/Internet
<b>Motor controller</b>			
SEC-ST-48-6-P01	■	■	12
<b>Cable</b>			
KMTR-ST-...	■	■	11
KMTRE-ST-...	-	-	
<b>Motor flange</b>			
MTR-FL44-ST87	■	-	10
MTR-FL64-ST87	■	-	
MTR-FL64-PL80	-	■	
<b>Electro-mechanical drive</b>			
DGE-25-...-ZR	■	-	dge-zr
DGE-40-...-ZR	-	■	
DGE-40-...-SP	■	-	dge-sp
DGE-63-...-SP	-	■	
DGEA-18-...-ZR	■	-	dgea
DGEA-25-...-ZR	■	-	
DGEA-40-...-ZR	-	■	

- 1) The flange MTR-FL44-ST87 must be used in combination with the axis DGE-25-...-ZR or DGEA-18-...-ZR  
The flange MTR-FL64-ST87 must be used in combination with the axis DGE-40-...-SP or DGEA-25-...-ZR

## Stepper motors MTR-ST

Type code

		MTR	-	ST	-	42	-	48S	-	AB
<b>Type</b>										
MTR	Motor									
<b>Motor type</b>										
ST	Stepper motor									
<b>Flange dimensions</b>										
42	42 mm									
57	57 mm									
87	87 mm									
<b>Nominal voltage/connection type</b>										
48	24 ... 48 V DC									
S	Plug connection									
<b>Additional function</b>										
A	No additional function									
G	Gear unit									
B	Brake									

- I - Type discontinued  
Available up until 2008

## Stepper motors MTR-ST

Technical data

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Electrical and mechanical data for MTR-ST-42-48S-...			
		MTR-ST-42-48S-AA	MTR-ST-42-48S-AB
Nominal voltage	[V]	48	
Nominal current, motor	[A]	1.8	
Holding torque, motor	[Nm]	0.34	
Stepper angle (full step)	[°]	1.8 ±5%	
Winding resistance	[Ω]	1.75 ±10%	
Winding inductance	[mH]	3.0	
Drive mass moment of inertia	[kg cm <sup>2</sup> ]	0.068	0.07
Voltage, brake	[V]	–	24
Power, brake	[W]	–	6
Holding torque, brake	[Nm]	–	0.4
Radial shaft load	[N]	18	18
Axial shaft load	[N]	7	7
Product weight	[kg]	0.39	0.49

Electrical and mechanical data for MTR-ST-57-48S-...			
		MTR-ST-57-48S-AA	MTR-ST-57-48S-AB
Nominal voltage	[V]	48	
Nominal current, motor	[A]	3.1	
Holding torque, motor	[Nm]	1.27	
Stepper angle (full step)	[°]	1.8 ±5%	
Winding resistance	[Ω]	1 ±10%	
Winding inductance	[mH]	3.8 ±20%	
Drive mass moment of inertia	[kg cm <sup>2</sup> ]	0.48	0.5
Voltage, brake	[V]	–	24
Power, brake	[W]	–	6
Holding torque, brake	[Nm]	–	0.4
Radial shaft load	[N]	71	71
Axial shaft load	[N]	10	10
Product weight	[kg]	1.2	1.4

## Stepper motors MTR-ST

Technical data


Electrical and mechanical data for MTR-ST-87-48S-...				
	MTR-ST-87-48S-AA	MTR-ST-87-48S-AB	MTR-ST-87-48S-GA	MTR-ST-87-48S-GB
Nominal voltage [V]	48			
Nominal current, motor [A]	4.7			
Holding torque, motor [Nm]	6.47		23.29	
Stepper angle (full step) [°]	1.8 ±5%			
Winding resistance [Ω]	0.9 ±10%			
Winding inductance [mH]	10.8 ±20%			
Gear unit ratio	-		4:1	4:1
Gear unit efficiency	-		0.9	0.9
Torsional backlash [arcmin]	-		15	15
Torsional resistance [Nm/arcmin]	-		5.2	5.2
Drive mass moment of inertia [kg cm <sup>2</sup> ]	4	4.05	4.52	4.6
Voltage, brake [V]	-	24	-	24
Power, brake [W]	-	9	-	9
Holding torque, brake [Nm]	-	1.4	-	1.4
Radial shaft load [N]	130	130	950	950
Axial shaft load [N]	50	50	1 200	1 200
Product weight [kg]	4.2	5.0	6.4	7.2

Operating and environmental conditions				
	MTR-ST-42-...	MTR-ST-57-...	MTR-ST-87-...-A...	MTR-ST-87-...-G...
Insulation protection class to VDE 60034	B			
Protection class without/with gear unit	IP54		IP54	IP43
Ambient temperature [°C]	0 ... +50			
CE marking symbol (see conformity declaration)	As per EU EMC directive			
Storage temperature [°C]	-25 ... +60			
Relative air humidity (non-condensing) [%]	45 ... 80			

- 1 - Note

Specifications are valid for full step operation, 48 V and maximum continuous output.

Technical data for cables				
	Cable composition	Ambient temperature	Suitable for chain link trunking	Protection class, motor plug
KMTR-ST-...	7 x 0.34 mm <sup>2</sup> , screened	-40 ... +125 °C	■	IP67

-  - Type discontinued  
Available up until 2008

## Stepper motors MTR-ST

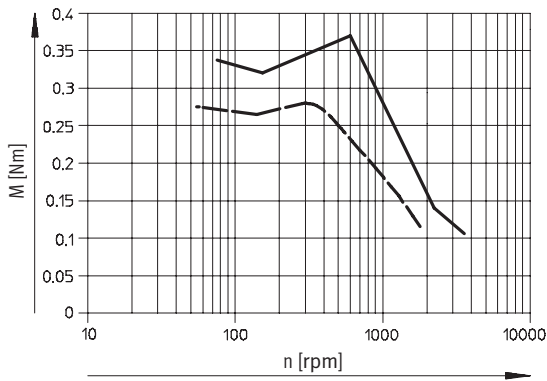
Technical data

FESTO

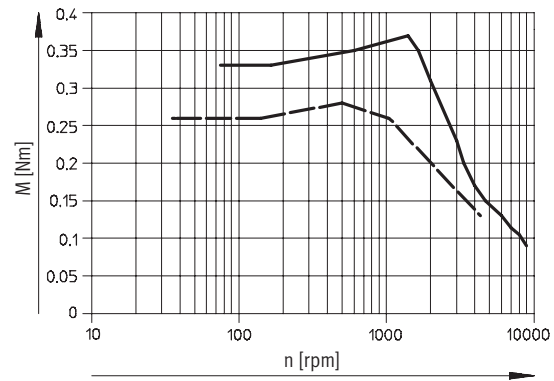
### Torque M as a function of n (r.p.m.)

at nominal voltage 24 V

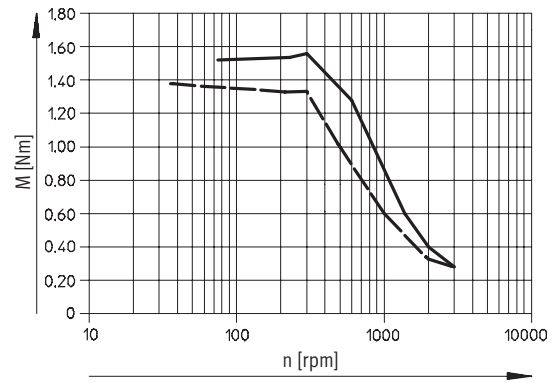
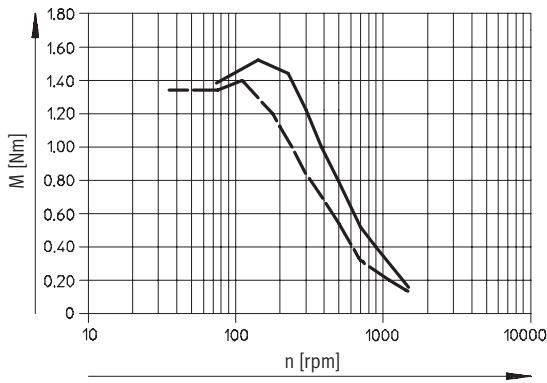
MTR-ST-42-48S...



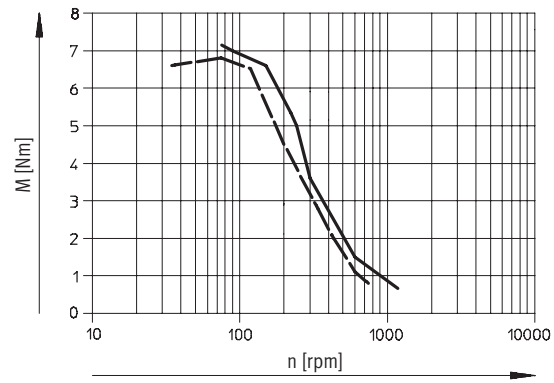
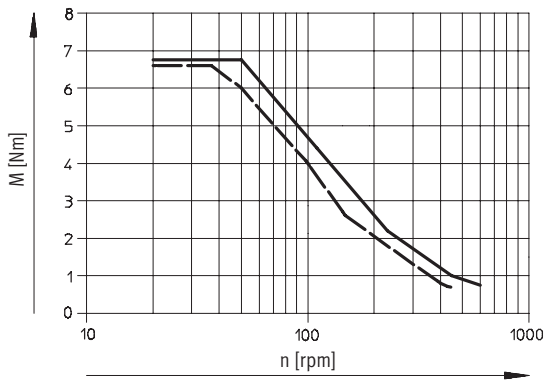
at nominal voltage 48 V




### MTR-ST-57-48S...



### MTR-ST-87-48S...



— Full step  
- - - Half step

-  - Note

Characteristic curves apply to motors without gear unit.  
The gear unit data must be taken into consideration for motors with gear unit.

Example:  
Holding torque for motor MTR-ST-87-48S...

without gear unit:  
Holding torque = 6.47 Nm  
(see characteristic curve)

with gear unit:  
Gear unit ratio = 4:1  
Gear unit efficiency = 0.9  
Holding torque =  
 $6.47 \text{ Nm} \times 4 \times 0.9 = 23.29 \text{ Nm}$



- 2 - Type discontinued  
Available up until 2008

# Stepper motors MTR-ST

Technical data

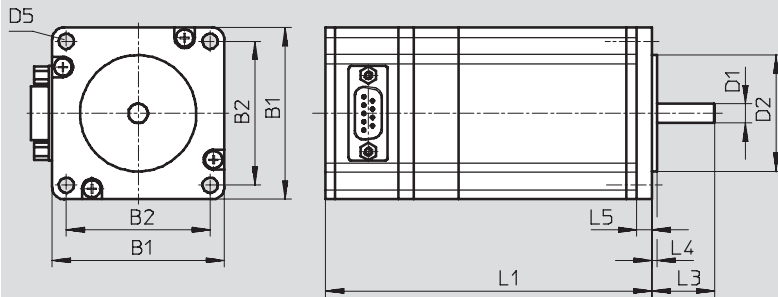
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## Dimensions

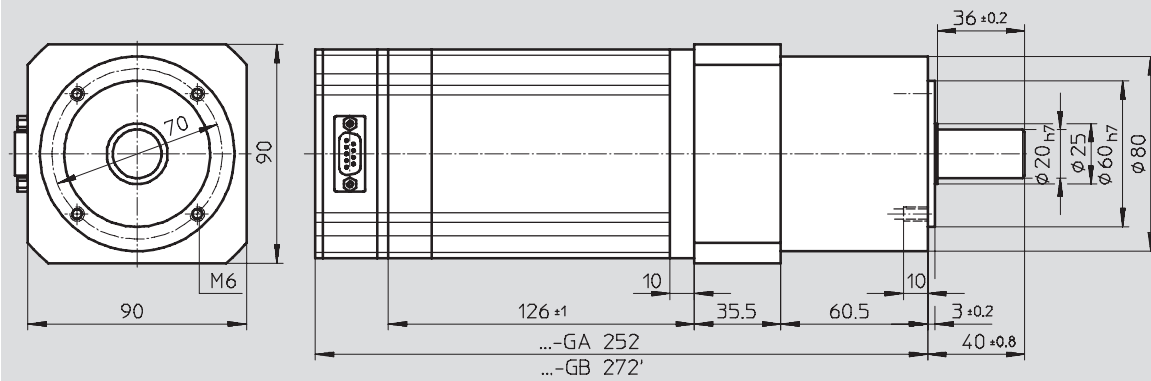
Download CAD data → [www.festo.com](http://www.festo.com)

Motor


MTR-ST...-A... (without gear unit)



MTR-ST-87-48S-G... (with gear unit)



Type	B1	B2	D1 ∅	D2 ∅	D5	L1	L3	L4	L5
MTR-ST-42-48S-AA	42	31	5	22	M3	73	24	2	-
MTR-ST-42-48S-AB						94			
MTR-ST-57-48S-AA	56.4	47.14	6.35	38.1	∅ 5	107	20.6	1.6	5
MTR-ST-57-48S-AB						128			
MTR-ST-87-48S-AA	85.8	69.6	11	73.025	∅ 6.6	156	27	2	10
MTR-ST-87-48S-AA						176			

-  - Type discontinued  
Available up until 2008

## Stepper motors MTR-ST

Technical data

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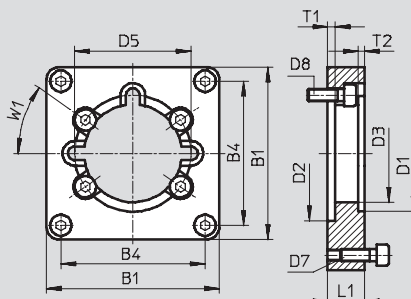
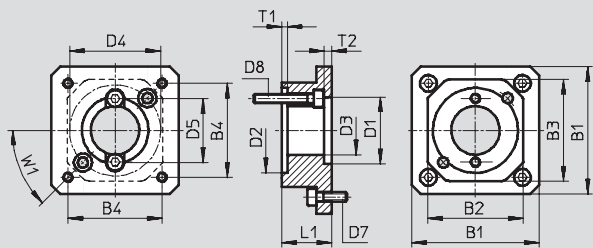
### Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Motor flange

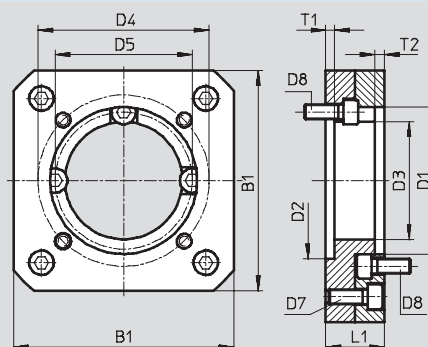
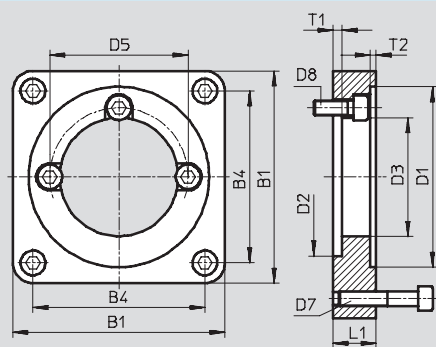
MTR-FL28-ST42

MTR-FL30-ST42 / MTR-FL44-ST57 / MTR-FL44-ST87



MTR-FL64-ST87

MTR-FL64-PL80



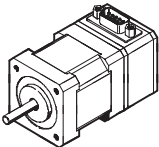
Type	B1	B2	B3	B4	D1 ∅ G7	D2 ∅ H7	D3 ∅	D4 ∅	D5 ∅	D7	D8	L1	T1	T2	W1
MTR-FL28-ST42	42	31.5	33.5	31	22	28	16	30	21	M3	M3	16.5	1.8	2.5	45°
MTR-FL30-ST42	42	-	-	31	22	30	16	-	26.2	M3	M3	18	4.6	2.5	30°
MTR-FL44-ST57	56.4	-	-	47.14	38.125	44	32	-	38	M4	M4	12	2.5	2	35°
MTR-FL44-ST87	85.8	-	-	69.6	73.05	44	32	-	38	M6	M4	15.5	2.5	2.5	35°
MTR-FL64-ST87	85.8	-	-	69.6	73.05	64	48	-	56	M6	M6	17.5	3.8	2.5	-
MTR-FL64-PL80	90	-	-	69.6	60	64	48	70	56	M6	M6	24	3.6	4	-

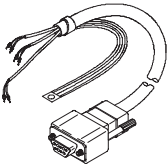
- 1 - Type discontinued  
Available up until 2008


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## Stepper motors MTR-ST

Technical data

Ordering data for motor MTR...-ST-...		Part No.	Type
	MTR-ST-42-48S-...	530 057	MTR-ST-42-48S-AA
		530 058	MTR-ST-42-48S-AB
	MTR-ST-57-48S-...	530 061	MTR-ST-57-48S-AA
		530 062	MTR-ST-57-48S-AB
	MTR-ST-87-48S-...	530 065	MTR-ST-87-48S-AA
		530 066	MTR-ST-87-48S-AB
		530 067	MTR-ST-87-48S-GA
		530 068	MTR-ST-87-48S-GB

Ordering data for cable KMTR-ST-...				
	Part No.	Type	Cable length	
	Motor cable KMTR-ST-...	530 071	KMTR-ST-5	5 m
		530 072	KMTR-ST-10	10 m
		530 073	KMTR-ST-X	X length (max. 25 m)

Ordering data for flange MTR-FL-...			
	Part No.	Type	
	MTR-FL28-...	530 080	MTR-FL28-ST42
	MTR-FL30-...	530 079	MTR-FL30-ST42
	MTR-FL44-...	530 081	MTR-FL44-ST57
		530 082	MTR-FL-44-ST87
	MTR-FL64-...	533 140	MTR-FL64-ST87
		533 139	MTR-FL64-PL80

- 1 - Type discontinued  
Available up until 2008

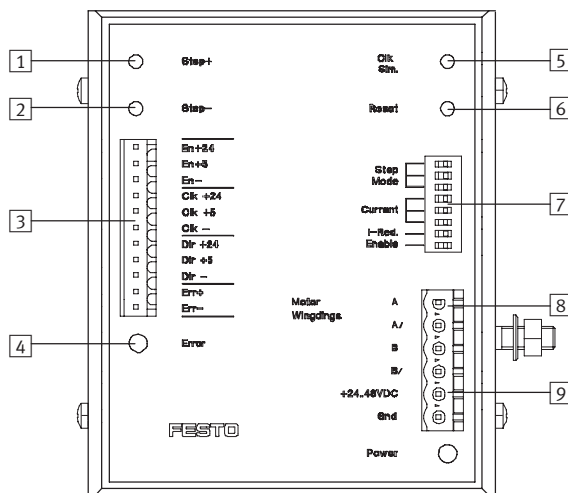
## Motor controller SEC-ST, for stepper motors

Technical data

FESTO



### Explanation of the functions/interfaces



- 1 "Step +" button
- 2 "Step -" button
- 3 Plug X1 for control cable (step, direction, etc.)
- 4 LED, indicates an error
- 5 "CLK, Sim." button
- 6 "Reset" button
- 7 DIP switch for setting the operating mode, current value and current reduction
- 8 Plug X2 for motor connection
- 9 Plug X3 for supply voltage

### General electrical data

General electrical data		SEC-ST-48-6-P01
Nominal operating voltage $V_{\text{nominal}}$	[V DC]	24 ... 48
Nominal current (adjustable) $I_{\text{nominal}}$	[A]	1.25 ... 6 via DIP switch
Max. step frequency	[kHz]	40
Current reduction (adjustable)	[%]	0 or 70 via DIP switch
Operating range Logic input	[V DC]	12 ... 30
System mode		Bipolar chopper driver
Operating mode		Full step = 200 steps/revolution Half step = 400 steps/revolution (recommended) Quarter step = 800 steps/revolution Fifth step = 1000 steps/revolution Eighth step = 1600 steps/revolution Tenth step = 2000 steps/revolution Thirty-second step = 6400 steps/revolution
Step adjustment		Via DIP switch

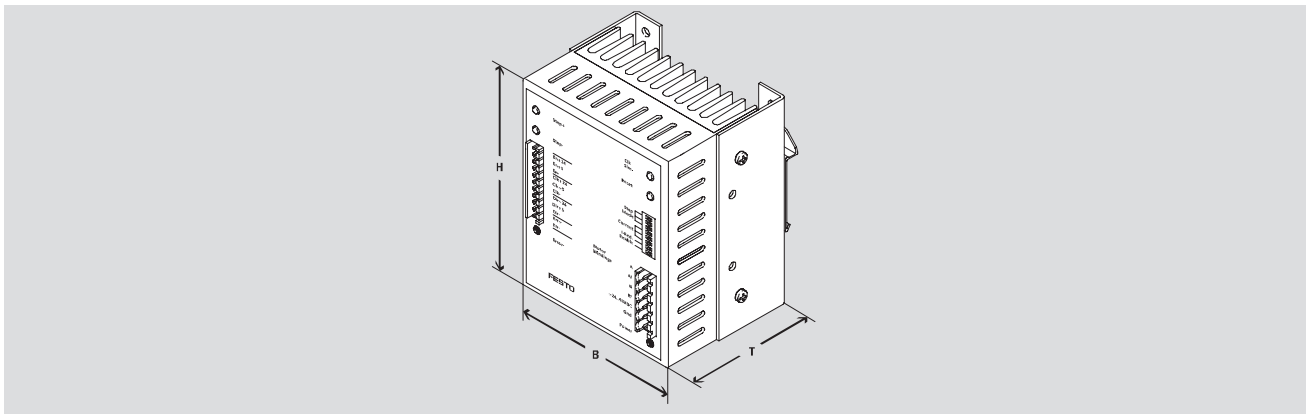
- 2 - Type discontinued  
Available up until 2008

## Motor controller SEC-ST, for stepper motors

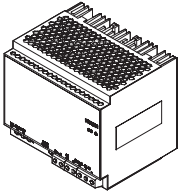
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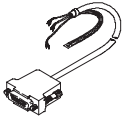
Technical data and accessories

Operating and environmental conditions		
Ambient temperature	[°C]	0 ... +40
Storage temperature	[°C]	-10 ... +60
Weight	[g]	660
Protection class		IP20
CE symbol (declaration of conformance)		In accordance with EU EMC Directive
Connection type		Screw terminal
Type of mounting		TS 35 DIN H-rail



Dimensions and ordering data					
	H	W	D	Part No.	Type
Motor controller	106	89	70	548 945	SEC-ST-48-6-P01

Ordering data for accessories						
	Brief description	Input voltage range [V AC]	Output voltage [V DC]	Nominal current [A]	Part No.	Type
						Technical data → Internet: svg
	Power supply for motor controller	100 ... 240	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	
		400 ... 500				

Ordering data			
	Brief description	Part No.	Type
	Control cable for connecting to the axis controller SPC200 Cable length 1.5 m	530 077	KSPC-SECST-1,5