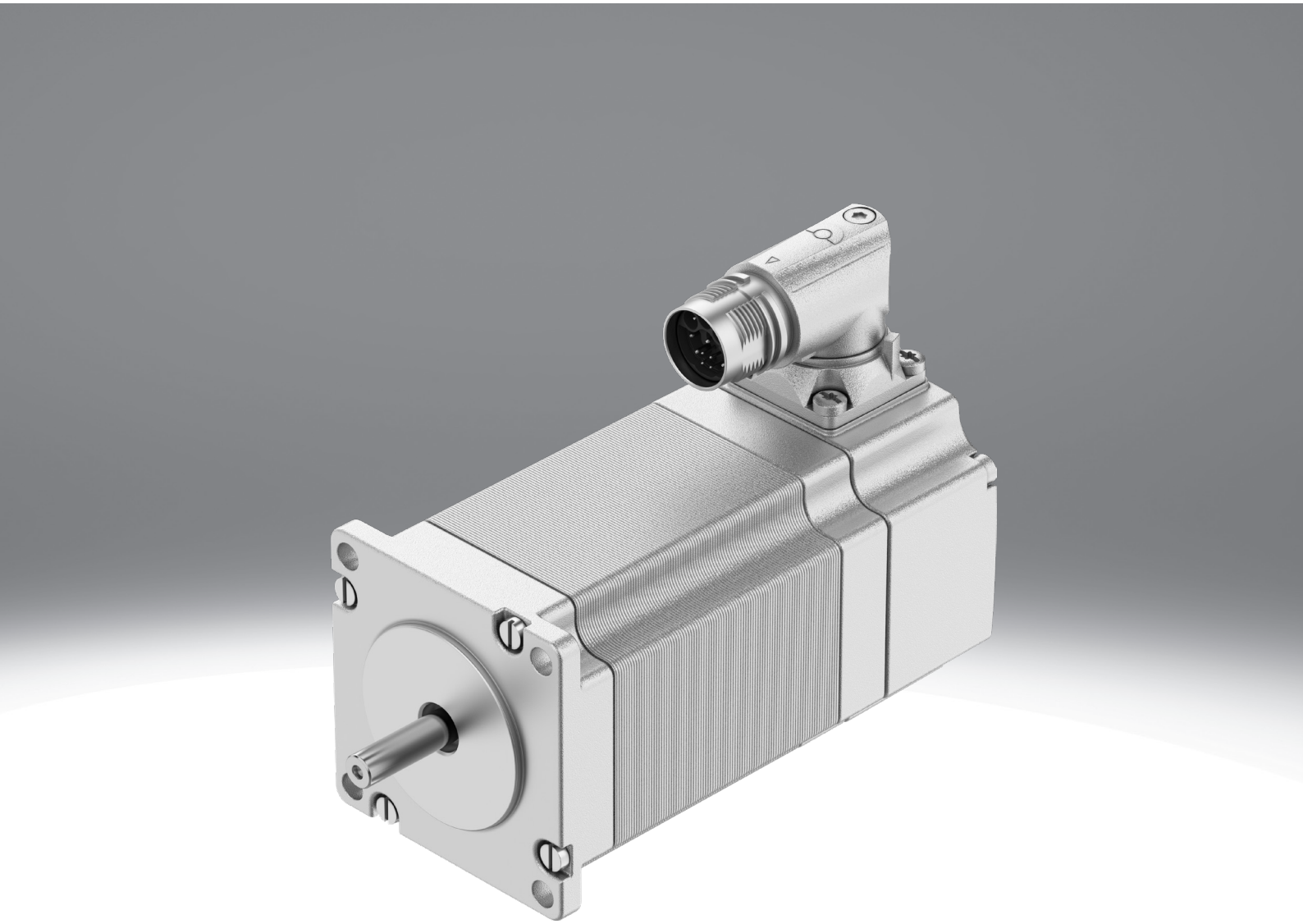
Stepper motor EMMT-ST



Characteristics

At a glance

- 2-phase hybrid technology
- 3 flange sizes available: M = 0.25 ... 9.4 Nm

Degree of protection:
- IP40 (motor shaft)
- IP65 (motor housing with connection technology)

Connection technology:
- Simple connection technology (OCP: one cable plug) – hybrid cable: motor cable and connecting cable for supply and encoder in one
- Plug can be rotated 290°

Digital absolute encoder system:
- Single turn
- Multi-turn

Engineering tools

Link 🔗 electric motion sizing

Save time with engineering tools: Smart engineering for the optimal solution. Our goal is to increase your productivity. Our engineering tools play an integral part in achieving this goal. They help you size your system correctly, tap into unimagined productivity reserves and generate additional productivity along the entire value chain. In every phase of your project, from the initial contact to the modernisation of your machine, you will come across a number of different tools that will be of use to you.

Electric Motion Sizing
- Create the optimum drive package quickly and reliably. Electric Motion Sizing calculates suitable combinations of electric axis, electric motor and servo drive using just a few application details. It provides all the relevant data including the bill of materials and documentation for your selected combination. This avoids design errors and results in significantly improved energy efficiency for the system. A smooth connection to the Festo Automation Suite also makes commissioning easier for you.

Festo Automation Suite
- Parameterisation, programming and commissioning in a clear and user-friendly interface
- Optimal support for complex processes thanks to guided wizards (e.g. for initial commissioning, drive configuration, etc.)
- Quick access to the required documents and further information
- Easy integration of electric drives in the controller programming

Diagrams

Link 🔗 emmt-st

The diagrams shown in this document are also available online. These can be used to display precise values.

Measuring unit

[S] Absolute encoder, single turn

- The angular position is assigned to a unique value in coded form.
- The position is only detected within one turn. All subsequent turns need to be counted by the higher-level device.
- When switched off, the position is only sensed within one turn.
- Following switch-on, a homing run is required.

[M] Absolute encoder, multi-turn

- A unique value in coded form is assigned to the angular position and each full turn.
- This type counts the full turns until the specified maximum is reached (including when switched off).
- Homing is only required once it has been installed in the application.

Brake

[B] With brake

The holding brake should not be used as a safety brake.

Type code

001	Series	
EMMT	Motor	

002	Motor type	
ST	Stepper motor ST	

003	Flange size, motors [mm]	
42	42	
57	57	
87	87	

004	Length	
S	Short	
M	Medium	
L	Long	

005	Electrical connection	
R	Angled connector, adjustable	

006	Measuring unit	
	None	
M	Absolute encoder, multi-turn	
S	Absolute encoder, single turn	

007	Brake	
	None	
B	With brake	

Datasheet

General technical data – EMMT-ST-42						
Flange size, motors [mm]	42 mm					
Length	Short			Long		
Measuring unit	None	Absolute encoder, multi-turn	Absolute encoder, single turn	None	Absolute encoder, multi-turn	Absolute encoder, single turn
Brake	None	With brake		None	With brake	
Nominal operating voltage DC	48 V					
Nominal motor current	1.8 A			3.4 A		
Continuous stall current	2 A			3.7 A		
Peak current	2 A			4 A		
Nominal power rating of motor	–	17 W		–	56 W	
Stepper angle for complete step	1.8 deg					
Stepping angle tolerance	±5%					
Motor holding torque	0.25 Nm			0.63 Nm		
Nominal torque [1]	–	0.24 Nm		–	0.54 Nm	
Peak torque	0.25 Nm			0.63 Nm		
Standstill torque	–					
Nominal rotary speed	–	600 rpm		–	1,000 rpm	
Max. rotational speed	2,700 rpm			3,200 rpm		
Max. mechanical speed	9,000 rpm					
Motor constant	0.133 Nm/A			0.162 Nm/A		
Voltage constant, phase	12.1 mVmin			10.6 mVmin		
Electric time constant	1.4 ms			1.3 ms		
Thermal time constant	22 min			16 min		
Thermal resistance	3.5 K/W			2 K/W		
I^2T time motor	2 s					
Number of phases	2					
Number of pole pairs	50					
Phase winding resistance	2.1 Ohm			0.6 Ohm		
Phase winding inductance	0.3 mH			0.8 mH		
Winding longitudinal inductivity Ld (phase)	1.6 mH			1.45 mH		
Winding cross inductivity Lq (phase)	3 mH			0.8 mH		
Permissible axial shaft load	10 N					
Permissible radial shaft load	28 N					
Measuring flange	200 x 200 x 15 mm, steel					

1) There is no nominal operating point defined for motors without encoders.

Datasheet

General technical data – EMMT-ST-57						
Flange size, motors [mm]	57 mm					
Length	Medium [M]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Brake	None	With brake		None	With brake	
Nominal operating voltage DC	48 V					
Nominal motor current	5.4 A			5.2 A		
Continuous stall current	6.6 A			6.1 A		
Peak current	8 A					
Nominal power rating of motor	–	87 W		–	86 W	
Stepper angle for complete step	1.8 deg					
Stepping angle tolerance	±5%					
Motor holding torque	1.12 Nm			1.86 Nm		
Nominal torque [1]	–	0.83 Nm		–	1.64 Nm	
Peak torque	1.1 Nm			2.1 Nm		
Standstill torque	–					
Nominal rotary speed	–	1,000 rpm		–	500 rpm	
Max. rotational speed	2,600 rpm			1,500 rpm		
Max. mechanical speed	8,000 rpm					
Motor constant	0.152 Nm/A			0.32 Nm/A		
Voltage constant, phase	13.1 mVmin			22.6 mVmin		
Electric time constant	2.9 ms			3.7 ms		
Thermal time constant	27 min			30 min		
Thermal resistance	1.6 K/W			1.3 K/W		
I^2T time motor	2 s					
Number of phases	2					
Number of pole pairs	50					
Phase winding resistance	0.17 Ohm			0.26 Ohm		
Phase winding inductance	0.5 mH			0.95 mH		
Winding longitudinal inductivity Ld (phase)	0.7 mH			1.75 mH		
Winding cross inductivity Lq (phase)	0.5 mH			0.95 mH		
Permissible axial shaft load	15 N					
Permissible radial shaft load	75 N					
Measuring flange	200 x 200 x 15 mm, steel					

1) There is no nominal operating point defined for motors without encoders.

Datasheet

General technical data – EMMT-ST-87									
Flange size, motors [mm]	87 mm								
Length	Short [S]			Medium [M]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Brake	None	With brake		None	With brake		None	With brake	
Nominal operating voltage DC	48 V								
Nominal motor current	7.8 A			7.5 A			8.4 A		
Continuous stall current	9.5 A			8.2 A			10 A		
Peak current	12 A						10 A		
Nominal power rating of motor	–	159 W		–	87 W		–	126 W	
Stepper angle for complete step	1.8 deg								
Stepping angle tolerance	±5%								
Motor holding torque	2.4 Nm			6.6 Nm			9.4 Nm		
Nominal torque [1]	–	1.9 Nm		–	5.9 Nm		–	8.4 Nm	
Peak torque	2.7 Nm			6.8 Nm			9.4 Nm		
Standstill torque	–								
Nominal rotary speed	–	800 rpm		–	140 rpm		–	140 rpm	
Max. rotational speed	2,200 rpm			600 rpm			430 rpm		
Max. mechanical speed	7,000 rpm								
Motor constant	0.24 Nm/A			0.79 Nm/A			1.06 Nm/A		
Voltage constant, phase	15.4 mVmin			56.6 mVmin			78.9 mVmin		
Electric time constant	1.75 ms			8.5 ms			9 ms		
Thermal time constant	35 min			32 min			37 min		
Thermal resistance	0.89 K/W			0.83 K/W			0.75 K/W		
I^2T time motor	2 s								
Number of phases	2								
Number of pole pairs	50								
Phase winding resistance	0.13 Ohm			0.27 Ohm			0.3 Ohm		
Phase winding inductance	0.35 mH			2.3 mH			2.7 mH		
Winding longitudinal inductivity Ld (phase)	0.56 mH			3.6 mH			4.1 mH		
Winding cross inductivity Lq (phase)	0.35 mH			2.3 mH			2.7 mH		
Permissible axial shaft load	60 N								
Permissible radial shaft load	220 N								
Measuring flange	250 x 250 x 15 mm, steel								

1) There is no nominal operating point defined for motors without encoders.

Technical data – Brakes			
Flange size, motors [mm]	42	57	87
Brake holding torque	0.63 Nm	1.74 Nm	4.26 Nm
Operating voltage DC for brake	24 V		
Brake current consumption	0.34 A	0.38 A	0.49 A
Power consumption, brake	8.2 W	9 W	12 W
Brake coil resistance	70.9 Ohm	63.8 Ohm	49.2 Ohm
Brake coil inductivity	146 mH	107 mH	110 mH
Brake separation time	28 ms	32 ms	44 ms
Brake closing time	41 ms	97 ms	110 ms
DC brake response delay	8 ms	11 ms	30 ms
Max. brake no-load speed	9,000 rpm	8,000 rpm	7,000 rpm
Max. friction per braking process	1,500 J	6,000 J	14,000 J
Number of emergency stops per hour	1		
Mass moment of inertia of brake	0.006 kgcm²	0.024 kgcm²	0.11 kgcm²
Switching cycles holding brake [1]	10 million idle actuations (without friction work!)		

1) Guide value for the number of switching operations (release/engage) when used exclusively as a holding brake without friction (i.e. clamping at a standstill).

Datasheet

Technical data – Encoder						
Flange size, motors [mm]	42		57		87	
Rotor position sensor	Absolute single-turn encoder	Absolute multi-turn encoder	Absolute single-turn encoder	Absolute multi-turn encoder	Absolute single-turn encoder	Absolute multi-turn encoder
Measuring unit	Absolute encoder, single turn [S]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	Absolute encoder, multi-turn [M]
Rotor position sensor, encoder measuring principle	Magnetic					
Rotor position encoder interface	BiSS-C					
rotor position sensor, absolute detectable revolutions	1	65,536	1	65,536	1	65,536
rotor position sensor, DC operating voltage	5 V			14 V	5 V	14 V
rotor position sensor, DC operating voltage range	4.75 ... 5.25 V	4.5 ... 5.5 V	4.75 ... 5.25 V	4.75 ... 15 V	4.75 ... 5.25 V	4.75 ... 15 V
Rotor pos. enc., sin/cosin p/r	2					
rotor position sensor, position values per revolution	65,536	131,072	65,536	131,072	65,536	131,072
Rotor position transducer resolution	16 bit	17 bit	16 bit	17 bit	16 bit	17 bit
rotor position sensor, system accuracy of angle measurement	-540 ... 540 arcsec	-310 ... 310 arcsec	-540 ... 540 arcsec	-310 ... 310 arcsec	-540 ... 540 arcsec	-310 ... 310 arcsec
rotor position sensor, max. operating speed	5,500 rpm	12,000 rpm	5,500 rpm	12,000 rpm	5,500 rpm	12,000 rpm
rotor position sensor, temperature range	-40 ... 105°C					
Mean time to failure (MTTF), subcomponent [1]	9,666 years, rotor position encoder	20 years, rotor position encoder	9,666 years, rotor position encoder	20 years, rotor position encoder	9,666 years, rotor position encoder	20 years, rotor position encoder

1) The data provided applies to an encoder temperature/operating temperature of 40 °C.

Total output moment of inertia - EMMT-ST-42						
Flange size, motors [mm]	42					
Length	Short [S]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Brake	None [_]	With brake [B]		None [_]	With brake [B]	
Total mass moment of inertia of output [1]	0.035 kgcm²	0.043 kgcm²	0.041 kgcm²	0.082 kgcm²	0.09 kgcm²	0.088 kgcm²

1) Without brake/with brake

Total output moment of inertia - EMMT-ST-57						
Flange size, motors [mm]	57					
Length	Medium [M]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Brake	None [_]	With brake [B]		None [_]	With brake [B]	
Total mass moment of inertia of output [1]	0.3 kgcm²	0.33 kgcm²	0.324 kgcm²	0.48 kgcm²	0.51 kgcm²	0.504 kgcm²

1) Without brake/with brake

Total output moment of inertia - EMMT-ST-87									
Flange size, motors [mm]	87								
Length	Short [S]			Medium [M]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Brake	None [_]	With brake [B]		None [_]	With brake [B]		None [_]	With brake [B]	
Total mass moment of inertia of output [1]	1 kgcm²	1.116 kgcm²	1.11 kgcm²	1.9 kgcm²	2.016 kgcm²	2.01 kgcm²	3 kgcm²	3.116 kgcm²	3.11 kgcm²

1) Without brake/with brake

Datasheet

Weight														
Flange size, motors [mm]	42				57				87					
Length	Short [S]		Long [L]		Medium [M]		Long [L]		Short [S]		Medium [M]		Long [L]	
Brake	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]
Product weight [1]	370 g	590 g	560 g	770 g	900 g	1,300 g	1,260 g	1,660 g	2,050 g	2,890 g	3,490 g	4,320 g	4,660 g	5,490 g

1) Product weight / With encoder / With brake / With encoder and brake

Operating and environmental conditions – EMMT-ST-42						
Flange size, motors [mm]	42					
Length	Short [S]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Conforms to standard	IEC 60034					
Motor type to EN 60034-7	IM B5, IM V1, IM V3					
Degree of protection	IP40					
Note on degree of protection	IP40 for motor shaft without rotary shaft seal, IP65 for motor housing, incl. connection technology					
Ambient temperature	0 ... 40°C			-15 ... 40°C		
Note on ambient temperature	Up to 80°C with derating -2%/°C					
Storage temperature	-20 ... 70°C					
Max. winding temperature	130°C					
Temperature monitoring	–	Dig. motor temp. via BiSS-C	–		Dig. motor temp. via BiSS-C	–
Rating class as per EN 60034-1	S1					
Temperature class as per EN 60034-1	B					
Relative air humidity	0 - 90%, Non-condensing					
CE mark (see declaration of conformity) [1]	To EU EMC Directive In accordance with EU RoHS Directive					
UKCA marking (see declaration of conformity)[2]	To UK instructions for EMC To UK RoHS instructions					
Approval	RCM trademark c UL us - Recognized (OL)					
Certificate issuing authority	UL E342973					
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6					
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27					
Isolation resistance AC	0.6					
LABS (PWIS) conformity	VDMA24364 zone III					
Note on materials	RoHS-compliant					

1) More information www.festo.com/catalogue/emms-st → Support/Downloads.
2) More information www.festo.com/catalogue/emms-st → Support/Downloads.

Datasheet

Operating and environmental conditions – EMMT-ST-57						
Flange size, motors [mm]	57					
Length	Medium [M]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Conforms to standard	IEC 60034					
Motor type to EN 60034-7	IM B5, IM V1, IM V3					
Degree of protection	IP40					
Note on degree of protection	IP40 for motor shaft without rotary shaft seal, IP65 for motor housing, incl. connection technology					
Ambient temperature	-15 ... 40°C					
Note on ambient temperature	Up to 80°C with derating -2%/°C					
Storage temperature	-20 ... 70°C					
Max. winding temperature	130°C					
Temperature monitoring	–	Dig. motor temp. via BiSS-C	–		Dig. motor temp. via BiSS-C	–
Rating class as per EN 60034-1	S1					
Temperature class as per EN 60034-1	B					
Relative air humidity	0 - 90%, Non-condensing					
CE mark (see declaration of conformity) [1]	To EU EMC Directive In accordance with EU RoHS Directive					
UKCA marking (see declaration of conformity)[2]	To UK instructions for EMC To UK RoHS instructions					
Approval	RCM trademark c UL us - Recognized (OL)					
Certificate issuing authority	UL E342973					
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6					
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27					
Isolation resistance AC	0.6					
LABS (PWIS) conformity	VDMA24364 zone III					
Note on materials	RoHS-compliant					

1) More information www.festo.com/catalogue/emms-st → Support/Downloads.

2) More information www.festo.com/catalogue/emms-st → Support/Downloads.

Datasheet

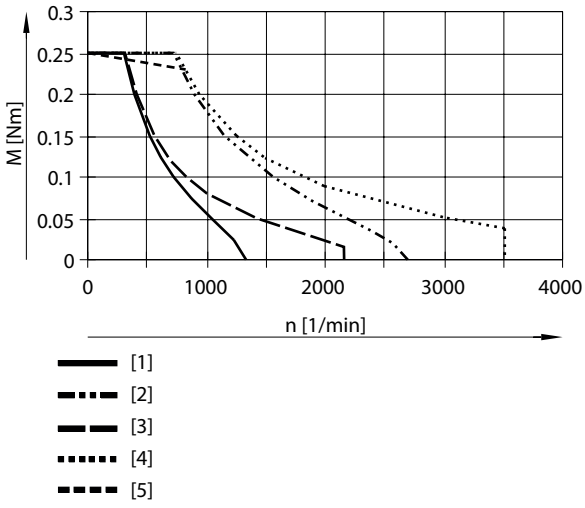
Operating and environmental conditions – EMMT-ST-87

Flange size, motors [mm]	87								
Length	Short [S]			Medium [M]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Conforms to standard	IEC 60034								
Motor type to EN 60034-7	IM B5, IM V1, IM V3								
Degree of protection	IP40								
Note on degree of protection	IP40 for motor shaft without rotary shaft seal, IP65 for motor housing, incl. connection technology								
Ambient temperature	-15 ... 40°C								
Note on ambient temperature	Up to 80°C with derating -2%/°C								
Storage temperature	-20 ... 70°C								
Max. winding temperature	130°C								
Temperature monitoring	–	Dig. motor temp. via BiSS-C	–		Dig. motor temp. via BiSS-C	–		Dig. motor temp. via BiSS-C	–
Rating class as per EN 60034-1	S1								
Temperature class as per EN 60034-1	B								
Relative air humidity	0 - 90%, Non-condensing								
CE mark (see declaration of conformity) [1]	To EU EMC Directive In accordance with EU RoHS Directive								
UKCA marking (see declaration of conformity)[2]	To UK instructions for EMC To UK RoHS instructions								
Approval	RCM trademark c UL us - Recognized (OL)								
Certificate issuing authority	UL E342973								
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6								
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27								
Isolation resistance AC	0.6								
LABS (PWIS) conformity	VDMA24364 zone III								
Note on materials	RoHS-compliant								

1) More information www.festo.com/catalogue/emms-st → Support/Downloads.

2) More information www.festo.com/catalogue/emms-st → Support/Downloads.

Torque M as a function of rotational speed n for EMMT-ST-42-S

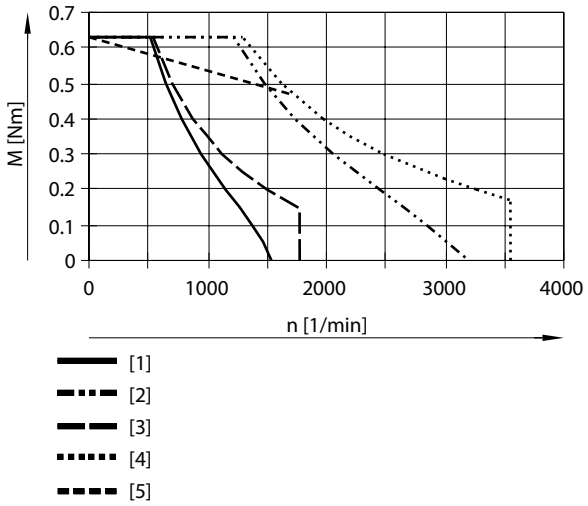


[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

Datasheet

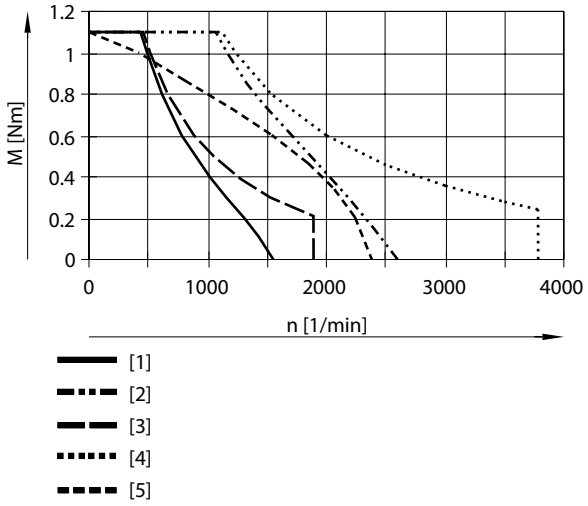
Torque M as a function of rotational speed n for EMMT-ST-42-L



[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

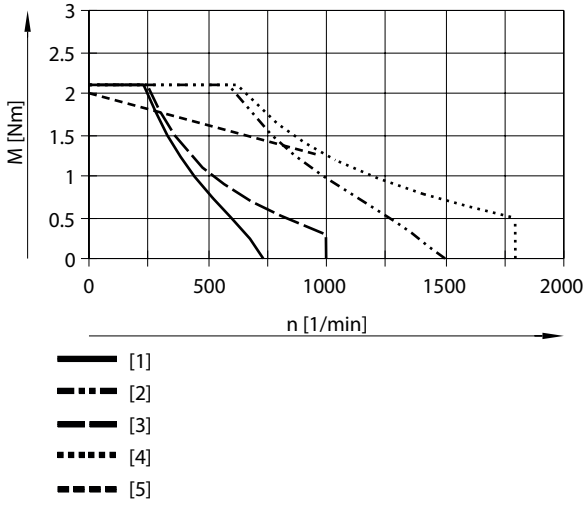
Torque M as a function of rotational speed n for EMMT-ST-57-M



[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

Torque M as a function of rotational speed n for EMMT-ST-57-L

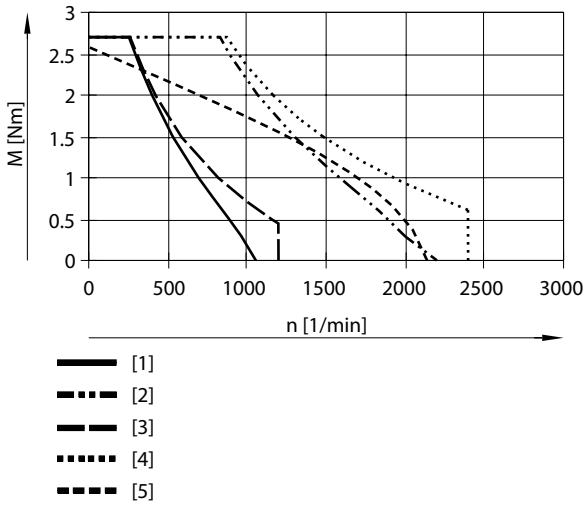


[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

Datasheet

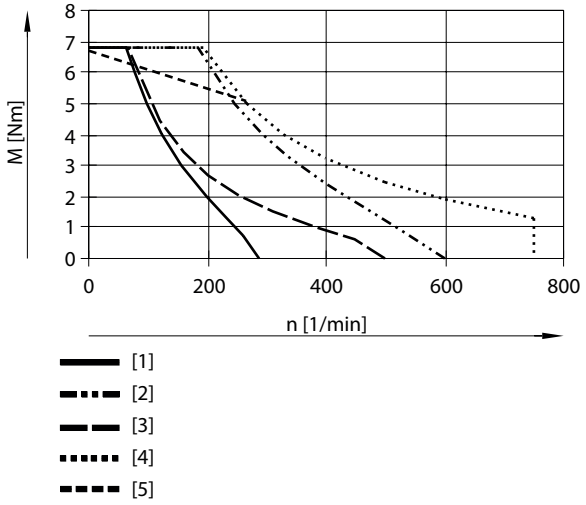
Torque M as a function of rotational speed n for EMMT-ST-87-S



[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

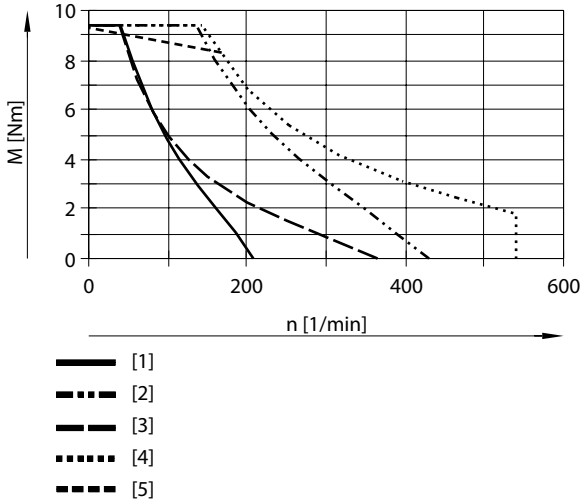
Torque M as a function of rotational speed n for EMMT-ST-87-M



[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

Torque M as a function of rotational speed n for EMMT-ST-87-L

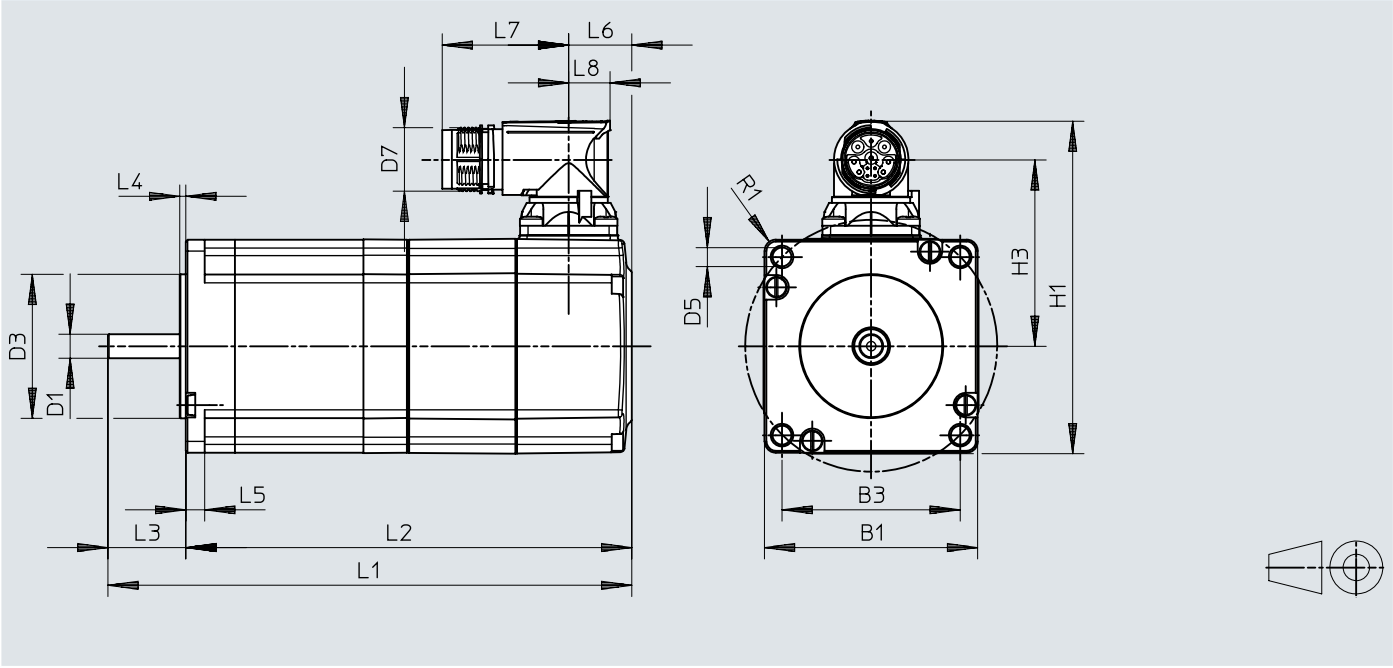


[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

Dimensions

Dimensions – EMMT-ST Download CAD data www.festo.com



		B1	B3 ±0,2	D1 ø h6	D3 ø h8	D5	D7	H1	H3
EMMT-ST-42	S	42	31	5	22	M3	M17	73,3	41,9
	S-B								
	L								
	L-B								
EMMT-ST-57	M	56,4	47,1	6,35	38,1	5	M17	88	49,3
	M-B								
	L								
	L-B								
EMMT-ST-87	S	85,9	69,5	11	73	6,6	M17	118	64,4
	S-B								
	M								
	M-B								
	L								
	L-B								

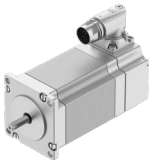
		L1	L2 ±2	L3 ±0,5	L4 ±0,2	L5	L6	L7	L8	R1
EMMT-ST-42	S	94	70	24	2	–	16	33,4	11	2,3
	S-B	124	100							
	L	112	88							
	L-B	142	118							
EMMT-ST-57	M	110,1	89,5	20,6	1,6	5	16,7	33,4	11	3
	M-B	138,6	118							
	L	131,1	110,5							
	L-B	159,6	139							
EMMT-ST-87	S	121	94	27	2	8	16	33,4	11	5,5
	S-B	149,5	122,5							
	M	154,5	127,5							
	M-B	183	156							
	L	184,5	158,5							
	L-B	213	186							

Ordering data

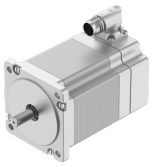
Flange size 42

	Flange size, motors [mm]	Measuring unit	Brake	Part no.	Type
	42 mm	None	None	8156161	EMMT-ST-42-S-R
				8156167	EMMT-ST-42-L-R
			With brake	8156170	EMMT-ST-42-L-RB
				8156164	EMMT-ST-42-S-RB
		Absolute encoder, multi-turn	None	★ 8156169	EMMT-ST-42-L-RM
				★ 8156163	EMMT-ST-42-S-RM
			With brake	★ 8156166	EMMT-ST-42-S-RMB
				★ 8156172	EMMT-ST-42-L-RMB
		Absolute encoder, single turn	None	★ 8156162	EMMT-ST-42-S-RS
				★ 8156168	EMMT-ST-42-L-RS
			With brake	★ 8156171	EMMT-ST-42-L-RSB
				★ 8156165	EMMT-ST-42-S-RSB

Flange size 57

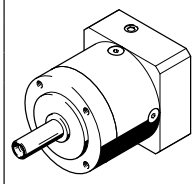
	Flange size, motors [mm]	Measuring unit	Brake	Part no.	Type
	57 mm	None	None	8156179	EMMT-ST-57-L-R
				8156173	EMMT-ST-57-M-R
			With brake	8156182	EMMT-ST-57-L-RB
				8156176	EMMT-ST-57-M-RB
		Absolute encoder, multi-turn	None	★ 8156181	EMMT-ST-57-L-RM
				★ 8156175	EMMT-ST-57-M-RM
			With brake	★ 8156184	EMMT-ST-57-L-RMB
				★ 8156178	EMMT-ST-57-M-RMB
		Absolute encoder, single turn	None	★ 8156180	EMMT-ST-57-L-RS
				★ 8156174	EMMT-ST-57-M-RS
			With brake	★ 8156183	EMMT-ST-57-L-RSB
				★ 8156177	EMMT-ST-57-M-RSB

Flange size 87

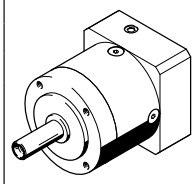
	Flange size, motors [mm]	Measuring unit	Brake	Part no.	Type
	87 mm	None	None	8156185	EMMT-ST-87-S-R
				8156197	EMMT-ST-87-L-R
				8156191	EMMT-ST-87-M-R
			With brake	8156188	EMMT-ST-87-S-RB
				8156200	EMMT-ST-87-L-RB
				8156194	EMMT-ST-87-M-RB
		Absolute encoder, multi-turn	None	★ 8156193	EMMT-ST-87-M-RM
				★ 8156199	EMMT-ST-87-L-RM
				★ 8156187	EMMT-ST-87-S-RM
			With brake	★ 8156196	EMMT-ST-87-M-RMB
				★ 8156190	EMMT-ST-87-S-RMB
				★ 8156202	EMMT-ST-87-L-RMB
		Absolute encoder, single turn	None	★ 8156186	EMMT-ST-87-S-RS
				★ 8156198	EMMT-ST-87-L-RS
				★ 8156192	EMMT-ST-87-M-RS
			With brake	★ 8156201	EMMT-ST-87-L-RSB
				★ 8156189	EMMT-ST-87-S-RSB
				★ 8156195	EMMT-ST-87-M-RSB

Accessories

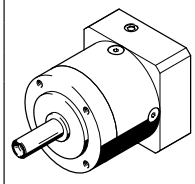
Planetary gear for EMMT-ST-42

	Gear unit ratio	Note on materials	Product weight	Part no.	Type
	3:1	RoHS-compliant	350 g	★ 549428	EMGA-40-P-G3-SST-42
	5:1			★ 549429	EMGA-40-P-G5-SST-42
	8:1		400 g	8141762	EMGA-40-P-G8-SST-42
	12:1		450 g	8141763	EMGA-40-P-G12-SST-42

Planetary gear for EMMT-ST-57

	Gear unit ratio	Note on materials	Product weight	Part no.	Type
	3:1	RoHS-compliant	900 g	★ 549430	EMGA-60-P-G3-SST-57
	5:1			★ 549431	EMGA-60-P-G5-SST-57
	8:1			★ 8141764	EMGA-60-P-G8-SST-57
	12:1		1,100 g	★ 8141765	EMGA-60-P-G12-SST-57

Planetary gear EMMT-ST-87

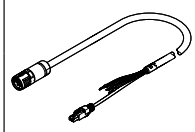
	Gear unit ratio	Note on materials	Product weight	Part no.	Type
	3:1	RoHS-compliant	2,100 g	★ 549432	EMGA-80-P-G3-SST-87
	5:1			★ 549433	EMGA-80-P-G5-SST-87
	8:1			★ 8141766	EMGA-80-P-G8-SST-87
	12:1		2,600 g	★ 8141767	EMGA-80-P-G12-SST-87

Recommended cable cross section as a function of cable length and servo drive CMMT-ST

	bis 5 m	bis 10 m	bis 20 m	bis 25 m
EMMT-ST-42-S-...	Q6	Q6	Q6	Q6
EMMT-ST-42-L-...	Q6	Q6	Q7	Q7
EMMT-ST-57-M-...	Q6	Q7	Q9	Q9
EMMT-ST-57-L-...	Q6	Q7	Q9	Q9
EMMT-ST-87-S-...	Q7	Q9	Q9	Q9
EMMT-ST-87-M-...	Q7	Q9	Q9	Q9
EMMT-ST-87-L-...	Q7	Q9	Q9	Q9

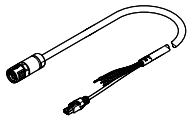
Q6 = 0,5 mm²
Q7 = 0,75 mm²
Q9 = 1,5 mm²

Motor cable

	Nominal cross section conductor	Bending radius, moving cable	Cable characteristic	Ambient temperature	Cable length [1]	Part no.	Type
	0.15 mm², 0.5 mm²	78.75 mm	Suitable for energy chains	-40 ... 90 °C	5 m	★ 8181668	NEBM-M17G12-EH-5-Q6N-LE12
	0.15 mm², 0.5 mm², 0.75 mm²				2.5 m	★ 8195458	NEBM-M17G12-EH-2.5-Q7N-LE12
	0.15 mm², 0.5 mm²					★ 8181670	NEBM-M17G12-EH-2.5-Q6N-LE12
	0.15 mm², 0.5 mm², 0.75 mm²				5 m	★ 8195459	NEBM-M17G12-EH-5-Q7N-LE12
					7.5 m	★ 8195460	NEBM-M17G12-EH-7.5-Q7N-LE12
	0.15 mm², 0.5 mm²					★ 8190096	NEBM-M17G12-EH-7.5-Q6N-LE12

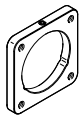
Accessories

Motor cable

	Nominal cross section conductor	Bending radius, moving cable	Cable characteristic	Ambient temperature	Cable length [1]	Part no.	Type
	0.15 mm², 0.5 mm²	78.75 mm	Suitable for energy chains	-40 ... 90 °C	10 m	★ **8195457**	**NEBM-M17G12-EH-10-Q6N-LE12**
	0.15 mm², 0.5 mm², 0.75 mm²					★ **8195461**	**NEBM-M17G12-EH-10-Q7N-LE12**
	0.15 mm², 0.5 mm², 0.75 mm², 1.5 mm²	78.75 ... 81 mm			0.5 ... 20 m	**8181663**	**NEBM-LX/M17-**

1) For NEBM-LX/M17-...: choice of cable lengths: 0.5 ... 25 m, in 0.5 m grid and all cable cross-sections Q6, Q7, Q9

Mounting flange for fitting the motor cable plug (e.g. on the control cabinet)

	Degree of protection	LABS (PWIS) conformity	Part no.	Type
	IP67	VDMA24364 zone III	**8191777**	**NEAM-MF-M17**