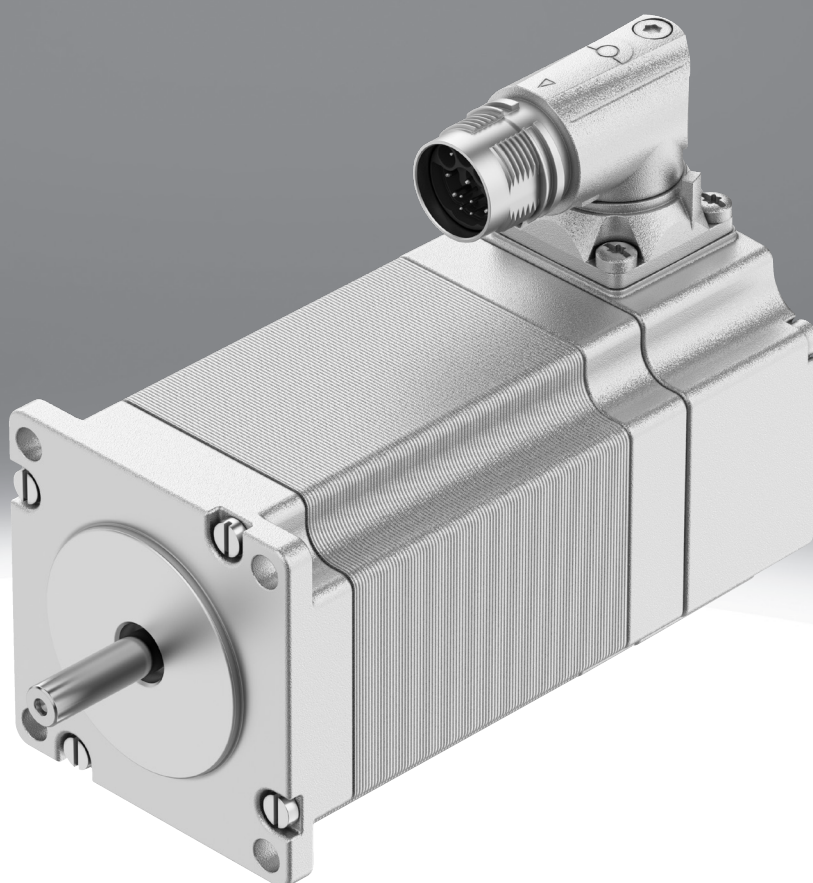


## Stepper motor EMMT-ST

**FESTO**



## 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 | [M]                                                                                                                                                                                                                                                                                                                                         | Absolute encoder, multi-turn |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <ul style="list-style-type: none"> <li>• The angular position is assigned to a unique value in coded form.</li> <li>• The position is only detected within one turn. All subsequent turns need to be counted by the higher-level device.</li> <li>• When switched off, the position is only sensed within one turn.</li> <li>• Following switch-on, a homing run is required.</li> </ul> |                               | <ul style="list-style-type: none"> <li>• A unique value in coded form is assigned to the angular position and each full turn.</li> <li>• This type counts the full turns until the specified maximum is reached (including when switched off).</li> <li>• Homing is only required once it has been installed in the application.</li> </ul> |                              |

### 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, mul-<br>ti-turn | Absolute encoder, sin-<br>gle turn | None        | Absolute encoder, mul-<br>ti-turn | Absolute encoder, sin-<br>gle turn |
| 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 <sup>1)</sup>                     | –                        | 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 mV/min              |                                   |                                    | 10.6 mV/min |                                   |                                    |
| 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       |                                   |                                    |
| I²T 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 inductivi-<br>ty Ld (phase) | 1.6 mH                   |                                   |                                    | 1.45 mH     |                                   |                                    |
| Winding cross inductivity Lq<br>(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, mul-<br>ti-turn [M] | Absolute encoder, sin-<br>gle turn [S] | None [ ]    | Absolute encoder, mul-<br>ti-turn [M] | Absolute encoder, sin-<br>gle turn [S] |
| 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<br>step               | 1.8 deg                  |                                       |                                        |             |                                       |                                        |
| Stepping angle tolerance                         | ±5%                      |                                       |                                        |             |                                       |                                        |
| Motor holding torque                             | 1.12 Nm                  |                                       |                                        | 1.86 Nm     |                                       |                                        |
| Nominal torque <sup>1)</sup>                     | –                        | 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 mV/min              |                                       |                                        | 22.6 mV/min |                                       |                                        |
| 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     |                                       |                                        |
| I²T 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 inductivi-<br>ty Ld (phase) | 0.7 mH                   |                                       |                                        | 1.75 mH     |                                       |                                        |
| Winding cross inductivity Lq<br>(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 en-<br>coder, mul-<br>ti-turn [M] | Absolute en-<br>coder, single<br>turn [S] | None [ ]    | Absolute en-<br>coder, mul-<br>ti-turn [M] | Absolute en-<br>coder, single<br>turn [S] | None [ ]    | Absolute en-<br>coder, mul-<br>ti-turn [M] | Absolute en-<br>coder, single<br>turn [S] |
| 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 <sup>1)</sup>                | –                        | 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 mV/min              |                                            |                                           | 56.6 mV/min |                                            |                                           | 78.9 mV/min |                                            |                                           |
| 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    |                                            |                                           |
| I²T 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 |                                            |                                           |             |                                            |                                           |             |                                            |                                           |

<sup>1)</sup> 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 kgcm <sup>2</sup>                             | 0.024 kgcm <sup>2</sup> | 0.11 kgcm <sup>2</sup> |
| Switching cycles holding brake <sup>1)</sup> | 10 million idle actuations (without friction work!) |                         |                        |

<sup>1)</sup> 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                                |                                  |
| 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 <sup>1)</sup>     | 106 years, rotor position encoder | 20 years, rotor position encoder | 106 years, rotor position encoder | 20 years, rotor position encoder | 106 years, rotor position encoder | 20 years, rotor position encoder |

1) The data provided applies to an encoder temperature/operating temperature of 105 °C.

| Total output moment of inertia - EMMT-ST-42 |                         |                         |                                  |                         |                                   |                         |
|---------------------------------------------|-------------------------|-------------------------|----------------------------------|-------------------------|-----------------------------------|-------------------------|
| Flange size, motors [mm]                    | 42                      |                         |                                  |                         |                                   |                         |
| Length                                      | Short [S]               |                         |                                  |                         |                                   |                         |
| Measuring unit                              | None [L]                |                         | Absolute encoder, multi-turn [M] |                         | Absolute encoder, single turn [S] |                         |
| Brake                                       | None [L]                | With brake [B]          | None [L]                         | With brake [B]          | None [L]                          | With brake [B]          |
| Total mass moment of inertia of output      | 0.035 kgcm <sup>2</sup> | 0.041 kgcm <sup>2</sup> | 0.037 kgcm <sup>2</sup>          | 0.043 kgcm <sup>2</sup> | 0.035 kgcm <sup>2</sup>           | 0.041 kgcm <sup>2</sup> |

| Total output moment of inertia - EMMT-ST-42 |                         |                         |                                  |                        |                                   |                         |
|---------------------------------------------|-------------------------|-------------------------|----------------------------------|------------------------|-----------------------------------|-------------------------|
| Flange size, motors [mm]                    | 42                      |                         |                                  |                        |                                   |                         |
| Length                                      | Long [L]                |                         |                                  |                        |                                   |                         |
| Measuring unit                              | None [L]                |                         | Absolute encoder, multi-turn [M] |                        | Absolute encoder, single turn [S] |                         |
| Brake                                       | None [L]                | With brake [B]          | None [L]                         | With brake [B]         | None [L]                          | With brake [B]          |
| Total mass moment of inertia of output      | 0.082 kgcm <sup>2</sup> | 0.088 kgcm <sup>2</sup> | 0.084 kgcm <sup>2</sup>          | 0.09 kgcm <sup>2</sup> | 0.082 kgcm <sup>2</sup>           | 0.088 kgcm <sup>2</sup> |

| Total output moment of inertia - EMMT-ST-57 |                       |                         |                                  |                        |                                   |                         |
|---------------------------------------------|-----------------------|-------------------------|----------------------------------|------------------------|-----------------------------------|-------------------------|
| Flange size, motors [mm]                    | 57                    |                         |                                  |                        |                                   |                         |
| Length                                      | Medium [M]            |                         |                                  |                        |                                   |                         |
| Measuring unit                              | None [L]              |                         | Absolute encoder, multi-turn [M] |                        | Absolute encoder, single turn [S] |                         |
| Brake                                       | None [L]              | With brake [B]          | None [L]                         | With brake [B]         | None [L]                          | With brake [B]          |
| Total mass moment of inertia of output      | 0.3 kgcm <sup>2</sup> | 0.324 kgcm <sup>2</sup> | 0.306 kgcm <sup>2</sup>          | 0.33 kgcm <sup>2</sup> | 0.3 kgcm <sup>2</sup>             | 0.324 kgcm <sup>2</sup> |

| Total output moment of inertia - EMMT-ST-57 |                        |                         |                                  |                        |                                   |                         |
|---------------------------------------------|------------------------|-------------------------|----------------------------------|------------------------|-----------------------------------|-------------------------|
| Flange size, motors [mm]                    | 57                     |                         |                                  |                        |                                   |                         |
| Length                                      | Long [L]               |                         |                                  |                        |                                   |                         |
| Measuring unit                              | None [L]               |                         | Absolute encoder, multi-turn [M] |                        | Absolute encoder, single turn [S] |                         |
| Brake                                       | None [L]               | With brake [B]          | None [L]                         | With brake [B]         | None [L]                          | With brake [B]          |
| Total mass moment of inertia of output      | 0.48 kgcm <sup>2</sup> | 0.504 kgcm <sup>2</sup> | 0.486 kgcm <sup>2</sup>          | 0.51 kgcm <sup>2</sup> | 0.48 kgcm <sup>2</sup>            | 0.504 kgcm <sup>2</sup> |

## Datasheet

## Total output moment of inertia - EMMT-ST-87

|                                        |                               |                                  |                                   |                               |                                  |                                   |
|----------------------------------------|-------------------------------|----------------------------------|-----------------------------------|-------------------------------|----------------------------------|-----------------------------------|
| Flange size, motors [mm]               | 87                            |                                  |                                   |                               |                                  |                                   |
| Length                                 | Short [S]                     |                                  |                                   |                               |                                  |                                   |
| Brake                                  | None <input type="checkbox"/> |                                  |                                   | With brake [B]                |                                  |                                   |
| Measuring unit                         | None <input type="checkbox"/> | Absolute encoder, multi-turn [M] | Absolute encoder, single turn [S] | None <input type="checkbox"/> | Absolute encoder, multi-turn [M] | Absolute encoder, single turn [S] |
| Total mass moment of inertia of output | 1 kgcm <sup>2</sup>           | 1.006 kgcm <sup>2</sup>          | 1 kgcm <sup>2</sup>               | 1.11 kgcm <sup>2</sup>        | 1.116 kgcm <sup>2</sup>          | 1.11 kgcm <sup>2</sup>            |

## Total output moment of inertia - EMMT-ST-87

|                                        |                               |                                  |                                   |                               |                                  |                                   |
|----------------------------------------|-------------------------------|----------------------------------|-----------------------------------|-------------------------------|----------------------------------|-----------------------------------|
| Flange size, motors [mm]               | 87                            |                                  |                                   |                               |                                  |                                   |
| Length                                 | Medium [M]                    |                                  |                                   |                               |                                  |                                   |
| Brake                                  | None <input type="checkbox"/> |                                  |                                   | With brake [B]                |                                  |                                   |
| Measuring unit                         | None <input type="checkbox"/> | Absolute encoder, multi-turn [M] | Absolute encoder, single turn [S] | None <input type="checkbox"/> | Absolute encoder, multi-turn [M] | Absolute encoder, single turn [S] |
| Total mass moment of inertia of output | 1.9 kgcm <sup>2</sup>         | 1.906 kgcm <sup>2</sup>          | 1.9 kgcm <sup>2</sup>             | 2.01 kgcm <sup>2</sup>        | 2.016 kgcm <sup>2</sup>          | 2.01 kgcm <sup>2</sup>            |

## Total output moment of inertia - EMMT-ST-87

|                                        |                               |                                  |                                   |                               |                                  |                                   |
|----------------------------------------|-------------------------------|----------------------------------|-----------------------------------|-------------------------------|----------------------------------|-----------------------------------|
| Flange size, motors [mm]               | 87                            |                                  |                                   |                               |                                  |                                   |
| Length                                 | Long [L]                      |                                  |                                   |                               |                                  |                                   |
| Brake                                  | None <input type="checkbox"/> |                                  |                                   | With brake [B]                |                                  |                                   |
| Measuring unit                         | None <input type="checkbox"/> | Absolute encoder, multi-turn [M] | Absolute encoder, single turn [S] | None <input type="checkbox"/> | Absolute encoder, multi-turn [M] | Absolute encoder, single turn [S] |
| Total mass moment of inertia of output | 3 kgcm <sup>2</sup>           | 3.006 kgcm <sup>2</sup>          | 3 kgcm <sup>2</sup>               | 3.11 kgcm <sup>2</sup>        | 3.116 kgcm <sup>2</sup>          | 3.11 kgcm <sup>2</sup>            |

## 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 <input type="checkbox"/> | With brake [B] | None <input type="checkbox"/> | With brake [B] | None <input type="checkbox"/> | With brake [B] | None <input type="checkbox"/> | With brake [B] | None <input type="checkbox"/> | With brake [B] | None <input type="checkbox"/> | With brake [B] | None <input type="checkbox"/> | With brake [B] |
| Product weight           | 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        |



## Datasheet

## 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 motor shaft, 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                                     | –                                                                                | Digital Motor temp. via BiSS-C   | –                                 | Digital 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) <sup>1)</sup>      | To EU EMC Directive<br>In accordance with EU RoHS Directive                      |                                  |                                   |                                |                                  |                                   |
| UKCA marking (see declaration of conformity) <sup>2)</sup> | To UK instructions for EMC<br>To UK RoHS instructions                            |                                  |                                   |                                |                                  |                                   |
| Approval                                                   | RCM<br>c UL us - Recognised (Oil)                                                |                                  |                                   |                                |                                  |                                   |
| 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](http://www.festo.com/catalogue/emms-st) → Downloads.

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## Datasheet

## Operating and environmental conditions – EMMT-ST-57

|                                                            |                                                                                  |                                  |                                   |                                |                                  |                                   |
|------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------|-----------------------------------|--------------------------------|----------------------------------|-----------------------------------|
| Flange size, motors [mm]                                   | 57                                                                               |                                  |                                   |                                |                                  |                                   |
| Length                                                     | Medium [M]                                                                       |                                  |                                   | Long [L]                       |                                  |                                   |
| Measuring unit                                             | None <input type="checkbox"/>                                                    | Absolute encoder, multi-turn [M] | Absolute encoder, single turn [S] | None <input type="checkbox"/>  | 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 motor shaft, 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                                     | –                                                                                | Digital Motor temp. via BiSS-C   | –                                 | Digital 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) <sup>1)</sup>      | To EU EMC Directive<br>In accordance with EU RoHS Directive                      |                                  |                                   |                                |                                  |                                   |
| UKCA marking (see declaration of conformity) <sup>2)</sup> | To UK instructions for EMC<br>To UK RoHS instructions                            |                                  |                                   |                                |                                  |                                   |
| Approval                                                   | RCM<br>c UL us - Recognised (Oil)                                                |                                  |                                   |                                |                                  |                                   |
| 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 (PWS) conformity                                      | VDMA24364 zone III                                                               |                                  |                                   |                                |                                  |                                   |
| Note on materials                                          | RoHS compliant                                                                   |                                  |                                   |                                |                                  |                                   |

1) More information [www.festo.com/catalogue/emms-st](http://www.festo.com/catalogue/emms-st) → Downloads.2) More information [www.festo.com/catalogue/emms-st](http://www.festo.com/catalogue/emms-st) → Downloads.

## Datasheet

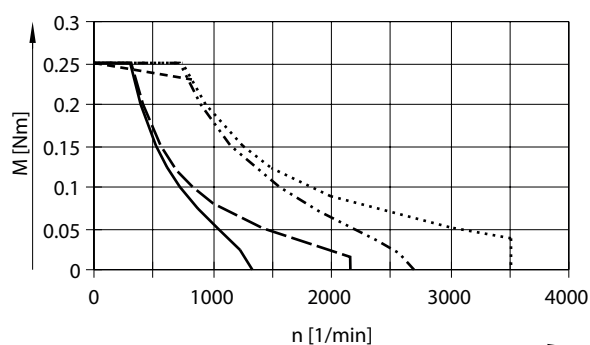
## Operating and environmental conditions – EMMT-ST-87

|                                                            |                                                                                  |                                  |                                   |                                |                                  |                                   |          |                                  |                                   |
|------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------|-----------------------------------|--------------------------------|----------------------------------|-----------------------------------|----------|----------------------------------|-----------------------------------|
| 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 motor shaft, 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                                     | –                                                                                | Digital Motor temp. via BiSS-C   | –                                 | Digital Motor temp. via BiSS-C | –                                | Digital Motor temp. via BiSS-C    | –        | Digital 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) <sup>1)</sup>      | To EU EMC Directive<br>In accordance with EU RoHS Directive                      |                                  |                                   |                                |                                  |                                   |          |                                  |                                   |
| UKCA marking (see declaration of conformity) <sup>2)</sup> | To UK instructions for EMC<br>To UK RoHS instructions                            |                                  |                                   |                                |                                  |                                   |          |                                  |                                   |
| Approval                                                   | RCM<br>c UL us - Recognised (Oil)                                                |                                  |                                   |                                |                                  |                                   |          |                                  |                                   |
| 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](http://www.festo.com/catalogue/emms-st) → Downloads.

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



- [1]
- - - [2]
- . - [3]
- . . . . [4]
- - - - [5]

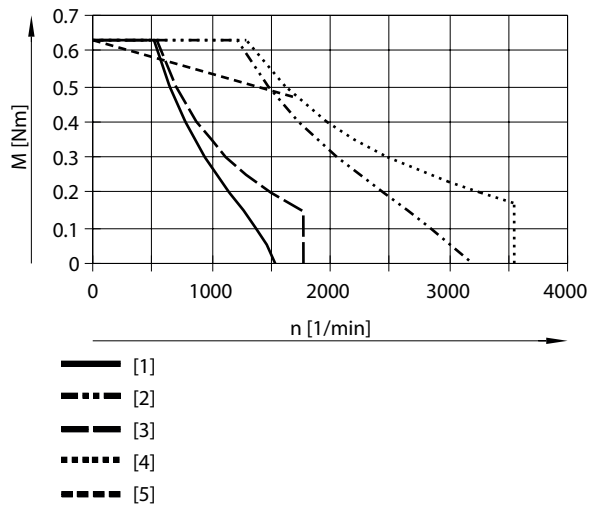
- [1] Peak torque at 24V DC
- [2] Peak torque at 48V DC
- [3] Field weakened peak torque at 24V DC
- [4] Field weakened peak torque at 48V DC
- [5] Nominal torque

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

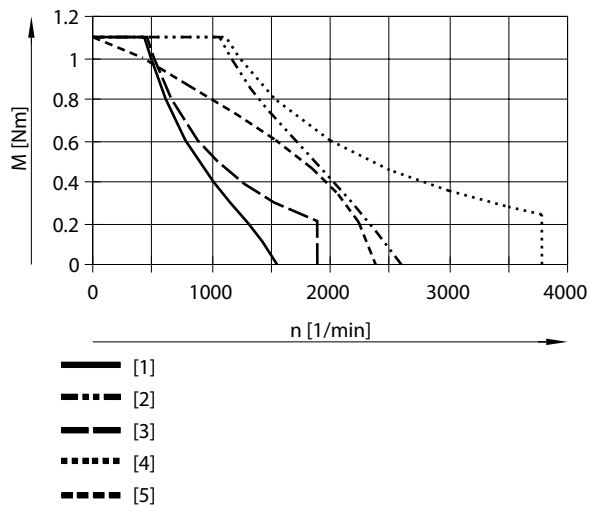


- [1] Peak torque at 24V DC
- [2] Peak torque at 48V DC
- [3] Field weakened peak torque at 24V DC
- [4] Field weakened peak torque at 48V DC
- [5] Nominal torque

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

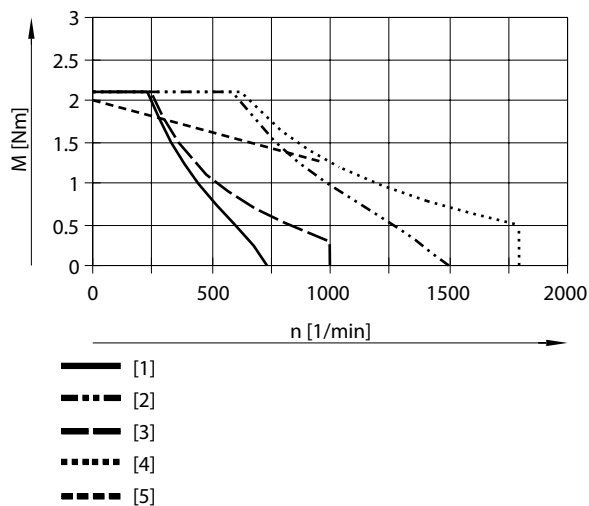


- [1] Peak torque at 24V DC
- [2] Peak torque at 48V DC
- [3] Field weakened peak torque at 24V DC
- [4] Field weakened peak torque at 48V DC
- [5] Nominal torque

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



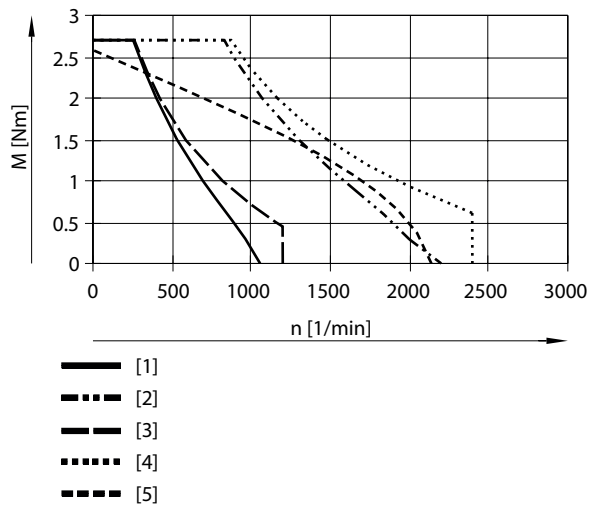
- [1] Peak torque at 24V DC
- [2] Peak torque at 48V DC
- [3] Field weakened peak torque at 24V DC
- [4] Field weakened peak torque at 48V DC
- [5] Nominal torque

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

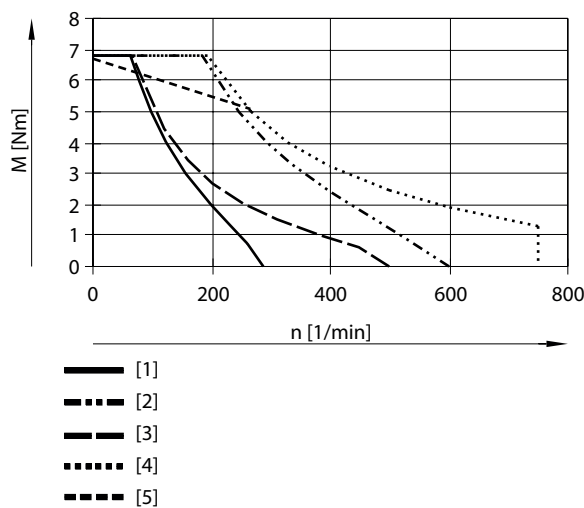


- [1] Peak torque at 24V DC
- [2] Peak torque at 48V DC
- [3] Field weakened peak torque at 24V DC
- [4] Field weakened peak torque at 48V DC
- [5] Nominal torque

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

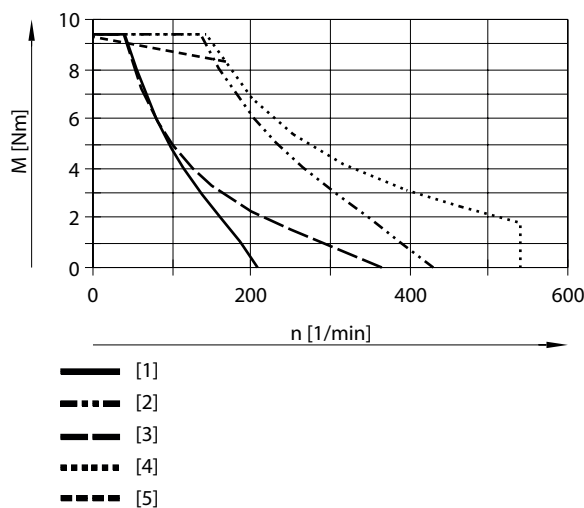


- [1] Peak torque at 24V DC
- [2] Peak torque at 48V DC
- [3] Field weakened peak torque at 24V DC
- [4] Field weakened peak torque at 48V DC
- [5] Nominal torque

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



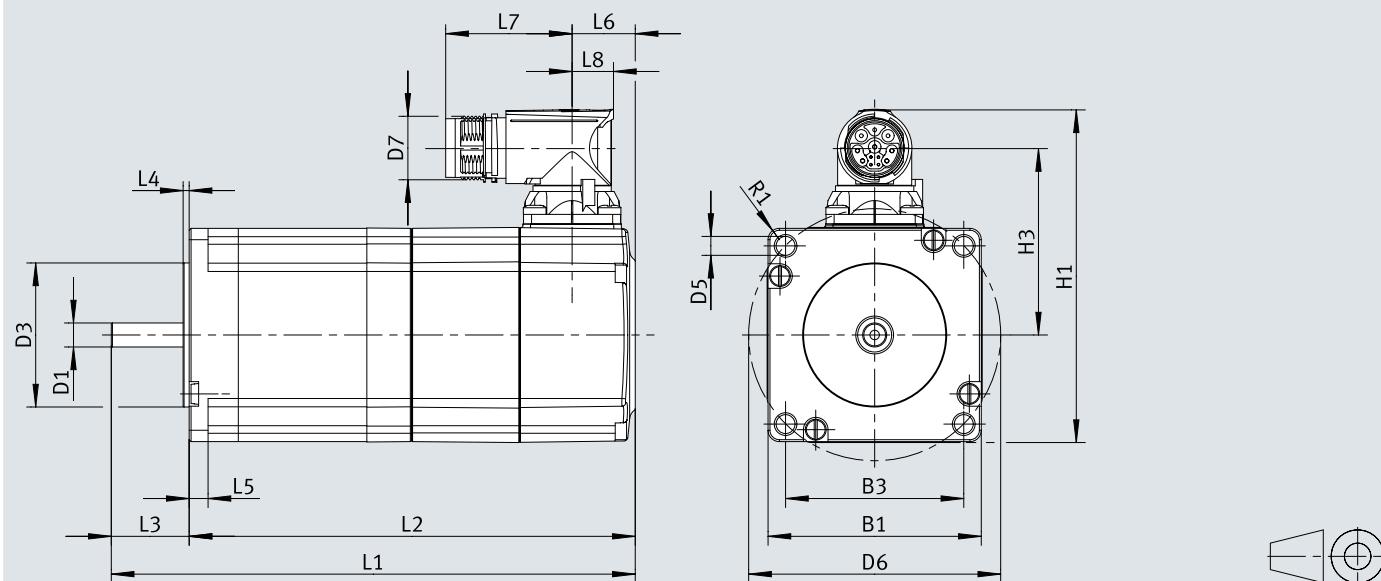
- [1] Peak torque at 24V DC
- [2] Peak torque at 48V DC
- [3] Field weakened peak torque at 24V DC
- [4] Field weakened peak torque at 48V DC
- [5] Nominal torque

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](http://www.festo.com)

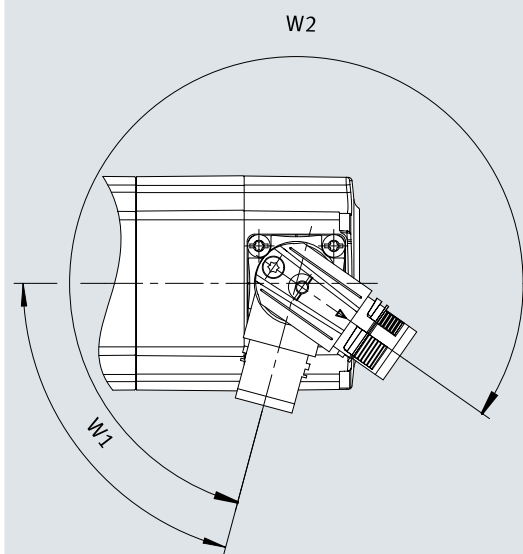
|            |     | B1   | B3   | D1      | D3      | D5  | D6   | D7  | H1   | H3   |
|------------|-----|------|------|---------|---------|-----|------|-----|------|------|
|            |     |      | ±0,2 | ∅<br>h6 | ∅<br>h8 |     | ∅    |     |      |      |
| EMMT-ST-42 | S   | 42   | 31   | 5       | 22      | M3  | 43,8 | M17 | 73,3 | 41,9 |
|            | S-B |      |      |         |         |     |      |     |      |      |
|            | L   |      |      |         |         |     |      |     |      |      |
|            | L-B |      |      |         |         |     |      |     |      |      |
| EMMT-ST-57 | M   | 56,4 | 47,1 | 6,35    | 38,1    | 5   | 66,7 | M17 | 88   | 49,3 |
|            | M-B |      |      |         |         |     |      |     |      |      |
|            | L   |      |      |         |         |     |      |     |      |      |
|            | L-B |      |      |         |         |     |      |     |      |      |
| EMMT-ST-87 | S   | 85,9 | 69,5 | 11      | 73      | 6,6 | 98,3 | M17 | 118  | 64,4 |
|            | S-B |      |      |         |         |     |      |     |      |      |
|            | M   |      |      |         |         |     |      |     |      |      |
|            | M-B |      |      |         |         |     |      |     |      |      |
|            | L   |      |      |         |         |     |      |     |      |      |
|            | L-B |      |      |         |         |     |      |     |      |      |

|            |     | L1    | L2    | L3   | L4   | L5 | L6   | L7   | L8 | R1  |
|------------|-----|-------|-------|------|------|----|------|------|----|-----|
|            |     |       | ±2    | ±0,5 | ±0,2 |    |      |      |    |     |
| 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   |      |      |    |      |      |    |     |

# Dimensions

## Dimensions – Connection

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

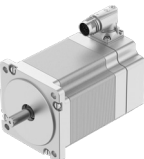


|            | W1  | W2   |
|------------|-----|------|
| EMMT-ST... | 75° | 290° |

# 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 |

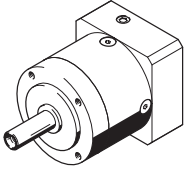
| Flange size 57                                                                    |                          |                               |            |          |                  |
|-----------------------------------------------------------------------------------|--------------------------|-------------------------------|------------|----------|------------------|
|                                                                                   | 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 |

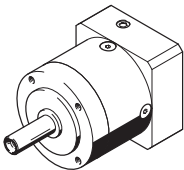


## Accessories

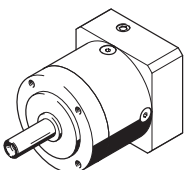
## Planetary gear for EMMT-ST-42

|                                                                                   | 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

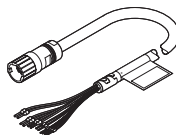
|                                                                                    | Gear unit ratio | Note on materials | Product weight | Part no. | Type                 |
|------------------------------------------------------------------------------------|-----------------|-------------------|----------------|----------|----------------------|
|  | 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

|                  | ≤ 5 m | ≤ 10 m | ≤ 20 m | ≤ 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 mm<sup>2</sup>  
 Q7 = 0.75 mm<sup>2</sup>  
 Q9 = 1.5 mm<sup>2</sup>

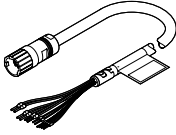
Motor cable with cable cross-section 0.5 mm<sup>2</sup> for servo drive CMMT-ST

|                                                                                     | Bending radius, moving cable | Cable characteristic       | Ambient temperature | Cable length <sup>1)</sup> | Part no. | Type                        |
|-------------------------------------------------------------------------------------|------------------------------|----------------------------|---------------------|----------------------------|----------|-----------------------------|
|  | 78.75 mm                     | Suitable for energy chains | -40 ... 90 °C       | 2.5 m                      | 8181670  | NEBM-M17G12-EH-2.5-Q6N-LE12 |
|                                                                                     |                              |                            |                     | 5 m                        | 8181668  | NEBM-M17G12-EH-5-Q6N-LE12   |
|                                                                                     |                              |                            |                     | 7.5 m                      | 8190096  | NEBM-M17G12-EH-7.5-Q6N-LE12 |
|                                                                                     |                              |                            |                     | 10 m                       | 8195457  | NEBM-M17G12-EH-10-Q6N-LE12  |
|                                                                                     | 78.75 ... 81 mm              |                            |                     | 0.5 ... 20 m               | 8181663  | NEBM-LX/M17-                |

1) For NEBM-LX/M17-...: cable lengths can be selected from 0.5 ... 25 m, in increments of 0.5 m and in all cable cross-sections Q6, Q7, Q9

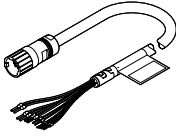
For NEBM-LX/M17-...: the extension cables can also be configured via the modular product system.

## Accessories

| Motor cable with cable cross-section 0.75 mm² for servo drive CMMT-ST            |                              |                            |                     |                            |          |                             |
|----------------------------------------------------------------------------------|------------------------------|----------------------------|---------------------|----------------------------|----------|-----------------------------|
|                                                                                  | Bending radius, moving cable | Cable characteristic       | Ambient temperature | Cable length <sup>1)</sup> | Part no. | Type                        |
|  | 78.75 mm                     | Suitable for energy chains | -40 ... 90 °C       | 2.5 m                      | 8195458  | NEBM-M17G12-EH-2.5-Q7N-LE12 |
|                                                                                  |                              |                            |                     | 5 m                        | 8195459  | NEBM-M17G12-EH-5-Q7N-LE12   |
|                                                                                  |                              |                            |                     | 7.5 m                      | 8195460  | NEBM-M17G12-EH-7.5-Q7N-LE12 |
|                                                                                  |                              |                            |                     | 10 m                       | 8195461  | NEBM-M17G12-EH-10-Q7N-LE12  |
|                                                                                  | 78.75 ... 81 mm              |                            |                     | 0.5 ... 20 m               | 8181663  | NEBM-LX/M17-                |

1) For NEBM-LX/M17-...: cable lengths can be selected from 0.5 ... 25 m, in increments of 0.5 m and in all cable cross-sections Q6, Q7, Q9

For NEBM-LX/M17-...: the extension cables can also be configured via the modular product system.

| Motor cable with cable cross-section 1.5 mm² for servo drive CMMT-ST             |                              |                            |                     |                            |          |                             |
|----------------------------------------------------------------------------------|------------------------------|----------------------------|---------------------|----------------------------|----------|-----------------------------|
|                                                                                  | Bending radius, moving cable | Cable characteristic       | Ambient temperature | Cable length <sup>1)</sup> | Part no. | Type                        |
|  | 78.75 ... 81 mm              | Suitable for energy chains | -40 ... 90 °C       | 0.5 ... 20 m               | 8181663  | NEBM-LX/M17-                |
|                                                                                  | 81 mm                        |                            |                     | 2.5 m                      | 8234028  | NEBM-M17G12-EH-2.5-Q9N-LE12 |
|                                                                                  |                              |                            |                     | 5 m                        | 8234029  | NEBM-M17G12-EH-5-Q9N-LE12   |
|                                                                                  |                              |                            |                     | 7.5 m                      | 8234030  | NEBM-M17G12-EH-7.5-Q9N-LE12 |
|                                                                                  |                              |                            |                     | 10 m                       | 8234031  | NEBM-M17G12-EH-10-Q9N-LE12  |

1) For NEBM-LX/M17-...: cable lengths can be selected from 0.5 ... 25 m, in increments of 0.5 m and in all cable cross-sections Q6, Q7, Q9

For NEBM-LX/M17-...: the extension cables can also be configured via the modular product system.

| 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 |