

# Brushless DC-Servomotors

## 2 Pole Technology

2,6 mNm  
9,9 W

### Series 1226 ... B

| Values at 22°C and nominal voltage           |  | 1226 S                  | 006 B                     | 012 B               |                                 |
|--|--|-------------------------|---------------------------|---------------------|---------------------------------|
| 1  | Nominal voltage  | $U_N$                   | 6                         | 12                  | V                               |
| 2  | Terminal resistance, phase-phase                                 | $R$                     | 2,2                       | 5,45                | $\Omega$                        |
| 3  | Efficiency, max.   | $\eta_{max}$            | 71                        | 72                  | %                               |
| 4  | No-load speed  | $n_0$                   | 21 000                    | 27 400              | min <sup>-1</sup>               |
| 5  | No-load current, typ. (with shaft $\varnothing$ 1,2 mm)          | $I_0$                   | 0,07                      | 0,054               | A                               |
| 6  | Stall torque   | $M_H$                   | 7,24                      | 8,99                | mNm                             |
| 7  | Friction torque, static  | $C_0$                   | 0,073                     | 0,073               | mNm                             |
| 8  | Friction torque, dynamic   | $C_V$                   | $5,3 \cdot 10^{-6}$       | $5,3 \cdot 10^{-6}$ | mNm/min <sup>-1</sup>           |
| 9  | Speed constant   | $k_n$                   | 3 563                     | 2 318               | min <sup>-1</sup> /V            |
| 10   | Back-EMF constant  | $k_E$                   | 0,281                     | 0,431               | mV/min <sup>-1</sup>            |
| 11   | Torque constant  | $k_M$                   | 2,68                      | 4,12                | mNm/A                           |
| 12   | Current constant   | $k_I$                   | 0,373                     | 0,243               | A/mNm                           |
| 13   | Slope of n-M curve   | $\Delta n / \Delta M$   | 2 925                     | 3 066               | min <sup>-1</sup> /mNm          |
| 14   | Terminal inductance, phase-phase                                 | $L$                     | 36                        | 85                  | $\mu$ H                         |
| 15   | Mechanical time constant   | $\tau_m$                | 4,4                       | 4,7                 | ms                              |
| 16   | Rotor inertia  | $J$                     | 0,15                      | 0,15                | gcm <sup>2</sup>                |
| 17   | Angular acceleration   | $\alpha_{max}$          | 499                       | 621                 | $\cdot 10^3$ rad/s <sup>2</sup> |
| 18   | Thermal resistance   | $R_{th1} / R_{th2}$     | 7,3 / 36,6                |                     | K/W                             |
| 19   | Thermal time constant  | $\tau_{w1} / \tau_{w2}$ | 3,2 / 207                 |                     | s                               |
| 20   | Operating temperature range:                                     |                         |                           |                     |                                 |
|  | – motor  |                         | -20 ... +100              |                     | °C                              |
|  | – winding, max. permissible                                      |                         | +125                      |                     | °C                              |
| 21   | Shaft bearings   |                         | ball bearings, preloaded  |                     |                                 |
| 22   | Shaft load max.:   |                         |                           |                     |                                 |
|  | – with shaft diameter  |                         | 1,2                       |                     | mm                              |
|  | – radial at 10 000 min <sup>-1</sup> (4 mm from mounting flange) |                         | 5                         |                     | N                               |
|  | – axial at 10 000 min <sup>-1</sup> (push only)                  |                         | 2,5                       |                     | N                               |
|  | – axial at standstill (push only)                                |                         | 11                        |                     | N                               |
| 23   | Shaft play:  |                         |                           |                     |                                 |
|  | – radial   | $\leq$                  | 0,012                     |                     | mm                              |
|  | – axial  | $=$                     | 0                         |                     | mm                              |
| 24   | Housing material   |                         | aluminium, black anodized |                     |                                 |
| 25   | Mass   |                         | 13                        |                     | g                               |
| 26   | Direction of rotation  |                         | electronically reversible |                     |                                 |
| 27   | Speed up to  | $n_{max}$               | 79 000                    |                     | min <sup>-1</sup>               |
| 28   | Number of pole pairs   |                         | 1                         |                     |                                 |
| 29   | Hall sensors   |                         | digital                   |                     |                                 |
| 30   | Magnet material  |                         | NdFeB                     |                     |                                 |
| <b>Rated values for continuous operation</b> |  |                         |                           |                     |                                 |
| 31   | Rated torque   | $M_N$                   | 2,13                      | 1,97                | mNm                             |
| 32   | Rated current (thermal limit)                                    | $I_N$                   | 0,932                     | 0,573               | A                               |
| 33   | Rated speed  | $n_N$                   | 12 480                    | 19 670              | min <sup>-1</sup>               |

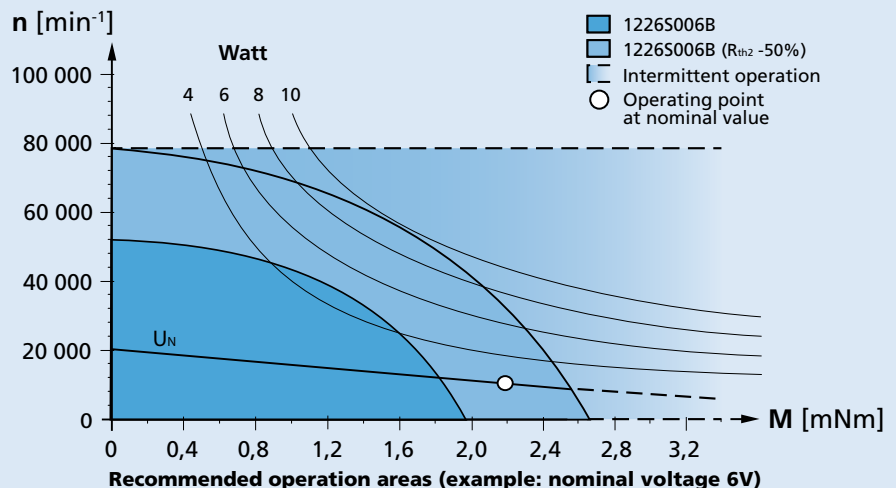
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 25%.

**Note:**

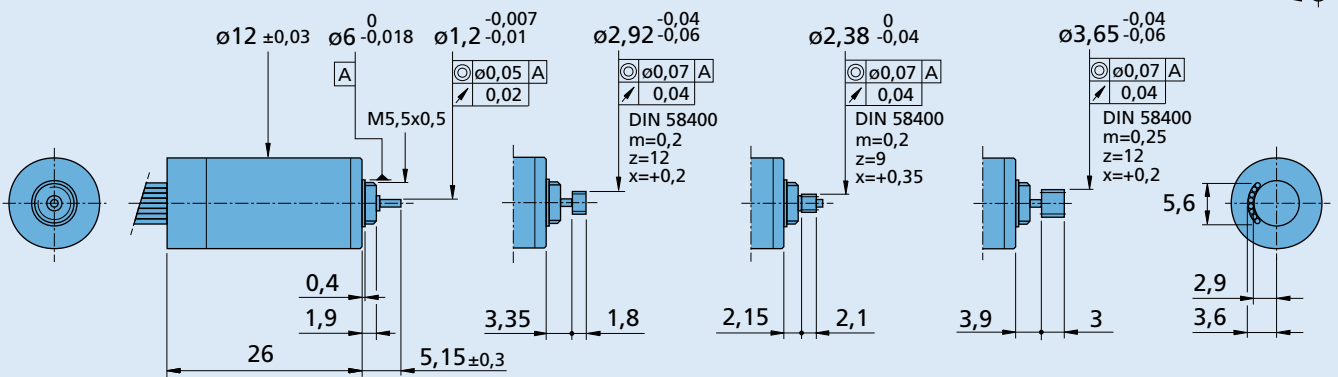
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in a completely insulated as well as thermally coupled condition ( $R_{th2}$  50% reduced).

The nominal voltage ( $U_N$ ) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



### Dimensional drawing



1226 S ... B

1226 M ... B  
for Gearheads 10/1

1226 E ... B  
for Gearheads 12/3, 12/5

1226 A ... B  
for Gearheads 12/4

### Option, cable and connection information

Example product designation: **1226S006B-K1855**

| Option | Type                   | Description   | Connection                  |        |
|--------|------------------------|---|-----------------------------|--------|
|        |                        |   | Function                    | Colour |
| K1855  | Controller combination | Analog Hall sensors for combination with Motion Controller MCBL | Phase C                     | yellow |
| K179   | Bearing lubrication    | For vacuum of $10^{-5}$ Pa @ 22°C                               | Phase B                     | orange |
|        |                        |   | Phase A                     | brown  |
|        |                        |   | GND                         | black  |
|        |                        |   | U <sub>DD</sub> (+5V)       | red    |
|        |                        |   | Hall sensor C               | grey   |
|        |                        |   | Hall sensor B               | blue   |
|        |                        |   | Hall sensor A               | green  |
|        |                        |   | <b>Standard cable</b>       |        |
|        |                        |   | Single wires, material PTFE |        |
|        |                        |   | 8 conductors, AWG 30        |        |
|        |                        |   | Length: 80 mm $\pm 3$ mm    |        |

### Product combination

| Precision Gearheads / Lead Screws | Encoders | Drive Electronics  | Cables / Accessories   |
|-----------------------------------|----------|--|--|
| 10/1<br>12/3<br>12/4<br>12/5      |          | SC 1801<br>SC 2402<br>SC 2804<br>MC 5004<br>MCBL 3002<br>MCBL 3003 | To view our large range of accessory parts, please refer to the "Accessories" chapter. |