NEW

FAULHABER

# Brushless DC-Servomotors 1,02 mNm

**For combination with**
Gearheads:
10/1, 12/3, 12/4, 12/5
Drive electronics:
Speed Controller, Motion Controller

## Series 1218 ... B

| | | 1218 S | | 006 B | 012 B | |
|---|---|---|---|---|---|---|
| 1 | Nominal voltage | $U_N$ | | 6 | 12 | Volt |
| 2 | Terminal resistance, phase-phase | R | | 3,14 | 12,0 | Ω |
| 3 | Output power [1] | $P_{2\ max.}$ | | 4,3 | 4,2 | W |
| 4 | Efficiency | $\eta_{max.}$ | | 57,4 | 57,0 | % |
| 5 | No-load speed | $n_o$ | | 29 200 | 30 400 | rpm |
| 6 | No-load current (with shaft ø 1,2 mm) | $I_o$ | | 0,126 | 0,067 | A |
| 7 | Stall torque | $M_H$ | | 3,4 | 3,4 | mNm |
| 8 | Friction torque, static | $C_o$ | | 0,107 | 0,107 | mNm |
| 9 | Friction torque, dynamic | $C_v$ | | $4{,}24 \cdot 10^{-6}$ | $4{,}24 \cdot 10^{-6}$ | mNm/rpm |
| 10 | Speed constant | $k_n$ | | 5 207 | 2 713 | rpm/V |
| 11 | Back-EMF constant | $k_E$ | | 0,192 | 0,369 | mV/rpm |
| 12 | Torque constant | $k_M$ | | 1,83 | 3,52 | mNm/A |
| 13 | Current constant | $k_I$ | | 0,545 | 0,284 | A/mNm |
| 14 | Slope of n-M curve | $\Delta n/\Delta M$ | | 8 914 | 9 249 | rpm/mNm |
| 15 | Terminal inductance, phase-phase | L | | 34 | 130 | µH |
| 16 | Mechanical time constant | $\tau_m$ | | 7 | 7 | ms |
| 17 | Rotor inertia | J | | 0,080 | 0,080 | $gcm^2$ |
| 18 | Angular acceleration | $\alpha_{max.}$ | | 423 | 425 | $\cdot 10^3 rad/s^2$ |
| 19 | Thermal resistance | $R_{th\,1}$ / $R_{th\,2}$ | 13 / 49,0 | | | K/W |
| 20 | Thermal time constant | $\tau_{w1}$ / $\tau_{w2}$ | 4 / 265 | | | s |
| 21 | Operating temperature range: | | | | | |
| | – motor | | – 20 ... +100 | | | °C |
| | – coil, max. permissible | | +125 | | | °C |
| 22 | Shaft bearings | | ball bearings, preloaded | | | |
| 23 | Shaft load max.: | | | | | |
| | – radial at 10 000/30 000 rpm (3,7 mm from mounting flange) | | 3,5 / 2,8 | | | N |
| | – axial at 10 000/30 000 rpm (push-on only) | | 2,0 / 1,0 | | | N |
| | – axial at standstill (push-on only) | | 11 | | | N |
| 24 | Shaft play: | | | | | |
| | – radial | ≤ | 0,012 | | | mm |
| | – axial | = | 0 | | | mm |
| 25 | Housing material | | aluminium, black anodized | | | |
| 26 | Weight | | 8,3 | | | g |
| 27 | Direction of rotation | | electronically reversible | | | |
| **Recommended values** - mathematically independent of each other | | | | | | |
| 28 | Speed up to [2] | $n_{e\ max.}$ | | 67 000 | 67 000 | rpm |
| 29 | Torque up to [1] [2] | $M_{e\ max.}$ | | 1,02 | 0,99 | mNm |
| 30 | Current up to [1] [2] | $I_{e\ max.}$ | | 0,71 | 0,36 | A |

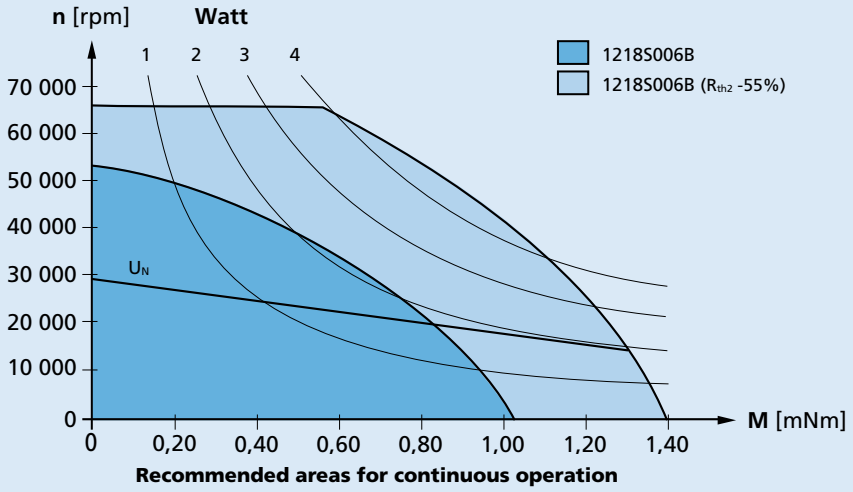
[1] at 40 000 rpm
[2] thermal resistance $R_{th\,2}$ by 55% reduced

**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 ($R_{th\,2}$ 55% 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.



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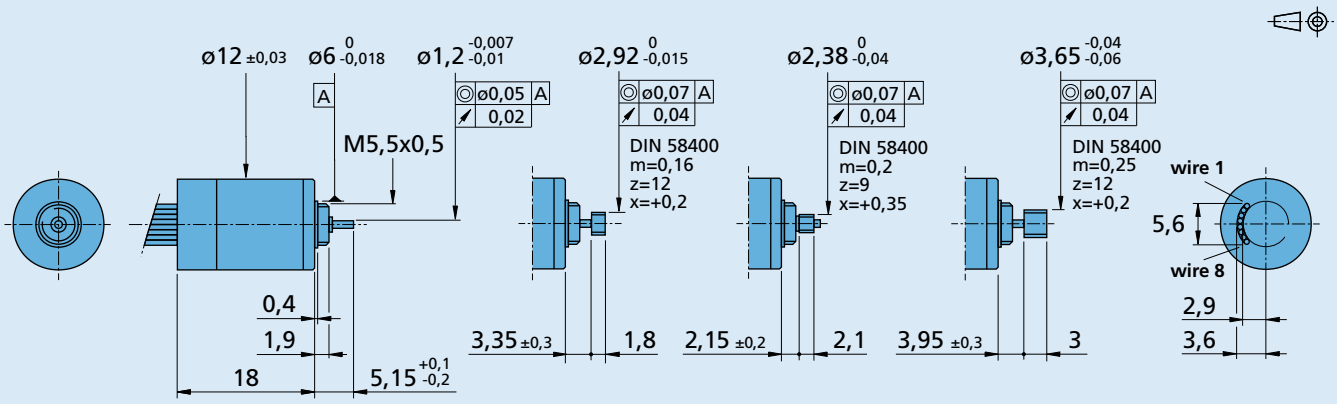
Specifications subject to change without notice.

**Options**
K1855:
Motors with analog Hall sensors
for operation with Motion Controllers

## 1218 ... B



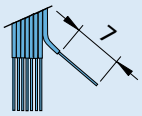

**1218 S ... B**

**1218 M ... B**
for Gearhead 10/1

**1218 E ... B**
for Gearheads 12/3, 12/5

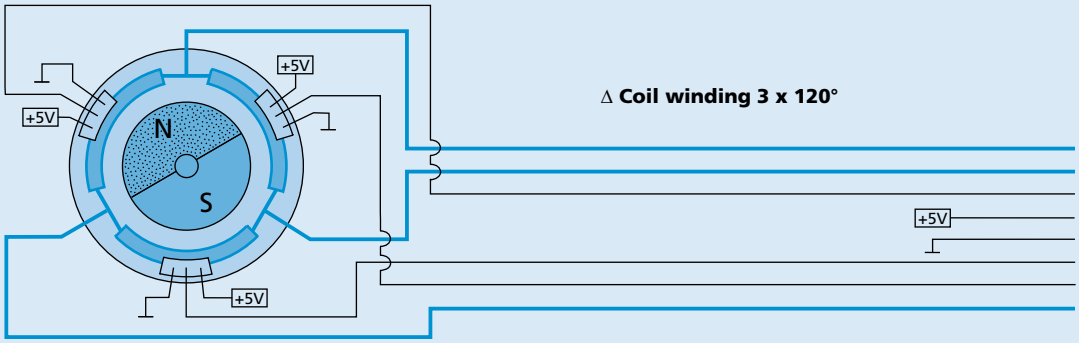
**1218 A ... B**
for Gearhead 12/4

## Cable and connection information




**Cable**
Single wires, material PTFE
Length 80 mm ± 3 mm
8 conductors, AWG 30

**Note**
Hallsensors digital
Number of pole pairs = 1




**Δ Coil winding 3 x 120°**

**Connection**

| No. | Function | Colour |
|---|---|---|
| 1 | Phase C | yellow |
| 2 | Phase B | orange |
| 3 | Hall sensor C | grey |
| 4 | Logical supply +5V | red |
| 5 | Logical GND | black |
| 6 | Hall sensor A | green |
| 7 | Hall sensor B | blue |
| 8 | Phase A | brown |



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