

Encoders

Magnetic Encoders

Features:
 16 Lines per revolution
 2 Channels
 Digital output

Series IE2 – 16

| | | IE2 – 16 | |
|--|------------------|-----------------|------------------|
| Lines per revolution | N | 16 | |
| Signal output, square wave | | 2 | channels |
| Supply voltage | V _{DD} | 4 ... 18 | V DC |
| Current consumption, typical (V _{DD} = 12 V DC) | I _{DD} | typ. 6, max. 12 | mA |
| Output current, max. admissible | I _{OUT} | 15 | mA |
| Pulse width ²⁾ | P | 180 ± 45 | °e |
| Phase shift, channel A to B ²⁾ | Φ | 90 ± 45 | °e |
| Signal rise/fall time, max. (C _{LOAD} = 100 pF) | tr/tf | 2,5 / 0,3 | µs |
| Frequency range ¹⁾ , up to | f | 7 | kHz |
| Inertia of code disc | J | 0,11 | gcm ² |
| Operating temperature range | | - 25 ... +85 | °C |

¹⁾ Velocity (rpm) = f (Hz) x 60/N
²⁾ Tested at 2 kHz

Ordering information

| Encoder type | number of channels | lines per revolution | in combination with: |
|--------------|--------------------|----------------------|---|
| IE2 – 16 | 2 | 16 | DC-Micromotors series 1336 ... C, 1516 ... SR, 1524 ... SR, 1717 ... SR, 1724 ... SR, 1727 ... C, 2224 ... SR, 2232 ... SR, 2342 ... CR, 2642 ... CR, 2657 ... CR, 3242 ... CR, 3257 ... CR, 3863 ... C |

Features

These incremental shaft encoders in combination with the FAULHABER DC-Micromotors are used for the indication and control of both shaft velocity and direction of rotation as well as for positioning. The encoder is integrated in the DC-Micromotors SR-Series and extends the overall length by only 1,4 mm!

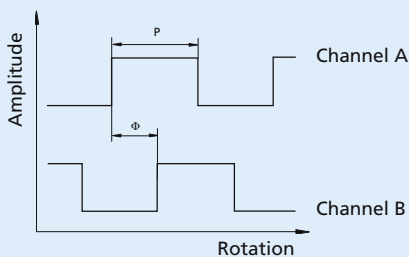
Solid state Hall sensors and a low inertia magnetic disc provide two channels with 90° phase shift.

The supply voltage for the encoder and the DC-Micromotor as well as the two channel output signals are interfaced through a ribbon cable with connector.

Details for the DC-Micromotors and suitable reduction gearheads are on separate catalogue pages.

Output signals / Circuit diagram / Connector information

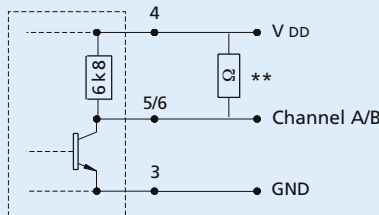
Output signals
 with clockwise rotation as seen from the shaft end



Admissible deviation of phase shift:

$$\Delta\Phi = \left| 90^\circ - \frac{\Phi}{P} * 180^\circ \right| \leq 45^\circ$$

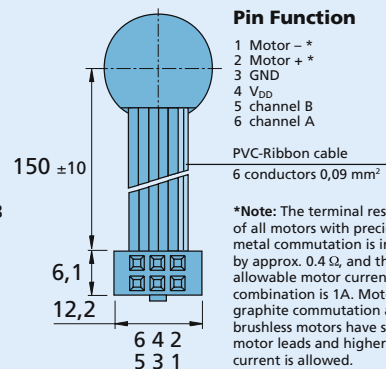
Output circuit



** An additional external pull-up resistor can be added to improve the rise time. Caution: I_{OUT} max. 15 mA must not be exceeded!

Pin Function

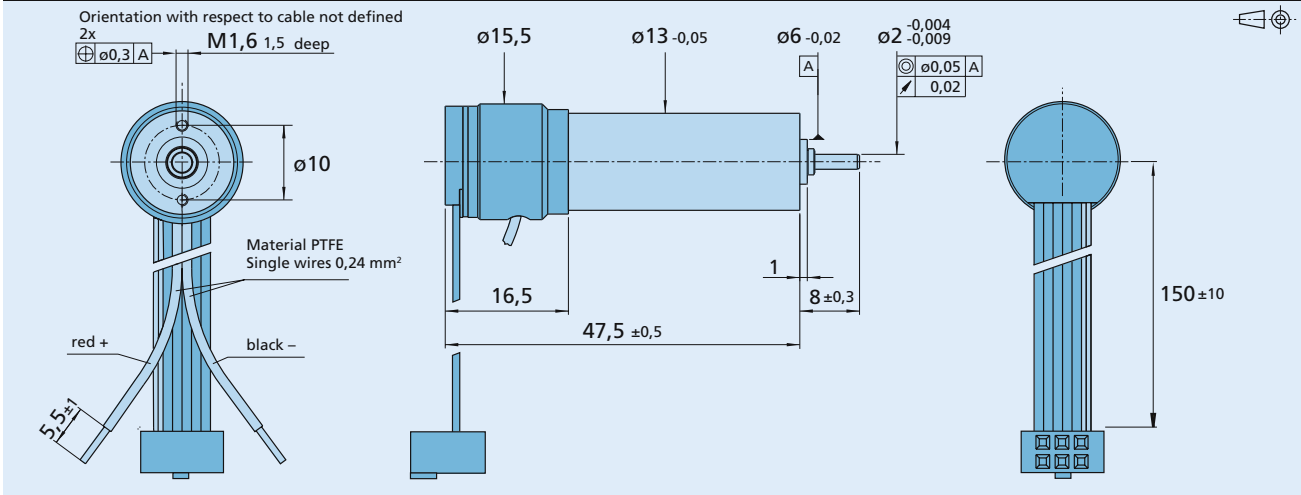
- 1 Motor - *
- 2 Motor + *
- 3 GND
- 4 V_{DD}
- 5 channel B
- 6 channel A



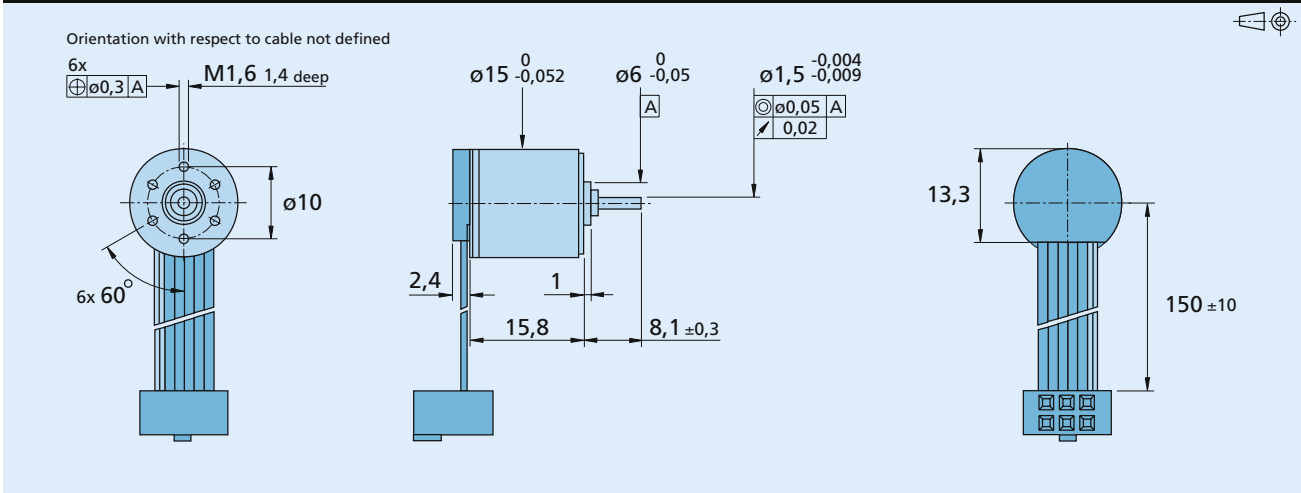
*Note: The terminal resistance of all motors with precious metal commutation is increased by approx. 0.4 Ω, and the max. allowable motor current in combination is 1A. Motors with graphite commutation and brushless motors have separate motor leads and higher motor current is allowed.

Connector
 DIN-41651
 grid 2,54 mm

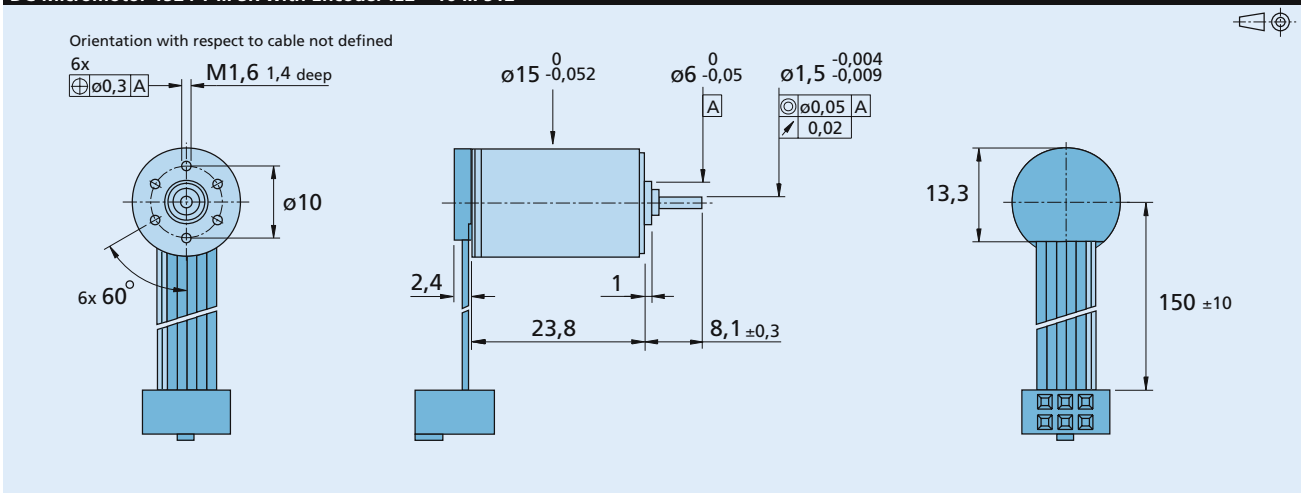
DC-Micromotor 1336 U ... C - 123 with Encoder IE2 – 16 ... 512



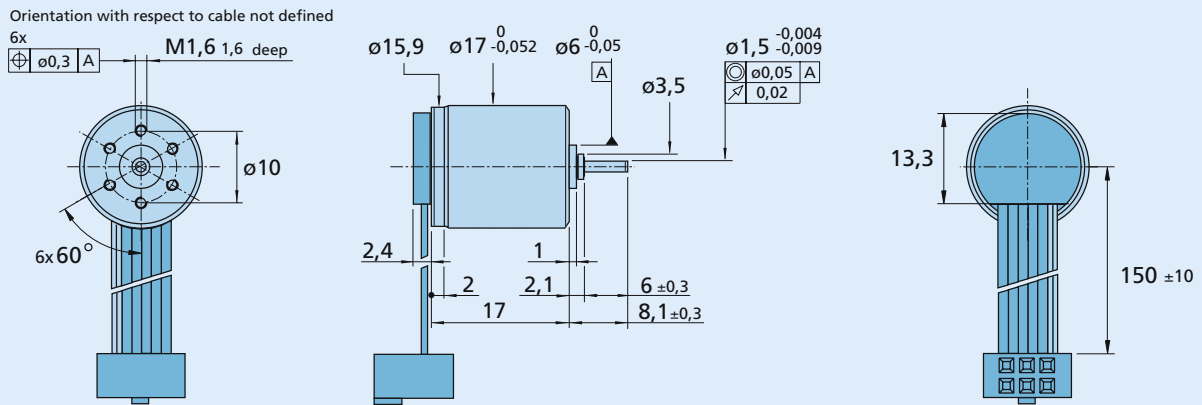
DC-Micromotor 1516 T ... SR with Encoder IE2 – 16 ... 512



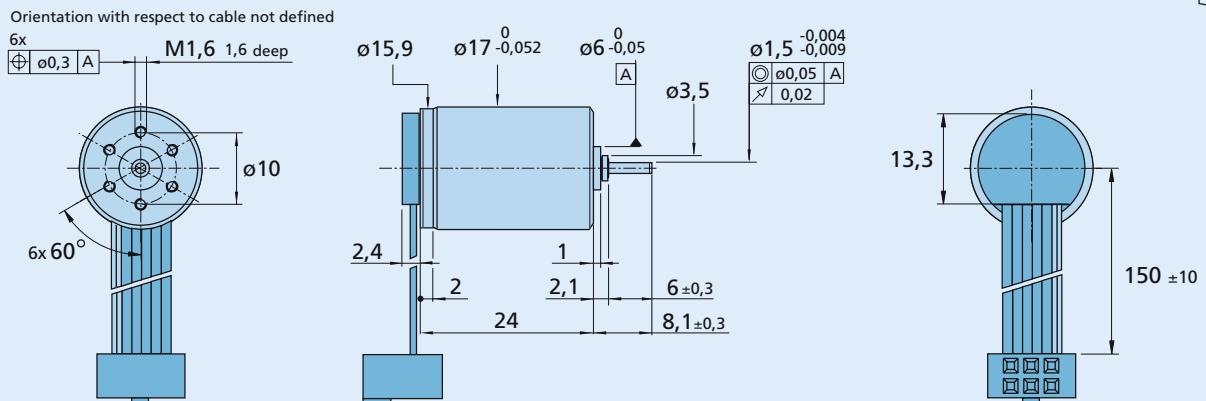
DC-Micromotor 1524 T ... SR with Encoder IE2 – 16 ... 512



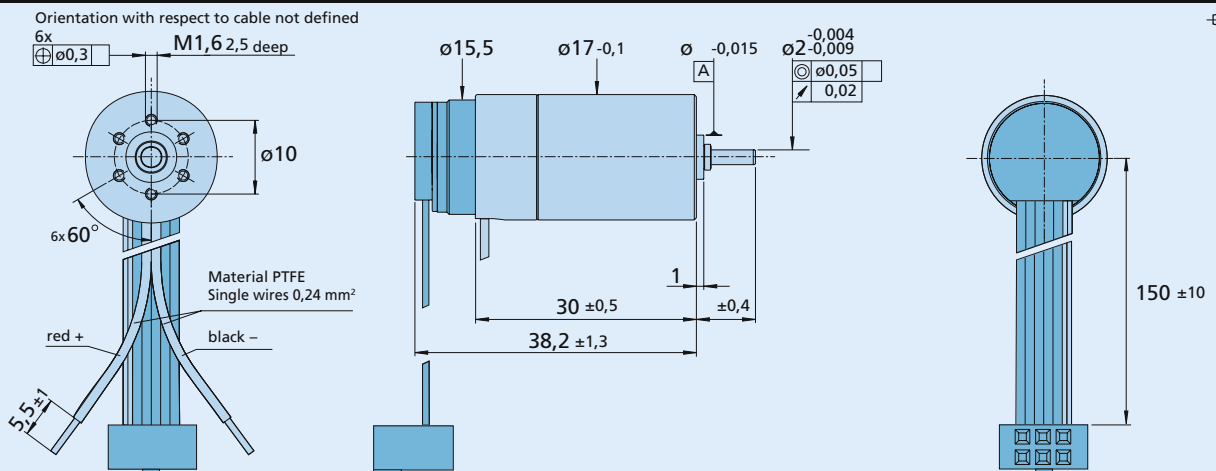
DC-Micromotor 1717 T ... SR with Encoder IE2 – 16 ... 512



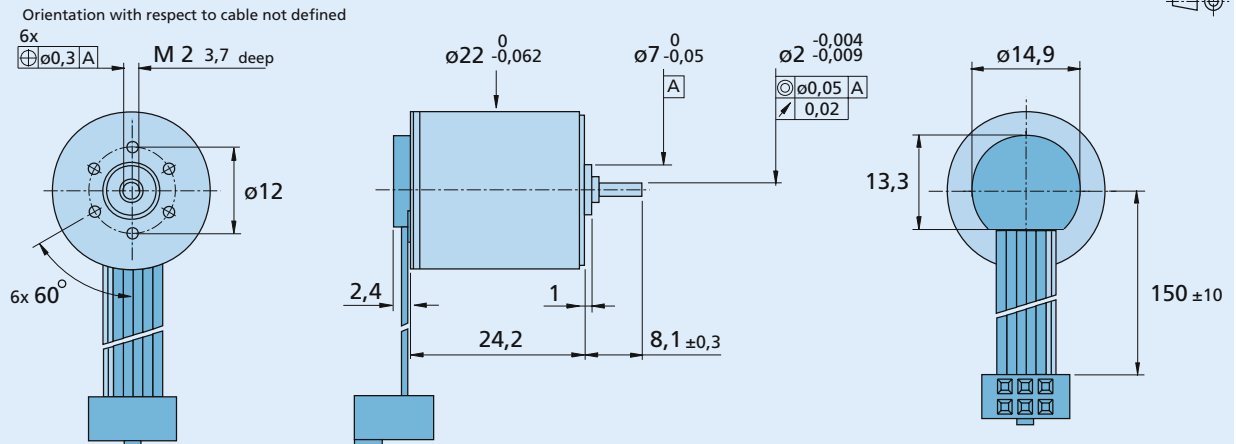
DC-Micromotor 1724 T ... SR with Encoder IE2 – 16 ... 512



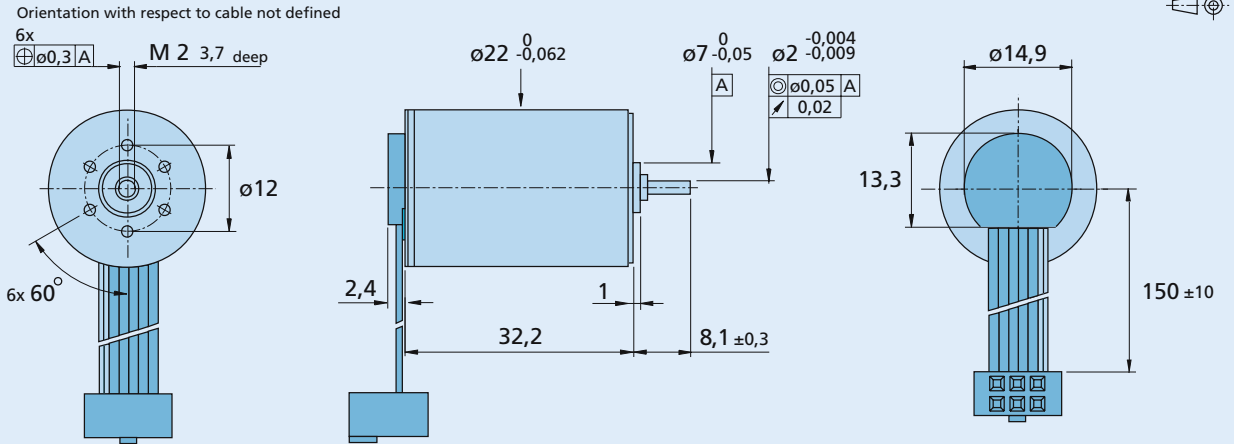
DC-Micromotor 1727 U ... C - 123 with Encoder IE2 – 16 ... 512



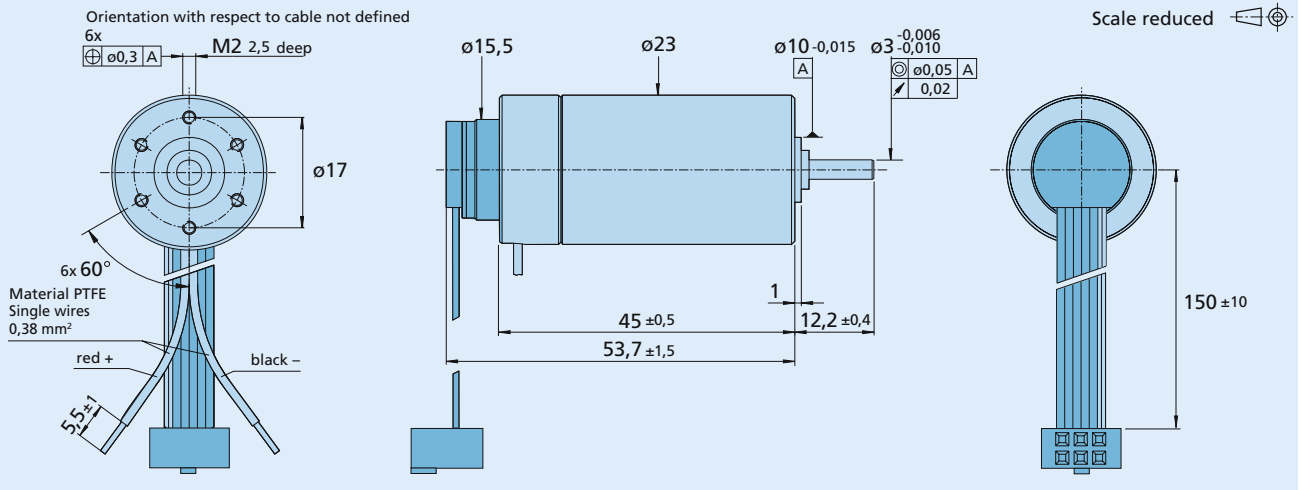
DC-Micromotor 2224 U ... SR with Encoder IE2 – 16 ... 512



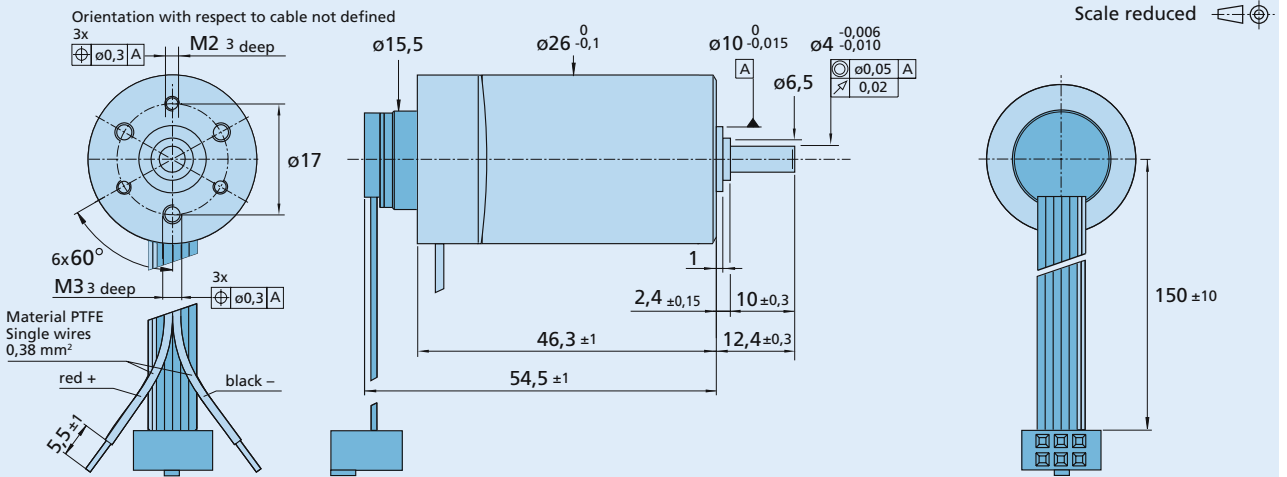
DC-Micromotor 2232 U ... SR with Encoder IE2 – 16 ... 512



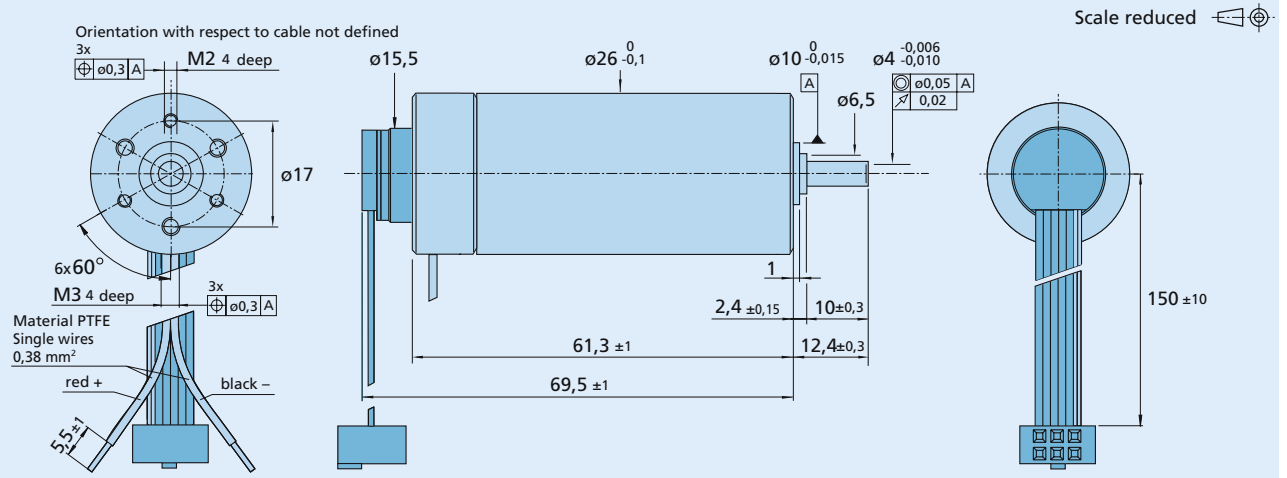
DC-Micromotor 2342 S ... CR with Encoder IE2 – 16 ... 512



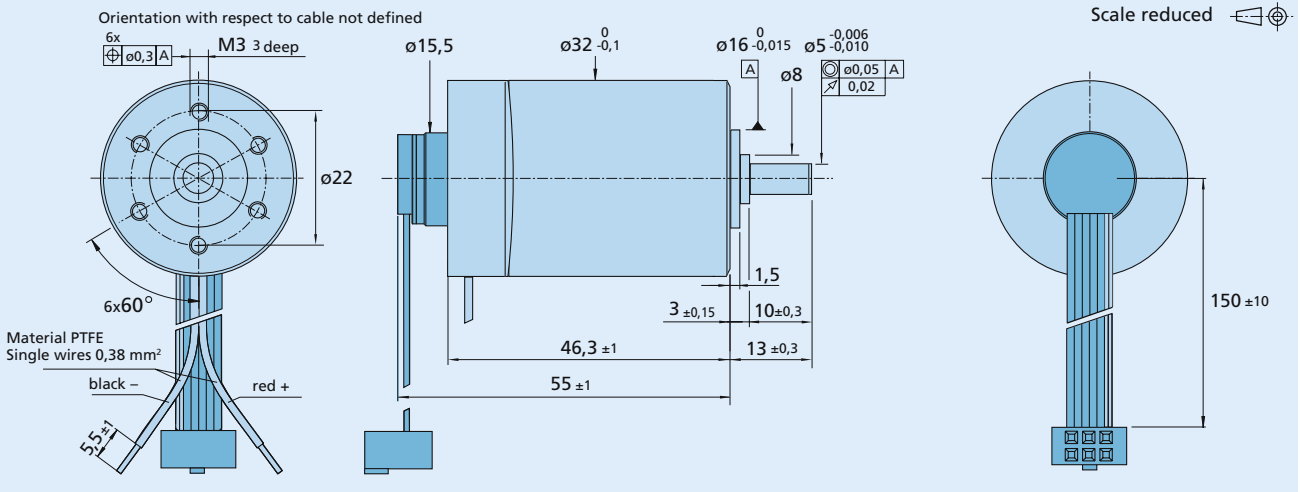
DC-Micromotor 2642 W ... CR with Encoder IE2 16 – 512



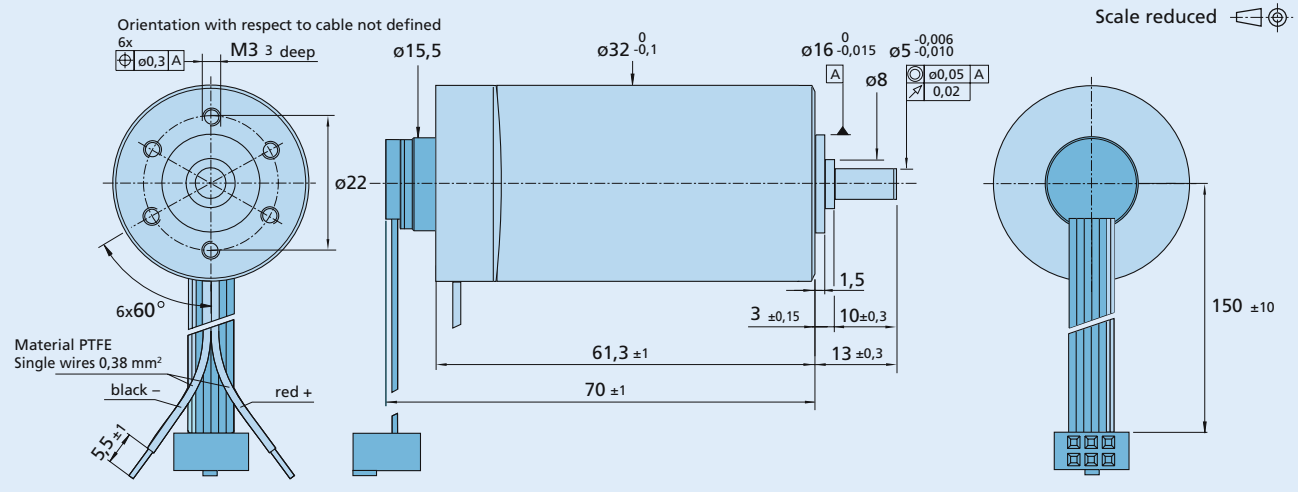
DC-Micromotor 2657 W ... CR with Encoder IE2 16 – 512



DC-Micromotor 3242 G ... CR with Encoder IE2 16 – 512



DC-Micromotor 3257 G ... CR with Encoder IE2 16 – 512



DC-Micromotor 3863 H ... C - 2016 with Encoder IE2 16 – 512

