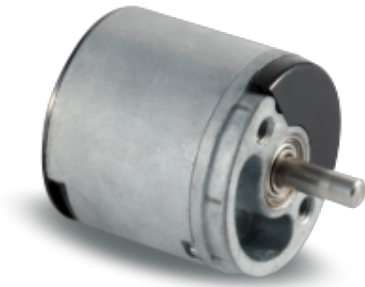


Case diameter 18 mm  
Resolution up to 1 600 pulses per revolution



## Micro Encoder ES 181

Optical incremental shaft encoder, Micro size for industrial use

### Resolution

#### Resolution (Pulses/Revolution):

100	160	200	300
360	400	500	800
1000	1024	1600	

### Type explanation

#### ES 181-3-500-05-C

Encoder type	Incremental
Flange diameter	ø 18 mm
Case diameter	ø 18 mm
Number of channels	3 = A + B + M 6 = AA + BB + MM
Supply voltage	05 = 5 VDC ±10% 12 = 12 VDC ±10%
Output driver	D-RS422 C
Shaft diameter	ø 2.5 mm

## Technical data

### Mechanical data

Rotational speed	$\leq 6000 \text{ min}^{-1}$
Torque	$\leq 0,01 \text{ Ncm}$ (20°C)
Breakaway torque	$\leq 0,05 \text{ Ncm}$
Moment of inertia	$0,1 \text{ g cm}^2$
shaft loading	$\leq 2 \text{ N}$ radial $\leq 2 \text{ N}$ axial
Angular acceleration	$\leq 10^4 \text{ rad/sec}^2$
Operational life of ball bearings	$> 2 \times 10^5 \text{ h}$ (100 min <sup>-1</sup> )
Weight	0,02 kg

### Environmental conditions

Vibration	$150 \text{ ms}^{-2}$ (50 Hz / 1h)
Shock	$490 \text{ ms}^{-2}$ (11 ms)
Operating temperature	-10 ... +70°C
Storage temperature	-30 ... +80°C
Atmospheric humidity	$\leq 85\%$ r.h.
Protection class	IP 50 (DIN 40050/IEC 144)

### Electrical data

Scanning type	Optical, without contact
Transmitter, infrared	LED
Receiver	Photo-Transistor
Supply voltage	V <sub>cc</sub> = 5 VDC $\pm 10\%$ V <sub>cc</sub> = 12 VDC $\pm 10\%$
Power consumption	50 mA max.
Output frequency	$\leq 50 \text{ kHz}$
Signal level	Low < 0,5 V (20 mA)
Load capacity of the outputs	20 mA
Dielectric strength of outputs	+50 V

### Cable 3 channels

Wire colour	Signal
Brown	Vcc
Red	0V
Orange	Sig A
Yellow	Sig B
Green	Sig C

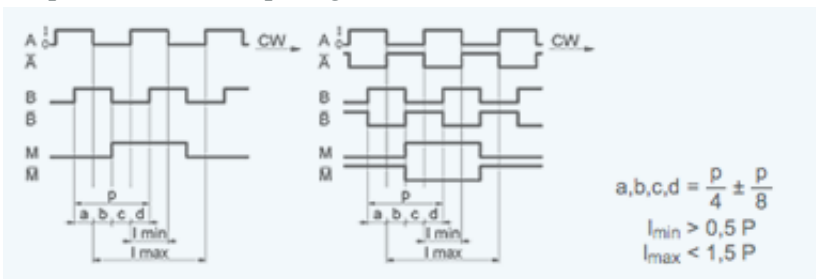
### Cable 6 channels

Wire colour	Signal
Brown	Vcc
Red	0V
Orange	Sig A
Yellow	Sig $\bar{A}$
Green	Sig B
Blue	Sig $\bar{B}$
Violet	Sig Z
Grey	Sig $\bar{Z}$
N.C.	N.C.

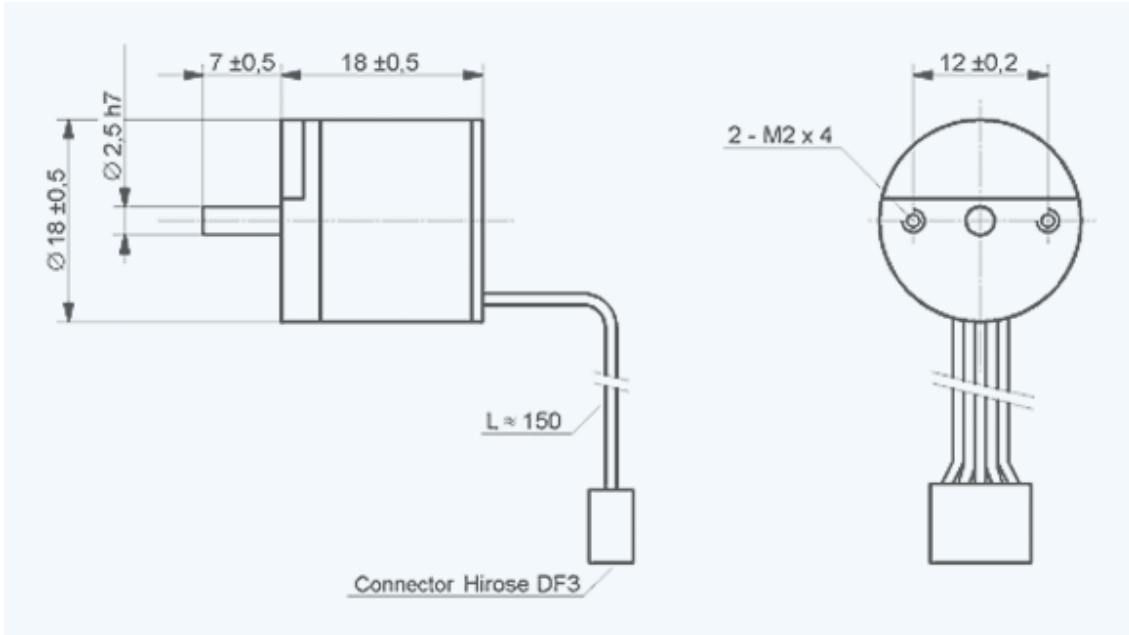
### Output driver



### Output channels / Output signals



Outline drawing



Version E 503A-209 · Subject to change

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