



Mini Encoder ES 28

Optical incremental shaft encoder, very small and efficient

Resolution

Resolution (Pulses/Revolution):

36	50	60	100
150	200	250	300
360	400	500	512
600	800	1000	1024
1500			

Type explanation

ES 28-6-1000-05-D-R

Encoder type	Incremental
Flange diameter	ø 28 mm
Case diameter	ø 28 mm
Number of channels	3 = A + B + M 6 = AA + BB + MM
Resolutions	xxxx = Impulse pro Umdrehung
Supply voltage	05 = 5 VDC TTL 12 = 12 VDC ±10% 24 = 24 VDC ±10%
Output driver	D-RS422 C R
Position of connection	R
Shaft diameter	ø 5 mm

Technical data

Mechanical data

Rotational speed	$\leq 6000 \text{ min}^{-1}$
Torque	$\leq 0,05 \text{ Ncm}$
Breakaway torque	$\leq 0,1 \text{ Ncm}$
Moment of inertia	$0,1 \text{ g cm}^2$
shaft loading	$\leq 10 \text{ N radial}$ $\leq 5 \text{ N axial}$
Angular acceleration	$\leq 10^3 \text{ rad/sec}^2$
Operational life of ball bearings	$> 10^5 \text{ h (1000 min}^{-1}\text{)}$
Weight	$\leq 0,1 \text{ kg}$

Environmental conditions

Vibration	$150 \text{ ms}^{-2} (50 \text{ Hz / 1h})$
Shock	$500 \text{ ms}^{-2} (11 \text{ ms})$
Operating temperature	$-10 \dots +70^\circ\text{C}$
Storage temperature	$-30 \dots +80^\circ\text{C}$
Atmospheric humidity	$\leq 85\% \text{ r.h.}$
Protection class	IP 50 (DIN 40050/IEC 144)

Electrical data

Scanning type	Optical, without contact
Transmitter, infrared	LED
Receiver	Photo-Transistor
Supply voltage	$V_{cc} = 5 \text{ VDC} \pm 5\%$ $V_{cc} = 12 \text{ VDC} \pm 10\%$ $V_{cc} = 24 \text{ VDC} \pm 10\%$
Power consumption	$\leq 80 \text{ mA, (Output C, R)}$ $\leq 150 \text{ mA, (Output D)}$
Output frequency	$\leq 150 \text{ kHz}$
Signal level	High $> V_{cc} - 1 \text{ V}$ Low $< 0,5 \text{ V (20 mA)}$
Load capacity of the outputs	20 mA
Dielectric strength of outputs	+50 V

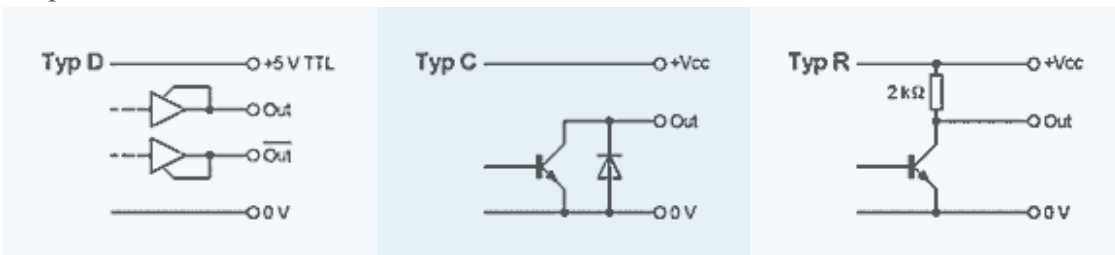
Cable 3 channels

Wire colour	Signal
Red	+Vcc
Black	0 V GND
Blue	Signal A
White	Signal B
Yellow	Signal M
Shield	N.C.

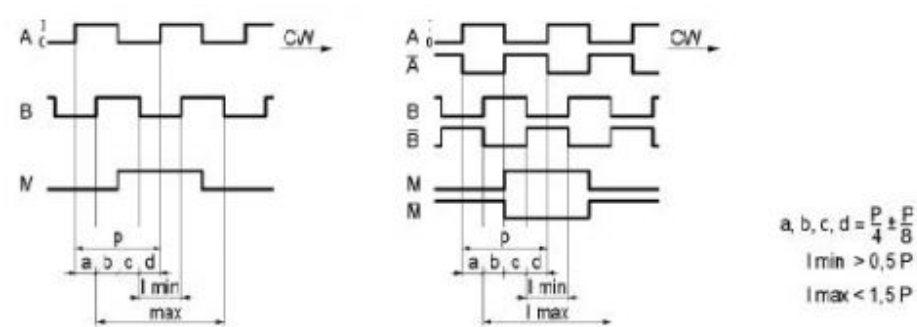
Cable 6 channels

Wire colour	Signal
Red	+Vcc
Black	0 V GND
Green	Signal A+
Blue	Signal A-
White	Signal B+
Grey	Signal B-
Yellow	Signal M+
Orange	Signal M-
Shield	N.C.

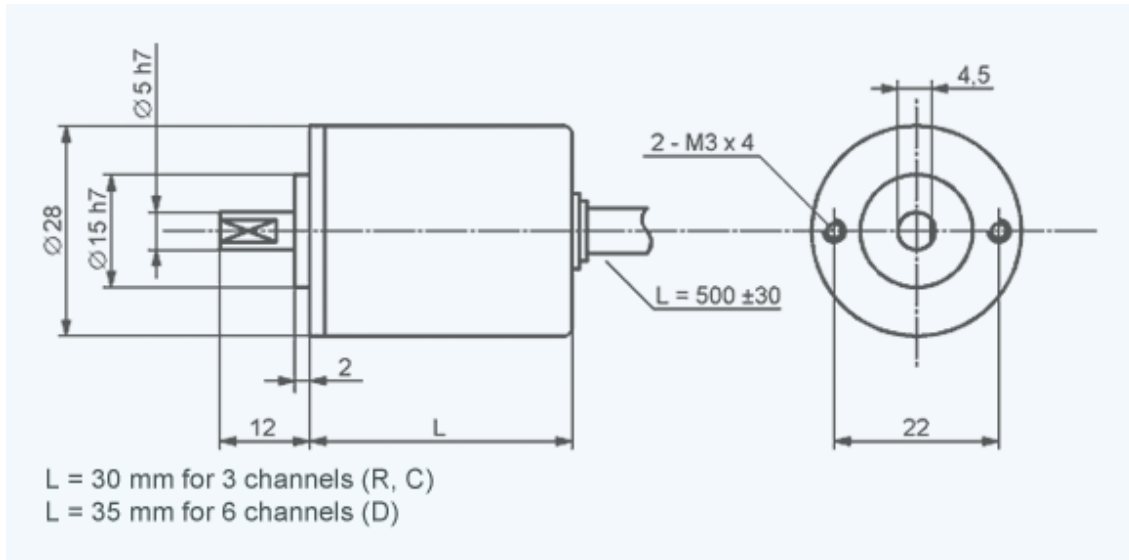
Output driver



Output channels / Output signals



Outline drawing



Version E 504-209 · Subject to change

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