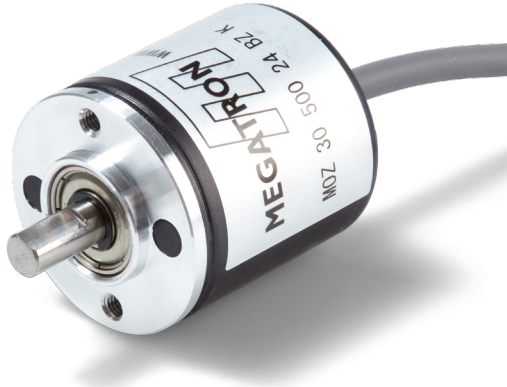


Data Sheet for Angle Sensors



- High-quality encoder in metal housing
- 28mm housing diameter
- Ball bearing
- 5mm shaft diameter
- 36...1500 pulses per revolution
- 2 channels + index
- Operating voltage 5 V, 12 V, 24 V
- Output electronics: push-pull, voltage-output, open collector, line-driver

The high quality encoder is based on his compact housing dimensions and the variety of electrical outputs suitable for a wide range of applications. The robust metal housing in combination with a ball bearing warrant a long life span.

Electrical Data	Voltage Output "NPN"	Open Collector "K"	Line Driver "N"
Output signal		A, B, Z	A, /A, B, /B, Z, /Z
Number of pulses		36..1500 pulses per rev.	
Output voltage high	Vcc-1 min	---	2,5V min
Output voltage low		0,5 V max	
Limit frequency		150 kHz	
Supply voltage	5 V ±10 % 12 V ±10 %	24 V ±10 %	5 V ± 5 %
Power consumption (no load)	≤ 80 mA	≤ 60 mA	≤ 150 mA
Output capacity		20 mA	
Max. pull-up voltage		50 V	
Insulation voltage 1.)		500 VAC, 1 min	
Insulation resistance 1.)		50 MOhm @ 500 VDC	
Output electronics	Voltage output	Open Collector	Line Driver
Switch-on delay		max. 1 µs	max. 200 ns

Mechanical and Environmental Data, Miscellaneous

Mechanical angle of rotation /stroke 1.)	360° without stop
Bearing	Ball bearing
Max. operational speed	6000 rpm
Shaft acceleration	1x10 ⁻⁵ rad/s ²
Moment of inertia	2x10 ⁻⁷ kg • m ²
Operational torque @ ambient temperature1.) 2.)	≤ 0.98 Ncm
Operating temperature range	-10..+70 °C
Storage temperature range	-30..+80 °C
Protection grade (IEC 60529)	IP50
Vibration (IEC 68-2-6, Test Fc)	10..55 Hz / 1,5 mm; X, Y, Z, each 2h
Shock (IEC 68-2-27, Test Ea)	490 m/s ² , 11ms, X, Y, Z, each 3x

Data Sheet for Angle Sensors

Optical Encoders

Series MOZ30

Mechanical and Environmental Data, Miscellaneous

Housing diameter	28 mm	
Housing depth	Voltage output (NPN), Open Collector output (K) 30 mm	Linedriver (N) 35 mm
Shaft diameter	5 mm	
Shaft type	Solid shaft	
Max. radial load	< 9.8 N	
Max. axial load	< 4.9 N	
Connection type	Round cable 0.5 m	
Connection position	Axial	
Sensor mounting	Insert nuts 2 x M3 depth 4	
Mass	ca. 60 g	
Fastening parts included in delivery	None	
Material shaft	Stainless steel	
Material housing	Aluminium	
Material disc	Metal	
Immunity ESD, human body model (MIL-STD-883, Method 3015.8)	±4 kV (contact) ±8 kV (air)	

1.) According IEC 60393

2.) Determined by climatic conditions according to IEC 68-1, para. 5.3.1 without load collectives

Data Sheet for Angle Sensors

Optical Encoders

Series MOZ30

Order Code

Description	Selection: standard=black/bold, possible options=grey/cursive						
Series	MOZ30						
Shaft diameter, shaft length: Standard: Ø5 x 12 mm <i>Option shaft length in mm</i> <i>Option shaft diameter in mm (≤5 mm)</i>		- <i>Ax,xx</i> <i>Dx,xx</i>					
Resolution in pulses per revolution: <i>Option 36 ppr.</i> <i>Option 50 ppr.</i> <i>Option 60 ppr.</i> <i>Option 100 ppr.</i> <i>Option 150 ppr.</i> <i>Option 200 ppr.</i> <i>Option 250 ppr.</i> <i>Option 300 ppr.</i> Standard: 360 ppr. <i>Option 400 ppr.</i> Standard: 500 ppr. <i>Option 512 ppr.</i> <i>Option 600 ppr.</i> <i>Option 800 ppr.</i> <i>Option 1000 ppr.</i> Standard: 1024 ppr. <i>Option 1500 ppr.</i>							
Supply voltage: <i>Option supply voltage 5 V ±10 % & voltage output (NPN)</i> <i>Option supply voltage 12 V ±10 % & voltage output (NPN)</i> <i>Option supply voltage 5 V ±10 % open collector output (K)</i> <i>Option supply voltage 12 V ±10 % & open collector output (K)</i> Standard: Supply voltage 24 V ±10 % & Open Collector output (N) <i>Option supply voltage 5 V ±5 % & linedriver output (N)</i>							
Output signal: Standard: A+B+Z (Index)						BZ	
Electrical connection: Standard: Round cable 0.5 m <i>Option round cable 1 m</i> <i>Option round cable 3 m</i> <i>Option user defined cable length in m</i>							- <i>R1</i> <i>R3</i> <i>Rx,xx</i>

Order example MOZ30

Requirement:

Shaft diameter 5 mm, shaft length 12 mm, 360 pulses per revolution, supply voltage 24 V ±10 %, 2 channels + index, open collector electronic, round cable 0,5m

Example for order coder: MOZ30 360 24 BZ K

Data Sheet for Angle Sensors

Optical Encoders

Series MOZ30

For higher quantities or on-going demand, additional options are available as described below

For example:

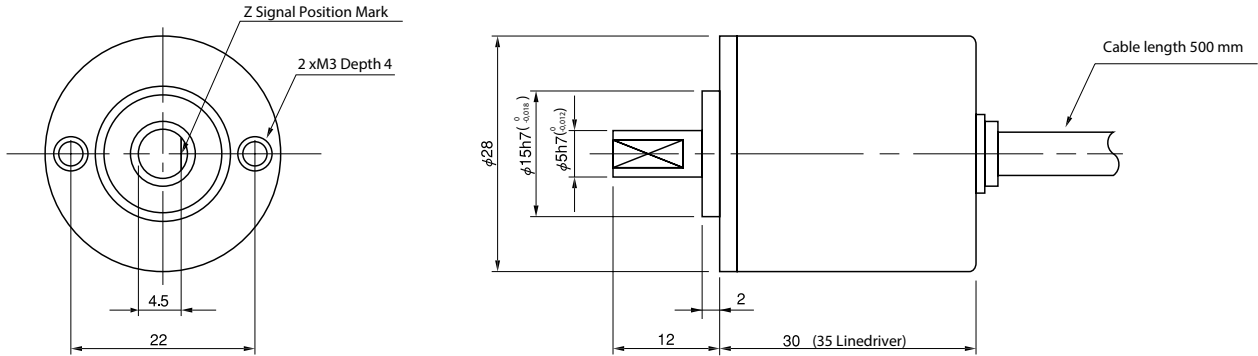
- Other resolutions
- Specials shaft design
- Special connector and cable design
- Other operational torque

Data Sheet for Angle Sensors

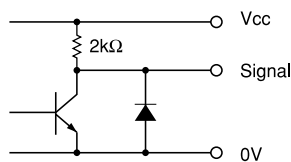
Optical Encoders

Series MOZ30

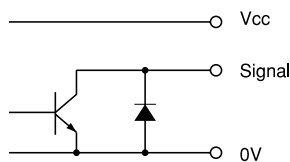
Technical Drawing



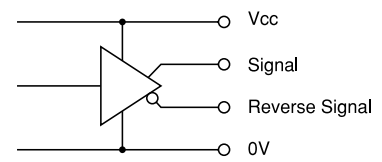
Transistor Output (NPN)



Open Collector (K)

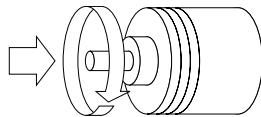


Linedriver (N)



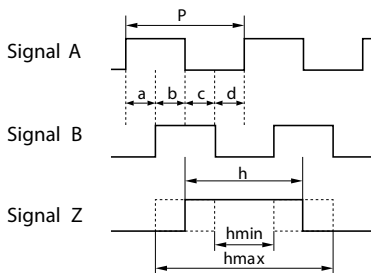
Wave Form

CW → Rotating Toward Clockwise Viewed from an Arrow



Rising point of A-Signal is always at one point while Z-Signal is at H-Level in CW.

NPN and K

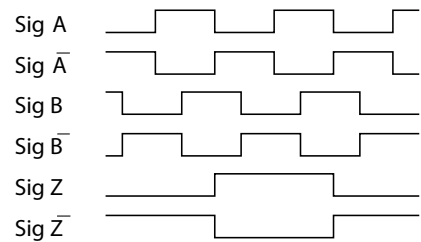


$$P = \frac{1}{\text{Resolution}}$$

$$a, b, c, d = \frac{P}{4} \pm \frac{P}{8} \quad \frac{P}{2} \leq h \leq \frac{3P}{2}$$

Wave Ratio (Duty); $50 \pm 25\%$

N



Electrical Connections

NPN and K

Color	Signal
Red	Power Supply(Vcc)
Black	0V
Green or Blue	Signal A
White	Signal B
Yellow	Signal Z
Shield	NC

N

Color	Signal	Color	Signal
Red	Power Supply(Vcc)	White	Signal B
Black	0V	Gray	Signal B̄
Green	Signal A	Yellow	Signal Z
Blue	Signal Ā	Orange	Signal Z̄
Shield	NC		

Dimensions in mm