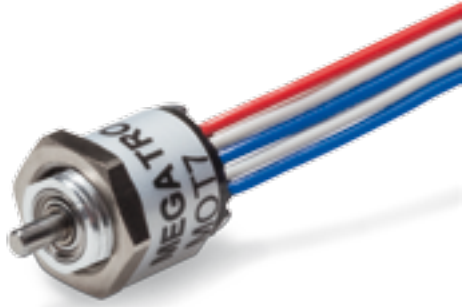


Data Sheet for Angle Sensors

Optical Encoders

Series MOT7



- Miniature rotary encoder
- Only 7 mm housing diameter and 8 mm housing depth
- 1.5 mm shaft diameter
- Ball bearing
- 2 channels and index
- 5V supply voltage
- Open collector output

The MOT7 is the cost-effective entry into the world of miniature optical encoders. The robust construction, based on a metal housing with ball bearings, ensures a long product life.

Electrical Data

Output signal	A, B, Z
Number of pulses	100, 200, 400 pulses per rev.
Output voltage low	≤ 0.4 V
Limit frequency	100 kHz
Supply voltage	5 VDC ±10%
Power consumption (no load)	≤ 30 mA
Output capacity	< 20 mA
Max. pull-up-voltage	13.2 V
Insulation voltage 1.)	100 VAC, 1 min
Insulation resistance 1.)	20 MOhm @ 100 VDC
Output electronics	Open Collector
Switch-on delay	max. 1 μs

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	1x10 ⁻⁹ kg · m ²
Operational torque @ ambient temperature 1.) 2.)	≤ 0.03 Ncm
Operating temperature range	-10 °C up to +80 °C
Storage temperature range	-20 °C up to +80 °C
Protection grade standard (IEC 60529)	IP50
Vibration (IEC 68-2-6, Test Fc)	55 Hz; 1.5 mm; each 2 h in X, Y, Z direction
Shock (IEC 68-2-27, Test Ea)	490 m/s ² , each 3 times in X, Y, Z direction

Data Sheet for Angle Sensors

Optical Encoders

Series MOT7

Mechanical and Environmental Data, Miscellaneous

Housing diameter	7.2 mm
Housing depth	max. 8 mm
Shaft diameter	1.5 mm
Shaft type	Solid shaft
Max. radial load	< 1.90 N
Max. axial load	< 0.98 N
Connection type	Flatband cable with single strands 500 mm
Connection position	Radial
Sensor mounting	Bushing
Mass	app. 5 g
Fastening parts included in delivery	Hex nut M6 x 0.5
Fastening torque mounting nut	< 2.53 Nm
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 MOT7

Order Code

Description	Selection: standard=black/bold, possible options=grey/italic						
Series	MOT7						
Shaft diameter, shaft length: Standard: Ø1.5 x 3 mm shaft length <i>Option other shaft length in mm</i>		- <i>Ax,xx</i>					
Resolution in pulses per revolution: Standard: 100 ppr. Standard: 200 ppr. Standard: 400 ppr.			100 200 400				
Supply voltage: Standard: 5 V				5			
Output signal: Standard: A+B+Z (index)					BZ		
Output electronics: Standard: Open Collector						K	
Electrical connection: Standard: Flatband cable 500 mm <i>Option user defined cable length in m</i>							- <i>X,XX</i>

Order example MOT7

Requirement:

Shaft diameter 1.5 mm, shaft length 3 mm, resolution 100 pulses per revolution, supply voltage 5 V, 2 channels + index, output electronic open collector, flatband cable 500 mm

Order example: MOT 7 100 5 BZ K

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

For example:

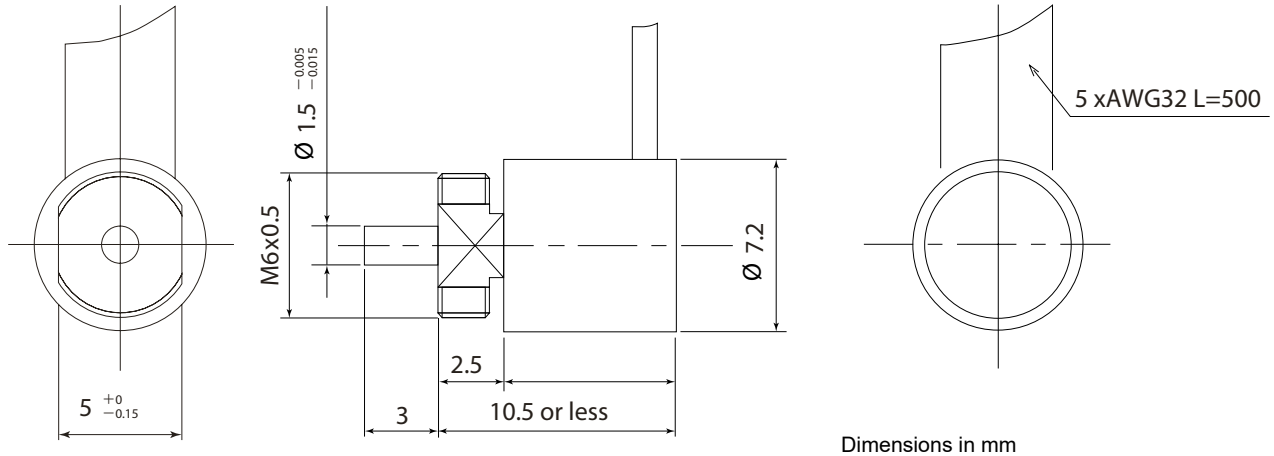
- Other resolutions
- Specials shaft design
- Special connector and cable design
- Other operational torque

Data Sheet for Angle Sensors

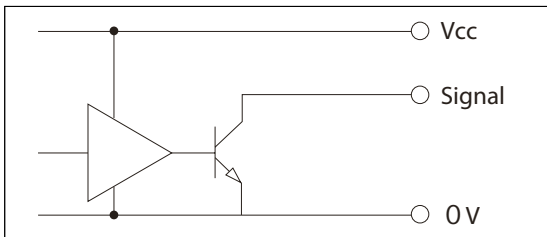
Optical Encoders

Series MOT7

Technical Drawing

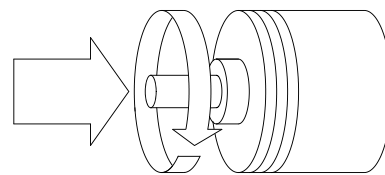
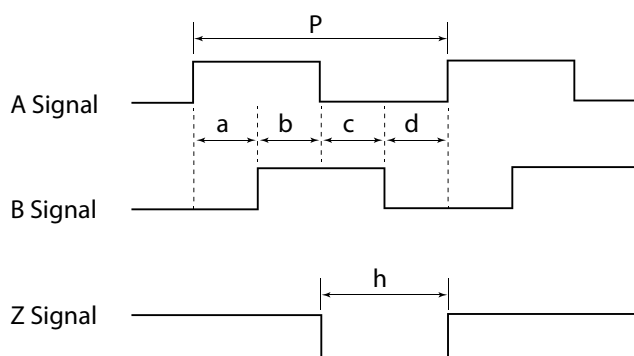


Output Circuit



Cable and assignment		
1	Supply voltage	red
2	Ground	white
3	Channel B	blue
4	Channel A	white
5	Channel Z (Index)	blue

Wave Form



CW Encoder

$P = 1 / \text{Resolution}$

Signal A,B $a, b, c, d = (P/4) \pm (P/8)$

Duty = $(P/2) \pm (P/4)$

Signal Z $(P/4) \leq h \leq (3P/4)$