

Data Sheet for Panel Encoders

Optoelectronic Panel Encoder

Series MHO



- Large premium handwheel
- High quality, solid construction
- Actuating ring / crank made of metal
- Diameter knob 58 mm / housing 80 mm
- Installation depth 27 mm
- Supply voltage 5 V, or 4.5 V up to 13.2 V
- 100 mechanical detents
- 25 or 100 pulses per revolution
- NPN transistor output
- Installation on the operation panel by means of 3 x M4 threaded bolts with union nuts
- Electrical connection M3 screw terminals

The handwheel is often the central input medium for setting target values in control panels. The MEGATRON handwheel MHO underlines with its massive construction and quality feel the quality of the application in which it is used.

Electrical Data

Output signal	A, B	
Number of pulses	25, 100 pulses per rev.	
Output voltage high	VSUP -1 V	
Output voltage low	< 0.5 V	
Limit frequency	5 kHz	
Supply voltage	4.5 up to 13.2 V	5 V ±10%
Power consumption (no load)	max. 50 mA	max. 70 mA
Output capacity	max. 20 mA	
Insulation resistance 1.)	50 MOhm @ 500 VDC	
Output electronics	NPN incl. 2 kOhm Pull-Up	NPN incl. 330 Ohm Pull-Up
Switch-on delay	1 µs	

Mechanical and Environmental Data, Miscellaneous

Mechanical angle of rotation /stroke 1.)	360° without stop
Number of detents per rev.	100 or 25 pulses per rev.
Lifespan 2.)	> 1 mio. revolutions (@200U/min)
Bearing	Sleeve bearing
Starting Torque / Detent torque	1.96 Ncm up to 5.88 Ncm
Operating temperature range	-10 °C up to +60 °C
Storage temperature range	-30 °C up to +80 °C
Protection grade front side (IEC 60529) Standard	IP52
Vibration (IEC 68-2-6, Test Fc)	10Hz up to 55 Hz; 1.5mm 2 h
Shock (IEC 68-2-27, Test Ea)	490 m/s ² , 11 ms X, Y, Z, each 3 times

Data Sheet for Panel Encoders

Optoelectronic Panel Encoder

Series MHO

Mechanical and Environmental Data, Miscellaneous

Housing diameter / length	80 mm
Housing depth	27 mm
Knob diameter	60 mm (scale 77 mm)
Max. radial load	< 19.6 N
Max. axial load	< 9.8 N
Connection type	Screw terminals
Connection position	Axial
Mass	app. 200 g
Fastening parts included in delivery	None
Material shaft	Stainless steel
Material housing	Zinc alloy (ZDC2)
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

Order Code

Description	Selection: standard=black/bold , possible <i>options=grey/italic</i>				
Series	MHO				
Resolution in pulses per revolution: <i>Option 25 pulses (100 detents) per revolution</i>		25			
100 pulses (100 detents) per revolution		100			
Supply voltage: 4.5..13.2 V (only available in connection with output electronic R1) <i>Option 5 V ±10%</i> (only available in connection with output electronic R2)			413 5		
Output signal: A+B				B	
Output electronics: NPN, internal pull up resistor 2 kOhm (only available in connection with supply voltage 413 [4.5...13.2 V]) <i>Option NPN, internal pull up resistor 330 Ohm</i> (only available in connection with option 5 supply voltage 5 V ±10%)					R1 R2

Order example MHO

Requirement:

100 pulses per revolution, supply voltage 4,5...13,2 V, 2 channels, output electronic with NPN with internal pull up resistor 2 kOhm

Example for order coder: MHO 100 413 B R1

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

For example:

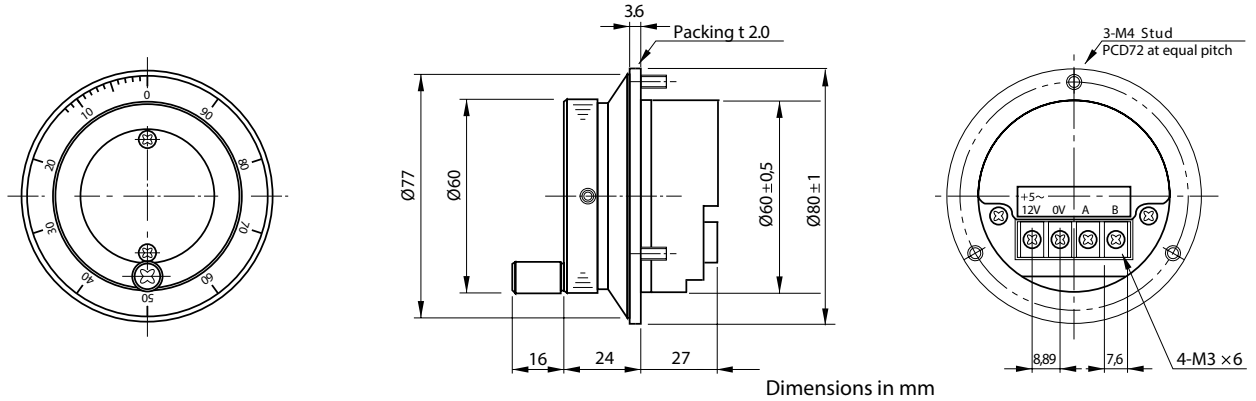
- Other resolutions
- Other amount of detents
- Customer specific detent torque

Data Sheet for Panel Encoders

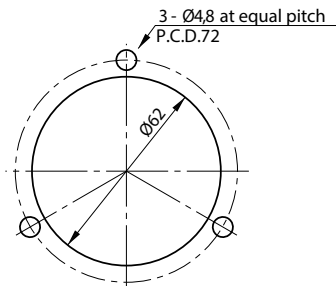
Optoelectronic Panel Encoder

Series MHO

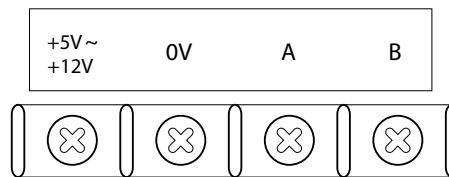
Drawing



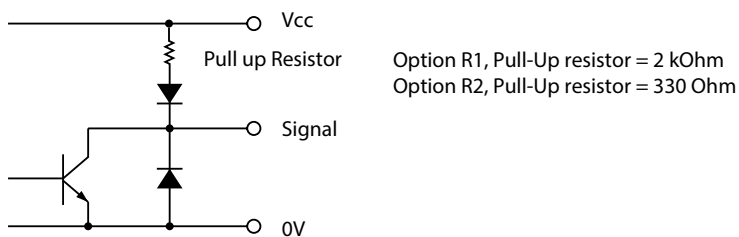
Cutting of Panel



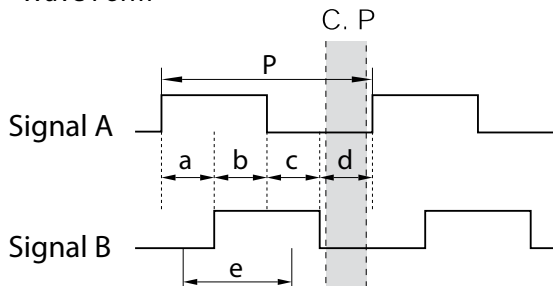
Electrical Connection



Output Circuit



Wave Form



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

$$a, b, c, d = \frac{P}{4} \pm \frac{P}{8}$$

Wave Ratio (Duty); 50 ± 25 (%)

C. P = Click Point

For mode 25P/R click point is at each position of a,b,c,d.

※Point "e" is recommended as the system switching point.