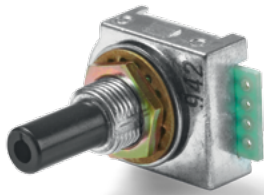


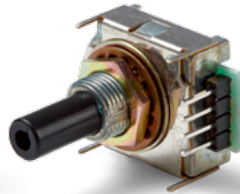
# Data Sheet for Panel Encoders

Optoelectronic Panel Encoder

Series MRL



MRL with solder pads



MRL V1 with solder pins

- Plastic shaft
- Compact housing design
- Resolution 20 or 25 pulses per revolution
- With or without detent
- 5 V supply voltage
- Standard solder pads, as an option solder pins for PCB mounting or 150 mm flatband cable

Compact optical panel encoder also as option for PCB mounting.

Electrical Data Sensor	MRL C with detent	MRL without detent
Output signal	A, B	
Number of pulses	20 pulses per rev. (option 25 pulses per rev.)	
Output voltage high	≥ (supply voltage -0.5V)	
Output voltage low	≤ 0.5 V max	
Limit frequency	100 Hz	
Supply voltage	5 V ±10%	
Power consumption (no load)	< 40 mA	
Insulation voltage 1.)	250 VAC, 1 min	
Insulation resistance 1.)	100 MOhm @ 250 VDC	
Output electronics	CMOS	

Mechanical and Environmental Data Sensor	MRL C with detent	MRL without detent
Mechanical angle of rotation /stroke 1.)	360° without stop	
Number of detents per revolution	20 or 25 (20 or 25 pulses per rev.)	-
Lifespan 2.)	> 1 mio. shaft revolutions	
Bearing	Sleeve bearing	
Operational torque / detent torque		
Without shaft sealing	0.5 ± 0.2 Ncm	≤0.4 Ncm
With shaft sealing	0.65 ± 0.35 Ncm	≤0.4 ±0.35 Ncm
Operating temperature range	0 °C up to +60 °C	
Storage temperature range	-40 °C up to +85 °C	
Protection grade standard (IEC 60529)	IP40	
Option D (shaft sealing)	IP65	
Vibration (IEC 68-2-6, Test Fc)	10-55 Hz; 1.5 mm 2h each direction	
Shock (IEC 68-2-27, Test Ea)	490m/s <sup>2</sup> , 11 mm X, Y, Z each 3 times	

# Data Sheet for Panel Encoders

Optoelectronic Panel Encoder

Series MRL

Mechanical and Environmental Data Sensor	MRL C with detent	MRL without detent
Housing diameter / length	24.5 x 18 mm	
Housing depth	8 mm	
Shaft diameter	6 mm	
Shaft type	Solid shaft	
Max. radial load	< 1 N	
Max. axial load	< 1 N	
Connection type	Solder pads, solder pins, flatband cable 150 mm	
Connection position	Radial	
Sensor mounting	Bushing	
Mass	ca. 10 g	
Fastening parts included in delivery	Hex nut M9, flat washer and tooth washer, for option D with additional sealing ring	
Fastening torque mounting nut	< 1 Nm	
Material shaft	Plastic	
Material housing	Metal	

1.) According IEC 60393

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

# Data Sheet for Panel Encoders

Optoelectronic Panel Encoder

Series MRL

## Order code

Description		Selection: <b>standard=black/bold</b> , possible <i>options=grey/italic</i>						
Description	MRL							
<b>Shaft diameter, shaft length:</b> <b>Ø 6 x 20 mm</b> <i>Option Ø 6 x 16 mm</i> <i>Option shaft length in mm</i> <i>Option shaft diameter in mm (≤6,00 mm)</i>		-						
		<i>A16,00</i>						
		<i>A xx,xx</i>						
		<i>DMx,xx</i>						
<b>Detent:</b> <b>With detent</b> <i>Option without detent</i>			<b>C</b>					
			-					
<b>Resolution in pulses per revolution:</b> <b>20 ppr (20 detents)</b> <i>Option 25 ppr (25 detents)</i>				<b>20</b>				
				25				
<b>Supply voltage:</b> <b>5 V</b>						-		
<b>Output signal:</b> <b>A+B</b>							-	
<b>Shaft sealing:</b> <b>Without shaft sealing</b> <i>Option D with shaft sealing</i>							-	
							D	
<b>Electrical Connection:</b> <b>With solder pads</b> <i>Option with solder pins to the front side</i> <i>Option flatband cable 150 mm</i>							-	
							V1	
							V6	

## Order example MRL

### Requirement:

Shaft diameter 6 mm, shaft length 20 mm, with detent, 20 pulses per revolutions, supply voltage 5 V, output signal A+B, with shaft sealing, electrical connection solder pads

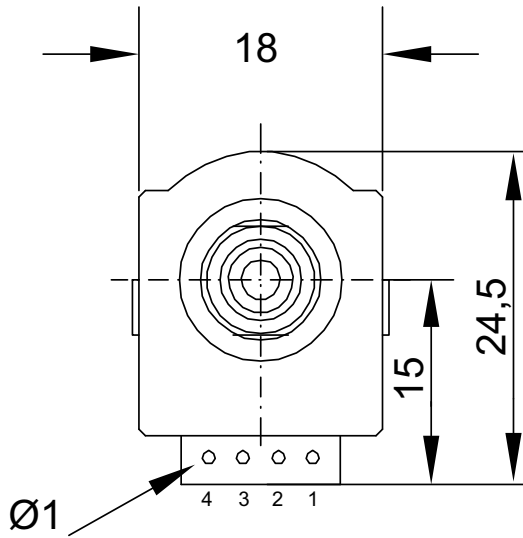
**Example for order code:** MRL C 20

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

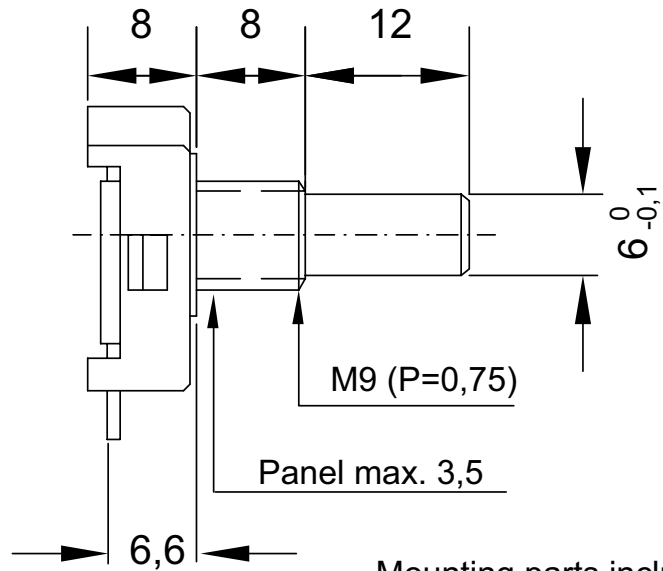
For example:

- Other resolutions
- Other number of detents
- Customized detent torque
- Special shaft design
- Special cable and connection design

Drawing

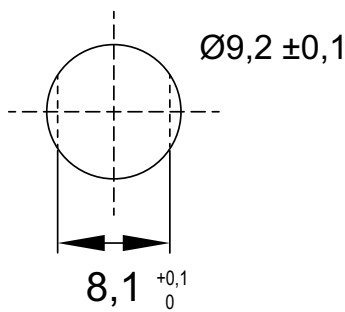


Optional:  
- With solder pins to the front side

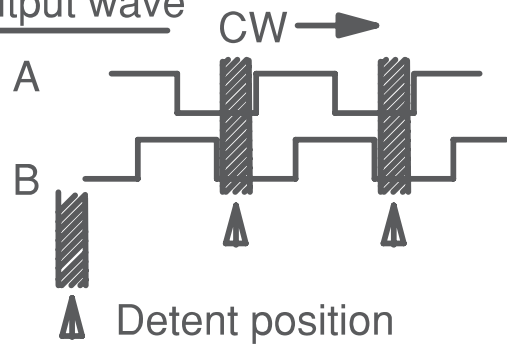


Mounting parts included:  
M9 hexagon nut t: 2  
Toothed washer t: 1  
Flat washer t: 0,5

Mounting hole



Output wave



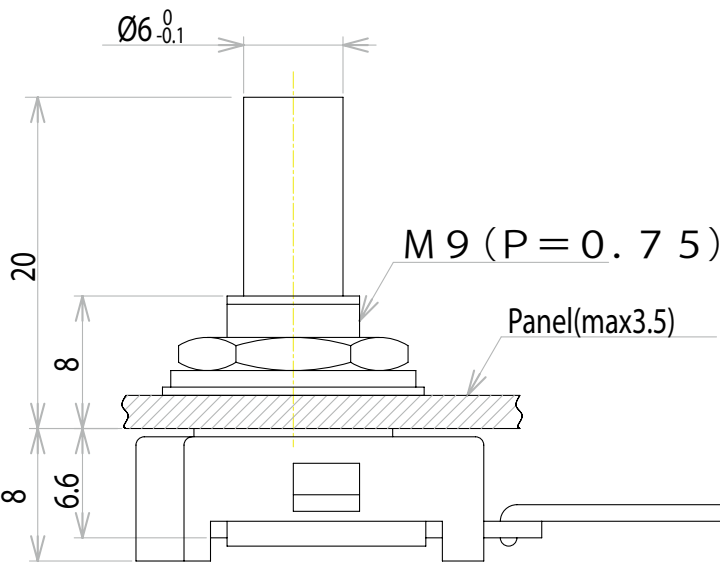
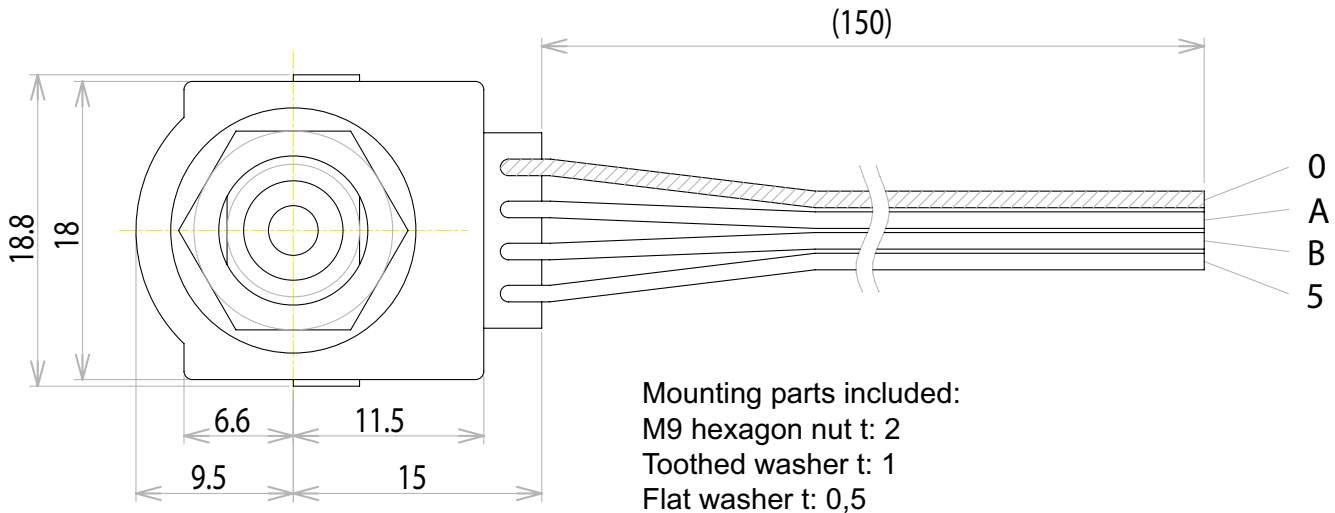
Dimensions in mm

**Connections**

1	GND
2	A phase output
3	B phase output
4	Powersupply

Drawing

Option V6 with cable 150 mm



Connections

Ind.	Color	Functions
0	Green	0V Common Return
A	Gray	A phase output
B	Gray	B phase output
5	Gray	+5V Powersupply

Dimensions in mm