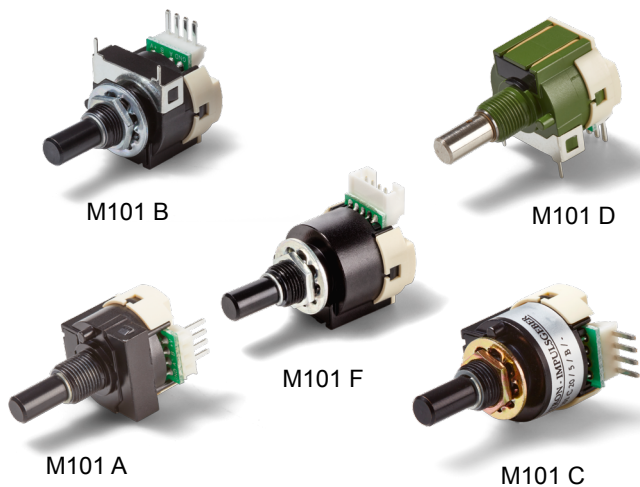


# Data Sheet for Angle Sensors

## Optical Incremental Encoder

## Series M101



- Optical resolution 20 to 128 pulses / 360°
- Variants as rotary encoder or panel encoder
- Very pleasant haptic as panel encoder
- Also available with detent and switch
- 6mm solid shaft, Bushing/central thread made of metal
- Compact housing dimensions
- Supply voltage 5 VDC
- 2 channels
- Output TTL

The combination of a die-cast housing, bushing and central thread made of metal combined with detent and switch function paired with a very pleasant haptic distinguishes the M101 variants C and F from other panel encoders.

Despite the high quality product design of the M101 encoder series, it has a very high-performance price structure, which makes the product also interesting for cost sensitive applications.

Electrical Data Sensor	M101 B Without detent/ switch	M101 D Without detent/ switch	M101 A Without detent/ switch	M101 F With detent/ switch	M101 C With detent/ without switch
Output signal	A, B				
Number of pulses (per rev.)	25, 50, 100, 128 (pulses per rev.)	50, 100, 128 (pulses per rev.)	50, 100 (pulses per rev.)	20 (pulses per rev.)	20 (pulses per rev.)
Output voltage high	≥ (supply voltage -0,5V)				
Output voltage low	≤ 0,5V				
Limit frequency	500 Hz			100 Hz	
Supply voltage	5 V ±5%				
Power consumption (no load)	< 50 mA			< 30 mA	< 50 mA
Insulation voltage 1.)	DC500 V, 1 min.				
Insulation resistance 1.)	100 MOhm @DC500 V				
Output electronics	TTL				

Mechanical and Environmental Data Sensor	M101 B Without detent/ switch	M101 D Without detent/ switch	M101 A Without detent/ switch	M101 F With detent/ switch	M101 C With detent/ without switch
Mechanical angle of rotation /stroke 1.)	360° without stop				
Lifespan 2.)	2.5 Mio. shaft revolu- tions	100 Mio. shaft revolu- tions	2.5 Mio. shaft revolu- tions	2 Mio. shaft revolutions	
Bearing	Sleeve bearing				
Max. operational speed	400 rpm.				
Operational torque @ ambient temperature	≤ 0,5 Ncm			0,4 ±0,2 Ncm	
Operating temperature range	0..+60 °C				
Storage temperature range	-20..+80 °C				
Protection grade from shaft side (IEC 60529)	IP40				

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## Optical Incremental Encoder

Series M101

Mechanical and Environmental Data Sensor	M101 B Without detent/ switch	M101 D Without detent/ switch	M101 A Without detent/ switch	M101 F With detent/ switch	M101 C With detent/ without switch
Housing diameter / length			22 mm		
Housing depth incl. electrical connection	20 mm		24 mm	20.8 mm	2.5 mm
Shaft diameter			6 mm		
Shaft type			Solid shaft		
Max. radial load			≤ 10 N		
Max. axial load			≤ 10 N		
Connection type	PCB solder pins downwards	Solder pins downwards	Solder pins backwards	Plug downwards	Solder pins downwards
Connection position			Radial		
Sensor mounting			Bushing		
Mass			app. 28 g		
Fastening parts included in delivery			Hex nut, flat washer, tooth washer		
Fastening torque mounting nut			< 0.8 Nm		
Material shaft			Metal		
Material housing			Metal die-cast, plastic		
Material disc			Metal		

Electrical Data Push Button Switch	M101 F With detent/switch
Max. voltage push button switch	12 VDC
Max. current push button switch	50 mA
Resistance push button switch	< 200 mOhm

Mechanical Data and Environmental Data Push Button Switch	M101 F With detent/switch
Lifespan push button switch	> 1 Mio. operations
Travel of push button switch	0,8 ±0,3 mm
Operational force of push button switch	3 ±1,5 N
Bounce time	max. 10 ms

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 Incremental Encoder

Series M101

## Order Code

### Description

Selection: standard=black, possible options=grey/cursive

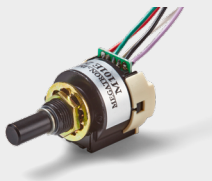
Series	M101				
<b>Version:</b> <b>Without detent / switch - Solder pins downwards</b> <i>With detent without switch - Solder pins downwards</i> <i>With detent and switch - Plug downwards (compatible with plug JST S5B-PH-K-3)</i> <i>Option without detent / switch - Solder pins backwards</i> <i>Option without detent / switch - Solder pins downwards (Option D with life span 100. Mio. rev.)</i>		<b>B</b> <b>C</b> <b>F(*)</b>  <b>A(*)</b> <b>D(*)</b>			
<b>Resolution in pulses per revolution:</b> <i>20 ppr. (only version C and F)</i> <i>25 ppr. (only version B)</i> <b>50 ppr. (not version C and F)</b> <b>100 ppr. (not version C and F)</b> <i>128 ppr. (only version B)</i>			20 25 <b>50</b> <b>100</b> 128		
<b>Supply voltage:</b> <b>5 V</b>				<b>5</b>	
<b>Output signal:</b> <b>TTL, A+B</b>					<b>B</b>
<b>Shaft diameter, shaft length:</b> <b>Ø 6 x 20 mm</b> <i>Option shaft length in mm</i> <i>Option shaft diameter in mm (≤6 mm)</i>					- <i>Ax,xx</i> <i>DMx,xx</i>

(\*) Minimum order quantity 100 pcs.

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

For example:

- Variant M101 E with single strands (e.g. 150 mm cable length) or solder lugs as electrical connection



For example:

- Other resolution
- Special shaft design
- Special cable and connector design

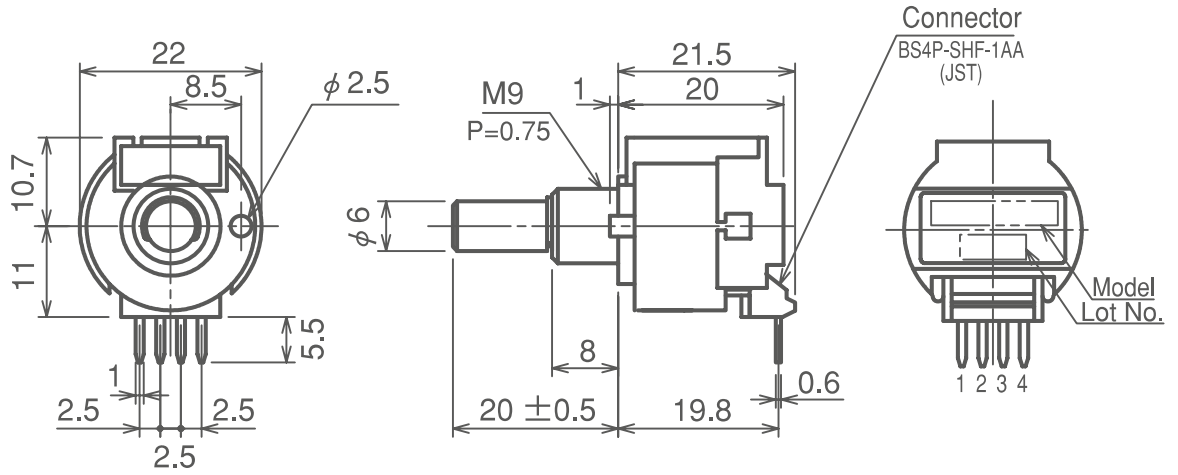


# Data Sheet for Angle Sensors

Optical Incremental Encoder

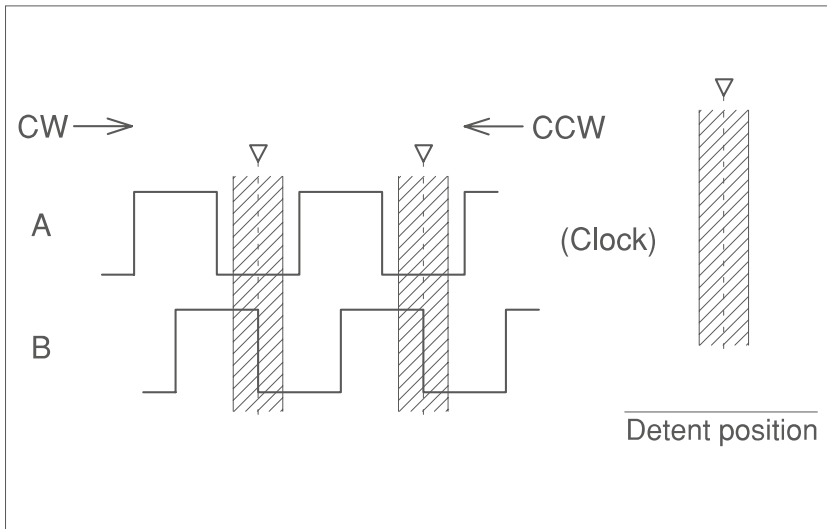
Series M101

Drawing M101 C



Dimensions in mm

## Output wave

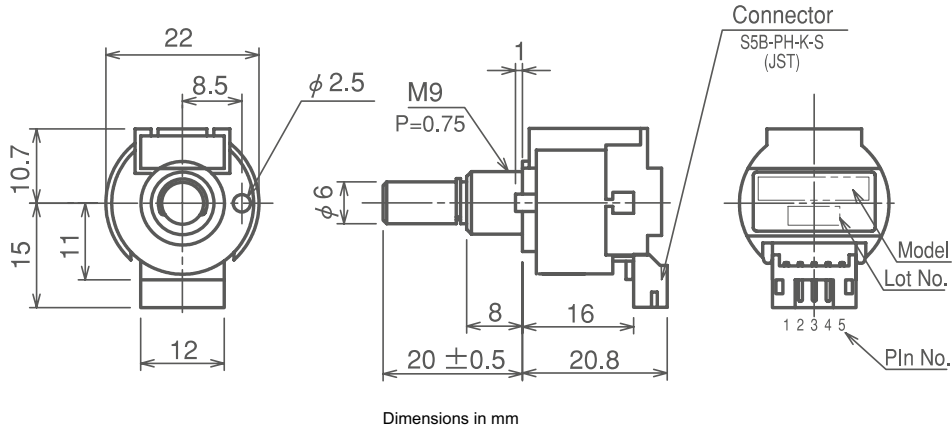


# Data Sheet for Angle Sensors

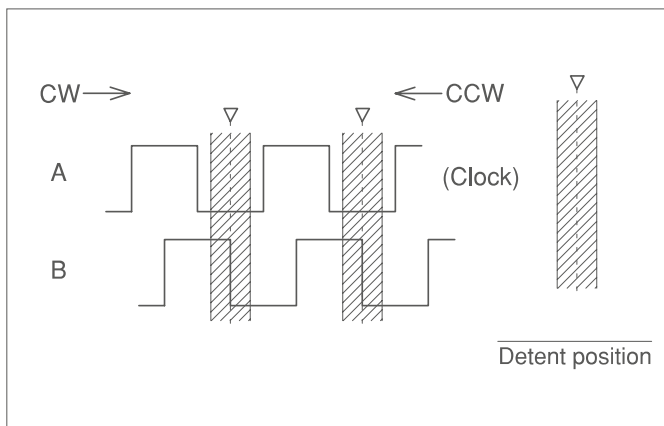
Optical Incremental Encoder

Series M101

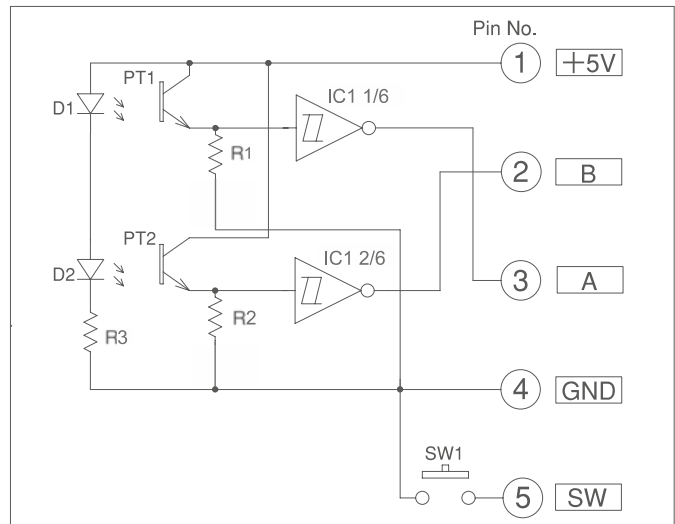
## Drawing M101 F



### Output wave



### Circuit

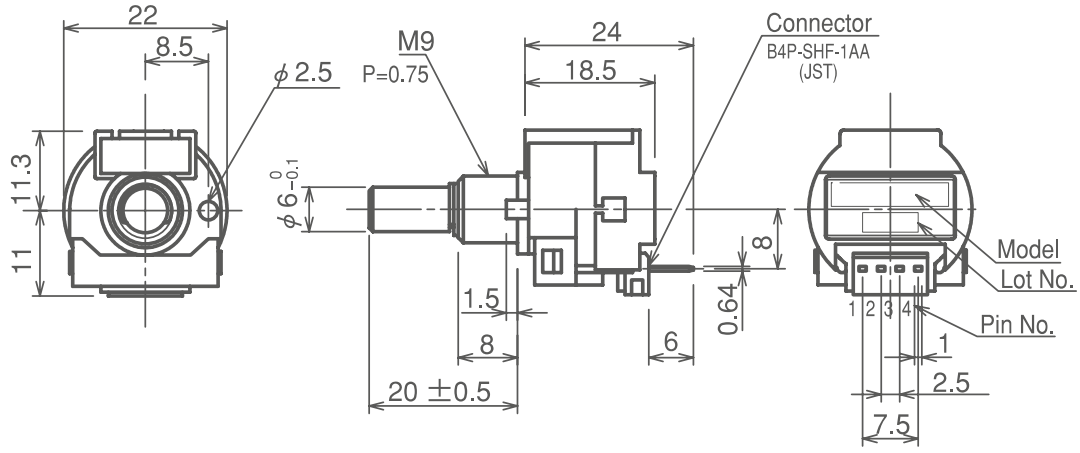


# Data Sheet for Angle Sensors

Optical Incremental Encoder

Series M101

## Drawing M101 A



Dimensions in mm

## Output wave

