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# POSIROT<sup>®</sup>

Magnetic Angle Sensors

PRAS26

Magnetic Angle Sensor

Datasheet



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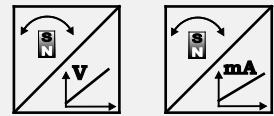
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## Analog output



### Sensor features

- Measurement range 0 ... 360°
- Protection class IP60
- Analog output
- Compact, low profile housing
- Non-contact with external position magnet, no wear
- Housing: Epoxy glass fibre, thermoplastic



## Specifications

<b>Output</b>	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V, ratiometric Current 4 ... 20 mA, 3 wire
<b>Measurement range</b>	0 ... 15° to 0 ... 360° (in 15° increments)
<b>Resolution</b>	0.03% (60 ... 360°); 0.1% (15 ... 45°)
<b>Repeatability</b>	±0.03% (60 ... 360°); ±0.1% (15 ... 45°)
<b>Linearity</b>	±0.5% f.s. (typical)
<b>Rated distance sensor / magnet</b>	Depending on the position magnet
<b>Protection class</b>	IP60
<b>Housing material</b>	Epoxy glass fibre, thermoplastic
<b>Mounting</b>	Screws M4
<b>Connection</b>	3-pin connector, Tyco Electronics, type "SlimSeal"
<b>Temperature range</b>	-40 ... +85°C
<b>Shock</b>	DIN EN 60068-2-27:2010, 100 g/11 ms, 100 shocks
<b>Vibration</b>	DIN EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles
<b>Weight</b>	8 g approx. (without cable)
<b>EMC</b>	DIN EN 61326-1:2013

## Order code

PRAS26 - 1 - 2 - 3 - 4

### 1 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

15 / 30 / 45 / ... / 345 / 360

### 2 Output

**U2B** = Voltage 0.5 ... 10 V (excitation voltage 11.5 ... 27 V DC)  
**U6** = Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)  
**I1B** = Current 4 ... 20 mA, 3 wire (excitation voltage 10 ... 27 V DC)

### 3 Signal characteristics

**CW** = Signal increasing CW, clockwise  
**CCW** = Signal increasing CCW, counterclockwise

### 4 Connection

**TE3** = 3-pin connector, Tyco Electronics, type "SlimSeal"

## Order example

PRAS26 - 360 - U6 - CW - TE3

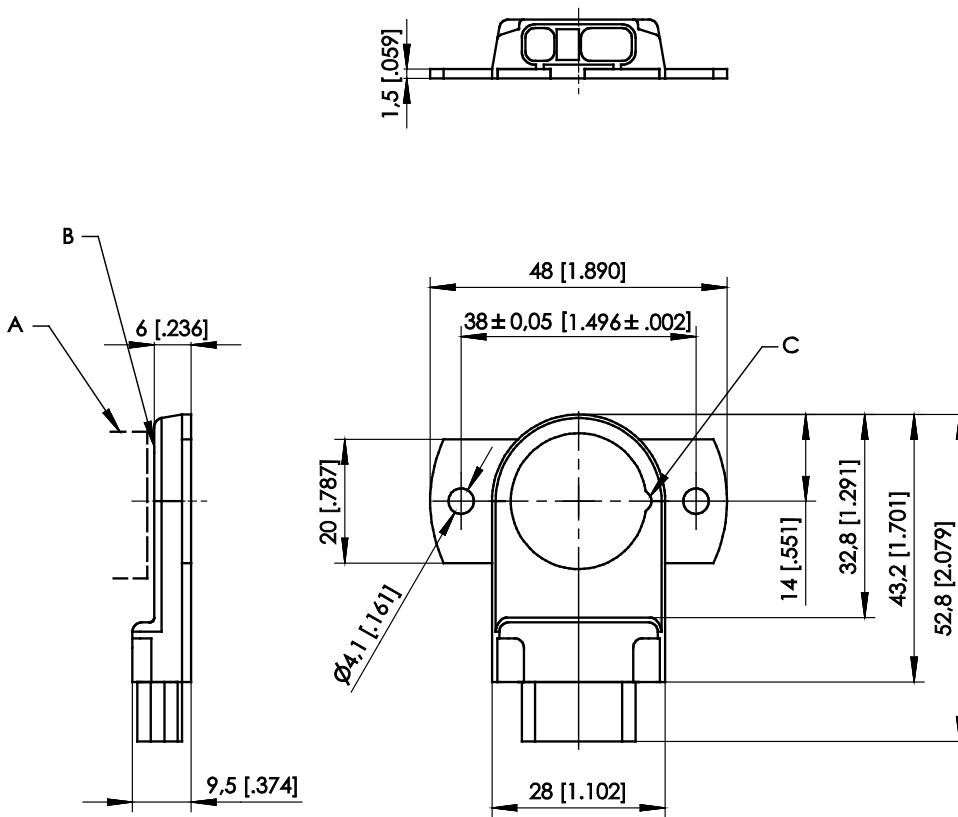
## Accessories:

Connector cables (see page 12)

Position magnets (see from page 7)

Magnetic shield (see page 14)

## Dimensions

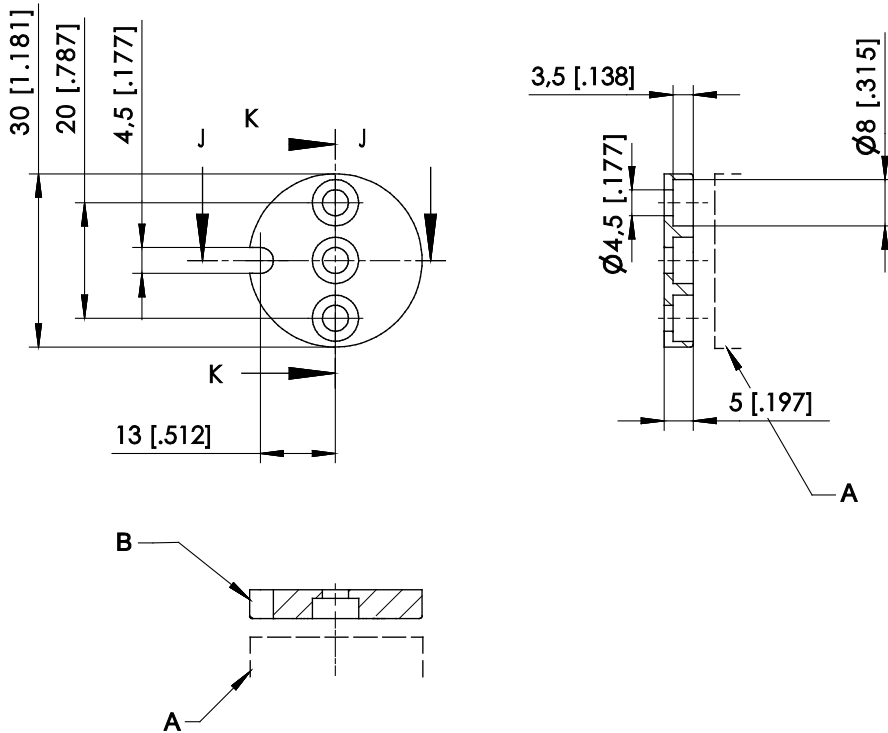


A – Position magnet  
B – Measuring area  
C – Marking

Dimensions in mm [inch]. Weight without cable approx. 8 g.  
Dimensions informative only.  
For guaranteed dimensions consult factory.

## Position magnets

### PRMAG20



A – Sensor  
B – Marking

Order code	Weight	Material	Moment of inertia
PRMAG20	approx. 12 g	zinc coated steel, plastic	1.3 kgmm <sup>2</sup>

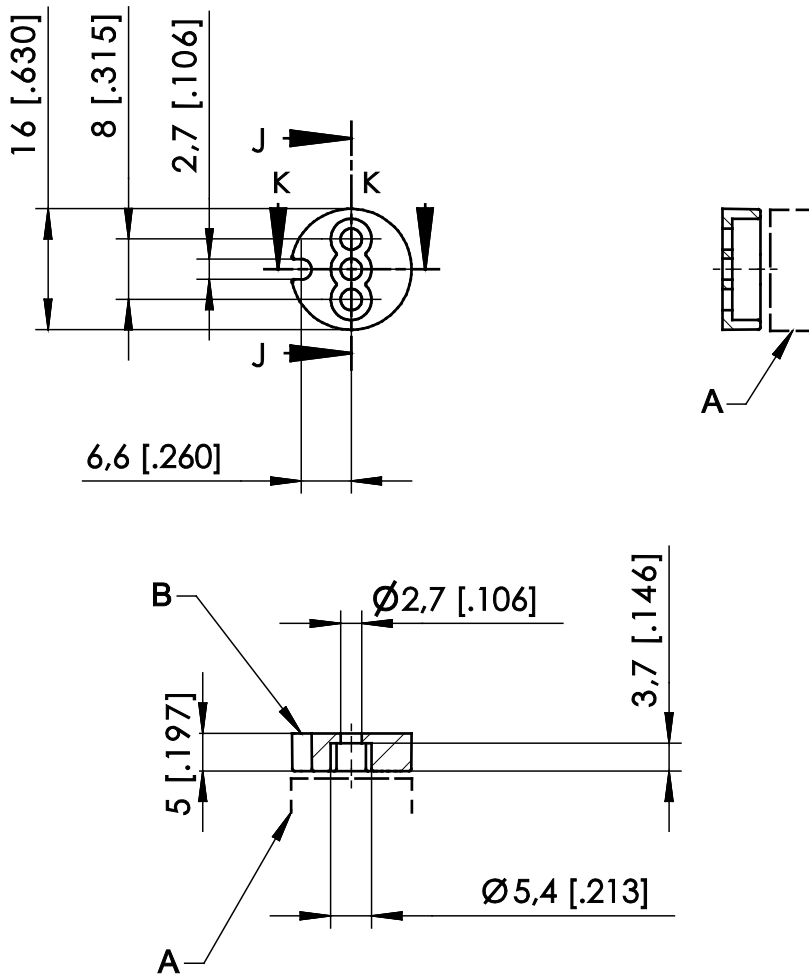
A misalignment of the position magnet has an effect on the linearity.

Dimensions in mm [inch].

Dimensions informative only.

For guaranteed dimensions please consult factory.

**PRMAG21**



A – Sensor  
B – Marking

Order code	Weight	Material	Moment of inertia
PRMAG21	approx. 3 g	zinc coated steel; plastic	0.1 kgmm <sup>2</sup>

A misalignment of the position magnet has an effect on the linearity.

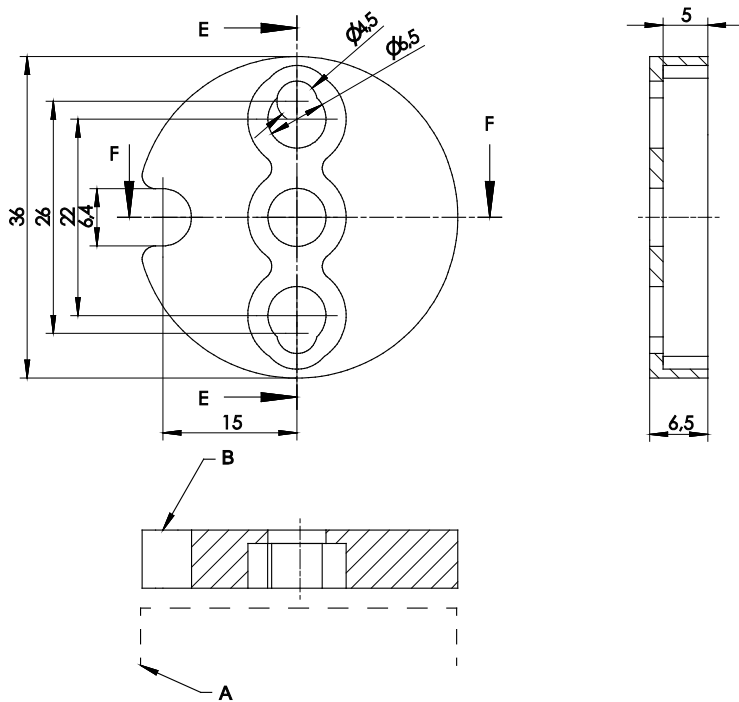
Dimensions in mm [inch]

Dimensions informative only.

For guaranteed dimensions please consult factory.



**PRMAG22**



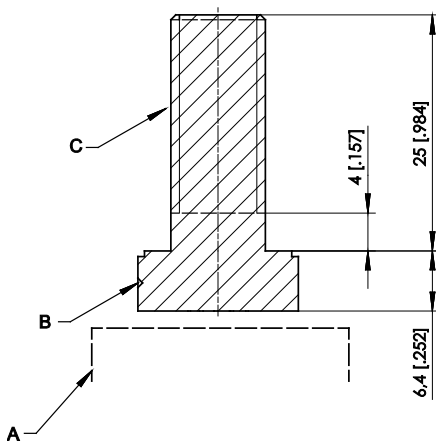
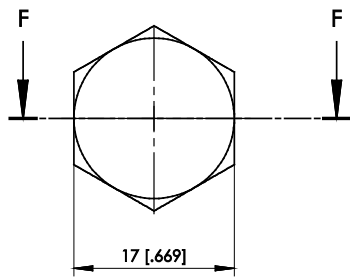
A – Sensor  
B – Marking

Order code	Weight	Material	Moment of inertia
PRMAG22	approx. 19 g	zinc coated steel, plastic	3 kgmm <sup>2</sup>

A misalignment of the position magnet has an effect on the linearity.

Dimensions in mm [inch].  
Dimensions informative only  
For guaranteed dimensions please consult factory.

**PRMAG-M10**



- A – Sensor
- B – Marking
- C – Thread M10

Order code	Weight	Material	Moment of inertia
<b>PRMAG-M10</b>	approx. 30 g	stainless steel A2	1.3 kgmm <sup>2</sup>

A misalignment of the position magnet has an effect on the linearity.

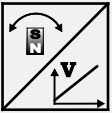
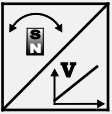
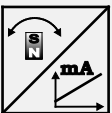
Dimensions in mm [inch].

Dimensions informative only.

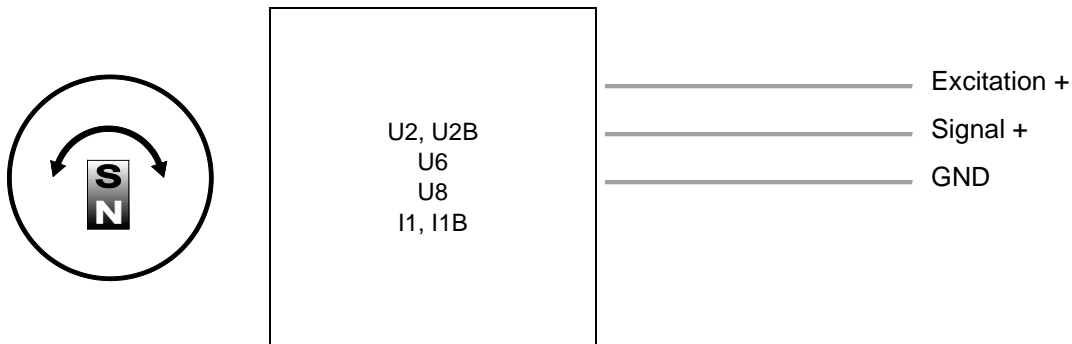
For guaranteed dimensions please consult factory.

## Output specification


### Analog output

<b>U2B</b> Voltage output 0.5 ... 10 V 	Excitation voltage	11.5 ... 27 V DC
	Excitation current	typical 12 mA max. 16 mA
	Output voltage	0,5 ... 10 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical for $90^\circ \dots 360^\circ$ ) $\pm 100 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical for $<90^\circ$ )
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 ... +85 °C
	EMC	DIN EN 61326-1:2013
<b>U6</b> Voltage output 10 ... 90 % ratiometric 	Excitation voltage	5 V DC $\pm 10\%$
	Excitation current	typical 8 mA max. 12 mA
	Output voltage	10 ... 90 % of the excitation voltage
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical for $90^\circ \dots 360^\circ$ ) $\pm 100 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical for $<90^\circ$ )
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 ... +85 °C
	EMC	DIN EN 61326-1:2013
<b>I1B</b> Current output 4 ... 20 mA, 3 wires 	Excitation voltage	10 ... 27 V DC
	Excitation current	typical 32 mA max. 36 mA
	Load $R_L$	250 $\Omega$ max.
	Output current	4 ... 20 mA
	Measuring rate	1 kHz standard
	Stability (temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical for $90^\circ \dots 360^\circ$ ) $\pm 100 \times 10^{-6} / ^\circ\text{C}$ f.s. (typical for $<90^\circ$ )
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 ... +85 °C
	EMC	DIN EN 61326-1:2013

**Signal diagram**



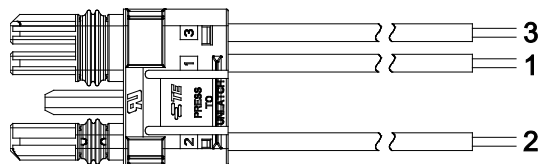
**PRAS26 – connector TE3  
Signal wiring**

Signal	Connector pin no.	View to sensor connector TE3
GND	1	
Excitation +	2	
Signal	3	

Mating connector: Tyco Electronics, SlimSeal, Part-Nr. 2106135-3, 3-pin

**PRAS26 – connector 3-pin with connecting leads**

This cable is supplied with a male 3-pin connector at one end and 3 wires at the other end.  
Cross section 0.32 mm<sup>2</sup>. Wire length 0.5 m.



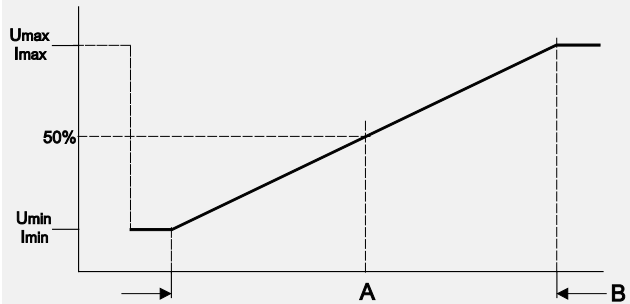
**Order code**

**CONN-TE-3F-G-LITZE-0,5M**

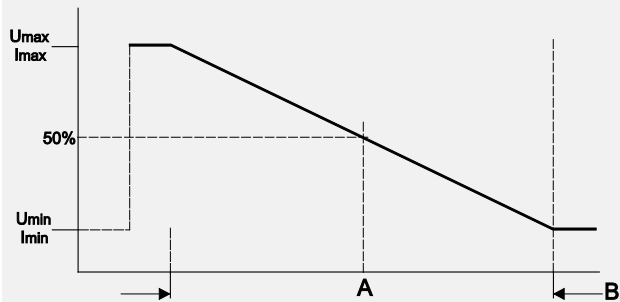
Signal wiring 3-pin connector	Connector pin no. / connecting leads		
	1 blue	2 brown	3 white

## Characteristics for magnetic angle sensors

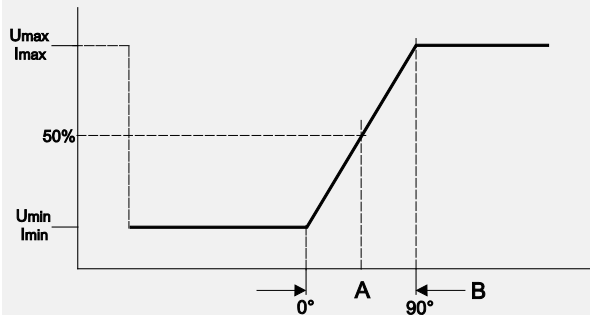
**Output signal CW**  
(clockwise increasing)



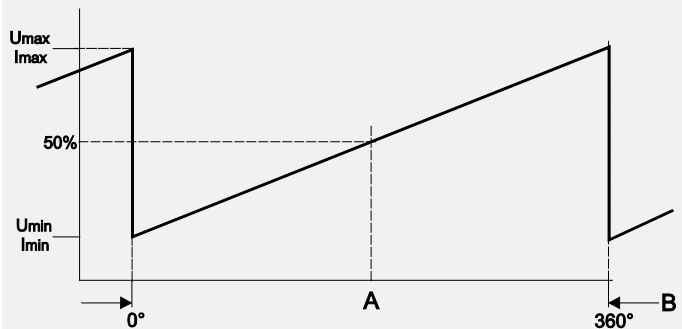
**Output signal CCW**  
(counterclockwise increasing)



Example angular range 90°



Example angular range 360°



A – Marking  
B – Measurement range [°]

## Accessories

### PRAS26 Magnetic shield

An optional shield plate is available for the angle sensor PRAS26. It can reduce the effect of residual magnetizing in case the sensor has to be mounted on a ferromagnetic material.

Order code magnetic shield:

**PRAS20/26-MSHIELD**

