

POSIROT[®]

Magnetic Angle Sensors

PRAS4
Magnetic Angle Sensor

Datasheet



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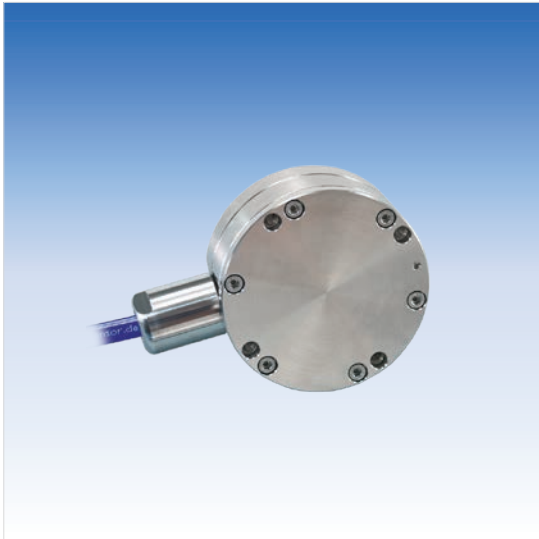
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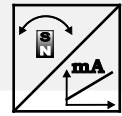
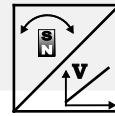
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Analog output



Sensor features

- Measurement range 0 ... 360°
- Protection class IP68 (10 bar)
- Analog output
- Subaqueous version up to 100 m depth, continuous use
- Non-contact with external position magnet, no wear
- Housing: Stainless steel 1.4404



Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V, ratiometric Current 4 ... 20 mA, 3 wire
Measurement range	0 ... 15° to 0 ... 360° (in 15° increments)
Resolution	0.03% (60 ... 360°); 0.1% (15 ... 45°) f.s.
Repeatability	±0.03% (60 ... 360°); ±0.1% (15 ... 45°) f.s.
Linearity	±0.3% f.s. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP68 (10 bar, up to 100m, continuous operation)
Housing material	Stainless steel 1.4404
Mounting	Screws M6
Connection	Cable, standard length 2 m
Temperature range	-20 ... +85 °C (+30 °C immersed in sea water)
Shock	DIN EN 60068-2-27:2010, 100 g/11 ms, 100 shocks
Vibration	DIN EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles
Weight	approx. 1250 g (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS4 - 1 - 2 - 3 - 4 - 5 - 6 - 7

1 Mechanical connection

K = Non-contact with external position magnet

2 Measurement range (0 ... 15° up to 0 ... 360°, in increments of 15°)

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

3 Output

U2 = Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U6 = Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
I1 = Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)

4 Signal characteristics

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

5 Connection

KAB2M = Cable, standard length 2 m

6 Housing material

VA = 1.4404 / screws A4

7 Pressure resistance

WP = 10 bar

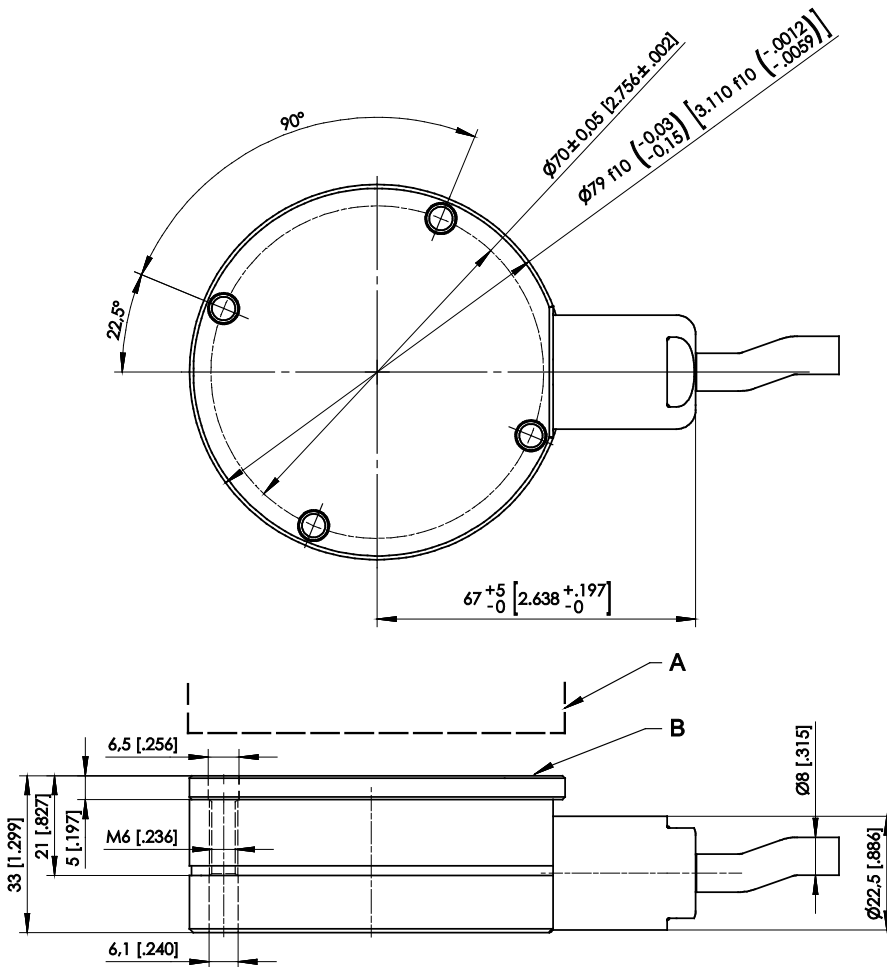
Order example

PRAS4 - K - 360 - I1 - CW - KAB2M - VA - WP

Accessories:

Position magnet (see page 7)

Dimensions



A – Position magnet
B – Marking

IP68 / 100 m, continuous use.

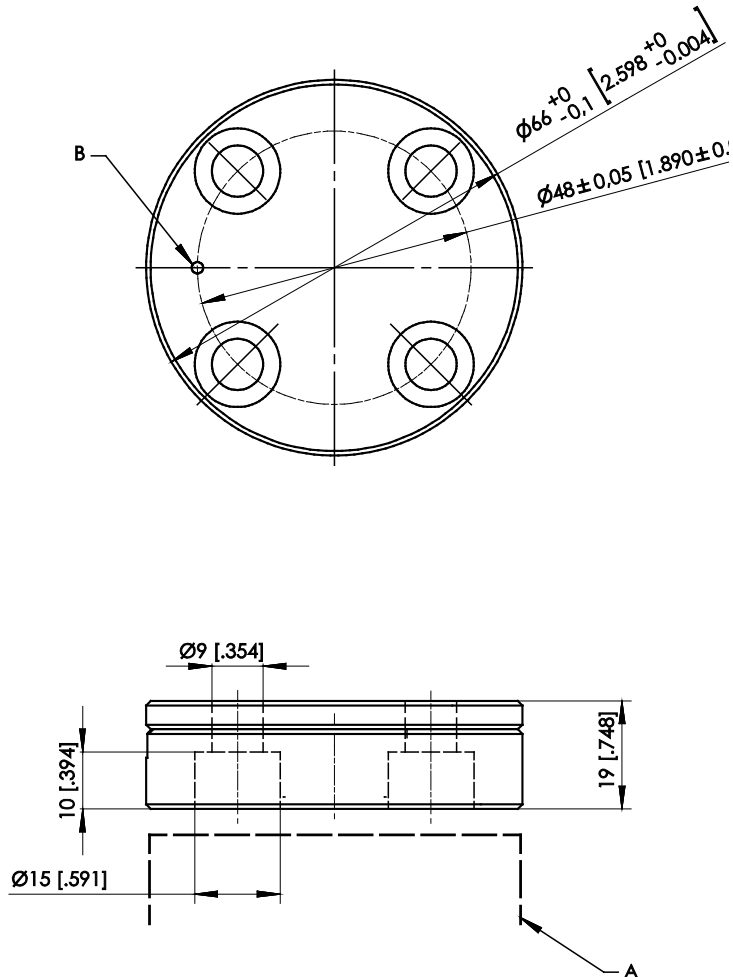
Dimensions in mm [inch]. Weight without cable approx. 1250 g.

Dimensions informative only.

For guaranteed dimensions please consult factory.

Position magnet

PRMAG5-Z-VA-WP



A – Position magnet
B – Marking

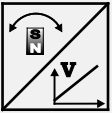
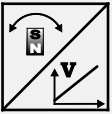
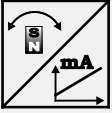
Order code	Weight	Material	Moment of inertia
PRMAG5-Z-VA-WP	approx. 292 g	stainless steel 1.4404	175 kgmm ²

IP68 / 100 m, continuous use.
A misalignment of the position magnet has an effect on the linearity.

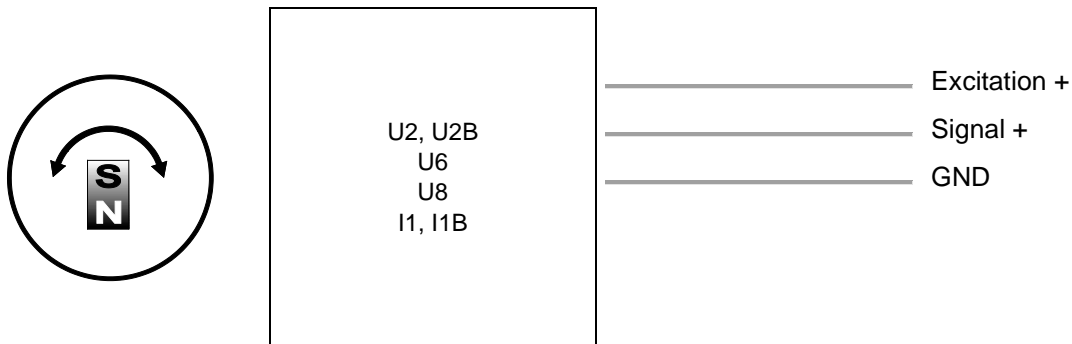
Dimensions in mm [inch]
Dimensions informative only.
For guaranteed dimensions please consult factory.

Output specification

Analog output

U2 Voltage output 0.5 ... 10 V 	Excitation voltage	18 ... 36 V DC
	Excitation current	typical 10 mA max. 15 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
U6 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
I1 Current output 4 ... 20 mA, 3 wires 	Excitation voltage	18 ... 36 V DC
	Excitation current	typical 30 mA max. 35 mA
	Load R_L	500 Ω 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



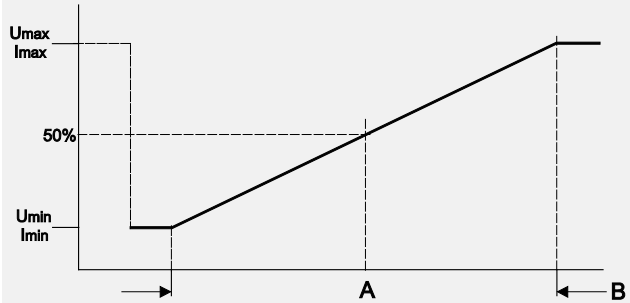
Signal wiring (cable output)

Signal	Connector Pin	Cable color
Excitation +	1	brown
Signal	2	white
GND	3	blue
Do not connect!	4	black
Do not connect!	5	grey

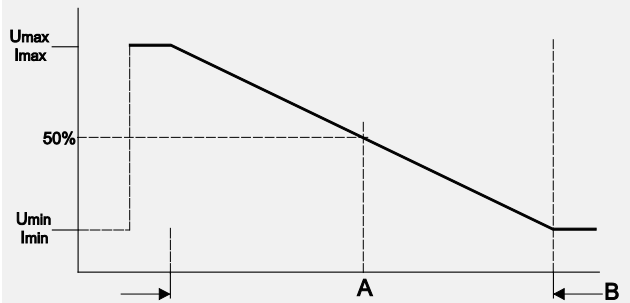
3-wire current 4...20 mA interface: GND has to be connected!

Characteristics for magnetic angle sensors

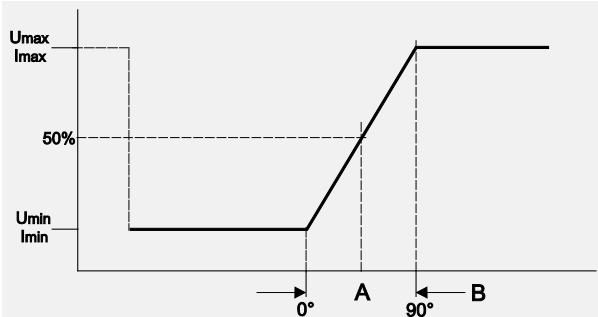
Output signal CW
(clockwise increasing)



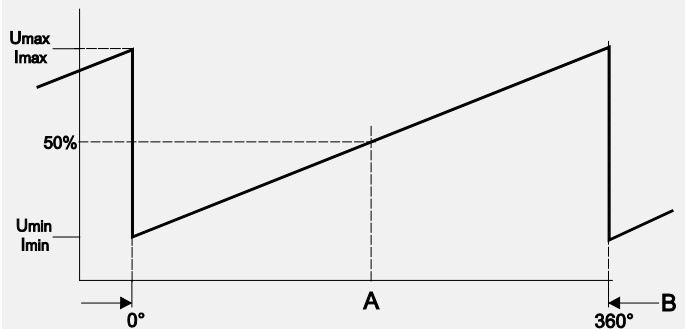
Output signal CCW
(counterclockwise increasing)



Example angular range 90°



Example angular range 360°



A – Marking
B – Measurement range [°]