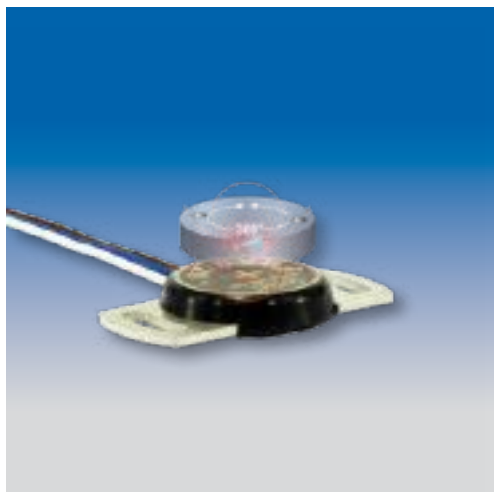
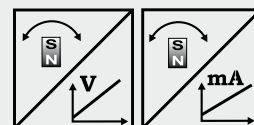




Magnetic angle sensor 0 - 360°

- Measurement range 0 - 360°
- Protection class IP60
- Analog output
- Non-contact with external position magnet
- Wear free
- Compact, low profile housing
- Redundant second channel optional



Specifications	Outputs	U2B U6 I1B	Tension 0.5 ... 10 V Tension 0.5 ... 4.5 V ratiometr. Current 4 ... 20 mA (3 wire)
	Measurement range		0 ... 15° to 0 ... 360° (selectable in 15° increments)
	Resolution		0.03 % (60 ... 360°); 0.1 % (15 ... 45°)
	Repeatability		±0.03 % (60 ... 360°); ±0.1 % (15 ... 45°)
	Linearity		±0.5 % f.s. (typ.)
	Rated distance sensor / magnet		Depending on the position magnet
	Protection class		IP60
	Signal characteristics		CW, CCW
	Material		Epoxy glass fiber, thermoplastic
	Connection		Single wire ETFE 3 x 0.5 mm ²
	Mounting		Screws M4
	Shock		EN 60068-2-27:2010, 100 g/11 ms, 100 shocks
	Vibration		EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles

Order code PRAS20

Model name

Measurement range 15 ... 360° (selectable in 15° increments)

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

Output (see page 5)

U2B = 0.5 ... 10 V

U6 = 0.5 ... 4.5 V ratiometric

I1B = 4 ... 20 mA, 3 wire

Signal characteristics

CW = Signal increasing CW

CCW = Signal increasing CCW

Connection

A300 = Single wire ETFE 3 x 0.5 mm², length 300 mm

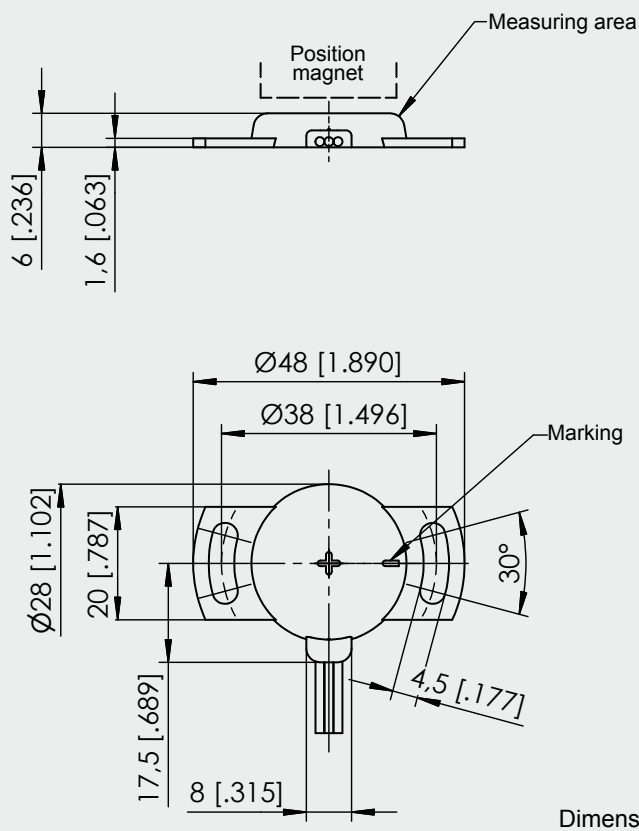
PRAS20 - - - -

Order code position magnet (see accessories page 8)

PRMAG ...

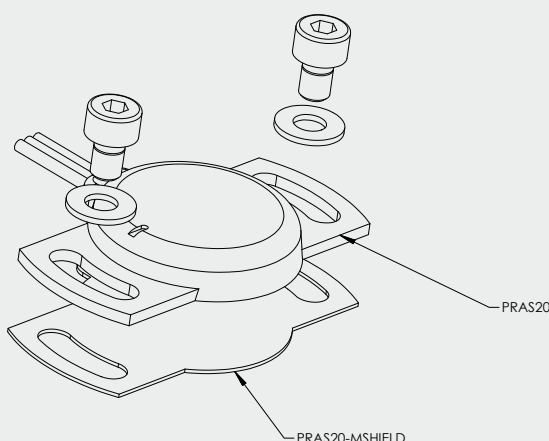
Order example: PRAS20 - 360 - U2B - CW - A300

**Outline drawing
 PRAS20**



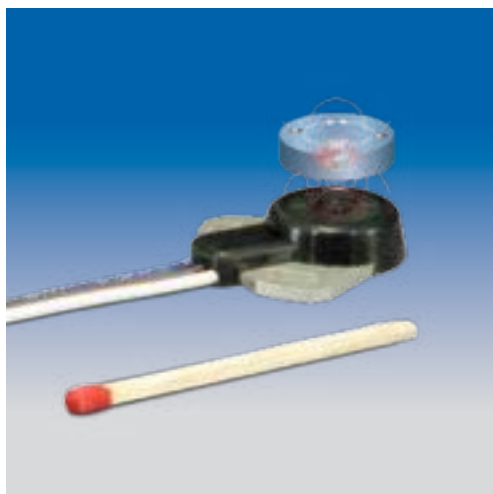
Weight without cable approx. 8 g.
 Dimensions informative only.
 For guaranteed dimensions please consult factory.

**PRAS20
 Magnetic shield**



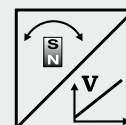
Order code magnetic shield:

PRAS20-MSHIELD



Magnetic angle sensor 0 - 360°

- Measurement range 0 - 360°
- Protection class IP60
- Analog output
- Compact, low profile housing
- Non-contact with external position magnet
- Wear free



Specifications

Outputs	U6	Voltage 0.5 ... 4.5 V ratiometric
Measurement range		0 ... 15° to 0 ... 360° (selectable in 15° increments)
Resolution		0.03 % (60 ... 360°); 0.1 % (15 ... 45°)
Repeatability		±0.03 % (60 ... 360°); ±0.1 % (15 ... 45°)
Linearity		±0.5 % f.s. (typ.)
Rated distance sensor / magnet		Depending on the position magnet
Protection class		IP60
Signal characteristics		CW, CCW
Material		Epoxy glass fiber, thermoplastic
Mounting		Screws M3
Connection		Single wire ETFE 3 x 0.5 mm2
Shock		EN 60068-2-27:2010, 100 g/11 ms, 100 shocks
Vibration		EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles

Order code PRAS21

Model name

Measurement range 15 ... 360° (selectable in 15° increments)

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

Output (see page 5)

U6 = 0.5 ... 4.5 V ratiometric

Signal characteristics

CW = Signal increasing CW

CCW = Signal increasing CCW

Connection

A300 = Single wire ETFE 3 x 0.5 mm², length 300 mm

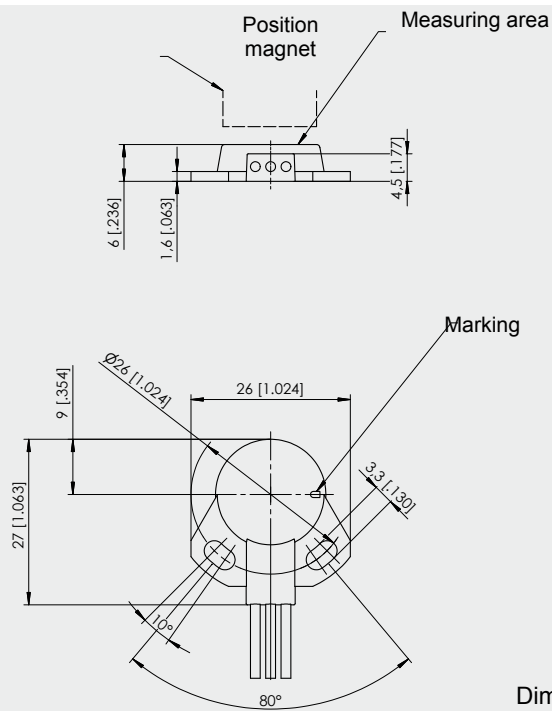
PRAS21

Order code position magnet (see accessories page 8)

PRMAG ...

Order example: PRAS21 - 360 - U6 - CW - A300

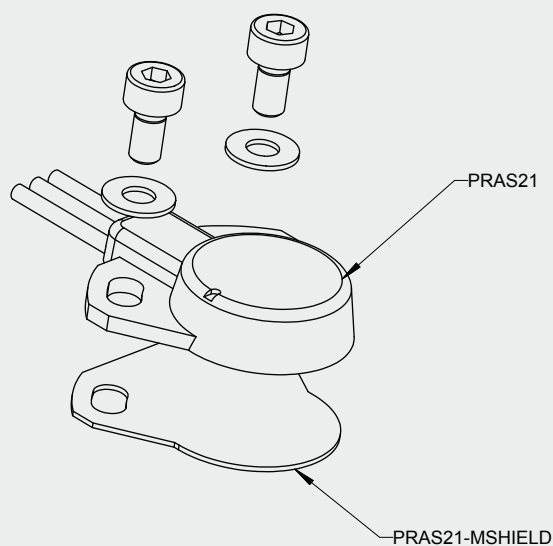
Outline drawing
PRAS21



Dimensions in mm [inch]

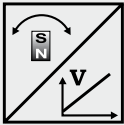
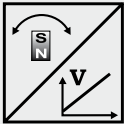
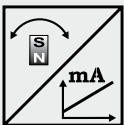
Weight without cable approx. 5 g.
Dimensions informative only.
For guaranteed dimensions please consult factory.

PRAS21
Magnetic shield

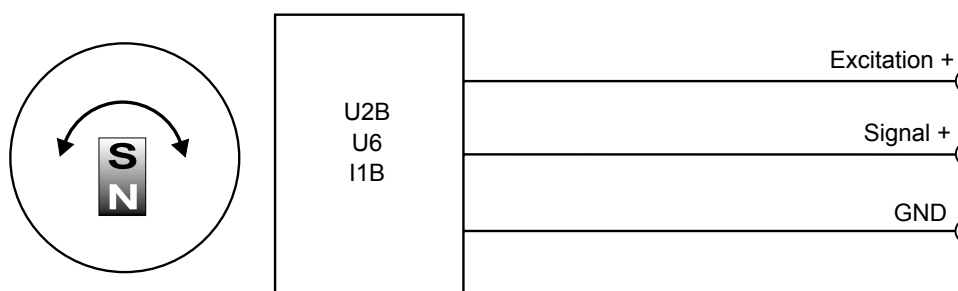


Order code magnetic shield:

PRAS21-MSHIELD

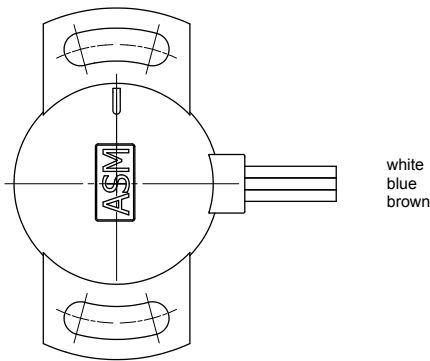
U2B Voltage Output 0.5 ... 10 V 	Excitation voltage	11.5 ... 27 V DC
	Excitation current	12 mA typ., 16 mA max.
	Output voltage	0.5 ... 10 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. (typ.) for $90^\circ \dots 360^\circ$ $\pm 100 \times 10^{-6} / ^\circ\text{C}$ f.s. (typ.) for $<90^\circ$
	Operating temperature	-40 ... +85 °C
	Protection	Reverse polarity, short circuit
	EMC	EN 61326-1:2013
U6 Voltage Output 10 ... 90% ratiometr. 	Excitation voltage	5 V DC $\pm 10\%$
	Excitation current	8 mA typ., 12 mA max.
	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. (typ.) for $90^\circ \dots 360^\circ$ $\pm 100 \times 10^{-6} / ^\circ\text{C}$ f.s. (typ.) for $<90^\circ$
	Operating temperature	-40 ... +85 °C
	Protection	Reverse polarity, short circuit
	EMC	EN 61326-1:2013
I1B Current Output 4 ... 20 mA, 3 wire 	Excitation voltage	10 ... 18 V DC
	Excitation current	32 mA typ., 36 mA max.
	Load resistor	200 Ω max.
	Output current	4 ... 20 mA
	Measuring rate	1 kHz standard
	Stability (temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s. (typ.) for $90^\circ \dots 360^\circ$ $\pm 100 \times 10^{-6} / ^\circ\text{C}$ f.s. (typ.) for $<90^\circ$
	Operating temperature	-40 ... +85 °C
	Protection	Reverse polarity, short circuit
	EMC	EN 61326-1:2013

Output signals

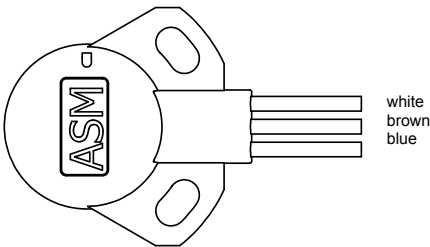


Signal wiring	Signal	Cable color
	Excitation +	brown
	Signal	white
	GND	blue

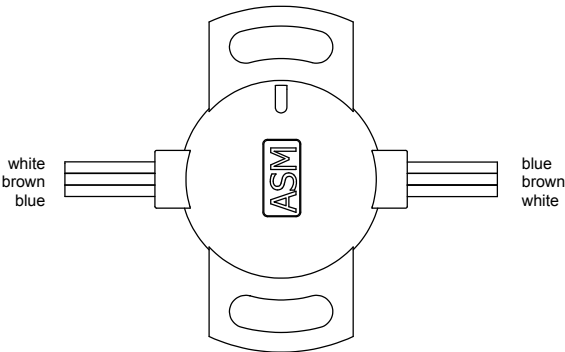
**Connection
PRAS20**



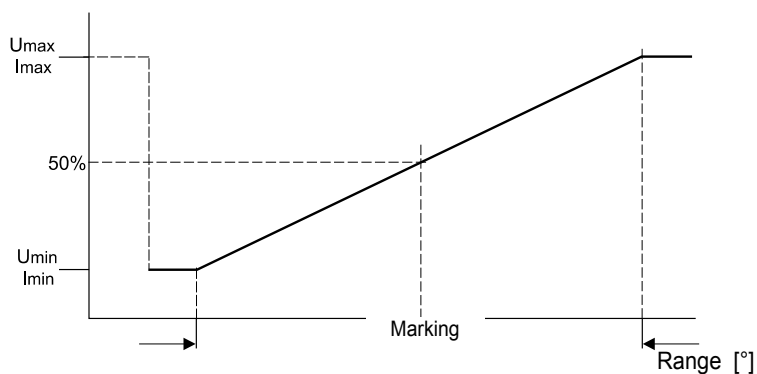
**Connection
PRAS21**



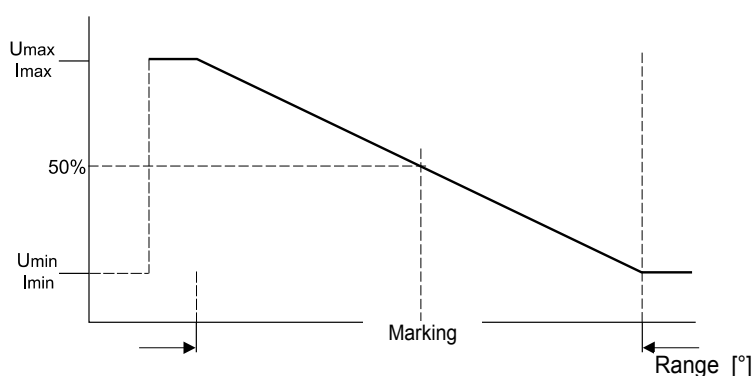
**Connection
PRAS20,
redundant version**



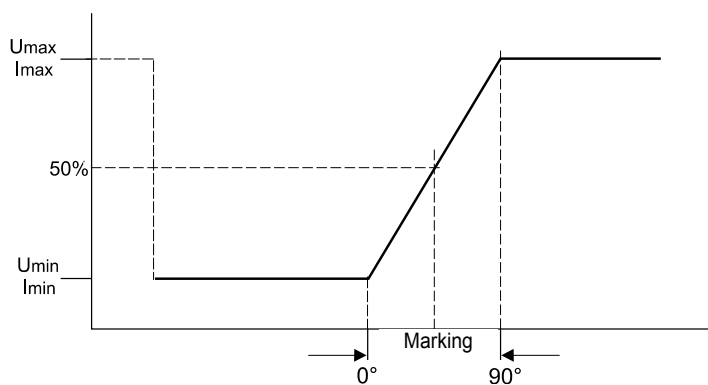
Output signal
(CW increasing)



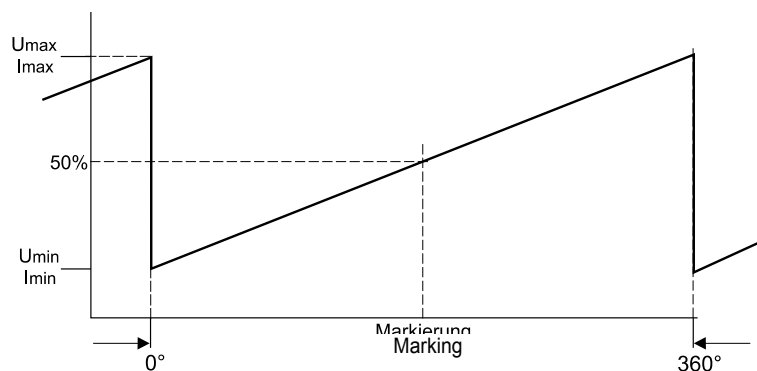
Output signal
(CCW increasing)



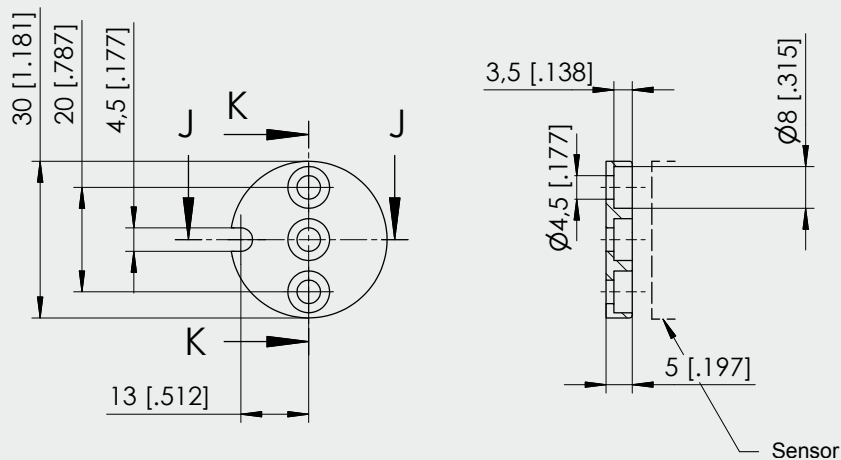
Example angular
range 90°



Example angular
range 360°

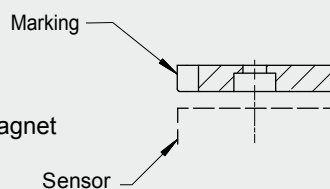


PRMAG20

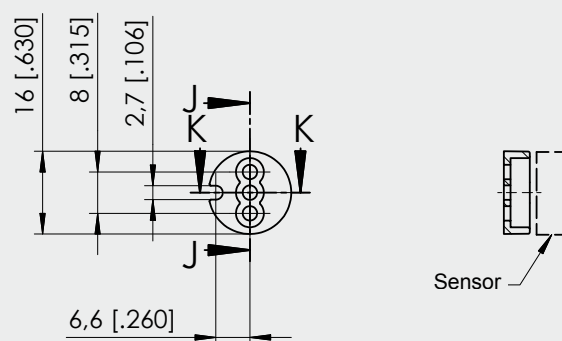


Weight 11 g approx.,
moment of inertia 1.2 kgmm²

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

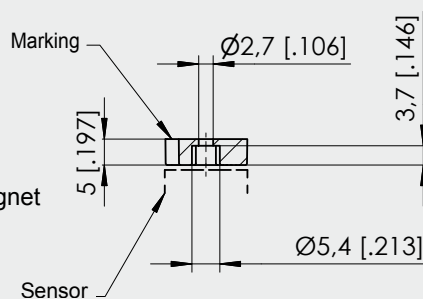


PRMAG21



Weight 3 g approx.,
moment of inertia 0.1 kgmm²

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



Dimensions in mm [inch]

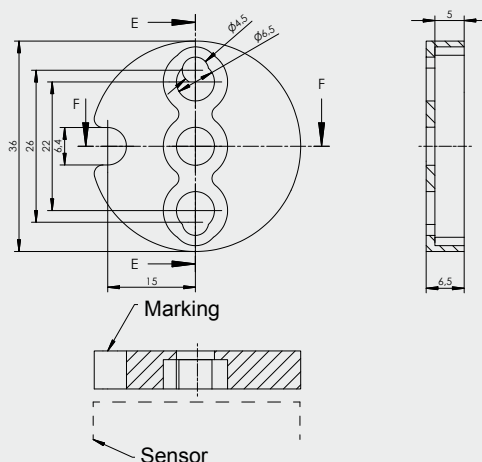
Dimensions informative only

For guaranteed dimensions please consult factory

PRMAG22

Weight 17 g approx.,
moment of inertia 3 kgmm²

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

Sensor	Position magnet	Air gap [mm]	Paralle- lism [°]	Error by axial misalignment of the position magnet [°]					
				(c)					
		(a)	(b)	0,2 mm	0,5 mm	1 mm	2 mm	3 mm	4 mm
PRAS20	PRMAG20	0 ... 7	0 ... 5	0,1	0,3	0,7	2,0	4,6	—
	PRMAG21	0 ... 2	0 ... 5	0,15	0,3	0,9	3,6	9,6	—
	PRMAG22	0 ... 10	0 ... 5	0,0	0,0	0,7	1,5	3,8	7,0
PRAS21	PRMAG20	0 ... 7	0 ... 5	0,1	0,3	0,7	2,0	4,6	—
	PRMAG21	0 ... 2	0 ... 5	0,15	0,3	0,9	3,6	9,6	—
	PRMAG22	0 ... 10	0 ... 5	0,0	0,0	0,7	1,5	3,8	7,0

