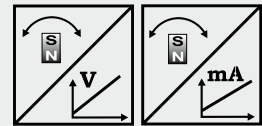


POSIROT® PRAS1 Magnetic Angle Sensor with Analog Output



Magnetic angle sensor 0 - 360° in M12 housing

- Measurement range 0 to 360°
- Protection class IP67 / IP69K
- Analog output
- Stainless steel housing
- Non-contact with external position magnet
- Wear free
- SIL in preparation



Specifications	Outputs	U6	Voltage 0.5 ... 4.5 V ratiometric
		U2	
	I1		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°)
	Repeatability		±0.03 % (60 ... 360°); ±0.1 % (15 ... 45°)
	Linearity		±0.3 % f.s. (typ.)
	Rated distance sensor / magnet		Depending on the position magnet
	Protection class		IP67/IP69K (connector output with IP69K connector cable) IP67 (cable output)
	Signal characteristics		CW, CCW
	Material		Stainless steel
	Mounting		M12 x 1
	Shock		EN60068-2-27:1993, 100 g/11 ms, 100 shocks
	Vibration		EN60068-2-6:1995, 20 g 10 Hz-2 kHz, 10 cycles

Order Code PRAS1

Model name

Measurement range 15 ... 360° in 15° increments

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

Output (see page 46)

U6 = 0.5 ... 4.5 V ratiometric

U2 = 0.5 ... 10 V

I1 = 4 ... 20 mA, 3 wire

Signal characteristics

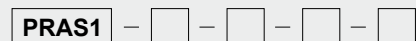
CW = Signal increasing CW

CCW = Signal increasing CCW

Connection

KAB2M = Cable, standard length 2 m, IP67

M12A5 = 5-pin socket M12 (compatible to 4-pin connector)



Order code position magnet (see accessories page 53/54)

PRMAG ...

Order code connector cable (see accessories page 90)

KAB-2M-M12/4F/G-LITZE

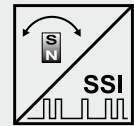
Order Example: PRAS1 - 360 - I1 - CW - M12A5

POSIROT®
PRDS1
Magnetic Angle Encoder with SSI Output



Magnetic angle encoder 0 - 360° in M12 housing

- Measurement range 0 to 360°
- Protection class IP67 / IP69K
- Synchronous serial output (SSI)
- Stainless steel housing
- Non-contact with external position magnet
- Wear free



Specifications	Output	Synchronous serial (SSI)
	Measurement range	0 ... 360°
	Resolution	12 bit (4096 steps) per revolution
	Repeatability	±0.1° (typ.)
	Linearity	±1° (typ.)
	Rated distance sensor / magnet	Depending on the position magnet
	Max. revolutions (mech.)	30,000 r.p.m.
	Protection class	IP67/IP69K (connector output with IP69K connector cable) IP67 (cable output, option IP67/IP69K)
	Code characteristics	CW, CCW
	Material	Stainless steel
	Mounting	M12 x 1
Shock	EN60068-2-27:1993, 100 g/11 ms, 100 shocks	
Vibration	EN60068-2-6:1995, 20 g 10 Hz-2 kHz, 10 cycles	

Order Code PRDS1

Model name

Output (see page 49)

RSSI5V = Synchronous serial output with excitation 5 V DC

RSSI24V = Synchronous serial output with excitation 10 ... 36 V DC

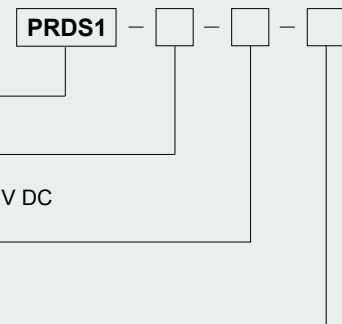
Code characteristics

CW = Code increasing CW

CCW = Code increasing CCW

Connection

M12A8 = 8 pin socket M12 axial



Order code position magnet (see accessories page 53/54)

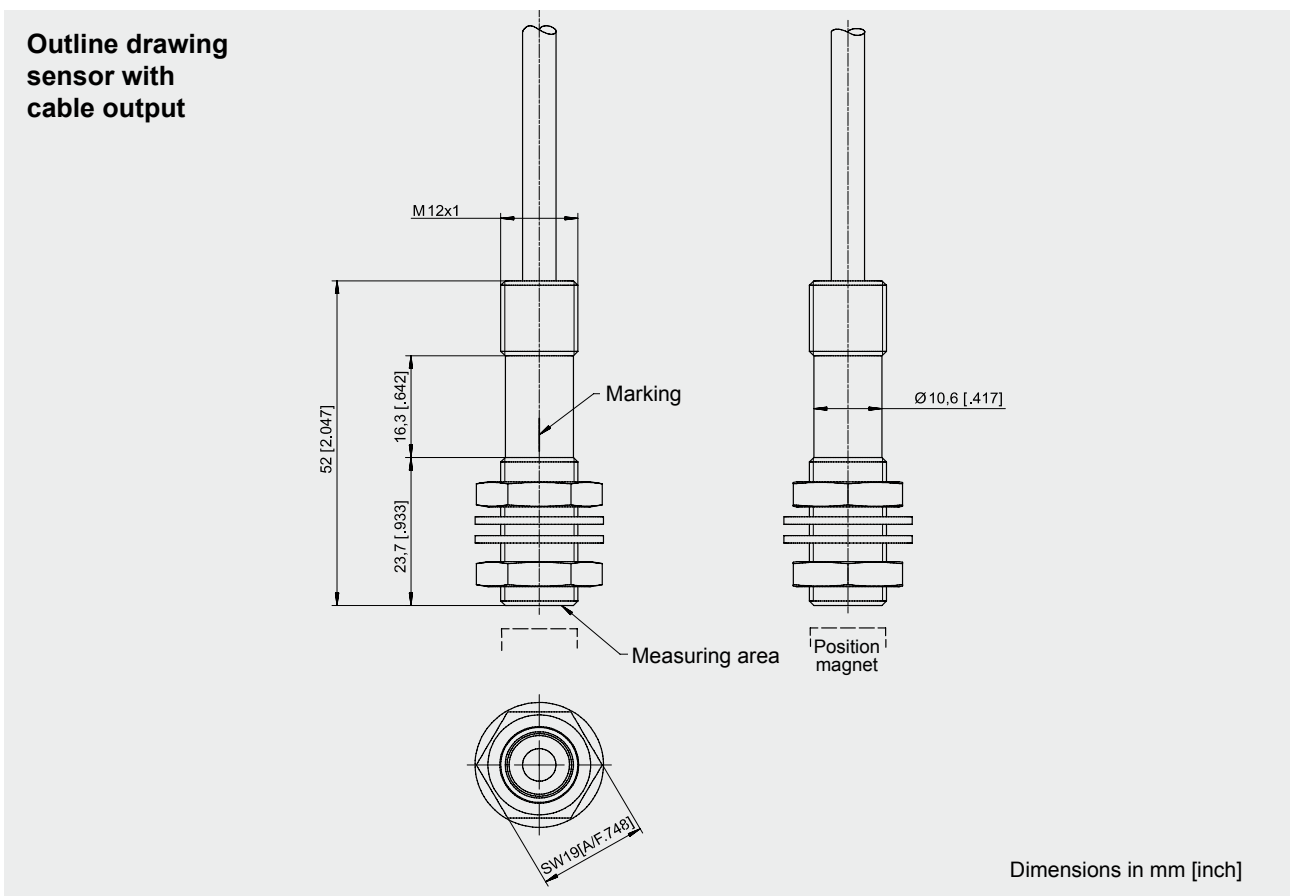
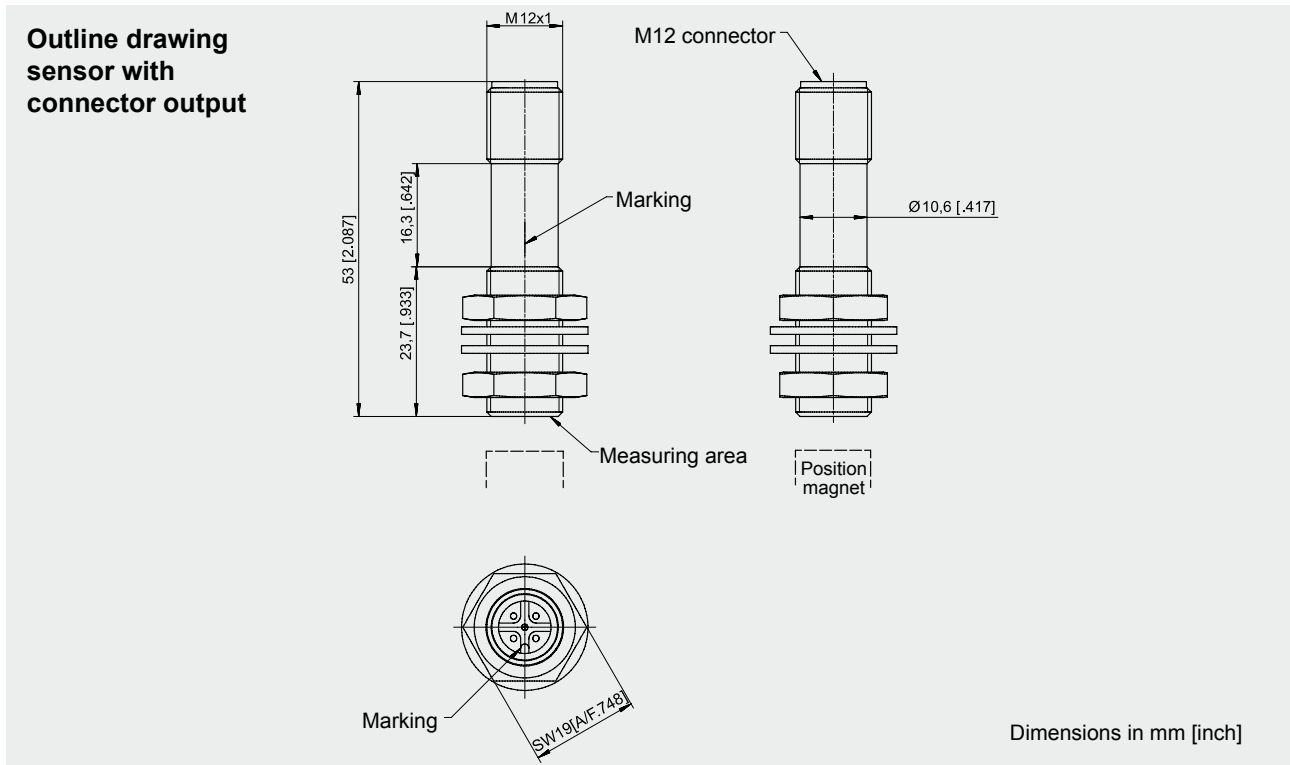
PRMAG ...

Order code connector cable (see accessories page 90)

KAB-2M-M12/8F/G-LITZE

Order example: PRDS1 - RSSI5V - CW - M12A8

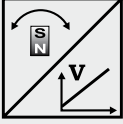
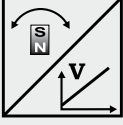
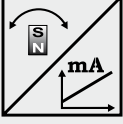
POSIROT®
PRAS1/PRDS1
Dimensions



Weight without cable 35 g approx.
 Dimensions informative only.
 For guaranteed dimensions please consult factory.

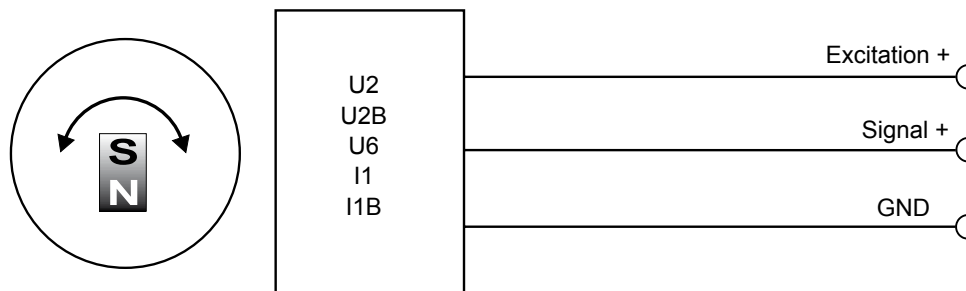
POSIROT®
PRAS
Analog outputs U2(B), U6 and I1(B)



U2; U2B Voltage Output 0.5 ... 10 V 	Excitation voltage	U2: 18 ... 36 V DC; U2B: 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	EN61326-1:2006	
U6/5; U6/8,25 Voltage Output 10 ... 90% ratiometr. 	Excitation voltage	5V DC $\pm 10\%$ / 8.25 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	EN61326-1:2006	
I1; I1B Current Output 4 ... 20 mA, 3 wire 	Excitation voltage	I1: 18 ... 36 V DC; I1B: 10 ... 18 V DC
	Excitation current	32 mA typ., 36 mA max.
	Load resistor	I1: 500 Ω max.; I1B: 250 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	EN61326-1:2006	

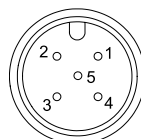
Other outputs available on request.

Output signals



Signal Wiring	Output signals	Connector pin	Cable color
	Excitation +	1	brown
	Signal	2	white
	GND	3	blue
	Do not connect!	4	black
	Do not connect!	5	-

Connection



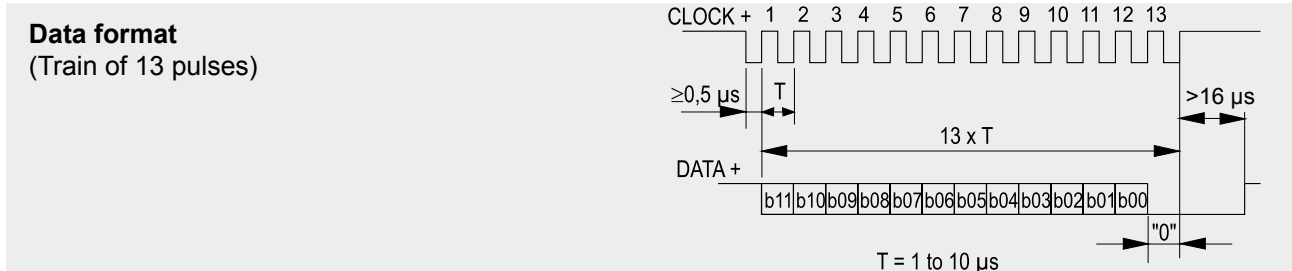
M12A5 / M12R5

View to sensor connector

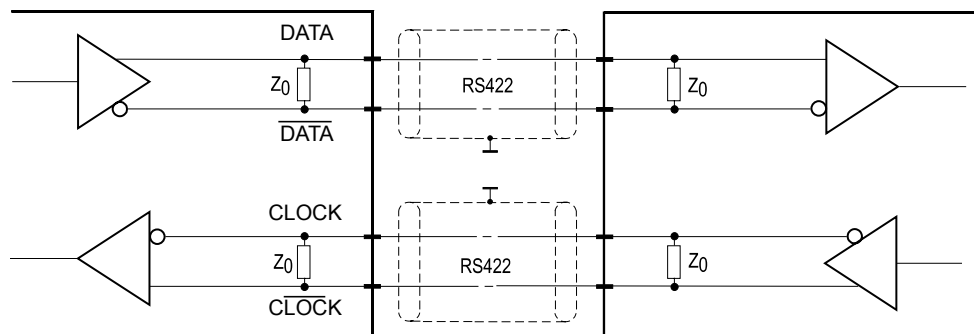
POSIROT®
PRDS
Output RSSI5V / RSSI24V



RSSI5V / RSSI24V Synchronous serial 	Interface	EIA RS-422
	Excitation voltage	RSSI5V: 5 V DC $\pm 10\%$; RSSI24V: 10 ... 36 V DC
	Excitation current	100 mA max. without load
	Clock frequency	100 kHz ... 1 MHz
	Code	Single step Gray code 12 Bit
	Resolution	12 Bit
	Delay between pulse trains	20 μ s min.
	Stability (temperature)	$\pm 50 \times 10^{-6}$ / °C f.s. (typ.)
	Operating temperature	-40 ... +85 °C
	Protection	Short circuit
EMC	EN61326-1:2006	



Recommended processing input circuit

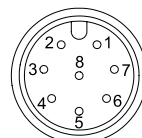


Cable length	Baud rate
50 m	100-1000 kHz
100 m	100-300 kHz

Note:
 Extension of the cable length will reduce the maximum transmission rate. The signals CLOCK /CLOCK and DATA/DATA must be connected in a twisted pair cable, shielded per pair and common.

Signal wiring	Signal name	Connector pin no.
	Excitation +	1
	Excitation GND	2
	CLOCK	3
	CLOCK	4
	DATA	5
	DATA	6
	Do not connect!	7,8

Connection



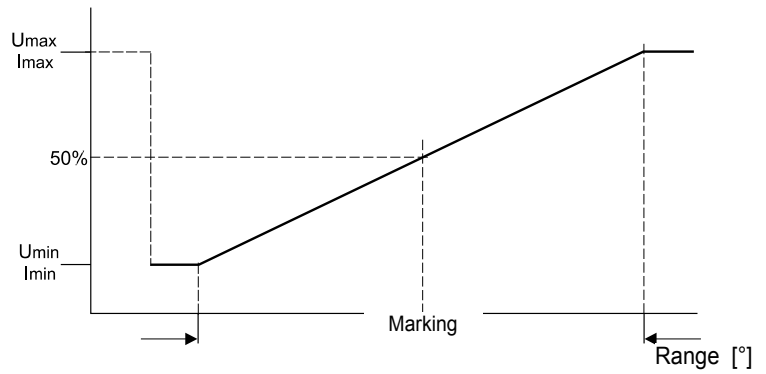
View to sensor connector

M12A8 / M12R8

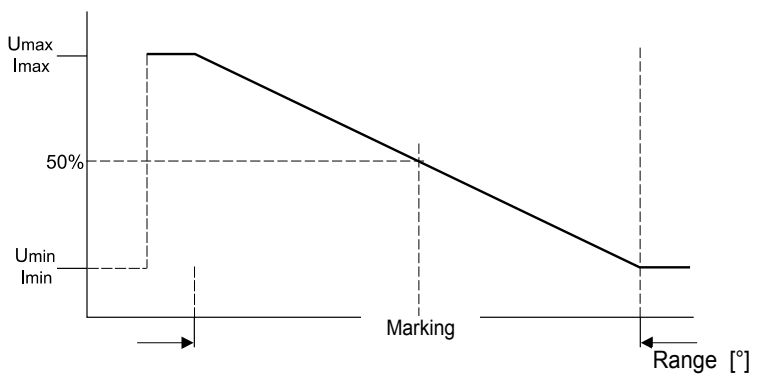
POSIROT[®]
PRAS/PRDS
Characteristics for magnetic angle sensors



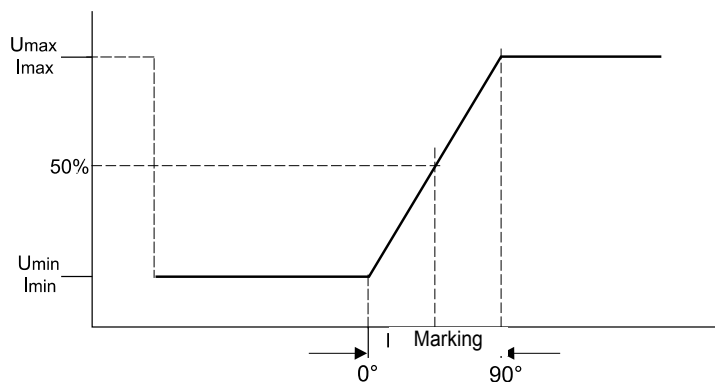
Output signal
 (CW increasing)



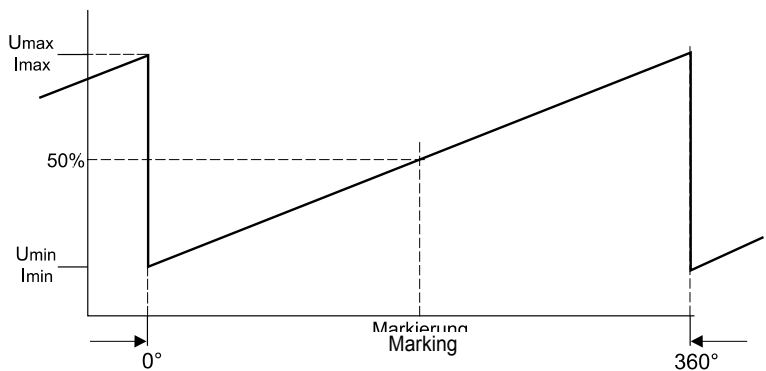
Output signal
 (CCW increasing)



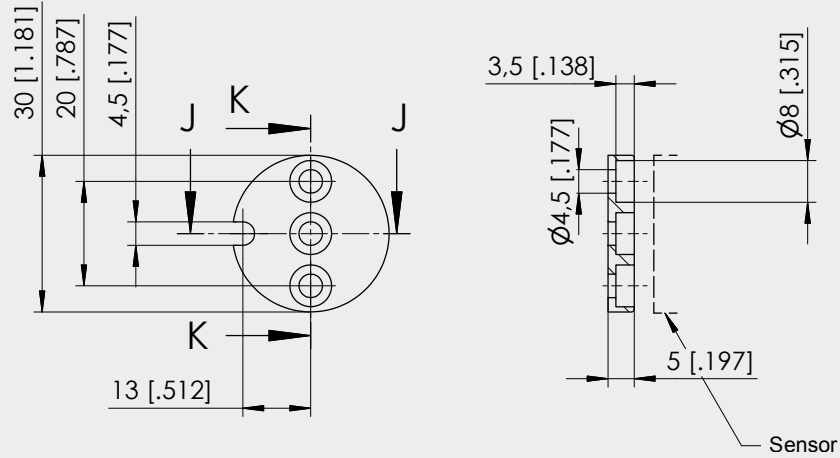
Example angular
range 90°



Example angular
range 360°

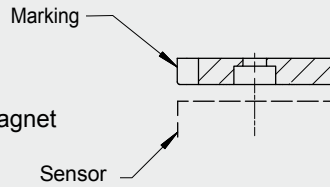


PRMAG20

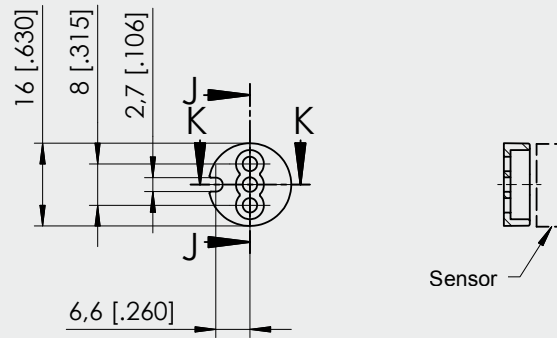


Weight 11 g approx.,
moment of inertia 1.2 kgmm²

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

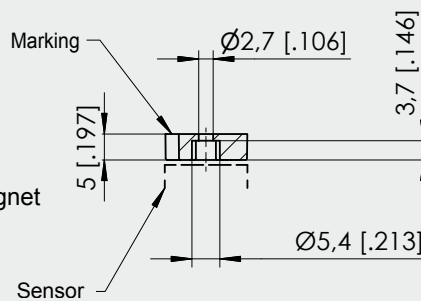


PRMAG21



Weight 3 g approx.,
moment of inertia 0.1 kgmm²

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



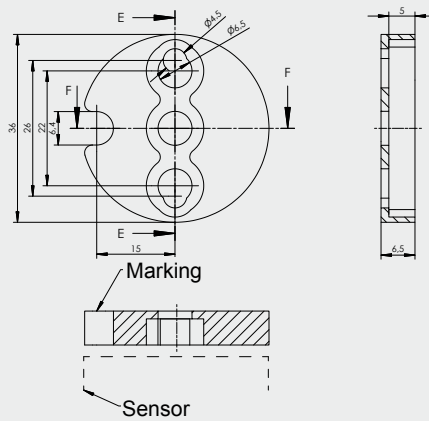
Dimensions in mm [inch]

Dimensions informative only
For guaranteed dimensions please consult factory

PRMAG22

Weight 17 g approx.,
 moment of inertia 3 kgmm²

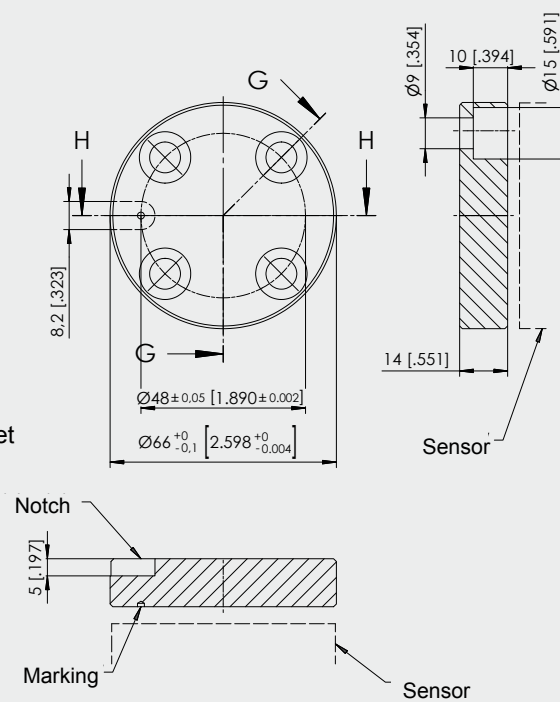
A misalignment of the position magnet
 has an effect on the linearity



PRMAG5Z

Weight 100 g approx.,
 moment of inertia 55 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

POSIROT® / POSITILT®

Accessories

Connector Cables



Connector cable for POSIROT®-POSITILT® sensors

4 pins M12

Suitable for 5-pin sensor connectors M12A5 and M12R5

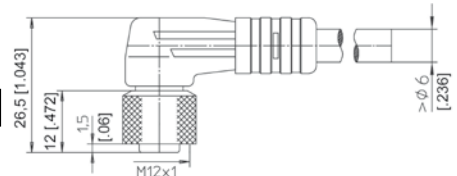
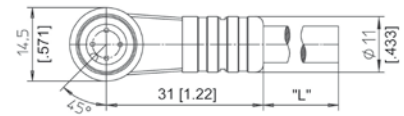
The 4-core screened cable is supplied with a mating 4-pin 90° M12 connector at one end and 4 wires at the other end. Available lengths are 2, 5 and 10 m.

Order code:

KAB - XM - M12/4F/W - LITZE

IP69K: **KAB - XM - M12/4F/W/69K - LITZE**

Length in m



Connector cable for POSIROT®-POSITILT® sensors

4 pins M12

Suitable for 5-pin sensor connectors M12A5 and M12R5

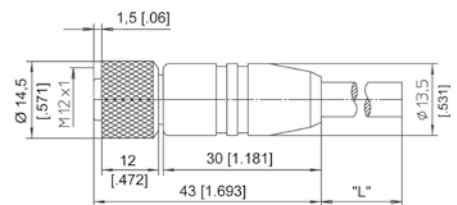
The 4-core screened cable is supplied with a mating 4-pin M12 connector at one end and 4 wires at the other end. Available lengths are 2, 5 and 10 m.

Order code:

KAB - XM - M12/4F/G - LITZE

IP69K: **KAB - XM - M12/4F/G/69K - LITZE**

Length in m



Signal wiring M12, 4 pin	Connector pin / cable color			
	1	2	3	4
	Brown	White	Blue	Black

Connector cable for POSIROT®-POSITILT® sensors

8 pins M12

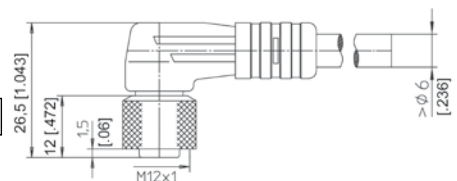
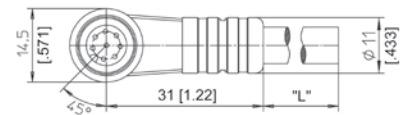
The 8-core screened cable is supplied with a mating 8-pin 90° M12 connector at one end and 8 wires at the other end. Available lengths are 2, 5 and 10 m.

Order code:

KAB - XM - M12/8F/W - LITZE

IP69K: **KAB - XM - M12/8F/W/69K - LITZE**

Length in m



Connector cable for POSIROT®-POSITILT® sensors

8 pins M12

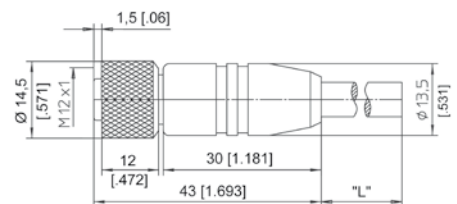
The 8-core screened cable is supplied with a mating 8-pin M12 connector at one end and 8 wires at the other end. Available lengths are 2, 5 and 10 m.

Order code:

KAB - XM - M12/8F/G - LITZE

IP69K: **KAB - XM - M12/8F/G/69K - LITZE**

Length in m



Signal wiring M12, 8 pin	Connector pin / cable color							
	1	2	3	4	5	6	7	8
	White	Brown	Green	Yellow	Grey	Pink	Blue	Red