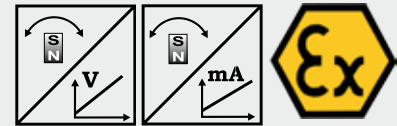


# POSIROT® PRAS2EX - Dust-Ex-proof Magnetic Angle Sensor with Analog Output



**Magnetic angle sensor 0 - 360° in a flat housing with 36 mm dia.**

- Measurement range 0 to 360°
- Protection class IP65
- Analog output
- Flat housing – 20 mm thickness
- Non-contact with external position magnet
- Dust-Ex-proof: II 3D Ex tD A22 IP65 T80°C X
- Wear free
- SIL in preparation



Specifications	Outputs	
		U6
	U2	Voltage 0.5 ... 10 V
	I1	Current 4 ... 20 mA, 3 wire
Measurement range		0 ... 15° to 0 ... 360° in increments of 15°
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		IP65
Signal characteristics		CW, CCW
Material		Stainless steel
Mounting		Clamps, mounting plate
Temperature		-20 to +40 °C
Shock		EN60068-2-27:1993, 100 g/11 ms, 100 shocks
Vibration		EN60068-2-6:1995, 20 g 10 Hz-2 kHz, 10 cycles
Dust-Ex-proof standard		DIN EN61241-0, DIN EN61241-1

## Order Code PRAS2EX

### Model name

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

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

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

M12R5 = 5-pin socket M12 radial (compatible with 4-pin connector)

PRAS2EX - [ ] - [ ] - [ ] - [ ]

**Dust-Ex-proof explanation** (see page 55)

**Order code mounting clamps** (set of 3 pieces)

**PRPT-BFS1**

**Order code position magnet** (see accessories page 55)

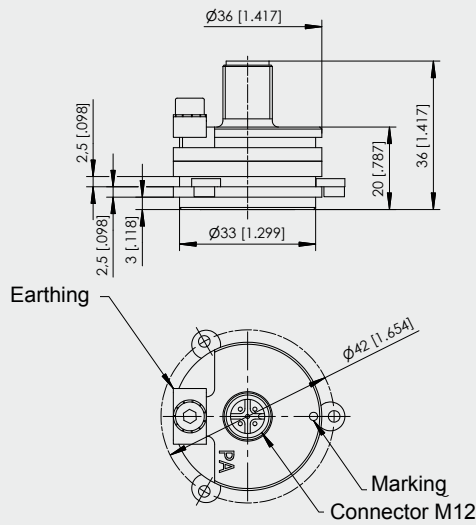
**PRMAG ...**

**Order example: PRAS2EX - 360 - I1 - CW - M12A5**

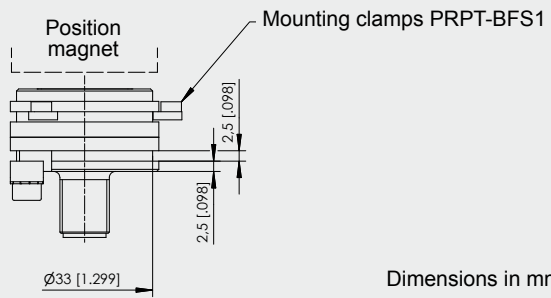
**POSIROT®**  
**PRAS2EX - Dust-Ex-proof**  
**Dimensions**



**Outline drawing  
 sensor M12 axial**

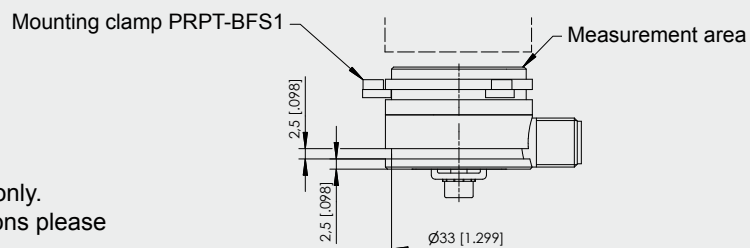
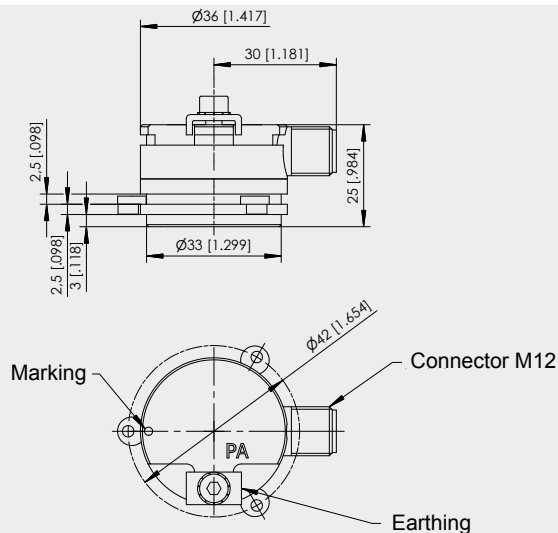


Weight approx. 110 g.  
 Dimensions informative only.  
 For guaranteed dimensions please  
 consult factory.



Dimensions in mm [inch]

**Outline drawing  
 sensor M12 radial**

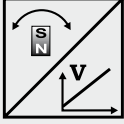
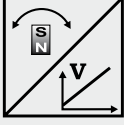
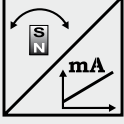


Weight approx. 140 g.  
 Dimensions informative only.  
 For guaranteed dimensions please  
 consult factory.

Dimensions in mm [inch]

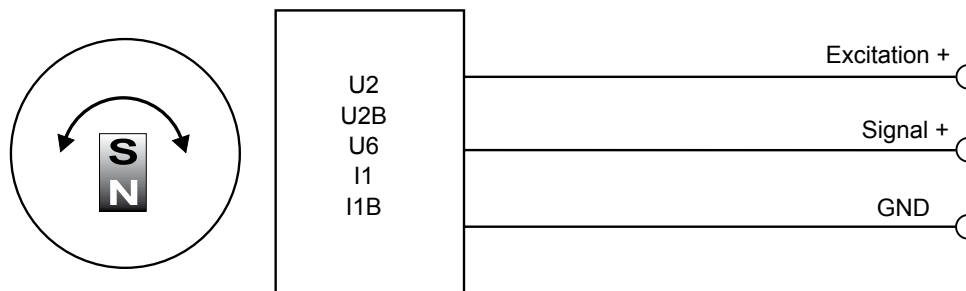
**POSIROT®**  
**PRAS**  
**Analog outputs U2(B), U6 and I1(B)**



<b>U2; U2B</b> 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)	±50 x 10 <sup>-6</sup> / °C f.s. (typ.) for 90°...360° ±100 x 10 <sup>-6</sup> / °C f.s. (typ.) for <90°
	Operating temperature	-40 ... +85 °C (+105 °C as option)
	Protection	Reverse polarity, short circuit
EMC	EN61326-1:2006	
<b>U6/5; U6/8,25</b> Voltage Output 10 ... 90% ratiometr. 	Excitation voltage	5V DC ±10 % / 8.25 V DC ±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)	±50 x 10 <sup>-6</sup> / °C f.s. (typ.) for 90°...360° ±100 x 10 <sup>-6</sup> / °C f.s. (typ.) for <90°
	Operating temperature	-40 ... +85 °C (+125 °C as option)
	Protection	Reverse polarity, short circuit
EMC	EN61326-1:2006	
<b>I1; I1B</b> 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)	±50 x 10 <sup>-6</sup> / °C f.s. (typ.) for 90°...360° ±100 x 10 <sup>-6</sup> / °C f.s. (typ.) for <90°
	Operating temperature	-40 ... +85 °C
	Protection	Reverse polarity, short circuit
EMC	EN61326-1:2006	

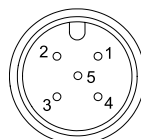
Other outputs available on request.

**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**



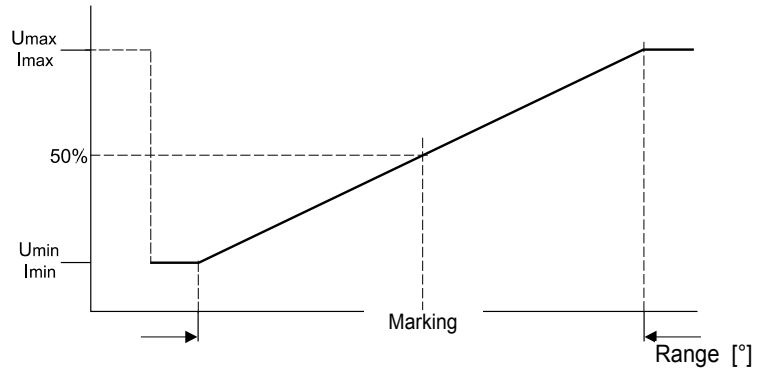
M12A5 / M12R5

View to sensor  
connector

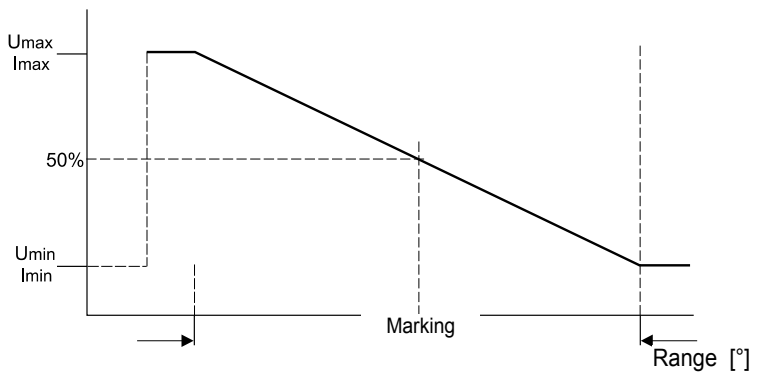
**POSIROT<sup>®</sup>**  
**PRAS/PRDS**  
**Characteristics for magnetic angle sensors**



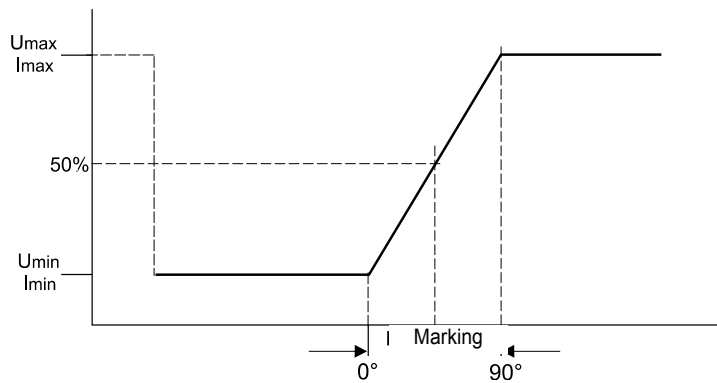
**Output signal**  
 (CW increasing)



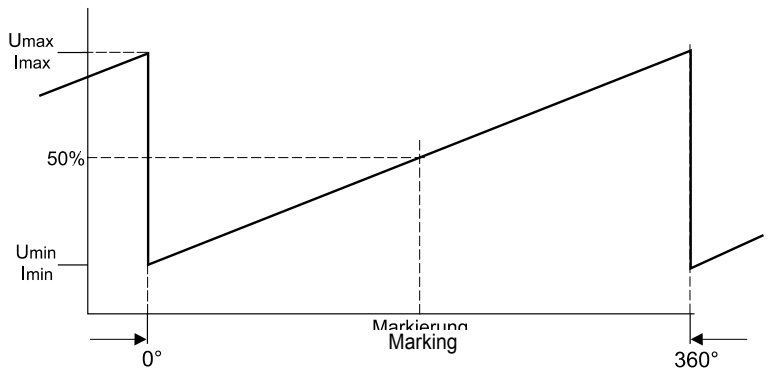
**Output signal**  
 (CCW increasing)



**Example angular**  
**range 90°**

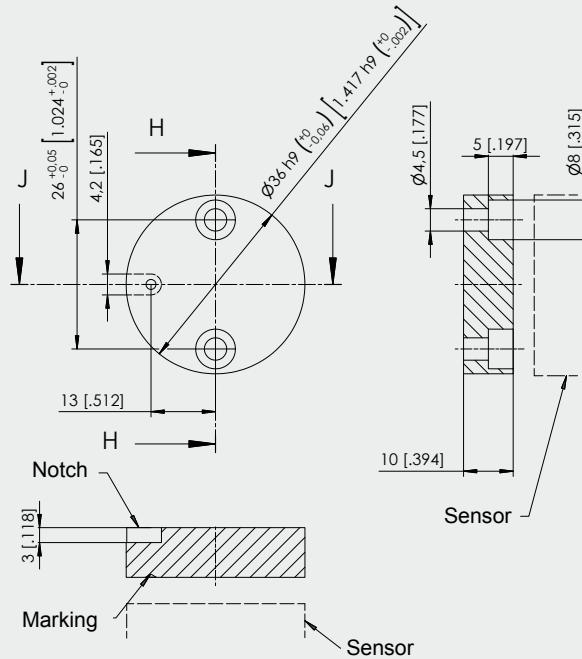


**Example angular**  
**range 360°**



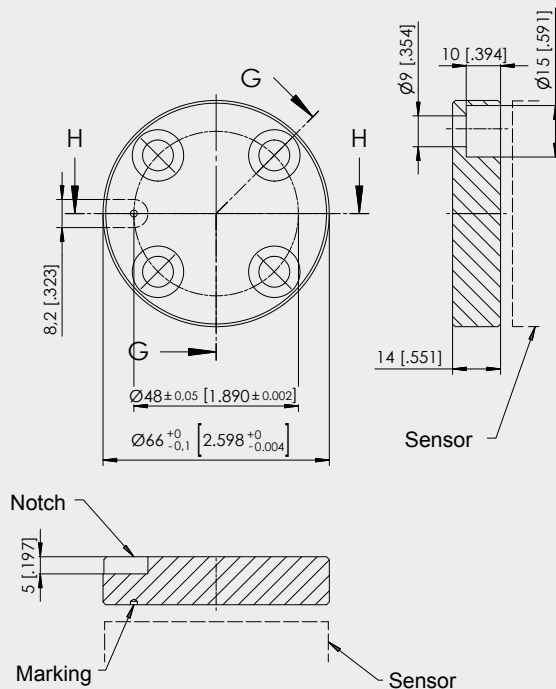
**PRMAG2Z-EX**

Weight ca. 22 g approx.  
 moment of inertia 4.5 kgmm<sup>2</sup>  
 A misalignment of the position magnet  
 has an effect on the linearity



**PRMAG5-EX**

Weight ca. 275 g approx.  
 moment of inertia 150 kgmm<sup>2</sup>  
 A misalignment of the position magnet  
 has an effect on the linearity

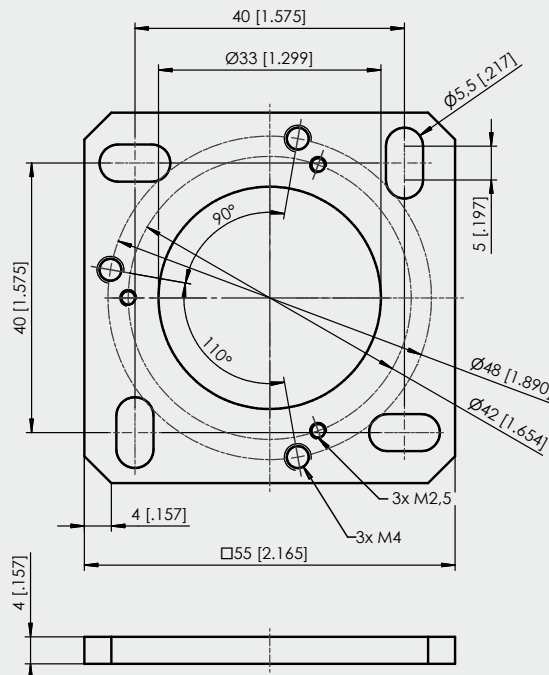


**EX - Explanation (II 3D Ex tD A22 IP65 T80°C X)**

- II** = for all Explosive Areas, excluding Surface and Underground Mining Systems
- 3D** = Equipment Category 3, applicable in Zone 22; D = dust
- Ex** = meets the requirements of the European Ex-Directive
- tD** = type of ignition protection: protection by enclosure "tD"
- A22** = measurement of the surface temperature acc. to procedure A for applications in Zone 22
- IP65** = IP Protection Class
- T80°C** = maximum surface temperature
- X** = tested with low impact energy

**PRPT-BPL1**

(screw mounting)  
 For PRAS2, PRDS2,  
 PRAS3, PRDS3



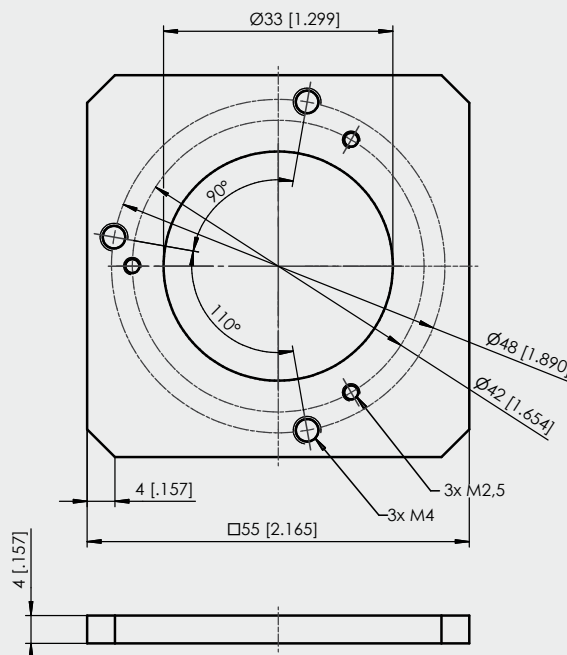
In combination with the  
 mounting clamps  
 PRPT-BFS1 (3 x M2.5)  
 or  
 in combination with the  
 mounting bracket  
 PRPT-BFS2 (3 x M4).

Dimensions in mm [inch]

Weight 30 g approx.  
 Dimensions informative only.  
 For guaranteed dimensions please consult factory.

**PRPT-BPL2**

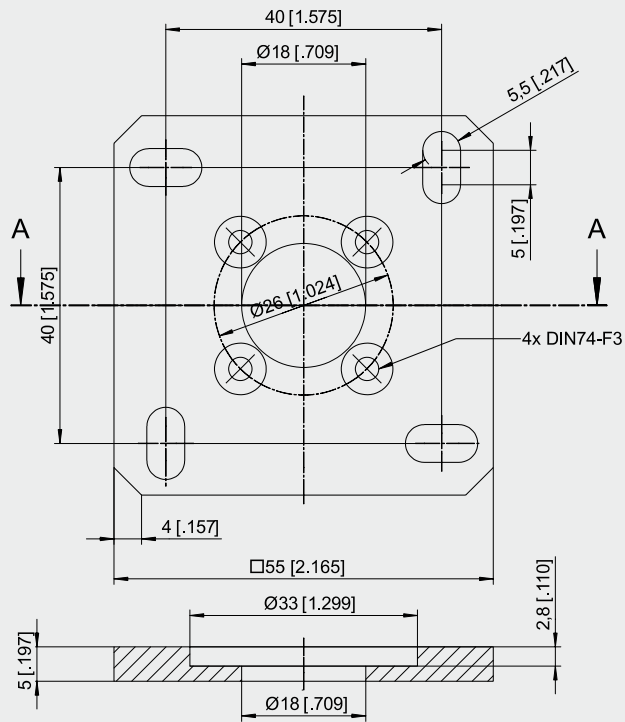
(welding assembly)  
 For PRAS2, PRDS2,  
 PRAS3, PRDS3



In combination with the  
 mounting clamps  
 PRPT-BFS1 (3 x M2.5)  
 or  
 in combination with the  
 mounting bracket  
 PRPT-BFS2 (3 x M4).

**PRPT-BPL3**

For PRAS3, PRDS3



Dimensions in mm [inch]

Weight 30 g approx.

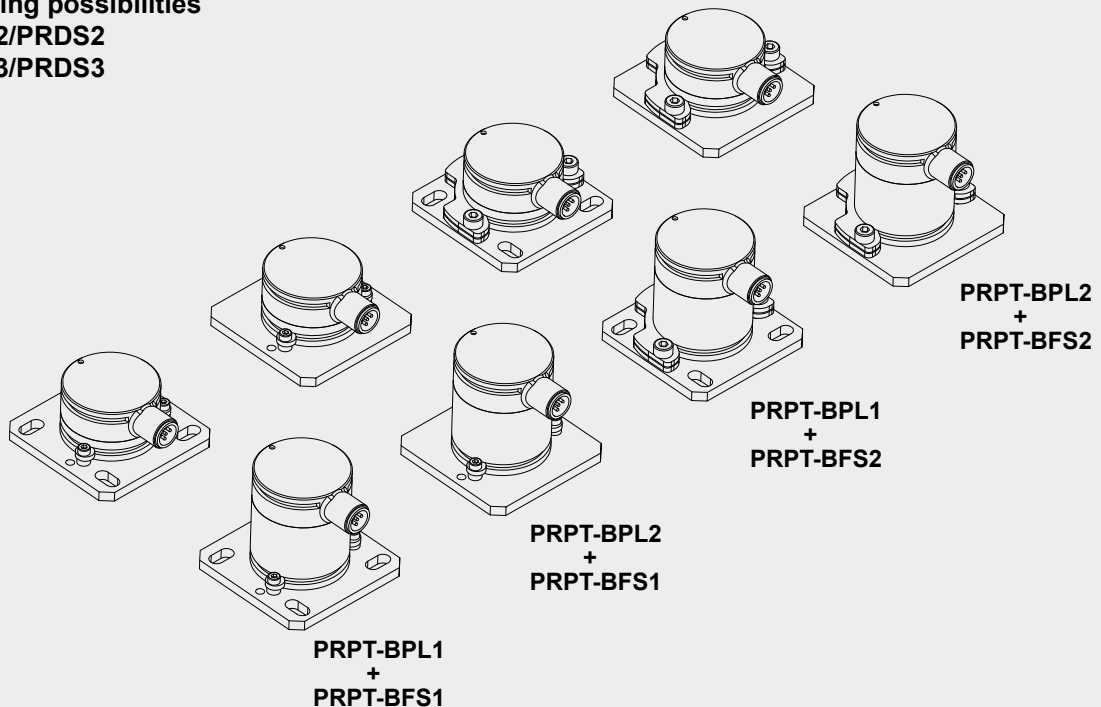
Dimensions informative only.

For guaranteed dimensions please consult factory.

**Mounting possibilities**

**PRAS2/PRDS2**

**PRAS3/PRDS3**



**Connector cable for POSIROT®-POSITILT® sensors**  
4 pins M12

Suitable for 5-pin sensor connectors M12A5 and M12R5

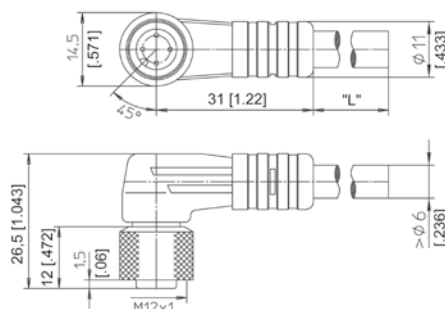
The 4-core screened cable is supplied with a mating 4-pin 90° M12 connector at one end and 4 wires at the other end. Available lengths are 2, 5 and 10 m.

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

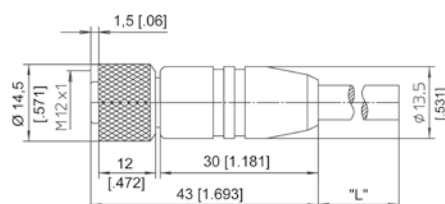
The 4-core screened cable is supplied with a mating 4-pin M12 connector at one end and 4 wires at the other end. Available lengths are 2, 5 and 10 m.

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

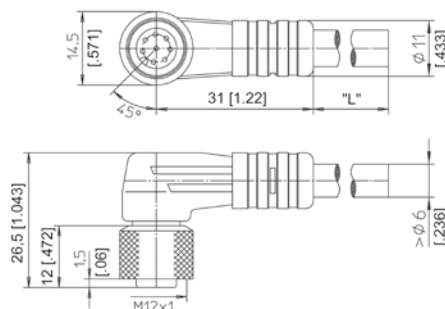
The 8-core screened cable is supplied with a mating 8-pin 90° M12 connector at one end and 8 wires at the other end. Available lengths are 2, 5 and 10 m.

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

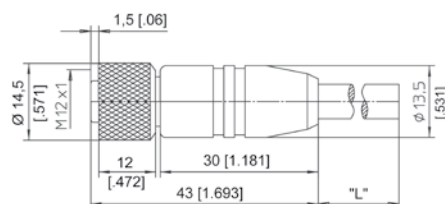
The 8-core screened cable is supplied with a mating 8-pin M12 connector at one end and 8 wires at the other end. Available lengths are 2, 5 and 10 m.

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