


posirot<sup>®</sup>  
Magnetic Angle Sensors,  
explosion protected



Angle sensor, explosion protected



- Measurement range 0°... 360°
- Protection class IP65
- Contactless, wear-free with external position magnet
-  II 3D Ex tc IIIC T80°C Dc X  
(X = examined with low impact energy of 4J)

### Product versions




Analog output (dust-EX-proof)



PRAS2EX - Magnetic Angle Sensor  
Version with analog output (dust-EX-proof)

Specifications

		Order options
Measurement range	0 ... 15° to 0 ... 360° (in 15° increments)	<b>1</b> 15 / 30 / 45 / ... / 345 / 360
Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V ratiometric Current 4 ... 20 mA, 3 wire	<b>2</b> U2 U6 I1
Signal characteristics	Signal increasing CW, clockwise Signal increasing CCW, counterclockwise	<b>3</b> CW CCW
Resolution	0.03% (60 ... 360°); 0.1% (15 ... 45°)	
Repeatability	±0.03% (60 ... 360°); ±0.1% (15 ... 45°)	
Linearity	±0.3% f.s. (typical)	
Rated distance sensor / magnet	Depending on the position magnet	
Housing material	Stainless steel EN 1.4404 (AISI 316L)	
Mounting	Clamps, mounting plate	
Protection class	Housing: IP65 Dust-EX-proof:  II 3D Ex tc IIIC T80°C Dc X (X = examined with low impact energy of 4J)	
Connection	5-pin connector M12 axial (compatible with 4-pin connector) 5-pin connector M12 radial (compatible with 4-pin connector)	<b>4</b> M12A5 M12R5
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	
Temperature range	-20 ... +40°C	
Weight	180 g approx.	
EMC	DIN EN 61326-1:2013	
Dust-EX-proof	DIN EN 60079-0 (September 2019) DIN EN 60079-31 (December 2014)	

Order code

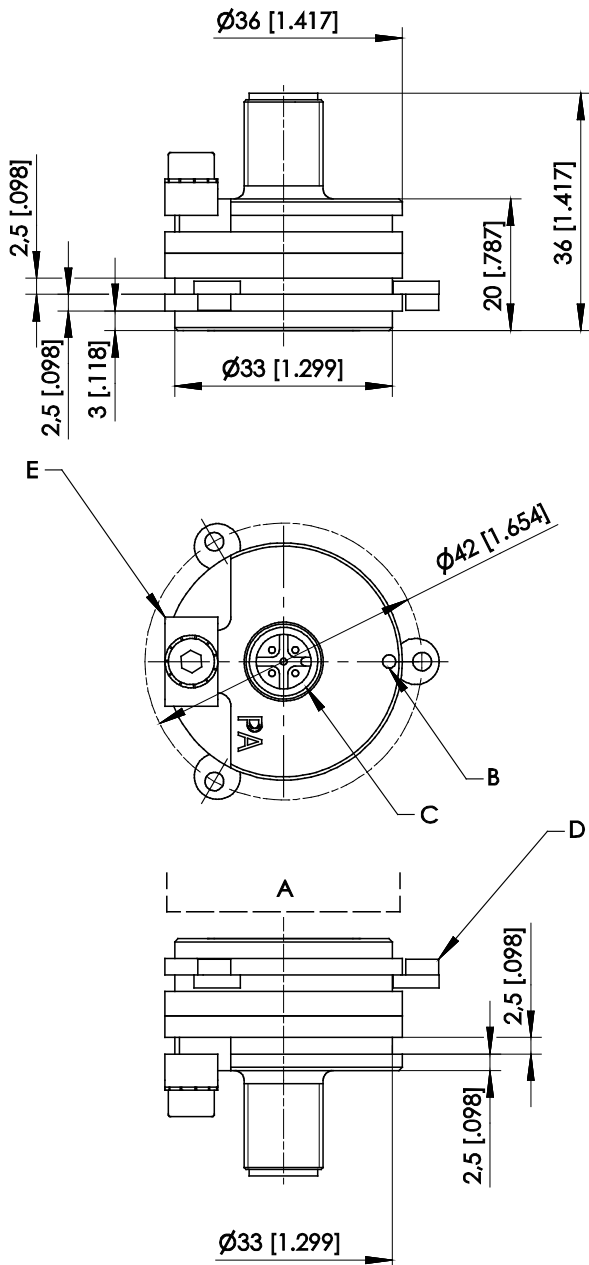
PRAS2EX – **1** – **2** – **3** – **4**

Order example: PRAS2EX – 360 – I1 – CW – M12A5

Accessories:  
Position magnets (see page 8)

## Dimensions

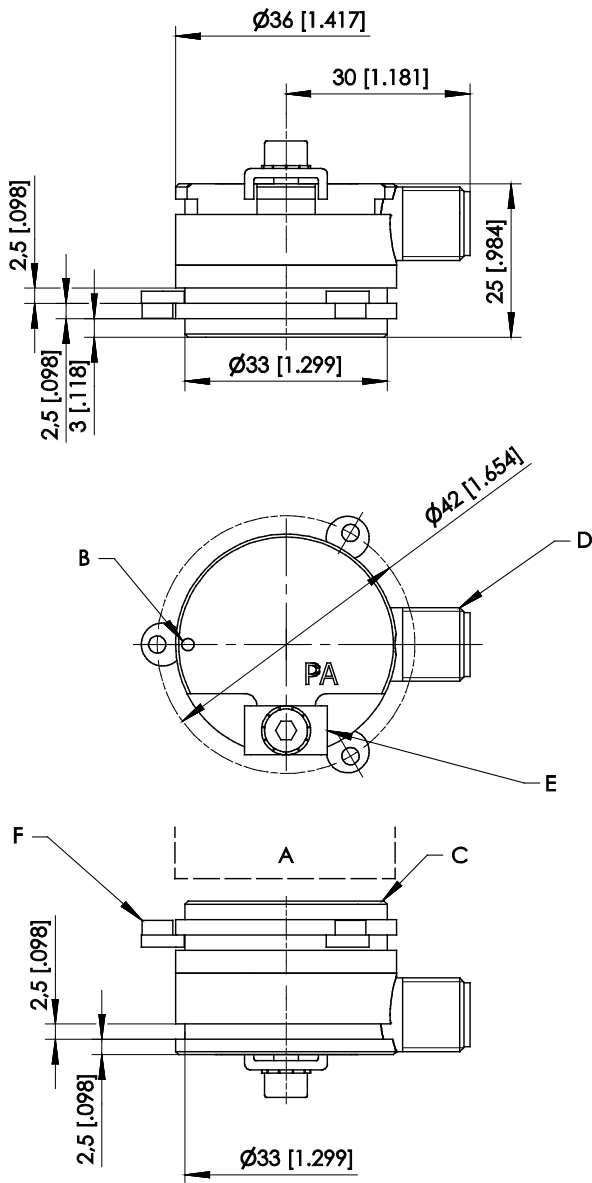
### Connector M12, axial



- A – Position magnet
- B – Marking
- C – Connector M12
- D – Mounting clamps PRPT-BFS1
- E – Earthing

Dimensions in mm [inch]. Weight approx. 180 g.  
Dimensions informative only.  
For guaranteed dimensions consult factory.

Connector M12, radial





- A – Position magnet
- B – Marking
- C – Measuring area
- D – Connector M12
- E – Earthing
- F – Mounting clamps PRPT-BFS1


Dimensions in mm [inch]. Weight approx. 180 g.  
Dimensions informative only.  
For guaranteed dimensions consult factory.

## Output specification

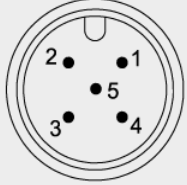
### Analog output

<b>U2</b> Voltage output 0.5 ... 10 V 	Excitation voltage	24 V DC (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)	$\pm 50 \times 10^{-6}$ / °C f.s. (typical for 90° ... 360°) $\pm 100 \times 10^{-6}$ / °C f.s. (typical for <90°)
	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)	$\pm 50 \times 10^{-6}$ / °C f.s. (typical for 90° ... 360°) $\pm 100 \times 10^{-6}$ / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 ... +85 °C
	EMC	DIN EN 61326-1:2013

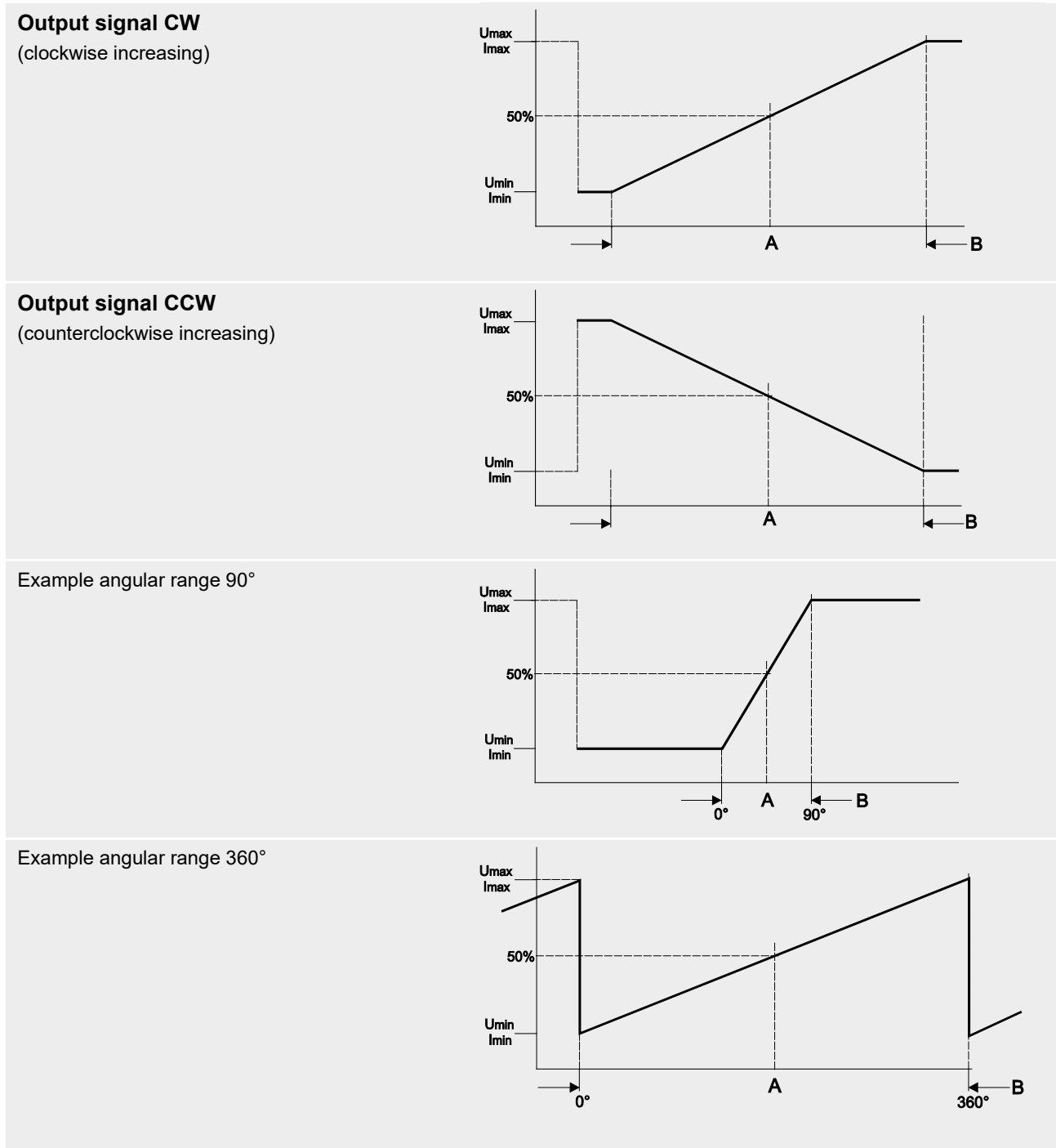
<b>I1</b> Current output 4 ... 20 mA, 3 wires 	Excitation voltage	24 V DC (18 ... 36 V DC)
	Excitation current	typical 30 mA max. 35 mA
	Load R <sub>L</sub>	500 Ω max.
	Output current	4 ... 20 mA
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10 <sup>-6</sup> / °C f.s. (typical for 90° ... 360°) ±100 x 10 <sup>-6</sup> / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 ... +85 °C
	EMC	DIN EN 61326-1:2013

**1 channel M12, 5 pin (connector output)**

Signal wiring	Output signals	Connector pin no.
<b>Connector M12, 5 pin</b>  View to the sensor connector	Excitation +	1
	Signal	2
	GND	3
	Do not connect!	4
	Do not connect!	5

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

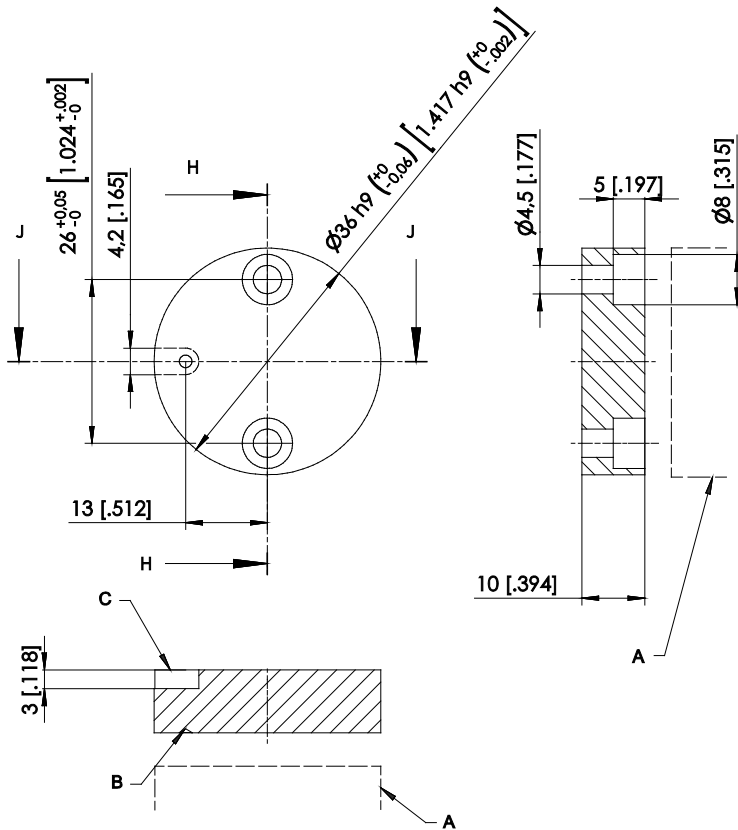
## Characteristics for magnetic angle sensors



A – Marking

B – Measurement range [°]

**Accessories**  
**Position magnets**  
**PRMAG2-VA / PRMAG2-Z-VA**



- A – Sensor
- B – Marking
- C – Notch

Order code	Weight	Material	Moment of inertia
<b>PRMAG2-VA</b>	approx. 67 g	stainless steel EN 1.4404 (AISI 316L)	12 kgmm <sup>2</sup>
<b>PRMAG2-Z-VA</b>	approx. 61 g	stainless steel EN 1.4404 (AISI 316L)	11.5 kgmm <sup>2</sup>

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

Dimensions in mm [inch].

Dimensions informative only.

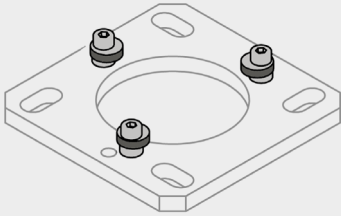
For guaranteed dimensions please consult factory.



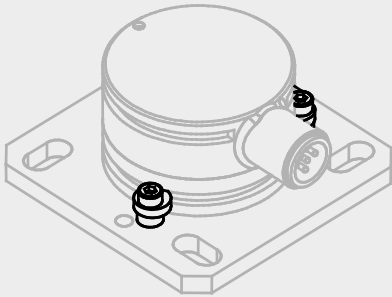
## Mounting plates

### Mounting possibilities PRxS2

#### Mounting possibilities of PRxS2 sensors

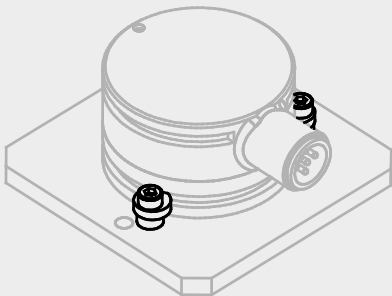


**Mounting clamp BFS1**



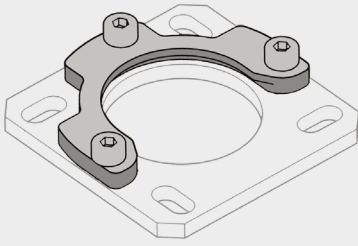
**PRPT-BPL1 + PRPT-BFS1**

(Mounting plates for screw mounting + mounting clamp)

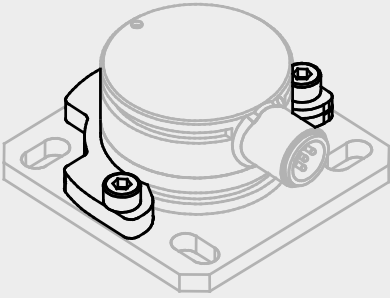


**PRPT-BPL2 + PRPT-BFS1**

(Mounting plates for welding assembly + mounting clamp)

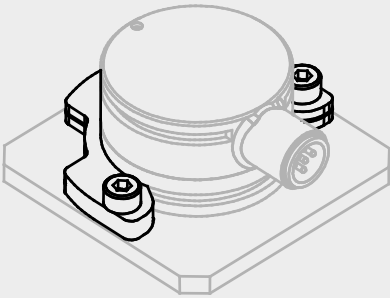


**Mounting clamp BFS2**



**PRPT-BPL1 + PRPT-BFS2**

(Mounting plates for screw mounting + mounting clamp)



**PRPT-BPL2 + PRPT-BFS2**

(Mounting plates for welding assembly + mounting clamp)

**PRPT-BPL1**

(Screw mounting)

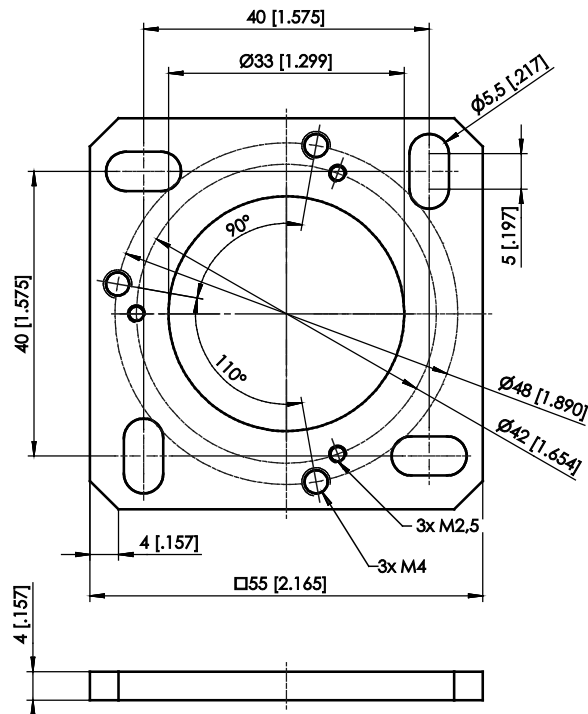
In combination with the mounting clamps PRPT-BFS1 (3 x M2.5) or in combination with the mounting bracket PRPT-BFS2 (3 x M4).

Dimensions in mm [inch].

Weight 30 g approx.

Dimensions informative only.

For guaranteed dimensions please consult factory.



**PRPT-BPL2**

(Welding assembly)

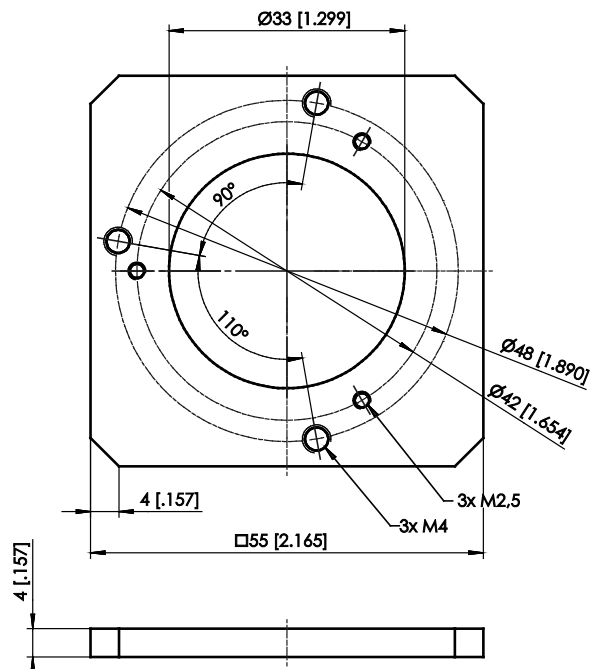
In combination with the mounting clamps PRPT-BFS1 (3 x M2.5) or in combination with the mounting bracket PRPT-BFS2 (3 x M4).

Dimensions in mm [inch].

Weight 30 g approx.

Dimensions informative only.

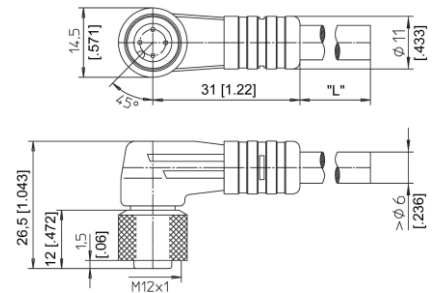
For guaranteed dimensions please consult factory.



### Connector cable M12, 4 pin (angular coupling)

shielded connector  
Suitable for 5-pin  
sensor connectors

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 m, 5 m and 10 m.  
Wire: cross sectional area 0.34 mm<sup>2</sup>  
Cable diameter: 5.6 ±0.2 mm



**Order code**

**KAB - xM - M12/4F/W - LITZE**

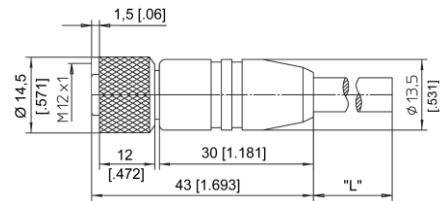
IP69: **KAB - xM - M12/4F/W/69K - LITZE**

xM = length in m

### Connector cable M12, 4 pin (straight coupling)

shielded connector  
Suitable for 5-pin  
sensor connectors

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 m, 5 m and 10 m.  
Wire: cross sectional area 0.34 mm<sup>2</sup>  
Cable diameter: 5.6 ±0.2 mm



**Order code**

**KAB - xM - M12/4F/G - LITZE**

IP69: **KAB - xM - M12/4F/G/69K - LITZE**

xM = length in m

Signal wiring M12, 4 pin	Plug connection / cable color			
	1	2	3	4
	brown	white	blue	black

#### Applicable for cable carriers

Maximum movement speed	3 m/s
Maximum acceleration	5 m/s <sup>2</sup>
Minimum bending radius	10 x cable diameter