

 PRDS1

Angle sensor for standard industrial applications



- Measurement range 0°... 360°
- Protection class IP67/IP69
- Stainless steel round housing
- Diameter 12 mm
- Contactless with external position magnet, wear-free

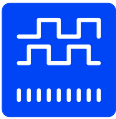
Product versions



Incremental output



Digital output SSI



PRDS1 - Magnetic Angle Sensor
Version with incremental output

Specifications

		Order options
Measurement range	0 ... 360°	
Resolution	1, 2, 3 ... 1024 pulses per revolution	1 1, 2, 3 ... 1024
Linearity	±1% (typical)	
Output	Incremental encoder output RS422 compatible output with excitation 5 V DC Incremental encoder output RS422 compatible output with excitation 8 ... 36 V DC Incremental encoder output HTL compatible output with excitation 8 ... 36 V DC DC	2 RS5VF RS24VF HT24VF
Rated distance sensor / magnet	Depending on the position magnet	
Connection	8-pin connector M12	3 M12A8 Litze5
Housing material	Stainless steel	
Mounting	M12 x 1	
Protection class	IP67/IP69	
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	-40 ... +85°C	
Weight	35 g approx.	
EMC	DIN EN 61326-1:2013	

Order code

PRDS1	-	1	-	2	-	3
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Order example: PRDS1 – 1024 – RSV5F – M12A8

Accessories:

Connector cable (see page 13)

Position magnets (see from page 5)



PRDS1 - Magnetic Angle Sensor
Version with digital output SSI

Specifications

		Order options
Measurement range	0 ... 360°	
Output	Synchronous serial output with excitation 5 V DC Synchronous serial output with excitation 10 ... 36 V	1 RSSI5V RSSI24V
Code characteristics	Signal increasing CW, clockwise Signal increasing CCW, counterclockwise	2 CW CCW
Resolution	12 Bit (4096 steps) per revolution	
Linearity	±1% (typical)	
Rated distance sensor / magnet	Depending on the position magnet	
Connection	8-pin connector M12	3 M12A8
Housing material	Stainless steel	
Mounting	M12 x 1	
Protection class	IP67/IP69	
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	-40 ... +85°C	
Weight	35 g approx.	
EMC	DIN EN 61326-1:2013	

Order code

PRDS1	-	1	-	2	-	3
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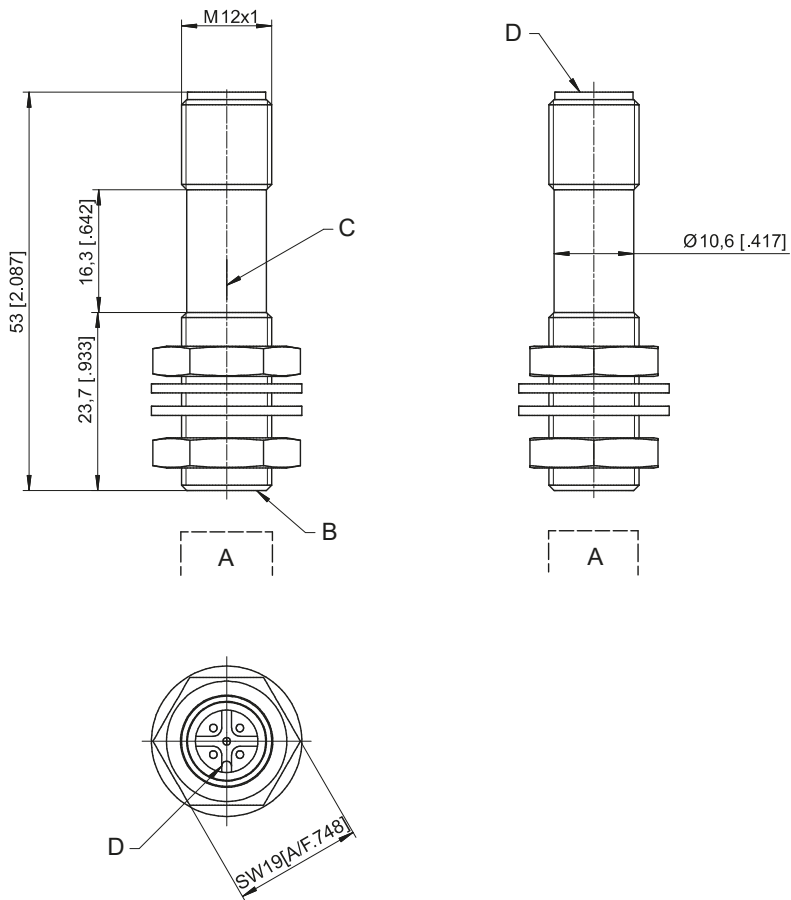
Order example: PRDS1 – RSSI5V – CW – M12A8

Accessories:

Connector cable (see page 13)

Position magnets (see from page 5)

Dimensions

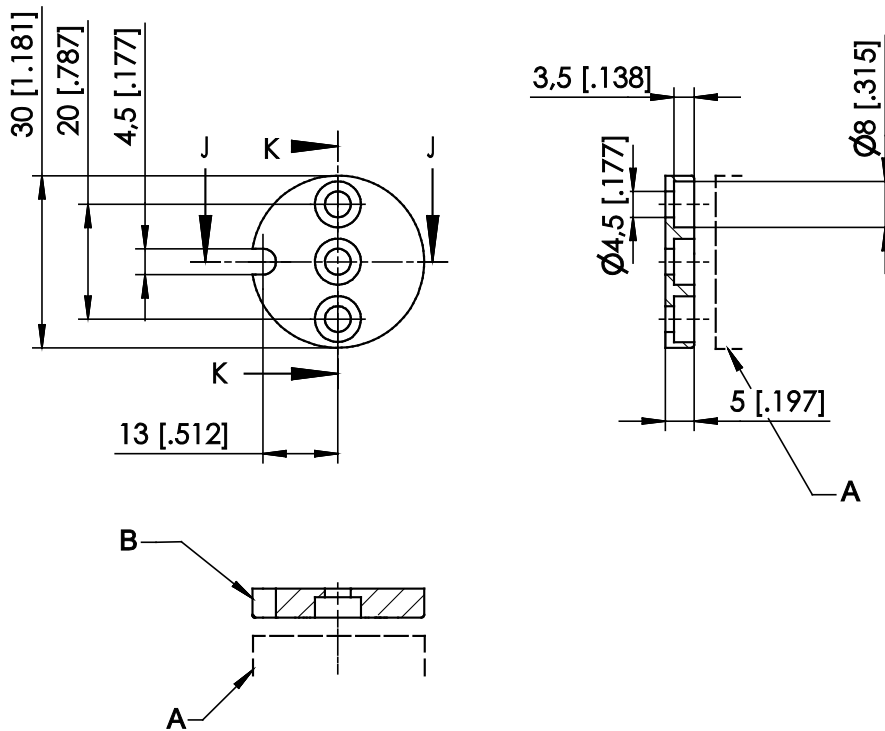


- A – Position magnet
- B – Measuring area
- C – Marking
- D – Connector M12

Dimensions in mm [inch]. Weight approx. 35 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

Position magnets

PRMAG20



A – Sensor
B – Marking

Order code	Weight	Material	Moment of inertia
PRMAG20	approx. 12 g	zinc coated steel, plastic	1.3 kgmm ²

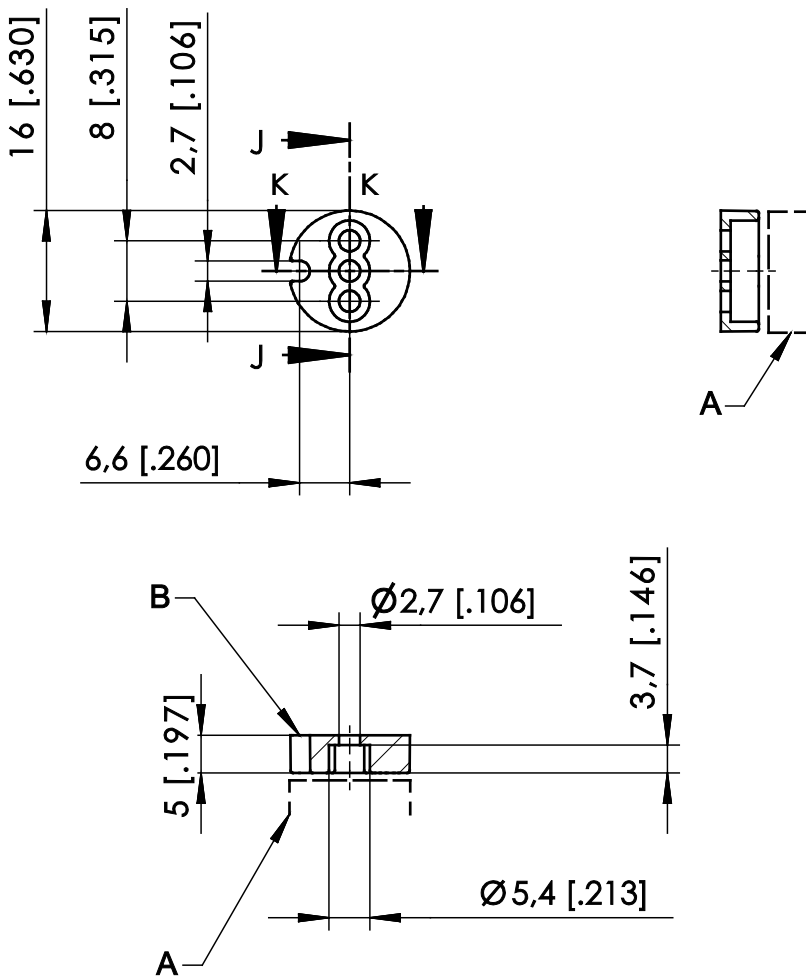
A misalignment of the position magnet has an effect on the linearity.

Dimensions in mm [inch].

Dimensions informative only.

For guaranteed dimensions please consult factory.

PRMAG21



A – Sensor
B – Marking

Order code	Weight	Material	Moment of inertia
PRMAG21	approx. 3 g	zinc coated steel; plastic	0.1 kgmm ²

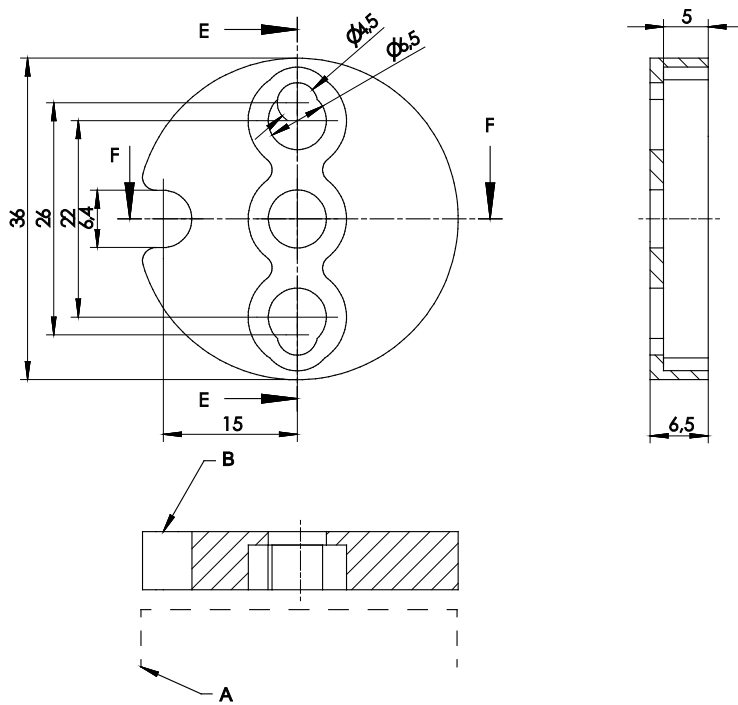
A misalignment of the position magnet has an effect on the linearity.

Dimensions in mm [inch]

Dimensions informative only.

For guaranteed dimensions please consult factory.

PRMAG22



A – Sensor
B – Marking

Order code	Weight	Material	Moment of inertia
PRMAG22	approx. 19 g	zinc coated steel, plastic	3 kgmm ²

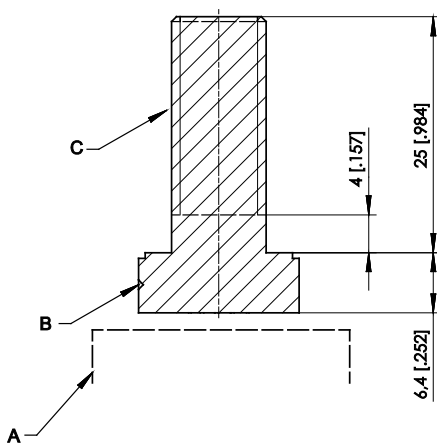
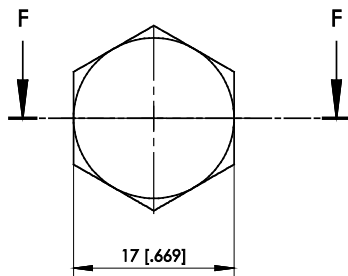
A misalignment of the position magnet has an effect on the linearity.

Dimensions in mm [inch].

Dimensions informative only

For guaranteed dimensions please consult factory.

PRMAG-M10



- A – Sensor
- B – Marking
- C – Thread M10

Order code	Weight	Material	Moment of inertia
PRMAG-M10	approx. 30 g	stainless steel A2	1.3 kgmm ²

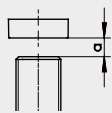
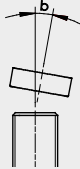
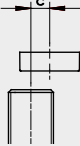
A misalignment of the position magnet has an effect on the linearity.

Dimensions in mm [inch].

Dimensions informative only.

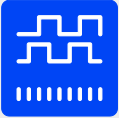
For guaranteed dimensions please consult factory.

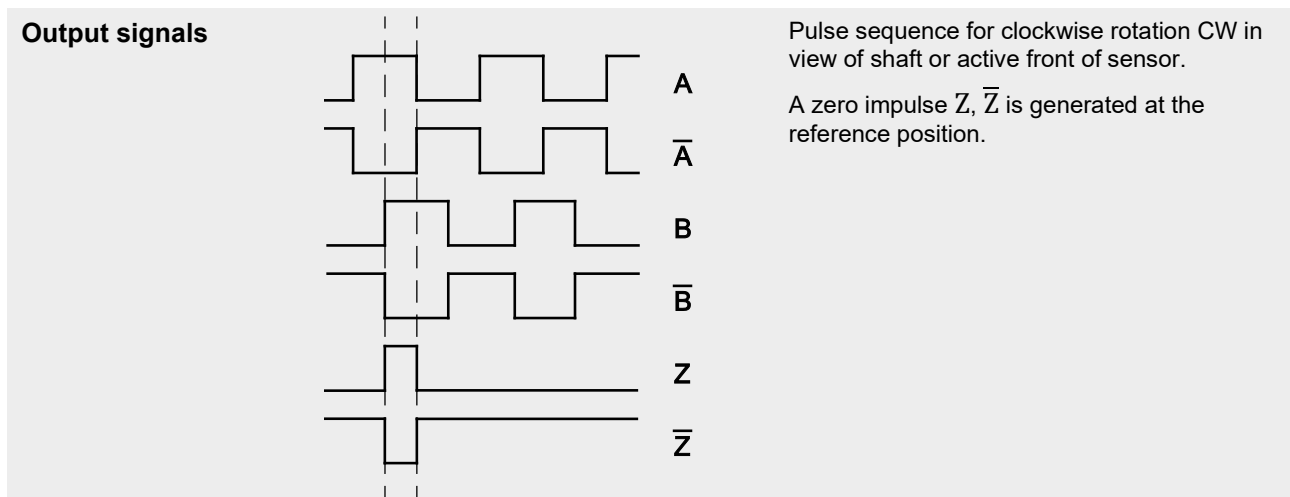
Measuring error by misalignment of the position magnet

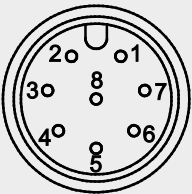
					Air gap (a) Parallelism (b) Axial misalignment (c)					
Sensor	Position magnet	Air gap [mm]	Parallelism [°]	Error by axial misalignment [°]						
				0.2 mm	0.5 mm	1 mm	2 mm	3 mm	4 mm	
PRAS1 PRDS1	PRMAG20	0 ... 6.5	0 ... 5	0.15	0.4	0.8	2.2	5.0	–	
	PRMAG21	0 ... 4	0 ... 5	0.2	0.4	1	3.8	10	–	
	PRMAG22	0 ... 9.5	0 ... 5	0.1	0.4	1	2.2	4.5	8	
	PRMAG-M10	0 ... 5	0 ... 5	0.1	0.1	0.5	2.0	7	–	


Output specification

Incremental output

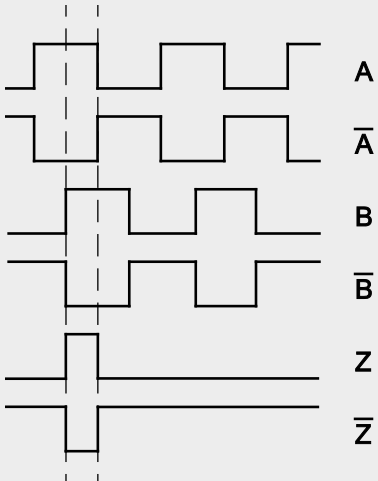
RS5VF /RS24VF Incremental 	Interface	EIA RS-422
	Excitation voltage	RS5VF: 5 V DC \pm 10 % RS24VF: 8 ... 36 V DC
	Excitation current	100 mA max., depending on the load
	Max. pulse frequency	500 kHz
	Output signals	A, \bar{A} , B, \bar{B} , Z, \bar{Z} Push-Pull
	Output current	10 mA max.
	Stability (temperature)	\pm 50 x 10 ⁻⁶ / °C f.s. (typical)
	Operating temperature	-40 ... +85 °C
	Protection	Short circuit
	EMC	DIN EN 61326-1:2013




Signal wiring	Output signals	Connector pin no.	Cable color
Connector M12, 8 pin  <p>View to the sensor connector</p>	Excitation +	1	white
	Excitation GND	2	brown
	A	4	yellow
	\bar{A}	6	pink
	B	3	green
	\bar{B}	5	grey
	Z	7	blue
	\bar{Z}	8	red

HT24VF Incremental 	Interface	HTL
	Excitation voltage	8 ... 36 V DC
	Excitation current	100 mA max., depending on the load
	Max. pulse frequency	500 kHz
	Output signals	A, \bar{A} , B, \bar{B} , Z, \bar{Z} Push-Pull
	Output current	10 mA max.
	Stability (temperature)	$\pm 50 \times 10^{-6}$ / °C f.s. (typical)
	Operating temperature	-40 ... +85 °C
	Protection	Short circuit
	EMC	DIN EN 61326-1:2013


Output signals



Pulse sequence for clockwise rotation CW in view of shaft or active front of sensor.
A zero impulse Z, \bar{Z} is generated at the reference position.

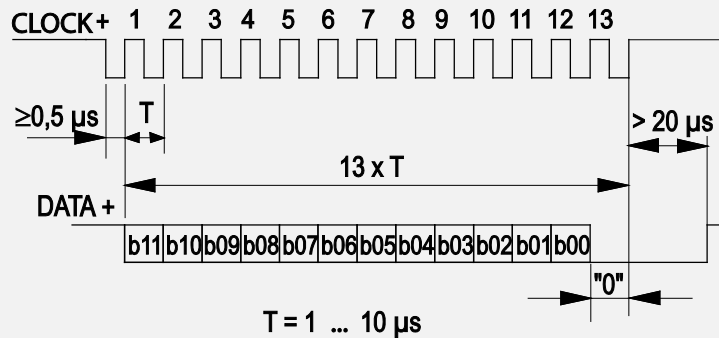
Signal wiring	Output signals	Connector pin no.	Cable color
Connector M12, 8 pin  View to the sensor connector	Excitation +	1	white
	Excitation GND	2	brown
	A	4	yellow
	\bar{A}	6	pink
	B	3	green
	\bar{B}	5	grey
	Z	7	blue
	\bar{Z}	8	red

SSI output

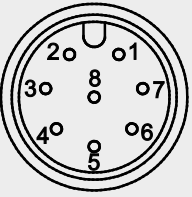
RSSI5V/RSSI24V Synchronous serial SSI 	Interface	EIA RS-422
	Excitation voltage	RSSI5V: 5 V DC ±10% RSSI24V: 10 ... 36 V DC
	Excitation current	100 mA max. without load
	Clock frequency	100 kHz ... 500 kHz
	Code	Gray-Code, continuous progression, 12 bit
	Delay between pulse trains	20 µs min.
	Stability (temperature)	±50 x 10 ⁻⁶ / °C f.s. (typical)
	Operating temperature	Refer to sensor specifications
	Protection	Short circuit
	EMC	EN 61326-1:2013

Data format

(Train of 13 pulses)



Transmission rate	Cable length	Baud rate	Note:
	50 m	100 - 1000 kHz	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 in pairs, the pairs also commonly shielded.
	100 m	100 - 300 kHz	

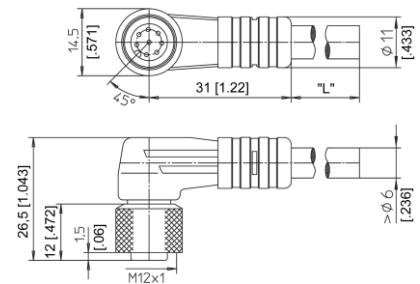
Signal wiring	Output signals	Connector pin no.	Cable color
Connector M12, 8 pin  View to the sensor connector	Excitation +	1	white
	Excitation GND	2	brown
	CLOCK	3	green
	CLOCK	4	yellow
	DATA	5	grey
	DATA	6	pink
	-	7	blue
	-	8	red

Accessories

Connector cable M12, 8 pin (angular coupling)

shielded connector

The 8-lead shielded 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 m, 5 m and 10 m.
Wire: cross sectional area 0.25 mm²
Cable diameter: 6.3 ±0.2 mm



Order code

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

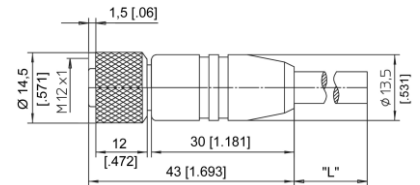
IP69: **KAB - xM - M12/8F/W/69K - LITZE**

xM = length in m

Connector cable M12, 8 pin (straight coupling)

shielded connector

The 8-lead shielded cable is supplied with a mating 8-pin M12 connector at one end and 8 wires at the other end. Available lengths are 2 m, 5 m and 10 m.
Wire: cross sectional area 0.25 mm²
Cable diameter: 6.3 ±0.2 mm



Order code

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

IP69: **KAB - xM - M12/8F/G/69K - LITZE**

xM = length in m

Signal wiring M12, 8 pin	Plug connection / cable color							
	1	2	3	4	5	6	7	8
	white	brown	green	yellow	grey	pink	blue	red

Applicable for cable carriers

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