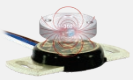
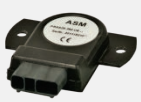
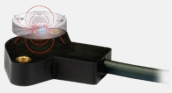
ASM®

perfect in sensors.

POSIROT®

Magnetic Angle Sensors and Encoders

Product catalog

Selection guide								
Pages	11 - 13	14 - 17	18 - 21	22 - 25	26 - 29	30 - 33	34 - 35	36 - 40
	PRAS20	**PRAS20R**	**PRAS21**	**PRAS26**	**PRAS27**	**PRDS27**	**PRAS1**	**PRDS1**
	A	A	A	A	A	D	A	D
Measurement range								
0° … 360°	•	•	•	•	•	•	•	•
Analog output, absolute								
Voltage 0.5 … 10 V	•			•	•		•	
Voltage 0.5 … 4.5 V	•	•	•	•	•		•	
Current 4 … 20 mA	•			•	•		•	
Redundant version		•			•			
Digital output, absolute								
SSI – RSSI5V, RSSI24V								•
CANopen						•		
CAN SAE J1939						•		
Redundant version CAN						•		
Digital output, incremental								
RS5V, RS24V								•
RS5VF, RS24VF								
HT24V								•
HT24VF								
Standard linearity								
	±0.5%		±0.5%	±0.5%	±0.5%	±1°	±0.3%	±1°
Protection class								
Standard	IP60		IP60	IP60	IP67		IP67	
Optional							IP67/IP69*	

A = Analog output D = Digital output

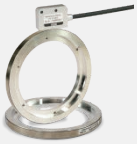
* = with a suitable connector IP67/IP69

Dust-EX-proof Angle Sensors			
Pages	54 - 57	70 - 73	93 - 98
	PRAS2EX	**PRAS3EX**	**PRAS5EX**
	A	A	A
Measurement range			
0° … 360°	•	•	•
Analog output, absolute			
Voltage 0.5 … 10 V	•	•	•
Voltage 0.5 … 4.5 V	•	•	•
Current 4 … 20 mA	•	•	•
Redundant version			
Standard linearity			
	±0.3%	±0.3%	±0.3%
Protection class			
Standard	IP65	IP65	IP65
Dust-EX-proof	Ex	Ex	Ex

											**Selection guide**
41 - 44	45 - 53	58 - 61	62 - 69	74 - 76	77 - 80	81 - 92	99 - 102	103 - 111	112 - 115	116 - 123	Pages
PRAS2	**PRDS2**	**PRAS3**	**PRDS3**	**PRAS4**	**PRAS5**	**PRDS5**	**PRAS6**	**PRDS6**	**PRAS7**	**PRDS7**	
A	D	A	D	A	A	D	A	D	A	D	
											Measurement range
•		•		•	•		•		•		0° … 360°
											Analog output, absolute
•		•		•	•		•		•		Voltage 0.5 … 10 V
•		•		•	•		•		•		Voltage 0.5 … 4.5 V
•		•		•	•		•		•		Current 4 … 20 mA
•		•			•		•		•		Redundant version
											Digital output, absolute
	•		•			•		•		•	SSI – RSSI5V, RSSI24V
	•		•			•		•		•	CANopen
	•		•			•		•		•	CAN SAE J1939
	•		•			•		•		•	Redundant version CAN
											Digital output, incremental
	•		•			•		•		•	RS5V, RS24V
	•		•			•		•		•	RS5VF, RS24VF
	•		•			•		•		•	HT24V
	•		•			•		•		•	HT24VF
											Standard linearity
±0.3%	±1°	±0.3%	±1°	±0.3%	±0.3%	±1°	±0.3%	±1°	±0.3%	±1°	
											Protection class
IP67		IP67		IP68	IP67/IP69*		IP67/IP69*		IP67/IP69*		Standard
IP67/IP69*		IP67/IP69*			IP68/IP69*						Optional

A = Analog output D = Digital output

* = with a suitable connector IP67/IP69

		**Magnetic Incremental Encoders**
164 - 172	173 - 182	Pages
PMIS4/PMIR5	**PMIS4/PMIR7(N)**	**Measurement range**
•	•	0° … 360°
		Digital output, incremental
•	•	HTL
•	•	TTL
•	•	TTL24V
		Standard linearity
±0.1°	±0.1°	
		Protection class
IP67	IP67	

Company Profile

ASM - Sensors for Displacement. Angle. Inclination.
With more than 35 years of company tradition ASM is your expert partner for mechatronic displacement, angle and inclination sensors. ASM global headquarters in Moosinning, Germany, represent the heart of the company and are the center for sensor research, development and manufacturing. With a global sales network of more than 30 distributors and company subsidiaries ASM ensures worldwide accessibility to its customers.

The ASM product program includes various sensor technologies and comprises seven product lines offering a broad range of innovative solutions to measure linear displacement, angle and inclination.

Product range

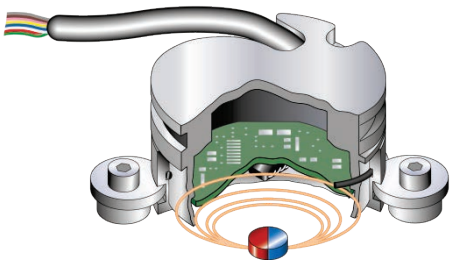
POSIWIRE® Cable Extension Position Sensors
POSITAPE® Tape Extension Position Sensors
POSICHRON® Magnetostrictive Position Sensors
POSIMAG® Magnetic Scale Position Sensors
POSIROT® Magnetic Angle Sensors
POSIHALL® Magnetic Multiturn Angle Sensors
POSITILT® Inclination Sensors

Quality and reliability

ASM high-quality products are subjected to a stringent quality management certified according to DIN EN ISO 9001:2008. Your application specific requests are evaluated by ASM product specialists in a comprehensive technical consultation to find out which solution best meets your requirements – this can be a standard or a customer specific technology solution.

Advantages at a Glance

The absolute POSIROT® angular displacement sensors measure angular displacement and position of rotating objects using a magnetic measuring principle. Because the magnetic encoder technology is entirely contactless and solid state, POSIROT®-sensors are resistant to shock, vibration and dirt, which makes them ideally suited for harsh outdoor applications, where they far outperform traditional optical encoders. Multiple designs are available, from flat, low profile housing to M12 stainless-steel housing to allow for easy and flexible integration on demanding applications



Technical Advantages

- Measuring range: 0° to 360°
- Magnetic measuring technology
- Contactless or with shaft
- Superb resistance to shock, vibration and dirt
- Protection class up to IP69
- Common analog and digital output signals for easy integration.
- Absolute, analog, incremental and linear measuring

POSIROT®: The functional principle:

Magnetic Absolut

In contrast to optical encoders, POSIROT® sensors utilize a ferromagnetic scale that modulates a magnetic field, which is analized and processedby Multihall technology.

Magnetic Incremental

POSIROT® PMIS-Series

In contrast to optical encoders, the incremental encoders of the POSIROT® PMIS series consist of a magnetoresistive read head and a magnetic ring as a magnetic scale.

POSIROT® PRDS-Series

The PRDS series uses a permanent magnet as position generator that modulates a magnetic field, which is analized and processed by Multihall technology.

Applications

POSIROT® angular displacement sensors are specifically designed for the precise measurement of angular positions in harsh environments commonly found in the field of mobile working machines, e.g. cranes, excavators, ships, and wind power plants. POSIROT® angle sensors with protection class IP60 are suited for demanding indoor applications such as large-scale medical equipment.

Mobile Working Machines

Mobile machines in applications such as agricultural and harvesting machines, communal vehicles or construction machinery require extremely rugged sensor solutions. POSIROT® angle sensors function trouble-free even under difficult operating conditions, such as dirt, temperature, shock or vibration. The Heavy Duty sensors are wear- and maintenance-free and are engineered for a long service-life.

Safety Applications

Safety critical applications, such as mobile cranes, require double protection against potential sensor failures. POSIROT® angle sensors with redundant electronics ensure correct angle measurement even if an electronic component fails.

Outdoor- and Hygienic Applications

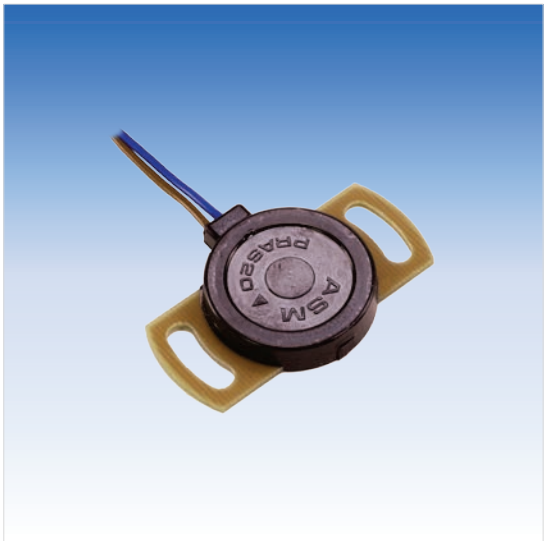
POSIROT® angle sensors are equipped with completely encapsulated electronics, so that they are able to withstand all kinds of weather conditions. With these properties they are perfectly suited for outdoor use and for hygienic applications with intensive cleaning processes such as food packaging machines.

Large-Scale Medical Devices

The high-performance POSIROT® sensor line offers tailored solutions for absolute and incremental measurement tasks for large-scale medical equipment, such as surgical tables or computer tomographs. The sensors are characterized by highest precision and reliability even under severe conditions. The sensor integral shielding protects reliably against external magnetic fields.

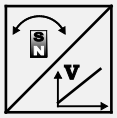
PRAS20

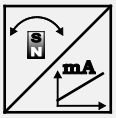
Analog output



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP60**
- **Analog output**
- **Compact, low profile housing**
- **Non-contact with external position magnet, no wear**
- **Housing: Epoxy glass fibre, thermoplastic**





Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V, ratiometric 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	±0.5% f.s. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP60
Housing material	Epoxy glass fibre, thermoplastic
Mounting	Screws M4
Connection	Single wire ETFE 3 x 0.5 mm^2
Temperature range	-40 ... +85°C
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
Weight	8 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS20	–	1	–	2	–	3	–	4

1 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

2 Output

U2B	= Voltage 0.5 ... 10 V (excitation voltage 11.5 ... 27 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
I1B	= Current 4 ... 20 mA, 3 wire (excitation voltage 10 ... 27 V DC)

3 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

4 Connection

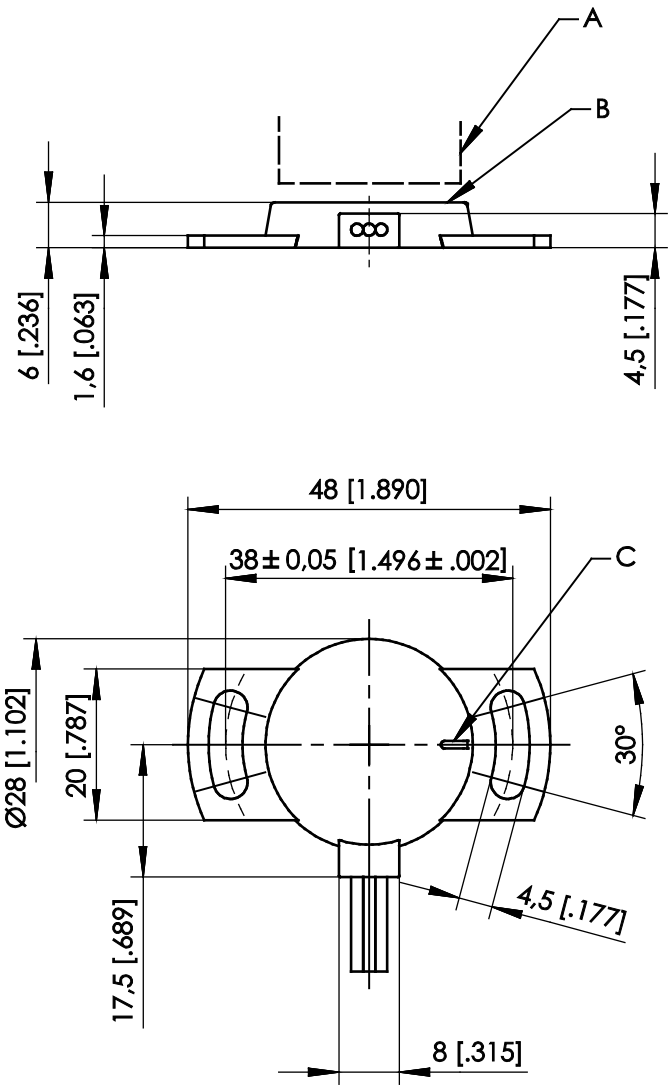
A300	= Single wire ETFE 3 x 0.5 mm^2, length 300 mm

Order example

PRAS20 – 360 – U6 – CW – A300

Accessories:
Position magnets (see from page 122)
Magnetic shield (see page 15)

Dimensions



A – Position magnet
B – Measuring area
C – Marking

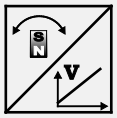
Dimensions in mm [inch]. Weight without cable approx. 8 g.
Dimensions for information only.
For guaranteed dimensions consult factory.

PRAS20R

Analog output, redundant

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP60**
- **Analog output, redundant**
- **Compact, low profile housing**
- **Non-contact with external position magnet, no wear**
- **Redundant second channel**



Specifications

Output	Voltage 0.5 ... 4.5 V, ratiometric
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	±0.5% f.s. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP60
Housing material	Epoxy glass fibre, thermoplastic
Mounting	Screws M4
Connection	Single wire ETFE 6 x 0.5 mm^2
Temperature range	-40 ... +85°C
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
Weight	8 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS20R – **1** – **2** – **3** – **4**

1 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

2 Output

U6 = Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)

3 Signal characteristics

CW/CCW = Signal 1 increasing clockwise, signal 2 increasing counterclockwise
CW/CW = Signal 1 and signal 2 increasing clockwise
CCW/CCW = Signal 1 and signal 2 increasing counterclockwise

4 Connection

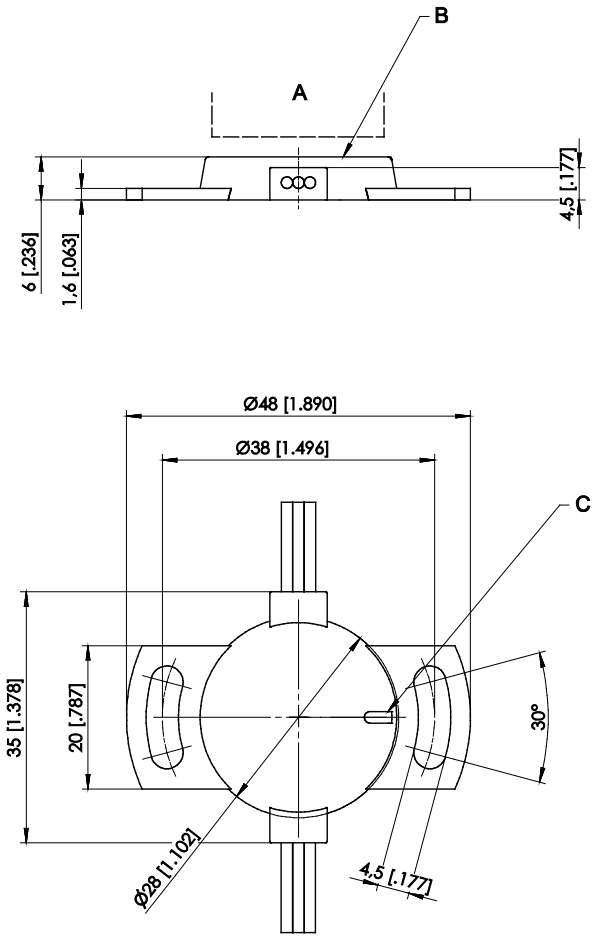
A300 = Single wire ETFE 6 x 0.5 mm^2, length 300 mm

Order example

PRAS20R – 360 – U6 – CW/CCW – A300

Accessories:
Position magnets (see from page 122)
Magnetic shield (see page 15)

Dimensions



A – Position magnet
B – Measuring area
C – Marking

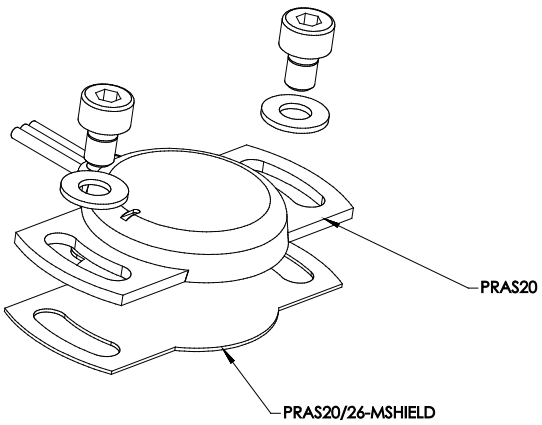
Dimensions in mm [inch]. Weight without cable approx. 8 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

PRAS20 / PRAS20R Magnetic shield

An optional shield plate is available for the angle sensors PRAS20 and PRAS20R. It can reduce the effect of residual magnetizing in case the sensor has to be mounted on a ferromagnetic material.

Order code magnetic shield:

PRAS20/26-MSHIELD

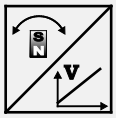


PRAS21

Analog output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP60**
- **Analog output**
- **Compact, low profile housing**
- **Non-contact with external position magnet, no wear**
- **Housing: Epoxy glass fibre, thermoplastic**



Specifications

Output	Voltage 0.5 ... 4.5 V, ratiometric
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	±0.5% f.s. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP60
Housing material	Epoxy glass fibre, thermoplastic
Mounting	Screws M3
Connection	Single wire ETFE 3 x 0.5 mm^2
Temperature range	-40 ... +85°C
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
Weight	5 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS21	–	1	–	2	–	3	–	4

1 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

2 Output

U6 = Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)

3 Signal characteristics

CW = Signal increasing CW, clockwise
CCW = Signal increasing CCW, counterclockwise

4 Connection

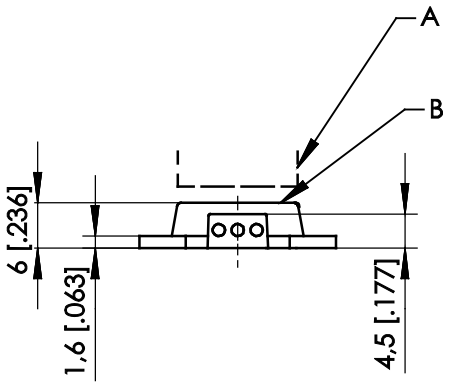
A300 = Single wire ETFE 3 x 0.5 mm^2. length 300 mm

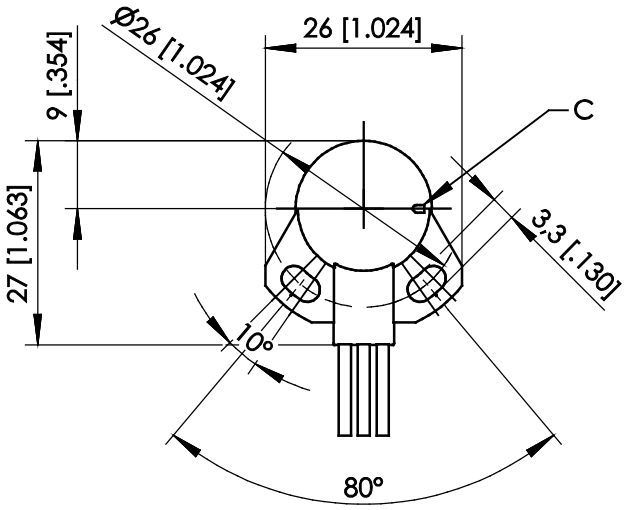
Order example

PRAS21 – 360 – U6 – CW – A300

Accessories:
Position magnets (see from page 122)
Magnetic shield (see page 19)

Dimensions





A – Position magnet
B – Measuring area
C – Marking

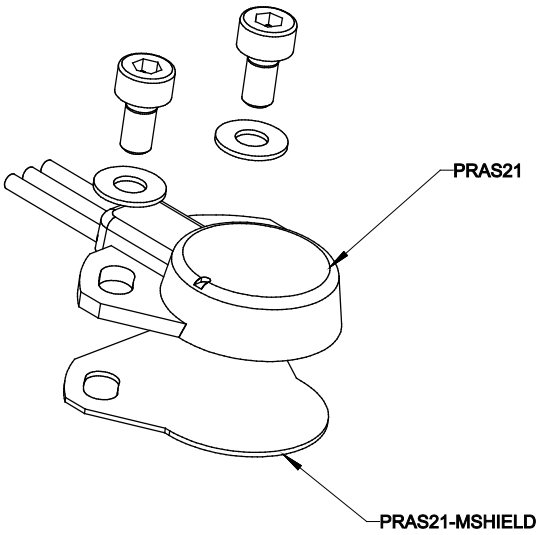
Dimensions in mm [inch]. Weight without cable approx. 5 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

PRAS21 Magnetic Shield

An optional shield plate is available for the angle sensor PRAS21. It can reduce the effect of residual magnetizing in case the sensor has to be mounted on a ferromagnetic material.

Order code magnetic shield:

PRAS21-MSHIELD

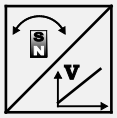


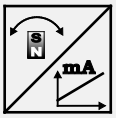
PRAS26

Analog output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP60**
- **Analog output**
- **Compact, low profile housing**
- **Non-contact with external position magnet, no wear**
- **Housing: Epoxy glass fibre, thermoplastic**





Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V, ratiometric 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	±0.5% f.s. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP60
Housing material	Epoxy glass fibre, thermoplastic
Mounting	Screws M4
Connection	3-pin connector, Tyco Electronics, type "SlimSeal"
Temperature range	-40 ... +85°C
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
Weight	8 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS26	–	1	–	2	–	3	–	4

1 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

2 Output

U2B	= Voltage 0.5 ... 10 V (excitation voltage 11.5 ... 27 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
I1B	= Current 4 ... 20 mA, 3 wire (excitation voltage 10 ... 27 V DC)

3 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

4 Connection

TE3	= 3-pin connector, Tyco Electronics, type "SlimSeal"

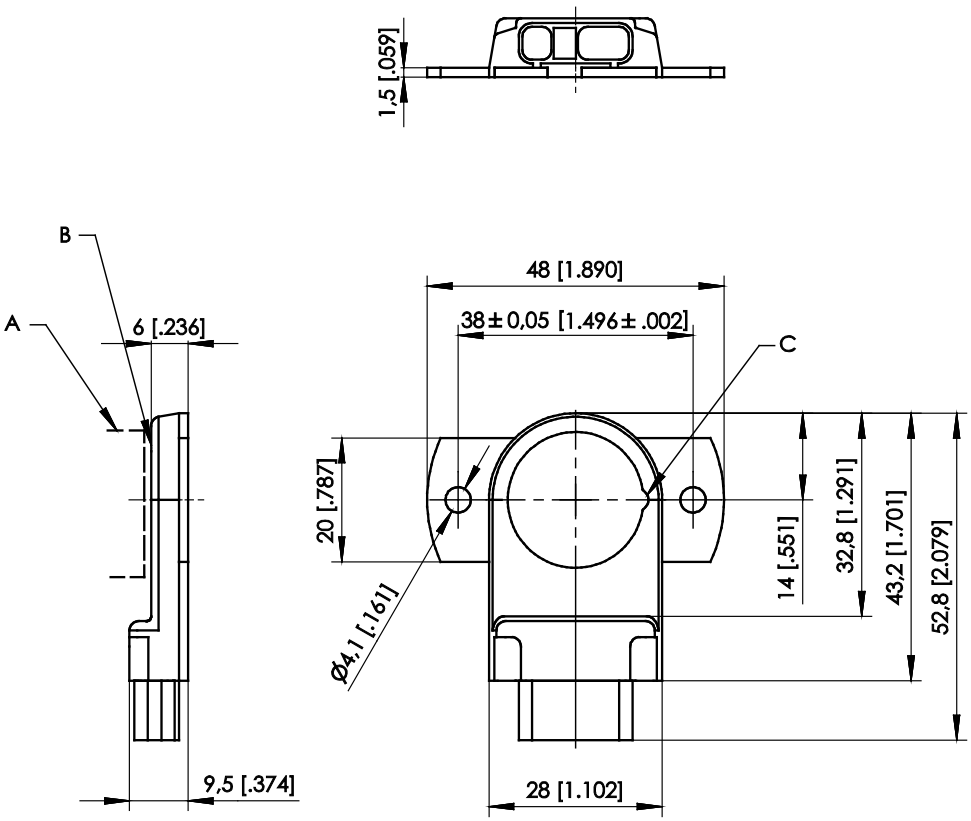
Order example

PRAS26 – 360 – U6 – CW – TE3

Accessories:

Connector cables (see page 160)
Position magnets (see from page 122)
Magnetic shield (see page 23)

Dimensions



A – Position magnet
B – Measuring area
C – Marking

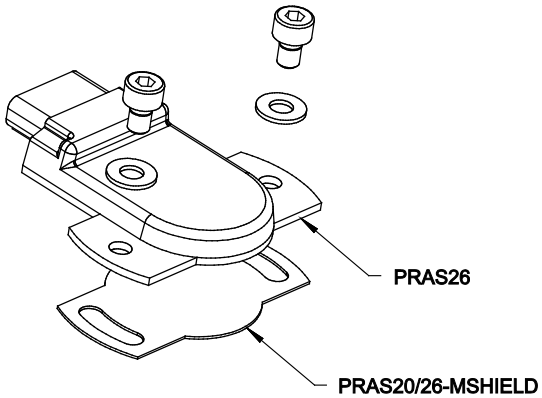
Dimensions in mm [inch]. Weight without cable approx. 8 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

PRAS26 Magnetic shield

An optional shield plate is available for the angle sensor PRAS26. It can reduce the effect of residual magnetizing in case the sensor has to be mounted on a ferromagnetic material.

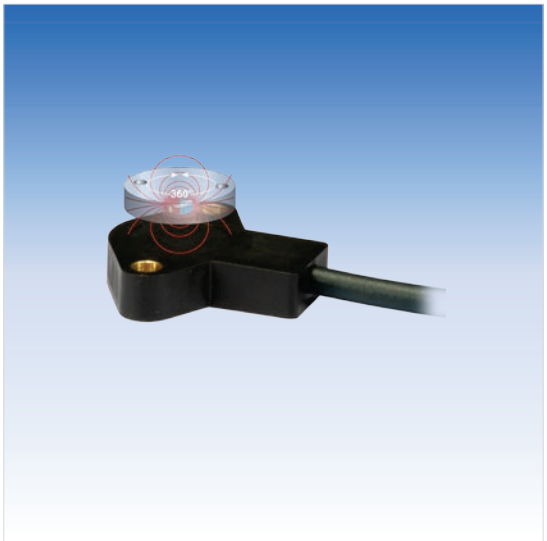
Order code magnetic shield:

PRAS20/26-MSHIELD



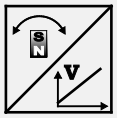
PRAS27

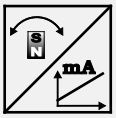
Analog output



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67**
- **Analog output**
- **Compact, low profile housing**
- **Non-contact with external position magnet, no wear**
- **Housing: Plastic**





Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V 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	±0.5% f.s. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67
Housing material	Plastic
Mounting	Screws M4: DIN 912, DIN 6912, DIN 7984
Connection	Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	20 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS27 – **1** – **2** – **3** – **4**

1 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

2 Output

U2	= Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U2B	= Voltage 0.5 ... 10 V (excitation voltage 11.5 ... 27 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
U8	= Voltage 0.5 ... 4.5 V (excitation voltage 11 ... 36 V DC)
I1	= Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)
I1B	= Current 4 ... 20 mA, 3 wire (excitation voltage 10 ... 27 V DC)

3 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

4 Connection

KAB2M	= Cable, standard length 2 m
KAB2M-DT04/3P/A*	= Cable 2 m with Deutsch connector DT04, 3 pin
KAB2M-DT04/3P/A-S*	= Cable 2 m with Deutsch connector DT04, 3 pin, with protective tube
KAB2M-DT04/4P/A	= Cable 2 m with Deutsch connector DT04, 4 pin
KAB2M-DT04/4P/A-S	= Cable 2 m with Deutsch connector DT04, 4 pin, with protective tube

* only for output U6

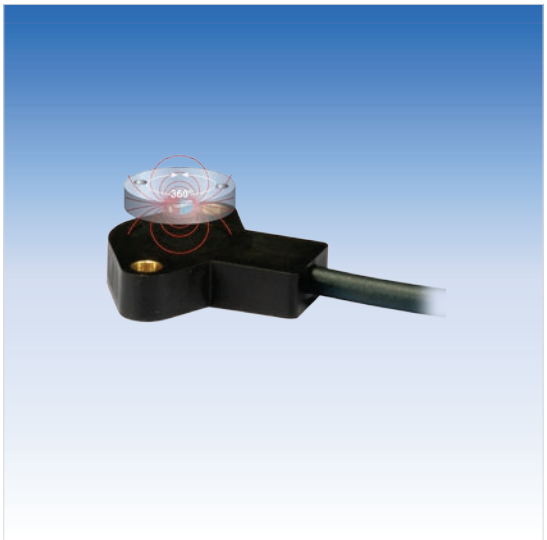
Order example

PRAS27 – 360 – U6 – CW – KAB2M

Accessories:

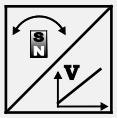
Position magnets (see from page 122)
Magnetic shield (see page 31)

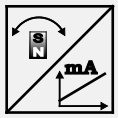
Analog output, redundant



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67**
- **Analog output, redundant**
- **Compact, low profile housing**
- **Non-contact with external position magnet, no wear**
- **Housing: Plastic**





Specifications

Output	Voltage 0.5 ... 10 V, redundant Voltage 0.5 ... 4.5 V, redundant Current 4 ... 20 mA, 3 wire, redundant
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	±0.5% f.s. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67
Housing material	Plastic
Mounting	Screws M4: DIN 912, DIN 6912, DIN 7984
Connection	Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	20 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS27	–	1	–	2	–	3	–	4

1 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

2 Output

U2R	= Voltage 0.5 ... 10 V, redundant (excitation voltage 18 ... 36 V DC)
U8R	= Voltage 0.5 ... 4.5 V, redundant (excitation voltage 11 ... 36 V DC)
I1R	= Current 4... 20 mA, 3 wire, redundant (excitation voltage 18 ... 36 V DC) (output I1R possible only with CW/CCW signal characteristics)

3 Signal characteristics

CW/CCW	= Signal 1 increasing clockwise, signal 2 increasing counterclockwise
CW/CW*	= Signal 1 and signal 2 increasing clockwise
CCW/CCW*	= Signal 1 and signal 2 increasing counterclockwise

* not available with output I1R

4 Connection

KAB2M	= Cable, standard length 2 m
KAB2M-DT04/6P/A*	= Cable 2 m with Deutsch connector DT04, 6 pin
KAB2M-DT04/6P/A-S*	= Cable 2 m with Deutsch connector DT04, 6 pin, with protective tube

* only for output U6R

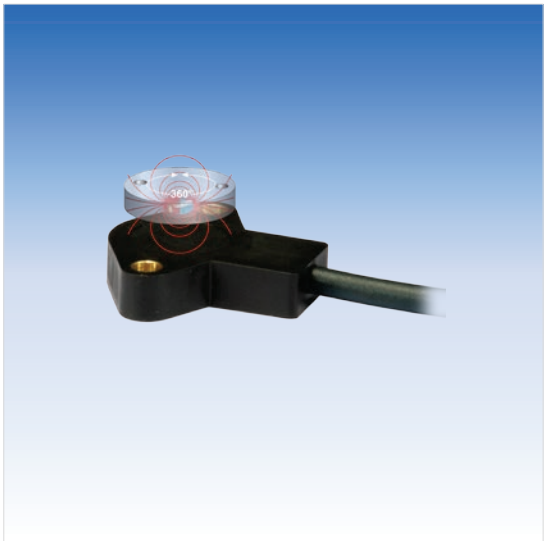
Order example

PRAS27 – 360 – U2R – CW/CCW – KAB2M

Accessories:
Position magnets (see from page 122)
Magnetic shield (see page 31)

PRDS27

Digital output CAN



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67**
- **Digital output CAN**
- **Non-contact with external position magnet, no wear**
- **Housing: Plastic**
- **Redundant version available**

Specifications

Output	CANopen (CiA 301-V4.02/406-V3.2) CAN SAE J1939
Measurement range	0 ... 360°
Resolution	0.05° max.
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67
Housing material	Plastic
Mounting	Screws M4: DIN 912, DIN 6912, DIN 7984
Connection	Cable 0.3 m, 5-pin connector M12 Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	20 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS27	–	**1**	–	**2**

1	Output	
	CANOP	= CANopen
	CANJ1939	= CAN SAE J1939
	CANOPR	= CANopen, redundant
	CANJ1939R	= CAN SAE J1939, redundant

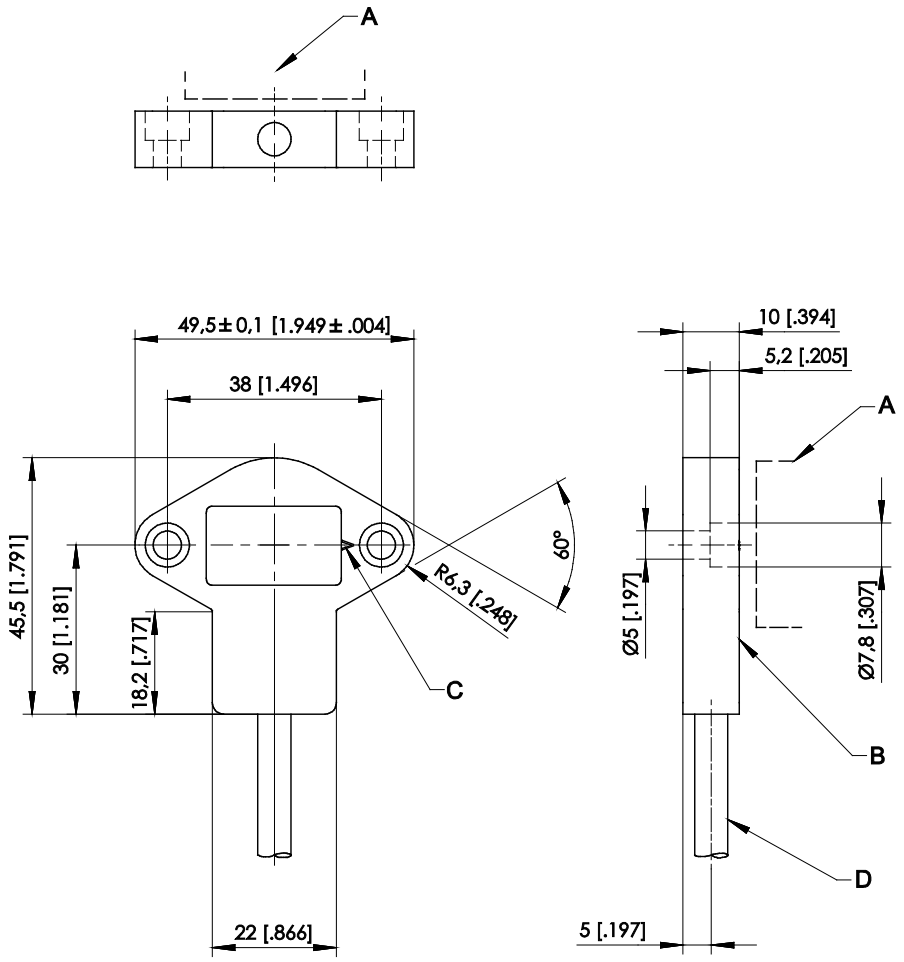
2	Connection	
	KAB0,3M-M12/CAN	= Cable 0.3 m with connector M12, 5 pin
	KAB0,3M-DT04/4P/A	= Cable 0.3 m with Deutsch connector DT04, 4 pin
	KAB0,3M-DT04/4P/A-S	= Cable 0.3 m with Deutsch connector DT04, 4 pin, with protective tube

Order example

PRDS27 – CANOP – KAB0,3M – DT04/4P/A

Accessories:
Position magnets (see from page 122)
Magnetic shield (see page 31)

Dimensions (analog and digital version)



A – Position magnet
B – Measuring area
C – Marking
D – Cable

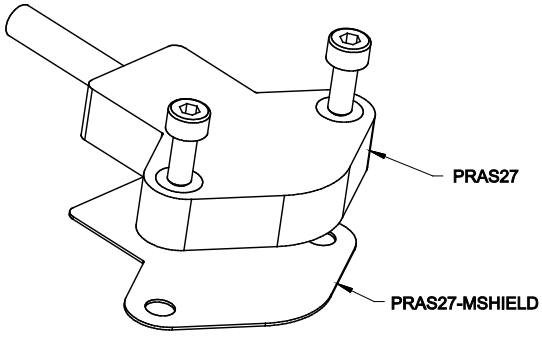
Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

PRAS27 Magnetic Shield

An optional shield plate is available for the angle sensors PRAS27 and PRDS27. It can reduce the effect of residual magnetizing in case the sensor has to be mounted on a ferromagnetic material.

Order code magnetic shield:

PRAS27-MSHIELD

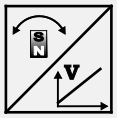


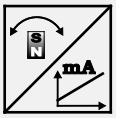
PRAS1

Analog output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Analog output**
- **Magnetic measurement principle**
- **Non-contact with external position magnet, no wear**
- **Housing: Stainless steel**





Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V 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. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (with IP67/IP69 connector cable)
Housing material	Stainless steel
Mounting	M12 x 1
Connection	5-pin connector M12 (compatible to 4-pin connector)
Temperature range	-40 ... +85°C
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
Weight	35 g approx.
EMC	DIN EN 61326-1:2013

Order code

PRAS1	–	1	–	2	–	3	–	4

1 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

2 Output

U2	= Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
U8	= Voltage 0.5 ... 4.5 V (excitation voltage 11 ... 36 V DC)
I1	= Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)

3 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

4 Connection

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

Order example

PRAS1 – 360 – I1 – CW – M12A5

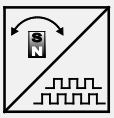
Accessories:
Connector cable (see page 157)
Position magnets (see from page 122)

PRDS1

Incremental output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Incremental output**
- **Magnetic measurement principle**
- **Non-contact with external position magnet, no wear**
- **Housing: Stainless steel**



Specifications

Output	Incremental encoder output, RS422-/HTL compatible
Measurement range	0 ... 360°
Resolution (pulses per revolution)	1 / 2 / 4 / 8 / 16 / 25 / 32 / 45 / 50 / 64 / 75 / 90 / 100 / 125 / 128 / 256 / 512 / 1024
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (with IP67/IP69 connector cable)
Max. output frequency	200 kHz (the quadrature counter of the subsequent circuit must be able to process >200 kHz)
Material	Stainless steel
Mounting	M12 x 1
Connection	8-pin connector M12
Temperature range	-40 ... +85°C
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
Weight	35 g approx.
EMC	DIN EN 61326-1:2013

Order code

PRDS1	–	1	–	2	KHZ	–	3	–	4

1 Resolution (pulses per revolution)

1 / 2 / 4 / 8 / 16 / 25 / 32 / 45 / 50 / 64 / 75 / 90 / 100 / 125 / 128 / 256 / 512 / 1024

2 Maximum pulse frequency

50	= 50 kHz (standard)
200	= 200 kHz

3 Output

RS5V	= RS422 compatible output with excitation 5 V DC
RS24V	= RS422 compatible output with excitation 10 ... 36 V
HT24V	= HTL compatible output with excitation 18 ... 36 V

4 Connection

M12A8	= 8-pin connector M12

Order example

PRDS1 – 1024 – 50 KHZ – RS5V – M12A8

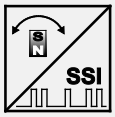
Accessories:

Connector cable (see page 158)
Position magnets (see page 122)

Digital output SSI

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Digital output SSI**
- **Magnetic measurement principle**
- **Non-contact with external position magnet, no wear**
- **Housing: Stainless steel**



Specifications

Output	Synchronous serial SSI
Measurement range	0 ... 360°
Resolution	12 Bit (4096 steps) per revolution
Repeatability	±0.1° (typical)
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (with IP67/IP69 connector cable)
Material	Stainless steel
Mounting	M12 x 1
Connection	8-pin connector M12
Temperature range	-40 ... +85°C
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
Weight	35 g approx.
EMC	DIN EN 61326-1:2013

Order code

PRDS1	–	1	–	2	–	3

1 Output

RSSI5V	= Synchronous serial output with excitation 5 V DC
RSSI24V	= Synchronous serial output with excitation 10 ... 36 V

2 Code characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

3 Connection

M12A8	= 8-pin connector M12

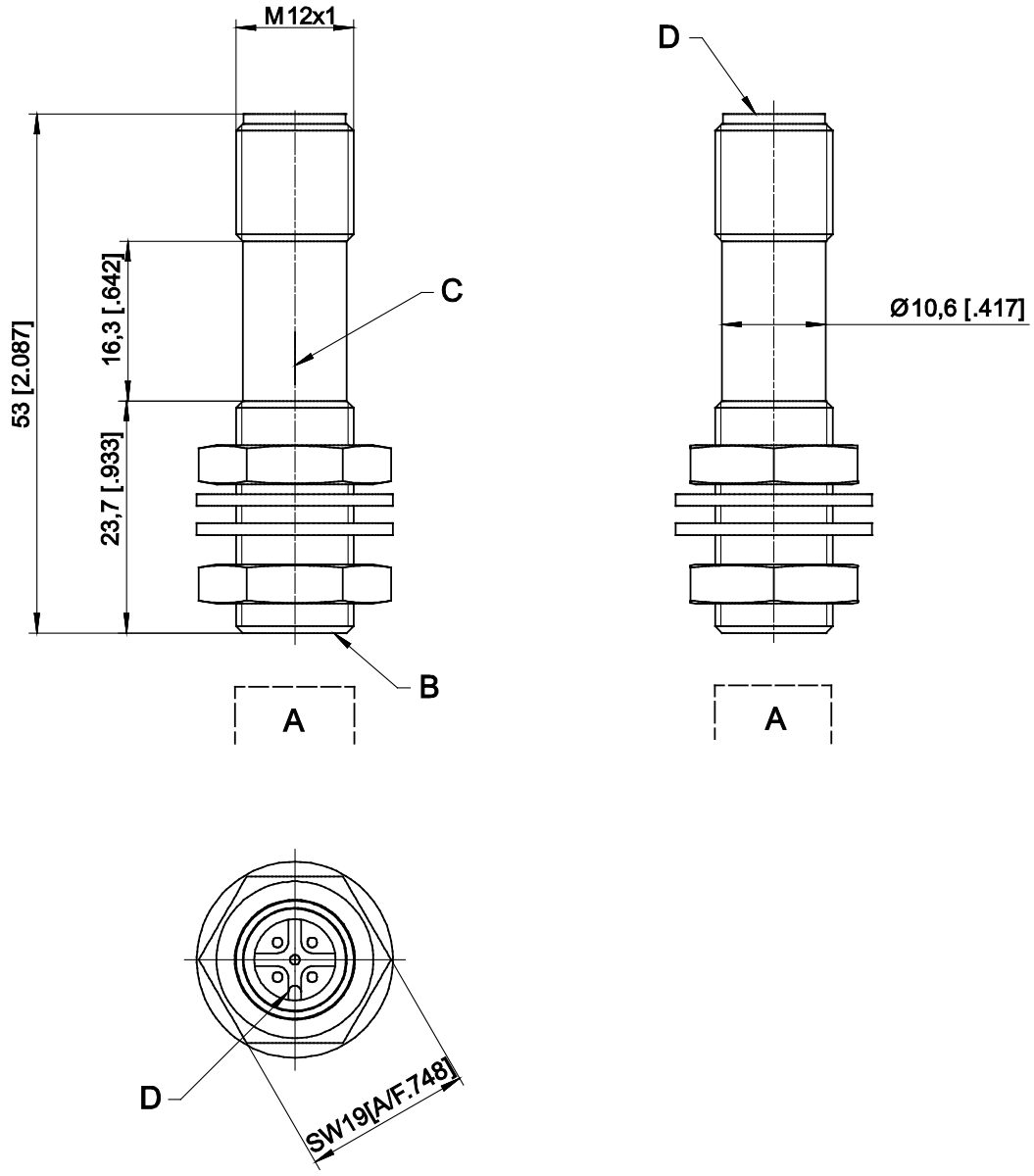
Order example

PRDS1 – RSSI5V – CW – M12A8

Accessories:

Connector cable (see page 158)
Position magnets (see from page 122)

Dimensions (analog and digital version)

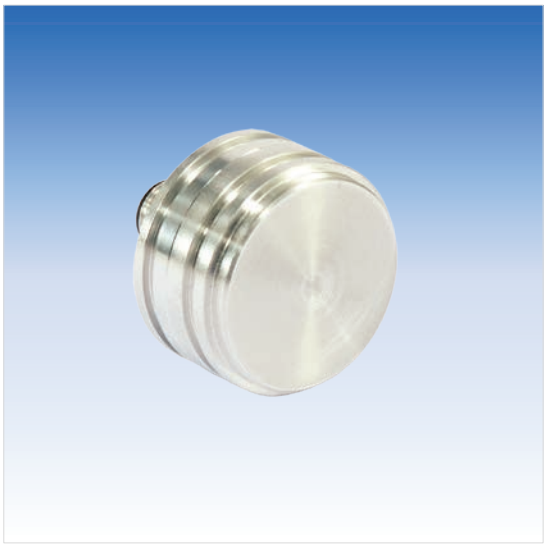


A – Position magnet
B – Measuring area
C – Marking
D – Connector M12

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

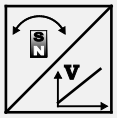
PRAS2

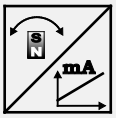
Analog output



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Analog output**
- **Flat housing – 20 mm / 25 mm thickness**
- **Non-contact with external position magnet, no wear**
- **Housing: Aluminium**





Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V 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. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable) IP67 (cable output)
Housing material	Aluminium
Mounting	Clamps, mounting plate
Connection	5-pin connector M12 (compatible to 4-pin connector) Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	50 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS2	–	1	–	2	–	3	–	4

1 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

2 Output

U2	= Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U2B	= Voltage 0.5 ... 10 V (excitation voltage 11.5 ... 27 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
U8	= Voltage 0.5 ... 4.5 V (excitation voltage 11 ... 36 V DC)
I1	= Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)
I1B	= Current 4 ... 20 mA, 3 wire (excitation voltage 10 ... 27 V DC)

3 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

4 Connection

M12A5	= 5-pin connector M12 axial (compatible with 4-pin connector)
M12R5	= 5-pin connector M12 radial (compatible with 4-pin connector)
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/3P/A*	= Cable 2 m with Deutsch connector DT04, 3 pin
KAB2M-DT04/3P/A-S*	= Cable 2 m with Deutsch connector DT04, 3 pin, with protective tube
KAB2M-DT04/4P/A	= Cable 2 m with Deutsch connector DT04, 4 pin
KAB2M-DT04/4P/A-S	= Cable 2 m with Deutsch connector DT04, 4 pin, with protective tube

* only for output U6

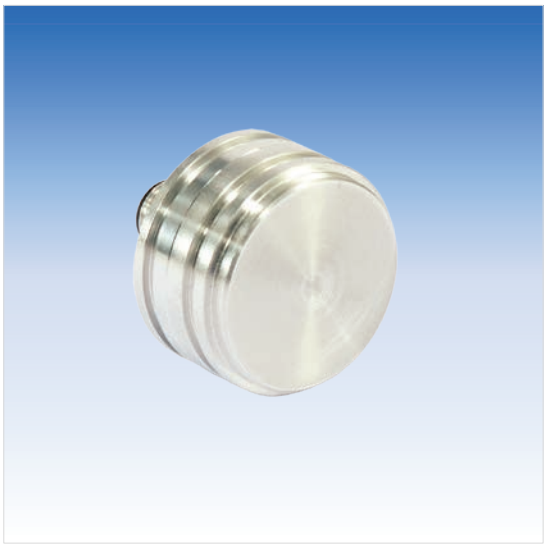
Order example

PRAS2 – 360 – I1 – CW – M12A5

Accessories:

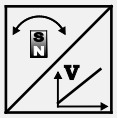
Connector cable (see page 157)
Position magnets (see from page 122)
Mounting (see page 133)

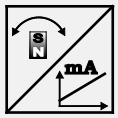
Analog output, redundant



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Analog output, redundant**
- **Flat housing – 20 mm / 25 mm thickness**
- **Non-contact with external position magnet, no wear**
- **Housing: Aluminium**





Specifications

Output	Voltage 0.5 ... 10 V, redundant Voltage 0.5 ... 4.5 V, redundant Current 4 ... 20 mA, 3 wire, redundant
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. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable) IP67 (cable output)
Housing material	Aluminium
Mounting	Clamps, mounting plate
Connection	8-pin connector M12 Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	50 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS2	–	1	–	2	–	3	–	4

1 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

2 Output

U2R	= Voltage 0.5 ... 10 V, redundant (excitation voltage 18 ... 36 V DC)
U6R	= Voltage 0.5 ... 4.5 V ratiometric, redundant (excitation voltage 5 V DC)
U8R	= Voltage 0.5 ... 4.5 V, redundant (excitation voltage 11 ... 36 V DC)
I1R	= Current 4... 20 mA, 3 wire, redundant (excitation voltage 18 ... 36 V DC) (output I1R possible only with CW/CCW signal characteristics)

3 Signal characteristics

CW/CCW	= Signal 1 increasing clockwise, signal 2 increasing counterclockwise
CW/CW*	= Signal 1 and signal 2 increasing clockwise
CCW/CCW*	= Signal 1 and signal 2 increasing counterclockwise

* not available with output I1R

4 Connection

M12A8	= 8-pin connector M12 axial
M12R8	= 8-pin connector M12 radial
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/6P/A*	= Cable 2 m with Deutsch connector DT04, 6 pin
KAB2M-DT04/6P/A-S*	= Cable 2 m with Deutsch connector DT04, 6 pin, with protective tube

* only for output U6R

Order example

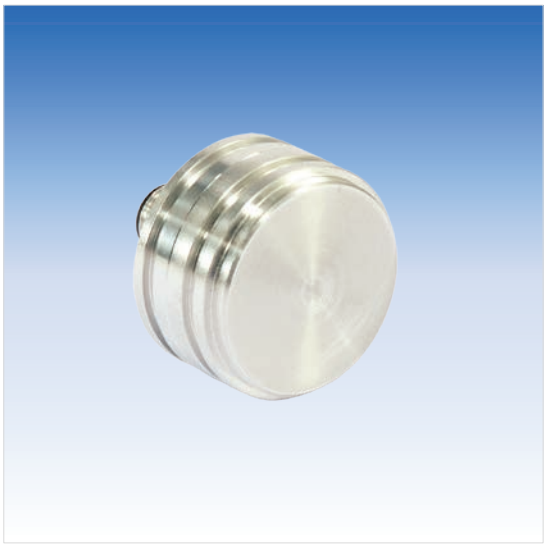
PRAS2 – 360 – U2R – CW/CCW – M12R8

Accessories:

Connector cable (see page 158)
Position magnets (see from page 122)
Mounting (see page 133)

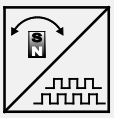
PRDS2

Incremental output



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Incremental output**
- **Magnetic measurement principle**
- **Non-contact with external position magnet, no wear**
- **Housing: Aluminium**



Specifications

Output	Incremental encoder output RS422-/HTL compatible, filtered output
Measurement range	0 ... 360°
Resolution (pulses per revolution)	25 / 50 / 100 / 200 / 256 / 300 / 400 / 500 / 512 / 1000 / 1024
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable) IP67 (cable output)
Material	Aluminium
Mounting	Clamps, mounting plate
Connection	5-pin connector M12 Cable, standard length 2 m
Temperature range	-40 ... +85°C
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
Weight	50 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS2	–	1	–	2	–	3

1 Resolution (pulses per revolution)

25 / 50 / 100 / 200 / 256 / 300 / 400 / 500 / 512 / 1000 / 1024

2 Output

RS5VF	= RS422 compatible output with excitation 5 V DC, filtered output
RS24VF	= RS422 compatible output with excitation 10 ... 36 V, filtered output
HT24VF	= HTL compatible output with excitation 18 ... 36 V, filtered output

3 Connection

M12A8	= 8-pin connector M12, axial
M12R8	= 8-pin connector M12, radial
KAB2M	= Cable, standard length 2 m

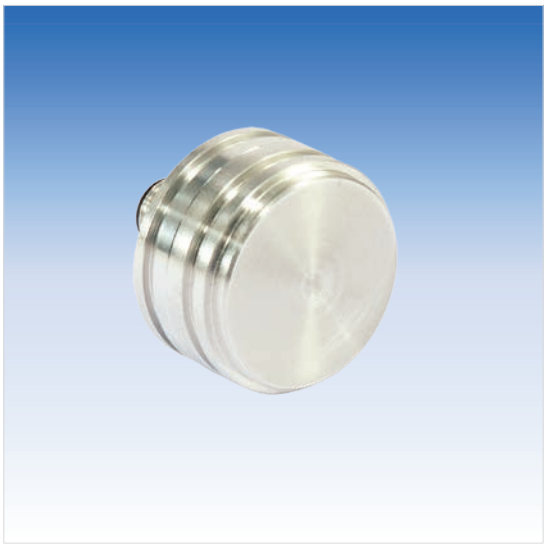
Order example

PRDS2 – 1024 – RS24VF – M12A8

Accessories:

Connector cable (see page 158)
Position magnets (see from page 122)
Mounting (see page 133)

Digital output SSI



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Digital output SSI**
- **Magnetic measurement principle**
- **Non-contact with external position magnet, no wear**
- **Housing: Aluminium**

Specifications

Output	Synchronous serial SSI
Measurement range	0 ... 360°
Resolution	12 Bit (4096 steps) per revolution
Repeatability	±0.1° (typical)
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable) IP67 (cable output)
Material	Aluminium
Mounting	Clamps, mounting plate
Connection	8-pin connector M12 Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	50 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS2	–	1	–	2	–	3

1 Output

RSSI5V	= Synchronous serial output with excitation 5 V DC
RSSI24V	= Synchronous serial output with excitation 10 ... 36 V

2 Code characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

3 Connection

M12A8	= 8-pin connector M12, axial
M12R8	= 8-pin connector M12, radial
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/6P/A	= Cable 2 m with Deutsch connector DT04, 6 pin
KAB2M-DT04/6P/A-S	= Cable 2 m with Deutsch connector DT04, 6 pin, with protective tube

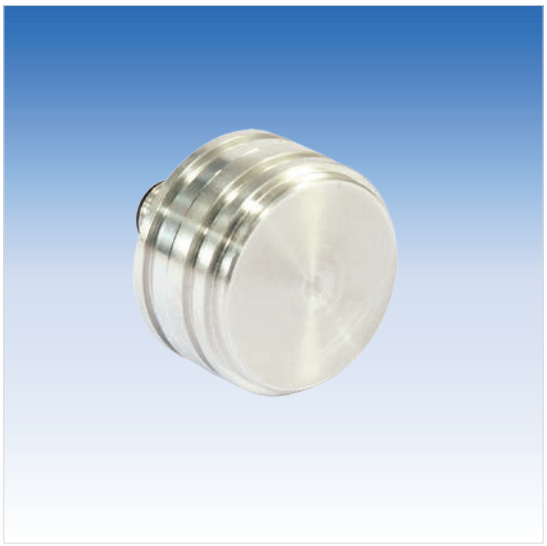
Order example

PRDS2 – RSSI5V – CW – M12A8

Accessories:

Connector cable (see page 158)
Position magnets (see from page 122)
Mounting (see page 133)

Digital output CAN



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Digital output CAN**
- **Non-contact with external position magnet, no wear**
- **Housing: Aluminium**
- **Redundant version available**

Specifications

Output	CANopen (CiA 301-V4.02/406-V3.2) CAN SAE J1939
Measurement range	0 ... 360°
Resolution	0.05° max.
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable) IP67 (cable output)
Housing material	Aluminium
Mounting	Clamps, mounting plate
Connection	5-pin connector M12 Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	50 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS2	–	1	–	2

1	Output
CANOP	= CANopen
CANJ1939	= CAN SAE J1939
CANOPR	= CANopen, redundant
CANJ1939R	= CAN SAE J1939, redundant

2	Connection
M12A5/CAN	= 5-pin connector M12 axial
M12R5/CAN	= 5-pin connector M12 radial
KAB0,3M-DT04/4P/A	= Cable 0.3 m with Deutsch connector DT04, 4 pin
KAB0,3M-DT04/4P/A-S	= Cable 0.3 m with Deutsch connector DT04, 4 pin, with protective tube

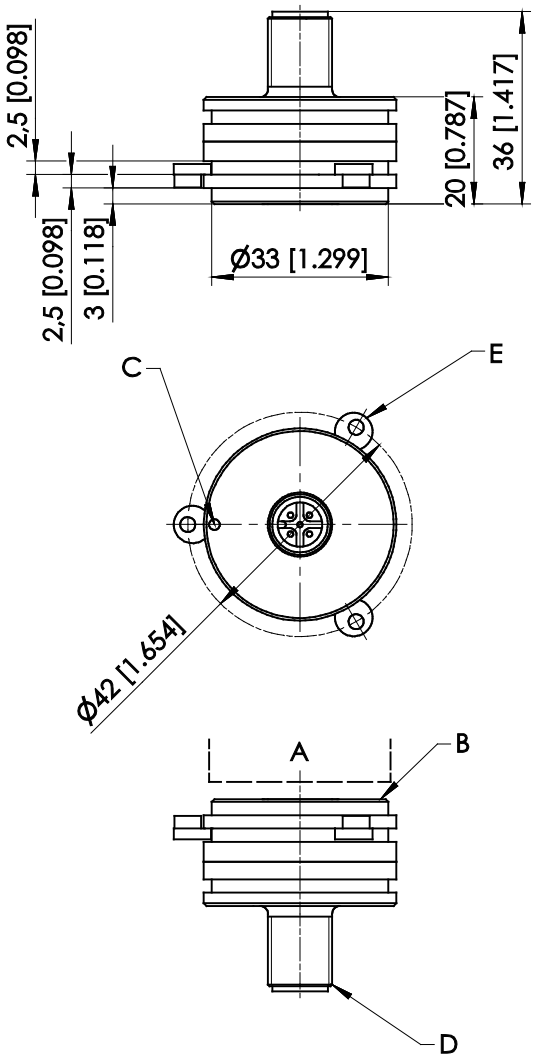
Order example

PRDS2 – CANOP – M12A5/CAN

Accessories:
Connector cable (see page 159)
Position magnets (see from page 122)
Mounting (see page 133)

Dimensions (analog and digital version)

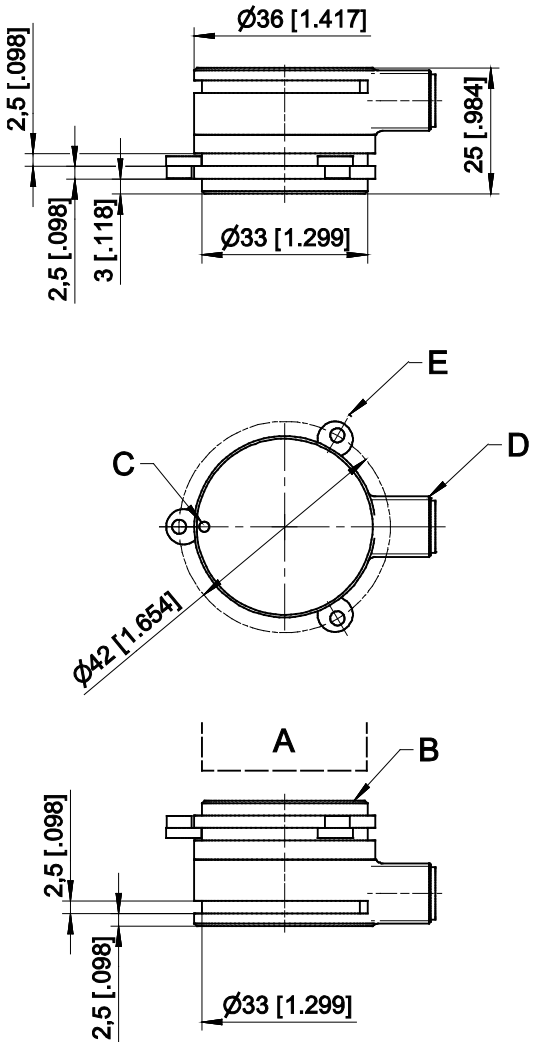
Connector M12, axial



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

Dimensions in mm [inch]. Weight approx. 50 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

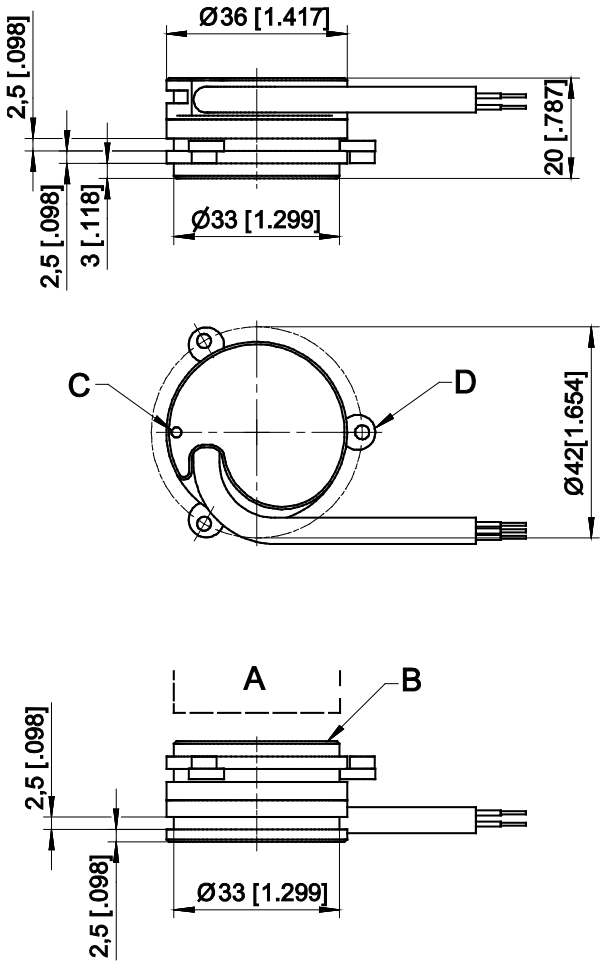
Connector M12, radial



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

Dimensions in mm [inch]. Weight approx. 50 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

Cable output



A – Position magnet
B – Measuring area
C – Marking
D – Mounting clamps PRPT-BFS1

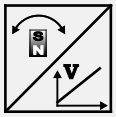
Dimensions in mm [inch]. Weight without cable approx. 40 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

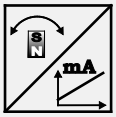
PRAS2EX

Analog output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP65**
- **Analog output**
- **Non-contact with external position magnet**
- **II 3D Ex tc IIIC T80°C Dc X (X = examined with low impact energy of 4J)**





Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V, ratiometric 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. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP65
Housing material	Stainless steel
Mounting	Clamps, mounting plate
Connection	5-pin connector M12 (compatible to 4-pin connector)
Temperature range	-20 ... +40°C
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
Weight	180 g approx.
EMC	DIN EN 61326-1:2013
Dust-EX proof	DIN EN 60079-0 (June 2014), DIN EN 60079-31 (December 2014)

Order code

PRAS2EX	–	1	–	2	–	3	–	4

1 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

2 Output

U2	= Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
I1	= Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)

3 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

4 Connection

M12A5	= 5-pin connector M12 axial (compatible with 4-pin connector)
M12R5	= 5-pin connector M12 radial (compatible with 4-pin connector)

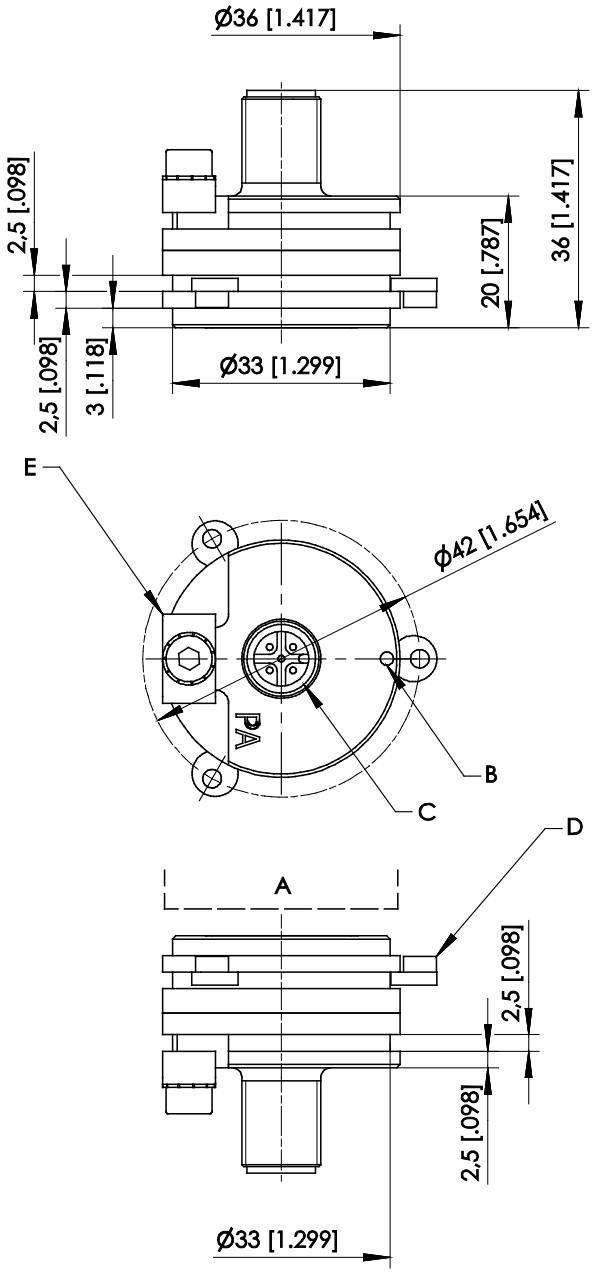
Order example

PRAS2EX – 360 – I1 – CW – M12A5

Accessories:
Position magnets (see from page 122)
Mounting (see from page 133)

Dimensions

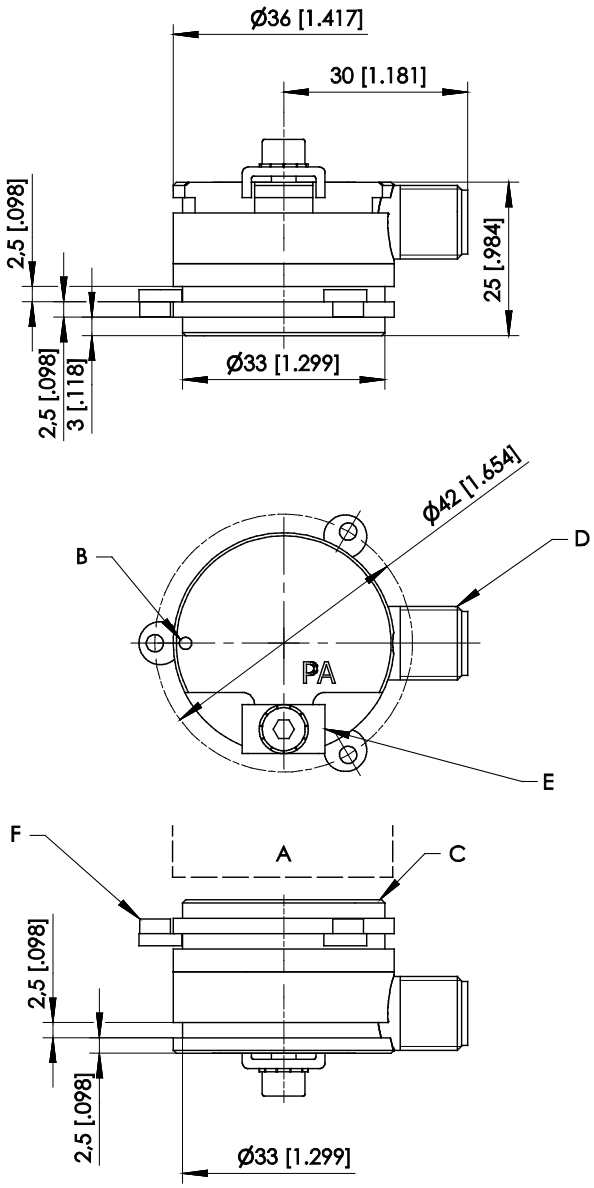
Connector M12, axial



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

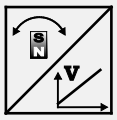
Dimensions in mm [inch]. Weight approx. 180 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

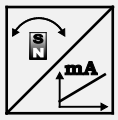
PRAS3

Analog output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Analog output**
- **Magnetic measurement principle**
- **With 10 mm shaft or 6 mm hollow shaft**
- **Housing: Aluminium**





Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V 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. (typical)
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable) IP67 (cable output)
Housing material	Aluminium
Mounting	Clamps, mounting plate
Connection	5-pin connector M12 (compatible to 4-pin connector) Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
Life cycle of bearings	100 x 10^6 revolutions (<1500 r.p.m.)
Revolutions per minute (mech.)	10.000 r.p.m.
Allowable shaft load	100 N radial / 100 N axial
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
Weight	250 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS3 – [1] – [2] – [3] – [4] – [5]

1 Shaft

V	= 10 mm shaft
H	= 6 mm hollow shaft

2 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

3 Output

U2	= Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U2B	= Voltage 0.5 ... 10 V (excitation voltage 11.5 ... 27 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
U8	= Voltage 0.5 ... 4.5 V (excitation voltage 11 ... 36 V DC)
I1	= Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)
I1B	= Current 4 ... 20 mA, 3 wire (excitation voltage 10 ... 27 V DC)

4 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

5 Connection

M12A5	= 5-pin connector M12 axial (compatible with 4-pin connector)
M12R5	= 5-pin connector M12 radial (compatible with 4-pin connector)
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/3P/A*	= Cable 2 m with Deutsch connector DT04, 3 pin
KAB2M-DT04/3P/A-S*	= Cable 2 m with Deutsch connector DT04, 3 pin, with protective tube
KAB2M-DT04/4P/A	= Cable 2 m with Deutsch connector DT04, 4 pin
KAB2M-DT04/4P/A-S	= Cable 2 m with Deutsch connector DT04, 4 pin, with protective tube

* only for output U6

Order example

PRAS3 – V – 360 – I1 – CW – M12A5

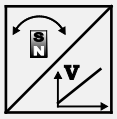
Accessories:

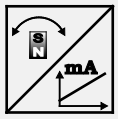
Connector cable (see page 157)
Mounting plates (see page 133)

Analog output, redundant

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Analog output, redundant**
- **Magnetic measurement principle**
- **With 10 mm shaft or 6 mm hollow shaft**
- **Housing: Aluminium**





Specifications

Output	Voltage 0.5 ... 10 V, redundant Voltage 0.5 ... 4.5 V, redundant Current 4 ... 20 mA, 3 wire, redundant
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. (typical)
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable) IP67 (cable output)
Signal characteristics	CW, CCW
Housing material	Aluminium
Mounting	Clamps, mounting plate
Connection	8-pin connector M12 Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
Life cycle of bearings	100 x 10^6 revolutions (<1500 r.p.m.)
Revolutions per minute (mech.)	10.000 r.p.m.
Allowable shaft load	100 N radial / 100 N axial
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
Weight	250 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS3 – **1** – **2** – **3** – **4** – **5**

1 Shaft

V	= 10 mm shaft
H	= 6 mm hollow shaft

2 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

3 Output

U2R	= Voltage 0.5 ... 10 V, redundant (excitation voltage 18 ... 36 V DC)
U6R	= Voltage 0.5 ... 4.5 V ratiometric, redundant (excitation voltage 5 V DC)
U8R	= Voltage 0.5 ... 4.5 V, redundant (excitation voltage 11 ... 36 V DC)
I1R	= Current 4... 20 mA, 3 wire, redundant (excitation voltage 18 ... 36 V DC) (output I1R possible only with CW/CCW signal characteristics)

4 Signal characteristics

CW/CCW	= Signal 1 increasing clockwise, signal 2 increasing counterclockwise
CW/CW*	= Signal 1 and signal 2 increasing clockwise
CCW/CCW*	= Signal 1 and signal 2 increasing counterclockwise

* not available with output I1R

5 Connection

M12A8	= 8-pin connector M12 axial
M12R8	= 8-pin connector M12 radial
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/6P/A*	= Cable 2 m with Deutsch connector DT04, 6 pin
KAB2M-DT04/6P/A-S*	= Cable 2 m with Deutsch connector DT04, 6 pin, with protective tube

* only for output U6R

Order example

PRAS3 – V – 360 – U2R – CW/CCW – M12R8

Accessories:

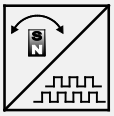
Connector cable (see page 158)
Mounting plates (see page 133)

PRDS3

Incremental output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Incremental output**
- **Magnetic measurement principle**
- **With 10 mm shaft or 6 mm hollow shaft**
- **Housing: Aluminium**



Specifications

Output	Incremental encoder output RS422-/HTL compatible, filtered output
Measurement range	0 ... 360°
Resolution (pulses per revolution)	25 / 50 / 100 / 200 / 256 / 300 / 400 / 500 / 512 / 1000 / 1024
Linearity	±1% (typical)
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable) IP67 (cable output)
Housing material	Aluminium
Mounting	Clamps, mounting plate
Connection	5-pin connector M12 Cable, standard length 2 m
Temperature range	-40 ... +85°C
Life cycle of bearings	100 x 10^6 revolutions (<1500 r.p.m.)
Revolutions per minute (mech.)	10.000 r.p.m.
Allowable shaft load	100 N radial / 100 N axial
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
Weight	250 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS3	–	1	–	2	–	3	–	4

1 Shaft

V	= Shaft 10 mm
H	= Hollow shaft 6 mm

2 Resolution (pulses per revolution)

25 / 50 / 100 / 200 / 256 / 300 / 400 / 500 / 512 / 1000 / 1024

3 Output

RS5VF	= RS422 compatible output with excitation 5 V DC, filtered output
RS24VF	= RS422 compatible output with excitation 10 ... 36 V, filtered output
HT24VF	= HTL compatible output with excitation 18 ... 36 V, filtered output

4 Connection

M12A8	= 8-pin connector M12, axial
M12R8	= 8-pin connector M12, radial
KAB2M	= Cable, standard length 2 m

Order example

PRDS3 – V – 1024 – HT24VF – M12R8

Accessories:

Connector cable (see page 158)
Mounting plates (see page 133)

Digital output SSI

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Digital output SSI**
- **Magnetic measurement principle**
- **With 10 mm shaft or 6 mm hollow shaft**
- **Housing: Aluminium**

Specifications

Output	Synchronous serial SSI
Measurement range	0 ... 360°
Resolution	12 Bit (4096 steps) per revolution
Repeatability	±0.1° (typical)
Linearity	±1% (typical)
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable) IP67 (cable output)
Material	Aluminium
Mounting	Clamps, mounting plate
Connection	8-pin connector M12 Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
Life cycle of bearings	100 x 10^6 revolutions (<1500 r.p.m.)
Revolutions per minute (mech.)	10.000 r.p.m.
Allowable shaft load	100 N radial / 100 N axial
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
Weight	250 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS3	–	1	–	2	–	3	–	4

1 Shaft

V	= Shaft 10 mm
H	= Hollow shaft 6 mm

2 Output

RSSI5V	= Synchronous serial output with excitation 5 V DC
RSSI24V	= Synchronous serial output with excitation 10 ... 36 V

3 Code characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

4 Connection

M12A8	= 8-pin connector M12, axial
M12R8	= 8-pin connector M12, radial
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/6P/A	= Cable 2 m with Deutsch connector DT04, 6 pin
KAB2M-DT04/6P/A-S	= Cable 2 m with Deutsch connector DT04, 6 pin, with protective tube

Order example

PRDS3 – V – RSSI24V – CW – M12R8

Accessories:

Connector cable (see page 158)
Mounting plates (see page 133)

Digital output CAN

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Digital output CAN**
- **With 10 mm shaft or 6 mm hollow shaft**
- **Housing: Aluminium**
- **Redundant version available**

Specifications

Output	CANopen (CiA 301-V4.02/406-V3.2) CAN SAE J1939
Measurement range	0 ... 360°
Resolution	0.05° max.
Linearity	±1% (typical)
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable) IP67 (cable output)
Material	Aluminium
Mounting	Clamps, mounting plate
Connection	5-pin connector M12 Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
Life cycle of bearings	100 x 10^6 revolutions (<1500 r.p.m.)
Revolutions per minute (mech.)	10.000 r.p.m.
Allowable shaft load	100 N radial / 100 N axial
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
Weight	250 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS3	–	1	–	2	–	3

1 Shaft

V	= Shaft 10 mm
H	= Hollow shaft 6 mm

2 Output

CANOP	= CANopen
CANJ1939	= CAN SAE J1939
CANOPR	= CANopen, redundant
CANJ1939R	= CAN SAE J1939, redundant

3 Connection

M12A5/CAN	= 5-pin connector M12 axial
M12R5/CAN	= 5-pin connector M12 radial
KAB0,3M-DT04/4P/A	= Cable 0.3 m with Deutsch connector DT04, 4 pin
KAB0,3M-DT04/4P/A-S	= Cable 0.3 m with Deutsch connector DT04, 4 pin, with protective tube

Order example

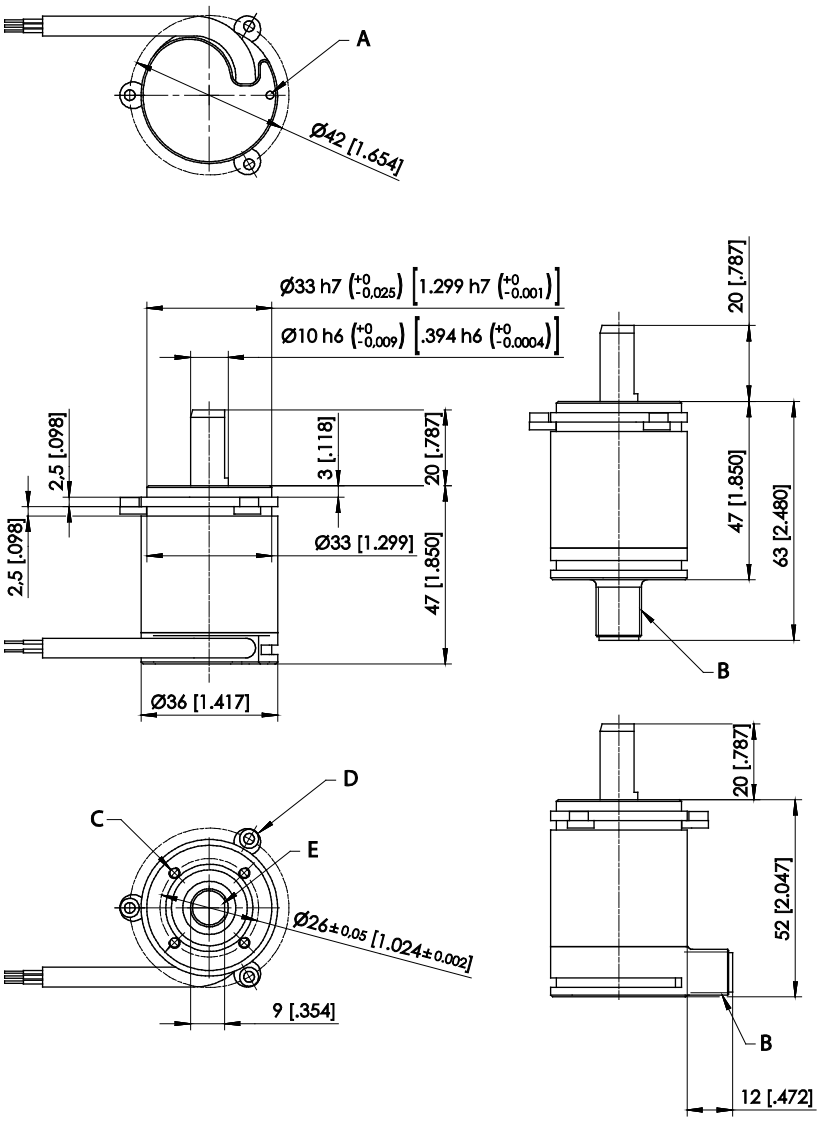
PRDS3 – V – CANOP – M12A5/CAN

Accessories:

Connector cable (see page 159)
Mounting plates (see page 133)

Dimensions (analog and digital version)

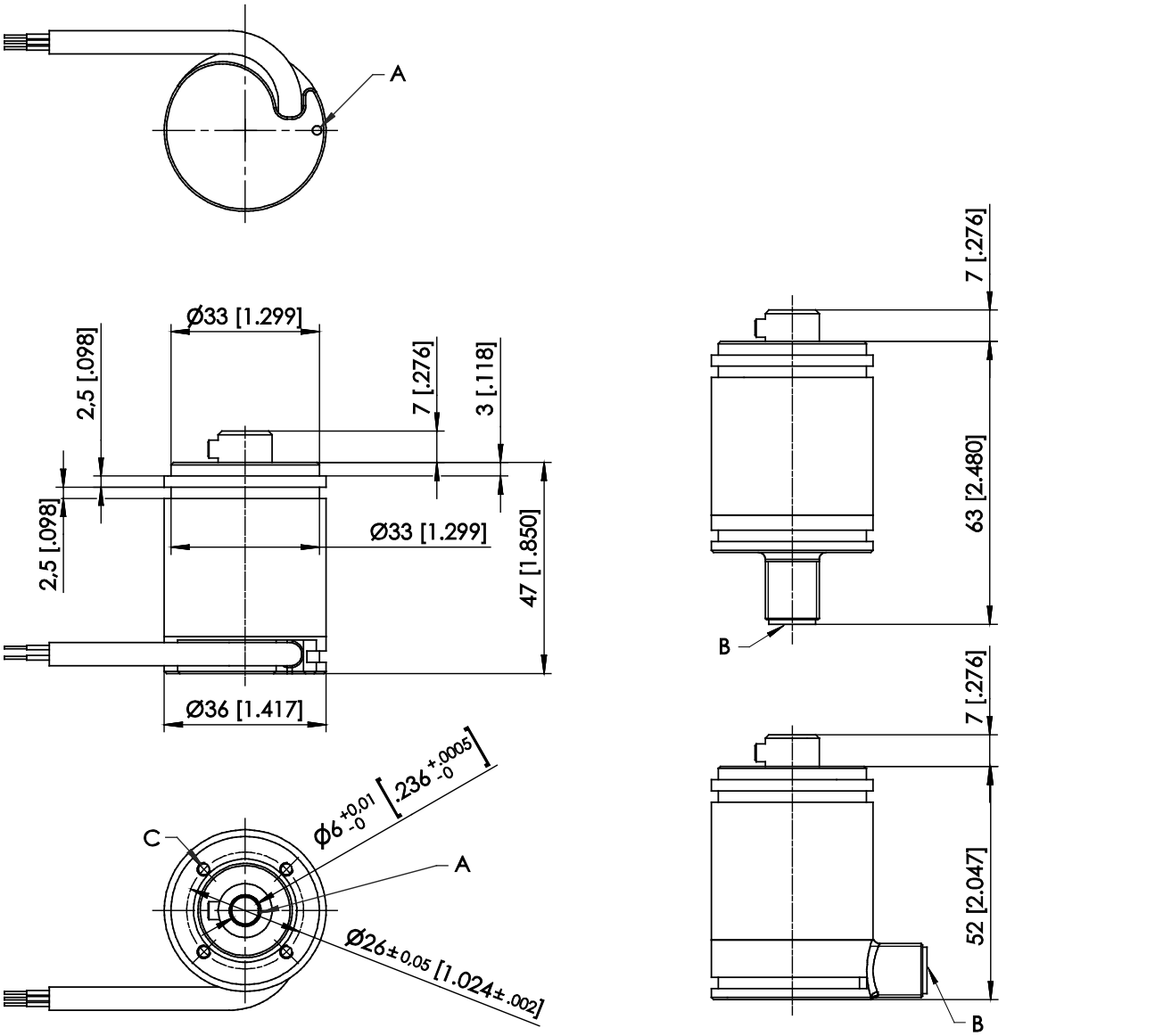
Version with shaft



A – Marking
B – Connector M12
C – 4x M3 – 5 [.197] deep
screw hole orientation to marking not defined!
D - Mounting clamps PRPT-BFS1
E - Flat

Dimensions in mm [inch].
Weight approx. 250 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

Version with hollow shaft

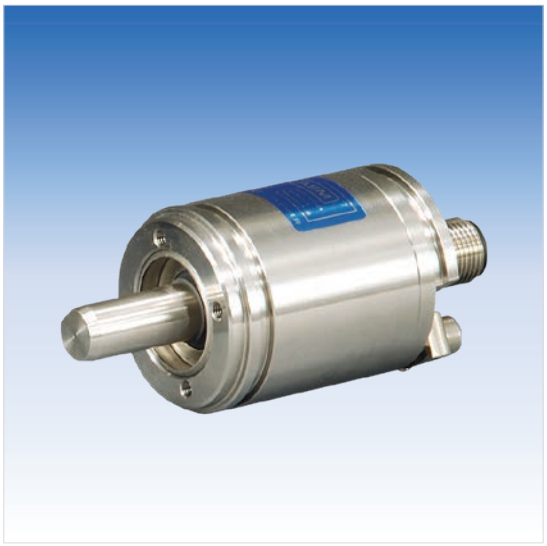


A – Marking
B – Connector M12
C – 4x M3 – 5 [.197] deep
screw hole orientation to marking not defined!

Dimensions in mm [inch].
Weight approx. 250 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

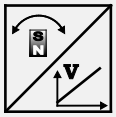
PRAS3EX

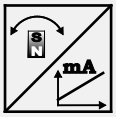
Analog output



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP65**
- **Analog output**
- **With 10 mm shaft or 6 mm hollow shaft**
- **II 3D Ex tc IIIC T80°C Dc X (X = examined with low impact energy of 4J)**



Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V, ratiometric 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. (typical)
Protection class	IP65
Housing material	Stainless steel
Mounting	Clamps, mounting plate
Connection	5-pin connector M12 (compatible with 4-pin connector)
Temperature range	-20 ... +40°C
Life cycle of bearings	100 x 10^6 revolutions (<1500 r.p.m.)
Revolutions per minute (mech.)	1000 r.p.m.
Allowable shaft load	100 N radial / 100 N axial
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
Weight	330 g approx.
EMC	DIN EN 61326-1:2013
Dust-EX proof	DIN EN 60079-0 (June 2014), DIN EN 60079-31 (December 2014)

Order code

PRAS3EX – 1 – 2 – 3 – 4 – 5

1 Shaft

V	= 10 mm shaft
H	= 6 mm hollow shaft

2 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

3 Output

U2	= Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
I1	= Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)

4 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

5 Connection

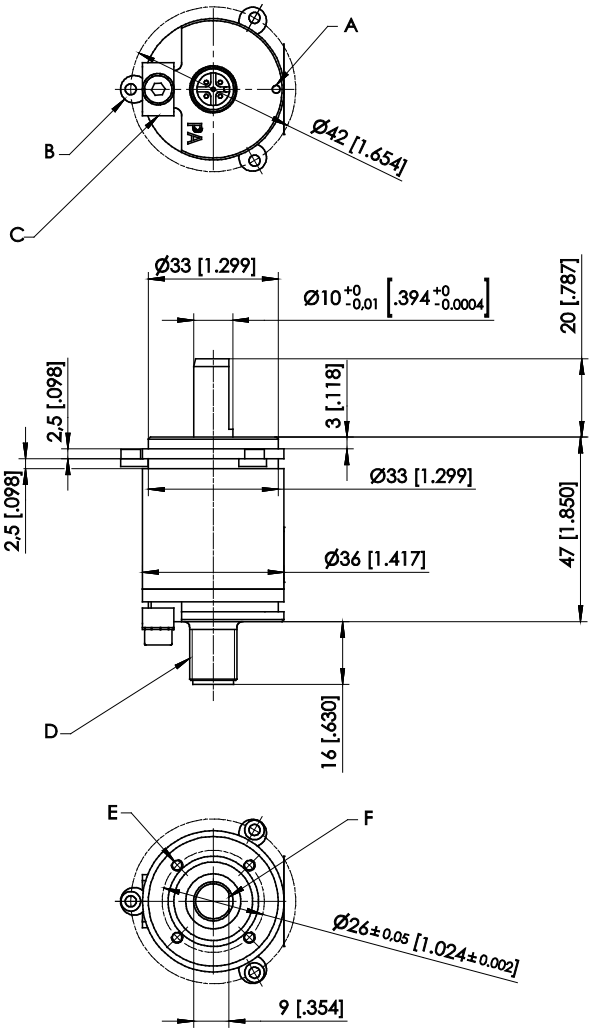
M12A5	= 5-pin connector M12 axial (compatible with 4-pin connector)
M12R5	= 5-pin connector M12 radial (compatible with 4-pin connector)

Order example

PRAS3EX – V – 360 – I1 – CW – M12A5

Dimensions

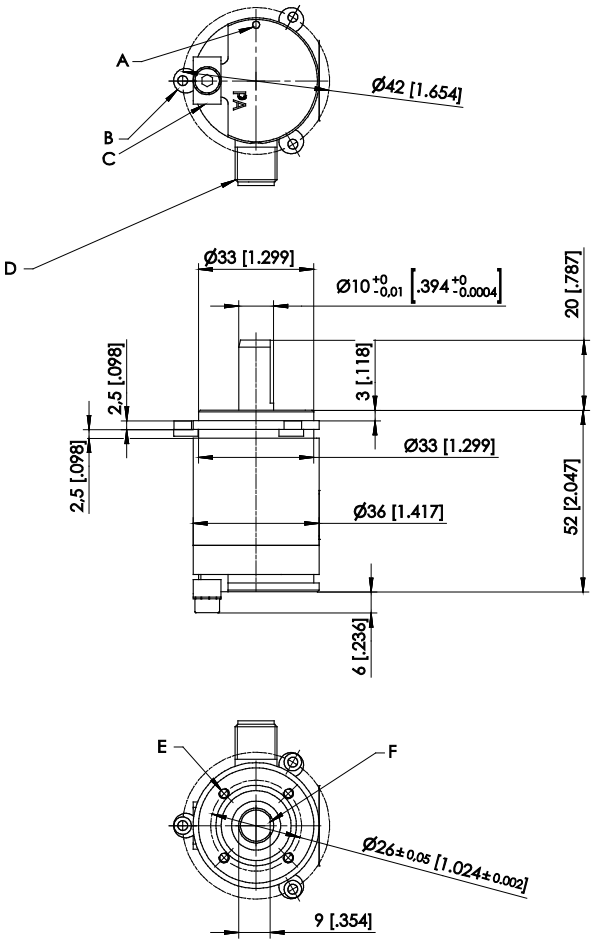
Connector M12, axial



A – Marking
B – Mounting clamps PRTP-BFS1
C – Earthing
D – Connector M12
E – 4x M3 – 5 [.197] deep,
screw hole orientation to marking not defined!!
F – Flat

Dimensions in mm [inch]. Weight approx. 290 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

Connector M12, radial



A – Marking
B – Mounting clamps PRTP-BFS1
C – Earthing
D – Connector M12
E – 4x M3 – 5 [.197] deep
screw hole orientation to marking not defined!
F – Flat

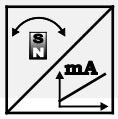
Dimensions in mm [inch]. Weight approx. 330 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

PRAS4

Analog output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP68 (10 bar)**
- **Analog output**
- **Subaqueous version up to 100 m depth, continuous use**
- **Non-contact with external position magnet, no wear**
- **Housing: Stainless steel 1.4404**



Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V, ratiometric 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°) f.s.
Repeatability	±0.03% (60 ... 360°); ±0.1% (15 ... 45°) f.s.
Linearity	±0.3% f.s. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP68 (10 bar, up to 100m, continuous operation)
Housing material	Stainless steel 1.4404
Mounting	Screws M6
Connection	Cable, standard length 2 m
Temperature range	-20 ... +85°C (up to +30°C immersed in sea water)
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
Weight	1250 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS4 – [1] – [2] – [3] – [4] – [5] – [6] – [7]

1 Mechanical connection

K	= Non-contact with external position magnet

2 Measurement range (0 ... 15° up to 0 ... 360°, in increments of 15°)

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

3 Output

U2	= Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
I1	= Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)

4 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

5 Connection

KAB2M	= Cable, standard length 2 m

6 Housing material

VA	= 1.4404 / screws A4

7 Pressure resistance

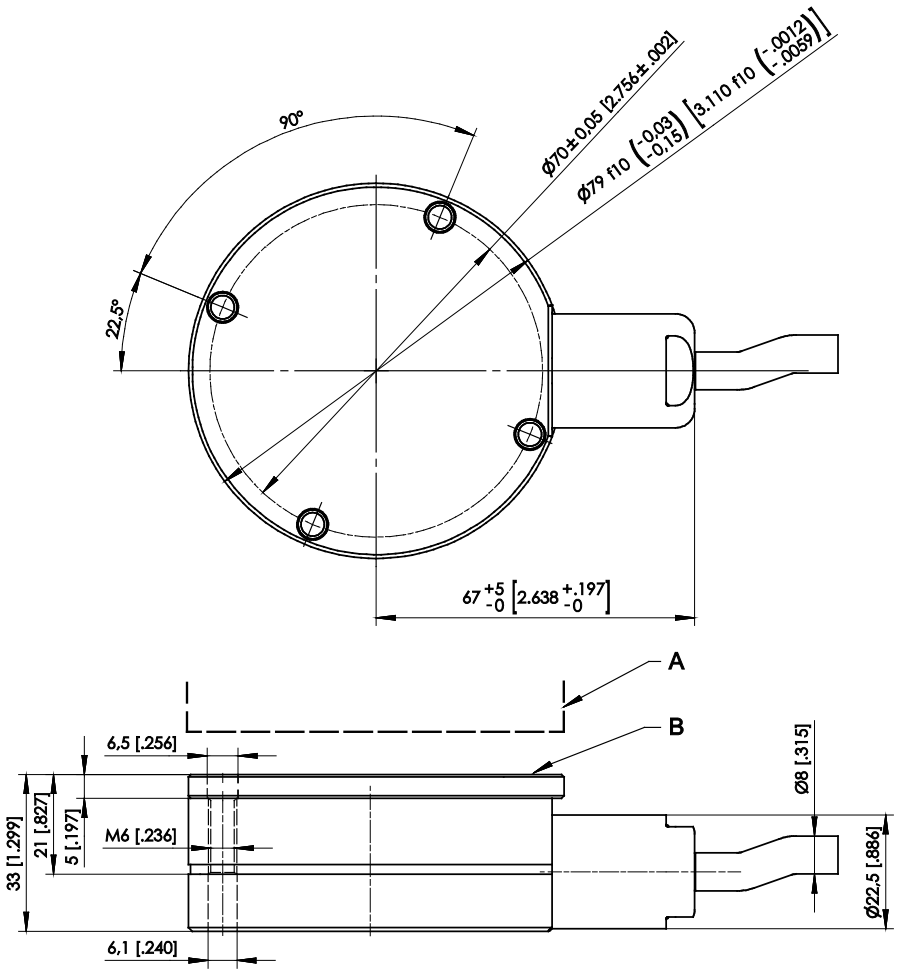
WP	= 10 bar

Order example

PRAS4 – K – 360 – I1 – CW – KAB2M – VA – WP

Accessories:
Position magnets (see from page 122)

Dimensions



A – Position magnet
B – Marking

IP68 / 100 m, continuous use.

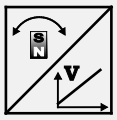
Dimensions in mm [inch]. Weight without cable approx. 1250 g.
Dimensions informative only.
For guaranteed dimensions please consult factory.

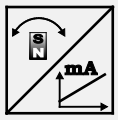
PRAS5

Analog output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69, IP68 optional**
- **Analog output**
- **Magnetic measurement principle**
- **With 10 mm shaft or non-contact**
- **Housing: Stainless steel 1.4404**





Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V 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. (typical)
Rated distance sensor / magnet	Depending on the position magnet (only version K)
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Housing material	Stainless steel 1.4404
Mounting	Screws M8
Connection	5-pin connector M12 (compatible to 4-pin connector) Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
Life cycle of bearings (shaft version)	100 x 10^6 revolutions (<1500 r.p.m.)
Revolutions per minute (shaft version)	10.000 r.p.m.
Allowable shaft load (shaft version)	120 N radial / 120 N axial
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
Weight	390 g approx., 890 g approx. with shaft (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS5	–	1	–	2	–	3	–	4	–	5	–	6

1 Mechanical connection

V	= Shaft 10 mm
K	= Non-contact with external magnet

2 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

3 Output

U2	= Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U2B	= Voltage 0.5 ... 10 V (excitation voltage 11.5 ... 27 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
U8	= Voltage 0.5 ... 4.5 V (excitation voltage 11 ... 36 V DC)
I1	= Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)
I1B	= Current 4 ... 20 mA, 3 wire (excitation voltage 10 ... 27 V DC)

4 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

5 Connection

M12A5	= 5-pin connector M12 axial (compatible with 4-pin connector)
M12R5	= 5-pin connector M12 radial (compatible with 4-pin connector)
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/3P/A*	= Cable 2 m with Deutsch connector DT04, 3 pin
KAB2M-DT04/3P/A-S*	= Cable 2 m with Deutsch connector DT04, 3 pin, with protective tube
KAB2M-DT04/4P/A	= Cable 2 m with Deutsch connector DT04, 4 pin
KAB2M-DT04/4P/A-S	= Cable 2 m with Deutsch connector DT04, 4 pin, with protective tube

* only for output U6

6 Housing material

VA	= Stainless steel 1.4404

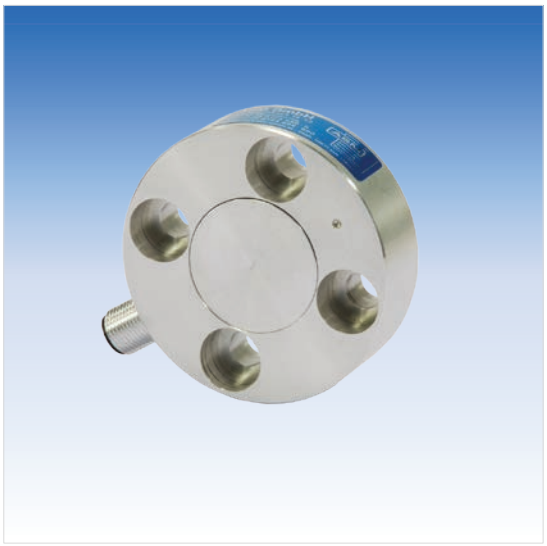
Order example

PRAS5 – V – 360 – I1 – CW – M12A5 – VA

Accessories:

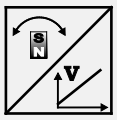
Connector cable (see page 157)
Position magnets (see from page 122)

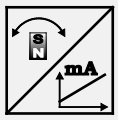
Analog output, redundant



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69, IP68 optional**
- **Analog output, redundant**
- **Magnetic measurement principle**
- **With 10 mm shaft or non-contact**
- **Housing: Stainless steel 1.4404**





Specifications

Output	Voltage 0.5 ... 10 V, redundant Voltage 0.5 ... 4.5 V, redundant Current 4 ... 20 mA, 3 wire, redundant
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. (typical)
Rated distance sensor / magnet	Depending on the position magnet (only version K)
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Housing material	Stainless steel 1.4404
Mounting	Screws M8
Connection	8-pin connector M12 Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
Life cycle of bearings (shaft version)	100 x 10^6 revolutions (<1500 r.p.m.)
Revolutions per minute (shaft version)	10.000 r.p.m.
Allowable shaft load	120 N radial / 120 N axial
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
Weight	390 g approx., 890 g approx. with shaft (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS5	–	1	–	2	–	3	–	4	–	5	–	6

1 Mechanical connection

V	= Shaft 10 mm
K	= Non-contact with external magnet

2 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

3 Output

U2R	= Voltage 0.5 ... 10 V, redundant (excitation voltage 18 ... 36 V DC)
U6R	= Voltage 0.5 ... 4.5 V ratiometric, redundant (excitation voltage 5 V DC)
U8R	= Voltage 0.5 ... 4.5 V, redundant (excitation voltage 11 ... 36 V DC)
I1R	= Current 4... 20 mA, 3 wire, redundant (excitation voltage 18 ... 36 V DC) (output I1R possible only with CW/CCW signal characteristics)

4 Signal characteristics

CW/CCW	= Signal 1 increasing clockwise, signal 2 increasing counterclockwise
CW/CW*	= Signal 1 and signal 2 increasing clockwise
CCW/CCW*	= Signal 1 and signal 2 increasing counterclockwise

* not available with output I1R

5 Connection

M12A8	= 8-pin connector M12 axial
M12R8	= 8-pin connector M12 radial
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/6P/A*	= Cable 2 m with Deutsch connector DT04, 6 pin
KAB2M-DT04/6P/A-S*	= Cable 2 m with Deutsch connector DT04, 6 pin, with protective tube
KAB2M-DT04/8P/A	= Cable 2 m with Deutsch connector DT04, 8 pin
KAB2M-DT04/8P/A-S	= Cable 2 m with Deutsch connector DT04, 8 pin, with protective tube

* only for output U6R

6 Housing material

VA	= Stainless steel 1.4404

Order example

PRAS5 – V – 360 – U2R – CW/CCW – M12R8 – VA

Accessories:

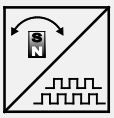
Connector cable (see page 158)
Position magnets (see from page 122)

PRDS5

Incremental output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69, IP68 optional**
- **Incremental output**
- **Magnetic measurement principle**
- **With 10 mm shaft or non-contact with external magnet**
- **Housing: Stainless steel 1.4404**



Specifications

Output	Incremental encoder output RS422-/HTL compatible, filtered output
Measurement range	0 ... 360°
Resolution (pulses per revolution)	25 / 50 / 100 / 200 / 256 / 300 / 400 / 500 / 512 / 1000 / 1024
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet (only version K)
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Material	Stainless steel 1.4404
Mounting	Screws M8
Connection	8-pin connector M12 Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
Life cycle of bearings (shaft version)	100 x 10^6 revolutions (<1500 r.p.m.)
Revolutions per minute (shaft version)	10.000 r.p.m.
Allowable shaft load	120 N radial / 120 N axial
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
Weight	390 g approx., 890 g approx. with shaft (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS5 – [1] – [2] – [3] – [4] – [5]

1 Mechanical connection

V	= Shaft 10 mm
K	= Non-contact with external magnet

2 Resolution

25 / 50 / 100 / 200 / 256 / 300 / 400 / 500 / 512 / 1000 / 1024

3 Output

RS5VF	= RS422 compatible output with excitation 5 V DC, filtered output
RS24VF	= RS422 compatible output with excitation 10 ... 36 V, filtered output
HT24VF	= HTL compatible output with excitation 18 ... 36 V, filtered output

4 Connection

M12A8	= 8-pin connector M12, axial
M12R8	= 8-pin connector M12, radial
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/8P/A	= Cable 2 m with Deutsch connector DT04, 8 pin
KAB2M-DT04/8P/A-S	= Cable 2 m with Deutsch connector DT04, 8 pin, with protective tube

5 Housing material

VA	= Stainless steel 1.4404

Order example

PRDS5 – V – 1024 – RS24VF – M12A8 – VA

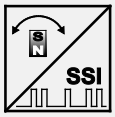
Accessories:

Connector cable (see page 158)
Position magnets (see from page 122)

Digital output SSI

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69, IP68 optional**
- **Digital output SSI**
- **Magnetic measurement principle**
- **With 10 mm shaft or non-contact with external magnet**
- **Housing: Stainless steel 1.4404**



Specifications

Output	Synchronous serial SSI
Measurement range	0 ... 360°
Resolution	12 Bit (4096 steps) per revolution
Repeatability	±0.1° (typical)
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet (only version K)
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Material	Stainless steel 1.4404
Mounting	Screws M8
Temperature range	-40 ... +85°C
Connection	8-pin connector M12 Cable, standard length 2 m Cable with Deutsch connector DT04
Life cycle of bearings (shaft version)	100 x 10^6 revolutions (<1500 r.p.m.)
Revolutions per minute (shaft version)	10.000 r.p.m.
Allowable shaft load	120 N radial / 120 N axial
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
Weight	390 g approx., 890 g approx. with shaft (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS5 – [1] – [2] – [3] – [4] – [5]

1 Mechanical connection

V	= Shaft 10 mm
K	= Non-contact with external magnet

2 Output

RSSI5V	= Synchronous serial output with excitation 5 V DC
RSSI24V	= Synchronous serial output with excitation 10 ... 36 V

3 Code characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

4 Connection

M12A8	= 8-pin connector M12, axial
M12R8	= 8-pin connector M12, radial
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/6P/A	= Cable 2 m with Deutsch connector DT04, 6 pin
KAB2M-DT04/6P/A-S	= Cable 2 m with Deutsch connector DT04, 6 pin, with protective tube

5 Housing material

VA	= Stainless steel 1.4404

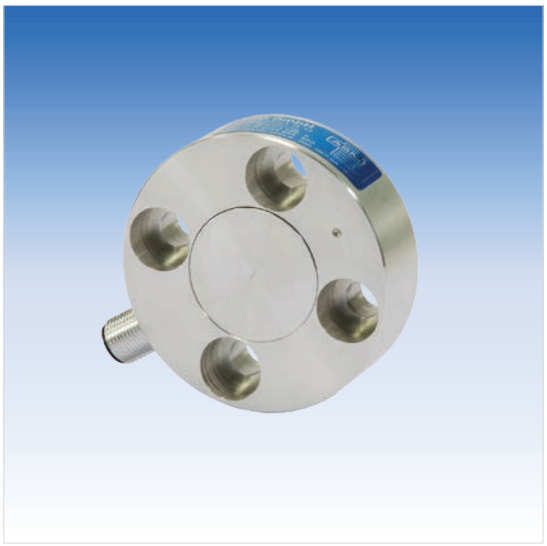
Order example

PRDS5 – K – RSSI24V – CW – M12A8 – VA

Accessories:

Connector cable (see page 158)
Position magnets (see from page 122)

Digital output CAN



Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69, IP68 optional**
- **Digital output CAN**
- **With 10 mm shaft or non-contact with external magnet**
- **Housing: Stainless steel 1.4404**
- **Redundant version available**

Specifications

Output	CANopen (CiA 301-V4.02/406-V3.2) CAN SAE J1939
Measurement range	0 ... 360°
Resolution	0.05° max.
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet (only version K)
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Material	Stainless steel 1.4404
Mounting	Screws M8
Connection	5-pin connector M12 Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
Life cycle of bearings (shaft version)	100 x 10^6 revolutions (<1500 r.p.m.)
Revolutions per minute (shaft version)	10.000 r.p.m.
Allowable shaft load	120 N radial / 120 N axial
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
Weight	390 g approx., 890 g approx. with shaft (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS5	–	1	–	2	–	3	–	4

1 Shaft

V	= Shaft 10 mm
K	= Non-contact with external magnet

2 Output

CANOP	= CANopen
CANJ1939	= CAN SAE J1939
CANOPR	= CANopen, redundant
CANJ1939R	= CAN SAE J1939, redundant

3 Connection

M12A5/CAN	= 5-pin connector M12 axial
M12R5/CAN	= 5-pin connector M12 radial
KAB0,3M-DT04/4P/A	= Cable 0.3 m with Deutsch connector DT04, 4 pin
KAB0,3M-DT04/4P/A-S	= Cable 0.3 m with Deutsch connector DT04, 4 pin, with protective tube

4 Housing material

VA	= Stainless steel 1.4404

Order example

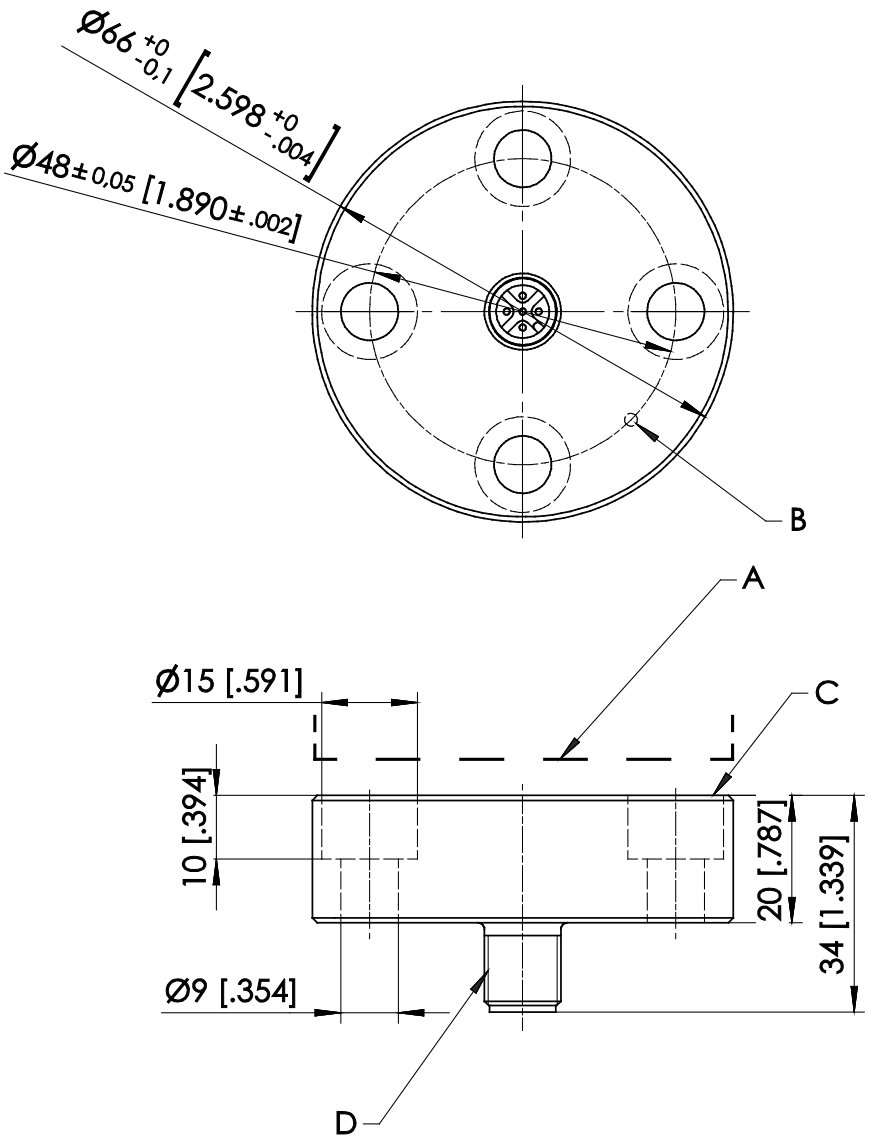
PRDS5 – V – CANOP – M12A5/CAN – VA

Accessories:

Connector cable (see page 159)
Position magnets (see from page 122)

Dimensions (analog and digital version)

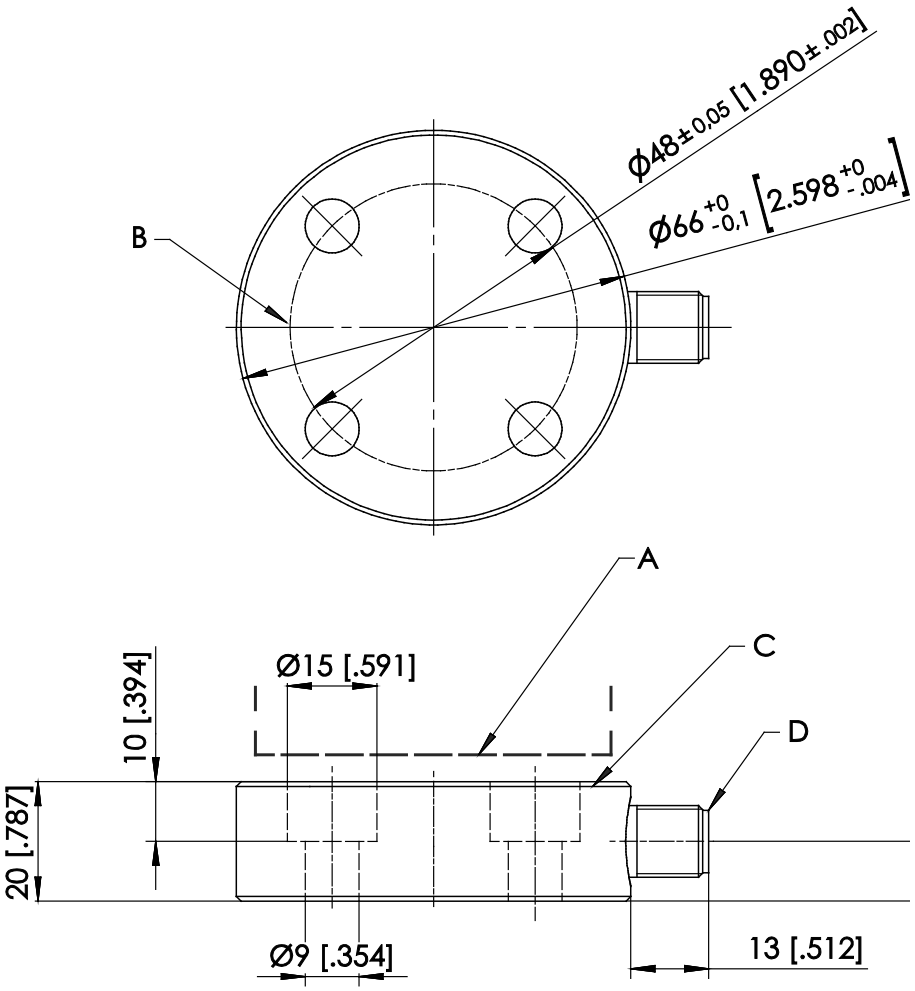
Contactless, connector M12, axial



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

Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

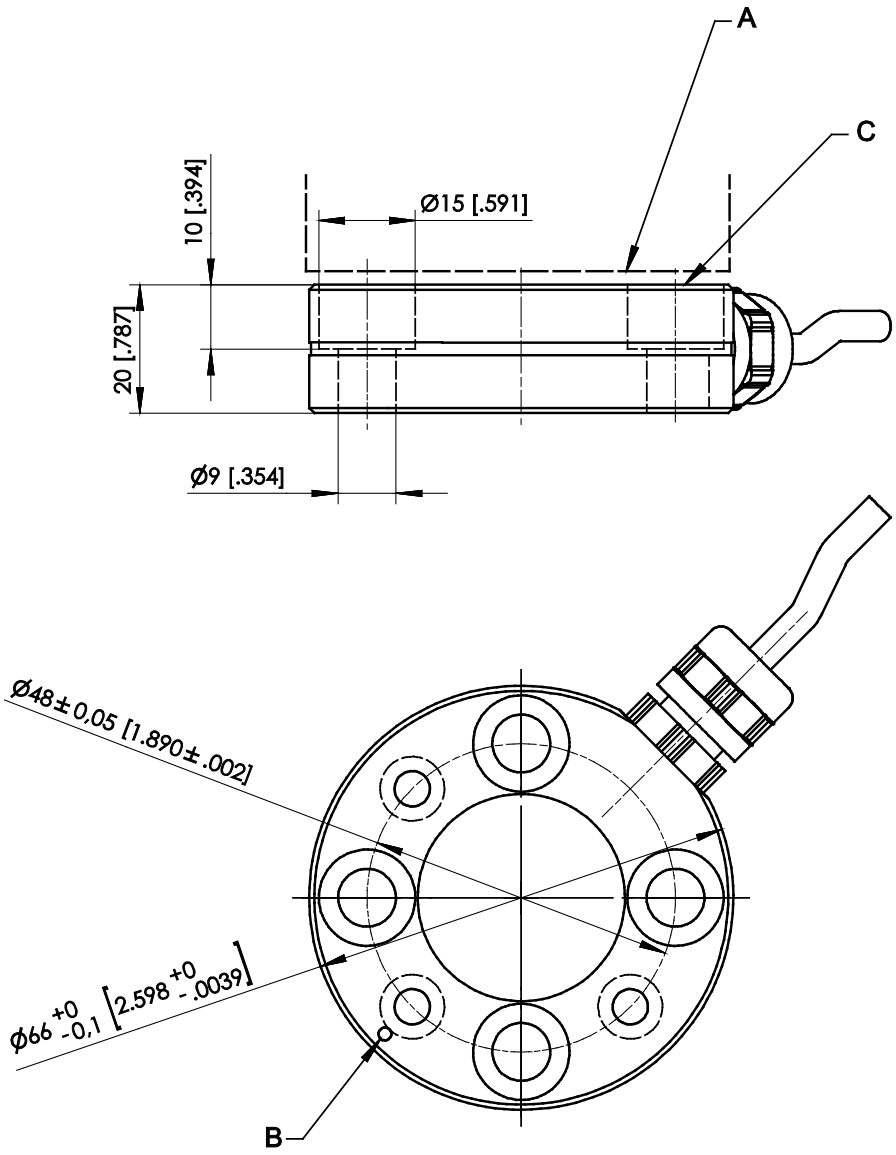
Contactless, connector M12, radial



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

Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

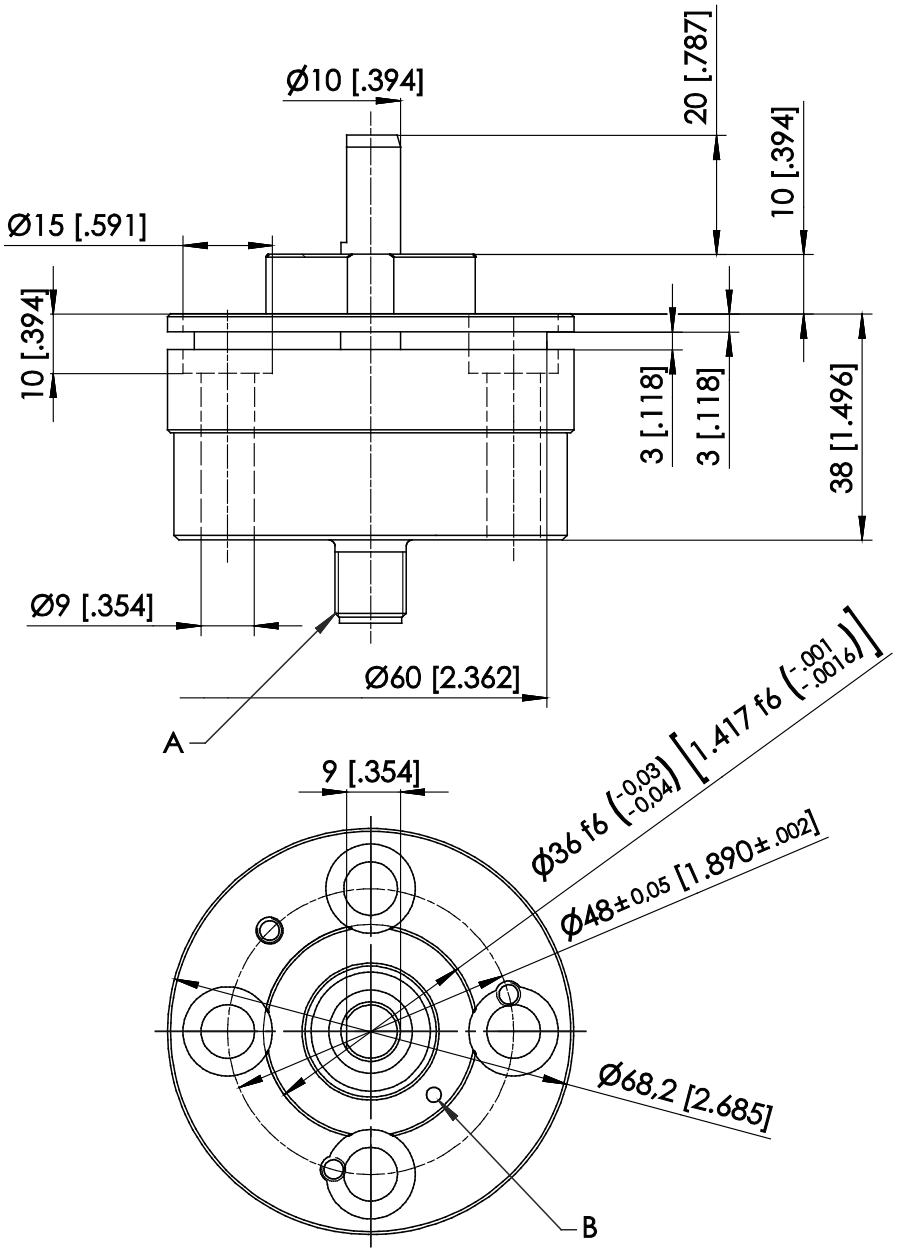
Cable version, contactless



A – Position magnet
B – Marking
C – Measurement area

Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

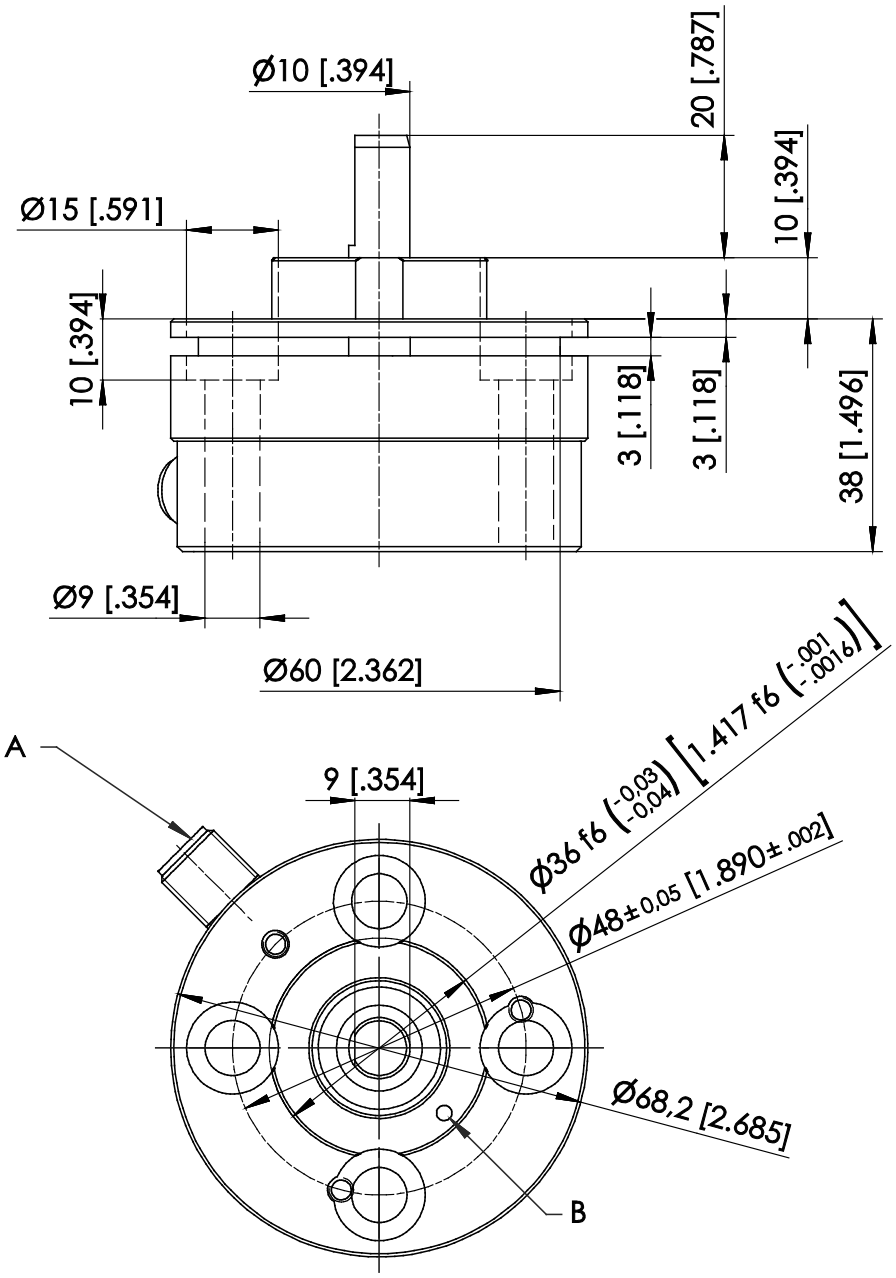
With shaft, connector M12, axial



A – Connector M12
B – Marking

Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

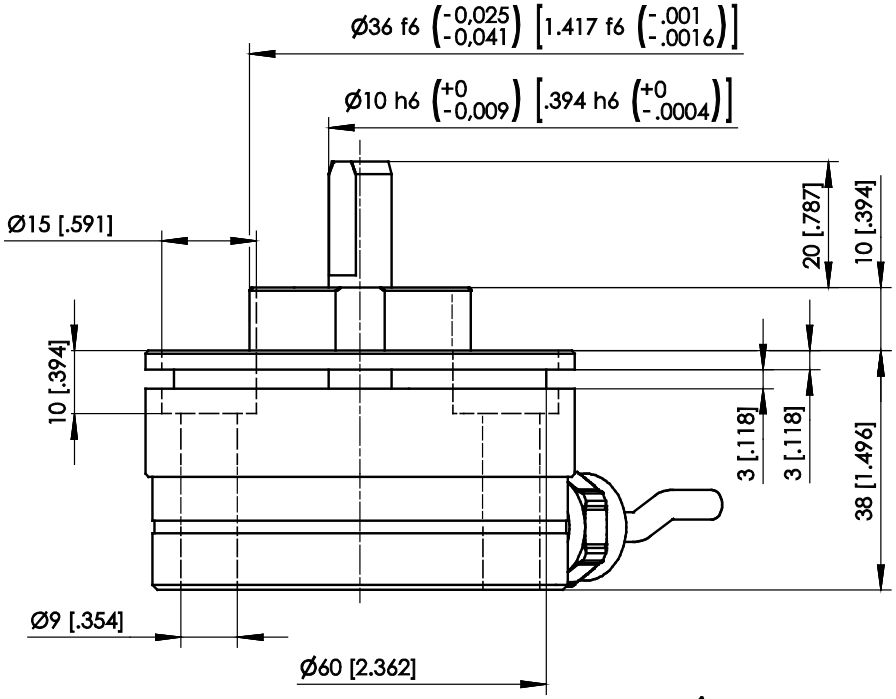
With shaft, connector M12, radial

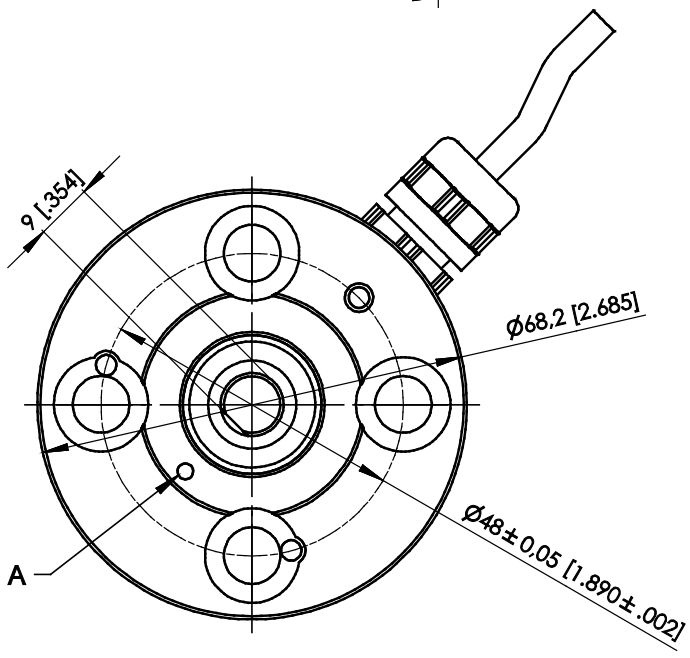


A – Connector M12
B – Marking

Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

Cable version, with shaft





A – Marking

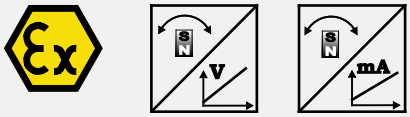
Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

PRAS5EX

Analog output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP65**
- **Analog output**
- **With 10 mm shaft or non-contact**
- **II 3D Ex tc IIIC T80°C Dc X (X = examined with low impact energy of 4J)**



Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V, ratiometric 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. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP65
Housing material	Stainless steel 1.4404
Mounting	Screws M8
Connection	5-pin connector M12 (compatible to 4-pin connector)
Temperature range	-20 ... +40°C
Life cycle of bearings (shaft version)	100 x 10^6 revolutions (<1000 r.p.m.)
Revolutions per minute (shaft version)	1000 r.p.m.
Allowable shaft load	120 N radial / 120 N axial
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
Weight	390 g approx., 890 g with shaft
EMC	DIN EN 61326-1:2013
Dust-EX proof	DIN EN 60079-0 (June 2014), DIN EN 60079-31 (December 2014)

Order code

PRAS5EX	–	1	–	2	–	3	–	4	–	5	–	6

1 Mechanical connection

V	= Shaft 10 mm
K	= Non-contact with external magnet

2 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

3 Output

U2	= Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
I1	= Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)

4 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

5 Connection

M12A5	= 5-pin connector M12 axial (compatible with 4-pin connector)
M12R5	= 5-pin connector M12 radial (compatible with 4-pin connector)

6 Housing material

VA	= Stainless steel 1.4404

Order example

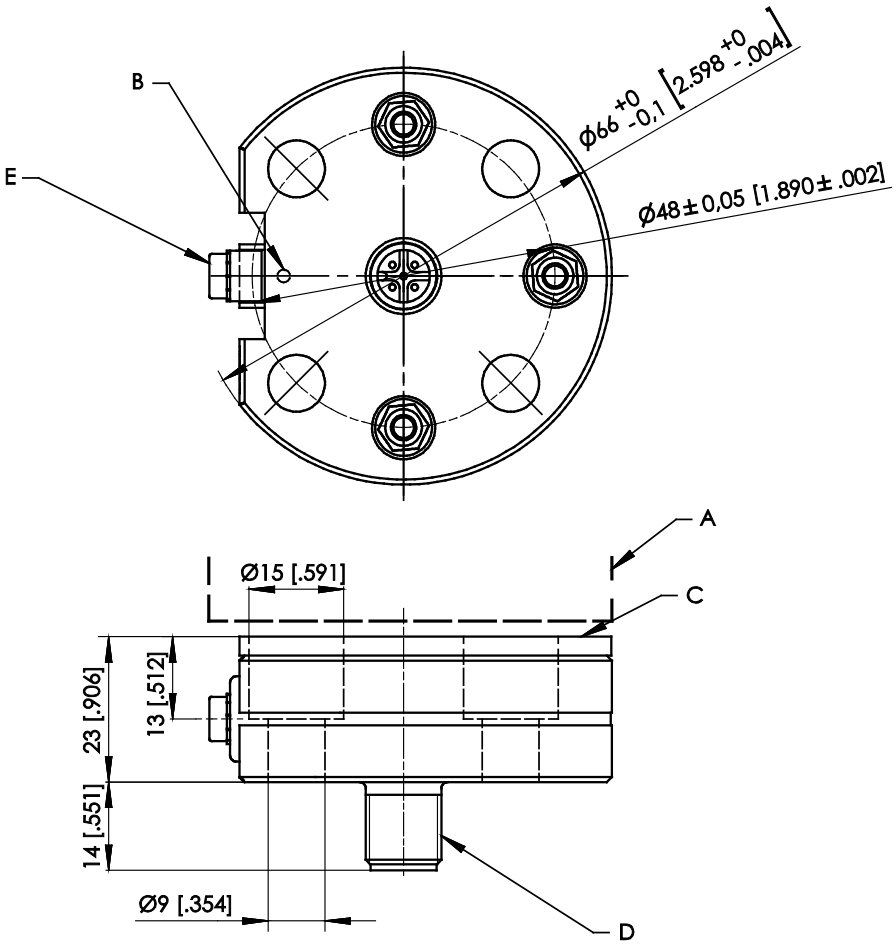
PRAS5EX – V – 360 – I1 – CW – M12A5 – VA

Accessories:

Position magnets (see from page 122)

Dimensions

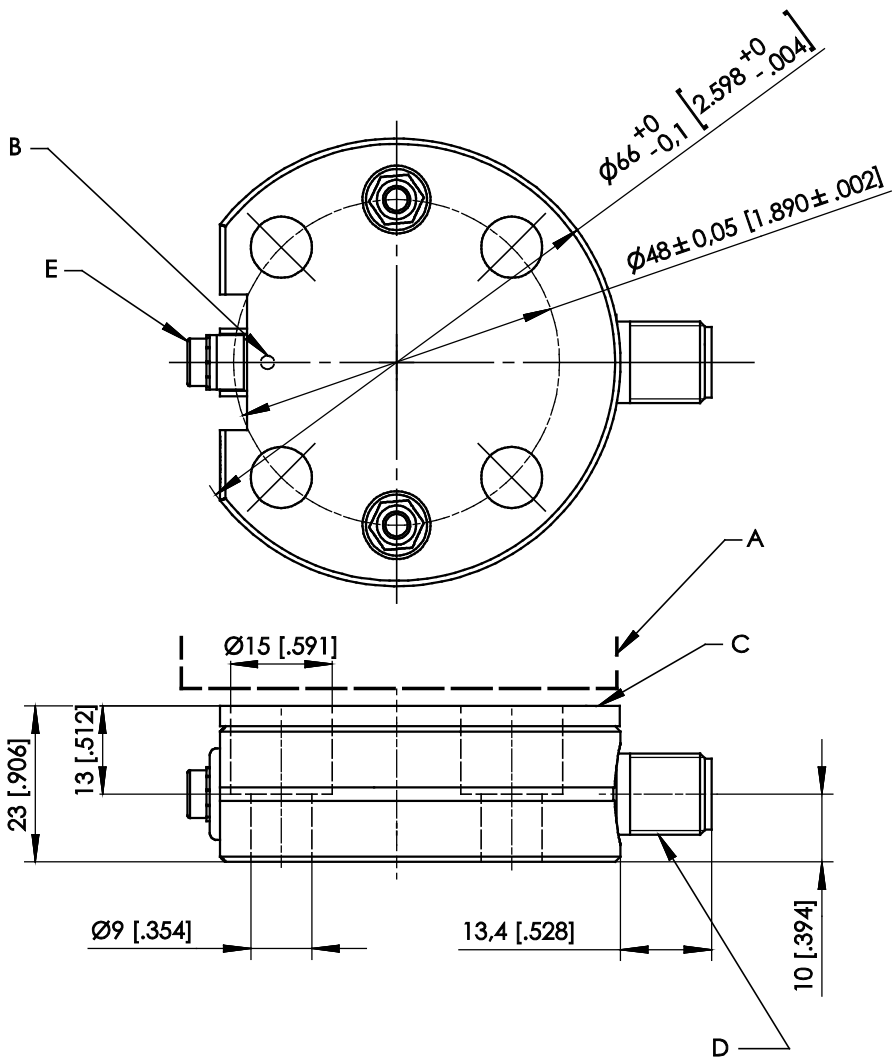
Contactless, connector M12, axial



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

Dimensions in mm [inch]. Weight approx. 390 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

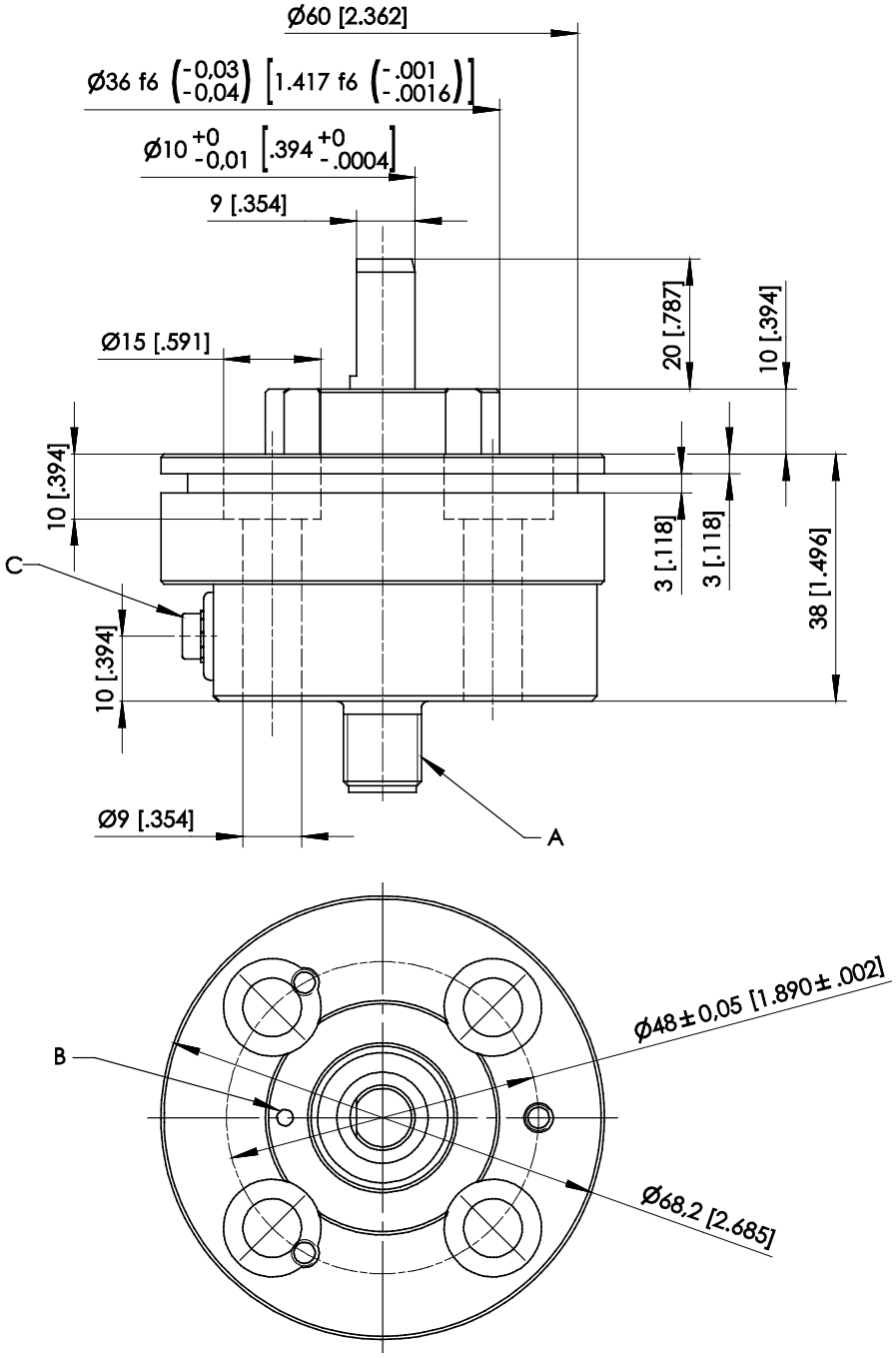
Contactless, connector M12, radial



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

Dimensions in mm [inch]. Weight approx. 390 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

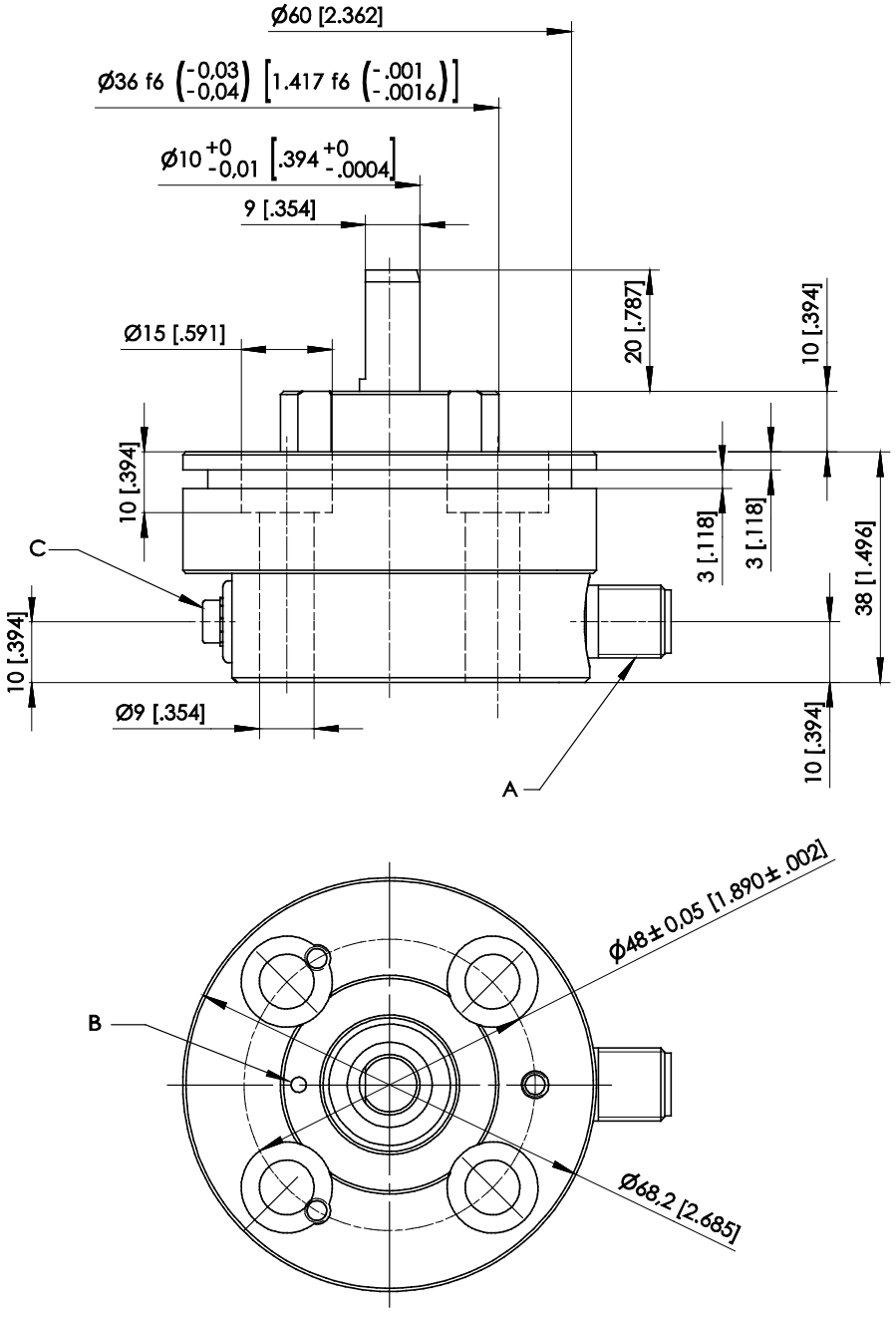
With shaft, connector M12, axial



A – Connector M12
B – Marking
C – Earthing

Dimensions in mm [inch]. Weight approx. 890 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

With shaft, connector M12, radial



A – Connector M12
B – Marking
C – Earthing

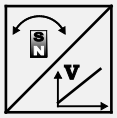
Dimensions in mm [inch]. Weight approx. 890 g.
Dimensions informative only.
For guaranteed dimensions consult factory.

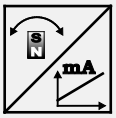
PRAS6

Analog output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Analog output**
- **Magnetic measurement principle**
- **Non-contact with external position magnet, no wear**
- **Housing: Stainless steel 1.4404**





Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V 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. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Housing material	Stainless steel 1.4404
Mounting	Screws M6
Connection	5-pin connector M12 (compatible to 4-pin connector) Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	390 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS6	–	1	–	2	–	3	–	4	–	5	–	6

1 Mechanical connection

K	= Non-contact with external position magnet

2 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

3 Output

U2	= Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U2B	= Voltage 0.5 ... 10 V (excitation voltage 11.5 ... 27 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
U8	= Voltage 0.5 ... 4.5 V (excitation voltage 11 ... 36 V DC)
I1	= Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)
I1B	= Current 4 ... 20 mA, 3 wire (excitation voltage 10 ... 27 V DC)

4 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

5 Connection

M12A5	= 5-pin connector M12 axial (compatible with 4-pin connector)
M12R5	= 5-pin connector M12 radial (compatible with 4-pin connector)
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/3P/A*	= Cable 2 m with Deutsch connector DT04, 3 pin
KAB2M-DT04/3P/A-S*	= Cable 2 m with Deutsch connector DT04, 3 pin, with protective tube
KAB2M-DT04/4P/A	= Cable 2 m with Deutsch connector DT04, 4 pin
KAB2M-DT04/4P/A-S	= Cable 2 m with Deutsch connector DT04, 4 pin, with protective tube

* only for output U6

6 Housing material

VA	= Stainless steel 1.4404

Order example

PRAS6 – K – 360 – I1 – CW – M12A5 – VA

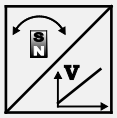
Accessories:

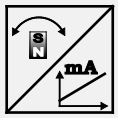
Connector cable (see page 157)
Position magnets (see from page 122)

Analog output, redundant

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Analog output, redundant**
- **Magnetic measurement principle**
- **Non-contact with external position magnet, no wear**
- **Housing: Stainless steel 1.4404**





Specifications

Output	Voltage 0.5 ... 10 V, redundant Voltage 0.5 ... 4.5 V, redundant Current 4 ... 20 mA, 3 wire, redundant
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. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Housing material	Stainless steel 1.4404
Mounting	Screws M6
Connection	8-pin connector M12 Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	390 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRAS6	–	1	–	2	–	3	–	4	–	5	–	6

1 Mechanical connection

K	= Non-contact with external position magnet

2 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

3 Output

U2R	= Voltage 0.5 ... 10 V, redundant (excitation voltage 18 ... 36 V DC)
U6R	= Voltage 0.5 ... 4.5 V ratiometric, redundant (excitation voltage 5 V DC)
U8R	= Voltage 0.5 ... 4.5 V, redundant (excitation voltage 11 ... 36 V DC)
I1R	= Current 4... 20 mA, 3 wire, redundant (excitation voltage 18 ... 36 V DC) (output I1R possible only with CW/CCW signal characteristics)

4 Signal characteristics

CW/CCW	= Signal 1 increasing clockwise, signal 2 increasing counterclockwise
CW/CW*	= Signal 1 and signal 2 increasing clockwise
CCW/CCW*	= Signal 1 and signal 2 increasing counterclockwise

* not available with output I1R

5 Connection

M12A8	= 8-pin connector M12 axial
M12R8	= 8-pin connector M12 radial
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/6P/A*	= Cable 2 m with Deutsch connector DT04, 6 pin
KAB2M-DT04/6P/A-S*	= Cable 2 m with Deutsch connector DT04, 6 pin, with protective tube
KAB2M-DT04/8P/A	= Cable 2 m with Deutsch connector DT04, 8 pin
KAB2M-DT04/8P/A-S	= Cable 2 m with Deutsch connector DT04, 8 pin, with protective tube

* only for output U6R

6 Housing material

VA	= Stainless steel 1.4404

Order example

PRAS6 – K – 360 – U2R – CW/CCW – M12R8 – VA

Accessories:

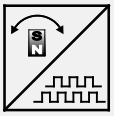
Connector cable (see page 158)
Position magnets (see from page 122)

PRDS6

Incremental output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Incremental output**
- **Magnetic measurement principle**
- **Non-contact with external position magnet**
- **Housing: Stainless steel 1.4404**



Specifications

Output	Incremental encoder output RS422-/HTL compatible, filtered output
Measurement range	0 ... 360°
Resolution (pulses per revolution)	25 / 50 / 100 / 200 / 256 / 300 / 400 / 500 / 512 / 1000 / 1024
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Material	Stainless steel 1.4404
Mounting	Screws M6
Connection	8-pin connector M12 Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	390 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS6 – [1] – [2] – [3] – [4] – [5]

1 Mechanical connection

K	= Non-contact with external position magnet

2 Resolution

25 / 50 / 100 / 200 / 256 / 300 / 400 / 500 / 512 / 1000 / 1024

3 Output

RS5VF	= RS422 compatible output with excitation 5 V DC, filtered output
RS24VF	= RS422 compatible output with excitation 10 ... 36 V, filtered output
HT24VF	= HTL compatible output with excitation 18 ... 36 V, filtered output

4 Connection

M12A8	= 8-pin connector M12, axial
M12R8	= 8-pin connector M12, radial
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/8P/A	= Cable 2 m with Deutsch connector DT04, 8 pin
KAB2M-DT04/8P/A-S	= Cable 2 m with Deutsch connector DT04, 8 pin, with protective tube

5 Housing material

VA	= Stainless steel 1.4404

Order example

PRDS6 – K – 1024 – RS24VF – M12A8 – VA

Accessories:

Connector cable (see page 158)
Position magnets (see from page 122)

Digital output SSI

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Digital output SSI**
- **Magnetic measurement principle**
- **Non-contact with external position magnet**
- **Housing: Stainless steel 1.4404**

Specifications

Output	Synchronous serial SSI
Measurement range	0 ... 360°
Resolution	12 Bit (4096 steps) per revolution
Repeatability	±0.1° (typical)
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Material	Stainless steel 1.4404
Mounting	Screws M6
Connection	8-pin connector M12 Cable, standard length 2 m Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	390 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS6 – 1 – 2 – 3 – 4 – 5

1 Mechanical connection

K	= Non-contact with external position magnet

2 Output

RSSI5V	= Synchronous serial output with excitation 5 V DC
RSSI24V	= Synchronous serial output with excitation 10 ... 36 V

3 Code characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

4 Connection

M12A8	= 8-pin connector M12, axial
M12R8	= 8-pin connector M12, radial
KAB2M	= Cable, standard length 2 m
KAB2M-DT04/6P/A	= Cable 2 m with Deutsch connector DT04, 6 pin
KAB2M-DT04/6P/A-S	= Cable 2 m with Deutsch connector DT04, 6 pin, with protective tube

5 Housing material

VA	= Stainless steel 1.4404

Order example

PRDS6 – K – RSSI24V – CW – M12A8 – VA

Accessories:

Connector cable (see page 158)
Position magnets (see from page 122)

Digital output CAN

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Digital output CAN**
- **Non-contact with external position magnet**
- **Housing: Stainless steel 1.4404**
- **Redundant version available**

Specifications

Output	CANopen (CiA 301-V4.02/406-V3.2) CAN SAE J1939
Measurement range	0 ... 360°
Resolution	0.05° max.
Linearity	±1% (typical)
Rated Distance sensor /magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Material	Stainless steel 1.4404
Mounting	Screws M6
Connection	5-pin connector M12 Cable with Deutsch connector DT04
Temperature range	-40 ... +85°C
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
Weight	390 g approx. (without cable)
EMC	DIN EN 61326-1:2013

Order code

PRDS6	–	1	–	2	–	3	–	4

1 Shaft

K	= Non-contact with external position magnet

2 Output

CANOP	= CANopen
CANJ1939	= CAN SAE J1939
CANOPR	= CANopen, redundant
CANJ1939R	= CAN SAE J1939, redundant

3 Connection

M12A5/CAN	= 5-pin connector M12 axial
M12R5/CAN	= 5-pin connector M12 radial
KAB0,3M-DT04/4P/A	= Cable 0.3 m with Deutsch connector DT04, 4 pin
KAB0,3M-DT04/4P/A-S	= Cable 0.3 m with Deutsch connector DT04, 4 pin, with protective tube

4 Housing material

VA	= Stainless steel 1.4404

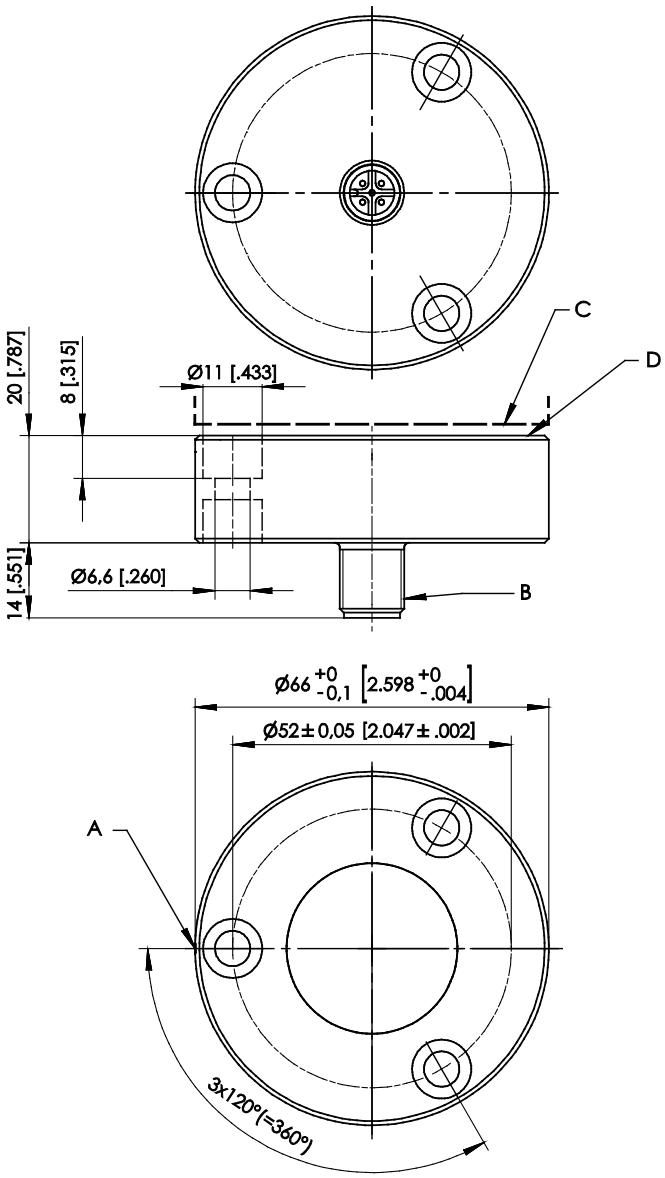
Order example

PRDS6 – K – CANOP – M12A5/CAN – VA

Accessories:
Connector cable (see page 159)
Position magnets (see from page 122)

Dimensions (analog and digital version)

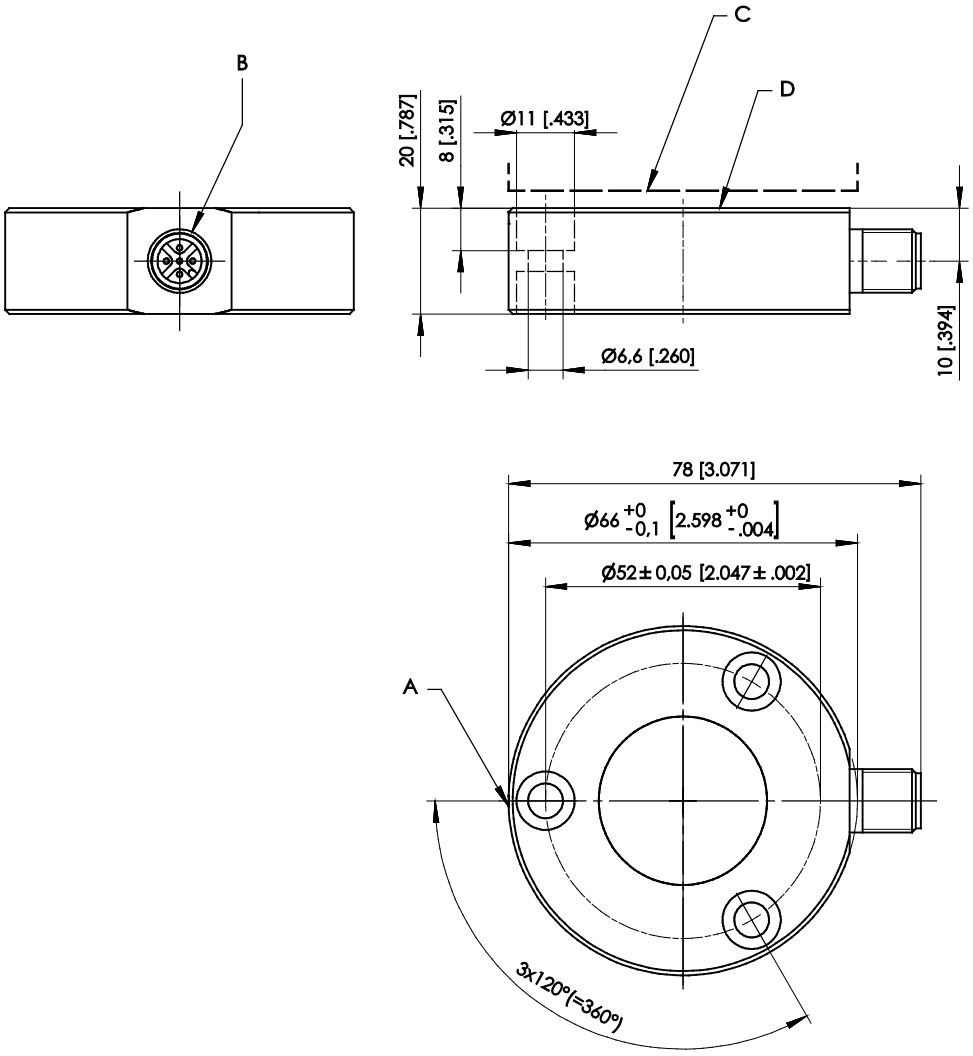
Connector M12, axial



A – Marking
B – Connector M12
C – Position magnet
D – Measurement area

Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

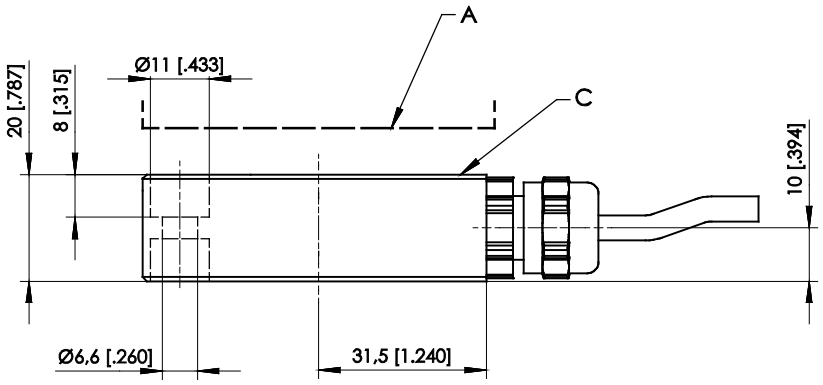
Connector M12, radial

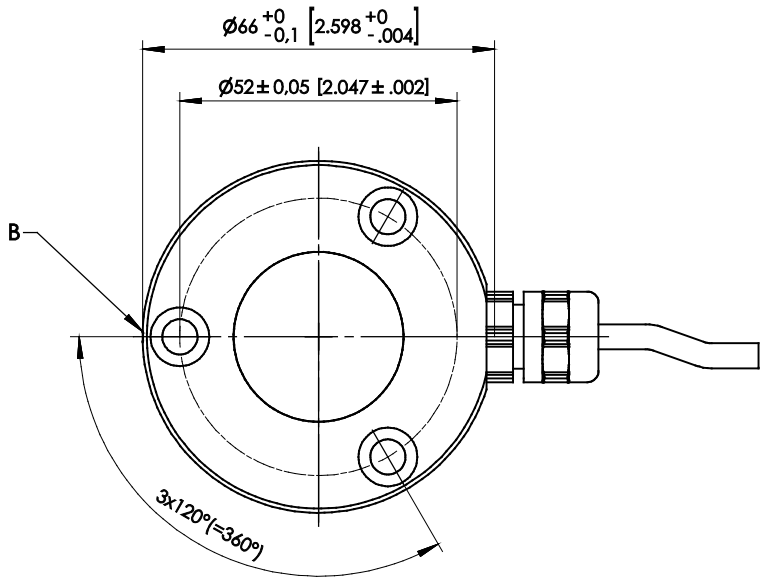


A – Marking
B – Connector M12
C – Position magnet
D – Measurement area

Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

Cable version





A – Position magnet
B – Marking
C – Measurement area

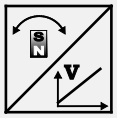
Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

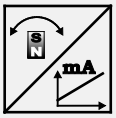
PRAS7

Analog output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Analog output**
- **Non-contact with external position magnet, no wear**
- **Housing: Stainless steel 1.4404**
- **Application: hygienic areas**





Specifications

Output	Voltage 0.5 ... 10 V Voltage 0.5 ... 4.5 V 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. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Housing material	Stainless steel 1.4404
Mounting	Screws M6
Connection	5-pin connector M12 (compatible to 4-pin connector)
Temperature range	-40 ... +85°C
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
Weight	390 g approx.
EMC	DIN EN 61326-1:2013

Order code

PRAS7	–	1	–	2	–	3	–	4	–	5	–	6

1 Mechanical connection

K	= Non-contact with external position magnet

2 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

3 Output

U2	= Voltage 0.5 ... 10 V (excitation voltage 18 ... 36 V DC)
U2B	= Voltage 0.5 ... 10 V (excitation voltage 11.5 ... 27 V DC)
U6	= Voltage 0.5 ... 4.5 V ratiometric (excitation voltage 5 V DC)
U8	= Voltage 0.5 ... 4.5 V (excitation voltage 11 ... 36 V DC)
I1	= Current 4 ... 20 mA, 3 wire (excitation voltage 18 ... 36 V DC)
I1B	= Current 4 ... 20 mA, 3 wire (excitation voltage 10 ... 27 V DC)

4 Signal characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

5 Connection

M12A5	= 5-pin connector M12 axial (compatible with 4-pin connector)
M12R5	= 5-pin connector M12 radial (compatible with 4-pin connector)

6 Housing material

VA	= Stainless steel 1.4404

Order example

PRAS7 – K – 360 – I1 – CW – M12A5 – VA

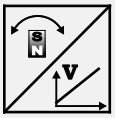
Accessories:

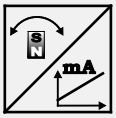
Connector cable (see page 157)
Position magnets (see from page 122)

Analog output, redundant

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Analog output, redundant**
- **Non-contact with external position magnet, no wear**
- **Housing: Stainless steel 1.4404**
- **Application: hygienic areas**





Specifications

Output	Voltage 0.5 ... 10 V, redundant Voltage 0.5 ... 4.5 V, redundant Current 4 ... 20 mA, 3 wire, redundant
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. (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Housing material	Stainless steel 1.4404
Mounting	Screws M6
Connection	8-pin connector M12
Temperature range	-40 ... +85°C
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
Weight	390 g approx.
EMC	DIN EN 61326-1:2013

Order code

PRAS7	–	1	–	2	–	3	–	4	–	5	–	6

1 Mechanical connection

K	= Non-contact with external position magnet

2 Measurement range (0 ... 15° to 0 ... 360°, in 15° increments)

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

3 Output

U2R	= Voltage 0.5 ... 10 V, redundant (excitation voltage 18 ... 36 V DC)
U6R	= Voltage 0.5 ... 4.5 V ratiometric, redundant (excitation voltage 5 V DC)
U8R	= Voltage 0.5 ... 4.5 V, redundant (excitation voltage 11 ... 36 V DC)
I1R	= Current 4... 20 mA, 3 wire, redundant (excitation voltage 18 ... 36 V DC) (output I1R possible only with CW/CCW signal characteristics)

4 Signal characteristics

CW/CCW	= Signal 1 increasing clockwise, signal 2 increasing counterclockwise
CW/CW*	= Signal 1 and signal 2 increasing clockwise
CCW/CCW*	= Signal 1 and signal 2 increasing counterclockwise

* not available with output I1R

5 Connection

M12A8	= 8-pin connector M12 axial
M12R8	= 8-pin connector M12 radial

6 Housing material

VA	= Stainless steel 1.4404

Order example

PRAS7 – K – 360 – U2R – CW/CCW – M12R8 – VA

Accessories:

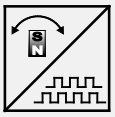
Connector cable (see page 158)
Position magnets (see from page 122)

PRDS7

Incremental output

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Incremental output**
- **Non-contact with external position magnet**
- **Housing: Stainless steel 1.4404**
- **Application: hygienic areas**



Specifications

Output	Incremental encoder output RS422-/HTL compatible, filtered output
Measurement range	0 ... 360°
Resolution (pulses per revolution)	25 / 50 / 100 / 200 / 256 / 300 / 400 / 500 / 512 / 1000 / 1024
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Material	Stainless steel 1.4404
Mounting	Screws M6
Connection	8-pin connector M12
Temperature range	-40 ... +85°C
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
Weight	390 g approx.
EMC	DIN EN 61326-1:2013

Order code

PRDS7 – 1 – 2 – 3 – 4 – 5

1 Mechanical connection

K	= Non-contact with external position magnet

2 Resolution

25 / 50 / 100 / 200 / 256 / 300 / 400 / 500 / 512 / 1000 / 1024

3 Output

RS5VF	= RS422 compatible output with excitation 5 V DC, filtered output
RS24VF	= RS422 compatible output with excitation 10 ... 36 V, filtered output
HT24VF	= HTL compatible output with excitation 18 ... 36 V, filtered output

4 Connection

M12A8	= 8-pin connector M12, axial
M12R8	= 8-pin connector M12, radial

5 Housing material

VA	= Stainless steel 1.4404

Order example

PRDS7 – K – 1024 – RS24VF – M12A8 – VA

Accessories:
Connector cable (see page 158)
Position magnets (see from page 122)

Digital output SSI

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Digital output SSI**
- **Non-contact with external position magnet**
- **Housing: Stainless steel 1.4404**
- **Application: hygienic areas**

Specifications

Output	Synchronous serial SSI
Measurement range	0 ... 360°
Resolution	12 Bit (4096 steps) per revolution
Repeatability	±0.1° (typical)
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Material	Stainless steel 1.4404
Mounting	Screws M6
Connection	8-pin connector M12
Temperature range	-40 ... +85°C
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
Weight	390 g approx.
EMC	DIN EN 61326-1:2013

Order code

PRDS7 – 1 – 2 – 3 – 4 – 5

1 Mechanical connection

K	= Non-contact with external position magnet

2 Output

RSSI5V	= Synchronous serial output with excitation 5 V DC
RSSI24V	= Synchronous serial output with excitation 10 ... 36 V

3 Code characteristics

CW	= Signal increasing CW, clockwise
CCW	= Signal increasing CCW, counterclockwise

4 Connection

M12A8	= 8-pin connector M12, axial
M12R8	= 8-pin connector M12 radial

5 Housing material

VA	= Stainless steel 1.4404

Order example

PRDS7 – K – RSSI24V – CW – M12A8 – VA

Accessories:

Connector cable (see page 158)
Position magnets (see from page 122)

Digital output CAN

Sensor features

- **Measurement range 0 ... 360°**
- **Protection class IP67/IP69**
- **Digital output CAN**
- **Non-contact with external position magnet**
- **Housing: Stainless steel 1.4404**
- **Redundant version available**

Specifications

Output	CANopen (CiA 301-V4.02/406-V3.2) CAN SAE J1939
Measurement range	0 ... 360°
Resolution	0.05° max.
Linearity	±1% (typical)
Rated distance sensor / magnet	Depending on the position magnet
Protection class	IP67/IP69 (connector output with IP67/IP69 connector cable)
Material	Stainless steel 1.4404
Mounting	Screws M6
Connection	5-pin connector M12
Temperature range	-40 ... +85°C
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
Weight	390 g approx.
EMC	DIN EN 61326-1:2013

Order code

PRDS7	–	1	–	2	–	3	–	4

1 Shaft

K	= Non-contact with external position magnet

2 Output

CANOP	= CANopen
CANJ1939	= CAN SAE J1939
CANOPR	= CANopen, redundant
CANJ1939R	= CAN SAE J1939, redundant

3 Connection

M12A5/CAN	= 5-pin connector M12 axial
M12R5/CAN	= 5-pin connector M12 radial

4 Housing material

VA	= Stainless steel 1.4404

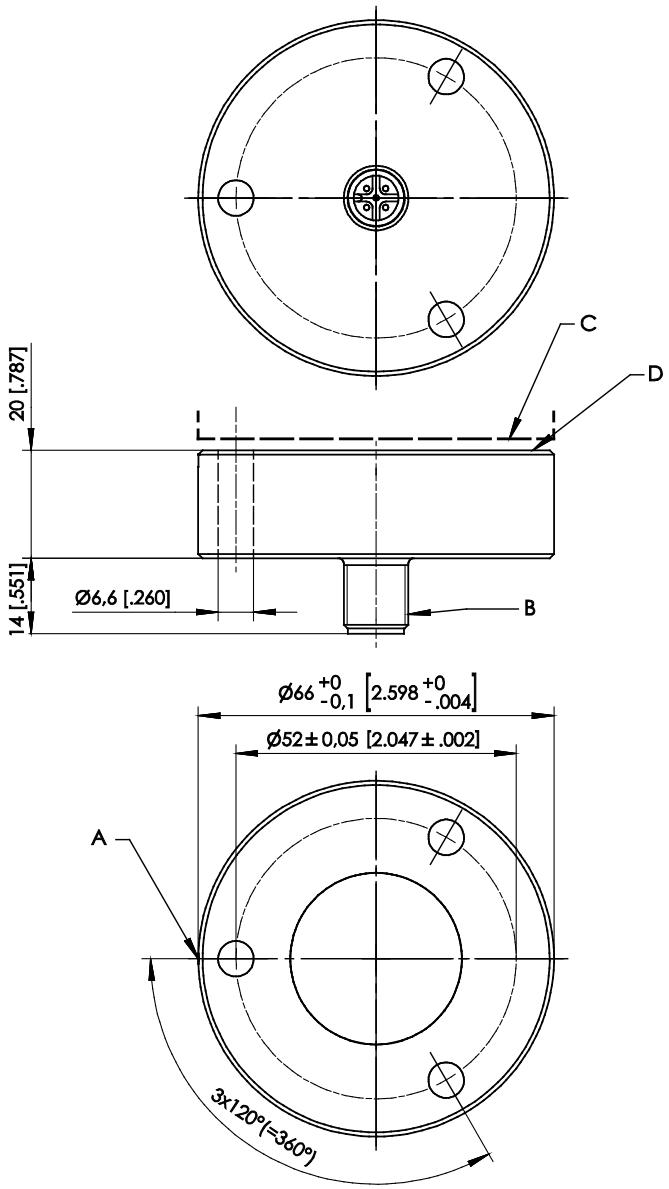
Order example

PRDS7 – K – CANOP – M12A5/CAN – VA

Accessories:
Connector cable (see page 159)
Position magnets (see from page 122)

Dimensions (analog and digital version)

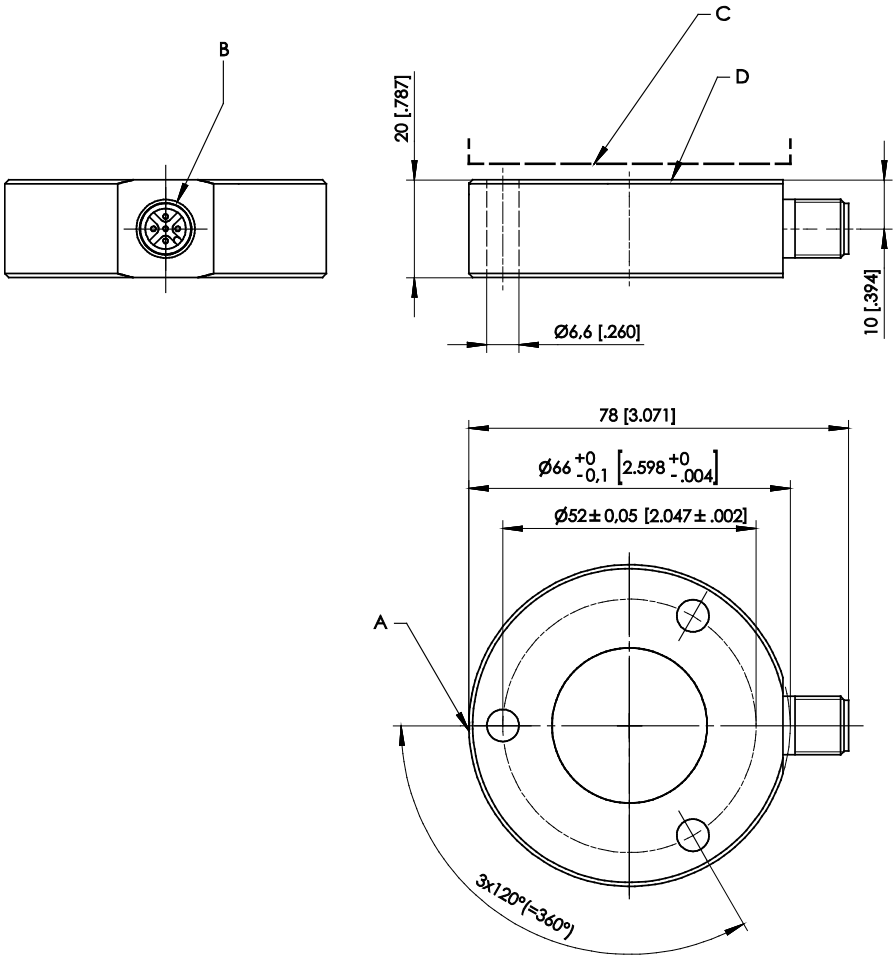
Connector M12, axial



A – Position magnet
B – Marking
C – Measurement area
D – Connector M12

Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

Connector M12, radial



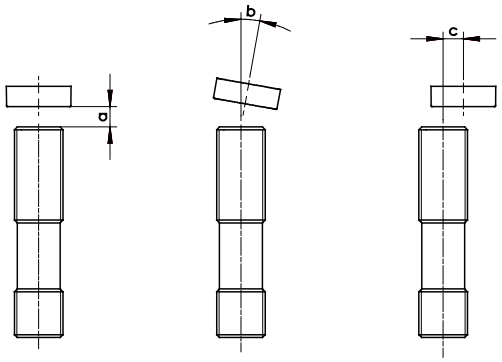
A – Position magnet
B – Marking
C – Measurement area
D – Connector M12

Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

Position magnets

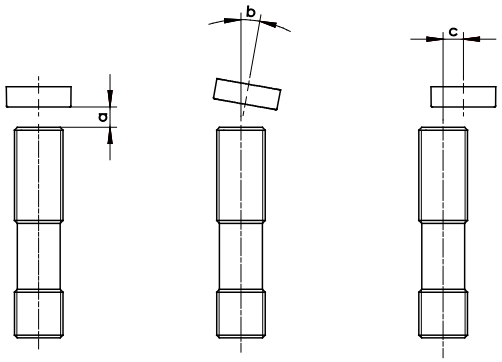
Measuring error by misalignment of the position magnet

Sensor	Position magnet	Air gap [mm] (a)	Parallelism [°] (b)	Error by axial misalignment [°] (c)					
				0.2 mm	0.5 mm	1 mm	2 mm	3 mm	4 mm
PRAS20 PRAS21 PRAS26	PRMAG20	0 ... 7	0 ... 5	0.1	0.3	0.7	2	4.6	–
	PRMAG21	0 ... 2	0 ... 5	0.15	0.3	0.9	3.6	9.6	–
	PRMAG22	0 ... 10	0 ... 5	0	0	0.7	1.5	3.8	7
	PRMAG-M10	0 ... 3	0 ... 5	0.1	0.1	0.5	2	7	–
PRAS27 PRDS27	PRMAG20	0 ... 7.5	0 ... 5	0.1	0.3	0.7	2	4.6	–
	PRMAG21	0 ... 2.5	0 ... 5	0.15	0.3	0.9	3.6	9.6	–
	PRMAG22	0 ... 10.5	0 ... 5	0	0	0.7	1.5	3.8	7
	PRMAG-M10	0 ... 3.5	0 ... 5	0.1	0.1	0.5	2	7	–

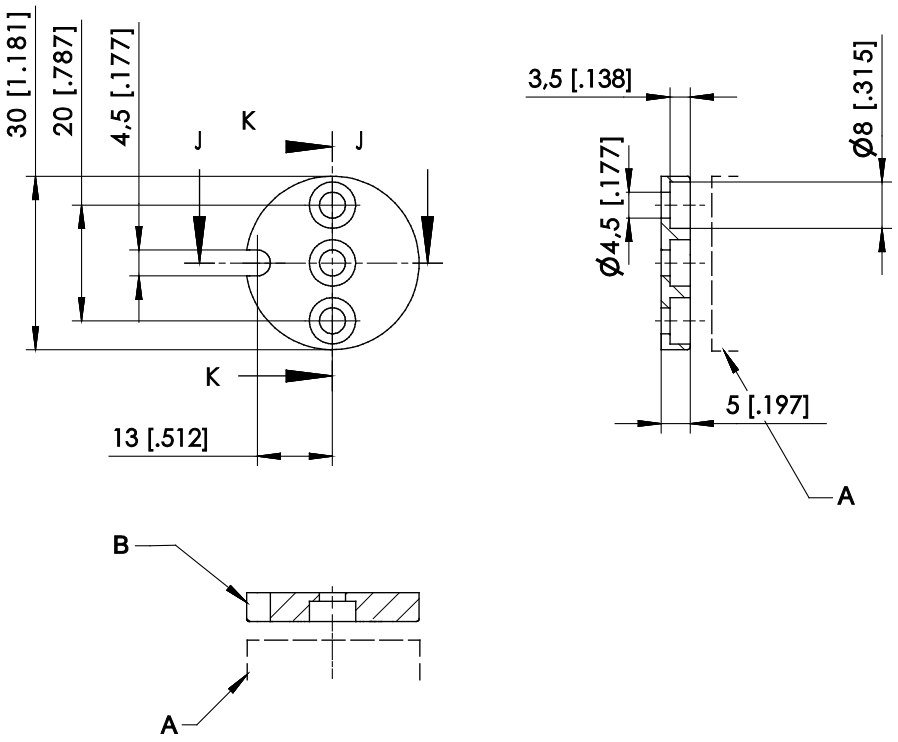


Measuring error by misalignment of the position magnet

Sensor	Position magnet	Air gap [mm] (a)	Parallelism [°] (b)	Error by axial misalignment [°] (c)					
				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	–
	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	7	–
PRAS2 PRDS2	PRMAG2-Z-VA	0 ... 9	0 ... 5	0.1	0.2	0.6	1.5	4.5	8.5
	PRMAG20	0 ... 6	0 ... 5	0.15	0.4	0.8	2.2	5	–
	PRMAG21	0 ... 3.5	0 ... 5	0.2	0.4	1	3.8	10	–
	PRMAG22	0 ... 9	0 ... 5	0.1	0.4	1	2.2	4.5	8
PRAS4	PRMAG5-Z-VA-WP	0 ... 6.5	0 ... 5	0.1	0.2	0.6	1.5	4.5	8.5
PRAS5 PRAS6 PRAS7 PRDS5 PRDS6 PRDS7	PRMAG2-Z-(VA)	0 ... 8.5	0 ... 5	0.1	0.2	0.6	1.5	4.5	8.5
	PRMAG5-Z-(VA)	0 ... 7.5	0 ... 5	0.1	0.2	0.6	1.5	4.5	8.5
	PRMAG6-Z-(VA)	0 ... 7.5	0 ... 5	0.1	0.2	0.6	1.5	4.5	8.5
	PRMAG7-Z-VA	0 ... 7.5	0 ... 5	0.1	0.2	0.6	1.5	4.5	8.5
	PRMAG20	0 ... 5.5	0 ... 5	0.15	0.4	0.8	2.2	5	–
	PRMAG21	0 ... 3	0 ... 5	0.2	0.4	1	3.8	10	–
	PRMAG22	0 ... 8.5	0 ... 5	0.1	0.4	1	2.2	4.5	8



PRMAG20



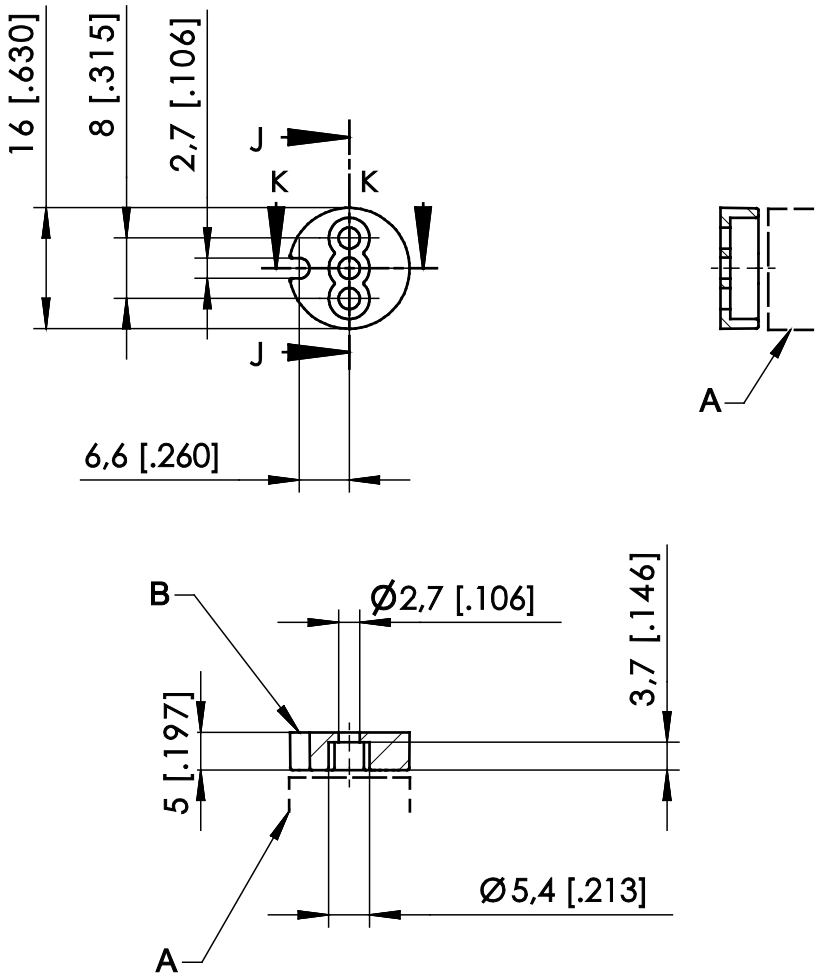
A – Sensor
B – Marking

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



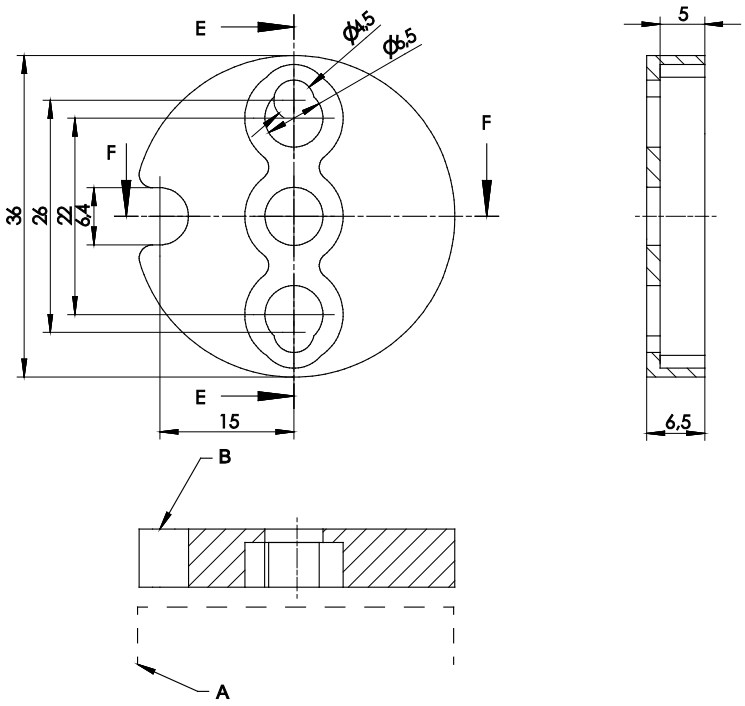
A – Sensor
B – Marking

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



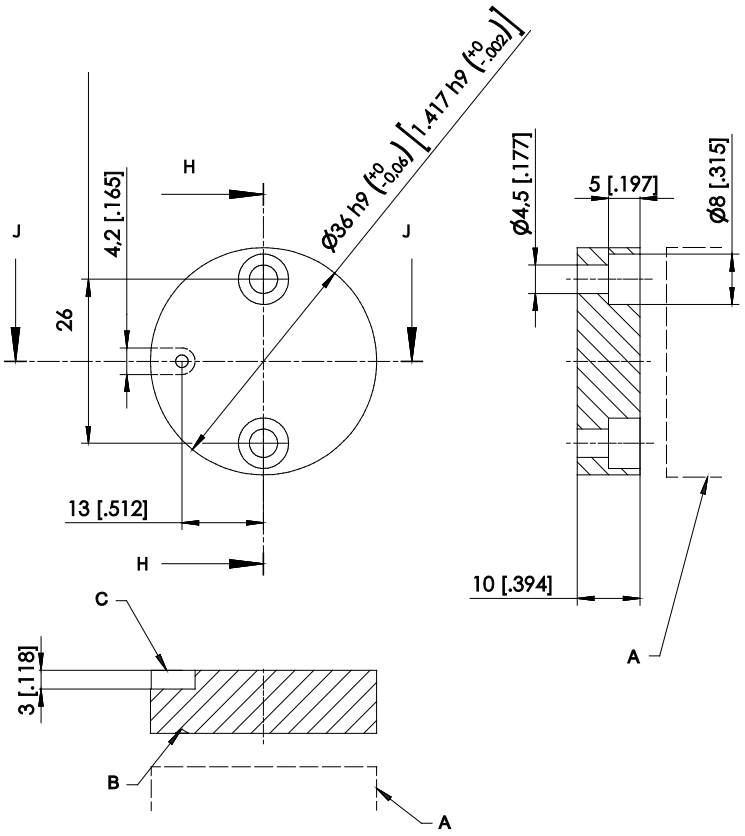
A – Sensor
B – Marking

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.

PRMAG2-Z / PRMAG2-Z-VA



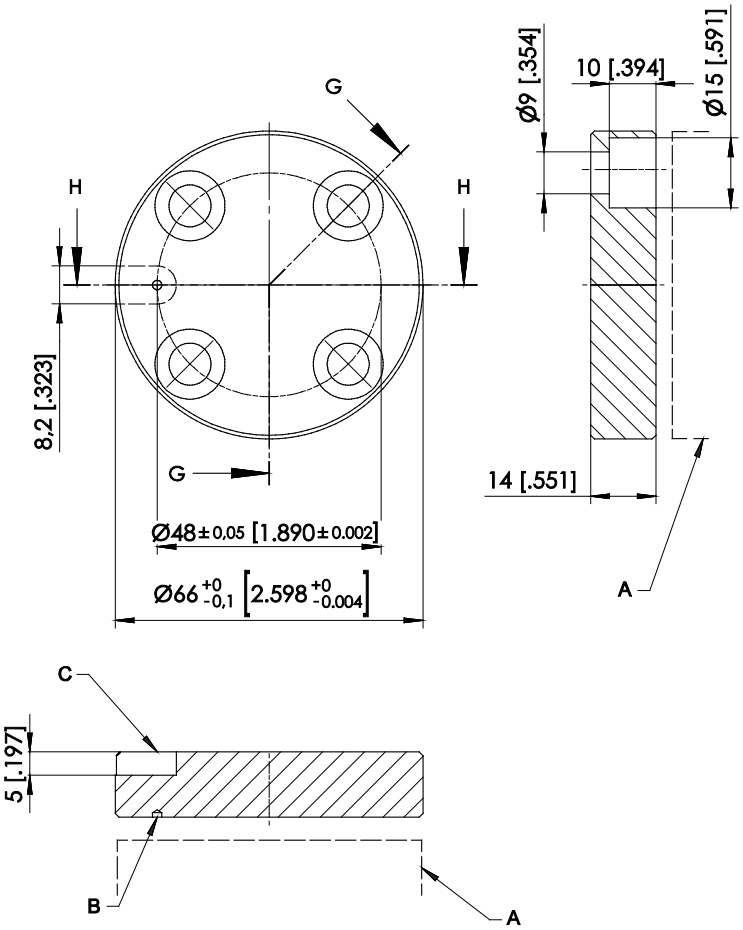
A – Sensor
B – Marking
C – Notch

Order code	Weight	Material	Moment of inertia
PRMAG2-Z	approx. 30 g	AlMgSi1	4.9 kgmm^2
PRMAG2-Z-VA	approx. 67 g	stainless steel 1.4404	10.9 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.

PRMAG5-Z / PRMAG5-Z-VA



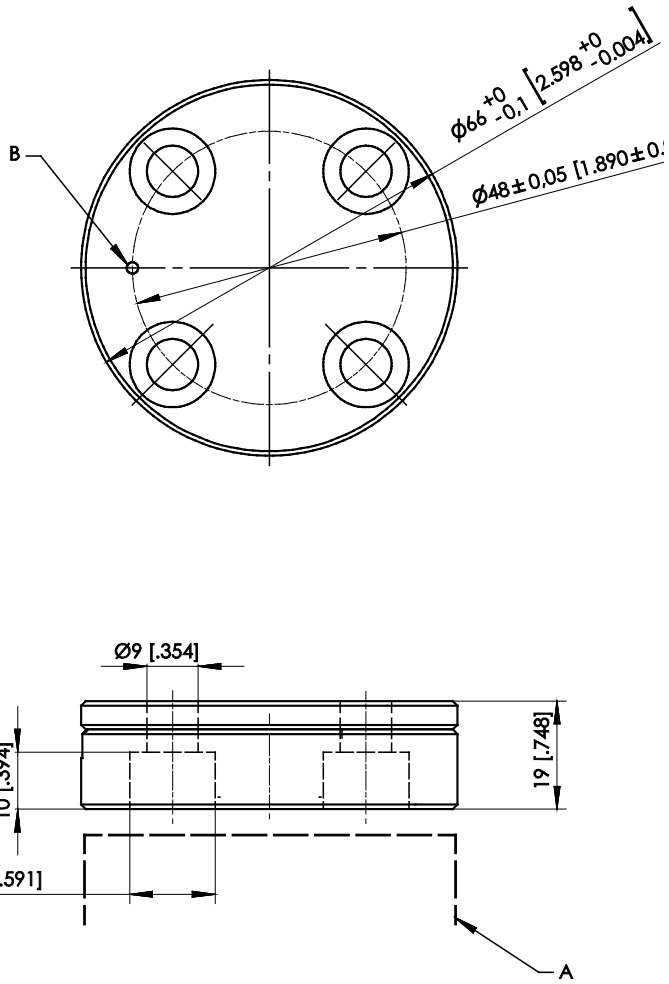
A – Sensor
B – Marking
C – Notch

Order code	Weight	Material	Moment of inertia
PRMAG5-Z	approx. 110 g	AlMgSi1	59,9 kgmm^2
PRMAG5-Z-VA	approx. 275 g	stainless steel 1.4404	149,9 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.

PRMAG5-Z-VA-WP



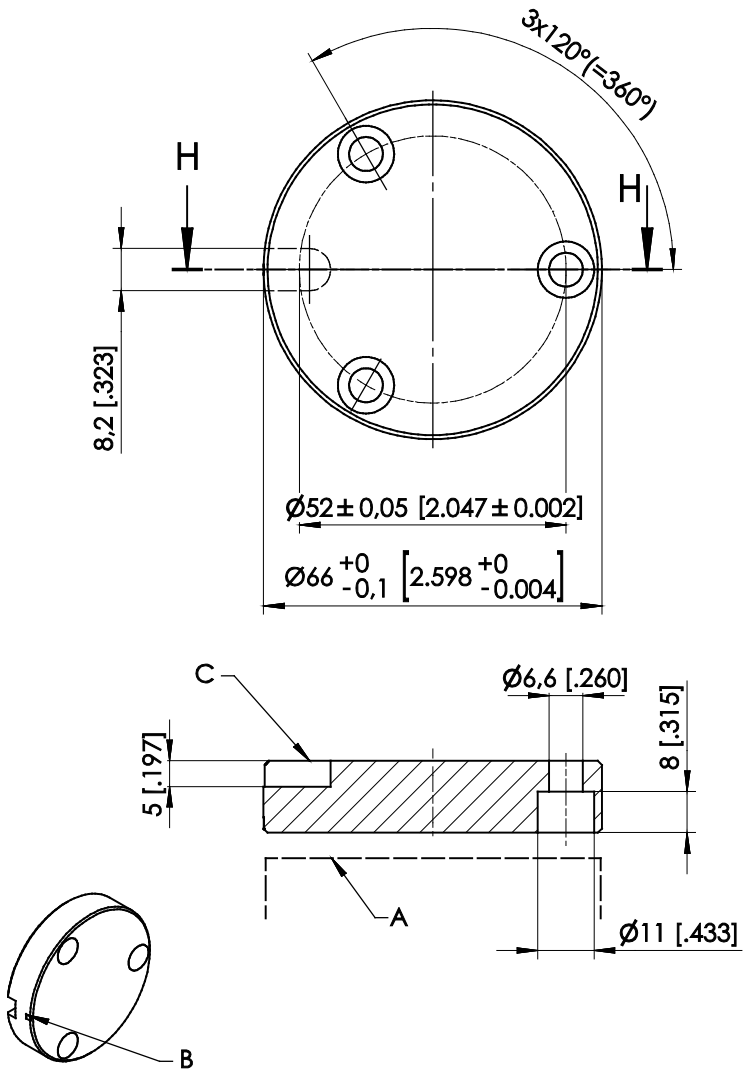
A – Position magnet
B – Marking

Order code	Weight	Material	Moment of inertia
PRMAG5-Z-VA-WP	approx. 292 g	stainless steel 1.4404	175 kgmm^2

IP68 / 100 m, continuous use.
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.

PRMAG6-Z / PRMAG6-Z-VA



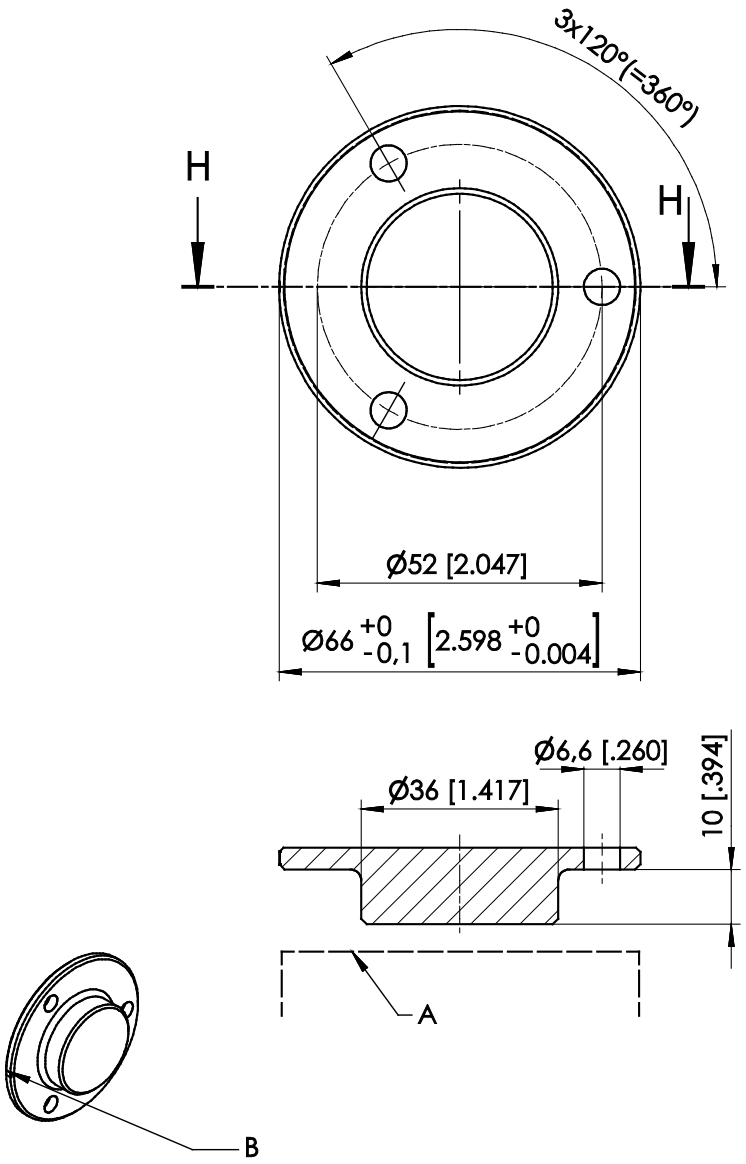
A – Sensor
B – Marking
C – Notch

Order code	Weight	Material	Moment of inertia
PRMAG6-Z	approx. 110 g	AlMgSi1,	65 kgmm^2
PRMAG6-Z-VA	approx. 315 g	stainless steel 1.4404	190 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.

PRMAG7-Z-VA



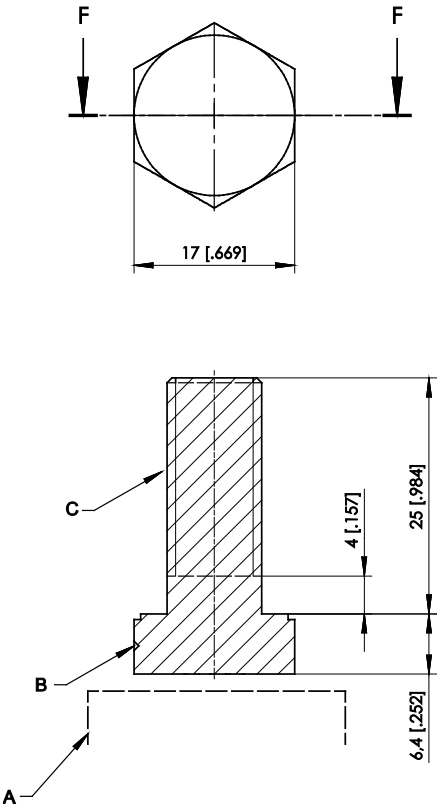
A – Sensor
B – Marking

Order code	Weight	Material	Moment of inertia
PRMAG7-Z-VA	approx. 146 g	stainless steel 1.4404	68 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



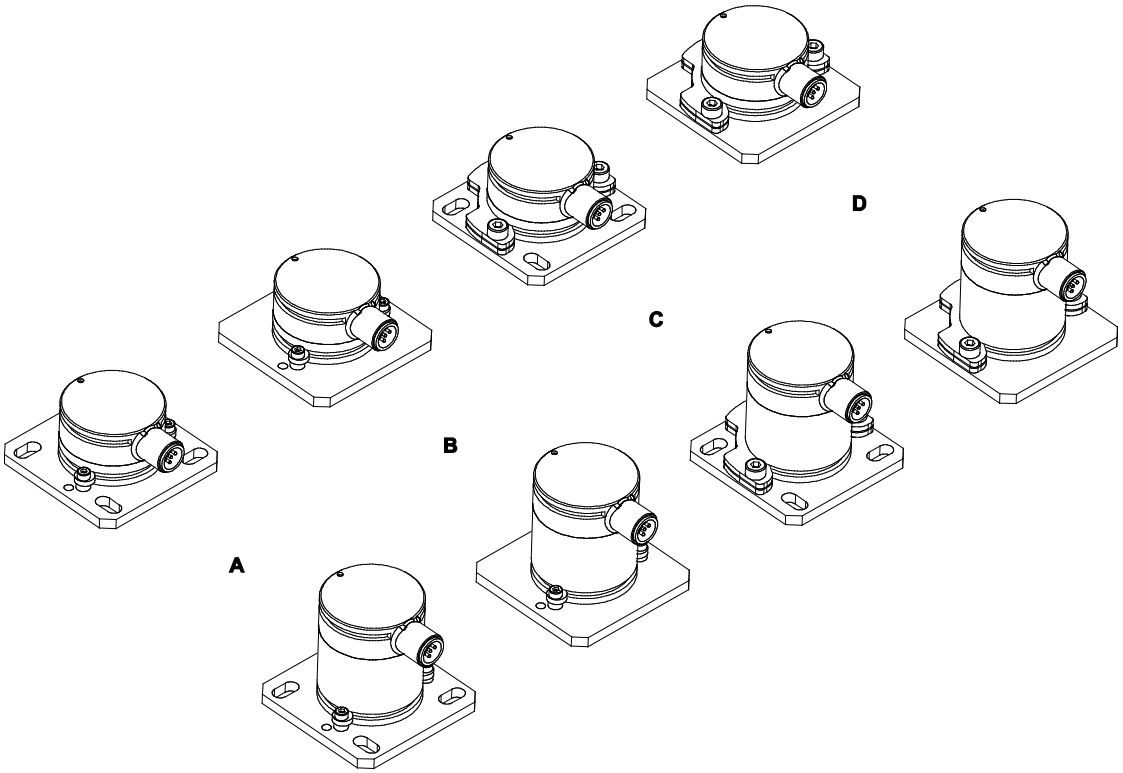
A – Sensor
B – Marking
C – Thread M10

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

Mounting possibilities PRAS2/PRDS2 and PRAS3/PRDS3



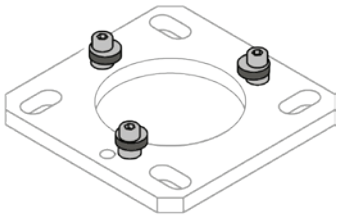
A. **PRPT-BPL1 + PRPT-BFS1**
(Mounting plates for screw mounting + mounting clamp)

B. **PRPT-BPL2 + PRPT-BFS1**
(Mounting plates for welding assembly + mounting clamp)

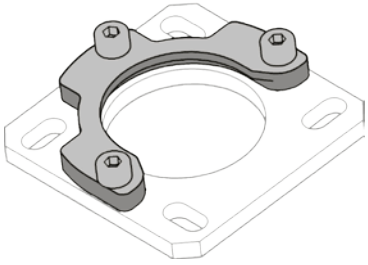
C. **PRPT-BPL1 + PRPT-BFS2**
(Mounting plates for screw mounting + mounting bracket)

D. **PRPT-BPL2 + PRPT-BFS2**
(Mounting plates for welding assembly + mounting bracket)

Mounting clamp BFS1



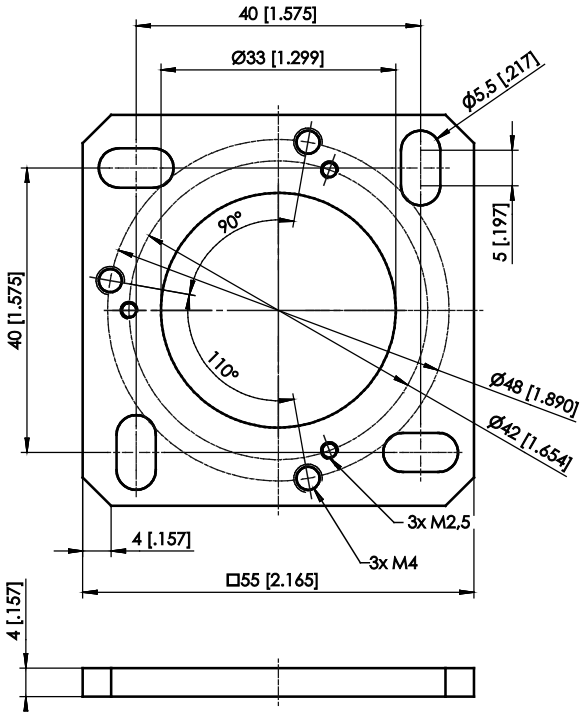
Mounting bracket BFS2



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).

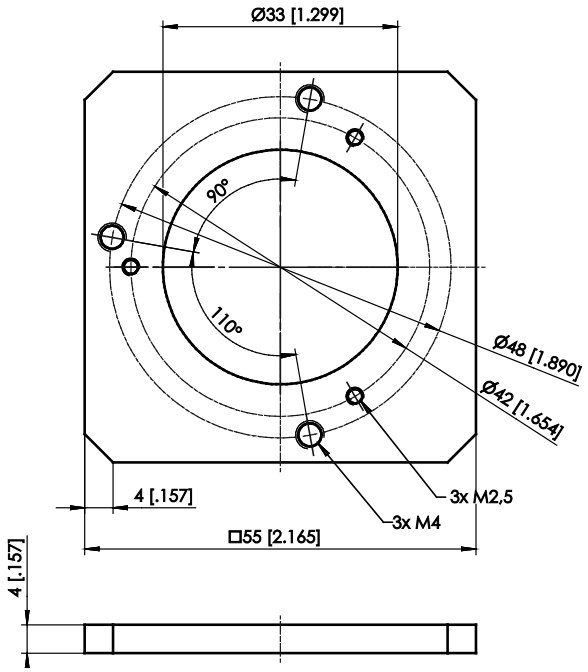


Dimensions in mm [inch]. Weight 30 g approx.
Dimensions informative only.
For guaranteed dimensions please consult factory.

PRPT-BPL2

(Welding assembly)

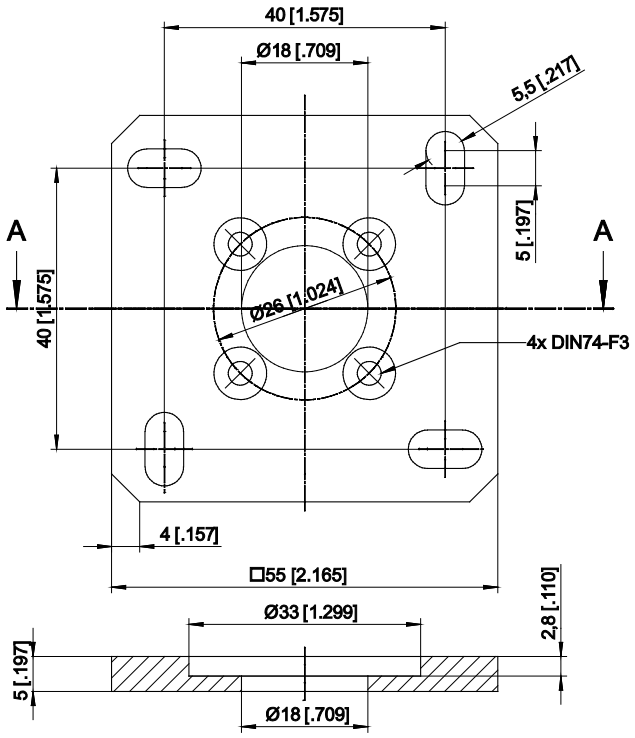
In combination with the mounting clamps PRPT-BFS1 (3 x M2.5) or in combination with the mounting bracket PRPT-BFS2 (3 x M4).



Dimensions in mm [inch]. Weight 30 g approx.
Dimensions informative only.
For guaranteed dimensions please consult factory.

PRPT-BPL3

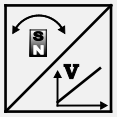
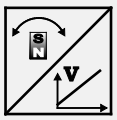
In combination with PRAS3/PRDS3 and frontal mounting.



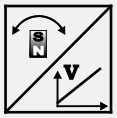
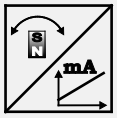
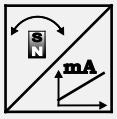
Dimensions in mm [inch]. Weight 30 g approx.
Dimensions informative only.
For guaranteed dimensions please consult factory.

Output specification

Analog output

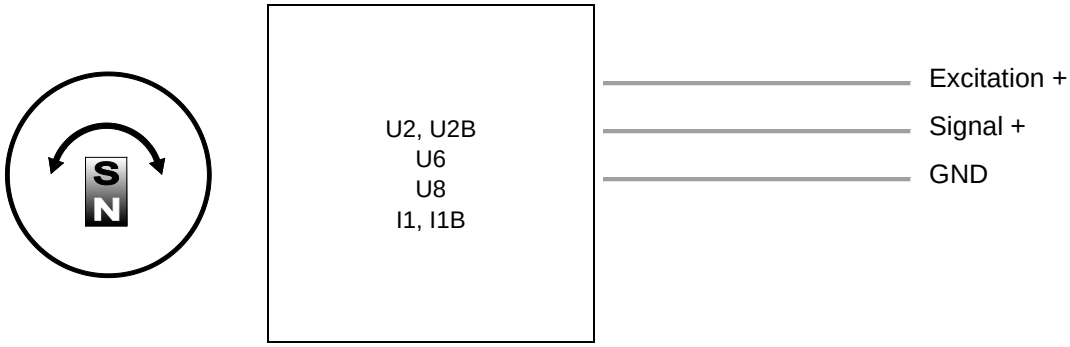
U2 Voltage output 0.5 ... 10 V 	Excitation voltage	18 … 36 V DC
	Excitation current	typical 10 mA max. 15 mA
	Output voltage	0.5 ... 10 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical for 90° … 360°) ±100 x 10^{-6} / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 … +85 °C
	EMC	DIN EN 61326-1:2013
U2B Voltage output 0.5 ... 10 V 	Excitation voltage	11.5 … 27 V DC
	Excitation current	typical 12 mA max. 16 mA
	Output voltage	0,5 ... 10 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical for 90° … 360°) ±100 x 10^{-6} / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 … +85 °C
	EMC	DIN EN 61326-1:2013
U6 Voltage output 10 … 90 % ratiometric 	Excitation voltage	5 V DC ±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)	±50 x 10^{-6} / °C f.s. (typical for 90° … 360°) ±100 x 10^{-6} / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 … +85 °C
	EMC	DIN EN 61326-1:2013

Note:
Excitation voltage for EX sensors: 24 V DC.

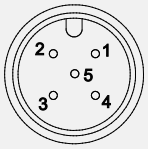
U8 Voltage output 0.5 … 4.5 V 	Excitation voltage	11 … 36 V DC
	Excitation current	typical 10 mA max. 20 mA
	Output voltage	0.5 … 4.5 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical for 90° … 360°) ±100 x 10^{-6} / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 … +85 °C
	EMC	DIN EN 61326-1:2013
I1 Current output 4 … 20 mA, 3 wires 	Excitation voltage	18 … 36 V DC
	Excitation current	typical 30 mA max. 35 mA
	Load R_L	500 Ω max.
	Output current	4 … 20 mA
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical for 90° … 360°) ±100 x 10^{-6} / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 … +85 °C
	EMC	DIN EN 61326-1:2013
I1B Current output 4 … 20 mA, 3 wires 	Excitation voltage	10 … 27 V DC
	Excitation current	typical 32 mA max. 36 mA
	Load R_L	250 Ω max.
	Output current	4 … 20 mA
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical for 90° … 360°) ±100 x 10^{-6} / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 … +85 °C
	EMC	DIN EN 61326-1:2013

Note:
Excitation voltage for EX sensors: 24 V DC.

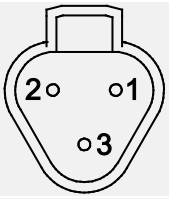
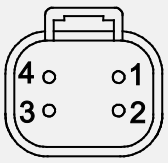
Signal diagram



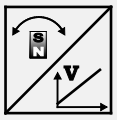
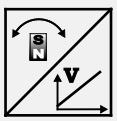
Signal wiring
(connector and cable output)

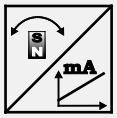
Signal	Connector pin no.	Cable color	View to the sensor connector
Excitation +	1	brown	
Signal	2	white	
GND	3	blue	
Do not connect!	4	black	
Do not connect!	5	grey	

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

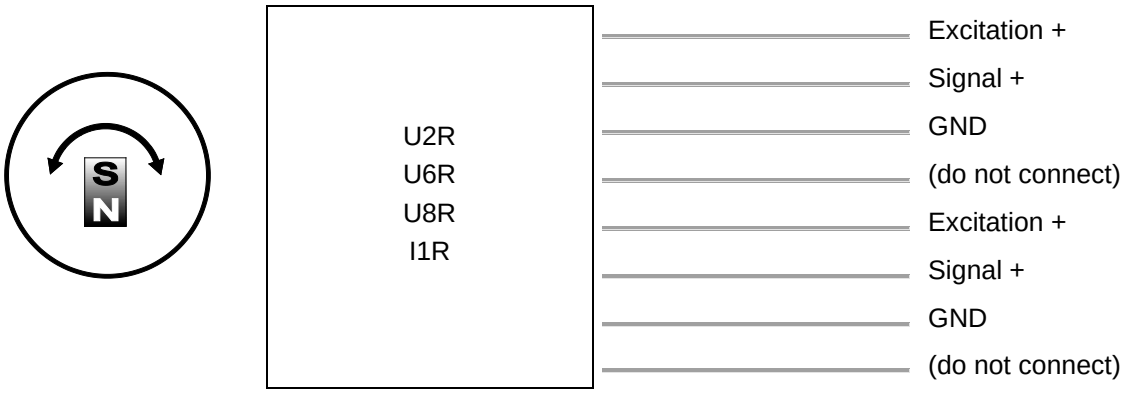
Deutsch connector DT04		
	DT04/3P/A	**DT04/4P/A**

Analog output, redundant

U2R Voltage output 0.5 ... 10 V 	Excitation voltage	18 … 36 V DC
	Excitation current	typical 10 mA max. 15 mA per channel
	Output voltage	0.5 ... 10 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz Standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical for 90° … 360°) ±100 x 10^{-6} / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 … +85 °C
	EMC	DIN EN 61326-1:2013
U6R Voltage output 10 … 90 % ratiometric 	Excitation voltage	5 V DC ±10 %
	Excitation current	typical 8 mA max. 12 mA per channel
	Output voltage	10 … 90 % of the excitation voltage
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical for 90° … 360°) ±100 x 10^{-6} / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 … +85 °C
	EMC	EN 61326-1:2013
U8R Voltage output 0.5 … 4.5 V 	Excitation voltage	11 … 36 V DC
	Excitation current	typical 10 mA max. 20 mA per channel
	Output voltage	0.5 … 4,5 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical for 90° … 360°) ±100 x 10^{-6} / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 … +85 °C
	EMC	DIN EN 61326-1:2013

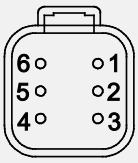
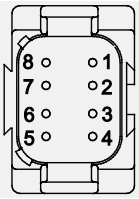
I1R Current output 4 … 20 mA, 3 wires 	Excitation voltage	18 … 36 V DC
	Excitation current	typical 30 mA max. 35 mA per channel
	Load R_L	500 Ω max.
	Output current	4 … 20 mA
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical for 90° … 360°) ±100 x 10^{-6} / °C f.s. (typical for <90°)
	Protection	Reverse polarity, short circuit
	Operating temperature	-40 … +85 °C
	EMC	DIN EN 61326-1:2013

Signal diagram

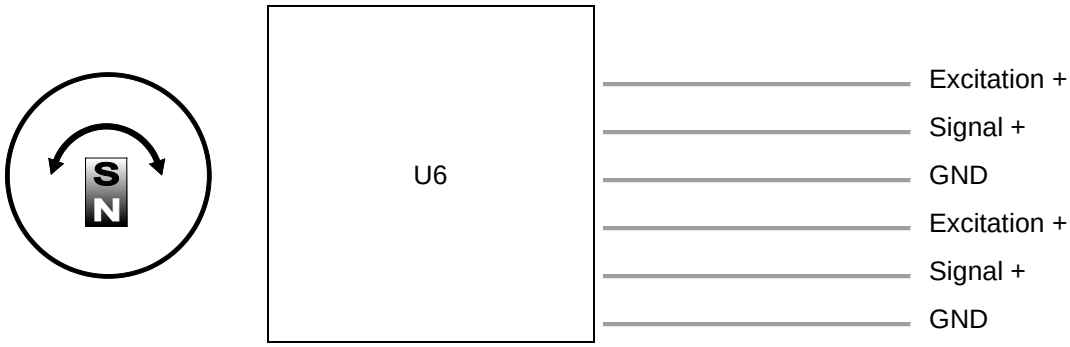


Signal wiring
2 channels, redundant (connector and cable output)

Channel	Signal	Connector pin no.	Cable color	View to the sensor connector
1	Excitation +	1	white	
1	Signal	2	brown	
1	GND	3	green	
1	Do not connect!	4	yellow	
2	Excitation +	5	grey	
2	Signal	6	pink	
2	GND	7	blue	
2	Do not connect!	8	red	

Deutsch connector DT04		
	DT04/6P/A	**DT04/8P/A**

Signal diagram PRAS20R



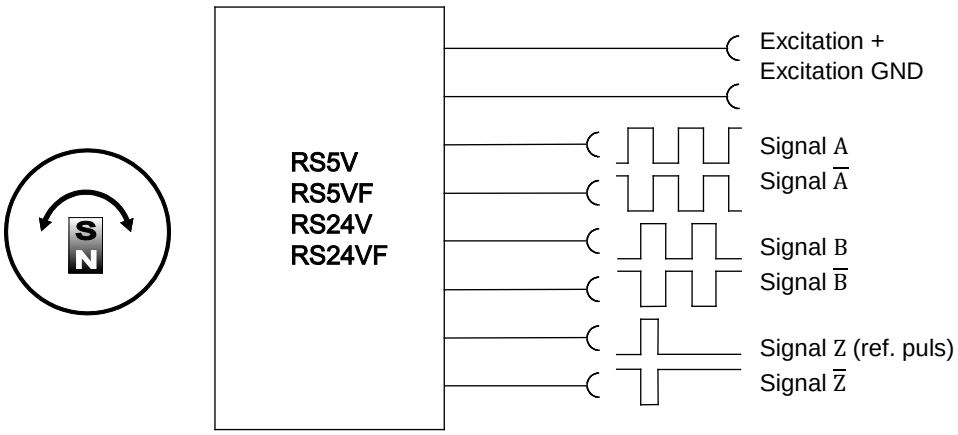
Signal wiring PRAS20/PRAS20R/PRAS21

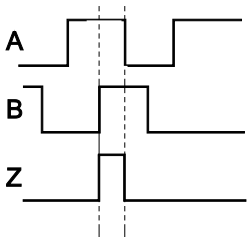
Signal	Cable color
Excitation +	brown
Signal	white
GND	blue

Incremental output

RS5V(F)/RS24V(F) Incremental	Interface	EIA RS-422
	Excitation voltage	RS5V(F): 5 V DC ±10 % RS24V(F): 10 ... 36 V DC
	Excitation current	100 mA max., depending on the load
	Pulse frequency	<500 kHz
	Output signals	A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$ Push-Pull
	Output current	10 mA max.
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Operating temperature	-40 ... +85 °C
	Protection	Short circuit
	EMC	DIN EN 61326-1:2013

Output signals





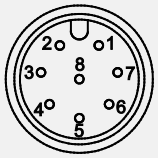
Unfiltered output RS5V / RS24V

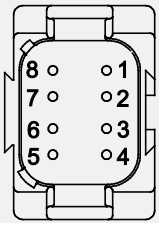
A preferred maximum pulse frequency has to be defined within the product code. This will take account for limited bandwidth of downstream counter.

Filtered output RS5VF / RS24VF

Option for filtered jitter free position value. The filter does not introduce velocity or acceleration error.

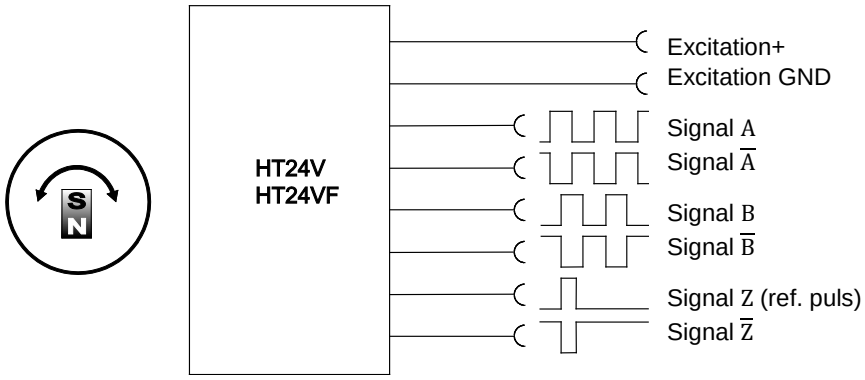
Signal wiring

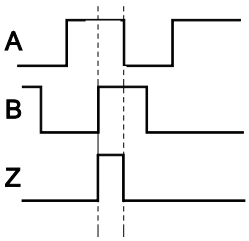
Signal	Connector pin no.	Cable color	View to the sensor connector
Excitation +	1	white	
Excitation GND	2	brown	
A	4	yellow	
$\overline{A}$	6	pink	
B	3	green	
$\overline{B}$	5	grey	
Z	7	blue	
$\overline{Z}$	8	red	

Deutsch connector DT04/8P/A	
	

HT24V(F) Incremental	Interface	HTL
	Excitation voltage	18 ... 36 V DC
	Excitation current	100 mA max., depending on the load
	Pulse frequency	<500 kHz
	Output signals	A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$ Push-Pull
	Output current	10 mA max.
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Operating temperature	-40 ... +85 °C
	Protection	Short circuit
	EMC	DIN EN 61326-1:2013

Output signals





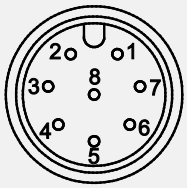
Unfiltered output HT24V

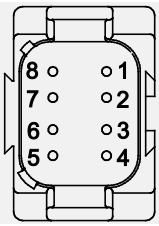
A preferred maximum pulse frequency has to be defined within the product code. This will take account for limited bandwidth of downstream counter.

Filtered output HT24VF

Option for filtered jitter free position value. The filter does not introduce velocity or acceleration error.

Signal wiring

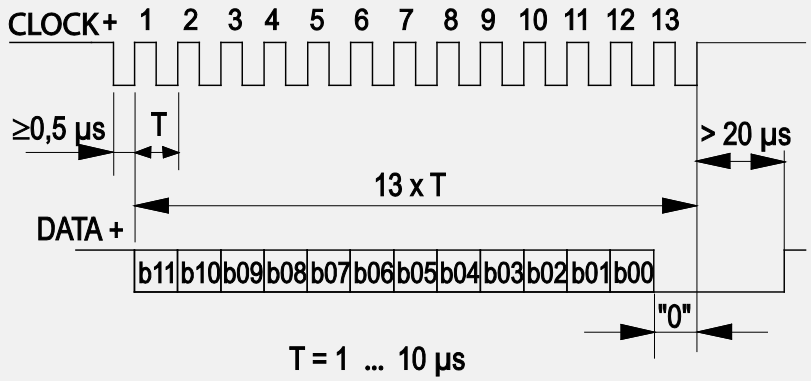
Output signals	Connector pin no.	Cable color	View to the sensor connector
Excitation +	1	white	
Excitation GND	2	brown	
A	4	yellow	
$\overline{A}$	6	pink	
B	3	green	
$\overline{B}$	5	grey	
Z	7	blue	
$\overline{Z}$	8	red	

Deutsch connector DT04/8P/A	
	

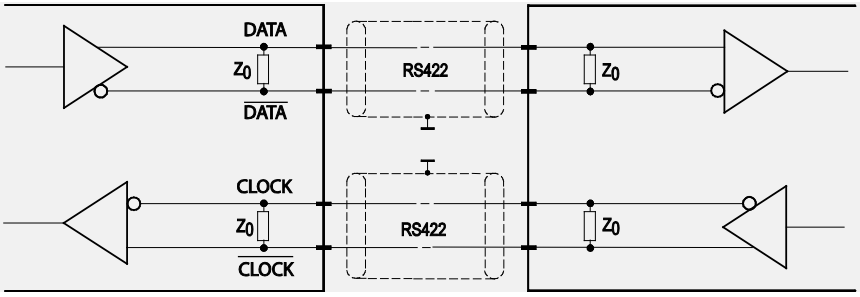
SSI output

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	-40 ... +85 °C
	Protection	Short circuit
	EMC	EN 61326-1:2013

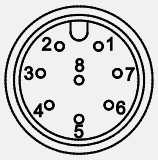
Data format
(Train of 13 pulses)

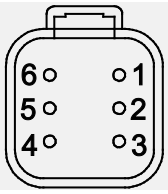


Recommended processing circuit



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 /$\overline{\text{CLOCK}}$ and DATA/$\overline{\text{DATA}}$ must be connected in a twisted pair cable, shielded per pair and common.
	100 m	100 - 300 kHz	

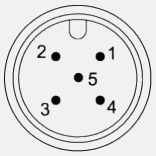
Signal wiring	Connector pin no.	Cable color	View to the sensor connector
Excitation +	1	brown	
Excitation GND	2	white	
CLOCK	3	green	
$\overline{\text{CLOCK}}$	4	yellow	
DATA	5	grey	
$\overline{\text{DATA}}$	6	pink	
-	7	blue	
-	8	red	

Deutsch connector DT04/6P/A	

Digital output CANopen

CANOP CANopen	CAN Specification	ISO 11898, Basic and Full CAN 2.0 B
	Communication profile	CANopen CiA 301 V 4.02, Slave
	Device profile	Encoder CiA 406 V 3.2
	Configuration services	Layer Setting Service (LSS), CiA Draft Standard 305 (transmission rate, node id)
	Error Control	Node Guarding, Heartbeat, Emergency Message
	Node ID	Default: 127; programmable via LSS or SDO
	PDO	3 TxPDO, 0 RxPDO, static mapping
	PDO Modes	Event-/Time triggered, Remote-request, Sync cyclic/acyclic
	SDO	1 server, 0 Client
	CAM	8 cams
	Certified	Yes
	Transmission rates	50 kBaud to 1 MBaud, default: 125 kBaud; programmable via LSS or SDO
	Bus connection	M12 connector, 5 pin
	Integrated bus terminating resistor	Adjustable by the customer
	Bus, galvanic isolated	No

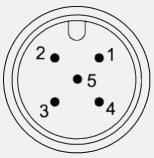
Specifications	Excitation voltage	8 ... 36 V DC
	Excitation current	20 mA typical at 24 V DC 40 mA typical at 12 V DC, 80 mA max.
	Resolution	0.05° max.
	Linearity	1° (optional 0.25°)
	Measuring rate	1 kHz (asynchronous)
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Repeatability	1 LSB
	Operating temperature	See specification of the respective sensor
	Protection	Reverse polarity, short circuit
	Dielectric strength	1 kV (V AC, 50 Hz, 1 min.)
	EMC	DIN EN 61326-1:2013

Signal wiring	**Signal**	**Connector pin no.**	**Cable color**	**View to the sensor connector**
	Shield	1	brown	
	Excitation +	2	white	
	GND	3	blue	
	CAN-H	4	black	
	CAN-L	5	grey	

Signal wiring Deutsch connector DT04/4P/A	**Signal**	**Connector pin no.**	**View to the sensor connector**
	Excitation+	1	
	CAN-H	2	
	GND	3	
	CAN-L	4	

CANOPR CANopen	CAN Specification	ISO 11898, Basic and Full CAN 2.0 B
	Communication profile	CANopen CiA 301 V 4.02, Slave
	Device profile	Encoder CiA 406 V 3.2
	Configuration services	Layer Setting Service (LSS), CiA Draft Standard 305 (transmission rate, node id)
	Error Control	Node Guarding, Heartbeat, Emergency Message
	Node ID	Default: 127 and 126; programmable via LSS or SDO
	PDO	3 TxPDO, 0 RxPDO, static mapping
	PDO Modes	Event-/Time triggered, Remote-request, Sync cyclic/acyclic
	SDO	1 server, 0 Client
	CAM	8 cams
	Certified	Yes
	Transmission rates	50 kBaud to 1 MBaud, default: 125 kBaud; programmable via LSS or SDO
	Bus connection	M12 connector, 5 pin
	Integrated bus terminating resistor	adjustable by the customer
	Bus, galvanic isolated	No

Specifications	Excitation voltage	8 ... 36 V DC
	Excitation current	40 mA typical at 24 V DC 80 mA typical at 12 V DC, 120 mA max.
	Resolution	0.05° max.
	Linearity	1° (0.25° optional)
	Measuring rate	1 kHz (asynchronous)
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Repeatability	1 LSB
	Operating temperature	See specification of the respective sensor
	Protection	Reverse polarity, short circuit
	Dielectric strength	1 kV (V AC, 50 Hz, 1 min.)
	EMC	DIN EN 61326-1:2013

Signal wiring	**Signal**	**Connector pin no.**	**Cable color**	**View to the sensor connector**
	Shield	1	brown	
	Excitation +	2	white	
	GND	3	blue	
	CAN-H	4	black	
	CAN-L	5	grey	

Signal wiring Deutsch connector DT04/4P/A	Signal	Connector pin no.	View to the sensor connector
	Excitation+	1	
	CAN-H	2	
	GND	3	
	CAN-L	4	

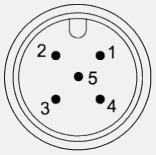
Digital output CAN SAE J1939

CANJ1939 CAN SAE J1939	CAN Specification		ISO 11898, Basic and Full CAN 2.0 B
	Transceiver		24V-compliant, not isolated
	Communication profile		SAE J1939
	Baud Rate		250 kbit/s
	Internal termination resistor		adjustable by the customer
	Address		Default 247d, configurable

NAME Fields	Arbitrary address capable	1	Yes
	Industry group	0	Global
	Vehicle system	7Fh (127d)	Non specific
	Vehicle system instance	0	
	Function	FFh (255d)	Non specific
	Function instance	0	
	ECU instance	0	
	Manufacturer	145h (325d)	Manufacturer ID
	Identity number	0nnn	Serial number 21 bit

Parameter Group Numbers (PGN)	Configuration data	PGN EF00h	Proprietary-A (PDU1 peer-to-peer)
	Process data	PGN FFnnh	Proprietary-B (PDU2 broadcast); nn Group Extension (PS) configurable

Specifications	Excitation voltage	8 ... 36 V DC
	Excitation current	20 mA typical at 24 V DC 40 mA typical at 12 V DC, 80 mA max.
	Resolution	0.05° max.
	Linearity	1° (0.25° optional)
	Measuring rate	1 kHz (asynchronous)
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Repeatability	1 LSB
	Operating temperature	See specification of the respective sensor
	Protection	Reverse polarity, short circuit
	Dielectric strength	1 kV (V AC, 50 Hz, 1 min.)
	EMV	DIN EN 61326-1:2013

Signal wiring	**Signal**	**Connector pin no.**	**View to the sensor connector**
	Shield	1	
	Excitiation +	2	
	GND	3	
	CAN-H	4	
	CAN-L	5	

Signal wiring Deutsch connector DT04/4P/A	Signal	Connector pin no.	View to the sensor connector
	Excitation+	1	
	CAN-H	2	
	GND	3	
	CAN-L	4	

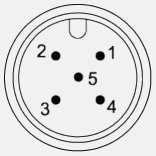
CANJ1939R CAN SAE J1939	CAN Specification	ISO 11898, Basic and Full CAN 2.0 B
	Transceiver	24V-compliant, not isolated
	Communication profile	SAE J1939
	Baud Rate	250 kbit/s
	Internal termination resistor	Adjustable by the customer
	Address	Default 247d and 246d, configurable

NAME Fields	Arbitrary address capable	1	Yes
	Industry group	0	Global
	Vehicle system	7Fh (127d)	Non specific
	Vehicle system instance	0	
	Function	FFh (255d)	Non specific
	Function instance	0	
	ECU instance	0	
	Manufacturer	145h (325d)	Manufacturer ID
	Identity number	0nnn	Serial number 21 bit

Parameter Group Numbers (PGN)	Configuration data	PGN EF00h	Proprietary-A (PDU1 peer-to-peer)
	Process data	PGN FFnnh	Proprietary-B (PDU2 broadcast); nn Group Extension (PS) configurable

Specifications	Excitation voltage	8 ... 36 V DC
	Excitation current	40 mA typical at 24 V DC 80 mA typical at 12 V DC, 120 mA max.
	Resolution	0.05° max.
	Linearity	1° (0.25° optional)
	Measuring rate	1 kHz (asynchronous)
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Repeatability	1 LSB
	Operating temperature	See specification of the respective sensor
	Protection	Reverse polarity, short circuit
	Dielectric strength	1 kV (V AC, 50 Hz, 1 min.)
	EMV	DIN EN 61326-1:2013

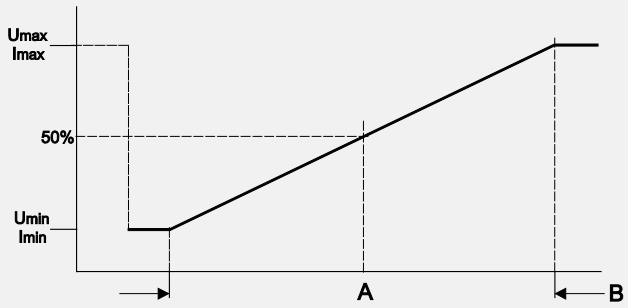
Signal wiring

Signal	Connector Pin no.	Cable color	View to the sensor connector
Shield	1	brown	
Excitiation +	2	white	
GND	3	blue	
CAN-H	4	black	
CAN-L	5	grey	

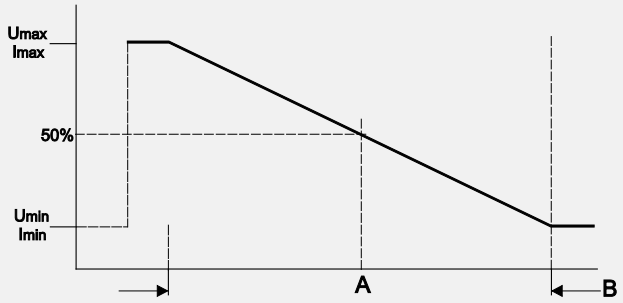
Signal wiring Deutsch connector DT04/4P/A	Signal	Connector pin no.	View to the sensor connector
	Excitation+	1	
	CAN-H	2	
	GND	3	
	CAN-L	4	

Characteristics for magnetic angle sensors

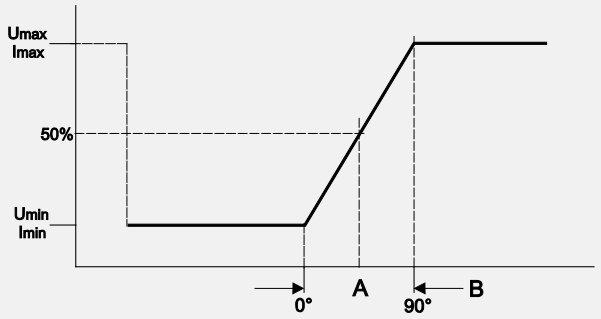
Output signal CW
(clockwise increasing)



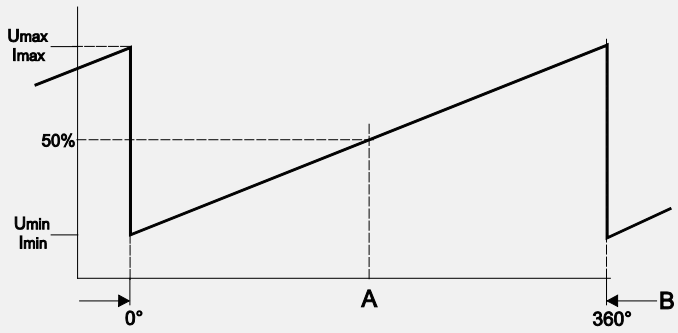
Output signal CCW
(counterclockwise increasing)



Example angular range 90°



Example angular range 360°



A – Marking
B – Measurement range [°]

Accessories

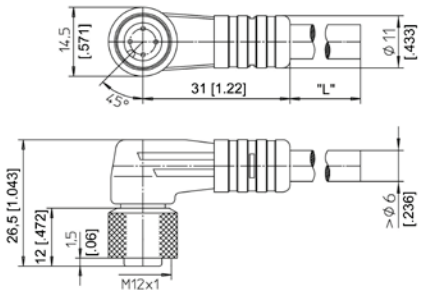
Connector cable M12, 4 pin

(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^2
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

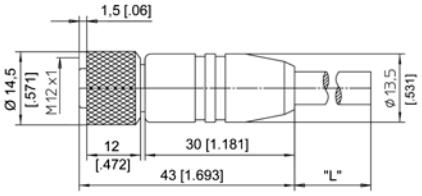
Connector cable M12, 4 pin

(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^2
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

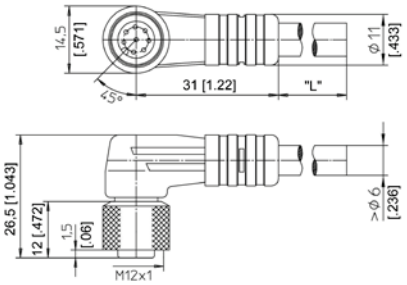
Maximum movement speed	3 m/s
Maximum acceleration	5 m/s^2
Minimum bending radius	10 x cable diameter

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**

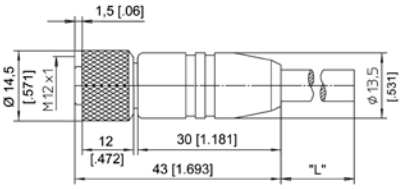
xM = length in m

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

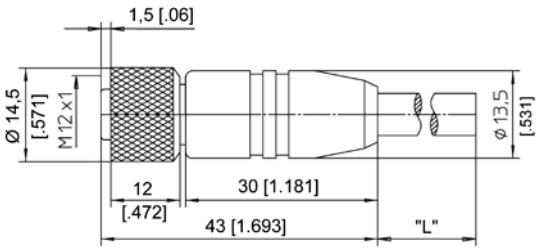
Signal wiring M12, 8 pin	**Plug connection / cable color**							
	1	2	3	4	5	6	7	8
	white	brown	green	yellow	grey	pink	blue	red

Applicable for cable carriers

Maximum movement speed	3 m/s
Maximum acceleration	5 m/s²
Minimum bending radius	10 x cable diameter

Connector/bus cable M12, 5 pin CAN-Bus

The 5-lead shielded cable is supplied with a female 5 pin M12 connector at one end and a male 5 pin M12 connector at the other end.
Available lengths are 0.3 m, 2 m, 5 and 10 m.
Cable diameter: 6.7 ±0.2 mm



Order code:

	KAB - xM - M12/5F/G - M12/5M/G - CAN
IP69:	**KAB - xM - M12/5F/G/69K - M12/5M/G/69K - CAN**

xM = length in m

T-connector for bus cable M12, 5 pin CAN-Bus

Order code:

KAB - TCONN - M12/5M - 2M12/5F - CAN

Terminating resistor M12, 5 pin CAN-Bus

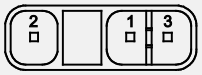
Order code:

KAB - RTERM - M12/5M/G - CAN

Applicable for cable carriers

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

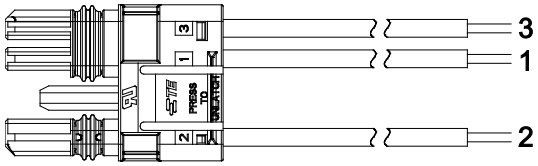
PRAS26 – connector TE3
Signal wiring

Signal	Connector pin no.	View to sensor connector TE3
GND	1	
Excitation +	2	
Signal	3	

Mating connector: Tyco Electronics,
SlimSeal, Part-Nr. 2106135-3, 3-pin

PRAS26 – connector 3-pin with connecting leads

This cable is supplied with a male 3-pin connector at one end and 3 wires at the other end.
Cross section 0.32 mm^2. Wire length 0.5 m.



Order code

CONN-TE-3F-G-LITZE-0,5M

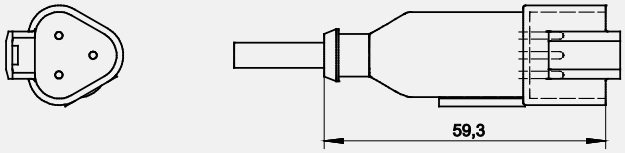
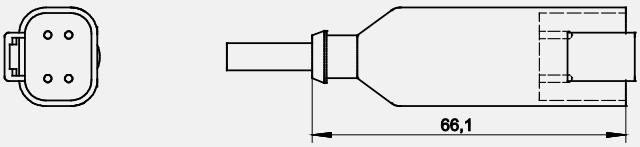
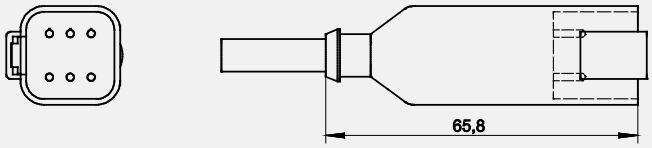
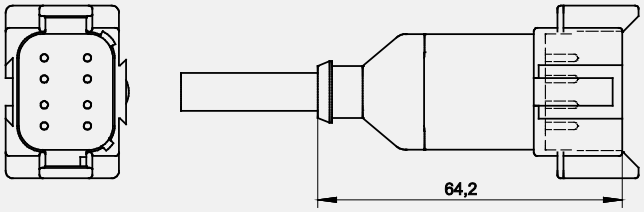
Signal wiring 3-pin connector	Connector pin no. / connecting leads		
	1	2	3
	blue	brown	white

Deutsch connector

Sensors with cable output can be delivered with Deutsch connector.

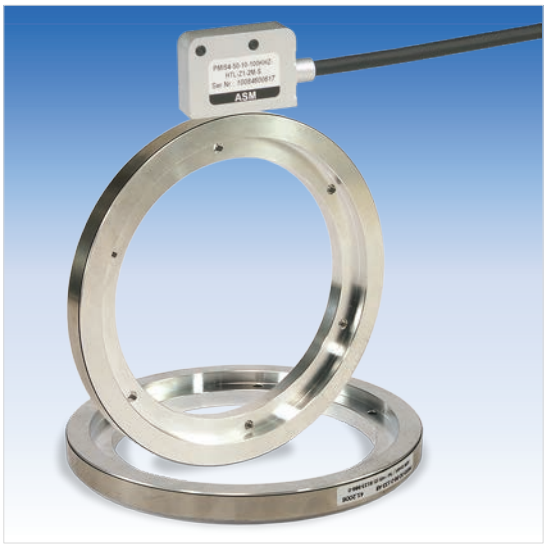
Protection class:	IP67 (while plugged)
Connection:	3, 4, 6, 8 poles – depending on output, see table below
Wire cross sectional area:	0.5 mm^2
Standard cable length:	2 m
Protective cable tube:	for a better mechanical protection the cable can be delivered with a protective tube

Deutsch connector – table

Number of poles	Deutsch connector DT04	Output
3 pin		U6
4 pin		U2, U2B, U8 I1, I1B CANOP(R), CANJ1939(R)
6 pin		U6R RSSI5V RSSI24V
8 pin		U2R, U8R I1R RS5VF, RS24VF HT24VF

PMIS4, PMIR5

Magnetic incremental encoder



Magnetic wheels for rotative applications

- **All metal housing**
- **Protection class IP67**
- **Excellent protection of the active measurement area**
- **Highest EMC protection**
- **Suitable for harsh environments**
- **Up to 327,680 pulses/360°**

Specifications

Output	Incremental encoder output A/B with differential push-pull output, TTL/24 V-, TTL/RS-422- or HTL-compatible
Excitation voltage	10 ... 30 VDC oder 5 VDC ±5%
Excitation current	300 mA max.
Magnetic period of the sensor	5 mm
Guided spacing between sensor and wheel x_Z	0.1 ... 2 mm
Side tracking tolerance of the sensor	±1 mm
Linearity (sensor with mag. wheel)	0.1°
Repeatability	±1 Digit
Maximum pulse frequency f_P	50 kHz, 20 kHz, 10 kHz (standard 50 kHz, max. 480 kHz)
Output signals	A, $\overline{A}$, B, $\overline{B}$ / signal Z, $\overline{Z}$ (optional) / status signal $\overline{ERR}$ (optional)
Material of housing	Zinc die casting
Connection	Cable 8 wire, dia. 5 mm, open cable end. 15 pin D-Sub connector at the cable end as option. Max. length of the integrated sensor cable: output TTL: 3 m; HTL/TTL24V: 20 m
Weight	30 g ±5 g (without cable and connector)
Protection class (EN 60529)	IP67
Shock	DIN EN 60068-2-27:1993, 50 g 6 ms, 100 shocks
Vibration	DIN EN 60068-2-6:1995, 20 g, 10-2000 Hz, 10 cycles
EMC	DIN EN 61326-1:2013
Temperature	-40 ...+85°C

Order code sensor head PMIS4

PMIS4	–	1	–	2	–	3	–	4	–	5	–	6	–	7

1 Magnetic period

50 = 5 mm

2 Scaling factor

See table*

3 Maximum pulse frequency (in kHz, standard 50 kHz)

50 / 20 / 10 (other frequencies on request, max. 480 kHz)

4 Output

HTL = HTL output with excitation 24 V DC, output 24 V
TTL = TTL output with excitation 5 V DC, output TTL/RS422
TTL24V = TTL output with excitation 24 V DC, output TTL/10 mA

5 Signal Z / status signal

Z0 = A/B without signal Z
Z1 = A/B with signal Z
Z3 = A/B with signal Z and status signal, only for non-differential outputs (single-ended)

6 Cable length

2M = Standard 2 m

7 Connection

S = open cable end
P15 = D-Sub connector at the cable end,15 pin

Order example sensor head

PMIS4 – 50 – 100 – 50KHZ – HTL – Z0 – 2M – S

***Table "Scaling factor sensor PMIS4-50…" (see page 167)**

The subsequent counting device must be able to process the specified maximum pulse frequency of the sensor.

Output signals

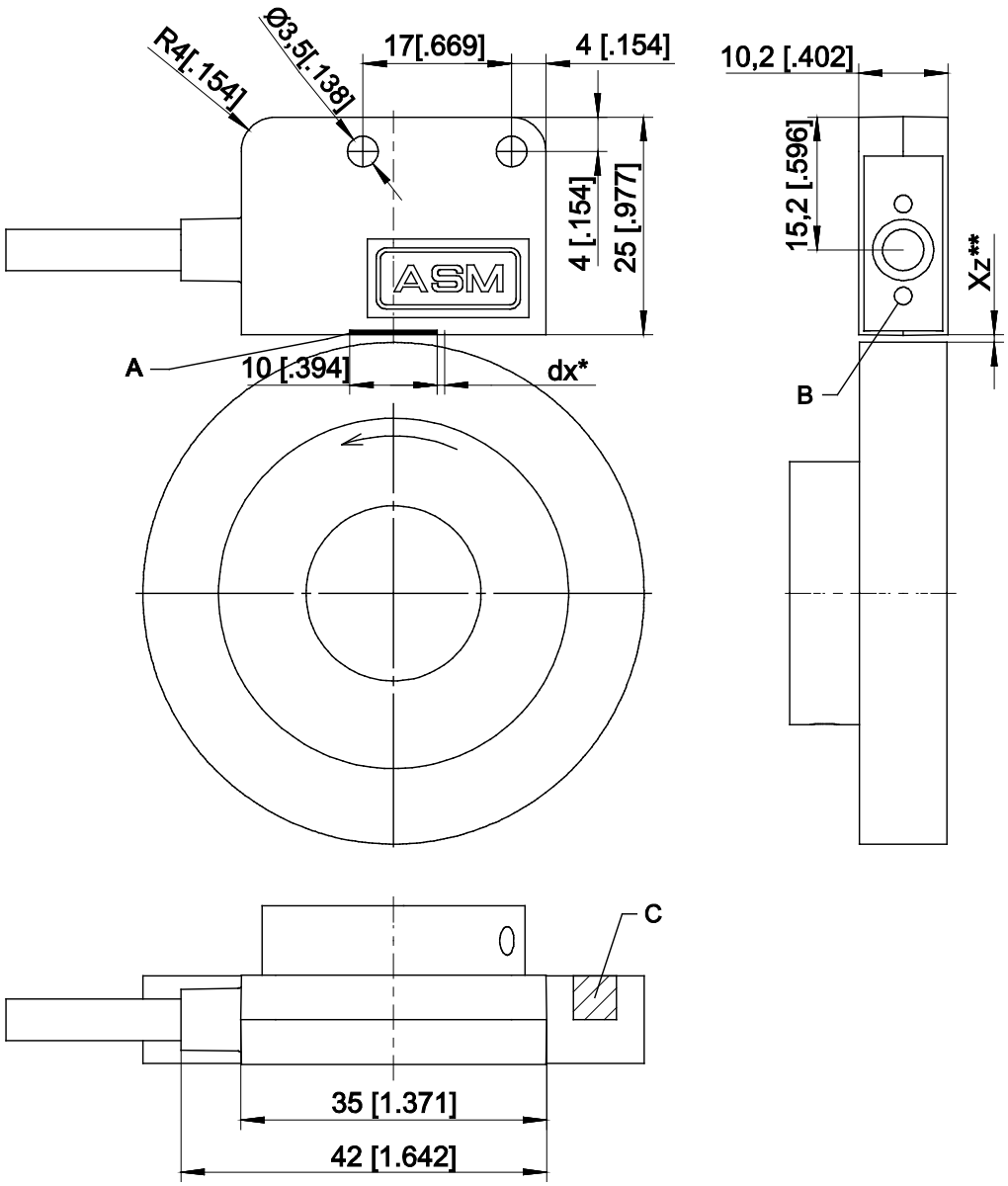
Saturation voltage	UH, UL = 0,2 V UH, UL = 0,4 V C_{last} < 10 nF	I_{out} = ±10 mA (UH = UB - U_{out}) I_{out} = ±30 mA
Short circuit current	ISL, ISH < 800 mA ISL, ISH < 90 mA	(UH, UL = 0 V) (UH, UL = 1,5 V)
Rise time	tr, tf < 200 ns	with cable length 1 m, 10 % … 90 %

Pulse frequency in dependence on the cable length

Load/cable length	**Load/pulse frequency fp**		
	HTL single ended UB = 24 V	**TTL/RS422 differential** UB = 5 V *	**TTL/24 V** UB = 24 V
Max. output current R_{last} min.	50 mA 500 Ω	50 mA 100 Ω	10 mA 500 Ω
C_{last} max.	10 nF	10 nF	1 nF
200 m	15 kHz	—	—
100 m	25 kHz	100 kHz	—
50 m	50 kHz	200 kHz	50 kHz
10 m	100 kHz	300 kHz	100 kHz
	50 mA	50 mA	10 mA

* = consider the voltage loss of the cable; the excitation voltage 5 V ± 5% of the sensor must be guaranteed.
Note: For longer distances (see specification above) you must use min. 0.5 mm^2 wire for „Excitation+“ and „Excitation GND“ (see signal wiring), all signal wires must be min. 0.14 mm^2!

Dimensions PMIS4



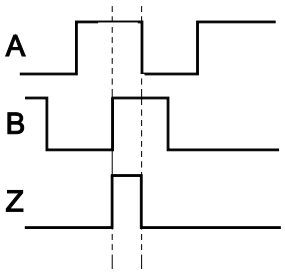
A – Active measurement area
B – Status signal (LED)
C – Index mark

* = position tolerance of the active measurement area: dx = ±1 mm
** = less masking tape

Dimensions in mm [inch]
Dimensions informative only.
For guaranteed dimensions please consult factory.

Output signals

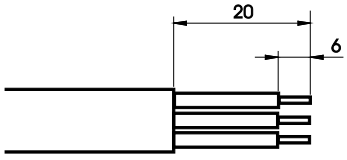
Option Z1
(Signal Z)



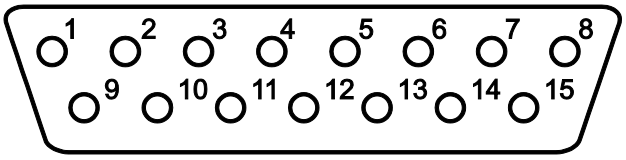
Signal wiring/ connection

Signal name				Cable with open end, cable color	Connector D-Sub, 15 pin
Option	**Z0**	**Z1**	**Z3***		
Excitation +				white	1
Excitation GND (0V)				brown	2
	B	B	B	green	6
	A	A	A	yellow	4
	$\overline{B}$	$\overline{B}$	$\overline{ERR}$	grey	7
	$\overline{A}$	$\overline{A}$	–	pink	5
	–	Z	Z	blue	8
	–	$\overline{Z}$	–	red	9
Shield				black	12

Z = Reference pulse
$\overline{ERR}$ = tatus signal, periodical approx. 16 Hz, for side tracking and velocity errors
* = status signal ERR available only with HTL (single ended) output



Cable output dimensions, open end



Connector D-Sub (Pin)
View to connector pins

PMIR5 - Incremental magnetic rings

Specifications PMIR5

Material	Plastic bonded magnetic scale
Base material	Aluminium, stainless steel
Signal periods per revolution	64 / 96 / 160 poles per revolution
Magnetic period	5 mm
Temperature range	-40 ...+120°C
Linearity with sensor PMIS4	Approx. ± 0.1°

Standard magnetic rings

Type	Poles	Ø	Width	Signal periods/revolution	Inner diameter Ø
PMIR5-50-64-O/M-83	64	102.3	14	Divisions see table below	Ø83 H7
PMIR5-50-96-O/M-133	96	153.2	14	Divisions see table below	Ø133 H7
PMIR5-50-160-O/M-233	160	255.1	14	Divisions see table below	Ø233 H7

Position magnet rings with other number of poles, diameters or magnetic periods on request.

Scaling factor sensor PMIS4-50- ...	PMIR5-50-64-O/M-83		PMIR5-50-96-O/M-133		PMIR5-50-160-O/M-233	
	Signal periods	r.p.m. 1/min * (at 480 kHz)	Signal periods	r.p.m. 1/min * (at 480 kHz)	Signal periods	r.p.m. 1/min (at 480 kHz) *
1	64	3000	96	3000	160	3000
2	128	3000	192	3000	320	3000
4	256	3000	384	3000	640	3000
8	512	3000	768	3000	1280	3000
10	640	3000	960	3000	1600	1800
16	1024	3000	1536	3000	2560	3000
20	1280	3000	1920	3000	3200	1800
25	1600	3000	2400	3000	4000	2880
32	2048	3000	3072	3000	5120	3000
40	2560	3000	3840	3000	6400	1800
50	3200	3000	4800	3000	8000	2880
64	4096	3000	6144	3000	10 240	2250
80	5120	3000	7680	3000	12 800	1800
100	6400	3000	9600	2400	16 000	1440
125	8000	2880	12 000	1920	20 000	1152
128	8192	2813	12 288	1875	20 480	1125
200	12 800	1800	19 200	1200	32 000	720
250	16 000	1440	24 000	960	40 000	576
256	16 384	1406	24 576	938	40 960	563
400	25 600	900	38 400	600	64 000	360
500	32 000	720	48 000	480	80 000	288
512	32 768	703	49 152	469	81 920	281
1024	65 536	352	98 304	234	163 840	141
2048	131 072	176	196 608	117	327 680	70

* Maximum revolution per minute mechanically 3,000 r.p.m.

Order code magnetic ring PMIR5

PMIR5 – 1 – 2 – 3 – 4 – 5

1 Magnetic period

50 = 5 mm

2 Number of poles

64 / 96 / 160 (other pole numbers on request)

3 Z signal mark

O = without
M = with

4 Inner diameter

83/133/233 (depending on the number of poles, see table)

5 Option

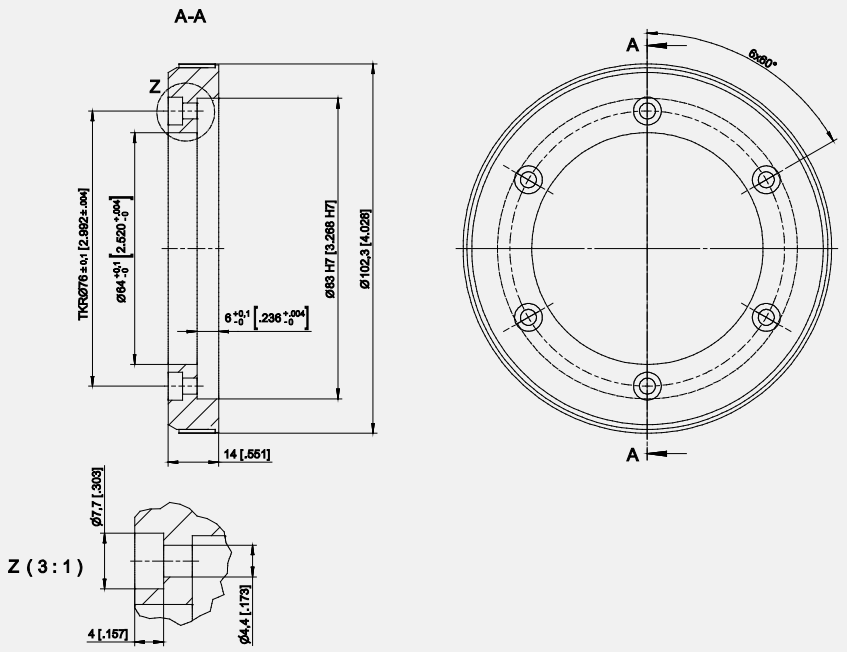
AB = Masking tape

Order example magnetic ring

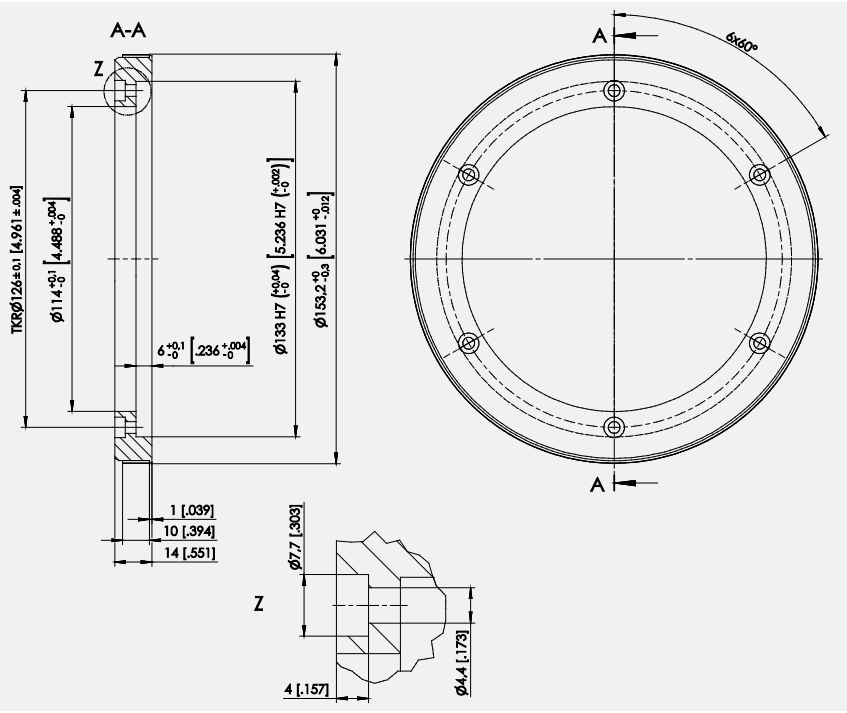
PMIR5 – 50 – 64 – M – 83 – AB

Magnetic rings PMIR5

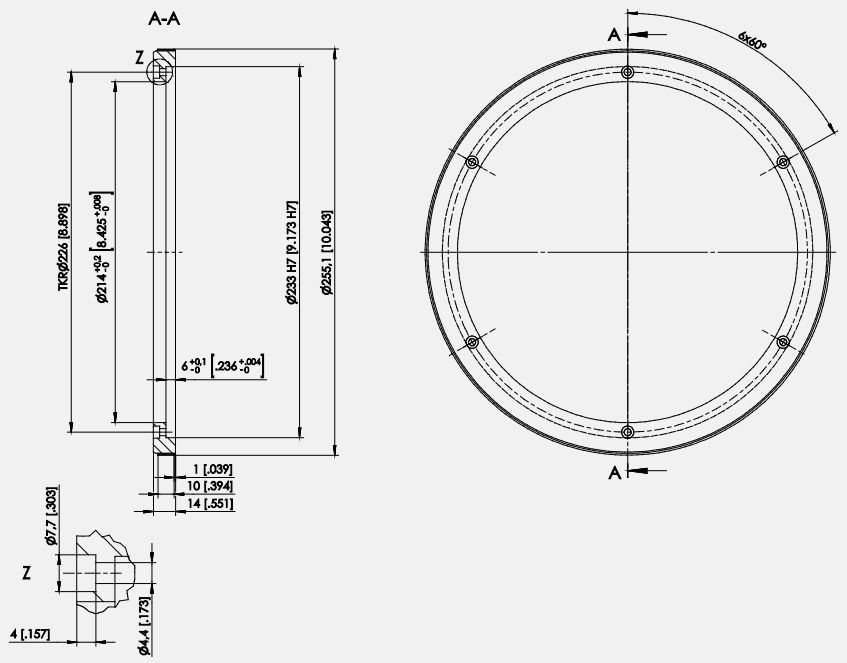
PMIR5-50-64-O/M-83



PMIR5-50-96-O/M-133



PMIR5-50-160-O/M-233



Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

PMIS4, PMIR7, PMIR7N

Magnetic incremental encoder

Magnetic wheels for rotative applications

- **All metal housing**
- **Protection class IP67**
- **Excellent protection of the active measurement area**
- **Highest EMC protection**
- **Suitable for harsh environments**
- **Up to 184,320 pulses/360°**

Specifications

Output	Incremental encoder output A/B with differential push-pull output, TTL/24 V-, TTL/RS-422- or HTL-compatible
Excitation voltage	10 ... 30 VDC oder 5 VDC ±5%
Excitation current	300 mA max.
Magnetic period of the sensor	2 mm
Guided spacing between sensor and wheel x_Z	0.1 ... 0,8 mm
Side tracking tolerance of the sensor	±1 mm
Linearity (sensor with mag. wheel PMIR4)	0.1°
Repeatability	±1 Digit
Maximum pulse frequency f_P	50 kHz, 20 kHz, 10 kHz (standard 50 kHz, max. 480 kHz)
Output signals	$A, \overline{A}, B, \overline{B}$ / signal $Z, \overline{Z}$ (optional) / status signal $\overline{ERR}$ (optional)
Material of housing	Zinc die casting
Connection	Cable 8 wire, dia. 5 mm, open cable end. 15 pin D-Sub connector at the cable end as option. Max. length of the integrated sensor cable: output TTL: 3 m; HTL/TTL24V: 20 m
Weight	30 g ±5 g (without cable and connector)
Protection class (EN 60529)	IP67
Shock	DIN EN 60068-2-27:1993, 50 g 6 ms, 100 shocks
Vibration	DIN EN 60068-2-6:1995, 20 g, 10-2000 Hz, 10 cycles
Temperature	-40 ...+85°C
EMC	DIN EN 61326-1:2013

Order code sensor head PMIS4

PMIS4	–	1	–	2	–	3	–	4	–	5	–	6	–	7

1 Magnetic period

20 = 2 mm

2 Scaling factor

See table*

3 Maximum pulse frequency (in kHz, standard 50 kHz)

50 / 20 / 10 (other frequencies on request, max. 480 kHz)

4 Output

HTL = HTL output with excitation 24 V DC, output 24 V
TTL = TTL output with excitation 5 V DC, output TTL/RS422
TTL24V = TTL output with excitation 24 V DC, output TTL/10 mA

5 Signal Z / status signal

Z0 = A/B without signal Z
Z1 = A/B with signal Z
Z3 = A/B with signal Z and status signal, only for non-differential (single-ended) outputs

6 Cable length

2M = Standard 2 m

7 Connection

S = open cable end
P15 = D-Sub connector at the cable end,15 pin

Order example sensor head

PMIS4 – 20 – 100 – 50KHZ – HTL – Z0 – 2M – S

***Table "Scaling factor sensor PMIS4-50…" (see page 175)**

The subsequent counting device must be able to process the specified maximum pulse frequency of the sensor.

Output signals

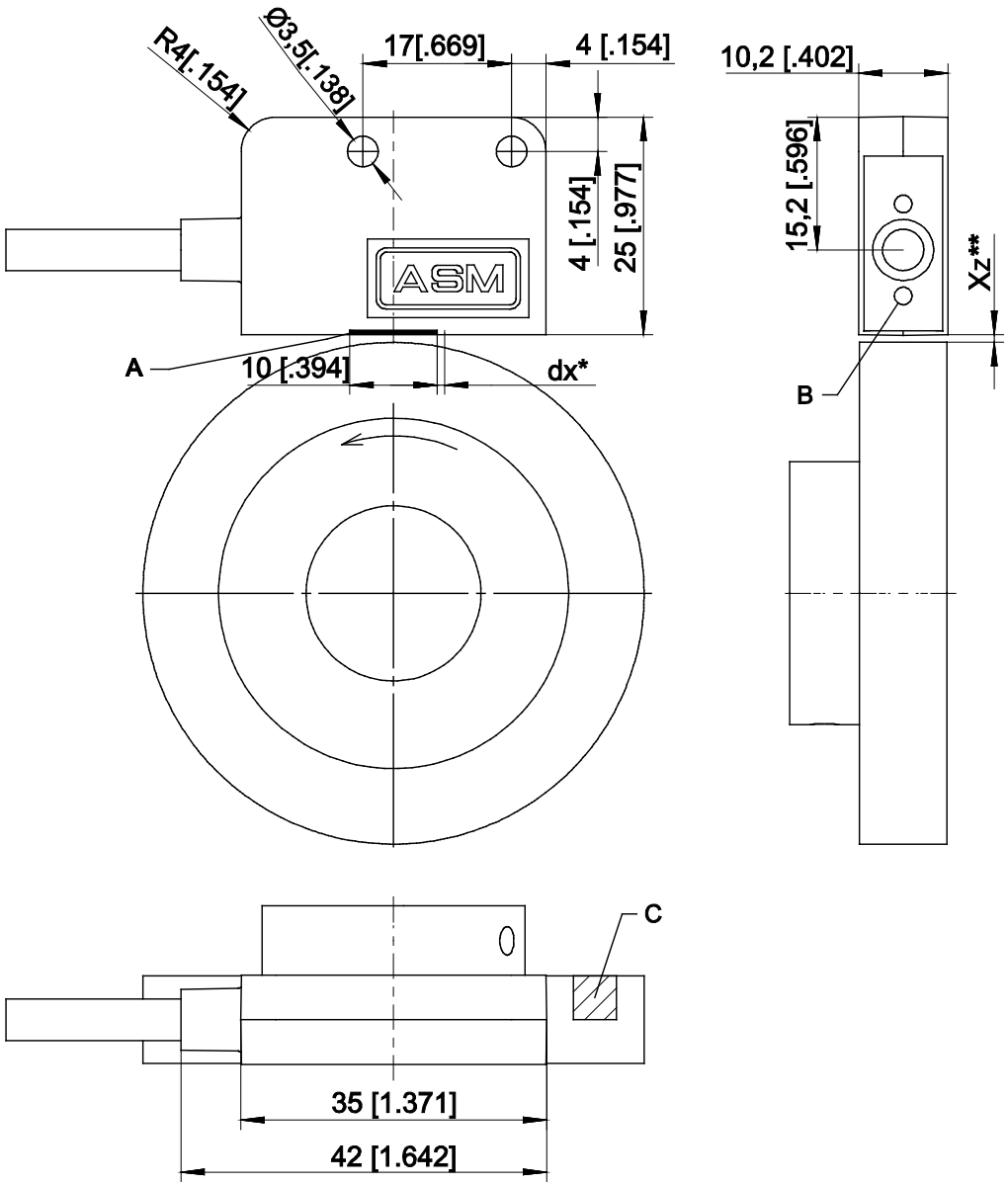
Saturation voltage	UH, UL = 0,2 V UH, UL = 0,4 V C_{last} < 10 nF	I_{out} = ±10 mA (UH = UB - U_{out}) I_{out} = ±30 mA
Short circuit current	ISL, ISH < 800 mA ISL, ISH < 90 mA	(UH, UL = 0 V) (UH, UL = 1,5 V)
Rise time	tr, tf < 200 ns	with cable length 1 m, 10 % … 90 %

Pulse frequency in dependence on the cable length

Load/cable length	**Load/pulse frequency fp**		
	HTL single ended UB = 24 V	**TTL/RS422 differential** UB = 5 V *	**TTL/24 V** UB = 24 V
Max. output current R_{last} min.	50 mA 500 Ω	50 mA 100 Ω	10 mA 500 Ω
C_{last} max.	10 nF	10 nF	1 nF
200 m	15 kHz	—	—
100 m	25 kHz	100 kHz	—
50 m	50 kHz	200 kHz	50 kHz
10 m	100 kHz	300 kHz	100 kHz
	50 mA	50 mA	10 mA

* = consider the voltage loss of the cable; the excitation voltage 5 V ± 5% of the sensor must be guaranteed.
Note: For longer distances (see specification above) you must use min. 0.5 mm^2 wire for „Excitation+“ and „Excitation GND“ (see signal wiring), all signal wires must be min. 0.14 mm^2!

Dimensions PMIS4



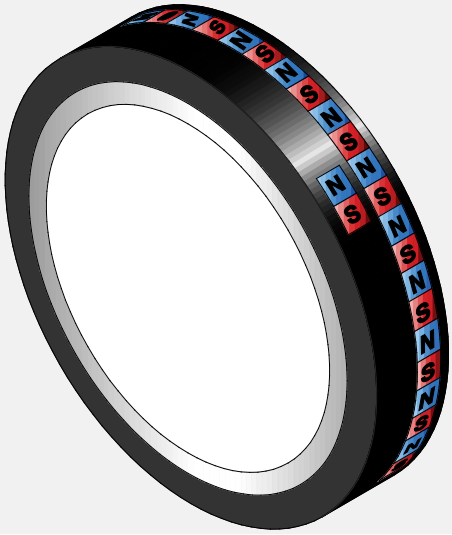
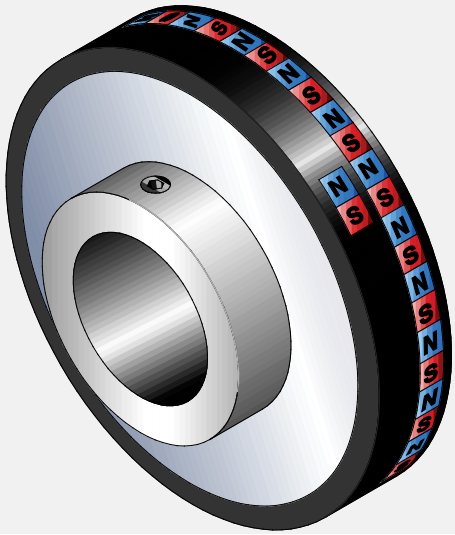
A – Active measurement area
B – Status signal (LED)
C – Index mark

* = position tolerance of the active measurement area: dx = ±1 mm
** = less masking tape

Dimensions in mm [inch]
Dimensions informative only.
For guaranteed dimensions please consult factory.

PMIR7(N) - Incremental magnetic rings

Specifications PMIR7, PMIR7N

PMIR7	PMIR7N
Magnetic rings	Magnetic rings with hub
	

Material	Elastomer bonded hard ferrite
Base material	PMIR7: stainless steel PMIR7N: stainless steel (hub: aluminium)
Poles per revolution	50 / 64 / 90 poles/360°
Magnetic period	2 mm
Temperature range	-40 ...+85°C
Linearity with sensor PMIS4	Approx. ± 0.1°

Standard magnetic rings

Type	Poles	ø	Width	Signal periods/rotation	Inside diameter
PMIR7(N)-20-50-M-27(20)	50	31.8	10	50 to 102 400 (refer to the table below)	27H7 (20H7)
PMIR7(N)-20-64-M-35(20)	64	40.7	10	64 to 131 072 (refer to the table below)	35H7 (20H7)
PMIR7(N)-20-90-M-50(20)	90	57.3	10	90 to 184 320 (refer to the table below)	50H7 (20H7)

Scaling factor sensor PMIS4-50- ...	PMIR7(N)-20-50-M-27(20)		PMIR7(N)-20-64-M-35(20)		PMIR7(N)-20-90-M-50(20)	
	Signal periods	r.p.m. * (at 480 kHz)	Signal periods	r.p.m. * (at 480 kHz)	Signal periods	r.p.m. * (at 480 kHz) *
1	50	6000	64	6000	90	6000
2	100	6000	128	6000	180	6000
4	200	6000	256	6000	360	6000
8	400	6000	512	6000	720	6000
10	500	5760	640	4500	900	3200
16	800	6000	1024	6000	1440	6000
20	1000	5760	1280	4500	1800	3200
25	1250	6000	1600	6000	2250	5120
32	1600	6000	2048	6000	2880	6000
40	2000	5760	2560	4500	3600	3200
50	2500	6000	3200	6000	4500	5120
64	3200	6000	4096	5625	5760	4000
80	4000	5760	5120	4500	7200	3200
100	5000	4608	6400	3600	9000	2560
125	6250	3686	8000	2880	11 250	2048
128	6400	3600	8192	2813	11 520	2000
200	10 000	2304	12 800	1800	18 000	1280
250	12 500	1843	16 000	1440	22 500	1024
256	12 800	1800	16 384	1406	23 040	1000
400	20 000	1152	25 600	900	36 000	640
500	25 000	922	32 000	720	45 000	512
512	25 600	900	32 768	703	46 080	500
1024	51 200	450	65 536	352	92 160	250
2048	102 400	225	131 072	176	184 320	125

* Maximum revolution per minute mechanically 6.000 r.p.m.

Order code

Order code magnetic ring PMIR7

PMIR7 – 1 – 2

1	Magnetic period
20	= 2 mm

2	Number of poles and inner diameter [in mm]
50 - M - 27	
64 - M - 35	
90 - M - 50	

Order example magnetic ring

PMIR7 – 20 – 64 – M – 35

Order code magnetic ring PMIR7N

PMIR7N – 1 – 2

1	Magnetic period
20	= 2 mm

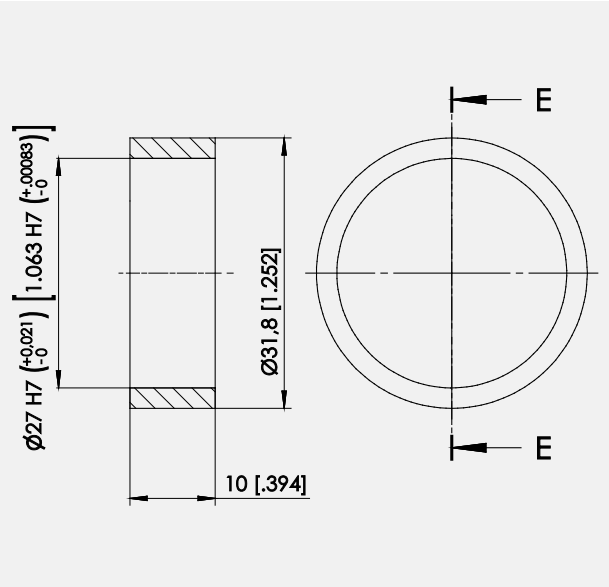
2	Number of poles and inner diameter [in mm]
50 - M - 20	
64 - M - 20	
90 - M - 20	

Order example magnetic ring

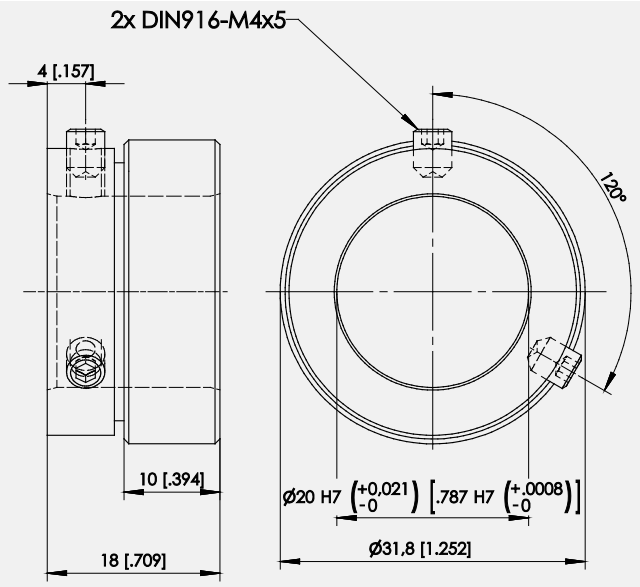
PMIR7N – 20 – 64 – M – 20

Dimensions

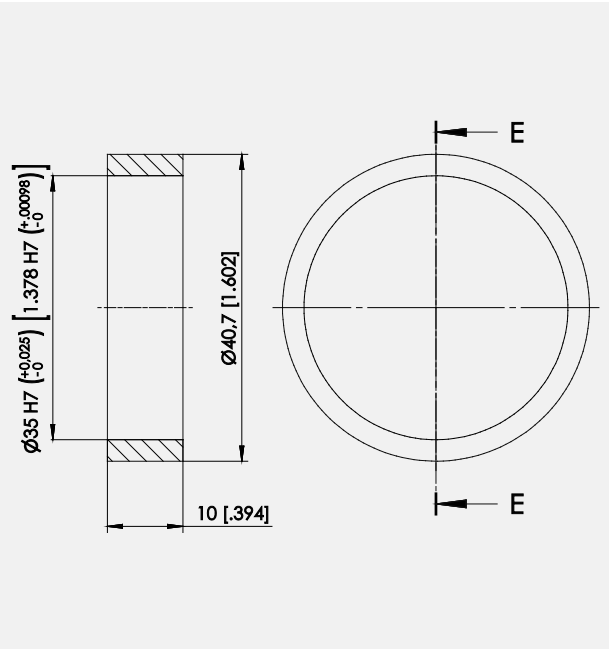
PMIR7-20-50-M-27



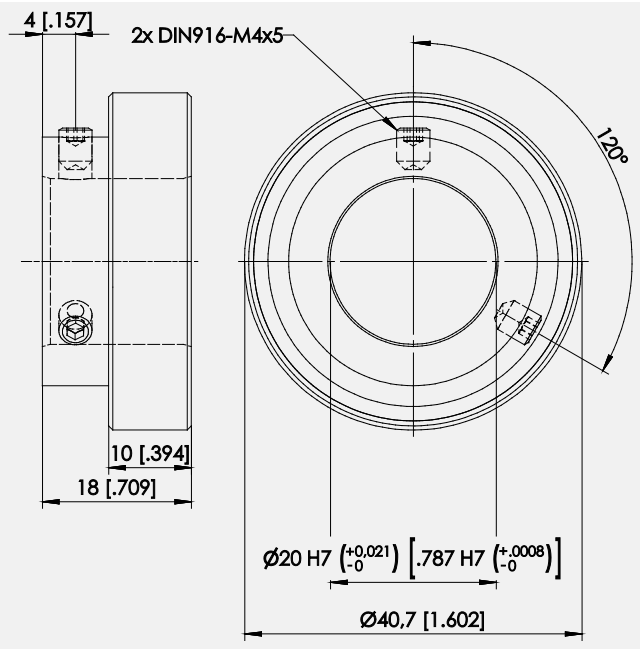
PMIR7N-20-50-M-20



PMIR7-20-64-M-35

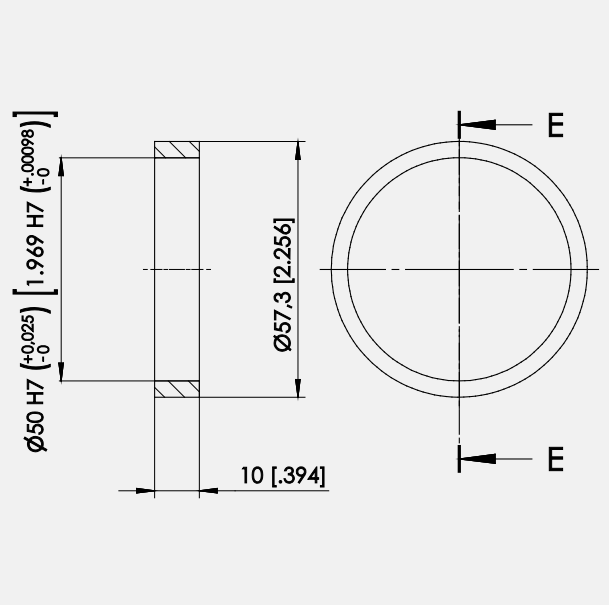


PMIR7N-20-64-M-20

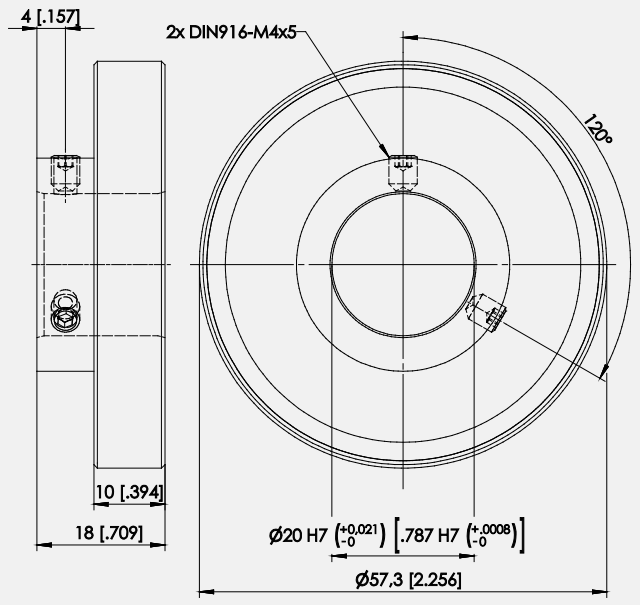


Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

PMIR7-20-90-M-50



PMIR7N-20-90-M-20

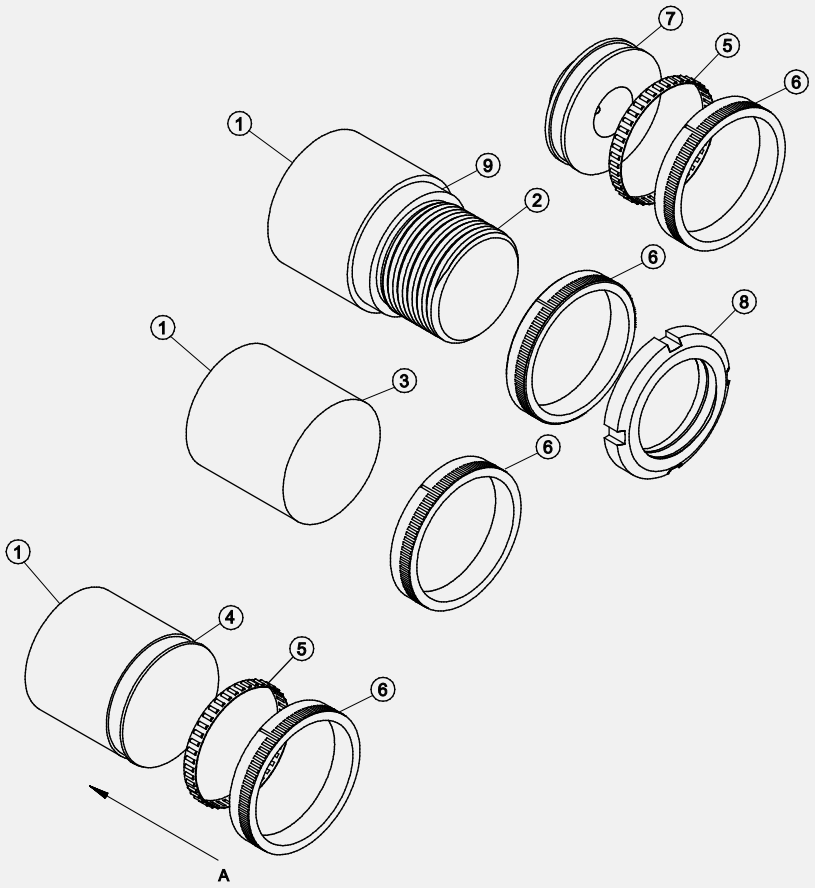


Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

How to mount the PMIR7/PMIR7N magnetic rings

The PMIR7/PMIR7N magnetic rings can be mounted in several ways on the customer's shaft resp. hub:

- press ring
- press fit
- bonding
- shaft nut

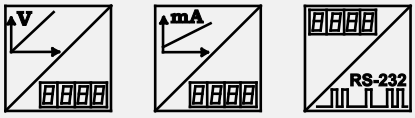


① customer's shaft
② thread for ⑧
③ press fit for ⑥
④ groove for press ring ⑤
⑤ press ring for ④ and ⑥
⑥ magnetic ring PMIR7
⑦ hub with groove for press ring
⑧ shaft nut for ②
⑨ force fit for ⑥
A - Mounting direction

PRODIS-ADC

Digital Process Meter for sensors with analog output

- **Voltage (e.g. 0 ... 10 V)**
  Current (e.g. 4 ... 20 mA)
  Voltage divider (Potentiometer)
- **Integrated sensor supply**
- **6-digit LED display**
- **RS-232-interface**



Description and specifications

PRODIS®-ADC is designed for use with analog position sensors to display angles and -displacements. A high resolution A/D converter processes signals from sensors with voltage or current output. The meter is programmable to display values within preset start/end range or values in units as inches, mm or degrees. A tare function or programming lock can be activated with two control terminals. Sensor excitation is supplied by the meter. With four membrane keys all parameters can be programmed for the special applications. Optional comparator functions with 4 NPN open-collector output are available, additional 2 of them have relay output.

Specifications

Display	6-digit, 7-segment LED, height 14 mm,
Counting rate	decimal point programmable
Measurement accuracy	1 ... 25/s programmable
Excitation voltage/current	24 V DC ±10%/150 mA, residual ripple 1%SS; 85-250 V AC, 50-60 Hz/180 mA max.
Sensor excitation	24 V DC/300 mA / voltage divider 5 V, 10 mA
Input	Two channels each for: Voltage: 0 ... 10 V; 0.5 … 4.5 V, 0.5 … 10 V, max. 24V, Current: 0...20 mA 3 wires; 4 … 20 mA 2 wires/3 wires Voltage divider R_{min}=500Ω, 0 … 5 V Load 100 Ω, I_{max}<30 mA One input or the difference between both inputs can be chosen by programming.
Control input	2 control inputs 24 V, active low
Comparator output (option)	Relay: 250 V AC/5 A, 30 V DC/5 A NPN: 24 V max./50 mA to GND
Connection	Terminal strip 12 pole, excitation 3 pole
Temperature coefficient	±20 x 10^{-6} / °C

Operating temperature	-10...+40 °C
Storage temperature	-20...+85 °C
Weight	24 V DC: approx. 250 g 230 V AC: approx. 400 g
Protection class	Front IP60, rear IP40
Humidity	Max. 80 % R. H., non-condensing
Safety of equipment	Directive 2014/35/EU: EN 61010-1:2010
EMC	Directive 2014/30/EU: EN 61326-1:2013

Programmable parameters / value range	
Value range offset	-999999 to +999999
Divisor, multiplier	0 to 999999
Other programmable parameters	Decimal point position, display brightness
Control input terminals	Key lock, display value hold, tare function

Interface RS-232	
Level	RS-232: ±8 V, galvanically isolated
Data format	1 start bit, 8 data bits, 1 stop bit, no parity
Transmission rate	9600 Baud

Order code

PD-ADC – 1 – 2

1 Excitation voltage

24VDC = 24 V DC
230VAC = 85 … 230 V AC

2 Options

REL2 = Comparator
DT = Desktop version

Order example

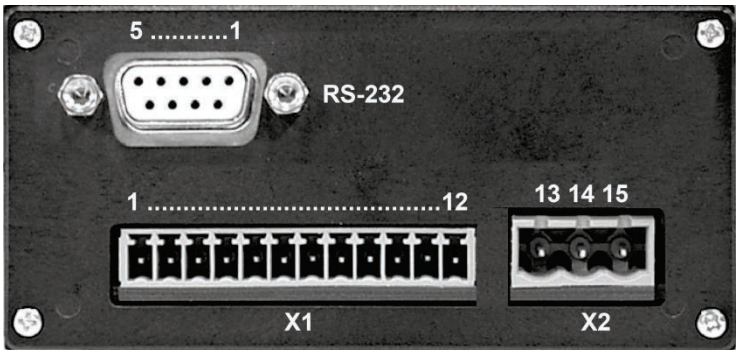
PD – ADC – 24VDC – REL2

Wiring basic unit

Signals	Connector X1 Pin no.	Connector X2 Pin no.
Sensor excitation +UB 24 V	1	
Sensor excitation 0 V (GND)	2	
Control input terminal 1: tare function	3	
Control input terminal 2: programming lock	4	
Voltage input terminal (e.g. 0 ... 10 V), channel 1	5	
Voltage input terminal (e.g. 0 ... 10 V), channel 2	6	
Current input terminal (e.g. 0 ... 20 mA), channel 1	7	
Current input terminal (e.g. 0 ... 20 mA), channel 2	8	
Voltage divider input terminal, channel 1	9	
Voltage divider input terminal, channel 2	10	
Reference voltage 5 V for voltage divider	11	
GND	12	
PD-ADC-24VDC Excitation +24 V Excitation 0 V (GND)		 13 14
PD-ADC-230VAC Excitation Protective ground		 13, 15 14

Signals	D-Sub, pin no.
TxD	2
RxD	3
GND	5

Rear view without comparator output

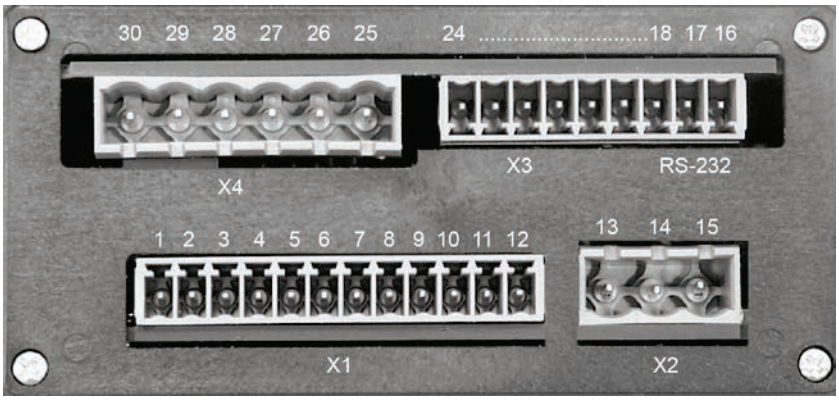


Wiring basic unit

Signals	Connector X1 Pin no.	Connector X2 Pin no.
Sensor excitation +UB 24 V	1	
Sensor excitation 0 V (GND)	2	
Control input terminal 1: tare function	3	
Control input terminal 2: programming lock	4	
Voltage input terminal (e.g. 0 ... 10 V), channel 1	5	
Voltage input terminal (e.g. 0 ... 10 V), channel 2	6	
Current input terminal (e.g. 4 ... 20 mA), channel 1	7	
Current input terminal (e.g. 4 ... 20 mA), channel 2	8	
Voltage divider input terminal, channel 1	9	
Voltage divider input terminal, channel 2	10	
Reference voltage 5 V for voltage divider	11	
GND	12	
PD-ADC-24VDC Excitation +24 V Excitation 0 V (GND)		 13 14
PD-ADC-230VAC Excitation Protective ground		 13, 15 14

Signals	Connector X3 Pin no.
TxD	17
RxD	16
GND	18

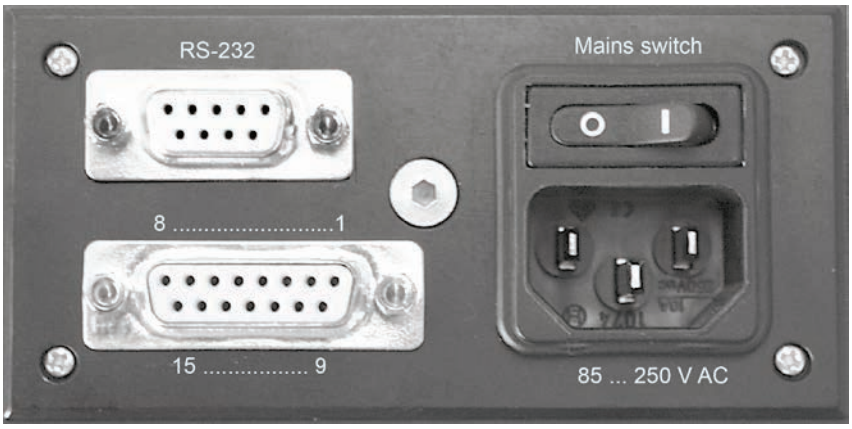
Rear view with comparator output (option „REL2“)



Comparator function (option)

Comparator	Comparator output				
	NPN collector	Connector X3 Pin no.	Relay	Connector X4 Pin no.	LED
Comparator 1	NPN1	20	Relay 1 NO NC Common	 25 27 26	LED1
Comparator 2	NPN2	21	Relay 2 NO NC Common	 28 30 29	LED2
Comparator 3	NPN3	22			
Comparator 4	NPN4	23			
	NPN GND NPN U_8 (+24V)	24 19			

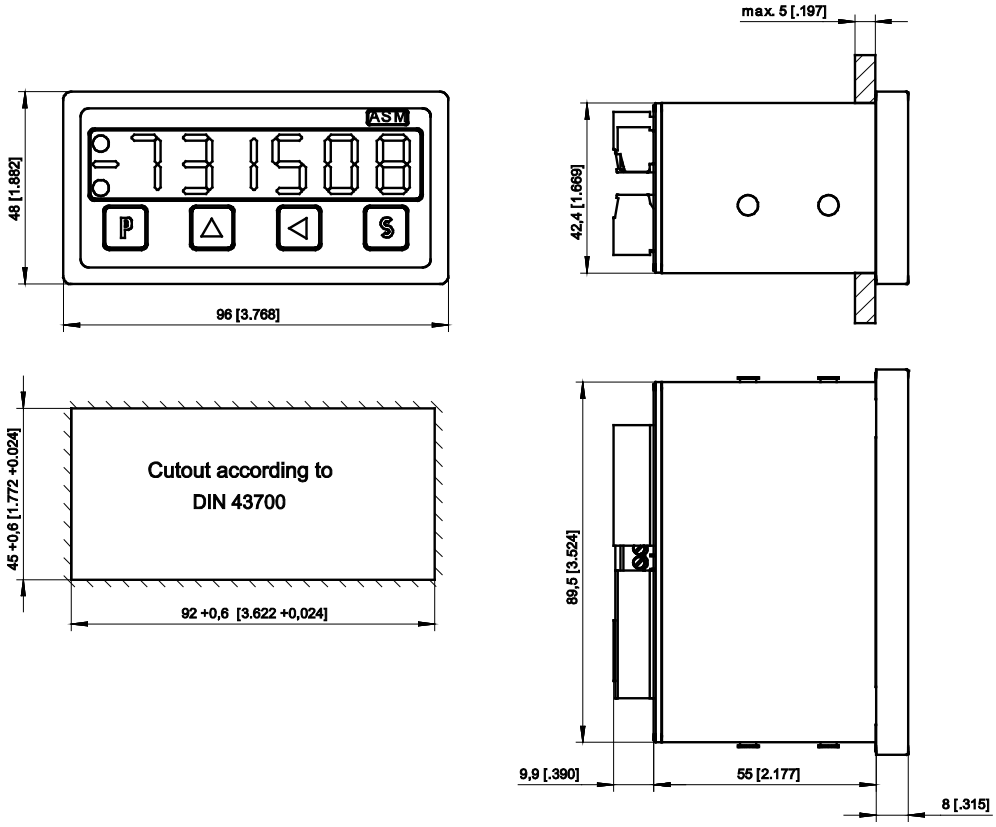
Desktop version (option „DT")



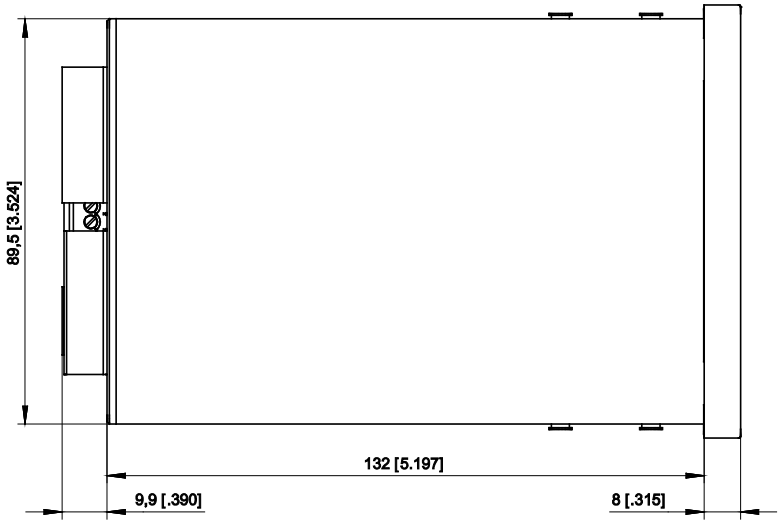
Wiring of connector X1 see table "Wiring basic unit".

Dimensions

PD-ADC-24VDC



PD-ADC-230VAC

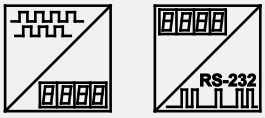


Dimensions in mm [inch]
Dimensions informative only. For guaranteed dimensions consult factory.

PRODIS-INC

Digital Process Meter for position sensors with incremental output

- **Counting rate up to 250 kHz (<1 MHz edge frequency)**
- **Integrated sensor supply**
- **6-digit LED display**
- **RS-232 interface**



Description and specifications

PRODIS®-INC is designed for use with incremental position sensors to display angles and displacements. The fast counter processes 90° phase shifted A, B signals (quadrature signals) for direction and counting information. Sensor excitation is supplied from the meter. With four membrane keys all parameters can be programmed for the special application. A zero signal and a reference signal can be used for calibration of the measurement system. Optional comparator functions with 4 NPN open-collector outputs are available, additional 2 of them have relay output.

Specifications

Display	6-digit, 7-segment LED, height 14 mm, decimal point programmable
Counting frequency	250 kHz max., 1 MHz edge frequency
Excitation voltage/current	24 V DC ±10%/150 mA, residual ripple 1%$_{ss}$; 85-250 V AC, 50-60 Hz/180 mA max.
Sensor excitation	24 V DC/300 mA or 5V DC/500 mA
Inputs	A, B, Z, T (reference signal)
Comparator outputs (option)	Relais: 250 V AC/5 A, 30 V DC/5 A NPN: 24 V max./50 mA to GND
Connection	Terminal strip 12 pole, excitation 3 pole
Temperature coefficient	±20 x 10^{-6} /°C
Operating temperature	-10...+40°C
Storage temperature	-20...+85°C
Weight	24 V DC: approx. 250 g; 230 V AC: approx. 400 g
Protection class	Front IP60, rear IP40
Humidity	Max. 80% R.H., non condensing
Safety of equipment	Directive 2014/35/EU: EN 61010-1:2010
EMC	Directive 2014/30/EU: EN 61326-1:2013

Programmable parameters / value range

Value range display, offset, limit values	-999999 to +999999
Divisor, Multiplier	0 to 999999
Other programmable parameters	Counting direction, decimal point position, last-value memory, Z signal evaluation, display brightness
Signal T	Manual zero, key lock, display value hold, Z release, relative measurement activation

Interface RS-232

Level	RS-232: ±8 V, galvanically isolated
Data format	1 start bit, 8 data bits, 1 stop bit, no parity
Transmission rate	4800 / 9600 / ... / 115200 Baud

Order code

PD-INC – 1 – 2 – 3 – 4

1 Excitation voltage

24VDC = 24 V DC
230 VAC = 85 … 230 V AC

2 Sensor excitation voltage

G24V = 24 V DC
G5V = 5 V DC

3 Sensor signal

HTL = HTL level with excitation voltage G24V
TTL = TTL level with excitation voltage G5V or G24V

4 Options

REL2 = Comparator
DT = Desktop version

Order example

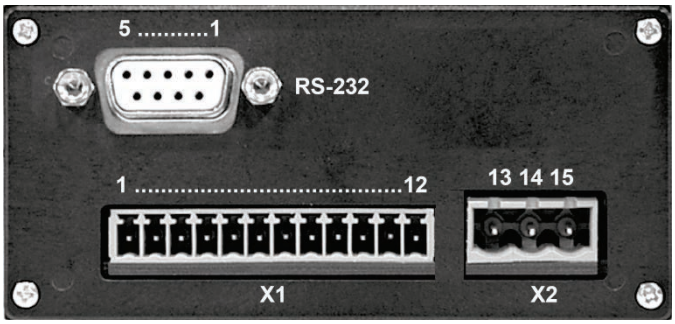
PD – INC – 24VDC – G24V – HTL – REL2

Wiring basic unit

Signals	Connector X1 Pin no.	Connector X2 Pin no.
Sensor excitation $+U_B$	1	
Sensor excitation 0 V (GND)	2	
Signal A	4	
Signal $\overline{A}$	5	
Signal B	6	
Signal $\overline{B}$	7	
Signal Z (zero signal)	8	
Signal $\overline{Z}$ (zero signal)	9	
Signal T (reference signal)	10	
Signal $\overline{T}$ (reference signal)	11	
GND	12	
PD-INC-24VDC Excitation +24 V Excitation 0 V (GND)		 13 14
PD-INC-230VAC Excitation Protective ground		 13, 15 14

Signals	D-Sub Pin no.
TxD	2
RxD	3
GND	5

Rear view without comparator output

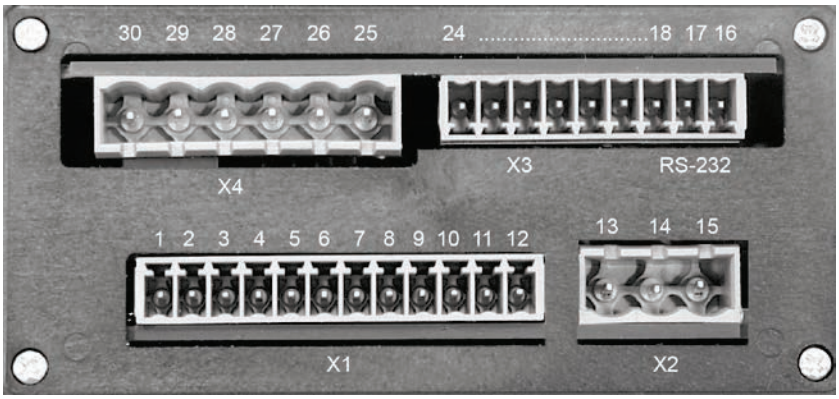


Wiring basic unit

Signals	Connector X1 Pin no.	Connector X2 Pin no.
Sensor excitation $+U_B$	1	
Sensor excitation 0 V (GND)	2	
Signal A	4	
Signal $\overline{A}$	5	
Signal B	6	
Signal $\overline{B}$	7	
Signal Z (zero signal)	8	
Signal $\overline{Z}$ (zero signal)	9	
Signal T (reference signal)	10	
Signal $\overline{T}$ (reference signal)	11	
GND	12	
PD-ADC-24VDC Excitation +24 V Excitation 0 V (GND)		 13 14
PD-ADC-230VAC Excitation +24 V Protective ground		 13, 15 14

Signals	Connector X3 Pin no.
TxD	17
RxD	16
GND	18

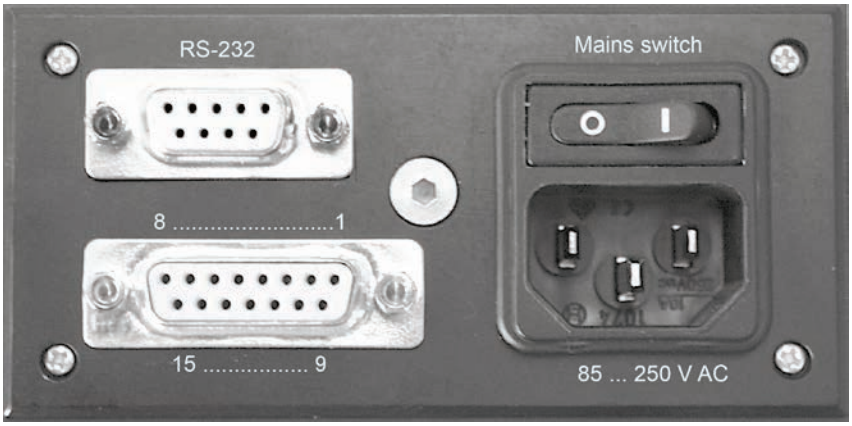
Rear view with comparator output (option „REL2“)



Comparator function (option)

Comparator	Comparator output				
	NPN collector	Connector X3 Pin no.	Relay	Connector X4 Pin no.	LED
Comparator 1	NPN1	20	Relay 1 NO NC Common	 25 27 26	LED1
Comparator 2	NPN2	21	Relay 2 NO NC Common	 28 30 29	LED2
Comparator 3	NPN3	22			
Comparator 4	NPN4	23			
	NPN GND NPN U_8 (+24V)	24 19			

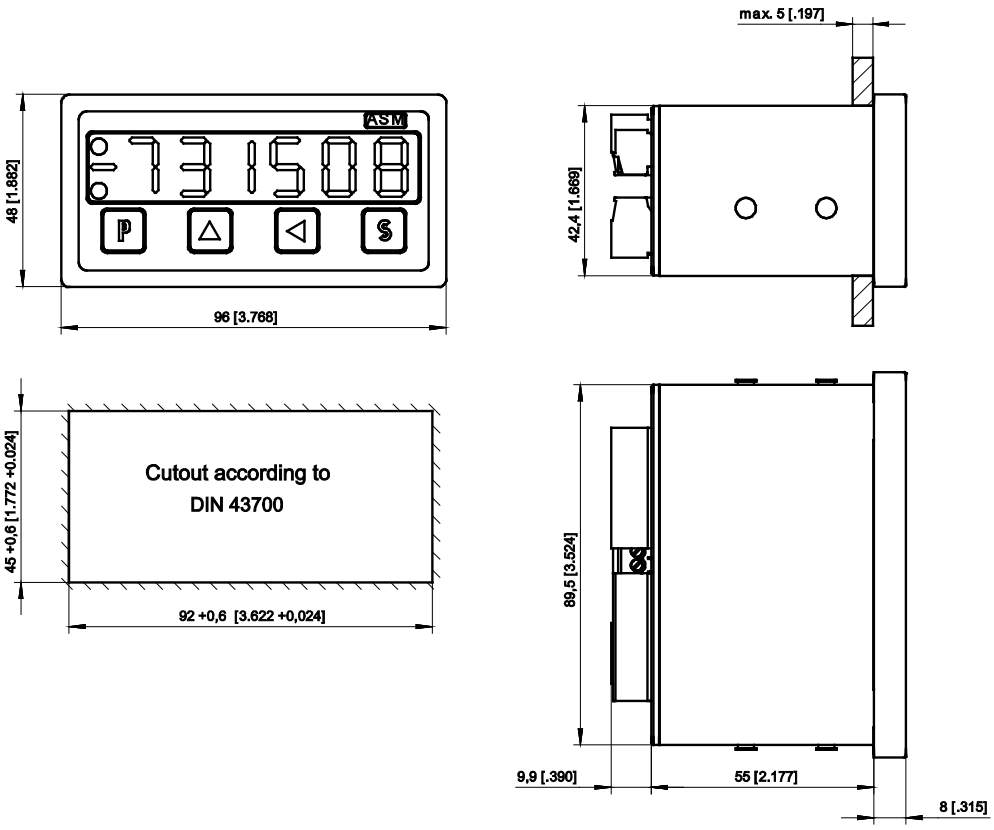
Desktop version (option „DT")



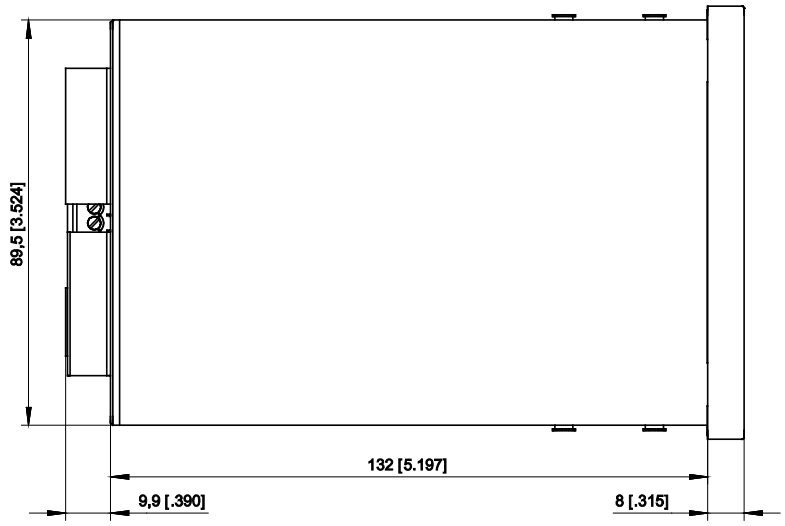
Wiring of connector X1 see table "Wiring basic unit".

Dimensions

PD-INC-24VDC



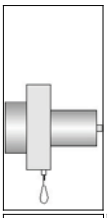
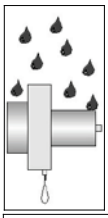
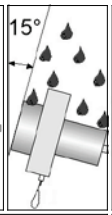
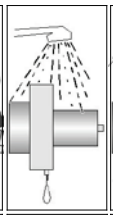
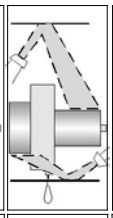
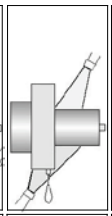
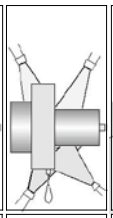
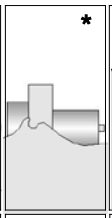
PD-INC-230VAC



Dimensions in mm [inch]
Dimensions informative only. For guaranteed dimensions consult factory.

General Information

Protection Classes according to DIN EN 60529

2nd char. numeral: Protection against ingress of water / 1nd char. numeral: Protection against solid foreign objects									
Protection against...	Not protected	Falling water drops vertical / 15°		Spraying water	Splashing water	Water jets	Powerful water jets	Temporary immersion	Continuous immersion
DIN EN 60529	IP .. 0	IP .. 1	IP .. 2	IP .. 3	IP .. 4	IP .. 5	IP .. 6	IP .. 7	IP .. 8
IP 0 .. Not protected	IP 00								
IP 1 .. Solid foreign objects diameter ≥ 50 mm	IP 10	IP 11	IP 12						
IP 2 .. Solid foreign objects diameter ≥ 12,5 mm	IP 20	IP 21	IP 22	IP 23					
IP 3 .. Solid foreign objects diameter ≥ 2,5 mm	IP 30	IP 31	IP 32	IP 33	IP 34				
IP 4 .. Solid foreign objects diameter ≥ 1 mm	IP 40	IP 41	IP 42	IP 43	IP 44				
IP 5 .. Dust-protected	IP 50		IP 52	IP 53	IP 54	IP 55	IP 56		
IP 6 .. Dust-tight	IP 60				IP 64	IP 65	IP 66	IP 67	IP 68*

* Depth and duration of immersion must be specified!

ASM Product Catalogs

POSIWIRE® – Cable Extension Position Sensors

POSITAPE® – Tape Extension Position Sensors

POSICHRON® – Magnetostrictive Position Sensors

POSIMAG® – Magnetic Scale Position Sensors

POSIROT® – Magnetic Angle Sensors and Encoders
POSIHALL® – Magnetic Multiturn Angle Sensors

POSITILT® – Inclination Sensors

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 01.2017