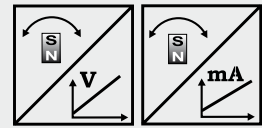


POSIROT® PRAS27 Magnetic Angle Sensor with Analog Output



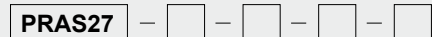
Magnetic angle sensor 0 - 360°

- Measurement range 0 to 360°
- Protection class IP67
- Analog output
- Material plastic
- Non-contact with external position magnet
- No wear
- High shock resistance
- Redundant second channel as option



| Specifications | Outputs | U2/U2B | Tension 0.5 ... 10 V |
|--------------------------------|-----------------------------------------------|--------|------------------------------|
| | | U6 | |
| | | I1/I1B | 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. (typ.) | | |
| Rated distance sensor / magnet | Depending on the position magnet | | |
| Protection class | IP67 | | |
| Signal characteristics | CW, CCW | | |
| Material | Plastic | | |
| Connection | Cable 5 x 0.25 mm² | | |
| Shock | EN60068-2-27:1993, 100 g/11 ms, 100 shocks | | |
| Vibration | EN60068-2-6:1995, 20 g 10 Hz-2 kHz, 10 cycles | | |

Order Code PRAS27



Model name

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

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

Output (see page 46)

U2/U2B = 0.5 ... 10 V

U6 = 0.5 ... 4.5 V ratiometr.

I1/I1B = 4 ... 20 mA, 3 wire

Signal characteristics

CW = Signal increasing CW

CCW = Signal increasing CCW

Connection

KAB2M = Cable, standard length 2 m

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

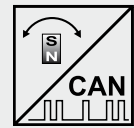
PRMAG ...

Order example: PRAS27 - 360 - U2 - CW - KAB2M



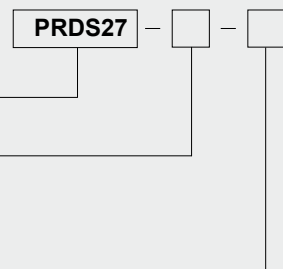
Magnetic angle sensor 0 - 360°

- Measurement range 0 to 360°
- Protection class IP67
- CANopen output
- Material plastic
- Non-contact with external position magnet
- No wear
- High shock resistance



| Specifications | | |
|----------------|--------------------------------|-----------------------------------------------|
| | Output | CANopen-Bus (Encoder CiA 406 V 3.2) |
| | Measurement range | 0 to 360° |
| | Resolution | 0.05° max. |
| | Linearity | ±1° |
| | Rated distance sensor / magnet | Depending on the position magnet |
| | Protection class | IP67 |
| | Material | Plastic |
| | Connection | Cable 0.3 m, 5-pin socket M12 |
| | Shock | EN60068-2-27:1993, 100 g/11 ms, 100 shocks |
| | Vibration | EN60068-2-6:1995, 20 g/10 Hz-2 kHz, 10 cycles |
| | EMC, Temperature | Refer to output specification |

Order Code PRDS27



Model

Output (see page 50/51)

- CANOP = CANopen
- CANJ1939 = CAN SAE J1939

Connection

- KAB0.3M-M12/CAN = Cable (length 0.3 m) with socket M12, 5 pin

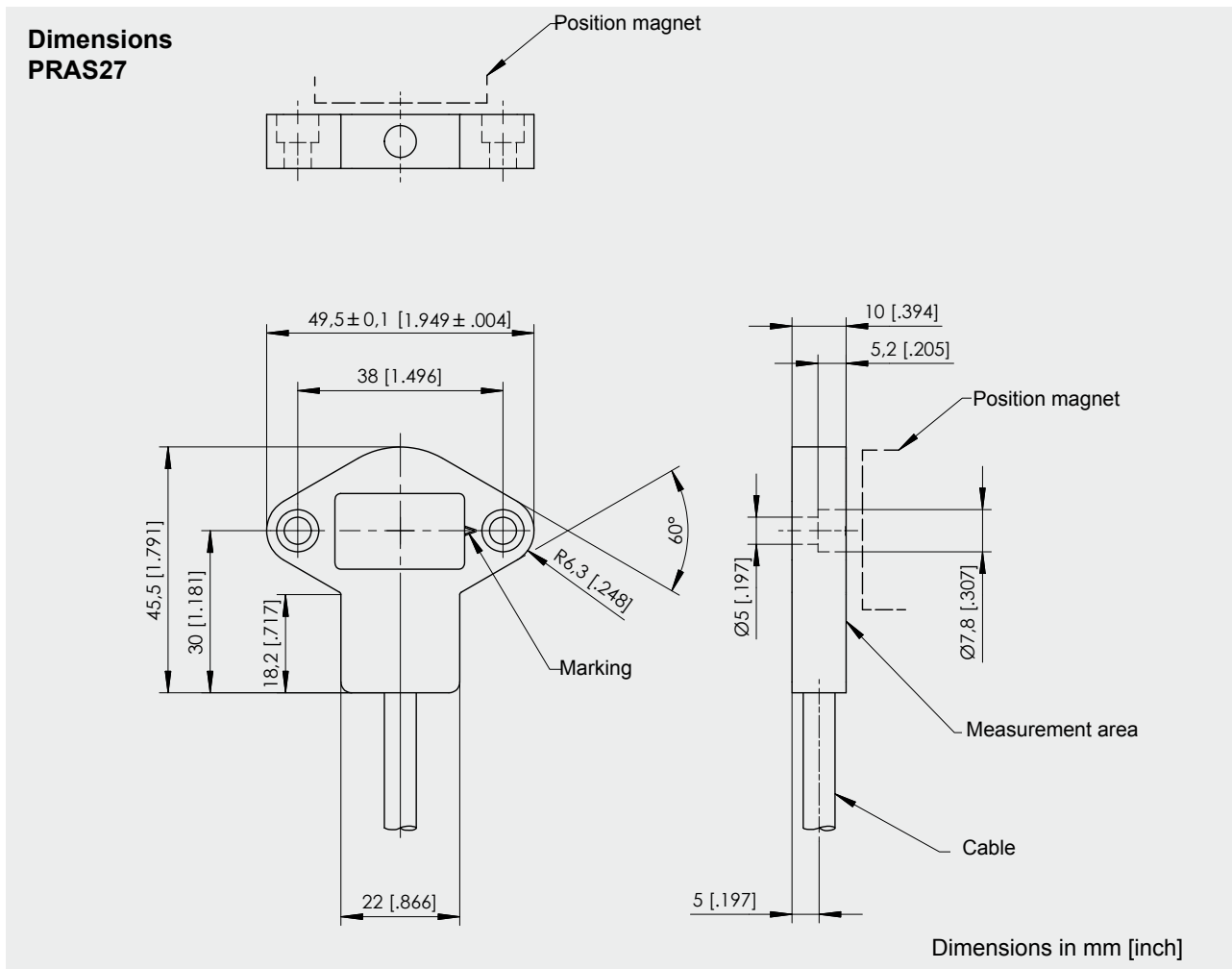
Order code position magnet (see accessories page 53/54)

PRMAG ...

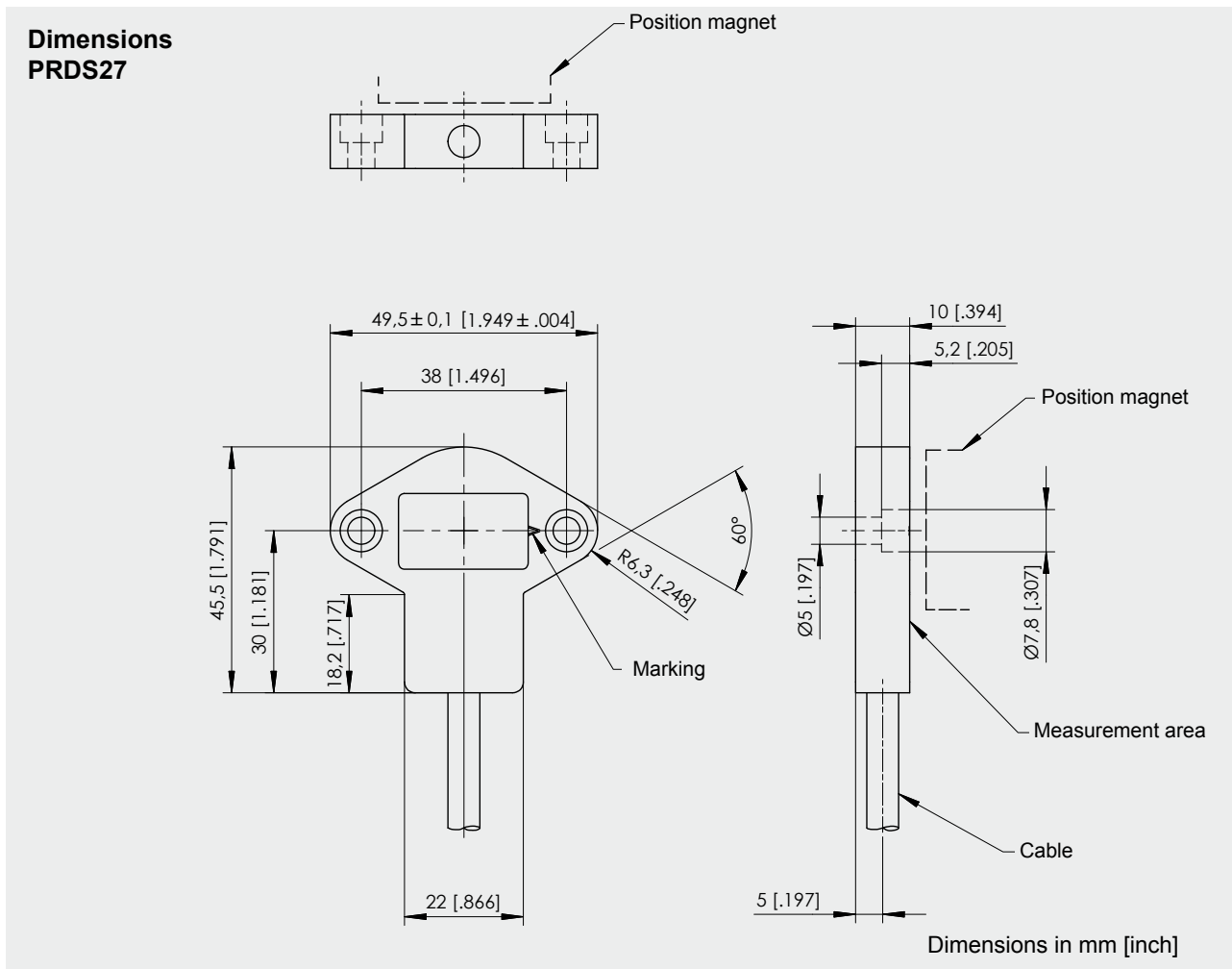
Order code connector cable (see accessories page 91)

KAB - XM - M12/5F/G - M12/5M/G - CAN

Order example: PRDS27 - CANOP - KAB0,3M - M12/CAN



Dimensions informative only.
 For guaranteed dimensions please consult factory.

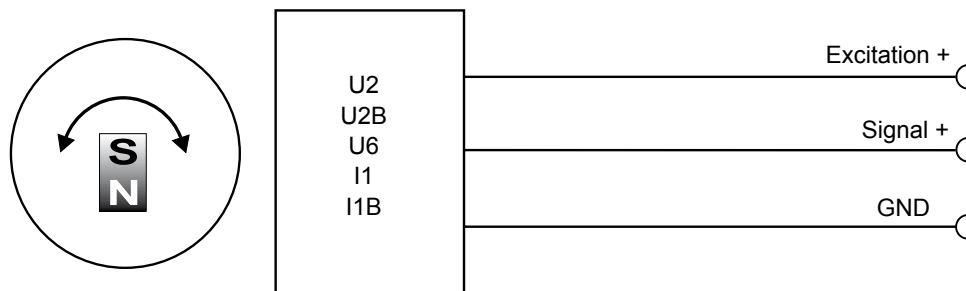


Dimensions informative only.
 For guaranteed dimensions please consult factory.

| | | |
|--------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------|
| <p>U2; U2B Voltage Output 0.5 ... 10 V</p> | Excitation voltage | U2: 18 ... 36 V DC; U2B: 11.5 ... 27 V DC |
| | Excitation current | 12 mA typ., 16 mA max. |
| | Output voltage | 0.5 ... 10 V DC |
| | Output current | 2 mA max. |
| | Measuring rate | 1 kHz standard |
| | Stability (temperature) | ±50 x 10 ⁻⁶ / °C f.s. (typ.) for 90°...360° ±100 x 10 ⁻⁶ / °C f.s. (typ.) for <90° |
| | Operating temperature | -40 ... +85 °C |
| | Protection | Reverse polarity, short circuit |
| EMC | EN61326-1:2006 | |
| <p>U6/5; U6/8,25 Voltage Output 10 ... 90% ratiometr.</p> | Excitation voltage | 5V DC ±10 % / 8.25 V DC ±10 % |
| | Excitation current | 8 mA typ., 12 mA max. |
| | Output voltage | 10 ... 90 % of the excitation voltage |
| | Output current | 2 mA max. |
| | Measuring rate | 1 kHz standard |
| | Stability (temperature) | ±50 x 10 ⁻⁶ / °C f.s. (typ.) for 90°...360° ±100 x 10 ⁻⁶ / °C f.s. (typ.) for <90° |
| | Operating temperature | -40 ... +85 °C |
| | Protection | Reverse polarity, short circuit |
| EMC | EN61326-1:2006 | |
| <p>I1; I1B Current Output 4 ... 20 mA, 3 wire</p> | Excitation voltage | I1: 18 ... 36 V DC; I1B: 10 ... 18 V DC |
| | Excitation current | 32 mA typ., 36 mA max. |
| | Load resistor | I1: 500 Ω max.; I1B: 250 Ω max. |
| | Output current | 4 ... 20 mA |
| | Measuring rate | 1 kHz standard |
| | Stability (temperature) | ±50 x 10 ⁻⁶ / °C f.s. (typ.) for 90°...360° ±100 x 10 ⁻⁶ / °C f.s. (typ.) for <90° |
| | Operating temperature | -40 ... +85 °C |
| | Protection | Reverse polarity, short circuit |
| EMC | EN61326-1:2006 | |


Other outputs available on request.

Output signals



| Signal Wiring | Output signals | Cable color |
|---------------|-----------------|-------------|
| | Excitation + | brown |
| | Signal | white |
| | GND | blue |
| | Do not connect! | black |
| | Do not connect! | - |

Description Magnetic angle encoder with CANopen interface according to CiA 406.

| | | |
|---------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------|
| <p>CANopen</p>  | 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 ping |
| | Integrated bus terminating resistor | Optional |
| | Bus, galvanic isolated | No |

| | | |
|------------------------------|-------------------------|----------------------------------------|
| <p>Specifications</p> | Excitation voltage | 8 ... 36 V DC |
| | Excitation current | Typ. 15/30 mA for 24/12 V, max. 100 mA |
| | Measuring rate | 1 kHz (asynchronous) |
| | Stability (temperature) | ±50 x 10 ⁻⁶ / °C f.s. |
| | Repeatability | 1 LSB |
| | Operating temperature | -40 ... +105 °C |
| | Protection | Reverse polarity, short circuit |
| | Dielectric strength | 1 kV (V AC, 50 Hz, 1 min.) |
| | EMC Automation | EN61326-1:2006 |

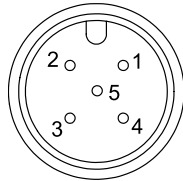
Description Angle encoder according to standard SAE J1939. Customer configuration of operating parameters by Peer-to-Peer. Process data exchange by Broadcast message. Node-Id distribution by address claiming (ACL).

| Interface 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 | 120 Ω |
| | 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 |

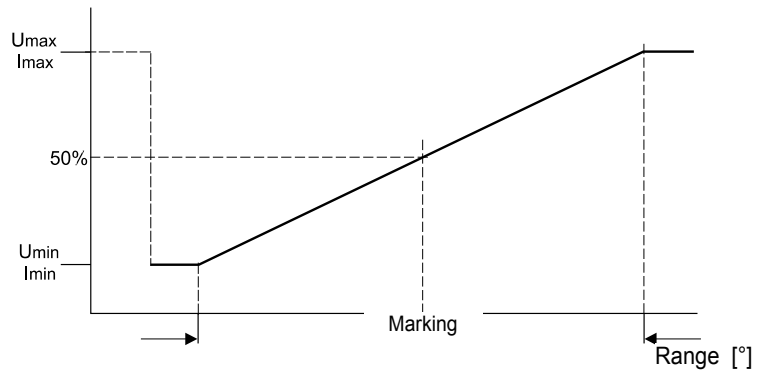
| Specifications | Excitation voltage | 8 ... 36 V DC |
|-----------------------|-------------------------|----------------------------------------|
| | Excitation current | Typ. 15/30 mA for 24/12 V, max. 100 mA |
| | Measuring rate | 1 kHz (asynchronous) |
| | Stability (temperature) | ±50 x 10 ⁻⁶ / °C f.s. |
| | Repeatability | 1 LSB |
| | Operating temperature | -40 ... +105 °C |
| | Protection | Reverse polarity, short circuit |
| | Dielectric strength | 1 kV (V AC, 50 Hz, 1 min.) |
| | EMC | EN61326-1:2006 |

| Signal wiring / connection | Signal name | Connector pin | Wire color | View to sensor connector  |
|-----------------------------------|--------------|---------------|------------|-------------------------------------------------------------------------------------------------------------------|
| | Shield | 1 | Black+grey | |
| | Excitation + | 2 | White | |
| | GND | 3 | Brown | |
| | CAN-H | 4 | Green | |
| | CAN-L | 5 | Yellow | |

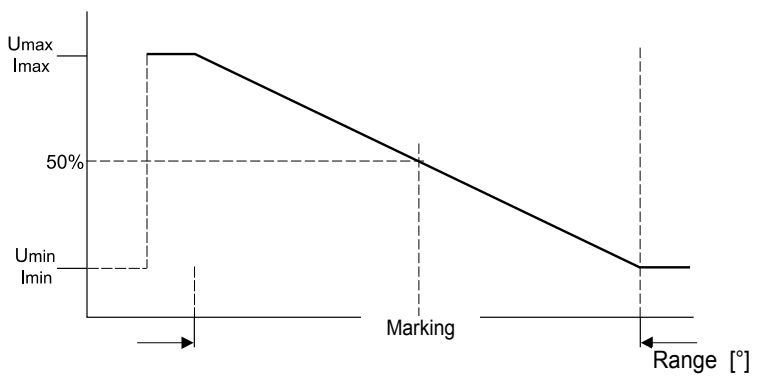
POSIROT[®]
PRAS/PRDS
Characteristics for magnetic angle sensors



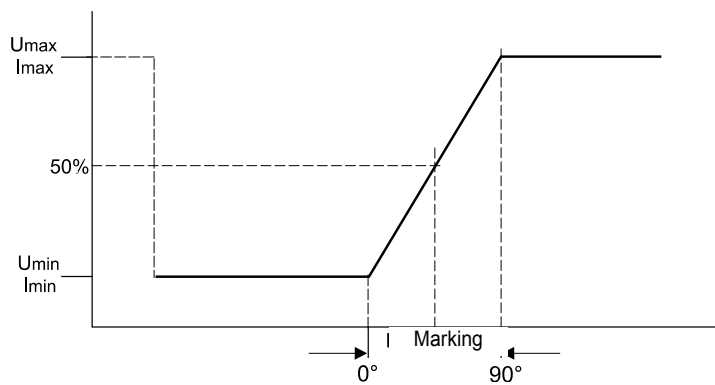
Output signal
 (CW increasing)



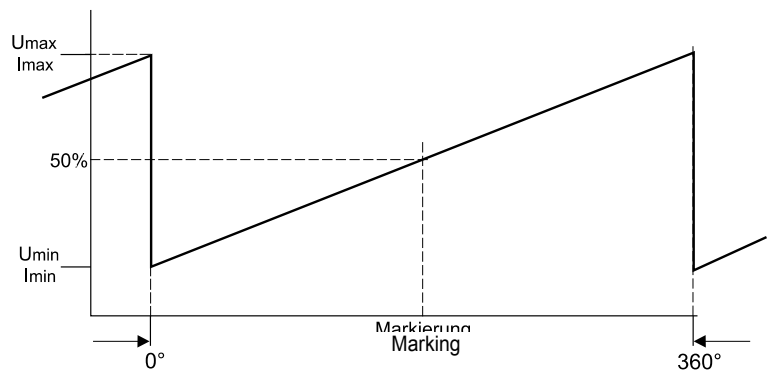
Output signal
 (CCW increasing)



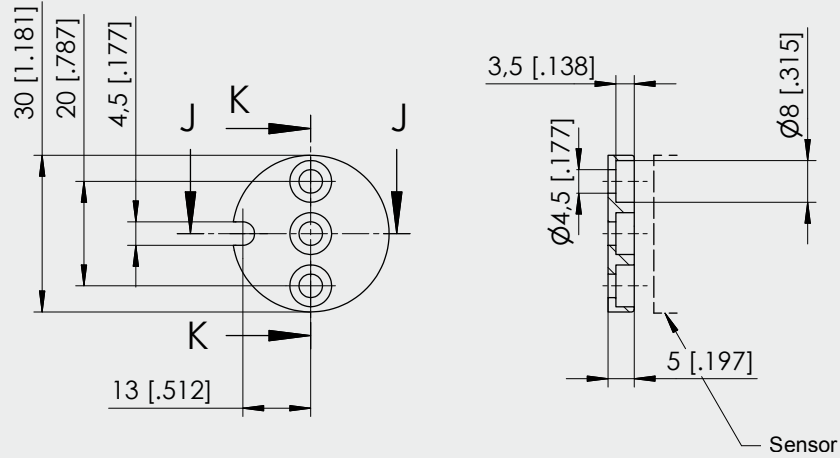
Example angular
range 90°



Example angular
range 360°

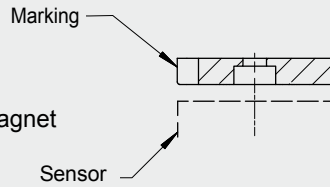


PRMAG20

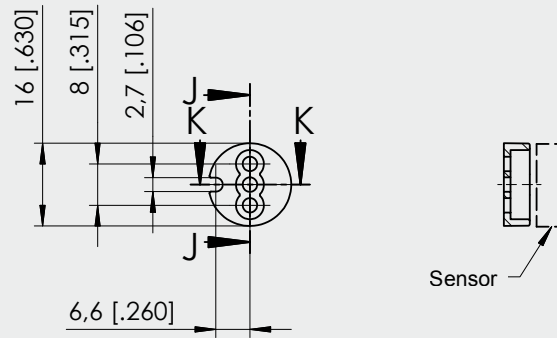


Weight 11 g approx.,
moment of inertia 1.2 kgmm²

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

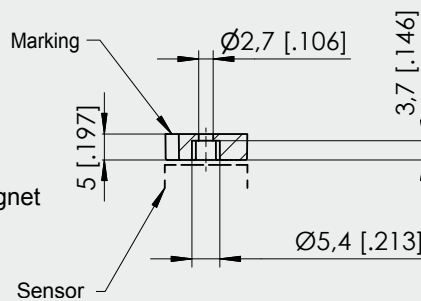


PRMAG21



Weight 3 g approx.,
moment of inertia 0.1 kgmm²

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



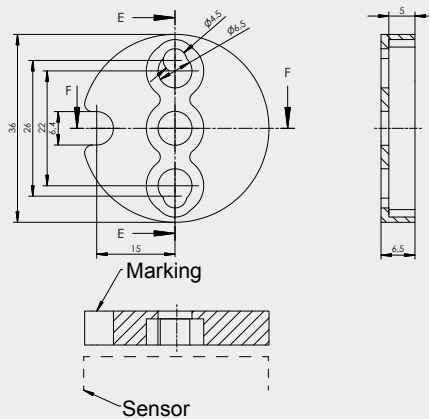
Dimensions in mm [inch]

Dimensions informative only
For guaranteed dimensions please consult factory

PRMAG22

Weight 17 g approx.,
 moment of inertia 3 kgmm²

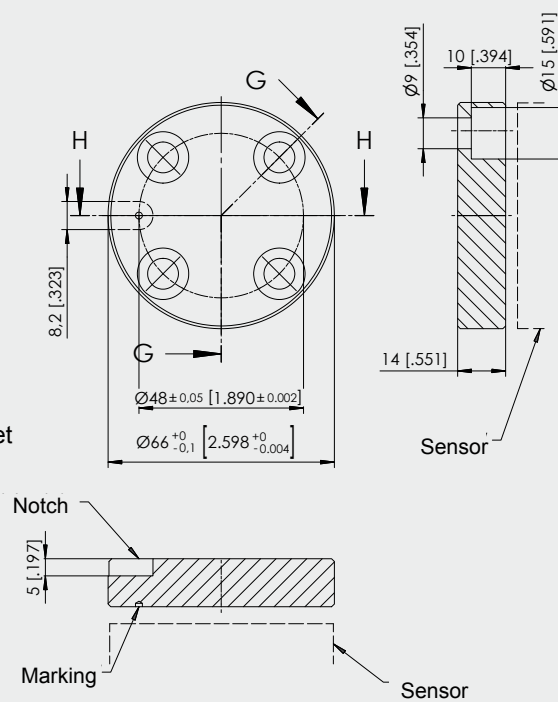
A misalignment of the position magnet
 has an effect on the linearity



PRMAG5Z

Weight 100 g approx.,
 moment of inertia 55 kgmm²

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



Dimensions in mm [inch]

Dimensions informative only
 For guaranteed dimensions please consult factory