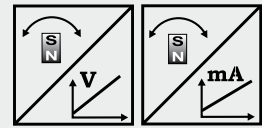


# POSIROT® PRAS27 Magnetic Angle Sensor with Analog Output



## 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 mm <sup>2</sup>		
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

PRAS27

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

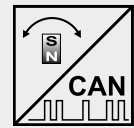
PRMAG ...

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



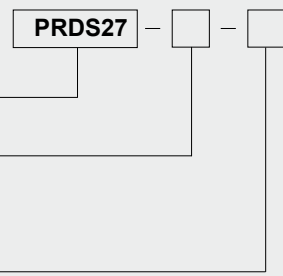
**Magnetic angle sensor 0 - 360°**

- 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

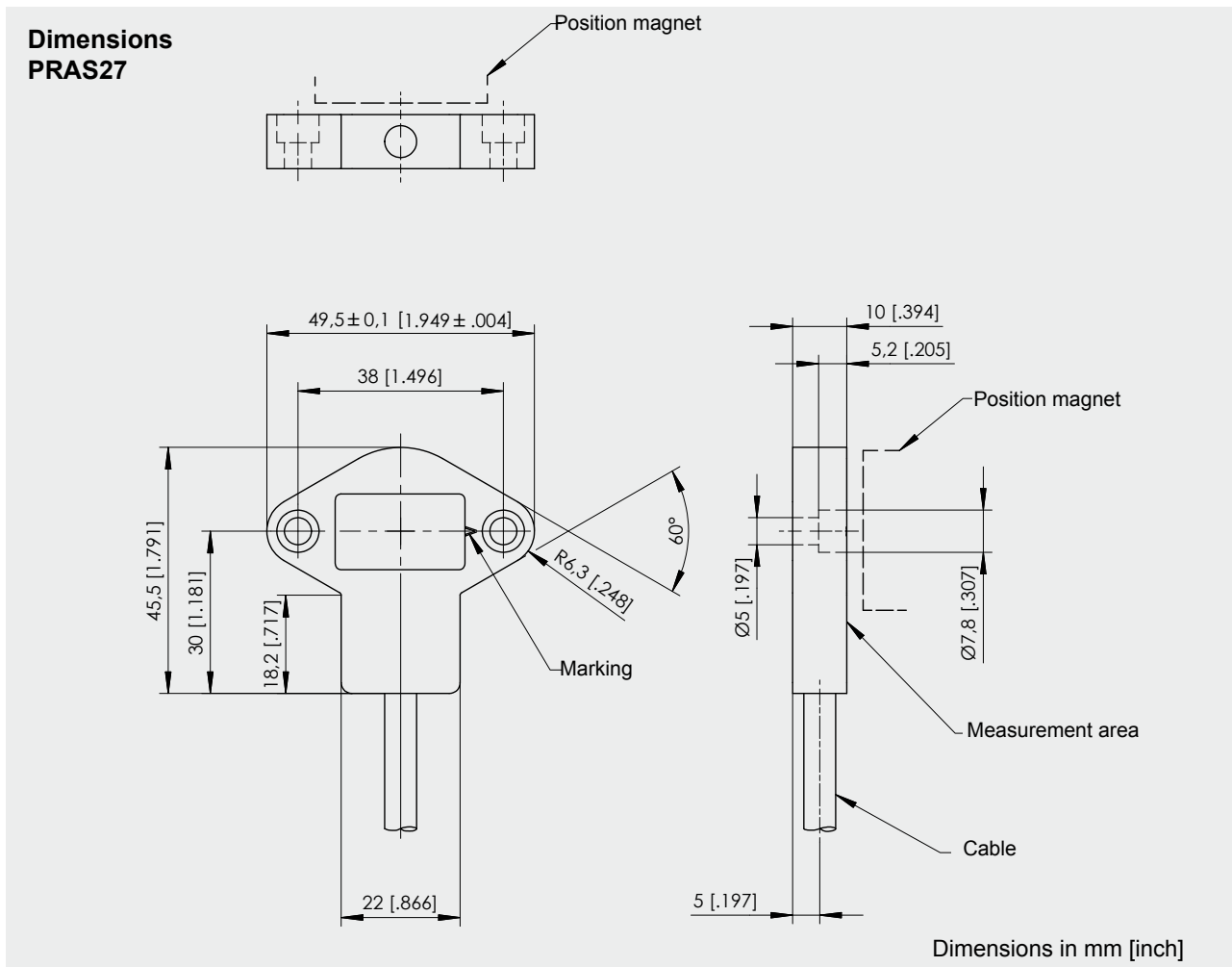
Order code position magnet (see accessories page 53/54)

**PRMAG ...**

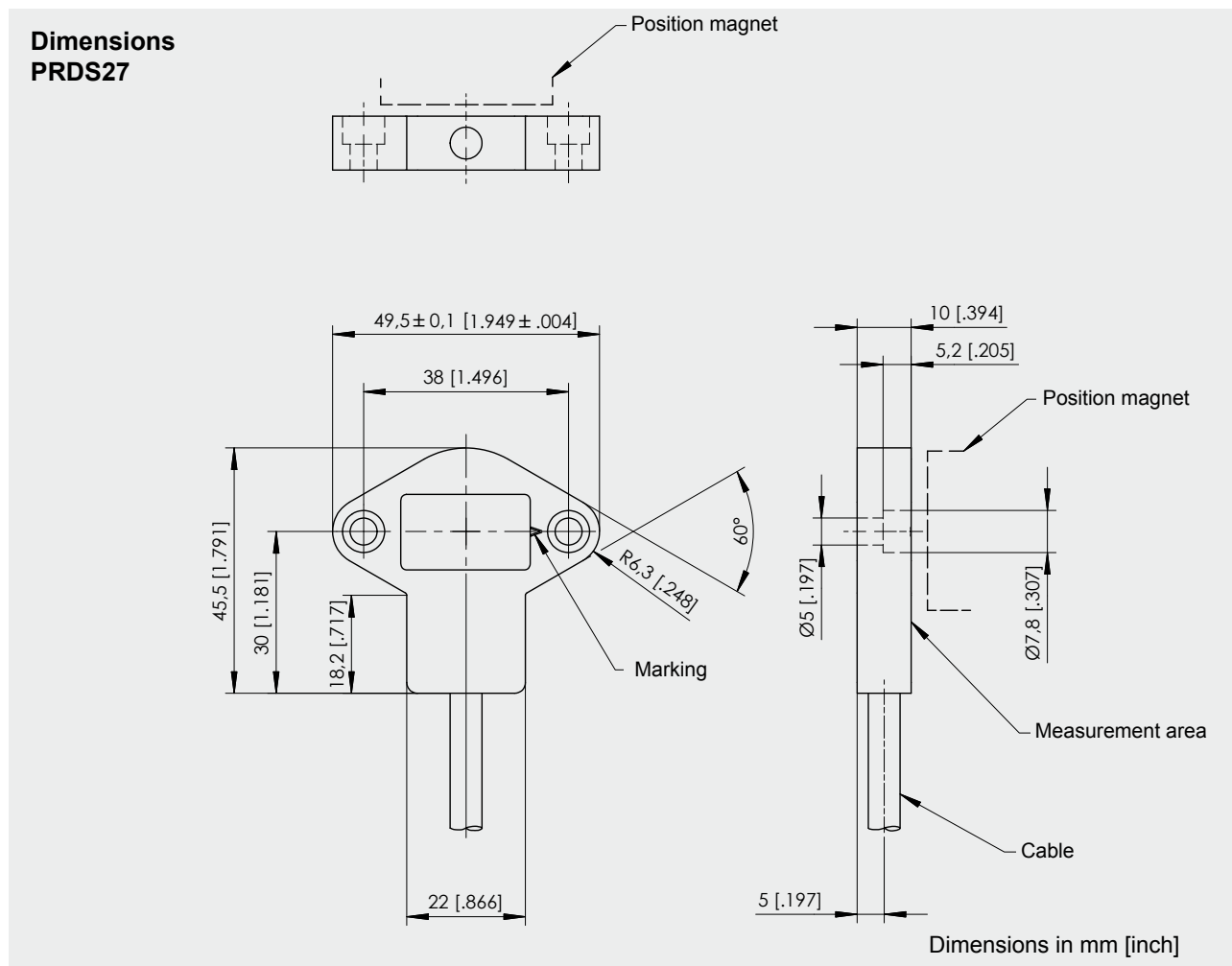
Order code connector cable (see accessories page 91 )

**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.

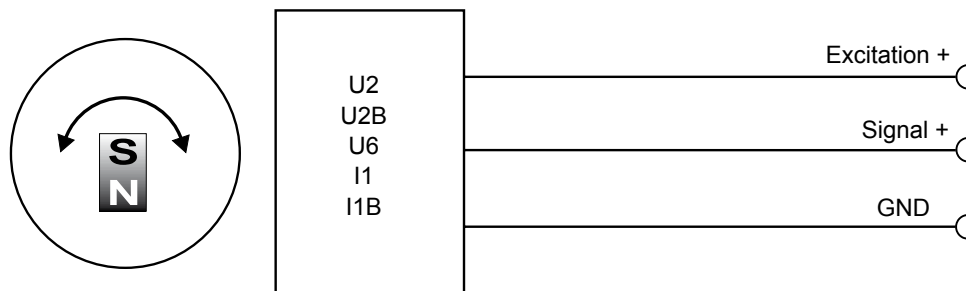


Dimensions informative only.  
 For guaranteed dimensions please consult factory.

<p><b>U2; U2B</b> 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 <sup>-6</sup> / °C f.s. (typ.) for 90°...360° ±100 x 10 <sup>-6</sup> / °C f.s. (typ.) for <90°
	Operating temperature	-40 ... +85 °C
	Protection	Reverse polarity, short circuit
EMC	EN61326-1:2006	
<p><b>U6/5; U6/8,25</b> 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 <sup>-6</sup> / °C f.s. (typ.) for 90°...360° ±100 x 10 <sup>-6</sup> / °C f.s. (typ.) for <90°
	Operating temperature	-40 ... +85 °C
	Protection	Reverse polarity, short circuit
EMC	EN61326-1:2006	
<p><b>I1; I1B</b> 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 <sup>-6</sup> / °C f.s. (typ.) for 90°...360° ±100 x 10 <sup>-6</sup> / °C f.s. (typ.) for <90°
	Operating temperature	-40 ... +85 °C
	Protection	Reverse polarity, short circuit
EMC	EN61326-1:2006	


Other outputs available on request.

Output signals



Signal Wiring	Output signals	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><b>CANopen</b></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><b>Specifications</b></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)	$\pm 50 \times 10^{-6}$ / °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

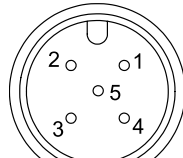
**Description** Angle encoder according to standard SAE J1939. Customer configuration of operating parameters by Peer-to-Peer. Process data exchange by Broadcast message. Node-Id distribution by address claiming (ACL).

<b>Interface J1939</b> 	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

<b>NAME Fields</b>	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

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

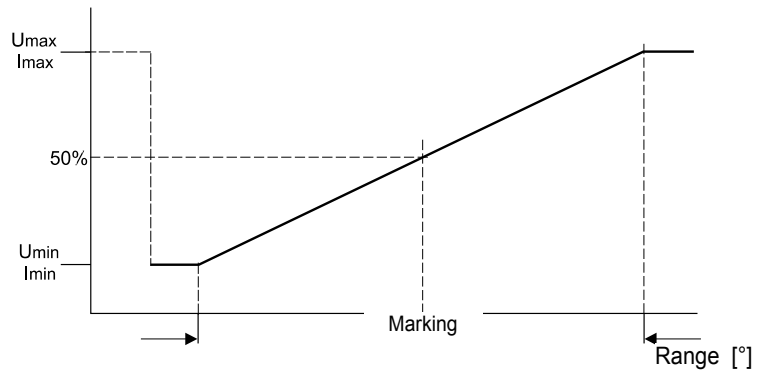
<b>Specifications</b>	Excitation voltage	8 ... 36 V DC
	Excitation current	Typ. 15/30 mA for 24/12 V, max. 100 mA
	Measuring rate	1 kHz (asynchronous)
	Stability (temperature)	±50 x 10 <sup>-6</sup> / °C f.s.
	Repeatability	1 LSB
	Operating temperature	-40 ... +105 °C
	Protection	Reverse polarity, short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

<b>Signal wiring / connection</b>	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	

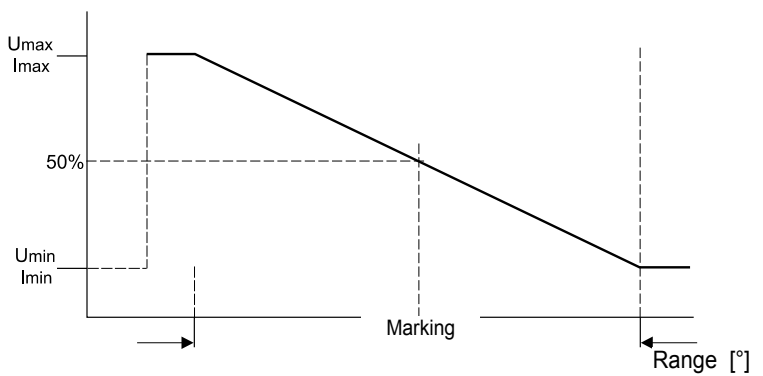
**POSIROT<sup>®</sup>**  
**PRAS/PRDS**  
**Characteristics for magnetic angle sensors**



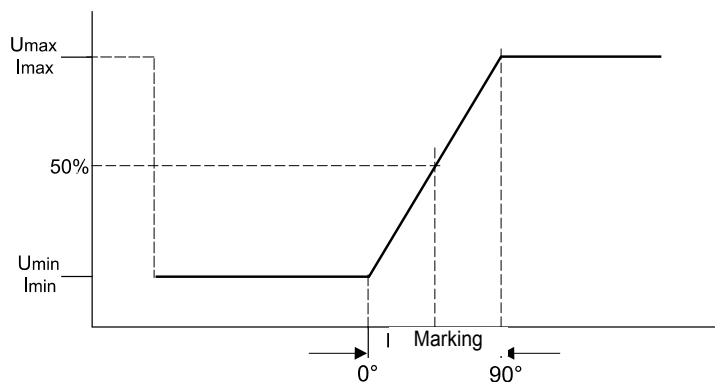
**Output signal**  
 (CW increasing)



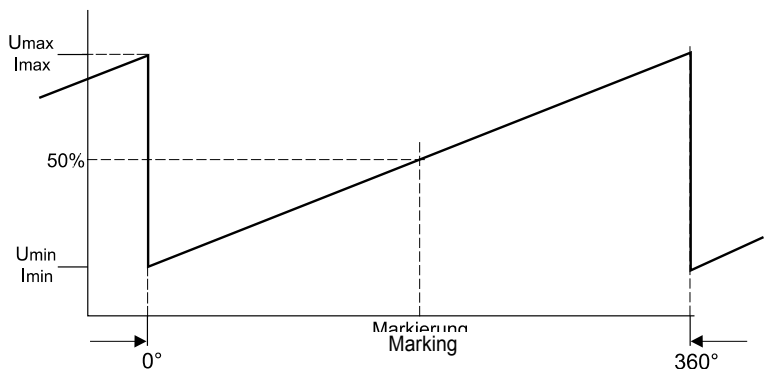
**Output signal**  
 (CCW increasing)



**Example angular**  
**range 90°**

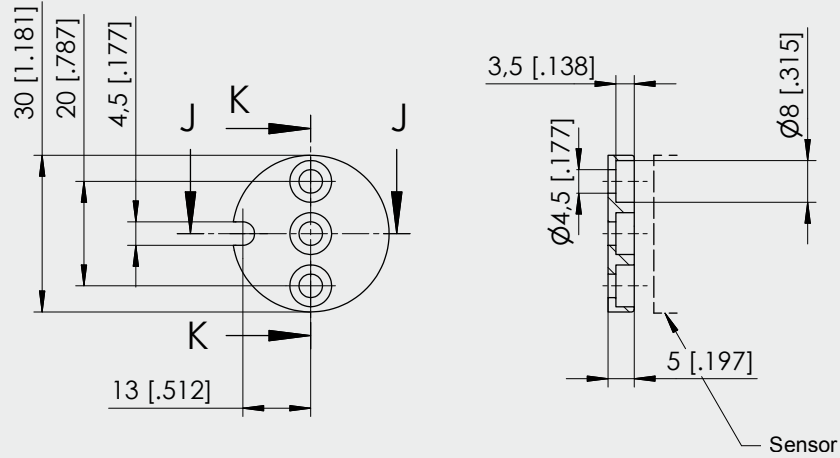


**Example angular**  
**range 360°**



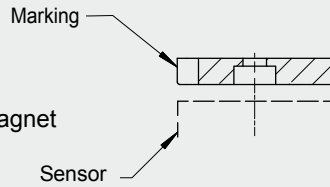


**PRMAG20**

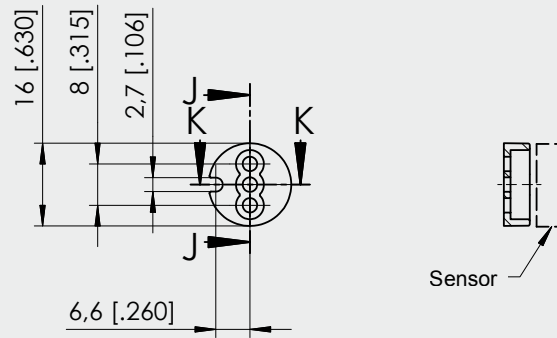


Weight 11 g approx.,  
 moment of inertia 1.2 kgmm<sup>2</sup>

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

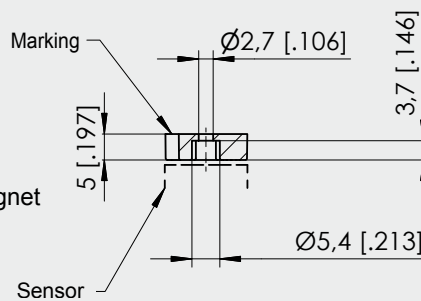


**PRMAG21**



Weight 3 g approx.,  
 moment of inertia 0.1 kgmm<sup>2</sup>

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



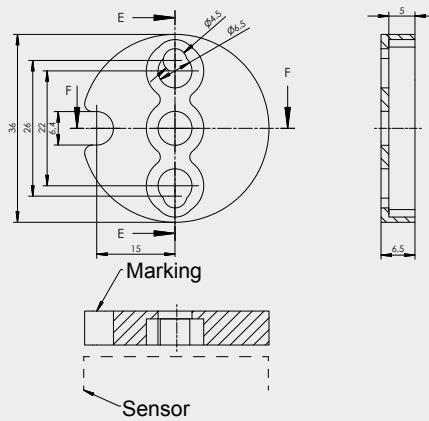
Dimensions in mm [inch]

Dimensions informative only  
 For guaranteed dimensions please consult factory

**PRMAG22**

Weight 17 g approx.,  
 moment of inertia 3 kgmm<sup>2</sup>

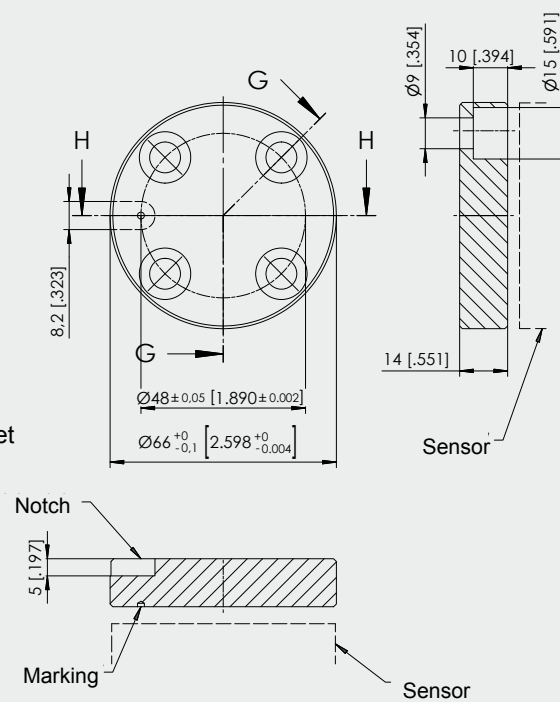
A misalignment of the position magnet  
 has an effect on the linearity



**PRMAG5Z**

Weight 100 g approx.,  
 moment of inertia 55 kgmm<sup>2</sup>

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



Dimensions in mm [inch]

Dimensions informative only  
 For guaranteed dimensions please consult factory