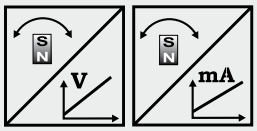
POSIROT®
PRAS27
Magnetic Angle Sensor with Analog Output

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 U6 I1/I1B	Tension 0.5 ... 10 V Tension 0.5 ... 4.5 V ratiometr. 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

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

POSIROT®
PRDS27
Magnetic Angle Sensor with CANopen Output

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

PRDS27 – □ – □

Model

Output (see page 50/51)

CANOP	= CANopen
CANJ1939	= CAN SAE J1939

Connection

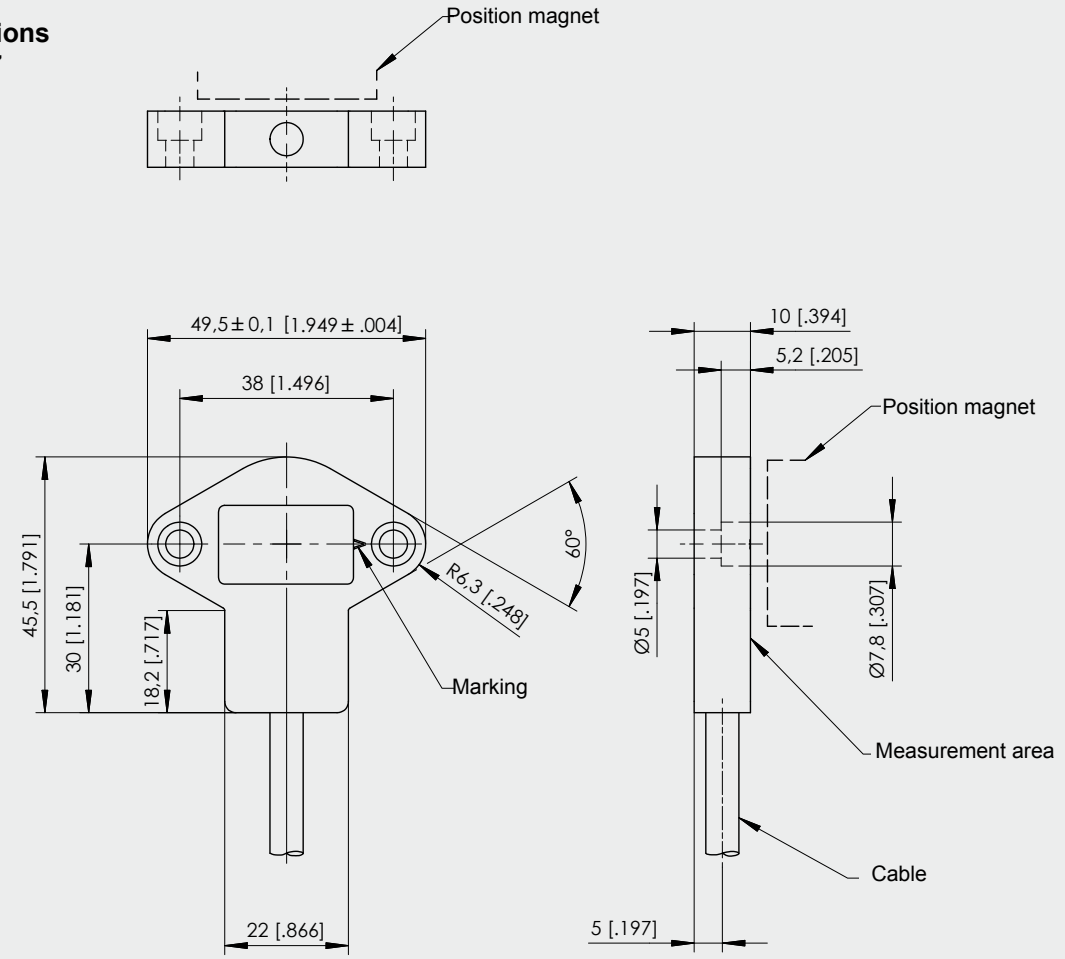
KAB0.3M-M12/CAN	= Cable (length 0.3 m) with socket M12, 5 pin

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

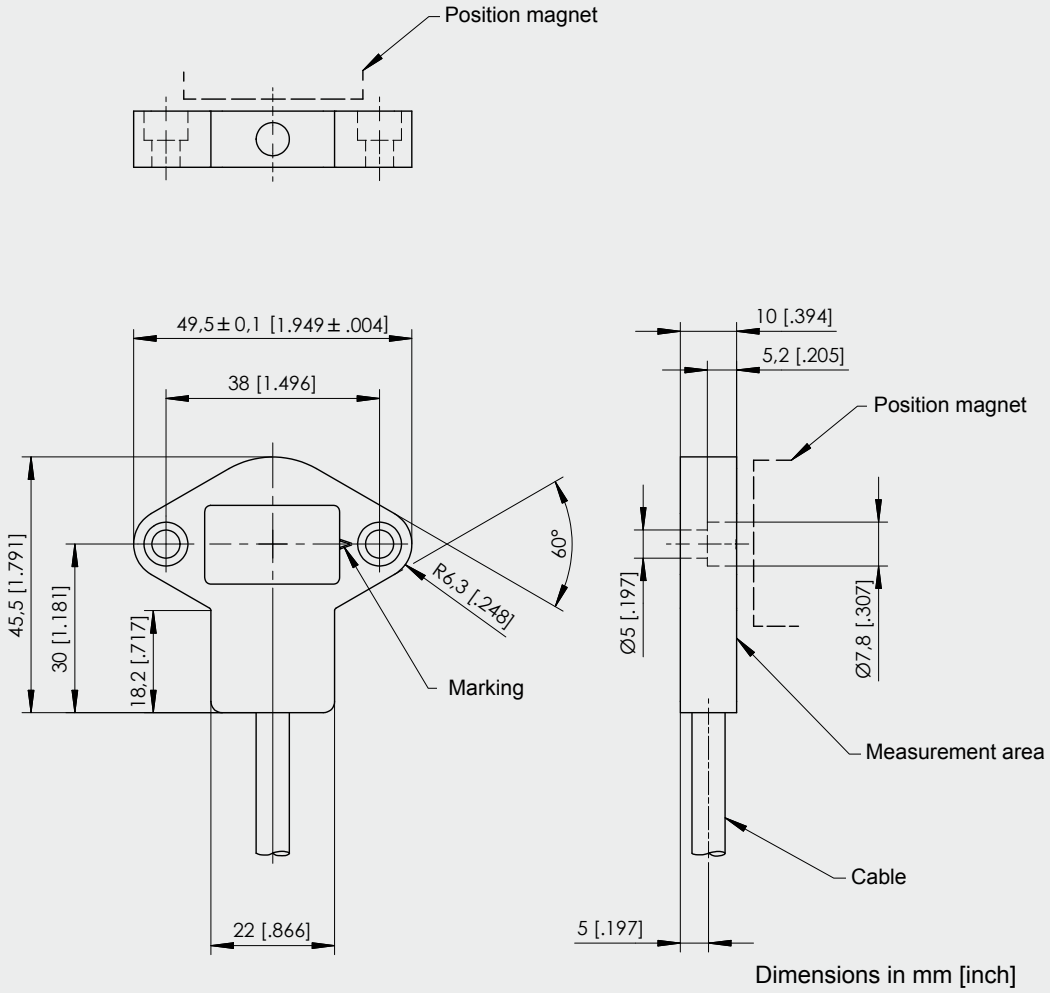
Dimensions
PRAS27



Dimensions in mm [inch]

Dimensions informative only.
For guaranteed dimensions please consult factory.

Dimensions
PRDS27



Dimensions informative only.
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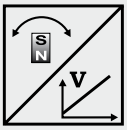
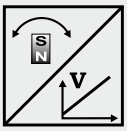
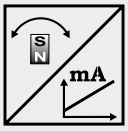
PRAS
Analog outputs U2(B), U6 and I1(B)

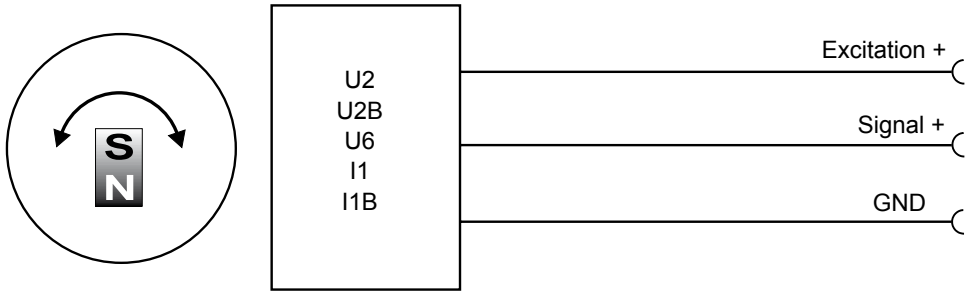
U2; U2B Voltage Output 0.5 ... 10 V 	Excitation voltage	U2: 18 ... 36 V DC; U2B: 11.5 ... 27 V DC
	Excitation current	12 mA typ., 16 mA max.
	Output voltage	0.5 ... 10 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typ.) for 90°...360° ±100 x 10^{-6} / °C f.s. (typ.) for <90°
	Operating temperature	-40 ... +85 °C
	Protection	Reverse polarity, short circuit
	EMC	EN61326-1:2006

U6/5; U6/8,25 Voltage Output 10 ... 90% ratiometr. 	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

I1; I1B Current Output 4 ... 20 mA, 3 wire 	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!	–

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PRDS
Output CANopen

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

CANopen	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

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 Automation	EN61326-1:2006

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Output CAN SAE J1939

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 temination 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

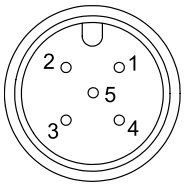
Specifications

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

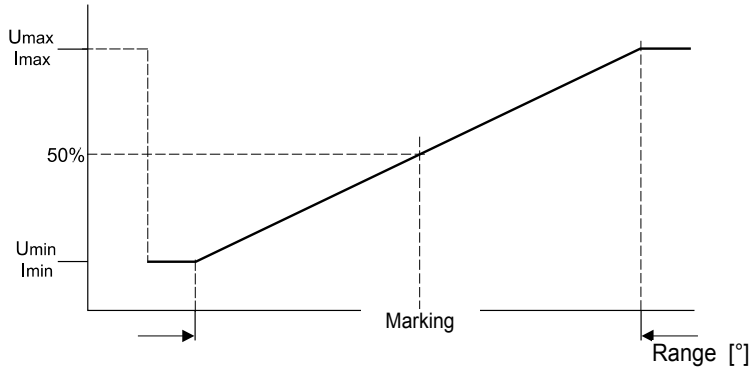
Signal wiring / connection

Signal name	Connector pin	Wire color
Shield	1	Black+grey
Excitation +	2	White
GND	3	Brown
CAN-H	4	Green
CAN-L	5	Yellow

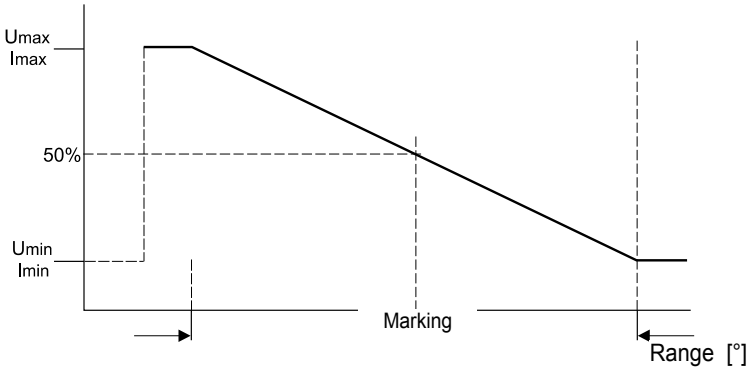
View to sensor connector



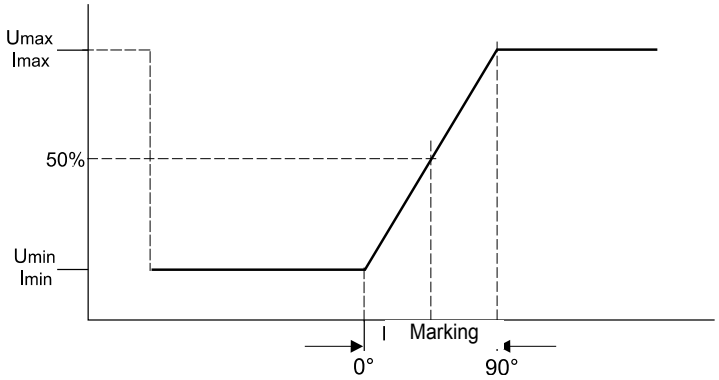
Output signal
(CW increasing)



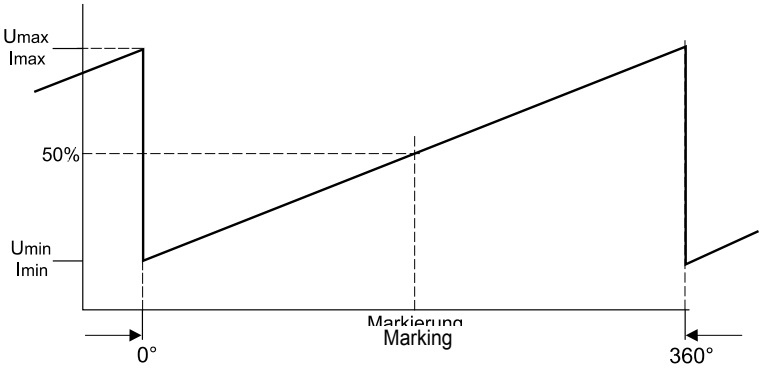
Output signal
(CCW increasing)



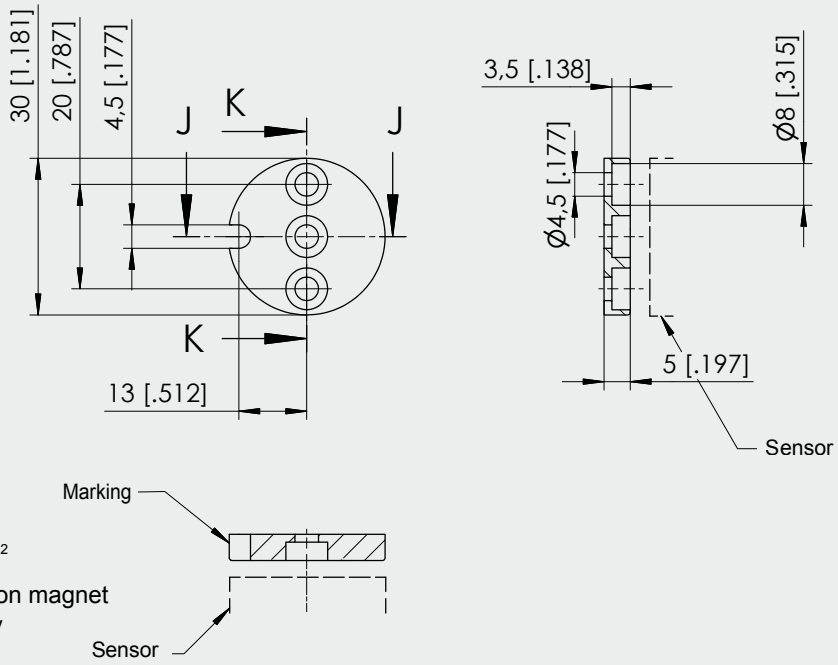
Example angular range 90°



Example angular range 360°



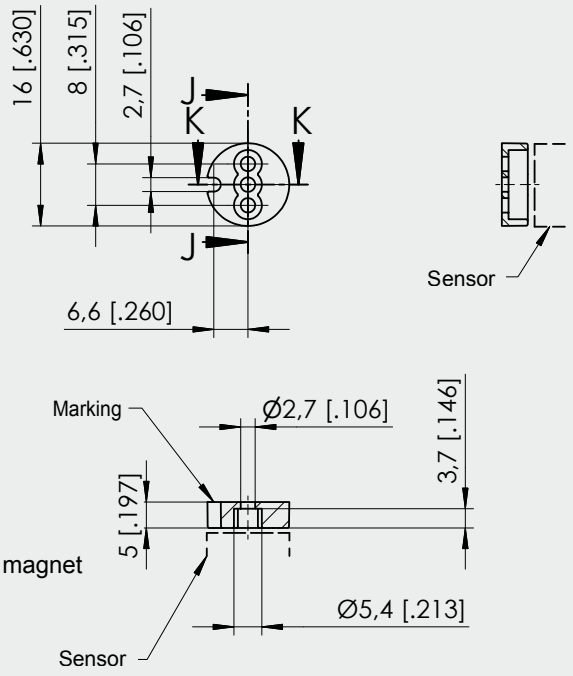
PRMAG20



Weight 11 g approx.,
moment of inertia 1.2 kgmm²

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

PRMAG21



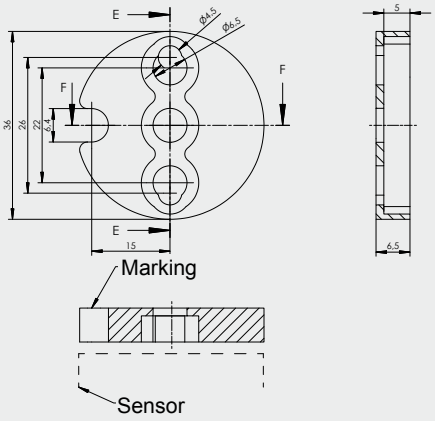
Weight 3 g approx.,
moment of inertia 0.1 kgmm²

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

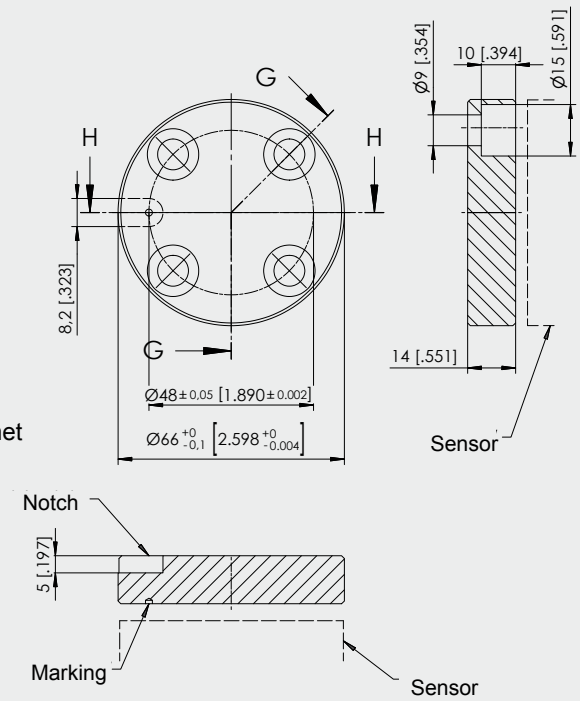
PRMAG22



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