positilt®
Inclination Sensors

PTDM7

Inclination sensor with robust stainless steel housing, also for hygienic applications



- **Measurement range up to ±180°**
- **Single or dual axis measurement**
- **Protection class IP67/IP69**
- **Hermetically sealed stainless steel housing**
- **Potted electronics**
- **Wear-free MEMS technology, shock resistant**

Product version

Digital output CAN



PTDM7 - Inclination sensor in MEMS technology

Version with digital output CAN

Specifications

			Order options
Output	CANopen (Profil „inclinometer“) CAN SAE J1939	1	**CANOP** **CANJ1939**
Measurement range	±180° with 1 axis ±60° with 2 axes		
Resolution	0.05°		
Linearity	±0.5°		
Output delay	0.1 s ... 10 s / 90%, configurable		
Mounting	Screws M6		
Protection class	IP67/IP69 (connector output with IP69 connector)		
Connection	Connector M12 axial, 5 pin Connector M12 radial, 5 pin	2	**M12A5/CAN** **M12R5/CAN**
Housing material	Stainless steel EN 1.4404 (AISI 316L)	3	**VA**
Shock	DIN EN 60068-2-27:2010, 100 g/11 ms, 100 shocks		
Vibration	DIN EN 60068-2-6:2008, 20 g 10 Hz-2 kHz, 10 cycles		
Temperature range	-40° ... +85°C		
Weight	approx. 390 g		
EMC	DIN EN 61326-1:2013		

Order code

PTDM7 – 1 – 2 – 3

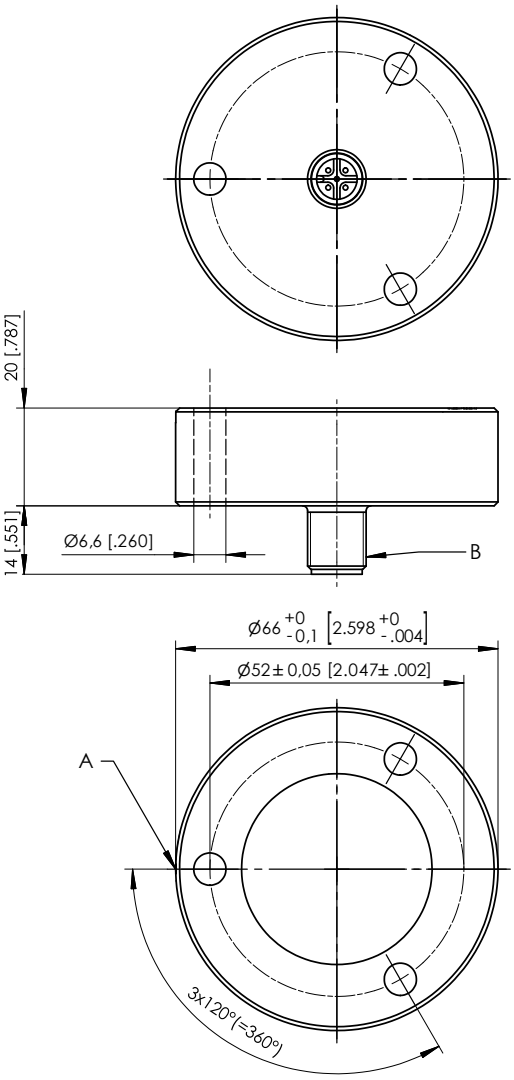
Order example: PTDM7 – CANOP – M12A5/CAN – VA

Accessories:

Connector cable (see page 8)

Dimensions

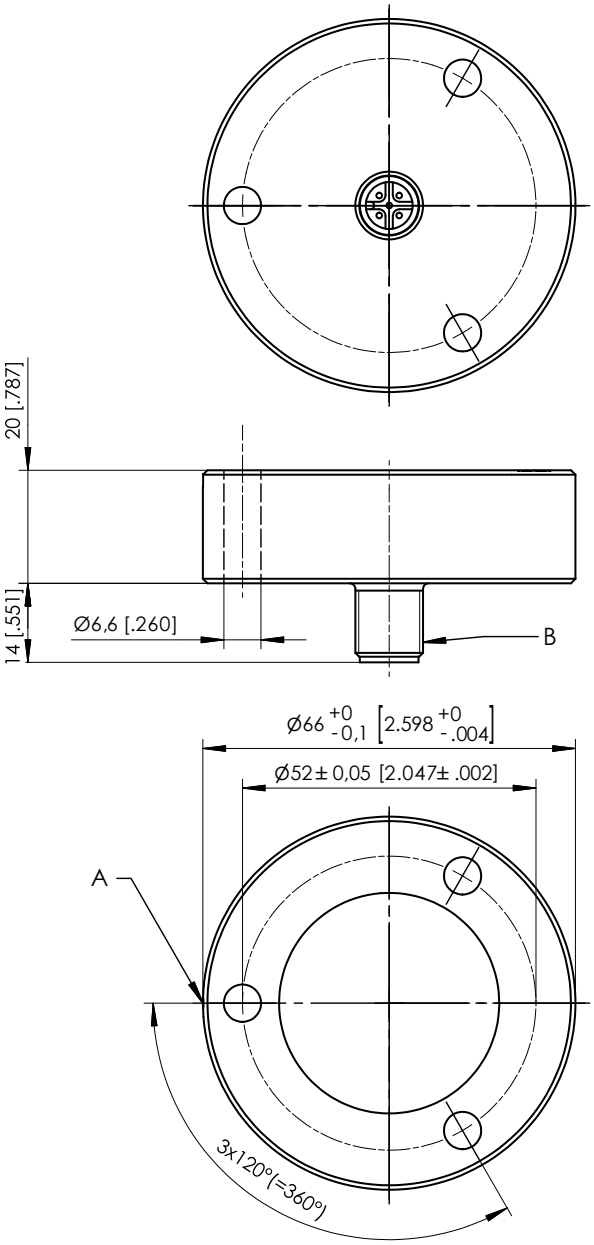
Connector M12, axial



A – Marking
B – Connector M12

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

Connector M12, radial



A – Marking
B – Connector M12

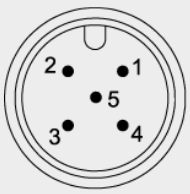
Dimensions in mm [inch].
Dimensions informative only.
For guaranteed dimensions consult factory.

Output specification

CANOP CANopen	Communication profile	CANopen CiA 301 V 4.02, Slave
	Encoder profile	CiA 410 V 1.2, Profile „Inclinometer“
	Configuration services	LSS, CiA Draft Standard 305 (Transmission rate, node ID)
	Error Control	Node guarding, Heartbeat, Emergency message
	Node ID	Adjustable via LSS or SDO, default: 127
	PDO	1 TxPDO, 0 RxPDO, no linking, static mapping
	PDO Modes	Event-/Time triggered, Remote-request, Sync cyclic/acyclic
	SDO	1 Server, 0 Client
	Certified	yes
	Transmission rate	50 kBit … 1 Mbit, adjustable via LSS or SDO, default: 125 kBit
	Bus connection	M12 conncector, 5 pin
	Bus with integrated terminating resistance	optional
	Bus, galvanic isolated	no

Specifications	Excitation voltage	8 ... 36 V DC
	Excitation current	15 mA typical at 24 V DC 30 mA typical at 12 V DC 100 mA max.
	Measuring rate	1 kHz (standard)
	Stability (temperature)	±100 x 10^{-6} / °C f.s.
	Repeatability	1 LSB
	Operating temperature	-40 … +85 °C
	Protection	Reverse polarity, short circuit
	EMC	DIN EN 61326-1:2013

Signal wiring
Connector M12, 5 pin



View to the sensor connector

Output signals	Connector pin no.
Shield	1
Excitation +	2
GND	3
CAN-H	4
CAN-L	5

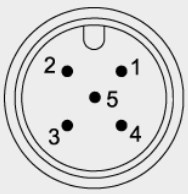
CANJ1939 SAE J1939	CAN specification	ISO 11898, Basic and Full CAN 2.0 B	
	Transceiver	24V-compliant, not isolated	
	Communication profile	SAE J1939	
	Transmission rate	250 kbit/s	
	Address	Default 247d, configurable	

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

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	Measuring rate	1 kHz (standard)
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	Operating temperature	-40 … +85 °C
	Protection	Reverse polarity, short circuit
	EMV	DIN EN 61326-1:2013

Signal wiring
Connector M12, 5 pin

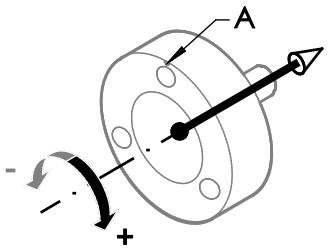


View to the sensor connector

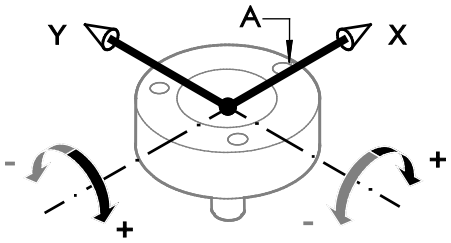
Output signals	Connector pin no.
Shield	1
Excitation +	2
GND	3
CAN-H	4
CAN-L	5

Position of the inclination axis and characteristic of the linear output PTxM7

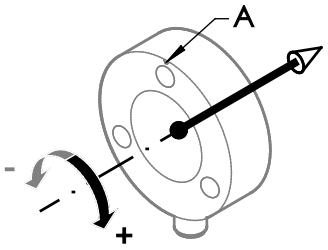
PTxM7 axial
Connector M12, 1 axis



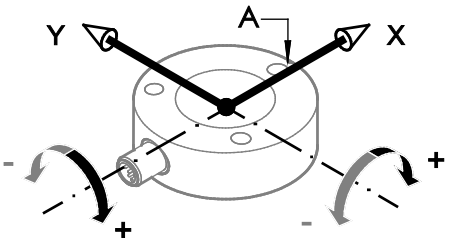
PTxM7 axial
Connector M12, 2 axes



PTxM7 radial
Connector M12, 1 axis

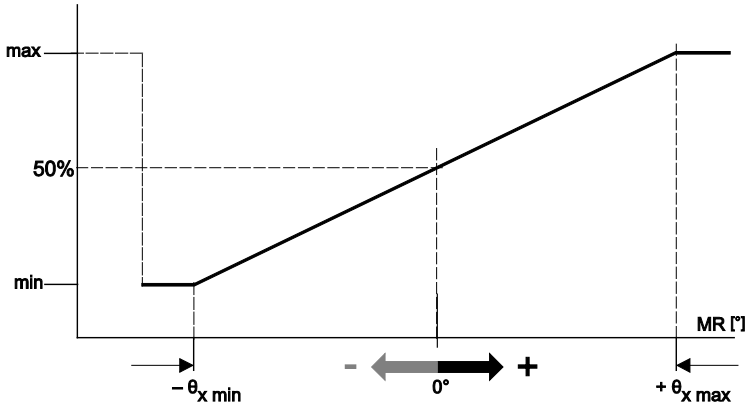


PTxM7 radial
Connector M12, 2 axes



A – Marking

Output signal

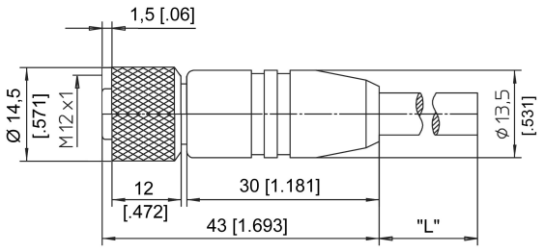


Accessories
Connector/bus cable M12, 5 pin CAN-Bus

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