positilt®
Gyro-compensated Inclination Sensors

PTK6

Dynamic inclination sensor with robust stainless steel housing



- **Measurement range ±180°, 2 axes**
- **Protection class IP67/IP69**
- **Hermetically sealed stainless steel housing**
- **Potted electronics**
- **Wear-free MEMS technology**
- **User selectable axis orientation (optional)**

Product versions

Digital output CAN



PTK6 - Dynamic inclination sensor

Version with digital output CAN

Specifications

			Order options
Output	CANopen SAE J1939	1	**CANOP** **CANJ1939**
Measurement range	±180°, 2 axes		
Resolution	≥0.01° Adjustable by the user		
Linearity (static)	0.05° (±30°) 0.1° (±60°) 0.2° (±180°)		
Housing material	Stainless steel EN 1.4404 (AISI 316L)		
Mounting	Screws M6		
Protection class	IP67/IP69 (connector output with IP67/IP69 connector)		
Connection	Connector M12 axial, 5 pin Connector M12 radial, 5 pin	2	**M12A5/CAN** **M12R5/CAN**
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

PTK6 – 1 – 2

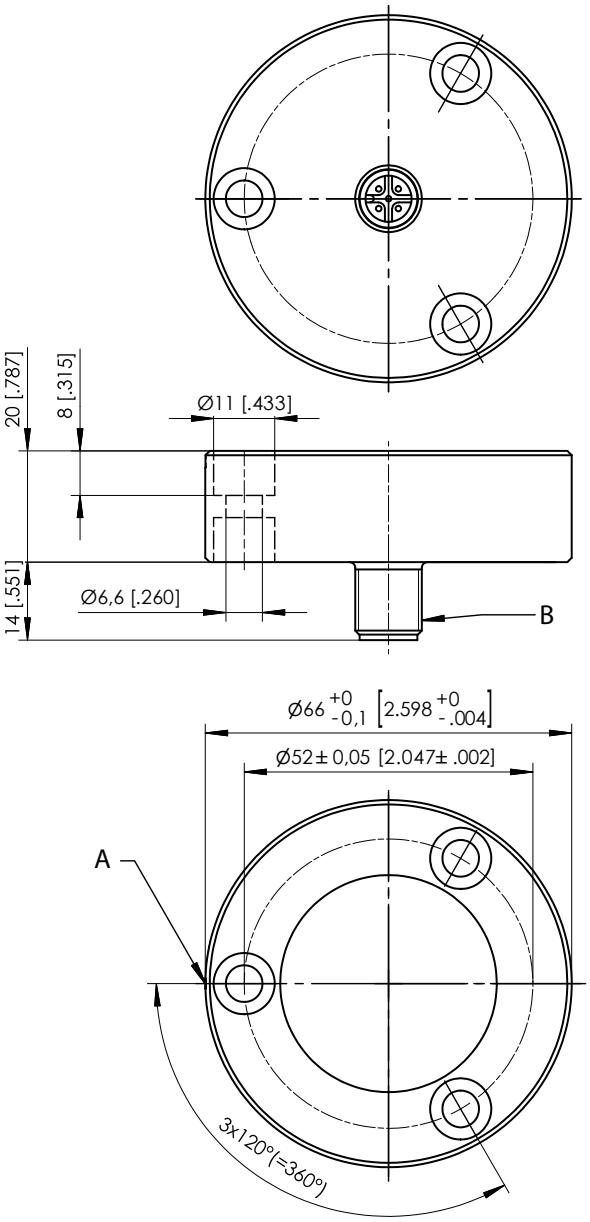
Order example: PTK6 – CANOP – M12R5/CAN

Accessories:

Connector cable (see page 9)

Dimensions

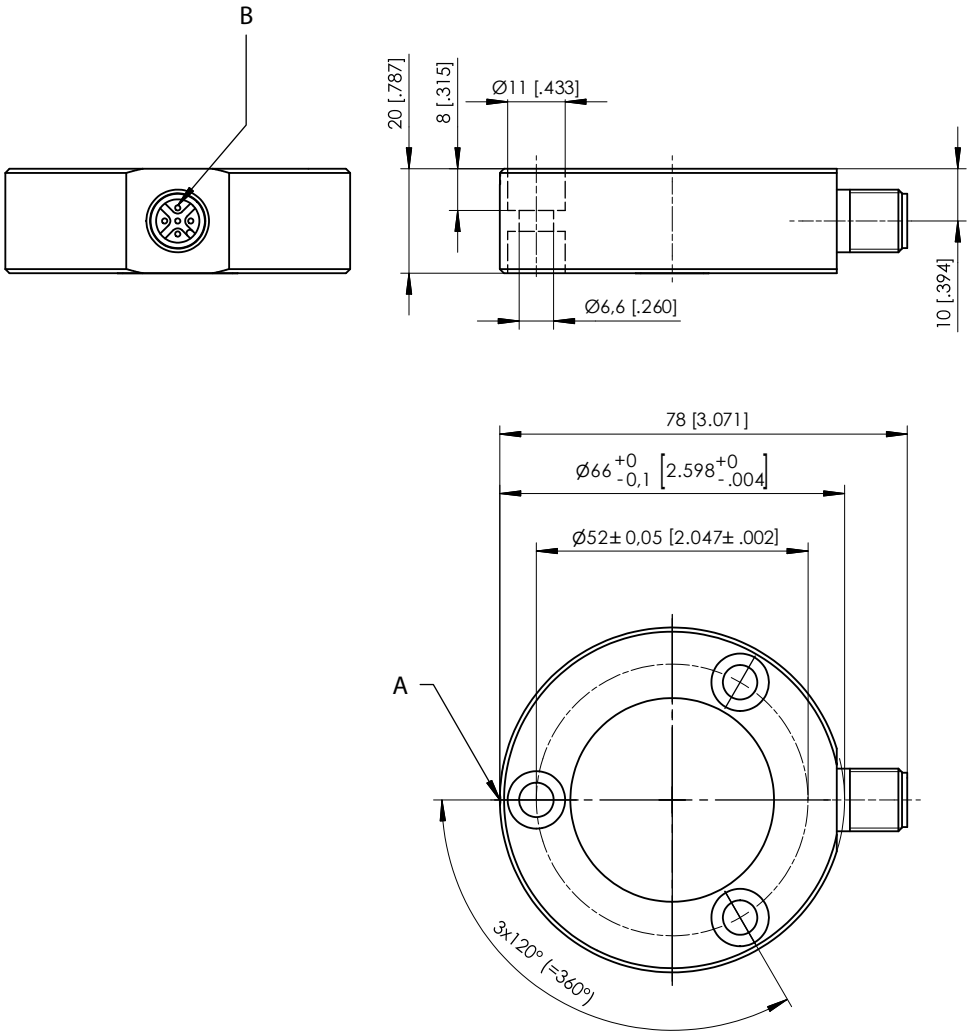
Connector M12, axial



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.

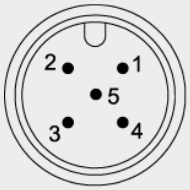
Output specification

Digital output CANopen

CANOP CANopen	Communication profile	CANopen CiA 301, Slave
	Encoder profile	CiA 410, 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	125 kBit … 1 Mbit, adjustable via LSS or SDO, default: 125 kBit
	Bus connection	M12 conncector, 5 pin
	Bus, galvanic isolated	no
	Error Control Baudrate	50 kBit/s … 1 MBit/s configurable
	Transceiver	24V-compliant, not isolated
	Internal termination resistor	120 Ohm configurable

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	0.5 kHz standard
	Stability (temperature)	± 0,2° (-20 … +40 °C) ± 0,4° (-40 … +85 °C)
	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

Digital output SAE J1939

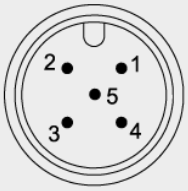
CANJ1939 SAE J1939	CAN Specification	ISO 11898, Basic and Full CAN 2.0 B extended message format with 29-bit identifier
	Transceiver	24V-compliant, not isolated
	Communication profile	SAE J1939, 29-bit identifier
	Transmission rate	250 kBit/s
	Internal termination resistor	120 Ω
	Address	Default 247d, configurable

NAME - Unique device identifier	**Name Fields**	**Remark**	**Field value**	**Size [Bit]**	**Byte order**	**Byte value**
	Arbitrary Address Capable	No	0	1	Byte 8 (MSB)	00h
	Industry Group	Global	0	3		
	Vehicle System instance		0	4		
	Vehicle System	Non specific	7Fh	7	Byte 7	FEh
	Reserved		0	1		
	Function	Non specific	FFh	8	Byte 6	FFh
	Function Instance		0	5	Byte 5	00
	ECU Instance		0	3		
	Manufacturer	Manufacturer Code	145h	11	Byte 4	28h
					Byte 3	A0h+nn
		Identity Number	n..nh	21		
					Byte 2	nnh
					Byte 1	nnh

Proprietary PGN - Manufacturer specific Parameter Group Numbers	Configuration data	PGN EFddh	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	15 mA typical at 24 V DC 30 mA typical at 12 V DC, 100 mA max.
	Measuring rate	0.5 kHz (asynchronous)
	Stability (temperature)	± 0,2° (-20 … +40 °C) ± 0,4° (-40 … +85 °C)
	Repeatability	1 LSB
	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

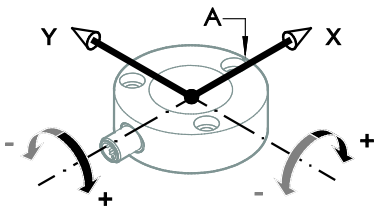
Output signals	Connector pin no.
Shield	1
Excitation +	2
GND	3
CAN-H	4
CAN-L	5

PTK6 – Output characteristic and axis orientation

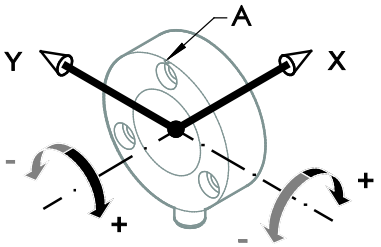
For CAN output, the axis orientation can be set by the user via software.
Sensor position as shown equals 0°.

2 measuring axes

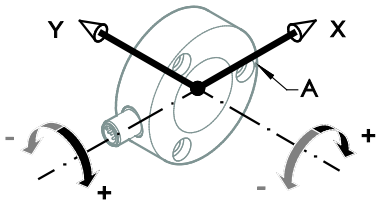
Axis orientation **2A**



Axis orientation **2B**

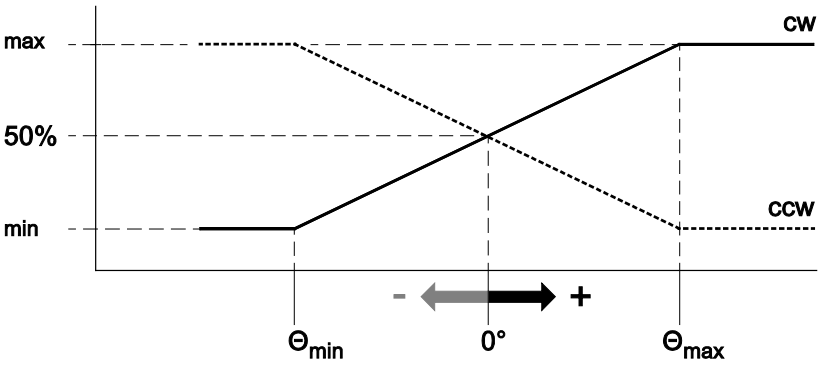


Axis orientation **2C**



A = Marking

Output signal

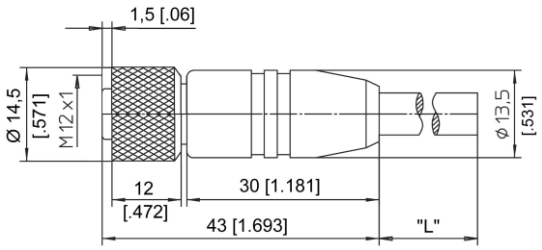


Accessories
Connector/bus cable M12, 5 pin CAN-Bus

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