



POSITILT® - PTAM / PTDM

Analog and Digital Inclination Sensors

Instruction Manual



Please read carefully before installation and operation!

| | | |
|-----------------|--|-----------|
| Contents | Safety instructions | 3 |
| | Description | 4 |
| | Electrical installation | 5 |
| | Mounting | 5 |
| | Torque for the mounting screws | 5 |
| | Outline drawings | 6 |
| | Accessories | 10 |
| | Mounting plates | 10 |
| | Analog output specification | 11 |
| | CANopen output specification | 13 |
| | CANopen output - set up procedure | 14 |
| | CAN SAE J1939 output specification | 17 |
| | CAN SAE J1939 output - set up procedure | 18 |
| | Connecting cables | 22 |
| | Output characteristics | 23 |
| | Response time | 25 |
| | Reliability characteristics | 26 |
| | Declaration of conformity | 27 |

**Safety
instructions**



DANGER

Do not use POSITILT® position sensors in safety critical applications where malfunction or total failure of the sensor may cause danger for man or machine.

For safety related applications additional mechanisms (devices) are necessary to maintain safety and to avoid damage.

Disregard of this advice releases the manufacturer from product liability.

The sensor must be operated only within values specified in the catalog or datasheet.

Connection to power supply must be performed in accordance with safety instructions for electrical facilities and performed only by trained staff.

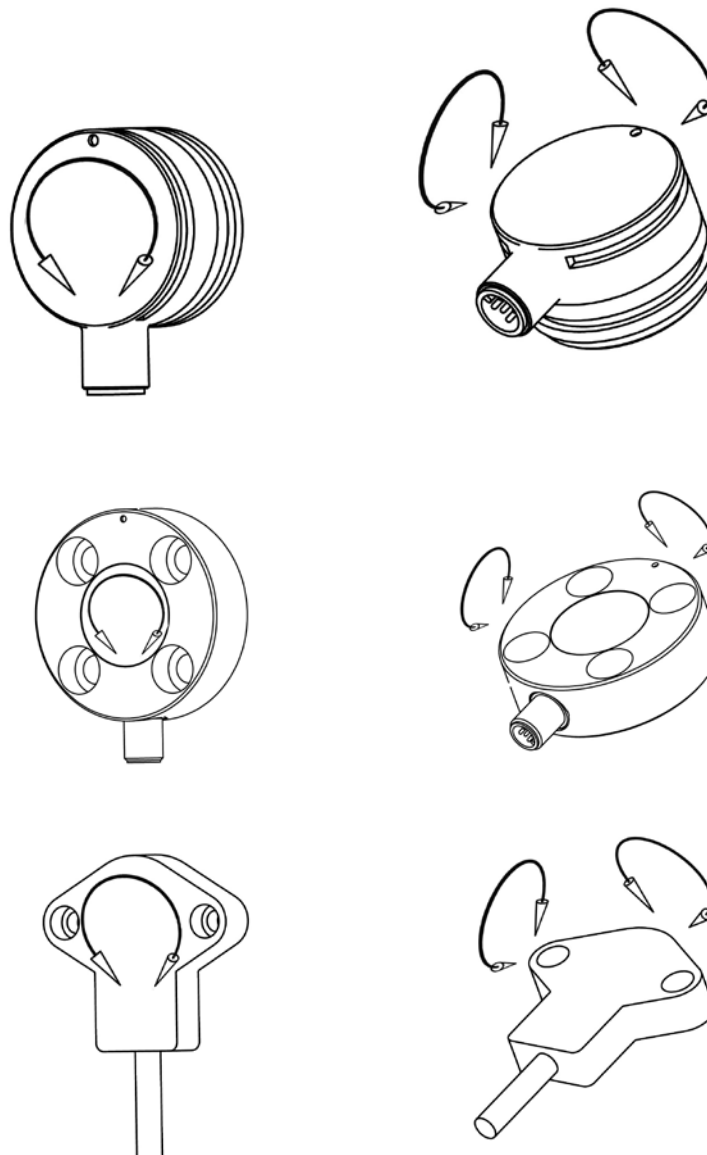
Description

Tilt sensors of the POSITILT® product family measure the angle of inclination for one or two axes. Measuring range can be specified from ± 15 up to ± 180 degree. Output configuration comprises high resolution voltage or current output and CAN interface. A wide variety of package and mounting options provide flexibility for many applications.

Home position (optional)

The home (center) position of the inclinometers POSITILT® can be configured not only via the mechanical adjustment but also via a switching input when the connector pin ZERO is connected to 0 V (GND) for 2 seconds.

Mounting options



Electrical installation



Supply voltage, current consumption, wiring

For wiring of connector or cable outlet as well as supply voltage and current consumption refer to chapter „Output specification“.

Cable screen has to be connected to protective earth.

Caution: Observe different color code for pre-assembled accessory cables - refer to accessories pages.

The protection class of sensors with connector output is valid only if the electrical plug is connected!

Caution: Do not twist the M12 connector insert.

Cable outputs must be installed in such a way that no moisture can get into the cable.

Crossing the dew point must be avoided.

| Resistance of plastic materials | Cable and housing | Cable PU | Cable EPDM | Housing PBT |
|---------------------------------|---|----------|------------|-------------|
| | Tensile strength /abrasion resistance | ++ | + | ++ |
| | Resistance against atmospheric conditions (UV, ozone) | ++ | ++ | ++ |
| | Resistance against hydrolysis | + *) | ++ | + |
| | Resistance against fuels, mineral oils | ++ | – | + |
| | Resistance against weak acids | – | ++ | + |
| | Resistance against acetone *) | -- | ++ | + |
| | Resistance against brake fluids *) | -- | + | ++ |

++ = very good; + = good; – = small; -- = non resistant; *) = T < 50 °C

The above specifications are for comparative purpose only and are not warranted characteristics.

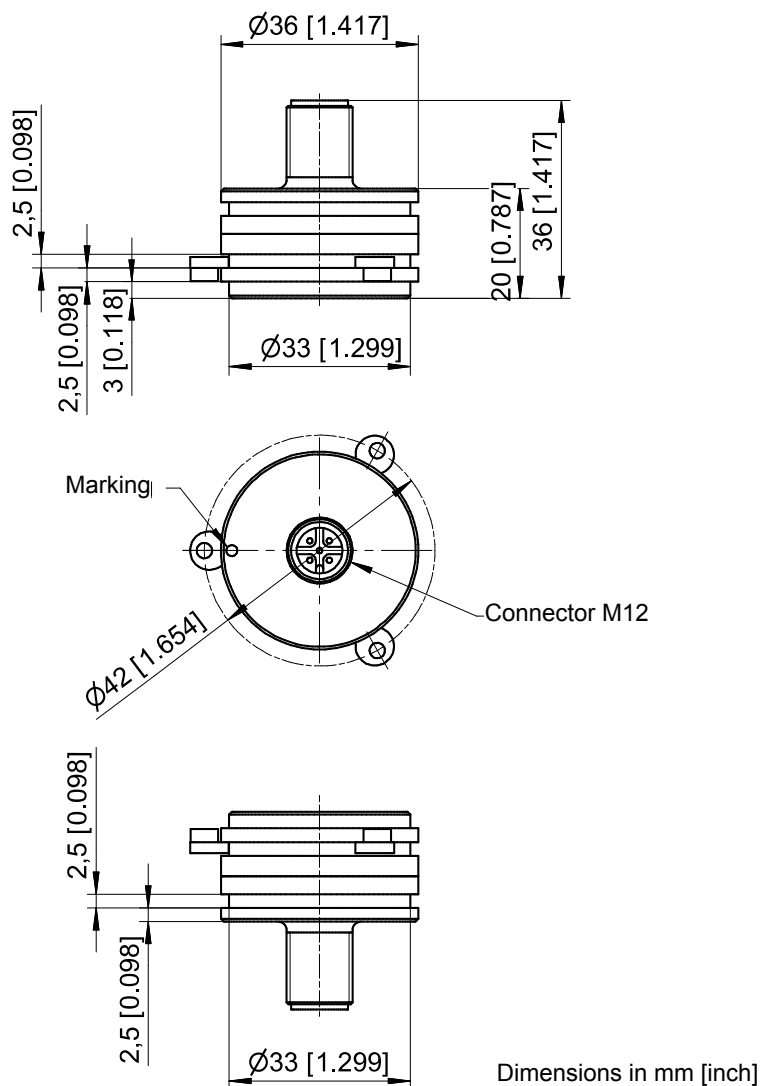
Mounting

| Torque | Mounting method | Torque [Nm] |
|--------|---|-------------|
| | M2,5 screws for mounting brackets (PTAM2) | 0.8 |
| | M8 screws (PTAM5) | <10 |
| | Screws M4 with washer (PTAM27) | <2 |

Lateral inclination sensitivity:

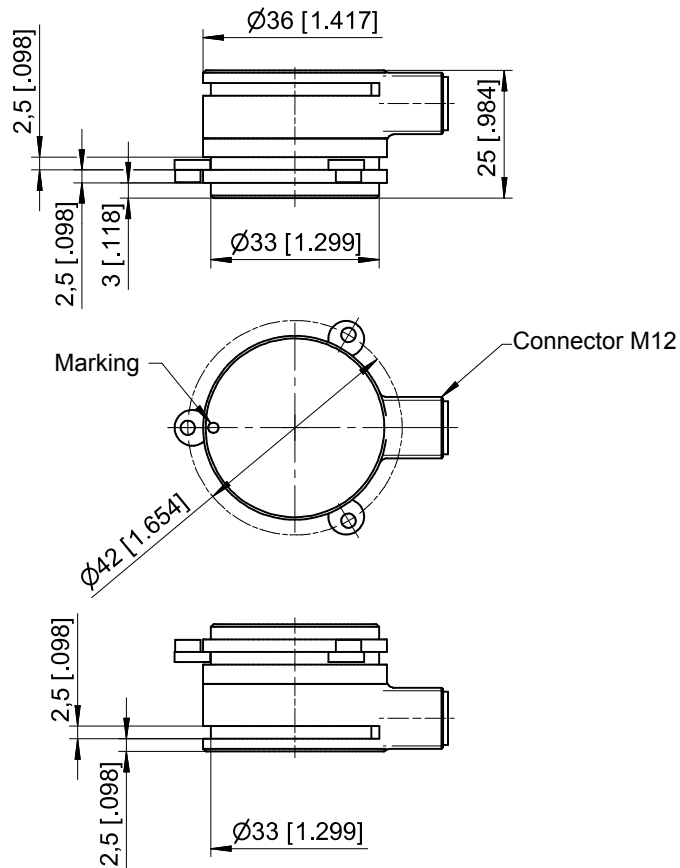
Up to 30° lateral inclination the resulting error is ≤1°.

Outline drawing
PTAM2/PTDM2
Connector version
M12 axial



Dimensions informative only.
For guaranteed dimensions consult factory.

Outline drawing
PTAM2/PTDM2
Connector version
M12 radial

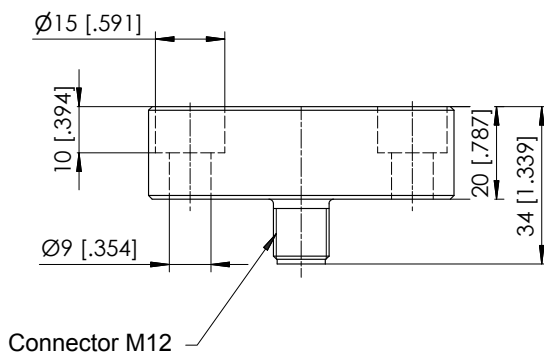
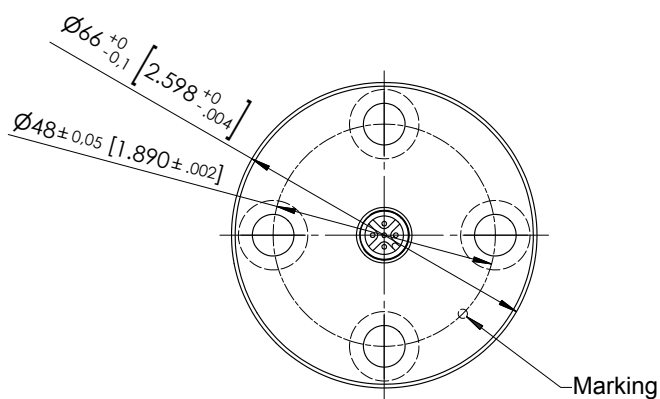


Dimensions in mm [inch]

Dimensions informative only.

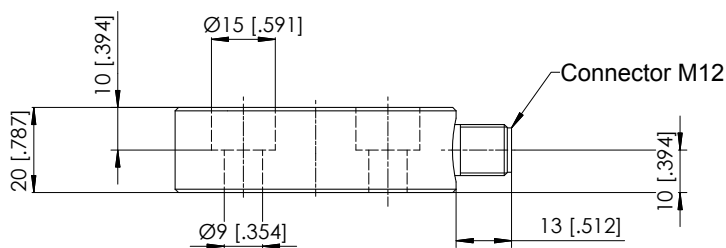
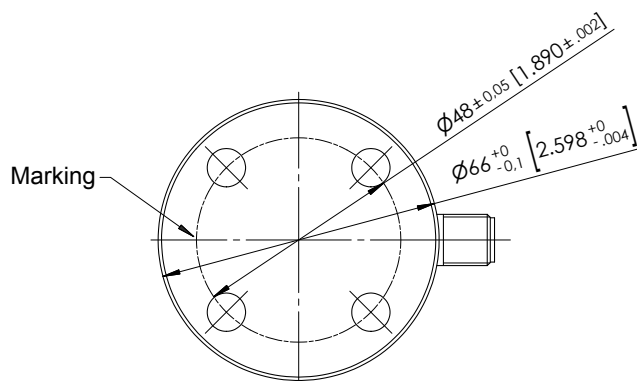
For guaranteed dimensions consult factory.

Outline drawing
PTAM5/PTDM5
Connector version
M12 axial

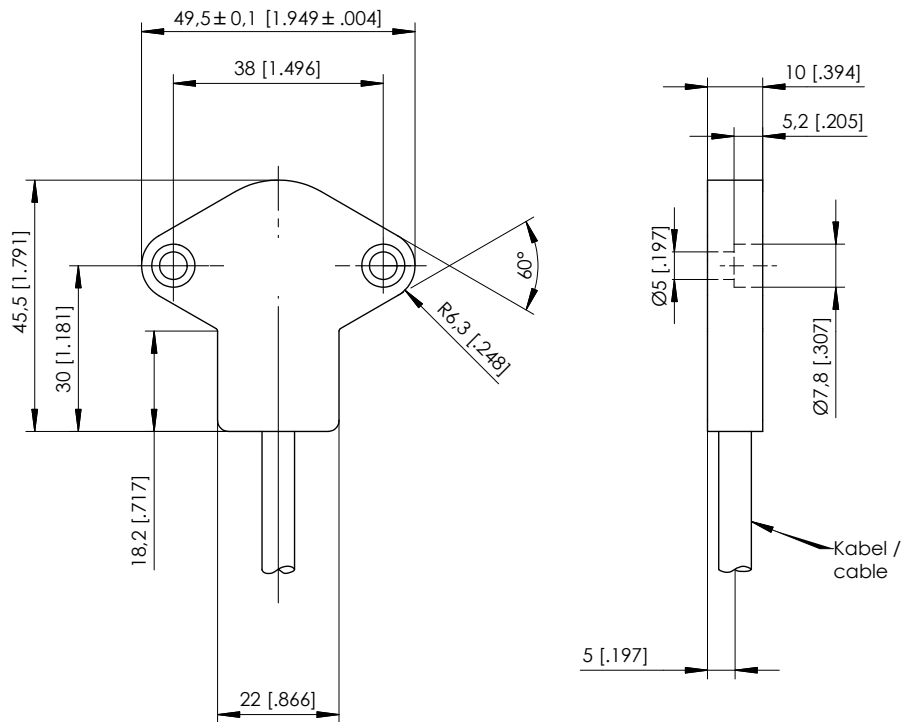


Dimensions in mm [inch]

Outline drawing
PTAM5/PTDM5
Connector version
M12 radial



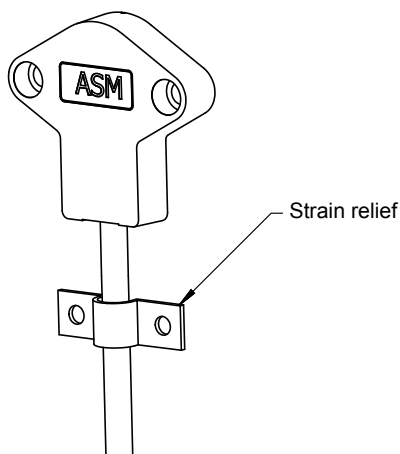
**Outline drawing
PTAM27**



Dimensions in mm [inch]

Dimensions informative only.
For guaranteed dimensions consult factory.

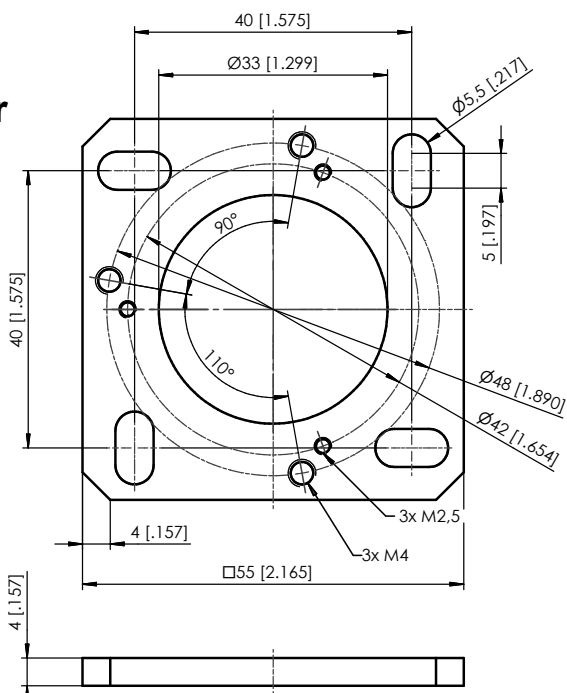
**Reference
position**



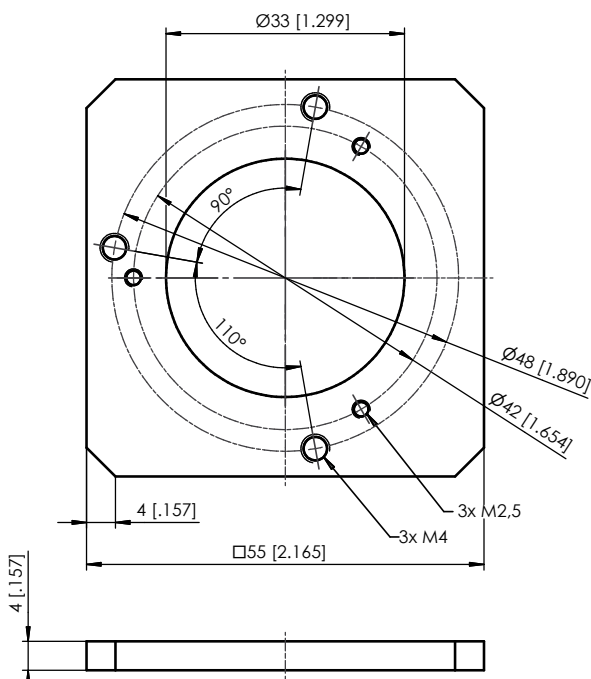
For all sensors with cable:

| | | |
|---------------------|---|------------------------|
| Cable diameter | $\varnothing 5,2$ mm | |
| Min. bending radius | in motion | not in motion |
| | $10 \times \varnothing$, 10 million cycles | $5 \times \varnothing$ |

**Mounting plate
 PRPT-BPL1**
 (screw mounting) for
 PTAM2/PTDM2

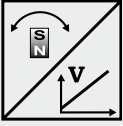


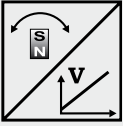
**Mounting plate
 PRPT-BPL2**
 (welding assembly)
 for PTAM2/PTDM2

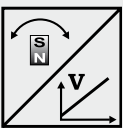


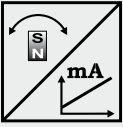
Dimensions in mm [inch]

Dimensions informative only.
 For guaranteed dimensions consult factory.

| | | |
|--|-------------------------|---|
| U2 Voltage Output 0.5 ... 10 V  | Excitation voltage | 18 ... 36 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) | $\pm 100 \times 10^{-6} / ^\circ\text{C}$ f.s. (typ.) |
| | Operating temperature | -40 ... +85 °C |
| | Protection | Reverse polarity, short circuit |
| | EMC | EN61326-1:2006 |

| | | |
|--|-------------------------|---|
| U6 Voltage Output 0.5 ... 4.5 V DC  | Excitation voltage | 5V DC $\pm 10\%$ |
| | Excitation current | 16 mA typ., 20 mA max. |
| | Output voltage | 0.5 ... 4.5 V DC |
| | Output current | 2 mA max. |
| | Measuring rate | 1 kHz standard |
| | Stability (temperature) | $\pm 100 \times 10^{-6} / ^\circ\text{C}$ f.s. (typ.) |
| | Operating temperature | -40 ... +85 °C |
| | Protection | Reverse polarity, short circuit |
| | EMC | EN61326-1:2006 |

| | | |
|---|-------------------------|---|
| U8 Voltage output 0.5 ... 4.5 V  | Excitation voltage | 10 ... 36 V DC |
| | Excitation current | 12 mA typ., 16 mA max. |
| | Output voltage | 0.5 ... 4.5 V DC |
| | Output current | 2 mA max. |
| | Measuring rate | 1 kHz standard |
| | Stability (temperature) | $\pm 100 \times 10^{-6} / ^\circ\text{C}$ f.s. (typ.) |
| | Operating temperature | -40 ... +85 °C |
| | Protection | Reverse polarity, short circuit |
| | EMC | EN61326-1:2006 |

| | | |
|---|-------------------------|---|
| I1 Current Output 4 ... 20 mA  | Excitation voltage | 18 ... 36 V DC |
| | Excitation current | 32 mA typ., 36 mA max.. |
| | Load resistor | 500 Ω max. |
| | Output current | 4 ... 20 mA |
| | Measuring rate | 1 kHz standard |
| | Stability (temperature) | $\pm 100 \times 10^{-6} / ^\circ\text{C}$ f.s. (typ.) |
| | Operating temperature | -40 ... +85 °C |
| | Protection | Reverse polarity, short circuit |
| | EMC | EN61326-1:2006 |

Function Zero (option)

Programming the zero point by the customer:

The function „ZERO“ allows to program the zero point of the output range by using a signal ZERO available at the connector. This Signal ZERO must be connected with GND via a push button. At first the sensor must be brought into the zero position. Pushing the button between 1 and 4 seconds sets the actual position as the zero point. The values are available as well after switching off the sensor.

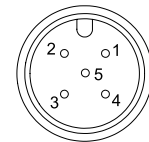
POSITILT® Analog Output Specification



| Cable output | Wire color VDE 0293-308 | Wire color VDE 47100 | Signal |
|--------------|----------------------------|-------------------------|--------------------------------------|
| 1 axis | Brown | White | +U _B (excitation voltage) |
| | White | Green | Analog output X |
| | Blue | Brown | GND |
| | Grey | Grey | ZERO |

| Cable output | Wire color VDE 0293-308 | Wire color VDE 47100 | Signal |
|--------------|----------------------------|-------------------------|--------------------------------------|
| 2 axes | Brown | White | +U _B (excitation voltage) |
| | White | Green | Analog output X |
| | Blue | Brown | GND |
| | Black | Yellow | Analog output Y |
| | Grey | Grey | ZERO |

| 5-pin connector | Pin no. | Signal |
|-----------------|---------|--------------------------------------|
| 1 axis | 1 | +U _B (excitation voltage) |
| | 2 | Analog output X |
| | 3 | GND |
| | 4 | Do not connect |
| | 5 | ZERO |



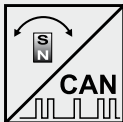
M12A5 / M12R5

View to sensor
connector

| 5-pin connector | Pin no. | Signal |
|-----------------|---------|--------------------------------------|
| 2 axes | 1 | +U _B (excitation voltage) |
| | 2 | Analog output X |
| | 3 | GND |
| | 4 | Analog output Y |
| | 5 | ZERO |

| Accessory cable M12, 5 pin | Connector pin / wire color | | | | |
|-------------------------------|----------------------------|-------|------|-------|------|
| | 1 | 2 | 3 | 4 | 5 |
| | Brown | White | Blue | Black | Grey |

Description Inclination sensor with CANopen interface according to CiA 410.

| | | |
|---|-------------------------------------|--|
| <p>CANopen Interface</p>  | Communication profile | CANopen CiA 301 V 4.02, Slave |
| | Device profile | Inclinometer CiA 410 V 1.2 |
| | Configuration services | LSS, CiA Draft Standard 305 (transmission rate, node ID) |
| | Error Control | Node Guarding, Heartbeat, Emergency Message |
| | Node ID | Adjustable via LSS or via object dictionary; default: 127 |
| | PDO | 1 TxPDO, 0 RxPDO, static mapping |
| | PDO Modes | Event-/Time triggered, Remote-request, Sync cyclic/acyclic |
| | SDO | 1 Server, 0 Client |
| | Certified | Yes |
| | Transmission rate | 50 kBaud to 1 MBaud, adjustable via LSS or via object dictionary, default: 125 kBaud |
| | Bus connection | M12 connector, 5 pin |
| | Integrated bus terminating resistor | Configurable |
| | Bus, galvanic isolation | No |

| | | |
|------------------------------|-------------------------|---|
| <p>Specifications</p> | Excitation voltage | 8 ... 36 V DC |
| | Excitation current | 15/30 mA typical for 24/12 V, 100 mA max. |
| | Measuring rate | 1 kHz standard |
| | Stability (temperature) | $\pm 100 \times 10^{-6}$ / °C f.s. |
| | Repeatability | 1 LSB |
| | Operating temperature | -40 ... +85 °C |
| | Protection | Reverse polarity, short circuit |
| | EMC | EN61326-1:2006 |

Setup procedure

Before connecting to the CAN bus make sure that every node ID is used once only and all nodes have the same baud rate. If necessary set node IDs and transmission rate.

After power up the slave sends a boot-up message and is ready for configuration and start of data exchange. On the first power-up the default parameters are effective.

After reading the EDS file by the control unit the parameters can be changed according to application requirements. Changed parameters become effective immediately. Non-volatile storage of the parameters by write access „save“ on object 1010/1. Node ID and bit rate can be changed via LSS (CANopen Layer Setting Services). Alternatively node ID and bitrate can be configured via object dictionary. These settings become effective not before „save“ and resetting the device.

Note: Setting of some parameters may have influence on the function of other parameters, e.g. changing the resolution may also influence the cam function. For further information refer to the device profile.



Warning notice

- Changing the parameters can cause a sudden step of the instantaneous value and can result in unexpected machine (re)actions!
- Precautions to prevent danger for man or machine are necessary!
- Execute parametrizing at standstill of the machine only!

Device profile

| | Index | Default | Value range |
|---|--------|---------|------------------------------|
| SAVE | 1010-1 | „save“ | MSB...LSB 73h, 61h, 76h, 65h |
| LOAD | 1011-1 | „load“ | MSB...LSB 6Ch, 6Fh, 61h, 64h |
| Manufacturer specific | | | |
| Node-ID | 2000 | 127 | 1 ... 127 |
| Bitrate | 2010 | 4 | 0...6 (s. table below) |
| Hysteresis send-on-change | 2040 | 10 | |
| Bus termination | 2050 | 0 | 0 (off), 1 (on) |
| Filter | 2102 | 16 | 1...65535 |
| Inclinometer CiA410 | | | |
| Resolution (in 0,001°) | 6000 | 100 | 10 ... 10000 |
| Slope long16 inclination angle round x axis | 6010 | | |
| Oper. parameters slope long16 1 or 2 axes | 6011 | 0 | |
| Slope long16 preset value | 6012 | 0 | |
| Slope lateral16 inclination angle round y axis | 6020 | | |
| Oper. parameters slope lateral16 2nd axis | 6021 | 0 | |
| Slope lateral16 preset value | 6022 | 0 | |

Operating Parameters Bit Code

| | | | | |
|-----|-----|---|---|-----|
| 7 | ... | 2 | 1 | 0 |
| m | | | s | i |
| MSB | | | | LSB |

i = 0/1 Code sequence CW/CCW
s = 0/1 Scaling function disabled/enabled
m = 0/1 Operating mode: 1 axis x $\pm 180^\circ$ /2 axes x,y $\pm 60^\circ$

| Bit rates | Index | Bit rate |
|-----------|-------|------------|
| | 0 | 1 MBit/s |
| | 1 | 800 kBit/s |
| | 2 | 500 kBit/s |
| | 3 | 250 kBit/s |
| | 4 | 125 kBit/s |
| | 5 | reserved |
| | 6 | 50 kBit/s |

POSITILT® CANopen output - set up procedure



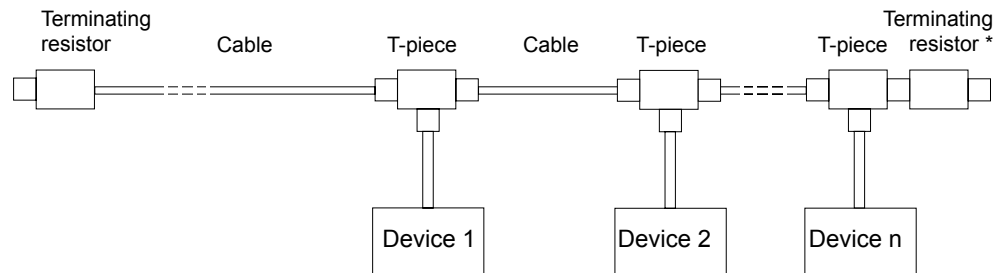
Process data

| PDO | Inclination 4 byte | | | | Preselected transmission mode |
|----------|--------------------|------------------|------------------|------------------|-------------------------------|
| | LSB _x | MSB _x | LSB _y | MSB _y | |
| TxPDO-01 | | | | | Asynchronous 100 ms |

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

CAN bus wiring


Connect the device by a T-connector to the CAN trunk line. Total length of stubs should be minimized. Do not use single stub lines longer than 0.5 m. Connect terminating resistors 120 Ohm at both ends of the trunk line.



* Only if device n has no internal terminating resistor

Description

Inclination sensor according to standard SAE J1939. Configuration of operating parameters by proprietary-A-Message (peer-to-peer connection). Process data exchange by proprietary-B-Message (broadcast).

| | | |
|---|-------------------------------|-------------------------------------|
| 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 EFddh | Proprietary-A (PDU1 peer-to-peer) dd Sensor Node ID |
| | Process data | PGN FFnnh | Proprietary-B (PDU2 broadcast); nn Group Extension (PS) configurable |

| | | |
|-----------------------|-------------------------|---|
| Specifications | Excitation voltage | 8 ... 36 V DC |
| | Excitation current | 15/30 mA typical for 24/12 V, 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 | EN61326-1:2006 |

Setup procedure

Node-ID

The default Node-ID the sensor will claim on power up is user or factory configurable. The user can configure by "Commanded Address" service according to the J1939 standard or by Peer-to-Peer message as described below.

User configuration

User accessible parameters including node-ID may be configured by peer-to-peer proprietary A message PGN 0EF00h. The parameters are accessed by byte-index and read/write operations coded in the data frame. The slave will return the data frame including the acknowledge code. Parameter values will be effective immediately. On execution of "Store Parameters" the configuration is saved nonvolatile.

Peer-to-peer message (PGN 0x00EF00), send/receive format

| PGN | | 8 Byte data frame | | | | | | | |
|---------------------|---------------------------------|-------------------|-------|---|-----|-------------|--|--|--|
| PGN _{HIGH} | PGN _{LOW} (Node-ID) | Index | Rd/Wr | 0 | Ack | 4-Byte Data | | | |

Request: Control Unit → Sensor

| | | | | | | | | | | |
|---|------|----|---|-----|---|---|-----|----|----|-----|
| → | 0EFh | dd | i | 0/1 | 0 | 0 | LSB | .. | .. | MSB |
|---|------|----|---|-----|---|---|-----|----|----|-----|

Response: Control Unit ← Sensor

| | | | | | | | | | | |
|---|------|----|---|-----|---|---|-----|----|----|-----|
| ← | 0EFh | cc | i | 0/1 | 0 | a | LSB | .. | .. | MSB |
|---|------|----|---|-----|---|---|-----|----|----|-----|

- a: Acknowledge codes:
 0: Acknowledge, 81: Read only parameter, 82: Range overflow,
 83: Range underflow, 84: Parameter does not exist
- dd: Sensor Node-ID (Default 0F7h, 247d)
- cc: Control-Unit Node-ID



Warning notice

- Changing the parameters can cause a sudden step of the instantaneous value and can result in unexpected machine (re)actions!
- Precautions to prevent danger for man or machine are necessary!
- Execute parametrizing at standstill of the machine only!

Configuration examples

Example: Set Transmit Cycle to 10ms, Index 31, Node-ID 247d (F7h)

| | PGN _{HIGH} | PGN _{LOW} | 8 Byte data frame | | | | | | | |
|---|---------------------|--------------------|-------------------|-----|----|----|-----|----|----|----|
| → | 0EFh | F7h | 1Fh | 01h | 00 | 00 | 0Ah | 00 | 00 | 00 |
| ← | 0EFh | cc | 1Fh | 01h | 00 | 00 | 0Ah | 00 | 00 | 00 |

Example: Read Transmit Cycle value, Index 31

| | | | | | | | | | | |
|---|------|-----|-----|----|----|----|-----|----|----|----|
| → | 0EFh | F7h | 1Fh | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| ← | 0EFh | cc | 1Fh | 00 | 00 | 00 | 0Ah | 00 | 00 | 00 |

Example: Store Parameters permanently, Index 28

| | | | | | | | | | | |
|---|------|-----|-----|-----|----|----|-----|-----|-----|-----|
| → | 0EFh | F7h | 1Ch | 01h | 00 | 00 | 65h | 76h | 61h | 73h |
| ← | 0EFh | cc | 1Ch | 01h | 00 | 00 | 65h | 76h | 61h | 73h |

Example: Reload factory defaults, Index 29

| | | | | | | | | | | |
|---|------|-----|-----|-----|----|----|-----|-----|-----|-----|
| → | 0EFh | F7h | 1Dh | 01h | 00 | 00 | 64h | 61h | 6Fh | 6Ch |
| ← | 0EFh | cc | 1Dh | 01h | 00 | 00 | 64h | 61h | 6Fh | 6Ch |

Configurable parameters

| Parameter | Index [dec] | Default | Range / Selection | Unit | Read / Write |
|-----------------------------|-------------|-----------|---------------------------------|--------|---------------------|
| Control | | | | | |
| Node ID | 20 | 247 | 128 ... 247 | | rd/wr ¹⁾ |
| Baude rate | 21 | 3 (250kB) | - | | rd/wr ¹⁾ |
| Termination resistor | 22 | 0 | 0 (OFF) 1 (ON) | | rd/wr ¹⁾ |
| Store parameters | 28 | - | "save" ²⁾ | | wr |
| Reload factory defaults | 29 | - | "load" ²⁾ | | wr |
| Communication | | | | | |
| Transmit mode | 30 | 0 | 0 timer 1 request 2 event | | rd/wr |
| Transmit cycle | 31 | 100 | 10..65535 | ms | rd/wr |
| PGN Group Extension | 32 | 0 | 0..255 | | rd/wr |
| Event mode hysteresis | 38 | 0 | 0..16383 | steps | rd/wr |
| Process data byte order | 39 | 0 | 0 little / 1 big endian | | rd/wr |
| Measurement | | | | | |
| 1 axis ±180° 2 axes ±60° | 69 | 1 | 1 = 0 2 = 80h | | rd/wr |
| Code sequence_X | 70 | 0 | 0 CW 1 CCW | | rd/wr |
| Code sequence_Y | 71 | 0 | 0 CW 1 CCW | | rd/wr |
| Resolution (in 0.001°) | 73 | 100 | 10 ... 10000 | deg | rd/wr |
| Preset 1 axis X/Y | 74 | 0 | ±0,1.. | deg | rd/wr |
| Preset 2 axes X | 75 | 0 | ±0,1.. | deg | rd/wr |
| Preset 2 axes Y | 76 | 0 | ±0,1.. | deg | rd/wr |
| Averaging Filter | 77 | 1 | 1...255 | | rd/wr |
| Identification | | | | | |
| SW Version | 198 | - | 4 bytes | number | rd |
| Serial number | 199 | - | 4 bytes | number | rd |
| Identity number | 200 | - | 21 bit | number | rd |

¹⁾ Effective on next power-up

²⁾ „save“ MSB...LSB: 73h, 61h, 76h, 65h
 „load“ MSB...LSB: 6Ch, 6Fh, 61h, 64h

Depending on configuration ordered default settings may be different, refer to ASM homepage.

POSITILT[®]

CAN-SAE J1939 Output - set up procedure



Process data

Process data are transmitted by broadcast proprietary-B-Message PGN 0x00FFxx where the low byte is configurable.

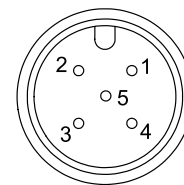
Data field of process data

| B7 | B6 | B5 | B4 | B3 | B2 | B1 | B0 |
|--------------------|----|----|----|----------------|----|----|-----|
| Error | | | | Position value | | | |
| Byte ^{*)} | | | | MSB | | | LSB |

^{*)} Error codes: 0 = no error, 1 = error

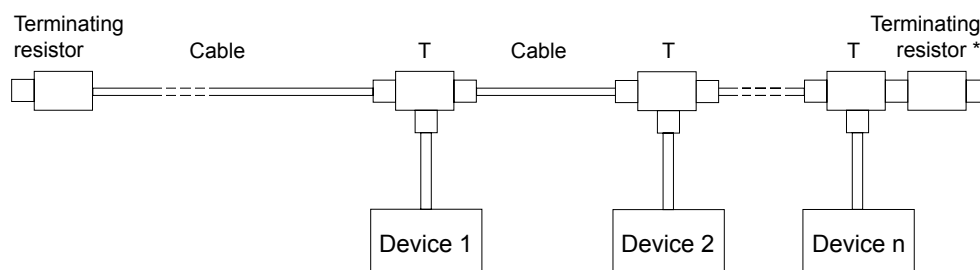
| Signal wiring / connection | Signal name | Connector pin |
|----------------------------|--------------|---------------|
| | Shield | 1 |
| | Excitation + | 2 |
| | GND | 3 |
| | CAN-H | 4 |
| | CAN-L | 5 |

View to sensor connector



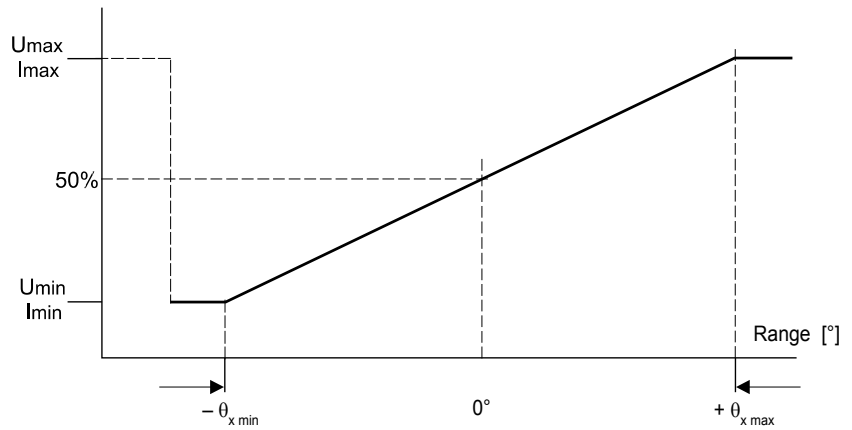
CAN bus wiring

Connect the device by a T-connector to the CAN trunk line. Total length of stubs should be minimized. Connect terminating resistors 120 Ohm at both ends of the trunk line.



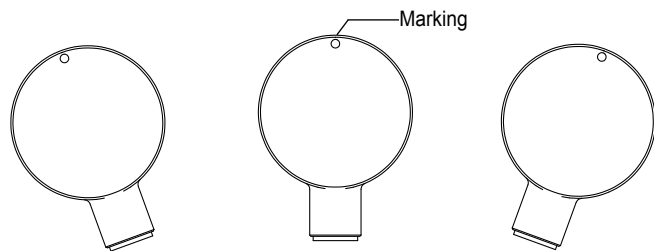
* Only if device n has no internal terminating resistor

Output signal



PTAM2/PTDM2

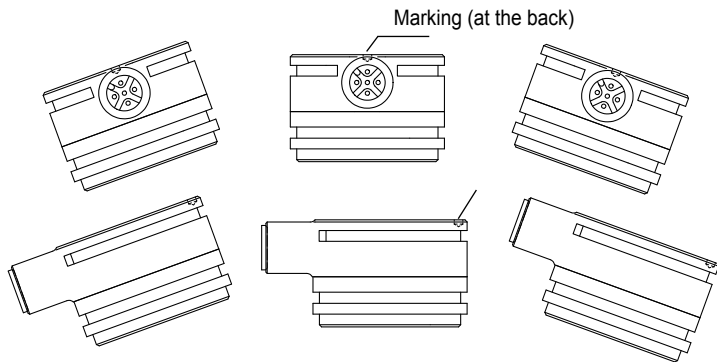
Radial, 1 axis



PTAM2/PTDM2

Radial, 2 axes

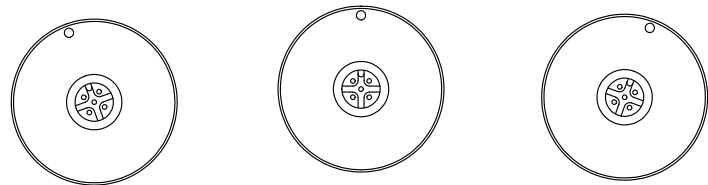
X



Y

PTAM2/PTDM2

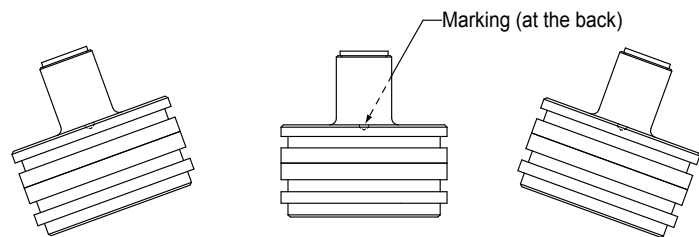
Axial, 1 axis



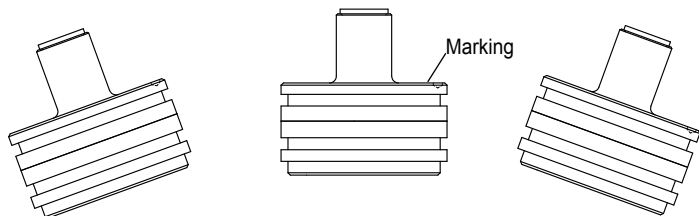
PTAM2/PTDM2

Axial, 2 axes

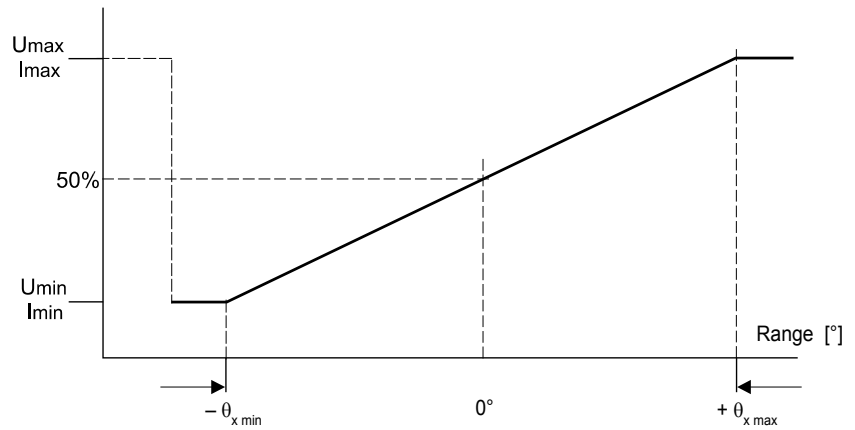
X



Y

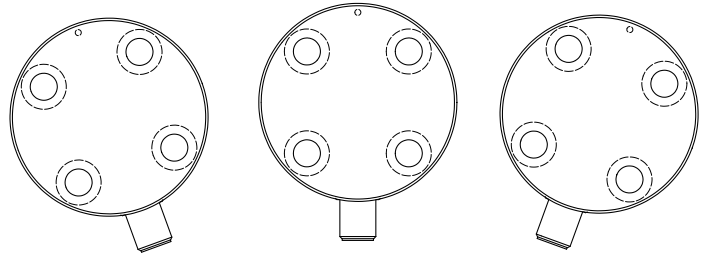


Output signal



PTAM5/PTDM5

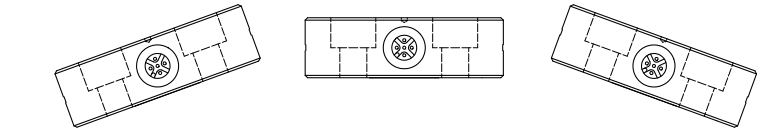
1 axis



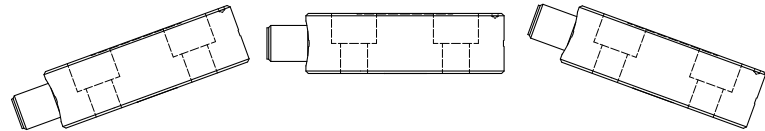
PTAM5/PTDM5

2 axes

X

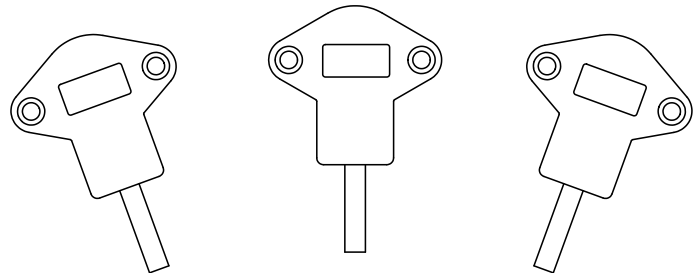


Y



PTAM27/PTDM27

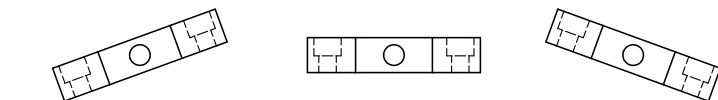
1 axis



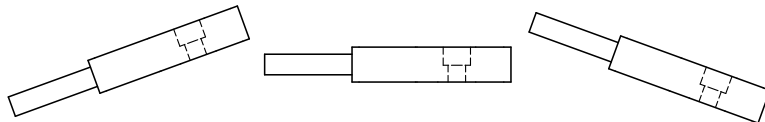
PTAM27/PTDM27

2 axes

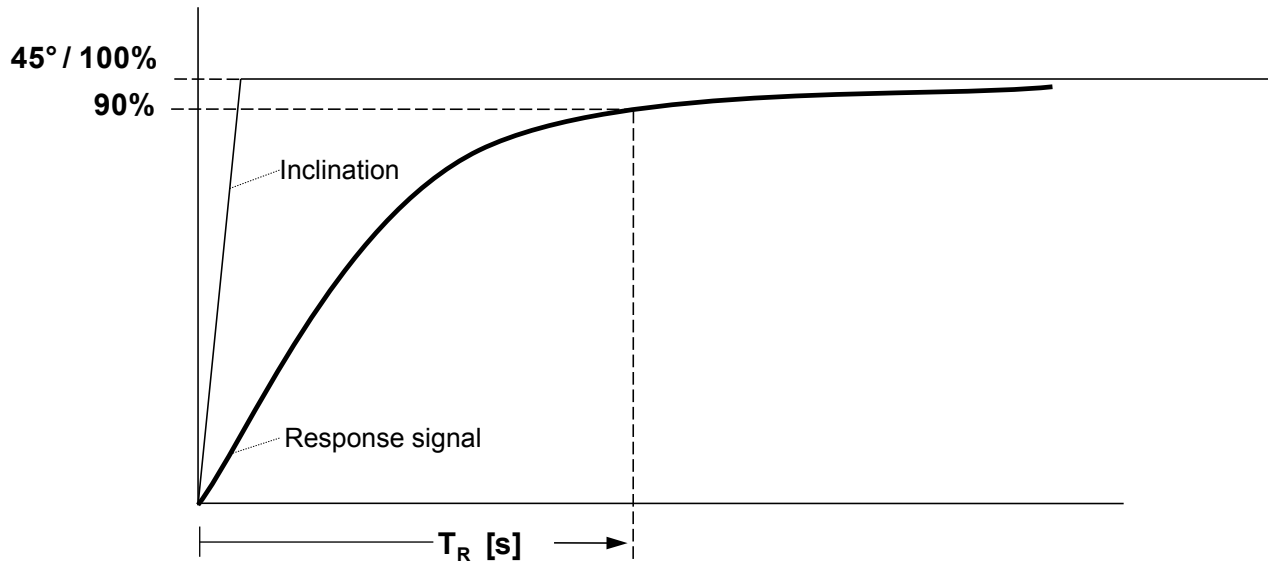
X



Y



Response time



Reliability characteristics

Models PTAM2(...EX), PTAM5(...EX), PTAM27

Outputs

- U2 Voltage output 0.5 ... 10 V
- U6 Voltage output 0.5 ... 4.5 V
- U8 Voltage output 0.5 ... 4.5 V
- I1 Current output 4 ... 20 mA

| | | |
|------------------------|------------------------|-------------------------|
| Characteristics | Probability of failure | 1 x 10 ⁻⁶ /h |
| | Life period MTTF | 110 years |
| | Working life | 10 years |

Standards SN29500 Failure rate electronic components (Siemens)

Declaration of conformity



The inclination sensor

Manufacturer: ASM GmbH
Am Bleichbach 18-22
85452 Moosinning / Germany

Model: **PTAM2/PTDM2, PTAM5/PTDM5, PTAM27/PTDM27**

complies with the following standards and directives:

Directives: 2004/108/EG (EMC)

Standards: EN 61326-1:2006 (EMC)

Moosinning, 2nd 12.2010



i.A. Andreas Bolm
Quality Manager



i.A. Peter Wirth
Head of Development

ASM GmbH Automation • Sensorik • Messtechnik

Am Bleichbach 18-22

Telephone: +49 8123 986-0

Internet: www.asm-sensor.de

E-Mail: info@asm-sensor.de

85452 Moosinning / Germany

Telefax: +49 8123 986-500

www.asmsensors.com

info@asmsensors.com

