

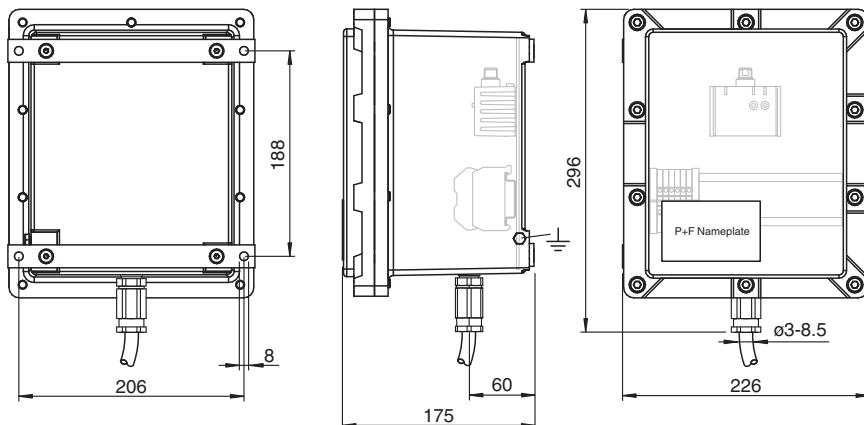


Inclination sensor INX360D-F99-I2E2-V15-Ex

- Explosion-proof housing
- Installation in Zone 1 and Zone 21
- E1-Type approval
- Measuring range 0 ... 360°
- Analog output 4 mA ... 20 mA
- Evaluation limits can be taught-in
- 2 programmable switch outputs
- High shock resistance
- Increased noise immunity 100 V/m



Dimensions



Technical Data

General specifications

Type	Inclination sensor, 1-axis
Measurement range	0 ... 360 °
Absolute accuracy	≤ ± 0.5 °
Response delay	≤ 20 ms
Resolution	≤ 0.1 °
Repeat accuracy	≤ ± 0.1 °
Temperature influence	≤ 0.027 °/K

Functional safety related parameters

MTTF _d	300 a
Mission Time (T _M)	20 a
Diagnostic Coverage (DC)	0 %

Indicators/operating means

Operation indicator	LED, green
Teach-In indicator	2 LEDs yellow (switching status), flashing
Button	2 push-buttons (Switch points programming , Evaluation range programming)
Switching state	2 yellow LEDs: Switching status (each output)

Technical Data

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC
No-load supply current	I_0	≤ 25 mA
Time delay before availability	t_v	≤ 200 ms

Switching output

Output type		2 switch outputs PNP, NO , reverse polarity protected , short-circuit protected
Operating current	I_L	≤ 100 mA
Voltage drop		≤ 3 V

Analog output

Output type		1 current output 4 ... 20 mA
Load resistor		0 ... 200 Ω at $U_B = 10 \dots 18$ V 0 ... 500 Ω at $U_B = 18 \dots 30$ V

Compliance with standards and directives

Standard conformity		
Shock and impact resistance		100 g according to DIN EN 60068-2-27
Standards		EN 60947-5-2:2007 IEC 60947-5-2:2007

Approvals and certificates

IECEx approval		IECEx INE 14.0029X
ATEX approval		INERIS 14 ATEX 0022X Device type: EJB4A.D.CP-INX360D-F99-I2E2
Marking		Ex II 2 GD Ex db IIB+H ₂ T6 Gb, II 2 GD Ex tb IIIC T85 °C Db
E1 Type approval		10R-04

Ambient conditions

Ambient temperature		-40 ... 60 °C (-40 ... 140 °F)
Storage temperature		-40 ... 60 °C (-40 ... 140 °F)

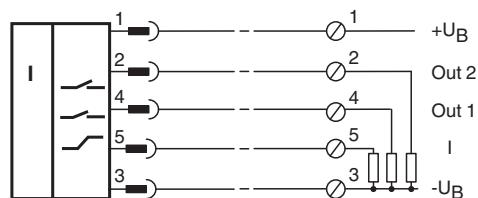
Mechanical specifications

Connection type		Connection terminals, max. conductor cross-section 2.5 mm ²
Conductor cross section		0.14 ... 2.5 mm ²
Cable gland		for cable diameter 3 ... 8.5 mm
Cover fixing		stainless steel socket cap head screws
Screws		M6
Housing material		Seawater-resistant aluminum
Finish		epoxy coated RAL 7005 (grey)
Flamepath grease		Greasil MS4 or NEVER SEEZ Marine Grade
Degree of protection		IP66
Mass		9 kg

Factory settings

Switching output 1		-30 ° ... 30 °
Switching output 2		-30 ° ... 30 °
Analog output		-45 ° ... 45 °

Connection

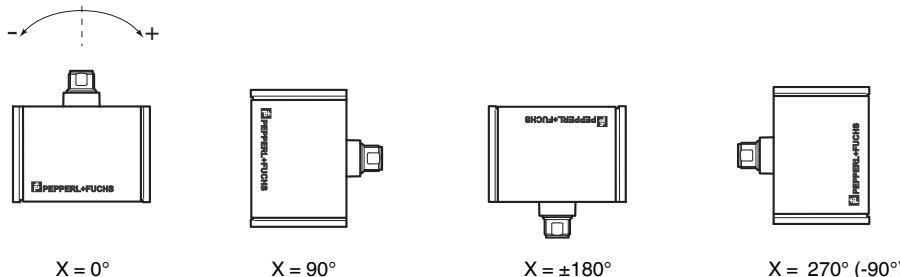


Mounting

Sensor Orientation

In the default setting the zero position of the sensor is reached, when the electrical connection faces straight upwards.

X Orientation



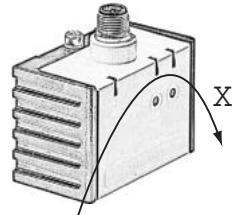
Additional Information

LED display

Displays dependent on the operating state	LED green: Power	LED yellow out 1	LED yellow out 2
Teach-in of switching points (output S1): Teach-in of switching points (output S2):	off off	flashes off	off flashes
Activate teach-in mode for analog limits: Teach-in of analog limits	off off	flashes flashes	flashes off
Normal operation	on	switchingstate	switchingstate
Reset to factory settings: 2 s ... 10 s > 10 s ... end of reset process Followed by normal operation	off flashes	flashes off	flashes off
Undervoltage	flashes	off	off

Axis definition

The definition of the X-axis is shown on the sensor housing by means of an imprinted and labeled double arrow. The figure shows the clockwise direction of rotation.



Teach-in of switching points (output S1)

1. Press key T1 > 2 s (see LED display)
2. Move sensor to switching position 1
3. Press key T1 briefly. LED "out 1" lights for 1.5 s as confirmation. Switching point 1 has been taught
4. Move sensor to switching position 2
5. Press key T1 briefly. LED "out 1" lights for 1.5 s as confirmation. Switching point 2 has been taught
6. Sensor returns to normal operation (see LED display)



The NC (active output state) is always defined in the range from the 1st configured position to 2nd configured position.

As an example :

Case #1: configure position #1 at +45degree, configure position #2 at +90 degree; NC is from +45 ' +90 in the CW direction

Case #2: configure position #1 at +90degree ; configure position #2 at +45 degree; NC is from +90 ' +45 in the CW direction

Teach-in of switching points (output S2)

Similar to the process for "Teach-in of switching points (output S1)", but with key T2 instead of key T1.

Teach-in of analog limits

1. Activate the teach-in mode for the analog limits by simultaneously pressing keys T1 and T2 until the green LED is extinguished and the two yellow LEDs flash. Then release the keys.
2. Press key T1 > for 2 s (see LED display)
3. Move the sensor into the position of minimum evaluation limit
4. Press key T1 briefly. LED "out 1" lights for 1.5 s as confirmation. The minimum evaluation limit has been taught. In this position the analog output will provide its minimum output value.
5. Move the sensor into the position of maximum evaluation limit
6. Press key T1 briefly. LED "out 1" lights for 1.5 s as confirmation. The maximum evaluation limit has been taught. In this position the analog output will provide its maximum output value.
7. Sensor returns to normal operation (see LED display)



If the sensor inclination exceeds one of the analog limits, the last value of the analog output is retained.

Resetting the sensor to factory settings

1. Press keys T1 and T2 > 10 s (see LED display)
2. The sensor has been reset when the green LED "Power" lights again after approx. 10 s.

Undervoltage detection

If the supply voltage falls below a value of approx. 7 V, all outputs and yellow LEDs are deactivated. The green "power" LED flashes rapidly. If the supply voltage falls below a value of approx. 8 V, the sensor continues with normal operation.

Technical Features

EMC Properties

Interference immunity in accordance with

DIN ISO 11452-2: 100 V/m

Frequency band 20 MHz up to 2 GHz

Mains-borne interference in accordance with ISO 7637-2:

Pulse 1 2a 2b 3a 3b 4

Severity level III III III III III III

Failure criterion C A C A A C

EN 61000-4-2: CD: 8 kV / AD: 15 kV

Severity level IV IV

EN 61000-4-3: 30 V/m (80...2500 MHz)

Severity level IV

EN 61000-4-4: 2 kV

Severity level III

EN 61000-4-6: 10 V (0.01...80 MHz)

Severity level III

EN 55011: Klasse A