



**Order Code**

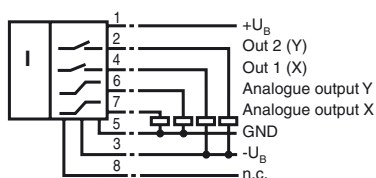
**INY360D-F99-2U2E2-V17**

**Features**

- Measuring range 0 ... 360°
- Analogue output 0 V ... 5 V
- Evaluation limits can be taught-in
- 2 programmable switch outputs
- Highly shock resistant
- e1-Type approval
- Raised EMC resistance 100 V/m

**Electrical Connection**

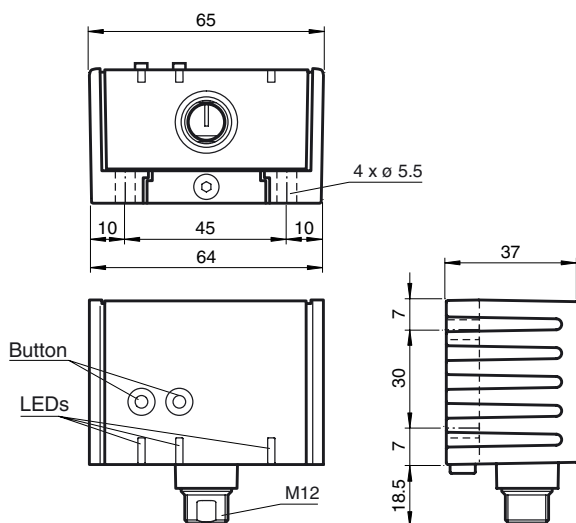
Standard symbol/Connection:



**Connector V17**



**Dimensions**



**Technical Data**

<b>General specifications</b>	
Type	Inclination sensor, 2-axis
Measuring range	0 ... 360 °
Absolute accuracy	≤ ± 0.5 °
Response delay	≤ 25 ms
Resolution	≤ 0.1 °
Repeat accuracy	≤ ± 0.1 °
Temperature influence	≤ 0.027 °/K
<b>Indicators/operating means</b>	
Operating display	LED, green
Teach-In indication	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)
<b>Electrical specifications</b>	
Operating voltage $U_B$	10 ... 30 V DC
No-load supply current $I_0$	≤ 25 mA
Time delay before availability $t_v$	≤ 200 ms
<b>Switching output</b>	
Output type	2 switch outputs pnp, NO , protected against reverse polarity , short-circuit proof
Operating current $I_L$	≤ 100 mA
Voltage drop	≤ 3 V
<b>Analogue output</b>	
Output type	2 voltage outputs 0 ... 5 V (one output for each axis)
Load resistor	≥ 1 kΩ
<b>Standard conformity</b>	
Shock resistance	100 g according to DIN EN 60068-2-27
Standards	IEC / EN 60947-5-2:2004
<b>Ambient conditions</b>	
Ambient temperature	-40 ... 85 °C (233 ... 358 K)
Storage temperature	-40 ... 85 °C (233 ... 358 K)
<b>Mechanical specifications</b>	
Connection type	connector M12 x 1, 8-pin
Housing material	PA
Protection degree	IP68 / IP69K
Mass	240 g
<b>Approvals and certificates</b>	
CSA approval	cCSAus Certified, General Purpose Class 2 power source
e1 Type approval	2006/28/EG

## LED display

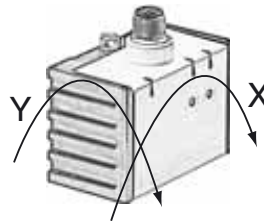
Displays dependent on the operating state	LED green: Power	LED yellow out 1	LED yellow out 2
Teach-in of switching points (X-axis):	off	flashes	off
Teach-in of switching points (Y-axis):	off	off	flashes
Activate teach-in mode for analog limits:	off	flashes	flashes
Teach-in of analog limit (X-axis)	off	flashes	off
Teach-in of analog limit (Y-axis)	off	off	flashes
Normal operation	on	switching- state	switching- state
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

## Factory settings

see Technical Data

## Axis definition

The definition of the X-axis and Y-axis is shown on the sensor housing by means of imprinted and labeled double arrows.



## Teach-in of switching points (X-axis)

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)



If the switching points are taught in clockwise direction, the switching output between these switching points works as a NO contact. If the switching points are taught in anticlockwise direction, the switching output between these switching points works as a NC contact.

## Teach-in of switching points (Y-axis)

1. Press key T2 > 2 s (see LED display)
2. Move sensor to switching position 1
3. Press key T2 briefly. LED "out 2" lights for 1.5 s as confirmation. Switching point 1 has been taught
4. Move sensor to switching position 2
5. Press key T2 briefly. LED "out 2" lights for 1.5 s as confirmation. Switching point 2 has been taught
6. Sensor returns to normal operation (see LED display)



If the switching points are taught in clockwise direction, the switching output between these switching points works as a NO contact. If the switching points are taught in anticlockwise direction, the switching output between these switching points works as a NC contact.

## Teach-in of analog limits (X-axis)

1. Activate the teach-in mode for the analog limits by simultaneously pressing keys T1 and T2 > 2 s (see LED display)
2. Press key T1 > for 2 s (see LED display)
3. Move the sensor into the position of evaluation limit 0 V
4. Press key T1 briefly. LED "out 1" lights for 1.5 s as confirmation. Evaluation limit 0 VA has been taught
5. Move the sensor into the position of evaluation limit 5 V
6. Press key T1 briefly. LED "out 1" lights for 1.5 s as confirmation. Evaluation limit 5 V has been taught
7. Sensor returns to normal operation (see LED display)



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

## Teach-in of analog limits (Y-axis)

1. Activate the teach-in mode for the analog limits by simultaneously pressing keys T1 and T2 > 2 s (see LED display)
2. Press key T2 > 2 s (see LED display)
3. Move the sensor into the position of evaluation limit 0 V
4. Press key T2 briefly. LED "out 2" lights for 1.5 s as confirmation. Evaluation limit 0 V has been

Emitted interference and interference immunity in accordance with motor vehicle directive 2006/28/EG (e1 Type approval)  
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	3 a	3b	4
Severity level	III	III	III	III	III	III
Failure criterion	C	A	C	A	A	C

EN 61000-4-2: CD: 4 kV / AD: 8 kV  
Severity level II III

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: Class A

## Accessories

V17-G-2M-PUR  
Cable socket, shielded

V17-G-5M-PUR  
Cable socket, shielded

V17-G-10M-PUR  
Cable socket, shielded

V17-G-10M-PVC ABG  
Cable socket, shielded

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5. Move the sensor into the position of evaluation limit 5 V
6. Press key T2 briefly. LED "out 2" lights for 1.5 s as confirmation. Evaluation limit 5 V has been taught
7. Sensor returns to normal operation (see LED display)



If the sensor inclination exceeds one of the analog limits, the last current 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 exceeds a value of approx. 8 V, the sensor continues with normal operation.