

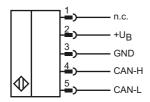
Model number

INX360D-F99-B16-V15

Features

- E1-Type approval
- Measuring range 0 ... 360° ٠
- High shock resistance ٠
- Extended temperature range -40 ... +85 °C .
- **CANopen interface** ٠
- Increased noise immunity 100 V/m ٠

Electrical connection



Туре	alions	
		Inclination sensor, 1-axis
Measurement ra	-	0360 °
Absolute accura Response delay	•	$\leq \pm 0.5^{\circ}$ < 20 ms
Resolution	/	≤ 20 ms ≤ 0.1 °
Repeat accurac	:V	≤±0.1 °
Temperature inf	•	≤ 0.027 °/K
Functional safet	y related parameters	
MTTF _d		300 a
Mission Time (T		20 a
Diagnostic Cove Indicators/opera	• • •	0 %
Operation indica	-	LED, green
Electrical specifi		, g
Operating voltage	ge U _B	10 30 V DC
No-load supply	J	≤ 50 mA
	ore availability t _v	≤ 2.5 s
Interface Interface type		CANopen
Device profile		CiA410, Ver. 1.2
Data output cod	le	binary code
Transfer rate		125 kBit/s , 250 kBit/s , 500 kBit/s , 1 MBit/s , programmable
Node ID		1 127 , programmable
Termination		external
Cycle time Ambient condition	one	≥ 20 ms
Ambient temper		-40 85 °C (-40 185 °F)
Storage temper		-40 85 °C (-40 185 °F)
Mechanical spec		
Connection type		5-pin, M12 x 1 connector
Housing materia		PA
Degree of prote	ction	IP68 / IP69K
Mass Factory settings		240 g
Node ID		1
Transfer rate		250 kBit/s
Compliance with	standards and	
directives		
Standard confor		
	pact resistance	100 g according to DIN EN 60068-2-27
Standards		EN 60947-5-2:2007 IEC 60947-5-2:2007
Approvals and	oortificatos	
UL approval	cei lincales	
		al II us Listad, Class 2 Power Source
CEA approval		cULus Listed, Class 2 Power Source
CSA approval		cCSAus Listed, General Purpose, Class 2 Power Source
CSA approval CCC approval		cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated
CCC approval	val	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V
CCC approval E1 Type appro		cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated
CCC approval E1 Type appro EMC Properties		cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2:	s unity in accordance with : 100 V/m	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2	s unity in accordance with : 100 V/m 20 MHz up to 2 GHz	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter	s unity in accordance with : 100 V/m 20 MHz up to 2 GHz ference in accordance wi	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse	s unity in accordance with 100 V/m 20 MHz up to 2 GHz ference in accordance wit 1 2a 2b 3a	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level	s unity in accordance with 100 V/m 20 MHz up to 2 GHz ference in accordance with 1 2a 2b 3a III III III III III	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse	s unity in accordance with 100 V/m 20 MHz up to 2 GHz ference in accordance with 1 2a 2b 3a III III III III III	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level	s unity in accordance with 100 V/m 20 MHz up to 2 GHz ference in accordance with 1 2a 2b 3a III III III III III	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level Failure criterion	s unity in accordance with 100 V/m 20 MHz up to 2 GHz ference in accordance wit 1 2a 2b 3a III III III III C A C A	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level Failure criterion EN 61000-4-2:	s unity in accordance with : 100 V/m 20 MHz up to 2 GHz ference in accordance wit 1 2a 2b 3a III III III III C A C A CD: 8 kV / AD: 1!	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level Failure criterion EN 61000-4-2: Severity level	S unity in accordance with : 100 V/m 20 MHz up to 2 GHz ference in accordance with 1 2a 2b 3a III III III III C A C A CD: 8 kV / AD: 11 IV IV IV 30 V/m (802500 MHz) IV	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level Failure criterion EN 61000-4-2: Severity level EN 61000-4-3: Severity level EN 61000-4-4:	S unity in accordance with : 100 V/m 20 MHz up to 2 GHz ference in accordance with 1 2a 2b 3a III III III III C A C A CD: 8 kV / AD: 1! IV IV IV 30 V/m (802500 MHz) IV 2 kV IV	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level Failure criterion EN 61000-4-2: Severity level EN 61000-4-3: Severity level EN 61000-4-4: Severity level	S unity in accordance with : 100 V/m 20 MHz up to 2 GHz ference in accordance with 1 2a 2b 3a III III III III C A C A CD: 8 kV / AD: 11 IV IV IV 30 V/m (802500 MHz) IV	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level Failure criterion EN 61000-4-2: Severity level EN 61000-4-3: Severity level EN 61000-4-4: Severity level EN 61000-4-6:	s unity in accordance with 100 V/m 20 MHz up to 2 GHz ference in accordance with 1 2a 2b 3a III III III III C A C A CD: 8 kV / AD: 11 IV IV IV 30 V/m (802500 MHz) IV 2 kV III 10 V (0.0180 MHz) IV	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level Failure criterion EN 61000-4-2: Severity level EN 61000-4-3: Severity level EN 61000-4-4: Severity level EN 61000-4-6: Severity level	s unity in accordance with 100 V/m 20 MHz up to 2 GHz ference in accordance with 1 2a 2b 3a 11 11 12 2 2b 3a 11 11 11 11 12 2 2b 3a 11 11 12 2 2b 3a 11 11 <td>cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C</td>	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level Failure criterion EN 61000-4-2: Severity level EN 61000-4-3: Severity level EN 61000-4-4: Severity level EN 61000-4-6:	s unity in accordance with 100 V/m 20 MHz up to 2 GHz ference in accordance with 1 2a 2b 3a III III III III C A C A CD: 8 kV / AD: 11 IV IV IV 30 V/m (802500 MHz) IV 2 kV III 10 V (0.0180 MHz) IV	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level Failure criterion EN 61000-4-2: Severity level EN 61000-4-3: Severity level EN 61000-4-4: Severity level EN 61000-4-6: Severity level	s unity in accordance with 100 V/m 20 MHz up to 2 GHz ference in accordance with 1 2a 2b 3a 11 11 12 2 2b 3a 11 11 11 11 12 2 2b 3a 11 11 12 2 2b 3a 11 11 <td>cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C</td>	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C
CCC approval E1 Type appro EMC Properties Interference immu DIN ISO 11452-2: Frequency band 2 Mains-borne inter Pulse Severity level Failure criterion EN 61000-4-2: Severity level EN 61000-4-3: Severity level EN 61000-4-4: Severity level EN 61000-4-6: Severity level	s unity in accordance with 100 V/m 20 MHz up to 2 GHz ference in accordance with 1 2a 2b 3a 11 11 12 2 2b 3a 11 11 11 11 12 2 2b 3a 11 11 12 2 2b 3a 11 11 <td>cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C</td>	cCSAus Listed, General Purpose, Class 2 Power Source CCC approval / marking not required for products rated ≤36 V 10R-04 th ISO 7637-2: 3b 4 III III A C

Technical Data General specifications

Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

Pepperl+Fuchs Group www.pepperl-fuchs.com

Release date: 2018-10-15 13:07 Date of edition: 2018-10-15 212422_eng.xml

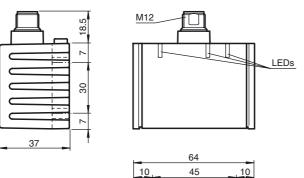
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com Germany: +49 621 776 4411 fa-info@de.pepperl-fuchs.com

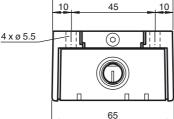
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com





Dimensions

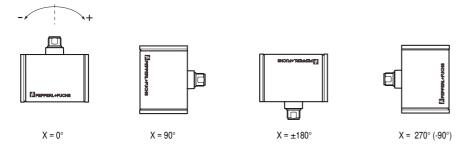




Sensor Orientation

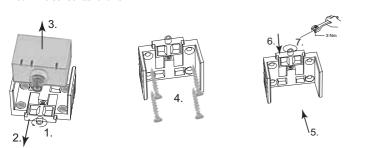
In the default setting the zero position of the sensor is reached, when the electrical connection faces straight upwards.

X Orientation



Mounting of the sensor

Sensors from the -F99 series consist of a sensor module and accompanying cast aluminum housing. Select a vertical surface with minimum dimensions of 70 mm x 50 mm to mount the sensor. Mount the sensor as follows:



- Loosen the central screw under the sensor connection. 1.
- Slide back the clamping element until you are able to remove the sensor module from the housing. 2.
- З. Remove the sensor module from the housing 4
- Position the housing at the required mounting location and secure using four countersunk screws. Make sure that the heads of the screws do not protrude.

www.pepperl-fuchs.com

- Solide the clamping element flush into the housing.
 Slide the clamping element flush into the housing. Check that the sensor element is seated correctly.
 Finally tighten the central screw.

Node ID setting

2

Inclination sensors by Pepperl+Fuchs are supplied with node ID 1. To change the node ID, write the new node ID to object 2000h "Node ID." If a "Reset sensor" command is issued via an NMT message or the power supply is interrupted, the sensor operates with the new node ID. Node ID values between 1 and 127 can be sent in hexadecimal format (01h ... 7Fh). Invalid values are not adopted. In this case, the current setting is retained.

fa-info@us.pepperl-fuchs.com

2	
3	

Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)
5	GY	(gray)

Accessories

Pinout

V15-G-2M-PUR-CAN-V15-G

DeviceNet/CANOpen bus cable, M12 to M12, PUR cable 5-pin

V15-G-5M-PUR-CAN-V15-G

DeviceNet/CANOpen bus cable, M12 to M12, PUR cable 5-pin

V15-G-10M-PUR-CAN-V15-G

DeviceNet/CANOpen bus cable, M12 to M12, PUR cable 5-pin

V15S-T-CAN/DN-V15

Y distributor. M12 socket on M12 connector/socket

ICZ-TR-CAN/DN-V15

Terminal resistor for DeviceNet, CANopen



Refer to "General Notes Relating to Pepperl+Fuchs Product Information" Pepperl+Fuchs Group USA: +1 330 486 0001

Germany: +49 621 776 4411 fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com

Example of modifying node ID from 1 to 15:

[601h	2Fh	00h	20h	00h	0Fh	xxh	xxh	xxh
Ī	CAN-ID	Com-	Object	index	Subindex	New ID	not used		
		mand							
		Data	Data	Data	Data	Data	Data byte 6	Data	Data
		byte 1	byte 2	byte 3	byte 4	byte 5		byte 7	byte 8

CAN ID: 601h, SDO1 channel of node 1

Command: 2Fh, write object, 1 byte of usable data Object index: 2000h, note: low byte first, then high byte!

Subindex: 00h

New ID: 0Fh, only values between 01h ... 7Fh (1 ... 127) permitted

Baud rate setting

Inclination sensors by Pepperl+Fuchs are supplied with a baud rate of 250 kbit/s. To change the baud rate, write the new baud rate to object 2001h "Baud rate." If a "Reset sensor" command is issued via an NMT message or the power supply is interrupted, the sensor operates at the new baud rate. The inclination sensor supports the baud rates 125 kbit/s, 250 kbit/s, 500 kbit/s and 1 Mbit/s. Invalid values are not adopted. In this case, the current setting is retained.

Example of modifying the baud rate from 250 kbit/s to 1 Mbit/s:

ſ	601h	2Fh	01h	20h	00h	08h	xxh	xxh	xxh
ľ	CAN-ID	Com-	Object	index	Subindex	New	not used		
		mand				baud rate			
		Data	Data	Data	Data	Data	Data byte 6	Data	Data
		byte 1	byte 2	byte 3	byte 4	byte 5		byte 7	byte 8

CAN ID: 601h, SDO1 channel of node 1

Command: 2Fh, write object, 1 byte of usable data Object index: 2001h, note: low byte first, then high byte! Subindex: 00h New baud rate: 08h, for 1 Mbit/s New baud rate: 04h, for 500 kbit/s New baud rate: 02h, for 250 kbit/s New baud rate: 01h, for 125 kbit/s

LED displays

The inclination sensor has three indicator LEDs that allow rapid visual monitoring.

The green **power** LED indicates the state of the power supply

• The yellow **run** LED indicates the bus and sensor status

• The red err LED indicates an error

power (green)	run (yellow)	err (red)	Meaning
Off	Off	Off	No power supply
On	Flashing constantly	Off	Pre-operational
On	1x flashing	Off	Stopped
On	On	Off	Operational
On	Off	On	CAN bus off
On	depending on bus status	1x flashing	Warning, e.g., outside measuring range
On	depending on bus status	2x flashing	Error, e.g., EEPROM checksum incorrect
Flashing constantly	Off	On	Undervoltage

Release date: 2018-10-15 13:07 Date of edition: 2018-10-15 212422_eng.xml

