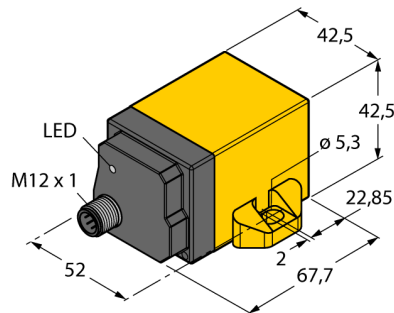


Inclinometer

For Use in Vehicle Electrical Systems

B2N360-Q42-E2LIUPN8X2-H1181/S97

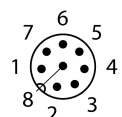
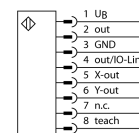


- Rectangular, plastic, PA12-GF30
- Status display via LEDs
- Parameterizable filter functions for different applications
- Parameterizable via teach pin
- Acceleration function ± 2 g, measuring range adjustable
- For vehicle electrical systems, 12 V and 24 V
- Increased interference immunity 30V/m following the e1 type approval
- Immune to conducted interference acc. to DIN ISO 7637-2 (SAE J 113-11)
- Extended temperature range
- High protection class IP68/IP69K
- 7 ... 30 VDC supply voltage when using the analog outputs
- 10 ... 30 VDC supply voltage when using the switching outputs
- Programmable current and voltage output functions
- All functions programmable via IO-Link / PACTware
- NC or NO switch functions, available as NPN or PNP version
- Process value for x and y-axis in the 16-bit IO-Link telegram
- M12 x 1 male, 8-pin
- Adapter cable RKC8.301T-1,5-RSC4T/TX320 required for IO-Link communication

| | |
|--------------------------|---|
| Type | B2N360-Q42-E2LIUPN8X2-H1181/S97 |
| ID | 1534117 |
| Measuring principle | Acceleration |
| General data | |
| Resolution | 16 bit |
| Measuring range | 0...360° |
| Measuring range x-axis | 0...360° |
| Measuring range y-axis | 0...360° |
| Number of measuring axes | 2 |
| Repeat accuracy | ≤ 0.07 % of full scale |
| | depending on the filter setting |
| Linearity deviation | ≤ 0.3 % of full scale, applies in the functional area of upper or lower hemisphere |
| Temperature drift | $\leq \pm 0.015$ %/K |

| | |
|--|--|
| Electrical data | |
| Operating voltage U_s | 7...30 VDC |
| | When using the analog outputs |
| Ripple U_s | ≤ 10 % U_{Bmax} |
| DC rated operating current I_s | ≤ 150 mA |
| Isolation test voltage | 0.5 kV |
| Short-circuit protection | yes |
| Wire break/reverse polarity protection | yes/Complete |
| Communication protocol | IO-Link |
| Output function | 8-pin, NO/NC, PNP/NPN, analog output |
| Voltage output | 0...10 V |
| Current output | 0...20 mA |
| | programmable via IO-Link, e.g. 4...20 mA |
| Load resistance voltage output | ≥ 4.7 k Ω |
| Load resistance current output | ≤ 0.4 k Ω |
| Sample rate | 500 Hz |
| Load-dump protection (DIN ISO 7637-2) | Severity degree IV/Level 4 |
| Current consumption | < 60 mA at 24 VDC |

Wiring Diagram



Functional principle

The TURCK inclinometers incorporate a micro-mechanical pendulum, operating on the principle of MEMS technology (Mikro Elektro Mechanic Systems).

The pendulum basically consists of two 'plate' electrodes arranged in parallel with a dielectric placed in the middle. When the sensor is inclined, the dielectric in the middle moves, causing the capacitance ratio between both electrodes to change.

| | |
|---------------------------------|---|
| IO-Link specification | V 1.1 |
| Programming | FDT/DTM |
| Frame type | 2.2 |
| Included in the SIDI GSDML | Yes |
| Mechanical data | |
| Design | Rectangular, Q42 |
| Dimensions | 67.7 x 42.5 x 42.5 mm |
| Housing material | Plastic, PA12-GF30 |
| Electrical connection | Connector, M12 × 1 |
| Environmental conditions | |
| Ambient temperature | -40...+85 °C |
| | Acc. to UL approval to +70 °C |
| Vibration resistance | 55 Hz (1 mm) |
| Shock resistance | 30 g (11 ms) |
| Protection class | IP68 |
| | IP69K |
| MTTF | 159 years acc. to SN 29500 (Ed. 99) 40 °C |
| Power-on indication | |
| Switching state | LED, Green |
| | LED, Yellow |

The downstream electronics evaluates this change in capacitance and generates a corresponding output signal.

| 12 V Bordnetz | | | | | | |
|------------------|-----|-----|-----|-----|-----|----|
| Impuls | 1 | 2a | 3a | 3b | 4 | 5 |
| Schärfegrad | III | III | III | III | III | IV |
| Ausfallkriterium | C | A | A | A | C | C |

| 24 V Bordnetz | | | | | | |
|------------------|-----|-----|-----|-----|-----|----|
| Impuls | 1 | 2a | 3a | 3b | 4 | 5 |
| Schärfegrad | III | III | III | III | III | IV |
| Ausfallkriterium | C | A | A | A | A | C |

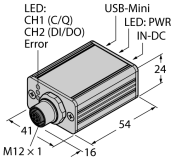
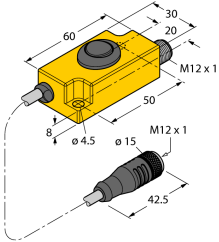
Programming instructions

| Parameters | Teach input | LED |
|--|--|--|
| Zero point offset (see notes) | Bridge Pin 3 (GND) and Pin 8 for 5 s | Status LED (yellow) flashes, after 1 s steady, after 3 s flashes, after 5 s steady |
| Measuring range start, X-axis (see notes) | Bridge Pin 1 (U _a) and Pin 8 for 1 s | Status LED (green) flashes, after 1 s steady |
| Measuring range end, X-axis (see notes) | Bridge Pin 1 (U _a) and Pin 8 for 3 s | Status LED (green) flashes, after 1 s steady, after 3 s flashes |
| Measuring range start, Y-axis (see notes) | Bridge Pin 3 (GND) and Pin 8 for 1 s | Status LED (yellow) flashes, after 1 s steady |
| Measuring range end, Y-axis (see notes) | Bridge Pin 3 (GND) and Pin 8 for 3 s | Status LED (yellow) flashes, after 1 s steady, after 3 s flashes |
| Pre-set mode Angle | Bridge Pin 1 (U _a) and Pin 8 for 10 s You must set a further teach input within 10 s or the device exits this mode automatically | Status LED (green) flashes, after 10 s steady |
| -10° ... +10° | Bridge Pin 3 (GND) and Pin 8 once briefly | LED (yellow) flashes once |
| -45° ... +45° | Bridge Pin 3 (GND) and Pin 8 twice briefly | LED (yellow) flashes twice |
| -60° ... +60° | Bridge Pin 3 (GND) and Pin 8 three times briefly | LED (yellow) flashes three times |
| -85° ... +85° | Bridge Pin 3 (GND) and Pin 8 four times briefly | LED (yellow) flashes four times |
| Pre-set mode Function | Bridge Pin 1 (U _a) and Pin 8 for 10 s You must set a further teach input within 10 s or the device exits this mode automatically | Status LED (green) steady, after 10 s flashes |
| Mode 1 "upper hemisphere", default setting | Bridge Pin 1 (U _a) and Pin 8 once briefly | LED (green) flashes once |
| Mode 2 "lower hemisphere" | Bridge Pin 1 (U _a) and Pin 8 twice briefly | LED (green) flashes twice |
| Mode 3, 2 x 360° | Bridge Pin 1 (U _a) and Pin 8 three times briefly | LED (green) flashes three times |
| Mode 4, X: 0...360°, Y: off | Bridge Pin 1 (U _a) and Pin 8 four times briefly | LED (green) flashes four times |
| Mode 5, Y: 0...360°, X: off | Bridge Pin 1 (U _a) and Pin 8 five times briefly | LED (green) flashes five times |
| Filter setting mode | Bridge Pin 3 (GND) and Pin 8 for 10 s You must set a further teach input within 10 s or the device exits this mode automatically | Status LED (yellow) steady, after 10 s flashes |
| 24 Hz, default setting | Bridge Pin 3 (GND) and Pin 8 once briefly | LED (yellow) flashes once |
| 15 Hz | Bridge Pin 3 (GND) and Pin 8 twice briefly | LED (yellow) flashes twice |
| Most effective filter setting | Bridge Pin 3 (GND) and Pin 8 three times briefly | LED (yellow) flashes three times |
| Default setting | Bridge Pin 3 (GND) or Pin 1 (UB) and Pin 8 for 15 s | LED flashes fast after 15 s |

Note:

Please note that with changing the zero point you also change the start and end point of the measuring range accordingly. Furthermore, it is not possible to offset the zero point in the "upper hemisphere" and "lower hemisphere" mode, since this would cause the measuring range to partially exceed the defined spread of 0°...±90° or rather 90°... 270°. This must also be observed when programming the start and end point.

Function accessories

| Type code | Ident no. | | Dimension drawing |
|----------------|-----------|---|---|
| USB-2-IOL-0002 | 6825482 | IO-Link Master with integrated USB port |  |
| TX3-Q20L60 | 6967118 | Teach adapter for 8-pin sensors |  |