

TURCK

Industrial Automation

INCLINOMETERS



Sense it! Connect it! Bus it! Solve it!

Inclinometers – Solutions for many applications



The rectangular biaxial Q20L60 sensors are available as $\pm 10^\circ$, $\pm 45^\circ$, $\pm 60^\circ$ and $\pm 85^\circ$ types. The uniaxial Q20L60 versions have a freely adjustable measuring range, $0^\circ \dots 360^\circ$. The Q42 are available with CANopen interface (CiA DS-301) or as IO-Link capable biaxial types adjustable within the full range of 360° .

No matter if applied in harvesters, agricultural and construction machinery, in ships, vehicles and airplanes or in machines, robots and solar plants:

Sensors for measuring and monitoring inclination are universally applicable and help to improve the safety and efficiency of operation processes.

The TURCK inclinometer series Q20L60 and Q42 are also suitable for fast production sequences and withstand impacts. The micromechanical pendulum inside, operates on the principle of MEMS technology (Micro Electro Mechanical Systems). Thanks to this technology, the sensors operate with a repeatability of 0.1 % and therefore highly precise and sensitive.



Operates highly precise within the full angular range

With a repeatability of 0.1%, the inclinometers are the right solution for high-precision applications, both Q20L60 and Q42 inclin feature a resolution of up to 0.01° depending on the measuring range.



Compact design, high protection rating

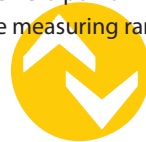
The very small 20 mm versions as well as the rectangular Q20L60 and the cubic Q42 are fully encapsulated and thus extremely rugged. A high protection rating of IP69K allows the application in extremely demanding environments.



The full range – Designs and functions

Biaxial 360° high-end, IO-link capable

- Usable as vibration sensor
- Fulfills e1 specification
- Current 4...20 mA
- Voltage 0...10 V
- Switching output PNP/NPN, NC/NO programmable
- Process value, 2 x 16-bit IO-Link telegram
- Parametrizable via IO-Link
- Filter settings parametrizable
- Teachable Zero point
- Teachable measuring range



IO-Link



Uniaxial 360° with CANopen interface

- Baud rates 10 kbps to 1 Mbps
- High sampling rates and bandwidths
- Parametrizable vibrostability
- Interface acc. to CiA DS-301/ Device profile acc. to CiA DSP-410
- All measured values and parameters adjustable via object directory (OD)
- Can be used as vibration sensor



Biaxial with CANopen interface

- $\pm 10^\circ, \pm 45^\circ, \pm 60^\circ$
- Baud rates 10 kbps to 1 Mbps
- High sampling rates and bandwidths
- Parametrizable vibrostability
- Interface acc. to CiA DS-301/ Device profile acc. to CiA DSP-410
- All measured values and parameters adjustable via object directory (OD)

Uniaxial 360° with analog output

- Current 4...20 mA
- Voltage 0.1... 4.9 V
- Adjustable measuring range

Biaxial with analog output

- $\pm 10^\circ, \pm 45^\circ, \pm 60^\circ$
- Current 4...20 mA
- Voltage 0.1...4.9 V
- Voltage, ratiometric



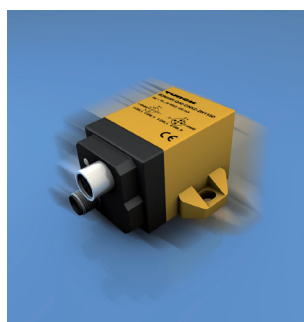
ZONE 22 ZONE 2

Uniaxial 360° with two switchpoints

- Two switchpoints, adjustable
- Hysteresis, adjustable
- Travel path, adjustable
- Switching status displayed via LED

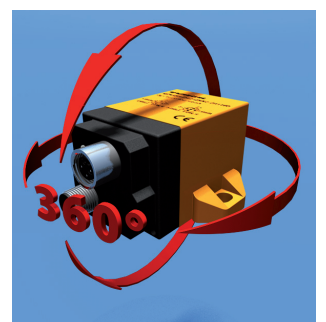
Individual filter settings

Individual filter settings to blank out possible interferences, allow the sensors to be used in many applications. The filter settings can be adjusted via IO-Link or teach pin.

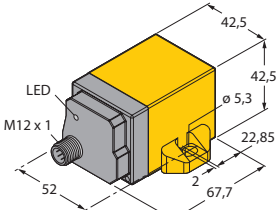
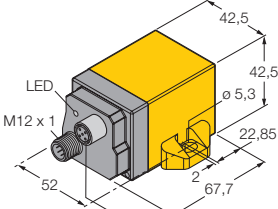


360° full angular range

With the biaxial inclinometers from TURCK the user can exploit the full angular range of 360° degrees for measurement.



Q42 series – Overview

Dimension drawing	Type code	Measuring range	Resolution	Output	Temperature range
	B2N360-Q42-E2LiUPN8X2-H1181	360 °	≤ 0,01°	biaxial, 4...20 mA, 4...20 mA, 0...10 V, PNP/NPN; NO/NC 2 x 16 bit IO-Link telegram, parametrizable via teach-pin or IO-Link	-25...+75 °C
	B2N360-Q42-E2LiUPN8X2-H1181/S97	360 °			-40...+75 °C
	B2N10H-Q42-CN2-2H1150	±10°	≤ 0,01°	Biaxial, CAN-open	-30...+70 °C
	B2N45H-Q42-CN2-2H1150	±45°			
	B2N60H-Q42-CN2-2H1150	±60°			
	B1N360V-Q42-CN2-2H1150	360°			

Freely parameterizable 3D inclinometer


The B2N360-Q42-E inclinometer from TURCK is unique on the market, freely parameterizable via IO-Link and precisely adaptable to individual demands. Depending on the local conditions and requirements, the user can individually adjust the filter settings, the measuring range, the PNP/NPN window and adjust the analog output to current or voltage values for the respective angular range. The sensor can be used as inclinometer or as vibration sensor, delivering output values according to the power of vibration. The angular value is not only provided as analog output but can also be transmitted via 2 x 16-bit IO-Link telegram.

Two types of inclinometers are available: An industrial type for -25...+75 °C and an e1 classified type for use in utility vehicles and construction machines. The e1 version withstands extreme temperatures in a range between -40...+85 °C and is powered with the board net typical operating voltage of 8...30 V. Both types are IP69K rated.

Features

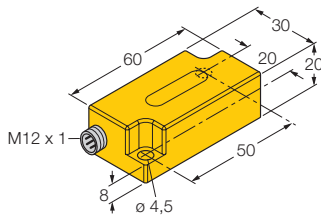
- Maximum range 360°, biaxial
- IO-Link capable
- Current/voltage output, adjustable
- 2 x 16-bit IO-Link telegram
- Individual filter settings for vibration/shock suppression
- Window function/switchpoints PNP/NPN
- Easy teaching via pin
- Can be used as inclinometer or as vibration sensor
- Protection IP69K



 IO-Link

Q20L60 series – Overview

Industrial Automation



Type code	Measuring range	Resolution	Output	Temperature range
B2N10H-Q20L60-2Li2-H1151	$\pm 10^\circ$	$\leq 0,04^\circ$	biaxial, 4...20 mA	-30...+70 °C
B2N45H-Q20L60-2Li2-H1151	$\pm 45^\circ$	$\leq 0,1^\circ$		
B2N60H-Q20L60-2Li2-H1151	$\pm 60^\circ$	$\leq 0,14^\circ$		
B2N85H-Q20L60-2Li2-H1151	$\pm 85^\circ$	$\leq 0,14^\circ$		
B2N60H-Q20L60-2Li2-H1151/S97	$\pm 60^\circ$	$\leq 0,14^\circ$		-40...+70 °C
B2N10H-Q20L60-2LU3-H1151	$\pm 10^\circ$	$\leq 0,04^\circ$	biaxial, 0.1...4.9 V	-30...+70 °C
B2N45H-Q20L60-2LU3-H1151	$\pm 45^\circ$	$\leq 0,1^\circ$		
B2N60H-Q20L60-2LU3-H1151	$\pm 60^\circ$	$\leq 0,14^\circ$		
B2N85H-Q20L60-2LU3-H1151	$\pm 85^\circ$	$\leq 0,14^\circ$		
B2N60H-Q20L60-2LU3-H1151/S97	$\pm 60^\circ$	$\leq 0,14^\circ$		-40...+70 °C
B2N85H-Q20L60-2LU3-H1151/S97	$\pm 85^\circ$	$\leq 0,14^\circ$		
B1N360V-Q20L60-2Li2-H1151			uniaxial, 4...20 mA	
B1N360V-Q20L60-2LU3-H1151	360°	$\leq 0,14^\circ$	uniaxial, 0.1...4.9 V	-30...+70 °C
B1N360V-Q20L60-2UP6X3-H1151			uniaxial, adjustable switch- points	
B2N45H-Q20L60-2LU3-H1151/3GD*	360°	$\leq 0,1^\circ$	biaxial, 0.1...4.9 V	
B2N45H-Q20L60-2Li2-H1151/3GD*	$\pm 45^\circ$	$\leq 0,1^\circ$	biaxial, 4...20 mA	
B1N360V-Q20L60-2Li2-H1151/3GD*			uniaxial, 4...20 mA	-30...+70 °C
B1N360V-Q20L60-2LU3-H1151/3GD*	360°	$\leq 0,14^\circ$	uniaxial, 0.1...4.9 V	
B1N360V-Q20L60-2UP6X3-H1151/3GD*			uniaxial, adjustable switch- points	

* Certified acc. to ATEX zones 2 (gases) and 22 (dusts).

Inclinometers according to ATEX 3GD

Inclinometers for use in potentially explosive atmospheres. The devices can be installed and operated in zone 2 (gases) and zone 22 (dusts).



To get all product information, just scan the QR code with a smartphone or webcam.

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