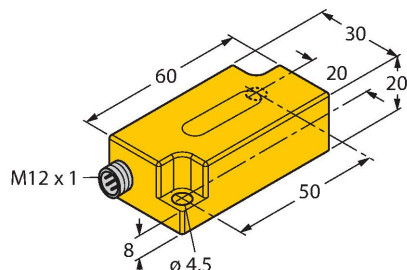


# B1N360V-Q20L60-2LU3-H1151/3GD

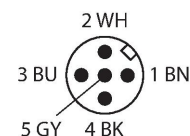
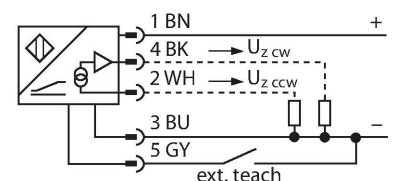
## Inclinometer



### Features

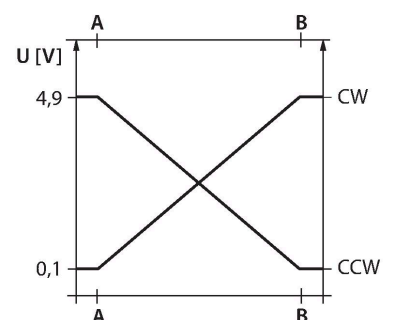
- Rectangular, plastic, PC
- Compact housing
- Connection via M12 × 1 male
- Response time 0.1 s
- 10...30 VDC
- Two counter-running 0.1 ... 4.9 V analog outputs improve machine safety through redundancy
- ATEX category II 3 G, Ex zone 2
- ATEX category II 3 D, Ex zone 22

### Wiring diagram



### Functional principle

The TURCK inclinometers incorporate a micromechanical 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. The downstream electronics evaluates this change in capacitance and generates a corresponding output signal.



### Technical data

Type	B1N360V-Q20L60-2LU3-H1151/3GD
ID	1534114
Measuring principle	Acceleration
<b>General data</b>	
Measuring range	0...360 °
Number of measuring axes	1
Mounting conditions	Vertical
Repeatability	≤ 0.2 % of measuring range  A - B
Linearity deviation	≤ 0.6 %
Temperature drift	≤ ± 0.05 %/K
Resolution	≤ 0.14 °
<b>Electrical data</b>	
Operating voltage U <sub>B</sub>	10...30 VDC
Isolation test voltage	0.5 kV
Short-circuit protection	yes
Wire break/reverse polarity protection	yes/Complete
Output function	5-pin, Analog output
Voltage output	0.1...4.9 V
	2 outputs, one for CW and one for CCW
Load resistance voltage output	≥ 40 kΩ
Response time	0.1 s
	Time for the output signal to reach 90% of the adjusted measuring range
Current consumption	50...105 mA (voltage-dependent)
Approval acc. to	ATEX declaration of conformity TURCK Ex-12002H X
Device marking	Ex II 3 G Ex nA IIC T5 Gc/II 3 D Ex tc IIIC T85 °C Dc

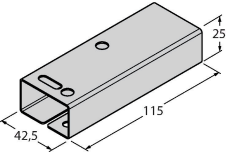
Technical data

Mechanical data	
Design	Rectangular, Q20L60
Dimensions	60 x 30 x 20 mm
Housing material	Plastic, PC
Electrical connection	Connector, M12 × 1
Environmental conditions	
Ambient temperature	-30...+70 °C
	For explosion hazardous areas see instruction leaflet
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 IP69K
MTTF	203 years acc. to SN 29500 (Ed. 99) 40 °C
Included in delivery	Security clip SC-M12/3GD

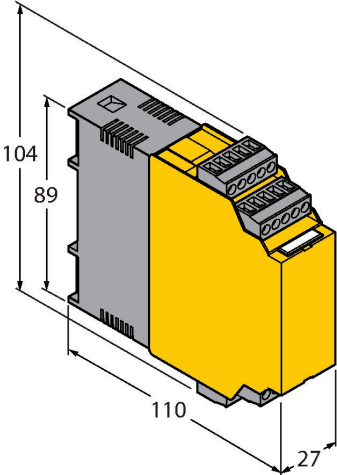
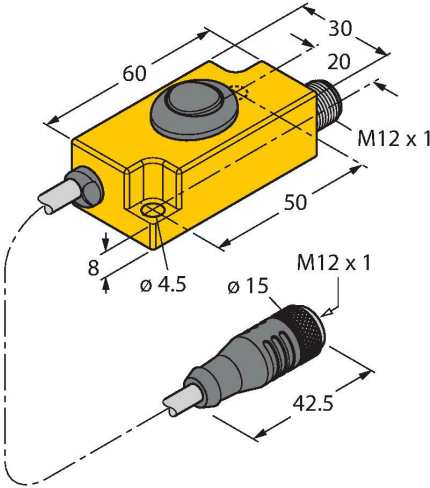
Mounting instructions

Mounting instructions/Description	
	<p>Adjusting the measuring range via TX1-Q20L60 teach adaptor</p> <p>Setting the angular range in CW direction:</p> <ol style="list-style-type: none"><li>1. Move sensor to start position</li><li>2. Press and hold Teach-Gnd until the output is set to &lt; 0.1 V (approx. 1 s)</li><li>3. Move sensor to end position</li><li>4. Press and hold Teach-Gnd until the output is set to 4.9 V (approx. 3 s)</li></ol> <p>Resetting the angular range:</p> <ol style="list-style-type: none"><li>1. Press and hold Teach-Gnd until the output is set to 2.5 V (approx. 6 s)</li><li>2. Angle measurement is set back to 360° degrees (in position "connector outgoing upwards" the sensor provides an output signal in accordance with 0° degrees)</li></ol>

Accessories

GUARD-Q20L60	A9684
	Protective housing for Q20L60 inclinometers for protecting against mechanical impact; material: Stainless steel

Accessories

Dimension drawing	Type	ID	
	IM43-13-SR	7540041	Trip amplifier; 1-channel; input 0/4... 20 mA or 0/2...10 V; supply of 2- or 3-wire transmitters/sensors; limit value adjustment via teach button; three relay outputs with one NO contact each; removable terminal blocks; 27 mm wide; universal voltage supply 20...250 VUC; further Limit value indicators are described in our "Interface Technology" catalog.
	TX1-Q20L60	6967114	Teach adapter for inductive encoders, linear position, angle, ultrasonic and capacitive sensors

## Instructions for use

Intended use	This device fulfills the directive 2014/34/EC and is suited for use in explosion hazardous areas according to EN60079-0:2009, EN60079-15:2010 and EN60079-31:2009. In order to ensure correct operation to the intended purpose it is required to observe the national regulations and directives.
For use in explosion hazardous areas conform to classification	II 3 G and II 3 D (Group II, Category 3 G, electrical equipment for gaseous atmospheres and category 3 D, electrical equipment for dust atmospheres).
Marking (see device or technical data sheet)	Ex II 3 G Ex nA IIC T5 Gc acc. to EN 60079-0:2009 and EN 60079-15:2010 and Ex II 3 D Ex tc IIIC T85 °C Dc acc. to EN 60079-0:2009 and EN 60079-31:2009
Local admissible ambient temperature	-30...+70 °C
Installation/Commissioning	These devices may only be installed, connected and operated by trained and qualified staff. Qualified staff must have knowledge of protection classes, directives and regulations concerning electrical equipment designed for use in explosion hazardous areas. Please verify that the classification and the marking on the device comply with the actual application conditions.
Installation and mounting instructions	Avoid static charging of cables and plastic devices. Please only clean the device with a damp cloth. Do not install the device in a dust flow and avoid build-up of dust deposits on the device. If the devices and the cable could be subject to mechanical damage, they must be protected accordingly. They must also be shielded against strong electro-magnetic fields. The pin configuration and the electrical specifications can be taken from the device marking or the technical data sheet. In order to avoid contamination of the device, please remove possible blanking plugs of the cable glands or connectors only shortly before inserting the cable or opening the cable socket.
Special conditions for safe operation	For devices with M12 connectors please use the supplied safety clip SC-M12/3GD. The safety clips SC-M12/3GD are not required when using the protective housing SG-Q20L60 or GUARD-Q20L60. Do not disconnect the plug-in connection or cable under voltage. Please attach a warning label permanently in an appropriate fashion in close proximity to the plug-in connection with the following inscription: Nicht unter Spannung trennen / Do not separate when energized. The device must be protected against any kind of mechanical damage and degrading UV-radiation. On selecting the approval-relevant accessories, always ensure that they are installed conform to the application. Load voltage and operating voltage of this equipment must be supplied from power supplies with safe isolation (IEC 30 364/UL508), to ensure that the rated voltage of the equipment (24 VDC +20% = 28.8 VDC) is never exceeded by more than 40%.
Service/Maintenance	Repairs are not possible. The approval expires if the device is repaired or modified by a person other than the manufacturer. The most important data from the approval are listed.