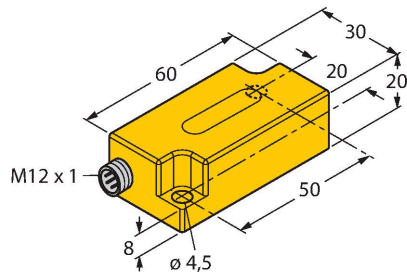# B1N360V-Q20L60-2UP6X3-H1151
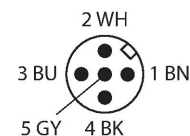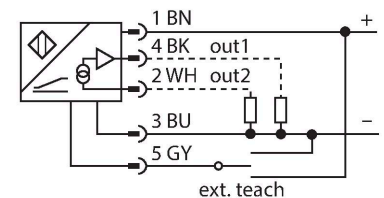# Inclinometer –   With two Programmable Switching Points

Features

- Rectangular, height 20 mm
- Plastic, PC
- Indication of operating voltage and switching state
- Two programmable switching outputs
- Switchpoints selectable in a range between 0° and 360°
- DC 4-wire, 10…30 VDC
- M12 x 1 male connector

Wiring diagram

Functional principle

Inclination is determined by a wear-free semiconducting sensor element.

Technical data

Type	B1N360V-Q20L60-2UP6X3-H1151
ID	1534051
Measuring principle	Acceleration
General data	
Measuring range	0…360 °
measuring range z-axis	0…360 °
Number of measuring axes	1
Mounting conditions	Vertical
Repeat accuracy	≤ 0.2 % of full scale
Absolute accuracy (at 25 °C)	± 0.5 °
Temperature coefficient typical	0.03 °/K
Resolution	≤ 0.14 °
Electrical data	
Operating voltage	10…30 VDC
Residual ripple	≤ 10 % U_{ss}
Residual current	≤ 0.1 mA
Isolation test voltage	≤ 0.5 kV
Output current	≤ 500 mA
Response delay	500 ms
Dropout delay	350 ms
Short-circuit protection	yes / Thermal
Wire breakage/Reverse polarity protection	yes / Complete
Output function	5-pin, NO/NC, 2 × PNP
	Surge protection from +Ub to (Ub - 40V)
Current consumption	35 mA

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
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 IP69K
MTTF	399 years acc. to SN 29500 (Ed. 99) 40 °C
Power-on indication	LED, Green
Switching state	2 × LEDs, Yellow

Mounting instructions

Mounting instructions/Description
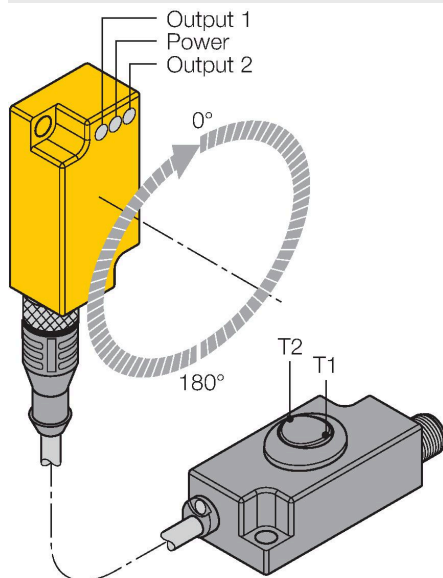
The switchpoints are set with the TX1-Q20L60 teach adapter
By actuating the toggle switch T1 (OUT 1), a bridge is formed between GND and pin 5.
By actuating the toggle switch T2 (OUT 2), a bridge is formed between UB and pin 5.
The switch-on and off points are freely selectable within 360° degrees.

You can teach-in the switching points either clockwise or counter-clockwise.

Before programming the wanted switch-on and off points, move the sensor in start position. For details on programming, please see next page. Should you wish to set the switch-off point yourself, the sensor must also be positioned at this point. The sensor must be installed in vertical position.

A further programming method has already a preset range of 180°. Here, only the switch-on point must be set.

Accessories

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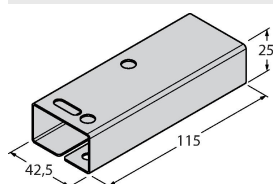
Protective housing for Q20L60 inclinometers for protecting against mechanical impact; material: Stainless steel

Instructions for use

Switchpoint adjustable as NO contact counter-clockwise or as NC contact clockwise
Press T1 (T2) for 5 s
Power LED flashes
Place the sensor in the wanted start position
Press T1 (T2) for 1 s to set the switch-on point
Power LED and Output 1 (2) LED flash
Place the sensor in the wanted end position
Press T1 (T2) for 3 s to set the switch-off point
Power LED and Output 1 (2) LED flash for 3 s then turn steady
Teach process completed, sensor ready for operation.

Switchpoint adjustable as NO contact clockwise or as NC contact counter-clockwise
Press T1 (T2) for 5 s
Power LED flashes
Place the sensor in the wanted start position
Press T1 (T2) for 3 s to set the switch-on point
Power LED and Output 1 (2) LED flash fast
Place the sensor in the wanted end position
Press T1 (T2) for 1 s to set the switch-off point
Power LED and Output 1 (2) LED flash for 3 s then turn steady
Teach process completed, sensor ready for operation.

Switchpoint adjustable as NO contact counter-clockwise or as NC contact clockwise (180° default setting)
Press T1 (T2) for 5 s
Power LED flashes
Place the sensor in the wanted start position
Press T1 (T2) for 1 s to set the switch-on point
Power LED and Output 1 (2) LED flash
Press T1 (T2) for 1 s to set the travel path 180 ° and the hysteresis 1 °
Power LED and Output 1 (2) LED flash for 3 s then turn steady
Teach process completed, sensor ready for operation.

Switchpoint adjustable as NO contact clockwise or as NC contact counter-clockwise (180° default setting)
Press T1 (T2) for 5 s
Power LED flashes
Place the sensor in the wanted start position
Press T1 (T2) for 3 s to set the switch-on point
Power LED and Output 1 (2) LED flash fast
Press T1 (T2) for 3 s to set the travel path 180 ° and the hysteresis 1 °
Power LED and Output 1 (2) LED flash for 3 s then turn steady
Teach process completed, sensor ready for operation.

T1 = Switching output 1; T2 = Switching output 2
Default settings:
Hysteresis 1°