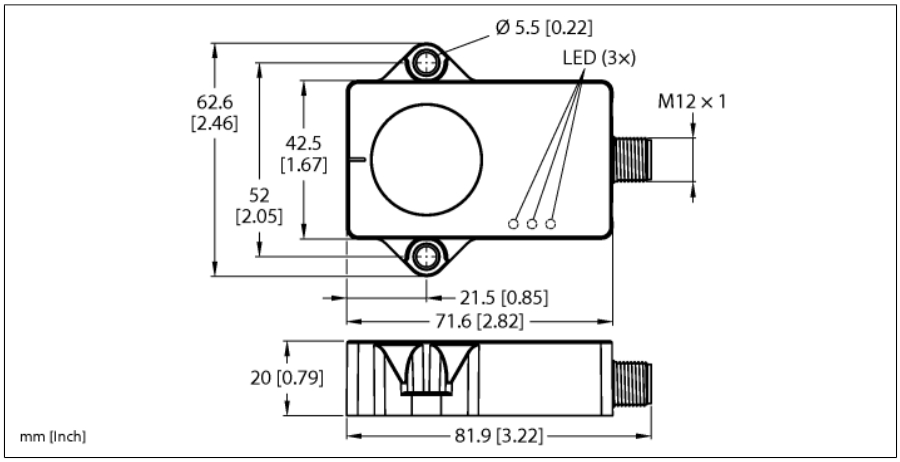
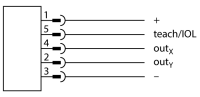
Dynamic Inclinometer
With Analog Outputs
B2NF45H-QR20-2LI2X3-H1151

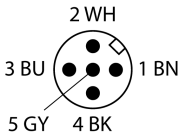


Type	B2NF45H-QR20-2LI2X3-H1151
ID	100031517
Measuring principle	Combination of gyroscopes and accelerometers
General data	
Resolution	16 bit
Measuring range	-45…45°
Number of measuring axes	2
Repeat accuracy	≤ 0.12 % of full scale
Linearity deviation	≤ 0.4 %
Temperature drift	≤ ± 0.025 %/K
Electrical data	
Operating voltage U_B	15…30 VDC
Ripple U_{ss}	≤ 10 % U_{Bmax}
Isolation test voltage	0.5 kV
Short-circuit protection	yes
Wire break/reverse polarity protection	yes/yes
Output function	5-pin, Analog output
Current output	4…20 mA
Load resistance voltage output	≥ 4.7 kΩ
Load resistance current output	≤ 0.4 kΩ
Current consumption	< 80 mA
Mechanical data	
Design	Rectangular, QR20
Dimensions	71.6 x 62.6 x 20 mm
Housing material	Plastic, Ultem
Electrical connection	Connector, M12 × 1

- Rectangular, plastic, Ultem
- Status displayed via LED
- Angle detection along two axes with ±45 ° measuring range
- High protection class IP68/IP69K
- Protected against salt spray and rapid temperature change
- 15…30 VDC
- M12 × 1 male connector, 5-pin
- Analog output 4…20 mA
- The center point of the measuring range can be adjusted using teach adaptor TX1-Q20L60
- Individual parameterization possible with USB-2-IOL-0002

Wiring Diagram





Functional principle

The dynamic inclinometers use an acceleration measuring cell and a gyroscope sensor to determine angles. Influences caused by vibrations or interfering acceleration are minimized by applying an intelligent fusion algorithm to the acceleration data and the rotation rate values. This enables the sensor to output a robust signal with impressive precision and speed, even in moving, dynamic applications.

The robust sensors are positioned with the cast side on a flat surface so that the casting compound is covered. The sensor is then secured with two screws.

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Environmental conditions	
Ambient temperature	-40…+85 °C
Temperature changes (EN60068-2-14)	-40… +85 °C; 20 cycles
Vibration resistance (EN 60068-2-6)	20 g; 5 h/axis; 3 axes
Shock resistance (EN 60068-2-27)	200 g; 4 ms ½ sine
Protection class	IP68 IP69K
MTTF	297 years acc. to SN 29500 (Ed. 99) 40 °C

Power-on indication	LED, Green
Measuring range display	LED, yellow
UL certificate	E351232

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Teach instructions

Activation of the teach process

	Bridge between pin 5 and pin 1	**LED green**	**LED yellow**
Activate teaching	Before switching on the supply voltage, set the teach bridge, then switch on the voltage, then remove the bridge immediately after starting the sensor	Teach process active: 700 ms/100 ms	
The teach process is automatically deactivated after 30 s. The yellow CENTER LED and the green LED flash alternately and then return to normal operation.			

Teach sequence for center point

	Bridge between pin 5 and pin 1	**LED green**	**LED yellow**
Activate sequence*	Set bridge for 2…8 s	After 2 s of flashing at 1 Hz	
Set center point**	Bridge for 2…8 s		After 2 s of flashing at 1 Hz

Factory setting

	Bridge between pin 5 and pin 1	**LED green**	**LED yellow**
Activate sequence for factory settings*	Bridge for 8…14 s	After 2 s of flashing at 2 Hz	
Reset to factory settings**	Bridge for 2…8 s		After 2 s of flashing at 1 Hz

*Teach sequence remains active for 30 s, then returns to normal operation

**After the center point/measuring range/factory settings have been established, the teach sequence ends and automatically returns to the activated teach process

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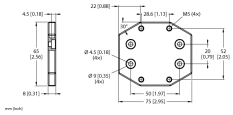
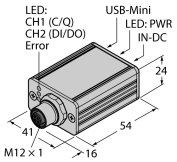
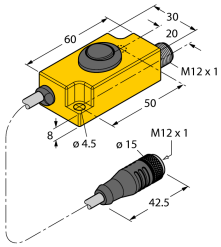
Accessories

Type code	Ident no.		Dimension drawing
AP-Q20L60-QR20	100029224	Adapter plate for mounting the QR20 housing with mounting holes for the Q20L60 housing	

Function accessories

Type code	Ident no.		Dimension drawing
USB-2-IOL-0002	6825482	IO-Link Master with integrated USB port	
TX1-Q20L60	6967114	Teach adapter for inductive encoders, linear position, angle, ultrasonic and capacitive sensors	

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