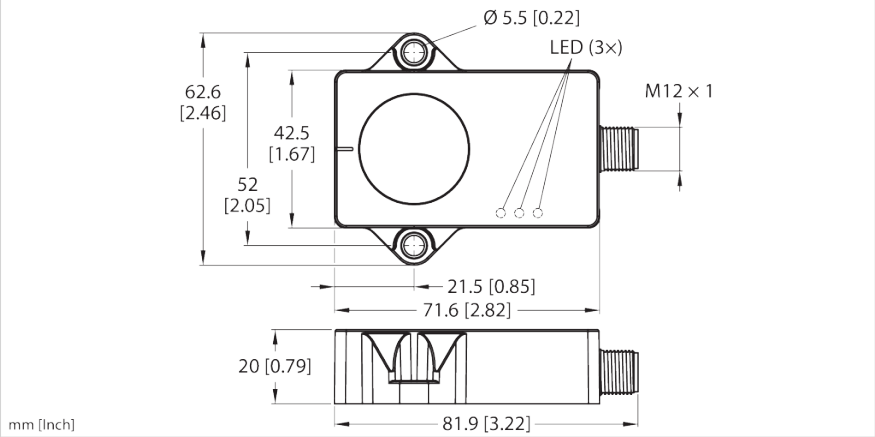
CMVT-QR20-IOLX3-H1141/3GD

Vibration and temperature sensor
For condition monitoring with IO-Link



Typ	CMVT-QR20-IOLX3-H1141/3GD
Ident-No.	100051195

Technical data

Vibration - Acceleration	
Sampling rate of the acceleration measuring cell	6,6 KHz
RMS measuring range	16 g
RMS resolution	0.01 g
RMS linearity deviation, typical	≤ ±3 % @ 78 Hz
RMS repeatability, typical	≤ ±5 % @ 78 Hz
Vibration - Speed	
RMS measuring range	0...320 mm/s @ 78Hz
RMS resolution	0.01 mm/s
RMS linearity deviation, typical	≤ ±1 % @ 78 Hz
RMS repeatability, typical	≤ ±5 % @ 78 Hz
Temperature	
Temperature measuring range	-40...85 °C
Temperature linearity deviation	≤ 1 %
Temperature repeatability	≤ ±2,4 %
Power supply	
Operating voltage U_B	18...30 VDC
Electrical data	

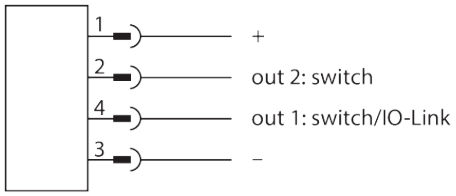
Features

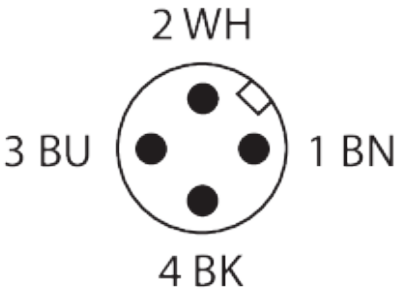
- Rectangular, plastic, Ultem
- Status displayed via LED
- Acceleration and speed output RMS or peak to peak of the vibration
- Acceleration measuring range 16 g
- Detection over three axes
- Temperature measuring range -40 °C… +85 °C
- High protection class IP68/IP69K
- ATEX category II 3 G, Ex zone 2
- ATEX category II 3 D, Ex zone 22
- 18…30 VDC, communication via IO-Link
- 10…30 VDC, SIO mode PNP/NPN switching outputs
- Connector, M12 × 1, 4-pin

Technical data

Wire break/reverse polarity protection	yes
Current consumption	< 50 mA
Isolation test voltage	≤ 0,5 kV
Residual ripple	≤ 10 % U_{SS}
Interfaces	
Communication protocol	IO-Link
IO-Link	
Communication mode	COM 3 (230.4 kBaud)
Function Pin 2	SIO
Function pin 4	IO-Link/SIO
Mechanical data	
Design	Rectangular, QR20
Construction type designation	QR20
Dimensions	71,6 mm x 62,6 mm x 20 mm
Housing material	Plastic, Ultem
Electrical connection	Connector, M12 × 1
Environmental conditions	
Ambient temperature	-40...+85 °C
Temperature changes (EN60068-2-14)	-40… +85 °C; 20 cycles
Shock resistance (EN 60068-2-27)	200 g; 4 ms ½ sine
Vibration resistance (EN 60068-2-6)	20 g; 5 h/axis; 3 axes
Protection class	IP68 IP69K
Tests/approvals	
UL registration number	E351232
Approval acc. to	ATEX declaration of conformity, TURCK Ex-25001H X
Device marking	Ex II 3 G Ex ec IIC T4 Gc/II 3 D Ex tc IIIC T110 °C Dc
MTTF	548 Jahre acc. to SN 29500 (Ed. 99) 40 °C
Displays/controls	
Power-on indication	LED, Green
Switching state	2 × LEDs, Yellow

Wiring diagram

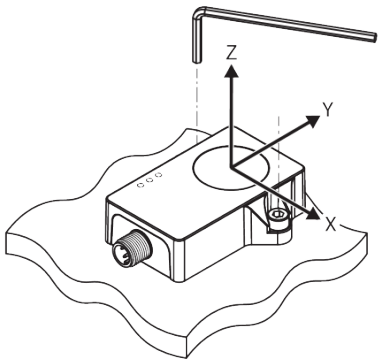




Functional principle

Condition monitoring sensors help to prevent unplanned downtimes and malfunctions during the production process. They monitor the condition of the machine as a preventative measure.
Using the CM sensors can prevent system downtime or machine damage, which in turn improves system effectiveness and allows uninterrupted operation.
The use of CMVT sensors also directly benefits the user in a quantifiable way.
Information on vibration and temperature is output via the standardized IO-Link protocol.
Warning and alarm messages can also be displayed via simple switching outputs.

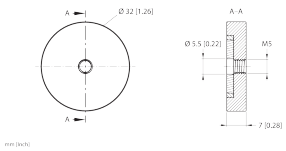
Installation instructions

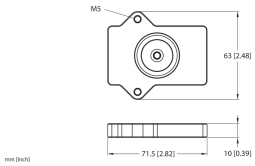


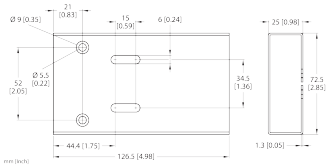
4 mm
3 Nm

Installation information:
A green LED indicates whether the sensor is being properly supplied with power. The green flashing LED indicates that IO-Link communication is active.
In addition, the yellow LEDs indicate whether a threshold value for the switching outputs is being exceeded. The threshold values can be parameterized according to ISO 10816-3, which contains critical vibrations for different types of machines.
It is also possible to freely define the threshold values.

Mounting accessories

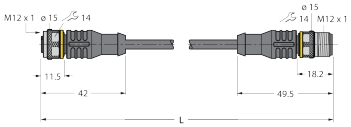
MAGKIT-M5	100036073
	Mounting magnet for mounting the CMVT-QR20; pack contents: 2 magnets and 2 mounting screws

MAGKIT-QR20	100051844
	Mounting magnet for mounting the CMVT-QR20; includes two mounting screws; the magnetic mount for the sensor offers a flexible mounting option. Permanent and operationally secure fixing depends on the application conditions and must be evaluated by the user.

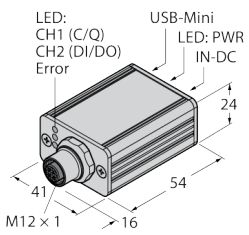
GUARD-QR20	100027185
	Protective housing for QR20 inclinometers for protecting against mechanical impact; material: stainless steel

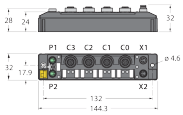
Connectivity accessories

RKC4.4T-2/TXL	6625503
	Connection cable, M12 female connector, straight, 4-pin, cable length: 2 m, jacket material: PUR, black; cULus approval

RKC4.4T-2-RSC4.4T/TXL	6625608
	Extension cable, M12 female connector, straight, 4-pin to M12 male connector, straight, 4-pin; cable length: 2 m, jacket material: PUR, black; cULus approval

Functional accessories

USB-2-IOL-0002	6825482
	IO-Link Master with integrated USB port

TBEN-S2-4IOL	6814024
	Compact multiprotocol I/O module, 4 IO-Link Master 1.1 Class A, 4 universal PNP digital channels 0.5 A

Instructions for use

Intended use	This device complies with 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.
Bestimmungsgemäße Verwendung 3	In order to ensure that the device is operated as intended, the national regulations and directives must be observed.
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).
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.
Installation / Inbetriebnahme 2	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.
Einbau-Montagehinweis 2	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.
Einbau-Montagehinweis 3	The pin configuration and the electrical specifications can be taken from the device marking or the technical data sheet.
Einbau-Montagehinweis 4	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.
BA special conditions 1 GBS	For devices with M12 connectors please use the supplied safety clip SC-M12/3GD. The safety clip SC-M12/3GD is not required when using the protective housing GUARD-QR20.
BA special conditions 2 GBS	Do not disconnect the plug-in connection or cable under voltage.
BA special conditions 4 GBS	The device must be protected against mechanical damage caused by energy > 4 joules and harmful UV rays. The GUARD-QR20 protective housing can be used for this.
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.