

TURCK

Your Global Automation Partner

CMVT Vibration/Temperature Sensors for Condition Monitoring



Condition Monitoring through Vibration Monitoring

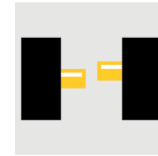
Every machine generates vibrations — even when new. However, the vibration states can change due to various factors, such as imbalances, loose parts, misalignment of shafts or contamination of rotor blades.



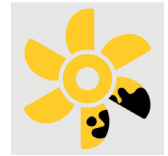
Imbalance



Loosening



Misalignment



Contamination

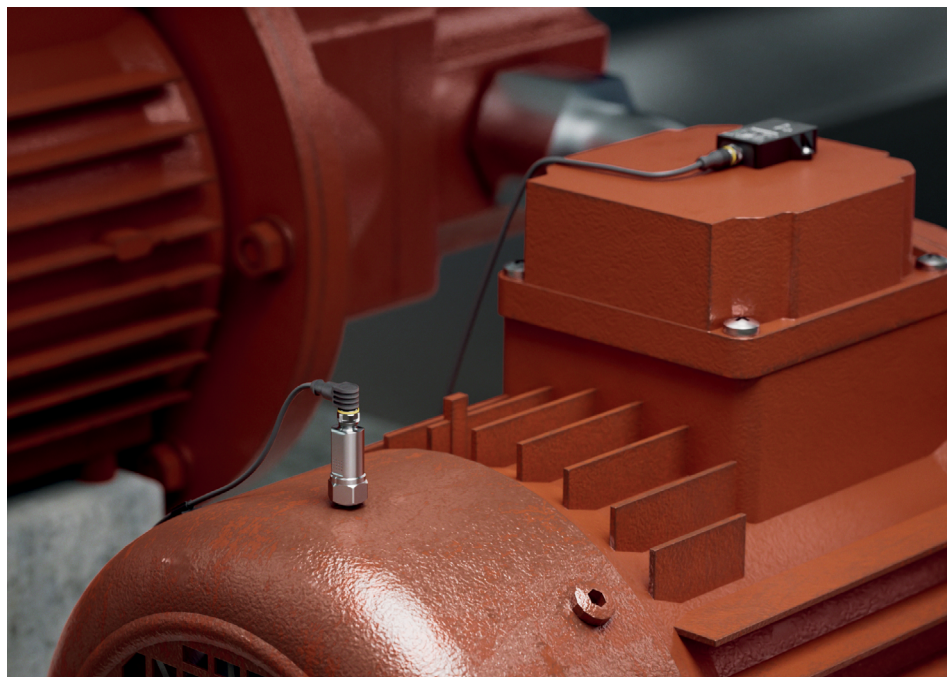
ISO 10816-3 specifies precise limit values for the effective vibration velocity of industrial rotary machines. These limit values are used to assess the condition of the machine. They indicate whether the machine is operating in a good condition similar to new, whether short-term operation can still be tolerated despite increased vibrations but rapid maintenance is recommended, or whether the vibrations are so severe that machine damage is to be expected.

The CMVT sensor analyzes the vibration behavior of machines and detects critical machine conditions. On the one hand, the CMVT supports the planning of maintenance intervals in the sense that maintenance is carried out only when it is really necessary; on the other hand, the sensor improves the safety of machine operation by warning in good time when a critical vibration condition is imminent.

In addition to an increase in vibration, machine faults frequently cause rising temperatures due to greater friction. For this reason, the CMVT detects the

temperature in addition to the vibration, which adds a further parameter to the condition monitoring of the machine. All these considerations increase the

availability and effectiveness of the machine and ensure that imminent faults are detected and rectified in good time, thus preventing expensive damage and unplanned machine downtimes from occurring in the first place.



QR20: Robust and maintenance-free

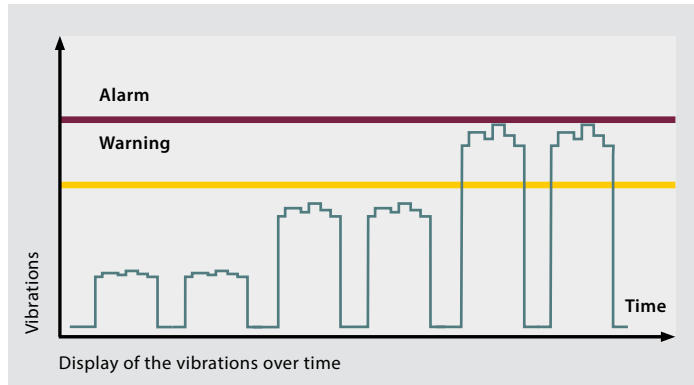
The CMVT in the QR20 design enables maintenance-free use even in demanding environments. This is ensured by the robust housing with protection to IP68/IP69K, the high shock resistance of 200 g and a wide temperature range of -40 °C...+85 °C.



M8T: Flexibly connectable

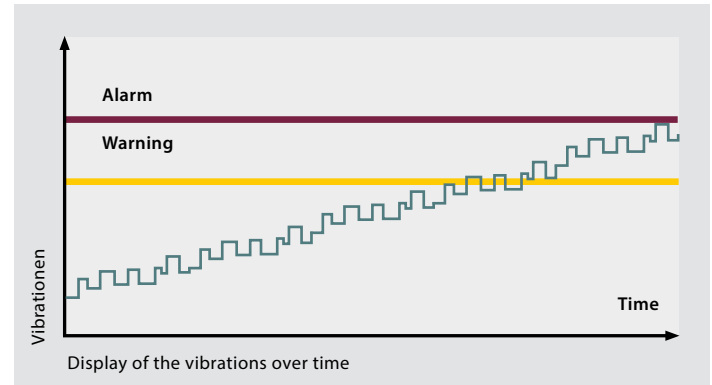
The CMVT-M8T has an M8 thread for mounting on existing service holes. Mounting adapters are available to suit many different thread sizes up to M30 and NPT threads. In addition to IO-Link and PNP, this sensor design also offers a 4...20-mA analog interface.

Applications with recurring vibrations



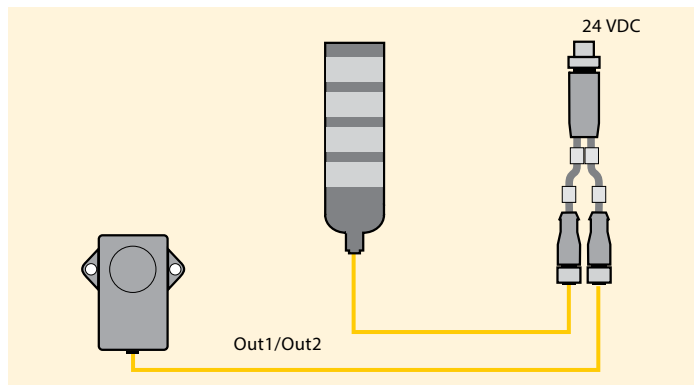
If the vibration increases during recurring processes, this can indicate damaged or worn tools. The CMVT offers the possibility to parametrize alarm or warning limits as required and to activate simple switching outputs when these limits are exceeded.

Fan with increasing imbalance



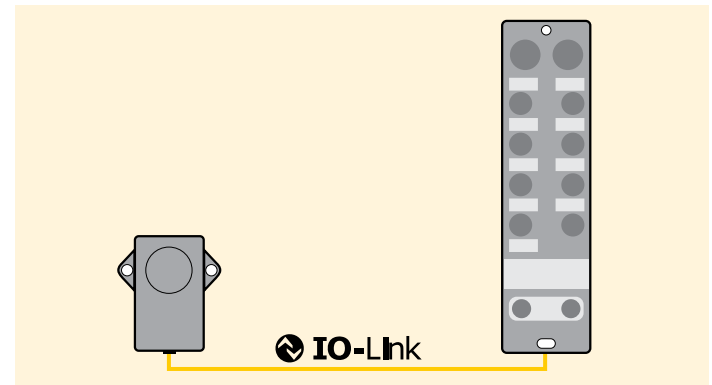
The smallest changes in vibration behavior or a steady increase in vibration velocity can be output as a process value via IO-Link and transferred to the controller for further analysis.

Solution without PLC integration



Simple retrofit of existing systems without PLC integration via switching outputs on a tower light

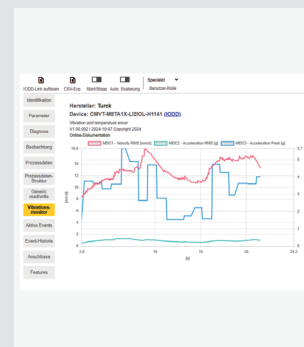
Communication via IO-Link



Simple commissioning of the sensor using standardized IO-Link protocol



Simple integration via IO-Link
The IO-Link protocol guarantees simple data transmission and generates additional information, such as sensor identification or the operating hours. The sensors can also be parametrized so that switching outputs are activated as a warning or alarm when threshold values are exceeded.



TAS vibration monitor
For easy visualization and analysis of vibration data, the web-based vibration monitor in the free TURCK Automation Suite (TAS) provides the best means of support. All TURCK IO-Link masters have the vibration monitor implemented directly as a web server.

Types and Features

TAS vibration monitor

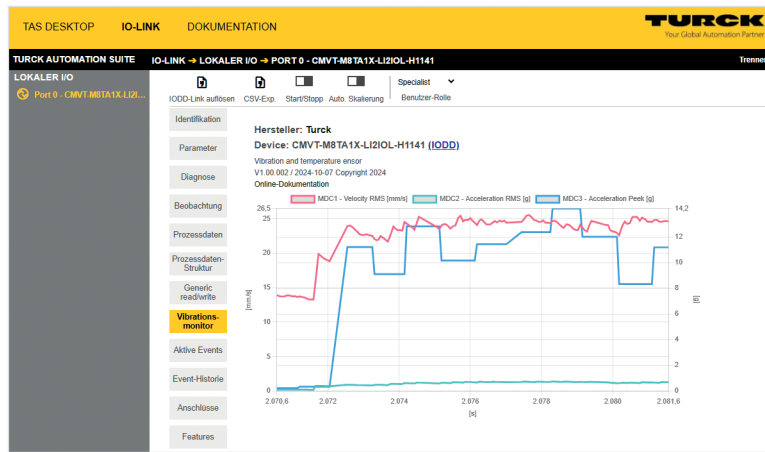
The vibration monitor is a web-based tool that is already implemented on all TURCK IO-Link masters. The vibration data recorded can be displayed very easily in the web

browser and made available for further analysis via data export. Setting individual vibration velocity threshold values via the vibration monitor is also particularly

easy. PNP/NPN outputs are set to activate a warning or alarm when the threshold values are exceeded.

If a TURCK IO-Link master is not used, the IIoT and service tool TAS (TURCK Automation Suite) provides the best solution for easy implementation. This free tool also allows web-based access to the full performance spectrum of the vibration monitor thanks to a connection from the PC via the USB-2-IOL-0002 parametrization device to the CMVT vibration sensor.

- Easy analysis of vibration and temperature
- Simple parameterization process, e.g. for setting the threshold values of switching outputs, for activating warnings or alarms



Visualization of the RMS values of acceleration and speed via a detection axis

ID	Type designation	Description
100016543	CMVT-QR20-IOLX3-H1141	CMVT sensor with M12 connector, QR20 housing, 3 measuring axes, IO-Link, PNP/NPN switching outputs
100029966	CMVT-QR20-IOLX3-0.3-RS4	CMVT sensor with cable outlet and M12 connector, QR20 housing, 3 measuring axes, IO-Link, PNP/NPN switching outputs
100050420	CMVT-M8TA1X-LI2IOL-H1141	CMVT sensor, M8T housing made of stainless steel with M8 screw-in thread, 1 measuring axis, IO-Link, PNP switching outputs, 4 to 20 mA

Note: The M8T design is also available as a purely analog version with a customer-specific configuration.

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