

CMTK – CONDITION MONITORING TOOLKIT

The plug-and-play system for monitoring
the condition of your equipment



An alarm that promises good things

Less unplanned downtime
and more productivity





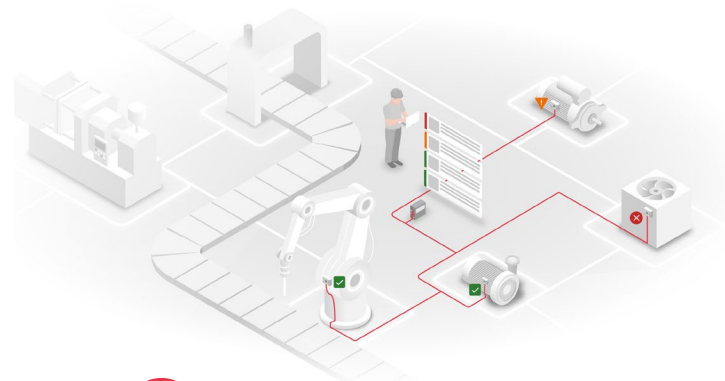
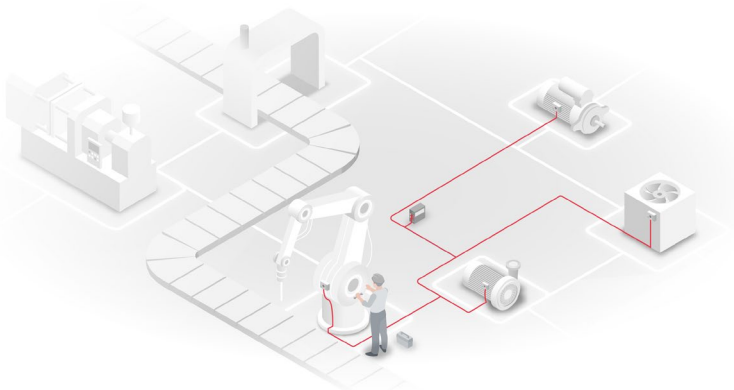
CMTK

The basis for your condition monitoring system



Plug-and-play commissioning

The CMTK is ready to use right out of the box. The sensor data is automatically interpreted, loaded into the integrated database, and then visualized. The system can be optimally adapted to your needs in just a few simple steps.



Keep informed

Easily set up notifications when sensor data indicates a specific machine behavior. Use the interactive BCM Assistant to define monitoring tasks for different machine types.

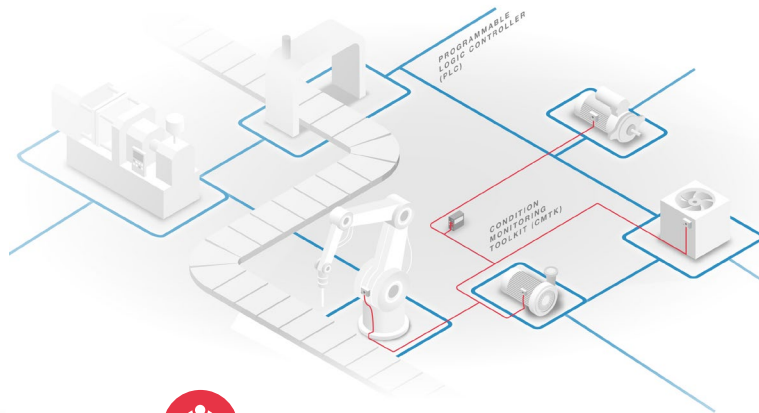
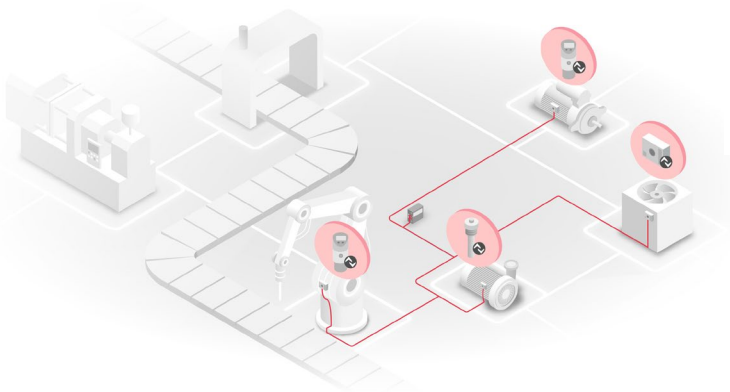


CMTK The basis for your condition monitoring system



High compatibility with many sensors

Combine the CMTK with all IO-Link sensors available on the market. For example, our all-rounder, the BCM sensor, offers functions such as vibration analysis in the time and frequency domains as well as temperature monitoring.



Standalone system

The CMTK can operate completely independently of your plants' existing IT and automation networks. This way, you avoid additional data traffic and minimize disruption to your existing systems.



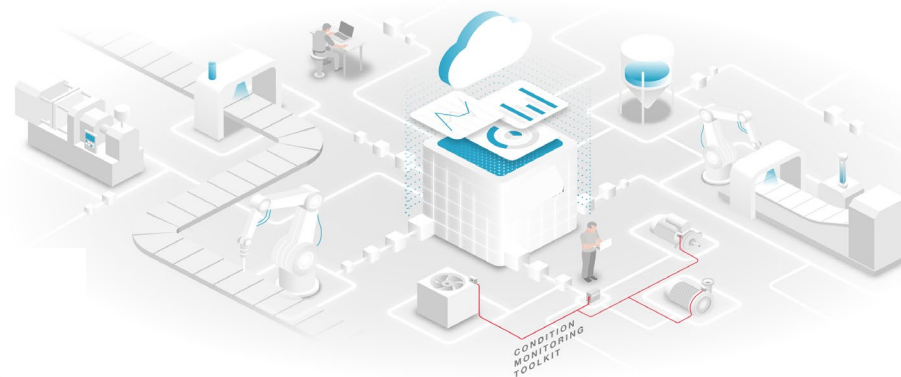
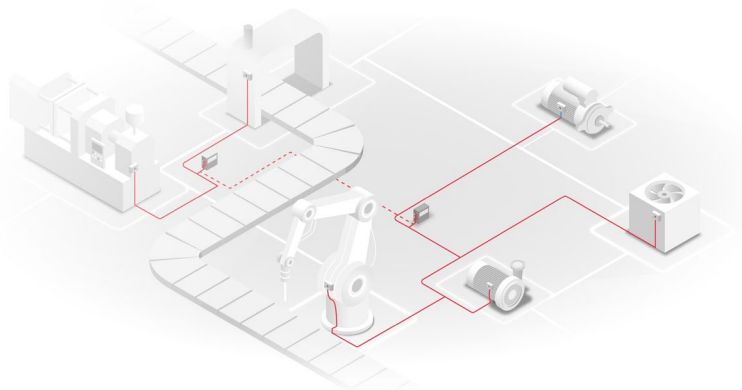
CMTK

The basis for your condition monitoring system



Unlimited expandability

Expand the CMTK with up to five IO-Link masters to integrate up to 44 IO-Link sensors. If that's not enough, you can modularly expand additional CMTK devices with the connected IO-Link masters, allowing you to scale up your condition monitoring system as needed.



Connected upwards

The CMTK provides its data via OPC/UA and MQTT so that you can further process it in local networks or cloud systems.

Product Highlights

Beyond a network module



**CMTK**

The basis for your condition monitoring system

User-friendly software

- Easy system setup and customization thanks to our plug-and-play approach.
- The software runs locally on the hardware and can be accessed via a web browser.
- One-time payment, no hidden license or subscription fees.
- Modular expansion thanks to the new app concept.
- Continuous development, e.g., through new apps.



Powerful hardware

- ARM 64-bit quad-core processor, 1.8 GHz
- 4 GB RAM
- Internal memory: 32 GB eMMC
- SD card support
- Ports for connecting four IO-Link devices
- 2 LAN ports
- IP20

Modular extensions

- Up to five IO-Link masters for integrating as many as 40 additional IO-Link devices
- Analog-to-digital converter for integrating analog sensors and PT100 or PT1000 temperature sensors

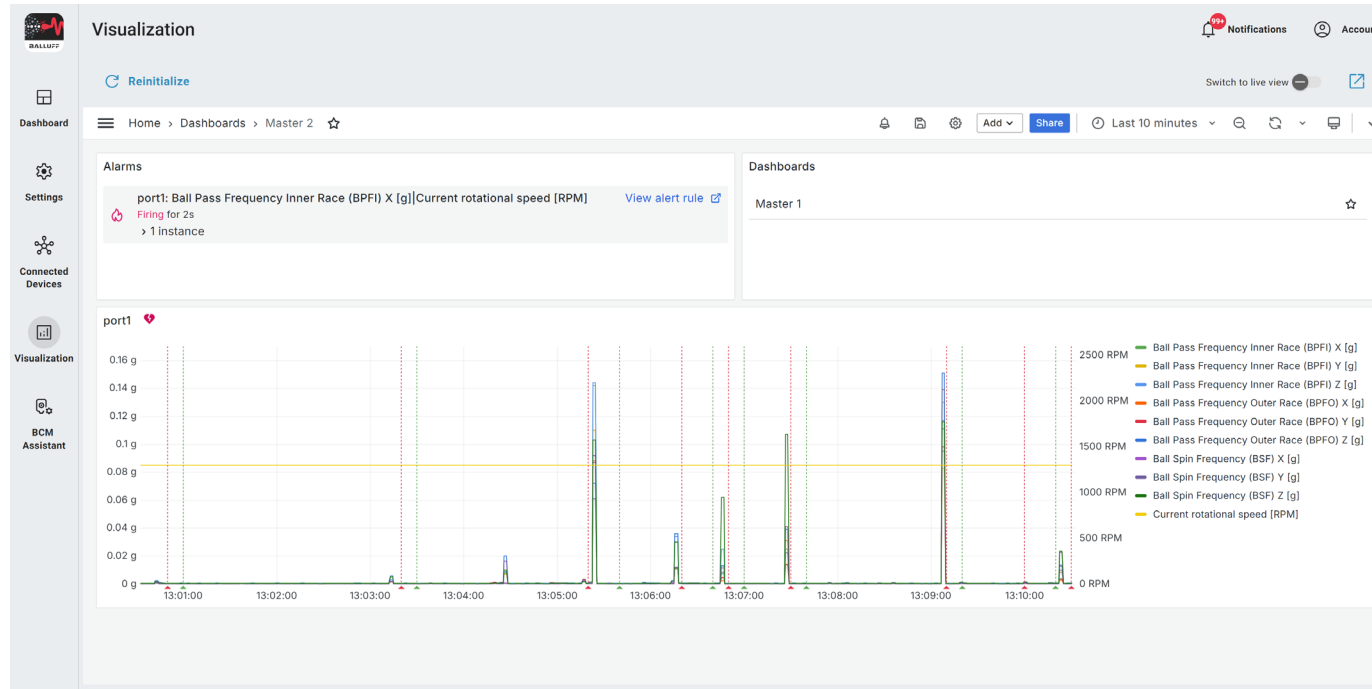
Sensor data is automatically interpreted, stored and visualized

Balluff GmbH | CMTK



CMTK

Visualize sensor data, monitor thresholds and identify trends



- **Easy to set up**
Generate visualization automatically based on the connected sensors.
- **All information in one dashboard**
Monitor current sensor values and thresholds or identify trends.
- **Highly customizable**
Customize charts, alarms, and more to suit your needs.



CMTK

Customize your system according to your needs
– simple, fast and modularly expandable

The screenshot displays the Balluff CMTK dashboard. On the left is a sidebar with icons for Dashboard, Settings, Connected Devices, Visualization, and BCM Assistant. The main area shows three device cards: 'Radial Fan', 'Electric Motor', and 'Centrifugal pump'. Each card indicates 'Device connected' with a green checkmark, shows notification and message counts, and includes a 'Check now' button. A 'Settings' button is visible on the right of the first two cards. The top right of the dashboard has 'Notifications' and 'Account' links.

- Expandable IO-Link ports**
 Expand the number of IO-Link ports with up to five additional IO-Link masters, each with 8 ports.
- Multi-CMTK**
 Display and access multiple CMTKs via a central dashboard.
- Daisy-Chain**
 For easy cabling, you can daisy-chain multiple CMTK modules and IO-Link masters in a row.



CMTK

Quick and easy integration – perfect data source for your IT systems

Communication with IT systems

Send data easily and conveniently to your host systems (e.g., cloud applications, local databases) via MQTT or OPC-UA.

Communication with the PLC

Capture additional machine data directly from the PLC via OPC UA. Conversely, you can also provide data to the PLC.

Versatile data

Subscribe to process data, status information and alarms



Ordering Information

Network technology, power supply
and sensors



CMTK Ordering information & accessories

CMTK – Condition Monitoring Toolkit

BNI00L2



1 IO-Link masters for expanding the IO-Link ports

- **BNI00L1:** 8x IO-Link, entry-level version with outstanding cost-benefit ratio
- **BNI00K6:** 8x IO-Link, with display, robust metal housing for extreme conditions



2 IO-Link hubs for the integration of analog sensors

- **BNI00AJ:** 8x analog, Voltage: 0...10 V/-10...10 V/0...5 V/-5...5 V/5...10 V, Current: 4...20 mA/ 0...20 mA, Temperature: Pt100/Pt1000/ Thermocouple Type J & K



3 Power supplies and switches

- **BAE0111:** Power supply unit for the control cabinet (3.12 A)
- **BNI0067:** Unmanaged switch with 8x Ethernet TCP 10Base-T/100Base-TX



4 Smart BCM Condition Monitoring Sensors

- **BCM0001:** Standard version with vibration and temperature
- **BCM0004:** Advanced version with vibration and temperature
- **BCM0003:** Premium version with frequency analysis

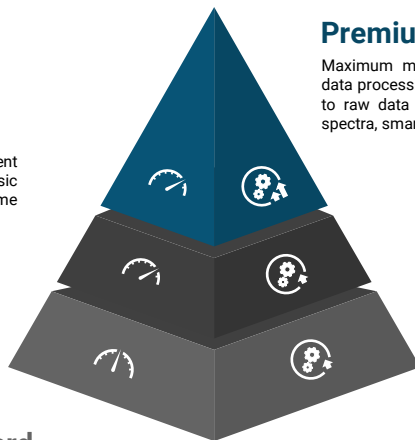


BCM Family

Always find the right solution

Advanced

Maximum measurement performance and basic data processing: time domain analysis




Standard

Basic measurement performance and basic data processing: Time domain analysis

Premium

Maximum measurement performance and data processing: frequency analysis, access to raw data and high-resolution frequency spectra, smart RPM input

Standard




\$420

2...1,800 Hz ($\pm 10\%$)
2...2,500 Hz (3 dB)

-25...70 °C

Vibration analysis in time domain

 Get BCM0001

Advanced




\$480

2...4,500 Hz ($\pm 10\%$)
2...6,000 Hz (3 dB)

-40...80 °C

Vibration analysis in time domain

 Get BCM0004

Premium



\$530

2...4,500 Hz ($\pm 10\%$)
2...6,000 Hz (3 dB)


-40...80 °C

Vibration analysis in time domain

Vibration analysis in frequency domain

Smart RPM input

Access to raw acceleration data and frequency spectra

 Get BCM0003

Continuous enhancement

Through new app concept

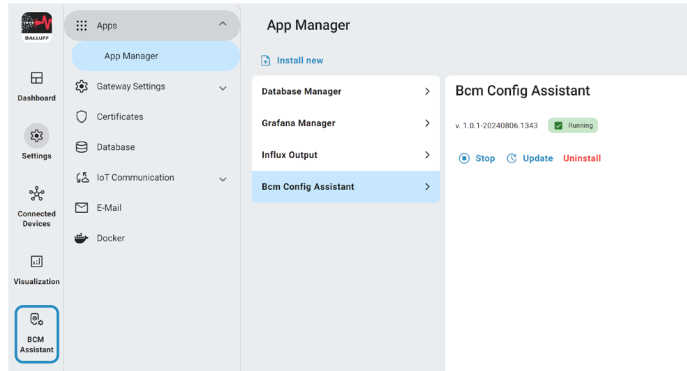
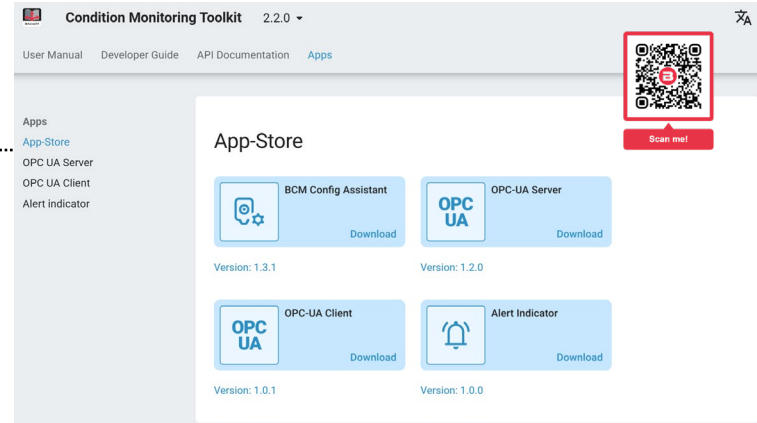




CMTK Continuous enhancement through new app concept

- Online App Store**
Download the required app free of charge from our online platform.

[Visit our App Store](#)

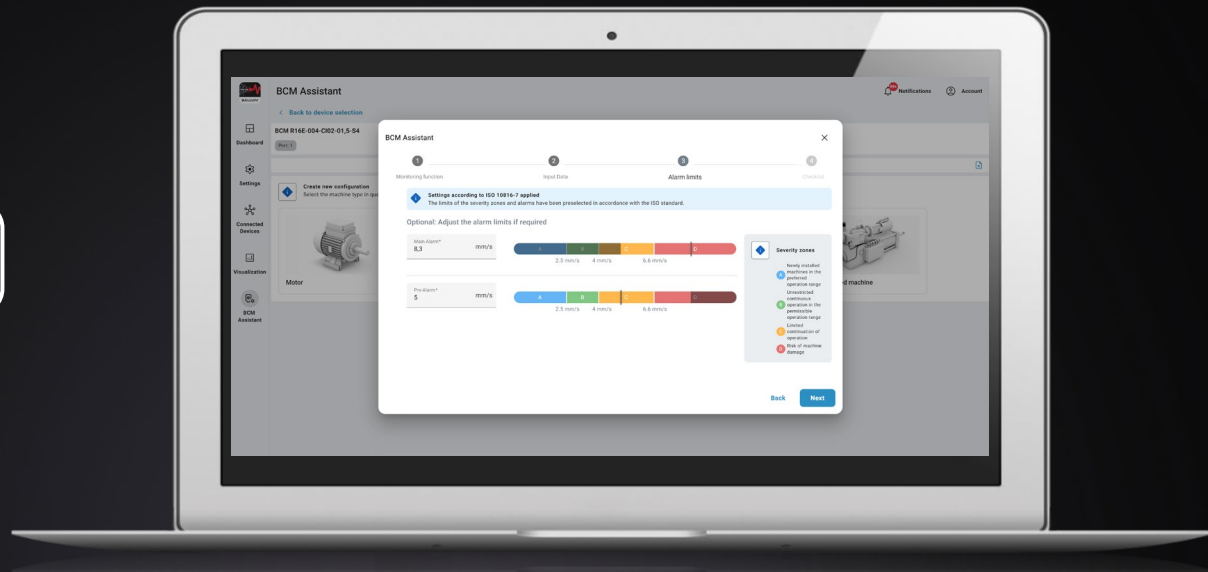


- CMTK App Manager**
Install the app on your CMTK and get started straight away.

BCM ASSISTANT



Always perfectly configured





BCM Assistant

Configure precisely for your needs
with minimal effort



Perfectly configured

Customize your BCM sensors perfectly to your individual application.



Convenient to use

The intuitive user interface allows you to achieve your set-up quickly and conveniently.



Quick to implement

Complete the configuration of your BCM sensors in just a few minutes.



Versatile in use

In addition to various ISO standards for a wide range of machine types, you also have access to an extensive bearing database with more than 160,000 types.





BCM Assistant

Configure precisely for your needs with minimal effort

Dashboard

Settings

Connected Devices

Visualization

BCM Assistant

BCM Assistant

[Back to device selection](#)

BCM R16E-004-CI02-01,5-S4

Port 1

Create new configuration

Select the machine type in question to start the assistant for configuring the sensor. The machine type can only be selected for the initial configuration and cannot be changed for additional configurations.

Motor

Pump

Fan

Compressor

User-defined machine

Notifications

Account

1 Start the assistant and select which machine type (e.g., pump) you want to monitor.



BCM Assistant

Configure precisely for your needs
with minimal effort

The screenshot displays the BCM Assistant web application. The main interface is titled 'BCM Assistant' and includes a sidebar with navigation options: Dashboard, Settings, Connected Devices, Visualization, and BCM Assistant. The main content area shows the configuration process for a device, with a progress bar indicating four steps: 1. Monitoring function, 2. Input Data, 3. Alarm limits, and 4. Checklist. The current step is 'Monitoring function', which is highlighted with a blue border. Below the progress bar, there are five options for selecting a monitoring function, each with a radio button:

- ISO 10816-7**: For monitoring centrifugal pumps in accordance with ISO 10816-7.
- Temperature**: For monitoring the temperature at the contact surface of the sensor.
- Bearing frequencies**: For monitoring bearing frequencies using FFT analysis. (This option is selected, indicated by a blue border and a blue radio button.)
- User-defined peak**: For individual monitoring of peak values, e.g., for detecting shocks.
- User-defined RMS**: For individual monitoring of RMS values, e.g., to detect imbalances, misalignments or belt damages.

A 'Next' button is located at the bottom right of the configuration window. The background interface also shows a 'Back to device selection' link and a 'Notifications' icon.

2 Select a monitoring function (e.g., bearing frequencies) that the sensor should perform.



BCM Assistant

Configure precisely for your needs
with minimal effort

BCM Assistant

1 Monitoring function 2 Input Data 3 Alarm limits 4 Checklist

Select your bearing in the database

Bearing code: 6002

Manufacturer: ZKL, KOYO, NTN, SKF, FAG

Bearing code	Bearing type	Manufacturer	Outer diameter	Width	Quantity of rolling elements
6002ARS	Ball bearing single row	SKF	30 mm	10 mm	9
6002AZR	Ball bearing single row	SKF	30 mm	10 mm	9
6002A	Ball bearing single row	SKF	30 mm	10 mm	9
6002RS	Ball bearing single row	SKF	32 mm	9 mm	9
6002LB	Ball bearing single row	SKF	32 mm	9 mm	9
6002LU	Ball bearing single row	NTN	15 mm / 32 mm	9 mm	9

Back Next

3 Select a bearing from our extensive database. With more than 160,000 types, you are sure to find the right one.



BCM Assistant

Configure precisely for your needs
with minimal effort

BCM Assistant

Monitoring function Input Data Alarm limits Checklist

Bearing 6002 from SKF was selected from database
You have selected a bearing from the database. This means that the frequency factors have been automatically applied and can no longer be changed.

Optional: If required, you can adjust the frequency window ⓘ

Component	Frequency factor*	Frequency window	%
Inner race	5,4119	± 5	%
Outer race	3,5881	± 5	%
Rolling elements	2,3661	± 5	%

Back Next

4 You will receive an overview of the automatically set bearing frequencies (BPFI, BPFO, BSF).



BCM Assistant

Configure precisely for your needs with minimal effort

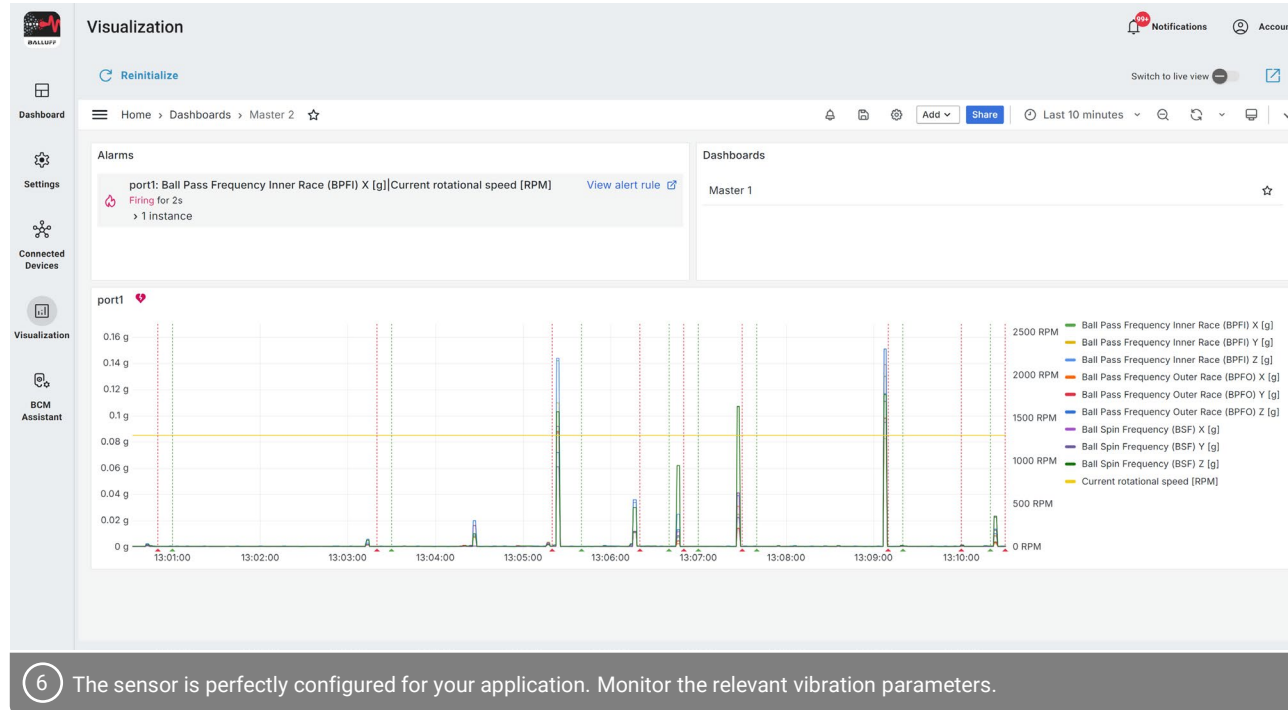
The screenshot displays the BCM Assistant web application. A modal window titled "BCM Assistant" is centered on the screen, showing a progress bar with four steps: 1. Monitoring function, 2. Input Data, 3. Alarm limits, and 4. Checklist. The first step is marked as complete with a green checkmark. The main heading in the modal is "Setup of the monitoring function completed". Below this, it says "Assign a name to your monitoring function." and shows a text input field with "Bearing Pump". Further down, it states "You can now upload your monitoring function directly to the sensor or create another monitoring function." and features a blue button labeled "Upload monitoring function". At the bottom of the modal, it asks "Would you like to create another monitoring function?" with a link "Create new monitoring function". The modal also has "Back" and "Done" buttons at the bottom right.

5 The configuration of your monitoring function is complete and can be uploaded to the sensor with one click.



BCM Assistant

Configure precisely for your needs
with minimal effort

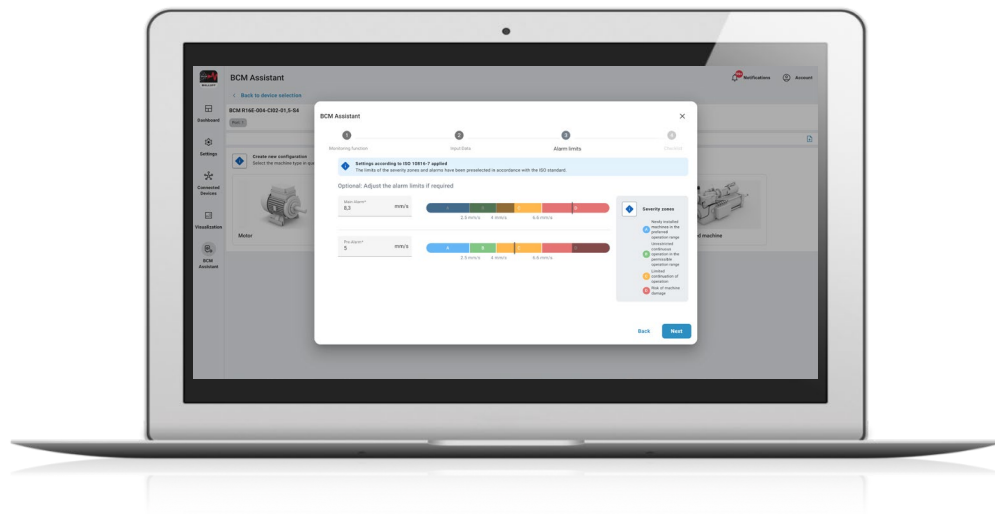


6 The sensor is perfectly configured for your application. Monitor the relevant vibration parameters.



BCM Assistant

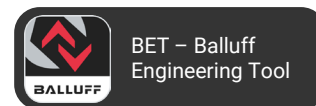
Configure precisely for your needs
with minimal effort



BCM Assistant now available!



Scan me

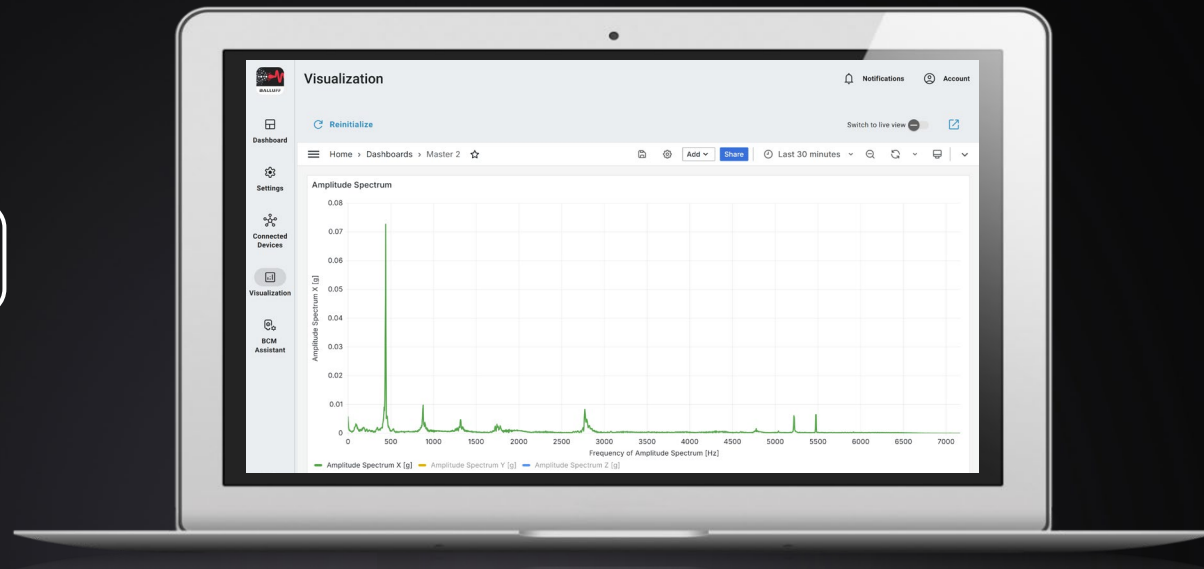


Scan me

BCM VibExtract



VibExtract – Access to raw data and frequency spectra





BCM VibExtract

For full access to raw acceleration data and frequency spectra



Maximized data access

Decide for yourself which additional data should be recorded and provided by BCM Premium. Gain access to raw acceleration data and high-resolution frequency spectra.



Flexible data request

Retrieve the data packets at regular intervals (e.g., every hour) or link this to specific events.



Versatile in use

Analyze the data directly on the device or make the data packets available for downstream analyses, e.g., in the cloud.





BCM VibExtract

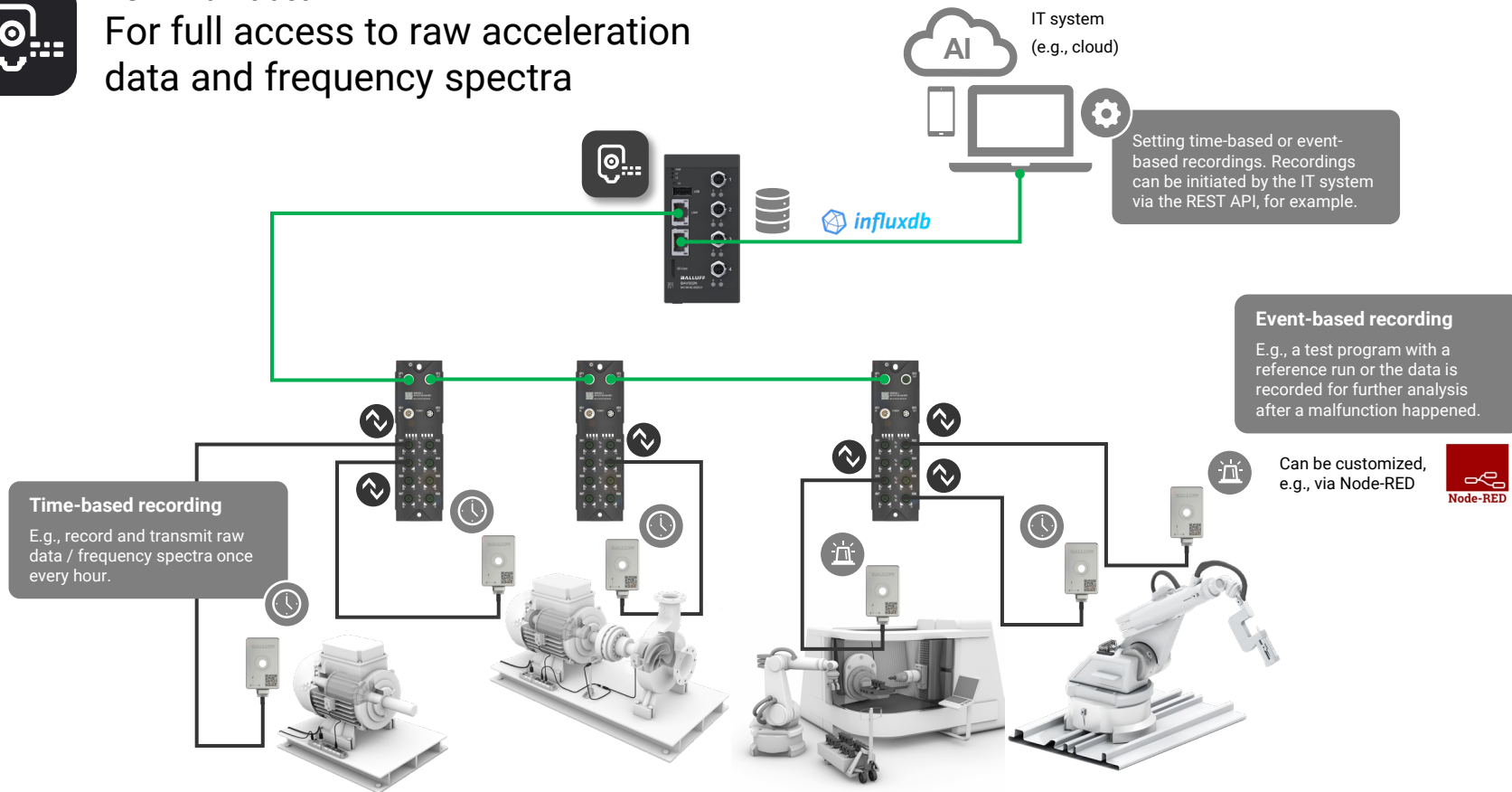
For full access to raw acceleration data and frequency spectra





BCM VibExtract

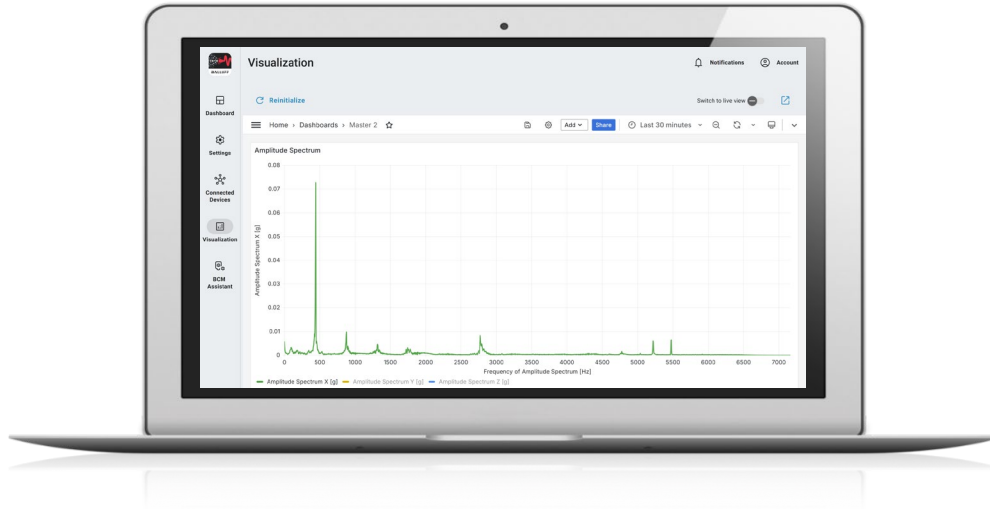
For full access to raw acceleration data and frequency spectra





BCM VibExtract

For full access to raw acceleration data and frequency spectra



BCM VibExtract
now available!



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