

## CM Sensor Data Viewer

## Software Instructions

PC visualization software for condition sensors





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Read this instruction carefully prior to installation and/or use. Pay attention particularly to all advises and safety instructions to prevent injuries. Bühler Technologies can not be held responsible for misusing the product or unreliable function due to unauthorised modifications.

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Document information

Document No..... SE150109

Version..... 11/2022

## 1 Introduction

CM Sensor Data Viewer is a National Instruments (NI) LabVIEW based program for reading, displaying and storing the data of the following condition sensors:

- BCM-MS
- BCM-LS
- BPM
- BMD

*Range of functions:*

- Simple and understandable handling through a graphical user interface.
- Graphical data visualization based on two charts, each with two Y-axes and one X-axis.
- Flexible axes assignments with linear and logarithmic display of axis and zoom function.
- List display of current measurement data and units.
- Choice of interfaces (RS232 or Ethernet TCP/IP).
- Recording and saving the data as text files in .txt-format with headers for measurement series and unit labels.
- Start, pause and stop function of the recording.
- Recording of the current time stamp and freely adjustable recording interval.

## 2 System requirements

- Windows XP or higher
- Processor: Min. Pentium 200 MHz or equivalent processor, a Pentium III, Celeron with 600 MHz or an equivalent processor is recommended
- Memory: Min. 64 MB, 256 MB recommended
- Screen resolution: Min. 1024 x 768 pixel

## 3 Quick start

The following section describes the steps which must be taken for the initial commissioning of CM Sensor Data Viewer with an Bühler Technologies GmbH oil condition sensor. For this purpose, the following components are required:

- PC/laptop with RS232 connection or alternatively a USB port, which serves as a measuring computer
- Oil condition sensor
- Sensor cable (order number: 1590001001)
- Power supply incl. cold-device plug (order number: 1590001003)
- Software CM Sensor Data Viewer
- In addition, when connected via USB: USB-RS232 converter with associated driver software (order number: 1590001002)

**The components must be prepared as follows:**

### Software installation CM Sensor Data Viewer

- Unpack the zip file on your computer.
- Before starting the exe file, LabVIEW Runtime Engine (V2010) needs to be installed.
- If the LabVIEW Runtime Engine has already been installed, only the "executable" file is needed.

**Software installation of the driver for the USB-RS232 converter for data acquisition via USB (If you do not use a converter, please continue with sensor connection for data acquisition via RS232)**

- Now connect your USB-RS232 converter to your PC/laptop.
- If the USB-RS232 converter is not known to the PC, the corresponding driver must be installed. Then follow the installation instructions of the operating system or the supplied driver CD.

### Sensor connection for data acquisition via USB

- Connect the sensor cable with the M12 connector to the sensor.
- Connect the 9-pin. D-Sub connector of the cable to the appropriate serial interface of the USB-RS232 converter.
- Connect the USB connector of the USB-RS232 converter to an appropriate interface of your PC/laptop.
- Connect the power supply and the sensor cable.
- Now properly connect your power supply with the cold-device plug to the mains voltage. Your sensor is now ready for operation.

## Sensor connection for data acquisition via RS232

- Connect the sensor cable with the M12 connector to the sensor.
- Connect the 9-pin. D-Sub connector of the cable to the appropriate serial interface of your PC/laptop.
- Connect the power supply and the sensor cable.
- Now properly connect your power supply with the cold-device plug to the mains voltage. Your sensor is now ready for operation.

## Start the software

- CM Sensor Data Viewer can be started by double-clicking on the file CM Sensor Data Viewer.exe.
- Select the serial interface (COM) at which you have connected the sensor to the computer. If you do not use a USB-RS232 converter, this usually is COM 1.
- When using a USB-RS232 converter, a new virtual COM port is created. Select this one. Optionally, you can check the assignment of the virtual COM port in the Windows Device Manager.
- The incoming data and the identification of the sensor appear on the left side of the window. On the right side of the window, the data can be visualized in a diagram.

## 4 User interface

When starting CM Sensor Data Viewer, a window with the user interface is opened. In this window all measured data can be read and all adjustments can be made.

Fig. 1: User Interface CM Sensor Data Viewer

The user interface can be divided into the following four sectors (I-IV).

#### 4.1 Sector I: List display of the current measurement values

Display of all parameters of the connected sensor with their units in square brackets.

More information on the individual measurements can be taken from the user manual of the respective sensor.



Fig. 2: Figure 2: List display of the measurement values

#### 4.2 Sector II: Recording of the measurement data

**Storage path:** Reproduction of the path and file name, selected via the start button.

**Comment field:** Ability to enter a comment. This is stored in the header of the log file. The input must be done before starting a recording.

**Start:** Starting a recording. A window opens in which the file path and the file name of the log file must be selected.

**Pause:** Temporary interruption of the recording. By pressing the key again, the recording will continue.

**Stop:** Stop recording.

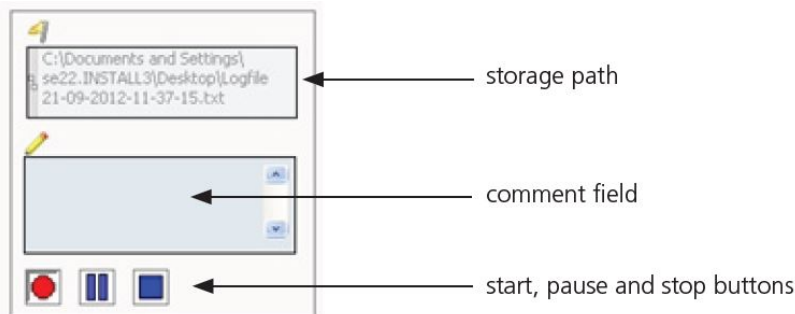


Fig. 3: Recording of the measurement data

#### 4.3 Communication and recording interval

**Communication settings:**

Select interface. See chapter Communication [► 8].

**Query/recording interval:**

Interval for the query of the sensor data, graphic representation and storage operation. The adjustment range is between 3 and 5 seconds (default setting: 3 seconds).

**Resetting the diagrams:**

Delete both charts. A running record of data is not affected.

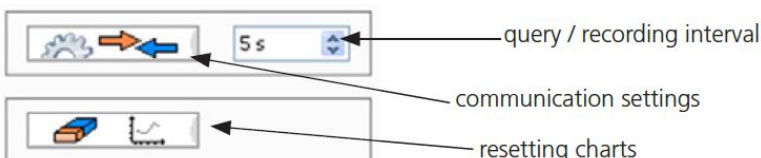


Fig. 4: Setting for communication and recording interval

## 4.4 Graphic representation

Two identically structured chart windows are available. See the following figure.

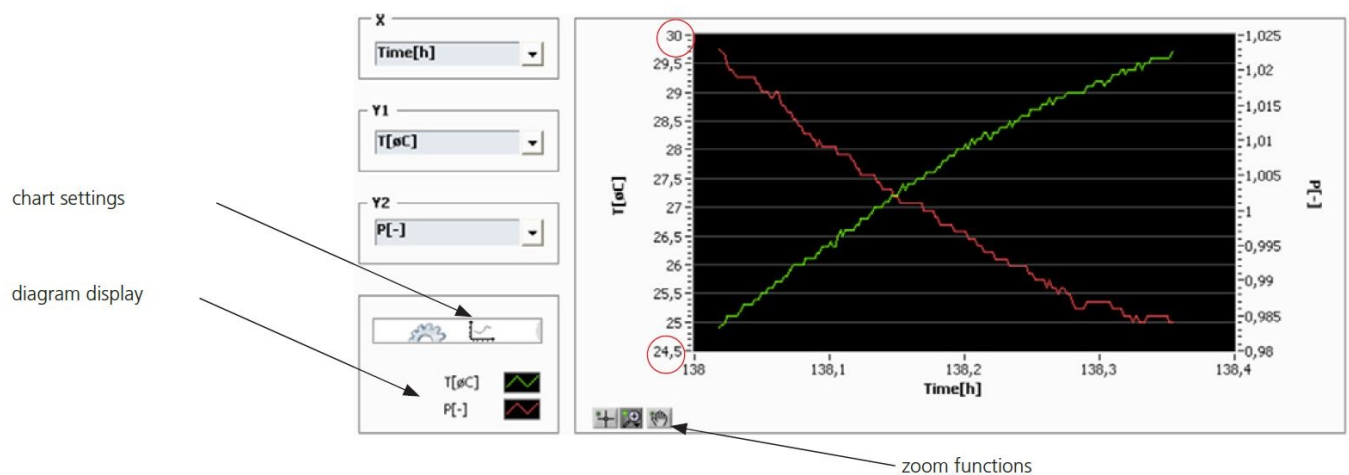


Fig. 5: Graphic representation of the measurement values

In the left sector, the parameters to be displayed can be selected. For this, two Y-axes (Y1, Y2) and a common X-axis are available. The selection of the parameters to be displayed can be combined as desired.

### Chart settings

Adjusting the scaling for each axis. Possible settings:

- linear:* Linear scaling
- log:* Logarithmic scaling
- automatically:* Automatic adjustment of the scaling to the read parameter values.
- manually:* The minimum and maximum values of the scaling can be manually entered, directly on the axis by clicking. See Figure “Graphic representation of the measurement values” red mark

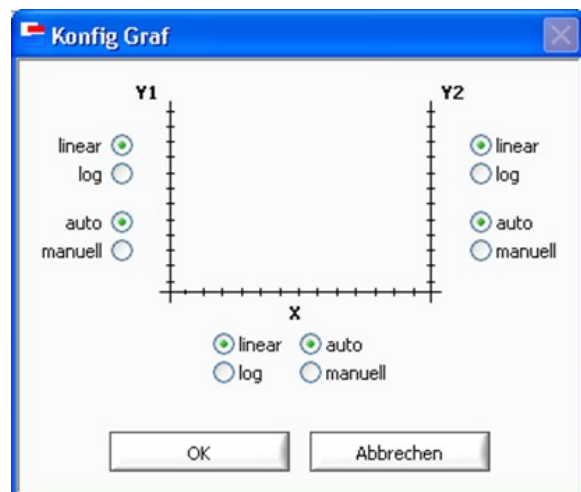


Fig. 6: Chart settings

## Diagram representation

By clicking on the box a menu opens in which the line display can be customized. The setting opportunities are directly provided in the menu:

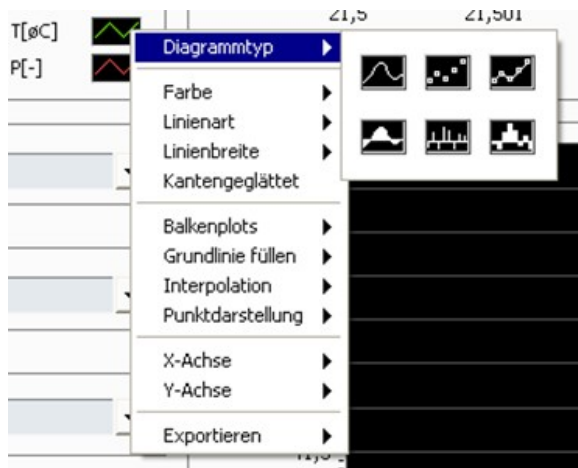


Fig. 7: Menu for the diagram display

Another option is the direct export of the measurement data displayed in the diagram. This is also possible, if no measurement data recording was started.

Zoom function:

There are two-dimensional zoom functions at your disposal as well as horizontal and vertical zoom. Selective zooming-in or zooming-out is also possible.

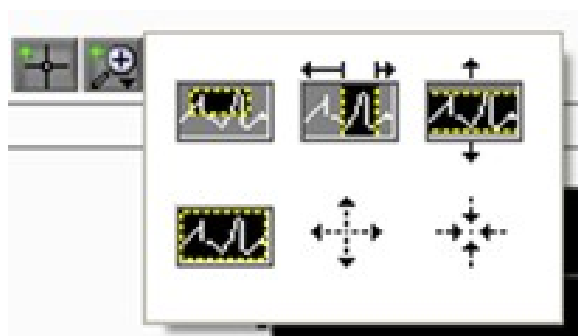


Fig. 8: Zoom functions

## 5 Communication

Communication with a sensor can be done in two different ways. On the one hand via a serial COM interface (RS232), on the other hand over Ethernet via TCP/IP.

### 5.1 Serial interface

Interface parameters for the COM port such as the transmission speed cannot be changed. These are firmly implemented in the program. The number of sensors that can be connected to a PC depends on the number of available COM ports. However, only the measurement data from one sensor may be displayed in the CM Sensor Data Viewer. Nevertheless, it is possible to repeatedly open the program CM Sensor Data Viewer and thus display the measured data of several sensors simultaneously. To this end, the program can be copied to multiple folders and then be started.

**NOTICE!** Through the use of USB-to-serial converters, additional virtual COM ports can be created. This makes it possible to connect more sensors to a PC despite there is only one physically available COM port. Note that most commercially available USB-to-serial converter require installation of a driver. If the driver is installed correctly, the new virtual COM port can be selected in the user interface.

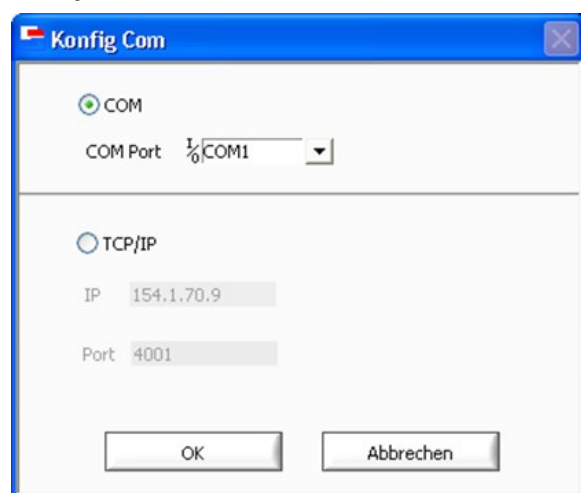


Fig. 9: Selection of the COM port

### 5.2 Ethernet - TCP/IP

In addition to the direct connection via a serial interface, it is also possible to integrate a sensor via an Ethernet Gateway in a Local Area Network (LAN). CM Sensor Data Viewer can access the sensor, based on the set IP number at the Ethernet Gateway and the associated port number.

*Example:*

The Ethernet Gateway is assigned the user's IP number 154.1.70.9. The first COM port of the Ethernet Gateway receives the port number 4001, the second COM port the port number 4002 etc. In the CM Sensor Data Viewer, on the user interface, the IP (154.1.70.9) and the appropriate port number of the desired sensor have to be entered.

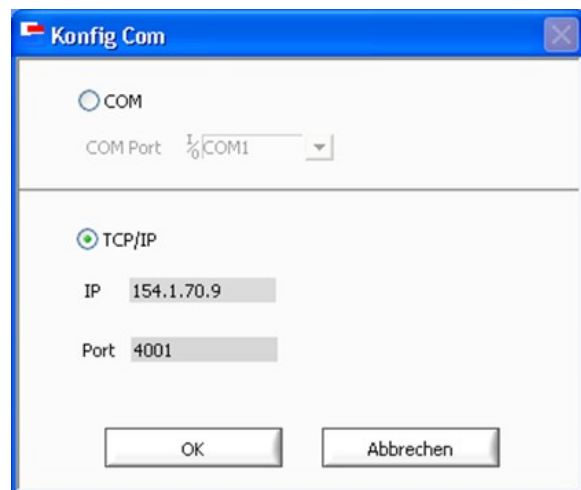


Fig. 10: Configuration for TCP/IP

**NOTICE!** The appropriate configuration parameters of the Ethernet Gateway such as the baud rate and other COM settings must be set on the basis of the user manual.



## 6 Log files

After starting the measurement data recording via the red circle button (also see chapter Sector II: Recording of the measurement data [► 5]), a prompt appears. In this, the user is prompted to select a path for the log files folder. By default, the path of the project directory and the name "logfile<date>-<time> .txt" are indicated.

The text files can be opened with any text editor. For graphic representation, the content can be exported in a standard spreadsheet program (e.g. Microsoft Excel).

## 7 Service and repair

This chapter contains information on troubleshooting and correction should an error occur during operation.

Repairs to the unit must be performed by Bühler authorised personnel.

Please contact our Service Department with any questions:

**Tel.: +49-(0)2102-498955** or your agent

For further information about our services and customised maintenance visit <http://www.buehler-technologies.com/service>.

If the equipment is not functioning properly after correcting any malfunctions and switching on the power, it must be inspected by the manufacturer. Please send the equipment inside suitable packaging to:

**Bühler Technologies GmbH**

**- Reparatur/Service -**

**Harkortstraße 29**

**40880 Ratingen**

**Germany**

Please also attach the completed and signed RMA decontamination statement to the packaging. We will otherwise be unable to process your repair order.

You will find the form in the appendix of these instructions, or simply request it by e-mail:

**[service@buehler-technologies.com](mailto:service@buehler-technologies.com)**.

### 7.1 Troubleshooting

#### Error: No communication with sensor CM Sensor Data Viewer

Possible cause	Recommended measures
<ul style="list-style-type: none"> <li>Cable is not properly connected</li> </ul>	<ul style="list-style-type: none"> <li>First please check the correct electrical connection of the sensor or of the data and power cable. Please take the prescribed pin assignment into account.</li> </ul>
<ul style="list-style-type: none"> <li>Cable wrong or defective</li> </ul>	<ul style="list-style-type: none"> <li>Only use data cable, recommended by Bühler Technologies GmbH.</li> </ul>
<ul style="list-style-type: none"> <li>Incorrect COM port has been selected</li> </ul>	<ul style="list-style-type: none"> <li>Check and correct the selection of the COM port (for example, COM1).</li> </ul>
<ul style="list-style-type: none"> <li>RS232 interface of the sensor is not activated</li> </ul>	<ul style="list-style-type: none"> <li>Activate the RS232 interface temporarily or permanently with the help of "CM Config" or a terminal program (e.g. Windows Hyper Terminal). For more detailed information please refer to the documentation of the respective sensor.</li> </ul>