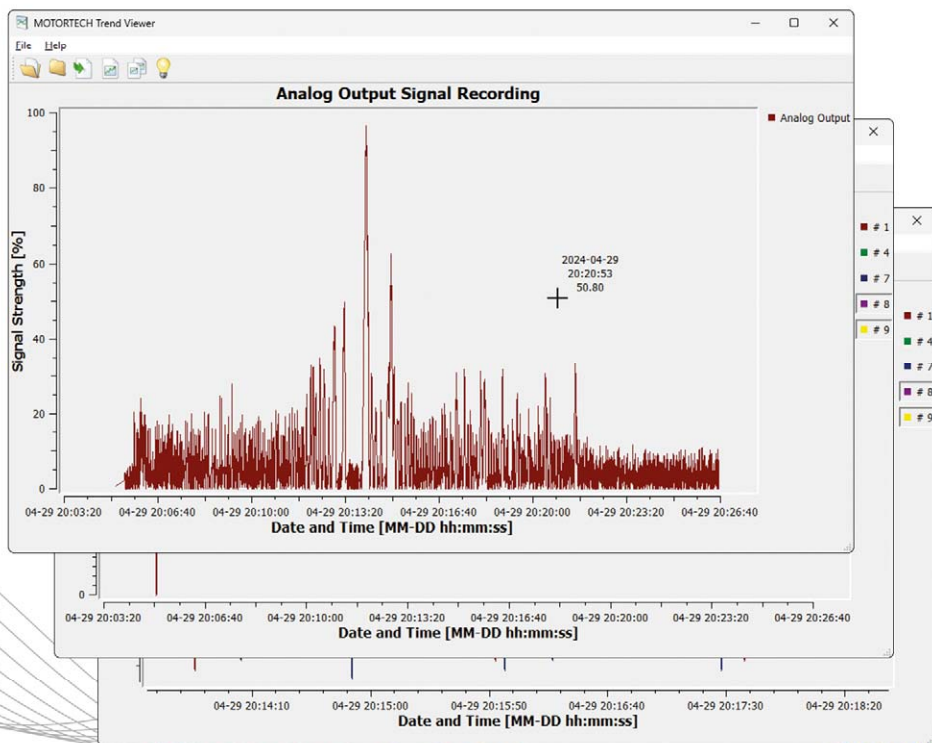


MOTORTECH Trend Viewer – Visualization Software

Operating Manual



Original instructions

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1 General Information

Read through this operating manual carefully before use and become familiar with the product. Installation and start-up should not be carried out before reading and understanding this document. Keep this manual readily available so that you can reference it as needed.

1.1 What Is the Purpose of this Operating Manual?

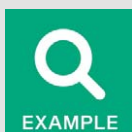
This manual serves as an aid for the installation and operation of the product and supports the technical staff with all operating and maintenance tasks to be performed. Furthermore, this manual is aimed at preventing dangers to life and health of the user and third parties.

1.2 Who Is this Operating Manual Targeted to?

The operating manual provides a code of conduct for personnel tasked with the setup, operation, maintenance, and repair of gas engines. A certain level of technical knowledge with respect to the operation of gas engines and basic knowledge of electronic ignition systems are necessary. Persons who are only authorized to operate the gas engine shall be trained by the operating company and shall be expressly instructed concerning potential hazards.

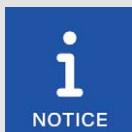
1.3 Which Symbols Are Used in the Operating Manual?

The following symbols are used in this manual and must be observed:



Example

This symbol indicates examples, which point out necessary handling steps and techniques. In addition, you receive additional information from the examples, which will increase your knowledge.



Notice

This symbol indicates important notices for the user. Follow these. In addition, this symbol is used for overviews that give you a summary of the necessary work steps.



Warning

This symbol indicates warnings for possible risks of property damage or risks to health. Read these warning notices carefully and take the mentioned precautionary measures.



Danger

This symbol indicates warnings for danger to life, especially due to high voltage. Read these warning notices carefully and take the mentioned precautionary measures.

1.4 Which Abbreviations/Acronyms Are Used in the Operating Manual?

In the operating manual or the user interface, the following abbreviations/acronyms are used.

Abb.	Term	Description	Explanation
°CRANK	Degree crankshaft		Unit for the rotation angle of the crankshaft
CSV	Comma-separated Values	Data separated by comma	Text file for storage or exchange of structured data
DetCon	Detonation Controller		Serves to prevent major engine damage that can be caused by knocking combustion.
HMI	Human-Machine Interface		Interface between a human and a machine or a computer
MIC	MOTORTECH Ignition Controller		
Temp-Scan	Thermocouple Scanner		
USB	Universal Serial Bus		Serial connection system to link a computer to external devices

2 Intended Use

2.1 Functional Description

The MOTORTECH Trend Viewer visualizes engine operating data recorded with a PowerView4, EasyNO_x, or PowerView3 HMI module from MOTORTECH. The visualized data can be exported as a CSV file and as an image.

2.2 Application

The MOTORTECH Trend Viewer can open files with engine operating data created by a PowerView4, EasyNO_x, or PowerView3 HMI module from MOTORTECH.

Any use other than the one described in the operating manual shall be considered improper use and will result in the voiding of all warranties.

3.1 System Requirements

For the installation of the MOTORTECH Trend Viewer, the following minimum requirements must be fulfilled:

- x86-compatible computer
- USB interface 1.1 or higher
- Display with a resolution of at least 1440 x 900 pixels (WXGA+)
- Microsoft® Windows 10, Windows 11

3.2 Installing MOTORTECH Trend Viewer

The software for installing the MOTORTECH Trend Viewer is on the storage device enclosed with the HMI Module.

Install the MOTORTECH Trend Viewer as follows:

1. Start the installation.
 - Via the menu:
Start the file *Start.exe* on the storage device. Start the installation routine for the MOTORTECH Trend Viewer via *Software -> MOTORTECH Trend Viewer -> Install MOTORTECH Trend Viewer*.
 - Directly from the storage device:
Start the installation routine for the MOTORTECH Trend Viewer directly. On the storage device, it is located in the sub-directory *Software/MOTORTECH_Trend_Viewer* and is named, for example, as follows: *MOTORTECH-Trend-Viewer-x.x.x-setup.exe*
2. Run the installation.

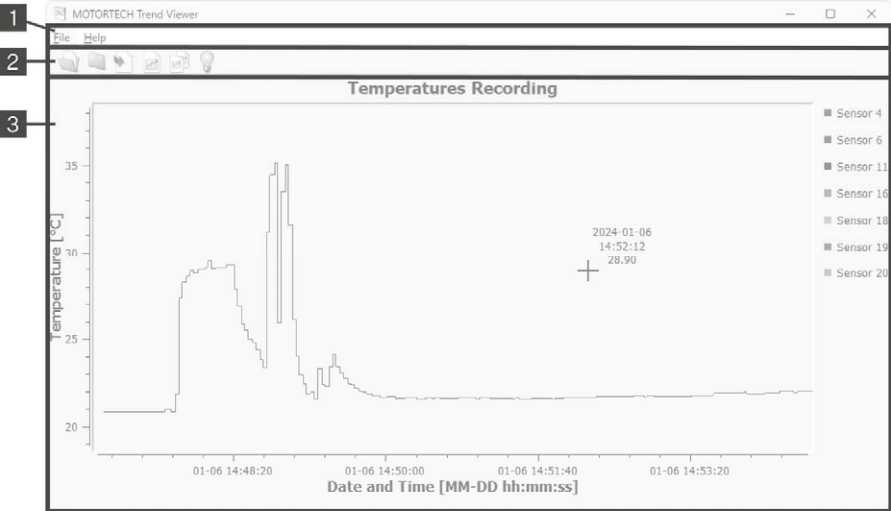
Follow the instructions of the installation routine. Note that the license agreement terms must be accepted before using the MOTORTECH Trend Viewer.

 - ▶ You have installed the MOTORTECH Trend Viewer and can now work with recording files of the HMI Module.

4 Operation

4.1 User Interface







The user interface of the MOTORTECH Trend Viewer is divided into the following sections:



Pos.	Area
1	Menu bar
2	Toolbar
3	Main window

4.2 Menu Bar and Toolbar

The following functions are available to you via the symbols on the toolbar and the entries in the menu bar:

Symbol	Menu	Function
	<i>File -> Open</i>	Open a recording or configuration file.
	<i>File -> Close</i>	Close a recording file.
	<i>File -> Export to CSV</i>	Create a CSV file from the data of an opened recording file.
	<i>File -> Export Plot</i>	Create an image file of the current view.
		Copy the current view as an image to the clipboard.
	<i>File -> Quit</i>	Exits MOTORTECH Trend Viewer.
	<i>Help -> Language</i>	Change the user interface language.
	<i>Help -> Tips and Tricks</i>	Open information on how to use the MOTORTECH Trend Viewer.
	<i>Help -> About</i>	View information about the MOTORTECH Trend Viewer.

4 Operation

4.3 Opening Files

The MOTORTECH Trend Viewer can open files with the extension *.pv3* created by the HMI Module on a USB flash drive. With the PowerView3, these files may also come from a memory card.

Recording Files

Recording files (e.g. *temperatures.pv3*, *speed.pv3*, *analog_output.pv3*) contain trend data that were recorded by the HMI Module.

Configuration Files

A configuration file (*configuration.pv3*) is automatically created with every recording file that the HMI Module creates. It contains general information about the recording.

4.3.1 Recording Files

The HMI Module can record data from connected MOTORTECH devices. For more information, refer to the HMI Module's operating manual. For a detailed analysis and further processing, you can open the recording files (e.g. *temperatures.pv3*, *speed.pv3*, *analog_output.pv3*) of specific devices in the MOTORTECH Trend Viewer.



Configuration file required

You cannot open a recording file (e. g. *temperatures.pv3*, *speed.pv3*, *analog_output.pv3*) without the correct configuration file (*configuration.pv3*). To open a recording file, the associated configuration file must be in the same folder as the recording file.



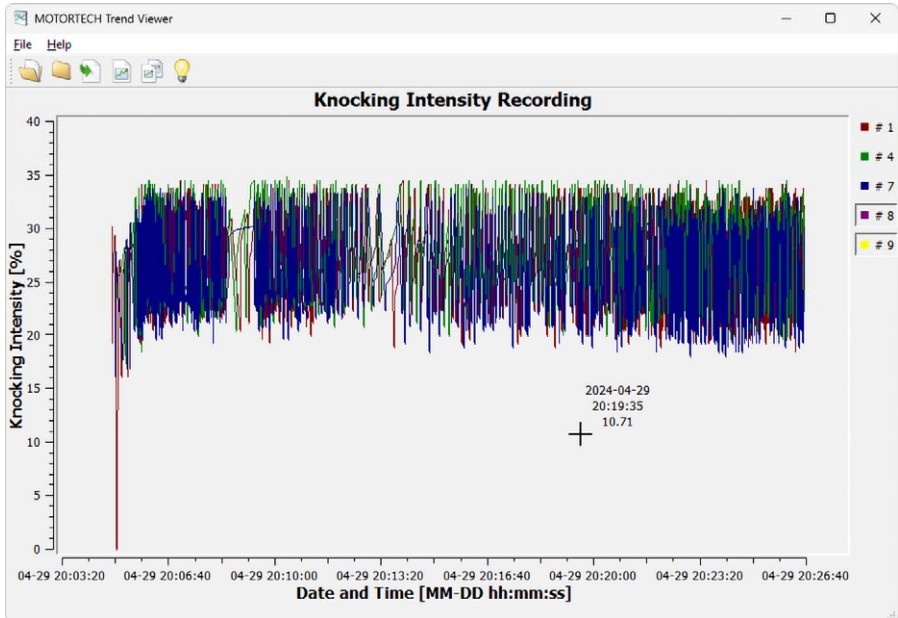
Do not change file names

Renamed recording and configuration files cannot be opened.



Click on the symbol to open the desired recording file (*.pv3) in the following dialog window.

- ▶ The recording file opens in the main window of the MOTORTECH Trend Viewer.



The following information is provided:

- X-axis: Date (MM-DD) and time (hh:mm:ss)
- Y-axis: Measured unit and value (e.g. knocking intensity in percent, firing angle in °crankshaft, temperature in °C or °F)
- Legend at the right window margin: Assignment of the colors to the curves
- In the MOTORTECH Trend Viewer, the mouse pointer is displayed as a cross. Next to it, date (YYYY-MM-DD), time (hh:mm:ss), and value for the position of the cross are displayed.

You have the following options:

Enlarging a Section

While holding down the left mouse button, drag a rectangle over the area of the plot that you want to enlarge. You can repeat this step several times until the desired magnification level has been reached. By clicking the middle mouse button, you go back to the respective last step.

With a right click, you return to the initial view.

4 Operation

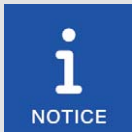
Moving a Section

Hold down the *Ctrl* key and the left mouse button and move the view to the desired position with the mouse.

With a right click, you return to the initial view.

Showing and Hiding Curves

At the right window margin, click on a legend entry to hide or show the associated curve. A depressed legend entry means that the associated curve is hidden.



Toggling between °C and °F not possible

Temperatures are displayed in either degrees Celsius (°C) or degrees Fahrenheit (°F). The displayed unit depends on how the HMI Module was set during recording. It is not possible to toggle in the MOTORTECH Trend Viewer.

4.3.2 Configuration Files

To obtain additional information about a recording file, open the associated configuration file (*configuration.pv3*). This file is automatically created by the HMI Module with the recording file.



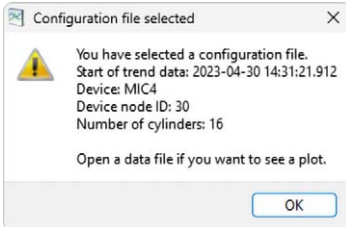
Do not change file names

Renamed configuration files cannot be opened.



Click on the symbol to open the desired configuration file (*configuration.pv3*) in the following dialog window.

- The configuration file opens in a new window.



Configuration files contain the following information:

- Date (YYYY-MM-DD) and time (hh:mm:ss.SSS) of the recording start
- Device
- Node ID of the device whose data was recorded
- Number of cylinders of the respective engine

Close the message with the *OK* button.

4 Operation

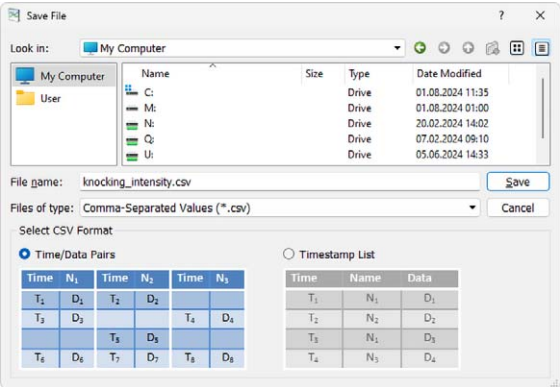
4.4 Exporting Data

You have different options to export the data collected by the HMI Module to other programs.

Creating a CSV File



Click on the symbol to create a CSV file with the data of the opened recording file.



- Select *Time/Data Pairs* to create a separate column for each curve in the CSV file.
- Select *Timestamp List* to sort the values by time only.

Creating an Image



Click on the symbol to save the current view as an image. The following formats are available: bmp, jpeg, jpg, pbm, pdf, pgm, png, ppm, ps, svg, xbm, xpm.



Click on the symbol to copy the current view as an image to the clipboard of your computer. You can then paste the cached image into a suitable program, usually with *Ctrl + V*.

5.1 Error Messages

The MOTORTECH Trend Viewer opens error messages in a pop-up window.



Example

To analyze the causes of errors and to fix them, observe the hints in the error messages. Use the *OK* button to confirm the error messages and to close the pop-up window.

5.2 Customer Service Information

You can reach us during our business hours by:

Phone: +49 5141 93 99 0

Email: service@motortech.de (technical support)
sales@motortech.de (all other matters)



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