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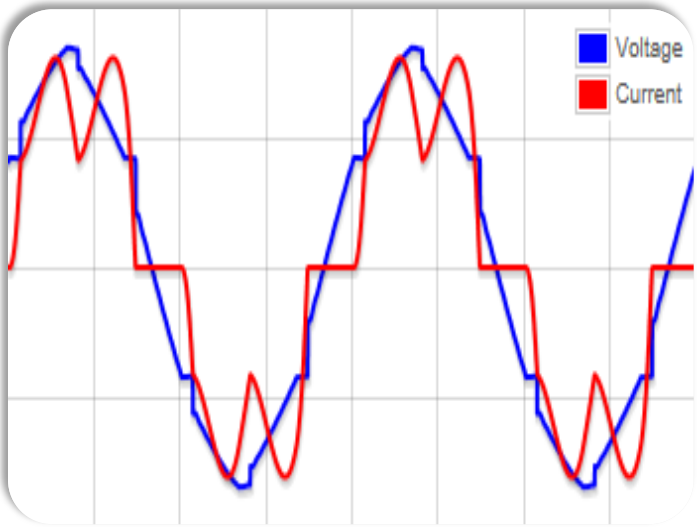

User Manual

2014-02-19

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AHF Viewer

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User Manual

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1. Introduction

The AHF Viewer is a PC Tool for communication with active harmonic filters from Schaffner. It is used for commissioning and monitoring the devices via a serial RS485 connection or via Ethernet connection with Modbus TCP.

Features

- Reading and setting the device configuration
- Detecting the current device status
- Representing current measurement values such as line voltage and current in an oscillogram
- FFT signal analysis
- Trend recording of RMS values
- Reading measured RMS values
- Reading the event log
- Firmware update

2. Installation

2.1 Installation requirements

Operating system: Windows XP, Windows Vista, or Windows 7

2.2 Installing the AHF Viewer

Installation of the AHF Viewer is done using an installation wizard. For Windows Vista or Windows 7, it is recommended to use a different installation directory. If the default directory is used for installation, you will need to make the settings described in chapter 2.3.

2.3 Setting permissions

If the AHF Viewer is installed into the path *C:\Programme\AHF Viewer* under Windows Vista or Windows 7, you will have to remove the write protection from this directory.

Attention	Administrator rights might be needed for this setting

1. Right click the AHF Viewer folder and choose properties

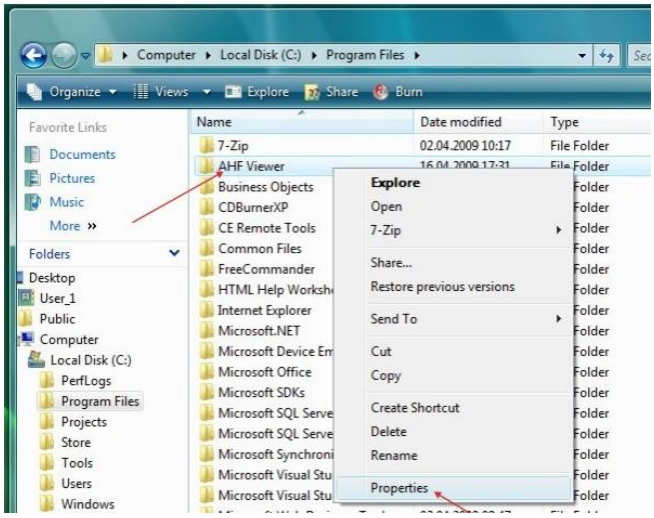

Fig. 1: Folder properties

2. Switch to the Security tab and click on Advanced

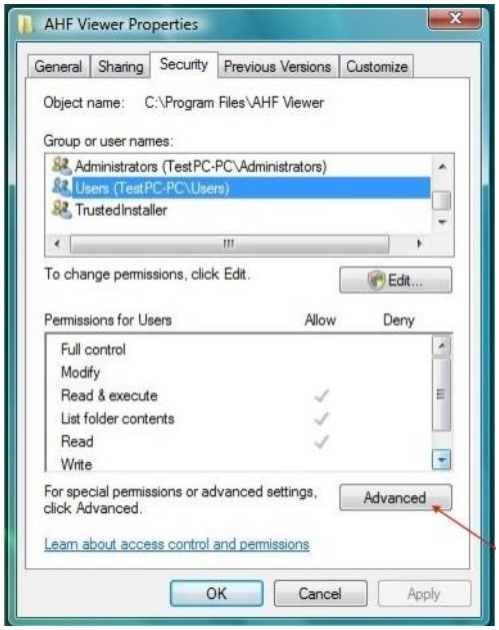

Fig. 2: Security tab

3. Now select ‘Users’ and click on ‘Edit’ to open a new window. Then tick the checkboxes as displayed and confirm all windows by clicking OK.

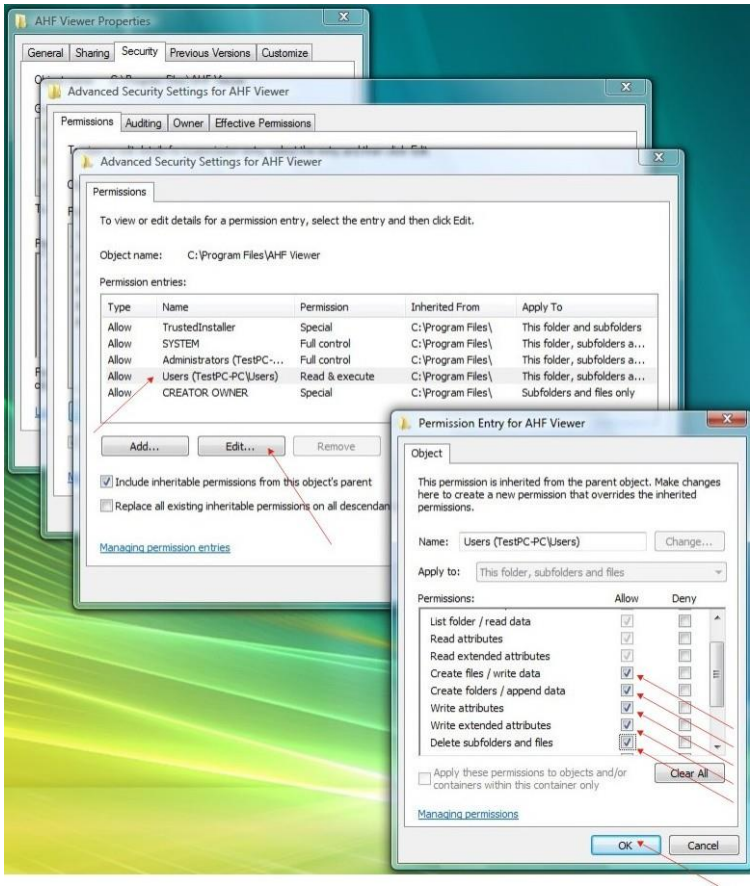

Fig. 3: Setting permissions

2.4 Installing the USB – RS485 adapter

Please follow the manufacturer's installation instructions. They can be downloaded from the manufacturer's website: www.cti-lean.com.

Table 1: Pin assignment of the RS485 interface on the ECOsine® active

Pin	Function
1	Ground
2	+5V
3	nc
4	nc
5	Line B
6	nc
7	nc
8	nc
9	Line A

In case of long lines and/or several bus participants, it is recommended to use 120Ω termination resistors at both ends of the RS485 bus. Most converters offer the possibility of adding an internal termination resistor. The last bus participant must have a termination resistor in the connector.

The COM port used for the USB – RS485 interface adapter can be seen in the device manager. The device manager can be accessed via *Start → Control Panel → System → Device Manager*. There, you will find the adapter by selecting '*Ports (COM & LPT)*' under the name of '*USB Serial Port*'.

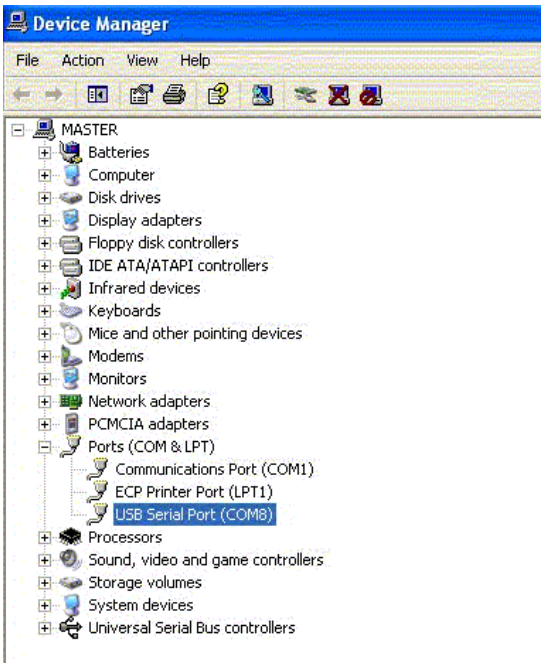

Fig. 4: Device Manager

3. Overview window

3.1 General

The overview window will be displayed when starting the AHF Viewer. Once a connection has been established, this window will display the most important data related to the connected filter, such as status of the device, some measurement values, trigger status, or currently running measurements in the status bar.

Fig. 5: Overview screen

The upper part of the window contains the menu bar and a quick selection bar. The icons of the quick selection bar have the following functions:

Table 2: Quick selection bar

Icon	Function
	Connect the ECOsine® active
	Disconnect the ECOsine® active
	Open connection settings
	Open parameter window
	Read measurement values and parameters. (This will only be necessary if the “Modem” checkbox of the communication settings is ticked, preventing the values from being updated automatically)

3.2 Connection settings

The connection settings window can be opened via the menu '*Connection→Settings*' or by clicking  in the quick selection bar.

The "Connection to filter" dialog box allows you to set the communication parameters for connection to the ECOsine® active. Two options are provided: Modbus TCP via Ethernet and Modbus RTU via serial RS485 interface.

Setting the Modbus TCP connection:

If the connection is set to Modbus TCP, only the IP address of the ECOsine® active can be set. To establish a connection between the PC and the ECOsine® active, an Ethernet connection must exist between the two devices. This could be a direct Ethernet cable connection or a routed connection. For more information on a direct Ethernet connection, please refer to the "Knowledge base information No. 004 – Direct PC – AHF connection via Ethernet cable (TCP/IP)".

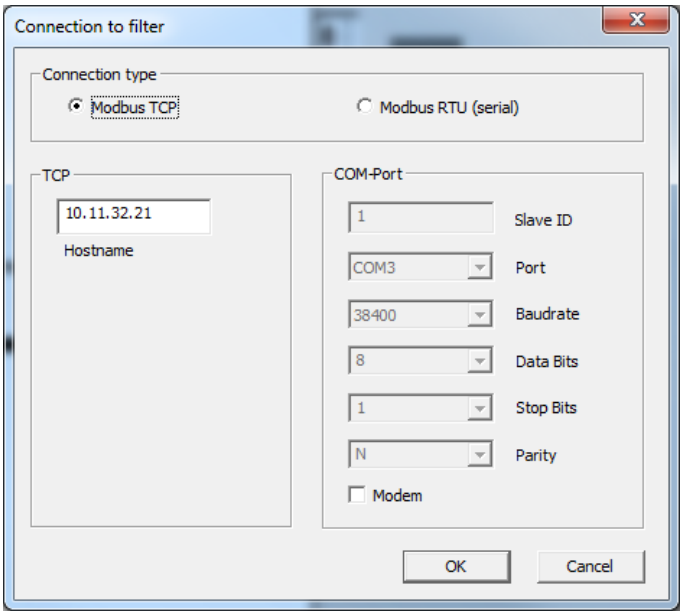

Fig. 6: Settings for Ethernet communication

Setting the Modbus RTU connection

To establish a serial connection to the ECOsine® active, the PC must have an RS485 interface or a USB to RS485 converter is needed.

Attention	Do not use RS232 adapters or interfaces for connection to the ECOsine® active; this may damage the device.

To enable communication with the ECOsine® active, the settings in the AHF Viewer and the ECOsine® active must be identical.

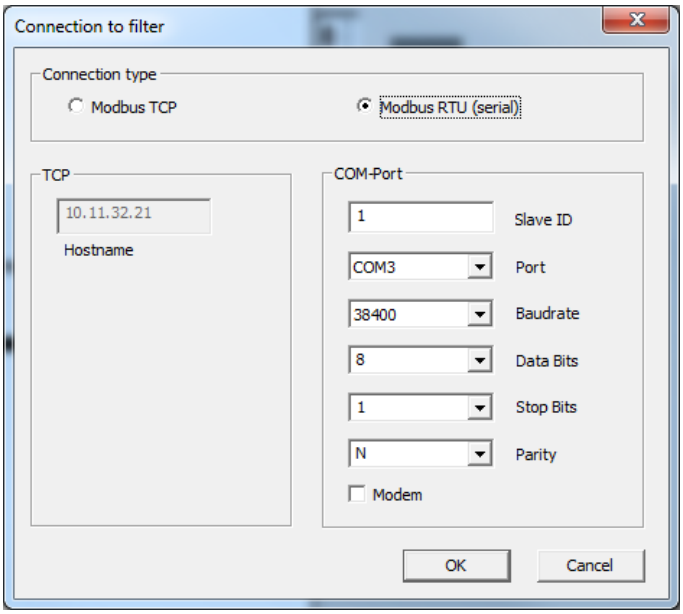

Fig. 7: Settings for serial communication

Table 3: Modbus settings for serial communication

Parameter	Function	Default value
Slave ID	The slave ID is used to distinguish the devices if more than one device are used on the same RS485 bus.	1
Port	This is to set the COM port for the serial interface. Only those interfaces that exist on the PC are displayed. To find out the correct interface, please refer to the Device Manager as described in Chapter 2.4.	
Baudrate	Baudrate for the serial communication.	38400
Data Bits	Number of data bits.	8
Stop Bits	Number of stop bits.	1
Parity	Set whether or not a parity bit is used..	No
Modem	This parameter prevents automatic updating of measurement values at a one-second interval to minimize the data rate for remote connections. To obtain current values from the filter, use the update button .	No

3.3 Connecting to the ECOsine® active

Once the communication settings have been made, a connection to the ECOsine® active can be established. This is possible via '*Connection →Connect to device*' or using the  symbol. The connection to the ECOsine® active will be displayed in the status bar at the bottom of the window.

After establishing the connection, the AHF Viewer may need to download a new parameter definition file from the device. This will be displayed with an information message and will need to be confirmed with 'OK'. This procedure is only necessary when connecting for the first time to a new firmware version; for further connections this will not be necessary anymore. Having downloaded the new parameter definition file from the device, the software has to be restarted. This is also displayed in an information message and has to be confirmed with 'OK'. The software the closes automatically and needs to be restarted manually.

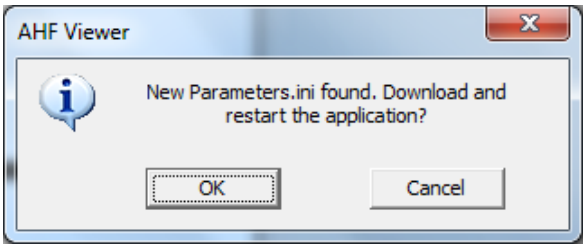

Fig. 8: Download parameter definition

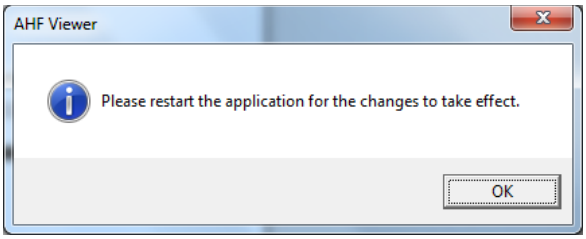

Fig. 9: Message saying that the application will be closed

If it is not possible to establish a connection to the ECOsine® active, a message will appear, saying that the device has not answered. In this case, check again all connection settings of the AHF Viewer and the ECOsine® active. The problem may be due to an improper connection between the PC and the ECOsine® active.

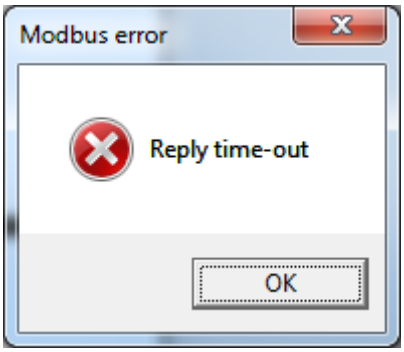

Fig. 10: Failed connection to ECOsine® active

4. Parameter

4.1 Changing parameters

All parameters can be displayed in the Device parameters window which can be opened via '*Parameter→Device parameters*' or by clicking the  symbol.

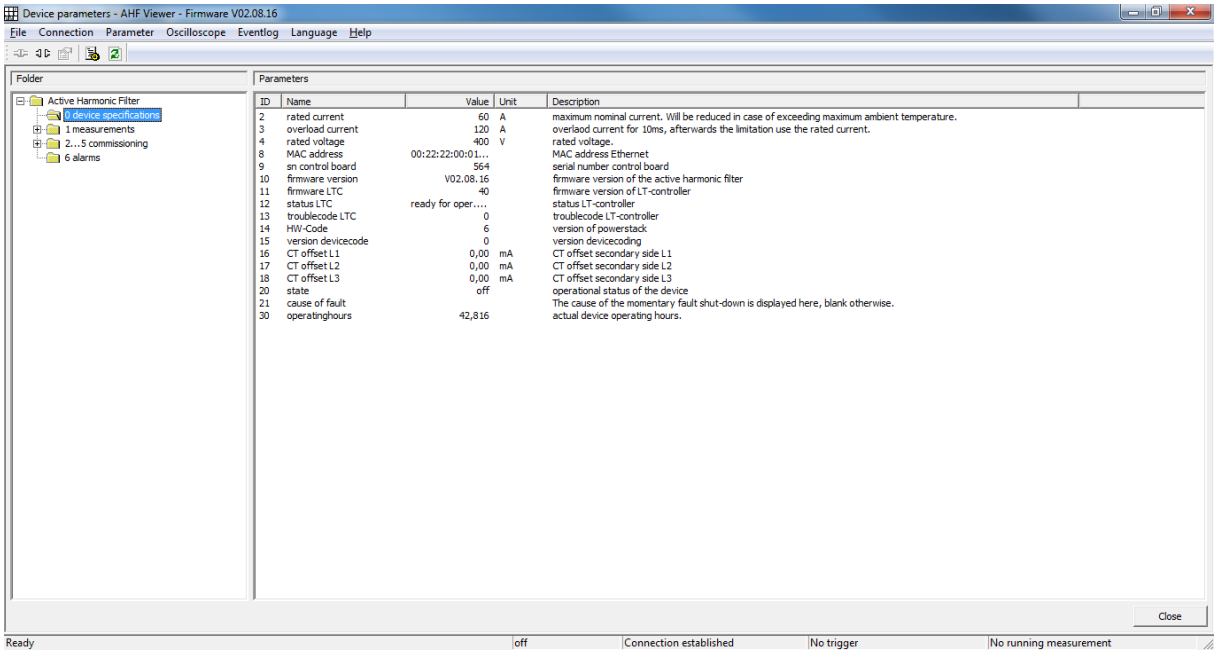

Fig. 11: Device parameters

The left part of the window displays the different menu levels which are described in detail in the ECOsine® active user manual. Double-click a parameter to change it. This will open a new window displaying a list box from which you can select the possible values. It is also possible to enter your own values where necessary and permitted. By clicking 'OK', the new value will be applied immediately to the device and stored; by clicking 'Cancel, the entry will be discarded.

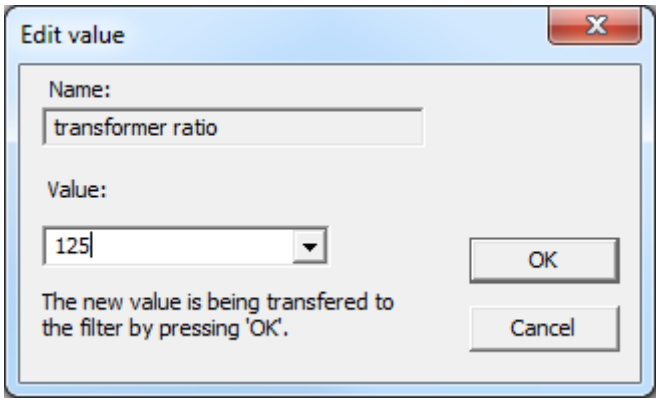

Fig. 12: Editing parameters

To change the date and time settings of the ECOsine® active, an additional 'PC time' button will be displayed, allowing you to transfer the date and time settings of the PC to the input box. By clicking 'OK', these values will be applied to the ECOsine® active.

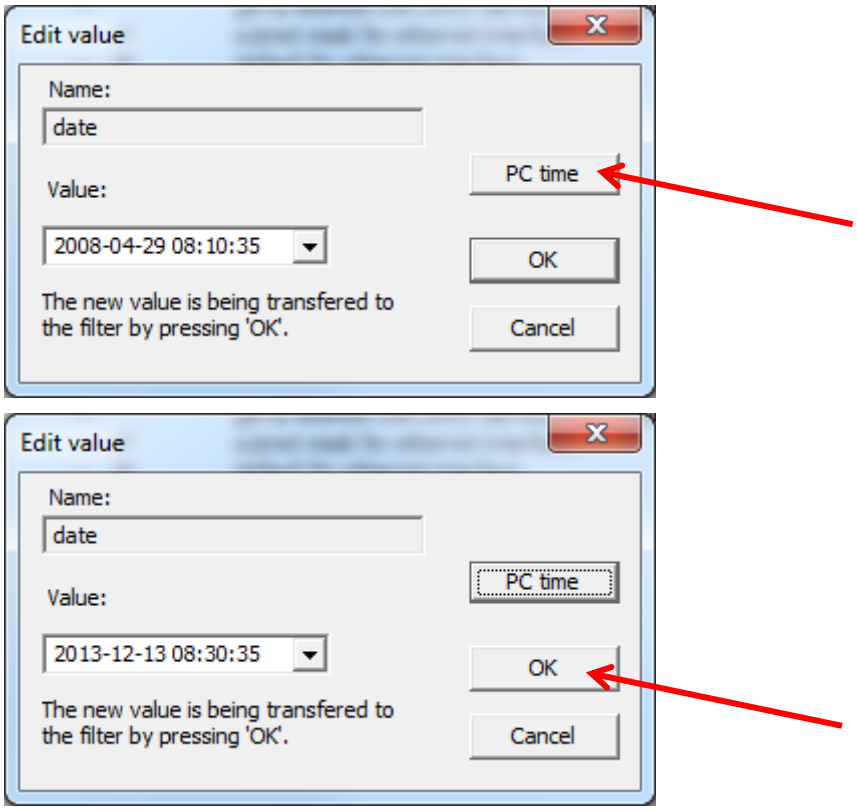

Fig. 13: Setting date and time

Table 4: Quick selection bar

Icon	Function
	Connect the ECOsine® active
	Disconnect the ECOsine® active
	Open connection settings
	Open parameter window
	Read measurement values and parameters. (This will only be necessary if the “Modem” checkbox of the communication settings is ticked, preventing the values from being updated automatically)

4.2 Reading and writing parameter files

Reading a parameter file from the device

In the Menu '*File→Read parameter set from device*' it is possible to load the complete parameter set from the ECOsine® active and save it to a file on your PC. The parameter set can only be read from the device if no long-term measurement is running and no single-measurement trigger is active. This parameter file can be displayed in the AHF Viewer or uploaded to an ECOsine® active.

This function also allows saving of parameters or using the same parameters for several devices connected in parallel.

Sending a parameter file to the device

To reload a parameter file, use the menu '*File→Send parameter set to device*' to transfer a complete parameter set to the connected device. The chosen parameter set will be displayed in an extra window for checking the parameters before uploading them to the device by clicking OK. In this case, only the commissioning part of the parameter file is uploaded to the device, because all the other parameters are read only.

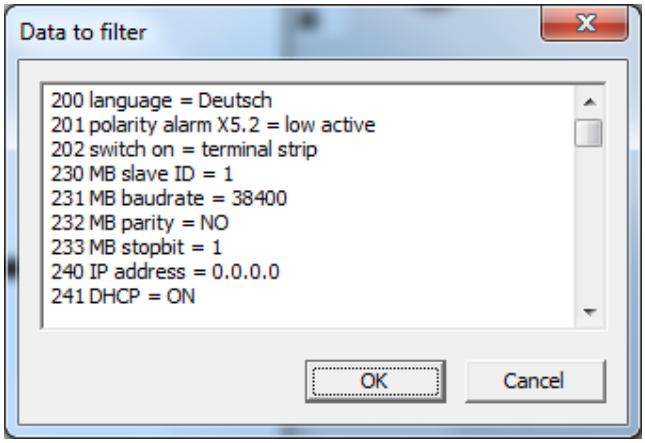

Fig. 14: Sending data to the device

If it is not possible to write a parameter to the device, the following message will be displayed. In this case all displayed parameters must be checked manually as these parameters still have the old values.

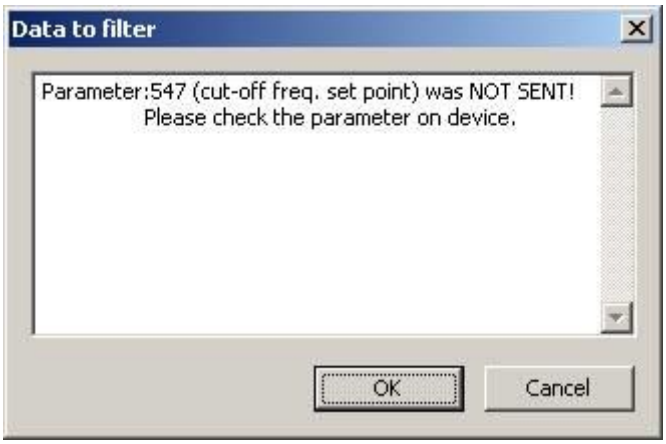

Fig. 15: Message saying that parameter could not be transferred

Structure of the parameter files

The parameter files (.btp) are normal text files which can be opened using a text editor. The structure of these files is the following:

Param <<number>> **=** <<parameter number>> **=** <<value>> **;** <<comment>>

The first number is only an order number in the file and has nothing to do with the parameters itself.

The parameter file is also divided into three parts:

- DeviceData (information on the filter)
- MeasuredValues (measured values at the moment of data withdrawal)
- Commissioning (ECOsine® active settings)

```
[DeviceData]
Param0=2=30
Param1=3=60
Param2=4=400
Param3=8=00:22:22:00:0A:C6
Param4=9=10523
Param5=10=V02.08.17
Param6=11=41
Param7=12=2;ready for oper. LTC
Param8=13=0
Param9=14=6
Param10=15=1
Param11=16=0,00
Param12=17=0,00
Param13=18=0,00
Param14=20=4;full load
Param15=21=0;
Param16=30=21,571
[MeasuredValues]
Param0=100=50,08
Param1=101=11,28
Param2=102=0,96
Param3=103=820
```

Fig. 16: Example of a parameter file

4.3 Opening a parameter file

To open a parameter file in the AHF Viewer, select '*File→Open parameter set*'. Having chosen the parameter file and opened it, a window will appear displaying the parameters. The presentation of the parameters is the same as in the parameter file but easier to read. With the 'OK' button, the window is closed without changing any parameter in the connected ECOsine® active.

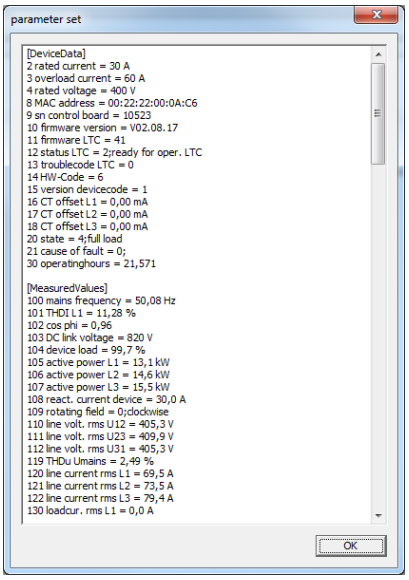

Fig. 17: Presentation of the parameter file

5. Oscilloscope

5.1 Single measurement

To open the single measurement, select '*Oscilloscope →Single measurement*'. In this window, it is possible to view the internal trace memory of the ECOsine® active. In the bottom part of the window, it is possible to display or hide the measurement channels by ticking or unticking them. This allows comparing different measurement values and hiding those that are not needed.

By means of the two cursors C1 and C2, the current values of all measurement channels at a certain moment can be displayed on the right side of the window. The time difference between the two cursor positions is also displayed. Additionally, on the right side of the window, the trigger settings and the time and date when the measurement started are displayed.

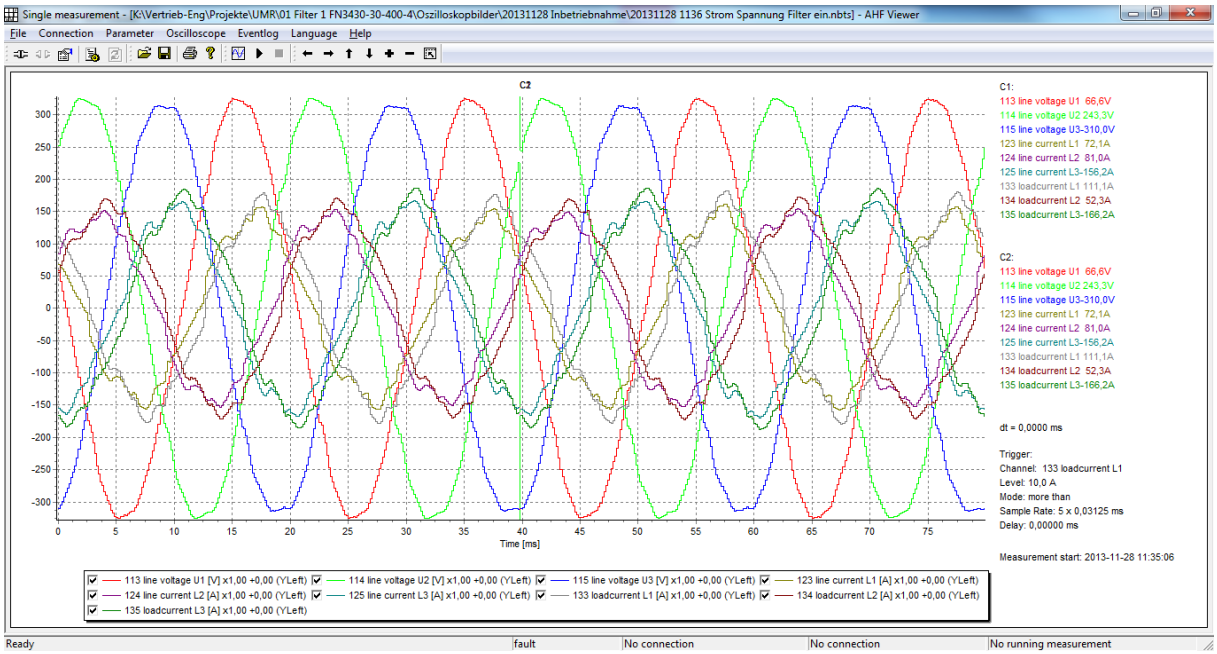

Fig. 18: Single measurement

5.1.1 Menu bar

The menu bar can be used to control the measurement window; the functions are as follows:

Table 5: Menu single measurement

Symbol	Function
	Connect the ECOsine® active
	Disconnect the ECOsine® active
	Open connection settings

Symbol	Function
	Open parameter window
	Open a saved measurement file
	Saves the current measurement to the hard disk, with the following possible formats. • .nbts (single measurement file) • .bmp • .jpg • .xls
	Prints the current measurement view on the standard printer
	Information about AHF Viewer (Version)
	Measurement settings
	Start measurement
	Stop measurement
	Measurement scroll left
	Measurement scroll right
	Measurement scroll upwards
	Measurement scroll downwards
	Zoom in
	Zoom out

Symbol	Function
	Fit zoom to window

5.1.2 Measurement settings

The trace channels and the trigger for a measurement can be set via the AHF Viewer. If the trigger is started using the  button, the AHF Viewer can be disconnected again. Measurement recording by the ECOsine® active is started by the first triggering. The measured values will only be stored in the internal RAM of the ECOsine® active as long as voltage is applied to the device. When a connection is re-established and the "Single measurement' window of the AHF Viewer is open, the measurement will automatically be loaded from the ECOsine® active memory.

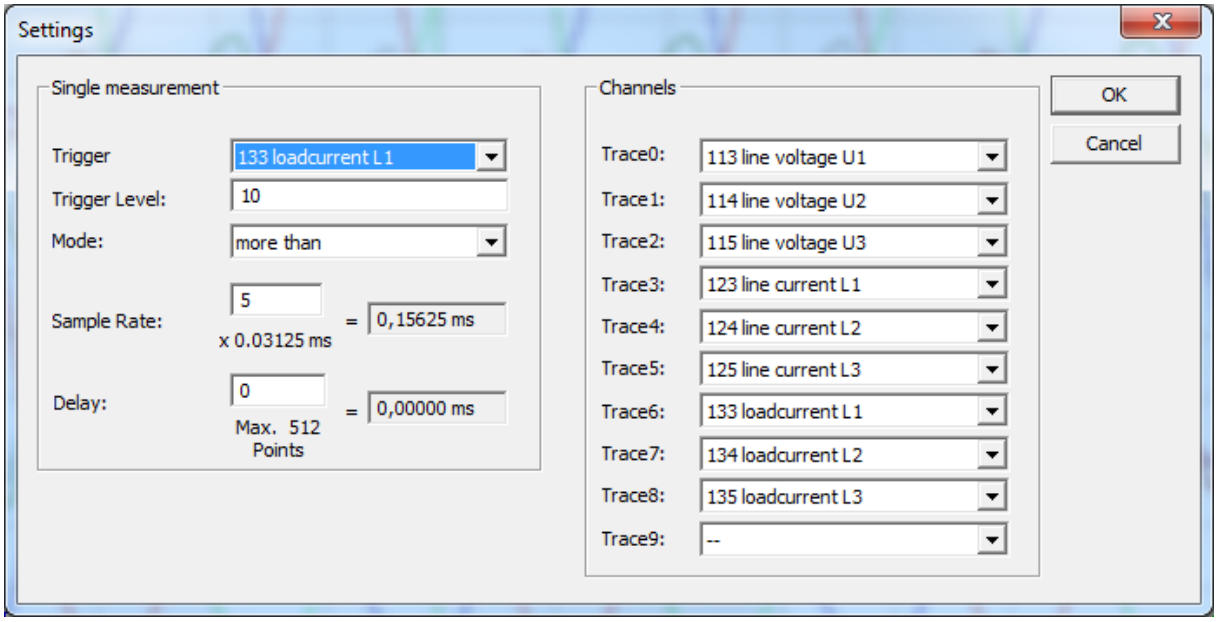

Fig. 19: Single measurement settings

The following values can be set:

Table 6: Properties for single measurement

Parameter	Function
Trigger	This parameter is used to select the measurement value for triggering. In the dropdown menu all available parameters are displayed.
Trigger Level	This is the trigger threshold; for binary signals it is only possible to set them to 0 and 1.
Mode	This defines whether the trigger is activated in case of exceeding or falling below the trigger level.

Parameter	Function
Sample Rate	Defines the sample rate as a multiple of 0.03125ms. The resulting sample rate is calculated and displayed.
Delay	Indicates the pre-trigger history. This allows, for example, using half of the trace memory for measurement values before trigger activation in order to include the cause of the trigger in the measurement.
Channels	This parameter defines the measurement values to be recorded. A maximum of 10 different values are possible at the same time.

By clicking one curve, a new window is opened, where it is possible to make additional settings for every channel.

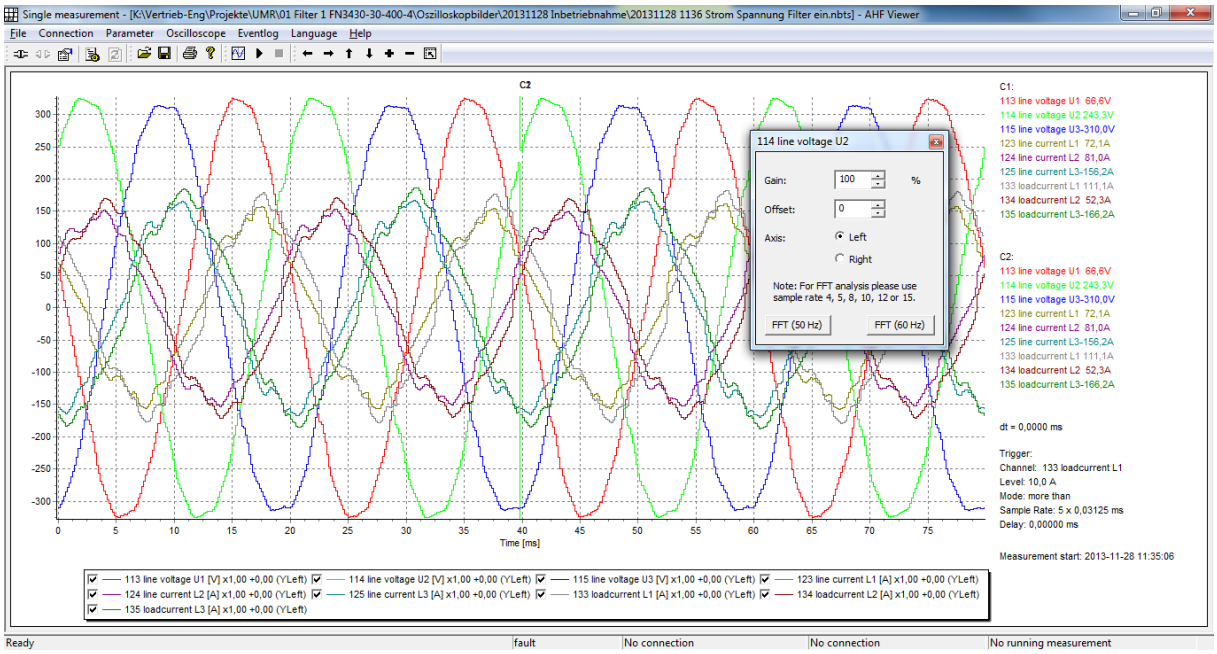

Fig. 20: Single channel settings

Table 7: Single channel settings

Parameter	Function
Gain	Gain for the measurement value
Offset	Offset to the measurement value
Axis	This is to switch scaling of the channel to the left or right axis.
FFT (50Hz)	FFT analysis of this channel at 50Hz line frequency
FFT (60Hz)	FFT analysis of this channel at 60Hz line frequency

5.1.3 FFT analysis

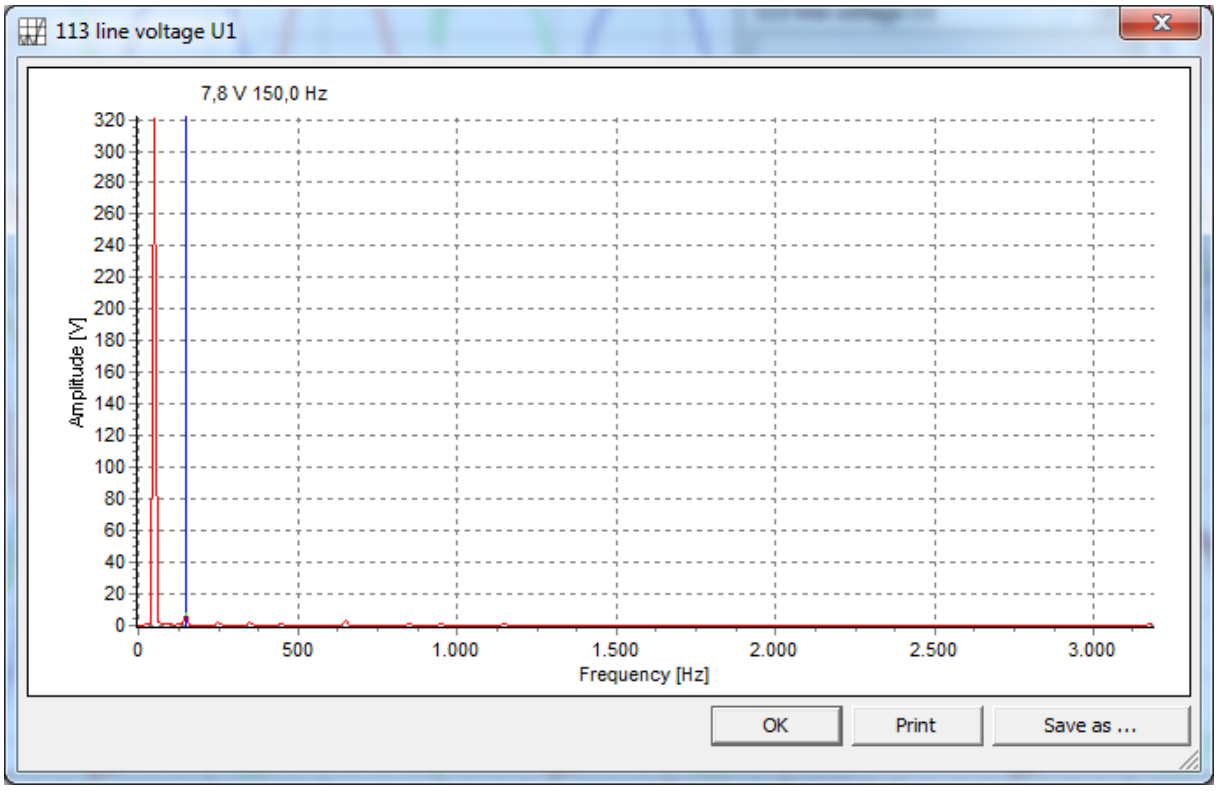

Fig. 21: FFT analysis

FFT analysis of the chosen channel. Using the blue line, the cursor can be moved to display the harmonic amplitudes for every frequency. All values are peak values of the selected frequency (RMS value = peak / √2). The '*Print*' button can be used to print the graph on the standard printer. By clicking '*Save as*', the graph can be saved as a picture or table of values.

5.2 Continuous measurement

The window for the continuous measurement is opened via '*Oscilloscope→Continuous measurement*'. This function allows recording of slowly changing values like RMS values or digital values at a sample rate of at least 1 second. The values are loaded from the ECOsine® active and displayed in a line chart. For this measurement the PC has to remain connected to the ECOsine® active; the maximum duration of the measurement is only limited by the memory of the PC. The measurement must be stored before starting the next one, otherwise the measured values will be lost.

To compare momentary values at two points, two cursers C1 and C2 are available. The values of the cursor positions are displayed on the right side of the screen, as well as the time difference between the two cursors. In the bottom part of the window, you can select the measurement values to be displayed or hidden by ticking or unticking them.

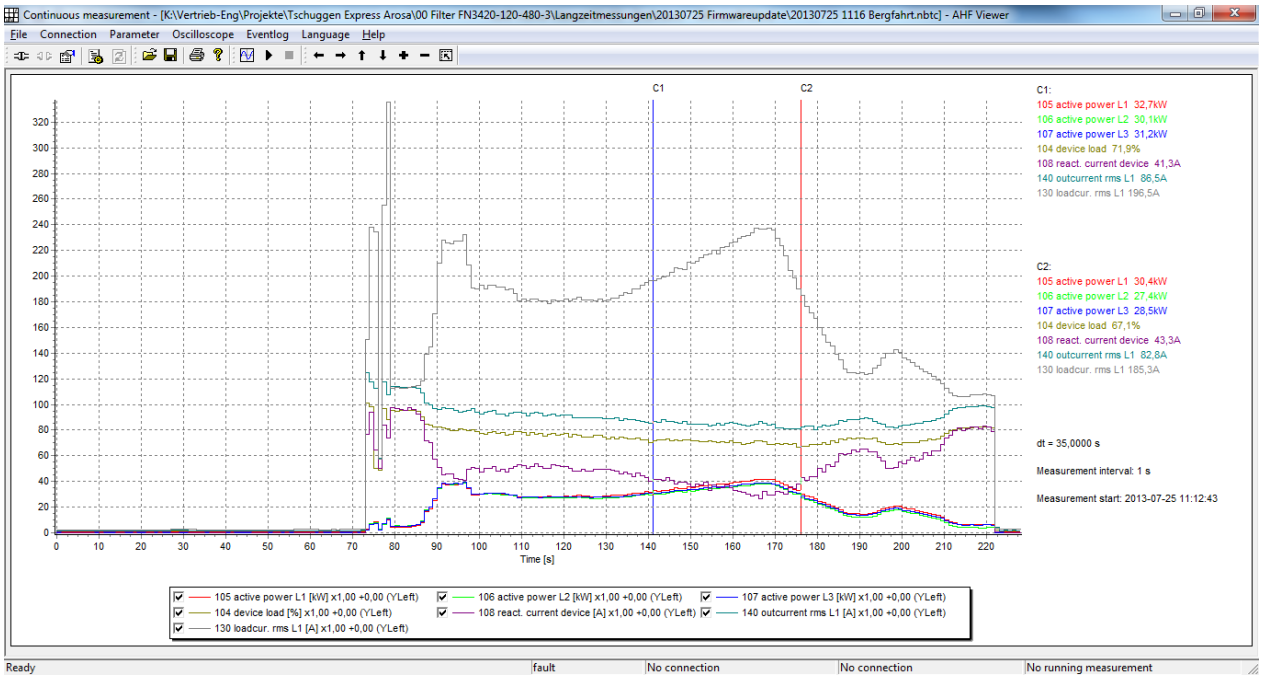

Fig. 22: Continuous measurement

5.2.1 Menu bar

The menu bar can be used to control the measurement window; the functions are as follows:

Table 8: Menu continuous measurement

Symbol	Function
	Connect the ECOsine® active
	Disconnect the ECOsine® active
	Connection settings

Symbol	Function
	Open parameter window
	Open a saved measurement file
	Saves the current measurement to the hard disk, with the following possible formats. • .nbtc (continuous measurement file) • .bmp • .jpg • .xls
	Prints the current measurement on the standard printer
	Information about AHF Viewer (Version)
	Measurement settings
	Start measurement
	Stop measurement
	Measurement scroll left
	Measurement scroll right
	Measurement scroll upwards
	Measurement scroll downwards
	Zoom in
	Zoom out

Symbol	Function
	Fit zoom to window

5.2.2 Measurement settings

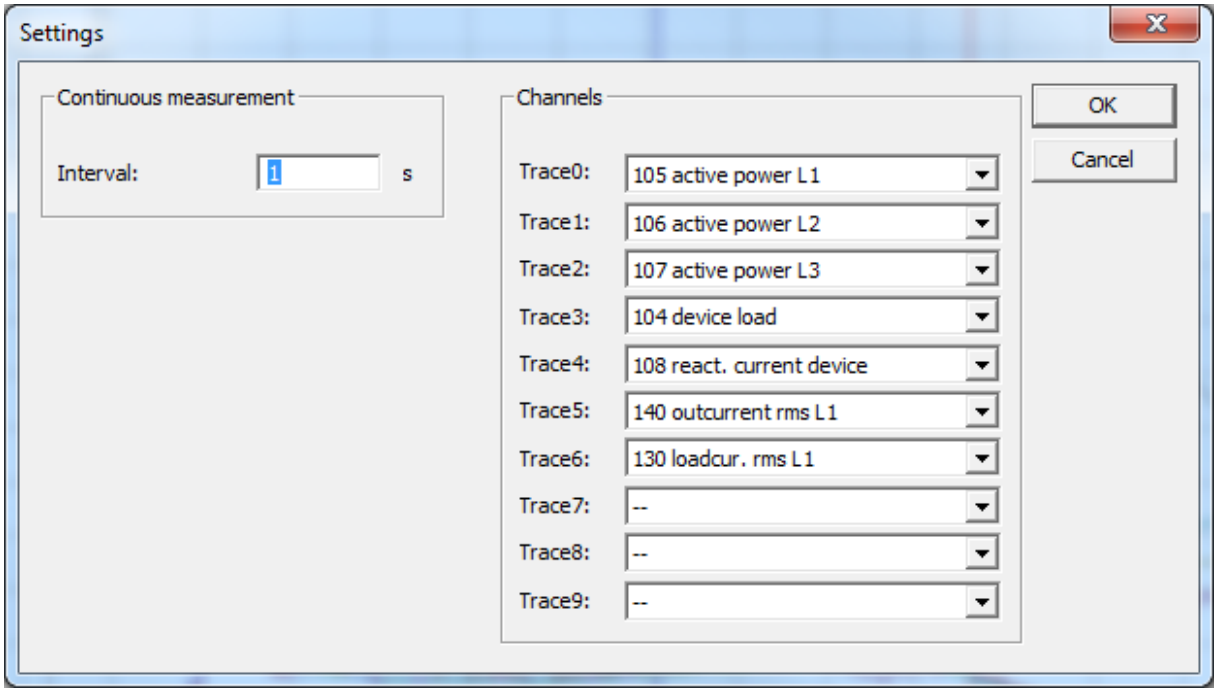

Fig. 23: Continuous measurement settings

The following values can be set:

Table 9: Values for continuous measurement

Parameter	Function
Interval	Interval for recording measurement values by the oscilloscope
Channels	This is where you can select the measurement values to be recorded. A maximum of 10 different values are possible at the same time.

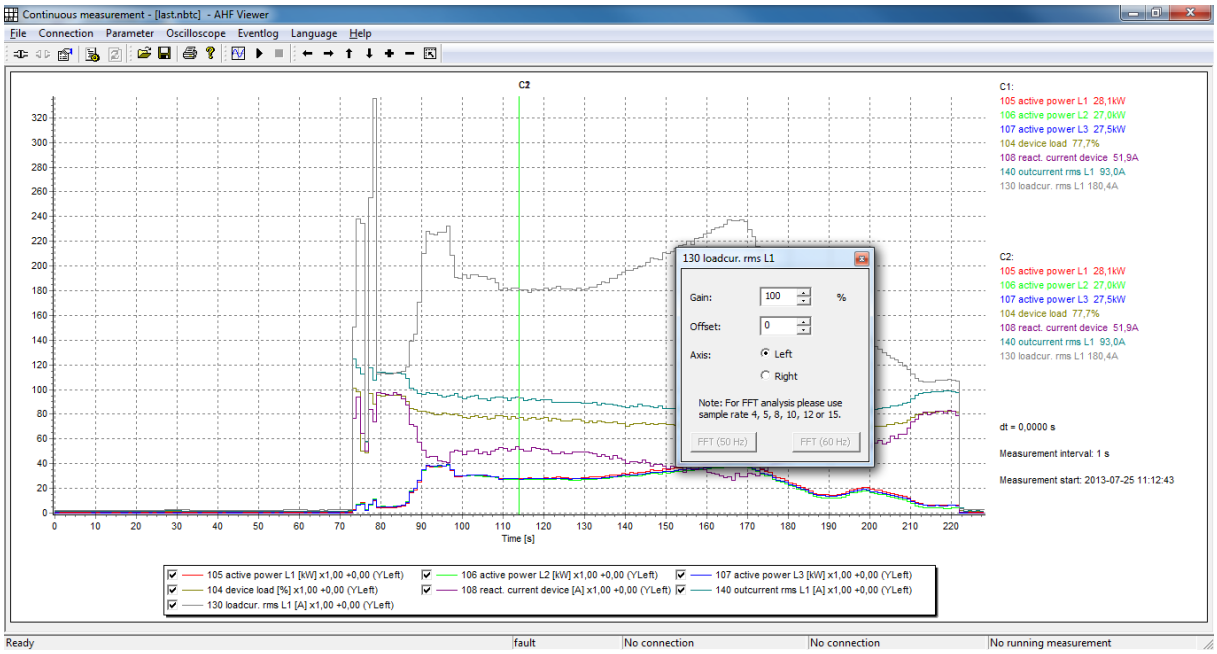

Fig. 24: Single channel settings

Clicking one of the curves opens a window allowing you to set further options for every channel.

Table 10: Description of the single channel menu

Parameter	Function
Gain	Gain for the measurement value
Offset	Offset to the measurement value
Axis	This is to switch scaling of the channel to the left or right axis..

6. Language

The '*Language*' menu is used to set the language of the AHF Viewer software. The language settings will only take affect after the next restart of the software.

7. Log file

To open the log file of the ECOsine®, select '*Eventlog→Show eventlog*'. This window shows all status entries with date and time, description, and operating hours.

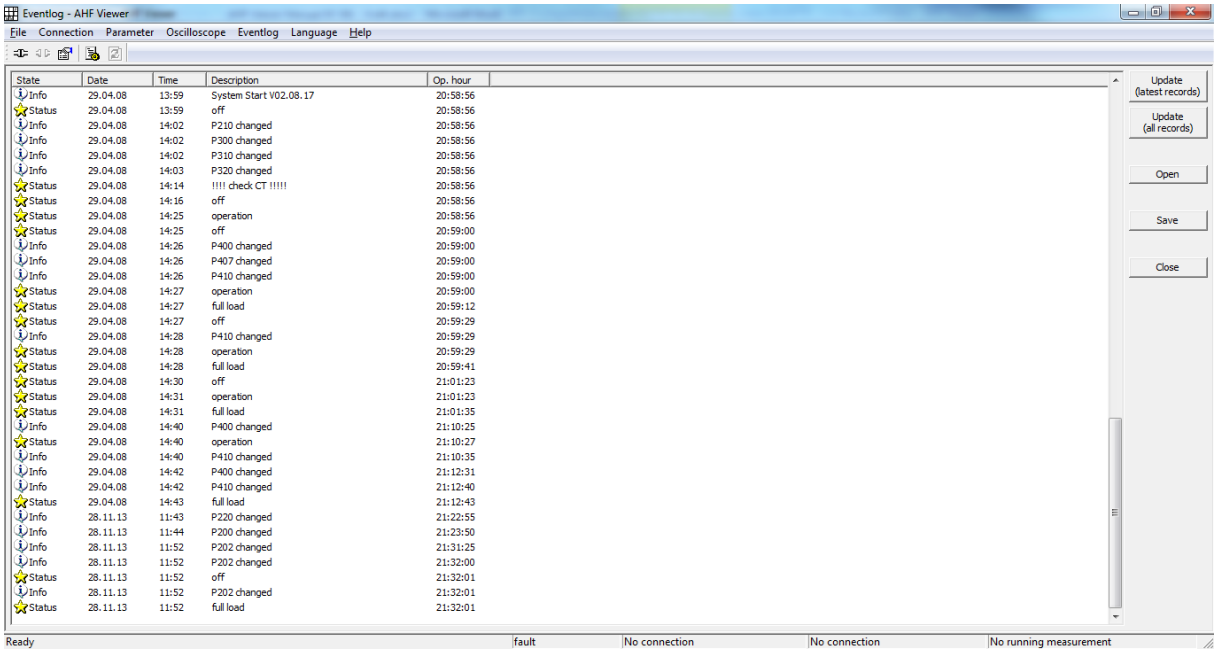

Fig. 25: Event log

Table 11: Functions of the event log

Button	Function
Update (latest records)	Reads the last about 200 entries from the event log of the ECOsine® active.
Update (all records)	Read all events saved in the ECOsine® active event log.
Open	Opens a saved log file from the hard disk.
Save	Saves the entries in a log file on the hard disk.
Close	Closes the event log window.

8. Firmware update

Attention	• **During firmware download do not disconnect the RS485 cable or interrupt the power supply to the ECOsine® active.** • Only authorized Schaffner service staff should perform a firmware update! • Firmware update is only possible via the RS485 interface! • Set the baudrate of the ECOsine® active to 38400 (P231)

To perform a firmware update, no active connection to the ECOsine® active is allowed and the parameter P202 has to be set to 'direct off'. You can then start firmware update by selecting '*File→Update Device Firmware*'. In the firmware update dialog box, you have to choose the COM port for the RS485 connection and apply it with OK

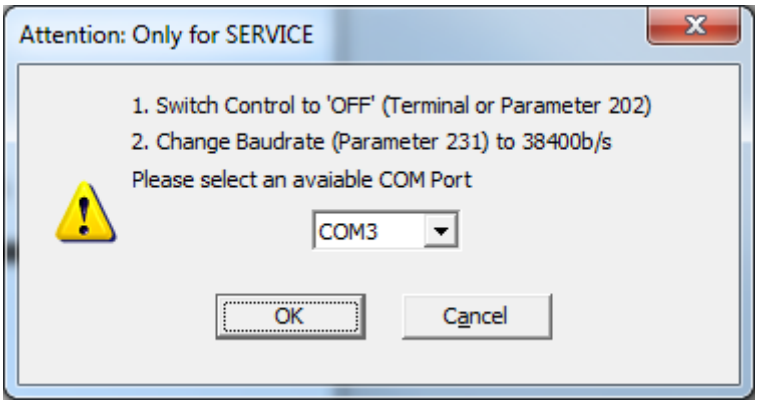

Fig. 26: Starting firmware update

Now the firmware file (.srec) needs to be chosen and all questions have to be answered by pressing the 'OK' button.

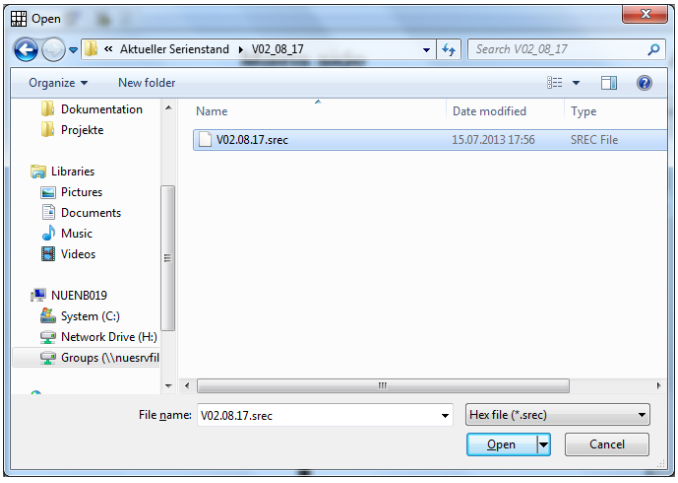

Fig. 27: Choosing firmware file

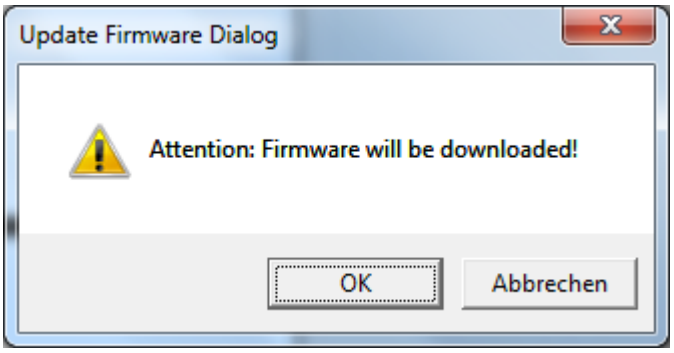

Fig. 28: Safety prompt before firmware download

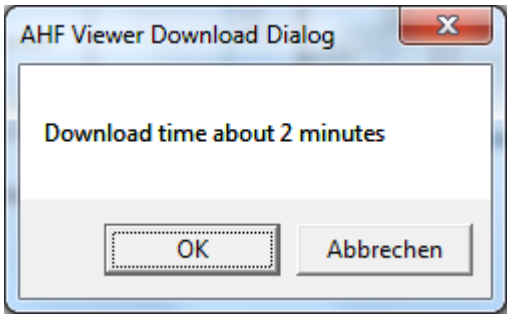

Fig. 29: Message saying that download will take about 2 minutes

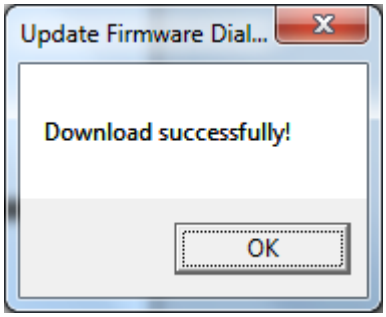

Fig. 30: Firmware update successfully completed

If the last firmware update has not been successful, the following message will appear. In this case, confirm the message with ‘Yes’ and follow the download instructions. If the message appears although firmware download has not been cancelled, there has to be a problem in the connection to the ECOsine® active. In this case, please check the cable connection between the PC and the device or proceed by clicking 'Yes' or 'Cancel'.

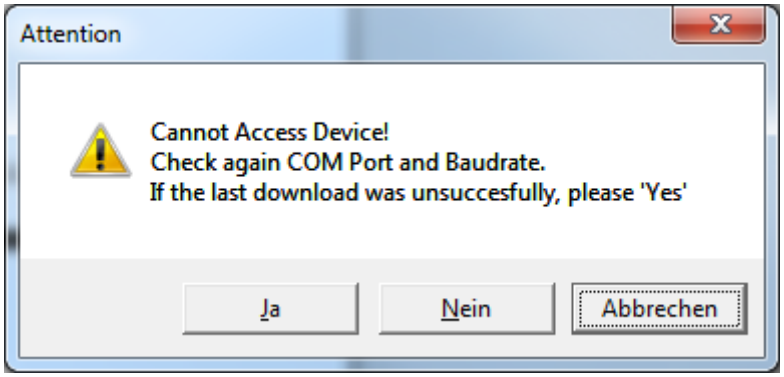

Fig. 31: Firmware update unsuccessful

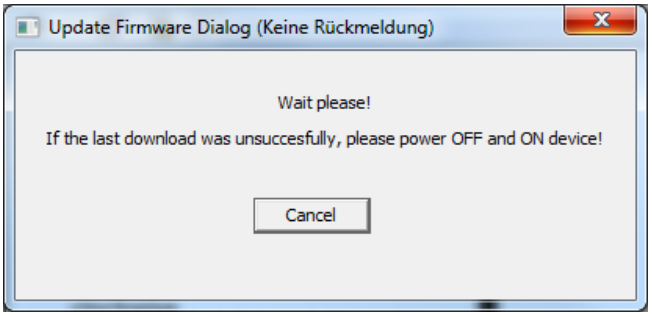

Fig. 32: Restarting firmware update

To restart firmware update, disconnect the ECOsine® active from the power supply and wait until the display is dark. Then reconnect it, and wait until the next window appears to select the firmware file. Select it and perform firmware download as described above.

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