

SV Viewer

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Further information is available on <http://www.schniewindt.de>



SCHNIEWINDT
THE POWER OF ELECTRIFYING IDEAS

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Software – Instruction Manual

Please read this instruction manual carefully.

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We set a high value on the effectiveness of all our products. If you should have any further questions or discover any errors in this manual, please contact Schniewindt GmbH & Co. KG using the contact information provided.

Schniewindt GmbH & Co. KG is not responsible for any damage, data loss or property loss which may occur during installation or use of this software.

The scope of this manual is limited to the installation and use of SV Viewer. It is not intended to describe the procedures to operate your PC nor the basic functions of Windows. It also does not describe the procedure of other components which you use in conjunction with your PC.

Working with this Schniewindt software does require a basic knowledge of how to use a PC. Please refer to your PC's user manual if you have any problems with your PC.

- MS, Microsoft and Windows are registered trademarks of Microsoft Corporation.
- The official name of Windows is Microsoft Windows Operation System
- Other trade names and product names are also registered trademarks.

The following product is required to operate this software:

- WinPcap (Basis for Network Software / open source)

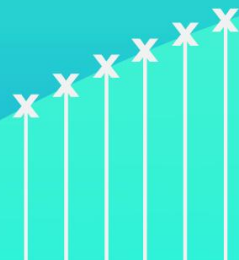


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1. Overview

This program gives you the facility to visualize and record the digital IEC protocol (Implementation Guidelines for Digital Interface to Instrument Transformers using IEC 61850-9-2 LE of the UCA User Group).

This software is designed to enable the user to visualize the current and voltage values of different merging units within the IEC-Norm.
The software is optimized for a sample rate of 80 samples / cycle.

1.1. Values / Waveform Tabs:

Select the 'Values' tab to numerically read out the sample values or the 'Waveform' tab to chart the sample values as waveforms.

The 'Values' tab provides the eight current and voltage values of the merging unit numerically. In each display window the DC offset value and the phase shift can be attached.

In real-time mode one selectable value is continuously shown.

By selecting the 'Waveform' tab the sample values of the merging unit are shown as waveforms. You can add or remove waveforms by selecting the boxes on the right side.

1.2. Phasor Tab

On the 'Phasor' tab the phase shift between the signals are shown in a 360 degrees diagram. Additionally the numerical values are shown top right.

1.3. Recorder Tab:

Furthermore you can record the data stream by selecting 'Recorder' tab.
The recorded data stream is saved on your hard drive.

These files are very easy to handle either in most spread sheet programs (e.g. in Notepad, WinWord, Excel, FlexPro) or in COMTRADE analysis software.

Note: Long recordings may result in very large data volume; therefore, a recording time of 3 minutes or less is recommended.

1.4. Report Tab:

The 'Report' tab shows the relevant information as MAC, AppID, sample counter, global or local synchronization flag.

A report may be printed out by using the 'Print' button.

1.5. Setup Tab:

This menu allows the settings to be changed them between sessions. By clicking on the 'Find Stream' button the software will automatically search for compatible data streams.

2. System Requirements

- Pre-Installation: WinPcap (actual 4.1.2) must be installed.
(see www.winpcap.org)
A wired network interface must be installed.
- Operating system: Microsoft Windows XP/Vista/7 (x64) *)
- Minimum memory: As specified for operating system
- CPU performance): A processor performance index of 6 or better is recommended if real-time acquisition is required.

This software runs in a single task mode; therefore, Intel i5-66x or other high performance CPU with single core enhancement is recommended. **)
- Disk space: Installation requires ~20MB disk space.
For recording data, additional disk space is required.
USB or other Flash drives are not recommended for long duration recordings due to slow write speeds.
- Screen: Optimized for 1024 x 768 pixel resolution.

*) Vista and Windows 7 require the UAC (User Access Control) to be deactivated in the user accounts console before installing any program. In addition Vista and Windows 7 need administrative rights during first use of SV Viewer. Shift + right mouse click on the desktop icon to obtain access to the system registry. In the registry the default start-up values are recorded. We strongly suggest installing the software on a dedicated computer. Running additional software (e.g. anti virus, personal firewall, etc.) may result in diminished system performance. It is highly recommended to also shut down unused processes on the PC; e.g. WIA, Windows update. etc and to change the state of unused services in the system management to manual.

**) Slower CPU performance is possible, if no real-time acquisition is required.



3. Installation Instruction

Quick Installation:

1. Step: Vista and Windows 7: Deactivate the UAC (User Access Control).
2. Step: If not yet done, install WinPcap 4.1.2. or latest version.
3. Step: Follow the installation procedure shown after starting 'setup.exe'.
4. Step: After successful installation of 'SV Viewer', start the program at first with administrative rights (i.e. click by using right button on the program and choose 'run as administrator')
5. Step: Go to the 'Setup' tab and decide which kind of network connection you have to obtain access to the IEC 61850-9-2 LE Sampled Values bus.

Step by Step Installation Instruction:

The following pages describe a step by step installation on a PC using the Windows XP operating system. For Vista and Windows 7 you must deactivate the UAC (User Access Control) in the user accounts console. Afterwards, if not already done, install the WinPcap Software which can be downloaded for free here:

<http://www.winpcap.org>.

To begin, download the Software 'SV Viewer' from our website:

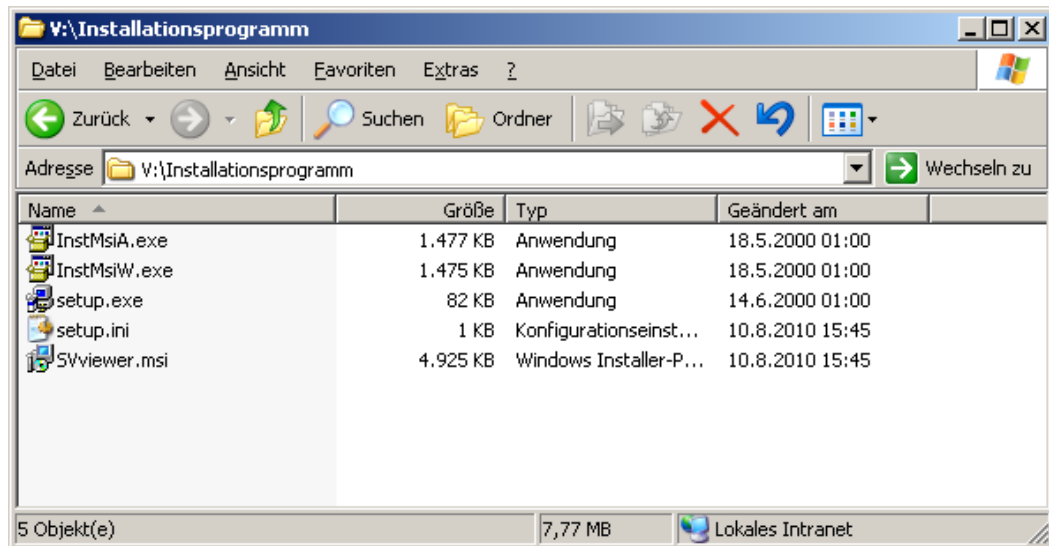
<http://sv-viewer.schniewindt.de> (www.schniewindt.de)

or insert a CD containing the software into your optical drive. If the installation folder does not open automatically upon insertion of the CD, from the start menu choose the 'My Computer' icon and choose the drive containing the folder 'SV Viewer Installer'. Next select the 'setup.exe' icon to start the installation.

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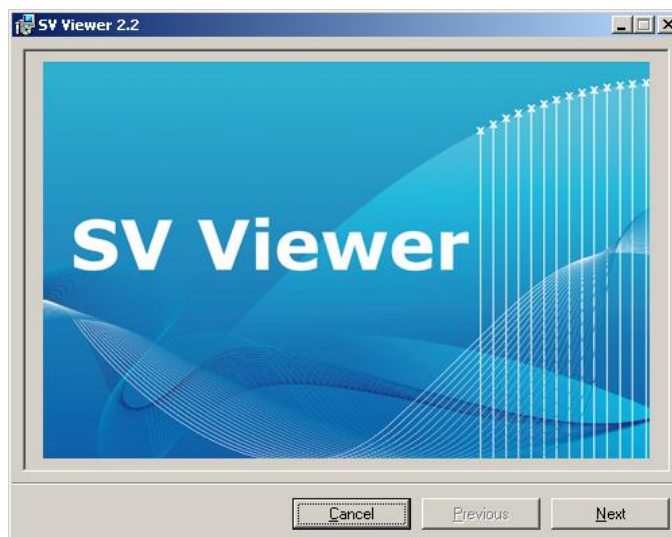
3.1. Installation Folder

Open the folder 'SV Viewer Installer' and double-click on 'setup.exe'.



3.2. Installation Start Screen

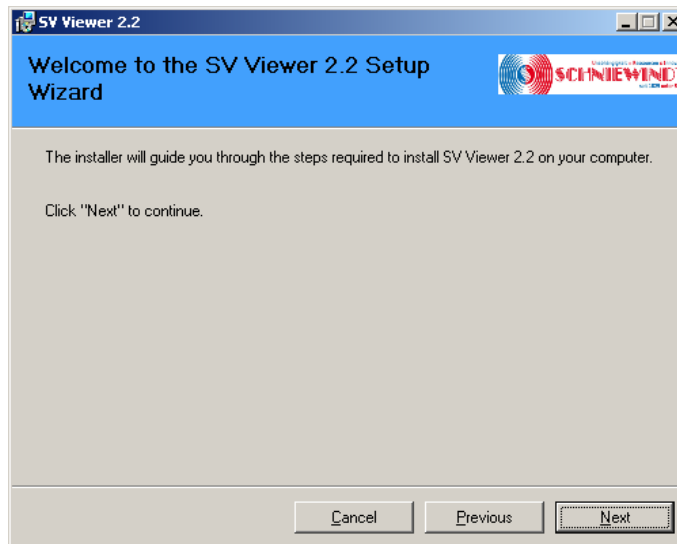
The following 'SV Viewer' window is the first window you will see. Please press the 'Next' button.



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3.3. SV Setup Wizard

After you press the 'Next' button, the next pop up window will appear.



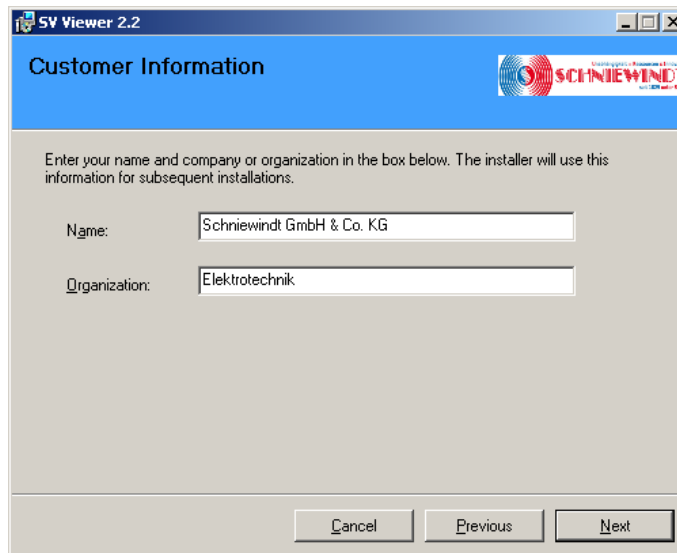
3.4. License Agreement

It is necessary to select the 'I agree' portion of the License Agreement to continue with the installation. If you do not accept the License, please leave the installation by pressing the 'Cancel' button.

SV Viewer

3.5. Customer Information

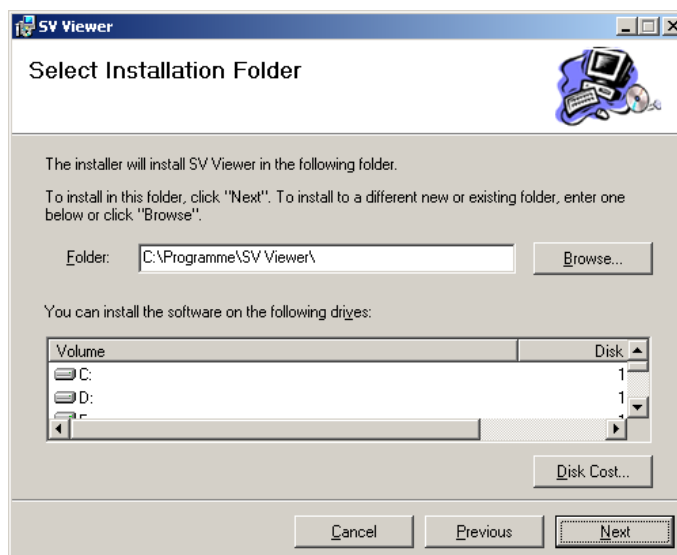
Please fill out the boxes.



The screenshot shows the 'Customer Information' dialog box for SV Viewer 2.2. The title bar reads 'SV Viewer 2.2'. The dialog has a blue header with the title 'Customer Information' and the SCHNIEWINDT logo. Below the header, there is a text area with the instruction: 'Enter your name and company or organization in the box below. The installer will use this information for subsequent installations.' There are two input fields: 'Name:' with the text 'Schniewindt GmbH & Co. KG' and 'Organization:' with the text 'Elektrotechnik'. At the bottom, there are three buttons: 'Cancel', 'Previous', and 'Next'.

3.6. Select Installation Folder

Please choose a folder where the software is to be installed.



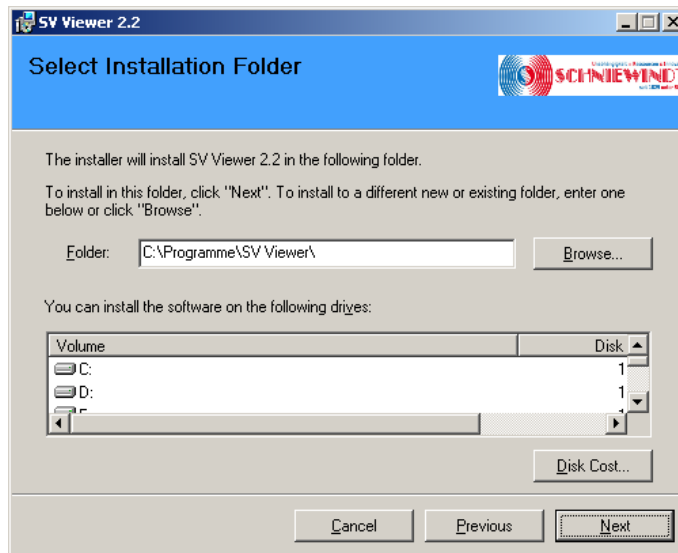
The screenshot shows the 'Select Installation Folder' dialog box for SV Viewer. The title bar reads 'SV Viewer'. The dialog has a white header with the title 'Select Installation Folder' and a small icon of a computer and a CD. Below the header, there is a text area with the instruction: 'The installer will install SV Viewer in the following folder. To install in this folder, click "Next". To install to a different new or existing folder, enter one below or click "Browse".' There is an input field for 'Folder:' with the text 'C:\Programme\SV Viewer\' and a 'Browse...' button. Below this, there is a section titled 'You can install the software on the following drives:' with a table showing available drives. At the bottom, there are three buttons: 'Cancel', 'Previous', and 'Next'.

Volume	Disk
C:	1
D:	1

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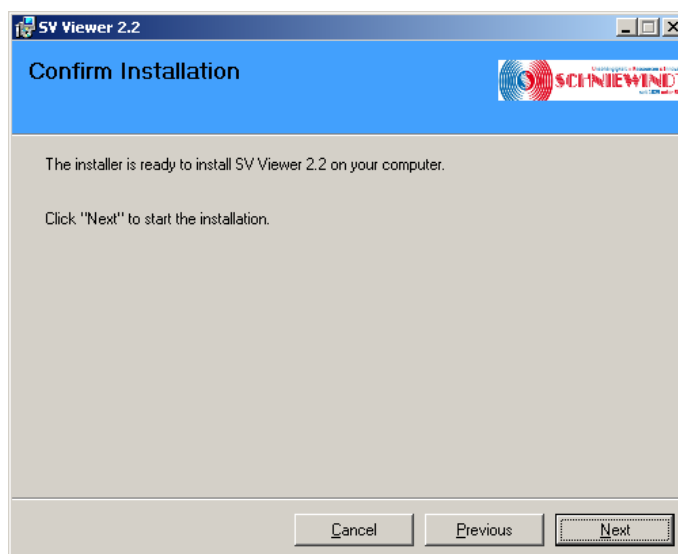
3.7. Confirm Installation

You have received the last step of the installation. After you press 'Next' the software SV Viewer will be installed.



3.8. Installation Complete

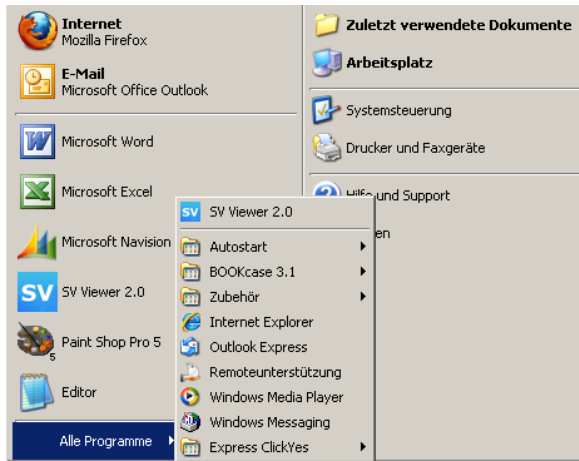
After the software has been installed successfully you get an 'installation complete' message as shown below.



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3.9. Start Menu

At this point the SV Viewer software should appear in the 'Start Menu'.



Click on the 'SV Viewer' icon to start the software. When starting software for the first time, it must be started with administrative rights enabled in Windows.

Note: without activation you are just able to use the 'Demo' Version.

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4. 'Demo' Version

When starting the software for the first time, only the 'Demo' version will be available. The 'Demo' version only allows use of the 'Values' and 'Report' tabs. The 'Report' tab shows the main information of the merging unit. The 'Values' tab visualizes the first current value. The other seven values are not applicable. The 'Demo' version allows use of the 'Setup', the 'Report' and the 'Values' tabs. The other tabs will be unavailable.

For licensing the software please see chapter 5.

4.1. Setup Tab

The screenshot shows the 'Setup' tab of the SV Viewer 2.3.2 application. The title bar reads 'SV Viewer: for Real-Time Communication on IEC 61850 Process Bus Based Distributed Sampled Measured Values Transmission; Version: 2.3.2'. The menu bar includes 'Info', 'Values', 'Phasor', 'Waveforms', 'Recorder', 'Report', 'Setup', and 'Exit'. The main area is divided into several sections:

- Network adapter:** A dropdown menu showing 'Realtek 10/100/1000 Ethernet NIC'.
- Standard printer:** A dropdown menu showing '*Microsoft XPS Document Writer'.
- Packet filter condition:** An empty text input field.
- Packet content filter #1:** A text input field containing 'IX_9001_1.9b' and a 'Find streams' button.
- Packet content filter #2:** An empty text input field.
- Unit for current:** A dropdown menu showing 'A'.
- Unit for voltage:** A dropdown menu showing 'kV'.
- Decimal point for values:** A dropdown menu showing '0.00' and a checked 'estimate DC offset' checkbox.
- Data path for storing data:** A text input field containing 'D:\StoredData' and a 'Browse' button.
- Interval for refreshing data:** A text input field containing '500' followed by 'in ms'.
- Base frequency:** A text input field containing '50' followed by 'in Hz'.
- Licence:** A section containing 'CompanyName: 12526-23425-49023-32743-12653-40774' and a 'Licensing' button.
- SV Viewer 2.3.2:** A section containing the company name 'Schniewindt GmbH & Co. KG', the website 'www.schniewindt.de', and the address 'D-58809 Neuenrade'.
- Names of first group of 4 data sources:** Four text input fields containing 'Current Sensor A', 'Current Sensor B', 'Current Sensor C', and 'Current Sensor N'.
- Names of second group of 4 data sources:** Four text input fields containing 'Voltage Sensor A', 'Voltage Sensor B', 'Voltage Sensor C', and 'Voltage Sensor N'.

To use the 'Demo' version, start with the setup. At first choose the 'Network adapter'. The easiest way to find your merging unit is to click on the 'Find Streams' button.

4.2. Report Tab

The 'Report' tab provides the most important information of your merging unit. Furthermore you find the original .hex-display which represents the IEC 61850-9-2 LE Protocol.

4.3. Value Tab

In the 'Run' operation the value of the Current Sensor A is shown. The other seven voltage and current values are not applicable.

4.4. Licensing

To get the full-version please go to the 'Setup' tab and choose the button 'Licensing'.

Further information can be found in chapter 5.

4.5. Detailed Information

For more detailed information of the software, please see chapter 6 (Full-Version description). Here you will find detailed information for each button and field.

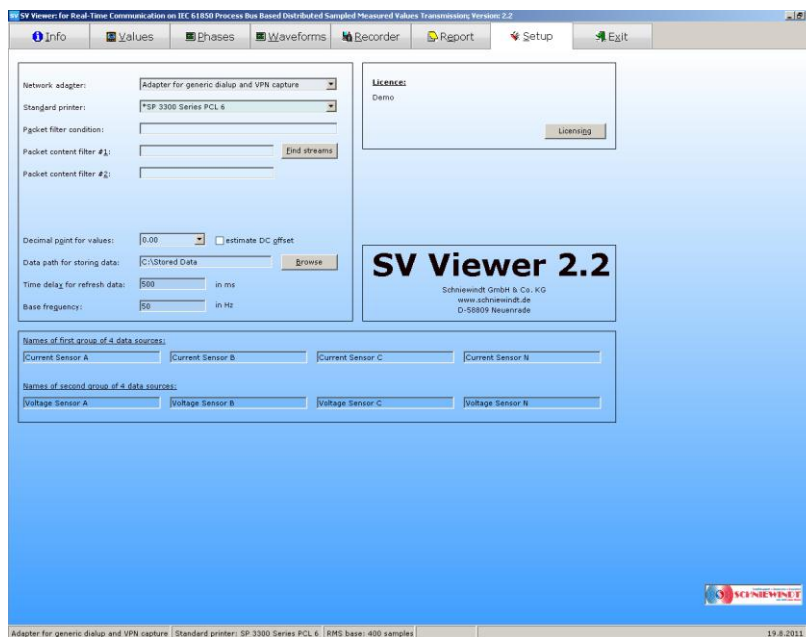
SV Viewer

5. Licensing

Complete the following steps to upgrade to the full-version of this software.

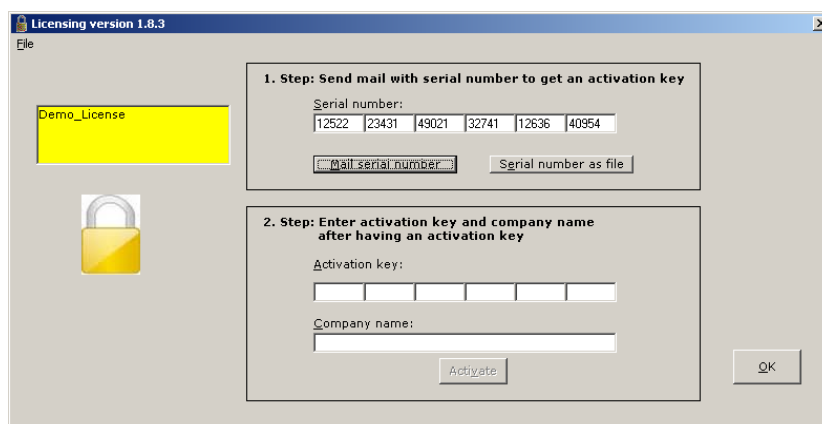
5.1. Setup Tab

Select the Setup Tab.



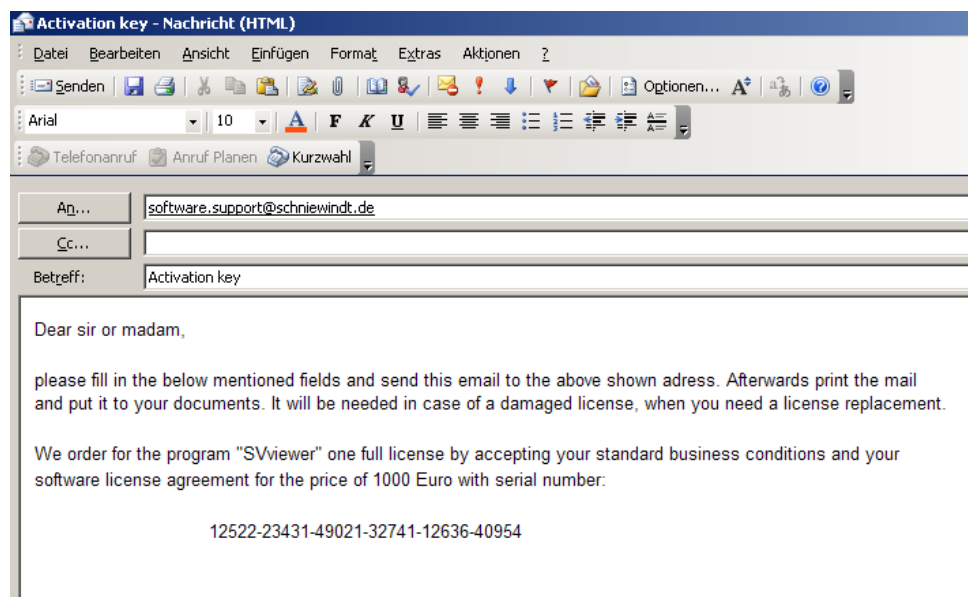
5.2. Status

In the top right square the status is shown. The default 'Demo' version is shown in this example. To get the full-version choose the 'Licensing' button. The next pop-up window will appear.



5.3. Sending serial number

The window automatically generates a serial number. This serial number is necessary to provide you with an activation key. You can send this serial number directly by electronic mail. If you have any problems with your email program, please send us the serial number as an attached file. Please find below the two choices.



12522-23431-49021-32741-12636-40954

For :

Company: Schniewindt GmbH & Co. KG

Name: Mr. Jäger

Surname: Johannes

Address: Schöntaler Weg 46

City: Neuenrade

Country: Germany

Zip code: 58809

Email: johannes.jaeger@schniewindt.de

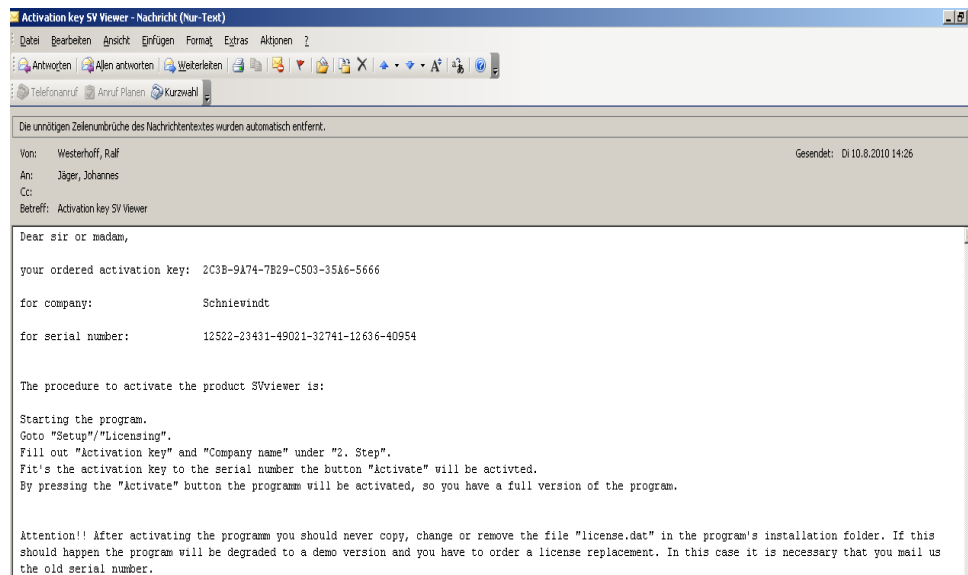
Telephon: +49-2392-692-10

Fax: +49-2392-692-11

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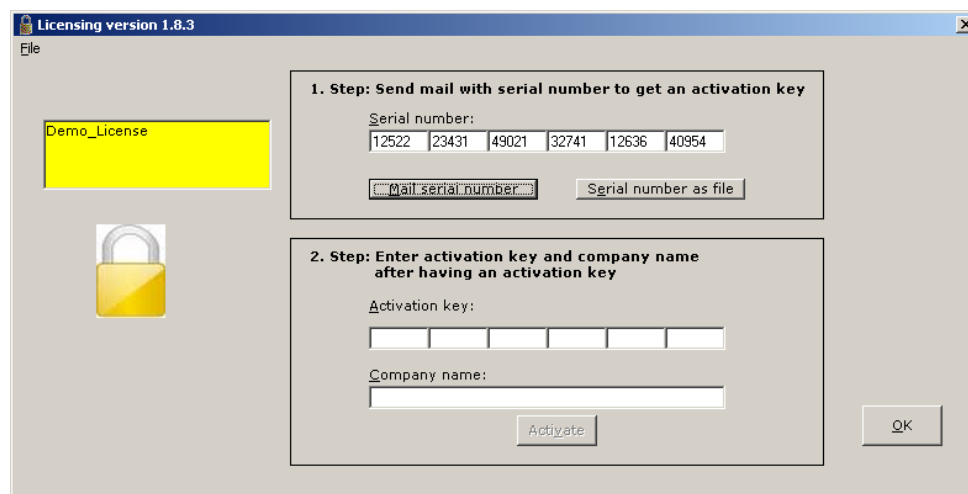
5.4. Received activation key

After we have received your serial number you will get an activation key from us within the next three working days. An example of this correspondence is shown below.



5.5. Insert activation key

When you receive the correspondence with the activation key, please open the SV Viewer Software and go to the 'Setup' tab. Press the 'Licensing' button to open shown window below. Please enter the activation key into the empty fields along with your company's name (at least 4 characters are needed in this field).



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5.6. Key and Company name

After you have inserted the key and the company name, please press 'Activate'.

Licensing version 1.5.0

File

1. Step: Send mail with serial number to get an activation key

Serial number: 12522 23431 49021 32741 12636 40954

Mail serial number Serial number as file

2. Step: Enter activation key and company name after having an activation key

Activation key: 2C38 9A74 7B29 C503 35A6 5666

Company name: Schniewindt GmbH & Co. KG

Activate OK

Licensing version 1.5.0

File

1. Step: Send mail with serial number to get an activation key

Serial number: 12522 23431 49021 32741 12636 40954

Mail serial number Serial number as file

2. Step: Enter activation key and company name after having an activation key

Activated for: Schniewindt GmbH & Co. KG

Activation key: 2C38 9A74 7B29 C503 35A6 5666

Company name: Schniewindt GmbH & Co. KG

Activate OK

5.7. Full-Version

The 'Demo' License changes to 'Activated for:'.

At this point all features will be enabled. Press 'OK' to leave the activation process.

The 'Setup' tab now shows your company's name and the serial number in the 'Licence' field.

SV Viewer: for Real-Time Communication on IEC 61850 Process Bus Based Distributed Sampled Measured Values Transmission; Version: 2.3.2

Info Values Phasor Waveforms Recorder Report Setup Exit

Network adapter: Realtek 10/100/1000 Ethernet NIC

Standard printer: *Microsoft XPS Document Writer

Packet filter condition:

Packet content filter #1: IX_9001_1_9b Find streams

Packet content filter #2:

Licence: CompanyName 12526-23425-49023-32743-12653-40774

Licensing

SV Viewer

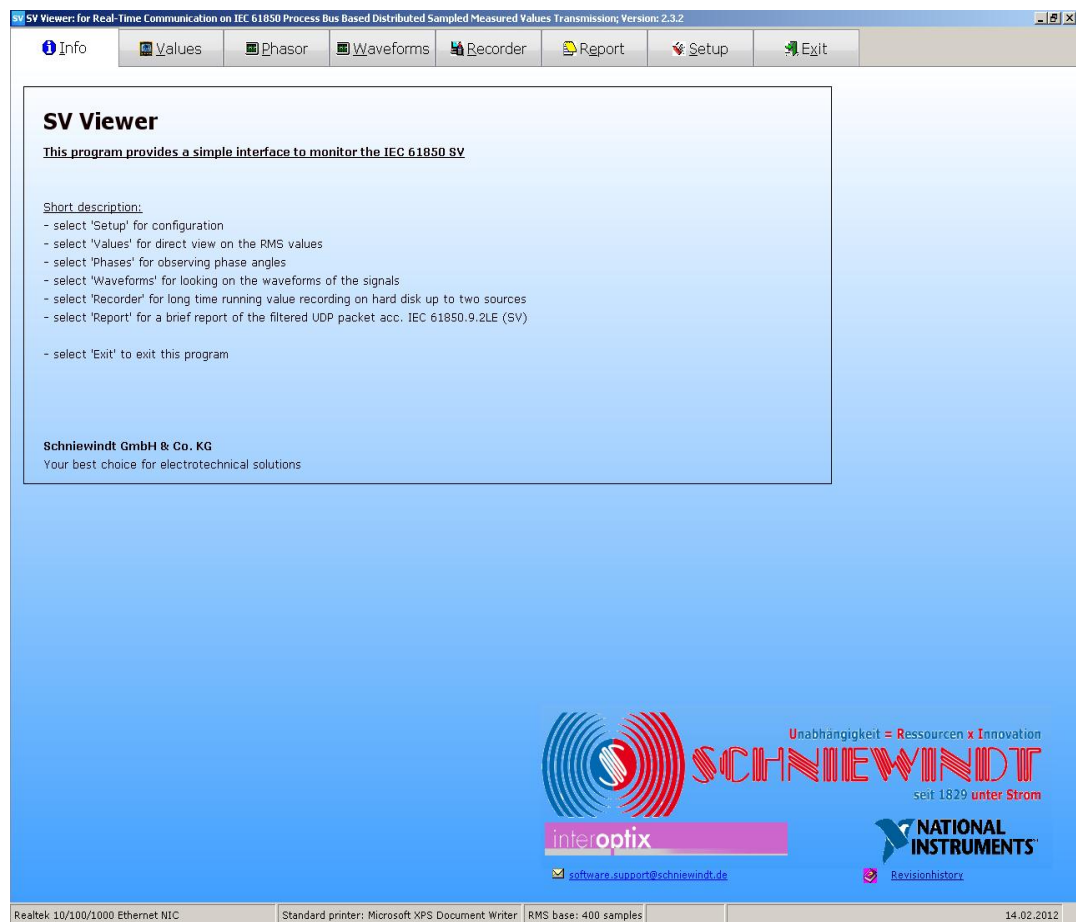
6. Function and Settings of the Tabs

On the following pages detailed descriptions of the different tabs are provided.

6.1. Info

After starting the SV Viewer the 'Info' tab is displayed. A short description of the different tabs is given.

You have direct access by clicking on the support link to your email program with a prepared email text which contents your serial number automatically. This page is the start screen.



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6.2. Setup

Check your configuration on the 'Setup' tab at every start up. The last setup configuration used will be automatically loaded during the next use of the software. The SV Viewer reads data streams of up to two merging units simultaneously.

SV Viewer: for Real-Time Communication on IEC 61850 Process Bus Based Distributed Sampled Measured Values Transmission; Version: 2.3.2

Info Values Phasor Waveforms Recorder Report Setup Exit

Network adapter: Realtek 10/100/1000 Ethernet NIC

Standard printer: *Microsoft XPS Document Writer

Packet filter condition:

Packet content filter #1: IX_9001_1.9b Find streams

Packet content filter #2:

Unit for current: A

Unit for voltage: kV

Decimal point for values: 0.00 ☒ estimate DC offset

Data path for storing data: D:\StoredData Browse

Interval for refreshing data: 500 in ms

Base frequency: 50 in Hz

Licence:

CompanyName
12526-23425-49023-32743-12653-40774

Licensing

SV Viewer 2.3.2

Schniewindt GmbH & Co. KG
www.schniewindt.de
D-58809 Neuenrade

Names of first group of 4 data sources:

Current Sensor A Current Sensor B Current Sensor C Current Sensor N

Names of second group of 4 data sources:

Voltage Sensor A Voltage Sensor B Voltage Sensor C Voltage Sensor N



6.2.1. Network adapter (Drop-down-menu)

The software will automatically search for all available network adapters and add them to the drop-down-menu. Please select the network adapter which is connected to the merging unit.

6.2.2. Standard printer (Drop-down-menu)

All available printers are added to the menu. Please select your preferred printer.

6.2.3. Packet filter condition (Input field)

This software is designed to work with WinPcap. WinPcap is a packet capture and filtering engine. Therefore it is necessary to set some filter.

The different filters may be found here:

http://dog.tele.jp/winpcapeng/html/group_language.html

The packet filter condition filters just the protocol type. It does not filter any AppID's, ID's or source addresses.

6.2.4. Packet content filter #1 (Input field)

Enter an ID (name) of a merging unit which should be filtered. (But we recommend to use the 'Find streams' button).

6.2.5. Packet content filter #2 (Input field)

Enter a second ID (name) of a second merging unit. This ID will be also filtered. This allows comparing two merging unit values with each other. This is just available for the recording mode.

6.2.6. Find streams (Button)

Your computer will automatically search for all compatible data streams. Please click the 'Start' button in the small 'searching' window. Select one of the found streams and press 'OK' to return to the 'Setup' tab.



6.2.7. Unit for current

Please choose the favoured unit.

6.2.8. Unit for voltage

Please choose the favoured unit.

6.2.9. Decimal point for values (Drop-down-menu)

Numbers of decimal points which should be shown in the 'Values' tab are modifiable.

6.2.10. Estimate DC offset (Check box)

The estimate DC offset is also displayed in the 'Values' tab by clicking the check box.

6.2.11. Data path for storing data (Input field)

Please create a folder on your hard drive where the recorded files are to be saved. Please copy the path of this folder into the input field. All new recorded files will be saved to this path.

6.2.12. Interval for refreshing data (Input field)

The time until the software restart to read in a number of values. The number of values is changeable under 'Samples of readout'. The recommend refresh time is 500 ms.

6.2.13. Frequency (Input field)

Enter the power frequency (50 / 60 Hz) of the measured sensors.

6.2.14. Renaming the first group of 4 data sources (Input field)

Use this field to rename the first group of 4 data if desired. The defaults are 'Current Sensor A, B, C and N'. Select the fields of interest and change the names as desired.

6.2.15. Renaming the second group of 4 data sources (Input field)

Use this field to rename the second group of 4 data sources if desired. The default names are 'Voltage Sensor A, B, C and N'. Click into the fields and change the names as desired.

6.2.16. Licensing (Button)

You can start by pressing this button the licensing procedure. For more details please see chapter 5.

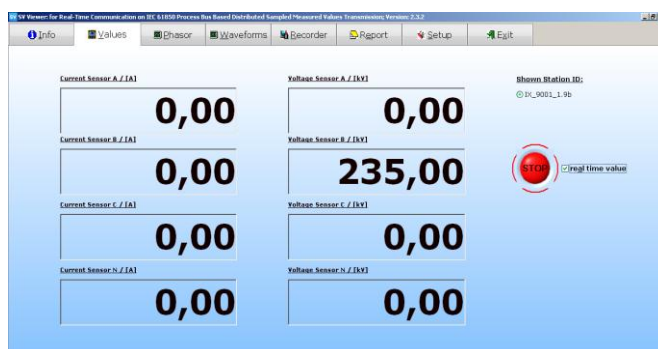
SV Viewer

6.3. Values

The 'Value' tab shows the numerical numbers of the merging unit.
The 'Start' / 'Stop' button starts and stops the reading of the values.
In the 'All Values' mode the buffer will read in the specified numbers of samples in the 'Setup' tab. The values are shown after the number of samples is reached. The refresh time of the values can also be changed in the 'Setup' tab (see 'Time delay for refresh data').



By pressing the 'real time' button it is possible to change to the real-time function. In the real-time mode only one value is shown.
The real-time function uses a ring buffer for calculation purposes. The size of the ring buffer is identical to the numbers of 'Samples for read-out' given under 'Setup' tab. The displayed value can be changed by clicking into another voltage or current window.



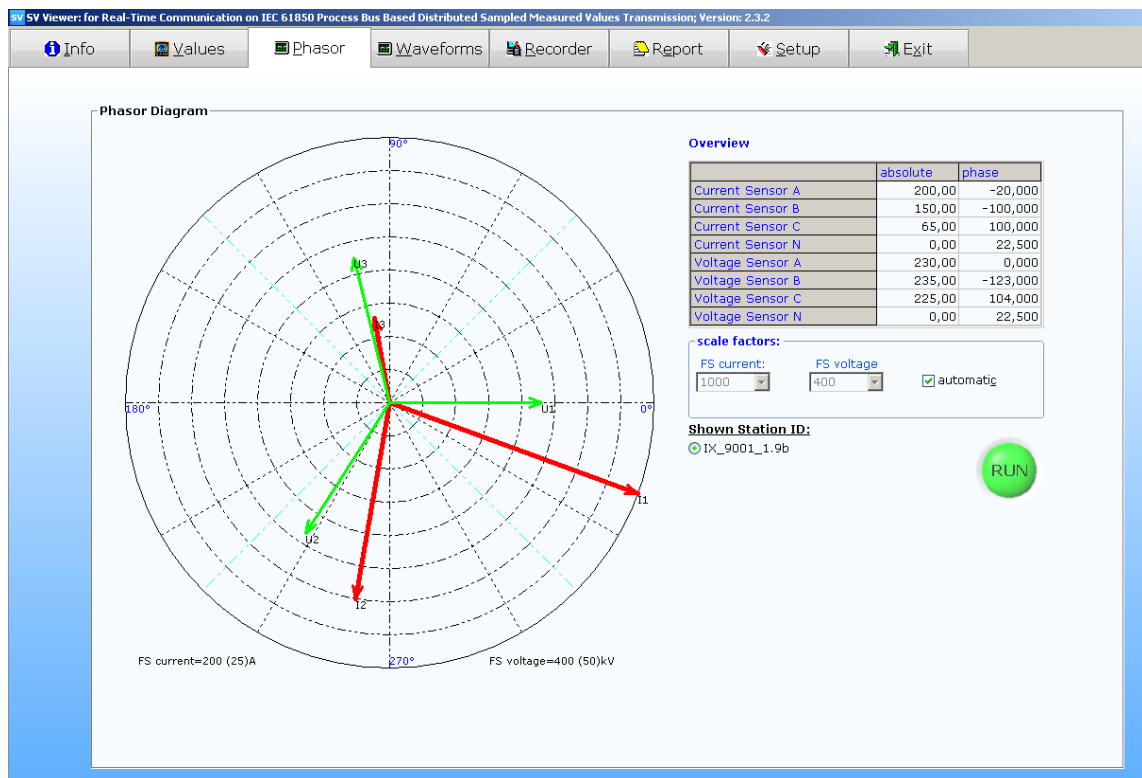
By again clicking the 'all values' button you come back to the standard mode where all values are shown. This will result in the program exiting the real-time mode.

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6.4. Phasor

On the 'Phasor' tab the phase shift between the signals are shown in a 360 degrees diagram. Additionally the numerical values are shown top right. The voltage signal 'Voltage Sensor A' is the reference. All phase shifts are calculated to this reference signal.

Scale factors for current and voltage can be changed in the drop-down menu. Generally the check box 'automatic' is activated.



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6.5. Waveforms

The 'Waveform' tab is similar to an analogue scope. The 'Start / Stop' button starts and stops the measurement.

You can add or remove waveforms by selecting the boxes right.

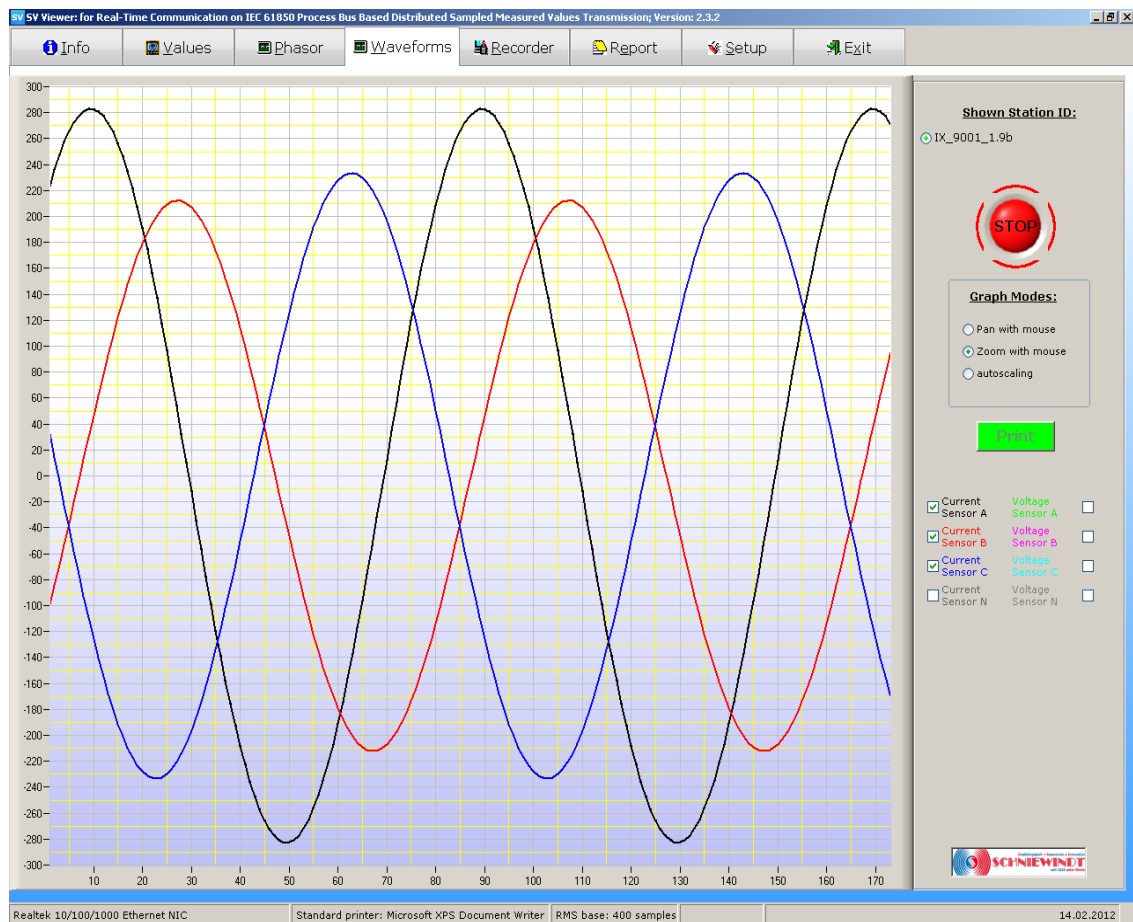
Pan with mouse: Movement of the screen / plot with the mouse cursor

Zoom with mouse: Zoom in and out with the mouse

Auto scaling: The plot will display in the optimal signal resolution

By clicking the 'Print' button a print-out will be done by your printer.

A right mouse click on the 'Print' button will save a copy to the clipboard.



6.6. Recorder

The button allows you to start and stop the recorder function.

Generally the sample values are saved to a .txt-file. The files will be saved to the data path which you have chosen in the 'Setup' tab. A recording time of less than 3 minutes is recommended due to the high data capture rate and subsequent file size.

Values can be also saved in a Microsoft Excel™ 97 compatible file. Note that Excel is limited to a file containing 65535 lines, which corresponds to a recording time of slightly more than 16 seconds at 4000 Samples / Second.

Additional values can be saved in the COMTRADE format. Please notice that special software is requested to open this file format.

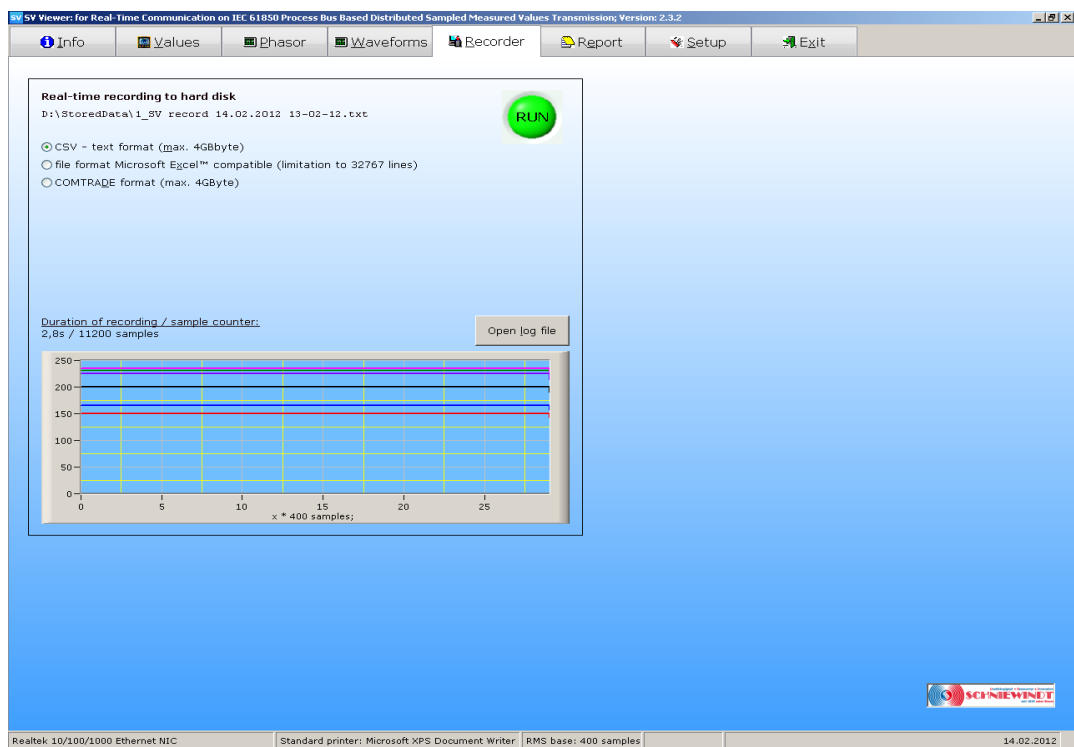
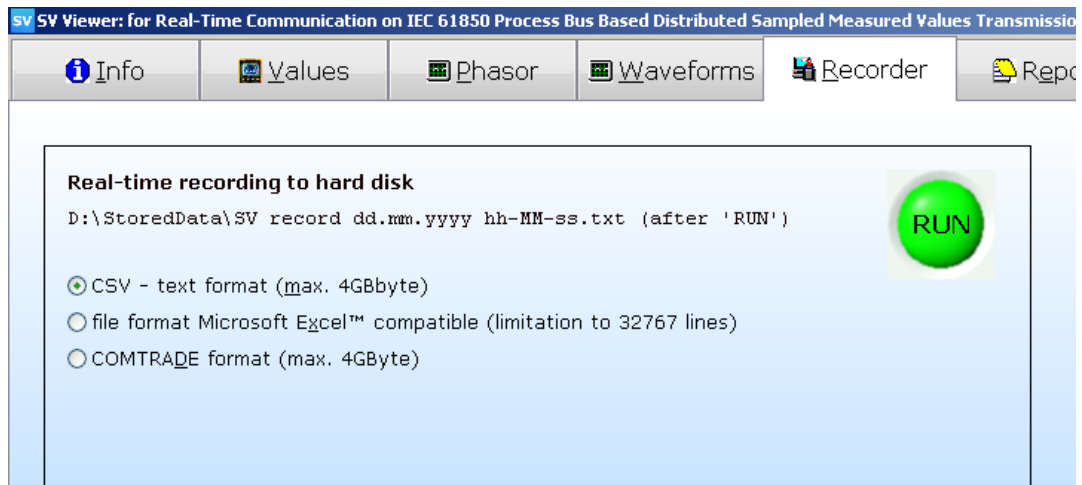
Each new recording is saved to a new file on the hard drive. The file name is shown in the second line.

Note: Recordings will be only saved if the 'Duration of recording' is longer than 1 second. The number of recordings is limited to the size of the hard drive used.

The time and the numbers of sampled values of the record are shown.

Waveforms of the RMS values are shown in a 'Quick View Screen' after the recording is finished. The 'Quick View Screen' can be moved in the horizontal direction. With a right mouse click into the screen you change to a 'Zoom' mode. Another right mouse click will bring you back to the 'horizontal move' mode. A double left mouse click into the screen will change the waveforms dimension by an auto-scaling function to the best view.

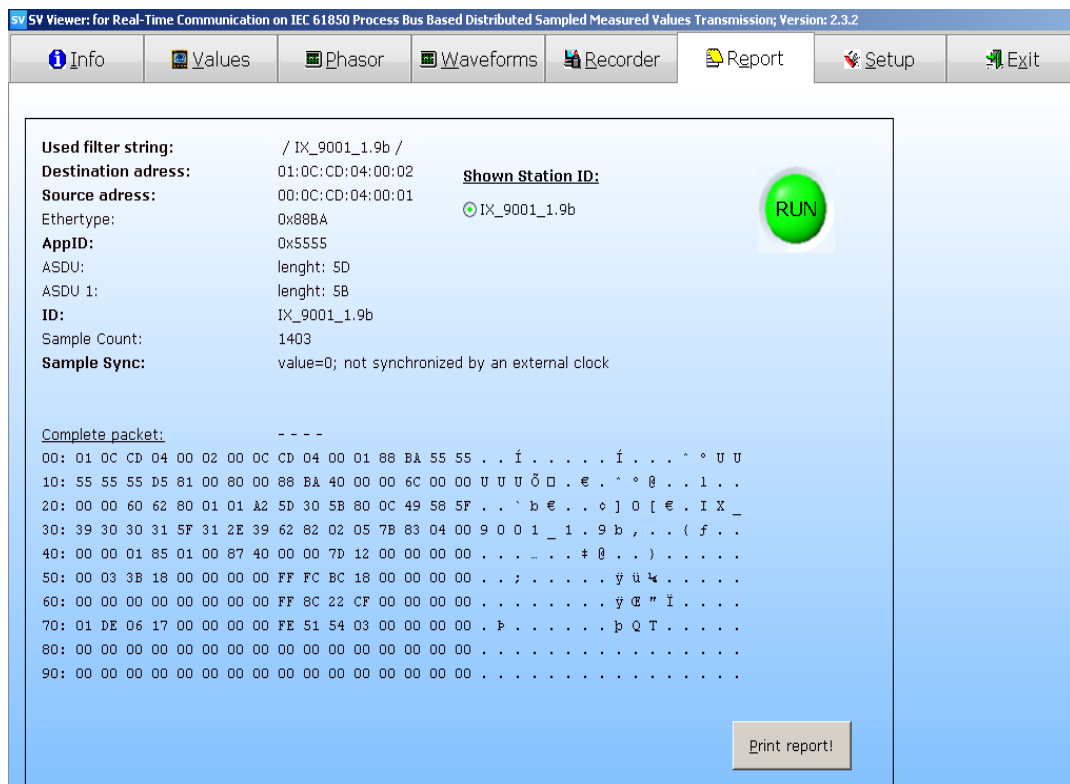
SV Viewer



SV Viewer

6.7. Report

The 'Report' tab shows the pertinent information as MAC, AppID, Sample Counter, Global or Local Synchronization Flag. A report may be printed out by using the 'Print' button.



6.8. Exit

Clicking this tab will shut down this program. The exit tab is the only button to trigger a shutdown.



7. Handling, Tips, Formats and other Information

7.1. Tooltips

Tooltips will be shown when the mouse cursor is held over the control elements.

7.2. Handling

The software is usable without a mouse. It is possible to operate the software by using the 'Alt' key and selecting the underlined characters. Direct jumping is possible through 'TAB' key and the space bar.

7.3. File formats and correct order of the values

The recorder can save the files in an Excel 97 format, in a CSV/ TXT format or in the COMTRADE format.

The correct order of the values is as follows:

Sample counter; Current A; Current B; Current C; Voltage A; Voltage B; and Voltage C. Semicolons (;) are used as the delimiter / separator. No space characters are used.

7.4. Default Setting 'Packet filter condition'

SV Viewer is dependent on WinPcap for proper operation. Therefore it is recommended to use the same syntax as WinPcap. For further information visit the website:

http://dog.tele.jp/winpcapeng/html/group_language.html

7.5. Ramp errors

Ramp error can be set to zero by double clicking on the down status line

SV Viewer



Please contact software.support@schniewindt.de for technical support.

Further information are available on <http://www.schniewindt.de>

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