VAMPSET

Setting and configuration tool

User Manual

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1. Overview

1.1. What is VAMPSET

VAMPSET is a relay configuration tool for VAMP relays. All configurations are made with a user-friendly graphical interface and the created documents can easily be printed out and saved for later use. User does not need to know anything about the model or hardware of the VAMP relay, VAMPSET reads all information directly from the device.

Since version 1.0 it has also been possible to read and evaluate disturbance recordings from VAMP relays. The built-in evaluator uses standard COMTRADE files for saving the records.

1.2. What is needed for using VAMPSET

All you need is a PC with Windows operation system installed. If VAMPSET is intended to connect to the device via local port the VX003 cable is needed. See the cable schematics at www.vamp.fi or from VAMPSET Help menu.

If VAMPSET is connected to the device via Ethernet the optional Ethernet module VEA 3CG is also needed.

1.3. Compatibility

Operation Systems

VAMPSET is compatible with all Microsoft Windows systems starting from Windows 95 to Windows XP.

Relays

VAMPSET works with all VAMP Protection Relays, excluding the Arc Protection Relays made by VAMP Ltd.

1.4. How to get the latest Version

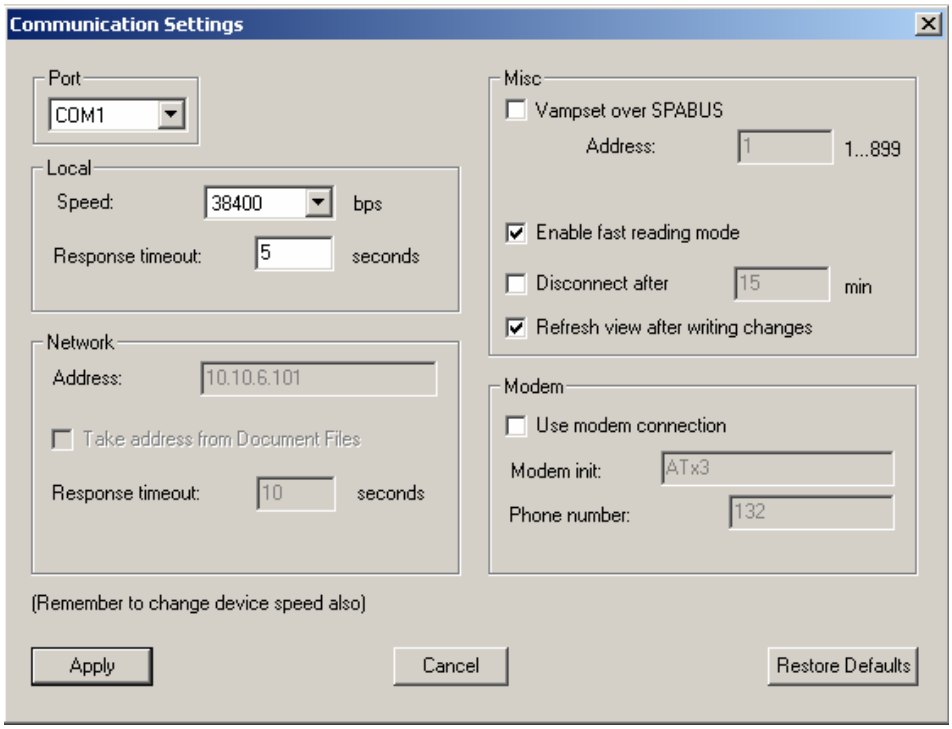
The latest VAMPSET version can be downloaded from VAMP Ltd WEB site, www.vamp.fi.

2. Settings -menu

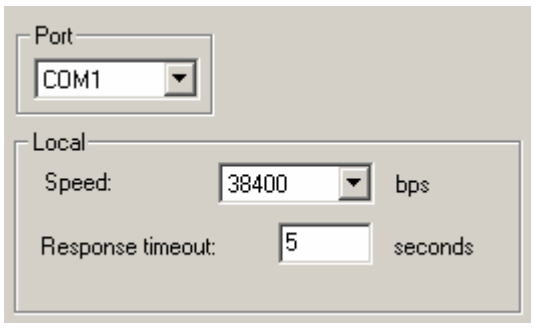
2.1. Communication

Communication settings can be found on the menu:

Settings/Communication Settings

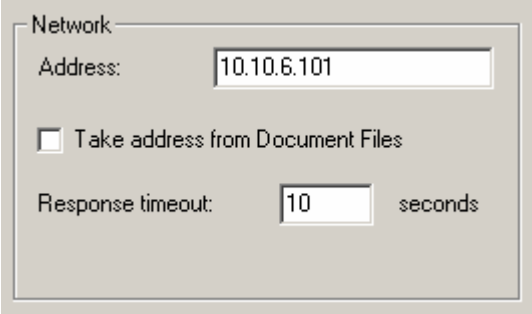


2.1.1. Serial Port



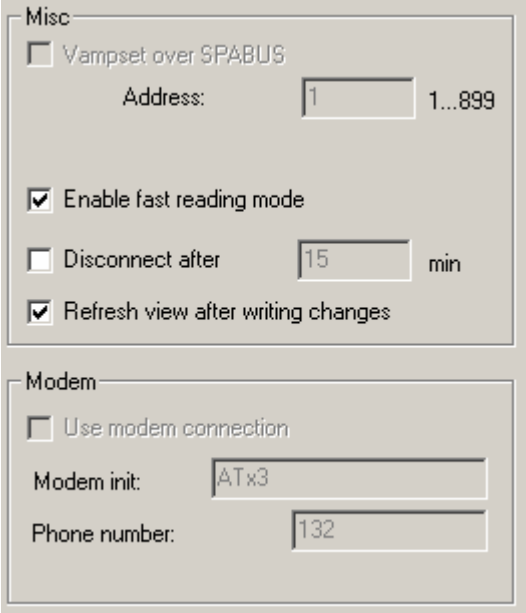
Serial port settings consist of port, speed and parity settings. These settings must correspond to the relay settings. Default setting in both VAMPSET and VAMP relays are 38 400 bps.

2.1.2. Ethernet



The network settings are enabled by selecting 'Network' as a communication port. The port should always be 23 in VAMP relays.

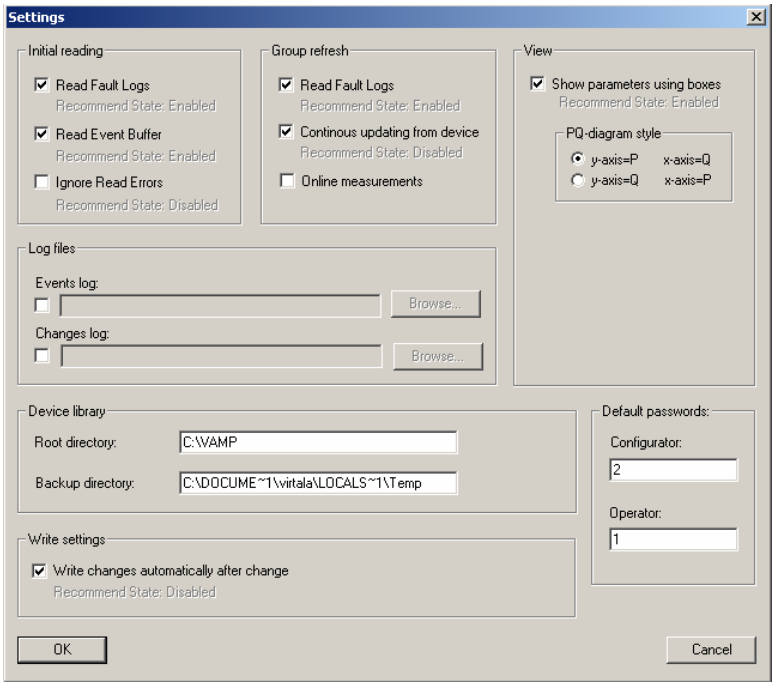
2.1.3. Miscellaneous communication settings



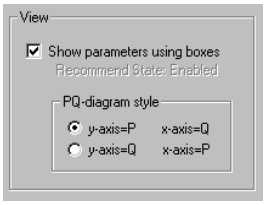
2.2. Program Settings

Program settings can be found on the menu:

Settings/Program Settings



2.2.1. View Settings



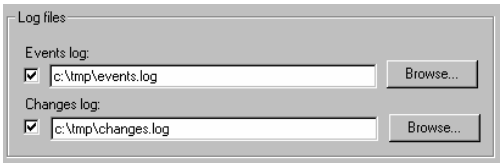
Show parameters using boxes:

- When enabled, VAMPSET draws borders around parameters which belong together
- It's advisable to keep this settings enabled

PQ-diagram style:

- This setting changes the axes of the PQ-diagram

2.2.2. Log Files



Logging can be enabled by checking appropriate box. The file paths can be typed directly into the text boxes or defined by using browse buttons. The paths must exist otherwise the log is not created. If the file does not exist a new file is created. Log files consist of plain ASCII text hence it can be opened using any text editor, e.g. Windows Notepad.

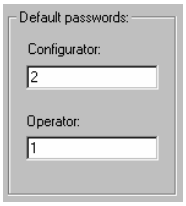
Events log:

- When events are read from device, they are also added to the log file

Changes log:

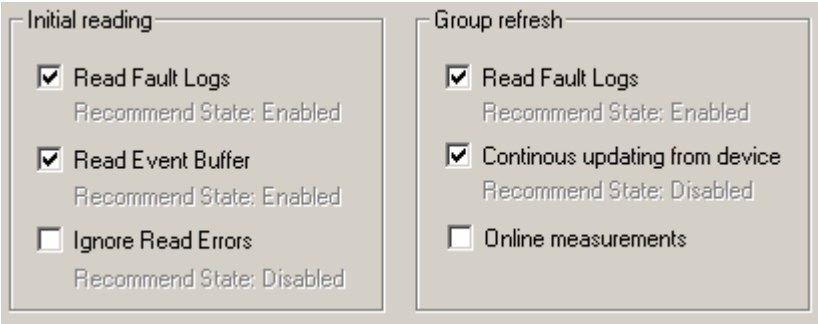
- A parameter is added to the log file after the change has been downloaded to the device

2.2.3. Default Passwords



It's possible to define default passwords for making connecting to device easier. Default passwords are used when the password field is left empty in the Access level dialog.

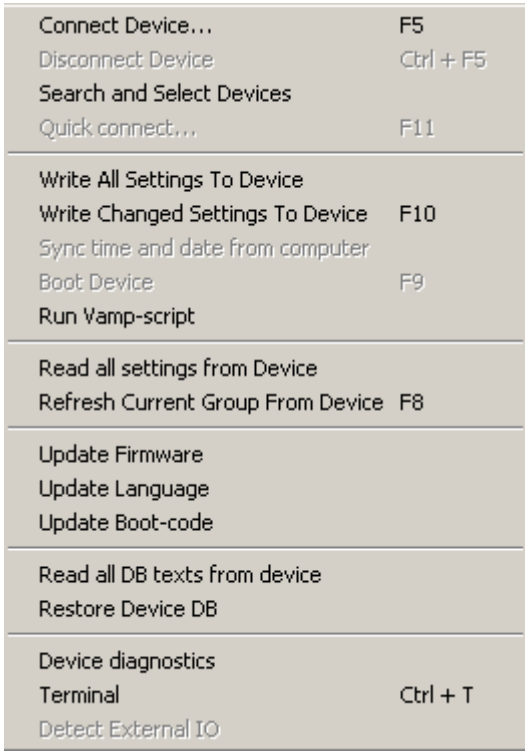
2.2.4. Reading and Group refresh settings



Settings related to VAMPSET and VAMP relay interaction.

3. Communication -menu

In the Communication menu are available commands, which are used in the interaction with the relay.



In the Communication drop-down menu are found the basic commands which are related in to the relay setting parameters for example connecting/disconnecting communication in to the relay, writing and reading setting values from and to the relay, time synchronization of the relay and device boot command. These commands are also available in the toolbar of the VAMPSET.

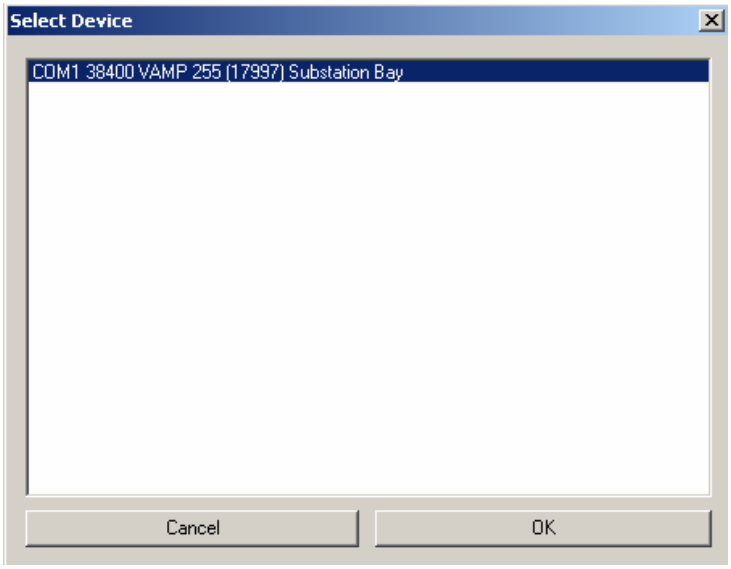
In the chapter 4.1.2 is found the description of the toolbar commands.

In the Communication menu are also available special commands for configuring and updating the relay.

3.1. Communication special commands

3.1.1. Search and select devices

With this command VAMPSET will try to find VAMP –relays attached in to system. When this command is selected VAMPSET will poll the Com 1 and Com 2 communication ports in normal and SPA bus mode at communication speeds from 9600 to 38400 in the computer and displays found VAMP-relays in a window.



From the window may be selected the relay which the communication is wanted to be established. By clicking the "Quick connect" VAMPSET will connect in to the relay and starts to read the menu structure and settings as in the case when the relay is connected directly. (In the chapter 4.2.3 is described the reading procedure).

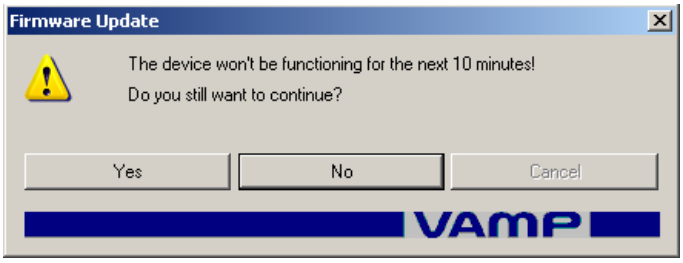
3.1.2. Update firmware

This command is only when the relay firmware needs to be updated. This firmware file is available from VAMP Ltd upon request and it will be sent to customer after evaluating of the need for update. The updating of the firmware is necessary only if there is found problems in the relay. ***For fully functional relay, even if the relay is old, there is no need and recommendation to update it.***

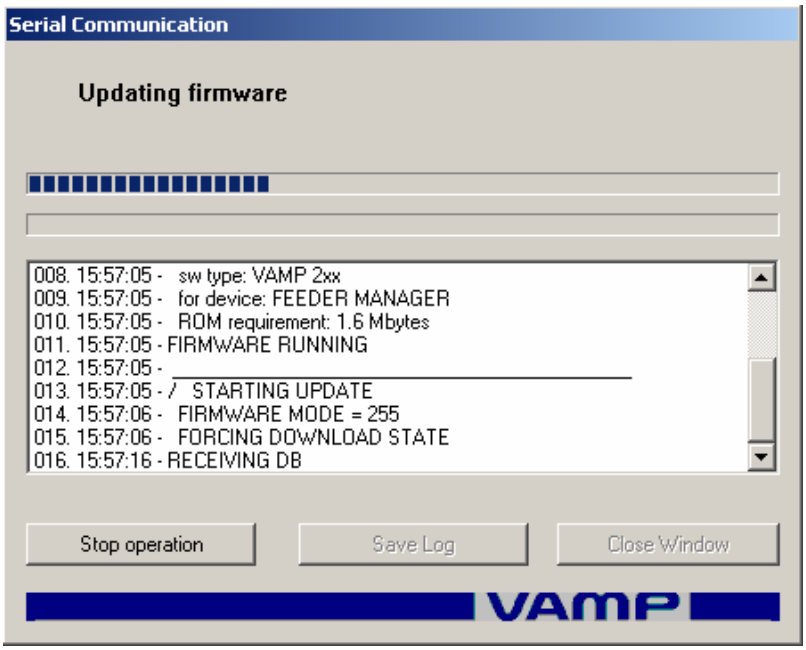
When the software is necessary to update, VAMP Ltd. will provide the required firmware file which is in form of "*VAMP2xx_VX_XX.vef*"

The firmware updating procedure is following:

1. Check that you are using the latest VAMPSET program from the VAMP website: http://www.vamp.fi/english/support/software_downloads/
2. Copy all given files to your hard disc in to place you can find them easily.
3. Connect the VX003 cable between the PC and relay.
4. Start VAMPSET and select a communication port by selecting **"Settings"** / **"Communication settings"**.
5. Connect to the relay (Short-cut key = F5). Use Configurator access level (default 2) and read the existing configurations and settings into VAMPSET.
6. Save the existing configurations and settings into a file.
7. Select menu **"Communication"**/"**Update Firmware"**. Warning window will appear.



Choose **"Yes"** from the warning dialog. Select the given firmware file i.e. "vef"-file. Before pressing **"Open"** button, make sure that the type of the relay matches with the type in the vef-file name. After the "open" button is pressed VAMPSET will automatically start the update and following dialog is displayed



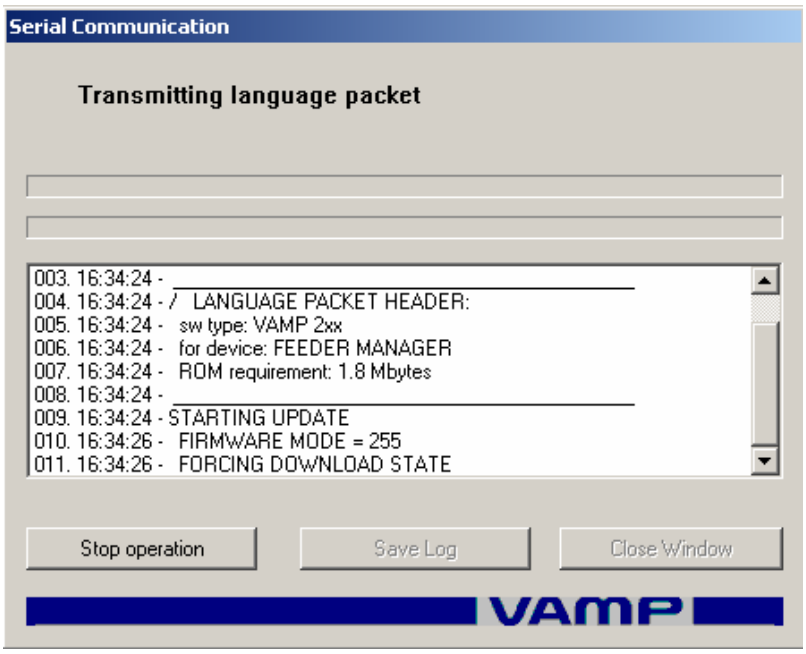
8. The firmware uploading takes about 5-10 minutes. Make sure that the power supply is not disconnected to the PC or the relay during the procedure. When the uploading is ready, the relay will re-start.
9. Open the saved setting file from VAMPSET.
10. Press **"Compare settings"** button. This takes about 2-5 minutes. If there are no differences, the updating was successful. Please note that time, date and some thermal values may be different.
11. Close the saved file and select **"Connect device"** (Shortcut key = F5). Now all the settings are read from the relay.
12. Save the new configuration and possible settings into a new file. There may also be new features in the relay.

3.1.3. Update language

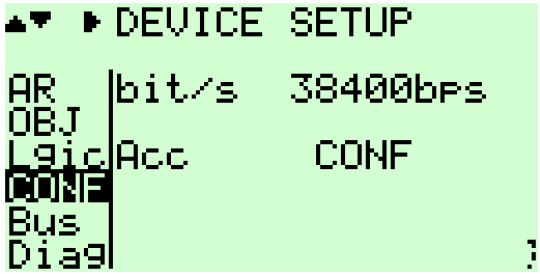
With this command the relays language may be updated to use other than default (English) language. Currently available languages are Finnish, French, German, Italian and Swedish. The language file is available from VAMP Ltd. upon request and is in form of *"language_xxx.vlf"*.

The language updating procedure is following:

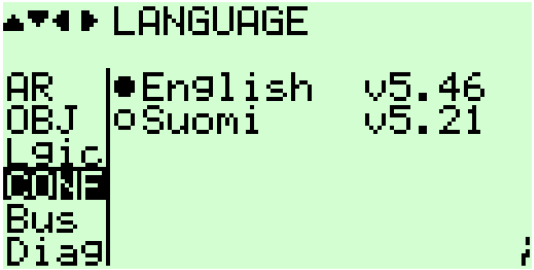
1. Check that you are using the latest VAMPSET program from the VAMP website: http://www.vamp.fi/english/support/software_downloads/
2. Copy all given files to your hard disc in to place you can find them easily.
3. Connect the VX003 cable between the PC and relay.
4. Start VAMPSET and select a communication port by selecting **"Settings"** / **"Communication settings"**.
5. Select menu **"Communication"**/"**Update Language"**. Warning window will appear. Choose **"Yes"** from the warning dialog. Select the given firmware file i.e. "vlf"-file. Before pressing **"Open"** button, make sure that the firmware version of the relay matches with the type in the vlf-file name. (For example if the firmware of the relay is 5.75 the vlf file should be *"language_575.vlf"*) After the **"Open"** button is pressed VAMPSET will automatically start the update and following dialog is displayed



6. The firmware uploading takes about 5-10 minutes. Make sure that the power supply is not disconnected to the PC or the relay during the procedure. When the uploading is ready, the dialog will show it in the final row. Close the dialog window.
7. Go downwards the relay main menu in the HMI until you reach the DEVICE SETUP window.

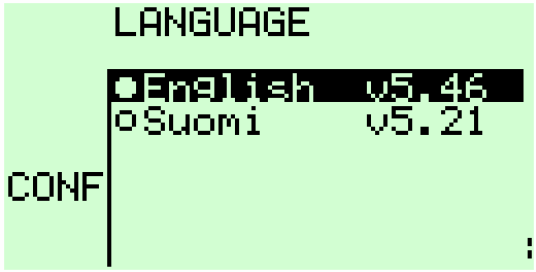


8. Now go to the left until you reach LANGUAGE window. In the window should now show the default language and also the language which was uploaded in to the relay.



9. Press the INFO button in the HMI and after that press ENTER and give the Configurator password (default 2). Press the ENTER-key again.

10. The currently active language is displayed with black background.



11. Select the desired language and press enter. The language of the relay will change in 10-20 seconds in to the new. Press CANCEL to go back to the main display of the relay.
12. Check that the language is actually changed in the relay from few menus in the relay by using HMI.
13. Download new VAMPSET setting-file from the relay by connecting in to the relay and save it.

3.1.4. Relay configuration commands

These commands are not necessary for the normal user and they always relate in to the individual relay and individual data files given by VAMP Ltd. upon request if found necessary.

Run Vamp-script, Update boot code and Restore Device DB

These selections are needed only in special cases. The procedure is similar to the firmware and language updates and the usage is advised by Vamp support when necessary.

Read all DB texts from device

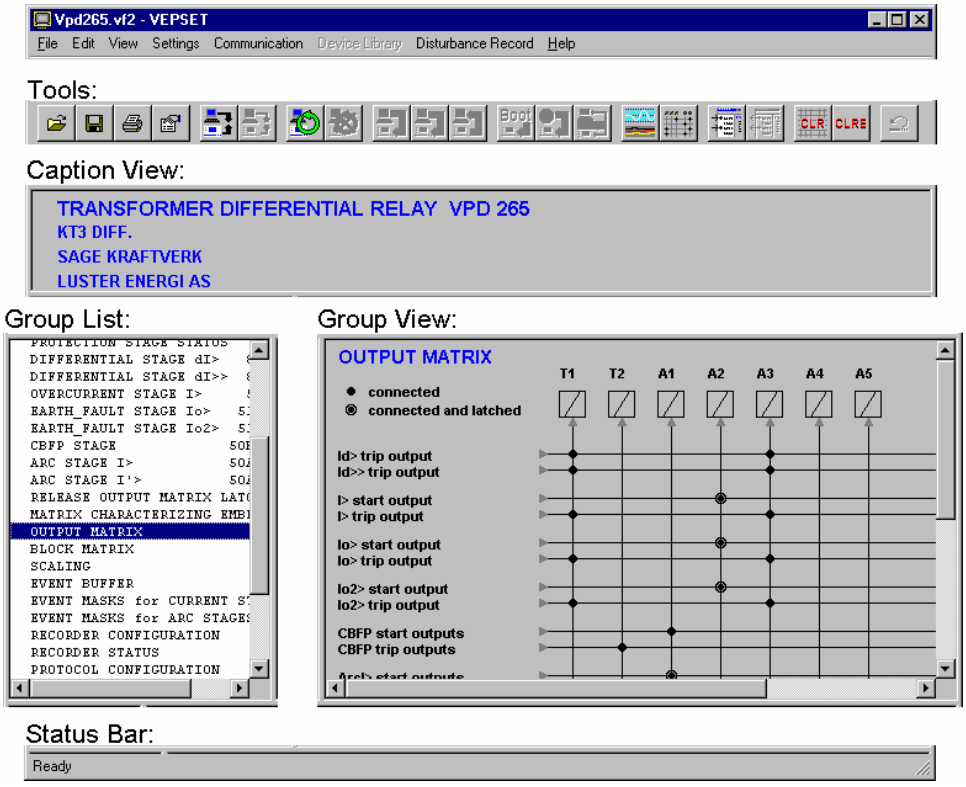
With this command VAMPSET reads the database of the relay in to a text file. This command is used for creating language files for the relay.

Terminal

This command is used for giving direct Get-Set commands to relay. The usage of the terminal is advised by Vamp support when necessary.

4. Relay Configuration Window

4.1. Main Window



4.1.1. Views

Caption View

- Shows device type, name and location information

Group List

- List of available parameter groups

Group View

- All device configurations are made in this view
- Right mouse button can be used to scroll the view

Status Bar

- Displays the current state of VAMPSET
- Displays value ranges when parameters are set

4.1.2. Tools

Open Document
Save Document
Print Active Group
View Program Settings
Connect Device
Disconnect Device
Enable Continuous Updating
Disable Continuous Updating
Transmit All
Transmit Changes
Refresh Visible Group
Boot Device
Send Time & Date
Compare Values
View DR
View Output Matrix
Select Groups
Unselect Groups
Clear Matrix
Clear Events
Undo

4.2. Document File (.vf2)

4.2.1. Overview

VAMPSET document file stores information about the device settings, events and fault logs. A new file is created when uploaded settings from a device are saved to a disk. The file can later be used for many purposes like

- Making changes to the settings offline. VAMPSET file keeps track of changes that are made offline. Once VAMPSET is connected to the device, all changes can be transmitted to the device at once.
- Copying all settings to another device
- Documentation purpose

4.2.2. Passwords

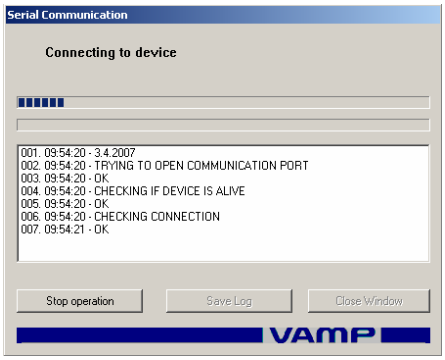
Access to the device parameters is divided into 3 levels: user, operator (1) and configurator (2). VAMPSET document file remembers the access level that is given when the settings are read from the device first time. For example, if the document file has been created with user access level, it cannot be changed later to configurator level.

4.2.3. Reading from Device

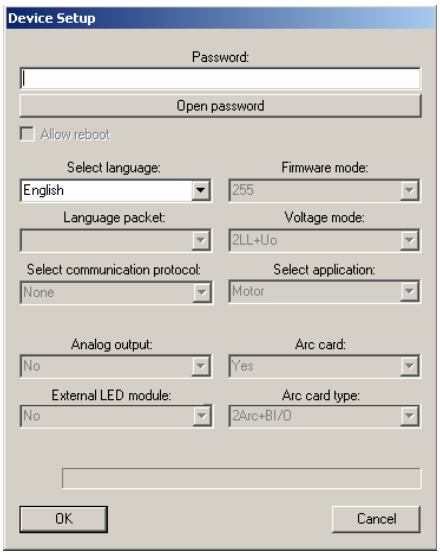
A new VAMPSET document file is created by reading all settings from the device. Initially VAMPSET screen is empty and only the mechanism to read information from the device is shown. Setting values, protection stages, analogue input information etc. are obtained from the device.

In order to read data from the device, any open document file must first be closed. Reading will start by simply connecting to the device. In order to connect the device press or ***F5*** or by using menu command: ***Communication/Connect device***

If the communication between VAMPSET and the device is OK, VAMPSET starts to upload the available menu parameter groups and the following dialog is displayed:



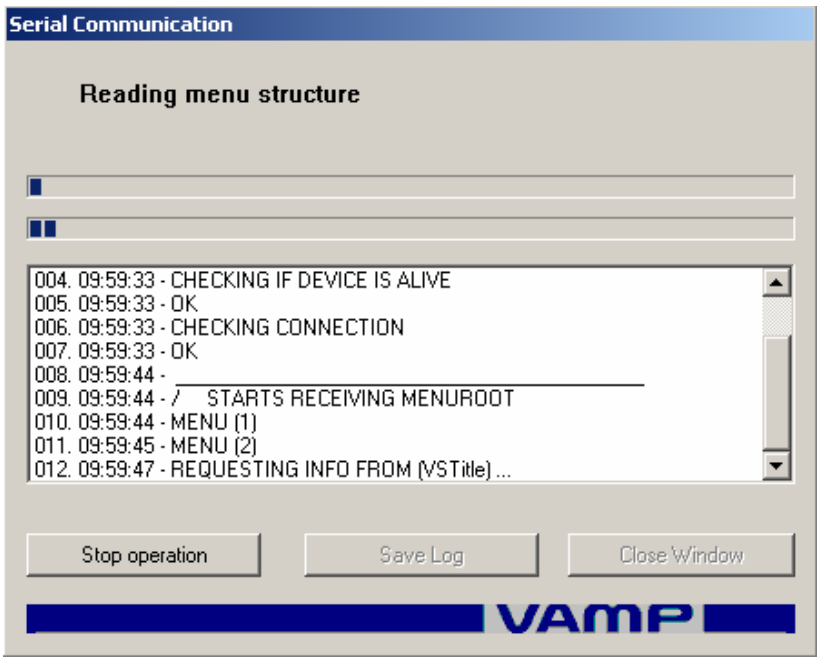
After a couple of seconds VAMPSET will ask the access level. If the password field is left empty, VAMPSET will try to use a default password. See chapter 2.2.3 on how to set the default passwords.



All VAMP devices have the following default passwords:

- Configurator: 2
- Operator: 1
- User: no password required

After pressing the *OK* button, VAMPSET starts to upload information about the settings and special features that are available in the relay. Depending on the device and communication speed, this might take several minutes. The upload can be stopped by choosing the *Stop operation* button on the lower left corner of the communication dialog.



4.2.4. Saving to Disk

A VAMPSET file can be saved to a disk by pressing or using menu command: *File/Save as*

4.2.5. Opening from Disk

A VAMPSET document file can be opened from a disk by pressing or using menu command: *File/Open*

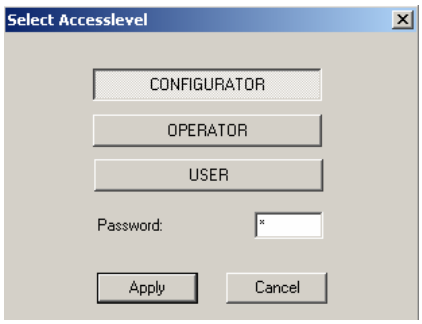
4.2.6. Downloading to Device (copying settings to device)

Open the appropriate document file and connect to the device by pressing or using menu command: *Communication/Connect Device*

The whole VAMPSET document can be transmitted to the device by using menu command: *Communication/Write all settings to device*

The destination device can be the same one that was used when the file was created, or any other device of the same type. That makes it easy to configure several devices with the same settings:

1. Open a VAMPSET document or create new by reading from device.
2. Select the access level for the opened document from the VAMPSET shown dialog.



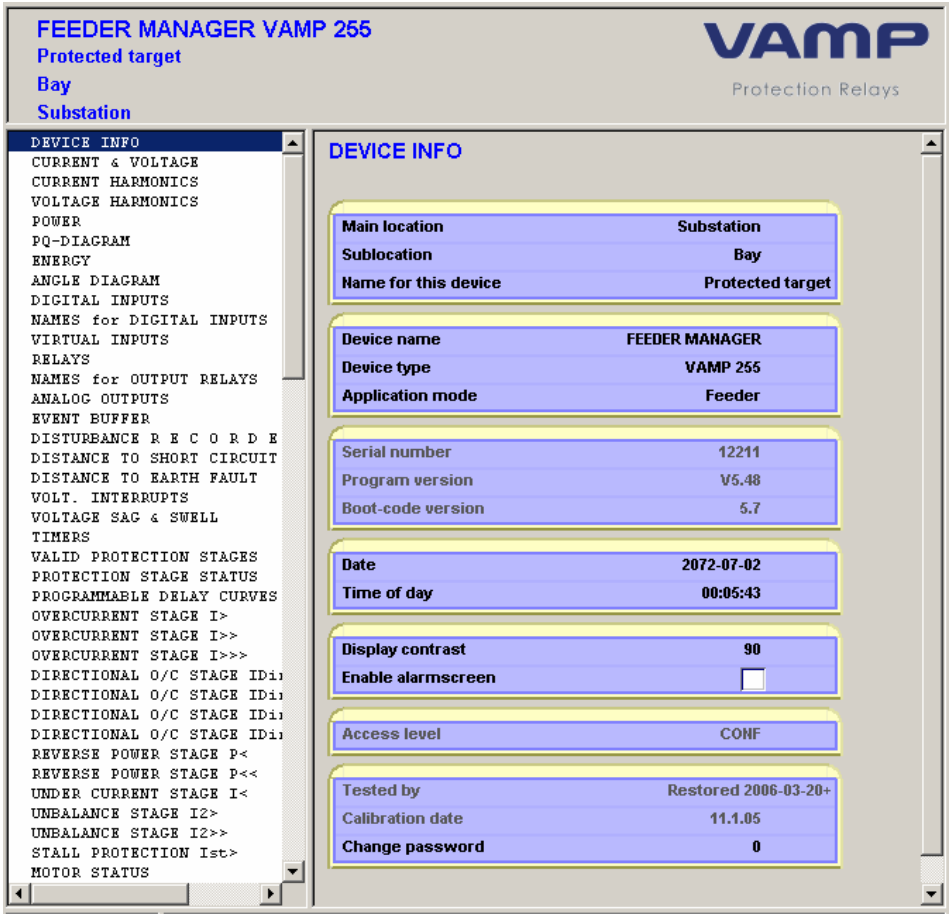
3. Make changes to the settings.
4. Save the document.
5. Connect to the device and write all settings as described above.
6. Disconnect the device by pressing or using menu command: ***Communication/Disconnect Device.***
7. Connect the serial cable in to the next device, or if you are using Ethernet, change the IP-address (see Chapter 2.1.2).
8. Change the device name and location on Device Info setting group.
9. Save the document with a new name by using menu command: ***File/Save as***. This is not needed if only one document is enough for all the devices.
10. Connect the device. VAMPSET will give a notice that the serial number is different from the currently connected device. Click "Ok" and write all settings in to the relay.
11. Go back to item 7 until all devices have been configurated.

5. Setting Groups

The device settings have been divided into several groups. There is a different group for every protection stage, communication protocol, analog output etc. Most of the setting groups are of the basic type, which only contains a list of parameters. There are also some special groups like matrix and PQ-diagram.

This chapter gives a short description for different kind of setting groups. See the appropriate device manual for complete usage of setting parameters.

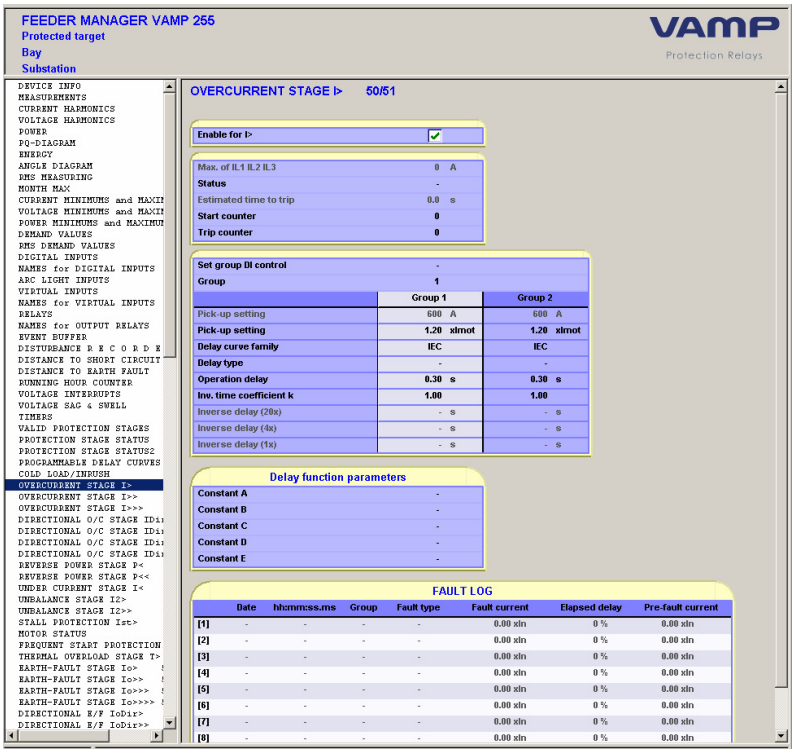
5.1. Device Info



Device info contains general information about the device. The device can be individualized by setting the location information and by giving a special name for it. Calibration information and the firmware version are also stored in this group. The last parameter can be used for changing the access level that is currently in use.

5.2. Basic Groups

5.2.1. Protection Stage Groups



A protection stage group consist of 4 parts, which are explained below.

Stage enabling:

- The protection stage can be enabled or disabled by checking or clearing the selection box.
- Configurator access level is needed for changing the parameter

Stage status:

- Shows the state of the input signals which are used by the stage
- Shows the present state of the stage, estimated time to trip and also start and trip counters

Stage Settings:

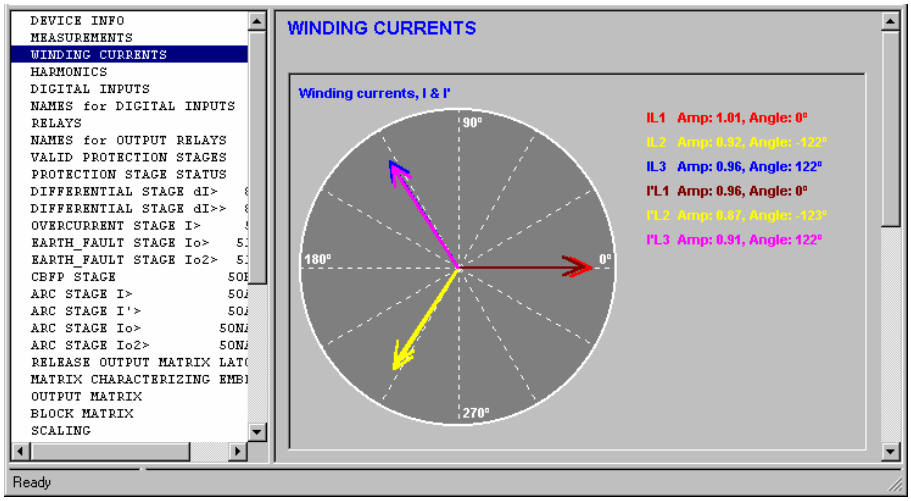
- Contains limit and delay settings for the stage
- Configurator access level is needed for changing the stage settings

Fault Log:

- Shows 8 latest events of the stage
- The latest event is on the first row

5.2.2. Diagrams

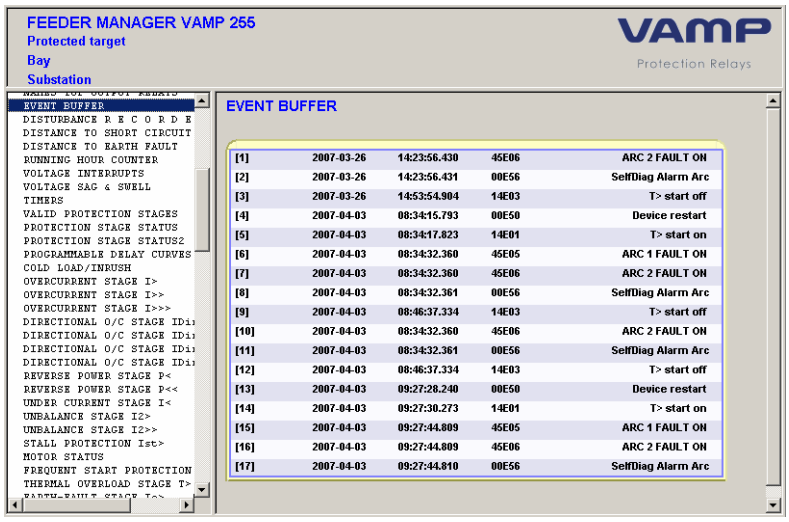
Angle diagram



This group shows the angles for different analog measurements. The amplitudes are usually relative to the maximum of all phasors or to a calculated mean value. Some of the angle diagrams have a settable maximum value for the amplitude and all phasors are drawn relative to that setting.

When the device is connected and continuous updating is enabled the diagrams are updated in real time.

5.2.3. Event Buffer

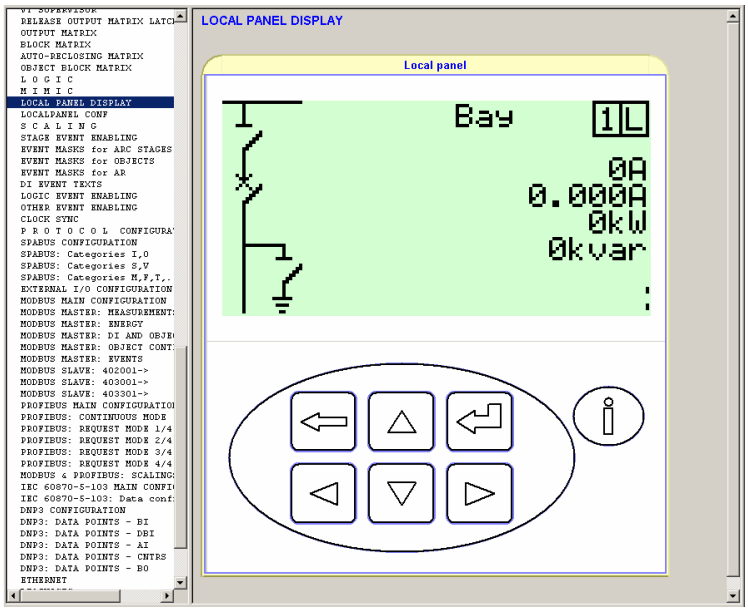


The event buffer is used for saving and viewing events. The event buffer can store maximum of 500 events. The oldest event is on the first row. When the buffer is full the oldest events are discarded when new ones are created.

An event carries the following information:

- full time stamp
- event code
- short description

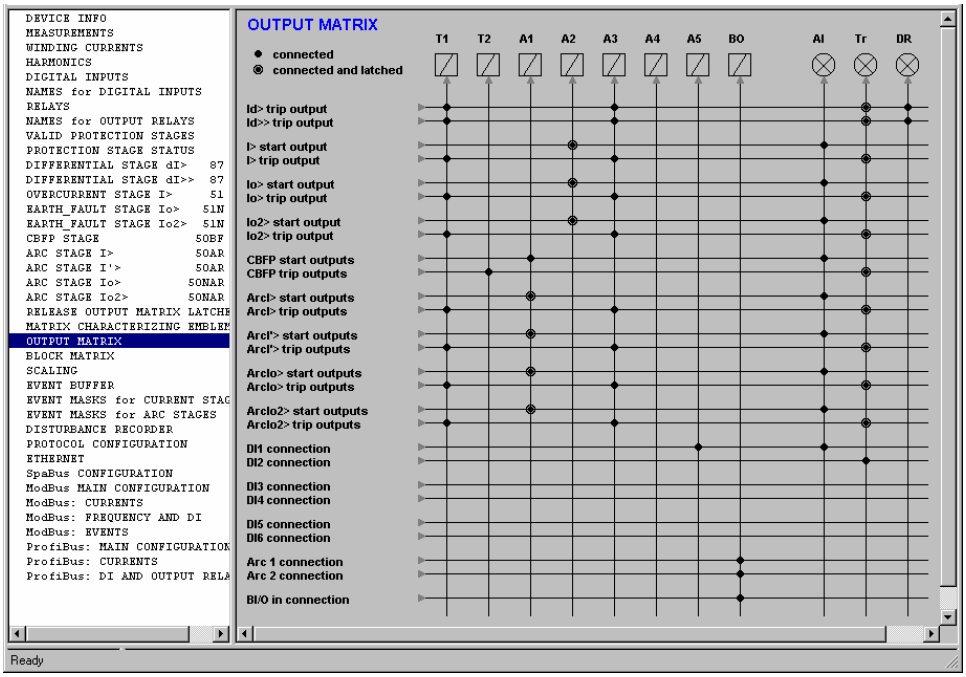
5.2.4. Local Panel Display



With the 'Local panel display' VAMPSET user may give the relay exactly similar commands which can be given through relay HMI.

5.2.5. Matrix Groups

Output Matrix



The output matrix is used for connecting signals of different protection stages, digital inputs and arc sensors, to the output relays (T1…A5), binary output (BO) and leds (Al and Tr). Depending of the device there is also some other outputs, like disturbance record trig (DR) in above picture.

The output matrix can be viewed by selecting it from the group list or by pressing . This matrix has two kind of connections:

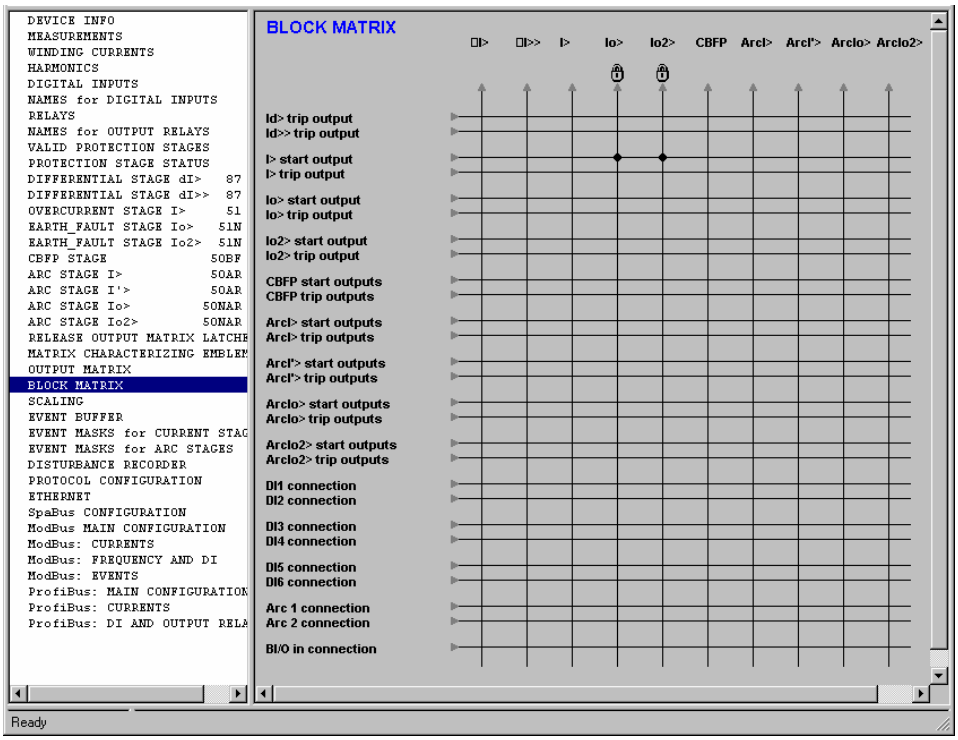
Matrix connection without latch

- When input the signal is activated, the output is activated
- When input the signal is released, the output is released

Latched matrix connection

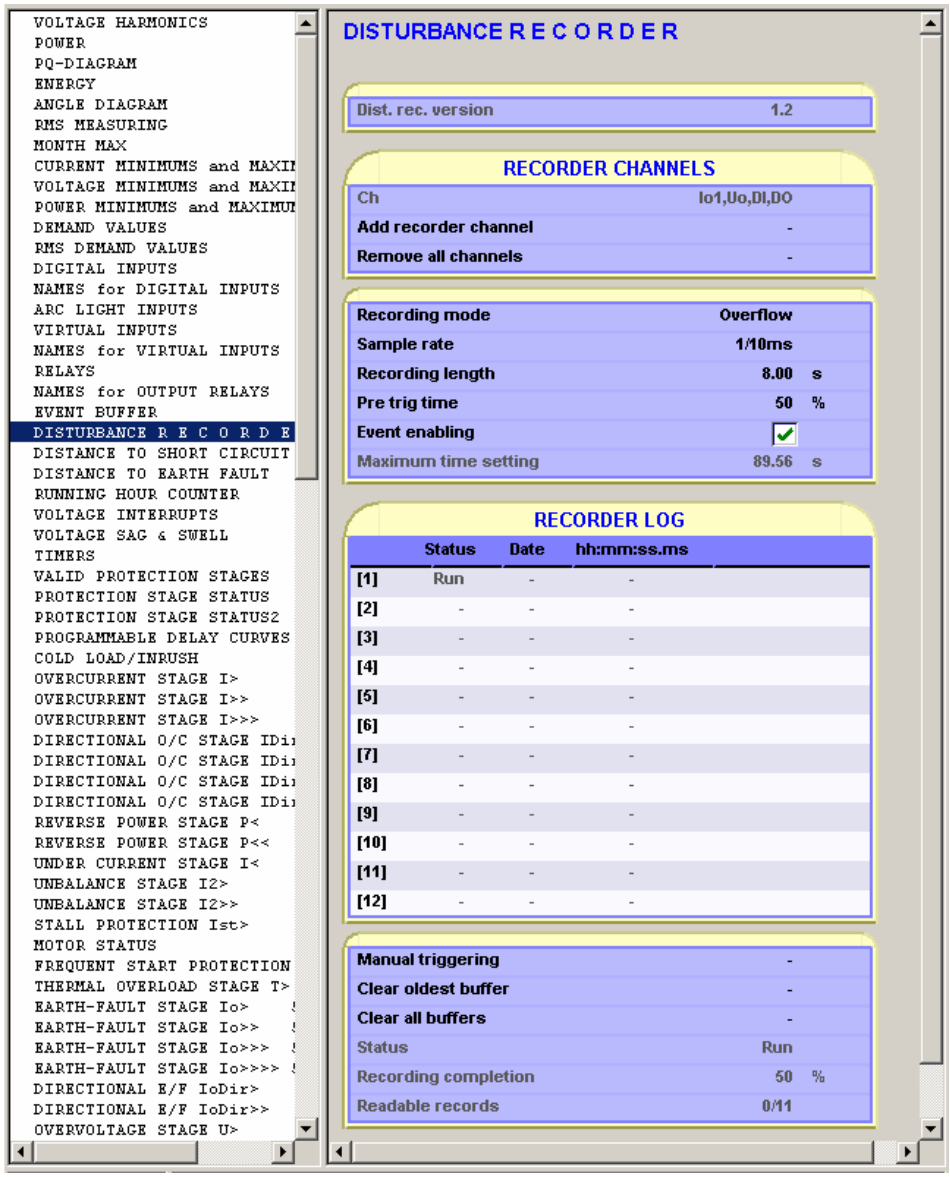
- When input the signal is activated, the output is activated
- When input the signal is released, the output will remain active until the device has been reset.

Block Matrix



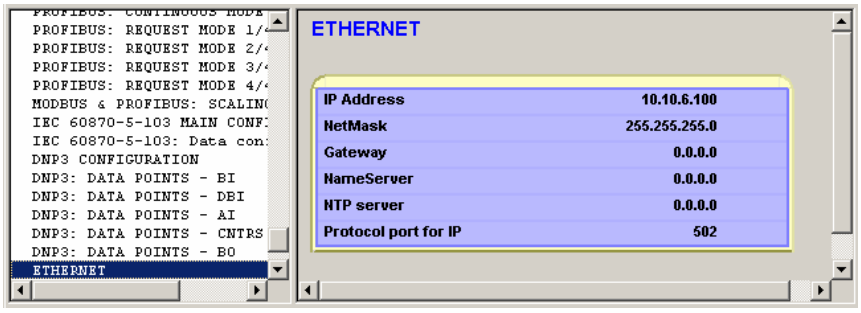
The block matrix can be used to block protection stages by input signals from other protection stages, digital inputs and arc sensors. Input signals are on the left side and protection stages to be blocked are displayed on the top.

5.2.6. Disturbance Recorder



This group is used for configuring the disturbance recorder. See Chapter 6.2 for a more detailed description about the settings of disturbance recorder.

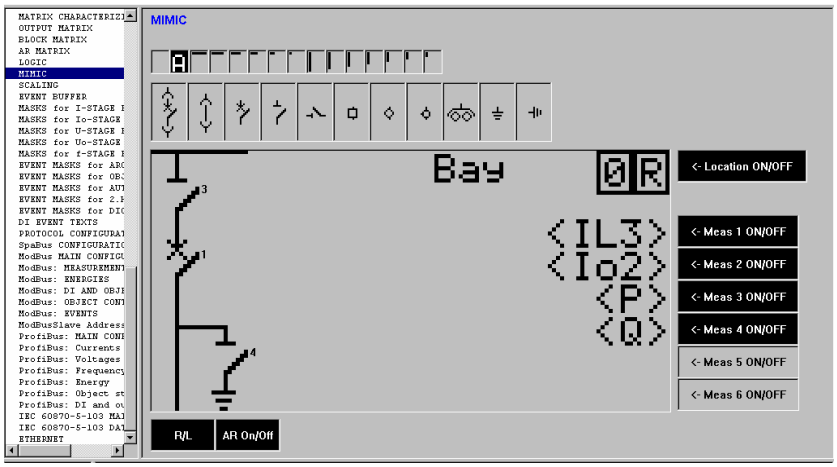
5.2.7. Ethernet



The Ethernet group contains network settings for the device. In order to use the device with Ethernet, check at the following steps:

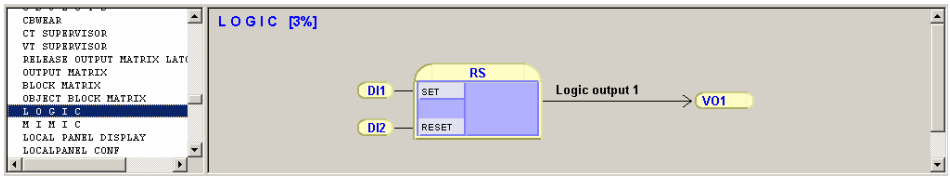
1. Connect to the device by local serial port.
2. Make appropriate changes to the Ethernet settings.
3. Transmit changes to the device.
4. Disconnect the device.
5. Go to ***Settings/Communication Settings*** and change IP-address to the same as the device has. See Chapter 2.1.2.
6. Remove the serial cable from the device. Otherwise the optional Ethernet interface won't work with VAMPSET.
7. Connect to the device via Ethernet.

5.2.8. Mimic



The Mimic editor group is used for creating and editing mimic display of the relay local panel. See Chapter 5.6 about how to use the mimic editor.

5.2.9. Logic



Some devices have the possibility of adding extra logic functions in addition to protection stages. The Logic editor group is used for this purpose. See Chapter 5.7 for more information about using the editor.

5.3. Making Relay Settings

5.3.1. How to change values

A device parameter can have four different access types:

- Read (e.g. measurements)
- User Write (e.g. display brightness)
- Operator Write (e.g. I> current limit)
- Configurator Write (e.g. I> stage enable)

VAMPSET shows parameters in three colours depending on present access level, the access type of the parameter and if the value has been changed or not. A parameter can have one of the following colours:

Red

- Parameter value has been changed but not downloaded to the device

Black

- Parameter value can be changed

Dimmed

- No write access
- Parameter is either read-only or the present access level is not high enough

The setting ***Settings/Program Settings/Write changes automatically after change (WAC)*** controls, when the changed settings are transferred to the device. When a parameter value is changed, the download will depend on the state of WAC and if the device is connected or not:

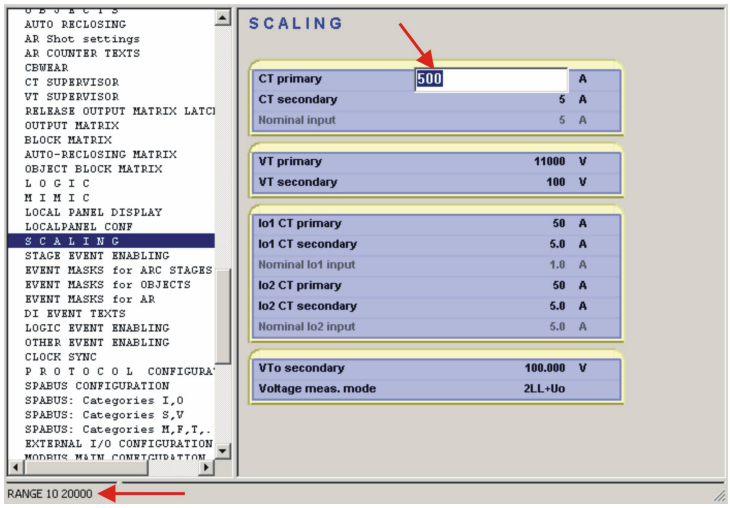
Device not connected or WAC disabled

- Changed values becomes red.
- New value has to be transferred to the device manually, by pressing or using menu command: ***Communication/Write Changed Settings to Device***
- If the document is saved, the changes will also be saved. This makes it possible to make changes offline and to write changes later from a saved document.

Device connected and WAC enabled

- Changed values are transferred to the device immediately
- Changed parameters are read back from the device after the transfer

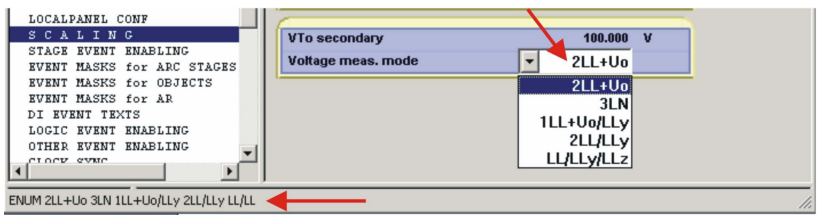
Changing parameter values



Click the left mouse button on the value that needs to be changed. When the text input box appears, use the keyboard to type a new value and press enter. Setting range is displayed at the bottom left corner of the main window.

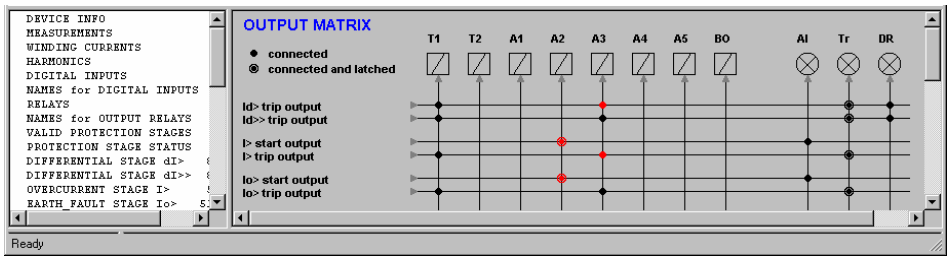
If the typed value is out of permitted the range, VAMPSET will give a warning after transmitting changes to the device and the illegal value will be replaced by current device value.

Some of the parameters have a fixed set of values that can be chosen from a list box.



Click the left mouse button on the value and choose the correct value by using the mouse.

Placing a matrix connection

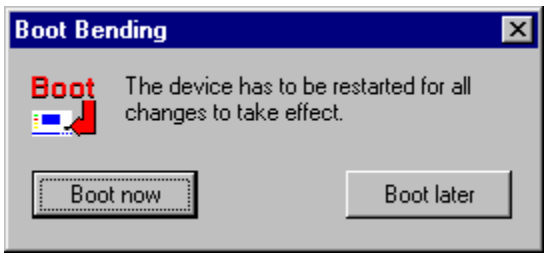


Placing a connection is done by clicking the left mouse button at a crossing point of a signal and output line.

The whole matrix can also be cleared by pressing CLR.

5.3.2. Booting the device

Some of the parameter changes need booting to become valid. When such parameter has been changed and transferred to the device, VAMPSET gives the following notice:



Boot now

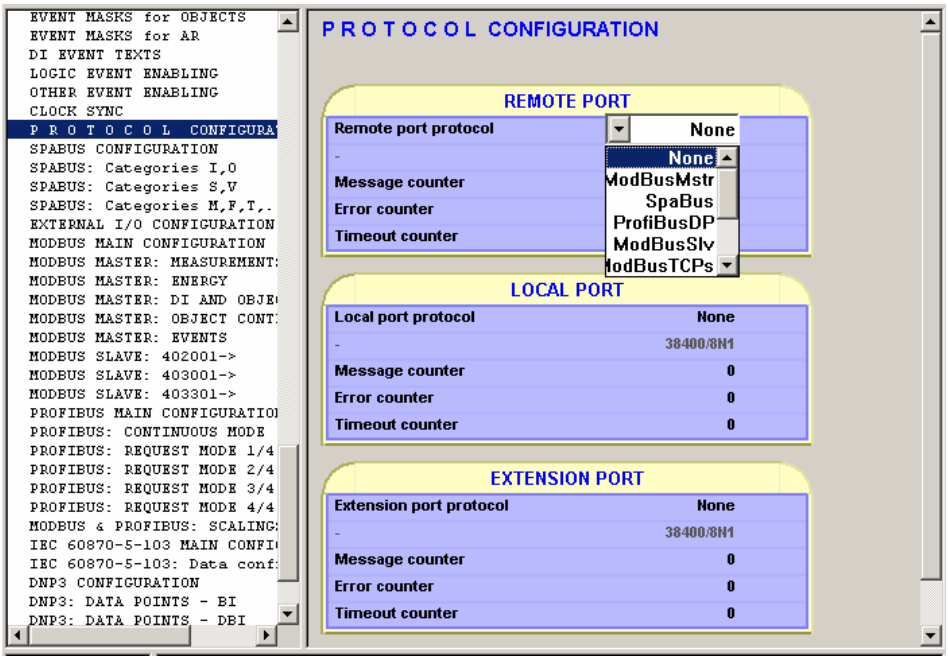
- VAMPSET sends boot command to the device immediately.

Boot later

- The dialog quits without booting the device
- Latest changes that need booting are not valid
- The device can be booted later by pressing Boot or ***F9***, or by using menu command: ***Communication/Boot Device.***

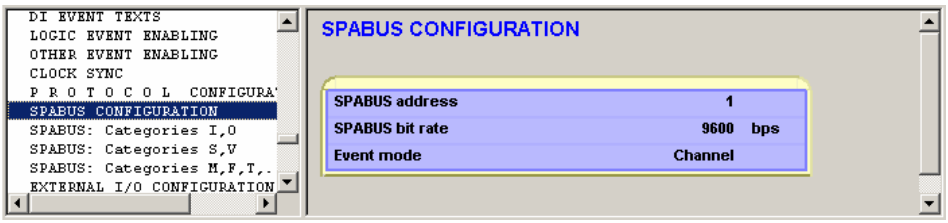
5.4. Making Protocol Settings

5.4.1. Changing Protocol



Remote port, Local port and Extension port protocol can be changed in the Protocol Configuration group. This group also contains message and error counters for the selected protocol and ports. See the appropriate device manual for complete description of protocol usage. Available protocols are ModBus, SpaBus, ProfiBus, IEC-103, External IO, DNP, CLIR and IEC-61850.

5.4.2. SpaBus Settings



SpaBus protocol has following settings available:

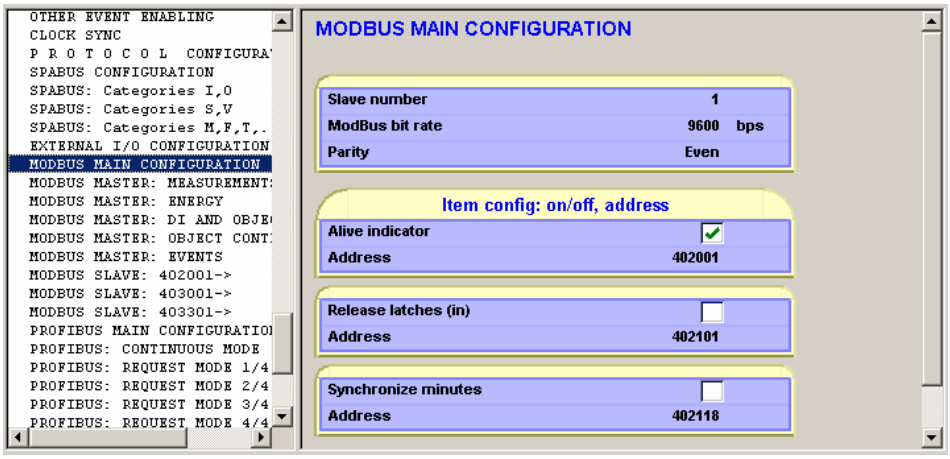
SpaBus address

- Setting range 1…899

SpaBus bit rate

- Look at the above picture for setting ranges

5.4.3. ModBus Settings



The first three settings in the ModBus MAIN CONFIGURATION group are used in both ModBus Master and Modbus Slave protocols. In master mode, the slave address is the destination address and in slave mode, the slave address is the device address. Setting range for bit rate is 1200…19200 bps.

ModBus item has four settings:

Enable

- Enables/disables item
- ModBus master only

Address

- ModBus holding register address
- ModBus master only

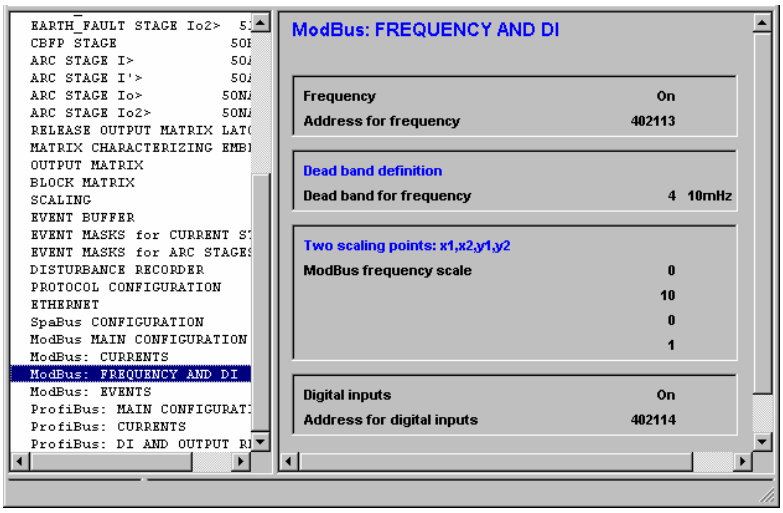
Dead band

- If item value has changed more than the dead band setting, it will be sent to the slave
- ModBus master only

Scaling

- Settable scaling points x1, x2, y1, y2
- Both master and slave

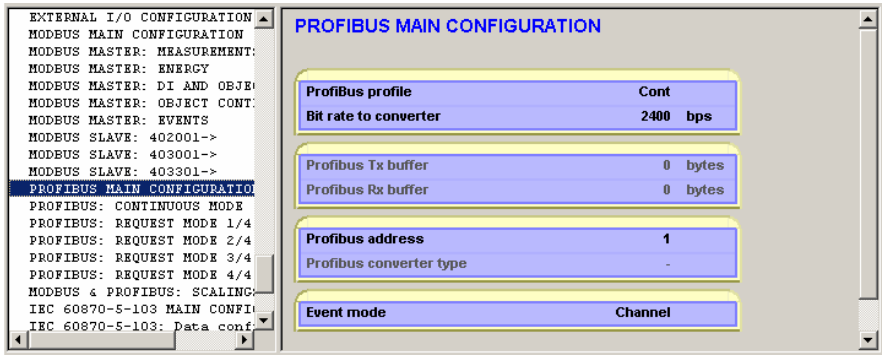
Dead band and Scaling



The picture above shows an example of dead band and scaling settings. Frequency has a dead band of 40 mHz and scaling divides the values by 10. Scaling is needed for frequency, because ModBus can handle only values between –32 768 and +32 767. For example if frequency is 50.000 Hz, the raw value is 50000 which doesn't fit into the permitted range. Dividing the raw value by 10 gives 5000 which is within the permitted range.

ModBus Slave protocol has it's own item list with fixed holding register addresses. See the appropriate device manual for a list of ModBus Slave items and addresses.

5.4.4. ProfiBus Settings



ProfiBus mode can be selected in the Profibus: MAIN CONFIGURATION group.

Profibus item has three settings:

On/Off

- Enables/disables item
- Continuous mode only

Offset

- Address for item
- Continuous mode only

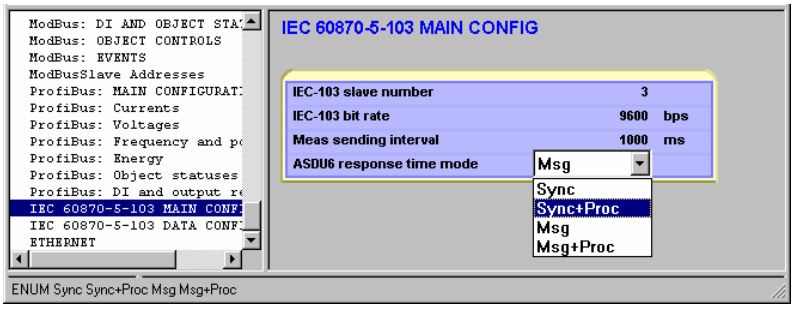
Scaling

- Settable scaling points x1, x2, y1, y2
- Works exactly the same way as ModBus scaling. See Chapter 5.4.3.

In request mode, all items are enabled and they have fixed offsets. See the device manual for a list of request mode items.

5.4.5. IEC 60870-5-103 Settings

Main configuration



IEC-103 slave number

- setting range 1…254 (255 is reserved for broadcasts)
- this is used as link layer address and as common address of ASDU in application layer

IEC-103 bit rate

9600 or 19200 bps

Meas sending interval

This setting is used for restricting measurement sending. The next measurement is not sent until the time interval has elapsed since last sending. During this time the device responses to class 2 poll by 'data not available' message.

ASDU 6 response time mode

This setting defines which time stamp is sent in response to a time synchronising message. The following modes are available:

- SYNC

Device sends back the same time stamp that the master sent in the synchronising message.

- **SYNC + PROC**

Device adds its internal processing time to the time stamp in the synchronising message and sends the sum in the response message.

- **MSG**

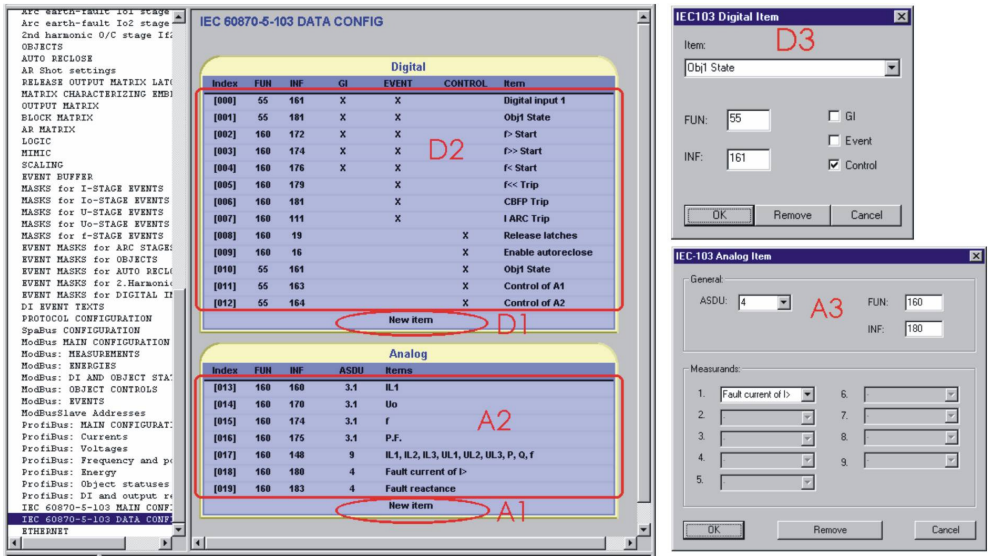
Device sends back its internal time stamp of the first received bit of the synchronising message from master. This mode can be very useful because subtracting the time stamp found in the response message from the time stamp that the master sent in the sync message gives the time difference between the master and the device just before the new sync became valid.

- **MSG + PROC**

Otherwise the same as MSG but internal processing time is added to the time stamp

Data configuration

Data configuration is divided into Digital and Analog sections. Any line can be changed or removed and new lines can be added to both sections.



Digital configuration

D1 - Click here to add new lines to digital configuration

D2 - Click any line to change its context

D3 - Select an item, define FUN and INF and select some of the available functions (GI/Event/Control). Availability of functions depends on the selected item.

Function	Description
GI	Item is included in general Interrogation
Event	Class 1 events are generated. Remember also enable corresponding events on event mask groups. See chapter 5.5.1 about how to enable events.
Control	Item can be controlled via master

Analog configuration

A1 - Click here to add new lines to analog configuration

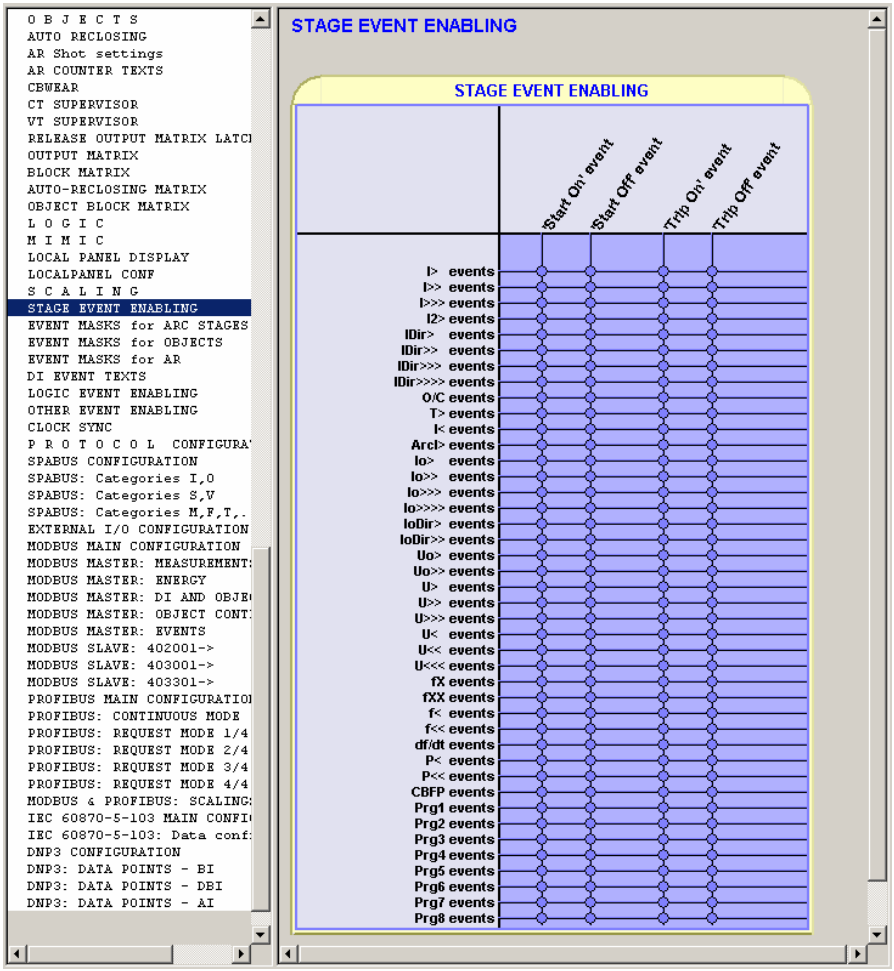
A2 - Click any line to change its context

A3 - Select ASDU type and define FUN and INF. Finally select measurement(s). Please notice that ASDU 4 has its own set of available measurements. To use ASDU 4 measurement, first select the ASDU 4 and after that select a measurement.

IEC-60870-5-103 data configuration is sent to the device by pressing or from the ***Communication*** menu: ***Write Changed Settings to Device***

5.5. Working with Events and fault logs

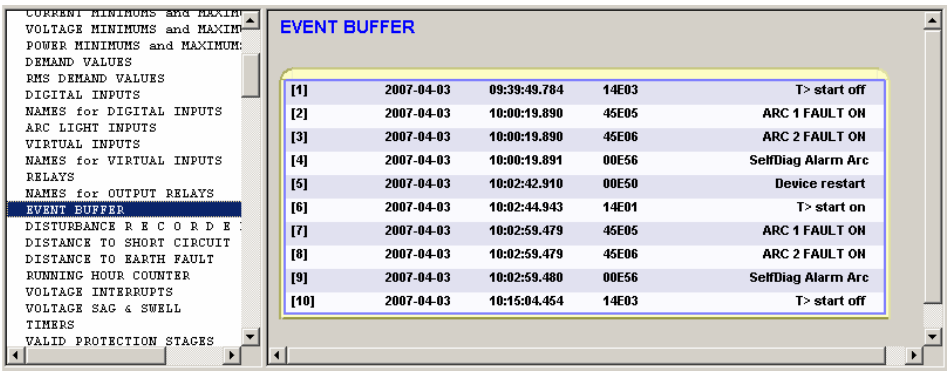
5.5.1. Enabling Events



Different events can be activated on the EVENT MASK groups. There are two different types of event selection available. For the protection stages there is possibility to select start and trip events from the matrix and for the other events the possibility is to select the event display either ON or OFF.

5.5.2. Reading from device

Before events can be read from the device, the EVENT BUFFER group must be selected from the group list.



Events are read from the device by pressing .

If ***Continuous updating*** is enabled, events are updated automatically when the EVENT BUFFER group is selected. ***Continuous updating*** can be enabled by pressing and disabled by pressing .

NOTE!

VAMPSET can only read new events (which has not been read by VAMPSET earlier) from the device. Once the events have been transferred from the device, it's not possible to read those particular events again. Hence the saving of the document is important.

5.5.3. Saving to disk

Events and fault logs are saved with the VAMPSET document file (.vf2), therefore no special saving commands are needed.

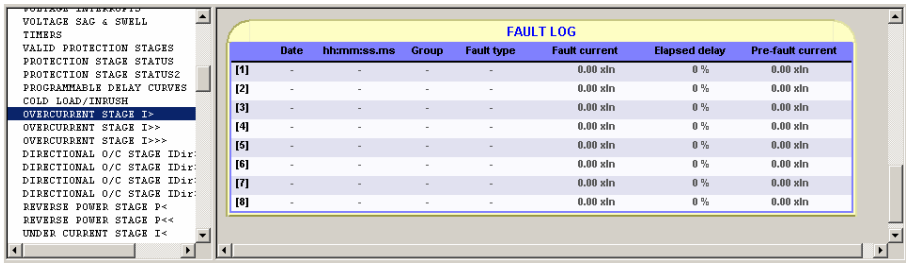
Events can also be saved into a log file, which is updated automatically after reading events from the device. Event logs are plain ASCII files thus they can be opened with any text editor like Windows Notepad. See Chapter 2.2.2 for how to enable event logging.

5.5.4. Clearing Events

VAMPSET event buffer can be cleared by pressing CLRE. This doesn't clear events from the device, only from the VAMPSET document.

5.5.5. Reading fault logs from device

In addition to Events, most of the protection stages have also their own fault logs. In order to read a fault log from the device, the appropriate protection stage screen must be selected from the group list.

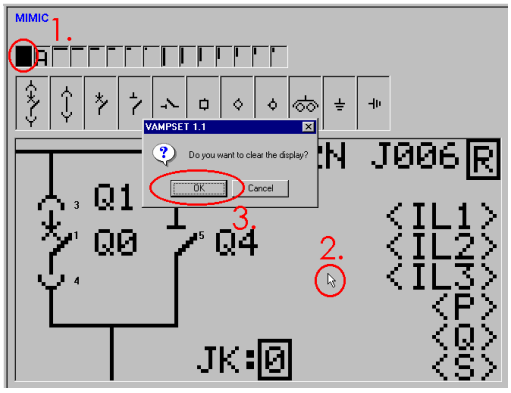


Fault logs are read exactly the same way as the events, by pressing or keeping ***Continuous updating*** enabled. ***Continuous updating*** can be enabled by pressing and disabled by pressing .

5.6. Mimic editor

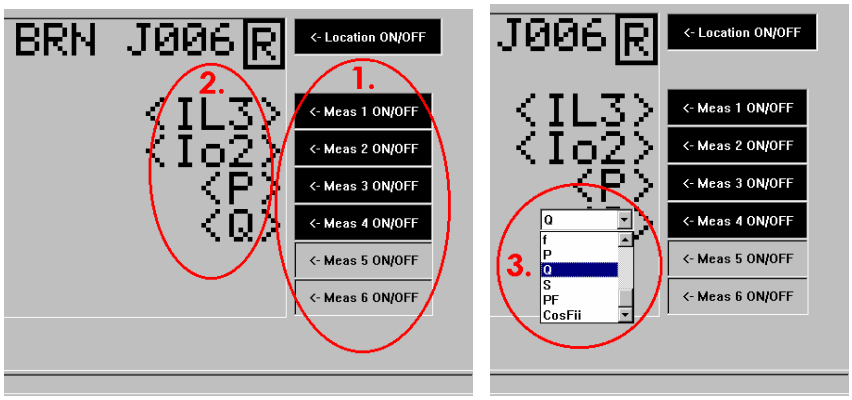
To show the mimic editor, select MIMIC group from the group list.

5.6.1. Clearing mimic display



1. Select the deleting tool
2. Click left mouse button over empty space. Confirmation window appears
3. Press OK to clear the display

5.6.2. Selecting measurements



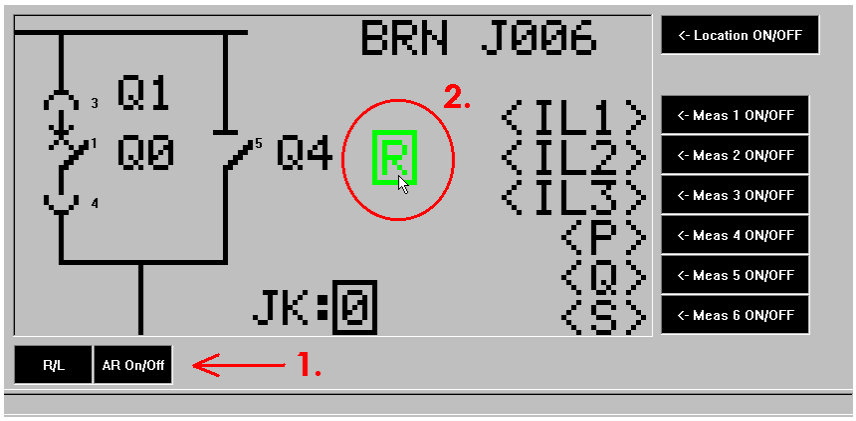
Maximum of 6 measurements can be freely selected on the right side of the display.

1. Set appropriate measurements visible using ON/OFF buttons on the right
2. Clicking a measurement opens a list of all selectable measurements
3. Select measurement from the list

5.6.3. Working with virtual buttons

Depending on the device the local panel mimic display can contain some virtual buttons, like

- Auto-reclose ON/OFF
- Remote/Local switch

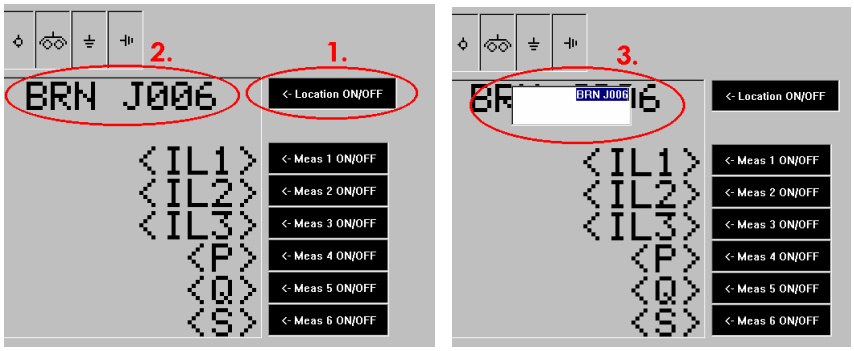


1. Virtual buttons can be set visible by using ON/OFF buttons on the bottom of the screen

2. Virtual buttons can be moved by holding down the left mouse button if the deleting tool is not selected

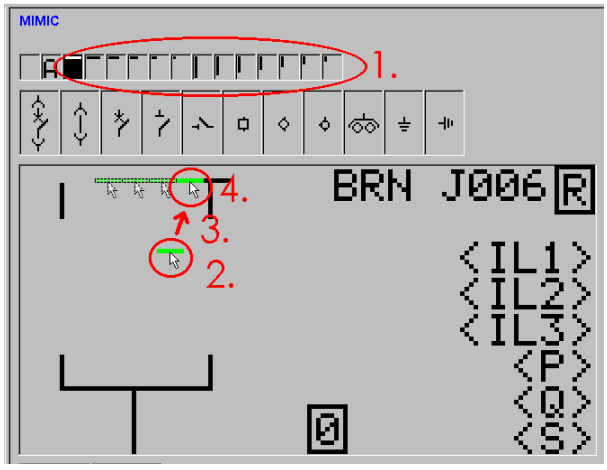
5.6.4. Location information

Location information is displayed in the top of the display. This is exactly the same setting as Sublocation on Device Info group and is also displayed on the caption view of VAMPSET.



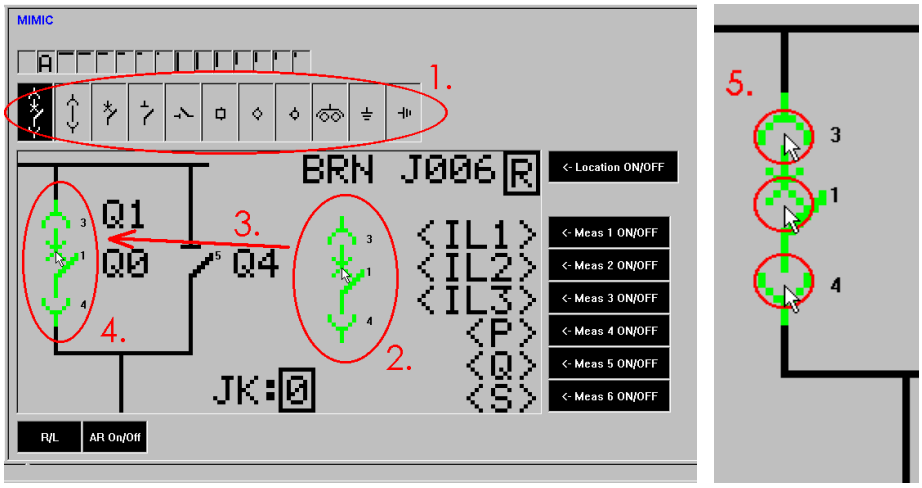
1. Location text can be set visible by the ON/OFF button
2. Clicking the location text brings up an edit box
3. Type new location information and press ENTER

5.6.5. Adding lines

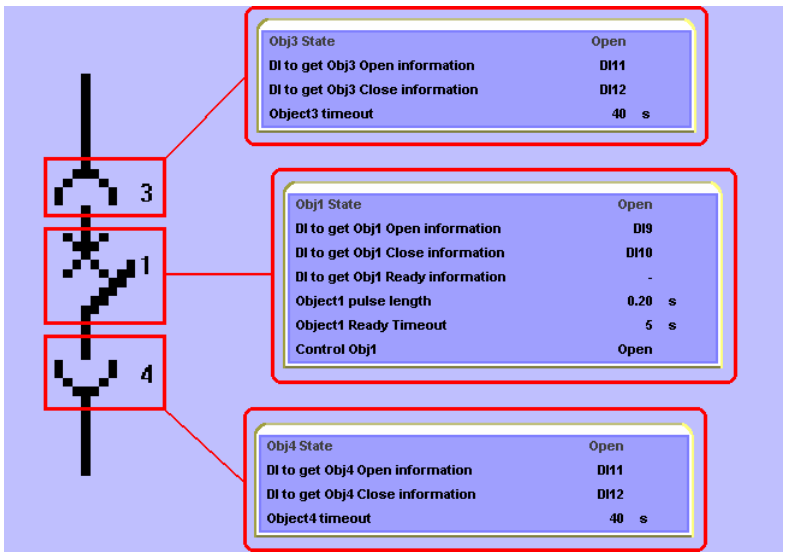


1. Select one of the line characters
2. Press and hold the left mouse button over empty space. Short piece of line appears at mouse cursor
3. Move the piece to correct place
4. Release the left mouse button
5. Continue from 2. until the line is complete

5.6.6. Adding objects

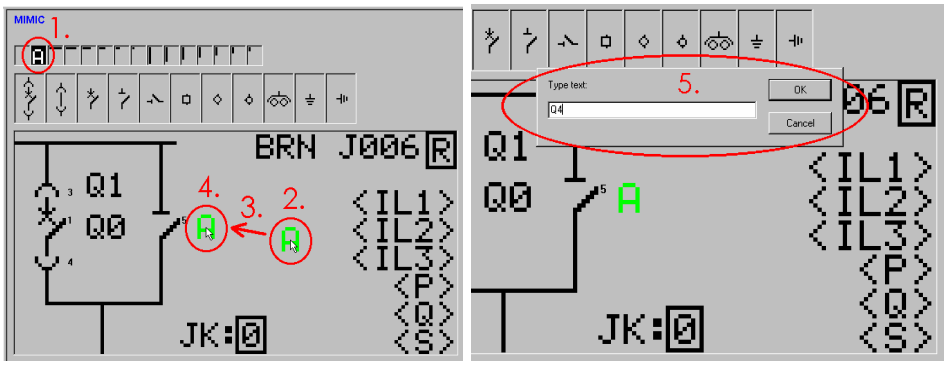


1. Select object type from the palette
2. Press and hold left mouse button over empty space. New object appears at mouse cursor
3. Move the object to correct place
4. Release the left mouse button
5. Select correct internal object numbers by clicking the left mouse button over active part(s) of the object. Clicking alternates unused object numbers. Use numbers 1 & 2 for objects that are going to be controlled by the relay.
6. Make object settings in Objects group (if not done yet)



Relationship between object numbers in Mimic group and object settings in Objects group

5.6.7. Text objects



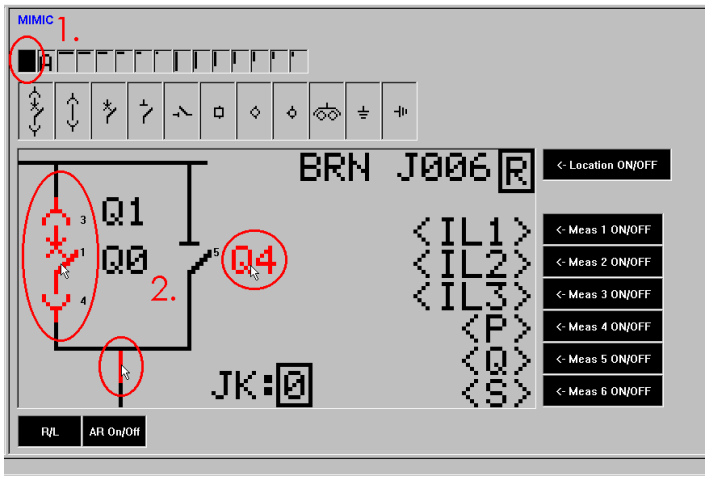
Adding text

1. Select the text tool ('A')
2. Press and hold left mouse button over empty space. New text object appears at mouse cursor
3. Move text object to correct place
4. Release the left mouse button and editing window will be displayed
5. Type text and press OK

Editing text

1. Move mouse over a text object. Text becomes green
2. Click left mouse button to show editing window
3. Type new text and press OK

5.6.8. Deleting objects, text and lines



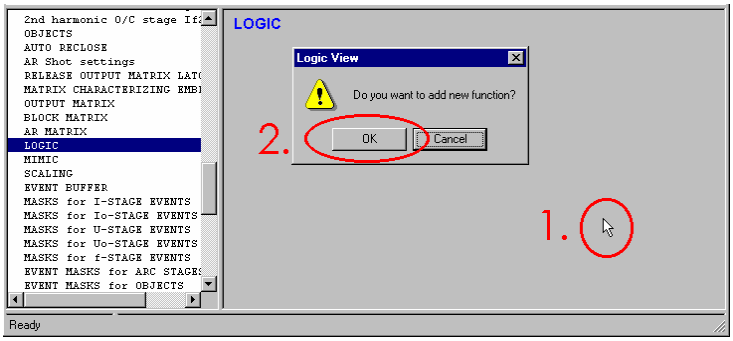
1. Select the deleting tool (an empty box)
2. Move mouse over an object you want to delete. Object becomes red.
3. Click left mouse button to delete the object

5.6.9. Sending to device

MIMIC display configuration is sent to the device by pressing or selecting from the *Communication* menu: ***Write Changed Settings to Device***

5.7. Logic editor

5.7.1. Adding the first function



If the logic display is empty, to add the first function:

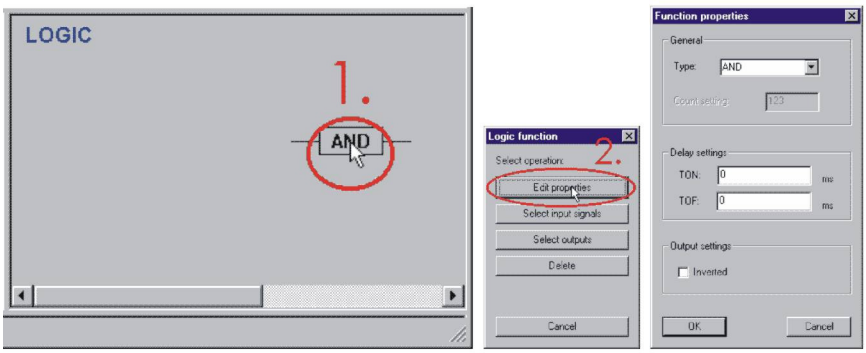
1. Click left mouse button anywhere on the display. Request window is displayed
2. Press OK. AND without inputs and outputs appears on the screen

If AND is not the type of function wanted see the next chapter about how to change function types.

5.7.2. Function properties

To edit properties of a function:

1. Click a function
2. Click Edit Properties button



Type

- use this setting for changing the function type

Count setting

- this is active only for CT-function
- defines how many rising edges must be detected in inputs before the output is activated

TON

- defines how long it takes to activate the output

TOF

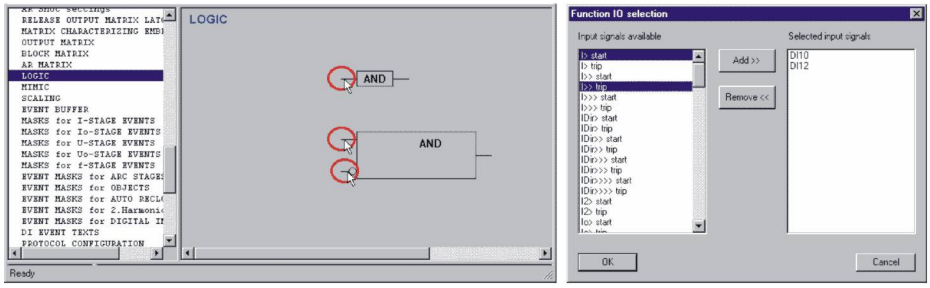
- defines how long it takes to inactivate the output

Inverted

- this setting can be used for inverting the output

5.7.3. Selecting input signals

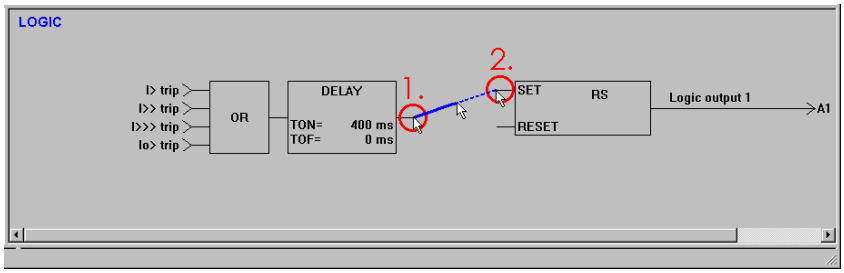
Only the left most functions can take input from signals. Inputs of other functions are outputs from functions on their left side.



1. Click the input line of a function. Some functions may have several input groups e.g. ANDINV has direct inputs and inverted inputs. With those functions click the specific group to change the inputs
2. To add new signals: select input signals from 'Input signals available' list and press the Add button
3. To remove signals: select input signals from 'Selected input signals' list and press the Remove button
4. Press OK to accept the changes

5.7.4. Connections between functions

Adding a new connection

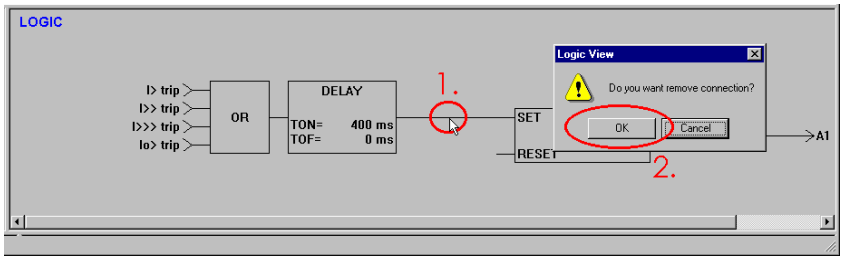


1. Press and hold the left mouse button over function output which is going to be connected to an input of another function
2. Move the mouse near function input and release the left mouse button.

Several functions can be connected to the same destination function. VAMPSET adds new input pins for the destination function as necessary.

Only connections between consecutive functions are legal!

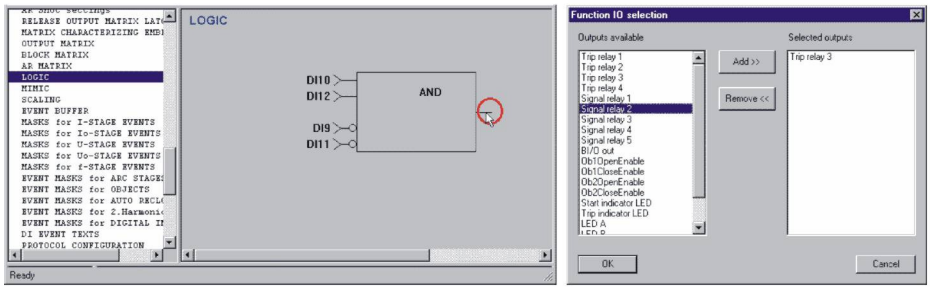
Removing a connection



1. Click a connection. Confirmation window appears
2. Press OK button

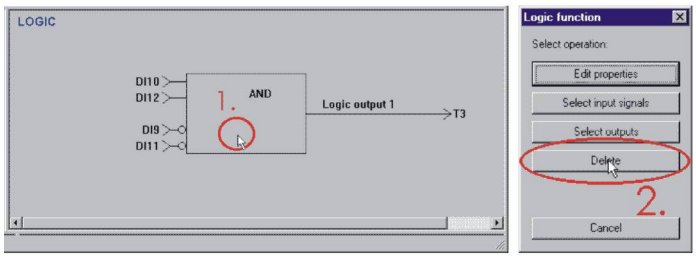
5.7.5. Selecting logic output connections

Only the right most functions can have output connection to relays, leds etc. If a function has 1 or more output connections the function output cannot be connected to input of any other function at the same time.



1. Click input line of a function
2. To add output connections: select outputs from 'Outputs available' list and press the Add button
3. To remove connections: select outputs from 'Selected outputs' list and press the Remove button
4. Press OK to accept changes

5.7.6. Deleting functions



1. Click a function
2. Press the Delete button

5.7.7. Sending to device

Logic configuration is sent to the device by pressing or selecting from the ***Communication*** menu: ***Write Changed Settings to Device***

5.8. Other functions

5.8.1. Sending time and date to Device

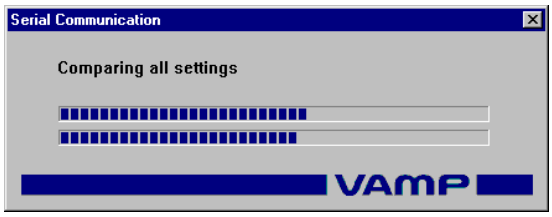
VAMPSET can read time and date from the PC and synchronize the device. Time and date is transferred by pressing or using menu command:

Communication/Sync time and date from computer.

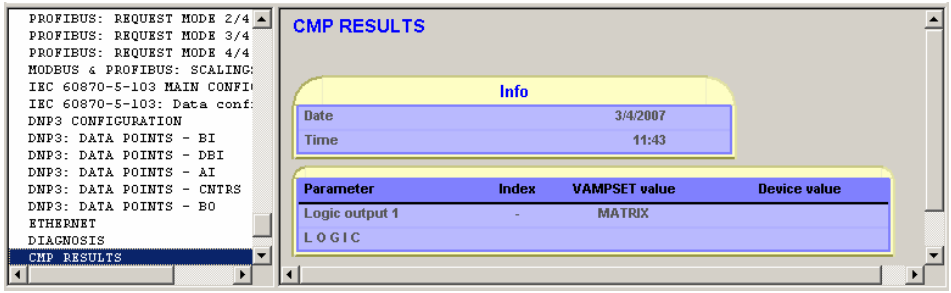
Transfer can be confirmed by selecting Device Info from the group list and then pressing . Now the device time and date is the same as PC's.

5.8.2. Comparing settings between VAMPSET and Device

VAMPSET can compare all parameter values between VAMPSET document and the connected device. Comparing starts by pressing and then the following dialog is displayed:



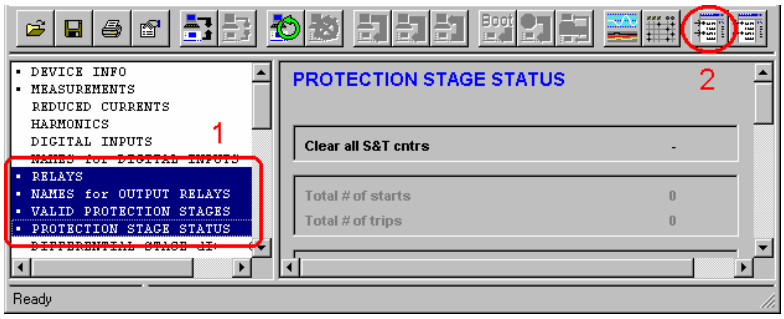
After all settings have been compared, a new group will be added to the group list and set visible. This group shows the comparison result of the differences.



The results of the comparison are also saved with the VAMPSET document.

5.9. Generating a SerCom-file

SerCom is a communication program, which is used for writing parameters to the device via serial port. SerCom is an old DOS program, so it works only under MS DOS and W95's MS-DOS Prompt. The SerCom is used mainly for writing calibration data to the device during production test.



Select groups which you want to include in a SerCom file:

1. Select one or more groups from the group list
2. Press . Go back to 1 until all required groups have been selected. Selected groups have a little dot before their names in the group list.

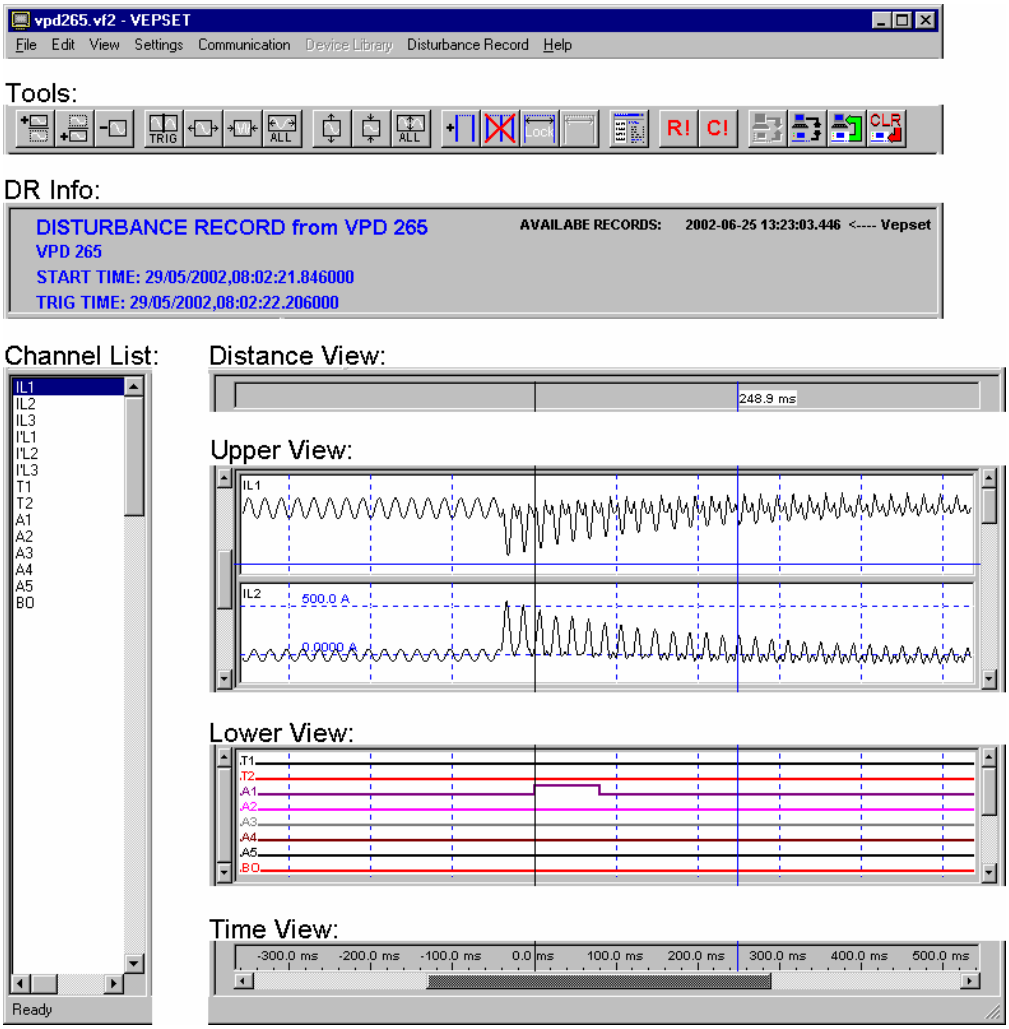
SerCom file is generated by using menu command:

File/Generate SerCom-file from selected groups

6. Disturbance Record Evaluator

6.1. Main Window

The Disturbance Record Evaluator is displayed by pressing or using menu command: *View/Disturbance Record*.



6.1.1. Views

DR Info

- Shows the device type and custom name
- Shows start & trig time stamps
- If the device is connected, all available records are displayed on the right side of the view

Channel List

- Shows all recorded channels
- Can be used for selecting new channels to the upper and lower views

Distance View

- Displays time between trig point and mouse cursor
- Displays distances between cursors

Upper View

- Displays analog and digital channels
- All analog channels are added here by default
- The right scroll bar is used for scrolling between displays
- The left scroll bar is used for changing the maximum number of displays, that are shown simultaneously

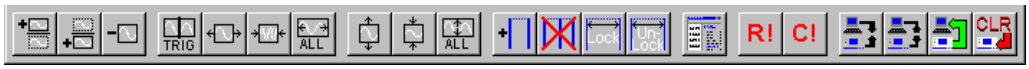
Lower View

- Displays analog and digital channels
- All digital channels are added here by default
- The right scroll bar is used for scrolling between displays
- The left scroll bar is used for changing the maximum number of displays, that are shown simultaneously

Time View

- Displays the time axis
- The scroll bar can be used for scrolling time

6.1.2. Tools



Add new display to the upper view
Add new display to the lower view
Remove Selected Views
Show the Trig Point
Zoom in Time
Zoom out Time
Show the Whole Waveform
Zoom in Amplitude
Zoom out Amplitude
Show the Whole Amplitude
Add New Cursor
Remove Cursors
Lock Distances between Cursors
Unlock Cursors
View Groups & Parameters
Reset Channel Views
Clear Channel Views
Connect Device
Disconnect Device
Read the oldest record from device
Clear the oldest record from device

6.2. Changing Disturbance Recorder Settings

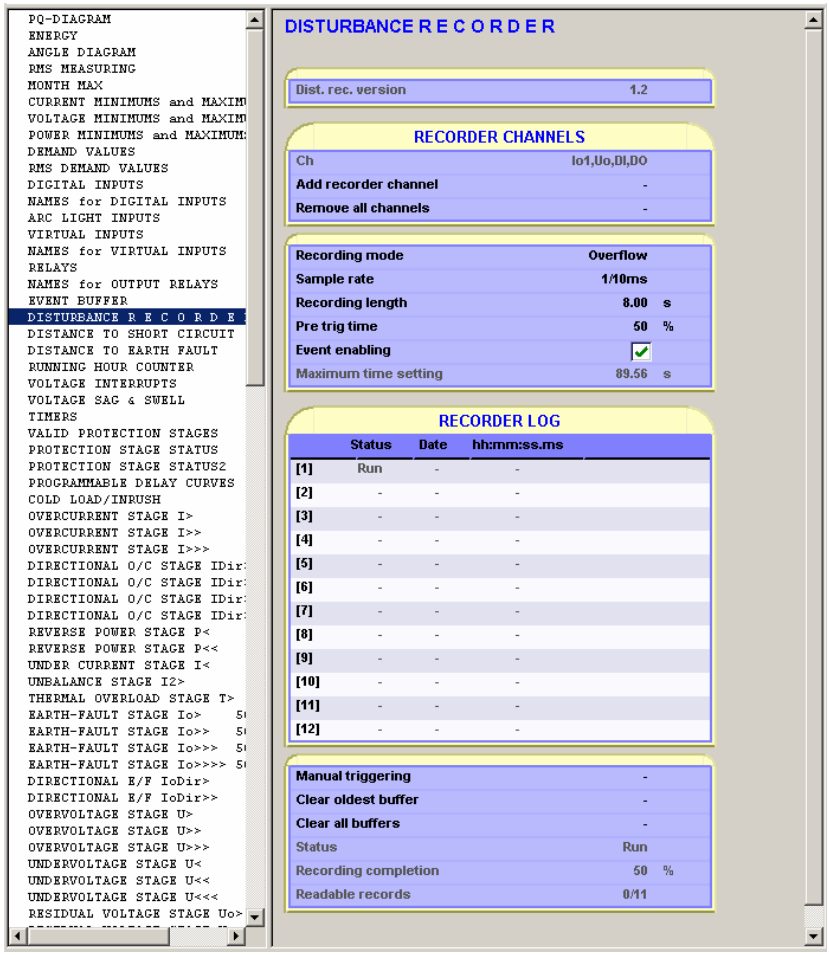
The device has three types of settings that must be adjusted before making any records:

1. channel selection
2. sampling settings: mode, rate and time
3. trigger settings: source and pre trigger rate

The following parts assume that you have a basic knowledge of setting the device via VAMPSET. Please read first Chapter 5.2.8 before continuing.

Before making any DR settings, the device must be connected to VAMPSET. Otherwise it's not possible to select channels or sampling time correctly. It's also recommended that ***Settings/Program Settings/Write changes automatically after change*** is enabled for making the channel selection easier.

All device settings, except the trigger source selection, are made in the Disturbance Record group. See chapter 5.2.5. for trigger source selection. Select the group from the group list.



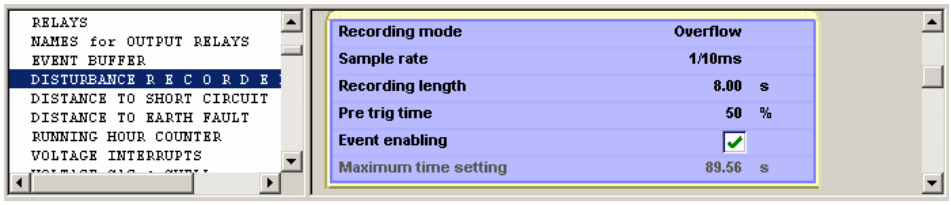
6.2.1. Channel Selection

Use the following sequence to select channels:

1. Clear all recorded channels by setting 'Clear' to the 'Remove all channels' -menu
2. Use 'Add recorder channel' to select one channel from a list of all available channels
3. Go back to 2, until all required channels have been selected

   The selected channels are shown in grey colour on the 'Ch' view.

6.2.2. Sampling Settings



Set the recording mode according to desired operation:

Saturated

- All buffers will be recorded once. If there are no empty buffers, the recording freezes.
- NOTE! All buffers will be lost if:
  ⇒ relay is rebooted (power supply fails)
  ⇒ changes made to the sampling settings, excluding Pre trigger rate.
- Buffers can be cleared manually. If new triggering occurs the cleared buffer will be used for recording

Overflow

- If new triggering occurs and there are no empty buffers, the oldest buffer will be overwritten

VAMP devices can do two different type of sampling. The sampling type is dependent on the sampling rate setting as follows:

Sampling Type	Sampling Rate	Sampling source	
		Analog	Digital
Waveform	32 / cycle	ADC samples	Instant
	16 / cycle		
	8 / cycle		
Amplitude	1 / 10 ms	20 ms mean	Instant
	1 / 20 ms		
	1 / 200 ms	200 ms mean	
	1 / 1 s	1 s mean	
	1 / 5 s		
	1 / 10 s		
	1 / 15 s		
	1 / 30 s		
	1 / 1 min	1 min mean	

Selectable sampling rates can vary between different devices and firmware versions.

Note!

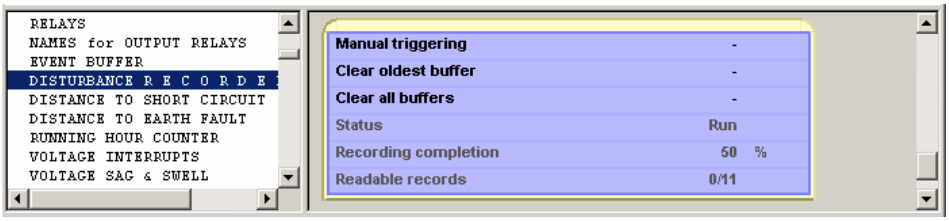
Changing the sampling rate will clear the record buffers.

Time setting defines the recording time. The setting cannot be more than the **MAX time** that is displayed in grey colour in the Disturbance Record group. **MAX time** is total available time for all records. The following table shows the relationship between time settings and MAX time:

Time (less or equal)	**Number of records**
1/5 MAX time	5
1/4 MAX time	4
1/3 MAX time	3
½ MAX time	2
MAX time	1

Maximum number of records is 12. Even if the time setting is 1/6 **MAX time** the number of available records remains at 12.

6.2.3. Recorder controls

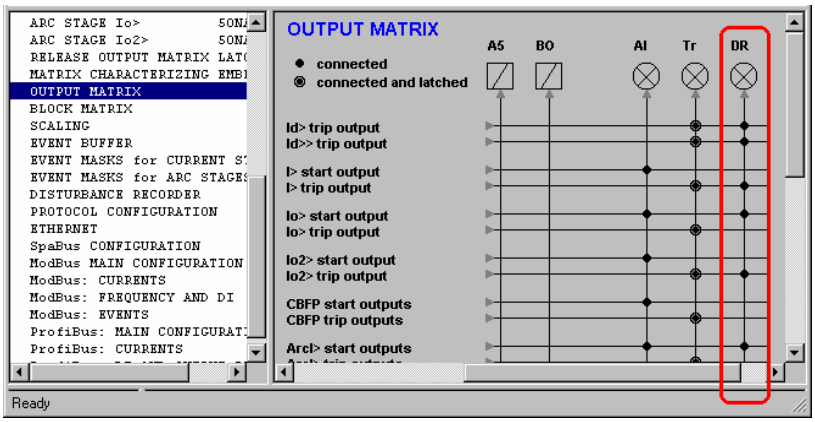


- By selecting 'Trig' from the 'Manual triggering' –menu the Disturbance recorder may be triggered to capture the waveform from the present measurements.
- By selecting 'Clear' from the 'Clear oldest buffer' –menu will delete the oldest triggered disturbance recording from the relay's memory.
- By selecting 'Clear' from the 'Clear all buffers' –menu will delete all of the disturbance recordings from the relay's memory.

6.2.4. Trigger Settings

Pre Trigger Rate defines how many samples will be recorded before the trig. If **Pre Trigger Rate** is 50% and **Time** is 0.50 s the device will record 0.25 s before and 0.25 s after the trig.

Trigger source is selected on Output Matrix group. Select the group from the group list.



Select the trigger sources by connecting appropriate signals to the DR-line. All connected signals will cause a new recording when activated.

6.3. Evaluating recordings with VAMPSET

VAMPSET stores the disturbance records to disk in COMTRADE format (revision year 1999). Data files are saved in ASCII format (binary format is not supported).

6.3.1. Reading from Device

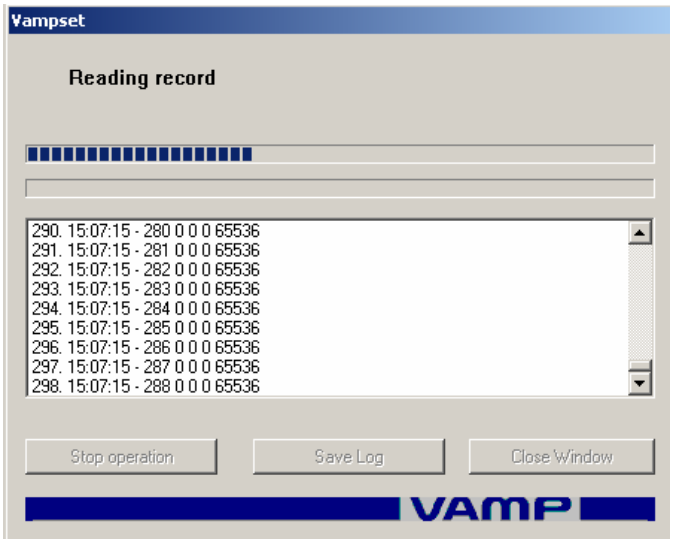
Reading starts by menu command:

Disturbance Record/Read from device *or* ***Read any from device*** *or* ***Read all from device*** depending of the desired operation.

If the menu command is disabled,

- the device is not connected or
- the device does not have DR recorder or
- there are no records available

The following dialog is displayed when reading is in process:



After the reading is ready the record must be saved and cleared from the device.

If selected ***Disturbance Record/Read all from device*** VAMPSET will read all records from the relay one-by-one and will ask after each finished read record to save the comtrade file in to disk. User may save or discard the read file.

If selected ***Disturbance Record/Read any from device*** a pop-up window will appear, where user may select the desired recording to be read.

The oldest record is cleared by pressing or using menu command:

Disturbance Record/Clear oldest Record. All recordings from the recorder may be cleared by selecting ***Disturbance Record/Clear all Records.***

6.3.2. Saving to Disk

The record can be saved to disk by menu command:

Disturbance Record/Save As…

6.3.3. Printing

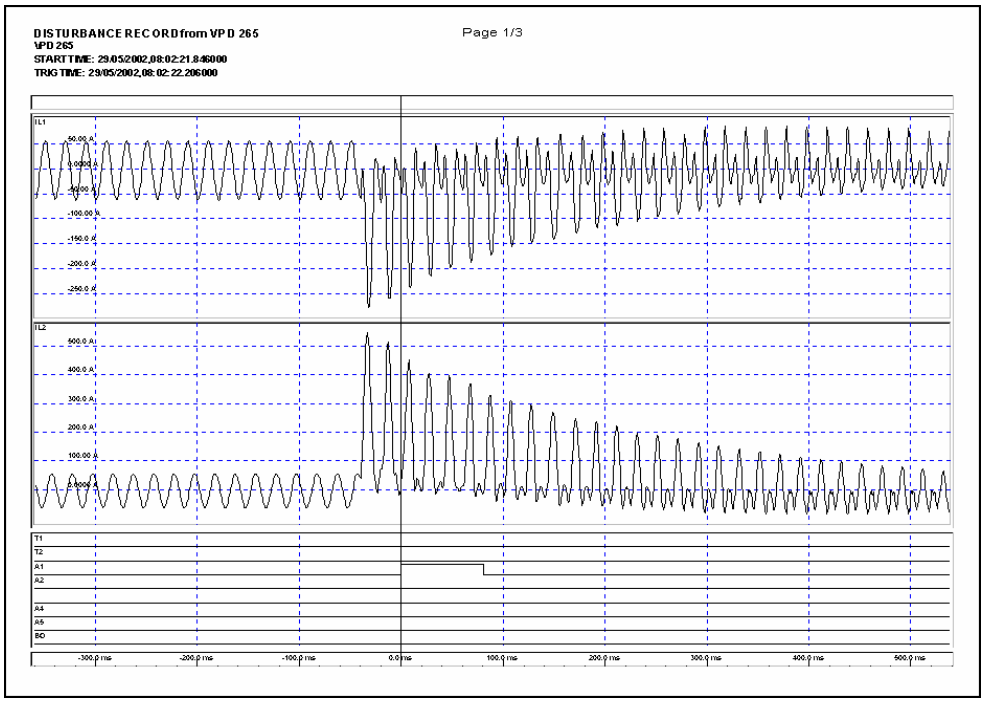
Record printing is controlled by the following commands on the ***File*** menu:

Command	Description
Preview Active View	Shows a preview of printed record
Print Active View	Prints the record
Print Setup	Printer selection & settings
	Paper type & orientation

Paper layout is dependent on the following settings:

Paper Layout	Settings & notes
Upper View displays per page	Same as on screen
Lower View displays	Same as on screen Printed to the footer of every page
Number of pages	Upper View displays / displays per page (left scroll bar)
Time period	Same as on screen
RMS, AVG, Min & Max	Same as on screen
Cursors	Same as on screen

See the following example page. The Upper View has 6 displays and the left scroll bar position is 2, resulting in 3 pages and 2 Upper View displays per page. The Lower View on paper looks the same as on screen and is printed on every page.



6.3.4. Opening from Disk

Disturbance record can be opened from a file by menu command:

Disturbance Record/Open..

6.4. Channel displays

6.4.1. Adding

Use the following sequence to add a new display

1. Select one or more channels from the Channel List
2. Press to add a display to the Upper View or to the Lower View. The display will contain all the selected channels.

6.4.2. Removing

To remove one or more displays:

1. Select one or more displays by double-clicking them with the mouse
2. Press to remove the selected displays

All displays can be removed by pressing .

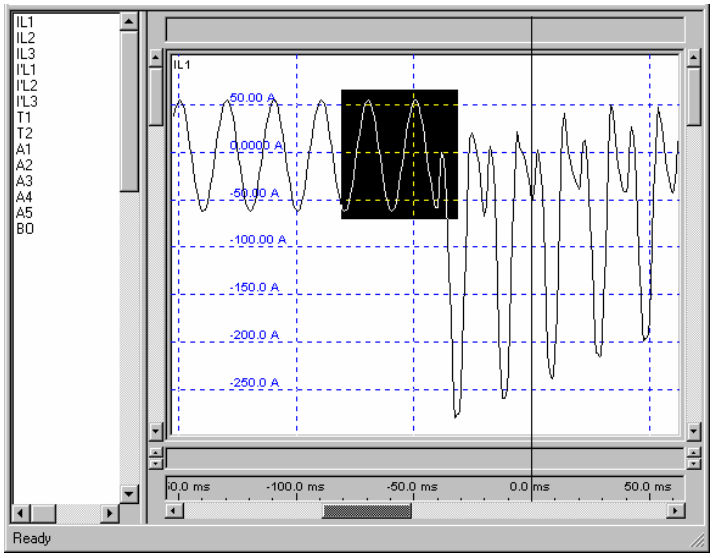
6.5. Zooming

6.5.1. By buttons

The following buttons are used for zooming:

Axis	Direction	Button	Note
Time	In		
	Out		
	View all		
Amplitude	In		If displays or channels are selected only those will be zoomed. All displays and channels are zoomed.
	Out		
	View all		

6.5.2. By mouse



Time and amplitude can be zoomed by using the mouse as follows:

1. Press left mouse button down
2. Drag a rectangle
3. Release the left mouse button

6.6. Using Cursors

6.6.1. Adding

New cursor is added by pressing . The cursor appears in the middle of the screen. The maximum number of cursors is 5.

If more than one cursor is used, all calculations (like RMS and AVG) are made from samples between the 1st and the 2nd cursor. The 1st cursor is the left most and the 2nd is the second right most.

6.6.2. Moving

To move a cursor with the mouse:

1. Move the mouse over a cursor
2. Press left mouse button down
3. Move the cursor to required place
4. Release the left mouse button

6.6.3. Removing

All cursors are removed by pressing .

6.6.4. Locking together

Distances between cursors can be locked by pressing and unlocked by .

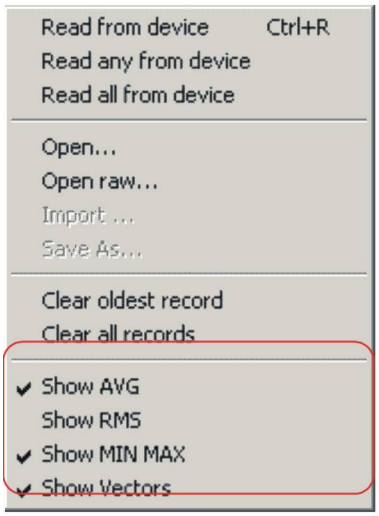
Locking can be used for example to examine instant RMS values of a waveform display:

1. Add two cursors
2. Move one cursor to one cycle distance from the other
3. Lock the cursors together
4. Enable RMS calculation. The displayed RMS value is calculated from samples between the two cursors.
5. Move one cursor with the mouse. The RMS value is updated in real time.

6.7. Calculations

VAMPSET can calculate RMS and Average values and show min & max from recorded samples. Calculations are based on samples between the first and last sample or between two cursors if exist.

Calculations can be activated from the ***Disturbance Record*** menu:



6.8. Other functions

6.8.1. Finding the trig point

The trig point is found easily by pressing

.

6.8.2. Resetting all Views

All view can be reset to the initial state by pressing

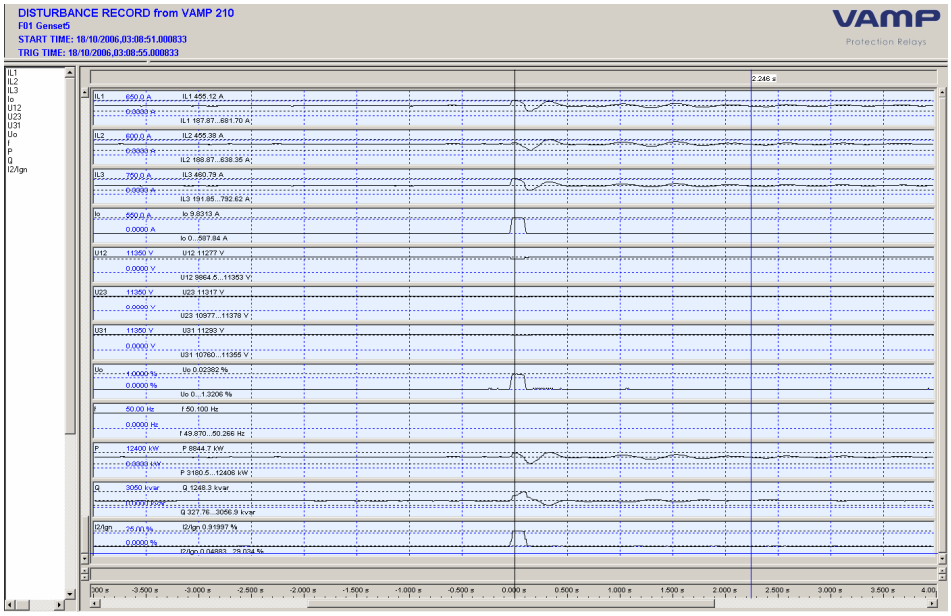
. The views will look the same as after opening the record from a disk or after reading the record from device:

- analog channels are added to the upper view
- digital channels are added to the lower view
- all cursors are removed
- amplitudes are zoomed to fit in the display
- time is zoomed to show all record

In the VAMPSET is available some evaluating properties, which are helpful for the user.

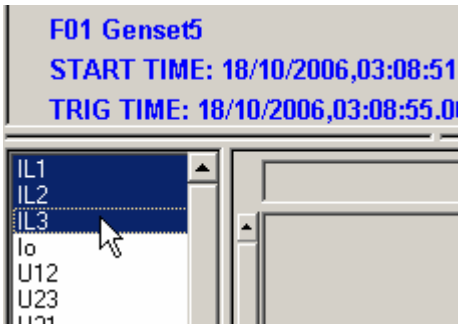
7. Disturbance recording evaluation example

In this example is presented the evaluation of disturbance recordings with VAMPSET. Following disturbance recording has been read from the relay. The default display will show the recording so that all of the signals are separately in their own graphs.

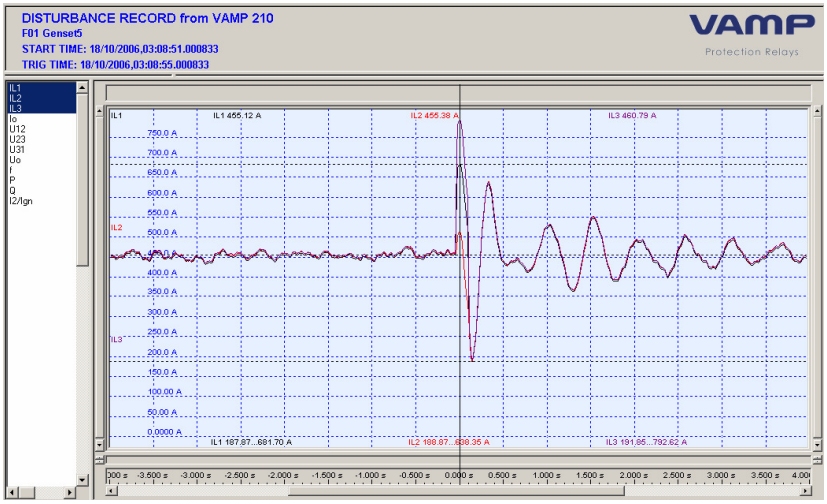


First the view is arranged for analyzing so that the currents and voltages are displayed in their own graphs by following procedure:

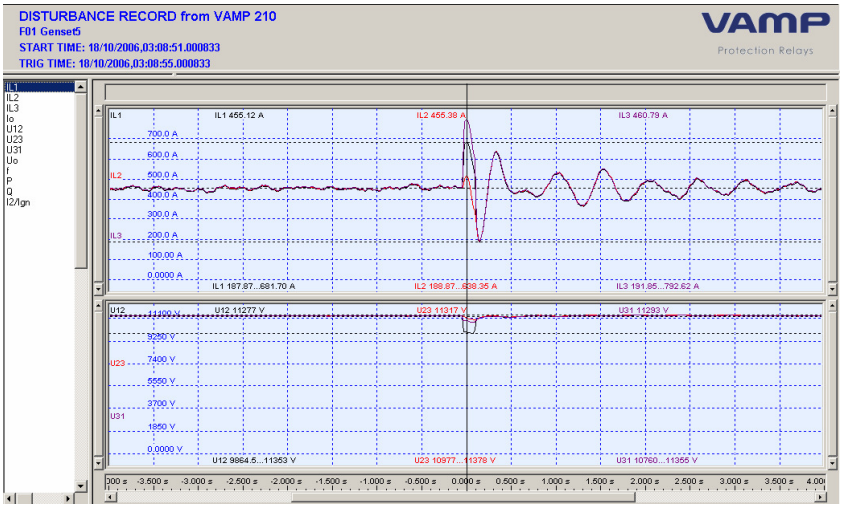
1. Clear the view by pressing C! button
2. Select first the currents from the signal list with mouse and "ctrl" button pressed.



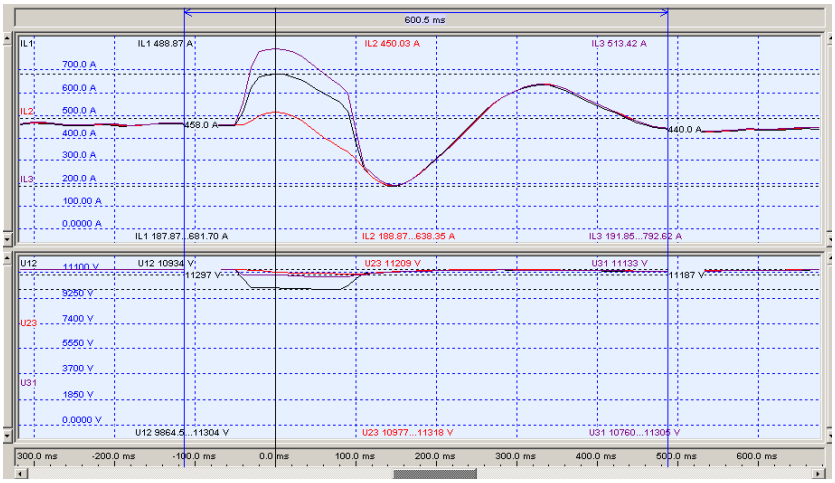
3. By pressing the button the selected signals are plotted in to the upper view.



4. Next plot the voltages in to lower graph by selecting the voltages from the signal list and pressing button

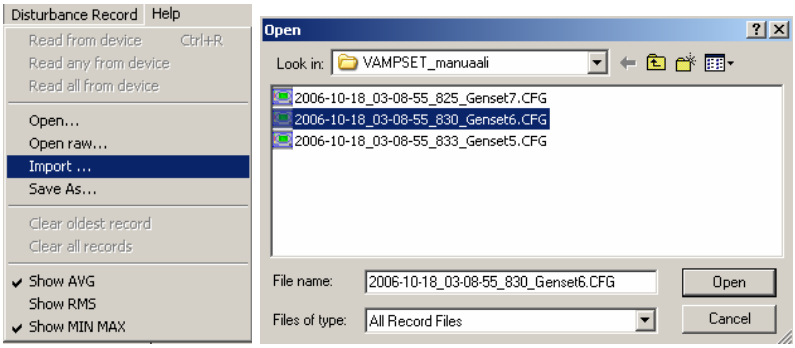


5. Now when the recording display is as desired, cursors can be added for evaluating by pressing button. If more than one cursor is added VAMPSET will display the time difference in between the cursors and the measurement value of each cursor. With the zoom buttons the graphs may be adjusted in to area of interest.

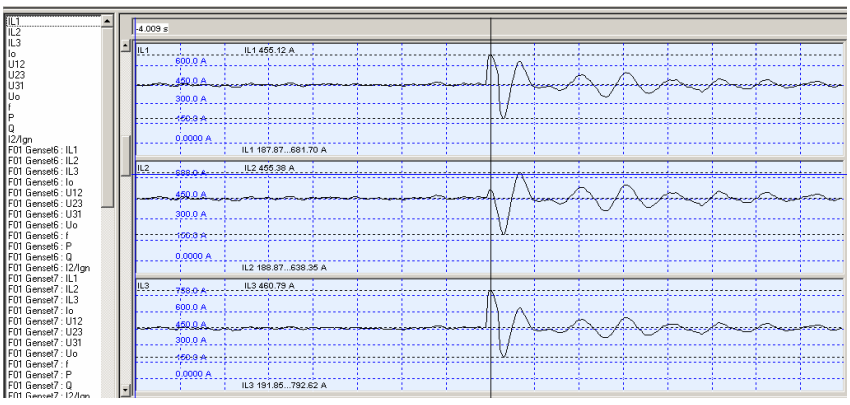


In cases where is necessary to evaluate several recordings from the same situation, VAMPSET has option to import older recordings in to the disturbance recording evaluator.

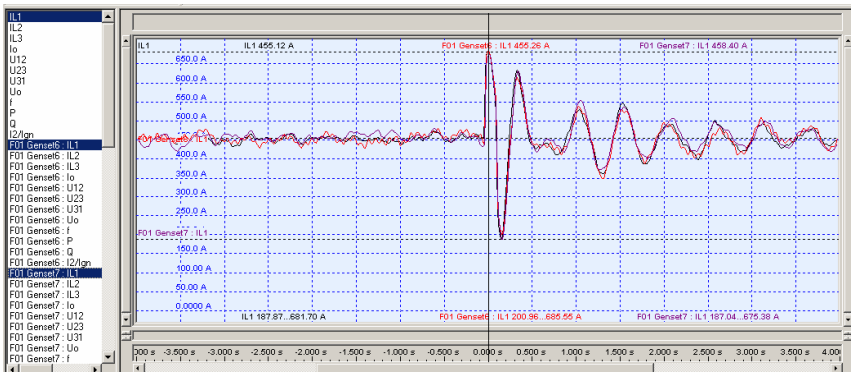
1. Read recording no.1 from the relay or open it with VAMPSET.
2. Select **"Disturbance Record"** - **"Import"** and select the desired disturbance recording, and click **"Open"**. Repeat the Import procedure as many times as necessary to get all of the desired recordings in to the VAMPSET.



3. The read disturbance recordings will show in the VAMPSET signal list so that the first read recording is not showing the source file. In front of every imported signal is shown the source file name.

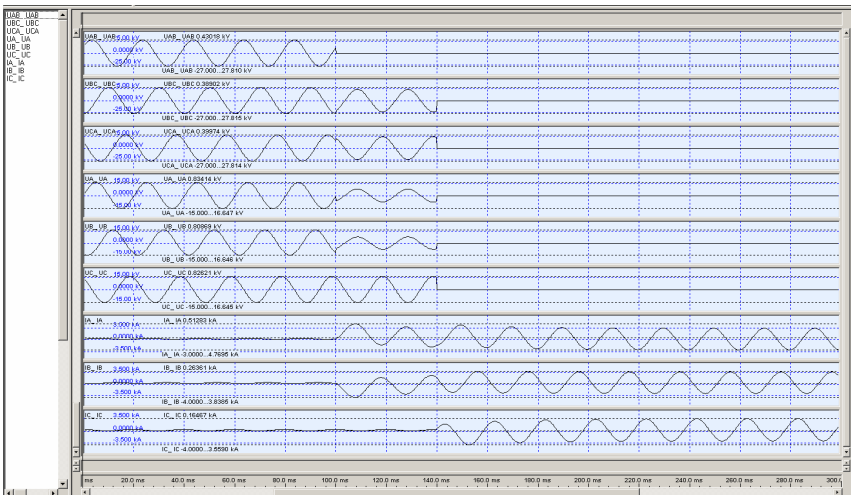


4. Clear the display by pressing the C! button
5. Select the desired signals to be evaluated from the signal list by using mouse click and “ctrl” button pressed. Plot the signals in to VAMPSET by pressing button and evaluate the recordings.

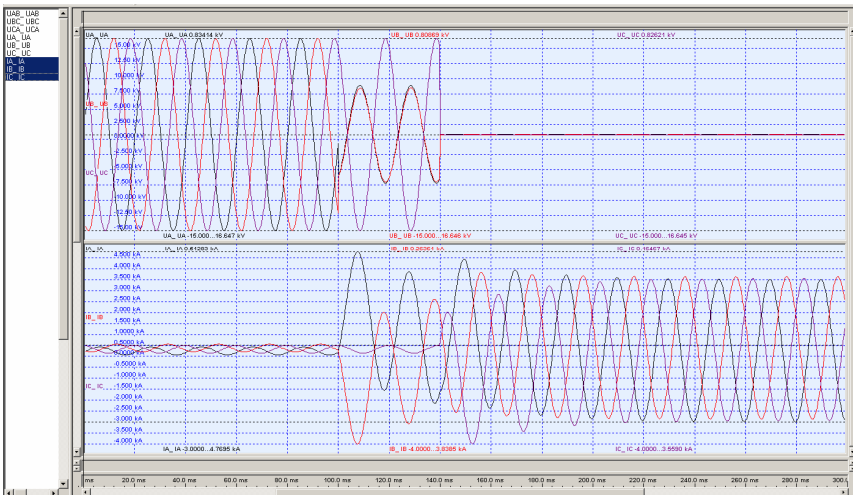


For the waveform data VAMPSET will show the phase vectors in the cursors. This is useful function because with waveform data is usually more complicated analysis needed.

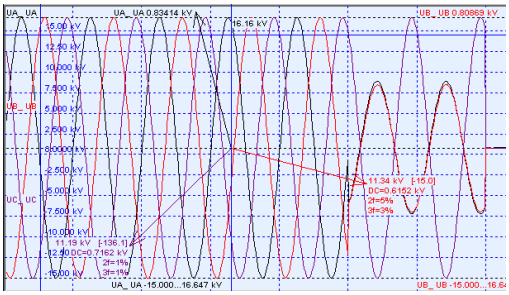
1. Read from the relay or open the desired waveform disturbance recording.



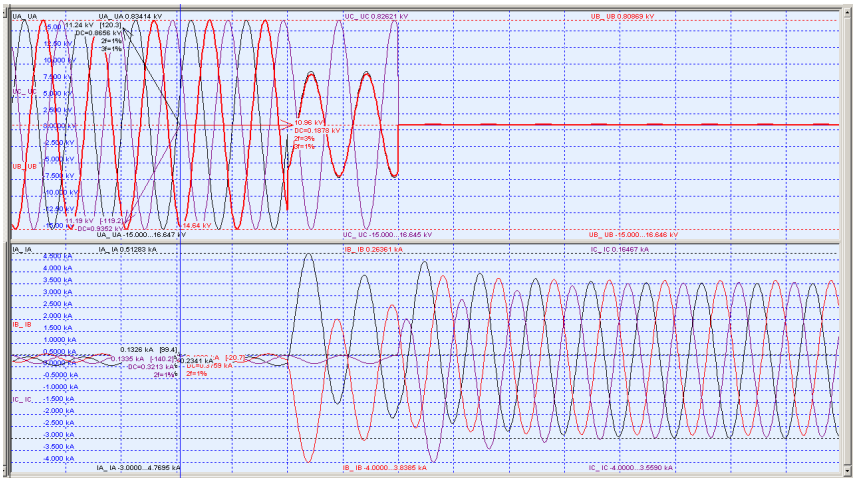
2. Clear the view C! and plot for example currents and voltages in to their own graphs .



3. Add cursor in to the graph with button. In the graph will show now cursor with the phasor vectors.



4. For the vector display to be convenient select one of the phase waveforms as reference by double-clicking the curve.



In this sample the voltage signal UB (red) has been selected as the phasor display reference and the signal curve is shown bolded in the upper graph. To change the reference in to another signal, double-click another curve. Phasors in all of the graphs will show related in to the same selected reference. By moving the cursors in the recording the phasors will change according to the measurement data.

We reserve the rights to changes without prior notice

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