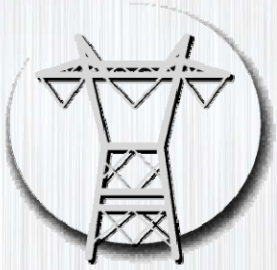
PROTECTA Lines

Remote user interface description



MICROENER

PROTECTA HUNGARY

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Version 1.0	20.06.2010	First published version	Attila Füzes
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CONTENTS

1 Introduction

This product is a special user interface to the Europrot+ device family. With the user-friendly interface, you can easily manage the device. Password protection is available to grant certain privileges and access to special functions.

2 System requirements

A web browser and an Ethernet connection is needed in order to access the device interface. HTML5 compatible web browser is recommended. To properly display the data on the screen, it is recommended that the user have a screen resolution of at least 1024x768. The following web browsers can be used:

- Microsoft Internet Explorer version 7.0 or higher
- Mozilla Firefox version 1.5 or higher
- Apple Safari version 2.0.4 or higher
- Google Chrome version 1.0 or higher
- Opera version 9.25 or higher

JavaScript must also be enabled within your browser. For security reasons, the device allows only limited number of connections over the network.

3 Getting started

Make sure you are connected to the device and have JavaScript enabled within your browser. For detailed information read the Quick Start Guide. The recommended browser is Mozilla Firefox version 23 or higher, and all examples shown in this document are performed with Firefox. Type the IP address of the device into your browser's address bar.

The currently selected menu item is highlighted in black (Fig.1). In some configurations, the currently displayed language can be changed. To do this, simply click one of the other available languages represented by the flags and the page will be refreshed in the desired language. Changing the display language affects only the local browser of the user. Other browsers and the language of the touch screen will not be modified. In case the content area is too long, the user can scroll down and the menu bar will follow the user.

4 Menu items

4.1 Main panel

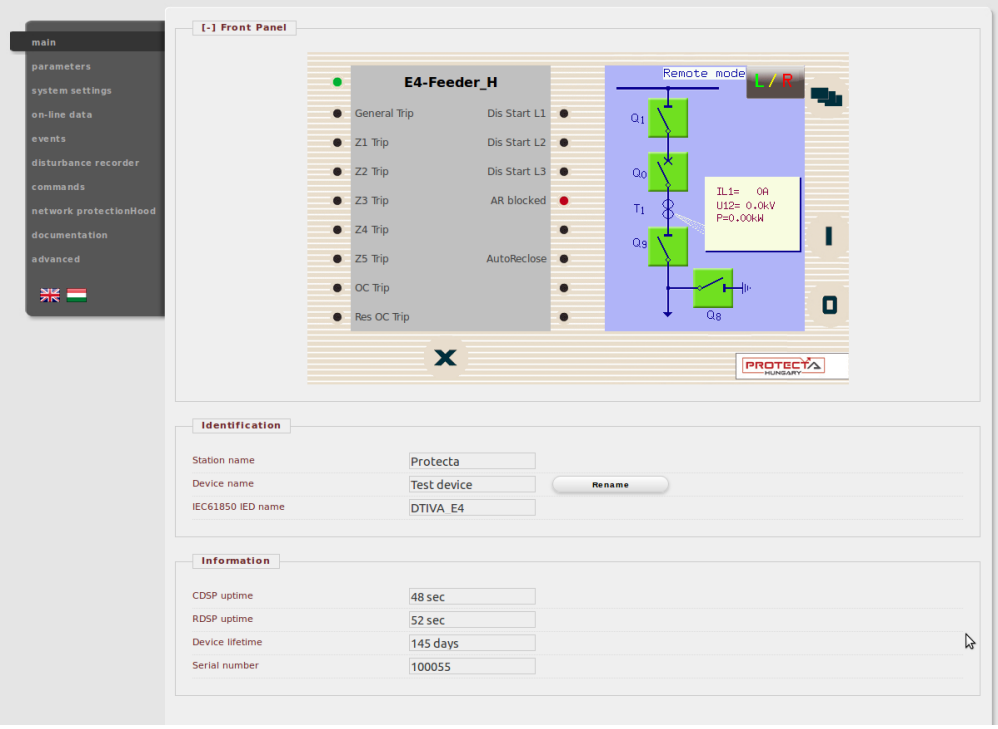

Fig. 1. Main menu

The front panel of the device can be controlled from here (Fig 1). The image in the center of the screen behaves the same way as the touch screen and the LEDs, except the on (1) and the off (0) buttons. These two buttons are insensitive for security reasons. The X button on the bottom of the front panel picture initiates a LED reset. Text appearing by a LED is coming from the configuration and may be different than the label inserted.

Identification - User can change the station and device names from this panel by typing in the new values and clicking on the Rename button. IEC61850 IED name field is here only for information. It depends on the IED name and allowed to change with the EuroCAP communication configuration tool.

Information part - There are some fields for measuring device operating time. Uptime fields display the time elapsed from the last power on of the device. CDSP is for the communication processor, RDSP is for relay processor unit. Device lifetime field value equals the number of days of the device's energized state.

Serial number information is also available in this panel, in case of contacting support team please use this number as a reference of your product.

4.2 Parameters

Various parameters and variables can be viewed and changed in this menu item. The user can manage different parameter sets with the ability to set, rename, export and import them. A password can be applied for the import, export and set settings options. All parameters are part of a certain function block which can be individually opened or closed using the [+] or [-] symbol. Parameter values are displayed and can be modified in text fields, list boxes or check boxes.

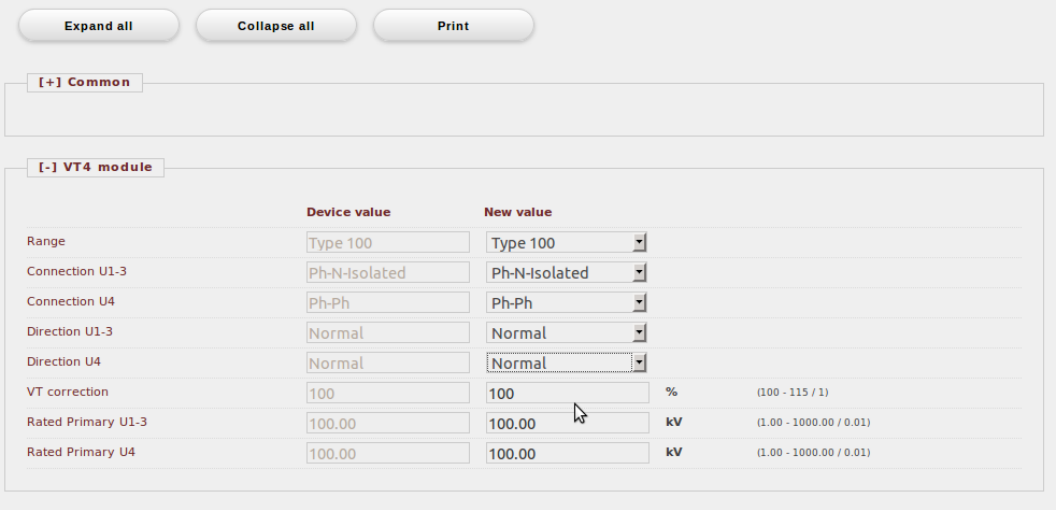

Fig. 2. Parameter settings

Buttons on the top of the parameter's sheet provide fast expanding and collapsing all the function panels make finding a parameter easy. Print button generates a printer-friendly layout opened in a new browser window. The [+] and [-] signs open and close the function block parameters individually.
General layout of the parameter's sheet divides columns:
The first column contains the name of the parameter, this text is coming from the configuration of the device. If it is a multilingual device (configuration prepared with multi-language titles) changing the language of the main menu will change this name also.
Second column displays the current values of the selected parameter set stored in the device. Selection can be made by choosing an item from the combo-box of the main menu. Changing the parameter set here doesn't mean activating it, only loading to the fields. You can find more information on activation in this chapter later.
Third column used to give the desired value by the user. In the moment of changing its color goes to blue for taking the user's attention. The expected value range and step are on the right end of the parameter line.

The detailed description of fields are as follows:

Textfield – *Text fields* hold values that can be modified. To prevent invalid values from being loaded into the device, make sure that all values entered are within proper range. In case a wrong value is entered, the user is alerted and the value is reset to the last correct value. When the current value is changed, the number is displayed in red.

Listbox - By clicking on the list box, the user can choose from the available values listed within the box. If a value other then the default one is selected, the letters and box outline

will change into red, just like in the case of text fields. (The list box represents enumerated type parameters.)

Checkbox - The user can enable or disable certain functions and properties with the check box, by clicking on the box. If the check box is ticked, the parameter is enabled. In contrast, if the check box is empty, the parameter is disabled. (The check box represents boolean type parameters.)

Unit - This displays the unit of parameter where applicable. Not all parameters have units.

Range / Step - This applies only to text fields; it displays the range a value can take. The step value represents the amount by which the value can be incremented/decremented. For example, if a parameter has a default value of 100 with a range of 1-1000 and a step value of .01, its value can be changed to 99.99, or 99.98, or 99.9, or 99 or 100.01, or 100.02, or 100.1, or 101, and so on. The value cannot go below 1.00 or above 1000.00, since that would be out of range. As another example, if the same parameter had a step value of 5, then we could only change the default value of 100 to 95, or 105, and so on.

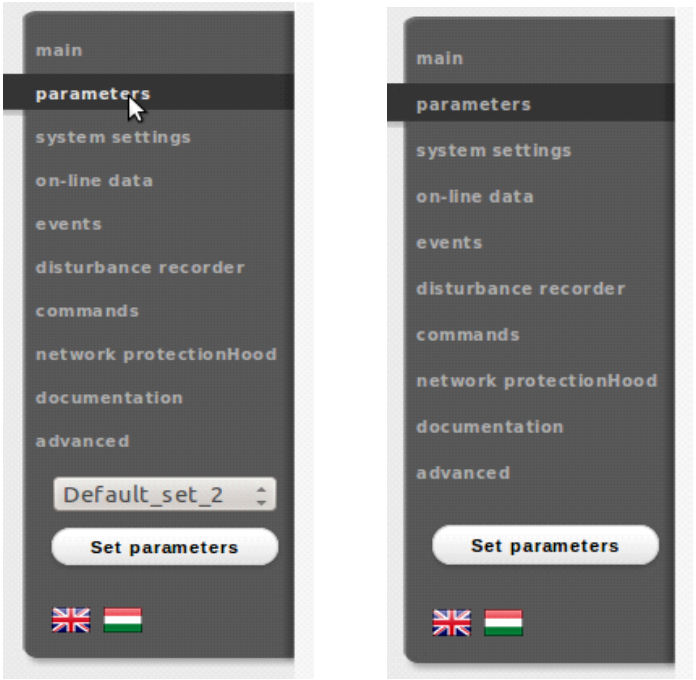

Fig.3. Main menu view with and without parameter set (configuration dependent)

Modified parameter values can be written into the selected parameter set by clicking Set parameters button on the main menu panel. In case of a single-parameter device there in no parameter set selector combo-box, as can be seen at the left side of figure 3.

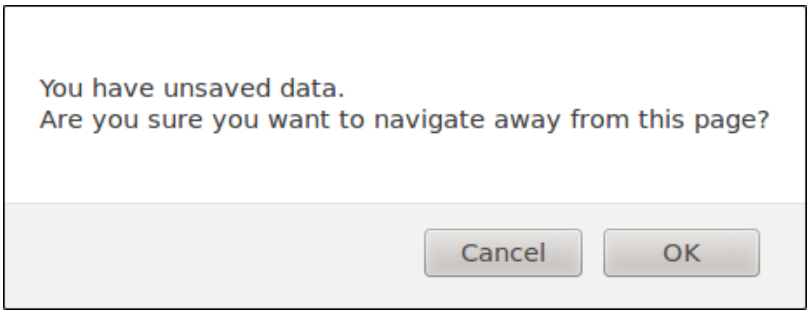

Fig 4. Unsaved data when leaving the page

Values are checked for change if the user navigates away from the page or he would like to load another parameter set. By pressing Cancel, the browser will return to the page. If you would like to ignore the changes made, simply press OK.

Towards the bottom of the page, there are options to manage parameter sets. These buttons and functions only appear if the device is configured to have more than one parameter set. The following buttons are available:

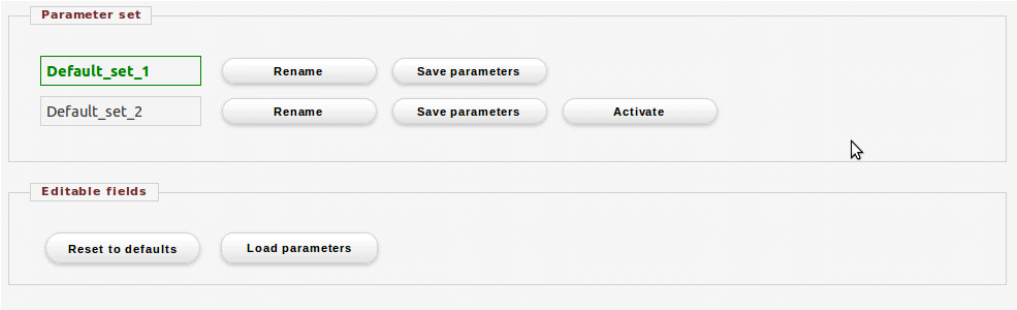

Fig. 5. Parameter set control field

Activate - This enables to activate the parameter set that in line with the button so the device will use the values from that specific set. Note: This button only appears, if there is more then one parameter set. The active parameters name will be displayed in green. Activating a parameter set doesn't load the values to the edit fields above. Parameter set values can be load into the editable fields using the combo-box placed in the main menu panel on the left side.

Rename - This renames the selected parameter set. Make sure that you use alphanumeric characters, spaces, dashes, or underscores as input and that no another set has the same name.

Reset to defaults - This resets the values on screen with the factory default settings.

Load parameters - This loads a previously saved parameter file, and sets the values on the screen based on its contents.

4.3 System settings

This is the menu item where adjustments can be made to some miscellaneous device settings. This menu item can be password protected. The text fields, list boxes, and check boxes are almost the same as in the parameters menu item except for one type of text field, the IP address field which is found only here, in the system settings menu item.

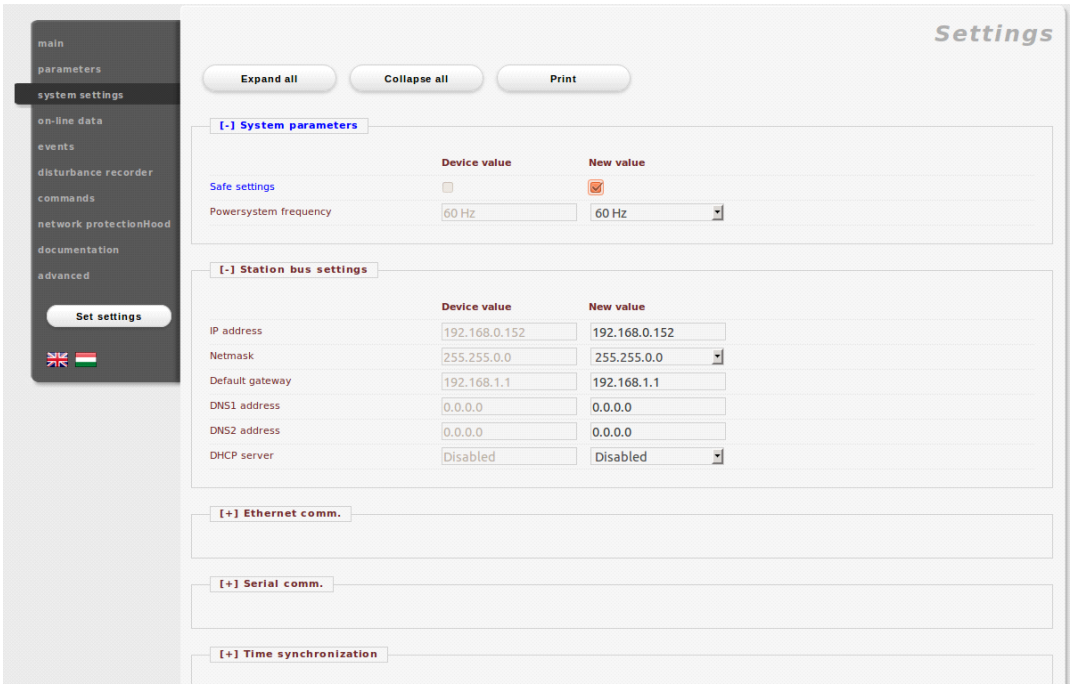

Fig.6. System settings menu

The behavior of the system Settings sheet is very similar to the Parameters sheet. The short description of the system parameters are as follows:

Safe settings – If enabled, device's LCD screen will ask user to confirm the save of new settings. If Set parameters or Set settings button clicked and there is at least one parameter changed, user must press the "I" (ON) button on the front panel of device locally. Choosing "O" (OFF) button discards the changes, selection can be made within 300 seconds.

Power system frequency – 50 or 60 Hz, default setting is 50Hz. *Warning:* changing this parameter initiates system restart.

Station bus settings – This field contains settings for the IPv4 based communication like IP address, mask, gateway, and DNS addresses. The DHCP server function can be switched on with a combo-box. *Warning:* uncontrolled use of DHCP server function may cause serious communication failures.

Ethernet communication – The device can communicate using several Ethernet based protocols at the same time. Only the IEC61850 communication is licensed, all the other protocols are available by default. The GOOSE repeat rate combo-box can be used for adjusting T0 time of the Generic Object Oriented Substation Event messages.

Serial communication – Only one protocol can be selected for serial communication purposes, physical parameters can be set in this field. Note that serial communication needs proper CPU card.

Time synchronization – The device handles broad range of time synchronization protocols: NTP server (SNTP), serial communication, and different pulse inputs. If Time sync warning parameter is enabled, and device is not synchronized, an alarm is raised (status LED goes yellow).

Time zone settings – Use this field to set the offset to the GMT time and the settings of daylight saving.

LCD back-light – Parameters in this field controls the behavior of the LCD panel. Back-light will switch off after its timeout. The Back-light group is useful if you have more than one device close to each other. Touching one of them will switch on all devices belong to the same group.

4.4 Online data

This displays data measured by the device. The values on the screen are updated every second. All data on this page is read-only, therefore they cannot be modified. In case there is a counter on the page, there will be a button next to it, which will reset it.

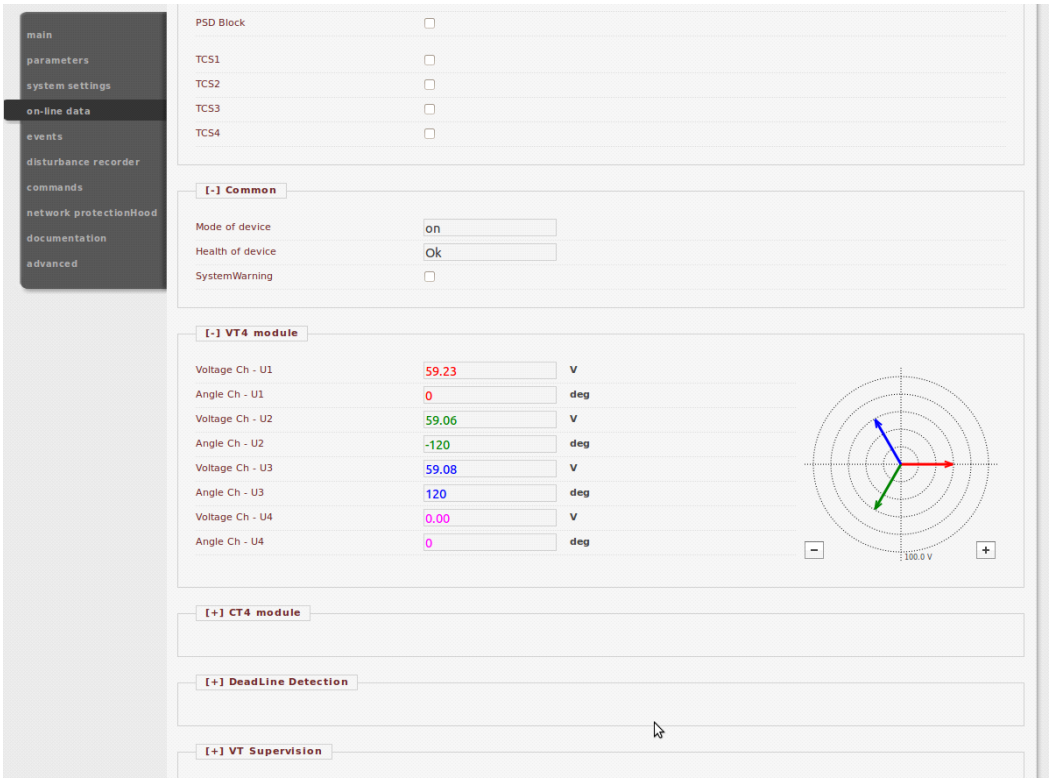

Fig. 6. On-line sheet

Binary data is displayed as check box, enumerated data will presented as text information. If user has HTML5 compatible Internet browser, analogue measurements will be drawn as vectors.

4.5 Events

The Events page displays the internal event list of the device. Every event is listed with time stamp, function block channel name, function block channel and its new status text. Time resolution is 1 ms.
If mouse hangs over for a short time on a function block name, all event lines belongs to the same function block will be highlighted. Also, if mouse is over a channel name, all events with the same text will be highlighted (Fig.7).
Event page is not refreshed automatically, user can click on the Refresh button. Erasing all events and exporting them to a text file is also possible.

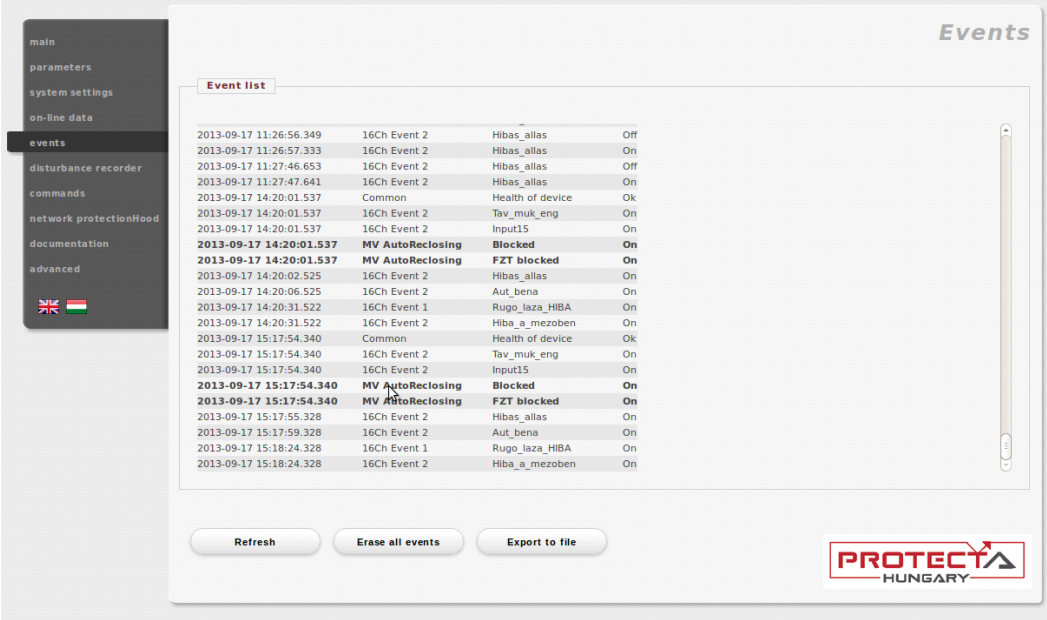

Fig. 7. Events sheet

4.6 Disturbance recorder

The Disturbance records (Fig.8.) panel allows the user to download or view the recorded disturbances. Every record is stored in COMTRADE format and can be downloaded in a zipped file (with CFG, INF and DAT files inside). The displayed trip time information is used as a reference to the stored records.
A simple built-in preview function makes work more easy (Fig.9 and 10). This viewer provides the fast evaluation possibility of the disturbance event. Both analogue and binary channels displayed on the screen. On the right side there is a floating panel with some buttons to control the behavior of the display. Buttons with plus and minus sign used for adjusting the horizontal zoom of the picture. Clicking on the 100% button resets the view to the default horizontal size. Scale mode is a toggle button to change the way of the analogue channel drawing. By default, it is drawn using a common vertical scale calculated from all available analogue channels with the same unit parameter. In other words it uses a grouping of the channels according to their unit. If the user clicks on this button, every analogue channel will be drawn with its individual scale calculated from the maximal value of that channel.

Fig. 8. The disturbance records list panel

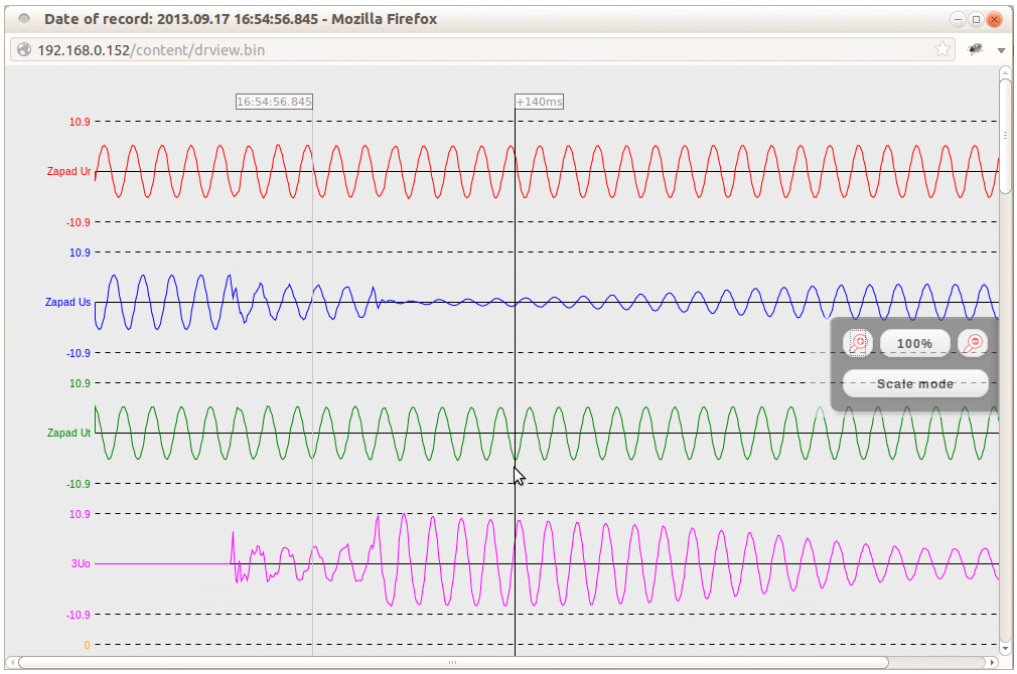

Fig.9. The disturbance record preview – analogue channels

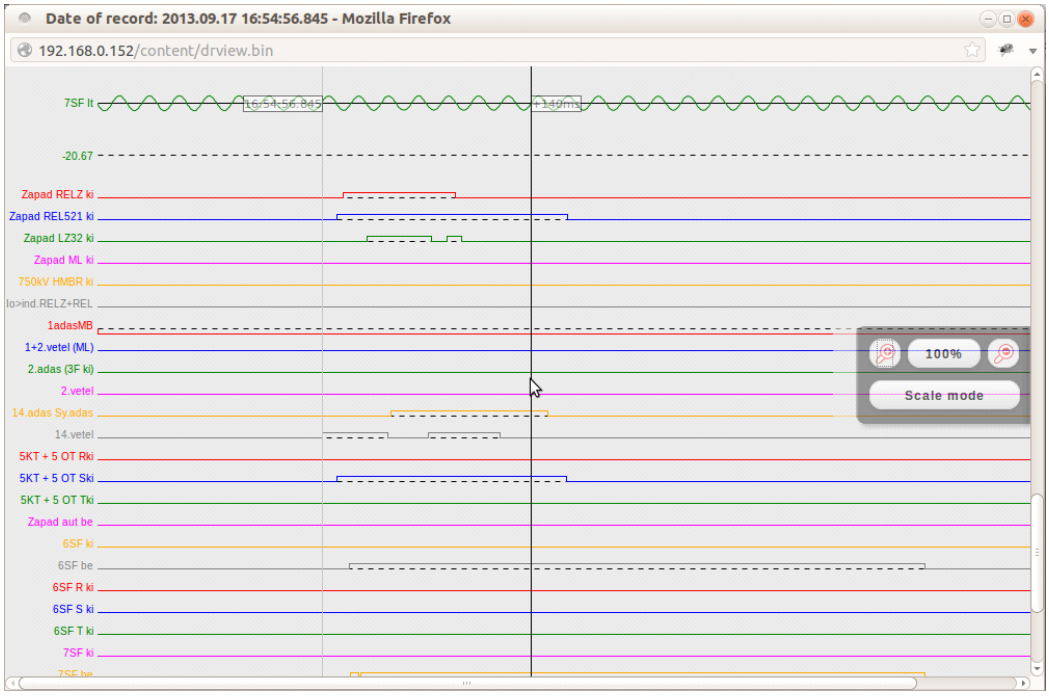

Fig.10. Disturbance record's binary channels

4.7 Commands

Device may contain function blocks with controllable objects. Most of them can be controlled from this page (Fig.11). A confirmation dialog will ask the user to confirm the command before it is really released (Fig.12.).

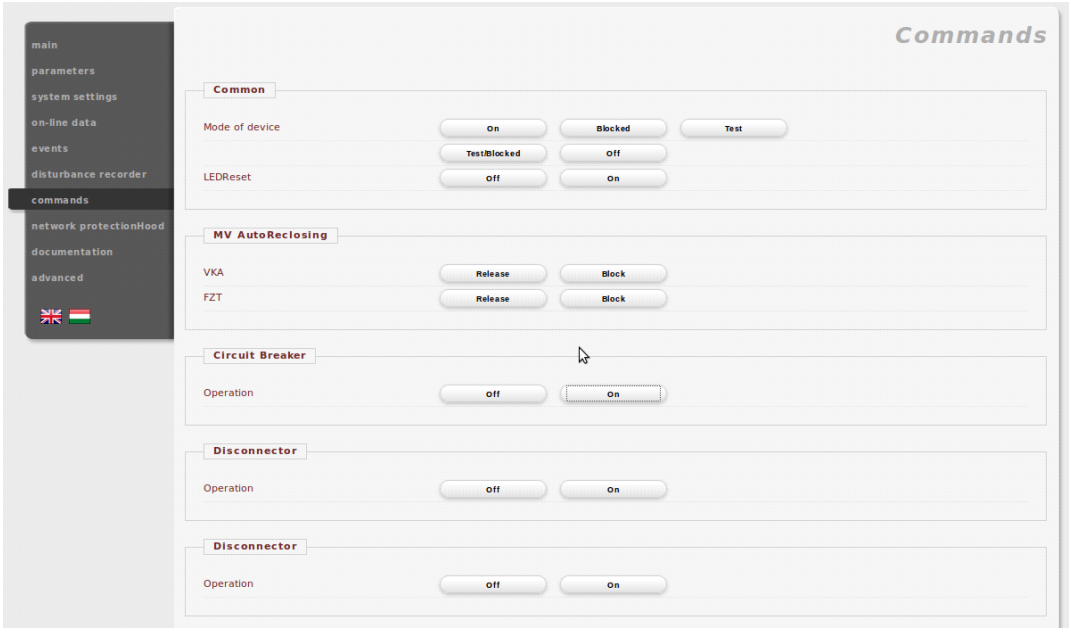

Fig.11. Command sheet

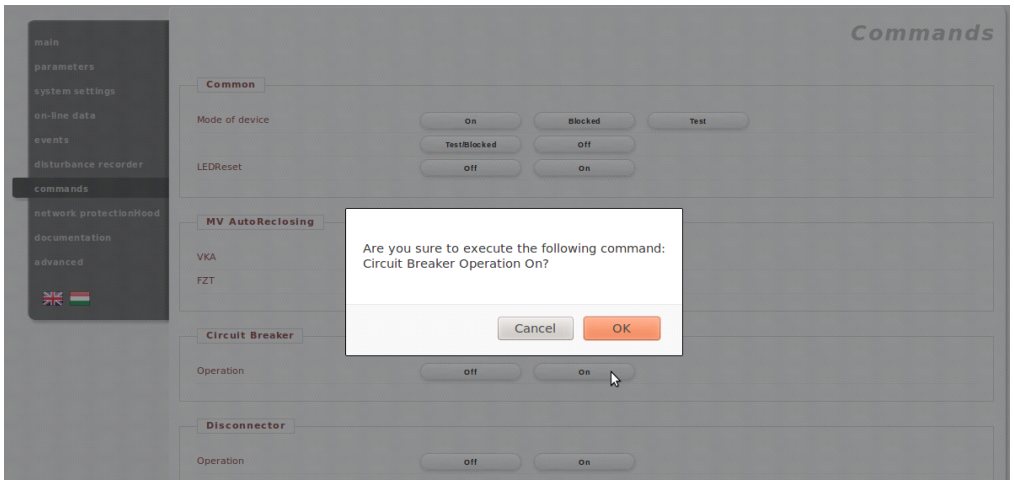

Fig.12. Confirmation dialog

4.8 Network protectionHood

This panel shows devices that are located on the same network as the device. Compatible devices are identified and information is displayed about them. The device highlighted in red is the one that is currently accessed. By clicking on the other links, the user will be redirected to the corresponding device.

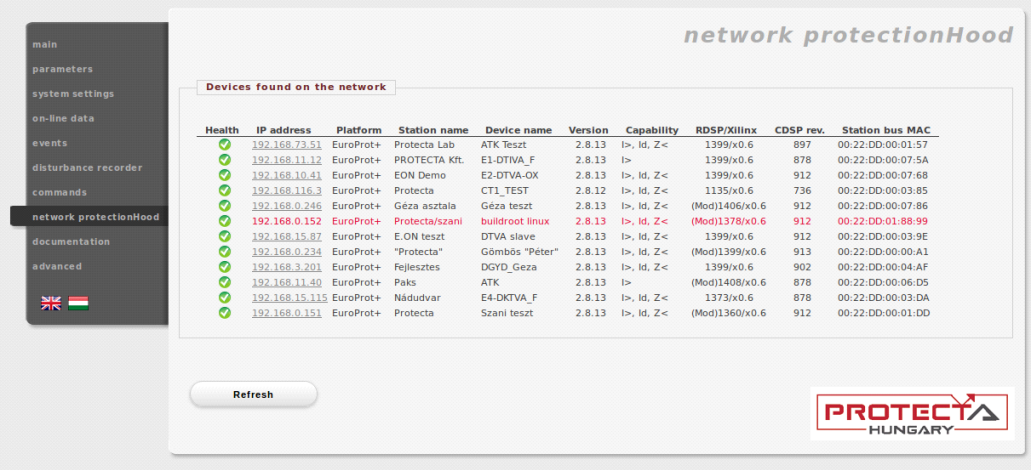

Fig.13. Network protection-hood

4.9 Documentation

This panel displays the documentation files on the device. The user can upload any documents and files, which will be saved on the device and will be accessible for later use. There is a 8 MB limit available, single file size maximum is 2MB.

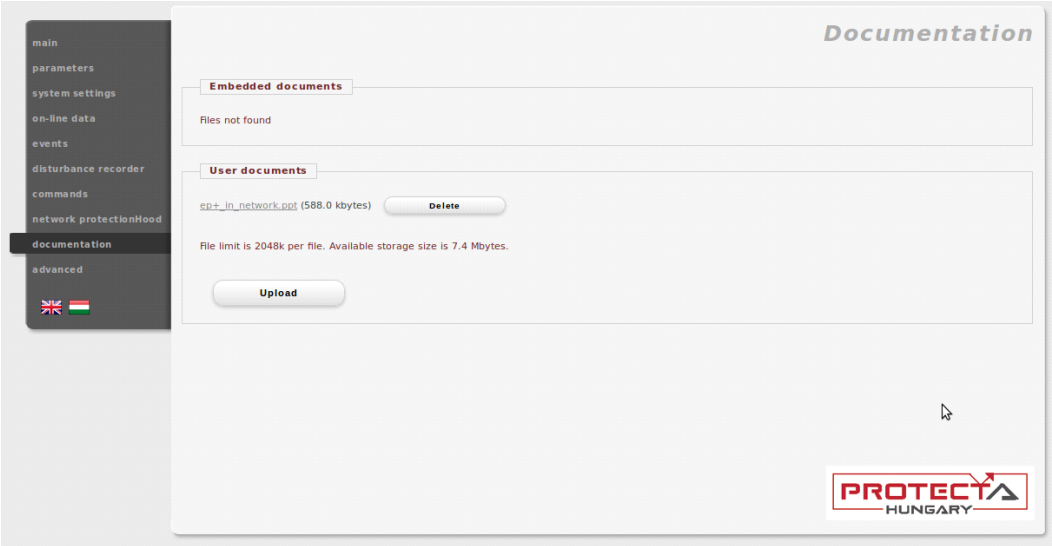

Fig.14. User documentation

4.10 Advanced

This menu item displays a submenu of other options available. A password can be set to allow access to these menu items.

4.10.1 Password manager

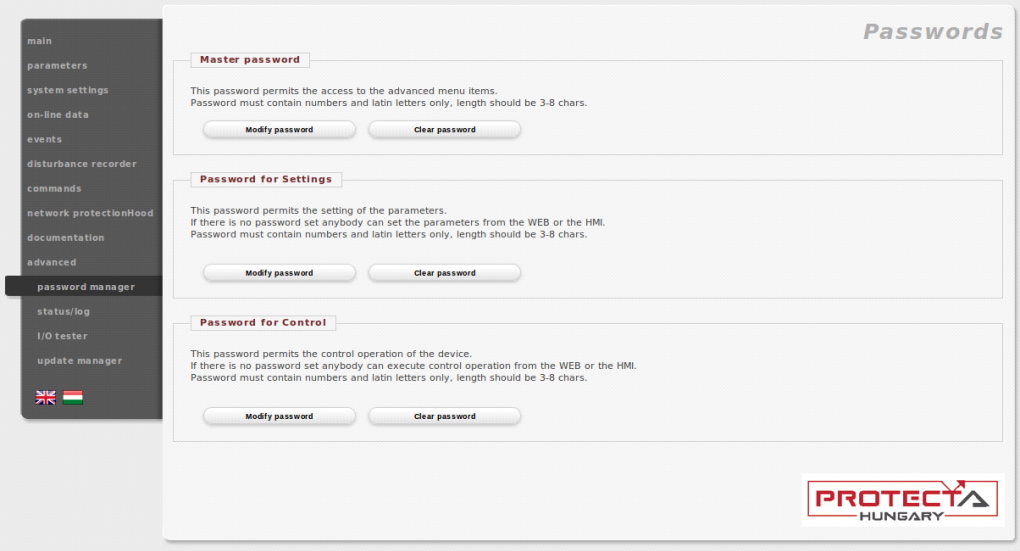

Fig.15. Password manager dialog

Passwords are used to prevent unauthorized access to the device. There are three password levels defined:

- Master password controls the access to the advanced menu. This prevents unauthorized access to the password control dialog also.
- Password for settings makes the parameterization more safe. When creating new password user is allowed to define its target: password for local (LCD) setting operation, password for remote (web) operation or both.
- Password for control works very similar than the password for settings. This is the protection for the commands web page.

The user must type in the password two times to avoid typing mistakes (Fig.16).

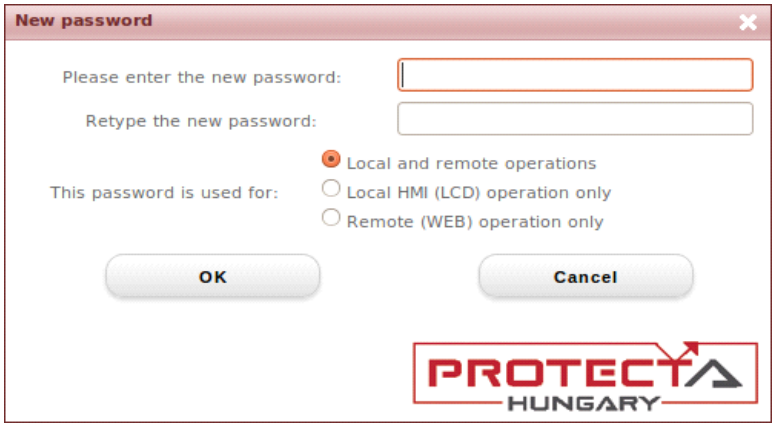

Fig.16. Password input dialog

4.10.2 Status/log

Status fields' detailed information is as follows:

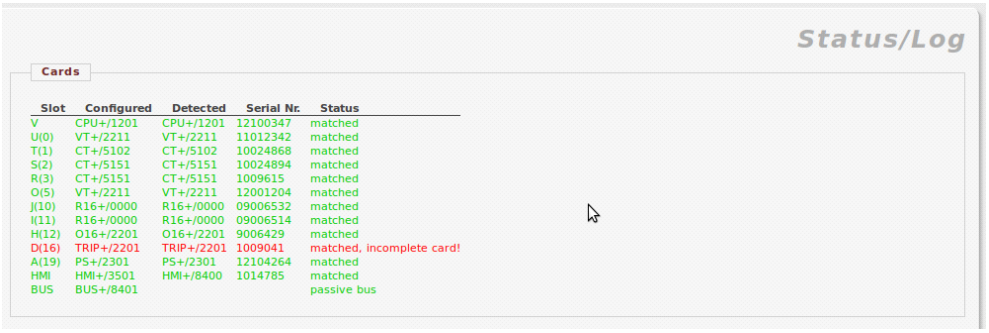

Fig. 17. Card info field

In the cards field (Fig.17) device hardware configuration must match to the configuration file created by the PC software. In case of any deviance user can get more information about the problem in this field.

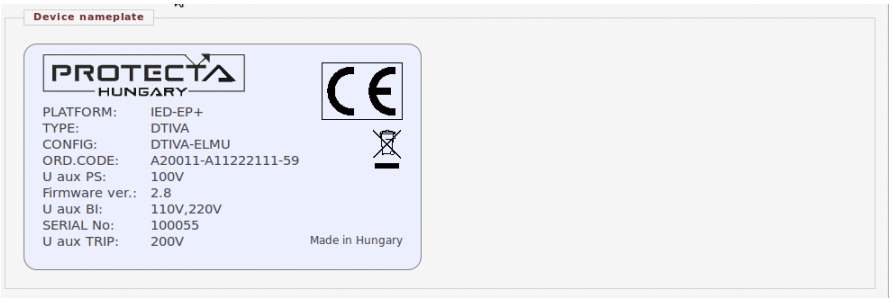

Fig.18. Device nameplate

Device nameplate (Fig.18) contains product information and basic data of the device.

Fig.19. LOG files field

In LOG files field (Fig.19) internal information about the specific part of the device (RDSP, system, LCD, etc.) can be found.

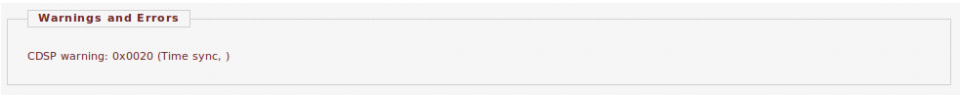

Fig.20. Warnings and Errors

Serious errors (red status LED) and warnings (yellow status LED) are listed in the Warnings and Errors field (Fig.20). In the example: time synchronization error is generated when its check box is ticked on the time sync. part of system settings page and there is no synchronization message received.

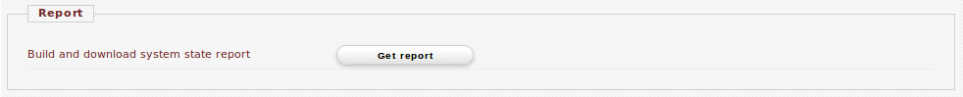

Fig.21. Report button

In case of any error it is recommended to generate a report file, which may contain relevant information for the manufacturer. Please send it to the support team.

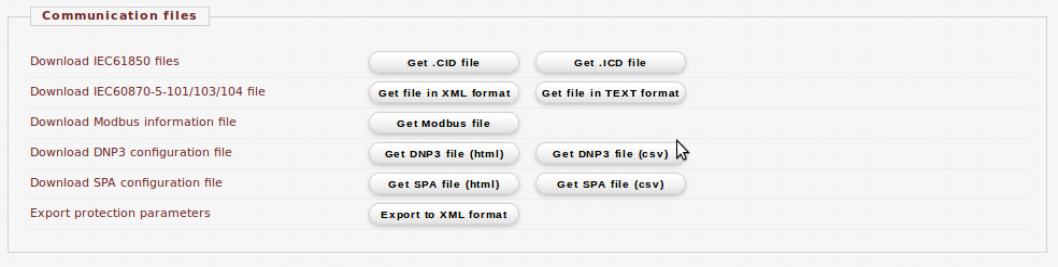

Fig.22. Communication files

Communication files (Fig.22) can be downloaded by clicking the appropriate button.

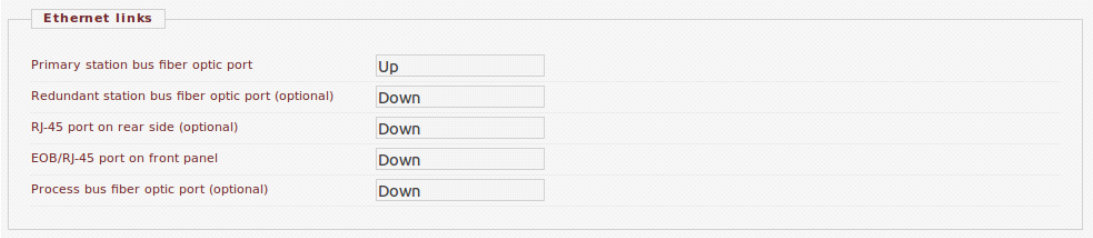

Fig.23. Ethernet link info

The status of the ports of the internal switch are displayed in the Ethernet links window (Fig.23).

Fig.24. Memory info

Memory info field (Device housekeeping, Fig.24) provide information about the CDSP resources.

Fig.25. Time synchronization info

Time synchronization field (Fig.25.) shows information about time synchronization supervision.

4.10.3 I/O tester

The web page for advanced functions provides I/O simulation.

Front panel LED test - by clicking on this button the front LEDs will be tested with a blink sequence

Simulate binary inputs (Fig. 26) - by enabling this function user can simulate the inputs. For safety reason this function must be confirmed on the LCD screen on the device. The LED symbol between the SET and RESET buttons shows the current state of the input: red if activated, green if inactive. Simulation mode can be disabled with the button on top of the input control buttons.

Direct control of the output contacts - prior to use this function the device should be switched to Test/Blocked mode on the command screen. If the mode changing was successful, the output contacts can be forced by the user. The confirmation request must be accepted on the LCD. The LED symbol between the SET and RESET buttons shows the current state of the output: red if activated, green if inactive. To disable this function change the mode of the device to ON state on the commands web page.

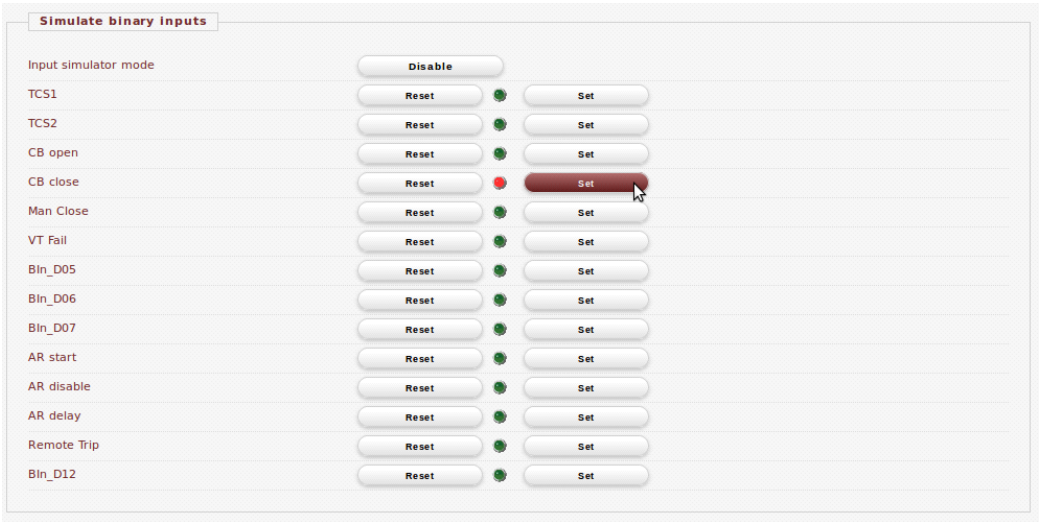

Fig. 26. Input simulator mode

4.10.4 Update manager

Device firmware can be upgraded when a new version is available. Information about the current RDSP and CDSP firmware and also for the downloaded configuration file can be found in the text fields (Fig.27).
To update, click on the Update button, select the appropriate file and click OK. A dialog on the LCD will ask you to confirm updating.

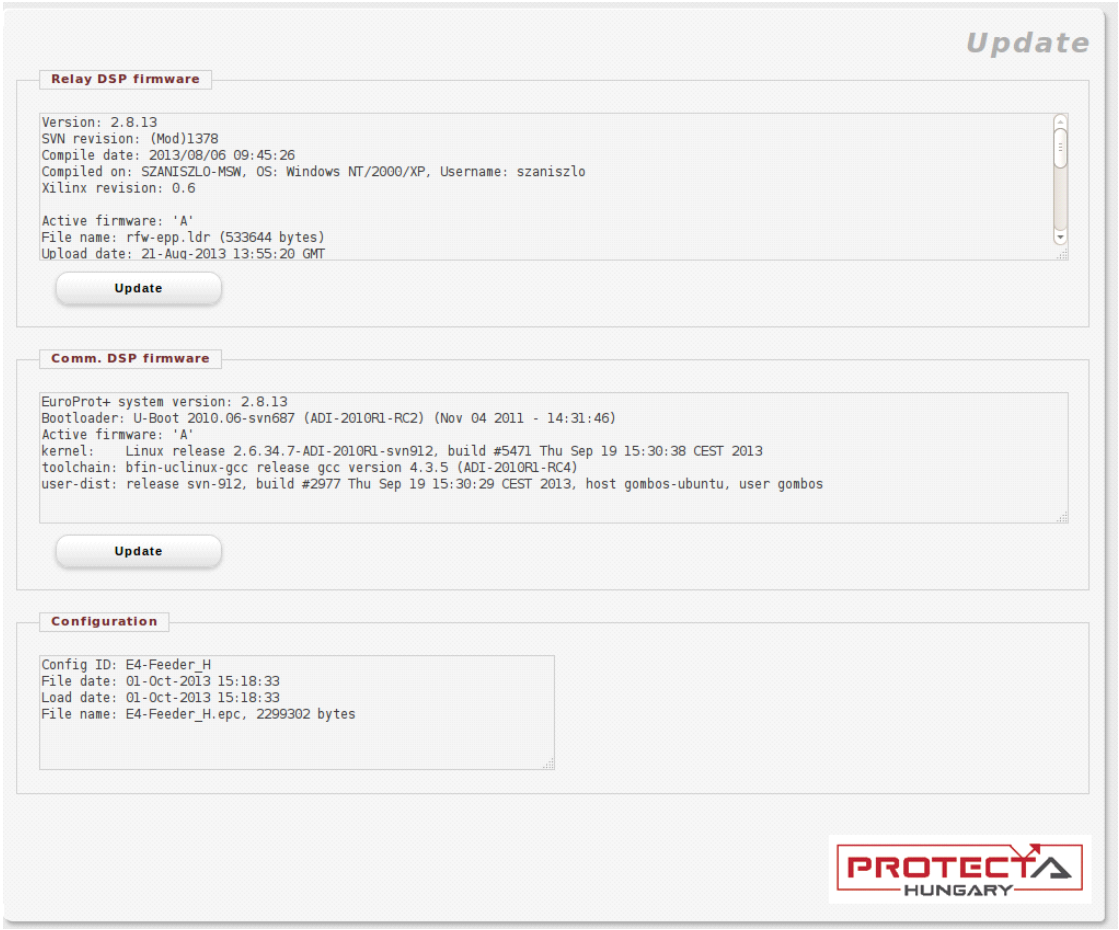

Fig.27. Update manager

The performances and the characteristics reported in this manual are not binding and can modified at any moment without notice.

MICROENER

Quartier du Pavé Neuf - 49 rue de l'université
F-93191 NOISY LE GRAND
TEL. : +33 1 48 15 09 09 - FAX. : +33 1 43 05 08 24
Email : info@microener.com - URL : http://www.microener.com