MICROENER

OPERATION MANUAL
REMOTE USER INTERFACE
PROTECTA LINE

FDE n°: 19AA2571500 Rev A

Update Management					
Rev.	**Description**	**Date**	**Written by**	**Checked by**	**Approved by**
A	Diffusion	30/08/2019	NLT	LA	LA
Z1	Creation	25/07/2019	AA	LA	LA

CONTENTS

INTRODUCTION

This document describes the web-based user interface of the PROTECTA device family (including the S24 series). With the user-friendly interface, you can easily manage the device. Password protection is available to grant certain privileges and access special functions.

System requirements

A web browser and an Ethernet connection are 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 to have a screen resolution of at least 1024x768. The latest version of the following web browsers can be used:

- Mozilla Firefox
- Apple Safari
- Google Chrome
- Microsoft Edge

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

Getting started

Make sure that 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 the latest version of Mozilla Firefox 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 (Figure 0-1).
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, events and disturbance records 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.

MENU ITEMS

Main panel

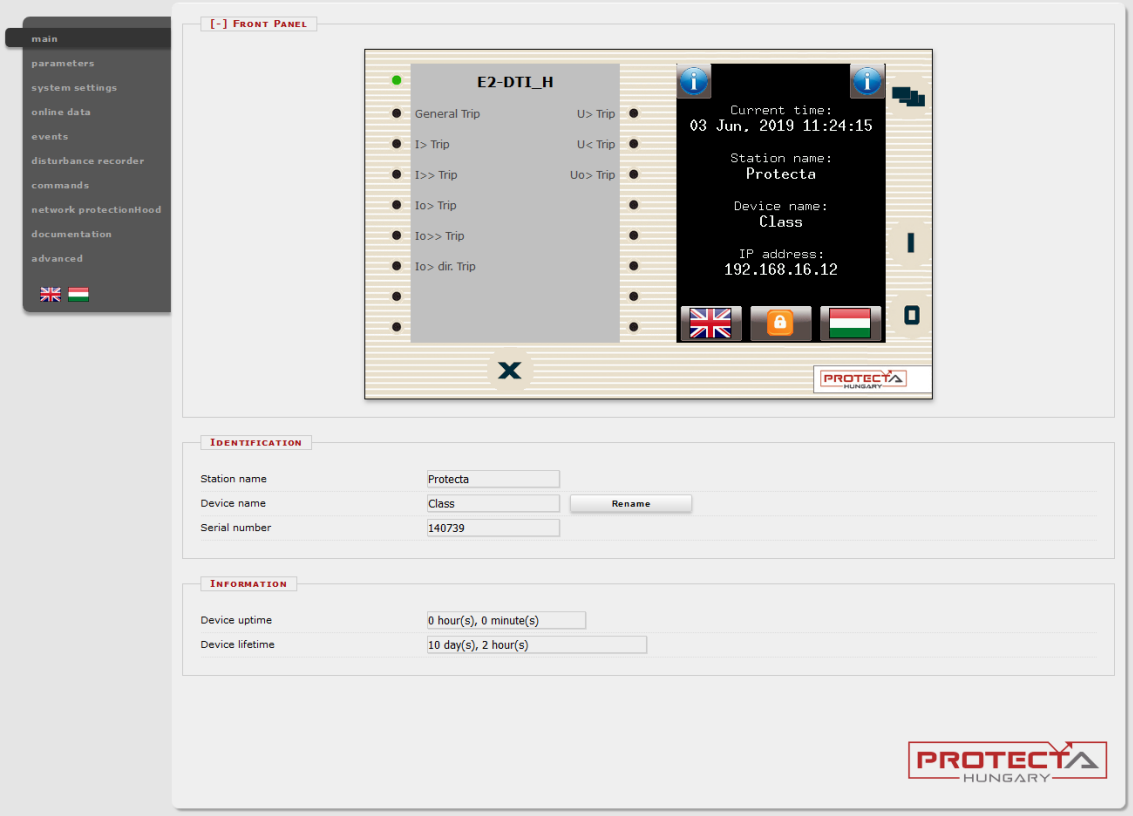

Figure 0-1 Main menu

The front panel of the device can be controlled from here (Figure 0-1). 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. Serial number information is also available in this panel, which shall be used by contacting support team as a reference of your product.
Information part - There are two fields for measuring device operating time. Uptime field displays the time elapsed from the last power on of the device. Device lifetime field value equals the number of days of the device's energized state.

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.

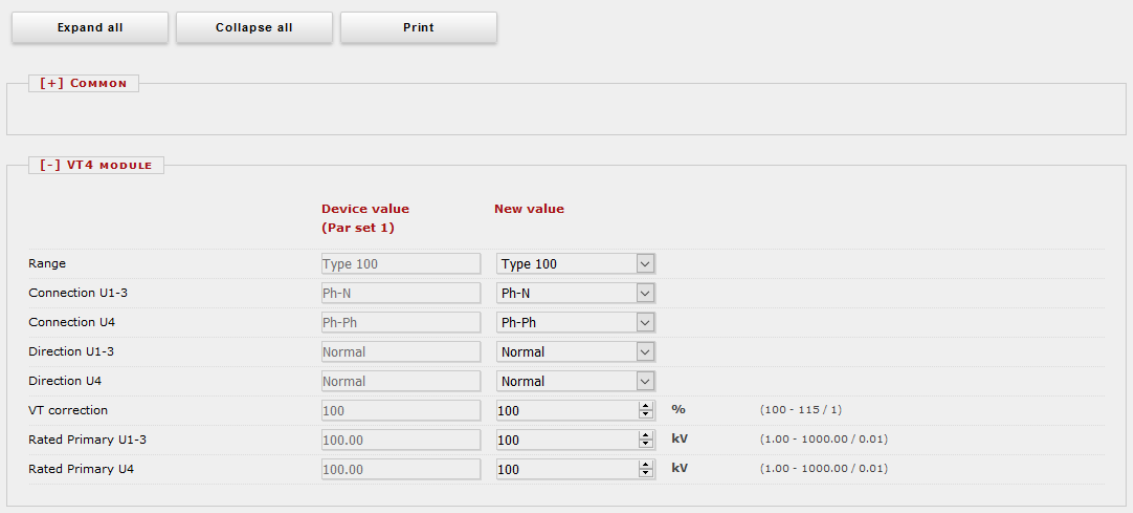

Figure 0-2 Parameter settings

Buttons on the top of the parameters' sheet provide fast expanding and collapsing all the function panels and 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 consists of 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 is used to give the desired value by the user. The expected value range and step are on the right end of the parameter line.
Changing any setting in the third column will be marked with blue function block name and with blue text in the corresponding line of the first column.
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 being alerted and the value is reset to the last correct value.

Listbox - By clicking on the list box, the user can choose from the available values listed within the box. (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/binary 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.

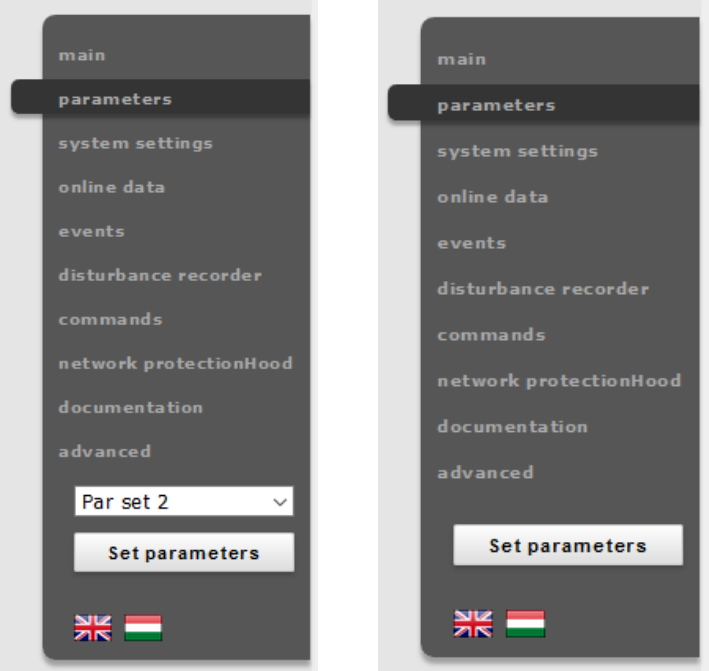

Figure 0-3 Main menu view with and without multiple parameter sets

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 device with only one parameter set there is no parameter set selector combo-box, as it can be seen on the right side of Figure 0-3.

Values are checked for change before the user navigates away from the actual page or another parameter set is being loaded. By pressing Cancel, the browser will remain on the actual page. By pressing OK, the browser will ignore the changes made and navigates away to the page selected.

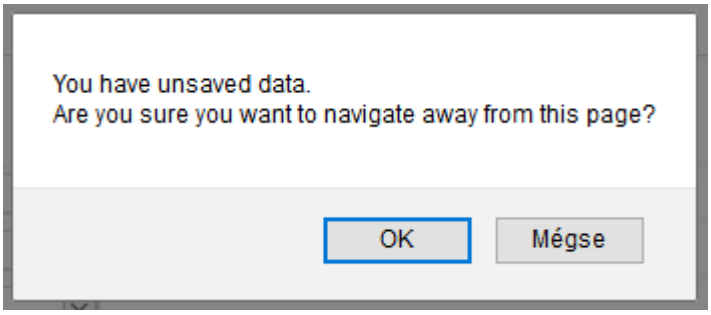

Figure 0-4 Unsaved data when leaving the page

Managing multiple parameter sets

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:

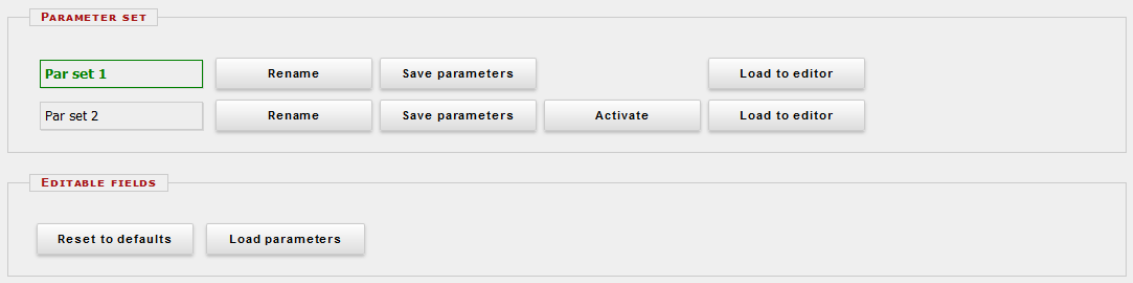

Figure 0-5 Parameter set control field

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

Save parameters - Corresponding parameter set can be saved as a *.par file.

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. This button only appears, if there is more than one parameter set and there are no other specified conditions in the configuration for activating the parameter set. The active parameter set's name will be displayed in green.
Note that activating a parameter set doesn't load the values to the edit fields above. Parameter set values can be loaded into the editable fields by using the combo-box placed in the main menu panel on the left side or by clicking on the Load to editor button.

Load to editor - This will load the parameter set in line with the button in the editable fields.

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.

System settings

This is the menu item where adjustments can be made to some 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.

Figure 0-6 System settings menu

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

System parameters - This field is used for front panel control and power system frequency settings.

Station bus settings - This field includes settings for the IPv4 based communication like IP address, IP address mode, redundancy mode, 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 the 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 backlight - Parameters in this field control the behavior of the LCD panel. Backlight will switch off after its timeout. The Backlight group is useful if you have more than one device close to each other. Touching one of them will switch on the LCD screen of all devices that belong to the same group.

System services - Use this field to set the web interface mode, enable secure file transfer mode, discover devices on the local network, set up remote login feature and log server.

Client whitelist - If this function is enabled, only the allowed clients can access the device in the selected role.

More information can be found under the question marks located in line with the actual setting.

Online data

This displays data measured by the device. The values on the screen are updated in 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.

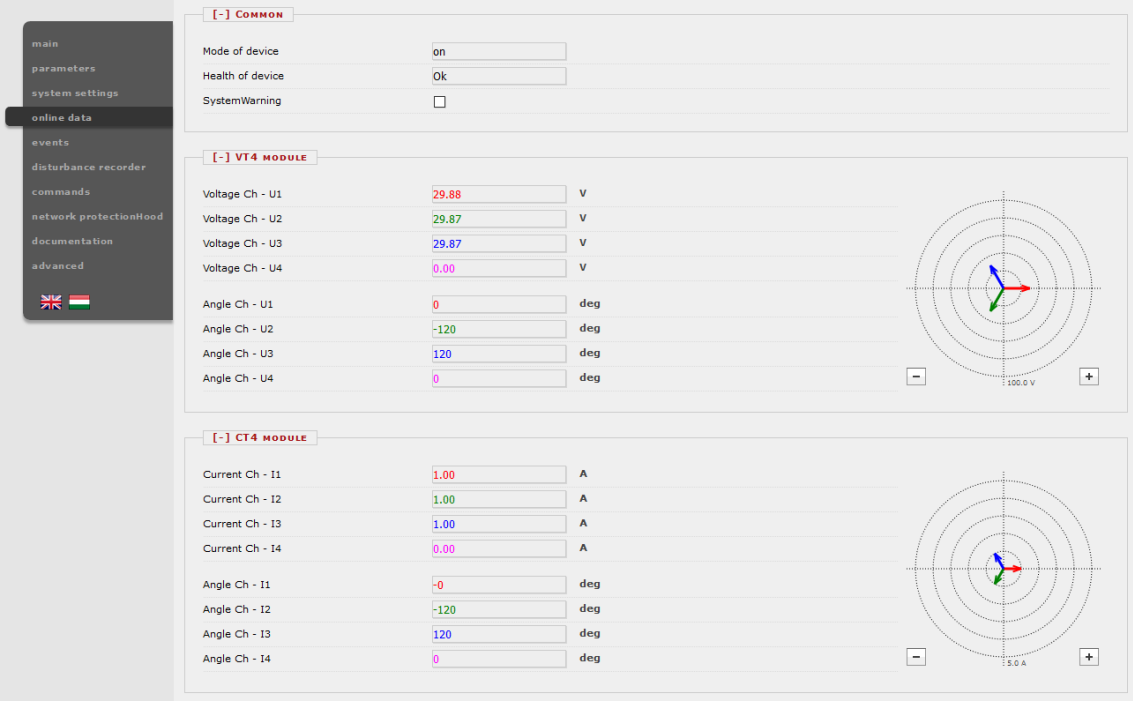

Figure 0-7 On-line sheet

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

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, the device can contain approximately 10000 events. If the list goes larger than this, the oldest events get erased.
If the mouse cursor hangs over a function block name for a short time, all event lines that belong to the same function block will be highlighted. Also, if the cursor is over a channel name, all events with the same text will be highlighted (Figure 0-8).
The Event page is not refreshed automatically, the user can refresh it by clicking on the Refresh button.
Erasing all events and exporting them to a text file is also possible.
An event filter can be utilized according to user's needs: there are filters for event row number, date and contained text, see rightmost part of the picture.

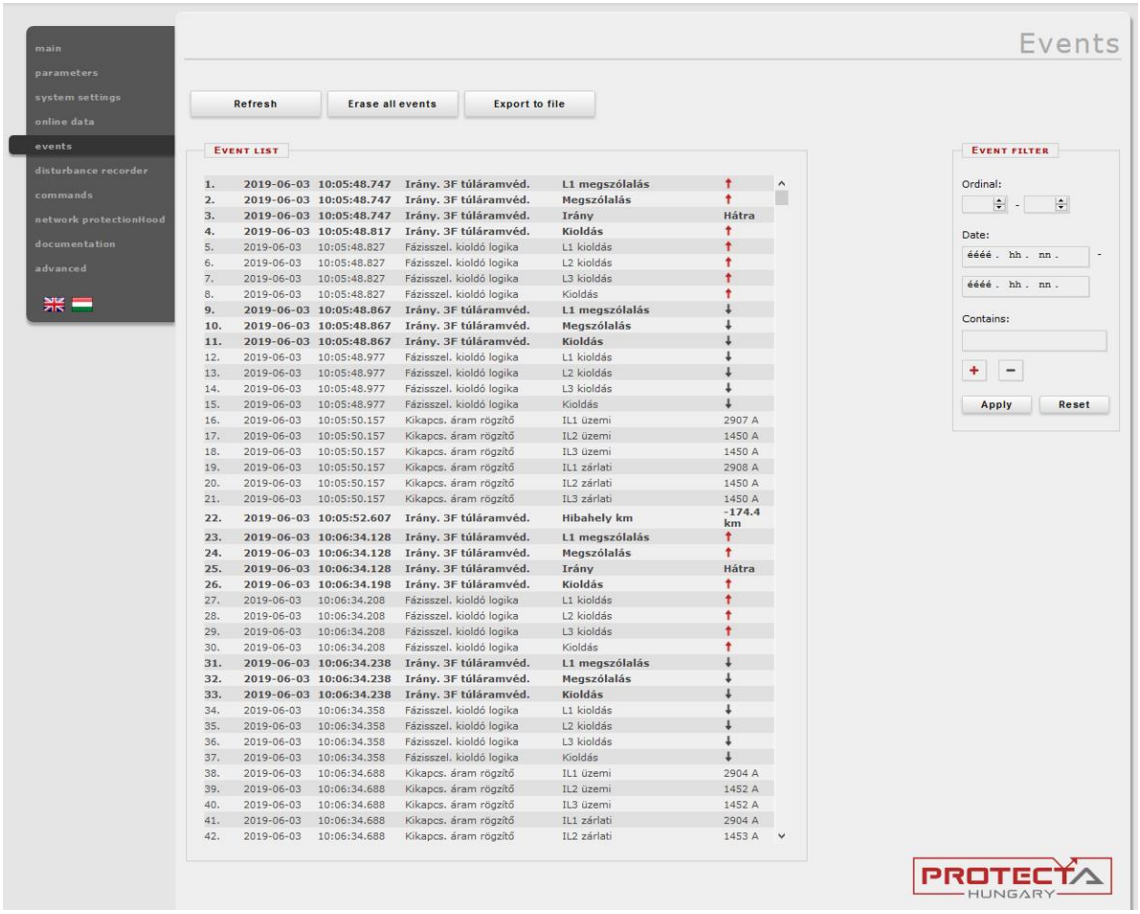

Figure 0-8 Events sheet

Disturbance recorder

The Disturbance recorder (Figure 0-9) 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. Downloading and erasing the records is possible one by one or for all of them: by clicking the Download all button, all records will be downloaded in one .zip file.
A simple built-in preview function makes work easier (Figure 0-10 and Figure 0-11). This viewer provides the fast evaluation possibility of the disturbance event. Both analogue and binary channels are displayed on the screen.
On the right side there is a floating panel with 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 1:1 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.

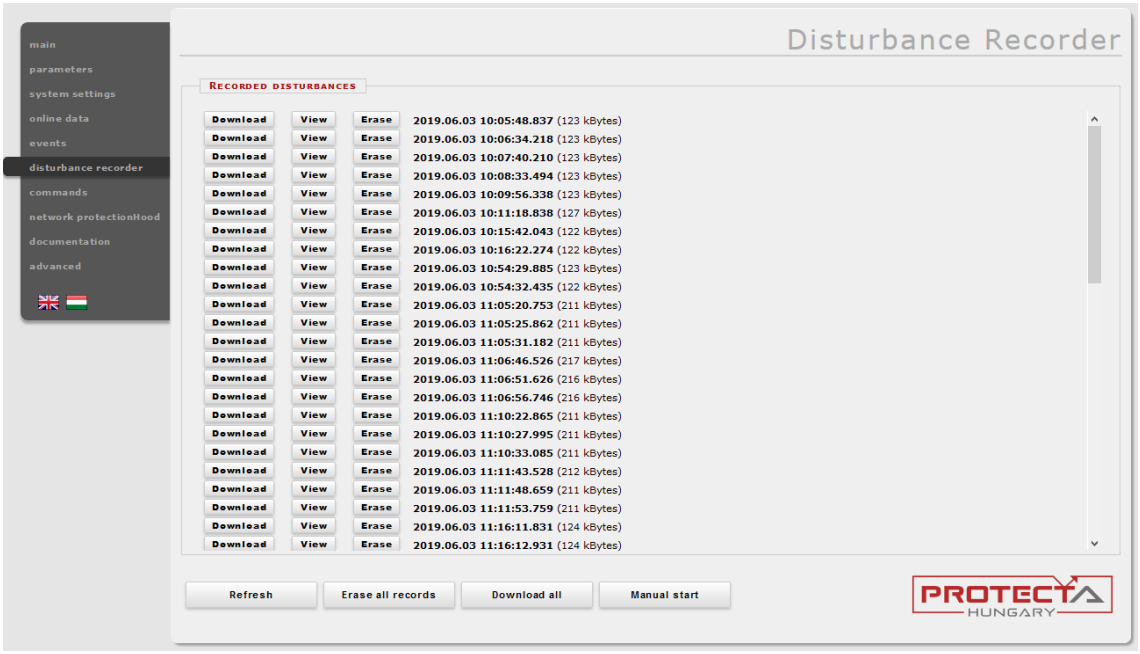

Figure 0-9 The disturbance records list panel

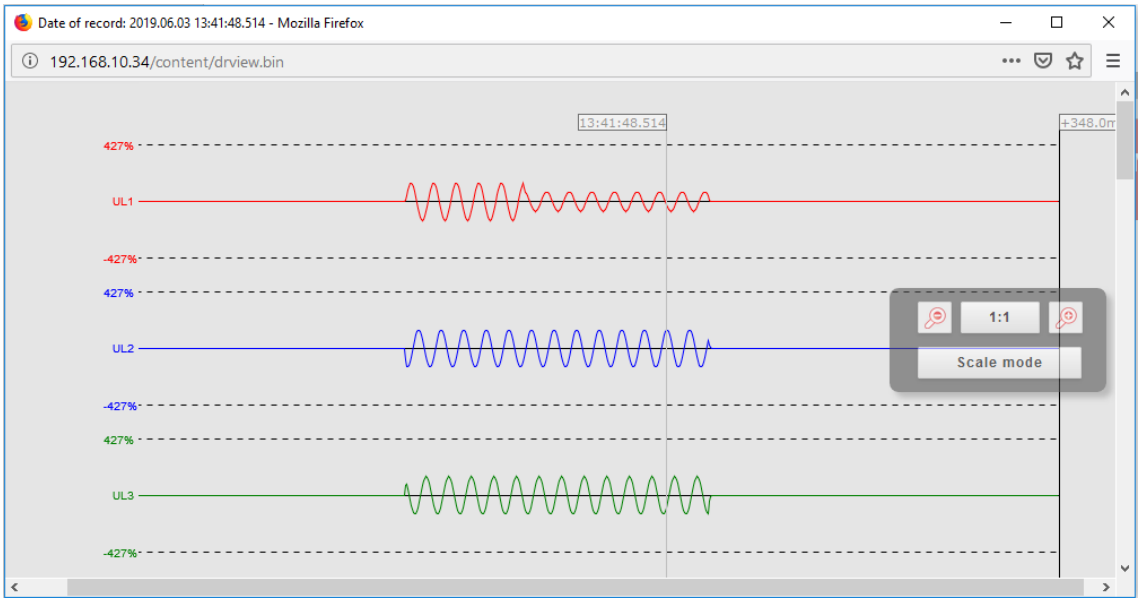

Figure 0-10 The disturbance record preview – analogue channels

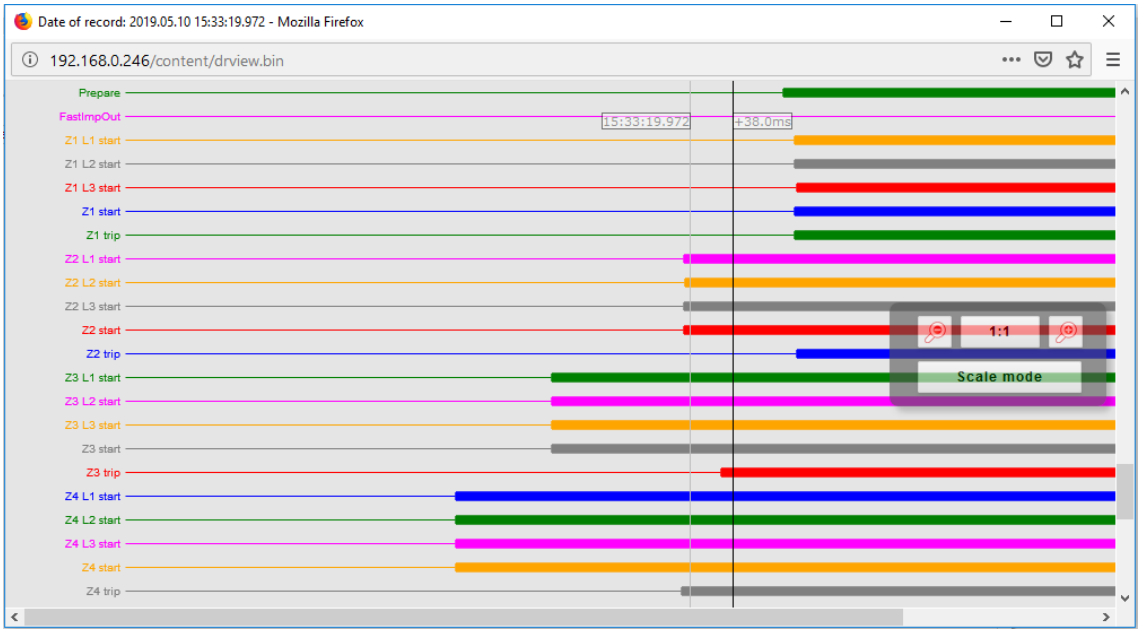

Figure 0-11 Disturbance record's binary channels

Commands

The device may contain function blocks with controllable objects whose commands appear on this page (Figure 0-12). A command can be issued by clicking the appropriate button on the field of the function. A confirmation dialog will ask the user to confirm the command (Figure 0-13).

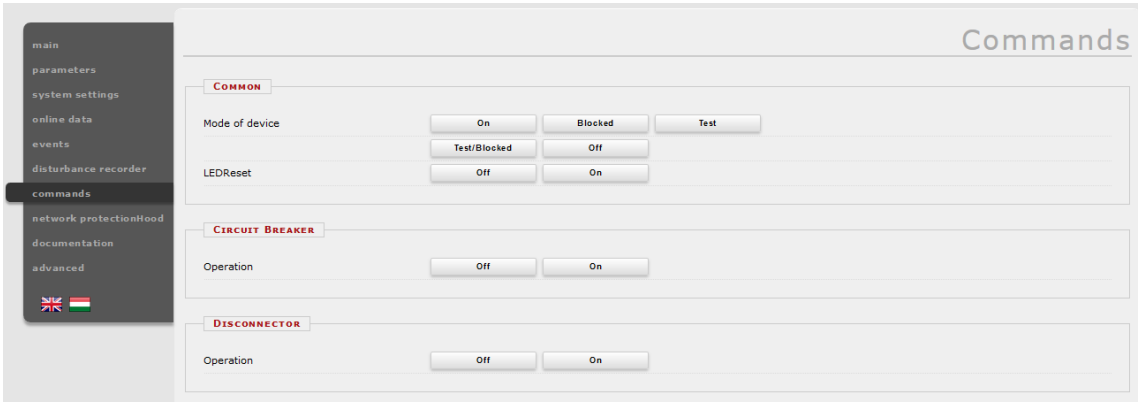

Figure 0-12 Command sheet

Figure 0-13 Confirmation dialog

The mode of device in the common field has 5 setting options based on IEC61850-7-410 definition:

Table 0-1 Mode of operation commands

MODE OF DEVICE:	ON	BLOCKED	TEST	TEST/ BLOCKED	OFF
Function	active	active	active	active	not active
Outputs (to process)	generated	not generated	generated	not generated	not generated
Reporting (to client)	yes	no reporting	flagged as test	flagged as test	no reporting
Control services (from client)	accepted	rejected	accepted	accepted	rejected
Functional (process related) data	visible	visible	visible	visible	not visible

Network protection Hood

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.

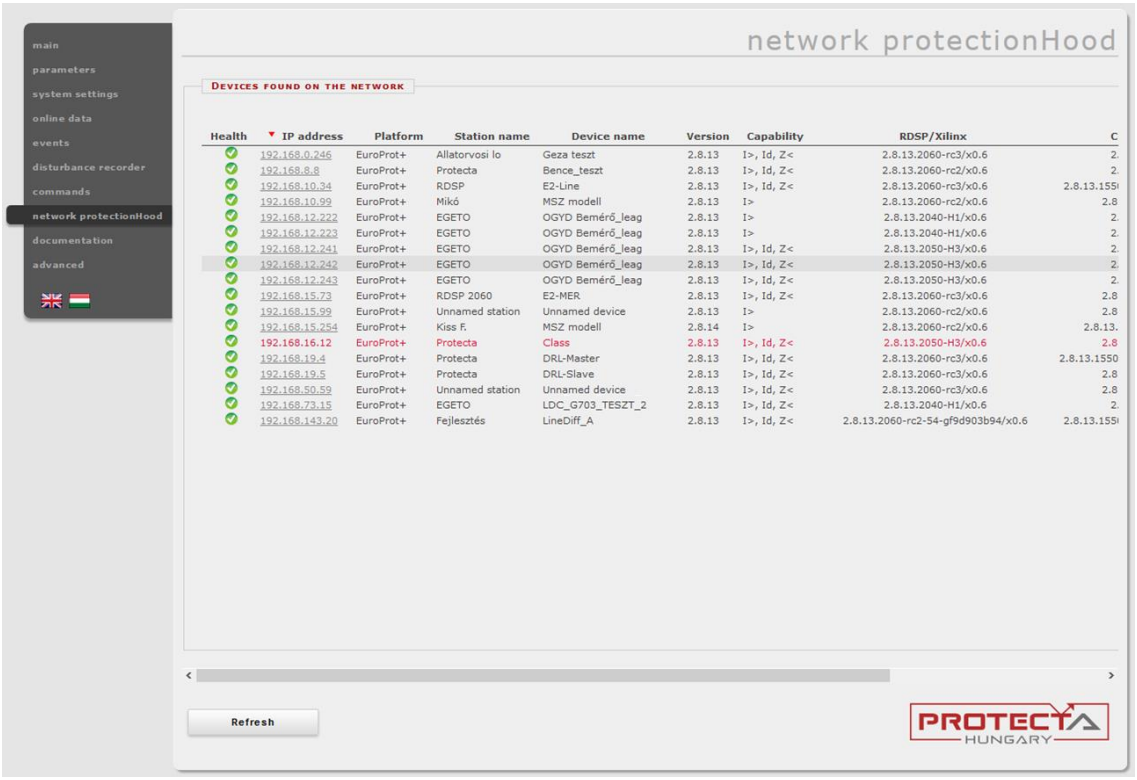

Figure 0-14 Network protectionHood

Documentation

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

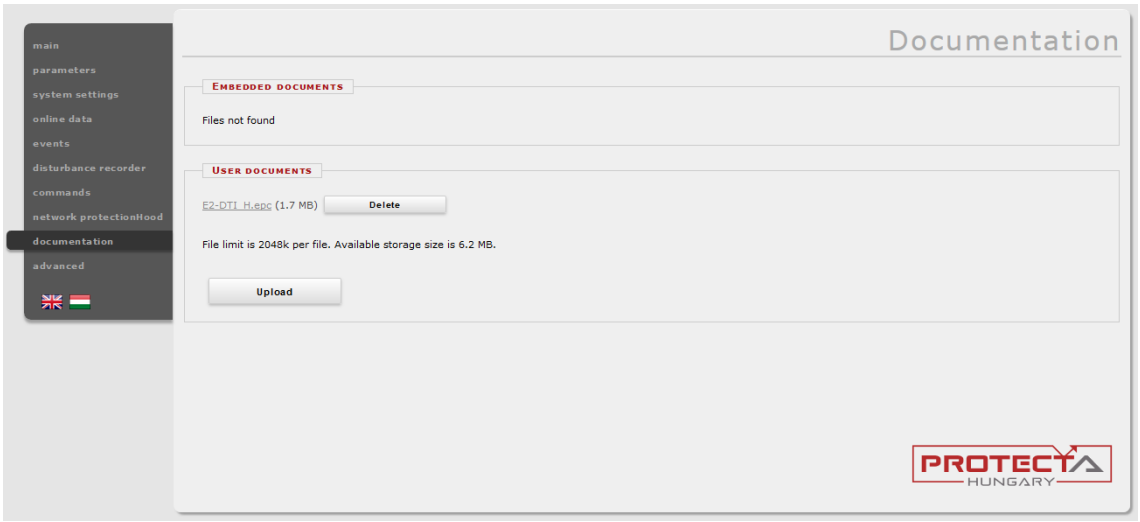

Figure 0-15 User documentation

Advanced

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

Password manager

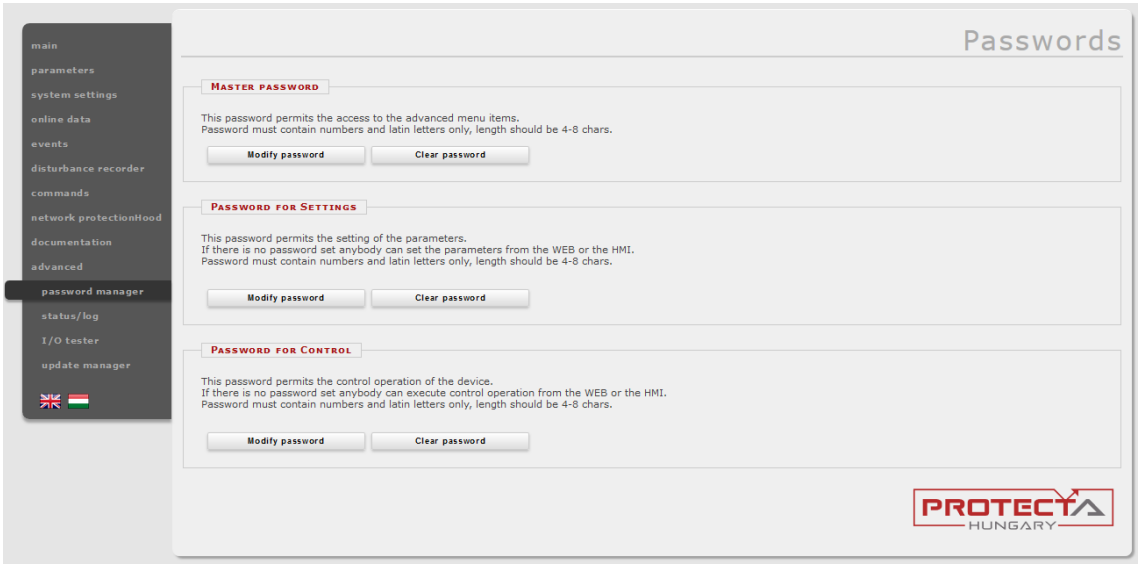

Figure 0-16 Password manager dialog

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 (*parameters* and *system settings*) safer. When creating new password, the 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 to 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 (Figure 0-17).

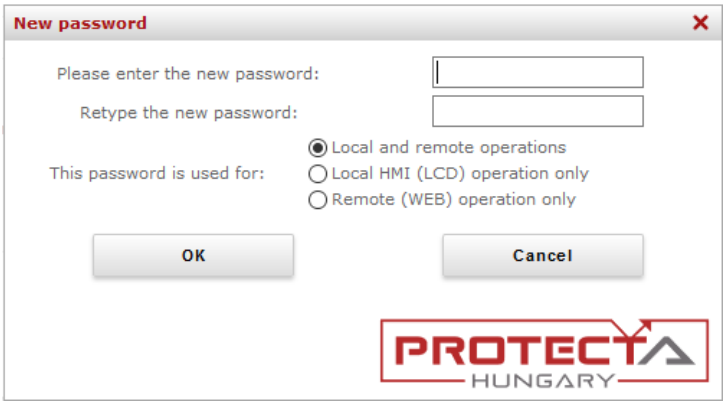

Figure 0-17 Password input dialog

Status/log

Status fields' detailed information is as follows:
In the **Cards** field (Figure 0-18) device hardware configuration must match to the configuration file created by the PC software. In case of any deviation, user can get more information about the problem in this field.

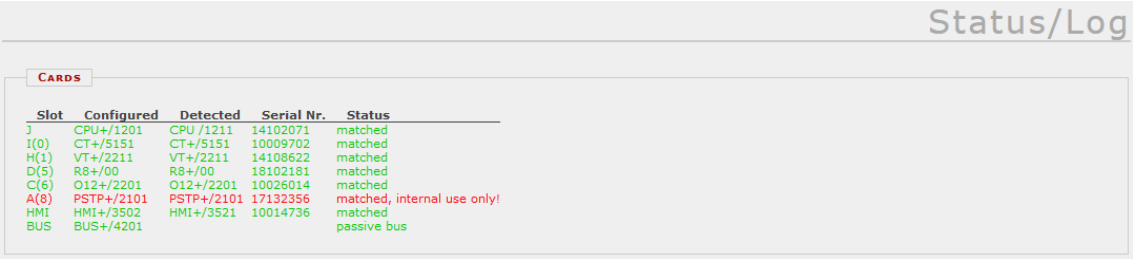

Figure 0-18 Card info field

Device nameplate (Figure 0-19) contains product information and basic data of the device.

Figure 0-19 Device nameplate

In **LOG files** field (Figure 0-20) internal information about the specific part of the device (RDSP, system, LCD, etc.) can be found.

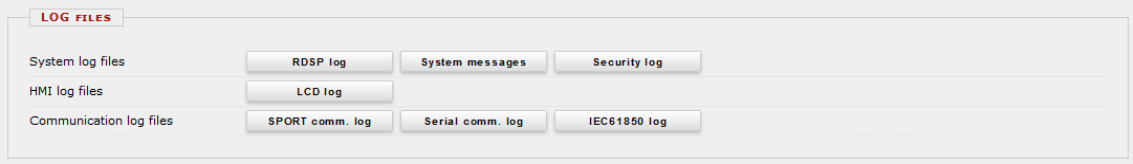

Figure 0-20 LOG files field

Serious errors (red status LED) and warnings (yellow status LED) are listed in the **Warnings and Errors** field (Figure 0-21). In the example below, 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. For more information please refer to the Troubleshooting guide.

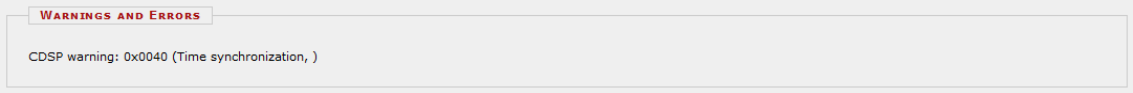

Figure 0-21 Warnings and Errors

In case of any error, it is recommended to generate a report file (Figure 0-22) using the button in the **Backup/Report** field and send it to the support team. The file has .zip extension and includes event log, parameter settings, configuration data and RDSP firmware for the actual device. However, it does not include disturbance records. Oscillographic fault records can be downloaded as shown on Figure 0-9.
Make sure to check the size of the downloaded report.zip file: it should be above 10 kB. If it is below this, try to download it again.

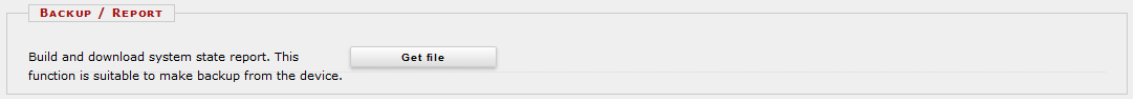

Figure 0-22 Button for getting the report.zip file

Communication files (Figure 0-23) for various protocols can be downloaded by clicking the appropriate button.

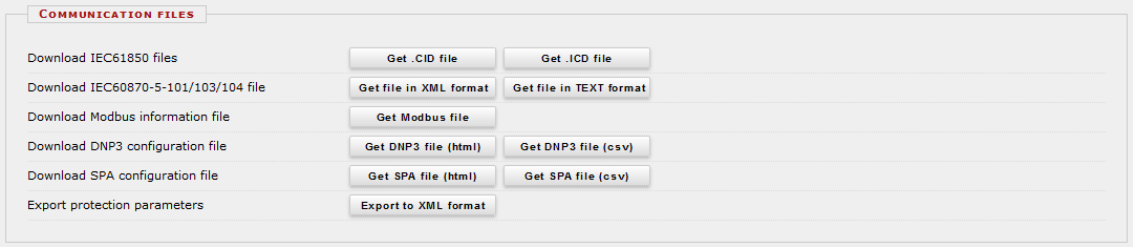

Figure 0-23 Communication files

The status of the ports of the internal switch are displayed in the **Ethernet links** field (Figure 0-24).

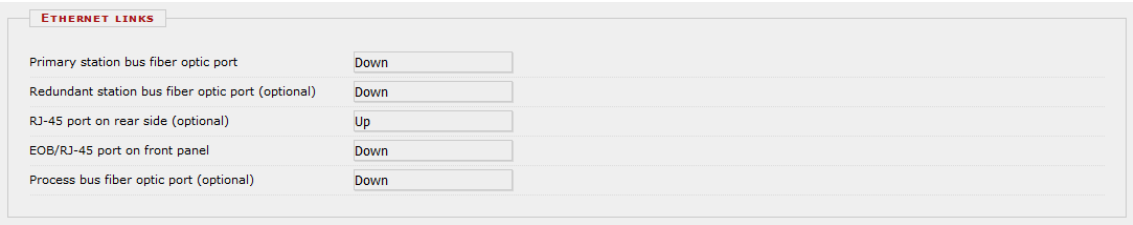

Figure 0-24 Ethernet link info

The memory info field (**Device housekeeping**, Figure 0-25) provides information about the CDSP resources.

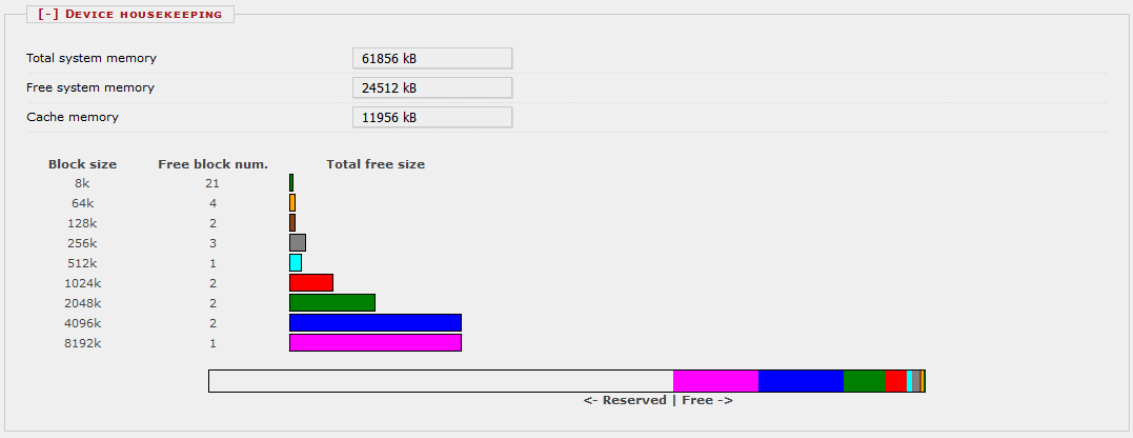

Figure 0-25 Memory info

The **Time synchronization** field (Figure 0-26) shows information about time synchronization supervision. If no external source is available, the PC operating system time can be set in the device with the Set device button.

Figure 0-26 Time synchronization info

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 *(*Figure 0-27*)* - 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.

Caution: in this mode the device is fully functional, meaning that it can still give trip signals!

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 has been changed, 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.

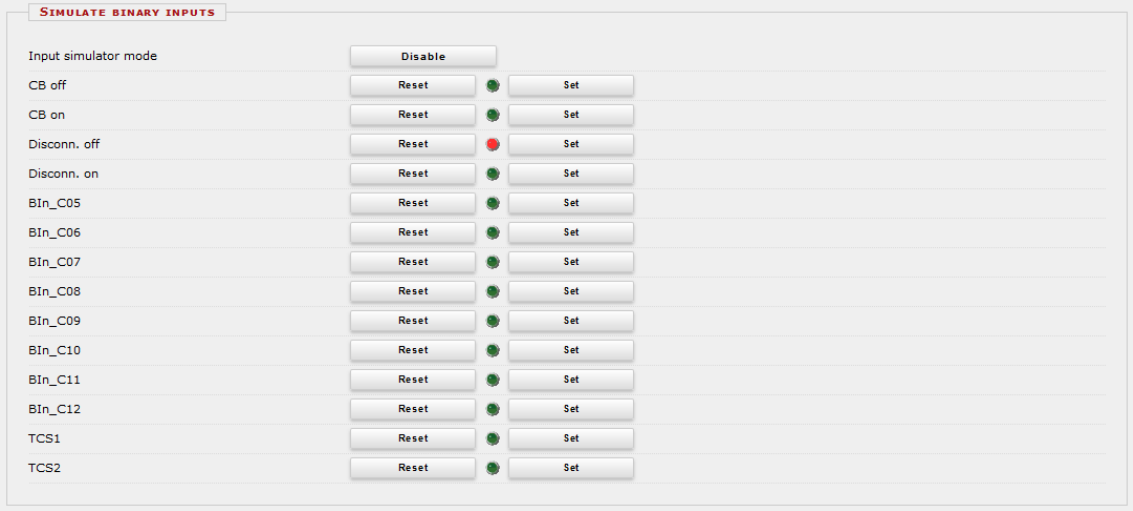

Figure 0-27 Input simulator mode

Update manager

In the **Restore** field the user can upload configuration and parameter settings from a *report.zip* file into the device.
Device firmware can be upgraded when a new version is available. Information about the current **RDSP/CDSP firmware** and for the downloaded configuration file can be found in the text fields (Figure 0-28).
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. Detailed information about the latest firmware updates can be found on the Protecta website in the release and revision history (login required). If new firmware update is needed, please contact Protecta support team.
In the **Configuration** field the user can download configuration file (.epc) from the device.

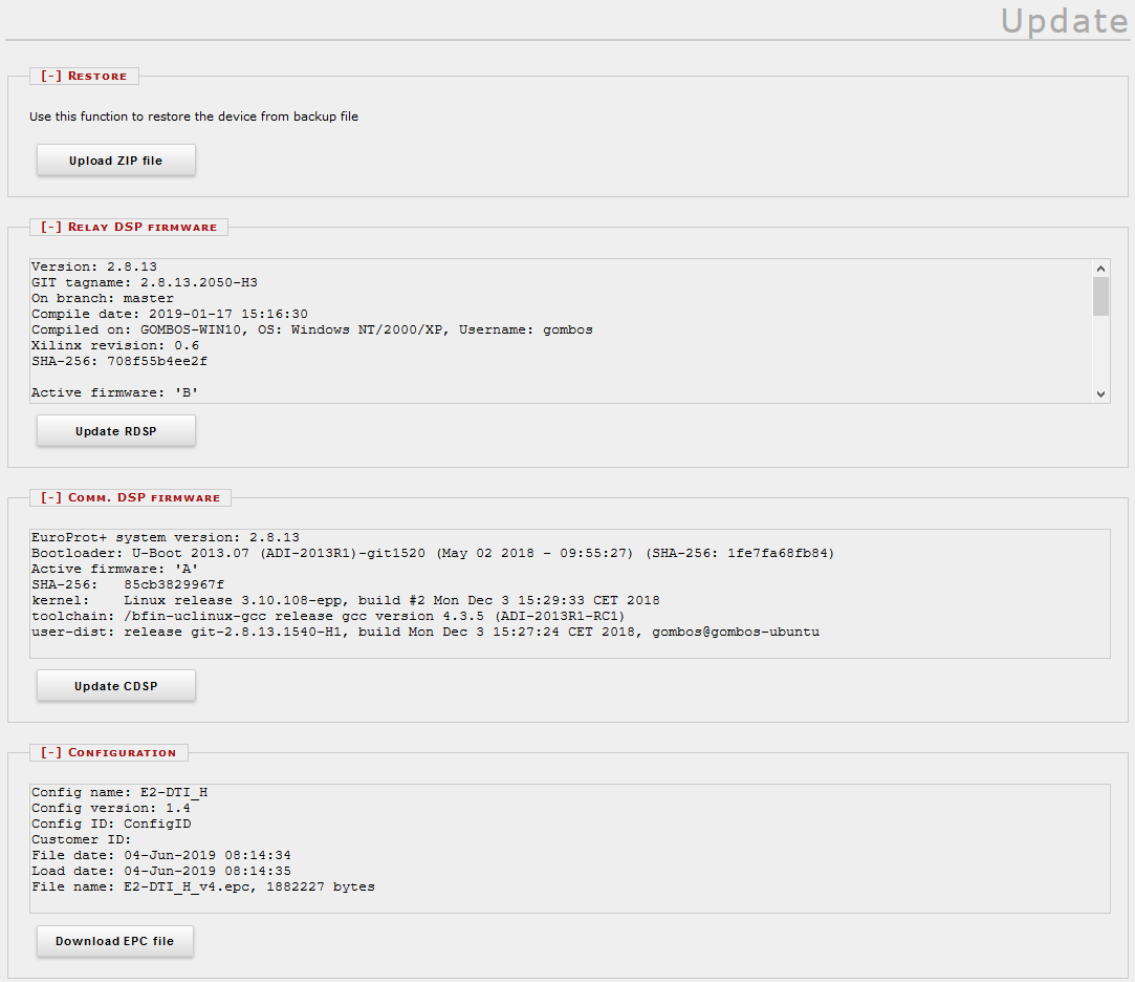

Figure 0-28 Update manager