



POWER FROM WITHIN

**SS3**

**SUPERVISION SOFTWARE**

**SMARTTECH<sup>+</sup>**

USER MANUAL



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# 1. Introduction

## 1.1 Safety information

 **WARNING!** This term indicates potentially dangerous situations which, if ignored, could cause serious damage and/or injury to things and/or people. In these cases, the manual describes the necessary precautions to avoid the hazard.

 **ATTENTION!** This term indicates potentially dangerous situations which, if ignored, could cause slight or moderate damage and/or injury to things and/or people. In these cases, the manual describes the necessary precautions to avoid the hazard.

 **INFORMATION!** The manual uses this term to provide useful information for carrying out the operation in progress, or clarifications.

## 1.2 General

SS3 was developed to provide customers with a simple supervision system, enabling them to monitor typical measurements of gensets, controlled by electronic devices designed by Mecc Alte and produced and distributed by Mecc Alte SpA. This manual describes the correct procedure for using this software.

This manual refers to version 2.01.03 of SS3.

## 1.3 Prerequisites

SS3 is a software intended for qualified personnel who have specific expertise in the use of emergency generators and, in the case, of parallel applications. Before using this software, carefully read this manual and the user manual of the DEVICE you intend to manage.

The minimum hardware/software requirements for installing SS3 are:

- Microsoft Windows® 7 or higher.
- Microsoft .NET framework 4.5.2.
- At least 1 GB of free hard disk space.
- At least 8 GB of RAM.

## 1.4 Features

This application is configurable and multilanguage. Through it, the user can simultaneously create and manage as many configurations as there are actual plants he or she intends to monitor. Each individual plant configuration is totally independent of the others and can be configured to reflect in detail the plant to which it refers.

It is a secure application. It provides for the possibility of configuration protection by setting a password. Upon installation of the program no password is set and all functionality is accessible. In case you need protection, it is possible to set and activate the password (see dedicated section).

Manages all types of plants in which boards are used: consisting of a single genset or multiple gensets in parallel, emergency, production or grid-parallel plants.

Layout is organized in vertical sections. It can manage up to 32 sections (boards/devices) within a system. Each section can be : GC (Genset Controller), MC (Mains Controller), ATS (Automatic Transfer Switch), BTB

(Bus Tie Breaker), HS (Hybrid System), RN (Renewable), DPRO (Protection relay), Load, PLC (Digital I/O Status), Generic Device, Element.

Types of plants and models of managed boards:

Typology	Boards
ATS	ATS115
BTB	BTB200
GC	GC315, GC400, GC600, GC250, GC310, GC350, GC500 DST4602, DST4602 Evolution, DST4603
MC	MC100, MC200, MC400
HS	HS315
RN	RN200
DPRO	DPRO

It is possible to use any communication resource on the PC to communicate with the boards: RS232 and RS485 serial ports, Ethernet network, analog modems, GSM.

## 2. Installation

The SS3 installation package is freely downloadable from the download section of the manufacturer's website.

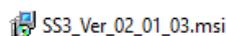
The downloaded file is in ".MSI" format: double click it to install SS3. "Administration" rights on the PC are required: contact the network administrator or the IT manager, if necessary.

The installation package is provided in English only.

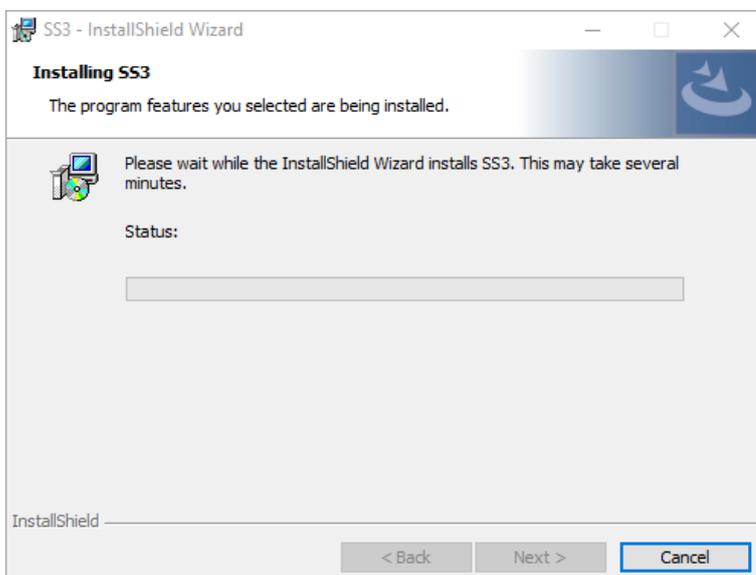
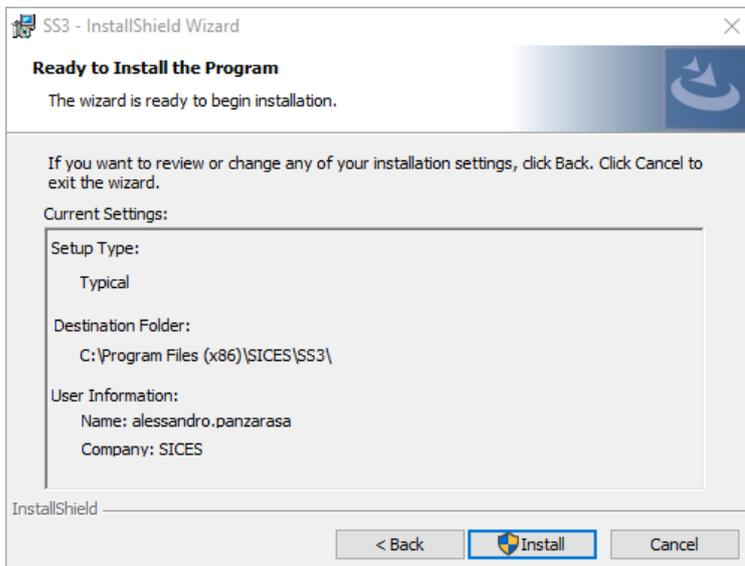
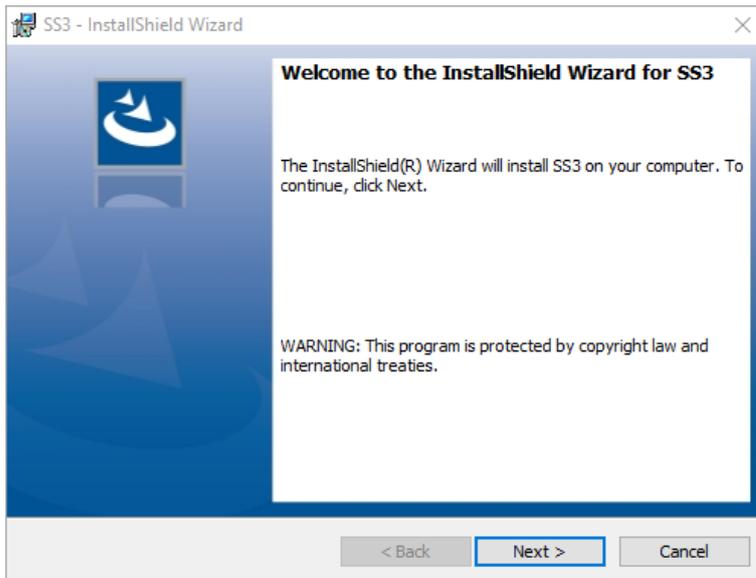
SS3 uses the system software "Microsoft .Net Framework 4.5.2": if it is not present on the PC, you can download it from the Microsoft website

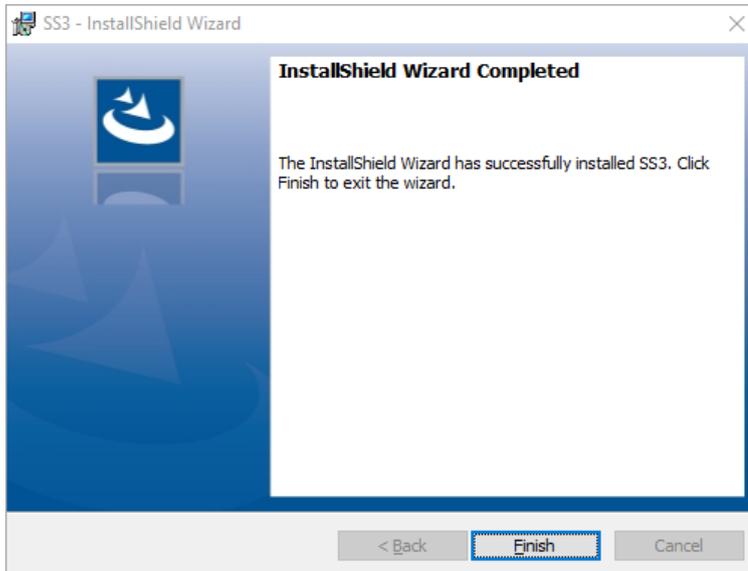
<https://www.microsoft.com/it-it/download/details.aspx?id=42642>

When finished, start the SS3 installation program again.

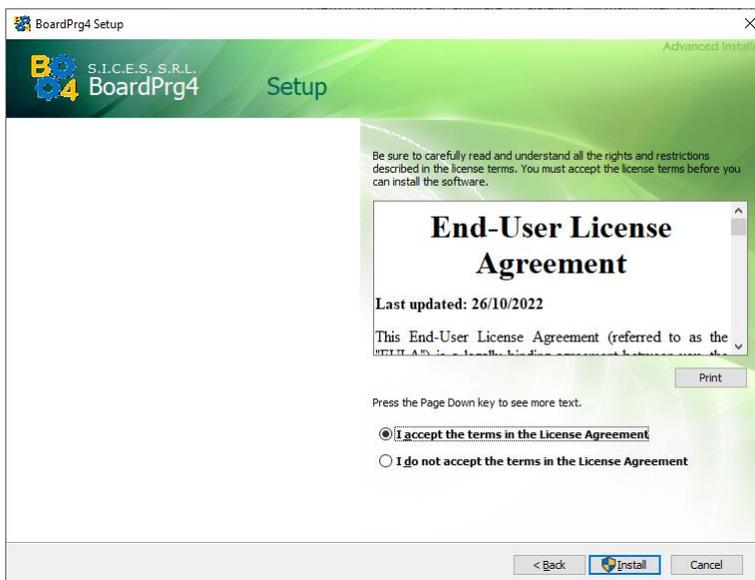


SS3 also requires some additional support software: if they are not already installed on your PC, you need to install them now. Select the various software proposed in the list on the left, and click on the "Next" button:

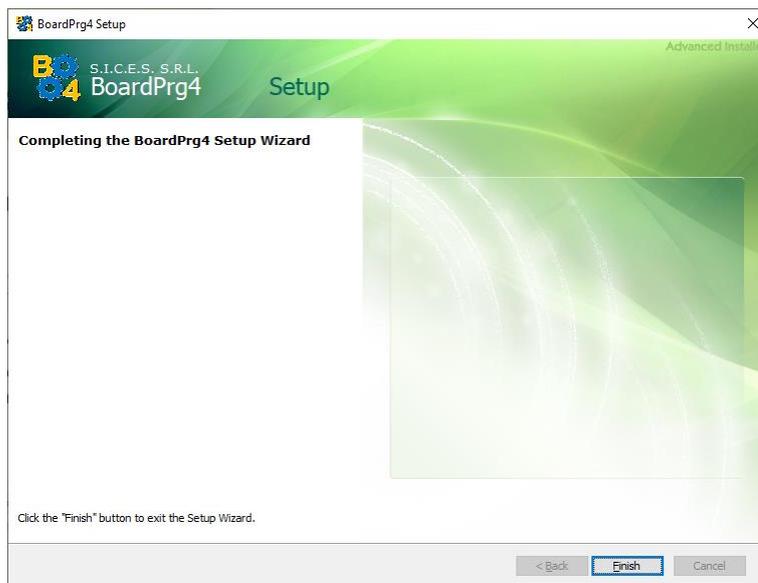




To continue with the installation of both BOARDPRG4 and any support programs, you must accept the license terms, then click on the "Install" button:



At the end of the installation, click the "Finish" button.



SS3 is now present in the Windows "Start" menu, in the "SICES\SS3" folder. However, it is enough typing "SS3" in the Windows search box to find the program and run it.

### 3. First use and configuration of SS3

To run the SUPERVISOR from the Windows Start menu Select:

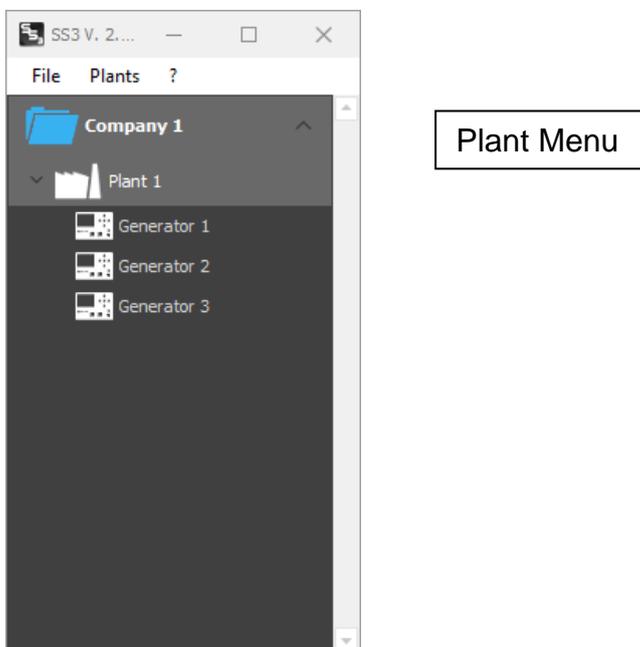


Or Double-click on the program icon :



#### 3.1 First execution

After starting, the program looks like this:



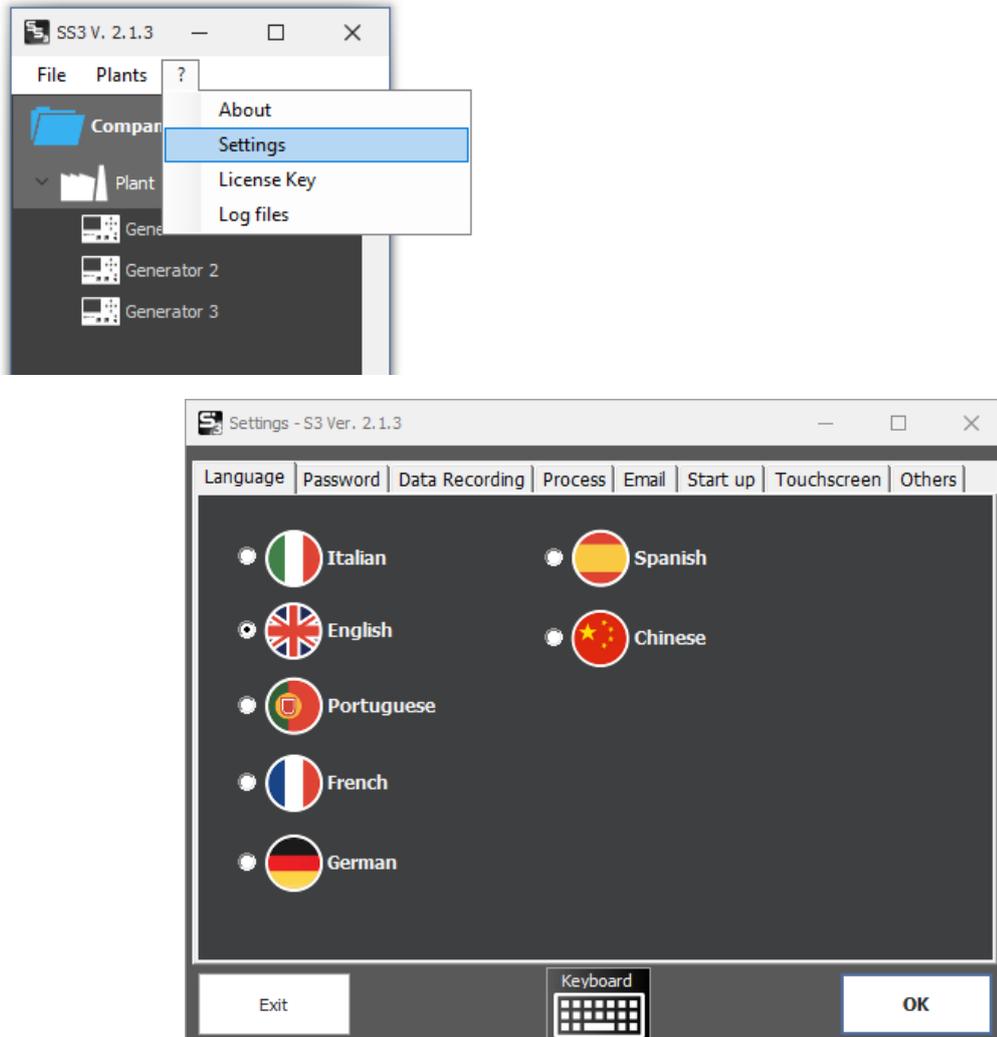
#### 3.2 Primary application windows

The supervision application consists mainly of the plant menu, which is displayed when the program is launched. From this window you can open the plant layout window and the individual board management window.

These are the main windows from which other windows and features can be accessed, which we will see below.

### 3.3 Language selection

The first time you run the program, it displays messages in English. It is possible to change the language (by selecting it from those available), using the "Language" section in "Settings" menu:

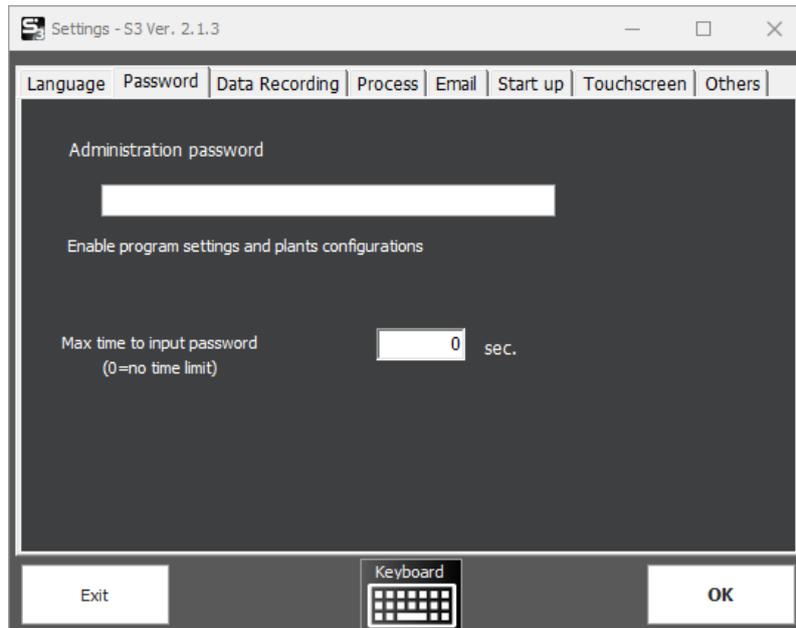


Select the desired language and confirm your selection by clicking OK

Warning: Failure to click on the OK button, cancels the setting of the new language.

There is no need to restart the program; the language is changed as soon as confirmation is given with the OK key.

### 3.4 Setting the administration password



Allows the setting of an administration password.

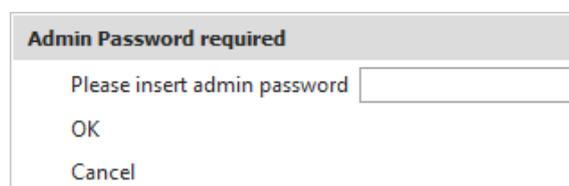
By default at installation there are no passwords, so all program functions are accessible.

Once the systems have been configured and the program settings have been made, it is possible to set the administration password, which protects against unwanted access to changing the settings.

If present, it is required every time you access the settings and the plant management popup menu (the one that appears by right-clicking on the plant menu) that allows insertion, deletion, and access to plant and board properties.

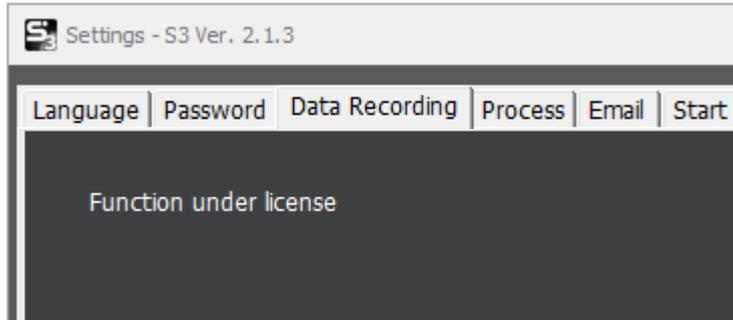
It is possible to set a maximum time for setting the password. For example, if you set the value 10 it means that you will have 10 seconds available for password setting, after which the password setting window disappears.

The value 0 indicates that there is no time limit: the password setting window remains displayed until you confirm the password with OK, or exit with Cancel



### 3.5 Data Recording, Process, Email

Configurations for licensed functions do not appear if the license is not active:

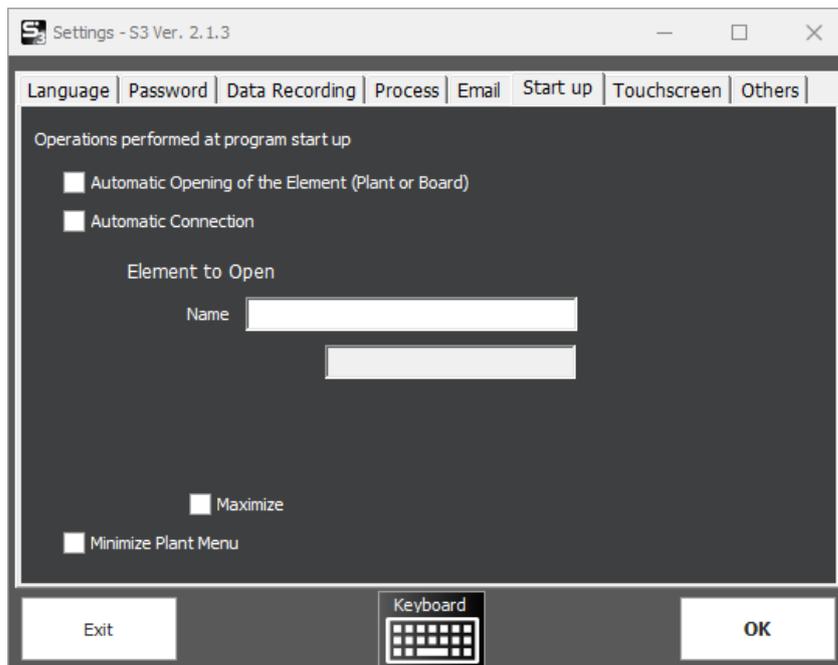


For a more detailed explanation of optional functions, please refer to Chapter "0 -

License”.

### 3.6 Startup

Allows you to set the operations to be performed when the program starts.

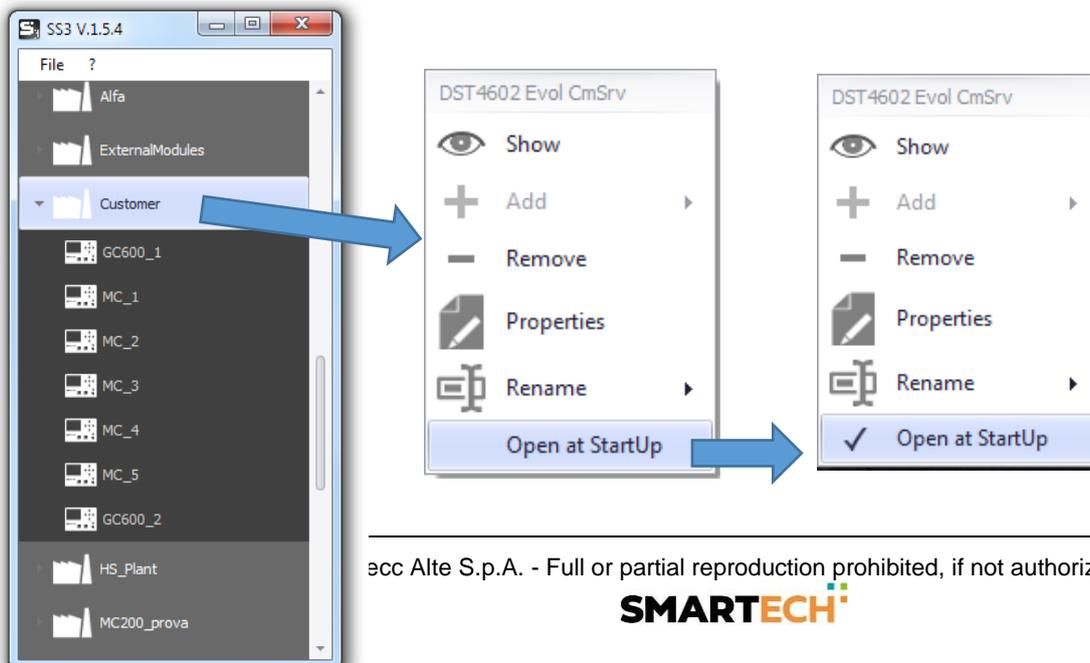


#### 3.6.1 Opening and automatic connection to a plant

How to set up automatic opening of a tab or plant directly from the menu:

Display the popup menu with the right mouse button pointing to the icon of the plant or board you want to open at startup.

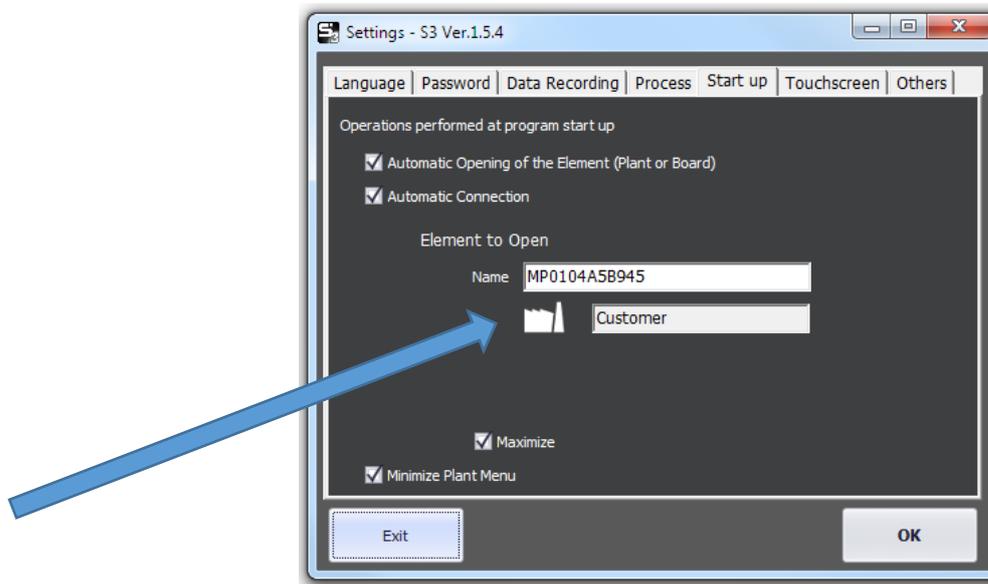
Click on "Open at Startup," a check mark will appear.



Close the program.

When restarting it will automatically open the selected node (board or plant).

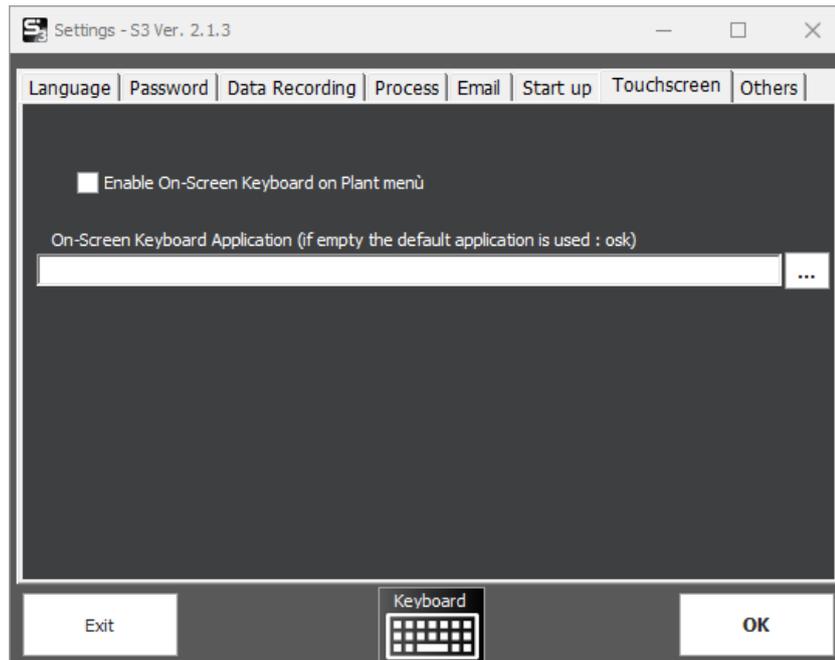
In the Startup settings you will find the name of the node and automatic opening enabled:



### 3.7 On-Screen Keyboard

Allows you to define the application for the on-screen keyboard (on-screen keyboard).

This feature is useful in installations with Panel PCs, where there is therefore no keyboard, only a touch screen.



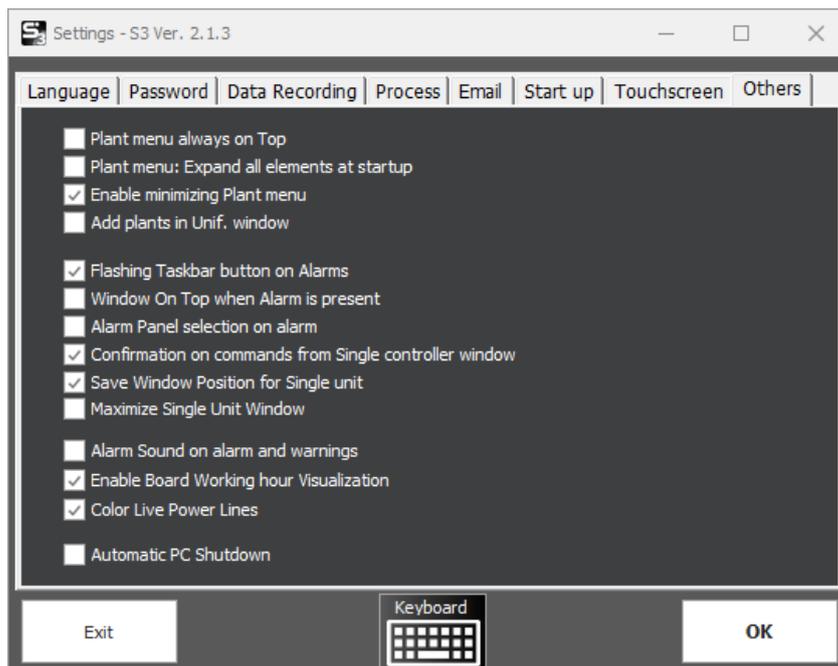
Enable on-screen keyboard in the facilities menu: enables the display of the on-screen keyboard recall button.

If nothing is set, the Windows keyboard appears by default :



### 3.8 Miscellaneous settings

Groups various generic settings.



**Plant menu always on Top** : If not minimized, the plant menu always appears above other windows when this option is selected.

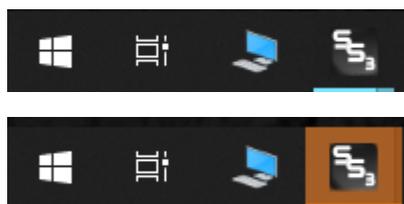
**Plant menu - Expand all elements at startup**: all items will be displayed expanded in the menu.

**Enable minimizing Plant Menu**: Enables the ability to minimize the plant menu.

**Add plants in Unif. window**: Enables automatic insertion of all tabs in plant layout (even if they are organized in different folders or plants).

**Flashing Taskbar button on Alarms**: Enables the flashing of the SS3 program icon in the presence of alarms.

This is function is useful in case there are several active programs on the PC and supervision is not always in the foreground. The operator is alerted to the presence of an alarm/alarm by seeing the icon flashing in the taskbar (the windows taskbar located at the bottom of the screen).



Flashing of the icon in the taskbar

**Window On Top when alarm is present**: Indicates whether the single board management window should be placed in the foreground when an alarm is detected.

**Alarm Panel selection on alarm**: Moves to the alarm list display automatically.

**Confirmation on commands from Single controller window**: prompts for confirmation of requested commands.

**Save Window Position for Single unit**: stores the position and size of the unit management window.

**Maximize Single Unit Window**: maximizes single board windows each time they are opened.

**Alarm Sound on alarm and warnings**: Performs sound signaling when a new alarm/warning occurs.

**Enable Board Working hour Visualization:** if not checked hide the display of board operating hours.

**Color Live Power Lines:** Enables the display of the status of bars and connection lines. When voltage is detected, the lines turn red..

**Automatic PC Shutdown:** on program exit performs PC shutdown.

### 3.9 How to end the application

To terminate the application, simply close the plant menu.

 **WARNING!** If the “Automatic PC Shutdown” option is selected, the computer will perform the shutdown procedure. By default this option is disabled.

## 4. How to configure SS3

Configuring SS3 means entering the elements that make up plants, setting parameters that inform the application where to read/write plant configurations and data, their structure, how to reach them, how to talk to them, and how to protect them from unwanted access.

The configuration tasks to be performed are listed below and will be described in detail in the remainder of this chapter.

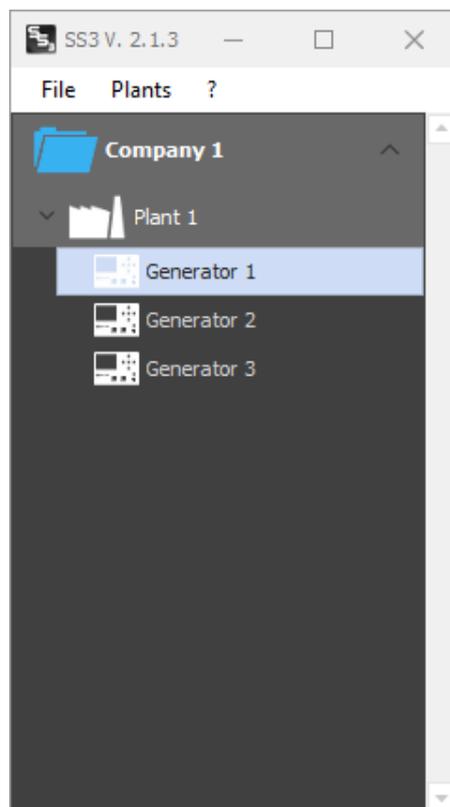
The program configuration is recorded in the following folder :

**C:\ProgramData\Sices\SS3**

### 4.1 Plant configuration

This function requires the administrator password (where present).

When SS3 is first started, a basic plant with 3 generators is proposed:

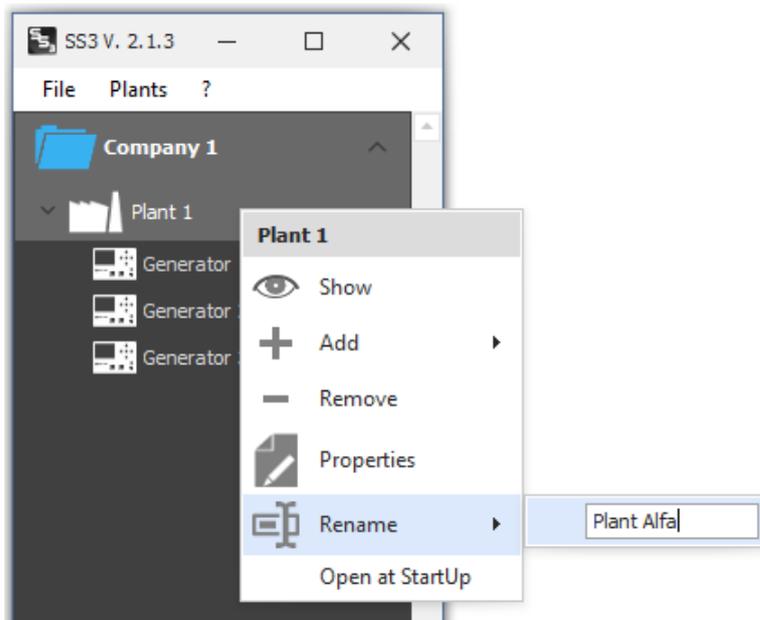


It is the client's option to use the existing structure (adapting the names and properties) or delete it to create a custom one.

For configuration, press the right mouse button at the node to be modified. A popup menu will appear.

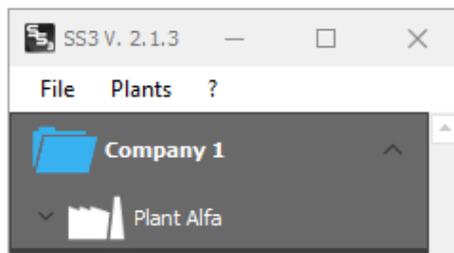
For example, to change the name of the folder "Company 1"

Right-click on the plant menu and the following popup menu will appear:



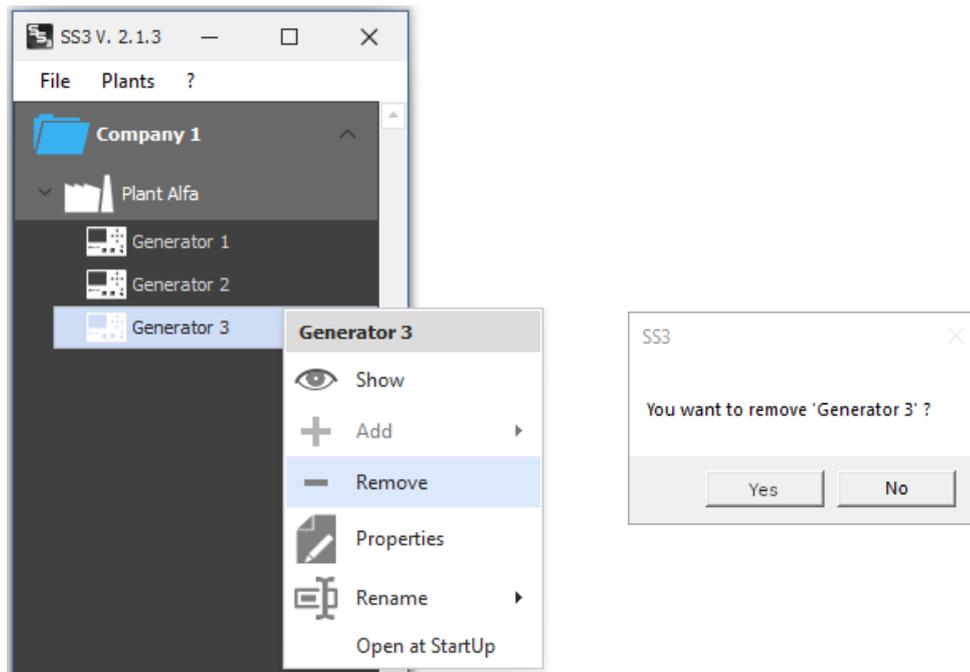
Confirm with the Enter key.

The plant will be renamed:



Similarly, it is possible to rename the folder and the Boards.

It is then possible to delete unnecessary tabs:



The logic of creating plant configuration normally involves creating one or more folders. Within the folders, other folders can be created (without nesting limitation). Within the last internal folder, one or more plants can be created. And within the plants one or more boards/devices can be placed.

There is no limit to the creation of folders and implants, while there can be a maximum of 32 boards/devices within one plant.

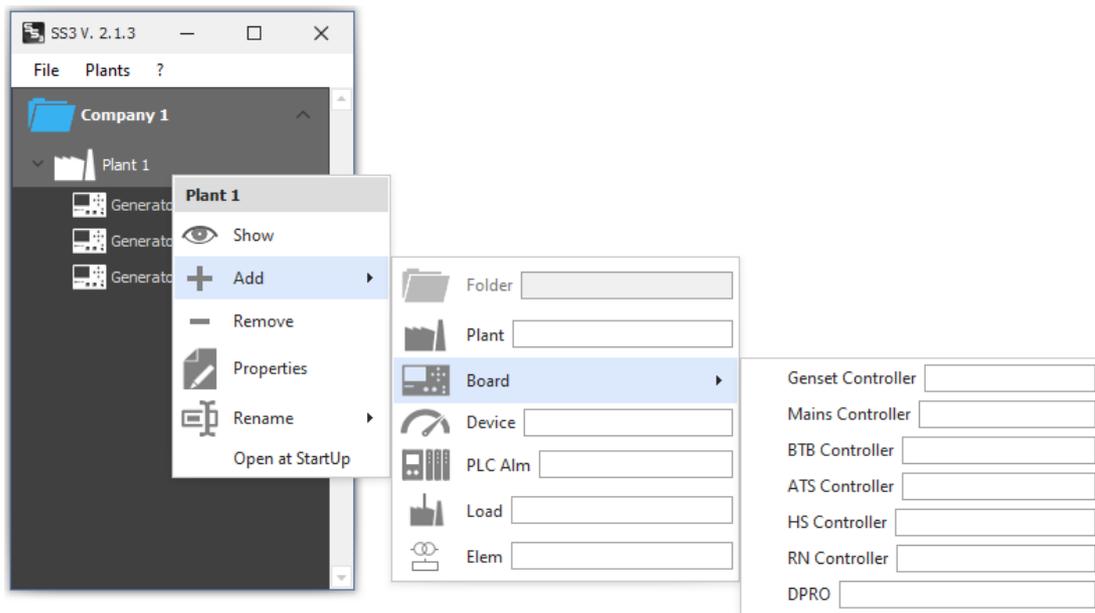
N.B.: creation of folders is not mandatory; you can create a plant directly in the menu. The creation of a plant is also not mandatory: you can create a board directly in the menu, but in this case not being part of a plant it will not be possible to display it in the plant layout (only the board management window will be accessible).

Attention: each new element (folder, plant, tab) is created at the point where the mouse pointer is positioned at the moment the right button is pressed. To create an element (normally a folder) directly in the menu as a root element click in a free area of the menu.

To create a board under a plant press the right button above the desired plant.

So at first you will be asked to enter the following information (see image below):

- name to the folder
- name of the plant
- name of the board(s) to be managed



**! ATTENTION!** deletion of a container also results in deletion of all other resources (folder, plants, and boards) in it. Before proceeding, SS3 asks for explicit confirmation.

SS3 uses three types of resources for configuration, identified by the names "Folder," "Plant," and "Board."

The "Board" resource reflects, within SS3, the actual Mecc Alte boards (GC315, GC400, GC600, DST4602, MC100, BTB100, etc.). Through this resource, it is possible to inform SS3 in detail about the type of board, its options, and how to go about acquiring its data.

The "Plant" resource, on the other hand, reflects the plant as a whole and is therefore composed of one or more boards. In SS3, "Plant" is considered to be the set of boards that you want to display in a single layout and with which you can also connect simultaneously through different communication resources.

Finally, the "Folder" resource has no real correspondence with plants but is just an object to allow hierarchical organization of plants. It is aimed at those who intend to monitor many plants: through this resource they can subdivide them by type, by geographic area or by any other criteria.

## 4.2 Configuring a Folder



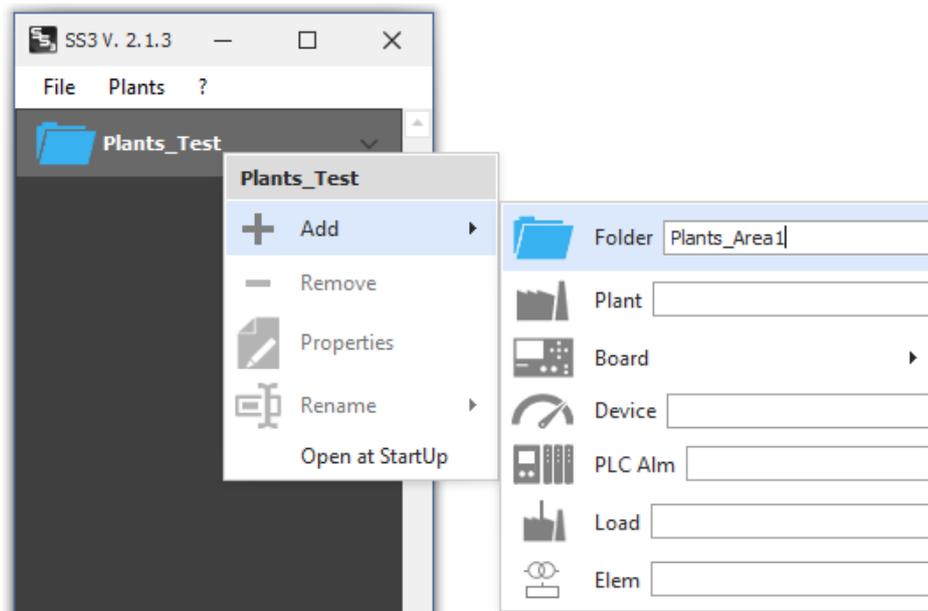
Folder icon

### 4.2.1 How to add a folder

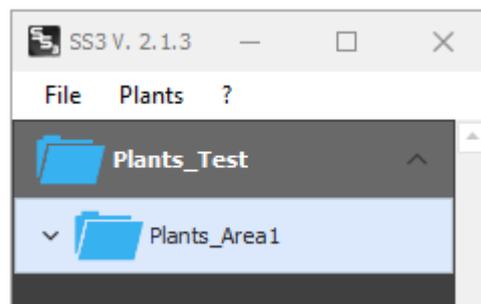
A folder is an object that allows plants to be grouped hierarchically. It is not essential to create folders. Plants can be created directly in the plant menu. A folder can contain others without nesting limitation.

To add a folder you must first locate the "parent" folder:

- Click on "parent" folder (Ex: "Plants\_Test") in plants menu, Right key, then "Add" button, then on "folder" enter new folder name (Ex: "Plants\_Area1").



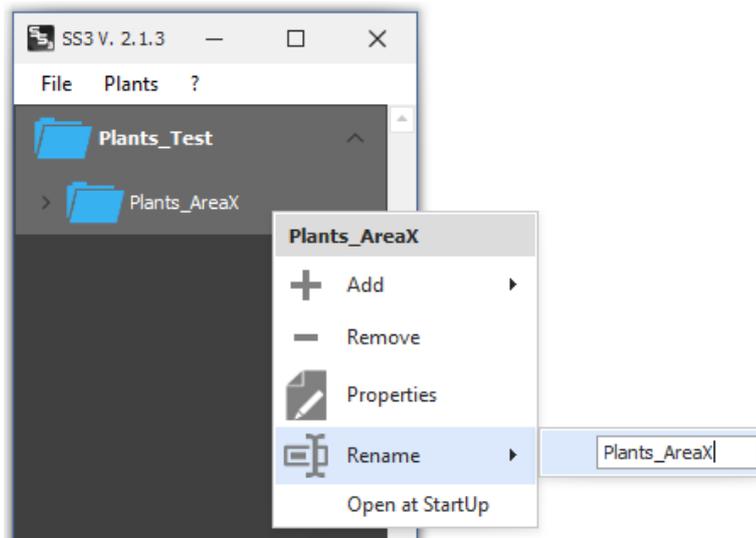
The Plants\_Area1 subfolder under Plants\_Test will be created:



#### 4.2.2 How to rename a folder

To do this you need to:

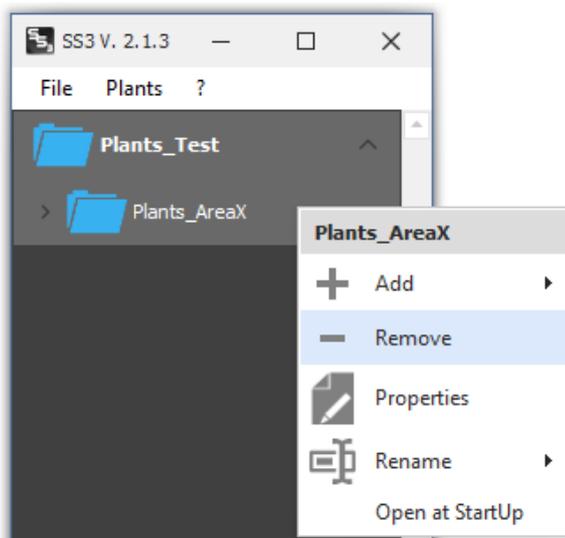
- Click on the affected folder in the resource hierarchy, Right click then "Rename" button of the tool popup.
- Enter in new name in the white box.:



### 4.2.3 How to delete a folder

To delete a folder:

- Click on the affected folder in the resource hierarchy, Right key then "Remove" button of the tool popup.



**! ATTENTION!** deletion of a container also results in the deletion of all other resources (containers, plants, and boards) in it. Before proceeding, SS3 asks for explicit confirmation.

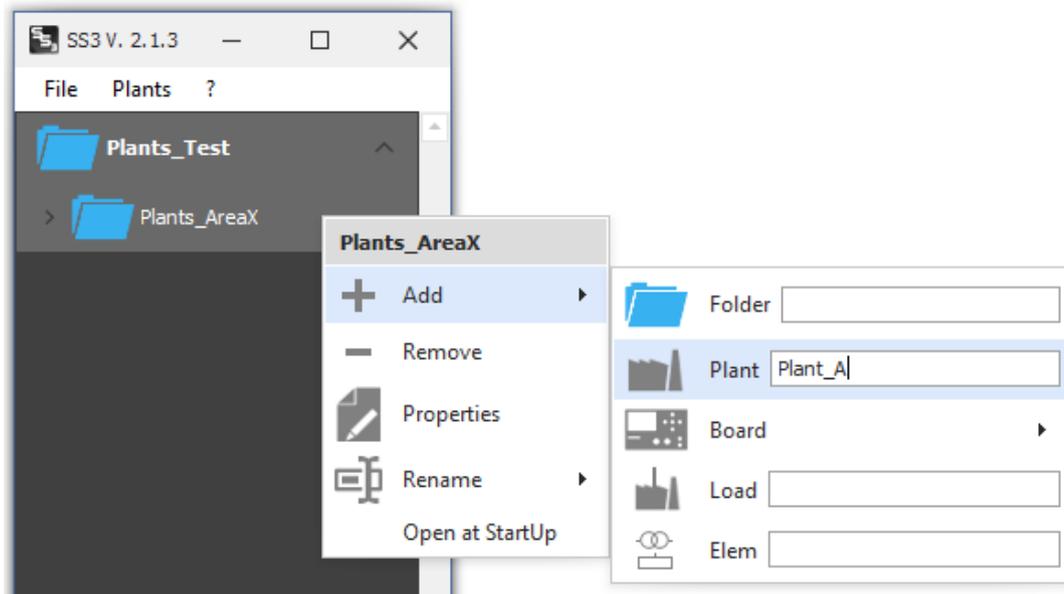
## 4.3 Configuring a Plant

The plant can contain one or more boards and allows them to be represented in a single layout. Plant properties govern its access.

### 4.3.1 How to add a plant

A plant can be a child of a folder or can be created directly in the plant menu. In the case of adding a plant under a folder, you must first locate the parent folder:

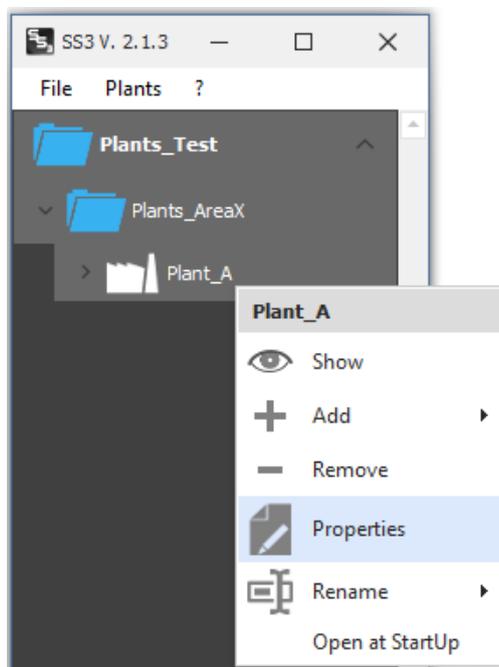
- Click on the "parent" folder in the resource hierarchy, Press right mouse button, then "Add" button, then on "Plant" enter the name of the new plant.



#### 4.3.2 How to change the properties of a plant

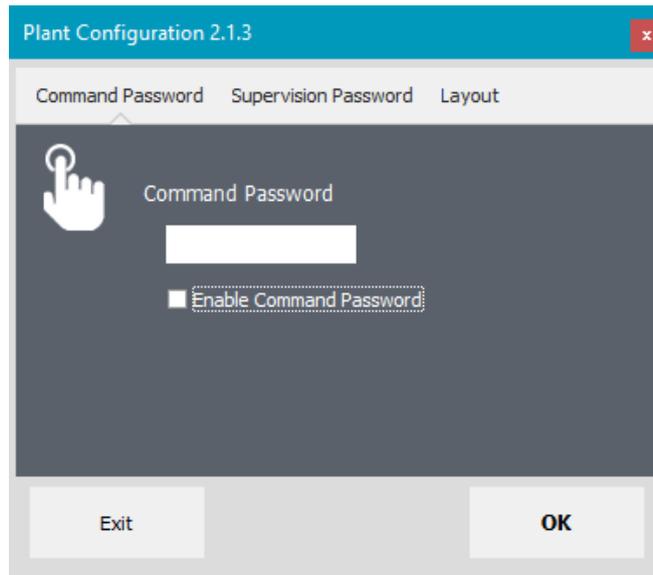
To access the properties of a plant:

- Right Click on the plant icon, then "Properties" button of the tool popup.

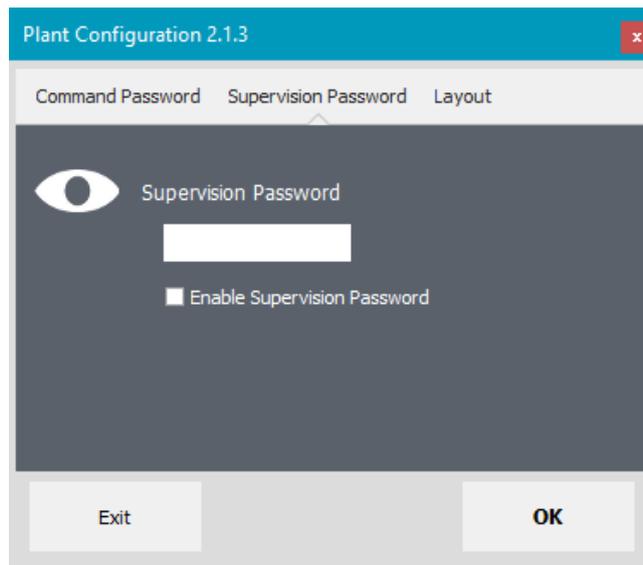


The plant properties window allows the following settings :

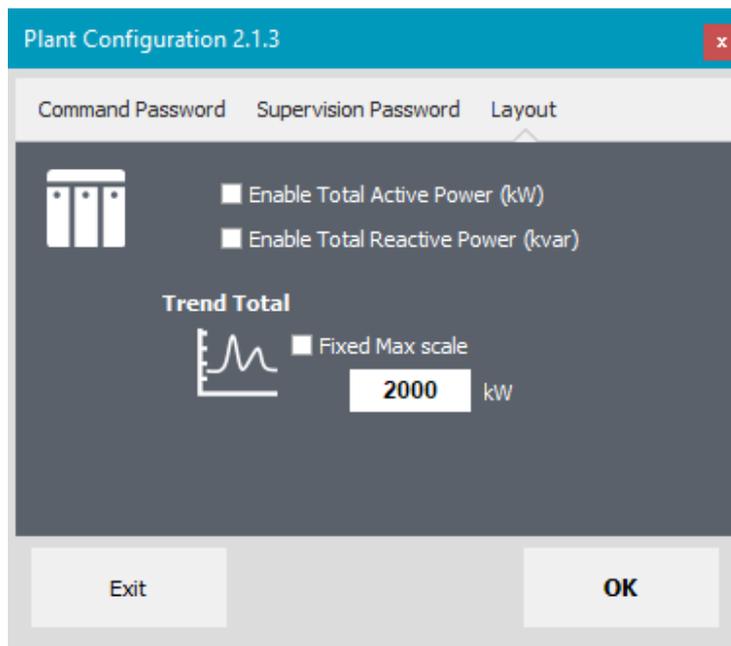
- Command Password: protects against sending commands to the board (when the operator requests activation of a Start, Stop or other command, the command password is requested)



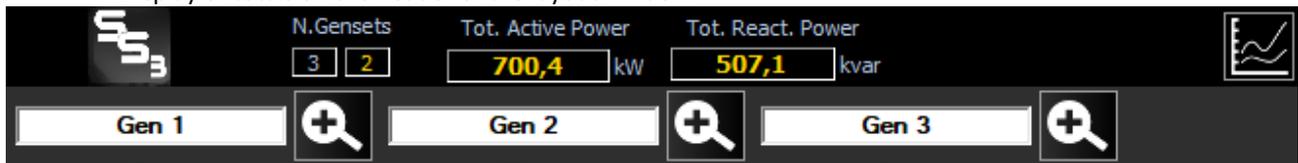
- Supervision Password: protects from access to the plant (it is not possible to view or connect to the plant).



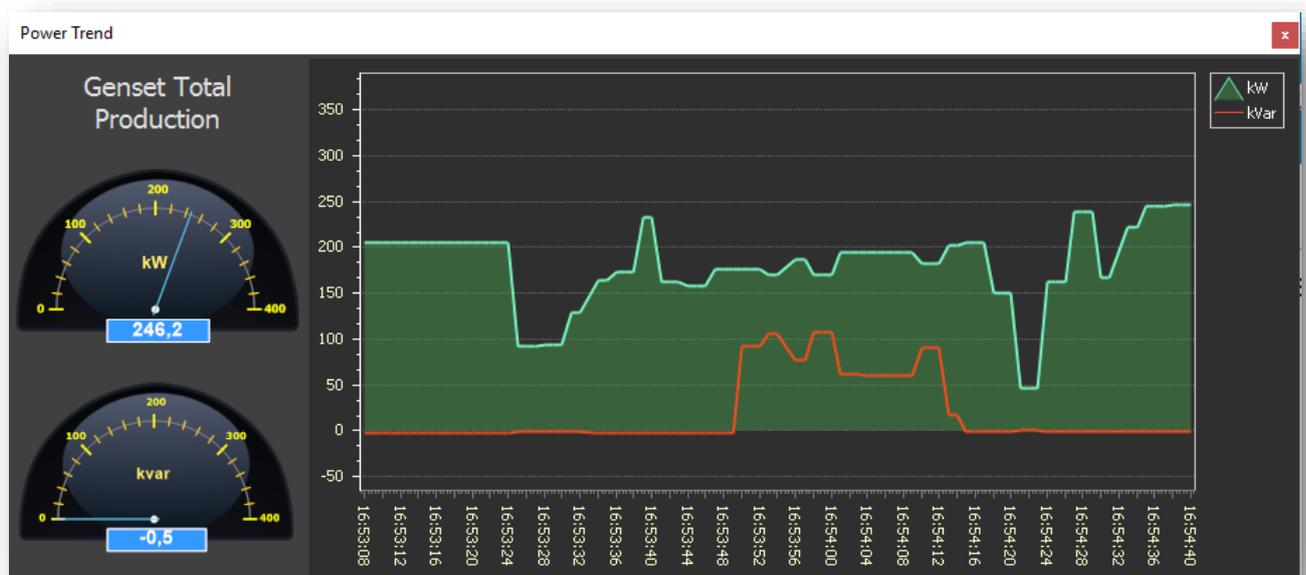
- Layout: defines some options in the layout view.
  - Enables the display of the total active and reactive power of gensets.
  - Allows you to set the bottom scale in the active power graph display. If not selected, the full scale will be dynamic and variable.



Display of totals on the header of the layout window:



To view the total power graph, press the  button located in the top bar of the layout. The window will appear :

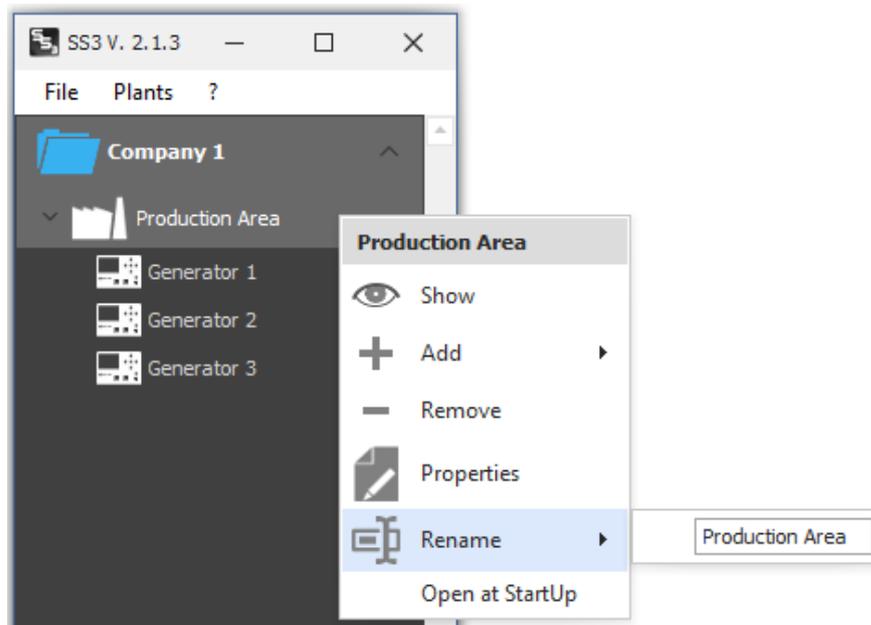


The graph represented in real time will display the trend of the total power delivered by the connected gensets.

### 4.3.3 How to rename a plant

To do this requires:

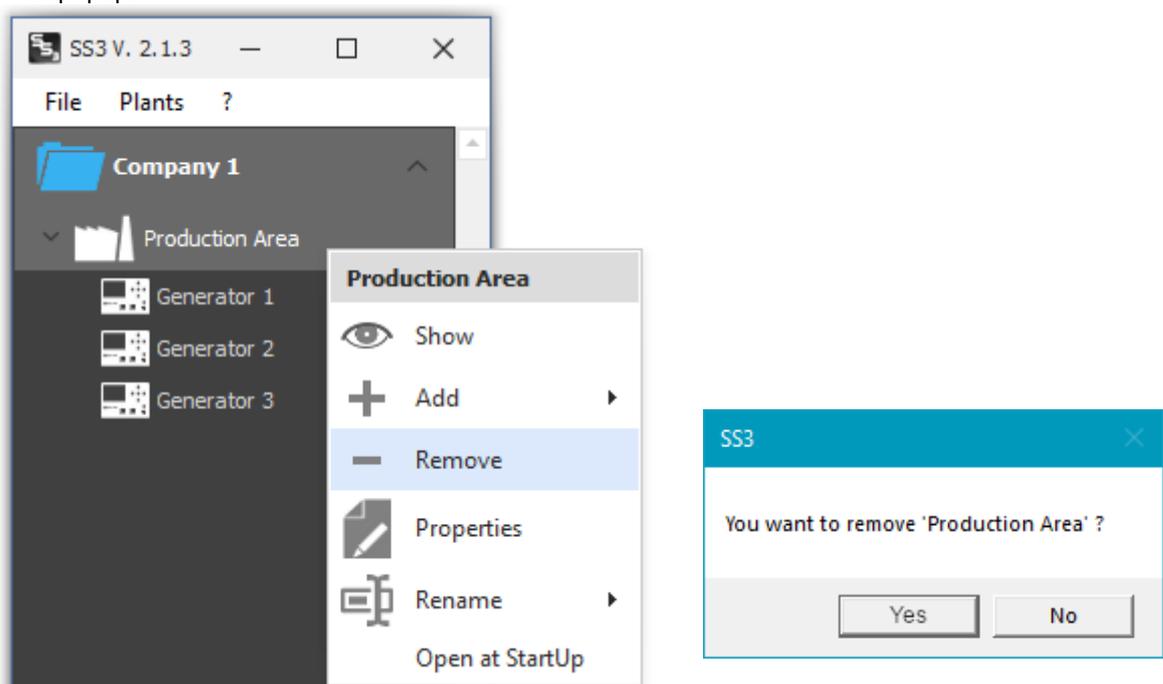
- Click on the affected plant in the resource hierarchy, Press right mouse button, then "Rename" button of the tool popup.



### 4.3.4 How to remove a plant

To eliminate a plant:

- Click on the affected plant in the resource hierarchy, Press right mouse button, then "Remove" button of the tool popup.



**!** **CAUTION!** deletion of a plant also involves deletion of all other resources (boards) in it. Before proceeding, SS3 asks for explicit confirmation.

## 4.4 Configuring a Board

The board displayed in the menu contains all the information necessary for supervision to connect and the visual representation of itself.

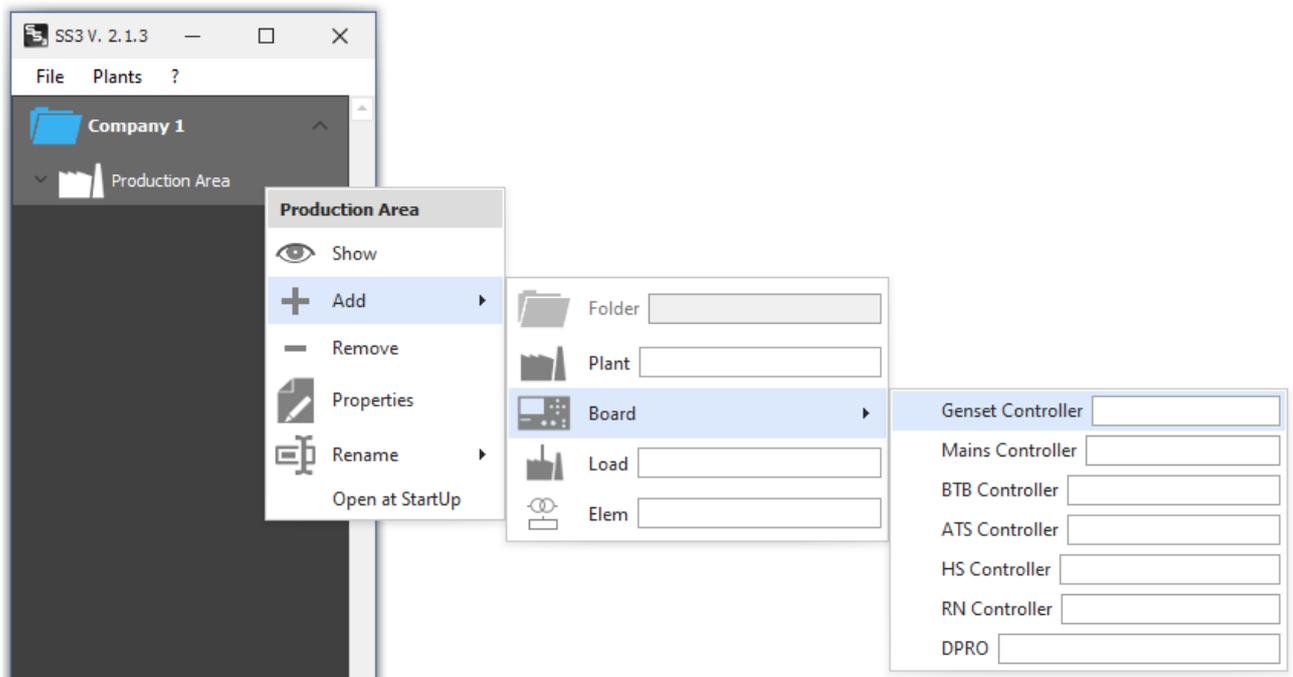
### 4.4.1 How to add a board

Usually, the hierarchy of plants provides in order of creation: Folder → Plant → board.

However, SS3 allows the placement of a board in any location. It can be created directly in the menu, or within a folder or under a plant.

In the most common case to add a board, you must first locate a "parent" plant:

- Click on the "parent" plant in the resource hierarchy, Press right mouse button, then "Add" button, then "Board" button then select the type of "Board" and enter name to be associated.



Type in the name of the board and press Enter:



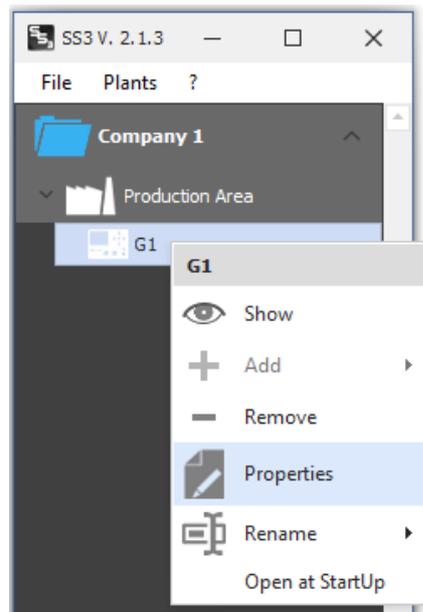
the board will appear under the indicated plant:



#### 4.4.2 How to change the properties of a board

To access the properties of the board:

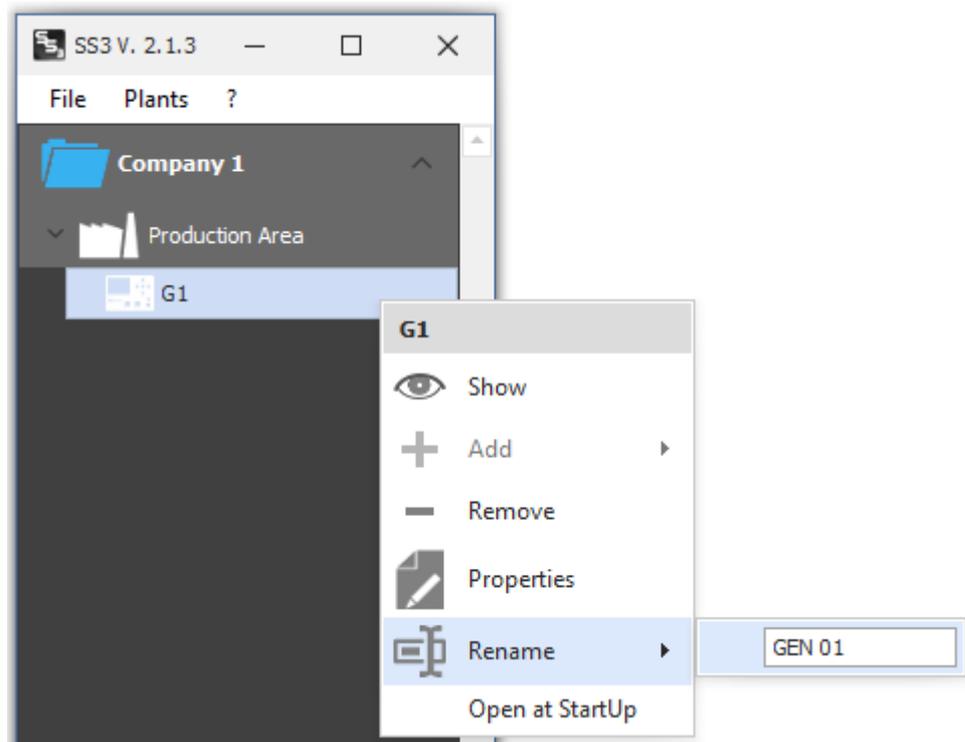
- Click on the relevant board in the resource hierarchy, Press right mouse button, then "Properties" button of the tool popup.
- To change the configuration of the board see sec. 5.4.5



#### 4.4.3 How to rename a board

To do this requires:

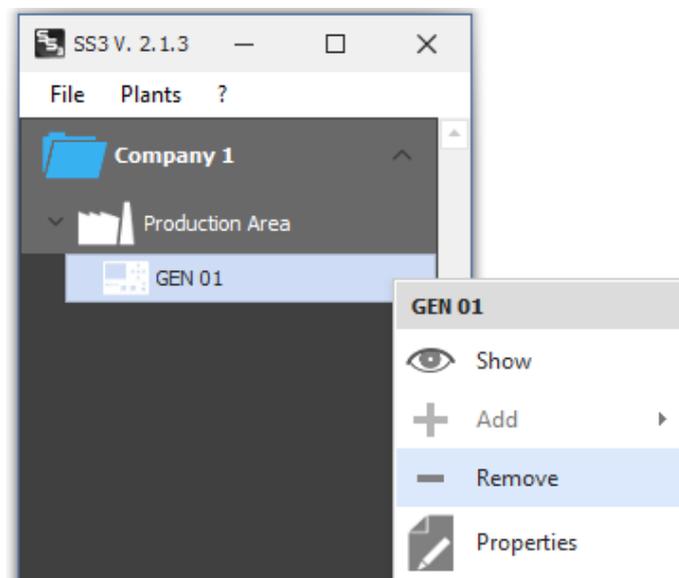
- Click on the affected board in the resource menu, Press right mouse button, then "Rename" button of the tool popup.



#### 4.4.4 How to delete a board

To do this requires:

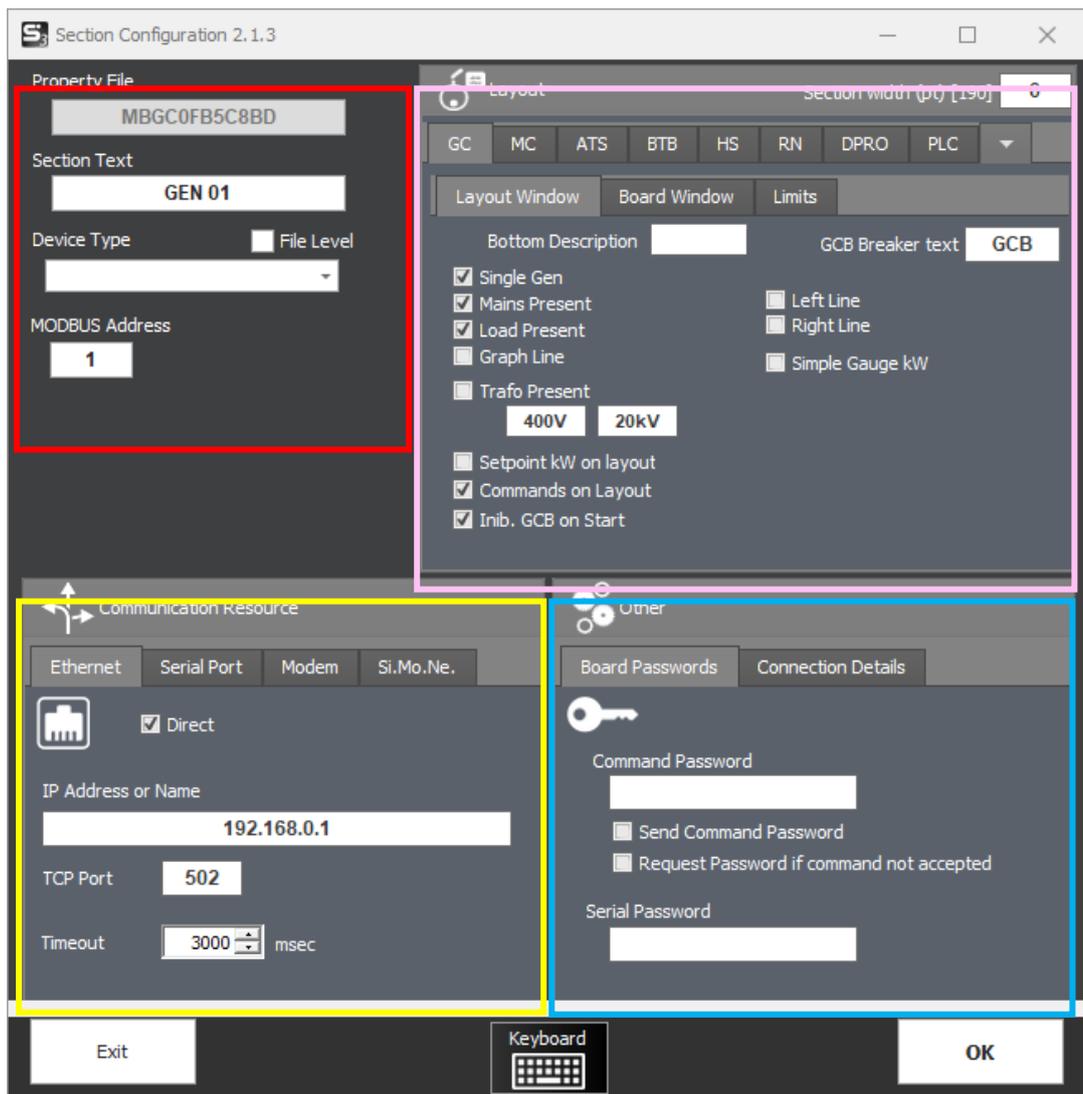
- Right-click on the affected board, then select "Remove" from the tool popup.



**Before proceeding SS3 asks for explicit confirmation.**

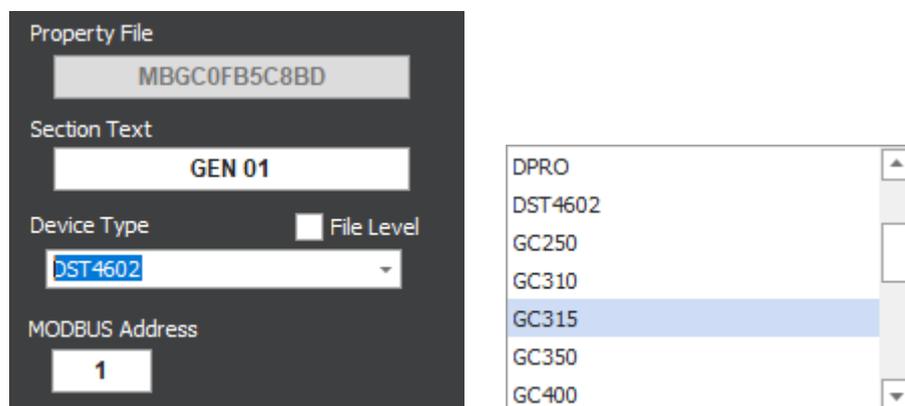
#### 4.4.5 Procedure for changing the configuration of a board

This procedure (valid for all board types) consists of four sections.



#### 4.4.5.1 Property Section 1

In this section you can set the type of board to communicate with and its modbus address (see detail below):



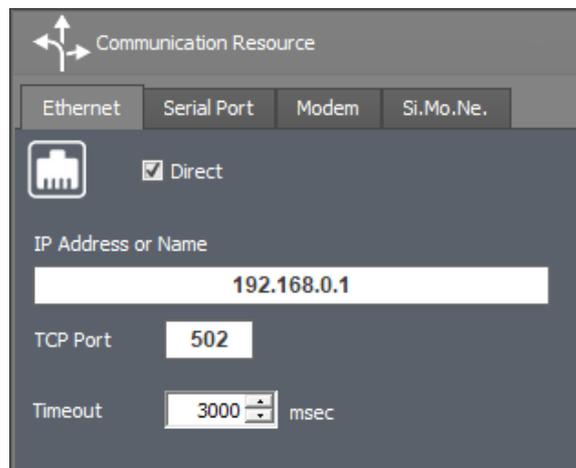
- **Property File:** Indicates the identification code of the board. It's automatically generated by the system. Within it the properties of the board are stored.
- **Section Text:** The name of the board / device.

- **Device Type:** Select the type of board to connect to.  
By selecting "Auto", supervision automatically detects the board being connected.  
Selecting the check "File Level" The version of the board descriptor is shown (Useful info for assistance).
- **Modbus address:** Set the serial address of the board.

#### 4.4.5.2 Property Section 2

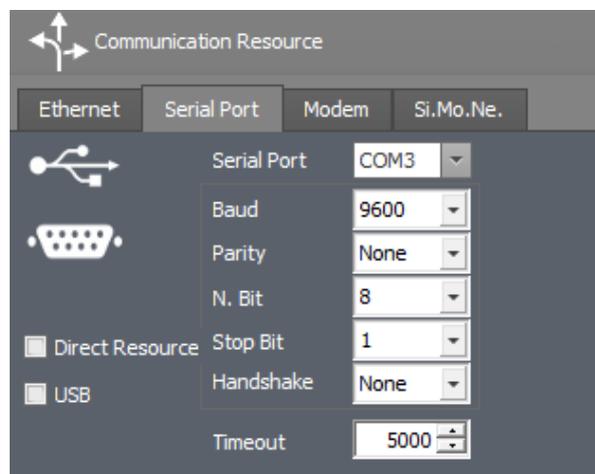
In this section you can set the communication resource.

##### 4.4.5.2.1 Ethernet



- **Direct:** indicates direct use of the communication resource (the Ethernet port is handled directly by SS3, and the Mecc Alte CommServer software is not used).
- **IP Address or Name (DNS) :** Set the IP address or DNS name of the board or network device through which the board communicates (Gateway/Dance).
- **TCP Port:** Set the TCP port configured in the network board or device through which the board communicates (Gateway/Dance). The default TCP port is 502.
- **Timeout:** Set the maximum response time of the device.

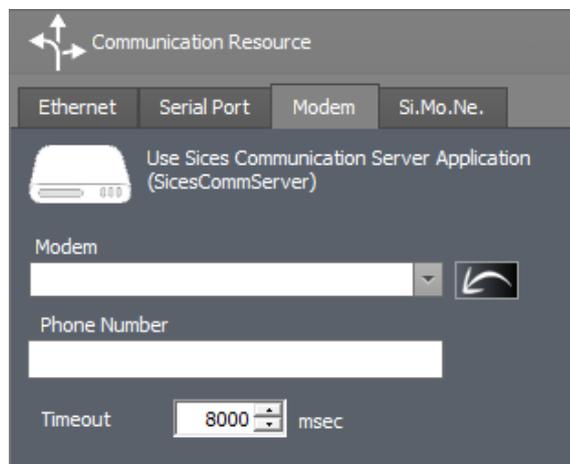
##### 4.4.5.2.2 Serial Port (RS232, RS485, USB)



- **Direct:** indicates direct use of the communication resource (the Serial port is handled directly by SS3, and the Mecc Alte CommServer software is not used).  
In this case, the serial port can only be used by one instance at a time (see Mecc Alte CommServer section for more details).
- **USB:** This check prepares communication in USB (does not take into account the characteristics of serial communication).
- **Serial Port:** Set the PC serial port to be used to connect to the board.
- **Communication parameters:** the parameters of the serial port should be aligned with those of the serial communication of the board.
  - **Baud:** baud rate - speed of communication (default 9600)
  - **Parity:** None (Default), Even, Odd, Mark, Space.
  - **N. Bit:** 8 bit is the default value. n.b.: the modbus protocol can only work in 8 bits.
  - **Stop Bit:** None, 1 (Default), 1.5, 2
  - **Handshake:** None (default), Hardware (RTS), Xon/Xoff, Hardware+Xon/Xoff
- **Timeout:** Set the maximum device response time in msec (default 5000 = 5 sec).

#### 4.4.5.2.3 Modem

This mode of communication involves the use of a device connected to the computer, the modem. It was mainly used in the past. Today it is no longer used, but it can be taken advantage of through the use of the appropriate driver. The modem can be connected via USB or RS232.



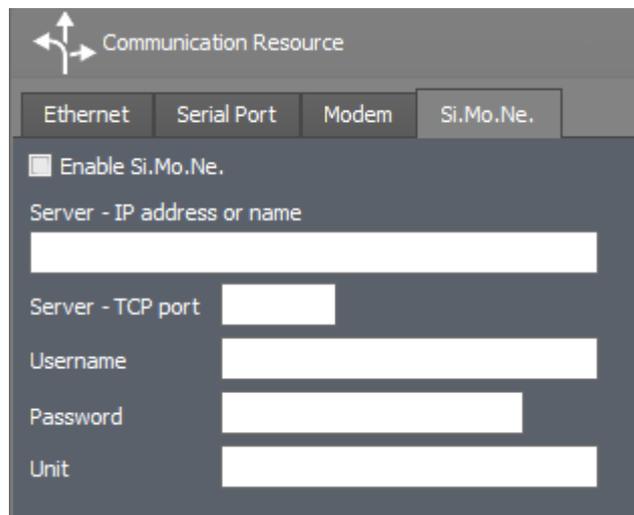
- **Modem:** Enter the name of the modem driver.  
 Pressing this key activates the Mecc Alte CommServer, which searches for available modem resources in the system.
- **Phone Number:** Enter the telephone number of the plant.
- **Timeout:** Set the maximum time to wait for response from the remote unit. (default 8000 = 8 sec.)

#### 4.4.5.2.4 Si.Mo.Ne.

Requires connection of the board to the SiMoNe cloud.

This is useful in plants connected via mobile network (2G, 4G, 5G) where the IP address of the plant is not fixed, but is constantly changing. In practice, knowing the name of the plant (unit) entered in the

Si.Mo.Ne. system, it is possible to retrieve the IP address with which the plant is connected to the network. Consequently, one can connect without being aware of it.



- **Enable Si.Mo.Ne.:** Selecting the checkmark activates the connection to the Si.Mo.Ne. service. (Mecc Alte Monitoring Network) service.
- **Server – IP Address or Name:** DNS name of SiMoNe server or public IP address.
- **Server – TCP Port:** It is the communication port of the server. The default is 53052.
- **Username, Password:** SiMoNe account login information.
- **Unit:** is the name of the unit in the SiMoNe system that corresponds to the plant to connect to.

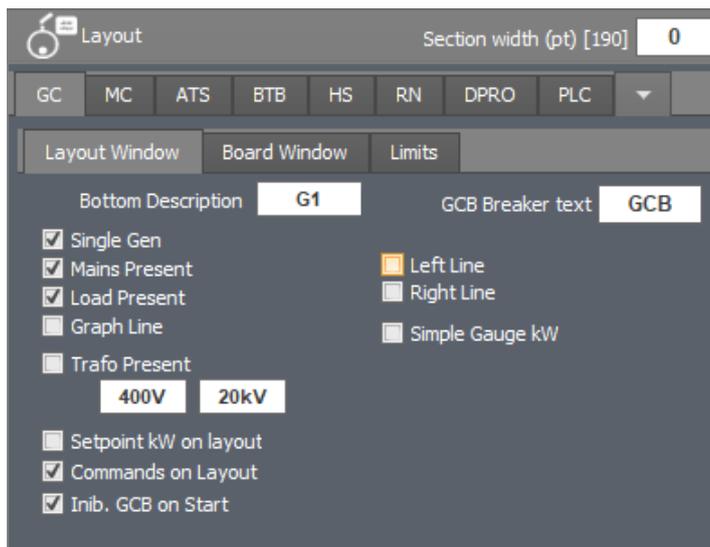
For more details See par. “13 - SS3 and SiMoNe”

### 4.4.5.3 Property Section 3

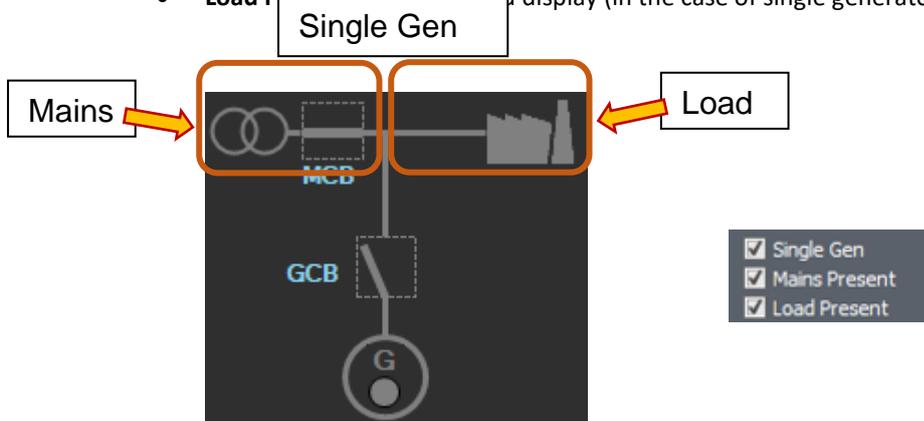
This section configures the visual representation of the board in the plant synoptic layout and in the individual window.

#### 4.4.5.3.1 GC (Genset Controller)

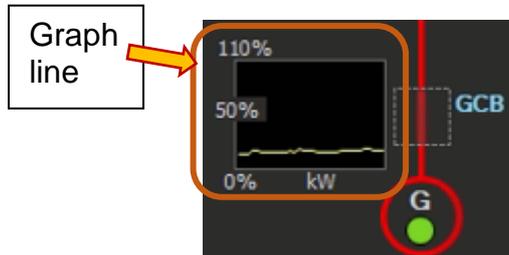
**Layout Window:**



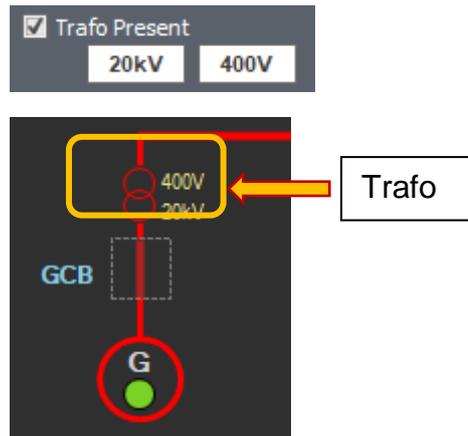
- **Bottom Description:** it's possible to insert a label under the generator icon.
- **GCB Breaker text:** allows you to customize or remove the GCB inscription on the related switch.
- **Single Gen:** This check allows the generator to be displayed independent of others.
- **Mains Present:** Adds Mains display (valid in the case of single generator).
- **Load Present:** Activates load display (in the case of single generator).



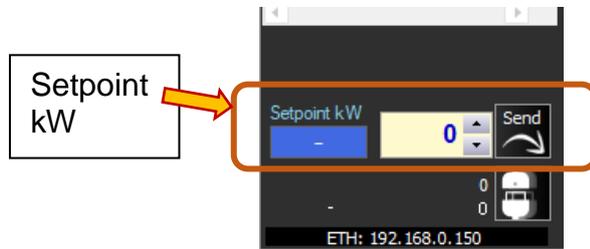
- **Graph Line:** This tick allows the graph of power produced in % to be displayed.



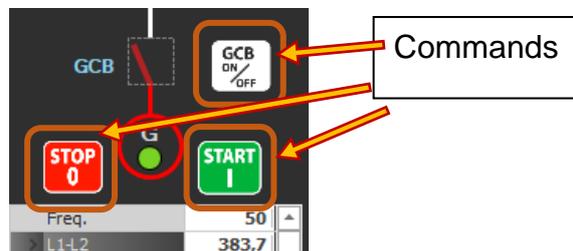
- **Trafo Present:** Inserts the display of a trafo with its transformation values.



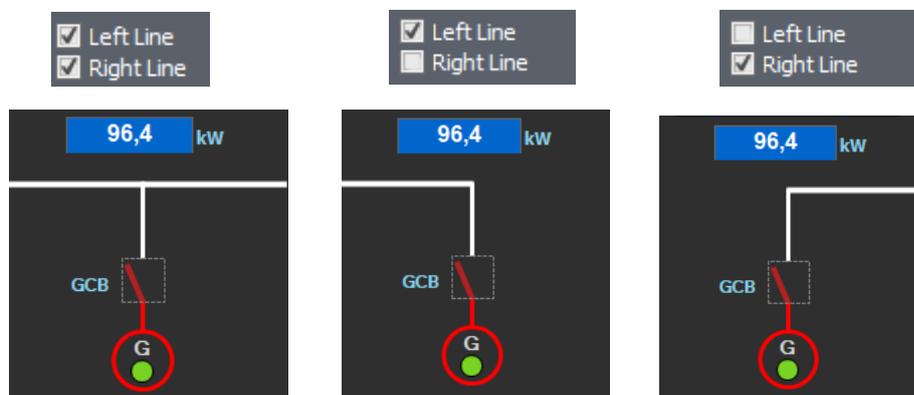
- **Setpoint kW on layout:** Enables the display and control of the active power setpoint directly from the layout.



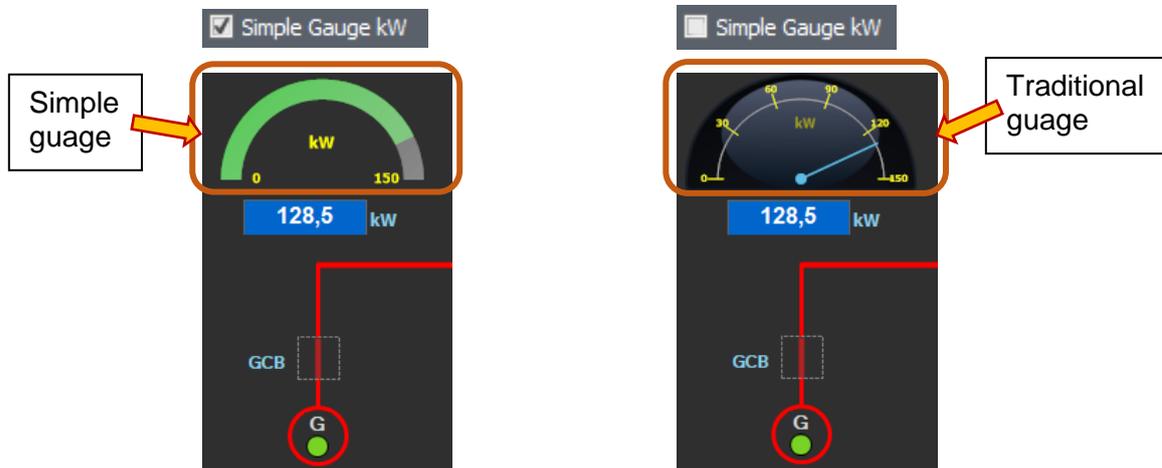
- **Commands on Layout:**



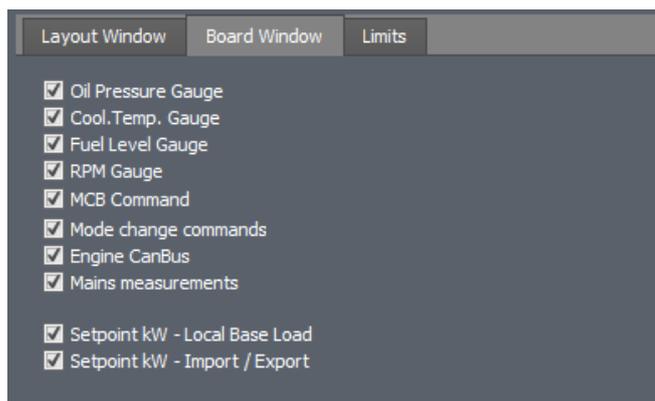
- **Inib. GCB on Start:** Activates the GCB closure inhibition on the START command.
- **Left Line:** View left common bar
- **Right Line:** View right common bar



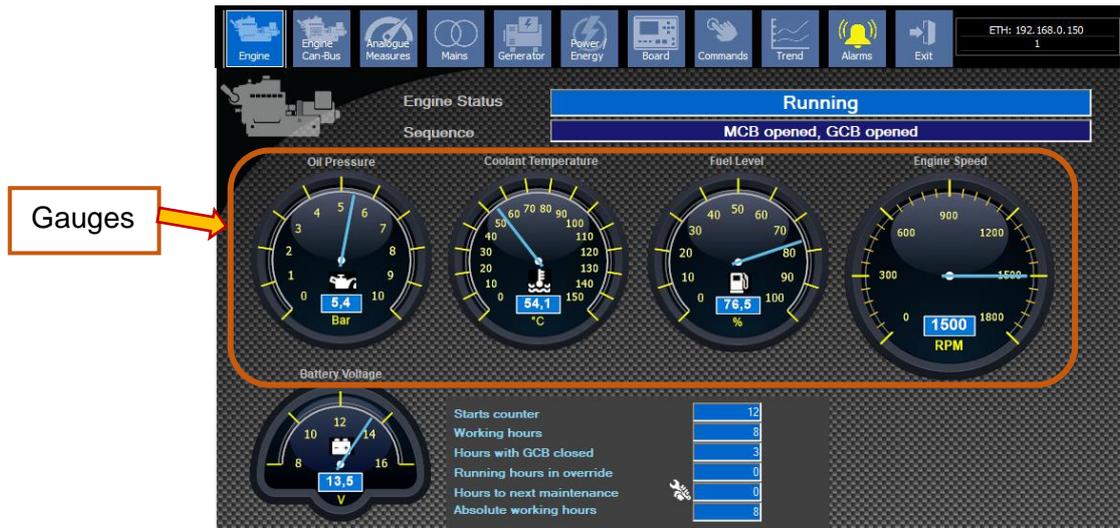
- **Simple Gauge kW:** Select simple gauge type for power display in layout.



**Board Window:**



- **Oil Pressure Gauge :** Displays the oil pressure instrument on the first page of the single window of the generator.
- **Cool. Temp. Gauge :** Displays the coolant temperature instrument on the single window of the generator.
- **Fuel Level Gauge :** Displays the fuel level instrument on the single window of the generator.
- **RPM Gauge :** Displays the engine speed gauge on the single window of the generator.

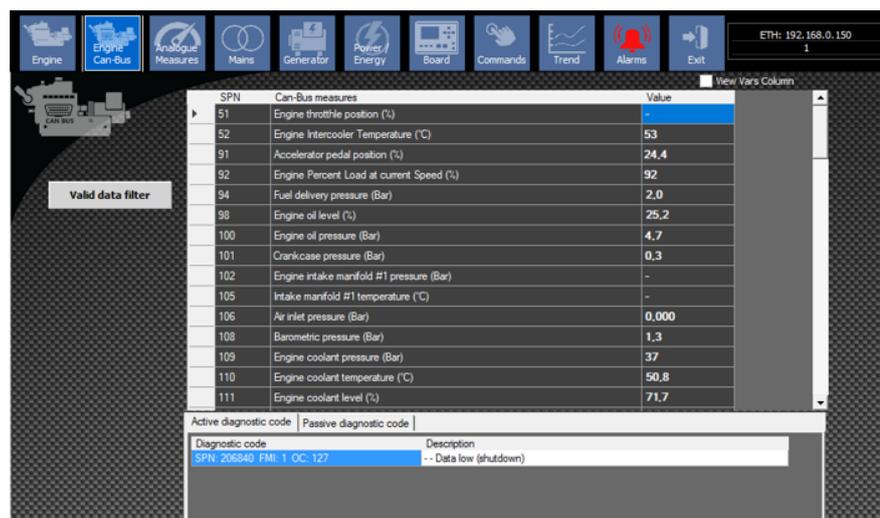


- **MCB Command** : Enables the MCB command on the layout.
- **Mode change commands**: View buttons to change the mode of the board (on the command page)



n.b.: not all boards allow mode switching via modbus.

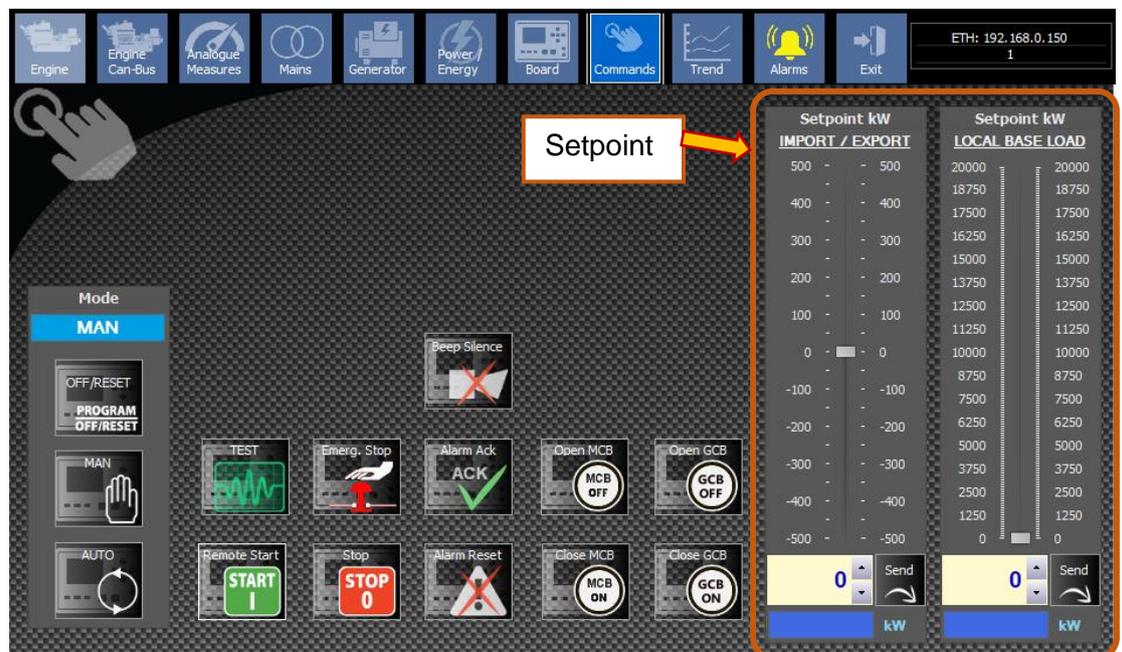
- **Engine CanBus**: Enables the display of the Can-Bus engine page.



- **Mains measurements**: Enables the display of the page containing instruments with mains measurements.

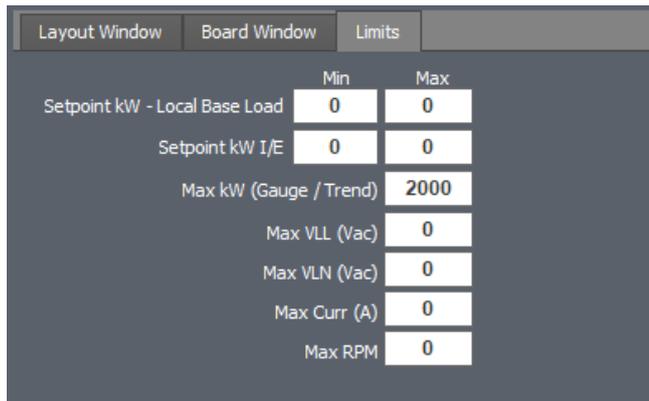


- **Setpoint kW – Local Base Load:** Displays the power setpoint bar for LocalBase Load.
- **Setpoint kW – Import / Export:** Displays the power setpoint bar for Import / Export.



**Limits:**

Allows you to set the full-scale values of graphs and gauges.



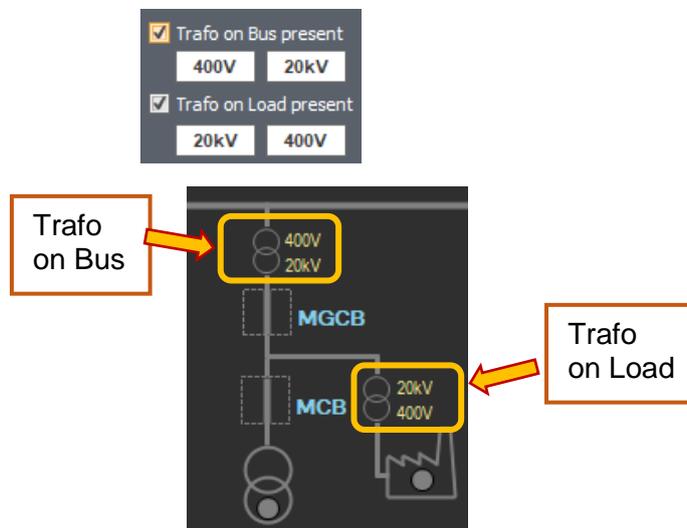
- **Setpoint kW – Local Base Load** : sets the minimum and maximum values for the active power setpoint in Local Base Load.
- **Setpoint kW I/E** : sets the minimum and maximum values for the active power setpoint in Import / Export.
- **Max kW (Gauge /Trend)** : sets the maximum value for Gauges and Trends related to concatenated voltages.
- **Max VLL (Vac)**: sets the full-scale value for instruments and diagrams related to concatenated voltages.
- **Max VLN (Vac)**: Defines the instrument's full scale for neutral voltages.
- **Max Curr (A)**: Defines the instrument's full scale for currents.
- **Max RPM** : Defines the instrument's full scale for engine speed.

#### 4.4.5.3.2 MC (Mains Controller)

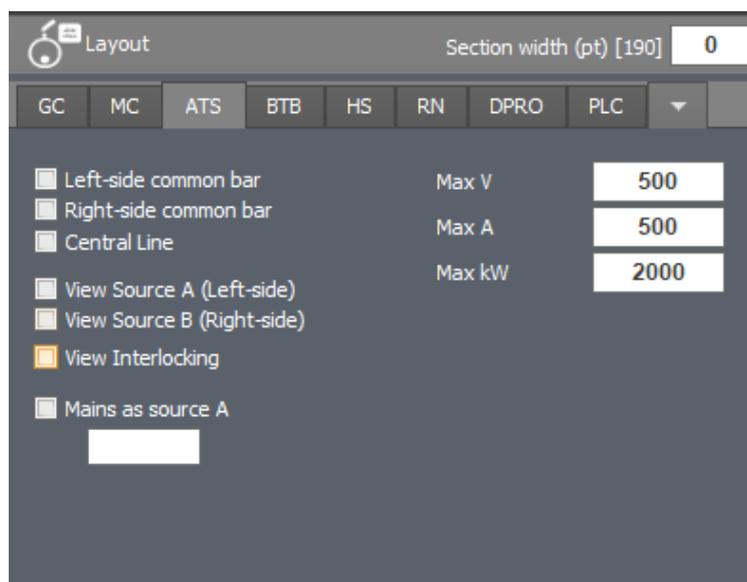


- **Mains and MCB Present**: Display the mains and MCB switch icon on the MC section in the layout.
- **Load Present**: displays the load in this MC section.

- **MGCB Present:** enables or disables the display of the MGCB switch.
- **Left-side common bar:** displays the common bar on the left side.
- **Right-side common bar:** displays the common bar on the right side.
- **MCB Breaker text:** customize MCB switch text.
- **MGCB Breaker text:** customize MGCB switch text.
- **Max VLL (Vac):** Set the maximum L-L Voltage value for gauges and graph on the MC board.
- **Max kW:** Set the maximum active power value that can be displayed on the measuring instruments and graph on the MC board.
- **Trafo on Bus present:** inserts the display of a transformer on the common bar (see image below). You can customize the values of the trafo.
- **Trafo on Load present:** inserts the display of a transformer on the Load (see image below). You can customize the values of the trafo.

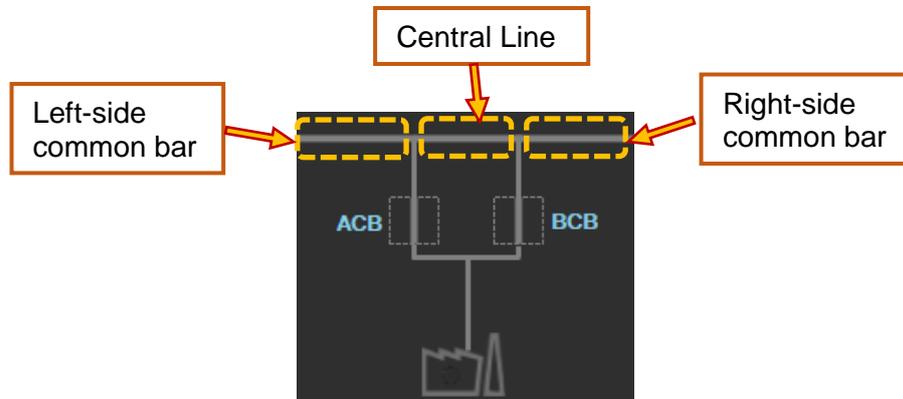


#### 4.4.5.3.3 ATS (Automatic Transfer Switch)



- **Left-side common bar:** displays the common bar on the left side.

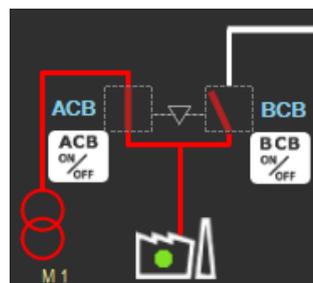
- **Right-side common bar:** displays the common bar on the right side.
- **Central Line :** joins the left and right sides of the common bar (which are normally separated).



- **View source A:** Displays the power source symbol for side A (left).
- **View source B:** Displays the power source symbol for side B (right).
- **View Interlocking:** displays the interlocking symbol.

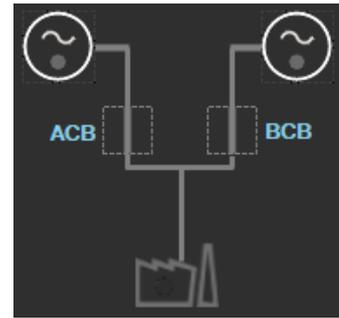
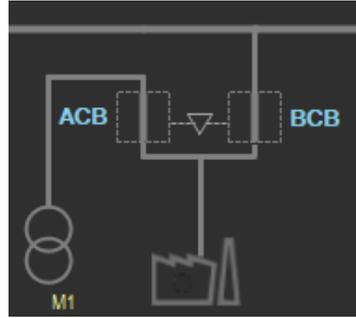
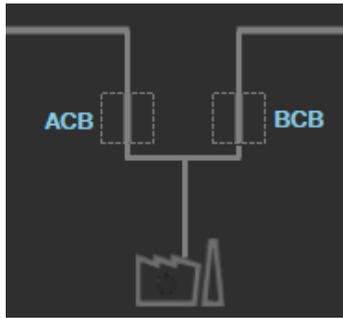
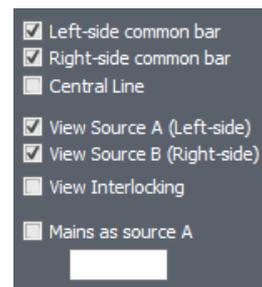
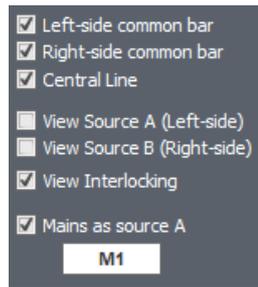
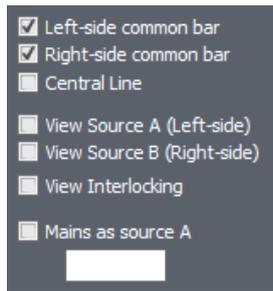


- **Mains as source A:** When source A can be considered a mains. It can be used in installations where there are multiple grids. It is possible to customize the mains identification text.

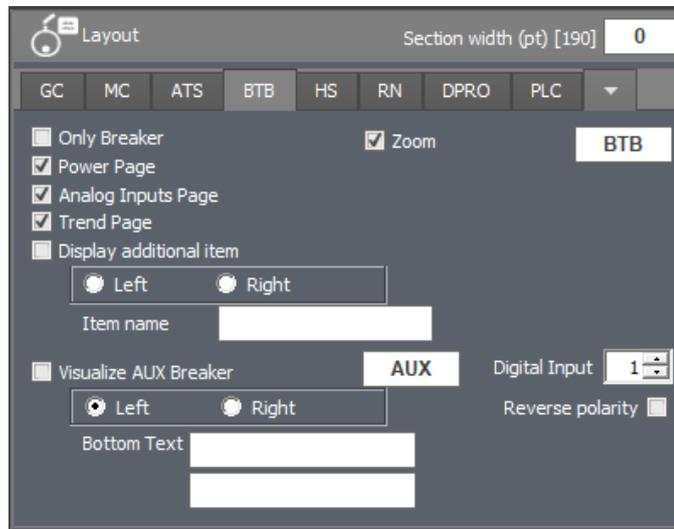


- **Max V:** Set the maximum voltage value that can be displayed on the various Measuring Instruments on the ATS board.
- **Max A:** Set the maximum current value that can be displayed on the various Measuring Instruments on the ATS board.
- **Max kW:** Set the full-scale value for the active power used on the trends and gauges for the ATS board.

Examples of uses with ATS:

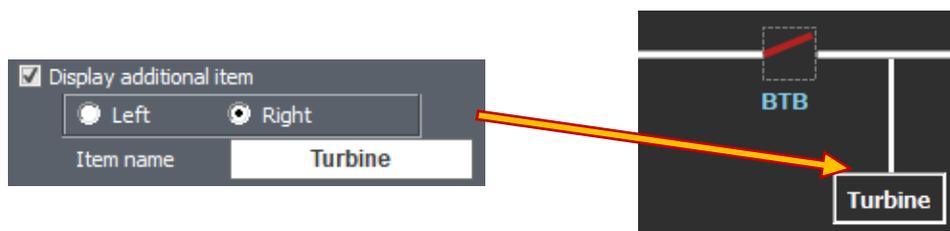


#### 4.4.5.3.4 BTB (Bus Tie Breaker)

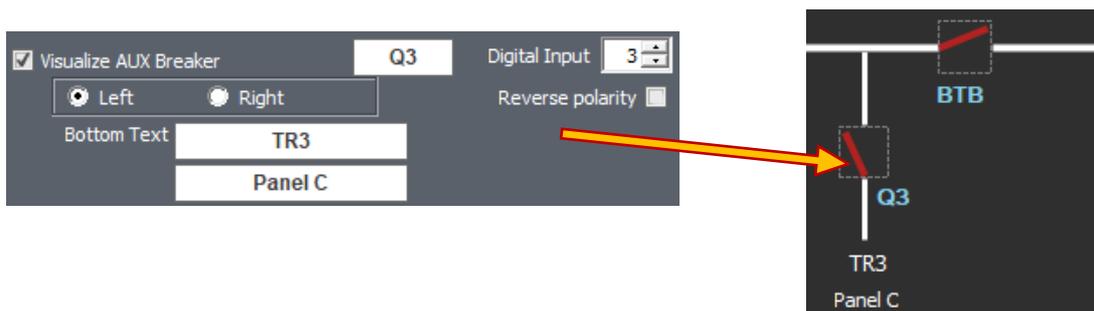


- **Only Breaker:** If it is active, only the breaker is displayed, thus hiding the data grid. It is used in installations where only the status of the BTB breaker is acquired.
- **Power Page:** Allows you to enable or disable the display of the powers page. Useful for hiding the powers page when currents are not acquired, so powers are not calculated.
- **Analog Inputs Page:** Enables the viewing of the controller's analogue input page.
- **Trend Page:** Enable the trend page. If deactivated, it will not be present.
- **Additional item:** Adds a generic object connected on the bus. You can place it on the right or left side of the BTB breaker, and you can enter the name.

The status of this element is not known and no parameters are measured, it is considered a passive element.



- **AUX Breaker:** adds a secondary Breaker to the right or left of the BTB breaker. You can assign a name to this breaker. It is also possible to acquire its status via a digital input on the BTB controller.
  - **Digital Input:** defines which input on the board detects the status of the auxiliary breaker.



- **Zoom:** Selects whether to display the Zoom button for opening the single control window.
- **BTB Text:** customise BTB breaker name.

#### 4.4.5.3.5 HS (Hybrid System)

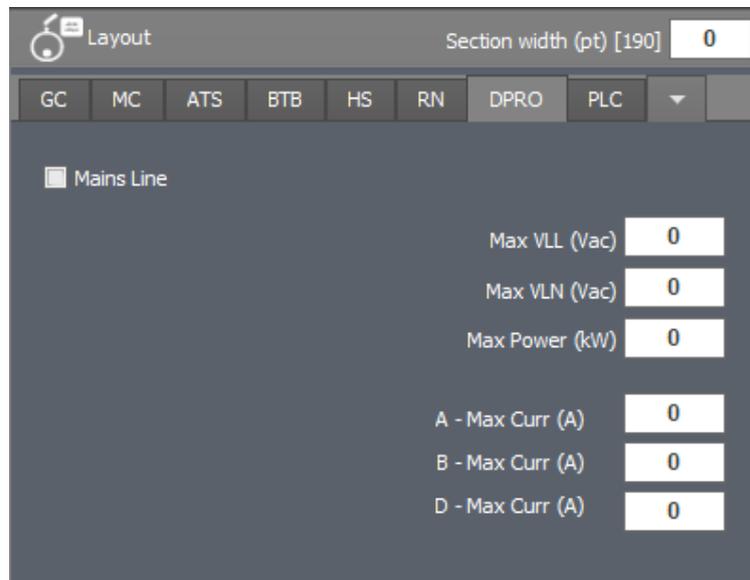
No options

#### 4.4.5.3.6 RN (ReNewable)

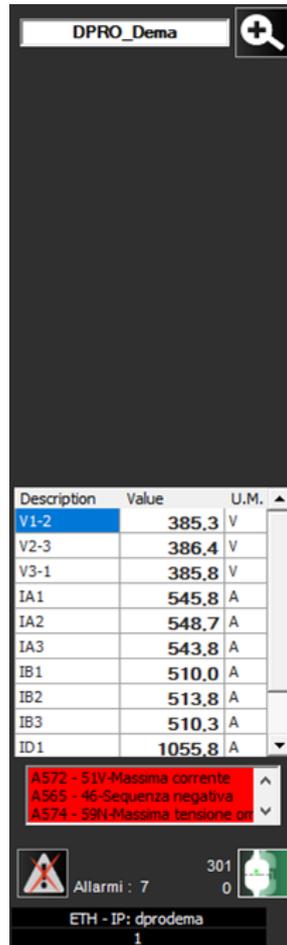


- **Left-side common bar:** displays the common bar on the left side.
- **Right-side common bar:** displays the common bar on the right side.

#### 4.4.5.3.7 DPRO (Protection Relay)



- **Mains Line :** displays the common bar.
- **Max VLL (Vac):** Set the full-scale value for the phase-to-phase voltages used on the trends and gauges.
- **Max VLN (Vac):** Defines the instrument's full scale for neutral voltages (trends and gauges).
- **Max Power (kW):** Set the full-scale value for the active power used on the trends and gauges.
- **A - Max Curr (A):** Set the full-scale value for currents .



Description	Value	U.M.
V1-2	385,3	V
V2-3	386,4	V
V3-1	385,8	V
IA1	545,8	A
IA2	548,7	A
IA3	543,8	A
IB1	510,0	A
IB2	513,8	A
IB3	510,3	A
ID1	1055,8	A

A572 - 51V-Massima corrente  
A565 - 46-Sequenza negativa  
A574 - 55N-Massima tensione on

Allarmi : 7 301 0

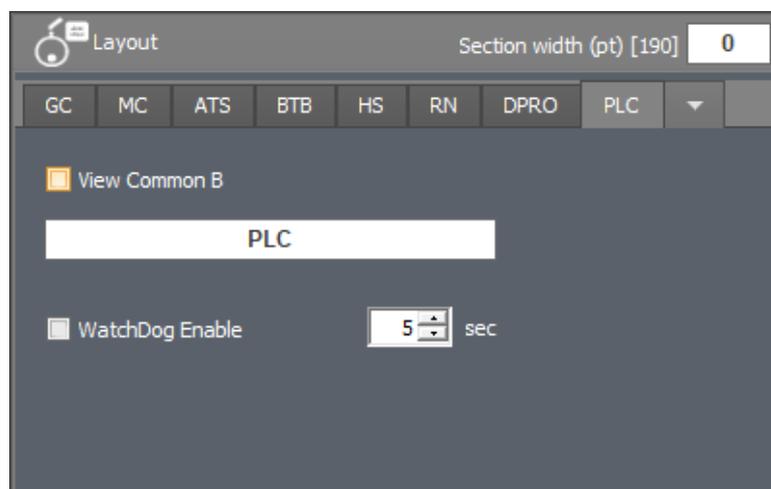
ETH - IP: dprodema  
1

Example of DPRO section in the layout

#### 4.4.5.3.8 PLC



**IMPORTANT** : This function is active only under license.



- **View Common Bar**: Displays on the layout the line representing the bus (mains).

- **PLC Name:** allows you to set a name / description that is displayed in the layout.
- **Watch dog:** Activates verification that the PLC program is running. A continuously incrementing counter must be implemented in the PLC. The counter is read by the supervisor, and if it is idle for longer than the set time, the "Communication Lost" warning is triggered.

#### 4.4.5.3.9 AUS (Auxiliary Device)



**IMPORTANT** : This function is active only under license.

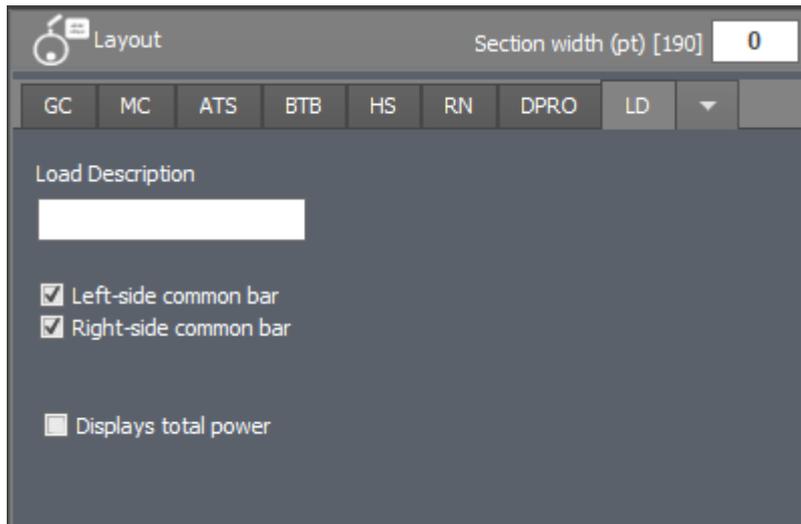
The auxiliary device involves the use of a specially compiled modbus definition file.



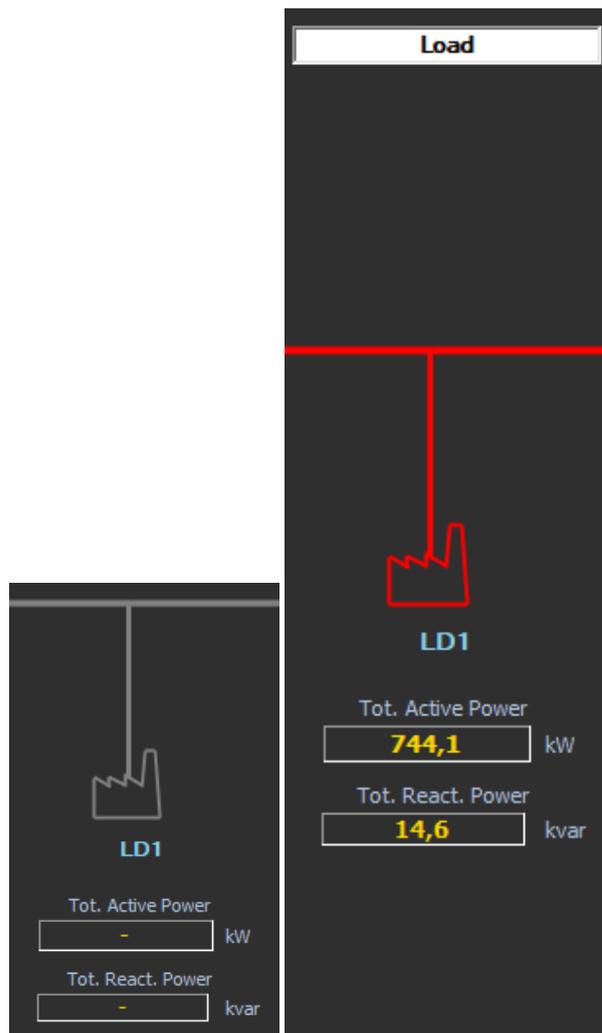
- **Device description** allows you to set a name / description that is displayed in the layout.
- **View Common Bar:** Displays on the layout the line representing the bus (mains).
- **Comm Lost Enable:** Activates the disconnected device check. When the communication timeout is exceeded, "Communication Lost" appears.
- **Debug – Enable Register Value:** Displays debug information related to the value read from the modbus register.

#### 4.4.5.3.10 LD (Load)

It only displays the load symbol. The status depends on the other layout units interconnected on the bus.

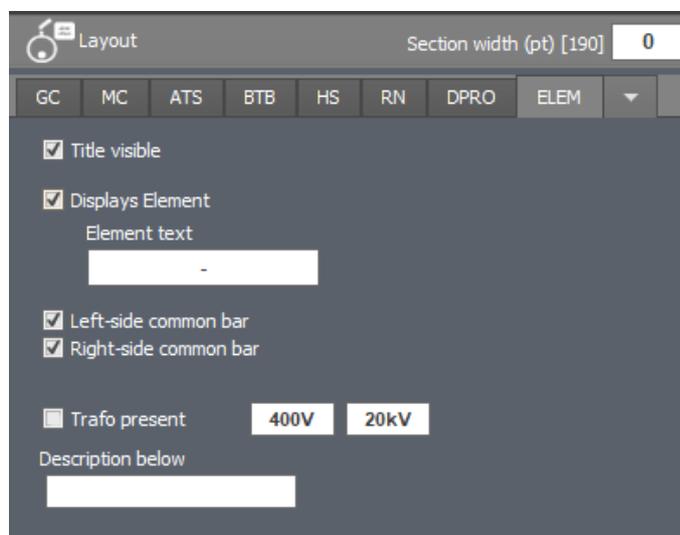


- **Load Description:** Allows you to set a name / description that is displayed in the layout.
- **Left-side common bar:** displays the common bar on the left side.
- **Right-side common bar:** displays the common bar on the right side.
- **Displays total power:** Displays the total power output read from the generators and available on the bus. Then totals kW and kvar of the connected groups that are on the bus and with GCB closed.

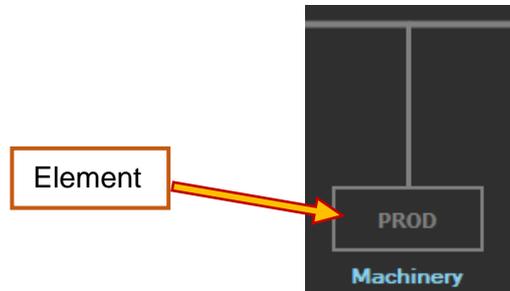


#### 4.4.5.3.11 ELEM (Generic Element)

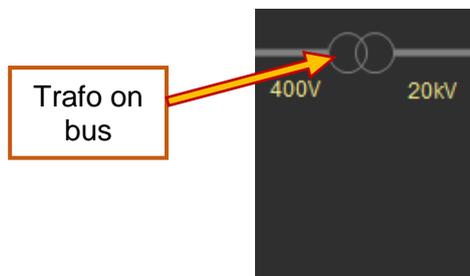
Inserts a generic element connected to the bus or a trafo on the bus. The state of this element depends on the state of the bus to which it is connected, thus on the units connected on the bus.



- **Title visible:** Is it possible to avoid displaying the title of the section.
- **Displays Element:** Enables display of the element box and defines the name to be displayed within the box.



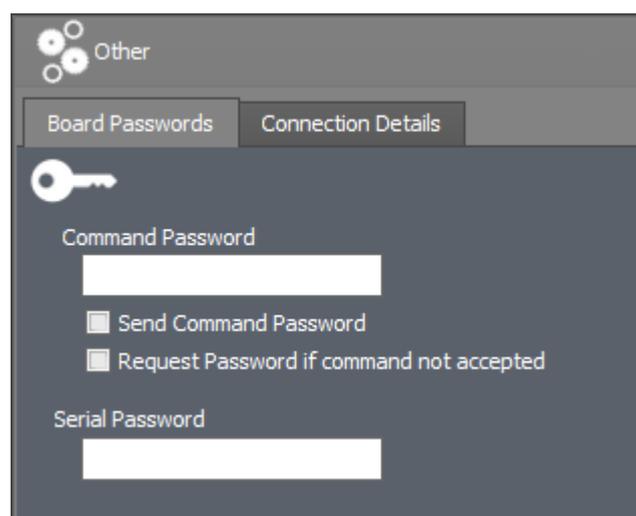
- **Left-side common bar:** displays the common bar on the left side.
- **Right-side common bar:** displays the common bar on the right side.
- **Trafo Present:** Inserts the display of a trafo with its transformation values.



- **Description below:** Adds additional text under the element.

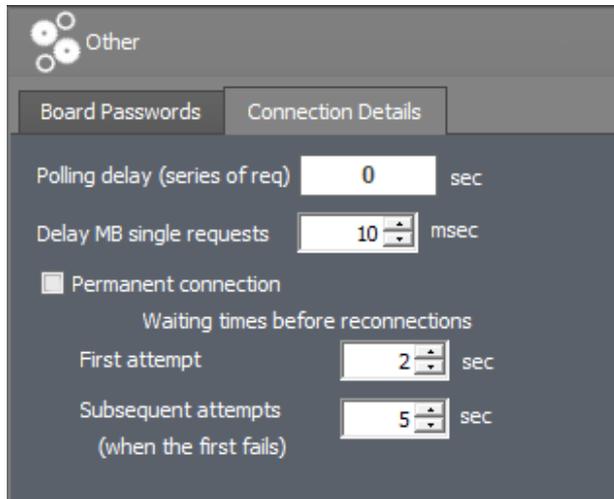
#### 4.4.5.4 Property Section 4

In this section you can configure the passwords in the board and the connection details.

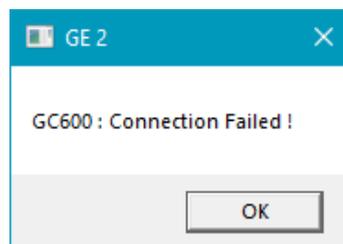


- **Command Password:** Enter the password that is sent to the board each time a command (e.g., Start/Stop) is requested.
- **Send Command Password:** Enables sending the password when a command is executed.

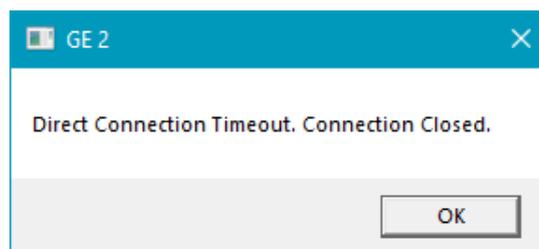
- **Request Password if command not accepted:** If the command is not accepted by the board it pops up a window to set the command password.



- **Polling Delay (series of req):** Set the delay time between one set of queries and the next (in seconds).  
Example:  
Entering a time 0sec results in continuous queries without delay.  
By increasing the time, a delay is introduced to limit data traffic.
- **Delay MB single requests:** Introduces a delay between a single modbus query and the next one (in milliseconds).
- **Permanent connection:** It establishes a continuous connection with the device.  
Used for fixed installations where the software must be always connected to the system. In this case if communication falls, connection attempts are automatically and continuously made.  
You have two different behaviors in case the communication goes into timeout:
  - **Disabled:** If the supervision fails to connect or when the communication drops, a warning message appears and the communication is closed.



Appears when supervision fails to connect from the first attempt already.



It appears when the connection was established but falls after the timeout.

- **Enabled:** When the communication falls down, the supervision performs recovery attempts according to the following parameters. It makes a first attempt, and then subsequent attempts with different timing. It keeps retrying. It is only the operator who can decide to disconnect permanently by pressing the Connect button.

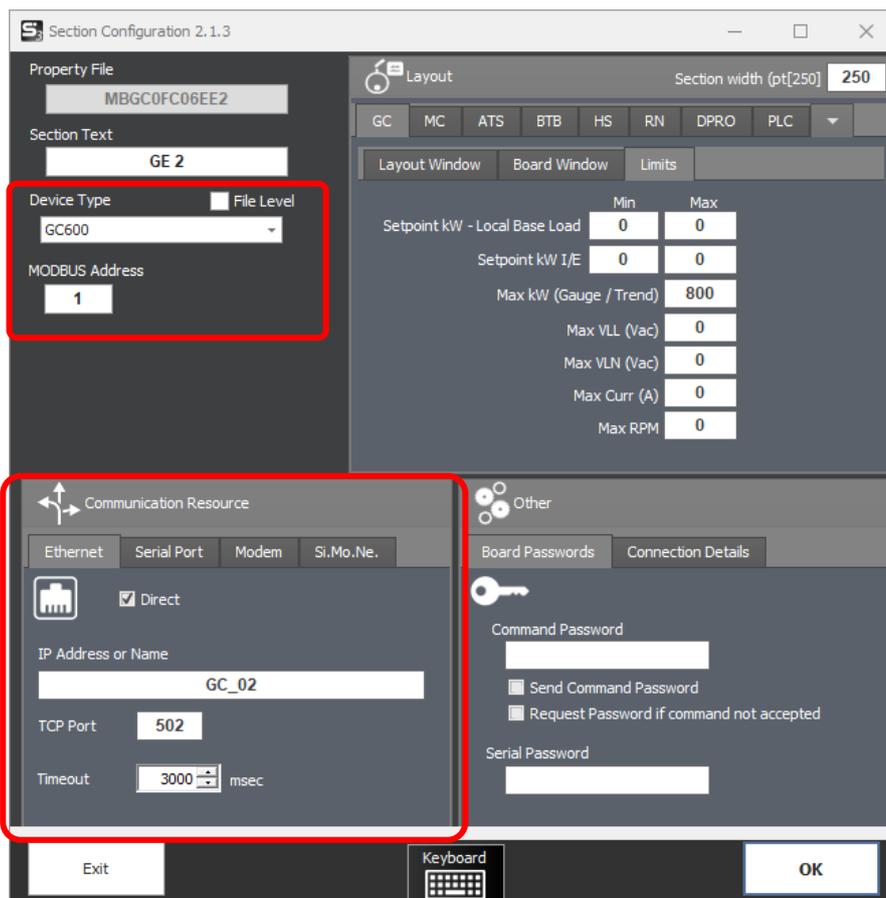
- **First attempt:** Determines how many seconds after communication falls to make the first reconnection attempt.
- **Subsequent attempts:** If the first reconnection attempt fails subsequent ones are made at a different cadence. This avoids burdening the program and communication channels unnecessarily.

## 5. Connecting to plant boards and devices

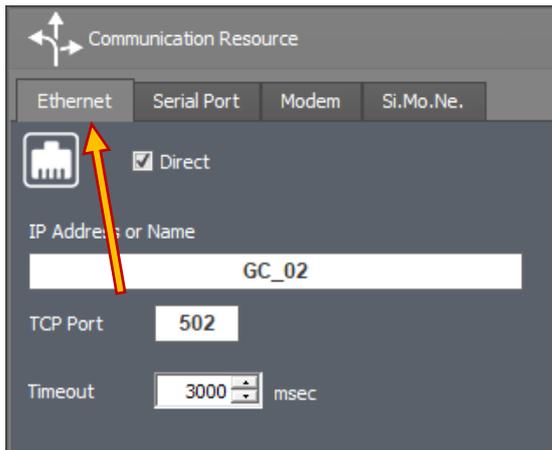
Before connecting to the boards or devices, it is necessary to check the port and communication parameters.

The PC can connect to the systems via the following communication ports: Ethernet, RS232 serial ports, RS485 serial ports, Modem.

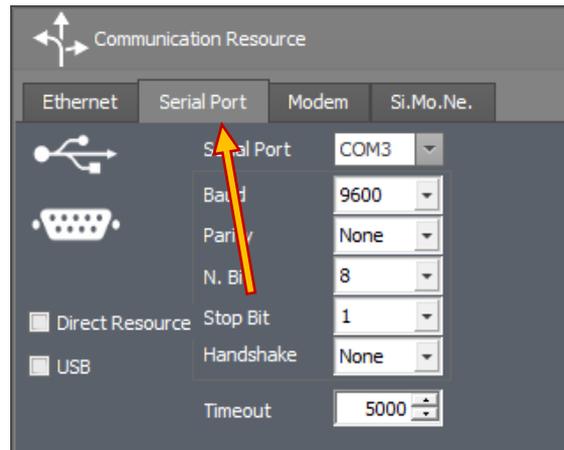
The communication parameters can be found in the properties of each board:



The selected tab in Communication Resource determines the type of interface to be used for connection:

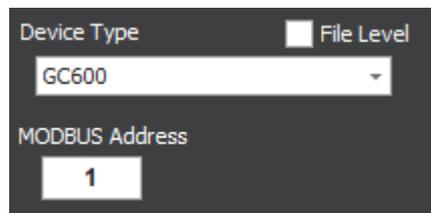


Ethernet port is selected



Serial Port is selected.

For more details on communication parameters, please refer to paragraph “4.4.5.2 Property Section 2”



## 5.1 Device Type

The first important thing to do is to select the type of board being connected. Each board has its own query sequence.

**! ATTENTION!** If no type is set, communication will not take place.

## 5.2 Modbus Address

Whatever the communication port used, the protocol supported by all devices is always Modbus, in the RTU variant on USB, RS232 and RS485 ports, in the TCP variant on the Ethernet port.

The Modbus protocol is a master/slave protocol, where the DEVICES always act as slave/server: that is, they transmit information only when suitably interrogated by the PC, which acts as master/client.

Modbus provides a numeric ID that uniquely identifies each slave/server. Each DEVICE, therefore, allows you to configure this numeric ID, independently for each of its communication ports. The default value for this ID is "1" for all communication ports, but, especially on RS485 networks, the operator can change it to allow the simultaneous connection of different DEVICES to the same network.

Before connecting to a DEVICE, it is therefore necessary to configure the Modbus address of the DEVICE itself.

Configure the Modbus address of the DEVICE you want to connect with (in most cases it will be "1").

## 5.3 Connecting via the Ethernet port

Many DEVICES are equipped with an Ethernet port that complies with all standards. You can also connect DEVICES not equipped with an Ethernet port to an Ethernet network using a converter (DANCE DEVICE).



You can use this port to connect the DEVICE to an existing network (to a switch or to a router) or directly to the Ethernet port of a PC. All types of cables on the market are suitable, straight cables of type A or B and cross-over, because the DEVICES support the MDI/MDIX function for self-negotiation. Use UTP, STP or FTP network cable, with CAT5 or higher category.

The Ethernet port of the DEVICE manages two LEDs:

- Green: communication speed (off: 10 Mbps, on: 100Mbps).
- Yellow: lights up during data transfer through the port.

DEVICES fully support the basic protocols of an Ethernet network:

- DHCP (dynamic assignment of the IP address).
- DNS (automatic association of a name to the assigned IP address).
- TCP/IP.

By default, the DEVICE is set up to use the DHCP protocol. However, it is possible to disable this protocol and manually assign the IP address, the sub-net mask, and the network gateway address. See the DEVICE documentation for configuring the Ethernet port parameters.

** INFORMATION!** to allow communication among two DEVICES connected to an Ethernet network, the IP address of both, the sub-net mask and the IP address of the network gateway are of particular importance. An incorrect configuration of these parameters prevents correct communication. The description of the function of these parameters is beyond this document. Furthermore, if you are going to use the DHCP protocol (default option on both DEVICES and PC), the configuration of these parameters is automatic. If you do not use the DHCP protocol and you do not know how to configure these parameters, contact your network administrator or your IT manager.

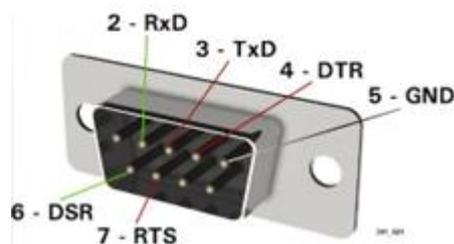
In the "IP address or name" field you can enter the IP address of the controller, or the DNS name. The latter is useful in case we are in a network with DHCP where the IP address might be reassigned.

Select the "Explicit IP address" option, then enter the real IP address (or DNS name) assigned to the DEVICE (visible on the DEVICE display) in the "IP address or DNS name" field.

The "TCP Port" field normally requires the value "502". Port 502 is, in fact, the standard one for the "Modbus/TCP" protocol used by DEVICES. Only in very special cases ("port forwarding" for example) is it necessary to change the TCP port: in these cases, contact the network administrator or IT manager.

## 5.4 Connecting via the RS232 port

Some DEVICES are equipped with a serial port compatible with the EIA-RS232 standard specifications, accessible via a 9-pole (male) CANON connector, with the standard pinout of a PC:



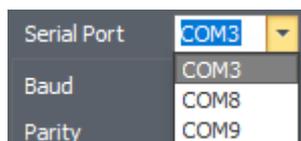
The pins relevant for communication are:

2. RX
3. TX
5. GND

To connect the PC to the DEVICE via its serial port, use an RS232 cable with two 9-pole (female) CANON type connectors. The cable must cross pins 2 and 3 of the two connectors and must instead connect pins 5 directly.

New PCs rarely provides RS232 ports. In these cases, it is possible to find RS232/USB converters on the market: see the manufacturer's documentation for installing the converter (with its driver). These converters provide a standard RS232 port, accessible with a standard 9-pole (male) CANON connector identical to that of the DEVICES. Once installed and connected to the PC, Windows automatically recognizes these converters and assigns them a virtual COM port.

SS3 automatically recognizes all COM ports (both physical and virtual ones) and lists them among the possible "communication resources" in the "drop-down box":



In the example, there is one physical (COM3) and two virtual (COM8 and COM9) serial ports. Use the "drop-down box" to select the desired RS232 serial port.

Communication on the serial port requires the configuration of some parameters:

- The communication speed (baudrate).
- The number of bits transmitted for each byte of data.
- The number of control bits (parity) transmitted after each byte of data.
- The number of STOP bits transmitted after each data byte.

You can configure these parameters both on the DEVICES and on the serial ports of the PC: make sure they are configured in the same way, otherwise communication will not be possible.

The standard configuration of the DEVICES is:

- 9600 bps (bit per second).
- 8 data bits.
- 1 stop bit.
- No control bits (parity).

Consult the DEVICE documentation to verify/modify these parameters.

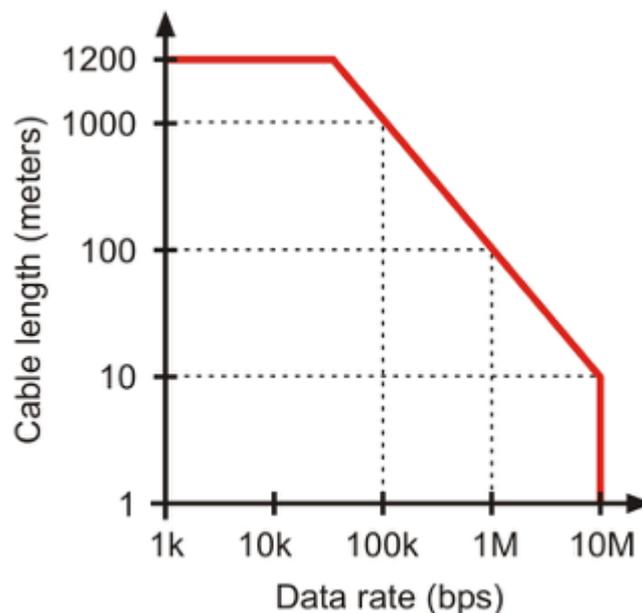
**i** **INFORMATION!** Modbus RTU/TCP always requires 8 data bits.

**i** **INFORMATION!** The RS232 standard allows a maximum cable length in the order of ten meters.

## 5.5 Connecting via the RS485 port

**i** **INFORMATION!** the RS485 standard allows to cover longer distances than the RS232 standard, but, on the other hand, requires more attention in the wiring. You must use twisted and shielded cables, and you must provide a 120 Ohm termination resistance on the two ends of the connection cable.

The maximum cable length varies according to the communication speed:



Some DEVICES are equipped with a serial port compatible with the standard RS485 specifications. As a rule, they also integrate the termination resistor, leaving the operator the ability to switch it on/off. See the DEVICE documentation for the type of connector available, for how to insert the termination resistor, and for configuring the characteristics of the serial communication.

PCs usually does not provide RS485 ports. You can buy RS485/USB converters on the market: see the manufacturer's documentation for installing the converter (with its driver). Once installed and connected to the PC, Windows automatically recognizes these converters and assigns them a virtual COM port (as described in the previous chapter).

SS3 automatically recognizes all COM ports (both physical and virtual ones) and lists them among the possible "communication resources" in the "drop-down box" in the "Communication Resource" section.

The RS485 ports have the same communication configuration parameters as the RS232 ports. See the description in the previous paragraph for the configuration of these parameters, both on the DEVICES and on the PC.

### 5.5.1 Connecting via SiMoNe to mobile networks (GPRS, LTE)

You can also connect DEVICES to the Internet. Some of them integrate a GPRS or LTE modems inside ("Link" controllers); others use external modems (REWIND3 DEVICE). See the DEVICES documentation for the characteristics of the supported GPRS networks (2G / 4G etc.).

In these cases, you must insert a SIM card inside the modem. You can require the SIM card with a public and static IP address. In this case, you can use SS3 to connect to the DEVICE via the Internet simply following the instructions provided in the previous chapter, entering the static and public IP address provided by the mobile operator.

More often, however, the IP address of the SIM card is neither public nor static (so the remote operator cannot know it). In these cases, it is possible to register the DEVICE on the SI.MO.NE platform, which will, among other things, store the IP address assigned to the DEVICE from the mobile operator in a database. Refer to the DEVICE documentation for the configuration of the parameters relating to the SI.MO.NE platform. Please refer to your distributor for information on the SI.MO.NE platform.

On SS3, configure the access to the SI.MO.NE platform :

The screenshot shows the 'Communication Resource' configuration window in SS3. The 'Si.Mo.Ne.' tab is selected. The 'Enable Si.Mo.Ne.' checkbox is checked. The 'Server - IP address or name' field contains 'simone.company.com'. The 'Server - TCP port' field contains '53052'. The 'Username' field contains 'aaa'. The 'Password' field contains '\*\*\*\*\*'. The 'Unit' field contains 'GE2'. There is a small icon of a mobile phone next to the password field.

Enter the IP address and TCP port of the SIMONE server provided by your distributor. Also enter the username you used to register on the platform, and the relative password.

Once registered the DEVICE into the SI.MO.NE platform and communicates regularly with it, you can use BOARDPRG4 to connect to the DEVICE: click on the "Configure the communication resource" item in the "Communication" menu or on the equivalent button in the "bar commands "

Select the "SI.MO.NE." tab, then enter the UNIT name used during registration on the SI.MO.NE platform (in the previous example "GE2").

**i** **INFORMATION!** To register a DEVICE operating on the GPRS network in the SI.MO.NE platform, you must ask the mobile operator to remove the NAT feature ("Network Address Translation") from the SIM card. In practice, the IP address assigned by the mobile operator to the SIM card must be bidirectional, i.e., it can be used both by the DEVICE to connect to the SI.MO.NE platform, and by the SI.MO.NE platform to connect to the DEVICE.

## 5.6 Connecting via the USB port

Many DEVICES are equipped with a USB 2.0 port.

Despite this, it is fair to say that the USB port is recommended only for configurations or any connection tests.

 **ATTENTION!** On installations, it is recommended to use communications ports more suitable for industrial environments such as Ethernet and RS485.

The USB protocol specifications do not allow its permanent use in industrial environments, due to the limited length of the cable and the high sensitivity to electrical noises. For this reason, insert the connection cable into the USB port of the DEVICE **only when necessary, and remove it when you finish the operation.**

Most DEVICES provides a USB type B connector. Some of them provides “mini-USB type B” connectors, and some with USB type A connectors. Consult the DEVICE documentation for information on the type of connector used. Depending on the connector type, obtain one of the following cables:



Once you have the cable, use it to connect the PC to the DEVICE.

## 6. How to use SS3

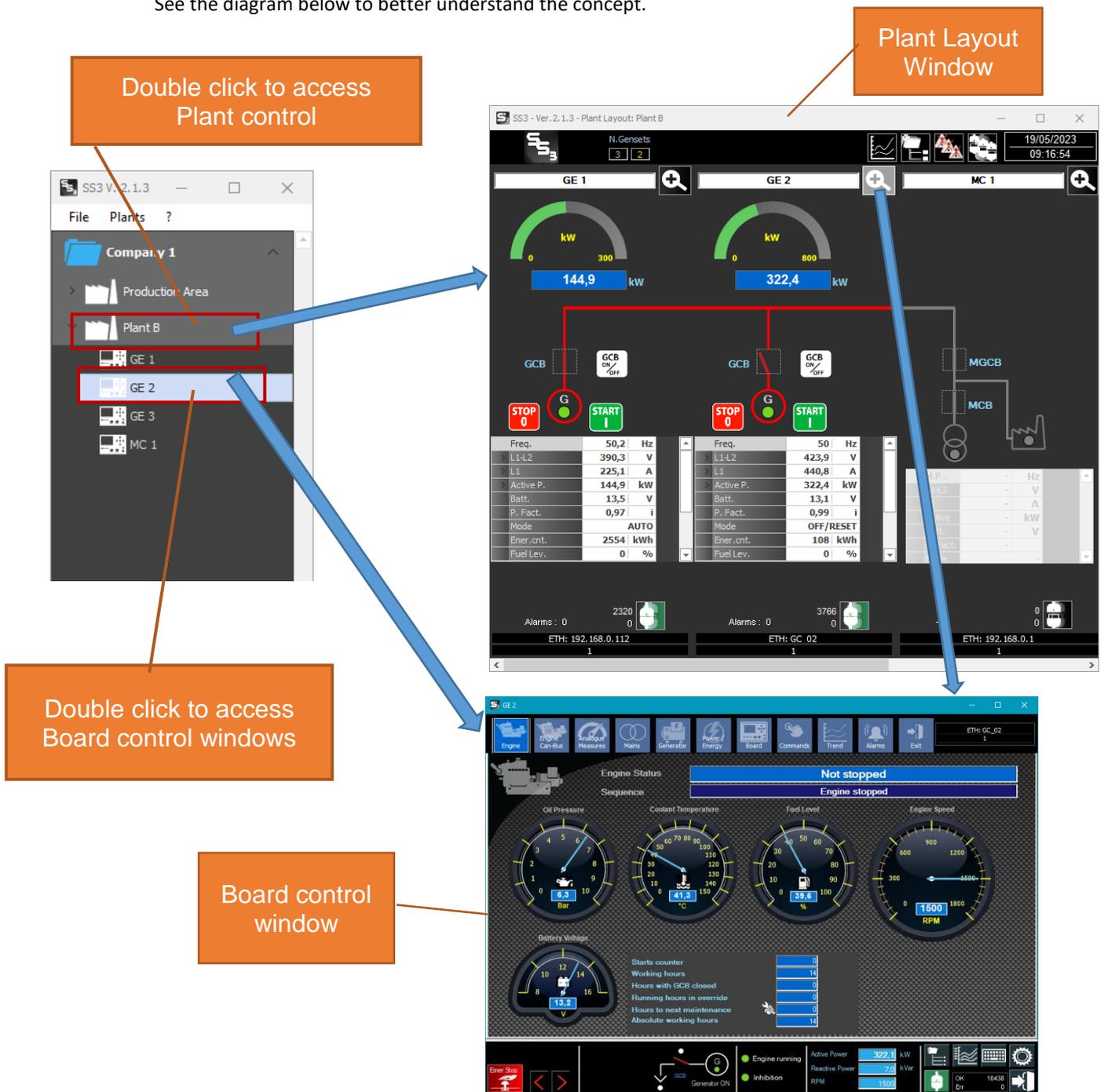
After configuring a plant we can move on to its use.

We basically have two viewing modes : layout (where I can see all the tabs of a plant), Single Control (where I access the individual tab in detail).

To view the layout, simply double-click on the plant icon (factory image).

To open the Single Control Window you can double-click on the board icon, , or click on the magnifying glass in the layout window.

See the diagram below to better understand the concept.



## 6.1 Plant layout window description

The plant layout window contains all the elements defined in the plant. It has a variable appearance depending on the number of boards in it, and their type.

## 6.2 Structure of the plant layout window

The window is divided into 3 parts:

- Information bar
- Page area
- Bottom page



### 6.2.1 Information bar

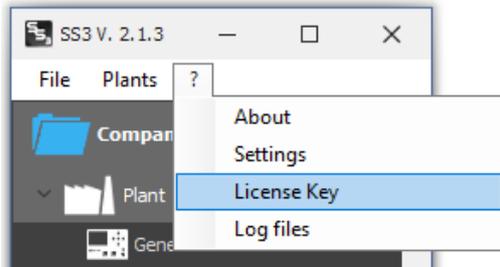


Company logo. It is possible to customize the logo (see paragraph 0

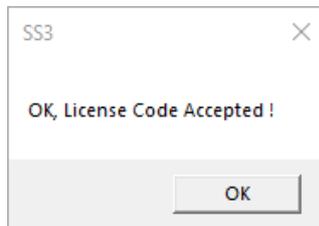
## License



**Important** : The application is free to download and can be used in basic functionality without a license. However, there are some optional functionalities that require the entry of a license code to be used. For the use of these features (indicated in the next section) please contact the business office. The procedure for license activation is given below:



Communicate the indicated MAC code to distributor.  
You will be sent the corresponding license key.  
Enter it in the "Key" field and press OK.



**Attention** : the key is valid only for the PC from which it is requested.

## 6.3 Optional functions

The license enables the following additional features:

1. **Customizable trends**

A new graph window is made available where you can enter the measurements you want to monitor in real time.

2. **Email sending on event**

You can configure the type of event, email addresses of recipients to send notifications to, SMTP server to be used.

3. **Data logging from PC** (to txt or csv file).

During connection, it is possible to automatically record data and events read from the boards. (It is possible to configure which data and how often)

4. **PLC Section**

Allows you to view states coming from a PLC.

5. **Generic Device Section**

Displays measurements read from a generic modbus device that can be configured via file.



Information: For more details regarding licensed functions refer to Chapter “0-

**Licensed features“**

## 7. Licensed features

The functions that are activated by entering the license code are listed below.

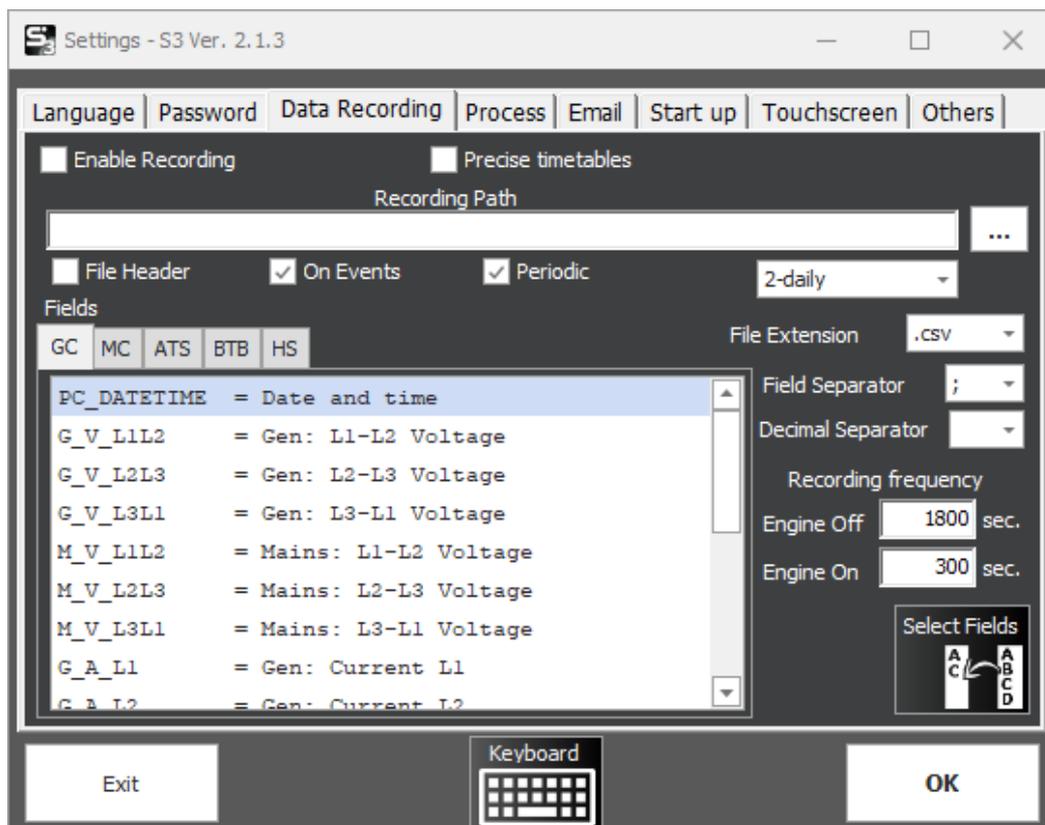
### 7.1 Data Recording

Optional function (active with license)

Allows recording of measurement data collected by PC.

When supervision is connected to the plant it can save data to a selectable path.

Data is saved in text format to .txt file or .csv file that can be imported to Excel.



- **Enable recording:** Enables/disables recording.
- **Precise timetables:** Allows aligning times on exact minutes. The recordings are still synchronized to the modbus readings, but it expects the time to be zero minutes or with multiple minutes of the recording time.
- **Recording path:** indicates the folder (network or PC) where to make the recording.

**Default=** C:\ProgramData\Sices\SS3\PC\_Data

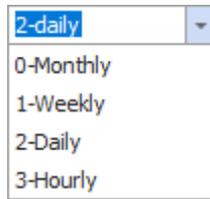
Subfolders will then be automatically created, one for each board.

Subfolder example (Consisting of the identifiable name of the section and the text of the section) :

**MBGC0FA5BA6C\_Generator\_1**

The file name is automatic based on the date and time and based on the type of recording (daily, monthly, hourly).

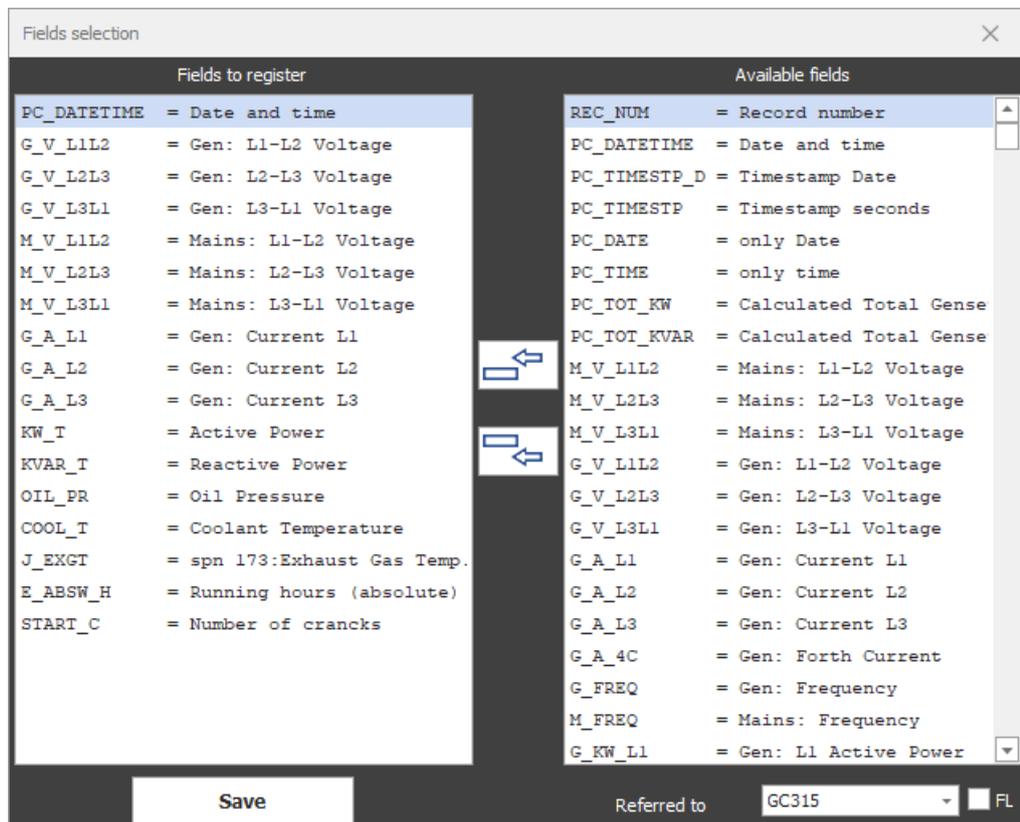
- **On Events:** When an event occurs it is recorded in a text file Events\_YYYY\_MM.txt.  
 Example : Events\_2023\_04.txt
- **Periodic:** enables periodic recording with the set frequency.
- **Subdivision of data:**



- o **Monthly:** creates a file for each month. File name : Date\_YY\_MM (YY=year, MM=month).
- o **Weekly:** creates a file every week. File name: Data\_YY\_WW (YY=year, WW=week).
- o **Daily:** creates a file every day. File name: Data\_YY\_MM\_DD (YY=year, MM=month, DD=day)
- o **Hourly:** creates a file every hour. File name : Data\_YY\_MM\_DD\_HH (YY=year, MM=month, DD=day, HH=hour)

- **File extension:** you can select .txt or .csv extension
- **Field separator:** character that separates fields in a data record.
- **Decimal separator:** indicates which separator to use for decimal values (period or comma).
- **Recording frequency**
  - o **Engine Off:** recording frequency when engine is stopped.
  - o **Engine On:** recording frequency when the engine is running

Select the fields to be recorded:



All available fields appear on the right. On the left are the fields that will be recorded.

**Referred to** : selects the card model from which to take the available fields.

**FL** : adds in parentheses the version of the descriptor file and the board type.

With the two middle buttons you can add of fields above or below the selected row.

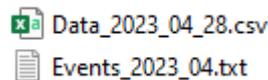
To delete a field simply press Delete on that field.

Press "Save" to save the setting of the fields.

### 7.1.1 Example of recordings

The following is an example of registration.

Files are of 2 types : data and events.



Example of Data file contents:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	PC_DATETIME	G_V_L1L2	G_V_L2L3	G_V_L3L1	M_V_L1L2	M_V_L2L3	M_V_L3L1	G_A_L1	G_A_L2	G_A_L3	KW_T	KVAR_T	OIL_PR	COOL_T	J_EXGT	E_ABSW_I	START_C
2	28/04/2023 09:54	424	380,2	374,2	0	0	0	7,4	7,5	7,4	5	0,1 -	-	-	-	0	0
3	28/04/2023 09:55	424	380,2	374,1	0	0	0	7,4	7,5	7,4	5	0,1 -	-	-	-	0	0
4	28/04/2023 09:55	424,1	380,2	374,1	0	0	0	7,4	7,5	7,4	5	0,1 -	-	-	-	0	0
5	28/04/2023 09:56	424	380,2	374,1	0	0	0	7,4	7,5	7,4	5	0,1 -	-	-	-	0	0
6	28/04/2023 09:56	424,1	380,2	374,1	0	0	0	7,4	7,5	7,4	5	0,1 -	-	-	-	0	0

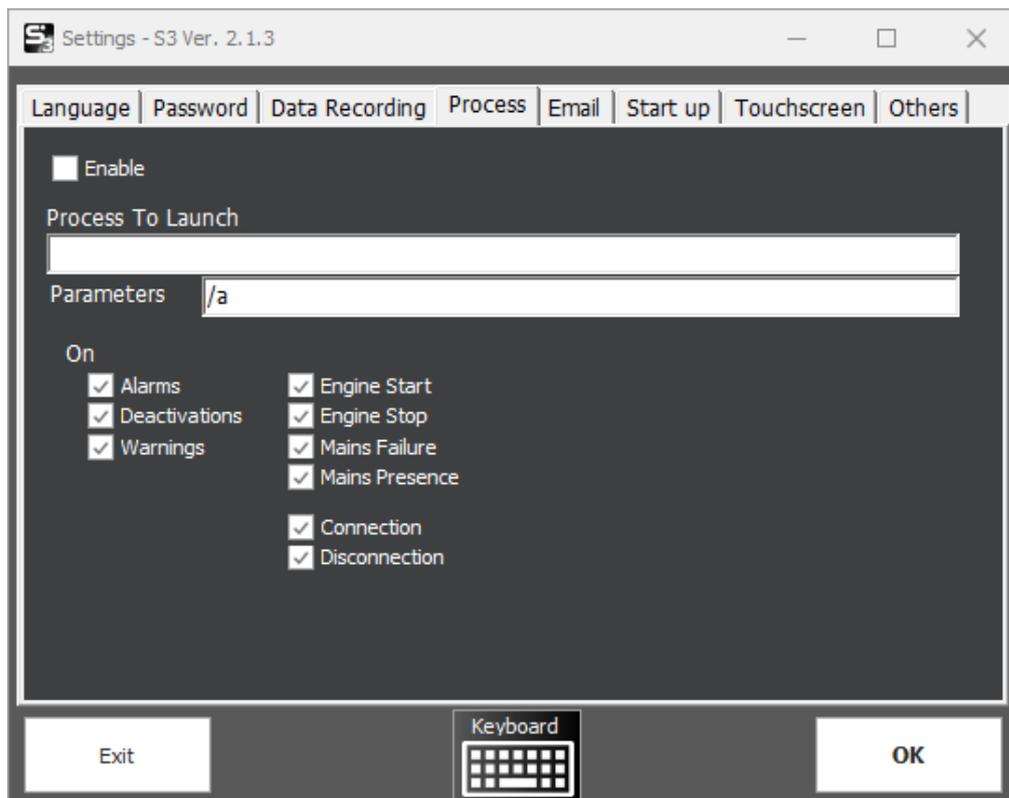
Example of event file contents:

28/04/2023 10:31:59 - W028 Low fuel level

28/04/2023 10:35:39 - A021 Engine not stopped

## 7.2 Process

Optional function (active with license)



Allows you to start an application or process when an event occurs.

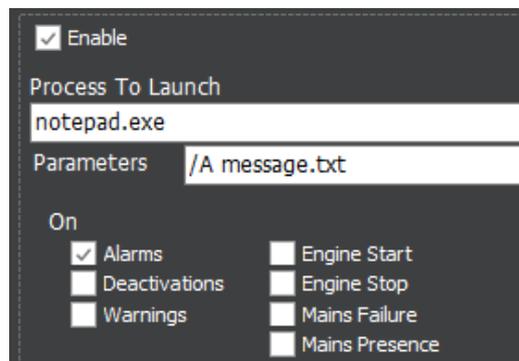
It is possible to pass some parameters to the application.

Parameters depend on the application being launched. Refer to the documentation of the external application.

The possibility is given to select the events that trigger the process.

It can be used, for example, to activate a program that sends text messages or makes phone calls to alert the operator when an anomaly occurs.

Example:

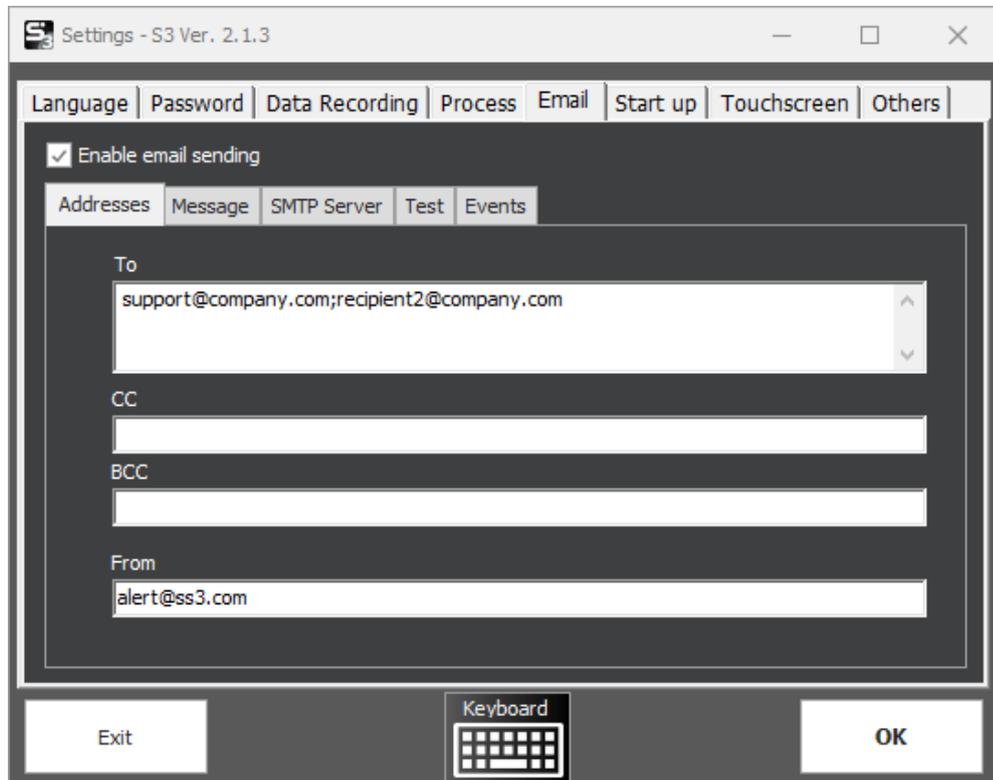


When an alarm occurs Notepad is launched which will display the contents of the message.txt file.

## 7.3 Email

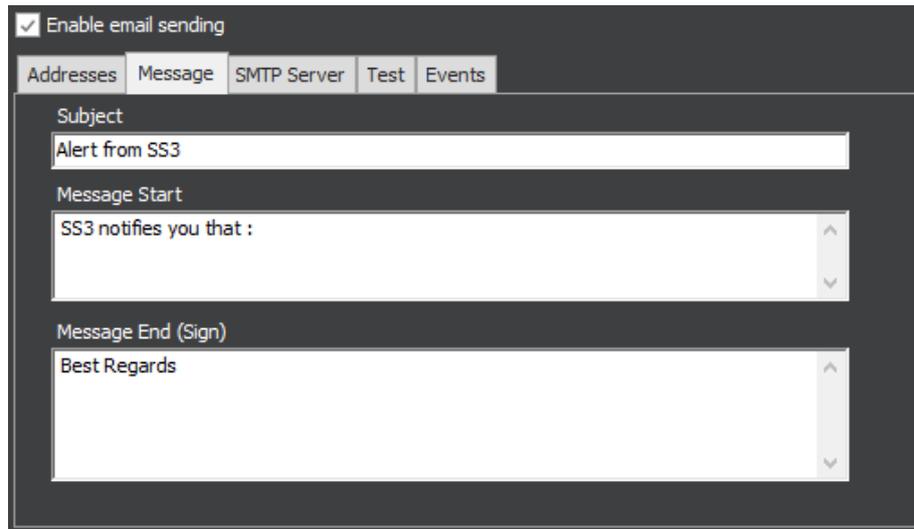
Optional function (active with license).

Allows an email to be sent to one or more recipients when certain events occur.



Set direct, CC and BCC recipients. Multiple email addresses can be set separated by semicolon (;)  
Indicate sender: email address of the person sending the email

- **Message:**



Enable email sending

Addresses Message SMTP Server Test Events

Subject  
Alert from SS3

Message Start  
SS3 notifies you that :

Message End (Sign)  
Best Regards

- o **Subject** : set the subject of the email. (Ex: Event from Supervisor)
- o **Message Start**: initial text of the message (Ex: The supervisory system reports: )
- o **Message End**: enter the final part of the message (signature, number to contact, etc.).

- **SMTP Server:**



Enable email sending

Addresses Message SMTP Server Test Events

SMTP server  
smtp.gmail.com

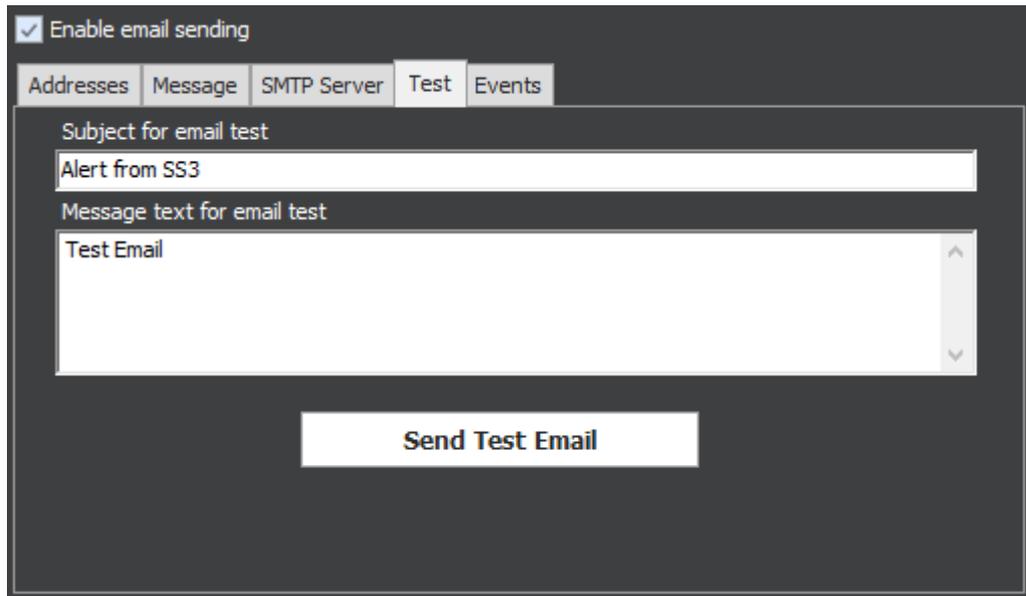
Port 587  Enable SSL

SMTP User  
user1000@gmail.com

Password  
\*\*\*\*\*

- o **SMTP server**: address of the mail server.
- o **Port**: port used for communication with the SMTP server.
- o **Enable SSL**: Activate SSL (Secure Sockets Layer).
- o **SMTP user**: username for access to the SMTP server.
- o **Password**: password to access the SMTP server.

- **Test :**



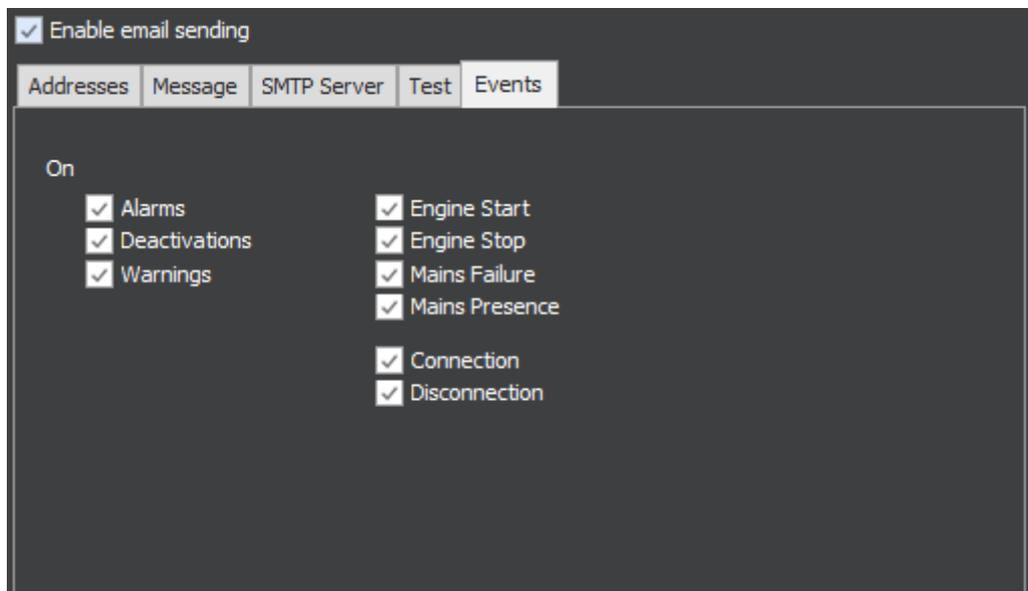
The screenshot shows the 'Test' tab of the email configuration interface. At the top, there is a checked checkbox labeled 'Enable email sending'. Below this, there are five tabs: 'Addresses', 'Message', 'SMTP Server', 'Test', and 'Events'. The 'Test' tab is active. It contains two text input fields: 'Subject for email test' with the value 'Alert from SS3', and 'Message text for email test' with the value 'Test Email'. A 'Send Test Email' button is located at the bottom center of the form.

Allows you to carry out tests to verify the sending of emails.

When the "Send test email" button is pressed, an email is immediately sent to the set recipients.

- **Events :**

Selects which types of events generate the sending of the email.



The screenshot shows the 'Events' tab of the email configuration interface. At the top, there is a checked checkbox labeled 'Enable email sending'. Below this, there are five tabs: 'Addresses', 'Message', 'SMTP Server', 'Test', and 'Events'. The 'Events' tab is active. It contains a section labeled 'On' with a list of events, each with a checked checkbox: 'Alarms', 'Deactivations', 'Warnings', 'Engine Start', 'Engine Stop', 'Mains Failure', 'Mains Presence', 'Connection', and 'Disconnection'.

## 7.4 Configurable trends

Optional function (active with license).

Configurable trends allow up to 10 real-time measurements to be selected and displayed:



To access configurable trends:

When active in the graph section, the button "Tr. Manager" :



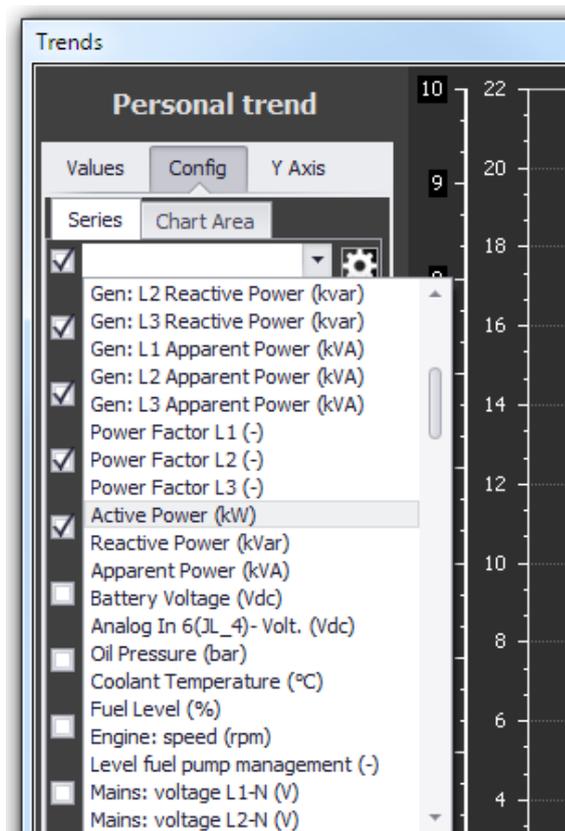
And at the bottom right of the single generator window:



On first access, the window without measures will appear:

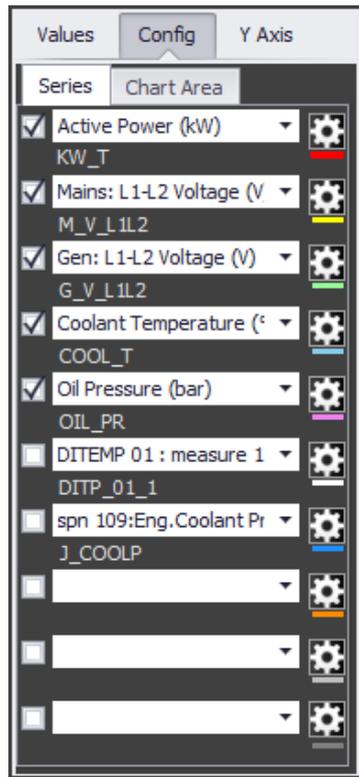


It is possible to enter the desired measurements by selecting the "Config" panel and opening the list of available variables.

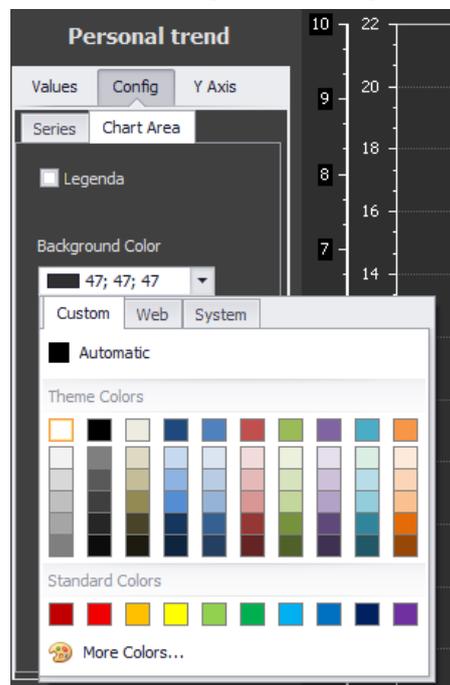


List depends on tab (taken from tab descriptor file)

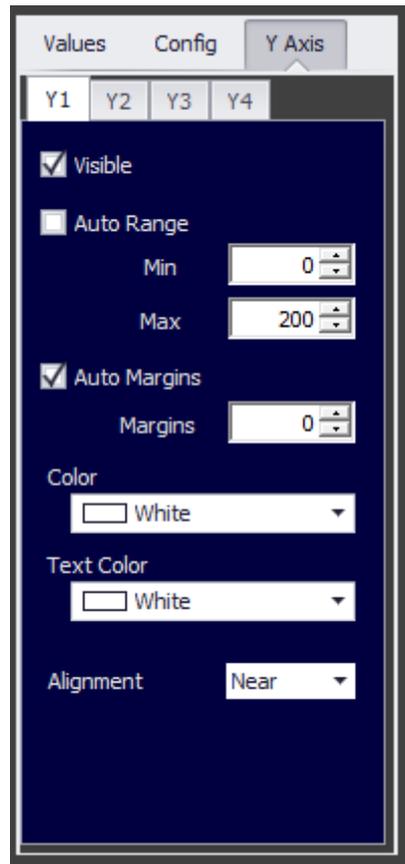
Select measures to be displayed in trends:



In the "Chart Area" section you can enter the legend and change the background color of the charts:



In the Y Axis section, up to 4 axes can be activated and configured to which measurements can then be associated:



List of editable properties of Y-axes:

<b>Visible</b>	Makes the axis visible
<b>Auto Range</b>	Range adjusts and varies dynamically according to the value of the measurement.
<b>Min</b>	If AutoRange is off it sets the minimum value displayed in the graph.
<b>Max</b>	If AutoRange is off it sets the bottom value of the graph.
<b>Auto Margins</b>	Sets the upper and lower margins that you add to the measurement range.
<b>Color</b>	Y-axis color
<b>Text Color</b>	Text color of the measurement scale.
<b>Alignment</b>	Alignment type: Near : left axis. Far : axis on the right Zero : axis on the left superimposed on the others.

### 7.4.1 Pen configuration

As a pen is understood a series linked to a value.

Here is how to configure each individual value displayed in the graph.

Select the Config tab, press the button with the wheel to configure each Series.

Below are the modifiable properties of the series:

<b>Y-Axis</b>	Indicates which Y axis the measurement refers to.
<b>Chart-Type</b>	<p>Sets the type of graph. Available types :</p> <p><b>Line</b> – display with a simple line</p> <p><b>Point</b> – point representation of acquired values</p> <p><b>Area</b> – display the series by coloring the area.</p> <p><b>Stacked Area</b> – stacked area display.</p> <p><b>Stacked Line</b> – representation in stacked lines (no overlapping).</p> <p><b>Full Stacked Line</b> – displays all points on the line.</p> <p><b>Spline</b> – Line with curvatures. The line does not simply join the points but rounds the lines.</p> <p><b>Spline Area</b> – Area with curvatures.</p>
<b>Color</b>	Defines the color of the line/area
<b>Thickness</b>	Line Thickness
<b>Trasparency</b>	Lets you make the area or line transparent. Sets the percentage of transparency (0=not transparent, 100=maximum transparency).

### Buttons



Resets the graph. Restarts point acquisition from scratch.

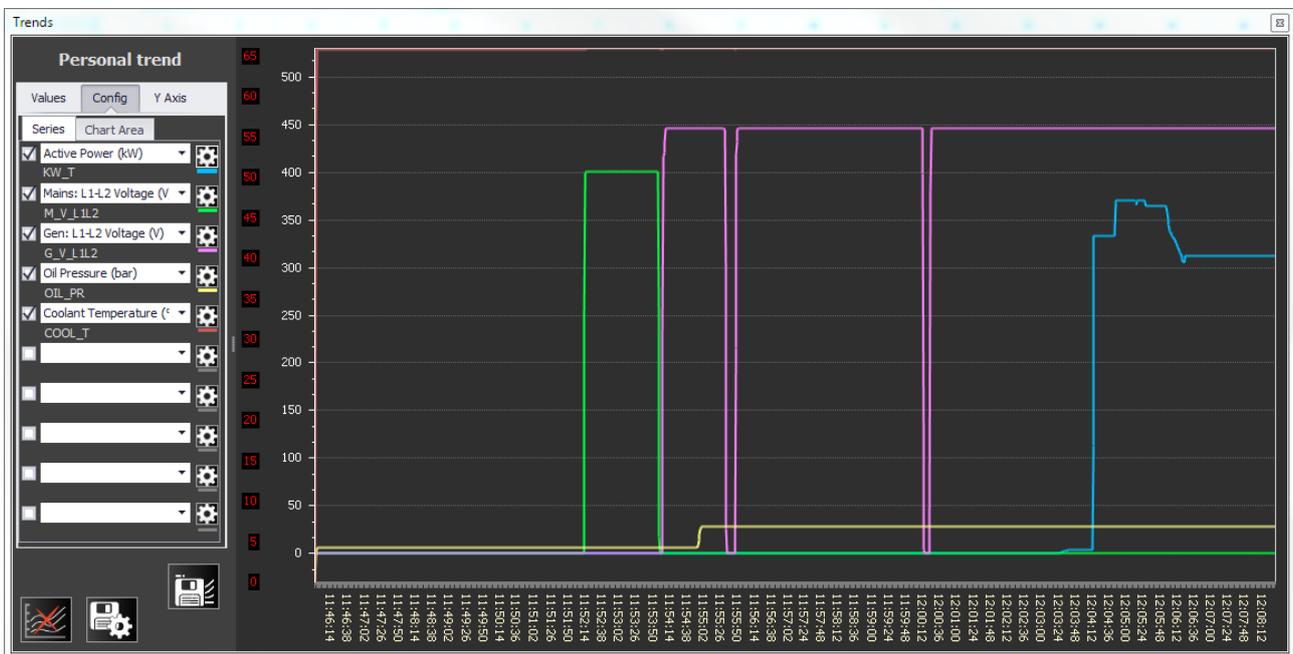


Save chart settings.



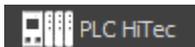
Save chart data. (file Chart\_personal.xls, e Chart\_personal.dat)

### Example of trends:



## 7.5 PLC status viewer section.

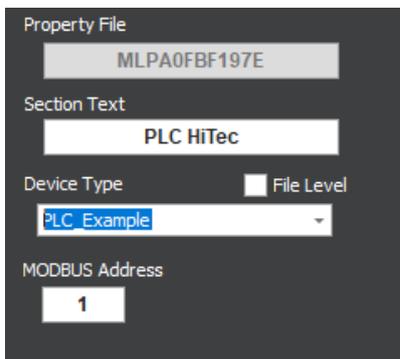
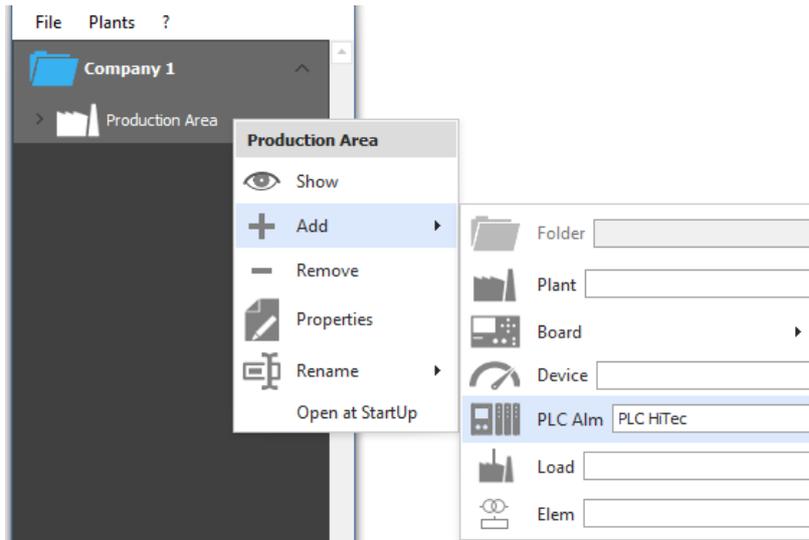
Optional under license.



This section allows you to display statuses and alarms from an external device. Usually this is a PLC, but it could be other type of device or instrumentation.

It does not allow you to drive outputs or send commands.

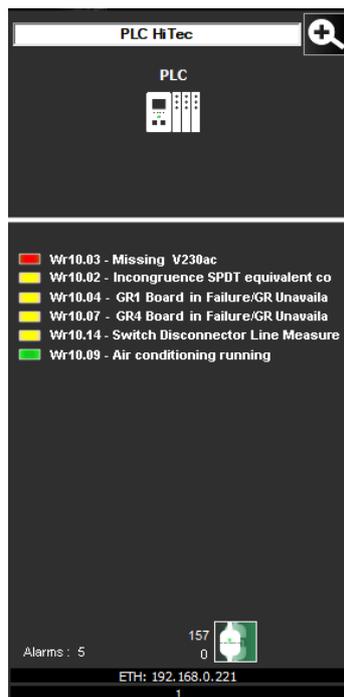
to add a PLC status viewer:



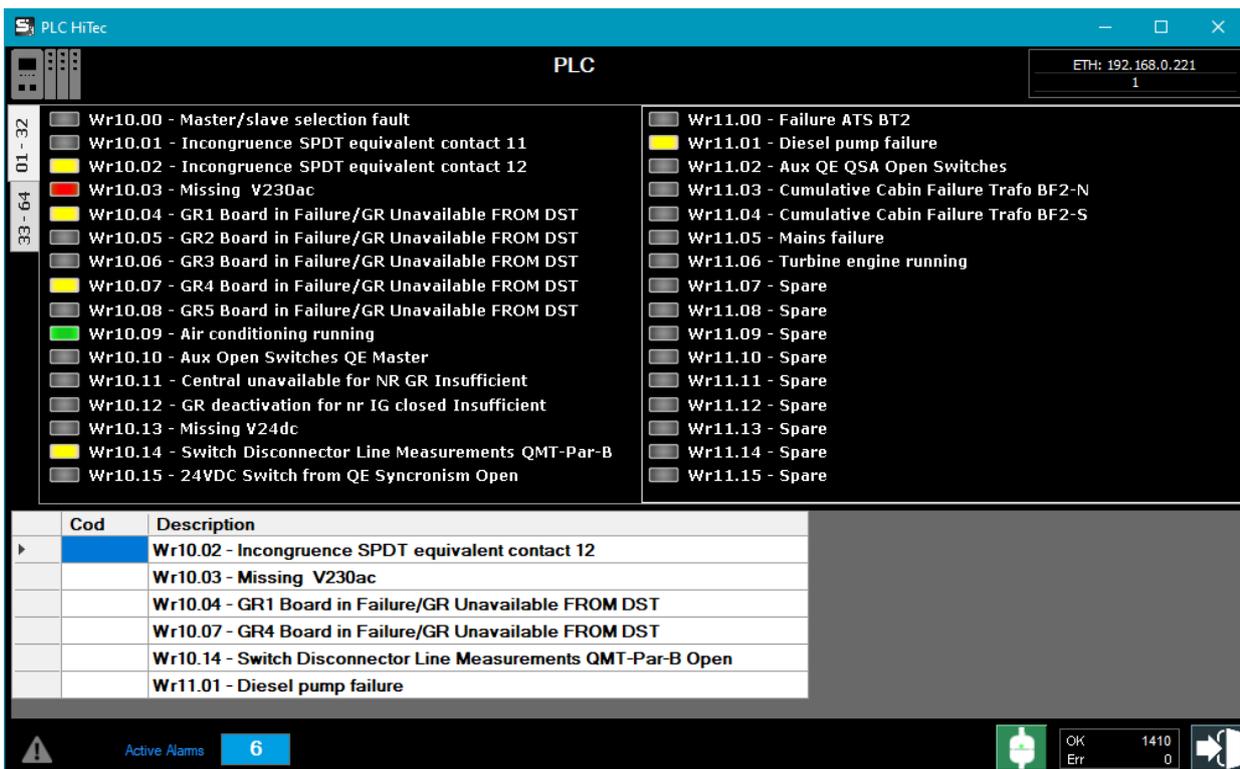
Example of a PLC input definition file (PLC\_Example.mbt):

```
PLC_Example.mbt 3
147 [CONFIG]
148
149 FileLevel=102
150
151 Dev_Type_Base=PA
152
153 Ser_Timeout=2000
154 Eth_Timeout=2000
155
156 ; Inputs
157 Dig_Inp_Num=32
158
159 ; Alarm bit management from PLC
160 ; Txt = Text displayed
161 ; Flg = Flag (0= not used, 1=Alarm-Red, 2=Warning-Yellow, 3=Status-Green, 99=not displayed)
162
163 Dig_Inp_Txt_01=Wrl0.00 - Master/slave selection fault
164 Dig_Inp_Flg_01=2
165
166 Dig_Inp_Txt_02=Wrl0.01 - Air conditioning running
167 Dig_Inp_Flg_02=3
168
169 Dig_Inp_Txt_03=Wrl0.02 - Incongruence SPDT equivalent contact 12
170 Dig_Inp_Flg_03=2
171
172 Dig_Inp_Txt_04=Wrl0.03 - Missing V230ac
173 Dig_Inp_Flg_04=1
174
175 Dig_Inp_Txt_05=Wrl0.04 - GR1 Board in Failure/GR Unavailable FROM DST
176 Dig_Inp_Flg_05=2
177
```

It appears in the layout window as follows:



Instead, the single management window appears as shown below:



## 7.6 Generic Device.

### Licensed optional

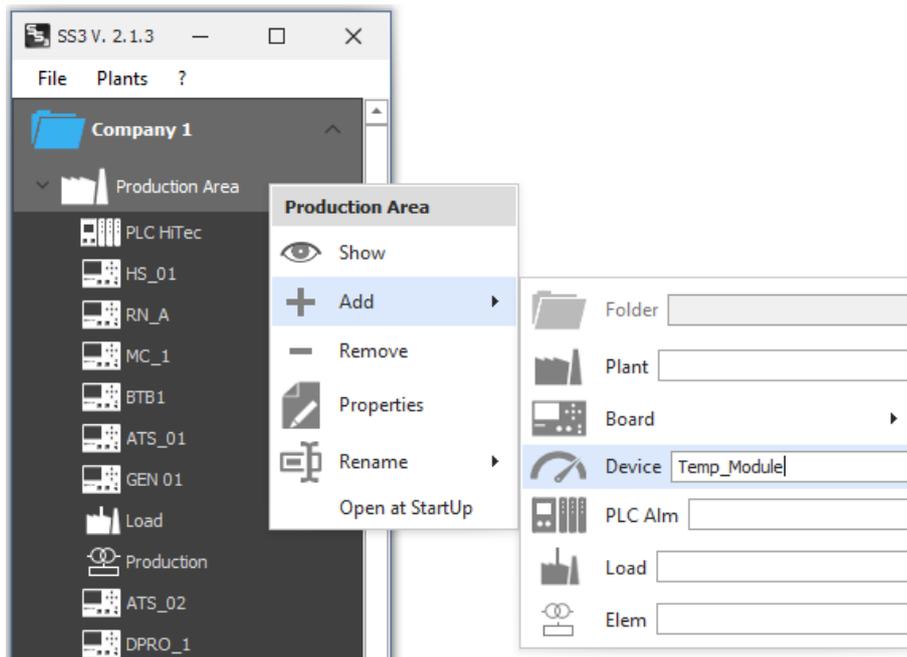


Allows you to detect the desired data from an auxiliary board or device.

Display in the layout window only is available. The single management window is not implemented for this function.

### 7.6.1 How to add a generic device

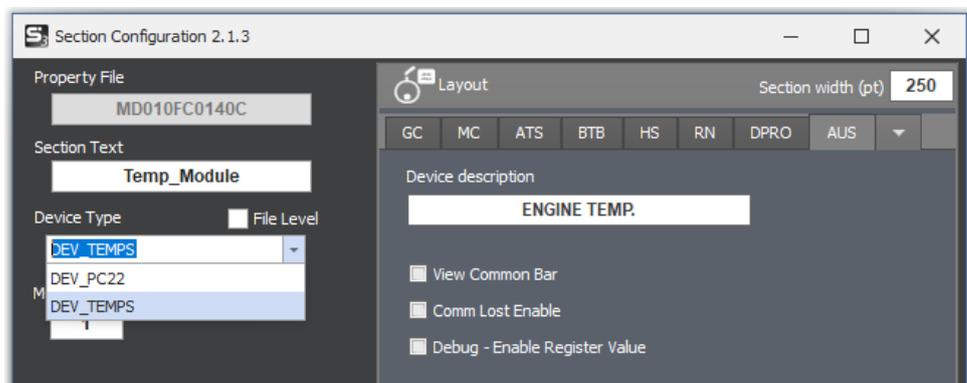
From the plant menu, right-click on the plant icon where you want to add the device:



Select Add → Device. Type a name for the device and press <Enter>.

It will appear in the Plants menu. Now press right mouse button on the newly created Device and select "Properties":

In the device properties, set the reference file for modbus query definitions:



Generic device descriptor files that are contained in the **C:\ProgramData\SICES\SS3\mbt** folder appear in the drop-down menu.

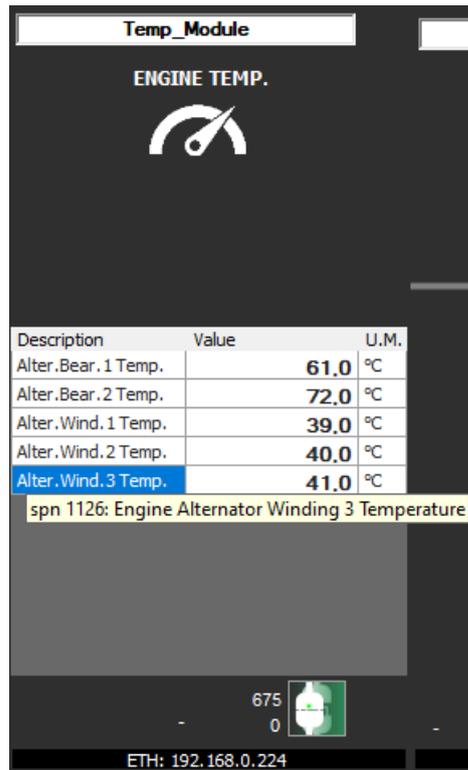
All .mbt files that are of generic device type (Dev\_Type\_Base=DV) are considered.

The descriptor file defines the modbus queries and the variables to be read.

Example of a DEVICE definition file (DEV\_TEMPS.mbt):

```
148 [CONFIG]
149
150 FileLevel=101
151
152 Dev_Type_Base=DV
153
154 Ser_Timeout=2000
155 Eth_Timeout=2000
156
157 ; Number of measures
158 Meas_Num = 5
159
160 ; Measures descriptions (SH=Short descriptions, LN=Long descriptions)
161 MEAS_DESC_SH_01=Alter.Bear.1 Temp.
162 MEAS_DESC_LN_01=sfn 1122: Engine Alternator Bearing 1 Temperature
163 MEAS_DESC_UM_01=°C
164
165 MEAS_DESC_SH_02=Alter.Bear.2 Temp.
166 MEAS_DESC_LN_02=sfn 1123: Engine Alternator Bearing 2 Temperature
167 MEAS_DESC_UM_02=°C
168
169 MEAS_DESC_SH_03=Alter.Wind.1 Temp.
170 MEAS_DESC_LN_03=sfn 1124: Engine Alternator Winding 1 Temperature
171 MEAS_DESC_UM_03=°C
172
173 MEAS_DESC_SH_04=Alter.Wind.2 Temp.
174 MEAS_DESC_LN_04=sfn 1125: Engine Alternator Winding 2 Temperature
175 MEAS_DESC_UM_04=°C
176
177 MEAS_DESC_SH_05=Alter.Wind.3 Temp.
178 MEAS_DESC_LN_05=sfn 1126: Engine Alternator Winding 3 Temperature
179 MEAS_DESC_UM_05=°C
180
181 [TASKS]
182 ; 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
183 T01, 1, 01, 04, 331, 10, 0, 0, 100, 1
184
185
186 [VARS]
187 ; 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14,
188 MEAS_01, 1, sfn 1122: Engine Alternator Bearing 1 Temperature, T01, 0, 2, 0, 2, 0, 1, 8, 1, 0, degC, #f
189 MEAS_02, 1, sfn 1123: Engine Alternator Bearing 2 Temperature, T01, 2, 2, 0, 2, 0, 1, 8, 1, 0, degC, #f
190 MEAS_03, 1, sfn 1124: Engine Alternator Winding 1 Temperature, T01, 4, 2, 0, 2, 0, 1, 8, 1, 0, degC, #f
```

The view in the layout window will appear as follows:



The long description is displayed as a tooltip so when the mouse hovers over the measurement line.

When the debug option is enabled, the contents of the modbus registers can be viewed.

**Reg. Val.Dec.** adds a column that displays the values read from the modbus registers in decimal format.

**Reg. Val.Hex.** adds a column that displays the values read from the modbus registers in hexadecimal format.

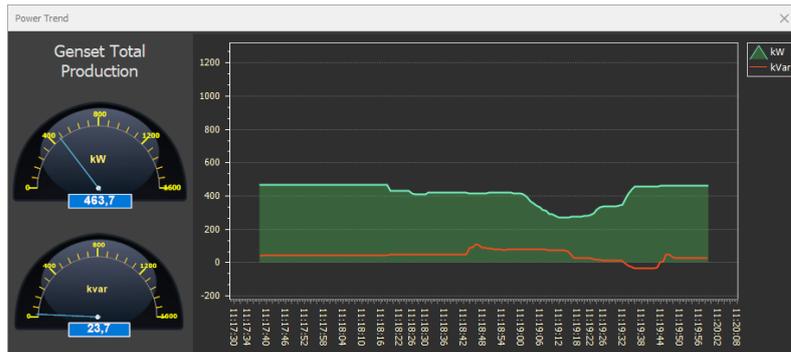
Customized logo)



Quantity of generators on the page and number of controllers in communication.



Opens the power trends window that displays a graph of the total powers delivered by connected generators.



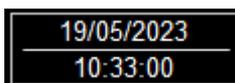
Pressing this button brings up the Plant Menu (back to the foreground).



Performs the alarm reset command for all connected boards.

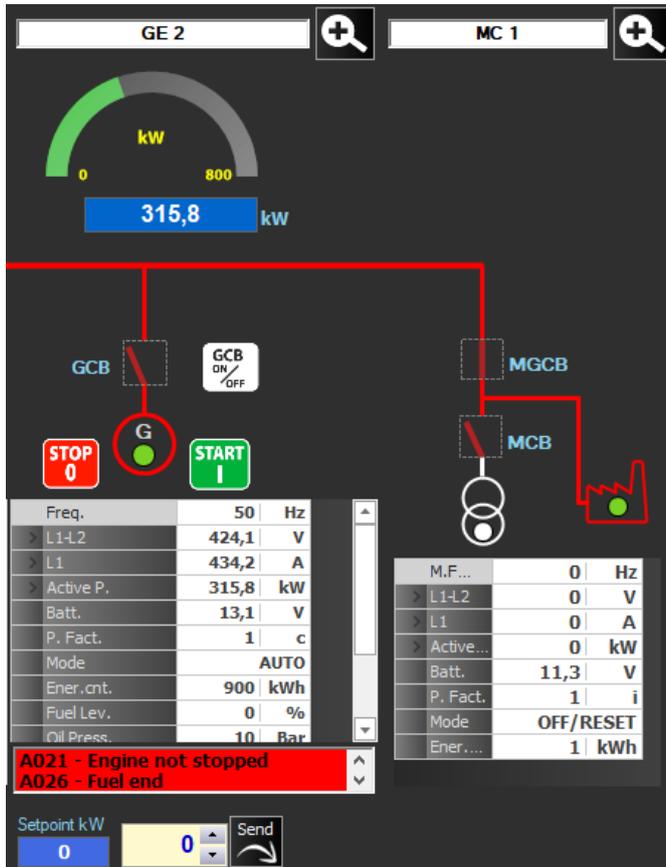


Pressing this button activates the connection to all configured boards

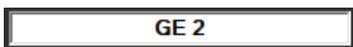


PC date time display

### 7.6.2 Page Area



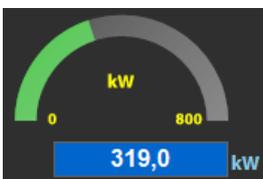
The page area consists of sections in vertical columns. Each column represents a board and contains the graphical representation, main information and commands of the controller.



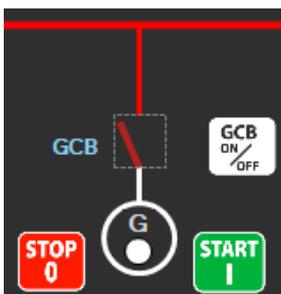
Indicates the name of the board / section.



Pressing this button directly opens the Board Control Window.



Indicates the active power produced by the Genset in analog and digital format.



The following information is represented in this image:

- o The single-line circuit (Configured previously in section three chapter 4.4.5.3.1 GC (Genset Controller)).
- o GCB status
- o GCB close or open command button.
- o Start command button
- o Stop button
- o Genset status: ON (green LED), OFF (white LED).

Freq.	50	Hz
▼ L1-L2	424	V
L2-L3	429,9	V
L3-L1	421,7	V
> L1	441	A
▼ Active P.	319	kW
React.P.	-11,2	kVar
Appar. P.	321,5	kVA
Batt.	13,2	V
P. Fact.	0,99	c
Mode	OFF/RESET	
Ener.cnt.	838	kWh
Fuel Lev.	0	%
Oil Press.	10	Bar
Cool.Temp.	30,8	°C
▼ M:L1-2	0	V
M:L2-3	0	V
M:L3-1	0	V

This grid displays the main measurements of the board. In the case of GCs we can see the concatenated generator and mains voltages, powers, and engine measurements.



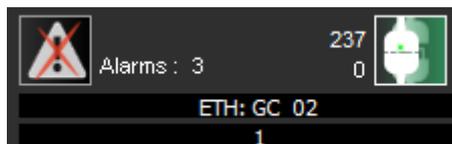
Displaying active alarms and warnings.



Power setpoint that can be activated by configuration.

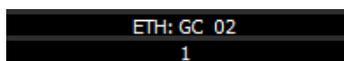
### 7.6.3 Bottom Page

This part displays for each individual board, information related to communication and nr alarms present.

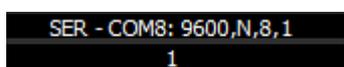


Indicates the number of active alarms on the board and allows the alarm reset command to be sent.

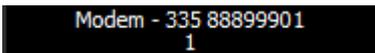
Communication parameter display area.



In this case we have Ethernet communication, so at the top the IP address of the Board appears, at the bottom the serial address.



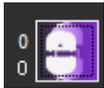
In this case we have a serial communication, so in the upper part appears the COM port and the communication parameters, in the lower part the serial address.



Here we have a modem connection, so at the top appears the phone number to dial, at the bottom the serial address.



The green symbol indicates that the board is connected with supervision,  
 The top number indicates the number of queries made by the PC to the board,  
 The bottom number indicates the number of errors when querying the board.



Connection attempt in progress or connection absent.



Board not connected.

## 7.7 The sections of the plant layout

The plant layout includes all the boards and devices in it (which have been entered under that plant in the plant menu).

Each element occupies a vertical section of the layout (page area) and can be managed independently of the others.

It can be visually interconnected on the same common bar or displayed as a stand-alone (see layout options found in the board property).

The screenshot displays the SS3 software interface for 'Plant Layout: Plant B'. It features three main sections: GE 1, GE 2, and MC 1. Each section has a power gauge and a data table. Callout boxes identify the GC section (Genset Controller) and the MC section (Mains Controller).

Section	Active Power (kW)	Reactive Power (kvar)	Frequency (Hz)	Voltage (V)	Current (A)	Power Factor (i)	Mode	Energy (kWh)	Fuel Level (%)	Oil Pressure (Bar)	Cool Temp (°C)
GE 1	144,9		50,2	390,3	225,2	0,97	AUTO	3381	0	0	0
GE 2	0,0		0	0	434,1	1	OFF/RESET	1866	0	10	
MC 1	0		0	0	0	1	AUTO	1	11,3		

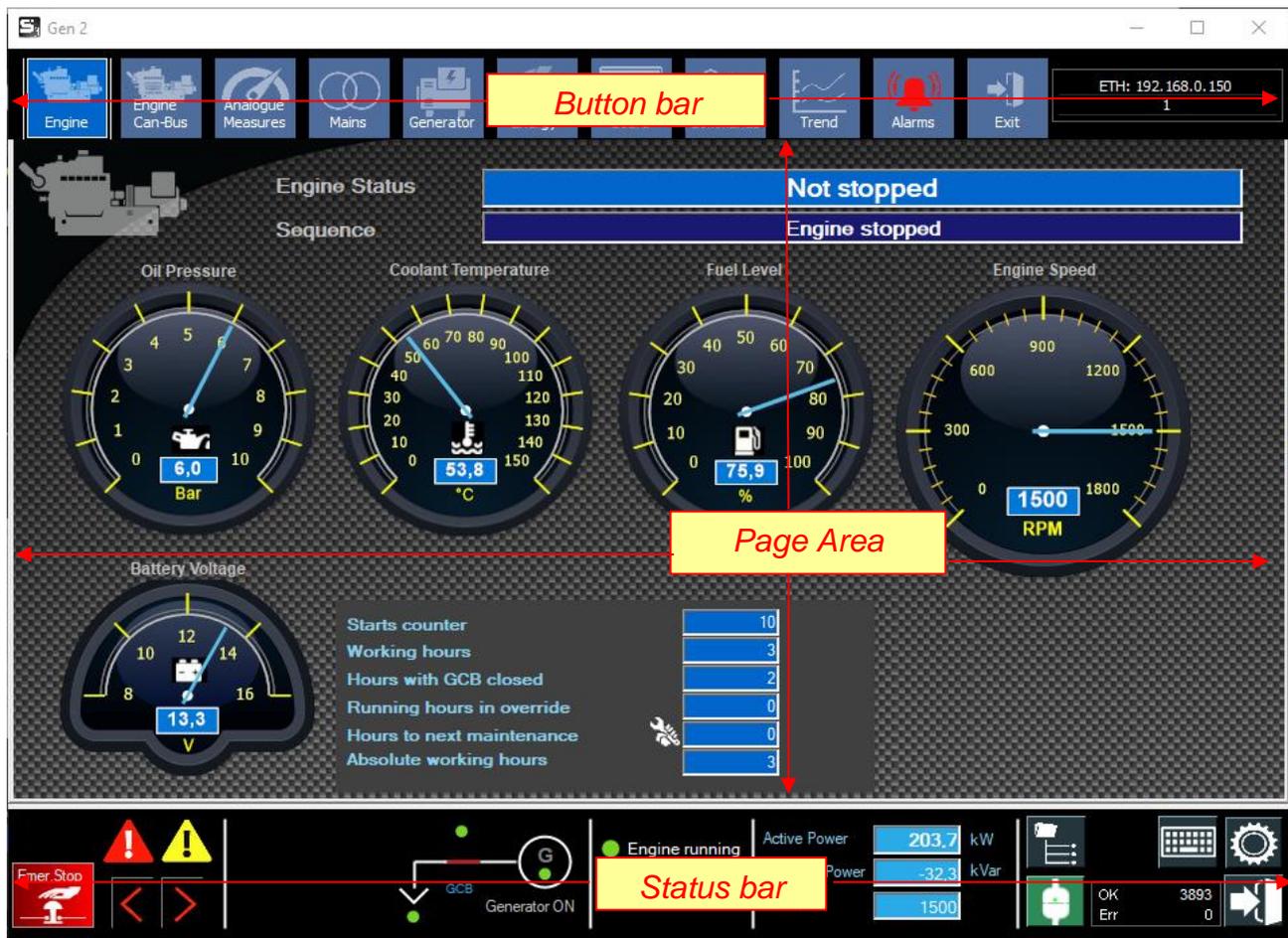
## 7.8 Single control windows

Through this window it is possible to access control of the individual board.

### 7.8.1 Board management window structure

It is divided into 3 parts:

1. Button bar
2. Page area.
3. Status bar



### 7.8.2 Button bar

It is a set of buttons arranged horizontally that provide access to pages related to the board.

**This bar is present on all pages.**

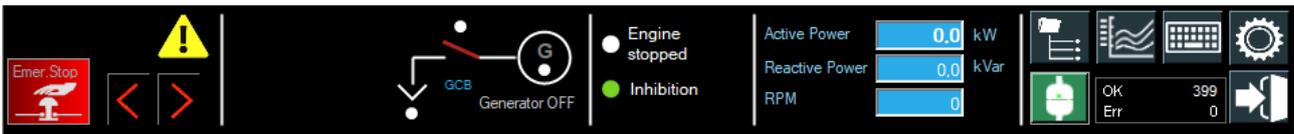
### 7.8.3 Page area

This area represents all the various measurement information, statuses, trend alarms, of the selected page.

### 7.8.4 Status bar

This bar is always present in the window.

The following info is represented in this section:



These two buttons allow navigation through the various windows of the project.



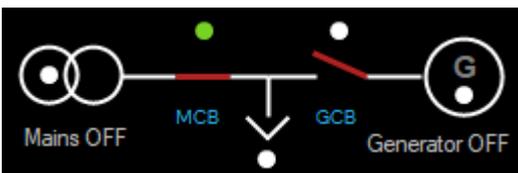
Sends the stop command to the board (Emergency Stop).



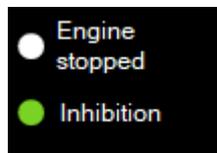
The appearance of this icon indicates the presence of alarms or deactivations.



The appearance of this icon indicates the presence of warnings.

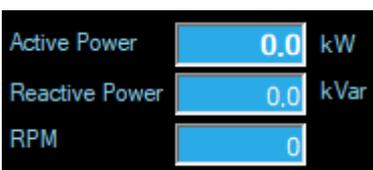


One-line diagram. It differs by board type and configuration.



The following information is represented:

- Engine status (white led Group OFF, green led Group ON).
- Inhibition status (white led inhibition OFF, green led inhibition ON).



Display board measurements.



command section and connection status.



Click on this button to access the plant folder management.



Opens the window of configurable trends.



Recalls the on-screen keyboard. Useful for touch systems where there is no keyboard.



Communication on/off button. It also indicates the status of the connection:



Gray color indicates that the connection is inactive. Clicking this button activates the connection to the board.



Purple background indicates a connection attempt in progress. Clicking this button cancels the connection.



Green indicates that communication is active. Pressing the button breaks the connection.



Clicking this button accesses the board programming software (BoardPrg)



Display of communication status counters:

**OK**, indicates the number of correct receptions

**Err**, indicates the number of wrong receptions



Closes the board control window.

### 7.8.5 Alarm reporting

The presence of alarms or warning is reported as follows:



Warning is present



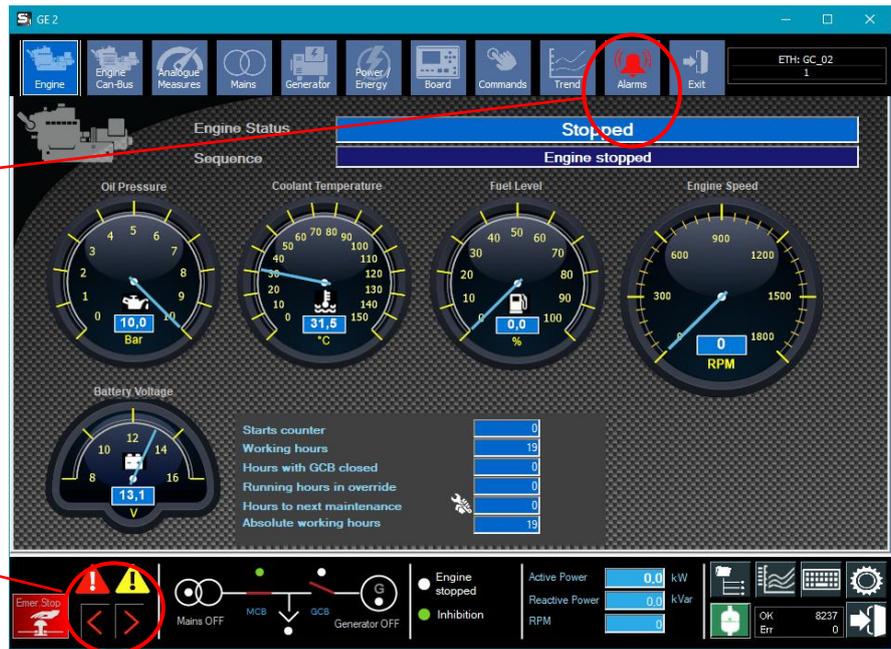
Alarm is present



Warning present



Alarm present



**i** **INFORMATION** For more details refer to the next chapters where the functionality for each type of card is specified.

## 8. Board types

SS3 can handle different types of boards corresponding to different types of plants.

Genset Controller	<input type="text"/>
Mains Controller	<input type="text"/>
BTB Controller	<input type="text"/>
ATS Controller	<input type="text"/>
HS Controller	<input type="text"/>
RN Controller	<input type="text"/>
DPRO	<input type="text"/>

Available types:

Type	Description	Boards
GC	Genset controller	GC250, GC310, GC315, GC350, GC400, GC500, GC600, DST4602, DST4602 Evolution, DST4603
MC	Mains Controller	MC100, MC200, MC400
BTB	Bus Tie Breaker	BTB100, BTB200
ATS	Automatic Transfer Switch	ATS115
HS	Hybrid System	HS315
RN	ReNewable	RN200
DPRO	Protection Relay	DPRO

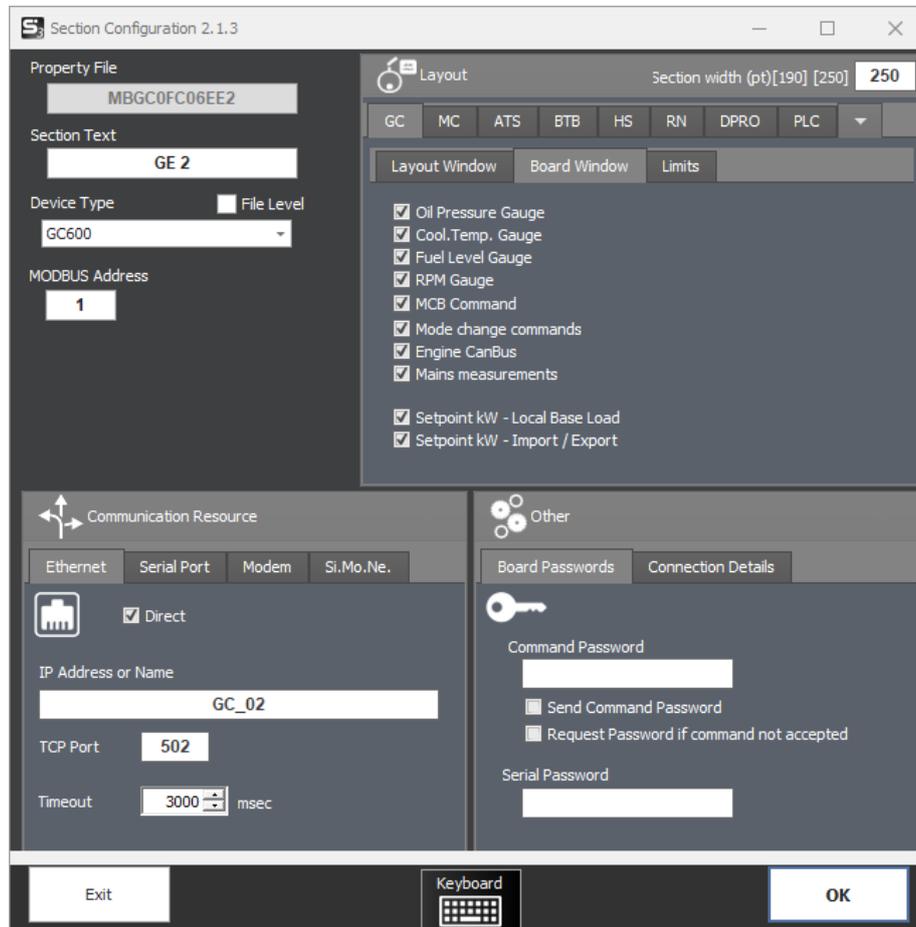
A paragraph for each type of board will be dedicated below.

## 8.1 GC - Genset Controller

All control boards of a genset are included in the GC type.

### 8.1.1 Configuration

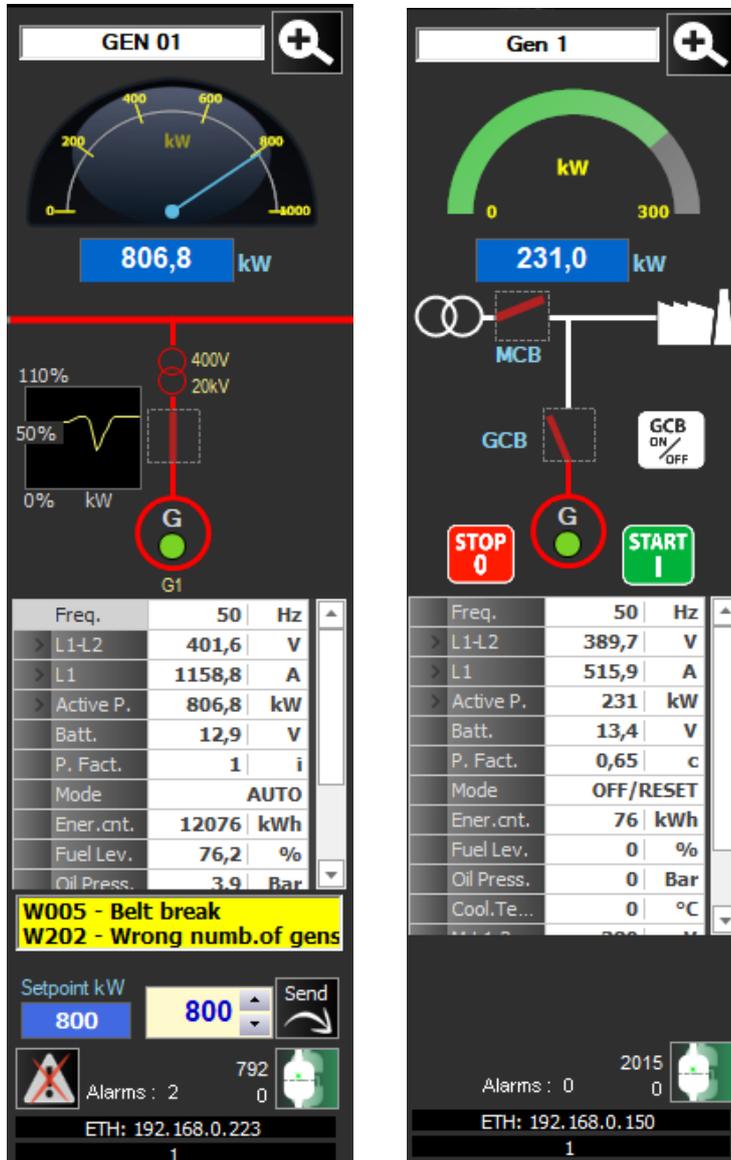
Here is how to configure Genset Control boards.



Remember to set the device type and communication parameters. For more details refer to chapter **4.4.5.3.1-GC (Genset Controller)**

### 8.1.2 Layout

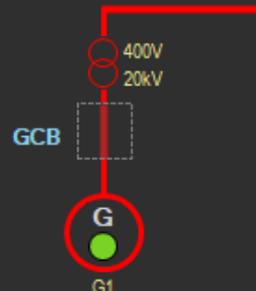
The following are some types of configurations for GC sections.



Gen 1
+



**202,1** kW



G1

Freq.	50	Hz
> L1-L2	389,7	V
> L1	310,3	A
> Active P.	202,1	kW
Batt.	13,3	V
P. Fact.	0,95	c
Mode	OFF/RESET	
Ener.cnt.	146	kWh
Fuel Lev.	0	%
Oil Press.	0	Bar

Setpoint kW

**200**

Send

Alarms : 0

912

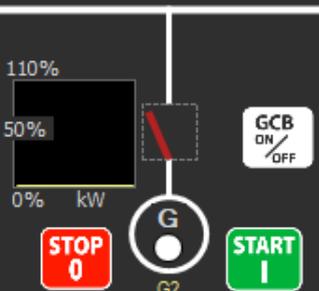
ETH: 192.168.0.150

1

Gen 2
+



**0,0** kW



G2

Freq.	0	Hz
> L1-L2	0	V
> L1	310,9	A
> Active P.	0	kW
Batt.	13,3	V
P. Fact.	1	c
Mode	AU	
Ener.cnt.	165	kWh
Fuel Lev.	0	%

Setpoint kW

**150**

Send

Alarms : 4

3472

ETH: 192.168.0.150

1

A021 - Engine not stopped  
 A006 - Over-current

### 8.1.3 Single Control Window

Let us explore in detail the various pages that compose the single control window for GC-type boards.

### 8.1.4 Engine page

Displays the status and basic measurements related to the engine.



The following information is displayed in this window:

- Engine status
- Engine measurements (Oil pressure, Coolant temperature, Fuel level, Engine speed, Battery voltage)
- Engine counters
- Fuel pump management

Below we explore them in detail.

#### 8.1.4.1 Engine Status



**Engine status:** indicates the state of the engine detected by the board.

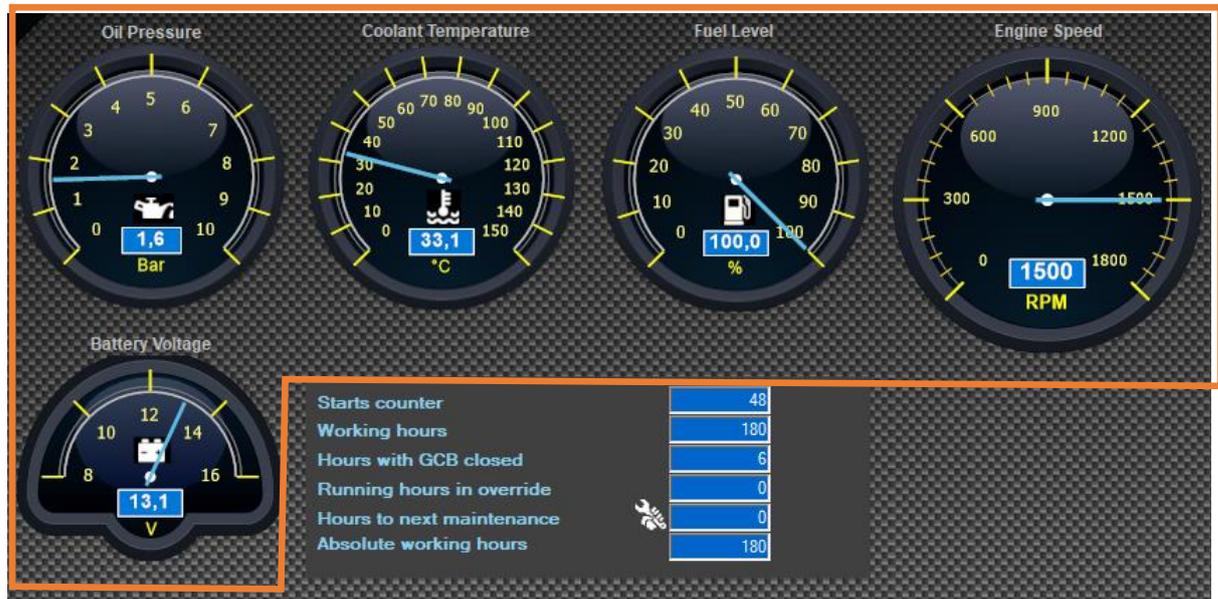
Here are some possible states: Stop cycle, Stopped, Not stopped, Crank, Delay Between two cranks, Running, Cleaning cycle (For gas engines), Running at idle speed, Pre-lubrication, Waiting For consent.

**Sequence:** indicates which state of the engine management sequence the board is in.

(Example of sequence: Engine stopped, Starting, Waiting for operating conditions, Delay before supply, Stop cycle, Cooling cycle, MCB opened, GCB closed)

### 8.1.4.2 Gauges of analog measurements

Instrument display (gauges) of key analog engine measurements:



- Oil pressure (Bar)
- Coolant temperature (°C)
- Fuel level (%)
- Engine speed (rpm)
- Battery voltage (Vdc)

Engine instruments are available if enabled by the supervision parameters and if available in the board.

If displayed in gray means they are disabled by the board:



For example, in this case the fuel level is not detectable because it is not configured on the board.

If an instrument is not displayed, it means that it has been disabled by the supervision parameters (see Board Properties, GC section, Instrument Enablement).

GC MC ATS BTB HS

Layout Window Board Window

- Oil Pressure Gauge
- Cool. Temp. Gauge
- Fuel Level Gauge
- RPM Gauge
- MCB Command
- Mode change commands
- Engine CanBus
- Mains measurements

In this case the fuel level meter will not be displayed.  
Note: It will also not be displayed in the section data grid in the layout.

Oil Pressure: 3,1 Bar

Coolant Temperature: 26,5 °C

Engine Speed: 1500 RPM

Battery Voltage: 13,1 V

Starts counter	48
Working hours	180
Hours with GCB closed	6
Running hours in override	0
Hours to next maintenance	0
Absolute working hours	180

### 8.1.4.3 Engine counters

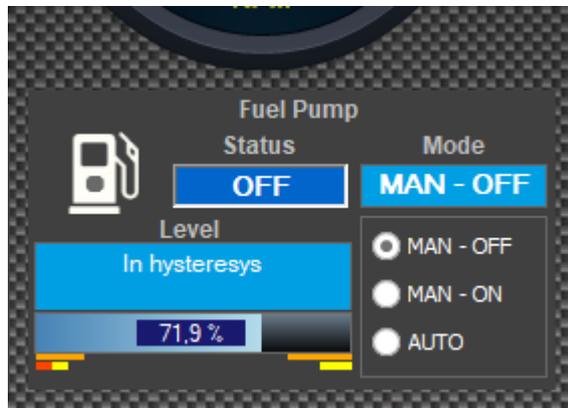
This area displays the engine functional counters read from the board.

Starts counter	48
Working hours	180
Hours with GCB closed	6
Running hours in override	0
Hours to next maintenance	0
Absolute working hours	180

Counters displayed: Starts counter, Working hours, Hours with GCB closed, Running hours with override, Hours to next maintenance, Absolute working hours.

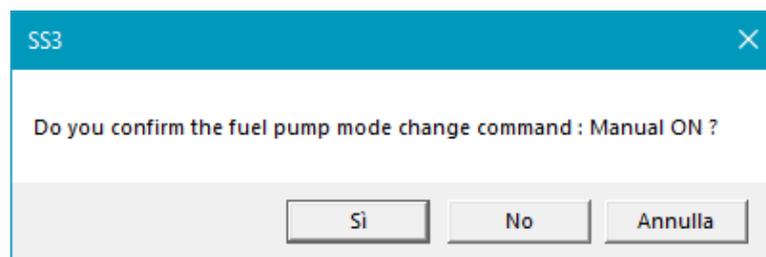
### 8.1.4.4 Fuel pump

The panel for managing the fuel pump appears when it is enabled by the board (digital outputs for pump control must be configured).



Displays pump status and mode (MAN-OFF, MAN-ON, AUTO).

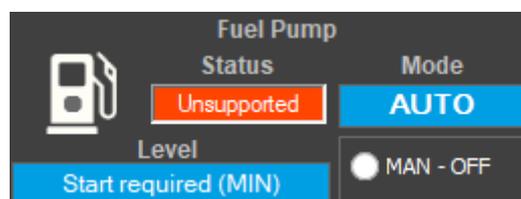
It is possible to change the mode by clicking on the corresponding radio button. Confirmation will be requested before sending the command to the board:



If the analogue fuel level sensor is active, the bar is displayed with the value and the thresholds represented by the red and orange yellow lines. The orange ones are the start and stop thresholds. The yellow ones represent the warning thresholds, the red one the alarm thresholds.



In some cases (older versions of the board) the fuel pump status may not be supported. In this case "Not supported" appears with a red background.



In this case, the card probably needs to be updated.

### 8.1.5 Canbus Engine page

This page displays data received via CAN-BUS (J1939) from ECU interface.

The 'Engine Can-Bus' page can be hidden in the event that data reading via canbus is not available. To disable it, use the option in the supervision parameters:

Mode Change commands  
 Engine CanBus  
Main measurements

SPN	Can-Bus measures	Value
51	Engine throttle position (%)	-
52	Engine Intercooler Temperature (°C)	53
91	Accelerator pedal position (%)	24,4
92	Engine Percent Load at current Speed (%)	92
94	Fuel delivery pressure (Bar)	2,0
98	Engine oil level (%)	25,2
100	Engine oil pressure (Bar)	4,7
101	Crankcase pressure (Bar)	0,3
102	Engine intake manifold #1 pressure (Bar)	-
105	Intake manifold #1 temperature (°C)	-
106	Air inlet pressure (Bar)	0,000
108	Barometric pressure (Bar)	1,3
109	Engine coolant pressure (Bar)	37
110	Engine coolant temperature (°C)	50,8
111	Engine coolant level (%)	71,7

Valid data filter

Measures

CAN-BUS DIAGNOSTIC

Active diagnostic code | Passive diagnostic code

Diagnostic code	Description
SPN: 206840 FMI: 1 OC: 127	-- Data low (shutdown)

Emer Stop  
Mains OFF  
MCB  
GCB  
Generator ON  
Engine running  
Inhibition  
Active Power 96.6 kW  
Reactive Power 17.6 kVar  
RPM 1500  
OK 10660  
Err 0

Valid data filter: allows you to remove all invalid data (which is not detected or sent by the engine) from the table. This filter is stored so only valid data will be displayed at the next connection.

In case you want to reverify what data is coming from the engine you will have to disable and re-enable the filter.

View Vars Column : useful for verification and debugging, it is used to see the name of the corresponding variables in the board descriptor file.

### 8.1.5.1 List of CAN-BUS data that can be displayed.

Below is the list of data (SPN) that can be displayed.

The data available depends on the type of engine control unit and the data it transmits.

Data that is not transmitted by the ECU will appear with a dash. To not display them you can use the "filter valid data" button.

SPN	Description
51	Engine throttle position (%)
52	Engine Intercooler Temperature (°C)
91	Accelerator pedal position (%)
92	Engine Percent Load at current Speed (%)
94	Fuel delivery pressure (Bar)
98	Engine oil level (%)
100	Engine oil pressure (Bar)
101	Crankcase pressure (Bar)
102	Engine intake manifold #1 pressure (Bar)
105	Intake manifold #1 temperature (°C)
106	Air inlet pressure (Bar)
108	Barometric pressure (Bar)
109	Engine coolant pressure (Bar)
110	Engine coolant temperature (°C)
111	Engine coolant level (%)
156	Engine injector timing rail 1 pressure (Bar)
157	Engine injector metering rail 1 pressure (Bar)
158	Battery voltage (switched) (Vdc)
166	Engine rated power (kW)
171	Ambient air temperature (°C)
173	Exhaust gas temperature (°C)
174	Fuel temperature (°C)
175	Engine oil temperature (°C)
182	Engine trip fuel used (L)
183	Engine fuel rate (L/h)
189	Engine rated speed (rpm)
190	Engine speed (rpm)
247	Engine total hours of operation (h)
250	Engine total fuel used (L)
441	Auxiliary temperature 1 (°C)
442	Auxiliary temperature 2 (°C)
512	Driver's demand engine - percent torque (%)
513	Actual engine - percent torque (%)
514	Nominal friction - percent torque (%)
515	Engine's desired operating speed (rpm)
1029	Trip average fuel rate (L/h)
1122	Engine alternator bearing 1 temperature (°C)
1123	Engine alternator bearing 2 temperature (°C)

1124	Engine alternator winding 1 temperature (°C)
1125	Engine alternator winding 2 temperature (°C)
1126	Engine alternator winding 3 temperature (°C)
1136	Engine ECU temperature (°C)
2433	Exhaust gas temperature - right manifold (°C)
2434	Exhaust gas temperature - left manifold (°C)
2629	Engine turbocharger 1 compressor outlet temperature (°C)
3563	Engine intake manifold #1 absolute pressure (Bar)
4781	DPF-Soot mass (g)
3719	DPF-Soot level (%)
3720	DPF-Ash level (%)
3721	DPF-Time since last regeneration (dd-hh-mm)
3242	DPF-Inlet gas temperature (°C)
3246	DPF-Outlet gas temperature (°C)
3251	DPF-Differential pressure (mbar)
4765	DOC-Inlet gas temperature (°C)
4766	DOC-Outlet gas temperature (°C)
4331	SCR-Actual dosing reagent quantity (g/h)
4334	SCR-Absolute pressure of reagent (bar)
4360	SCR-Inlet gas temperature (°C)
4363	SCR-Outlet gas temperature (°C)
1761	DEF-Tank level (%)
3031	DEF-Tank temperature (°C)
3515	DEF-Fluid temperature (°C)
3516	DEF-Fluid concentration (%)
5963	DEF-Total fluid used (lt)
3241	EST-Exhaust gas temperature (°C)
3697	DPF-Lamp Command
3699	DPF-Passive Regeneration Status
3700	DPF-Active Regeneration Status
3701	DPF-Status
3702	DPF-Active Regeneration Inhibited Status
3703	DPF-Active Regeneration Inhibited Due to Inhibit Switch
3711	DPF-Active Regeneration Inhibited Due to Inhibit Switch
3712	DPF-Active Regeneration Inhibited Due to System Fault Active
3714	DPF-Active Regeneration Inhibited Due to Temporary System Lockout
3715	DPF-Active Regeneration Inhibited Due to Permanent System Lockout
3716	DPF-Active Regeneration Inhibited Due to Engine Not Warmed Up
3713	DPF-Active Regeneration Inhibited Due to System Timeout
-	Manual Regeneration Status
5246	SCR-Operator Inducement Severity
5245	DEF-Tank 1 Low Level Indicator
3698	High Exhaust System Temperature Lamp Command
1081	Engine Wait to Start Lamp

### 8.1.6 Analog measures page

This page displays the analog inputs and outputs of the current board (the nr of measurements changes depending on the type of board).

Connector	Input N.	Description	Value	U.M.	Vdc	Ohm
JU-3	1	Not used	6	-	-	-
JU-5	2	Not used	0	-	-	-
JK-2 FL	3	(AI.00.03)	0	%	-	-
JK-3 OP	4	(AI.00.04)	10	bar	-	-
JK-4 CT	5	(AI.00.05)	31	°C	-	-
JK-5 OT	6	Not used	410	-	-	-
JJ-4 DP	7	Not used	5	-	-	-

Conn.	Output	Des.	Val	U.M.
JT	1	Speed regulator	50,0	%
JS	2	Voltage regulator	50,0	%

Connector: name of the connector related to the input. It is indicated in the descriptor file of the board.

Input No.: indicates the numerical reference of the input.

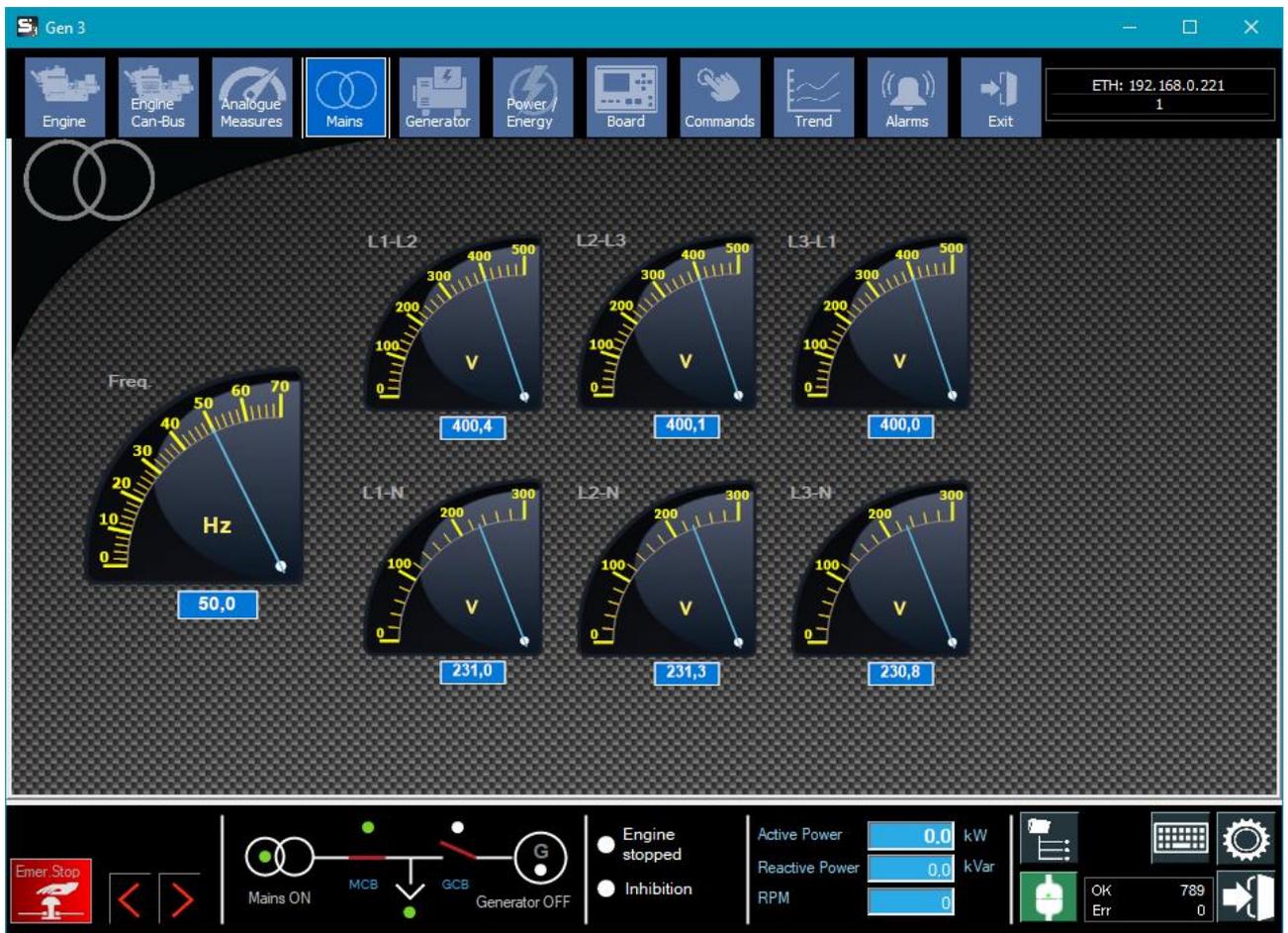
Description: is taken from the board.

Value, U.M: value of the measurement with unit of measurement.

Vdc : voltage on input (where available)

Ohm : resistance on input (where available)

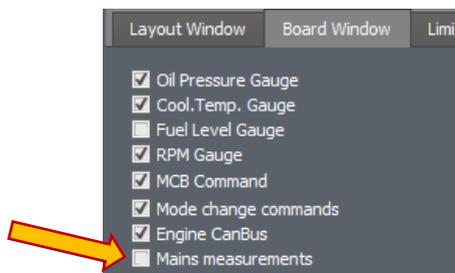
### 8.1.7 Mains measurements page



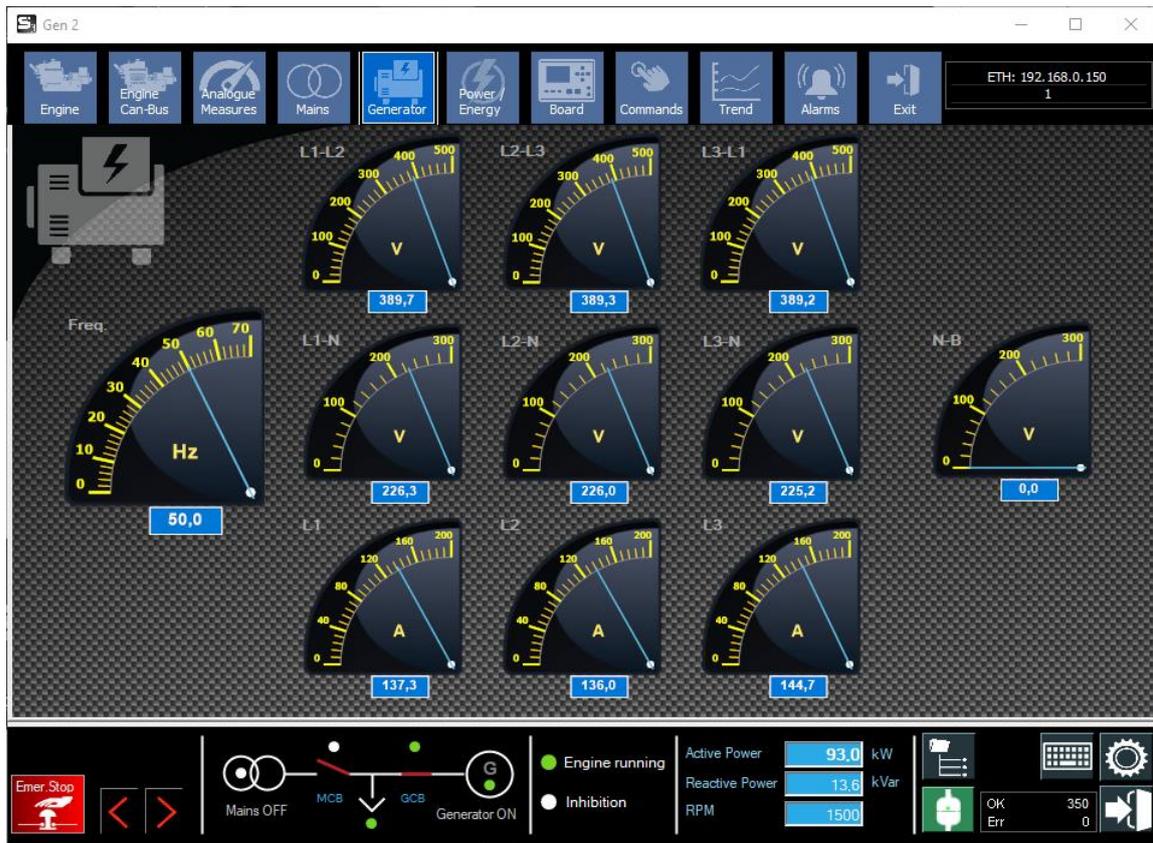
This page shows the following network measures:

- Mains frequency (Hz)
- Phase-to-phase voltages (VLL)
- Phase voltages (VLN)

The Mains page can be disabled by the supervision parameters, thus not visible:



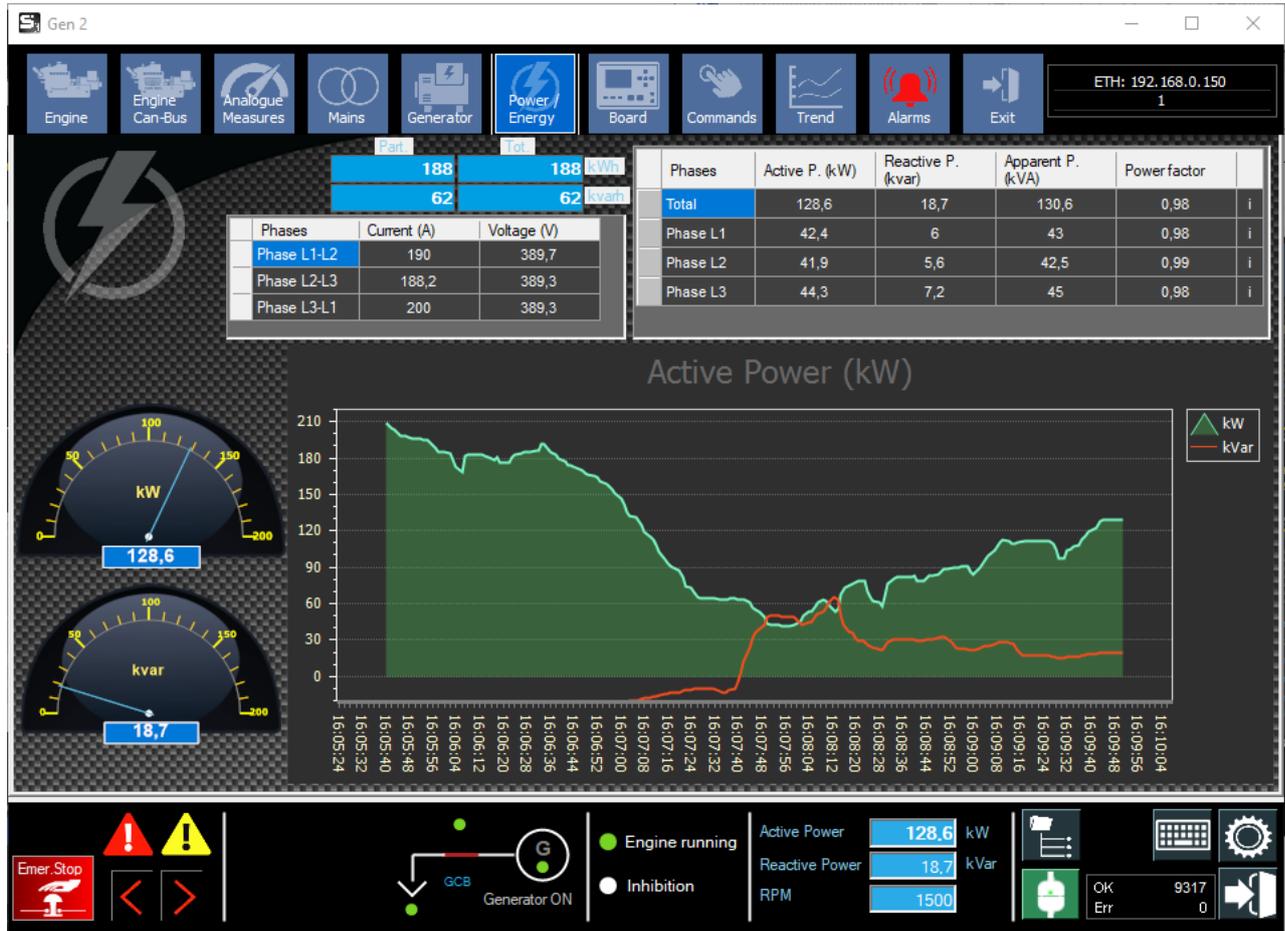
### 8.1.8 Generator measurements page



In this window using Gauges, the following measurements are represented:

- Frequency of the genset
- Phase-to-phase Voltages
- Phase Neutral Voltages
- Neutral Voltage (if present)
- Phase Currents
- Fourth Current (if present)

### 8.1.9 Power and energy meter page



The following information is displayed in this page:

Part	Tot
24783	29079 kWh
36047	42995 kvarh

Total and Partial Counter of Active Energy Produced.

Total and Partial counter of reactive energy produced.

Phases	Current (A)	Voltage (V)
Phase L1-L2	190	389,7
Phase L2-L3	188,2	389,3
Phase L3-L1	200	389,3

Tabular representation of:

Measurements of phase-to-phase voltages

Measurements of Phase Currents

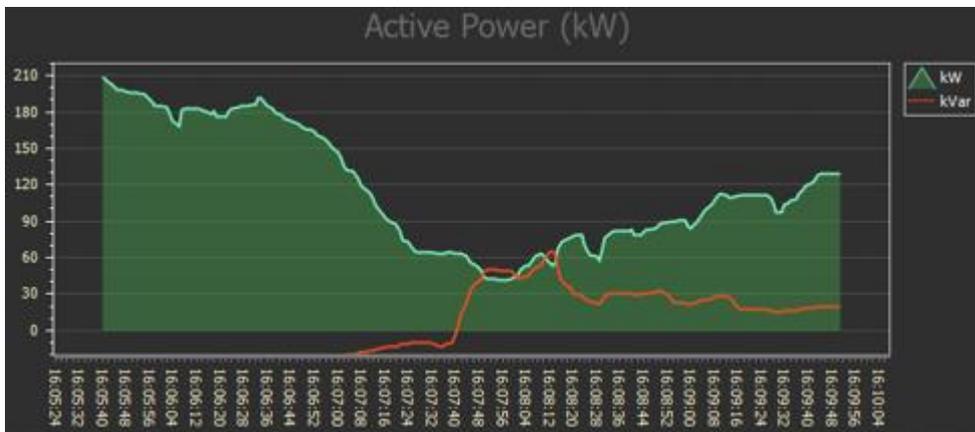
Phases	Active P. (kW)	Reactive P. (kvar)	Apparent P. (kVA)	Power factor	
Total	144,6	34,6	149	0,97	i
Phase L1	49,1	12,2	50,7	0,97	i
Phase L2	47,5	11,1	48,8	0,97	i
Phase L3	48	11,3	49,4	0,97	i

Tabular representation of the values per phase and Totals of the following powers:

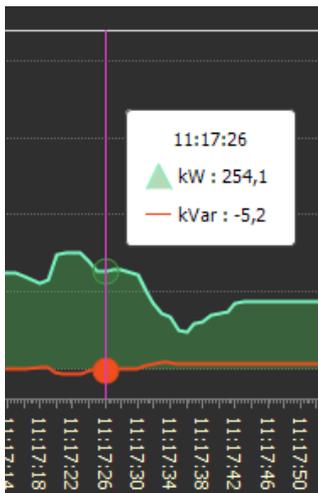
- Active power (kW)
- Reactive power (kvar)
- Apparent power (kVA)
- Power factor
- Type of load (Capacitive or Inductive)



Analog representation of total active power and total reactive power.



Graphical representation (last 100 points) of real-time trend of total active power and total reactive power measurements.



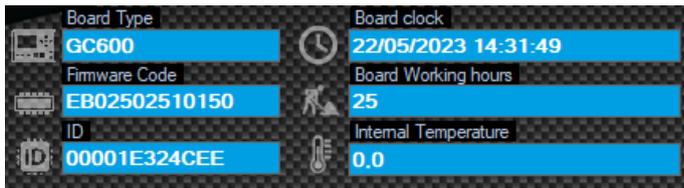
By hovering the mouse over an area of interest in the trend, a popup appears showing the time of recording, the total active power value, and the total reactive power value.

It is also possible to zoom in on the graph.

For more details see the chapter 15. Trend management and zooming in

### 8.1.10 Board page

This page shows the information of the board, physical status of the inputs and outputs of the board, and buttons to access additional functions.

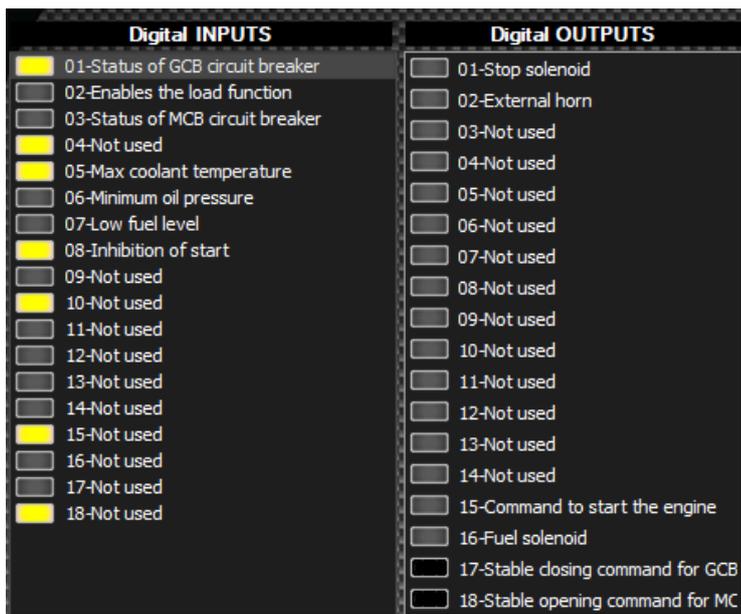


The following information is represented here:

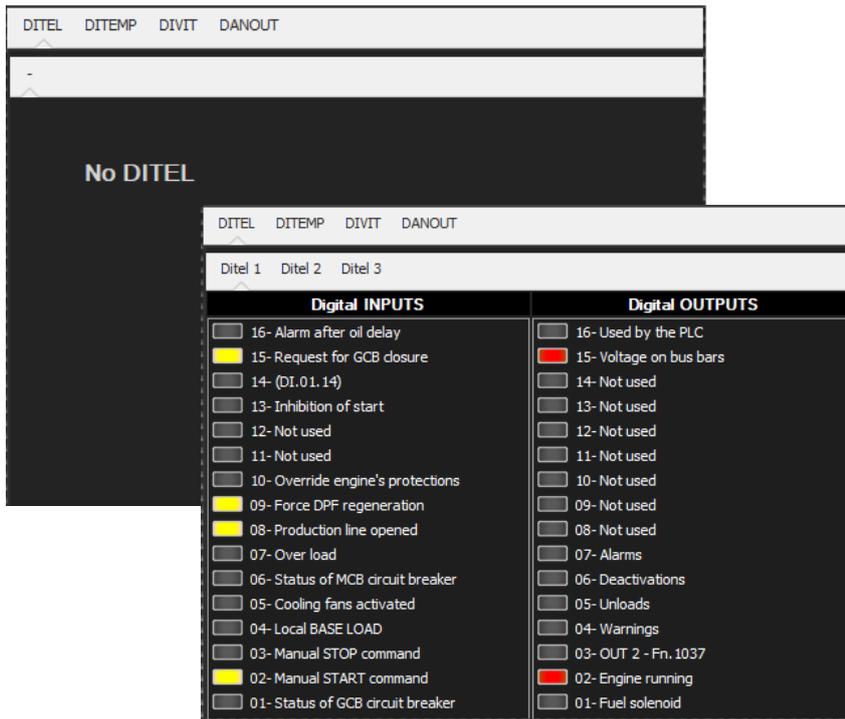
- Board type
- Firmware code of the board
- ID (Unique identifier) of the board
- Date and time of the board
- Time of operation of the board
- Internal temperature of the board (not present for all boards)



mode of operation of the board (OFF/RESET, MAN, AUTO)



Function and status of the board's digital inputs and outputs. The functions associated with the inputs and outputs are read directly from the board configuration.



External modules connected to the board (DITEL, DIVIT, DITHEM, DANOUT).  
 See section 0

External modules for more details.



Buttons for accessing board functions: board programming, History logs, Rear Panel.

See the next section for more details.

### 8.1.10.1 BoardPrg and access to board parameters.



Pressing this button commands the opening of the Mecc Alte board configuration program. It must be preinstalled BoardPrg4 (first choice), or BoardPrg3 with version greater than or equal to 3.33 (if no Boardprg4 is found).



The same way is also accessed using the  button on the status bar.

The screenshot shows the BoardPrg4 4.0.23.23 software interface. The main window displays a tree view on the left with categories like System, Security, Engine, Generator, Mains/bus, Frequency, Currents, General, Sequence, Protections, Auxiliary function, Communication, Canbus for the engine, and Parallel. The right pane shows a table of parameters with columns for ID, Description, U.M., In the controller, and In the PC. The status bar at the bottom indicates 'GC600 (1.50) | 00001E324CEE | TCP/IP: communication in progress | Serial address: 1 - GC\_02:502 | 292/0'.

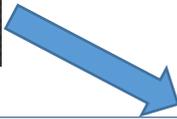
ID	Description	U.M.	In the controller	In the PC
P.0100	Type of generator		0-Synchronous	0-Synchronous
P.0151	Input type for generator voltages		0-400V	0-400V
P.0101	Number of phases of the generator		3	3
P.0102	Nominal voltage of the generator	Vac	400	400
P.0103	Voltage transformers for the generator (primary side)	Vac	0	0
P.0104	Voltage transformers for the generator (secondary side)	Vac	0	0
P.0128	Is the neutral of the generator connected to the controller?		1-Yes	1-Yes
P.0106	Nominal power of the generator	kVA	0	0

Boardprg will receive the parameters to connect to the board, it will then automatically perform the connection, read the parameters and copy the values from the column in the "In the controller" to the "In the PC" column.

For more information on programming the board parameters, please refer to the BoardPrg manual.

### 8.1.10.2 Board History Logs.

Pressing this button accesses the display window of the historical archives stored in the board (HistoryLog).



The screenshot shows the 'History Logs 2.1.3' window. On the left, there are buttons for 'Download Logs' and 'Archived Logs'. The main area is divided into configuration fields and a 'Records' summary table.

**Configuration Fields:**

- Board Type: GC600
- ID Code: 00001E324CEE
- Plant Name: GC\_02
- Device ID: SICES s.r.l., GC600, EB02502510150

**Records Summary Table:**

	On Board	New	Down loaded
Events N.	113	113	113
Fast Analog N.	538	538	538
<b>Total records</b>	<b>651</b>	<b>651</b>	<b>651</b>

**Events Table:**

DateTime	N.	Cod.	Board Descr.	Mode	Engine	Generator	Mains	GCB Cmd	GCB Status	MCB Cmd	MCB Status	MGCFC Statu.
28/03/2023 13:39:39	9554	1077	New power on	0-OFF	0-Stopped	0-Absent	0-Absent	0	1	0	0	0
28/03/2023 13:39:39	9555	1076	Clock updated	0-OFF	0-Stopped	0-Absent	0-Absent	0	1	0	0	0
29/03/2023 09:19:37	9556	1077	New power on	0-OFF	0-Stopped	0-Absent	0-Absent	0	1	0	0	0
29/03/2023 09:19:37	9557	1076	Clock updated	0-OFF	0-Stopped	0-Absent	0-Absent	0	1	0	0	0
30/03/2023 08:22:44	9558	1077	New power on	0-OFF	4-Stop c...	1-Prese...	0-Absent	0	0	0	0	0
30/03/2023 08:22:44	9559	1076	Clock updated	0-OFF	4-Stop c...	1-Prese...	0-Absent	0	0	0	0	0
31/03/2023 08:45:11	9560	1077	New power on	0-OFF	4-Stop c...	1-Prese...	0-Absent	0	0	0	0	0
31/03/2023 08:45:11	9561	1076	Clock updated	0-OFF	4-Stop c...	1-Prese...	0-Absent	0	0	0	0	0
03/04/2023 08:35:45	9562	1077	New power on	0-OFF	0-Stopped	0-Absent	0-Absent	0	0	0	0	0
03/04/2023 08:35:45	9563	1076	Clock updated	0-OFF	0-Stopped	0-Absent	0-Absent	0	0	0	0	0
04/04/2023 07:48:44	9564	1077	New power on	0-OFF	0-Stopped	0-Absent	0-Absent	0	0	0	0	0
04/04/2023 07:48:44	9565	1076	Clock updated	0-OFF	0-Stopped	0-Absent	0-Absent	0	0	0	0	0
04/04/2023 08:23:43	9566	W702	(DI.00.02)	1-MAN	0-Stopped	0-Absent	0-Absent	0	0	0	0	0
04/04/2023 09:01:22	9567	W702	(DI.00.02)	1-MAN	0-Stopped	0-Absent	0-Absent	0	0	0	0	0
04/04/2023 13:09:09	9568	1077	New power on	0-OFF	0-Stopped	0-Absent	0-Absent	0	0	0	0	0

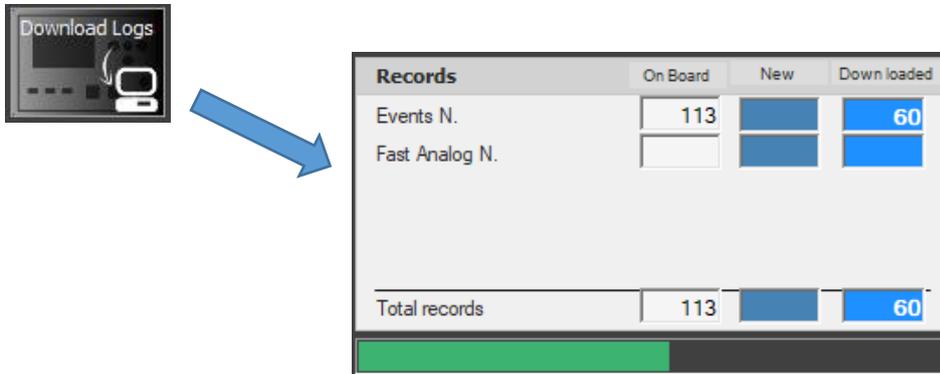
This section allows you to:

- Receive Event Logs
- Receive the analogue logs
- Manage configurable archives (DST4602, GC600)
- Allows export downloaded logs to PC in .txt or .csv format

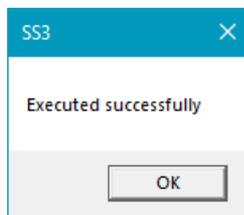
Download only new Data: allows you to download only new events and data. Useful if you wish to download histories frequently without having to receive the entire archive each time.

### 8.1.10.3 Download Logs.

Downloading of archives:



The program connects to the board and downloads all archives. When finished, it displays a message that the operation is complete.



### 8.1.10.4 Archived Logs.

Opens a separate window allowing access to data previously downloaded to the PC. It is possible to filter by date, export and import data.



DateTime	N.	Cod.	Board Descr.	Mode	Engine	Generator	Mains	GCB Cmd
28/04/2023 08:58:20	9577	1076	Clock updated	0-OFF	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:09:01	9578	1002	Mode: MAN	1-MAN	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:09:03	9579	A273	273-Incoherent parameters	1-MAN	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:09:23	9580	A21	021-Engine not stopped	1-MAN	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:16:19	9581	1001	Mode: OFF/RESET	0-OFF	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:16:21	9582	1002	Mode: MAN	1-MAN	4-Stop c...	2-Present	0-Absent	0
28/04/2023 09:16:27	9583	1001	Mode: OFF/RESET	0-OFF	4-Stop c...	2-Present	0-Absent	0
28/04/2023 09:28:31	9584	1002	Mode: MAN	1-MAN	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:28:33	9585	W28	028-Low fuel level (from analogu...	1-MAN	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:28:51	9586	A26	026-Minimum fuel level (from anal...	1-MAN	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:29:11	9587	A21	021-Engine not stopped	1-MAN	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:36:50	9588	1001	Mode: OFF/RESET	0-OFF	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:39:05	9589	1002	Mode: MAN	1-MAN	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:39:19	9590	W28	028-Low fuel level (from analogu...	1-MAN	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:39:37	9591	A26	026-Minimum fuel level (from anal...	1-MAN	0-Stopped	2-Present	0-Absent	0
28/04/2023 09:39:57	9592	A21	021-Engine not stopped	1-MAN	0-Stopped	2-Present	0-Absent	0
12/05/2023 08:57:22	9593	1077	New power on	0-OFF	0-Stopped	2-Present	0-Absent	0
12/05/2023 08:57:22	9594	1076	Clock updated	0-OFF	0-Stopped	2-Present	0-Absent	0
16/05/2023 15:30:35	9595	1077	New power on	0-OFF	0-Stopped	2-Present	0-Absent	0
16/05/2023 15:30:35	9596	1076	Clock updated	0-OFF	0-Stopped	2-Present	0-Absent	0
16/05/2023 15:31:26	9597	1077	New power on	0-OFF	0-Stopped	2-Present	0-Absent	0
16/05/2023 15:31:26	9598	1076	Clock updated	0-OFF	0-Stopped	2-Present	0-Absent	0
16/05/2023 16:34:03	9599	1077	New power on	0-OFF	0-Stopped	2-Present	0-Absent	0

**Note:** it is possible to type and store notes associated with the board.

**Display filter:** allows you to display information in a time frame (date to date).

**Export Folder:** compacts all data (events, fast data, slow data, events) of the board into a file in compressed format (.gz)

This file can then be transferred or sent by email.

**Import Folder:** reads the compressed file (.gz) that was created by the export function and unzips it into the folder relating to this board.

This makes it possible to import and display all the data it contains.

**Export csv:** Exports data in csv format (typical format that can be imported into Excel).

### 8.1.10.5 Rear Panel of the board



Pressing this button opens the image of the rear panel of the board with the dynamic display of digital input and output states.

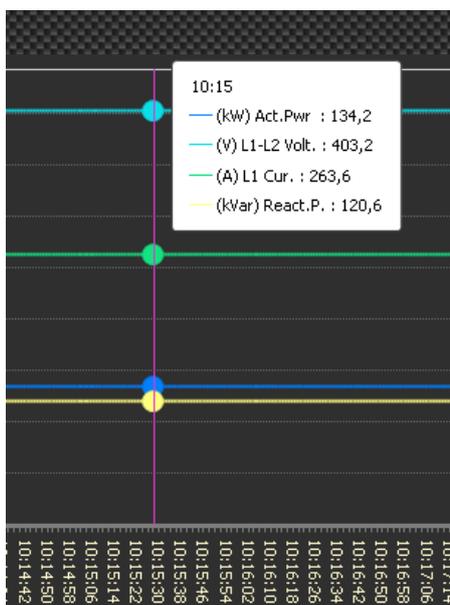
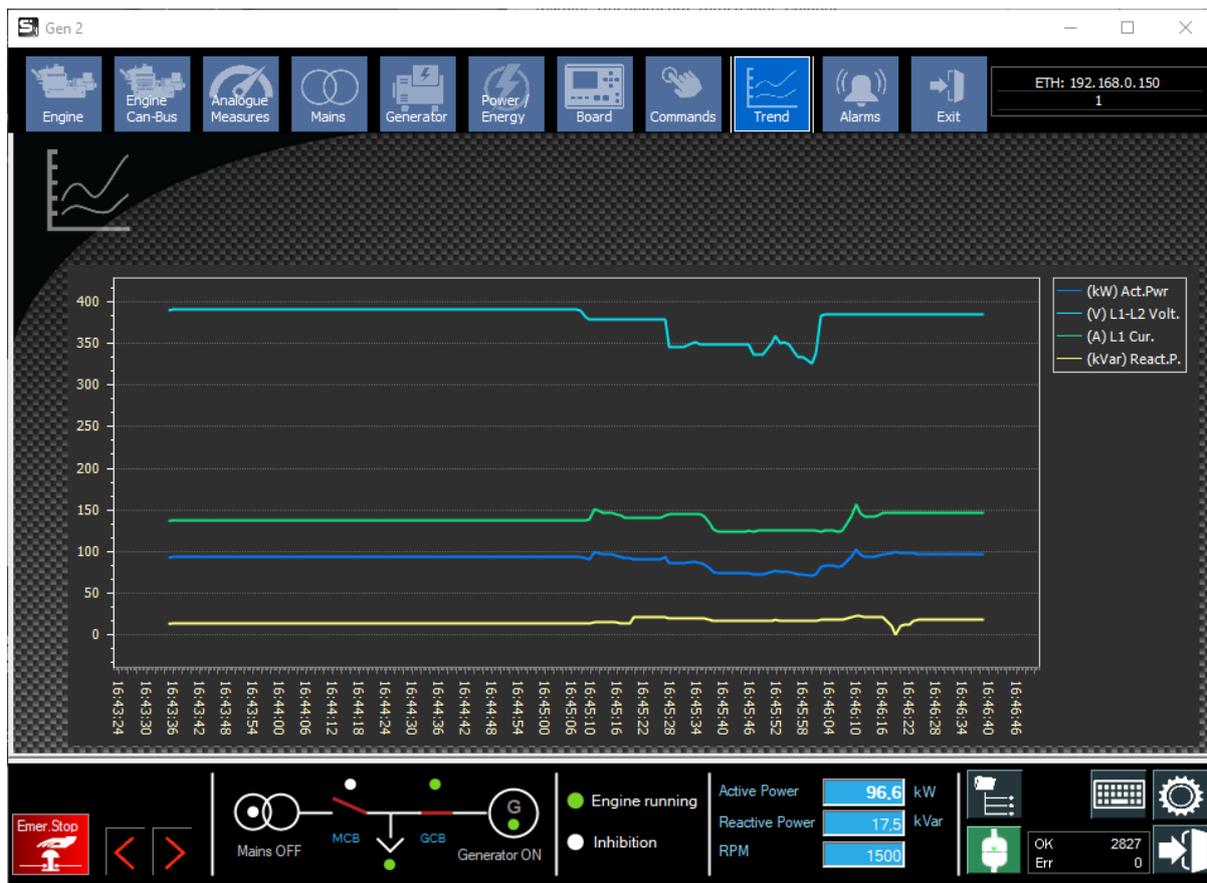
The screenshot shows the 'Board Rear' software window with a detailed diagram of the board's rear panel. A red box highlights the 'JD DIGITAL OUTPUTS 1+4' section. Below the main diagram, two smaller diagrams are shown: 'JL DIGITAL INPUT 1+8' and 'JD DIGITAL OUTPUTS 1+4'. Red arrows point from the highlighted area in the main diagram to these two smaller diagrams. Below the smaller diagrams are labels 'Digital inputs' and 'Digital outputs'.

When the board is connected, the statuses of digital inputs and outputs are displayed in real time.

### 8.1.11 Trend page

This page graphically depicts the real-time trend of the following measurements:

- Total active power (kW)
- Total reactive power (kvar)
- Phase to phase voltage L1-L2 (Volts)
- Phase Current L1 (A)

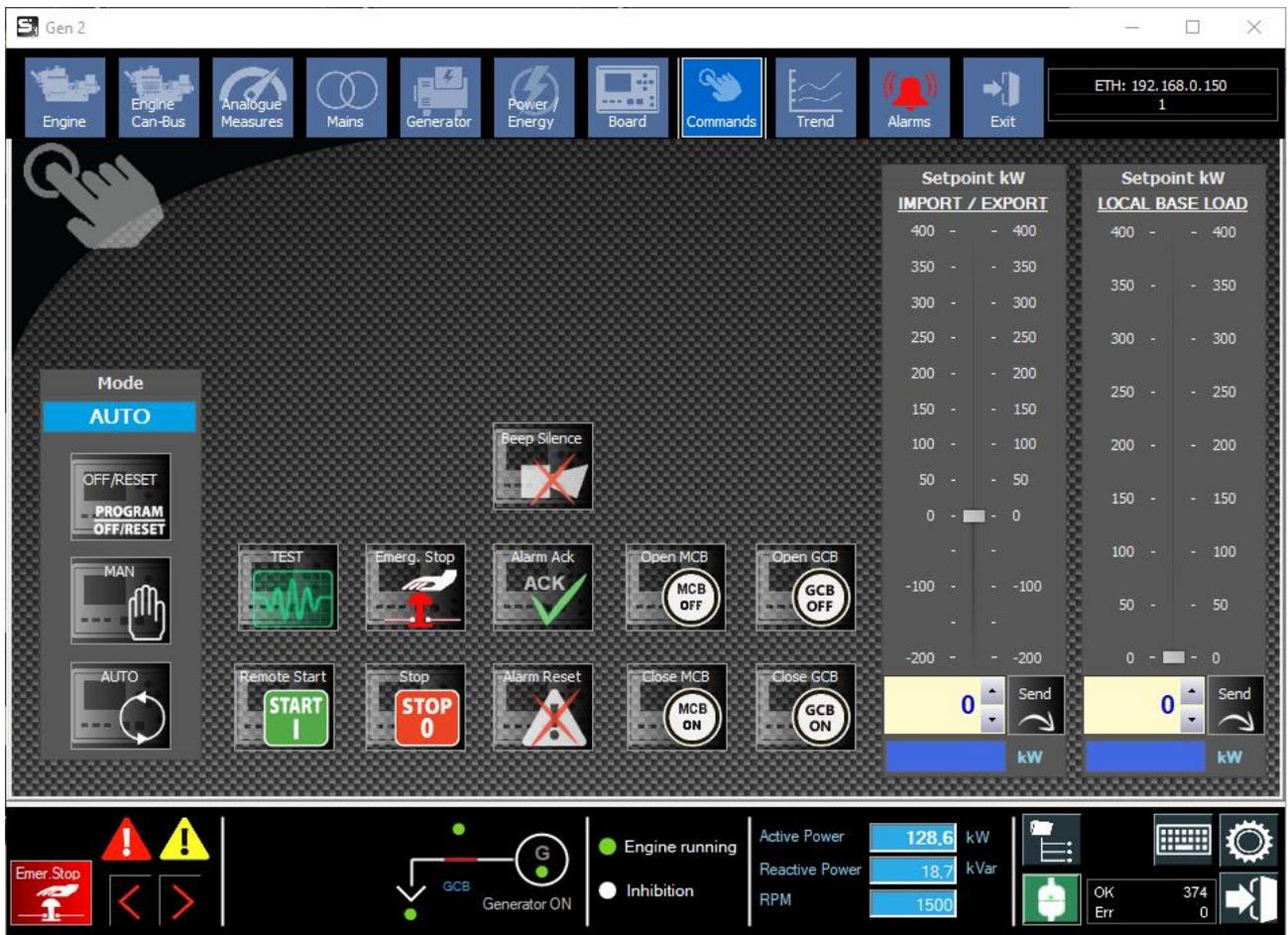


By positioning the mouse over an area of interest in the trend, a popup appears showing the time of the recording and the value of the recorded measurements.

For further information on the use of trends, please refer to paragraph **"15 - Trend management and zooming in"**.

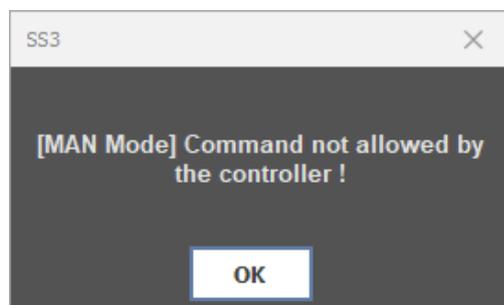
### 8.1.12 Commands page

Commands for the board are grouped in this panel:

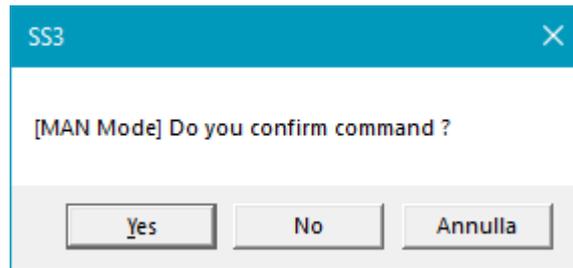


**! ATTENTION!** Writing commands is subject to the board's command password.

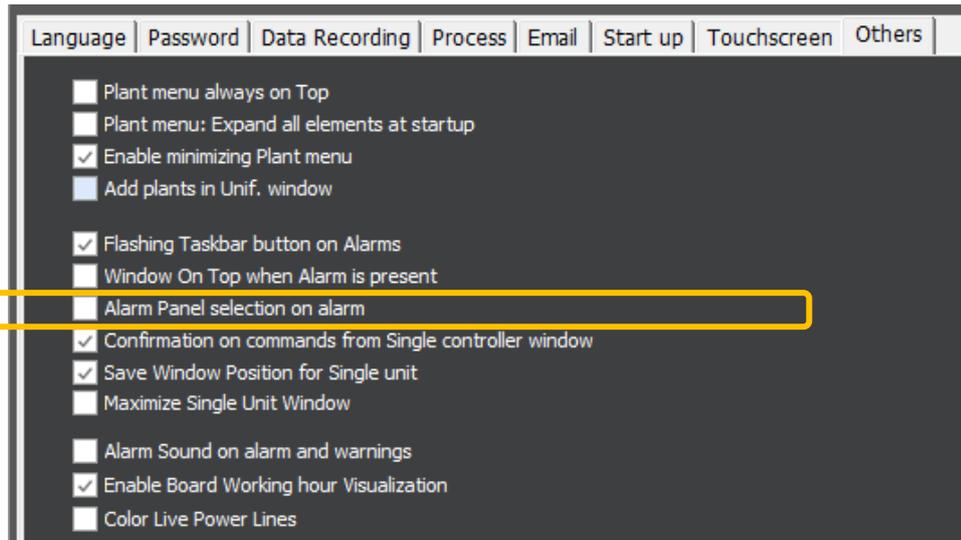
If the board has a command password, it must be set in the configuration, otherwise commands are not accepted:



It is possible to configure supervision to require operator confirmation for each command.



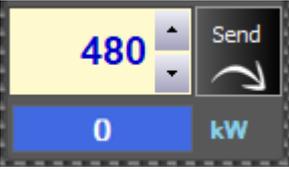
The selection for this option must be made in the generic settings accessible from the plant menu:



### 8.1.13 Commands table

Below is a list of the commands that can be used:

Command code	Control button	Description
12		Requires TEST mode (only in AUTO). The board will or will not automatically close GCB according to parameter P.0222). Commands 31, 32, 33 can be used to force the status of GCB. TEST mode will be terminated if serial communication is interrupted.
13	 In AUTO	If the board is in AUTO mode, pressing this button will send the REMOTE START command (13). With this command, the board will perform the GCB closure. <input checked="" type="checkbox"/> Inib. GCB on Start If the "Inib. GCB on Start" option is activated, the program, in addition to the remote start command, also cyclically sends the switching inhibition command (code 32) which prevents the board from closing the GCB. In the absence of this cyclical command (disconnection or loss of communication), the board closes the GCB after a few seconds.
11	 In MAN	If the board is in MAN mode, pressing this button sends the manual START command (11). It requests the engine to start (in MAN mode only). The board will not do an automatic GCB shutdown: it will have to be requested with command 33.
21		Requests the engine to stop. In AUTO, TEST and REMOTE START the requests for TEST and REMOTE START are removed: the actual stopping of the engine depends on the type of system and the conditions (and is possibly preceded by power unloading, opening of the GCB switch and the cooling cycle). In MAN the stop is immediate (the GCB is also opened without power unload and without cooling cycle).
22		Requires immediate engine stop (emergency).
51		It only deactivates the beeper, but the situation remains unchanged.
52		Alarm Recognition. If there are warnings whose cause is no longer present then these disappear. Note: If there are only warnings whose cause is no longer active, the result will be the same as for Reset alarms.
53		Alarm reset. Removes all present alarms and warnings and turns off the siren. If the causes are still present the unresolved alarms and warnings come back out and are recorded again in the archive.

41		Requires immediate opening of MCB (only in MAN).
43		Requires MCB to be closed (only in MAN, the board activates automatic synchronisation if required).
31		Requires immediate opening of GCB (only in MAN).
32	-	Requires the GCB to be opened (with power unload if required). In AUTO, TEST and REMOTE START this command will be aborted (and therefore the GCB can be closed again) if communication is interrupted.
33		Requires the GCB to be closed (the board activates automatic synchronisation if required). If the board receives this command in MAN during power unloading, it interrupts unloading and keeps the GCB closed.
-		<p>Setpoint kW.</p> <p>Allows you to set the power setpoint. It is possible to change the value using the slider bar, or with the arrows in the box with the yellow background. The value must be confirmed with the Send button. The value at the bottom indicates the current setpoint value in the board.</p>

### 8.1.14 Alarms page

This page displays the active alarms generated by the board in tabular form.

The table contains a column showing the alarm identification code, and a column showing the alarm description in the language set in the controller.



Indicates the number of active alarms in the controller.



Appears only if sound signaling from the PC is enabled and active. Pressing it deactivates the sound signaling generated by the computer.



Simply turns off the board's buzzer, but the situation remains unchanged.



Ack : recognizes alarms (and turns off the siren). Pre-alarms whose cause is no longer present will disappear.

(note: if there are only warnings whose cause is no longer active the result between ACK and RESET is the same)



Pressing this button commands an alarm reset.

It removes all present alarms and prealarms and turns off the siren. Then if the causes are still present the unresolved alarms and prealarms come back out and are recorded again in the archive.

Supervisor asks for confirmation to send reset command:



## 8.2 Mains Controller

MC (Mains Controller) type boards are represented and managed as follows.

### 8.2.1 Layout

The layout may include the load and the MGCB breaker.

The first screenshot shows a simple MCB configuration. The second shows an MGCB configuration with a load. The third shows an MGCB configuration with a load and an active alarm.

Parameter	Value	Unit
M.F...	50	Hz
> L1-L2	400,4	V
> L1	4,8	A
> Active...	1,5	kW
Batt.	13,3	V
P. Fact.	0,43	i
Mode	OFF/RESET	
Ener....	0	kWh

Parameter	Value	Unit
M.F...	50	Hz
> L1-L2	400,4	V
> L1	4,8	A
> Active...	1,5	kW
Batt.	13,3	V
P. Fact.	0,43	i
Mode	OFF/RESET	
Ener....	0	kWh

Parameter	Value	Unit
M.F...	50	Hz
> L1-L2	285,3	V
> L1	7,7	A
> Active...	1,6	kW
Batt.	13,3	V
P. Fact.	0,42	i
Mode	AUTO	
Ener....	0	kWh

Alarms : 0    292    0

Alarms : 0    547    0

Alarms : 2    1637    0

ETH: 192.168.0.223

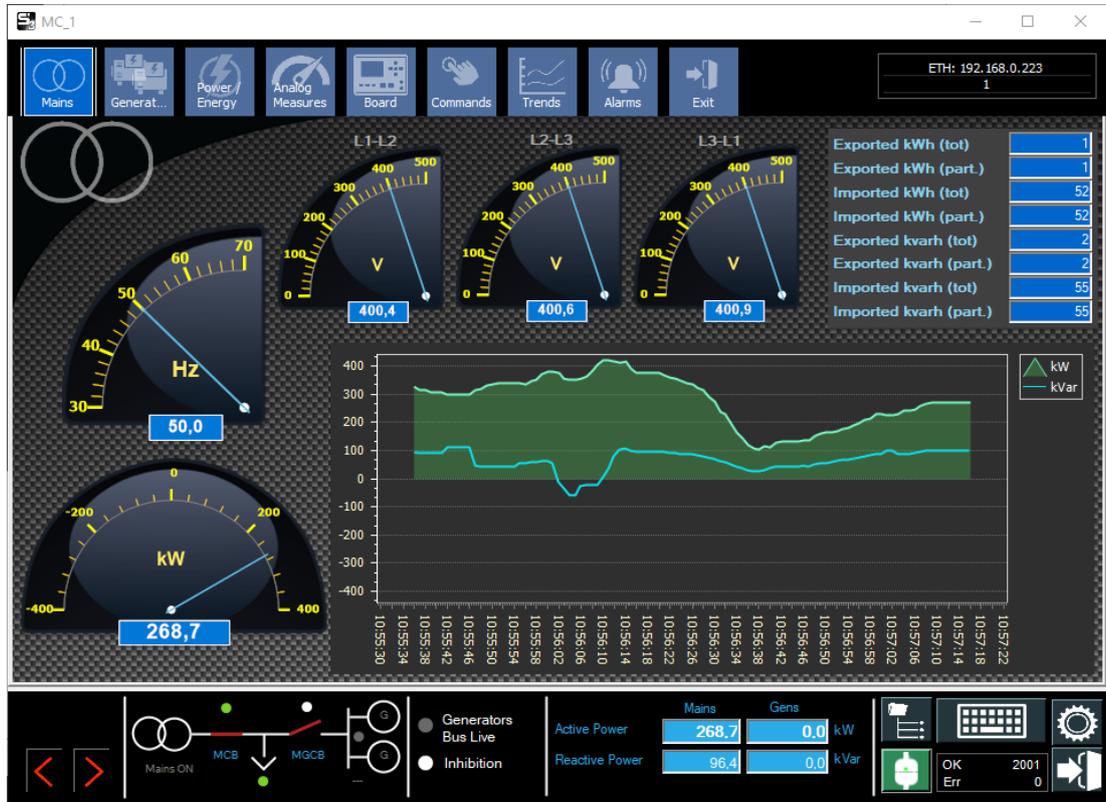
ETH: 192.168.0.223

ETH: 192.168.0.223

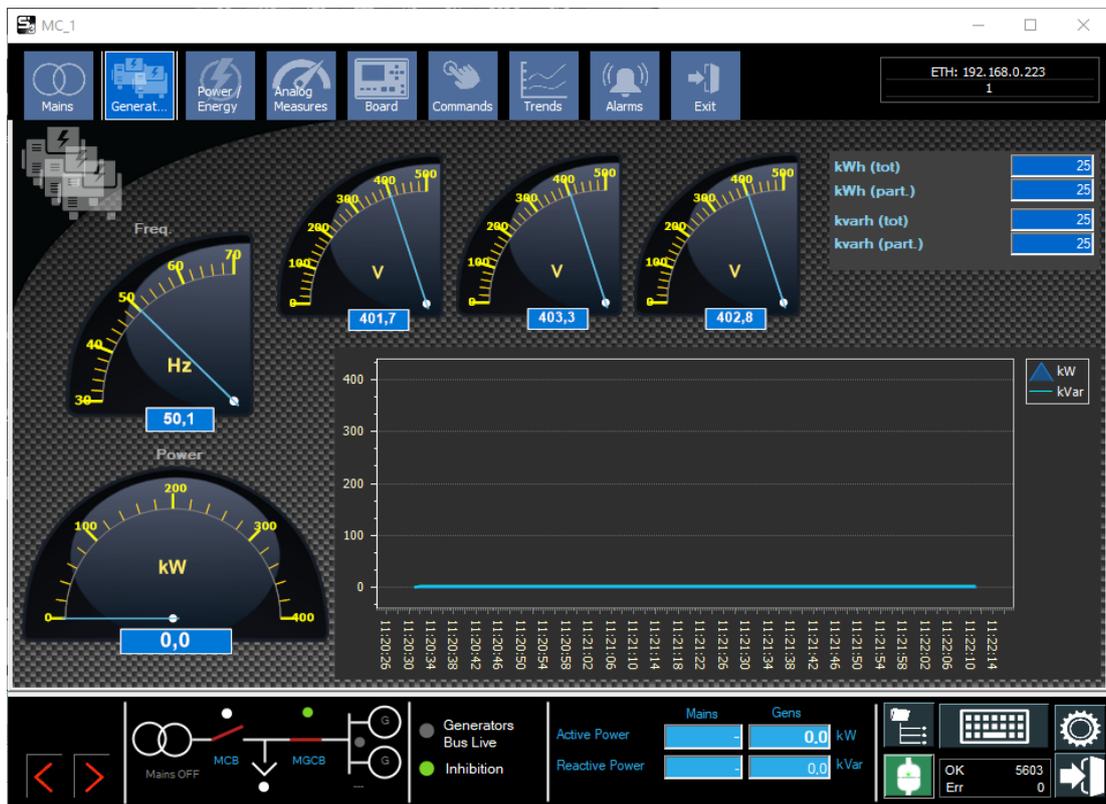
A024 - MGCB not open  
 W013 - MCB not closed

## 8.2.2 Single Control Window

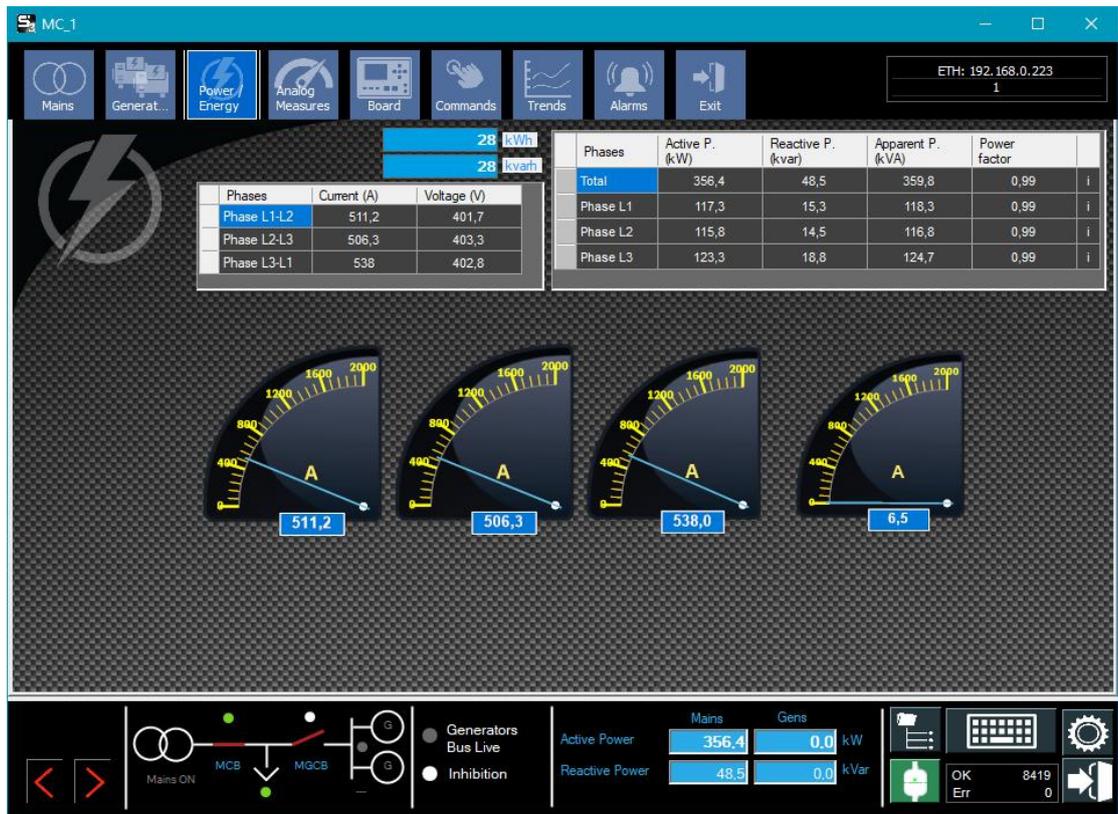
If the inserted board is a Mains Controller the single control window will appear as follows:



### 8.2.2.1 Generators



### 8.2.2.2 Power / Energy



### 8.2.2.3 Board

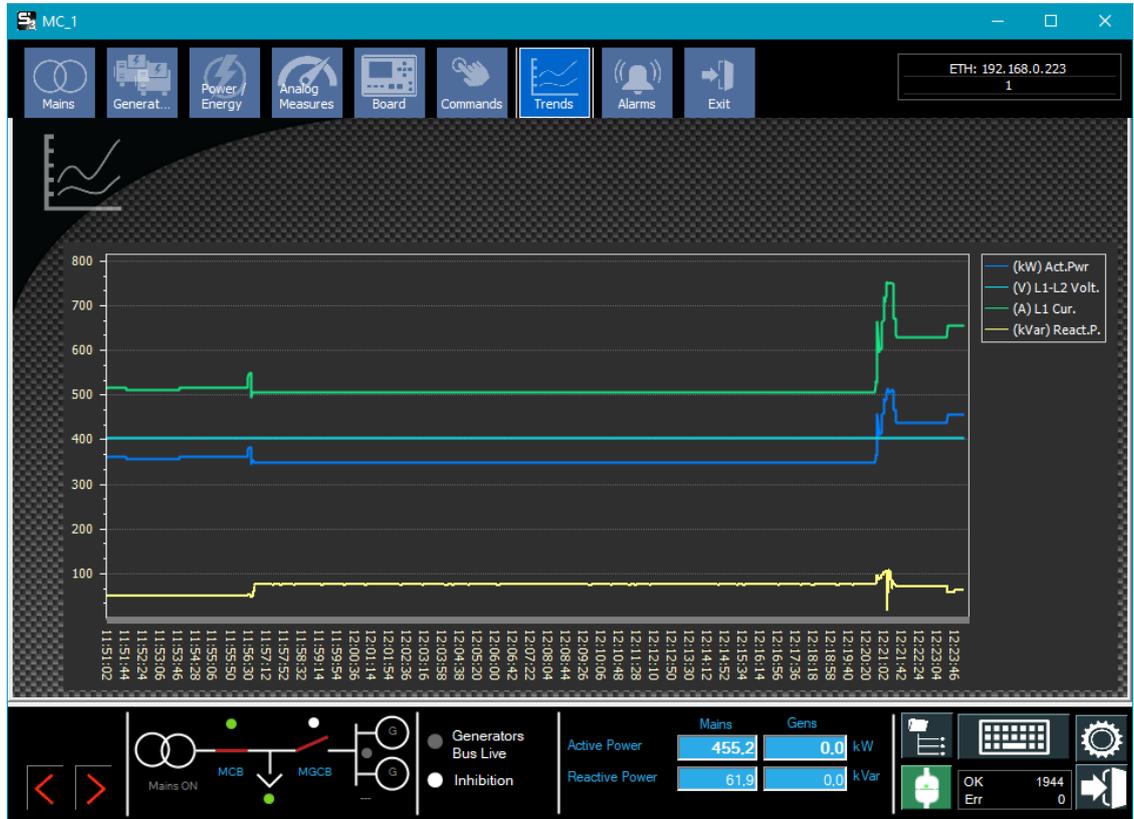


### 8.2.2.4 Commands

The MC command section:



### 8.2.2.5 Trends



### 8.2.2.6 Alarms

Cod.	Description
A017	Maximum current (#2)
W016	Maximum current (#1)

The interface also features a status bar at the bottom with system parameters (Active Power: 455.2 kW, Reactive Power: 61.9 kVar) and a schematic diagram. An 'Alarm Reset' button is visible in the top right corner of the main area.

## 8.3 BTB Controller

BTB controllers provides the ability to control a bus tie breaker, for applications where it is necessary to divide the common bus-bars.

BTB (Bus Tie Breaker) type boards are represented and managed as follows.

### 8.3.1 Layout

The screenshot displays the BTB\_1 control interface. At the top, there is a title bar with 'BTB\_1' and a search icon. Below the title bar, a red diagonal line indicates the BTB status. The main area contains a table of electrical parameters:

A: ...	50	Hz
> A: L1-...	400,6	V
B: Freq	50	Hz
> B: L1-L2	395,4	V
> L1	1,5	A
> Active...	0	kW
Batt.	13,1	V
P. Fact.	1	
Mode	MAN	

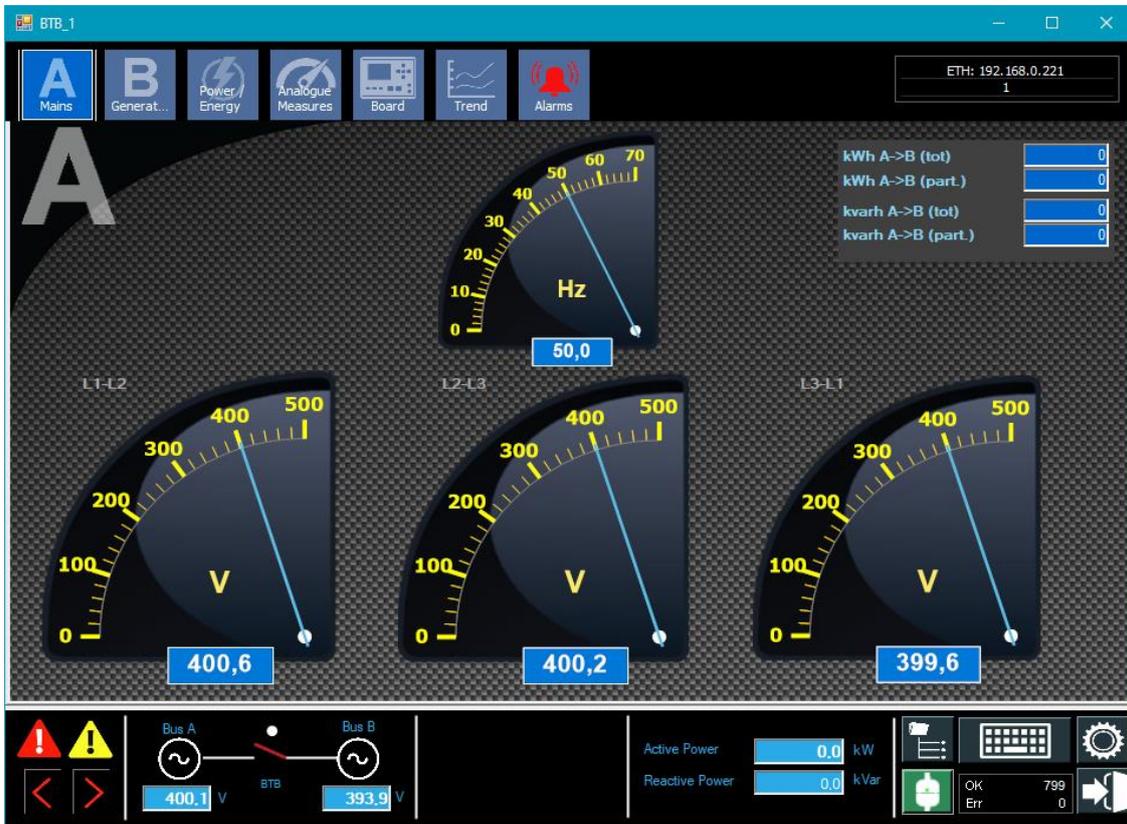
Below the table, there is a red alarm banner with the following messages:

- A021 - Engine not stopped
- D024 - GCB not open
- W252 - Expansion board is mis

At the bottom, there is a status bar showing 'Alarms : 4', '232', '0', and 'ETH: 192.168.0.221'.

### 8.3.2 Single Control Window

#### 8.3.2.1 Source A, source B



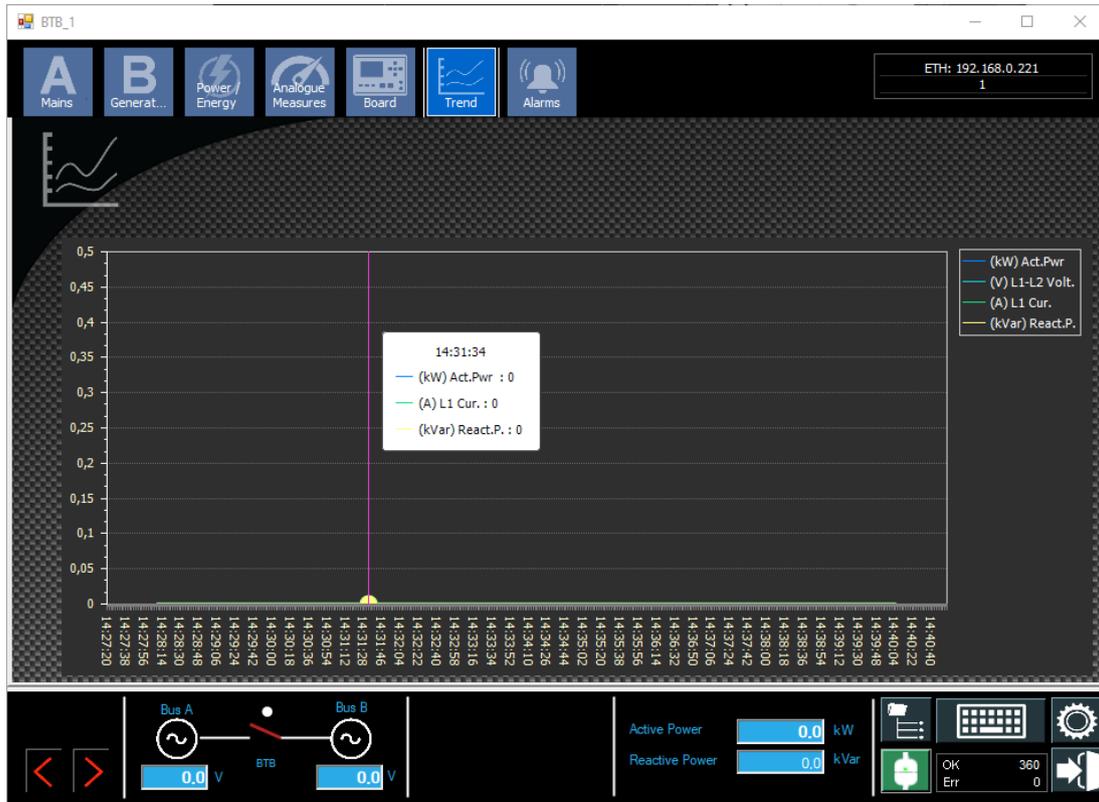
### 8.3.2.2 Power / Energy



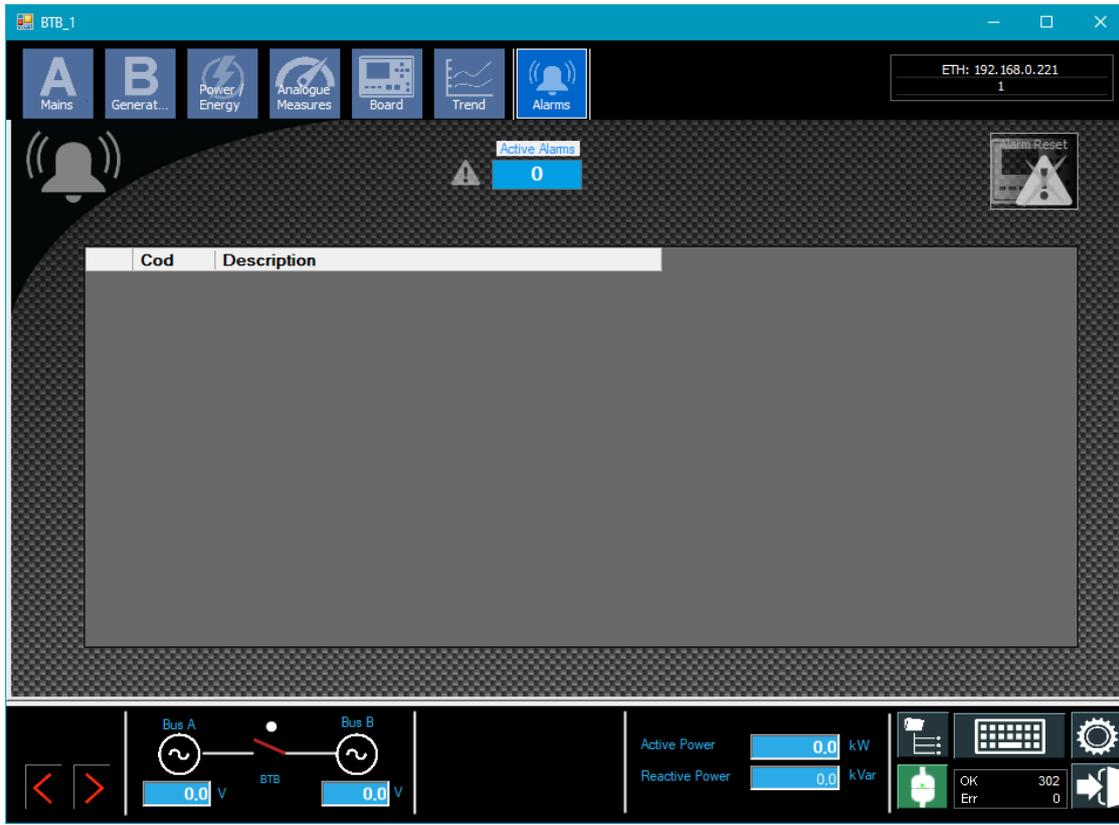
### 8.3.2.3 Board



### 8.3.2.4 Trend



### 8.3.2.5 Alarms

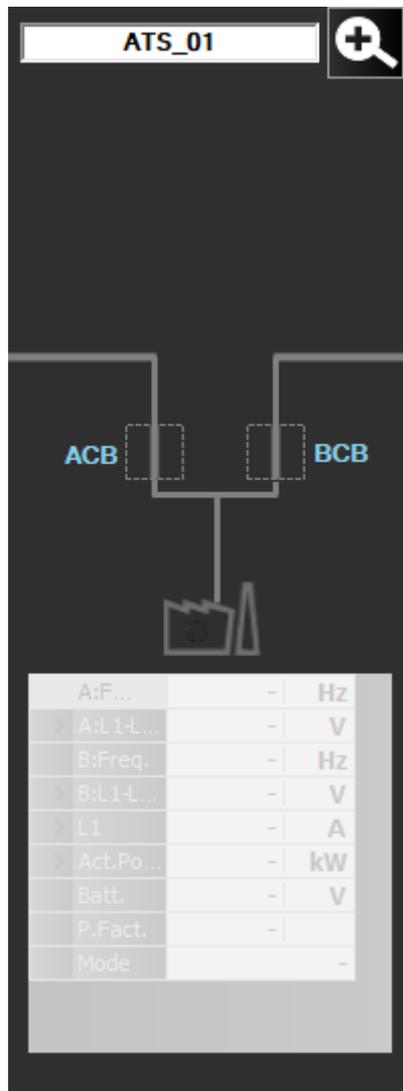


## 8.4 ATS Controller

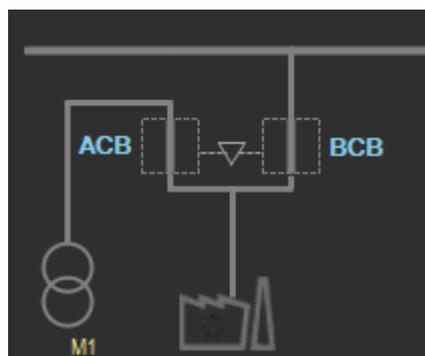
### 8.4.1 Layout

#### 8.4.1.1 Basic Configuration with 2 breakers ACB and BCB

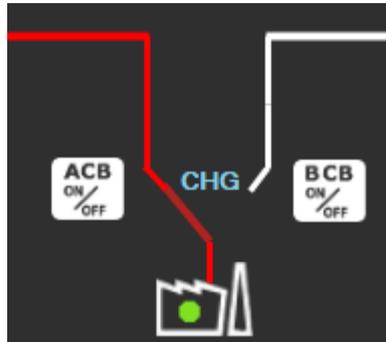
This is the basic configuration with the 2 breakers ACB and BCB:



#### 8.4.1.2 Configuration with Mains



### 8.4.1.3 Configuration with 1 breaker (Sircover)



Only one switch is used that selects one of the two sources (Sircover).

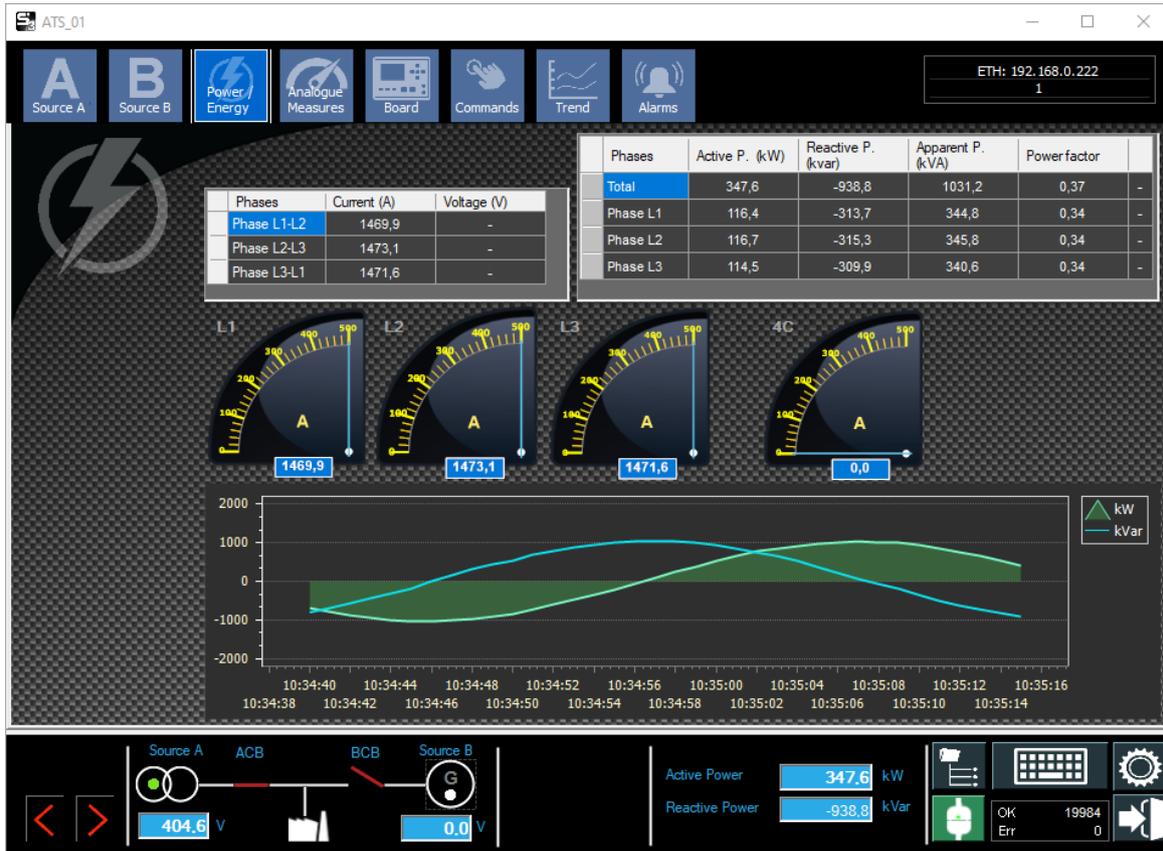
This mode is set on the ATS board (P.3007 Function of the output ACB = 0-Not Used) and read by the supervision, which automatically adapts the graphical representation. Only the BCB switch is used in this mode, so ACB should be set as unused or with a different function.

## 8.4.2 Single Control Window

### 8.4.2.1 Source A, Source B



### 8.4.2.2 Power / Energy



### 8.4.2.3 Analog measures

The screenshot displays the 'Analog Measures' section of the Mecc Alte Supervision Software. The interface includes a navigation bar with icons for Source A, Source B, Power/Energy, Analogue Measures, Board, Commands, Trend, and Alarms. A table displays the values for four analog inputs. The bottom status bar shows a schematic diagram of the power source and various power parameters.

Measures	Value
Analog Input 1	36,1
Analog Input 2	251,6
Analog Input 3	269,7
Analog Input 4	0

Active Power: -241,3 kW  
Reactive Power: -1011,6 kVar

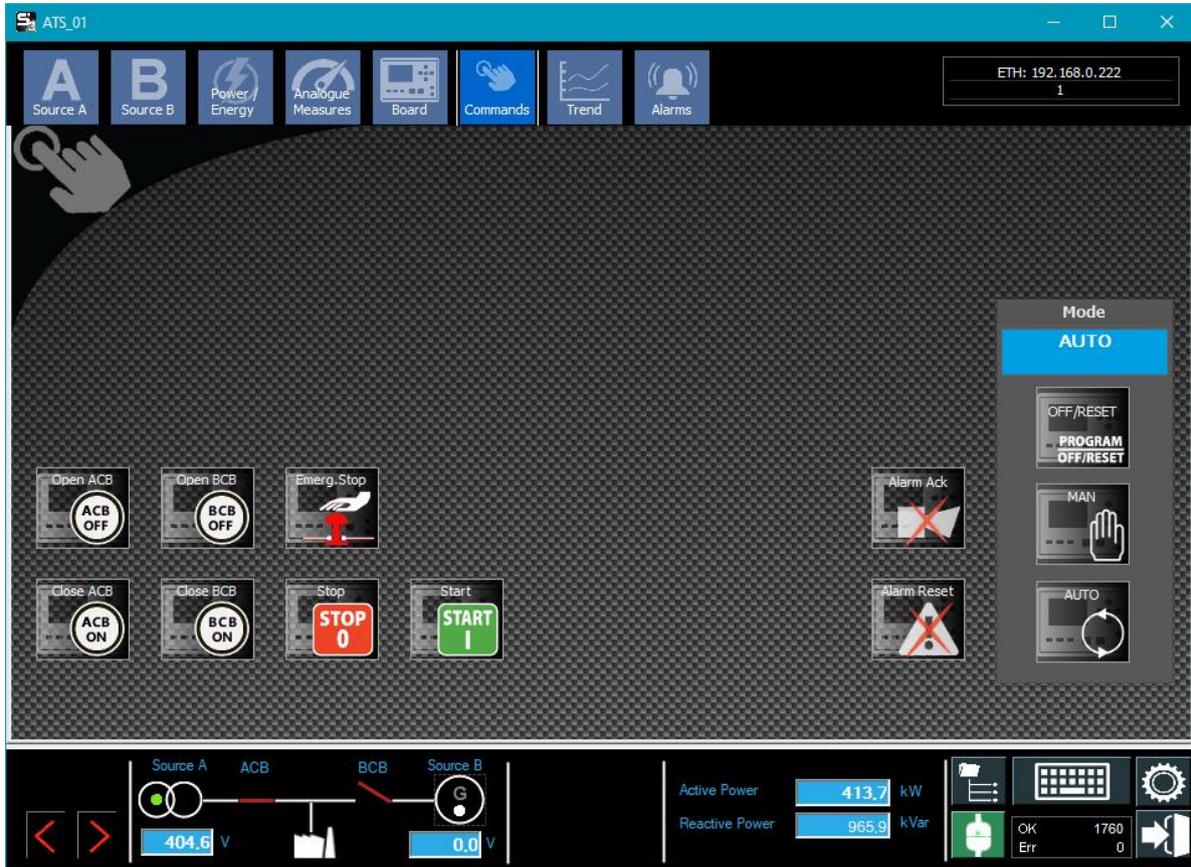
Source A: 404,6 V  
Source B: 0,0 V

ETH: 192.168.0.222  
1

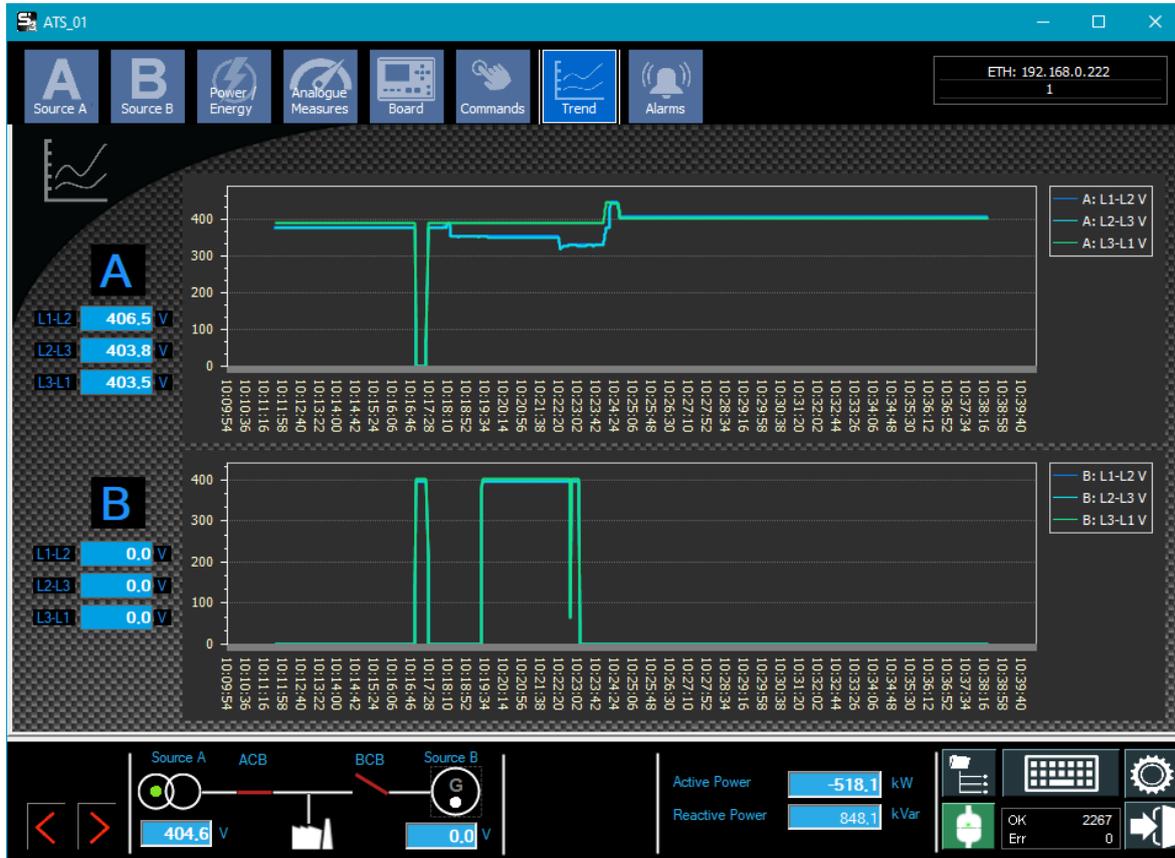
### 8.4.2.4 Board



### 8.4.2.5 Commands



### 8.4.2.6 Trend



### 8.4.2.7 Alarms

ATS\_01

Source A Source B Power/Energy Analogue Measures Board Commands Trend Alarms

ETH: 192.168.0.222  
1

Active Alarms  
2

Cod	Description
W023	ACB not open
W031	Failure Source A

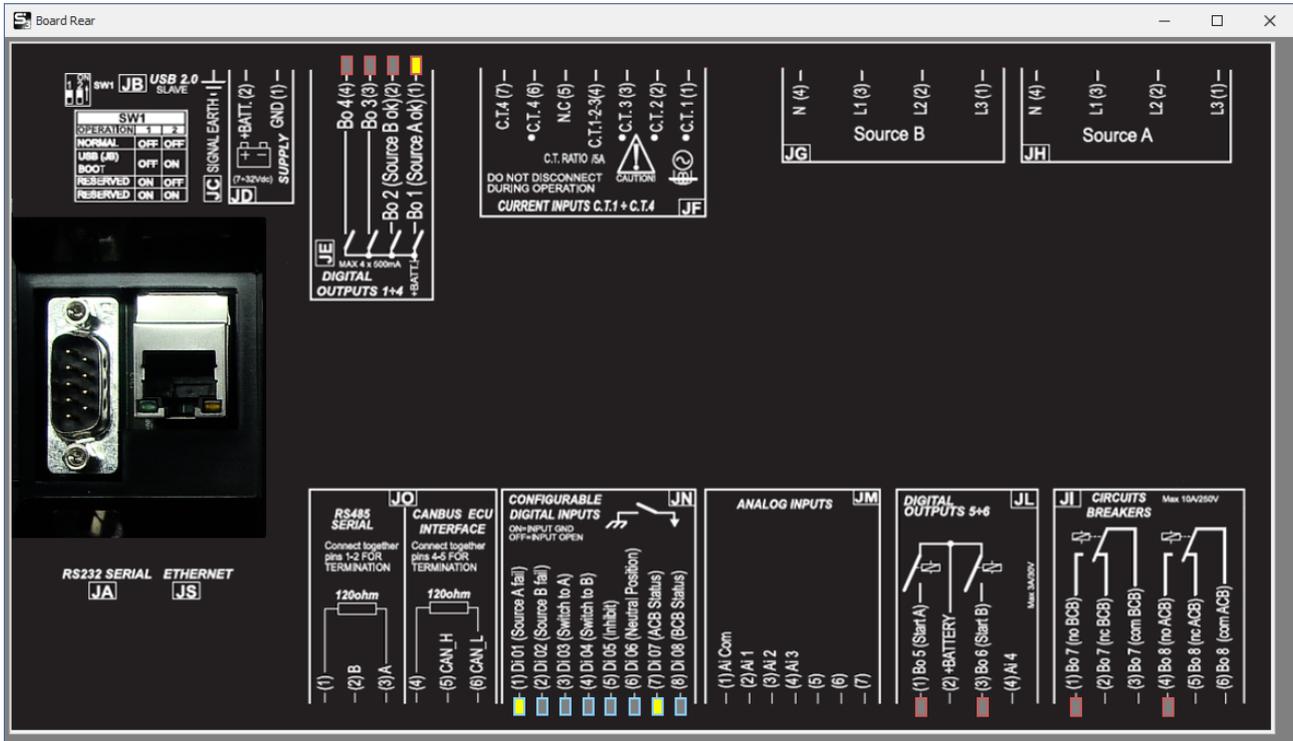
Source A ACB BCB Source B

404.6 V 0.0 V

Active Power 0.0 kW  
Reactive Power 0.0 kVar

OK 3586  
Err 0

### 8.4.2.8 Board Rear



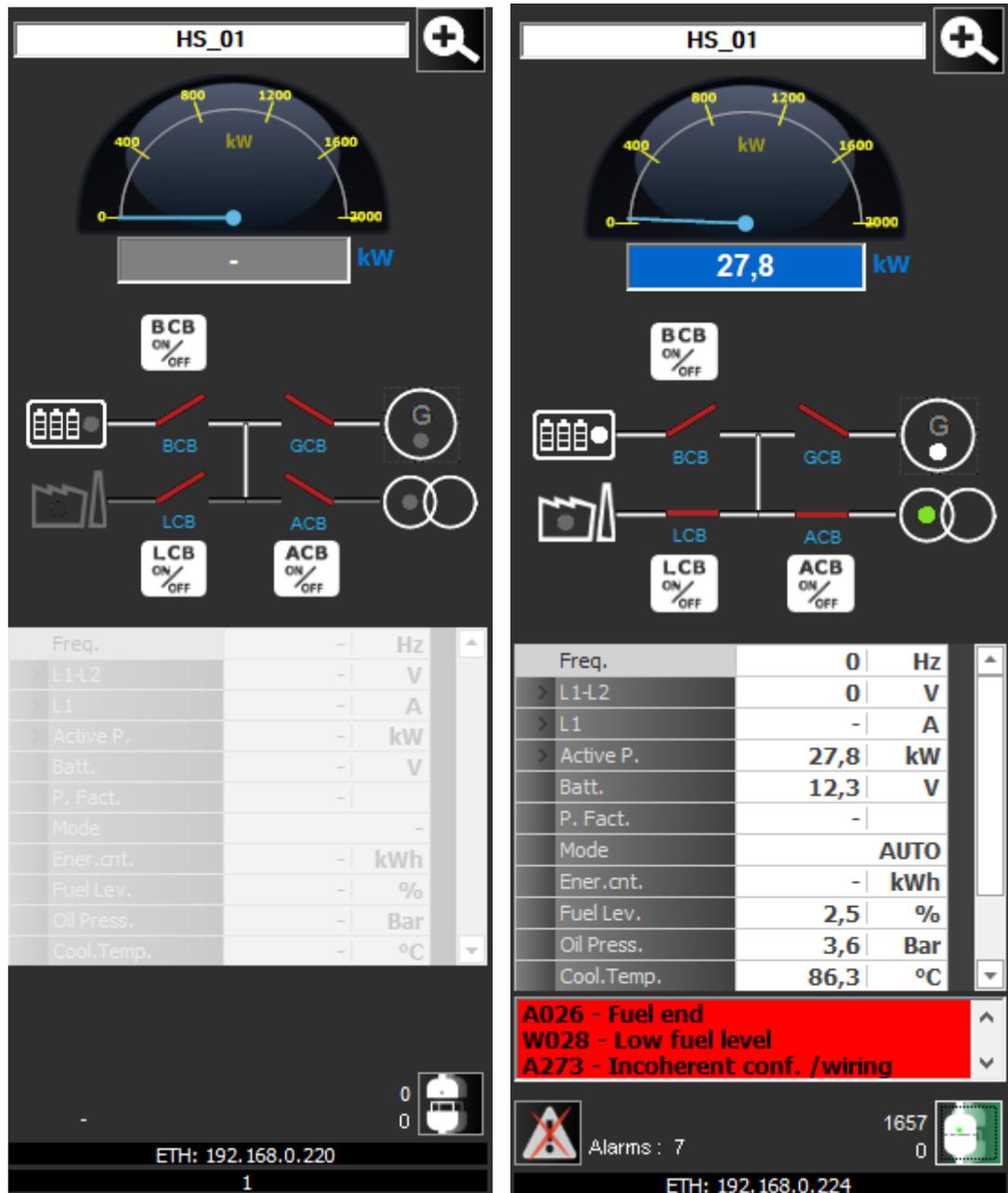
### 8.4.2.9 History Logs

N.	Date time	Event ID	Alarm Code	Event description	Description from board	Mode	Engine	Generator	Mains
56	28/03/2023 15:04:02	1064		Source B: automatic stop c...		0-OFF	0-Stopped	0-Absent	0-Absent
73	11/04/2023 11:07:14	1089		Standard time on		1-MAN	0-Stopped	2-Present	0-Absent
74	11/04/2023 11:10:11	2024	W024	BCB breaker not open		2-AUTO	0-Stopped	2-Present	2-Present
75	11/04/2023 11:10:57	2024	W024	BCB breaker not open		2-AUTO	0-Stopped	2-Present	2-Present
76	11/04/2023 11:11:18	2024	W024	BCB breaker not open		4-REMOTE S...	0-Stopped	2-Present	2-Present
77	11/04/2023 11:16:12	2024	W024	BCB breaker not open		4-REMOTE S...	0-Stopped	2-Present	2-Present
78	15/05/2023 10:20:33	1077		New power on		0-OFF	0-Stopped	2-Present	0-Absent
79	15/05/2023 10:23:41	1077		New power on		0-OFF	0-Stopped	2-Present	0-Absent
80	16/05/2023 07:52:27	1077		New power on		0-OFF	0-Stopped	2-Present	0-Absent
81	16/05/2023 10:02:50	2031	W031	Failure Source A		2-AUTO	0-Stopped	2-Present	0-Absent
82	16/05/2023 10:03:09	2023	W023	ACB breaker not open		2-AUTO	0-Stopped	2-Present	0-Absent
83	16/05/2023 10:03:25	2031	W031	Failure Source A		1-MAN	0-Stopped	2-Present	0-Absent
84	16/05/2023 10:03:45	2023	W023	ACB breaker not open		2-AUTO	0-Stopped	2-Present	0-Absent
85	16/05/2023 10:04:26	2008	W008	Source B operating condi...		2-AUTO	0-Stopped	2-Present	0-Absent

## 8.5 HS Controller

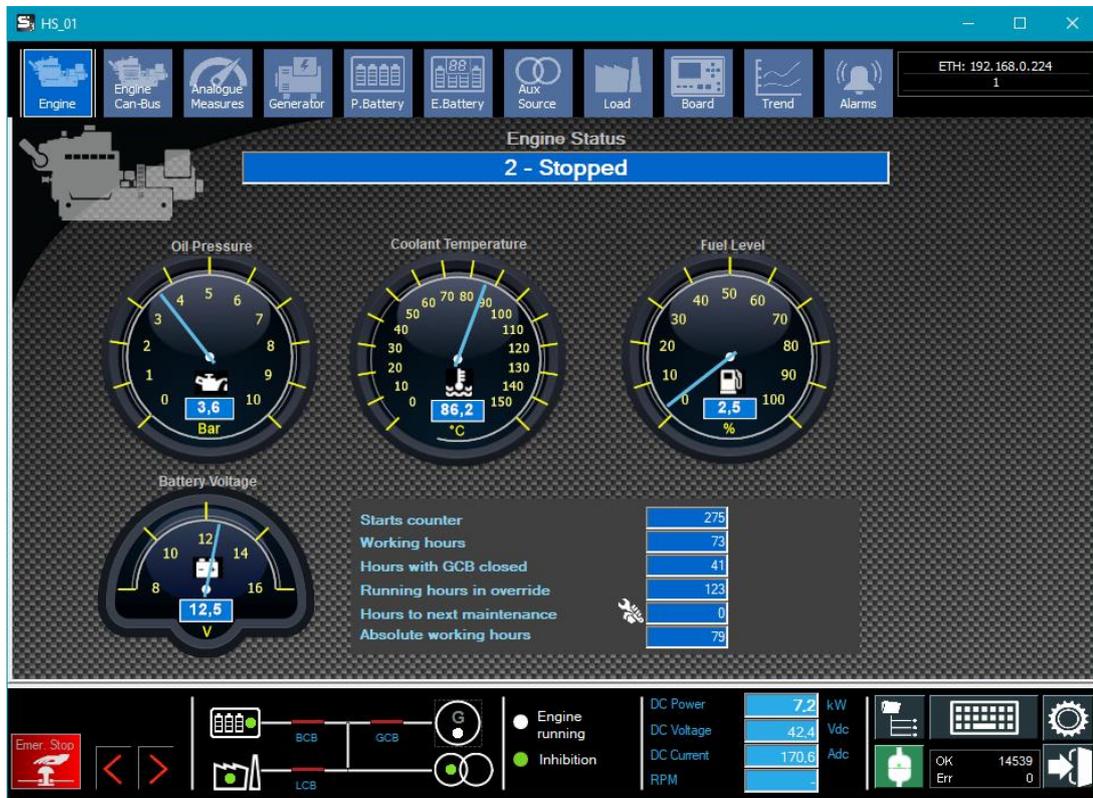
HS controllers allows to control DC generator and monitor load and battery levels.

### 8.5.1 Layout



## 8.5.2 Single Control Window

### 8.5.2.1 Engine



### 8.5.2.2 Engine Can-Bus

Displays measurements from the engine's Canbus interface.

The screenshot displays the SS3 Supervision Software interface for a generator set (HS\_01). The top navigation bar includes icons for Engine, Engine Can-Bus, Analogue Measures, Generator, P.Battery, E.Battery, Aux Source, Load, Board, Trend, and Alarms. The IP address is shown as ETH: 192.168.0.224. The main area features a table of CAN-Bus measures and a diagnostic code section.

SPN	Can-Bus measures	Value
51	Engine throttle position (%)	73.2
52	Engine Intercooler Temperature (°C)	35
91	Accelerator pedal position (%)	72.0
92	Engine Percent Load at current Speed (%)	69
94	Fuel delivery pressure (Bar)	2.1
98	Engine oil level (%)	2.0
100	Engine oil pressure (Bar)	1.0
101	Crankcase pressure (Bar)	0.5
102	Engine intake manifold #1 pressure (Bar)	3,922
105	Intake manifold #1 temperature (°C)	37.0
108	Barometric pressure (Bar)	0,613
109	Engine coolant pressure (Bar)	0.8
110	Engine coolant temperature (°C)	5
111	Engine coolant level (%)	7.2
156	Engine injector timing rail 1 pressure (Bar)	22.0

Diagnostic code	Description
SPN: 100 FMI: 1 OC: 2	Engine oil pressure (Bar) - Data low (shutdown)
SPN: 103 FMI: 4 OC: 5	-- Low voltage / shorted low

The bottom status bar shows an emergency stop button, a schematic diagram of the generator set with BCB, GCB, and LCB components, and real-time monitoring data:

- DC Power: 7.2 kW
- DC Voltage: 41.9 Vdc
- DC Current: 171.9 Adc
- RPM: 9
- Engine running:  (off)
- Inhibition:  (on)
- Err: 55834
- OK: 10

### 8.5.2.3 Analog measures

The screenshot displays the 'Analogue Measures' section of the SS3 software interface. The main content area features a table with the following data:

Measures	Value
Analog Input 1	2.4
Analog Input 2	3.5
Analog Input 3	86
Analog Input 4	171.4
Analog Input 5	0

The bottom status bar includes an 'Emer Stop' button, a schematic diagram with components labeled E.C.B., G.C.B., and L.C.B., engine status indicators for 'Engine running' and 'Inhibition', and a list of power and RPM readings:

- DC Power: 7.2 kW
- DC Voltage: 41.8 Vdc
- DC Current: 171.9 Adc
- RPM: 9

Additional status information includes 'OK Err 56488 10' and various control icons.

### 8.5.2.4 Generator



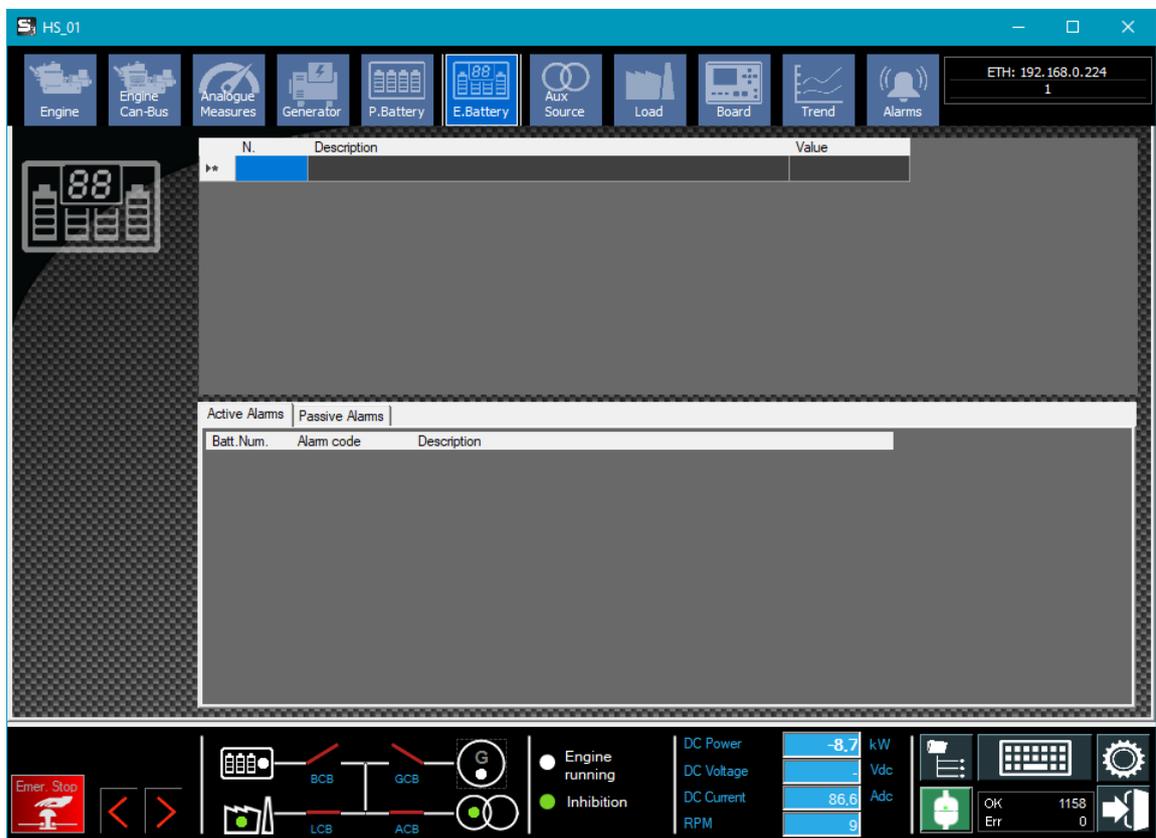
### 8.5.2.5 Battery

Displays battery measurements acquired or calculated from the HS board.

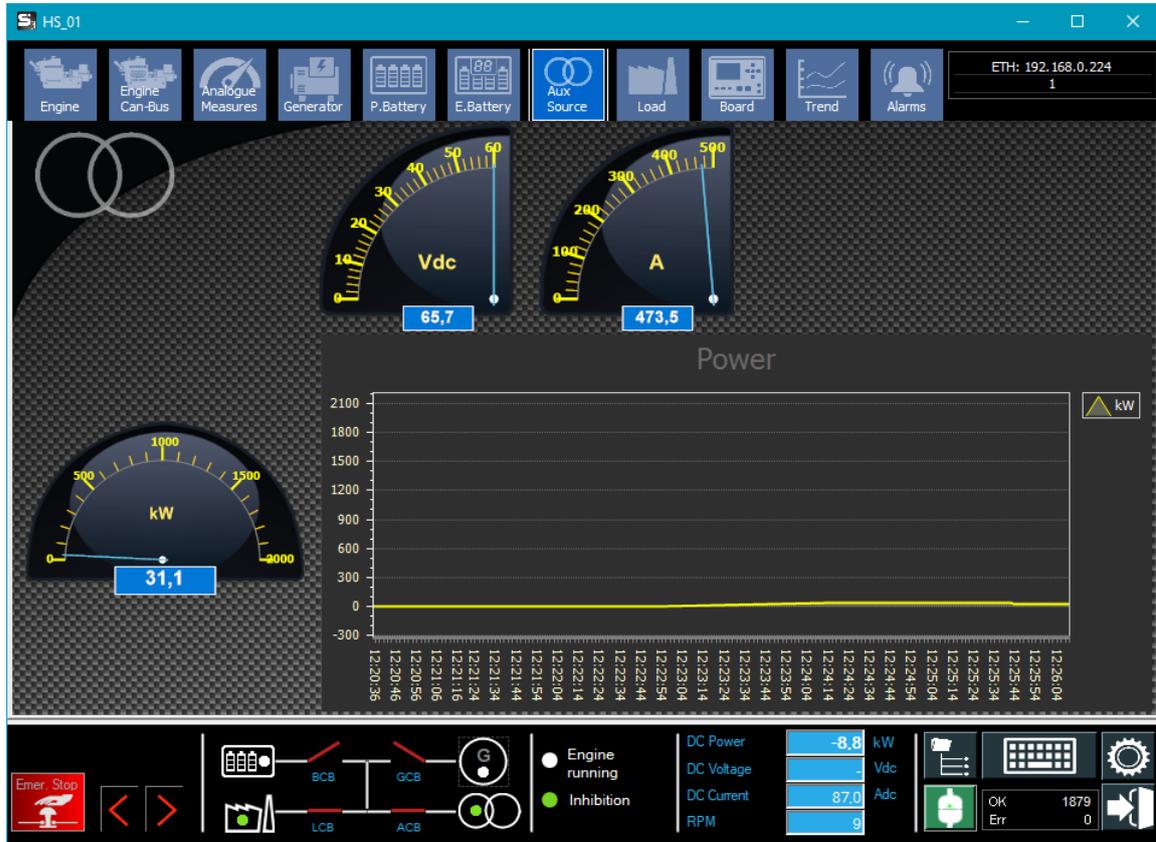


### 8.5.2.6 Electronic Battery

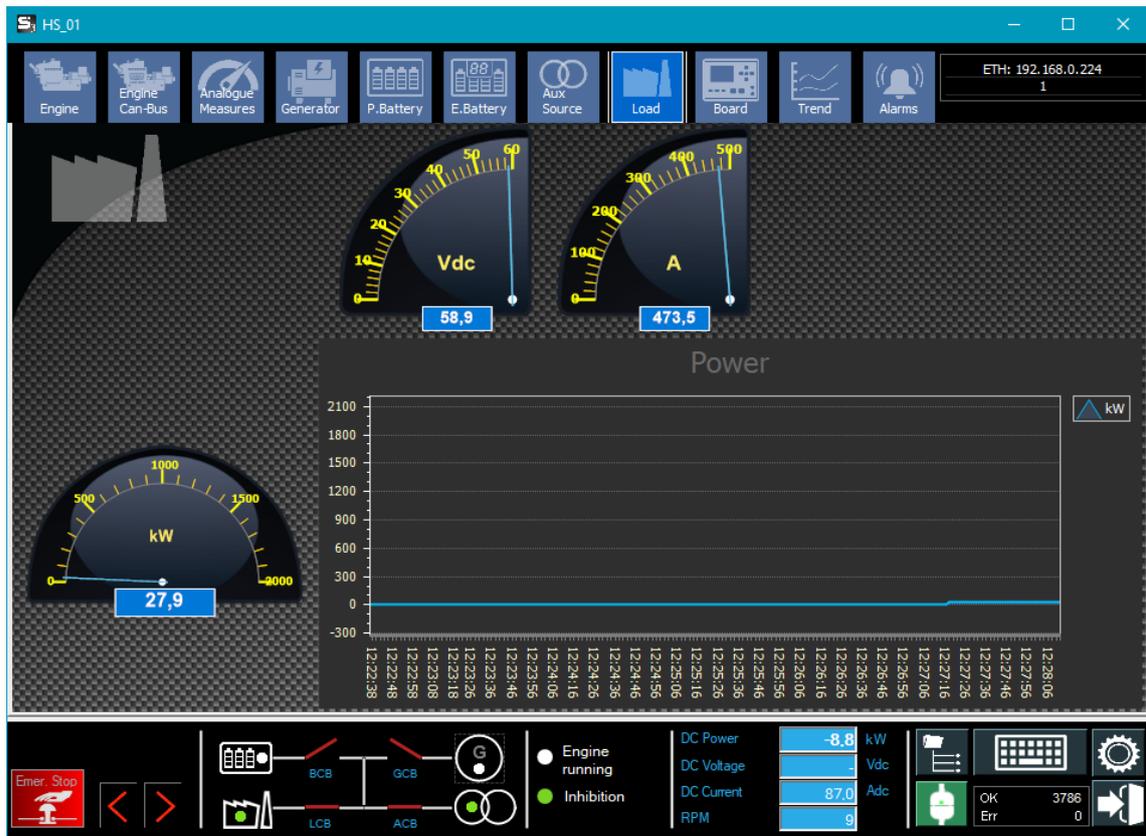
Displays measurements from the electronic battery communication interface.



### 8.5.2.7 Aux Source



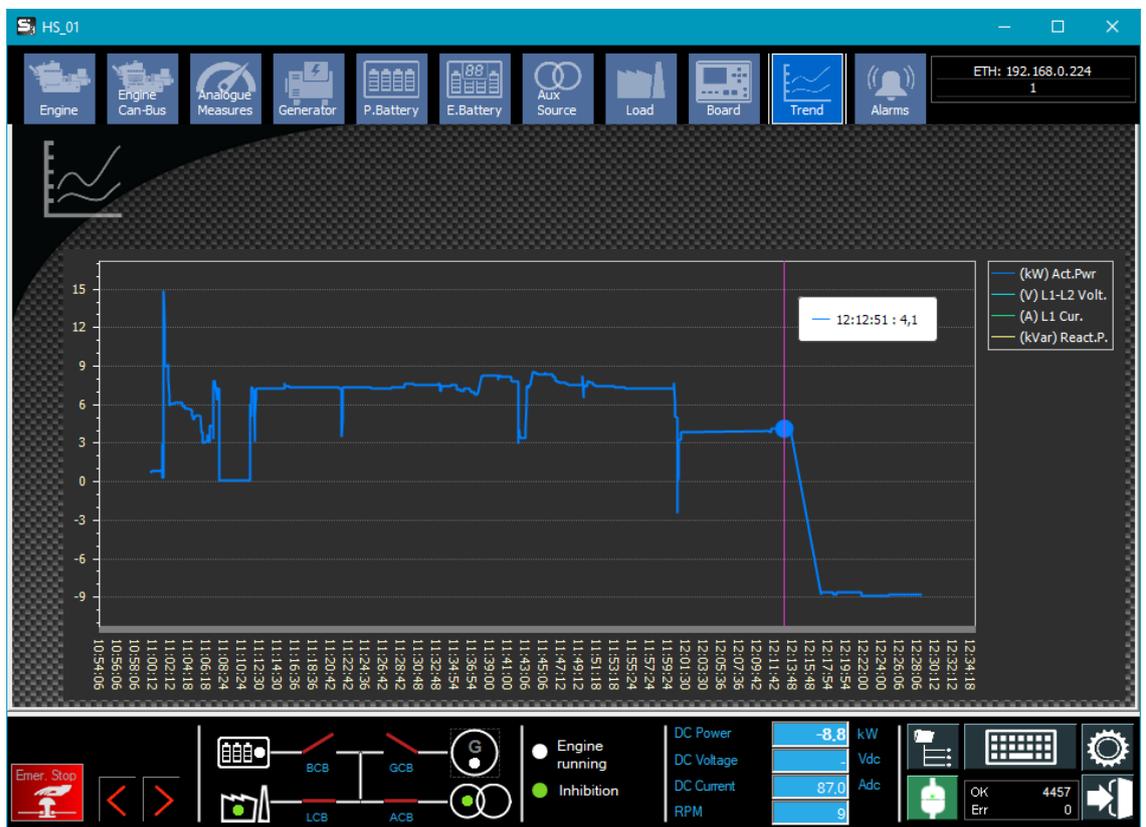
### 8.5.2.8 Load



### 8.5.2.9 Board



### 8.5.2.10 Trend



### 8.5.2.11 Alarms

The screenshot shows the 'Alarms' window in the SS3 software. At the top, there is a navigation bar with icons for Engine, Engine Can-Bus, Analogue Measures, Generator, P.Battery, E.Battery, AUX Source, Load, Board, Trend, and Alarms. The Alarms icon is highlighted. On the right, the IP address 'ETH: 192.168.0.224' and a status '1' are displayed. Below the navigation bar, there is a bell icon and a red warning triangle with the text 'Active Alarms 7'. An 'Alarm Reset' button is also present. The main area contains a table of active alarms:

Cod	Description
A026	Fuel end
W028	Low fuel level
A273	Incoherent conf. /wiring
W014	GCB not closed
W263	High loads voltage
W219	Low storage battery voltage
K218	Minimum storage battery voltage

At the bottom of the window, there are several status indicators: 'Emer. Stop' button, engine status (running/inhibition), and a summary of DC Power (-8.8 kW), DC Voltage (Vdc), DC Current (87.0 A), and RPM (9). There are also 'OK' and 'Err' buttons with counts (5265 and 0 respectively).

### 8.5.2.12 Board rear

The screenshot shows the 'Board Rear' window, which is a detailed wiring diagram of the control board. It includes various terminals and their connections:

- JA RS232 SERIAL:** SW1 (OPERATION, NORMAL, USB (JB), BOOT, RESERVED), SIGNAL EARTH (1), ENGINE BATTERY (+), SUPPLY (7-32Vdc), GND (1).
- JE DIGITAL OUTPUTS 1-4:** OUT 4 (4), OUT 3 (3), OUT 2 (2), OUT 1 (1).
- JG VOLTAGE MEASURES:** V8 (4), V7 (3), V6 (2), V5 (1), V4 (4), V3 (3), V2 (2), V1 (1).
- JH VOLTAGE MEASURES:** Same as JG.
- JU CURRENT MEASURES DC:** IDC1 (1), IDC2 (2), IDC3 (3), IDC4 (4).
- JT DIGITAL INPUT 9-12:** ON-INPUT GND, OFF-INPUT OPEN, INPUT 9 (1), INPUT 10 (2), INPUT 11 (3), INPUT 12 (4), OUTPUT 9 (5), OUTPUT 10 (6), OUTPUT 11 (7), OUTPUT 12 (8).
- JN CONFIGURABLE DIGITAL INPUTS:** ON-INPUT GND, OFF-INPUT OPEN, INPUT 1 (1), INPUT 2 (2), INPUT 3 (3), INPUT 4 (4), INPUT 5 (5), INPUT 6 (6), INPUT 7 (7), INPUT 8 (8).
- JM ANALOG INPUTS 3-5:** (1) ANALOG REF., (2) FUEL LEVEL, (3) OIL PRESS., (4) W. TEMPER., (5) IN PICKUP, (6) FILT RTN, (7) IN W.
- JL ENGINE COMMANDS:** (1) OUT5, (2) ENGINE BATTERY, (3) OUT6, (4) Dr-(AN INPUT 6).
- JI CIRCUITS BREAKERS:** (1) NO OUT6, (2) NC OUT6, (3) COM OUT6, (4) NO OUT7, (5) NC OUT7, (6) COM OUT7.
- Other components:** Ethernet (JS), RS485 SERIAL (JO), CANBUS ECU INTERFACE (JO), BATTERY TEMPERATURE (JP), AN INPUT 2 (JO), TR1 (JR).

## 8.6 RN

RN controllers are device for the protection and control of the inverters for the production of electricity from renewable sources (wind, photovoltaic etc.).

### 8.6.1 Layout



### 8.6.2 Single Control Window

The single management window is not currently implemented for this type of board.

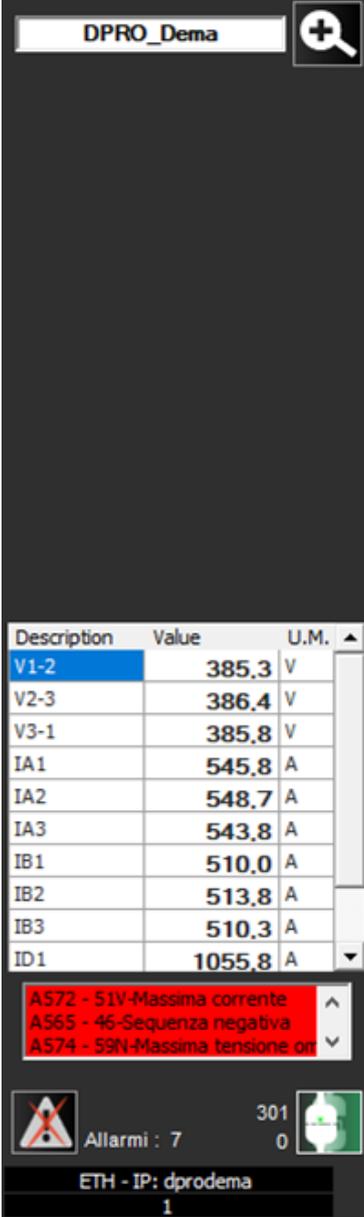
## 8.7 DPRO

D-PRO is a protection relay for the genset.



The following are the visualizations and commands available.

### 8.7.1 Layout



The screenshot displays the SS3 software interface for a device named 'DPRO\_Dema'. At the top, there is a search icon. Below it is a table with three columns: 'Description', 'Value', and 'U.M.'. The table lists various electrical parameters such as voltages (V1-2, V2-3, V3-1) and currents (IA1, IA2, IA3, IB1, IB2, IB3, ID1). Below the table, there are three red warning messages: 'A572 - 51V-Massima corrente', 'A565 - 46-Sequenza negativa', and 'A574 - 59N-Massima tensione on'. At the bottom, there is an alarm status section showing 'Allarmi : 7' and a '301' indicator, along with a green status icon. The interface also shows 'ETH - IP: dprodema' and a '1' at the very bottom.

Description	Value	U.M.
V1-2	385,3	V
V2-3	386,4	V
V3-1	385,8	V
IA1	545,8	A
IA2	548,7	A
IA3	543,8	A
IB1	510,0	A
IB2	513,8	A
IB3	510,3	A
ID1	1055,8	A

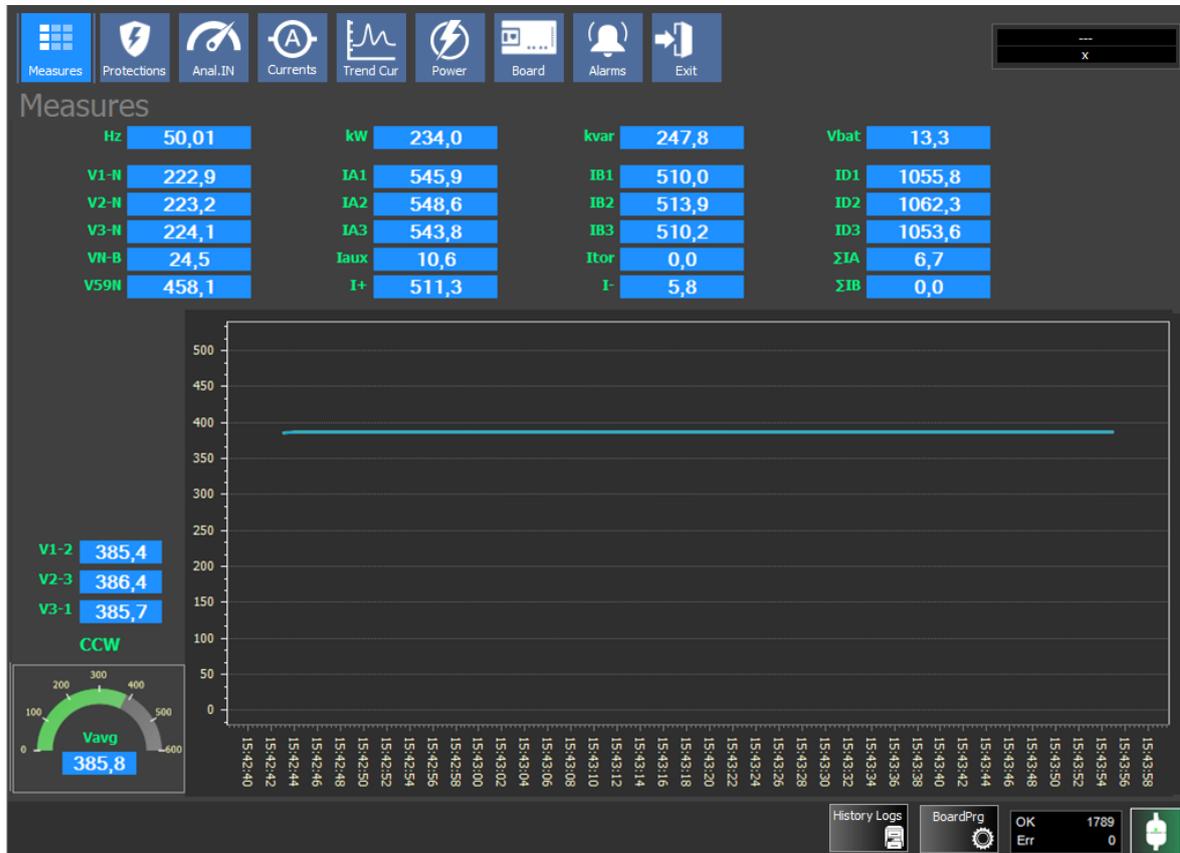
A572 - 51V-Massima corrente  
A565 - 46-Sequenza negativa  
A574 - 59N-Massima tensione on

Allarmi : 7      301  
0

ETH - IP: dprodema  
1

## 8.7.2 Single Control Window

### 8.7.2.1 Measures



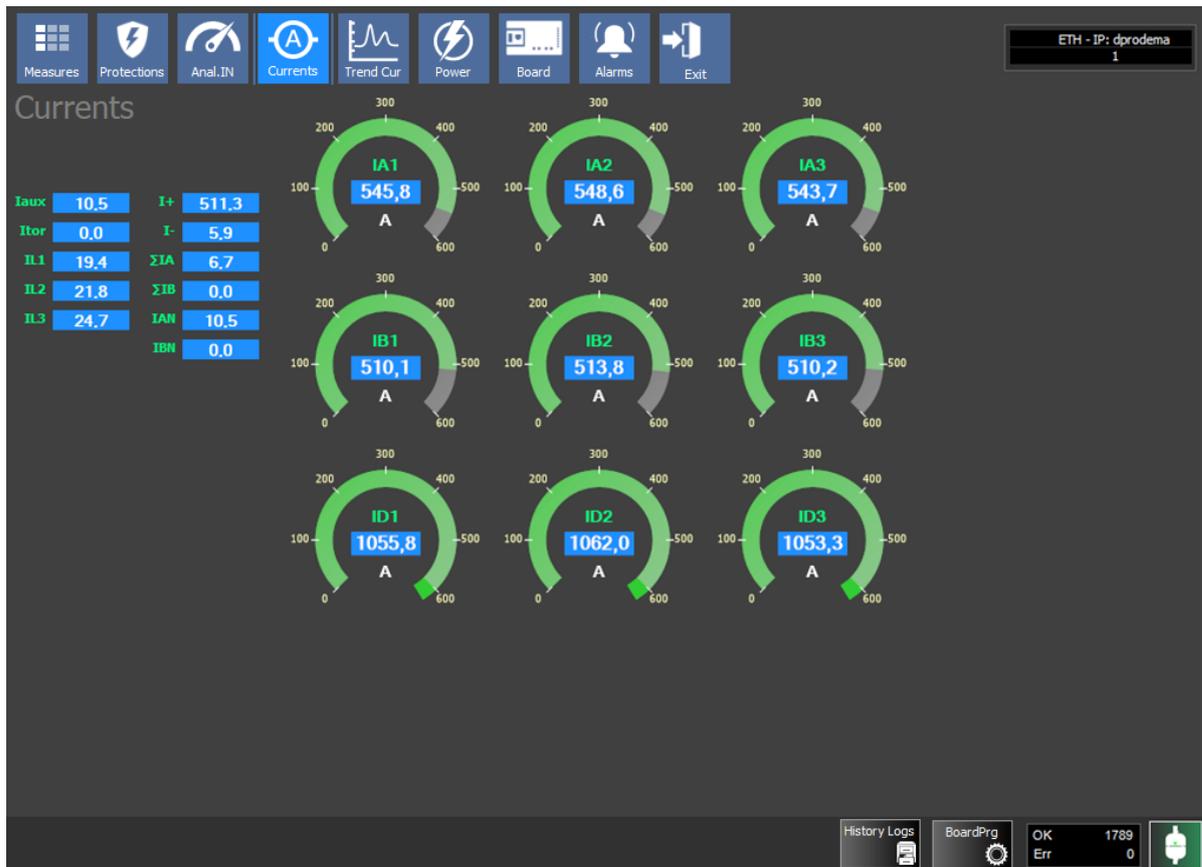
### 8.7.2.2 Protections

**Protections**

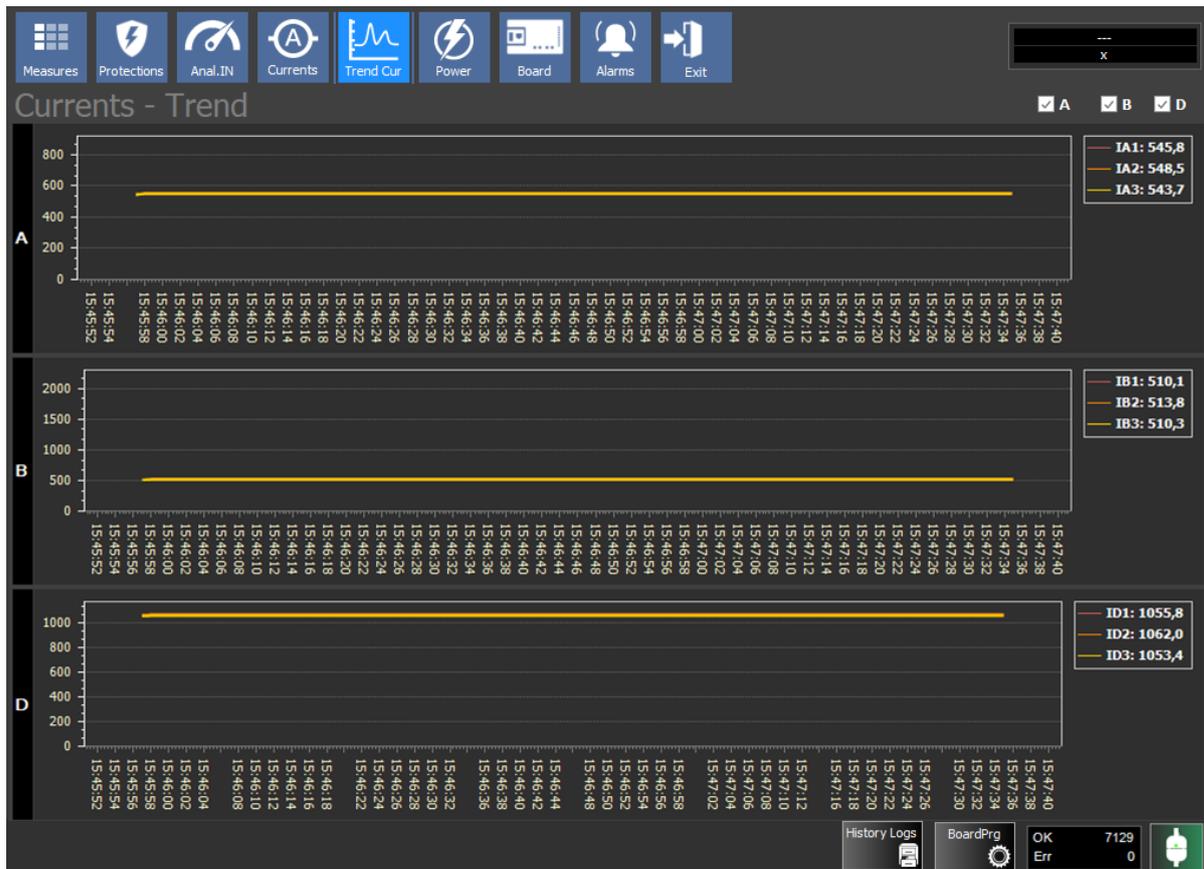
27 - Minimum generator's voltage	87G - Maximum differential current of the generator
27T - Minimum generator's voltage time dependent	87T - Maximum differential current of the transformer
32P - Maximum active power	32RP - Active power reverse
32Q - Maximum reactive power	32RQ/40 - Reactive power reverse / Loss of excitation
46 - Negative sequence	64 - Restricted earth fault / Maximum differential current
47 - Wrong phases sequence	
50 - Short circuit	
50N - Maximum current for earth fault	
50V - Short circuit with voltage-restrained	
51 - Maximum current	
51N - Maximum auxiliary/neutral current	
51V - Maximum current with voltage-restrained	
59 - Maximum generator's voltage	
59N - Maximum generator's residual voltage	
81U - Minimum generator's frequency	
810 - Maximum generator's frequency	

History Logs | BoardPrg | OK: 3158 | Err: 0

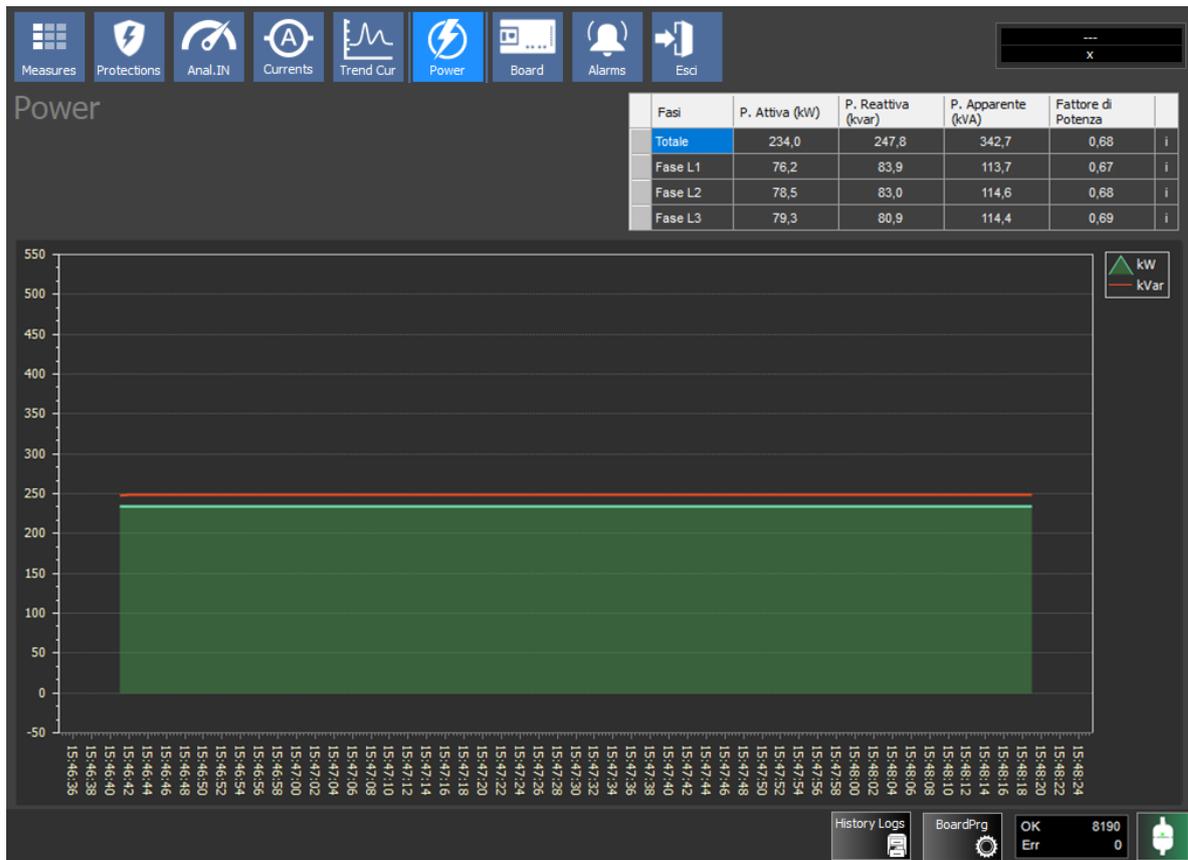
### 8.7.2.3 Currents



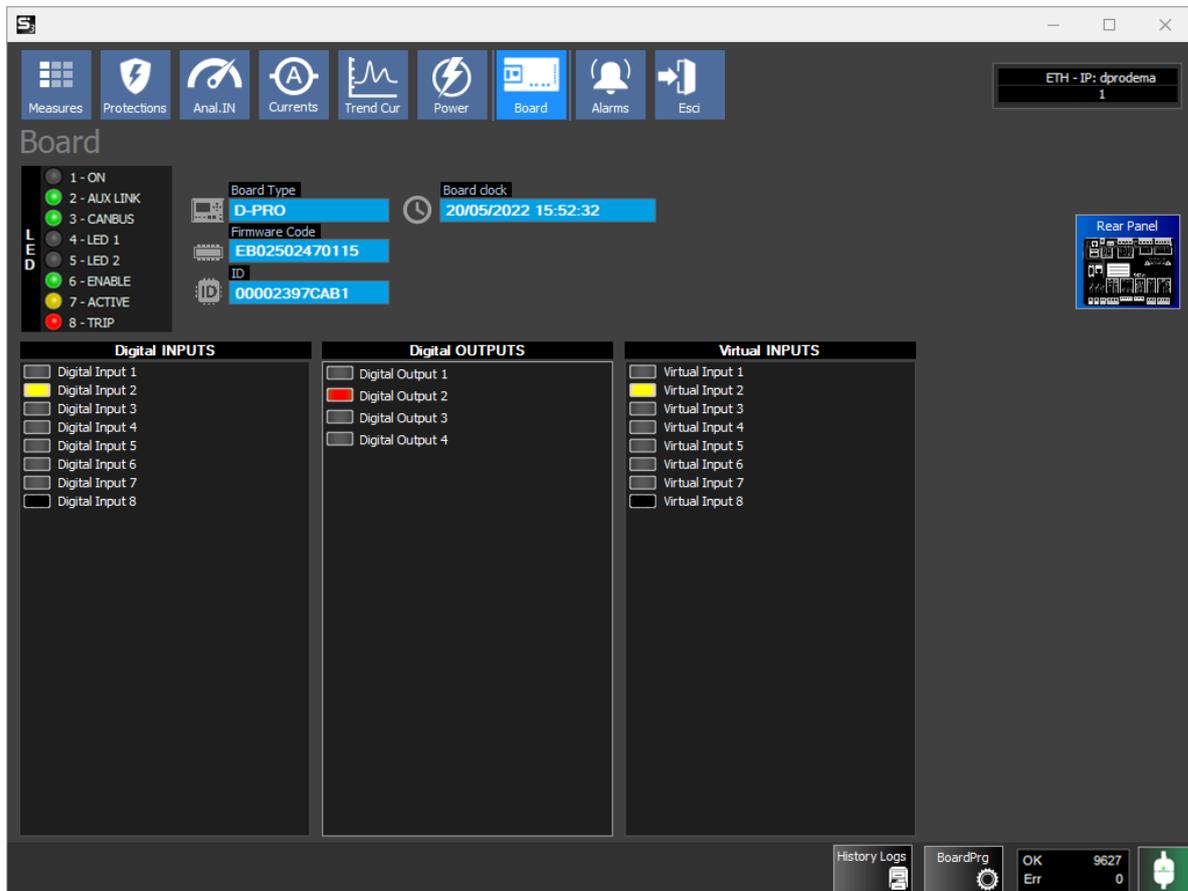
### 8.7.2.4 Trend Currents



### 8.7.2.5 Power



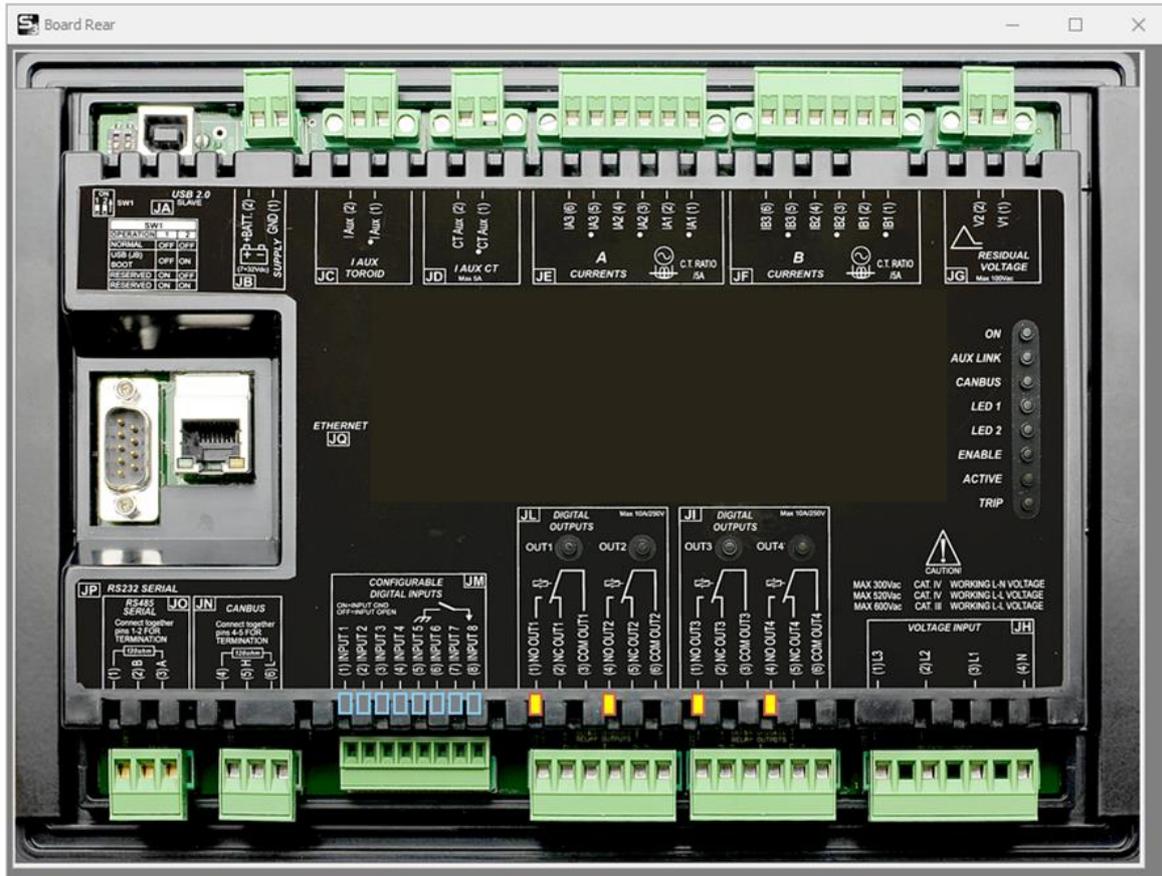
### 8.7.2.6 Board



### 8.7.2.7 Alarms

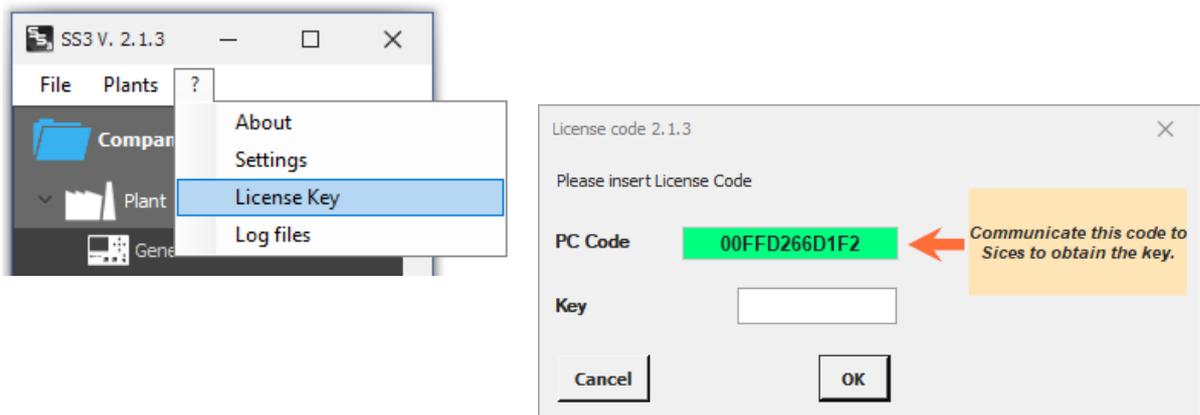
The screenshot displays the 'Alarms' section of the Mecc Alte Supervision Software. At the top, a navigation bar includes icons for Measures, Protections, Anal.IN, Currents, Trend Cur, Power, Board, Alarms, and Esd. The 'Alarms' icon is highlighted. In the top right corner, the IP address 'ETH: 192.168.0.221' and the number '1' are shown. Below the navigation bar, the 'Alarms' title is followed by 'Active Alarms' with a warning icon and a blue box containing the number '0'. To the right are 'Alarm Ack' and 'Alarm Reset' buttons. A table with columns 'Cod' and 'Description' is present but empty. The bottom status bar contains 'History Logs', 'BoardPrg', 'OK 395', 'Err 1', and a power button icon.

### 8.7.2.8 Board rear

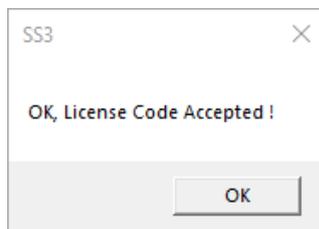


## 9. License

**i Important** : The application is free to download and can be used in basic functionality without a license. However, there are some optional functionalities that require the entry of a license code to be used. For the use of these features (indicated in the next section) please contact the business office. The procedure for license activation is given below:



Communicate the indicated MAC code to distributor.  
You will be sent the corresponding license key.  
Enter it in the "Key" field and press OK.



**i Attention** : the key is valid only for the PC from which it is requested.

## 9.1 Optional functions

The license enables the following additional features:

1. **Customizable trends**

A new graph window is made available where you can enter the measurements you want to monitor in real time.

2. **Email sending on event**

You can configure the type of event, email addresses of recipients to send notifications to, SMTP server to be used.

3. **Data logging from PC** (to txt or csv file).

During connection, it is possible to automatically record data and events read from the boards. (It is possible to configure which data and how often)

4. **PLC Section**

Allows you to view states coming from a PLC.

5. **Generic Device Section**

Displays measurements read from a generic modbus device that can be configured via file.



Information: For more details regarding licensed functions refer to Chapter “0-

**Licensed features“**

## 10. Licensed features

The functions that are activated by entering the license code are listed below.

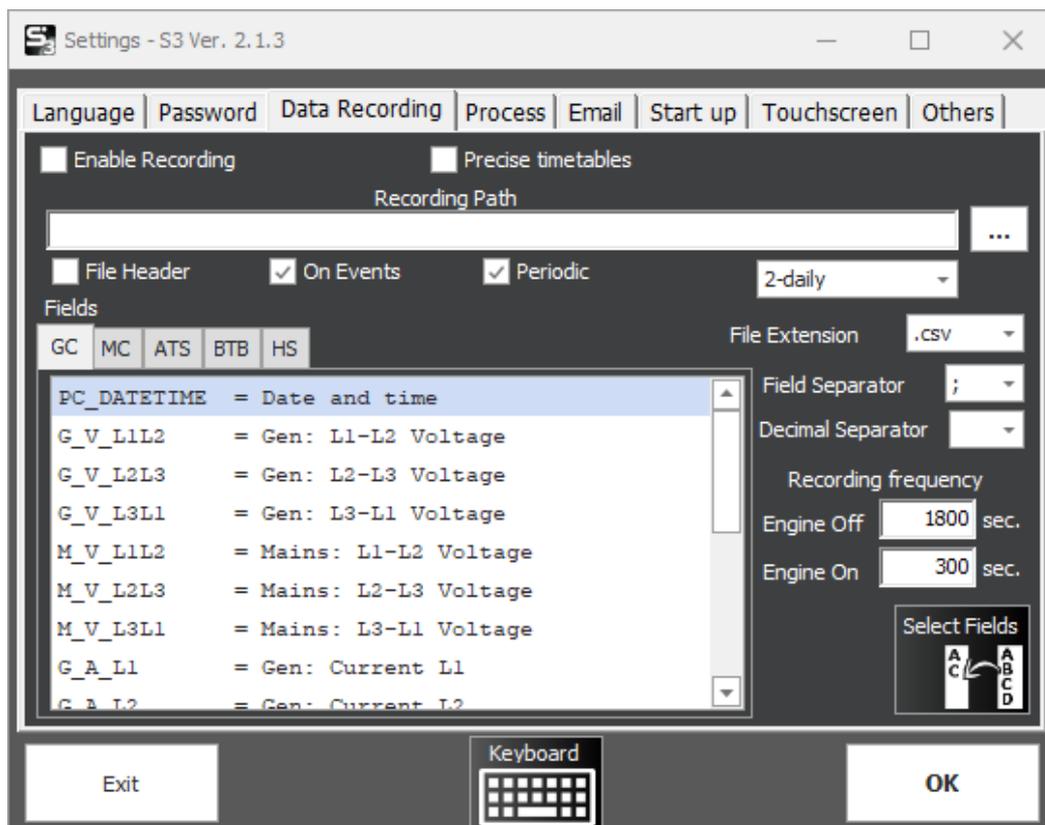
### 10.1 Data Recording

Optional function (active with license)

Allows recording of measurement data collected by PC.

When supervision is connected to the plant it can save data to a selectable path.

Data is saved in text format to .txt file or .csv file that can be imported to Excel.



- **Enable recording:** Enables/disables recording.
- **Precise timetables:** Allows aligning times on exact minutes. The recordings are still synchronized to the modbus readings, but it expects the time to be zero minutes or with multiple minutes of the recording time.
- **Recording path:** indicates the folder (network or PC) where to make the recording.

**Default=** C:\ProgramData\Sices\SS3\PC\_Data

Subfolders will then be automatically created, one for each board.

Subfolder example (Consisting of the identifiable name of the section and the text of the section) :

**MBGC0FA5BA6C\_Generator\_1**

The file name is automatic based on the date and time and based on the type of recording (daily, monthly, hourly).

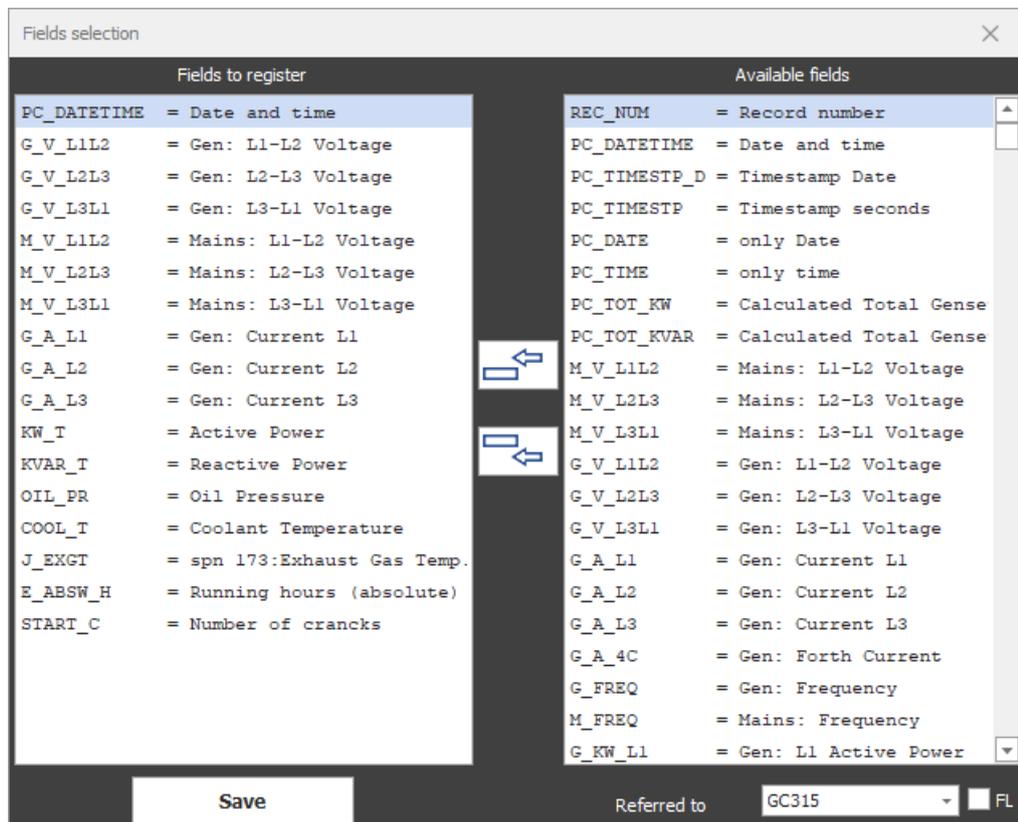
- **On Events:** When an event occurs it is recorded in a text file Events\_yyyy\_mm.txt.  
 Example : Events\_2023\_04.txt
- **Periodic:** enables periodic recording with the set frequency.
- **Subdivision of data:**



- o **Monthly:** creates a file for each month. File name : Date\_YY\_MM (YY=year, MM=month).
- o **Weekly:** creates a file every week. File name: Data\_YY\_WW (YY=year, WW=week).
- o **Daily:** creates a file every day. File name: Data\_YY\_MM\_DD (YY=year, MM=month, DD=day)
- o **Hourly:** creates a file every hour. File name : Data\_YY\_MM\_DD\_HH (YY=year, MM=month, DD=day, HH=hour)

- **File extension:** you can select .txt or .csv extension
- **Field separator:** character that separates fields in a data record.
- **Decimal separator:** indicates which separator to use for decimal values (period or comma).
- **Recording frequency**
  - o **Engine Off:** recording frequency when engine is stopped.
  - o **Engine On:** recording frequency when the engine is running

Select the fields to be recorded:



All available fields appear on the right. On the left are the fields that will be recorded.

**Referred to** : selects the card model from which to take the available fields.

**FL** : adds in parentheses the version of the descriptor file and the board type.

With the two middle buttons you can add of fields above or below the selected row.

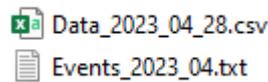
To delete a field simply press Delete on that field.

Press "Save" to save the setting of the fields.

### 10.1.1 Example of recordings

The following is an example of registration.

Files are of 2 types : data and events.



Example of Data file contents:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	PC_DATETIME	G_V_L1L2	G_V_L2L3	G_V_L3L1	M_V_L1L2	M_V_L2L3	M_V_L3L1	G_A_L1	G_A_L2	G_A_L3	KW_T	KVAR_T	OIL_PR	COOL_T	J_EXGT	E_ABSW_I	START_C
2	28/04/2023 09:54	424	380,2	374,2	0	0	0	7,4	7,5	7,4	5	0,1 -	-	-	-	0	0
3	28/04/2023 09:55	424	380,2	374,1	0	0	0	7,4	7,5	7,4	5	0,1 -	-	-	-	0	0
4	28/04/2023 09:55	424,1	380,2	374,1	0	0	0	7,4	7,5	7,4	5	0,1 -	-	-	-	0	0
5	28/04/2023 09:56	424	380,2	374,1	0	0	0	7,4	7,5	7,4	5	0,1 -	-	-	-	0	0
6	28/04/2023 09:56	424,1	380,2	374,1	0	0	0	7,4	7,5	7,4	5	0,1 -	-	-	-	0	0

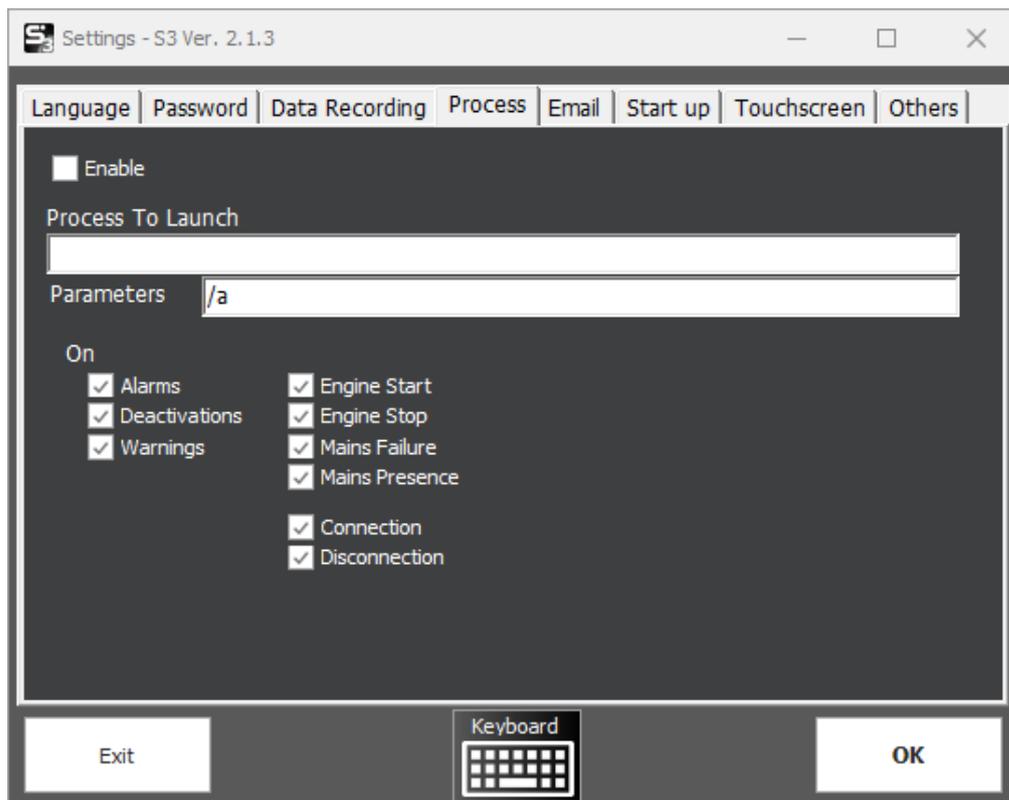
Example of event file contents:

28/04/2023 10:31:59 - W028 Low fuel level

28/04/2023 10:35:39 - A021 Engine not stopped

## 10.2 Process

Optional function (active with license)



Allows you to start an application or process when an event occurs.

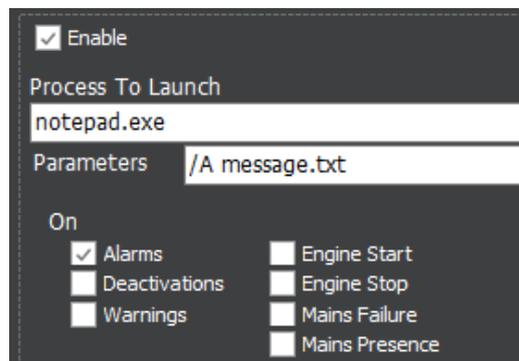
It is possible to pass some parameters to the application.

Parameters depend on the application being launched. Refer to the documentation of the external application.

The possibility is given to select the events that trigger the process.

It can be used, for example, to activate a program that sends text messages or makes phone calls to alert the operator when an anomaly occurs.

Example:

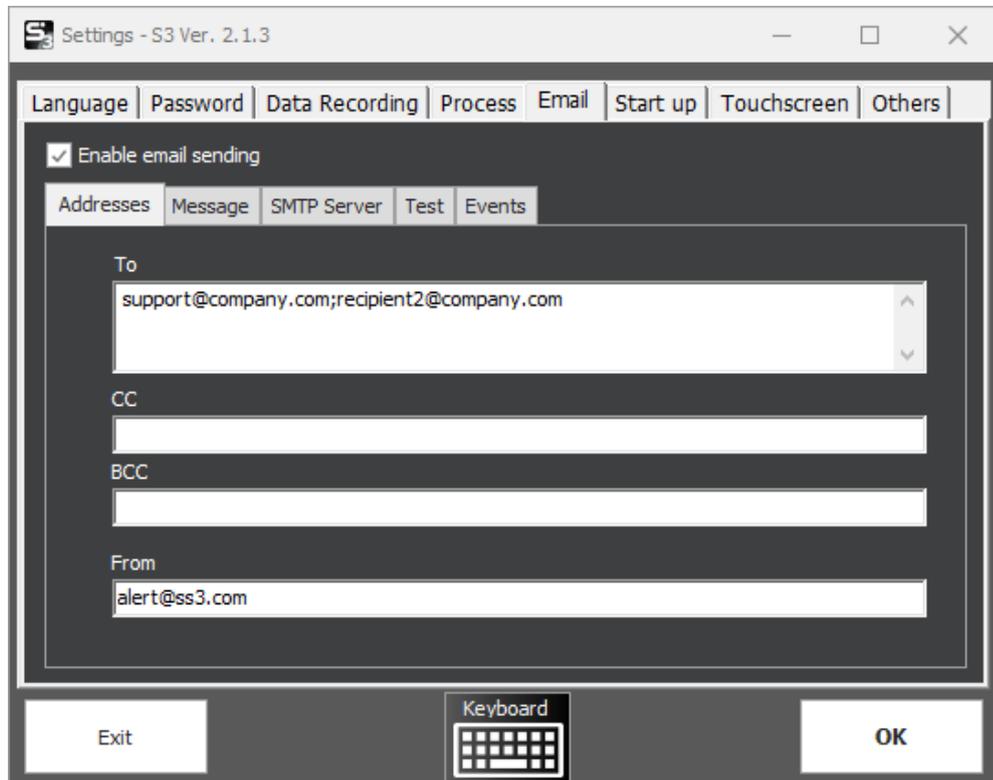


When an alarm occurs Notepad is launched which will display the contents of the message.txt file.

## 10.3 Email

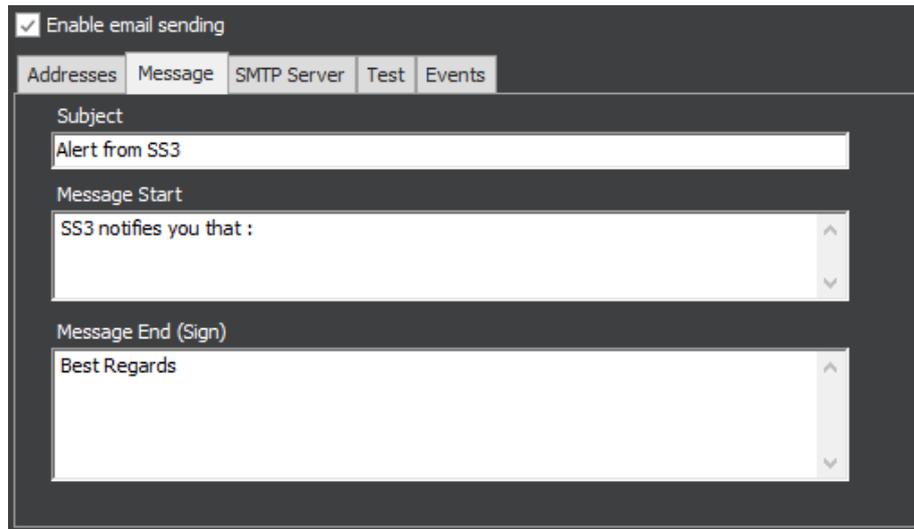
Optional function (active with license).

Allows an email to be sent to one or more recipients when certain events occur.



Set direct, CC and BCC recipients. Multiple email addresses can be set separated by semicolon (;)  
Indicate sender: email address of the person sending the email

- **Message:**



Enable email sending

Addresses Message SMTP Server Test Events

Subject  
Alert from SS3

Message Start  
SS3 notifies you that :

Message End (Sign)  
Best Regards

- o **Subject** : set the subject of the email. (Ex: Event from Supervisor)
- o **Message Start**: initial text of the message (Ex: The supervisory system reports: )
- o **Message End**: enter the final part of the message (signature, number to contact, etc.).

- **SMTP Server:**



Enable email sending

Addresses Message SMTP Server Test Events

SMTP server  
smtp.gmail.com

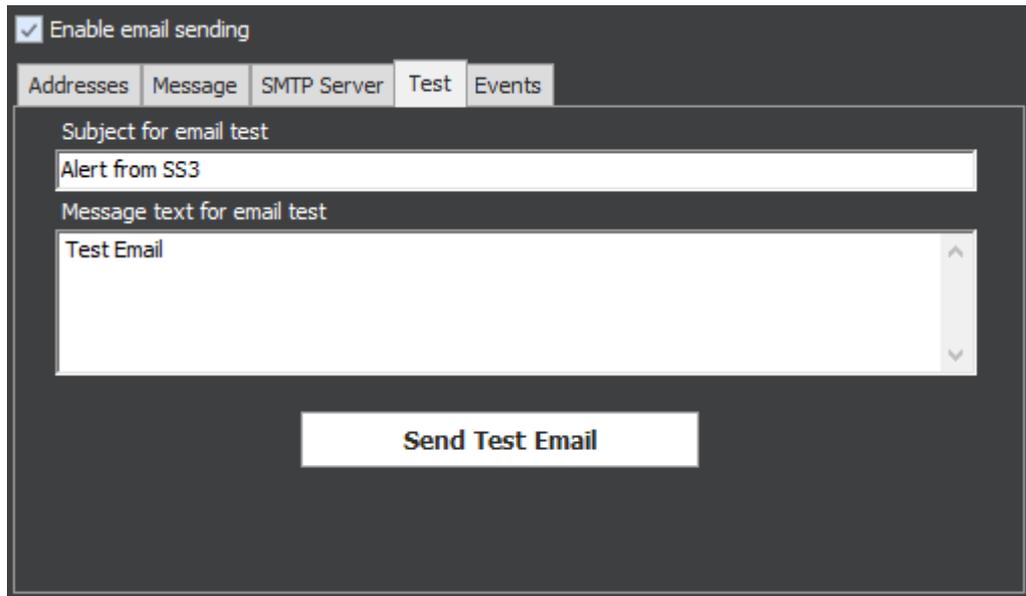
Port 587  Enable SSL

SMTP User  
user1000@gmail.com

Password  
\*\*\*\*\*

- o **SMTP server**: address of the mail server.
- o **Port**: port used for communication with the SMTP server.
- o **Enable SSL**: Activate SSL (Secure Sockets Layer).
- o **SMTP user**: username for access to the SMTP server.
- o **Password**: password to access the SMTP server.

- **Test :**



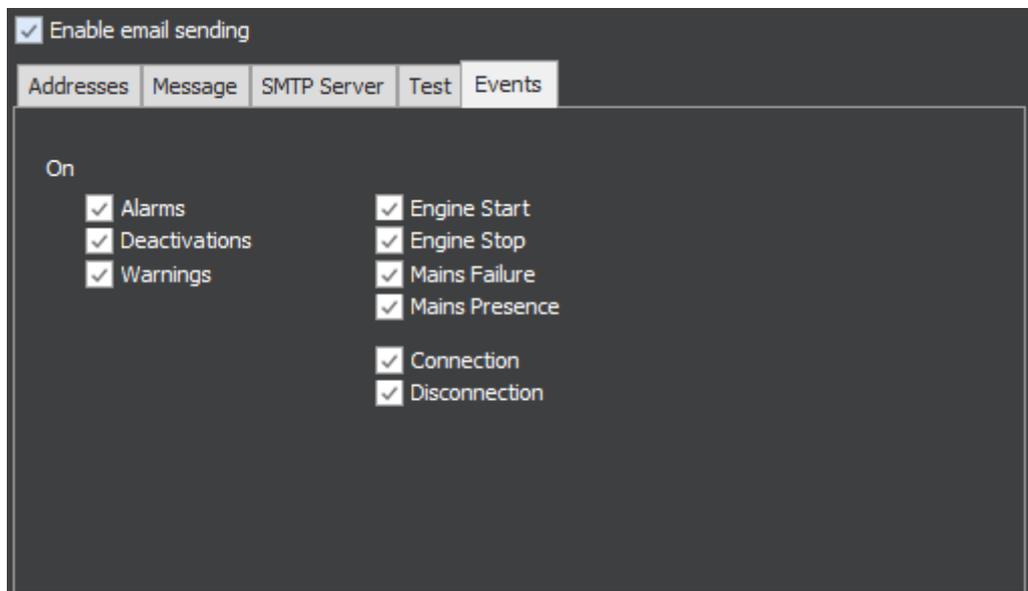
The screenshot shows the 'Test' tab of the email configuration interface. At the top, there is a checked checkbox labeled 'Enable email sending'. Below this are five tabs: 'Addresses', 'Message', 'SMTP Server', 'Test', and 'Events'. The 'Test' tab is active. It contains two text input fields: 'Subject for email test' with the value 'Alert from SS3', and 'Message text for email test' with the value 'Test Email'. A 'Send Test Email' button is located at the bottom center of the form.

Allows you to carry out tests to verify the sending of emails.

When the "Send test email" button is pressed, an email is immediately sent to the set recipients.

- **Events :**

Selects which types of events generate the sending of the email.



The screenshot shows the 'Events' tab of the email configuration interface. At the top, there is a checked checkbox labeled 'Enable email sending'. Below this are five tabs: 'Addresses', 'Message', 'SMTP Server', 'Test', and 'Events'. The 'Events' tab is active. It contains a section labeled 'On' with a list of event types, each with a checked checkbox: 'Alarms', 'Deactivations', 'Warnings', 'Engine Start', 'Engine Stop', 'Mains Failure', 'Mains Presence', 'Connection', and 'Disconnection'.

## 10.4 Configurable trends

Optional function (active with license).

Configurable trends allow up to 10 real-time measurements to be selected and displayed:



To access configurable trends:

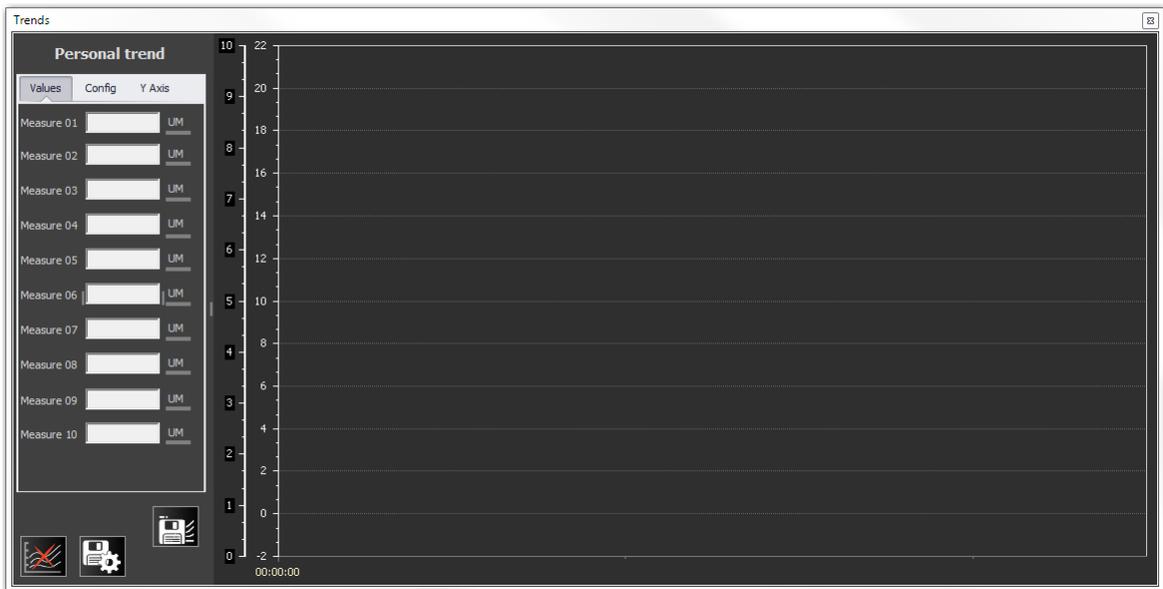
When active in the graph section, the button "Tr. Manager" :



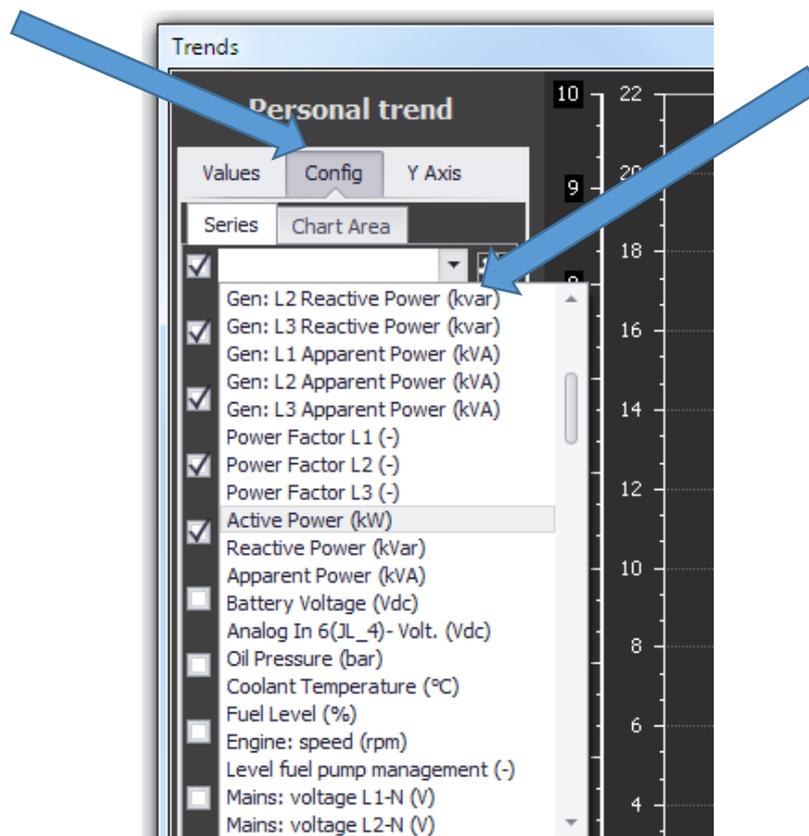
And at the bottom right of the single generator window:



On first access, the window without measures will appear:

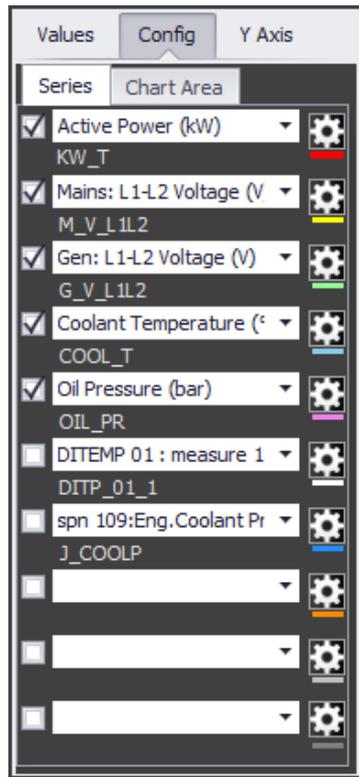


It is possible to enter the desired measurements by selecting the "Config" panel and opening the list of available variables.

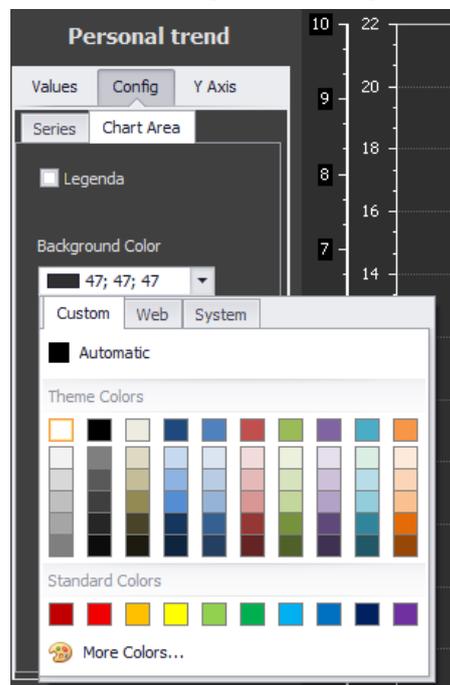


List depends on tab (taken from tab descriptor file)

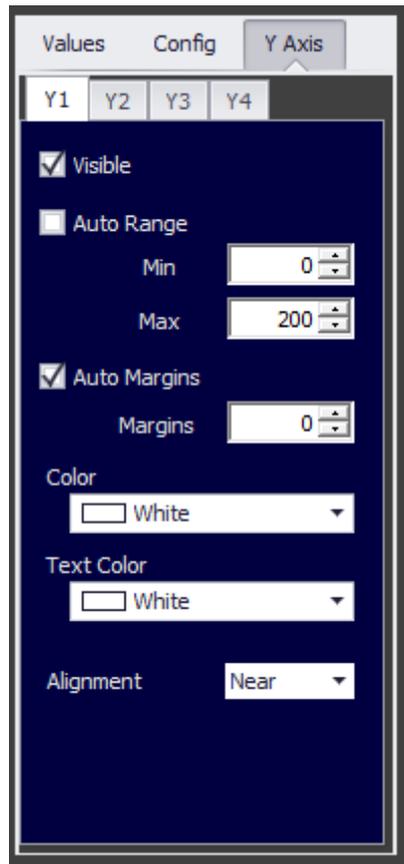
Select measures to be displayed in trends:



In the "Chart Area" section you can enter the legend and change the background color of the charts:



In the Y Axis section, up to 4 axes can be activated and configured to which measurements can then be associated:



List of editable properties of Y-axes:

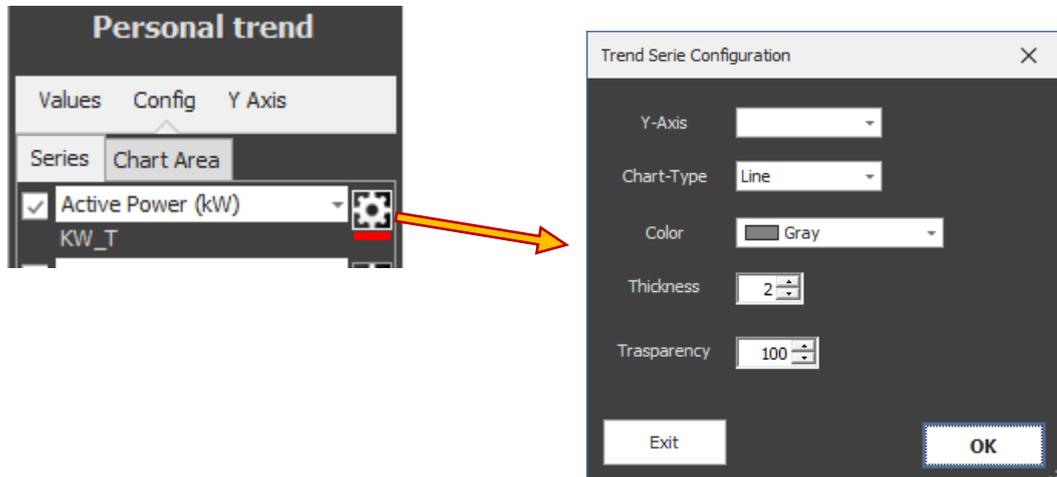
<b>Visible</b>	Makes the axis visible
<b>Auto Range</b>	Range adjusts and varies dynamically according to the value of the measurement.
<b>Min</b>	If AutoRange is off it sets the minimum value displayed in the graph.
<b>Max</b>	If AutoRange is off it sets the bottom value of the graph.
<b>Auto Margins</b>	Sets the upper and lower margins that you add to the measurement range.
<b>Color</b>	Y-axis color
<b>Text Color</b>	Text color of the measurement scale.
<b>Alignment</b>	Alignment type: Near : left axis. Far : axis on the right Zero : axis on the left superimposed on the others.

### 10.4.1 Pen configuration

As a pen is understood a series linked to a value.

Here is how to configure each individual value displayed in the graph.

Select the Config tab, press the button with the wheel to configure each Series.



Below are the modifiable properties of the series:

<b>Y-Axis</b>	Indicates which Y axis the measurement refers to.
<b>Chart-Type</b>	<p>Sets the type of graph. Available types :</p> <ul style="list-style-type: none"> <li><b>Line</b> – display with a simple line</li> <li><b>Point</b> – point representation of acquired values</li> <li><b>Area</b> – display the series by coloring the area.</li> <li><b>Stacked Area</b> – stacked area display.</li> <li><b>Stacked Line</b> – representation in stacked lines (no overlapping).</li> <li><b>Full Stacked Line</b> – displays all points on the line.</li> <li><b>Spline</b> – Line with curvatures. The line does not simply join the points but rounds the lines.</li> <li><b>Spline Area</b> – Area with curvatures.</li> </ul>
<b>Color</b>	Defines the color of the line/area
<b>Thickness</b>	Line Thickness
<b>Trasparency</b>	Lets you make the area or line transparent. Sets the percentage of transparency (0=not transparent, 100=maximum transparency).

### Buttons



Resets the graph. Restarts point acquisition from scratch.

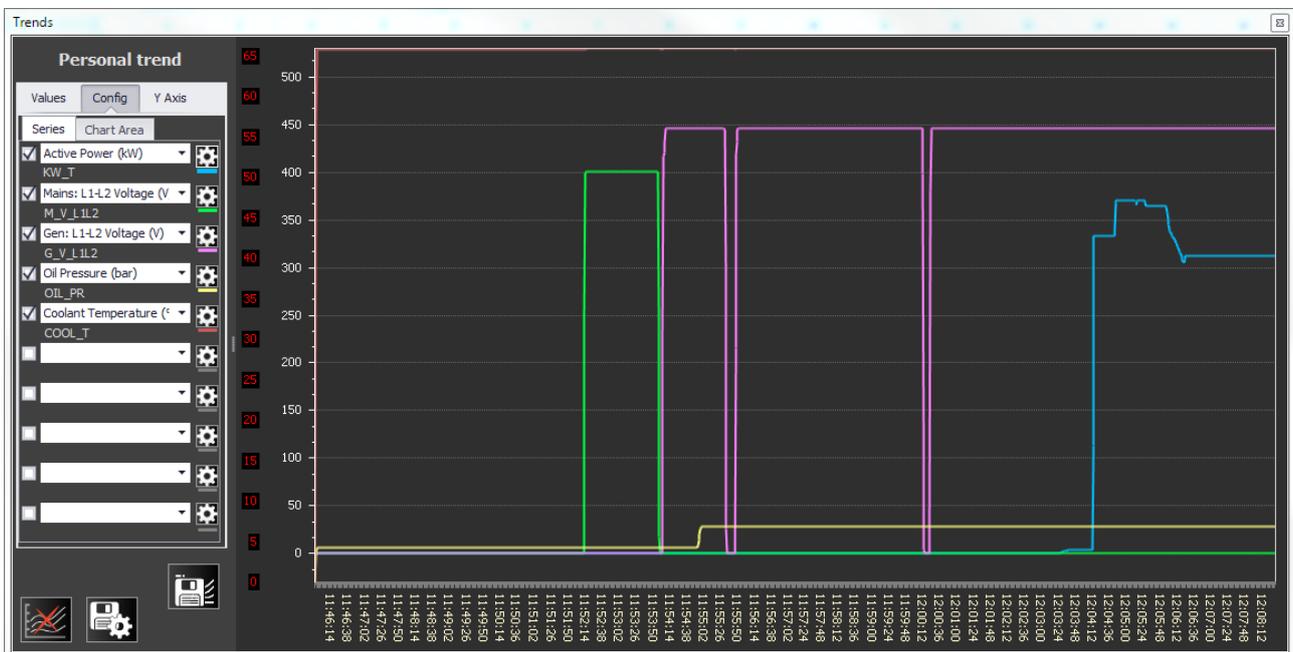


Save chart settings.



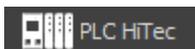
Save chart data. (file Chart\_personal.xls, e Chart\_personal.dat)

### Example of trends:



## 10.5 PLC status viewer section.

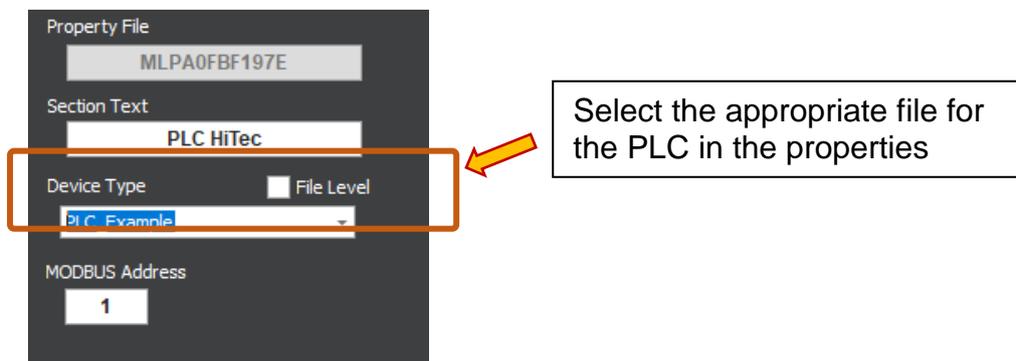
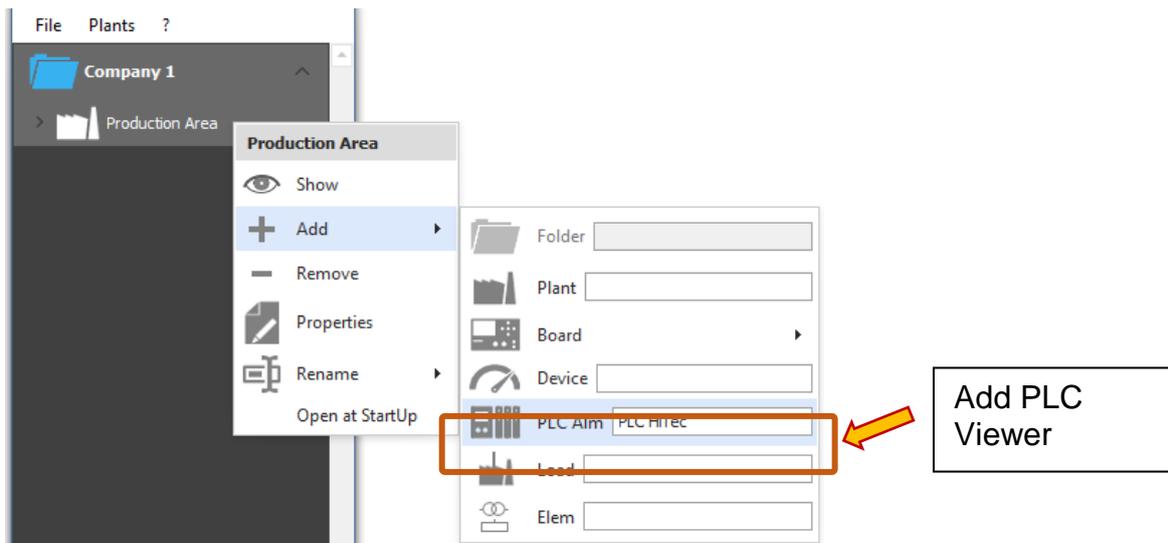
Optional under license.



This section allows you to display statuses and alarms from an external device. Usually this is a PLC, but it could be other type of device or instrumentation.

It does not allow you to drive outputs or send commands.

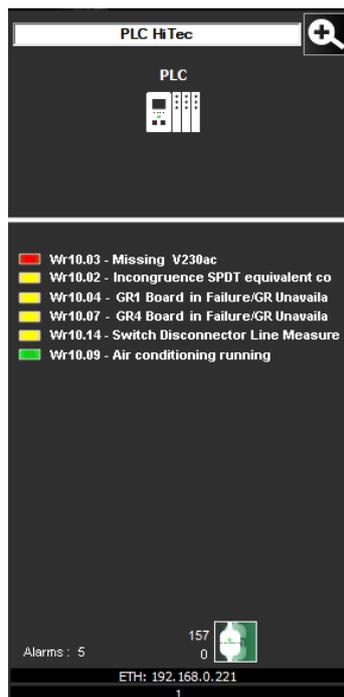
to add a PLC status viewer:



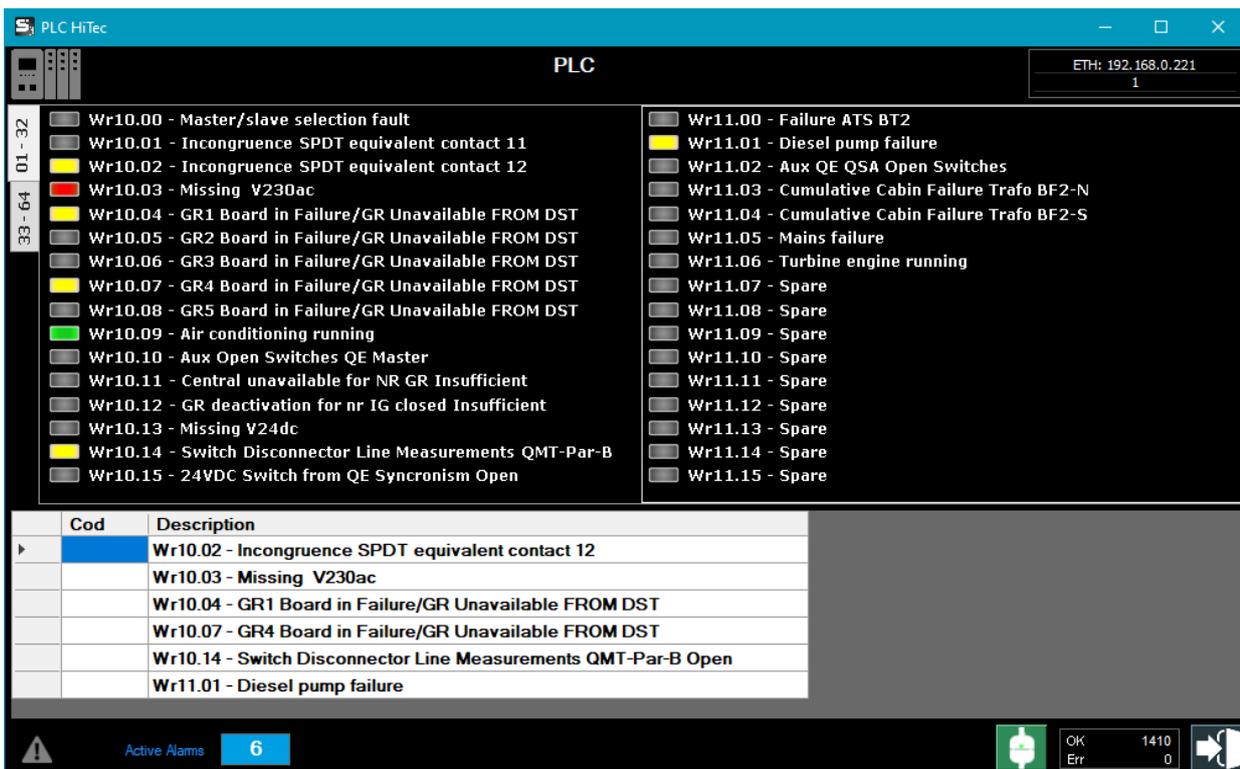
Example of a PLC input definition file (PLC\_Example.mbt):

```
PLC_Example.mbt 3
147 [CONFIG]
148
149 FileLevel=102
150
151 Dev_Type_Base=PA
152
153 Ser_Timeout=2000
154 Eth_Timeout=2000
155
156 ; Inputs
157 Dig_Inp_Num=32
158
159 ; Alarm bit management from PLC
160 ; Txt = Text displayed
161 ; Flg = Flag (0= not used, 1=Alarm-Red, 2=Warning-Yellow, 3=Status-Green, 99=not displayed)
162
163 Dig_Inp_Txt_01=Wrl0.00 - Master/slave selection fault
164 Dig_Inp_Flg_01=2
165
166 Dig_Inp_Txt_02=Wrl0.01 - Air conditioning running
167 Dig_Inp_Flg_02=3
168
169 Dig_Inp_Txt_03=Wrl0.02 - Incongruence SPDT equivalent contact 12
170 Dig_Inp_Flg_03=2
171
172 Dig_Inp_Txt_04=Wrl0.03 - Missing V230ac
173 Dig_Inp_Flg_04=1
174
175 Dig_Inp_Txt_05=Wrl0.04 - GR1 Board in Failure/GR Unavailable FROM DST
176 Dig_Inp_Flg_05=2
177
```

It appears in the layout window as follows:



Instead, the single management window appears as shown below:



## 10.6 Generic Device.

### Licensed optional

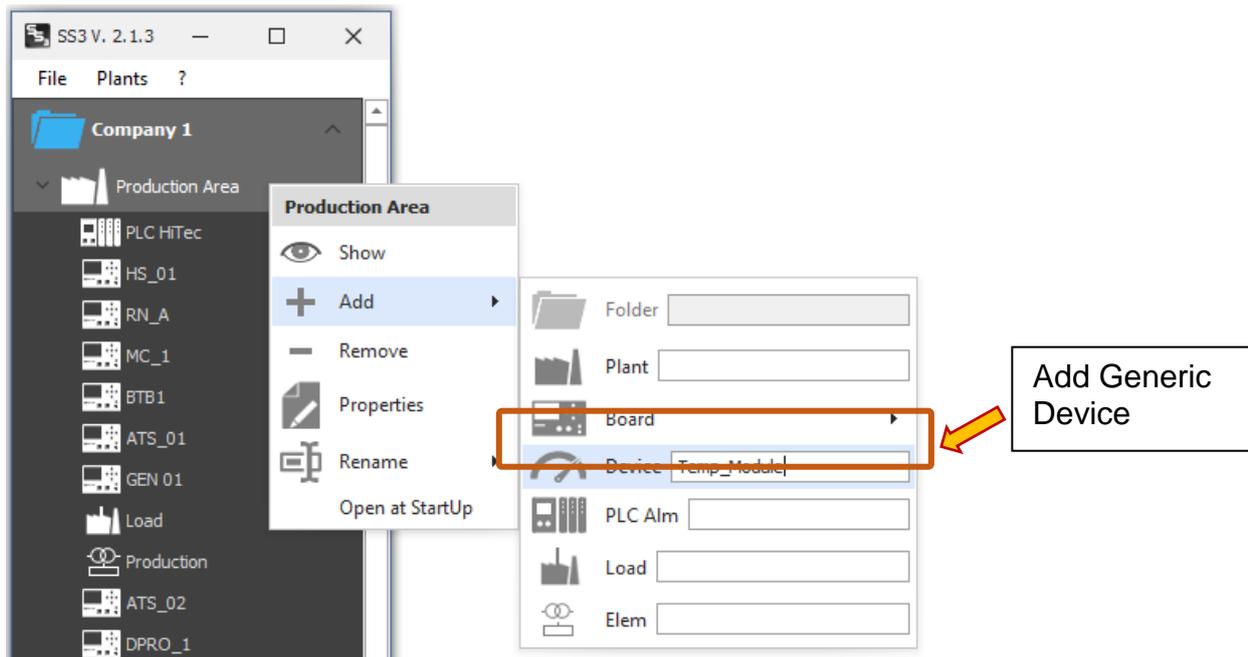


Allows you to detect the desired data from an auxiliary board or device.

Display in the layout window only is available. The single management window is not implemented for this function.

### 10.6.1 How to add a generic device

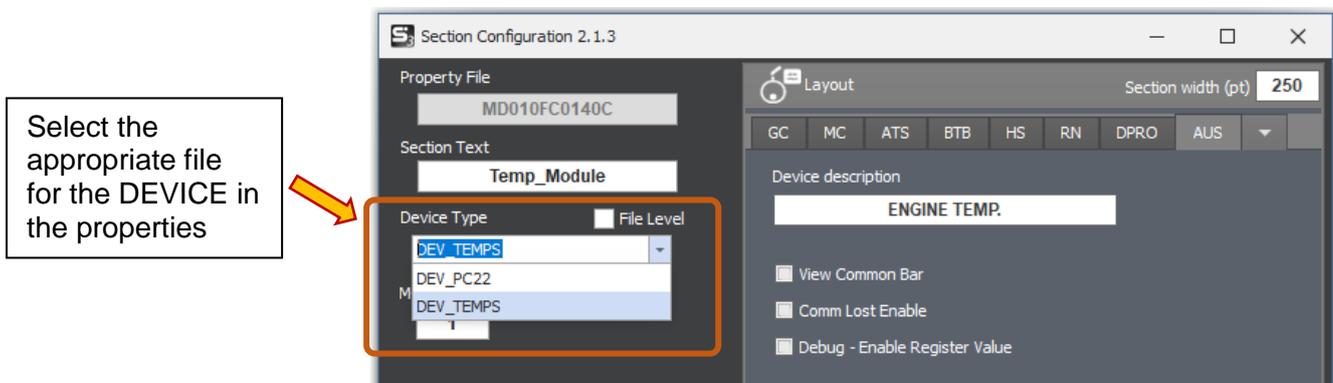
From the plant menu, right-click on the plant icon where you want to add the device:



Select Add → Device. Type a name for the device and press <Enter>.

It will appear in the Plants menu. Now press right mouse button on the newly created Device and select "Properties":

In the device properties, set the reference file for modbus query definitions:



Generic device descriptor files that are contained in the **C:\ProgramData\SICES\SS3\mbt** folder appear in the drop-down menu.

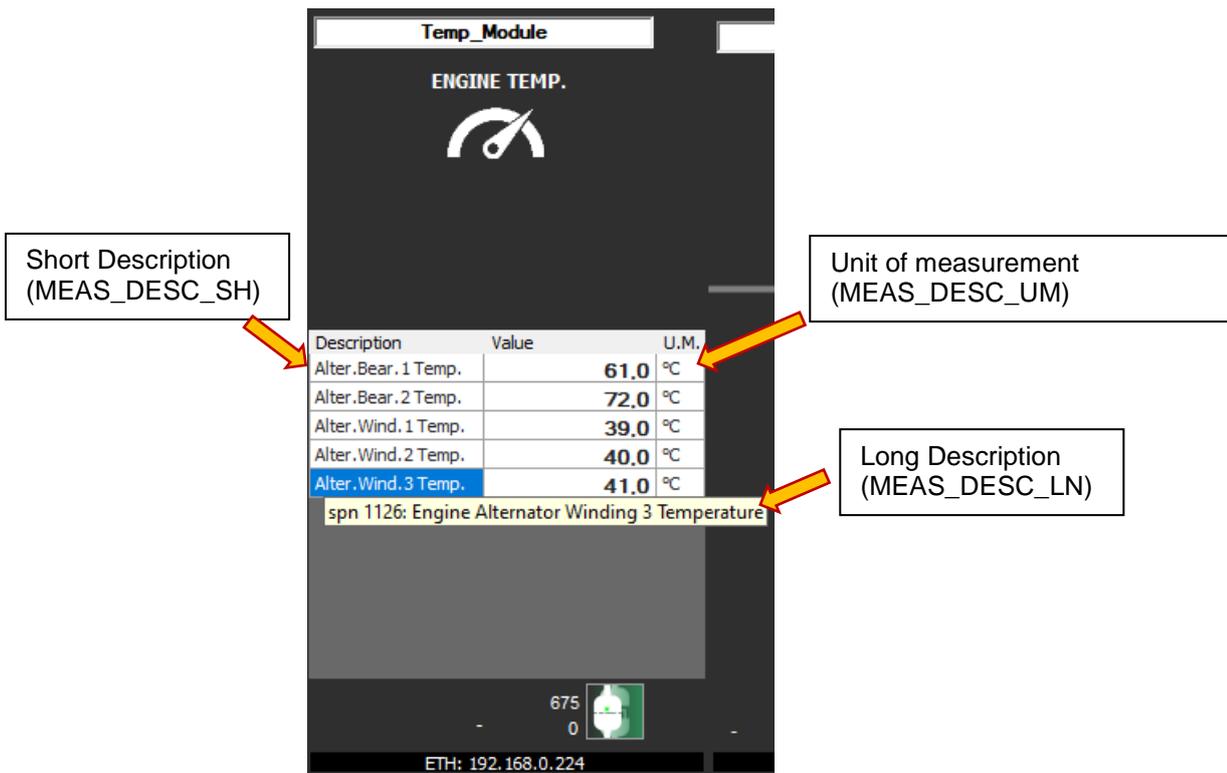
All .mbt files that are of generic device type (Dev\_Type\_Base=DV) are considered.

The descriptor file defines the modbus queries and the variables to be read.

Example of a DEVICE definition file (DEV\_TEMPS.mbt):

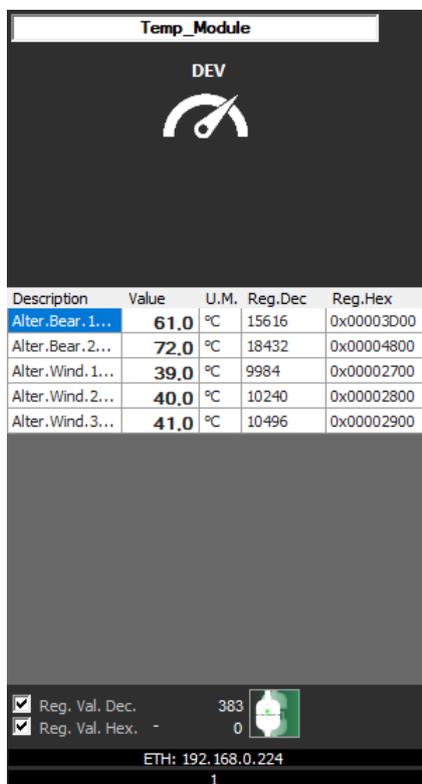
```
148 [CONFIG]
149
150 FileLevel=101
151
152 Dev_Type_Base=DV
153
154 Ser_Timeout=2000
155 Eth_Timeout=2000
156
157 ; Number of measures
158 Meas_Num = 5
159
160 ; Measures descriptions (SH=Short descriptions, LN=Long descriptions)
161 MEAS_DESC_SH_01=Alter.Bear.1 Temp.
162 MEAS_DESC_LN_01=sfn 1122: Engine Alternator Bearing 1 Temperature
163 MEAS_DESC_UM_01=°C
164
165 MEAS_DESC_SH_02=Alter.Bear.2 Temp.
166 MEAS_DESC_LN_02=sfn 1123: Engine Alternator Bearing 2 Temperature
167 MEAS_DESC_UM_02=°C
168
169 MEAS_DESC_SH_03=Alter.Wind.1 Temp.
170 MEAS_DESC_LN_03=sfn 1124: Engine Alternator Winding 1 Temperature
171 MEAS_DESC_UM_03=°C
172
173 MEAS_DESC_SH_04=Alter.Wind.2 Temp.
174 MEAS_DESC_LN_04=sfn 1125: Engine Alternator Winding 2 Temperature
175 MEAS_DESC_UM_04=°C
176
177 MEAS_DESC_SH_05=Alter.Wind.3 Temp.
178 MEAS_DESC_LN_05=sfn 1126: Engine Alternator Winding 3 Temperature
179 MEAS_DESC_UM_05=°C
180
181 [TASKS]
182 ; 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
183 T01, 1, 01, 04, 331, 10, 0, 0, 100, 1
184
185
186 [VARS]
187 ; 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14,
188 MEAS_01, 1, sfn 1122: Engine Alternator Bearing 1 Temperature, T01, 0, 2, 0, 2, 0, 1, 8, 1, 0, degC, #f
189 MEAS_02, 1, sfn 1123: Engine Alternator Bearing 2 Temperature, T01, 2, 2, 0, 2, 0, 1, 8, 1, 0, degC, #f
190 MEAS_03, 1, sfn 1124: Engine Alternator Winding 1 Temperature, T01, 4, 2, 0, 2, 0, 1, 8, 1, 0, degC, #f
```

The view in the layout window will appear as follows:



The long description is displayed as a tooltip so when the mouse hovers over the measurement line.

When the debug option is enabled, the contents of the modbus registers can be viewed.



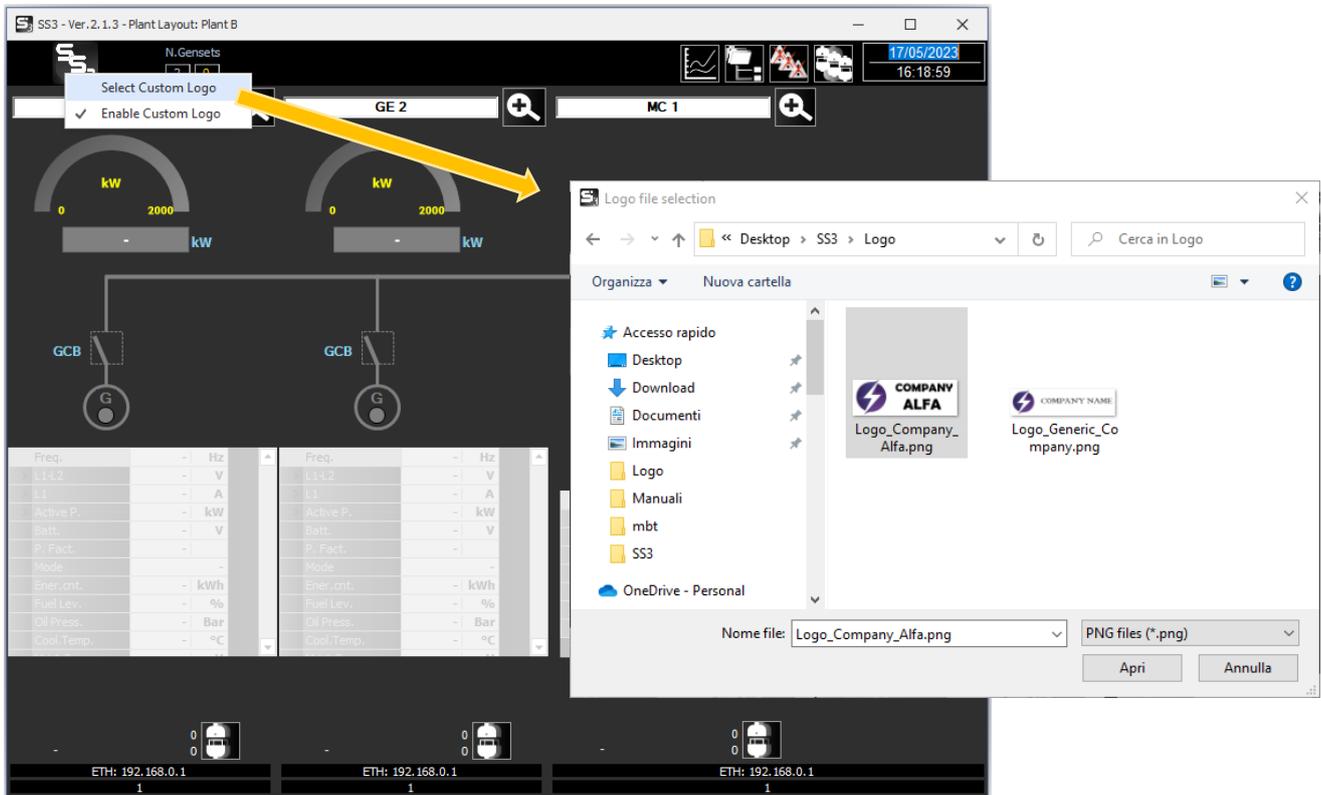
**Reg. Val.Dec.** adds a column that displays the values read from the modbus registers in decimal format.

**Reg. Val.Hex.** adds a column that displays the values read from the modbus registers in hexadecimal format.

## 11. Customized logo

It's possible to insert your company logo in the plant layout screen.

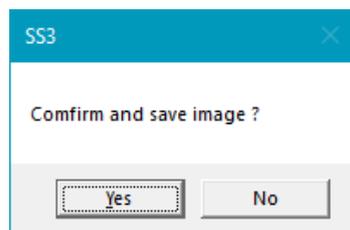
To select the image: right-click on the current logo:



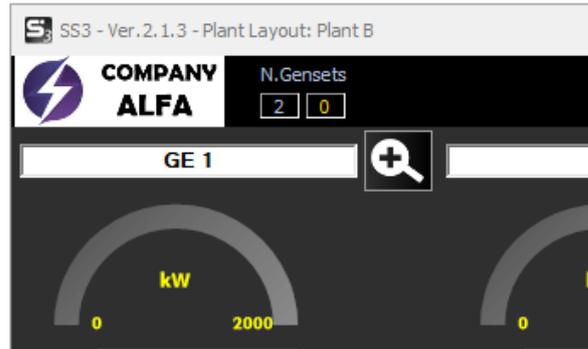
Click on "Select Custom Logo."

Select the image file and confirm with "Open".

If the logo is correct and displayed as you want to confirm :



If you confirm from now the new logo will be displayed on the supervision layout screen:



## 12. External modules

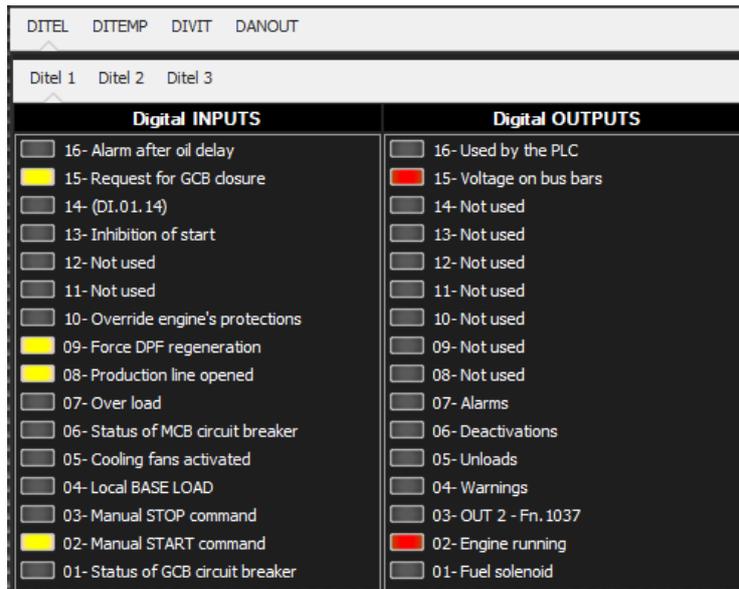
In systems with Mecc Alte boards, additional modulators (DITEL, DIVIT, DITHERM, DANOUT) are likely to be connected.



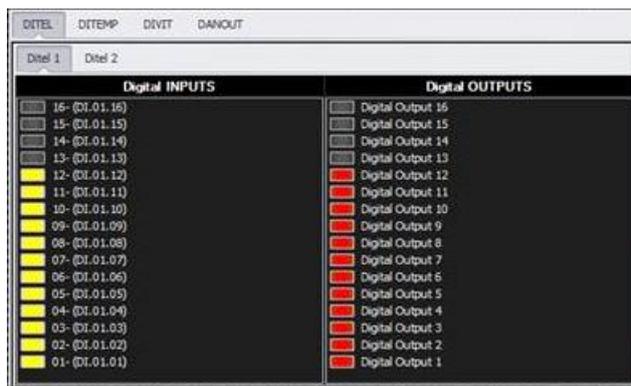
Supervision detects from the board settings whether additional modules are present in the system and displays their states and values in the "Board" section of the single management window:

The screenshot displays the 'Board' section of the supervision software. It includes a navigation bar with icons for Engine, Analogue Measures, Mains, Generator, Power Energy, Board, Commands, Trend, Alarms, and Exit. The main area shows board details: Board Type (DST4602 Evolution), Board clock (06/04/2023 17:04:46), Firmware Code (EB02402450139), Board Working hours (19), ID (00002B6BBE3B), and Internal Temperature (33.9). Below this, there are sections for Digital INPUTS and Digital OUTPUTS. The Digital INPUTS section lists 20 items, with 01-Engine running and 02-Enable for engine control unit checked. The Digital OUTPUTS section lists 16 items, all of which are 'Not used'. A callout box labeled 'External modules' points to the Digital INPUTS and Digital OUTPUTS sections.

DITEL	DITEMP	DIVIT	DANOUT
Ditel 1			
Digital INPUTS		Digital OUTPUTS	
<input type="checkbox"/> 16- Not used	<input type="checkbox"/> 15- Not used	<input type="checkbox"/> 16- Not used	<input type="checkbox"/> 15- Not used
<input type="checkbox"/> 14- Not used			
<input type="checkbox"/> 13- Not used			
<input type="checkbox"/> 12- Not used			
<input type="checkbox"/> 11- Not used			
<input type="checkbox"/> 10- Not used			
<input type="checkbox"/> 09- Not used			
<input type="checkbox"/> 08- Not used			
<input type="checkbox"/> 07- Not used			
<input type="checkbox"/> 06- Not used			
<input type="checkbox"/> 05- Not used			
<input type="checkbox"/> 04- Not used			
<input type="checkbox"/> 03- Not used			



## 12.1 DITEL – Digital I/O



**DITEL.** Each module manages up to 16 digital inputs and 16 digital outputs. Up to 16 DITEL modules can be displayed in the supervision.

## 12.2 DITEMP – Temperature modules



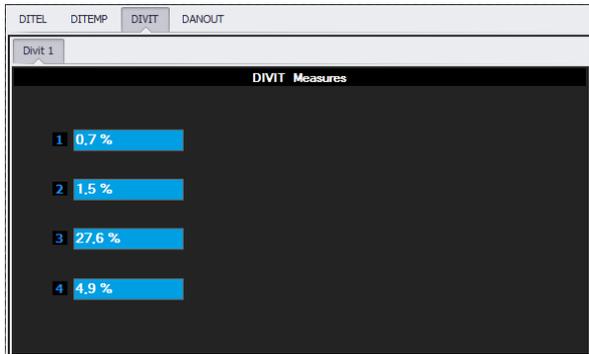
**DITEMP.** Identifies temperature modules, which can be of 2 types:

- **DIGRIN** : reads PT100
- **DITHERM** : reads thermocouples.

Ogni modulo gestisce fino a 3 sensori di temperatura.

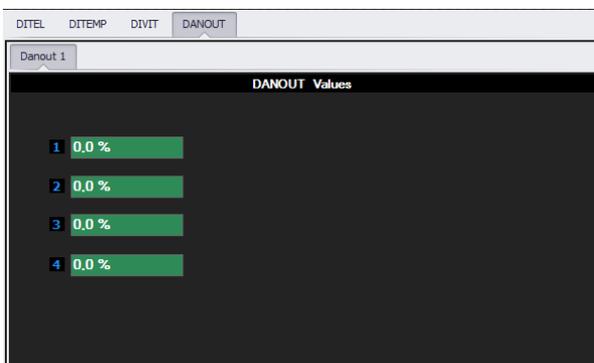
Nella supervisione possono essere visualizzati fino a 16 moduli DITEMP.

## 12.3 DIVIT – Analog Inputs



**DIVIT.** Each DIVIT module handles up to 4 analog inputs (voltage and current signals with 4 different insulated channels). Up to 16 DIVIT modules can be displayed in the supervision.

## 12.4 DANOUT – Analog Outputs



**DANOUT.** Each DANOUT module manages up to 4 analog outputs (provide voltage and current signals). Up to 16 DANOUT modules can be displayed in the supervision.

## 13. Mecc Alte CommServer.

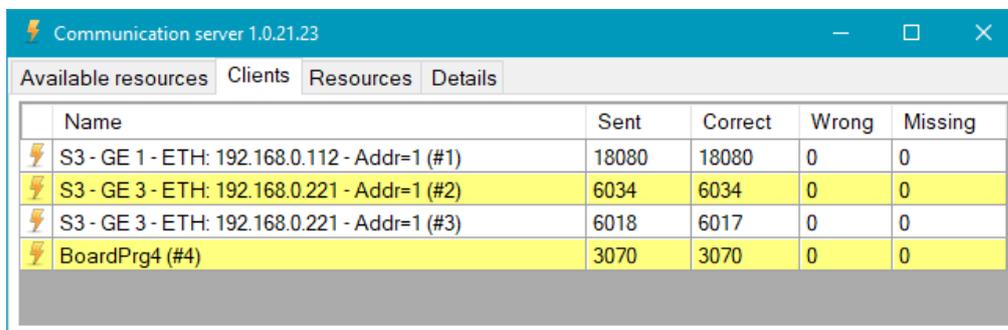
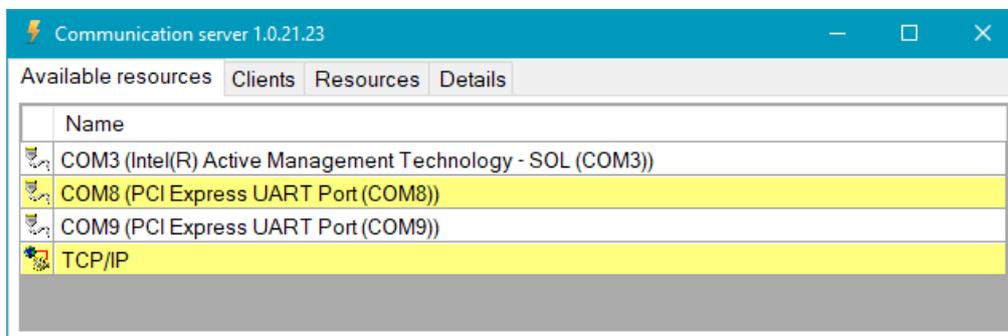
Mecc Alte CommServer is an auxiliary program for sharing and managing a computer's communication resources.

It is automatically installed by SS3 or BoardPrg4.

It is launched when a connection is required. When it is running it appears in the taskbar:



Clicking on the icon displays the window containing available resources and connection statuses :



Each connection is reported on a line in the "Clients" section. Each program can use several connections.

When a connection is closed it disappears from the table. When there are no more active connections the Mecc Alte CommServer automatically closes.

SS3 is able to take advantage of the Mecc Alte CommServer.

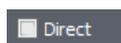
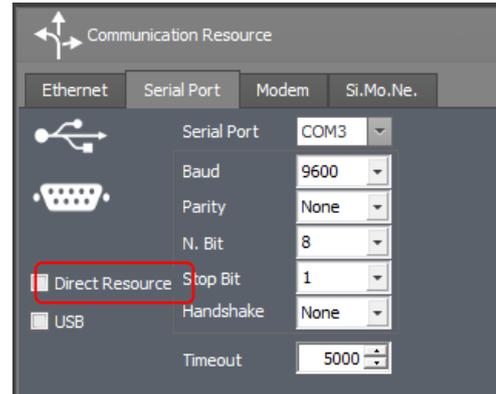
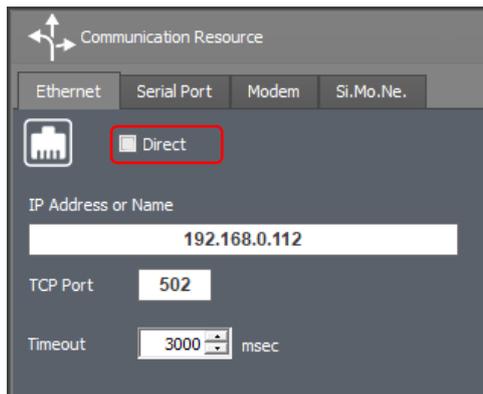
Mecc Alte CommServer handles:

- Serial ports (RS232/RS485/USB) : COM ports installed in the system
- Modems : Modems managed through the drivers installed in the operating system.
- Ethernet : network connections (via IP address or DNS name)
- SiMoNe : automatically connects to the SiMoNe system to derive the current address of a unit connected via mobile network.

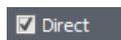
Programs using Mecc Alte CommServer can use the same communication resource. For example, a COM port normally cannot be committed by more than one program.

In this case we can have SS3 and BoardPrg4 communicating with a board on the same serial port at the same time because of Mecc Alte CommServer.

The Mecc Alte CommServer is launched automatically when needed (it can then be launched by BoardPrg4 or by SS3).



Uses Mecc Alte CommServer



Does not use Mecc Alte CommServer.

It manages the communication resource directly from the program.

Mecc Alte Supervisor3 can use a communication resource in 2 modes:

1. Direct (handles the communication port directly). In the case of serial port no other program can use it, and SS3 can open only one connection at a time (if, for example, we have 3 boards connected in RS485 we can use one connection at a time).

The resources that can be used directly are: serial port, Ethernet port.

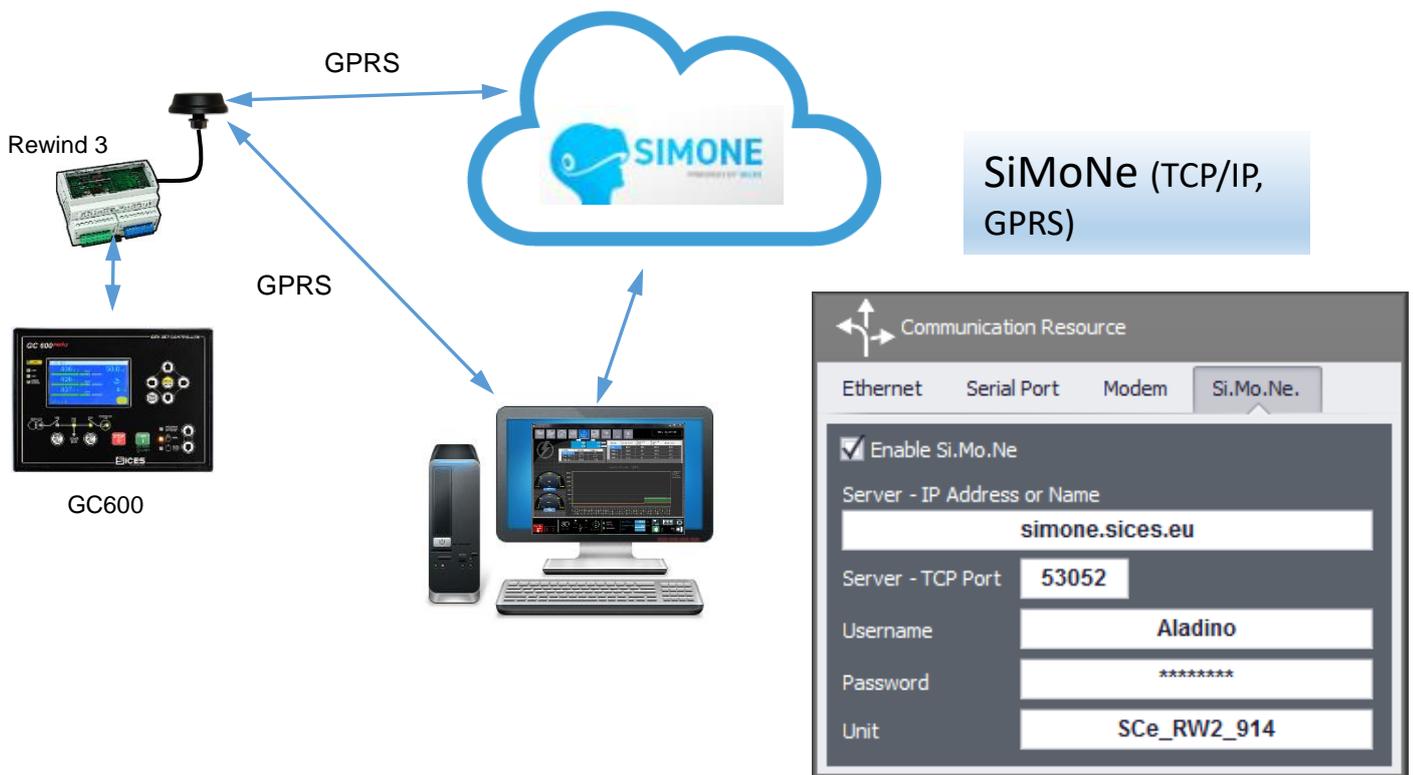
2. Shared (via Mecc Alte CommServer). You can communicate simultaneously with multiple boards connected on the same serial. SS3 can use the same communication resource as other software using the Mecc Alte CommServer (in our case BoardPrg).

## 14. SS3 and SiMoNe

The connection between SS3 and the SiMoNe cloud enables connection to mobile systems that have variable IP address.

The device must be registered on SiMoNe and connected. The SiMoNe server records the last IP address and is able to provide it to the supervisor when requested.

Then SS3 once it gets the IP address can connect directly to the plant.



N.B.: The board needs to have a public IP address that can be reached via TCP (port 502)

<b>Enable SiMoNe</b>	Enable connection to SiMoNe.
<b>Server – IP Address or name</b>	Set the IP address or name of the SiMoNe server. The default address of the server is: <b>simone.sices.eu</b>
<b>Server – TCP Port</b>	TCP port for access to SiMoNe server.
<b>Username</b>	User name accessing the SiMoNe service. Important: The user name must be able to see the requested unit in SiMoNe otherwise it cannot receive its information.
<b>Password</b>	SiMoNe user password. Note: These login credentials are the same for accessing the SiMoNe platform via the web.
<b>Unit</b>	Unit name in SiMoNe.

## 15. Trend management and zooming in

All the trends included in this program have common features that can be used to make enlargements and selections. We describe these display options below.

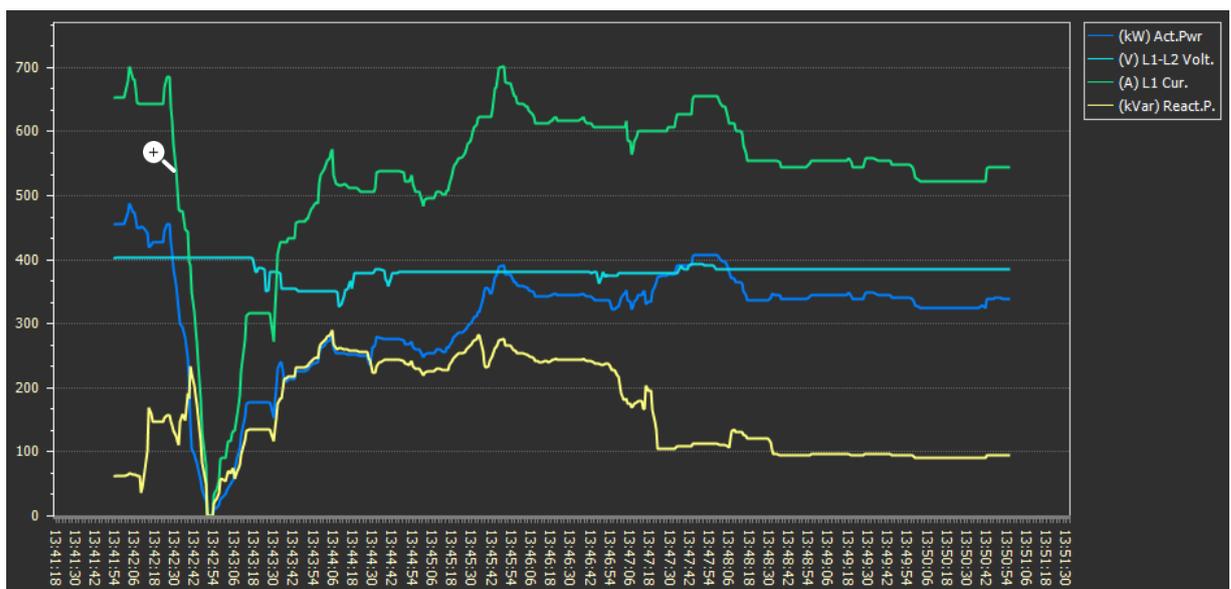
### 15.1 One-point data visualisation

Positioning the mouse over a point on the graph will display a box with the measurements at that point.

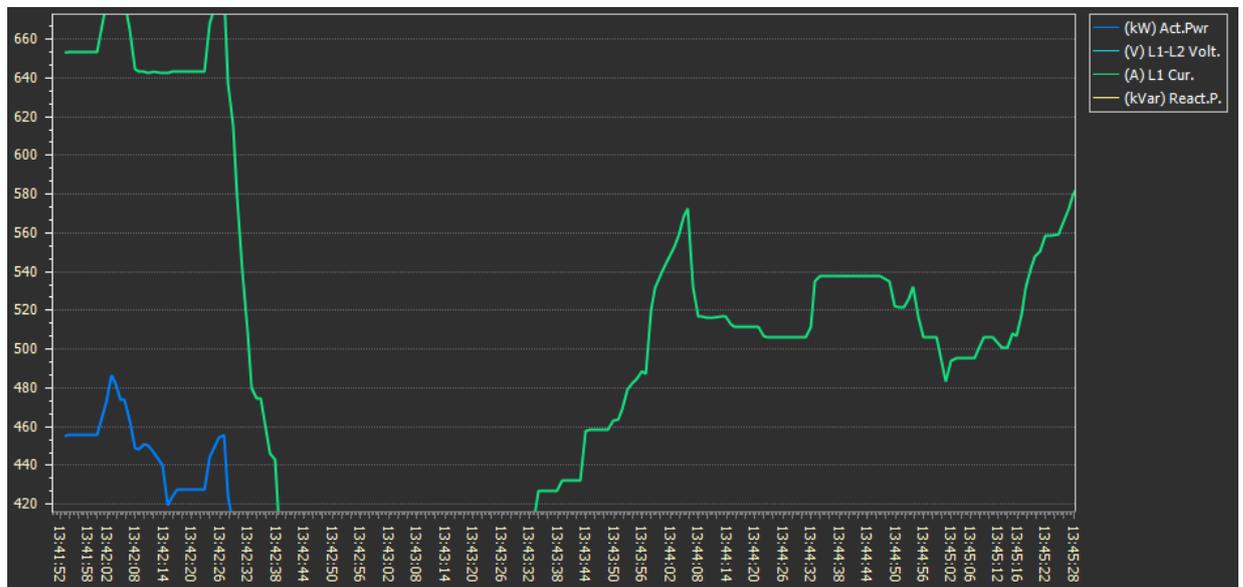


### 15.2 Zoom Trend

Pressing the SHIFT button will display a magnifying glass in the graph. Pressing the right mouse button zooms in on the selected point.



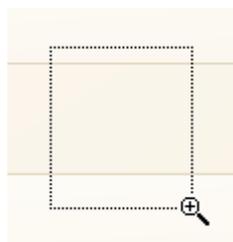
Zoomed trend:



### 15.3 List of trend functions

You can use the following actions to zoom a diagram:

Action	Effect
Press <b>Shift</b> and click the diagram.	The mouse pointer changes to  after a user presses the <b>Shift</b> key. They should move the mouse pointer to the chart region they want to zoom and click the left mouse button with <b>Shift</b> pressed. This zooms in the diagram <b>3</b> times.
Press <b>Alt</b> and click the diagram.	The mouse pointer changes to  after a user presses the <b>Alt</b> key. They should move the mouse pointer to the region to be zoomed out, and click the left mouse button with <b>Alt</b> pressed. The diagram is zoomed out by <b>3</b> times.
Press <b>Shift</b> and select a region on the diagram.	The mouse pointer changes to  after a user presses the <b>Shift</b> key. They should use the left mouse button to select a region on a chart.



A chart is zoomed into the selected region bounds after a user releases the left mouse button.

Use **Ctrl** with the **+** or **-** key.

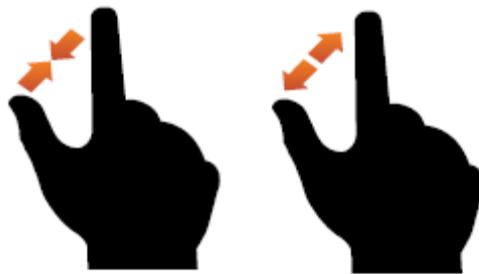
A chart's diagram is zoomed in by **20** percent from the current axis ranges if a user presses and holds the **Ctrl** key with the **+** key. A chart's diagram is zoomed out by **20** percent from the current axis ranges if a user presses and holds the **Ctrl** key with the **-** key.

Use the mouse wheel.

A user should hover a diagram with the mouse pointer and scroll the mouse wheel to zoom in/out by **20** percent from the current ranges of axes. To zoom in/out a chart by an individual axis, they should hover the axis with the mouse pointer and scroll the mouse wheel.

Use the spread or pinch gestures on a touchscreen device.

Spread or pinch gestures allow a user to zoom in and out a diagram on any touchscreen devices.

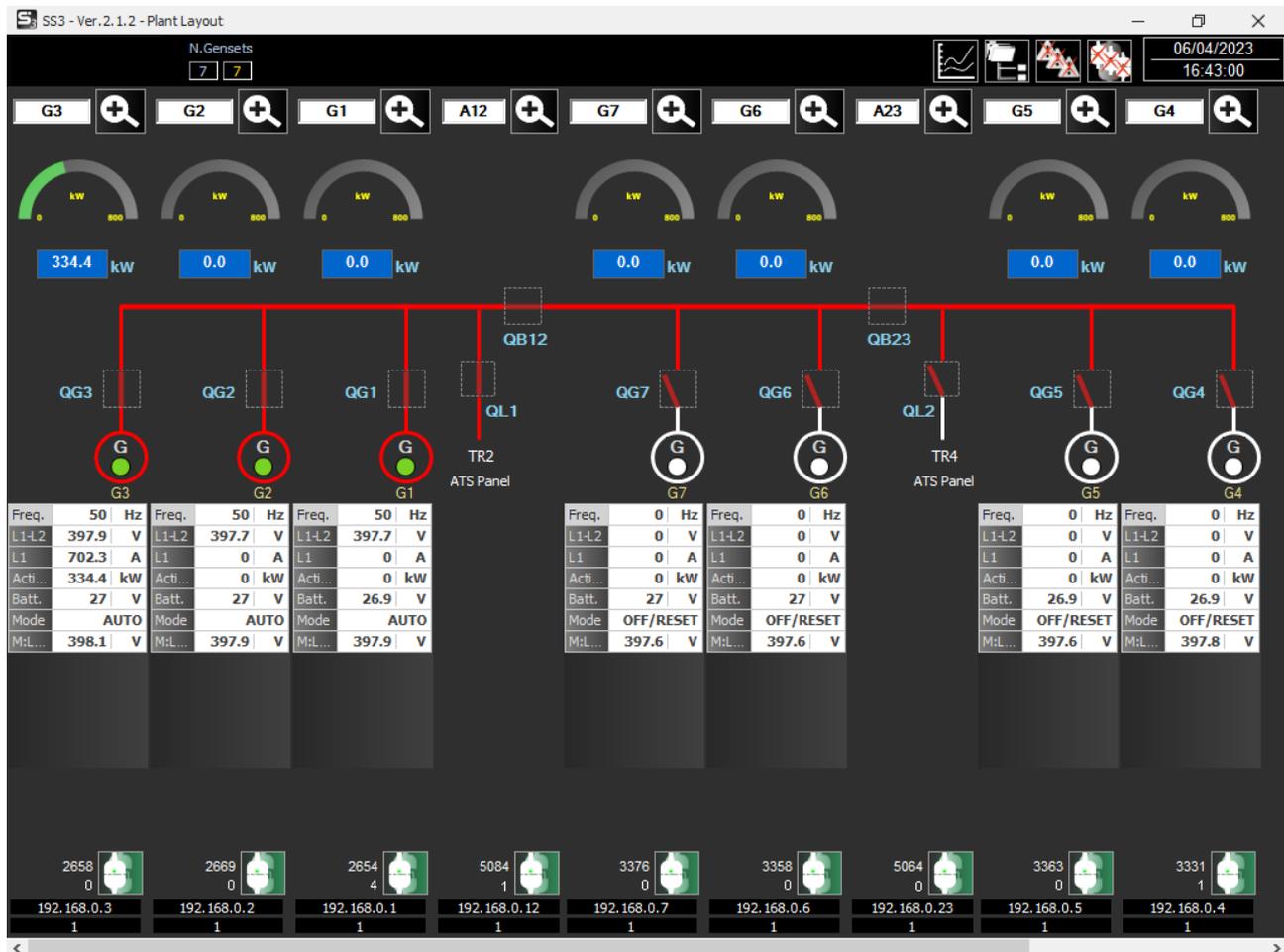


Use **Ctrl + Z**.

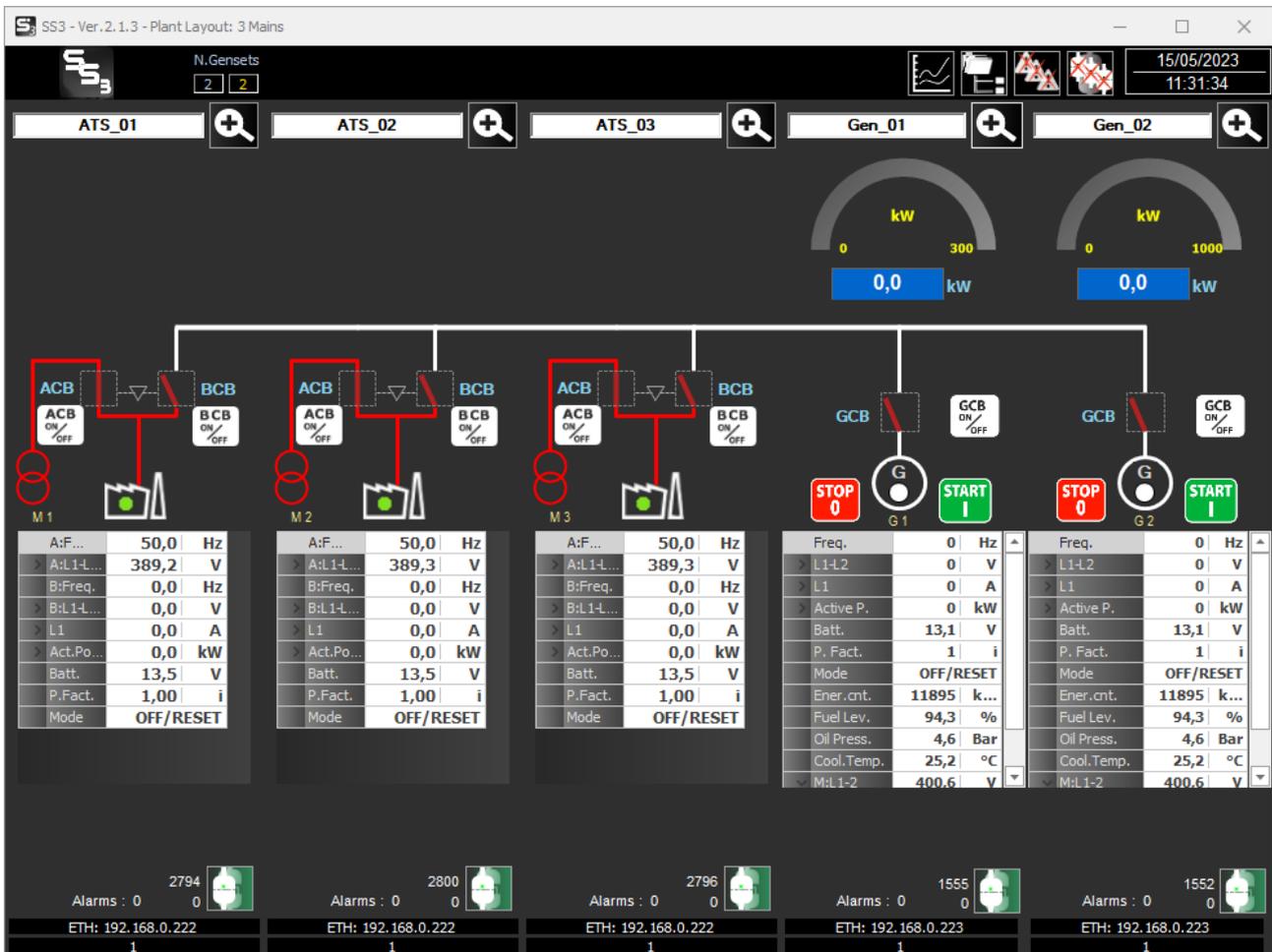
Users should press the **Ctrl + Z** keys to return the previous zoom state of a diagram. Note that all subsequent operations of a similar kind (for example, multiple "zoom in" operations) are considered as a single transaction. A press of **Ctrl + Z** returns the zoom state existed before the first zoom operation in a zoom series.

## 16. Examples of plants

### 16.1 Plant example 1



## 16.2 Plant example 2





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