HMI
DIGITAL TOUCHSCREEN LCD PANEL

USER'S GUIDE

## Index

1] General Characteristics

The Convel's UPS' and chargers can be provided with an HMI (Human Machine Interface) colour touchscreen panel to show the equipment running conditions including measuring of the voltage, current, frequency, temperature, the presence of alarms, set different charging modes, read the operating Event Log History and much more…

The HMI function is obtained with a resistive 4 wires touchscreen panel with screen resolution 800x480 pixel and provided with front ingress protection **IP66**, suitable for industrial applications, based on a microprocessor-controlled card with operating system Windows CE.

The different features are divided over several pages that can be activated starting from the Home Page. The access to the equipment settings is password protected and the panel is provided with a screen saver which will dim the screen light showing the Convel's logo. The panel includes also one serial RS485 port and one TCP/IP Ethernet port.

Connections on the back
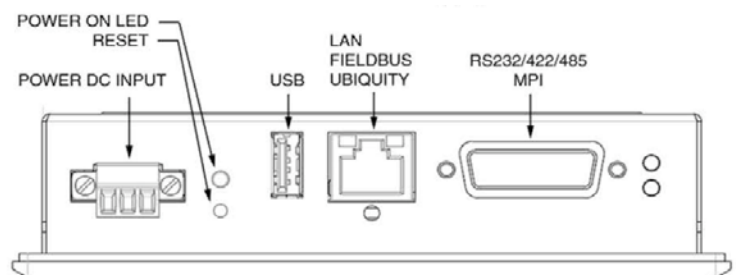
2] Home Page

The visualization and control of the equipment operating status is performed starting from the Home Page.
Here below are listed some home pages according to system type.
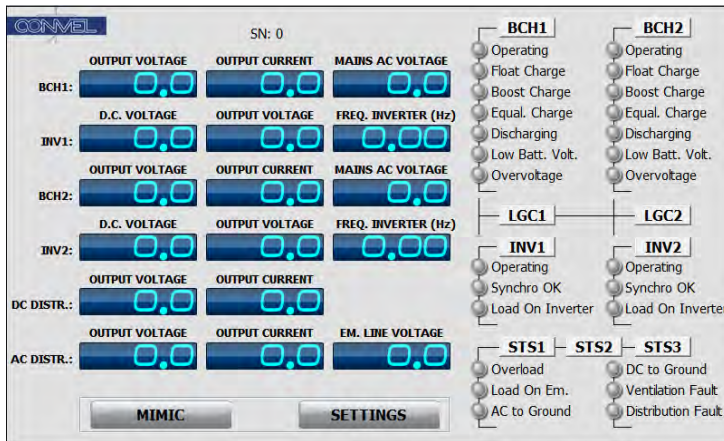
Full Home Page

Home Page of Dual Redundant Battery Charger

Home Page of Dual Redundant Inverter

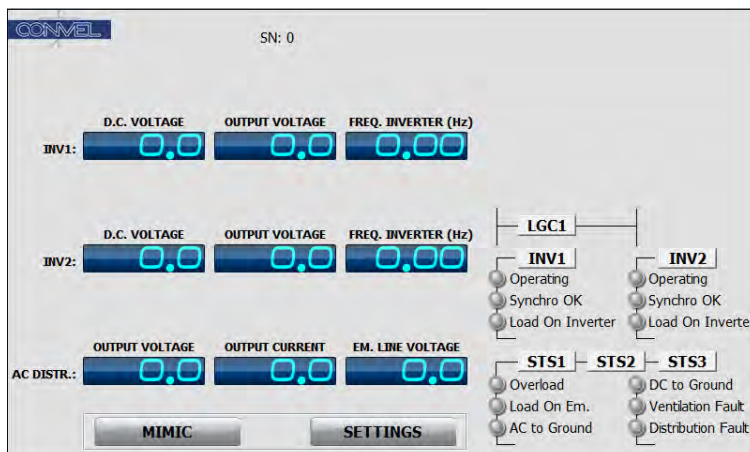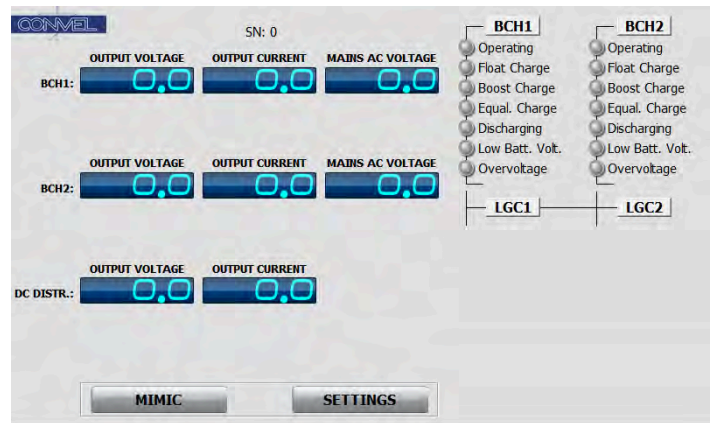## 2.1] Home Page Description

The Home Page contains all the main information about the equipment operating status. In this page it is immediately possible identify the operating status and/or the presence of alarms/anomalies. The **Fig. 1** shows the Home Page for the most complex equipment type (Dual redundant UPS) and for the other equipment types will be displayed the relative sections only.
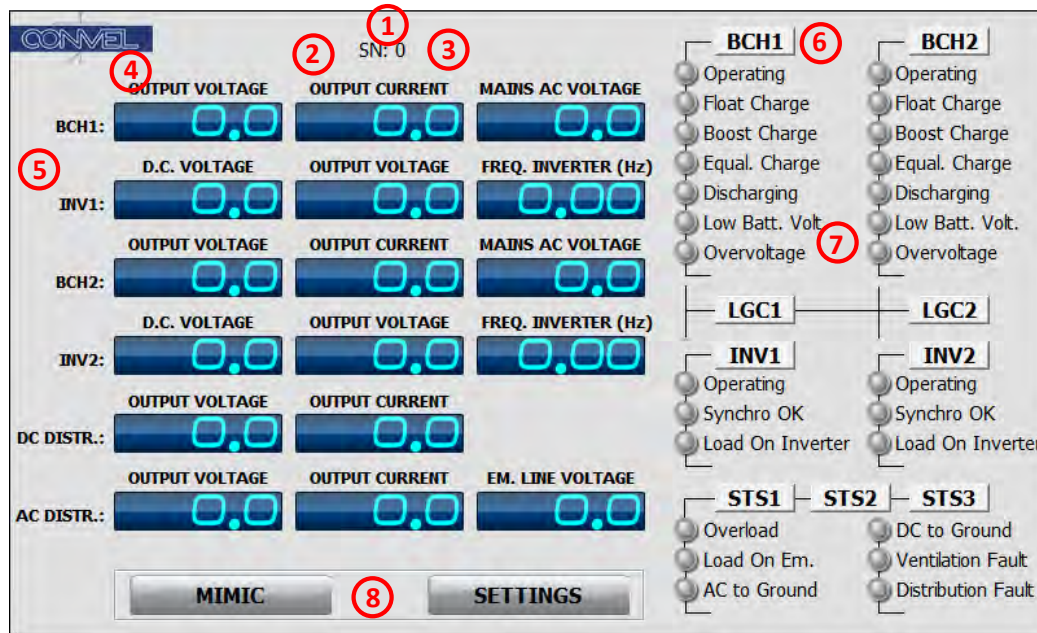

Fig. 1

1] Equipment Type
It is shown the equipment type (e.g. Dual Redundant 30kVA UPS)

2] Convel's Job Number
It is shown the Convel's job number

3] Equipment Serial Number
It is shown the equipment serial number

4] Measure Type
Instrument type and relevant value

5] Section Names
The equipment can be composed by several sections. In the above example (Fig.1), the equipment sections are:
BCH1 –Battery Charger 1
BCH2 – Battery Charger 2
INV1 – Inverter 1
INV2 – Inverter 2
OUT – Output

6] Sections Redirection Pushbuttons
Pushbuttons to access the more detailed information of a section. If the pushbutton is **green coloured**, no alarm is present in the section, otherwise, if the pushbutton is **red coloured** one or more alarms are present.

The pushbuttons available as per Fig.1 are:
BCH1 – Battery Charger 1
BCH2 – Battery Charger 2
INV1 – Inverter 1
INV2 – Inverter 2
STS1 – Static Switch 1
STS2 – Static Switch 2
STS3 – Static Switch 3
Tapping on "**BCH1**" pushbutton the Battery Charger 1 page with measures and detailed signalizations is open, tapping on "**BCH2**" pushbutton the Battery Charger 2 page is open and so on for all other pushbuttons. In the next pages the detailed information for each section are provided.

7] Signalization Leds
Signalization leds and relevant description. Available on Inverter and UPS only.

8] Settings & Mimic Pushbuttons
Tapping on the "**SETTINGS**" pushbutton, the system settings page is open. Refer to "Settings" page for more detail. Tapping on "**MIMIC**" pushbutton, the system single line will be shown (See par. 7 for more details).

3] Battery Charger BCH1/2 Section

Tapping in the Home Page on "BCH1" or "BCH2" pushbuttons you can access to the relevant battery charger section (**Fig. 2**). This section is composed of 3 pages (Measurement page, Alarms page and Events Log page) here below described. Refer to paragraph 7.0 for more details about history log.

3.1] Battery Charger Measurements Page Description

In this page are shown all available measures like voltages, currents and frequency, including the relevant alarm leds. Moreover, in this page it is possible to turn-on, or off, the rectifier through START-STOP pushbuttons.
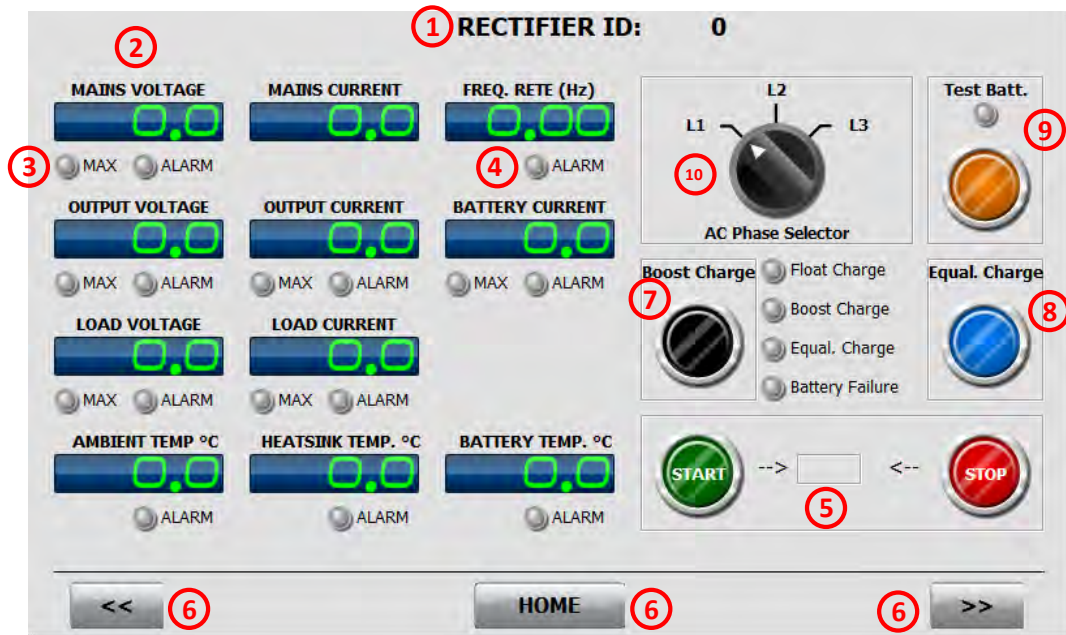

Fig. 2

1] Number of the active Battery Charger
It is shown the number of the active Battery Charger (1,2)

2] Measure Type
Instrument type and relevant value

3] Max Value Led
This led indicates that the maximum allowed value of the relevant measure has been reached.

4] Alarm Led
This led indicates that the relevant measure is outside the Min-Max values allowed.

5] Start-Stop Pushbuttons
Battery Charger ON (Start) and OFF (Stop) pushbuttons.
It is possible hiding them in the "Settings" page.

6] Back, Home and Forward Pushbuttons
The "<<" and ">>" pushbuttons are used to browse all Battery Charger's section pages. Return to the Home Page with the "Home" button.

7] Boost Charge Pushbutton
Pushbutton to start a battery boost charge cycle. At the end of the cycle the Battery Charger is automatically switched back to float charge.

8] Equalizing Charge Pushbutton
Pushbutton to start a battery equalizing (manual) charge cycle. At the end of the cycle the Battery Charger is automatically switched back to floating charge.

9] Battery Test
Pushbutton to start a battery test cycle. During the test the led is ON and in event of failure it will be indicated by the Battery Failure led.

10] Three Phase AC Switch
Switch to select which voltage and current phase will be shown on display.

3.2] Battery Charger Alarms Page Description

In this page are shown all Battery Charger available alarms (**Fig. 3**). In case of multiple charging mode capability, are available the relevant pushbuttons to start the different charging modes.
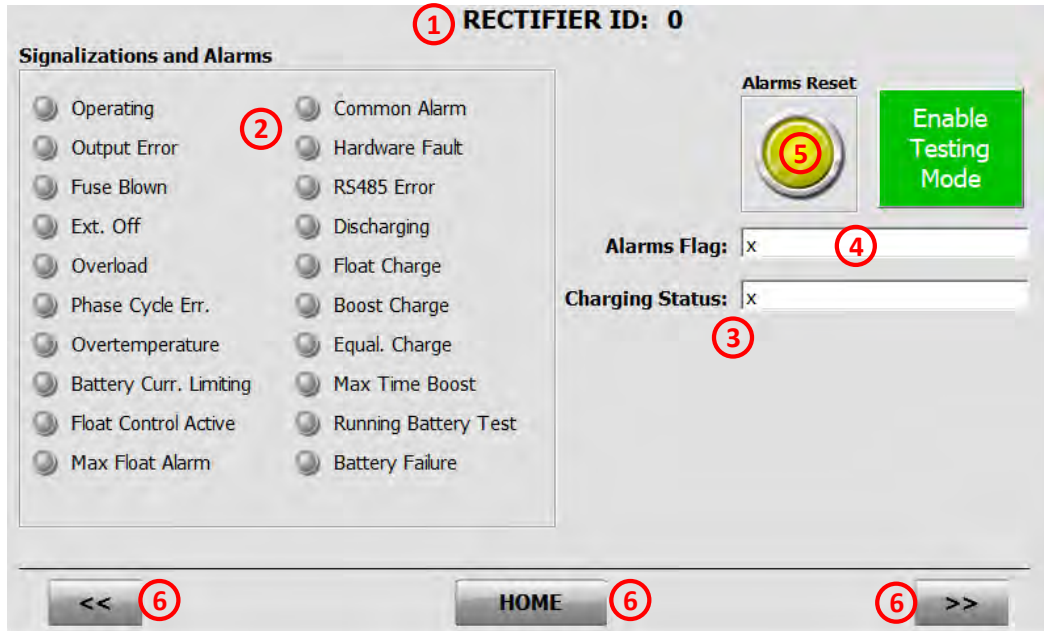

Fig. 3

1] Number of the active Battery Charger
It is shown the number of the active Battery Charger (1 or 2).

2] Alarms Leds
Available alarms leds.

3] Battery charging status
Current battery charging status.

4] Alarms Flags
Hex operating status and/or alarms flags. Useful for maintenance/assistance purpose.

5] Alarms Reset Pushbutton
Alarms reset pushbutton.

6] Back, Home and Forward Pushbuttons
The "**<<**" and "**>>**" pushbuttons are used to browse all Battery Charger's section pages. Return to the Home Page with the "Home" button.

4] Logic & Measurements LGC1/2 Section

Tapping in the Home Page on "LGC1" or "LGC2" pushbuttons you can access to the relevant Logic section (**Fig. 4**). This section is composed of 2 pages (Measurement page and Events Log page) as stated below.
Refer to paragraph 7.0 for more details about history log.

4.1] Logic Measurements Page Description

In this page are shown all available AC & DC measures like voltages, currents and frequency, including the relevant alarm leds. The common alarms & signalisation leds are also available.
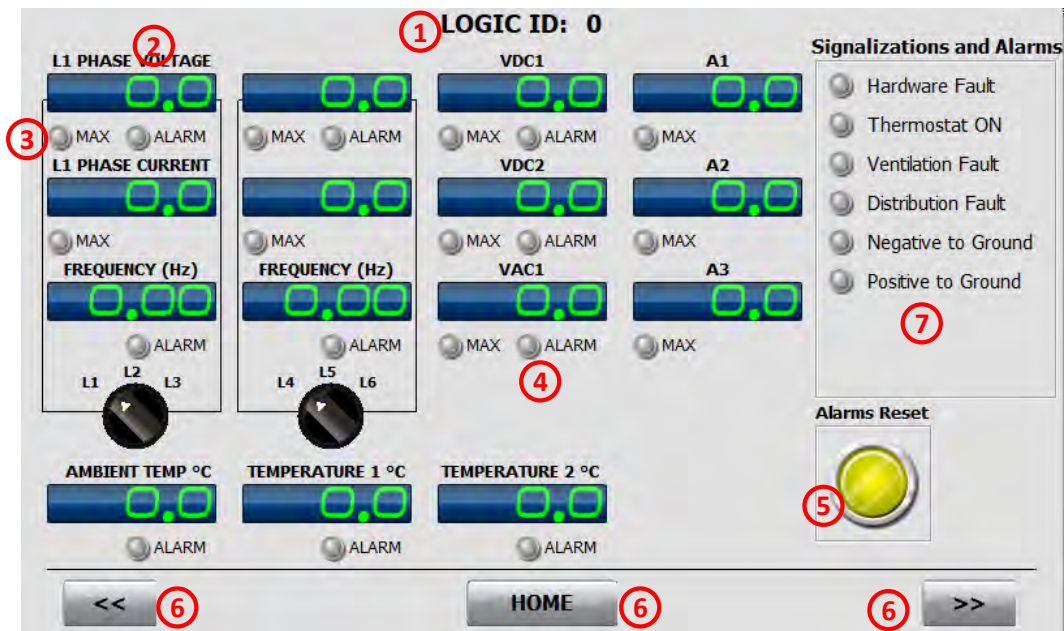

Fig. 4

1] Number of the active Logic
It is shown the number of the active Logic Card (1 or 2)

2] Measure Type
Instrument type and relevant value.

3] Max Value Led
This led indicates that the maximum allowed value of the relevant measure has been reached.

4] Alarm Led
This led indicates that the relevant measure is outside the Min-Max values allowed.

5] Alarms Reset Pushbutton
Alarms Reset pushbutton.

6] Back, Home and Forward Pushbuttons
The "<<" and ">>" pushbuttons are used to browse all Inverter's section pages. Return to the Home Page with the "Home" button.

7] System Alarms
Various operating system alarms.

5] Inverter INV1/2 Section

Tapping in the Home Page on "INV1" or "INV2" pushbuttons you can access to the relevant inverter section (**Fig. 5**).
This section is composed of 3 pages (Measurements page, Alarms page and Events Log page) here below described.
Refer to paragraph 7.0 for more details about history log.

5.1] Inverter Measurements Page Description

In this page are shown all available measures like voltages, currents and frequency, including the relevant alarm leds.
Moreover, in this page it is possible to turn-on, or off, the rectifier through START-STOP pushbuttons.
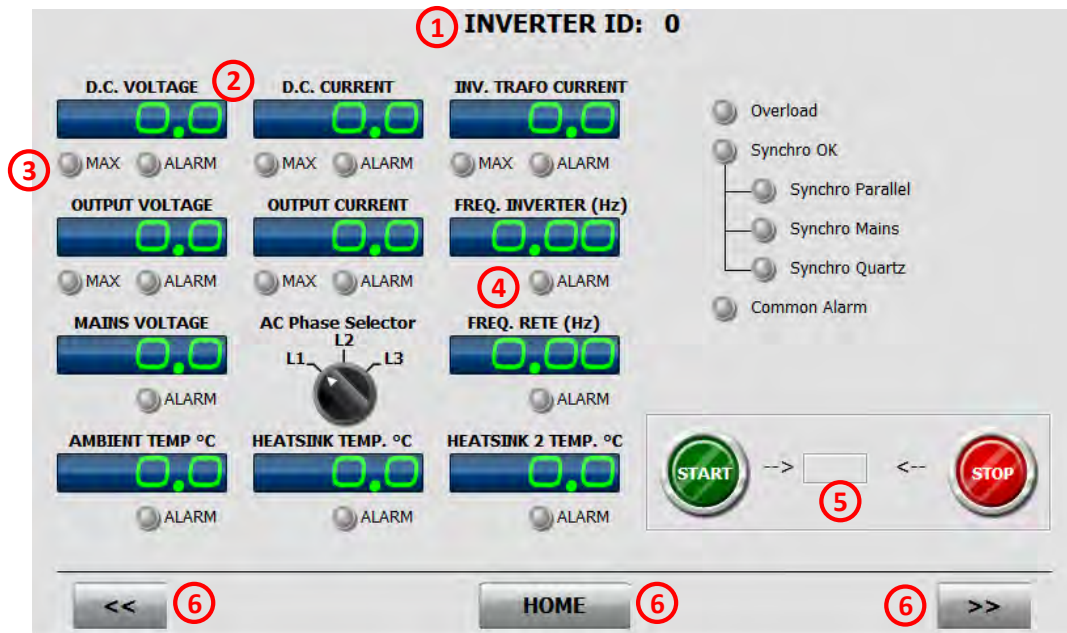

Fig. 5

1] Number of the active Inverter
It is shown the number of the active Inverter (1 or 2)

2] Measure Type
Instrument type and relevant value.

3] Max Value Led
This led indicates that the maximum allowed value of the relevant measure has been reached.

4] Alarm Led
This led indicates that the relevant measure is outside the Min-Max values allowed.

5] Start-Stop Pushbuttons
Inverter ON (Start) and OFF (Stop) pushbuttons.
It is possible hiding them in the "Settings" page.

6] Back, Home and Forward Pushbuttons
The "<<" and ">>" pushbuttons are used to browse all Inverter's section pages. Return to the Home Page with the "Home" button.

5.2] Inverter Alarms Page Description

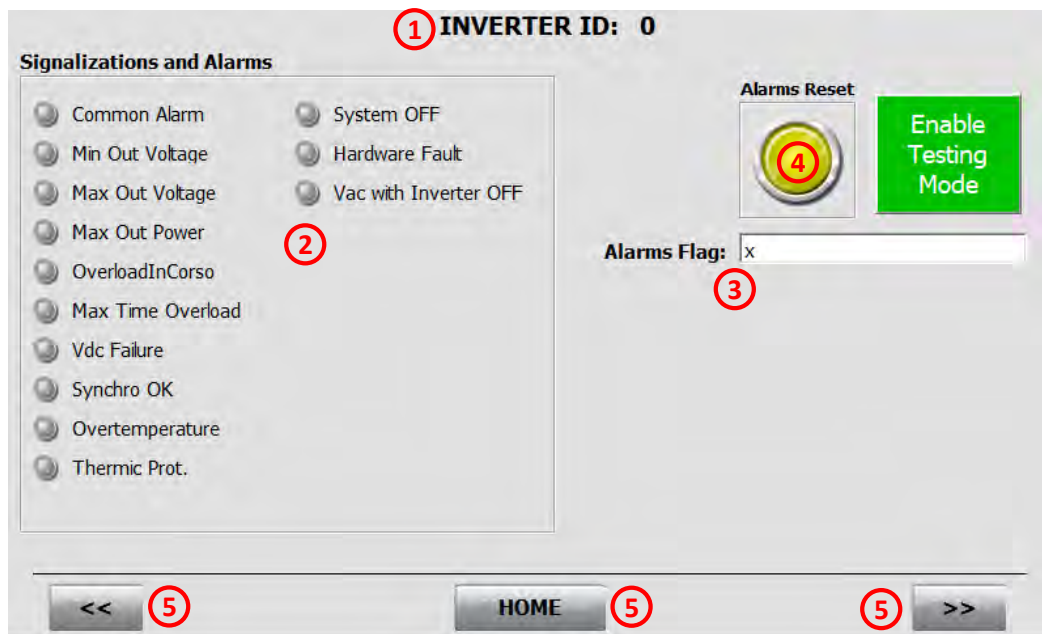In this page are shown all Inverter available alarms (**Fig. 6**).

Fig. 6

1] Number of the active Inverter
It is shown the number of the active Inverter (1 or 2)

2] Signalizations & Alarms Leds
Signalizations & alarms leds.

3] Alarms Flags
Hex operating status and/or alarms flags. Useful for maintenance/assistance purpose.

4] Alarms Reset Pushbutton
Alarms Reset pushbutton.

5] Back, Home and Forward Pushbuttons
The "**<<**" and "**>>**" pushbuttons are used to browse all Inverter's section pages. Return to the Home Page with the "Home" button.

6] Static Switch STS1/2/3 Section

Tapping in the Home Page on "STS1", "STS2" or "STS3" pushbuttons you can access to the relevant static switch section (**Fig. 7**). This section is composed of 3 pages (Measurement page, Alarms page and Events Log page) here below described. Refer to paragraph 7.0 for more details about history log.

6.1] Static Switch Measurements Page Description

In this page are shown all available measures like voltages, currents and frequency, including the relevant alarm leds. Moreover, in this page it is possible to turn-on, or off, the rectifier through START-STOP pushbuttons.
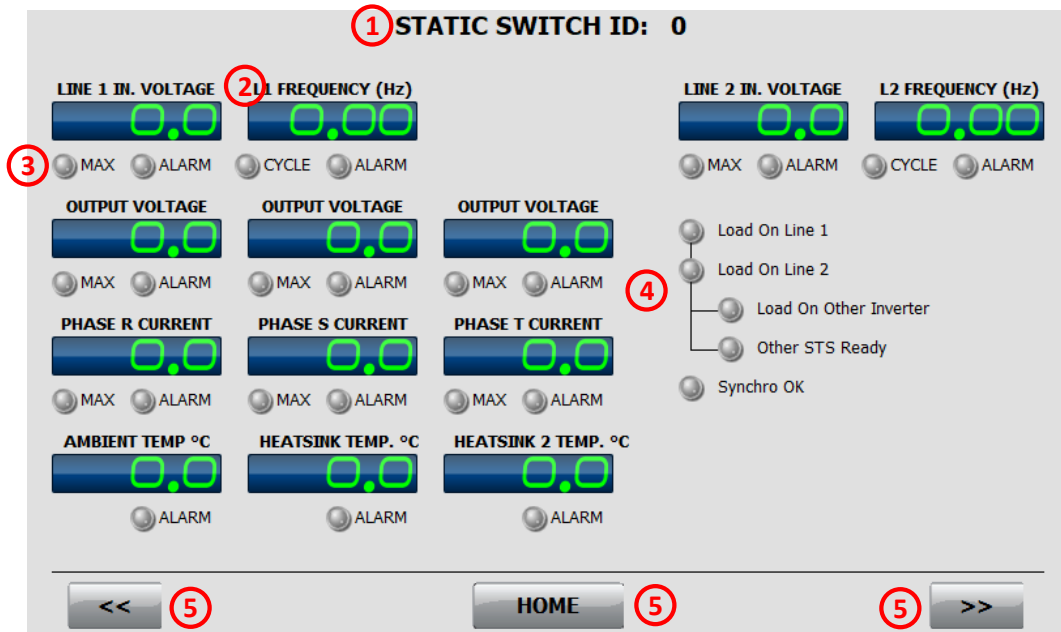

Fig. 7

1] Number of the active Static Switch
It is shown the number of the active Static Switch (1,2 or 3)

2] Measure Type
Instrument type and relevant value.

3] Max Value Led
This led indicates that the maximum allowed value of the relevant measure has been reached.

4] Alarm Led
This led indicates that the relevant measure is outside the Min-Max values allowed.

5] Back, Home and Forward Pushbuttons
The "<<" and ">>" pushbuttons are used to browse all Battery Charger's section pages. Return to the Home Page with the "Home" button.

6.2] Static Switch Alarms Page Description

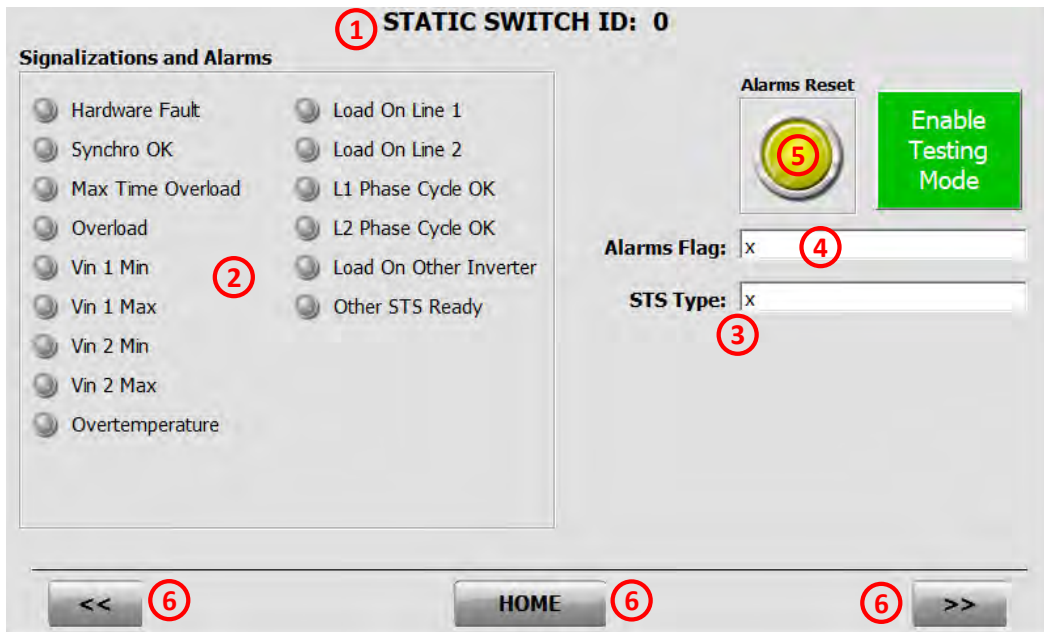In this page are shown all Static Switch available alarms (**Fig. 8**).

Fig. 8

1] Number of the active Static Switch
It is shown the number of the active Static Switch (1,2 or 3)

2] Signalizations & Alarms Leds
Signalizations & alarms leds.

3] Static Switch mode
Static Switch operating mode.

4] Alarms Flags
Hex operating status and/or alarms flags. Useful for maintenance/assistance purpose.

5] Alarms Reset Pushbutton
Alarms reset pushbutton.

6] Back, Home and Forward Pushbuttons
The "**<<**" and "**>>**" pushbuttons are used to browse all Battery Charger's section pages. Return to the Home Page with the "Home" button.

7] Events History Page

Each system subsection, Charger, Logic, Inverter and Static Switch, is provided with a page to show the relevant events history log file (**Fig. 9**).

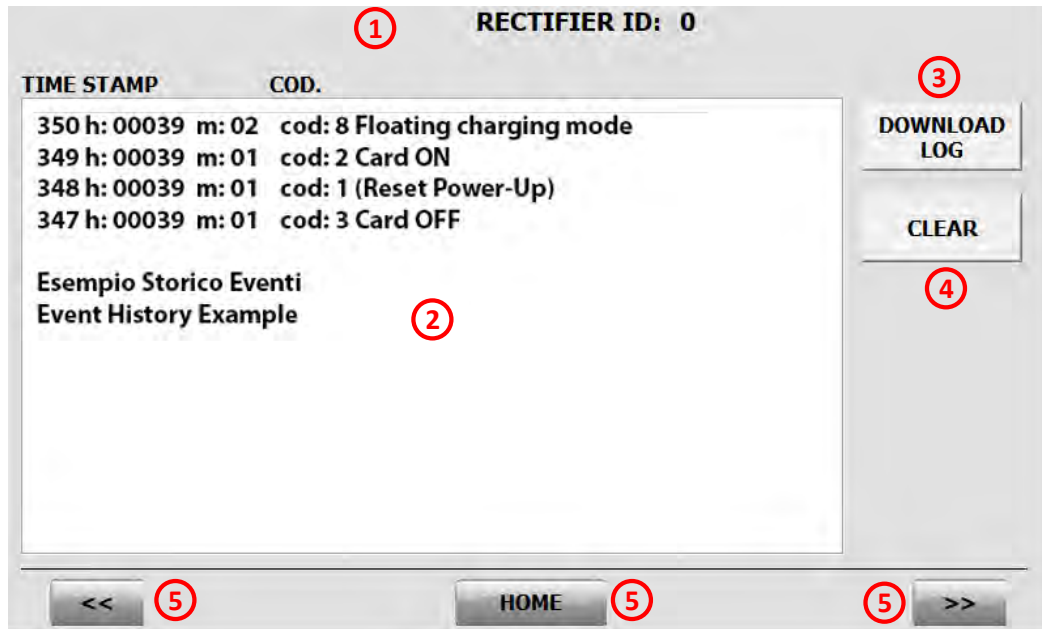## 7.1] Events History Log Page Description

Fig. 9

1] Number of the active subsection
It is shown the number of the active Static Switch (1,2 or 3)

2] Events Log
It is shown the Static Switch Events Log file

3] Log Download Pushbutton
Pushbutton to download the Static Switch events log.

4] Clear Pushbutton
Pushbutton to clear Static Switch events log shown in this page.

5] Back, Home and Forward Pushbuttons
The "**<<**" and "**>>**" pushbuttons are used to browse all Static Switch's section pages. Return to the Home Page with the "Home" button.

8] Settings Page

Tapping in the Home Page on "SETTINGS" pushbutton you can access to the Settings page. To permit the access to authorized persons only, this page is password protected (see picture on the right). The default password is "0", however, the user can change it then. The panel is also provided with the Master Password "**55555**" (unchangeable) which it can be used if the previously set password has been forgotten or lost.
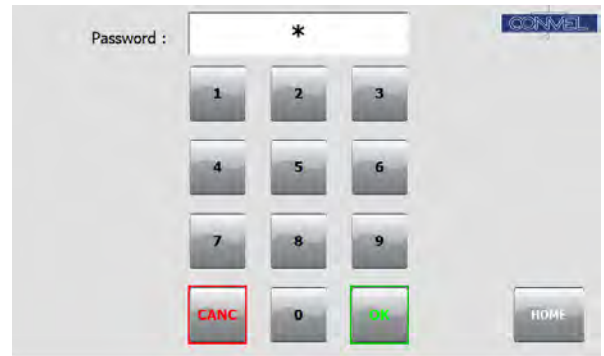
8.1] Settings Page Description

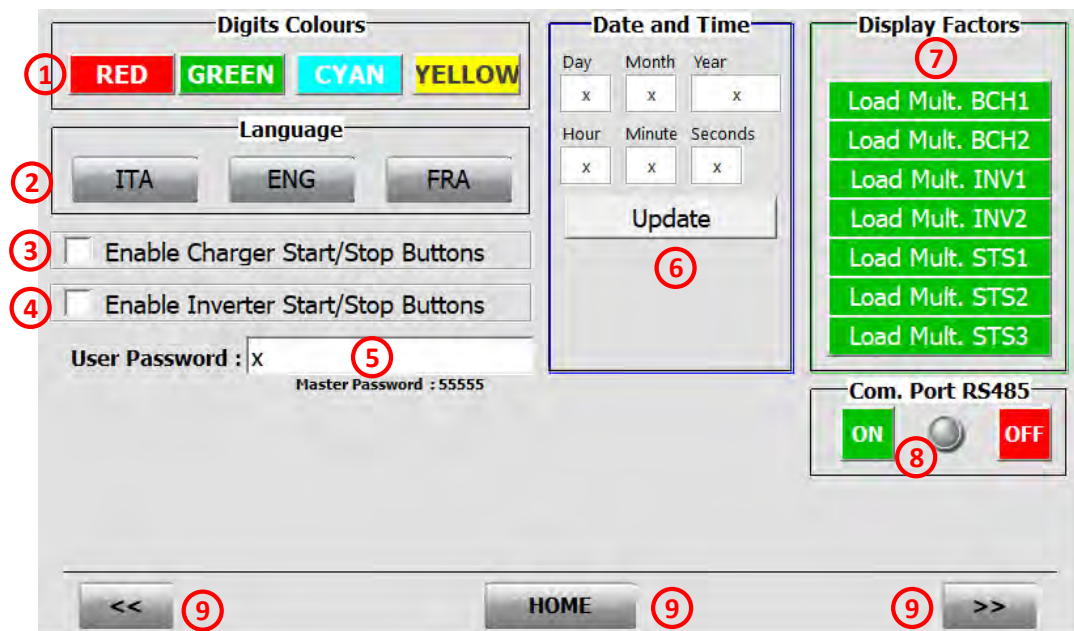In this page are shown all available settings for the current system (**Fig.10**).

Fig. 10

1] Digits Colours
It is possible to change the colour of the digits used by all instruments.
The available colours are:
RED – Red Colour
GREEN – Green Colour
BLUE – Blue Colour
YELLOW – Yellow Colour

2] Language
It is possible to change the panel language.
The provided localizations are:
ITA – Italian language
ENG –English language
FRA – French language

3] Enable Charger Start-Stop Pushbuttons
Setting this option, it is possible to enable the Start and Stop pushbuttons in the Battery Charger section.

4] Enable Inverter Start-Stop Pushbuttons
Setting this option, it is possible to enable the Start and Stop pushbuttons in the Inverter section.

5] User Password
It is possible to change the current user's password (default value "0"). Tap on text for changing.
The Master Password is "55555" (unchangeable).

6] Date and Time
It is possible to set date and time.
All the available fields must be filled, then push UPDATE.

7] Display Parameters Pushbuttons
Pushbuttons to update the panel's meters params with the equipment's ones. The **Fig.11** shows all pushbuttons provided for the most complete equipment type (Dual redundant UPS), for all the other equipment types, it will be displayed the relevant pushbuttons only.

The available pushbuttons are:
Load Mult. BCH1 – Copy params from Battery Charger 1
Load Mult. BCH2 – Copy params from Battery Charger 2
Load Mult. INV1 – Copy params from Inverter 1
Load Mult. INV2 – Copy params from Inverter 2
Load Mult. STS1 – Copy params from Static Switch 1
Load Mult. STS2 – Copy params from Static Switch 2
Load Mult. STS3 – Copy params from Static Switch 3

Tapping on "**Load Mult. BCH1**" pushbutton, all Battery Charger 1 parameters will be updated with the relevant equipment's card. Tapping on "**Load Mult. BCH2**" pushbutton, the Battery Charger 2 parameters will be updated and so on for all other pushbuttons.

8] RS485 Communication Port
This led indicates that the RRS485 port is working properly (Green Led). The ON/OFF pushbuttons, if available, can be activated for extraordinary maintenance only.

9] Back, Home and Forward Pushbuttons
The "**<<**" and "**>>**" pushbuttons are used to browse all Static Switch's section pages. Return to the Home Page with the "Home" button.

9] Mimic Page

Tapping in the Home Page on "MIMIC" pushbutton you are redirected in the Mimic page (**Fig. 11**) where it is shown the Single Line of the equipment. This page is useful for checking the equipment configuration, the main components and the protection circuit breakers

9.1] Mimic Page Example

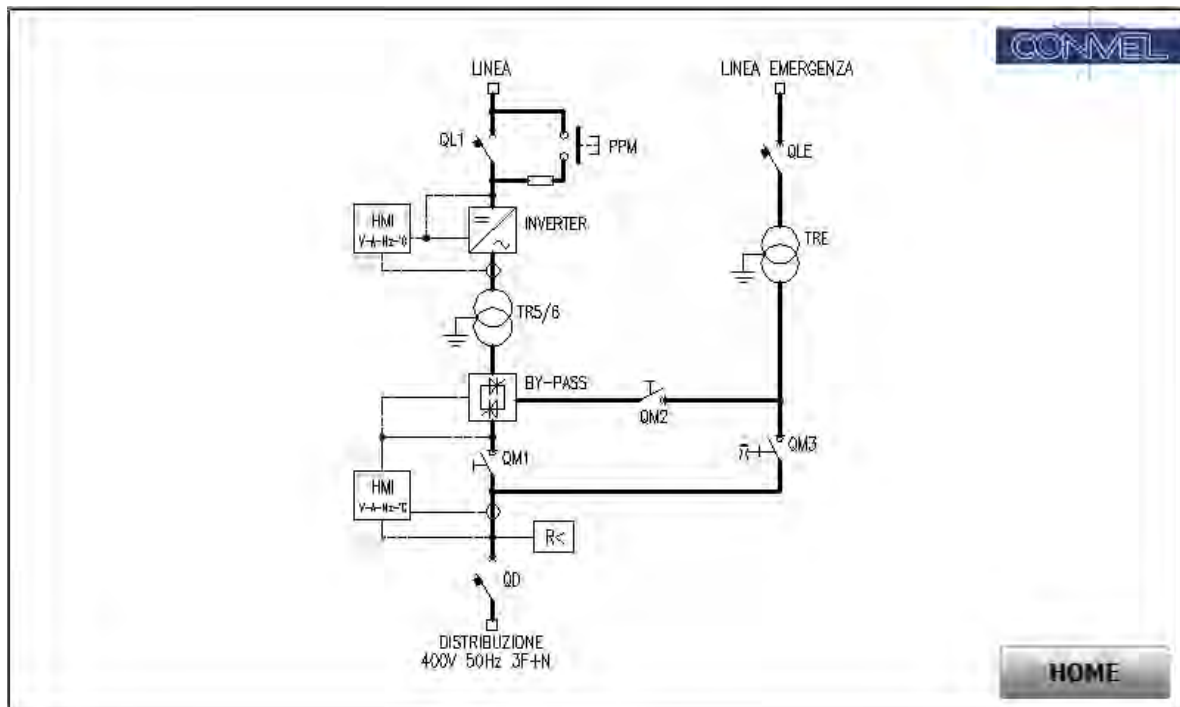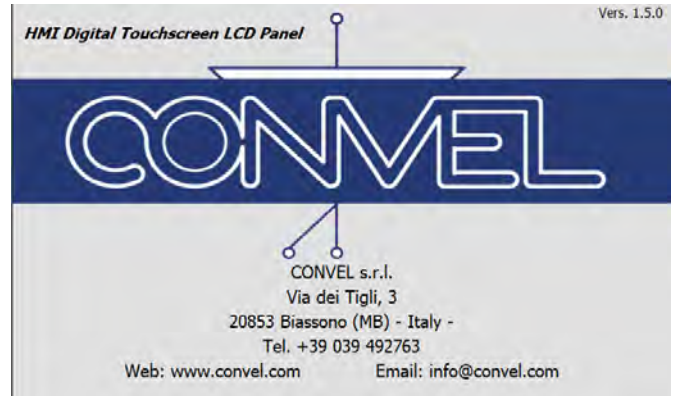SLD of single inverter with static switch and emergency lime.
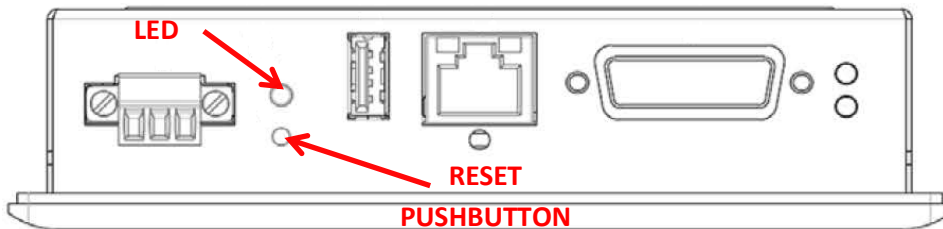

Fig. 11

10] Info Page

Tapping in the Home Page on Convel's logo you can access to the Info page.
The current panel software version is shown here.
Tapping everywhere on the Info page, you go back to the Home page.

11] Troubleshooting

The HMI panel is based on Windows CE operating system that does not require any updates and/or assistance.
However, it is possible recover a malfunction.

10.1] Fixing Malfunctions or Failures

- In case of HMI panel malfunction, it is not responding to screen touches or the RS485 is not working, it is possible, pushing the "Reset" pushbutton on the back of the panel (see above picture), completely rebooting the panel's system software restoring the correct operating mode.
  Pushing the Reset button will change the LED colour to yellow.

- If one or more displayed values of voltages, currents or temperatures are quite different from the measured ones, it is possible trying the instruments re-align through the pushbuttons "**Load. Mult**" of the relevant section, as stated at point **7]** in the "Settings" page.

- Contact the Convel's assistance service if the malfunction/failure is not fixed.