

INVIEW 5

User Manual V1.2

THE NEW GENERATION OF MONITORING

- WEB-BASED USER INTERFACE
- EXTENDED LOG CAPABILITIES
- IN BUILT DISPLAY



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Release Note:

Version	Release date (DD/MM/YYYY)	Modified page number	Modifications
1.0	23/04/2021	-	First release of the manual
1.1	27/08/2021	38	Added Remote ON/OFF details
		58 - 59	Added boolean expressions
1.2	28/09/2021	17 & 19	Updated auxiliary power supply kit part number

1. Introduction to Helios

CE+T Power designs, manufactures, and markets a range of products for industrial operators, with mission critical applications, who are not satisfied with existing AC backup system performances and related maintenance costs.

Our product is an innovative AC backup solution that unlike most used UPS's

- Maximizes the operator's applications uptime;
- Operates with lowest OPEX;
- Provides best protection to disturbances;
- Optimizes footprint.

Our systems are:

- Modular
- Truly redundant
- Highly efficient
- Maintenance free
- Battery friendly

2. Abbreviations

AC	Alternating current
AL	Alarm
DC	Direct current
DHCP	Dynamic Host Configuration Protocol
DSP	Digital Signal Processor
ECI	Enhanced Conversion Innovation
EPC	Enhanced Power Conversion
ESD	Electro Static Discharge
ETH	Ethernet
HTTP	HyperText Transfer Protocol
HTTPS	Secure HyperText Transfer Protocol
LAN	Local Access Network
MBB	Measure Box Battery
MBP	Manual By-pass
MET	Main Earth Terminal
MIB	Management Information Base
N	Neutral
NTP	Network Time Protocol
NT/KO	Not Okay
NUA	Non-Urgent Alarm
PCB	Printed Circuit Board
PE	Protective Earth (also called Main Protective Conductor)
PWR	Power
REG	Regular
SNMP	Simple Network Management Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
TRS	True Redundant Structure
UA	Urgent Alarm
UMB	Universal Measure Box
USB	Universal Serial Bus

3. Warranty and Safety Conditions*

WARNING:

The electronics in the power supply system are designed for an indoor, clean environment.

When installed in a dusty and/or corrosive environment, outdoor or indoor, it is important to:

- Install an appropriate filter on the enclosure door, or on the room's air conditioning system.
- Keep the enclosure door closed during operation.
- Replace the filters on a regular basis.

Important safety instructions, save these instructions.

3.1 Disclaimer

- The manufacturer declines all responsibilities if equipment is not installed, used or operated according to the instructions herein by skilled technicians according to local regulations.
- Warranty does not apply if the product is not installed, used and handled according to the instructions in the manuals.

3.2 Technical care

- This electric equipment can only be repaired or maintained by a "qualified employee" with adequate training. Even personnel who are in charge of simple repairs or maintenance are required to have knowledge or experience related to product maintenance.
- Please follow the procedures contained in this Manual, and note all the "DANGER", "WARNING" AND "NOTICE" marks contained in this Manual. Warning labels must not be removed.
- Qualified employees are trained to recognize and avoid any dangers that might be present when working on or near exposed electrical parts.
- Qualified employees understand how to lock out and tag out machines so the machines will not accidentally be turned on and injure employees working on them.
- Qualified employees also understand safety related work practices, including those by OSHA and NFPA, as well as knowing what personal protective equipment should be worn.
- All operators are to be trained to perform the emergency shut-down procedure.
- Never wear metallic objects such as rings, watches, or bracelets during installation, service and maintenance of the product.
- Insulated tools must be used at all times when working with live systems.
- When handling the system/units pay attention to sharp edges.

3.3 Installation

- This product is intended to be installed only in restricted access areas.
- The Inverter System may contain output over current protection in the form of circuit breakers. In addition to these circuit breakers, the user must observe the recommended upstream and downstream circuit breaker requirements as per the local regulations.
- Please use extreme caution when accessing circuits that may be at hazardous voltages or energy levels.
- The modular inverter rack is a dual input power supply. The complete system shall be wired in a way that both input and output leads can be made power free.
- In REG systems, to comply with local and international safety standards the N (output) and PE shall be bonded. The bonded connection between N (output) and PE must be removed once the AC input is connected.
- AC and DC circuits shall be terminated with no voltage / power applied.
- The safety standard IEC/EN62040-1-1 requires that, in the event of an output short circuit, the inverter must disconnect in 5 seconds maximum. The parameter can be adjusted on Inview controller; however, if the parameter is set at a value > 5 seconds, an external protection must be provided so that the short circuit protection operates within 5 seconds. Default setting is 60 seconds.
- The system is designed for installation within an IP20 or IP21 environment. When installed in a dusty or humid environment, appropriate measures (air filtering) must be taken.
- All illustrations in the manual are for general reference.

3.3.1 Handling

- The cabinet shall not be lifted using lifting eyes.
- Remove weight from the cabinet by unplugging the inverters. Mark inverters clearly with shelf and position for correct rebuild. This is especially important in dual or three phase configurations.
- Empty module positions must not be left open. Replace with dummy cover.

3.3.2 Surge and transients

The mains (AC) supply of the modular inverter system shall be fitted with Lightning surge suppression and Transient voltage surge suppression suitable for the application at hand. Manufacturer's recommendations of installation shall be adhered to. Selecting a device with an alarm relay for function failure is advised.

Indoor sites are considered to have a working lightning surge suppression device in service.

- Indoor sites Min Class II.
- Outdoor sites Min Class I + Class II or combined Class I+II. The modular inverter system/rack can reach hazardous leakage currents. Earthing must be carried out prior to energizing the system. Earthing shall be made according to local regulations.

3.3.3 Other

- Isolation test (Hi-Pot) must not be performed without instructions from the manufacturer.

3.4 Pre-cautions before maintenance

- The modular inverter system/rack can reach hazardous leakage currents. Earthing must be carried out prior to energizing the system. Earthing shall be made according to local regulations.
- Prior to any work conducted on a system/unit make sure that AC input voltage and DC input voltage are disconnected.
- Converter modules and shelves contain capacitors for filtering and energy storage. Prior to accessing the system/modules after power down, wait at least 5 minutes to allow capacitors to discharge.
- Some components and terminals carry high voltage during operation. Contact may result in fatal injury.

3.5 Replacement and Dismantling

- ESD Strap must be worn when handling PCBs and open units.
- CE+T cannot be held responsible for disposal of the Inverter system and therefore the customer must segregate and dispose of the materials which are potentially harmful to the environment, in accordance with the local regulations in force in the country of installation.
- If the equipment is dismantled, to dispose of its component products, you must comply with the local regulations in force in the country of destination and in any case avoid causing any kind of pollution.

4. Introduction

4.1 Inview Slot

Inview Slot is also an advanced monitoring and controller unit, but it for Bravo 10 and Sierra 10 power systems. This product is specially designed in 1U height to accommodate in the converter shelf and reduces the additional space in the cabinet.

The Inview Slot also allows the user to easily access the system information through inbuilt powerful LCD touch screen graphic display. In addition to the touch screen display, the user can also access the system information through the web interface and SNMP protocol.

The Inview Slot interface provides the user to access the configuration and setup files of the modules in the system. Also, it is a controller for DC regulation

Inview Slot can monitor up to 32 inverters/converters and featured with:

- 1.8" LCD touch screen display
- Three LED's to indicate Major alarm, Minor alarm and System status
- Two Digital Inputs
- Two Output Relay contacts
- Records 5000 logs as FIFO



4.2 Inview S

Inview S is an advanced monitoring and controller unit for Bravo 10, Bravo 25, Sierra 10, Sierra 25 and Flexa 25 power systems. It allows the user to easily access the system information through inbuilt powerful touch screen graphic display. In addition to the touch screen display, the user can also access the system information through the web interface and SNMP protocol.

The Inview S interface provides the user to access the configuration and setup files of the modules in the system. As like Inview Slot, it is also a controller for DC regulation.

Inview S can monitor up to 32 inverters/converters and featured with:

- 2.8" LCD touch screen display
- Three LED's to indicate Major alarm, Minor alarm and System status
- Two Digital Inputs
- Two Output Relay contacts
- Records 5000 logs as FIFO



4.3 Inview X

Inview X is an advanced monitoring and controller unit for power systems. It allows the user to easily view, access, configure the system information through LCD screen graphic display and web interface. The home screen of both LCD and web interface provides a summary of system power, modules, batteries, and events information.

The Ethernet ports in Inview X allow multiple communication points for remote communication, Web interface, and connecting the accessories such as Measure Box Battery, TUS, and Gateway.

Inview X interface provides the user access to the configuration and setup files of the modules that are connected in the system. It is also a controller for DC regulation.

Inview X is featured with:

- Monitor up to 48 converters
- 7" LCD touch screen display
- Two Digital Inputs and two Output Relay contacts
- Records 5000 events as FIFO



4.4 Inview Slot, S & X - Specifications

Models	Inview Slot	Inview S	Inview X
Modules compatibility	Bravo 10 and Sierra 10	Bravo 25 and Sierra 25	
Display	1.8" resistive touchscreen	2.8" capacitive touchscreen	7" capacitive touchscreen
Hardware interfaces	1 x ETH, 1 x RS485, 1 x USB	1 x ETH, 1 x RS485, 1 x USB	2 x ETH, 1 x RS485, 1 x USB
Supported protocols	Modbus TCP, SNMP v1, v2C and v3, HTTP/HTTPS		
Digital input / Output relay	2 / 2		
Accessories	Measure Box Battery & Universal Measure Box (UMB)		
Buzzer	Yes		
Mounting	1U Shelf	DIN / Panel / Door	Panel / Door
Power supply	Internal shelf 48 Vdc (40 to 60 Vdc) or External 12 Vdc (10 to 14 Vdc)	External 12 Vdc (10 to 14 Vdc)	External redundant 2 x 48 Vdc (40 to 60 Vdc)
Power consumption	6 W	5 W	17 W
Dimension (W x H x D) mm	87 x 42 x 331	180 x 83 x 31	185 x 128 x 54
Weight	650 g	240 g	725 g
Part number	T602004110	T602004100	T602004200

4.5 Accessories

4.5.1 MBB (Measure Box Battery)

Measure Box Battery is a unit which monitors the battery parameters such as battery voltage, current, and temperature and LVD. In addition it contains extended Digital Inputs and Output Relay contacts.

MBB can connect up to three in parallel.



4.5.2 UMB (Universal Measure Box)

Universal Measure Box is a unit which monitors battery parameters such as battery voltage, current, temperature, and LVD. It has additional features such as Modbus RS485 communication and four DC input versions.



4.5.3 Accessories Specifications

Models	Measure Box Battery	Universal Measure Box
VDC	3 Vdc inputs (maximum 60 Vdc)	2 Vdc inputs (following Vdc range)
IDC	3 Idc inputs, 0 - 60 mV shunt	1 Idc inputs, 0 - 100 mV shunt
Temperature sensor	2 (type: LM335)	1 (type: Pt 1000)
Output relays	6 (maximum 60 Vdc, 0.5 A)	3 (maximum 60 Vdc, 1 A)
Digital inputs	8 (from free potential contact)	4 (from free potential contact)
Communication	-	Modbus RS 485
Power supply	Through Inview or External 12 Vdc input (10 to 14 Vdc)	External 12 Vdc, 24 Vdc or 48 Vdc power supply (10 to 60 Vdc input)
Synoptics	1 LED	2 LEDs
Mounting	DIN Rail	
Dimension (W x H x D)	160 x 97 x 38 mm	90 x 90 x 68 mm
Weight	240 g	200 g
Part number	T602006000	Measure Box 380 Vdc version: T602006380 Measure Box 220 Vdc version: T602006220 Measure Box 110 Vdc version: T602006110 Measure Box 48 Vdc version: T602006048

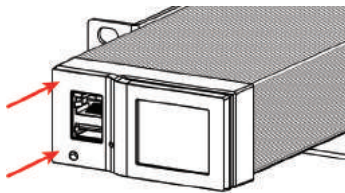
5. Installation

5.1 Site preparation

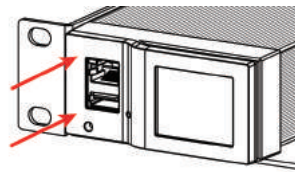
- All cables should be copper wire and must be rated for min 90°C (194°F).
- All cables must be sized according to the rated current of the Inview S / Measure Box Battery and to the customer terminal connection.
- All power and signal cables should be routed properly.

5.2 Installing - Inview Slot

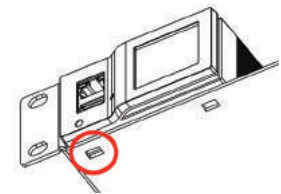
1. Place the Inview Slot and slide into the shelf.
2. Push the unit firmly until the controller rear part is engaged correctly with shelf.
3. Make sure the latch is locked in the shelf.



Place the module & slide into the shelf



Push firmly until module is engaged



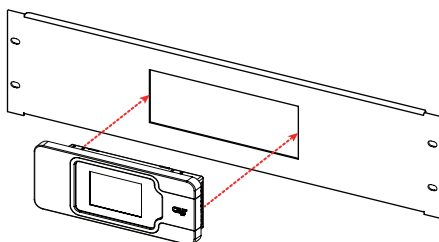
Make sure the latch is locked in the shelf

5.3 Mounting - Inview S

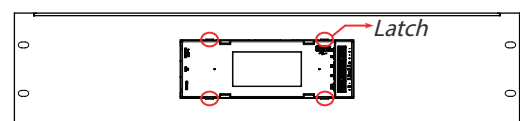
5.3.1 Panel Mounting

Before mounting the Inview S in the system, route all the required connection cables from the system and place near to the Inview S mounting location.

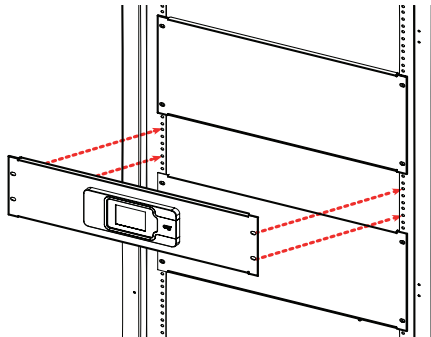
1. Place the Inview S in the panel sheet.
2. Lock all the four latches at the rear side of the Inview S in the panel sheet.
3. Connect required connection cables to the Inview S.
4. Mount the panel sheet in the system with screws.



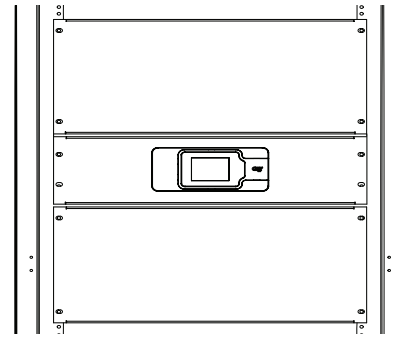
Place the Inview S in the panel sheet



Lock it with four latches



Connect wires and place the panel sheet in the cabinet



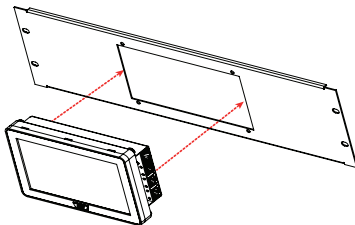
Mount the panel sheet with screws

Note: To know about panel sheet dimension and cut-out details, refer “17. Annex 4: Inview Panel Sheets”, page 72.

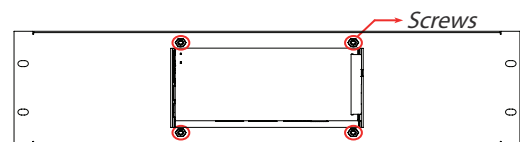
5.4 Mounting - Inview X

Before mounting the Inview X in the system, route all the required connection cables from the system and place near to the Inview X mounting location.

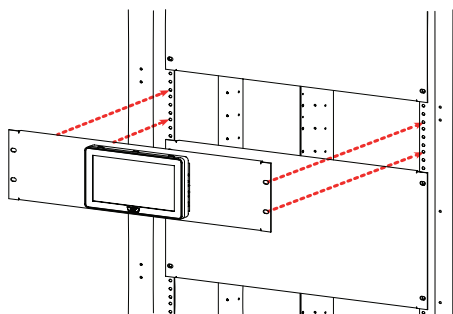
1. Place the Inview X in the panel sheet.
2. Fix the Inview X in the panel sheet using four screws at the rear side.
3. Connect required connection cables to the Inview X.
4. Place the panel sheet in the system and fix it with screws.



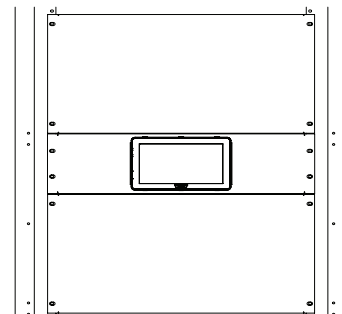
Place the Inview X in the panel sheet



Fix it with four screws



Connect wires and place the panel sheet in the cabinet



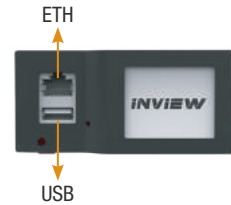
Fix the panel sheet with screws

Note: To know about panel sheet dimension and cut-out details, refer “17.2 Inview X - Panel sheet”, page 73

5.5 Hardware Connections

5.5.1 Inview Slot - Connections

Inview Slot has an ETH port and USB at the front. Output relays, digital inputs, CAN and power connections are present at the rear side of the Inview Slot connected shelf.

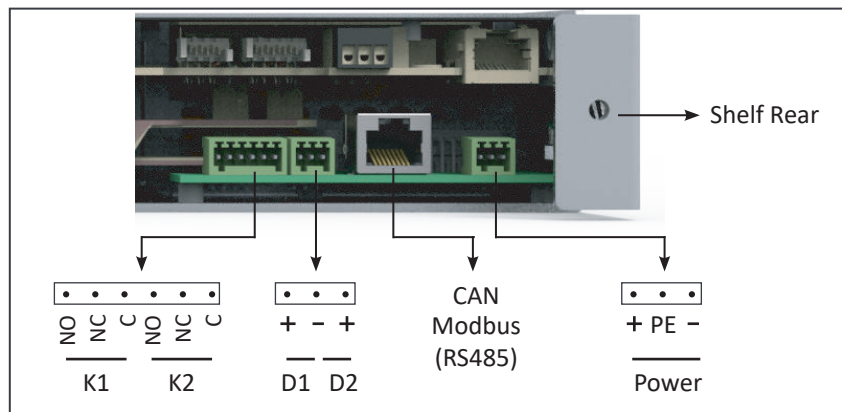


5.5.1.1 Inview Slot - Front connections

- ③ LAN ports used for network connectivity and user can access the system information in the Web Interface.
- ③ USB ports used to update the Inview S firmware.

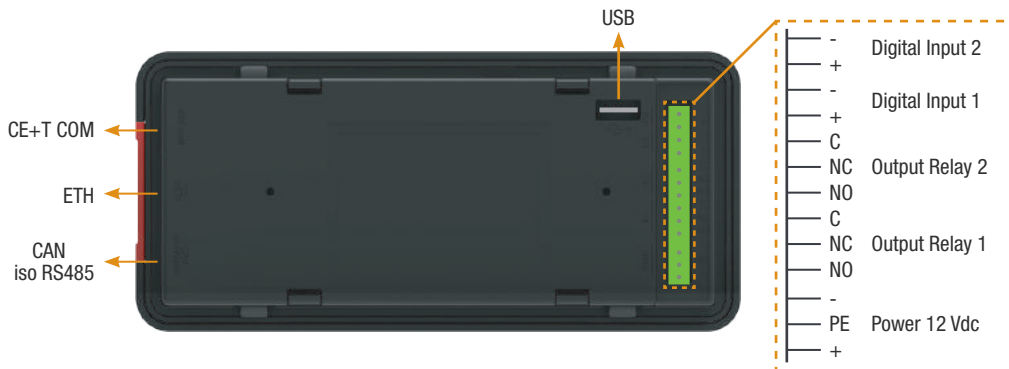
5.5.1.2 Inview Slot - Shelf rear connections

- Digital Inputs (D1 and D2) Two digital inputs are available for customer connections.
- Output Relays (K1 and K2) Two output relays are available and can be used for Major and Minor Alarms.
- CAN / Modbus (RS485) port is used to establish communication between Inview Slot and accessories. It also provide the +12 Vdc power to one Measure Box Battery.
Note: In future version, user can use this port for RS485-Modbus communication.
- Power: The redundant external auxiliary +12 Vdc and the power consumption is 5W. By default, Inview Slot takes power from DC bus. If DC is not present, it takes +12 V from external Auxiliary power supply converter (AC to DC).



5.5.2 Inview S - Connections

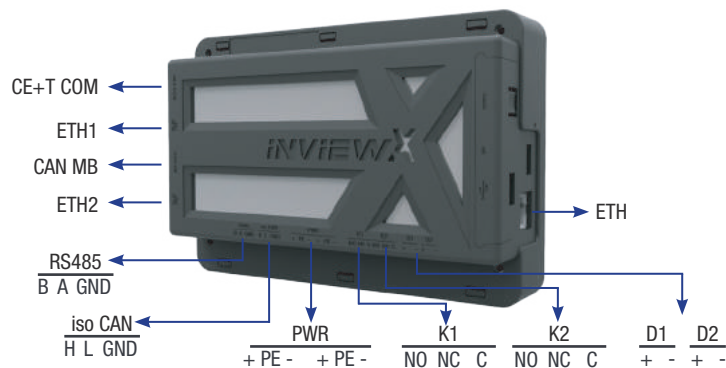
Inview S is composed of multiple network ports, digital inputs and Output Relay contacts which are present at the rear side of the product.



- CE+T COMport is dedicated to establish connection between Inview S and converters.
- ETH (RJ45) port is used for network connectivity and user can access the system information in the Web Interface and SNMP.
- CAN / iso RS485port is used to establish communication between Inview S and Measure Box Battery.
Note: In future version, user can use this port for RS485-Modbus communication.
- USB port is used to update the Inview S firmware.
- Digital Inputs (D1 and D2) two digital inputs are available for customer connections.
- Output Relays (K1 and K2) two output relays are available and it is used for Major and Minor Alarms.
- Power: The regulated separate +12 Vdc is required for powering the controller and the power consumption is 5W. (CE+T can provide auxiliary power supply converter (48 to 12 Vdc). Part number is **T602004120**)

5.5.3 Inview X - Connections

Inview X composed of multiple network ports and inbuilt free potential contacts.



- CE+T COMport is dedicated to establish connection between Inview X and Sierra - shelf.
- ETH1 and ETH2 ports are used for network connectivity, and user can access the system information through the web interface. Also, this port will be used to communicate with accessories such as TUS and Gateway.

- Output Relays (K1 to K6) Six output relays are available for customer connections
 - ③ K1 and K2 - Major and Minor alarms
 - ③ K5 and K6 - LVD Connections
- Power: The regulated separate +12 V power supply is required for powering MBB and the power consumption is 2W. (CET can provide auxiliary power supply converter (48 to 12 Vdc). Part number is **T602004120**).

5.5.5 UMB (Universal Measure Box) - Connections

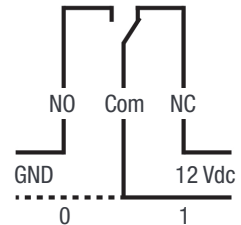
MBB is composed of multiple digital inputs and analog outputs.

- 2 DC Voltage measurement inputs
- 1 DC Current measurement input (shunts)
- Isolated 1 Temperature measurement input - PT1000
- 3 Relays outputs
- 4 Digital inputs - Customer will use potential free contact
- Communication Port with monitoring - RS485 communication port, Modbus Protocol
- Power Supply - 10Vdc to 60Vdc Power supply
- Status Display - In display and communication



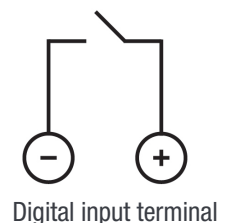
5.5.6 Output relay connections

Each output relay terminal in Inview Slot/S/X and MBB should be connected as below diagram. A possible way of connecting Ground and 12 Vdc in order to get a "0" or a "1" based on the relay state.



5.5.7 Digital input connections

In digital input terminal, the external voltage should not be applied and it is mandatory to connect only like switches. Each digital input terminal in Inview Slot/S/X, and MBB should be connected as per diagram.

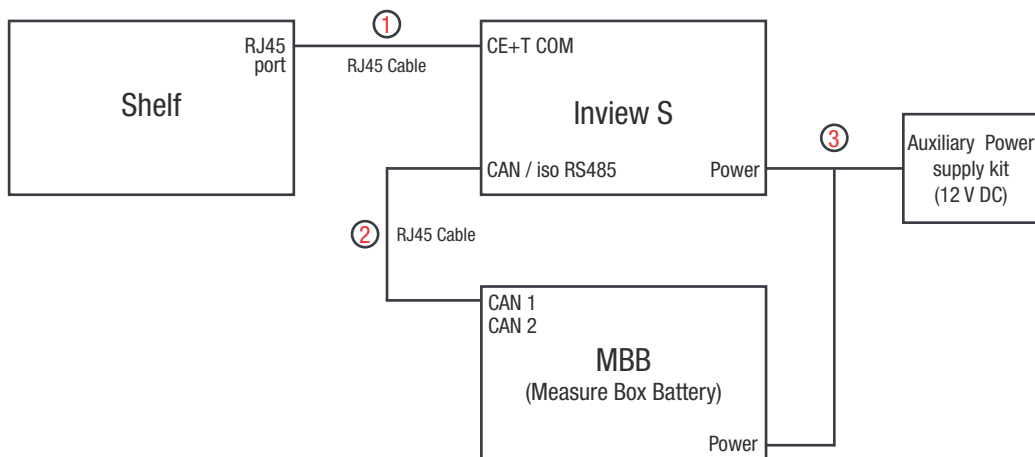


5.5.8 Inview S with Bravo and Sierra - System

In Bravo and Sierra systems, the Inview S, Measure Box Battery and Measure Box DC should be connected as per the following:

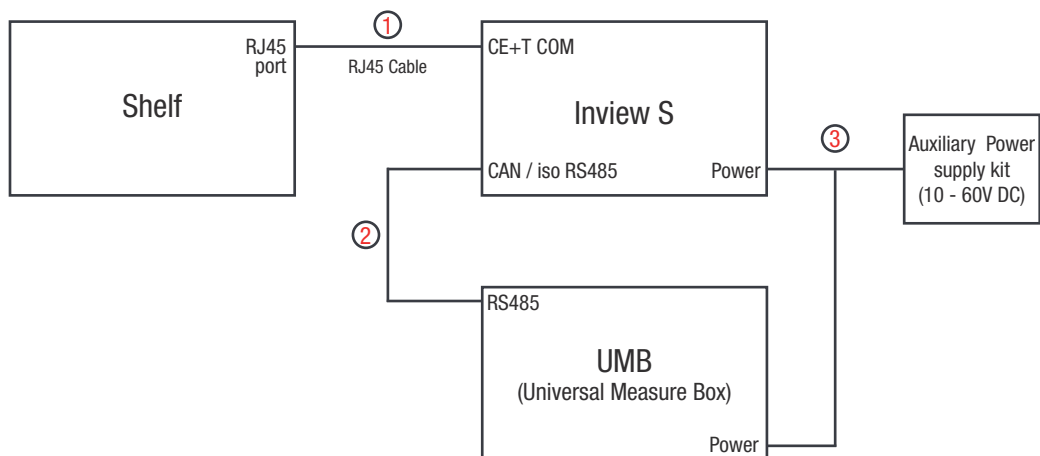
1. Connect "RJ45" port in shelf and "CE+T COM" port in Inview S using RJ45 straight cable.
2. Connect "CAN / iso RS485" port in Inview S and "CAN1" port in MBB / "RS485" port in UMB.
(Note: this connection is not applicable for Bravo System)
3. Connect power to Inview S and MBB / UMB from auxiliary power supply kit.

System with Inview S and MBB



For more information about wiring refer "15.3 Inview S with MBB", page 67.

System with Inview S and UMB



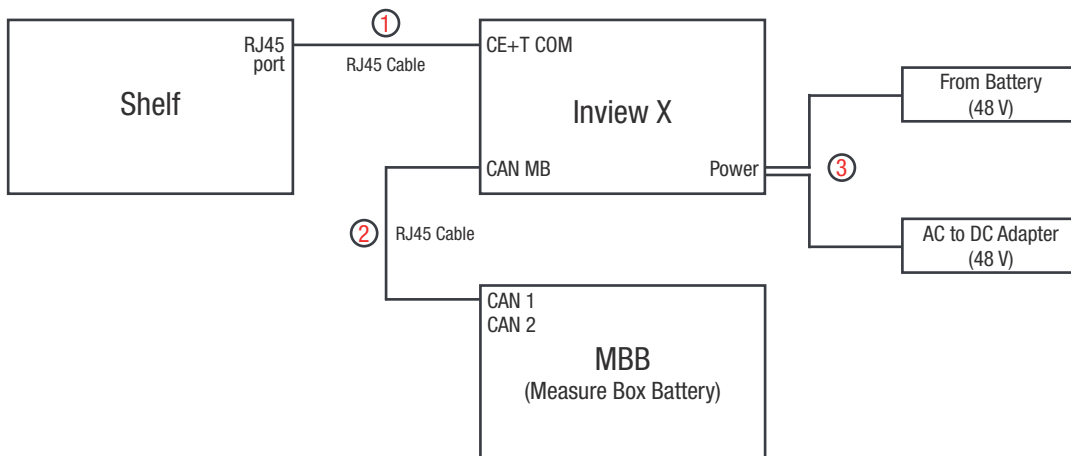
For more information about wiring refer "15.4 Inview S with UMB", page 68.

5.5.9 Inview X with Bravo and Sierra - System

In Sierra system, the Inview X, Measure Box Battery and Measure Box DC should be connected as per the following:

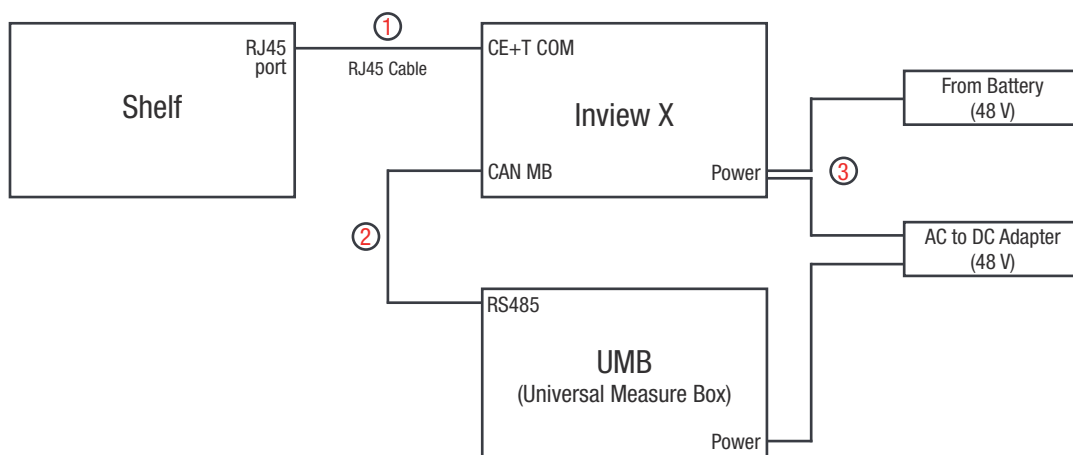
1. Connect "RJ45" port in shelf and "CE+T COM" port in Inview X using RJ45 straight cable.
2. Connect "CAN MB" port in Inview X and "CAN1" port in MBB / "RS485" port in UMB.
(Note: this connection is not applicable for Bravo System)
3. Connect 48 V supply to Inview X from AC to DC adapter and Battery.

System with Inview X and MBB



For more information about wiring refer "15.5 Inview X with MBB", page 69.

System with Inview X and UMB



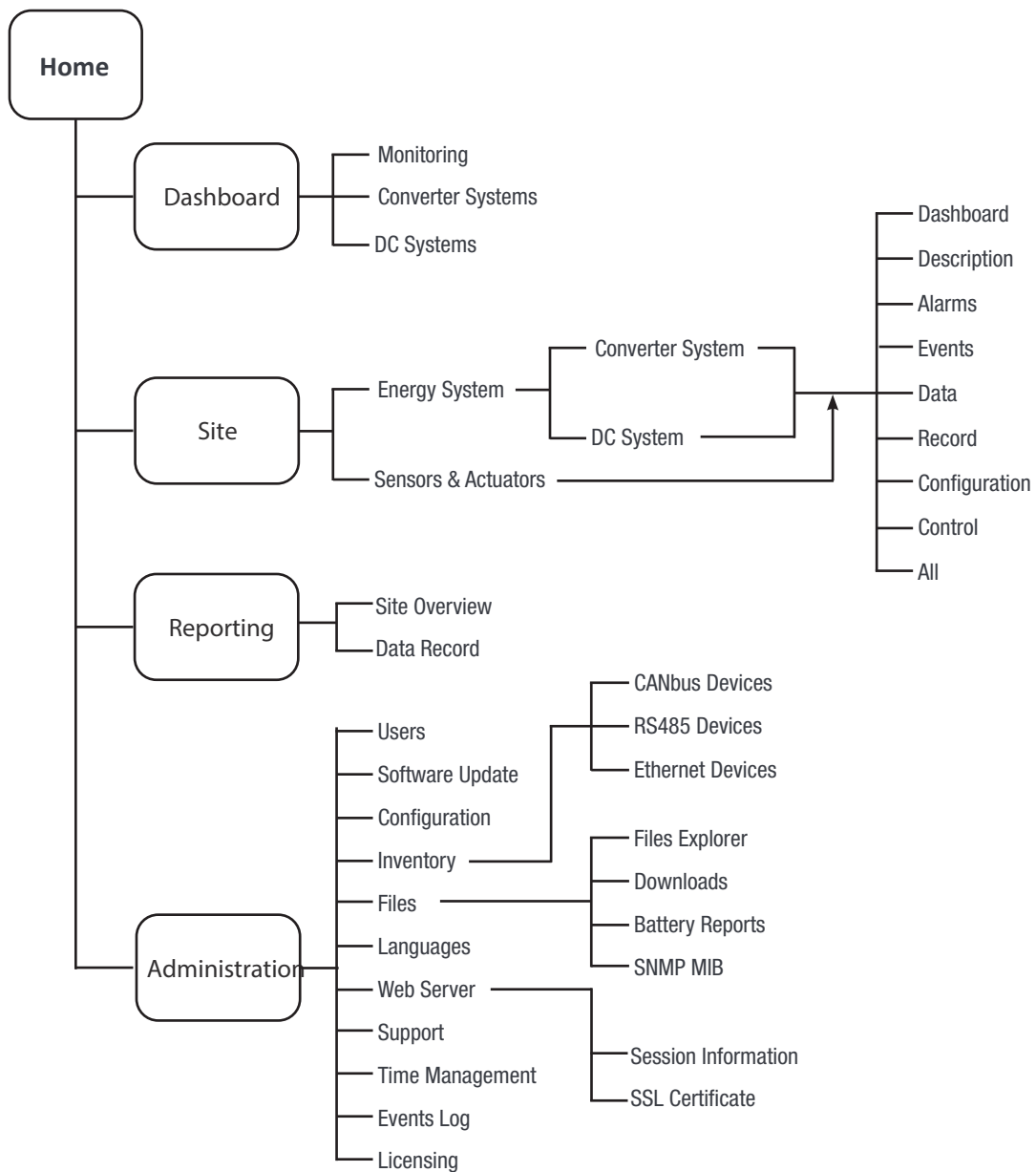
For more information about wiring refer "15.6 Inview X with UMB", page 70.

6. Overview - Web Interface

The web interface of all the controller **Inview Slot, S and X** is same. The Inview web interface provides the user to interact with system, access, configure and modify the system parameters.

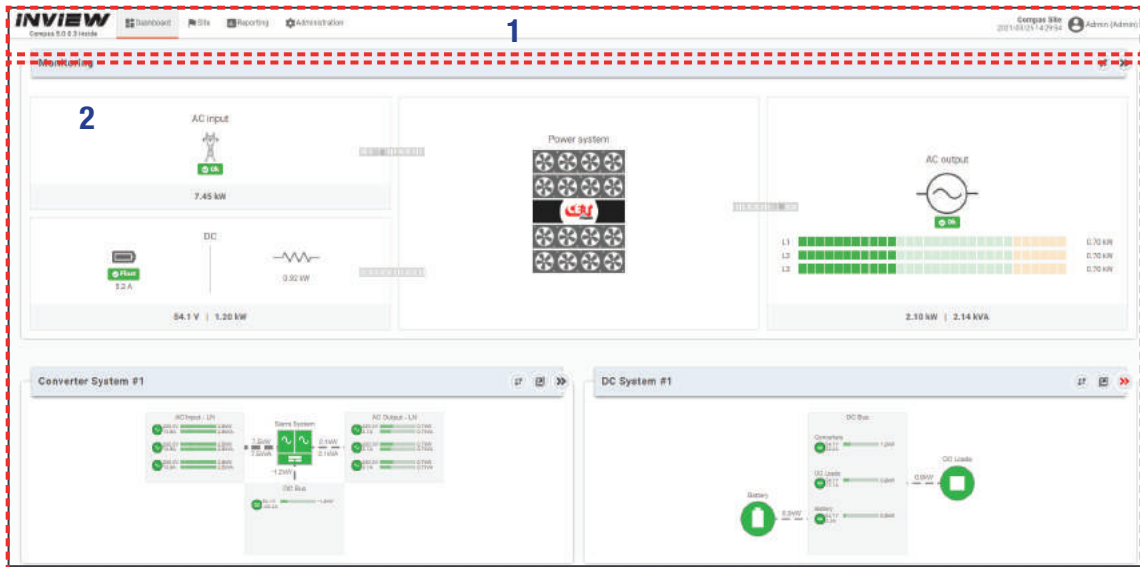
The below tree provides an overview of the menu structure in the web interface.

Note: Dashboard page varies depending upon the topology selection.



6.1 Interface Areas

- 1 → Header
- 2 → Main Page



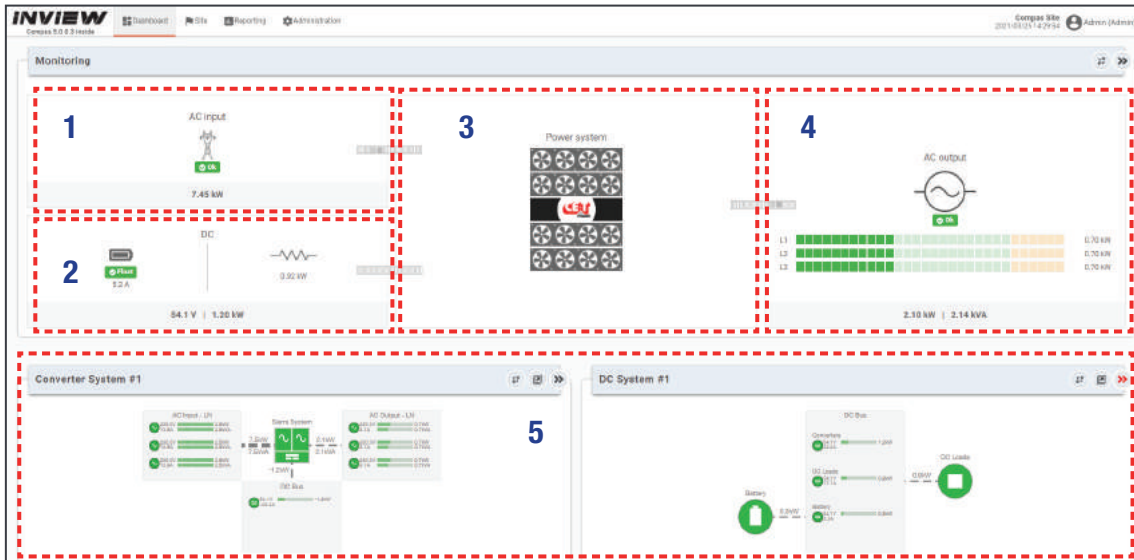
6.1.1 Header



The tabs in header provide quick access to the corresponding pages.

- 1 → **Home:** Clicking on **INVIEW** logo goes to the home page from any page you are accessing in the interface.
- 2 → **Menu:** Provides access to other pages.
- 3 → Display the date, time and the site name of the system.
- 4 → **Account:** Provides the information of which account is logged in (Basic, Expert or Admin). Clicking on drop-down arrow user can perform the following actions: Save Configuration and Inventory, Reboot Controller, Change Password and Logout.

6.1.2 Home Page



- 1 → **AC Input:** Clicking on the AC Input region displays the page contain all measurements regarding AC Input.
- 2 → **DC:** Clicking on the DC region displays the page contains all measurements regarding DC input and output.
- 3 → **Power System:** Clicking on the Power System region display the page contains regarding system information such as overall system power and also in each phase, configured converters, active converters, and list of detected converters and accessories.
- 4 → **AC Output:** Clicking on the AC Output region displays the page contains all measurements regarding AC Output. Regardless of the system configuration (1P, 3P), display the power fed to the load on each phase.
- 5 → **System Information:** Displays system information such as Converter System, DC System, Site, Energy system, Sensors and Actuators details.










(Note: System information screen varies depending upon the topology selection.)

6.2 Web page Controls

Placing or clicking on it performs the corresponding action.

Controls	Description
	Page changes to edit mode and the user can change the parameters. If any parameter value is changed, the edit icon changes to modification icon and displays the list.
	Filters: Page displays depending upon the filter selection.
	On-Board help: Provide a short description to help to know about the corresponding parameters.
	Rename parameter name.

Note: Edit, Filter, Help and Rename icons are present at right side of the web page.

Controls	Description
	Page or section expands
	Page or section collapse
	Particular section opens in a new tab
	Particular section open as a pop-up
	Drop down list – more options are present
	Delete / Clear the corresponding parameter.
	<p>Modifications list: It appears at right side of the “Site” page. This list helps the user to overview the changes and can apply the required parameters.</p> <p>Apply: Clicking on “APPLY” button, the controller accepts all the parameter changes in the modifications list.</p> <p>Apply and Save: Clicking on “APPLY AND SAVE” button, the controller accepts all the parameter changes in the modifications list and saves them in the configuration file.</p> <p>Dismiss All: Clicking on “DISMISS ALL” button, the controller rejects all the parameter changes in the modifications list.</p> <p>Clicking on  button, the controller rejects only the particular modification from the list.</p> <p>Note: The number on the icon indicates the number of modifications in the list.</p> <div data-bbox="979 1144 1441 1525" style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>Pending Modifications (3) </p> <p>Site > Alarms tab > XML > Heartbeat > AL21 > Failure > SEVERITY ✖ major → minor</p> <p>Site > Alarms tab > Controller > License > AL51 > Failure > SEVERITY LEVEL ✖ 6 → 4</p> <p>Site > Alarms tab > Digital Input > D1 > AL501 > Alarm > SET DELAY ✖ 5 → 10</p> <p style="text-align: center;"> APPLY APPLY AND SAVE DISMISS ALL </p> </div>

7. System Settings

Once system is powered on, the Inview Slot/S and X is up and ready for operation. Configuration and other parameters can be changed using the web interface. Perform the following procedure to configure the system through web interface.

7.1 Login

Open the web browser and type the default IP address **10.250.250.1** in the address field and press enter.

Note: Use any one of the following latest web browsers: Google Chrome, Mozilla Firefox, Safari, or Microsoft Edge.

Inview Slot, S and X have three login – Basic, Expert and Admin. All three login is password protected.

The default password for all three logins is “1234”. It can be modified, refer section , page 41.

Basic login can only browse the pages and download the files, but Expert and Admin login can access and also modify the system parameter values.

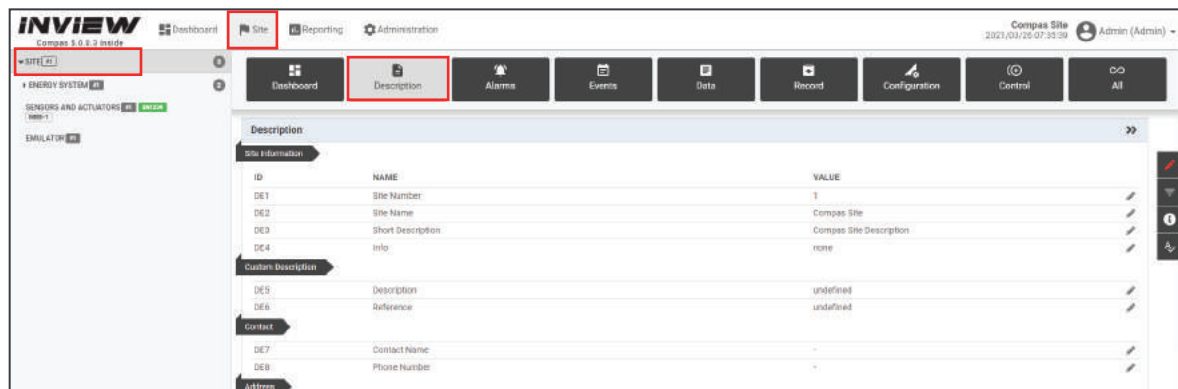
An auto-logout feature is available to avoid a user being connected all the time. When no action is performed for more than 10 minutes the session will expire and goes to login screen.

7.2 Site Management

7.2.1 Site Description

Go to [Site > Description](#).

Enter the Site details such as *Site description, Location and Contact details*.

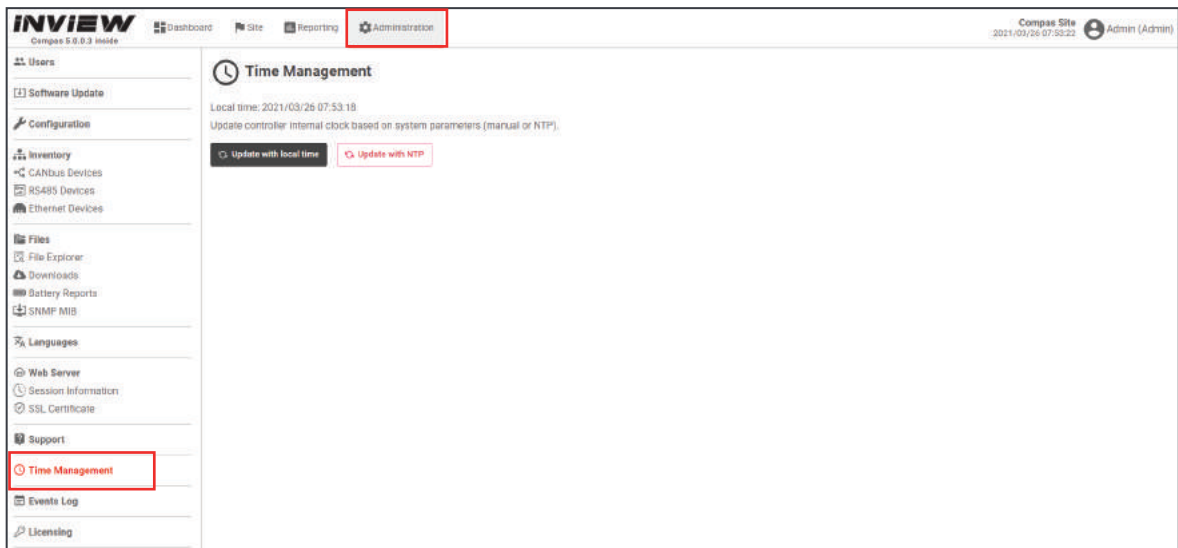


7.2.2 Date and Time Settings

Go to [Administration > Time Management](#).

Choose any one option from the below.

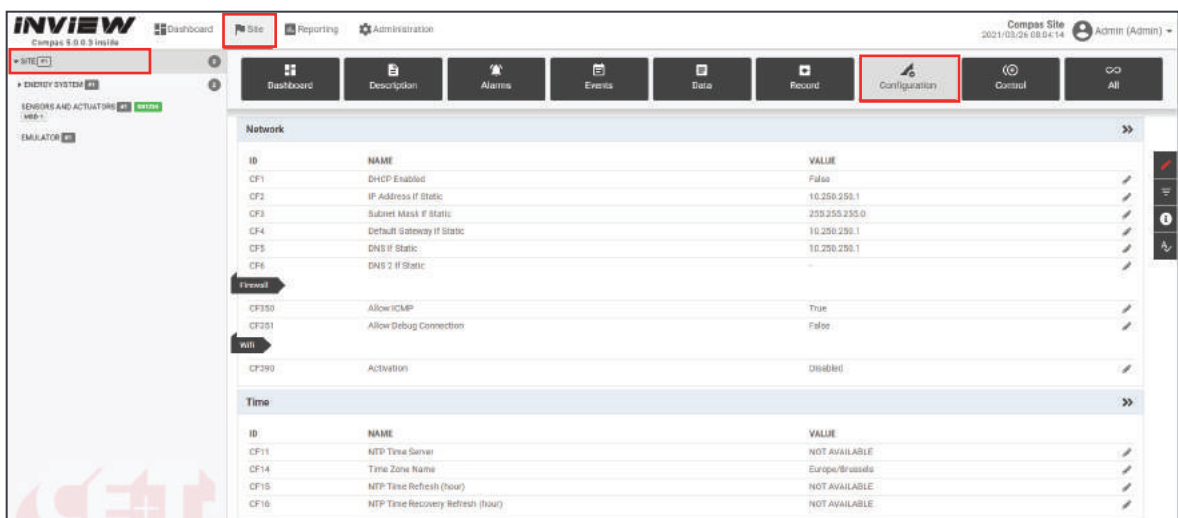
- Update with local time: Inview read the laptop time during the configuration and adapt that time.
- Update with NTP: Inview Internal clock synchronizes with the server time.



7.2.3 Network Settings

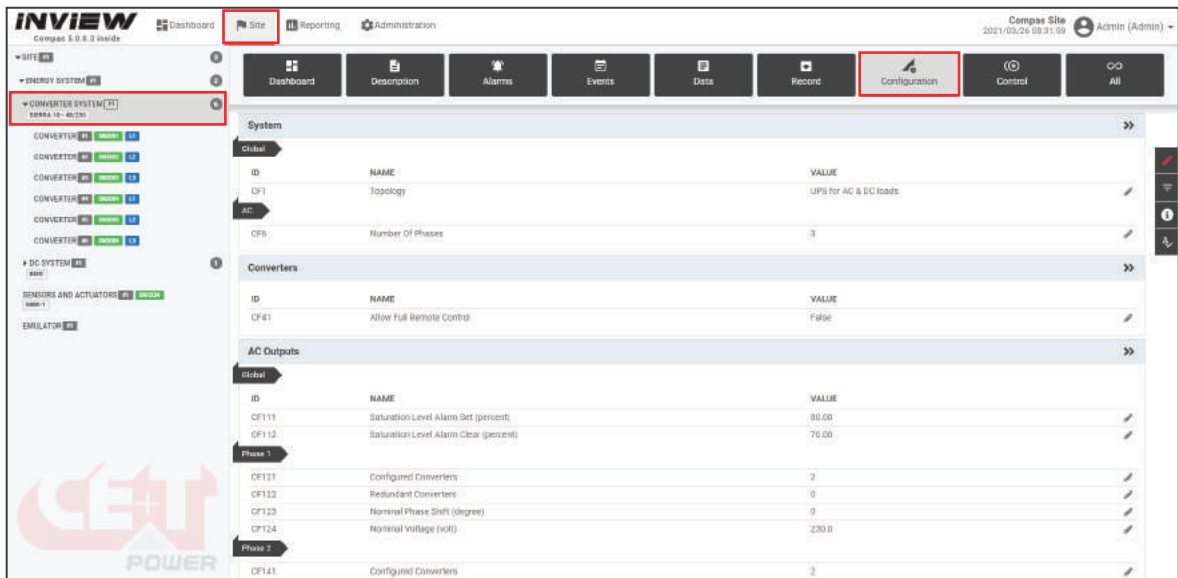
Go to [Site > Configuration](#)

Enter the network details such as *IP address, Firewall settings, NTP time, webserver*, and applicable parameters.



7.3 System Configuration

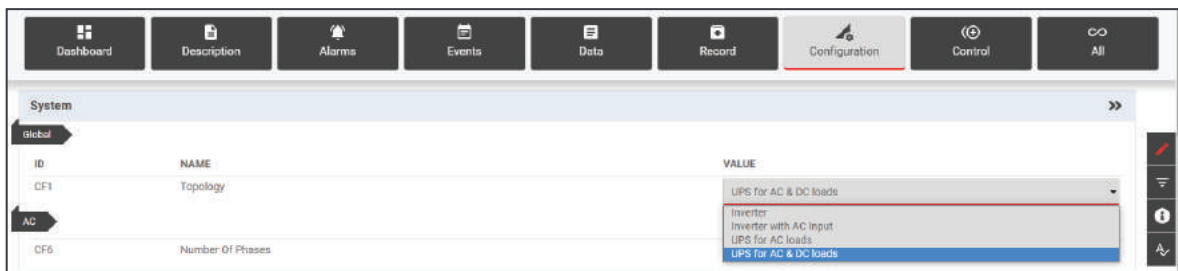
To configure the converter systems, go to *Site > Energy System > Converter System > Configuration*



7.3.1 Topology selection

Go to *Site > Energy System > Converter System > Configuration > System > Global*.

In System section > ID CF1, select the topology from the drop-down list based upon the system design.



After selecting the topology, scroll down to **Converter Configuration** section on the same page and set the ID CF1071 to “0” or “1” as per in the following table.

CF1071	Sierra mode	1
--------	-------------	---

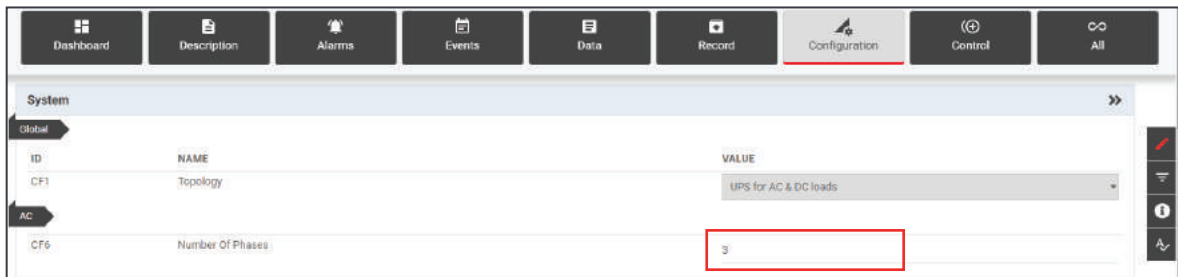
Topology	Supported Modules	Input	Output	Parameter ID CF1071
Inverter (REG DC / AC only)	Bravo 20 and 10	DC	AC load	0
Inverter with AC Input (EPC mode)	Bravo 20 and 10	AC and DC	AC load	0
UPS for AC loads	Flexa 25 and 200	AC and DC	AC load and battery charging	1
UPS for AC and DC loads	Sierra 25 and 10	AC and DC	AC & DC load, and battery charging	1

7.3.2 Phase Selection

To configure the Single, Dual or Three phase of the system, go to [Site > Energy System > Converter System > Configuration](#).

In the System Section > ID CF6 enter the number of phases based upon the system input/output power.

(Note: while configuring the AC phases, all the converters should be in OFF mode)



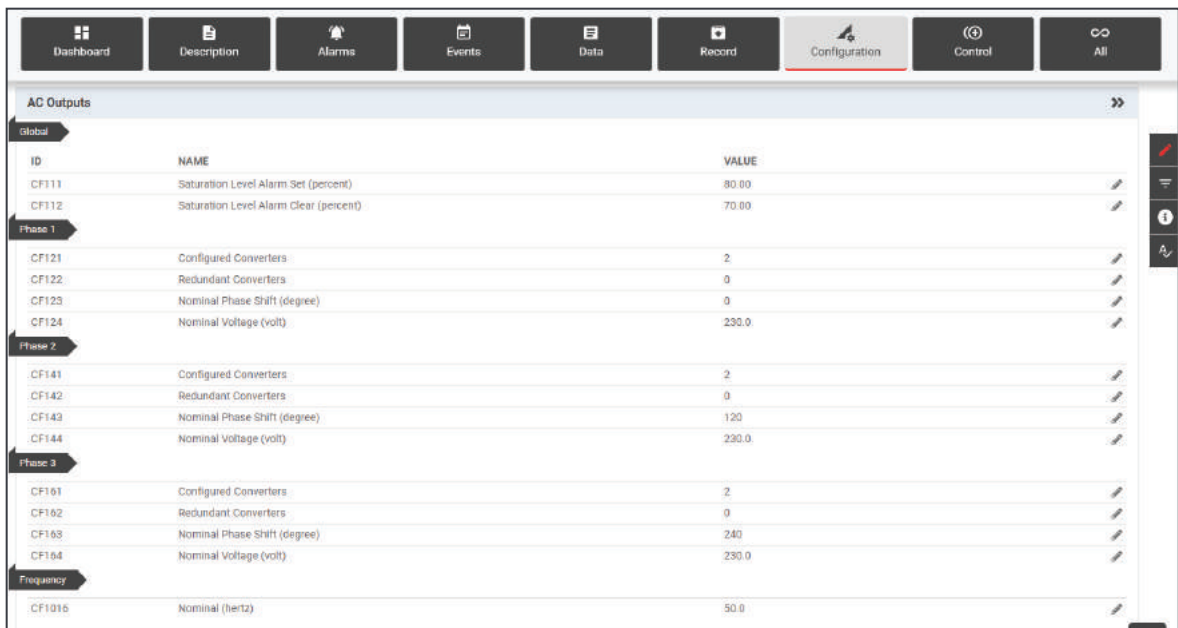
7.3.3 AC Output configuration

To configure AC output parameters, go to [Site > Energy System > Converter System > Configuration](#).

In the AC Outputs section, enter the values for the corresponding parameter ID

- ID CF121 enter the number of converters configured for phase 1 (Installed power)
- ID CF122: enter the number of converters redundant for phase 1 (Available power)
- ID CF122: enter the phase shift degree for phase 1
- Similarly, enter the values for phase 2 and 3
- IDCF1016 enter the nominal frequency

(Note: while configuring the AC phases, the converter should be in OFF mode)




7.3.4 Converters Configuration

If the system has more than one converter, it is better to start configure with one converter at each phase.

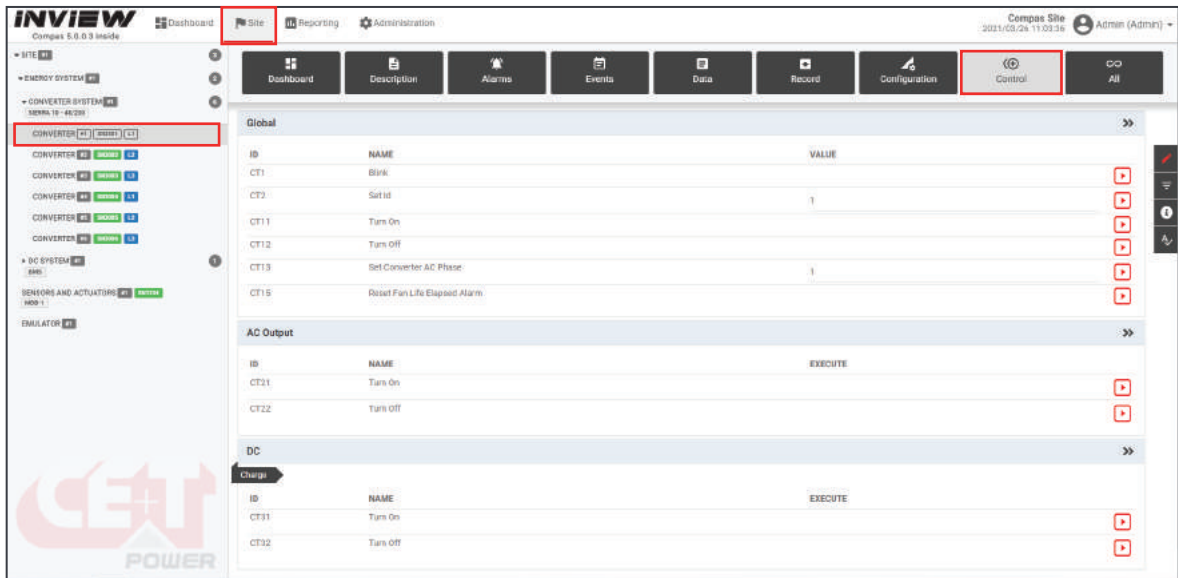
1. Insert only one converter in the first phase of the system.

Go to [Site](#) > [Energy System](#) > [Converter System](#) > [Converter](#) > [Control](#).

(Note: while assigning the phases of the converter, its AC output must be in OFF)

- a) Execute the ID CT12, to turn off the converter
- b) In the ID CT2, type "1" to set the converter ID and in the ID CT13 as "1" to assign phase 1
- c) After setting the values, click the  icon to execute that command

In this page, you can turn on/off the module or AC output and DC port of the module.

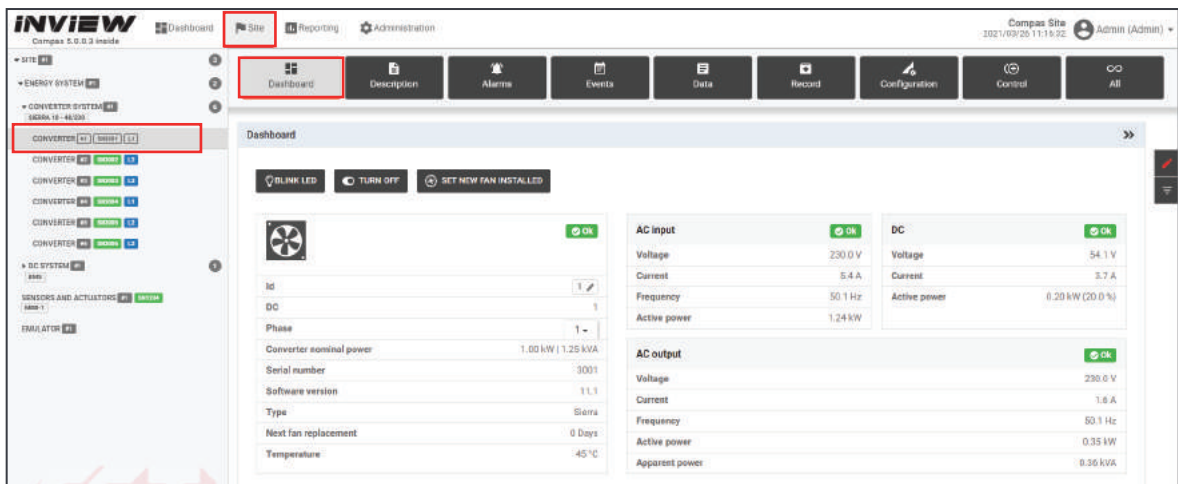


ID	NAME	VALUE
CT1	Blank	
CT2	Set Id	1
CT11	Turn On	
CT12	Turn Off	
CT13	Set Converter AC Phase:	1
CT15	Reset Fan Life Elapsed Alarm	

ID	NAME	EXECUTE
CT21	Turn On	
CT22	Turn Off	

ID	NAME	EXECUTE
CT31	Turn On	
CT32	Turn Off	

To get an overview of the converter details, go to [Site](#) > [Energy System](#) > [Converter System](#) > [Converter](#) > [Dashboard](#).



Id	DC	Phase	Converter nominal power	Serial number	Software version	Type	Next fan replacement	Temperature
1	1	1 -	1.00 kW / 1.25 kVA	3001	1.1.1	Sierra	0 Days	45 °C

AC input		DC	
Voltage	230.0 V	Voltage	54.1 V
Current	5.4 A	Current	3.7 A
Frequency	50.1 Hz	Active power	0.20 kW (20.0 %)
Active power	1.24 kW		

AC output	
Voltage	230.0 V
Current	1.8 A
Frequency	50.1 Hz
Active power	0.35 kW
Apparent power	0.36 kVA

In this page also you can modify the converter ID and Phase number.

Other Features:

- **Blink LED:** Clicking on “BLINK LED” button, the corresponding converter LED’s blink for 6 seconds. It helps to identify the converter in the system and also the assigned phase of the converter.
- **Turn Off:** Clicking on “TURN OFF” button, the corresponding converter will be turned OFF and generates an alarm in events page as converter off.
- **Set new fan installed:** Clicking on “SET NEW FAN INSTALLED” button, the corresponding converter “Module fan replacement” due will be reset to 2556 days (7 years).

(Note: Do not click this button, until a new fan is replaced inside the converter.)

2. If it is a single-phase system, insert the remaining converters and set module ID and assign them to phase 1.

Perform the following procedure for the multiphase system

3. Insert the second converter in phase 2, and set the Converter ID as “2,” and assign it “Phase 2”
4. Insert the third converter in phase 3, and set the Converter ID as “3,” and assign it “Phase 3.”
5. Repeat the process for remaining converters by adding one converter in each phase.
6. After configuring all the converters, turn ON all the converters.
To turn on all the converters, go to *site > Converter System > Control and execute CT41 parameter.*

7.3.5 DC Configuration

Go to *Site > Energy System > DC System > Configuration*

In the DC Bus section, set the parameters depending upon the DC voltage. The below page is configured to 48 Vdc.

ID	NAME	VALUE
CF30	Alarm Low Threshold (volt)	41.00
CF31	Alarm Low Clean Threshold (volt)	42.00
CF32	Alarm High Threshold (volt)	57.00
CF33	Alarm High Clean Threshold (volt)	56.50

7.4 Battery Configuration

The battery page provides access and configures battery parameters such as battery characteristics, LVD, temperature compensation, boost charging, and test.

Battery configuration page is applicable only for the following topology designed system.

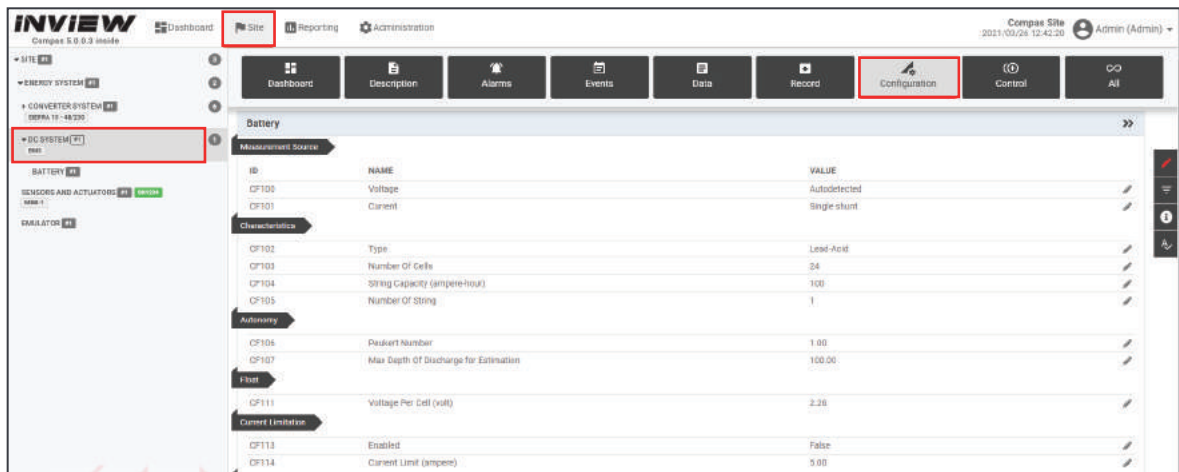
- UPS for AC loads
- UPS for AC and DC loads

Make sure the ID CF1071 is set as “1” to configure Sierra converter.

Go to *Site > Energy System > DC System > Configuration*.

In the Battery section, enter the details of the battery connected to the system such as Battery Characteristics, Autonomy, float voltage, Current limitation, Temperature, Temperature compensation, Boost and Test.

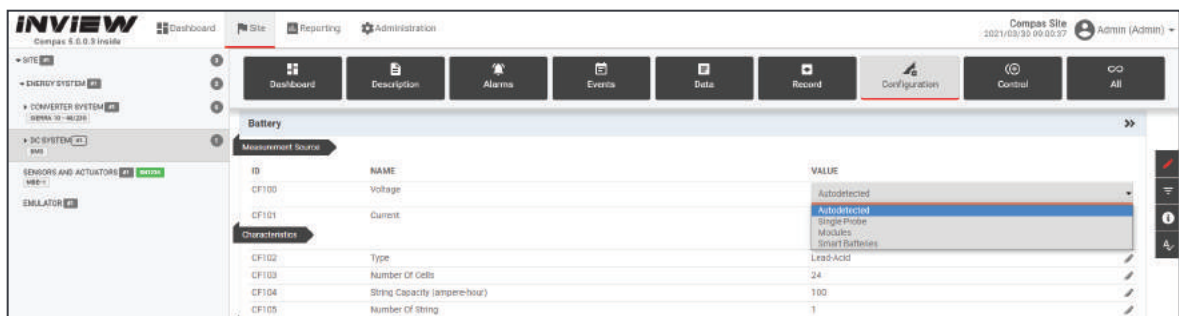
Note: In this page, the parameters are configured with default values. While modifying the parameters, it is recommended to enter the values as per the system DC voltage and battery datasheet.



7.4.1 Measurement source:

Select any one option for battery voltage and current based upon the battery source in the ID CF100 and CF101, respectively.

- *Auto Detected*: It detects automatically based upon the voltage and current measurement
- Select “Single probe”, if MBB measures the DC values
- Select “Modules”, if MBB is not installed
- Select “Smart Batteries”, if BMS of the battery measures the DC values



7.4.2 Battery Disconnect or LVD

The LVD in the CE+T system works as bistable only, and it prevents batteries from discharging beyond the threshold voltage. It is installed in-line between the load and the battery. On this page, the parameters are configured with default values. Users can modify it as per the LVD installed in the system.

Go to [Site](#) > [Energy System](#) > [DC System](#) > [Configuration](#)

In the *Battery Disconnect* section, enter the details of LVD connected to the system.

ID	NAME	VALUE
CF301	Presence	True
CF302	Inhibit	False
CF312	Closing Delay (second)	60
CF313	Opening Delay (second)	15
Voltage Too Low		
CF310	Enabled	True
CF311	Threshold (volt)	42.00
Temperature Too High		
CF321	Enabled	False
CF322	Disconnect Threshold (degree Celsius)	80.00
CF323	Reconnect Threshold (degree Celsius)	65.00

Refer to the section “Relay Configuration”, page 35 for further LVD bistable relay/shunt settings.

7.5 Sensors and Actuators

The Sensors and Actuators page contains details of external devices such as MBB / UMB, which are connected through CANBUS, Ethernet or RS485.

If any external devices are connected, make sure it displays on the dashboard page.

Go to [Dashboard](#) > [Power system](#) and select “*Accessories*” section

Set the ID as “MBB -1”

Note: If a new MBB is replaced, clear the old MBB from the list by clicking “Remove Missing Accessories”.

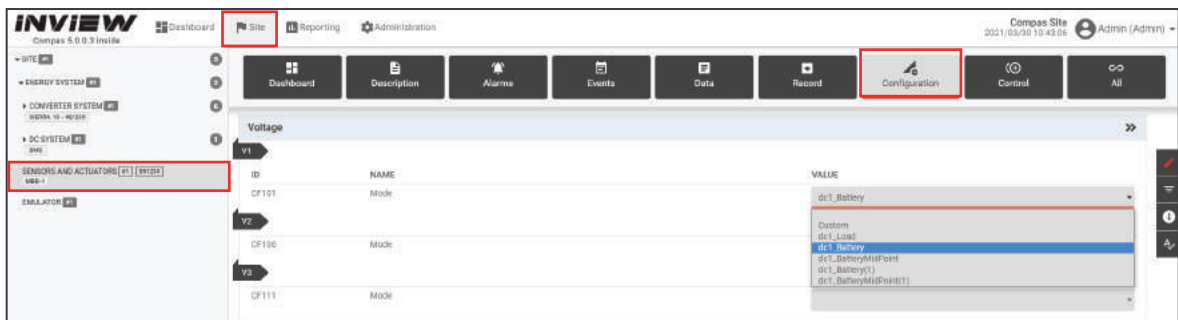
Type	State	Id	Serial number	Software version
Measure Box Battery	OK	MBB-1	1234	3.4.0

7.5.1 MBB Configuration

Before configuring MBB, go to *Site > Energy System > DC System > Configuration* and in the *Measurement Source* section, make sure the ID CF100is set to “Single probe” and ID CF101to “Single shunt”.

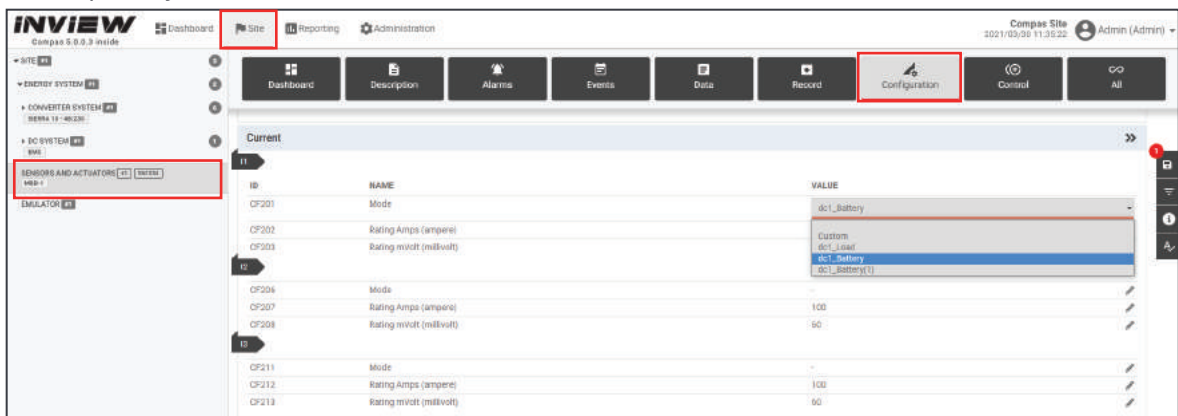
To configure MBB, go to *Site > Sensors and Actuators > Configuration*.

1. Voltage section select an option for the V1, V2 and V3 from the drop-down list in the ID CF101,CF106,and CF111, respectively.



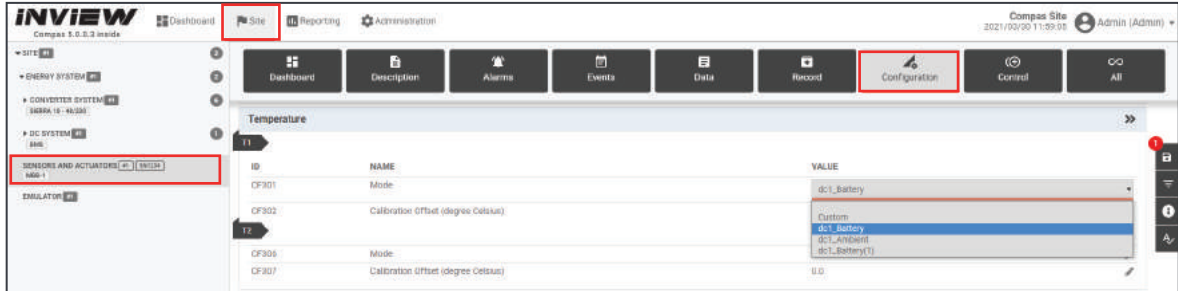
- dc1_Load to measure voltage of DC load
- dc1_Battery to measure the voltage of battery
- dc1_BatteryMidPoint to measure the DC voltage between the batteries midpoint by using V2 and V3

2. Current section select an option for the I1, I2 and I3 from the drop-down list in the ID CF201, CF206 and CF211, respectively.



- dc1_Load to measure the current of DC load
- dc1_Battery to measure the current of battery
- Enter the corresponding rating values of shunt

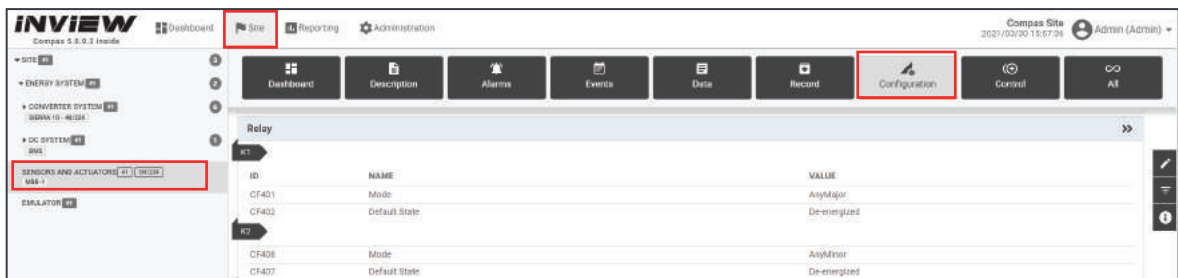
3. Temperature section select an option for the T1 and T2 from the drop-down list in the ID CF301 and CF306, respectively.



- dc1_Battery to measure the temperature of battery
- dc1_Ambient to measure the ambient temperature of battery

4. Relay Configuration: The MBB has six relays and configured as below.

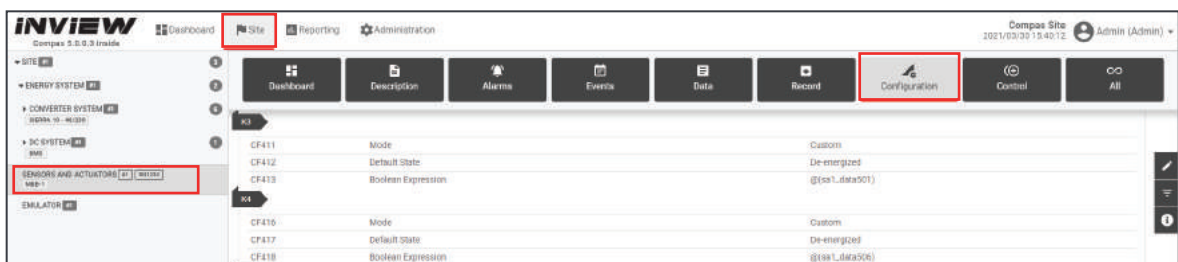
- K1 and K2 are configured to Minor and Major alarms



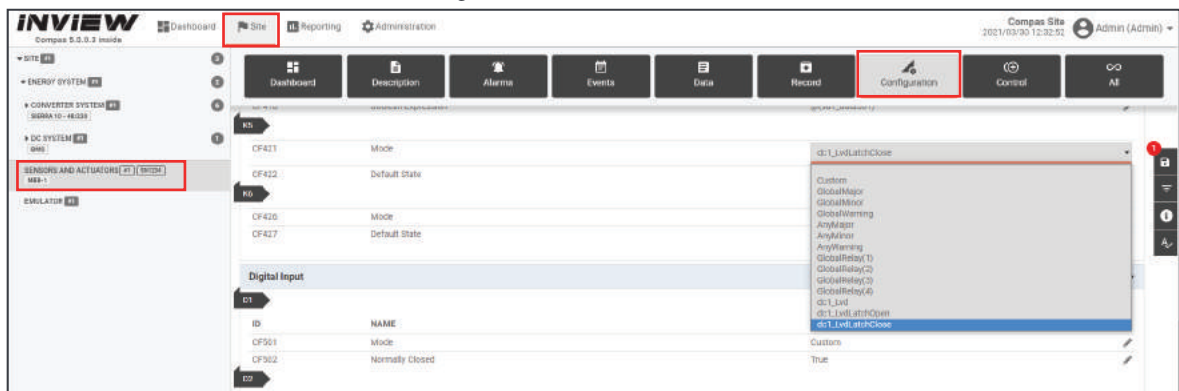
- K3 and K4 can be configured to any desired alarms or digital inputs

Example: Assigning a relay to the digital input

- Go to K3 relay and select the following options
- ID CF411: select the mode as "Custom"
- ID CF412: select the Default state as "Energized" or "De-energized"
- ID CF413: enter the formula as "@(sa1_data501)"
(Sa1: Sensors and Actuators, data501: Data section, Digital input D1 (DA501))
- After selecting the options, click "APPLY AND SAVE" in the modification list



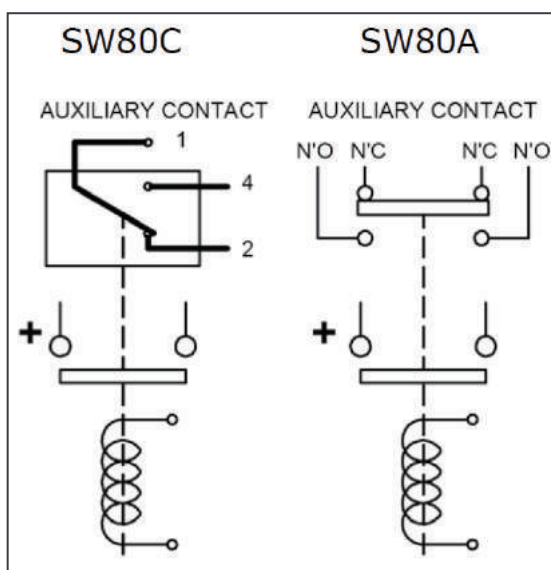
- K5 and K6 are configured to latch or non-latch LVD, if used
 - ③ Relay section select an option for K5 and K6 from “Mode” drop down list
 - ③ For latch LVD, select the ID CF421as “*dc1_LvdLatchClose*” and CF426as “*dc1_LvdLatchOpen*” or vice versa, but must not assign the same value for both relays.
 - ③ For non-latch LVD, select the ID CF421as “*dc1_Lvd*”
 - ③ Select Default State as “*De-energized*”



- ③ To know LVD status, connect the auxiliary contact to the Digital Input 6. The ID CF526is to select as “*dc1_LvdState*”



The below connection diagram is an example of LVD Auxiliary contact.



7.6 Manual Bypass Configuration

The manual by-pass is a manually operated switch, and it is used to transfer the load from normal to by-pass without interruption. When the system is in by-pass, the load is subjected to AC main disturbances. .

The standard manual by-pass is “Make before Break”.

The MBP auxiliary contact must be connected to the Inview Digital input.1

Go to [Site > Configuration](#) and scroll down to the Digital Input section.

In the ID CF501,select the “convs1_ManualByPass” from the drop down list.

The screenshot shows the Inview software interface. The top navigation bar includes 'Dashboard', 'Site', 'Reporting', and 'Administration'. The 'Configuration' tab is active. The left sidebar shows a tree view with 'SITE (2)' selected. The main content area displays a table of digital inputs. The 'Digital input' section is expanded, and the dropdown menu for ID CF501 is open, showing 'convs1_ManualByPass' selected.

ID	NAME	VALUE
CF401	Mode	Custom
CF402	Default State	De-energized
CF406	Mode	GlobalMajor
CF407	Default State	De-energized
Digital input		
ID	NAME	VALUE
CF501	Mode	convs1_ManualByPass
CF502	Normally Closed	
CF508	Mode	
CF507	Normally Closed	
PLC		
Global		

Note: For more information about MBP auxiliary connection with remote ON/OFF, refer to the system user manual.

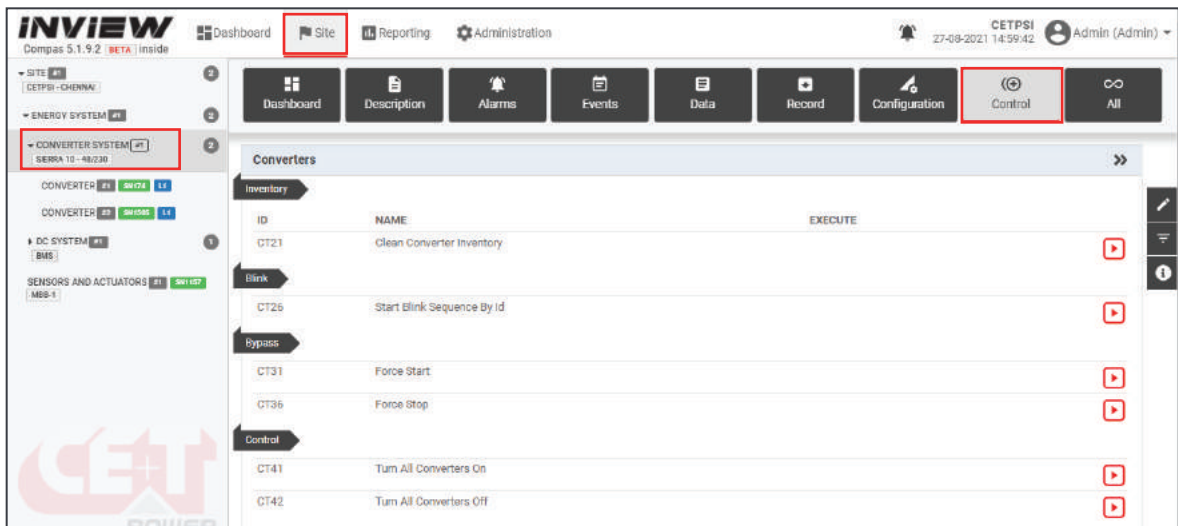
7.7 Module Remote ON/OFF

The AC and DC output of the sierra system and also each module in the system can be turned ON/OFF in two ways:

1. Remote ON/OFF terminal at rear side of the shelf
2. Through web interface

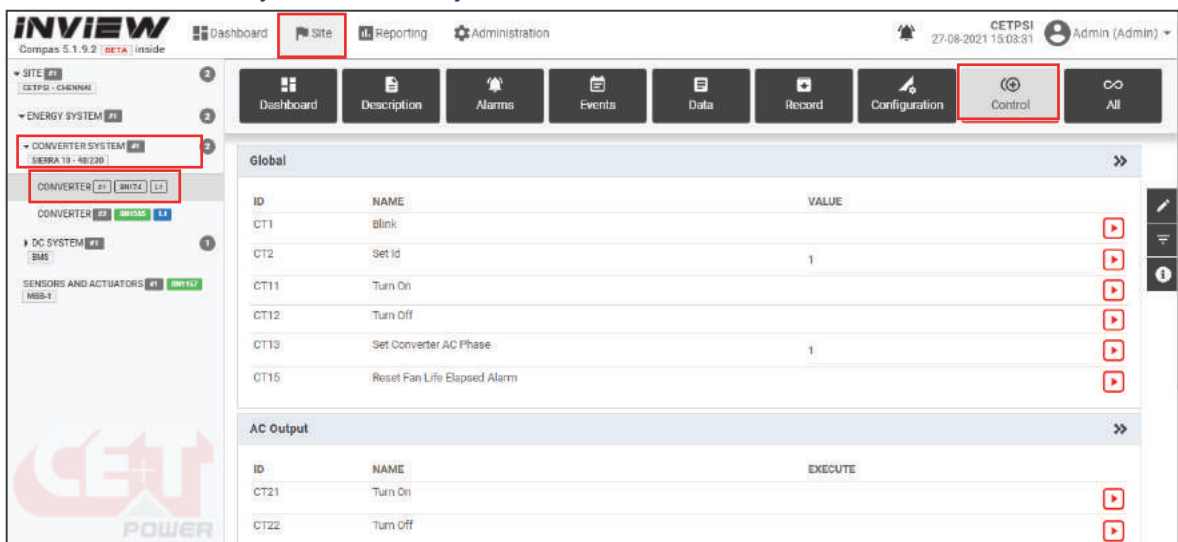
③ Systems Level

- Both AC and DC: *Site > Converter system > Control > Converterers* section> CT41 and CT42
- AC Only: *Site > Converter system > Control > AC Outputs* section > CT101and CT102
- DC Only: *Site > Converter system > Control > DC* section > CT511and CT512



③ Module Level

- Both AC and DC: *Site> Converter system > Converter > Control > Global* > CT11 and CT12
- AC Only: *Site > Converter system > Converter > Control > AC output* > CT21 and CT22
- DC Only: *Site> Converter system > Converter > Control > DC* > CT31 and CT32



7.8 Communication Protocol

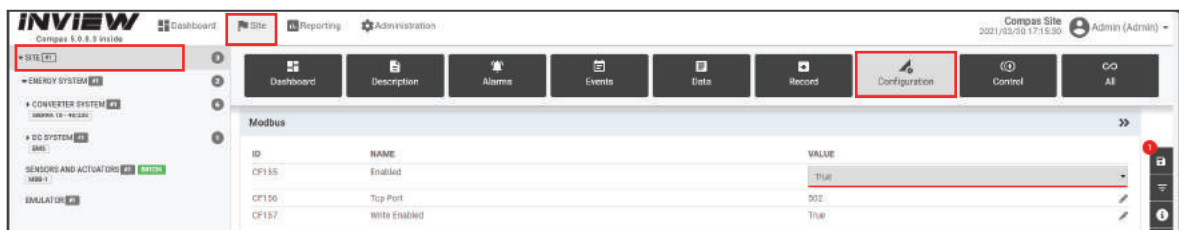
7.8.1 Modbus

Modbus over TCP/IP is available, and it has both read and write mode, which means that Modbus can be used for monitoring and execute actions on the system.

Port is fixed to standard Modbus TCP/IP port 502. This protocol can be either enabled or disabled.

For the Modbus configuration, go to [Site > Configuration](#), scroll down to the *Modbus* section and select the following options.

In the ID CF155 select “True” to enable the Modbus TCP/IP function.



The following device/equipment mapping has been defined:

Device ID	Equipment
1	DC System 1
2	DC System 2
3	DC System 3
4	DC System 4
11	Inverter System 1
12	Inverter System 2
13	Inverter System 3
14	Inverter System 4
31	Converter System 1
32	Converter System 2
33	Converter System 3
34	Converter System 4
91	Energy System 1
100	Site
101	Sensors And Actuators 1
102	Sensors And Actuators 2

When the equipment does not exist, it will respond with function code 4.

- Each discrete inputs associated with the alarm of the equipment, with the same id. Reading 1 means that the alarm is active.
- Each input register corresponds to the data of the equipment. All these values are coded assigned 16 bit. A correction factor is often applied. All the values are not available (like strings. Some status are coded as uint)

- Each discrete coil corresponds to the entries for controlling the equipment. It supports only simple control, without any parameters.
- Each holding register corresponds to the configuration of the equipment. It only supports entries that can be read and of numeric type.

Here follows the exchange table of a DC SYSTEM between the supervisor and the Inview 5 monitoring. The Modbus transport layer is Ethernet over TCP/IP. The default used port is 502:

- Discrete Inputs, alarm reading (Read Only), using modbus command 02
- Input Registers, data reading (Read Only), using modbus command 04
- Discrete Coils Table (Command), using modbus command 05
- Holding registers, using modbus command 03 for multiple read, and 06 for a single write

If you want to use Modbus to monitor other types of systems, please contact us. We will study the business case and make a proposal.

7.8.2 SNMP

This section describes the Management Information Base (MIB) schema design for SNMP V1, V2c and V3 configuration. A MIB schema describes the structure of information served by a Simple Network Management Protocol Subsystem (SNMP) agent.

For the SNMP configuration, go to [Site > Configuration](#), scroll down to the *SNMP Agent* section and select the following options.

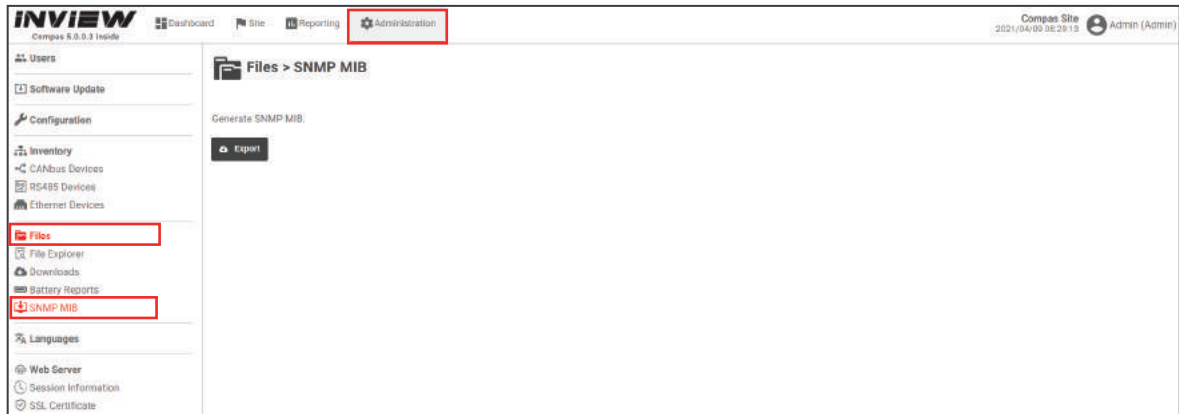
- In the ID CF61, select “True” to enable the SNMP function and enter the port address in the ID CF62
- In the ID CF63 select the SNMP version V1, V2C or V3.

ID	NAME	VALUE
CF61	Enabled	True
CF62	Trap Port	161
CF63	Trap Version	V2c
CF64	SET Minimum Security Level	V1 Community
CF65	SET Minimum Security Level	V1 Community
CF77	Site Description Ids Included in Traps	-
CF911	Trap Targets IP	-
V3		
CF66	Authentication Algorithm	MD5
CF67	Privacy Algorithm	DES
CF68	Privacy Password	-
CF72	Trap Auth Algorithm	MD5
CF73	Trap Privacy Algorithm	DES
CF74	Trap Username	compas
CF75	Trap Auth Password	-
CF76	Trap Privacy Password	-
V1 V2c		
CF79	Read Community	public
Traps		
CF912	Minimal Event Severity For Sending	none

7.8.3 MIB

The MIB file describes the specific format of data provided by the SNMP agent running within the subsystem. The data is grouped in terms of high-level objects and therefore models a top-down hierarchical design.

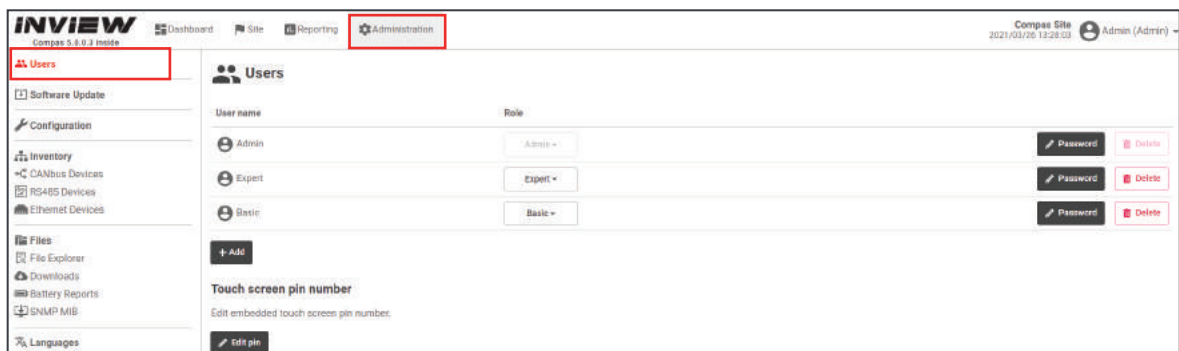
To download the SNMP MIB file, go to [Administration > Files > SNMP MIB](#) and click “Export” button.



7.9 Users Management

Users page provides the access to create and modify the user accounts for web interface and PIN modification for LCD interface.

Go to [Administration > Users](#)



Web interface - User account

Users can create up to ten accounts for web interface and assign role as Admin, Expert, or Basic.

- ③ Admin – User can access, modify all the applicable parameters, and manage user accounts. (The manufacturer created Admin account cannot be deleted)
- ③ Expert - User can access and modify all the applicable parameters, and can change their own password.
- ③ Basic – User can only view the parameters.

Note: The feature of creating and editing user account is available only in Admin privilege.

- **Creating a new user account**

- In Users page, Click on “+ADD” button. A pop window appears with the title “Add a new user.”
- Enter an appropriate user name and assign a role from the drop down list as Basic or Expert.
- Enter a new password, type the same password for confirmation, and then click **ADD** button. The password length should be at least four characters.

- **Editing the existing user account**

In the Users page, choose a user account which you like modify.

- Modify the privilege from the “Role” drop-down list as Admin, Expert, or Basic.
- Click on “PASSWORD” button to edit existing password.
- Click on “DELETE” button to remove the user account.

LCD interface - PIN number

Inview Slot, S and X LCD interface do not have any user account; the user can view the system details and cannot modify the parameters. The LCD interface is protected with the PIN during any action request.

The default PIN is 1234.

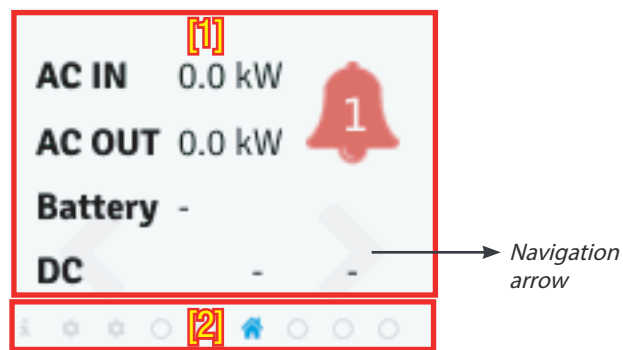
- **Editing the LCD PIN number**

- Select *Home page* > > *Users*.
- In users page, Click on “EDIT PIN” button below the “Touch screen pin number”.
- Enter a new pin, type the same for confirmation, and then click **OK**. The pin should be four characters.

8. Overview - LCD Interface

8.1 Inview Slot - LCD Display

Once the system is powered upon, the Inview Slot is up and ready for operation. The LCD is a 1.8-inch touch screen and user can only view the system details through the interface.



- **[1] Interface area**

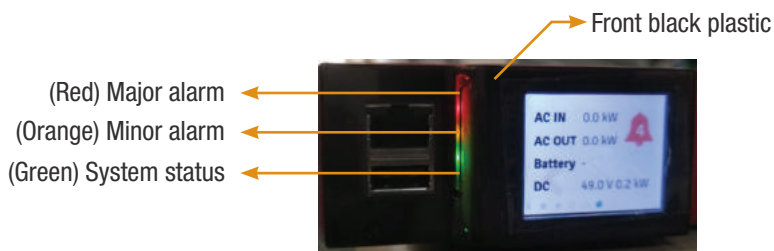
Interface area provides information about the corresponding page. At the bottom of the screen, left and right arrows are present for moving next and the previous screen. In some screens, up and down arrows appear at the top of the page, indicating more contents are present.

- **[2] Status bar**

The status bar appears throughout the interface and illuminate the current page icon.

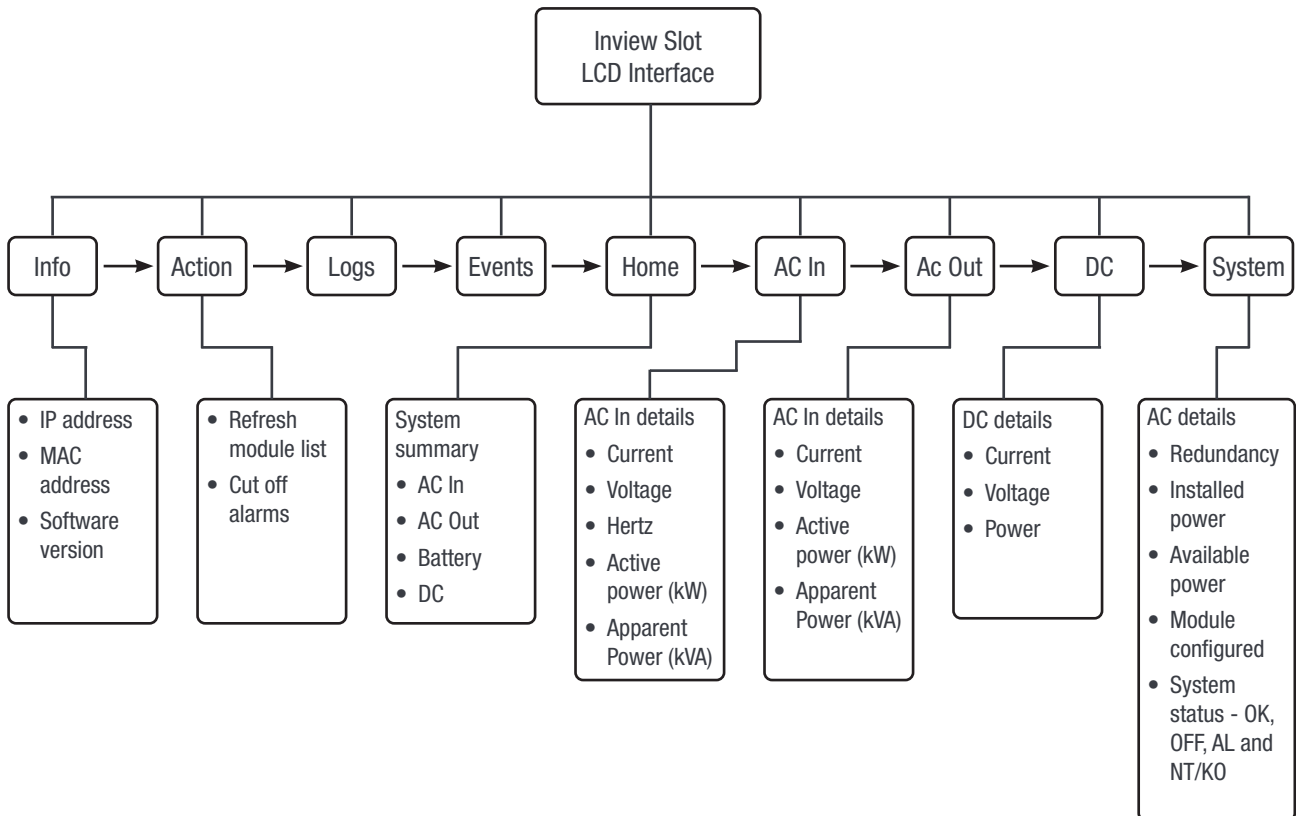
8.1.1 LED indications

Three LED's are present behind the front black plastic of the controller to indicate major alarm, minor alarm, and system status. These LED's are not visible until they illuminate during the corresponding action occurs.



8.1.2 Menu structure

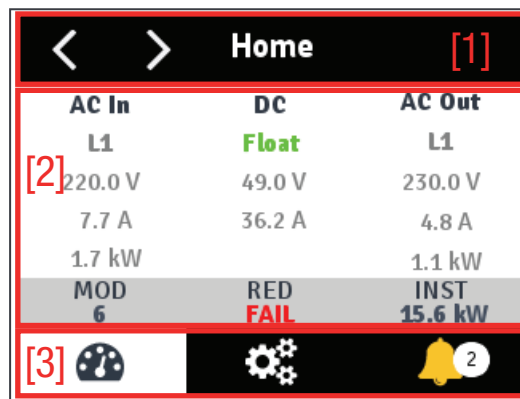
The home page is the default page in the LCD interface, and other pages are arranged in the below sequence.



8.2 Inview S - LCD interface

Inview S LCD interface is a 2.8-inch touch screen. It does not have any user account, the user can only view the system details. The LCD interface is protected with the PIN during any action request. To modify the PIN, refer section 7.9, page 41.

Once system is powered upon, the Inview S is up and ready for operation.



- **[1] Header**

Displays the title of the current page and navigation buttons for next and previous page. In some pages, Up and Down navigation buttons appear at the right side, indicating more contents are present.

- **[2] Information Area**

Provides information about the corresponding page.

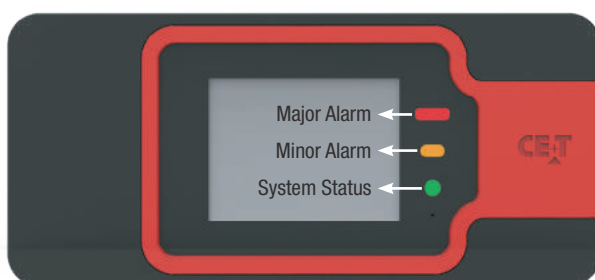
- **[3] Toolbar**

The toolbar is present at the bottom throughout the interface, to provide quick access to following pages:

- ③ Measures
- ③ Settings
- ③ Alarms and Logs

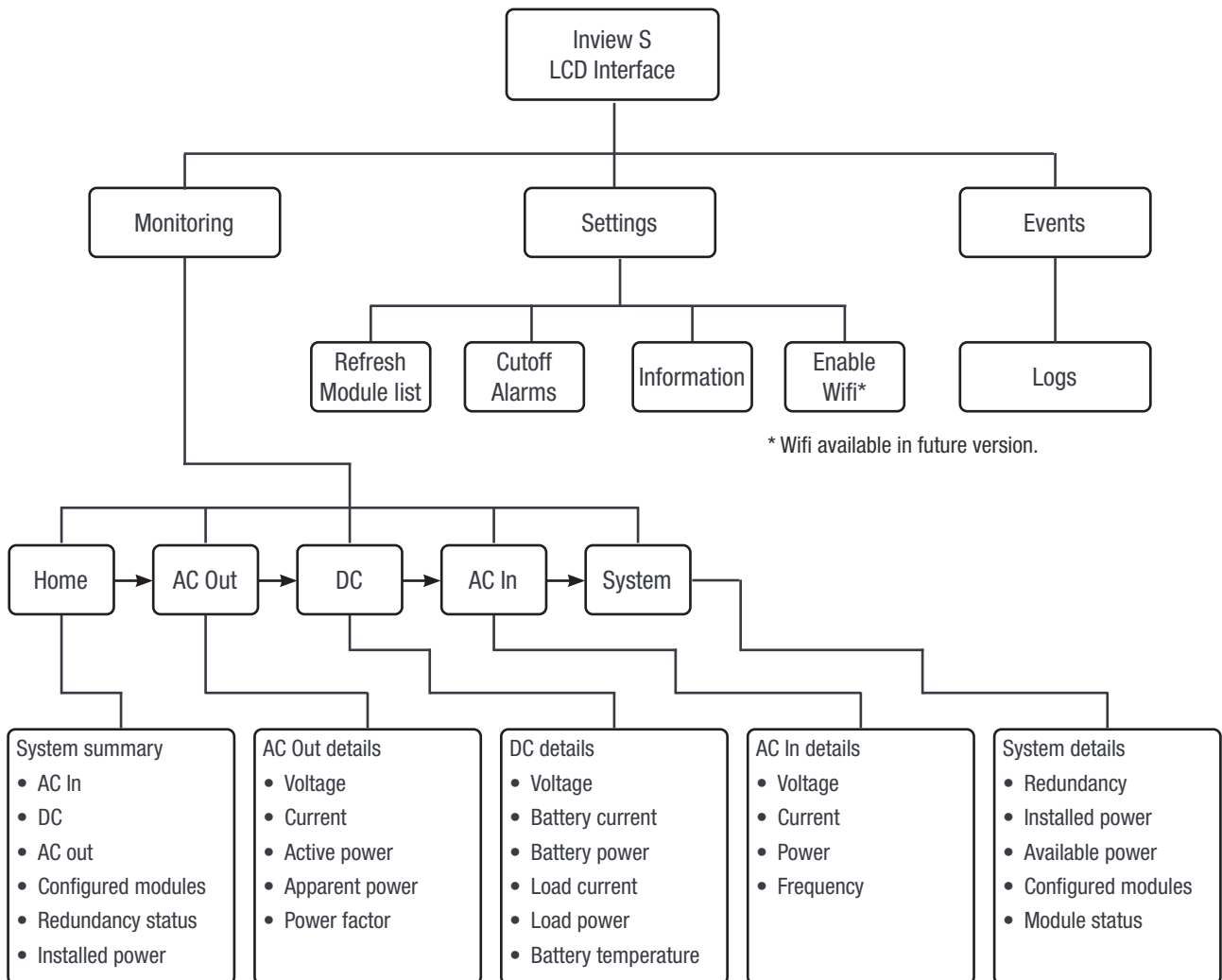
8.2.1 LED indications

Three LED's are present at front side of the controller to indicate major alarm, minor alarm, and system status.



8.2.2 Menu structure

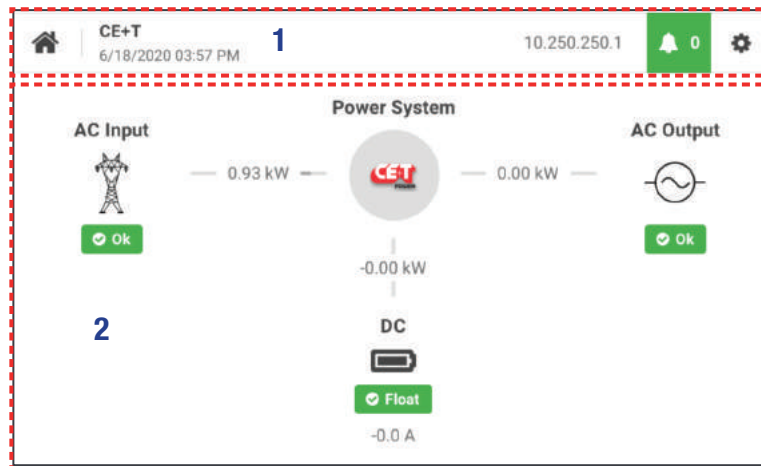
The below tree provides an overview of the menu structure in the Inview S LCD interface.



8.3 Inview X - LCD interface




Inview X LCD interface is a 7-inch touch screen. Through the LCD interface, the user can view and access the system details. Once the system is powered upon, the Inview X is up and ready for operation.

Note: Interface graphics and layout may change based on firmware version.



- **[1] Header**

Displays the title of the corresponding and IP address of the system. It also has three icons for navigating to different screens.

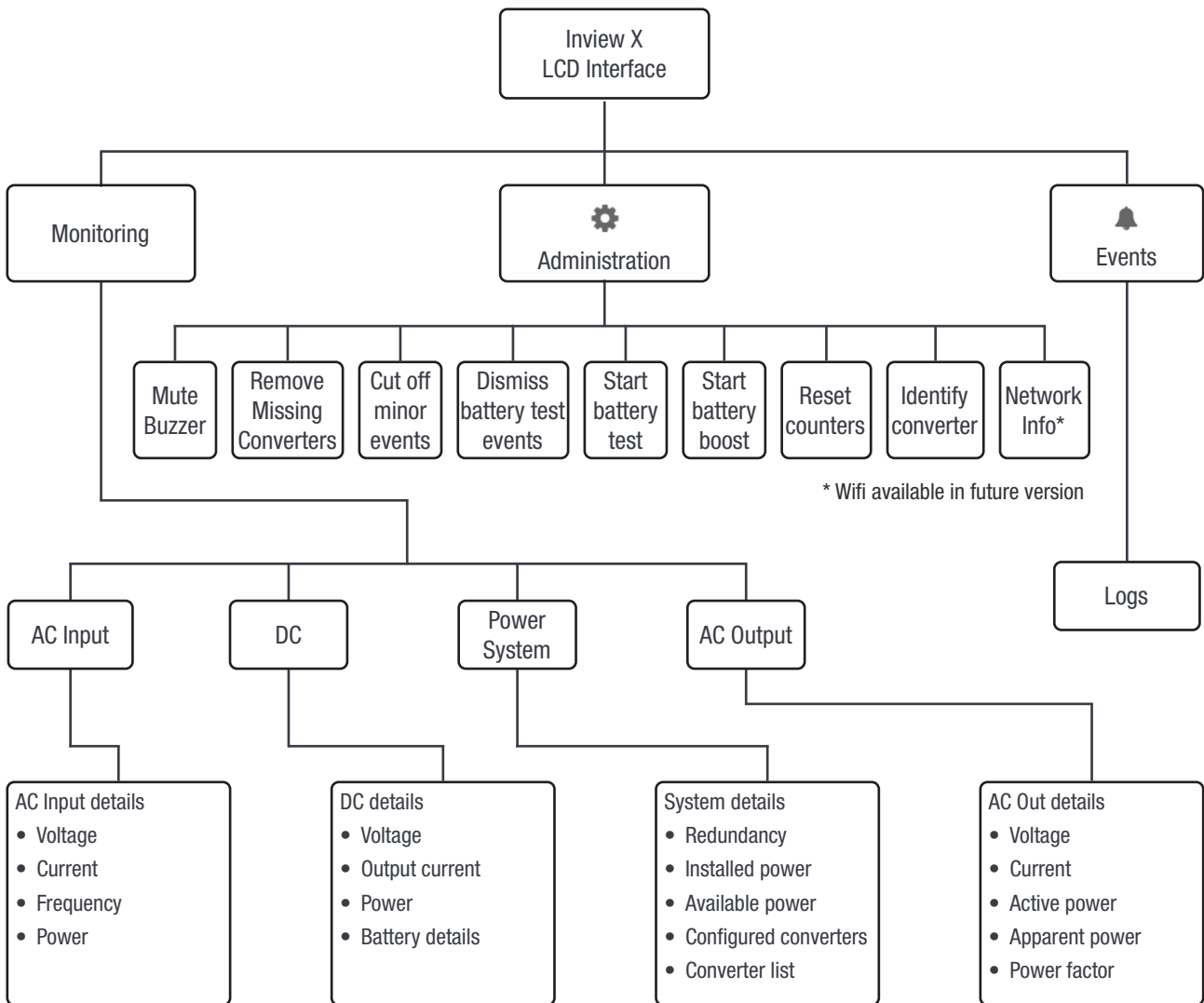
- ③ **Home:** Tapping on  goes to the home screen from any screen you are accessing in the interface.
- ③ **Events:** Tapping on  goes to Events and Logs screen.
- ③ **Administration:** Tapping on  provide access to different action screens.

- **[2] Information Area**

Provides information about the corresponding screen. In some screens, left and right navigation buttons appear, indicating more screens are present.

8.3.1 Menu structure

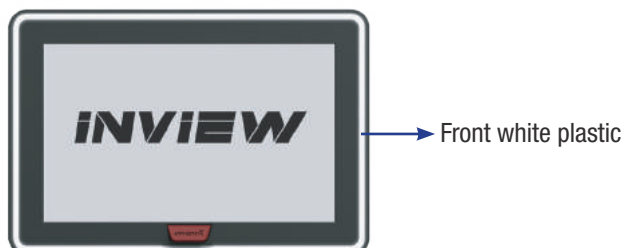
The below tree provides an overview of the menu structure in the Inview X LCD interface.



8.3.2 LED indications

Three LED's are present behind the front white plastic of the controller to indicate major alarm, minor alarm, and system status. These LED's are not visible until they illuminate during the corresponding action occurs.

- Light Blue: Normal Operation
- Orange: Minor Alarm
- Red: Major Alarm



8.4 LCD interface - Terminology

The below table provides the description of abbreviation and terminology which appears in Inview Slot, S and X LCD interface.

S.NO	Terminology	Description
1	MOD	Number of converters configured in the system
2	RED	Redundancy satisfied or not
3	INST	Installed Power
4	Redundancy	Number of redundancy from the configured converters
5	OK	Number of active converters
6	OFF	OFF: Number of non-active or switched off converters.
7	AL	Displays the alarms
8	NT/OK (Not Okay)	Number of faulty converters or missing converters when compare to configured converters
9	Installed power	It is the total power of the configured converters, including redundancy. Moreover, it is a user configuration based upon the system capacity.
10	Available power	It is the total power of active converters present in the system.
11	Modules configured	Total number of converters configured in the system
12	Refresh converter list	The controller performs a complete scan and remove the non-active converters from the converter list. Note: If any parameter is changed, an authentication page appears. Enter the display PIN password to apply changes. To modify the password, refer section , page 42.
13	Cutoff alarms	Buzzer sound will be muted
14	Logs	Display the latest 100 events occurred.
15	Information	Displays product and network details

9. Defective unit

9.1 Return defective Inview

- A repair request should follow the regular logistics chain:
End-user => Distributor => CE+T Power.
- Before returning a defective product, a RMA number must be requested through the <http://my.cet-power.com/extranet>. Repair registering guidelines may be requested by email at repair@cet.be
- Freight costs:
 - ③ The cost to ship the unit(s) from the Customer's premises back to CE+T Power is at the Customer's charge.
 - ③ CE+T Power will pay for the shipping of the unit(s) back to the Customer's premises.
- Warranty:
 - ③ The warranty will be void if the transport conditions or packing were inadequate.
 - ③ The warranty will be cancelled if the unit sent for repair has been opened by parties other than a CE+T approved Repair Centre.
- Repair costs:
 - ③ If the faulty unit is under warranty, CE+T Power will bear the repair costs.
 - ③ If the warranty is void, the repair costs will be invoiced to the Customer.
 - ③ If a unit sent back to CE+T Power (Repair or Swap) presents no defect or failure, a lump sum amount will be charged to the Customer.
- Swap conditions:
 - ③ You must provide CE+T Power with a Purchase Order for the new unit that you are requesting, at the current price. No Swap request will be accepted without it!
 - ③ Within 3 months of the reception of our Swap approval email, you will have to provide CE+T Power with a tracking reference proving that you have shipped the faulty unit(s) back to CE+T Power.
 - ③ If CE+T Power does not receive the tracking reference or the unit in time, CE+T Power will automatically invoice the unit(s) sent in exchange, at the current price list value.
- RMA:
 - ③ Your Return Material Authorization number (RMA) and the address of the appropriate Repair Centre will be confirmed to you after careful review of your request.
 - ③ The RMA number must be present on the packing and all the paperwork of the returned material.
 - ③ So PLEASE, wait until you receive these two informations before you ship us the faulty unit.

10. Trouble shooting and Service

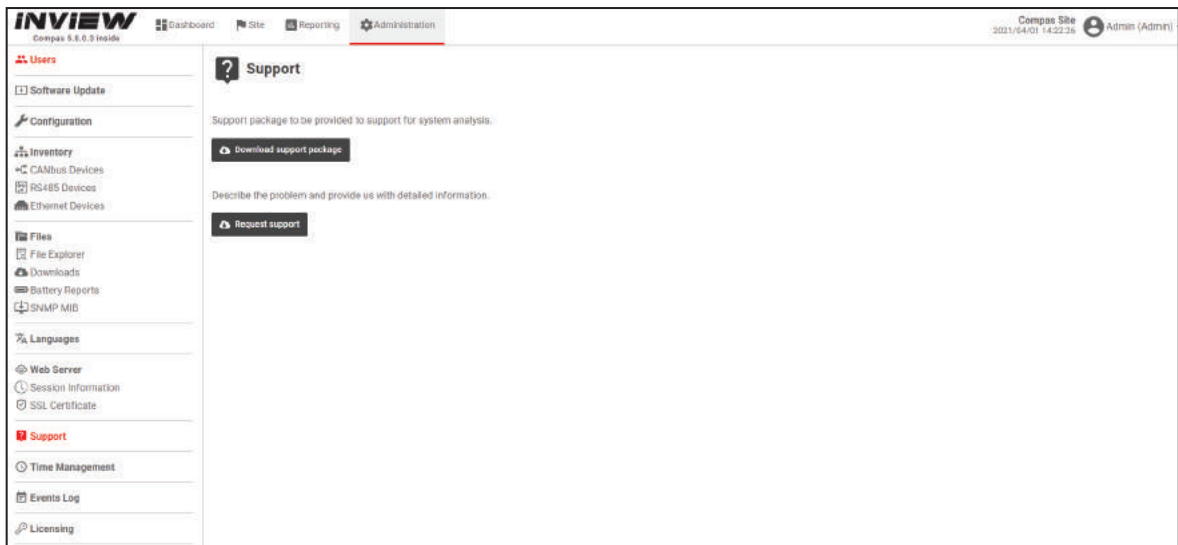
For Service

- Check Service Level Agreement (SLA) of your vendor. Most of the time they provide assistance on call with integrated service. If such SLA is in place, you must call their assistance first.
- If your vendor doesn't provide such assistance (*) you may contact CE+T through email.
 - ③ Rest of the world: customer.support@cet-power.com
 - ③ USA and Canada: tech.support@cetamerica.com

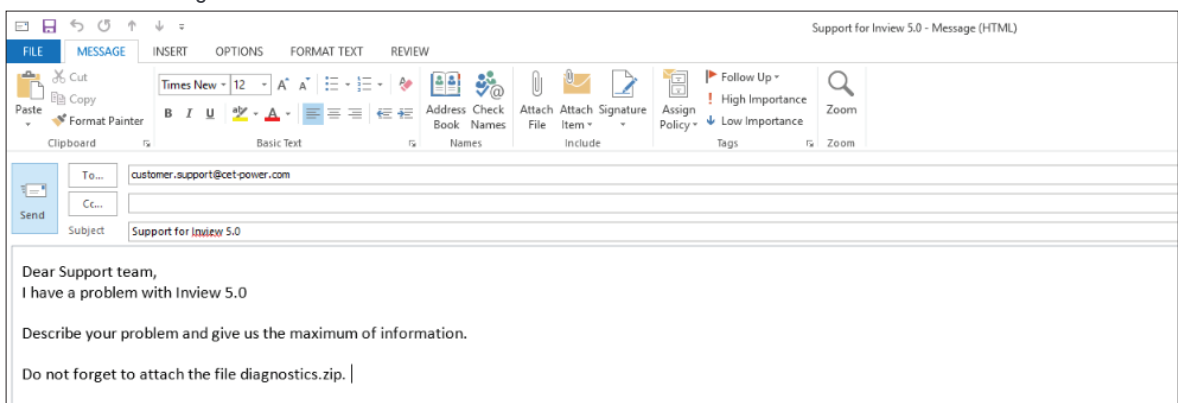
Before sending the unit to repair, download the debug file and send it to CE+T customer support team through email.

Perform the following steps to download and send the file:

1. Go to **Administration > Support** and click **"Download support package"** to download the "diagnostics" zip file.

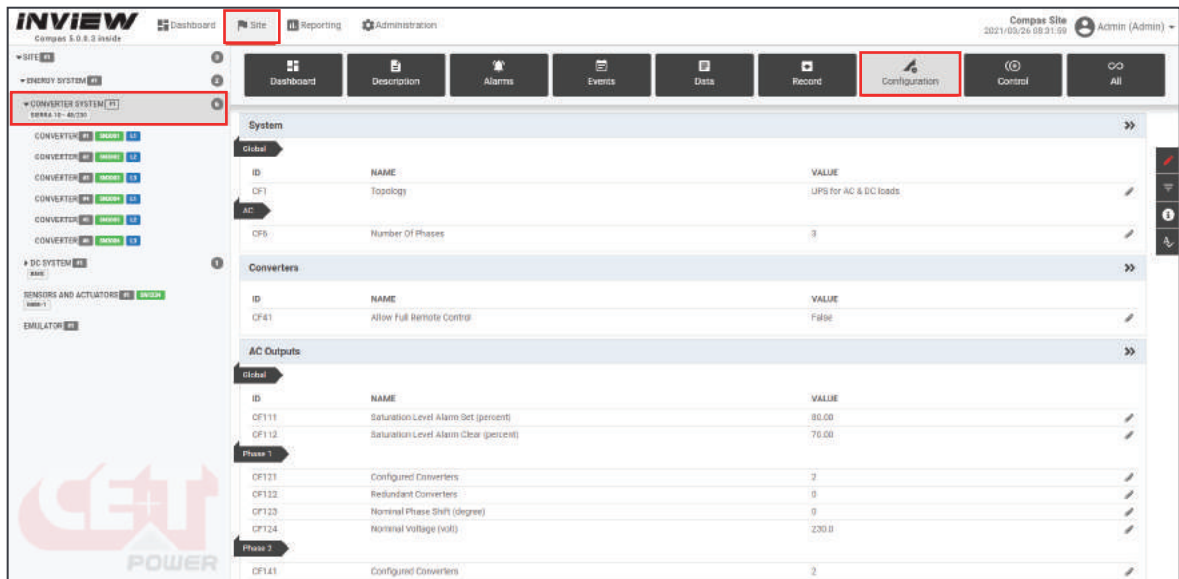


2. To send the diagnostic file to CE+T customer support, Click **"Request support"**, a new email will pop up from your default outlook with the CE+T address, subject and body text as below.
3. Attach the diagnostic file in the email and sent it.



11. Annexe 1: Converter - Parameter List

To view and edit the converter parameters, go to *Site > Energy System > Converter System > Configuration*.



The below table is reference for 48 Vdc / 230 Vac converters. If it is other DC and AC voltages, enter the appropriate values.

ID	Name	Description	Min	Default	Max	Unit
System						
CF1	Topology	Select the topology based upon the system design.	-	-	-	-
CF6	Number Of Phases	Enter the number of phases based upon the system input/output power.	1	1	3	-
Converters						
CF41	Allow Full Remote Control	It allows to shut down all the converters in the system.	-	False	-	
AC Outputs						
CF111	Saturation Level Alarm Set	The saturation is an event defined in the percentage of the Installed Power with Parameter CF121 when the output power crosses the threshold.	0	80	100	%
CF112	Saturation Level Alarm Clear	The saturation is an event defined in the percentage of the Power to clear the saturation level.	0	70	100	%
CF121	Configured Converters	The number of converters configured in the output of phase 1.	1	1	32	-
CF122	Redundant Converters	The number of redundant converters configured in the output of phase 1.	1	1	3	-

ID	Name	Description	Min	Default	Max	Unit
CF123	Nominal Phase Shift	The angle of phase shift at phase 1.	0	0	240	Deg
CF124	Nominal Voltage	The nominal voltage at AC output of phase 1.	200	230	245	V
CF141	Configured Converters	The number of converters configured in the output of phase 2.	1	1	32	-
CF142	Redundant Converters	The number of redundant converters configured in the output of phase 2.	1	1	3	-
CF143	Nominal Phase Shift	The angle of phase shift at phase 2.	0	120	240	Deg
CF144	Nominal Voltage	The nominal voltage at AC output of phase 2.	200	230	245	V
CF161	Configured Converters	The number of converters configured in the output of phase 3.	1	1	32	-
CF162	Redundant Converters	The number of redundant converters configured in the output of phase 3.	1	1	1	-
CF163	Nominal Phase Shift	The angle of phase shift at phase 3.	0	240	240	Deg
CF164	Nominal Voltage	The nominal voltage at AC output of phase 3.	200	230	245	V
CF1016	Nominal	Set the converters system frequency. This frequency is used when the system is not synchronized on AC input.	-	50	-	Hz
AC Inputs						
CF301	Override Power Limitation Timeout	The timeout after the defined voltage, which the system returns in normal condition.	0	20	60	s
CF1068	Default Power Limitation	global peak-shaving (-1 if no peak-shaving)	0	-1	2400	W
CF1006	Low Start	AC IN Voltage where a higher value leads the AC IN to start	195	195	195	V
CF1007	Low Transfer	AC IN Voltage where a lower value leads to the transfer of the load from the AC IN to DC IN	185	1850	185	V
CF1008	Low Stop	AC IN Voltage where a lower value leads the AC IN converter to stops. It is possible to step down to 150 Vac. In this case, the AC/DC converter will run at a lower power. The converter DC/DC supply the rest (Only if DC is available, if not, there is a de-rating)	182	182	182	V
CF1009	High Start	AC IN Voltage where a lower value leads the AC IN converter re-start	255	255	255	V
CF1010	High Transfer	AC IN Voltage where a higher value leads to the transfer the load of the charge from the AC IN converter to the DC IN converter	260	260	260	V
CF1011	High Stop	AC IN Voltage where a higher value leads to stop the AC IN converter.	265	265	265	V

ID	Name	Description	Min	Default	Max	Unit
CF1012	Low Start	Frequency where a higher value leads the outlet of the inverters trying to synchronize with AC IN.	47	47	63	Hz
CF1013	Low Stop	Frequency where a lower value leads the outlet of inverters stop to synchronize with AC IN.	47	47	63	Hz
CF1014	High Start	Frequency where a lower value leads the inverters outlet to synchronize with AC IN.	47	52.7	63	Hz
CF1015	High Stop	Frequency where a higher value leads the inverters outlet to stop to synchronize with AC IN.	47	53	63	Hz
DC						
CF501	Override Voltage SetPoint Timeout	The timeout after the defined voltage, which the system returns in normal condition.	0	20	60	s
CF503	Override Power SetPoint Timeout	The timeout after the defined power, which the system returns in normal condition.	0	20	60	s
CF1000	Low Start	Low DC Voltage where a higher value leads the DC/AC converter to re-start.	39	44	61	V
CF1001	Low Transfer	Low DC Voltage where a lower value leads to transfer the load from DC IN to AC IN. Under this voltage peak-shaving is relaxed and battery discharge test is stopped.	39	390	610	V
CF1002	Low Stop	Low DC voltage where a lower value stops the DC/AC converter.	39	39	61	V
CF1003	High Start	High DC voltage where a higher value re-starts the DC/AC converter.	39	58	61	V
CF1004	High Transfer	High DC Voltage where a higher value leads to transfer the load from DC IN to AC IN.	39	61	61	V
CF1005	High Stop	High DC voltage where a higher value stops the DC IN converter. Value increased from sw 173 to 62 VDC.	39	61	61	V
CF1066	Charging Voltage	DC voltage set point in SIERRA mode.	53	54	54	V
CF1067	Discharging Power	DC power setpoint in sierra mode (> 0 if battery discharge, <0 if battery charging).	0	-	2400	W
Converters Configuration						
CF1034	Short circuit threshold voltage	Minimum Voltage Threshold where converter considers that outlet is in short circuit.	80	80	200	V
CF1035	Short circuit hold time	Time Duration when a converter tries to eliminate the short-circuit existing on outlet. If the system is still in short-circuit after this time, the output will be stopped.	1	60	600	s
CF1036	Input source in Percent	Defines the priority source 0 - Feeding from AC IN has priority (converter AC/AC - EPC mode) default value. 100 - Feeding from DC has priority (converter DC/AC - On Line mode)	0	0	100	%

ID	Name	Description	Min	Default	Max	Unit
CF1037	Synchronization tracking speed	The speed at which the converter tries to synchronize the AC Out with AC IN. The lowest value will have the fastest synchronization.	-2	0	2	-
CF1038	Max current Percent	Maximum Power that converter can supply.	30	150	150	%
CF1039	Max power Percent	Maximum Current that converter can supply.	30	150	150	%
CF1040	Max Overload Duration	Maximum Time Duration when converter can run with overload.	0	15	15	s
CF1041	AC in mode	Allows to open the AC IN inlet relay 0 - normal running in EPC mode 1 - AC IN inlet relay is open and so the system is insulated from the Mains. This parameter can be set to 1 only if repartition is on DC (parameter 036 should be 100)	0	0	1	-
CF1042	Booster 10x I in	Allow to inhibit the Booster option which generates a current of 10 In for 20ms in case of short-circuit (9 In for Nova inverter).	0	1	1	-
CF1043	Remote Off Disable AC InPower	This parameter change the attribution of the remote ON/OFF input. If parameter is 1, then, when system is in remote OFF position, output is not stopped and AC input is stopped instead.	0	0	1	-
CF1044	Reinjection allowed	If this parameter is 1, the converter is allowed to inject power in the grid with its AC input.	0	0	1	-
CF1045	External clock	Records the "External Clock" mode configuration 0 - no protection in: phase drift is allowed. 1 - protection in: no phase drift allowed, stops the system after 1 minute. 2 - System stops immediately.	0	0	2	-
CF1046	Walk in mode	The Walk-in mode allows the inverter to come back progressively on the AC priority source after an outage. Friendly use on Genset.	0	0	12	-
CF1047	Triangle mode	Defines the protection type for working on Delta load. 0 - Default setting, and no delta load protection 1 - The mode is active. If one output phase stops, the other phases will also stop.	0	0	1	-
CF1048	Airco Mode	When this mode is activated, the overload capabilities are moved from default value to 330% overload in current and power for maximum 900 ms.	0	0	1	-
CF1049	Start without supervision	When this mode is activated, the converter is able to start without Inview.	0	1	1	-

ID	Name	Description	Min	Default	Max	Unit
CF1050	P DC Max	This feature allow to limit or reduce the INRUSH DC current when the system work on battery. To limit the current this configuration line should limit the inrush DC current. To allow for the high capability this inverter is build with extra capacitor running on 400VDC to provide the requested energy.	0	0	1	-
CF1051	AC 1 stop power	Stops the power of the corresponding AC group. The AC input of the converters of this AC group will then be used for synchronisation only, no power will be taken.	0	0	1	-
CF1052	AC 2 stop power		0	0	1	-
CF1053	AC 3 stop power		0	0	1	-
CF1054	AC 4 stop power		0	0	1	-
CF1055	St module Number	NA	0	0	0	-
CF1056	St module Redundancy	NA	0	0	0	-
CF1057	Tus	Mode TUS activation.	0	0	1	-
CF1058	Tus modules number	Number of TUS modules in the system (typically 2) -> number of tus seen by local supervision.	0	0	24	-
CF1059	Tus sub sub system address	address of the system on TUS bus -> address of local supervision which need to be different from other local supervisions.	0	1	4	-
CF1060	Tus sub sub system output phase	Output phase in TUS mode.	0	1	11	-
CF1061	Tus sub system index	System index in TUS mode (for example, if we have a A+B redundancy, this parameter is 1 for A systems, 2 for B systems)	0	1	2	-
CF1062	Number of tus sub sub system	Number of systems connected on TUS bus.	0	0	8	-
CF1063	X Tus supply Source	X TUS supply source.	0	3	3	-
CF1064	Y Tus supply Source	Y TUS supply source.	0	3	3	-
CF1065	Tus sub sub system dc group	DC group of the system in TUS mode.	0	0	3	-
CF1069	P AC max per phase safe mode	Peak-shaving for each individual phase (-1 if no peak-shaving).	0	-1	1	-
CF1070	Phase compensation	Phase balancing	0	1	1	-
CF1071	Sierra mode	Converter allowed to run in charger mode.	0	1	1	-
CF1072	V DC low stop charger	Dc voltage under which charger is stopped.	0	53	54	V
CF1073	Lvd mode	If this mode is ON, converter goes in low consumption mode 1 minute after it stops by Vdc LowStop.	0	0	1	-

ID	Name	Description	Min	Default	Max	Unit
CF1074	Max V DC increment safe mode	Vdc set point rising speed, if controller is missing.	0	2	2	-
CF1075	Out Sync 1	Reserved for future implementation. <i>Note: Do not change the default values.</i>				
CF1076	Out Sync 2					
CF1077	Out Sync 3					
CF1078	Out Sync 4					
CF1079	Out Sync 5					
CF1080	Out Sync 6					
CF1081	Out Sync 7					
CF1082	Out Sync 8					
CF1083	Scaling Factor					
CF1084	Temperature Derating Mode					
CF1097	BackFeed DetectionMode					
CF1098	SleepMode					

12. Annex 2: Boolean Expression Functionalities

12.1 Overview

Boolean expressions can be used to open/close relays under user defined logics for their requirements and for specific alarm monitoring.

12.1.1 Our Boolean expression Syntax

Abbreviations	Descriptions
convxX	States converter system with ID X
coX	States Converter with ID X
dcY	States DC system with ID Y
saX	States Sensors and actuators with ID X

1. Operators & functions

Syntax	Explanation
(...)	Parentheses
&&	Logical AND
	Logical OR
==	Equal
!=	Not Equal
+	Addition
-	Subtraction
*	Multiplication
/	Division
>	Superior
>=	Superior or Equal
<	Inferior
<=	Inferior or equal
\$minute()	Minute part of the actual time
\$hour()	Hour part of the actual time
\$day()	Integer indicating the day of the month
\$dayofweek()	Integer indicating the day of the week. This integer ranges from zero =>indicating Sunday, to six=> indicating Saturday
\$dayofyear()	Integer indicating the day of the year
\$month()	Integer indicating the month of the year
\$year()	Integer indicating the year
\$time()	The actual time of the day

Syntax	Explanation
@ts(XXXXX)	Create a timespan variable from XXXX string. Example: @ts(11:30) corresponds to 11h:30.
\$iif(condition, val if true, val if false)	Equivalent to “If then else”

2. Using data and alarm entries from a monitored device

Syntax	Explanation
@(dataXXX) , @(daXXX)	The data with id XXX of the relative equipment Example: @(data501), @(da501)
@(dcY_dataXXX)	The data with id XXX relative to the dc system with id Y. Example: @(dc1_data60)- Denotes voltage data with id data60 from dc system 1
@(saY_dataXXX)	The data with id XXX relative to the Sensors And Actuators with id Y. Example:@(sa1_data101) – Denotes voltage measured with data id 101 from Sensors and actuators with ID 1
@(alarmXXX) , @(alXXX)	The alarm with id XXX of the relative equipment Example: @(alarm501), @(al501) – Denotes Alarm ID 501.
@(convsY_alXXX)	The alarm with id XXX of the relative equipment Example: @(convs1_al103) – Denotes Alarm ID 103 from converter system 1.
@(dcY_alarmXXX)	The data with id XXX relative to the dc system with id Y. Example: @(dc1_data202) is the bus voltage with data ID202 of the DC System 1.
@(saY_alarmXXX)	The data with id XXX relative to the Sensors And Actuators with id Y. Example: @(sa1_alarm501) – Denotes alarm with ID 501 from Sensors and actuators with ID 1

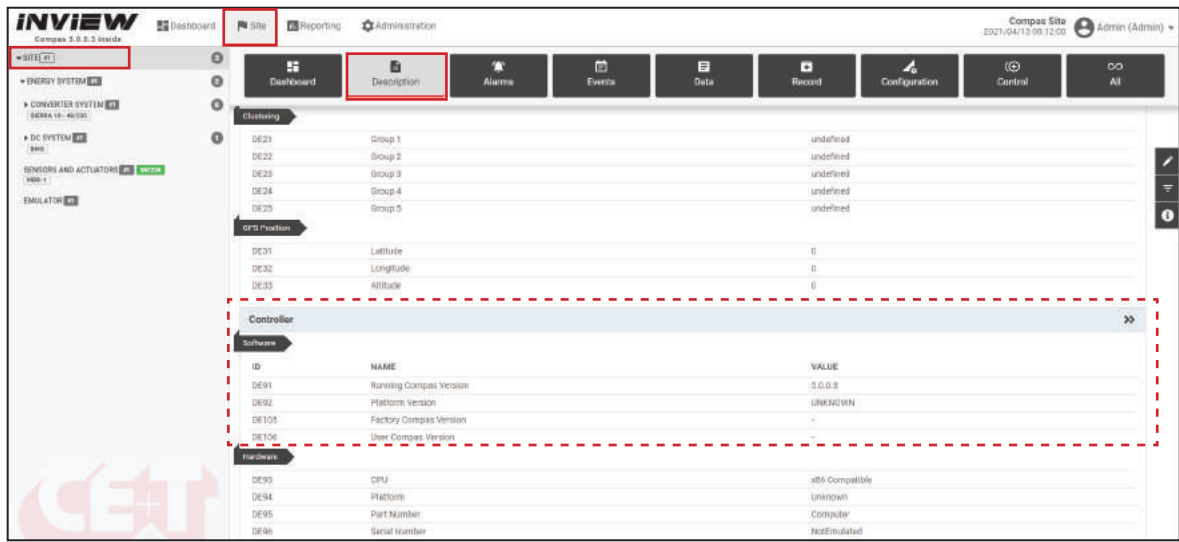
12.1.2 Examples of Basics Expressions

Condition or Data	Configuration examples
The bus voltage is under 47V.	@(data11)<47
If the specific inverter output power is over 2500W	@(convs1_co1_data13)>2500
The time of the day is comprised between 10:30 and 11:30	(\$time())>@ts(10:30)&&(\$time())<@ts(11:30))
The day of the week is Sunday	\$dayofweek()==0
The alarm with id 17 is active	@(alarm17) ==True
The alarm with id 17 and 18 are active	@(alarm17) ==True && @(alarm18) ==True
Linking Digital input with relay	<ul style="list-style-type: none"> • If Digital input 3 is closed then relay K3 need to be energized. <ul style="list-style-type: none"> ▪ D3 alarm ID from Inview: al511 ▪ Boolean expression set at relay : @(sa1_al511) • Mode: Custom; Boolean Expression: @(sa1_al511)

Condition or Data	Configuration examples
Linking Specific alarm with Relay	<ul style="list-style-type: none"> • If Redundancy lost alarm need to be configured with relay <ul style="list-style-type: none"> ③ Redundancy lost alarm ID from Inview: al103 ③ Boolean expression need to be set at relay: @(convs1_al103) • Mode: Custom; Boolean Expression: @(convs1_al103)
For specific data range higher or lower value.	<ul style="list-style-type: none"> • When the battery voltage reaches below 45.00v <ul style="list-style-type: none"> ③ Battery voltage measurement displayed at: sensors and actuators > Data> da101 ③ Boolean expression need to be set at relay: @(sa1_al101)<45.00 • Relay Mode: Custom; Boolean Expression: @(sa1_da101)<45.00

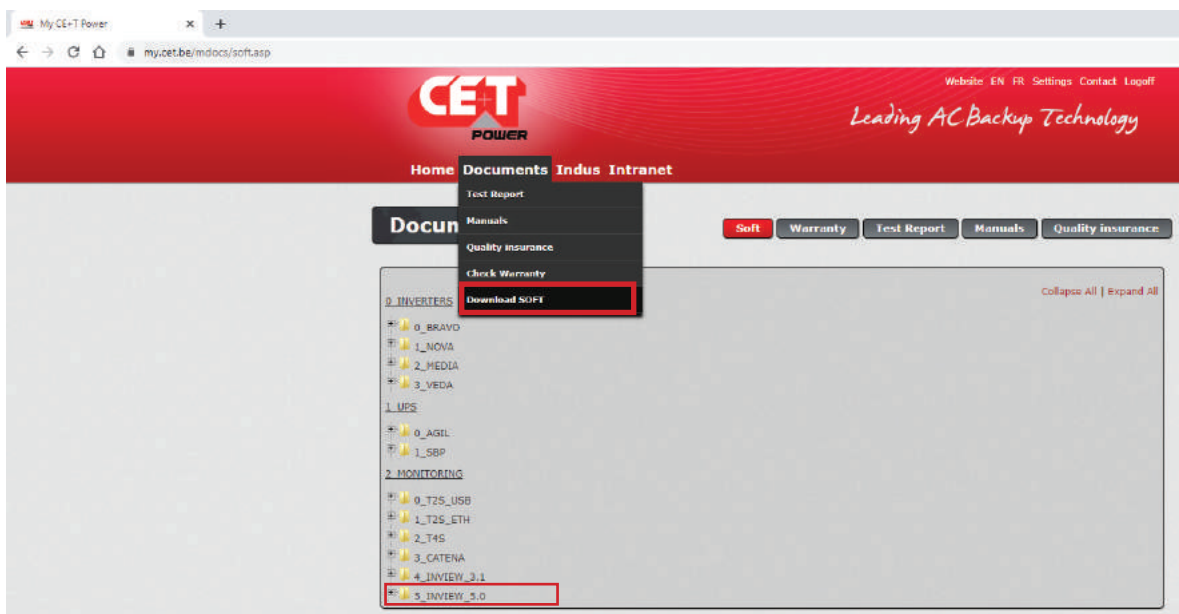
13. Annex 2: Inview 5 - Software Upgrade

The current software version number will be present below the Inview logo on the webpage. To know more about software details, go to [Site > Description](#) and scroll down to the Controller section



Perform the following steps to upgrade Inview 5 software, and this process can do only through the web interface.

- Go to my.cet-power.com > [Documents](#) > [Download SOFT](#) > [2_MONITORING](#) (link) and download the latest software from the 5_INVIEW_X.0 folder. The downloaded file will be ".RAR", extract and save it in local as ".UPG" extension.



4. Login as admin privileged account in the Inview 5 web interface and go to [Administration > Software Update](#).



5. Click “Choose file” button and direct to the downloaded .UPGfile and the Click “Upload, save configuration and reboot” button.



6. Wait, the upgrading process will take approximately 15 minutes to return to normal operating conditions.
7. After successful up-gradation, the web interface resumes to the login screen. Login and verify the Software version below the Inview logo or go to the [Controller](#) section at [Site > Description](#) page.

14. Annex 3: Hardware replacement

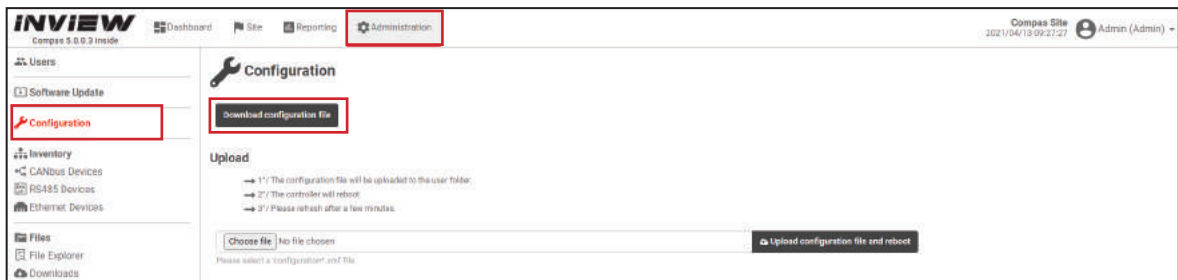
14.1 Inview Slot, S and X

Before replacing the new Inview Slot, S or X, the existing configuration file must be saved and need to upload the same after installing the new controller.

Perform the following steps for replacing Inview Slot, S or X:

1. Login as admin privileged account, go to *Administration > Configuration*, click “Download configuration file” button, and save the file in local.

Note: The downloaded file name will be as “configuration.xml” and it should not be renamed.



2. Remove the existing controller and install the new controller. To know about installing it and its hardware connections, refer to the section “5. Installation”, page 14.
3. Power on the controller and login as admin privileged account.
4. Go to *Administration > Configuration*, click “Choose file” button, and direct to the downloaded “configuration.xml” file. Then click “Upload configuration and reboot” button.



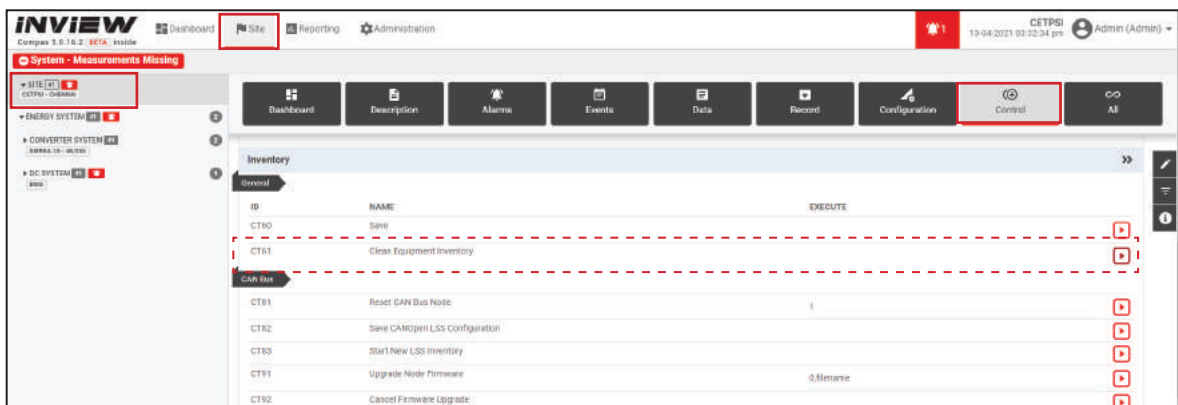
14.2 Accessories - MBB and UMB

Perform the following steps for replacing MBB and UMB:

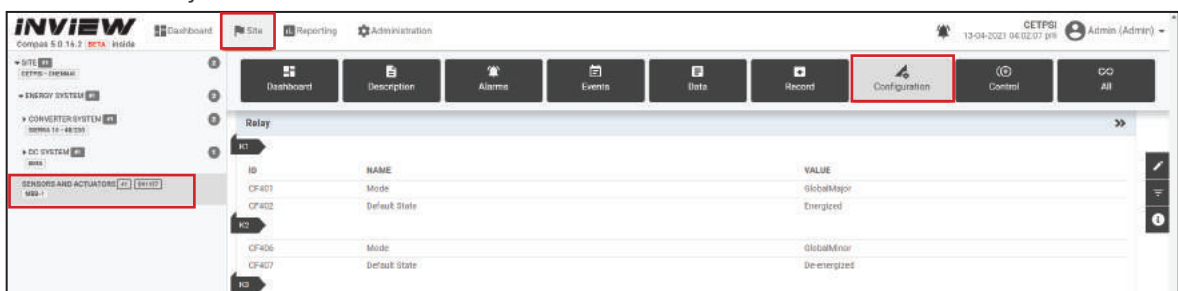
1. Remove the existing MBB/UMB from the system.
2. Clear from the accessories list go to [Dashboard > Power system > Accessories](#) and click “REMOVE MISSING ACCESSORIES” button to clear it from the list.



3. Clear from the inventory list go to [Site > Control](#), scroll down to the [Inventory](#) section. In the ID CT61 (Clean Equipment Inventory), click the icon to clear it from the list.

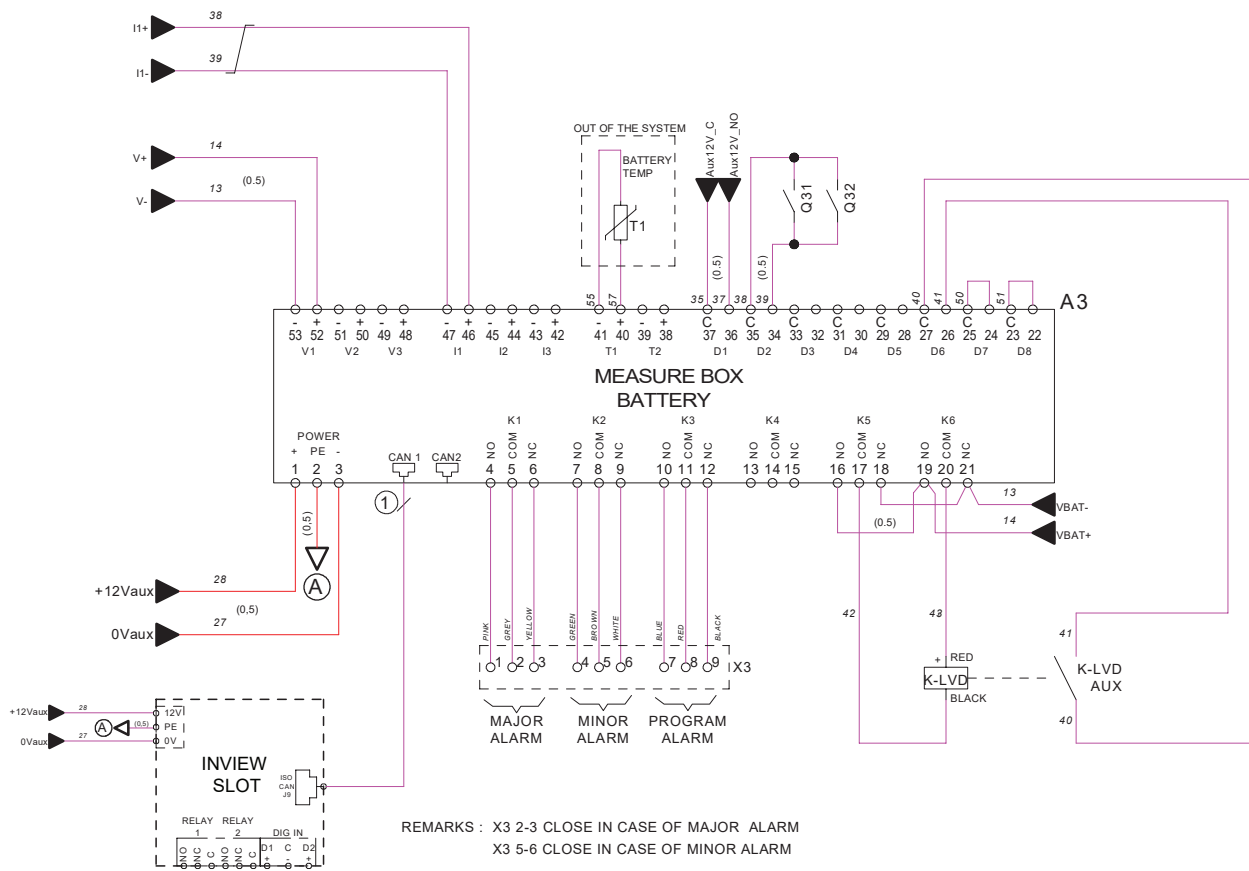


4. Connect the new MBB/UMB in the system. To know about the hardware connections, refer to the section “5.5 Hardware Connections”, page 16.
5. Once the MBB/UMB is powered on, make sure it was detected and listed in the Accessories list ([Dashboard > Power system > Accessories](#))
6. Go to [Site > Sensors and Actuators](#), scroll down to [Relay](#) and [Digital Input](#) section, and verify the mappings are done correctly.

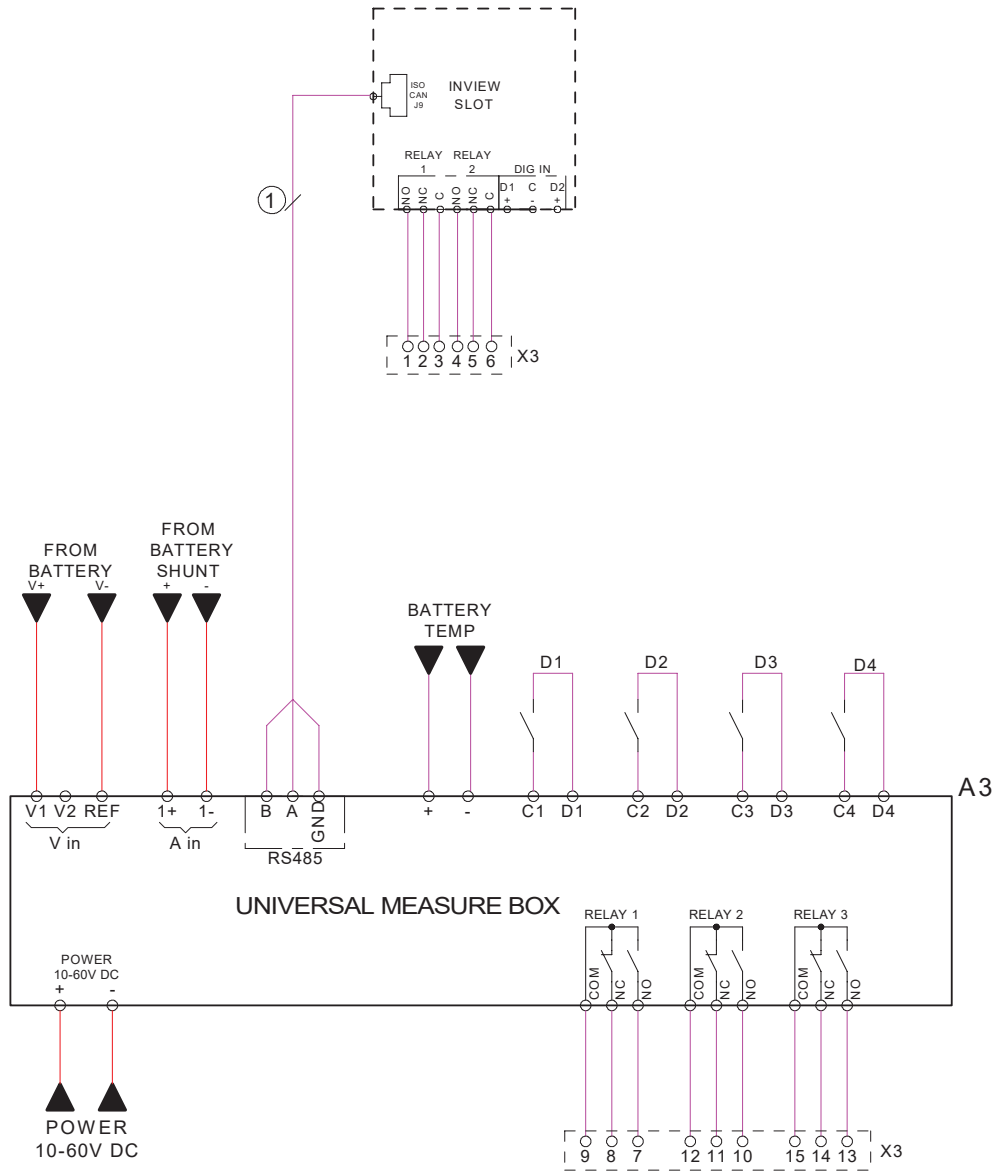


15. Annex 4: Wiring Diagrams

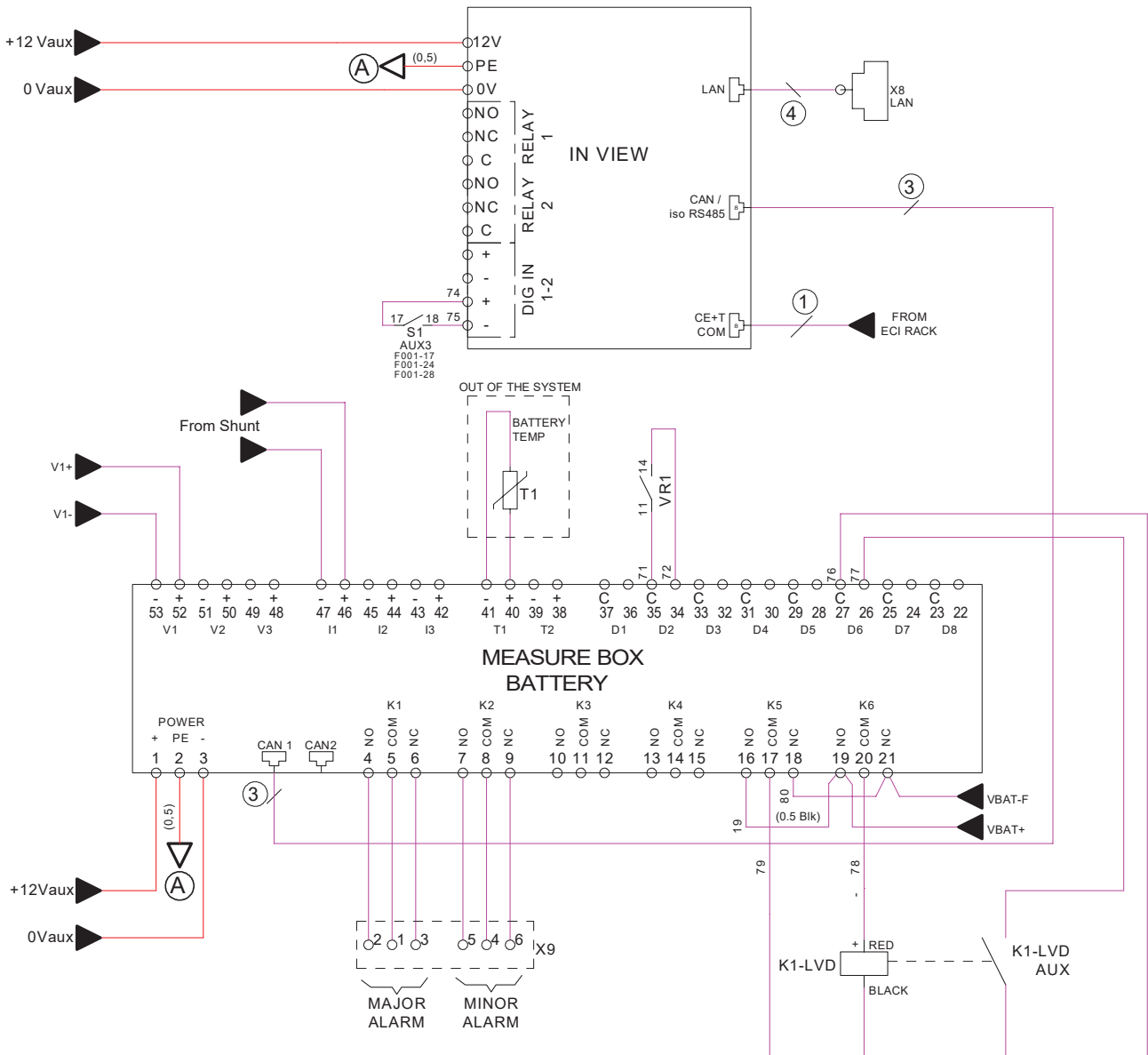
15.1 Inview Slot with MBB



15.2 Inview Slot with UMB

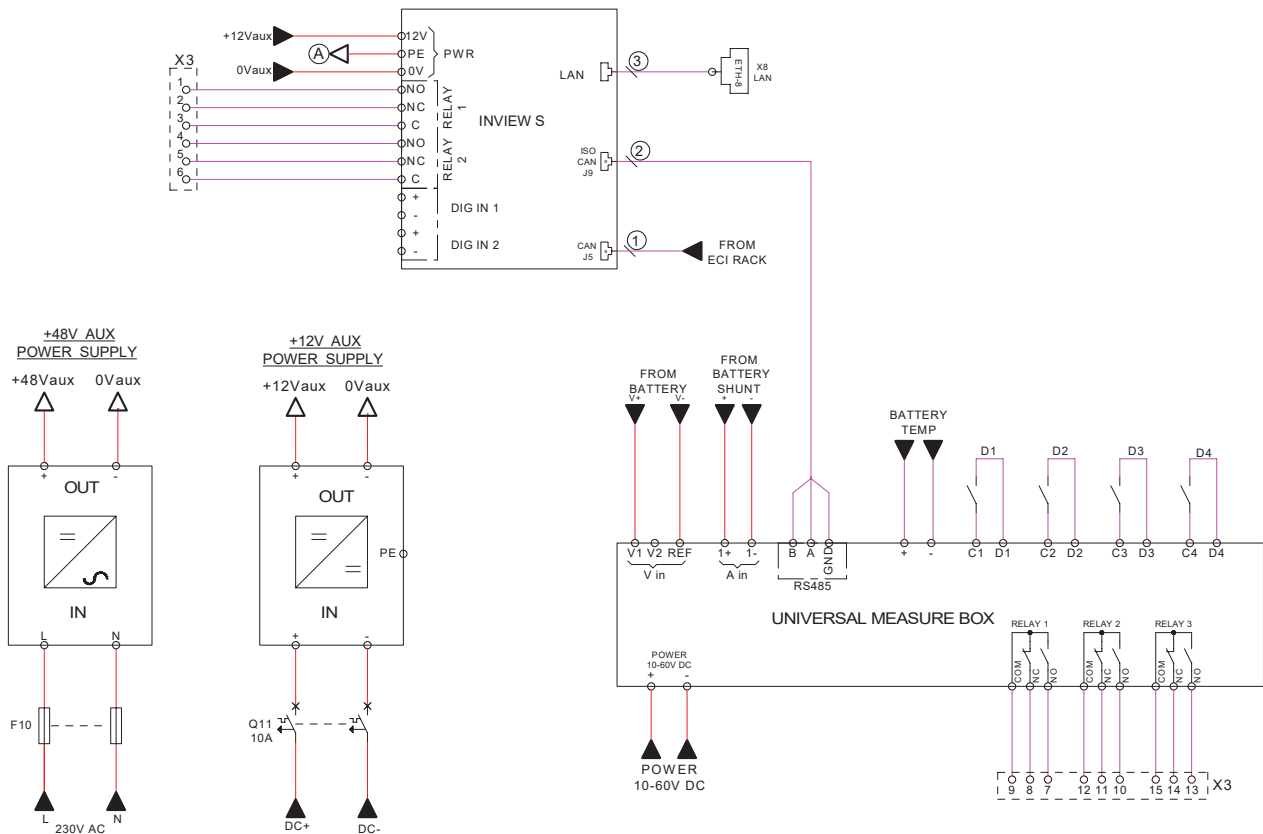


15.3 Inview S with MBB

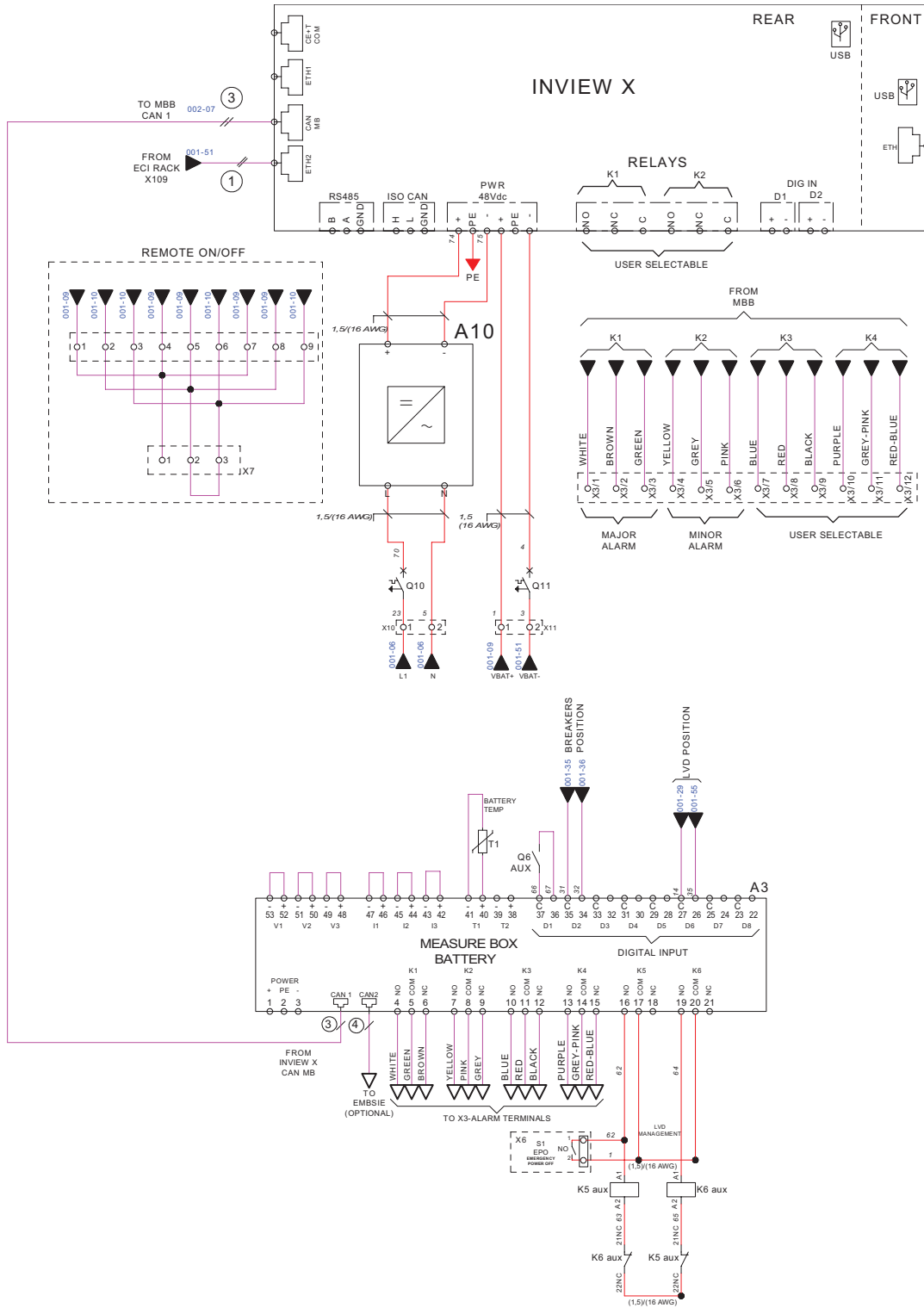


REMARKS : X9 2-3 CLOSE IN CASE OF MAJOR ALARM
X9 5-6 CLOSE IN CASE OF MINOR ALARM

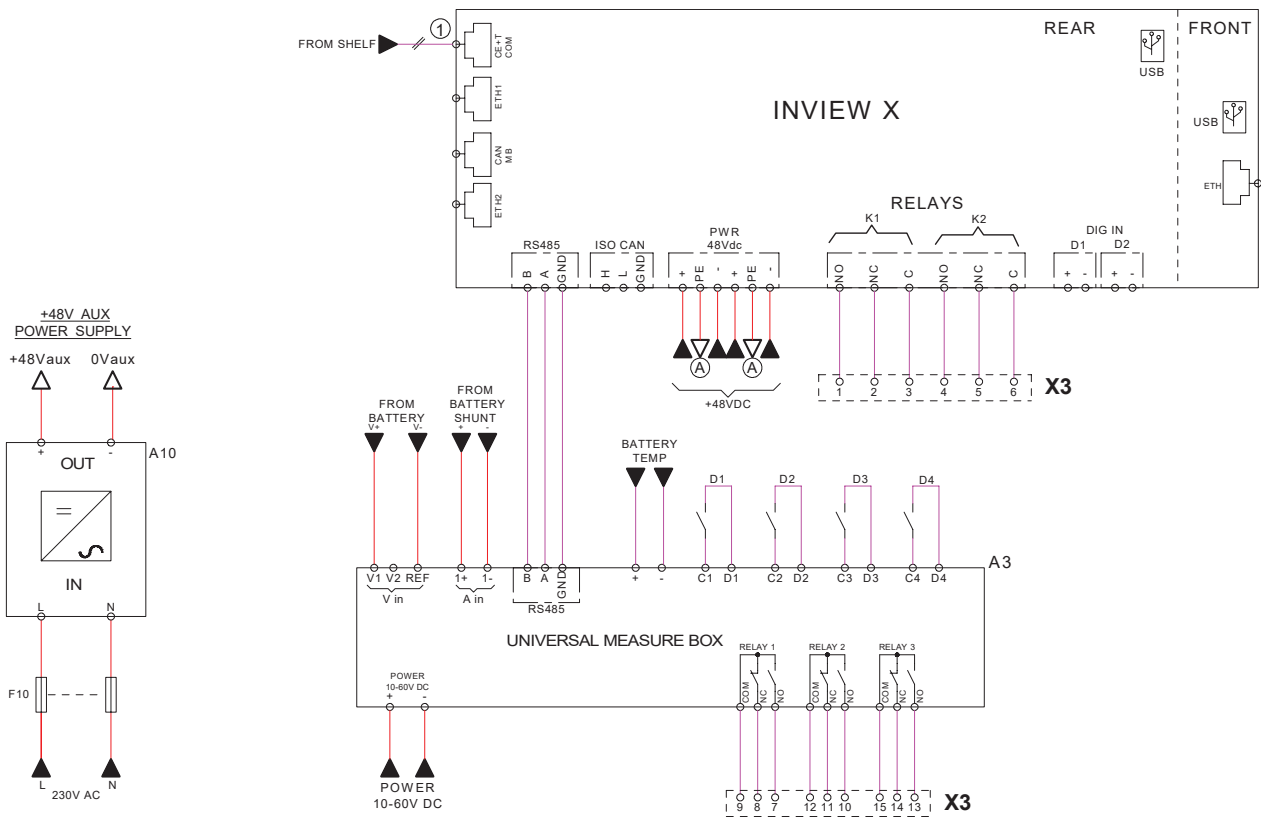
15.4 Inview S with UMB



15.5 Inview X with MBB



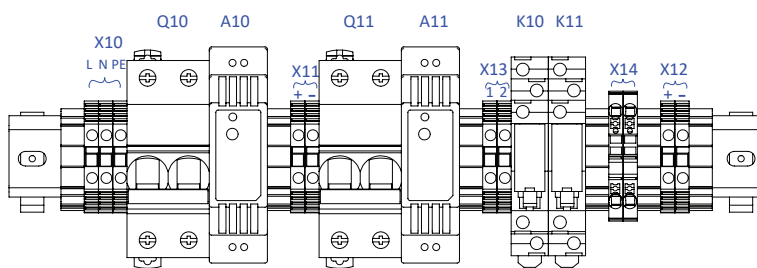
15.6 Inview X with UMB



16. Annex 3: Auxiliary power supply kit

16.1 Auxiliary power supply kit with Din Rail

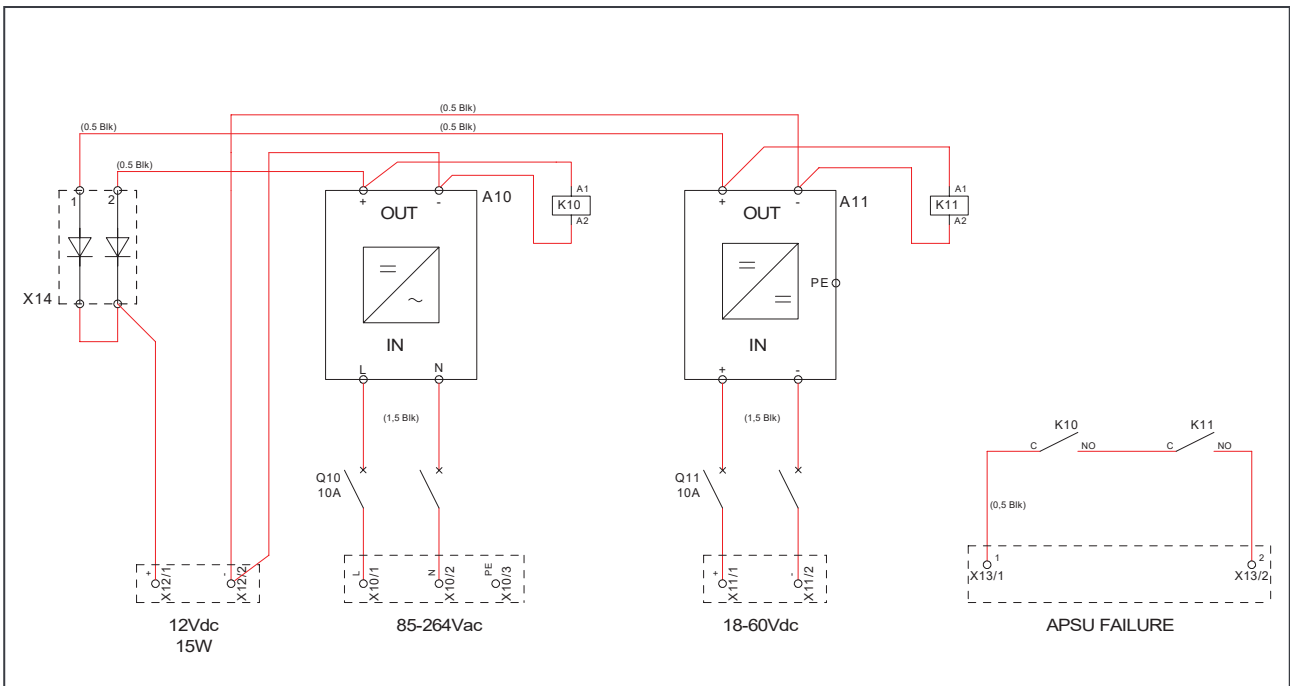
Part number T602004120



- X10 - AC input terminal (1P)
- X11 - DC input terminal (Battery voltage)
- X12 - DC Output terminal (12 V DC)
- X13 - Alarm contact for Aux power supply unit fail

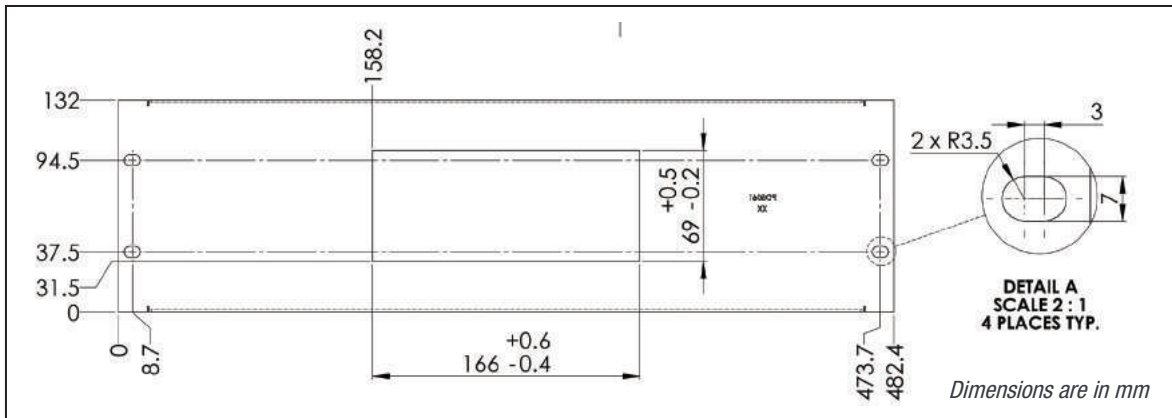
Front View

16.2 Auxiliary power supply kit - Wiring diagram

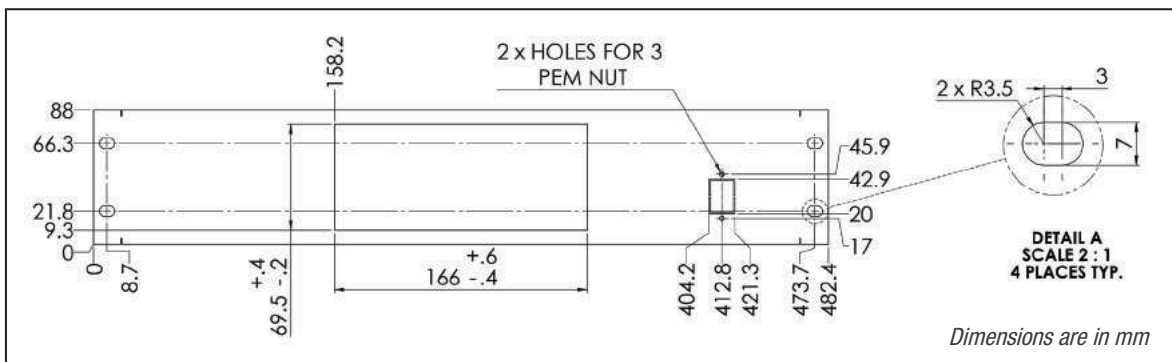


17. Annex 4: Inview Panel Sheets

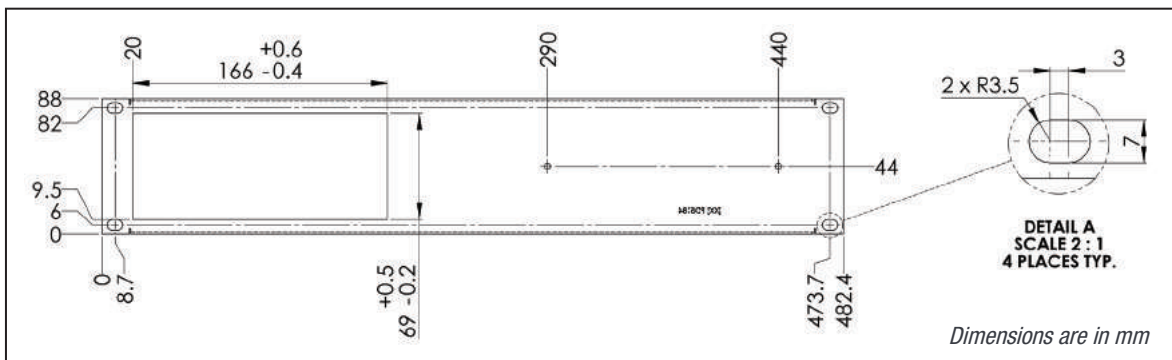
17.1 Inview S - Panel Sheets



3U Panel sheet - cut out details



2U Panel sheet (center)- cut out details



2U Panel sheet (left)- cut out details

17.2 Inview X - Panel sheet

