Galaxy VL 1600-2000 kW UPS System

Operation

Latest updates are available on the Schneider Electric website

6/2025

www.se.com

Legal Information

The information provided in this document contains general descriptions, technical characteristics and/or recommendations related to products/solutions.

This document is not intended as a substitute for a detailed study or operational and site-specific development or schematic plan. It is not to be used for determining suitability or reliability of the products/solutions for specific user applications. It is the duty of any such user to perform or have any professional expert of its choice (integrator, specifier or the like) perform the appropriate and comprehensive risk analysis, evaluation and testing of the products/solutions with respect to the relevant specific application or use thereof.

The Schneider Electric brand and any trademarks of Schneider Electric SE and its subsidiaries referred to in this document are the property of Schneider Electric SE or its subsidiaries. All other brands may be trademarks of their respective owner.

Schneider Electric does not grant any right or license for commercial use of the document or its content, except for a non-exclusive and personal license to consult it on an "as is" basis.

Schneider Electric reserves the right to make changes or updates with respect to or in the content of this document or the format thereof, at any time without notice.

To the extent permitted by applicable law, no responsibility or liability is assumed by Schneider Electric and its subsidiaries for any errors or omissions in the informational content of this document, as well as any non-intended use or misuse of the content thereof.

Table of Contents

Important Safety Instructions — SAVE THESE INSTRUCTIONS

Read these instructions carefully and look at the equipment to become familiar with it before trying to install, operate, service or maintain it. The following safety messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety message indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages with this symbol to avoid possible injury or death.

⚠DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

Failure to follow these instructions will result in death or serious injury.

⚠WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

Failure to follow these instructions can result in injury or equipment damage.

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.

Failure to follow these instructions can result in equipment damage.

Please Note

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

FCC Statement

NOTE: The individual equipment in this UPS system have been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Safety Precautions

⚠⚠DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH

All safety instructions in this document must be read, understood and followed.

Failure to follow these instructions will result in death or serious injury.

⚠⚠DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH

After the UPS system has been electrically wired, do not start up the system. Start-up must only be performed by Schneider Electric.

Failure to follow these instructions will result in death or serious injury.

⚠CAUTION

RISK OF HOT SURFACE

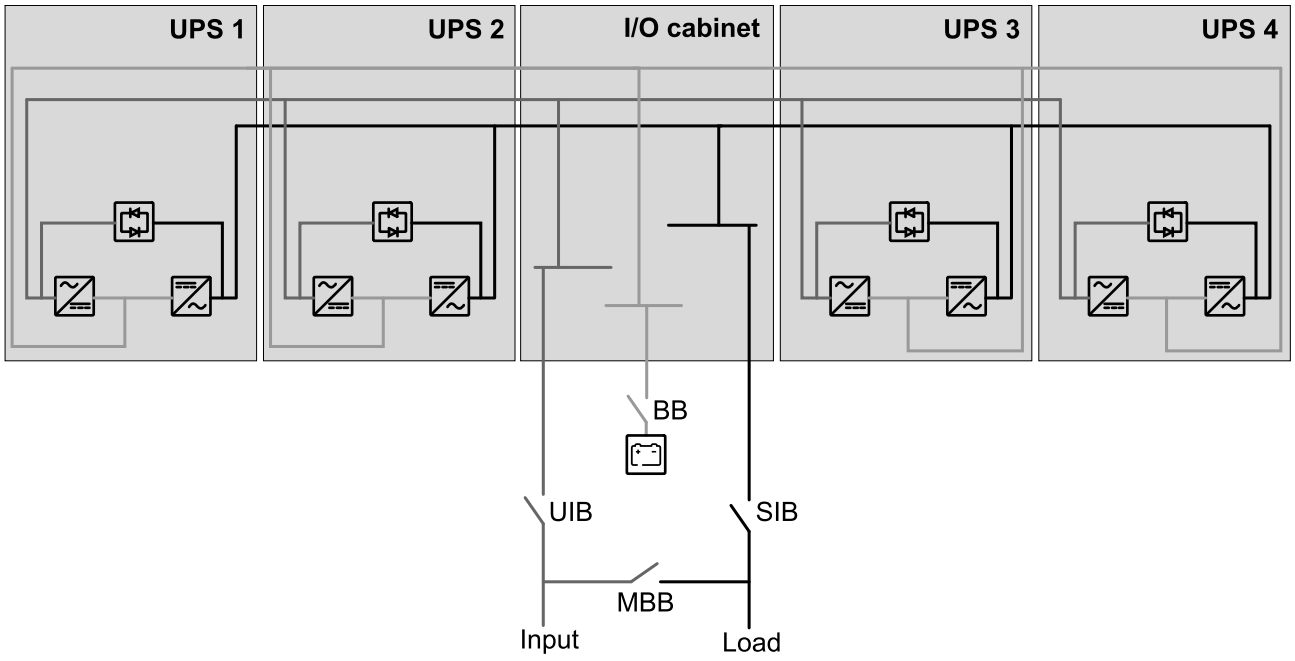
The outer plates of the cabinet can exceed temperatures of 65 °C (149 °F) at 50 °C (122 °F) ambient room temperature, if the air filter(s) in the front door is clogged. Replace the air filter regularly as described in the UPS operation manual.

Failure to follow these instructions can result in injury or equipment damage.

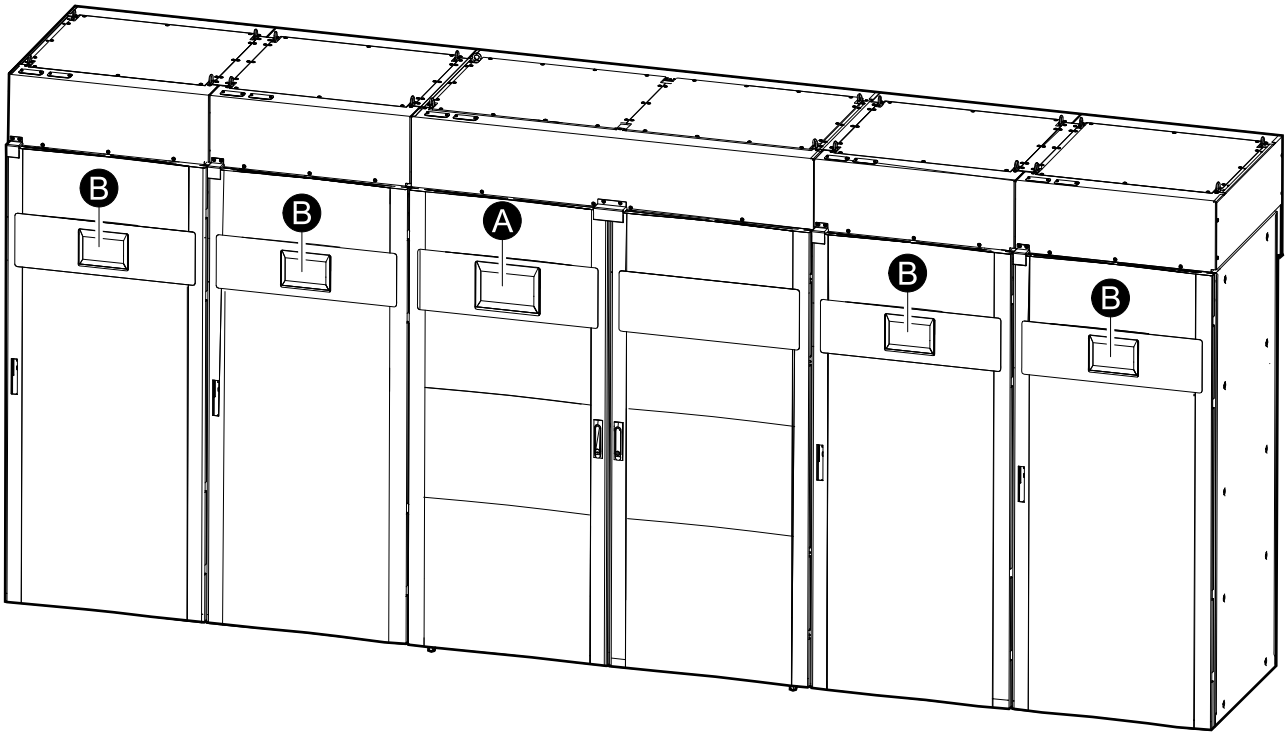
System Overview

UIB	Unit input disconnect device
SIB	System isolation disconnect device
MBB	Maintenance bypass disconnect device
BB	Battery disconnect device

NOTE: In Schneider Electric literature, 'disconnect device' is used as a generic term covering circuit breakers or switches as their position may vary depending on configuration. Details about the individual configuration are found in the electrical diagram and/or by reading the symbol on the front of each disconnect device.



Overview of the UPS System User Interface



A. **Centralized UPS system display**

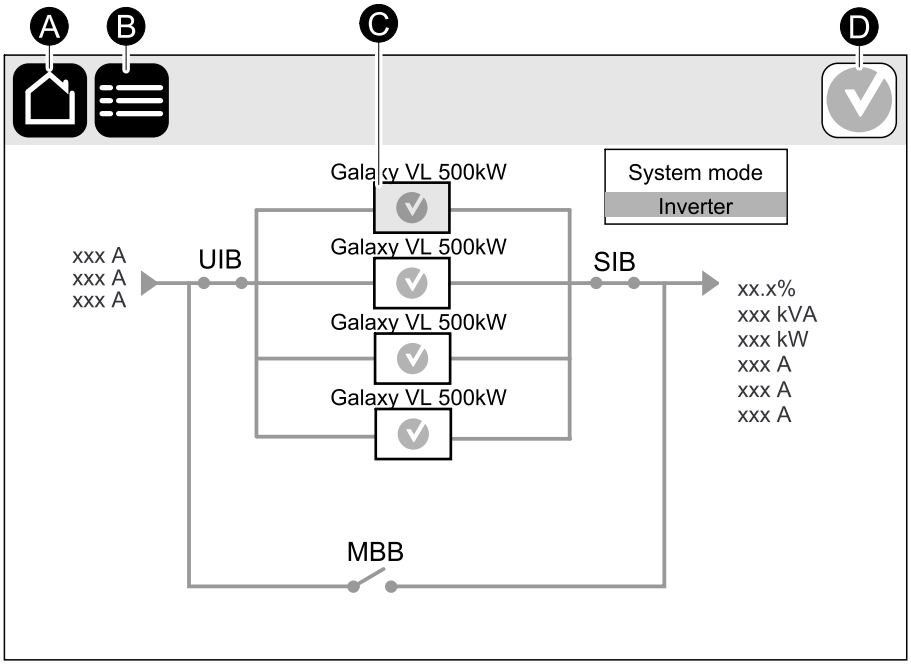
The centralized UPS system display can be used to view the status and measurements for each of the UPSs in the system and to transfer the entire UPS system between double-conversion (normal) and bypass operation. You can also configure the external disconnect devices (present/not present) and view their status. Logs and alarms are also visible in the centralized UPS system display. See Centralized UPS System Display on the I/O Cabinet – User Interface, page 9, UPS System Configuration, page 16, and Operation Procedures for the UPS System, page 44 for details.

B. **Individual UPS display**

The individual UPS display shows the status and measurements for the individual UPS. Individual UPS configuration is available from this display, as well as individual UPS operation and alarms/logs. See Individual UPS Display – User Interface, page 12, Individual UPS Configuration, page 19, and Operation Procedures for the Individual UPSs, page 56 for details.

Centralized UPS System Display on the I/O Cabinet – User Interface

Overview of the Home Screen on the Centralized UPS System Display in the I/O Cabinet



A. Home button - tap this button on any screen to return to the home screen.

B. Main menu button - tap this button on any screen to access the menus. See Menu Tree, page 11 for details.

C. Mimic diagram button - tap on the gray UPS to see the mimic diagram on UPS level. See Mimic Diagram on the Centralized UPS System Display in the I/O Cabinet, page 10 for details.

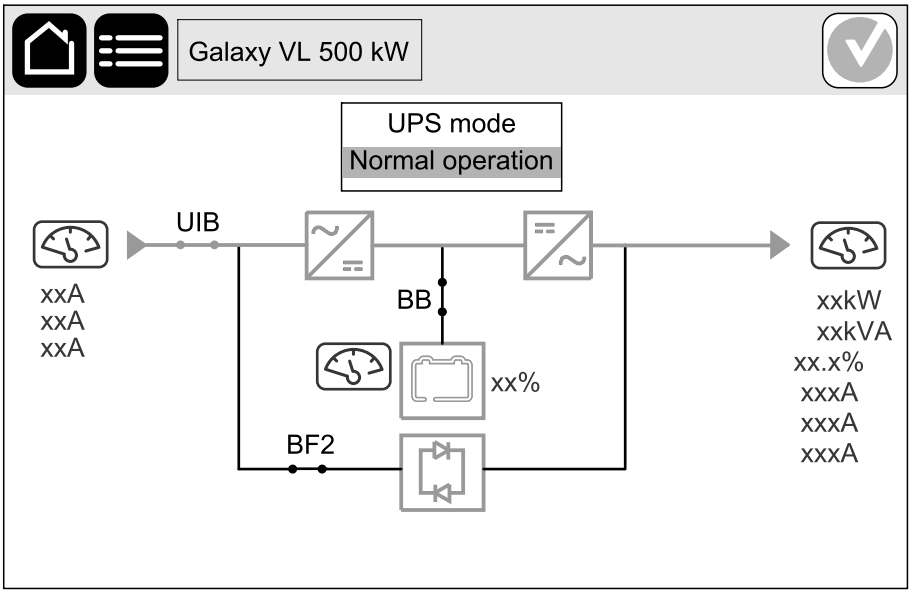
D. Alarm status symbol - tap this button on any screen to access the active alarms log. See Alarm Status Symbol, page 11 for details.

Mimic Diagram on the Centralized UPS System Display in the I/O Cabinet

The home screen shows the mimic diagrams for parallel systems. Tap on each UPS to see the mimic diagram on UPS level.

The mimic diagram will adapt to your system configuration – the mimic diagram shown here is just an example.

Example of Mimic Diagram on UPS Level



The green power line (gray in illustration) in the mimic diagram shows the power flow through the UPS system. Active modules (inverter, rectifier, battery, static bypass switch, etc.) are framed in green and inactive modules are framed in black. Modules framed in red are inoperable or in an alarm condition.

NOTE: The mimic diagram only shows one battery disconnect device BB even if more battery disconnect devices have been connected and configured for monitoring. If one or more of the monitored battery disconnect devices are in the closed position, the BB on the mimic diagram will show as closed. If all of the monitored battery disconnect devices are in the open position, the BB on the mimic diagram will show as open.

Menu Tree

- **Configuration**[1]
  - **System**
  - **Display**
- **Logs**
- **Communication**
- **Control**
- **External breakers**
- **About**
- **Logout**

Some menus contain more submenus than described in this manual. These submenus are grayed out and are only for use by Schneider Electric to avoid unwanted load impacts. Other menu items can also be grayed out/not shown on the display if they are not relevant or not released yet for this particular UPS system.

Alarm Status Symbol

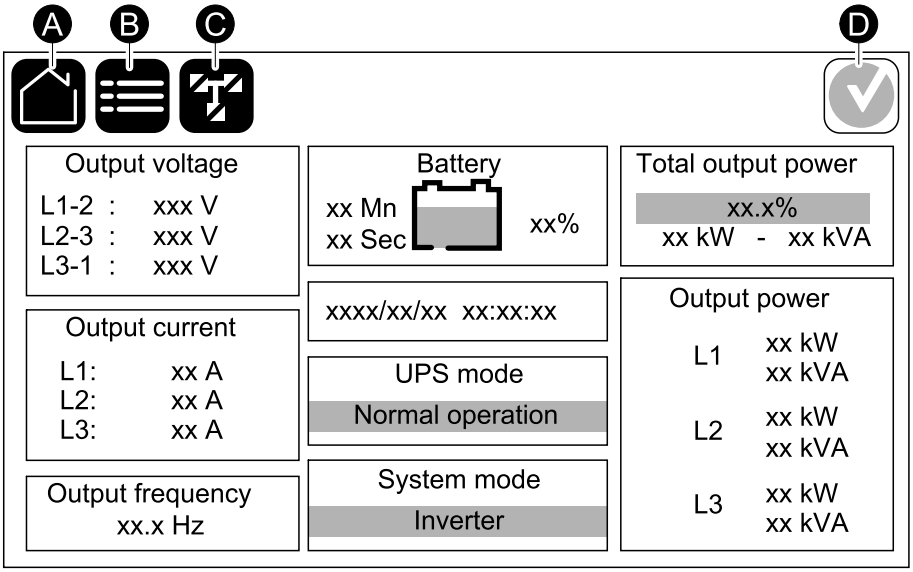
The alarm status symbol (gray in illustration) in the top right corner of the display changes depending on the alarm status of the UPS system.

	Green: No alarms present in the UPS system.
	Blue: Informational alarm(s) present in the UPS system. Tap the alarm status symbol to open the active alarms log.
	Yellow: Warning alarm(s) present in the UPS system. Tap the alarm status symbol to open the active alarms log.
	Red: Critical alarm(s) present in the UPS system. Tap the alarm status symbol to open the active alarms log.

1. This menu requires administrator login to access.

Individual UPS Display – User Interface

Overview of the Home Screen on the Individual UPS Display



A. Home button - tap this button on any screen to return to the home screen.

B. Main menu button - tap this button on any screen to access the menus. See Menu Tree, page 13 for details.

C. Mimic diagram button - tap this button on any screen to access the mimic diagram. See Mimic Diagram on the Individual UPS Display, page 12 for details.

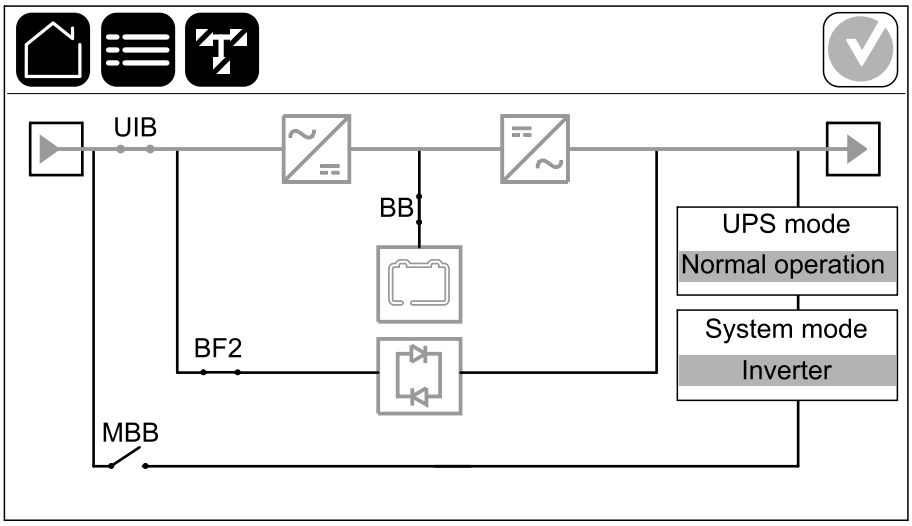
D. Alarm status symbol - tap this button on any screen to access the active alarms log. See Alarm Status Symbol, page 11 for details.

You can tap on the output or battery fields on the home screen to go directly to the detailed measurement pages.

Mimic Diagram on the Individual UPS Display

The mimic diagram will adapt to your system configuration – the mimic diagrams shown here are just examples.

Example of the Mimic Diagram



The green power line (gray in illustration) in the mimic diagram shows the power flow through the individual UPS. Active modules (inverter, rectifier, battery, static bypass switch, etc.) are framed in green and inactive modules are framed in black. Modules framed in red are inoperable or in an alarm condition.

NOTE: The mimic diagram only shows one battery disconnect device BB even if more battery disconnect devices have been connected and configured for monitoring. If one or more of the monitored battery disconnect devices are in the closed position, the BB on the mimic diagram will show as closed. If all of the monitored battery disconnect devices are in the open position, the BB on the mimic diagram will show as open.

Menu Tree

- **Status**
  - **Input**
  - **Output**
  - **Bypass**
  - **Battery**
  - **Temperature**
  - **Power modules**
  - **Peak shaving**
  - **Parallel**[2]
- **Logs**
- **Control**[3]
  - **Operation mode**
  - **Inverter**
  - **Charger**
  - **Guided sequences**

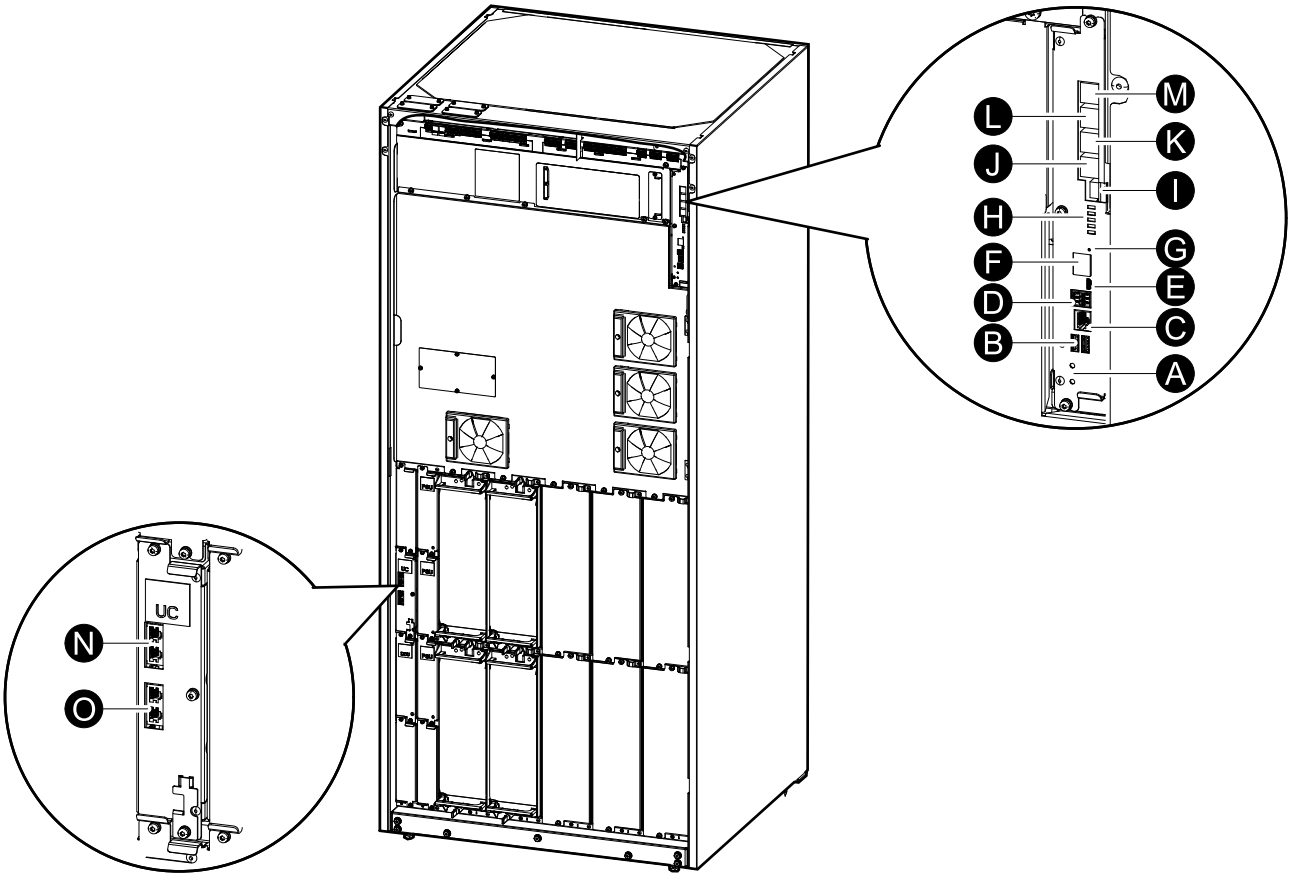
2. This menu is only available in a parallel system.
3. This menu requires administrator login to access.

- **Configuration**[4]
  - **UPS**
  - **Output**
  - **Battery**
    - **Standard**
      - ◊ **General settings**
    - **Custom**
      - ◊ **General settings**
      - ◊ **Specific settings**
  - **High efficiency**
    - **Schedule**
  - **Grid interactive UPS**
    - **Protected Modbus**
  - **Breakers**
  - **Contacts and relays**
  - **Network**
  - **Modbus**
  - **General**
  - **Reminder**
  - **Save/restore**
  - **Update status**
- **Maintenance**
  - **Buzzer**
  - **Status LEDs**
  - **Breaker lamp**
  - **Battery**[4]
  - **Runtime calibration**[4]
  - **Battery replacement**[4]
  - **Battery SPoT mode**[4]
  - **UPS report**[4]
- **Statistics**
- **About**
- **Logout**
- Flag button – Tap this button to set the display language.

Some menus contain more submenus than described in this manual. These submenus are grayed out and are only for use by Schneider Electric to avoid unwanted load impacts. Other menu items can also be grayed out/not shown on the display if they are not relevant or not released yet for this particular UPS system.

4. This menu requires administrator login to access.

System Level Controller (SLC) and Unit Controller (UC) Overview



A. Inverter ON/OFF buttons
B. USB ports[5]
C. Universal I/O[5]
D. Modbus port[5]
E. USB Micro-B port[5]
F. Network port[5]
G. Reset button[5]
H. Status LEDs[6]
I. Display power supply
J. Display port
K. Service port[7]
L. EXT port
M. For future use
N. PBUS 1[8]
O. PBUS 2[8]

5. Built-in network management card.
6. See Status LED Lighting per UPS Operation Mode, page 68.
7. The service port can only be used by a Schneider Electric Field Service Representative with approved Schneider Electric tools to configure the unit, retrieve logs, and upgrade firmware. The service port cannot be used for any other purpose. The service port is only active when the Field Service Representative is within physical proximity to the UPS and manually activates the connection. Do not connect to a network. The connection is not intended for network operation and may cause inoperability of the network.
8. Do not disconnect during operation of the UPS. Do not connect to a network. The connection is not intended for network operation and may cause inoperability of the network.

UPS System Configuration

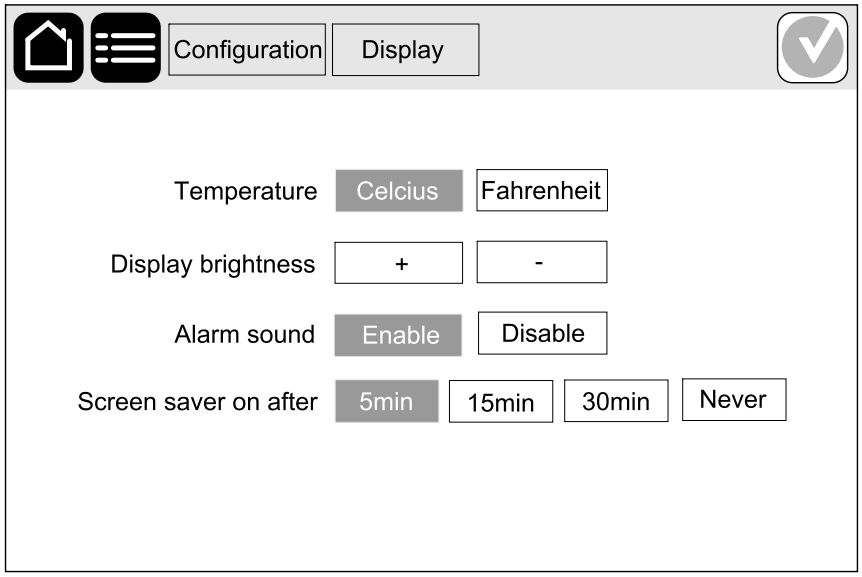
The configurations described in this section are performed from the centralized UPS system display on the I/O cabinet and affect the entire UPS system.

Set the Display Language

1. Tap the flag button on the main menu screen.
2. Tap your language.

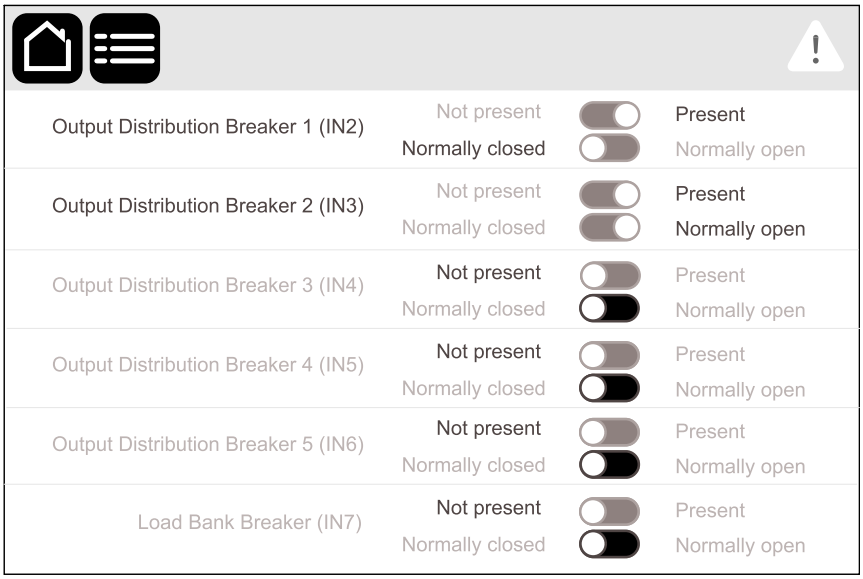
Configure the Display Preferences

1. On the main menu screen, tap **Configuration > Display**.
   a. Set the temperature unit to **Celsius** or **Fahrenheit**.
   b. Tap the - or + to set the display brightness.
   c. Set the **Alarm sound** to **Enable** or **Disable**. This will enable/mute all alarm sounds.
   d. Select the wait time to activate the screen saver: **5min**, **15min** or **30min**. Or select **Never** to disable the screen saver.



Configure the External Disconnect Devices

1. On the main menu screen, tap **Configuration > External breakers**.
   a. Tap the buttons to configure which disconnect devices are **Present** or **Not Present**.
   b. Tap the button to configure the disconnect devices as **Normally closed** or **Normally open**.



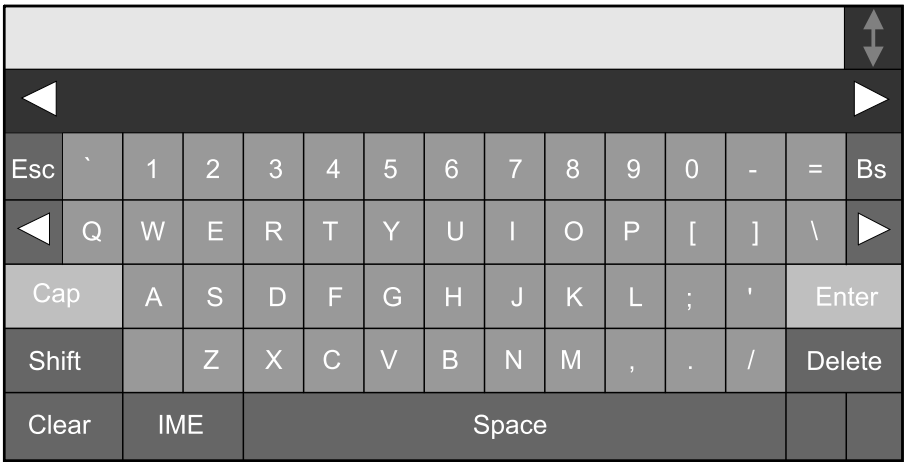
Change the Password

NOTE: Schneider Electric recommends to change the password on first login for better cybersecurity.

1. Tap **Configuration**.
2. Enter your password.

   NOTE: The default administrator username and password is **admin**.
3. Tap **Change password** and enter the new password.

Access Password-Protected Screens



1. When prompted for the password, tap the **User Name** field to access the keyboard.
2. Tap the username field, type in your username, and tap **Enter**.

   NOTE: The default administrator username and password is **admin**.

   NOTE: Schneider Electric recommends to change the password on first login for better cybersecurity.
3. Tap the **Password** field, type in your password, and tap **Enter**.
4. Tap **Login**.

Individual UPS Configuration

The configurations described in this section are performed from the display on the individual UPSs and only affect the individual UPS.

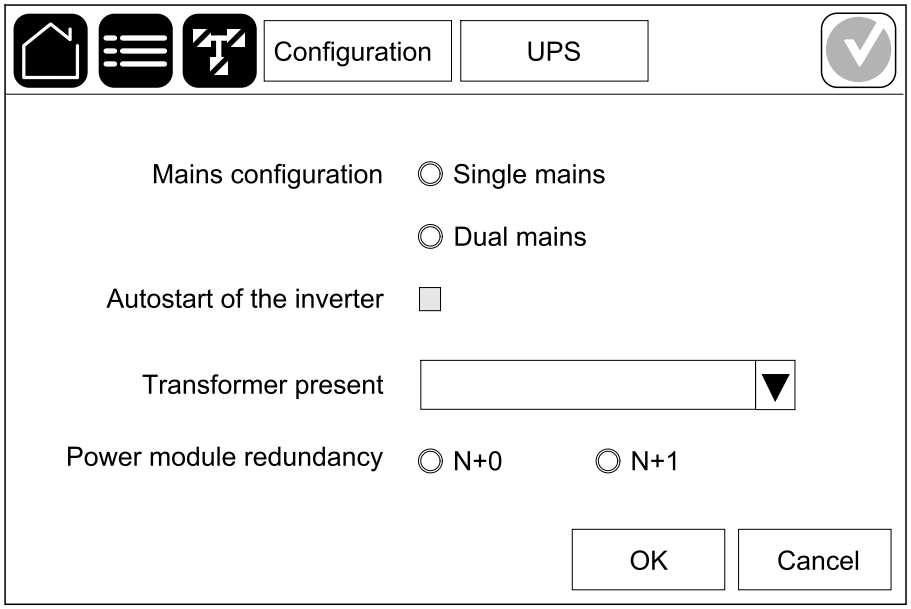
Set the Display Language

1. Tap the flag button on the main menu screen.
2. Tap your language.

Configure the UPS Input

NOTE: This configuration is mandatory for correct UPS operation.

1. Tap **Configuration > UPS**.
2. Set the **Mains configuration** to **Single mains** .



3. Select **Autostart of the inverter** if you want to enable this function. When **Autostart of the inverter** has been enabled, the inverter will start up automatically when input voltage returns, after a shutdown due to drained battery.

   NOTE: Autostart of the inverter is not allowed in a parallel system.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Always perform correct Lockout/Tagout before working on the UPS. A UPS with autostart enabled will automatically restart when the mains supply returns.

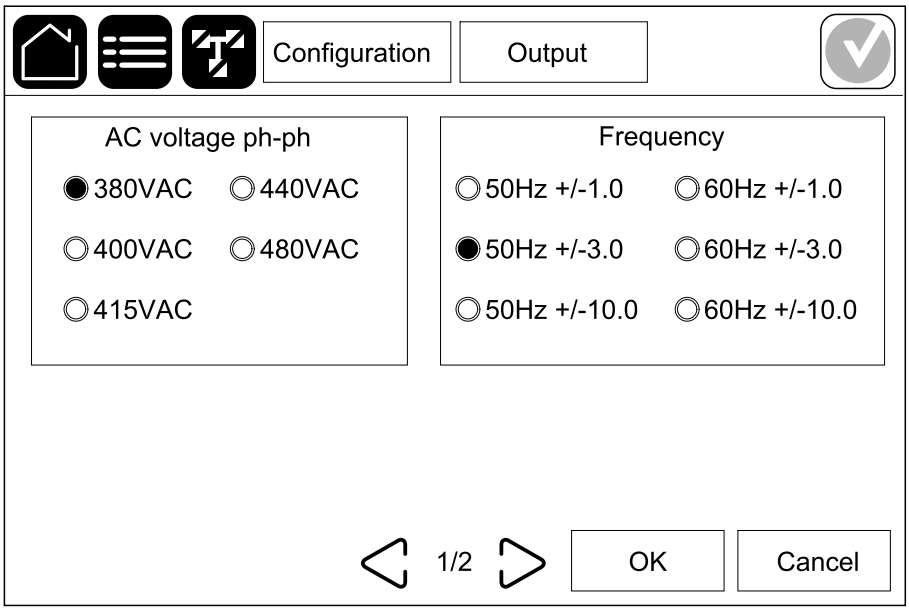
Failure to follow these instructions will result in death or serious injury.

4. Set **Transformer present** to **No transformer present**.
5. Set **Power module redundancy** to **N+0** or **N+1**.
6. Tap **OK** to save your settings.

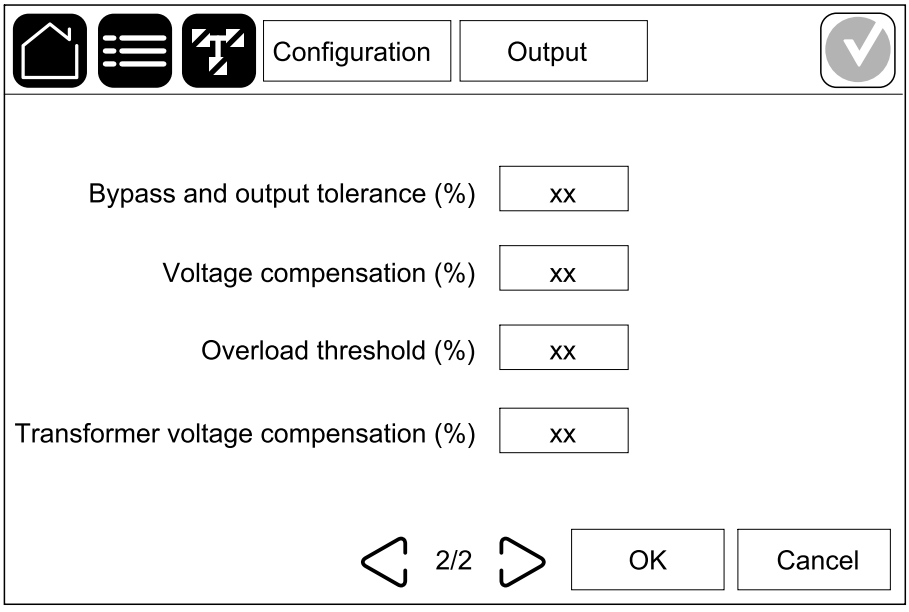
Configure the Output

NOTE: This configuration is mandatory for correct UPS operation.

1. Tap **Configuration > Output**.
2. Set the **AC voltage ph-ph** to **480VAC**.



3. Set the **Frequency** to **50Hz ±1.0**, **50Hz ±3.0**, **50Hz ±10.0**, **60Hz ±1.0**, **60Hz ±3.0**, or **60Hz ±10.0** depending on your configuration.
4. Tap **OK** to save your settings and tap the arrow symbol to go to the next page.
5. Set the **Bypass and output tolerance (%)**. The bypass and output tolerance range is +3% to +10%, default is +10%.



6. Set the **Overload threshold (%)**. The overload range is 0% to 100%, default is 75%.

7. Tap **OK** to save your settings.

Configure the Battery Solution

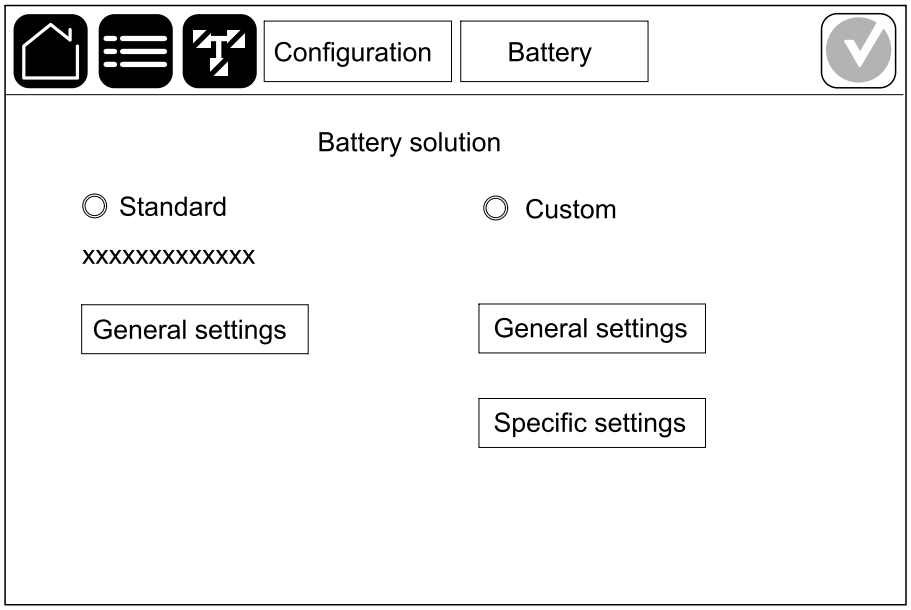
⚠⚠DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION, OR ARC FLASH

Battery settings must only be configured by qualified personnel knowledgeable of batteries, battery configuration, and the required precautions.

Failure to follow these instructions will result in death or serious injury.

1. Tap **Configuration > Battery**.
2. Your battery solution type will be shown as:
   - **Standard** if you have a standard battery solution from Schneider Electric the commercial reference for your specific battery configuration will be shown.
   - **Custom** if you have a custom battery solution.



3. Tap **General settings** and set up the following parameters:

   NOTE: On each page, tap **OK** to save your settings and tap the arrow symbol to go to the next page.

Number of battery cabinets connected to the battery breaker	Shows number of battery cabinets connected to the battery disconnect device. Only configurable by Schneider Electric Service.
Low runtime warning (sec)	Set the threshold for remaining runtime in seconds that will activate the low runtime warning.
Charge capacity (%)	Set the maximum charge capacity in percentage of the UPS nominal power rating.
Temperature monitoring	Shows if temperature monitoring is enabled. Only configurable by Schneider Electric Service.
Temperature sensor # 1/Temperature sensor # 2	Shows presence of temperature sensors. Only configurable by Schneider Electric Service.
Minimum threshold	Set the minimum acceptable battery temperature in Celsius or Fahrenheit. Temperatures below this threshold will activate an alarm.
Maximum threshold	Set the maximum acceptable battery temperature in Celsius or Fahrenheit. Temperatures above this threshold will activate an alarm.
Charger autoboost mode	Shows charger autoboost mode. This function will automatically transfer the charger to boost charger mode after the system has been in battery operation. Only configurable by Schneider Electric Service.
Cyclic charge mode	Shows cyclic charge mode. During a cyclic charge, the system cycles between periods of float charging and resting. This function will continuously maintain the battery charge status without stressing the batteries by conducting a permanent float charging. Only configurable by Schneider Electric Service.
Test interval every	Set how often the UPS should run a battery test.
Test day of the week	Set on which day of the week the battery test should run.
Test start time (hh:mm)	Set which time of day the battery test should run.
Manual battery self-test mode	Set which battery test type should run: **By capacity** or **By voltage/time**. **By capacity** will discharge the batteries and use about 10% of the total capacity. **By voltage/time** will discharge the batteries to a set time or voltage.
Time limit (minutes)/Voltage limit (V)	If you chose battery test type **By voltage/time**, set the time limit or set the voltage limit.

4. **Only for custom battery solution**: Tap **Specific settings** to view the following settings:

   NOTE: These settings are only configurable by Schneider Electric Service.

Battery type	Shows the configured battery type.
Battery midpoint connected	Shows if battery midpoint is connected.
Disable temperature monitoring	Shows if temperature monitoring is disabled.
Allow boost charge	Shows if boost charge is allowed. Boost charging makes it possible to conduct a fast charging in order to quickly restore a discharged battery.
Allow battery deep discharge	Shows if battery deep discharge is allowed. The deep discharge function allows to discharge the batteries to an even lower voltage level than the normally recommended value when in battery operation. Note that this may damage the batteries.
Enable battery automatic disconnect	Shows if battery automatic disconnect is enabled. When the UPS output is off and no ability to charge the batteries is available, this function will trip the battery disconnect devices to avoid battery deep discharge after a period of: • Two weeks. • 10 minutes with the battery cell voltage below the low battery shutdown level.
Capacity per battery block (Ah)	Shows the battery capacity per battery block in ampere hours for the battery bank connected to each battery disconnect device.
Number of parallel battery strings	Shows the number of battery strings connected in parallel for the battery bank connected to each battery disconnect device.
Number of battery blocks per string	Shows the number of battery blocks per battery string.
Number of battery cells per block	Shows the number of battery cells per battery block.
DC voltage per battery cell (V)	Shows the float voltage. Float charging is the basic charging function available on all types of batteries and automatically initiated by the charger.
	Shows the boost voltage. Boost charging makes it possible to conduct a fast charging in order to quickly restore a discharged battery.
	Shows the equalization voltage. Equalization charging is used when equalizing skewed open cell batteries. This is the charging method available using the highest possible charging voltage level. When equalization charging is conducted, water is evaporated from the open cell batteries which must be replaced when charging is completed.
Charge duration (sec)	Shows the duration in seconds of the charge for **Boost** charging and **Equalization** charging.
Nominal battery cell voltage (V)	Shows the nominal voltage level per battery cell.
DC shutdown voltage per battery cell (V)	Shows the voltage level per battery cell for when the battery must be shut down.

Nominal temperature	Shows the nominal temperature in Celsius or Fahrenheit.
Charge current rate	Shows the charge current rate.

Configure High Efficiency Mode

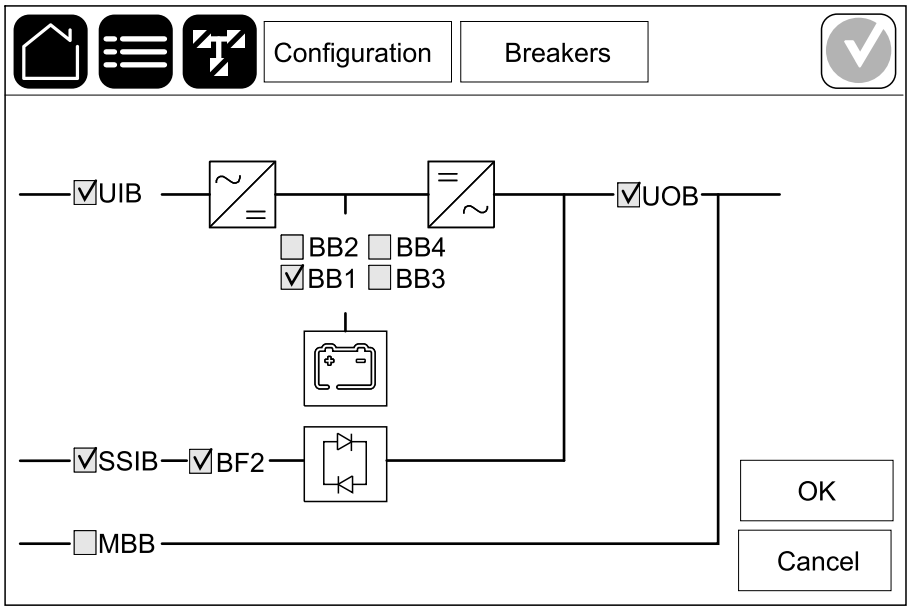
1. Tap **Configuration > High efficiency**.
2. Select the **High efficiency mode**: **Disable**, **ECO mode**, **eConversion**. If high efficiency mode has been disabled by the system due to battery discharge over the configured limit, **Disabled by system** will be marked.

   NOTE: Contact Schneider Electric to enable **ECO mode**.
3. Select **eConversion harmonics compensator**, if relevant. This is only selectable when eConversion is enabled.
4. Select the **High efficiency schedule**: **Active on schedule**, **Always active**, or **Never active**.
   a. For **Active on schedule**, tap **Schedule** and set up and enable the schedule(s) as needed.

Configure the Disconnect Devices

NOTE: This configuration is mandatory for correct UPS operation.

1. Tap **Configuration > Breakers**.
2. Tap the different disconnect devices in the mimic diagram to configure which disconnect devices are present in the UPS system. Square with a √ means that the disconnect device is present, empty square means that the disconnect device is not present. BF2 presence can only be configured by Schneider Electric Service.

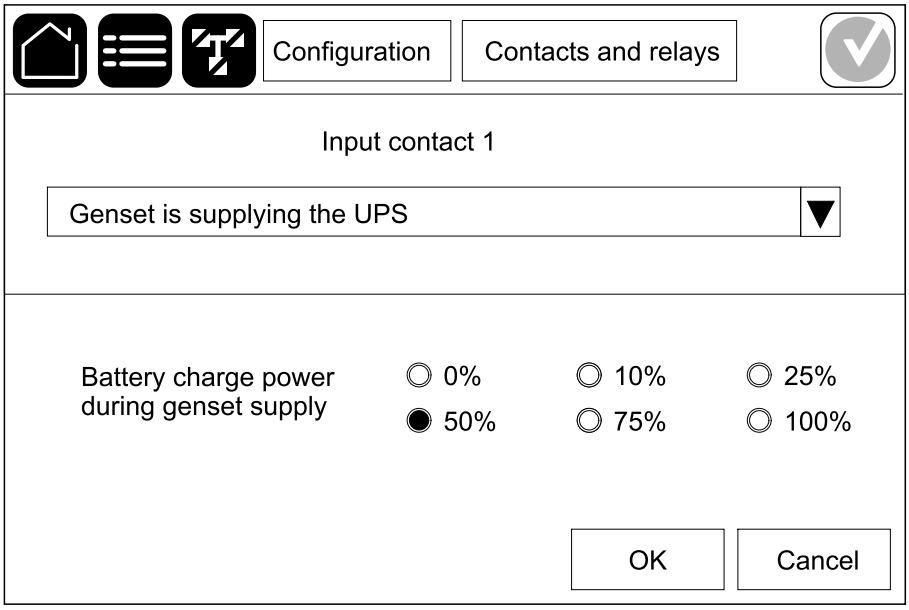


NOTE: The UPS can monitor up to four battery disconnect devices in a battery solution. The mimic diagram only shows one battery disconnect device BB even if more battery disconnect devices have been connected and configured for monitoring. If one or more of the monitored battery disconnect devices are in the closed position, the BB on the mimic diagram will show as closed. If all of the monitored battery disconnect devices are in the open position, the BB on the mimic diagram will show as open.

3. Tap **OK** to save your settings.

Configure the Input Contacts

1. Tap **Configuration > Contacts and relays** and select the input contact that you want to configure.
2. Select a function from the drop-down list for the selected input contact:



None: No action assigned to this input contact.	**Genset is supplying the UPS**: Input to indicate that the UPS is being supplied by a generator. You must also select the reduction in battery charge current while the UPS is being supplied by a generator. Set **Battery charge power during genset supply** to **0%** (no battery charging), **10%**, **25%**, **50%**, **75%**, or **100%** (full battery charging). **Battery charge power during genset supply** is only selectable for this function.
Ground fault: Input to indicate that a ground fault is present.	**Battery room ventilation is inoperable**: Input to indicate that the battery room ventilation is inoperable. When the input is active, the battery charger will turn OFF.
User-defined 1: General purpose input.	**External battery monitoring detected a fault**: Input to indicate that the external battery monitoring has detected a fault. When the input is active, the UPS will post an alarm (no other action).
User-defined 2: General purpose input.	**High efficiency mode is disabled**: If this input is activated, the UPS is prevented from entering high efficiency mode (ECO mode and eConversion mode) or will exit any active high efficiency mode.
External energy storage monitoring detected a minor fault: Input to indicate that the external energy storage monitoring has detected a minor fault.	**External signal turns charger off**: If this input is activated, the charger will turn OFF on a signal from external equipment, e.g. on a signal from the external energy storage.
External energy storage monitoring detected a major fault: Input to indicate that the external energy storage monitoring has detected a major fault.	**Transformer temperature is too high**: Input to indicate that there is a high temperature alarm for the transformer.

3. Tap **OK** to save your settings.

Configure the Output Relays

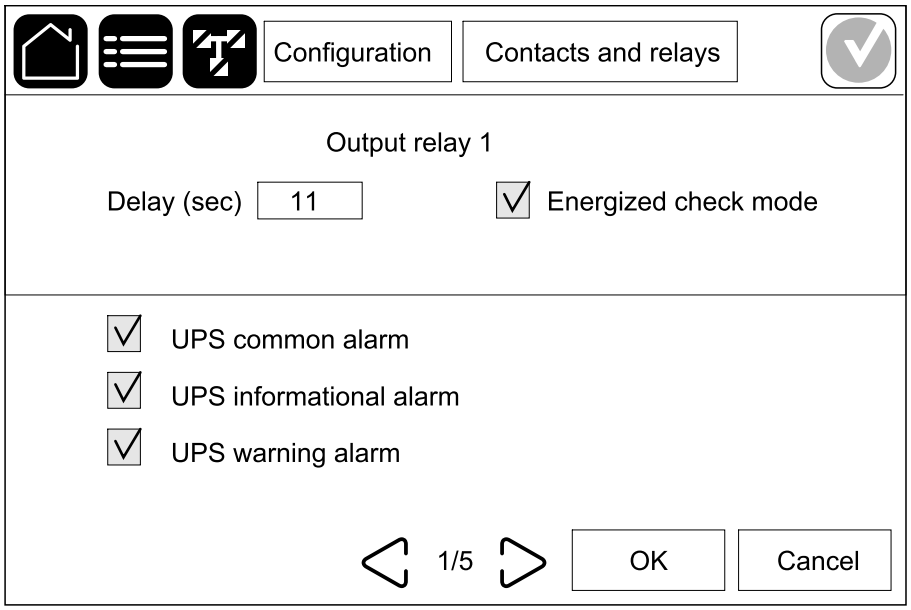
1. Tap **Configuration > Contacts and relays** and select the output relay that you want to configure.
2. Set the **Delay (sec)**.
3. Select to enable **Energized check mode** (disabled as default).

   When **Energized check mode** is enabled, the output relay is activated, and will deactivate when the events assigned to the output relay occurs (normally activated).

   When **Energized check mode** is disabled, the output relay is deactivated, and will activate when the events assigned to the output relay occurs (normally deactivated).

   Energized check mode must be individually enabled for each output relay and makes it possible to detect if the output relay is inoperable:

   - If the power supply to the output relays is lost, the events assigned to all the output relays will be indicated as present.
   - If a single output relay has become inoperable, the events assigned to the single output relay will be indicated as present.
4. Select the event(s) you want to assign to the output relay. On each page, tap **OK** to save your settings and tap the arrow symbol to go to the next page.



NOTE: It is possible to assign several functions to the same output relay.

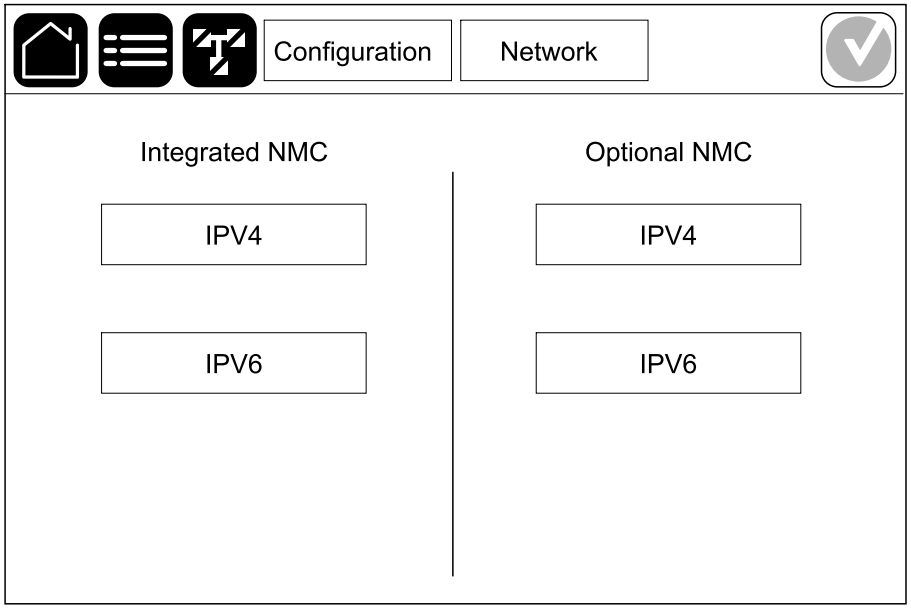
UPS common alarm: The output is triggered when any alarm is present for the UPS.	**UPS in maintenance mode**: The output is triggered when the unit output disconnect device UOB has been opened which transfers the UPS to maintenance mode. The UPS is not supplying the load.
UPS informational alarm: The output is triggered when an information alarm is present for the UPS.	**External fault**: The output is triggered the UPS detects an external fault.
UPS warning alarm: The output is triggered when a warning alarm is present for the UPS.	**Fan inoperable**: The output is triggered when one or more fans are inoperable.
UPS critical alarm: The output is triggered when a critical alarm is present for the UPS.	**Battery voltage low**: The output is triggered when the battery voltage is below the threshold.
System common alarm: The output is triggered when any alarm is present for the system.	**Battery is not working correctly**: The output is triggered when the batteries are not working correctly.
System informational alarm: The output is triggered when an information alarm is present for the system.	**Battery is disconnected**: The output is triggered when the batteries have been disconnected or the battery disconnect device(s) are open.
System warning alarm: The output is triggered when a warning alarm is present for the system.	**Inverter overload**: The output is triggered when there is an overload condition, while the UPS is in inverter operation.
System critical alarm: The output is triggered when a critical alarm is present for the system.	**Output overload**: The output is triggered when there is an overload condition, while the UPS is in inverter operation or bypass operation.
UPS in normal operation: The output is triggered when the UPS is in normal operation.	**Input out of tolerance**: The output is triggered when the input is out of tolerance.
UPS in battery operation: The output is triggered when the UPS is in battery operation.	**Bypass out of tolerance**: The output is triggered when the bypass is out of tolerance.
UPS in static bypass operation: The output is triggered when the UPS is in forced static bypass operation or requested static bypass operation.	**EPO active**: The output is triggered when the EPO has been activated.
UPS in maintenance bypass operation: The output is triggered when the UPS is in internal maintenance bypass operation or external maintenance bypass operation.	

5. Tap **OK** to save your settings.

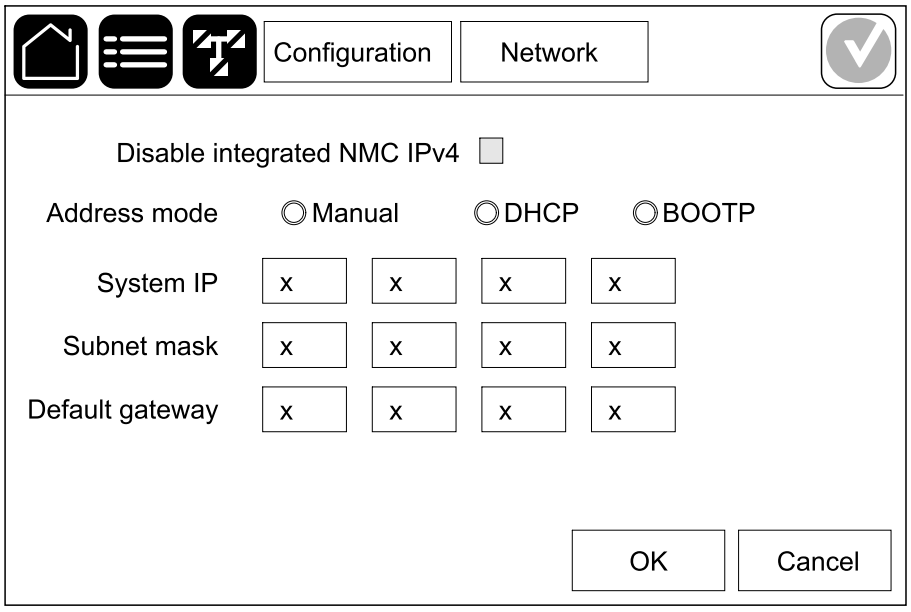
Configure the Network

The network can be configured for the integrated and the optional network management card (NMC).

1. Tap **Configuration > Network** and select **IPv4** for the **Integrated NMC** to configure the integrated network management card or for the **Optional NMC** to configure the optional network management card (if present).



2. Configure the IPv4 settings on the page for the chosen NMC:

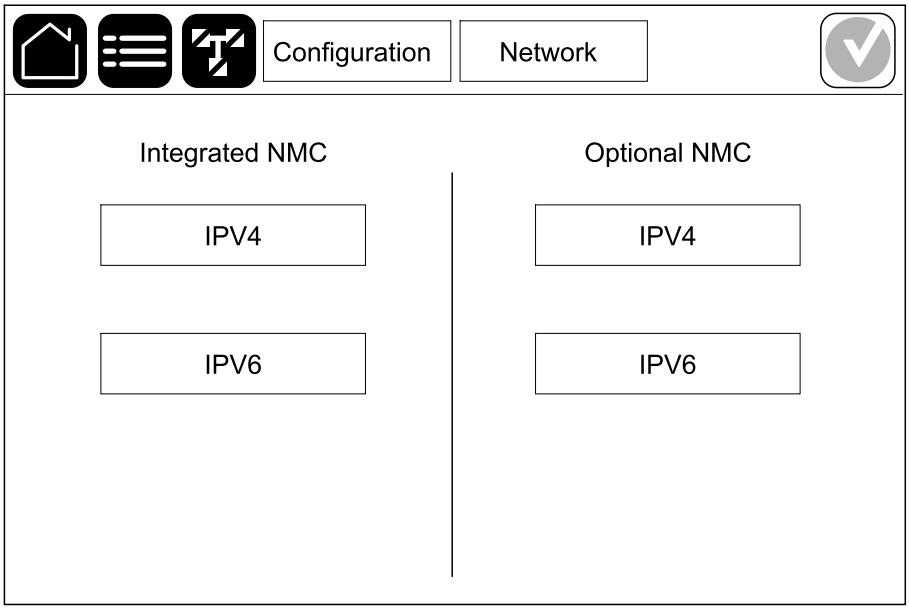


   a. Remove the check mark for **Disable integrated NMC IPv4**/**Disable optional NMC IPv4** to configure the **IPv4**. When the check mark is present, no settings can be made and the function is disabled.

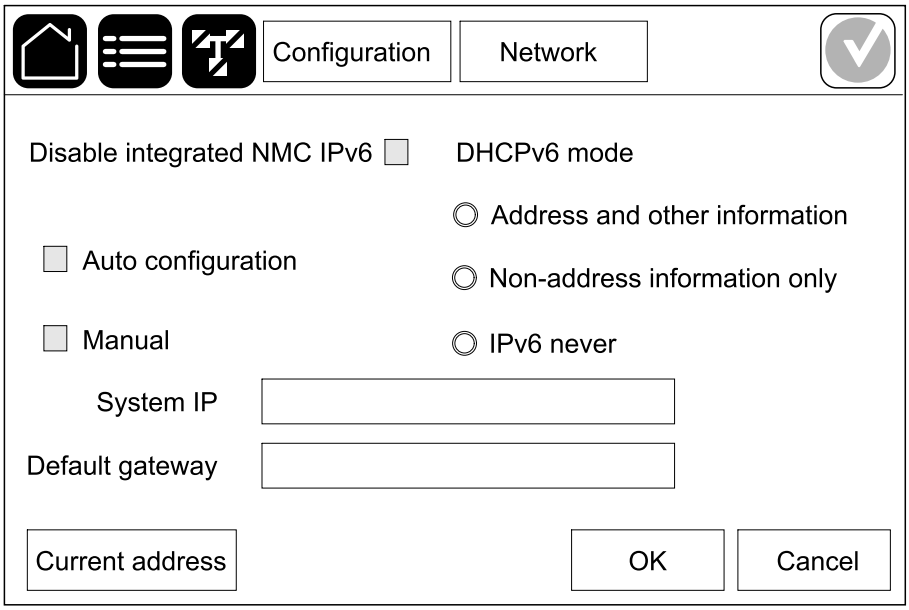
   b. Set the **Address mode** to **Manual**, **DHCP**, or **BOOTP**. For manual address mode, add the values.

   c. Tap **OK** to save your settings.

3. Tap **Configuration > Network** and select **IPV6** for the **Integrated NMC** to configure the integrated network management card or for the **Optional NMC** to configure the optional network management card (if present).



4. Configure the IPv6 settings on the page for the chosen NMC:



   a. Remove the check mark for **Disable integrated NMC IPv6**/**Disable optional NMC IPv6** to configure the **IPv6**. When the check mark is present, no settings can be made and the function is disabled.

   b. Set the **DHCPV6 mode** to **Address and other information**, **Non-address information only**, or **IPv6 never**.

   c. Select **Auto configuration** or **Manual**. For manual mode, add the values.

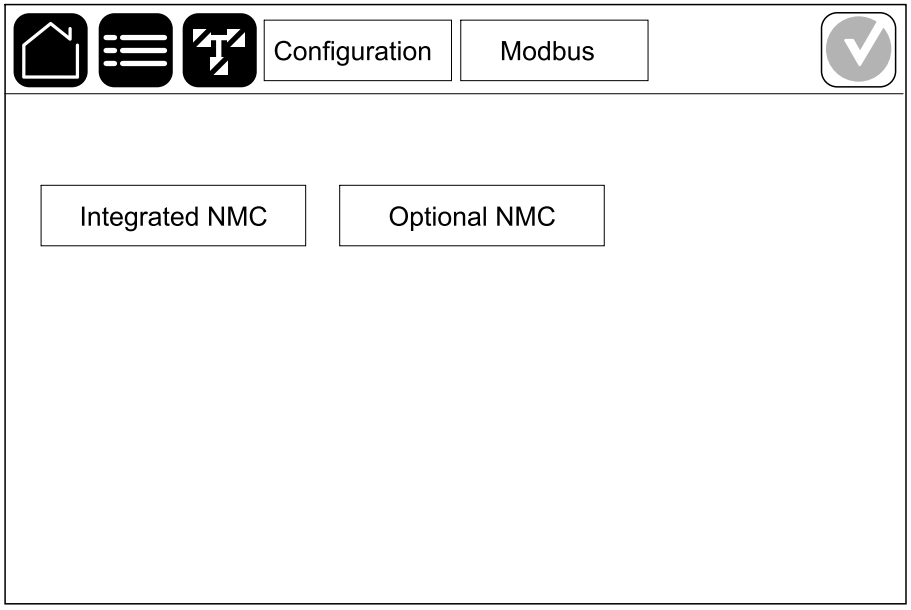
   d. Tap **OK** to save your settings.

5. Repeat the steps to configure the other NMC, if needed.

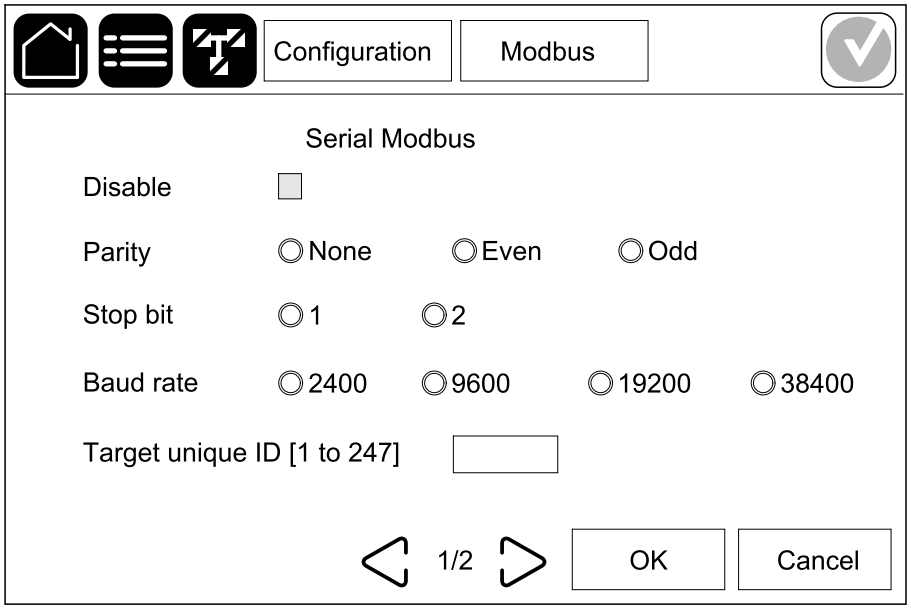
Configure the Modbus

The Modbus can be configured for the integrated and the optional network management card (NMC).

1. Tap **Configuration > Modbus** and select **Integrated NMC** to configure the integrated network management card or **Optional NMC** to configure the optional network management card (if present).



2. Configure the settings on the first page for the chosen NMC:



   a. Remove the check mark for **Disable** to configure the **Serial Modbus**. When the check mark is present, no settings can be made and the function is disabled.

   b. Set the **Parity** to **None**, **Even**, or **Odd**.

   c. Set the **Stop bit** to 1 or 2.

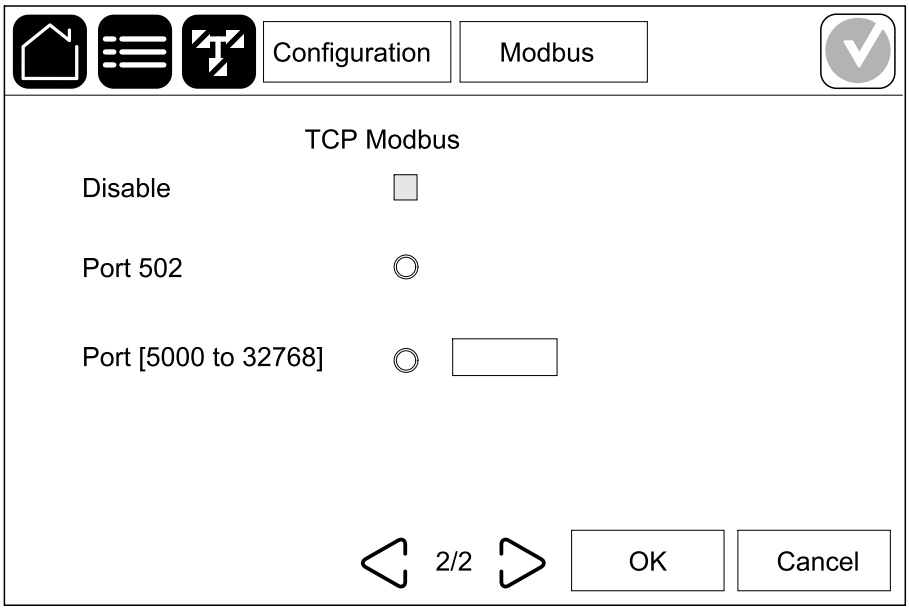
   d. Set the **Baud rate** to **2400**, **9600**, **19200**, or **38400**.

   e. Set the **Target unique ID** to a number between 1 and 247.

      NOTE: Every device on the bus must have exactly the same settings except the device address **Target unique ID**, which must be unique for every device. No two devices on the bus can have the same address.

f. Tap **OK** to save your settings and tap the arrow symbol to go to the next page.

3. Configure the settings on the second page:



a. Remove the check mark for **Disable** to configure the **TCP Modbus**. When the check mark is present, no settings can be made and the function is disabled.

b. Select **Port 502** or **Port [5000 to 32768]**.

c. Tap **OK** to save your settings.

4. Repeat the steps to configure the other NMC, if needed.

Set the UPS Name

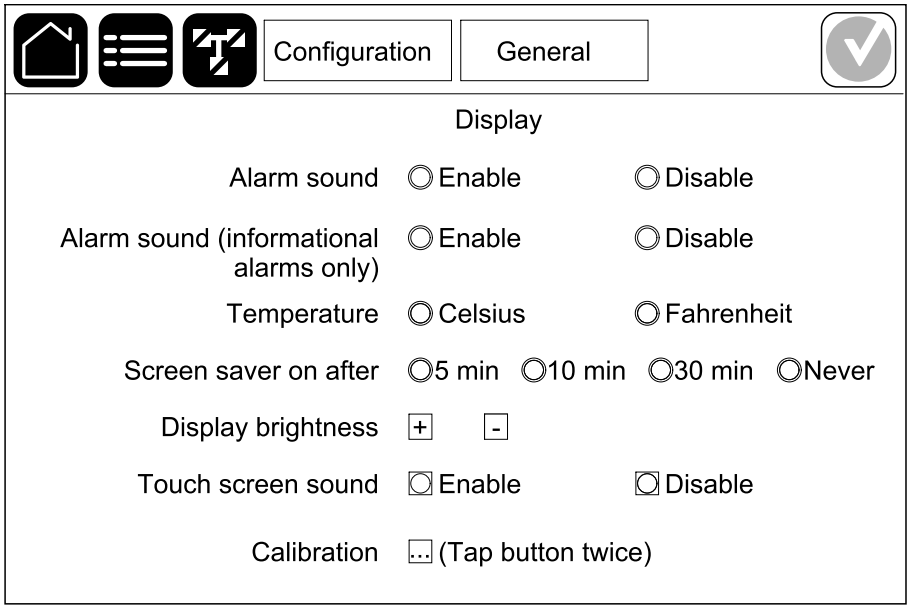
1. Tap **Configuration > General > UPS name**.
2. Set the UPS name.
3. Tap **OK** to save your settings.

Set the Date and Time

1. Tap **Configuration > General > Date and time**.
2. Set the **Year**, **Month**, **Day**, **Hour**, **Minute**, and **Second**.
3. Tap **OK** to save your settings.

Configure the Display Preferences

1. Tap **Configuration > General > Display**.
   a. Set the **Alarm sound** to **Enable** or **Disable**. This will enable/mute all alarm sounds.
   b. Set the **Alarm sound (informational alarms only)** to **Enable** or **Disable**. This will enable/mute all informational alarm sounds.
   c. Set the temperature unit to **Celsius** or **Fahrenheit**.
   d. Set the **Screen saver on after** to **5 min**, **15 min**, **30 min**, or **Never**. The screen saver will turn on after the set time where no activity has been performed on the display.
   e. Set the **Display brightness** by tapping the - or +.
   f. Set the **Touch screen sound** to **Enable** or **Disable**. This will enable/mute all display sounds (excluding alarm sounds).
   g. Calibrate the touch functionality of the display by tapping the calibration button twice.

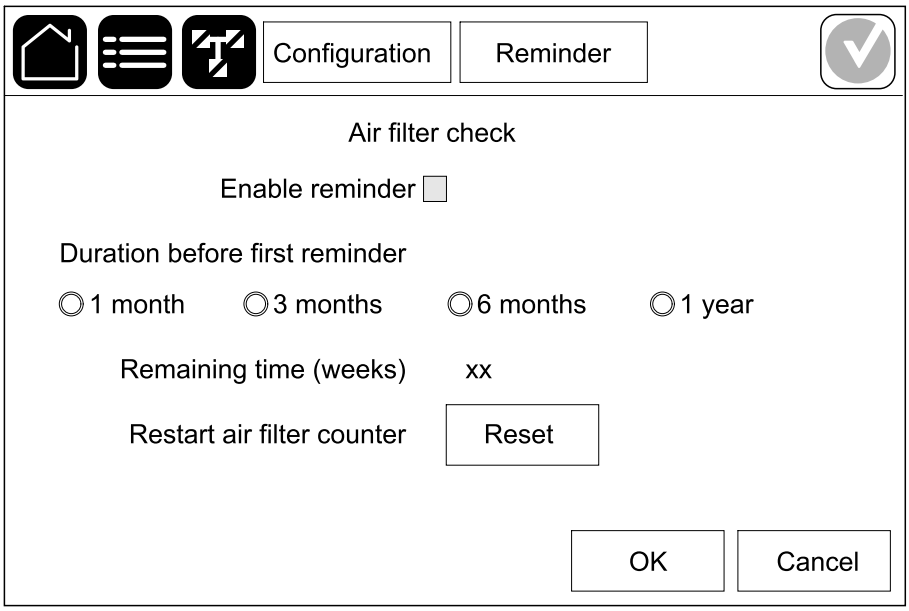


Configure the Air Filter Reminder

When the air filter has been replaced, reset the air filter reminder.

1. Tap **Configuration > Reminder**.
   a. Select **Enable reminder** to get reminders about replacing the air filter.
   b. Select the reminder interval: **1 month**, **3 months**, **6 months**, or **1 year** based on the installation room environment.

      Under **Remaining time (weeks)** you can see how much service life the air filter in use has left.
   c. Tap **Reset** to reset the air filter service life counter.



2. Tap **OK** to save your settings.

Save the UPS Settings on a USB Device

NOTE: The UPS can only accept settings that were originally saved from the same UPS. Settings saved from other UPSs cannot be reused.

1. Tap **Configuration > Save/restore**.
2. Open the front door.
3. Insert your USB device in USB port 1 in the system level controller.
4. Tap **Save** to save the present UPS settings on the USB device.

   NOTE: Do not remove the USB device until the save process has finished.

Restore the UPS Settings from a USB Device

NOTE: The UPS can only accept settings that were originally saved from the same UPS. Settings saved from other UPSs cannot be reused.
Settings can only be restored when the UPS is in maintenance bypass operation or off mode.

NOTE: Do not open the unit input disconnect device UIB at the end of the shutdown sequence as this will turn off the power to the display.

NOTE: It is recommended to keep the battery disconnect device(s) closed during this procedure.

1. Tap **Control > Guided sequences > Shut down UPS system** or **Control > Guided sequences > Shut down a UPS in a parallel system**, and follow the steps which appear on the display.
2. Select **Configuration > Save/restore**.
3. Open the front door.
4. Insert your USB device in one of the USB ports on the UPS.
5. Tap **Restore** to implement saved UPS settings from the USB device. Wait for the system level controller to reboot automatically.

   NOTE: Do not remove the USB device until the restore process has finished.
6. Select **Control > Guided sequences > Start up UPS system** or **Control > Guided sequences > Start up a UPS in a parallel system**, and follow the steps which appear on the display.

Change the Password

NOTE: Always change your password on your first login and keep the password in a secure location.

TIP: Create complex passwords to protect your UPS:

- The password should be at least eight characters long.
- The password should be significantly different from previous passwords and from passwords to other devices.
- Use a combination of uppercase letters, lowercase letters, numbers and special characters.

1. Tap **Logout**.
2. Tap **Configuration**.
3. Enter your password.

   NOTE: The default administrator username and password is **admin**.
4. Tap **Change password** and enter the new password.

Set the Charger Mode

1. Tap **Control > Charger**.
2. Tap **Float**, **Boost**, or **Equalization**.
3. Tap **OK** on the confirmation screen.

Access a Configured Network Management Interface

The network management card web interface is compatible with:
Windows® operating systems:

- Microsoft® Internet Explorer® (IE) 10.x or higher, with compatibility view turned on.
- The latest release of Microsoft® Edge®.

All operating systems:

- The latest releases of Mozilla® Firefox® or Google® Chrome®.

The below procedure describes how to access the network management interface from a web interface. If enabled, it is also possible to use the following interfaces:

- SSH
- SNMP
- FTP
- SFTP

NOTE: Please visit www.schneider-electric.com to view the Security Deployment Guidelines and Security Handbook for the product.

The network management card supports NTP connection for synchronization of time. Ensure that only one network management interface in the entire UPS system (single or parallel) is set to synchronize time.

You can use either of the following protocols when you use the web interface:

- The HTTP protocol (disabled by default), which provides authentication by user name and Pin but no encryption.
- The HTTPS protocol (enabled by default), which provides extra security through Secure Socket Layer (SSL); encrypts user names, Pin, and data being transmitted; and authenticates network management cards by means of digital certificates.

See Enable HTTP/HTTPS Protocols, page 37.

By default, SNMP protocols are disabled on the network management card to avoid cybersecurity risks. SNMP protocols must be enabled to use the monitoring functions of the network management card, or to connect to EcoStruxure IT Gateway or StruxureWare Data Center Expert. You can enable and use either of these SNMP protocols:

- SNMPv1, which provides minimal security. If using this protocol, Schneider Electric recommends customizing the access control parameters to enhance security.
- SNMPv3, which provides extra security through both encryption and authentication. Schneider Electric recommends using this protocol for better security and customizing the access control parameters.

See Enable SNMP Protocols, page 38.

Enable HTTP/HTTPS Protocols

1. Access the network management interface by its IP address (or its DNS name, if a DNS name is configured).
2. Enter the user name and password. The default user name and password is **apc**. You will be prompted to change this password on the first login.
3. To enable or disable the HTTP or HTTPS protocol, go to **Configuration > Network > Web > Access**, select the protocol, set the parameters, and click on **Apply**.

Enable SNMP Protocols

1. Access the network management interface by its IP address (or its DNS name, if a DNS name is configured).
2. Enter the user name and password. The default user name and password is **apc**. You will be prompted to change this password on the first login.
3. To enable SNMPv1 protocol:
   a. Go to **Configuration > Network > SNMPv1 > Access**, select **Enable** and click on **Apply**.
   b. Go to **Configuration > Network > SNMPv1 > Access Control** and set up the parameters.
4. To enable SNMPv3 protocol:
   a. Go to **Configuration > Network > SNMPv3 > Access**, select **Enable** and click on **Apply**.
   b. Go to **Configuration > Network > SNMPv3 > Access Control** and set up the parameters.
   c. Go to **Configuration > Network > SNMPv3 > User Profiles** and set up the parameters.

NOTE: The SNMPv1 or SNMPv3 settings must match your settings on the EcoStruxure IT Gateway or StruxureWare Data Center Expert for the network management card 4 to communicate correctly with EcoStruxure IT Gateway or StruxureWare Data Center Expert.

Operation Modes

The UPS has two different levels of operation modes:

- **UPS mode**: The operation mode of the individual UPS. See UPS Modes, page 39.
- **System mode**: The operation mode of the complete UPS system that supplies the load. See System Modes, page 42.

UPS Modes

eConversion Mode

eConversion provides a combination of maximum protection and highest efficiency, that permits to reduce the electricity absorbed by the UPS by a factor three compared with double conversion. eConversion is now the generally recommended operation mode and is enabled by default in the UPS but it can be disabled via the display menu. When enabled, eConversion can be set to always active or on a set schedule configured through the display menu.

In eConversion the UPS supplies the active part of the load through the static bypass as long as the utility/mains supply is within tolerance. The inverter is kept running in parallel so the input power factor of the UPS is maintained close to unity, regardless of the load power factor, as the reactive part of the load is significantly reduced in the UPS input current. In case of an interruption of the utility/mains supply, the inverter maintains the output voltage providing an uninterrupted transfer from eConversion to double conversion. The batteries are charged when the UPS is in eConversion mode and harmonics compensation is also provided.

eConversion mode can be used for the Galaxy VL 1600-2000 kW UPS system in the following conditions:

- The load on the UPS system is minimum 10%.
- Voltage fluctuation is ≤10% versus nominal voltage (adjustable setting from 3% to 10%).
- THDU is ≤5%.

  NOTE: When changes to eConversion mode settings are made on one UPS in a parallel system, the settings are shared to all UPSs in the parallel system.

  NOTE: When a genset/generator is in use and frequency fluctuations are seen (typically due to downsizing), it is recommended to configure an input contact to disable high efficiency modes while the genset/generator is on.

  NOTE: If external synchronization is required, it is generally recommended to disable eConversion.

Double Conversion (Normal Operation)

The UPS supports the load with conditioned power. Double conversion mode permanently creates a perfect sinewave at the system output, but this operation also uses more electricity.

Battery Operation

If the utility/mains supply fails, the UPS transfers to battery operation and supports the load with conditioned power from the DC source.

Requested Static Bypass Operation

The UPS can be transferred to requested static bypass operation following a command from the display. During requested static bypass operation, the load is supplied from the bypass source. If a fault is detected, the UPS will transfer to double conversion (normal operation) or forced static bypass operation. If there is an interruption to the utility/mains supply during requested static bypass operation, the UPS will transfer to battery operation.

Forced Static Bypass Operation

The UPS is in forced static bypass operation following a command from the UPS or because the user has pressed the inverter OFF button on the UPS. During forced static bypass operation, the load is supplied from the bypass source.

NOTE: The batteries are not available as an alternate power source while the UPS is in forced static bypass operation.

Maintenance Bypass Operation

When the maintenance bypass disconnect device MBB is closed in the external maintenance bypass cabinet, maintenance bypass panel, or third party switchgear, the UPS transfers to external maintenance bypass operation. The load is supplied with unconditioned power from the bypass source. Service and replacement can be performed on the entire UPS during external maintenance bypass operation via the maintenance bypass disconnect device MBB.

NOTE: The batteries are not available as an alternate power source while the UPS is in external maintenance bypass operation.

Static Bypass Standby Operation

Static bypass standby is only applicable to an individual UPS in a parallel system. The UPS enters static bypass standby operation if the UPS is prevented from entering forced static bypass operation and the other UPSs of the parallel system can support the load. In static bypass standby the output of the specific UPS is OFF. The UPS automatically transfers to the preferred operation mode when possible.

NOTE: If the other UPSs cannot support the load, the parallel system transfers to forced static bypass operation. The UPS in static bypass standby operation will then transfer to forced static bypass operation.

Battery Test Mode

The UPS is in battery test mode when the UPS is performing a battery self-test or a runtime calibration.

NOTE: The battery test will be aborted if the utility/mains supply is interrupted or if a critical alarm is present and the UPS will return to normal operation upon return of utility/mains.

ECO Mode

In ECO mode the UPS uses requested static bypass to power the load as long as the power quality is within tolerance. If a fault is detected (bypass voltage out of tolerance, output voltage out of tolerance, power interruption, etc) the UPS will transfer to double conversion (normal operation) or forced static bypass.

Depending on the transfer conditions, a minimal interruption of the load supply may happen (up to 10 ms). The batteries are charged when the UPS is in ECO mode. The main advantage of ECO mode is a reduction in the consumption of electrical power compared with double conversion.

NOTE: When changes to ECO mode settings are made on one UPS in a parallel system, the settings are shared to all UPSs in the parallel system.

OFF Mode

The UPS is not supplying the load with power. The batteries are charged and the display is on.

System Modes

The system mode indicates the output status of the complete UPS system including the surrounding switchgear and indicates which source supplies the load.

eConversion Mode

eConversion provides a combination of maximum protection and highest efficiency, that permits to reduce the electricity absorbed by the UPS by a factor three compared with double conversion. eConversion is now the generally recommended operation mode and is enabled by default in the UPS but it can be disabled via the display menu. When enabled, eConversion can be set to always active or on a set schedule configured through the display menu.

In eConversion the UPS system supplies the active part of the load through the static bypass as long as the utility/mains supply is within tolerance. The inverter is kept running in parallel so the input power factor of the UPS system is maintained close to unity, regardless of the load power factor, as the reactive part of the load is significantly reduced in the UPS system input current. In case of an interruption of the utility/mains supply, the inverter maintains the output voltage providing an uninterrupted transfer from eConversion to double conversion. The batteries are charged when the UPS system is in eConversion mode and harmonics compensation is also provided.

eConversion mode can be used for the Galaxy VL 1600-2000 kW UPS system in the following conditions:

- The load on the UPS system is minimum 10%.
- Voltage fluctuation is ≤10% versus nominal voltage (adjustable setting from 3% to 10%).
- THDU is ≤5%.

NOTE: When changes to eConversion mode settings are made on one UPS in a parallel system, the settings are shared to all UPSs in the parallel system.

NOTE: When a genset/generator is in use and frequency fluctuations are seen (typically due to downsizing), it is recommended to configure an input contact to disable high efficiency modes while the genset/generator is on.

NOTE: If external synchronization is required, it is generally recommended to disable eConversion.

Inverter Operation

In inverter operation the load is supplied by the inverters. The UPS mode can be in either double conversion (normal operation) or battery operation when the UPS system operation mode is inverter operation.

Requested Static Bypass Operation

When the UPS system is in requested static bypass operation, the load is supplied from the bypass source. If a fault is detected, the UPS system will transfer to inverter operation or forced static bypass operation.

Forced Static Bypass Operation

The UPS system is in forced static bypass operation following a command from the UPS system or because the user has pressed the inverter OFF button on the

UPSs. During forced static bypass operation, the load is supplied directly by the bypass source with unconditioned power.

NOTE: The batteries are not available as an alternate power source while the UPS system is in forced static bypass operation.

Maintenance Bypass Operation

In maintenance bypass operation, the load is supplied directly by the bypass source with unconditioned power via the maintenance bypass disconnect device MBB.

NOTE: The batteries are not available as an alternate power source in maintenance bypass operation.

ECO Mode

In ECO mode the UPS system uses requested static bypass to power the load as long as the power quality is within tolerance. If a fault is detected (bypass voltage out of tolerance, output voltage out of tolerance, power interruption, etc) the UPS system will transfer to double conversion (normal operation) or forced static bypass. Depending on the transfer conditions, a minimal interruption of the load supply may happen (up to 10 ms). The batteries are charged when the UPS system is in ECO mode. The main advantage of ECO mode is a reduction in the consumption of electrical power compared with double conversion.

NOTE: When changes to ECO mode settings are made on one UPS in a parallel system, the settings are shared to all UPSs in the parallel system.

OFF Mode

The UPS system is not supplying the load with power. The batteries are charged and the display is on.

Operation Procedures for the UPS System

The operation procedures in this section are performed from the centralized UPS system display on the I/O cabinet and affect the entire UPS system.

Shut Down the UPS System into Maintenance Bypass Operation

NOTE: Only operate a disconnect device when the associated disconnect device indicator lamp is illuminated.

1. From the centralized UPS system display in the I/O cabinet: Select **Control > Transfer to bypass operation**.
2. Close the maintenance bypass disconnect device MBB.
3. Open the system isolation disconnect device SIB.
4. Open the battery disconnect device(s).
5. Open the unit input disconnect device UIB.

Start Up the UPS System from Maintenance Bypass Operation

NOTE: Only operate a disconnect device when the associated disconnect device indicator lamp is illuminated.

1. Close the unit input disconnect device UIB.

   The displays turns on. The rebooting sequence lasts approximately 3 minutes.
2. Close the bypass backfeed disconnect device BF2 in UPS 1-4.
3. Close the battery disconnect device(s).
4. Close the system isolation disconnect device SIB.
5. Verify that the load is on bypass.
6. Open the maintenance bypass disconnect device MBB.
7. From the centralized UPS system display in the I/O cabinet: Select **Control > Transfer to inverter operation**.

Transfer the System Mode from Normal Operation to Bypass Operation

1. Select **Control > Transfer to bypass operation**.
2. Tap **OK** on the confirmation screen.

Transfer the System Mode from Bypass Operation to Normal Operation

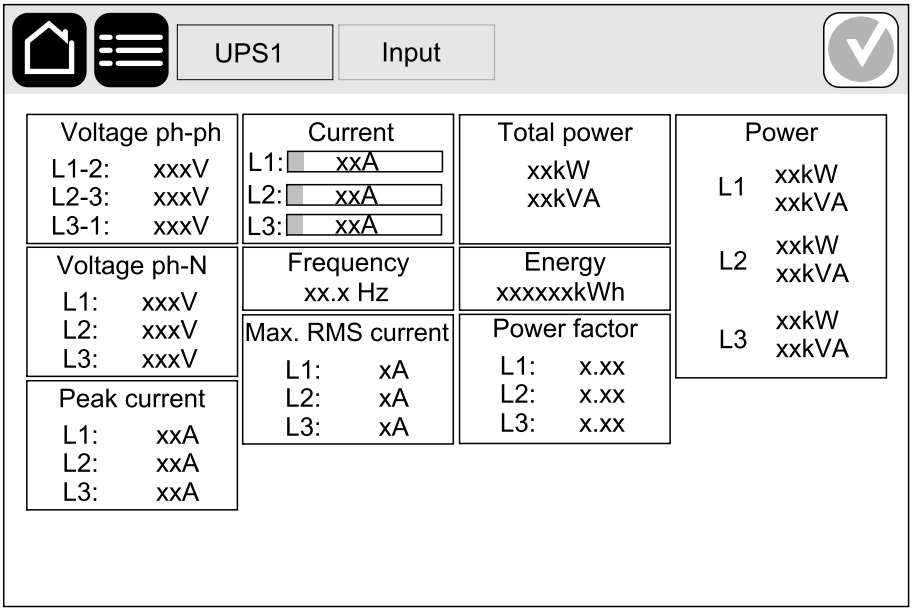
1. Select **Control > Transfer to normal operation**.
2. Tap **OK** on the confirmation screen.

View the UPS Status Information on the Centralized UPS System Display in the I/O Cabinet

On the mimic diagram of the individual UPSs, tap on the measurements button to see the status of input, output, bypass, and battery.

Input

Example of Input Measurements on an Individual UPS

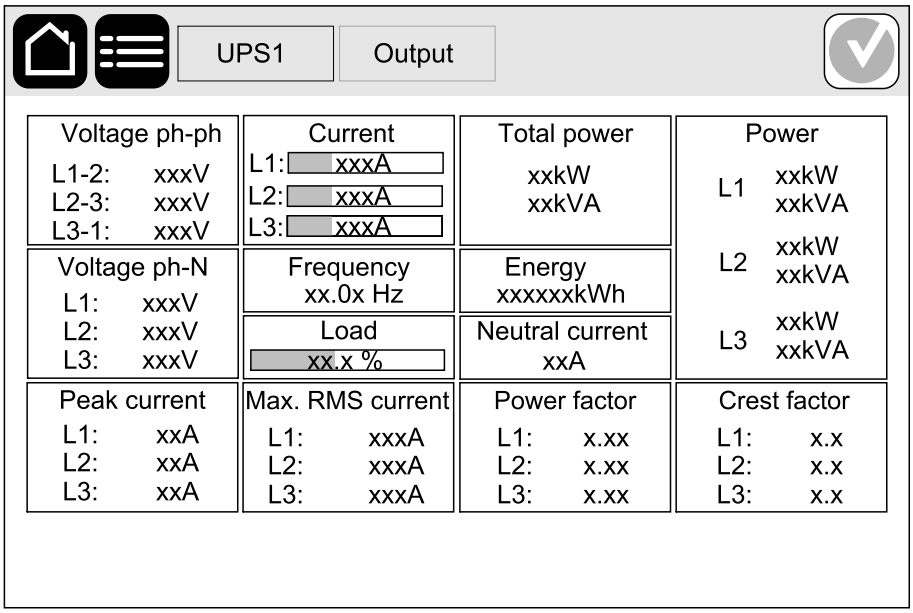


Voltage ph-ph (phase-to-phase)	The present phase-to-phase input voltage.
Voltage ph-N (phase-to-neutral)[9]	The present phase-to-neutral input voltage in volts (V).
Peak current	The input peak current in amperes (A)
Current	The present input current from the AC utility power source per phase in amperes (A).
Frequency	The present input frequency in hertz (Hz).
Max. RMS current	The present maximum RMS current in amperes (A).
Total power	The present total active power input (for all three phases) in kW.
Energy	The total energy consumption since the time of installation.
Power factor	The ratio of the active power to apparent power.
Power	The present active power (or real power) input for each phase in kilowatts (kW). Active power is the portion of power flow that, averaged over a complete cycle of the AC waveform, results in net transfer of energy in one direction.

9. Only applicable in systems with neutral connection.

Output

Example of Output Measurements on an Individual UPS

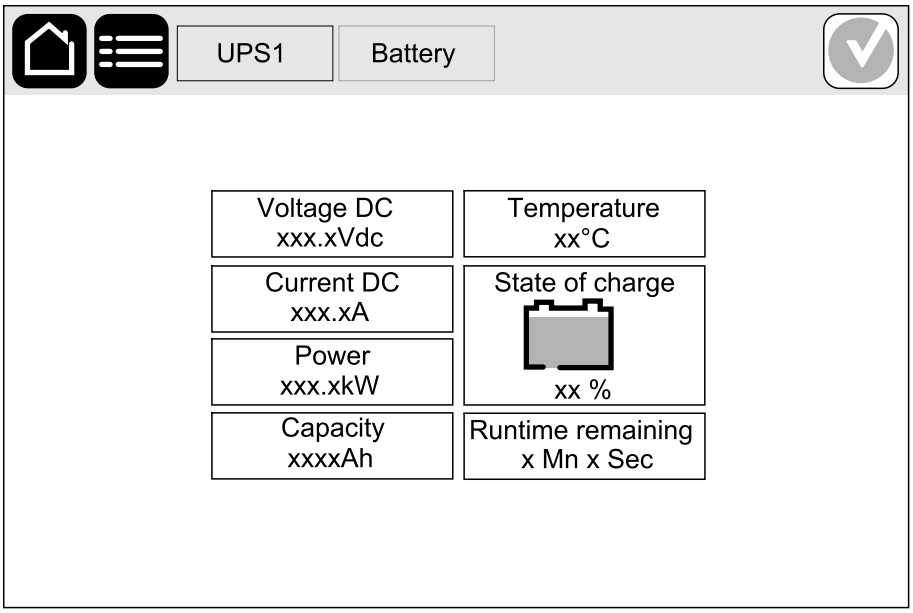


Voltage ph-ph (phase-to-phase)	The phase-to-phase output voltage at the inverter in volts (V).
Voltage ph-N (phase-to-neutral)[10]	The phase-to-neutral output voltage at the inverter in volts (V).
Peak current	The output peak current in amperes (A).
Current	The present output current for each phase in amperes (A).
Frequency	The present output frequency in hertz (Hz).
Load	The percentage of the UPS capacity presently used across all phases. The load percentage for the highest phase load is displayed.
Max. RMS current	The present maximum RMS current in amperes (A).
Total power	The present active total output power (for all three phases) in kilowatts (kW).
Energy	The total energy supplied since the time of installation.
Neutral current[10]	The present output neutral current in amperes (A).
Power factor	The present output power factor for each phase. Power factor is the ratio of active power to apparent power.
Power	The present active power (or real power) output for each phase in kilowatts (kW). Active power is the portion of power flow that, averaged over a complete cycle of the AC waveform, results in net transfer of energy in one direction.
Crest factor	The present output crest factor for each phase. The output crest factor is the ratio of the peak value of the output current to the RMS (root mean square) value.

10. Only applicable in systems with neutral connection.

Battery

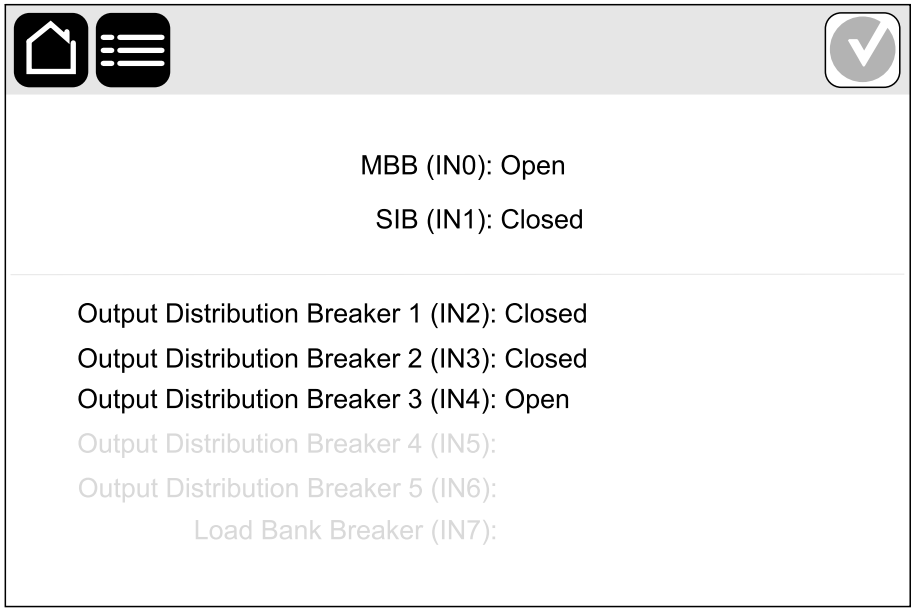
Example of Battery Measurements on an Individual UPS



Voltage DC	The present battery voltage (VDC).
Current DC	The present battery current in amperes (A). A positive current indicates that the battery is charging; a negative current indicates that the battery is discharging.
Power	The present DC power being drawn from the battery, in kilowatts (kW).
Capacity	The present battery charge (Ah).
Temperature	Battery temperature from the connected temperature sensors in Celsius or Fahrenheit.
State of charge	The present charge level of the battery as a percentage of full charge capacity.
Runtime remaining	The amount of time before the batteries reach the low-voltage shutdown level.

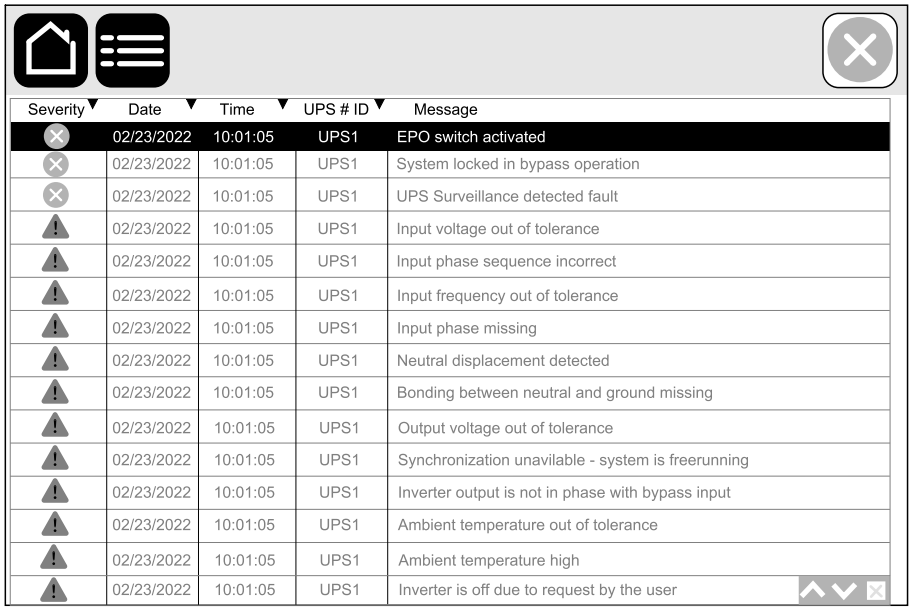
View the Status of the External Disconnect Devices

1. On the main menu screen, tap **External breakers**.



View the Logs

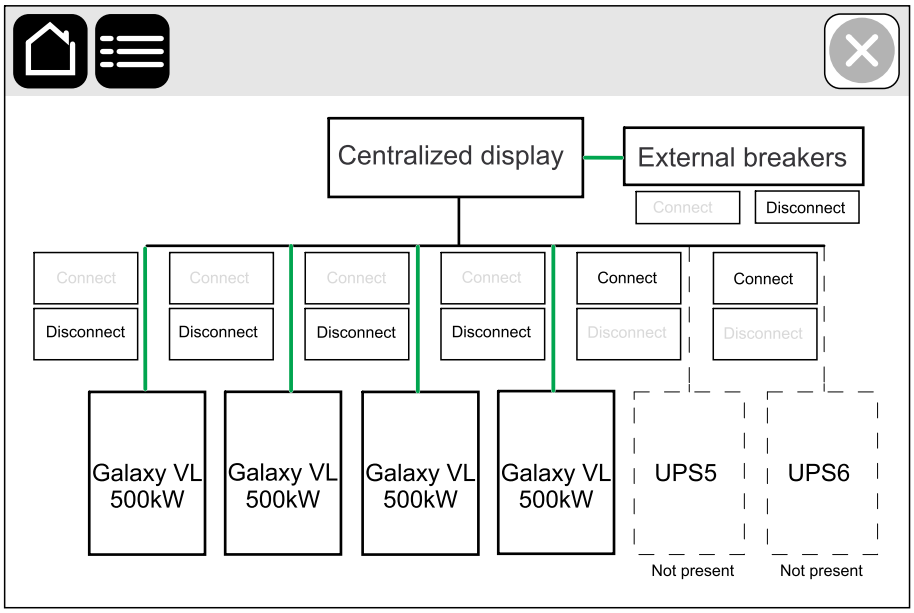
1. On the main menu screen, tap **Logs**. The log shows the latest 400 events with the newest events at the top of the list.
   a. Tap the arrow buttons to scroll up and down.
   b. Tap **Severity**, **Date**,**Time** or **UPS #ID** to sort the events.



Severity	Date	Time	UPS # ID	Message
	02/23/2022	10:01:05	UPS1	EPO switch activated
	02/23/2022	10:01:05	UPS1	System locked in bypass operation
	02/23/2022	10:01:05	UPS1	UPS Surveillance detected fault
	02/23/2022	10:01:05	UPS1	Input voltage out of tolerance
	02/23/2022	10:01:05	UPS1	Input phase sequence incorrect
	02/23/2022	10:01:05	UPS1	Input frequency out of tolerance
	02/23/2022	10:01:05	UPS1	Input phase missing
	02/23/2022	10:01:05	UPS1	Neutral displacement detected
	02/23/2022	10:01:05	UPS1	Bonding between neutral and ground missing
	02/23/2022	10:01:05	UPS1	Output voltage out of tolerance
	02/23/2022	10:01:05	UPS1	Synchronization unavilable - system is freerunning
	02/23/2022	10:01:05	UPS1	Inverter output is not in phase with bypass input
	02/23/2022	10:01:05	UPS1	Ambient temperature out of tolerance
	02/23/2022	10:01:05	UPS1	Ambient temperature high
	02/23/2022	10:01:05	UPS1	Inverter is off due to request by the user

View the Communication Status and Start/Stop the Communication with the UPSs and the External Disconnect Devices

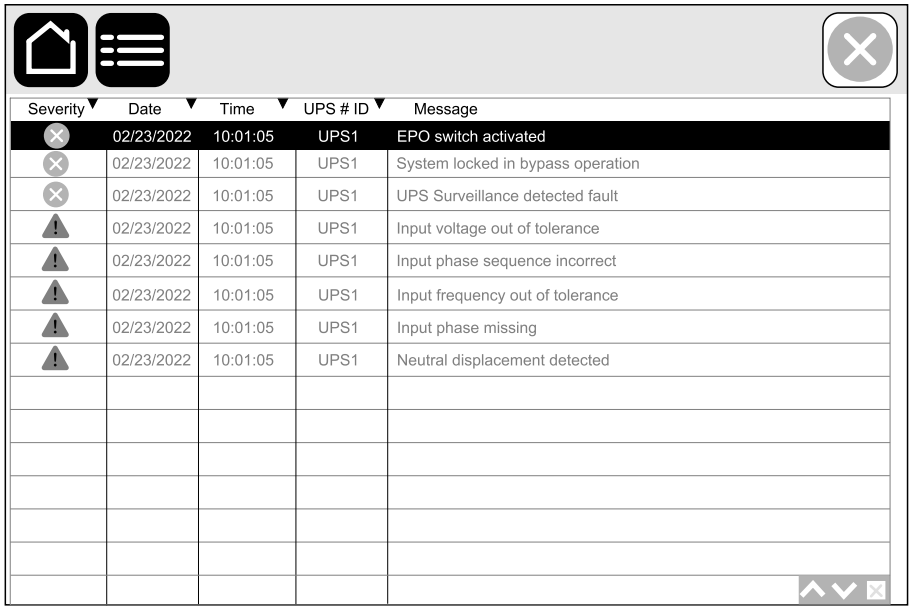
1. On the main menu screen, tap **Communication**. The color of the lines connecting the centralized UPS system display to the UPSs or to the external disconnect devices in the diagram indicates the communication status.
   - Gray: UPS/external disconnect devices not present
   - Green: UPS/external disconnect devices present and communication is normal
   - Red: UPS/external disconnect devices present and communication is abnormal
2. Tap **Connect** or **Disconnect** to start or stop the communication with each UPS or the external disconnect devices.



View the Active Alarms

When there is an active alarm in the system, a symbol indicating the alarm level is shown in the top right corner of the screen and the buzzer is active.

1. Tap the alarm status symbol to access the active alarms log. The log shows the latest 100 events with the newest events at the top of the list.
   a. Tap the arrow buttons to scroll up and down.
   b. Tap **Severity**, **Date**,**Time** or **UPS #ID** to sort the events.



Alarm Messages

Alarm/ Event	Severity	Display text	Description	Corrective action
Alarm	Warning	**Ambient temperature high**	Ambient temperature is high.	Please check the environment.
Alarm	Warning	**Ambient temperature out of tolerance**	Ambient temperature is out of tolerance.	Please check the environment.
Alarm	Warning	**Batteries are discharging**	The load is drawing more power than the UPS can draw from the input, causing the UPS to draw power from the batteries.	
Alarm	Warning	**Battery breaker BB1 open**	Battery disconnect device BB1 is open.	
Alarm	Warning	**Battery breaker BB2 open**	Battery disconnect device BB2 is open.	
Alarm	Warning	**Battery breaker BB3 open**	Battery disconnect device BB3 open.	
Alarm	Warning	**Battery breaker BB4 open**	Battery disconnect device BB4 open.	
Alarm	Warning	**Battery condition is poor**	Battery capacity is lower than 50%.	Batteries should be replaced.
Alarm	Warning	**Battery condition is weak**	Battery capacity is between 50% to 75%.	
Alarm	Warning	**Battery float charge current exceeds expected value**	The battery float charge current exceeds the expected value and has been limited to avoid thermal runaway.	

Alarm/ Event	Severity	Display text	Description	Corrective action
Alarm	Warning	**Battery is below minimum acceptable runtime**	The battery runtime is below configured minimum acceptable value.	
Alarm	Critical	**Battery is not working correctly**	A battery is not working correctly.	Please contact Schneider Electric.
Alarm	Warning	**Battery room ventilation inoperable**	Input relay indicates that the battery room ventilation is not working correctly.	
Alarm	Warning	**Bonding between neutral and ground missing**	Bonding between neutral and ground is missing.	
Alarm	Warning	**Breaker MBB closed**	Maintenance bypass disconnect device MBB is closed, feeding the load with unprotected power from bypass.	
Alarm	Warning	**Breaker SIB open**	System isolation disconnect device SIB is open, and system cannot feed the load.	
Alarm	Warning	**Breaker SSIB open**	Bypass static switch input disconnect device SSIB is open, making static bypass operation unavailable.	
Alarm	Warning	**Breaker UIB open**	Unit input disconnect device UIB is open, and the UPS is prevented from running in normal operation.	
Alarm	Warning	**Breaker UOB open**	Unit output disconnect device UOB is open, and UPS cannot feed the load.	
Alarm	Warning	**Bypass backfeed breaker open**	Bypass backfeed disconnect device is open.	
Alarm	Warning	**Bypass frequency out of tolerance**	Bypass input frequency is out of tolerance.	Check bypass input frequency and bypass input frequency setting.
Alarm	Warning	**Bypass phase missing**	Bypass input is missing a phase.	Check bypass input. Please contact Schneider Electric.
Alarm	Warning	**Bypass phase sequence incorrect**	The phase rotation on bypass input is incorrect.	Check bypass input. Please contact Schneider Electric.
Alarm	Warning	**Bypass voltage out of tolerance**	Bypass input voltage is out of tolerance and UPS is prevented from going into requested bypass mode.	
Alarm	Warning	**Charger shutdown due to high battery temperature**	The charger has been shut down due to a high battery temperature.	
Alarm	Critical	**EPO Switch Activated**	An emergency power off (EPO) switch is activated.	Deactivate the Emergency Power Off switch.
Alarm	Warning	**External battery monitoring detected fault**	Input relay indicates external battery monitoring has detected a fault.	
Alarm	Critical	**External energy storage monitoring: Major alarm**	Input relay indicates external energy storage monitoring has detected a major alarm.	Please contact Schneider Electric.
Alarm	Warning	**External energy storage monitoring: Minor alarm**	Input relay indicates external energy storage monitoring has detected a minor alarm.	Please contact Schneider Electric.
Alarm	Warning	**External signal turns charger off: Activated**	Input contact for charger off is activated.	
Alarm	Warning	**Ground fault detected**	Input relay indicates that a ground fault has been detected.	Please contact Schneider Electric.
Alarm	Critical	**High battery discharge current shutdown**	The energy storage surveillance has detected a battery discharge current above shutdown limit.	
Alarm	Warning	**High Battery Temperature Level**	The battery temperature is above the alarm setting.	Check the battery temperature. A high temperature may decrease the battery lifetime.

Alarm/ Event	Severity	Display text	Description	Corrective action
Alarm	Critical	**High battery temperature shutdown**	The energy storage surveillance has detected a battery temperature above shutdown limit.	
Alarm	Warning	**Input frequency out of tolerance**	Mains input frequency is out of tolerance.	Check input frequency and input frequency setting.
Alarm	Warning	**Input phase missing**	Input is missing a phase.	Check input. Please contact Schneider Electric.
Alarm	Warning	**Input phase sequence incorrect**	The phase rotation on input is incorrect.	Check input. Please contact Schneider Electric.
Alarm	Warning	**Input voltage out of tolerance**	Mains input voltage is out of tolerance.	
Alarm	Warning	**Internal power module redundancy lost**	The configured internal power module redundancy is lost because there are not enough power modules available.	
Alarm	Warning	**Inverter is Off due to a request by the user**	The inverter is off due to a request by the user.	
Alarm	Warning	**Inverter output is not in phase with bypass input**	The UPS inverter output is not in phase with the bypass input.	
Alarm	Warning	**Load on UPS is above warning level**	Load on UPS has exceeded the warning level.	
Alarm	Warning	**Low Battery Temperature Level**	The battery temperature is below the Alarm setting.	
Alarm	Warning	**MBB redundant monitoring not working correctly**	The two redundant AUX switches of MBB do not report the same status.	
Alarm	Warning	**Neutral displacement detected**	Neutral displacement has been detected.	
Alarm	Warning	**Output frequency out of tolerance**	Output frequency is out of tolerance.	Check output frequency and output frequency setting.
Alarm	Warning	**Output voltage out of tolerance**	The output voltage is out of tolerance.	
Alarm	Warning	**Overload on installation**	The load exceeds 100% of rated installation capacity.	
Alarm	Warning	**Overload on UPS due to high ambient temperature**	The load exceeds the rated capacity when running with high ambient temperature.	Reduce load on system or ambient temperature.
Alarm	Warning	**Overload or short circuit on UPS**	Reduce load on system or check for output short circuit.	The load exceeds 100% of rated capacity or there is a short circuit on the output.
Alarm	Warning	**Parallel breaker status inconsistency detected**	The status of one or more common parallel disconnect devices is not detected to be the same on all parallel UPS.	Replace parallel cable 1.
Alarm	Warning	**Parallel communication lost on PBUS cable 1**	PBUS cable 1 may be damaged.	
Alarm	Warning	**Parallel communication lost on PBUS cable 2**	PBUS cable 2 may be damaged.	
Alarm	Warning	**Parallel mixed operation mode**	One or more parallel UPS units are operating in battery operation, while others are operating in normal operation.	
Alarm	Warning	**Parallel redundancy lost**	The configured parallel redundancy is lost, either because the output load is too high, or because there are not enough parallel UPS units available.	
Alarm	Warning	**Parallel unit not present**	UPS is unable to communicate with parallel UPS %d. The UPS might have been powered down or PBUS cables may be damaged.	

Alarm/ Event	Severity	Display text	Description	Corrective action
Alarm	Warning	**PM (X) Power module disabled**	The power module has been disabled.	
Alarm	Warning	**PM (X) Power module inoperable**	Power module is inoperable.	
Alarm	Critical	**PM (X) Power module overheated**	Power module temperature exceeds critical level.	
Alarm	Critical	**PM (X) Power module surveillance detected fault**	Power module surveillance has detected a fault.	
Alarm	Warning	**Static bypass switch fan inoperable**	Static bypass switch has one or more inoperable fans. Fan redundancy is lost.	
Alarm	Critical	**Static bypass switch inoperable**	Static bypass switch is inoperable. UPS is prevented from going into static bypass operation.	
Alarm	Warning	**Synchronization unavailable - system is freerunning**	The UPS is unable to synchronize to the bypass input, external source or parallel system.	
Alarm	Critical	**System locked in bypass operation**	The system is locked in bypass operation.	The system has toggled between inverter operation and bypass operation more than 10 times within 1 minute. Please activate on button to transfer back to normal operation.
Alarm	Critical	**System operation mode - Forced static bypass**	The system is in bypass in response to a critical event or an inverter off request.	
Alarm	Warning	**System operation mode - Maintenance bypass**	The system load is supplied through the maintenance bypass disconnect device MBB.	
Alarm	Critical	**System operation mode - Off**	The system output power is turned off.	
Alarm	Warning	**System operation mode - Requested static bypass**	The system is in bypass in response to the UPS front-panel or a user-initiated software command, typically for maintenance.	
Alarm	Critical	**System operation mode - Static bypass standby**	The system is in static bypass standby operation in response to a critical event or an inverter off request.	
Alarm	Warning	**Temperature of input and/or output transformer is too high**	Temperature of input and/or output transformer is too high.	
Alarm	Warning	**UOB redundant monitoring not working correctly**	The two redundant AUX switches of UOB do not report the same status.	
Alarm	Warning	**UPS locked in static bypass mode: Activated**	Input contact for UPS locked in static bypass mode is activated.	
Alarm	Warning	**UPS operation mode - Battery**	On battery power in response to an input power problem or due to a transfer out of eConversion.	
Alarm	Critical	**UPS operation mode - Forced static bypass**	The UPS is in forced static bypass.	
Alarm	Warning	**UPS operation mode - Maintenance bypass**	The UPS load is supplied through the maintenance bypass disconnect device MBB.	
Alarm	Critical	**UPS operation mode - Off**	The output power is turned off.	
Alarm	Warning	**UPS operation mode - Requested static bypass**	The UPS is in bypass in response to the UPS front-panel or a user-initiated software command, typically for maintenance.	

Alarm/ Event	Severity	Display text	Description	Corrective action
Alarm	Warning	**UPS operation mode - Static bypass standby**	The UPS is ready to enter static bypass but awaits permission from the system. UPS output is off.	
Alarm	Critical	**UPS surveillance detected fault**	UPS surveillance has detected a fault.	Please contact Schneider Electric.

Operation Procedures for the Individual UPSs

The operation procedures in this section are performed from the display of the individual UPSs and only affect the individual UPS.

Turn the Inverter OFF

IMPORTANT: This will turn off the supply to the load.

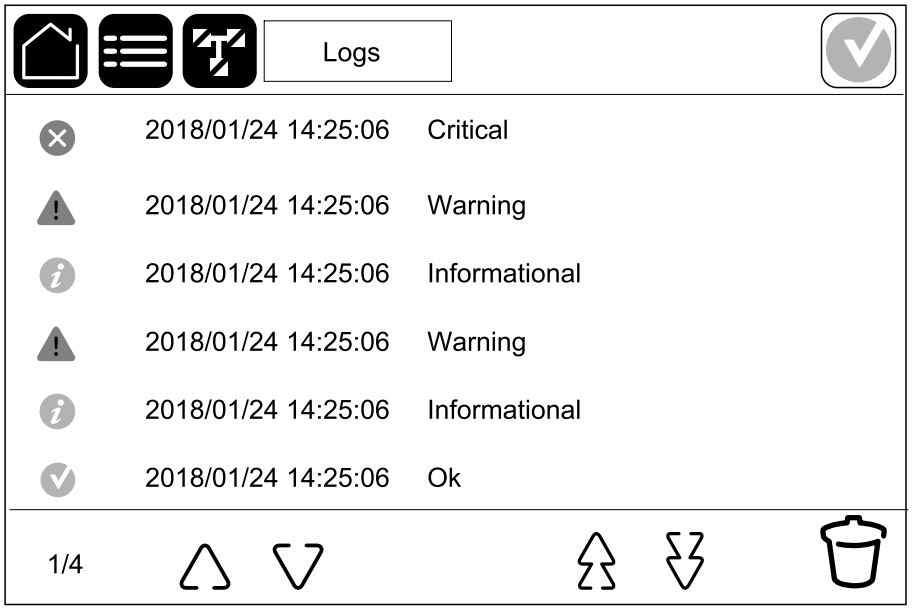
1. Select **Control > Inverter > Inverter off**.
2. Tap **OK** on the confirmation screen.

Turn the Inverter ON

1. Select **Control > Inverter > Inverter on**.
2. Tap **OK** on the confirmation screen.

View the Logs

1. Tap **Logs**. The log shows the latest 100 events with the newest events at the top of the list.
   a. Tap the arrow buttons to go to the next or previous page.
   b. Tap the double arrow buttons to go the first or last page.
   c. Tap the recycle bin button to delete all events stored in the log.



View the System Status Information

NOTE: The UPS display does not show real time data, and a comparison between the UPS display and an external power analyzer will not show the same data. Please allow for a tolerance of ±1% for voltages, ±3% for power, and ±3% for currents.

1. Tap **Status**.
   a. Tap **Input** to see the status.

Input

Voltage ph-ph (phase-to-phase)	The present phase-to-phase input voltage.
Current	The present input current from the AC utility power source per phase in amperes (A).
Frequency	The present input frequency in hertz (Hz).
Voltage ph-N (phase-to-neutral)[11]	The present phase-to-neutral input voltage in volts (V).
Total power	The present total active power input (for all three phases) in kW.
Power	The present active power (or real power) input for each phase in kilowatts (kW). Active power is the portion of power flow that, averaged over a complete cycle of the AC waveform, results in net transfer of energy in one direction.
Peak current	The present input peak current in amperes (A).
Power factor	The present ratio of the active power to apparent power.
Max. RMS current	The present maximum RMS current for each phase in amperes (A).
Energy	The total energy consumption since the time of installation.

   b. Tap **Output** to see the status.

Output

Voltage ph-ph (phase-to-phase)	The phase-to-phase output voltage at the inverter in volts (V).
Current	The present output current for each phase in amperes (A).
Frequency	The present output frequency in hertz (Hz).
Voltage ph-N (phase-to-neutral)[11]	The phase-to-neutral output voltage at the inverter in volts (V).
Load	The percentage of the UPS capacity presently used across all phases. The load percentage for the highest phase load is displayed.
Neutral current[11]	The present output neutral current in amperes (A).
Total power	The present active total output power (for all three phases) in kilowatts (kW).
Power	The present active power (or real power) output for each phase in kilowatts (kW). Active power is the portion of power flow that, averaged over a complete cycle of the AC waveform, results in net transfer of energy in one direction.
Peak current	The output peak current in amperes (A).
Power factor	The present output power factor for each phase. Power factor is the ratio of active power to apparent power.

11. Only applicable in systems with neutral connection.

Output (Continued)

Max. RMS current	The present maximum RMS current for each phase in amperes (A).
Crest factor	The present output crest factor for each phase. The output crest factor is the ratio of the peak value of the output current to the RMS (root mean square) value.
Energy	The total energy supplied since the time of installation.

c. Tap **Bypass** to see the status.

Bypass

Voltage ph-ph (phase-to-phase)[12]	The present phase-to-phase bypass voltage (V).
Current	The present bypass current for each phase, in amperes (A).
Frequency	The present bypass frequency in hertz (Hz).
Voltage ph-N (phase-to-neutral)	The present phase-to-neutral bypass voltage (V).
Total power	The present total active bypass power (for all three phases) in kilowatts (kW).
Power	The present active bypass power for each phase in kilowatts (kW). Active power is the time average of the instantaneous product of voltage and current.
Peak current	The bypass peak current in amperes (A).
Power factor	The present bypass power factor for each phase. Power factor is the ratio of active power to apparent power.
Max. RMS current	The present maximum RMS current for each phase in amperes (A).

d. Tap **Battery** to see the status.

Battery

Measurements	The present DC power being drawn from the battery, in kilowatts (kW).
	The present battery voltage (VDC).
	The present battery current in amperes (A). A positive current indicates that the battery is charging; a negative current indicates that the battery is discharging.
	Battery temperature from the connected temperature sensors in Celsius or Fahrenheit.
Battery	The amount of time before the batteries reach the low-voltage shutdown level. Also shows charge level of the battery as a percentage of full charge capacity.
	The present battery charge (Ah).
Configuration	Shows battery type.
Status	The general condition of the charger.
Mode	The operation mode of the charger (**Off**, **Float**, **Boost**, **Equalization**, **Cyclic**, **Test**).
Charging capacity	The maximum charge capacity in percentage of the UPS nominal power rating.

12. Only applicable in systems with neutral connection.

e. Tap **Temperature** to see the status.

Temperature

Ambient temperature	Ambient temperature in Celsius or Fahrenheit.
Battery temperature	Battery temperature in Celsius or Fahrenheit from the connected battery temperature sensors.
Temperature	Ambient temperature in Celsius or Fahrenheit from the optional connected temperature sensors (AP9335T and AP9335TH). Naming to be set up via the network management interface.
Humidity	Humidity in percentage from the optional connected humidity sensors (AP9335TH). Naming to be set up via the network management interface.

f. Tap **Power modules** to see the status.

Power modules

The view will show presence (present/not present) and status (OK, warning, critical) for each power module.

g. Tap **Peak shaving** to see the status.

Peak shaving

Peak shaving mode	Shows if peak shaving mode is active or inactive at this moment.
Input power	The present input power used by the UPS.
Battery power	The present battery power used by the UPS.
Charging in peak shaving mode	Shows if battery charging is allowed while the UPS is in active peak shaving mode.
Forced battery operation	Shows if forced battery operation is enabled (green).
State of charge	The present state of charge for the batteries. The state of charge for the batteries must be at a specified level before peak shaving mode is allowed to be active. Peak shaving mode will be deactivated if the state of charge reaches a specified minimum level.
Remaining time: **Battery operation** **Peak shaving mode**	 The remaining time scheduled for battery operation. The remaining time scheduled for active peak shaving mode.

h. Tap **Parallel** to see the status.

Parallel

Input current	The present input current from the input source per phase in amperes (A).
Bypass current	The present bypass current from the bypass source per phase in amperes (A).
Total output power	The total output power of the parallel UPS system showing the total load percentage and the total output power in kW and kVA for the parallel system.
Output current	The present output current for each phase in amperes (A).
Number of redundant UPSs	The number of redundant UPSs present.
Redundancy setting	The configured redundancy setting.

Maintenance

Recommended Personal Protective Equipment (PPE)

For all procedures where the outermost front door on the unit is opened, Schneider Electric recommends the following personal protective equipment (PPE) as a minimum:

- Non-flammable cotton clothing
- Eye protection (e.g. glasses or goggles)
- Safety shoes
- Any personal protective equipment required or recommended by local or national regulation

⚠CAUTION

RISK OF PERSONAL INJURY

Always perform a risk assessment before operating or maintaining this equipment. Use appropriate personal protection equipment.

Failure to follow these instructions can result in injury or equipment damage.

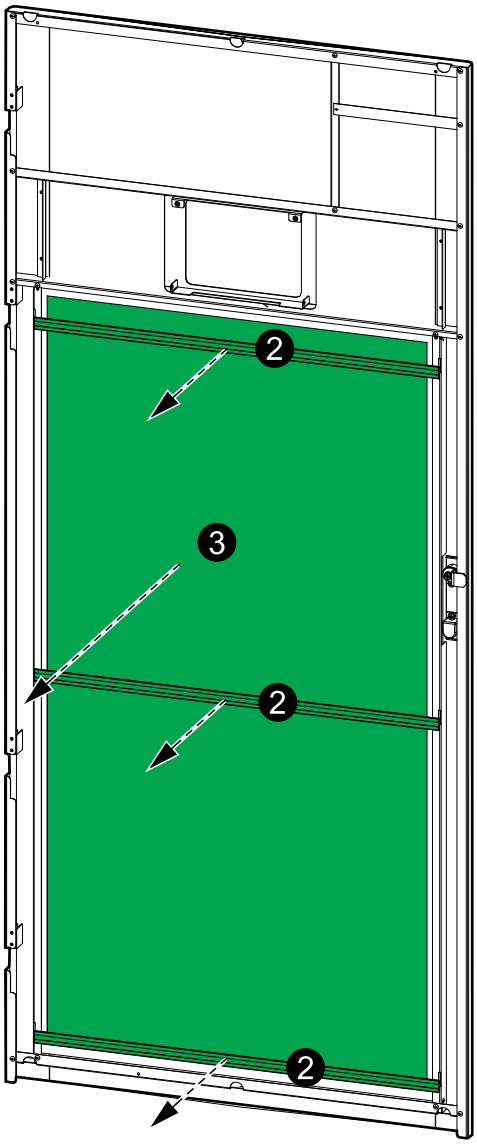
Connect Temperature/Humidity Sensor (Option)

Temperature/humidity sensor (AP9335T or AP9335TH) can be connected to the network management card.

1. Connect the temperature/humidity sensor to the universal I/O port of the network management card.
2. Set up the temperature/humidity sensor via the network management interface, see Access a Configured Network Management Interface, page 37.
3. To see the temperature/humidity measurements, tap **Status > Temperature**.

Replace the Air Filter (GVLOPT001)

1. Open the front door.
2. Remove the three horizontal brackets.
3. Remove the old air filter and install the new air filter.



4. Reinstall the three horizontal brackets.
5. Close the front door.
6. Reset the air filter counter, see Configure the Air Filter Reminder, page 34.

Live Swap: Add, Remove, or Replace a Power Module

NOTE: This UPS has been designed and evaluated for power module insertion and removal in any operation mode: **Live Swap**. This page specifies manufacturer's instructions for how to perform **Live Swap**.

NOTE: Incident energy is <1.2 cal/cm^2 when installed and first startup commissioned in accordance with product instructions. Incident energy is measured 200 mm (8 in) from cabinet front.

DISCLAIMER:

- Electrical equipment should be installed, operated, serviced, maintained, replaced, or have similar work carried out on it only by suitably qualified, trained, experienced, and competent personnel who hold any necessary authorizations (e.g. licenses, permits or certifications) to perform such work. All work must be carried out in a way that does not give rise to danger and using appropriate personal protective equipment (PPE).
- User must ensure compliance with the manufacturer's instructions and user manual and with all applicable laws, regulations, standards, and guidance when using this equipment and carrying out work or permitting work to be carried out on or near electrical equipment.
- Neither Schneider Electric nor any of its affiliates shall be liable for any claims, costs, losses, damages, death, or injuries arising out of the improper use of this equipment or any failure to comply with any of the above requirements.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Verify that the UPS has the **Live Swap** label present.
- If no **Live Swap** label is present on the UPS, then the UPS must be transferred to maintenance bypass operation or turned off before a power module can be inserted or removed.
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- Insertion or removal of power modules must only be performed by qualified personnel knowledgeable of electrical work and the required precautions. Keep unqualified personnel away.
- This procedure requires opening the front door. All other doors and covers must remain closed and secured during this procedure.
- Verify that the UPS is secured against movement before performing this procedure.
- If evidence of poor maintenance or poor installation is observed, do not proceed with this procedure.
- Do not install power modules which have been accidentally dropped, broken, flooded, contaminated, infested, or damaged in any way.
- Do not install power modules which are of unknown operational state.
- Keep a minimum distance of 200 mm (8 in) from the cabinet front while the system is energized.
- Do not use any tools inside the empty power module slot.
- Do not reach into the empty power module slot.

Failure to follow these instructions will result in death or serious injury.

⚠WARNING

RISK OF EQUIPMENT DAMAGE

- Store the power modules at an ambient temperature of -15 to 40 °C (5 to 104 °F), 10-80% non-condensing humidity.
- Store the power modules in their original protective packaging.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠CAUTION

HEAVY LOAD

Power modules are heavy (38 kg (83.77 lbs)) and require two persons to lift.

Failure to follow these instructions can result in injury or equipment damage.

NOTICE

RISK OF INSTALLATION OVERLOAD

Check and verify that the installation is correctly sized for the increase in power rating before installing more power modules in the UPS. Incorrect sizing of the installation can result in an installation overload. See the installation manual for requirements for upstream and downstream protection, cable sizes, etc.

Failure to follow these instructions can result in equipment damage.

NOTICE

RISK OF UNEXPECTED EQUIPMENT BEHAVIOR

Adding or removing power modules from the UPS system must be done in the same manner on all four UPSs, so UPS 1-4 always contain an equal number of power modules for even load distribution.

Failure to follow these instructions can result in equipment damage.

NOTICE

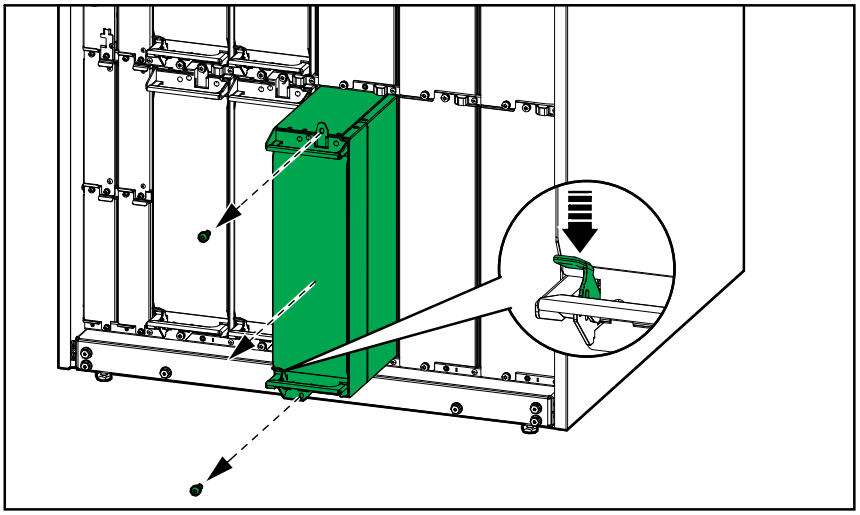
RISK OF LOAD DROP

Check and verify that the remaining power modules can support the load before removing a power module from the UPS.

Failure to follow these instructions can result in equipment damage.

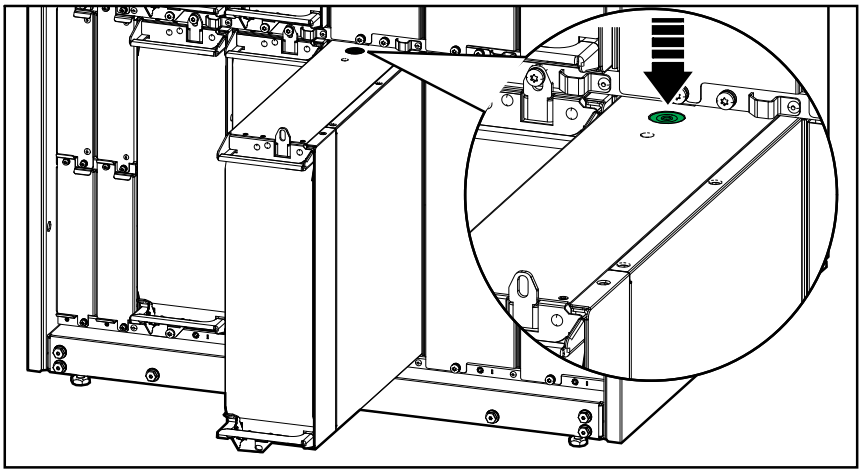
1. To remove an installed power module:

   a. Remove the screws in the top and bottom of the power module and push the unlock switch.

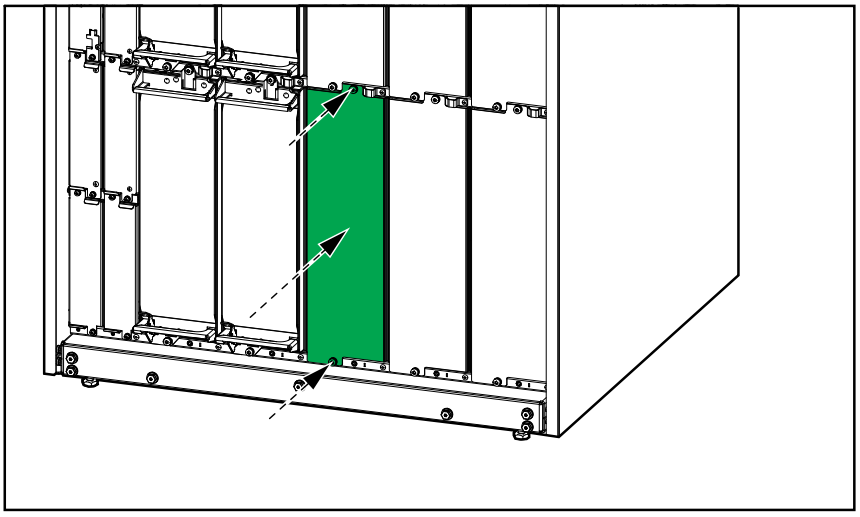


   b. Pull the power module halfway out. A locking mechanism prevents the power module from being pulled all the way out.

   c. Release the lock by pressing the release button on the top of the power module and remove the power module.

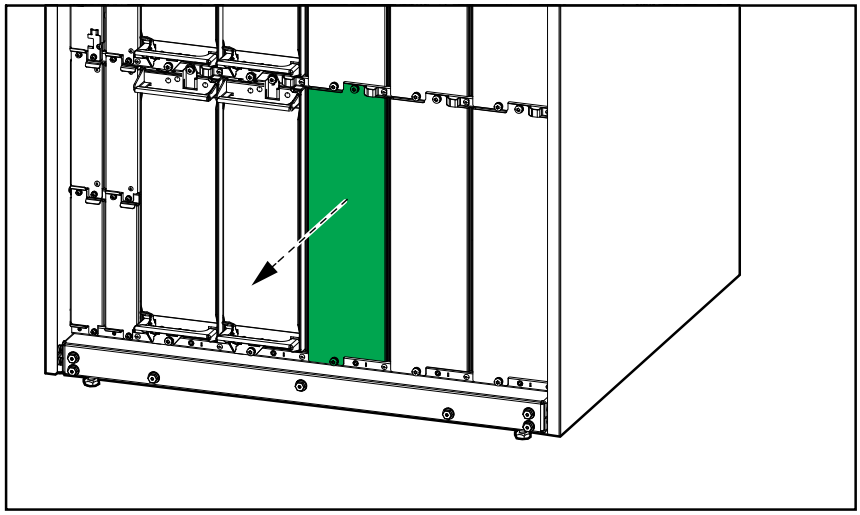


   d. If no replacement power module will be installed: Install a filler plate in front of the empty power module slot.



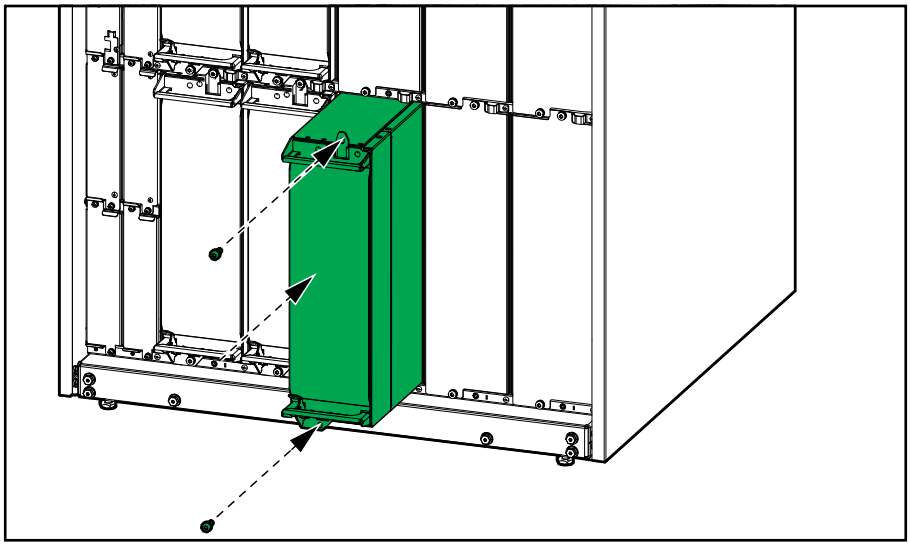
2. To install a new power module:

   a. If this is an additional power module that is being installed: Remove the filler plate from the empty power module slot. Save the filler plate for future use.



   b. Push the power module into the slot. The enable mechanism will latch when the power module is correctly inserted.

   c. Install the provided screws in the top and the bottom of the power module.



The power module will perform a self-test, automatically upgrade the firmware according to the system, and then go online.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

All power module slots must have either a power module or a filler plate installed.

Failure to follow these instructions will result in death or serious injury.

Determine if you need a Replacement Part

To determine if you need a replacement part, contact Schneider Electric and follow the procedure below so that the representative can assist you promptly:

1. In the event of an alarm condition, scroll through the alarm lists, record the information, and provide it to the representative.
2. Write down the serial number of the unit so that you will have it easily accessible when you contact Schneider Electric.
3. If possible, call Schneider Electric from a telephone that is within reach of the display so that you can gather and report additional information to the representative.
4. Be prepared to provide a detailed description of the problem. A representative will help you solve the problem over the telephone, if possible, or will assign a return material authorization (RMA) number to you. If a module is returned to Schneider Electric, this RMA number must be clearly printed on the outside of the package.
5. If the unit is within the warranty period and has been started up by Schneider Electric, repairs or replacements will be performed free of charge. If it is not within the warranty period, there will be a charge.
6. If the unit is covered by a Schneider Electric service contract, have the contract available to provide information to the representative.

Return Parts to Schneider Electric

To return an inoperable part to Schneider Electric, contact Schneider Electric customer support to obtain an RMA number.

Pack the part in the original shipping materials, and return it by insured, prepaid carrier. The customer support representative will provide the destination address. If you no longer have the original shipping materials, ask the representative about obtaining a new set.

- Pack the part properly to avoid damage in transit. Never use styrofoam beads or other loose packaging materials when shipping a part. The part may settle in transit and become damaged.
- Enclose a letter in the package with your name, RMA number, address, a copy of the sales receipt, description of the problem, a phone number, and a confirmation for payment (if necessary).

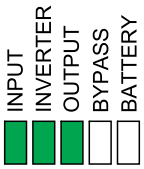
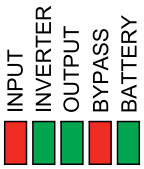
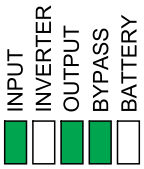
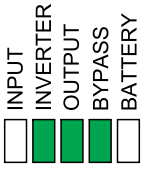
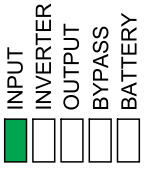
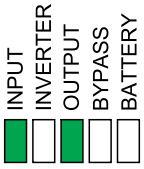
  NOTE: Damages sustained in transit are not covered under warranty.

Troubleshooting

Status LED Lighting per UPS Operation Mode

If the display becomes inoperable, you can see the UPS operation mode via the status LEDs behind the front panel.

- Green LED means function active.
- Off LED means function inactive.
- Red LED means function inoperable or in alarm condition.

Double conversion (normal operation)	
Battery operation (in dual mains system with bypass available)	
Battery operation (in single mains system or in dual mains system with bypass unavailable)	
Requested static bypass operation Forced static bypass operation ECO mode	
eConversion mode	
Off mode	
Static bypass standby operation	

Export UPS Report to a USB Device

1. Select **Maintenance > UPS report**.
2. Open the front door.
3. Insert your USB device in the USB port on the system level controller.
4. Tap **Export**.

   NOTE: Do not remove the USB device until the export process has finished.
5. Send the UPS report to Schneider Electric customer support.

Schneider Electric
35 rue Joseph Monier
92500 Rueil Malmaison
France

+ 33 (0) 1 41 29 70 00

www.se.com

990-94384-001