GAMATRONIC
Our Power, Your Confidence

CENTRIC UPS SYSTEM

Cat. no. 101SBD6x

User Guide
for models 50 kVA - 200 kVA

Release 0.3, July 2013

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SAFETY CONSIDERATIONS

The **Centric** UPS system is designed for industrial applications and harsh environments. Nevertheless the **Centric** UPS system is a sophisticated power system and should be handled with appropriate care, following these guidelines.

WARNING!

HIGH TOUCH CURRENT!
EARTH CONNECTION ESSENTIAL
BEFORE CONNECTING SUPPLY.

Do's

- Read this manual carefully before starting installation and operation of the UPS.
- Review the safety precautions described below to avoid injury to users or damaging equipment.
- All power connections must be completed by a **licensed electrician who is experienced in wiring this type of equipment,** and who is **knowledgeable about national and local electrical codes and regulations. Improper wiring may cause injury to personnel, or death,** or damage to the equipment**.**
- Pay attention to the warning signs, labels and marks on the unit. A warning sign signals the presence of a possibly serious, life-threatening condition.
- Keep the surroundings clean, uncluttered and free from excess moisture.
- Allow only qualified technicians to service the UPS. There are no user-serviceable components. **Do not try to repair it yourself!**
- Use the UPS only for its intended purpose.
- The batteries should be installed next to the UPS, or as close to it as is practically possible.

WARNING - RISK OF LETHAL ELECTRIC SHOCK:

The battery drawer contains a series of 12-Volt batteries that provide high voltage and energy in the UPS body even when the UPS is not connected to the ac input. Take appropriate precautions during installation, inspection and servicing.

Don’ts

- Do not open the cover of the UPS or the battery cabinets under any circumstances. All UPS panels and doors should be closed.
- Do not insert any objects through the ventilation holes.
- Do not put objects on the UPS.
- Do not move the UPS while it is operating.
- Do not use the UPS outdoors.
- Do not turn the UPS upside down during transportation.
- Do not connect or disconnect the cable to the battery cabinet before the battery circuit breaker is turned OFF.
- Do not turn ON the battery circuit breaker when the battery cabinet is disconnected from the UPS.
- Do not install the UPS next to gas or electrical heaters. A restricted location is recommended in order to prevent access by unauthorized personnel.

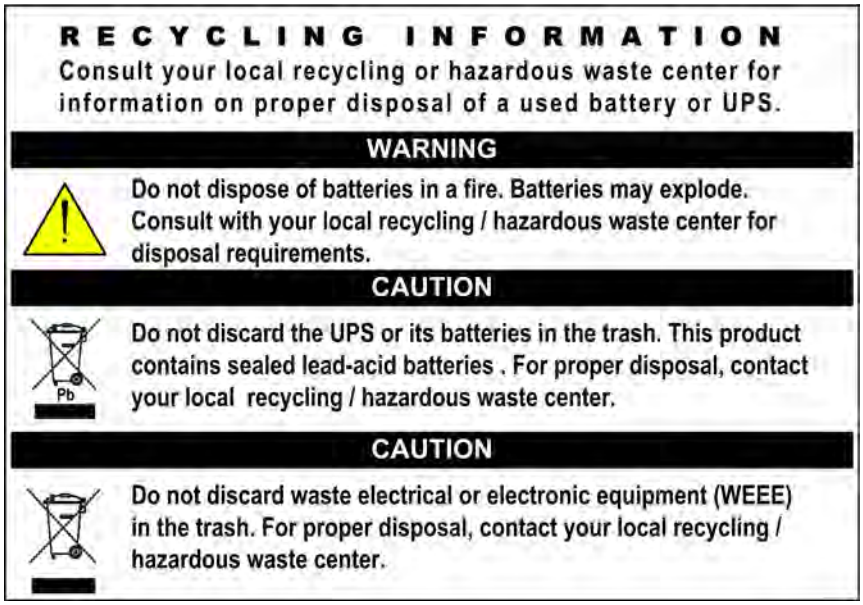
WARNING:RISK OF SEVERE DAMAGE TO THE UPS!!!

THIS SYSTEM REQUIRES THE NEUTRAL LINE FOR OPERATION.
DO NOT CONNECT THIS SYSTEM TO THE AC POWER SOURCE WITHOUT A NEUTRAL (NULL) CONDUCTOR!!

FAILURE TO USE A NEUTRAL CONDUCTOR MAY CAUSE PERMANENT DAMAGE TO THE SYSTEM.

STANDARDS AND CONVENTIONS

- This user manual contains diagrams which include images of the display screen of the UPS. Unless otherwise indicated, the readings shown in the screen images are only illustrative, and are not intended to match the readings on a specific system in a particular environment.
- Operation and control of the **Centric** UPS is accomplished through a touch-sensitive LCD display screen. In this manual, when explaining how to navigate the control software via the touch-sensitive screen, the terms "tap", "press", "choose", and "select" may be used interchangeably to indicate selection of a screen option.



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1. INTRODUCTION

In general, an Uninterruptible Power Supply (UPS) provides backup power for use when the utility ac electric power mains fail or drop to an unacceptable voltage level. **Centric** does this and much more.

Centric is designed to protect your data and equipment and minimize downtime and other adverse effects normally incurred by power irregularities and failures.

Voltage surges, spikes and sags are inherent in commercial utility power. Over time, these irregularities shorten the life of equipment and components. **Centric** continually eliminates power irregularities, thus helping to extend the life of your equipment, even through normal use when the input power is constant and continuous.

Centric requires very little attention or intervention during normal operation; however, you should read and understand the procedures described in this manual to ensure trouble-free operation.

Centric has a "true on-line battery" design in accordance with IEC62040-3. It is a "green" power solution thanks to low input THD, and provides regulated, stable power to your loads. Centric employs active current balancing between power modules, and delivers overall electrical efficiency of up to 96 %, up to 98 % in backup mode.

The **Centric** is comprised of the following sub-assemblies:

- From one to eight internal UPS modules, each with a maximum output of 25 kVA / 25 kW.
- System controller
- Static switch module
- LCD control panel

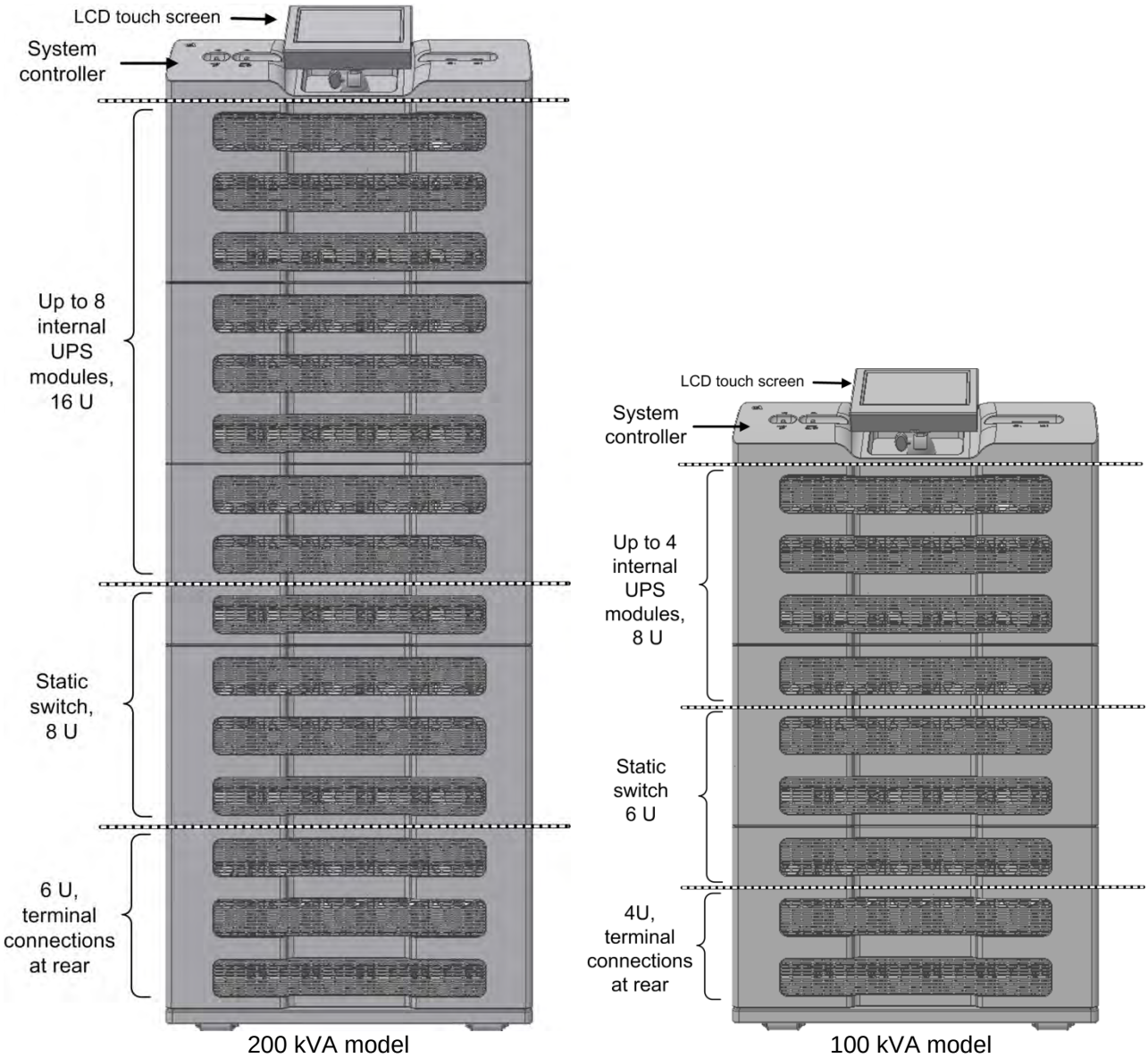


Figure 1: Major components of the Centric

1.1 LCD Control Panel

The LCD control panel (Figure 2) is the user's main interface with the **Centric**. The LCD panel is touch-sensitive – the user navigates through the system screens by pressing lightly on the various icons. On all screens other than the main menu screen, the current navigation path is displayed in the upper-left corner of the screen (Figure 3), enabling you to easily understand where you are within the control system menus. The extensive capabilities of the user interface are described in detail in chapter 6 "Centric menu functions in detail".

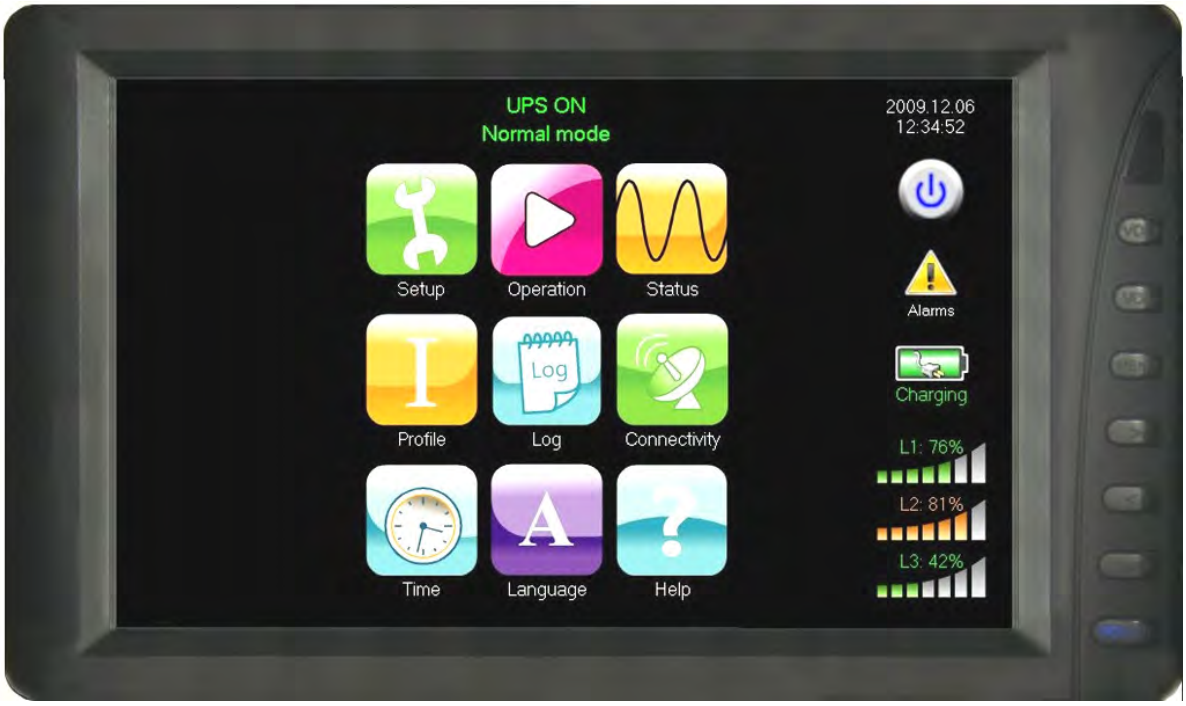


Figure 2: System control panel, displaying the main menu

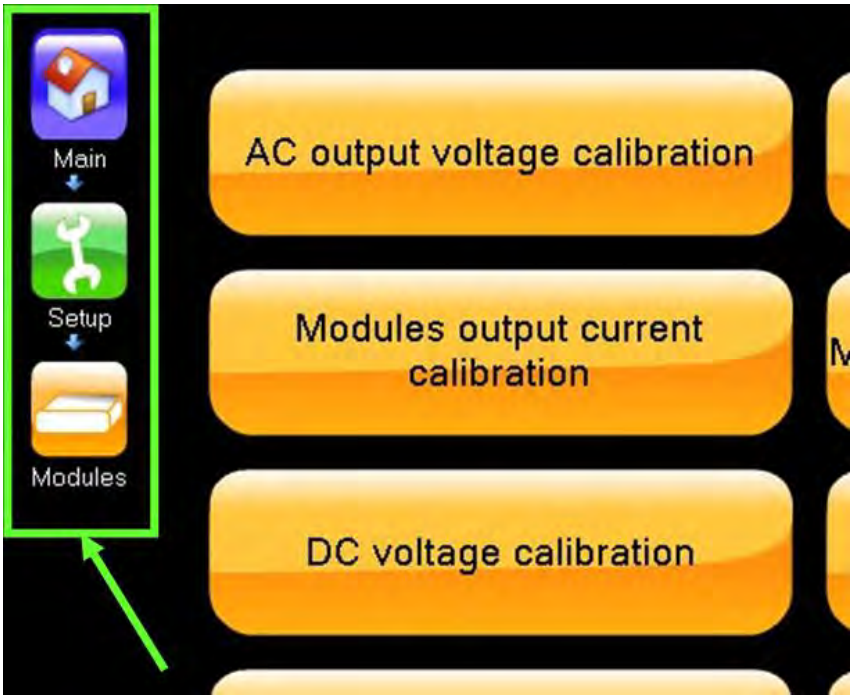


Figure 3: System control panel, with current navigation path

1.2 System controller

The **Centric** system controller has three purposes:

- Controls and monitors the operation of the **Centric** according to the user's commands.
- Collects and summarizes data from all sections of the UPS.
- Manages communication with external computers for data transfer and operation.

The **Centric** can operate without the system controller but with reduced functionality.

1.3 UPS module (25 kVA / 25 kW)

The UPS module is the core of the **Centric**, which consists of from one to ten identical internal modules operating in parallel. The number of UPS modules is fixed at the time of manufacture and depends on the user's capacity requirements.

Each UPS module includes a 3-phase charger with PFC (power factor correction) and a 3-phase PWM (pulse-width modulation) inverter connected to batteries by a classic dc link.

1.4 Static switch module

The centralized hybrid static switch enables an automatic transfer of the load from the output of the inverters to an alternate source – the ac mains, for example – when the inverter is unable to supply sufficient power to the load (for example, in the event of an overload, or an inverter failure). The static switch transfers high currents at very high speed; a typical transfer time is 3 ms.

1.5 Battery

The **Centric** battery bank provides backup power to the UPS and its load devices in the event that the utility ac input fails. The batteries are housed in an external cabinet adjacent to the **Centric**. The batteries are charged by the rectifier that supplies both the inverter and the battery charger.

The battery cabinet should be installed as close to the UPS as is practically possible.

Protect the batteries from moisture, dampness, and foreign substances.

The temperature of the battery's surroundings influences the batteries' useful lifetime.

Table 1: Battery lifetime vs environmental temperature as per Eurobat

ENVIRONMENTAL TEMPERATURE	ACHIEVABLE PERCENTAGE OF BATTERY'S RATED LIFETIME
20 °C	100 %
30 °C	50 %
40 °C	20 %

1.6 Emergency Power Off – EPO (manual)

An external Emergency Power Off (EPO) switch may be installed on the **Centric** by the customer. The EPO switch cuts power to the load in emergency situations. After being switched OFF by the EPO, the **Centric** must be restarted manually. Refer to the section "Emergency Power Off" in the *Centric Installation Guide* for further information.

1.6.1 EPO indication

Any of the output dry contacts can be assigned to indicate when the EPO switch has been activated. This dry contact can be used to trigger an external circuit if desired, such as a lamp or an audible alarm.

Refer to the section "EPO indication" in the *Centric Installation Guide* for further information.

1.6.2 Battery trip coil

The battery trip coil terminals are intended to be connected to the trip coil of the battery circuit breaker. If this is done and the EPO switch is activated, the **Centric** sends a voltage pulse V to the battery circuit breaker trip coil, causing the battery circuit breaker to turn OFF.

Use of the battery trip coil means that not only will use of the EPO switch cut all ac output from the UPS, it will also turn off the battery circuit breaker.Refer to the section "Battery trip coil" in the *Centric Installation Guide* for further information.

2. OPERATING MODES

The **Centric** UPS functions to supply ac electrical power to your load.

The **Centric** has three possible modes of operation:

- Normal operation.
- Battery operation.
- Bypass operation.

2.1 Normal operation

The UPS is almost always in normal operation mode. The load receives its power from the inverters that supply stabilized voltage, protected from spikes and irregularities in the ac input. The ac input system feeds the charger which supplies dc power to the inverter, while concurrently charging the batteries.

2.2 Battery operation

During battery operation, the load continues to receive power from the inverters, but the dc input to the inverter is taken from the batteries, instead of from the rectifier.

The batteries are galvanically connected by dc link to the inverter and the charger. Therefore, the dc voltage to the inverter continues without interruption when the ac input supply drops out; there is no need for any switching devices to bring the battery on-line, as it is permanently on-line.

The duration of the battery operation is determined by the load demand and the battery capacity.

2.3 Bypass operation

During bypass operation, the load receives power directly from the bypass ac input via the static switch.

Whenever the inverters cannot provide power to the load, either due to an overload or a short-circuit in the load, the load is automatically moved to the bypass ac input. The load automatically returns to the inverter when the problem has been corrected.

3. USER INTERFACE

This section describes the buttons and indicators used to operate the **Centric**.

3.1 Control panel

The LCD control panel (Figure 2) is the user's main interface with the **Centric**. The LCD panel is touch-sensitive – the user navigates through the system screens by pressing lightly on the various icons. On all screens other than the main menu screen, the current navigation path is displayed in the upper-left corner of the screen (Figure 3), enabling you to easily understand where you are within the control system menus.

The navigation path in the upper-left corner of the screen is also used to navigate backwards – to return to a previous screen or to the main menu.

The extensive capabilities of the user interface are described in detail in chapter 6 "Centric menu functions in detail".

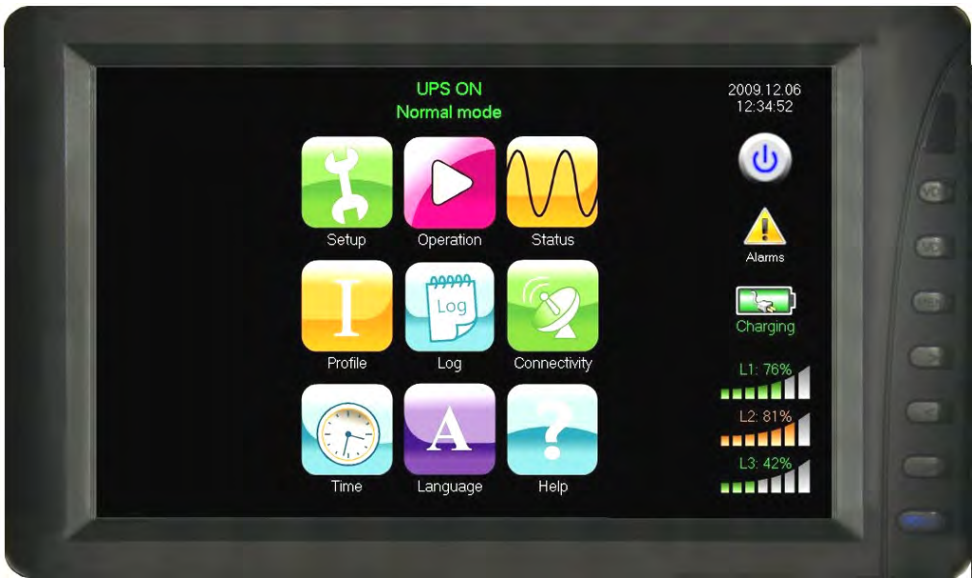


Figure 4: The control panel

The LCD control panel is attached to the front of the UPS and is active when the UPS is connected to ac power and also when the UPS is operating in battery mode.

There is a physical power on/off button on the control panel that controls the power supply to the screen. If the UPS is connected to ac power or operating in battery mode and the display screen is blank, ensure that the display unit itself has been powered on.

The display unit is mounted on a holder and can be removed from that holder if necessary. The angle of the display screen can be adjusted.

3.1.1 Calibrating the touch screen

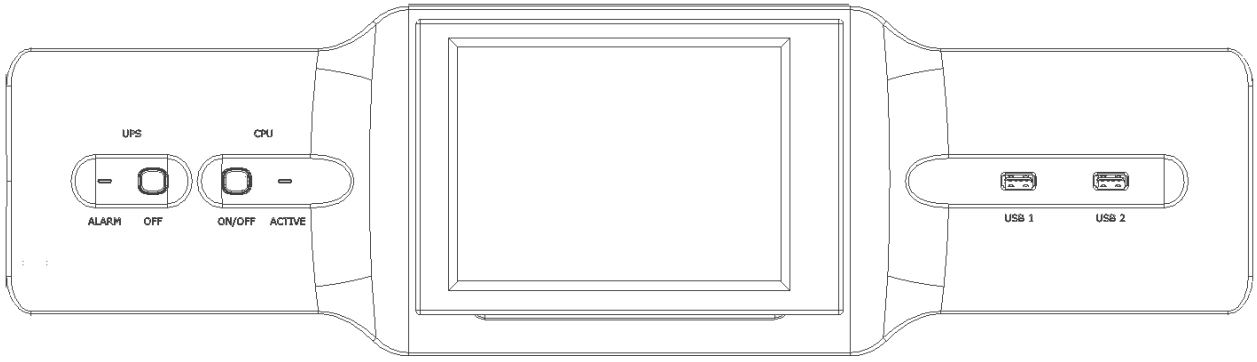
It may occasionally be necessary to calibrate the touch-screen, so that the pressure sensitive spots on the screen accurately overlay the icons. It is recommended to calibrate the touch-screen the first time you use it. The touch-screen can be recalibrated at any time, if needed.

To calibrate the touch screen, press and hold your finger on any location on the screen (preferably not on an icon) for 10 seconds and then release your finger. The software then prompts you to press on four specific locations on the screen, in series. Upon completing this process, the touch screen has been calibrated.

3.2 Alarm Off button

To the left side of the LCD touch screen are two buttons. The leftmost button is the “Alarm Off” button. Pressing the “Alarm Off” button silences the alarm that sounds when there is a system fault. If another fault occurs, the alarm returns to active mode.

***Note**: The ALARM LED remains lit until the problem is resolved to indicate the continued existence of a system fault.*



3.3 CPU On/Off button

To the left of the LCD touch screen are two buttons. The rightmost of these is the “CPU On/Off” button. Pressing this button switches the UPS’s main computer (the CPU) off or on. This is for use only in the rare instance that the LCD touch screen freezes up or the system otherwise ceases to respond to commands. In such a case, switching the CPU off and then on again may resolve the problem.

The Centric will continue to operate as normal even when the computer is turned off, although obviously there will be reduced functionality.

3.4 USB1 and USB2 connectors

To the right of the LCD touch screen are two USB connectors. These are described in section XX.

4. CENTRIC CONTROL SYSTEM

The **Centric** control system provides the user complete control over the UPS and its operating parameters. This chapter describes basic, most frequently-used functions.

4.1 The main screen (main menu)

The main menu is the user's starting point for most operations. Figure 5 illustrates the main screen and Table 2 explains the main screen's features.

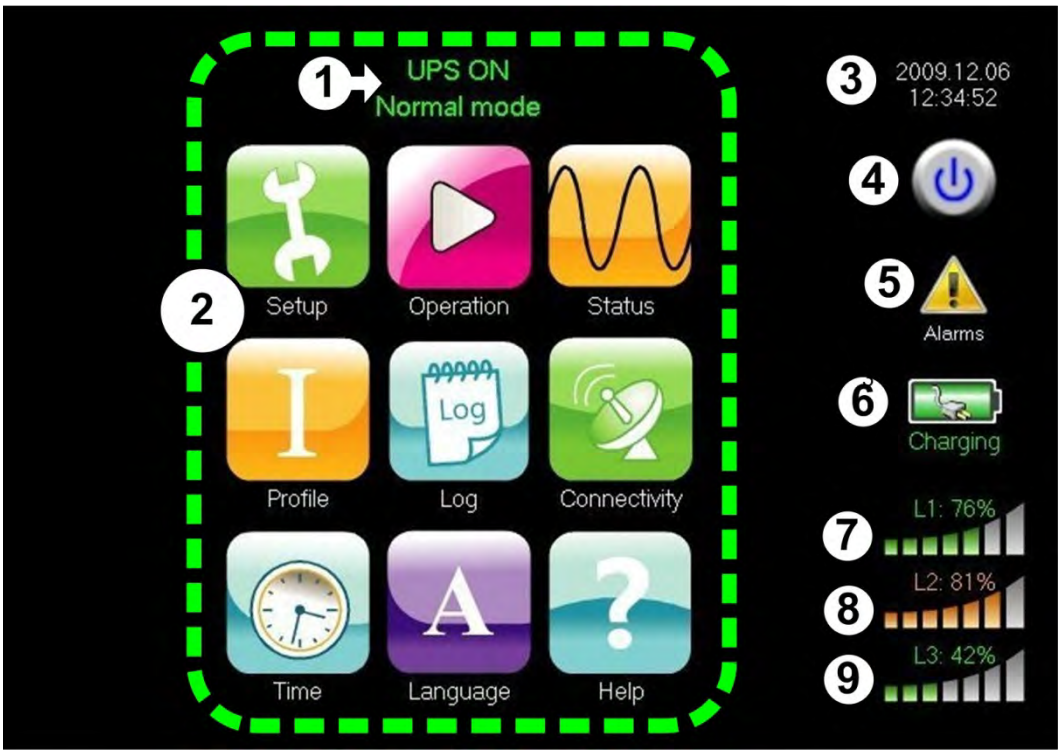


Figure 5: The main screen and its features

Table 2: Features of the main screen

ITEM	DESCRIPTION
1	**The operational status (ON/OFF) and current mode (Normal [inverter] mode / bypass mode / battery mode)**
2	**Menu options:**pressing these icons provide access to the main submenus.
3	**Current date and time.**
4	**UPS soft on/off button:**Pressing this icon displays the UPS ON/OFF screen, which enables the user to turn the UPS on and off.
5	**Alarm indicator:**When there are active alarms, a yellow triangle is displayed with an exclamation point inside. When there are no active alarms, this area of the main screen is blank. Pressing this icon displays the Active Alarm screen.
6	**Battery indicator:**Indicated the status of the battery: charging or discharging. Pressing on this icon displays the Battery Status screen.
7, 8, 9	**Load indicators:**Indicates the approximate load level on each output phase. With no load, all the vertical bars are white. As load increases, the vertical bars change color, from left to right.

On all screens other than the main menu screen, the current navigation path is displayed in the upper-left corner of the screen (see Figure 3), making it easy to understand where you are located within the control system menus.

The navigation path in the upper-left corner of the screen is also used to navigate backwards – to return to a previous screen or to the main menu. Pressing any of the screen icons in the navigation path moves you to that screen.

4.2 Main Menu highlights

This section provides a brief overview of the Main Menu options, highlighting the most frequently used options. (Chapter 6 provides an in-depth look at all of the options.)

4.2.1 Setup

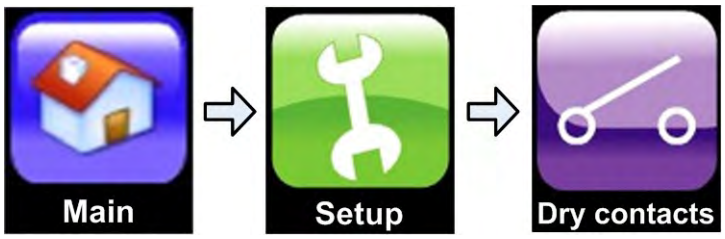
The Setup menu option contains a wide range of functions for setting the operating parameters of the system. Most of these functions are of interest only to the service technician, but there are a few that may be of interest to the non-technical user.

For a full description of all of the Setup menu functions, see section 6.1.1.

4.2.1.1 Time

The Time function under the Setup option is used to set the system date and time.
See section 6.1.7 for details.

4.2.1.2 Dry contacts



The Dry Contact function under the Setup option assigns alarm conditions to the output dry contacts. When the specified alarm occurs, the contact closes. The output dry contacts can be used to trigger external devices. See section 6.1.9 for details.

4.2.2 Operation

The Operation option on the Main Menu is used to turn the UPS on or off.

(For a full description of all of the Operation menu functions, see section 6.2.)

4.2.2.1 Turning the UPS on

To turn the UPS on:

1. On the Main Menu, tap the Operation button. The Operation submenu appears.

Figure 6: The Operation submenu

2. Tap the top button labeled "Turn on / off" on the Operation submenu. Another menu appears (Figure 7).
3. Tap the "System on" button.

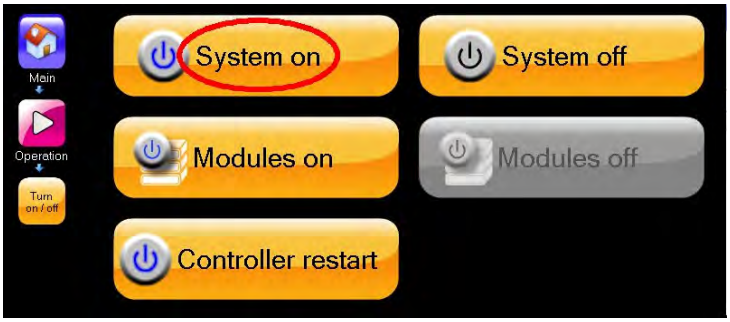


Figure 7: The "Turn off / on" submenu

4. The system requests confirmation.

Figure 8: The system requests confirmation

5. Choose "OK". The UPS takes a minute to perform a self-check routine, after which it is ready to supply power to the load.

4.2.2.2 Turning the UPS off

To turn the UPS off:

1. On the Main Menu, tap the Operation button.
2. Tap the top button labeled "Turn on / off" on the Operation submenu. Another menu appears (Figure 9).
3. Tap the "System off" button.

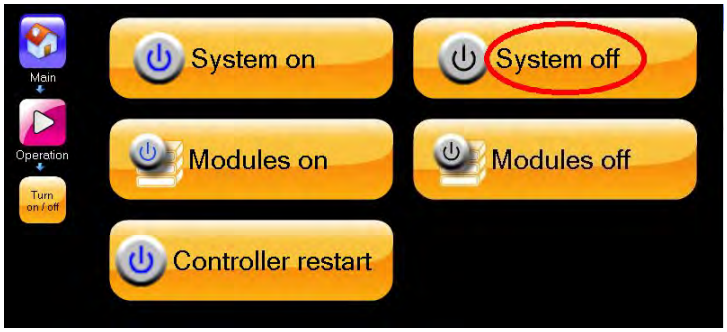


Figure 9: The "Turn off / on" submenu

4. The system requests confirmation.

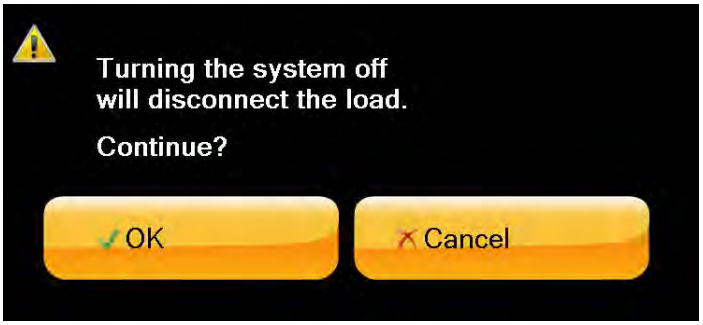
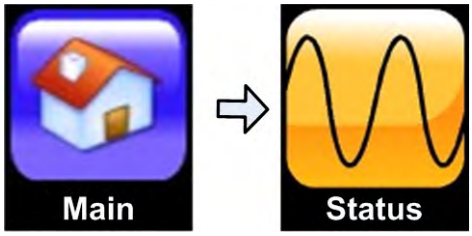


Figure 10: The system requests confirmation

5. Choose "OK". The UPS is then turned off.

4.2.3 Status



Selecting the Status option on the Main Menu displays a diagram that summarizes the overall state of the UPS.

In the diagram, shown in Figure 11, the highlighted (yellow) line indicates the present power flow through the UPS.A yellow triangle with an exclamation point inside indicates an alarm condition related to the UPS component where the triangle is located. Clicking on the component will provide more detailed information about the problem.

Clicking on the various parts of the diagram reveals more detailed information, including present voltage and current readings.

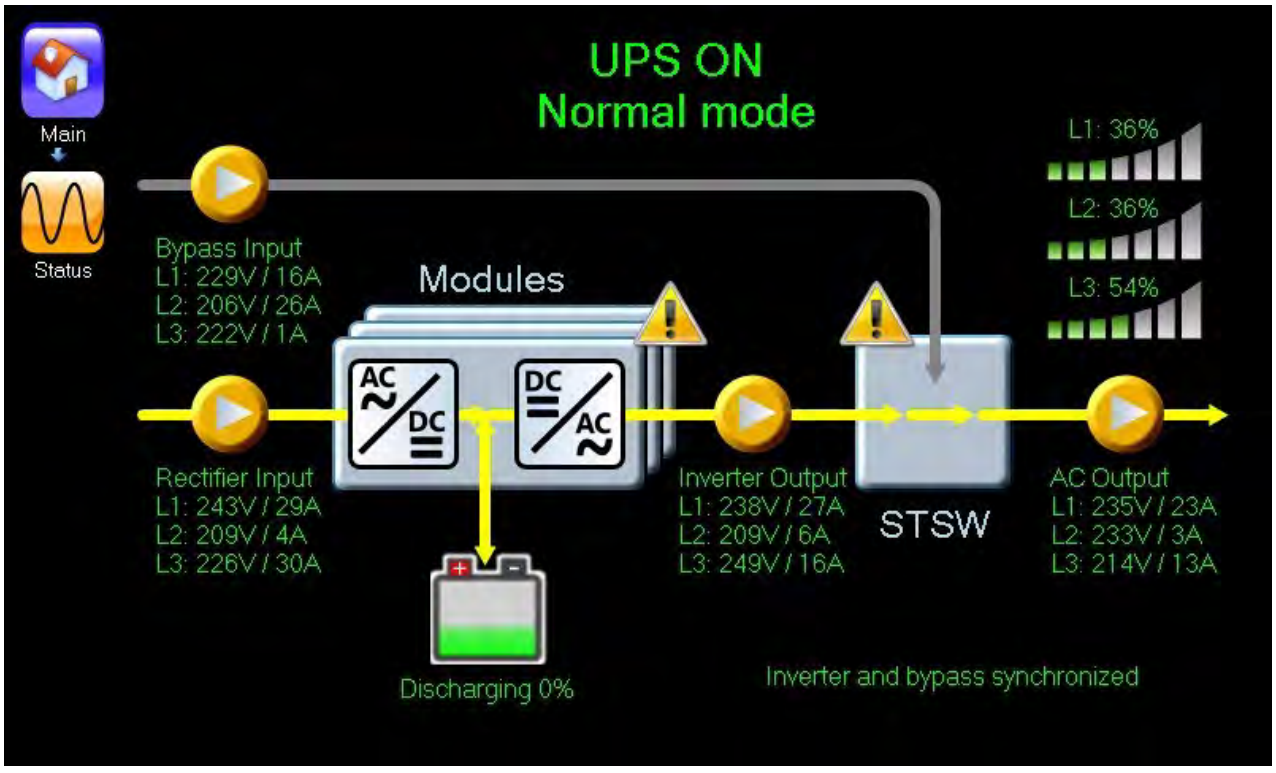


Figure 11: The Status screen

For a full description of the Status option, see section 6.3.

4.2.4 Profile

Selecting the Profile icon on the Main Menu lets you view various system parameters as defined by the factory or by your system technician.

Parameters for the overall system and for the battery, static switch, alarms, and hardware and software versions can be viewed.

For a full description of the Profile option, see section 6.4.

4.2.5 Log

Tap the Log icon on the Main Menu to see the system log. The system log lists all of the important system events that have occurred since the last time you initialized the log. Events listed include system power-up and power-down and the start and end of all alarm conditions.

For a full description of the Log option, see section 6.5.

4.2.6 Time

Tap on the Time icon on the Main Menu to see the system time, the time zone setting (relates to when daylight savings time goes into effect), and the accumulated operational time.

Section 6.7 provides more information on the Time function on the Main Menu.

4.2.7 Help

Tap on the Help icon on the Main Menu to access reference information on the UPS, including operating instructions.

4.3 Operating the system

The "Operation" option on the system main menu is used to:

- Turn the **Centric** ON (System on).
- Turn the **Centric** OFF (System off).
- Turn the power modules OFF.
- Turn the power modules ON.
- Transfer the load from the inverter to bypass power.
- Transfer the load from bypass power to the inverter.

4.3.1 Turning the UPS ON

4.3.2 Turning the UPS OFF

4.3.3 Transferring the load to bypass

During normal operation, the load is supplied with power from the **inverter**. The inverter voltage is controlled and regulated to protect the load from any aberrations in the local ac power. When the load is on the inverter, battery backup is always ready to ensure a continuous power supply even in the event of a local ac power failure.

Transferring the load to **bypass** takes the load off the regulated voltage of the inverter and supplies the load with power directly from the local ac mains. In bypass mode, no power conditioning is in effect, and in the event of an ac mains failure there is no battery backup to supply the load. Transfer to bypass can occur automatically, when the controller detects a malfunction in the inverter or a short-circuit in the load. Transfer to bypass can also be accomplished manually.

To manually transfer the load from the inverter to the bypass power:

Main Menu > Operation > Transfer load > Transfer Load to Bypass > OK

4.3.4 Transferring the load to the inverter

To transfer the load from bypass power to inverter power:

Main Menu > Operation > Transfer load > Transfer Load to Bypass > OK

See section 4.3.3 above for an explanation of the difference between inverter mode and bypass mode.

5. CENTRIC START-UP

5.1 Normal (not first-time) start-up

This section describes the start-up procedures for the operator after a shutdown of the Centric. A shutdown could occur due to battery exhaustion following an extended power outage, or due to a manual shutdown by a technician prior to maintenance on the Centric.

After a normal **Centric** shutdown the main menu screen indicates a status of "UPS OFF" and "No output":

Figure 12: Main menu, UPS off, normal mode

1. From the main menu, choose Operation > Turn OFF/ON > System ON
   - OR -
   Press the ON/OFF button in the upper right corner of the main screen and then choose "System ON".

2. Wait about 2 minutes for the **Centric** to start up.

   While waiting, you can press the  status icon to see a display of the system status. The status description at the top of the screen should become "UPS ON, Normal mode"

   If instead of the status description being "UPS ON, Normal mode" it remains "UPS ON, Bypass mode", there may be a problem with the rectifier voltage. You can see the input voltage readings on the status screen. If the readings are not within acceptable limits, verify that the external circuit breaker for the rectifier input voltage is ON, and that the rectifier input voltage is connected properly to the UPS terminals.

3. Connect the load and observe the results on the  status display.

4. Observe that the output voltage numbers and the bar graph now indicate the presence of the load (if any) and the load's relative power consumption.

Centric start-up is now complete.

5.2 Centric total shutdown (no ac output)

1. Switch OFF the load device(s).
2. From the main menu choose Operation > Turn ON/OFF > System OFF.
3. The control screen will show a status of "UPS OFF, No output".

6. CENTRIC MENU FUNCTIONS IN DETAIL

This chapter describes the functions available through the **Centric** Main Menu and its submenus.

The menus of the **Centric** are logically organized by function, to make it easy to find what you are looking for. The structure of this chapter mirrors the menu structure,.

When a screen is referred to in this chapter, it is frequently referred to by its full navigation path, to make it clear which screen is being referred to. For example, the System screen that is accessed from the "Setup" option on the Main Menu is referred to as the "Setup > System" screen.

Figure 13: Centric main menu

6.1 SETUP menu

The Setup menu functions enable you to set values for most of the parameters that govern the operation of the **Centric** UPS.

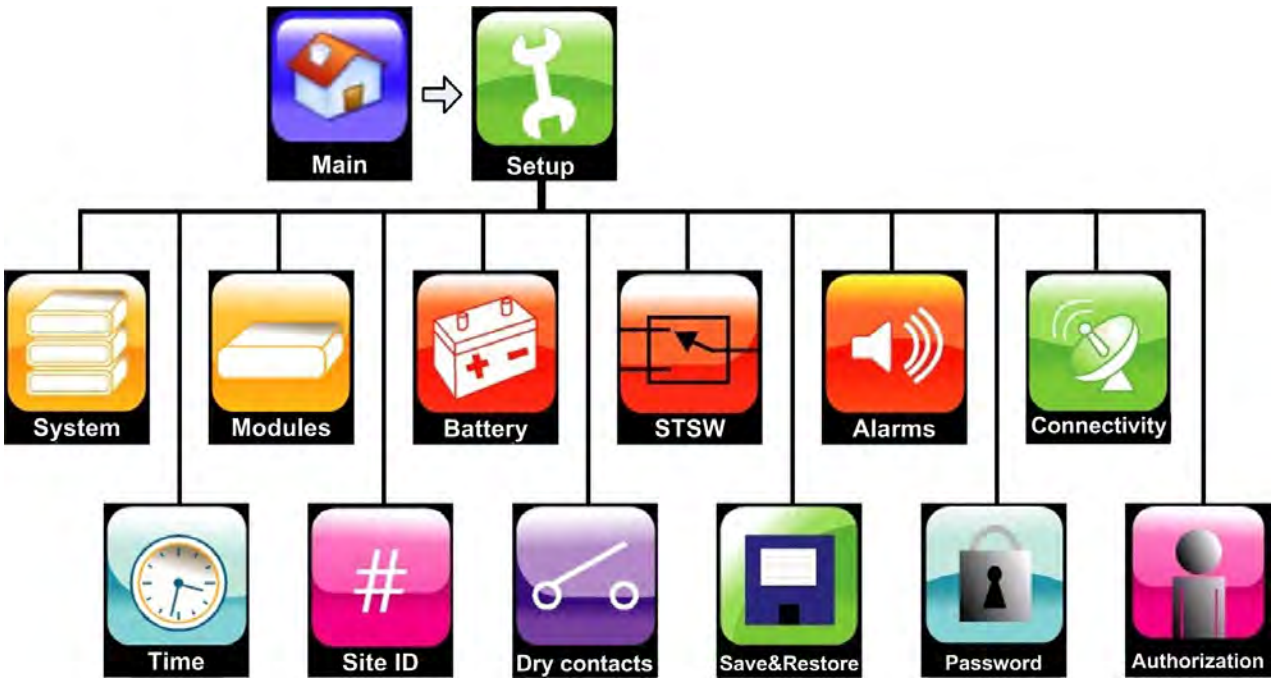


Figure 14: "Setup" menu

6.1.1 Setup > SYSTEM

The "Setup > System" submenu is used to inform the UPS of its operating environment in regards to the following parameters:

- Nominal input and output values of the UPS.
- Number of battery strings.
- Output power capacity.
- If the UPS is being operated in parallel with one or more additional UPSs.
- On what conditions should the UPS be shutdown when in battery mode, and should the UPS be automatically restarted when the ac mains power returns.
- Interval between automatic tests of the controller battery.
- Testing the remote control panel.
- List any maintenance alarms.

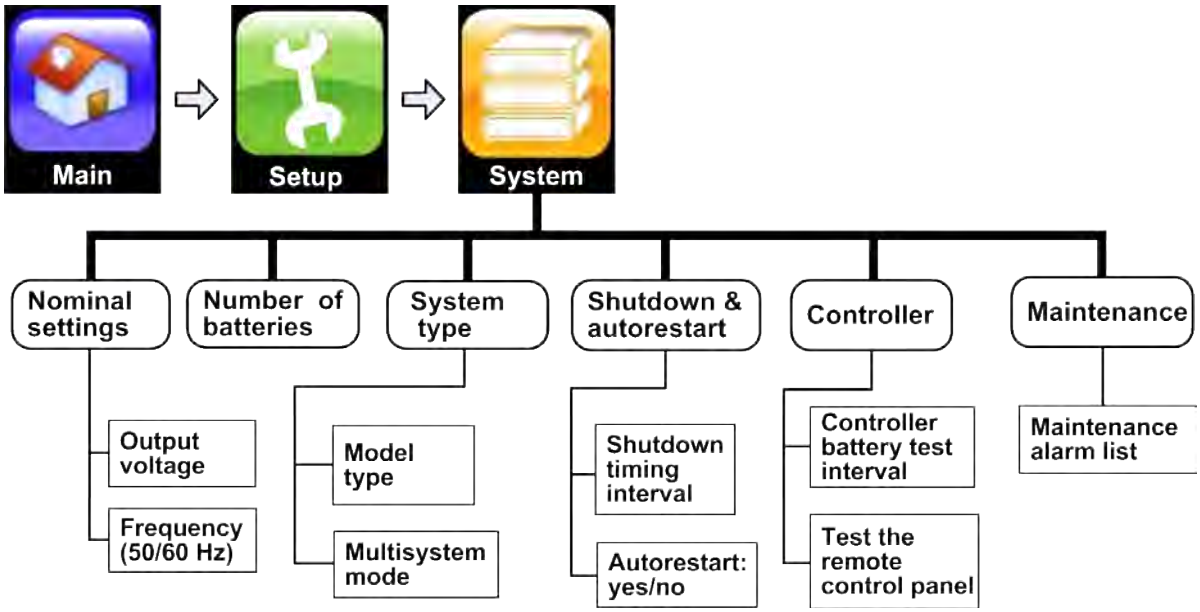


Figure 15: "Setup > SYSTEM" options

6.1.1.1 Setup > System > NOMINAL SETTINGS

- **Nominal system output voltage:** you can modify the nominal output voltage to any of the values listed on the screen, but first you must turn off the UPS by means of the ON/OFF button on the main menu screen. Obviously, you should not change the output voltage unless you are sure that the new value is appropriate for the load devices. An inappropriate output voltage can cause permanent damage to the load devices.
- **Nominal system frequency:** the output frequency of the UPS can be set to either 50 Hz or 60 Hz. Before modifying the UPS nominal frequency, the UPS must be turned off by means of the ON/OFF button on the main menu screen. Obviously, the nominal system frequency chosen should be the same as the nominal frequency of the rectifier input and bypass voltage.
- **Frequency tracking range:** The inverter frequency is normally governed by the frequency of the bypass voltage, which will be a nominal 50 or 60 Hz. There may be natural fluctuations in the bypass frequency. The frequency tracking range lets you determine how far away from the nominal frequency the inverter will follow the bypass frequency. When the bypass frequency fluctuation exceeds the frequency tracking range, the inverter stops following the bypass frequency and begins instead to determine its frequency by means of the UPS's

internal clock.

For example, the bypass frequency is a nominal 50 Hz, and you have set the frequency tracking range to be ±2 Hz. In this case, as long as the bypass frequency remains with in the range of 48–52 Hz, the inverter frequency will mirror it. When the bypass frequency passes these boundaries, the inverter frequency ceases to be determined by the bypass frequency and comes under the control of the UPS's internal clock (this is called "free-running mode"). When the bypass frequency returns to the range of 48–52 Hz, free-running mode ceases and the inverter frequency again comes under the control of the bypass frequency.

6.1.1.2 Setup > System > NUMBER OF BATTERIES

Specify the number of battery strings connected to the UPS. You can specify 1, 2, or 3 battery strings. The **Centric** requires you to enter a password to change this setting.

6.1.1.3 Setup > System > SYSTEM TYPE

Indicates the maximum output power of your system, and whether the UPS is operating in standalone mode or in a parallel configuration.

6.1.1.4 Setup > System > SHUTDOWN and AUTORESTART

Use this option to specify the behavior of the UPS during a failure of the ac mains power.

- You can set a specific limit to the duration of battery mode, after which time the UPS will automatically turn itself off.
- You can instruct the UPS to continue to supply backup power until the battery voltage descends to the predefined level at which the UPS will turn itself off.

In this screen, you also specify if the UPS should automatically turn itself back on when the ac mains power returns following a power failure, or if it should remain off.

6.1.1.5 Setup > System > CONTROLLER

- Lets you change the scheduling of the automatic test of the controller battery. (Note: this is not related to the test of the UPS’s main backup batteries.
- This option also lets you test the LEDs on the remote control panel.

6.1.2 Setup > MODULES

The Modules menu is where the parameters for individual modules can be adjusted. The functions here enable "fine-tuning" of the module output.

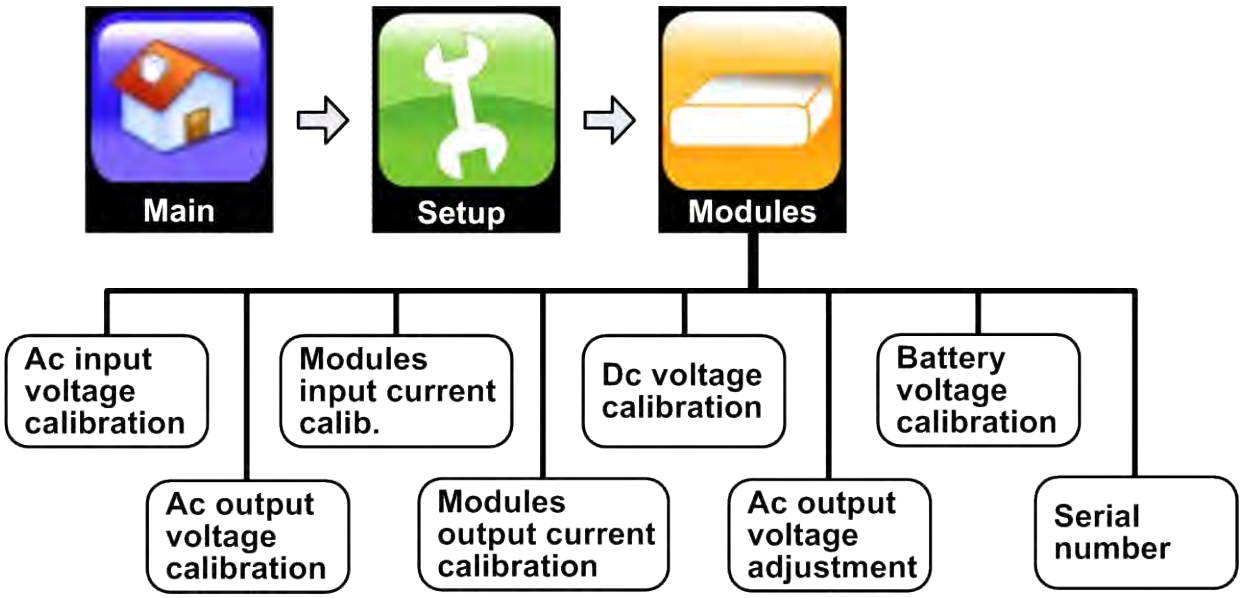


Figure 16: "Setup > Modules" options

6.1.2.1 Setup > Modules > AC INPUT VOLTAGE CALIBRATION

Use this function if it becomes necessary to recalibrate the voltage readings of one of the UPS's input phases. Note that this does not refer to the input reading of a particular module but rather to the input of all modules together.

To perform the calibration, measure the voltage of the input phase with a multimeter, then enter the measured value into this screen and press "confirm". Calibration of the input ac voltage reading should be performed only under conditions where the input and output voltages are stable and not subject to fluctuation.

6.1.2.2 Setup > Modules > AC OUTPUT VOLTAGE CALIBRATION

Use this function if it becomes necessary to recalibrate the voltage readings of one of the UPS's output phases. Note that this does not refer to the output reading of a particular module but rather to the output of all modules together.

To perform the calibration, measure the voltage of the output phase with a voltmeter, then enter the measured value into this screen and press "confirm". Calibration should be performed only under conditions where the input and output voltages are stable and not subject to fluctuation.

6.1.2.3 Setup > Modules > MODULES INPUT CURRENT CALIBRATION

Use this function if it necessary to recalibrate the current readings of one of the UPS's input phases. The value you enter will be sent to all modules, so input current calibration should only be performed on one module at a time, with all of the other modules turned off. (To turn modules OFF, see section 6.2.1.3 "Operation > Switch on/off > MODULES OFF".)

To perform the calibration, measure the current of the input phase with a multimeter, then enter the measured value into this screen and press "confirm". Only the values that you modified (indicated by a change in color of the numbers from white to orange) are sent to the module.

For your reference, the present UPS-measured values are displayed on the right side of the screen.

Calibration should be performed only under conditions where the input and output current are stable and not subject to fluctuation.

6.1.2.4 Setup > Modules > MODULES OUTPUT CURRENT CALIBRATION

Use this function if it becomes necessary to recalibrate the current readings of one of the UPS's output phases. The value you enter is sent to all modules, so output current calibration should only be performed on one module at a time, with all of the other modules turned off. (To turn modules OFF, see section 6.2.1.3 "Operation > Switch on/off > MODULES OFF".)

To perform the calibration, measure the current of the output phase with an ammeter, then enter the measured value into this screen and press "confirm". When you press "confirm", only the values that you have modified (indicated by a change in color of the numbers from white to orange) are sent to the module.

For your reference, the present UPS-measured values are displayed on the right side of the screen.

Note:

- Modules output current calibration should be performed only if necessary, not casually.
- Modules output current calibration should be performed only under conditions where the input and output current are stable and not subject to fluctuation.
- Calibration is best performed when the system is under relatively high load (70+ %).

6.1.2.5 Setup > Modules > DC VOLTAGE CALIBRATION

Use this function if it is necessary to recalibrate the reading of the UPS's internal dc voltage. The readings for the positive and negative components of the dc voltage are calibrated separately, and can be increased or decreased.

To perform the calibration, measure the internal dc voltage with a multimeter, then enter the measured value into this screen and press "confirm". Calibration should be performed only under conditions where the UPS's input and output currents and voltages are stable and not subject to fluctuation.

6.1.2.6 Setup > Modules > AC OUTPUT VOLTAGE ADJ.

Use this function to modify the voltages of the individual output phases of a specific power module. The phase voltage can be adjusted upward or downward by up to 15 V.

6.1.2.7 Setup > Modules > BATTERY VOLTAGE CALIBRATION

Use this function if it is necessary to recalibrate the reading of the battery voltage. The readings for the positive and negative components of the dc voltage are calibrated separately, and can be increased or decreased.

To perform the calibration, measure the dc voltage between the UPS's positive battery terminal and neutral battery terminal, and between the UPS's negative battery terminal and the neutral battery terminal. Enter the measured values into this screen and press "confirm". Calibration should be performed only under conditions where the UPS's input and output currents and voltages are stable and not subject to fluctuation.

6.1.2.8 Setup > Modules > SERIAL NUMBER

This function enables you to record the serial number of each UPS power module in memory, for easy reference.

6.1.3 Setup > BATTERY

The Setup > BATTERY functions provide control over a number of battery parameters.

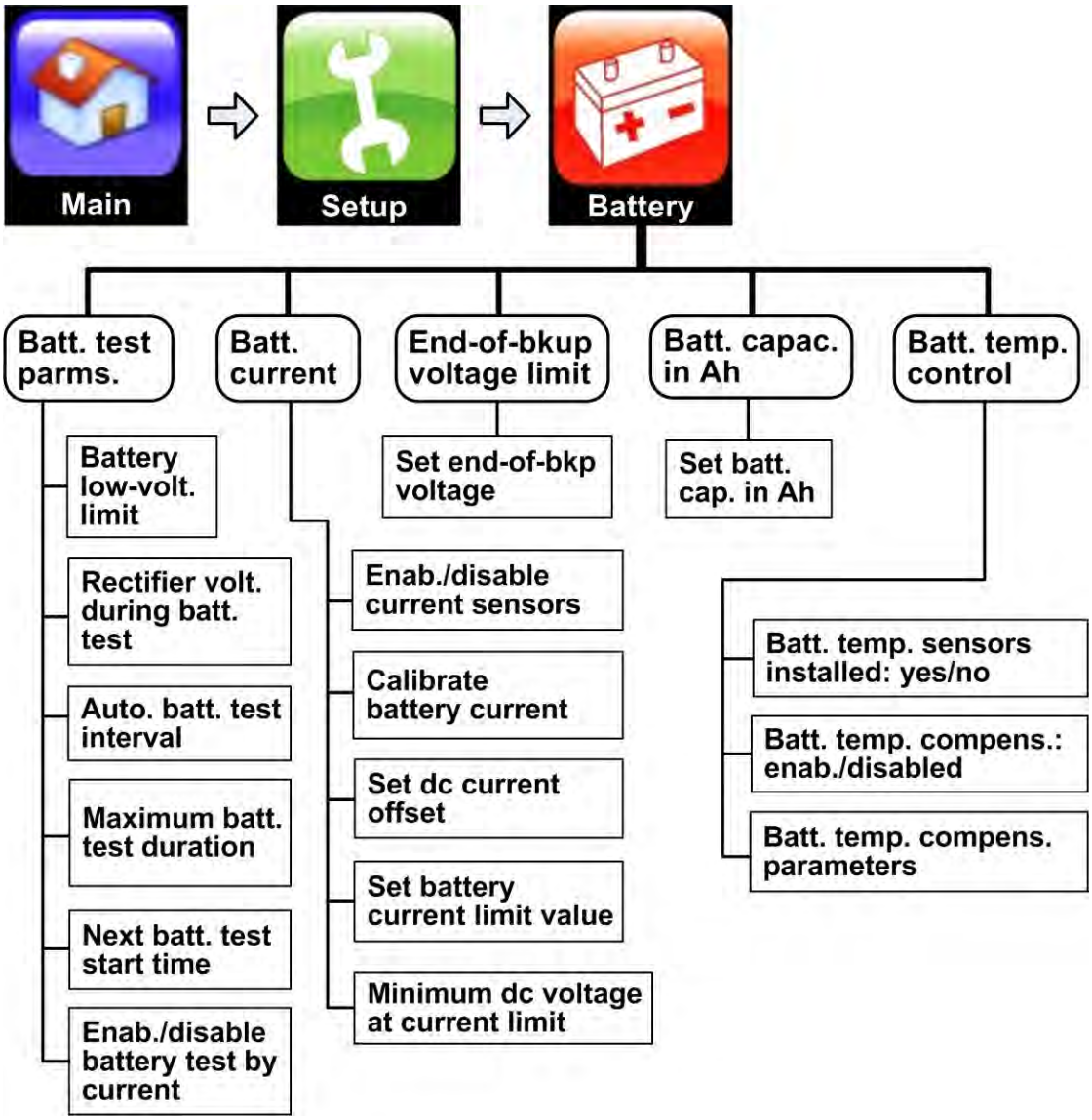


Figure 17: "Setup > Battery" options

6.1.3.1 Setup > Battery > BATTERY TEST PARAMETERS

The parameters in this section relate to the battery test function.

`6.1.3.1.1 Battery low-voltage limit`

This parameter sets the battery voltage at which a "low battery voltage" alarm is generated by the UPS. (This should not be confused with the "end-of-backup" battery voltage.)

`6.1.3.1.2 Rectifier voltage during battery test`

Sets the value to which the rectifier's output voltage descends during a battery test.

6.1.3.1.3 Automatic battery test interval

The UPS will conduct a periodic battery test automatically according to the time interval specified here. The time interval is specified in weeks.

6.1.3.1.4 Maximum duration of battery test

Set the maximum time a battery test may continue. If the battery is able to power the load for this time period without its voltage descending to the "battery low voltage limit", the battery has passed the test.

6.1.3.1.5 Next battery test start time

Use this function to change/override the start time of the next automatic battery test. The subsequent battery test interval is counted down from the completion of that test.

6.1.3.1.6 Enable/Disable battery test by current

If you have more than one battery bank and the current sensors are installed, it is possible to compare the current supplied by each battery bank. If the battery banks do not draw equal currents, then the battery current test fails when this test is enabled.

6.1.3.2 Setup > Battery > BATTERY CURRENT

The parameters in this section relate to the battery output current.

6.1.3.2.1 Enable/Disable current sensors

Use this function to enable or disable the (optional) battery current sensors.

6.1.3.2.2 Calibrate battery current

This function is used to calibrate battery current reading for any of the battery strings.

The "Set dc current offset" and "Calibrate battery current" functions should be performed only if the battery current measurement is not correct. They are used only when current sensors are added to the system.

1. Operate the UPS without a load and with batteries disconnected.
2. Perform the "Set dc current offset" function (only if the measured current is not zero).
3. Connect the UPS to its batteries and to a load and operate the UPS in battery mode.
4. Measure the actual battery current and correct the controller reading (if necessary) using the "calibrate battery current" function. Note: when the system is operating in battery mode, the battery current value is negative.

6.1.3.2.3 Set dc current offset

The "Set dc current offset" sets the UPS's dc current measurement to relative zero.

The "Set dc current offset" and "Calibrate battery current" functions should be performed only if the battery current measurement is not correct. They are generally used only when current sensors are added to the system.

1. Operate the UPS without a load and with batteries disconnected.
2. Perform the "Set dc current offset" function (only if the measured current is not zero).
3. Connect the UPS to its batteries and to a load and operate the UPS in battery mode.
4. Measure the actual battery current and correct the controller reading (if necessary) using the "calibrate battery current" function. Note: when the system is operating in battery mode, the battery current value is negative.

6.1.3.2.4 Set battery current limit value

Use this function to set a limit for the battery output current. There are two options:

- set maximum battery current to 0.1 x battery capacity.
- set maximum battery current to 0.2 x battery capacity.

6.1.3.2.5 Minimum dc voltage at current limit

Use this function to set a minimum value for the battery-charging voltage when current limiting is in effect. The permitted range is from 340 to 405 Vdc.

The factory setting of 340 Vdc is recommended for most situations.

6.1.3.3 Setup > Battery > BATTERY CAPACITY IN Ah

Use this function to tell the **Centric** the total capacity (in ampere/hours) of the connected battery strings. This total battery capacity figure is used by the **Centric** in three ways:

- To provide an estimate of the remaining battery time, when the system is in battery mode.
- To calculate the battery current limit.
- To calculate the duration of the battery test.

If you do not know your battery capacity, look at one of the battery cells. The Ah rating of a battery cell is usually indicated on the outside of the cell. This same number is your battery capacity.

6.1.3.4 Setup > Battery > BATTERY TEMPERATURE CONTROL

These functions are related to battery temperature compensation, a process that monitors the battery temperature and adjusts the charging voltage to avoid overcharging the battery. This prolongs battery life.

6.1.3.4.1 Setup > Batt. > Batt. Temp. Cntl. > TEMP SENSORS YES/NO

Indicate whether battery temperature sensors are present or not. Battery temperature sensors are required if one wishes to make use of battery temperature compensation.

6.1.3.4.2 Setup > Batt. > Batt. Temp. Cntl. > ENABLE/DISABLE BATT. TEMP. COMP.

Enables / disables battery temperature compensation.

6.1.3.4.3 Setup > Batt. > Batt. Temp. Cntl. > BATT. TEMP. COMP. PARAMTERS

The ideal parameters can vary depending on the type of battery cells being used and their manufacturer. Consult the battery manufacturer's data sheet for more information.

6.1.3.4.3.1 Temp. comp factor for a single cell

The compensation factor is usually provided on the battery manufacturer's data sheet.

6.1.3.4.3.2 Low limit dc voltage at compensation

Lowest charging voltage to be used when battery temperature compensation is enabled.

6.1.3.4.3.3 High limit dc voltage at compensation

Highest charging voltage to be used when battery temperature compensation is enabled.

6.1.4 Setup > STATIC SWITCH

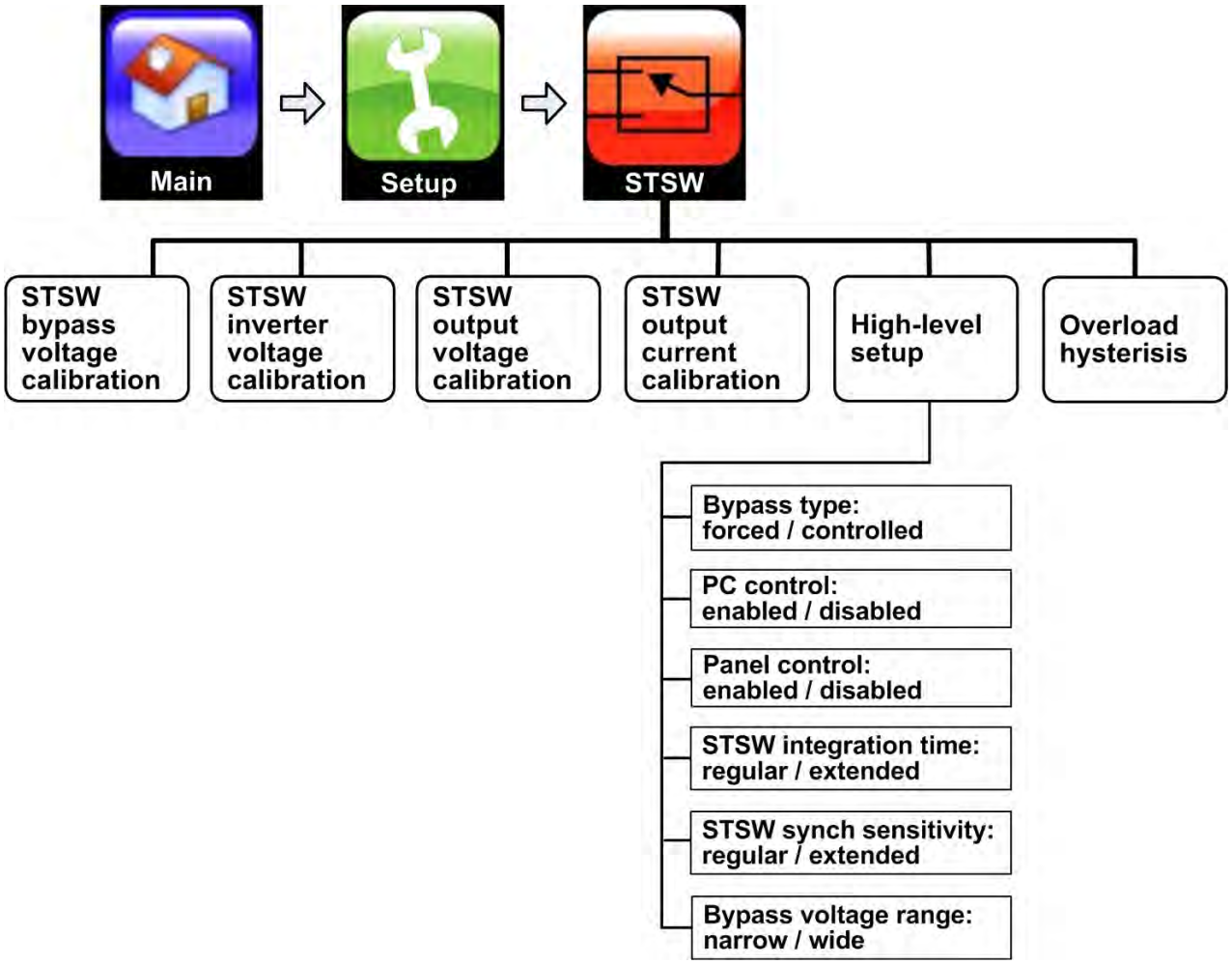


Figure 18: "Setup > Static Switch" options

6.1.4.1 Setup > ST.SW. > CALIBRATE BYPASS VOLTAGE

For calibration of the bypass voltage reading, by phase.

6.1.4.2 Setup > ST.SW. > CALIBRATE INVERTER VOLTAGE

For calibration of the inverter voltage reading, by phase.

6.1.4.3 Setup > ST.SW. > CALIBRATE OUTPUT VOLTAGE

For calibration of the ac output voltage reading, by phase.

6.1.4.4 Setup > ST.SW. > CALIBRATE OUTPUT CURRENT

For calibration of the ac output current reading, by phase.

Note:

- Static switch output current calibration should be performed only if necessary, not casually.
- Static switch output current calibration should be performed only under conditions where the system input and output current are stable and not subject to fluctuation.
- Calibration is best performed when the system is under relatively high load (70+ %).

6.1.4.5 Setup > ST.SW. > HIGH-LEVEL SETUP

These functions are related to the static switch.

6.1.4.5.1 Setup > ST.SW. > Hi-level setup > BYPASS FORCED/CONTROLLED

When the UPS wants to move to bypass mode, this function determines whether the controller will check the quality of the bypass voltage or not, before moving to bypass.

Choose "Forced" if you want the UPS to move to bypass regardless of the quality of the bypass voltage.

Choose "Controlled" if you want the UPS to determine if the bypass voltage is acceptable before transferring to bypass. In this case, if the bypass voltage is not acceptable, the UPS remains in inverter mode. The range of what is an "acceptable" bypass voltage can be set to "wide" or "narrow". See section 6.1.4.5.6 below.

6.1.4.5.2 Setup > ST.SW. > Hi-level setup > PC CONTROL ENABLE/DISABLE

Determines whether Static Switch functions – such as moving the system from inverter mode to bypass mode or from bypass mode to inverter mode – can be accomplished from the display screen.

6.1.4.5.3 Setup > ST.SW. > Hi-level setup > CONTROL PANEL ENABLE/DISABLE

Enables / disables the buttons on the controller's rear panel (transfer to bypass/inverter; alarm mute).

6.1.4.5.4 Setup > ST.SW > Hi-level setup > ST.SW. INTEGRATION TIME

This option controls the amount of time the static switch waits before transferring the load to bypass after detecting that the inverter output voltage is out of range. The "normal" setting is 3 ms, the "extended" setting is 20 ms.

6.1.4.5.5 Setup > ST.SW. > Hi-level setup > ST.SW. SYNCHRONIZATION SENSITIVITY

The UPS prevents transfers from inverter to bypass if there is a significant difference between the inverter output voltage and the bypass voltage. This option lets you control the degree of sensitivity of the UPS to such a voltage difference. The options are:

"Regular" sensitivity means that the UPS can move to bypass for a difference up to 20 V.

"Extended" sensitivity means the UPS can move to bypass for a difference up to 30 V.

6.1.4.5.6 Setup > ST.SW. > Hi-level setup > BYPASS VOLTAGE RANGE

This option relates to the "Forced / Controlled Bypass" option described in section 6.1.4.5.1 above. When "Controlled Bypass" is in effect, this option determines if the voltage range criterion used to determine an acceptable bypass voltage is "wide" (187 – 265 Vac) or "narrow" (207 – 253 Vac).

6.1.4.6 Setup > ST.SW. > OVERLOAD HYSTERISIS

This option sets the load level at which the load returns to the inverter after being transferred to bypass due to an overload. The return of the load to the inverter is blocked until the load level has decreased to this user-specified level.

This helps avoid a repeated transfer of the load back and forth between the inverter and bypass in a situation where the UPS is operating under near-overload conditions.

The factory default setting of 85 % is recommended for most environments.

6.1.5 Setup > ALARMS

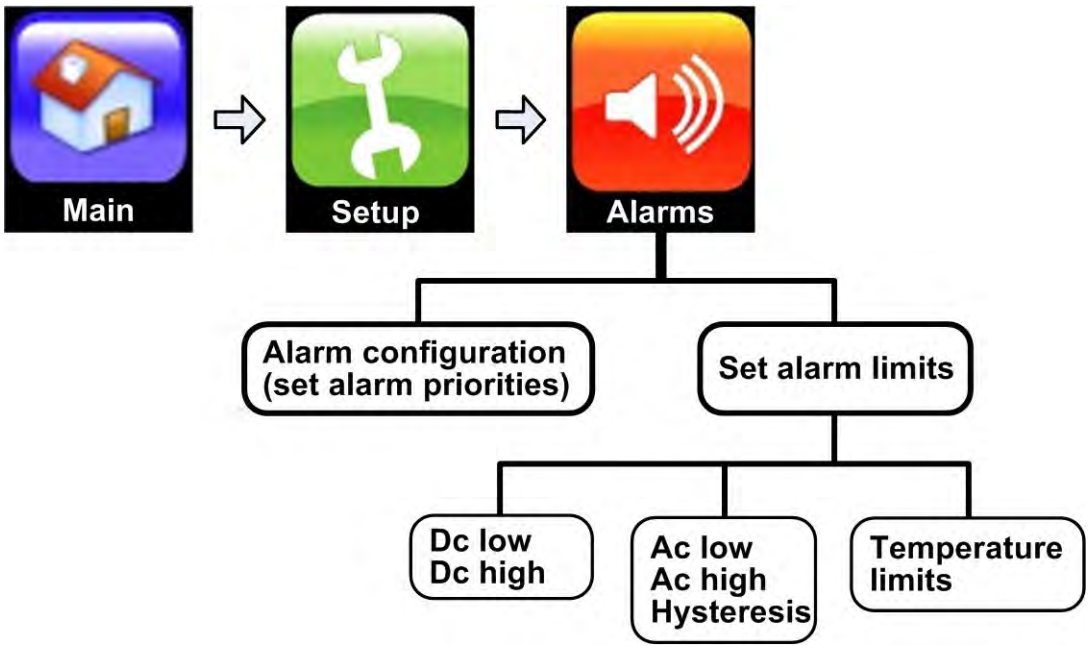


Figure 19: "Setup > Alarms" options

6.1.5.1 Setup > Alarms > SET ALARM PRIORITIES

This function enables you to assign one of three possible levels of importance to each type of system alarm. The levels of importance, in ascending order of importance, are Information, Warning, and Critical.

Factory default settings are already assigned to each alarm message when you install the UPS. It may be, however, that in your site a particular alarm condition is more or less important that the default value assigned to the alarm. This function allows you to override the default value for a given alarm.

You can scroll through all of the possible alarm messages in the scroll box at the top of the window. The assigned priority level for that alarm is highlighted. To modify the priority level, press the desired button.

It is also possible to instruct the system to ignore a specific alarm, by pressing the "Ignore" button near the upper left corner of the screen.

6.1.5.2 Setup > Alarms > ALARM LIMITS

This function lets you set the threshold values for several important alarms.

6.1.5.2.1 Setup > Alarms > Alarm Limits > DC VOLTAGE LIMITS

Use this function to set the voltage levels at which the "DC VOLTAGE HIGH" and "DC VOLTAGE LOW" will be activated.

6.1.5.2.2 Setup > Alarms > Alarm Limits > AC VOLTAGE LIMIT

Use this function to set the voltage levels at which the "AC VOLTAGE HIGH" and AC VOLTAGE LOW" alarms will be activated.

You can also set a "hysteresis" value. This value damps the sensitivity of the alarms to prevent a situation where, for example, a minor but frequent fluctuation of 1 Vac just above or below the threshold value causes an ac voltage alarm to turn on and off many times, rapidly.

The hysteresis value is the number of volts that a measurement must change before an alarm senses that the measurement has changed. So, in the example above, if you set a hysteresis value of 2, the alarm state wouldn't change until the fluctuation grew to 2 Vac. This would reduce the number of alarms while still ensuring that an alarm will be sounded when the voltage meets the threshold.

6.1.5.2.3 Setup > Alarms > Alarm Limits >TEMPERATURE LIMITS

This function lets you set the temperature (in °C) at which the high-temperature alarm and low-temperature alarm are generated. The temperature is read from an optionalinternal temperature sensor.

6.1.6 Setup > CONNECTIVITY

The functions in the "Setup > Connectivity" menu relate to the ability of the **Centric** to communicate with other devices.

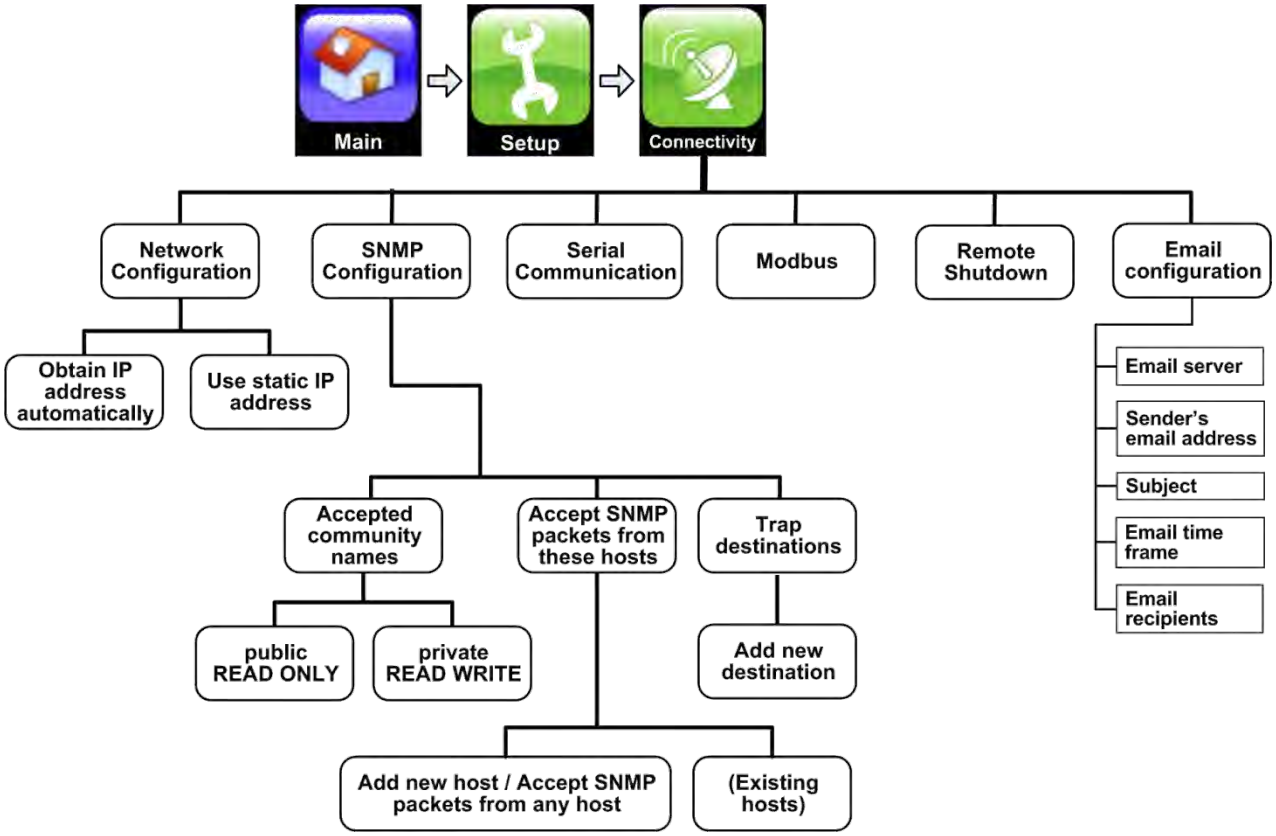


Figure 20: "Setup > Connectivity" options

6.1.6.1 Network configuration options

6.1.6.1.1 Network configuration >OBTAIN IP ADDRESS AUTOMATICALLY

This is the right choice if your computer network supports dynamic assignment of IP addresses (DHCP).When you press this button the **Centric** will request and receive an IP address from the computer network. Obviously the **Centric** must be connected to the network for this to work. The network connection is an RJ-45-type socket on the rear panel of the controller module.

6.1.6.1.2 Network configuration > USE STATIC IP ADDRESS

Choose this option to manually enter IP configuration information that you have received from your network support person. Use the keyboard on the screen to enter the numbers and periods.

6.1.6.2 SNMP configuration options (optional feature)

6.1.6.2.1 SNMP configuration > ACCEPTED COMMUNITY NAMES

You have the option of creating community names. To create a new community, do the following:

1. Touch **Add new community…**:

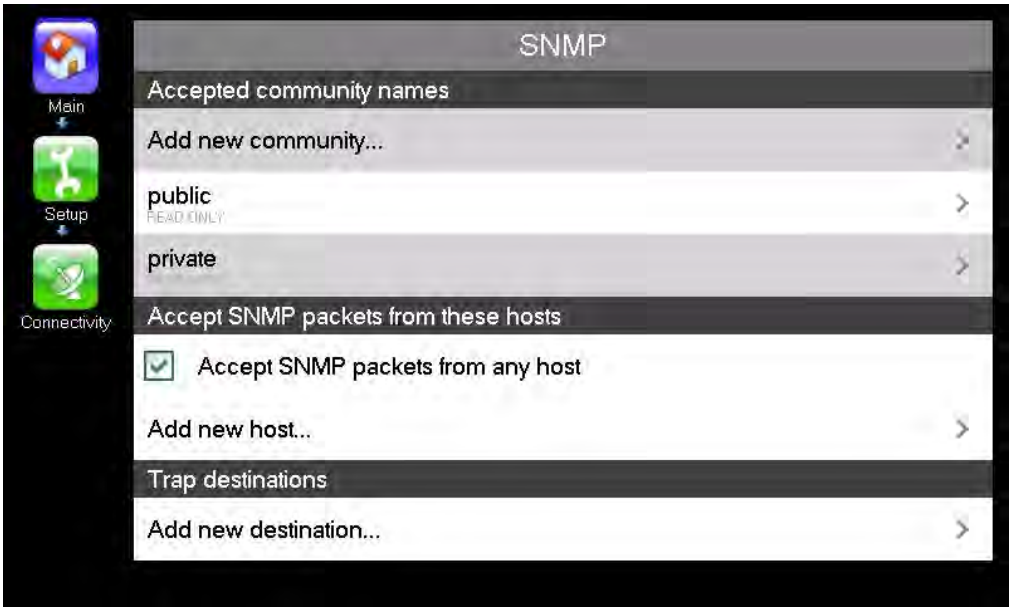


Figure 21: Setup > Connectivity > SNMP configuration options

2. Type in the desired community name and select the community rights. Click the arrow at the top of the screen to proceed.

Figure 22: Creating a new community

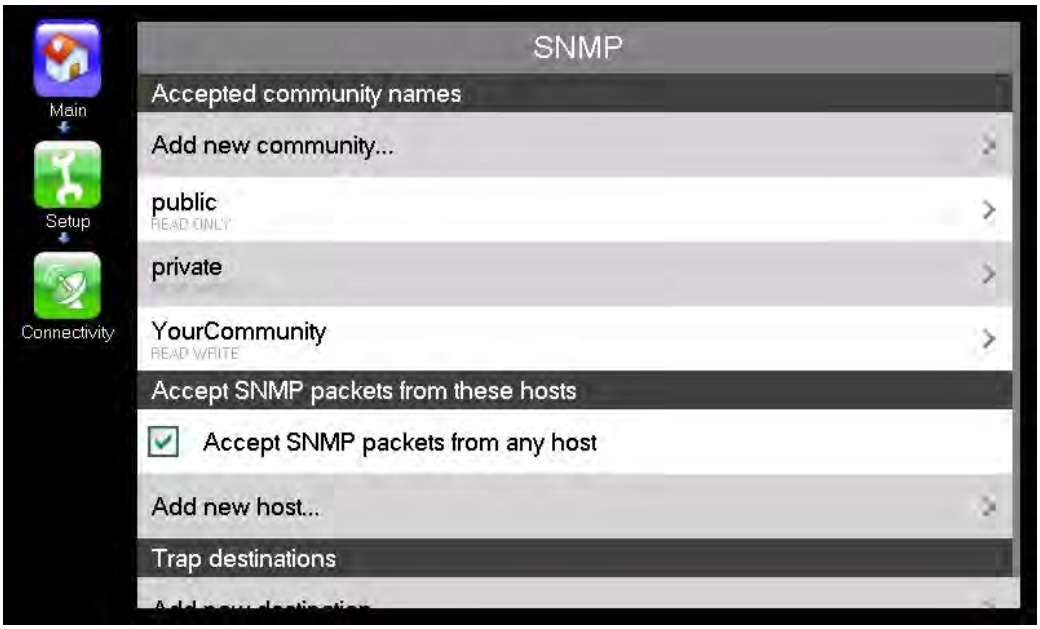


Figure 23: Community name accepted

3. To delete a community, first touch the community name to be deleted. In the screen that appears (similar to Figure 22), click **DELETE** at the bottom of the screen.

6.1.6.2.2 SNMP configuration > ACCEPT SNMP PACKETS FROM THESE HOSTS

Selecting this check box allows SNMP packets to be accepted from any host. You also have the option of adding hosts (see Figure 23). Adding or deleting hosts is performed in the same manner as adding or deleting communities—see section 6.1.6.2.1.

6.1.6.2.3 SNMP configuration > TRAP DESTINATIONS

An SNMP trap is a destination to which the **Centric** will send alarm notifications using the SNMP protocol. For each destination, an IP address and a port must be specified.

Adding or deleting trap destinations is performed in the same manner as adding or deleting communities—see section 6.1.6.2.1.

***Note**: The **Centric** supports the UPS MIB (Management Information Base) standard.*

6.1.6.3 Serial communication (optional feature)

Serial communication is an optional feature, available by special order.

This option enables serial communication between the **Centric** and an external device. Indicate the port to be used and the baud rate. Choose one of the available "COM" ports from the list.

If your system includes this option, the serial communication connector is labeled "RS232" and is located on the left side of the static switch on the rear side of the UPS.

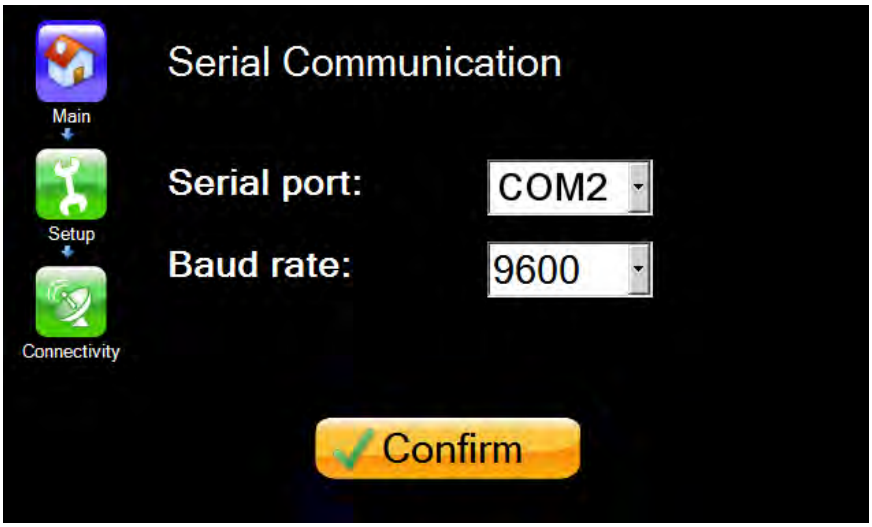


Figure 24: Defining serial communication parameters

Note: If the serial communication option is ordered as an add-on to an existing system, the physical connection details may be other than described above.

6.1.6.4 Modbus (optional feature)

The ability to use a Modbus link with the **Centric** is an optional feature, available by special order.

To define a Modbus link between the **Centric** and another device on the network, specify a serial port (one of the available "COM" ports in the list), indicate the address of the slave device (from 1 to 247), and specify the transmission protocol to be used (RTU or ASCII).

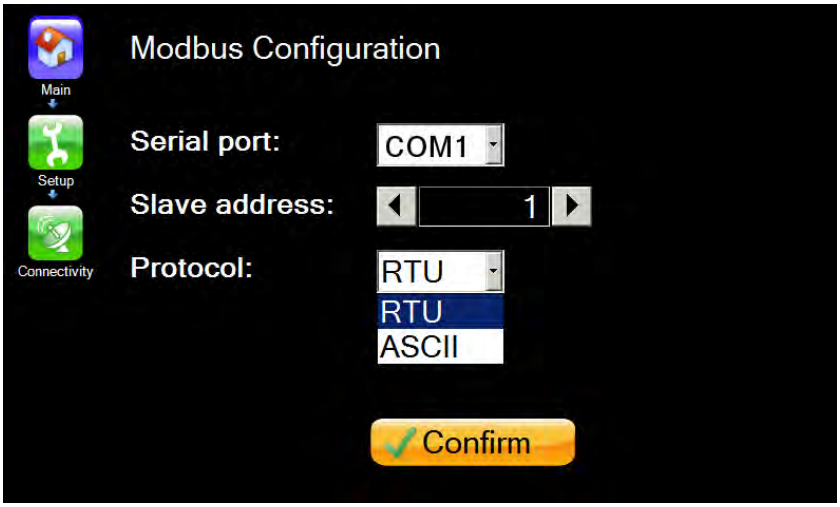


Figure 25: Defining Modbus communication parameters

6.1.6.5 Remote shutdown (optional feature)

The remote shutdown function is used to instruct the **Centric** to perform an orderly shutdown of a server or other computer in the event of an ac power outage or after a low-battery condition on the **Centric**. This function helps prevent data loss by ensuring that computer applications have been shut down in an orderly way before the UPS's battery runs out. The computer to be shut down (the "target computer") must of course have connectivity to the same computer network as the **Centric**.

The target computer must also have a Shutdown Agent installed on it. The Shutdown Agent is available as a self-installing “setup.exe” file intended to be run on the target computer. The install file can be downloaded from Gamatronic's website or supplied to you by your Gamatronic representative.

Upon selection of the remote shutdown option from the "Setup > Connectivity" menu, the remote shutdown submenu is displayed. From this submenu, the main choices are:

- **Add new destination**.
- **Select destinations from list**.

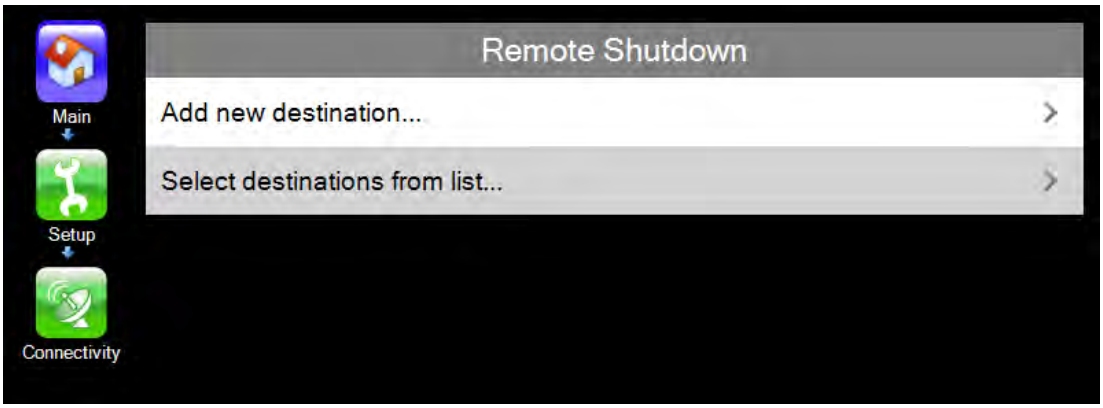


Figure 26: Remote shutdown submenu

6.1.6.5.1 Add new destination

Choose this option if the desired target computer does not appear in the destination list displayed by the "Select destinations from list" option.

When this option is chosen, the "New shutdown destination" screen is displayed (see Figure 27). Upon choosing this option, the user must indicate the network name of the target computer, and the delay interval after which the computer will be shut down following an ac outage or a low-battery condition. The delay interval following an ac outage is expressed in minutes; the interval following a low-battery condition is expressed in seconds.

To create the new shutdown destination, after entering the destination name and changing any of the default parameters if required, press the arrow in the upper left corner of the screen. Or, to abandon the definition, press the "Connectivity" icon.

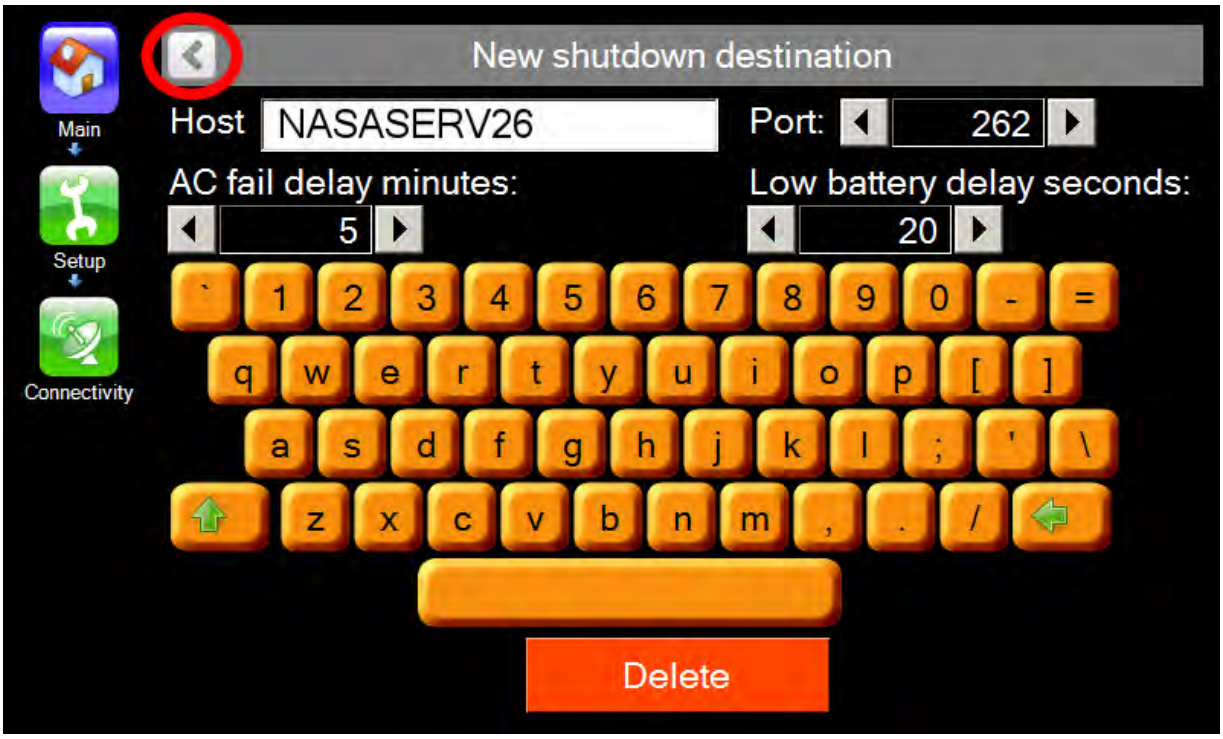


Figure 27: New shutdown destination

6.1.6.5.2 Select destinations from list

This option displays a list in alphabetical order of all devices that are currently connected to the network and are in the "ON" state. Place a check mark in the box alongside the name of the desired target or targets, then press the arrow in the upper left of the screen to return to the remote shutdown submenu.

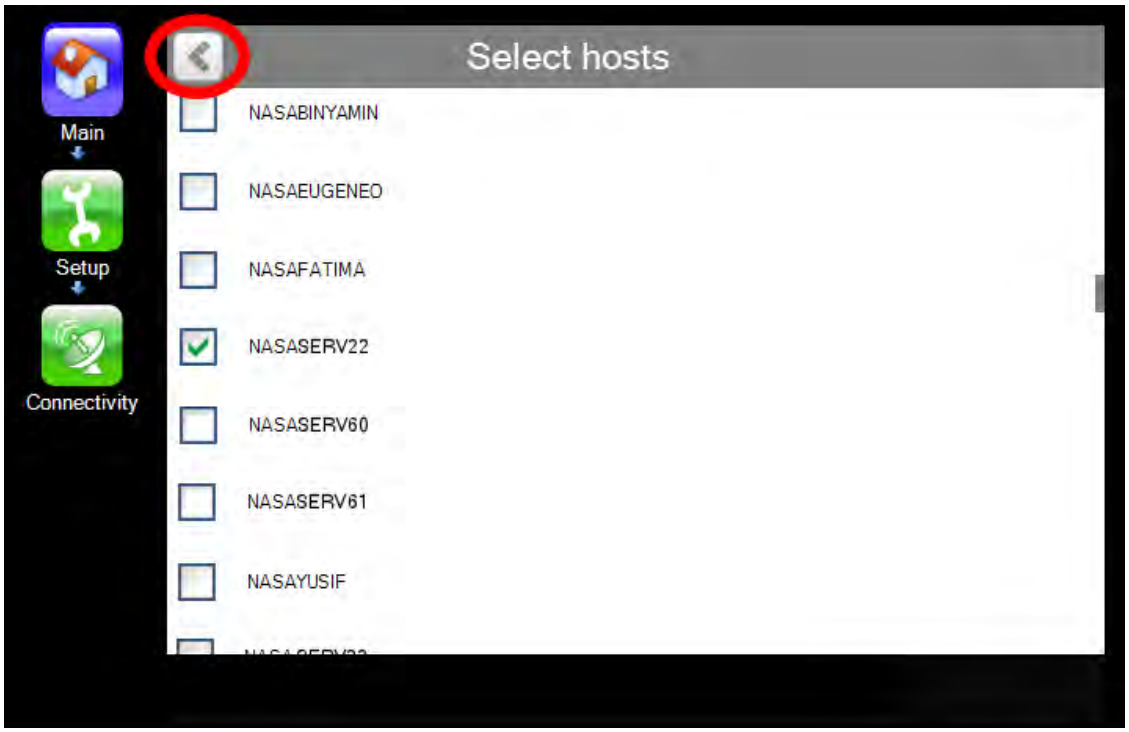


Figure 28: Select the shutdown target and press the arrow

You will see your target has been added to the menu.

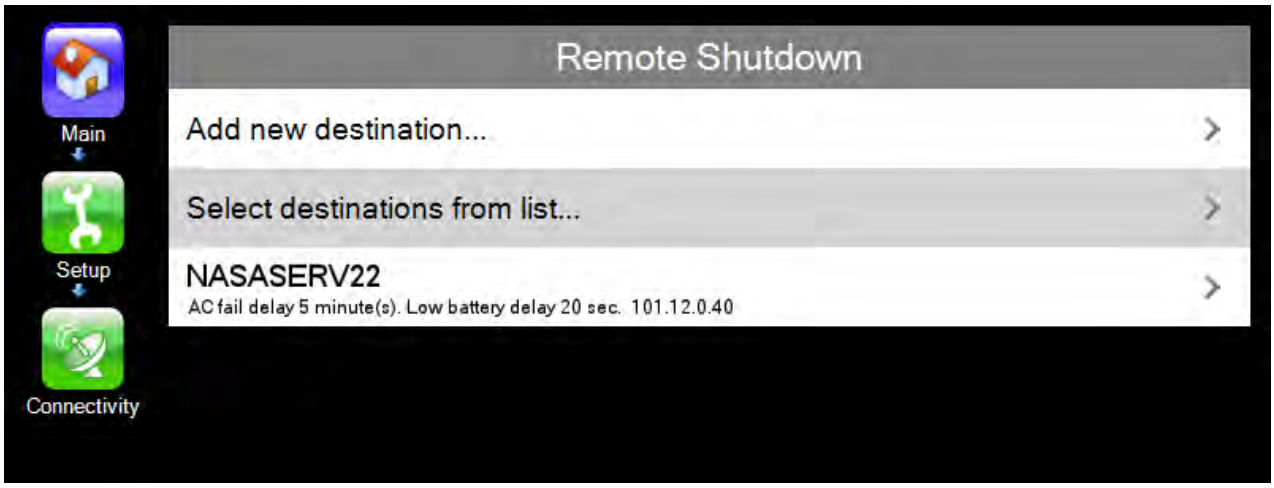


Figure 29: Remote shutdown menu with target destination added

The target's default shutdown intervals are displayed in small letters beneath the target name. If you want to modify the shutdown intervals, tap the target name. This puts you in edit mode, where you can modify the shutdown delay intervals.

The default port of 262 will be acceptable in most environments. In the case that port 262 is not available on the shutdown target computer (for example, if an application on the target computer requires exclusive use of that port), a different port may be used.

To apply your changes, press the arrow in the upper left corner of the screen (see Figure 30). To abandon your changes, press the "Connectivity" icon.

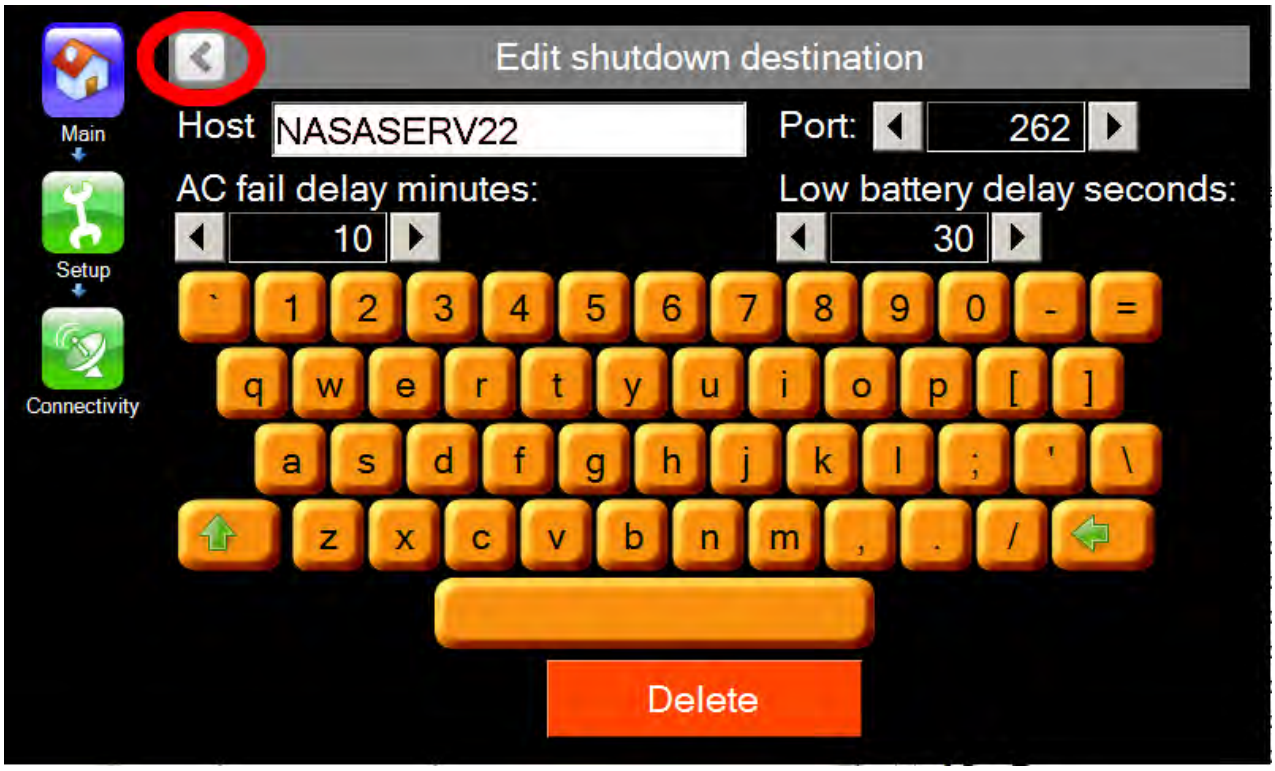


Figure 30: Shutdown destination screen

6.1.6.6 Email configuration (optional feature)

You can have the Centric send email messages to the email addresses of your choice, containing information about the starting and ending of system alarms.

The message body contains:

- a timestamp,
- the user-assigned priority of the message (Informational / Warning / Critical),
- the main message text as it appears in the log,
- the status of the log message: "On" (alarm condition started) or "Off" (alarm condition ended).

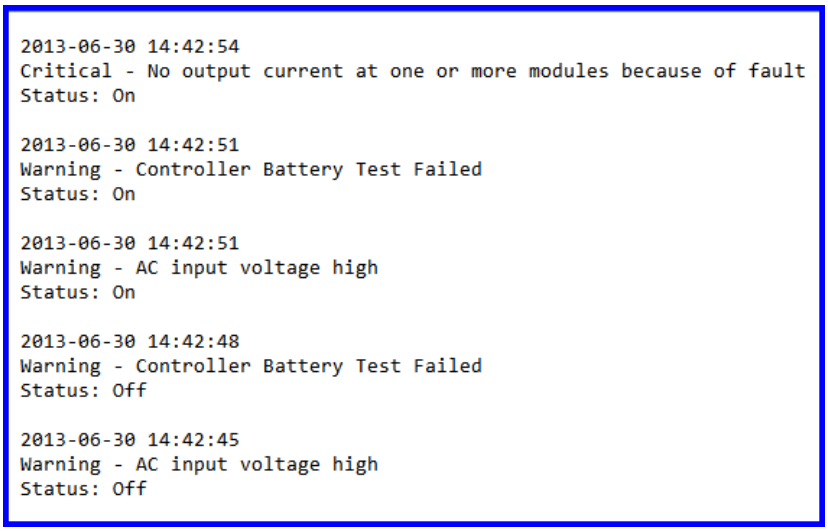


Figure 31: Example of email message body

To use the optional email alarm notification feature, several parameters must be configured:

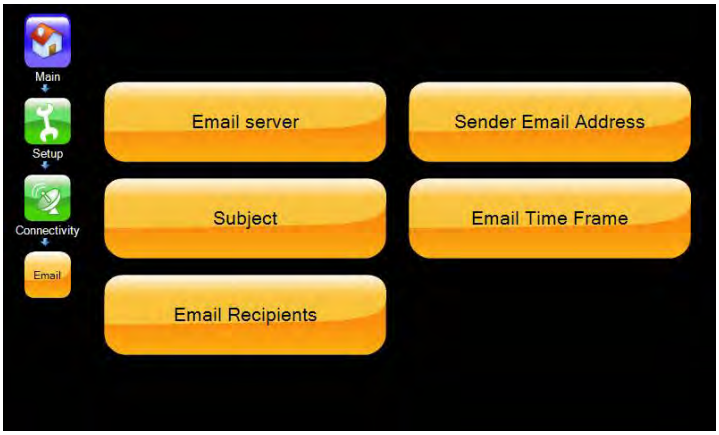


Figure 32: The email configuration menu

Table 3: Description of email parameters

PARAMETER NAME	DESCRIPTION
Email server	Consult your network administrator for the name of your email server or its IP address.
Sender email address	This address will appear in the message header as the sending address.
Subject	The text you wish to appear in the email subject field. Example: "Alarm notification from the Centric"
Email time frame	Specifies the interval in minutes between the sending of a new email. Each new email contains all the system alarms that have occurred since the sending of the previous email.
Email recipients	Up to 10 target email addresses can be defined.

6.1.6.6.1 Adding a new email recipient

1. Tapping the “Email recipients” button brings up a list of the existing recipients and the opportunity to add a new recipient. Tap the “Add new recipient” line.

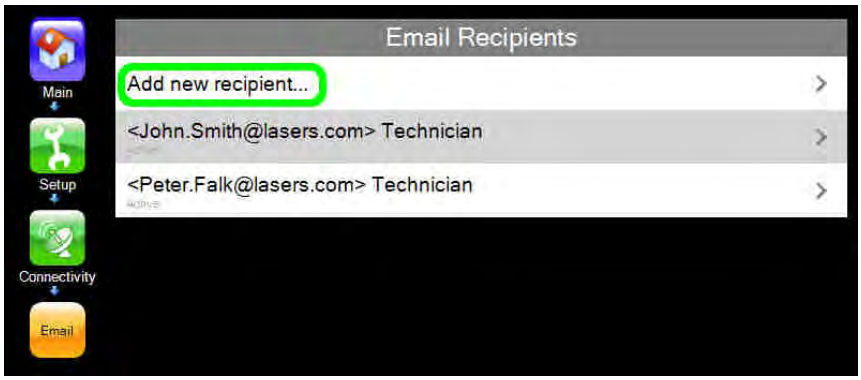


Figure 33: “Add new recipient” line

2. The “New email recipient” screen is displayed.
Enter the recipient’s email address and, optionally, a description.
The “Active/Inactive” checkbox is selected by default to indicate that the recipient is active and should be sent email.

   Tap the “Confirm” button to add the new recipient.

   Tapping the “Send” button sends a test email to the new recipient, to verify that it has been created successfully.

Figure 34: New email recipient screen

3. Now that the recipient has been created, the “Alarms” button in the lower left of the screen becomes available.

Figure 35: Alarms button on email recipient screen

Pressing the alarm button displays an “alarm selection” screen on which you indicate the alarms that you want to be included in the emails to the current recipient. The buttons at the bottom of the screen (Figure 36) control which alarms are listed on the screen: “All”, or only those with an

"information", "warning", or "critical" severity. From the alarms displayed, indicate the ones you want to go to the recipient by selecting the checkbox at the left of the message. Tap the "Confirm" button to register your choices.

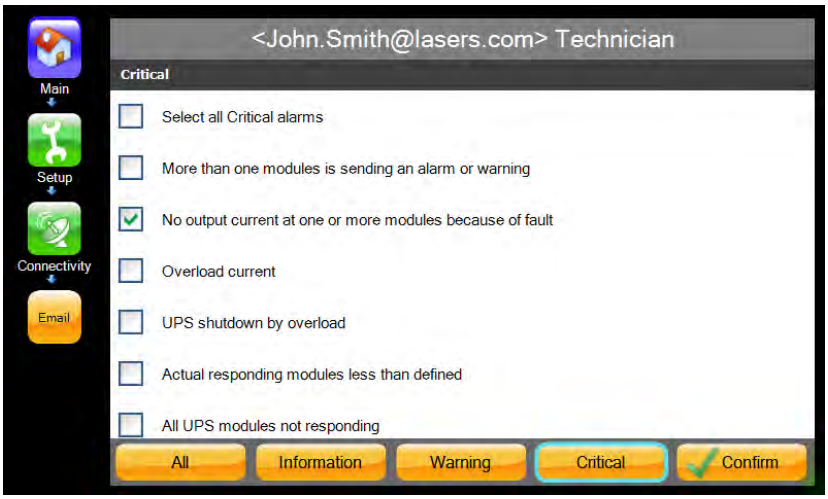


Figure 36: Alarm selection screen for email recipient

6.1.7 Setup > TIME

This menu includes those features related to time.

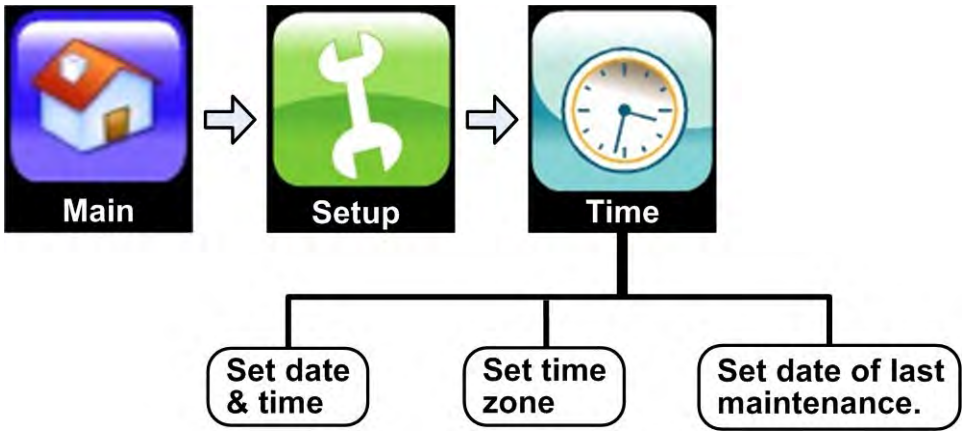


Figure 37: "Setup > Time" options

6.1.7.1 Setup > Time > ADJUST DATE / TIME

Modify any or all of the fields as required: year, month, day, hours, minutes, seconds.

Click "Confirm" to apply the data.

6.1.7.2 Setup > Time > CHANGE TIME ZONE

Use this function to set the UPS to the proper time zone.

6.1.7.3 Setup > Time > SET LAST MAINTENANCE DATE

This function allows you to keep a record of when the last maintenance performed on the **Centric**. The system password is required to change the last maintenance date.

6.1.8 Setup > ASSIGN SITE ID

This function enables descriptors to be associated with the unit. When the **Centric** is connected to a computer network, this is the ID by which it will be known to the network.

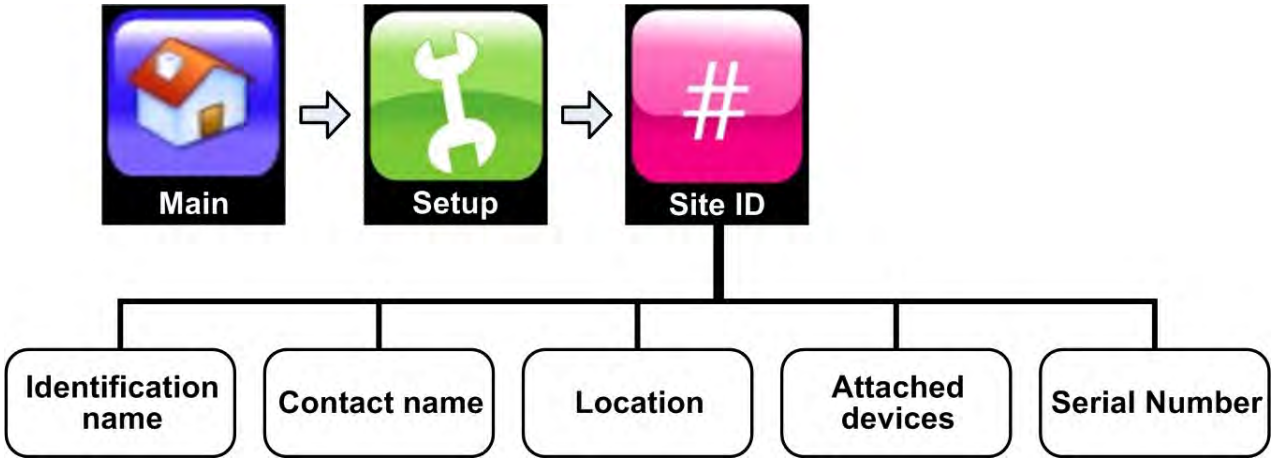


Figure 38: Assigning a site ID

For the authorization level of User, the descriptors are shown in Figure 38. Touching the buttons under **Site ID** causes the virtual keyboard to appear.

6.1.9 Setup > DRY CONTACTS (optional feature)

This function enables the user to manage the **Centric**'s input and output dry contacts.

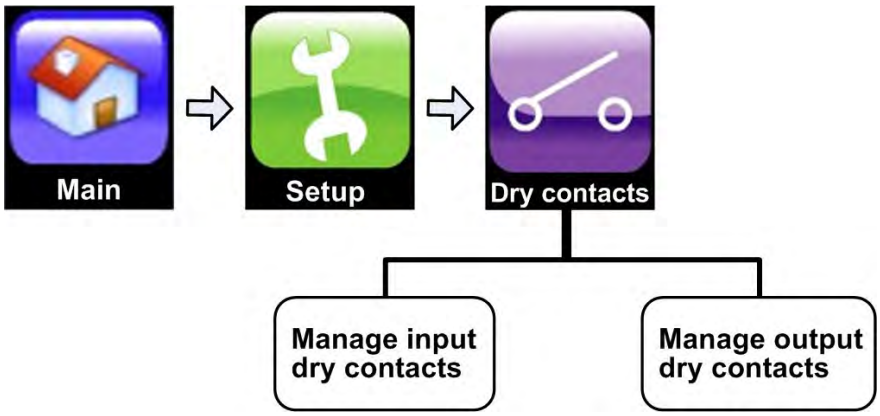


Figure 39: "Setup > Dry Contacts" option

6.1.9.1 Setup > Dry contacts > INPUT DRY CONTACTS

The input dry contacts enable the user to monitor the state (open or closed) of a relay external to the UPS, by generating an alarm condition when the state of the external relay changes. (The relay must be voltage free. **Connection of a voltage-bearing circuit or relay to the input dry contacts may damage the Centric**.)

For example, if the battery circuit breaker has trip-indicating auxiliary contacts which close when the circuit breaker closes and open when the circuit breaker opens, these auxiliary contacts on the battery circuit breaker can be connected to one of the pairs of input dry contacts on the UPS, and that pair of input dry contacts can then be programmed to generate an alarm condition when the battery circuit breaker is opened.

6.1.9.1.1 Location of the input dry contacts

The connections for the input dry contacts are located in two locations on the upper rear panel of the UPS. See items 1 and 2 in Figure **59**, and also Figure 60, Figure 61, and Figure 62.

The connections for four of the input dry contacts (AUX1, AUX2, AUX3, AUX4) are located in connector group 1 (see Figure **59** and Table 7).

The connection for the fifth input dry contact (AUX5) consists of two pins on the D9 alarm terminal in connector group 2 (see Figure **59** and Table 7).

6.1.9.1.2 Using the input dry contacts

The connection for each input dry contact consists of two pins – one independent pin (AUX1, AUX2, AUX3, AUX4, or AUX5), and the second pin, labeled COM (or COMMON).

Input dry contact AUX5 makes use of an opto-coupler. **No more than 30 V and 100 mA should be applied to input dry contact AUX5. Exceeding either of these limits may cause serious damage to the system controller.**

In the "Setup > Dry contacts > Input dry contacts screen the user defines the dry contact as normally open or normally closed, depending on the normal state of the external circuit. The user must also ensure that the input dry contact is enabled, by selecting the "Enabled" box for that dry contact in the same screen (see Figure 40).

An alarm has been pre-assigned to each of the input dry contacts. (You can see these alarms in the "Setup > Alarms" function. They are named "Auxiliary #1 fault" through "Auxiliary #5 fault". These names can be modified by the user.) Provided that the input dry contact is enabled, when it changes from its defined normal state the associated alarm condition is generated. Depending on the severity level associated with the alarm (in the "Setup > Alarms" function), the alarm generates an entry in the system log and may light up the alarm LED and sound the audible alarm.

Figure 40: Defining an input dry contact

6.1.9.2 Setup > Dry contacts > OUTPUT DRY CONTACTS

- There are six output dry contacts
- There are currently 48 alarm conditions to which the output dry contacts can be linked, so that when the alarm condition occurs, the state of the output dry contact will change.
- Any number of output dry contacts can be linked to a single alarm condition.
- Each output dry contact can be linked to any number of alarm conditions.

The output dry contacts are numbered 1 through 6.

The alarm conditions are listed in Table 4.

Table 4: Alarms that can trigger output dry contacts

System active
Emergency Power Off is active
UPS shutdown by “Off” button on LCD panel
UPS shutdown by hardware “Off” button
UPS shutdown by remote user command
UPS shutdown by end of battery backup
UPS shutdown by overload
UPS shutdown by Emergency Power Off
Static switch is not responding
Adapter (PC710) not responding
All UPS modules not responding
Controller battery test failed
The system is operating with more than one master
Detected modules are more than defined
Actual responding modules are less than defined
Conflict with the nominal output voltage and/or frequency
UPS module #1 is sending an alarm or warning
UPS module #2 is sending an alarm or warning
UPS module #3 is sending an alarm or warning
UPS module #4 is sending an alarm or warning
UPS module #5 is sending an alarm or warning
UPS module #6 is sending an alarm or warning
UPS module #7 is sending an alarm or warning
UPS module #8 is sending an alarm or warning
More than one module is sending an alarm or warning
No output current at one or more modules because of fault
Fan failure
Dc voltage high
Dc voltage low
Low battery voltage
End of battery backup, battery discharged to shutdown limit
Temperature fault
Battery test in progress
Battery failed last test
Load is now running on bypass
Static switch is sending alarm or warning
Sync fault
Ac input voltage high
Ac input voltage low

Ac input failure
Overload current
High load level
No ac output to load
Auxiliary #1 fault
Auxiliary #2 fault
Auxiliary #3 fault
Auxiliary #4 fault
Auxiliary #5 fault

Figure 41 shows output dry contact #6 defined to change state when the **Centric** moves into or out of bypass mode. The move to bypass generates an alarm, and in this example dry contact #6 is linked to that alarm.

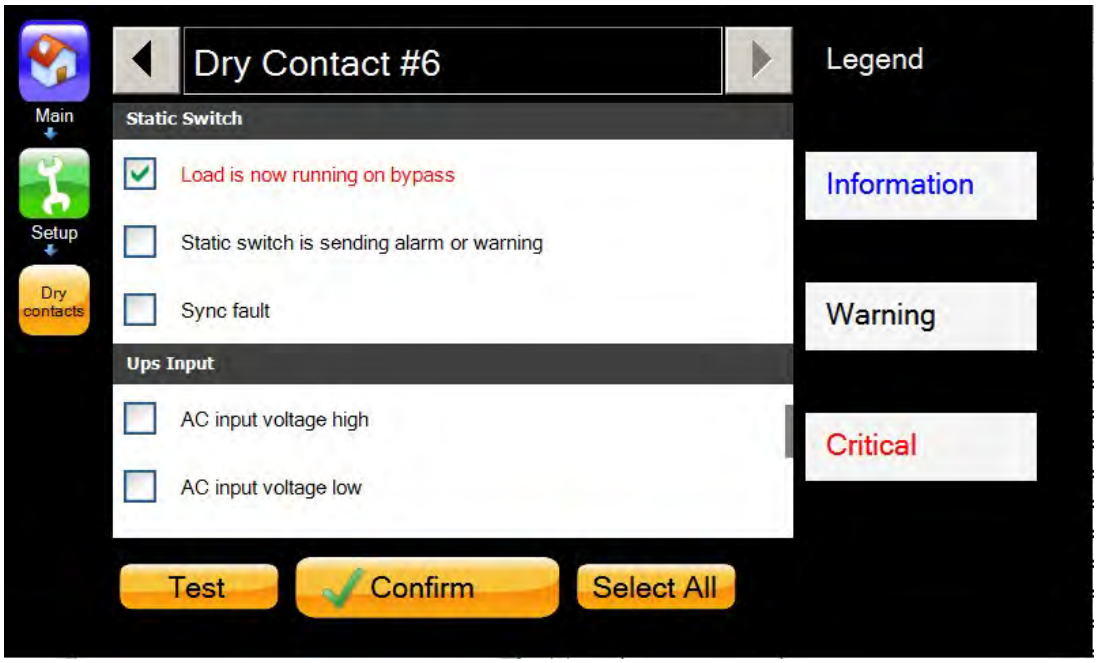


Figure 41: Example of an output dry contact linked to an alarm

6.1.9.2.1 Location of the output dry contacts

The connections for the output dry contacts are located in two locations on the upper rear panel of the UPS. See items 1 and 2 in Figure **59**, and also Figure 60, Figure 61, and Figure 62.

6.1.9.2.2 Connecting output dry contacts 1 and 2

The connections for output dry contacts 1 and 2 consist of pins on the D9 alarm connector on the upper right side of the **Centric** rear panel (connector group 2 – see Figure **59** and Table 7.

The connection for output dry contact 1 is pin 5 and pin 4 (the COMMON pin) on the D9 alarm connector. Output dry contact 1 is Normally Open.

The connection for output dry contact 2 is pin 3 and pin 4 on the D9 alarm connector. Output dry contact 2 is Normally Open.

The factory default association of output dry contact 1 is the "Battery low" alarm. The factory default association of output dry contact 2 is the "Ac input failure" alarm. These associations can be changed if the user so desires.

6.1.9.2.3 Connecting Output dry contacts 3 through 6

The connections for output dry contacts 3 through 6 are located in connector group 1 (see Figure **59** and Table 7). Each of these output dry contacts has 3 pins: COMx, NCx, and NOx (where "x" is the number of the output dry contact).

When connecting an output dry contact to the external circuit, the connection must be made using the COMx pin and either the NCx or NOx pin. Use of the NCx pin results in the circuit being Normally Closed. Use of the NOx pin makes the circuit Normally Opened.

6.1.9.2.4 Output dry contacts in action

Upon the occurrence of any of the alarm conditions in Table 4, the output dry contact(s) associated with that alarm (if any) changes state. Output dry contacts 1 and 2 are always Normally Open, so they close while the alarm exists. Output dry contacts 3 through 6 will change state from open to closed or from closed to open, depending on whether the NCx or NOx pin was used in connecting the output circuit. When the alarm condition ceases, the output dry contact reverts to its normal state.

6.1.9.2.5 Testing an output dry contact

An output dry contact that has been associated with an alarm can be tested without actually invoking the related alarm condition, by pressing the "Test" button at the bottom of the output dry contact screen (see Figure 41).

Pressing the test button changes the state of the output dry contact to its "non-Normal" condition for about five seconds.

6.1.10 Setup > SAVE & RESTORE

This set of functions let you save the current UPS settings, and restore them later. This would enable you to experiment with new settings and then easily return to the previous settings. There is also an option to restore the factory default settings.

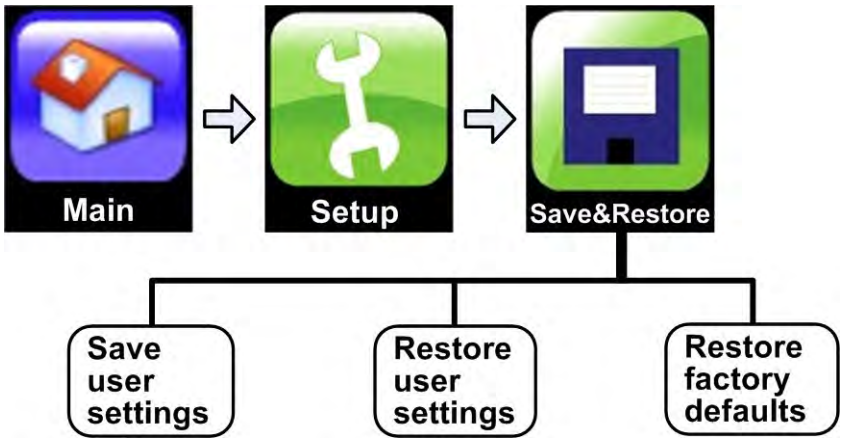


Figure 42: "Setup > Save & Restore" options

6.1.10.1 Setup > Save & restore > SAVESETTINGS

Saves the current settings of the UPS in non-volatile memory.

6.1.10.2 Setup > Save & restore > RESTORESETTINGS

Restores to active status the settings that you previously saved in non-volatile memory.

6.1.10.3 Setup > Save & restore >RESTORE FACTORY SETTINGS

Restores to active status the "factory default" settings of the UPS. Performing this function does not have any effect on what is saved by the SAVE SETTINGS function above.

Be aware that using the "restore factory settings" returns the **Centric** settings to what they were when the unit arrived at your premises. If, for example, you have since added additional power modules, the settings will not include the additional modules and you must readjust the settings to include the additional modules.

6.1.11 Setup > CHANGE PASSWORD

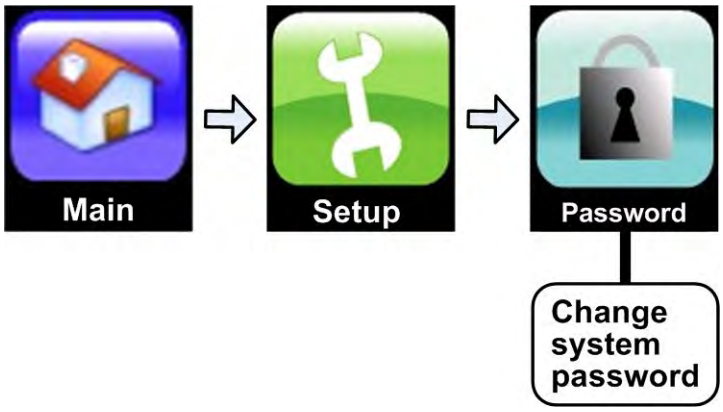


Figure 43: "Setup > Password"

Use this function to change the administrative password. The administrative password is required when executing certain functions.

6.1.12 Setup > CHANGE AUTHORIZATION LEVEL

This function allows you to change the current security level of the software interface.

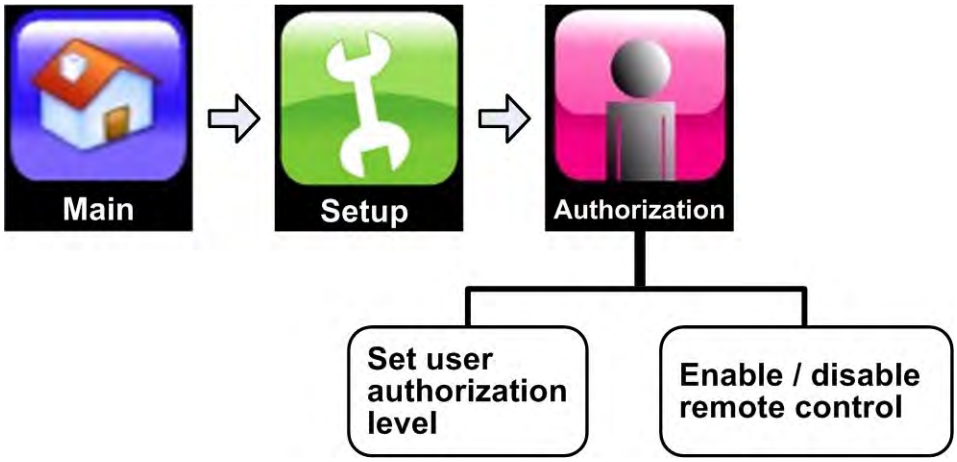


Figure 44: "Setup > Authorization" option

6.1.12.1 Setup > Authorization > SET USER AUTHORIZATION LEVEL

There are three security levels: User, Technician, and Super-User.

The "Technician" and "Super-User" levels have access to additional capabilities and menu fuctions; the additional functionality is hidden from the "User" level.

6.1.12.2 Setup > Authorization > ENABLE / DISABLE REMOTE CONTROL

Use this function to enable or disable remote access to the system. This controls access to the **Centric** user interface and all of its functionality from a remote terminal over a network.

6.2 OPERATION

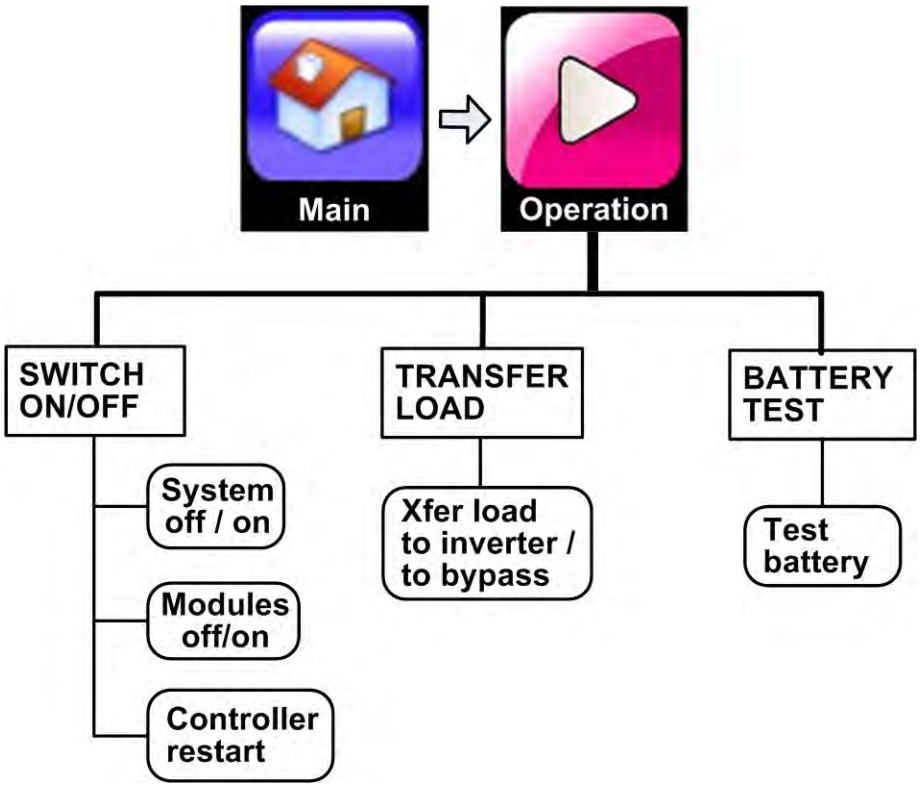


Figure 45: The "Operation" option on the main menu

6.2.1 Operation > SWITCH ON/OFF

This function is used to turn the UPS on and off. Pressing the "ON/OFF" button on the main screen also brings you to this option.

6.2.1.1 Operation > Switch on/off > SYSTEM OFF

Turning the system OFF disconnects the load.

6.2.1.2 Operation > Switch on/off > SYSTEM ON

Turns the modules ON and moves the load from bypass mode to inverter mode.
This function reverses a "Modules OFF" command.

6.2.1.3 Operation > Switch on/off > MODULES OFF

Turns the power modules OFF. If all modules are shut off the load is automatically moved to bypass.

6.2.1.4 Operation > Switch on/off > CONTROLLER RESTART

Restarts the controller; the load is unaffected.

6.2.2 Operation > TRANSFER LOAD

From this menu you can move the load from the inverter to the bypass voltage, or vice versa.

6.2.2.1 Operation > Transfer load > TRANSFER LOAD TO INVERTER

Transfers the load from the bypass voltage to the inverter voltage.

6.2.2.2 Operation > Transfer load > TRANSFER LOAD TO BYPASS

Transfers the load from the inverter voltage to the bypass voltage.

6.2.3 Operation > BATTERY TEST

Only one function under this menu; it executes a battery test. Once the battery test begins you have the option of aborting the test before it finishes.

Operational parameters for the battery test can be found
in section 6.1.3.1 "Setup > Battery > BATTERY TEST PARAMETERS" on page 25.

6.3 STATUS

Selecting the Status option on the Main Menu displays a diagram that summarizes the present status of the UPS.

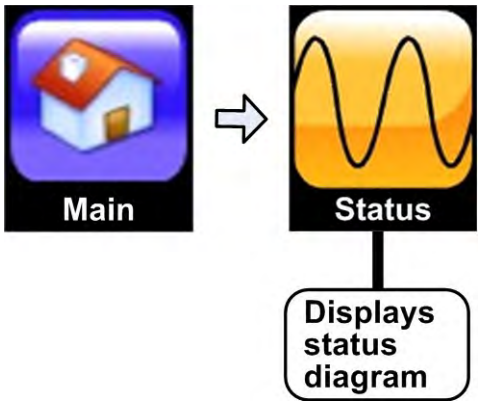


Figure 46: "Main Menu > Status" option

In the diagram, shown in Figure 47, the highlighted (yellow) line indicates the present power flow through the UPS.A yellow triangle with an exclamation point inside indicates an alarm condition related to the UPS component where the triangle is located. Clicking on the component will provide more detailed information about the problem.

Clicking on the various parts of the diagram reveals more detailed information, including present voltage and current readings.

The Status screen shows the power source and destination route currently in use. The route will be different for each of the 3 automated operation modes.

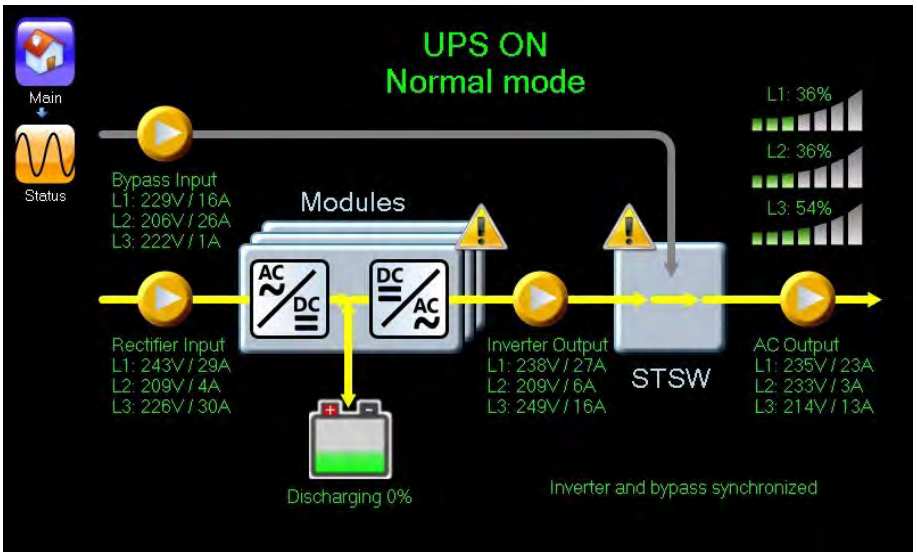
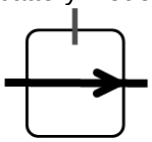
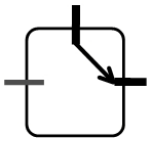


Figure 47: The Status Screen

The Status screen shows the power source and destination route currently in use. The route is different for each of the 3 automated operation modes.

Table 5: Key to Figure 47 (the Status screen)

ITEM	DESCRIPTION
1	Navigation trail – shows how you arrived at this screen.
2	Voltage and amperage reading of each bypass input phase. Pressing the  bypass input icon displays additional measurements for each bypass input phases.
3	UPS state (ON / OFF) and mode (Normal [inverter] mode / Bypass mode / Battery mode / No output).
4	Load level, indicates the load on each output phases, as a percentage of maximum capacity. The white vertical bars fill with color from left to right as the load increases on the phase.
5	Voltage and amperage readings for each phase of the rectifier input. Pressing the  rectifier input icon displays more detailed readings for each rectifier input phase.
6	This graphic represents the UPS power modules. Pressing this icon gives access to detailed readings of each UPS module's ac input, ac output, dc current, status, and nominal values.
7	Modules alarm icon. When present, indicates that there is an active alarm condition for one or more of the UPS modules. To see the modules' status in detail, press the "modules" icon and then press the "status" button at the bottom of the modules screen.
8	Static switch alarm icon. When present, indicates that there is an active alarm condition for the static switch. To see the static switch status in detail, press the "static switch" icon and then press the "detail" button.
9	Voltage and amperage reading for each phase of the inverter output. Pressing the  inverter output icon displays the more detailed reading for each inverter output phase.
10	Static switch. This icon indicates the source of the output power – whether it is from the inverter or the bypass input. This graphic is displayed when the output source is the inverter (normal mode and battery mode):  This graphic is displayed when the output source is the bypass input (bypass mode):  Pressing the static switch icon displays the static switch detail screen.
11	Voltage and amperage readings of the static switch output, which is the UPS output. Pressing the  bypass input icon button displays more detailed readings for all output phases.
12	Battery status and charge level. Pressing the battery icon displays more detailed information on the status of the battery.

6.4 PROFILE

The PROFILE function displays a summary of the operating parameters of various parts of the system.

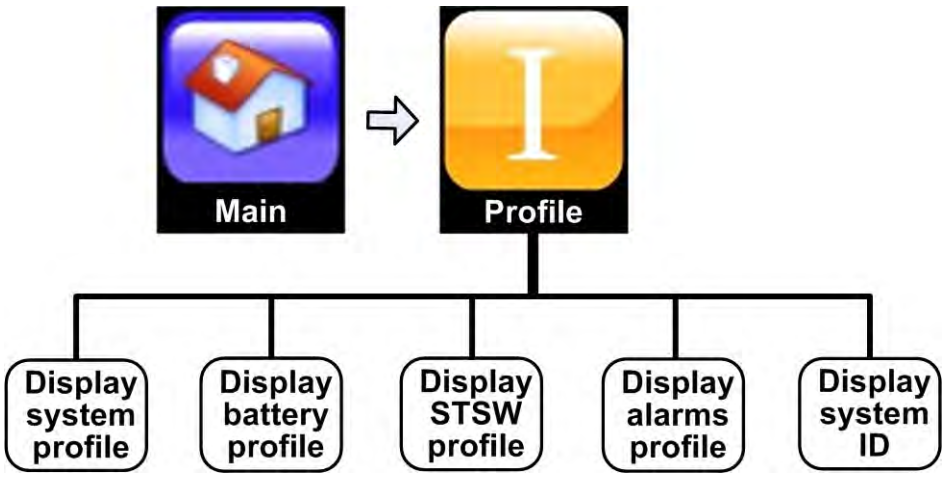


Figure 48: "Main Menu > Profile" options

6.4.1 Profile > SYSTEM

Lists the current values for a number of basic system settings, including:

- Nominal power.
- Number of phases.
- Nominal ac voltage.
- Nominal frequency.
- Number of modules.
- Number of modules for redundancy.
- Number or battery cabinets.
- Operation mode (stand-alone or parallel).
- Automatic restart (enabled/disabled).
- Shutdown by long ac fail (enabled/disabled).
- Last maintenance date.

More information about these parameters is available in section 6.1.1 "Setup > SYSTEM" on page 21.

6.4.2 Profile > BATTERY

Lists the current values for a number of important battery parameters, including:

- Nominal charger voltage.
- Battery low limit voltage.
- Rectifier voltage at battery test.
- End-of-backup battery voltage limit.
- Automatic battery test period (in weeks).
- Test duration limit.
- Current sensor status (active/inactive).
- Current limit (enabled/disabled).
- Current limit values (in amps).
- Battery cabinet capacities (in Ah).
- Temperature sensor status (active/inactive).
- Temperature compensation status (active/inactive).
- Temperature compensation factor (mV/°C).
- Limit dc voltage at compensation (400 – 440V).

More information about these parameters is available in section 6.1.3 "Setup > BATTERY" on page 25.

6.4.3 Profile > ST.SW.

Lists the current values for several parameters related to the static switch, including:

- Bypass (forced or controlled).
- Control by PC activity status (active/inactive).
- Control by panel activity status (active/inactive).
- Voltage range (wide/narrow).
- Frequency range (in Hertz).
- Integration time (regular/extended).
- Synchronization sensitivity (regular/extended).

More information about these parameters is available in section 6.1.4 "Setup > STATIC SWITCH" on page 28.

6.4.4 Profile > ALARMS

Lists current parameter values, mostly alarm limit values, for alarms, including:

- Dc voltage high limit.
- Dc voltage low limit.
- Ac voltage high limit.
- Ac voltage low limit.
- Over temperature limit.
- Under temperature limit.
- Ac voltage hysteresis.

Section 6.1.5 "Setup > ALARMS" on page 31 has more information on the parameters displayed in the "Profile > Alarms" screen.

6.4.5 Profile > IDENTIFICATION

Lists several identifiers:

- Manufacturer.
- Model name.
- Software version.
- System serial number.
- Identification.
- Contact name.
- Location.
- Attached devices.
- Module#1.

  ⋮
- Module#10.

6.5 LOG

Selecting this option displays the log file.

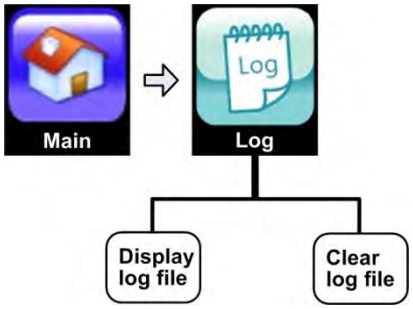


Figure 49: "Main Menu > Log" options

The log file display screen includes a button that you can press to clear the log file if you so desire. If you do not clear the log file, when it reaches the maximum number of entries (490), it continues in "wrap-around" mode, overwriting the oldest messages, so that the log file always contains the 490 last log events.

Every log message has a severity level assigned to it. There are four different severity levels, as described in Table 6.

Table 6: Log message types

LOG MESSAGE SEVERITY LEVEL	ICON	MEANING
Informational		No action required.
Warning		Reports a problem.
Error		Reports a more serious problem.
Alarm removed		A previously reported alarm condition has been resolved.

(In certain unusual situations, the user may want to change the severity level of a given log message. This can be accomplished in the "Setup > Alarms > Alarm configuration" screen.)

Figure 50 shows an example of a listing of the log file.

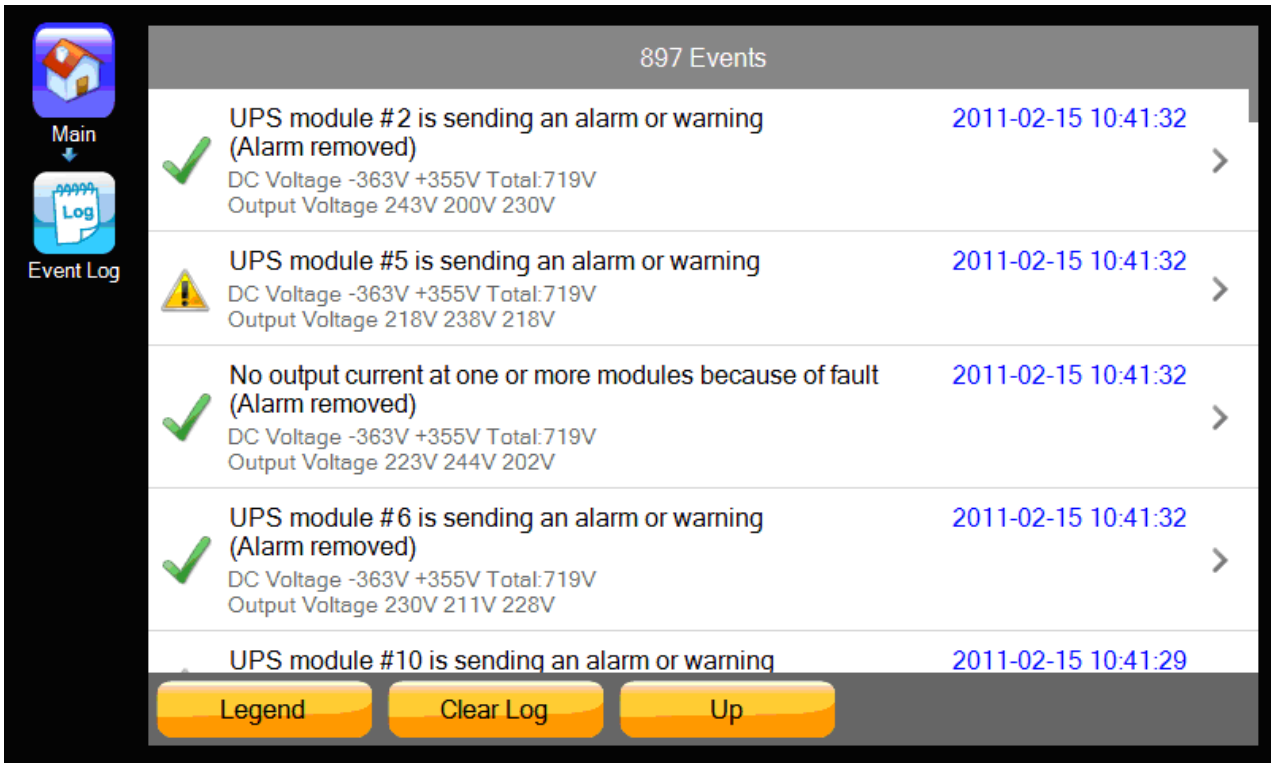


Figure 50: Listing of the logfile contents

To scroll through the log messages, slide your finger up or down along the touch screen.

To display detailed information about the system status at the time the log entry was recorded, tap the log message in question. For example, tapping the message the message with the yellow triangle in Figure 50 ("UPS module #5 is sending an alarm or warning") displays the status of system parameters at the time of the fault (Figure 51). Touching any of the buttons at the bottom of the screen displays the detailed readings for the selected system component as recorded at the time of the log entry.

The buttons at the bottom of the screen in Figure 51 enable you to focus on the readings of specific system components, such as the battery, the output stage, the bypass input, and so on, including modules 1 through 10.

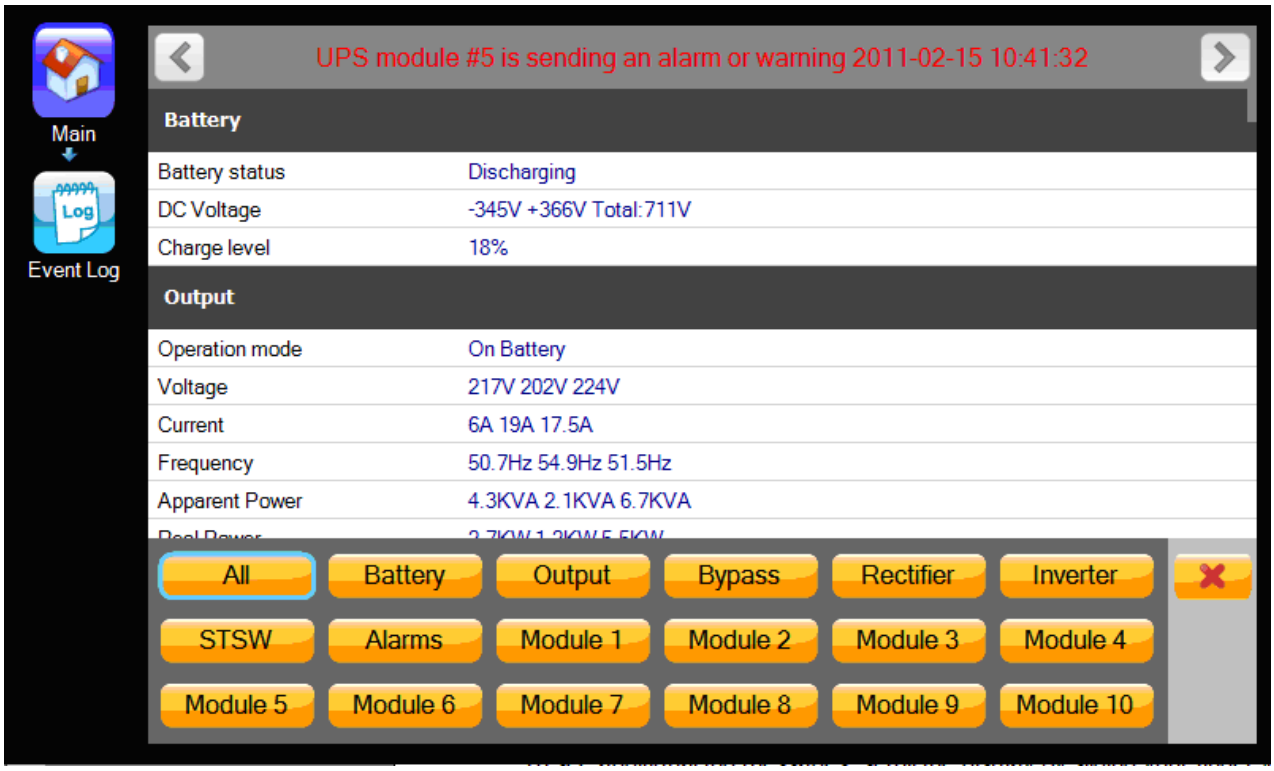


Figure 51: Log record - detailed display

You can navigate to the detailed readings for the previous or the next log message by tapping on the left and right arrows at the top of the screen.

To close the detailed reading screen and return to the list of log messages, tap the "X" (or "Close") button at the bottom right of the screen.

If you don't feel like pressing buttons, you can just keep on scrolling down through the "All" screen, and you will see all of the same readings that are accessed individually by the other buttons.

6.5.1 The "Alarms" button on the log detail screen

In Figure 52, in the second row of buttons at the bottom of the screen, the "Alarm" button can be seen. (If this button is not present on the screen and you want this feature, ask your dealer for a software upgrade.)

Tapping this button displays a list of all alarms that were active at the time the viewed log record. This can helpful to understanding the state of the system at the time the alarm of interest occurred. Figure 52 shows an example of the "Alarms" display from the log detail screen.

Figure 52: "Alarms" display from the log detail screen

6.6 CONNECTIVITY

This function displays the status of the **Centric**'s connection to the computer network, the UPS's IP address, and related information. This is of relevance if you are using the remote access feature, which allows monitoring and control of the **Centric** from a remote computer over an intranet or the Internet.

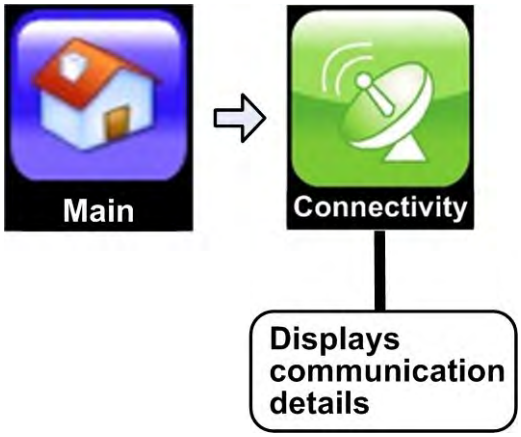


Figure 53: "Main Menu > Connectivity" option

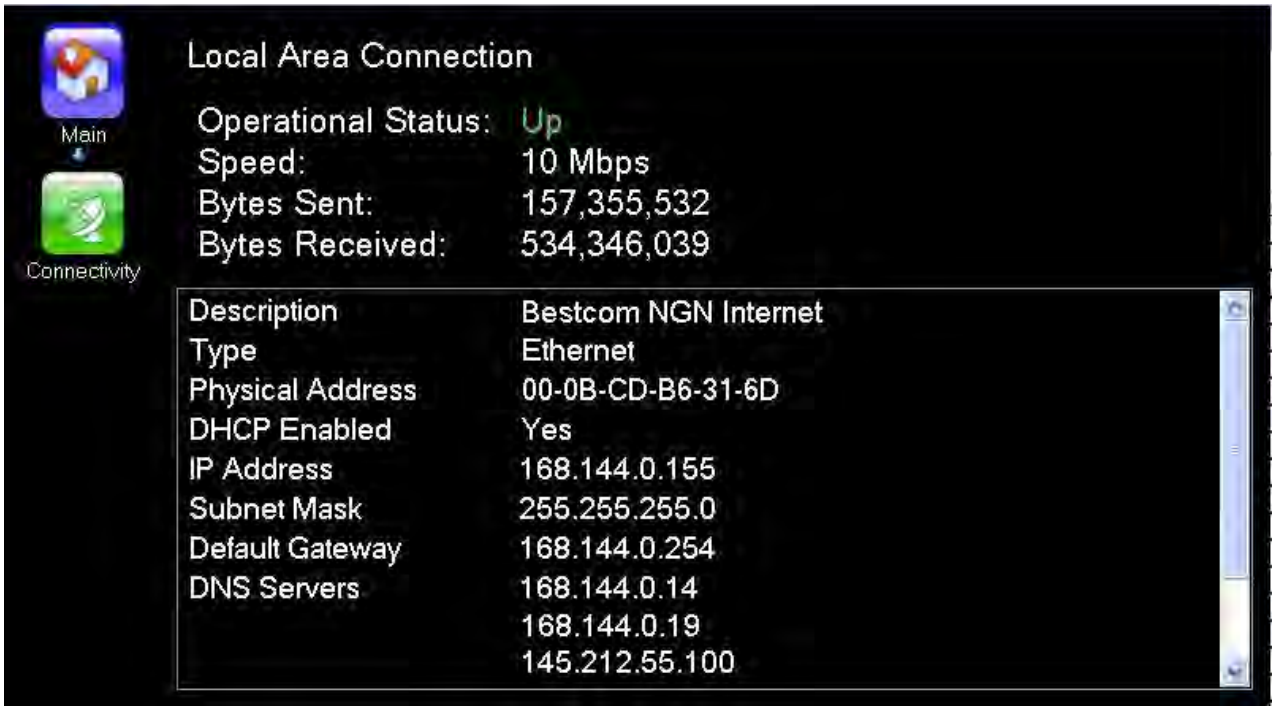


Figure 54: "Connectivity" display from main menu

6.7 TIME

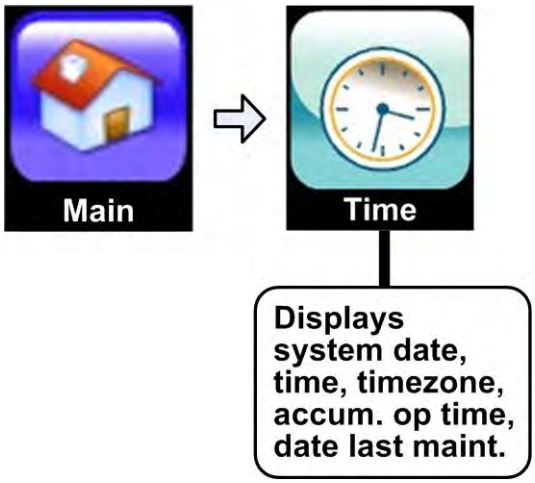


Figure 55: "Main Menu > Time" option

This main menu option displays the time on the UPS's internal clock, the time zone, the current operating time (the time since the unit was last turned on), and the last recorded maintenance date.

Figure 56: The "Time" function on the main menu

6.8 LANGUAGE

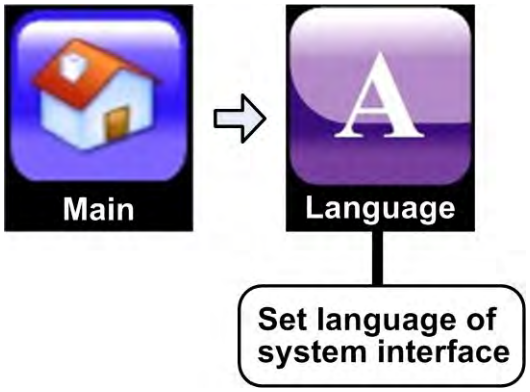


Figure 57: "Main Menu > Language" option

This function gives you the ability to choose the language in which the display screen options and messages are displayed.

6.9 HELP

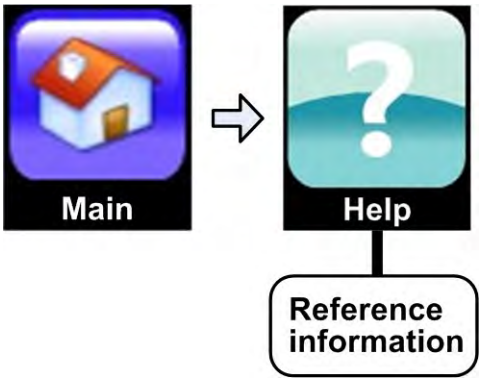


Figure 58: "Main Menu > Help" option

The Help function provides reference information to assist you in operating the unit and defining its operational parameters.

7. REAR PANEL CONNECTORS

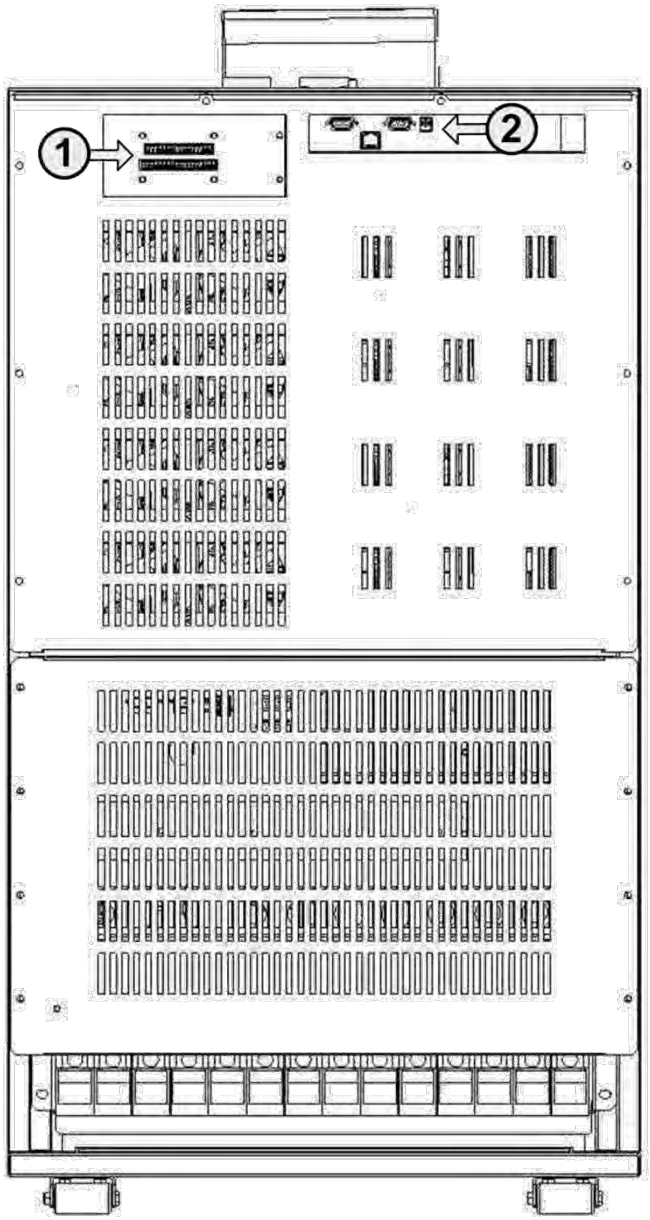


***Figure** 59: Rear panel with connectors*

***Table 7: Key to Figure** 59*

ITEM	CONNECTOR DESCRIPTIONS
1	**Connector group 1:** • Dc current measurement connections • 4 input dry contacts (AUX1 – AUX4) • 4 output dry contacts (output dry contacts 3 – 6)
2	**Connector group 2:** • RS232 (D9) • RJ45 (network) • Alarm (D9) (includes input dry contact AUX5) • 12 Vdc (for related optional devices)

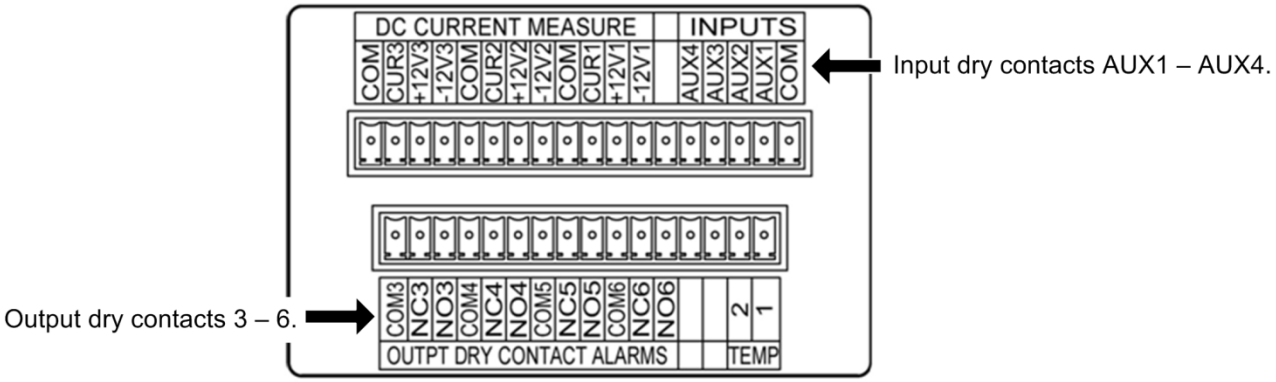


Figure 60: Close-up of connector group 1

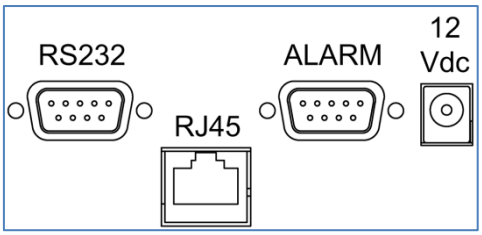
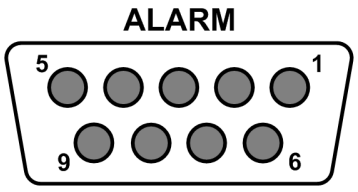


Figure 61: Close-up of connector group 2



PIN	USAGE
1	Input dry contact #5 (AUX5)
2	Reserved
3	Line failure (default, can be reassigned)
4	COMMON
5	Low battery (default, can be reassigned)
6 – 9	Remote panel

Figure 62: Pin usage in D9 alarm connector (in connector group 2)

8. TROUBLESHOOTING

There are two places to look for information when analyzing a problem: the status screen and the log screen.

The status screen provides a quick overview of the system status, including access to real-time voltage and current measurements.

The log screen provides access to a detailed record of the system status at the time the log entry was recorded, including voltage and current measurements. See section 6.5 for information on how to use the log file.

LINE #	ALARM MESSAGE	EXPLANATION, RECOMMENDED ACTION (IF ANY)	DEFAULT SEVERITY
1	UPS module 1 is sending an alarm or warning. [1]	As stated.	Warning
2	UPS module 2 is sending an alarm or warning. [1]	As stated.	Warning
3	UPS module 3is sending an alarm or warning. [1]	As stated.	Warning
4	UPS module 4 is sending an alarm or warning. [1]	As stated.	Warning
5	UPS module 5 is sending an alarm or warning. [1]	As stated.	Warning
6	UPS module 6 is sending an alarm or warning. [1]	As stated.	Warning
7	UPS module 7 is sending an alarm or warning. [1]	As stated.	Warning
8	UPS module 8 is sending an alarm or warning. [1]	As stated.	Warning
9	More than one module is sending an alarm or warning.	As stated. Go to status screen for more information.	Critical
10	Static switch is sending an alarm or warning.	As stated. Go to status screen for more information. If one of the voltage measurements for the inverter, bypass, or output phases is shown as 0, it may be that one of the ac fuses on the front of the left column has burned out.	Warning
11	Load is now running on bypass.	The UPS is operating in bypass mode.	Warning
12	Temperature fault.	The battery temperature sensor has registered a temperature outside of the acceptable range (too high or too low). Measured temperature can be displayed via Status screen (tap on the battery icon).	Warning
13	No ac output to load.	The UPS is not providing any output power.	Critical
14	Dc voltage is high.	Internal dc voltage is above normal.	Warning
15	Dc voltage is low.	Internal dc voltage is below normal.	Warning
16	End of battery backup. Battery is discharged to shutdown limit.	The system was running in battery mode and the battery has been exhausted.	Information
17	Low battery voltage.	The battery voltage is low.	Warning
18	Emergency Power Off is active.	The EPO switch has been activated.	Warning
19	Batteries failed last test.	The last battery test found the battery voltage was lower than acceptable.	Critical
20	Ac input voltage is low.	As stated.	Warning
21	Ac input voltage is high.	As stated.	Warning
22	Ac input failure.	As stated.	Warning
23	No output current at one or more modules due to fault.	As stated.	Critical
24	Overload current.	The load devices are demanding more power than the UPS can supply.	Warning

LINE #	ALARM MESSAGE	EXPLANATION, RECOMMENDED ACTION (IF ANY)	DEFAULT SEVERITY
25	Battery test in progress.	A battery test is in progress.	Information
26	Auxiliary #1 fault.	Input dry contact #1 has been activated.	Warning
27	Auxiliary #2fault.	Input dry contact #2 has been activated.	Warning
28	Auxiliary #3 fault.	Input dry contact #3 has been activated.	Warning
29	Auxiliary #4 fault.	Input dry contact #4 has been activated.	Warning
30	Auxiliary #5 fault.	Input dry contact #5 has been activated.	Warning
31	UPS shutdown by Off button on LCD panel.	As stated.	Information
32	UPS shutdown by hardware Off button.	As stated.	Information
33	UPS shutdown by remote user command.	As stated.	Information
34	UPS shutdown by end of battery backup.	The UPS was in battery mode, and the battery became exhausted, so the UPS automatically turned itself off.	Information
35	UPS shutdown by overload.	The UPS turned itself off automatically due to a serious overload condition.	Information
36	UPS shutdown by Emergency Power Off.	The UPS has turned itself off due to activation of the EPO switch.	Information
37	Actual responding modules less than defined.	The number of power modules installed is greater than the number of power modules defined to the UPS.	Warning
38	Static switch not responding.	As stated.	Warning
39	All UPS modules not responding.	As stated.	Critical
40	Adapter (PC710) not responding.		Critical
41	High load level.	The UPS is at 90% load level.	Warning
42	Detected modules are more than defined.	More modules are installed than have been defined to the system.	Information

[1] The UPS module slots are numbered from bottom to top.

9. PERIODIC PREVENTIVE MAINTENANCE

The **Centric** should be inspected on a regular basis by a trained and qualified technician to verify the following:

- The Centric UPS and batteries are in proper electrical and physical condition.
- The operation of the UPS and its batteries conform to design specifications.
- The UPS and its batteries are in compliance with all relevant safety standards and regulations.

A procedure for periodic preventive maintenance can be found in the *Centric Installation Guide*. It is recommended that this inspection procedure be performed every three to six months, or in any case at least once annually.

10. THE BUILT-IN WEB INTERFACE (OPTION)

The **Centric** can be monitored and controlled from a distance over an intranet or the Internet,through the same menus and screens used on the **Centric** control panel. This feature is compatible with Windows, WIndows NT, and Linux networks.

Note: Use of the built-in web interface on Windows requires the **Microsoft Internet Explorer browser version 7** or higher.

An SNMP agent and the associated MIB is available upon request.

10.1 Preliminaries to use of the Web interface

To enable the **Centric** Web interface:

1 Consult with your Network Administrator to obtain an IP address for your **Centric**, and the appropriate mask and gateway address.

2 Configure the **Centric** with the IP address. See the **Centric** Installation Guide for instructions to configure the IP address.

3 Connect the **Centric** to the local Ethernet network using the Ethernet (RJ45) port on the rear panel of the **Centric** controller. This is the port labeled “SNMP” on the controller rear panel.

4 On a computer terminal that has connectivity to the **Centric** IP address, open a Web browser and enter the **Centric** IP address in the URL bar. For example: “//192.102.2.130” (without quotation marks), and press Enter. You should see the **Centric**'s main menu. From that point you can continue as usual as if you were using the Mega's display screen. If your computer screen doesn't have touch capability, use your mouse to make selections.

11. CENTRIC SPECIFICATIONS

Table 8: Technical specifications

CENTRIC: UPS SYSTEM SPECIFICATIONS								
Topology				On-line battery, double-conversion, VFI				
Operation				Continuous				
Input								
Voltage				3×400 Vac+ N (+10 % / -15 %)				
Voltage range				340 – 440 V: full power, 323 – 340 V: derated 20 %				
Current				3 × 42 A per module – no inrush current at startup				
Frequency				47 – 63 Hz				
Power walk-in				>60 s				
Power factor				>0.99				
THDI				<3 %				
Output								
Rated Power				50 kVA / kW to 200 kVA / kW				
Nominal frequency				50/60 Hz				
Frequency tracking range				±(0.5, 1, 2, 3) Hz, selectable				
Frequency tracking slew rate				1 Hz/sec				
Frequency (in free-running mode)				50/60 Hz ±0.1 %				
Nominal voltage				3x400 Vac (230 Vac)				
Static voltage regulation				±1 %				
Regulation for unbalanced load				±1 % for 100 % unbalanced load				
Dynamic response to 100 % load step				±2 %				
Overload withstand	Inverter mode			110 % : 10 minutes, 125 % : 60 s,				
	Bypass mode			125 % : 10 minutes, 1000 % : 1 cycle				
Waveform				Sinusoidal				
THD				Linear load: <2 %; non-linear load: <8 %				
Load CF (max)				6:1				
Ac-Ac efficiency (nominal)				Up to 96 % at full load				
Batteries								
Dc-link voltage				300 to 405 Vdc (405 V floating, accuracy to ±1 %)				
Quantity				60 × 12 Vdc				
Type				Sealed, lead acid, rechargeable				
General								
Maximum power dissipation (Po=25 kW)				N*1041 W (N*3552 BTU/h), where N = # modules				
Ambient temperature				-10 to +40 °C (operating), -20 to +60 °C (storage)				
Relative humidity				95 % maximum, non-condensing				
Altitude				1500 m without derating				
Enclosure				IP20				
Cooling system				Multi-fan with speed control (forced)				
Standards								
Safety				IEC 62040-1				
EMC				IEC 62040-2				
Design				IEC 62040-3				
Low magnetic field radiation				EMF as per ICNIRP				
Dimensions								
UPS model	100 kVA/kW			200 kVA/kW				
# of power modules	2	3	4	4	5	6	7	8
Power output (kW/kVA)	50	75	100	100	125	150	175	200
Height (mm) (w/o wheels)	931			1450 max.				
Width (mm)	540							
Depth (mm)	731.5							
Weight (kg)	98.6	117.2	135.7	144.3	162.9	181.4	200	218.5

All specifications are subject to change without notice.

SYSTEM CONTROLLER – TECHNICAL DATA	
Display	LCD flat panel, touch-sensitive
Other indicators	Audible alarm
Analog input channels	4 input dry contacts (N.O. / N.C.)
Real Time Clock (RTC)	Yes, with backup
Power meter	kVA, kW, PF
Volt-free outputs (dry contacts)	6 outputs, rated 50 V / 1 A
Communication	TCP/IP, GPRS/SMS wireless communications (optional)
Communications with system modules	Serial, isolated
Events log	500 events
System operation without controller	Unchanged
On-screen parameters	Load bar-graph 3-phase voltages 3-phase currents Battery voltage Status of each UPS module Static-switch parameters and status Battery sensor temperature
Alarms	Ac failure Dc failure UPS module(s) failure Load on bypass Battery test failure Over/under temperature Overload (Contacts rated max. 48 V 1 A)
RTC operation without power	2 weeks
Power requirements	3 × 400 Vac

For a full company profile, please visit our website at www.gamatronic.com*.*

Gamatronic Building, Jerusalem, Israel

Gamatronic's product range:

- UPS Systems
- Power systems for Telecom
- Dc-to-Ac Inverters
- Dc-to-Dc Converters
- Frequency Changers
- Battery Chargers
- Power Management Solutions

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