The Power of Reliability

Platinum Series DC Power Supply Instruction Manual 855-339-004

HELIOS POWER SOLUTIONS

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SAFETY GUIDELINES

Principles of Safe Operation and Maintenance

Safety must always be the top priority of all personnel involved in the installation, operation, and maintenance of this unit as it operates at high voltages that could be potentially lethal. Technicians must adhere to the appropriate standards and manufacturer's recommendations to minimize hazards.

Do not attempt to perform the tasks described in this manual if you are not a qualified professional.

It is essential that all safety devices and emergency response systems be fully operational and within their certification periods before starting any service.

Visual Communication

This manual uses extensive visual aids and tries to adhere to ANSI and ISO safety symbol standards. These symbols describe the following situations:

WARNING indicates a hazardous situation that, if not avoided, may result in death or severe injury or damage to equipment and property.

CAUTION indicates a hazardous situation that, if not avoided, may result in minor or moderate injury or damage to equipment and property.

NOTICE indicates practices not related to physical injury but may result in equipment damage, environmental hazards, loss of data, and other undesirable consequences.

General Alerts

Risk of serious personal injury or damage to equipment and property. Always observe the following:

- Install and operate unit in a restricted access location. A restricted access location is an area to which access can be gained only by service personnel using a special tool, lock and key, or other means of security and which is controlled by the authority responsible for the location.
- Install the unit in locations where children are likely not to be present.
- Install chassis ground to the unit before connecting AC input.
- Installation, operation, and service must be done by qualified technicians, with all wiring and connections done in accordance with the local electrical codes.
- Input voltages can range up to 240 volts AC. All upstream AC, load and battery breakers must be shut OFF prior to installation. The system must be completely de-energized.
- All AC connections must conform to local codes and regulations.
- Use caution when handling unit under load as surfaces may be hot.

Always observe the following for applications requiring a backup battery:

- Use a battery with rating and capacity appropriate for the model of power supply in use.
- Use an appropriate DC overcurrent protection device in-line with the backup battery connection.
- Use wire and connectors rated for the maximum load current.
- Ensure battery polarity is correct before connecting.
- Do not attempt to charge a frozen battery.
- Handle batteries with care. Never short-circuit battery terminals.
- Always install batteries in well-ventilated areas.
- Always consult with and observe all battery manufacturer recommendations.

CAUTION

Risk of personal injury or damage to equipment and property. Always observe the following:

- Install in a protected environment and keep sources of moisture away from unit.
- Ensure the total power consumption of the load does not exceed the continuous rated capacity of the power supply output.
- Provide adequate support for the rear of the unit without obstructing the air inlet or outlet openings.
- Remove all metallic jewelry before working with the unit.
- Wear appropriate eye protection and always use appropriate tools during installation.
- DC-AC inverters should not be connected to any of the load connection points without a battery connected to the system. DC-AC inverters create significant inrush current and may damage the circuitry or interfere with the operation of power supplies when there is no battery connected. Connecting a DC-AC inverter in this way may void the product warranty.

NOTICE

Risk of damage to equipment, environmental hazards, loss of data and other undesirable consequences. Always observe the following:

- The unit must be properly handled, mounted, and installed.
- Do not block air inlet or outlet openings.
- Due to environmental factors which are common at outdoor communications sites, power surges from lightning strikes, electrostatic discharge, and utility power feeds can occur. These surges can damage connected equipment.
- This product is compliant and certified to IEC61000-4-5 Surge Immunity, however, additional surge suppression methods must be followed to further protect this device.
- Third-party surge suppression devices must be utilized to protect AC input power feeds, every exposed DC power conductor, and exposed data cables. These protection devices must be installed at both ends of the exposed conductor, in close proximity to installed equipment. Periodically inspect these surge protection devices for proper function.
- Consult with manufacturers of surge suppression devices to select appropriately rated protection device(s) and proper installation methods.
- ICT's product warranty does not cover damage caused by power surges and electrostatic discharge events including lightning.

Product Alerts

Risk of serious personal injury or damage to equipment and property. Always observe the following:

- Operate the supply from a grounded 3-wire 120-volt AC or 230/240-volt AC source (50 or 60 Hz) with a branch circuit breaker rated 20 amps or less.
- Do not connect a battery to the "+ BAT" terminal when more than one Platinum Series power supply is connected in parallel.
- Battery current through the "+ BAT" terminal and internal LVD relay must not exceed the maximum current limit rating of the Platinum Series power supply. Use a suitably rated overcurrent protection device and disconnect in line with the "+ BAT" terminal and external battery positive.
- If a lithium-ion battery is used, it must have an integrated battery management system (BMS) to protect the battery cells from inappropriate voltage or current levels.

Do not connect power supplies of different output voltage ratings in parallel as this may damage the units or the connected loads.

GENERAL INFORMATION

Document Number: 855-339-004

Models:

ICT1600-12SC	ICT1600-24SC	ICT1600-48SC
ICT1600-12SBC	ICT1600-24SBC	ICT1600-48SBC
ICT800-12SC	ICT800-24SC	ICT800-48SC
ICT800-12SBC	ICT800-24SBC	ICT800-48SBC

This manual also applies to models containing "A" (e.g. ICT1600A-12SC).

Date and Revision: September 2025, Revision 2.11

Disclaimer

ICT shall not be held liable for any damage or injury involving this product if it has been subjected to misuse and exposure to environmental conditions not conforming to the product's limits of operation, improper installation, or maintenance.

The illustrations in this manual are for illustrative purposes only. Review the drawings before proceeding. If there are questions and concerns regarding the product, refer to the FAQs section or contact ICT.

Contact Information

- North America toll-free: +1 877.930.0717 ext. 810
- International: +1 604.856.6303 ext. 810
- E-mail: techsupport@ictcorporate.com

ICT LIMITED WARRANTY

The warranty period on ICT products is two (2) years from date of purchase from an authorized ICT reseller or OEM with valid proof of purchase, or from date of shipment from the ICT manufacturing facility. The warranty period for a repaired product or part is ninety (90) days or the remainder of the unexpired term of the new product warranty period, whichever is greater. Repair or replacement of a defective product or part does not extend the original warranty coverage period.

The ICT Limited Warranty is only intended for the benefit of the original purchaser and user of this product. This Warranty is not transferable or assignable without the prior written permission of ICT. ICT's sole obligation and liability under this warranty is limited to either repairing or replacing defective products at the sole discretion of ICT. When repairing or replacing the products, ICT may use products or parts that are new, equivalent to new or re-conditioned. Parts repaired or replaced during the warranty period will be under warranty for the remainder of the warranty period.

No claim will be accepted unless written notice of the claim is received by ICT in accordance with ICT's Return Material Authorization (RMA) procedure, as soon as reasonably possible after the defect is discovered. A valid product serial number must be provided with the RMA claim to prove eligibility. The RMA procedure is available on the ICT website at www.ict-power.com/support/warranty-repair/.

The Purchaser shall at their own risk and cost return the defective product to ICT's factory or designated repair center once an RMA is issued by ICT. Return of the products to the customer after repair is completed shall be prepaid by ICT unless otherwise mutually agreed between the parties. Products shipped to ICT which have incurred freight damage will not be covered by this Warranty and any repairs or replacement parts, components or products needed will be invoiced in the full current price amount and returned freight collect to the Purchaser. It is the Purchaser's responsibility to check the product upon receipt for any damage during shipping and to contact the carrier or shipper regarding such damage. Product that is returned as defective, which is determined to operate within published specifications will be returned to the Purchaser freight collect.

ICT assigns to the Purchaser any warranties which are made by manufacturers and suppliers of components of, or accessories for, the ICT product and which are assignable. ICT makes no representations as to the effectiveness or extent of such warranties, assumes no responsibility for any matters which may be warranted by such manufacturers or suppliers and extends no additional coverage under this Warranty to such components or accessories.

In no event shall ICT be liable for any special, indirect, or consequential damages such as, but not limited to, loss of use, business or goodwill, loss of revenue, or loss of profits, which may result, either directly or indirectly, from defects in products provided by ICT.

This Warranty will be void if the product has been subjected to misuse, neglect, accident, exposure to environmental conditions not conforming to the products' limits of operation, improper installation or maintenance, improper use of an electrical source, defects caused by sharp items or by impact pressure, a force majeure event, has been modified or repaired by anyone other than ICT or its authorized representative, has been subjected to unreasonable physical, thermal or electrical stress, improper maintenance, or causes external to the unit including but not limited to general environmental conditions such as rust, corrosive atmospheres, sustained temperatures outside the specified operating range of the equipment, exposure to power surges and/or electrical surges, improper grounding, mold or dust, animal or insect damage, water damage or immersion in liquid of any kind, or if the serial number has been altered, defaced, or removed.

ICT does not control the installation and use of any ICT product. Accordingly, it is understood this does not constitute a warranty of performance or a warranty of fitness for a particular purpose. This Warranty represents the entire agreement between ICT and Purchaser with respect to the subject matter herein and supersedes all prior verbal or written communications, representations, understandings, or agreements relating to this subject.

Return Material Authorization Procedure

1. Request RMA number from ICT through telephone, e-mail, or website from Monday to Friday between 8:00am and 4:30pm Pacific Time.

    - North America toll-free: +1 877.930.0717 ext. 810
    - International: +1 604.856.6303 ext. 810
    - E-mail: techsupport@ictcorporate.com
    - ICT website: https://ict-power.com/support/warranty-repair

2. Provide the following information when requesting an RMA:

    - ICT model number
    - Serial number
    - Return ship-to address
    - The preferred shipping courier and account number, if applicable
    - An estimate of what the possible failure cause might be

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1.0 INTRODUCTION

The ICT Platinum Series is an intelligent high-performance DC power supply in a 1RU rack mount design with power factor corrected AC input and extremely low noise output for powering wireless communications, broadband, and radio access equipment where high reliability is essential. The Platinum Series provides 800 or 1,600 watts with an isolated 12-, 24- or 48-volt DC output for use in either positive or negative voltage applications; and can function either as a standalone DC power supply or as a complete DC power system with an optional battery backup feature. Standard TCP/IP Ethernet monitoring on all models provides remote monitoring and control. SBC models provide advanced battery management with programmable charge parameters and adjustable Low Voltage Disconnect (LVD) for Li-ion and Lead-acid batteries. Platinum Series can be paralleled to provide up to 9,600 watts of combined output power using the Smart Parallel feature.

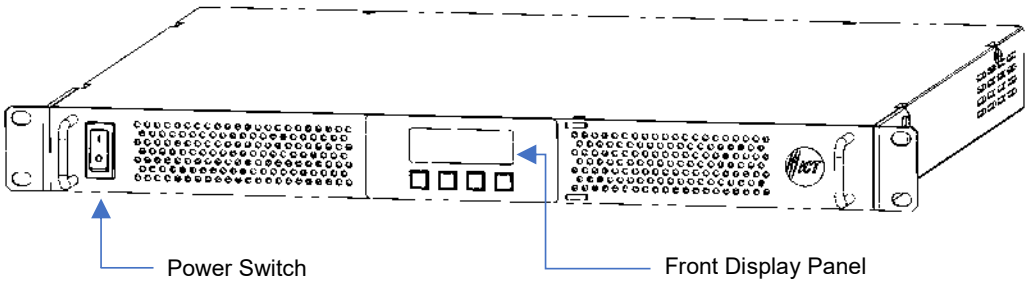


Figure 1. Front View

Table 1. Power Supply Ratings

Model	Output Voltage Range (V)	Default Output Voltage (V)	Output Current Limit Range (A)	Default Current Limit (A)
ICT1600-12SC ICT1600-12SBC	11.5–15.5	13.8	25–120	120
ICT1600-24SC ICT1600-24SBC	23.0–31.0	27.6	10–60	60
ICT1600-48SC ICT1600-48SBC	46.0–62.0	55.2	5–30	30
ICT800-12SC ICT800-12SBC	11.5–15.5	13.8	13–60	60
ICT800-24SC ICT800-24SBC	23.0–31.0	27.6	5–30	30
ICT800-48SC ICT800-48SBC	46.0–62.0	55.2	3–15	15

The models with factory installed battery backup feature with LVD option are designated by the letter "B".

1.1 Features

- 800 or 1,600 watts of output power
- Power Factor Corrected wide range AC input
- 12-, 24- or 48-volt nominal DC output (floating ground)
- Isolated design allows operation with positive or negative ground
- User adjustable output voltage
- 90 to 93% efficiency
- −30 to +70°C operating range
- TCP/IP Ethernet
- Form-C alarm contacts
- Optional factory installed battery backup and LVD
- Advanced battery management features including:
  - temperature compensated charging (lead-acid battery only)
  - display of battery voltage
  - battery status
  - battery current
  - state of charge
  - run time remaining
  - adjustable LVD settings
  - configurable advanced battery management features such as boost charge parameters, maximum charge current, battery capacity, battery test timer, and battery discharge test cutoff voltage
- Support for lead-acid and lithium-ion battery types (features differ depending on battery type)
- Smart Parallel operation allows up to six Platinum Series to be connected in parallel for up to 9,600 watts of nominal power output

2.0 INSTALLATION

The following is the recommended sequence for the installation process.

2.1 Unpacking and Inspection

Perform a physical check of the unit as it is being taken out of the box to ensure it has not been damaged during shipping. Check that the system configuration matches the version ordered, and that the accessories under the package contents section were shipped with the unit.

NOTE: In case of shipping damage, your freight carrier should be notified immediately.

2.2 Package Contents

- Quick Start Guide
- Power supply
- One nut on the ground stud (installed)
- Two rack-mounting ears (installed)
- Bag containing the following:
  - DC output bus bar cover
  - Instruction manual (USB drive)
  - One 3-pin AC input wire clamp connector plug
  - One 7-pin REMOTE connector plug
  - Two 1/4-inch bolt/washer/nut sets for the DC output bus bar connection
  - One 1/4-inch bolt/washer/nut set for the BAT bus bar connection (if SBC model)
  - Two 6-32 x 1/4-inch screws for installing the bus bar cover

2.2.1 Tools and Parts Needed

- Two 7/16-inch wrenches for the output connection
- Wire stripper and crimper
- Four screws to install the unit into the equipment rack
- #1 Phillips screwdriver for the connections of the output bus bar cover and AC input connector
- 3/32-inch flathead screwdriver for the connections of the AC input wires, and REMOTE wires

2.3 Quick Install Guide

- Unpack and check that the unit and all materials have been delivered.
- Obtain the recommended tools.
- Mount the unit into a 19-inch rack.
- Connect the chassis ground according to the site design and in accordance with local electrical code standards.
- Connect the sensors, alarms, and remote-control lines, if needed.
- Connect the battery, if applicable.
- Connect the network cable using third-party surge protection.
- Connect and energize the AC power source, using third-party surge protection.
- Configure the software settings.
- De-energize the unit and connect the load devices using third-party surge protection.
- Verify the system wiring.
- Energize the loads and battery connections.

2.4 System Configuration

The Platinum Series has a floating output which can supply either positive or negative voltage, and can function either as a standalone DC power supply or as a complete DC power system when using the optional Battery Backup feature. Up to six power supplies of the same voltage rating can be connected in parallel.

NOTE: Accessories must be ordered separately.

Table 2. Available Accessories

Description	Model No.
Battery temperature sensor (for use with SBC models)	ICT-TMP
Secondary power supply output bus bar jumper strap (for paralleling two or more power supplies)	ICT-PAR
Secondary power supply parallel RJ11 control cable jumper (4”) (allows Smart Parallel Operation with automatic load sharing when up to six Platinum Series power supplies are paralleled)	ICT-JMP

2.5 Rack Mounting

CAUTION

Provide adequate support for the rear of the unit without obstructing the air vents.

Mount the unit in an enclosed, standard 19-inch equipment rack or other restricted access location, using rack mounting screws (not supplied). Support the rear of the unit with rack shelf supports or back rail if required.

2.6 Ground Connection

WARNING

De-energize the unit/system before making any change to the wiring and connections.

NOTICE

All DC outputs of ICT’s DC power systems are isolated from chassis ground (floating). DC output returns can remain isolated from ground (DC-I) or can be grounded (DC-C), as per site grounding requirements and/or local or national electrical codes. Ensure that all relevant electrical code standards are followed.

Connect a ground bonding wire from the chassis ground stud to a nearby common grounding point. Use a ground bonding wire that is sized in accordance with NEC Table 250.122 (see Table 3). Ensure that the selected ground bonding wire is rated to handle the maximum current rating of the unit.

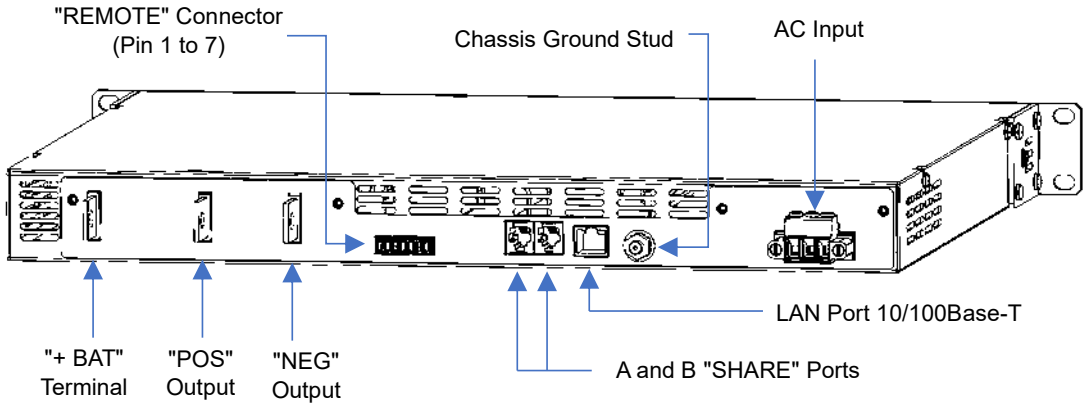


Figure 2. Rear View (SBC Model)

Table 3. Minimum Size Equipment Grounding Conductors for Grounding Raceway and Equipment

Maximum Circuit Breaker Size (Amps)	Conductor Size (AWG or kcmil)	
	Copper	Aluminum or Copper-Clad Aluminum
15	14	12
20	12	10
30	10	8
40	10	8
60	10	8
100	8	6
200	6	4

This is sourced from "National Electrical Code 2005 Edition", p. 70-112.

2.7 Surge Protection Device(s) Installation

Third-party surge suppression devices must be utilized to protect AC input power feeds, every exposed DC power conductor, and exposed data cables. These protection devices must be installed at both ends of the exposed conductor, in close proximity to installed equipment. Periodically inspect these surge protection devices for proper function.

NOTE: Consult with manufacturers of surge suppression devices to select appropriately rated protection device(s) and proper installation methods.

2.8 Sensor, Alarm and Remote Control Connections

The REMOTE connector allows the Platinum Series to report faults to an external monitoring device through a form-C contact; to monitor the external temperature of an external battery pack; and to remotely disable the unit.

1. Install the 7-pin cage clamp style REMOTE connector.

2. If needed, connect form-C contact monitoring wiring to the Alarm Output contacts on the REMOTE connector as shown in Table 4. Use 16–24 AWG wire. Refer to Tables 6 and 7 for which conditions will trigger a form-C alarm.

NOTE: The Form-C relay provides a voltage-free (dry) contact and does not supply power. It is intended to switch external circuits energized by other devices.

3. Connect the optional external Battery Temperature Sensor (ICT-TMP, for use with lead-acid batteries only, on SBC models) to pins 4 and 5 on the REMOTE connector as shown in Table 4. This will allow the Platinum Series to compensate the battery charge voltage according to the battery temperature.

   Mount the sensor to the mid-level side of the middle battery in a battery bank using the adhesive-backed clip. The rate of voltage compensation can be adjusted through the front display panel interface, or the Graphical User Interface (GUI) in the Battery Backup Settings section. The default compensation is 0 mV/C per cell (no compensation). Adjust this according to the battery manufacturer's recommendation to enable charge voltage temperature compensation.

NOTE: Battery temperature is assumed to be 25°C if no sensor is installed.

4. Connect external Remote Shutdown control wiring to pins 6 and 7 on the REMOTE connector as shown in Table 4, if external on/off control of the power supply output is required (see Section 3.5).

Table 4. REMOTE Connector

Pin Number	Name	Function
1	Common	Alarm output common
2	NC	Alarm NC (alarm state)
3	NO	Alarm NO (alarm state)
4	Temp	Battery temp sensor (either lead)
5	Temp	Battery temp sensor (either lead)
6	SD +	Remote shutdown (+2 to +12 V)
7	SD −	Remote shutdown (Return)

2.9 Battery Connections (if applicable)

Risk of serious personal injury or damage to equipment and property. Observe the following:

- Use a battery with rating and capacity appropriate for the model of power supply in use.
- Use an appropriate DC overcurrent protection device in line with the backup battery connection.
- Use wire and connectors rated for the maximum load current.
- Ensure battery polarity is correct before connecting.
- Do not attempt to charge a frozen battery.
- Always install batteries in well-ventilated areas.
- Handle batteries with care. Never short-circuit the battery terminals.
- Always consult with and observe all battery manufacturer recommendations.
- When connecting a battery ensure the nominal battery voltage is correct, and that the battery positive is connected to a positive terminal and the battery negative is connected to a negative terminal.
- Note that the "+ BAT" terminal (on SBC model) is internally tied to the "POS" DC output through the LVD contactor.
- Only use the Equalize Charge setting for flooded lead-acid batteries in a well-ventilated location. **Do not use Equalize Charge on sealed or lithium-ion batteries**. Always consult with and observe all battery manufacturer recommendations.
- Do not connect either of the unit's main outputs to the BAT terminal, as this may short-circuit the battery or bypass the internal LVD circuitry in the SBC models.
- Use wire and connectors appropriately rated for the highest possible unit current when making connections to the battery, "+ BAT", and main DC output.

WARNING

- If a lithium-ion battery is used, it must utilize an integrated battery management system (BMS) to protect the battery cells from inappropriate voltage or current levels.
- Do not connect a battery to the "+ BAT" terminal when more than one Platinum Series power supply is connected in parallel.

CAUTION

Leave the battery breaker open until the software has been configured (see Section 3.2.2 or Section 4.3.2).

An external lead-acid or lithium-ion battery with the same nominal voltage as the power supply may be connected directly to the output terminals, or to the "+ BAT" terminal (on SBC models) to provide a DC backup capability.

On SBC models, the internal LVD contactor will disconnect the battery should it discharge below the voltage level which is set in the Battery Backup section of the GUI. Internal battery current monitoring provides a full suite of remote battery charge monitoring features.

1. Check that the default system output voltage and current limit (see Table 1) match the requirements of the battery and the loads to be connected. Adjust the system Output Voltage and Current Limit (see Section 3.2.1 or Section 4.2.2) to match the combined battery and system load requirements before making final connections, if required.

NOTE: Use wire and connectors appropriately rated for the maximum unit current when making connections to the battery.

2. Connect the backup battery positive lead to the "+ BAT" terminal, and the backup battery negative lead to the "NEG" terminal. Install an appropriate in-line DC overcurrent protection device, such as a fuse or circuit breaker, on the battery positive lead. Leave the fuse or breaker open until the software has been configured.

Figure 3. The "+ BAT" Terminal

NOTE: See Section 2.16 step 3 for the battery connection on parallel units.

2.10 Network Cable Connection

Connect a 10/100 Base-T Ethernet cable, using third-party surge protection, to the RJ45 LAN port on the rear panel to allow for remote monitoring and control of the unit.

NOTE: See the Network Monitoring and Control section for information on configuring and using the built in GUI, e-mail, or SNMP functions (Section 4.5.2).

2.11 AC Power Source Connections

AC input wiring to the Platinum Series unit must be protected using an outlet with a branch rated circuit breaker of 20 amps or lower value.

Install appropriately rated surge suppression systems on AC, DC, and data connections.

The ICT Platinum Series provides flexible, managed DC power from single-phase AC power between 100 and 300 volts AC.

1. Create an AC power cable using a 3-conductor cord rated for the maximum input current of the unit by stripping and terminating the three wires in the Line, Neutral, and Ground terminals of the removable AC input connector provided with the unit (AC line labeled "L", neutral labeled "N" and safety ground labeled "⏚").

Table 5. AC Source Wiring Connections

AC Voltage	3-Conductor Cord	Connection to ICT Unit
120/240 VAC (Single-Phase)	Line Neutral Ground	Line to Line Neutral to Neutral Ground to Ground
240 VAC (Split-Phase/Two-Phase)	Line1 Line 2 Ground	Line 1 to Line Line 2 to Neutral Ground to Ground

2. De-energize the AC source by switching off its circuit breaker.

3. Plug the AC connector into the AC input on the unit rear panel and tighten the captive retaining screws.

4. Connect the source end of the cord to the de-energized AC supply equipped with a branch rated circuit breaker of 20 amps or less.

5. Energize the AC feed and turn the front-panel power switch to ON position.

2.12 Software Configuration

Configure the software (see Section 3 or Section 4).

2.13 Load Connections

CAUTION

- DC-AC inverters should not be connected to any of the load connection points without a battery connected to the system. DC-AC inverters create significant inrush current and may damage the circuitry or interfere with the operation of power supplies when there is no battery connected. Connecting a DC-AC inverter in this way may void the product warranty.
- Do not mix polarity of the load devices.
- Install appropriately rated surge suppression systems on AC and DC, and data connections.

1. Turn OFF the front-panel power switch before making or changing any connections.

2. Make connections to the load using wire and connectors appropriately rated for the maximum load current. Connect the load positive lead to the "POS" terminal, and the load negative lead to the "NEG" terminal (see Figure 4). Ensure that the software has been configured (see Section 3.2.1 or Section 4.2.2) before connecting the loads to the DC output terminals.

Figure 4. DC Output Bus Bars

2.14 System Wiring Final Verification

1. Check that all connections to the power supply are correct and properly tightened.

2. Install the protective bus bar cover(s) using the screws provided.

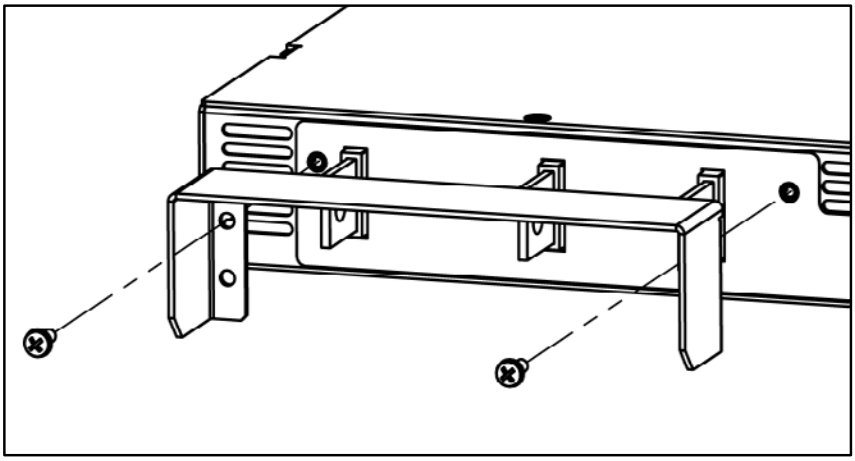


Figure 5. Installation of the Bus Bar Cover

2.15 Energize Loads and Battery Connections

1. Turn ON the front-panel power switch to energize the loads.

2. Close the backup battery breaker (if an external battery is used) to connect the backup battery string to the system.

2.16 Parallel Power Supply Installation (if applicable)

WARNING

- Do not use the "+ BAT" terminal for parallel applications.
- Batteries used with a Platinum Series parallel system must be connected to the "POS" / "NEG" terminals and use an external LVD.

CAUTION

Risk of personal injury or damage to equipment and property. Always observe the following:

- Do not connect the power supplies of different output voltage ratings in parallel as this may damage the units or the connected loads.
- Do not connect power supplies in series; they are meant for parallel operation only.

Use secondary power supplies for applications that require up to 9,600 watts of DC power. Up to six power supplies of the same output voltage rating can be connected in parallel in a Primary-Secondary configuration. One of the units will operate as a Primary, and the remaining units are Secondaries, with the combined settings controlled by the Primary, requiring only additional AC line input connections, control jumper cable (ICT-JMP) connection, and the installation of parallel bus bars (ICT-PAR) to parallel the power supply outputs. A battery and an external LVD can be connected directly to the parallel output terminals of the power supplies to provide a DC backup capability.

The primary and the secondary power supplies must be installed as a set into adjacent rack locations to ensure the output parallel bus bars (ICT-PAR) and the parallel control cable (ICT-JMP) will correctly fit.

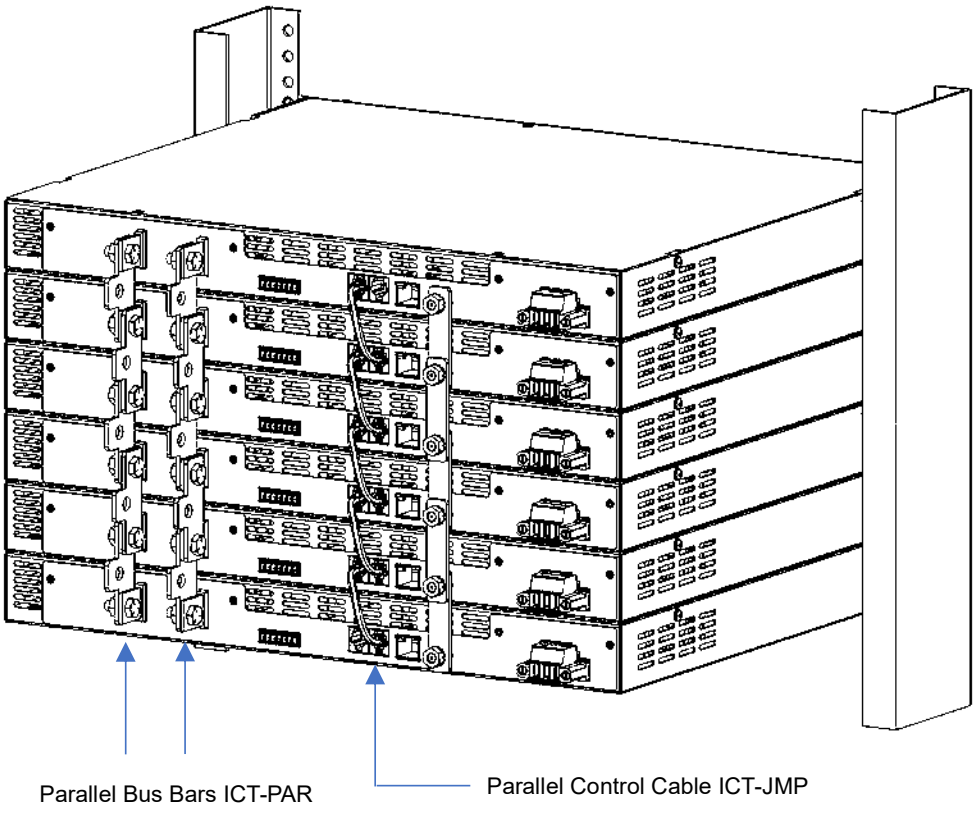


Figure 6. Primary and Secondaries Connected in Parallel

1. Connect the positive terminals (labelled "POS") of each unit together at a common positive load point using the Parallel Bus Bars (ICT-PAR) as shown in Figure 6. See Section 2.13.

2. Connect the negative terminals (labelled "NEG") of each unit together at a common negative load point using the Bus Bar Strap (ICT-PAR), then install the plastic bus bar covers using the supplied hardware. See Section 2.13.

3. Connect the backup battery positive lead to the "POS" parallel output terminals, and the backup battery negative lead to the "NEG" parallel output terminals. Install an appropriate in-line DC overcurrent protection device, such as a fuse or circuit breaker on the battery positive lead. Leave battery breaker open until the software has been configured. Use an external LVD. See Section 2.9.

4. Connect the "SHARE A" port on the first unit to the "SHARE B" port on the second unit using the Parallel Control Cable (ICT-JMP) as shown in Figure 6. If there will be more than two units connected in parallel, repeat this step for each unit as shown in Figure 6. This will allow the Primary power supply to control the Secondary power supplies.

5. Connect alarm monitoring wiring to the form-C contacts on the Secondary power supplies if desired, to remotely monitor for secondary power supplies alarm conditions. See Section 2.8.

6. Connect a separate AC power cord to each power supply, using independent AC circuits rated for the full power operation of each power supply. See Section 2.11.

7. Configure each unit for parallel operation. See Section 5.3.

8. Turn OFF the front-panel power switches before connecting loads. Connect a load to the parallel power supply output terminals to utilize the combined power of all Platinum Series connected in parallel. Connect the load to the external LVD if using a backup battery. See Section 2.13.

3.0 OPERATION: FRONT DISPLAY PANEL

Energize the external AC source and turn the front-panel power switch to ON position to power up the unit. Check that the front display panel powers up and an initial start-up screen appears, which is then replaced with the main screen (System Status screen).

The Platinum Series will start up and operate at the factory default settings when AC power is connected, generally requiring no other set up or adjustment for basic operation.

The front display panel works on DC power even when the LVD is open.

3.1 Graphic Display

Use the front display panel and four interface buttons on the front panel to monitor the system status and to make changes to the power supply settings such as output voltage, current limit, and battery low voltage disconnect points.

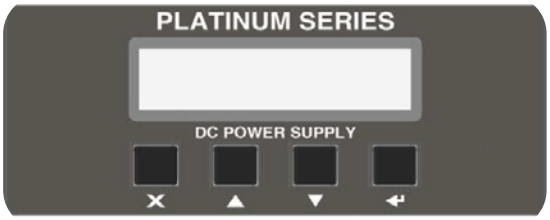


Figure 7. Front Control Interface

NOTE: The display will turn off after approximately 60 minutes of no use and can be re-activated by momentarily pressing any button.

Up/Down ▲▼ Buttons: Use to scroll through display screens, and to adjust selected settings.

Enter ↵ Button: Use to select a screen for adjustment; to save a change and return to the previous screen.

Back X Button: Use to return to previous screen without saving changes.

3.2 Menu Structure

See the complete menu structure in the following diagram. Navigate through the various screens using the four interface buttons.

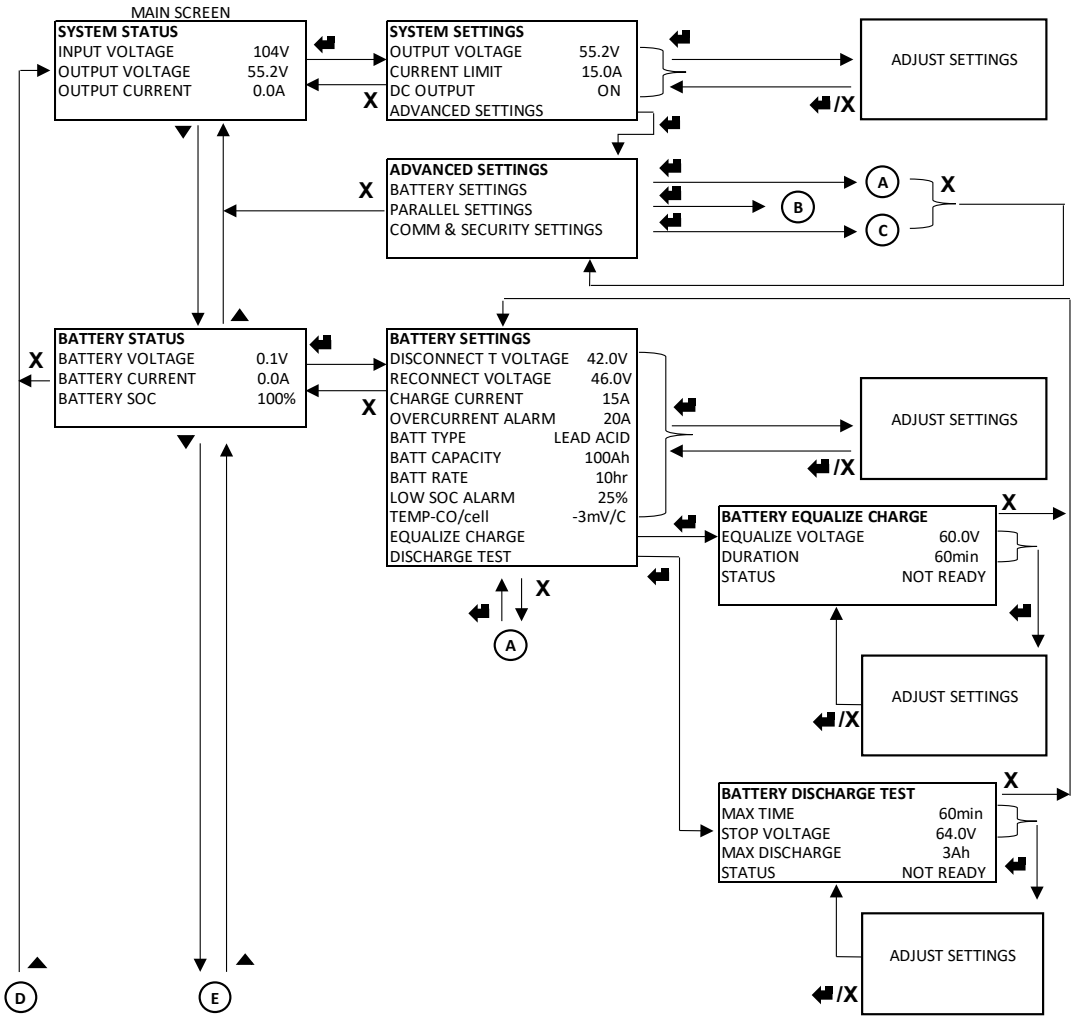


Figure 8. Menu Structure (cont'd on next page)

NOTE: Connectors (B), (C), (D) and (E) show continuation of the structure from one page to another.

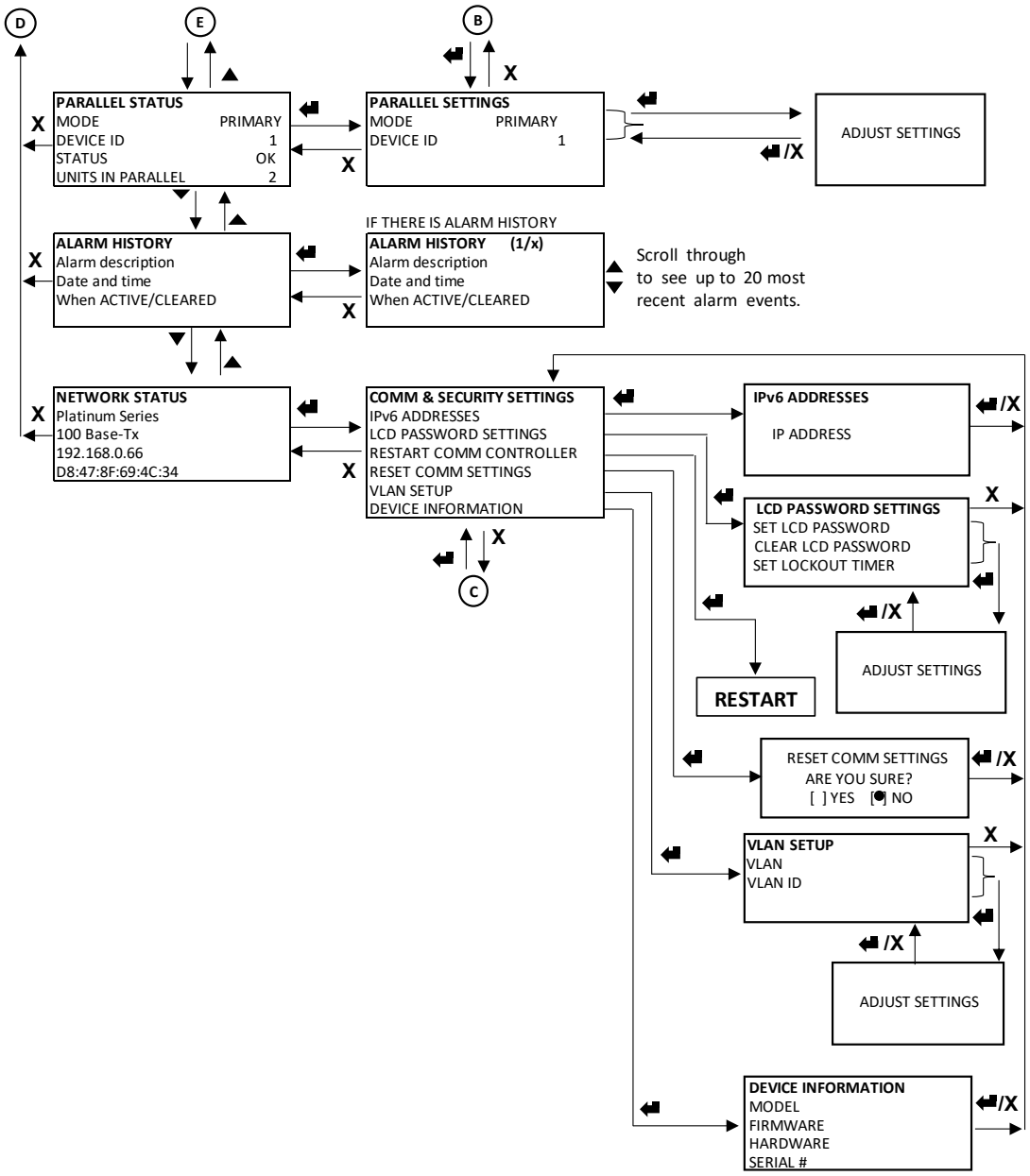


Figure 9. Menus Structure (cont'd from previous page)

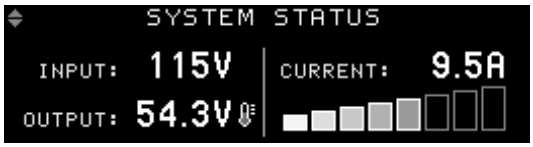
NOTE: Connectors (B), (C), (D) and (E) show continuation of the structure from one page to another.

3.2.1 System Status

The main system status screen will show the most current operating conditions for the unit, primarily the Input Voltage (VAC), the Output Voltage (VDC), and the unit's Output Current (A). To view the total current supplied by the units connected in parallel, refer to the Parallel Status window in the System Status tab in the graphical user interface (GUI) (See Section 4.2.1).

Other information will be shown depending on the operating state of the unit:

- A small thermometer symbol to indicate that the remote temperature sensor is installed and may be compensating the battery charge voltage
- A bar graph indicating relative output current
- Indication that the output has been disabled (off)
- Indication that a battery discharge test is in process
- The Input Voltage or Output Voltage will be flashing during an AC voltage or output voltage failure
- The Output Current will be flashing if the unit is operating at the set Current Limit



↵ Press Enter to move to the System Settings.

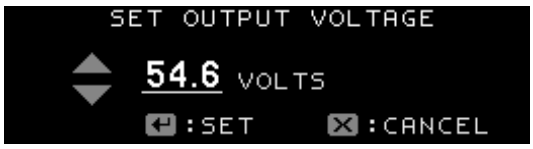
System Settings

The Output Voltage and Output Current Limit settings come with factory default values that should be adjusted to match the actual system and battery float voltage requirements, as shown below:

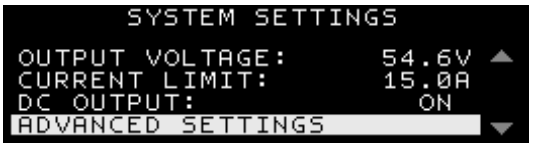
▲▼ Scroll to highlight the setting to adjust.

- Output Voltage
- Current Limit
- DC Output ON/OFF (default = ON)
- Advanced Settings

Press Enter to select.



Use the Up/Down buttons to adjust setting (Output Voltage shown), press Enter to set value and return to previous screen. Press Back X to return to System Settings screen without saving changes.



Scroll to the Advanced Settings line, and then press Enter to move to the Advanced Settings screen.

Scroll to choose sub-menu.

- Battery Settings
- Parallel Settings
- Comm & Security Settings

Press Enter to move to the setting screen of the selected sub-menu (see succeeding sections). Press Back X to return to System Status screen.

3.2.2 Battery Status (SBC models)

WARNING

Do not connect any battery to the "+ BAT" terminal when more than one Platinum Series power supply is connected on parallel.

The Battery Status Screen indicates the Battery Voltage (VDC), the Battery Current, the approximate battery State of Charge (%), and a bar graph showing relative magnitude of the battery current.

The SOC% is estimated by counting the ampere-hours (Ah) flowing into and out of the battery while knowing the nominal rated capacity of the battery. The system resets the SOC to 100% whenever it detects that the battery is at the rated Float Voltage with minimal charge current for at least 24 hours (units with factory-installed firmware v1.04, or newer, will reset when at Float Voltage for 8 hours with lead-acid, or 1 hour with lithium batteries).

Other information will be shown depending on the operating state of the unit:

- Battery current will be zero when not charging, + while charging and − while discharging
- A battery graphic marked with X indicates the LVD is open
- Battery voltage will be zero when no battery is connected

↵ Press Enter to move to the Battery Settings.

Battery Settings (All Battery Types)

The Battery Backup comes with factory default settings that should be reconfigured to match the actual battery used in the system.

Always consult battery manufacturer's specifications when selecting battery type. Incorrect battery type setting may damage the battery. If Lithium-Ion type battery is selected, it must utilize an integrated battery management system (BMS) to protect the battery cells from inappropriate voltage or current levels.

Scroll to highlight the setting or sub-menu to change.

- LVD Disconnect V
- LVD Reconnect Voltage
- Charge Current
- Overcurrent Alarm
- Battery Type
- Battery Capacity (Ah) rating
- Battery discharge rate (hrs.) used for capacity spec. (typically either 10 or 20 hrs.)
- Low SOC Alarm
- V Temp-co/cell (default = 0, typically = −4 mV/°C)
- Equalize Charge
- Discharge Test

Press Enter to select.

Use the Up/Down buttons to adjust settings (SET CHARGE CURRET LIMIT shown), press Enter to set value and return to previous screen. Press Back X to return to Battery Settings screen without saving changes.

DISCONNECT VOLTAGE: Set the battery Low Voltage "Disconnect Voltage" threshold to a level that will protect the battery from excessive discharge. The LVD contactor will open when the battery discharges to this level for at least 3 seconds.

RECONNECT VOLTAGE: Set the "Reconnect Voltage" higher than the disconnect voltage (see Table 12) to prevent the LVD contactor repeatedly cycling on and off. This setting will be used when charging the battery from an external DC source (such as a solar system), otherwise once AC power returns, the LVD contactor will automatically close so that the power supply can charge the battery directly.

NOTE: For lead-acid battery, the LVD contactor will not close if the lead-acid battery is less than 24 volts on a 48-volt system (see Table 9). The unit believes the battery is deeply discharged, and possibly damaged. A deeply discharged battery will not be reconnected as a safety measure. The battery will need to be manually checked for proper function and then manually charged to at least 24 volts (on a 48-volt system) before the LVD will close. Refer to the battery manufacturer's recommendations on how to proceed with a deeply discharged battery. This does not apply to the system when the Lithium setting has been chosen.

CHARGE CURRENT: Set the "Battery Charge Current Limit" to limit the maximum battery charge current provided, while still allowing the full rated current to be drawn from the main output.

OVERCURRENT ALARM: Set the "Battery Overcurrent" to receive an alarm notification when the battery discharge or charge current exceeds the set over-current level.

NOTE: Set the threshold to 0 A to disable this alarm (default setting).

BATT TYPE: Configure the "Battery Type" of the battery used in the system (Lead Acid, Lithium Ion (Narada), Lithium Ion (PWRSS) and Lithium Ion (Other)).

NOTE: PWRSS is an abbreviation for Power Storage Solutions.

If Lithium Ion-type battery is selected, the following battery parameters and settings will be unavailable. These should be available from the integrated BMS.

- Voltage Temperature Coefficient / cell
- Equalize Charge

BATT CAPACITY: Enter the combined battery capacity in Ah so the system can estimate the total battery SOC%.

BATT RATE: Set the battery rate (hrs.). This represents the discharge rate specified by the battery manufacturer to determine the battery capacity (usually will be 20 hr. or 10 hr. rate).

NOTE: Connecting batteries in parallel will increase the total Ah capacity, while connecting batteries in series will increase the voltage with no change to the Ah capacity.

LOW SOC ALARM: Set the "Low SOC Alarm" (%) if desired, to raise an alarm when the battery is nearly discharged.

TEMP-CO/cell (only available for lead-acid batteries): Ensure the Battery Temperature Sensor (ICT-TMP) is installed and connected to the battery case (see Section 2.8) for optimal lead-acid battery charging and best battery life. Set the "Temperature Compensation/°C" level per battery cell to match the recommendation of the battery manufacturer (−4 mV/°C per cell is typical). The numbers are absolute values.

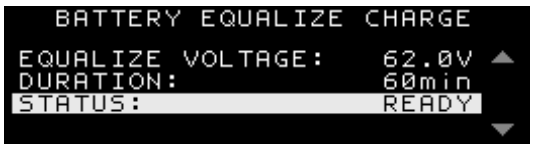
EQUALIZE CHARGE (only available for lead-acid batteries): Configure the "Battery Equalize Charge" voltage, duration, and automatic repeat interval if desired when using flooded lead-acid type batteries only. The system will step up the output voltage to the Equalize Voltage for the Equalize Duration time whenever the Equalize Status is set to Enable. The unit's data log (see Section 4.5.1) will record the completion of the equalization charge while a pop-up window will appear on the front display panel (see Section 3.2.6).

WARNING

Risk of serious personal injury or damage to equipment and property! Always observe the following:

- Equalize charging is intended for flooded lead-acid batteries only and may produce higher than normal levels of hydrogen gas.
- Consult with the battery manufacturer when using SLA batteries.
- **Do not use equalization charging with lithium-ion batteries**.
- Ensure the battery compartment is well ventilated to avoid any risk of explosion.
- Always consult with and observe all battery manufacturer recommendations.

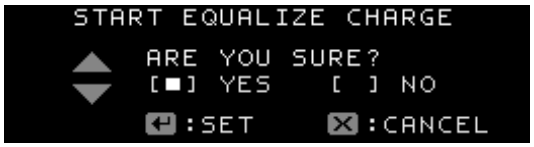
↵ Press Enter to select.



▲▼ Scroll to highlight parameter in selected sub-menu.

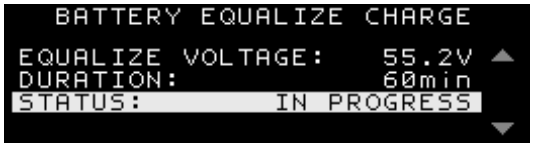
- Voltage
- Duration
- Status

Press Enter to set to START EQUALIZE CHARGE screen.



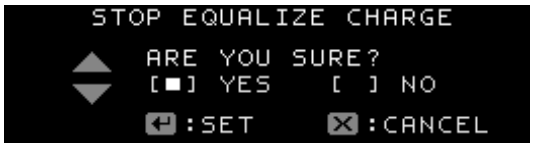
Use the Up/Down buttons to select setting, press Enter to set selected setting and return to previous screen. Press Back X to return to previous screen without saving changes.

Press Enter to start discharge test.

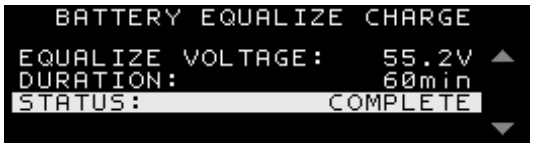


Status will show IN PROGRESS when equalize charge is occurring. Press Back X to return to the Battery Setting screen.

Press Enter to set to STOP EQUALIZE CHARGE screen.



Use the Up/Down buttons to select setting, press Enter to set selected setting. Press Back X to return to previous screen without saving changes.



Status will show COMPLETE when equalize charge is completed. Press Back X to return to the Battery Setting screen. Press Enter to set status to ready.

NOTE: System will state that Manual Equalize Charge is Not Ready if battery is not fully charged (a fully charged battery will have charge current close to zero amps).

DISCHARGE TEST: Configure the "Battery Discharge Test" to check on the battery's ability to power the system for a set duration. Set Max Discharge Time, minimum Stop Voltage, Max Discharge Limit, and the automatic repeat interval if desired. Each time the test is run the output voltage from the power supply will be reduced so that the external battery will power the system load until the MAX TIME limit, STOP VOLTAGE, or MAX DISCHARGE limit is reached.

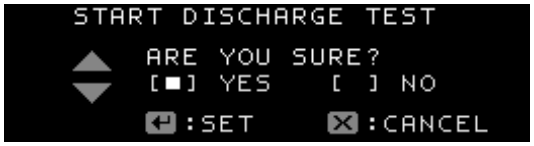
A Discharge Test Complete notification (on the front display and with an e-mail if messaging is configured via the GUI) will indicate a Test Failure if the Stop Voltage is reached before the Max Time limit, as the battery was not able to power the load for the desired duration. The unit's data log (see Section 4.5.1) will record the completion of the discharge test while a pop-up window will appear on the front display panel (see Section 3.2.6).

↵ Press Enter to select.

▲▼ Scroll to highlight parameter in selected sub-menu.

- Max Time
- Stop Voltage
- Max Discharge
- Status

↵ Press Enter to set to BATTERY DISCHARGE TEST screen.

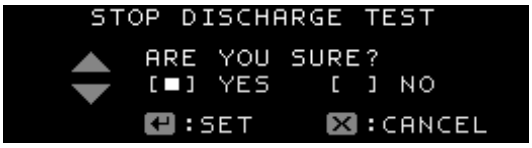


▲▼ Use the Up/Down buttons to select setting, press Enter ↵ to set selected setting and return to previous screen. Press Back ✕ to return to previous screen without saving changes.

↵ Press Enter to start discharge test.

Status will show IN PROGRESS when discharge test is occurring. Press Back ✖ to return to the Battery Setting screen.

↵ Press Enter to set to STOP DISCHARGE TEST screen.



▲▼ Use the Up/Down buttons to select setting, press Enter ↵ to set selected setting. Press Back ✖ to return to previous screen without saving changes.

Status will show FAIL when discharge test is not completed. Press Back ✖ to return to the Battery Setting screen. Press Enter ↵ to set status to ready.

NOTE: A discharge test can only be initiated when the battery is fully charged (a fully charged battery will have charge current close to zero amps).

3.2.3 Parallel Status

The Parallel Status screen shows the currently configured Parallel settings. If parallel operation is active, the status and total number of parallel units is displayed on the screen. Up to six units can be connected in parallel. See the Smart Parallel Operation section (see Section 5.3) for more information on configuring the parallel settings.

↵ Press Enter to move to the Parallel Settings.

Parallel Settings

The parallel Mode setting has three options — Standalone for a single unit, Primary and Secondary for parallel units (select one unit in a set as the

Primary then set other units as Secondary). The parallel Device ID setting ranges from 0 to 5 — assign each unit in a parallel set a unique ID number.

NOTE: When a "Mode" setting (Standalone, Primary, Secondary) is changed and set to a different setting on a unit, the DC Output of that power supply will automatically be turned OFF if it is currently enabled. Verify the output voltage and current settings, then manually re-enable the output.

▲▼ Scroll to highlight the setting to adjust.

- Mode
- Device ID

↵ Press Enter to select.

▲▼ Use the Up/Down buttons to adjust setting, press Enter ↵ to set mode and return to previous screen. Press Back ✖ to return to previous screen without saving changes.

▲▼ Scroll to Device ID line, and then press Enter ↵ to move to the Set Device ID screen.

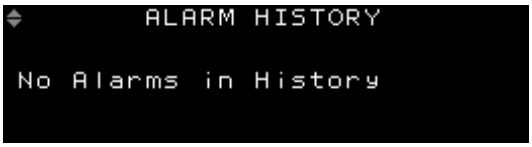
▲▼ Use the Up/Down buttons to adjust the setting, press the Enter ↵ to set the unique ID number and return to previous screen. Press Back ✖ to return to previous screen without saving changes.

3.2.4 Alarm History

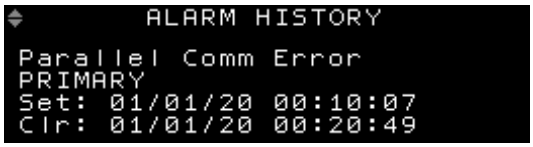
The Alarm History screen displays a log of the 20 most recent alarm events. This screen shows the alarm description, date and time when set and when cleared.

Other information will be shown depending on the operating state of the unit:

- If there is no alarm history, the screen will display "No Alarms in History" and the Alarm History log screen will not be displayed.

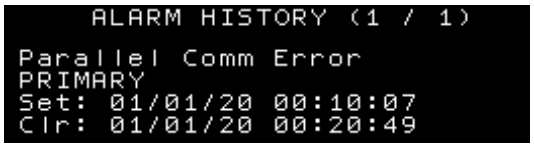


Alarm History screen if no alarms in history



Alarm History screen with alarms in history

↵ Press Enter to see the Alarm History log.

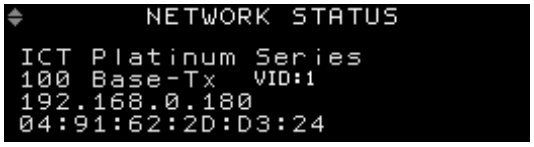


▲▼ Scroll through the history screens to see the 20 most recent Alarm events.

NOTE: The system date and time are normally set by the network. These may be manually set, see GUI, Communications Basic Setup tab (see Section 4.5.1).

3.2.5 Network Status

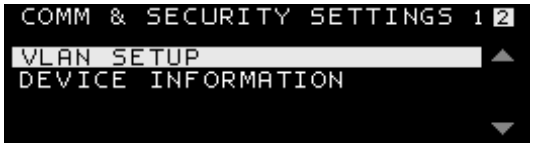
The Network Status screen displays the network connectivity, IP address of the system, assigned VID # (if unit has VLAN enabled), and the assigned MAC address.



↵ Press Enter to move to the Comm & Security Settings.

Comm & Security Settings

Use the Comm & Security Settings screen to view the IPv6 addresses, set or clear the LCD Password, Restart Comm Controller, Reset Comm Settings, enable or disable VLAN tagging, and view the Device Information.



Scroll to highlight the setting or sub-menu to adjust.

- IPv6 Addresses
- LCD Password Settings
- Restart Comm Controller
- Reset Comm Settings
- VLAN Setup
- Device Information

Press Enter to select the sub-menu.

Press Back ✕ button or Enter ↵ to return to the previous screen.

IPv6 ADRESSES: Displays the IPv6 addresses assigned to the system. If multiple IPv6 addresses are assigned, use the Up/Down buttons to scroll through the addresses.

LCD PASSWORD SETTINGS: Set or clear a 4-digit LCD password to lock out the LCD Display adjustments after the LOCKOUT TIMER has expired. Set the display Lockout Timer duration from 0 to 60 minutes. Once the password has been set, it will be required to access all front display settings screens.

NOTE: To reset forgotten passwords, refer to Section 3.3.1.

Scroll to highlight the setting to adjust, press Enter ↵ to go to the selected setting's screen or press Back ✕ to return to previous screen without saving changes.

Press Enter button to select the sub-menu.

▲▼ Scroll to choose.

↵ Press Enter button to select the sub-menu.

▲▼ Use the Up/Down buttons to adjust the setting and press Enter ↵ to set the value and return to previous screen. Press Back ✕ to return to previous screen without saving changes.

RESTART COMM CONTROLLER: Press "Restart Comm Controller " to immediately restart the controller without affecting any of the unit settings and without interrupting DC power to the output terminals.

↵ Press Enter to select.

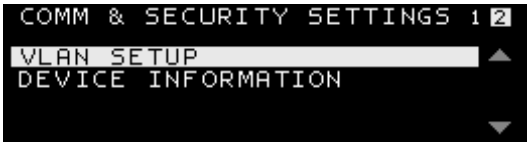
RESET COMM SETTINGS: Reset the admin password, port settings, and IP address to the factory defaults by pressing the "YES" button in the Reset Comm Settings. This does not affect the LCD password, not user accounts in the GUI (see Section 3.3).

↵ Press Enter to select.

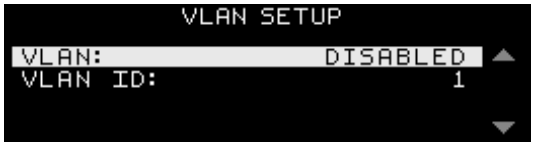
▲▼ Scroll to choose. Press Enter ↵ or Back ✕ to exit with no change.

Scroll to choose. Press Enter to select.

VLAN SETUP: Enable or disable VLAN tagging. Enter the VLAN ID number. After making any changes to the VLAN configuration, restart the Communications Controller to have the changes take effect. The Communications Controller can be restarted by selecting the "Restart Comm Controller" option in the menu.



Press Enter button.

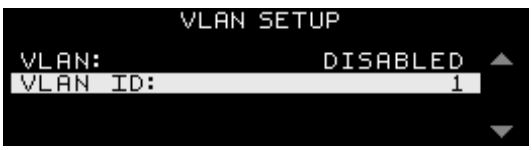


Sroll to choose (default: DISABLED)

Press Enter button to select the sub-menu.

Use the Up/Down buttons to adjust setting, press Enter to set value and return to previous screen. Press Back X to return to previous screen without saving changes.

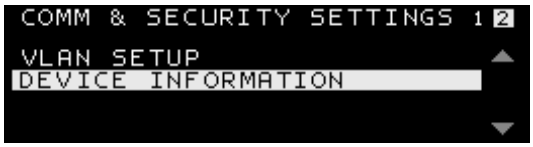
NOTE: VLAN should only be enabled if the unit is connected to a network that is configured to support VLAN tagging. If VLAN is enabled, ensure the network is configured to accept the VLAN ID assigned to the unit.



Press Enter button to choose (default: 1)

Use the Up/Down buttons to adjust setting, press Enter ↵ to set value and return to previous screen. Press Back ✕ to return to previous screen without saving changes.

DEVICE INFORMATION: The Device Information screen displays the unit model, installed firmware version, hardware version, and the serial number.



Press Enter to select.

Press Back ✕ button or Enter ↵ to return to the previous screen.

3.2.6 Notification Screens

Alarm Notification

When the unit triggers an alarm, the front display panel will be over-written by the Alarms Active screen. Press ✕ to return to the previous screen, press Enter ↵ to jump to the Alarm History screen.

Alarms will be shown as they occur, press Back ✕ button to return to the previous screen, press Enter ↵ for Alarm History info.

Equalization Charge Notification

When an Equalization Charge is completed, the front display panel will be overwritten with the Equalization Charge results screen. Press Enter ↵ or Back ✕ buttons to jump to the System Status screen.

Discharge Test Notification

A notification will automatically appear indicating the results of a Discharge Test at the completion of the test. Press Enter ↵ or Back ✕ buttons to return to jump to the System Status screen.

A notification will automatically appear indicating a test failure. Press Enter ↵ or Back ✕ buttons to jump to the System Status screen.

3.3 Password Reset

3.3.1 LCD Password Reset

NOTE: Always record the LCD password when set, as it must be entered to change any supply settings using the front display panel.

Do the following to clear the LCD password in cases where it is lost:

1. Turn the front-panel power switch to the OFF position.
2. Simultaneously press the ENTER ↵ and BACK ✕ buttons for more than 15 seconds while turning the power switch to ON position.
3. Enter a new password if password protection is required (see Section 3.2.5).

3.3.2 GUI Password Reset

Reset the GUI password back to the factory default (user: admin, no password) by selecting "RESET COMM SETTINGS" in the Network Status front display panel menu (see Section 3.2.5).

3.3.3 User Password Reset

The unit may be restored to factory settings, including all passwords through the GUI (see Section 4.5.5).

3.3.4 User Password Maintenance

Configure user passwords by following Section 4.5.4.

3.4 Status Indicators and Alarms

The status of the Platinum Series is indicated on the front display panel, or via the network GUI (see Section 4) on remotely monitored units. It is also available through SNMP (see Section 4.5.2). The form-C alarm contacts on the rear panel indicate an alarm condition and the core status of the unit.

There is an option on the Setup & Control tab in the GUI for most alarms to send e-mail to designated addresses for remote notification. (see Section 4.5.3). No email will be sent if power is disconnected from the unit, due to loss of network control.

All alarms and warnings will be displayed on the front display panel and entered in the Alarm History log (most recent 20 alarms listed, see Section 3.2.4).

Table 6. Power Supply Alarms

Alarm Condition	Trigger Condition	Output	Alarm Relay	Send E-mail
No Alarms	Normal Operation	Closed	No	---
DC Output Failure (Overvoltage)	Output voltage rises above approx. 106% of the max-rated output for 1 s (manually re-enable output to reset)	Disabled	Active[1]	Yes[2]
DC Output Failure (Undervoltage)	Low output voltage	Disabled	Active[1]	Yes[2]
DC Overcurrent Shutdown	Output current rises above approx. 108% of the max-rated output for 1 s (manually re-enable DC output to reset)	Disabled	Active[1]	Yes[2]
AC Input Voltage Failure (120/240 V operation)	AC input voltage falls below 88 VAC (DC output re-enabled when alarm is cleared, if enabled previously)	Disabled	Active[3]	Yes[2]
System Failure	Internal aux voltages out of range	Disabled	Active[1]	Yes[2]
Overtemperature Shutdown	Internal temperature too high	Disabled[4]	Active[1]	Yes[2]
Parallel Unit Offline	Parallel unit goes offline	Disabled	Active[1]	Yes[2]
Fan Failure	Fan is not operating to spec	Disabled	Active[1]	Yes[2]

[1] Contact active only if alarm enabled in the web-GUI Alarms Settings & Control page.
[2] E-mail notifications only sent if enabled in the unit's web-GUI Alarms Settings & Control page, and either AC or DC power is available for the unit to be operational.
[3] If the unit completely loses AC power, the Form-C contact will be activated regardless of if the Alarm checkbox is selected or not.
[4] During parallel operation, only the unit with Overtemperature condition will shut down, and will automatically have its Output re-enabled once the unit cools down. All other units connected to the Parallel Bus will continue to operate.

Table 7. Battery Management Alarms (SBC model)

Alarm Condition	Trigger Condition	LVD Contactor	Alarm Relay	Send E-mail
Battery Overcurrent	Battery current rises above overcurrent setting for 10 s	Open	Active[1]	Yes[2]
Battery Disconnected by LVD	Battery voltage at LVD or Overvoltage setting	Open	Active[1]	Yes[2]
Battery Low SOC	SOC drops below Low SOC setting	Open	Active[1]	Yes[2]
Battery Overtemperature	Optional TMP probe temp>50°C for 5 s (Lead-acid battery only)	Open	Active[1]	Yes[2]

[1] Contact active only if alarm enabled in the web-GUI Battery Backup Settings & Control page.
[2] E-mail notifications only sent if enabled in the unit's web-GUI Battery Backup Settings & Control page, and either AC or DC power is available for the unit to be operational.

3.5 External Remote Shutdown

External Remote Shutdown control lines (TTL compatible signal) can be connected to the Platinum Series power supply if external on/off control of the power supply output is required. An opto-isolated 2 to 12 volts signal will activate Remote Shutdown (Hi = output off, Lo = output on).

When connected to a unit configured as a Primary, it will control all units connected in parallel but will have no effect if connected to a unit configured as Secondary.

NOTE: The External Remote Shutdown does not alter the state of the battery contactor on SBC models.

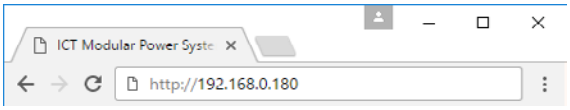
4.0 OPERATION: GRAPHICAL USER INTERFACE

Connect to the Platinum Series via Ethernet for full access to all system settings, status, and alarm conditions. The unit is equipped with a built-in web server that can be accessed via any standard web browser on a network connected computer or phone. No additional software is required on the unit.

The Graphical User Interface (GUI) works on DC power even when the LVD is open.

4.1 Log In/Log Out

1. Connect to the Platinum Series by entering the IP address of the unit in the location/address field of the browser as shown:



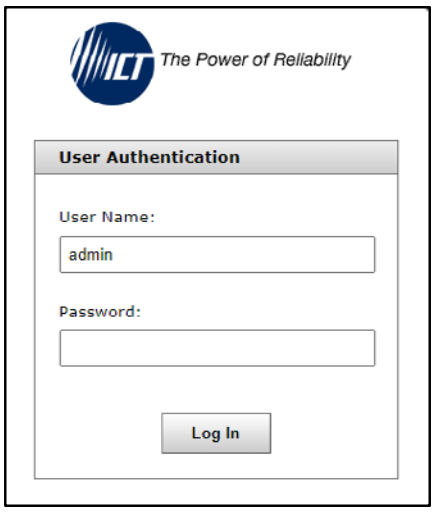
The default IP address of the unit is "192.168.0.180", but any unit connected to a network with a DHCP server will be assigned a different IP address automatically. To find the assigned address use the front display panel on the unit and navigate to the Network Status screen (see Section 3.2.5).

NOTE: Take note of the assigned IP address displayed and use this in the browser address field to access the unit remotely.

NOTE: If connecting directly from a computer to the Platinum Series, the computer must be configured with an IP address on the same network subnet as the unit. This is not required for a network connection (See Section 4.5.2).

The IP address of any ICT unit on a local network can be found by running the ICT "IP Address Discovery tool", after installing it on a Windows computer connected to the same network (tool available for download from ICT http://www.ict-power.com/resources/tools-utilities/). This tool does not support macOS.

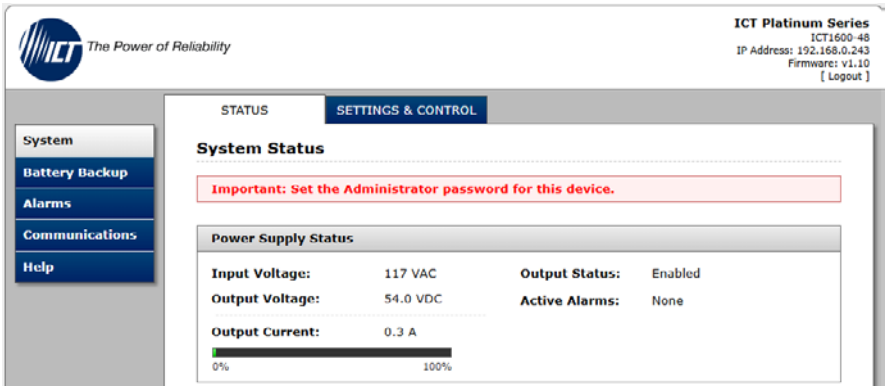
2. Log into the unit's built-in server when prompted with the username and password. The default username is "admin", and no password is required as the factory default.



To log out of the Platinum Series Graphical User Interface (GUI), click the Logout link on the header. The system will also automatically log off the user after 20 minutes of inactivity.

4.2 System

Once successfully logged in, the Status page of the System tab will be shown in the browser. All tabs have the same header that displays the name, model number, IP address, and firmware version number of the unit. Click the ICT logo to visit the ICT website.



4.2.1 STATUS

This tab provides the operating status of the unit.

Power Supply Status

Input Voltage: Shows the input AC voltage.

Output Voltage: Shows output DC voltage. This is an absolute value and does not specify polarity.

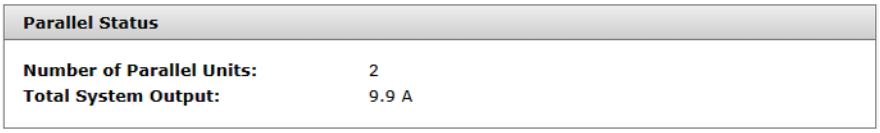
Output Current: Shows the amps being supplied by the unit. This includes loads and battery charging.

Output Status: Shows status of the DC output. Will show Enabled if providing DC output or Disabled if not.

Active Alarms: Shows any errors or alarm conditions that are currently active. Shows "None" if there is no active alarm.

Parallel Status (Parallel operations only)

When parallel operation is enabled, this section will show the total number of units in parallel and the total system output. See the Parallel Operation section in Section 4.5.1 for more details.

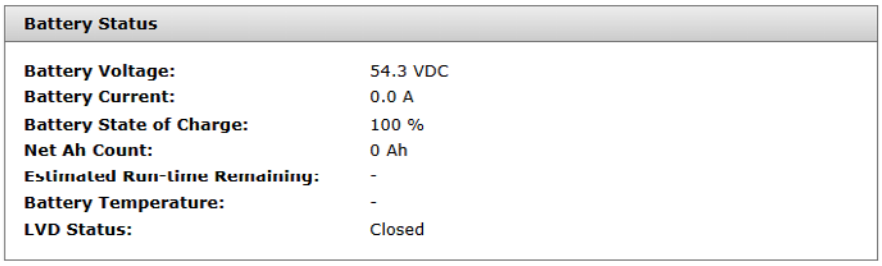


Number of Parallel Units: Shows number of units connected in parallel.

Total System Output: Shows total amps of the units connected in parallel.

Battery Status (SBC models)

If the Platinum Series is an SBC model with battery backup, this section will show the status of the connected batteries.



Battery Voltage: Shows voltage of the battery. This number does not specify polarity.

Battery Current: Shows the current that is passing from, or to the batteries. This number is negative if the battery is discharging; positive if the battery is being charged; and shows 0.0 A if the battery is fully charged.

Battery State of Charge: Shows the estimated state of charge in %. The system resets the SOC to 100% whenever it detects that the battery is at the rated Float Voltage with minimal charge current for at least 24 hours (units with factory-installed firmware v1.04, or newer, will reset when at Float Voltage for 8 hours with lead-acid, or 1 hour with lithium batteries).

Net Ah Count: Shows the Ah that have been consumed from the battery. Will display 0 Ah if the batteries are fully charged.

Estimated Run-time Remaining: Shows the estimated time in hours and minutes before the battery is discharged. This is blank if the batteries are charging.

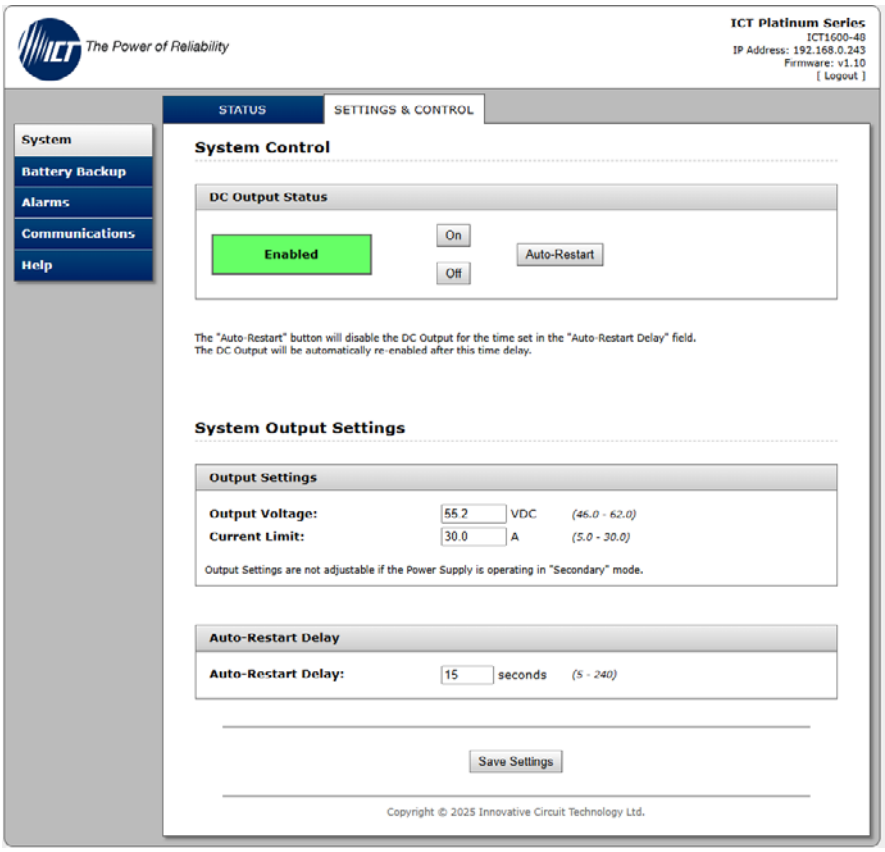
NOTE: The Estimated Run-time Remaining and Battery State of Charge values shown are estimated values.

Battery Temperature: Shows the temperature measured on the optional ICT Battery Temperature Probe (ICT-TMP) if installed.

LVD Status: Shows status of the battery's low voltage disconnect (LVD) contactor (Closed or Open).

4.2.2 SETTINGS & CONTOL

This tab is used to adjust the System Output Settings on a Standalone or Primary unit. This tab is locked out on all Secondary units as the Primary unit will control the settings.



DC Output Status

On/Off Buttons: Use these to remotely disable or enable the DC output and optional battery LVD contactor. The default setting is Enabled.

Auto-Restart Button: Use this button to momentarily shut off the supply output, and then restart automatically after a time delay (set in the "Auto-Restart Delay" field). This feature can be used to remotely force connected equipment to re-boot.

NOTE: Using the "On/Off" or "Auto-Restart" buttons on a unit configured as a Primary will cause all units connected in parallel to disable their outputs, but will have no effect if used on a unit configured as Secondary.

Output Settings

Output Voltage: Set the power supply "Output Voltage" within the allowable range. If using a backup battery, set the system "Output Voltage" to match the float voltage requirement for the external battery. The default setting varies based on the power supply model being used (see Table 1).

Current Limit: Set the power supply output "Current Limit" to limit the total current that can be drawn by all the external loads and charging the battery. The default setting varies based on the power supply model being used (see Table 1).

Auto-Restart Delay

Auto-Restart Delay: Set the delay time (5 to 240 s) that the output will remain off when output is remotely disabled using the "Auto-Restart" button. The unit will automatically restart after the Auto-Restart Delay period. The default setting is 15 seconds.

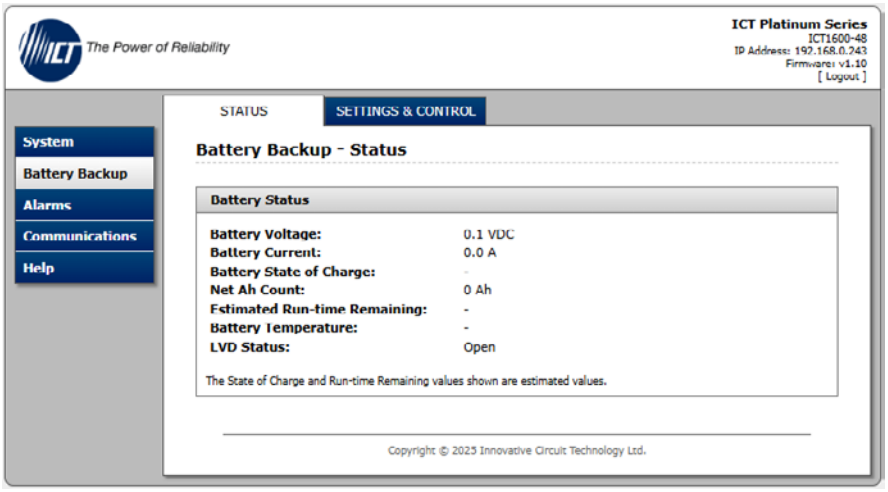
NOTE: The output voltage and current limit settings apply to the combined output of all power supplies connected in parallel. The Primary treats the combined units as a single high-power supply. Adjust the system Output Voltage and Current Limit to match the system load requirements if required.

4.3 Battery Backup (SBC models)

Use this tab to see the status of the connected batteries and to control their settings.

WARNING

Do not connect any battery to the "+ BAT" terminal when more than one Platinum Series power supply is connected on parallel.



4.3.1 STATUS

This tab shows the operating status of the connected batteries.

Battery Status

Battery Voltage: Shows voltage of the battery. This number does not specify polarity.

Battery Current: Shows the current that is passing from, or to the batteries. This number is negative if the battery is discharging; positive if the battery is being charged; and shows 0.0 A if the battery is fully charged.

Battery State of Charge: Shows the estimated state of charge in %. The system resets the SOC to 100% whenever it detects that the battery is at the rated Float Voltage with minimal charge current for at least 24 hours (units with factory-installed firmware v1.04, or newer, will reset when at Float Voltage for 8 hours with lead-acid, or 1 hour with lithium batteries).

Net Ah Count: Shows the Ah that have been consumed from the battery. Will display 0 Ah if the batteries are fully charged.

Estimated Run-time Remaining: Shows the estimated time in hours and minutes before the battery is discharged. This is blank if the batteries are charging.

Run-time Remaining and Battery State of Charge values shown are estimated values.

Battery Temperature: Shows the temperature measured on the optional ICT Battery Temperature Probe (ICT-TMP) if installed.

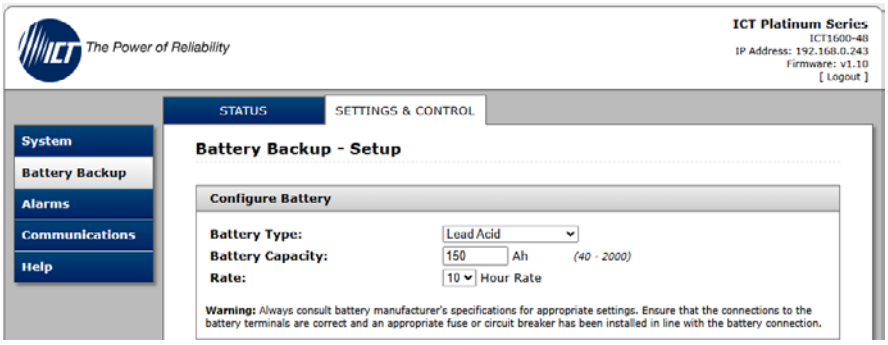
LVD Status: Shows status of the LVD battery contactor (Closed or Open).

4.3.2 SETTINGS & CONTOL

This tab is used to adjust the settings of the battery on units with the Backup Battery feature.

WARNING

Always consult battery manufacturer's specifications when selecting battery type. Incorrect battery type setting may damage the battery. If Lithium Ion type battery is selected, an integrated battery management system (BMS) must be used to protect the battery cells from inappropriate voltage or current levels.



Configure Battery

Battery Type: Configure the Battery Type of the battery used in the system (Lead Acid, Lithium Ion (Narada), Lithium Ion (PWRSS) and Lithium Ion (Other)).

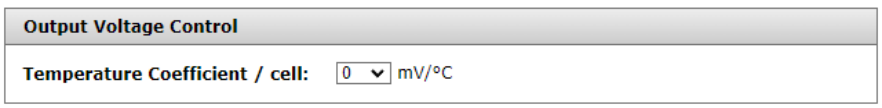
NOTE: PWRSS is an abbreviation for Power Storage Solutions.

Battery Capacity: Set the "Battery Capacity" in Ah (40 to 2000 Ah) of the total battery pack connected to the power supply. This value is used by the unit when estimating Run-time Remaining. The default setting is 150 Ah.

Rate: Set the discharge "RATE" (in hours) as specified by the battery manufacturer to determine the battery capacity. Normally the 10- or 20-hr rate is used. The system will use this information to help estimate the Battery State of Charge, and remaining battery capacity when in use. The default setting is 10 Hour Rate.

NOTE: Connecting batteries in parallel will increase the total Ah capacity, while connecting batteries in series will increase the voltage with no change to the Ah capacity.

Output Voltage Control (only available on lead-acid batteries)

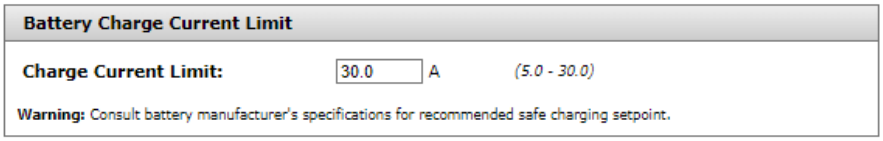


Temperature Coefficients / cell: Set the battery voltage Temperature Coefficient / Cell to optimize the automatic control of the lead-acid battery charging voltage, to keep the battery in a good state of health. This setting is only available if the system is configured for use with a lead-acid type battery.

Adjust this setting to match the battery manufacturer's recommended compensation value in −mV/°C per cell. This value will typically be −4 mV/°C for a flooded lead-acid battery (i.e., will compensate output voltage −24 mV/°C for a 6-cell 12 V battery) to help ensure the battery is fully charged in cold locations, and is not overcharged when warm. The numbers in the drop-down field are absolute values. The default setting is 0 mV/°C.

NOTE: The system must have the battery temperature sensor (ICT-TMP) installed on the battery for this setting to have an effect (default setting is 0 mV, assumes 25°C operation).

Battery Charge Current Limit



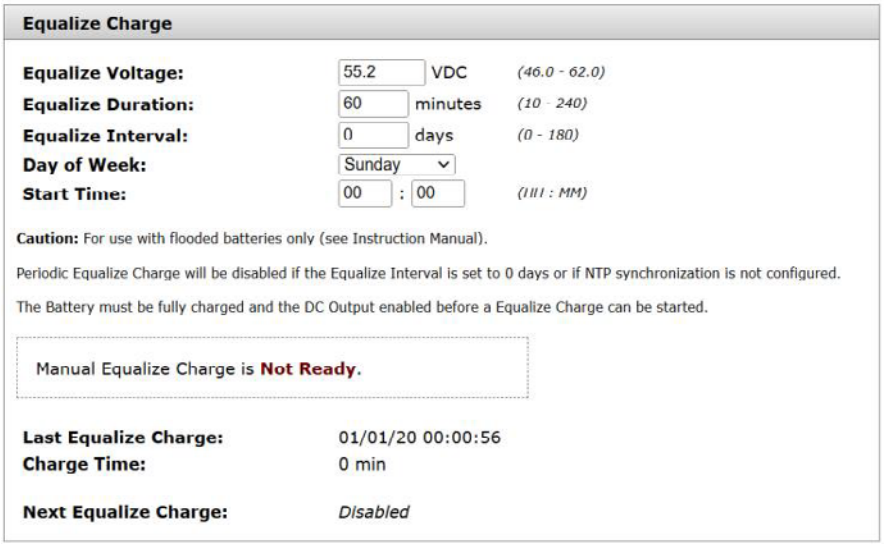
Charge Current Limit: Set the maximum current that the unit may provide through the optional Battery terminal while still allowing the full rated current to be drawn from the main output. This setting should be set to the value recommended by the battery manufacturer. The default setting is the maximum current rating for the unit (see Table 1).

Equalize Charge (only available on lead-acid batteries)

Set up manual or automatic equalize charge cycles for flooded lead-acid batteries. This setting is only available if the system is configured for use with a lead-acid type battery.

The connected load devices should continue to run normally while the equalization charge is running.

The unit's log (see Section 4.5.1) will record the completion of the equalization charge.



WARNING

Risk of serious personal injury or damage to equipment and property! Always observe the following:

- Equalize charging is intended for flooded lead-acid batteries only and may produce higher than normal levels of hydrogen gas.
- Consult with the battery manufacturer when using SLA batteries.
- **Do not use equalization charging with lithium-ion batteries**.
- Ensure the battery compartment is well ventilated to avoid any risk of explosion.
- Always consult with and observe all battery manufacturer recommendations.

Equalize Voltage: Set this to the battery manufacturer's recommended value for an equalize (or boost) charge (for flooded lead-acid batteries only). A regular high-voltage equalization charge will help prevent stratification of the electrolyte in the battery and can help extend its life. The default setting varies based on the power supply rating.

Table 8. Default Equalize Voltage Settings

Model	48 VDC Units	24 VDC Units	12 VDC Units
Voltage	62.0 VDC	31.0 VDC	15.5 VDC

Equalize Duration: Set the time in minutes (10–240 minutes) for the equalize charge voltage to be applied (as recommended by the battery manufacturer). The default setting is 60 minutes.

Equalize Interval: Set the time in days (0–180 days) between automatic equalize charges. Set this time to 0 to disable the automatic equalize charge. The default setting is 0 (Disabled).

Day of Week: Set the day of the week that the automatically recurring equalize charge should take place or select "Any" to allow an equalize charge to take place on any day of the week. Day of Week takes precedence over Equalize Interval. The default setting is Any.

Start Time: Set the time of day for automatically recurring equalize charges to start. The time must be entered using 24-hour time format. The default setting is 00:00.

NOTE: NTP Time Synchronization must be enabled on the Communications Basic Setup page to enable automatically recurring equalize charges.

An Equalize Charge can only be initiated when the battery is fully charged (a fully charged battery will have charge current close to zero amps). If the system is unable to start an equalize charge at the selected Start Time, it will attempt again at the same time next day, or next week if a specific Day of Week is selected.

An Equalization Charge will immediately be terminated if AC power fails.

Manual Equalize Charge: Press this button to manually initiate an equalize charge for the set duration time once the battery is fully charged.

NOTE: System will state that Manual Equalize Charge is Not Ready if battery is not yet fully charged.

Last Equalize Charge: Shows the date and time that the last equalization charge was performed.

Charge Time: Shows the duration of the last equalization charge.

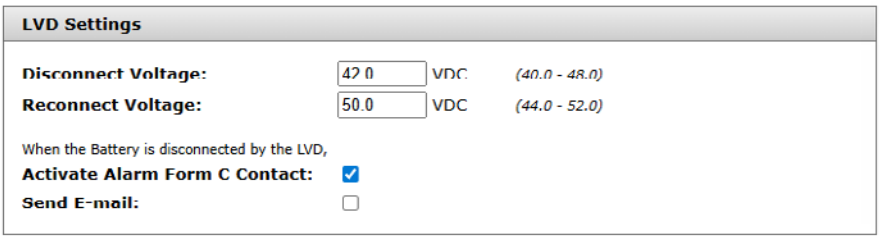
Next Equalize Charge: Shows the scheduled date and time of the next automatic equalize charge, if an Equalize Interval has been set. This information is to help track where the system is within the automatic charge cycle.

LVD Settings

The low voltage disconnect (LVD) protects the battery from excessive discharge by disconnecting the battery when the battery reaches a preset

voltage. The battery is reconnected when AC power is restored or after recharging to a preset threshold.

The reconnect voltage setting will be used when charging the battery from an external DC source (such as a solar system), otherwise once AC power returns, the LVD contactor will automatically close so that the power supply can charge the battery directly.



NOTE: For lead-acid battery, the LVD contactor will not close if the lead-acid battery is less than 24 volts on a 48-volt system (see Table 9). The unit believes the battery is deeply discharged, and possibly damaged. A deeply discharged battery will not be reconnected as a safety measure. The battery will need to be manually checked for proper function and then manually charged to at least 24 volts (on a 48-volt system) before the LVD will close. Refer to the battery manufacturer's recommendations on how to proceed with a deeply discharged battery. This does not apply to the system when the Lithium setting has been chosen.

Table 9. Deeply Discharged Battery Values (typical)

12 VDC Units	24 VDC Units	48 VDC Units
6 VDC	12 VDC	24 VDC

Disconnect Voltage: Set the threshold to a level that will protect the battery from excessive discharge (as recommended by the battery manufacturer. The LVD contactor will open when the battery discharges to this level for at least 3 seconds. The default setting varies based on the power supply rating.

Table 10. Default Disconnect Voltage Settings

Model	12 VDC Units	24 VDC Units	48 VDC Units
Threshold Voltage	10.5 VDC	21.0 VDC	42.0 VDC

Reconnect Voltage: Set the level where unit will reconnect to the battery after it has recharged (as recommended by the battery manufacturer). The "Reconnect Voltage" must be higher than the Disconnect Voltage to

prevent the LVD contactor repeatedly cycling on and off. The default setting varies based on the power supply rating.

Table 11. Default Reconnect Voltage Settings

Model	12 VDC Units	24 VDC Units	48 VDC Units
Threshold Voltage	12.5 VDC	25.0 VDC	50.0 VDC

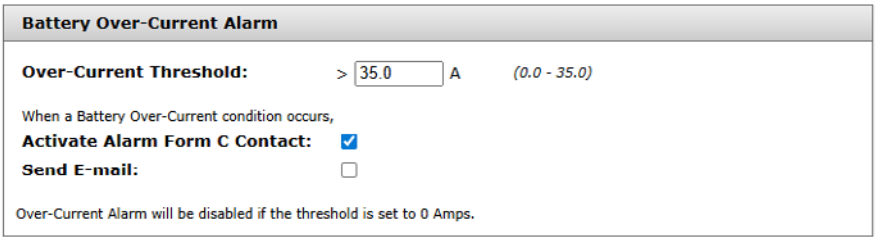
Table 12. The Minimum Difference Between Disconnect and Reconnect Voltage

12 VDC Units	24 VDC Units	48 VDC Units
1.5 V	2.0 V	4.0 V

Activate Alarm Form C Contact: Select this checkbox to have the rear panel alarm contacts change state whenever the battery is disconnected by the LVD. The default setting is Enabled.

Send E-mail: Select this checkbox to have an e-mail sent to the e-mail addresses set up on the communications page whenever the battery is disconnected by the LVD (see Section 4.5.3). The default setting is Disabled.

Battery Over-Current Alarm



Over-Current Threshold: Set the threshold to receive an alarm notification when the battery discharge or charge current exceeds a set overcurrent level. Set the threshold to 0 amps to disable this alarm. The default setting varies based on the power supply rating.

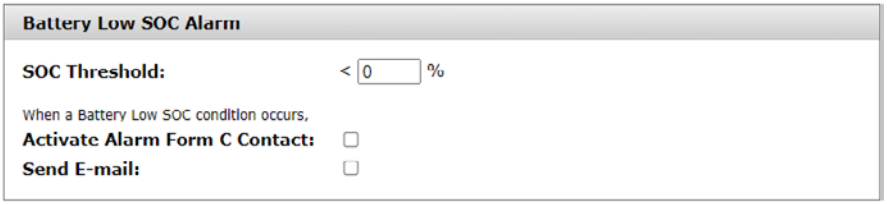
Table 13. Default Battery Over-current Settings

Model	800 W 12 VDC	1600 W 12 VDC	800 W 24 VDC	1600 W 24 VDC	800 W 48 VDC	1600 W 48 VDC
Overcurrent Threshold	67 A	130 A	35 A	67 A	20 A	35 A

Activate Alarm Form C Contact: Select this checkbox to have the rear panel alarm contacts change state whenever a Battery Overcurrent condition occurs. The default setting is Enabled.

Send E-mail: Select this checkbox to have an e-mail sent to the e-mail addresses set up on the communications whenever a Battery Overcurrent condition occurs (see Section 4.5.3). The default setting is Disabled.

Battery Low SOC Alarm



SOC Threshold: Set the threshold that will trigger when a battery state of charge falls below the specified level. Set the threshold to 0 amps to disable this alarm. The default setting is 0 (Disabled).

Activate Alarm Form C Contact: Select this checkbox to have the rear panel alarm contacts change state whenever a Battery Low SOC condition occurs. The default setting is Disabled.

Send E-mail: Select this checkbox to have an e-mail sent to the e-mail addresses set up on the communications whenever a Battery Low SOC condition occurs (see Section 4.5.3). The default setting is Disabled.

Battery Discharge Test

Configure the Battery Discharge Test settings in this section to either manually or automatically perform a partial discharge test to gauge the relative capacity of the external lead-acid battery. Limit the depth of discharge to no more than 50% of the nominal battery capacity to avoid stressing the battery due to a deep discharge.

When the test is run, the output voltage from the power supply will be reduced so that the external battery will power the system load until the "Set Discharge Time" limit, the "Set Discharge Voltage Limit", or the "Maximum Discharge Limit" is reached.

A "Discharge Test Complete" notification indicates the battery can power the connected load for the set test duration while maintaining its voltage above the Discharge Voltage Limit. This notification is displayed on the front display panel and is delivered via e-mail if messaging is configured via the GUI (see Section 4.5.3).

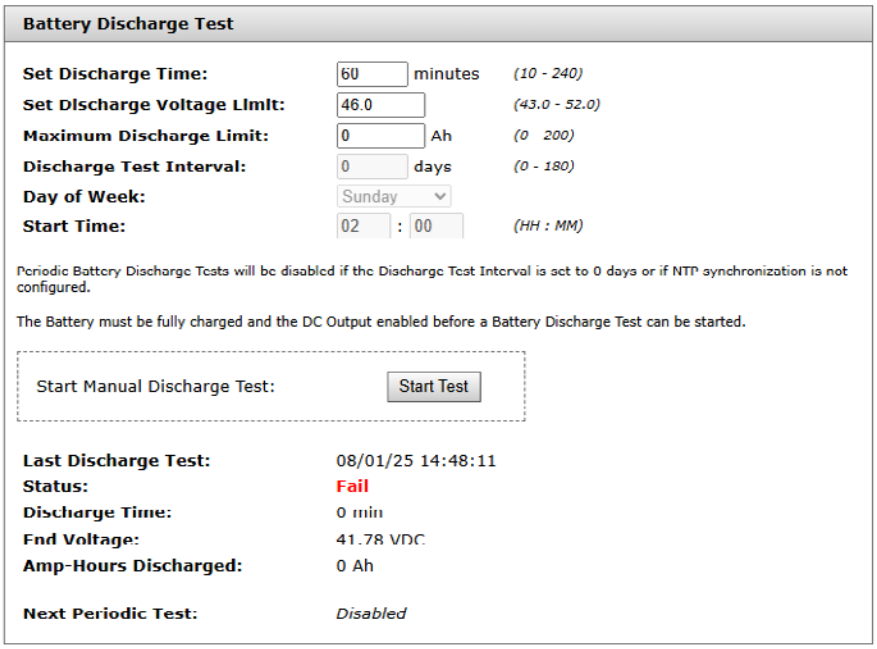
The unit's log (see Section 4.5.1) will record the completion of the discharge test.

A "Discharge Test Failure" notification indicates the battery is unable to power the load for the set duration.

The connected load devices should continue to run normally while the discharge test is running.

NOTICE

This test must only be done when AC power is present during the test and for adequate time after the test to allow for a full recharging of the battery. Otherwise, the battery may not have sufficient remaining capacity to power the load during an AC power outage.



Set Discharge Time: Set the maximum time for the test in minutes (10–240 minutes) that the test will run. The default setting is 60 minutes.

Set Discharge Voltage Limit: Set the minimum battery voltage which will terminate the test. The default setting varies based on the power supply rating.

Table 14. Default Discharge Voltage Limit Settings

Model	12 VDC Units	24 VDC Units	48 VDC Units
Threshold Voltage	11.5 VDC	23.0 VDC	46.0 VDC

Maximum Discharge Limit: Set the maximum battery capacity in amp-hours that can be discharged before the test will be terminated. Set this to 0 Ah for no limit. The default setting is 0 (no limit).

Discharge Test Interval: Set the time in days (0–180 days) between automatic discharge tests. Set this time to 0 to disable automatic discharge tests. The default setting is 0 (Disabled).

Day of Week: Set the day of the week that the automatically recurring discharge test should take place or select "Any" to allow a discharge test to take place on any day of the week. Day of Week takes precedence over Discharge Time Interval. The default setting is Any.

Start Time: Set the time of day for an automatically recurring discharge test to start. The time of time must be entered using 24-hour time format. The default setting is 00:00.

NOTE: NTP Time Synchronization must be enabled on the Communications Basic Setup page to enable automatic Discharge Tests.

A discharge test can only be initiated when the battery is fully charged (a fully charged battery will have charge current close to zero amps). If the system is unable to start a Discharge Test at the selected Start Time, it will attempt again at the same time next day, or next week if a specific Day of Week is selected.

A discharge test will immediately fail if the unit loses AC power. The log will show that the test failed.

Manual Discharge Test: Press this button to manually initiate a Battery Discharge Test of a fully charged battery.

NOTE: System will state that the discharge test is Not Ready if the battery is not fully charged (a fully charged battery will have charge current close to zero amps).

Last Battery Discharge Test: Shows the date and time that the last discharge test was performed.

Status: Displays the end status of the last discharge test (Complete or Fail).

Discharge Time: Shows the time in minutes that the test lasted.

End Voltage: Shows the battery voltage when the test ended.

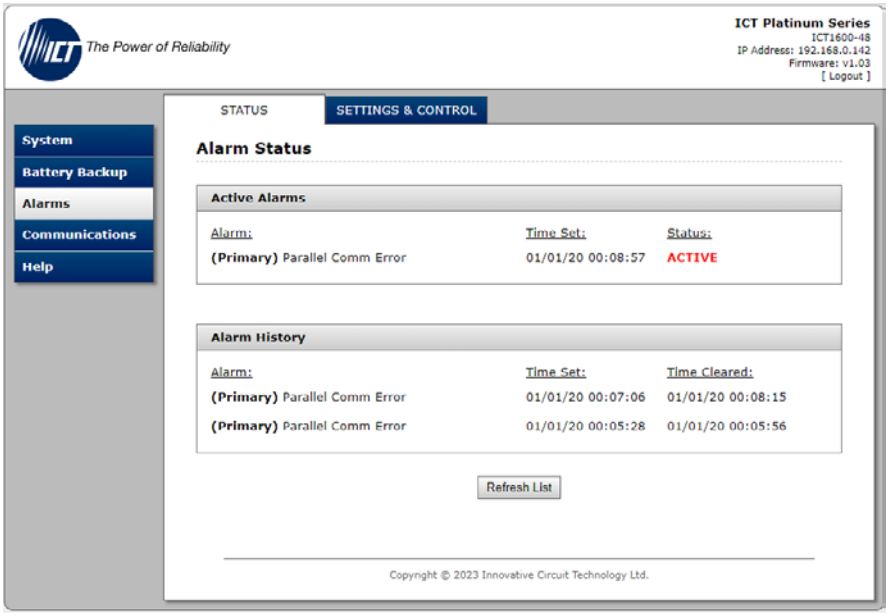
Amp-Hours Discharged: Shows the amp-hours discharged during the test.

Next Periodic Discharge Test: Shows the scheduled date and time of the next automatic discharge test if a Discharge Test Interval has been set. This information is to help track where the system is within the automatic charge cycle.

NOTE: Save Settings before leaving this tab.

4.4 Alarms

Use this tab to see the alarms on this unit and to control their settings.



4.4.1 STATUS

This tab shows all active alarms and up to 20 historic alarms. The history will be cleared after the unit is rebooted.

Active Alarms

Shows the name of the alarm; the time that the alarm started and the status of the alarm (ACTIVE).

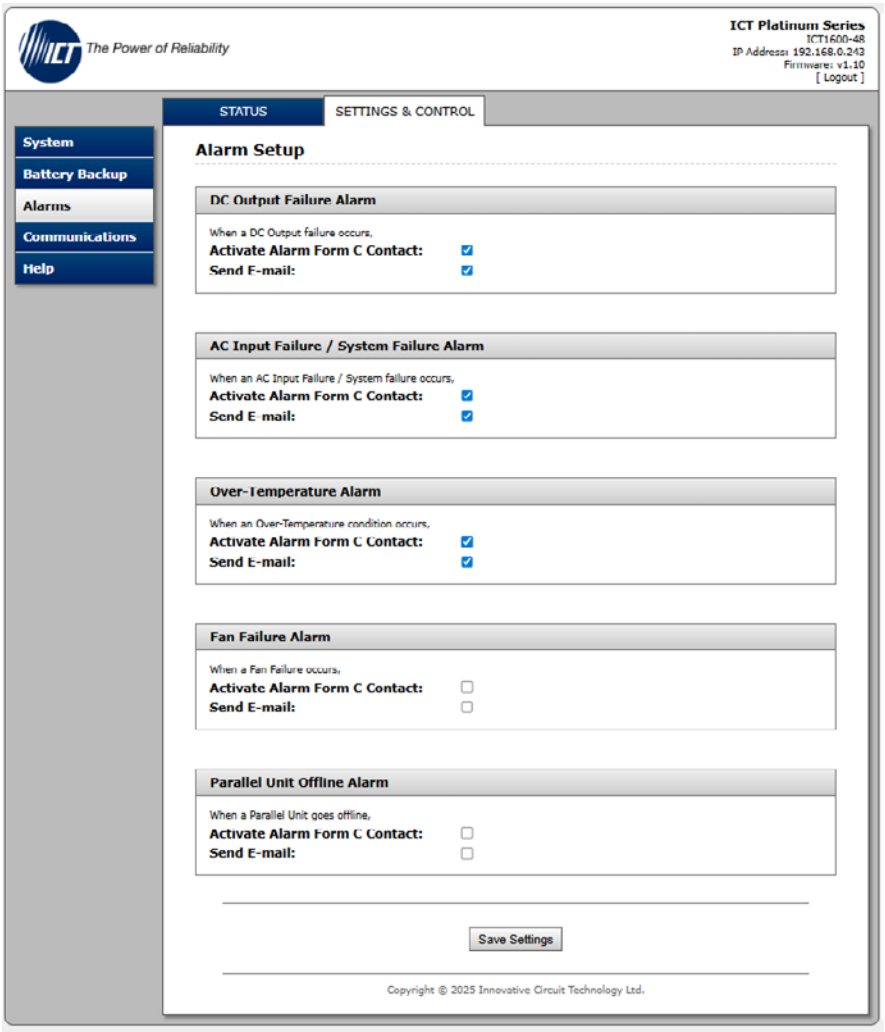
Alarm History

Shows the name of the alarm; the time that the alarm started; and the time that the alarm cleared.

4.4.2 SETTINGS & CONTOL

Use this tab to configure the actions to be taken when power alarms are triggered.

The ICT Platinum Power Supply can send email alerts if the E-Mail Setup (see Section 4.5.3) has been completed.



DC Output Failure Alarm

Activate Alarm Form C Contact: Select this checkbox to have the unit send a form-C alarm when the DC Output failure occurs. The default setting is Enabled.

Send E-mail: Select this checkbox to have an e-mail sent to the e-mail addresses set up on the communications page whenever a DC Output failure occurs. The default setting is Enabled.

AC Input Failure/System Failure Alarm

Activate Alarm Form C Contact: Select this checkbox to have the unit send a form-C alarm whenever an AC Input Voltage Failure occurs. The default setting is Enabled.

NOTE: The form-C contact will be activated any time the unit completely loses AC power, regardless of this setting.

Send E-mail: Select this checkbox to have an e-mail sent to the e-mail addresses set up on the communications page whenever an AC Input Failure / System Failure occurs. The default setting is Enabled.

Over-Temperature Alarm

Activate Alarm Form C Contact: Select this checkbox to have the unit send a form-C alarm when an internal or battery Over-Temperature alarm occurs. The default setting is Enabled.

Send E-mail: Select this checkbox to have an e-mail sent to the e-mail addresses set up on the communications page whenever an internal, or battery Over-Temperature alarm occurs. The default setting is Enabled.

Fan Failure Alarm

Activate Alarm Form C Contact: Select this checkbox to have the unit send a form-C alarm when a Fan failure occurs. The default setting is Disabled.

Send E-mail: Select this checkbox to have an e-mail sent to the e-mail addresses set up on the communications page whenever a Fan Failure occurs. The default setting is Disabled.

Parallel Unit Offline Alarm

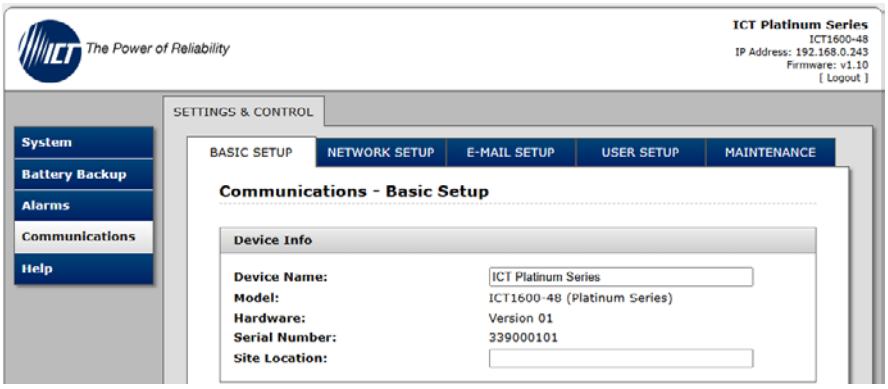
Activate Alarm Form C Contact: Select this checkbox to have the unit send a form-C alarm when a Parallel Unit Offline alarm occurs. This setting has no effect if parallel operation is not active. The default setting is Disabled.

Send E-mail: Select this checkbox to have an e-mail sent to the e-mail addresses set up on the communications page whenever a Parallel Unit Offline alarm occurs. This setting has no effect if parallel operation is not active. The default setting is Disabled.

NOTE: Save Settings before selecting a different tab.

4.5 Communications

Use this tab to configure the basic system parameters, network settings, e-mail settings, user setup, and maintenance functions.



4.5.1 BASIC SETUP

Use this tab to configure the unit's name, configure the parallel operation settings, set the date and time and data logging features.

Device Info

Device Name: Enter a descriptive name for the power supply. This name will be used in all e-mail messages. This field is limited to 27 characters.

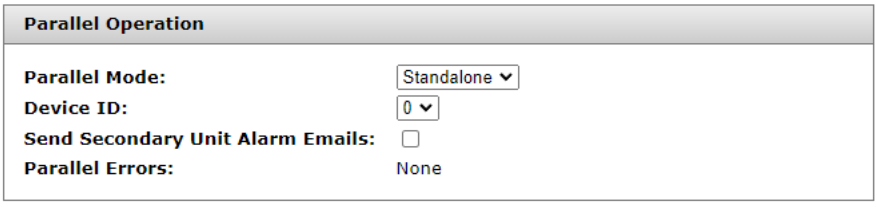
Model: Shows the model number, and series name.

Hardware: Shows the hardware version.

Serial Number: Shows the serial number.

Site Location: Enter the details. This information is optional.

Parallel Operation



NOTE: When a "Parallel Mode" setting (Standalone, Primary, Secondary) is changed and saved to a different setting on a unit, the DC Output of that power supply will automatically be turned OFF if it is currently enabled. Verify the output voltage/current settings, then manually re-enable the output in the GUI (see Section 4.2.2).

Parallel Mode: Set the mode (Standalone, Primary, Secondary) of operation for the power supply. The default setting is Standalone (see Section 5.0).

Device ID: Set a unique device ID (0 to 5) for units to be connected in parallel. Each unit in a set must have a unique Device ID, or a "Parallel Comm Error" will occur. The default setting is 0.

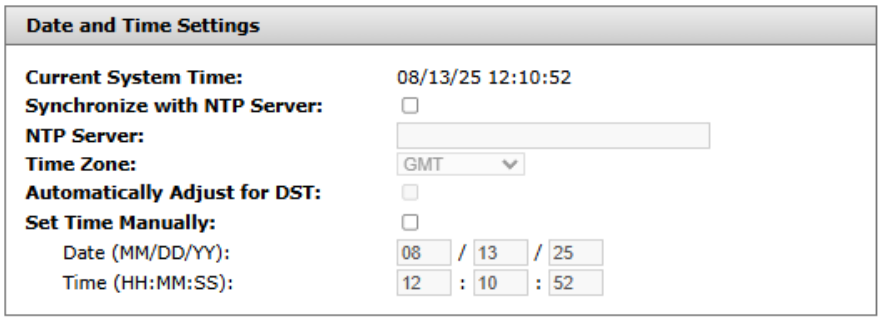
Send Secondary Unit Alarm Emails: Select this checkbox on Primary unit to have the Primary forward all alarm e-mails from the connected Secondary power supplies. Use this feature to monitor all units in parallel set with a single Ethernet connection made to the Primary unit only.

This field will have no effect on unit configured as Secondary or Standalone.

NOTE: If this feature is enabled, select all the "Send E-mail" checkboxes in the "Settings & Control" Alarms tab.

Parallel Errors: Displays any error or alarm condition related to the serial SHARE interface that are currently active. Displays "None" if no error.

Date and Time Settings



Current System Time: Shows the current system date and time.

Synchronize with NTP Server: Select this checkbox to synchronize with NTP Server. The default is Enabled.

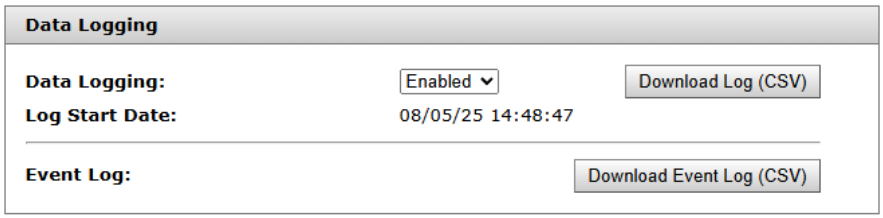
NTP Server: Set an NTP server address here (i.e., time.nist.gov) to automatically load network time. This field is limited to 48 characters.

Time Zone: Set the time zone the unit will be using.

Automatically Adjust for DST: Select this checkbox to automatically adjust the time for Daylight Savings Time when synchronizing the clock with a NTP Server. The default is Disabled.

Set Time Manually: Select this checkbox to enable manually setting the time and date. The default is Disabled.

Data Logging



Data Logging: Set to "Enabled" to enable data logging. This will keep a running record of all the key system parameters and alarms, recorded once per minute for the last 30 days. The default is Enabled.

Log Start Date: Shows date and time that the data log started.

Download Log (CSV): Click on the Download Log (CSV) button to store the CSV format log file on the computer for further analysis.

Download Event Log (CSV): Click on this button to download the Event Log in CSV format. This log keeps a record of alarm events, device logins, configuration changes and other events.

NOTICE

Updating the firmware will delete the current log files. Download the logs before updating the firmware.

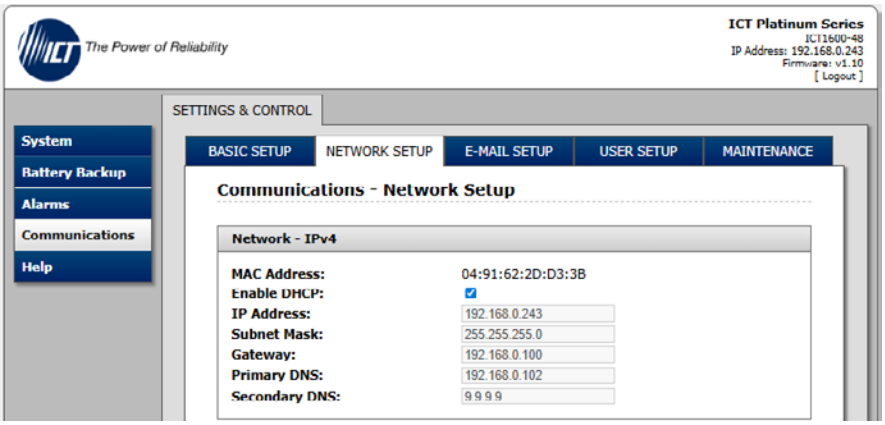
NOTE: Save Settings to enable any changes made.

4.5.2 NETWORK SETUP

Use this tab to configure the power supply's network settings.

NOTICE

Saving any changes to the network settings will cause the Communications Controller to re-start, causing momentary loss of communications.



Network – IPv4

MAC Address: Shows the MAC address assigned to the unit. It is also shown on the LCD Network Status screen.

Enable DHCP: Select this checkbox if the network uses a DHCP server to automatically assign IP addresses. The default is Enabled.

To manually assign a static IP address to the unit uncheck this box, then set the following parameters.

IP Address: Set a unique IP address for the unit.

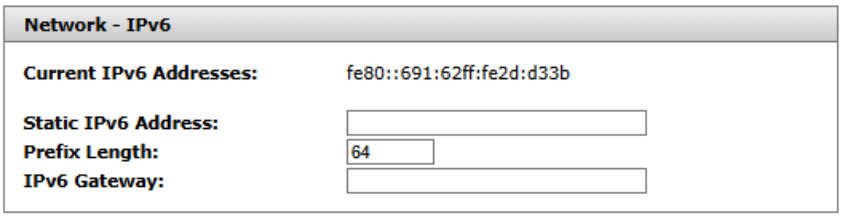
Subnet Mask: Set the mask for the subnet the unit is located on.

Gateway: Set the IP address of the default router (Gateway) used for connecting attached devices to different networks.

Primary DNS: Set the IP address of the Primary DNS Server for the network.

Secondary DNS: Set the IP address of the Secondary DNS Server for the network.

Network – IPv6



Current IPv6 Addresses: Shows the IPv6 addresses assigned to the unit. An IPv6 Link-Local address will be configured automatically.

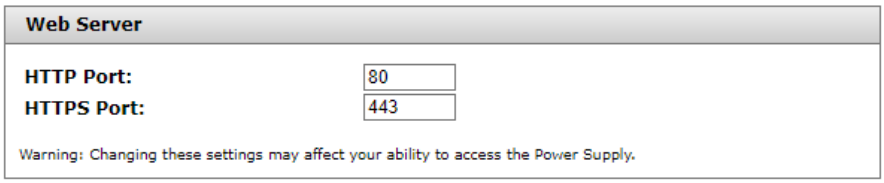
Addresses can also be configured by the router through Router Advertisements.

Static IPv6 Address: Set a unique static IPv6 address for the unit. Configuring a static IPv6 address is optional.

Prefix Length: Set the IPv6 prefix length for the network. The default value is 64.

IPv6 Gateway: Set the gateway IPv6 address for the network (optional).

Web Server



NOTICE

Changing the web server port numbers may cause loss of communication with the unit.

The following ports may be changed within a range of 1 to 65,565, if required.

HTTP Port: Set the port used for HTTP traffic between the unit and the browser. The default HTTP port is "80", and if this is changed, the new HTTP port number must be appended to the URL used to access the unit (e.g., use URL "http://192.168.0.180:8000" for IP address "192.168.0.180", port "8000").

Setting the HTTP Port to zero will disable HTTP access to the unit.

HTTPS Port: Set the power used for HTTPS traffic between the unit and the browser. The HTTPS (HTTP Secure) protocol uses encrypted data transfer between web browsers and servers for higher security. The default HTTPS port is "443". Append any changed HTTPS port to the end of the URL for the unit.

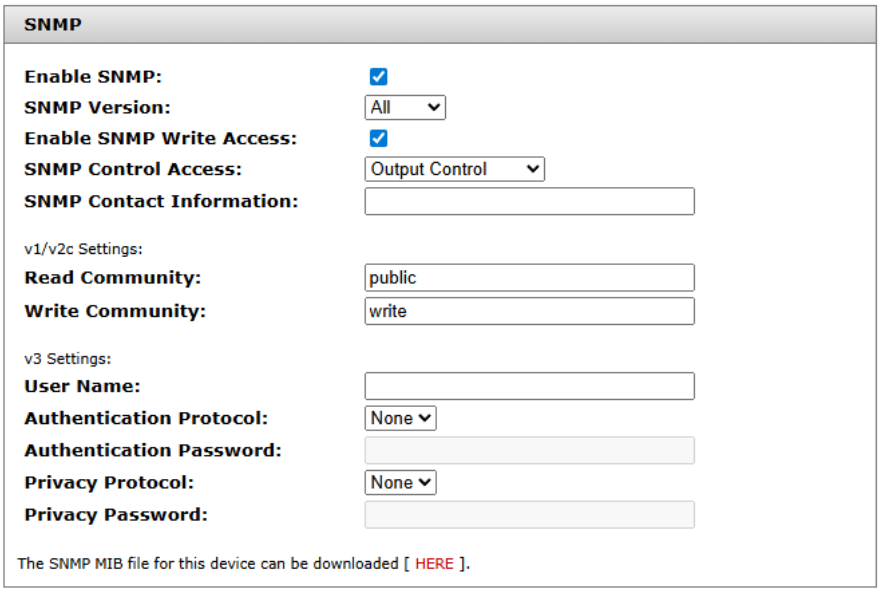
To access the unit through a secure HTTPS connection, use "https://" at the start of the unit's URL (e.g., "https://192.168.0.180:8888" for IP address "192.168.0.180", HTTPS port "8888").

Setting the HTTPS Port to zero will disable HTTPS access to the unit.

SNMP

SNMP (Simple Network Management Protocol) is an industry standard protocol for network management software. Enabling the SNMP function on the unit will allow standard SNMP management software to connect to the SNMP agent running on the unit and read real-time system information such as bus voltage, and channel currents. The unit can send SNMP traps to the external management software when an alarm or fault occurs.
The information available from the SNMP agent is described in a MIB (Management Information Base) file, which can be downloaded from the ICT website: https://ict-power.com/resources/tools-utilities/.

The MIB file can also be downloaded from within the GUI. There are links in the SNMP section of the Communications Network Setup tab and on the Help tab. The unique unit MIB file must then be imported into the external SNMP management software.



Enable SNMP: Select this checkbox to enable the SNMP agent. The default setting is Disabled.

SNMP Version: Set the SNMP version (v1/v2c, v3, or All) supported by the SNMP agent. If "All" is selected, all SNMP versions will be supported simultaneously. The appropriate settings for the selected SNMP version will need to be configured.

Enable SNMP Write Access: Select this checkbox to enable remote SNMP control of the system output. If this box is unchecked, all information available from the SNMP agent will be read-only.

SNMP Control Access: Set the level of unit control that is allowed through SNMP. This setting is only available if Enable SNMP Write Access is enabled.

- **Output Control:** Allows remote SNMP control of the system output and LDM channel outputs only.
- **Full Device Control**: Allows SNMP client to set all unit settings through SNMP. This setting requires a different MIB file which can be downloaded from the ICT Website: https://www.ict-power.com/resources/tools-utilities/.

SNMP Contact Information: Set contact information, such as an operator name and phone number for the unit, which can be read via SNMP queries (this information is optional).

v1/v2c Settings

Read Community: Enter the community string/password here for read-only SNMP access. The default read community string is "public".

Write Community: Enter the community string/password here for read/write SNMP access. The default write community string is "write".

NOTE: The community strings should be changed to unique passwords before enabling SNMP, as the defaults are well known.

v3 Settings

User Name: Set the username for SNMPv3 access.

Authentication Protocol: Set the SNMPv3 authentication protocol (None, MD5, or SHA).

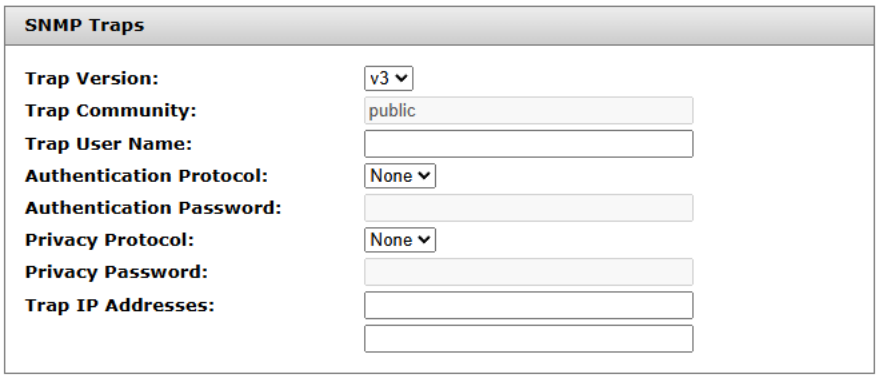
Authentication Password: If an authentication protocol is selected, set the authentication password.

Privacy Protocol: Set the SNMPv3 privacy protocol (None, or AES).

Privacy Password: If a privacy protocol is selected, set the privacy password.

SNMP Traps

Trap Version: Set the SNMP version (v1 or v3) for SNMP traps sent from the system. The appropriate settings for the selected SNMP version will need to be configured.



Trap Community: Set the community string/password that will be sent with all SNMPv1 traps. Some trap receivers can filter based on Trap Community. This field is only used for v1 traps.

Trap User Name: Set the username for SNMPv3 traps. This field is only used for v3 traps.

Authentication Protocol: Set the authentication protocol for SNMPv3 traps (None, MD5, or SHA).

Authentication Password: If an authentication protocol is selected, set the authentication password for SNMPv3 traps.

Privacy Protocol: Set the privacy protocol for SNMPv3 traps (None, or AES).

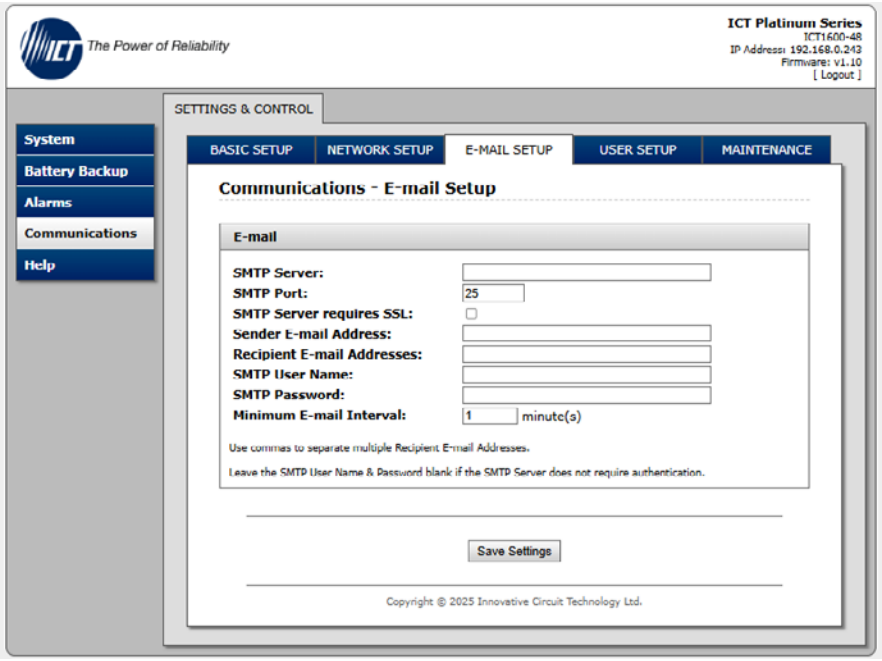
Privacy Password: If a privacy protocol is selected, set the privacy password for SNMPv3 traps.

Trap IP Addresses: Set the IP addresses for up to two devices that will receive SNMP traps from the unit.

NOTE: Save Settings before selecting a different tab.

4.5.3 E-MAIL SETUP

Use this tab to configure all e-mail settings to enable automatic e-mail notifications directly from the unit. The information required for this is available from the Network Administrator, or Internet Service Provider (ISP).



E-mail

SMTP Server: Set the name or the IP address of the SMTP server used for sending outgoing e-mail (e.g., "smtp.gmail.com"). This field is limited to 64 characters.

SMTP Port: Set the port used by the SMTP server. The default setting is 25.

SMTP Server requires SSL: Select this checkbox if the SMTP server requires an encrypted SSL connection. This box should normally be checked if the SMTP port used by the SMTP server is 465. If the SMTP server uses STARTTLS (normally port 587), this box should be unchecked.

Sender E-mail Address: Set an e-mail address that will appear as the sender for all e-mail notifications sent from the unit. This field is limited to 48 characters.

Recipient E-mail Addresses: Set one or more e-mail addresses that are to receive all e-mail notifications from the unit. Use commas to separate multiple addresses. This field is limited to 128 characters.

NOTE: This field can also be used to send text message notifications to a phone (see Section 8.10).

SMTP User Name: Set an SMTP user name here, if required by the SMTP server. Leave this field blank if the server does not require authentication. This field is limited to 48 characters.

SMTP Password: Set an SMTP password here, if required by the SMTP server. Leave this field blank if the server does not require authentication. This field is limited to 48 characters.

Minimum E-mail Interval: Set a minimum interval in minutes (0–60 minutes) between e-mail notifications. This time interval is used to prevent an un-intended flood of e-mail alarm notifications that could occur when an alarm limit is incorrectly configured, for example. The default setting is 1 minute.

NOTE: Save Settings before selecting a different tab.

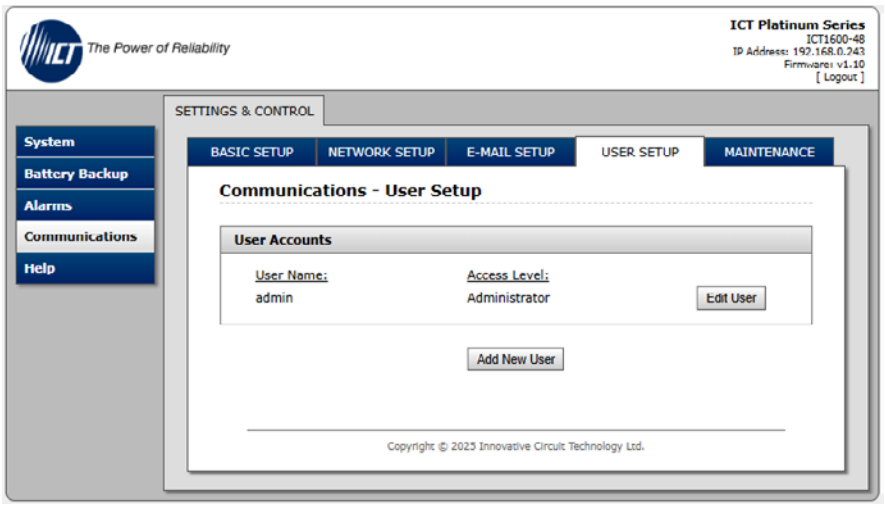
4.5.4 USER SETUP

Use this tab to set up and configure the usernames and passwords for up to 10 users. Set the level of access to the unit settings allowed for each user. Click on the Save Settings button at the bottom of the page to save any password changes.

The unit has no password assigned by default, so an Administrator password should be assigned to the unit for improved security.

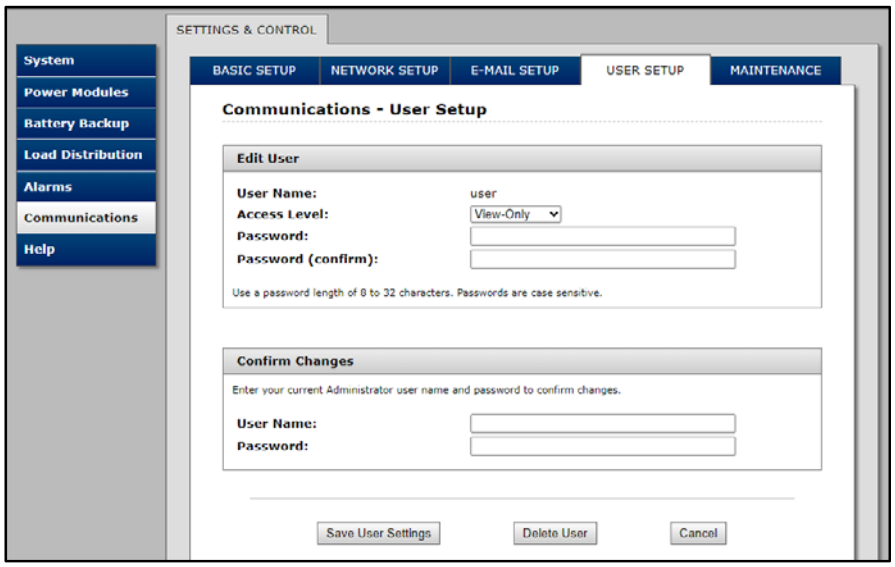
NOTICE

Record the new password(s) for future access. If the Administrator password is lost the unit must be reset to return the password to the blank default setting, causing loss of all other user settings (see Section 3.3).



User Accounts
Shows the User Name and Access Level.

Edit User
Select to edit an existing user account. Set the access level for each user.



Access Level: Set the access level:

- **Administrator:** This level has full access to the unit settings and can set up users and change passwords ("admin" is the default user).
- **Control:** User has read-only access to the unit, but can enable or disable the outputs, and change some of the basic settings.
- **View-Only**: User can only view status, cannot change any settings.

Password: Enter the new password for the chosen user.

Password (confirm): Re-enter the new password to confirm the entry.

Confirm Changes
User Name: Enter admin user name to confirm these changes are valid.

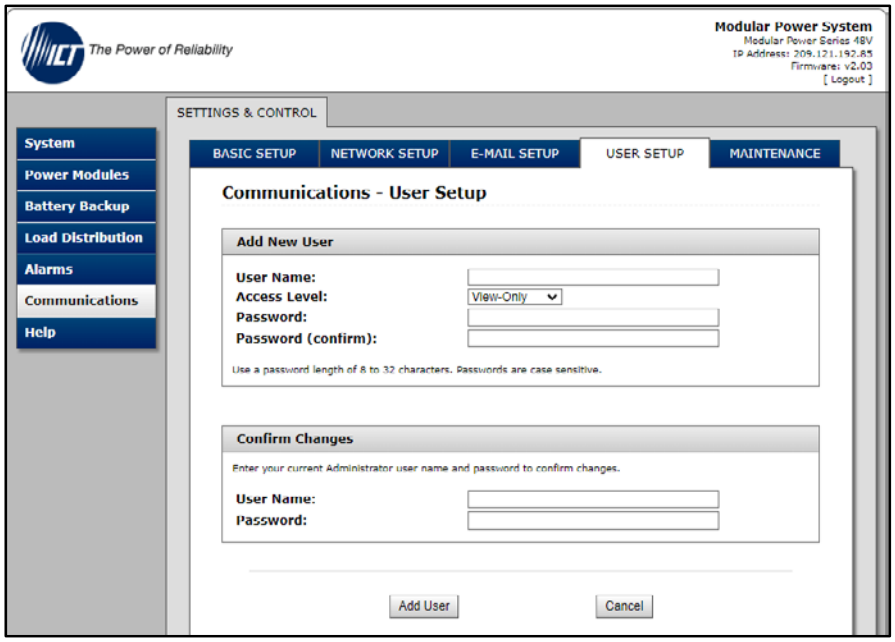
Password: Enter the admin password to confirm the changes are valid.

Add New User
User Name: Set user name.

Access Level: Set access level.

Password: Set password.

Password (confirm): Confirm password.



Confirm Changes

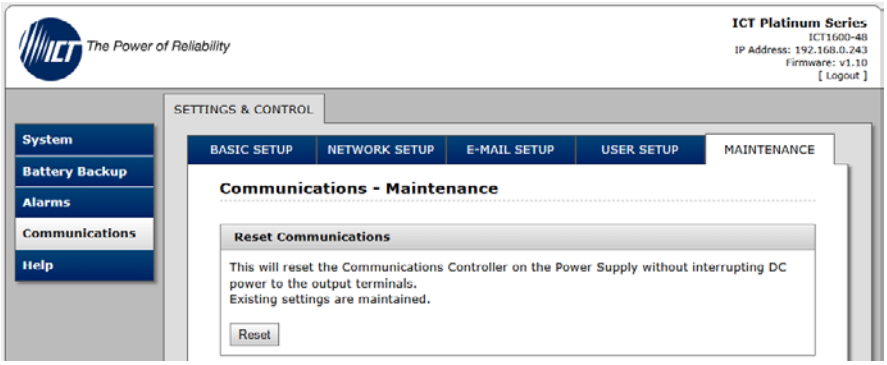
User Name: Enter admin user name to confirm these changes are valid.

Password: Enter the admin password to confirm the changes are valid.

Add User to save and return to the previous screen.

4.5.5 MAINTENANCE

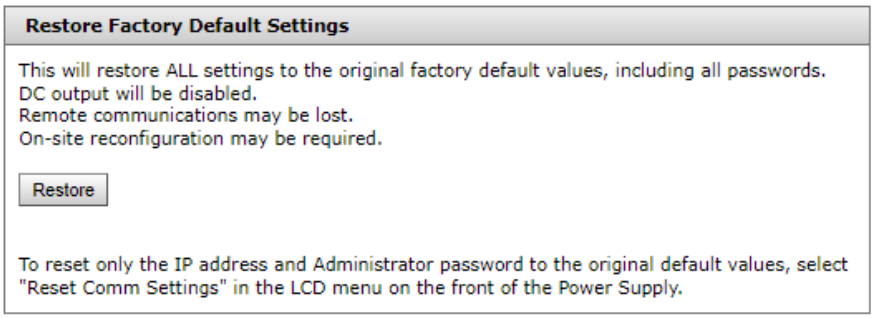
Use this tab to reset the unit (soft reset), restore the factory default settings, or send a test e-mail to verify e-mail functionality.



Reset Communications

Select the "Reset" button to restart the Communications Controller of the Platinum Series without interrupting DC power to the output terminals. All other settings are maintained during the reset.

Restore Factory Default Settings



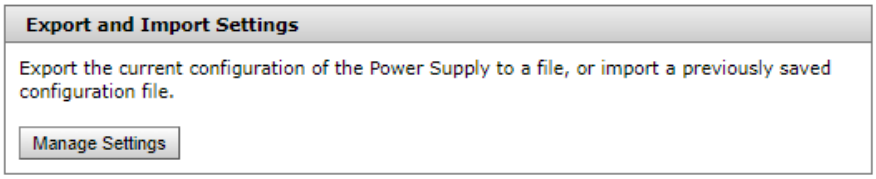
Select the "Restore" button to restore all communications and alarm settings to the original factory default values, including the user passwords. To restore the network settings and passwords only, see the Password Reset section (this feature is only available to the system Administrator) (see Section 3.3).

NOTICE

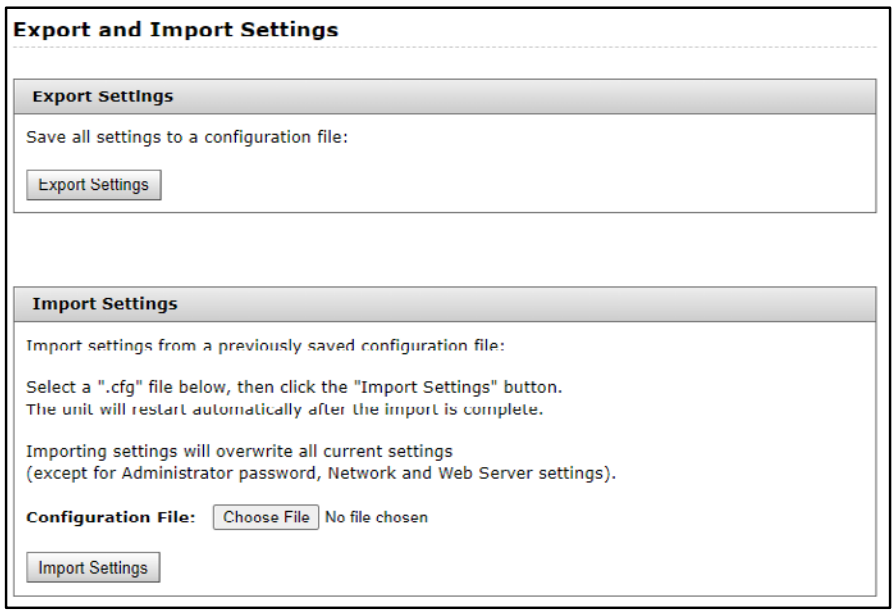
Restoring the unit to Factory Default settings may cause loss of network communications due to loss of custom changes to any network settings.

To reset only the IP address and Administrator password to the original default values, select "Reset Comm Settings" (see Section 3.2.5) in the front display panel menu.

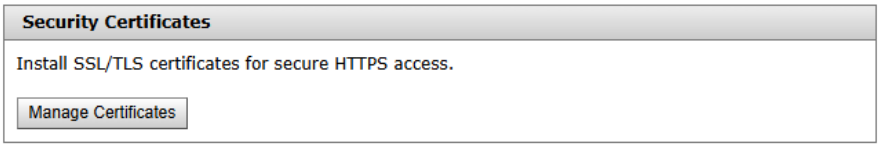
Export and Import Settings



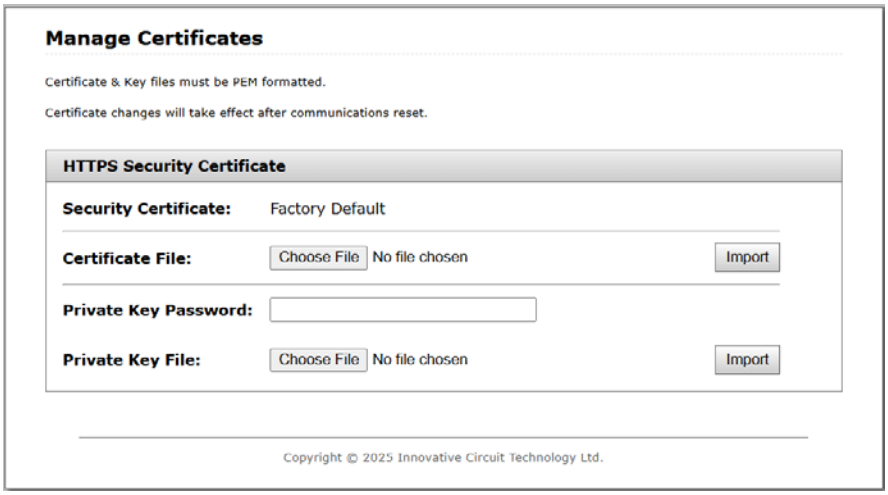
Select the "Manage Settings" button to access the Export and Import Settings page shown below. Use this page to export all system settings to an encrypted .cfg file which may be imported into other units to speed configuration. The export does not include Administrator password, Network nor Web Server settings. Use the Import Settings section on other systems to locate this file and then import it to any other Platinum Series.



Security Certificates



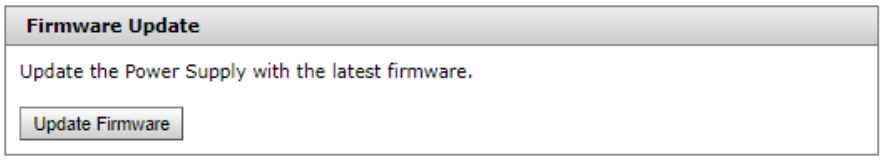
Select the "Manage Certificates" button to access the Manage Certificates page shown below. Use this page to import a new HTTPS Security Certificate to replace the default certificate. Both the Certificate File and Private Key File must be imported individually in PEM format. An optional Private Key Password can be entered if the Private Key is password-protected.



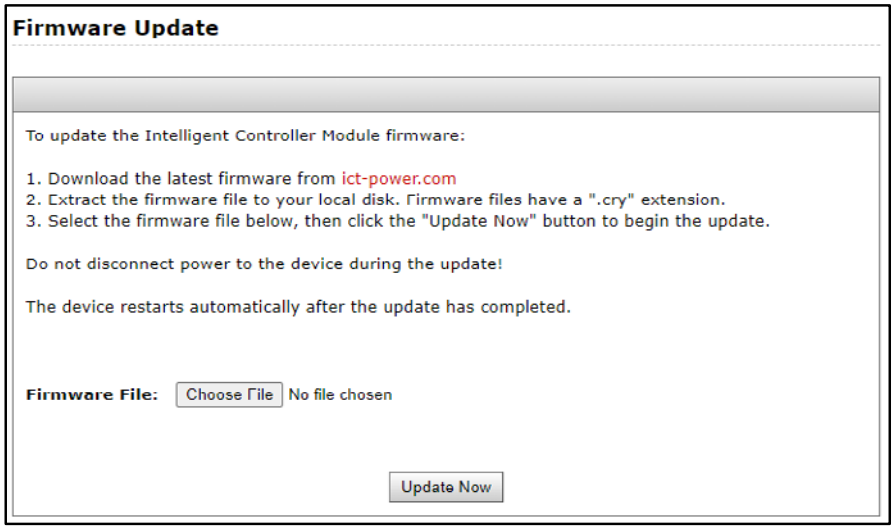
After a certificate has been successfully imported, a "Delete" button will be available which will erase the imported certificate.

The Communication Controller must be restarted before any certificate changes will take effect.

Firmware Update



Download the latest Platinum Series firmware file from the ICT website (ict-power.com) to a local computer. Select the "Update Firmware" button to access the Firmware Update page shown below. Use this page to update the firmware on the power system control module by clicking the "Choose File" button to link the downloaded firmware then click the "Update Now" button. Note that the system settings will not be changed. Do not remove AC power during the update process.

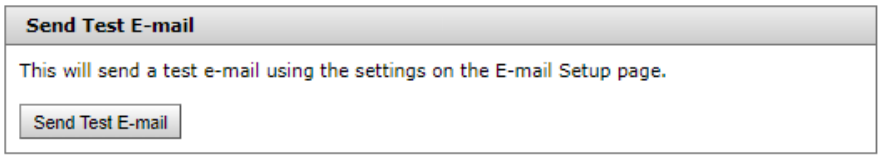


NOTICE

Updating the firmware will delete the current log files. Download the logs before updating the firmware.

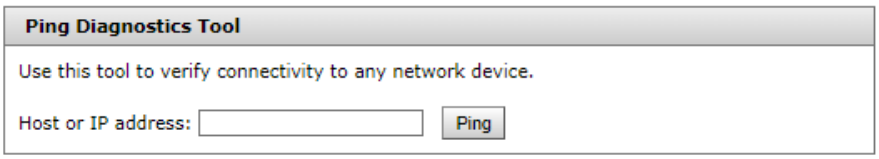
Send Test E-mail

Select the "Send Test E-mail" button to send a test e-mail to the e-mail recipients listed on the E-mail Setup page (see Section 4.5.3).



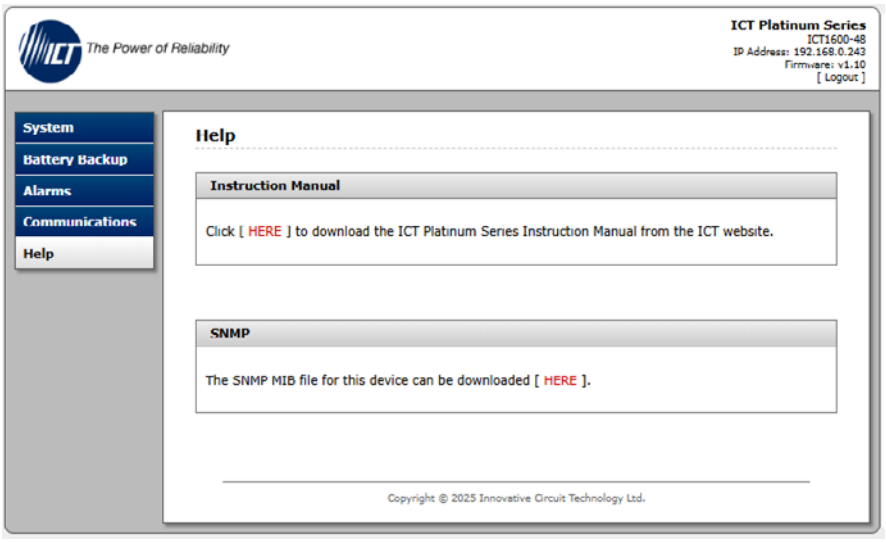
Ping Diagnostics Tool

Use this feature to verify connectivity of any network connected unit. Enter the hostname or IP address of the target device, and then click the "Ping" button to check if the device is active.



4.6 Help

This tab has helpful links to ICT's website.



Instruction Manual

Click the "HERE" button to download the ICT Platinum Series Instruction Manual from ICT's website.

SNMP

Click the "HERE" button to download the SNMP MIB file.

5.0 OPERATION: PARALLEL (If applicable)

WARNING

Do not use the Battery Backup/LVD option "+ BAT" terminal on units connected in parallel, as there is a risk that the potential current could be higher than the rating of the internal low voltage disconnect relay. Otherwise, damage to the unit, load, and/or personal injury may occur if the battery output current through the "+ BAT" terminal exceeds the rating for an individual power supply.

CAUTION

Do not connect power supplies of different output voltage ratings in parallel as this may damage the units or the connected loads.

Up to six power supplies of the same output voltage rating can be connected in parallel to provide up to six times the total output power capability of a single unit. An optional bus bar set (ICT-PAR) is available to simplify connection of units in parallel. When multiple power supplies are operating in parallel, these should all be connected together through the RS485 "SHARE" interface ports (located at the back panel) using the optional ICT-JMP jumper cables. This will allow the units to share output current more equally and allow the external network connection of the combined units using a single Ethernet port on the Primary. One of the units will operate as a Primary, and the remaining units are Secondaries, with the combined settings controlled by the Primary. The Primary will monitor all units for alarms and transmit alerts as configured in the Graphical User Interface (GUI). Each Secondary unit displays its own output current and voltage on the System Status screen in its front display panel and on the System Status tab in its GUI.

A battery and an external low voltage disconnect (LVD) can be connected directly to the parallel output terminals of the power supplies to provide a DC backup capability.

NOTE: Connecting Platinum Series power supplies in parallel should only be done using the Smart Parallel feature and the ICT-JMP.

5.1 "SHARE" Interface Connector

The RJ11 connectors for the RS485 serial interface are located on the back panel and are labelled SHARE "A" and "B" as shown in Figure 10. Parallel units should be connected together in a daisy chain manner using the control jumper cable (ICT-JMP).

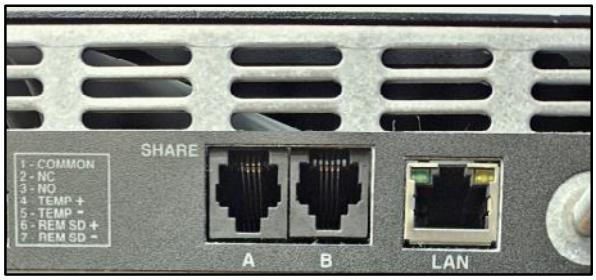


Figure 10. "SHARE" Ports

5.2 Connecting the Power Supplies in Parallel

See Section 2.16.

5.3 Configuring the Power Supplies for Parallel Operation

The Platinum Series power supplies connected in parallel can be configured for parallel operation either with the front display panel access (see Section 5.3.1) or with the GUI access (see Section 5.3.2).

The "Output Voltage", "Current Limit", and "DC Output" system settings of all units are set in unison on the Primary unit and locked out on all of the Secondary units. The Output Voltage and Current Limit can no longer be set from any of the Secondary units once they are configured as Secondaries.

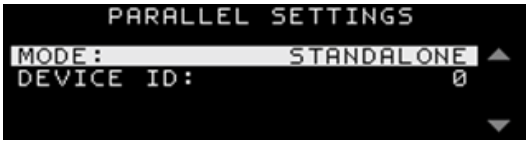
NOTE: When a "Parallel Mode" setting (Standalone, Primary, Secondary) is changed, and set or saved to a different setting on a unit, the DC Output of that power supply will automatically be turned OFF if it is currently enabled. Verify the output voltage/current settings, then manually re-enable the output (see Section 3.2.1 or Section 4.2.2).

5.3.1 Advanced Parallel Operation with Front Display Panel Access

In the Front Display Panel menu, configure the parallel operation settings by scrolling to the "Parallel Status" screen using the ▲▼ buttons. This screen displays the default Parallel settings (Mode: Standalone, Device ID:0) to be adjusted.

↵ Press Enter to move to the Parallel Settings screen.

Set Parallel Mode



Scroll to "Mode", then press Enter ↵ to move to the "Set Parallel Mode" screen

Use the Up/Down buttons to adjust setting, press Enter ↵ to set mode and return to previous screen. Press Back **X** to return to previous screen without saving changes.

One unit must be set to "Primary", and the remaining units must be set to "Secondary". If more than one unit is configured as Primary, an alarm notification "Parallel Comm Error" will appear on the front display panel, and the units will not operate in parallel correctly.

Set Device ID

Scroll to "Device ID", then press Enter ↵ to move to the "Set Device ID" screen

Use the Up/Down buttons to adjust setting, press Enter ↵ to set the unique ID number and return to previous screen. Press Back **X** to return to previous screen without saving changes.

A unique device ID number must be assigned for each unit. If more than one unit is assigned with the same device ID number, an alarm notification "Parallel Comm Error" will appear on the front display panel, and the units will not operate in parallel correctly.

Alarm Notification

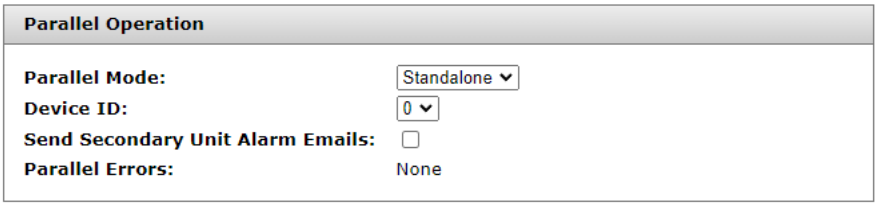
The front display panel will be over-written by the Alarms Active screen during configuration when more than one unit is configured as Primary, or more than one unit is assigned with the same device ID number.

Alarms will be shown as they occur, press Back ✘ button to return to the previous screen, press Enter ↵ for Alarm History info.

5.3.2 Advanced Parallel Operation with GUI Access

In the Graphical User Interface (GUI), configure the parallel operation settings on the "Communications" and "Basic Setup" tabs.

Parallel Operation



NOTE: When a "Parallel Mode" setting (Standalone, Primary, Secondary) is changed to a different setting on a unit, the DC Output of that power supply will automatically be turned OFF if it is currently enabled. Verify the output voltage/current settings, then manually re-enable the output (see Section 3.2.1 or 4.2.2).

Parallel Mode: Set the parallel mode of the units connected in parallel. The default setting is Standalone. One unit must be set to "Primary", and the remaining units must be set to "Secondary". If more than one unit is configured as Primary, an alarm notification will be indicated on the "Parallel Error" field.

Device ID: Set a unique device ID (0 to 5) for each unit connected in parallel, or an alarm notification will be indicated on the "Parallel Error" field. The default setting is 0.

Send Secondary Unit Alarm Emails: Select this checkbox on Primary unit to have the Primary forward all alarm e-mails from the connected Secondary power supplies. Use this feature to monitor all units in parallel set with a single Ethernet connection made to the Primary unit only.

This field will have no effect on units configured as Secondary or Standalone.

NOTE: If this feature is enabled, select all the "Send E-mail" checkbox in the "Settings & Control" Alarms tab.

Parallel Errors: Displays any error or alarm condition related to the serial SHARE interface that is currently active. Displays "None" if no error.

5.4 Changing a Power Supply Back to Standalone Mode

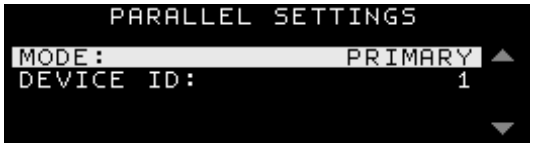
1. Turn the power switch on all parallel units to the OFF position.

2. Disconnect the connections to the positive terminal "POS" and negative terminal "NEG" by removing the Parallel Bus Bars (ICT-PAR); and SHARE interface "A" and "B" by removing the Parallel Control Cable (ICT-JMP).

3. Turn the power switch to the ON position.

4. In the Control Panel menu, scroll to the "Parallel Status" screen using the ▲▼ buttons.

↵ Press Enter to move to the Parallel Settings screen.



▲▼ Scroll to "Mode", then press Enter ↵ to move to the "Set Parallel Mode" screen

▲▼ Scroll to "Standalone" then press Enter ↵.

5. The unit is now configured as a Standalone unit. If the unit was previously configured as Secondary unit, the "System Settings" screen will now be unlocked, and remote access will be lost unless an Ethernet cable is installed in each unit.

NOTE: When a "Parallel Mode" setting (Standalone, Primary, Secondary) is changed, and set or saved to a different setting on a unit, the DC Output of that power supply will automatically be turned OFF if it is currently enabled. Verify the output voltage/current settings, then manually re-enable the output (see Section 3.2.1 or 4.2.2).

6.0 OPERATION: STANDARD POWER SUPPLY (not applicable)

7.0 OPERATION: COMMAND INTERFACE

The Platinum Series supports remote ON/OFF control via HTTP POST (e.g., cURL or LabVIEW) and real-time status access through an XML file, with full monitoring and control via SNMP.

7.1 Remote Output Control using cURL

Easily toggle the power output ON or OFF by sending HTTP POST requests with cURL commands that include the device's IP address and admin credentials.

Turn Output ON

curl -d "os=E" -u admin:[Admin Password] [Power Supply URL]/ctrl/

Example: curl -d "os=E" -u admin:password 192.168.0.180/ctrl/

Turn Output OFF

curl -d "os=D" -u admin:[Admin Password] [Power Supply URL]/ctrl/

Example: curl -d "os=D" -u admin:password 192.168.0.180/ctrl/

7.2 Real-Time Status Monitoring

Users who only need to access status information can retrieve the status.xml file to obtain the device's current status in XML format.

Table 15. Info.xml

XML Tag	Notes
<info>	Root Element
<fw>	Firmware Version
<hw>	Hardware Version
<model>	ICT Model Number
<mac>	MAC Address
<serial>	Serial Number
<site>	Site Name
<cal>	Voltage Calibration Offset

Table 16. Status.xml

XML Tag	Notes
<status>	Root Element
<v0>	DC Output Voltage
<v1>	AC Input Voltage
<v2>	Battery Voltage
<i0>	DC Output Current
<i1>	Total System Current
<i2>	Battery Current
<s0>	DC Output Enable Status: 0 = Output Disabled 1 = Output Enabled >1 = Output Disabled & Auto-Restart active
<s1>	Battery State of Charge
<s2>	Battery Net Ah Count
<s3>	Estimated Battery Run-time Remaining
<s4>	Battery Temperature
<s5>	Battery LVD Status: 0 = Disconnected 1 = Connected
<a0>	Triggered Alarms
<p0>	Number of units operating in Parallel

7.3 SNMP Control and Monitoring

For full control and monitoring capabilities, the Platinum Series also supports SNMP (Simple Network Management Protocol). This enables integration with network management tools and advanced monitoring setups. To enable the SNMP functions, refer to Section 4.5.2.

8.0 FAQs

8.1 Can Platinum Series provide negative voltage?

Yes. The Platinum Series has a floating output and can provide a positive or negative voltage.

8.2 How do I connect a battery to the units connected in parallel?

Do not connect any battery to the "+ BAT" terminal when more than one Platinum Series power supply is connected in parallel, as there is a risk that the potential current could be higher than the rating of the internal LVD relay. Damage to the unit, load, and/or personal injury may occur if the battery output current through the "BAT" terminal exceeds the rating for an individual supply.

Connect a battery directly to the parallel output terminals and use an external low voltage disconnect (LVD).

Connect the battery positive lead to the "POS" parallel output terminals, and the battery negative lead to the "NEG" parallel output terminals. Install an appropriate in-line DC overcurrent protection device, such as fuse or circuit breaker on the battery positive lead. Use an external LVD.

8.3 How do I connect the temperature sensor to the battery?

- Mount the sensor to the mid-level side of the middle battery in a set using the adhesive backed clip.
- See step # 3 of Section 2.8 for more information.

8.4 What information do I need to set up my battery?

Review the battery manual for the correct settings to enter into the GUI to ensure that the battery is correctly configured and to avoid future issues.

8.5 Why are Net Ah count, Run Time Remaining and SOC blank?

- The unit requires the battery to be running at full charge for the battery net Ah, Run Time Remaining and SOC to be displayed.
- See Section 4.3.1 in the user manual for more details.

NOTE: Disconnecting and reconnecting the battery will require the same process as connecting a new battery to the unit.

8.6 How do I configure a router?

To set up the power supply with remote internet access when it is located behind a router, Port Forwarding will need to be enabled on the router to forward incoming HTTP or HTTPS traffic to the local IP address of the unit. Refer to the router's user manual for instructions on how to configure Port Forwarding.

8.7 How do I access the web-based configuration utility?

- Check the correct IP address for the system by downloading and running the ICT IP Address Discovery tool from http://www.ict-power.com/tools-utilities/.
- Check the network cable connections to the unit and the network.
- Ensure the network card settings on the computer are configured for accessing the IP address of the Platinum Series. To access a unit with the default IP address of 192.168.0.180 the typical network settings for the computer are:
    - IP Address: 192.168.0.100
    - Subnet Mask: 255.255.255.0
    - Gateway: 192.168.0.1
- If the HTTP port of the unit has been changed, append the new port number to the URL used to access the unit (see Section 4.5.2). See the Password Reset Section (see Section 4.5.5) for details on how to reset the port number to the factory default value.
- If the network switch allows the user to manually configure port speed and duplex settings, turn-on "Auto Negotiation" for the switch port that the unit is connected to.

8.8 How do I reset the password?

See Section 3.3.

8.9 How do I upgrade the firmware?

On the ICT website, click on Resources > Product Firmware and select the product. Download the latest firmware. In the ZIP file will be a README document with step-by-step instructions or see section "Firmware Update" in Section 4.5.5.


NOTICE

Updating the firmware will delete the current log files. Download the logs before updating the firmware.

8.10 How do I receive text message alarm notifications?

The unit can send alarm notifications to a cell phone by configuring the alarm e-mails to be sent to the mobile phone service provider.

To use this feature, check with the user's mobile phone service provider to confirm whether email-to-text messaging is supported and to obtain the correct address format. Alternatively, third-party email-to-SMS services may be used to deliver text message notifications

8.11 How do I receive e-mails from the unit?

- See Section 4.4.2. Alarms/SETTINGS & CONTOL.
- Verify that the "Send E-mail" checkboxes are selected for any alarm conditions for which the user wishes to receive e-mail notifications.
- Verify the e-mail settings by going to the "Communications/Maintenance" tab on the unit's GUI and clicking on the "Send Test E-mail" button, to send a test message to the designated recipient addresses. The "Send Test E-mail" page will show an error message if the system is unable to send the e-mail.
- Check on the "Communications/E-mail Setup" tab and ensure that the "SMTP Server" field is the correct address for the e-mail provider, and that the "SMTP Port" is correct (Port should be 25 for most servers).
- If the SMTP server requires SSL encryption, ensure that the "SMTP Server requires SSL" checkbox is ticked. Otherwise leave it blank.
- If the SMTP server requires authentication, ensure that the "SMTP User Name" and "SMTP Password" fields are correctly entered.

8.12 How do I log out of the GUI?

To log out of the ICT Platinum Series GUI, click on the Logout link on the top right of the browser window. The system will also automatically log off the user after 20 minutes of inactivity.

9.0 PRODUCT SPECIFICATIONS

9.1 Electrical Specifications

Table 17. Overall Electrical Specifications

Parameters	Rating
AC Input Nominal Rating	120 / 240 VAC; 50 / 60 Hz
AC Input Operating Range	108 to 264 VAC
AC Input Maximum Range	90 to 300 VAC
Input Power Factor (typical)	0.99
Efficiency	Up to 93%
Output V Line Regulation	0.1%
Network Communication	RJ45 10/100-T port (IPv4, IPv6, VLAN, HTTP, HTTPS, SMTP, DNS, TCP, UDP, ICMP, DHCP, ARP, SNMP v1/v2c/v3, SNTP Protocols)
Network Security	Password protection, SSL encryption for HTTPS and SMTP (TLS 1.3)

Table 18. Power Supply Specifications (cont'd on next page)

Rating	12 V 120 A 1600 W	12 V 60 A 800 W	24 V 60 A 1600 W	24 V 30 A 800 W	48 V 30 A 1600 W	48 V 15A 800 W
AC Input Current (A_{rms} at 230 VAC)	9 A max	4.5 A max	9 A max	4.5 A max	9 A max	4.5 A max
AC Input Current (A_{rms} at 115 VAC)	18 A max	9 A max	18 A max	9 A max	18 A max	9 A max
Default Output Voltage (Nominal Battery float Voltage) (+/− 0.5%)	13.8 VDC	13.8 VDC	27.6 VDC	27.6 VDC	55.2 VDC	55.2 VDC
Output Voltage Range (adjustable)	11.5–15.5 VDC	11.5–15.5 VDC	23–31 VDC	23–31 VDC	46–62 VDC	46–62 VDC
Output Power (max)	1,600 W	800 W	1,600 W	800 W	1,600 W	800 W
Output Current (continuous)	120 A	60 A	60 A	30 A	30 A	15 A
Output Derating	2% / °C (above 50°C)					

Rating	12 V 120 A 1600 W	12 V 60 A 800 W	24 V 60 A 1600 W	24 V 30 A 800 W	48 V 30 A 1600 W	48 V 15A 800 W
Efficiency (typical)	90%	90%	91%	91%	93%	93%
Heat Dissipation	607 BTU/hr	304 BTU/hr	540 BTU/hr	270 BTU/hr	411 BTU/hr	206 BTU/hr
Output Noise (max mV_{rms})	30 mV_{rms}	30 mV_{rms}	30 mV_{rms}	30 mV_{rms}	60 mV_{rms}	60 mV_{rms}
Output V Load Regulation	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Max total Battery Current through LVD	200 A	100 A	60 A	60 A	50 A	50 A
LVD Threshold V (Default)	10.5 V	10.5 V	21.0 V	21.0 V	42.0 V	42.0 V
LVD Reconnect V (Default)	11.5 V	11.5 V	23.0 V	23.0 V	46.0 V	46.0 V

9.2 Physical Specifications

Table 19. Physical Specifications

Parameters	Configuration
Output Grounding	Floating may be connected with positive or negative ground
Alarm Output	Form-C dry contact, 0.5 A, 125 VAC max (voltage-free contact)
DC Connectors: (Output, Battery)	Bus Bar, 5/16-inch bolt hole
Remote Alarm Connector	7-pin removable plug, cage clamp type 16–24 AWG
Remote Shutdown (isolated)	External 2–12 V will disable output
AC Input Connector	3-pin removable plug, cage clamp type 8–22 AWG
Operating Temperature Range	−30 to +70°C[1]
Storage Temperature Range	−40 to +70°C
Humidity	Operating: 10–90% (non-condensing) Storage: 5–95% (non-condensing)
Cooling	Temperature Controlled Fans (front to rear airflow)

[1] Ambient Temperature. De-rate output 2% per °C above 40°C.

9.3 Regulatory Specifications

Table 20. Regulatory Compliance

Category	Certification
Safety, EMC-Emissions, EMC-Immunity, CE, RoHS	CSA/UL/EN 60950-1 Standard, FCC Part 15 ClassB / EN61000-6-3, EN61000-6-1, CE, and RoHS

9.4 Mechanical Specifications

Table 21. Dimension and Weight

Physical Property	Value
Dimension - L x W x H	16.4 x 19.0 x 1.7 in. (416 x 483 x 44 mm)
Weight	15 lbs. (6.8 kg)

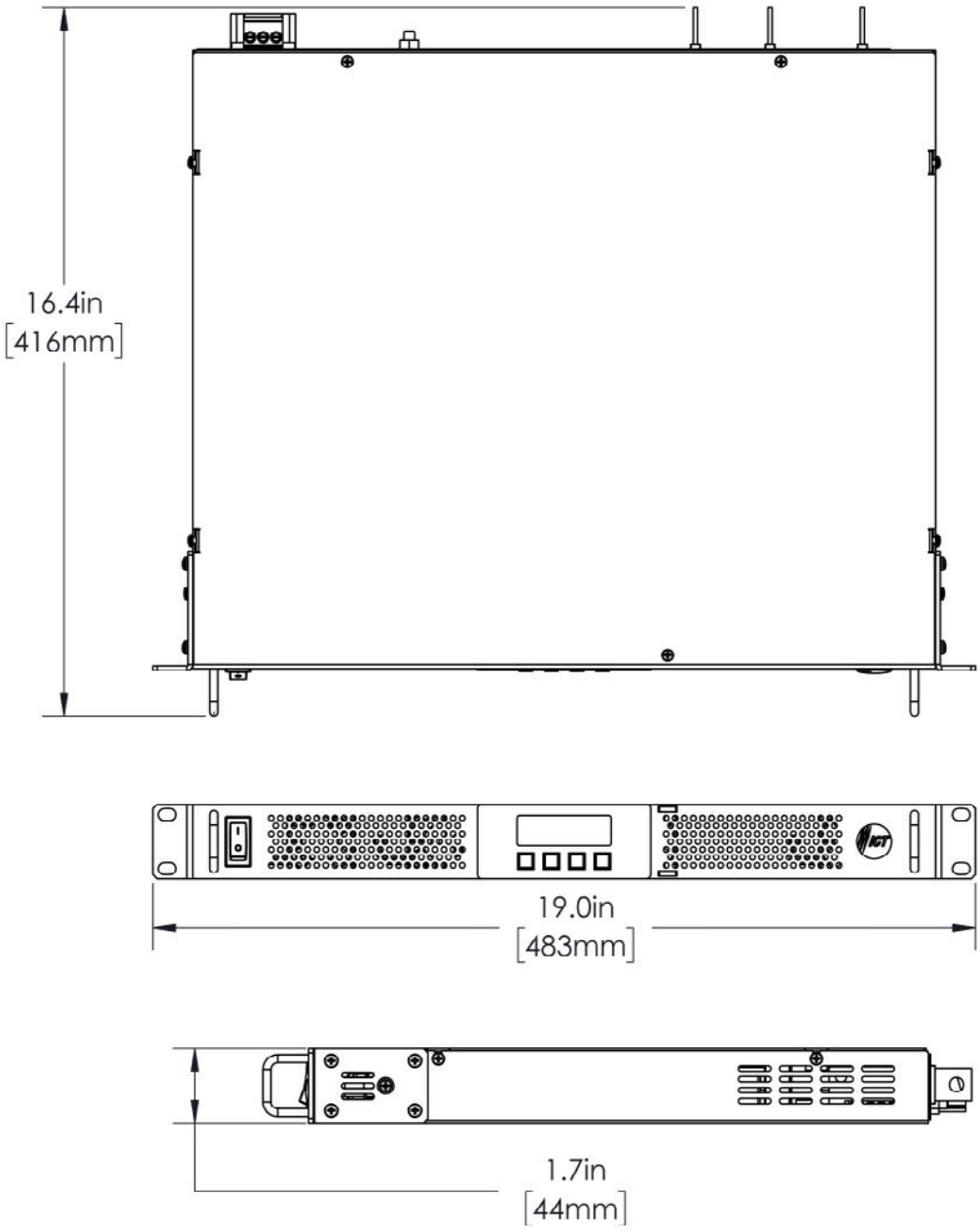


Figure 11. Dimensions

10.0 GLOSSARY

1RU	One Rack Unit; 1.75-inch (44.55 mm) of rack height
A, amps	Amperes
A_{rms}	Amperes (Root Mean Square)
AES	Advanced Encryption Standard
Ah	Ampere-Hours
ANSI	American National Standards Institute
ARP	Address Resolution Protocol
AWG	American Wire Gauge
BMS	Battery Management System
BTU	British Thermal Unit
CE	Conformité Européenne
CSA	Canadian Standards Association
CSV	Comma-Separated Values
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
EMC	Electromagnetic Compatibility
EN	European Norms
FCC	Federal Communications Commission
GUI	Graphical User Interface
HTTPS	Hypertext Transfer Protocol Secure
Hr	Hour
Hz	Hertz
ICMP	Internet Control Message Protocol
ISO	International Organization for Standardization
ISP	Internet Service Provider
LVD	Low Voltage Disconnect
MAC	Media Access Control
MIB	Management Information Base
NEC	National Electrical Code
OEM	Original Equipment Manufacturer
PEM	Privacy-Enhanced Mail
RMA	Return Material Authorization
RoHS	Restriction of Hazardous Substances
SHA	Secure Hash Algorithms
SNMP	Simple Network Management Protocol
SLA	Sealed Lead-acid
SOC	State of Charge
TCP	Transmission Control Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
TLS	Transport Layer Security
TTL	Transistor-Transistor Logic
UDP	User Datagram Protocol
UL	Underwriters Laboratories
V	Volts
VAC	Volts, Alternating Current
VDC	Volts, Direct Current
VLAN	Virtual Local Area Network
V_{rms}	Volts (Root Mean Square)
W	Watts
XML	Extensible Markup Language