The Power of Reliability

Distribution Series 3 10/10 GMT Fuse Panel Instruction Manual

855-351-000

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

WARNING

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

- Installation must be done by qualified technicians.
- Shut off or disconnect all DC power sources before connecting or disconnecting wiring.
- Carefully observe wiring polarity when making input and output connections.
- Securely tighten all connections.
- Do not attempt to service any internal parts. Refer all product service to an authorized ICT Ltd. service facility.

CAUTION

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

- Use wire and connectors rated for the maximum load current and size of fuse or circuit breaker in accordance with NEC Section 210.20(A) and keep cable lengths as short as practical.
- Install unit in a restricted access location (such as an equipment rack) to limit unintentional contact with terminals and wiring.
- Keep sources of moisture away from unit.
- Do not energize the unit before the chassis ground is connected.
- DC-AC inverters should not be connected to the outputs of the distribution unit. DC-AC inverters create significant inrush current and may damage the circuitry or interfere with the operation of load distribution panels that they are connected to. 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.

NOTICE

- Third-party surge protection devices must be utilized to protect every exposed DC power conductor and data cable. 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.

NOTE: Due to the fuse-detection circuitry internal to the unit, it may be possible to measure a voltage on the terminal(s) with no load connected, even if that terminal's fuse is open. This is normal operation. The fuse-detection circuitry is a high-impedance circuit, and while a voltage may be present on the output terminal, it is a signal voltage and does not support loading. A load device connected to the output will immediately pull this voltage to zero volts.

Product Alerts

CAUTION

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

- Ensure the total power consumption of the loads does not exceed the 100-amp (peak) rated capacity of each power bus.
- Ensure continuous load current through each output channel does not exceed 80% of the maximum output ratings in accordance with NEC Section 210.20(A).

GENERAL INFORMATION

Document Number: 855-351-000

Model: ICT200DF-20BRC

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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 Distribution Series 3 dual-bus DC distribution panel provides two 100-amp (peak) bus inputs; with 10 independently controlled and monitored output channels per bus in a compact 1RU chassis for 19-inch rack mounting. Overcurrent protection for each output is available on the front panel with GMT-type fuses that are orderable separately.

Each bus can accommodate a supply voltage from 20- to 60-volts DC, either positive or negative polarity, with a peak input current of 100 amps to be distributed at up to16 amps continuous on each of the 10 output channels. Each channel has independent current sensing, overcurrent protection, alarms, and output on/off control.

Remote monitoring and control are available through the integrated security-protected Ethernet communications port on the rear of the unit. The unit has a built-in web server with an embedded web-based graphical user interface (GUI) that can be accessed using any standard commercial web browser. The GUI displays all panel information; allows full access to channel configuration settings; provides remote channel on/off control; and can be set up to send an alarm to user-defined e-mail accounts in the event a fault occurs. The GUI can also be used to configure and download a data log of up to 30 days of time-stamped event information. Full monitoring and control are also available using an SNMP-based management system.

System voltage, system current, output channel current, fuse status, and alarm input status can also be monitored onsite through the front display panel. Fuse trip status is displayed by an LED indicator located under each fuse. Form-C contacts alarm outputs (C/NO/NC) are provided on the rear panel for each bus to indicate all distribution panel alarms, while the digital alarm inputs can be used to monitor up to five external devices such as smoke, door or water sensors.

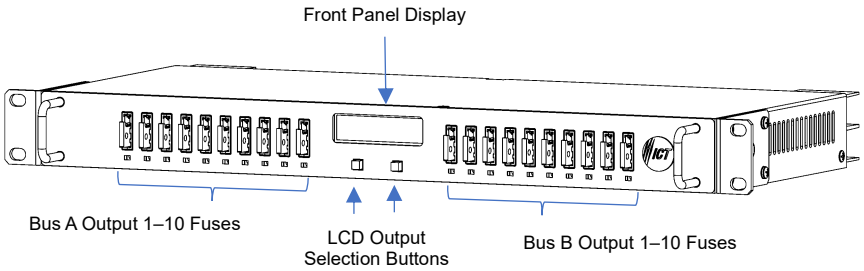


Figure 1. Front Panel

1.1 Common Features

- Supports 24- and 48-volt DC applications
- Mixed voltages and polarities can be supported in one panel
- 200 amps peak system current rating / 100 amps per bus
- 10 independently controlled and monitored output channels per bus
- Independent form-C alarm contacts for each bus
- −30°C to +60°C operating temperature range
- 2-year warranty

1.2 Intelligent Models

- TCP/IP remote management and power control of system and individual outputs
- On-board web server means no software to maintain
- Easy to use GUI
- Remote firmware update capability
- HTTPS, SMTP, SNMP (v1, v2c, v3), TLS 1.3 protocols supported
- IPv6 and VLAN networking
- User managed security certificates
- Monitoring and alarm reporting of each output
- Alarms can be sent to multiple e-mail accounts
- Each output has adjustable load-shedding settings
- Network watchdog
- Five digital inputs for site monitoring sensors
- Data logging
- Password protection

2.0 INSTALLATION

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

- Shut off or disconnect all DC power sources before connecting or disconnecting wiring.
- Carefully observe wiring polarity when making input and output connections.
- Securely tighten all connections.

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

- Use wire and connectors rated for the maximum load current and size of fuse or circuit breaker in accordance with NEC Section 210.20(A) and keep cable lengths as short as practical.

CAUTION

- Channel output fuses must not exceed 20 amps max rating.
- Install unit in a restricted access location (such as an equipment rack) to limit unintentional contact with terminals and wiring.
- Keep sources of moisture away from unit.
- Remove all fuses before connecting or disconnecting wiring.
- Do not energize the unit before the chassis ground is connected.
- Ensure the total power consumption of the loads does not exceed the 100-amp (peak) rated capacity of each power bus.

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 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
- Distribution panel
- One nut on the ground stud (installed)
- Two rack-mounting ears (installed)
- Eight 1/4-inch KEP nuts for the input connection (installed)
- Two clear snap-on covers to insulate main DC power connections (installed)
- Bag containing the following:
  - Instruction manual (USB drive)
  - Two 7-pin alarm output, input connector plugs

2.2.1 Tools and Parts Needed

- 7/16-inch wrench
- Wire stripper and crimper
- Four dual-hole lug terminals (5/8-inch spacing, 1/4-inch holes)
- Four screws to install the unit into the equipment rack
- 3/32-inch flathead screwdriver for the connections of the alarm output and input wires.

2.2.2 Other Requirements

To complete the installation, appropriate fuses (available from ICT) are needed for each output channel that the user plans to use. Fuses must be ordered separately from the following list for use on the ICT200DF-20BRC unit.

Table 1. Fuses

ICT Model	Rating (60 VDC)
ICT-GMT5	5 A
ICT-GMT10	10 A
ICT-GMT15	15 A
ICT-GMT20	20 A

NOTE: Standard GMT fuses with current ratings up to 20 amps may also be used.

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 and alarms, if needed.
- Connect the network cable using third-party surge protection.
- Connect and energize the DC inputs.
- Configure the software settings.
- De-energize the DC inputs and insert the fuses.
- Connect the load devices using third-party surge protection on all DC conductors which may be exposed to environmental factors such as lightning.
- Verify the system wiring.
- Energize the loads.

2.4 Rack Mounting

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.

2.5 Ground Connection

NOTICE

All DC inputs and outputs of ICT's DC distribution panels are isolated from chassis ground (floating). DC input and 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.

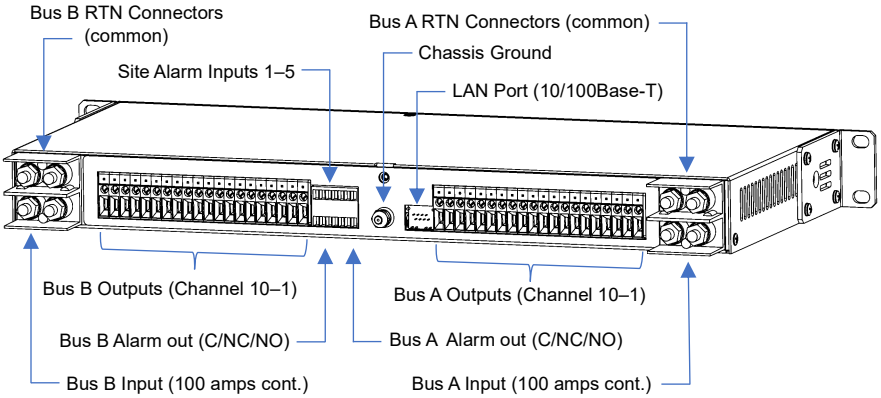


Figure 2. Typical Rear View

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 2). Ensure that the selected ground bonding wire is rated to handle the maximum current rating of the unit.

Table 2. 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.

2.6 Surge Protection Device(s) Installation

Third-party surge protection devices must be utilized to protect every exposed DC power conductor and data cable. 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.

2.7 Sensor and Alarm Connections

1. Connect the two form-C relay Bus Alarm outputs to an external monitoring system if needed, by stripping and terminating 16–28 AWG alarm wiring in the Alarm 7-pin connector plug and installing the connector in the rear panel (see Figure 3). Each Bus Alarm output will trigger for any fuse open, or other alarm related to any channel on that bus (factory default). If required, using the Graphical User Interface (GUI), some alarm conditions may be muted so that they will not trigger the form-C alarm output (See Section 4).

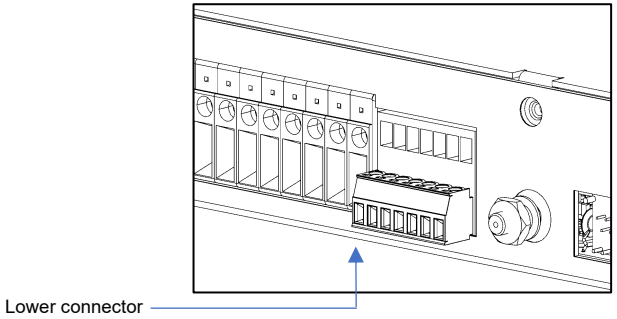


Figure 3. Lower Connector

Table 3. Alarm Output Connector

Pin Number	Name	Function
1	C	Bus A: Alarm Output Common (0.5 A, 65 VDC max)
2	NC	Bus A: Alarm Output normally closed for alarm condition
3	NO	Bus A: Alarm Output normally open for alarm condition
4		Unused
5	C	Bus B: Alarm Output Common (0.5 A, 65 VDC max)
6	NC	Bus B: Alarm Output normally closed for alarm condition
7	NO	Bus B: Alarm Output normally open for alarm condition

2. Connect up to five external devices such as smoke, door or water sensors through the digital alarm inputs by stripping and terminating 16–28 AWG alarm wiring and connecting to the five Site Alarm Inputs on the 7-pin removable Alarm Input Plug, if desired (see Figure 4). Each alarm input can be connected to a form-C/dry contact output on the external device. If the alarm state changes on the device being monitored, the GUI will report the alarm. The GUI allows each of the five alarm inputs to be labelled with a unique name (see Section 4.9).

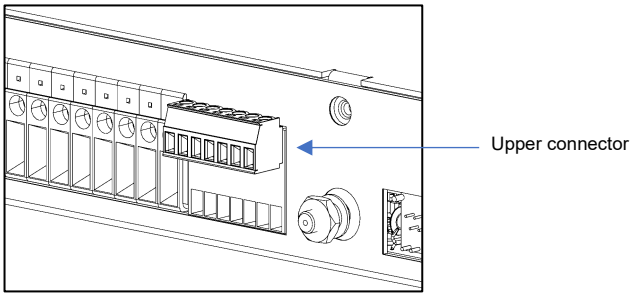


Figure 4. Upper Connector

Table 4. Alarm Input Connector

Pin (L-R)	Site Alarm Input Function
1	Input 1
2	Input 2
3	Input 3
4	Input 4
5	Input 5
GND	Common
GND	Common

2.8 Network Cable Connection

Connect a 10/100 Base-T Ethernet cable, using third-party surge protection device, 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 (see Section 4.7).

2.9 Input Connections

1. De-energize the DC source and open any disconnect switches.

2. Connect the main Bus A "RTN" line to the DC source return using wire and dual-hole lug terminal rated for up to 100 amps continuous current. Feed a stripped wire into the lug terminal and connect the lug to the dual 1/4-20 thread "RTN" studs, then securely fasten with supplied hardware.

3. Connect the Bus A "INPUT" through a suitably rated disconnect switch (set in the open position) and a fuse or circuit breaker rated for 100 amps continuous operation to the DC source output, using wire and connectors rated for 100 amps continuous current. Feed a stripped wire into a dual-hole lug terminal and connect the lug to the dual 1/4-20 thread "INPUT" studs, then securely fasten with supplied hardware.

4. Snap the clear cover on to the Bus A connectors to help prevent accidental contact with the stud connections.

5. Repeat input wiring for the Bus B input, its power source and overcurrent protection device, if the Bus B outputs are to be used.

6. Energize the DC source and close any disconnect switches.

2.10 Software Configuration

Configure the software (see Section 4).

2.11 Installation of the Fuses

CAUTION | Fuses must not exceed 20 amps maximum rating.

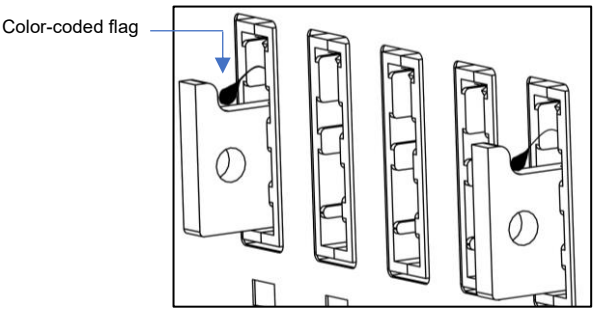


Figure 5. Installation of Fuse

1. De-energize the DC source and open any disconnect switches.

2. Install appropriately rated GMT-type fuses in the desired channel locations, where the side of the fuse that has the color-coded flag is facing upwards. The fuse only fits in one direction — do not force wrong orientation.

The fuse can be removed using a fuse puller. Do not use inappropriate tools as they may damage the fuse.

2.12 Load Connections

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

- DC-AC inverters should not be connected to the outputs of the distribution unit. DC-AC inverters create significant inrush current and may damage the circuitry or interfere with the operation of load distribution panels that they are connected to. Connecting a DC-AC inverter in this way may void the product warranty.
- Ensure that the combined current draw on the outputs does not exceed the output capacity of the bus (100 amps).
- Ensure continuous load current through each output channel does not exceed 80% of the maximum output ratings in accordance with NEC Section 210.20(A).
- Install appropriately rated surge protection device on every exposed DC power conductor.

Make connections to the load using wire and connectors appropriately rated for the maximum load current.

An output (labelled OUT) and return (labelled RTN) are provided for each channel.

Each bus provides 10 remotely controlled and monitored outputs, with front panel overcurrent protection provided by GMT-type fuses.

The maximum current rating for each bus is 100 amps. Each output can accept 16 amps continuous current.

The unit may be operated with either Bus A or Bus B powered, or both. Each bus may have independent polarity and bus voltage.

CAUTION

All output return (RTN) lines and the main Bus A and Bus B RTN terminals are common and are referenced to a single internal bus (RTN). Bus A and Bus B inputs can be wired to a different DC voltage (10 to 60 volts DC) of either polarity. When used with mixed-polarity voltages, e.g., positive 24 volts on Bus A and negative 48 volts on Bus B, the two voltage sources must be electrically isolated from each other. Not isolating the two voltage sources for mixed-polarity applications will short-circuit and potentially damage connected equipment.

For each bus that is being used:

1. Ensure that the DC source is de-energized, and all disconnect switches are open.

2. Locate the ten outputs on the bus rear panel connector block.

3. Verify the polarity of the bus.

4. Connect up to 10 external loads using appropriately rated wire inserted and secured into the ten cage-clamp output connector pairs on the bus rear panel. The terminal will accept wires from 10–22 AWG.

2.13 System Wiring Final Verification

Check that all connections to the power distribution panel are correct and properly tightened.

2.14 Mixed Polarity or Voltage Installation

All output return (RTN) lines and the main Bus A and Bus B RTN terminals are common and are referenced to a single internal bus (RTN). Bus A and Bus B inputs can be wired to a different DC voltage (20- to 60-volt DC) of either polarity. When used with mixed-polarity voltages, e.g., positive 24 volts on Bus A and negative 48 volts on Bus B, the two voltage sources must be electrically isolated from each other. Not isolating the two voltage sources for mixed-polarity applications will short-circuit and potentially damage connected equipment.

2.15 Energize Loads

Re-energize the DC source and close any disconnect switches to energize any loads connected to the unit.

3.0 OPERATION: FRONT PANEL

Energize each bus by closing the main external breaker or disconnect device on the bus input lines. Check that the distribution panel front graphic display powers up.

The Distribution Series 3 will start up and operate at the factory default settings when DC power is connected, generally requiring no further set up or adjustment for basic operation.

3.1 Graphic Display

Use the front display screen and two interface buttons on the front panel to monitor the bus voltage, total bus current, network status, channel output status of the selected bus and the alarm status of the external monitored devices.

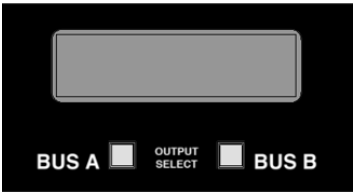


Figure 6. Front Control Interface

NOTE: The LCD backlight will activate when pressing either "Output Select" button and will turn off after approximately 15 minutes of inactivity.

Bus A "Output Select" Button: Use to scroll through the Bus A display screens; or to switch to the Bus A main screen from Bus B.

Bus B "Output Select" Button: Use to scroll through the Bus B display screens; or to switch to Bus B main screen from Bus A.

Holding either "Output Select" button for 2 seconds will return the display to the main screen for that bus. Holding either "Output Select" button for 20 seconds will reset the administrator's password to the factory default (see Section 3.3.1).

3.2 Menu Structure

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

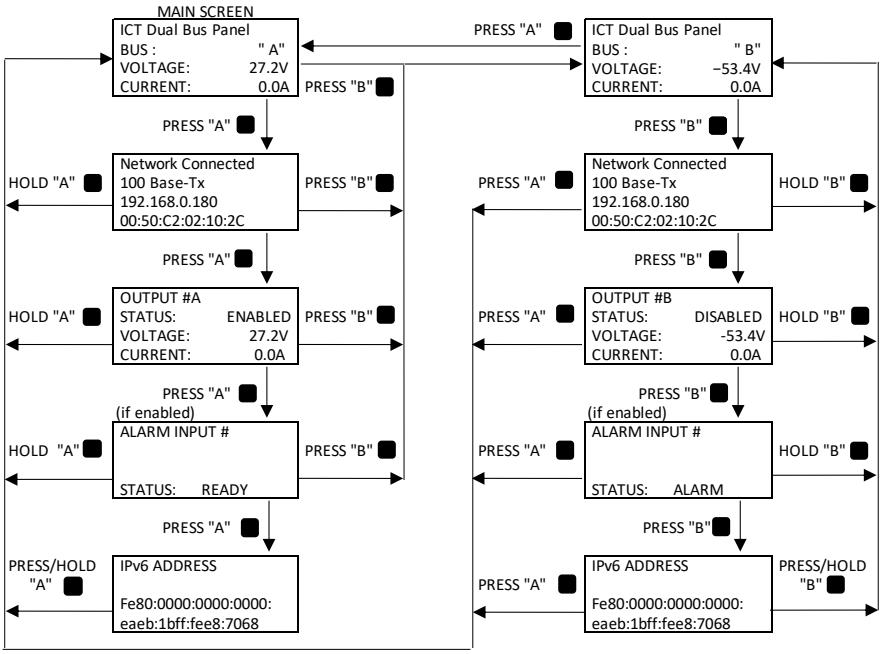


Figure 7. Menu Structure

NOTE: While navigating using the A button, pressing B will take the user to the Bus B main screen. Similarly, pressing A while navigating using the B button will take the user to the Bus A main screen.

3.2.1 Main Screen

The main screen will show the name of the unit — user configurable through the graphic user interface (GUI); the bus being monitored (Bus A or Bus B); the bus voltage and polarity; and the total bus current.

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

- The bus voltage will blink if the voltage exceeds the undervoltage or overvoltage alarm thresholds.
- The total bus current will blink if the current exceeds the overcurrent alarm threshold.

```
ICT Dual Bus Panel
BUS:              "X"
VOLTAGE:        27.2V
CURRENT:         0.0A
```

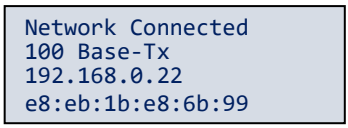
- Press either "Output Select" button to move to the Network Screen.

3.2.2 Network Screen

The Network screen will show the network status, connection type, IP address assigned to the unit, and the MAC address of the unit.

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

- The network status will display either "Network Connected" or "Network no Connected".
- The connection type will display either "100 Base-Tx" or "10 Base-Tx".



- Press either "Output Select" button to move to the Output Screen for that bus.

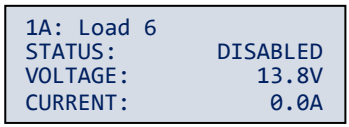
3.2.3 Output Screen (1A to 10A or 1B to 10B)

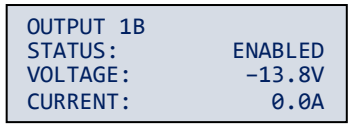
The Output screen will show the channel number and name of the load (inputted by the user), channel output status, channel output voltage, and channel output current. Each output channel may be given a unique name to describe the actual load connected using the Output Setup section of the GUI (see Section 4.6).

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

- The channel output status will display "ENABLED", "DISABLED" to indicate internal relay state or "FUSE OPEN" if the overcurrent device for the channel is blown.
- The channel output voltage will blink if it exceeds the overvoltage or undervoltage alarm thresholds.
- The channel output current will blink if it exceeds the overcurrent or undercurrent alarm threshold for that channel.

NOTE: "FUSE OPEN" only displays if a fuse is installed, and the "Ignore Fuse Status" is not enabled in Section 4.6.





■ Press either "Output Select" button to scroll through the output screens before moving to the Site Alarm Input Screen.

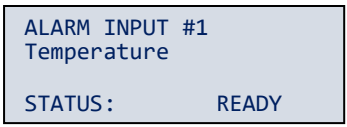
3.2.4 Site Alarm Input Screen (1 to 5)

The Site Alarm Input screen will show the status of the external site monitoring sensors. The screen will show the alarm input number (1 to 5), name of the alarm (inputted by the user) and the alarm status.

The alarm screens are displayed only if the alarm input has been enabled using the Alarm Setup section of the GUI (see Section 4.9).

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

- The alarm status will display "ALARM" if the alarm is triggered.
- The alarm status will display "READY" when the alarm is not triggered.



■ Press either "Output Select" button to scroll through the alarm screens before going back to the Main Screen.

3.2.5 IPv6 Address Screen

The IPv6 Address Screen will show the IPv6 addresses assigned to the unit.

■ Press either "Output Select" button to scroll through the IPv6 address screens (if multiple addresses are assigned) before going back to the Main Screen.

3.3 Password Reset

3.3.1 Admin Password Reset

Reset the Administrator password, the network, and web server settings to the original factory default values by doing the following on the front display panel (the standard user password and other settings are not affected):

1. Press and hold either "Output Select" button on the front panel for approximately 20 seconds until "Resetting" is shown on the front panel display.

2. Release the button.

3. Press and release one of the "Output Select" buttons once to view the Network Status screen on the LCD. The factory default IP address for the unit will be displayed.

3.3.2 User Passwords Reset

The unit may be restored to factory settings, including all passwords through the GUI (see Section 4.11).

3.3.3 User Password Maintenance

Configure user passwords by following Section 4.10.

3.4 Status Indicators and Alarms

The Bus Alarm LEDs on the front panel and the form-C Bus Alarm contacts on the rear panel are used to indicate an alarm condition.

Table 5. Distribution Unit Alarms (cont'd on next page)

Alarm	Trigger Condition	Channel Output	Bus Alarm LED[1]	Bus Alarm Contact[1]	Send E-mail
Fuse Open	Fuse is installed but blown	Off	On	On	Yes
Bus Undervoltage	Bus voltage drops below undervoltage threshold	No change	On	On	Yes
Bus Overvoltage	Bus voltage rises above the overvoltage threshold	No change	On	On	Yes
Bus Overcurrent	Bus current exceeds the overcurrent threshold (default 100 amps)	No change	On	On	Yes

Alarm	Trigger Condition	Channel Output	Bus Alarm LED[1]	Bus Alarm Contact1	Send E-mail
Output Overcurrent	Channel output current exceeds overcurrent threshold	Off[2]	On	On	Yes
No power to Unit	Loss of bus input power source	Off	Off	On	No
Site Alarm Input	Alarm on any external input	No change	On	On[3]	Yes

[1] The Bus Alarm LED and Bus Alarm contact are enabled for Fuse alarms as the factory default setting; all other alarms must be enabled in the appropriate setup page of the GUI by selecting the "Activate Alarm Form-C Contact" check box for each alarm.
[2] The channel may be user configured to disable the output for an Overcurrent Alarm.
[3] Use the GUI to configure each alarm input to trigger either Bus A, B or both alarm contacts.

The unit may also be configured to send an alarm e-mail to multiple user e-mail addresses for any of the alarm conditions (see Section 4.9) (no e-mail will be sent if power is disconnected from the unit, due to loss of network control).

4.0 OPERATION: GRAPHICAL USER INTERFACE

Connect to the Distribution Series 3 via Ethernet for full remote monitoring and control using any standard web browser on a network connected computer or phone. No additional software is required.

4.1 Log In/Log Out

1. Connect to the Distribution Series 3 by entering the IP address of the unit in the location/address field of the browser as shown:

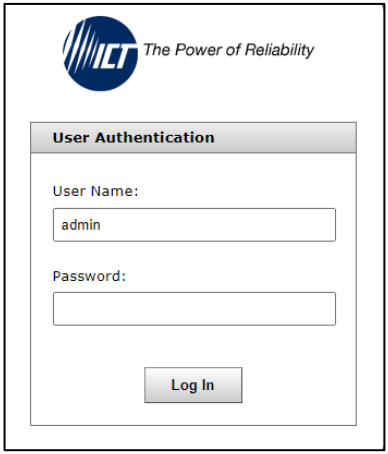
The default IP address of the unit is "192.168.0.180", but any unit connected to a network with a DHCP server will be assigned a different IP address automatically. To find the assigned address use the front display screen on the unit and navigate to the Network Status screen (see Section 3.2.2).

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 Distribution Series 3, 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 4.7).

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.

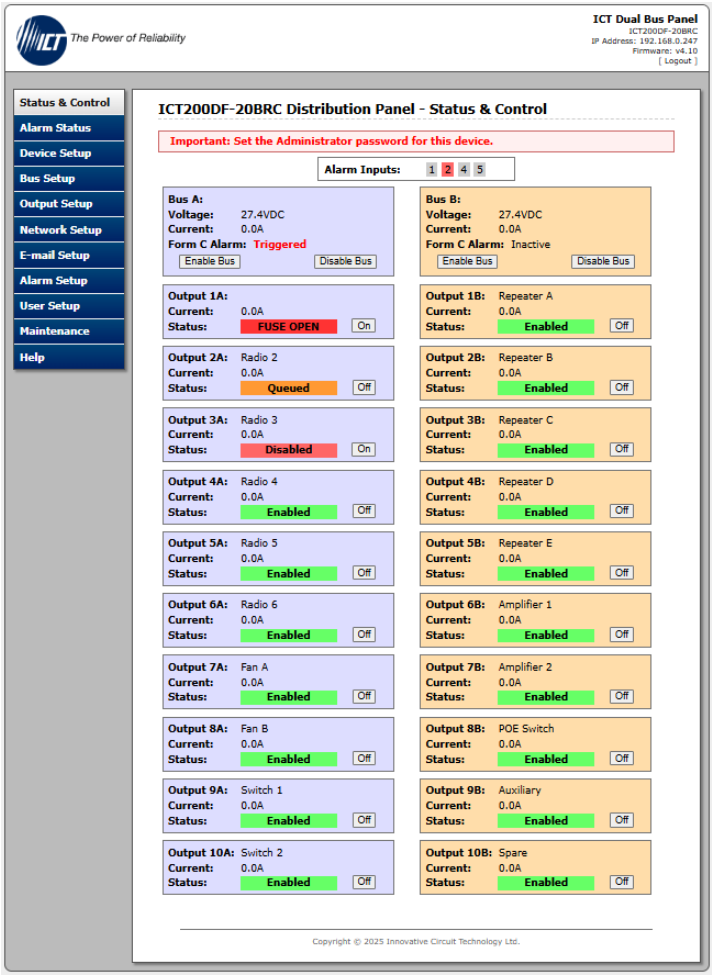


To log out of the ICT Distribution Series 3 Graphical User Interface (GUI), click the Logout link on the header. The system will also automatically log off the user after 20 minutes of inactivity.

4.2 Status & Control

Once successfully logged in, the page of the Status & Control tab will be shown in the browser. This tab provides the operating status of the unit.

All tabs have the same header that displays the Site Name, model number, IP address, and firmware version number of the unit. Click the ICT logo to visit the ICT website.



Alarm Inputs

Shows the status of any of the five Input Alarms that have been enabled (see Section 4.9). Will show grey if inactive or red if an alarm is active. An alarm input indicator box will not be displayed if the alarm is not enabled.

Bus Status

Bus x: Shows name of each bus if one was assigned.

Voltage: Shows output DC voltage on this bus. This value does specify polarity.

Current: Shows total amps being supplied by this bus.

Form C Alarm: Shows whether the unit is broadcasting a form-C alarm for that bus (Triggered or Inactive).

Enable Bus Buttons: Use these to close the ten channel relays on each bus, applying power to all external loads. The outputs will be enabled in a timed sequence if the "power-on sequencing" has been enabled on the Device Setup page (see Section 4.4).

Disable Bus Buttons: Use these to open the ten channel relays on that bus, disabling power to external loads on the bus.

Output Status

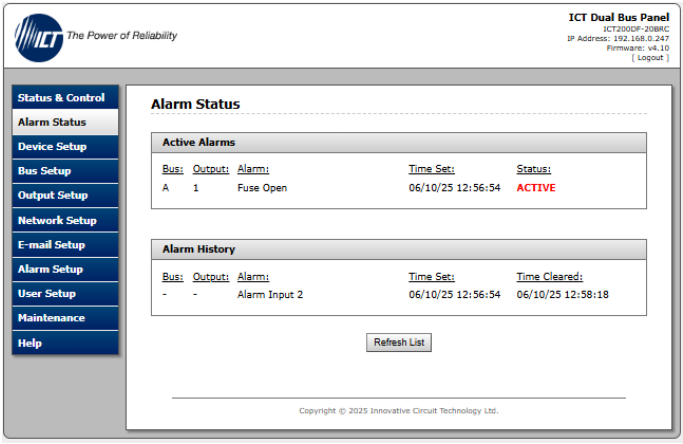
Each output on the unit will be displayed with name and status (Enabled, Disabled, FUSE OPEN, Queued). A green "Enabled" indicates that the internal electronic relay on that output channel is closed or turned on. A red "Disabled" indicates that the internal electronic relay is open or turned off. A red "FUSE OPEN" indicates that the fuse is installed but blown. An orange "Queued" indicates that the output is in the power-cycling state.

NOTE: "FUSE OPEN" only displays if a fuse is installed, and the "Ignore Fuse Status" is not enabled in Section 4.6.

Select the "On" or "Off" buttons to turn the output on or off. The default setting is Enabled.

4.3 Alarm Status

Use this tab to monitor all active alarms and up to 100 historic alarms. The history will be cleared after the unit is rebooted.

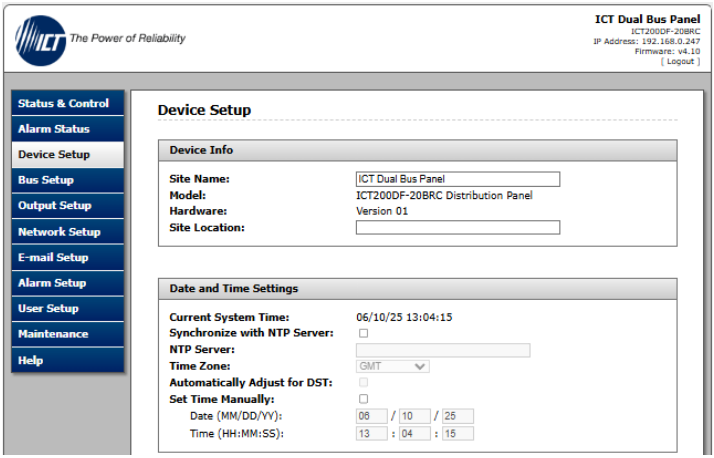


Active Alarms
Shows the bus and output that the alarm is on; the name of the alarm; the time that the alarm started and the status of the alarm (ACTIVE).

Alarm History
Shows the bus and output that the alarm is on; the name of the alarm; the time that the alarm started; and the time that the alarm cleared.

4.4 Device Setup

Use this tab to configure the unit's name, set the date and time and enable the watchdog timer and data logging features.



Device Info

Site Name: Enter a descriptive name for the system. This name will be displayed in the header and used in all e-mail messages. This field is limited to 32 characters.

Model: Shows the model number of the unit.

Hardware: Shows the hardware version of the unit.

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

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 Disabled.

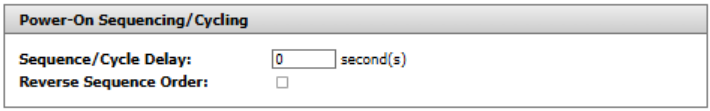
NTP Server: Set an NTP server address here (i.e., time.nist.gov) to automatically load network time. This field is limited to 48 characters.

Time Zone: Set the time zone this 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 an NTP Server. The default is Disabled.

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

Power-On Sequencing/Cycling



Sequence/Cycle Delay: Set the time in seconds (0–60 seconds) that will be used as the delay between energizing outputs. This will affect all outputs power cycled within the GUI – it will not affect outputs during initial device startup. Set to 0 to disable. Use this feature to allow a delay between energizing loads to reduce inrush current. The default setting is 0 (Disabled).

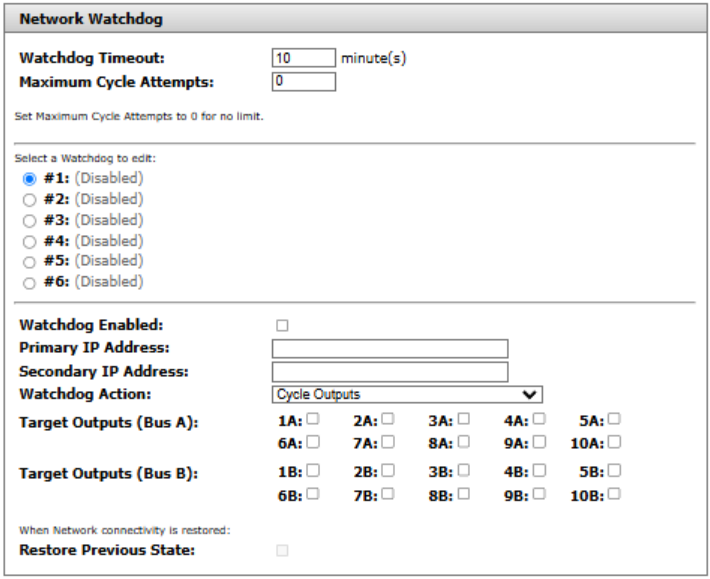
The "Sequence Delay" time will also be used as the "Power Cycling" time delay for each output that has the "Power Cycling" feature enabled on the "Output Setup" page (see Section 4.6).

Reverse Sequence Order: Select this checkbox to cause the power-on sequence to run in reverse order with output 10 on first, ending with output 1, when the "Enable Bus" button is clicked on the Status & Control page.

Network Watchdog

The network watchdog will cycle power output on loss of communications. Use this to reset network routers or other devices that may require rebooting to re-establish communications with the unit. The default is Disabled.

Watchdog Timeout: Set a time in minutes (1–80 minutes) for the unit to wait with no ping response from either IP address before initiating the watchdog action. Ensure this time is greater than the normal start-up time for the network hardware to prevent nuisance power cycle events at system start up. The default is 10 minutes.



Maximum Cycle Attempts: This setting will limit the maximum number of times the unit can attempt to cycle power to the output(s). If network connectivity is restored the attempts counter is reset. Rebooting the unit will also reset the counter. Set Maximum Cycle Attempts to zero for no limit. The default is 0.

Select a Watchdog to edit: Select one of the six independent watchdogs to configure. Each watchdog, if enabled, will cause the unit to periodically ping up to two remote IP addresses to verify network connection status. If there is no response from either address, the unit will perform a Watchdog Action as configured below. This feature is useful for re-booting a router or other network device that is powered by one of the distribution panel outputs, to help recover the network IP connection when one of these devices becomes unresponsive.

Watchdog Actions can include cycling power, enabling or disabling selected outputs, or rebooting the entire unit.

Watchdog Enabled: Select this checkbox to enable the selected network watchdog. The default is Disabled.

Primary IP Address: Set a primary IP address for the selected watchdog to monitor. If left blank the unit will monitor the Gateway IP address listed in the Network Setup page.

Secondary IP Address: Set an optional secondary IP address for the unit to monitor to verify network status.

NOTE: The Network Watchdog will only trigger if both the Primary and Secondary IP addresses fail to respond.

Watchdog Action: Sets action to be taken after the Network Watchdog triggers. The default setting is "Cycle Outputs". Select one of the following:

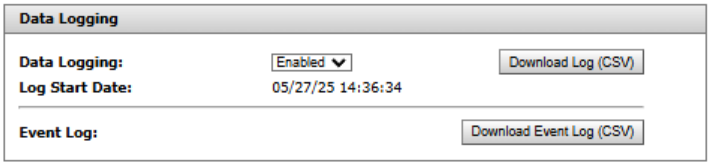
- **Cycle Outputs:** This will cycle the selected target outputs when the Network Watchdog triggers. A delay time must be entered in the "Sequence/Cycle Delay" field for this function to work. Power for a cycled channel will be held in the off state for the duration set by the Sequence/Cycle delay time, then will be turned back on.
- **Enable Outputs:** This will turn the selected target outputs on when the Network Watchdog triggers.
- **Disable Outputs:** This will turn the selected target outputs off when the Network Watchdog triggers.
- **Reset Distribution Panel + Cycle Outputs:** When the Network Watchdog triggers, this will perform a reboot of the Distribution Panel in addition to cycling power to any selected target outputs. A delay time must be entered in the "Sequence/Cycle Delay" field to cycle the target outputs.

Target Outputs: Select which output(s) to target when the Network Watchdog triggers.

NOTE: If Output Load-Shedding is enabled on any of the selected Target Outputs, the outputs will not be enabled by the Network Watchdog while a Load-Shedding alarm is active.

Restore Previous State: Select this checkbox to restore the configured target outputs back to their previous state after network connectivity is restored. This setting is only available if the Watchdog Action has been set to either "Enable Outputs" or "Disable Outputs".

Data Logging



Data Logging: Set to "Enabled" to enable data logging. This will keep a running record of the bus voltage, bus current, channel output currents, fuse status, and alarm inputs, 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.

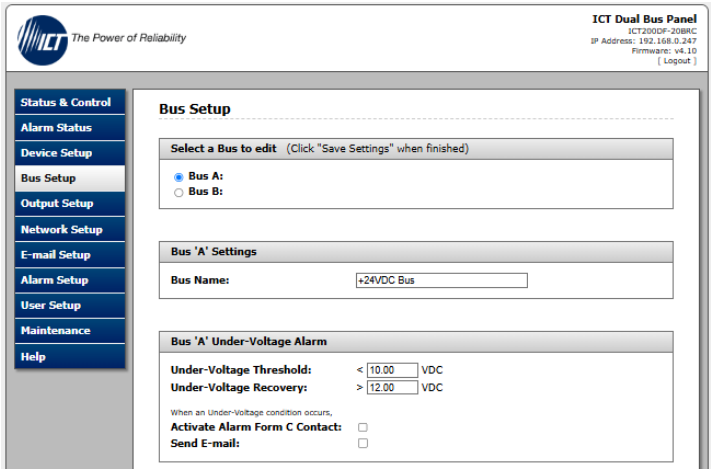
NOTICE

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 Bus Setup

Use this tab to configure each bus.



Select a Bus to edit

Select "Bus A" or "Bus B" to call up the settings for that bus.

Bus "A/B" Settings

Bus Name: Set a descriptive name for the selected bus if desired. This field is limited to 16 characters.

Bus "A/B" Under-Voltage Alarm

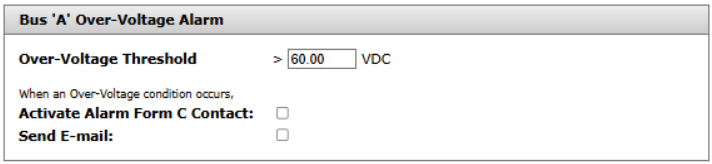
Under-Voltage Threshold: Set the voltage (0.00–60.00 VDC) that will trigger an undervoltage alarm on this bus. Bus voltage dropping below this level will immediately trigger a bus undervoltage alarm. The default setting is 10.00 VDC.

Under-Voltage Recovery: Set the voltage (0.50–60.50 VDC) that will clear the alarm on this bus. Bus voltage rising above this level will immediately clear the alarm. The default setting is 12.00 VDC.

Activate Alarm Form C Contact: Select this checkbox for the Alarm relay to trigger for an undervoltage condition. The default setting is Disabled.

Send E-mail: Select this checkbox to have a Bus Under-Voltage alarm e-mail sent to the e-mail addresses set up on the "E-mail Setup" page (see Section 4.8). The default setting is Disabled.

Bus "A/B" Over-Voltage Alarm

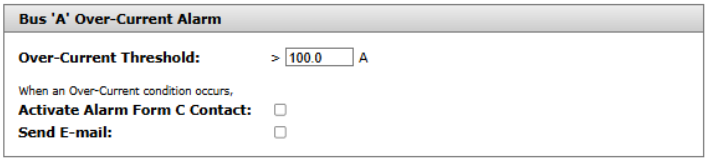


Over-Voltage Threshold: Set the voltage (1.00–60.00 VDC) that will trigger an overvoltage alarm on this bus. Bus voltage rising above this level will immediately trigger a Bus Over Voltage alarm. Bus voltage under this threshold will clear the alarm. The default setting is 60.00 VDC.

Activate Alarm Form C Contact: Select this checkbox for the Alarm relay to trigger for an overvoltage condition. The default setting is Disabled.

Send E-mail: Select this checkbox to have a Bus Over-Voltage alarm e-mail sent to the e-mail addresses set up on the "E-mail Setup" page (see Section 4.8). The default setting is Disabled.

Bus "A/B" Over-Current Alarm



Over-Current Threshold: Set the current (1.0–100.0 A) that will trigger an overcurrent alarm on this bus. Bus current above this level for at least 5 seconds will trigger the Over-Current Alarm. The default setting is 100.0 A.

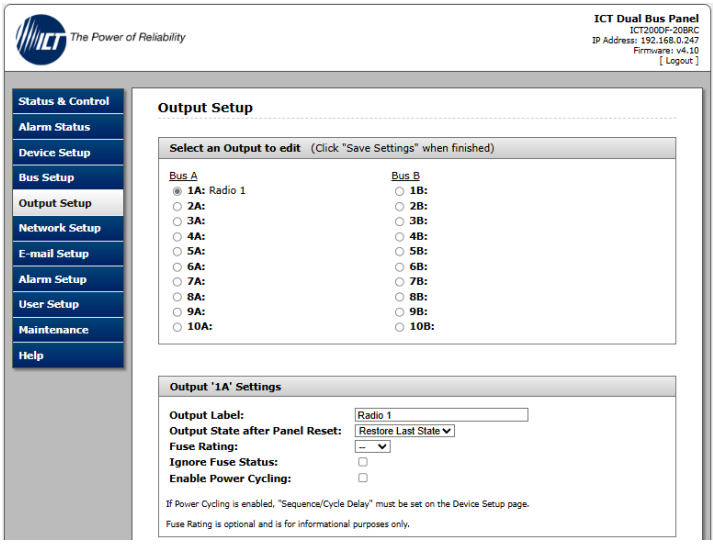
Activate Alarm Form C Contact: Select this checkbox to have Alarm relay trigger for an overcurrent condition. The default setting is Disabled.

Send E-mail: Selectt this checkbox to have a Bus Over-Current alarm e-mail sent to the e-mail addresses set up on the "E-mail Setup" page (see Section 4.8). The default setting is Disabled.

NOTE: Save Settings to enable any changes made.

4.6 Output Setup

Use this tab to configure the settings for each output channel on Bus A and Bus B.



Select an Output to edit

Select the output to be edited in this section. Make any required changes, and then click on the "Save Settings" button at the bottom of the page to save any edits.

Output Settings

Output Label: Enter a descriptive label for the selected output channel. The default setting is blank. This field is limited to 16 characters.

Output State after Panel Reset: Sets the state for the output after an input power failure, or soft reset of the panel. The default setting is Restore Last State. Select one of the following:

- **Restore Last State:** This will return the output relay to the state prior to the reset event (default).
- **Enable Output:** This will turn the output on, regardless of its previous state.
- **Disable Output:** This will turn the output off, regardless of its previous state.

Fuse Rating: Select the current rating of the fuse installed in the output channel. This field is optional and is for informational purposes only.

Ignore Fuse Status: Select to disable alarms from this output. Will prevent false alarms on an unused channel. The default setting is Disabled.

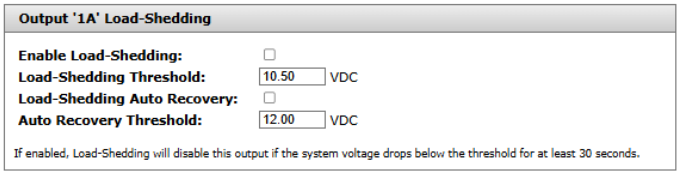
Enable Power Cycling: Select this checkbox to enable output power cycling for the selected output. Enabled outputs will automatically be re-enabled after the "Sequence/Cycle Delay" time whenever the output is disabled using the "Output Off" button on the "Status & Control" page, or when the Network Watchdog is triggered. This feature is useful for remotely resetting power to a router or other hardware required for the network connectivity of the unit. The default setting is Disabled.

NOTE: The "Sequence/Cycle Delay" time must be set on the "Device Setup" page with duration long enough for the connected network hardware to fully reset for this function to be effective. Multiple outputs that are disabled using Power Cycling will be re-enabled in sequence from output #1 to output #10.

Output Load-Shedding

Load shedding will disable specified outputs when the bus voltage reaches a preset threshold for at least 30 seconds. This will save battery capacity for mission-critical load devices by turning off non-critical load devices. Loads

will be reconnected if Load-Shedding Auto Recovery is enabled, and the bus voltage exceeds the Auto Recovery Threshold for 60 seconds.



Enable Load-Shedding: Select this checkbox to enable load-shedding on this output. The default setting is Disabled.

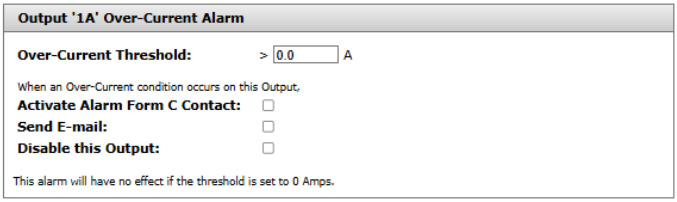
Load-Shedding Threshold: Set the voltage (1.00–60.00 VDC) at which the selected output will be disabled. The default setting is 10.50 VDC.

Load-Shedding Auto Recovery: Select this checkbox to allow the output to be automatically reconnected when the bus voltage is above the "Auto Recovery Threshold" for 60 seconds. The default setting is Disabled.

Auto Recovery Threshold: Set the voltage (1.50–60.50 VDC) at which the selected output will automatically be reconnected. This value must be at least 0.5 V above the Load-Shedding Threshold voltage. The default setting is 12.00 VDC.

NOTE: Outputs that have been disabled on the Status & Control page will reconnect automatically if "Load-Shedding Auto Recovery" is enabled for that output. To prevent this, ensure that "Load-Shedding Auto Recovery" is not enabled.

Output Over-Current Alarm



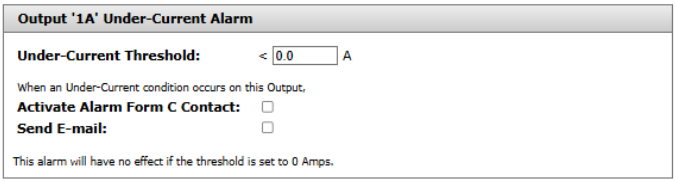
Over-Current Threshold: Set the current (0–26.3 A) that will trigger an overcurrent alarm on this output. Output current above this level for at least 5 seconds will trigger the Over-Current Alarm. Disable this alarm by setting the threshold to 0 amps. The default setting is 0.0 A (Disabled).

Activate Alarm Form C Contact: Select this checkbox for the Alarm relay to trigger for an overcurrent condition. The default setting is Disabled.

Send E-mail: Select this checkbox to have a Bus Over-Current alarm e-mail sent to the e-mail addresses set up on the "E-mail Setup" page (see Section 4.8). The default setting is Disabled.

Disable this Output: Select this checkbox to disable the output if an overcurrent alarm occurs. This function may be used as an electronic circuit breaker which can then be remotely reset by clicking the "Output ON" button on the Status & Control page. The default setting is Disabled.

Output Under-Current Alarm

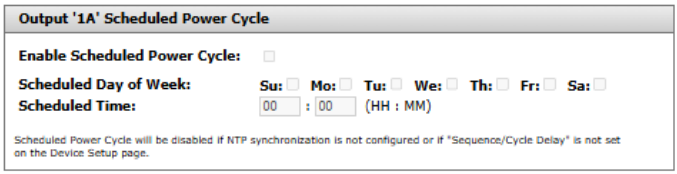


Under-Current Threshold: Set the current (1.0–26.3 A) that will trigger an undercurrent alarm on this output. Output current below this level for at least 5 seconds will trigger the Under-Current Alarm. Disable this alarm by setting the threshold to 0 amps. The default setting is 0.0 A (Disabled).

Activate Alarm Form C Contact: Select the checkbox for the Alarm relay to trigger for an undercurrent condition. The default setting is Disabled.

Send E-mail: Select the checkbox to have a Bus Under-Current alarm e-mail sent to the e-mail addresses set up on the "E-mail Setup" page (see Section 4.8). The default setting is Disabled.

Output Scheduled Power Cycle



Enable Scheduled Power Cycle: Select this checkbox to schedule a recurring power cycle of the output, which will reboot the equipment connected to the output channel. The default setting is Disabled.

A delay time must be entered in the "Sequence/Cycle Delay" field on the Device Setup page field for this function to work. Power for a cycled channel will be held in the off state for the duration set by the Sequence/Cycle delay time, then will be turned back on.

NOTE: NTP Time Synchronization must be enabled on the Device Setup page to enable scheduled power cycles.

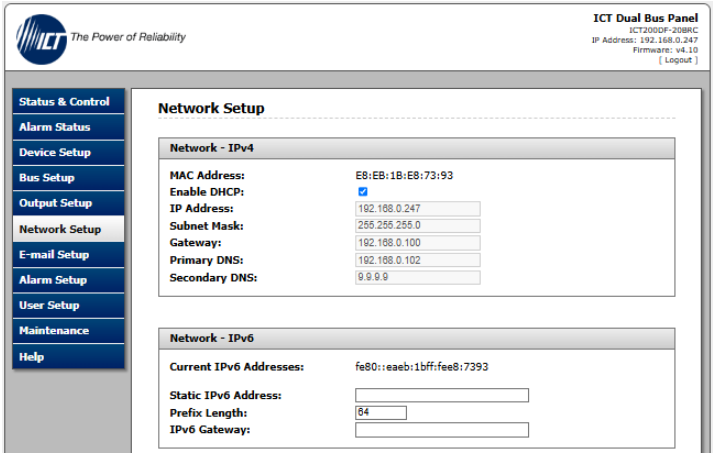
Scheduled Day of Week: Set the day of the week that the scheduled recurring power cycle should occur. Multiple days can be selected at once.

Scheduled Time: Set the time of day that the scheduled recurring power cycle should occur.

NOTE: Save Settings for each channel and then repeat the setup process for all output channels to be used, or Copy Settings to All.

4.7 Network Setup

Use this tab to configure the unit's network settings.



NOTICE

Saving any changes to the network settings will cause the unit's control board to re-start, output power will be unaffected.

Network – IPv4

MAC Address: Shows the MAC address assigned to the unit. It is also shown on the Front Display's Network screen.

Enable DHCP: Set the 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

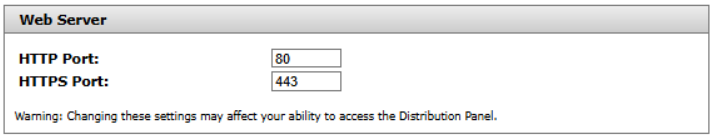
Current IPv6 Addresses: Shows the IPv6 addresses assigned to the unit. An IPv6 Link-Local address will be configured automatically. Addresses can also be configured by the router through Router Advertisements.

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").

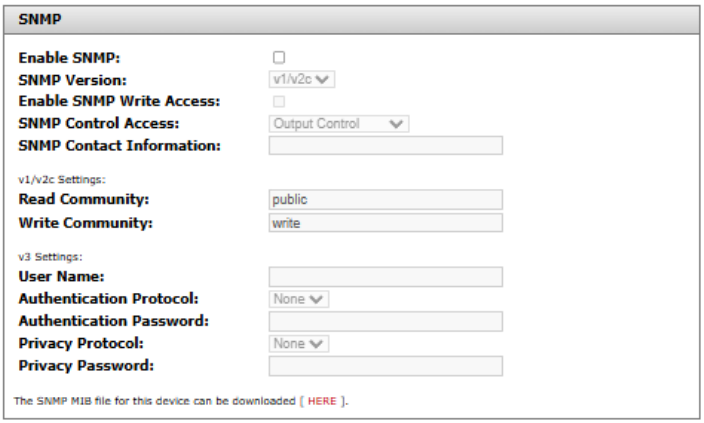
Setting the HTTP Port to zero will disable HTTP access to the unit.

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 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 DC power to individual outputs through SNMP. 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)

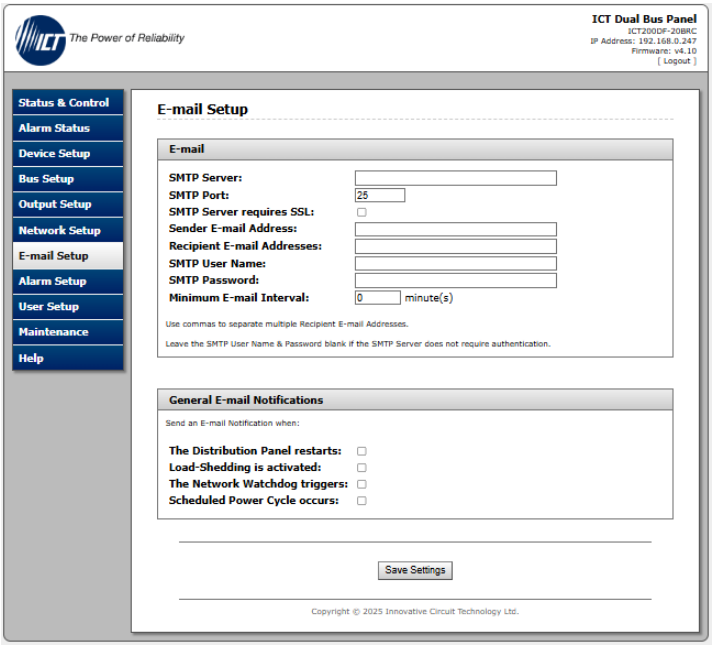
Privacy Password: If a privacy protocol is selected, set the privacy password for SNMPv3 traps.

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

NOTE: Save Settings to enable any changes made.

4.8 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 6.5).

SMTP User Name: Set an SMTP username 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 unintended flood of e-mail alarm notifications that could occur when an alarm limit is incorrectly configured, for example. The default setting is 0.

General E-mail Notifications

Set these options to receive an e-mail when one or more of these events occurs:

The Distribution Panel restarts: Select this checkbox to receive an e-mail notification when the unit restarts after a power failure or a soft reset.

Load-Shedding is activated: Select this checkbox to receive an e-mail notification when any of the outputs are disabled or enabled due the voltage crossing one of the load-shed settings configured on the Output Setup page (see Section 4.6).

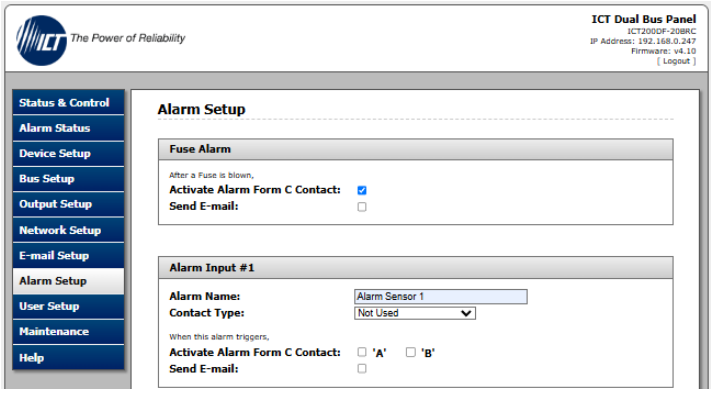
The Network Watchdog triggers: Select this checkbox to receive an e-mail notification when the Network Watchdog triggers due to a loss of the network connection (see Section 4.4).

Scheduled Power Cycle occurs: Select this checkbox to receive an e-mail notification after a scheduled power cycle of an output has occurred.

NOTE: Save Settings to enable any changes made.

4.9 Alarm Setup

Use this tab to control the settings for the alarms.



Fuse Alarm

Activate Alarm Form C Contact: Set the checkbox to have the bus A alarm output trigger for any blown or open fuse on channels 1A to 10A and have the bus B alarm output trigger for any blown or open fuse on channels 1B to 10B. The default setting is Enabled.

NOTE: Bus A/B alarm output will not be triggered for any blown or open fuse if the "Ignore Fuse Status" is enabled.

Send E-mail: Select this checkbox to have an e-mail sent to the e-mail addresses set up on the E-mail Setup page when a fuse is blown or open on any of the output channels (see Section 4.8). The default is Disabled.

Alarm Input #

Alarm Name: Set a meaningful name to suit the installation (these will be used in e-mail and front panel alarm messages).

Contact Type: Set the form-C behavior for each device to be monitored (Not Used, Normally Open, Normally Closed). Select Not Used for all unused alarm input channels. The default setting is Not Used.

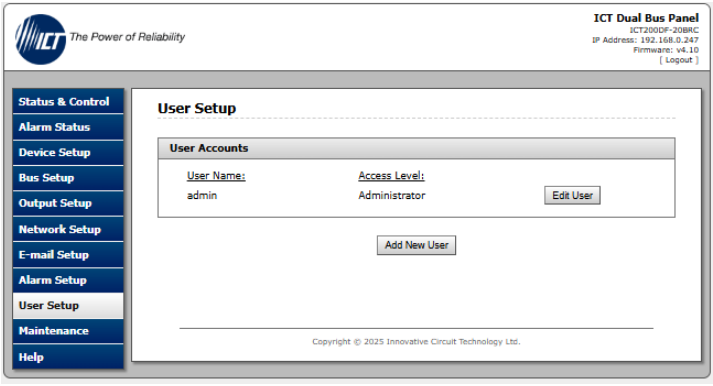
Activate Alarm Form C Contact: Select this checkbox to have both Bus Alarm relay outputs indicate a fault for an alarm condition on that input. The default setting is Disabled.

Send E-mail: Select this checkbox to have an e-mail sent to the e-mail addresses set up on the E-mail Setup page when one of the enabled alarm inputs is triggered, stating which input was affected (see Section 4.8). The default setting is Disabled.

NOTE: Save Settings to enable any changes made.

4.10 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.



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

NOTICE

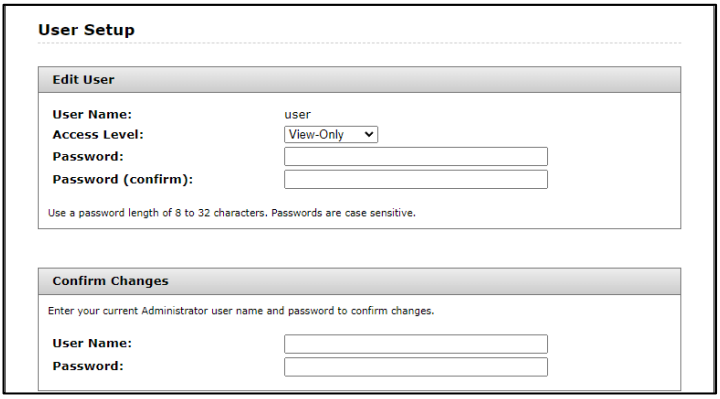
Record the new password(s) for future access. If the Administrator password is lost the unit must be reset to return the password to the blank default setting, causing loss of all other user settings (see Section 3.3).

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.



User Name: Shows the username.

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 password for the chosen user. This field is limited to 32 characters.

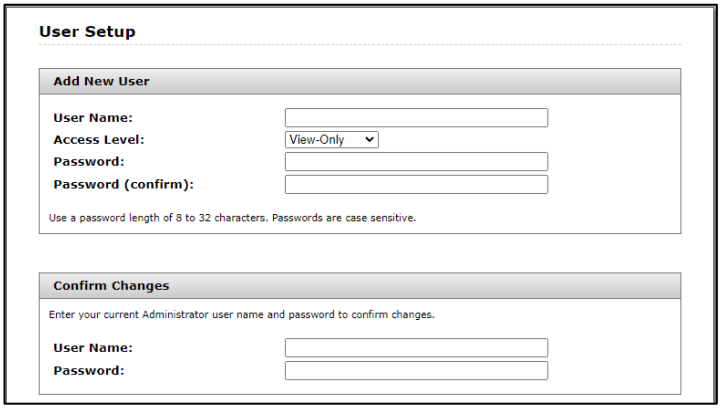
Password (confirm): Re-enter the new password to confirm the entry.

Confirm Changes

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

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

Add New User



User Name: Set username.

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. This field is limited to 32 characters.

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

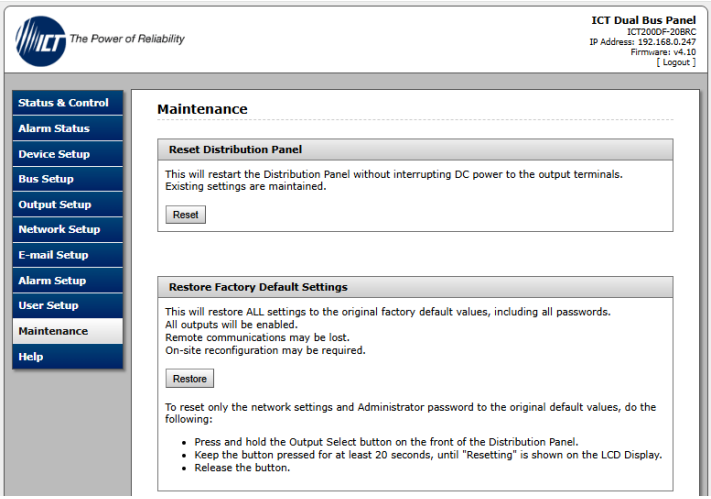
Confirm Changes

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

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

4.11 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 Distribution Panel

Select the "Reset" button to restart the unit's control board. The channel output states will be restored according to the "Output State after Panel Reset" setting for each output on the "Output Setup" page (see Section 4.6). All other settings are maintained during the reset. This will not affect the output power.

Restore Factory Default Settings

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

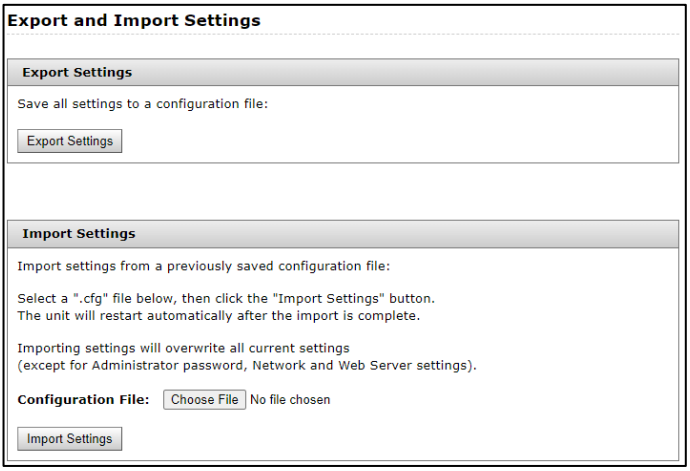
NOTICE

- Restoring the unit to Factory Default settings may cause loss of network communications due to loss of custom changes to any network settings.
- Restoring the unit to Factory Default settings will not affect the power output.

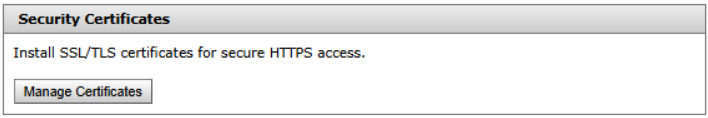
To reset only the network settings and Administrator password to the original default values, see Section 3.3.1.

Export and Import Settings

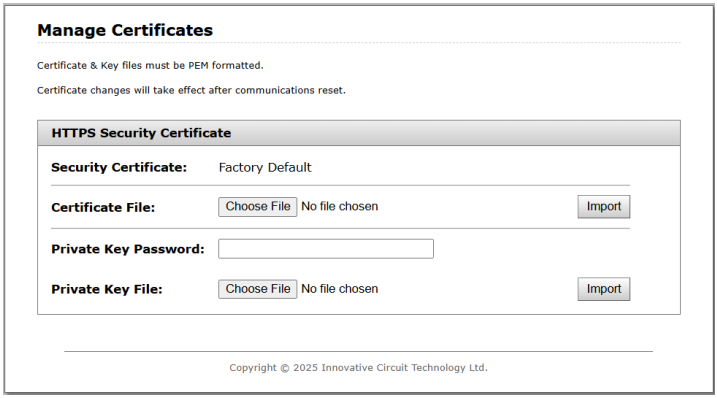
Select the "Manage Settings" button to access the Export and Import Settings page shown below. Use this page to export all system settings to an encrypted .cfg file which may be imported into other units to speed configuration. The export does not include Administrator password, Network nor Web Server settings. Use the Import Settings section on other systems to locate this file and then import it to any other Distribution Series 3.



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.

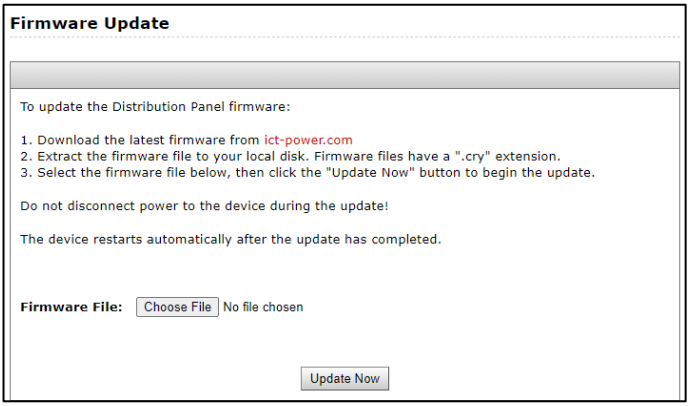


After a certificate has been successfully imported, a "Delete" button will be available which will erase the imported certificate.

The Distribution Panel must be restarted before any certificate changes will take effect.

Firmware Update

Download the latest Distribution Series 3 firmware file from the ICT website (ict-power.com/resources/product-firmware/) 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 unit by clicking the "Choose File" button to link the downloaded firmware then click the "Update Now" button. Do not disconnect power to the device during the update process. The device restarts automatically after the update has been completed. The channel output states will be restored according to the "Output State after Panel Reset" setting for each output on the "Output Setup" page (see Section 4.6). All other settings are maintained during the reset. This will not affect the output power.

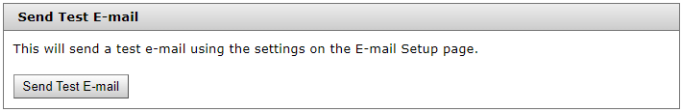


NOTICE

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

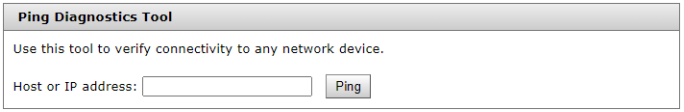
Send Test E-mail

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 4.8).



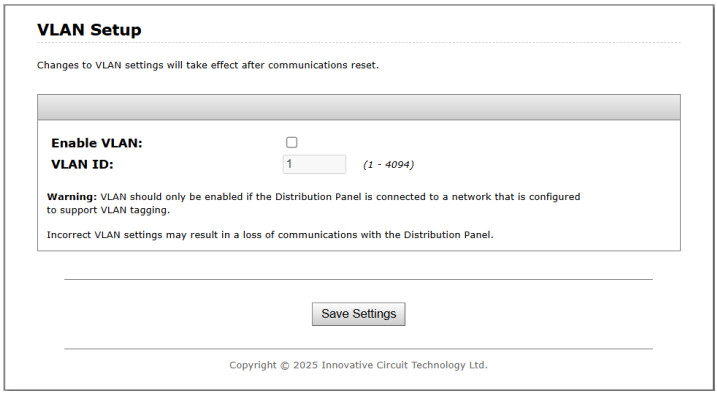
Ping Diagnostics Tool

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.



VLAN Setup

Select the "Configure VLAN" button to access the VLAN Setup page shown below.



Enable VLAN: Select this checkbox to enable VLAN tagging on the network interface. The default setting is Disabled.

VLAN ID: Enter the VLAN ID number (1–4094).

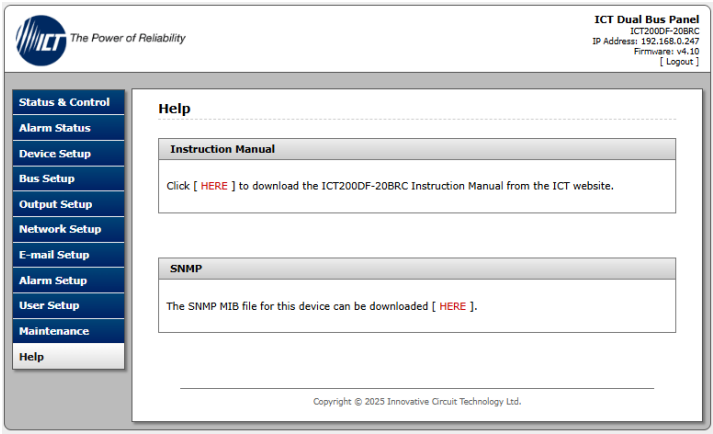
NOTICE

VLAN should only be enabled if the Distribution Panel is connected to a network that is configured to support VLAN tagging. Incorrect VLAN settings may result in a loss of communication with the Distribution Panel.

NOTE: The Distribution Panel must be restarted before any VLAN configuration changes will take effect.

4.12 Help

This tab has helpful links to ICT's website.



Instruction Manual
Click the "HERE" button to download the ICT Distribution Series 3 Dual Bus Instruction Manual from ICT's website.

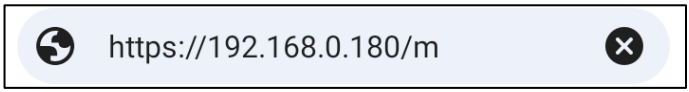
SNMP
Click the "HERE" button to download the SNMP MIB file.

5.0 OPERATION: MOBILE VERSION

Use the mobile version of the "Status & Control" page to monitor and control the unit with a smartphone web browser.

5.1 Log In/Log Out

1. Connect to the Distribution Series 3 by entering the IP address of the unit in the address field of the mobile browser, followed by "/m" (e.g., https://192.168.0.180/m) shown below.



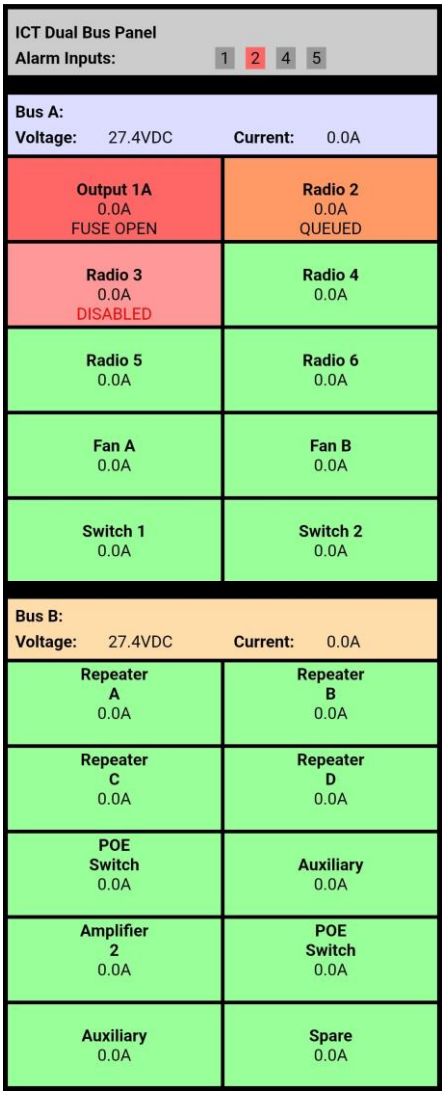
   For improved security, the user should normally use a HTTPS (secure) connection when accessing the unit over the Internet with the mobile web version or use a Virtual Private Network (VPN) connection.

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.

5.2 Status & Control

Once successfully logged in, the mobile version of the Status & Control page will be shown in the smartphone web browser.

The mobile web version page provides information on the bus voltage, bus current, input alarm status, and the status and current level of each of the bus output channels. Each individual output may be manually enabled or disabled by tapping on an output cell (if the user is logged in using the administrator account).



Site Name

Displays the name inputted in the Device Info section (see Section 4.4).

Alarm Inputs

Shows the status of any of the five Input Alarms for alarms that have been enabled (see Section 4.9). Will show grey if inactive or red if an alarm is active. An alarm input indicator box will not be displayed if the alarm is not enabled.

Bus Status

Shows the bus name inputted in the Bus Setup page, voltage and total amps being used by each bus.

Output Status

Output #x cells: Use these to toggle the internal relay for each channel, enabling or disabling the power to the load on that output. Each output on the unit will be displayed with name and status (green cell, red cell with "DISABLED", red cell with "FUSE OPEN", orange cell with "QUEUED"). A green cell indicates that the internal electronic relay on that output channel is closed or turned on. A red cell with "DISABLED" indicates that the internal electronic relay is open or turned off. A red cell with "FUSE OPEN" indicates that the fuse is blown. An orange cell with "QUEUED" indicates that the output is in the power-cycling state.

NOTE: "FUSE OPEN" only displays if a fuse is installed, and the "Ignore Fuse Status" is not enabled in Section 4.6.

6.0 FAQs

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

- Check the correct IP address for the unit by pressing an "Output Select" button on the front panel to view the Network Status screen on the LCD. The IP address may have been changed if DHCP is enabled.
- If the Network Status screen on the front display screen shows "Network Not Connected", check the network cable connections to the unit and the network.
- Ensure that an industry standard “crossover” type of network cable is used if directly connecting a computer to the unit, and a “straight-through” type of cable to connect the panel to a network.
- Ensure that the network card settings on the computer are configured for accessing the IP address of the unit. 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 4.7). See the Password Reset Section 4.11 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.
- If VLAN is enabled, check that the VLAN ID configured on the unit matches the VLAN ID set on the user's network. After any changes to the VLAN configuration, make sure to restart the distribution panel to have the changes take effect.

6.2 How do I reset the password?

See Section 3.3.

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

- See Section 4.8 E-MAIL SETUP.
- Verify that the "Send E-mail" check boxes 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 "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 "E-mail Setup" page 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.

6.4 How do I configure a router?

To set up the ICT Dual Bus Distribution Panel Series 3 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.

6.5 How do I receive text message alarm notifications?

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

On the "E-mail Setup" page of the GUI enter the address of the phone in the "Recipient E-mail Address" field. Example with an AT&T phone:

enter the recipient address "cellnumber@txt.att.net", replacing "cell number" with the 10-digit cell phone number.

Cell address formats for some common North American mobile phone providers:

AT&T	cellnumber@txt.att.net
Verizon	cellnumber@vtext.com
T-Mobile	cellnumber@tmomail.net
Virgin Mobile	cellnumber@vmobl.com
Bell Mobility	cellnumber@txt.bell.ca
Rogers	cellnumber@pcs.rogers.com
Telus	cellnumber@msg.telus.com
Virgin Mobile (Can)	cellnumber@vmobile.ca

NOTICE

Verify formatting with the mobile provider.

6.6 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 "Firmware Update" in Section 4.11.

NOTICE

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

6.7 How can I access the MIB file?

The MIB file can be downloaded from the ICT website: https://ict-power.com/resources/tools-utilities/. It can also be downloaded from within the GUI. There are links in the SNMP section of the Network Setup tab (see Section 4.7) and on the Help tab (see Section 4.12).

6.8 What type and maximum rating of fuse can be installed in the unit?

- Fuse type: ICT-GMT
- Fuse maximum rating: 20 amps

6.9 How do I properly wire the unit?

- See the quick install guide Section 2.3.
- See Sections 2.3–2.15 for more details.

6.10 How do I configure mixed polarity or voltage?

Use an isolated DC-DC converter to adjust the input voltage on one bus to suit the application requirements. See Section 2.14.

6.11 How do I log out of the GUI?

To log out of the ICT Distribution Series 3 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.

7.0 PRODUCT SPECIFICATIONS

7.1 Electrical Specifications

Table 6. Electrical Specifications

Parameters	Rating
Operating Voltage (POS or NEG ground)	20 to 60 VDC
Current Rating per Bus	100 A max
Outputs per Bus	10 (normally closed)
Max Output Rating	20 A peak (16 A continuous)[1]
Meter Accuracy, Voltage	Bus voltage readings +/−1%
Meter Accuracy, Current	Channel current readings +/− 3%
Power Consumption	< 52 W (all outputs disabled) < 6 W (all outputs enabled)
Network Communications	RJ45 10/100-T port (IPv4, IPv6, HTTP, HTTPS, SMTP, DNS, TCP, UDP, ICMP, DHCP, ARP, SNMP v1/v2c/v3)
Network Security	Password protection, SSL encryption for HTTPS and SMTP (TLS 1.3)

[1] In accordance with NEC Section 210.20(A).

7.2 Physical Specifications

Table 7. Physical Specifications

Parameters	Configuration
Outputs	Floating
Alarm Output	2x Form-C contact, 1 A, 60 VDC max
Input Connector	4x Dual 1/4-20 thread studs 5/8-in center-to-center, 50 in-lb. (5.6 N-m) max torque
Output Connector	2x 20-position cage clamp type 10–22 AWG, 5.22 in-lb. (0.59 N-m)
Alarm Output Connector	7-pin removable plug, cage clamp type 16–28 AWG
Alarm Input Connector	7-pin removable plug, cage clamp type 16–28 AWG
Operating Temperature	−20°C to +60°C (Derate max bus current by 2% per degree C above 50°C)
Storage Temperature Range	−40°C to +70°C
Humidity	Operating and Storage: 30–90% (non-condensing)
Cooling	Convection (no fan)
Heat Dissipation	178 BTU/hr (idle, all outputs disabled) 397 BTU/hr (100 A / bus; System Voltage: 55.2 VDC)

7.3 Regulatory Specifications

Table 8. Regulatory Compliance

Category	Certification
Safety, EMC-Emissions, EMC-Immunity, RoHS	RoHS. Designed to meet FCC CFR47 Part15/B, IEC 60950-1, CE.

7.4 Mechanical Specifications

Table 9. Dimension and Weight

Physical Property	Value
Dimension - L x W x H	9.4 x 19.0 x 1.7 in. (239 x 482 x 44 mm)
Weight	9.5 lbs. (4.3 kg)

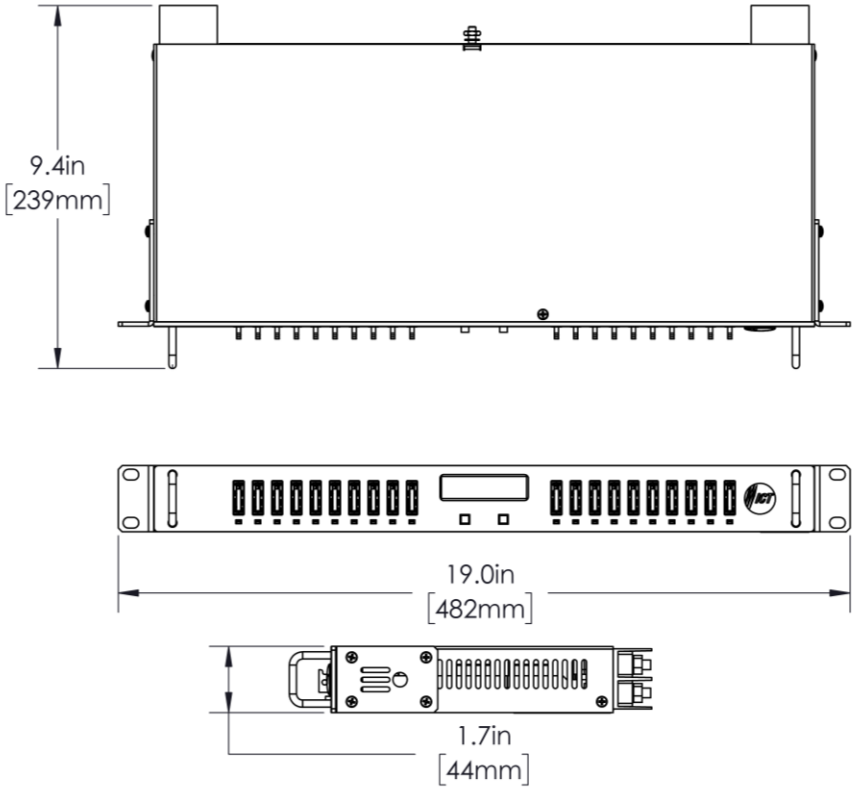


Figure 8. Dimensions

8.0 GLOSSARY

- 1RU — One Rack Unit; 1.75-inch (44.45 mm) of rack height
- A, amps — Amperes
- AES — Advanced Encryption Standard
- ANSI — American National Standards Institute
- AWG — American Wire Gauge
- BTU — British Thermal Unit
- CFR — Code of Federal Regulations
- CE — Conformité Européenne
- CSV — Comma-Separated Values
- DHCP — Dynamic Host Configuration Protocol
- DNS — Domain Name System
- EMC — Electromagnetic Compatibility
- FCC — Federal Communications Commission
- GUI — Graphical User Interface
- HTTPS — Hypertext Transfer Protocol Secure
- ICMP — Internet Control Message Protocol
- IEC — International Electrotechnical Commission
- ISO — International Organization for Standardization
- ISP — Internet Service Provider
- MAC — Media Access Control
- MIB — Management Information Base
- NEC — National Electrical Code
- NTP — Network Time Protocol
- OEM — Original Equipment Manufacturer
- RMA — Return Material Authorization
- RoHS — Restriction of Hazardous Substances
- SHA — Secure Hash Algorithms
- SMTP — Simple Mail Transfer Protocol
- SNMP — Simple Network Management Protocol
- TCP/IP — Transmission Control Protocol/Internet Protocol
- TLS — Transport Layer Security
- UDP — User Datagram Protocol
- V — Volts
- VDC — Volts, Direct Current
- VLAN — Virtual Local Area Network
- VPN — Virtual Private Network

Find the latest version of this manual here:

https://ict-power.com/product/ict200df-20brc

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