



Server Technology

Solutions for the Data Center Equipment Cabinet

Sentry

Cabinet Distribution Unit

- CDU84-Y-30932L

Installation and Operations Manual

**Instructions**

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**Dangerous Voltage**

This symbol is intended to alert the user to the presence of un-insulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

**Protective Grounding Terminal**

This symbol indicates a terminal that must be connected to earth ground prior to making any other connections to the equipment.

Life-Support Policy

As a general policy, Server Technology does not recommend the use of any of its products in the following situations:

- life-support applications where failure or malfunction of the Server Technology product can be reasonably expected to cause failure of the life-support device or to significantly affect its safety or effectiveness.
- direct patient care.

Server Technology will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to Server Technology that:

- the risks of injury or damage have been minimized,
- the customer assumes all such risks, and
- the liability of Server Technology is adequately protected under the circumstances.

The term life-support device includes but is not limited to neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief or other purposes), auto-transfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators (for adults or infants), anesthesia ventilators, infusion pumps, and any other devices designated as "critical" by the U.S. FDA.

Compliance

Units have been safety tested/certified to the following standards: USA and Canada to UL 60950:2003 and CAN/CSA 22.2 No. 60950-1-03, European Union to EN60950-1:2001.

This product is also designed for Norwegian IT power system with phase-to phase voltage 230V

USA Notification

Warning: Changes or modifications to these units not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment under FCC rules.

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

Canadian Notification

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Japanese Notification

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Chapter 1: Introduction

The Server Technology Inc. Sentry family of products provides easy, practical, and secure solutions for power distribution, power management and load-measurement for remote internetworking equipment and branch AC circuits.

The Server Technology **Cabinet Distribution Unit** provides simple power distribution with cumulative load and environmental measurement for environments without a requirement for remote power management.

Features and Benefits

Communication Access Modes

The Cabinet Distribution Units are equipped standard with a Serial RS-232 port and a 10/100 Base-T Ethernet port for in-band web browser (HTML) access.

Power Distribution & Remote Management

Cabinet Distribution Units distribute up to 28A of 100-120V and 208-240V AC power combined.

Load and Environmental Measurement

The Cabinet Distribution Unit load measurement feature eliminates guesswork by supplying the operating load per branch or phase in amperes. This allows on-site technicians to maximize the equipment installed and operated on a circuit without worry. Use of the circuit is maximized, while effectively allowing a 10% to 20% safety margin. Remote users also may access this information at any time from the user interface.

Additionally, the Cabinet Distribution Unit features an integrated Environmental Monitor for support of up to two temperature/humidity probes for monitoring of the equipment cabinet's physical environment.

User Interfaces and LEDs

Cabinet Distribution Unit series features two user interfaces: the HTML interface and the command line. For the on-site technician, LEDs on the Cabinet Distribution Unit indicate cumulative power loads for individual branches or phases.

Security

The Cabinet Distribution Unit ships with one predefined administrative user account. The administrator may create up to 128 user accounts, with individualized access to outlets and commands. All accounts support username and password protection. For configurations requiring multiple fully-privileged users, the Cabinet Distribution Unit allows the administrator to grant administrative privileges to other user accounts in the system.

Automatic Timeout

For added security, a user session will be automatically terminated after five minutes of inactivity; if a user is called away unexpectedly, an unprotected channel will not remain open indefinitely.

Technical Support

Server Technology understands that there are often questions when installing and/or using a new product. Free Technical Support is provided from 8:30 AM to 5:00 PM, Monday-Friday, Pacific Time. See *Technical Support* in Chapter 5: Appendices for more information.

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Quick Start Guide

The following instructions will help you quickly install and configure your Cabinet Distribution Unit for use in your data center equipment cabinet. For detailed information on each step, go to the page number listed to the right.

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2. Connect to the power source5
3. Connect the devices.....6
4. Connect the sensors.....6
5. Connect to the Cabinet Distribution Unit6
6. Configure the Cabinet Distribution Unit7
 - Login as the predefined Administrator (admin/admin)7
 - Create new administrative user account.....10
 - Configure location and Cabinet Distribution Unit names8
 - Configure sensor names8
 - Configure new user account(s)10
 - Remove the predefined Administrator10
7. Connect the Cabinet Distribution Unit to the network

Chapter 2: Installation

Before installing your Sentry Cabinet Distribution Unit (CDU), refer to the following lists to ensure that you have all the items shipped with the unit as well as all other items required for proper installation.

Standard Accessories

- Mounting hardware - two removable flanges with M4 screws
- Outlet retention clips, one per every two 208V outlets
- RJ45 to RJ45 crossover cable
- RJ45 to DB9F serial port adapter (for connection to standard DB9M DTE serial port)

Optional Accessories

- Temperature/Humidity sensors

Additional Required Items

- Flathead and Phillip screwdrivers
- Screws, washers and nuts to attach the CDU to your rack

Equipment Overview

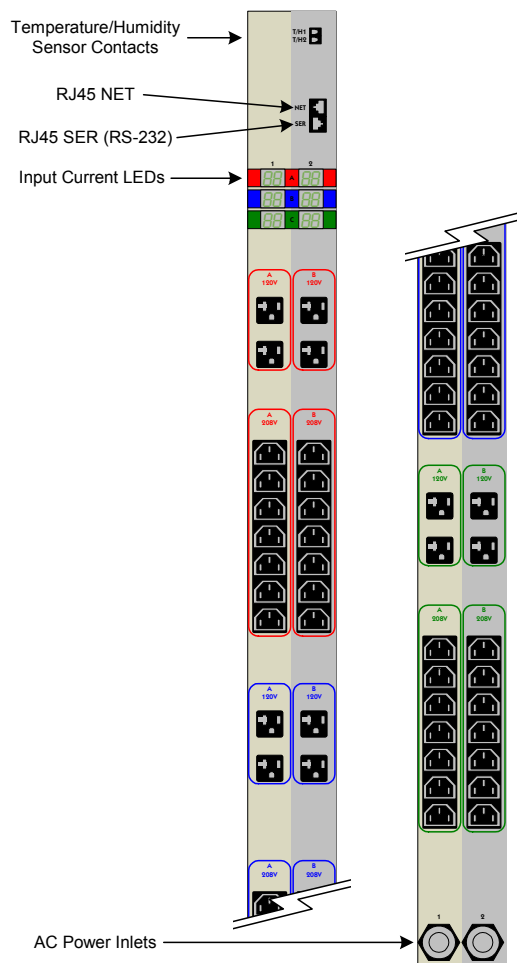





Figure 2.1 Cabinet Distribution Unit Views

- The Input Current LED(s) displays the current load for each infeed or electrical phase per infeed.
- Each Branch Circuit / electrical phase is color-coded for easy identification.
- The power inlet/cord(s) connects the CDU to the electrical power source.
- Two RJ45 connectors for Serial (RS-232) and Ethernet connection.
- Two mini RJ11 connectors for Temperature/Humidity sensors (one sensor provided).

Safety Precautions

This section contains important safety and regulatory information that should be reviewed before installing and using the Sentry Cabinet Distribution Unit. For input and output current ratings, see *Power Ratings* in Appendix C: Technical Specifications.

	Only for installation and use in a Restricted Access Location in accordance with the following installation and use instructions.	<i>Seulement pour l'installation et l'utilisation dans une Zone Interdite conformément aux installations et l'utilisation des indications suivants.</i>	Nur zur Installation und Verwendung in einem Sicherheitsbereich gemäß den folgenden Installations- und Verwendungsanleitungen.
	This equipment is designed to be installed on a dedicated circuit.	<i>Cet équipement est conçu à être installé sur un circuit spécialisé.</i>	Diese Ausrüstung ist zur Installation in einem festen Stromkreis vorgesehen.
	Dedicated branch circuit must have circuit breaker or fuse protection; 3-phase/multi-pole dedicated branch circuits must have circuit breaker or fuse protection for each phase/pole located together. CDUs have been designed without a master circuit breaker or fuse to avoid becoming a single point of failure. It is the customer's responsibility to provide adequate protection for the dedicated branch power circuit. Protection should not exceed the Total Input Rating of the CDU and must meet all applicable local, state and federal codes and regulations.	<i>Le circuit de dérivation spécialisé doit être équipé de disjoncteurs ou de fusibles ; Lorsqu'ils sont triphasés ou multipolaires, ils doivent être équipés de disjoncteurs ou de fusibles sur chaque phase ou pôle. Les CDU ont été conçus sans disjoncteur ou fusible principal afin de ne pas constituer le seul point de rupture. Le client est seul responsable de la protection des circuits électriques de dérivation spécialisés. Cette protection ne doit pas excéder la consommation totale en entrée du CDU et doit être conforme aux normes et à la réglementation locales, d'état et fédérales.</i>	Der als Standleitung verwendete Zweigstromkreis muss mit einem Überlastschalter bzw. einer Sicherung ausgestattet sein; bei Standleitungs-Zweigstromkreisen mit 3 Phasen/mehreren Polen müssen zusammengehörige Phasen/Pole individuell durch einen Überlastschalter bzw. eine Sicherung geschützt sein. In CDUs ist kein Haupt-Überlastschalter bzw. keine Hauptsicherung installiert. Dadurch wird ausgeschlossen, dass die CDU als alleinige Schwachstelle in Frage kommt. Es liegt in der Verantwortung des Kunden, den als Standleitung verwendeten Zweigstromkreis durch entsprechende Schutzmaßnahmen vor Überlastung zu schützen. Der Wert für den Überlastschutz darf nicht über dem Wert für die Eingangsstromstärke der CDU liegen und muss geltenden örtlichen und staatlichen Bestimmungen entsprechen.
	The plug on the power supply cord shall be installed near the equipment and shall be easily accessible.	<i>La prise sur le cordon d'alimentation sera installée près de l'équipement et sera facilement disponible.</i>	Der Stecker des Netzkabels muss in der Nähe der Ausrüstung installiert werden und leicht zugänglich sein.
	Always disconnect the power supply cord before opening to avoid electrical shock.	<i>Toujours déconnecter le cordon d'alimentation avant d'ouvrir pour éviter un choc électrique.</i>	Ziehen Sie vor dem Öffnen immer das Netzkabel heraus, um die Gefahr eines elektrischen Schlags zu vermeiden.
	WARNING! High leakage current! Earth connection is essential before connecting supply!	ATTENTION ! <i>Haut fuite très possible ! Une connection de masse est essentielle avant de connecter l'alimentation !</i>	ACHTUNG! Hoher Ableitstrom! Ein Erdungsanschluss ist vor dem Einschalten der Stromzufuhr erforderlich!

Mounting

1. Attach one of the removable flanges to the mount points on the top rear of the enclosure using M4 screws.
2. Repeat with the other flange for the bottom mount points on the enclosure.
3. Attach one mounting bracket to the top flange with one set of screws and washers through each of the slots in the bracket into the nut plate, as shown in Figure 2.2 (brackets may differ from the illustration). The slots allow about 1½ inches of vertical adaptability.
4. Repeat with the other mounting bracket on the bottom flange.
5. Attach the top and bottom brackets to your rack.

NOTE: Contact your Server Technology Sales Representative for information regarding custom bracket design and fabrication services if you are unable to find a suitable manner for utilizing the included mounting brackets.

Connecting to the Power Source

Plug the male end of the power cord(s) into the AC power source(s).

Connecting Devices

To avoid the possibility of noise due to arcing:

1. Keep the device's on/off switch in the off position until after it is plugged into the outlet.
2. Connect devices to the CDU outlets.

NOTE: Server Technology recommends even distribution of attached devices across all available outlets to avoid exceeding the outlet, branch or phase limitations. See *Power Ratings* in Appendices for more information.



Always disconnect both power supply cords before opening to avoid electrical shock.

Afin d'éviter les chocs électriques, débranchez les câbles électrique avant d'ouvrir.

Immer beiden Netzleitungen auskuppeln vor den Aufmachen um elektrischen Schlag zu vermeiden.

Connecting the Sensors

The Cabinet Distribution Unit is equipped with two mini RJ11 T/H ports for attachment of the included Temperature/Humidity sensor. Attach the mini RJ11 plug of the sensor(s) to the appropriate T/H port.

Connecting to the Cabinet Distribution Unit

Serial (RS232) port

The Cabinet Distribution Unit is equipped with an RJ45 Serial RS-232 port for attachment to a PC or networked terminal server using the supplied RJ45 to RJ45 crossover cable and RJ45 to DB9F serial port adapter as required. See *Data Connections* in Appendix C: Technical Specifications for more information on the Serial RS-232 port.

Ethernet port

The Cabinet Distribution Unit is equipped with an RJ45 10/100Base-T Ethernet port for attachment to an existing network. This connection allows access to the Cabinet Distribution Unit via Telnet or HTML.

The Cabinet Distribution Unit is configured with the following network defaults to allow unit configuration out-of-the-box through either Telnet or HTML:

- IP address: 192.168.1.254
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.1.1

The local PC network connection must be configured as noted below:

NOTE: Contact your system administrator for instructions in reconfiguring the network connection. Reconfiguration of your network connection may require a restart to take effect.

- IP address: 192.168.1.x (where x is 2-253)
- Subnet Mask: 255.255.255.0

Chapter 3: Operations

Interfaces

The Cabinet Distribution Unit has two interfaces: the HTML interface accessed via the HTTP enabled Ethernet connections and the command line for serial connections.

Username and Passwords

The Cabinet Distribution Unit has one predefined administrative user account (username/password: admn/admn) and supports a maximum of 128 defined user accounts

NOTE: For security, Server Technology recommends removal of the predefined administrative user account after a new account with administrative rights has been created.

Only an administrative-level user may perform operations such as creating/removing user accounts and command privileges, changing passwords and displaying user information. An administrator may also view the status of all sensors and power inputs.

Usernames may contain from 1-16 characters and are not case sensitive; spaces are not allowed. Passwords may contain up to 16 characters, and are case sensitive.

HTML Interface

The HTML interface is constructed of three major components: the System Location bar, the User/Navigation bar and the Control Screen. The System Location bar displays the Sentry's location and IP address as well as the current Control Screen title. The User/Navigation bar displays the current user and privilege level and provides access to all HTML pages. And the Control Screen is used to display current data and allow changes to outlet states or system configuration.

The following sections describe each interface section/page and their use.

The screenshot shows the Sentry Power Distribution Unit web interface in a Microsoft Internet Explorer browser window. The browser title is "Sentry Power Distribution Unit - Microsoft Internet Explorer" and the address bar shows "http://64.42.31.200/". The interface features a blue header with the Sentry logo and "Power Distribution Unit" text. A dark blue navigation bar on the left contains a "Logout" button and a menu with "Environmental Monitoring", "Input Feeds", "Sensors", "Configuration", and "Tools". The main content area displays "Environmental Monitoring - Input Feeds" and a table of input feed data. Three arrows point from labels above to specific parts of the interface: "User/Navigation" points to the left sidebar, "System Location" points to the top header area, and "Control Screen" points to the main data table.

Input Feed ID	Input Feed Name	Input Status	Input Load
AA	TowerA_InfeedA	On	0.00 Amps
AB	TowerA_InfeedB	On	0.00 Amps
AC	TowerA_InfeedC	On	0.00 Amps
DA	TowerB_InfeedA	On	0.00 Amps
BB	TowerB_InfeedB	On	0.00 Amps
BC	TowerB_InfeedC	On	0.25 Amps

Figure 3.1 Example HTML page

Logging In

Logging in through HTML requires directing the HTML client to the configured IP address of the unit.

To log in by HTML:

1. In the login window, enter a valid username and password and press **OK**.

If you enter an invalid username or password, you will be prompted again.

You are given three attempts to enter a valid username and password combination. If all three fail, the session ends and a protected page will be displayed.

Environmental Monitoring

Input Feeds

The Input Feeds page displays:

- Temperature/humidity sensor's absolute and descriptive names
- Temperature/humidity sensor readings in degrees Celsius and percent relative humidity

Sensors

The Sensors page displays:

- Temperature/humidity sensor's absolute and descriptive names
- Temperature/humidity sensor readings in degrees Celsius and percent relative humidity

Configuration

System

The System page is used for assignment and/or editing of descriptive names for the Cabinet Distribution Unit and attached sensors.

Descriptive names may be up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal – spaces are not allowed).

Creating a descriptive system location name:

Enter a descriptive name and press **Apply**.

Creating a descriptive Environmental Monitor name:

Click on the **Environmental Monitor Names** link.

On the subsequent page, enter the environmental monitor name in the appropriate field and press **Apply**.

Creating descriptive sensor names:

Click on the **Sensor Names** link.

On the subsequent page, enter the sensor name in the appropriate field and press **Apply**.

Network

The Network configuration page is used for maintenance of the network interface. From this page an administrator may configure the IP address, subnet mask and gateway address as well as view the link status, speed and duplex value.

The Sentry is configured with the following network defaults to allow unit configuration out-of-the-box through either Telnet or HTML:

- IP address: 192.168.1.254
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.1.1

The initial local PC network connection must be configured as noted below:

NOTE: Contact your system administrator for instructions in reconfiguring the network connection. Reconfiguration of your network connection may require a restart to take effect.

- IP address: 192.168.1.x (where x is 2-253)
- Subnet Mask: 255.255.255.0

NOTE: The unit must be restarted after network configuration changes. See *Performing a warm boot*: on page 11.

Setting the IP address, subnet mask or gateway:

In the appropriate field, enter the IP address, subnet mask or gateway address and press **Apply**.

HTTP

The HTTP configuration page used to configure the port number that the HTTP server watches and responds to and selection of the method of authentication used.

Changing the HTTP server port number:

In the HTTP Port field, enter the port number and press **Apply**.

Setting the HTTP authentication method:

The Sentry HTTP server supports two authentication methods for security and validation of the username-password – Basic and MD5 digest.

The Basic method utilizes Base64 encoding to encode and deliver the username-password over the network to the HTTP server for decoding and authentication. This basic method is supported by all web browsers and offers a minimum level of security.

NOTE: The Base64 algorithm is widely-known and susceptible to packet-sniffer attack for acquisition of the encoded username-password string.

The MD5 digest method provides stronger protection utilizing one-way encoded hash numbers, never placing the username-password on the network. Instead, the sending browser creates a challenge code based on the hash algorithm, provided username-password and unique items such as the device IP address and timestamp, which is compared against the HTTP server internal user database of valid challenge codes. The MD5 digest method offers a higher level of security than the Basic method but at present is not supported by all browsers.

NOTE: MD5 is known to be fully supported by Internet Explorer 5.0+

Select **Basic** or **MD5** from the Authentication drop-down menu and press **Apply**.

Users

The Users configuration page is used for creation and removal of usernames and the changing of user passwords.

Creating a new user:

Enter a user name in the Username field. Up to 24 alphanumeric and other typeable characters (ASCII 33 to 126 decimal, spaces and colon characters are not allowed) are allowed.

Enter a password for the new user and verify in the Password and Verify Password fields. For security, password characters are not displayed. Press **Apply**.

Removing a user:

Click on the **Remove** link in the Action column for the user to be removed and press **Yes** on the subsequent confirmation window.

Changing a user password:

Click on the **Edit** link in the Action column for the associated user.

On the subsequent User Edit page, enter a password and verify the new password for the new user in the Password and Verify Password fields. For security, password characters are not displayed. Press **Apply**.

Changing a user's access privilege level:

The Sentry has four defined access privilege levels; Admin and User:

- Admin: Full-access for all configuration, control (On, Off, Reboot), status and Pass-Thru.
- User: Partial-access for control (On, Off, Reboot), status and Pass-Thru of assigned outlets, groups and serial/Pass-Thru ports.

The administrator may also grant administrative privileges to other user accounts allowing the Sentry to have more than one administrative-level user.

NOTE: You cannot remove administrative privileges from the Admin user unless another user has already been given administrative access level privileges created.

Click on the **Edit** link in the Action column for the associated user.

On the subsequent User Edit page, select **Admin** or **User** from the Access Level drop-down menu and press **Apply**.

FTP

The FTP configuration page is used for setup and maintenance of all settings required to perform an FTP firmware upload. See Appendix B: Uploading Firmware for more information on uploading firmware.

Setting the FTP Host IP Address:

Enter the IP address in the Host IP Address field and press **Apply**.

Setting the FTP username:

Enter the FTP server username in the Username field, and press **Apply**.

Setting the FTP password:

Enter the FTP server password in the Password field, and press **Apply**.

Setting the filepath:

Enter the path of the file to be uploaded in the Directory field, and press **Apply**.

Setting the filename for upload:

Enter the filename of the file to be uploaded in the Filename field, and press **Apply**.

Testing the FTP upload configuration:

This test validates that the unit is able to contact and log onto the specified FTP server, download the firmware file and verify that the firmware file is valid for this unit.

Press **Test**.

SNMP

The SNMP configuration page is used for setup and maintenance of all settings required to enable SNMP support as well as access to the trap configuration pages. For additional information on SNMP support and detailed descriptions of available traps, see *SNMP Traps* on page 17.

NOTE: Traps are generated according to a hierarchical architecture; i.e. if a Tower Status enters a trap condition, only the Tower Status trap is generated. Infeed and Outlet Status traps are suppressed until the Tower Status returns to Normal.

Enabling or disabling SNMP support:

Select **Enabled** or **Disabled** from the drop-down menu and press **Apply**.

Setting the community strings:

Enter the community string in the appropriate field and press **Apply**.
Community strings may be 1 to 24 characters

Setting the trap timer:

Enter a trap timer value in the Error Trap Repeat Time field and press **Apply**.
The Error Trap Repeat Time value may be 1 to 65535 (in seconds).

Setting trap destinations:

Enter an IP address in the appropriate Trap Destination field and press **Apply**.

Enabling or disabling tower traps:

Click on the **Tower Traps** link.

On the subsequent Tower Traps page, select or deselect the desired traps and press **Apply**.

Configuring input feed traps:

Click on the **Input Feed Traps** link.

On the subsequent Input Feed Traps page, select or deselect the desired traps and press **Apply**.

Enabling or disabling Environmental Monitor traps:

Click on the **Environmental Monitor Traps** link.

On the subsequent page, select or deselect the desired traps and press **Apply**.

Configuring the Temperature-Humidity sensor traps:

Click on the **Sensor Traps** link.

On the subsequent page, select or deselect the desired traps and press **Apply**.

For Temp traps, enter a minimum and maximum threshold value for the sensor in the appropriate field and press **Apply**.

The threshold value may be 0 to 127 (in degrees Celsius).

For Humid traps, enter a minimum and maximum threshold value for the sensor in the appropriate field and press **Apply**.

The threshold value may be 0 to 100 (in percent relative humidity).

Tools

The Tools section contains access to rebooting the unit, uploading new firmware as well as resetting the unit to factory defaults. This section is available to administrative level users only.

Restart

Performing a warm boot:

Select the **Restart** from the Action drop-down menu and press **Apply**.

Note: System user/outlet/group configuration or outlet states are NOT changed or reset with this command.

Resetting to factory defaults:

See Appendix A: for more information on resetting a Sentry to factory defaults from the HTML interface.

Uploading new firmware:

See Appendix B: for more information on uploading new firmware from the HTML interface.

Command Line Interface

Logging In

Logging in through the Console (RS232) port requires the use of a terminal or terminal emulation software configured to support ANSI or VT100 and a supported data rate (300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 BPS) - 8 data bits-no parity-one stop bit and Device Ready output signal (DTR or DSR).

To log in by RS-232:

1. Press **Enter**. The following appears, where **x.xx** is the firmware version:
Sentry Power Distribution Unit Version x.xx
Username:
2. At the Username: and Password: prompts, enter a valid username and password. And press **Enter**.
You are given three attempts to enter a valid username and password combination. If all three fail, the session ends.

When you enter a valid username and password, the command prompt (Sentry PDU:) appears. If a location identifier has been defined, it will be displayed before the Sentry PDU: prompt.

You may enter commands in any combination of uppercase and lowercase. You must enter all command characters correctly; there are no command abbreviations. There are two types of commands: operations and administration. A user must have administrative privileges to use the administration commands. The following tables list and briefly describe each command.

Operations Command Summary

Command	Description
Envmon	Displays the status of Environmental Monitor sensors
Login	Ends the current session and brings up the Username: prompt
Logout	Ends a session
Quit	Ends a session

Administrative Command Summary

Restart	Performs a warm boot
Set FTP Filename	Specifies the file to be uploaded via FTP
Set FTP Filepath	Specifies the filepath for the file to be uploaded
Set FTP Host	Sets the FTP Host IP address
Set FTP Password	Sets the password for the FTP Host
Set FTP Username	Sets the username for the FTP Host
Set Gateway	Sets the Gateway
Set HTTP Port	Sets the HTTP server port number
Set HTTP Security	Sets the HTTP server authentication method
Set Ipaddress	Sets the Environmental Monitor IP address
Set Subnet Mask	Sets the Subnet Mask
Show FTP	Displays FTP configuration information
Show Network	Display network configuration information
Version	Displays the firmware version

Operations Commands

Starting a new session

The Login command activates the Username: prompt. The current session ends, allowing a user to log in and start a new session under a different username.

To start a new session:

At the Sentry PDU: prompt, type **login** and press **Enter**. The Username: prompt appears.

Ending a session

The Quit or Logout commands ends a session. A session ends automatically when no activity is detected for five minutes, or upon loss of connection.

To end a session:

At the Sentry PDU: prompt, type **quit** and press **Enter**, or

Type **logout** and press **Enter**.

Administration Commands

System Administration

Displaying the firmware version

The Version command displays the firmware version.

To display the firmware version:

At the Sentry PDU: prompt, type **version** and press **Enter**.

Performing a warm boot

The Restart command performs a warm boot.

NOTE: System user/outlet/group configuration or outlet states are NOT changed or reset with this command.

To perform a warm boot:

At the Sentry PDU: prompt, type **restart** and press **Enter**.

Network Administration Commands

NOTE: A restart is required after setting or changing ANY TCP/IP configurations. See *Performing a warm boot* on page 13 for more information.

Setting the IP address

The Set Ipaddress command sets the TCP/IP address of the network interface controller.

To set the IP address:

At the Sentry PDU: prompt, type **set ipaddress**, followed by the IP address and press **Enter**.

Example

The following command sets the IP address to 12.34.56.78:

```
Sentry PDU: set ipaddress 12.34.56.78<Enter>
```

Setting the subnet mask

The Set Subnet command sets the subnet mask for the network the Sentry will be attached to.

To set the subnet mask:

At the Sentry PDU: prompt, type **set subnet**, followed by the subnet mask and press **Enter**.

Example

The following command sets the subnet mask to 255.0.0.0

```
Sentry PDU: set subnet 255.0.0.0<Enter>
```

Setting the gateway

The Set Gateway command sets the IP address of the default gateway the Sentry uses to access external networks.

To set the gateway IP address:

At the Sentry PDU: prompt, type **set gateway**, followed by the gateway IP address and press **Enter**.

Example

The following command set the gateway IP address to 12.34.56.1:

```
Sentry PDU: set gateway 12.34.56.1<Enter>
```

HTTP Administration Commands

Changing the HTTP server port

With HTTP support enabled, the HTTP server watches and responds to requests on the default HTTP port number 80. This port number may be changed using the Set HTTP Port command.

To change the HTTP port:

At the Sentry PDU: prompt, type **set http port**, followed by the port number and press **Enter**.

Example

The following changes the HTTP port number to 2048:

```
Sentry PDU: set HTTP port 2048<Enter>
```

Setting the HTTP authentication method

The Set HTTP Security command is used to set the method of authentication. The Sentry HTTP server supports two authentication methods for security and validation of the username-password – Basic and MD5 digest.

For more information on authentication methods, see *Setting the HTTP authentication method*: on page 9.

To set the HTTP authentication method:

At the Sentry PDU: prompt, type **set http security**, followed by **basic** or **md5** and press **Enter**.

Displaying network configuration information

The Show Network command displays TCP/IP and Web configuration information.

- NIC module serial number, MAC address and hardware revision code
- IP address, subnet mask and gateway
- HTTP port number
- HTTP authentication method
- Network link status, connection speed and duplex value

To display network configuration information:

At the Sentry PDU: prompt, type **show network** and press **Enter**.

Example

The following command displays the network configuration information:

```
Sentry PDU: show network<Enter>
Network Configuration
  NIC S/N :      1600001
  MAC Address:  00-0a-9c-10-00-01
  H/W Rev Code: 0
  IP Address:   12.34.56.78
  Subnet Mask: 255.0.0.0
  Gateway:     12.34.56.1
  HTTP Port:   80
  HTTP Security: Basic
Network Status
  Link:        Up
  Speed:       100 Mbps
  Duplex:      Half
```


FTP Administration

The following commands are used to configure the Sentry for an FTP firmware upload. See Appendix B: Uploading Firmware for more information on initiating a FTP firmware upload.

Setting the FTP Host IP address

The Set FTP Host command sets the FTP host IP address allowing for firmware file uploads.

To set the FTP Host IP address:

At the Sentry PDU: prompt, type **set ftp host**, followed by the Host IP address and press **Enter**.

Example

The following command sets the FTP Host IP address to 12.34.56.99:

```
Sentry PDU: set ftp host 12.34.56.99<Enter>
```

Setting the FTP username

The FTP Username command sets the username as required by the FTP Host.

To set the FTP username:

At the Sentry PDU: prompt, type **set ftp username**, followed by the FTP username and press **Enter**.

Example

The following command sets the FTP username to Guest:

```
Sentry PDU: set ftp username guest<Enter>
```

Setting the FTP Password

The FTP Password command sets the password as required by the FTP Host.

To set the FTP password:

At the Sentry PDU: prompt, type **set ftp password**, followed by the FTP password and press **Enter**.

Example

The following command sets the FTP password to OpenSesame:

```
Sentry PDU: set ftp password OpenSesame<Enter>
```

Setting the filename to be uploaded

The FTP Filename command sets the filename of the firmware file to be uploaded.

To set the FTP filename:

At the Sentry PDU: prompt, type **set ftp filename**, followed by the firmware filename and press **Enter**.

Example

The following command sets the FTP filename to snb_s50a.bin:

```
Sentry PDU: set ftp filename pdu-v51a.bin<Enter>
```

Setting the filepath for the file to be uploaded

The FTP Filepath command sets the filepath for the firmware file to be uploaded.

To set the FTP filepath:

At the Sentry PDU: prompt, type **set ftp filepath**, followed by the filepath and press **Enter**.

Example

The following command sets the FTP filepath to ftp://pdu:

```
Sentry PDU: set ftp filepath ftp://pdu<Enter>
```

Displaying FTP configuration information

The Show FTP command displays all FTP configuration information.

- FTP Host IP address
- FTP Host username and password
- Firmware filepath and filename

To display FTP configuration information:

At the Sentry PDU: prompt, type **show ftp** and press **Enter**.

Example

The following command displays the FTP configuration information:

```
Sentry PDU: show ftp<Enter>
FTP Configuration
Host IP Address: 12.34.56.99
Username:       guest
Password:       OpenSesame
Directory:      ftp://pdu
Filename:       pdu-v51a.bin
```

Chapter 4: Advanced Operations

SNMP

The Sentry family of products supports the Simple Network Management Protocol (SNMP). This allows network management systems to use SNMP requests to retrieve information and control power for the individual outlets.

The Sentry includes an SNMP v2c agent supporting standard MIB I and MIB II objects. A private enterprise MIB extension (Sentry3 MIB) is also supported to provide remote power control.

See *SNMP* on page 11, for information on enabling and configuring SNMP.

NOTE: For security, SNMP support is disabled by default.

MIB, OID and Support

The Sentry SNMP MIB and OID are available on the Server Technology website:

<ftp://ftp.servertech.com/pub/SNMP/sentry3>

Technical support is available 8:30AM to 5:00 PM Pacific Time, Monday-Friday.

For SNMP Support, email: mibmaster@servertech.com

SNMP Traps

The Cabinet Distribution Unit supports four types of SNMP traps. Traps are enabled at the Tower (T), Infeed (I), Environmental Monitor (E) or sensor (S) level.

Trap Summary

Name	Level(s)	Description
Status	T, I, E, S	Operational status change
Load	I, S	Input load out of limit
Temp	S	Temperature is out of range
Humid	S	Relative Humidity is out of range

All traps include the Location of the Sentry as defined with the Set Location command.

Status trap

A Status trap is generated when an error condition occurs on a tower, infeed, Environmental Monitor or individual sensor. Status traps include the reported Status, the Location of the Sentry and identifier and name of the affected tower, infeed, outlet, environmental monitor or sensor.

Any error state generates a Status trap and triggers the trap timer. A new trap is generated at the end of every timer period until the Status returns to a non-error status. All status traps are enabled by default.

Tower Status traps

Status	Error	Description
Normal		Tower is working correctly
NoComm	x	Communication to the tower has been lost

Infeed Status traps

Status	Error	Description
On		Infeed is on
OffError	x	Infeed should be on but no current is sensed at the infeed
NoComm	x	Communication to the infeed has been lost

Environmental Monitor Status traps

Status	Error	Description
Normal		Environmental Monitor is working correctly
NoComm	x	Communication to the Environmental Monitor has been lost

Temperature/Humidity Sensor Status traps

Status	Error	Description
Found		The sensor has been detected
NotFound		No sensor has been detected
Lost	x	Sensor initially detected but communication to the sensor has been lost
NoComm	x	Communication to the sensor has been lost

NOTE: Traps are generated according to a hierarchical architecture; ie if an Tower Status enters a trap condition, only the Tower Status trap will be generated. Infeed, Environmental Monitor or Sensor Status and Temp and Humid traps will be suppressed until the Tower Status returns to Normal.

Load Trap

The Load trap is generated whenever the total input load on an infeed exceeds a preset threshold. Load traps include the reported input load, load status, Location of the Sentry, and identifier and name of the affected infeed.

Any error state generates a Load trap and triggers the trap timer. A new trap is generated at the end of every timer period until the Load returns to a non-error status.

Load traps

Status	Error	Description
Normal		Infeed is on and within preset thresholds
NotOn		Infeed is off
Reading		Non-error state – Load status currently being read
LoadHigh	x	Infeed current load exceeds preset threshold
OverLoad	x	Infeed current load exceeds the measurable range for the infeed
ReadError	x	Unable to read Load status
NoComm	x	Communication to the infeed has been lost

Temp Trap

The Temp trap is generated whenever the temperature on a temperature/humidity sensor is beyond preset thresholds. Temp traps include the reported temperature, temp status, Location of the Sentry, and identifier and name of the affected sensor.

Any error state generates a Temp trap and triggers the trap timer. A new trap is generated at the end of every timer period until the Temp returns to a non-error status.

Temp traps

Status	Error	Description
Normal		The sensor is working correctly and the temperature is within preset thresholds
NotFound		No sensor has been detected
Reading		Temp status currently being read
TempLow	x	Temperature at the sensor below preset low threshold
TempHigh	x	Temperature at the sensor exceeds preset high threshold
ReadError	x	Unable to read Temp status
Lost	x	Sensor initially detected but communication to the sensor has been lost
NoComm	x	Communication to the sensor has been lost

Humidity Trap

The Humidity trap is generated whenever the humidity on a temperature/humidity sensor is beyond preset thresholds. Humidity traps include the reported relative humidity, humidity status, Location of the Sentry, and identifier and name of the affected sensor.

Any error state generates a Humidity trap and triggers the trap timer. A new trap is generated at the end of every timer period until the Humidity returns to a non-error status.

Humidity traps

Status	Error	Description
Normal		The sensor is working correctly and the relative humidity is within preset thresholds
NotFound		No sensor has been detected
Reading		Humidity status currently being read
HumidLow	x	Relative humidity at the sensor below preset low threshold
HumidHigh	x	Relative humidity at the sensor exceeds preset high threshold
ReadError	x	Unable to read Humidity status
Lost	x	Sensor initially detected but communication to the sensor has been lost
NoComm	x	Communication to the sensor has been lost

Chapter 5: Appendices

Appendix A: Resetting to Factory Defaults

You may reset the non-volatile RAM that stores all configurable options. This clears all administrator-editable fields and resets all command line configurable options to their default values, including all user accounts.

You may reset the unit to factory defaults from the command line or the HTML interface, or by pressing the reset button. You must have administrator-level privileges to issue the command. Using the reset button may be necessary when a forgotten password prevents administrator login. Each of the methods updates the current working configuration to the factory defaults.

NOTE: Resetting the unit resets all TCP/IP and Telnet/Web configurations. Reconfiguring the TCP/IP and Telnet/web settings will be required.

To reset to factory defaults from the HTML interface

On the Restart page in the Tools section of the HTML interface, select **Restart and reset to factory defaults** from the drop-down menu and press **Apply**.

To reset to factory defaults from the command line

At the Sentry PDU: prompt, type **restart factory** and press **Enter**.

To reset to factory defaults using the reset button

Locate the recessed reset button directly beside the Serial & Ethernet ports. You will need a non-conductive, non-metallic tool that fits inside the recess.

Insert the tool in the recess, then depress and hold the reset button for at least ten seconds.

NOTE: If the reset button is depressed and held for more than 15 seconds, the reset will abort.

Appendix B: Uploading Firmware

You may upload new versions of firmware using File Transfer Protocol (FTP). This allows access to new firmware releases for firmware improvements and new features additions.

NOTE: To begin an FTP upload session, you must first configure the FTP Host address, username/password, filename and filepath. For information on configuring the FTP settings required for firmware upload see Chapter 3: Operations.

You may initiate an FTP upload session by issuing a command or from the HTML interface. You must have administrator-level privileges to initiate an upload.

To initiate an FTP upload session from the HTML interface

On the Restart page in the Tools section of the HTML interface, select **Restart and upload firmware via FTP** from the drop-down menu and press **Apply**.

Upon issuing this command the unit will restart and upload the firmware file specified with the FTP Filename command from the previously configured FTP Host. See *FTP Administration* in Chapter 3: for more information.

To initiate an FTP upload session from the command line

The Restart FTPLoad command initiates an upload of firmware. Upon issuing this command the unit will restart and upload the firmware file specified with the FTP Filename command from the previously configured FTP Host. See *FTP Administration* in Chapter 3: for more information.

To initiate an FTP firmware upload session:

At the Sentry PDU: prompt, type **restart ftpload** and press **Enter**.

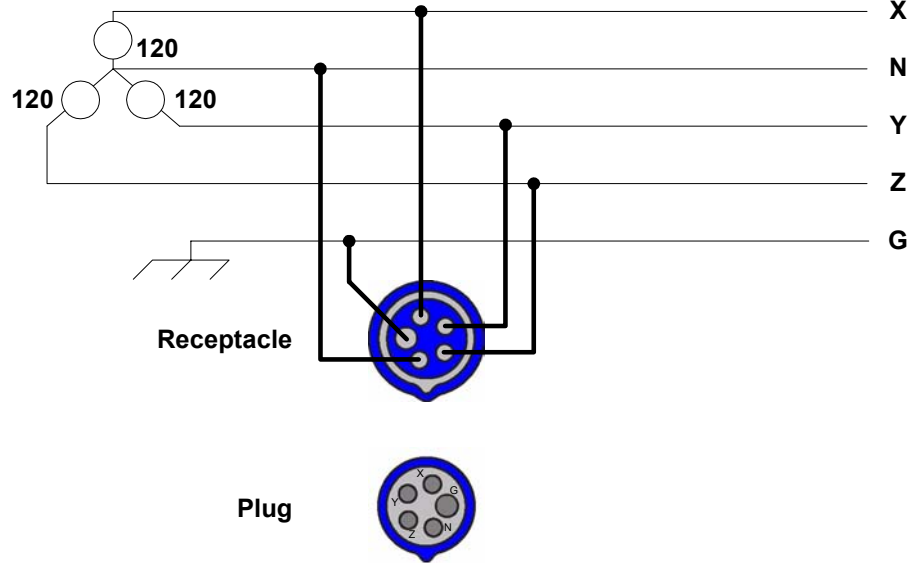
Appendix C: Technical Specifications

Standard Models

Model	Rated Voltage	Input Cordset and Plug (10')	Outlets (120V / 208V) ¹
CDU84-Y-30932L	3/N/PE 208V 60Hz	NEMA L6-20P, 20A/230V locking	12 / 42

¹ 120V outlets are NEMA 5-20R and 208V outlets are C13 connectors per standard sheet F in IEC 60320-2-2

Power Ratings



© Server Technology, Inc

CDU84-Y-30932L

Model <i>Modelle</i> <i>Modell</i>	Input Current Ratings ¹ <i>L'indice du courant d'entrée</i> <i>Eingangsstromstärke</i>		Output Current Ratings <i>L'indice du courant de sortie</i> <i>Ausgangsstromstärke</i>				
	Voltage <i>Tension</i> <i>Spannung</i>	Current <i>Courant</i> <i>Strom</i>	Voltage <i>Tension</i> <i>Spannung</i>	Outlet <i>Prise</i> <i>Anschlussstelle</i>	Branch Circuit ² <i>Circuit de la Branche</i> <i>Zweigstromkreis</i>	Phase ²	Total <i>Total</i> <i>Insgesamt</i>
CDU84-Y-30932L	3/N/PE 208V 60 Hz	A: 16 B: 16	100-120V 50/60Hz 208V 60Hz	9.2	9.2 9.2 9.2	xy: yz: xz:	9.2 9.2 9.2 A: 27.7 B: 27.7

¹ All current ratings are in amperes.

Tous les indices de courant sont en ampères.

Alle Angaben der Stromstärke erfolgen in Ampere.

² Each branch circuit or phase consists of two 120V outlets and one 7-outlet gang module; 9 outlets.

Input A: xy, yz, xz Input B: xy, yz, xz

Chaque circuit de la branche comporte 2 120V prises de courants y 1 série de 7 prises de courants, soit au total 9 prises.

Entrée A: xy, yz, xz Entrée B: xy, yz, xz

Jeder Zweigstromkreis besteht aus zwei 120V Anschlüsse und eine gekuppelten Modulen mit je 7 Anschlüssen: 9 Anschlüsse.

Eingang A: xy, yz, xz Eingang B: xy, yz, xz

Physical Specifications

Model	CDU84-Y-30932L	
Physical	Size (H x W x D)	66.25 x 3.5 x 2.25 in.
	Weight	24.0 lbs
Temperature	Operating	0° to 50° C (32° to 122° F)
	Storage	-40° to 85° C (-40° to 185° F)
Elevation (above MSL)	Operating	0 to 10,000 ft (0 to 3000 m)
	Storage	0 to 50,000 ft (0 to 15 000 m)
Relative Humidity	Operating	10 to 90%, non-condensing
	Storage	10 to 90%, non-condensing
Approvals	cTUVus ¹	

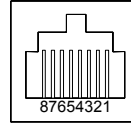
¹ cTUVus - UL 60950-1-2003, CAN/CSA 22.2 No. 60950-1:2003

Data Connections

RS-232 port

Cabinet Distribution Units are equipped standard with an RJ45 DTE RS-232c serial port. This connector may be used for direct local access or from other serial devices such as a terminal server. An RJ45 crossover cable is provided for connection to an RJ45 DCE serial port.

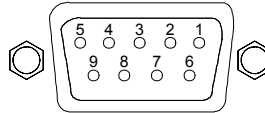
Pin	DTE Signal Name		Input/Output
1	Request to Send	RTS	Output
2	Data Terminal Ready	DTR	Output
3	Transmit Data	TD	Output
4	Signal Ground		
5	Signal Ground		
6	Receive Data	RD	Input
7	Data Set Ready	DSR	Input
8	Clear to Send	CTS	Input



RJ45 to DB9F serial port adapter

Additionally, an RJ45 to DB9F serial port adapter is provided for use in conjunction with the RJ45 crossover cable to connect to a PC DB9M DCE serial port. The adapter pinouts below reflect use of the adapter with the provided RJ45 crossover cable.

Pin	DCE Signal Name		Input/Output
1			
2	Receive Data	RD	Output
3	Transmit Data	TD	Input
4	Data Terminal Ready	DTR	Input
5	Signal Ground		
6	Data Set Ready	DSR	Output
7	Request to Send	RTS	Input
8	Clear to Send	CTS	Output



Branch Circuit Protection



Always disconnect both power supply cords before opening to avoid electrical shock.
Afin d'éviter les chocs électriques, débranchez les cables électrique avant d'ouvrir.
Immer beiden Netzleitungen auskuppeln vor den Aufmachen um elektrischen Schlag zu vermeiden.

Cabinet Distribution Units feature Branch Circuit protection on all outlets in the form of internal fuses. These fuses meet the strict safety requirements of UL/CSA 60950 for Branch Circuit Protection.

Time-Delay Fuses – Class G

Amperes	Bussman Part Number
15	SC-15

CooperBussman product data-sheet #1024,

Appendix D: Warranty, Product Registration and Support

Warranty and Limitation of Liability

Server Technology, Inc. agrees to repair or replace Products that fail due to a defect within twelve (12) months after the shipment date of each Product unit to Buyer (“Warranty Period”). For purposes of this Agreement the term “defect” shall mean the Product fails to operate or fails to conform to its applicable specifications. Any claim made pursuant to this Agreement shall be asserted or made in writing only by Buyer. Buyer shall comply with Server Technology’s Standard Return Merchandise Authorization (“RMA”) procedure for all warranty claims as set forth in Server Technology’s operation manual.

Buyer must return Products in original packaging and in good condition. This limited warranty does not include labor, transportation, or other expenses to repair or reinstall warranted Products on site or at Buyer’s premises.

Server Technology reserves the right to investigate any warranty claims to promptly resolve the problem or to determine whether such claims are proper. In the event that after repeated efforts Server Technology is unable to repair or replace a defective Product, then Buyer’s exclusive remedy and Server Technology’s entire liability in contract, tort, or otherwise shall be the payment by Server Technology of Buyer’s actual damages after mitigation, but shall not exceed the purchase price actually paid by Buyer for the defective Product.

Server Technology shall have no responsibility or liability for any Product, or part thereof, that (a) has had the Serial Number, Model Number, or other identification markings altered, removed or rendered illegible; (b) has been damaged by or subject to improper installation or operation, misuse, accident, neglect and/or has been used in any way other than in strict compliance with Server Technology’s operation and installation manual; (c) has become defective or inoperative due to its integration or assembly with any equipment or products not supplied by Server Technology; (d) has been repaired, modified or otherwise altered by anyone other than Server Technology and/or has been subject to the opening of any sealed cabinet boxes without Server Technology’s prior written consent. If any warranty claim by Buyer falls within any of the foregoing exceptions, Buyer shall pay Server Technology its then current rates and charges for such services.

THE ABOVE WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH ARE EXPRESSLY DISCLAIMED. SERVER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL, OR EXEMPLARY DAMAGES; EVEN IF IT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

For warranty issues, contact the Product Support Department at the number listed above. All repair and return shipments must be approved by Server and must be accompanied by a RMA (Return Merchandise Authorization) number and dated proof of purchase.

Product Registration

Registration is your key to special offers and services reserved for Registered Users.

- Excellent Technical Support Services
- Special Update and Upgrade Programs
- Warranty Protection
- Extended Warranty Service
- New Product Information

Register your products online today!

www.servertech.com

Technical Support

Server Technology understands that there are often questions when installing and/or using a new product. Free Technical Support is provided from 8:30 AM to 5:00 PM, Monday-Friday, Pacific Time.

Server Technology, Inc.

1040 Sandhill Drive

Reno, Nevada 89521 USA

Tel: 775.284.2000

Fax: 775.284.2065

Web: www.servertech.com

Email: support@servertech.com

Return Merchandise Authorization

If you have a unit that is not functioning properly and is in need of technical assistance or repair:

Submit a request for support by phone at the above number, or via the web at

www.servertech.com/support/support_req.html

Be ready to provide:

Company Name

Contact Name, Phone Number, and Email address

Model or Part Number (from the label on the equipment)

Server Technology Serial Number

Version of code (type 'vers' at the Sentry: prompt)

Description of problem

1. Technical Support will work to diagnose/resolve the problem remotely, if possible. If the problem cannot be resolved, Technical Support will then issue an RMA# for the return/repair of the equipment in question. RMA#'s are valid for 30 days only from the issue date.
2. Shipping charges for the return of the equipment to Server Technology shall be the responsibility of the customer. For warranty repairs, Server Technology shall assume return shipping charges but for non-warranty repairs, the shipping charges shall be billed.
3. The RMA# shall be placed conspicuously on all shipping documentation, associated correspondence, and the shipping container.
4. Equipment must be returned in proper/original packaging to protect the equipment in transit. The customer shall be financially responsible for any damage/destruction of the equipment due to improper packaging.
5. Equipment shall typically be turned around within 48-72 hours of receipt at Server Technology. Equipment under warranty shall be repaired at no cost. Equipment NOT under warranty shall be repaired at the standard labor rate plus parts. Upon diagnosis of the equipment, the customer shall be notified of estimated charges prior to repair.
6. For non-warranty repairs, return of the equipment will be expedited with the inclusion of a Purchase Order or credit card number for incurred charges.



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