

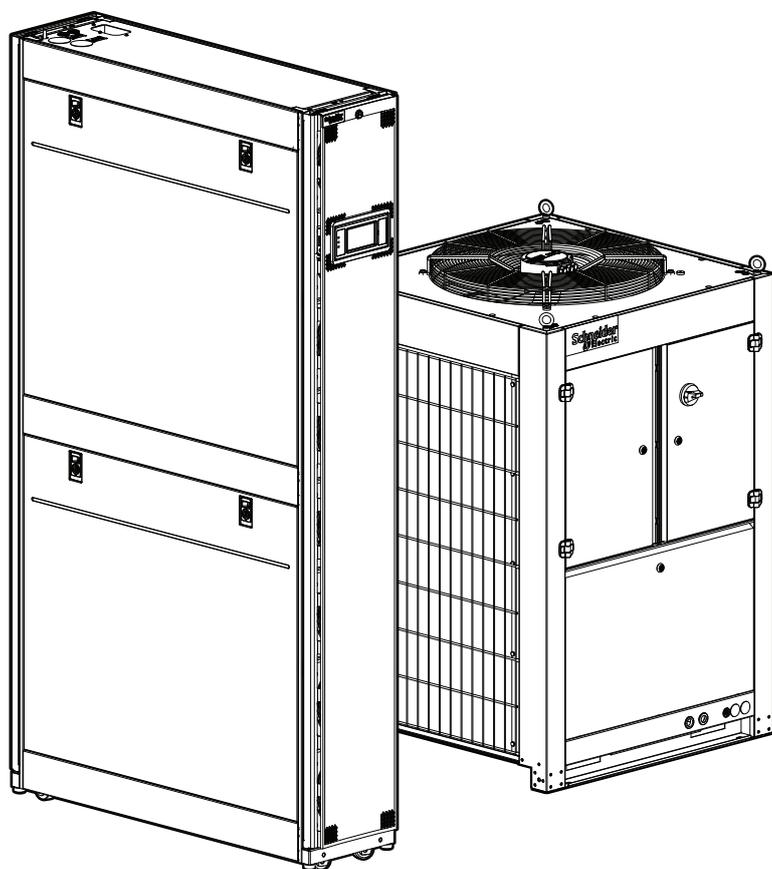
InRow® Direct Expansion Air Conditioners

ACRD300 and ACCU30000 Series

Online Guide

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Introduction

Product Description

Unit Overview

The cooling units are Web-based, IPv6–ready products. They can manage supported devices using multiple open standards such as the following:

- Hypertext Transfer Protocol (HTTP)
- Secure SHell (SSH)
- Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)
- Simple Network Management Protocol versions 1 and 3 (SNMPv1, SNMPv3)
- File Transfer Protocol (FTP)
- Secure Copy (SCP)
- Telnet
- Syslog
- RADIUS
- Modbus TCP

Features

- Provides data and event logs.
- Enables you to set up notifications through e-mail and SNMP traps.
- Supports using a Dynamic Host Configuration Protocol (DHCP) or BOOTstrap Protocol (BOOTP) server to provide the network (TCP/IP) address of the unit.
- Supports using the Remote Monitoring Service (RMS).
- Provides the ability to export a user configuration (.ini) file from a configured unit to one or more unconfigured units.
- Provides a selection of security protocols for authentication and encryption.
- Communicates with StruxureWare Data Center Expert.
- Provides one USB host port to support firmware upgrades in addition to the retrieval of event, data log, and configuration files.

IPv4 Initial Setup

You must define three TCP/IP settings for the unit before it can operate on the network.

- The IP address of the unit
- The subnet mask of the unit
- The IP address of the default gateway (only needed if you are going off segment)

NOTE: Do not use the loopback address (127.0.0.1) as the default gateway. Doing so disables the card. You must then log on using a serial connection and reset the TCP/IP settings to their defaults.



For detailed information on how to use a DHCP server to configure the TCP/IP settings for a unit, see *DHCP Response Options*, page 39

IPv6 Initial Setup

IPv6 network configuration provides flexibility to accommodate your requirements. IPv6 can be used anywhere an IP address is entered on this interface. You can configure manually, automatically, or using DHCP.



See *TCP/IP Settings for IPv6*, page 38.

Network Management with Other Applications

These applications and utilities work with the unit:

- PowerNet® Management Information Base (MIB) with a standard MIB browser — Perform SNMP SETs and GETs and receive SNMP traps.
- StruxureWare Data Center Expert — Collects, organizes, and distributes critical alerts and key information, providing a unified view of complex physical infrastructure environments from anywhere on the network.
- Device IP Configuration Utility — Configure the basic settings of one or more units over the network.
- Security Wizard — Create components needed to help with security for the unit when you are using Secure Sockets Layer (SSL) with related protocols and encryption routines.

Internal Management Features

Overview

Use the Web user interface (UI) to view the status and manage the unit. You can also use SNMP to monitor the status of the unit.

Use Modbus RTU to view the network settings through the building management system.

Access Priority for Logging On

You can enable more than one user to log on at the same time, where each user has equal access.

See *Session Management*, page 33.



Types of User Accounts

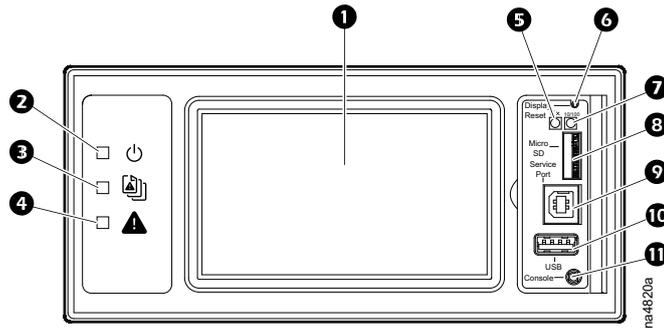
The unit has various levels of access — Administrator, Device User, Read-Only User, and Network-only User — and these are protected by user name and password requirements.

- A Super User/Administrator can use all of the menus in the UI and all of the commands in the command line interface. Administrator user types can be deleted. The default user name and password are both **apc**.
- A Device User has read and write access to device-related screens. Administrative functions like **Session Management** under the **Configuration > Security** menu and **Firewall** under **Logs** are grayed out.
 - The default user name is `device`, and the default password is `apc`.
- A Read-only User has the following restricted access:
 - Access through the Web UI and command line interface (CLI) only.
 - Access to the same menus as a Device User above but without the capability to change configurations, control devices, delete data, or use file transfer options. Links to configuration options are visible but disabled. (The Event and Data Logs display no button for this user to clear the log.)
 - The default user name is `readonly` and the default password is `apc`.
- A Network-only User can only log on using the Web user interface (UI) and CLI (telnet not serial). A network-only user has read-write access to the network-related menus only. There is no default name and password.

To set User Name and Password values for the top three account types, see *Local Users*, page 33.



Display Interface



Item	Description	Function
1	LCD Display	4.3-inch touch-screen color display
2	Power LED	The cooling unit is powered when the LED is illuminated. Unit firmware is updating when LED is blinking.
3	Check Log LED	When this LED is illuminated, a new entry has been made to the event log.
4	Alarm LED	Displays current alarm condition of unit.
5	Status LED	Displays current network management card status.
6	Display Reset button	Resets the display microprocessor. This has no effect on the air conditioner controller.
7	Link-RX/TX (10/100) LED	Displays current network link status.
8	Micro SD card slot	Memory card expansion slot.
9	Service port	USB-B port used only by service personnel.
10	USB-A port	Supports firmware upgrades.
11	Serial Configuration port	Connects the display to a local computer to configure initial network settings or access the command line interface (CLI).

Alarm LED

This LED indicates active alarms on the display.

Condition	Description
Off	No alarm
Solid yellow	Warning alarm
Solid red	Critical alarm

Status LED

This LED indicates the status of the display.

Condition	Description
Off	One of the following situations exist: <ul style="list-style-type: none"> The display is not receiving input power. The display is not operating properly. It may need to be repaired or replaced. Contact Schneider Electric Customer Support.
Solid green	The display has valid TCP/IP settings.
Solid orange	A hardware malfunction has been detected in the display. Contact Schneider Electric Customer Support.
Flashing green	The display does not have valid TCP/IP settings.
Flashing orange	The display is making BOOTP requests.
Alternately flashing green and orange	If the LED is flashing slowly, the display is making DHCP requests. If the LED is flashing rapidly, the display is starting up.

Link-RX/TX (10/100) LED

This LED indicates the network status of the display.

Condition	Description
Off	One or more of the following situations exist: <ul style="list-style-type: none"> The display is not receiving input power. The cable or device that connects the cooling unit to the network is disconnected or not functioning properly. The display itself is not operating properly. It may need to be repaired or replaced. Contact Schneider Electric Customer Support.
Solid green	The display is connected to a network operating at 10 megabits per second (Mbps).
Solid orange	The display is connected to a network operating at 100 Mbps.
Flashing green	The display is receiving or transmitting at 10 Mbps.
Flashing orange	The display is receiving data packets at 100 Mbps.

How to Recover from a Lost Password

You can use a local computer that connects to the display through the serial port to access the command line interface.

1. Select a serial port on the local computer, and disable any service that uses that port.
2. Connect the provided serial cable to the selected port on the computer and to the configuration port on the display.
3. Run a terminal program (such as HyperTerminal®) and configure the selected port for 9600 bps, 8 data bits, no parity, 1 stop bit, and no flow control.
4. Press `Enter`, repeatedly if necessary, to display the **User Name** prompt. If you are unable to display the **User Name** prompt, verify the following:
 - The serial port is not in use by another application.
 - The terminal settings are correct as specified in step 3.
 - The correct cable is being used as specified in step 2.
5. Press the `Reset` button. The **Status** LED will flash alternately orange and green. Press the `Reset` button a second time immediately while the LED is flashing to reset the user name and password to their defaults temporarily.
6. Press `Enter`, repeatedly if necessary, to display the **User Name** prompt again, then use the default, **apc**, for the user name and password. (If you take longer than 30 seconds to log on after the **User Name** prompt is re-displayed, you must repeat step 5 and log on again.)
7. At the command line interface, use the following commands to change the **Password** setting, which is **apc** at this stage:

```
user -n <user name> -pw <user password>
```

For example, to change the Super User password to XYZ, type:

```
user -n apc -pw XYZ
```

8. Type **quit** or **exit** to log off, reconnect any serial cable you disconnected from the computer, and restart any service you disabled on the unit.

Watchdog Features

Overview

To detect internal problems and recover from unanticipated input, the display uses internal, system-wide watchdog mechanisms. When it restarts to recover from an internal problem, a System: Network Interface Restarted event is recorded in the event log.

Network Interface Watchdog Mechanism

The display implements internal watchdog mechanisms to protect itself from becoming inaccessible over the network. For example, if the display unit does not receive any network traffic for 9.5 minutes (either direct traffic, such as SNMP, or broadcast traffic, such as an Address Resolution Protocol [ARP] request), it assumes that there is a problem with its network interface and restarts.

Resetting the Network Timer

To ensure that the display does not restart if the network is quiet for 9.5 minutes, the display unit attempts to contact the default gateway every 4.5 minutes. If the gateway is present, it responds to the display, and that response restarts the 9.5-minute timer. If your application does not require or have a gateway, specify the IP address of a computer that is running on the network and is on the same subnet. The network traffic of that computer will restart the 9.5-minute timer frequently enough to prevent the display from restarting.

Web User Interface

Introduction

Overview

The Web user interface (UI) provides options to manage the unit and to view the status of the unit.



See *Web Access, page 42* for information on how to select, enable, and disable the protocols that control access to the UI and to define the Web-server ports for the protocols.

Supported Web Browsers

You can use Microsoft® Internet Explorer® (IE) 7.x or higher (on Windows operating systems only) or Mozilla® Firefox® 3.0.6 or higher (on all operating systems) to access the unit through its UI. Other commonly available browsers might work but have not been fully tested.

The unit cannot work with a proxy server. Before you can use a browser to access the UI of the unit, you must do one of the following:

- Configure the browser to disable the use of a proxy server for the unit.
- Configure the proxy server so that it does not proxy the specific IP address of the unit.

How to Log On

Overview

You can use the DNS name or the System IP address of the unit for the URL address of the UI. Use your case-sensitive user name and password to log on. If you do not have a user name and password assigned, the default user name can be used and differs by account type:

- **apc** for Administrator
- **device** for a Device User
- **readonly** for a Read-Only User

The default password is **apc** for these three account types. There is no default for a Network-only account type.



See also *Types of User Accounts, page 9*.

When HTTPS is enabled, the unit generates its own certificate. This certificate negotiates encryption methods with your browser.



For more information, search for Security Handbook at www.schneider-electric.com > **Support** > **Download Documents and Software**.

URL Address Format

Type the DNS name or IP address of the unit in the Web browser URL address field and press Enter. When you specify a non-default Web-server port in Internet Explorer, you must include http:// or https:// in the URL.

Common Browser Error Messages at Log-On		
Error Message	Browser	Cause of the Error
"This page cannot be displayed."	Internet Explorer	Web access is disabled, or the URL was not correct.
"Unable to connect."	Firefox	

URL Format Examples	
Example and Access Mode	URI Format
DNS name of Web1	
HTTP	http://Web1
HTTPS	https://Web1
System IP address of 139.225.6.133 and a default Web server port (80)	
HTTP	http://139.225.6.133
HTTPS	https://139.225.6.133
System IP address of 139.225.6.133 and a non-default Web server port (5000)	
HTTP	http://139.225.6.133:5000
HTTPS	https://139.225.6.133:5000
System IPv6 address of 2001:db8:1::2c0:b7ff:fe00:1100 and a non-default Web server port (5000)	
HTTP	http://[2001:db8:1::2c0:b7ff:fe00:1100]:5000

Home Screen

Overview

Home: On the **Home** screen of the Web user interface, you can view the device name and location, temperature readings, active alarms, and the most recent events recorded in the **Event Log**. To view the entire **Event Log**, click **More Events** in the bottom-right of the **Recent Device Events** list.

One or more icons and accompanying text indicate the current operating status of the unit.

Symbol	Description
	No Alarm: No alarms are present.
	Warning: An alarm condition requires attention and could jeopardize your data or equipment if its cause is not addressed.
	Critical: A critical alarm exists that requires immediate action.

In the upper-right corner of every screen, the same icons report the unit status. If any Critical or Warning alarms exist, the number of active alarms also displays.

Icons and links: To make any screen the “home” screen (i.e., the screen that displays first when you log on), go to that screen, and click  in the top-right corner.

Click  to revert to displaying the **Home** screen when you log on.

At the lower-left on each screen of the interface, there are three configurable links to useful Web sites. By default, the links access the URLs for these Web pages:

- Link 1: *APC Web Site*
- Link 2: *Testdrive Demo*
- Link 3: *APC Monitoring*



To re-configure the links, see *Configure the Links Screen, page 53*.

Monitoring the Status

Unit Status

Path: Main > Status > Unit

View information specific to this unit.



You can configure your unit and network using the **Configuration** menu options. See *Configuring Your Settings*, page 22.

Unit

- **Mode:** Displays the current operational mode of the unit.
 - **Unknown:** A status cannot be currently acquired.
 - **Init:** Unit is currently initializing.
 - **Off:** Unit is currently off.
 - **Standby:** Unit is in standby mode.
 - **Delaying:** Unit is delaying start until the **Startup Delay** time has elapsed.
 - **Active:** Unit is currently cooling.
- **Airflow:** The current airflow output of the unit. (l/s (ft³/m))
- **Air Filter Pressure:** The current air pressure at the air filter. (Pa (in. WC))
- **Cool Demand:** The cooling output required to meet the current heat load of the conditioned space.(kW)
- **Cool Output:** The combined output of the cooling unit. (kW)

Environment

- **Supply (Average) Temperature:** The average temperature from the top and bottom supply air temperature sensors connected to this unit. (°C (°F))
- **Upper Supply Temperature:** The temperature from the top supply air temperature sensor connected to this unit. (°C (°F))
- **Lower Supply Temperature:** The temperature from the bottom supply air temperature sensor connected to this unit. (°C (°F))
- **Return (Average) Temperature:** The average temperature from the top and bottom return air temperature sensors connected to this unit. (°C (°F))
- **Upper Return Temperature:** The temperature from the top return air temperature sensor connected to this unit. (°C (°F))
- **Lower Return Temperature:** The temperature from the bottom return air temperature sensor connected to this unit. (°C (°F))
- **Room Temperature:** The temperature of the ambient air in the IT space. (°C (°F))
- **Humidity:** The relative humidity of the air in the IT space. (%RH)
- **Dew Point Temperature:** The dew point of the IT space. (°C (°F))
- **Maximum Rack Inlet Temperature:** The highest rack temperature reported by any cooling unit in the cooling group. (°C (°F))
- **Rack Inlet Temperature 1:** The temperature from the rack inlet 1 air temperature sensor connected to this unit. (°C (°F))
- **Rack Inlet Temperature 2:** The temperature from the rack inlet 2 air temperature sensor connected to this unit. (°C (°F))
- **Rack Inlet Temperature 3:** The temperature from the rack inlet 3 air temperature sensor connected to this unit. (°C (°F))

- **Rack Inlet Temperature 4:** The temperature from the rack inlet 4 air temperature sensor connected to this unit. (°C (°F))

Refrigerant System

- **Suction Pressure:** The pressure of the refrigerant at the suction line. (bar (psi))
- **Discharge Pressure:** The pressure of the refrigerant at the discharge line. (bar (psi))
- **Suction Evap. Temp.:** The temperature of the refrigerant at the suction line. (°C (°F))
- **Discharge Cond. Temp.:** The temperature of the refrigerant at the discharge line. (°C (°F))
- **Outlet Evap Coil Temperature:** The temperature of the refrigerant leaving the evaporative coil. (°C (°F))
- **Inlet Evap Coil Temperature:** The temperature of the refrigerant entering the evaporative coil. (°C (°F))
- **Superheat:** The temperature difference required to keep the refrigerant in a gaseous state. ($\Delta^{\circ}\text{C}$ ($\Delta^{\circ}\text{F}$))
- **Avg Fan Speed:** The current average speed of the eight fans in the unit. (%)
- **Compressor Speed:** The current speed of the compressor. (Hz)
- **EEV Position:** The current open percentage of the electronic expansion valve. (%)
- **Condenser Fan Speed:** The current speed of the condenser fan. (%)

Power Information

- **Power Feed Type:** Displays whether the indoor unit has a **Single** or **Dual** power feed.
- **Active Power Source:** Displays if the unit is using the primary or secondary power source.
- **Primary Power Source:** If the power source is **Bad**, then the ATS will transfer to the secondary power supply.
- **Secondary Power Source:** If the secondary power source is good, then it can be used in the event of primary source is bad.
- **Fan Power Supply 1:** The current draw of fan power supply 1. (A)
- **Fan Power Supply 2:** The current draw of fan power supply 2. (A)
- **Condenser Fan Power:** The current draw of the condenser fan. (W)
- **Compressor Power:** The current draw of the compressor. (kW)

Input/Output

- **Standby Input State:** The current state of the shutdown input. (**Open** or **Closed**)
- **Alarm Relay 1:** The current state of alarm relay 1. (**Open** or **Closed**)
- **Alarm Relay 2:** The current state of alarm relay 2. (**Open** or **Closed**)
- **Alarm Relay 3:** The current state of alarm relay 3. (**Open** or **Closed**)
- **Alarm Relay 4:** The current state of alarm relay 4. (**Open** or **Closed**)

Cycle Counters/Run Hours

Path: Main > Status > Counters/Run Hours

View component run hours and compressor cycle counters.

Run Hours

- **Unit Run Hrs**
- **Air Filter Run Hrs**
- **Compressor Run Hrs**
- **Condenser Fan Run Hrs**
- **Condensate Pump Run Hrs**
- **Fan 1 Run Hrs**
- **Fan 2 Run Hrs**
- **Fan 3 Run Hrs**
- **Fan 4 Run Hrs**
- **Fan 5 Run Hrs**
- **Fan 6 Run Hrs**
- **Fan 7 Run Hrs**
- **Fan 8 Run Hrs**

NOTE: Fan 1 is the bottom fan; fan 8 is the top fan.

Group Status

Path: Main > Status > Group

View information specific to this cooling group.

NOTE: These are read-only values.

- **Group Minimum Rack Temperature:** The lowest rack temperature reported by any cooling unit in the cooling group. (°C (°F))
- **Group Maximum Rack Temperature:** The highest rack temperature reported by any cooling unit in the cooling group. (°C (°F))
- **Group Dew Point Temperature:** The average group dew point temperature. (°C (°F))
- **Total Airflow:** The combined airflow output of the cooling units in the cooling group. (l/s (ft³/m))
- **Total Air Side Cooling Demand:** The cooling output required to meet the current heat load of the conditioned space. (kW)
- **Total Sensible Cooling Power:** The combined output of the cooling group. (kW)
- **Active Flow Control Status:** The conditional state of the containment air pressure differential measurement device (AFC).
 - **Under:** The air flow status on at least one AFC unit is insufficient. The LED on the AFC will be illuminated as red.
 - **OK:** There is nominal air flow status on all AFC units. The LED on the AFC will be illuminated as green.
 - **Over:** There is a surplus of air flow status on at least one AFC unit. The LED on the AFC will be illuminated as blue.
 - **NA:** There are no AFC units installed or no status reading is available.

Network Status

Path: Main > Status > Network

The **Network** screen displays information about your network.

Current IPv4 Settings

- **System IP:** The IP address of the cooling unit.
- **Subnet Mask:** The subnet mask for the sub-network.
- **Default Gateway:** The default gateway address used by the network.
- **MAC Address:** The MAC address of the cooling unit.
- **Mode:** How the IPv4 settings are assigned: **Manual**, **DHCP**, or **BOOTP**.
- **DHCP Server:** The IP address of the DHCP server. This is only displayed if **Mode** is DHCP.
- **Lease Acquired:** The date/time that the IP address was accepted from the DHCP server.
- **Lease Expires:** The date/time that the IP address accepted from the DHCP server expires and will need to be renewed.

Current IPv6 Settings

- **Type:** How the IPv6 settings are assigned.
- **IP Address:** The IP address of the unit.
- **Prefix Length:** The range of addresses for the sub-network.

Domain Name System Status

- **Active Primary DNS Server:** The IP address of the primary DNS server.
- **Active Secondary DNS Server:** The IP address of the secondary DNS server.
- **Active Host Name:** The host name of the active DNS server.
- **Active Domain Name (IPv4/IPv6):** The IPv4/IPv6 domain name that is currently in use.
- **Active Domain Name (IPv6):** The IPv6 domain name that is currently in use.

Port Speed

- **Current Speed:** The current speed assigned to the Ethernet port.

Unit Operation Status

Path: Main > Control > Unit

Unit Control

- **Unit:** The unit operational status. (**On/Off**)

Security and Network Control

The **Control** menu options enable you to take immediate actions affecting active user management and the security of your network.

Manage User Sessions

Path: Main > Control > Security > Session Management

The **Session Management** menu displays all active users currently connected to the unit. To view information about a given user, click their user name. The **Session Details** screen displays basic information about the user including what interface they are logged-in to, their IP address, and user authentication. There is also an option to **Terminate Session** for the user.

Reset the Network Interface

Path: Main > Control > Network > Reset/Reboot

This menu gives you the option to reset and reboot various components of the network interface. Users have the option to **Reboot Management Interface**, **Reset All** (option to exclude TCP/IP), or **Reset Only (TCP/IP or Event Configuration)**.

Configuring Your Settings

With the **Configuration** menu options, you can set fundamental operational values for your unit.

Configuration

Path: Main > Configuration > Unit > Unit Configuration

Under the **Configuration > Unit > Unit Configuration** menu, options are available to make changes to the unit.

Unit Configuration

- **Number of Evaporator Fan Power Supplies:** Set the number of fan power supplies installed in the electrical box. (1 or 2)
- **Air Filter Type:** Select whether the air filters are **Standard** or **High Efficiency**.
- **Number of Rack Inlet Temp Sensors in Unit:** Set the number of rack inlet air temperature sensors connected to the unit. (0–4)
- **Number of Leak Detectors in Unit:** Set the number of leak sensors connected to the unit. (0–4)
- **Shutdown Input State:** Displays the current state of the shutdown input.
- **Shutdown Input Normal State:** Select the normal state of the shutdown input. (**Open**, **Closed**)

Cooling Group Configuration

The cooling group configuration settings determine which components are available and how the cooling group should operate.

NOTE: Changing the settings incorrectly can cause malfunctions to your cooling unit. Only qualified service personnel should make changes to these settings.

NOTE: Displayed settings may vary based on model.

Configure the Cooling Group

Path: Main > Configuration > Unit > Group Configuration

The **Group Configuration** menu contains settings that identify the number of cooling units installed in this cooling group and the physical arrangement of those cooling units.

Composition

- **Number of Units in Group:** The number of cooling units in this cooling group. Up to 20 cooling units can be joined together to work as a single cooling group.
- **Number of Active Flow Controllers:** The number of AFC units in the group (0–5).
- **Number of Backup Units:** The total number of desired backup cooling units. This value can range from zero to one less than **Number of Units in Group**.
- **Altitude:** The distance of the unit above sea level in meters or feet depending on the user preferences. The altitude is used to calculate the pressure compensation if an AFC is installed. The altitude is also used in conversions between absolute (g/Kg) and relative (%RH) humidity.

Cooling

A setpoint is the target value that a cooling group tries to maintain in the environment. The default setpoints are appropriate for most cooling applications.

NOTE: Changing the settings incorrectly can cause malfunctions to your cooling unit. Only qualified service personnel should make changes to these settings.

NOTE: Displayed settings may vary based on model and unit configuration.

Path: Main > Configuration > Unit > Setpoints

- **Cooling Strategy:** Select the cooling strategy used to control the operation of the unit. (**RACS, HACS, INROW, CACS, Manual**)



See the “How the Modes of Operation Work” in the *Operation and Maintenance Manual* for more information on the types of cooling strategy.

- **Supply Air Setpoint:** The **Supply Air Setpoint** is the required temperature of the air expelled into the surrounding environment. (15.0–30.2°C (59.0–86.4°F))

NOTE: The **Supply Air Setpoint** is defined by Schneider Electric qualified personnel when the cooling group is commissioned.

- **Cool Setpoint:** Set the temperature that the cooling group should maintain in the IT space. (17.8–35.0°C (64.0–95.0°F))
- **Delta-T Setpoint:** When the group is programmed for HACS or RACS mode, this value specifies the desired temperature difference between the supply and return air temperatures when an AFC is not present. (**10F/5.6C, 15F/8.3C, 20F/11.1C, 25F/13.9C, 30F/16.7C, 35F/19.4C, 40F/22.2C**)

NOTE: Set a lower **Cool Setpoint** or a smaller **Delta-T Setpoint** to assist with start-up during winter.

- **Load Assist Enable:** When set to **Enable**, provides extra capacity via a backup cooling unit in the event that a primary unit is unable to service the demand. When the assistance is no longer needed, the unit will return to the backup state.

NOTE: Redundancy (backup units), runtime balancing, and load assist modes are only supported in HACS, RACS, and CACS configurations.

- **Runtime Balancing Enable:** When set to **Enable**, the system maintains similar run times between units in the group. When the difference between the runtime hours of the cooling units in the system exceeds the value entered for **Runtime Balancing Difference**, the system will automatically exchange modes between the longest running primary unit and the backup unit with equal or greater capability if available with the least runtime hours.

NOTE: The runtime balancing cap is not adjustable. Runtime hours are hours that the cooling unit is actually operating and NOT 72 consecutive hours (three days) of time.

- **Runtime Balancing Difference:** Enter the number of hours used to maintain runtime balancing in the cooling group. (24–720 hours)
- **Switchover Handoff Time:** Enter the length of time that the currently active unit will remain on after another unit is made the active unit. Both units will be running during this time. (0–30 minutes)

Service Menu

Path: Main > Configuration > Unit > Service

The **Service** menus contain settings related to the operation of the unit that should only be changed by qualified personnel.

Unit

NOTE: All changes to settings must be performed by qualified personnel.

- **Number of Evaporator Fan Power Supplies:** Set the number of fan power supplies installed in the electrical box. (1 or 2)
- **Air Filter Type:** Select whether the air filters are **Standard** or **High Efficiency**.
- **Maximum Fan Speed:** Set the maximum fan speed percentage allowed for the evaporator fans. (15.0–100.0%)
- **Minimum Fan Speed:** Set the minimum fan speed percentage allowed for the evaporator fans. (15–100%)
- **Voltage:** Select the voltage of the unit.
 - **Not Configured**
 - **100-120v**
 - **200-240v**
- **Power Feed Type:** Select whether the power feed is a **Single** or **Dual** power feed.
- **Condensate Drain Type:** Select the type of condensate drain used by the unit. (**Gravity** or **Pump**)
- **Smoke-Fire Sensor:** Select **Yes** if the sensor is present.
- **Humidity Sensor Present:** Select **Yes** if the sensor is present.
- **Shutdown Input Present:** Select **Yes** if the shutdown input is present.
- **Shutdown Input State:** Displays the normal state of the shutdown input. (**Open** or **Closed**)
- **Number of Rack Inlet Temp Sensors in Unit:** Set the number of rack inlet air temperature sensors connected to the unit. (0–4)
- **Number of Leak Detectors in Unit:** Set the number of leak sensors connected to the unit. (0–4)

Containment Systems

- **Number of Active Flow Controllers:** Set the number of Active Flow Controller units in the group. (0–5)
- **Active Flow Control Lamp Test:** When set to **On**, the Active Flow Controller (s) LEDs will cycle through a red, green, and blue illumination pattern.

Run Hours Reset

Select **Reset** and press **OK** to reset the run hours for an individual component. The following components can have run hour alarms reset:

- Unit Run Hour Alarm Reset
- Air Filter Run Hour Alarm Reset

Compressor Drive

- **Compressor Speed:** Displays the current speed of the compressor. (Hz)
- **Maximum Compressor Speed:** Enter the maximum speed allowed for the compressor. (60.0–100.0 Hz)
- **Minimum Compressor Speed:** Enter the minimum speed allowed for the compressor. (15.0–60.0 Hz)
- **Startup Compressor Speed:** Enter the target speed of the compressor (Hz) when it is first turned on. The target speed is valid until the evaporating temperature exceeds 0°C (32°F). After that, the compressor is controlled by the supply temperature PID. (15–100 Hz)
- **Maximum Compressor Restarts:** Enter how many compressor restarts are allowed within 30 minutes after a compressor trips. The variable frequency drive (VFD) will shut down the compressor if the number of restarts exceeds this value within 30 minutes. (1–20)
- **Enable Envelope Management:** Select whether or not envelope management is enabled.



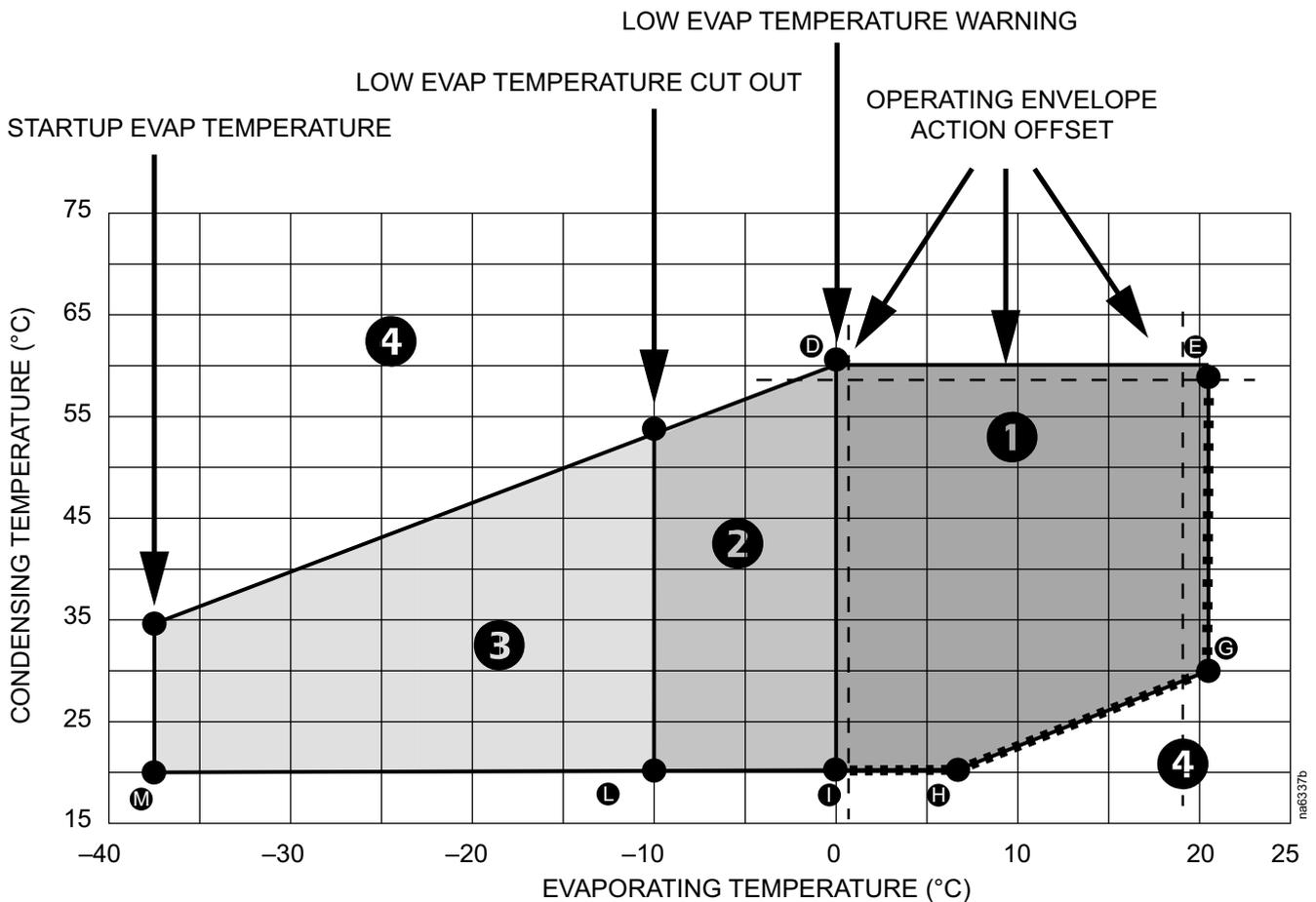
See *Envelope Management*, page 25.

- **Compressor Envelope Start Offset:** The environmental action offset. This is the temperature offset at which the controller will start applying the compressor envelope management process. (2,8–5.6°C (6.2–12.3°F))
- **Heat Sink Temperature:** Displays the compressor heat sink temperature. (°C (°F))
- **Current:** Displays the compressor current draw. (A)
- **Compressor Power:** The compressor power consumption. (kW)
- **Alarm Status:** The compressor alarm word used for diagnostics.
- **Warning Status:** The compressor warning word used for diagnostics.
- **Software Version:** The software version of the compressor controller.
- **Serial Number:** The serial number of the compressor
- **Software ID:** The compressor driver software ID.

Envelope Management

Envelope management is used to control the acceptable operating range for compressors.

Variable-Speed Compressor Operating Range



- EXV ACTION (SH<30°C)
- CONDENSER FAN SPEED REGULATION ACTION

NOTE: The operating envelope for your unit will differ based on unit settings and compressor model; this example is based on default values for the VZH044CG compressor model.

Data Point	Condensing Pressure – barg	Evaporating Pressure – barg	Data Point	Condensing Pressure – barg	Evaporating Pressure – barg
D	36.95	11.56	I	13.45	6.97
E	17.86	11.56	L	13.45	4.71
H	13.45	8.33	M	13.45	1.00

Zone	Description	Zone	Description
1	Open operating area	3	Compressor can operate in this region for a maximum of 240 seconds at start-up
2	Compressor can operate in this region for a maximum of 240 seconds at any time during the compressor run cycle	4	Not acceptable operating range

The compressor will be allowed to start if the evaporation temperature exceeds the **Startup Evap Temperature** value. The compressor can operate in zone 3 for a maximum of 240 seconds only after startup. After the evaporation temperature enters zone 2, the compressor can operate in this zone for a maximum of 240 seconds. After the evaporation temperature enters zone 1, it can return to zone 2 for a maximum of 240 seconds. If the evaporation temperature drops below the **Low Evap Temperature Cut Out** value at any time after entering zone 2, it will turn off the compressor. The compressor can run in zone 1 indefinitely. The compressor will not operate in zone 4.

The controller continually adjusts the condensing temperature setpoint such that it follows the dashed line between **I**, **H**, and **G**. This causes the condenser fan to

drive the condensing temperature as low as possible thus reducing the load on the compressor.

If the evaporating temperatures near the limits of the operating envelope, the controller will take actions to keep the compressor operating within the accepted ranges.

- If the evaporating temperature reaches a temperature within **Op. Env. Action Offset** degrees of the operating envelope boundaries formed by points **E** and **G**, the controller will adjust the electronic expansion valve (EXV) to keep the evaporating temperature within the acceptable range.
- If the evaporating temperature reaches a temperature within **Op. Env. Action Offset** degrees of the operating envelope boundary formed by points **D** and **I**, the controller will adjust the compressor speed to keep the evaporating temperature within the acceptable range.
- If the condensing temperature reaches a temperature within **Op. Env. Action Offset** degrees of the operating envelope boundary formed by points **D** and **E**, the controller will adjust the compressor speed to keep the condensing temperature within the acceptable range.



See *Compressor Drive*, page 25.

PID Settings

NOTICE

DAMAGE TO EQUIPMENT

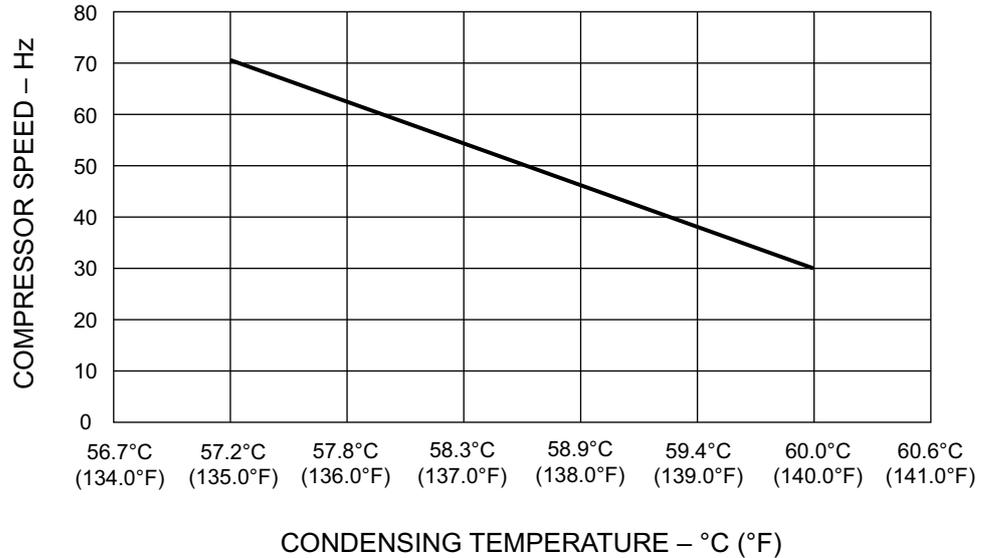
This procedure is to be performed by Schneider Electric qualified personnel only. Improperly set PID controls could result in equipment damage.

Failure to follow these instructions can result in equipment damage.

The Proportional plus Integral plus Derivative (PID) loops control the output of the fans and other components.

- **Superheat Control:** Displays whether the PID algorithm for superheat is running (**Run**) or not (**Stop**).
- **Superheat Setpoint:** Set the target value for the temperature difference for refrigerant entering and leaving the coil. (4.4–22.2Δ°C (8.0–40.0Δ°F))
- **Superheat PID Gain:** The proportional multiplier (gain) for the temperature sensors installed on the inlet and outlet of the cooling coil. The proportional multiplier adjusts for the difference (error) between the measured value and the setpoint.
- **Superheat PID Integral:** The integral multiplier (reset rate) for the temperature sensors installed on the inlet and outlet of the cooling coil. The integral multiplier adjusts for error measurement and the amount of time that the error has existed. The integral multiplier adds to or subtracts from the output in small increments to correct for the offset error caused by the proportional contribution.
- **Superheat PID Derivative:** The derivative multiplier (derivative) for the temperature sensors installed on the inlet and outlet of the cooling coil. The derivative multiplier adjusts the output for rapid changes in the error, correcting for the rate of change of the error over time.
- **Superheat PID Reset:** Select **Yes** to reset the superheat setpoint PID values to factory default settings.
- **AirFlow Control:** Displays whether the PID algorithm for airflow control is running (**Run**) or not (**Stop**).
- **AirFlow PID Gain:** The proportional multiplier (gain) for the evaporator fan when an AFC is present. The proportional multiplier adjusts for the difference (error) between the measured value and the setpoint.
- **AirFlow PID Integral:** The integral multiplier (reset rate) for the evaporator fan when an AFC is present. The integral multiplier adjusts for error measurement and the amount of time that the error has existed. The integral multiplier adds to or subtracts from the output in small increments to correct for the offset error caused by the proportional contribution.
- **AirFlow PID Derivative:** The derivative multiplier (derivative) for the evaporator fan when an AFC is present. The derivative multiplier adjusts the output for rapid changes in the error, correcting for the rate of change of the error over time.
- **AirFlow PID Reset:** Select **Yes** to reset the airflow control PID values to factory default settings.
- **Condenser Fan Control:** Displays whether the PID algorithm for the condenser fan is running (**Run**) or not (**Stop**).
- **Condenser Temperature Setpoint:** Enter the setpoint that will be used by the condenser temperature controller in two conditions: One condition is when the condensing temperature is less than or equal to 0°C (32°F); the other condition is when the evaporation temperature sensor does not provide a value. (10.0–93.3°C (50.0–200.0°F))
- **Condenser Temperature Setpoint Mode:** If **Manual** is selected, the condenser fan is controlled to regulate the condensing temperature to the **Condenser Temperature Setpoint**. If **Auto** is selected, the condenser fan is controlled to regulate the condensing temperature to a setpoint determined by the evaporating temperature, as show in the diagram below.

COMPRESSOR ENVELOPE (HIGH CONDENSING TEMPERATURE)



- **Condenser PID Gain:** The proportional multiplier (gain) for the condenser fan. The proportional multiplier adjusts for the difference (error) between the measured value and the setpoint.
- **Condenser PID Integral:** The integral multiplier (reset rate) for the condenser fan. The integral multiplier adjusts for error measurement and the amount of time that the error has existed. The integral multiplier adds to or subtracts from the output in small increments to correct for the offset error caused by the proportional contribution.
- **Condenser PID Derivative:** The derivative multiplier (derivative) for the condenser fan. The derivative multiplier adjusts the output for rapid changes in the error, correcting for the rate of change of the error over time.
- **Condenser PID Reset:** Select **Yes** to reset the condenser fan control PID values to factory default settings.
- **Supply Air Control:** Displays whether the PID algorithm for the supply air is running (**Run**) or not (**Stop**).
- **Supply Air Setpoint:** The required temperature of the air expelled into the surrounding environment. (15.0–30.2°C (59.0–86.4°F))
- **Delta-T Setpoint:** When the group is programmed for HACS or RACS mode, this value specifies the desired temperature difference between the supply and return air temperatures when an AFC is not present. (**10F/5.6C, 15F/ 8.3C, 20F/11.1C, 25F/13.9C, 30F/16.7C, 35F/19.4C, 40F/22.2C**)

NOTE: Set a lower **Cool Setpoint** or a smaller **Delta-T Setpoint** to assist with start-up during winter.

- **Supply Air PID Gain:** The proportional multiplier (gain) for the supply air sensors installed on the unit. The proportional multiplier adjusts for the difference (error) between the measured value and the setpoint.
- **Supply Air PID Integral:** The integral multiplier (reset rate) for the supply air temperature sensors installed on the unit. The integral multiplier adjusts for error measurement and the amount of time that the error has existed. The integral multiplier adds to or subtracts from the output in small increments to correct for the offset error caused by the proportional contribution.
- **Supply Air PID Derivative:** The derivative multiplier (derivative) for the supply air temperature sensors installed on the unit. The derivative multiplier adjusts the output for rapid changes in the error, correcting for the rate of change of the error over time.
- **Supply Air PID Reset:** Select **Yes** to reset the supply air temperature PID values to factory default settings.
- **Rack Inlet Control:** Displays whether or not the PID algorithm for the rack inlet air temperature is running (**Run**) or not (**Stop**).

- **Cool Setpoint:** Set the temperature that the cooling group should maintain in the IT space. (17.8–35.0°C (64.0–95.0°F))
- **Rack Inlet PID Gain:** The proportional multiplier (gain) for the rack inlet air temperature sensors connected to the unit. The proportional multiplier adjusts for the difference (error) between the measured value and the setpoint.
- **Rack Inlet PID Integral:** The integral multiplier (reset rate) for the rack inlet air temperature sensors connected to the unit. The integral multiplier adjusts for error measurement and the amount of time that the error has existed. The integral multiplier adds to or subtracts from the output in small increments to correct for the offset error caused by the proportional contribution.
- **Rack Inlet PID Derivative:** The derivative multiplier (derivative) for the rack inlet air temperature sensors connected to the unit. The derivative multiplier adjusts the output for rapid changes in the error, correcting for the rate of change of the error over time.
- **Rack Inlet PID Reset:** Select **Yes** to reset the rack inlet air temperature PID values to factory default settings.

Alarms Configuration

Path: Main > Configuration > Unit > Alarms > Configuration

Thresholds

Thresholds can be set to activate alarms to alert you to violations when the threshold is exceeded.

- **Supply Air High Temperature Threshold:** The high temperature threshold for the supply air as averaged by the supply air temperature sensors. If the temperature exceeds this threshold, an alarm will occur. (0–100°C (32–212°F))
- **Rack Inlet High Temperature Threshold:** The high temperature threshold for the rack inlet air temperature as averaged by the rack inlet temperature sensors. If the temperature exceeds this threshold, an alarm will occur. (0–100°C (32–212°F))
- **Return Air High Temperature Threshold:** The high temperature threshold for the air entering the cooling unit. If the temperature exceeds this threshold, an alarm will occur. (0–100°C (32–212°F))
- **Return Humidity High Threshold:** The relative humidity at which the high threshold alarm occurs. (35–90%RH)
- **Return Humidity Low Threshold:** The relative humidity at which the low threshold alarm occurs. (20–50%RH)

Maintenance

Each component interval setting has an alarm. If set to **Enable**, the annunciator will sound when the service interval for the component has elapsed. The alarms are cleared by selecting the check box for the **XXX Alarm Reset** for each component to reset the service alarm and pressing **OK**. Enable service interval alarms and set the number of weeks to service the following components:

- **Unit Run Hours:** Displays the total hours the unit has been in operation.
- **Unit Alarm Enabled:** Select to **Enable** or **Disable** the alarm.
- **Unit Alarm Interval:** Set the interval for the service alarm for the cooling unit. (1–300 wk)
- **Air Filter Run Hrs:** Displays the number of hours the filters have been in use.
- **Air Filter Alarm Enabled:** Select to **Enable** or **Disable** the alarm.
- **Air Filter Alarm Interval:** Set the interval for the service alarm for the air filters. (1–300 wk)

Alarm Relay Map

Path: Main > Configuration > Unit > Alarms > Alarm Relay Map

Select the **Output Relays** for each alarm for the unit. Click **Apply** below each section to confirm changes.

Enable Alarm Notifications

Path: Main > Configuration > Unit > Alarms > Enable Alarm Notifications

Select whether each alarm is **Enabled** or **Disabled**. Click **Apply** below each section to confirm changes.

Rotate on Event

Path: Main > Configuration > Unit > Alarms > Rotate On Event

Select whether each alarm will cause operation to rotate to a stand-by unit if the alarm is triggered on the active unit. Click **Apply** below each section to confirm changes.

Security Menu

Session Management

Path: Main > Configuration > Security > Session Management

Enabling **Allow Concurrent Logins** Two or more users can log on at the same time. Each user has equal access and each interface (HTTP, FTP, telnet console, serial console (CLI), etc.) counts as a logged-in user.

Remote Authentication Override: The unit supports remote authentication dial-in user service (RADIUS) storage of passwords on a server. However, if you enable this override, the unit will allow a user with **Serial Remote Authentication Override** enabled to log on using the password for local authentication.



See *Local Users*, page 33 and *Remote Users Authentication*, page 35.

NOTE: **Remote Authentication Override** only works for users logged-in through the LCD display or through the serial cable.

Ping Response

Path: Main > Configuration > Security > Ping Response

Enable the **IPv4 Ping Response** check box to allow the cooling unit to respond to network pings. This does not apply to IPv6.

Local Users

Use these menu options to view, and to set up access and individual preferences (like displayed date format), for the unit display interface. This applies to users as defined by their logon name.

Path: Main > Configuration > Security > Local Users > Management

From this menu, an administrator or super user can view the users that are allowed access to the UI. Click on the user name to view details and to edit or delete a user.

Click **Add User** to add a user. On the resulting **User Configuration** screen, you can add a user and withhold access by clearing the **Access** check box. The maximum length for both the name and password is 64 characters, with less for multi-byte characters. You have to enter a password. A PIN of four to eight digits may also be designated.

To change an administrator/super user setting, you must supply the current password as a security measure.

User Type

There are four levels of access (Administrator, Device User, Read-Only User, and Network-Only User).

- An Administrator can use all the menus in the Web interface and control console. The default user name and password are both **apc**.
- A Device User can access only the following:
 - In the Web interface, the menus on the **Group** and **Unit** tabs and the event and data logs, accessible under the **Events** and **Data** headings on the left navigation menu of the **Logs** tab.
 - In the control console, the equivalent features and options. The default user name is device, and the default password is **apc**.
- A Read-Only User has the following restricted access:

- Access through the Web interface only. You must use the Web interface to configure values for the Read-Only User.
- Access to the same tabs and menus as a Device User, but without the capability to change configurations, control devices, delete data, or use file transfer options. Links to configuration options are visible but disabled, and the event and data logs display no button to clear the log.

The default user name is **readonly**, and the default password is **apc**.

- A Network-Only User has the following restricted access:
 - Access through the Web interface only (UI) and CLI (telnet not serial). A network-only user has read-write access to the network-related menus only. There is no default name and password.

Touch Screen Remote Authentication Override

Use to configure whether or not this account can log in to the touch screen even when the NMC authentication is set to RADIUS.

User Description

This is a general description of the user.

Session Timeout

Use to configure the length of time that the various UIs wait before logging-out this user (three minutes by default). If you change this value, the user must log-off for the change to take effect.

Serial Remote Authentication Override

The unit will allow a user with this enabled to log-on to the unit using the password for local authentication. **Remote Authentication Override** must be enabled on the **Configuration > Security > Session Management** screen for this to function.

User Preferences

Select options related to how users view information.

- **Event Log Color Coding:** Select the check box to enable color-coding of alarm text recorded in the event log based on severity. (System-event entries and configuration-change entries do not change color because they are considered informational events.)
- **Export Log Format:** Exported log files can be formatted using CSV (comma-separated values) or tab delimited.



See *Event Log*, page 57 for information on exporting logs.

- **Temperature Scale:** Select the temperature scale for measurements in this UI. **US Customary** corresponds to Fahrenheit, and **Metric** corresponds to Celsius.
- **Date Format:** Select the date form for the UI.
- **Language:** Select the default language for the UI. This can be set when you log on also. You can also specify different languages for e-mail recipients and SNMP trap receivers.



See *E-Mail Notification Configuration*, page 49 and *SNMP Trap Receiver Configuration*, page 50.

Path: Main > Configuration > Security > Local Users > Default Settings

Setting up defaults can make adding users quicker. Use this option to set defaults for the options on the **Management** screen. A remote RADIUS user will also use these default settings.

Remote Users Authentication

Path: Main > Configuration > Security > Remote Users > Authentication

Authentication

Specify how you want users to be authenticated at logon.

The following authentication and authorization functions of remote authentication dial-in user service (RADIUS) are supported:

- When a user accesses the unit or other network-enabled device that has RADIUS enabled, an authentication request is sent to the RADIUS server to determine the permission level of the user.
- RADIUS user names are limited to 32 characters with the unit.

Select one of the following:

- **Local Authentication Only:** RADIUS is disabled.



See *Local Users*, page 33.

- **RADIUS, then Local Authentication:** Both are enabled. Authentication is requested from the RADIUS server first. If the RADIUS server does not respond, local authentication is used.
- **RADIUS Only:** There is no local authentication.

If **RADIUS Only** is selected, and the RADIUS server is unavailable, improperly identified, or improperly configured, remote access is unavailable to all users. To regain access, you must use a serial connection to the command line interface and change the access setting to local or radiusLocal.

For example, the command to change the access setting to local would be **radius -a local**.

Radius

Path: Main > Configuration > Security > Remote Users > RADIUS

You can use a RADIUS server to authenticate remote users. Use this option to do the following actions:

- List the RADIUS servers (a maximum of two) available to the unit and the time-out period for each.
- Configure the authentication parameters for a new or existing RADIUS server by clicking on a RADIUS server link.

The **RADIUS Server** menu for each RADIUS server contains the following options:

- **RADIUS Server:** The name or IP address (IPv4 or IPv6) of the RADIUS server.
- **Port:** The port on which the RADIUS server listens to authenticate users. This is port 1812 by default but can be changed to any unused port between 5000-32678.
- **Secret:** The shared secret between the RADIUS server and the unit.
- **Reply Timeout:** The time in seconds that the unit waits for a response from the RADIUS server.
- **Test Settings:** Enter the user name and password configured on the RADIUS server order to test the configured settings.
- **Skip Test and Apply:** Applies the RADIUS server settings without testing.

Configuring the RADIUS Server

You must configure your RADIUS server to work with the cooling unit.

Add the IP address of the unit to the RADIUS server client list (file).

- Users must be configured with Service-Type attributes unless Vendor Specific Attributes (VSAs) are defined. If no Service-Type attributes are configured, users will have read-only access (on the UI only).
- VSAs can be used instead of the Service-Type attributes provided by the RADIUS server.
- VSAs require a dictionary entry and a RADIUS user file. In the dictionary file, define the names for the ATTRIBUTE and VALUE keywords, but not for the numeric values. If you change numeric values, RADIUS authentication and authorization will not work. VSAs take precedence over standard RADIUS attributes.

Configuring a RADIUS server on UNIX® with shadow passwords

If UNIX shadow password files are used (/etc/passwd) with the RADIUS dictionary files, the following two methods can be used to authenticate users:

- If all UNIX users have administrative privileges, add the following to the RADIUS “user” file. To allow only Device Users, change the APC-Service-Type to Device.

```
DEFAULT Auth-Type = System
APC-Service-Type = Admin
```

- Add user names and attributes to the RADIUS “user” file, and verify the password against /etc/passwd. The following example is for users bconners and thawk:

```
bconners Auth-Type = System
APC-Service-Type = Admin
thawk Auth-Type = System
APC-Service-Type = Device
```

Supported RADIUS servers

FreeRADIUS and Microsoft IAS 2003 are supported. Other commonly available RADIUS applications may work but have not been fully tested.

Firewall

Path: Main > Configuration > Security > Firewall > Configuration

Enable or disable the overall firewall functionality. Any configured policy is also listed, even if the firewall is disabled.

Path: Main > Configuration > Security > Firewall > Active Policy

Select an active policy from the available firewall policies. The validity of the policy is also listed here.

Path: Main > Configuration > Security > Firewall > Active Rules

When a firewall is enabled, this lists the individual rules that are being enforced by a current active policy. You can edit existing rules and add or delete new rules here.

Path: Main > Configuration > Security > Firewall > Create/Edit Policy

Create a new policy or edit an existing one.

Path: Main > Configuration > Security > Firewall > Load Policy

Load a policy (with .fwl suffix) from a source external to this device.

Path: Main > Configuration > Security > Firewall > Test

Temporarily enforce the rules of a chosen policy for a time that you specify.

Network Configuration

TCP/IP Settings for IPv4

Path: Main > Configuration > Network > TCP/IP > IPv4 Settings

The upper part of the screen displays any current IPv4 address, subnet mask, default gateway, MAC address, boot mode, DHCP server, and lease dates of the unit. Use the lower part of the screen to configure those settings, including disabling IPv4.

- **Manual:** Specify your IPv4 address, subnet mask, default gateway here.
- **BOOTP:** At 32-second intervals, the device requests network assignment from any BOOTP server:
 - If it receives a valid response, it starts the network services.
 - If previously configured network settings exist and it receives no valid response to five requests (the original and four retries), it uses the previously configured settings by default. This ensures that it remains accessible if a BOOTP server is no longer available.
 - If it finds a BOOTP server, but the request to that server does not work or times out, the device stops requesting network settings until it is restarted.
- **DHCP:** At 32-second intervals, the device requests network assignment from any DHCP server.
 - If a DHCP server is found, but the request to that server does not work or times out, it stops requesting network settings until it is restarted.
 - Optionally, you can set up the device with **Require vendor specific cookie to accept DHCP Address** in order to accept the lease and start the network services.
 - **Vendor Class:** This should be APC. This is only available if BOOTP or DHCP is selected.
 - **Client ID:** The MAC address of the device. If you change this value, the new value must be unique on the LAN. This is only available if BOOTP or DHCP is selected.
 - **User Class:** The name of the application firmware module. This is only available if BOOTP or DHCP is selected.

TCP/IP Settings for IPv6

Path: Main > Configuration > Network > TCP/IP > IPv6 Settings

The upper part of this screen displays any current IPv6 settings of the unit. Use the lower part of the screen to configure those settings, including disabling IPv6.

You have the option of using manual or automated IP addressing. It is possible to use them both concurrently. For **Manual**, select the check box and then enter the **System IPv6** address and the **Default Gateway**.

Select the **Auto Configuration** check box to enable the system to obtain addressing prefixes from the router (if available). It will use those prefixes to automatically configure IPv6 addresses.

IPv6 Possible Formats	Description
fe80:0000:0000:0000:0204:61ff:fe9d:f156	full form of IPv6
fe80:0:0:0:204:61ff:fe9d:f156	drop leading zeroes
fe80::204:61ff:fe9d:f156	collapse multiple zeroes to :: in the IPv6 address
fe80:0000:0000:0000:0204:61ff:254.157.241.86	IPv4 dotted quad at the end
fe80:0:0:0:0204:61ff:254.157.241.86	drop leading zeroes, IPv4 dotted quad at the end
fe80::204:61ff:254.157.241.86	dotted quad at the end, multiple zeroes collapsed

IPv6 Possible Formats	Description
::1	localhost
fe80::	link-local prefix
2001::	global unicast prefix

For **DHCPv6 Mode**, see the table below.

Option	Description
Router Controlled	<p>When this radio box is selected, DHCPv6 is controlled by the M (Managed Address Configuration Flag) and O (Other Stateful Configuration Flag) flags received in IPv6 router advertisements. When a router advertisement is received, the unit checks whether the M and O flags are set. The unit interprets them as follows:</p> <ul style="list-style-type: none"> • Neither is set: Indicates that the local network has no DHCPv6 infrastructure. The unit uses Router Advertisements and manual configuration to get non-link-local addresses and other settings. • M, or M and O are set: In this situation, full DHCPv6 address configuration occurs. DHCPv6 is used to obtain addresses AND other configuration settings. This is known as "DHCPv6 stateful." <p>Once the M flag has been received, the DHCPv6 address configuration stays in effect until the interface in question has been closed, even if subsequent Router Advertisement packets are received in which the M flag is not set.</p> <p>If an O flag is received first, then an M flag is received subsequently, the unit performs full address configuration upon receipt of the M flag.</p> <ul style="list-style-type: none"> • Only O is set: In this situation, the unit sends a DHCPv6 Info-Request packet. DHCPv6 is used to configure "other" settings (such as location of DNS servers), but NOT to provide addresses. This is known as "DHCPv6 stateless."
Address and Other Information	DHCPv6 is used to obtain addresses AND other configuration settings. This is known as "DHCPv6 stateful."
Non-Address Information Only	DHCPv6 is used to configure "other" settings (such as location of DNS servers), but NOT to provide addresses. This is known as "DHCPv6 stateless."
Never	DHCPv6 is NOT used for any configuration settings.

DHCP Response Options

Each valid DHCP response contains options that provide the TCP/IP settings that the unit needs in order to operate on a network. Each response also has other information that affects the operation of the unit.



For more information, refer to FA156110 on **FAQ**, under the **Support** tab at www.schneider-electric.com.

Vendor Specific Information (option 43)

The unit uses this option in a DHCP response to determine whether the DHCP response is valid. This option contains an option in a TAG/LEN/DATA format, called the APC Cookie. This is disabled by default.

- APC Cookie. Tag 1, Len 4, Data "1APC"

Option 43 communicates to the unit that a DHCP server is configured to service devices.

The following, in hexadecimal format, is an example of a Vendor Specific Information option that contains the APC cookie:

Option 43 = 0x01 0x04 0x31 0x41 0x50 0x43

TCP/IP Options

The unit uses the following options within a valid DHCP response to define its TCP/IP settings. All of these options, except the first, are described in **RFC2132**.

- **IP Address** (from the **yiaddr** field of the DHCP response, described in **RFC2131**): The IP address that the DHCP server is leasing to the unit.

- **Subnet Mask** (option 1): The **Subnet Mask** value that the unit needs to operate on the network.
- **Router**, i.e., Default Gateway (option 3): The default gateway address that the unit needs to operate on the network.
- **IP Address Lease Time** (option 51): The time duration for the lease of the IP Address to the unit.
- **Renewal Time, T1** (option 58): The time that the unit must wait after an IP address lease is assigned before it can request a renewal of that lease.
- **Rebinding Time, T2** (option 59): The time that the unit must wait after an IP address lease is assigned before it can seek to rebind that lease.

Other Options

The unit also uses these options within a valid DHCP response. All of these options except the **Boot File Name** are described in RFC2132.

- **Network Time Protocol Servers** (option 42): Up to two NTP servers (primary and secondary) that the unit can use.
- **Time Offset** (option 2): The offset of the unit subnet, in seconds, from Coordinated Universal Time (UTC).
- **Domain Name Server** (option 6): Up to two Domain Name System (DNS) servers (primary and secondary) that the unit can use.
- **Host Name** (option 12): The host name that the unit will use (32-character maximum length).
- **Domain Name** (option 15): The domain name that the unit will use (64-character maximum length).
- **Boot File Name** (from the file field of the DHCP response, described in RFC2131): The fully qualified directory-path to a user configuration file (.ini file) to download. The **siaddr** field of the DHCP response specifies the IP address of the server from which the unit will download the .ini file. After the download, the unit uses the .ini file as a boot file to reconfigure its settings.

Port Speed

Path: Main > Configuration > Network > Port Speed

The port speed setting defines the communication speed of the Ethernet network port. Your current setting is displayed in **Current Speed**.

You can change the setting by choosing a radio button under **Port Speed**.

- For **Auto-negotiation** (the default), network devices negotiate to transmit at the highest possible speed, but if the supported speeds of two devices are not matched, the slower speed is used.
- Alternatively, you can select 10 Mbps or 100 Mbps, each with the following options:
 - Half-Duplex (communication in only one direction at a time)
 - Full-Duplex (communication in both directions on the same channel simultaneously)

DNS Configuration

Path: Main > Configuration > Network > DNS > Configuration

The values under **Domain Name System Status** list your current status and setup.

Use the options under **Manual Domain Name System Settings** to configure the Domain Name System (DNS).

- **Override Manual DNS Settings:** Enabling **Override Manual DNS Settings** means that configuration data from other sources like DHCP take precedence over the manual configurations here.
- **Primary DNS Server:** Specify the Primary DNS Server and, optionally, the Secondary DNS Server with IPv4 or IPv6 addresses. For the unit to send email, you must at least define the IP address of the primary DNS server.
 - The unit waits up to 15 seconds for a response from the primary DNS server or the secondary DNS server. If the unit does not receive a response within that time, email cannot be sent. Use DNS servers on the same segment as the unit or on a nearby segment, but not across a wide-area network (WAN).
 - After you define the IP addresses of the DNS servers, test it.
- **System Name Synchronization:** Enabling this synchronizes the DNS host name with the unit system name. Click on the **System Name** link to define it.
- **Host Name:** After you configure a host name here and a domain name in the **Domain Name** field, users can enter a host name in any field in the unit interface (except e-mail addresses) that accepts a domain name.
- **Domain Name (IPv4/IPv6):** For the display interface, you only need to configure the domain name here. In all other fields in this UI — except email addresses — that accept domain names, the unit defaults to adding this domain name when only a host name is entered.

To override the expansion of a specified host name by the addition of a domain name, set this domain name field to its default, `somedomain.com` or to `0.0.0.0`.

To override the expansion of a specific host name entry (for example, when defining a trap receiver), include a trailing period. The unit recognizes a host name with a trailing period (such as `mySnmpServer.`) as if it were a fully-qualified domain name and does not append the domain name.

- **Domain Name (IPv6):** Specify the IPv6 domain name here.

DNS Testing

Path: Main > Configuration > Network > DNS > Test

Use this option to send a DNS query that tests the setup of your DNS servers by looking up the IP address.

View the result of a test in the **Last Query Response** field.

- For **Query Type**, select the method to use for the DNS query, see the table below.
- For **Query Question**, specify the value to be used for the selected query type as explained in the table.

Query Type Selection	Query Question to Use
By Host	The host name, the URL
By FQDN	The fully-qualified domain name: <code>my_server.my_domain.com</code>
By IP	The IP address of the server
By MX	The mail exchange address

Web Access

Path: Main > Configuration > Network > Web > Access

Use this option to configure the access method for the Web interface. In order to activate any changes here, you must log off from the unit display interface.

- **HTTP:** Select this check box to enable access through HTTP. HTTP does not encrypt user names, passwords, and data during transmission.
- **HTTPS:** Select this check box to enable access through HTTPS. HTTPS encrypts user names, passwords, and data during transmission.
- **HTTP Port:** The port used for HTTP connection. The port range is 5000–32768: default is 80.
- **HTTPS Port:** The port used for HTTPS connection. The port range is 5000–32768: default is 443.

NOTE: You must use a colon (:) in the address field of the browser to specify the port number. For example, for a port number of 5000 and an IP address of 152.214.12.114 enter `http(s)://152.214.12.114:5000`.

- **Minimum Protocol:** Select the minimum encryption protocol. There are four available.
 - SSL 3.0
 - TLS 1.0
 - TLS 1.1
 - TLS 1.2
- **Require Authentication Cookie:** If enabled, a session cookie will be used for authentication tracking within the browser. The cookie will be removed upon session end.
- **Limited Status Access:** Select whether or not to display a read-only, public Web page with basic device status. This feature is disabled by default and can be set via the **Use as default page** option to show as the default landing page when a user accesses the device with just the IP/hostname (no specific page listed).

Web SSL Certificate Configuration

Path: Main > Configuration > Network > Web > SSL Certificate

Add, replace, or remove a security certificate. SSL (Secure Socket Layer) is a protocol used to encrypt data between your browser and the Web server.

- **Status:** The **Status** can be one of the following:
 - **Valid certificate:** A valid certificate was installed or was generated by the unit. Click on this link to view the contents of the certificate.
 - **Certificate not installed:** A certificate is not installed or was installed by FTP or SCP to an incorrect location. Using **Add or Replace Certificate File** installs the certificate to the correct location: /ssl on the unit.
 - **Generating:** The unit is generating a certificate because no valid certificate was found.
 - **Loading:** A certificate is being activated on the unit.

IMPORTANT: If you install an invalid certificate, or if no certificate is loaded while SSL is enabled, the unit generates a default certificate, a process which delays access to the interface for up to one minute. You can use the default certificate for basic encryption-based security, but a security alert message displays whenever you log on.
- **Add or Replace Certificate File:** Browse to the certificate file created with the Security Wizard.
- **Remove:** Delete the certificate. See screen text also.

Console Settings

Console Access

Path: Main > Configuration > Network > Console > Access

Console access enables use of the command line interface (CLI).

You can enable access to the CLI through either **Telnet** or **SSH** or through both, by using the **Enable** check boxes. Telnet does not encrypt user names, passwords, and data during transmission whereas SSH does.

For the ports to be used to communicate with the unit, you can change the setting to any unused port from 5000 to 32768 for additional security.

- **Telnet Port:** This is 23 by default. You must then use a colon (:) or a space to specify the non-default port, as required by your Telnet client program.

For example, for port 5000 and an IP address of 152.214.12.114, your Telnet client requires one of the these commands:

```
telnet 152.214.12.114:5000 or telnet 152.214.12.114 5000
```
- **SSH Port:** This is 22 by default. See the documentation for your SSH client for the command line format required to specify a non-default port.

User Host Key Configuration

Path: Main > Configuration > Network > Console > SSH Host Key

If you are using SSH (Secure Shell Protocol) for console (CLI) access, you can add, replace, or remove the host key on the **User Host Key** screen.

- **Status:** The **Status** indicates whether the host key (private key) is valid. The **Status** can be one of the following:
 - **SSH Disabled:** No host key in use.
 - **Generating:** The unit is creating a host key because no valid host key was found.
 - **Loading:** A host key is being activated on the unit.
 - **Valid:** One of the following valid host keys is in the /ssh directory (the required location on the unit):

- A 1024-bit or 2048-bit host key created by the Security Wizard
- A 2048-bit RSA host key generated by the unit
- **Add or Replace Host Key:** Upload a host key file created by the Security Wizard. To use an externally created host key, load the host key before you enable SSH.

NOTE: To reduce the time required to enable SSH, create and upload a host key in advance. If you enable SSH with no host key loaded, the unit takes up to one minute to create a host key, and the SSH server is not accessible during that time.

- **Remove:** Delete the host key. See screen text also.

To use SSH, you must have an SSH client installed. Most Linux and other UNIX platforms include an SSH client, but Microsoft Windows operating systems do not. Clients are available from various vendors.

SNMPv1 Access Configuration

All user names, passwords, and community names for SNMP are transferred over the network as plain text. If your network requires the high security of encryption, disable SNMP access or set the access for each community to Read. (A community with Read access can receive status information and use SNMP traps.)

When using StruxureWare Data Center Expert to manage a unit on the public network of a StruxureWare system, you must have SNMPv1 or SNMPv3 enabled in the unit interface. Read access will allow the StruxureWare device to receive traps from the unit, but Write access is required while you use the unit user interface to set the StruxureWare device as a trap receiver.

Path: Main > Configuration > Network > SNMPv1 > Access

Use **SNMPv1 Access** to enable or disable SNMP version 1 as a method of communication with the unit.

Access Control

Path: Main > Configuration > Network > SNMPv1 > Access Control

You can configure up to four access control entries to specify which Network Management Systems (NMSs) have access to the unit. To edit, click a community name.

By default, one entry is assigned to each of the four available SNMPv1 communities. You can edit these settings to apply more than one entry to any one community to grant access by several specific IPv4 and IPv6 addresses, host names, or IP address masks.

- By default, a community has access to the unit from any location on the network.
- If you configure multiple access control entries for any one community name, it means that one or more of the other communities have no access to the device.
- **Community Name:** The name that an NMS must use to access the community. The maximum length is 15 ASCII characters, and the default names are public, private, public2, and private2.
- **NMS IP/Host Name:** The IPv4 or IPv6 address, IP address mask, or host name that controls access by NMSs. A host name or a specific IP address (for example, 149.225.12.1) allows access only by the NMS at that location. IP addresses that contain '255' restrict access as follows:
 - 149.225.12.255: Access only by an NMS on the 149.225.12 segment.
 - 149.225.255.255: Access only by an NMS on the 149.225 segment.
 - 149.255.255.255: Access only by an NMS on the 149 segment.
 - 0.0.0.0 (the default setting) which can also be expressed as 255.255.255.255: Access by any NMS on any segment.

- **Access Type:** The actions an NMS can perform through the community.
 - **Read:** GETS only, at any time
 - **Write:** GETS and SETS at any time
 - **Write+:** Legacy mode that operates the same as Write
 - **Disable:** No GETS or SETS at any time

SNMPv3 Access Configuration

Path: Main > Configuration > Network > SNMPv3 > Access

For GETs, SETs, and trap receivers, SNMPv3 uses a system of user profiles to identify users. An SNMPv3 user must have a user profile assigned in the MIB software program to perform GETs and SETs, to browse the MIB, and to receive traps.

To use SNMPv3, you must have a MIB program that supports SNMPv3.

The unit supports SHA or MD5 authentication and AES or DES encryption.

Enable **SNMPv3 Access** under the **Access** menu enables this method of communication with this device.

User Profiles

Path: Main > Configuration > Network > SNMPv3 > User Profiles

By default, **User Profiles** lists the settings of four user profiles configured with the user names **apc snmp profile1** through **apc snmp profile4**, with no authentication and no privacy (no encryption). To edit the following settings for a user profile, click a user name in the list.

- **User Name:** The identifier of the user profile. SNMP version 3 maps GETs, SETs, and traps to a user profile by matching the user name of the profile to the user name in the data packet being transmitted. A user name can have up to 32 ASCII characters.
- **Authentication Passphrase:** A phrase of 15 to 32 ASCII characters (`apc auth passphrase` by default) that verifies that the NMS communicating with this device through SNMPv3 is the NMS it claims to be.
It also verifies that the message has not been changed during transmission, and that the message was communicated in a timely manner. This indicates that it was not delayed and that it was not copied and sent again later at an inappropriate time.
- **Privacy Passphrase:** A phrase of 15 to 32 ASCII characters (`apc crypt passphrase` by default) that ensures the privacy of the data that an NMS is sending to or receiving from this device through SNMPv3, by using encryption.
- **Authentication Protocol:** The implementation of SNMPv3 supports SHA and MD5 authentication. One of these must be selected.
- **Privacy Protocol:** The implementation of SNMPv3 supports AES and DES as the protocols for encrypting and decrypting data. You must use both a privacy protocol and a privacy password, otherwise the SNMP request is not encrypted.

In turn, you cannot select the privacy protocol if no authentication protocol is selected.

Access Control

You can configure up to four access control entries to specify which Network Management Systems (NMSs) have access to the unit. To edit, click a user name.

By default, one entry is assigned to each of the four user profiles. You can edit these settings to apply more than one entry to any one user profile to grant access by several specific IP addresses, host names, or IP address masks.

- By default, all NMSs that use that profile have access to this device.

- If you configure multiple access control entries for one user profile, it means that one or more of the other user profiles must have no access to this device.
- **User Name:** From the drop-down list, select the user profile to which this access control entry will apply. The selections available are the four user names that you configure through the **User Profiles** option.
- **NMS IP/Host Name:** The IP address, IP address mask, or host name that controls access by the NMS. A host name or a specific IP address (for example, 149.225.12.1) allows access only by the NMS at that location. An IP address mask that contains 255 restricts access as follows:
 - 149.225.12.255: Access only by an NMS on the 149.225.12 segment.
 - 149.225.255.255: Access only by an NMS on the 149.225 segment.
 - 149.255.255.255: Access only by an NMS on the 149 segment.
 - 0.0.0.0 (the default setting) which can also be expressed as 255.255.255.255: Access by any NMS on any segment.

Modbus Configuration

Use the **Modbus** menu to set up communications between the unit and the building management system (BMS).

Path: Main > Configuration > Network > Modbus > TCP

- **Port:** Enter a port: 502, 5000-32768.

FTP Server Access Configuration

Path: Main > Configuration > Network > FTP Server

Use this screen to enable access to an FTP server and to specify a port.

- **Access:** FTP transmits files without encrypting them. For encrypted file transfer, use Secure CoPy (SCP). SCP is automatically enabled when you enable SSH, but you must disable the FTP Server here to enforce highsecurity file transfer.
 - NOTE:** At any time that you want a device to be accessible for management by StruxureWare Data Center Expert, FTP Server must be enabled in the display interface of that unit.
- **Port:** The TCP/IP port of the FTP server (21 by default). The FTP server uses both the specified port and the port one number lower. The allowed non-default port numbers are indicated on the screen: 21, and 5001–32768.
 - NOTE:** Configuring the FTP server to use a non-default port enhances security by requiring users to append the port name to the IP address in an FTP command line. The appended port name must be preceded by a space or colon depending on the FTP client used.

Notification Menu

Types of Notification

You can configure notification actions to occur in response to an event. You can notify users of an event in any of several ways:

- Active, automatic notification: The specified users or monitoring devices are contacted directly.
 - E-mail notification
 - SNMP traps
 - Remote Monitoring Service
 - Syslog notification
- Indirect notification
 - Event log: If no direct notification is configured, users must check the log to determine which events have occurred.



You can also log system performance data to use for device monitoring. See *Log Configuration*, page 54 for information on how to configure and use this data logging option.

- Queries (SNMP GETs)



For more information, see *SNMP Trap Receiver Configuration*, page 50 and *SNMP Traps Test Configuration*, page 51. SNMP enables an NMS to perform informational queries. For SNMPv1, which does not encrypt data before transmission, configuring the most restrictive SNMP access type (READ) enables informational queries without the risk of allowing remote configuration changes.

The unit supports the use of the RFC1628 MIB (Management Information Base). See *SNMP Trap Receiver Configuration*, page 50 for information on how you can set up a trap receiver. The 1628 MIB group of three events only works with that MIB, not the alternative Pownet MIB. They can be configured like any event (see *Configuring Event Actions*, page 47).

Configuring Event Actions

By Event

Path: Main > Configuration > Notification > Event Actions > By Event

By default, logging an event is selected for all events. To define event actions for an individual event:

1. To find an event, click on a column heading to see the lists under the **Device Events** or **System Events** categories.
2. Or you can click on a sub-category under these headings, like **Security** or **Temperature**. Click on the event name to view or change the current configuration, such as recipients to be notified by e-mail, or Network Management Systems (NMSs) to be notified by SNMP traps.

If no Syslog server is configured, items related to Syslog configuration are not displayed.



When viewing details of an event configuration, you can enable or disable event logging or Syslog, or disable notification for specific e-mail recipients or trap receivers, but you cannot add or remove recipients or receivers. To add or remove recipients or receivers, see the following:

- See *Identify Syslog Servers*, page 54
- See *E-Mail Notification Configuration*, page 49.
- See *SNMP Trap Receiver Configuration*, page 50.

By Group

Path: Main > Configuration > Notification > Event Actions > By Group

To configure a group of events simultaneously:

1. Select how to group events for configuration:
 - Select **Events by Severity**, and then select one or more severity levels. You cannot change the severity of an event.
 - Select **Events by Category**, and then select all events in one or more pre-defined categories.
2. Click **Next** to move to the next screen to do the following:
 - Select event actions for the group of events.
 - To select any action except **Logging** (the default), you must first have at least one relevant recipient or receiver configured.
 - If you selected **Logging** and have configured a Syslog server, select **Event Log** or **Syslog** on the next screen.



See *Log Configuration*, page 54.

3. Click **Next** to move to the next screen to do the following:
 - If you selected **Logging** on the previous screen, select **Enable Notifications** or **Disable Notification**.
 - If you selected **Email Recipients** on the previous screen, select the e-mail recipients to configure.
 - If you selected **Trap Receivers** on the previous screen, select the trap receiver to configure.
4. Click **Next** to move to the next screen to do the following:
 - If you are configuring **Logging** settings, view the pending actions and click **Apply** to accept the changes or click **Cancel** to revert to the previous settings.
 - If you are configuring **Email Recipients** or **Trap Receivers**, select **Enable Notifications** or **Disable Notification** and set the notification timing settings.
5. Click **Next** to move to the next screen to do the following:
 - View the pending actions and click **Apply** to accept the changes or click **Cancel** to revert to the previous settings.

Notification Parameters

These configuration fields define e-mail parameters for sending notifications of events. These are usually accessed by clicking the receiver or recipient name

Field	Description
Delay <i>n</i> time before sending	If the event persists for the specified time, the notification is sent. If the condition clears before the time expires, no notification is sent.
Repeat at an interval of <i>n</i>	The notification is sent repeatedly at the specified interval (the default is every two minutes until the condition clears).
Up to <i>n</i> times	During an active event, the notification repeats for this number of times.
or	
Until condition clears	The notification is sent repeatedly until the condition clears or is resolved.

For events that have an associated clearing event, you can also set these parameters. (An example of an event with its clearing event is `RD: Fan 2 Error Detected` and `RD: Fan 2 Error Corrected`).

E-Mail Notification Configuration

Use Simple Mail Transfer Protocol (SMTP) to send e-mail to up to four recipients when an event occurs. To use the e-mail feature, you must define the following settings:

- The IP addresses of the primary and, optionally, the secondary Domain Name System (DNS) servers.
- The IP address or DNS name for the SMTP Server and **From Address**.
- The e-mail addresses for a maximum of four recipients.
- You can use the **To Address** setting of the recipients option to send e-mail to a text-based screen.

Path: Main > Configuration > Notification > E-mail > Server

This screen lists your primary and secondary DNS servers and displays the following fields:

- **From Address:** The contents of the **From** field in e-mail messages sent by the cooling unit:
 - In the format `user@[IP_address]` (if an IP address is specified as Local SMTP Server)
 - In the format `user@domain` (if DNS is configured and the DNS name is specified as Local SMTP Server) in the e-mail messages

NOTE: The local SMTP server may require that you use a valid user account on the server for this setting. See the server documentation.
- **SMTP Server:** The IPv4/ IPv6 address or DNS name of the local SMTP server.

NOTE: This definition is required only when the SMTP server is set to Local.
- **Authentication:** Enable this if the SMTP server requires authentication.
- **Port:** The SMTP port number, with a default of 25. The range is 1–65535.
- **User Name, Password, and Confirm Password:** If your mail server requires authentication, enter your user name and password here. This performs a simple authentication, not SSL.
- Use SSL/TLS: Select when encryption is used.
 - **Never:** The SMTP server does not require nor support encryption.
 - **If Supported:** The SMTP server advertises support for STARTTLS but does not require the connection to be encrypted. The STARTTLS command is sent after the advertisement is given.
 - **Always:** The SMTP server requires the STARTTLS command to be sent on connection to it.

- **Implicitly:** The SMTP server only accepts connections that begin encrypted. No STARTTLS message is sent to the server.
- **Require CA Root Certificate:** This should only be enabled if the security policy of your organization does not allow for implicit trust of SSL connections. If this is enabled, a valid root CA certificate must be loaded onto the unit for encrypted e-mails to be sent.
- **File Name:** This field is dependent on the root CA certificates installed on the unit and whether or not a root CA certificate is required.

Path: Main > Configuration > Notification > E-mail > Recipients

Specify up to four e-mail recipients. Click on a name to configure the settings.

- **Generation:** Enables (default) or disables sending e-mail to the recipient.
- **To Address:** The user and domain names of the recipient. To use e-mail for paging, use the email address for the recipient pager gateway account (for example, myacct100@skytel.com). The pager gateway will generate the page.

To bypass the DNS lookup of the IP address of the mail server, use the IP address in brackets instead of the email domain name, e.g., use jsmith@[xxx.xxx.x.xxx] instead of jsmith@company.com. This is useful when DNS lookups are not working correctly.

NOTE: The recipient pager must be able to use text-based messaging.

- **Format:** The long format contains name, location, contact, IP address, serial number of the device, date and time, event code, and event description. The short format provides only the event description.
- **Server:** Select one of the following methods for routing e-mail:
 - **Local:** This is through the site-local SMTP server. This recommended setting ensures that the e-mail is sent using the site-local SMTP server. Choosing this setting limits delays and network outages and retries sending e-mail for many hours. When choosing the **Local** setting you must also enable forwarding at the SMTP server of your device and set up a special external e-mail account to receive the forwarded e-mail. Check with your SMTP server administrator before making these changes.
 - **Recipient:** This is the SMTP server of the recipient. The unit performs an MX record look-up on the recipients e-mail address and uses that as its SMTP server. The e-mail is only sent once so it could easily be lost.
 - **Custom:** This setting enables each e-mail recipient to have its own server settings. These settings are independent of the settings given under **SMTP Server**.

Path: Main > Configuration > Notification > E-mail > SSL Certificates

Load a mail SSL certificate on the unit for greater security. The file must have an extension of .crt or .cer. Up to five files can be loaded at any given time.

When installed, the certificate details also display here. An invalid certificate will display "n/a" for all fields except **File Name**.

Certificates can be deleted using this screen. Any e-mail recipients using the certificate should be manually modified to remove reference to this certificate.

Path: Main > Configuration > Notification > E-mail > Test

Send a test message to a configured recipient.

SNMP Trap Receiver Configuration

Path: Main > Configuration > Notification > SNMP Traps > Trap Receivers

With Simple Network Management Protocol (SNMP) traps, you can automatically get notifications for significant unit events. They are a useful tool for monitoring devices on your network.

The trap receivers are displayed by **NMS IP/Host Name**, where NMS stands for Network Management System. You can configure up to six trap receivers.

To configure a new trap receiver, click **Add Trap Receiver**. To edit (or delete) one, click its IP address/host name.

- **Trap Generation:** Enable (the default) or disable trap generation for this trap receiver.
- **NMS IP/Host Name:** The IPv4/ IPv6 address or host name of this trap receiver. The default, 0.0.0.0, leaves the trap receiver undefined.
- **Language:** Select a language from the drop-down list. This can differ from the UI and from other trap receivers
Select either the **SNMPv1** or **SNMPv3** .radio button to specify the trap type. For an NMS to receive both types of traps, you must separately configure two trap receivers for that NMS, one for each trap type.
- **SNMPv1:** Settings for SNMPv1.
 - **Community Name:** The name (“public” by default) used as an identifier when SNMPv1 traps are sent to this trap receiver.
 - **Authenticate Traps:** When this option is enabled (the default), the NMS identified by the NMS IP/Host Name setting will receive authentication traps (traps generated by invalid attempts to log on to this device).
- **SNMPv3:** Settings for SNMPv3.
 - **User Name:** Select the identifier of the user profile for this trap receiver.

If you delete a trap receiver, all notification settings configured under *Configuring Event Actions*, page 47 for the deleted trap receiver are set to their default values.

SNMP Traps Test Configuration

Path: Main > Configuration > Notification > SNMP Traps > Test

- **Last Test Result:** The result of the most recent SNMP trap test. A successful SNMP trap test verifies only that a trap was sent; it does not verify that the trap was received by the selected trap receiver. A trap test succeeds if all of the following are true:
 - The SNMP version (SNMPv1 or SNMPv3) configured for the selected trap receiver is enabled on this device.
 - The trap receiver itself is enabled.
 - If a host name is selected for the To address, that host name can be mapped to a valid IP address.
- **To:** Select the IP address or host name to which a test SNMP trap will be sent. If no trap receiver is configured, a link to the **Trap Receiver** configuration screen is displayed.

General Menu

This menu contains miscellaneous configuration items including device identification, date and time, exporting and importing your unit configuration options, the three links at the bottom left of the screen, and consolidating data for troubleshooting purposes.

Identification Screen

Path: Main > Configuration > General > Identification

Define the **Name**, the **Location** (the physical location), and the **Contact** (the person responsible for the device) used by

- The SNMP agent of the unit
- StruxureWare Data Center Expert



Specifically, the name field is used by the **sysName**, **sysContact**, and **sysLocation** object identifiers (OIDs) in the SNMP agent of the unit. For more information about MIB-II OIDs, see the PowerNet® *SNMP Management Information Base (MIB) Reference Guide*, available at www.schneider-electric.com.

The **Name** and **Location** fields also identify the device when you register for the Remote Monitoring Service.

You may leave a **System Message** of up to 256 characters.

Date/Time Configuration

Path: Main > Configuration > General > Date/Time > Mode

Set the time and date used by the unit. You can change the current settings manually or through a Network Time Protocol (NTP) Server.

With both, you select the **Time Zone**. This is your local time difference with Coordinated Universal Time (UTC), also known as Greenwich Mean Time (GMT).

- **Manual Mode:** Do one of the following:
 - Enter the date and time for the unit.
 - Select the check box **Apply Local Computer Time** to apply the date and time settings of the computer you are using.
- **Synchronize with NTP Server:** Have an NTP (Network Time Protocol) Server define the date and time for the unit. By default, any unit on the private side of a StruxureWare Data Center Expert obtains its time settings by using StruxureWare Data Center Expert as an NTP server.
 - **Override Manual NTP Settings:** If you select this, data from other sources (typically DHCP) take precedence over the NTP configurations you set here.
 - **Primary NTP Server:** Enter the IP address or domain name of the primary NTP server.
 - **Secondary NTP Server:** Enter the IP address or domain name of the secondary NTP server, when a secondary server is available.
 - **Update Interval:** Define, in hours, how often the unit accesses the NTP Server for an update. Minimum: 1; Maximum: 8760 (1 year).
 - **Update Using NTP Now:** Initiate an immediate update of the date and time by the NTP Server.

Path: Main > Configuration > General > Date /Time > Daylight Savings

Daylight Saving Time (DST) is disabled by default. You can enable traditional United States DST, or enable and configure a customized daylight saving time to match how Daylight Saving Time is implemented in your local area.

When customizing DST, the system puts the clock forward by an hour when the time and date you specify under **Start** is reached and puts the clock back an hour when the time and date you specify under **End** is reached.

- If your local DST always starts or ends on the fourth occurrence of a specific weekday of a month (e.g., the fourth Sunday), select **Fourth/Last**. If a fifth Sunday occurs in that month, you should still choose **Fourth/Last**.
- If your local DST always starts or ends on the last occurrence of a specific weekday of a month, whether it is the fourth or the fifth occurrence, select **Fifth/Last**.

Create and Import Settings with the Configuration File

Path: Main > Configuration > General > User Config File

You can speed up and simplify the configuration of new devices by re-using the existing configuration settings with this option. Use **Upload** to transfer configuration data to this interface and **Download** to transfer from this interface (and then use the file to configure another interface). The default name of the file is config.ini.

Configure the Links Screen

Path: Main > Configuration > General > Quick Links

Use this option to view and change the URL links displayed at the bottom-left of each screen of the interface.

To reconfigure a link, click the link name in the **Name** column. You can reset the links to their defaults at any time by clicking on **Reset to Defaults**.

Log Configuration

Identify Syslog Servers

Path: Main > Configuration > Logs > Syslog > Servers

Click **Add Server** to configure a new Syslog server.

- **Syslog Server:** Uses IPv4/ IPv6 addresses or host names to identify from one to four servers to receive Syslog messages sent by the unit.
- **Port:** The user datagram protocol (UDP) port that the unit will use to send Syslog messages. The default UDP port assigned to Syslog is 514.
- **Protocol:** Select either UDP or TCP.
- **Language:** Select the language for any Syslog messages.

Syslog Settings

Path: Main > Configuration > Logs > Syslog > Settings

- **Message Generation:** Enable the generation and the logging of Syslog messages for events that have Syslog configured as a notification method.



See *Configuring Event Actions*, page 47.

- **Facility Code:** Selects the facility code assigned to the Syslog messages of the unit (User, by default).

NOTE: User best defines the Syslog messages sent by the unit. Do not change this selection unless advised to do so by the Syslog network or system administrator.

- **Severity Mapping:** This section maps each severity level of the unit or environment events to available Syslog priorities. The local options are **Critical**, **Warning**, and **Informational**. You should not need to change the mappings.

- **Emergency:** The system is unusable
- **Alert:** Action must be taken immediately
- **Critical:** Critical conditions
- **Error:** Error conditions
- **Warning:** Warning conditions
- **Notice:** Normal but significant conditions
- **Informational:** Informational messages
- **Debug:** Debug-level messages

The following are the default settings for the **Local Priority** settings:

- **Critical** is mapped to **Critical**
- **Warning** is mapped to **Warning**
- **Informational** is mapped to **Info**



To disable Syslog messages, see *Configuring Event Actions*, page 47.

Syslog Test and Format Example

Path: Main > Configuration > Logs > Syslog > Test

Send a test message to the Syslog servers (configured through *Identify Syslog Servers*, page 54). The result will be sent to all configured Syslog servers.

Select a severity to assign to the test message and then define the test message. Format the message to consist of the event type (for example, APC, System, or Device) followed by a colon, a space, and the event text. The message can have a maximum of 50 characters.

- The priority (PRI): The Syslog priority assigned to the message event, and the facility code of messages sent by the unit.
- The Header: A time stamp and the IP address of the unit.
- The message (MSG) part:
 - The TAG field, followed by a colon and space, identifies the event type.
 - The CONTENT field is the event text, followed (optionally) by a space and the event code.

Example: APC: Test Syslog is valid.

Tests

Set the Unit LED Lights to Blink

Path: Main > Tests > Network > LED Blink

If you are having trouble finding your unit, enter a number of minutes in the **LED Blink Duration** field, click **Apply**, and the LED lights under the panel on the right side of the display will blink.

Logs and About Menus

Event and Data Logs

The event log records individual occurrences. The data log, by contrast, provides you with a snapshot of your system by recording values at regular time intervals.

Event Log

By default, the log displays all events recorded during the last two days, starting with the latest events.

Additionally, the log records any event that sends an SNMP trap, except SNMP authentication failures, and abnormal internal system events.

You can enable color coding for events on the **Main > Configuration > Security > Local Users > Management** screen.

By default, the event log displays the most recent events first. To see the events listed together on a Web page, click **Launch Log in New Window**.

To open the log in a text file or to save the log to disk, click on the floppy disk icon () on the same line as the **Event Log** heading.



You can also use FTP or Secure CoPy (SCP) to view the event log. See *How to Use FTP or SCP to Retrieve Log Files*, page 60.

Filter Event Logs

Use filtering to omit information you do not want to display.

- Filtering the log by date or time: Use the **Last** or **From** radio buttons. (The filter configuration is saved until the unit restarts.)
- Filtering the log by event severity or category:
 1. Click **Filter Log**.
 2. Clear a check box to remove it from view.
 3. After you click **Apply**, text at the upper-right corner of the **Event Log** page indicates that a filter is active. The filter is active until you clear it or until the unit restarts.
- Removing an active filter:
 1. Click **Filter Log**.
 2. Click **Clear Filter (Show All)**.
 3. As Administrator, click **Save As Default** to save this filter as the new default log view for all users.

The following are important points on filtering:

- Events are processed through the filter using OR logic. If you apply a filter, it works regardless of the other filters.
- Events that you cleared in the Filter By Severity list never display in the filtered Event Log, even if selected in the Filter by Category list.
- Similarly, events that you clear in the Filter by Category list never display in the filtered Event Log.

Delete Event Log

To delete all events, click **Clear Log**. Deleted events cannot be retrieved.



To disable the logging of events based on their assigned severity level or their event category, see *Configuring Event Actions*, page 47.

Launch Log in New Window

Click **Launch Log in New Window** to launch the event log in a new browser window that provides a larger view of the graph.

With reverse lookup enabled, when a network-related event occurs, both the IP address and the domain name for the network device with the event are logged in the event log. If no domain name entry exists for the device, only its IP address is logged with the event.

Since domain names generally change less frequently than IP addresses, enabling reverse lookup can improve the ability to identify addresses of networked devices that are causing events.

Reverse lookup is disabled by default. You should not need to enable it if you have no DNS server configured or have poor network performance because of heavy network traffic.

Use **Event Log Size** to specify the maximum number of log entries.

IMPORTANT: When you re-size the event log in order to specify a maximum size, all existing log entries are deleted. When the log subsequently reaches the maximum size, the older entries are deleted.

Data Log

Use the data log to display measurements about the unit, the power input to the unit, and the ambient temperature of the unit.

The steps to display and re-size the data log are the same as for the event log, except that you use menu options under **Data** instead of **Events**.

Filter Data Log

Use filtering to omit information you do not want to display.

Filter Log by Date or Time

Use the **Last** or **From** radio buttons. (The filter configuration is saved until the unit restarts.)

Delete Data Log

To delete all events, click **Clear Data Log**. Deleted events cannot be retrieved.

Data Graphing

Data log graphing provides a graphical display of logged data and is an enhancement of the existing data log feature. How the graphing enhancement displays data and how efficiently it performs will vary depending on your computer hardware, computer operating system, and the Web browser you use to access the interface of the unit.

NOTE: JavaScript® must be enabled in your browser to use the graphing feature. Alternatively, you can use FTP or SCP to import the data log into a spreadsheet application, and graph data in the spreadsheet.

- **Graph Time:** Select **Last** to graph all records or to change the number of hours, days, or weeks for which data log information is graphed. Select a time option from the drop-down menu. Select **From** to graph data logged during a specific time period.

NOTE: Enter time using the 24-hour clock format.

- **Apply:** Click **Apply** to graph the data.
- **Launch Graph in New Window:** Click **Launch Log in New Window** to launch the data log in a new browser window that provides a larger view of the graph.

Log Intervals

Define, in the **Log Interval** setting, how frequently data is searched for and stored in the data log. When you click **Apply**, the number of possible storage days is recalculated and display at the top of the screen. When the log is full, the oldest entries are deleted.

NOTE: Because the interval specifies how often the data is recorded, the smaller the interval, the more times the data is recorded and the larger the log file.

Data Log Rotation

Rotation causes the contents of the data log to be appended to the file you specify by name and location. Use this option to set up password-protection and other parameters.

- **FTP Server:** The IP address or host name of the server where the file will reside.
- **User Name/Password:** The user name with password required to send data to the repository file. This user must also be configured to have read and write access to the data repository file and the directory (folder) in which it is stored.
- **File Path:** The path to the repository file.
- **Filename:** The name of the repository file (an ASCII text file), e.g. datalog.txt. Any new data is appended to this file: it does not overwrite it.
- **Unique Filename:** Select this check box to save the log as mmddyyyy_<filename>.txt, where filename is what you specified in the **Filename** field. Any new data is appended to the file but each day has its own file.
- **Delay n hours between uploads:** The number of hours between uploads of data to the file (max. 24 hours).
- **Upon failure, try uploading every n minutes:** The number of minutes between attempts to upload data to the file after a failed upload.
- **Up to n times:** The maximum number of times the upload will be attempted after it fails initially.
- **Until upload succeeds:** Attempt to upload the file until the transfer is completed.

Data Log Size

Use **Data Log Size** to specify the maximum number of log entries.

IMPORTANT: When you resize the data log in order to specify a maximum size, all existing log entries are deleted. When the log subsequently reaches the maximum size, the older entries are deleted.

Firewall Log

Path: Main > Logs > Firewall

If you create a firewall policy, firewall events will be logged here.



For more information on implementing a policy, see *Firewall*, page 37.

The information in the log can be useful to help the technical support team solve problems. Log entries contain information about the traffic and the rules action (allowed, discarded). When logged here, these events are not logged in the main Event Log .

A Firewall log contains up to 50 of the most recent events. The Firewall log is cleared when the display reboots.

How to Use FTP or SCP to Retrieve Log Files

A Super User/Administrator or Device User can use FTP or SCP to retrieve a tab-delimited event log file (event.txt) or data log file (data.txt) and import it into a spreadsheet. Both reside on the unit.

- The file reports all events or data recorded since the log was last deleted or, in the case of the data log, truncated because it reached maximum size.
- The file includes information that the event log or data log does not display.
 - The version of the file format (first field)
 - The date and time the file was retrieved
 - The **Name**, **Contact**, and **Location** values and IP address of the unit
 - The unique **Event Code** for each recorded event (event.txt file only)
 - The unit uses a four-digit year for log entries. You may need to select a four-digit date format in your spreadsheet application to display all four digits.

Use SCP to Retrieve the Files

Enable SSH on the unit to use SCP to retrieve files.



See *Console Settings*, page 43.

To retrieve the event.txt file, use the following command:

```
scp <username@hostname> or <ip_address>:event.txt./event.txt
```

To retrieve the data.txt file, use the following command:

```
scp <username@hostname> or <ip_address>:data.txt./data.txt
```

Use FTP to Retrieve the Files

To use FTP to retrieve the event.txt or data.txt file:

1. At a command prompt, type `ftp` and the IP address of the unit, and press `Enter`.

If the **Port** setting for the **FTP Server** option has been changed from its default (21), you must use the non-default value in the FTP command.

For Windows-based FTP clients, use the following command, including spaces. (For some FTP clients, you must use a colon instead of a space between the IP address and the port number.)

```
ftp>open ip_address port_number
```



To set a non-default port value to enhance security for the FTP Server, see *FTP Server Access Configuration*, page 46. You can specify any port from 5001 to 32768.

2. Use the case-sensitive **User Name** and **Password** for the Super User/Administrator or Device User to log on. For Administrator, `apc` is the default for the user name and password. For the Device User, the defaults are `device` for user name and `apc` for password.

3. Use the `get` command to transmit the text of a log to your local drive.

```
ftp>get event.txt
```

or

```
ftp>get data.txt
```

4. You can use the `del` command to clear the contents of either log.

```
ftp>del event.txt
```

or

```
ftp>del data.txt
```

You will not be asked to confirm the deletion.

- If you clear the data log, the event log records a deleted-log event.
- If you clear the event log, a new event.txt file records the event.

5. Type `quit` at the `ftp>` prompt to exit from FTP.

About the Device

Path: Main > About > Device

Display

- Name
- Location
- Application Version
- OS Version

Controller

- **Model Number:** The model number of the unit.
- **Serial Number:** The serial number of the unit.
- **Firmware Revision:** The firmware revision of the unit.
- **Development Firmware Revision:** The developmental firmware revision of the unit.
- **Hardware Revision:** The hardware revision of the unit.
- **Manufacture Date:** The date the cooling unit was manufactured.
- **PIC1 Firmware Revision:** The firmware revision of the PIC1 processor.
- **PIC2 Firmware Revision:** The firmware revision of the PIC2 processor.

About the Network

Path: Main > About > Network

NOTE: Some items may not appear for your unit.

Hardware Factory

This hardware information is useful for troubleshooting problems with your unit. **Management Uptime** refers to the length of time this management interface has been running continuously; that is, the length of time since the unit has been warm or cold started.

Network Management Card

This information is the serial number of the Network Management Card embedded in the display interface.

Application Module, APC OS (AOS), and APC Boot Monitor

This information is useful for troubleshooting and for determining if updated firmware is available.

- **Name:** The name of the firmware module. The APC AOS module is always named aos, and the boot monitor module is always named bootmon.
- **Version:** The version number of the firmware module. Version numbers of the modules may differ, but compatible modules are released together. Never combine application modules and AOS modules from different releases.

NOTE: If the boot monitor module must be updated, a boot monitor module is included in the firmware release. Otherwise, the boot monitor module that is installed on the card is compatible with the firmware update.

- **Date/Time:** The date and time at which the firmware module was loaded

Troubleshooting and Support

Path: Main > About > Support

There are three links to useful websites. These links access the URLs for these Web pages:

- Link 1: Knowledge Base
- Link 2: Company Contact Information
- Link 3: Software and Firmware Downloads

Technical Support Debug Information Download

With this option, you can consolidate various data in this interface into a single ZIP file for troubleshooting purposes and customer support. The data includes the event and data logs, the configuration file, and complex debugging information.

Click **Generate Logs** to create the file and then **Download**. You are asked whether you want to view or save the ZIP file.

Device IP Configuration Wizard

Capabilities, Requirements, and Installation

How to Use the Wizard to Configure TCP/IP Settings

- Remotely over your TCP/IP network to discover and configure any unconfigured cooling units on the same network segment as the computer running the Wizard.
- Through a direct connection from a serial port of your computer to the cooling unit to configure or reconfigure it.

System Requirements

The Wizard runs on Windows® 2000, Windows 2003, Windows Vista®, Windows XP, Windows 7, Windows Server 2008, Windows 8, and Windows 2012.

Installation

To install the Wizard from a downloaded executable file:

1. Go to www.schneider-electric.com.
2. Download the Device IP Configuration Wizard.
3. Run the executable file in the folder to which you downloaded it.

Use the Wizard

NOTE: Most software Firewalls must be temporarily disabled for the Wizard to discover unconfigured units.

Launch the Wizard

The installation creates a shortcut link in the **Start** menu to launch the Wizard.

Configure the Basic TCP/IP Settings Remotely

Prepare to Configure the Settings

Before you run the Wizard:

1. Contact your network administrator to obtain valid TCP/IP settings.
2. If you are configuring multiple unconfigured units, obtain the MAC address of each one to identify it when the Wizard discovers it. (The Wizard displays the MAC address on the screen on which you then enter the TCP/IP settings.)
 - The MAC address is accessible on the Web user interface on the **Main > About > Display > Device** screen.

Run the Wizard to Perform the Configuration

To discover and configure unconfigured units over the network:

1. From the **Start** menu, launch the Wizard. The Wizard detects the first cooling unit that is not configured.
2. Select **Remotely (over the network)**, and click **Next >**.
3. Enter the system IP, subnet mask, and default gateway for the cooling unit identified by the MAC address. Click **Next >**.

On the **Transmit Current Settings Remotely** screen, if you select the **Start a Web browser when finished** check box, the default Web browser connects to the cooling unit after the Wizard transmits the settings.

4. Click **Finish** to transmit the settings. If the IP address you entered is in use on the network, the Wizard prompts you to enter an IP address that is not in use. Enter a correct IP address, and click **Finish**.
5. If the Wizard finds another unconfigured cooling unit, it displays the screen to enter TCP/IP settings. Repeat this procedure beginning at step 3, or to skip the cooling unit whose MAC address is currently displayed, click **Cancel**.

Configure or Re-Configure the TCP/IP Settings Locally

1. Contact your network administrator to obtain valid TCP/IP settings.
2. Connect the serial configuration cable (which came with the cooling unit) from an available communications port on your computer to the serial port of the card or device. Make sure no other application is using the computer port.
3. From the **Start** menu, launch the Wizard application.
4. If the cooling unit is not configured, wait for the Wizard to detect it. Otherwise, click **Next >**.
5. Select **Locally (through the serial port)**, and click **Next >**.
6. Enter the system IP, subnet mask, and default gateway for the cooling unit, and click **Next >**.

On the **Transmit Current Settings Remotely** screen, if you select the **Start a Web browser when finished** check box, the default Web browser connects to the cooling unit after the Wizard transmits the settings.

7. Click **Finish** to transmit the TCP/IP settings. If the IP address you entered is in use on the network, the Wizard prompts you to enter an IP address that is not in use. Enter a correct IP address, and click **Finish**.

If you selected **Start a Web browser when finished** in step 6, you can now configure other parameters through the Web interface of the device.

How to Export Configuration Settings

Retrieve and Export the .ini File

Summary of the Procedure

An Administrator can retrieve the .ini file of a unit and export it to another unit or to multiple units.

1. Configure one unit to have the settings you want to export.
2. Retrieve the .ini file from that unit.
3. Customize the file to change at least the TCP/IP settings.
4. Use a file transfer protocol supported by the unit to transfer a copy to one or more other units. For a transfer to multiple units, use an FTP or SCP script or the Schneider Electric .ini file utility.

Each receiving unit uses the file to re-configure its own settings and then deletes it.

Contents of the .ini File

The config.ini file you retrieve from the unit contains the following:

- *section headings* and *keywords* (only those supported for the device from which you retrieve the file): Section headings are category names enclosed in brackets ([]). Keywords, under each section heading, are labels describing specific unit settings. Each keyword is followed by an equals sign and a value (either the default or a configured value).
- The `override` keyword: With its default value, this keyword prevents the exporting of one or more keywords and their device-specific values, e.g., in the [NetworkTCP/IP] section, the default value for `Override` (the MAC address of the cooling unit) blocks the exporting of values for the `SystemIP`, `SubnetMask`, `DefaultGateway`, and `BootMode`.

Detailed Procedures

Retrieving

To set up and retrieve an .ini file to export:

1. If possible, use the interface of a unit to configure it with the settings to export. Directly editing the .ini file risks introducing errors.
2. To use FTP to retrieve config.ini from the configured unit:
 - a. Open a connection to the unit, using its IP address:

```
ftp> open ip_address
```
 - b. Log on using the Administrator user name and password.
 - c. Retrieve the config.ini file containing the unit settings:

```
ftp> get config.ini
```

The file is written to the folder from which you launched FTP.

Customizing

You must customize the file before you export it.

1. Use a text editor to customize the file.
 - Section headings, keywords, and pre-defined values are not case-sensitive, but string values that you define are case-sensitive.
 - Use adjacent quotation marks to indicate no value. For example, `LinkURL1=""` indicates that the URL is intentionally undefined.

- Enclose in quotation marks any values that contain leading or trailing spaces or are already enclosed in quotation marks.
- To export scheduled events, configure the values directly in the .ini file.
- To export a system time with the greatest accuracy, if the receiving cooling units can access a Network Time Protocol server, configure enabled for NTPEnable:

```
NTPEnable=enabled
```

Alternatively, reduce transmission time by exporting the [SystemDate/Time] section as a separate .ini file.

- To add comments, start each comment line with a semicolon (;).

2. Copy the customized file to another file name in the same folder:

- The file name can have up to 64 characters and must have the .ini suffix.
- Retain the original customized file for future use.

IMPORTANT: The file that you retain is the only record of your comments.

Transfer the File to a Single Unit

To transfer the .ini file to another unit, do either of the following:

- From the Web user interface of the receiving unit, select the **Administration** tab, **General** on the top menu bar, and **User Config File** on the left navigation menu. Enter the full path of the file, or use **Browse**.
- Use any file transfer protocol supported by units, i.e., FTP, FTP Client, SCP, or TFTP). The following example uses FTP:

1. From the folder containing the copy of the customized .ini file, use FTP to log in to the unit to which you are exporting the .ini file:

```
ftp> open ip address
```

2. Export the copy of the customized .ini file to the root directory of the receiving unit:

```
ftp> put filename.ini
```

Export the File to Multiple Units

To export the .ini file to multiple units:

- Use FTP or SCP, but write a script that incorporates and repeats the steps used for exporting the file to a single unit.
- Use a batch processing file and the Schneider Electric .ini file utility.

The Upload Event and Error Message

The Event and Its Error Messages

The following event occurs when the receiving cooling unit completes using the .ini file to update its settings:

Configuration file upload complete, with *number* valid values

If a keyword, section name, or value is invalid, the upload by the receiving unit succeeds, and additional event text states the error.

Event Text	Description
Configuration file warning: Invalid keyword on line <i>number</i> .	A line with an invalid keyword or value is ignored.
Configuration file warning: Invalid value on line <i>number</i> .	
Configuration file warning: Invalid section on line <i>number</i> .	If a section name is invalid, all keyword/value pairs in that section are ignored.
Configuration file warning: Keyword found outside of a section on line <i>number</i> .	A keyword entered at the beginning of the file (i.e., before any section headings) is ignored.
Configuration file warning: Configuration file exceeds maximum size.	If the file is too large, an incomplete upload occurs. Reduce the size of the file, or divide it into two files, and try uploading again.

Messages in config.ini

A device associated with the cooling unit from which you download the config.ini file must be discovered successfully in order for its configuration to be included. If the device is not present or, for another reason, is not discovered, the config.ini file contains a message under the appropriate section name, instead of keywords and values.

If you did not intend to export the configuration of the device as part of the .ini file import, ignore these messages.

Errors Generated by Overridden Values

The `Override` keyword and its value will generate error messages in the event log when it blocks the exporting of values.



See *Contents of the .ini File*, page 66 for information about which values are overridden.

Because the overridden values are device-specific and not appropriate to export to other cooling units, ignore these error messages. To prevent these error messages, you can delete the lines that contain the `Override` keyword and the lines that contain the values that they override. Do not delete or change the line containing the section heading.

Related Topics

On Windows operating systems, instead of transferring .ini files, you can use the Device IP Configuration Wizard to update the basic TCP/IP settings of units and configure other settings through their user interface.



See *Device IP Configuration Wizard*, page 64.

File Transfers

Updating the Firmware

When you update the firmware on the unit, you obtain the latest features, performance improvements, and bug fixes.

Updating here means placing the module files on the unit; there is no installation required. Check regularly on www.schneider-electric.com for any new updates.

NOTE: You will need to select the language pack if you require your display interface to be available in a language other than English.

Firmware Module Files

A firmware version has three modules, and they must be updated (that is, placed on the unit) in this order:

Module	Description
❶ Boot monitor (bootmon)	Roughly equivalent to the BIOS of a PC
❷ American Power Conversion Operating System (AOS)	Can be considered the operating system of the unit
❸ Application	Specific to the unit device type

(Each module contains one or more Cyclical Redundancy Checks (CRCs) to protect its data from corruption.)

The boot monitor module, the AOS, and the application file names share the same basic format:

```
apc_hardware-version_type_firmware-version.bin
```

- **apc:** Indicates the context.
- **hardware-version:** "hw0n" where 'n' identifies the hardware version on which you can use this file.
- **type:** Identifies which module.
- **version:** The version number of the file.
- **bin:** Indicates that this is a binary file.

Firmware File Transfer Methods

Update the bootmon module first, then the AOS module, and finally, the application module by placing them on the unit in that order.

Obtain the free, latest firmware version from www.schneider-electric.com. To update the firmware of one or more units, use one of these methods:

- On a Windows operating system, use the Firmware Upgrade Utility downloaded from the www.schneider-electric.com Web site.
- On any supported operating system, use FTP or SCP to transfer the individual AOS and application firmware modules.
- For a unit that is NOT on your network, use XMODEM through a serial connection to transfer the individual firmware modules from your computer to the unit.



See *Use XMODEM to Update One Unit*, page 73.

- Use a USB drive to transfer the individual firmware modules from your computer.



See *Using a USB Drive to Transfer and Update Files*, page 73.

Firmware Upgrade Utility

The **Firmware Upgrade Utility** is part of the firmware update package available on the www.schneider-electric.com website.

NOTE: Never use an upgrade utility designated for one product to upgrade the firmware of another product.

Use the Utility for Updates on Windows-Based Systems

On any supported Windows operating system, the **Firmware Upgrade Utility** automates the transferring of the firmware modules, in the correct module order.

Unzip the downloaded firmware upgrade file and double-click the .exe file. Then enter the IP address, the user name, and the password in the dialog fields and click **Upgrade Now**. You can use the Ping button to test your entered details.



See *Update Firmware on Multiple Units*, page 76.

Use the Utility for Manual Updates, Primarily on Linux

On non-Windows operating systems, the **Firmware Upgrade Utility** extracts the individual firmware modules but does not update the unit.

To extract the firmware files:

1. After obtaining the files from the downloaded firmware upgrade file, run the **Firmware Upgrade Utility** (the .exe file).
2. At the prompts, click **Next**, and then specify the directory location to which the files will be extracted.
3. When the **Extraction Complete** message displays, close the dialog box.

Use FTP or SCP to Update One Unit

FTP

To use FTP to upgrade a unit over the network:

1. The unit must be on the network, with its system IP, subnet mask, and default gateway configured.
2. The FTP server must be enabled at the unit.

To transfer the files, perform these steps (this procedure assumes bootmon does not need upgrading):

1. The firmware module files must be extracted.
2. At a computer on the network, open a command prompt window. Go to the directory that contains the firmware files, and list the files:

```
C:\>cd apc
```

```
C:\apc>dir
```

3. Open an FTP client session:

```
C:\apc>ftp
```

4. Type `open` with the IP address of the unit, and press `Enter`. If the port setting for the FTP Server has changed from its default of 21, you must use the non-default value in the FTP command.

- For Windows FTP clients, separate a non-default port number from the IP address by a space. For example (showing a space before 21000):

```
ftp> open 150.250.6.10 21000
```

NOTE: Some FTP clients require a colon instead before the port number.

5. Log on as a Super User/Administrator (`apc` is the default user name and password).
6. Upgrade the AOS. (Always upgrade the AOS before the application module).

```
ftp> bin
```

```
ftp> put apc_hw06_aos_nnn.bin (where nnn is the firmware version number)
```

7. When FTP confirms the transfer, type `quit` to close the session.
8. After 20 seconds, repeat step 3 through step 6, using the application module file name at step 6.

SCP

To use Secure CoPy (SCP) to update firmware for the unit, follow these steps (this procedure assumes bootmon does not need upgrading):

1. Locate the firmware modules, see *Firmware Upgrade Utility, page 71*.
2. Use an SCP command line to transfer the AOS firmware module to the unit. The following example uses `nnn` to represent the version number of the AOS module:

```
scp apc_hw06_aos_nnn.bin apc@158.205.6.185:apc_hw05_aos_nnn.bin
```

3. Use a similar SCP command line, with the name of the application module, to transfer the application firmware module to the unit. (Always upgrade the AOS before the application module).

Use XMODEM to Update One Unit

To use XMODEM to update one unit that is not on the network, you must extract the firmware files with the **Firmware Upgrade Utility**.

To transfer the files (this procedure assumes bootmon does not need upgrading):

1. Select a serial port at the local computer and disable any service that uses the port.
2. Connect the provided serial configuration cable to the selected port and to the serial port at the unit.
3. Run a terminal program such as HyperTerminal, and configure the selected port for 57600 bps, 8 data bits, no parity, 1 stop bit, and no flow control.
4. Press the `Reset` button on the unit, then immediately press the `Enter` key twice, or until the Boot Monitor prompt displays: `BM>`.
5. Type `XMODEM`, then press `Enter`.
6. From the terminal program menu, select `XMODEM`, then select the binary AOS firmware file to transfer using XMODEM. After the XMODEM transfer is complete, the Boot Monitor prompt returns. (Always upgrade the AOS before the application module).
7. To install the application module, repeat step 5 and step 6. In step 6, use the application module file name.
8. Type `reset` or press the `Reset` button to restart the unit.



See *Firmware Module Files*, page 70.

Using a USB Drive to Transfer and Update Files

Update Display Interface Firmware

1. Insert a USB drive into an available port on the PC and verify that the drive is formatted as a FAT32 file system.
2. Create a folder named **apcfirm** on the USB drive.
3. Acquire the firmware files from the local support team or the Schneider Electric Web site.
4. Unzip and extract the files to the **apcfirm** folder.
 - Operating system (*_aos_*.bin)
 - Boot monitor (*_bootmon_*.bin)
 - Application (*_RD3xx_*.bin)
5. Use a text editor, like Notepad, to create a file named `upload.rcf`.
6. List the filename for each firmware module in the order to be transferred. An example is shown below.

IMPORTANT: The files must be listed in the correct order in the `upload.rcf` file.

 - The BM (bootmon) file must be listed first: `BM=apc_hw06_bootmon_105.bin`
 - The AOS (operating system) file must be listed second: `AOS=apc_hw06_aos_609.bin`
 - The APP (application) must be listed third: `APP=apc_hw06_rd3xx4i_*.bin`

NOTE: * in the APP file name is the revision number and will change with each release.
7. Save the `upload.rcf` file in the **apcfirm** folder.

Your **apcfirm** folder should look similar to the example folder shown here:

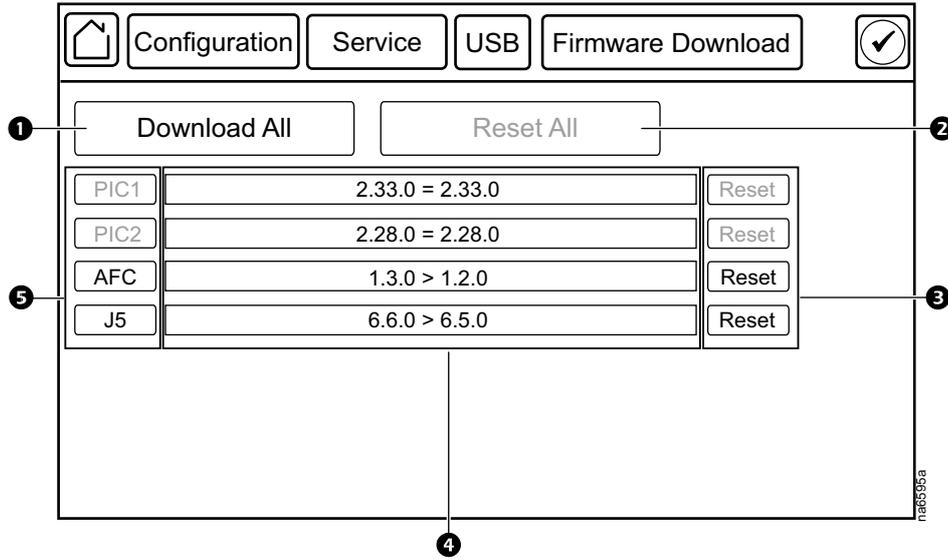
Name	Date modified	Type	Size
apc_hw06_aos_646.bin	3/16/2017 3:55 PM	BIN File	3,058 KB
apc_hw06_bootmon_108.bin	3/16/2017 3:55 PM	BIN File	256 KB
apc_hw06_unflitsa_600g.bin	4/20/2017 4:41 PM	BIN File	2,454 KB
upload.rcf	3/17/2017 7:16 AM	RCF File	1 KB

8. Insert the USB drive into the USB-A port on the display interface.
A confirmation message appears on the display interface.
9. Press the **Display Reset** button to reset the display interface.
The display interface resets and transfers files. The display will resume operation when transfer is complete.
NOTE: The touch screen will be disabled during the transfer process.
There is no disruption of unit operation during the file transfer process.
10. Remove the USB drive when the file transfer is complete.
11. Check the firmware version on the touch screen display interface on the **Main > About > Display** screen.
12. To update the firmware on additional units, repeat from step 8.

Update Controller Firmware

Before starting the transfer, make sure the USB drive is formatted in FAT32.

Path: Main > Configuration > Service > USB > Firmware Download



Item	Description	Function
1	Download All	Downloads all available firmware updates.
2	Reset All	Resets all controllers that have had firmware updates. This button will appear gray if no controllers need to be reset.
3	Reset	Resets the corresponding controllers individually. These buttons will appear gray if the controller cannot be reset or is not present.
4	Firmware revision	Displays the firmware revision on the USB drive on the left side of the operation symbol and the current firmware revision on the controller on the right side of the operation symbol. NOTE: NOTE: Make sure to check the revision numbers: the revision on the drive may not be a newer release.
	= symbol	An equals symbol denotes that the firmware revisions are the same.
	> symbol	A greater than symbol denotes that the current firmware can be changed to the firmware revision on the USB drive.
	Device Not Present	The controller is not present in the unit.
5	Controllers	Downloads the firmware for the specific controller. These buttons will appear gray if the controller firmware cannot be changed or the controller is not present.
	PIC1	PIC1
	PIC2	PIC2
	AFC	Active Flow Controller
	J5	Unit controller

1. Download the firmware upgrade files and unzip them.
2. Create a folder named **fw** on the USB flash drive.
3. Place the extracted module files in the **fw** directory.
4. Use a text editor to create a file named fw.rcf. (The file extension must be .rcf, not .txt for example.)
5. In fw.rcf, add a line for each firmware module that needs to be updated. The following are examples of formatting for the file.

NOTE: Make sure the j5.cbp file remains in directory: the J5 controller may download the firmware on its own if there is no valid firmware or the personality jumpers do not match the current loaded firmware.

PIC1 = pic1-2.33.0.cbp

PIC2 = pic2-2.28.0.cbp

AFC = AFC-1.11.0.cbp

J5 = J5-1.0.3.cbp

6. Place fw.rcf in the **fw** folder on the USB drive.
7. Insert the USB drive into the USB port on the display interface.
8. On the display interface, navigate to **Main > Configuration > Service > USB > Firmware Download**.
9. Select the firmware to download for the controllers individually or for all devices.
10. After downloading the firmware, reset the controllers individually or reset all.
11. Check that the update was completed successfully using the procedures in *Verify Updates*, page 76.

Update Firmware on Multiple Units

Use one of these three methods:

- **Unit Firmware Upgrade Utility on Windows:** Use the Upgrade Utility to update multiple units.
- **Use FTP or SCP:** To upgrade multiple units using an FTP client or using SCP, write a script which automatically performs the procedure.
- **Export configuration settings:** Create a batch file and use a utility to retrieve configuration settings from multiple units and export them to other units.



Utility is available from the Knowledge Base on the Schneider Electric Web site: www.schneider-electric.com.

Use the Firmware Upgrade Utility for Multiple Upgrades on Windows-Based Systems

After downloading the upgrade utility from the unit downloads page on the www.schneider-electric.com website, double-click on the .exe file to run the utility (which ONLY works with IPv4) and follow these steps to upgrade your unit firmware:

1. In the utility dialog, type in an IP address, a user name, and a password, and select the **Ping** button if you need to verify the IP address.
2. Click the **Device List** button to open the iplist.txt file. Here you should type all unit devices to upgrade with the necessary information: IP, user name, and password. For example,


```
SystemIP=192.168.0.1
SystemUserName=apc
SystemPassword=apc
```

 You can use an existing iplist.txt file if it already exists.
3. Select the **Upgrade From Device List** check box to use the iplist.txt file.
4. Select the **Upgrade Now** button to start the firmware version upgrade(s).
5. Select **View Log** to verify any upgrade.

Verify Updates

Verify Success of the Transfer

To verify whether a firmware upgrade succeeded, you can use the xferStatus command in the command line interface to view the last transfer result.

Alternatively, you can use an SNMP GET to receive the **mfiletransferStatusLastTransferResult** OID.

NOTE: This is only valid for checking the success of the touch screen firmware update.

Last Transfer Result Codes

Possible transfer errors include the TFTP or FTP server not being found, or the server refusing access, the server not finding or not recognizing the transfer file, or a corrupt transfer file.

Verify Version Numbers of Installed Firmware

Path: Main > About > Network

Use the display interface or the Web user interface to verify the versions of the upgraded firmware modules. You can also use an SNMP GET to the MIB II sysDescr OID. In the command line interface, use the about command.

Troubleshooting

If necessary, call Technical Support describing the nature of the fault and its possible cause displayed on the control panel.

Alarm Messages and Suggested Actions

Alarm Message	Severity	Action Required
AFC Fault	Warning	Contact Schneider Electric Technical Support.
AFC Firmware Revision Compatible	Critical	<ul style="list-style-type: none"> Check revision of AFC firmware. If the problem persists, contact Schneider Electric Technical Support.
Air Filter Clogged	Warning	<ul style="list-style-type: none"> Clean or replace the air filter. If the problem persists, contact Schneider Electric Technical Support.
Air Filter Has Exceeded Runtime Threshold	Warning	Reset the Air Filter Run Hours after the air filter is cleaned or replaced.
Air Filter Pressure Sensor Failed	Warning	<ul style="list-style-type: none"> Check the sensor connection. If the problem persists, contact Schneider Electric Technical Support.
Coil Freezing	Warning	If the problem persists, contact Schneider Electric Technical Support.
Condensate Pan Full	Warning	A hardware problem may exist: Contact Schneider Electric Technical Support.
Condensate Pan Overflowing	Critical	A hardware problem may exist: Contact Schneider Electric Technical Support.
Condenser Communication Failure	Critical	<ul style="list-style-type: none"> Check the RS485 connection to the outdoor unit. Check power to outdoor unit. If the problem persists, contact Schneider Electric Technical Support.
Condenser Fan BAD	Critical	Contact Schneider Electric Technical Support.
Condenser Fan Brake Op	Warning	Contact Schneider Electric Technical Support.
Condenser Fan Cable Break	Warning	Contact Schneider Electric Technical Support.
Condenser Fan Communication Error	Critical	<ul style="list-style-type: none"> Check the RS485 connection to the outdoor unit. Check power to outdoor unit. If the problem persists, contact Schneider Electric Technical Support.
Condenser Fan Current Limitation	Warning	Contact Schneider Electric Technical Support.
Condenser Fan Electronics Temperature High	Warning	Contact Schneider Electric Technical Support.
Condenser Fan DC Link Over Voltage	Critical	Contact Schneider Electric Technical Support.
Condenser Fan DC Link Under Voltage	Critical	Contact Schneider Electric Technical Support.
Condenser Fan DC Link Voltage Low	Warning	Contact Schneider Electric Technical Support.
Condenser Fan Electronic Over Heated	Critical	Contact Schneider Electric Technical Support.

Alarm Message	Severity	Action Required
Condenser Fan Hall Sensor Error	Critical	<ul style="list-style-type: none"> Check the sensor connection. If the problem persists, contact Schneider Electric Technical Support.
Condenser Fan Locked Motor	Critical	Contact Schneider Electric Technical Support.
Condenser Fan Low Speed	Warning	Contact Schneider Electric Technical Support.
Condenser Fan Mains Over Voltage	Critical	Contact Schneider Electric Technical Support.
Condenser Fan Mains Under Voltage	Critical	Contact Schneider Electric Technical Support.
Condenser Fan Motor Over Heated	Critical	Contact Schneider Electric Technical Support.
Condenser Fan Motor Temperature High	Warning	Contact Schneider Electric Technical Support.
Condenser Fan Line Impedance Too High	Warning	Contact Schneider Electric Technical Support.
Condenser Fan Phase Failure	Critical	Contact Schneider Electric Technical Support.
Condenser Fan Power Limitation	Warning	Contact Schneider Electric Technical Support.
Condenser Fan Power Module Over Heated	Critical	Contact Schneider Electric Technical Support.
Discharge Pressure Sensor Failed	Warning	<ul style="list-style-type: none"> Check the sensor connection. If the problem persists, contact Schneider Electric Technical Support.
Discharge Pressure Too High	Critical	<ul style="list-style-type: none"> Check condenser for obstructions. If the problem persists, contact Schneider Electric Technical Support.
EcoAisle Door Open	Warning	<ul style="list-style-type: none"> Verify the aisle containment system door is shut properly. If the problem persists, contact Schneider Electric Technical Support.
Fan #s Fault	Warning	A hardware problem may exist: Contact Schneider Electric Technical Support.
High Discharge Pressure Persistent	Critical	<ul style="list-style-type: none"> Indicates there were four Compressor High Pressure shutdowns in 30 minutes. Alarms must be cleared manually. If the problem persists, contact Schneider Electric Technical Support.
Humidity is Below Threshold	Warning	Contact Schneider Electric Technical Support.
Humidity is Above Threshold	Critical	Contact Schneider Electric Technical Support.
Inlet Evap Coil Temperature Sensor Failed	Warning	<ul style="list-style-type: none"> Check the sensor connection. If the problem persists, contact Schneider Electric Technical Support.
Input Voltage Has Not Been Configured	Critical	<ul style="list-style-type: none"> Check the Voltage setting in the Main > On/Off menu. If the problem persists, contact Schneider Electric Technical Support.
Insufficient Air Flow	Warning	<ul style="list-style-type: none"> Verify the air ports are clear of obstructions and there is sufficient cooling capacity for the load. If the problem persists, contact Schneider Electric Technical Support.
Internal Communication Error	Critical	A hardware problem may exist: Contact Schneider Electric Technical Support.

Alarm Message	Severity	Action Required
Leak Detected	Critical	<ul style="list-style-type: none"> System is configured to enter idle mode when leak has been detected. Identify the source of the leak. If the problem persists, contact Schneider Electric Technical Support
Low Suction Pressure Persistent	Critical	A hardware problem may exist: Contact Schneider Electric Technical Support.
Lower Return Temperature Sensor Failed	Warning	<ul style="list-style-type: none"> Check the sensor connection. If the problem persists, contact Schneider Electric Technical Support.
Lower Supply Temperature Sensor Failed	Warning	<ul style="list-style-type: none"> Check the sensor connection. If the problem persists, contact Schneider Electric Technical Support.
No Standby Units Available	Warning	<ul style="list-style-type: none"> Check to make sure cooling units in the group have the Unit Role Override setting on the Main > On/Off screen is set to Automatic and that cooling units are available (not in a failed state). Check that the Number of Backup Units in the Main > Configuration > Group > Composition menu is not set to zero (0). If the problem persists, contact Schneider Electric Technical Support.
Outlet Evap Coil Temperature Sensor Failed	Warning	<ul style="list-style-type: none"> Check the sensor connection. If the problem persists, contact Schneider Electric Technical Support.
Output Relay # is Active	Informational	Informational message only: no action required.
PIC# Firmware Revision Incompatibility	Critical	<ul style="list-style-type: none"> Check revision of PIC firmware. If the problem persists, contact Schneider Electric Technical Support.
Primary Power Source Failed	Warning	<ul style="list-style-type: none"> Check power source. If the problem persists, contact Schneider Electric Technical Support.
Rack Inlet Temperature is Above Threshold	Warning	<ul style="list-style-type: none"> Make sure the temperature sensor is connected and placed properly. Make sure the Rack Inlet High Temperature Threshold is set correctly in the Main > Configuration > Unit > Alarms > Thresholds menu. If the problem persists, contact Schneider Electric Technical Support.
Return Temperature is Above Threshold	Warning	<ul style="list-style-type: none"> Make sure the Return Air High Temperature Threshold is set correctly in the Main > Configuration > Unit > Alarms > Thresholds menu. If the problem persists, contact Schneider Electric Technical Support.
Room Humidity Sensor Failed	Warning	<ul style="list-style-type: none"> Check the sensor connection. If the problem persists, contact Schneider Electric Technical Support.
Secondary Power Source Failed	Warning	<ul style="list-style-type: none"> Check power source.

Alarm Message	Severity	Action Required
		<ul style="list-style-type: none"> If the problem persists, contact Schneider Electric Technical Support.
Smoke Detected	Critical	<ul style="list-style-type: none"> Check for presence of smoke. Remove power from the unit and inspect for damage to internal wiring and components. If the problem persists, contact Schneider Electric Technical Support.
Suction Pressure Sensor Failed	Warning	A hardware problem may exist: Contact Schneider Electric Technical Support.
Suction Pressure Too Low	Critical	<ul style="list-style-type: none"> Check the air filter and the evaporator for obstructions. If the problem persists, contact Schneider Electric Technical Support.
Suction Pressure Too Low to Start	Critical	A hardware problem may exist: Contact Schneider Electric Technical Support.
Superheat High or Low Persistent	Critical	Contact Schneider Electric Technical Support.
Superheat Too High	Critical	Contact Schneider Electric Technical Support.
Superheat Too Low	Critical	Contact Schneider Electric Technical Support.
Supply Temperature is Above Threshold	Critical	<ul style="list-style-type: none"> Make sure the Supply Air High Temperature Threshold is set correctly in the Main > Configuration > Unit > Alarms > Thresholds menu. If the problem persists, contact Schneider Electric Technical Support
Too Many Compressor Short Cycles	Warning	Contact Schneider Electric Technical Support.
Unexpected Number of AFCs	Warning	<ul style="list-style-type: none"> Verify physical number of AFC units is set correctly in the Main > Configuration > Service > Containment Systems. If the problem persists, contact Schneider Electric Technical Support.
Unexpected Number of Units in Group	Warning	<ul style="list-style-type: none"> Check group CAN connection. Verify the number of units within the group is correct (Main > Configuration > Group > Composition). If problem persists, contact Schneider Electric Technical Support
Unit Has Exceeded Runtime Threshold	Warning	<ul style="list-style-type: none"> Service the unit. If the problem persists, contact Schneider Electric Technical Support.
Unit is Idle	Critical	A hardware problem may exist: Contact Schneider Electric Technical Support.
Unit Off Due to Input Contact	Warning	<ul style="list-style-type: none"> For an abnormal condition, check the remote contact switch and wiring for proper operation. For a normal condition, no action required.
Upper Return Temperature Sensor Failed	Warning	<ul style="list-style-type: none"> Check the sensor connection. If the problem persists, contact Schneider Electric Technical Support.
Upper Supply Temperature Sensor Failed	Warning	<ul style="list-style-type: none"> Check the sensor connection.

Alarm Message	Severity	Action Required
		<ul style="list-style-type: none"> If the problem persists, contact Schneider Electric Technical Support.
VFD Communication Failed	Critical	<ul style="list-style-type: none"> Check the RS485 connection to the outdoor unit. Check power to outdoor unit. If problem persists, contact Schneider Electric Technical Support
VFD Control Card Over Temperature	Critical	Contact Schneider Electric Technical Support.
VFD Control Card Over Temperature Warning	Warning	Contact Schneider Electric Technical Support.
VFD Control Voltage Overloaded	Warning	Contact Schneider Electric Technical Support.
VFD Current Limit Exceeded	Warning	Contact Schneider Electric Technical Support.
VFD Current Overload	Critical	Contact Schneider Electric Technical Support.
VFD Current Overload Warning	Warning	Contact Schneider Electric Technical Support.
VFD DC Link Voltage High	Warning	Contact Schneider Electric Technical Support.
VFD DC Link Voltage Low	Warning	Contact Schneider Electric Technical Support.
VFD DC Overvoltage	Critical	Contact Schneider Electric Technical Support.
VFD DC Overvoltage Warning	Warning	Contact Schneider Electric Technical Support.
VFD DC Undervoltage Warning	Warning	Contact Schneider Electric Technical Support.
VFD Drive Initialized To Defaults	Critical	Contact Schneider Electric Technical Support.
VFD Earth Fault	Critical	Contact Schneider Electric Technical Support.
VFD High Head Pressure Switch Activated	Critical	Contact Schneider Electric Technical Support.
VFD Inrush Error	Critical	Contact Schneider Electric Technical Support.
VFD Internal Error	Critical	Contact Schneider Electric Technical Support.
VFD Initialization Error	Critical	Contact Schneider Electric Technical Support.
VFD Mains Phase Loss	Critical	Contact Schneider Electric Technical Support.
VFD Motor Over Temperature	Critical	Contact Schneider Electric Technical Support.
VFD Motor Phase U Missing	Critical	Contact Schneider Electric Technical Support.
VFD Motor Phase V Missing	Critical	Contact Schneider Electric Technical Support.
VFD Motor Phase W Missing	Critical	Contact Schneider Electric Technical Support.
VFD Motor Thermistor Over Temperature	Critical	Contact Schneider Electric Technical Support.
VFD Peak Over Current	Critical	Contact Schneider Electric Technical Support.
VFD Persistent Trips	Critical	Contact Schneider Electric Technical Support.
VFD Power Card Temperature OK	Critical	Contact Schneider Electric Technical Support.
VFD Short Circuit	Critical	Contact Schneider Electric Technical Support.
VFD Speed Not Within Limits	Warning	Contact Schneider Electric Technical Support.
VFD Torque Limit Exceeded	Critical	Contact Schneider Electric Technical Support.

Alarm Message	Severity	Action Required
VFD Vd D1 Supply Low	Critical	Contact Schneider Electric Technical Support.
Wrong Number of Leak Detector Sensors	Warning	<ul style="list-style-type: none">• Check the Number of Leak Detectors in Unit setting in the Main > Configuration > Unit > Components menu.• If the problem persists, contact Schneider Electric Technical Support.

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As standards, specifications, and design change from time to time,
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