

# Operation and Maintenance

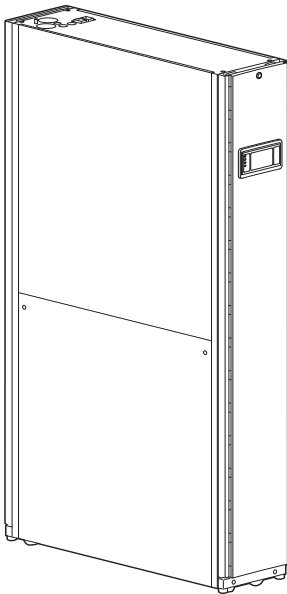
## InRow™ Chilled Water Air Conditioners

InRow™ RC

ACRC301S, ACRC301H

990-4739B-001

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# General Information

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## Overview

### Save these instructions

This manual contains important instructions that must be followed during the installation of this equipment.

### Manual updates

Check for updates to this manual on the Schneider Electric Web site, **www.schneider-electric.com/support**. Select the **Download Documents and Software** link under the **Support** tab and enter the manual part number or SKU for your equipment in the search field. See the back cover of this manual for the part number.

### Cross-reference symbol used in this manual



See another section of this document or another document for more information on this subject.

### Safety

Read and adhere to the following important safety considerations when working with this cooling unit.

#### **⚠ ⚠ DANGER**

##### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Turn off all power supplying this equipment before working on the equipment. All electrical work must be performed by qualified personnel. Practice Lockout/Tagout procedures. Do not wear jewelry when working with electrical equipment.

**Failure to follow these instructions will result in death or serious injury.**

**⚠ WARNING**

**TIP HAZARD**

- Use two or more people at all times to move or turn this equipment.
- Always push, pull, or turn while facing the front and rear of this equipment - never push, pull, or turn while facing the sides of the equipment.
- Slowly move this equipment across uneven surfaces or door thresholds.
- Lower leveling feet to the floor when this equipment is stationary.
- Lower the leveling feet and attach joining brackets to adjacent racks when the equipment is in its final location.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

**⚠ WARNING**

**HAZARD FROM MOVING PARTS**

Keep hands, clothing, and jewelry away from moving parts. Check the equipment for foreign objects before closing the doors and starting the equipment.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**



# Commissioning

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After installation, complete the following checklists to verify that all components are working properly and that the equipment is ready to begin operation.

## Checklists

### Initial inspection

The initial inspection ensures that the equipment has been properly installed, the location of the cooling unit has been properly prepared, and the cooling unit is free of damage.

The room vapor barrier minimizes moisture infiltration. Without a vapor barrier, it will be difficult to maintain the humidity in the room.

Do not introduce unconditioned outside air into the space.

### Ensure that

- 
- The installation procedure is complete according to the requirements of this installation manual.

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  - The walls, floor, and ceiling of the room where the cooling unit is located are sealed with a vapor barrier.

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  - There is no evidence of damage to the cooling unit.

---

  - Clearance around the equipment is in accordance with ASHRAE, local, and national codes as well as this installation manual.

---

  - The cooling unit is level and joined to the adjacent racks or fastened to the floor.

---

  - Room humidity is below 60% relative humidity and all other room cooling equipment is functioning before starting this equipment. See the “InRow RC Operating Guidelines” on page 14.

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  - Chilled water temperature is above the room dew point without the optional circulation pump (ACRC301H only).

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  - Chilled water flow rate is above 0.85 l/s (13.5 gpm) with the optional circulation pump (ACRC301H only).

---

## Electrical inspection

The electrical inspection verifies that all electrical connections are secure and correct and that the cooling unit is properly grounded.

<b>⚠ ⚠ DANGER</b>
<b>HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH</b>
<ul style="list-style-type: none"><li>• All electrical wiring must comply with local and national codes and regulations.</li><li>• Turn off all power supplying this equipment before working on the equipment.</li><li>• The equipment is grounded through its power cord. Ensure the equipment is connected to a grounded outlet.</li></ul>
<b>Failure to follow these instructions will result in death or serious injury.</b>

Ensure that

- 
- Incoming voltages match the phase and voltage rating on the nameplate.
  - Equipment is properly connected to an earth ground.
  - Internal electrical components and terminal blocks do not have any loose connections.
  - Electrical connections are tight, including controllers and auxiliary devices.
  - The primary and secondary power feeds are properly connected.
- 

## Mechanical inspection

The mechanical inspection verifies that all mechanical components and connections are secure.

<b>NOTICE</b>
<b>PROPER INSTALLATION</b>
Ensure all piping is properly installed to avoid improper operation or damage to cooling unit or surrounding equipment.
<b>Failure to follow these instructions can result in equipment damage.</b>

Ensure that

- 
- If equipped, the condensate drain line is the size of the drain connection and is routed properly (ACRC301S only).
  - Mechanical connections are tight.
  - Equipment has isolation valves installed for removal of the equipment from a row for servicing.
  - Piping is insulated.
  - Equipment has strainers installed into the supply piping.
  - Piping does not have any leaks.
  - External chilled water isolation valves are open.
  - Air is bled from the system. If air remains in the system, bleed it out now.
  - Supply water temperature is recorded.
-

Ensure that

- Internal chilled water valves are open

---

- Cooling Distribution Unit (CDU) is used in conjunction with the equipment or that circuit setters are installed in the supply lines to each cooling unit.

---

- Room conditions and relative humidity comply with the operating guidelines before starting the equipment. (See “InRow RC Operating Guidelines” on page 14.)

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- If included, make sure the rope leak sensors and rope leak sensor extensions are routed properly to the bottom of the unit.

---

User interface inspection

The user interface inspection verifies that the sensors and internal communication links of the cooling unit are installed properly.

Ensure that

- User interface display is working properly. The LCD backlight, LEDs, and alarm tone will perform a self-test when power is applied to the unit.

---

- A-Link and network connections are properly made.

---

- Input contacts and output relays are connected correctly.

---

- Building management system RS-485 port is connected properly.

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- The network port is connected correctly and an IP address has been assigned to the cooling unit.

---

- When installed, assure that the remote temperature sensors are properly routed to the front (entering air side) of the racks in the proximity of the cooling unit.

---

- Make sure no buttons are covered by the display protective sticker.

---

Start-up inspection

The start-up inspection ensures that the cooling unit is operating properly after the initial start-up. This inspection verifies that all modes of operation are working correctly and that the cooling unit is ready for normal operation.

While the equipment is operating, ensure that

- The cooling unit is free from malfunctions, including water leaks, unusual vibrations, or other irregularities in each mode of operation.

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- The cool cycle engages. The chilled water valve actuator responds to the cooling demand.

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- Air filters are clean and free of debris. Replace air filters if necessary.

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- The fans achieve the desired fan speed setting.

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- If equipped, the condensate pump is working properly by adding fresh clean water to the condensate pan and checking pump operation (ACRC301S only).

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- If equipped, the circulation pump settings match those shown in “Preparation and sequence” on page 13. (ACRC301H only).

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## Final inspection

The final inspection verifies that the system is clean and the start-up form has been sent to Schneider Electric.

### Ensure that

- 
- Interior and exterior of the equipment are clean and free from debris.

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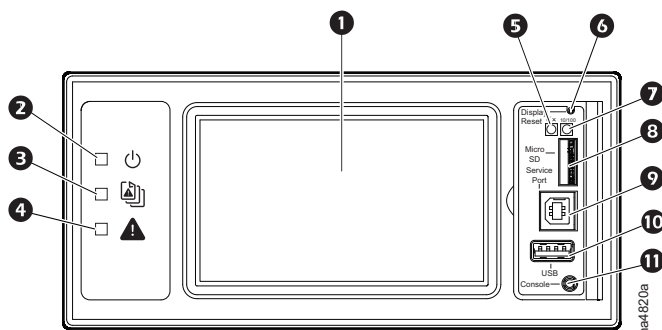
  - Packaging materials are disposed of properly.

---

  - Start-up form is filled in and sent to Schneider Electric.

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# Operation



Item	Description	Function
❶	LCD display	4.3-in. touch-screen color display.
❷	Power LED	The cooling unit is powered when the LED is illuminated. Unit firmware is updating when LED is blinking.
❸	Check Log LED	When this LED is illuminated, a new entry has been made to the event log.
❹	Alarm LED	Displays current alarm condition of unit.
❺	Status LED	Displays current network management card status.
❻	Link-RX/TX (10/100) LED	Displays current network link status.
❼	Display Reset button	Resets the display microprocessor. This has no effect on the air conditioner controller.
❽	Micro SD card slot	Memory card expansion slot.
❾	Service port	USB-B port used only by service personnel.
❿	USB-A port	Supports firmware upgrades.
⓫	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 Alarms
Solid yellow	Warning Alarm
Solid red	Critical Alarm

## Status LED

This LED indicates the status of the display.

<b>Condition</b>	<b>Description</b>
Off	One of the following situations exist: <ul style="list-style-type: none"><li>• The display is not receiving input power.</li><li>• The display is not operating properly. It may need to be repaired or replaced. Contact Schneider Electric Customer Support.</li></ul>
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.

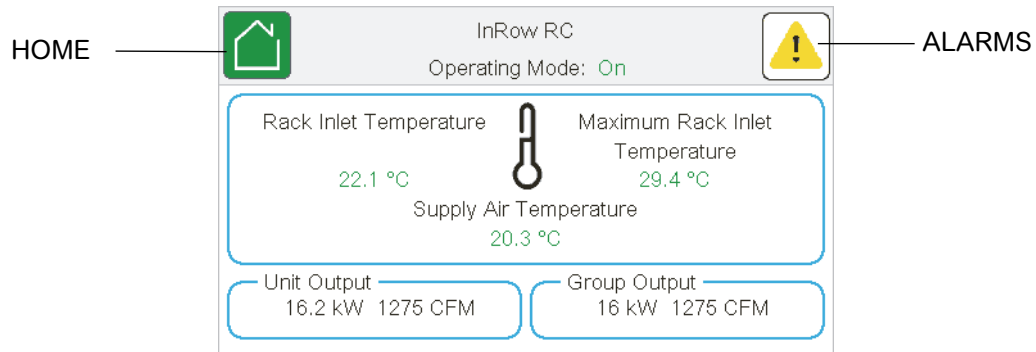
<b>Condition</b>	<b>Description</b>
Off	One or more of the following situations exist: <ul style="list-style-type: none"><li>• The display is not receiving input power.</li><li>• The cable or device that connects the cooling unit to the network is disconnected or not functioning properly.</li><li>• The display itself is not operating properly. It may need to be repaired or replaced. Contact Schneider Electric Customer Support</li></ul>
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.

## Using the Display

The display initializes and runs an LED test when power is applied to the cooling unit.

## Overview screen

After start-up, the display shows an overview screen containing basic status information. Press **Home** to toggle between the main menu and overview screen. After a period of inactivity, the display also reverts back to the overview screen.



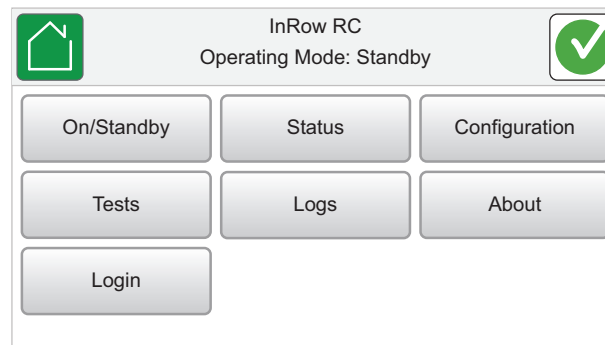
## Main menu screen

At any time during operation, press **Home** to return to the main menu. To view active alarms, press **Alarms**. The **Alarms** image changes based on the current state of the display.



See “Alarms” on page 28 for more information on the **Alarms** state images.

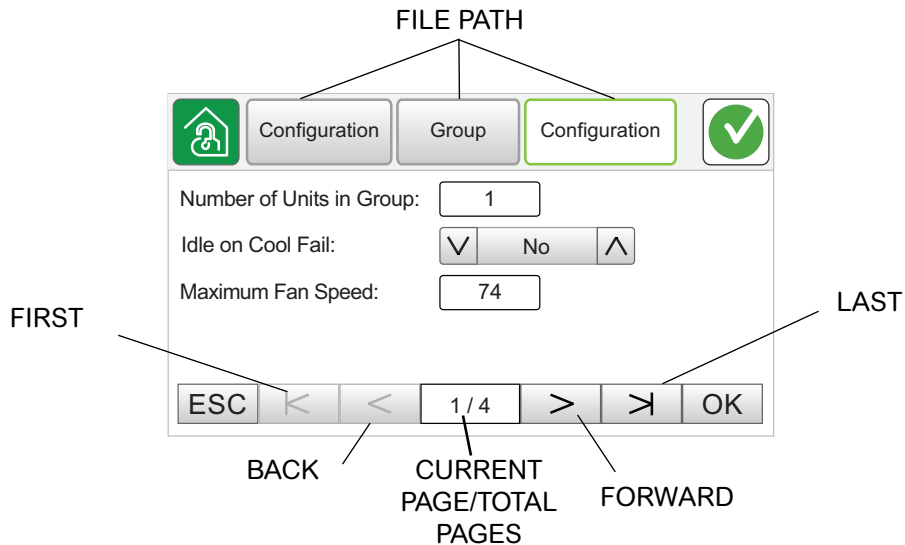
Main menu options appear on the display as shown below.



## Display controls

To view a sub-menu, select an option from the main menu. Continue this process until the appropriate menu is active.

During navigation, the current file path is displayed at the top of the screen. Up to three menu headers can be displayed at one time. Clicking on any of the headers reverts the display to the specified menu.



Menus with multiple pages use arrows to move between pages. **Forward** and **Back** advance one page at a time while **First** and **Last** move directly to the first or last page within the menu. Once changes have been made within a menu, press **OK** to confirm changes or **ESC** to cancel.

### Using the path statement

Select the main- and sub-menu options specified in the path statement to view or configure a setting. The path statement lists the main- and sub-menu options you select to navigate to the setting you want to view or modify. The parts of the path statement are defined in the following example:

**Path: Main > Status > Unit Overview**

**Main** > Your starting point is the main menu.

**Status** > Select this option from the main menu.

**Unit Overview** > Select this option from the sub-menu.

Subsequent options are listed and defined under the path statement.

### Calibrating the display

**Path: Main > Tests > Display Calibration > Calibrate**

Use this screen to calibrate the touch screen by touching the center of the box that appears on the screen. When you are satisfied with the calibration, let the timer run down to zero.

### Password entry



The InRow RC display requires password verification before settings can be altered on the unit. You can log in from the main menu by selecting **Login**. While it is not required to log in to view unit configurations, it is required to make any changes. If the password was not entered from the **Login** screen on the main menu, you will be prompted to enter the password when attempting to change a setting. The unit default password is **1234**.



See “Add a new user or edit an existing user” on page 21 for information on editing users and passwords.



The **Home** button visually changes to signify that a user is currently logged in.

Symbol	Description
	<b>Home</b> when the system is locked.
	<b>Home</b> when the system has been unlocked by a user.

Once the password is entered, user login remains active until the period of inactivity exceeds the **Auto Logoff** setting.



See “Screen visibility and audible tones” on page 21.

Start the cooling unit

**Path: Main > On/Standby**

1. Press **Command On**.
2. Select **Yes**.  
If not logged in and **Protect On/Standby** is activated, a prompt will appear to enter your password.  
**NOTE: Protect On/Standby** can be enabled under **Configuration > Unit > Configuration**. The default setting is **Off**.
3. Enter your password if required.  
The **On/Standby** status will now display **On**.

The fans will start after the chilled water valve has reached its starting position. The cooling unit will run according to the configured settings.

**NOTE: On/Standby** only affects the local cooling unit. You must set the **On/Standby** option for each cooling unit in the cooling group.



**NOTE:** The Standby Input must also be inactive in order to leave the **Standby** state.

If the **Protect On/Standby** option has been selected, you will be prompted to enter the device password before a change can be made to the **On/Standby** setting.

## Stop the cooling unit

### Path: Main > On/Standby

1. Press **Command Standby**.
2. Select **Yes**.
3. If not logged in and **Protect On/Standby** is activated, a prompt will appear for you to enter your password.
4. The **On/Standby** status will now display **Standby**.  
**NOTE:** The unit can also be stopped via an external signal connected to the Standby Input.

  <b>DANGER</b>
<b>HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH</b>
The Standby option does not remove power from the cooling unit. You must disconnect power at the mains to remove power from the cooling unit.
<b>Failure to follow these instructions will result in death or serious injury.</b>

# Start-up Conditions

## NOTICE

### HIGH HUMIDITY

Ensure excess humidity is removed from the installation area.

**Failure to follow these instructions can result in equipment damage.**

### Preparation and sequence

1. Close all doors and windows. Ensure the room is sealed.



See “Room Preparation” in the *InRow Chilled Water Air Conditioners Installation Manual*.

2. Run the room cooling equipment until the “Acceptable Operating Conditions” dry bulb temperature (db °C or db °F) and relative humidity (% RH) zone indicated in the chart below are reached. Supplementary dehumidification and cooling equipment may be necessary to reduce the humidity to acceptable levels. Do not proceed until all conditions in step 2 have been met.
3. Turn on the InRow RC unit.
4. Turn on the heat loads.
5. Check that the circulation pump display matches the display shown below (optional for ACRC301H only).

If the settings on the pump do not match the settings given, you must manually change the settings.

**NOTE:** 29.1 is an example value.

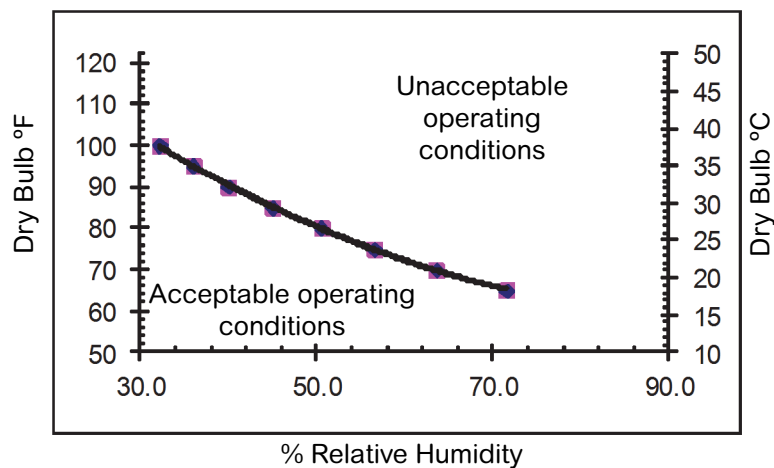


See the *InRow Chilled Water Air Conditioners Service Manual* for information on display items and settings.

If the following sequence of events occurs on units equipped with a condensation pump, the room humidity is too high. Ensure step 1 (above) is completed. InRow RC cooling units are not intended for dehumidification.

1. If the high-limit float device detects that the condensate pan is full, the **Condensate Pan Full Alarm** is recorded in the event log and the critical alarm LED illuminates.  
**NOTE:** Only ACRC301S units have a condensate pan. ACRC301H units should not produce condensate; however, if this is a possibility in the operation environment, an optional circulation pump is available for installation.
2. The fans turn off and the chilled water valve closes completely.
3. The condensate pump continues to operate until the low-limit float is deactivated, which clears the alarm (ACRC301S only).
4. The equipment resumes normal operation.
5. Subsequent activation of the high-limit float results in repeating steps 1 through 4 until room conditions are reduced to an acceptable level as shown in the chart below.

### InRow RC Operating Guidelines



# General Configuration

The cooling group configuration options are set during the commissioning of the cooling units in the cooling group.

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

## Cooling unit configuration

**Path:** Main > Configuration > Unit > Configuration

**Startup Delay.** The delay begins when the cooling unit is started and initialized. The cooling unit cannot begin operation until this delay has expired. Use the start-up delay to restart equipment sequentially in your room after a scheduled downtime.

**Idle on Leak Detect.** When set to **Yes**, the cooling unit will enter idle mode if a **Water Detection Fault** activates. Set to **No** to disable the cooling unit from entering idle mode if a leak is detected.

**NOTE:** The leak sensor (Schneider Electric part number NBES0308) and extension (Schneider Electric part number NBES0309) are optional.

**Idle on Cool Fail.** When set to **Yes**, the cooling unit will enter idle mode if the cooling unit is unable to supply conditioned air. Set to **No** to disable the cooling unit from entering idle mode if a cooling failure is detected.

**NOTE:** There are three alarms that will cause the cooling unit to enter idle mode:

- Water Detection Fault (If **Idle on Leak** is set to **Yes**.)
- Condensate Pan Full
- Cooling Failure (If **Idle on Cool Fail** is set to **Yes**.)



See “Alarms” on page 28 for more information on alarms.

**Air Filter Type.** Selects the type of air filter the unit is using. The controller requires this information in order to properly calculate air flow.

**Air Filter Service Alarm Enable.** **Enable** or **Disable** the air filter service alarm.

**Air Filter Service Interval.** Enter the number of weeks between air filter service alarms.

**Bypass Valve Position.** Reflects the position of the manual bypass valve. This setting must match the physical setting of the valve. When the bypass is **Closed**, the maximum chilled water flow is limited via the **Maximum Chilled Water Flow** setting.

**Maximum Chilled Water Flow.** Restricts the maximum chilled water flow rate of the unit. This setting is only used when the **Bypass Valve Position** is set to **Closed**. The input range is 0–100 gallons per minute (0–6.30 liters per second). Only qualified service personnel can make changes to this setting.

**Chilled Water Valve Control.** The setting used to determine chilled water flow. When **Automatic** is selected, the unit operates based on measured demand. Only qualified service personnel can make changes to this setting.

**Power Source.** Select the number of InRow RC power connections. Select **Single** when using one power connection. Select **Dual** when using two power connections.

**Standby Input Normal State.** Define the normal state of the standby input: **Open** (no voltage present at the input) or **Closed** (voltage present at the input).



See “Output relays and standby input” in the *InRow Chilled Water Air Conditioners Installation Manual*.

**Number of Rack Inlet Temp Sensors in Unit.** The number of expected rack inlet sensors for the unit. One (1) sensor is included by default; the unit supports up to four (4) sensors.

**NOTE:** Four sensor ports total are provided for rack inlet temperature sensors and leak detectors combined.

**Number of Leak Detectors in Unit.** The number of expected leak detectors in the unit. Zero (0) leak detectors are included by default; the unit supports up to four (4) leak detectors.

**NOTE:** Four (4) sensor ports total are provided for rack inlet temperature sensors and leak detectors combined.

**Unit Service Alarm Enable.** **Enable** or **Disable** the unit service alarm. Only qualified service personnel can make changes to this setting.

**Unit Service Alarm Interval.** Enter the number of weeks between unit service alarms. Only qualified service personnel can make changes to this setting.

**Protection On/Standby.** **Enable** to password protect the On/Standby menu.

## Cooling Group Configuration

The cooling group configuration determines how the cooling group should operate.

**NOTE:** The settings in the **Cooling Group Configuration** menu are defined by the field service representative when the cooling group is commissioned. Only qualified service personnel should make changes to these settings.

Configure the cooling group

**Path: Main > Configuration > Group > Configuration**

The group configuration settings identify the number of cooling units installed in this cooling group and the physical arrangement of those cooling units.

**Configuration Type.** The airflow control strategy for the cooling units of this cooling group. Only qualified service personnel can make changes to this setting.

- **In-Row:** Air flow is horizontal to allow in-row operation of the cooling. The loads share a common open cold aisle.
- **HACS** (Hot Aisle Containment System): Air flow in the room is controlled by enclosing the hot air aisle. The loads share an enclosed common hot aisle.
- **RACS** (Rack Air Containment System): Air flow in the enclosure is controlled by a ducting system fitted to the enclosure.
- **CACS** (Cold Aisle Containment System): Air flow in the room is controlled by enclosing the cold air aisle. The loads share an enclosed common cold aisle.

**Number of Units in Group.** Indicates the number of cooling units in this cooling group. Up to twelve cooling units can be joined together to work as a single cooling group.

**Maximum Fan Speed.** Defines the maximum speed at which the fans operate. The speed of the fans will not be allowed to exceed this percentage.

**NOTE:** Reducing the default maximum fan speed percentage may lower the sound level of operating equipment. This reduction will result in reducing total cooling capacity.

**Percent Glycol.** The percentage of glycol used by the cooling group to cool the environment. This affects how cooling output is reported. Only qualified service personnel can make changes to this setting.

**Altitude.** Set the altitude (in feet or meters) of the unit above sea level. This number is used to estimate the density of air and is a factor in pressure measurement.

**Airflow Control.** When **Automatic** is selected, the unit operates based on measured demand. When set to **60%**, **70%**, **80%**, **90%**, or **100%**, the fans will operate at the selected output.

**NOTE:** If an active flow controller is being used in RACS/HACS/CACS, the following are pertinent.

**Number of Active Flow Controllers.** Sets number of AFC units in the group (0 to 5).

**Active Flow Control Lamp Test.** When enabled, the Active Flow Controller(s) LEDs will cycle through a red, green, and blue illumination pattern. (Not on unit.)

**Active Flow Control Bias.** This setting is used to change the bias of the controller by adjusting the contained aisle pressure threshold. **Zero** is the default setting. Only qualified service personnel can make changes to these settings.

- Hot Aisle Containment (HACS)
  - If the cooling units seem to be under-cooling, select **Negative** or **Slightly Negative** to adjust the aisle pressure for additional cooling.
  - If the cooling units seem to be over-cooling, select **Positive** or **Slightly Positive** to adjust the aisle pressure for less cooling.
- Cold Aisle Containment (CACS)
  - If the cooling units seem to be under-cooling, select **Positive** or **Slightly Positive** to adjust the aisle pressure for additional cooling.
  - If the cooling units seem to be over-cooling, select **Negative** or **Slightly Negative** to adjust the aisle pressure for less cooling.

Setting	Blue LED – HACS Red LED – CACS	Setpoint Green LED	Red LED – HACS Blue LED – CACS
<b>Positive</b>	< -0.008 in. ±3%	0.004 ±0.0004 in.	> 0.016 in. ±3%
<b>Slightly Positive</b>	< -0.010 in. ±3%	0.002 ±0.0004 in.	> 0.014 in. ±3%
<b>Zero</b>	< -0.012 in. ±3%	0.000 ±0.0004 in.	> 0.012 in. ±3%
<b>Slightly Negative</b>	< -0.014 in. ±3%	-0.002 ±0.0004 in.	> 0.010 in. ±3%
<b>Negative</b>	< -0.016 in. ±3%	-0.004 ±0.0004 in.	> 0.008 in. ±3%

**Active Flow Control Status.** The status of the Active Flow Control. Indicates whether the correct amount of airflow is being provided to the load. This status is not configurable.

**NOTE:** AFC compatibility may require upgrading the cooling unit controller.

## PID Settings

**Path: Main > Configuration > Group > Configuration**

**NOTE:** Only qualified service personnel can make changes to these settings.

**Cool Gain (P).** The proportional multiplier (gain) for this mode or actuator. The proportional multiplier adjusts for the difference (error) between the measured temperature and the setpoint. The proportional multiplier is expressed in percent of output per unit error.

**Cool Reset Rate (I).** The integral multiplier (reset rate) for this mode or actuator. The integral multiplier adjusts for error measurement and for 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. It is expressed in percent of output for each minute and unit of error (error multiplied by minutes).

**Cool Derivative (D).** The derivative multiplier (derivative) for this mode or actuator. The derivative multiplier adjusts the output for rapid changes in the error, correcting for the rate of change of the error over time. It is expressed in percent of output for each unit of error per minute (error divided by minutes).

## Configure Modbus

**Path: Main > Configuration > Modbus**

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

Configure the Modbus by enabling **Serial** or **TCP** access and adding the required values.

**Address.** Each Modbus device must have a unique target identification number. Enter a unique number (between 1 and 247) for the cooling unit (serial Modbus only).

**Baud Rate.** Select either **9600** bps or **19200** bps.

**Parity.** Select **Even**, **Odd**, or **None**.

**NOTE:** If you select **Even** or **Odd** parity, then select 1 stop bit on the host computer. If you select **None**, then select two stop bits on the host computer.

**Port.** Enter a port. The default port is 502. For additional security enter a port between 5000 and 32768 (TCP connection only).

# Control the Environment

The InRow RC utilizes a chilled water coil, a valve to modulate fluid flow through the chilled water coil, and a set of fans to control airflow through the coil. The control strategies employed by the cooling unit depend upon the deployment strategy of the cooling group.

In an in-row environment, the InRow RC supplies constant-temperature supply air to the common aisle. The fan speed is modulated to ensure that the required volume of air reaches the IT equipment.



In a HACS or RACS environment, the InRow RC neutralizes the heat accumulated in the common hot aisle and expels it back into the environment after the heat is neutralized while maintaining the required temperature gradient across the group.

In a CACS environment, the InRow RC supplies constant temperature supply air to the enclosed cold aisle. The fan speed is modulated to ensure that the required volume of air reaches the IT equipment.

## Setpoints

### **Path: Main > Configuration > Group > Setpoints**

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

**Cool Setpoint.** Set the temperature that the cooling group should maintain. The setpoint must be within 18.0–35.0°C (64.4–95.0°F).

**NOTE:** This is the temperature maintained at the rack inlets.

**Supply Air Setpoint.** The setpoint must be within 15.0–30.2°C (59.0–86.4°F). The **Supply Air Setpoint** will be the required temperature of the air expelled into the surrounding environment.

**NOTE:** The **Supply Air** setting is defined by the field service representative when the cooling group is commissioned.

**Delta-T Setpoint.** When the group is programmed for HACS or RACS mode, this property specifies the desired temperature difference across the equipment from the following options.

- 40°F/22.2°C
- 35°F/19.4°C
- 30°F/16.7°C
- 25°F/13.9°C
- 20°F/11.1°C
- 15°F/8.3°C
- 10°F/5.6°C

## Run hours

The cooling unit records the number of hours each of its components has been in operation.

### **Path: Main > Status > Unit Run Hours**

- **Unit**
- **Condensate Pump** (ACRC301S only)
- **Fan 1 Power Supply**
- **Fan 2 Power Supply**
- **Air Filter**  
**NOTE:** When the air filter is replaced, use the **Air Filter Serviced** button to reset the maintenance alarm.
- **Fan 1-8** (Fan 1 is the bottom fan; Fan 8 is the top fan)
- **Circulation Pump** (optional for ACRC301H only)

## Thresholds

Set alarms to alert you to high temperature violations.

**Path: Main > Configuration > Unit > Thresholds**

When the air temperature exceeds the temperature defined by the **High Temperature Threshold**, a warning alarm will occur. Set high temperature thresholds for the following:

- **Rack Inlet:** The air entering the rack at the temperature sensor.
- **Supply Air:** The air leaving the cooling unit.
- **Return Air:** The air entering the cooling unit.
- **Entering Chilled Water:** The chilled water entering the cooling unit.

# Display Settings

Set display settings including the time and date, temperature units, passwords, and time-out settings.

Add a new user or edit an existing user

**Path: Main > Configuration > Display > Security**

1. Select **Add User** to add a new user or select **Edit User** to edit an existing user of the system.
2. In the **Name** field, enter the name of the user.
3. In the **Pin** field, enter a pin code for the user.
4. In the **Confirm Pin** field, re-enter the pin code of the user.
5. Under **Language**, select the preferred language of the user.
6. Under **Date Format**, select the preferred date format for the user.
7. Under **Temperature**, select if the user should see temperature values in metric (Celsius) or US Customary (Fahrenheit) format.
8. Press **OK** to save your settings.

Delete a user

**Path: Main > Configuration > Display > Security > Delete User**

1. Browse to the user that you wish to delete using the up and down arrows and press **OK**.
2. Press **Yes** to confirm deletion of an existing user of the system.

Language, date and time

**Path: Main > Configuration > Display > Preferences**

**Language.** Select the correct language for the display.

**Current Date.** Enter the day, month, and year. The date is displayed on some status screens and is also used in the alarm/event log to date-stamp events.

**Current Time.** Enter the current time for the display.

Screen visibility and audible tones

**Path: Main > Configuration > Display > System Settings**

**Alarm Volume.** Choose the level of audio at which alarms will sound.

**Button Volume.** **Enable** or **Disable** the audible tone that sounds every time a key is pressed on the display interface and select the volume at which the tone will be produced.

**Brightness.** Controls the visibility of the display.

**Enable Backlight Timeout.** **Enable** or **Disable** backlight timeout settings.

**Backlight Timeout.** Turns off unit backlight after a specified amount of time. Timeout range is 1-60 minutes.

**Intensity.** Select the visibility of the display during backlight timeout.

- **Off:** The display will remain at the normal intensity level.
- **Very Low:** The display will be very dim.
- **Low:** The display will be dim:
- **Medium:** The display will dim to about half of the normal brightness.

**Enable Auto Logoff.** **Enable** or **Disable** auto log-off settings.

**Auto Logoff.** Automatically signs current user out of the system after specified amount of time. Timeout range is 1-60 minutes.

# Network Configuration

The cooling unit is shipped with an embedded Network Management Card (NMC) that enables you to manage the cooling unit over your network. Configure the network settings for the Network Management Card from the display interface. The management card allows remote control and configuration of the cooling unit

Configure the network

**Path: Main > Configuration > Network**

- TCP/IPv4: Enable IPv4 (if applicable), and select the Address mode (Manual, DHCP, BOOTP).
- TCP/IPv6: Enable IPv6 (if applicable), select **Auto Configuration** or **Manual Configuration**, and select the DHCPv6 Mode (Router controlled, Non-Address Information Only, or Address and Other Information).
- Web Access: Enable Web (if applicable) and select the access Mode (HTTP and/or HTTPS).
- FTP server: Enable FTP (if applicable)

## View Status Readings

The display interface provides several options for viewing the status of the cooling group, its cooling units, and the environment being controlled.

Overview screen

When the display interface is idle or **Home** is pressed, an overview screen shows basic status readings including Rack Inlet Temperature, Maximum Rack Inlet Temperature, Cool Setpoint, Unit Output and Group Output. To view more detailed information about the status of the unit, manually navigate to the status menus.

Basic cooling unit status

**Path: Main > Status > Unit Overview**

The cooling unit status screens provide basic information for each cooling unit in a cooling group.

**Operating Mode.** Identifies the operating mode of the unit.

- **Standby:** The cooling unit is receiving power but not enabled for cooling.
- **On:** The cooling unit is cooling.
- **Idle:** The cooling unit is no longer cooling due to active alarms.
- **Maintenance:** Testing and maintenance mode used by qualified service personnel.

**Rack Inlet Temperature.** The current temperature recorded at the rack inlet temperature sensors connected to the unit.

**Supply Air Temperature.** The temperature of the air leaving the cooling unit.

**Return Air Temperature.** The temperature of the air entering the cooling unit.

**Dew Point Temperature.** The dew point of the environment (ACRC301H only).

**Airflow.** The amount of airflow output by the unit.

**Fan Speed.** The speed of the fans that regulate the airflow through the cooling unit.

**Cool Output.** The actual cooling output of the cooling unit.

**Cool Demand.** The amount of cooling that the load currently requires.

**Unit Energy.** The electrical energy consumed by the unit since the last Reset Unit Energy command.

**Unit Power.** The electrical power being consumed by the unit.

## Detailed cooling unit status

### Path: Main > Status > Detailed Status

**Chilled Water Valve Position.** The position (percent open) of the valve that controls how much chilled water enters the cooling unit.

**Chilled Water Flow.** The amount of chilled water that flows through the cooling unit.

**Entering Chilled Water Temperature.** The temperature of the chilled water as it enters the cooling coil.

**Leaving Chilled Water Temperature.** The temperature of the chilled water as it leaves the cooling coil.

**Coil Chilled Water Temperature.** The temperature of chilled water entering the coil (ACRC301H only).

**Standby Input State.** The current state of the input. If the input is in an abnormal state, an alarm will occur and the unit will stop cooling.



See “Output Relays and Standby Input” in the *InRow Chilled Water Air Conditioners Installation Manual*.

**Output 1-4 State.** The current state of the output.



See the *InRow Chilled Water Air Conditioners User’s Guide* for information on editing output states.

**Filter Differential Pressure.** The differential pressure of the air filter.

**Active Power Source.** The power source being used by the unit. The unit supports a redundant power input.

## Cooling group status

### **Path: Main > Status > Group Status**

The cooling group status screens provide information about the cooling group.

**Cool Output.** The actual cooling output of the cooling group.

**Cool Demand.** The output required to meet the current heat load of the conditioned space.

**Cool Setpoint.** The temperature setting that the air entering the rack should maintain (InRow, cold aisle containment system (CACS) modes only).

**Airflow.** The total airflow output of the cooling units in the cooling group.

**Maximum Rack Inlet Temperature.** The highest rack temperature reported by any cooling unit in the cooling group.

**Minimum Rack Inlet Temperature.** The lowest rack temperature reported by any cooling unit in the cooling group.

**Active Flow Control Status.** Indicates whether the correct amount of airflow is being provided to the load. Status can be **Over**, **OK**, **Under**, or **N/A**.

## About the network

View identifying information about the cooling network parameters. Select **IPv4** or **IPv6**.

### **Path: Main > About > Network > IPv4**

**Enabled** . Identifies whether the specified network is **Enabled** or **Disabled**.

**Mode.** Identifies how the IP address is obtained.

**IP Address.** The IP address of the unit.

**Subnet Mask.** The subnet mask for the sub-network.

**Default Gateway.** The default gateway address used by the network.

### **Path: Main > About > Network > IPv6**

Press Addresses to view all assigned IPv6 addresses.

**Enabled** . Identifies whether the specified network is **Enabled** or **Disabled**.

**Auto Configuration.** Displays **Yes** if the IP address is assigned automatically.

**Manual Configuration.** Displays **Yes** if the IP address is assigned manually.

**DHCPv6 Mode.** The DHCPv6 mode.

- **Router Controlled:** 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 network management card (NMC) checks whether the M and O flags are set. The NMC interprets the state of the M and O "bits" for the following cases:

- **Neither is set:** Indicates local network has no DHCPv6 infrastructure. The NMC uses Router Advertisements and/or 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. 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. If an O flag is received first, then an M flag is received subsequently, the NMC performs full address configuration upon receipt of the M flag
  - **Only O is set:** In this situation, the NMC 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:** If this radio box is selected, DHCPv6 is used to obtain addresses AND other configuration settings. This is known as DHCPv6 stateful.
  - **Non-Address and Information Only:** If this radio box is selected, DHCPv6 is used to configure "other" settings (such as locations of DNS servers), but NOT to provide addresses. This is known as DHCPv6 stateless.
  - **Never:** If this radio box is selected, DHCPv6 is NOT to be used for any configuration settings.

## About the cooling unit

**Path: Main > About > Display > Device**

View identifying information that is helpful when obtaining service:

- **Model Number:** The model number of the unit.
- **Serial Number:** The serial number of the unit.
- **Hardware Revision:** The hardware revision of the unit.
- **Manufacture Date:** The date the unit was manufactured.
- **MAC Address:** The MAC address of the unit.

## About the firmware

**Path: Main > About > Display > Firmware**

View identifying revision information about the display interface firmware:

- **Application**
- **APC OS (AOS)**
- **APC Boot Monitor**
- **Video Driver**
- **FPGA**



## About the controller

### Path: Main > About > Controller

View identifying information about the embedded controller:

- **Model Number:** The model number of the controller.
- **Serial Number:** The serial number of the controller.
- **Firmware Revision:** The version number of the controller firmware.
- **Hardware Revision:** The hardware revision of the controller.

## Event Log

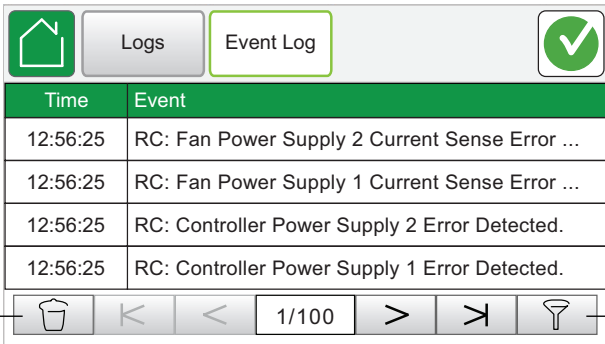
The event log saves status information and a message each time a change in the cooling group is detected. Alarms and events are recorded in the log and displayed on the active alarm screen. Status information and system configuration changes are only displayed in the event log.

### View event log

#### Path: Main > Logs > Event Log

The event log keeps a record of all alarms and events.  
The screen displays

- The name of the event.
- The time and date the event occurred (date only shown for events at least one day old).



The screenshot shows the 'Event Log' screen. At the top, there is a navigation bar with a home icon, 'Logs', 'Event Log' (highlighted), and a checkmark icon. Below this is a table with two columns: 'Time' and 'Event'. The table contains four rows of event data. At the bottom of the screen, there is a control bar with a 'DELETE' button (trash icon), navigation arrows, a page indicator '1/100', and a 'FILTER' button (funnel icon).

Time	Event
12:56:25	RC: Fan Power Supply 2 Current Sense Error ...
12:56:25	RC: Fan Power Supply 1 Current Sense Error ...
12:56:25	RC: Controller Power Supply 2 Error Detected.
12:56:25	RC: Controller Power Supply 1 Error Detected.

Use the arrows to scroll through the list of events. Use **Delete** to remove all event logs. Use **Filter** to filter events by event time, severity, or category.

#### Path: Main > Logs > Export Log




Various log data can be exported to a USB drive connected to the display. The following files will be exported as ZIP files:

- debug.txt
- dump.txt
- event.txt
- data.txt
- config.ini

# Alarms

When an alarm is triggered, the cooling unit alerts you through the display by the following methods:

- **Alarms** indicator in the top-right corner of the display.

Symbol	Description
	There are no active alarms.
	A warning alarm condition exists.
	A critical alarm condition exists.

- LED on the front panel display.
- An audible alarm, if enabled, every 30 seconds.

Active alarms can be viewed directly by pressing **Alarms** or by following the file path using the menus.

## View alarms

**Path: Main > Status > Active Alarms**

The **Alarms** menu displays all active alarms. Use **Forward** and **Backward** to navigate between pages if necessary.



See “View event log” on page 27 for more information on the alarm and event details screens.

## Clear alarms

**Path: Main > Status > Clear Active Alarms**

Clears all active alarms in log.

## Alarm messages and suggested actions

**Critical alarm**—An alarm that requires immediate action and prevents the system from performing at its rated cooling capacity.

**Warning alarm**—An alarm that requires attention and could jeopardize your data or equipment if its cause is not addressed.

Displayed Alarm Message	Severity	Action Required
Active Flow Controller Sensor Error Detected	Warning	<ul style="list-style-type: none"> <li>• Check the AFC hardware and wiring.</li> <li>• Replace the AFC.</li> <li>• If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Air Filter Clogged	Warning	<ul style="list-style-type: none"> <li>• Clean or replace the air filter.</li> <li>• For assistance, contact Schneider Electric Customer Support.</li> </ul>

Displayed Alarm Message   Severity   Action Required

Air Filter Run Hours Violation	Warning	<ul style="list-style-type: none"> <li>At the management interface, reset the <b>Air Filter Service Alarm</b> after the air filter is cleaned or replaced.</li> </ul>
Check Condensate Management System	Warning	<ul style="list-style-type: none"> <li>Clear debris from the condensate pump reservoir and the condensate removal lines.</li> <li>Verify the condensate removal lines are free of obstructions and the float switch moves freely.</li> <li>For assistance, contact Schneider Electric Customer Support.</li> </ul>
Chilled Water Flow Meter Error Detected	Warning	<ul style="list-style-type: none"> <li>Verify the electrical connections to the flow meter are correct.</li> <li>If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Chilled Water Valve Actuator Error Detected	Critical	<ul style="list-style-type: none"> <li>Check the actuator hardware and wiring.</li> <li>For assistance, contact Schneider Electric.</li> </ul>
Chilled Water Valve Control Not Set to Automatic	Warning	<ul style="list-style-type: none"> <li>Contact Schneider Electric Customer Support.</li> </ul>
Coil Chilled Water Temperature Sensor Error Detected	Warning	<ul style="list-style-type: none"> <li>Verify the sensor is connected properly.</li> <li>If the problem persists, replace the sensor, or contact Schneider Electric Customer Support.</li> </ul>
Coil Condensation Possible	Warning	<ul style="list-style-type: none"> <li>To prevent coil condensation, the chilled water temperature must be kept above the room dew point temperature.</li> <li>If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Condensate Pan Full	Critical	<ul style="list-style-type: none"> <li>Verify the floats are operating correctly.</li> <li>Clear debris from the condensate pan and drain lines.</li> <li>If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Controller Power Supply 1 Error Detected	Warning	<ul style="list-style-type: none"> <li>A hardware error exists.</li> <li>For assistance, contact Schneider Electric Customer Support.</li> </ul>
Controller Power Supply 2 Error Detected	Warning	<ul style="list-style-type: none"> <li>A hardware error exists.</li> <li>For assistance, contact Schneider Electric Customer Support.</li> </ul>
Cool Function Unavailable	Critical	<ul style="list-style-type: none"> <li>A hardware error exists.</li> <li>Verify the chiller is operating properly.</li> <li>Verify the chilled water pump is operating properly.</li> <li>For assistance, contact Schneider Electric Customer Support.</li> </ul>
EcoAisle Door Open	Warning	<ul style="list-style-type: none"> <li>Verify the EcoAisle door is shut properly.</li> <li>If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Entering Chilled Water High Temperature Condition	Warning	<ul style="list-style-type: none"> <li>Verify the chiller is operating properly.</li> <li>At the management interface, make sure the threshold is set correctly.</li> <li>If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Entering Chilled Water Temperature Sensor Error Detected	Warning	<ul style="list-style-type: none"> <li>Verify the sensor is connected properly.</li> <li>If the problem persists, replace the sensor, or contact Schneider Electric Customer Support.</li> </ul>
Factory Configuration Not Completed	Critical	<ul style="list-style-type: none"> <li>For assistance, contact Schneider Electric Customer Support.</li> </ul>

Displayed Alarm Message	Severity	Action Required
Fan #n Error Detected	Warning	<ul style="list-style-type: none"> <li>Verify all air intakes are clear of any blockage.</li> <li><b>NOTE:</b> Fans are numbered sequentially, starting with Fan 1 at the bottom.</li> <li>If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Fan Power Supply 1 Current Sense Error Detected	Warning	<ul style="list-style-type: none"> <li>A hardware error exists.</li> <li>For assistance, contact Schneider Electric Customer Support.</li> </ul>
Fan Power Supply 1 Error Detected	Warning	<ul style="list-style-type: none"> <li>Replace the power supply.</li> <li>For assistance, contact Schneider Electric Customer Support.</li> </ul>
Fan Power Supply 2 Current Sense Error Detected	Warning	<ul style="list-style-type: none"> <li>A hardware error exists.</li> <li>For assistance, contact Schneider Electric Customer Support.</li> </ul>
Fan Power Supply 2 Error Detected	Warning	<ul style="list-style-type: none"> <li>Replace the power supply.</li> <li>For assistance, contact Schneider Electric Customer Support.</li> </ul>
Filter Differential Pressure Sensor Error Detected	Warning	For assistance, contact Schneider Electric Customer Support.
Humidity Sensor Error Detected	Warning	<ul style="list-style-type: none"> <li>Verify the sensor is connected properly.</li> <li>If the problem persists, replace the sensor, or contact Schneider Electric Customer Support.</li> </ul>
Idle Due To Leak Detected	Critical	<ul style="list-style-type: none"> <li>Identify the source of the leak.</li> <li>Isolate the leak by shutting off the main water supply valve.</li> <li>For assistance, contact Schneider Electric Customer Support.</li> </ul>
Insufficient Airflow Detected	Warning	<ul style="list-style-type: none"> <li>Verify the air ports are clear of obstructions and there is sufficient cooling capacity for the load.</li> <li>If the problem persists, contact Schneider Electric Customer Support Customer Support.</li> </ul>
Internal Communication Error	Critical	For assistance, contact Schneider Electric Customer Support.
Leaving Chilled Water Temperature Sensor Error Detected	Warning	<ul style="list-style-type: none"> <li>Verify the sensor is connected properly.</li> <li>If the problem persists, replace the sensor, or contact Schneider Electric Customer Support.</li> </ul>
Lower Return Air Sensor Error Detected	Critical	<ul style="list-style-type: none"> <li>Verify the sensor is connected properly.</li> <li>If the problem persists, replace the sensor, or contact Schneider Electric Customer Support.</li> </ul>
Lower Supply Air Sensor Error Detected	Critical	<ul style="list-style-type: none"> <li>Verify the sensor is connected properly.</li> <li>If the problem persists, replace the sensor, or contact Schneider Electric Customer Support.</li> </ul>
Output Relay #n Abnormal	Warning	Alarm relay #n contacts have switched from their normal position due to an active alarm. Check the alarm log for active alarms.
Primary Power Source Unavailable	Warning	<ul style="list-style-type: none"> <li>Verify the power source is connected properly and the power is on.</li> <li>If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Rack High Temperature Condition	Critical	<ul style="list-style-type: none"> <li>Verify the <b>Rack Inlet High Temperature Threshold</b> is set correctly.</li> <li>If the problem persists, replace the sensor.</li> <li>For assistance, contact Schneider Electric Customer Support.</li> </ul>
Rack Temperature Sensor #n Error Detected	Critical	<ul style="list-style-type: none"> <li>Verify the sensor is connected properly.</li> <li>If the problem persists, replace the sensor, or contact Schneider Electric Customer Support.</li> </ul>

Displayed Alarm Message	Severity	Action Required
Return Air High Temperature Condition	Warning	<ul style="list-style-type: none"> <li>• Verify the <b>Return Air High Temperature Threshold</b> is set correctly.</li> <li>• If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Secondary Power Source Unavailable	Warning	<ul style="list-style-type: none"> <li>• Verify the power source is connected properly and the power is on.</li> <li>• If the redundant power input is unused set <b>Power Source</b> to <b>Single</b>.</li> <li>• If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Shutdown Due to Input Contact	Warning	<ul style="list-style-type: none"> <li>• No user action is required, since it is assumed the unit shut down due to the user's action.</li> <li>• For more information, contact Schneider Electric Customer Support.</li> </ul>
Supply Air High Temperature Condition	Warning	<ul style="list-style-type: none"> <li>• Verify the <b>Supply Air High Temperature Threshold</b> is set correctly.</li> <li>• If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Unexpected Number of Active Flow Controllers	Warning	<ul style="list-style-type: none"> <li>• Verify physical number of AFC units matches the number shown in the <b>Number Of Active Flow Controllers</b> setting.</li> <li>• If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Unexpected Number of Leak Detectors	Warning	<ul style="list-style-type: none"> <li>• Verify physical number of leak detectors matches the number shown in the <b>Number of Leak Detectors</b> setting.</li> <li>• If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Unexpected Number of Rack Inlet Temperature Sensors	Warning	<ul style="list-style-type: none"> <li>• Verify physical number of rack inlet temperature sensors matches the number shown in the Number Of Rack Inlet Temperature Sensors setting.</li> <li>• If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Unexpected Number of Units in Group	Warning	<ul style="list-style-type: none"> <li>• Verify the number of units in the group is configured properly, and the A-Link connections between units are correct.</li> <li>• Verify the system is receiving power and connected properly.</li> <li>• If the problem persists, contact Schneider Electric Customer Support.</li> </ul>
Unit is in Maintenance Mode	Critical	<ul style="list-style-type: none"> <li>• The unit has been placed in maintenance mode by qualified service personnel.</li> <li>• There is no action required.</li> </ul>
Unit Service Required	Warning	<ul style="list-style-type: none"> <li>• The unit has exceeded the unit service interval.</li> <li>• Please contact Schneider Electric Customer Support.</li> </ul>
Upper Return Air Sensor Error Detected	Critical	<ul style="list-style-type: none"> <li>• Verify the sensor is connected properly.</li> <li>• If the problem persists, replace the sensor, or contact Schneider Electric Customer Support.</li> </ul>
Upper Supply Air Sensor Error Detected	Critical	<ul style="list-style-type: none"> <li>• Verify the sensor is connected properly.</li> <li>• If the problem persists, replace the sensor, or contact Schneider Electric Customer Support.</li> </ul>
Water Detected Error	Warning	<ul style="list-style-type: none"> <li>• Identify the source of the leak.</li> <li>• Isolate the leak by shutting off the main water supply valve.</li> <li>• For assistance, contact Schneider Electric Customer Support.</li> </ul>

# Service

**Path:** Main > Configuration > Service

The **Service** menu contains settings related to operation of the InRow RC unit that should only be changed by trained service personnel.

The **Service** menu is only accessible to service personnel. If you need to access the **Service** menu, you will need to contact technical support with the code displayed in the message window. After receiving a service code from technical support, enter the service code in the appropriate window on the display.

**Configuration Type.** The airflow control strategy for the cooling units of this cooling group.

- **In-Row:** Air flow is horizontal to allow in-row operation of the cooling. The loads share a common open cold aisle.
- **HACS** (Hot Aisle Containment System): Air flow in the room is controlled by enclosing the hot air aisle. The loads share an enclosed common hot aisle.
- **RACS** (Rack Air Containment System): Air flow in the enclosure is controlled by a ducting system fitted to the enclosure.
- **CACS** (Cold Aisle Containment System): Air flow in the room is controlled by enclosing the cold air aisle. The loads share an enclosed common cold aisle.

**Percent Glycol.** The percentage of glycol used by the cooling group to cool the environment. This affects how cooling output is reported.

**Active Flow Control Bias.** This setting is used to control the difference between the cooling airflow and the airflow of the load as measured by the Active Flow Controller(s). A setting of **Zero** will control the fans to match the airflow of the load. A setting of **Positive** will provide more cooling airflow than required by the load. A setting of **Negative** will provide less cooling airflow than required by the load.

**Cool Gain 'P'.** The proportional multiplier (gain) for this mode or actuator. The proportional multiplier adjusts for the difference (error) between the measured temperature and the setpoint. The proportional multiplier is expressed in percent of output per unit error.

**Cool Reset Rate 'I'.** The integral multiplier (reset rate) for this mode or actuator. The integral multiplier adjusts for error measurement and for 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. It is expressed in percent of output for each minute and unit of error (error multiplied by minutes).

**Cool Derivative 'D'.** The derivative multiplier (derivative) for this mode or actuator. The derivative multiplier adjusts the output for rapid changes in the error, correcting for the rate of change of the error over time. It is expressed in percent of output for each unit of error per minute (error divided by minutes).

**Chilled Water Valve Control.** The setting used to determine chilled water flow. When **Automatic** is selected, the unit operates based on measured demand.

**Maximum Chilled Water Flow.** Restricts the maximum chilled water flow rate of the unit. This setting is only used when the **Bypass Valve Position** is set to **Closed**. The input range is 0–100 gallons per minute (0–6.30 liters per second).

**Unit Service Alarm Enable.** **Enable** or **Disable** the unit service alarm.

**Unit Service Alarm Interval.** Enter the number of weeks between unit service alarms.

Individual serviceable components are listed. After servicing individual items in the list, select the check box next to the item.

- Unit
- Condensate Pump
- Circulation Pump
- Air Filter
- Fan Power Supply 1
- Fan Power Supply 2
- Fan 1 - 8

# Network Management

---

## Quick Configuration

The cooling unit is equipped with an embedded Network Management Card that enables the cooling unit to be managed over the network. The Network Management Card must be configured in order to control the cooling unit over a network.

### Overview

You must configure the following TCP/IP settings before the cooling unit can operate on a network:

- IP address of the Network Management Card
- Subnet mask
- Default gateway

**IMPORTANT:** Never use the loopback address (127.0.0.1) as the default gateway address for the Network Management Card. Doing so will disable the card and will require you to reset TCP/IP settings to their defaults using a local serial login.

**NOTE:** If a default gateway is unavailable, use the IP address of a computer that is located on the same subnet as the Network Management Card and that is usually running. The Network Management Card uses the default gateway to test the network when traffic is very light.



See “Watchdog Features” in the “Introduction” of the *InRow Chilled Water Air Conditioners Installation User’s Guide* for more information about the watchdog role of the default gateway.

### TCP/IP configuration methods

Use one of the following methods to define the basic TCP/IP settings needed by the Network Management Card:

- Device IP Configuration Wizard (See “Device IP Configuration Wizard” on page 35.)
- BOOTP or DHCP server (See “BOOTP and DHCP configuration” on page 35.)
- Networked computer
  - “Remote access to the command line interface (CLI)” on page 37
  - “Local access to the command line interface (CLI)” on page 38



## Device IP Configuration Wizard

The Device IP Configuration Wizard is used to discover and configure Network Management Cards that do not have IP addresses assigned. The Device IP Configuration Wizard runs on Microsoft® Windows® 2000, Windows Server® 2003, Windows Server® 2012, and on 32- and 64-bit versions of Windows XP, Windows Vista, Windows 2008, Windows 7, and Windows 8 operating systems.

The Device IP Configuration Wizard supports cards that have firmware version 3.0.x or higher and is for IPv4 only.

**NOTE:** Most software firewalls must be temporarily disabled for the Wizard to discover Network Management Cards that are not configured.



To configure one or more network management cards from a user configuration file, see the *User's Guide*.

1. Download the Device IP Configuration Wizard from <http://www.apc.com/tools/download>.
2. Install and run the Device IP Configuration Wizard.
3. Follow the on-screen instructions.

**NOTE:** If you leave the option **Start a Web browser when finished** enabled, you can use **apc** (the default) for both the user name and password.

## .ini file utility

You can use the .ini file export utility to export .ini file settings from configured Network Management Cards to one or more Network Management Cards that are not configured.

## BOOTP and DHCP configuration

The default **TCP/IP Configuration, DHCP**, assumes that a properly configured DHCP server is available to provide TCP/IP settings to Network Management Cards. The possible settings are **Manual, DHCP, or BOOTP**.



If neither a DHCP nor BOOTP server is available, see “Device IP Configuration Wizard” on page 35 or “Remote access to the command line interface (CLI)” on page 37 to configure the TCP/IP settings.

**BOOTP.** For the Network Management Card to use a BOOTP server to configure its TCP/IP settings, it must find a properly-configured RFC951-compliant BOOTP server.

1. In the BOOTPTAB file of the BOOTP server, enter the MAC address of the Network Management Card, and the IP addresses of the subnet mask and default gateway, and an optional bootup file name.

**NOTE:** Look on the nameplate of the unit for the MAC address. The MAC address is also available on the display interface at **Main > About > Display > Device**.

2. When the Network Management Card reboots, the BOOTP server provides it with the TCP/IP settings.
  - If you specified a bootup file name, the Network Management Card attempts to transfer that file from the BOOTP server using TFTP or FTP. The Network Management Card takes on all settings specified in the bootup file.
  - If you did not specify a bootup file name, the Network Management Card can be configured remotely by using the CLI or the Web interface. User name and password are both **apc**, by default.



To create the bootup file, see your BOOTP server documentation.

**DHCP.** You can use a RFC2131/RFC2132-compliant DHCP server to configure the TCP/IP settings for the Network Management Card



For more details on how a DHCP can configure the network settings for a Network Management Card, see “DHCP Configuration” in the *InRow Chilled Water Air Conditioners Installation User’s Guide*.

1. The Network Management Card sends out a DHCP request that uses the following to identify itself:
  - Vendor Class Identifier (by default, APC)
  - Client Identifier (by default, the MAC address of the Network Management Card)
  - User Class Identifier (by default, the identification of the application firmware installed on the Network Management Card)
2. A properly configured DHCP server responds with a DHCP offer that includes all of the settings that the Network Management Card needs for network communication. The DHCP offer also includes the Vendor Specific Information option (DHCP option 43). If configured to do so, the Network Management Card will ignore DHCP offers that do not encapsulate the APC cookie in DHCP option 43 using the following hexadecimal format:

Option 43 = 01 04 31 41 50 43

where

- the first byte (01) is the code
- the second byte (04) is the length
- the remaining bytes (31 41 50 43) are the APC cookie (not required by default)



See your DHCP server documentation to add code to the Vendor Specific Information option.

To change the command line interface (CLI) DHCP Cookie Is setting, use the Advanced option in the TCP/IP menu.



See “Remote access to the command line interface (CLI)” on page 37.

## Remote access to the command line interface (CLI)

From any computer on the same network as the Network Management Card, you can use ARP and Ping to assign an IP address to the Network Management Card and then use Telnet to access the CLI of that Network Management Card and configure the other TCP/IP settings.

**NOTE:** After a Network Management Card has its IP address configured, you can use Telnet, without first using ARP and Ping, to access that Network Management Card.

1. Use the MAC address of the Network Management Card in the ARP command to define an IP address for the Network Management Card. For example, to define an IP address of 156.205.14.141 for a Network Management Card that has a MAC address of 00 c0 b7 63 9f 67, use one of the following commands:

**NOTE:** Look on the nameplate of the unit for the MAC address. The MAC address is also available on the display interface at **Main > About > Display > Device**.

– Windows command format:

```
arp -s 156.205.14.141 00-c0-b7-63-9f-67
```

– LINUX command format:

```
arp -s 156.205.14.141 00:c0:b7:63:9f:67
```

2. Use Ping with a size of 113 bytes to assign the IP address defined by the ARP command. For the IP address defined in step 1, use one of the following Ping commands:

– Windows command format:

```
ping 156.205.14.141 -l 113
```

– LINUX command format:

```
ping 156.205.14.141 -s 113
```

3. Use Telnet to access the Network Management Card at its newly assigned IP address. For example,

```
telnet 156.205.14.141
```

4. Use **apc** for both the user name and password.

5. Contact your network administrator to obtain the IP address, subnet mask, and default gateway for the Network Management Card.

6. Use these three commands to configure network settings (text in *italics* indicates a variable):

a. `tcpip -i yourIPAddress`

b. `tcpip -s yourSubnetMask`

c. `tcpip -g yourDefaultGateway`

For each variable, enter a numeric value with the format xxx.xxx.xxx.xxx.

For example, to set a system IP address of 156.205.14.141, enter the following command and press Enter:

```
tcpip -i 156.205.14.141
```

7. Type `reboot`. The Network Management Card restarts to apply the changes.

## Local access to the command line interface (CLI)

You can use a computer connected to the serial port on the front of the display to access the CLI.

1. Select a serial port on the local computer and disable any service that uses that port.
2. Use the provided serial cable (part number: 940-0299) to connect the selected serial port to the serial on the front of the display.
3. Run a terminal program (such as HyperTerminal®, TeraTerm, or PuTTY) and configure the selected port for 9600 bps, 8 data bits, no parity, 1 stop bit, and no flow control.
4. Save the changes.
5. Press `ENTER`, repeatedly if necessary, to display the **User Name** prompt.
6. Use **apc** for the user name and password.
7. Contact your network administrator to obtain the IP address, subnet mask, and default gateway for the Network Management Card.
8. Use these three commands to configure network settings (text in *italics* indicates a variable):

- a. `tcpip -i yourIPAddress`
- b. `tcpip -s yourSubnetMask`
- c. `tcpip -g yourDefaultGateway`

For each variable, enter a numeric value with the format `xxx.xxx.xxx.xxx`.  
For example, to set a system IP address of 156.205.14.141, enter the following command and press Enter:

```
tcpip -i 156.205.14.141
```

9. Type `reboot`. The Network Management Card restarts to apply the changes.

## Accessing a Configured Unit

### Overview

After the InRow RC is running on your network, you can access the configured InRow RC through the following interfaces:

- Web interface
- Telnet/SSH
- Simple Network Management Protocol (SNMP)
- FTP/SCP
- Modbus



For more information on the interfaces, see the *InRow Chilled Water Air Conditioners User's Guide*.

## Web interface

Use Microsoft Internet Explorer® 7.x or higher (on Windows operating systems only), or Mozilla® Firefox® 3.0.6 or higher (on all operating systems) to access the InRow RC through its Web interface. Other commonly available browsers also may work but have not been fully tested by Schneider Electric.

You can use either of the following protocols when you use the Web browser to configure display interface options or to view the event log:

- The HTTP protocol (enabled by default), which provides authentication by user name and password but no encryption.
- The HTTPS protocol, which provides extra security through Secure Sockets Layer (SSL), encrypts user names, passwords, and data being transmitted, and authenticates the Network Management Card by means of digital certificates.

To access the Web interface and configure the security of your cooling unit on the network,

1. Enter the IP address or DNS name of the cooling unit into a web browser.
2. Enter the username and password (both are `apc` by default).
3. To enable or disable the HTTP or HTTPS protocols, use `Main > Configuration > Network > Web > Access`.



For more information on selecting and configuring network security, see the UPS Network Management Card Security Handbook, available at <http://www.apc.com/site/support/>. Click on “User Manuals” on the right side and search for “UPS Network Management Cards.”

## Telnet and SSH

You can access the control console through Telnet and/or Secure SHell (SSH), depending on which is enabled. To enable these access methods from the Web UI, select **Configuration > Network > Console > Access**. By default, Telnet is enabled. Telnet and SSH can be enabled simultaneously.

**Telnet for basic access.** Telnet provides the basic security of authentication by user name and password, but not the high-security benefits of encryption. To use Telnet to access the Network Management Card control console from any computer on the same network,

1. At a command prompt, use the following command line, and press `ENTER`:

```
telnet address
```

As *address*, use the Network Management Card IP address or DNS name (if configured).

2. Enter the user name and password (by default, **apc** and **apc** for an Administrator, or **device** and **apc** for a Device User).

**SSH for high-security access.** If you use the high security of SSL for the Web interface, use Secure SHell (SSH) for access to the CLI. SSH encrypts user names, passwords, and transmitted data.

The interface, user accounts, and user access rights are the same whether you access the CLI through SSH or Telnet, but to use SSH, you must first configure SSH and have an SSH client program installed on your computer.



See the *InRow Chilled Water Air Conditioners User's Guide* for more information on configuring and using SSH.

## Simple Network Management Protocol (SNMP)

**SNMPv1 only.** After you add the latest version of PowerNet® MIB to a standard SNMP MIB browser, you can use that browser to access the InRow RC. All user names, passwords, and community names for SNMP are transferred over the network as plain text. The default read community name is **public**; the default read/write community name is **private**.

**SNMPv3 only.** For SNMP 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, browse the MIB, and receive traps. The default settings are **no authentication** and **no privacy**.

**NOTE:** To use SNMPv3, you must have an MIB program that supports SNMPv3, and SNMPv3 must be configured correctly in the Network Management Card.

The InRow RC supports SHA or MD5 authentication and V or DES encryption.

**SNMPv1 and SNMPv3.** To use StruxureWare Data Center Expert to manage the InRow RC on the public network of an InfraStruXure system, you must have SNMPv1 enabled in the unit interface. Read access allows InfraStruXure devices to receive traps from the InRow RC. Write access is required while you set the InfraStruXure device as a trap receiver.

To enable or disable SNMP access, you must be an Administrator. Select **Administration > Network** and select the access option under SNMPv1 or SNMPv3.

## FTP and SCP

You can use FTP (enabled by default) or Secure CoPy (SCP) to transfer downloaded firmware to the Network Management Card or to access a copy of the InRow RC event or data logs. SCP provides the higher security of encrypted data transmission and is enabled automatically when you enable SSH. FTP and SCP can be enabled simultaneously.

To access the Network Management Card through FTP or SCP, the default user name and password are **apc** and **apc** for an Administrator, or **device** and **apc** for a Device User. In the command line, use the IP address of the unit.

**NOTE:** If you enable SSL and SSH for their high-security authentication and encryption, disable FTP. To disable FTP, you must be an Administrator. Go to **Main > Configuration > Network** to enable FTP.



In the *InRow Chilled Water Air Conditioners User's Guide*, see the following sections:

-To transfer firmware, see "File Transfers."

-To retrieve a copy of the event or data log, see "Use FTP or SCP to retrieve log files."

## Modbus

Modbus lets you view the Network Management Card through the interface of your building management system.

The Modbus RTU interface supports 2-wire RS-485, 4-wire RS-485, plus ground MODBUS TCP.

**NOTE:** Modbus can be configured to run at either 9600 or 19200 bps. It is already configured for 8 data bits, no parity, and 1 stop bit: parity is changeable but data bits and stop bits are not.



To access the Modbus register map, go to the Schneider Electric website, <http://download.schneider-electric.com/library> and search for the Modbus register map.

# Recovering from a Lost Password

Use a local computer (a computer that connects to the Network Management Card through the serial port) to access the command line interface (CLI).

1. Select a serial port at the local computer, and disable any service that uses that port.
2. Connect the Schneider Electric serial cable (part number 990-0299) to the selected port on the computer and to the serial port on the front of the display.
3. Run a terminal program (such as HyperTerminal<sup>®</sup>) and configure the selected port:
  - 9600 bps
  - 8 data bits
  - no parity
  - 1 stop bit
  - no flow control
4. Press the **Reset** button on the front of the display, immediately press Enter on the computer keyboard, repeatedly if necessary, to display the User Name prompt.

**NOTE:** If you do not press the `ENTER` key before 5 seconds elapse, you must press the **Reset** button again.

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 on the front of the display. The Status LED will alternately flash orange and green. Immediately press the Reset button on the front of the display a second time while the LED is flashing to temporarily reset the user name and password to their defaults.
  6. Press `ENTER` on the computer keyboard as many times as necessary to re-display the **User Name** prompt, 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 has been reset to **apc**:

```
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, and restart any service you disabled.

## Upgrading Firmware



For a complete description on how to download a firmware upgrade for your Schneider Electric InRow RC and transfer it to the unit, see the *InRow Chilled Water Air Conditioners User's Guide*.



# Maintenance

---

## Monthly Preventive Maintenance

The following pages can be photocopied and used during the maintenance procedures. After they have been filled out, save them for future reference.

Prepared By: \_\_\_\_\_

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Date: \_\_\_\_\_

### Environment

In what type of room is the cooling unit located?  
\_\_\_\_\_

Is the cooling unit maintaining the temperature setpoint?  
\_\_\_\_\_

Temperature setpoint \_\_\_\_\_

Is there visible damage to the cooling unit (dents, scratches)?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Check for environmental damage (dirt, dust, debris, liquid stains) around the installation area.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Record the room temperature/humidity near the return of the cooling unit.  
Temperature \_\_\_\_\_

Record the alarm history from last month.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Cleanliness

- Check the condition of the return air filters. Clean or replace if necessary.
- Check the condition of the drain pan and accumulation of debris in the pan. Clean as required.

## Mechanical

- Check the fans. All components should be moving freely with no signs of binding or damages.
- Verify that the condensate line is flowing freely.
- Verify the chilled water supply temperature for the cooling unit.

Chilled water supply temperature\_\_\_\_\_

## Electrical

- Before checking the electrical connections, shut off and lock out the power to the cooling unit.
- Inspect the electrical panel for tight connections or overheated connections from loose contact terminals
- Confirm the incoming main power matches the requirements listed on the cooling unit nameplate. The measurement should be within 10% of the nameplate listing.

# Quarterly Preventive Maintenance

Perform all the Monthly Preventive Maintenance items **and** the items below.

Prepared By: \_\_\_\_\_

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Date: \_\_\_\_\_

## Mechanical

- Before you perform mechanical checks, you must shut off and lock out the power to the cooling unit.
- Verify that the fan hardware is tight.
- Clean or replace filters.
- Clean condensate pans.
- Clean condensate drain line.
- Remove any debris from condensate floats.
- Clean dust from door perforations.
- Clean dust from fan bezels.
- Check and clean dust accumulation on the fan power supply ventilation openings.

## Functional tests

- Verify the cooling operation mode.
- Verify the operation of the chilled water actuator.
- Check the status LEDs on the fan power supplies.

# Semi-Annual Preventive Maintenance

Perform all the Monthly/Quarterly Preventive Maintenance items **and** the items below.

Prepared By: \_\_\_\_\_

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Date: \_\_\_\_\_

## Cleanliness

- Check the cleanliness of the evaporator coil. Clean if required.

## Functional tests

- Check the operation of all system alarms.

# Troubleshooting

---

Problem	Possible Cause	Corrective Action
Cooling controller response is erratic or inoperative	<ul style="list-style-type: none"> <li>• Inlet temperature to the cooling unit is higher than the rated maximum temperature</li> <li>• Cooling unit is not properly tuned</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce the load or add additional cooling equipment.</li> <li>• Contact Schneider Electric Customer Support.</li> </ul>
Fans fail to start	<ul style="list-style-type: none"> <li>• Power supplies are not operating properly</li> <li>• Failed power supply</li> <li>• Cooling unit inlet temperature is higher than rated maximum temperature</li> <li>• Cooling unit shutdown due to an external command</li> <li>• Single fan fails to start</li> </ul>	<ul style="list-style-type: none"> <li>• Confirm that the power supplies are seated properly and fully engaged. This is indicated by a green LED.</li> <li>• Confirm that the cooling unit is plugged in and is receiving power.</li> <li>• Replace the power supply if the LED is red.</li> <li>• Reduce the load or add additional cooling equipment.</li> <li>• Temporarily remove the user input contact cable if it is connected.</li> <li>• Confirm that the fan is seated properly and fully engaged.</li> <li>• Replace the fan if it is faulty.</li> </ul>
Cooling unit cannot obtain setpoint	<ul style="list-style-type: none"> <li>• Improper placement of remote temperature sensor</li> <li>• Dirty filter</li> <li>• Dirty coil</li> <li>• Valve/actuator malfunction</li> <li>• Isolation valve is closed or is not open fully</li> <li>• Application error</li> <li>• Entering water temperature is too high</li> <li>• Heat load is too far away</li> <li>• Cooling unit is not properly tuned</li> </ul>	<ul style="list-style-type: none"> <li>• Verify that the remote temperature sensor is properly located in the cold aisle.</li> <li>• Clean the filter.</li> <li>• Clean the coil.</li> <li>• Fully open the valve.</li> <li>• Fully open the valve.</li> <li>• Contact Schneider Electric Customer Support.</li> <li>• Verify that the temperature of the cooling unit water supply is within the specified range.</li> <li>• Place the cooling unit closer to the heat load.</li> <li>• Contact Schneider Electric Customer Support.</li> </ul>
Water carryover	<ul style="list-style-type: none"> <li>• Improper fan speed selected</li> <li>• Inlet water temperature is too low</li> <li>• Room humidity is too high</li> <li>• Dirty coil</li> <li>• Dirty filter</li> </ul>	<ul style="list-style-type: none"> <li>• Select the next highest fan speed setting. For example, change the fan speed setting from Low to Med/Low.</li> <li>• Verify that the temperature of the inlet water is within the specified range.</li> <li>• Adjust setpoint on dehumidifying equipment.</li> <li>• Add additional dehumidifying equipment.</li> <li>• Clean the coil.</li> <li>• Clean the air filter.</li> </ul>
Cooling unit fan sound is louder than expected	<ul style="list-style-type: none"> <li>• Improper fan speed selected</li> <li>• Incorrect placement of remote temperature sensor</li> </ul>	<ul style="list-style-type: none"> <li>• Select a lower fan speed.</li> <li>• Verify that the remote temperature sensor is properly located in the cold aisle.</li> </ul>
Temperature control not tight enough	<ul style="list-style-type: none"> <li>• Improper placement of remote temperature sensor</li> <li>• Improper PID tuning</li> </ul>	<ul style="list-style-type: none"> <li>• Verify that the remote temperature sensor is properly located in the cold aisle.</li> <li>• Contact Schneider Electric Customer Support.</li> </ul>

Problem	Possible Cause	Corrective Action
Water on outside of cooling unit	<ul style="list-style-type: none"> <li>• Condensate drain hose is not connected or not properly routed outside the Cooling Unit</li> <li>• Leak in piping system</li> <li>• Cooling unit not leveled properly</li> <li>• Damaged piping insulation</li> </ul>	<ul style="list-style-type: none"> <li>• Verify that the condensate drain hose is properly connected to the pump and properly routed outside of the cooling unit.</li> <li>• Verify that the condensate drain line does not exceed 12 feet lift and 30 feet horizontal run.</li> <li>• Locate and repair the leak.</li> <li>• Adjust the leveling feet of the cooling unit.</li> <li>• Identify damaged area and repair the insulation.</li> </ul>
Water valve not responsive	<ul style="list-style-type: none"> <li>• Actuator not connected properly</li> <li>• Actuator and shaft not rotating together</li> </ul>	<ul style="list-style-type: none"> <li>• Verify that the actuator is connected properly.</li> <li>• Tighten the linkage screw on the actuator shaft.</li> </ul>
Display interface not operational but cooling unit operates	<ul style="list-style-type: none"> <li>• Display interface not connected properly</li> </ul>	<ul style="list-style-type: none"> <li>• Verify that the display interface cable is connected properly.</li> </ul>
Incorrect air filter differential pressure reading	<ul style="list-style-type: none"> <li>• False filter clogs</li> </ul>	<ul style="list-style-type: none"> <li>• Verify that the ends of the clear plastic air tubes are not obstructed.</li> <li>• Verify that the clear plastic air tubes are connected to the controller.</li> <li>• Verify that the clear plastic air tubes are not pinched.</li> </ul>
Alarms do not show up on monitoring equipment (Form C)	<ul style="list-style-type: none"> <li>• External monitoring equipment is not receiving power or is not functioning properly</li> </ul>	<ul style="list-style-type: none"> <li>• Confirm that power, if required, is being supplied to the external equipment.</li> <li>• If the cooling unit is providing power (+12 V or +24 V) to the external equipment, verify that the external equipment is <math>\leq 50</math> mA.</li> <li>• Test the external equipment by bypassing the Form C.</li> </ul>
Cooling unit does not shut down when using the input contact	<ul style="list-style-type: none"> <li>• Drive voltage</li> </ul>	<ul style="list-style-type: none"> <li>• Verify that there is drive voltage entering the input of the cooling unit. You may use the available +12 V or +24 V. You must then also use the ground.</li> </ul>
No communication with building management system (BMS) port	<ul style="list-style-type: none"> <li>• Improper connection</li> <li>• Wrong baud rate</li> <li>• Wrong ID</li> </ul>	<ul style="list-style-type: none"> <li>• Confirm that the Cooling Unit is connected to the BMS port and not to the Control port.</li> <li>• Verify that the wire polarity is correct. Using a DC voltmeter, test the signal with no transmissions in progress: expect Pin 2 to be greater than Pin 1 by at least 200 mV. Measure the cooling unit with the cable disconnected, and then measure it again with the cable connected. If the signal is less than 200 mV, the cooling unit may be reverse-wired.</li> <li>• Make sure that every cooling unit has either two sets of wires in its connector OR one set of wires and a terminating resistor of 100 to 120 ohms.</li> <li>• Verify the baud rate is correct.</li> <li>• Verify the ID is correct.</li> </ul>
Cooling units are not communicating with each other	<ul style="list-style-type: none"> <li>• A-Link CAN</li> </ul>	<ul style="list-style-type: none"> <li>• Verify that the A-Link port of every cooling unit has either two cables or one cable and a terminator.</li> <li>• Confirm that the A-Link cables are connected to the A-Link ports and that a network cable is connected to the network port.</li> </ul>



# Worldwide Customer Support

Customer support is available at no charge via e-mail or telephone. Contact information is available at [www.apc.com/support/contact](http://www.apc.com/support/contact).

Customer support and warranty information is available at [www.schneider-electric.com](http://www.schneider-electric.com).

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