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Important Safety Information

Read the instructions carefully to become familiar with the equipment before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

<table>
<thead>
<tr>
<th><strong>DANGER</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>WARNING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CAUTION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>CAUTION indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>NOTICE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTICE addresses practices not related to physical injury including certain environmental hazards, potential damage or loss of data.</td>
</tr>
</tbody>
</table>
Safety Notices During Operation

Read and adhere to the following important safety considerations when working with this equipment. Follow all local and national regulations when handling refrigerants.

**DANGER**

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
- This equipment must be installed and serviced by qualified personnel only.
- Turn off all power supplying this equipment before working on or inside the equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

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

**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.

**WARNING**

HAZARD TO EQUIPMENT OR PERSONNEL

All work must be performed by Schneider Electric qualified personnel.

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

**WARNING**

HAZARD OF EQUIPMENT FALLING OVER

- Use two or more persons 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 this equipment.
- Slowly move this equipment across uneven surfaces or door thresholds.
- Lower leveling feet to floor when this equipment is at rest.
- Lower leveling feet and attach joining brackets to adjacent racks when this equipment is in final position.

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

HAZARD TO EQUIPMENT OR PERSONNEL

Ensure that all spare parts and tools are removed from the equipment before operating it.

Failure to follow these instructions can result in injury or equipment damage.

CAUTION

HAZARD OF HIGH PRESSURE REFRIGERANT OR EQUIPMENT DAMAGE

• Use R410A refrigerant only.
• Use hose and manifold set rated for 4000 psi (276 bar) minimum burst and 800 psi (55 bar) maximum working pressure.
• The unit display should be used to obtain pressure readings.

Failure to follow these instructions can result in injury or equipment damage.
General Information

Overview

Save these instructions

This manual contains important instructions that must be followed during installation, operation, and maintenance of the InRow RD cooling unit.

Cross-reference symbol used in this manual

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

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.

Equipment Disposal

Waste Electrical and Electronic Equipment (WEEE) disposal

Schneider Electric products comply with international directives on the Restriction of Hazardous Substances (RoHS) in electronic and electrical equipment and the disposal of Waste Electrical and Electronic Equipment (WEEE). Dispose of any waste electronic or electrical equipment with the appropriate recycling center. Contact Schneider Electric for assistance.
Commissioning

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

1. Complete the following inspections:
   – Initial
   – Electrical
   – Mechanical
   – User interface
2. Completely charge the system with refrigerant (see “Charging with Refrigerant” on page 10).
3. Complete the following inspections:
   – Final
   – Start-up

**Inspection Checklists**

**Initial inspection checklist**

<table>
<thead>
<tr>
<th><strong>WARNING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DAMAGE TO EQUIPMENT OR PERSONNEL</strong></td>
</tr>
<tr>
<td>• The cooling unit operates under pressure. Take proper safety precautions when connecting gauges or servicing piping.</td>
</tr>
<tr>
<td>• Do not operate the cooling unit with any cover, guard, door, or panel removed unless the instructions indicate otherwise. Then, proceed with extreme caution.</td>
</tr>
<tr>
<td>• Do not run service utilities in front of the fan outlets.</td>
</tr>
</tbody>
</table>

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

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.

**NOTE:** The 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 installation manual.
- The walls, floor, and ceiling of the room where the cooling unit is located are sealed with a vapor barrier.
- There is no evidence of damage to the cooling unit.
- The cooling unit is level and joined to the adjacent racks.
- The cooling unit is not installed at the open end of a row.
- The clearance around the equipment is in accordance with local and national codes and regulations as well as the installation manual.
Electrical inspection checklist

<table>
<thead>
<tr>
<th>☢ ☢ WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELECTRICAL HAZARD</td>
</tr>
<tr>
<td>• Electrical service must conform to local and national electrical codes and regulations.</td>
</tr>
<tr>
<td>• The equipment must be grounded.</td>
</tr>
</tbody>
</table>

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

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

Ensure that:

- ☐ Incoming voltages match the phase and voltage listing on the nameplate.
- ☐ Electrical wiring complies with local and national codes and regulations.
- ☐ Equipment is properly grounded.
- ☐ Front and rear doors are properly grounded.
- ☐ The rack temperature sensors are installed correctly for InRow and CACS modes.
- ☐ The optional rope water detection device is installed properly.
- ☐ The temperature and humidity sensors are connected correctly.
- ☐ Electrical connections are tight, including contactors, terminal blocks, controllers, switches, relays, auxiliary devices, and field connections.
- ☐ Circuit breakers are properly connected and securely attached to the DIN rail.
Mechanical inspection checklist

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAZARD TO EQUIPMENT</td>
</tr>
<tr>
<td>• The equipment is shipped from the factory with a nitrogen holding charge. Remove the nitrogen holding charge using the service ports located on the internal refrigerant piping.</td>
</tr>
<tr>
<td>• Improperly installed piping may result in improper operation and possible damage to the cooling unit or surrounding equipment.</td>
</tr>
<tr>
<td>Failure to follow these instructions can result in equipment damage.</td>
</tr>
</tbody>
</table>

The mechanical inspection verifies that all mechanical components and connections are secure and tight and ready for start-up. The inspection ensures that field piping is properly installed to promote oil return to the compressor.

Ensure that:

- Fans are turning freely and the blades are not distorted or bent.
- Condensate drain line is at least the size of the drain connection.
- Piping has been leak tested and held a vacuum prior to introduction to refrigerant into the system.
- Mechanical connections are tight, including compressor and receiver connections.
- Refrigerant piping size is correct according to the line size table in the installation manual.
- The vertical, horizontal, and total run lengths of the liquid and discharge lines are recorded.
- The number of 45- and 90-degree bends in the refrigerant piping are recorded.
- Field-installed traps and piping are in accordance with the installation manual and follow proper piping practices.
- Piping is adequately supported and isolated when necessary.
- Field-installed service valves are open.
- Pressure relief valve is installed in accordance with the installation manual as well as local and national codes and regulations.
- Piping in the building and on the roof is properly insulated.
- Covers and guards are in place.
Display interface inspection checklist

The display interface inspection verifies that the sensors and internal communication links are installed properly. Check that the cooling unit is connected to the other cooling units in the room if you are using cooling group controls.

Ensure that:

- An A-Link bus is connected to each cooling unit and a terminator is plugged into all unused A-Link connectors.
- The input contacts and output relays are connected correctly.
- The building management system is connected correctly and a terminator is wired into the final InRow RD unit between Modbus D0 and Modbus D1.
- The network port is connected correctly and an IP address has been assigned to the equipment.

Start-up inspection checklist

The start-up inspection ensures that the equipment 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 current draw of fan motors, compressor, electric heaters, and humidifier is within the ratings of the respective circuit breakers.
  1. Record the current at the main power connection of the main circuit breaker.
  2. Record all current draws on the load side of any circuit breakers used for each device.
  3. Compare the circuit breaker setting for each device to the actual current measured and the full load amps of the device to verify that the current draws are acceptable.

- Compressor suction and discharge pressures are within normal range.

- The compressor oil level is at one-half glass full.

- The cooling unit has the proper refrigerant charge for year-round operation.

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

- The high-pressure switch is operating correctly.
  1. Shut down the condenser.
  2. The head-pressure will rise until the high-pressure switch shuts down the compressor.
  3. Record the shut-off point.

- Air filters are clean and free of debris. Replace air filters with Schneider Electric air filters only.

- The clogged filter alarm is operating properly.
  Cover 1/2 to 1/3 of the filter area to initiate the alarm.
Final inspection checklist

The final inspection verifies that the system is clean, the installed options work properly, and the start-up form is sent to Schneider Electric.

Ensure that:

- The unit is clean and free of loose hardware and debris.
- Internal protective covers and hardware are installed.
- The refrigerant charge weight is recorded on the nameplate.
- Hinged doors and hardware are installed and secure.
- There are no active alarms.
- Unit documentation has been given to the customer.
- Packaging materials are disposed of properly.
- The start-up form was completed and sent to Schneider Electric.
## Charging with Refrigerant

### Calculating R410A charge

Use the following table and formula when calculating the total R410A charge.

<table>
<thead>
<tr>
<th>Condenser Model</th>
<th>Schneider Electric SKU</th>
<th>Selected Ambient Temperature – °C (°F)</th>
<th>Condenser Summer Charge – kg (lb)</th>
<th>Condenser Flooded Charge for Different Minimum Outdoor Ambient Temperatures – kg (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>4°C (40°F)</td>
<td>-7°C (20°F)</td>
</tr>
<tr>
<td>LCS5213-099-2C</td>
<td>ACCD75228</td>
<td>35.0–40.6 (95–105)</td>
<td>6.1 (13.3)</td>
<td>9.7 (21.4)</td>
</tr>
<tr>
<td>LCS5213-113-2C</td>
<td>ACCD75229</td>
<td>46 (115)</td>
<td>8.1 (17.9)</td>
<td>13.0 (28.6)</td>
</tr>
<tr>
<td>LCS5213-099-4C</td>
<td>ACCD75230</td>
<td>35.0–40.6 (95–105)</td>
<td>6.1 (13.3)</td>
<td>9.7 (21.4)</td>
</tr>
<tr>
<td>LCS5213-113-4C</td>
<td>ACCD75231</td>
<td>46 (115)</td>
<td>8.1 (17.9)</td>
<td>13.0 (28.6)</td>
</tr>
<tr>
<td>CAP2001P</td>
<td>ACCD75232</td>
<td>35.0–46.0 (95–115)</td>
<td>7.7 (17.0)</td>
<td>12.4 (27.2)</td>
</tr>
<tr>
<td>CAP2001P.0005</td>
<td>ACCD75233-C</td>
<td>35.0–46.0 (95–115)</td>
<td>7.7 (17.0)</td>
<td>12.4 (27.2)</td>
</tr>
<tr>
<td>LCV8211-009-2C</td>
<td>ACCD75234*</td>
<td>35.0–40.6 (95–105)</td>
<td>6.1 (13.3)</td>
<td>9.0 (19.9)</td>
</tr>
<tr>
<td>LCV8211-009-4C</td>
<td>ACCD75235*</td>
<td>35.0–40.6 (95–105)</td>
<td>6.1 (13.3)</td>
<td>9.0 (19.9)</td>
</tr>
</tbody>
</table>

*Longer lead times may apply. Consult a Schneider Electric representative for more information.

Total charge = Equipment charge + condenser summer charge + condenser flooded charge (for minimum possible ambient temperature) + liquid R410A in liquid pipe

Equipment charge: 5.5 kg (12.1 lb)

Liquid line charge for 7/8 in. ACR copper tube: 0.28 kg/m (0.186 lb/ft)

Density of liquid R410A at 40.6°C (105°F) and 27.5 bar (400 psig): 0.975 g/cm³ (60.9 lbm/ft³)

Example: Calculate the total R410A charge for an ACCD75232 condenser with 7.6 m (24.9 ft) of 7/8-in. liquid piping. Outdoor temperature is –18°C (0°F).

Total R410A charge:

- Metric: 5.5 + 7.7 + 13.1 + (7.6 * 0.28) = 28.4 kg
- Imperial: 12.1 + 17.0 + 28.9 + (24.9 * 0.186) = 62.6 lb
Perform the “Add initial refrigerant amount—“fast charge” method:” on page 12 first, and then select one of the following to complete charging the system: “Top off the system refrigerant charge—“fast charge” method:” on page 13 or “Top off the system refrigerant charge—“slow charge” method:” on page 14.
Add initial refrigerant amount—“fast charge” method: Perform the following with the system not in operation.

1. Open the discharge isolation valve, the liquid line isolation valve. The receiver outlet valve and receiver inlet valve should be back seated.

2. Attach a refrigerant cylinder and charging hose to the receiver outlet valve and purge the hose if necessary.

3. Open the receiver outlet valve and add the liquid refrigerant until the calculate initial amount is charged into the system.

4. Close the receiver outlet valve, and remove the refrigerant cylinder and charging hose.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discharge isolation valve</td>
<td>3</td>
<td>Receiver outlet</td>
</tr>
<tr>
<td>2</td>
<td>Liquid line isolation valve</td>
<td>4</td>
<td>Receiver inlet</td>
</tr>
</tbody>
</table>
Top off the system refrigerant charge—“fast charge” method: Perform the following with the system in operation.

1. Attach a refrigerant cylinder and charging hose to the service port on the cooling unit and purge the hose if necessary.
2. Close the liquid line isolation valve and wait for bubbles to appear in the liquid line sight glass.
3. Open the refrigerant cylinder valve and add refrigerant.
4. When charging is complete, close the refrigerant cylinder valve and remove the charging hose from the service port.
5. Slowly open the liquid line isolation valve.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discharge isolation valve</td>
<td>3</td>
<td>Receiver outlet</td>
</tr>
<tr>
<td>2</td>
<td>Liquid line isolation valve</td>
<td>4</td>
<td>Receiver inlet</td>
</tr>
</tbody>
</table>
Top off the system refrigerant charge—"slow charge" method: Perform the following with the system in operation.

1. Attach a refrigerant gauge manifold to the discharge and suction ports on the cooling unit.
2. Attach a manifold charging hose to the refrigerant cylinder and purge the hose if necessary.
3. Add liquid refrigerant very slowly through the suction port at a pressure of about 1 bar (15 psig) above the suction pressure. Do not charge for longer than two minute intervals; stop charging and wait 3–5 minutes for the system to stabilize.
4. Repeat step 3 as necessary.
5. When charging is complete, close the refrigerant cylinder valve and remove the charging hose from the suction port.
6. Slowly open the liquid line isolation valve.

---

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discharge isolation valve</td>
</tr>
<tr>
<td>2</td>
<td>Liquid line isolation valve</td>
</tr>
<tr>
<td>3</td>
<td>Receiver outlet</td>
</tr>
<tr>
<td>4</td>
<td>Receiver inlet</td>
</tr>
</tbody>
</table>
Compressor Oil Charge

⚠️ WARNING
HAZARD TO EQUIPMENT OR PERSONNEL

All work must be performed by Schneider Electric qualified personnel.

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

Oil charging procedure

⚠️ NOTICE
HAZARD TO EQUIPMENT

Do not charge the compressor with too much oil, or compressor damage could result. The only way to drain oil from the compressor is to remove the compressor from the equipment, which cannot be done when the equipment is in the row.

Failure to follow these instructions can result in equipment damage.

⚠️ NOTICE
DAMAGE TO EQUIPMENT

Be careful not to charge more oil than is necessary. Excessive oil in the system may cause system damage, including the following:
• Failure of valves and pistons due to oil slugging.
• Excessive oil carryover.
• Loss of evaporator performance due to oil level build-up in the low-pressure side of the system.

Failure to follow these instructions can result in equipment damage.
1. Prepare to add oil:
   a. Use a new sealed oil can and a manual oil pump. The pump hose must be sized for 1/4 in. flare fittings and must include a valve depressor at its end, which will open the valve on the suction port of the compressor.
   b. Use high quality polyolester (POE) type 160SZ oil or equivalent.

2. Purge the pump and hose:
   a. Ensure that the oil pump is clean. Insert the pump in the oil container and make sure that the container is open to the atmosphere for as short a period of time as possible. When available, use a plug adapter kit to further reduce the exposure of the oil to the atmosphere.
   b. Bleed all air from the pump and hose with a few strokes of the pump. Purging the pump removes the moisture-saturated oil left inside the hose from previous usage.
   c. Connect the hose to the suction port of the compressor immediately after purging to avoid moisture contamination.

3. While the equipment is running, charge 0.44 l (15 oz.) POE oil through the suction port. Pump the oil very slowly. (This is to ensure the oil separator is functioning properly.)

4. Other than the amount required for the oil separator, no additional oil should be required.
   Let the compressor run at full capacity for at least one hour and check the oil level in the oil sight glass. The level should be between 1/4 and 3/4 full, or within the limit shown on the oil level sticker. If the oil is not within the acceptable limit, check the oil return line for restrictions. When oil is flowing properly, the oil return line should feel warm.
   **NOTE:** Dispose of the oil waste appropriately.

[Diagram of oil sight glass]
## Display Interface

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

### Alarm LED

This LED indicates active alarms on the display.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>No Alarms</td>
</tr>
<tr>
<td>Solid yellow</td>
<td>Warning Alarm</td>
</tr>
<tr>
<td>Solid red</td>
<td>Critical Alarm</td>
</tr>
</tbody>
</table>
### Status LED

This LED indicates the status of the display.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>One of the following situations exist:</td>
</tr>
<tr>
<td></td>
<td>• The display is not receiving input power.</td>
</tr>
<tr>
<td></td>
<td>• The display is not operating properly. It may need to be repaired or</td>
</tr>
<tr>
<td></td>
<td>replaced. Contact Schneider Electric Customer Support.</td>
</tr>
<tr>
<td>Solid green</td>
<td>The display has valid TCP/IP settings.</td>
</tr>
<tr>
<td>Solid orange</td>
<td>A hardware malfunction has been detected in the display. Contact Schneider</td>
</tr>
<tr>
<td></td>
<td>Electric Customer Support.</td>
</tr>
<tr>
<td>Flashing green</td>
<td>The display does not have valid TCP/IP settings.</td>
</tr>
<tr>
<td>Flashing orange</td>
<td>The display is making BOOTP requests.</td>
</tr>
<tr>
<td>Alternately flashing green and orange</td>
<td>If the LED is flashing slowly, the display is making DHCP requests. If the LED is flashing rapidly, the display is starting up.</td>
</tr>
</tbody>
</table>

### Link-RX/TX (10/100) LED

This LED indicates the network status of the display.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>One or more of the following situations exist:</td>
</tr>
<tr>
<td></td>
<td>• The display is not receiving input power.</td>
</tr>
<tr>
<td></td>
<td>• The cable or device that connects the cooling unit to the network is</td>
</tr>
<tr>
<td></td>
<td>disconnected or not functioning properly.</td>
</tr>
<tr>
<td></td>
<td>• The display itself is not operating properly. It may need to be repaired</td>
</tr>
<tr>
<td></td>
<td>or replaced. Contact Schneider Electric Customer Support.</td>
</tr>
<tr>
<td>Solid green</td>
<td>The display is connected to a network operating at 10 megabits per second</td>
</tr>
<tr>
<td></td>
<td>(Mbps).</td>
</tr>
<tr>
<td>Solid orange</td>
<td>The display is connected to a network operating at 100 Mbps.</td>
</tr>
<tr>
<td>Flashing green</td>
<td>The display is receiving or transmitting at 10 Mbps.</td>
</tr>
<tr>
<td>Flashing orange</td>
<td>The display is receiving data packets at 100 Mbps.</td>
</tr>
</tbody>
</table>
Using the Display

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.

NOTE: To maintain cleanliness and optimal performance of the touch-screen surface, it is recommended to use a soft-tip stylus when using the display. Never use sharp or hard-pointed objects on the touch-screen surface.

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 “Alarm messages and suggested actions” on page 39 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.
Logging in/password entry

Path: Main > Login

NOTE: If a user is currently logged-in, the button will change to Logout.

The InRow RD 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.

1. Select Login.
2. Select your login ID with the up and down arrows (1).
   NOTE: The default user ID is apc.
3. Enter your password in the Pin field (2) with the keypad.
   NOTE: The default password is 1234.
4. Select Enter (3).

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 default password is 1234.

See “Add a new user or edit an existing user” on page 31 for information on editing users and passwords.

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

Symbol | Description
--- | ---
[Home] | Home when the system is locked.
[Home] | Home 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 32.
Start the cooling unit

Path: Main > Unit On/Standby

1. Select On for On/Standby.
   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 > Security. The default setting is Disable.

2. Enter your password if required.
   The Operating Mode will now display On.

3. Select the option for Unit Role Override:
   – Automatic: Allows the system to select the role of the cooling unit.
   – Forced On: Select Enable if you have Run-time Balancing Enable selected and you DO NOT want a particular unit in the group to become a backup unit.

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

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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.

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

Path: Main > On/Standby

1. Select Standby for On/Standby.
   If not logged in and Protect On/Standby is activated, a prompt will appear for you to enter your password.

2. The Operating Mode will now display Standby.
   NOTE: The unit can also be stopped via an external signal connected to the Standby Input.
General Configuration

Cooling Unit 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.

**NOTE:** Displayed settings may vary based on model.

Configure the unit

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

When the monitored input violates the unit threshold, an alarm will occur.

- **Rack Inlet High Temperature Threshold:** The high temperature threshold for air entering the racks. If the temperature exceeds the threshold, an alarm will occur.
- **Supply Air High Temperature Threshold:** The high temperature threshold for the supply air as averaged by the upper and lower supply air temperature sensors. If the temperature exceeds this threshold, an alarm will occur.
- **Return Air High Temperature Threshold:** The high temperature threshold for the air entering the cooling unit. If the temperature exceeds this threshold, an alarm will occur.
- **Startup Delay:** Enter a value for the start-up in seconds. The start-up delay begins when the cooling unit is started and initialized. The cooling unit cannot begin operation until this delay expires. Use the start-up delay to restart equipment sequentially in your room after a scheduled downtime or a power outage.
- **Cool Capacity:** Set the cooling capacity of the unit.
  - **Automatic:** The cooling unit automatically controls its output under normal (default) conditions.
  - **Maximum:** The cooling unit runs at full capacity.
    **NOTE:** Normal checks for cooling failures are disabled in **Maximum** mode.
- **Idle on Leak Detect:** When set to **Yes**, the cooling unit will enter idle mode if a Leak Detected Critical alarm activates. Set to **No** to disable the cooling unit from entering idle mode if a leak is detected.
  **NOTE:** The leak sensor (AP9326) is optional.
  **NOTE:** There are eight alarms that will cause the cooling unit to enter idle mode:
  - Leak Detected Critical (when **Idle On Leak Detect** is set to **Yes**)
  - Condensate Pan Full Shutdown
  - Cooling Failure
  - Persistent High Head Pressure
  - VFD Inverter Overheat
  - Compressor Drive Failure
  - Compressor Drive Locked
  - Persistent Low Suction Pressure
- **Idle on Cool Fail:** Set the cooling unit to enter idle mode if the cooling unit is unable to supply conditioned air. Select **Yes** to enable the cooling unit to enter idle mode when unable to supply conditioned air. Select **No** to disable the cooling unit from entering idle mode if a cooling failure is detected.
Path: Main > Configuration > Unit > Humidity

- **Return Humidity High Threshold**: The relative humidity at which the high threshold alarm occurs.
- **Return Humidity Low Threshold**: The relative humidity at which the low threshold alarm occurs.
- **Humidify Enable**: Enable or Disable humidification.
- **Humidifier Control**: Select Auto to run according to settings. Select Drain to manually drain the humidifier canister.
- **Dehumidify Enable**: Enable or Disable dehumidification.

Path: Main > Configuration > Unit > Reheat

- **Reheat Enable**: Enable or Disable the reheat function.
- **Heat Assist Enable**: When Enable is selected, this setting allows use of heat when load is less than approximately 10 kW.

Contacts

Each cooling unit supports a user-defined input contact and a user-defined normal or output contact. Each contact monitors a sensor and responds to changes in the state of the sensor (open or closed). Output contacts can map internal alarms and events to outside devices.

Path: Main > Configuration > Unit > Input/Output

- **Standby Input Normal State**: Set the normal state of the contact (Open or Closed). The cooling unit changes its operating mode to Standby when the actual state differs from the normal state.
- **Standby Input State**: Indicates the actual state of the input contact Open or Closed. A cooling unit is On when the state is normal and in Standby when the state is not normal.
- **Output Contact Normal State**: Set the normal state of the contact (Open or Closed). If the state of an alarm or event mapped to this contact changes from the normal state, the contact also changes state.
- **Output Source**: Define the type of output source (alarm) that causes the output to change from its normal state.
  - Any Alarm
  - Only Critical Alarms

Identify the cooling unit

Path: Main > Configuration > Unit > Identity

- **Unit ID**: Assign a unique identification number to this cooling unit (1–12).

Unit role override

Path: Main > Unit On/Standy

- **Unit Role Override**: When selected this forces the cooling unit to be the primary cooling unit in the group.
  - **Automatic**: Allows the system to select the role of the cooling unit.
  - **Forced On**: Select Enable if you have Run-time Balancing Enable selected and you DO NOT want a particular unit in the group to become a backup unit.

See “Alarm messages and suggested actions” on page 39 for more information on alarms.
Cooling Group Configuration

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

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

Configure the cooling group

Path: Main > Configuration > Group > Composition

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

- **Number of Units in Group**: The number of cooling units in this cooling group. Up to 12 cooling units can be joined together to work as a single cooling group.
- **Number of Backup Units**: The total number of desired backup cooling units. This value can range from zero to one less than Number of Units in Group.
- **Number of Precision Units**: The number of units in the group that are precision units (ACRD60xP units).
- **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.

Configure Modbus

Use the Modbus menu to set up communications between the cooling unit and the building management system. Select to enable serial Modbus or TCP communication protocol.

Path: Main > Configuration > Modbus > Serial

- **Enable Serial Modbus**: Select to enable Modbus serial communication protocol.
- **Address**: Each Modbus device must have a unique target identification number. Enter a unique number for this cooling unit (1–247).
- **Baud Rate**: Set to 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.

Path: Main > Configuration > Modbus > TCP

- **Enable Modbus TCP**: Select to enable Modbus TCP.
- **Port**: Enter a port. The default port is 502. For additional security, enter a port between 5000 and 32768 (TCP connection only).
- **Restore Port to Default**: Press to restore the Port to default settings (502).
Control the Environment

The primary function of the cooling unit is to cool air from the hot aisle and deliver it to the cold aisle at the temperature setpoint. The control strategies employed by the cooling unit depend upon the deployment strategy of the cooling group.

In an InRow environment, the cooling unit supplies constant-temperature supply air to the common cold aisle. The fan speed is modulated to ensure that the desired volume of air reaches the IT equipment. The fan speed is determined by the difference between the cooling setpoint and the maximum rack air inlet temperature.

In a HACS or RACS environment, the cooling unit neutralizes the heat accumulated in the common hot aisle and expels it back into the surrounding environmental space while maintaining the desired temperature in the cold aisle.

In a CACS environment, the cooling unit 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.

How the modes of operation work

Path: Main > Configuration > Service > Configuration

- **Cool:** The cooling unit uses a direct expansion coil and a variable speed compressor to modulate refrigerant flow through the coil, and a set of fans to control airflow through the coil. The cooling output is determined by the difference between the supply setpoint and the supply air temperature of the cooling unit.
  
The airflow control is varied based on configuration.
  
  - **In-Row:** The fan speed is controlled by comparing the rack inlet temperature to the cooling setpoint. As the rack temperature increases compared to the cooling setpoint the fans increase output to maintain the setpoint. As rack inlet temperature decreases compared to the cooling setpoint the fans decrease output to maintain the setpoint.
  
  - **RACS/HACS:** When Active Flow Controller (AFC) devices are present, the controller utilizes differential pressure data supplied by the AFC(s) to supply the correct amount of airflow to the IT load. When AFC devices are not present, the fan speed is controlled by the fan speed preference setting. The fan speed can be selected based on the temperature differential across the cooling unit. As return temperatures deviate from the fan speed preference setting, the fan speed increases to bring the temperature difference back down to the setpoint or decreases fan output to increase the unit temperature differential. By maintaining the desired temperature differential, the system matches the airflow requirements of the load.
  
  - **CACS:** When AFC devices are present, the controller utilizes differential pressure data supplied by the AFC(s) to supply the correct amount of airflow to the IT load. When AFC devices are not present, the evaporator fan speed is controlled by comparing the rack inlet temperature to the cooling setpoint. As the rack temperature increases compared to the cooling setpoint, the fans increase output to maintain the setpoint. As rack temperature decreases compared to the cooling setpoint the fans decrease output to maintain the setpoint.

The cooling unit is equipped with compressor cycling control that tries to minimize the number of times the compressor cycles on and off. The compressor will cycle off when the supply air temperature drops below 15°C (59°F) whether or not the minimum compressor on time of three minutes has elapsed. Once off, the compressor will not normally cycle on until the supply temperature reaches its setpoint and the minimum off time of two minutes has elapsed. However, if the rack inlet temperature reaches 25°C (78°F), the compressor will cycle on regardless of whether the minimum off time has elapsed (InRow and CACS only).

Compressor cycles are monitored over a seven-day period. If the number of cycles average more than 12 per hour over that period, the **Excessive Compressor Cycling** alarm is set.
• **Humidify** (ACRD60xP): The cooling unit contains an electric humidifier that injects steam into the treated air if the return air dew point is below the dew point setpoint. The humidification output is determined by the difference between the humidify setpoint and the cooling unit return air dew point (with humidification output increasing as the return air dew point decreases).

• **Dehumidify** (ACRD60xP): The cooling unit actively removes humidity from the air passing through the cooling unit. The cooling unit dehumidifies if the return air dew point is above the dehumidify dew point setpoint and the cooling unit cooling demand is being met. The dehumidification output is determined by the difference between the dehumidify dew point setpoint and the cooling unit return air dew point.

• **Reheat** (ACRD60xP): When enabled, reheat is used as needed to provide stable cooling at a lower heat load than is possible with cooling alone. Reheat increases the heat load (up to 4 kW) to the cooling controller which allows the compressor to avoid cycling off. The return air temperature may be low while the unit is dehumidifying or if data center equipment is off and the environment is relatively cold. Reheat output is determined by the difference between the reheat setpoint and the cooling unit return air temperature (the reheat output increases as the return air temperature decreases).

• **Heat assist** (ACRD60xP): Enabling heat assist in conjunction with reheat increases the reheat output when the compressor speed approaches its minimum cooling output. Without this additional heat load, the compressor cycles off, and will not return to service until its minimum off time has expired. The reheat output changes as needed to provide the minimum air temperature needed to keep the compressor from cycling off. If the heat load is low enough the compressor will cycle off, but this occurs at a lower heat load than if heat assist (or reheat) were disabled. Heat assist improves the performance of the dehumidification function by allowing the coils to stay colder than is needed for supply air, which increases condensation.

**Setpoints**

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

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

- **Cool Setpoint**: Set the temperature that the cooling group should maintain. The setpoint must be within 18.0–32.2°C (64.4–90.0°F).

- **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.

- **Air Flow Control**: When **Automatic** is selected, the unit operates based on measured demand.
  - **Manual/Automatic**

- **Fan Speed Preference**: Set the fan speed preference that will produce the desired temperature difference (DT). Each fan speed provides an approximate DT between the supply air from the cooling unit and the air returned from the rack.

<table>
<thead>
<tr>
<th>HACS/RACS Mode Fan Speeds</th>
<th>Desired Temperature Difference (Automatic Mode)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Range</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>16.7°C (30°F)</td>
</tr>
<tr>
<td>Med-Low</td>
<td>13.9°C (25°F)</td>
</tr>
<tr>
<td>Med</td>
<td>11.1°C (20°F)</td>
</tr>
<tr>
<td>Med-High</td>
<td>8.3°C (15°F)</td>
</tr>
<tr>
<td>High</td>
<td>5.6°C (10°F)</td>
</tr>
</tbody>
</table>
**NOTE:** The cooling group will automatically override this fan speed setting and adjust the fan speed to provide optimum cooling for the environment as needed.

- **Maximum Fan Speed:** The maximum fan speed of the Group. The default is 100%, and is adjustable to 60%.

- **Run-Time Balancing Enable:** When set to Enable, the system maintains similar run-times between units in the group. When the difference between the runtime hours of the cooling units in the system exceeds 72 hours, the system will automatically exchange modes between the longest running primary unit and the backup unit with equal or greater capability if available with the least runtime hours.
  
  **NOTE:** The runtime balancing cap is not adjustable. Runtime hours are hours that the cooling unit is actually operating and NOT 72 consecutive hours (three days) of time.

- **Load Assist Enable:** When set to Enable, provides extra capacity via a backup cooling unit in the event that a primary unit is unable to service the demand. When the assistance is no longer needed, the unit will return to the backup state.
  
  **NOTE:** Redundancy (backup units), runtime balancing and load assist modes are only supported in HACS, RACS, and CACS configuration.

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

- **Reheat Setpoint:** The Target value for air leaving the cooling unit. This setting must be at least 2°F (1.1°C) below the Supply Air Setpoint. (10.0–18.0°C (50.0–64.4°F)).

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

The setpoints are the target values that the cooling group tries to maintain in the rack. The default setpoints are appropriate for most cooling applications:

- **Humidify Setpoint:** The target value for the relative humidity of conditioned air, as a percentage. The Humidify Setpoint must be at least 5% RH below the Dehumidify Setpoint. (20.0–50.0% RH)

- **Humidify Sensitivity Band:** Set the percentage of relative humidity below the Humidify Setpoint that will make the humidifier operate at full capacity.

- **Dehumidify Setpoint:** The target value for the relative humidity of conditioned air, as a percentage. The Humidify Setpoint must be at least 5% RH below the Dehumidify Setpoint. (35.0–80.0% RH)

- **Dehumidify Deadband:** The allowable percentage of relative humidity below the Dehumidify Setpoint before dehumidification ceases. (2.0–10.0%)

**PID settings**

**Path:** Main > Configuration > Service > PID

The Proportional plus Integral plus Derivative (PID) loop controls the output of the fans.

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

- **Cool Gain ‘P’:** The proportional multiplier (gain) for this mode. The proportional multiplier adjusts for the difference (error) between the measured value and the setpoint.

- **Cool Reset Rate ‘I’:** The integral multiplier (reset rate) for this mode. The integral multiplier adjusts for error measurement and the amount of time that the error has existed. The integral multiplier adds to or subtracts from the output in small increments to correct for the offset error caused by the proportional contribution.

- **Cool Derivative ‘D’:** The derivative multiplier (derivative) for this mode. The derivative multiplier adjusts the output for rapid changes in the error, correcting for the rate of change of the error over time.

- **Reheat Gain ‘P’:** The proportional multiplier (gain) for this mode. The proportional multiplier adjusts for the difference (error) between the measured value and the setpoint.

- **Reheat Reset Rate ‘I’:** The integral multiplier (reset rate) for this mode. The integral multiplier adjusts for error measurement and the amount of time that the error has existed. The integral multiplier adds to or subtracts from the output in small increments to correct for the offset error caused by the proportional contribution.
• **Reheat Derivative ‘D’**: The derivative multiplier (derivative) for this mode. The derivative multiplier adjusts the output for rapid changes in the error, correcting for the rate of change of the error over time.

• **Reset Reheat PID Coefficients**: Select Yes or No to reset the reheat PID coefficients to default settings.

• **Dehumidifying Gain ‘P’**: The proportional multiplier (gain) for this mode. The proportional multiplier adjusts for the difference (error) between the measured value and the setpoint.

• **Dehumidifying Reset Rate ‘I’**: The integral multiplier (reset rate) for this mode. The integral multiplier adjusts for error measurement and the amount of time that the error has existed. The integral multiplier adds to or subtracts from the output in small increments to correct for the offset error caused by the proportional contribution.

• **Dehumidifying Derivative ‘D’**: The derivative multiplier (derivative) for this mode. The derivative multiplier adjusts the output for rapid changes in the error, correcting for the rate of change of the error over time.

• **Reset PID Coefficients**: Reset the coefficients to the default settings.

**Tune the PID loop**

Tune the PID loop to optimize the performance of the cooling group.

**NOTE:** This procedure is to be performed by Schneider Electric authorized personnel only. The PID loop must be tuned after the equipment in the room is installed and running. The loop should be tuned periodically to account for changes in the room load.

1. Adjust the integral and derivative constants to zero and the proportional constant to 1.0.
2. Set the temperature setpoint value and start the cooling group.
3. When the temperature reaches a stable value, increase the proportional constant by 0.5. If the temperature does not respond to this change, adjust the setpoint.
4. Repeat step 3 until the temperature value starts to oscillate and the peak amplitude of the oscillations is constant.
5. Note the time, in minutes, between the peaks of the oscillations. This is the Ultimate Period, \( P_U \).
6. Note the value of the proportional constant. This is the Ultimate Gain, \( G_U \).
7. Compute the PID constants using the table below. Use the equations for that control method in the row to compute the values for each constant.
8. Set each constant according to these calculations.

<table>
<thead>
<tr>
<th>Control Method</th>
<th>Proportional</th>
<th>Integral</th>
<th>Derivative</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>0.5*( G_U )</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>P + I</td>
<td>0.45*( G_U )</td>
<td>0.54*( G_U/\nu )</td>
<td>–</td>
</tr>
<tr>
<td>P + I + D</td>
<td>0.6*( G_U )</td>
<td>1.2*( G_U/\nu )</td>
<td>0.075*( G_U )*( \nu )</td>
</tr>
</tbody>
</table>

You may need to further tune the PID loop in the following ways to account for changes in the room load:

<table>
<thead>
<tr>
<th>Loop Behavior</th>
<th>PID Tuning Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow response to temperature changes</td>
<td>Increase the proportional multiplier or increase the derivative multiplier.</td>
</tr>
<tr>
<td>Overcooling/undercooling after changes in the room load or changes in setpoint</td>
<td>Increase the derivative or the proportional multiplier.</td>
</tr>
<tr>
<td>Environmental temperature never reaches the setpoint</td>
<td>Increase the integral multiplier.</td>
</tr>
<tr>
<td>Overcooling/undercooling on constant room load</td>
<td>Decrease the integral multiplier.</td>
</tr>
</tbody>
</table>

InRow RD Operation and Maintenance
Active Flow Controller (AFC) settings

Path: Main > Configuration > Service > AFC

- **Number of Active Flow Controllers**: Set the number of AFC units in the group (0–5).
- **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.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>$&lt; -0.008 \text{ in. } \pm 3%$</td>
<td>$0.004 \pm 0.0004 \text{ in.}$</td>
<td>$&gt; 0.016 \text{ in. } \pm 3%$</td>
</tr>
<tr>
<td>Slightly Positive</td>
<td>$&lt; -0.010 \text{ in. } \pm 3%$</td>
<td>$0.002 \pm 0.0004 \text{ in.}$</td>
<td>$&gt; 0.014 \text{ in. } \pm 3%$</td>
</tr>
<tr>
<td>Zero</td>
<td>$&lt; -0.012 \text{ in. } \pm 3%$</td>
<td>$0.000 \pm 0.0004 \text{ in.}$</td>
<td>$&gt; 0.012 \text{ in. } \pm 3%$</td>
</tr>
<tr>
<td>Slightly Negative</td>
<td>$&lt; -0.014 \text{ in. } \pm 3%$</td>
<td>$-0.002 \pm 0.0004 \text{ in.}$</td>
<td>$&gt; 0.010 \text{ in. } \pm 3%$</td>
</tr>
<tr>
<td>Negative</td>
<td>$&lt; -0.016 \text{ in. } \pm 3%$</td>
<td>$-0.004 \pm 0.0004 \text{ in.}$</td>
<td>$&gt; 0.008 \text{ in. } \pm 3%$</td>
</tr>
</tbody>
</table>

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

**Run hours**

The cooling unit records the number of hours each of its components has operated. When a component is replaced, use the **Reset** option to reset the run hours for the displayed component to zero.

Path: Main > Configuration > Service > Run Hours

- Evap Fan 1 Run Hrs Reset
- Evap Fan 2 Run Hrs Reset
- Evap Fan 1 Run Hrs Reset
- Evap Fan 2 Run Hrs Reset
- Air Filter Run Hrs Reset
- Condensate Pump Run Hrs Reset
- Compressor Run Hrs Reset
- Humidifier Run Hrs Reset
- Heater 1 Run Hrs Reset
- Heater 2 Run Hrs Reset
- Unit Run Hrs Reset
Thresholds

Set alarms to alert you to threshold violations.

Path: Main > Status > Detailed Status

When the monitored input violates the unit threshold, an alarm will occur. The following sensor information is available:

- **Suction Temperature**: The temperature of refrigerant entering the compressor.
- **Suction Pressure**: The pressure of the refrigerant entering the compressor.
- **Discharge Pressure**: The pressure of the refrigerant leaving the compressor.
- **Standby Input State**: The state of the standby digital input.
- **Output State**: The state of the output contact.
- **Filter Differential Pressure**: The amount of pressure drop through the air filter media.
- **Humidifier Current**: The humidifier working current in amps.
- **Humidifier Water Conductivity**: The conductivity of the supply water of the humidifier.
- **Rack Inlet Temperature 1**: The first rack inlet temperature sensor reading.
- **Rack Inlet Temperature 2**: The second rack inlet temperature sensor reading.
- **Rack Inlet Temperature 3**: The third rack inlet temperature sensor reading.

**NOTE**: Only the Rack Inlet Temperature thresholds are configurable from this menu.

Service intervals

Path: Main > Configuration Unit > Alarms

The service interval depends on environmental cleanliness. Each component interval setting has an alarm. If enabled, the alarm will sound when the component interval has elapsed. The alarm is cleared by selecting Clear Alarms in the main menu. Set the number of weeks to service the following:

- **Air Filter Service Interval**: The default is 18 weeks.
- **Compressor Service Alarm Interval**: The default is 52 weeks.
- **Heater Service Alarm Interval**: The default is 52 weeks.
- **Humidifier Service Alarm Interval**: The default is 26 weeks.
- **Fans Service Alarm Interval**: The default is 52 weeks.
- **Condensate Pump Service Alarm Interval**: The default is 52 weeks.

**NOTE**: The Air Filter interval alarm is enabled by default. The condensate pump, fan, and compressor interval alarms are disabled by default.

Display

Set display interface settings, including time and date, units, passwords, and time-out. You can also adjust the contrast and sound 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. 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, time, and temperature

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.
- **Temperature**: Select Metric or US Customary for temperature format.

Screen visibility and audible tones

Path: Main > Configuration > Display > System Settings

- **Alarm Volume**: Select the level of audio at which alarms will sound.
- **Button Volume**: Enable or Disable the audible tone that sounds every time a button 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.
- **Auto Logoff**: Automatically signs current user out of the system after specified amount of time. Options are 1, 5, 10, 30, or 60 minutes.
Network Configuration

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

Configure the network

Path: Main > Configuration > Network

- **TCP/IPv4**: Enable IPv4 (if applicable), and select the **Address Mode** (Manual, DCHP, BOOTP).
  - **Manual**: Enter the IP Address, subnet mask, and default gateway.
  - **BootP**: Set the Network Management Card of the cooling unit to obtain its network settings from a BootP server.
  - **DHCP**: Set the Network Management Card of the cooling unit to obtain its network settings from a DHCP server. Select whether or not to require vendor-specific cookies to accept the DHCP address.
- **TCP/IPv6**: Enable IPv6 (if applicable), select **Auto Configuration** or **Manual Configuration**, and select the **DHCPv6 Mode** (Router Controlled, Non-Address Information Only, Address and Other Information, or Never). For **Manual Configuration**, enter the **System IP** and **Default Gateway**.
- **Web Access**: Enable Web (if applicable) and select the **Access Mode** (HTTP or HTTPS) and enter the **Port**.
- **FTP server**: Enable FTP (if applicable) and enter the **Port**.
View Status Readings

The display interface has several options for viewing the status of the cooling unit, the cooling group to which the cooling unit belongs, and the environment being controlled. The status readings for the cooling unit are available under the Status > Unit Overview screen, and status readings for the cooling group are available under the Status > Group Status screen or on the overview screen.

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.

Cooling unit status

Path: Main > Status > Unit Overview

View information specific to this cooling unit.

- Operating Mode: The cooling unit is in one of the following modes:
  - On: The cooling unit is cooling.
  - Standby: The cooling unit is receiving power but not enabled for cooling.
  - Idle: The cooling unit is not operating in normal mode due to active alarms.
  - Assist: A backup unit is operating due to a request for cooling assistance.
  - Backup: The unit has been designated as a backup unit and is in the standby state.

For more information, see “Idle on Leak Detect” on page 23.

- Unit Maximum Rack Inlet Temperature: The highest reading of the three rack inlet temperature sensors determines the rack temperature.
- Airflow: The amount of air required to maintain the setpoint temperature.
- Fan Speed: The speed of the fans that regulate the air flow through the cooling unit.
- Supply Air Temperature: The average temperature of the air leaving the cooling unit, as measured by the upper and lower supply air temperature sensors.
- Return Air Temperature: The temperature of the air entering the cooling unit.
- Supply Humidity: The humidity of the air leaving the cooling unit.
- Return Humidity: The humidity of the air entering the cooling unit.
- Cool Output: The actual cooling output of the cooling unit.
- Cool Demand: The amount of cooling that the heat load currently requires.
- Reheat Output: The actual percent of maximum reheating output of the cooling unit.
- Reheat Demand: The percent of maximum reheating that the rack currently requires.
- Dehumidify Output: The actual percent of maximum dehumidification output of the cooling unit.
- Dehumidify Demand: The percent of maximum dehumidification that the rack currently requires.
- Humidify Output: The actual percent of maximum humidification output of the cooling unit.
- Humidify Demand: The percent of maximum humidification that the rack currently requires.
Cooling group status

Path: Main > Status > Group Status

View information about the cooling group.

- **Cool Setpoint**: The temperature set to maintain the room environment.
- **Supply Air Setpoint**: The desired temperature of the air supplied by the cooling unit.
- **Group Maximum Rack Inlet Temperature**: The highest rack temperature reported by any cooling unit in the cooling group.
- **Group Minimum Rack Inlet Temperature**: The lowest rack temperature reported by any cooling unit in the cooling group.
- **Dew Point Temperature**: The average group dew point temperature.
- **Airflow**: The combined airflow output of the cooling units in the cooling group.
- **Active Flow Control Status**: The conditional state of the containment air pressure differential measurement device (AFC).
  - Under
  - Okay
  - Over
- **Cool Demand**: The cooling output required to meet the current heat load of the conditioned space.
- **Cool Output**: The combined output of the cooling group.
- **Humidify Output**: The actual percent of maximum humidification output of the cooling group.
- **Humidify Demand**: The percent of maximum humidification that is currently required.
- **Dehumidify Output**: The actual percent of maximum dehumidification output of the cooling group.
- **Dehumidify Demand**: The percent of maximum dehumidification that is currently required.
- **Reheat Output**: The actual percent of maximum reheating output of the cooling group.
- **Reheat Demand**: The percent of maximum reheating that is currently required.

Compressor drive status

Path: Main > Status > Compressor Drive

- **Speed**: The compressor speed.
- **Power**: The compressor power consumption.
- **Voltage**: The compressor voltage.
- **Current**: The compressor current draw.
- **DC Link Voltage**: The compressor internal direct current (DC) link voltage.
- **Heat Sink Temperature**: The compressor heat sink temperature.
- **Control Card Temperature**: The compressor control card temperature.
- **Software Version**: The software version of the compressor controller.
- **Software ID**: The compressor driver software ID.
- **Serial Number**: The serial number of the compressor.
- **Warning Status**: The compressor warning word used for diagnostics.
- **Alarm Status**: The compressor alarm word used for diagnostics.
- **Warning History**: The last four warning events stored in the compressor drive.
- **Alarm History**: The last four active alarm events stored in the compressor drive.
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 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 > Unit

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.
- **Firmware Revision:** The firmware revision of the unit.
- **Hardware Revision:** The hardware revision of the unit.
Path: Main > About > Identification

- **Name:** The name assigned to the cooling unit.
- **Unique ID:** The unique ID assigned to the cooling unit.
- **Location:** The physical location of the cooling unit.

About the display

Path: Main > About > Display > Device

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

Path: Main > About > Display > Firmware

View identifying revision information about the display interface firmware:

- **Application**
- **APC OS (AOS)**
- **APC Boot Monitor**
- **Video Driver**
- **FPGA**
**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 alarms screen. Status events (informational) and system configuration changes are only displayed in the event log.

**View event log**

Path: Main > Event Log

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

- The name of the event.
- The time and date the event occurred.

Use the arrow keys to scroll through the list of events and display the date and time for each event.

**Clear event log**

Path: Main > Event Log

1. Press the trash can icon in the bottom-left corner of the screen to clear the event log. A confirmation screen is displayed.
2. Enter the Admin password to erase the log.
3. Select Yes to erase all of the events in the log. Select No to return to the Event Log screen.

**Respond to Alarms**

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

- Active alarm screen entry on scrolling status screens
- LEDs on the front panel display
- An optional audible alarm every 30 seconds, if enabled

**View active alarms**

Path: Main > Status > Active Alarms

The Active Alarms screen provides the number of alarms, the severity, and a brief description of the alarm.

**Clear active alarms**

Path: Main > Status > Active Alarms

1. Press Clear to clear the active alarms. A confirmation screen is displayed.
2. Enter the Admin password to erase the alarms list.
3. Select Yes to erase all of the alarms. Select No to return to the Active Alarms screen.
## Alarm messages and suggested actions

<table>
<thead>
<tr>
<th>Alarm Message</th>
<th>Severity</th>
<th>Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS Door Open</td>
<td>Warning</td>
<td>• Verify the aisle containment system door is shut properly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If the problem persists, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Air Filter Clogged</td>
<td>Warning</td>
<td>• Clean or replace the air filter.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If the problem persists, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Air Filter Runtime Condition</td>
<td>Warning</td>
<td>• Reset the Air Filter Run Hours after the air filter is cleaned or replaced.</td>
</tr>
<tr>
<td>CABC Sensor Failure</td>
<td>Warning</td>
<td>• Check the Active Flow Controller (AFC) hardware and wiring. Replace the AFC.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If the problem persists, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Cool Function Unavailable</td>
<td>Critical</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Compressor Drive Failure</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Compressor Drive Comm Condition</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Compressor Drive Locked</td>
<td>Warning</td>
<td>• Resolve the VFD fault. Power cycle the unit to reset.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If the problem persists, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Compressor Drive Warning</td>
<td>Warning</td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Compressor Runtime Condition</td>
<td>Warning</td>
<td>• At the display interface, make sure the compressor run hours setting is correct in the <strong>Main &gt; Status &gt; Run Hours</strong> screen after the appropriate maintenance for the device has been performed.</td>
</tr>
<tr>
<td>Compressor Suction Sensor Error</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Condensate Pan Full Shutdown</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Condensate Pump Runtime Condition</td>
<td>Warning</td>
<td>• At the display interface, make sure the condensate pump run hours setting is correct in the <strong>Main &gt; Status &gt; Run Hours</strong> screen after the appropriate maintenance for the device has been performed.</td>
</tr>
<tr>
<td>Condensate System Degraded</td>
<td>Warning</td>
<td>• Clear debris from condensate pump reservoir and the condensate removal lines.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Verify the condensate removal lines are free of obstructions and the float switch moves freely.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Discharge Pressure Sensor Failure</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Excessive Compressor Cycling Condition</td>
<td>Warning</td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Fan #n Error</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Fan #n Runtime Condition</td>
<td>Warning</td>
<td>• At the display interface, make sure the fan run hours setting is correct in the <strong>Main &gt; Status &gt; Run Hours</strong> screen after the appropriate maintenance for the device has been performed.</td>
</tr>
<tr>
<td>Filter Diff Pressure Sensor Error</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Group Comm Error</td>
<td>Warning</td>
<td>• Make sure the number of cooling units in the group is configured properly, and the A-Link connections between cooling units are correct.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Make sure the system is receiving power and is connected properly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If the problem persists, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Heater #n Error</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Alarm Message</td>
<td>Severity</td>
<td>Action Required</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Heater #n Runtime Condition Warning</td>
<td>Warning</td>
<td>• At the display interface, make sure the heater hours setting is correct in the <strong>Main &gt; Status &gt; Run Hours</strong> screen after the appropriate maintenance for the device has been performed.</td>
</tr>
<tr>
<td>High Discharge Pressure Condition</td>
<td>Warning</td>
<td>• Check condenser for obstructions.</td>
</tr>
<tr>
<td>High Pressure Sensor Active</td>
<td>Critical</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td>High Return Humidity Condition</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td>High Suction Pressure Condition</td>
<td>Warning</td>
<td>• Check that load is not greater than the cooling capacity rating on the unit.</td>
</tr>
<tr>
<td>Humidifier Comm Error</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td>Humidifier Cylinder Full Unit Off Condition</td>
<td>Warning</td>
<td>• See the humidifier manual.</td>
</tr>
<tr>
<td>Humidifier Drain Error</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td>Humidifier Error Tolerance Exceed Condition</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td>Humidifier High H2O Conductivity</td>
<td>Warning</td>
<td>• See the humidifier manual.</td>
</tr>
<tr>
<td>Humidifier Low Water Condition</td>
<td>Warning</td>
<td>• Make sure the water line to the humidifier is connected, and the water supply is turned on.</td>
</tr>
<tr>
<td>Humidifier Replace Cylinder Condition</td>
<td>Warning</td>
<td>• Replace the humidifier cylinder.</td>
</tr>
<tr>
<td>Humidifier Runtime Condition Warning</td>
<td>Warning</td>
<td>• At the display interface, make sure the humidifier run hours setting is correct in the <strong>Main &gt; Status &gt; Run Hours</strong> screen after the appropriate maintenance for the device has been performed.</td>
</tr>
<tr>
<td>Input Contact Error</td>
<td>Warning</td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Insufficient Airflow</td>
<td>Warning</td>
<td>• Verify the air ports are clear of obstructions and there is sufficient cooling capacity for the load.</td>
</tr>
<tr>
<td>Leak Detected Critical</td>
<td>Warning</td>
<td>• System configured to enter idle mode when leak has been detected.</td>
</tr>
<tr>
<td>Leak Detected Warning</td>
<td>Warning</td>
<td>• Identify the source of the leak.</td>
</tr>
<tr>
<td>Low Return Humidity Condition</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td>Low Suction Pressure Condition</td>
<td>Warning</td>
<td>• Check the air filter and evaporator for obstructions.</td>
</tr>
<tr>
<td>Humidifier High H2O Conductivity</td>
<td>Warning</td>
<td>• Make sure the water line to the humidifier is connected, and the water supply is turned on.</td>
</tr>
<tr>
<td>Humidifier Low Water Condition</td>
<td>Warning</td>
<td>• If the problem persists, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Humidifier Replace Cylinder Condition</td>
<td>Warning</td>
<td>• Consult the humidifier manual.</td>
</tr>
<tr>
<td>Humidifier Error Tolerance Exceed Condition</td>
<td>Warning</td>
<td>• For further assistance, contact Schneider Electric technical support.</td>
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</tr>
<tr>
<td>Humidifier Replace Cylinder Condition</td>
<td>Warning</td>
<td>• Replace the humidifier cylinder.</td>
</tr>
<tr>
<td>Humidifier Runtime Condition Warning</td>
<td>Warning</td>
<td>• At the display interface, make sure the humidifier run hours setting is correct in the <strong>Main &gt; Status &gt; Run Hours</strong> screen after the appropriate maintenance for the device has been performed.</td>
</tr>
<tr>
<td>Input Contact Error</td>
<td>Warning</td>
<td>• For assistance, contact Schneider Electric technical support.</td>
</tr>
<tr>
<td>Insufficient Airflow</td>
<td>Warning</td>
<td>• Verify the air ports are clear of obstructions and there is sufficient cooling capacity for the load.</td>
</tr>
<tr>
<td>Leak Detected Critical</td>
<td>Warning</td>
<td>• System configured to enter idle mode when leak has been detected.</td>
</tr>
<tr>
<td>Leak Detected Warning</td>
<td>Warning</td>
<td>• Identify the source of the leak.</td>
</tr>
<tr>
<td>Low Return Humidity Condition</td>
<td>Warning</td>
<td>• A hardware problem may exist.</td>
</tr>
<tr>
<td>Low Suction Pressure Condition</td>
<td>Warning</td>
<td>• Check the air filter and evaporator for obstructions.</td>
</tr>
<tr>
<td>Humidifier High H2O Conductivity</td>
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<td>• Check the air filter and evaporator for obstructions.</td>
</tr>
<tr>
<td>Alarm Message</td>
<td>Severity</td>
<td>Action Required</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>----------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| No Backups Available                  | Warning  | • Check to make sure cooling units in the group have the **Role Override** setting on the **Main > Unit On/Standby** screen set to **Automatic** and that cooling units are available (not in a failed state).  
  • Check that the **Number of Backup Units** on the **Configuration > Group > Composition** screen is not zero.  
  • For assistance, contact Schneider Electric technical support. |
| Persist Low Suction Pressure Condition| Warning  | • A hardware problem may exist.  
  • For assistance, contact Schneider Electric technical support. |
| Rack Inlet #n High Temperature Condition| Warning  | • Make sure the temperature sensor is connected and placed properly.  
  • Make sure the **Rack Inlet Threshold** is set correctly in the **Main > Configuration > Unit > Cooling** screen.  
  • For assistance, contact Schneider Electric technical support. |
| Rack Temperature Sensor #n Fault      | Warning  | • Make sure the sensors are connected properly.  
  • If the problem persists, replace the sensor, or contact Schneider Electric technical support. |
| Return High Temperature Condition     | Warning  | • Make sure the **Return Air Threshold** is set correctly in the **Main > Configuration > Unit > Cooling** screen.  
  • If the problem persists, contact Schneider Electric technical support. |
| Return Humid Sensor Fail              | Warning  | • Make sure the faulty sensor is connected properly.  
  • If the problem persists, replace the sensor, or contact Schneider Electric technical support. |
| Return Temperature Sensor Error       | Warning  | • Make sure the faulty sensor is connected properly.  
  • If the problem persists, replace the sensor, or contact Schneider Electric technical support. |
| Suction Pressure Sensor Failure       | Warning  | • A hardware problem may exist. For assistance, contact Schneider Electric technical support. |
| Supply High Temperature Condition     | Warning  | • Make sure the temperature sensor is connected properly.  
  • Make sure the **Supply Air Threshold** is set correctly in the **Main > Configuration > Unit > Cooling** screen.  
  • If the problem persists, contact Schneider Electric technical support. |
| Supply Humidity Sensor Fail           | Warning  | • Make sure the faulty sensor is connected properly.  
  • If the problem persists, replace the sensor, or contact Schneider Electric technical support. |
| Supply Temperature Lower Sensor Error | Warning  | • Make sure the faulty sensor is connected properly.  
  • If the problem persists, replace the sensor, or contact Schneider Electric technical support. |
| Supply Temperature Upper Sensor Error | Warning  | • Make sure the faulty sensor is connected properly.  
  • If the problem persists, replace the sensor, or contact Schneider Electric technical support. |
| Unexpected Number of AFC Sensors     | Warning  | • Verify physical number of AFC units matches the number shown in the **Number of Active Flow Controllers** setting.  
  • If the problem persists, contact Schneider Electric technical support. |
| Unit Capability Not Configured        | Warning  | • A manufacturing problem may exist.  
  • If the problem persists, contact Schneider Electric technical support. |
| VFD Inverter Overheat                 | Warning  | • The VFD will restart once the inverter cools.  
  • If the problem persists, contact Schneider Electric technical support. |
Network Management Card

Quick Configuration

The cooling unit is shipped with a Network Management Card that enables the cooling unit to be managed over a network. Configure the Network Management Card to control this cooling unit through a network.

Overview

You must configure the following TCP/IP settings before the Network Management Card can operate on a network:

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

**NOTE:** 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 RD User 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 TCP/IP settings needed by the Network Management Card:

- Device IP Configuration Wizard (See “Device IP Configuration Wizard” on page 43.)
- BootP or DHCP server (See “BootP & DHCP configuration” on page 43.)
- Local computer (See “Local access to the command line interface (CLI)” on page 45.)
- Networked computer (See “Remote access to the command line interface (CLI)” on page 44.)
Device IP Configuration Wizard


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 InRow RD User Manual.

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 unconfigured Network Management Cards.

BootP & 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 43 or “Remote access to the command line interface (CLI)” on page 44 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.

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 “Local access to the command line interface (CLI)” on page 45.

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 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.
Access a Configured Unit

Overview

After the unit is running on your network, you can access the configured cooling unit 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 RD User Manual.

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 RD 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.

For more information on selecting and configuring network security, see the UPS Network Management Card Security Handbook, available on www.schneider-electric.com. 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:

```plaintext
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 RD User Manual 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 RD cooling unit. 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 cooling unit supports SHA or MD5 authentication and V or DES encryption.

SNMPv1 and SNMPv3: To use StruxureWare Data Center Expert to manage the InRow RD on the public network, you must have SNMPv1 enabled in the unit interface. Read access allows devices to receive traps from the InRow RD cooling unit. Write access is required while you set the 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/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 RD 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 RD User Manual, 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://www.schneider-electric.com/en/download/ and search for the Modbus register map.

Recover 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®) 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 five 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 RD cooling unit and transfer it to the unit, see the InRow RD Service Manual.
Monthly Preventive Maintenance

Photocopy the following pages and use them during the maintenance procedures. After they have been completed, save them for future reference.

Prepared By: ________________________________
Model Number: ______________________________
Serial Number: _______________________________
Date: ______________________________________

Environment

- Supply air temperature sensor reading: __________
- Supply air humidity sensor reading: ____________
- Return air temperature sensor reading: __________
- Return air humidity sensor reading: ____________
- Record the alarm history for the last month.
  _____________________________________________________________________________________
  _____________________________________________________________________________________
  _____________________________________________________________________________________
  _____________________________________________________________________________________

Cleanliness

- Check the condition of the air filters. Clean or change if necessary.
- Check the condition of the condenser coil. Remove large debris.
DANGER
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
- This equipment must be installed and serviced by qualified personnel only.
- Turn off all power supplying this equipment before working on or inside the equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

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

- Check the evaporator fans for abnormal noise or vibration.
- Check the liquid line sight glass moisture indicator.
- Check the liquid line sight glass for bubbles.
- Check the oil level in the compressor sight glass.
- Check the condenser fans for abnormal noise or vibration.

DANGER
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
- This equipment must be installed and serviced by qualified personnel only.
- Turn off all power supplying this equipment before working on or inside the equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

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

- Inspect the electrical panel doors and covers for damage or loose hardware.
- Check the condenser electrical panel and covers for damage or loose hardware.

Functional tests

- Check the operation of the display interface.
Quarterly Preventive Maintenance

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

Prepared By: _________________________________
Model Number: _______________________________
Serial Number: _______________________________
Date: ______________________________________

Environment

☐ Record the Supply Air Setpoint: ____________
☐ Record the Cool Setpoint: _________________

Cleanliness

☐ Check for debris in the condensate pan. Clean as needed.

Mechanical

⚠️⚠️ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

• Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
• This equipment must be installed and serviced by qualified personnel only.
• Turn off all power supplying this equipment before working on or inside the equipment.
• Always use a properly rated voltage sensing device to confirm power is off.
• Replace all devices, doors, and covers before turning on power to this equipment.

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

☐ Record the suction and discharge pressures: ____________
☐ Record the evaporator superheat temperature: ____________
☐ Check the condition of the humidifier cylinder.
Electrical

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
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<tbody>
<tr>
<td>HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH</td>
</tr>
</tbody>
</table>

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
- This equipment must be installed and serviced by qualified personnel only.
- Turn off all power supplying this equipment before working on or inside the equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

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

- Check wiring harnesses and molded connectors.
- Check customer interface wiring connections.
- Check temperature and humidity sensor connections.
Semi-Annual Preventive Maintenance

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

Prepared By: _________________________________
Model Number: _______________________________
Serial Number: _______________________________
Date: ______________________________________

Environment

☐ Check for visible damage to the cooling unit.
☐ Check for dirt, dust, debris, and liquid stains in and around the cooling unit

Cleanliness

☐ Replace air filters. Reset air filter run hours alarm counter.
☐ Replace humidifier cylinder. Reset humidifier run hours alarm counter.
☐ Check and clean the evaporator coil.
☐ Check and clean the condenser coil.

Mechanical

⚠️ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

• Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
• This equipment must be installed and serviced by qualified personnel only.
• Turn off all power supplying this equipment before working on or inside the equipment.
• Always use a properly rated voltage sensing device to confirm power is off.
• Replace all devices, doors, and covers before turning on power to this equipment.

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

☐ Check for refrigerant leaks on valves, threaded connections, and heat exchangers.
☐ Check refrigerant piping clamps and insulation. Secure as needed.
☐ Check that the condensate line is not obstructed or clogged.
Electrical

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH</td>
</tr>
<tr>
<td>• Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.</td>
</tr>
<tr>
<td>• This equipment must be installed and serviced by qualified personnel only.</td>
</tr>
<tr>
<td>• Turn off all power supplying this equipment before working on or inside the equipment.</td>
</tr>
<tr>
<td>• Always use a properly rated voltage sensing device to confirm power is off.</td>
</tr>
<tr>
<td>• Replace all devices, doors, and covers before turning on power to this equipment.</td>
</tr>
</tbody>
</table>

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

- Check circuit breaker and fuse block electrical connections.
- Check low voltage transformers, measure and record output voltage.
- Measure and record mains input voltage: _____________
- Check and tighten electrical connections on the compressor inverter drive.
- Check and record the current draw for the following components:
  - Fans: _____________
  - Compressor:________
  - Heaters:___________
  - Humidifier:_________
- Check condenser electrical components, fuses, contactors, speed controller.

Functional tests

- Check the operation of the water leak detection device.
- Verify the cooling operation mode is functioning properly.
- Check condensate pump operation.
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls erratic or inoperative</td>
<td>• Inlet temperature to cooling unit is higher than rated max temp</td>
<td>• Reduce the load or add additional cooling equipment.</td>
</tr>
<tr>
<td>Fans fail to start</td>
<td>• Cooling unit shutdown due to an external command</td>
<td>• Temporarily remove the input contact cable, if it is connected.</td>
</tr>
<tr>
<td></td>
<td>• Single fan fails to start</td>
<td>• Verify that the fan circuit breaker is ON.</td>
</tr>
<tr>
<td>Cooling unit cannot obtain setpoint</td>
<td>• Improper placement of remote temperature sensor</td>
<td>• Verify that the remote temperature sensor is properly located in the cold aisle.</td>
</tr>
<tr>
<td></td>
<td>• Dirty filter</td>
<td>• Clean the filter.</td>
</tr>
<tr>
<td></td>
<td>• Dirty coil</td>
<td>• Clean the coil.</td>
</tr>
<tr>
<td></td>
<td>• Application error</td>
<td>• Contact Schneider Electric technical support</td>
</tr>
<tr>
<td></td>
<td>• Heat load is too far away</td>
<td>• Place the cooling unit closer to the heat load.</td>
</tr>
<tr>
<td>Water carryover</td>
<td>• Improper fan speed selected</td>
<td>• RACS and HACS modes only: Select the next-highest fan speed setting. For example, change the fan speed setting from Low to Med/Low.</td>
</tr>
<tr>
<td></td>
<td>• Room humidity is too high</td>
<td>• Improve room sealing.</td>
</tr>
<tr>
<td>Temperature control not tight enough</td>
<td>• Improper placement of remote temperature sensor</td>
<td>• Verify that the remote temperature sensor is properly located in the cold aisle.</td>
</tr>
<tr>
<td>Water on outside of cooling unit</td>
<td>• Condensate drain hose is not connected or not properly routed outside the cooling unit</td>
<td>• Verify that the condensate drain hose is properly connected to the pump and properly routed outside the cooling unit. • Verify that the condensate drain line does not exceed 3.5 m (11.5 ft) lift and 18.0 m (60.0 ft) horizontal run.</td>
</tr>
<tr>
<td></td>
<td>• Leak in drain system</td>
<td>• Locate and repair the leak.</td>
</tr>
<tr>
<td></td>
<td>• Cooling unit not leveled properly</td>
<td>• Adjust the leveling feet of the cooling unit.</td>
</tr>
<tr>
<td></td>
<td>• Damaged piping insulation</td>
<td>• Identify damaged area and repair the insulation.</td>
</tr>
<tr>
<td>Display interface not operational, but cooling unit operates</td>
<td>• Display interface not connected properly</td>
<td>• Verify that the display interface cable is connected properly.</td>
</tr>
<tr>
<td>Incorrect air pressure</td>
<td>• False filter clogs</td>
<td>• Verify that the ends of the clear plastic air tubes are not obstructed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Verify that the clear plastic air tubes are connected to the controller.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Verify that the clear plastic air tubes are not pinched.</td>
</tr>
<tr>
<td>Problem</td>
<td>Possible Cause</td>
<td>Corrective Action</td>
</tr>
<tr>
<td>---------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
</tbody>
</table>
| Alarms do not show up on monitoring equipment (Customer Output Contact) | • External monitoring equipment is not receiving power or is not functioning properly | • Confirm that power, if required, is being supplied to the external equipment.  
• If the cooling unit (+12 V or +24 V) is providing power to the external equipment, verify that the external equipment is ≤50 mA.  
• Test the external equipment by bypassing the customer output contact.  
• Verify Customer Output Contact settings. See “Contacts” on page 24. |
| Cooling unit does not shut down on command | • Drive voltage | • Verify that there is a drive voltage entering the input of the cooling unit. You may use the available +12 V or +24 V. You must also use the ground.  
• Verify Customer Input Contact settings. See “Contacts” on page 24. |
| No communication with building management system (BMS) port | • Improper connection | • Confirm that the cooling unit is connected to the BMS port and not to the Control port.  
• Make sure that the wire polarity is correct. Using a DC voltmeter, test the signal with no transmissions in progress. Expect the voltage at pin 2 to be greater than at 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.  
• 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. |
| Cooling units are not communicating with each other | • A-Link failure | • Verify that the first and last cooling units have one cable and a terminator.  
• Verify that every other cooling unit has two cables.  
• Confirm that the A-Link cables are connected to the A-Link ports and that a network cable is connected to the network port.  
• Verify that the number of cooling units in the cooling group matches the group number setting. |
| Output air is 17°C (62°F) and fans are running at a very high rate of speed. | • Upper or lower supply air sensor | • Either upper or lower supply air temperature sensor has a fault. Verify that both supply air temperature sensors are installed and working properly. |
Worldwide Customer Support

Customer support for this or any other product is available at no charge in any of the following ways:

• Visit the Schneider Electric Web site to access documents in the Schneider Electric Knowledge Base and to submit customer support requests.
  – www.schneider-electric.com (Corporate Headquarters)
    Connect to localized Schneider Electric Web sites for specific countries, each of which provides customer support information.
  – www.schneider-electric.com/support/
    Global support searching Schneider Electric Knowledge Base and using e-support.
• Contact the Schneider Electric Customer Support Center by telephone or e-mail.
  – Local, country-specific centers: go to www.schneider-electric.com > Support > Operations around the world for contact information.

For information on how to obtain local customer support, contact the representative or other distributors from whom you purchased your product.

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