# Uniflair™ SP

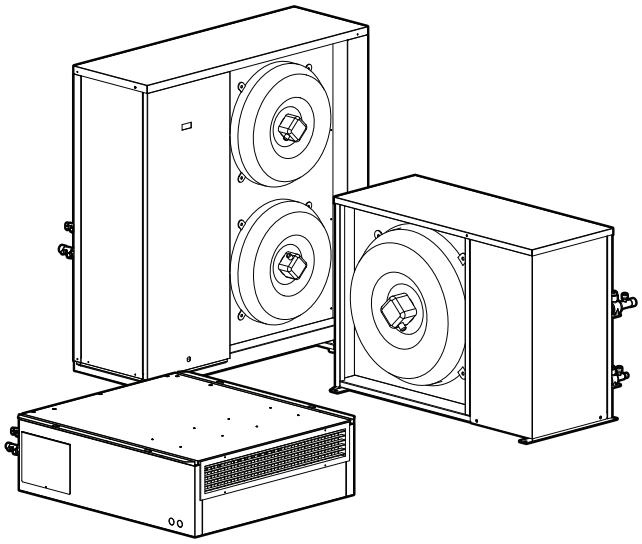
## Uniflair UCF, MRA

## Operation and Maintenance Manual

**990-91230A-001**

**06MC0155@00B0120**

**Release date: 05/2019**



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# Table of Contents

# Safety

## Important Safety Instructions — SAVE THESE INSTRUCTIONS

Read these instructions carefully and look at the equipment to become familiar with it before trying to install, operate, service or maintain it. The following safety 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 message 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 with this symbol to avoid possible injury or death.

**⚠DANGER**

**DANGER** indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

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

**⚠WARNING**

**WARNING** indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

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

**⚠CAUTION**

**CAUTION** indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

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

***NOTICE***

**NOTICE** is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.

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

### Please Note

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

# Safety During Operation

## ⚠⚠DANGER

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

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- 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.
- 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

**MOVING PARTS HAZARD**

Do not remove rear panels if the equipment is operating.

**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.

**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.
- Contents are under pressure: use caution when releasing pressure in the system or refilling.
- Charging and maintaining the refrigeration circuit must only be performed by qualified personnel.

**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 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

Schneider Electric™ policy is one of continuous technological innovation and the company reserves the right to amend any data herein without prior notice. The images shown in this manual are for descriptive purposes only and they may differ from specific models that are selected.

> **NOTE:** Unit images and component identification information are examples only. The final configuration of the unit may change according to the different options.

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.

### Abbreviations

The following abbreviations and terms are used in this manual:

- DX: Direct expansion
- NMC: Network Management Card
- TXV: Thermostatic Expansion Valve

# 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.

## California Proposition 65—Warning Statement for California Residents

**WARNING:** This product can expose you to chemicals including lead and lead compounds, that are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to *www.P65Warnings.ca.gov*.

# Commissioning

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

## Overview

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
   - Display interface
2. Complete the following inspections:
   - Start-up
   - Final

## Inspection Checklists

### Initial Inspection Checklist

**⚠WARNING**

**DAMAGE TO EQUIPMENT AND PERSONNEL**

Do not run service utilities in front of the fan outlet.

**Failure to follow these instructions can result in death, serious 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 requirements of the installation manual and local codes.
- ❑ 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 clearance around the equipment is in accordance with local, and national codes as well as the installation manual.

## Electrical Inspection Checklist

**⚠⚠DANGER**

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

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- 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.
- 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**

**ELECTRICAL HAZARD**

- Electrical service must conform to local and national electrical codes and regulations.
- The equipment must be grounded.

**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 rating on the nameplate.
- ❑ Electrical wiring complies with local and national codes and regulations.
- ❑ Equipment is properly connected to an earth ground.
- ❑ Electrical connections are tight, including contactors, terminal blocks, controllers, switches, relays, auxiliary devices, and field connections.
- ❑ Circuit breakers are correct and securely attached to the DIN rail.

## Mechanical Inspection Checklist

**⚠CAUTION**

**HAZARD TO EQUIPMENT OR PERSONNEL**

- 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.
- Improperly installed piping may result in improper operation and possible damage to the cooling unit or surrounding equipment.

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

The mechanical inspection verifies that all mechanical components and connections are secure and tight and ready for start-up.

**Ensure that**

- ❑ Mechanical connections are tight.
- ❑ Fans are turning freely and the blades are not distorted or bent.
- ❑ Pipe fittings are tight.
- ❑ 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**

- ❑ The input contacts and output relays are connected correctly.
- ❑ The building management system is connected correctly.

## 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 cooling unit is free from malfunctions, including water leaks, unusual vibrations, or other irregularities in each mode of operation.
- ❑ The current draw of fan motors is within the ratings of the respective circuit breakers.
  - Record the current at the main power connection of the main circuit breaker.
  - Record all current draws on the load side of any circuit breakers used for each device.
  - 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.

## 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**

- ❑ Interior and exterior of the equipment are clean and free from debris and loose hardware.
- ❑ Internal protective covers and hardware are installed.
- ❑ Doors and hardware are installed and secure.
- ❑ Packaging materials are disposed of properly.
- ❑ There are no active alarms.
- ❑ Unit documentation has been given to the customer.
- ❑ The start-up form is filled in and sent to Schneider Electric.

# Charging the Equipment

**⚠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.**

**⚠CAUTION**

**HAZARD OF HIGH PRESSURE REFRIGERANT OR EQUIPMENT DAMAGE**

- Use R410A refrigerant only.
- Use hose and manifold set suitable for R410A with a minimum pressure rating of 50 bar (725 PSIG).
- The unit display should be used to obtain pressure readings.

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

## Calculating R410A Charge

To calculate the initial charge requirement of the equipment, see the piping plan layout for the actual lengths of the equipment line-set.

See the *Installation Manual* for more information about refrigerant piping.

Verify that the actual piping matches the planned layout. If necessary, measure the actual lengths of piping used for traps and loops to get the total pipe length.

Using the table below, find the installed liquid and suction line sizes and look up the R410A multiplier for your application. The table provides the amount of R410A, in ounces per foot for different combinations of suction and liquid line sizes (ACR tubing only). Multiply the value in the table by the length of the line-set to provide the total ounces of R410A for the line-set.

| **Line-Set Charge Adjustment, Initial Charge, Ounces of R410A/Foot (Grams of R410A/Centimeter)** | | |
|---|---|---|
| | **Liquid Line Size** | |
| Suction Line Size | 3/8 in. ACR | 1/2 in. ACR |
| 3/4 in. ACR | 14.0 g (0.62 oz) | N/A |
| 7/8 in. ACR | 18.7 g (0.66 oz) | 32.3 g (1.14 oz) |
| 1-1/8 in. ACR | 20.9 g (0.74 oz) | 34.5 g (1.22 oz) |

Charge amount is based on the actual line-set length.

Look up the equipment charge in the table. A standard line-set is sized to the service valve sizes of the equipment.

| Initial R410A Charge Weight Calculation | |
|---|---|
| **Unit** | **Indoor and Outdoor Units Only Charge** |
| UCF0341I<br>MRA0221I | 2.5 kg (5 lb 10 oz) |
| UCF0481I<br>MRA0611D | 4.9 kg (10 lb 15 oz) |

**NOTE:** Always verify the equipment charge amount listed on the nameplates. If the nameplate charge differs from that listed in these instructions, use the nameplate value.

Add the “Indoor and Outdoor Units Only” charge amount to the calculated line-set charge. This is the initial charge for the equipment before start-up.

Total charge = Outdoor Equipment charge + Indoor Equipment charge + Line-set charge

See *R410A Refrigerant Charging Charts, page 18*.

## Oil Charging Procedure

| ***NOTICE*** |
|---|
| **DAMAGE TO EQUIPMENT**<br><br>Do not charge the compressor with too much oil: compressor damage could result. The only way to drain oil from the compressor is to remove the compressor from the equipment. The following system damage could also occur:<br>• Failure of valves and pistons due to oil slugging.<br>• Excessive oil carryover.<br>• Loss of evaporator performance due to oil level build-up in the low-pressure side of the system.<br><br>**Failure to follow these instructions can result in equipment damage.** |

### Calculating POE Oil Charge

If the total R410A refrigerant charge for the system exceeds 9 kg (20 lb), use the chart to determine the appropriate POE oil charge required.

| **Final System R410A Charge** | **9–11 kg (20–25 lb)** | **11–13 kg (25–30 lb)** | **13–16 kg (30–35 lb)** |
|---|---|---|---|
| POE Oil Addition Requirements | 0.02 kg (1 oz) | 0.06 kg (2 oz) | 0.08 kg (3 oz) |

## R410A Refrigerant Charging Charts

**⚠CAUTION**

**HAZARD OF HIGH PRESSURE REFRIGERANT OR EQUIPMENT DAMAGE**

- Use R410A refrigerant only.
- Contents are under pressure: use caution when releasing pressure in the system or refilling.
- Charging and maintaining the refrigeration circuit must only be performed by qualified personnel.

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

The equipment comes factory supplied with a dry nitrogen holding charge.

The unit charging charts shown below are only intended to be used with the listed indoor and outdoor equipment matches as shown in the titles of the charts (MRA0611D and UCF0481I) and (MRA0221I and UCF0341I) and should not be used for any other equipment.

The charging charts are only intended for final verification of the unit charge. When first commissioning a unit during installation, always weigh in the proper equipment charge to the listed nameplate value plus the proper line-set adjustment.

See the *Installation Manual* for additional details.

Do not operate a compressor system that has a serious undercharge condition for more than 60 seconds.

Ensure that the TXV in the indoor unit has been properly adjusted prior to starting the unit.

Before using the charging charts below, ensure that the compressor circuit is energized and operating stably. If the system has not been running or requires the technician to start it up, allow the equipment to operate for at least 10 minutes before using the charts for charge adjustment.

These charts are valid for a wide variety of indoor and outdoor temperature ranges and unit loads however, for best results, the ambient temperature should be in the range of 15.5; 37.7°C (60–100°F) with the outdoor fan(s) operating at 100% and the indoor unit return air temperature should be between 21.1–26.6°C (70–80°F) with the rated IT air flow rate.

Do not allow the outdoor unit fans to vary their speed when using these charts to inspect the charge. Use the maintenance menu commands to lock the outdoor fans to 100% speed, evaporator fan speed set to the rated IT air flow rate of the unit, and the compressor **ON** for the duration of the inspection and charge adjustment period.

If the installed equipment is operating with an extreme under-voltage condition, do not use these charts for charge adjustment until after the under-voltage condition has been corrected. Ensure the required clearances for proper operation are satisfied, the condenser coil is clean, and the condenser fan is operating at full load.

### How to Use R410A Refrigerant Charging Charts

1. Use quality instruments, measure the liquid line pressure and temperature at the outdoor unit service port.
2. Find the measured liquid pressure on the bottom axis and follow it up to the equipment charging line.

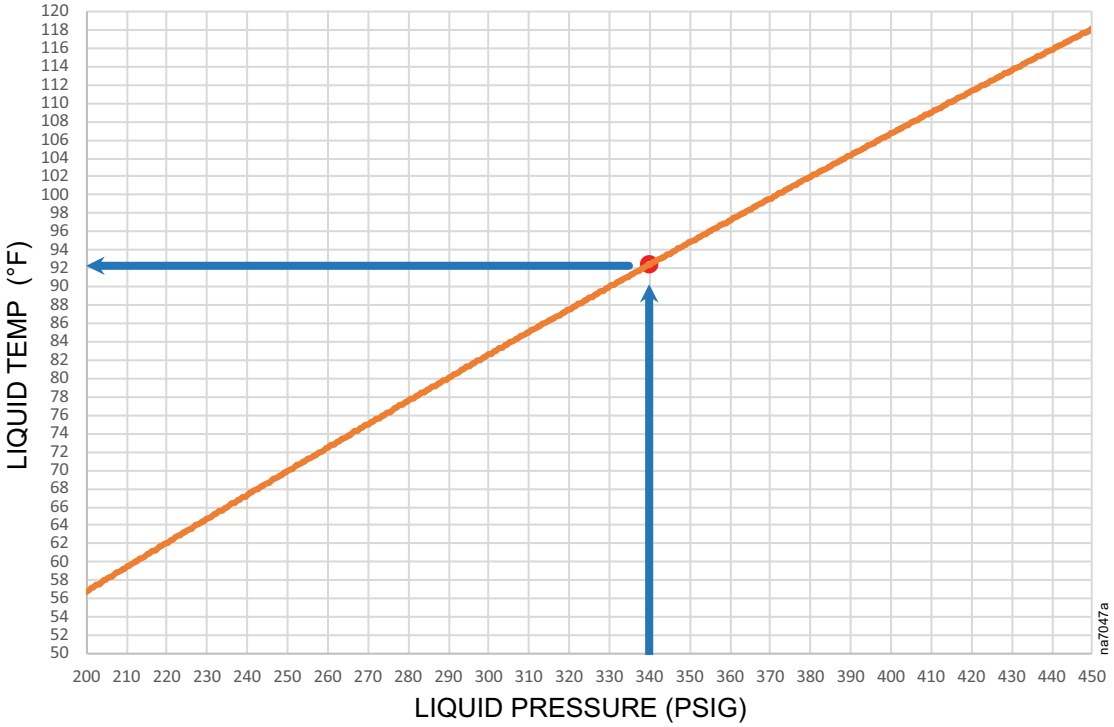
3. Read the corresponding liquid temperature from the charging chart and compare to the measured value.
4. If the measured temperature value is larger than the chart value, add charge to the equipment. If less, remove charge from the equipment.
5. After charge adjustment, collect new measurements and repeat steps 1–4 as necessary.
6. Adjust the equipment charge until the measured values are either on the line or that the measured liquid line temperature is no more than 0.6°C (1.0°F) lower than the chart value for the measured liquid pressure.
7. Record the final refrigerant system charge in the service documentation for future reference.

When using these charts to inspect a system that has been in operation for some time, follow these guidelines:

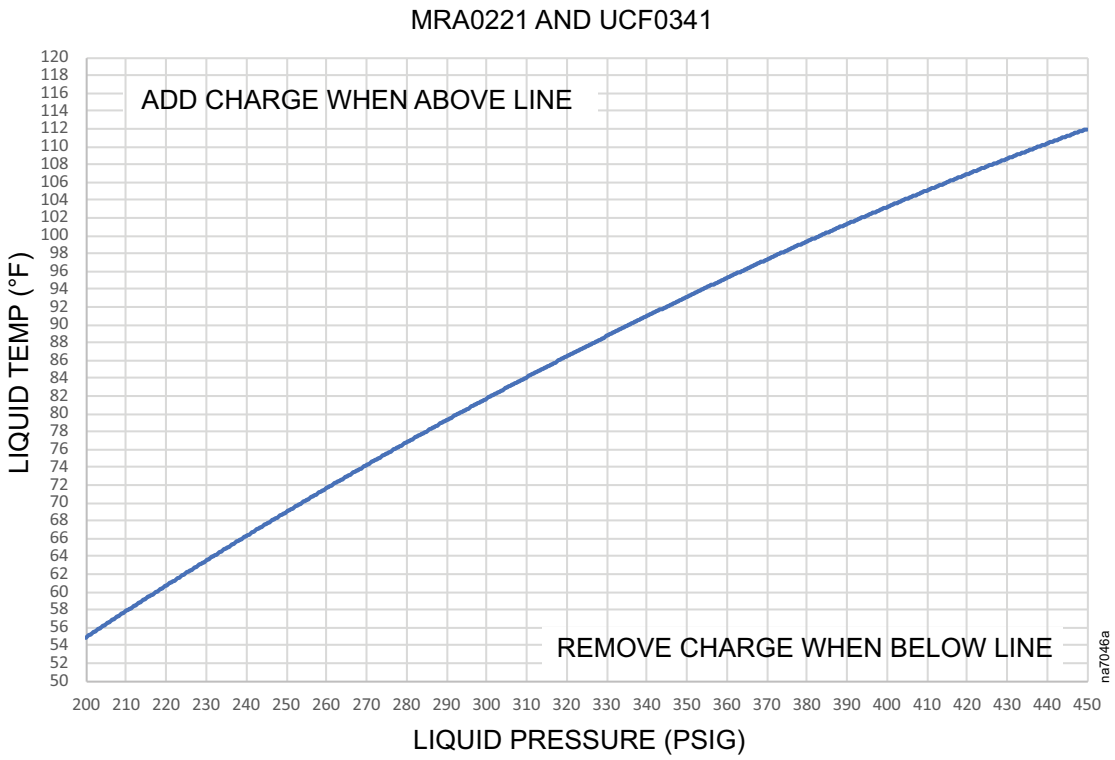
- If the measured liquid temperature is more than 1.1°C (2.0°F) higher than the chart value for the measured liquid pressure, inspect the system for leaks.
- When repairing system leaks, always use a dry nitrogen or other inert gas to protect the system piping.
- Always replace the refrigerant filter-drier when repairing refrigerant piping systems or exposing the piping system to moist air.
- Once all repairs are complete, perform a pressure test on the system, then evacuate the system to 350-500 microns and weight in the proper refrigerant charge based on the unit nameplate and line-set adjustment.

See the installation instructions included with the unit before use.

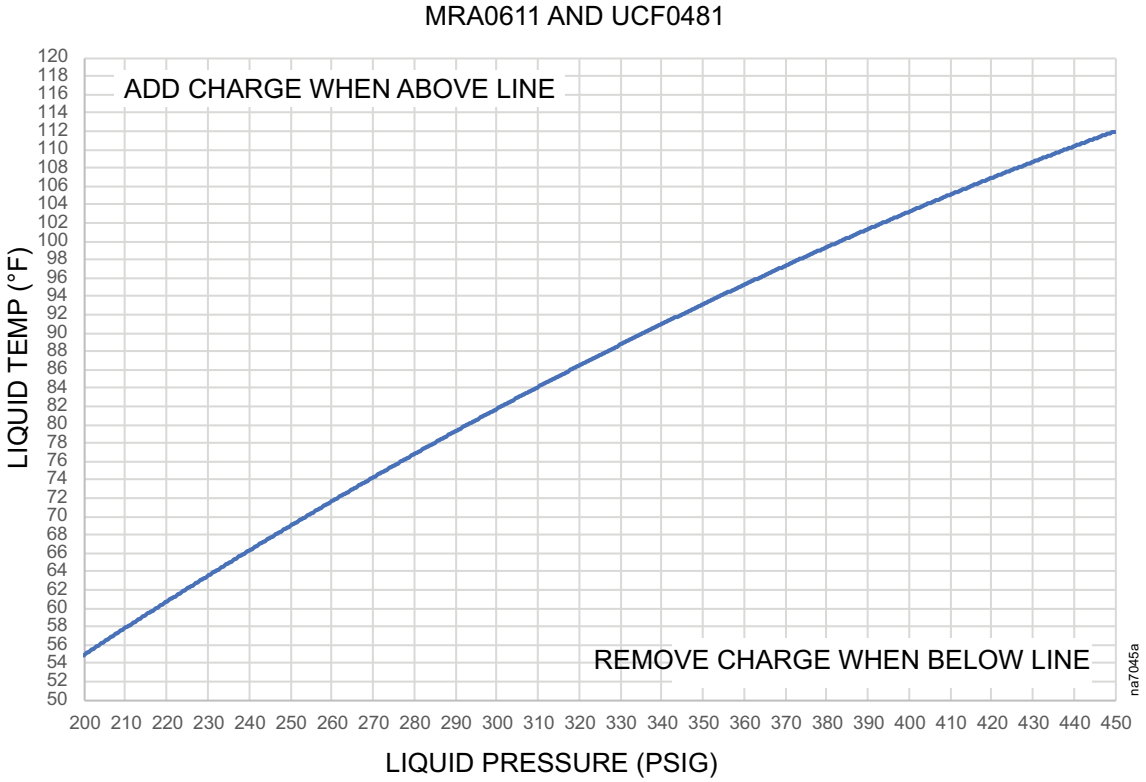
LIQUID DATA CHARGING CHART EXAMPLE



## R410A Refrigerant Charging Chart for MRA0221I and UCF0341I

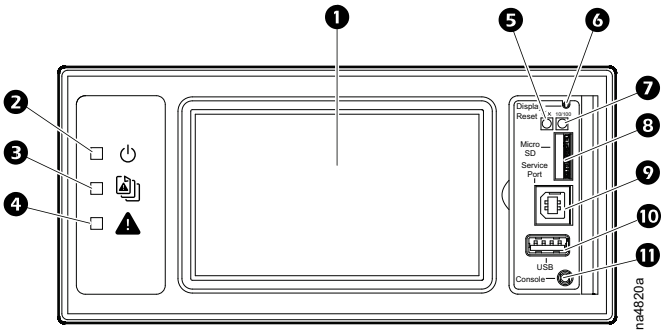



## R410A Refrigerant Charging Chart for MRA0611D and UCF0481I



# Operation

## Display Interface




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

## Alarm LED

This LED indicates active alarms on the display.

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

## Status LED

This LED indicates the status of the display.

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

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

This LED indicates the network status of the display.

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

# Using the Display

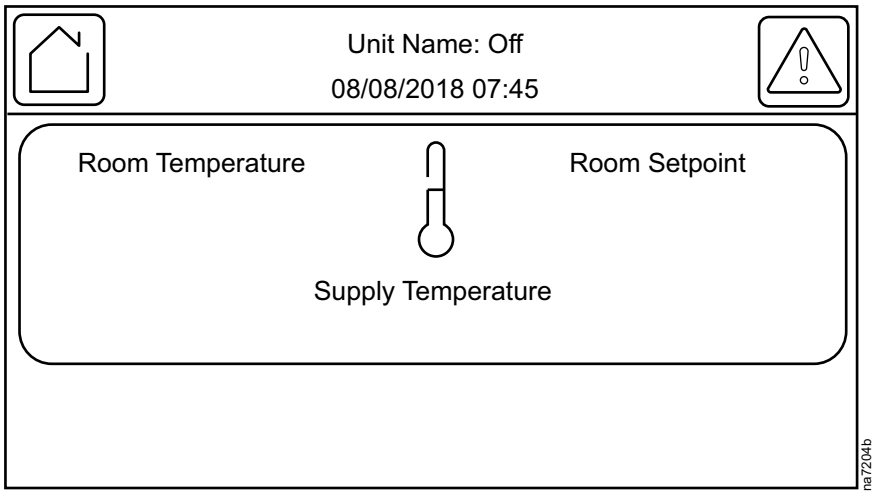
The display initializes and runs an LED test when power is applied to the cooling unit.

## Overview Screen

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

**NOTE:** Images are examples only to show operation of the display interface. Screens on your unit may vary.



## Home Screen/Main Menu

At any time during operation, press **Home** to return to the main menu. While on the main menu, press **Home** to toggle between the home and overview screen. To view active alarms, press **Alarms**.

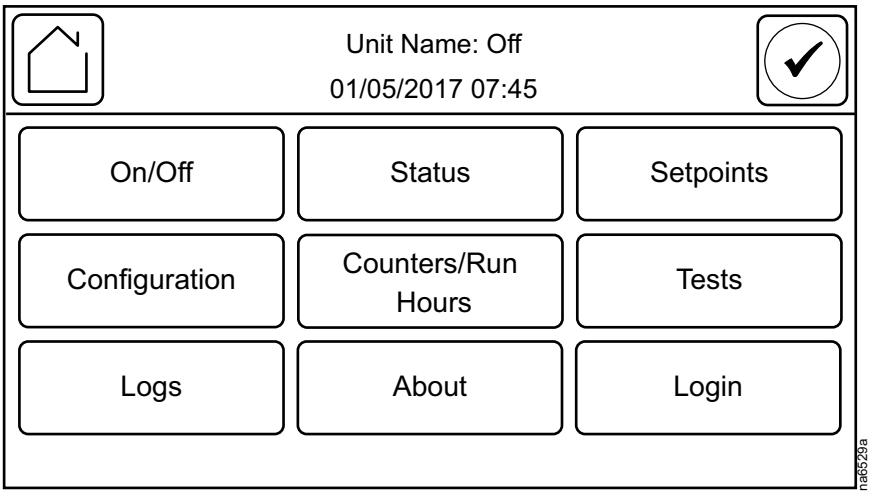
See *Alarms, page 55* for more information.

The **Alarms** button changes based on the current state of the unit.

| Symbol | Description |
|---|---|
| | No alarms: No alarms are present. |
| | Informational: Provides details on an alarms that are not a warning or critical. |
| | Warning: An alarm condition requires attention and could jeopardize your data or equipment if its cause is not addressed. |
| | Critical: A critical alarm exists, which requires immediate action. |

Main menu options appear on the display as shown in the example below.

**NOTE:** Menus will vary depending on unit type.



## Menu Description

- **ON/Off:** The **On/Off** screen is used to turn the unit on or off.

See *Unit Start Up/Shut Down, page 30*.

- **Status:** Contains menus with sensor reading information, unit operation information, runtimes and counters, and component information.

See *View Status Readings, page 46*.

- **Setpoints:** Contains the setpoints to control the environment.

See *Setpoints, page 73*.

- **Configuration:** Contains menus for user-configurable settings for the unit and network. The **Service** menu is also located here.

See *Cooling Unit Configuration, page 33* and *Cooling Group Configuration, page 35*.

- **Counters/Run Hours:** Contains menus to reset run hours and counters for components installed in the unit.

See *Counter/Run Hours, page 41*.

- **Tests:** Contains menus to calibrate the touch screen and test the display LEDs.

See *Tests, page 29*.

- **Logs:** These screens save status information and record events and configuration changes.

See *Logs, page 52*.

- **About:** These screens display identifying information that is helpful when obtaining service.

See *About the Network, page 50*, *About the Unit, page 51*, and *About the Display, page 51*.

- **Login/Logout:** Used to log into or log out of the unit.

See *Logging In/Password Entry, page 28*.

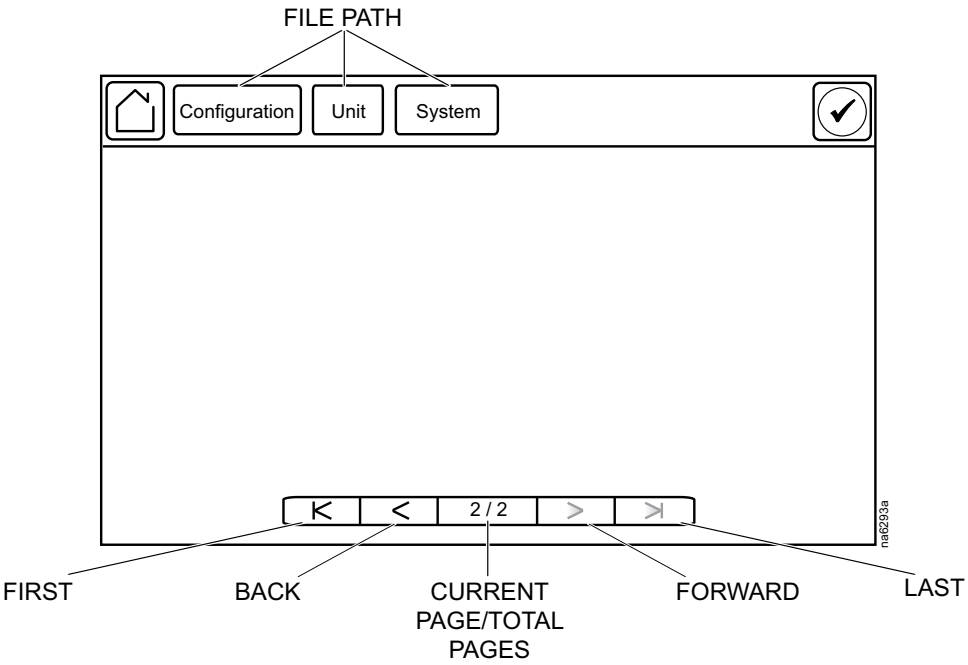
## Display Controls

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. 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.

**NOTE:** Images are examples only to show operation of the display interface. Screens on your unit may vary.




## 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.

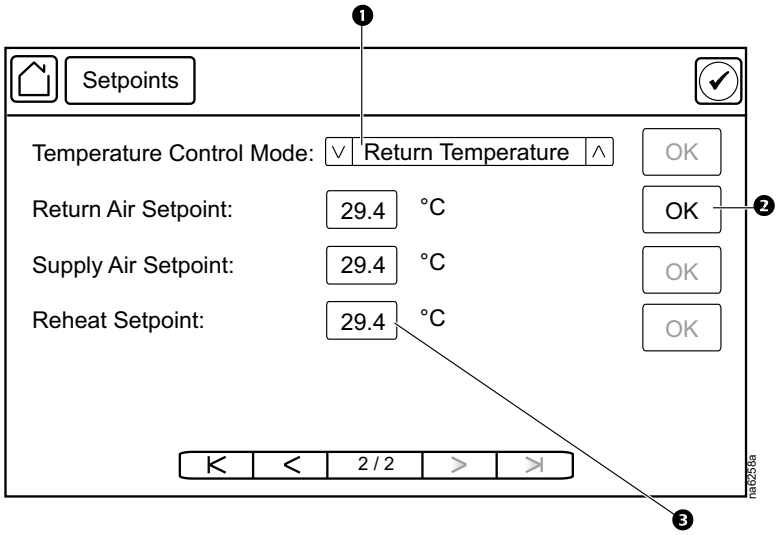
Subsequent options are listed and defined under the path statement.

## Changing Settings

**NOTE:** Images are examples only to show operation of the display interface. Screens on your unit may vary.

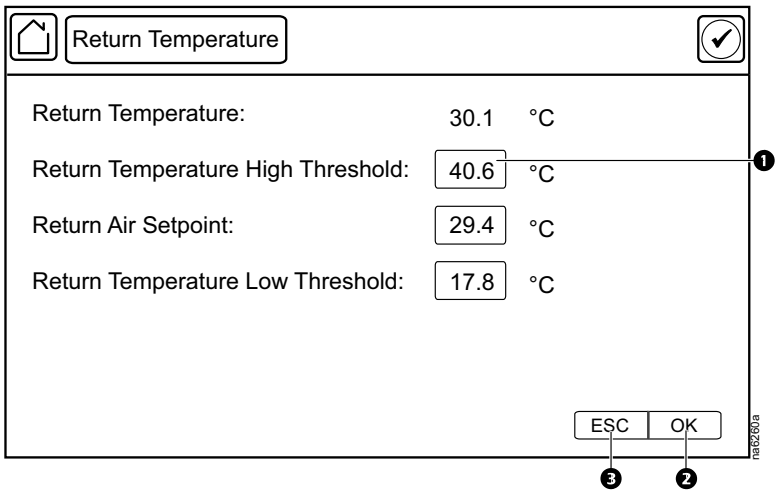
Screens that have mixed types of settings (e.g., list items and field items) require changes to be confirmed individually after being changed.

1. Select the option or enter a value for the setting to be changed.
   a. For list items ❶, press the up and down arrows to select the setting.
   b. For field items ❸, enter a value for the setting.
2. Press **OK** ❷ to confirm after each individual setting change.




Screens that only contain field items can be confirmed together with a single **OK** button.

1. Enter a value for any or all field items ❶.
2. Press **OK** ❷ to confirm all changes at once, or press **ESC** to exit without accepting changes ❸.



## Logging In/Password Entry

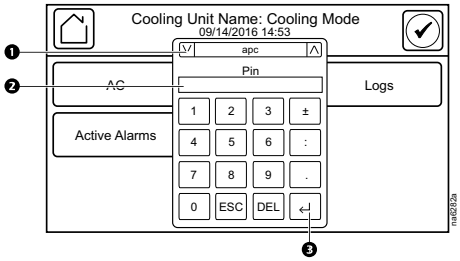
**Path: Main > Login**

The unit display interface 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 ❶.

   **NOTE:** The default user ID is `apc`.
3. Enter your password in the **Pin** field ❷ with the keypad.

   **NOTE:** The default password is `1234`.
4. Select **Enter** ❸.




If the password was not entered from the **Login** screen on the main menu, you will be prompted to enter the password when attempting to change a setting. The unit default password is `1234`.

See *Add a New User or Edit an Existing User, page 42* for information on editing users and passwords.

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

| Symbol | Description |
|---|---|
|  | **Home** when the system is locked. |
|  | **Home** when the system has been unlocked by a user. |

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

See *Screen Visibility and Audible Tones, page 44*.

# Tests

## 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.

**NOTE:** The touch screen will need to be calibrated every time the firmware on the touch screen is updated.

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

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

## Testing Display LEDs and Annunciator

**Path: Main > Tests > Annunciators**

1. Press **Start** to test the display LEDs and annunciator.

   The display LEDs will cycle through a green, orange, and red illumination pattern and the annunciator will sound.
2. Press **Stop** to stop testing.

# Unit Start Up/Shut Down

## Start the Cooling Unit

**Path: Main > On/Off**

1. Select **On** for **On/Off**.

   If you are not logged in, a prompt will appear to enter your password.

2. Enter your password if required.

   The header will now display **Uniflair SP: On**.

The cooling unit will run according to the configured settings.

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

## Stop the Cooling Unit

**⚠⚠DANGER**

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

The **Off** 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/Off**

1. Select **Off** for **On/Off**.

   If you are not logged in, a prompt will appear to enter your password.

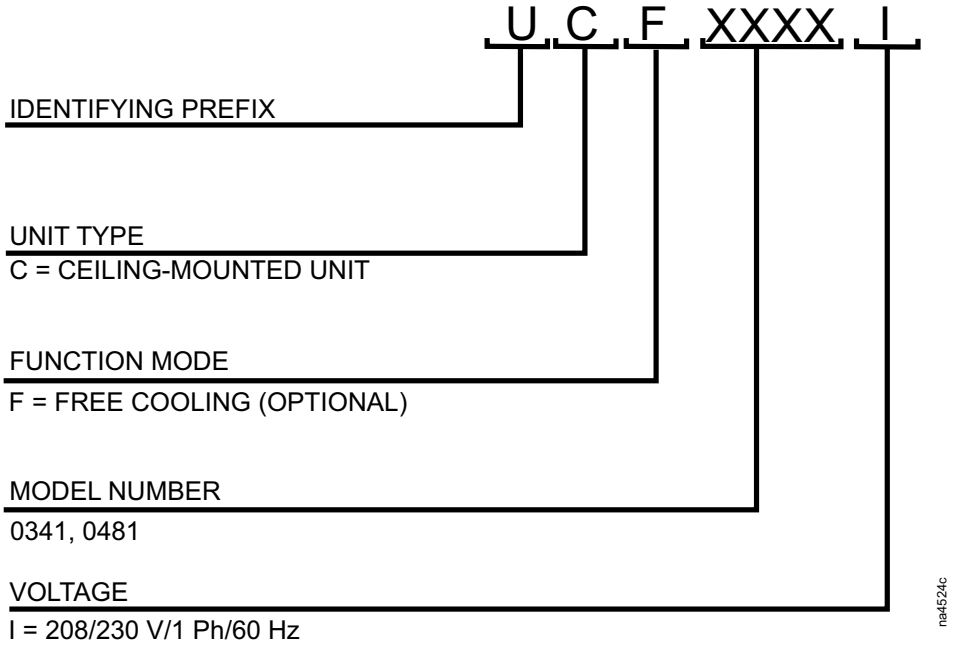
   The header will now display **Unit Name: Off**.

   **NOTE:** The unit can also be stopped via an external signal connected to the **Remote On/Off**.

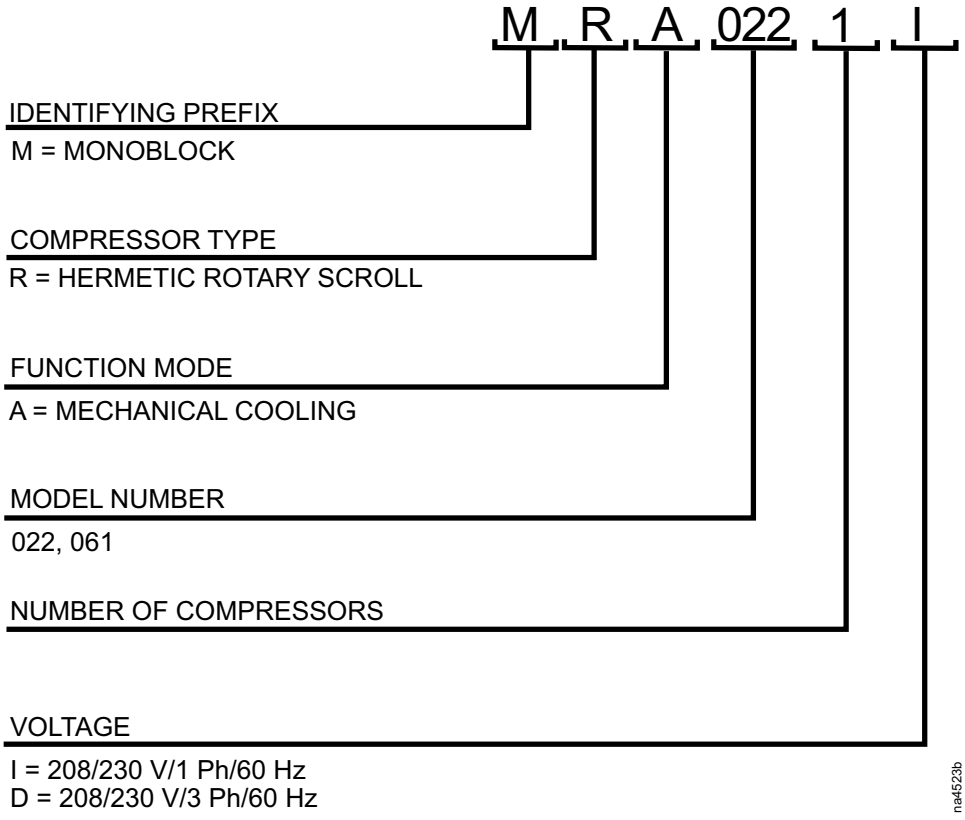
# Unit Overview

## Model Nomenclature

### Indoor Units




### Outdoor Units



# Uniflair SP Overview

Uniflair SP direct-expansion air conditioning units with air-cooled condensing units are designed for Telecom, ITE, and computer room/DC applications. Uniflair SP units have two separate sections: the evaporating section (UCF) in the room to be air conditioned and the condensing section (MRA), that is installed externally. The evaporating section is installed on the ceiling and enables management of room parameters through a sophisticated microprocessor controller. The UCF model can be accessorized to include an optional intelligent free-cooling system that allows the free-cooling of the room even with high external temperatures. The UCF units are intended for ceiling mount, horizontal flow applications with a free air discharge.

When the Uniflair SP consists of a DX system and an Air Economizer damper, only one subsystem (either DX or Air Economizer) may be in operation at a time.

Both the DX and Air Economizer control the room air temperature to the selected setpoint.

Uniflair SP also has an external condensing unit for which the controller is responsible for maintaining condensing pressure.

The system can also operate in a group. The group can be configured to operate on their local return air sensors or the group average return temperature. If multiple units exceed the setpoint + deadband when operating on their local temperature sensors, the group controller starts the unit that exceeds the setpoint + deadband by the largest margin. Another compressor starts after the stage delay expires.

When operating in average temperature mode the deadband is divided into N sub regions (deadband/number of available compressors). When the return temperature reaches setpoint + sub regionN, another compressor starts.

The same strategy applies when the group operates in economization mode.

The group also supports redundancy, including failover to a backup, run time balancing and Load Assist (Cooling Only).

# General Configuration

## Import and Export Unit Configuration

It is possible to configure a cooling unit by importing the settings of another cooling unit from a USB drive.

### Export

1. Navigate to **Main > Configuration > Service > USB**.
2. Insert the USB drive into the USB port on the display.
3. Press **Export**.

   The configuration of the unit will be exported to the USB drive.

   A message stating “Abort export of data to USB drive” will disappear when exporting is complete.
4. Remove the USB drive from the USB port.

### Import

1. Navigate to **Main > Configuration > Service > USB** .
2. Insert the USB drive into the USB port on the display.
3. Press **Import**.

   The configuration of the unit will be downloaded from the USB drive.
4. Press **OK** when the ”Import Complete” message appears.
5. Remove the USB drive from the USB port.

## Cooling Unit Configuration

The cooling unit 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.

### Fans

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

- **Fan Mode:** The current fan mode. Select **Auto** or **On**.
- **Fan Speed:** The current fan speed.

### System

**Main > Configuration > Unit > System**

- **Number of Units in Group:** The number of units in the group.
- **Altitude:** Altitude of the location of the unit. (-2000 to 15,000 ft)

  **Startup Delay:** Startup delay at power on. (0–300 seconds)
- **Warn when unit is off:** When the unit state is changed from **ON** to **OFF** on the display interface, an **Off Due to User Action** alarm activates.

## Thresholds

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

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

- **Room Air Temperature Low Threshold:** The low temperature threshold for the room air temperature. (0 to 32°C (32 to 90°F))
- **Room Air Temperature High Threshold:** The high temperature threshold for the room air temperature. (15 to 48°C (60 to 118°F))
- **Supply Temperature High Threshold:** The high temperature threshold for the supply air as averaged by the supply air temperature sensors. If the temperature exceeds this threshold, an alarm will occur. (15 to 48°C (60 to 118°F))

## Free Cooling

**Main > Configuration > Unit > Free Cooling**

- **Free Cooling Enable:** Select **Yes** or **No**.
- **Free Cooling Mode:**
  - **Differential Dry Bulb:** Free-cooling is engaged when the outdoor air temperature is less than the room air temperature setpoint plus the **Outdoor Air Temperature Threshold** minus 1.1°C (2.0°F). It is disengaged when the outdoor air temperature exceeds the room air temperature setpoint plus the **Outdoor Air Temperature Threshold**.
  - **Fixed Enthalpy:** Free-cooling is engaged when outdoor air enthalpy is less than the enthalpy calculated using the outdoor humidity and the room air setpoint plus the **Outdoor Air Temperature Offset** minus 1.1°C (2.0° F) and the outdoor air temperature is less than the room air setpoint plus the **Outdoor Air Temperature Offset**. It is disengaged if the outdoor air enthalpy is at least the return air enthalpy or the outdoor air temperature exceeds the room air setpoint plus the **Outdoor Air Temperature Offset**.
  - **Fixed Dry Bulb:** Free-cooling is engaged when the outdoor air temperature is less than the room air temperature setpoint plus the **Outdoor Air Temperature Offset** minus 1.1°C (2.0°F). It is disengaged when the outdoor air temperature exceeds the room air temperature setpoint plus the **Outdoor Air Temperature Offset**.

## Inputs

**Main > Configuration > Unit > Inputs**

- **Smoke Fire Normal State:** Select **Normally Closed** or **Normally Open**.
- **Remote Shutdown Normal State:** Select **Normally Closed** or **Normally Open**.

# Cooling Group Configuration

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

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

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

## Overview

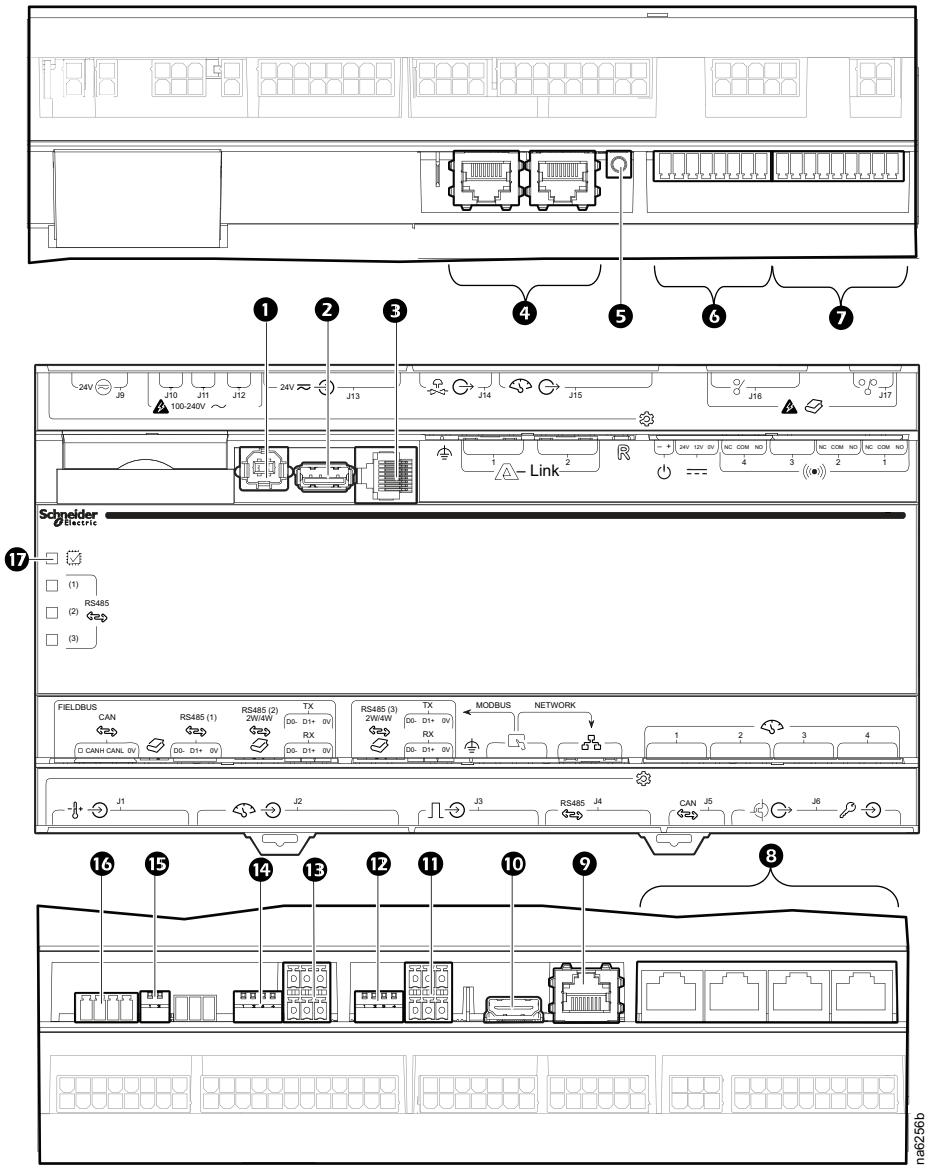
The cooling group configuration settings determine which components are available and how the cooling group should operate. Up to units installed in the same room can be connected in a local network to manage the environmental conditions as a group. The following guidelines describe group configurations:

**NOTE:** Units in a network can be connected at a maximum of 500 m (1640 ft).

**NOTE:** All units connected to the network must have the same version of firmware.

To communicate on the local network, the units are configured so that each of them can communicate the information necessary to operate correctly. Electrical connections must be completed step-by-step.

## Interface Connections




| Item | Description |
|---|---|
| ❶ | USB device port |
| ❷ | USB host port |
| ❸ | Serial port |
| ❹ | A-Link ports |
| ❺ | Reset button |
| ❻ | Output relay 4/standby input |
| ❼ | Output relay 1–3 |
| ❽ | Universal sensor ports |
| ❾ | Network connection |

| Item | Description |
|---|---|
| ❿ | Touch screen display connection |
| ⓫ | Modbus connection |
| ⓬ | Modbus configuration switches |
| ⓭ | Fieldbus Modbus connection |
| ⓮ | Fieldbus Modbus configuration switches |
| ⓯ | Fieldbus CANbus configuration switches |
| ⓰ | Fieldbus CANbus connection |
| ⓱ | Processor status LED |

## A-Link Ports

| NOTICE |
| --- |
| **CAT 5 PINOUT**<br><br>Devices connected on the A-Link ports should use a standard pin-out (1-1, 2-2, 3-3, 4-4, 5-5, 6-6, 7-7, 8-8) CAT5 cable only.<br><br>**Failure to follow these instructions can result in equipment damage.** |

**NOTE:** All input and output connections should be wired as Class 2 circuits.

The A-Link bus connection allows a maximum group of twelve units to communicate with one another.

To enable the units to function as a group, link them together using a standard pin-out CAT-5 cable with RJ-45 connectors. The A-Link bus must be terminated at the first and last unit installed in the group. See example below. An A-Link terminator is supplied with the unit.

**NOTE:** The maximum wire length for the entire group must not exceed 305 m (1,000 ft).

## Group Configuration Settings

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

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

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

- **Number of Standby Units:** Enter the number of units in standby as backup units. (0–10)
- **Preferred Role:** Select whether the unit is the **Primary Only** unit or if the unit role is determined by cooling demand (**Automatic**). If **Automatic** is selected, the number of primary units is the difference between **Number of Units in Group** and **Number of Standby Units**.

  **NOTE: Number of Units in Group** is set in the **Main > Configuration > Unit > System** menu.
- **Cooling Assist:** When **Enabled**, the unit provides extra cooling capacity as 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 standby state.
- **Room Temperature Mode:**
  - **Local:** The cooling units will be managed independently. A cooling demand is realized if the room air temperature exceeds the sum of the setpoint and the deadband. The demand is satisfied when the room air temperature returns to the setpoint. When more than one unit has a demand the group controller will choose the unit with the highest local room temperature. Additionally, the group controller will wait the **Compressor Stage Delay** before engaging the next unit.
  - **Average:** The cooling units will be managed as a group. The proportional band, setpoint + deadband is divided into sub-regions (deadband/number of active units). When the room air temperature crosses into a subregion the group controller selects a unit to satisfy the demand. The group controller will select a unit that has the highest local room air temperature. If the room air temperature has crossed multiple subregions the group controller will wait the **Compressor Stage Delay** before engaging the next unit.
- **Run Time Balancing:** When **Enabled**, the system maintains similar run-times between units in the group. When the difference between the runtime hours of the cooling units in the system exceeds the user entered value, 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.
- **Switchover Handoff Time:** When switching from the primary unit to a backup unit, the units will operate together for this length of time, in minutes, before the primary unit is turned off.
- **Switchover Mode:** Select which process will be used to change to backup units.
  - **Runtime Difference:** This mode uses the **Runtime Balancing Difference** to determine the switchover time.
  - **Time Relative:** This mode uses the **Relative Switchover Time** to determine the switchover time.
  - **Day of Week:** This mode uses the **Day of Week Switchover Time** to determine the switchover time.
- **Runtime Balancing Difference:** Enter the maximum time difference in operating hours between units.
- **Relative Switchover Time:** Enter the number of minutes, hours, and days for the relative switchover time. This is the total length of time from the last unit switchover NOT run time.
- **Day of Week Switchover Time:** Select the day and enter the time at which unit switchover will occur.

## Configure Modbus

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

**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.
- **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).

## Adding and Removing Units

1. Navigate to **Main > Configuration > Unit > System**.
2. Set **Number of Units in Group** to the number of units to be included in the group.

If the value set for **Number of Units in Group** does not match the number of units detected by the group controller, an **Unexpected Number of Units in Group** alarm will activate.

## Redundancy

A unit in the group has one of the possible states:

- **Off:** The unit is powered but not performing any functions.
- **Standby:** The unit is not currently providing environmental control but is ready to become active if an active unit fails or requires assistance.
- **Assist:** The unit is providing environmental control in response to a request for assistance. When assistance is no longer required, the unit returns to the standby state. The type of assistance being provided will be displayed immediately after **Assist**.

## Operation

The number of active units in the group is determined by the **Number of Units in Group** minus the **Number of Standby Units in Group**. By default, the group controller will select which units are primary units and which units are standby units. The group controller will designate the unit with the least system runtime as an active unit. A unit can be forced to be an active unit by selecting **Primary Only** as the **Preferred Role** on the **Main > Configuration > Unit > Group** screen.

The group controller maintains the active number of units in the group. If there are no standby units available to replace an active unit, a **No Standby Units Available** alarm is activated.

Events that activate a standby unit are configured via the Web interface; the active unit will switch over to a standby unit if one is available. When the issue with the active unit has been resolved and the alarm is cleared by user acknowledgment, the previously active unit will come back online, and the group controller will return the currently active unit to standby mode.

See the *User Guide* or *Online Guide* for information on the Web interface.

## Runtime Balancing

Runtime balancing maintains even runtimes on units within a group. Runtime balancing can be turned off via the **Run Time Balancing** setting on the **Main > Configuration > Unit > Group** screen.

An active unit will switch roles with a standby unit when the system runtime exceeds the set threshold. The threshold is set in one of the following ways:

- **Differential:** The roles are switched when the system runtime of the active unit exceeds the system runtime of the standby unit. This difference in runtime is set in the Runtime Balancing Difference setting on the **Main > Configuration > Unit > Group** screen.
- **Time relative:** The roles are switched after the **Relative Switchover Time** length of time since the previous switchover.
- **Scheduled:** The roles are switched on the day and time entered in the **Day of Week Switchover Time** setting.

When the switchover occurs, the group controller selects a standby unit with the least amount of system runtime. The group controller will also maintain both units running until the **Switchover Handoff Time** expires.

## Assist

Assisting activates a standby unit to assist the active unit when the active unit cannot maintain the relevant setpoint alone. Assisting is provided for cooling. These settings are enabled or disabled on the **Main > Configuration > Unit > Group** screen with the **Cooling Assist** setting.

Only one standby unit is allocated to assist at a time.

### Cooling Assist

The group controller will assign a standby unit to assist when the air temperature process variable exceeds the setpoint plus the deadband plus **Cooling Assist Threshold**. The unit will be returned to standby mode when it no longer has a demand. **Cooling Assist Threshold** is set on the **Main > Configuration > Service > Setpoints > Assist** screen.

# Control the Environment

## Setpoints

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

**Path: Main > Setpoints**

- **Room Setpoint:** Temperature to be maintained in the room (16.7–35.0°C (62.1–95.0°F))

# Counter/Run Hours

## Run Hours

The cooling unit records the number of hours select components have been in operation. When a component is replaced, use the **Run Hours Reset** menu to reset the run hours for the displayed component to zero. These settings are read-only values.

**Path: Main > Counters/Run Hours > Run Hours**

- System Run Hours
- Compressor Run Hours
- Free Cooling Run Hours
- Air Filter Run Hours
- Evaporator Fan 1 Run Hours
- Evaporator Fan 2 Run Hours
- Evaporator Fan 3 Run Hours (12 kW unit only)
- Condenser Fan 1 Run Hours
- Condenser Fan 2 Run Hours (12 kW unit only)

## Thresholds

Thresholds can be set to activate alarms to alert you to violations when the threshold is exceeded. The following thresholds can be set on the **Main > Counters/Run Hours > Thresholds** screen:

- **Air Filter Service Alarm Enable:** Select **Enabled** or **Disabled**.
- **Air Filter Service Interval:** The default is 18 weeks.
- **Reset Air Filter Service Alarm:** Select **Yes** or **No**.
- **Reset Unit Service Alarm:** Select **Yes** or **No**.

## Cycle Counters

The cycle counters record the number of on/off cycles of each compressor.

**Main > Counters/Run Hours > Cycle Counters**

- **Compressor Cycle Counter:** The number of on/off cycles for the compressor.

## Run Hours and Service Intervals

### Reset Run Hours

**Path: Main > Configuration > Service > Run Hours Reset**

Settings under this menu are used to reset the run hour alarms that are configured as reminders for regular maintenance inspection.

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

- System Run Hours Reset

  **NOTE: System Run Hours** should not be reset to zero (0) since this is the total time that the unit has been in operation and is not dependent on any component replacement.
- Compressor Run Hours Reset
- Free Cooling Run Hours Reset
- Air Filter Run Hours Reset
- Evaporator Fan 1 Run Hours
- Evaporator Fan 2 Run Hours
- Evaporator Fan 3 Run Hours (UCF0481I only)
- Condenser Fan 1 Run Hours
- Condenser Fan 2 Run Hours (MRA0661D only)
- Compressor Cycle Counter Reset

# User Security Settings

The **Security** menus under the **Display** menu include options for user access to the unit.

## 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

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.

# Display Settings

The **Display** menus set the display interface settings, including time and date, units, passwords, and time-out. You can also adjust the contrast and sound settings.

## Language, Date, Time, and Temperature

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

- **Language:** Select the correct language for the display.
- **Date Format:** Select the display format for the date.
- **Temperature:** Select **Metric** or **US Customary** for temperature format.
- **Manual:** Manually enter the current and time instead of retrieving from a server.
  - **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.
- **Synchronize with NTP Server:** Select to sync the time and date with the Network Time Protocol server.

## Screen Visibility and Audible Tones

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

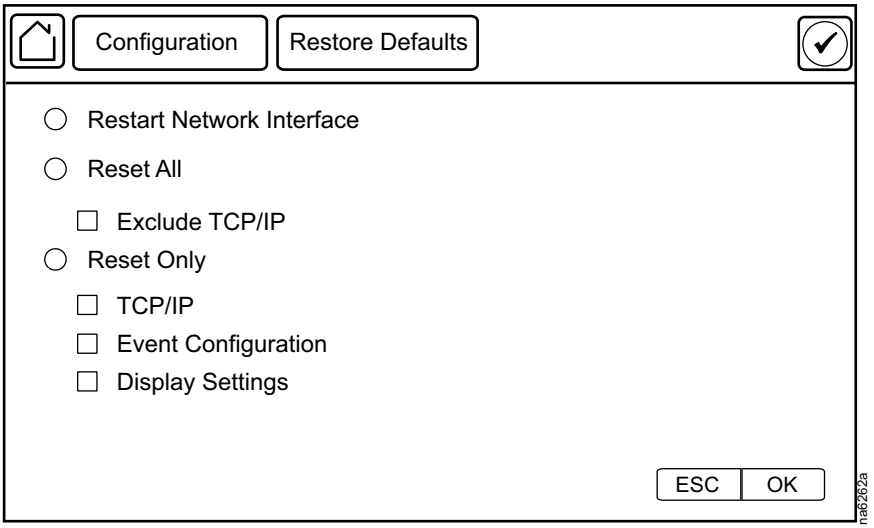
- **Alarm Volume:** Select the level of audio at which alarms will sound (**Off**, **Low**, **Medium**, or **High**).
- **Button Volume:** Select the volume at which a tone will be produced every time a button is pressed on the display interface. The audible tone can also be set to **Off**.
- **Brightness:** Controls the visibility of the display.
- **Enable Backlight Timeout: Enable** or **Disable** backlight timeout settings.
- **Backlight Timeout:** Adjust the backlight timeout settings.
  - **Minutes:** 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.

## Restore Defaults

**Path: Main > Configuration > Restore Defaults**

The **Restore Defaults** screen is used to restart the display and reset display settings to factory defaults.

**NOTE:** The controller settings will not be restored.



# 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

### TCP/IPv4 Settings

**Path: Main > Configuration > Network > TCP/IPv4**

Enable IPv4 (if applicable), and select the **Address Mode** (**Manual**, **DHCP**, **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 Settings

**Path: Main > Configuration > Network > 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 Settings

**Path: Main > Configuration > Network > Web Access**

Enable Web (if applicable) and select the **Access Mode** (**HTTP** or **HTTPS**) and enter the **Port**.

### FTP Server Settings

**Path: Main > Configuration > Network > FTP Server**

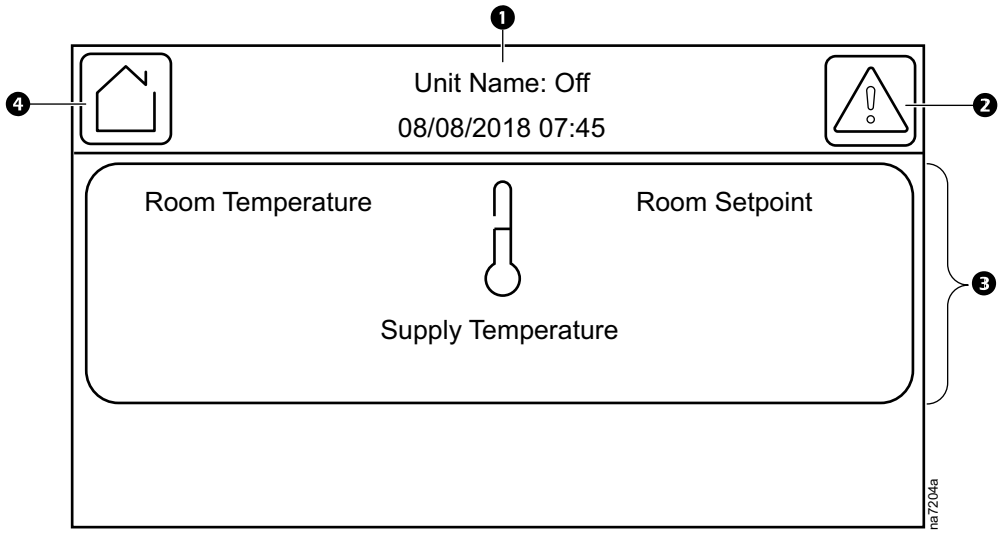
Enable FTP (if applicable) and enter the **Port**.

# 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 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.




| Item | Description |
|---|---|
| ❶ | Unit operational mode status and current date and time<br>• Initializing: The J5 controller hardware is initialized and configured. A warning alarm **Unit Configuration Not Completed – Personality** is annunciated if the unit capacity has not been configured. This setting is usually done at the factory; however, if the J5 controller has been replaced in the field, the service personnel must set this value.<br>• Delaying: The controller is waiting for the **Startup Delay** to expire.<br>• Maintenance: The controller is in maintenance mode. The operator has control of the actuators in this state.<br>• Off: The cooling function is disabled.<br>• Standby: The unit is ready to operate if a primary unit fails or needs assistance.<br>• No demand: The cooling function is available, but the environmental conditions do not require cooling.<br>• Cooling: The compressor is engaged.<br>• Free cooling: The free cooling damper is open.<br>• Idle: An error occurred that caused the cooling function to shut down.<br>• Unknown: The controller is in a state that the display does not know about. This is not a likely scenario. |
| ❷ | Alarms button |
| ❸ | • **Room Temperature:** The current room temperature.<br>• **Room Setpoint:** The current room setpoint.<br>• **Supply Temperature:** The average temperature from the top and bottom supply air temperature sensors connected to this unit. |
| ❹ | Home button |

# Cooling Unit Status

**Path: Main > Status**

Status information for the environment, cooling unit, and components installed in the unit are provided in sub-menus. All of the status screens provide read-only information.

## DX

**Path: Main > Status > DX**

- **Compressor:** The current state of the compressor. (**On** or **Off**)
- **Discharge Pressure:** The pressure at the discharge line. (0–44 bar (0–638 psi))
- **Condensing Temperature:** The condensing temperature of the refrigerant at the output port of the compressor. (77.9–68.5°C (172.2–155.4°F))

## Fans

**Path: Main > Status > Fans**

- **Commanded Evap. Fan Speed:** The commanded fan speed percentage of the evaporating fans.
- **Commanded Cond. Fan Speed:** The commanded fan speed percentage of the condenser fans.

## Humidity

**Path: Main > Status > Humidity**

- **Average Outside Air Humidity:** The average outside air humidity of the group. (%RH)

## Free Cooling

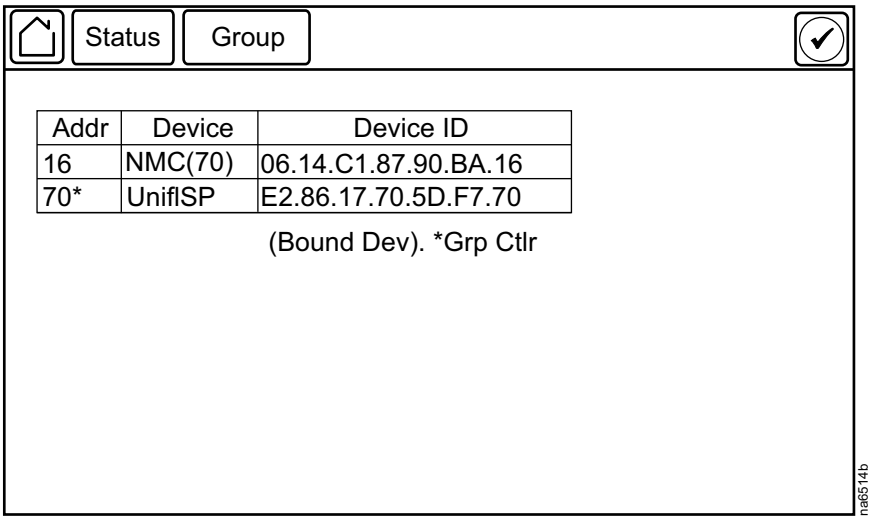
**Path: Main > Status > Free Cooling**

- **Free Cooling Damper:** The opening position, as a percentage, for the free cooling damper.

# Group Network Information

**Path: Main > Status > Group**

The **Status > Group** screen displays networking information about the A-Link bus. Each display will generate its own table: this table can be used to aid in troubleshooting group communication issues.




- **Addr:** This is the CAN address of the device displayed as a hex value.
  - An asterisk (*) denotes the group controller.
- **Device:** This is the type of device.
  - **NMC:** The display interface. The first entry is always the display interface being viewed. If a value appears in parentheses after “NMC,” this value is the address of the unit connected to the NMC.
  - **UnflSP:** A Uniflair SP unit.
- **Device ID:** A randomly generated code that uniquely identifies the device.
- **(Bound Dev)** The device (UnflSP) is connected to the NMC displayed in the first line.

# Temperature Readings

**NOTE:** Display settings vary depending on unit configuration.

**Path: Main > Status > Temperature**

- **Room Temperature:** The temperature from the room air temperature sensor connected to this unit. (–40 to 120°C (–40 to 248°F))
- **Supply Temperature:** The temperature from the supply air temperature sensor connected to this unit. (–40 to 120°C (–40 to 248°F))
- **Outdoor Air Temperature:** The temperature from the outdoor air temperature sensor connected to this unit. (–40 to 120°C (–40 to 248°F))
- **Outdoor Dewpoint Temperature:** The temperature from the outdoor dew point temperature sensor connected to this unit.
  (–67 to 54°C (–88.6 to 130°F))

  **NOTE:** Optional with free-cooling damper kit

# Input States

**Path: Main > Status > Discrete Inputs**

The **Discrete Inputs** menu provides the current state of discrete input connections.

**NOTE:** These are read-only values.

- **Remote Shutdown Active:** The current state of the remote shutdown.
- **Airflow Good:** The current state of the airflow.
- **Air Filter Clogged:** The current state of the air filter.
- **Compressor On:** The current state of the compressor.
- **Low Suction Pressure:** The current state of the low suction pressure.
- **Smoke/Fire Detected:** The current state of smoke or fire.
- **Condenser Powered:** The current state of the condenser.
- **Condensate Pan Full:** The current state of the condensate pan.

# About the Network

View identifying information about the cooling network parameters (IPv4 or IPv6).

**Path: Main > About > Network**

**IPv4 Configuration:** If IPv4 is used, this section will display IPv4 information.

- **Enabled:** Identifies whether the specified network is enabled or not.
- **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.

**IPv6 Configuration:** If IPv6 is used, this section will display IPv6 information.

Press **Addresses** to view all assigned IPv6 addresses.

- **Enabled:** Identifies whether the specified network is enabled or not.
- **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:** 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:** DHCPv6 is used to obtain addresses AND other configuration settings. This is known as DHCPv6 stateful.
  - **Non-Address and Information Only:** 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 Unit

View identifying information that is helpful when obtaining service.

**NOTE:** Displayed settings are read-only and will vary based on unit type and configuration.

**Path: Main > About > Unit**

- **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.
- **Manufacture Date:** The date the cooling unit was manufactured.
- **Controller Bootloader Revision:** The revision of the controller bootloader.
- **PIC1 Firmware Revision:** The firmware revision of the PIC1 processor.
- **PIC1 Bootloader Revision:** The bootloader revision of the PIC1 processor.
- **PIC2 Firmware Revision:** The firmware revision of the PIC2 processor.
- **PIC2 Bootloader Revision:** The bootloader revision of the PIC1 processor.

# About the Display

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

View identifying information about the physical display device.

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

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

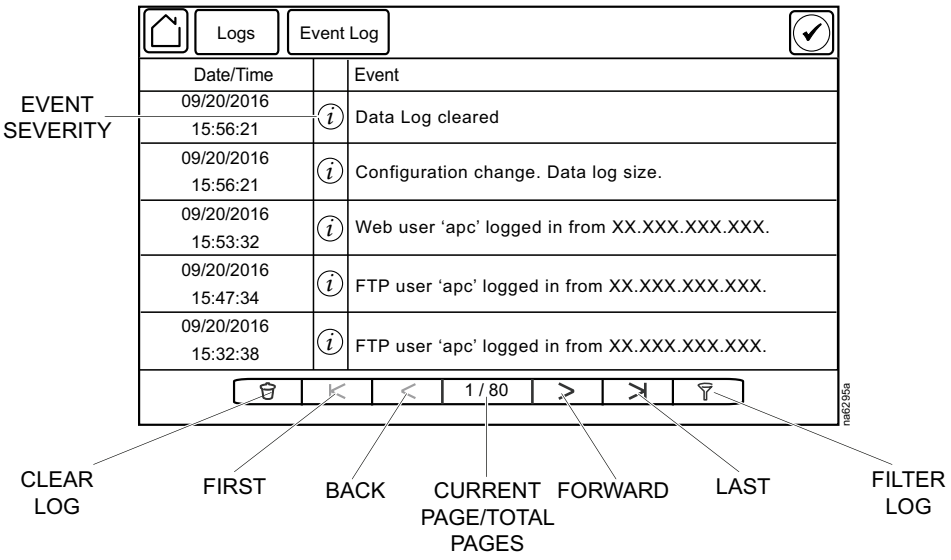
View identifying revision information about the display interface firmware:

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

# Logs

## Event Log

The **Event Log** saves status information and a message each time a change in the unit 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 > Logs > Event Log**

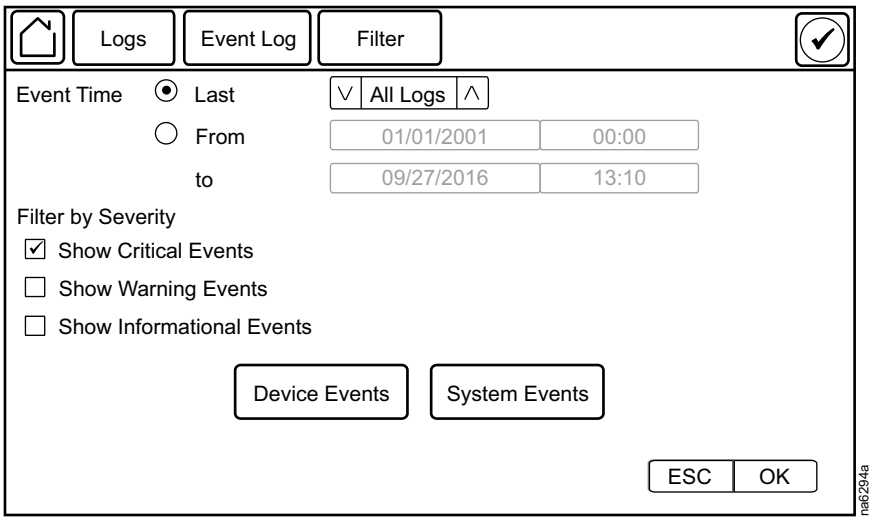
The **Event Log** keeps a record of all alarms and events. The screen displays the following:

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

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

## Filter Event Log

Events in the **Event Log** can be sorted by time or severity. Events can also be displayed by **Device Events** or **System Events**. Press **ESC** to return to the previous screen without making changes; press **OK** to accept changes.




The filter options for related **Device Events** are the following:

- Communication
- Temperature
- Fans
- Status
- Diagnostics
- Humidity
- Configuration

The filter options for related **System Events** are the following:

- Mass Configuration
- Security

## Clear Event Log

**Path: Main > Logs > Event Log**

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

# Export Data

**Path: Main > Logs > Export Data**

The data export function exports a .tar file containing the following files:

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

1. Insert a USB drive into the USB port of the display interface.
2. Press **Start Data Export**.
3. Confirm exporting the data to the USB drive.
4. Wait for the data to export or abort exporting by pressing **Abort Data Export**.
5. Press **OK** when the “Data exported successfully. Remove USB device.” message displays.
6. Remove the USB drive from the display interface.

# Alarms

## Respond to Alarms

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

- LEDs on the display interface
- Alarm icon in the upper-right corner of the screen
- An optional audible alarm every 30 seconds if enabled

### View Active Alarms

The **Active Alarms** screen is accessed by pressing the alarm icon in the upper-right corner of the screen. The **Active Alarms** screen provides the number of alarms, the severity, and a brief description of the alarm.

### Clear 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.

### Thresholds

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

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

- **Room Air Temperature Low Threshold:** The low temperature threshold for the room air temperature. (0 to 32°C (32 to 90°F))
- **Room Air Temperature High Threshold:** The high temperature threshold for the room air temperature. (15 to 48°C (60 to 118°F))
- **Supply Temperature High Threshold:** The high temperature threshold for the supply air as averaged by the supply air temperature sensors. If the temperature exceeds this threshold, an alarm will occur. (15 to 48°C (60 to 118°F))

## Alarm Messages and Suggested Actions

| Alarm Message | Severity | Action Required |
|---|---|---|
| Air Filter Clog Cleared | Informational | No action required. |
| Air Filter Clogged | Warning | Clean or replace air filters.<br>If the problem persists, contact Schneider Electric Technical Support. |
| Air Filter Service Completed | Informational | No action required. |
| Air Filter Service Required | Warning | Clean or replace air filters.<br>At the management interface, reset the Air Filter service alarm. |
| Compressor High Evaporating Temperature | Warning | Verify the heat load does not exceed the unit cooling capacity.<br>Check the compressor operation.<br>For assistance, contact Schneider Electric Technical Support. |
| Compressor High Evaporating Temperature Cleared | Informational | No action required. |
| Compressor High Head Pressure Switch Reset | Informational | No action required. |
| Compressor High Head Pressure Switch Tripped | Critical | Verify the heat load does not exceed the unit cooling capacity.<br>Check the compressor operation.<br>For assistance, contact Schneider Electric Technical Support. |
| Compressor Low Evaporating Temperature | Warning | Verify the heat load does not exceed the unit cooling capacity.<br>Check the compressor operation.<br>For assistance, contact Schneider Electric Technical Support. |
| Compressor Low Evaporating Temperature Cleared | Informational | No action required. |
| Compressor Persistent High Evaporating Temperature | Critical | Verify the heat load does not exceed the unit cooling capacity.<br>Check the compressor operation.<br>For assistance, contact Schneider Electric Technical Support. |
| Compressor Persistent High Evaporating Temperature Cleared | Informational | No action required. |
| Compressor Persistent Low Evaporating Temperature | Critical | Verify there is sufficient heat load.<br>Check the refrigeration system for low liquid level or excessive pressure drop.<br>For assistance, contact Schneider Electric Technical Support. |
| Compressor Persistent Low Evaporating Temperature Cleared | Informational | No action required. |
| Condensate Pan Full | Critical | Clear debris from the condensate pump reservoir and the condensate removal lines.<br>Make sure the condensate removal lines are free of obstructions and the float switch moves freely. |
| Condensate Pan No Longer Full | Informational | No action required. |
| Condenser is Powered | Informational | No action required. |
| Condenser Not Powered | Critical | Verify that the condenser unit has AC power. |

| Alarm Message | Severity | Action Required |
|---|---|---|
| | | If the problem persists, contact Schneider Electric Technical Support. |
| Condensing Temperature Sensor Error | Warning | If the problem persists, contact Schneider Electric Technical Support. |
| Condensing Temperature Sensor Error Cleared | Informational | No action required. |
| Configuration Changed | Informational | No action required. |
| Configuration String Changed | Informational | No action required. |
| Controller EEPROM Write Error | Critical | A hardware error may exist. Contact Schneider Electric Technical Support. |
| Controller EEPROM Write Error Cleared | Informational | No action required. |
| Controller Reset Occurred | Informational | No action required. |
| Economizer Damper Error | Critical | If the problem persists, contact Schneider Electric Technical Support. |
| Economizer Damper Error Cleared | Informational | No action required. |
| Idle Due to Error | Critical | Correct the problem that caused the unit to transition to the idle state. |
| Internal Communication Error | Critical | If the problem persists, contact Schneider Electric Technical Support. |
| Internal Communication Restored | Informational | No action required. |
| Low Airflow | Critical | If the problem persists, contact Schneider Electric Technical Support. |
| Low Airflow Cleared | Informational | No action required. |
| Minimum or Maximum Value Reset Due to Overlap | Informational | Verify the affected set points/thresholds are set correctly. |
| Minimum or Maximum Value Reset Due to Overlap Acknowledged | Informational | No action required. |
| No Standby Units Available | Warning | No action required. |
| Number of Units in Group Corrected | Informational | No action required. |
| Off Due to Input Contact | Warning | No action required. |
| Off Due to User Action | Warning | The unit is in the off state due to a user command. |
| Output Relay X Abnormal | Warning | No action required. |
| Outdoor Temperature Sensor Error Cleared | Informational | No action required. |
| Outdoor Temperature Sensor Error Detected | Warning | If the problem persists, contact Schneider Electric Technical Support. |
| Outside Air Humidity Sensor Error | Warning | A hardware error exists.<br>Contact Schneider Electric Technical Support. |
| Outside Air Humidity Sensor Error Cleared | Informational | No action required. |
| PIC1 Firmware Incompatibility Corrected | Informational | No action required. |
| PIC1 Firmware Incompatibility Detected | Warning | Upgrade PIC firmware to the proper firmware revision. |
| PIC2 Firmware Incompatibility Corrected | Informational | No action required. |

| Alarm Message | Severity | Action Required |
|---|---|---|
| PIC2 Firmware Incompatibility Detected | Warning | Upgrade PIC firmware to the proper firmware revision. |
| Returned from Idle Due to Error | Informational | No action required. |
| Returned from Off Due to Input Contact | Informational | No action required. |
| Returned from Off Due to User Action | Informational | No action required. |
| Room Air High Temperature Threshold Exceeded | Warning | Check temperature threshold settings.<br>If the problem persists, contact Schneider Electric Technical Support. |
| Room Air High Temperature Threshold Not Exceeded | Informational | No action required. |
| Room Air Low Temperature Threshold Exceeded | Warning | Check temperature threshold settings.<br>If the problem persists, contact Schneider Electric Technical Support. |
| Room Air Low Temperature Threshold Not Exceeded | Informational | No action required. |
| Room Air Sensor Error Cleared | Informational | No action required. |
| Room Air Sensor Error Detected | Critical | If the problem persists, contact Schneider Electric Technical Support. |
| Smoke/Fire Cleared | Informational | No action required. |
| Smoke/Fire Detected | Critical | Identify the source of the smoke/fire. |
| Standby Units Available | Informational | No action required. |
| Supply Air High Threshold Exceeded | Warning | Check temperature threshold settings.<br>If the problem persists, contact Schneider Electric Technical Support. |
| Supply Air High Threshold Not Exceeded | Informational | No action required. |
| Supply Air Sensor Error Cleared | Informational | No action required. |
| Supply Air Sensor Error Detected | Warning | If the problem persists, contact Schneider Electric Technical Support. |
| Unexpected Number of Units in Group | Warning | Check that the number of units in the group is configured correctly.<br>Check that the A-Link connections are correct.<br>Check that the system is receiving power and connected properly.<br>If the problem persists, contact Schneider Electric Technical Support. |
| Unit Configuration Completed – Personality | Informational | No action required. |
| Unit Configuration Not Completed – Personality | Critical | If the problem persists, contact Schneider Electric Technical Support. |
| Unit is in Maintenance Mode | Warning | The unit has been placed in maintenance mode by service personnel: no action required. |
| Unit Returned from Maintenance Mode | Informational | No action required. |
| Unit Service Completed | Informational | No action required. |
| Unit Service Required | Warning | The unit has exceeded the unit service interval. Contact Schneider Electric Technical Support. |

# Network Management Card

## Quick Configuration

The unit is shipped with a Network Management Card that enables the unit to be managed over a network. Configure the Network Management Card to control this 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 *User Manual* or *Online 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, page 60* for more information.)
- BootP or DHCP server (See *BootP and DHCP Configuration, page 60* for more information.)
- Local computer (See *Local Access to the Command Line Interface (CLI), page 63* for more information.)
- Networked computer (See *Remote Access to the Command Line Interface (CLI), page 62* for more information.)

## Device IP Configuration Wizard

The Device IP Configuration Wizard is used to discover and configure Network Management Cards that do not have IP addresses assigned. The Device IP Configuration Wizard runs on Microsoft® Windows® 2000, Windows 2003, Windows Server® 2003, Windows Server 2012, and on 32- and 64-bit versions of Windows XP, Windows Vista, Windows 2008, Windows 7, Windows 8, Windows 10, and Windows 2012 operating systems.

The Device IP Configuration Wizard supports network management cards that have firmware version 3.x.x or higher and is for IPv4 only.

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

To configure one or more Network Management Cards from a user configuration file, see the *User Manual* or *Online Guide*.

1. Download the Device IP Configuration Wizard from *www.schneider-electric.com* or *www.apc.com* (search for “Device IP Configuration Wizard”).
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 and DHCP Configuration

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

If neither a DHCP nor BOOTP server is available, see *Device IP Configuration Wizard, page 60* or *Remote Access to the Command Line Interface (CLI), page 62* for more information on how to configure the TCP/IP settings.

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

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

   **NOTE:** Look on the nameplate of the unit for the MAC address. The MAC address is also available on the display interface at **Main > About > Display > Device**
2. When the Network Management Card reboots, the BOOTP server provides it with the TCP/IP settings.
   - If you specified a bootup file name, the Network Management Card attempts to transfer that file from the BOOTP server using TFTP or FTP. The Network Management Card takes on all settings specified in the bootup file.
   - If you did not specify a bootup file name, the Network Management Card can be configured remotely by using the CLI or the Web interface. User name and password are both `apc`, by default.

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

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

For more details on how a DHCP can configure the network settings for a Network Management Card, see “DHCP Configuration” in the *Online Guide*.

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

   `Option 43 = 01 04 31 41 50 43`

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

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

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

See *Local Access to the Command Line Interface (CLI), page 63* for more information.

## 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 *Online Guide*.

## Web Interface

Use Microsoft Internet Explorer® 7.x or higher (on Windows operating systems only), or Mozilla® Firefox® 3.0.6 or higher (on all operating systems) to access the cooling unit 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 user name 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*: search for “UPS Network Management Cards.”

## Telnet and SSH

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

### Telnet for Basic Access

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

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

   `telnet` *`address`*

   As *`address`*, use the Network Management Card IP address or DNS name (if configured).
2. Enter the user name and password (by default, `apc` and `apc` for an Administrator, or `device` and `apc` for a Device User).

### SSH for High-Security Access

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

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

See the *Online Guide* for more information on configuring and using SSH.

## Simple Network Management Protocol (SNMP)

### SNMPv1 Only

After you add the latest version of PowerNet® MIB to a standard SNMP MIB browser, you can use that browser to access the device. 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 device supports SHA or MD5 authentication and V or DES encryption.

### SNMPv1 and SNMPv3

To use StruxureWare Data Center Expert to manage the device on the public network of StruxureWare system, you must have SNMPv1 enabled in the unit

interface. Read access allows devices to receive traps from the 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 device 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 *User Manual*, see the following sections:

- To transfer firmware, see “File Transfers.”
- To retrieve a copy of the event or data log, see “How to 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, *www.schneider-electric.com*, and search for “Modbus Register Map.”

# Recover From a Lost Password

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

1. Select a serial port at the local computer, and disable any service that uses that port.
2. Connect the Schneider Electric serial cable (part number 940-0299) 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.

   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.

# Updating the Firmware

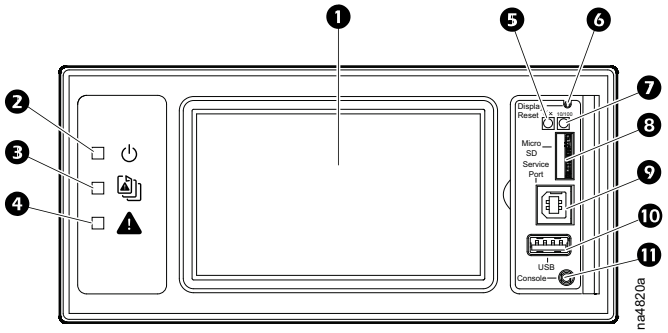
When you update the firmware on the unit, you obtain the latest features, performance improvements, and bug fixes.

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

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

## Update Display Firmware

### Display Interface




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

## Using a USB Drive to Transfer and Update Files

### Update Display Interface Firmware

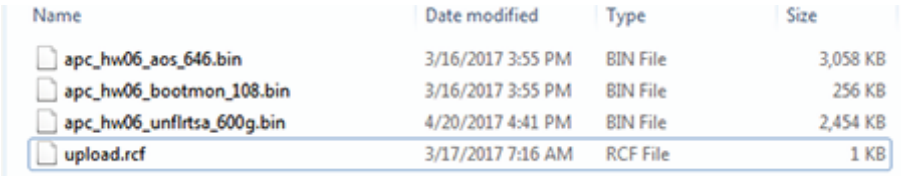
1. Insert a USB drive into an available port on the PC and verify that the drive is formatted as a FAT32 file system.
2. Create a folder named **apcfirm** on the USB drive.
3. Acquire the firmware files from the local support team or the Schneider Electric Web site.
4. Unzip and extract the files to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

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

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

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

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



| Name | Date modified | Type | Size |
|---|---|---|---|
| apc_hw06_aos_646.bin | 3/16/2017 3:55 PM | BIN File | 3,058 KB |
| apc_hw06_bootmon_108.bin | 3/16/2017 3:55 PM | BIN File | 256 KB |
| apc_hw06_unflrtsa_600g.bin | 4/20/2017 4:41 PM | BIN File | 2,454 KB |
| upload.rcf | 3/17/2017 7:16 AM | RCF File | 1 KB |

8. Insert the USB drive into the USB-A port on the display interface.

   A confirmation message appears on the display interface.
9. Press the **Display Reset** button to reset the display interface.

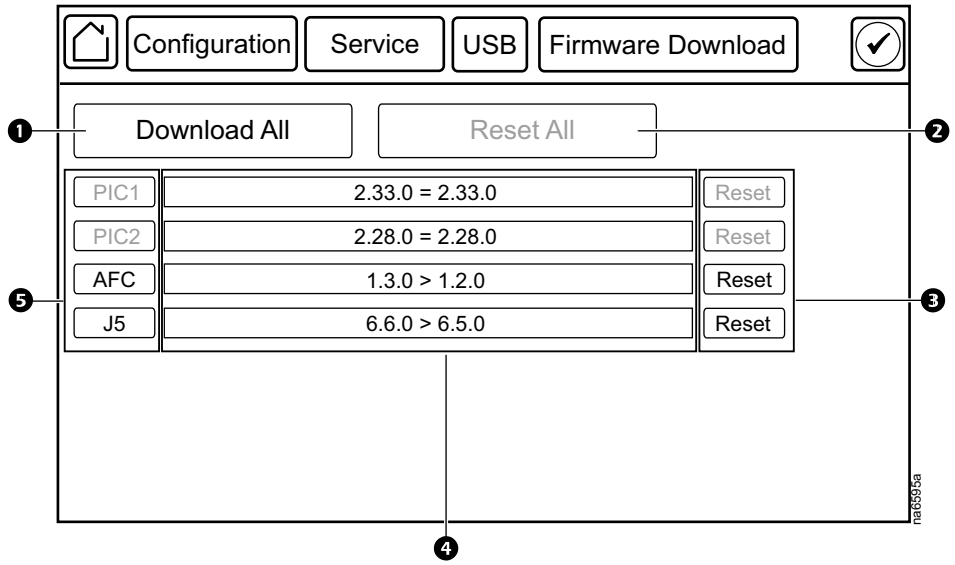
   The display interface resets and transfers files. The display will resume operation when transfer is complete.

   **NOTE:** The touch screen will be disabled during the transfer process. There is no disruption of unit operation during the file transfer process.
10. Remove the USB drive when the file transfer is complete.
11. Check the firmware version on the touch screen display interface on the **Main > About > Display** screen.
12. To update the firmware on additional units, repeat from step 8.

## Update Controller Firmware

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

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




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

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

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

`PIC1 = pic1-2.33.0.cbp`

`PIC2 = pic2-2.28.0.cbp`

`J5 = J5-1.0.3.cbp`

6. Place fw.rcf in the **fw** folder on the USB drive.
7. Insert the USB drive into the USB port on the display interface.
8. On the display interface, navigate to **Main > Configuration > Service > USB > Firmware Download**.
9. Select the firmware to download for the controllers individually or for all devices.
10. After downloading the firmware, reset the controllers individually or reset all.
11. Check that the update was completed successfully using the procedures in *Verify Updates, page 71*.

# Verify Updates

## Verify Success of the Transfer

To verify whether a firmware upgrade succeeded, you can use the xferStatus command in the command line interface to view the last transfer result. Alternatively, you can use an SNMP GET to receive the **mfiletransferStatusLastTransferResult** OID.

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

## Last Transfer Result Codes

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

## Verify Version Numbers of Installed Firmware

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

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

# Service Menu

**⚠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.**

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

## Service Menu Access

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

## Unit Configuration

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

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

- **Model Number:** The model number of the unit.
- **Serial Number:** The serial number of the unit.
- **Manufacture Date:** The manufacture date of the unit (mm/dd/yyyy).
- **Capacity:** Set the cooling capacity of the unit.
- **Direct Free Cool, Present:** Select **Yes** or **No**.

## Configure Components

**Path: Main > Configuration > Service > Components**

The **Components** screens are used to configure the operation of individual components installed in the unit.

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

### Fans

**Path: Main > Configuration > Service > Components > Fans**

- **Low Fan Speed:** Enter the minimum fan speed allowed. (0–100%)
- **High Fan Speed:** Enter the maximum fan speed allowed. (0–100%)
- **Air Proving Inhibit Time:** Enter the time in seconds to wait after starting the evaporator fans before checking for the loss of airflow. (30–180)

### DX

**Path: Main > Configuration > Service > Components > DX**

- **Compressor Stage Delay:** The time to wait in seconds after starting a compressor (or Economizer) before starting another compressor. (5–120)

### Free Cooling Damper

**Path: Main > Configuration > Service > Components > Free Cooling Damper**

- **Free Cooling Min. Damper Pos:** Enter the minimum opening position, as a percentage (0–50), for the free-cooling damper.
- **Free Cooling Max. Damper Pos:** Enter the maximum opening position, as a percentage (50–100), for the free-cooling damper.

## Setpoints

### Compressor

**Path: Main > Configuration > Service > Setpoints > Compressor**

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

- **Room Air Temperature Deadband:** The temperature above the setpoint at which all compressors in a group will be engaged (0.5 to 25°C (1 to 45° F)). The number of compressors to engage are determined from this equation ((room temperature - setpoint) * N / Room Air Temperature Deadband), where N represents the number of available compressors in a group.

### External Condenser

**Path: Main > Configuration > Service > Setpoints > External Condenser**

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

- **Condenser Setpoint:** The operating setpoint for the condenser. (21–65°C (70–150°F))
- **External Condenser Gain Coefficient:** The proportional multiplier (gain) for the external condenser fan.
- **External Condenser Integral Coefficient:** The integral multiplier (reset rate) for the external condenser fan.
- **External Condenser Derivative Coefficient:** The derivative multiplier (derivative) for the external condenser fan.
- **External Condenser Reset Coefficient:** Select **Yes** to reset the condenser fan control PID values to factory default settings.

### Assist

**Path: Main > Configuration > Service > Setpoints > Assist**

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

- **Cooling Assist Threshold:** The offset temperature above the room air temperature setpoint plus room air temperature deadband at which this unit will assist with the cooling load. (0.5 to 25°C (1 to 45°F))

## Free Cooling

**Path: Main > Configuration > Service > Setpoints > Free Cooling**

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

- **Outdoor Air Temperature Offset:** When **Free Cooling Mode** is set to **Differential Dry Bulb** or **Fixed Enthalpy**, this setting allows you to make small adjustments to the temperature used to engage free cooling. (–5.6 to 5.6°C (–10 to 10°F))
- **Outdoor Humidity Ratio Threshold:** The humidity ratio of the outside air at which free-cooling will be allowed for the **Fixed Enthalpy** mode. (0–200 gr/lbm)
- **Outdoor Air Temperature Threshold:** When **Free Cooling Mode** is set to **Fixed Dry Bulb**, this setting is the temperature at which free-cooling will be engaged. (–40 to 65.6°C (–40 to 150°F))

# Settings and Adjustment

## Setting the Airflow Sensor

**⚠⚠DANGER**

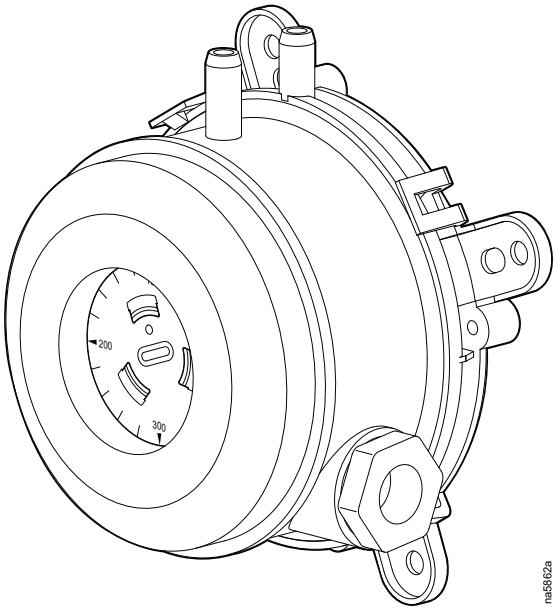
**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- 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.
- 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.**

Because the pressure difference between fan return and supply depends on the air flow of the application, you may need to adjust the fan differential pressure switch using a standard screwdriver after installation.

**NOTE:** Displayed image is an example and will vary based on unit type and configuration.

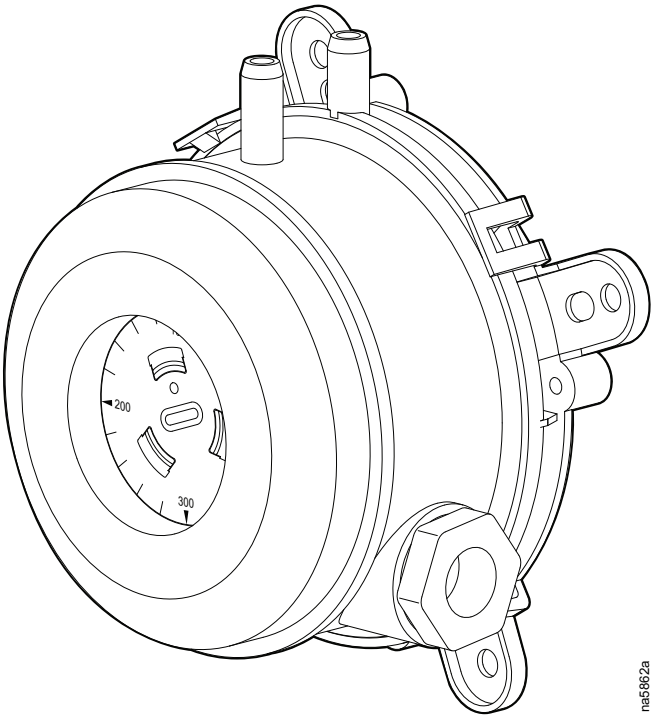



- Rotate the dial to the right to decrease the minimum differential pressure setting.
- Rotate the dial to the left to increase the minimum differential pressure setting.

**NOTE:** Ensure that the contact closes when the fans are operating.

# Setting the Dirty Filter Sensors

The differential pressure switch is set according to the loss of load dependent on the dirt inside the filters and the amount of air flow. The differential pressure switch is factory set at 3 mbar (1.2 in. wc).




To verify and set the pressure switch:

1. Using a standard screwdriver, turn the pressure switch to the desired value.
2. Gradually cover the air filter surface, verifying that the pressure switch activates when the filter is about 50–60% covered. If the pressure switch does not activate, gradually lower the setting; if the switch activates too soon, increase the setting.

# Maintenance

## Maintenance Mode

| NOTICE |
| --- |
| **UNIT MALFUNCTIONS**<br>• Changing the settings incorrectly can cause malfunctions to your cooling unit.<br>• Only qualified service personnel should make changes to these settings.<br>**Failure to follow these instructions can result in equipment damage.** |

**Path: Main > Configuration > Service > Maintenance Mode**

Maintenance mode is used to perform maintenance checks. Qualified personnel can manually control components within the unit to check for errors and mechanical issues. Press **OK** next to each setting to accept changes.

- **Maintenance Mode:** Select which type of maintenance mode to enter.
  - **Enable Indefinitely:** The unit will remain in maintenance mode until it is disabled.
  - **Enable With Timeout:** The unit will remain in maintenance mode for two minutes.
  - **Disable:** The unit will exit maintenance mode and resume normal operation.
- **Set Compressor:** Engages the compressor.

  **NOTE:** The controller will automatically manage the condenser fans, but the operator is responsible for managing the evaporator fans.
- **Free Cooling Damper:** Enter an opening percentage for the damper.
- **Evaporator Fans:** Enter a fan speed percentage at which to run the evaporator fans.
- **Condenser Fans:** Enter a fan speed percentage at which to run the condenser fans.
- **Alarm Relay 1:** Select to open or close the alarm relay.
- **Alarm Relay 2:** Select to open or close the alarm relay.
- **Alarm Relay 3:** Select to open or close the alarm relay.
- **Alarm Relay 4:** Select to open or close the alarm relay.

# Daily/Monthly Preventive Maintenance

**⚠⚠DANGER**

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

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- 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.
- 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 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.**

Perform the following maintenance check list.

Prepared By: _____

Model Number: _____

Serial Number: _____

Date: _____

| | |
|---|---|
| ❑ | Check for active alarms and review the alarm log history. |
| ❑ | Check the correct functionality of the local/remote display interface and alarms (logs included). |
| ❑ | Check that the room temperature/humidity setpoint is achieved. |
| ❑ | Check compressor and fans for possible noise and/or anomalous vibration. Clean them if necessary. |
| ❑ | Check compressors, coils, manifolds and associated piping for potential refrigerant leakage (oil spots). |
| ❑ | Check the general status of the of the electrical panel and the internal control devices. |
| ❑ | Check the air filters. Clean or replace them if necessary. |

# Quarterly Preventive Maintenance

**⚠⚠DANGER**

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

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- 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.
- 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 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.**

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: _____

Perform the following quarterly maintenance check lists in addition to the monthly check lists.

| | |
|---|---|
| ❑ | Check and report the power supply voltage and the asymmetry between the phases (for 3-phase units only). |
| ❑ | Check and report the electrical absorption (Amps) of compressors, fans. |
| ❑ | Check and report the compressor and fan running hours and compressor run starts number. |
| ❑ | Check that the sight glass on the liquid line is without any bubbles and dry. |
| ❑ | Inspect coil drain pan and coil drain lines. Clean if necessary. |

# Semi-Annual Preventive Maintenance

**⚠⚠DANGER**

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

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- 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.
- 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 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.**

Perform the following maintenance check list in addition to the monthly and quarterly check lists.

Prepared By: _____

Model Number: _____

Serial Number: _____

Date: _____

| | |
|---|---|
| ❑ | Check the proper activation of the high/low pressure switch. |
| ❑ | Check all electrical contacts, terminals, relays, and capacitor switches for wear and damage. |
| ❑ | Check that all screws for the main power devices are tight. |
| ❑ | Check for any refrigerant leakage with an electronic leak detector (part of F-gas certification). |
| ❑ | Check and report compressor discharge and suction pressure/ temperature. |
| ❑ | Check and report the superheating of the refrigerant at the suction of the compressors. |
| ❑ | Check and report the sub-cooling of the refrigerant at the expansion valve inlet. |
| ❑ | Check the condensing coil fins for dirt. If necessary, clean with low-pressure compressed air blown across the fins or using a soft bristle brush (or both). |
| ❑ | Check that the external air damper is functioning correctly. |

# Annual Preventive Maintenance

**⚠⚠DANGER**

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

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- 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.
- 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 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.**

Perform the following maintenance check list in addition to the monthly, quarterly, and semi-annual check lists.

Prepared By: _____

Model Number: _____

Serial Number: _____

Date: _____

| | |
|---|---|
| ❑ | Check the status of corrosion, insulation and paint. |
| ❑ | Check all hinges, recesses, and gaskets. |
| ❑ | Check the correct functioning of the unit at partial loads. |
| ❑ | Check and report the calibration of the temperature sensors and pressure transducers. |
| ❑ | Check and adjust in case the calibration of the temperature/humidity sensors. |
| ❑ | Check LAN addresses and settings (if present) and simulate a time-based rotation and a rotation in case of alarm (if a stand-by unit is present). |
| ❑ | Check and if necessary adjust the calibration of the safety devices (pressure switches, thermostats, flow switches and protection devices); Reset if necessary. |
| ❑ | Provide system operation report and recommend repairs or replacement as necessary. |
| ❑ | Check the condensing fan(s) speed setting and adjust if necessary. |

# Five–Year Preventive Maintenance

**⚠⚠DANGER**

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

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- 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.
- 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 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.**

Perform the following maintenance checks every 5 years in addition to the monthly, quarterly, semi-annual, and annual check lists.

Prepared By: _____

Model Number: _____

Serial Number: _____

Date: _____

❑ Conduct an oil analysis to determine the acidity level and replace compressor oil and filter drier if necessary.

## Cleaning and Replacing the Air Filter

At least once a month, or when the clogged filter alarm is triggered, open the front panel and remove the filter.

Clean the filter with a vacuum cleaner after having removed the larger dust and debris.

Replace the filter if necessary.

## Damper Maintenance and Replacing the Servomotor

Open the side door where the servomotor of the damper is found, press the release latch and make sure the damper moves freely.

Check the state of the neoprene rubber covering the damper, checking sealing of the peripheral stops.

When replacing the servomotor, unscrew the screws and pull it off the small shaft of the damper.

If needed, position the damper by hand at the desired position.

# Troubleshooting

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

## General Troubleshooting

| Problem | Possible Cause | Check/Corrective Action |
|---|---|---|
| The air conditioner does not work. | The electric panel is not powered. | Check the presence of voltage; close the main switch. |
| | The auxiliary circuits are not powered. | Make sure the circuit breaker switch IM of the auxiliary circuits is armed. |
| | The control panel does not start the air conditioner. | Make sure the display interface is powered and connected to the standard board. |
| | The incorrect phase sequence alarm appears on three-phase units. | Invert two phases. |

## Temperature Control Troubleshooting

| Problem | Possible Cause | Check/Corrective Action |
|---|---|---|
| Ambient temperature is too high | Parameter settings on the microprocessor control are not correct. | Check the ambient temperature setpoint. |
| High ambient temperature alarm triggered | Air flow is too low or missing. | See *Ventilation Control Troubleshooting, page 85* for more information. |
| | The compressor yield is insufficient. | See *Refrigerant Circuit Troubleshooting, page 85* and *Compressor Troubleshooting, page 86* for more information. |
| | Thermal load is higher than expected. | Check the thermal load of the room. |
| | The control system does not work. | Check functioning of the control system and of the probes. |
| | The compressor(s) are not working despite control call. | See *Compressor Troubleshooting, page 86* for more information. |
| Ambient temperature is too low | Parameter settings on the control panel are not correct. | Check the ambient temperature set point. |
| Low ambient temperature alarm triggered | The control system does not work. | Check functioning of the control system. |
| | Heat loss greater than expected. | Check the consistency of heat losses; check the degree of outdoor air leakage. |

# Ventilation Control Troubleshooting

| Problem | Possible Cause | Check/Corrective Action |
|---|---|---|
| Air flow rate low or missing. | The fan is not powered. | Check the electric power circuit of the fan. |
| | The air filter is clogged (dirty filter pressure switch tripped). | Clean the air filter in the vacuum cleaner after having removed the larger dust; replace the filter if clogged.<br>Check the correct dirty filter pressure switch PFS setting. |
| | Air flow obstructions | See the *Uniflair™ SP Installation Manual*. |
| | Fan circuit breaker tripped | Check resistance of fan windings after having restored the alarm, measure voltage, and absorption. |
| | The pressure drop of the air ventilation system (channelling, grille) is excessive. | Check the air ventilation system. |

# Refrigerant Circuit Troubleshooting

| Problem | Possible Cause | Check/Corrective Action |
|---|---|---|
| High discharge pressure of compressor | Air or uncondensed gas in refrigerating circuit | Empty and recharge circuit. |
| | Air flow rate insufficient or too hot for condenser. | Check the state of fouling of the condenser heat exchanger and remove material which clogs it using a compressed air jet or a brush. |
| | Circuit too full of refrigerant, subcooling of liquid leaving condenser is excessive. | Empty and recharge circuit checking working pressures and temperatures. |
| AP high pressure switch intervenes (high compressor discharge pressure) | The condensing pressure control system is not functioning efficiently. | Check the fan function of the condenser and of the relative protection; re-set or replace the faulty fans. |
| | The system discharge pressure is too high. | Check setting and functioning of RVC/e regulator. |
| Low compressor discharge pressure | The condensing pressure control system is not functioning efficiently (see control panel manual). | Check the setting and function of the condenser fan pressure switch or speed regulator. |
| | Intake pressure too low | Check the condenser water flow and temperature. |
| High intake pressure of compressor | The thermal load is too high. | Check the consistency of the thermal load in the environment. |
| | The discharge pressure is too high. | Empty and recharge circuit, checking working pressures and temperatures. |
| | The circuit is too full of refrigerant. | Make sure gas overheating downstream thermostatic valve is correct (5–8°C (9.0–14.4°F)). |
| | Liquid refrigerant returns to compressor intake. | |

| Problem | Possible Cause | Check/Corrective Action |
|---|---|---|
| Low compressor suction pressure (and possible freezing of the coil) | The ambient temperature is too low. | Check the ambient temperature set point. |
| | The air flow is too low or is absent. | Check the electric power circuit of the fan. |
| | The lamination organ is clogged. | Make sure the gas overheating downstream thermostatic valve is correct (5-8°C (9.0–14.4°F)). |
| | The refrigerant filter is obstructed. | Check the refrigerant filter. |
| | The gas charge is insufficient. | Check for leakage; after repairs, empty and recharge the circuit checking working pressures and temperatures. |
| Pressure switch BP trips (low intake pressure of compressor). | Thermostatic valve not adjusted or faulty. | Make sure gas overheating downstream thermostatic valve is correct (5-8°C (9.0–14.4°F)). |
| | Dehydrating filter dirty. | Check whether the cartridge of the dehydrating filter must be replaced; the temperature difference upstream and downstream of the filter must be within 2°C (3.6°F). |
| | The circuit has discharge pressure too low. | Check setting and functioning of RVC/e regulator. |

## Compressor Troubleshooting

| Problem | Possible Cause | Check/Corrective Action |
|---|---|---|
| The compressor does not work | The short circuit protection has intervened. | Re-set the automatic switch and check the cause of the short circuit. Before re-starting the compressor, check the resistance and continuity of the compressor motor windings. |
| | The contactor is not working. | Check the contacts and the contactor coil. |
| The internal protection of the compressor intervened | The motor is overloaded. | Check that the unit pressure operates within the planned limits. |
| | The power supply voltage is too high or too low. | Check that the voltage is within -10% and +10% of the nominal value. |
| | The rotor is blocked. | Replace the compressor. |
| The compressor is noisy | The compressor is damaged. | Call the nearest Service Center in order to replace the compressor. |
| | There is liquid return to the compressor. | Check the setting and function of the thermostatic valve. |

# Free Cooling Troubleshooting

| Problem | Possible Cause | Check/Corrective Action |
|---|---|---|
| The free-cooling cycle does not activate. | The servomotor of the damper does not work. | Check the wiring of the servomotor; replace or repair the motor if necessary. |
| | The control system setting is not correct. | Check the parameters of the control system. |
| | The control system does not work. | Check functioning of the probes. |
| The ambient temperature is too high.<br>The high ambient temperature alarm triggered. | The free-cooling damper has remained open towards the outside. | The damper motor does not work; position the damper manually at recirculation while awaiting replacement or repairs. |
| | The evaporator is enveloped in hot and/or humid outdoor air. | The minimum opening set for the damper is excessive; minimize the minimum opening. |
| The ambient temperature too low.<br>The low ambient temperature alarm triggered. | The free-cooling damper has remained open towards the outside.<br>The evaporator is enveloped in cold outdoor air. | Check the ambient temperature setpoint.<br>See *Ventilation Control Troubleshooting, page 85* for more information. |
| | Damper modulation does not work properly with outdoor air too cold. | The setting of the control system is not correct.<br>Check the parameters of the control system. |
| The ambient humidity too high.<br>The high ambient humidity alarm triggered. | The free cooling damper has remained open toward the outside.<br>The evaporator is enveloped in hot and/or humid outdoor air. | Check the ambient temperature setpoint.<br>See *Ventilation Control Troubleshooting, page 85* for more information. |
| High intake pressure of compressor. | The free cooling damper has remained open toward the outside.<br>The evaporator is enveloped in hot and/or humid outdoor air. | Check the ambient temperature setpoint.<br>See *Ventilation Control Troubleshooting, page 85* for more information. |
| Low intake pressure of compressor | The free cooling damper has remained open toward the outside.<br>The evaporator is enveloped in cold outdoor air. | Check the ambient temperature setpoint.<br>See *Ventilation Control Troubleshooting, page 85* for more information. |

# 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 esupport.

- Contact the Schneider Electric Customer Support Center by telephone or e-mail.

  Local, country-specific centers: go to *www.schneider-electric.com/support/contact***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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