InRow[®] Direct Expansion Air Conditioners

ACRD600, ACRD601, ACRD602, ACRD600P, ACRD601P, ACRD602P

Installation Manual

990-5711F-001 Release Data: 07/2021





Legal Information

The Schneider Electric brand and any trademarks of Schneider Electric SE and its subsidiaries referred to in this guide are the property of Schneider Electric SE or its subsidiaries. All other brands may be trademarks of their respective owners.

This guide and its content are protected under applicable copyright laws and furnished for informational use only. No part of this guide may be reproduced or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), for any purpose, without the prior written permission of Schneider Electric.

Schneider Electric does not grant any right or license for commercial use of the guide or its content, except for a non-exclusive and personal license to consult it on an "as is" basis. Schneider Electric products and equipment should be installed, operated, serviced, and maintained only by qualified personnel.

As standards, specifications, and designs change from time to time, information contained in this guide may be subject to change without notice.

To the extent permitted by applicable law, no responsibility or liability is assumed by Schneider Electric and its subsidiaries for any errors or omissions in the informational content of this material or consequences arising out of or resulting from the use of the information contained herein.

Table of Contents

Safety	5
Important Safety Instructions — SAVE THESE INSTRUCTIONS	5
Safety During Installation	6
General Information	7
Document Overview	7
Original Instructions	7
Save These Instructions	7
Manual Updates	7
Cross-Reference Symbol Used in This Manual	7
Abbreviations	7
Equipment Disposal	8
Waste Electrical and Electronic Equipment (WEEE) Disposal	8
Receiving and Inspecting the Equipment	8
Filing a Claim	8
Storing the Cooling Unit Before Installation	8
Moving the Equipment	9
Unit Overview	10
Model Identification	10
Equipment Guidelines	11
Inventory	12
Install Kit Inventory	12
Component Identification	13
External Components	13
Front (ACRD60x and ACRD60xP)	13
Internal Components	14
Front (ACRD60x)	14
Rear (ACRD60x)	15
Front (ACRD60xP)	16
Rear (ACRD60xP)	17
Electrical Panels	18
ACRD600, ACRD601, ACRD602	18
ACRD600P, ACRD601P, ACRD602P	19
Refrigeration Piping Diagram	20
Dimensions and Weights	21
Cooling Units	21
Service Access	22
Piping and Electrical Access Locations	23
Top Piping and Power Access Locations—Top View, Looking Down	
(ACRD600, ACRD600P Series)	23
Bottom Piping and Power Access Locations—Bottom View, Looking	0.4
	24
Installation	25
Room Preparation	25
Air Distribution	25
Incoming Power Supply Requirements	25
Removing Doors and Panels	26
Removing the Front and Rear Doors	26

	Side Panels	.27
	Electrical Panel Access	.28
	Stabilizing the Cooling Unit	.29
	Joining the Equipment to Enclosures	.29
	Leveling	. 30
	Connections Overview	.31
	Power Connections	.31
	Sensor and Communication Connections	.32
	Piping Connections	.32
	Mechanical Connections	.33
	Refrigerant Piping	.33
	Connect Refrigerant Lines	.34
	Condenser	.34
	Flooded Receiver	.34
	Humidifier (ACRD60xP Only)	.35
	Condensate Pump	.36
	Condensate Overflow	.37
	Leak Sensor—Optional	.38
	Adding a Holding Charge	.39
	Adding Compressor Oil	.39
	Electrical Connections	.40
	Customer Interface Connections	.41
	Form C Alarm Contacts and Shutdown Input	.43
	Rack Air Temperature Sensors	.44
	Communication Connections	.44
	A-Link Connections	.44
	Building Management System (BMS)	.46
	Network Port	.47
	Power Connections	.48
	Wiring Configurations	.48
	Top Routing	.49
	Bottom Routing	.50
	Strain Relief	.51
	Voltage Selections	.51
	Voltage Selections	.52
	Flooded Receiver Heater	.52
	Connect Flooded Receiver Heater	.53
	Charging the Refrigeration System	.54
	Calculating R410A Charge	.54
	Charging the Equipment	.55
	Compressor Oil Charge	.59
Δ٢		61
	Low Temperature Kit	61
		61
	Install Kit Inventory	.01
	Installation	.03
		.00

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 the user to potential personal injury hazards. Obey all safety messages with this symbol to avoid possible injury or death.

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.

AWARNING

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 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.

Always abide strictly by local laws and regulations in the place of installation.

Safety During Installation

A A 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 and trained 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.

HAZARD TO EQUIPMENT OR PERSONNEL

This equipment is not to be operated or installed by persons with reduced physical, sensory, or mental capabilities, or persons lacking experience or knowledge. Children are not to operate or play on or around this equipment.

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

AWARNING

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.

AWARNING

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.

HAZARD TO EQUIPMENT OR PERSONNEL

All work must be performed by Schneider Electric qualified and trained personnel.

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

General Information

Document Overview

Original Instructions

These are the original instructions provided by the manufacturer.

Save These Instructions

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

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.

NOTE: Unit images and component identification information are examples only.

For any updates to this manual, please contact Schneider Electric[™] providing the related part number displayed on the manual back cover.

Cross-Reference Symbol Used in This Manual



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

Abbreviations

The following are abbreviations and terms used in this manual:

- EEV: Electronic expansion valve
- VFD/VSD: Variable-frequency drive/variable-speed drive
- BMS: Building management system
- ATS: Automatic transfer switch
- HACS: Hot aisle containment system
- CACS: Cold aisle containment system
- RACS: Rack aisle containment system

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.

At the end of an EEE (Electrical and Electronic Equipment) useful life, any battery included in the same must be removed and separated according to the instructions provided by the supplier, before disposing of the product. Used batteries must be disposed of at an appropriate waste collection center, as required by local regulations.

Receiving and Inspecting the Equipment

Uniflair InRow air conditioner has been tested and inspected for quality assurance before shipment from Schneider Electric. Carefully inspect both the exterior and interior of the equipment immediately upon receipt to ensure that the equipment has not been damaged during transit.

Verify that all parts ordered were received as specified and that the equipment is the correct type, size, and voltage.

Filing a Claim

If damage is identified on receipt of the equipment, note the damage on the bill of lading and file a damage claim with the shipping company. Contact Schneider Electric Worldwide Customer Support at one of the numbers listed on the Web page on the back page of this manual for information on how to file a claim with the shipping company. The shipping claim must be filed at the receiving end of the delivery.

NOTE: In case of shipping damage, do not operate the equipment. Keep all packaging for inspection by the shipping company and contact Schneider Electric.

Storing the Cooling Unit Before Installation

NOTICE

DAMAGE FROM EXPOSURE

Leaving the equipment uncovered and exposed to possible damage from the environment will void the factory warranty.

Failure to follow these instructions can result in equipment damage.

If the cooling unit will not be installed immediately, store it in a safe place, protected from the weather.

Moving the Equipment

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.

The recommended tools for moving equipment while it is still on the pallet include the following:







Unit Overview

Model Identification

Standard Unit



The model number can be found on the outside of the shipping crate and on the nameplate located inside the equipment as shown. Use the table below to verify that the equipment is the correct size and voltage.

SKU	Range of Capacity	Heat Rejection	Voltage	Frequency	Reheat	Humidifier	Air Pattern
ACRD600	Up to 42 kW	Air-cooled	200–240	50/60 Hz	N/A	N/A	Rear to front
ACRD601	Up to 42 kW	Air-cooled	460–480	60 Hz	N/A	N/A	Rear to front
ACRD602	Up to 42 kW	Air-cooled	380–415	50/60 Hz	N/A	N/A	Rear to front
ACRD600P	Up to 42 kW	Air-cooled	200–240	50/60 Hz	Electric	Steam canister (replaceable)	Rear to front
ACRD601P	Up to 42 kW	Air-cooled	460–480	60 Hz	Electric	Steam canister (replaceable)	Rear to front
ACRD602P	Up to 42 kW	Air-cooled	380–415	50/60 Hz	Electric	Steam canister (replaceable)	Rear to front

Equipment Guidelines

Working Conditions and Environmental Limits

InRow DX units have a minimum heat load to ensure proper operation. Failure to operate the unit with at least the minimum load will result in one or more of the following conditions:

- Decreased operating efficiency
- Equipment on/off cycling
- Inadequate dehumidification
- Increased wear and tear caused by frequent on/off cycles
- · Decreased group control effectiveness
- · Potential increase in cost of ownership

Limit Working Conditions					
Models	ACRD600 ACRD601 ACRD602 ACRD600P ACRD601P ACRD602P				
Power Supply	200–240 V 3 Phase 50/60 Hz	460–480 V 3 Phase 60 Hz	380–415 V 3 Phase 50/60 Hz		
Minimum Recommended Load	8 kW (27,296 BTU/hr)				

Inventory

Install Kit Inventory



ltem	Description	Quantity
0	Humidifier inlet water connection, shutoff	
	1/4-in. NPT** and 1/4-in. BSPT* (ACRD600P)	1 each
	1/4-in. NPT** (ACRD601P)	1
	1/4-in. BSP1* (ACRD602P)	1
Ð	Condensate drain outlet, shutoff, 3/8-in. BSPT*	1
8	Condensate overflow hose adapter clamp, double snap	2
4	Temperature sensor	3
5	M5 x 10-mm TORX [®] screw with washer (spare parts)	5
6	M6 x 12-mm TORX screw with washer (spare parts)	5
Ð	M6 x 10-mm self-tapping TORX screw (spare parts)	5
8	M6 x 16-mm TORX screw with washer	5
9	Strain relief, metal (ACRD602 and ACRD602P only)	2
O	Wire clip	9
Ū	Tie wrap, 200 mm (8 in.)	10
Ð	Tie wrap, 390 mm (15.3 in.)	3
B	Resistor, 150 Ohm	1
Ø	Cable tie	10
G	Condensate overflow hose adapter	1
C	Reducer, 3/8-in. to 1/2-in. BSPT*	1
Œ	Reducer, 3/8-in. to 1/2-in. NPT**	1
ß	Voltage jumper	***

*British Standard Pipe Thread **National Pipe Thread ***Quantity and wire connections vary depending on model number. See

Component Identification

External Components

Front (ACRD60x and ACRD60xP)



- Display interface
- B Removable front door

Internal Components

Front (ACRD60x)



ltem	Description	ltem	Description
0	Condensate drain pan	Ø	Fan (2)
Ø	Electronic expansion valve	8	Fan guard (2)
3	Compressor	9	Electrical panel
4	Variable frequency drive for compressor (VFD)	Ð	Communication and external device connectors
5	Supply air temperature sensor	0	Ground lug
6	Main circuit breaker	Ð	Humidity sensor

Rear (ACRD60x)



Item	Description	Item Description	
0	Evaporator coil	6	Condensate pump
0	Sight glass	Ø	Air filters
B	Condensate drain pan	8	Pipe chase
4	Filter drier	9	Return air temperature sensor
6	Oil separator		

Front (ACRD60xP)



ltem	Description	ltem	Description
0	Electric heater	8	Main circuit breaker
2	Condensate drain pan	9	Fan (2)
B	Electronic expansion valve	O	Fan guard (2)
4	Humidifier	0	Electrical panel
6	Compressor	Ð	Communication and external device connectors
0	Variable frequency drive for compressor (VFD)	Ē	Ground lug
Ũ	Supply air temperature sensor	œ	Humidity sensor

Rear (ACRD60xP)



ltem	Description	ltem	Description
0	Evaporator coil	0	Humidifier
2	Sight glass	8	Air filters
B	Condensate drain pan	9	Pipe chase
4	Filter drier	Ū	Humidity sensor
5	Oil separator	0	Return air temperature sensor
G	Condensate pump		

Electrical Panels

ACRD600, ACRD601, ACRD602



ltem	Description
0	Transformers
0	Display interface connectors
8	Main controller board
4	Relay board
6	Ground lug
6	Main circuit breaker
0	Compressor fuse block (ACRD600, ACRD601) Compressor circuit breaker (ACRD602)
8	Fan circuit breakers
0	Fuse not populated
0	Transformer A fuse
Φ	Transformer C/MB fuse

NOTE: For a top installation, control wiring is routed through the wire channel located at the top-left corner, just above the user interface connectors.

For a bottom installation, the control wiring is routed to the access hole in the bottom of the equipment through wire clamps from the interface connectors. Then, the wiring is routed down along the electrical panel and secured with wire clamps

ACRD600P, ACRD601P, ACRD602P



Item	Description
0	Transformers
0	Display interface connectors
B	Main controller board
4	Relay board
Ø	Ground lug
6	Main circuit breaker
0	Compressor fuse block (ACRD600P, ACRD601P) Compressor circuit breaker (ACRD602P)
8	Fan circuit breakers
0	Controller fuse
0	Heater circuit breaker
0	Humidifier circuit fuse
Ð	Heater contactors
Ð	Humidifier contactor

NOTE: For a top installation, control wiring is routed through the wire channel located at the top-left corner, just above the user interface connectors.

For a bottom installation, the control wiring is routed to the access hole in the bottom of the equipment through wire clamps from the interface connectors. Then, the wiring is routed down along the electrical panel and secured with wire clamps

Refrigeration Piping Diagram

BOTTOM PIPING	TOP PIPING
SV9 LOH UNIT	DX UNIT
Item Description	Item Description
Pitch in direction of refrigerant flow; 4 mm per m (1/2-in, per 10 ft)	Check valve
 Reduction of piping diameter for vertical piping run (if necessary) 	─ P-trap
Shut-off valve	S-trap
Head pressure control valve	Inverted P-trap
Pressure relief valve	

NOTE: All lines are Type L ACR copper tubing.

NOTE: Shutoff valves shown nearest to the condenser are provided in receiver kit.

NOTE: Route piping through the top or bottom of the InRow DX.

NOTE: Trap the vertical discharge line every 6 m (20 ft) to ensure proper oil return.

NOTE: The maximum piping run is 91 m (300 ft) equivalent length. Size the piping pursuant to accepted refrigeration practice.

NOTE: The condenser can be placed up to 4.5 m (15 ft) below the indoor cooling unit for equivalent line lengths of 8 m (25 ft) or less.

For Condensers Mounted Below the Level of the Indoor Unit							
Piping Equivalent Length – m (ft)	91 (300)	76 (250)	61 (200)	46 (150)	30 (100)	15 (50)	8 (25)
Allowable Distance From Bottom of Condenser to Bottom of Indoor Unit* – m (ft)	0.3 (1)	1.5 (5)	2.1 (7)	2.7 (9)	3.3 (11)	3.9 (13)	4.5 (15)

*When condenser is installed below unit level, use 7/8 in. pipe for liquid line.

NOTE: The condenser can be placed higher than indoor cooling unit but height shall be no more than 27 m (90 ft), regardless of piping length.

Dimensions and Weights

Cooling Units



Model	Net Weight – kg (lb)	Shipping Weight – kg (Ib)
ACRD600	402 (886)	447 (986)
ACRD601	391 (862)	436 (961)
ACRD602	391 (862)	436 (961)
ACRD600P	413 (911)	458 (1,010)
ACRD601P	402 (886)	447 (986)
ACRD602P	402 (886)	447 (986)

Service Access

A minimum of 900 mm (36 in.) of clear floor space in front of and behind the equipment is recommended for service access. All required normal maintenance is performed from the front and rear of the equipment.

Most of the cooling components in the equipment can be replaced while the unit is installed in row and without the use of heavy lift equipment or a welding torch. However, if it is necessary to remove the unit for repair, use the casters on the equipment to remove it from the row. An area of minimum 1200 mm (48 in.) of clear floor space in front of or behind the equipment is recommended to roll out the equipment.

NOTE: Check local and national codes and regulations for further service access requirements.



NOTE: Image is an example only: your unit may differ.

SERVICE ACCESS REQUIRED WHEN EQUIPMENT IS INSIDE THE ROW FREE SPACE NEEDED TO MOVE EQUIPMENT OUTSIDE THE ROW

NOTE: Dimensions are shown in mm (in.).

Piping and Electrical Access Locations

Top Piping and Power Access Locations—Top View, Looking Down (ACRD600, ACRD600P Series)



NOTE: Dimensions are shown in mm (in.).

ltem	Description
0	Refrigerant discharge line
0	Refrigerant liquid line
B	Trough for communication cables
4	Power connections
Ø	Humidifier water supply (ACRD600P series only)
6	Condensate drain line outlet

Bottom Piping and Power Access Locations—Bottom View, Looking Up (ACRD600, ACRD600P Series)



NOTE: Dimensions are shown in mm (in.).

ltem	Description
0	Humidifier water supply (ACRD600P series only)
0	Condensate drain line outlet
8	Power connections
4	Communication connections—27.80 mm (1.09 in.)
6	Condensate overflow—50.00 mm (1.97 in.)
6	Refrigerant discharge line
Ø	Refrigerant liquid line

Installation

Room Preparation

During the configuration of the data center, consider ease of entry for the equipment, floor loading factors, and accessibility to piping and wiring. In addition, the room temperature and humidity combination should conform to the environmental operating envelope as defined in the following graphics.



Seal the room with a vapor barrier to minimize moisture infiltration. Polyethylene film is recommended for ceiling and wall applications. Apply rubber- or plastic-based paints to concrete walls and floors.

Insulate the room to minimize the influence of exterior heat loads. Reduce fresh air to the minimum required by local and national codes and regulations. Fresh air imposes extreme load variation on the cooling equipment from summer to winter and causes increased system operating costs.

Air Distribution

The equipment distributes air in a back-to-front discharge pattern, removing hot air from a hot aisle and discharging cooled air into a cold aisle.

NOTE: The equipment is used for free air discharge or for use with the Rack Air Containment System or EcoAisle Containment System. The equipment is not intended to be connected to a duct system.

Incoming Power Supply Requirements

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.

See the name plate on the unit to determine the maximum possible current draw of the cooling unit. Provide either a single outlet circuit or a Power Distribution Unit (PDU) with sufficient capacity to handle all loads. Do not plug two Uniflair InRow cooling units into the same branch circuit or PDU.

Removing Doors and Panels

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.

NOTICE

EQUIPMENT DAMAGE

Do not lean the doors against a wall with the side panel latches facing the wall. This can deform the latches and prevent them from working properly.

Failure to follow these instructions can result in equipment damage.

Removing the Front and Rear Doors

- 1. Unlock and open the door 90 degrees.
- 2. Unplug the ground wires.
- 3. Lift the door up and off the hinges.



Side Panels





INSTALLING THE SIDE PANEL



Electrical Panel Access

ELECTRICAL HAZARD

Ensure all wiring is not energized before routing cables into this equipment. Only qualified service and maintenance personnel should work on this equipment.

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

Remove the electrical panel cover to install the main power cable.

- 1. Remove the five M4 screws securing the cover.
- 2. Remove the cover by opening it and sliding it toward the front of the equipment.



Stabilizing the Cooling Unit

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

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

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.

Joining the Equipment to Enclosures

Joining to NetShelter[™] SX Enclosures

Joining brackets are installed on the unit, two in the front and two on the rear. Each bracket is designed to accommodate both 24-in. or 600-mm enclosure spacing.

NOTE: Image is an example only: the unit may differ.

- 1. Loosen the attachment screw.
- 2. Rotate the brackets 90°.
- 3. Install a provided Phillips M5 screw through the bracket and into the adjoining enclosure.
- 4. Retighten the attachment screw.



Joining to NetShelter VX and VS Enclosures



For information on joining the equipment to NetShelter VX and VS enclosures, see the installation sheet *NetShelter SX to VX or VS External Joining Kit*—*AR7601, AR7602.*

Leveling

The leveling feet provide a stable base if the floor is uneven but cannot compensate for a badly sloped surface.

Once the cooling unit is in its intended location, use a screwdriver to turn each leveling foot until it makes contact with the floor. Adjust each foot until the cooling unit is level and plumb. The casters and leveling feet can be removed to allow the cooling unit to rest directly on the floor.

NOTE: Front and rear panels will need to be removed to access the leveling screw.

NOTE: Image is an example only: the unit may differ.



NOTE: Use a 13-mm open-ended wrench to level the equipment without removing the doors.

Connections Overview

All connections to and from the indoor unit can be made through either the top or the bottom of the unit. Once the corresponding connectors are brazed or soldered into place, the equipment can be disconnected without soldering, welding, or gluing. See the following tables for information about the sizes and types of connectors.

Power Connections

		Minimum	Movimum		Comp		
Model	Voltage	Circuit Ampacity (MCA)	Overload Protection (MOP)	Full Load Amperes (FLA)	Locked Rotor Amperes (LRA)	Compressor Rated Load Amperes (RLA)	Power – kW
ACRD600	200-240 V, 50/60 Hz	52.6	80	—	29.7*	36.6	14.6
ACRD601	460-480 V, 60 Hz	24.4	40	—	28.1*	16.6	14.6
ACRD602	380-415 V, 50/60 Hz	31.1	50	25.2	28.1*	16.6	14.6
ACRD600P	200-240 V, 50/60 Hz	78.6	110	—	29.7*	36.6	23.5
ACRD601P	460-480 V, 60 Hz	36.9	50	—	28.1*	16.6	23.5
ACRD602P	380-415 V, 50/60 Hz	45.8	60	34.2	28.1*	16.6	23.5

*Consult local and national codes for wire size, conduit requirements, and overload protection.

Sensor and Communication Connections

г

Connection	Туре	Wire	Torque	
Connection	Type	Minimum	Maximum	Torque
Rack temperature sensors	RJ-45	—	—	_
A-Link IN	RJ-45	—	—	—
A-Link OUT	RJ-45	—	—	—
Network port	RJ-45	—	—	—
Customer output, Normally Closed (NC)	Screw connector	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)	0.6 Nm
Customer output, Common (COM)	Screw connector	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)	0.6 Nm
Customer output, Normally Open (NO)	Screw connector	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)	0.6 Nm
Supply GND	Screw connector	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)	0.6 Nm
Supply 12 VDC	Screw connector	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)	0.6 Nm
Supply 24 VDC	Screw connector	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)	0.6 Nm
Customer input +	Screw connector	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)	0.6 Nm
Customer input -	Screw connector	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)	0.6 Nm
Modbus D1	Screw connector	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)	0.6 Nm
Modbus D0	Screw connector	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)	0.6 Nm
Modbus GND	Screw connector	AWG 24 (0.2 mm ²)	AWG 18 (0.75 mm ²)	0.6 Nm

Piping Connections

Connection	Туре	ACRD600 ACRD600P	ACRD601 ACRD601P	ACRD602 ACRD602P
Refrigerant discharge	1 1/4-in. threaded ring seal*	3/4-in. ID	3/4-in. ID	3/4-in. ID
Refrigerant liquid	1 1/4-in. threaded ring seal*	3/4-in. ID	3/4-in. ID	3/4-in. ID
Humidifier water supply (ACRD600P, ACRD601P, ACRD602P only)	Quick coupling	1/4-in. NPT or 1/4- in. BSPT	1/4-in. NPT	1/4-in. BSPT
Condensate drain	Quick coupling	1/2-in. female NPT or 1/2-in. female BSPT	1/2-in. female NPT or 1/2-in. female BSPT	1/2-in. female NPT or 1/2-in. female BSPT

*Use a new Teflon gasket (supplied) to prevent leakage. Tighten the nut to 90 Nm (66 ft-lb).

Mechanical Connections

Refrigerant Piping

The equipment must be connected to a condenser— either a remote outdoor condenser or an indoor centrifugal condenser. Systems with remote outdoor or indoor centrifugal condensers must have discharge and liquid lines from the equipment to the condenser. Calculate an equivalent length based on the actual linear length of the run, including valves and fittings.

NOTE: All fittings should be long-radius to minimize pressure drop.

NOTE: Change the size of the pipe after the P-trap.



See Refrigeration Piping Diagram, page 20.

Make all refrigerant lines as short and direct as possible. Horizontal suction lines must be pitched downward at a minimum of 4 mm per m (1/2 in. per 10 ft) in the direction of flow to aid in oil return. Install a trap in the suction line at the bottom of the riser and additional traps approximately every 6 m (20 ft) of rise to ensure proper oil return. Traps are normally not necessary at the base of discharge lines; however, the line should be looped toward the floor before running it vertically to prevent the drainage of oil back to the compressor during shutdown periods. Isolate piping from structural surfaces using vibration clamps.

NOTE: Field-installed gas lines must be insulated.

NOTE: Install all piping in accordance with applicable industry guidelines as well as local and national codes and regulations.

The following table provides ASHRAE standards for equivalent piping lengths of fittings and valves.

	Type of Fitting or Valve—Equivalent Length of Pipe in m (ft)							
Nominal Pipe Size	ACR Tubing Size	Gate Valve	Angle Valve	Globe Valve	Standard Elbow 90°	Contraction 1/2	Tee Branch	Tee Straight
3/4 in.	7/8 in.	0.27 (0.9)	2.74 (9.0)	6.71 (22.0)	0.61 (2.0)	0.30 (1.0)	1.22 (4.0)	0.43 (1.4)
1 in.	1 1.8 in.	0.30 (1.0)	3.66 (12.0)	8.84 (29.0)	0.79 (2.6)	0.37 (1.2)	1.52 (5.0)	0.52 (1.7)
1 1/4 in.	1 3.8 in.	0.46 (1.5)	4.57 (15.0)	11.58 (38.0)	1.01 (3.3)	0.55 (1.8)	2.13 (7.0)	0.70 (2.3)

Recommended Line Sizes

Equivalent Length [L _e] – m (ft)	Line Type	Length Details	Pipe Size
All lengths	Discharge line (Horizontal/ Vertical)	All lengths	1 1/8 in.
	Liquid line	All lengths	7/8 in.

NOTE: Actual vertical height of the condenser cannot exceed 90 ft.

Connect Refrigerant Lines



Be sure to use only clean, air conditioning/refrigeration (ACR) pipe and follow standard procedures for pipe size selection for air-cooled equipment. All refrigerant piping must be Type L ACR hard-drawn copper pipes (soft/annealed copper is unacceptable) and must be 700 psig UL rated or equivalent. The maximum allowable equivalent length between the evaporator and condenser is 90 equivalent m (300 equivalent ft). Vertical runs require a trap every 6 m (20 ft) of rise.

NOTE: When brazing field-installed copper refrigeration lines, use a nitrogen purge to minimize contamination of the refrigeration system during the brazing process.

The air-cooled equipment has been dehydrated at the factory and is shipped with a holding charge of nitrogen. Test refrigerant connections for leaks before replacing the holding charge.

NOTE: Remove the nitrogen holding charge tag from the lines after nitrogen removal and product startup.

Connect both refrigerant lines to the equipment, using all fittings as shown.



See Install Kit Inventory, page 12.

Item	Description
0	3/4–in. copper tubing (field supplied and installed)
0	Ball valve (field supplied)
3	3/4-in. female threaded ring seal connector (field supplied)
4	Gasket (field supplied)
5	3/4–in. male connector (field supplied)
G	3/4-in. male connector (factory installed inside the equipment)

Condenser

Install and pipe the condenser in accordance with the provided instructions.

NOTE: If no receiver kit is being installed, a field-supplied pressure relief valve must be installed.

Flooded Receiver

Install the flooded receiver in accordance with the instructions included with the kit.

Humidifier (ACRD60xP Only)

NOTICE

COMPLIANCE REQUIREMENT

The installation must comply with local plumbing codes.

Failure to follow these instructions can result in equipment damage.

The humidifier water supply line is routed to the unit in flexible tubing (or alternative tubing approved by local building codes) that will allow the humidifier water supply line connector to be moved approximately 25 mm (1 in.) away from the equipment. This facilitates removing the equipment from a row.

A factory-installed quick-connector for connecting the tubing to the equipment is supplied. The quick connector has a male 1/4-in. NPT or male 1/4-in. BSPT to connect to a compression fitting. The quick-connector has a shut-off function, so no separate shut-off valve is necessary.

The humidifier water supply line can be connected through either the top or the bottom of the equipment as shown. Male quick-connectors are positioned in both the top and the bottom of the equipment.

Water pressure should be between 100 and 800 kPa (15 and 115 psi) for proper humidifier operation. Dirty water must be filtered before it is supplied to the humidifier. Water temperature must be between 1°C and 40°C (34°F and 104°F). Do not use softened, de-mineralized, or de-ionized water.





See the manual included with the humidifier for more information about water quality, mineral content, hardness, and minimum/maximum levels for conductivity.

NOTE: Before making any connections, clear any debris that may have accumulated during assembly from the humidifier water supply line.

NOTE: It is recommended that a solenoid water valve be installed in the humidifier supply line, connected to a leak detector.

Connect the fittings to the humidifier water supply line as shown, then connect the water supply line quick-connector to the top or bottom humidifier input.

ltem	Description
0	Flexible tubing (field supplied and installed)
0	Compression fitting (field supplied and installed)
€	Straight reduction (supplied)
4	Quick connector (supplied)





Condensate Pump

NOTICE

WATER DAMAGE

- Failure to properly route the condensate pump drain line before operation could result in water damage.
- Do not route drain or supply lines above computer equipment, Uninterruptible Power Supply (UPS) units, Power Distribution Units (PDUs), or light fixtures.
- Comply with all local and national codes and regulations when installing the condensate drain line to the proper drain system.

Failure to follow these instructions can result in equipment damage.

The pump is factory-wired and piped internally to the condensate drain pan. The pump can move liquid a maximum of 18 m (60 ft), which may include a maximum lift of 3.5 m (11.5 ft) at a flow rate of 32 l/hr (8.45 gph). For example, if your lift is 3 m (10 ft), you will have 15 m (50 ft) of usable run remaining. The pump uses an on-board condensate high level float switch wired into the equipment for alarm capabilities.



The condensate drain line can be connected through either the top or the bottom of the equipment using factory-installed male quick connectors and tubing approved by local building codes that will allow the drain line connector to be moved approximately 25 mm (1 in.) away from the equipment. This facilitates removing the equipment from a row. Female quick connectors and reduction fittings are supplied with the equipment. Connect the fittings to the humidifier water supply line as shown, then connect the water supply line quick-connector to the top or bottom humidifier input.

Description
Flexible tubing (field supplied and installed)
Compression fitting (field supplied and installed)
Quick connector (supplied)

NOTE: Perform all piping in accordance with applicable industry guidelines as well as local and national codes and regulations.


Condensate Overflow

NOTICE

WATER DAMAGE

Failing to perform the following procedure may result in condensate pan overflow and possible damage to the data center.

Failure to follow these instructions can result in equipment damage.

Connect the equipment condensate overflow line to an external drain using the fittings, as shown.



- 2 Hose adapter clamp (supplied)
- B Hose adapter (supplied)
- 7/8-in. copper tubing (field supplied and installed)

Leak Sensor—Optional

Install one leak sensor (AP9325). To extend the leak sensor length, add up to three additional leak sensors (AP9326).



- 1. Connect the leak sensor to the equipment using the leak detector port as shown
- 2. Position the leak detector inside or outside the equipment.

NOTE: Install leak sensors on a clean surface, and do not allow them to touch metal that is in an air stream.

- 3. Route the leak sensor to the outside through either the bottom plate or the door.
- 4. Secure the leak sensor wire to surfaces using cable ties and cable tie holders (provided with the leak detector).





Adding a Holding Charge

NOTICE

DAMAGE TO THE MICRON GAUGE

Install a ball valve before the micron gauge to prevent damage to the micron gauge during charging.

Failure to follow these instructions can result in equipment damage.

R410A is a mixed refrigerant. When charging this equipment with mixed refrigerant, only liquid refrigerant must be charged.

NOTE: The equipment must be charged only with R410A. The installing contractor is responsible for providing sufficient refrigerant for a complete system charge during start-up.

- 1. Pressurize the system to 17.2 bar (250 psi) with nitrogen (use the service, discharge, and suction ports). Leave the system pressurized for 24 hours, and check the gauges for a drop in pressure.
- 2. Use a deep vacuum pump and pull the first vacuum down to 750 microns. The initial pull down can take up to 24 hours.



- 3. Once the vacuum level has reached 750 microns, close the manifold gauge valves and turn off the vacuum pump. Wait for one hour (the vacuum should not rise above 1500 microns) and then break the vacuum with nitrogen gas (use the service and discharge ports) until the system pressure equals atmospheric pressure.
- 4. Pull a final vacuum down to 300 microns for a minimum of two hours.
- 5. Charge with liquid R-410A through service port and needle valve on condenser until the pressure equalizes with the refrigerant canister.
- 6. Open the ball valves and then start the system and charge the refrigerant slowly through the suction port.

Adding Compressor Oil

Unit shall be field charged with 0.44 I (15 oz.) POE oil during startup to make sure oil separator functions normally.

Electrical Connections

A A 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 and trained 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.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Potentially dangerous and lethal voltages exist within this unit. More than one disconnect switch may be required to energize or de-energize this equipment. Observe all cautions and warnings. Failure to do so could result in serious injury or death. Only qualified service and maintenance personnel may work on this equipment.

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

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 following electrical connections are required in the field:

- Controls (customer interface connections, Network Management Card)
- · Communication (A-Link, Building Management System)
- Power to the Uniflair Direct Expansion InRow Cooling unit (single-phase plus ground)
- Power to flooded receiver heater



See the electrical schematic (located on the electrical box) for all electrical connections.



See the equipment name plate for voltage and current requirements.

All low-voltage connections, including data and control connections, must be made with properly insulated wires. Low-voltage wiring must be insulated based on the wiring with which it is routed. The low-voltage connections must have 300-V minimum insulation.

NOTE: A power disconnect is required to isolate each unit for maintenance and servicing.

Customer Interface Connections

NOTE: Wire all input and output connections as Class 2 circuits.

Depending on the configuration, additional customer interface connections may be required for the A-Link remote communications through the Network Management Card support or traditional equipment-monitoring software.

0 Ø 2 ß A Ø Õ Þ Ø ð Ó Ц Ō ወ ē Ð Ø ē Ø Ð 0

Description Item

- Rack inlet temperature sensors 1, 2, 3
- Ø A-Link IN

0

- Ø A-Link OUT 0
 - Network port
- Customer output, NC (normally closed) Ø
- 6 Customer output, COM (common)
- Customer output, NO (normally open) Ø
- 8 Supply GND (Ground)
- Supply 12 VDC (current limit: 20 mA) 0
- O Supply 24 VDC (current limit: 20 mA)
- 0 Customer input + (12-30 VAC/VDC, 24 VDC @ 11 mA)
- Ð Supply COM
- Ð RTRX (-)
- Ø RTRX (+)
- Ð Modbus GND
- Ø Supply air temperature sensor (front)
- Supply air humidity sensor (front) Ð

Item	Description					
0	Rack inlet temperature sensors 1, 2,	Three temperature sensors which must be installed on				
	3	the cold aisle side of the server racks. See				
0	A-Link IN	In and out connections for A-Link. The terminators				
8	A-Link OUT	supplied with the equipment must be plugged into the first A-link port and the final A-Link port for the group.				
4	Network port	 10/100 Base-T Network port. Connects the equipment to the network; Status and Link LEDs indicate network traffic. Status LED—blinks orange and green at startup; indicates the status of the network connection (solid green—IP address established; blinking green— attempting to obtain an IP address). 				
		 Link LED—blinks to indicate network traffic (green — operating at at 10 mbps; orange—operating at 100 				
6	Customer output, NC (normally closed)	Customer-configurable output relay which can be activated for all types of alarms or critical alarms. The				
6	Customer output, COM (common)	relay can be connected to external equipment using 30 VAC/VDC, 2 A.				
0	Customer output, NO (normally open)					
8	Supply GND (Ground)	Can be used for customer input and output interface.				
9	Supply 12 VDC (current limit: 20 mA)	Can be used for customer input and output interface. Current limit is 20 mA.				
Ø	Supply 24 VDC (current limit: 20 mA)	Can be used for customer input and output interface. Current limit is 20 mA.				
0	Customer input + (12–30 VAC/VDC, 24 VDC @ 11 mA)	Used for remote shutdown of an InRow DX unit. Voltage is applied from the internal power supply or by using an external power supply.				
Ð	Supply COM	Ground connection point for remote shutdown supply source.				
Ē	RTRX (+)	Connections for Building Management System. Wire a				
ß	RTRX (-)	150-Ohm terminator resistor (supplied) into the final				
ß	Modbus GND	INROW DX unit, between Modbus DU and Modbus D1.				
C	Supply air temperature sensor (front)	Temperature sensor installed on the front of the equipment.				
Ū	Supply air humidity sensor (front)	Humidity sensor installed on the front of the equipment.				

Form C Alarm Contacts and Shutdown Input





See items 5 through 12 in Customer Interface Connections, page 41.

A relay internal to the user interface is controlled by a user-defined alarm (for example, malfunctioning fans). Before an alarm condition, the signal on the COM (common) terminal is routed to the NC (normally closed) terminal. When the alarm is activated, the relay is energized, causing the signal on the COM terminal to be routed to the NO (normally open) terminal. The NO and NC terminals could be connected to remote indicator lights, a warning buzzer, or another device to alert an operator to the presence of an alarm condition.

A remote disconnect switch can be connected to the shutdown inputs as shown.

NOTE: Either +12 VDC or +24 VDC can be used to power the remote disconnect.

The equipment may be remotely disconnected by supplying a voltage to the shutdown inputs as shown above. Option 1 shows a remote switch that uses internal +12 VDC or +24 VDC supply to manually stop operation. Option 2 shows how any external source of 12 VAC/VDC or 24 VAC/VDC may be connected to the shutdown input.

Rack Air Temperature Sensors

The rack air temperature sensors control unit airflow and ensure an adequate supply of cooling air to the server racks in the data center. The unit is supplied with three external rack temperature sensors. These sensors are attached on the unit front door.



Installation

NOTE: Rack temperature sensor installation is not required if the equipment operates in Rack Air Containment System (RACS) or Hot Aisle Containment System (HACS) mode. The Uniflair InRow configuration requires temperature sensor installation.

- 1. Route the sensor through either the top or the bottom of the adjacent server rack.
- 2. Secure the temperature sensor cable to the front door of the adjacent server rack at multiple locations using the provided wire clips as shown.



NOTE: Remote rack sensors must be installed for proper operation.

The sensors should be located on racks that are adjacent to the cooling unit. The optimum position of the rack temperature sensors will vary from installation to installation but should be located in close proximity to fancooled IT equipment to ensure accurate readings. Servers most likely to have insufficient or inadequately cooled cooling air due to the recirculation of hot air from the hot aisle include:

- Servers positioned at the top of a rack
- Servers positioned at any height in the last rack at an open end of a row
- Servers positioned behind flow-impairing obstacles such as building elements
- · Servers positioned in a bank of high-density racks
- Servers positioned next to racks with Air Removal Units (ARU)
- Servers positioned very far from the equipment
- · Servers positioned very close to the equipment

Communication Connections

A-Link Connections

The A-Link bus connection allows multiple InRow cooling units (up to twelve) to communicate with one another. Only one InRow cooling unit must be defined through the display interface; other InRow cooling units are numbered automatically.

To enable the InRow units to work as a group, link them using the supplied cables, or CAT-5 cables with RJ-45 connectors. A terminator (150 Ohm, 1/4 W) is installed in the A-Link port, and must remain inserted into the A-Link ports of the first and final InRow units only.

The maximum wire length for the entire group may not exceed 1000 m (3280 ft).



Building Management System (BMS)

The Modbus interface allows each InRow cooling unit to communicate with the BMS. Use a three-wire cable to connect each cooling unit in turn. Wire a 150 Ohm, 1/4-W terminator resistor (included) into the MODBUS master and the final cooling unit between Modbus D0 and Modbus D1.

MODBUS master and the final cooling unit between Modbus D0 and Modbus D1. Each cooling unit has a three-wire Modbus terminal on the user interface. Use a connector with screw terminals to allow wiring to be attached.



See Customer Interface Connections, page 41.



For information on setup of Modbus parameters, see the *InRow DX Operation and Maintenance Manual*.



Network Port



The network port allows communication from the cooling unit to the network.

Power Connections

Wiring Configurations

A A 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 and trained 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.

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.

AWARNING

HAZARD TO EQUIPMENT OR PERSONNEL

All work must be performed by Schneider Electric qualified and trained personnel.

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

NOTE: To ease installation and future removal of the equipment for repairs, use flexible conduit for the power wiring.

Route incoming power from the PDU or electrical service panel to the electrical panel located in the left side of the equipment. Route power either through the top or the bottom of the equipment.

Top Routing

1. Remove the electrical panel cover.



See Electrical Panel Access, page 28.

2. Locate the power connection plate at the top of the equipment.



See Top Piping and Power Access Locations—Top View, Looking Down (ACRD600, ACRD600P Series), page 23.

- 3. Loosen the screw securing the connection plate, and remove the plate.
- 4. Attach the conduit connector using the pilot hole in the connection plate.
- 5. Route the cabling to the main breaker as shown.
- 6. Connect the power wiring to the top of the main circuit breaker using the torque specified on the breaker. Connect the phases as marked next to the terminals.
- 7. Connect the ground wire to the ground terminal block located above the main circuit breaker.
- 8. Reinstall the connection plate and the electrical panel cover.



Bottom Routing

1. Remove the electrical panel cover.



See Electrical Panel Access, page 28.

2. Locate the power connection plate in the bottom of the equipment.



See Bottom Piping and Power Access Locations—Bottom View, Looking Up (ACRD600, ACRD600P Series), page 24.

- 3. Loosen the screw securing the connection plate, and remove the plate.
- 4. Attach the conduit connector using the pilot hole in the connection plate.
- For ACRD602 and ACRD602P units, perform the steps in Strain Relief, page 51.
- 6. Route the cabling to the main breaker as shown.
- 7. Connect the power wiring to the top of the main circuit breaker using the torque specified on the breaker. Connect the phases as marked next to the terminals.
- 8. Connect the ground wire to the ground terminal block located above the main circuit breaker.
- 9. Fasten the cabling inside the equipment with the provided tie wraps.
- 10. Reinstall the connection plate and the electrical panel cover.

Adjustable metal strain relief brackets are provided.

- 1. Hook one strain relief into a pair of slots in each of the two locations shown.
- 2. Route the electrical cable up from the bottom of the equipment, passing through the strain reliefs.
- 3. Tighten the screws on the strain reliefs to capture the electrical cable, taking the weight off of the inner conductors.
- 4. Continue connecting electrical wiring to the circuit breaker.

Voltage Selections



Your equipment can operate at various supply voltages, provided the proper voltage jumpers are connected to the input transformers. Read the part number on the jumpers connected at the factory and compare that number to the table below. If the correct jumpers for your input voltage are not connected, remove them and connect the proper jumper.

Jumper Connections	
Transformer A (0) connected to J50 (2)	

Model	Input Voltage	Use Jumper Part Number		
	208 (50/60 Hz)	0W2540 (default)		
	230 (50/60 Hz)	0W2541		
	460 (60 Hz)	0W2545		
	480 (60 Hz)	0W2546 (default)		
	380 (50/60 Hz)	0W2542		
	400 (50/60 Hz)	0W2543 (default)		
	415 (50/60 Hz)	0W2544		



Voltage Selections



Your equipment can operate at various supply voltages, provided the proper voltage jumpers are connected to the input transformers. Read the part number on the jumpers connected at the factory and compare that number to the table below. If the correct jumpers for your input voltage are not connected, remove them and connect the proper jumper.

Jumper Connections				
Transformer A (0) connected to J51 (9)				
Transformer A (2) connected to J50 (4)				

Model	Input Voltage	Use Jumper Part Number		
	208 (50/60 Hz)	0W2540 (default)		
	230 (50/60 Hz)	0W2541		
	460 (60 Hz)	0W2545		
	480 (60 Hz)	0W2546 (default)		
	380 (50/60 Hz)	0W2542		
	400 (50/60 Hz)	0W2543 (default)		
	415 (50/60 Hz)	0W2544		

Flooded Receiver Heater

The flooded receiver is equipped with a heater to keep the refrigerant warm during extremely cold weather conditions. The heater requires 208–240/1~/60 Hz electrical service to be wired to the condenser electrical panel.



See submittal drawings for details.

NOTE: Observe all local and national electrical codes.

Connect Flooded Receiver Heater

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 flooded receiver is equipped with a heater to keep the refrigerant warm during extremely cold weather conditions. If your location is subject to subfreezing temperatures for extended periods of time, you must connect the self-regulating heater to a convenient source of electrical power. If you are not sure your location or application requires the heater, contact Schneider Electric Customer Support.



See the documentation included with the flooded receiver for more information on voltage requirements.

Charging the Refrigeration System

Calculating R410A Charge

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

Condenser Medel	Schneider Electric SKU	Selected Ambient Temperature – °C (°F)	Condenser Summer Charge – kg (lb)	Condenser Flooded Charge for Different Minimum Outdoor Ambient Temperatures – kg (lb)				
Condenser Model				4°C (40°F)	–7°C 20°F)	–18 °C (0°F)	–29 °C (–20°F)	–40°C (–40°F)
LCS5213-099-2C	ACCD75228	35.0–40.6 (95–105)	6.1 (13.3)	9.7 (21.4)	9.7 (21.4)	10.3 (22.8)	10.4 (22.9)	10.8 (23.7)
LCS5213-113-2C	ACCD75229	46.0 (115)	8.1 (17.9)	13.0 (28.6)	12.9 (28.5)	13.8 (30.4)	13.9 (30.6)	14.3 (31.6)
LCS5213-099-4C	ACCD75230	35.0–40.6 (95–105)	6.1 (13.3)	9.7 (21.4)	9.7 (21.4)	10.3 (22.8)	10.4 (22.9)	10.8 (23.7)
LCS5213-113-4C	ACCD75231	46.0 (115)	8.1 (17.9)	13.0 (28.6)	12.9 (28.5)	13.8 (30.4)	13.9 (30.6)	14.3 (31.6)
CAP2001P	ACCD75232	35.0–46.0 (95–115)	7.7 (17.0)	12.4 (27.2)	12.4 (27.2)	13.1 (28.9)	13.2 (29.1)	13.7 (30.1)
CAP2001P	ACCD75232-C	35.0–46.0 (95–115)	7.7 (17.0)	12.4 (27.2)	12.4 (27.2)	13.1 (28.9)	13.2 (29.1)	13.7 (30.1)
CAP2001P	ACCD75232- 40C	35.0–46.0 (95–115)	7.7 (17.0)	12.4 (27.2)	12.4 (27.2)	13.1 (28.9)	13.2 (29.1)	13.7 (30.1)
CAP2001P.0005	ACCD75233-C	35.0–46.0 (95–115)	7.7 (17.0)	12.4 (27.2)	12.4 (27.2)	13.1 (28.9)	13.2 (29.1)	13.7 (30.1)
LCV8211-009-2C	ACCD75234*	35.0–46.0 (95–115)	6.1 (13.3)	9.0 (19.9)	9.3 (20.6)	9.9 (21.7)	10.0 (21.9)	10.4 (23.0)
LCV8211-009-4C	ACCD75235*	35.0–46.0 (95–115)	6.1 (13.3)	9.0 (19.9)	9.3 (20.6)	9.9 (21.7)	10.0 (21.9)	10.4 (23.0)

* Make-to-order.

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

Equipment charge: 5.5 kg (12.1 lb)

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

Density of liquid R410A at 40.6 $^\circ C$ (105 $^\circ F) and 27.5 bar (400 psig): 0.975 g/cm^3 (60.9 lbm/ft^3)$

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

Total R410A charge:

- Metric: 5.5 + 7.7 + 13.1 + (7.6 * 0.28) = 28.4 kg
- Imperial: 12.1 + 17.0 + 28.9 + (24.9 * 0.186) = 62.6 lb

Charging the Equipment

HAZARD TO EQUIPMENT OR PERSONNEL

All work must be performed by Schneider Electric qualified and trained personnel.

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

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.

NOTICE

DAMAGE TO COMPRESSOR

Introducing a fast charge of liquid refrigerant through the suction port may damage the compressor.

Failure to follow these instructions can result in equipment damage.

Perform the Add Initial Refrigerant Amount—"Fast Charge" Method, page 56 process first, and then select one of the following to complete charging the system: Top Off the System Refrigerant Charge—"Fast Charge" Method, page 57 or Top Off the System Refrigerant Charge—"Slow Charge" Method, page 58.

Add Initial Refrigerant Amount—"Fast Charge" Method

Perform the following with the system not in operation.



item	Description
0	Discharge isolation valve
0	Liquid line isolation valve

- B Receiver outlet
- A Receiver inlet
- 1. Open all isolation valves.
- 2. Liquid charge into the liquid line isolation valve near the condenser. Liquid will fill the liquid line and back fill the receiver (it will stop at the check valve on the inlet to the receiver and at the liquid line solenoid on the indoor unit).
- 3. Charge until the initial charge (80% of calculated) is met or until the system pressure and refrigerant cylinder are equalized.

Top Off the System Refrigerant Charge—"Fast Charge" Method



Item Description

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





Top Off the System Refrigerant Charge—"Slow Charge"

Item Description

- Discharge isolation valve 0
- 0 Liquid line isolation valve
- Receiver outlet B
- Ø Receiver inlet
- 1. Attach a refrigerant gauge manifold to the discharge and suction ports on the cooling unit.
- Attach a manifold charging hose to the refrigerant cylinder and purge the 2. hose if necessary.
- 3. Add liquid refrigerant very slowly through the suction port at a pressure of about 1 bar (15 psig) above the suction pressure. Do not charge for longer than two-minute intervals; stop charging and wait 3–5 minutes for the system to stabilize.
- 4. Repeat step 3 as necessary.
- 5. When charging is complete, close the refrigerant cylinder valve and remove the charging hose from the suction port.
- 6. Slowly open the liquid line isolation valve.



Compressor Oil Charge

Oil Charging Procedure

HAZARD TO EQUIPMENT OR PERSONNEL

All work must be performed by Schneider Electric qualified and trained personnel.

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

NOTICE

DAMAGE TO EQUIPMENT

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:

- Failure of valves and pistons due to oil slugging.
- Excessive oil carryover.
- Loss of evaporator performance due to oil level build-up in the low-pressure side of the system.

Failure to follow these instructions can result in equipment damage.

- 1. Prepare to add oil:
 - a. Use a new sealed oil can and a manual oil pump. The pump hose must be sized for 1/4 in. flare fittings and must include a valve depressor at its end, which will open the valve on the suction port of the compressor.
 - b. Use high quality polyolester (POE) type 160SZ oil or equivalent.
- 2. Purge the pump and hose:
 - a. Ensure that the oil pump is clean. Insert the pump in the oil container and make sure that the container is open to the atmosphere for as short a period of time as possible. When available, use a plug adapter kit to further reduce the exposure of the oil to the atmosphere.
 - b. Bleed all air from the pump and hose with a few strokes of the pump. Purging the pump removes the moisture-saturated oil left inside the hose from previous usage.
 - c. Connect the hose to the suction port of the compressor immediately after purging to avoid moisture contamination.
- 3. While the equipment is running, charge 0.44 I (15 oz.) POE oil through the suction port. Pump the oil very slowly. (This is to ensure the oil separator is functioning properly.)

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

NOTE: Dispose of the oil waste appropriately.



Accessories

Low Temperature Kit

The low temperature kit provided by Schneider Electric includes a pressure relief valve on the liquid receiver vessel. If the low temperature kit is not installed, then Schneider Electric recommends the installation of a pressure relief valve on the discharge pipe near the condenser. The pressure relief valve selection and installation is the responsibility of the installer and shall comply with local authorities.

Unpacking

GCN-GB and EMEA-PED Versions (ACAC75013 and ACAC75015)

1. Remove plywood top and sides from the pallet.



- 2. Remove the valve box (contains safety valve, ball valve, head pressure valve, and check valve).
- 3. Remove brackets.



4. Remove receiver kit.



NAM-ASME Versions (ACAC75014)

1. Remove plywood top and sides from the pallet.



- 2. Remove the valve box (contains safety valve, ball valve, head pressure valve, and check valve).
- 3. Remove brackets.



4. Remove receiver kit. M6X50 HEX HEAD SCREW



Install Kit Inventory

GCN-GB Versions (ACAC75013)





Item	Description	Quantity	Item	Description	Quantity
0	Ball valve, 7/8 in. (inlet)	1	6	Bolt, M6	16
0	Ball valve, 5/8 in. (outlet)	1	Ð	Washer flat, M6	16
3	Head pressure valve and check valve	1	8	Quality certificate for receiver (GB)	1
4	Safety valve (GB)	1	0	Quality certificate for safety valve (GB)	1
6	Tie wrap, 1 1/4 in.	11	Ð	Hose clamp	2

EMEA-PED Versions (ACAC75015)



Item	Description	Quantity	Item	Description	Quantity
0	Ball valve, 7/8 in. (inlet)	1	6	Tie wrap, 11/4 in.	11
2	Ball valve, 5/8 in. (outlet)	1	6	Bolt, M6	16
8	Head pressure valve and check valve	1	0	Washer flat, M6	16
4	Safety valve (PED)	1	8	Hose clamp	2



NAM-ASME Versions (ACAC75014)

Installation

GCN-GB and EMEA-PED Versions (ACAC75013 and ACAC75015)

1. Facing the inlet and outlet connections, attach the first bracket to the rightside condenser legs.



2. Install the safety valve onto the receiver kit. Use thread sealing adhesives or raw adhesive tape as necessary.



- 3. Install inlet piping onto the receiver kit.
- 4. Attach the receiver kit onto the previously installed bracket.



5. Install the second bracket on the opposite side of the first bracket to enclose the receiver kit.



6. Install the included valve and pipes to the inlet and outlet connections on the condenser.



NAM-ASME versions (ACAC75014)

1. Install the bracket using the 1/4-in. washers and 1/4-in. bolts.



NOTE: Model ACCD75228–231 is shown.

2. Install the safety valve onto the receiver kit. Use thread sealing adhesives or raw adhesive tape as necessary.



3. Install receiver kit using the M10 washers, M10 bolts, and M10 nuts.



NOTE: Model ACCD75228-231 is shown.



NOTE: Model ACCD75234/ACCD75235 is shown. **NOTE:** Make-to-order.

4. Install included valve and pipes to the inlet and outlet connections on the condenser.



Bulb Location

Two clamps are provided to fasten the head pressure valve sensing bulb to the condenser outlet header.

GCN-GB and EMEA-PED Versions (ACAC75013 and ACAC75015)



NAM-ASME versions (ACAC75014)



Heater Connection Location

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.

GCN-GB and EMEA-PED Versions (ACAC75013 and ACAC75015)



- 1. Remove the cap over the hole on the electrical box.
- 2. Install the grommet (supplied with condenser).
- 3. Connect the heater wire to the terminal blocks on the electrical box.

NAM-ASME versions (ACAC75014)



- 1. Open the door accessing the electrical box.
- 2. Connect the heater wire to the terminal blocks on the electrical box.



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/ contactwww.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.

Schneider Electric 35 rue Joseph Monier 92500 Rueil Malmaison France

+ 33 (0) 1 41 29 70 00

www.schneider-electric.com

As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

© 2016 – 2021 Schneider Electric. All rights reserved. 990-5711F-001