

Installation Manual

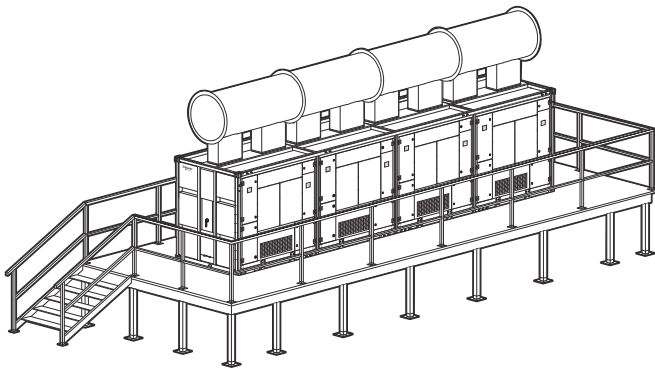
Cooling Solutions

EcoBreeze™ System

ACECFR20101SE, ACECFR20200SE,
ACECFR20201SE, ACECFR40101SE,
ACECFR40200SE, ACECFR40201SE

990-3976D-001

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General Information


Safety

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

 DANGER
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH
Turn off all power supplying this equipment before working on the equipment. All electrical work must be performed by licensed electricians. Practice Lockout/Tagout procedures. Do not wear jewelry when working with electrical equipment.
Failure to follow these instructions will result in death or serious injury.

 WARNING
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
DAMAGE TO EQUIPMENT OR PERSONNEL
The equipment is heavy and can easily be tipped. For safety purposes, adequate personnel must be present when moving this equipment.
Failure to follow these instructions can result in death, injury, or equipment damage.

 CAUTION
HAZARD TO EQUIPMENT OR PERSONNEL
All work must be performed by Schneider Electric authorized personnel.
Failure to follow these instructions can result in injury or equipment damage.

Inspecting the Equipment

Inspect for missing components. All shipped loose components are identified by part number and description on the bill of lading. Ensure each item is present before accepting delivery of the unit.

Filing a claim. If damage has occurred, or if shipped loose parts are missing, report it immediately to the delivering carrier and note the problem on the receiving copy of the bill of lading. Failure to do so will result in replacement parts and repairs being billed to the customer.

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 equipment before installation

⚠ WARNING
DAMAGE TO EQUIPMENT OR PERSONNEL
<ul style="list-style-type: none">• Do not remove tension rods until the EcoBreeze™ Frame is placed and secured on its supports.• Move the EcoBreeze Frame directly from the truck to its permanent foundation or supports. If it must be stored temporarily, it must be placed on a flat and level surface to avoid damage.• Leave the protective plastic wrap in place until you are prepared to install the equipment.
Failure to follow these instructions can result in death, serious injury, or equipment damage.



Heavy: Ensure the lifting equipment has sufficient capacity for the load.

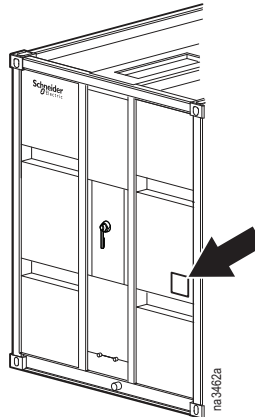
The recommended tools for moving the equipment include the following:

Crane
(Frame,
ductwork)



Model Identification

Model identification label location



Frames

SKU	Description
ACECFR20101SEn*	6 m (20 ft) ISO Frame 400/3/50
ACECFR20200SEn*	6 m (20 ft) ISO Frame 480/3/60
ACECFR20201SEn*	6 m (20 ft) ISO Frame 600/3/60
ACECFR40101SEn*	12 m (40 ft) ISO Frame 400/3/50
ACECFR40200SEn*	12 m (40 ft) ISO Frame 480/3/60
ACECFR40201SEn*	12 m (40 ft) ISO Frame 600/3/60

*Where n is the number of Modules populating the Frame upon order.

Modules

SKU	Description
ACEC101SE	EcoBreeze Module 400/3/50
ACEC200SE	EcoBreeze Module 480/3/60
ACEC201SE	EcoBreeze Module 600/3/60

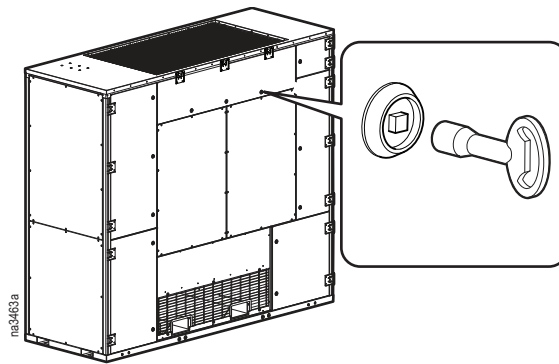
Other components

SKU	Description
ACECINS100SE	Frame install kit
ACECCP100SE	EcoBreeze remote interface panel
ACECSJ100SE	EcoBreeze screw-jack assembly

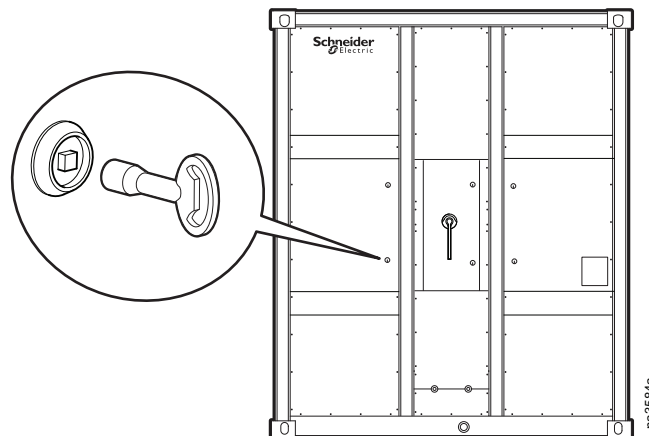
Access Door and Panel Operation

Module access doors and panels have latches with a locking mechanism. Secondary door latches are provided on doors on compartments that have positive air pressure to prevent the doors from opening quickly if a door is opened while the unit is in operation.

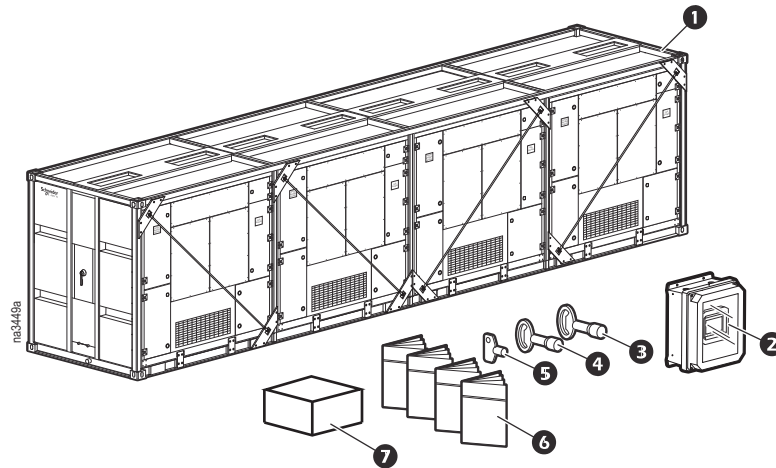
⚠ ⚠ WARNING
HAZARD OF ELECTRIC SHOCK
To avoid possible personal injury or death, re-engage the access door locking mechanism after access to a compartment for inspection or service requirements.
Failure to follow these instructions can result in death or serious injury.



Frame access panels and the main power enclosure have locking latches that open with a key.



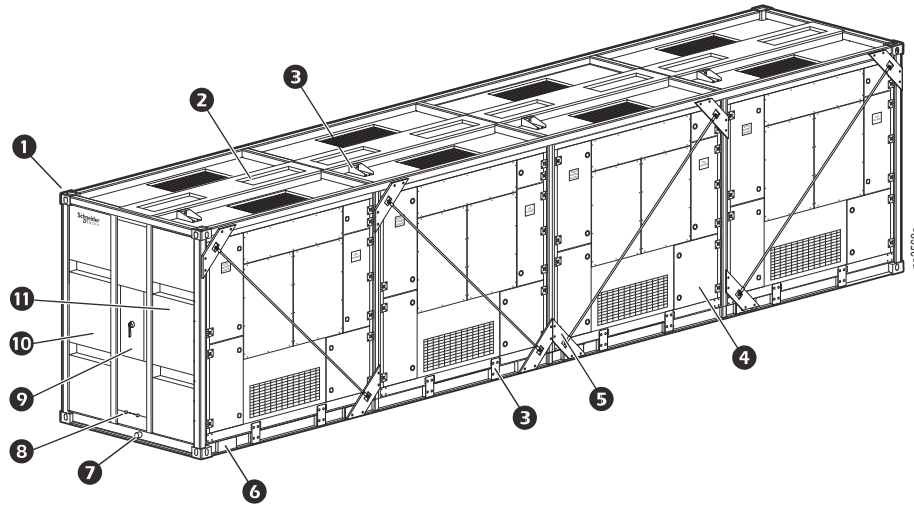
Component Identification



Item	Description	Quantity 20 ft	Quantity 40 ft
1	EcoBreeze Frame and Module assembly*	1	1
2	Remote display interface	1	1
3	Frame electrical panel latch tool	4	4
4	Module access door latch tool	4	8
5	Water treatment module signal generator key	1	1
6	Technical manuals	5	5
7	Pipe adapter kit (50 Hz only) 3/4 NPT x 3/4 - 14 BSPT (4) 2-in. NPT x 2 - 11 BSPT (1)	1	1

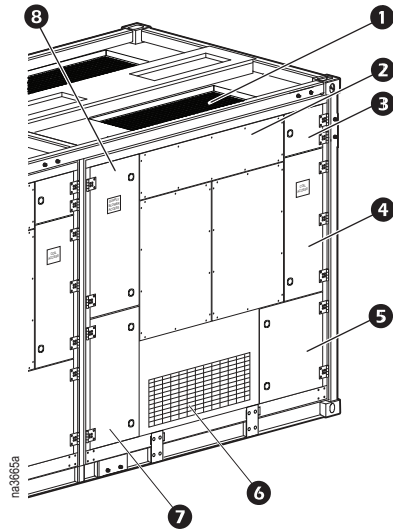
* Version shown is the 12 m (40 ft) model.

EcoBreeze Frame and Modules



Item	Description
1	ISO corner fittings
2	Return air inlets
3	Module anchor brackets
4	Module
5	Tension rods and mounts
6	Screw-jack mounting points
7	Water drain outlet
8	Water supply inlets
9	Frame main power enclosure
10	Frame power distribution panel
11	Direct digital controller (DDC) panel

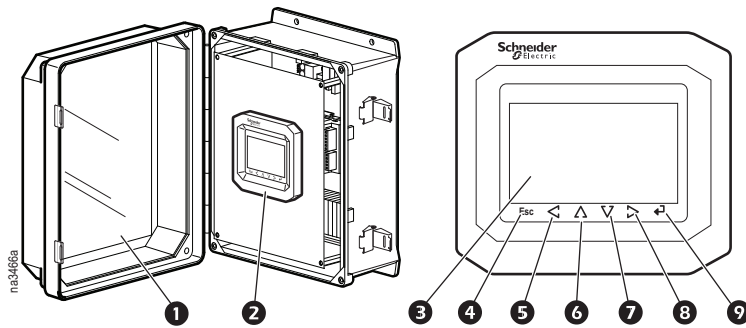
Module — front



Item Description

- ① Condenser coil
- ② Sprayer head and mist eliminator access door
- ③ Water coupling and water strainer access door
- ④ Air filter and DX evaporator coil access door
- ⑤ Module supply air duct access door
- ⑥ Outdoor air intake
- ⑦ Compressor and wiring connections access door
- ⑧ Indoor air fans access door

Remote display interface



Item Description

- ① NEMA case
- ② Display
- ③ LCD touch screen
- ④ Escape key
- ⑤ Left arrow key
- ⑥ Up arrow key
- ⑦ Down arrow key
- ⑧ Right arrow key
- ⑨ Enter key

Site Preparation

Incoming power supply requirements

NOTE: This equipment requires three-phase electrical service. Electrical service must conform to national and local electrical codes. The equipment must be grounded.

NOTE: To facilitate routing of main power supply wiring, run parallel wires for the main power connections.

Ductwork

Provide supply and return ducting at the site to connect to the supply and return ductwork on the EcoBreeze System.



See the ductwork drawings in submittal package for recommendations for ducting sizes and supply and return duct configurations.

Water supply

Supply water requirements. The water supply must be clean, potable water. The inlet water pressure provided to the unit must be between 207 and 448 kPa (30 and 65 psig). If the water pressure available is less than 207 kPa (30 psig), a booster pump (not supplied) may be needed to operate the equipment properly. If the water pressure available is higher than 448 kPa (65 psig), use an external pressure regulator (not supplied).

NOTE: Installation of back flow prevention and a water hammer arrestor is recommended.

NOTE: For 50 Hz models, use the pipe adapters to make the connections. See “Water supply connection” on page 18.

NOTICE

DAMAGE TO EQUIPMENT

External water piping must have adequate freeze protection and must be correctly applied based on local climatic conditions and best practices. Any exposed piping must be electrically heat-traced and insulated (supplied by others).

Failure to follow these instructions can result in equipment damage.

Foundation

Provide a foundation for the EcoBreeze System as recommended in the submittal package. Corner supports must have clamp connectors installed to secure the EcoBreeze Frame. See “Position the EcoBreeze” on page 14. Intermediate supports must have vibration damper pads installed on the top surface before the frame is placed on the permanent supports.

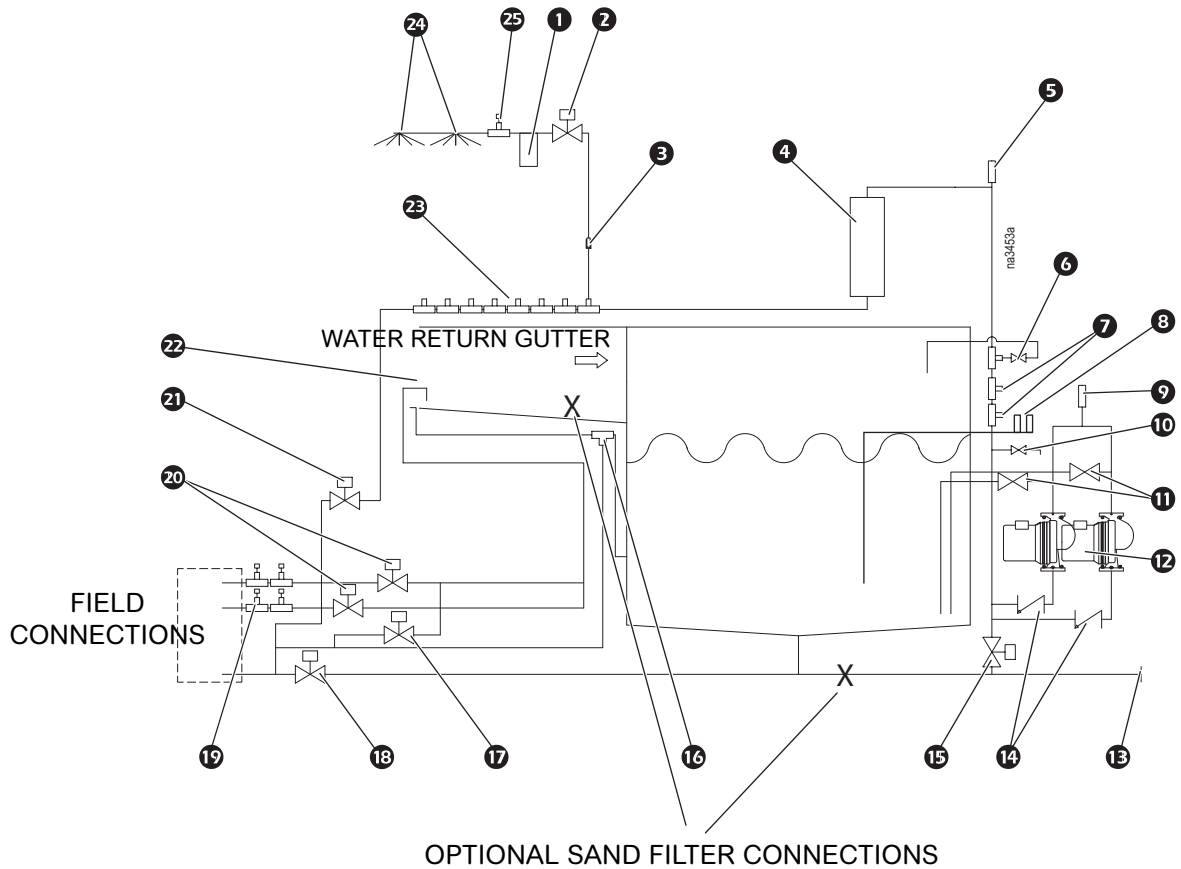


See EcoBreeze Frame Install Kit installation instructions for additional information.

Environment

NOTE: Locating the EcoBreeze system near areas of increased airborne debris may result in more frequent service intervals.

Piping/plumbing diagram

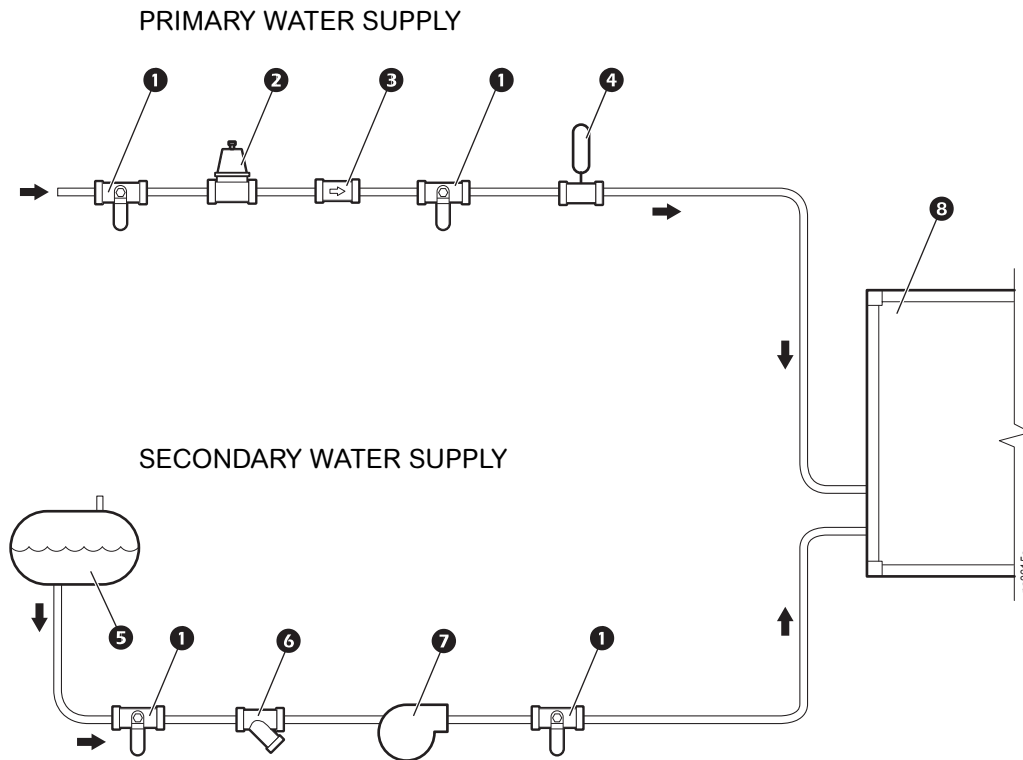


Item	Description	Item	Description
1	Clear T-strainer	14	Check valves
2	Two-way motorized valve*	15	Pump line drain solenoid valve
3	Quick connect coupling	16	Basin overflow
4	Water treatment module	17	Supply water piping drain solenoid valve**
5	Automatic vent	18	Basin drain valve
6	Pressure relief valve	19	Water supply A & B pressure switches***
7	Conductivity sensors	20	Supply water A & B solenoid valves**
8	Water level sensors	21	Blow down valve
9	Pump suction vent valve	22	Basin water supply pipe
10	Water sample service valve	23	Piping to other modules
11	Pump suction isolation valve	24	Spray nozzles
12	Redundant water pumps	25	Module water pressure switch
13	Drain line cap		

*Controlled from module

** Use electric schematic #APC-CFR-02 to confirm valve wiring connections

*** Make sure the pressure switches are set to 7 psi



Item	Description
①	Shut-off
②	Water pressure reducing valve (if necessary)
③	Backflow preventer
④	Water hammer arrestor
⑤	Alternate water supply (if available)
⑥	Inline strainer
⑦	Water pressure booster pump (if necessary)
⑧	EcoBreeze Frame

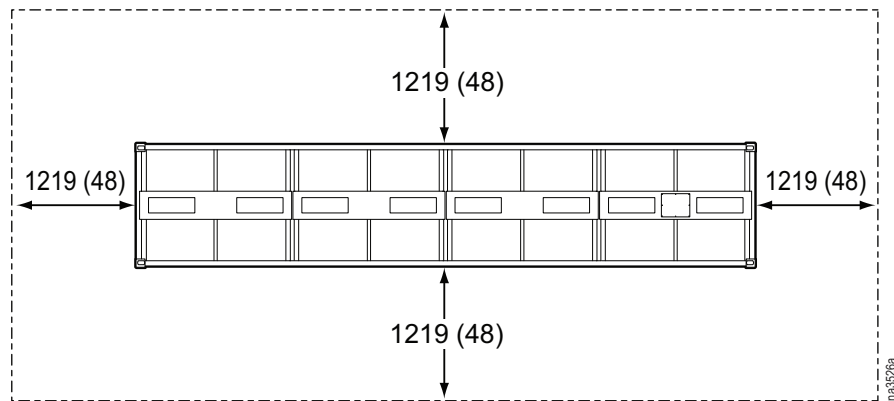
Note: All plumbing components shown are field installed.

Refrigeration

Each EcoBreeze Module contains its own closed refrigeration circuit. No field connections are required.

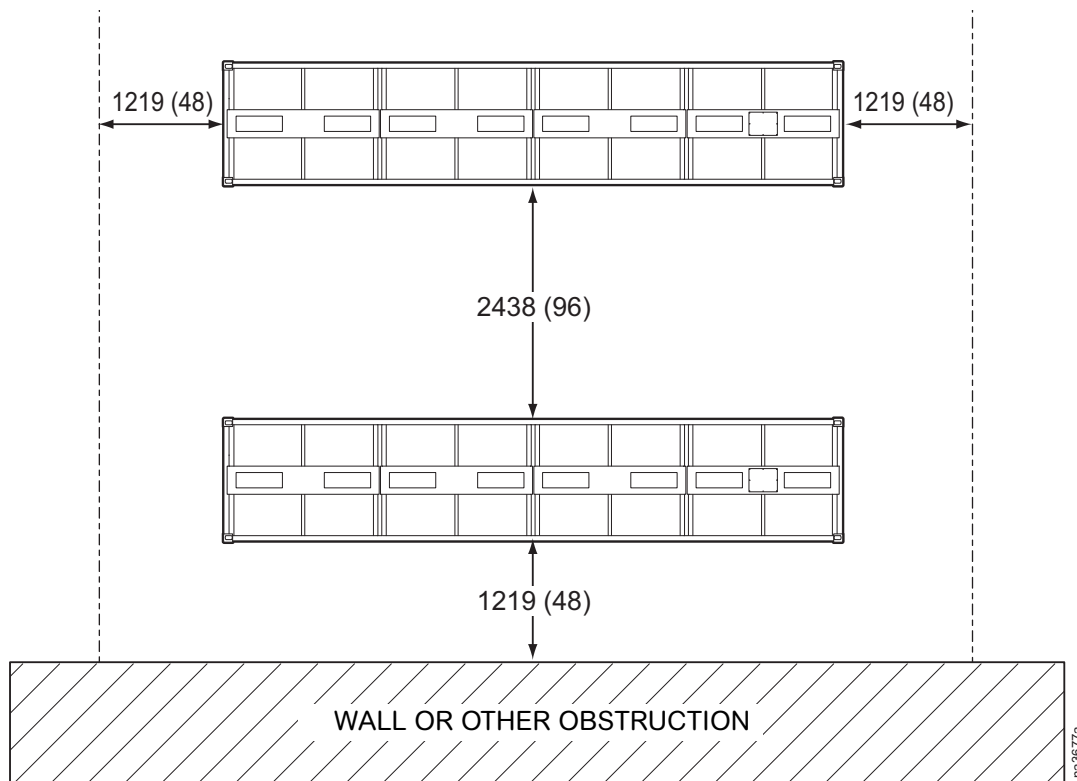
Service access

Install a service platform (not supplied) to facilitate maintenance activities. Regular maintenance activities require a of minimum 1219 mm (48 in.) clearance on all sides to remove, maneuver, and install Modules and components.



NOTE: Consider local soil conditions, codes, and loading when determining appropriate support footings.

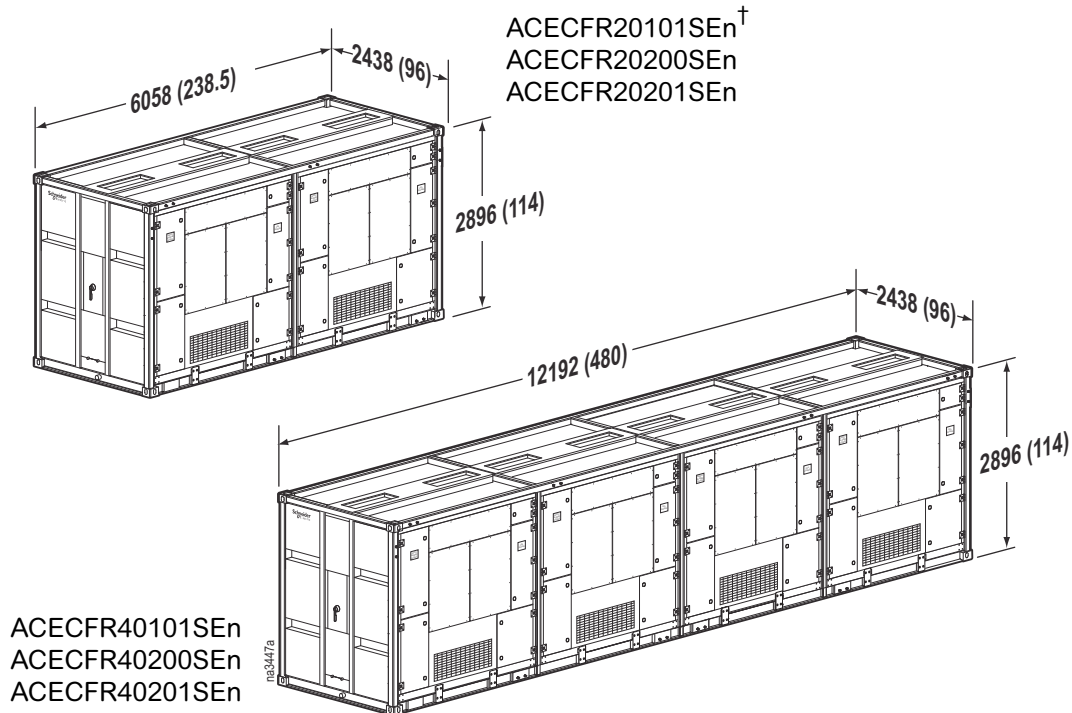
To prevent short cycling of outdoor air, each EcoBreeze Frame must have a minimum of 1219 mm (48 in.) clearance on each side, totaling 2438 mm (96 in.) between Frames, and 1219 mm (48 in.) at the end of the Frame.



* Dimensions are shown in millimeters with inches in parentheses.

Weights and Dimensions

Frame



* Dimensions are shown in millimeters, with inches in parentheses.

† Where *n* is the number of Modules populating the Frame upon order.

Frame (fully populated with Modules)	Weight (dry)
ACECFR20101SE4, ACECFR20200SE4, ACECFR20201SE4	7 863 kg (17,300 lb)
ACECFR40101SE8, ACECFR40200SE8, ACECFR40201SE8	14 290 kg (31,440 lb)
Frame (with Modules and water)	Weight (wet)
ACECFR20101SE4, ACECFR20200SE4, ACECFR20201SE4	8 203 kg (18,047 lb)
ACECFR40101SE8, ACECFR40200SE8, ACECFR40201SE8	14 630 kg (32,187 lb)
Frame (no Modules)	Weight
ACECFR20101SE0, ACECFR20200SE0, ACECFR20201SE0	2 863 kg (6,300 lb)
ACECFR40101SE0, ACECFR40200SE0, ACECFR40201SE0	4 290 kg (9,440 lb)
Module	Weight
ACEC101SE, ACEC200SE, ACEC201SE	1 250 kg (2,750 lb)

Installation

Lifting and Rigging

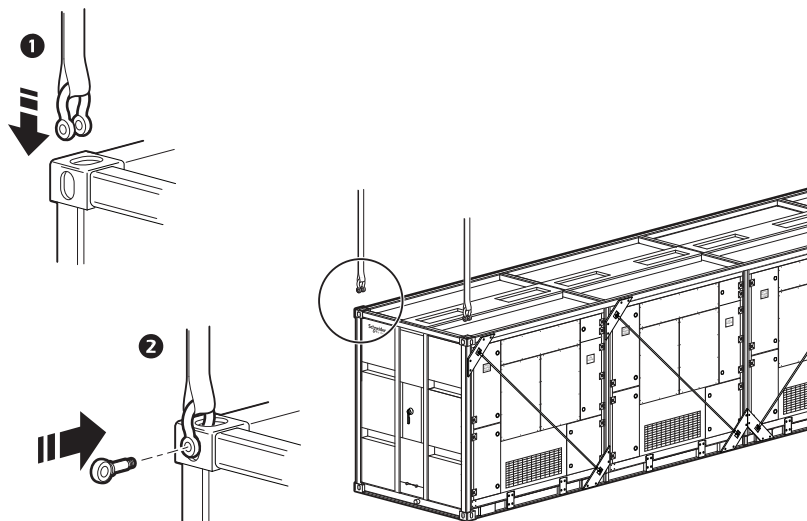
⚠ WARNING

DAMAGE TO EQUIPMENT OR PERSONNEL

- Do not remove tension rods until the EcoBreeze Frame is placed and secured on its supports.
- Before lifting the EcoBreeze Frame, ensure the lifting equipment is adequately sized for the load.
- Lift and rig the EcoBreeze Frame from the top four ISO corners only.
- Move the EcoBreeze Frame directly from the truck to its permanent foundation. If the Frame must be placed elsewhere temporarily, it must be placed on a flat and level surface in order to avoid damage.
- Check for overhead obstructions such as power cables.
- Maintain a minimum safe distance while equipment is hoisted.
- Control access of personnel at lift site.

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

EcoBreeze Frame. The EcoBreeze Frame is not equipped with forklift pockets. Lift and rig only from the four upper ISO corner blocks on each EcoBreeze Frame using a crane. Recommended horizontal sling angles are greater than 45 degrees. Lifting equipment must be rated for at least 18 144 kg (40,000 lb) for lifting a 12.2 m (40 ft) Frame, and at least 12 247 kg (27,000 lb) for a 6 m (20 ft) Frame.



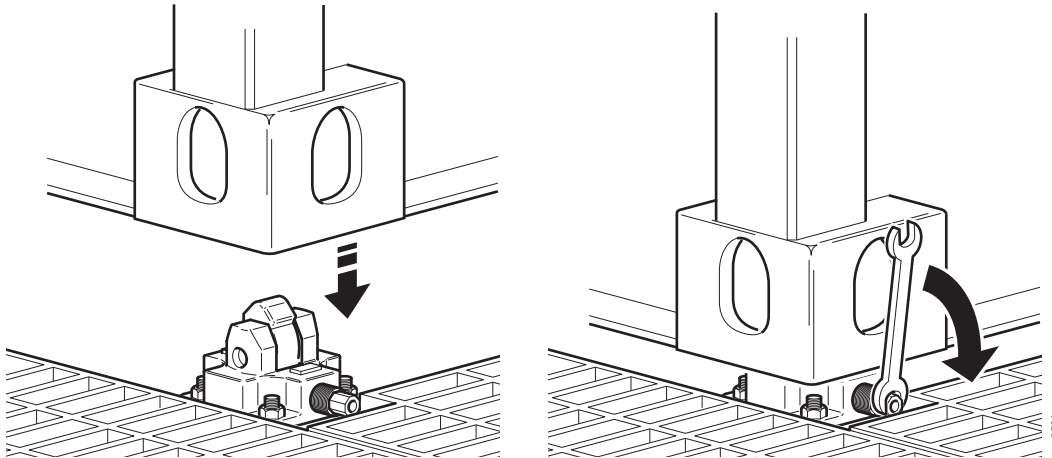
Mechanical Connections

Install the EcoBreeze Frame per the EcoBreeze Frame Install Kit instructions.

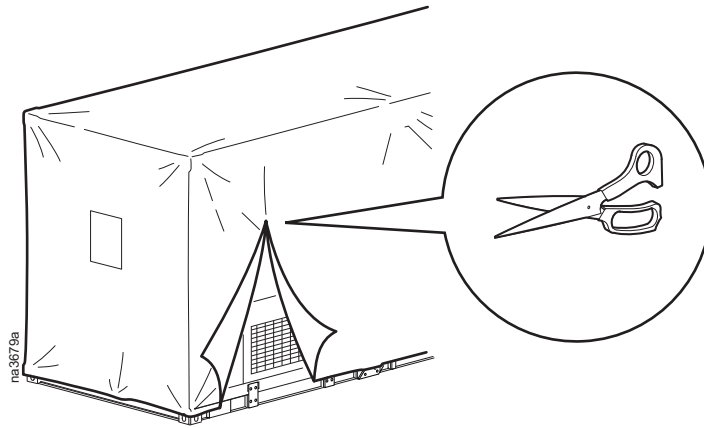
Position the EcoBreeze

NOTE: The power and plumbing connections for the EcoBreeze Frame are located on the end where the unpacking sheet is placed on the protective wrap. Typically this is the end that will face the building.

1. Ensure that clamp connectors and vibration damper pads are installed per the EcoBreeze Frame Install Kit instructions.
2. Use a crane with sufficient lifting capacity to place the EcoBreeze onto the permanent supports. Typically the end of the frame with plumbing and power connections is placed nearest to the building.
3. Using a 15/16-in. open-end wrench to turn the drive stud, lock down the clamp connectors located at each of the four corners. Maximum torque on the drive stud is 68 N-m (50 ft/lb).



Unwrap the equipment



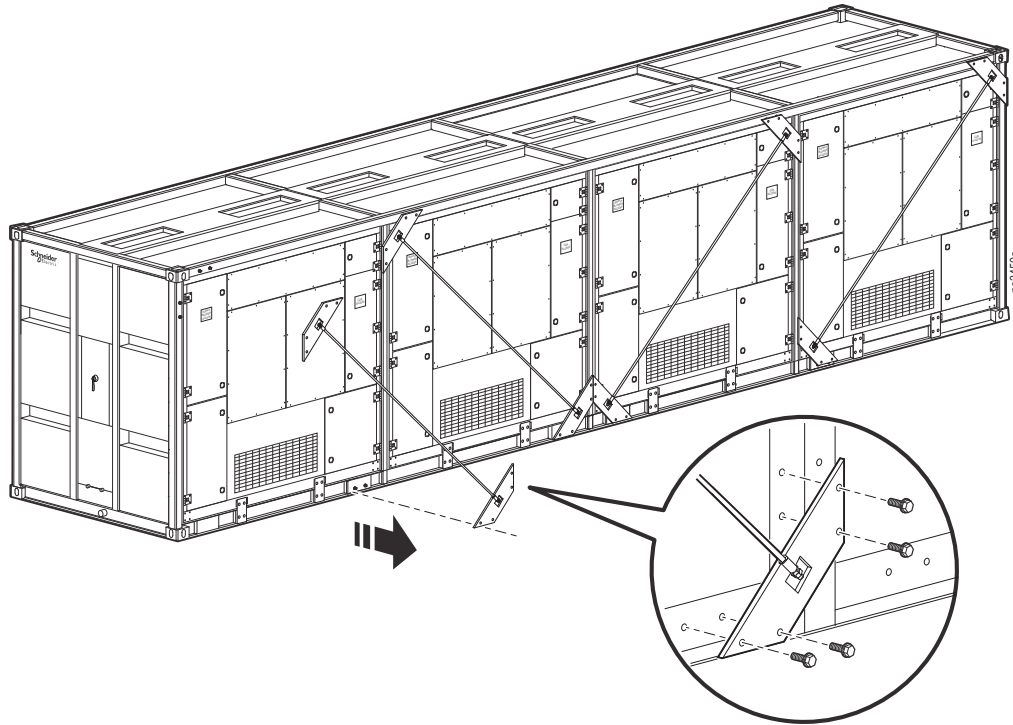
NOTICE

DAMAGE TO EQUIPMENT

- Do not remove the plastic wrap until the EcoBreeze Frame is placed on its permanent supports and you are prepared to install the return air ductwork. If the plastic is removed, ensure that the return air plenums on top of the Frame are protected.
- When removing protective plastic wrap, be careful to cut only the plastic and not damage the exterior of the equipment.
- The plastic wrap protects the return air plenum openings on top of the Frame until the return air ductwork is installed.

Failure to follow these instructions can result in equipment damage.

Remove the tension rods



⚠ WARNING

DAMAGE TO EQUIPMENT OR PERSONNEL

- Loosen the nuts on the ends of the tension rods to relieve tension before removing tension rod brackets.
- Do not remove the tension rods until EcoBreeze Frame is placed and secured on its supports.
- Move the EcoBreeze Frame directly from the truck to its permanent foundation or supports. If it must be stored temporarily, it must be placed on a flat and level surface to avoid damage.

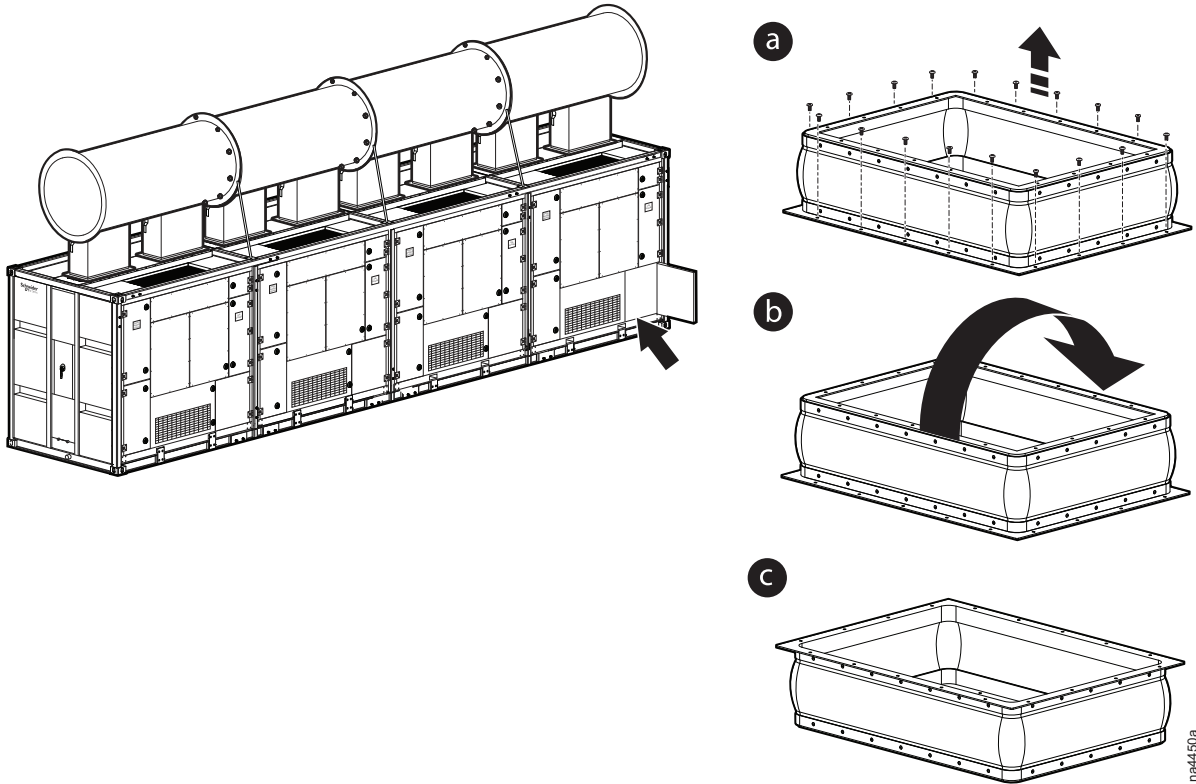
Failure to follow these instructions can result in death, serious injury, or equipment damage.

Tension rods are installed diagonally across each Module bay to provide support during shipping.

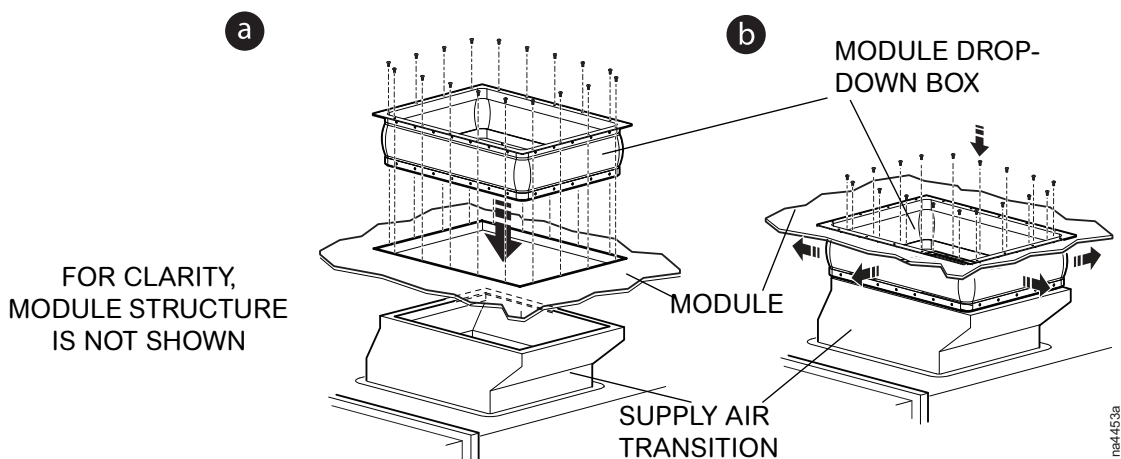
1. Release tension on the rods by loosening the nuts on the ends of the tension rods.
2. Using an M12 wrench, remove the eight bolts securing the tension rod brackets.
3. Remove the tension rods and brackets.

Lower Module drop-down box

1. Open the lower-right door on each Module.
2. For shipping, the drop-down box is secured upside down inside the Module. Remove the screws securing the drop-down box (a).
NOTE: The screws will be re-used to install the drop-down box.
3. Turn the drop-down box over (b) so it faces right-side up (c).



4. Drop the drop-down box through the opening in the bottom of the Module and attach it to the Module with the supplied screws (a).
5. Line up the drop-down box with the supply air transition and attach it to the supply air transition (b).
NOTE: The drop-down box is flexible enough to adjust for slight misalignments.
NOTE: Hardware to attach the drop-down box to the supply air transition is field supplied.



6. Locate the insulation strips packed in the ship-loose kit.
7. Remove the backing from the insulation and apply the insulation around the air transition ducts.
8. Open the damper on the supply air transition.

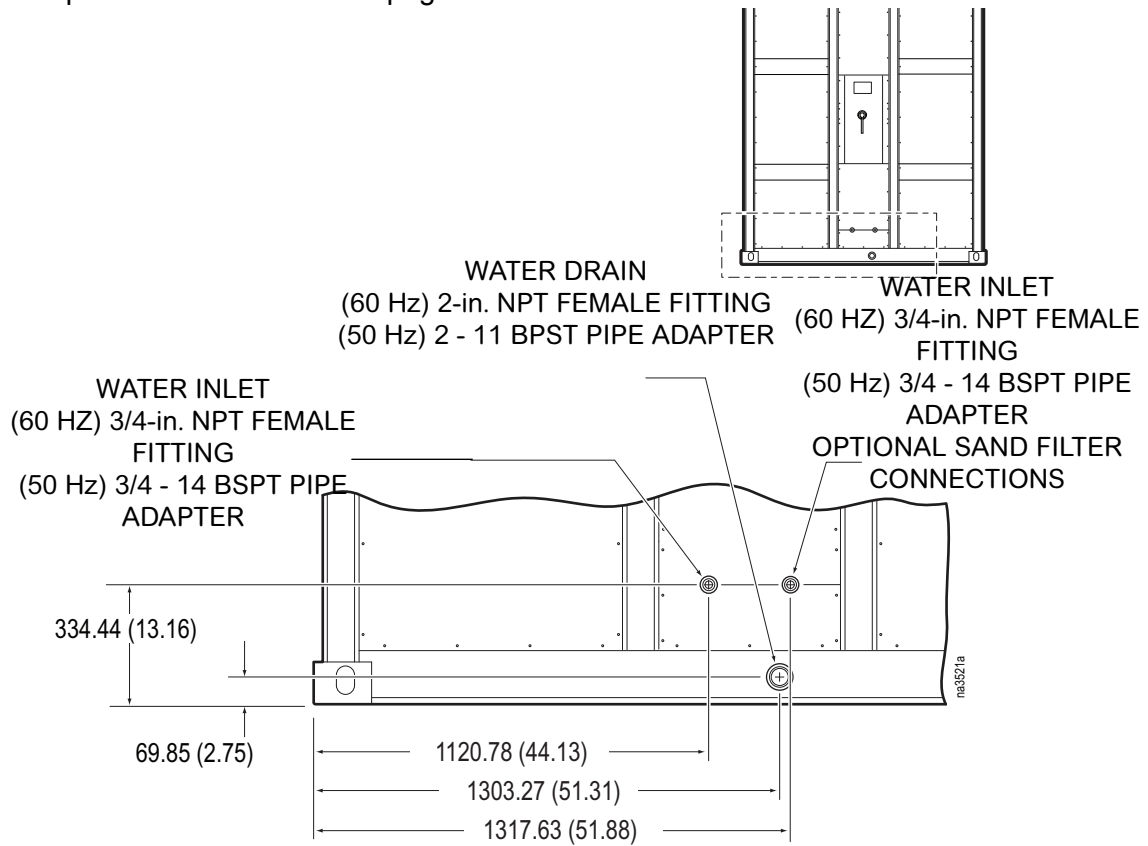
Water supply connection

NOTE: There are two water supply inlets on the EcoBreeze Frame. Use separate sources if possible to provide a redundant water supply.

<i>NOTICE</i>
DAMAGE TO EQUIPMENT Install adequate freeze protection (not supplied) on all external water piping. Freeze protection (which may consist of any combination of insulation and electric heat-tracing) must be correctly applied based on local climatic conditions and best practices. Failure to follow these instructions can result in equipment damage.

Sand filtration connections are provided if further filtration of the water supply is required. Sand filtration systems can be acquired from a third-party vendor.

Connect the water supply to the two 3/4-inch water supply fittings on the EcoBreeze Frame. If necessary, make the connections using the appropriate fittings from the pipe adapter kit. See “Component Identification” on page 5.

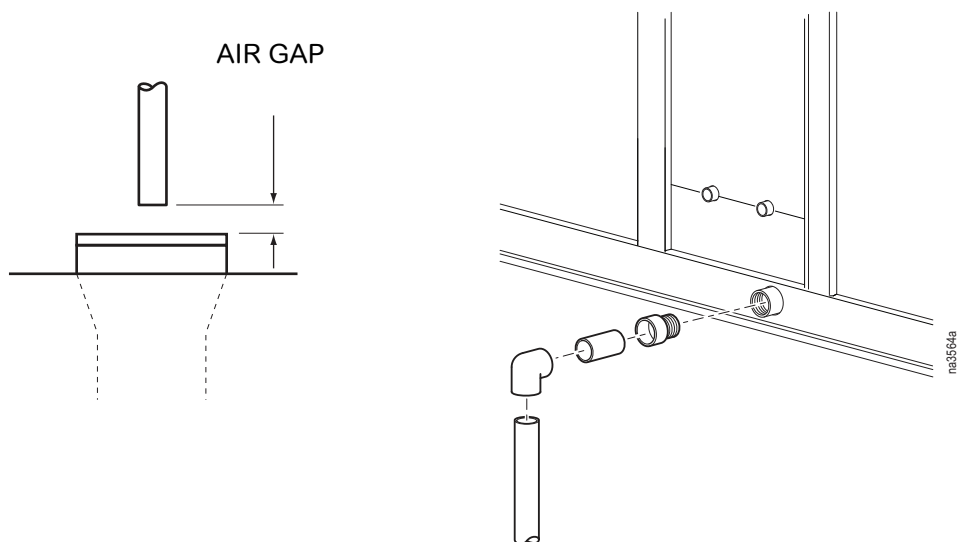


* Dimensions are shown in millimeters with inches in parentheses.

Drain

Connect the external 2-in. drain line on the EcoBreeze Frame to an open drain used for collection of wastewater. If necessary, make the connection using the appropriate fitting from the pipe adapter kit. See “Component Identification” on page 5.

NOTE: Separate the drain line from the EcoBreeze Frame and the external drain line by a 50 mm (2 in.) air gap in order to prevent back up of contaminated water into the cooling system.



NOTE: Pitch the external drain piping at a minimum of 25 mm (1 in.) per 3048 mm (10 ft) towards the wastewater drain.



Electrical Connections

The electrical connections required are the following:

- Power to Frame
- Control (remote display interface)
- Communication - Building Management System (BMS) - optional

Make all electrical connections in accordance with applicable industry guidelines as well as national and local codes.

Make all low-voltage connections, including data and control connections, with properly insulated wires. The low-voltage wires and connections must have at least 300V insulation.

  DANGER
HAZARD OF ELECTRIC SHOCK
Use a voltmeter to ensure that power is turned off before making any electrical connections.
Failure to follow these instructions will result in death or serious injury.

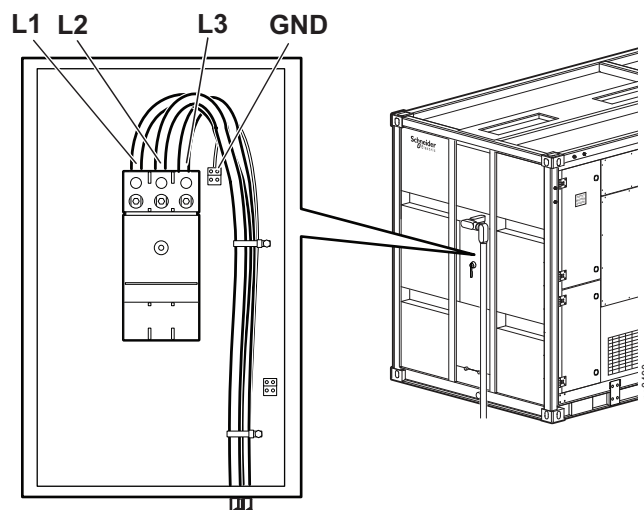
NOTE: Three-phase electrical service is required. Electrical service must conform to national and local electrical codes.

Power supply to EcoBreeze Frame

⚡ ⚠ 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 licensed electricians. Practice Lockout/Tagout procedures. Do not wear jewelry when working with electrical equipment.
Failure to follow these instructions will result in death or serious injury.

⚠ WARNING
HAZARD TO EQUIPMENT AND PERSONNEL
Only Schneider Electric authorized personnel may energize the equipment.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

1. Use a punch tool to create an access hole as needed for power supply wires entering the main power enclosure.
 2. Attach the conduit connector to the access hole on the main power enclosure.
- NOTE:** A service loop is factory-installed in the main power enclosure.
3. If permitted by local and national codes, route the cable to the disconnect switch as shown. If local and national codes do not permit service loops, make all connections per code.
 4. Connect the power wiring to the disconnect switch. Connect the phases as marked next to the disconnect switch.
 5. Connect the ground wire to the grounding lug beside the disconnect switch.



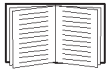
Remote display interface

NOTICE

DAMAGE TO EQUIPMENT

Damage to LCD display will result from exposure to temperatures below 0°C (32°F). Outdoor installations will require a third-party heat source as needed to ensure the LCD display is not subjected to temperatures below 0°C (32°F).

Failure to follow these instructions can result in equipment damage.



See EcoBreeze remote display installation instructions for additional information.

The remote display interface enclosure contains the LCD display that is used to control the EcoBreeze from a remote location. The EcoBreeze connects to the remote display interface over an expansion bus.

NOTE: Separate incoming power cables from low voltage wiring by 150 mm (6 in.).

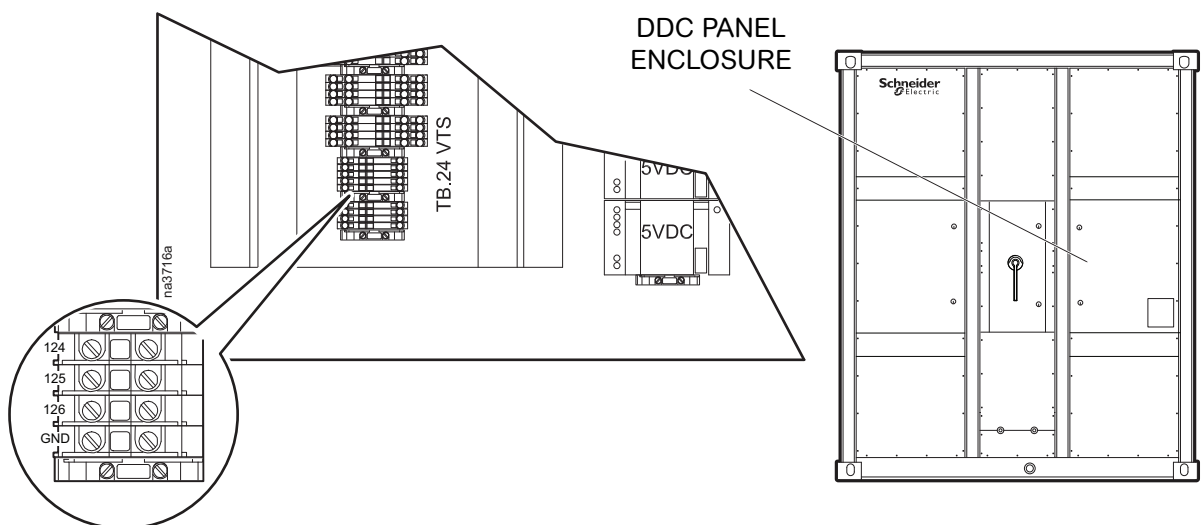
NOTE: Communication wiring from the EcoBreeze to the remote display interface enclosure must be a minimum of 24-gauge, 3-core wire with shield with a maximum length of 300 m (984 ft).

1. Install the remote display interface enclosure in the desired location.
IMPORTANT: For outdoor applications, use weather-proof conduit connectors.

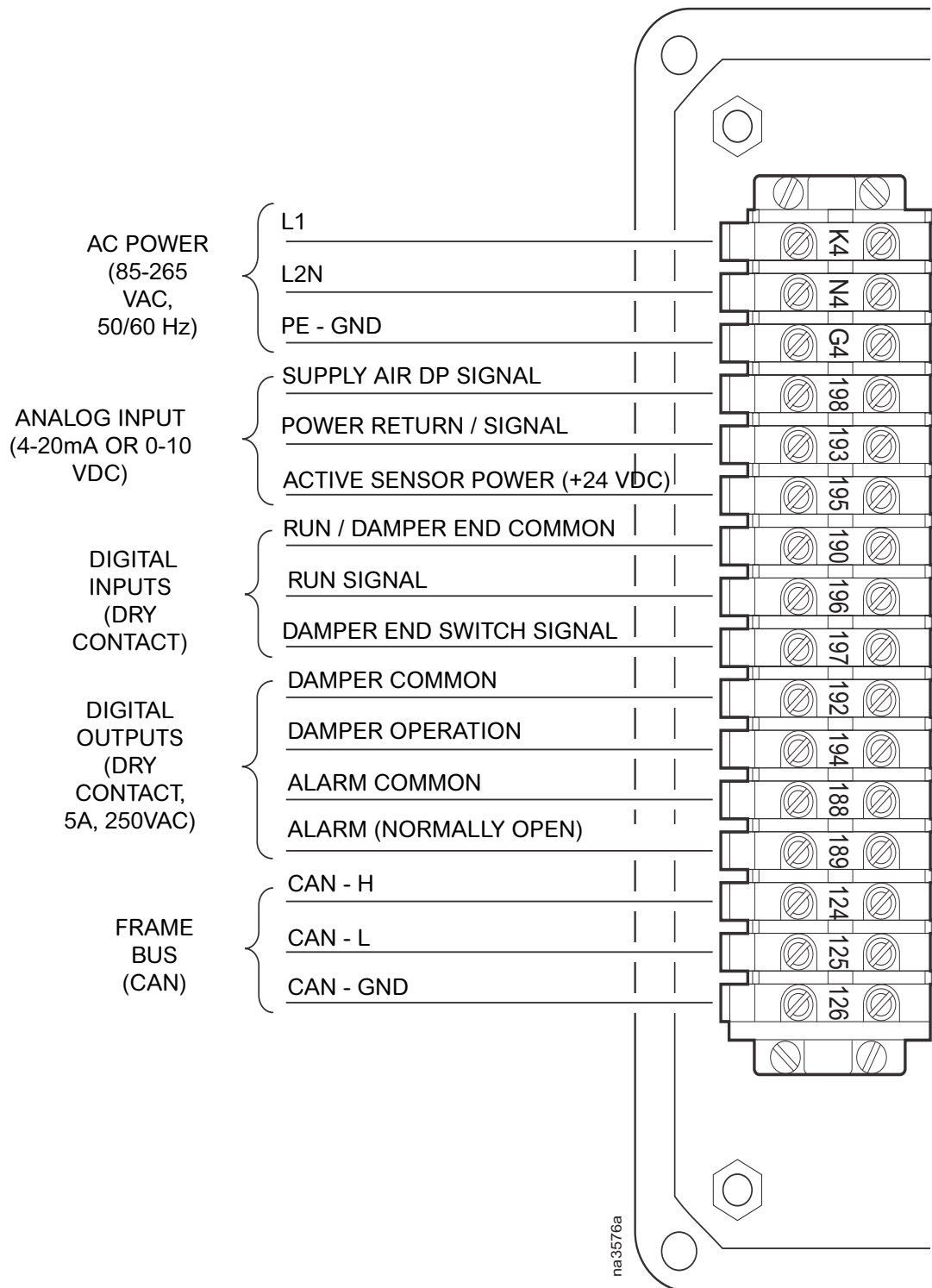
OPERATING CONDITIONS: Ambient temperature 0 - 55°C (32 - 131°F). Relative humidity 5% - 95% non-condensing.

NOTE: Connect shield wire to GND.

2. Connect the bus wiring to the contacts labeled 124, 125, and 126 on the expansion bus terminal block, located behind the direct digital controller (DDC) access door on the Frame.



- Wire the expansion bus to the 124, 125, and 126 contacts on the terminal block in the remote display interface enclosure.



Building Management System

The Modbus interface allows the EcoBreeze System to communicate with a building management system (BMS).

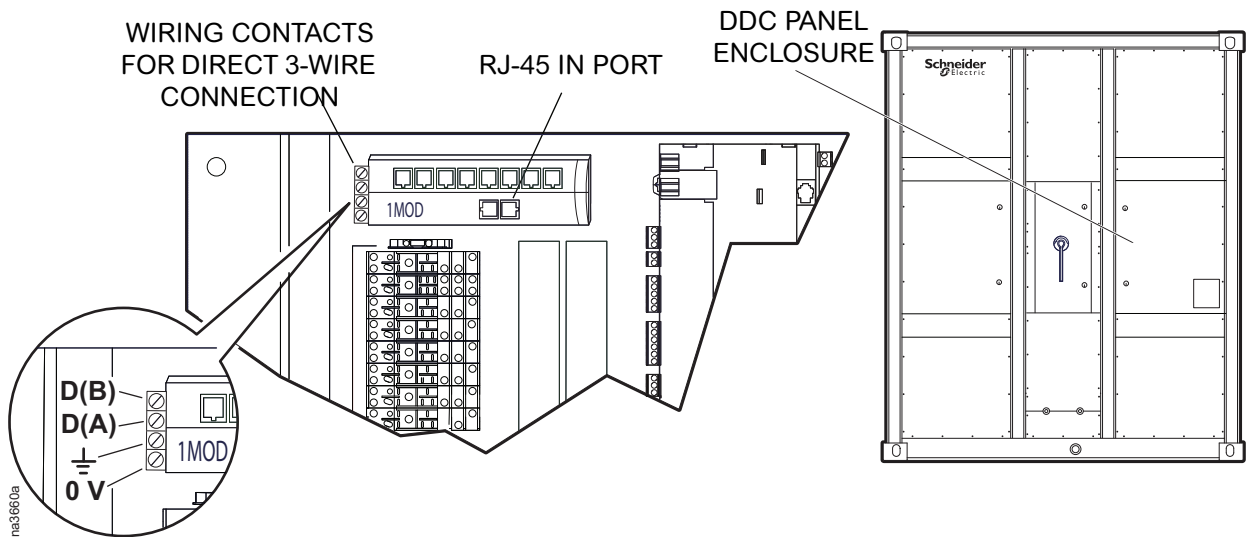
The Modbus connection is available in two locations on the Modbus hub:

- RJ-45 In port
- 3-wire on terminal block

For an RJ-45 connection, wire as follows:

Pin 4	D(A)
Pin 5	D(B)
Pin 8	Ground

For a direct 3-wire connection, connect to the corresponding contacts on the green terminal block on the side of the Modbus hub. No connection is necessary to the 0V contact.



Worldwide Customer Support

Customer support is available at no charge via e-mail or telephone. Contact information is available at www.apc.com/support/contact.

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