LIEBERT® OUTDOOR CONTROL ENCLOSURE™

Quick Installation Guide

The Liebert Outdoor Control Enclosure is a NEMA 3R rated enclosure that mounts on Liebert condensers or drycoolers and provides control for one or more pumps and/or fan motors.

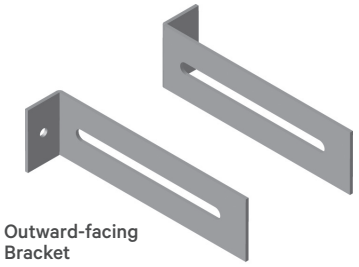
INSTALLING THE ENCLOSURE

⚠ **WARNING:** *Arc flash and electric shock hazard. Open all local and remote electric power-supply disconnect switches, verify with a voltmeter that power is off and wear appropriate OSHA-approved personal protective equipment per NFPA 70E before working within the electric control enclosure.*

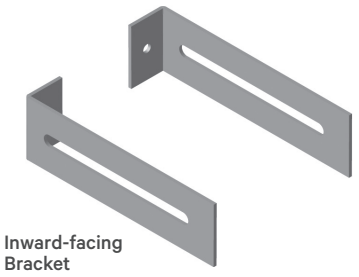
Installer must provide a remote, electric-power disconnect switch and earth ground to unit per NEC, CEC and local codes as applicable. Failure to comply can cause injury or death.

NOTICE: *Risk of water leaks. Can cause equipment damage.*

NOTE: *To flush-mount the back of the enclosure, the adjustable brackets can be inverted. Refer to the "Dimensions" drawings on the following page.*



Outward-facing Bracket Orientation



Inward-facing Bracket Orientation

NOTE: *Alternate mounting locations are on a secure wall or building surface.*

Use the provided mounting brackets to attach the enclosure to a Liebert condenser or drycooler.

- Tighten the bracket fasteners to maintain the weather rating of the enclosure.
- Ensure that the field wiring knockouts are facing down, and the enclosure cover is vertical.
- Ensure that the bolts securing the enclosure cover are in place and tightened securely when the installation is complete.

ELECTRICAL CONNECTIONS

⚠ **WARNING:** *Arc flash and electric shock hazard. Open all local and remote electric power-supply disconnect switches, verify with a voltmeter that power is off and wear appropriate OSHA-approved personal protective equipment per NFPA 70E before working within the electric control enclosure. Installer must provide a remote, electric-power disconnect switch and earth ground to unit per NEC, CEC and local codes as applicable. Failure to comply can cause injury or death.*

Hazardous-voltage Power-supply Wiring

Wire per NEC and local codes.

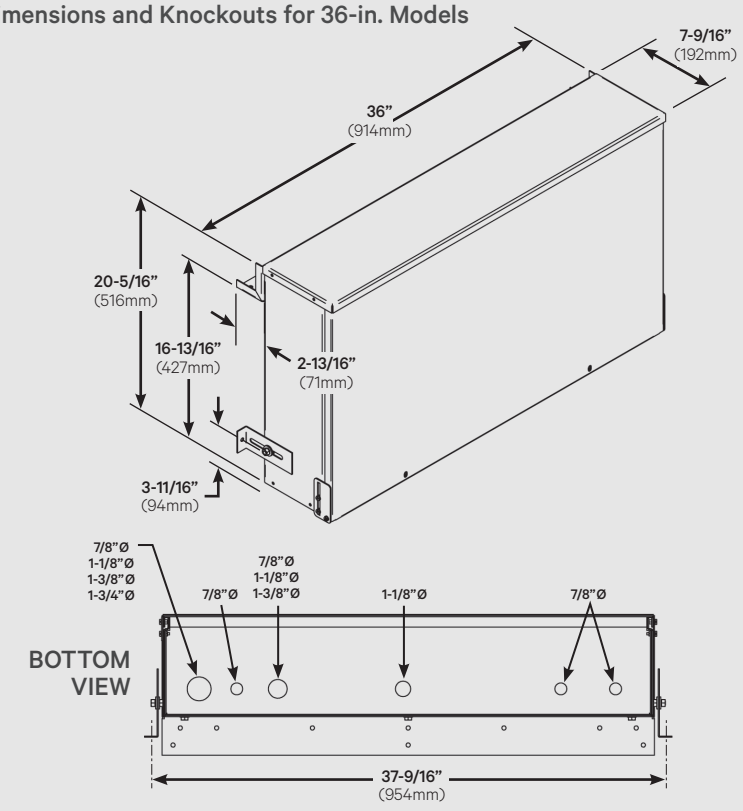
Hazardous-voltage electrical service is required at the location of the control enclosure. Use the knockouts provided at the bottom of the enclosure. This power supply does not have to be the same voltage as the Liebert indoor unit. This separate power source may be 110V, 208V, 230V, 460V or 575V, single-phase or three-phase, 60Hz; or it may be 200V, 230V, 380V or 415V, single-phase or three-phase, 50 Hz as appropriate.

Extra-low-voltage Control Wiring

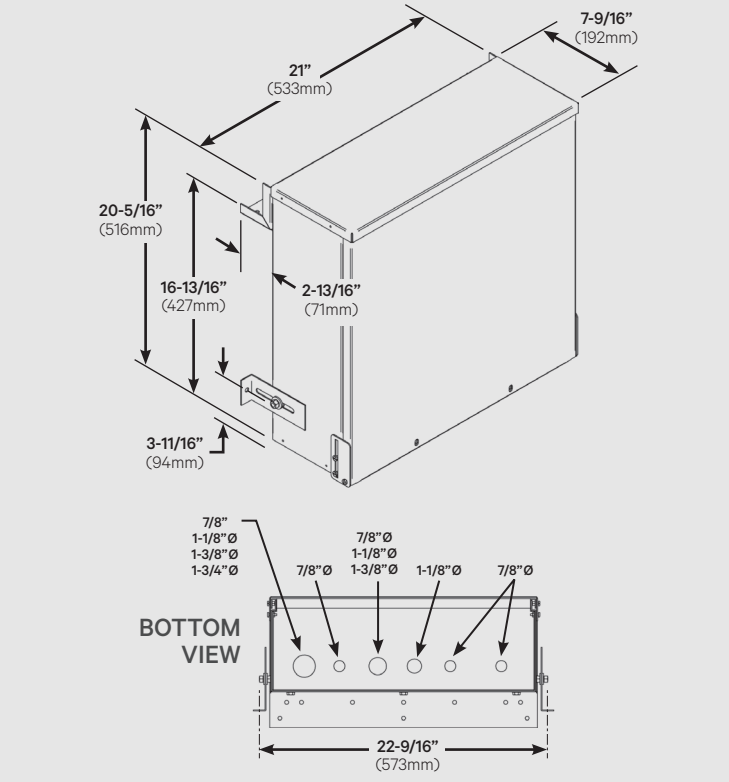
Control interlock between the control enclosure and the indoor unit(s) or other source(s) is required. Multiple indoor units may be connected in parallel if the controlled pumps will feed them all.

- Extra-low voltage, non-safety control wiring must be a minimum of 16 GA. (1.665 mm^2) for up to 75 ft (22.9 m), or not to exceed 1-V drop in the control line.

Dimensions and Knockouts for 36-in. Models



Dimensions and Knockouts for 21-in. Models



- Install extra-low-voltage control wiring (24 V) from Terminals 70 and 71 on the wire raceway in the compressor compartment of the indoor unit to Terminals 70 and 71 of the control enclosure.
- Install extra-low-voltage control wiring between Terminals 24 and 50 from the control enclosure to the indoor cooling unit's common alarm or other alarm location for loss-of-flow indication.
- Install extra-low-voltage control wiring between the auxiliary terminals on the control panel to Terminals 70 and 71 on the drycooler.
- Connect the flow switch wiring to Terminals 77 and 74.
- Provide line voltage to power block(s) in the control enclosure as shown in the electrical schematic.
- Install optional field-supplied disconnect if desired.
- Run 3-phase line voltage from the control box to each individual pump motor.

FLOW SWITCH INSTALLATION

NOTE: *Only required for dual-pump package installation.*

- Mount the flow switch in a section of coolant supply/return piping where there is a straight run of at least five (5) pipe diameters on each side of the flow switch.
- Mount the switch so the terminals or wire leads are easily accessible for wiring.
- Mount the flow switch in a standard 1-in. x 1-in. x 1-in. tee for one-inch pipe installation. Use a reducing tee for larger sizes of pipe to keep the flow switch near the pipe and to provide adequate paddle length in the flow stream.
- Screw the flow switch in position so the flat part of the paddle is at a right angle to the flow. The arrow on the side of the case must point in the direction of the flow.
- The flow switch must be mounted in a horizontal pipeline.

DUAL PUMP CONTROLS SEQUENCE OF OPERATION

On a call for cooling, the compressor contactor and/or the Econ-O-Coil relay in the Liebert unit is energized. The relay and contactor are in the Liebert indoor evaporator section. Each compressor contactor has a side switch wired in parallel with the Econ-O-Coil relay and is responsible for closure of the low-voltage pump-control circuit.

This low-voltage circuit has a series of contactors, relays, selector switch and a flow switch. This circuit controls the start of the pumps and provides contact closure to interlock the drycooler(s) control circuit. Once the circuit is closed, 24V is passed to the pumps control circuit and the auxiliary relays are energized, closing the drycooler(s) control circuit.

Pump P1 is factory set to be the primary pump (Selector Switch 1-2). Voltage then passes through the normally closed contacts of the R2 relay (standby pump relay), through the current overloads and to the #1 pump contactor. At this point, the #1 pump and appropriate drycoolers are running.

When the pump establishes flow, it opens the system flow switch. The pump has approximately 10 seconds to establish full flow. If it does, the system will run in this state until the call for cooling is satisfied and the circuit drops out. If this pump cannot establish flow or if it has been running and fails, the flow switch will close and energize an adjustable relay, typically set for 10 seconds.

Once this relay times out, it energizes the R2 switch over relay. This relay will drop out the voltage to the #1 pump contactor and energize the #2 pump contactor. Along with the R2 relay the AL relay (alarm relay) will energize. This will provide a set of closed contacts for remote indication of the switch-over situation.

Once the problem with the lead pump is repaired, the controls must be reset. To reset the control box, turn Off the main power to the control box and then restore the main power to the control box. Pump P1 then becomes the primary pump again.

TECHNICAL SUPPORT AND SERVICE

Vertiv Services, Inc.

24x7 dispatch of technicians for all products.

1-800-543-2378

Liebert Thermal Management Products

1-800-543-2778

Liebert Channel Products

1-800-222-5877

Liebert AC and DC Power Products

1-800-543-2378

LOCATIONS

United States

Vertiv Headquarters
1050 Dearborn Drive
Columbus, OH, 43085, USA

Europe

Via Leonardo Da Vinci 8 Zona Industriale Tognana
35028 Piove Di Sacco (PD) Italy
+39 049 9719 111
Fax: +39 049 5841 257

Asia

7/F, Dah Sing Financial Centre
3108 Gloucester Road, Wanchai
Hong Kong 852 2572220
Fax: 852 28029250

To contact Vertiv Technical Support: visit www.VertivCo.com