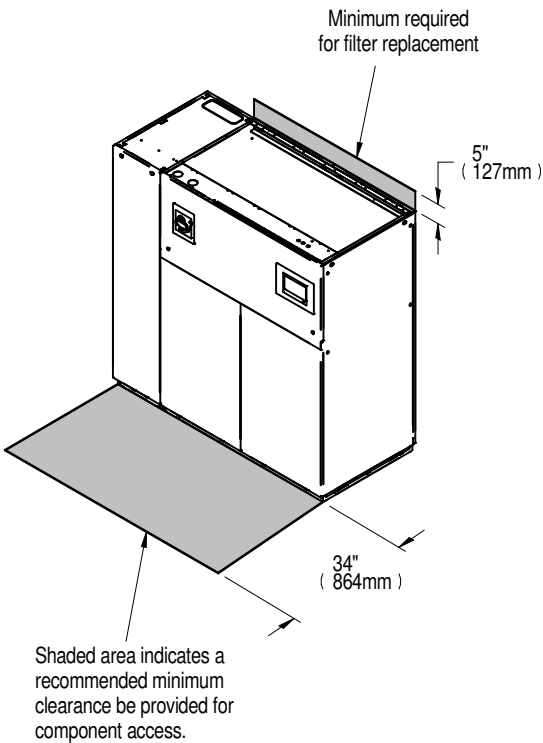
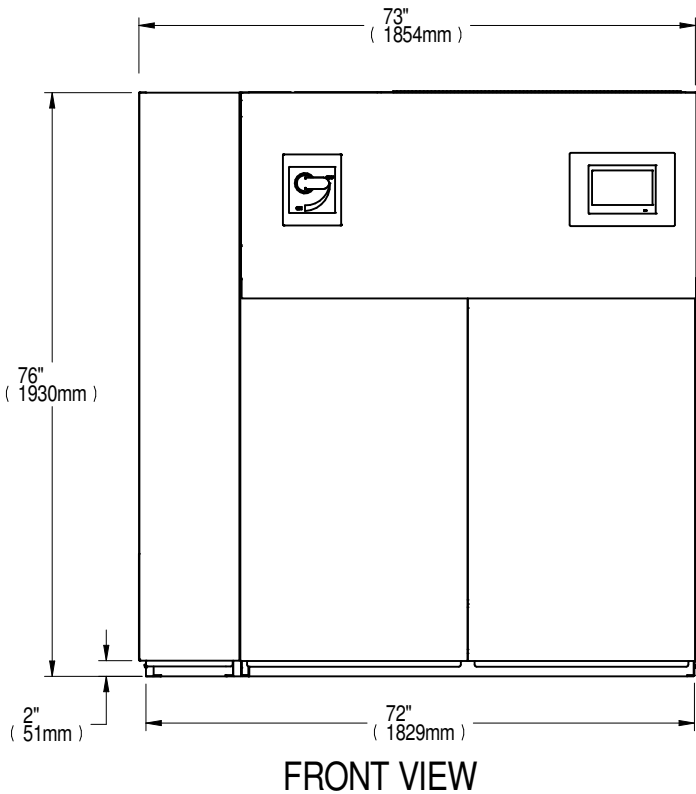
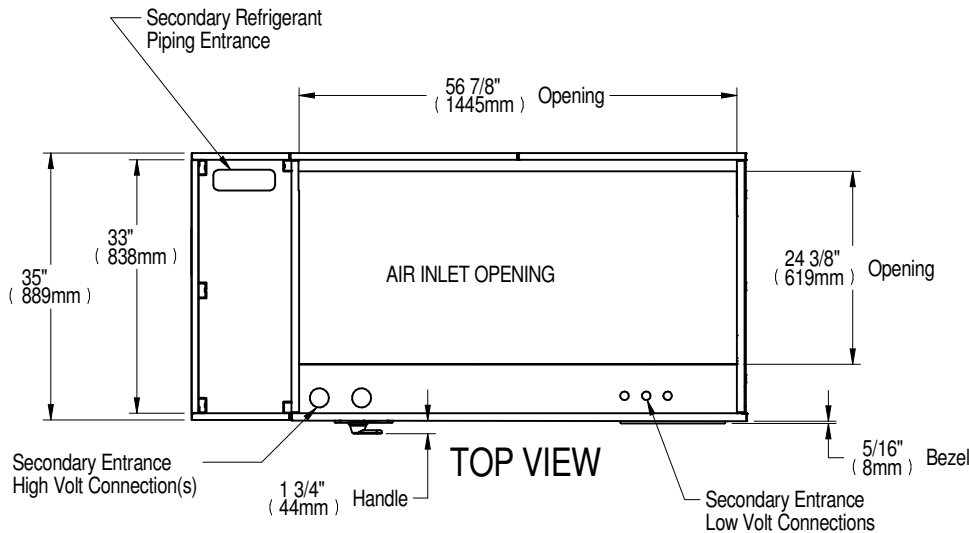




LIEBERT DS

CABINET DIMENSIONAL DATA
DOWNFLOW AIR COOLED 35-42kW (10-12 TONS)
W/ SCROLL OR DIGITAL SCROLL COMPRESSOR MODELS



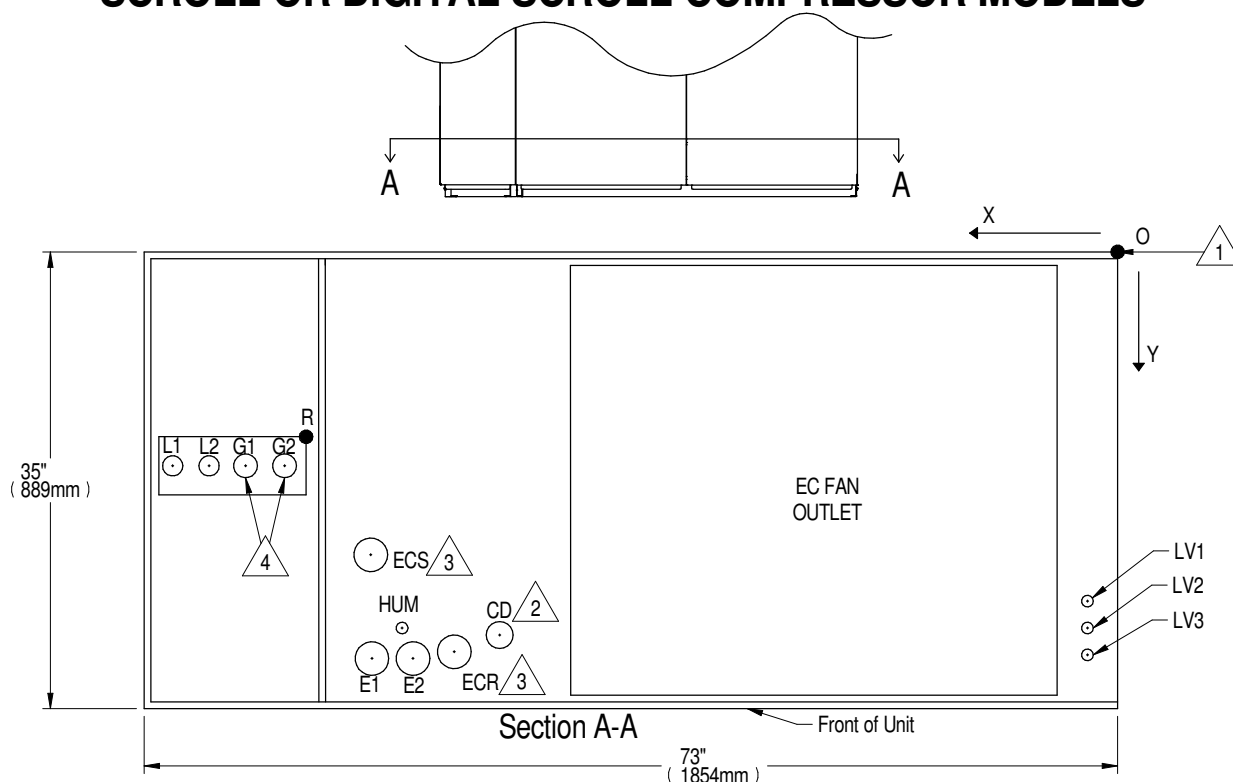
APPROXIMATE DRY WEIGHT lb (kg)	
Air Cooled	1470 (668)
Dual Cool	1620 (736)

- Notes:
1. Filters are accessible through top of unit only.
 2. Downflow electrical connections can be made from top or bottom of unit.



LIEBERT DS

PRIMARY CONNECTION LOCATIONS DOWNFLOW AIR COOLED 35-42kW (10-12 TONS) SCROLL OR DIGITAL SCROLL COMPRESSOR MODELS



Notes:

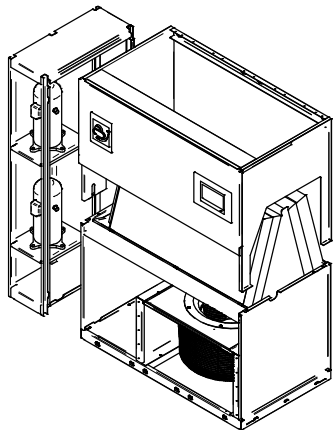
1. Drawing not to scale. All dimensions from rear corner of unit including panels, and have a tolerance of $\pm 1/2"$ (13mm).
2. Field pitch Condensate Drain line a minimum of $1/8"$ (3.2 mm) per foot (305 mm). All units contain a factory installed condensate trap. Do not trap external to the unit. Drain line may contain boiling water. Select appropriate drain system materials. The drain line must comply with all local codes.
3. Supplied on Dual Cooling systems only.
4. When piping out the top of the unit, install traps in the discharge lines in the bottom of the unit before running lines to the top.

POINT	DESCRIPTION	X in. (mm)	Y in. (mm)	CONNECTION SIZE / OPENING
R	REFRIGERANT ACCESS	59-5/16 (1507)	14-3/4 (375)	11-3/16" (284mm) X 4" (102mm)
L1	LIQUID LINE SYSTEM 1	69-15/16 (1776)	16-13/16 (427)	1/2" O.D. Cu
L2	LIQUID LINE SYSTEM 2	67-5/8 (1718)		
G1 4	HOT GAS DISCHARGE 1	65-1/2 (1664)		5/8" O.D. Cu
G2 4	HOT GAS DISCHARGE 2	62-7/16 (1586)		
CD 2	CONDENSATE DRAIN (infrared humidifier or no humidifier) W/ OPTIONAL PUMP	46 (1168)	29-1/2 (749)	3/4" NPT FEMALE
HUM	HUMIDIFIER SUPPLY LINE	53-1/2 (1359)	29 (737)	1/4" O.D. Cu
ECS 3	ECON-O-COIL SUPPLY	54-7/8 (1394)	22-9/16 (573)	1-5/8" O.D. Cu
ECR 3	ECON-O-COIL RETURN	49-3/8 (1254)	30-3/4 (781)	
E1	ELECTRICAL CONN. (HIGH VOLT)	55-1/2 (1410)	31-1/4 (794)	2-1/2"
E2	ELECTRICAL CONN. (HIGH VOLT)	52-7/16 (1332)		
LV1	ELECTRICAL CONN. (LOW VOLT)	2-1/4 (57)	27 (686)	7/8"
LV2	ELECTRICAL CONN. (LOW VOLT)		29 (737)	
LV3	ELECTRICAL CONN. (LOW VOLT)		31 (787)	

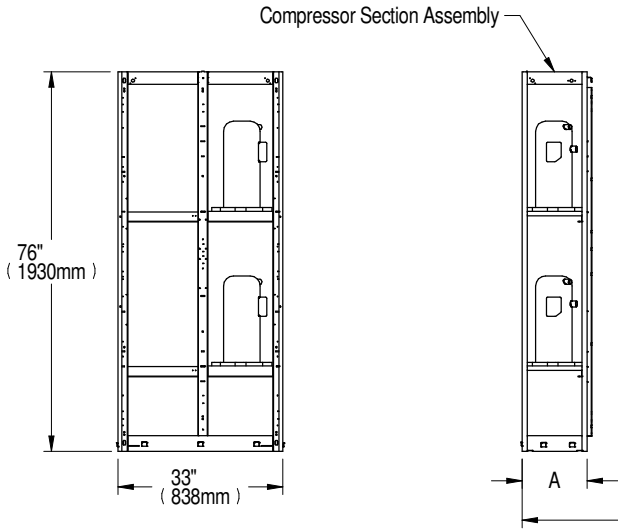
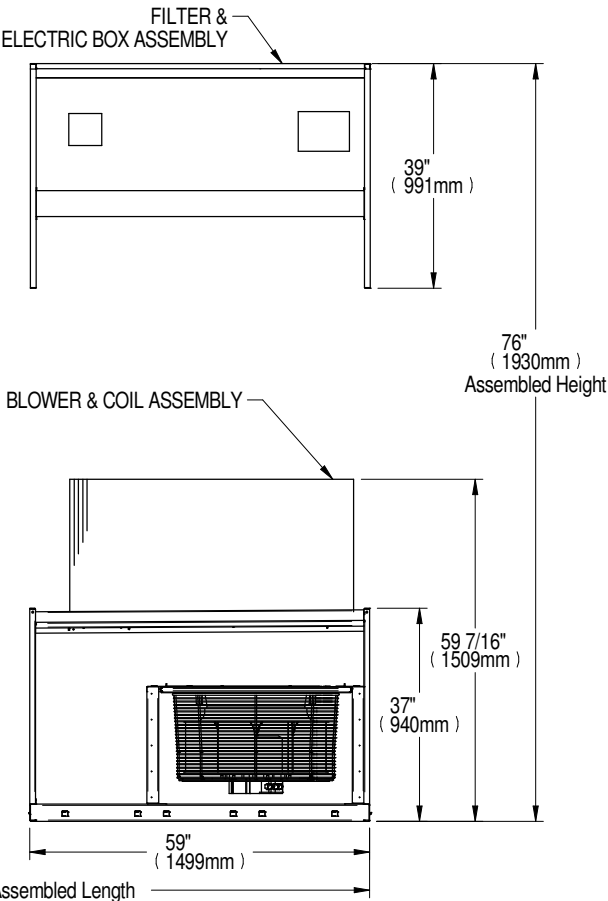


LIEBERT DS

DISASSEMBLY DIMENSIONAL DATA
DOWNFLOW 35-42kW (10-12 TONS) MODELS
W/ SCROLL & DIGITAL SCROLL COMPRESSORS



Unit w/ Scroll/Digital Scroll
Compressor Section



Cooling Type	A in. (mm)	B in. (mm)
Air Cooled	13 (330)	72 (1829)
Air Cooled w/Dual Cool		
Water/Gly col	26 (660)	85 (2159)
GLYCOOL™/Dual Cool		

Assembly	APPROXIMATE DRY WEIGHT lb (kg) (Includes Panels)			
	Air Cooled	A/C w/ Dual Cool	Water/Gly col	GLYCOOL™/Dual Cool
Compressor Assembly	490 (223)	490 (223)	800 (364)	800 (364)
Filter & Electric Box Assembly	210 (96)	210 (96)	210 (96)	210 (96)
Blower & Coil Assembly	770 (350)	920 (418)	770 (350)	920 (418)

Notes:
1. Drawing Views are simplified with panels removed to show overall dimensions. See disassembly and handling instructions in installation manual.



LIEBERT DS

ELECTRICAL FIELD CONNECTION DESCRIPTION UPFLOW AND DOWNFLOW MODELS

STANDARD ELECTRICAL CONNECTIONS

- 1) **Primary high voltage entrance** - 2.50" (64mm); 1.75" (44mm); 1.375" (35mm) diameter concentric knockouts located in bottom of box
- 2) **Secondary high voltage entrance** - 2.50" (64mm); 1.75" (44mm); 1.375" (35mm) diameter concentric knockouts located in top of box
- 3) **Primary low voltage entrance** - Quantity (3) 1.375" (35mm) diameter knockouts located in bottom of unit
- 4) **Secondary low voltage entrance** - Quantity (3) 1.375" (35mm) diameter knockouts located in top of box
- 5) **Three phase electrical service** - Terminals are on main fuse block (disregard if unit has optional disconnect switch). Three phase service not by Liebert.
- 6) **Earth ground** - Terminal for field supplied earth grounding wire. Earth grounding required for Liebert units.
- 7) **Remote unit shutdown** - Replace existing jumper between terminals 37 & 38 with field supplied normally closed switch having a minimum 75VA, 24VAC rating. Use field supplied Class 1 wiring.
- 8) **Customer alarm inputs** - Terminals for field supplied, normally open contacts, having a minimum 75VA, 24VAC rating, between terminals 24 & 50, 51, 55, 56. Use field supplied Class 1 wiring. Terminal availability varies by unit options.
- 9) **Common alarm** - On any alarm, normally open dry contact is closed across terminals 75 & 76 for remote indication. 1 AMP, 24VAC max load. Use Class 1 field supplied wiring.
- 10) **Heat rejection interlock** - On any call for compressor operation, normally open dry contact is closed across terminals 70 & 71 (circuit 1), 230 (circuit 2) to heat rejection equipment. 1 AMP, 24VAC max load. Use Class 1 field supplied wiring. When DS unit is paired with a Liebert MC series condenser, remove jumper between terminal 71 and terminal 230. Three wires must connect terminals 70, 71 and 230 of the indoor unit to terminals 70, 71 and 230 of the Liebert MC series condenser.
- 11) **Unit factory installed disconnect switch, Fuse Block and Main Fuses** – "Locking Type" consists of a non-automatic molded case switch operational from the outside of the unit. Access to the high voltage electric panel compartment can be obtained only with the switch in the "off" position. Units with fused disconnects are provided with a defeater button that allows access to the electrical panel when power is on. The molded case switch disconnect models contain separate main fuses.

CANBUS ELECTRICAL CONNECTIONS

- 12) **CANbus Connector**– Terminal block with terminals 49-1 (CAN-H) and 49-3 (CAN-L) + SH (shield connection). The terminals are used to connect the CANbus communication cable (provided by others) from the indoor unit to the Liebert MC Condenser –Optional Econophase Unit.
- 13) **CANbus Cable** – CANbus cable provided by others to connect to the outdoor condenser, and optional PRE unit (DA units only). No special considerations are required when the total external cable connection between the indoor unit and outdoor unit(s) is less than 450FT (137M). For total external cable connections greater than 450FT (137M) but less than 800FT (243M) a CANbus isolator is required. Contact Factory.
Cable must have the following specifications:
 - Braided shield or foil shield with drain wire
 - Shield must be wired to ground at indoor unit
 - 22-18AWG stranded tinned copper
 - Twisted pair (minimum 4 twists per foot)
 - Low Capacitance (15pF/FT or less)
 - Must be rated to meet local codes and conditions
 - EXAMPLES BELDEN 89207 (PLENUM RATED), OR ALPHA WIRE 6454 CATEGORY 5, 5E, OR HIGHER
- 14) Do not run in same conduit, raceway, or chase as high voltage wiring.
- 15) For CANbus network lengths greater than 450FT (137M) call Factory.



LIEBERT DS

ELECTRICAL FIELD CONNECTION DESCRIPTION

UPFLOW AND DOWNFLOW MODELS

OPTIONAL ELECTRICAL CONNECTIONS

- 16) **Smoke sensor alarm - Factory** wired dry contacts from smoke sensor are 91-common, 92-NO, and 93-NC. Supervised contacts, 80 & 81, open on sensor trouble indication. This smoke sensor is not intended to function as, or replace, any room smoke detection system that may be required by local or national codes. 1 AMP, 24VAC max load. Use Class 1 field supplied wiring.
- 17) **Reheat and humidifier lockout** - Remote 24VAC required at terminals 82 & 83 for lockout of reheat and humidifier.
- 18) **Condensate alarm** (with condensate pump option) - On pump high water indication, normally open dry contact is closed across terminals 88 & 89 for remote indication. 1 AMP, 24VAC max load. Use Class 1 field supplied wiring.
- 19) **Remote humidifier** - On any call for humidification, normally open dry contact is closed across terminals 11 & 12 to signal field supplied remote humidifier. 1 AMP, 24VAC max load. Use Class 1 field supplied wiring.
- 20) **Auxiliary cool contact** - On any call for econ-o-coil operation, normally open dry contact is closed across terminals 72 & 73 on dual cool units only. 1 AMP, 24VAC max load. Use Class 1 field supplied wiring.

OPTIONAL LOW VOLTAGE TERMINAL PACKAGE CONNECTIONS

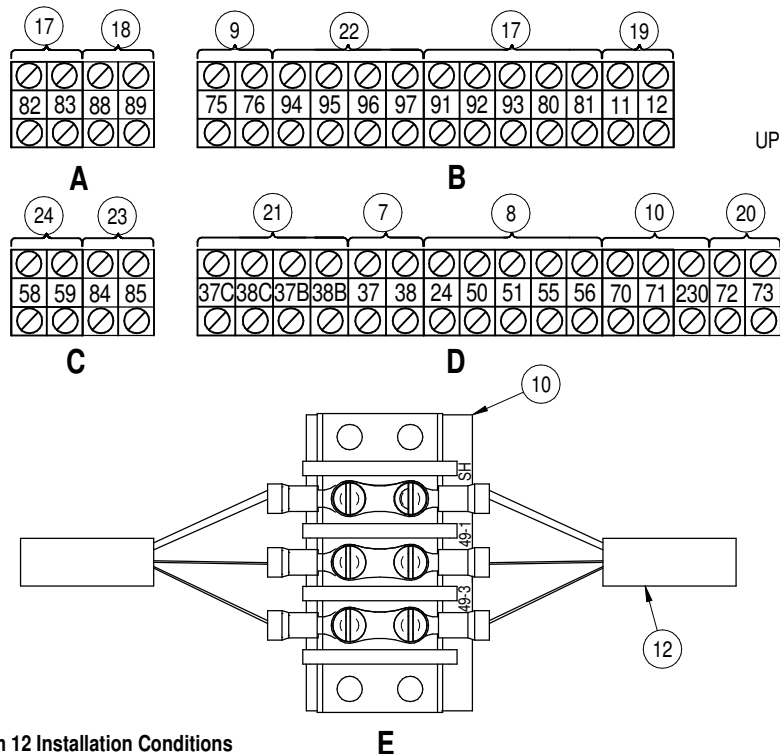
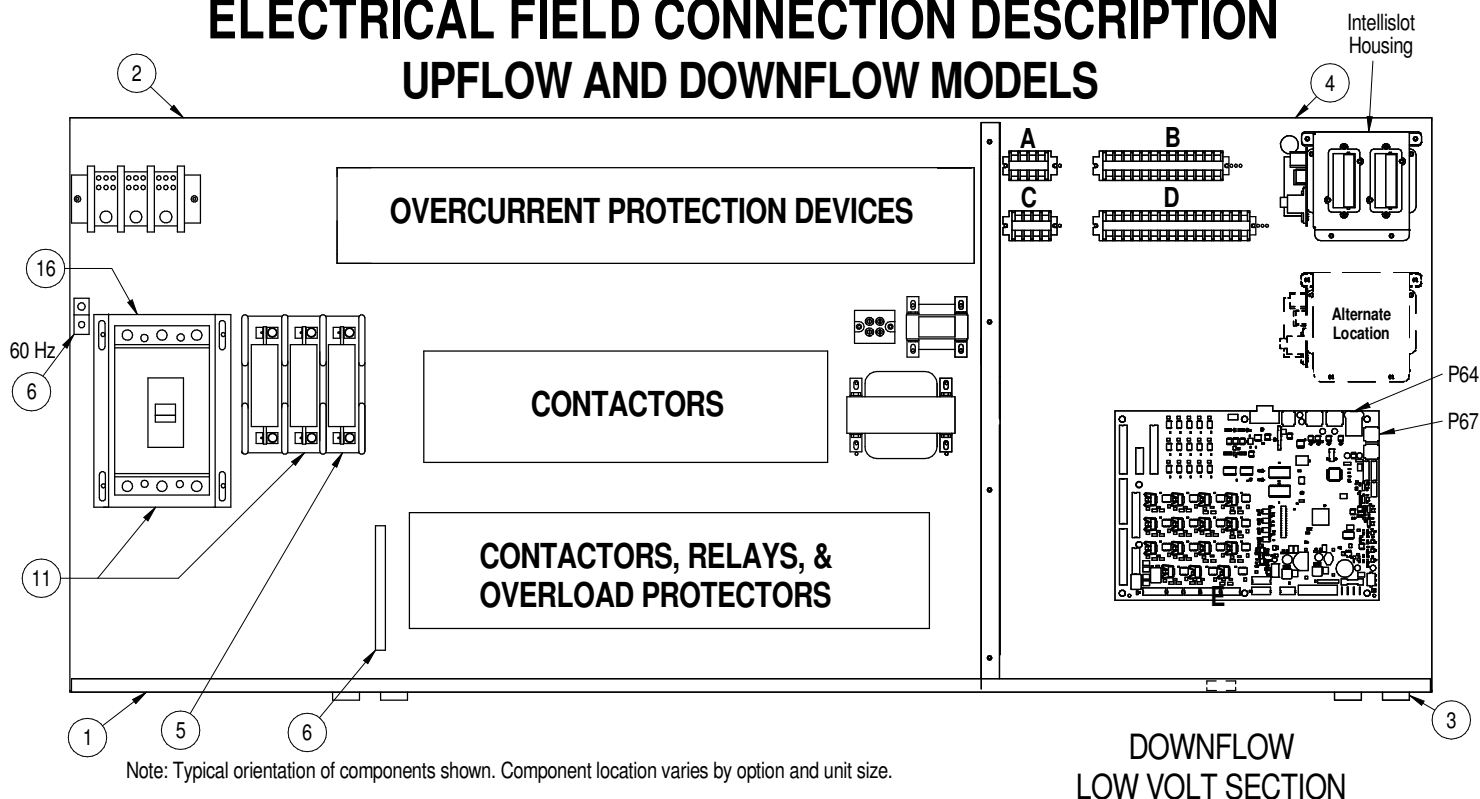
- 21) **Remote unit shutdown** - Two additional contact pairs available for unit shutdown (labeled as 37B & 38B, 37C & 38C). Replace jumpers with field supplied normally closed switch having a minimum 75VA, 24VAC rating. Use field supplied Class 1 wiring.
- 22) **Common alarm** - On any alarm, two additional normally open dry contacts are closed across terminals 94 & 95 and 96 & 97 for remote indication. 1 AMP, 24VAC max load. Use Class 1 field supplied wiring.
- 23) **Main fan auxiliary switch** - On closure of main fan contactor, normally open dry contact is closed across terminals 84 & 85 for remote indication. 1 AMP, 24VAC max load. Use Class 1 field supplied wiring.
- 24) **LiquiText shutdown and dry contact** - On LiquiText activation, normally open dry contact is closed across terminals 58 & 59 for remote indication (LiquiText sensor ordered separately). 1 AMP, 24VAC max load. Use Class 1 field supplied wiring.

NOTE: Refer to specification sheet for total unit full load amps, wire size amps, and max overcurrent protective device size.



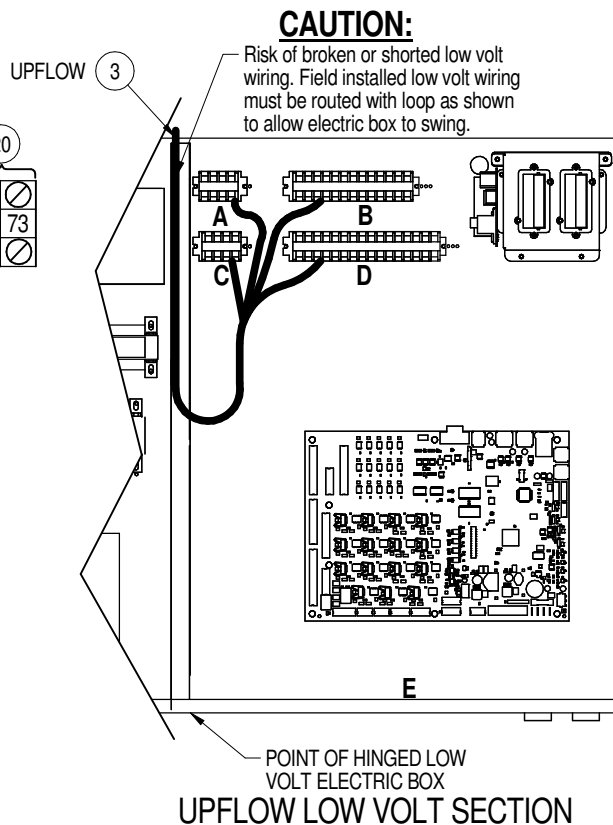
LIEBERT DS

ELECTRICAL FIELD CONNECTION DESCRIPTION UPFLOW AND DOWNFLOW MODELS



Item 12 Installation Conditions

1. Follow all local installation codes.
2. Do not run CAN cables in same conduit, raceway, or chase as high voltage wires (120-600V).
3. Separate high volt wires from CAN wires by 12 inches.

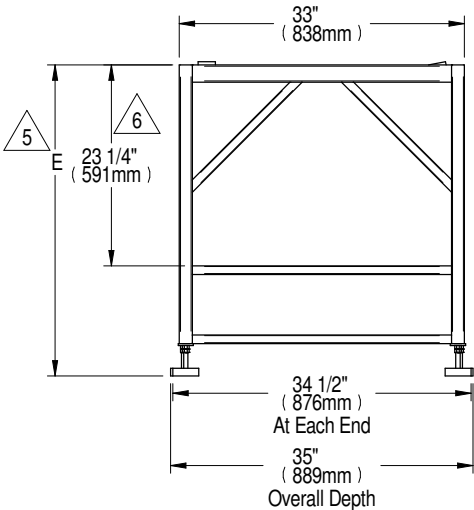
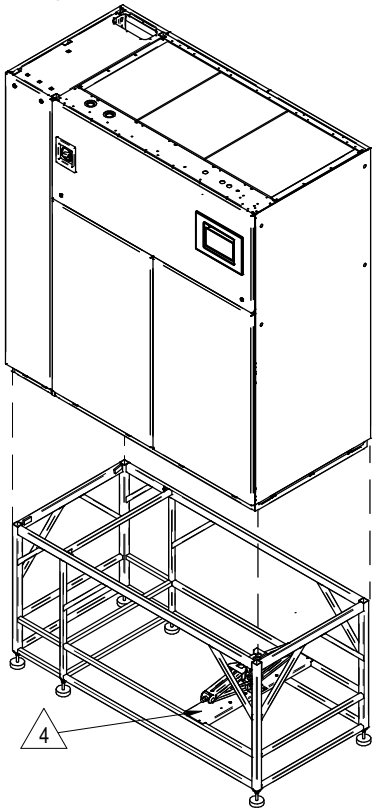
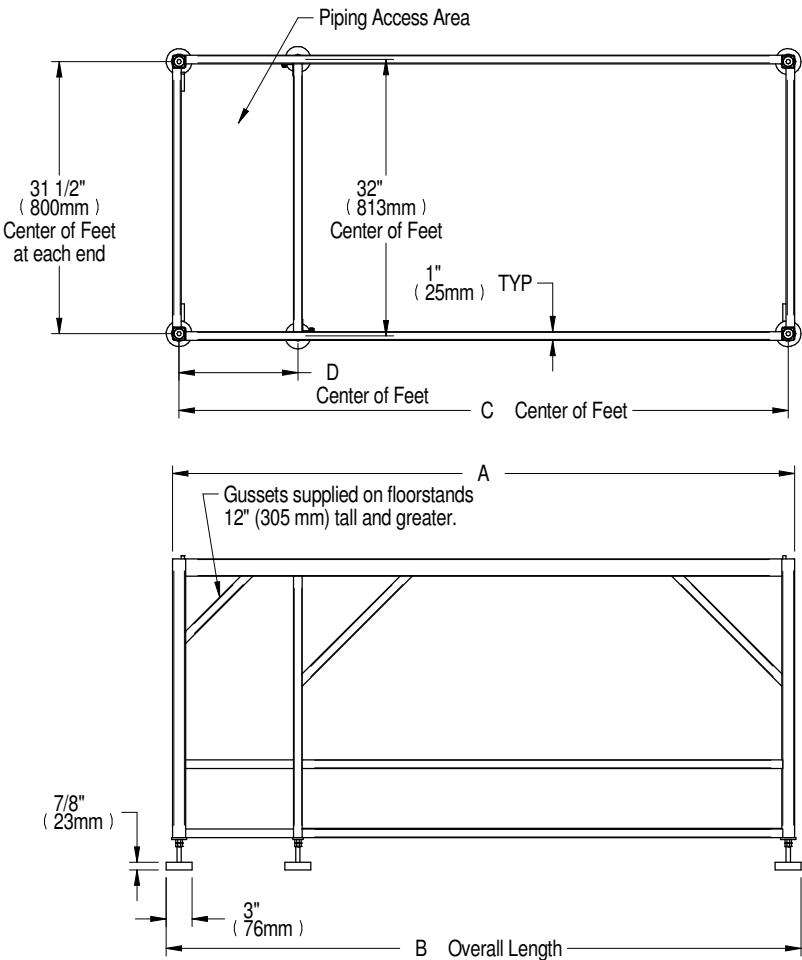




LIEBERT DS

FLOORSTAND DIMENSIONAL DATA
35kW - 42kW (10-12 TONS) W/ EC FANS

- Notes:
- 1. This floorstand should be used when EC fans are intended to be lowered under a raised floor. 24-48" floorstands allow fan to be lowered under the raised floor.
 - 2. Right side of paneled unit is flush with right side of floorstand. All other paneled sides overhang floorstand 1" (25mm).
 - 3. The floorstand used with EC units is not symmetrical and its orientation to the Liebert DS is critical for lowering the EC fans. Unless the floorstand is installed in the correct position, the blowers will not lower into the floor stand.
 - 4. Jack and jack support are shipped loose and are intended to be placed into position under each fan and utilized to lower or raise that fan as needed for Downflow units.
 - 5. Leveling feet are provided with $\pm 1\text{-}1/2"$ (38mm) adjustment from nominal height "E".
 - 6. Applies to 36", 42", & 48" Floorstands.



Model	Dimensional Data in. (mm)			
	A	B	C	D
35kW - 42kW Water/Glycol/GLYCOOL™ Scroll & Digital Scroll Models	85 (2159)	86-1/2 (2197)	83-1/2 (2121)	26-3/4 (679)
35kW - 42kW Air-Cooled Scroll and Digital Scroll Models	72 (1829)	73-1/2 (1867)	70-1/2 (1791)	13-3/4 (349)

Height in. (mm)
E
24 (610)
30 (762)
36 (914)
42 (1069)



LIEBERT iCOM™

PRODUCT INFORMATION UNIT MOUNTED DISPLAY



The Liebert iCOM™ display is a microprocessor 9 inch color touch screen in an ergonomic, aesthetically pleasing housing. The display and housing will be viewable while the unit accent panels are open or closed. The display can be easily detached to view while the panel is open.

Menu Layout- The menus will be broken out into two main menu screens: User screen and Service screen. The User screen contains the menus to access parameters required for basic unit control and setup. The Service screen is designed for service personal and provides access to advanced control setup features and diagnostic information.

Password Protection- The display will contain two unique passwords to protect against unauthorized changes. An auto hide/show feature allows the user to see applicable information based on the login used.

Unit Backup and Restore- The user shall have the ability to create safety copies of important control parameters. The display has the ability for the user to automatically backup unit configuration settings to internal memory or USB storage drive. Configuration settings may be transferred to another unit for a more streamlined unit startup.

Parameter Download- The display has the ability for the user to download a report that lists parameter names, factory default settings and user programmed settings in .csv format for remote reference.

Parameter Search- The display has search fields for efficient navigation and parameter lookup.

Setup Wizards- The display will contain step by step tutorials or wizards to provide easy setup of the control.



LIEBERT iCOM™

PRODUCT INFORMATION

UNIT MOUNTED DISPLAY

Context Sensitive Help- The display will have an onboard help database. The database will provide context sensitive help to assist with setup and navigation of the menus.

Display Setup- The user has the ability to configure the display information based on the specific user's preference. Language, units of measure, screen contrast, home screen layout, back light timer and the hide/show of certain readouts will be configurable through the display.

Additional Readouts- The display has the ability for the user to configure custom widgets on the main screen. Widget options will include items such as fan speed, call for cooling, call for free cooling, maintenance status, call for hot water reheat, call for electric reheat, call for dehumidification, call for humidification, airflow, static pressure, fluid flow rate and cooling capacity.

Status LEDs- The display will provide the user with the unit's operating status using an integrated LED. The LED will indicate if the unit has an active alarm; if the unit has an active alarm that has been acknowledged; or if the unit is on, off, or in a standby status.

Unit Alarms – All unit alarms are annunciated through both audio and visual cues, clearly displayed on the screen, automatically recorded in the event log, and communicated to optional IntelliSlot monitoring cards.

Event Log – The display will automatically store the last 400 unit-only events (messages, warnings, and alarms).

Service Contact Information – The display has the ability to store the local service or sales contact information.

Upgradeable –Display upgrades are performed through a USB connection.

Unit-to-Unit (U2U) Communication – Communication via private Ethernet network allows for advanced control functionality (Teamwork modes, sharing sensor data, Standby Rotation, Lead-Lag, and Cascade operation).

LIEBERT® LIQUI-TECT® 410 POINT LEAK-DETECTION SENSOR

Product Specification/Installation Guide



The Liebert Liqui-TECT 410 (LT410) provides single-point detection of leaks. The point-detection sensor has two gold-plated sensing probes to prevent corrosion and to provide accurate readings. The LT410 constantly monitors for leaks, internal faults, and power failures and warns of any abnormal conditions. Mounting brackets allow for sensor height adjustment and leveling.

The LT410 is the ideal solution for sensing leaks under a raised computer floor or air conditioning drip pans. Two independent outputs provide added flexibility with the capacity to signal both a local alarm panel and a remote building-management system or external equipment, such as motorized water shut-off valves.

LT410 APPLICATIONS

The LT410 is ideally-suited for:

- Glycol and chilled-water cooling,
- Humidification supply water piping,
- Condensate pumps and drains,
- Unit and ceiling auxiliary drip pans,
- Overhead piping troughs.

LOCATIONS/PLACEMENT

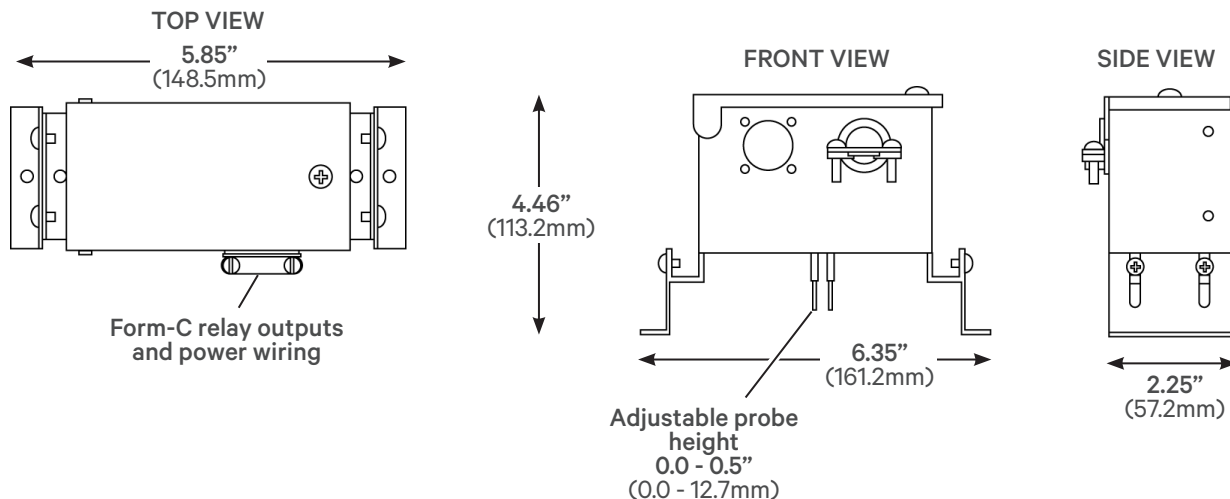
The LT410 is an excellent choice for:

- Large-scale network control centers,
- Data centers,
- Server rooms and closets,
- Unattended, remote shelters,
- Mechanical equipment rooms,
- Sensitive areas with overhead piping,
- Industrial process-control rooms.

COMPONENTS OF THE LIQUI-TECT 410 MODULE

The LT410 consists of a metal enclosure with a hinged top door that provides access to the internal wiring termination. It includes side access through a box connector for installation of the power and contact wiring. The mounting brackets attach to the enclosure with adjustable slots to allow custom setting of the height of the sensing probes.

DIMENSIONS - TOP, FRONT AND SIDE



SPECIFICATIONS

Power Requirements	24 VAC 100 mA, 50/60 Hz, 3 VA (max.)
Dimensions, W x D x H	6.35 x 2.25 x 4.46 in (161.2 x 57.2 x 113.2 mm)
Weight (assembled)	2.0 lb (0.9 kg)
Metal Enclosure	NEMA 1, IP 30

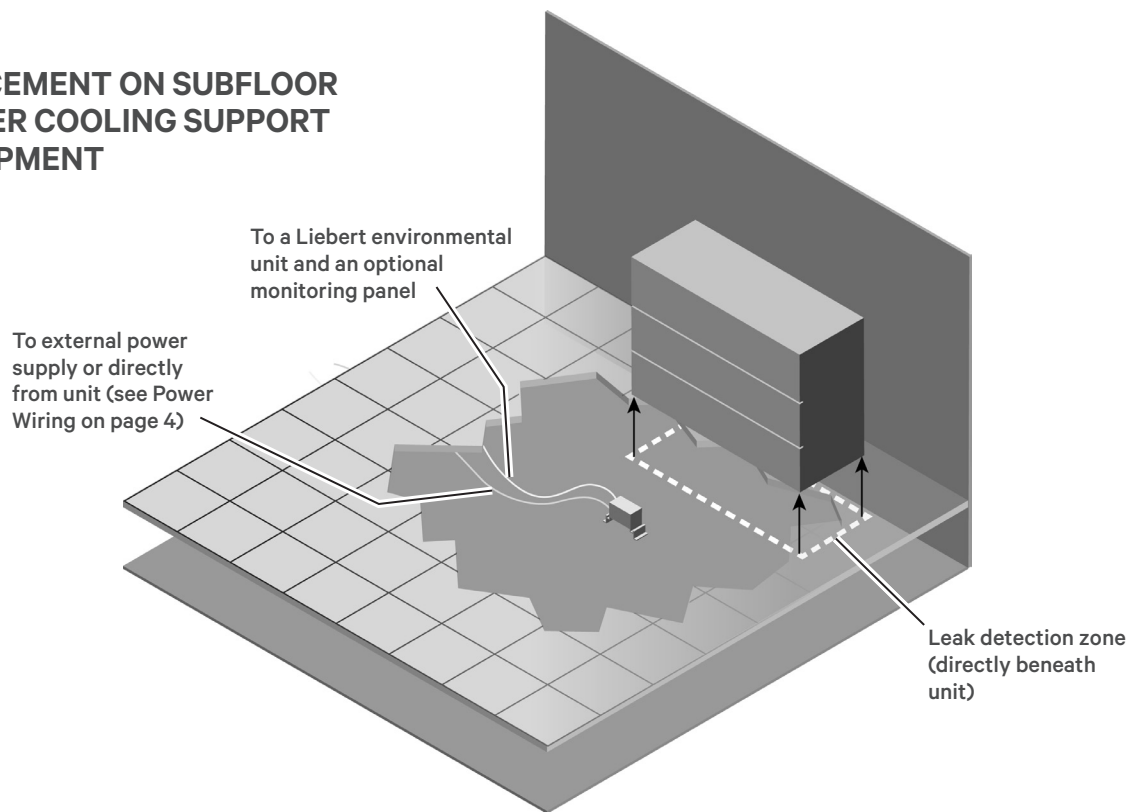
ENVIRONMENTAL CONDITIONS

Operating Temperature	50°F to 104°F (10°C to 40°C)
Operating Humidity	10% to 95% relative humidity (non-condensing)
Operating Altitude	0 to 10,000 ft (0 to 3,048 m)
Output Relay Contact Rating	2 Form-C; 3 A rating at 24 VAC

AGENCY LISTINGS

UL	UL916
C-UL	C22.2, No. 205-M1983
CE	Yes
FCC Compliance	47 CFR, Part 15

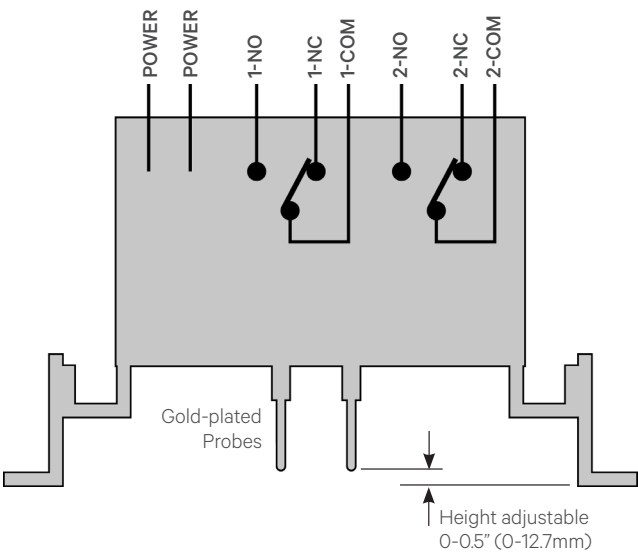
**PLACEMENT ON SUBFLOOR
UNDER COOLING SUPPORT
EQUIPMENT**



WIRING INTERCONNECTIONS

Circuits are shown in powered, non-alarm state.

NOTE: All power and alarm connections must be Class 2 circuits.



Red Wires	Orange Wires	Yellow Wires
24 V, AC/DC @ 0.10A, 50-60 Hz, DC Class 2 Circuit Only	Alarm Contact Rating 24 VAC @ 3A Class 2 Circuit Only	Alarm Contact Rating 24 VAC @ 3A Class 2 Circuit Only

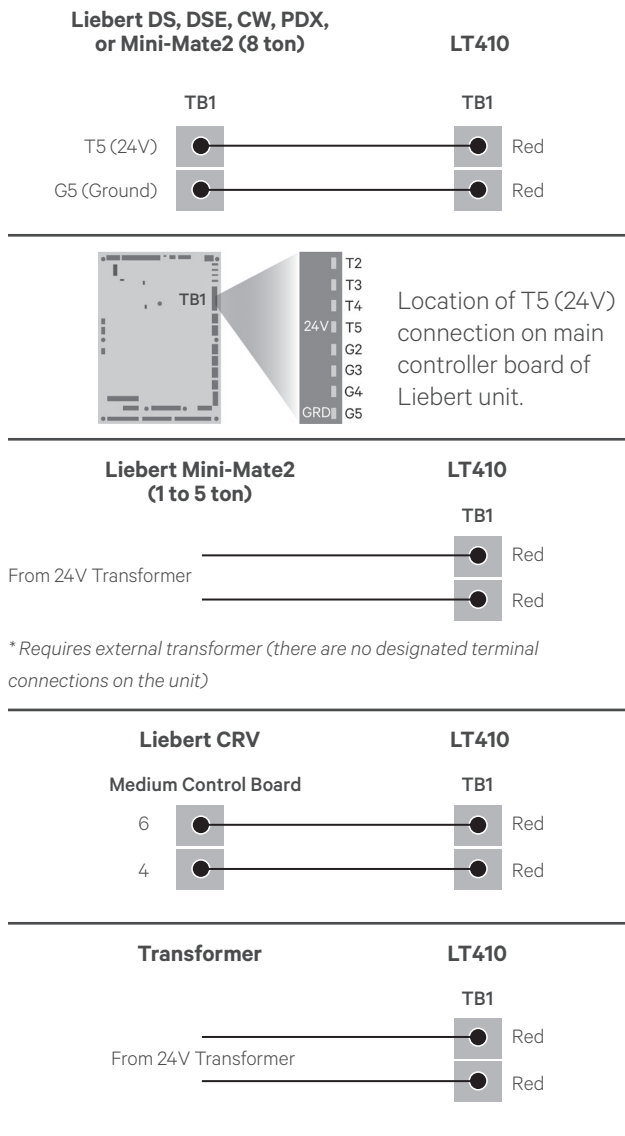
LIEBERT® LT410 POINT LEAK-DETECTION SENSOR

Product Specification/Installation Guide



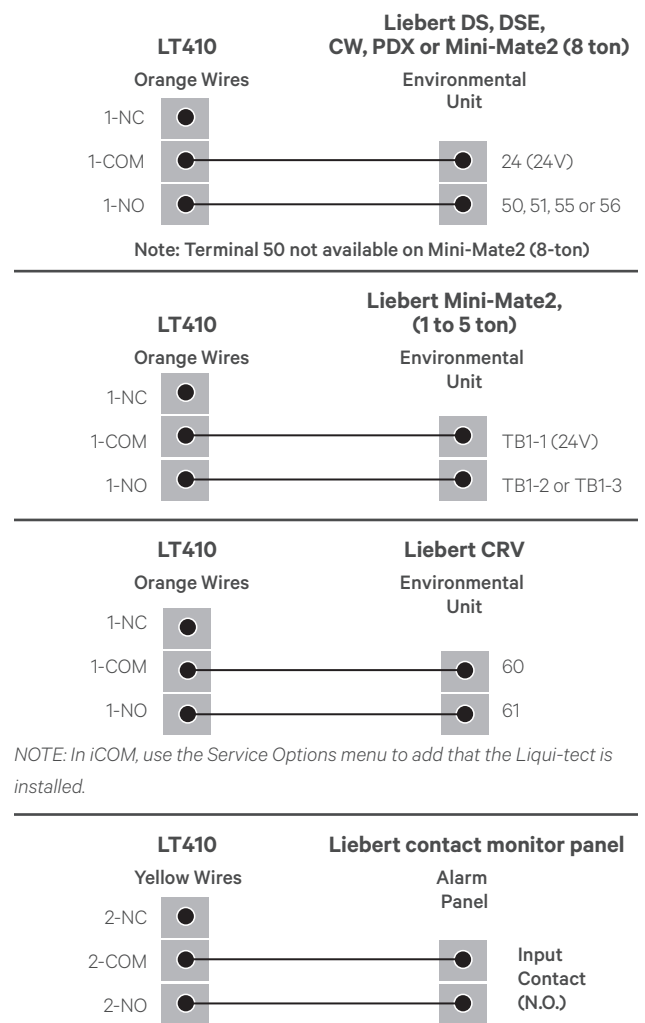
POWER WIRING

The LT410 is rated for 24 VAC, 50/60 Hz, and 0.10 A.



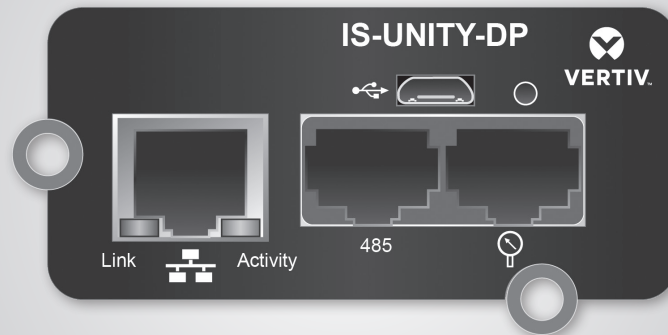
WIRING TO AUXILIARY ALARM PANELS

The LT410 has two Form-C dry contact alarm output contacts: orange wires (1) and yellow wires (2). Each contact is rated for 24 VAC at 3 amp.



LIEBERT® INTELLISLOT™ UNITY PLATFORM CARDS

Product Specification/Installation Guide



The Liebert IntelliSlot Unity Platform brings SNMP, BACnet IP, BACnet MSTP, Modbus TCP, Modbus RTU, YDN23 and Web management capability to many models of Vertiv's power and cooling equipment. The cards employ Ethernet and RS-485 networks to monitor and manage a wide range of operating parameters, alarms and notifications. The card also supports communication for LIFE™ Services by VERTIV.

ADDITIONAL FEATURES

- SNMPv1, SNMPv2c and SNMPv3 with MIB-II support
- HTTP/HTTPS 1.1
- BootP
- DHCP per RFC2131/2132
- Remote firmware updates via a Web browser
- IPv6 support for HTTP/HTTPS, DHCPv6, e-mail, SMS, SNMP v1/v2c/v3 and Modbus TCP

- Liebert SN Environmental Sensor Support (Web, SNMP, SMS and SMTP): Temperature, Humidity, Door Closure, Contact Closure and Leak Detection: Liebert SN-2D, Liebert SN-3C, Liebert SN-L, Liebert SN-T, Liebert SN-TH, Liebert SN-Z01, Liebert SN-Z02 and Liebert SN-Z03

IntelliSlot Unity cards are a form, fit, and function replacement for several Liebert IntelliSlot Web and 485 cards.

COMPATABILITY with Liebert Equipment

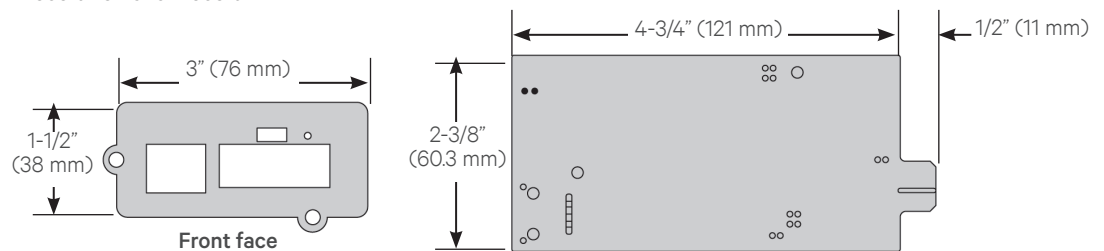
IntelliSlot Card	Compatible with			
IS-UNITY-DP	Alber BDSU-50™	Liebert Deluxe System/3™	Liebert GXT3™	Liebert PeX™ *
IS-UNITY-SNMP	Liebert APM™	Liebert DS™	Liebert GXT4™	Liebert PPC™
IS-UNITY-LIFE	Liebert APS™	Liebert DSE™	Liebert HPC™	Liebert RDC™
	Liebert Challenger 3000™	Liebert EPM™	Liebert HPC-S/M/R/W/Generic™	Liebert RX™
	Liebert CRV™	Liebert EXC™	Liebert HPM™	Liebert XDC™
	Liebert CW™	Liebert eXL™	Liebert NX™ 225-600 kVA	Liebert XDP™
	Liebert DCL™	Liebert EXL™ S1	Liebert NXC™	Liebert XDP-Cray™
	Liebert DCP™	Liebert eXM™	Liebert NXL™ *	
		Liebert FDC™	Liebert NXR™	
		Liebert FPC™	Liebert PCW™/PDX™	

* YDN23 supported only for Liebert PeX and Liebert NXL.

COMPATABILITY with Communication Protocols

Liebert IntelliSlot Card	Life Services Support	Communication Protocol							
		HTTP HTTPS	Velocity Protocol	Email	SMS	SNMP v1, v2c, v3	BACnet IP BACnet MSTP	Modbus TCP Modbus RTU	YDN23*
IS-UNITY-DP	✓	✓	✓	✓	✓	✓	✓	✓	✓
IS-UNITY-SNMP	✓	✓	✓	✓	✓	✓	—	—	—
IS-UNITY-LIFE	✓	✓	✓	✓	✓	—	—	—	—

* YDN23 supported only for Liebert PeX and Liebert NXL.

DIMENSIONS**SPECIFICATIONS**

Power Requirements	DC Inputs	7 to 12 VDC
	Power Consumptions:	3.6 W maximum
Dimensions, W x D x H	2.97 x 5.2 x 1.45 in. (75.5 x 15 x 37 mm)	
Weight (assembled)	Net:	7 oz (0.2 kg)
	Shipping:	1.3 lb (0.6 kg)
Ambient Operating Environment	32 to 104°F (0 to 40°C); 10% to 90% RH (non-condensing)	
Ambient Storage Temperature	-4 to 140°F (-20 to 60°C)	
Communication Ports	Ethernet Communication	RJ-45 (LIFE™ Services requires a network connection to the Internet)
	RJ-45 (RJ-45 to 2-position terminal-block adapter)	

WIRING

10/100 Mb/s Ethernet connector	Standard Category 5E Cable	328 ft. (100m)
RJ-45 - One-Wire Connector	Liebert® Integrated One-Wire Sensor Cable or 2m Cat 5E to Modular 1-Wire	65.6 ft. (20m)

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LIEBERT AIR COOLED SYSTEMS

RECOMMENDED REFRIGERANT LINE SIZES CU, OD LIEBERT AIR-COOLED SYSTEMS USING R-410A

System Fluid : R-410A		Any Compressor Type				
Indoor Model	Equivalent Length	50 ft (15m)	100 ft (30m)	150 ft (45m)	300 ft (91m)	450ft (137m)
CR019RA/ CR020RA	Hot Gas Line, in.	3/4	3/4	3/4	7/8 ²	
	Liquid Line, in.	5/8	5/8	5/8	3/4	
CR035RA	Hot Gas Line, in.	7/8	7/8	7/8	1-1/8 ²	
	Liquid Line, in.	3/4	3/4	3/4	7/8	
PX011	Hot Gas Line, in.	1/2	5/8 ²	5/8 ²	5/8 ²	
	Liquid Line, in.	3/8	1/2	1/2	1/2	
PX018	Hot Gas Line, in.	5/8	5/8	5/8	3/4 ²	
	Liquid Line, in.	1/2	1/2	1/2	5/8	
PX023	Hot Gas Line, in.	3/4	3/4	3/4	7/8 ²	
	Liquid Line, in.	5/8	5/8	5/8	5/8	
PX029	Hot Gas Line, in.	7/8	7/8	7/8	1-1/8 ²	
	Liquid Line, in.	5/8	5/8	5/8	3/4	
DA050 / DA080/ DA085	Hot Gas Line, in.	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8 ³
	Liquid Line, in.	7/8	7/8	7/8	7/8	7/8 ³
DA125	Hot Gas Line, in.	1-3/8	1-3/8	1-3/8	1-3/8	1-3/8 ³
	Liquid Line, in.	7/8	7/8	7/8	7/8	7/8 ³
DA150	Hot Gas Line, in.	1-3/8	1-3/8	1-3/8	1-3/8	1-3/8 ³
	Liquid Line, in.	7/8	1-1/8	1-1/8	1-1/8	1-1/8 ³
DA165	Hot Gas Line, in.	1-3/8	1-3/8	1-3/8	1-3/8	1-3/8 ³
	Liquid Line, in.	7/8	1-1/8	1-1/8	1-1/8	1-1/8 ³

Notes:

1. Consult factory for proper line sizing for runs longer than maximum equivalent length shown in table.
2. Must downsize vertical riser one trade size (1-1/8" to 7/8" or 7/8" to 3/4" or 3/4" to 5/8" or 5/8" to 1/2").
3. Consult factory when actual pipe length between condenser/EconoPhase and Liebert DSE unit will exceed 300 ft (91 m).



LIEBERT AIR COOLED SYSTEMS

RECOMMENDED REFRIGERANT LINE SIZES CU, OD LIEBERT AIR-COOLED SYSTEMS USING R-407C

System Fluid : R-407C		Standard Scroll Models (Non-Digital Scroll)				4-Step Semi-Hermetic or Digital Scroll Models		
Indoor Model	Equivalent Length	50 ft (15m)	100 ft (30m)	150 ft (45m)	200 ft (60m)	50 ft (15m)	100 ft (30m)	150 ft (45 m)
DS028	Hot Gas Line, in.	7/8	7/8	7/8		3/4	3/4	7/8
	Liquid Line, in.	1/2	5/8	5/8		1/2	5/8	5/8
DS035	Hot Gas Line, in.	7/8	7/8	7/8		3/4	7/8	7/8
	Liquid Line, in.	1/2	5/8	5/8		1/2	5/8	5/8
DS042	Hot Gas Line, in.	7/8	7/8	7/8		7/8	7/8	1-1/8 ¹
	Liquid Line, in.	1/2	5/8	5/8		5/8	5/8	5/8
DS053	Hot Gas Line, in.	7/8	1-1/8	1-1/8		7/8	1-1/8 ¹	1-1/8 ¹
	Liquid Line, in.	5/8	7/8	7/8		7/8	7/8	7/8
DS070	Hot Gas Line, in.	1-1/8	1-1/8	1-1/8		1-1/8 ¹	1-1/8 ¹	1-1/8 ¹
	Liquid Line, in.	7/8	7/8	7/8		7/8	7/8	7/8
DS077 ²	Hot Gas Line, in.	1-1/8	1-1/8	1-1/8		1-1/8	1-1/8	1-1/8
	Liquid Line, in.	7/8	7/8	7/8		7/8	7/8	7/8
DS105 ²	Hot Gas Line, in.	1-3/8	1-3/8	1-3/8		1-3/8	1-3/8	1-3/8
	Liquid Line, in.	7/8	7/8	1-1/8		7/8	7/8	1-1/8
XDC160	Hot Gas Line, in.	1-1/8 ³	1-1/8 ³	1-3/8 ³	1-3/8 ³			
	Liquid Line, in.	7/8	1-1/8	1-1/8	1-1/8			

System Fluid : R-407C		Standard Scroll Models (Non-Digital Scroll)				
Indoor Model	Equivalent Length	50 ft (15m)	75 (23m)	100 ft (30m)	125 (38m)	150 ft (45m)
MMD12	Suction Line, in.	5/8	5/8	7/8	7/8	7/8
	Liquid, Line, in.	3/8	3/8	3/8	3/8	3/8
MMD18 / DME020	Suction Line, in.	5/8	7/8	7/8	7/8	7/8
	Liquid, Line, in.	3/8	3/8	3/8	1/2	1/2
MMD24 / DME027	Suction Line, in.	7/8	7/8	7/8	7/8	7/8
	Liquid, Line, in.	3/8	3/8	1/2	1/2	1/2
MMD36/ MMD35 / DME037 / MMD96-3T / MMD95-3T	Suction Line, in.	7/8	7/8	1-1/8 ¹	1-1/8 ¹	1-1/8 ¹
	Liquid, Line, in.	1/2	1/2	1/2	1/2	1/2
MMD60/ MMD59 / MMD96-5T /MMD95-5T	Suction Line, in.	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8
	Liquid, Line, in.	1/2	5/8	5/8	5/8	5/8

Note:

Consult factory for proper line sizing for runs longer than maximum equivalent length shown in tables above.

1. Downsize vertical riser one trade size (1-1/8" to 7/8")

2. Digital scroll not available on 077 and 105 models.

3. Double risers are required when hot gas vertical rise is 15 ft (4.6m) or more. Refer to XDC user manual