

# Liebert

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## LIEBERT CHALLENGER ITR AIR COOLED MODELS

Job Name	COMCAST SPOTLIGHT
Model	BR067ADCDEI
Quantity	1
Date	Oct 29, 2009
Invoice #	
Purchaser	McKinstry Co.
P.O. #	
Tag #	
Submitted By	Climate & Power Conditioning

## **HUMIDIFIER SECTION**

- Infrared with Autoflush Capacity: 11.0 lbs/hr (5.0 kg/hr) / 4.8 kW

## **REHEAT SECTION**

- Electric Reheat : 88,700 BTU/hr (15 kW) (Includes Fan Motor)
- Number of Stages: 2

## **EVAPORATIVE COIL**

- Coil Face Area: 6.67 sq. ft. (.62 sq. m.)
- Rows of Coil: 4

## **FILTER SECTION** (Disposable Type - Efficiency based on ASHRAE 52.2)

- Size: 28.5 in.(724 mm) X 29.5 in.(749mm)
- 4" (10cm) MERV 7 Filter

## **MICROPROCESSOR CONTROLLER**

- Liebert iCOM microprocessor with Large Graphic Display
- Display Language is English

## **AIR COOLED CONDENSER SECTION**

- Air Cooled Condenser Part Number : TCSV165-Y
- Design Ambient : 100° F (38° C)
- Variable Frequency Drive Control and Condenser Disconnect Switch

## **STANDARD EQUIPMENT**

- Locking Disconnect Switch
- Dual-Float Condensate Pump

# AIR COOLED LIEBERT CHALLENGER ITR BR MODELS

## OPTIONAL FEATURES (Refer to specification sheet for options supplied)

**FIRESTAT** Is mounted in the unit with the sensing element in the return air flow. Upon activation the high temperature stat will immediately shut down the entire unit.

**SMOKE DETECTOR** The smoke detector senses the return air, shuts down the unit upon detection, and sends visual and audible alarm. Dry contacts are available for a remote customer alarm. This smoke detector is not intended to function as or replace any room smoke detection system that may be required by local or national codes.

**FILTERS** The standard and optional filters are available with optional pre-filters. A 2" ASHRAE 52.2 MERV 7 (40% ASHRAE 52.1) pre-filter, and 4" ASHRAE 52.2 MERV 7 (40% ASHRAE 52.1) or 4" ASHRAE 52.2 MERV 11 (60-65% ASHRAE 52.1) main filter may be specified.

➔ **LIQUI-TECT SENSOR** Is a solid state water sensor that has no moving parts and is hermetically sealed to keep out dust and dirt. When the sensor detects the presence of moisture the alarm system is activated.

**FLOORSTAND** Is constructed of MIG welded tubular steel and available in heights from 9" to 24" (229mm to 610mm) with vibration isolation pads provided on the adjustable legs.

➔ **PLENUM(S)** 5 plenums are available for horizontal flow units: 2 way, 3 way, or 4 way discharge, top duct connection, and low profile cold aisle discharge. Each plenum is 18" (457mm) high or 15-1/16" (382mm) and constructed of steel with 1" (25.4mm), 1 1/2 lb. (.68kg) insulation and is custom painted in unit matching colors.

**STEAM GENERATING CANISTER HUMIDIFIER** This system is housed in a steel enclosure and includes a replaceable canister with integral fill cup, fill and drain valves, and high water indicator. System automatically fills and drains as well as maintains the required water level based on conductivity.

**REHEAT/HUMIDIFIER LOCKOUT** Includes the necessary relays to disable the reheat and humidifier from an external 24 volt signal.

**SCR ELECTRIC REHEAT** Is controlled by the unit microprocessor by pulsing the reheat elements for tight temperature control. Not available in 575 volts.

**200K HOUR BEARINGS** Lifetime lubricated self-aligning pillow-block ball bearings rated at a minimum L10 life of 200,000 hours; available on upflow units only.

**TWO (2) ADDITIONAL REMOTE SHUTDOWN TERMINALS** Provides the customer with a total of three locations to remotely shut down the unit.

**TWO (2) EXTRA COMMON ALARM CONTACTS** Provides the customer with a total of three sets of n/o contacts for remote indication of unit alarms.

**MAIN FAN AUXILIARY SWITCH** Provides the unit with one n/o set of contacts to indicate that the motor/unit is on.

**REMOTE HUMIDIFIER CONTACTS** allow the unit's humidity controller to control a humidifier outside the unit. Power to operate the remote humidifier does not come from the Challenger unit.

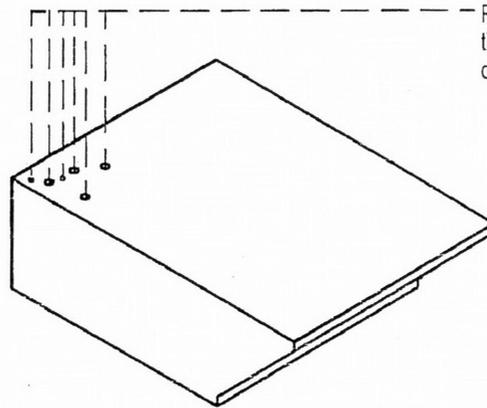
**INTELLISLOT ISWEB-LBDS CARD** Provides 10/100 baseT Ethernet connectivity for unit monitoring and management. The supported management interfaces include: SNMP for Network Management Systems and HTTP for web page viewing.

**INTELLISLOT OC485-LBDS CARD** Provides RS-485 Modbus network connectivity to Building Management Systems for unit monitoring and management.

➔ **DIGITAL COMPRESSOR** Scroll with a suction gas cooled motor, internal centrifugal oil pump, vibration isolating mountings, internal thermal overloads, manual reset high pressure switch, unloading solenoid valve and piping and operates at 3500 RPM @ 60 HZ and 2900 RPM @ 50 HZ.

**REMOTE TEMPERATURE AND HUMIDITY SENSORS** Are provided in a vented case for mounting in the room to be conditioned. Includes 30 ft. (9m), 60 ft. (18m), 90 ft. (27m), 120 ft. (36m), or 150 ft. (45m) of cable supplied for connecting sensors to unit.

# PIPING: AIR COOLED LIEBERT CHALLENGER ITR BR MODELS



Piping outlet locations through the plenum are the same as the unit. See below for descriptions and connection sizes.

Humidifier Water Supply Line  
1/4" OD CU

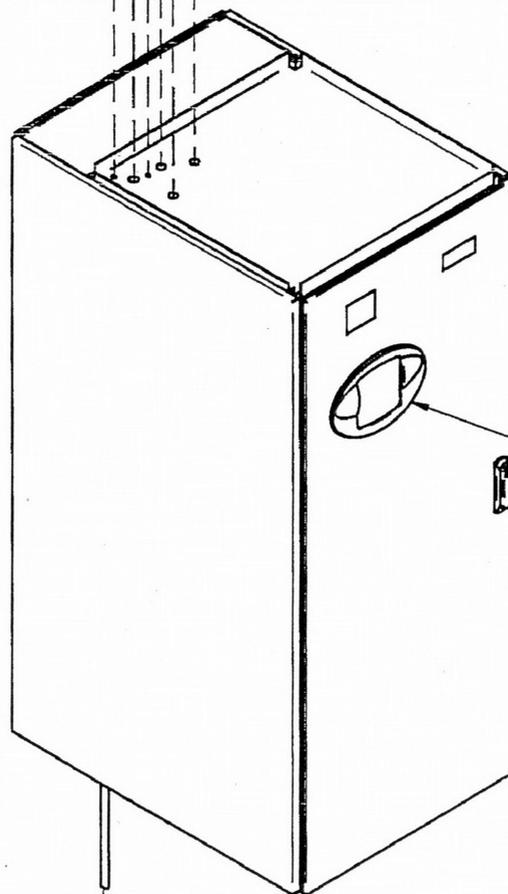
Hot Gas Refrigerant Line  
7/8" OD CU on Models BR067A/BR065A

Condensate Pump Line  
1/2" OD CU  
Use only if condensate pump is present.

Hot Water Return  
5/8" OD CU (optional)

Liquid Refrigerant Line  
1/2" OD CU on Models BR067A/BR065A

Hot Water Supply  
5/8" OD CU (optional)



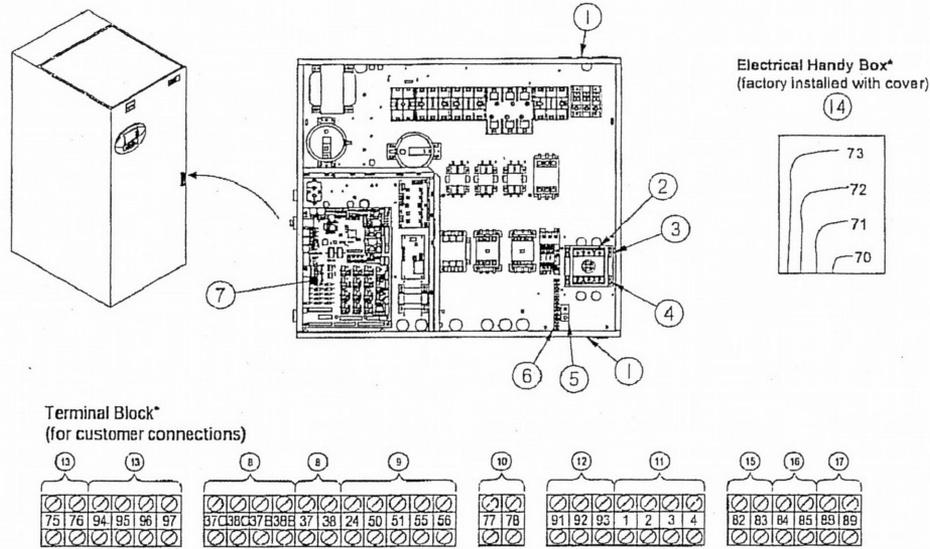
iCOM Control Panel

Condensate Drain  
3/4" FPT

Field pitch a min. of 1/8" (3.2mm) per ft. (305mm). Units without a condensate pump have a factory-supplied trap in the unit, so a field trap should not be added. Units with a condensate pump will require a field-supplied trap downstream from the pump. The drain line must comply with all applicable codes. (If condensate pump is ordered piping is out top of unit).

PIPING OUTLET LOCATIONS  
(See Cabinet and Floor Planning  
Dimensional Data for Piping  
Opening Sizes.)

# ELECTRICAL FIELD CONNECTIONS LIEBERT CHALLENGER ITR BR/BM MODELS WITH iCOM CONTROLS



- 1) **Electric conduit knockouts** on top and bottom of electric box. Knockout size 1 3/4" (44.5mm).
- 2) **Three phase connection.** Electric service connection terminals when factory disconnect switch is supplied.
- 3) **Factory installed disconnect switch.**
- 4) **Three phase electric service** field supplied.
- 5) **Earth ground connection (50/60HZ).** Connection terminal for field supplied earth grounding wire.
- 6) **Earth ground bar (50HZ only).** Connection terminals with factory ground from each high voltage component for field supplied earth grounding wire.
- 7) **Control and monitoring section** of electric box.
- 8) **Remote unit shutdown.** Replace existing jumper between terminals 37 + 38 with normally closed switch having a minimum 75VA, 24VAC rating. Use field supplied Class 1 wiring. Two additional contact pairs available as an option (labeled as 37B & 38B, 37C & 38C). Replace existing jumper for appropriate pair as done for 37 & 38.
- 9) **Special alarm connections.** Field supplied 24V Class 1 wiring for special alarm. Connection made by adding normally open contacts between terminals 24 + 50. Special alarm connections may be factory wired or field wired. See schematic for factory wired special alarms. For field wired special alarms, use 24V Class 1 wiring to connect normally open contacts between terminals 24 & 50, 24 & 51, 24 & 55, or 24 & 56.
- 10) **SiteScan connection.** Terminals 77 (-) and 78 (+) are for connection of a 2 wire, twisted pair, communication cable (available from Liebert or others) to optional SiteScan.
- 11) **Remote condensing unit connection.** Field supplied 24V Class 1 wiring to remote condensing unit terminals 1, 2, 3, & 4 from (R2) relay (split system only.)
- 12) **Smoke detector alarm connections.** Field supplied 24V Class 1 wiring to remote alarm circuits. Factory wired contacts from optional smoke detector are #91-comm., #92-NO, and #93-NC.
- 13) **Common alarm connection.** Field supplied 24V. Class 1 wiring to common alarm terminals 75 + 76 (and optional 94 + 95, and 96 + 97), which are factory connected to common alarm relay (R3).
- 14) **Heat rejection connection.** Field supplied 24V Class 1 wiring to interlock heat rejection from pigtails 70 + 71 which are factory connected to compressor side switch (self contained units only) or to GLYCOOL relay (K11, GLYCOOL units only). On Dual Cool units only, pigtails 72 + 73 connect auxiliary cooling source to GLYCOOL relay K11.
- 15) **Reheat and Humidifier Lockout.** Optional emergency power lockout of reheat and/or humidifier: connections provided for remote 24V AC source.
- 16) **Main Fan Auxiliary Switch.** Optional main fan auxiliary side switch. Terminals located in field wiring compartment for remote indication that the evaporator fan motor/unit is on. Field to connect 24V maximum.
- 17) **Optional Condensate Alarm (Dual Float Condensate Pump only).** Relay terminals located in field wiring compartment for remote indication.

\*Located inside unit on top for Horizontal flow units.

NOTE: Refer to specification sheet for full load amp. and wire size amp. ratings.

# LIEBERT LIQUI-TECT® 410

## Point Leak Detection Sensor

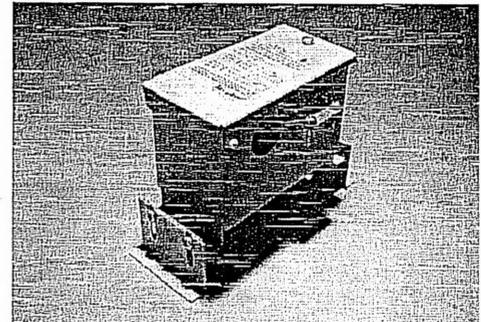
### Product Specification Sheet

#### Description

The Liebert Liqui-TECT 410 (LT410) provides a single-point detection of leaks. The point detection sensor has two gold-plated sensing probes to prevent corrosion resistance and to provide accurate readings. The LT410 constantly monitors points 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.

The LT410 is also ideally suited for the following:



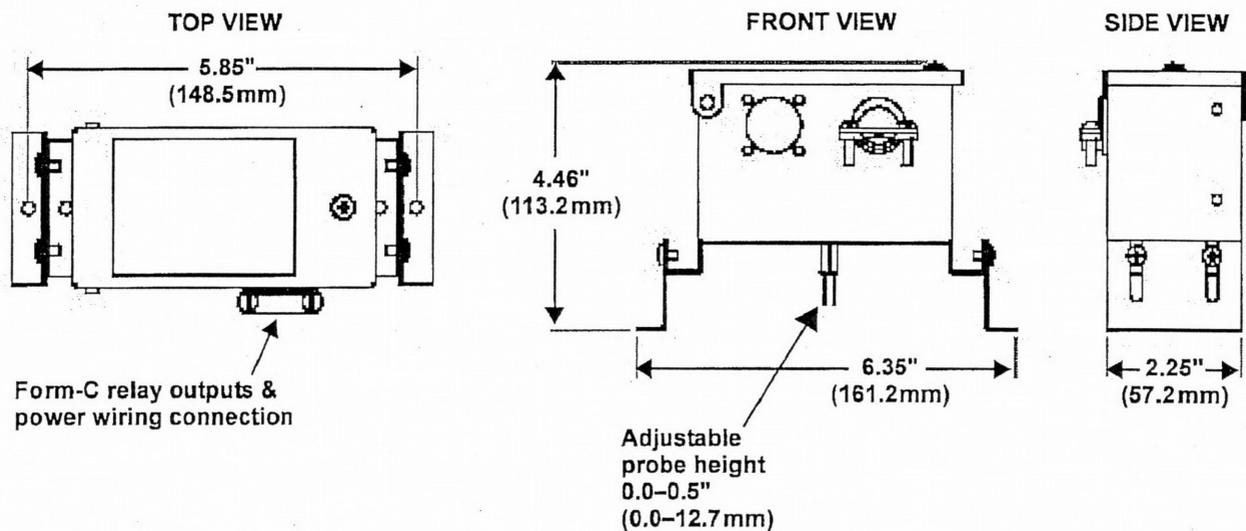
#### Applications

- Glycol, Chilled Water Cooling
- Humidification Feed Water Piping
- Condensate Pumps and Drains
- Unit and Ceiling Auxiliary Drip Pans
- Overhead Piping Troughs

#### Locations

- Large-Scale Network Control Centers
- Data Centers
- Server Rooms - Closets
- Unattended Remote Shelters
- Mechanical Equipment Rooms
- Sensitive Areas With Overhead Piping
- Industrial Process Control Rooms

#### Dimensions - Top, Front & Side Views



Shipping weight: 2 lbs (0.9 kg)

Mounting holes: #8 screws

# Power Wiring

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

Figure 1 24V from Liebert environmental units to LT410

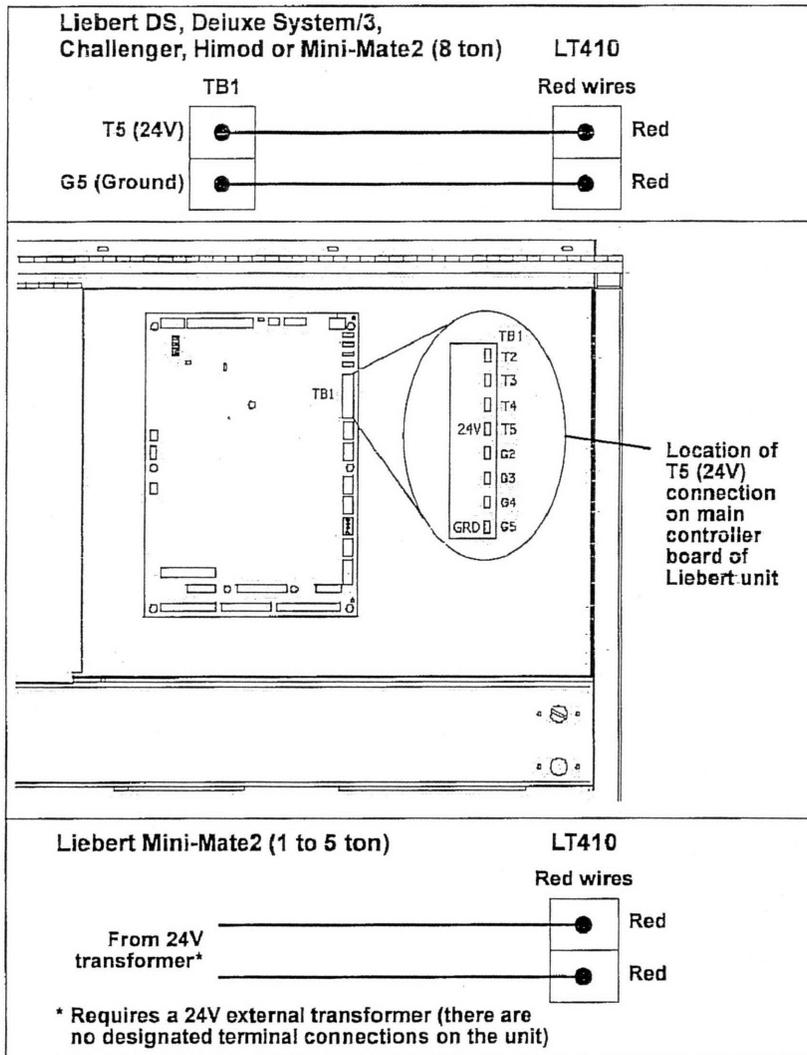
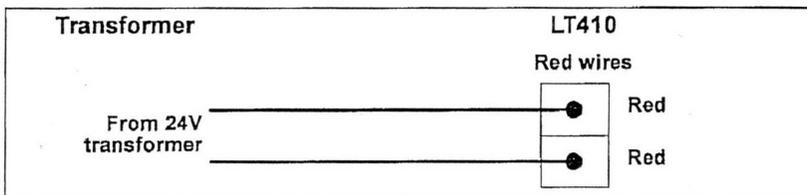
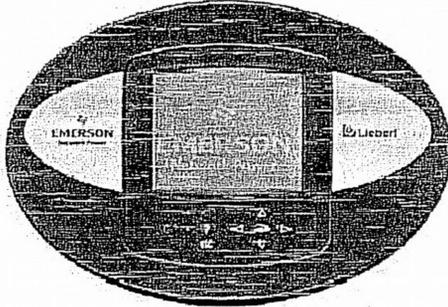


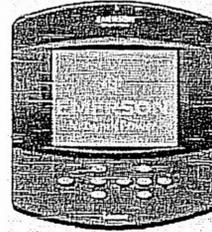
Figure 2 24V from transformer to LT410



**Liebert iCOM® Control System  
Intelligent Communications & Monitoring  
Large Graphic Display  
(Unit or Wall-mounted)**



*Large Graphic Display shown in unit bezel*



Large Graphic Display for Wall-Mounting

The Liebert iCOM® Large Graphic Display shall be microprocessor based with a 320x240 dot matrix graphic monitor with control keys for user inputs mounted in an ergonomic, aesthetically pleasing housing. The display and housing shall be viewable while the unit panels are open or closed. All parameter changes are password protected.

Wall-Mounted Large Graphic Displays shall be capable of being mounted on a wall and are provided with a power supply. Wall-mounted displays can be added to a Unit-to-Unit network and remotely located from the cooling unit(s) to provide convenient monitoring and control capabilities.

Large Graphic Display only features:

The Large Graphic Display provides all of the **same features of the Small Graphic Display**, plus Large Graphic Display only features.

**Event Log** – Automatically stores the last 400 unit and system (U2U communication required) events (messages, warnings, and alarms)

**Spare Parts List** - shows a list of key spare parts, their quantity and respective parts numbers

**Unit Diary** - A free field area where unit history may be stored for reference

**View Network** – Shows a summarized view of all the cooling units connected on a U2U network

**Centralized Operation** – View and configure any cooling unit on a U2U network from a Large Graphic Display

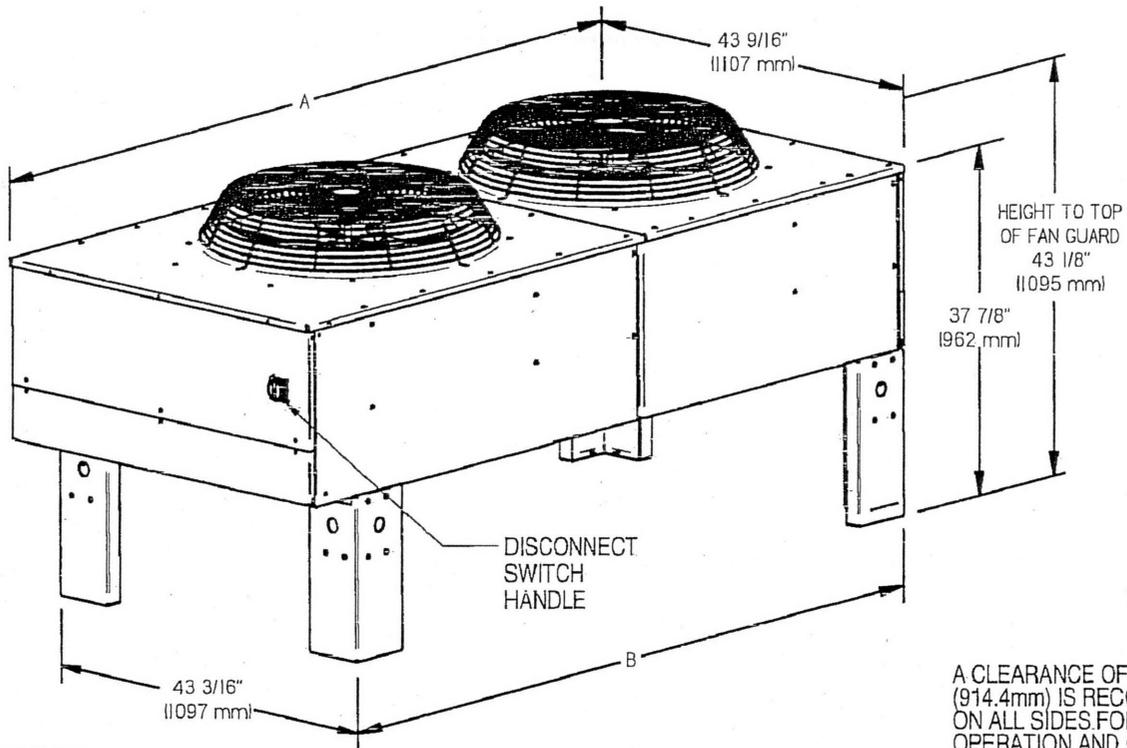
**System View** – View the averages of all operations being performed on the U2U network

**Active Alarms on Status Screen** – Last two unit/system events are displayed at the bottom of the Status Screen for rapid identification of critical events without having to enter submenus

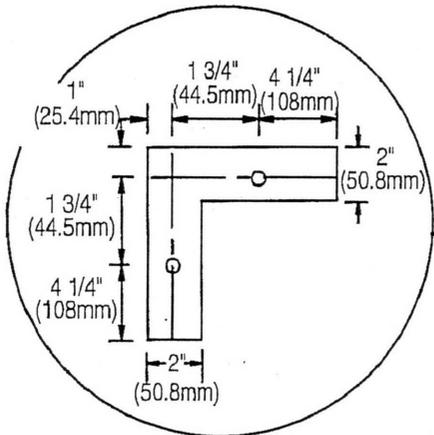
**Full Text Descriptions** – The large screen size eliminates the need for abbreviated text, simplifying user operation

# CABINET & ANCHOR DIMENSIONAL DATA

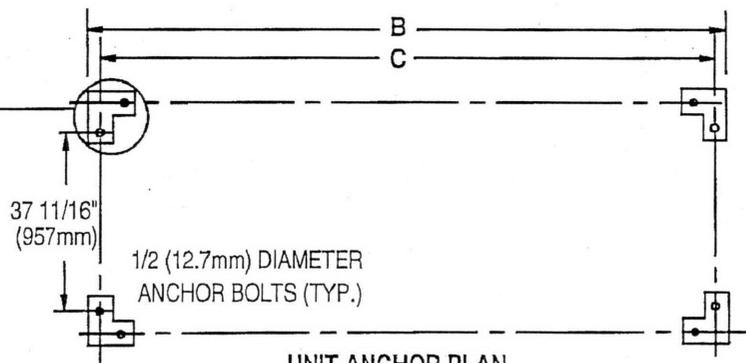
VFD CONTROL CONDENSERS 50 AND 60Hz -- TCSV ONLY



A CLEARANCE OF 36 IN. (914.4mm) IS RECOMMENDED ON ALL SIDES FOR PROPER OPERATION AND COMPONENT ACCESS.



TYPICAL FOOTPRINT



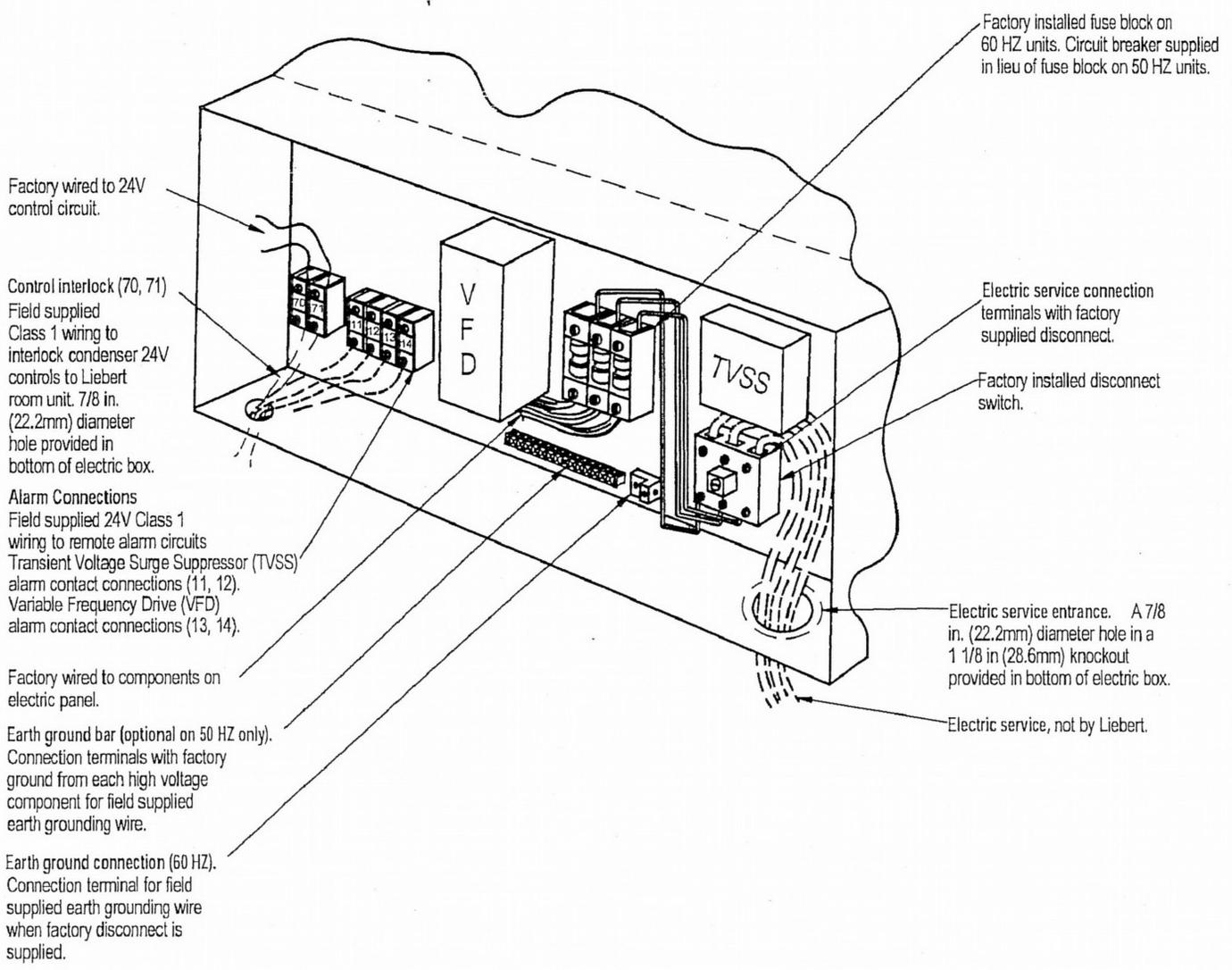
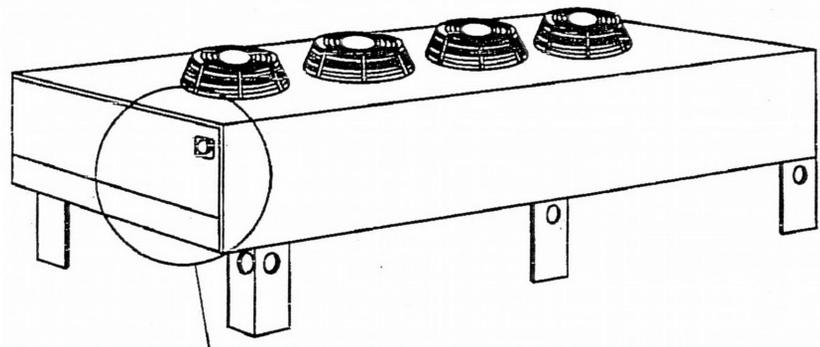
UNIT ANCHOR PLAN

LIEBERT MODEL NO. Note 1	NO. FANS	A		B		C		NET WEIGHT	
		IN.	MM.	IN.	MM.	IN.	MM.	LBS.	KG.
TCSV083	1	51 1/2	1308	44	1118	42	1067	295	134
TCSV104	1	51 1/2	1308	44	1118	42	1067	315	143
TCSV165	2	91 1/2	2324	84	2134	82	2083	425	193
TCSV205	2	91 1/2	2324	84	2134	82	2083	495	225
TCSV251	3	131 1/2	3340	124	3150	122	3099	500	227
TCSV308	3	131 1/2	3340	124	3150	122	3099	670	305

1. All condenser fan motors are 3/4 H.P.

# ELECTRICAL FIELD CONNECTIONS

## VFD CONTROL CONDENSERS



NOTE: Refer to specification sheet for full load amp. and wire size amp. ratings.

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Quantity	1
Date	Oct 29, 2009
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## **HUMIDIFIER SECTION**

- Infrared with Autoflush Capacity: 11.0 lbs/hr (5.0 kg/hr) / 4.8 kW

## **REHEAT SECTION**

- Electric Reheat : 88,700 BTU/hr (15 kW) (Includes Fan Motor)
- Number of Stages: 2

## **EVAPORATIVE COIL**

- Coil Face Area: 6.67 sq. ft. (.62 sq. m.)
- Rows of Coil: 4

## **FILTER SECTION** (Disposable Type - Efficiency based on ASHRAE 52.2)

- Size: 28.5 in.(724 mm) X 29.5 in.(749mm)
- 4" (10cm) MERV 7 Filter

## **MICROPROCESSOR CONTROLER**

- Liebert iCOM microprocessor with Large Graphic Display
- Display Language is English

## **AIR COOLED CONDENSER SECTION**

- Air Cooled Condenser Part Number : TCSV165-Y
- Design Ambient : 100° F (38° C)
- Variable Frequency Drive Control and Condenser Disconnect Switch

## **STANDARD EQUIPMENT**

- Locking Disconnect Switch
- Dual-Float Condensate Pump

# AIR COOLED LIEBERT CHALLENGER ITR BR MODELS

## OPTIONAL FEATURES (Refer to specification sheet for options supplied)

**FIRESTAT** Is mounted in the unit with the sensing element in the return air flow. Upon activation the high temperature stat will immediately shut down the entire unit.

**SMOKE DETECTOR** The smoke detector senses the return air, shuts down the unit upon detection, and sends visual and audible alarm. Dry contacts are available for a remote customer alarm. This smoke detector is not intended to function as or replace any room smoke detection system that may be required by local or national codes.

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**TWO (2) ADDITIONAL REMOTE SHUTDOWN TERMINALS** Provides the customer with a total of three locations to remotely shut down the unit.

**TWO (2) EXTRA COMMON ALARM CONTACTS** Provides the customer with a total of three sets of n/o contacts for remote indication of unit alarms.

**MAIN FAN AUXILIARY SWITCH** Provides the unit with one n/o set of contacts to indicate that the motor/unit is on.

**REMOTE HUMIDIFIER CONTACTS** allow the unit's humidity controller to control a humidifier outside the unit. Power to operate the remote humidifier does not come from the Challenger unit.

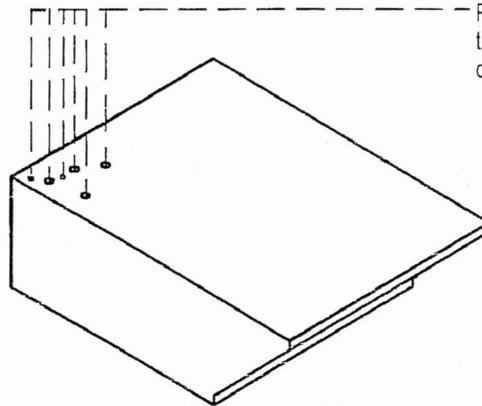
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**DIGITAL COMPRESSOR** Scroll with a suction gas cooled motor, internal centrifugal oil pump, vibration isolating mountings, internal thermal overloads, manual reset high pressure switch, unloading solenoid valve and piping and operates at 3500 RPM @ 60 HZ and 2900 RPM @ 50 HZ.

**REMOTE TEMPERATURE AND HUMIDITY SENSORS** Are provided in a vented case for mounting in the room to be conditioned. Includes 30 ft. (9m), 60 ft. (18m), 90 ft. (27m), 120 ft. (36m), or 150 ft. (45m) of cable supplied for connecting sensors to unit.

# PIPING: AIR COOLED LIEBERT CHALLENGER ITR BR MODELS



Piping outlet locations through the plenum are the same as the unit. See below for descriptions and connection sizes.

Humidifier Water Supply Line  
1/4" OD CU

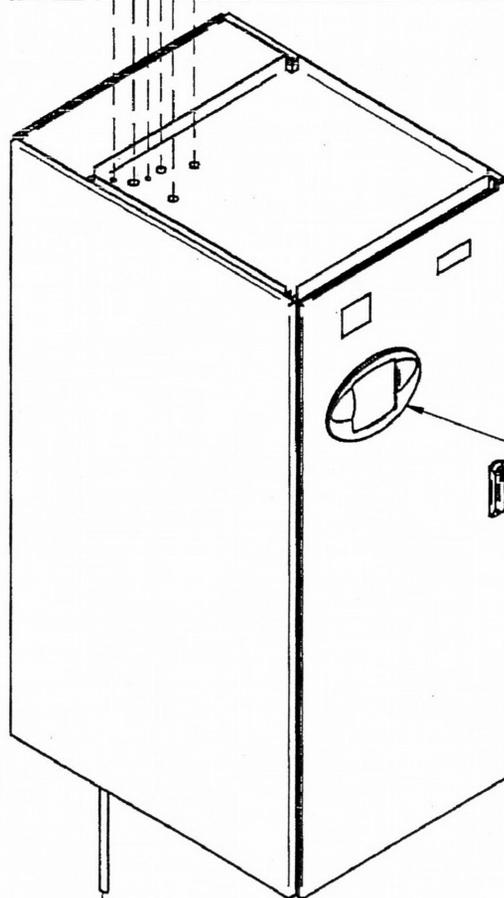
Hot Gas Refrigerant Line  
7/8" OD CU on Models BR067A/BR065A

Condensate Pump Line  
1/2" OD CU  
Use only if condensate pump is present.

Hot Water Return  
5/8" OD CU (optional)

Liquid Refrigerant Line  
1/2" OD CU on Models BR067A/BR065A

Hot Water Supply  
5/8" OD CU (optional)



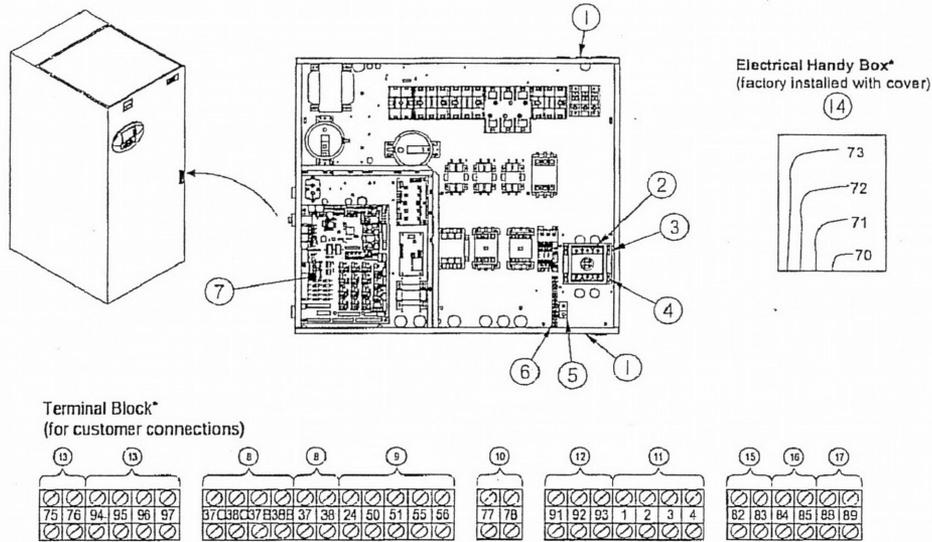
iCOM Control Panel

Condensate Drain  
3/4" FPT

Field pitch a min. of 1/8" (3.2mm) per ft. (305mm). Units without a condensate pump have a factory-supplied trap in the unit, so a field trap should not be added. Units with a condensate pump will require a field-supplied trap downstream from the pump. The drain line must comply with all applicable codes. (If condensate pump is ordered piping is out top of unit).

PIPING OUTLET LOCATIONS  
(See Cabinet and Floor Planning  
Dimensional Data for Piping  
Opening Sizes.)

# ELECTRICAL FIELD CONNECTIONS LIEBERT CHALLENGER ITR BR/BM MODELS WITH ICOM CONTROLS



- 1) **Electric conduit knockouts** on top and bottom of electric box. Knockout size 1 3/4" (44.5mm).
- 2) **Three phase connection.** Electric service connection terminals when factory disconnect switch is supplied.
- 3) **Factory installed disconnect switch.**
- 4) **Three phase electric service** field supplied.
- 5) **Earth ground connection (50/60HZ).** Connection terminal for field supplied earth grounding wire.
- 6) **Earth ground bar (50HZ only).** Connection terminals with factory ground from each high voltage component for field supplied earth grounding wire.
- 7) **Control and monitoring section** of electric box.
- 8) **Remote unit shutdown.** Replace existing jumper between terminals 37 + 38 with normally closed switch having a minimum 75VA, 24VAC rating. Use field supplied Class 1 wiring. Two additional contact pairs available as an option (labeled as 37B & 38B, 37C & 38C). Replace existing jumper for appropriate pair as done for 37 & 38.
- 9) **Special alarm connections.** Field supplied 24V Class 1 wiring for special alarm. Connection made by adding normally open contacts between terminals 24 + 50. Special alarm connections may be factory wired or field wired. See schematic for factory wired special alarms. For field wired special alarms, use 24V Class 1 wiring to connect normally open contacts between terminals 24 & 50, 24 & 51, 24 & 55, or 24 & 56.
- 10) **SiteScan connection.** Terminals 77 (-) and 78 (+) are for connection of a 2 wire, twisted pair, communication cable (available from Liebert or others) to optional SiteScan.
- 11) **Remote condensing unit connection.** Field supplied 24V Class 1 wiring to remote condensing unit terminals 1, 2, 3, & 4 from (R2) relay (split system only.)
- 12) **Smoke detector alarm connections.** Field supplied 24V Class 1 wiring to remote alarm circuits. Factory wired contacts from optional smoke detector are #91-comm., #92-NO, and #93-NC.
- 13) **Common alarm connection.** Field supplied 24V. Class 1 wiring to common alarm terminals 75 + 76 (and optional 94 + 95, and 96 + 97), which are factory connected to common alarm relay (R3).
- 14) **Heat rejection connection.** Field supplied 24V Class 1 wiring to interlock heat rejection from pigtails 70 + 71 which are factory connected to compressor side switch (self contained units only) or to GLYCOOL relay (K11, GLYCOOL units only). On Dual Cool units only, pigtails 72 + 73 connect auxiliary cooling source to GLYCOOL relay K11.
- 15) **Reheat and Humidifier Lockout.** Optional emergency power lockout of reheat and/or humidifier: connections provided for remote 24V AC source.
- 16) **Main Fan Auxiliary Switch.** Optional main fan auxiliary side switch. Terminals located in field wiring compartment for remote indication that the evaporator fan motor/unit is on. Field to connect 24V maximum.
- 17) **Optional Condensate Alarm (Dual Float Condensate Pump only).** Relay terminals located in field wiring compartment for remote indication.

\*Located inside unit on top for Horizontal flow units.

NOTE: Refer to specification sheet for full load amp. and wire size amp. ratings.

# LIEBERT LIQUI-TECT® 410

## Point Leak Detection Sensor

### Product Specification Sheet

#### Description

The Liebert Liqui-TECT 410 (LT410) provides a single-point detection of leaks. The point detection sensor has two gold-plated sensing probes to prevent corrosion resistance and to provide accurate readings. The LT410 constantly monitors points 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.

The LT410 is also ideally suited for the following:



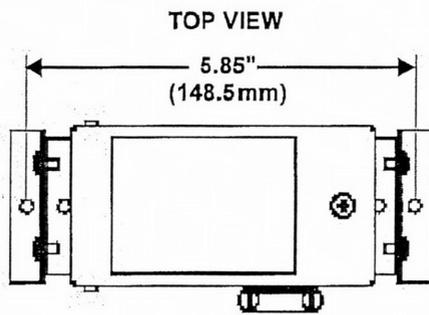
#### Applications

- Glycol, Chilled Water Cooling
- Humidification Feed Water Piping
- Condensate Pumps and Drains
- Unit and Ceiling Auxiliary Drip Pans
- Overhead Piping Troughs

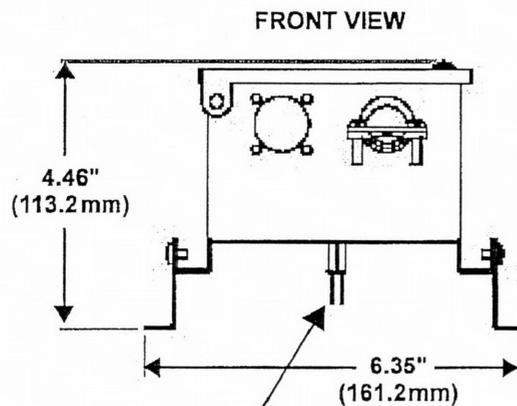
#### Locations

- Large-Scale Network Control Centers
- Data Centers
- Server Rooms - Closets
- Unattended Remote Shelters
- Mechanical Equipment Rooms
- Sensitive Areas With Overhead Piping
- Industrial Process Control Rooms

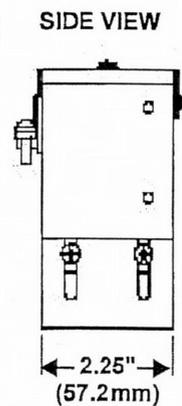
#### Dimensions - Top, Front & Side Views



Form-C relay outputs & power wiring connection



Adjustable probe height  
0.0-0.5"  
(0.0-12.7 mm)



Shipping weight: 2 lbs (0.9 kg)  
Mounting holes: #8 screws

# Power Wiring

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

Figure 1 24V from Liebert environmental units to LT410

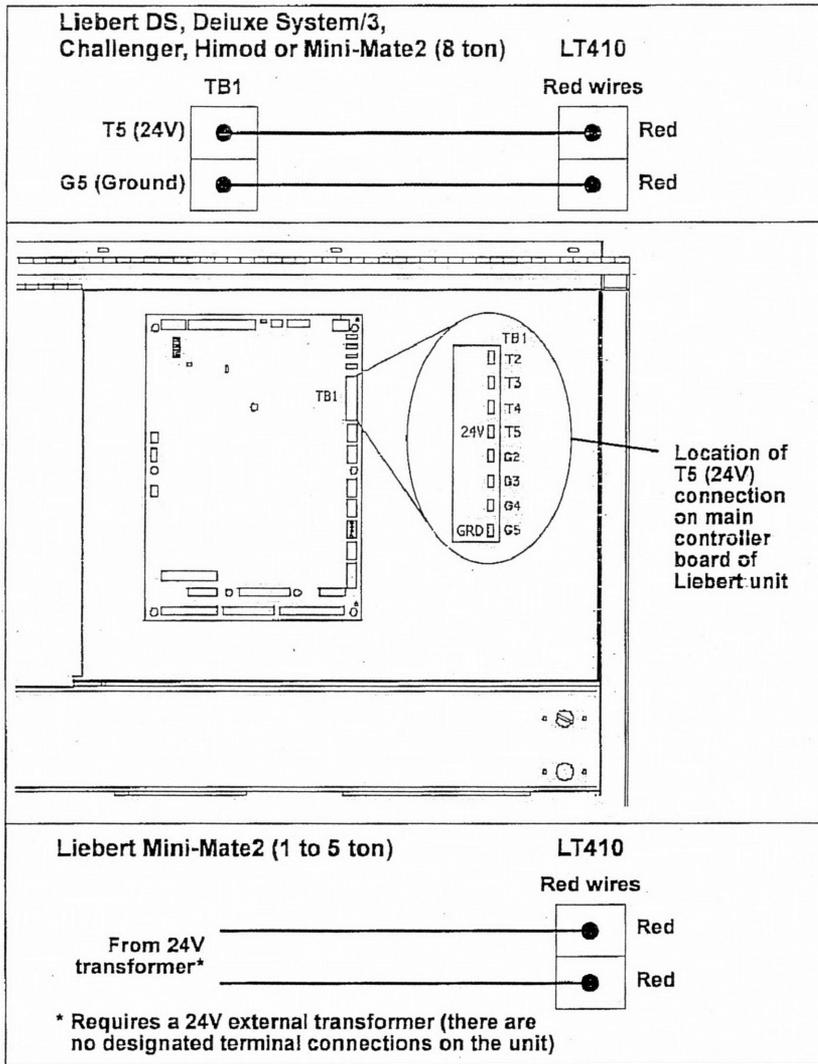
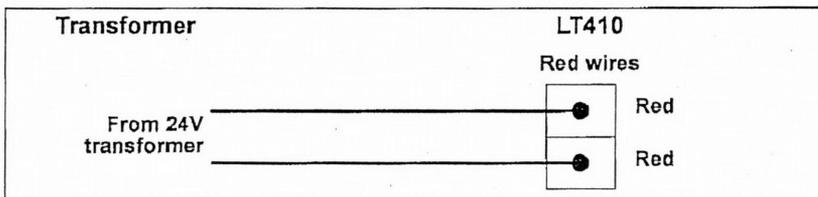
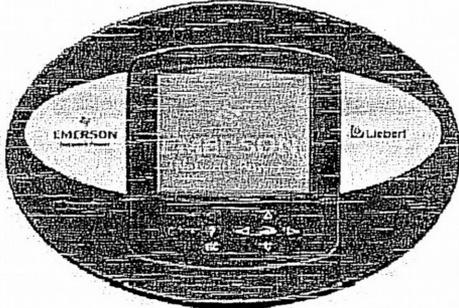


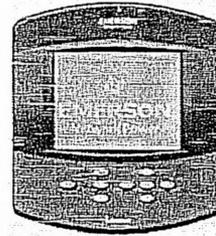
Figure 2 24V from transformer to LT410



**Liebert iCOM® Control System  
Intelligent Communications & Monitoring  
Large Graphic Display  
(Unit or Wall-mounted)**



*Large Graphic Display shown in unit bezel*



Large Graphic Display for Wall-Mounting

The Liebert iCOM® Large Graphic Display shall be microprocessor based with a 320x240 dot matrix graphic monitor with control keys for user inputs mounted in an ergonomic, aesthetically pleasing housing. The display and housing shall be viewable while the unit panels are open or closed. All parameter changes are password protected.

Wall-Mounted Large Graphic Displays shall be capable of being mounted on a wall and are provided with a power supply. Wall-mounted displays can be added to a Unit-to-Unit network and remotely located from the cooling unit(s) to provide convenient monitoring and control capabilities.

Large Graphic Display only features:

The Large Graphic Display provides all of the **same features of the Small Graphic Display**, plus Large Graphic Display only features.

**Event Log** – Automatically stores the last 400 unit and system (U2U communication required) events (messages, warnings, and alarms)

**Spare Parts List** - shows a list of key spare parts, their quantity and respective parts numbers

**Unit Diary** - A free field area where unit history may be stored for reference

**View Network** – Shows a summarized view of all the cooling units connected on a U2U network

**Centralized Operation** – View and configure any cooling unit on a U2U network from a Large Graphic Display

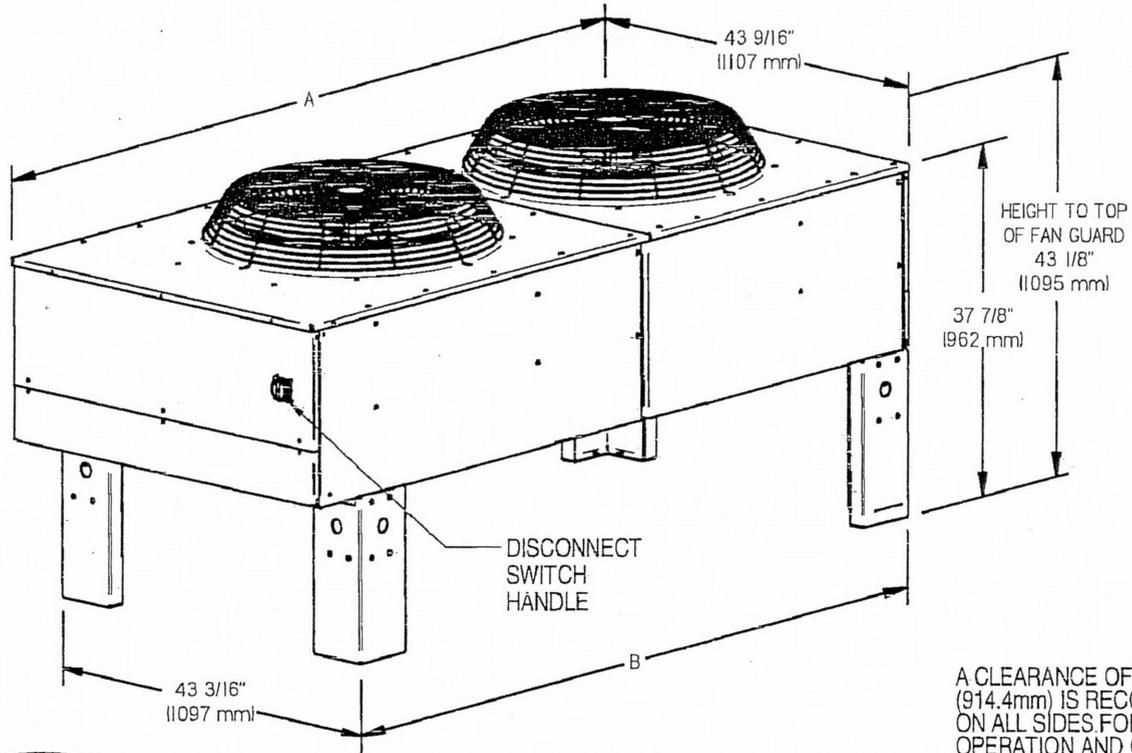
**System View** – View the averages of all operations being performed on the U2U network

**Active Alarms on Status Screen** – Last two unit/system events are displayed at the bottom of the Status Screen for rapid identification of critical events without having to enter submenus

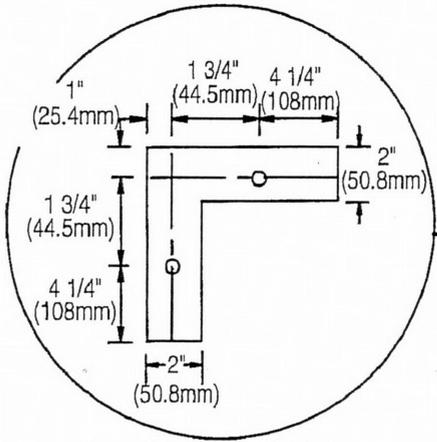
**Full Text Descriptions** – The large screen size eliminates the need for abbreviated text, simplifying user operation

# CABINET & ANCHOR DIMENSIONAL DATA

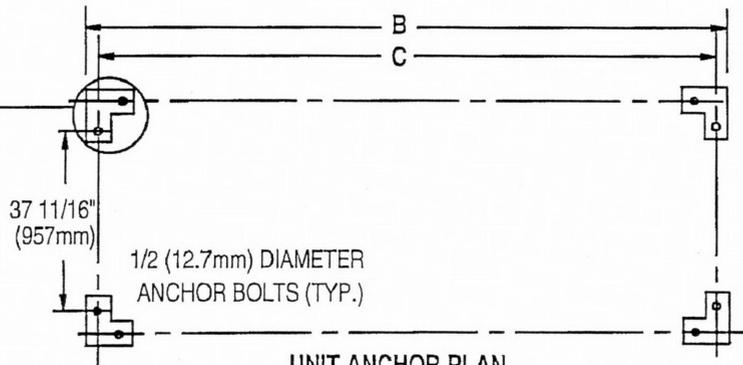
VFD CONTROL CONDENSERS 50 AND 60Hz -- TCSV ONLY



A CLEARANCE OF 36 IN. (914.4mm) IS RECOMMENDED ON ALL SIDES FOR PROPER OPERATION AND COMPONENT ACCESS.



TYPICAL FOOTPRINT



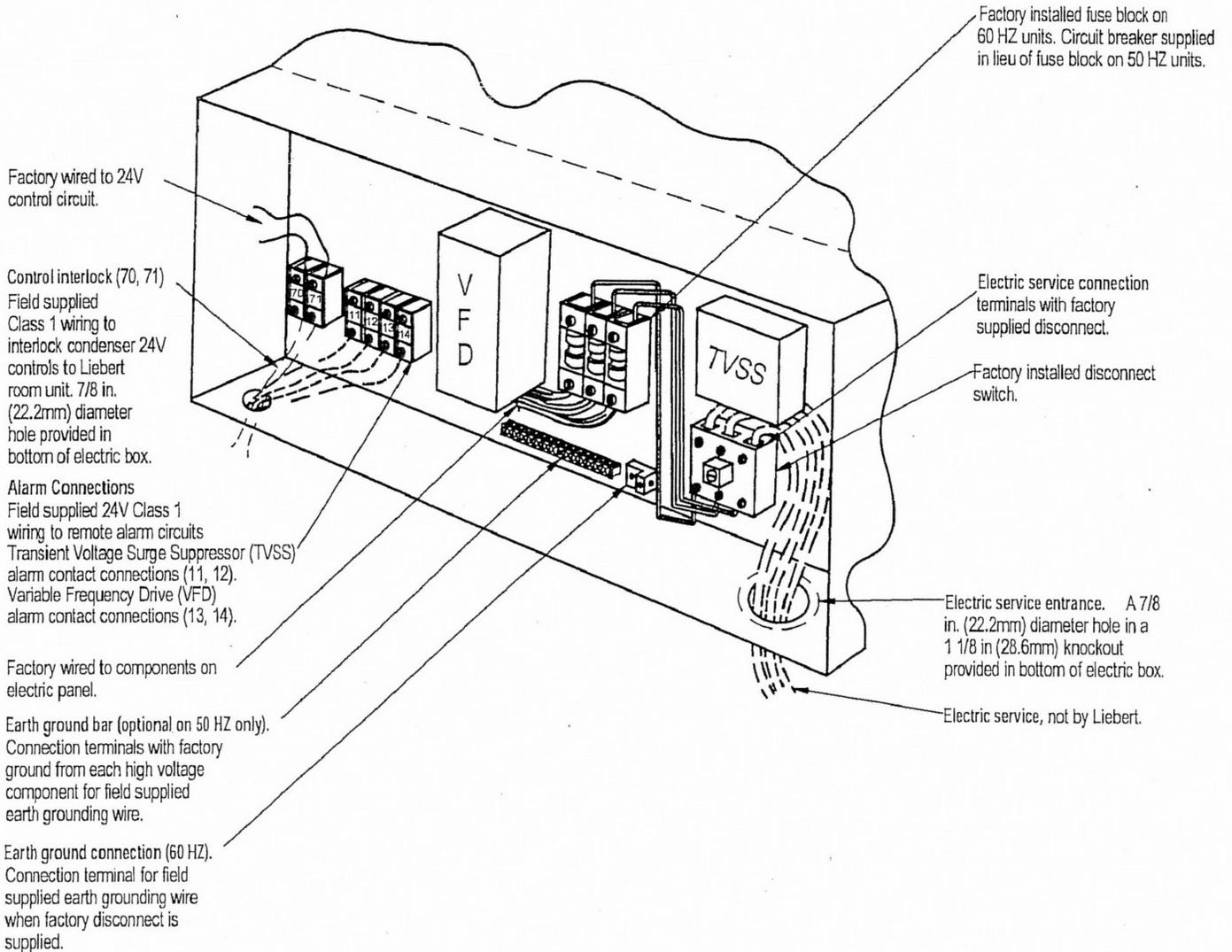
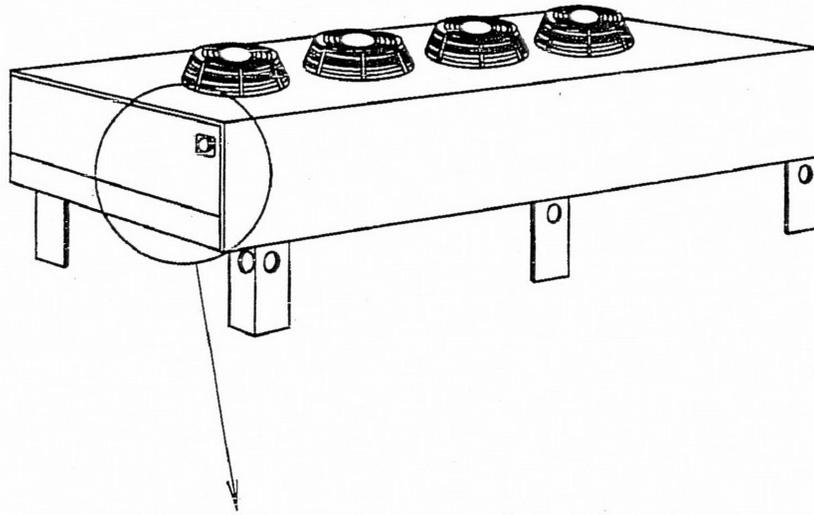
UNIT ANCHOR PLAN

LIEBERT MODEL NO. Note 1	NO. FANS	A		B		C		NET WEIGHT	
		IN.	MM.	IN.	MM.	IN.	MM.	LBS.	KG.
TCSV083	1	51 1/2	1308	44	1118	42	1067	295	134
TCSV104	1	51 1/2	1308	44	1118	42	1067	315	143
TCSV165	2	91 1/2	2324	84	2134	82	2083	425	193
TCSV205	2	91 1/2	2324	84	2134	82	2083	495	225
TCSV251	3	131 1/2	3340	124	3150	122	3099	500	227
TCSV308	3	131 1/2	3340	124	3150	122	3099	670	305

1. All condenser fan motors are 3/4 H.P.

# ELECTRICAL FIELD CONNECTIONS

## VFD CONTROL CONDENSERS



NOTE: Refer to specification sheet for full load amp. and wire size amp. ratings.