



8125 Lewis Road
Golden Valley, MN 55427
www.mmsus.com



SUBMITTAL FOR APPROVAL

Product Description:	Dedicated Outdoor Air Units
Date:	September 20, 2022
Project:	T-2273 - DHU-07,14 - Bossier City, LA
Engineer:	Nelson-Rudie & Associates
Sale Engineer:	Mark McCollough (952-525-2060)
MMS Job#:	T-2273

Submittal for approval. Please advise on release.

APPROVAL STAMPS

Equipment will not be released for production until approved shop drawings are received by Midwest Mechanical Solutions. Production timing and shipping information cannot be determined until approved drawings are received. Performance, openings and dimensions may vary from contract documents. Receipt of approved drawings constitutes acceptance of these variances. Contractor to notify Midwest Mechanical Solutions of required shipping dates.

ADDISON®

SEMI-CUSTOM PACKAGED COOLING SYSTEMS PR-SERIES

- Multiple cabinet sizes help to optimize performance of operating components.
- Double wall construction of 2" thick, R-13 closed cell foam insulation to reduce heat transfer losses.
- Direct-drive supply, exhaust and condenser fans with high-efficiency, ODP or TEFC fan motors (optional ECM) and variable frequency drives (VFD) to improve energy efficiency.
- Standard pre-filters (and optional final filters) to improve indoor air quality.
- Optional gas heat furnaces with high outputs and turndowns to help meet outside air heating requirements.
- Optional on/off or modulating hot gas reheat to help rewarm dehumidified air to a neutral discharge temperature for humidity control.
- Optional digital scroll compressor or hot gas bypass to reduce overcooling or icing of evaporator coil during times when light load conditions are present.
- Optional energy recovery module to help provide pre-conditioning of evaporator inlet air with leaving exhaust air to help curtail energy usage.



www.addison-hvac.com
Telephone: +1.407.292.4400



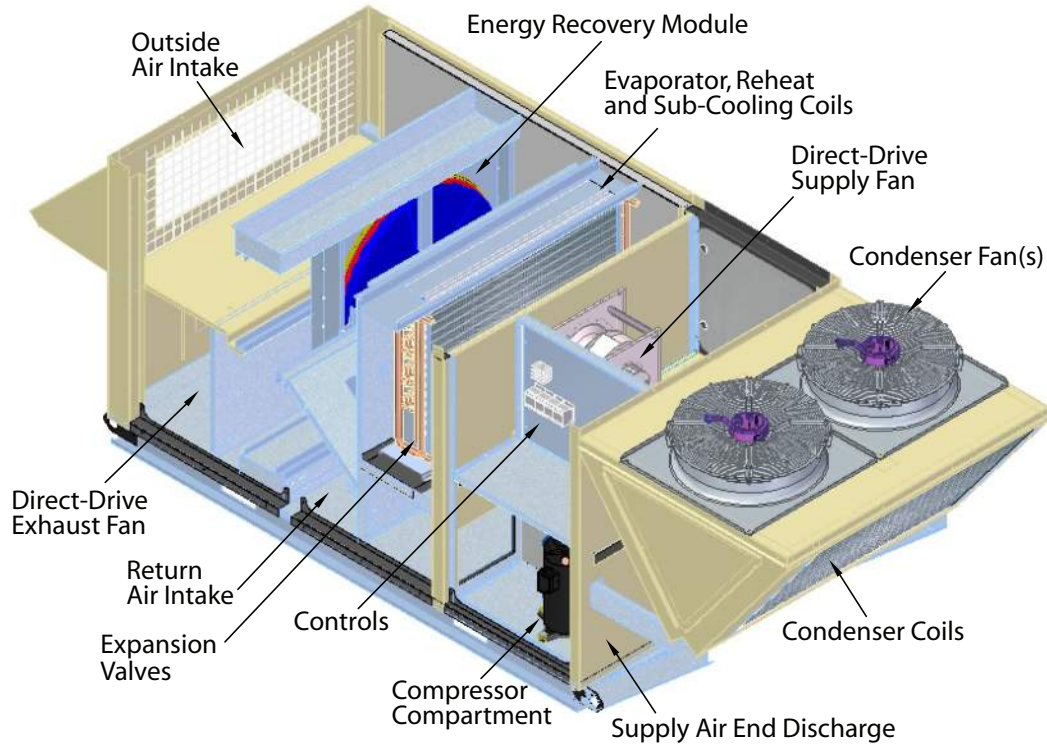
Intertek

PRRA AND PRRH: RATED IN ACCORDANCE TO ANSI / AHRI STANDARDS 210/240-2008 OR 340/360-2007
PRRW: RATED IN ACCORDANCE TO ISO STANDARD 13256-1:1998

WIDE RANGE OF OPTIONS

CAPACITIES	AIRFLOW CONFIGURATIONS	SOURCE SIDE CONFIGURATIONS
450 - 14,000 CFM (764 - 23,786 m ³ /h)	100% Outside Air	Air-Cooled Condenser
3 - 70 Tons (10.5 - 246.2 kW) Cooling	Recirculating Air	Air-Source Heat Pump
50 - 1,200 MBH (14.6 - 351.7 kW) Gas Heating 5 - 100 kW Electric Heating	Combination 100% Outside/Recirculating Air	Water-Source Heat Pump

UNIT CONFIGURATION



Notes: 1. Air-source unit is illustrated. Component locations for water-source units and air handlers are similar.
 2. Supply air bottom discharge is available
 3. Gas furnace/electric heater (not shown) are located below direct-drive supply fan.

ADDISON®

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Installation Code and Quarterly Inspections: All installation and service of ADDISON® equipment must be performed by a contractor qualified in the installation and service of equipment sold and supplied by Addison and conform to all requirements set forth in the ADDISON® manuals and all applicable governmental authorities pertaining to the installation, service, operation and labeling of the equipment. To help facilitate optimum performance and safety, Addison recommends that a qualified contractor conduct quarterly inspections of your ADDISON® equipment and perform service where necessary, using only replacement parts sold and supplied by Addison.

Further Information: Applications, engineering and detailed guidance on systems design, installation and equipment performance is available through ADDISON® representatives. Please contact us for any further information you may require, including the Installation, Operation and Service Manual.

These products are not for residential use.

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MIDWEST MECHANICAL SOLUTIONS

8125 Lewis Road
Golden Valley, MN 55427



TARGET

Target

Addison DOAS Specification Features

PANEL CASING AND CONSTRUCTION

- Outdoor 2” double-wall construction with closed cell foam panels, R13
- 18 gauge galvanized sheet metal floor
- 18 gauge acrylic enamel painted exterior panels
- Stainless steel and MAGNI 555 coated hardware
- Double-wall hinged access doors
- Standard epoxy powder coated paint tested to 1,000 salt-spray hours
- AHRI 340/360 rated
- ETL Listed and Labeled

COMPRESSOR AND CONDENSER SECTION

- (1) Modulating R-410a Bitzer VFD scroll compressors with factory installed phase monitors, (1) Scroll Compressor
- Acoustically lined separate compressor compartment
- V-Bank aluminum condenser coils
- VFD condenser fan motors

SUPPLY FAN SECTION

- SWSI direct-drive plenum fans supply fans with R-I-S
- NEMA premium efficiency ODP motors with Integral Variable Frequency Drive Piezometer and flow station

DIRECT EXPANSION COIL

- Direct expansion intertwined refrigerant coils
- Double sloped 304 Stainless Steel IAQ drain pan
- Thermal expansion valves, sight glass, Schrader valves, and inline filter-driers

SUB-COOLER COIL SECTION (INCREASES EER AND CAPACITY)

- One row sub-cooler circuit coil with check valve

HOT GAS REHEAT REFRIGERANT COIL SECTION

- One row single circuit hot gas reheat coil
- Modulating hot gas reheat valve

GAS HEATING SECTION (When supplied)

- Stainless steel burners with modulating gas heat with 4 stage control for multiple furnace applications or 5:1 modulating for single burners
- Factory mounted gas train – requires 3.5” to 14” w.c. gas pressure

ELECTRIC HEATING COIL (When supplied)

- 4 stage electric heat
- Open coil with 80% nickel / 20% chromium
- Primary and secondary limit switches

FILTER SECTION

- Low-Leak Class 1A outside air damper per AMCA 500 – three (3) cfm/ sq ft @ 1” w.c.
- 2” MERV 8 efficient pre-filters - 1 set
- Outside air hood with integral rain gutter

UNIT MOUNTED CONTROLLER & SENSORS

- ALC Factory mounted Micro-Processor Control Center with (1) Bacview LED Display per project
- BACnet MSTP communication interface
- SAT Discharge and OA Temp Sensors, Discharge Humidity sensor

ELECTRICAL

- 460/60/3 power
- Single point power connection with factory mounted non-fused disconnect
- 115 volt GFCI NON powered convenience outlet

ROOFCURB

- By Others

START-UP AND ONE YEAR SERVICE

- By Others

WARRANTY

- Standard Parts Only Warranty – 1 year from Start-Up or 18 months from shipment
- Five Year Compressor Parts Warranty
- Ten (10) Year Gas Heat Exchanger Parts Only Warranty

Miscellaneous Accessories

- Condensate P-Trap
- Gas Pressure Regulators – Field Provided
- (1) Equipment Touch readout panel per unit



Tag: T-2273

PROA420C4A4DEBE0D_B03FKB0000000C00000000M00000A00000

Unit Information

Package Unit - DOAS

Model:	PROA	Unit Length:	184.75	in	Altitude:	0	ft
Size:	420 C4	Unit Width:	87.125	in	Unit Weight:	3384	lb.
Quantity:	2	Unit Height:	81.625	in			

Design Conditions

Filter Information

Supply Airflow:	4100	CFM	Ambient Air DB:	91.1	F	Filters:	20x16(6), 16x16(3)
Outside Airflow:	4100	CFM				Pleated Filter Media:	59.7 sq.ft

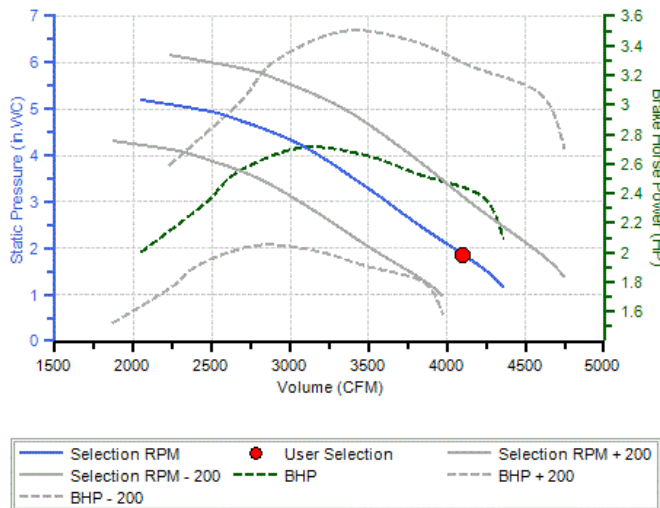
Cooling Performance

Gross Total Capacity:	435.7	MBh	Evaporator Face Area:	16	sq ft
Gross Sensible Capacity:	195.4	MBh	Evaporator Rows:	6	
Net Total Capacity:	429.5	MBh	Evaporator FPI:	12	
Net Sensible Capacity:	189.2	MBh	Condenser Face Area:	53.44	sq ft
Entering Air DB / WB (Coil):	91.1 / 79.4	F	Condenser Rows:	1	
Leaving Air DB / WB (Coil):	48.5 / 48.2	F	Condenser FPI:	19.5	
Leaving Air DB / WB (Subcooling):	61.1 / 53.7	F	Air Velocity:	256	fpm
Leaving Air DB / WB (Max. Reheat):	83.7 / 62.35	F	Cooling Coil Air PD:	0.34	in H2O
Leaving Air DB / WB (Unit):	85.1 / 62.8	F			
EER:	14.5		MRE:	7.37	lb/kWh
Watts:	29633		MRC:	218.4	lb/h

Heating Performance

Heat Type:	Gas	Entering Air DB:	26.5	F	
Input Capacity:	250.0	MBh	Leaving Air DB:	71.7	F
Output Capacity:	200.0		Heating Coil Air PD:	0.20	in H2O

Supply Fan BI 16



Supply Pressure Drop Summary

External Static Pressure:	1.00	in H2O
Internal Pressure Drop:	0.86	in H2O
Total Static Pressure:	1.86	in H2O

Supply Fan Conditions

Fan Motor BHP:	2.43	BHP
Fan RPM:	2249	RPM

Internal Pressure Drop Breakdown

Cabinet:	0.09	in H2O
Filter:	0.08	in H2O
Cooling Coil:	0.34	in H2O
Hot Gas Reheat & Subcooling:	0.05	in H2O
Heating Coil:	0.2	in H2O
Ventilation & Controls:	0.07	in H2O

Unit Electrical Data

Unit Voltage-Ph-Hz: **460-3-60**
 Unit Amps - FLA: **64.06** Amps
 Min Circuit Ampacity - MCA: **70.8** Amps
 Maximum Fuse Size - MFS: **90** Amps

Motors

<u>Name/Type</u>	<u>Fan Service</u>	<u>Qty</u>	<u>HP (ea.)</u>	<u>FLA (ea.)</u>	<u>RLA (ea.)</u>	<u>LRA (ea.)</u>
Scroll		2			26.9	173.0
460-3 ODP Hi E (4 pole)	Supply	1	3	3.9		
630mm AC Condenser Fan	Condenser	4	1.3	1.6		

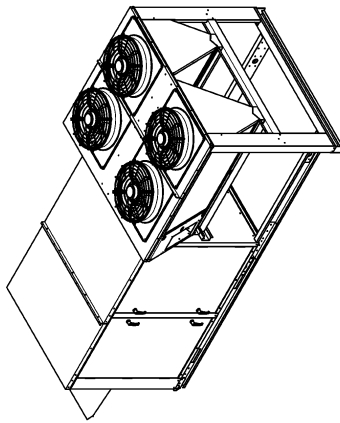
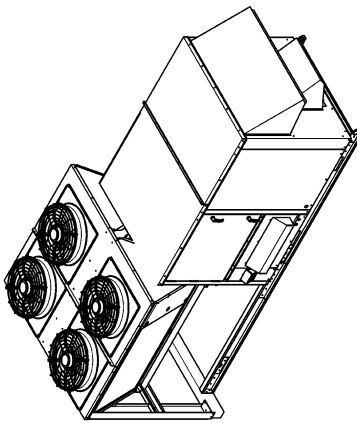
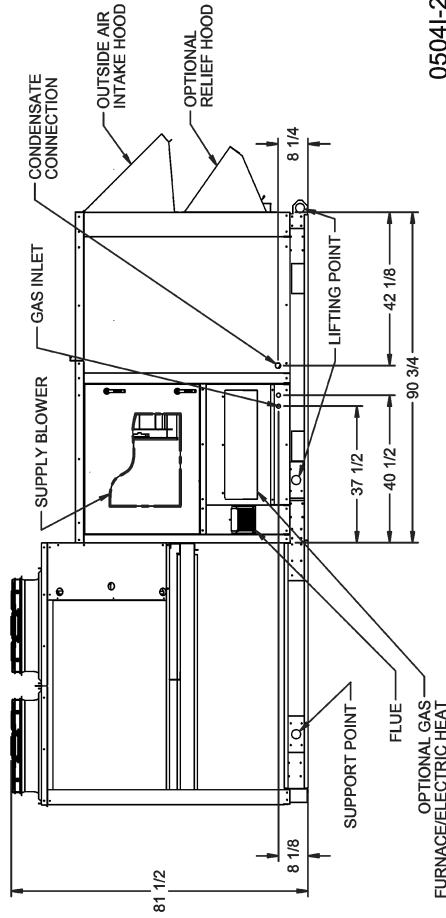
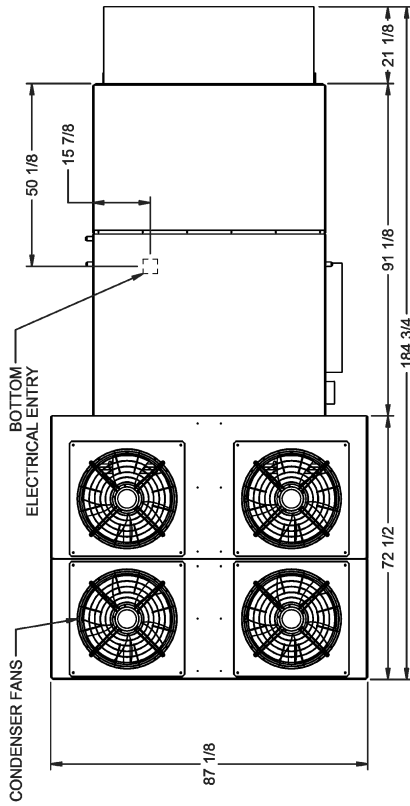
Sound Data

	<u>63Hz</u>	<u>125Hz</u>	<u>250Hz</u>	<u>500Hz</u>	<u>1KHz</u>	<u>2KHz</u>	<u>4KHz</u>	<u>8KHz</u>	<u>Total DBA</u>
Condenser fans	69.5	87.1	85	89.9	88.3	83.5	78	72.8	92.01
Supply	53	60	71	70.0	69.0	69.0	66	60	77

05041-2534 - *R C4 CAB NO EXH-1

Qty: 2 Tags: T-2273

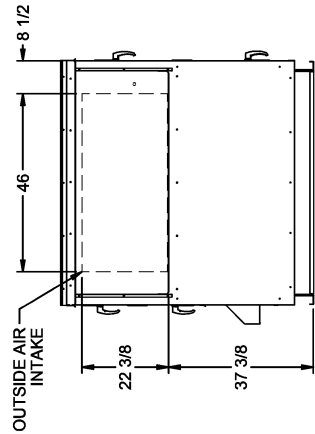
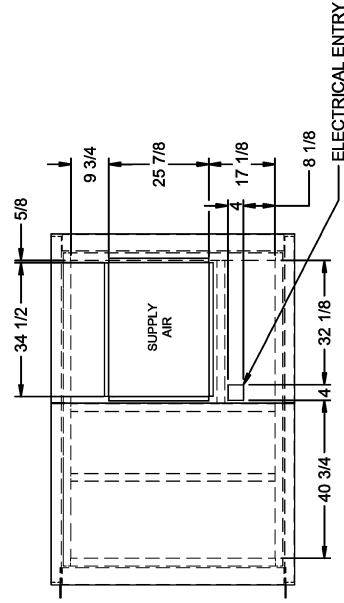
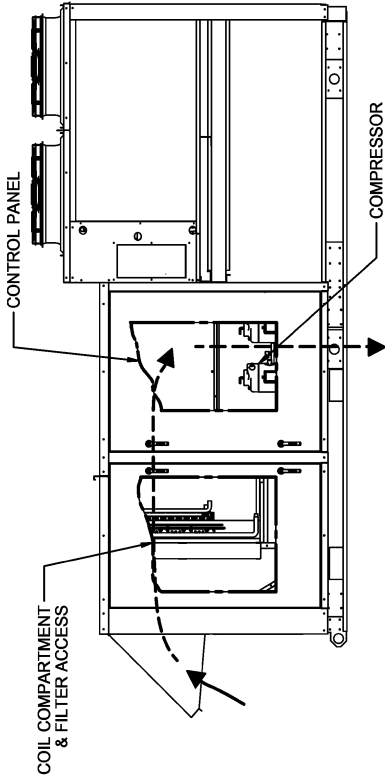
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*R C4 CAB NO EXH
05/2017



0504I-2534 - *R C4 CAB NO EXH-4

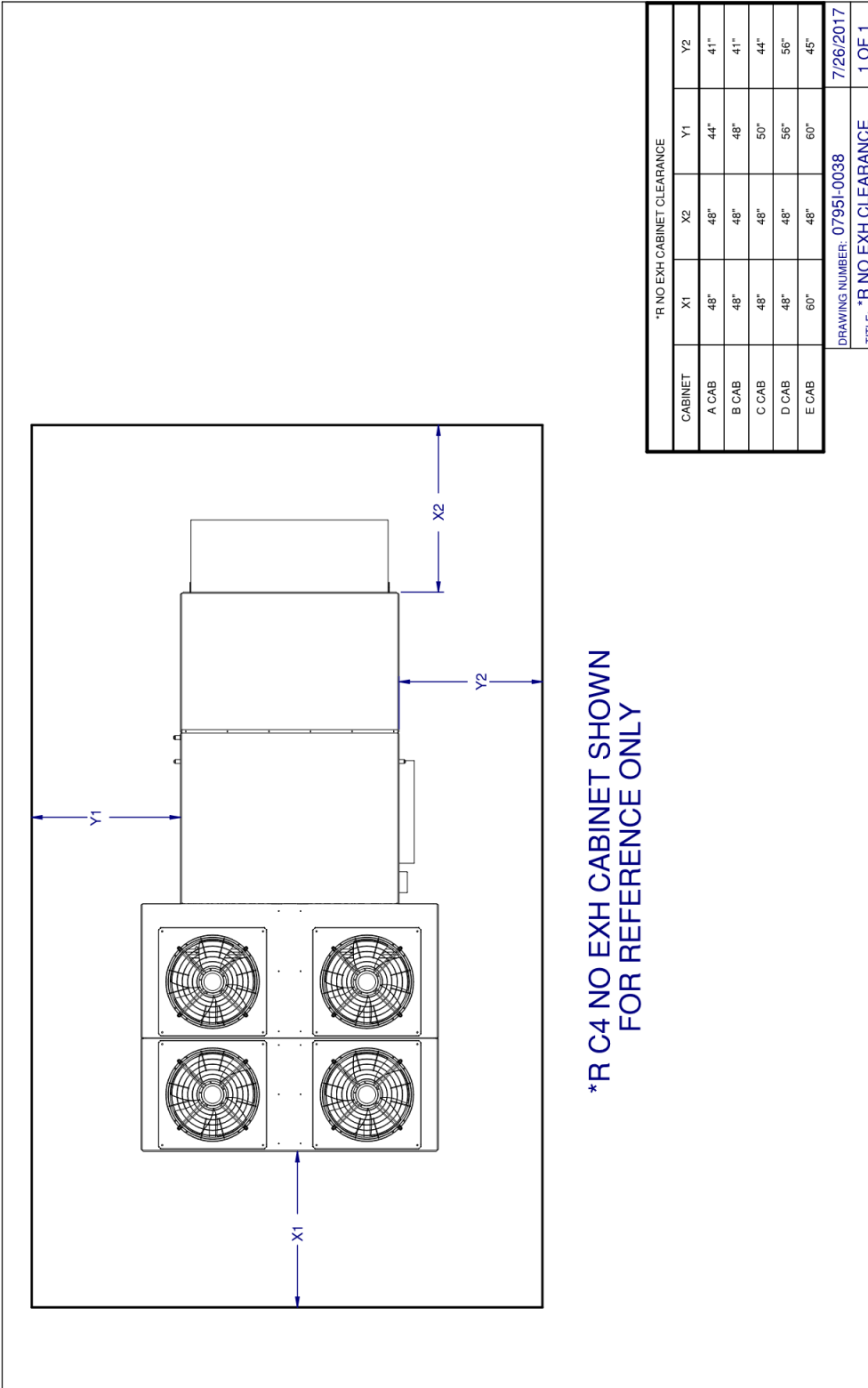
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0504I-2534 - 4
*R C4 CAB NO EXH
100% OUTSIDE AIR
05/2017

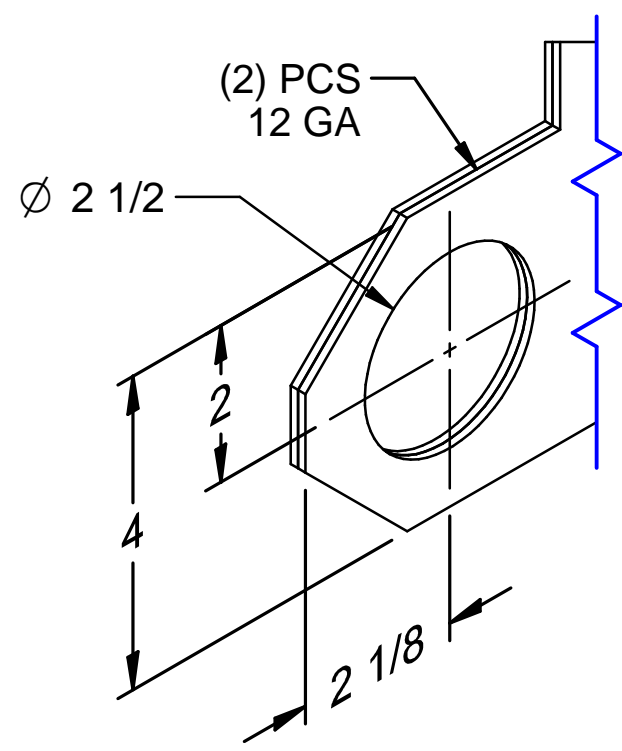


0795I-0038 - *R NO EXH CLEARANCE

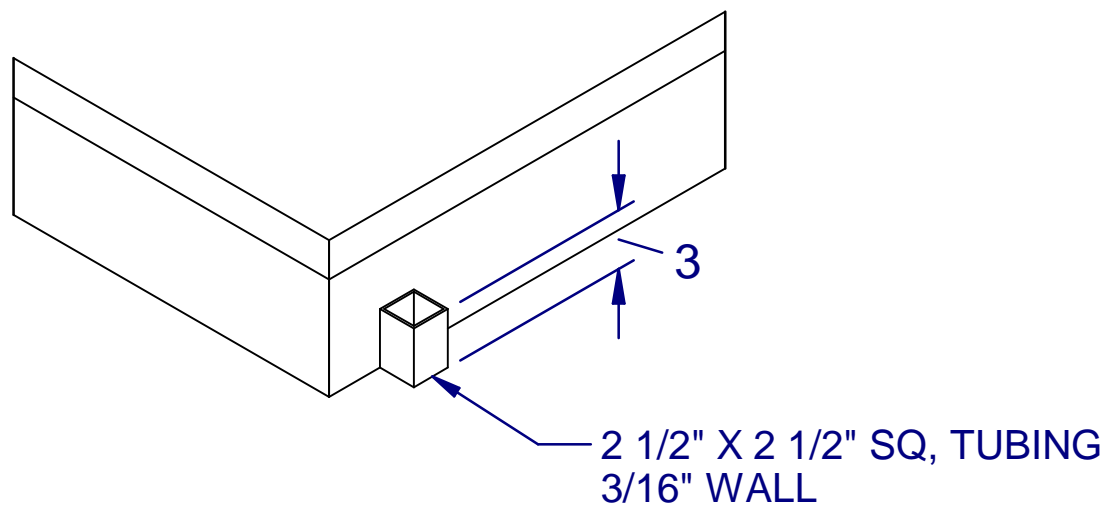
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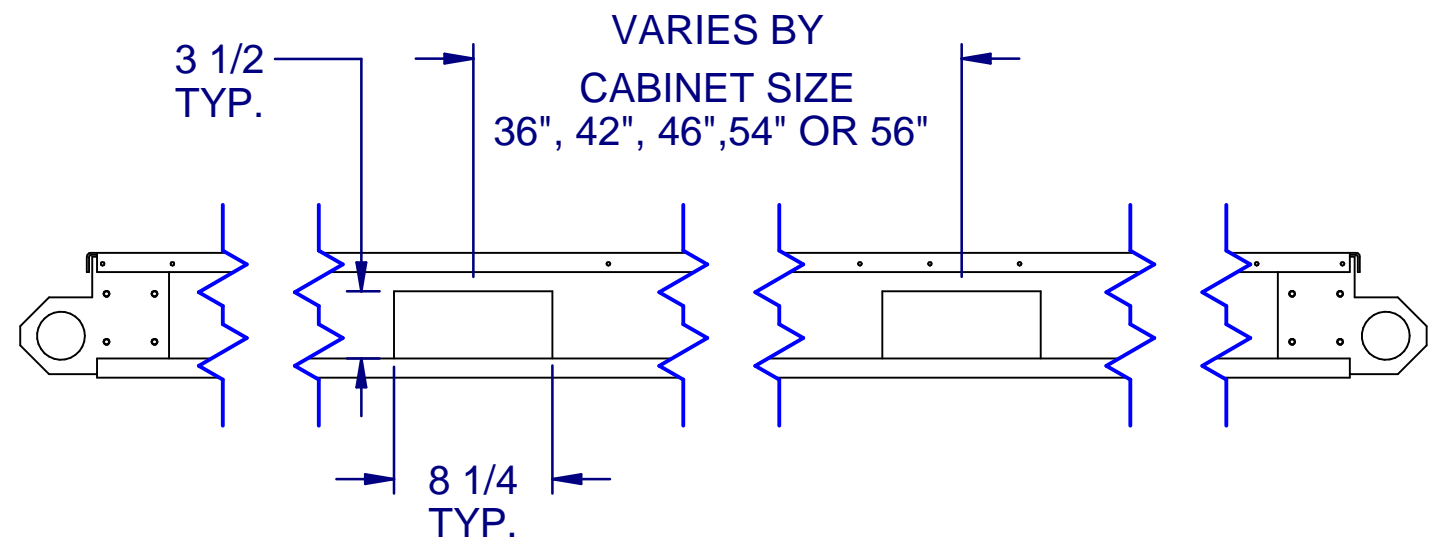
LIFTING EYES: PR SERIES A, B, C,
D NO EXHAUST, AND BXL CABINETS



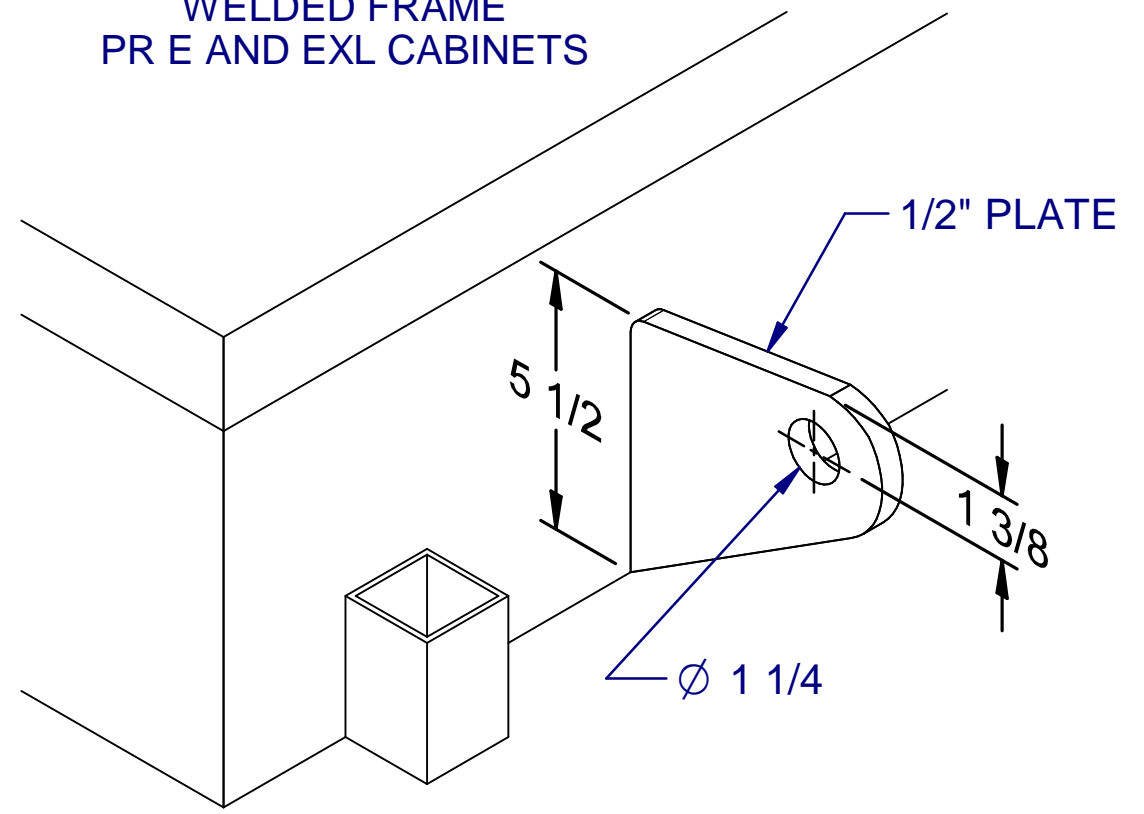
LIFTING LUGS
WELDED FRAME
PR D AND DXL CABINETS

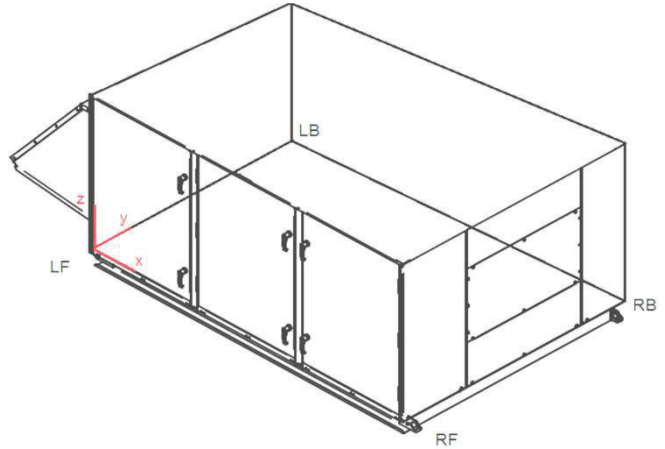
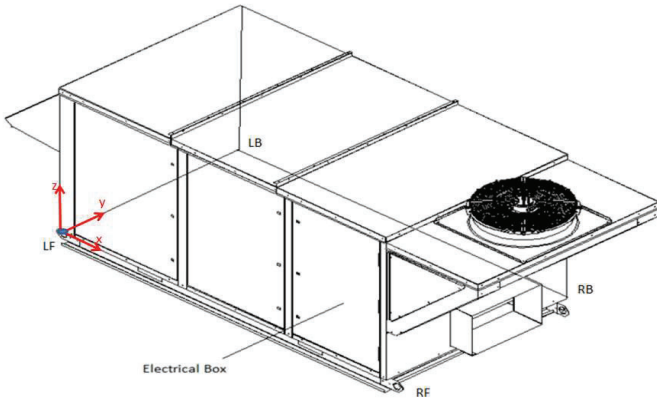


FORKLIFT POCKETS
(62" MINIMUM FORK LENGTH)



LIFTING EYES
WELDED FRAME
PR E AND EXL CABINETS





* Unit Shown: Left: A1 Cabinet PRO/PRR Series, Right: S5 Cabinet PRAK Series

<u>Quote/Job#</u>	
<u>Customer</u>	

PROA420c4A4DEC3CM3B41FJB0e16000C0000000AED10000A00000

: RHSC 6-Row Evap. 450-LOW ECM 250MBH C4 Cab									
PROA	Shipping Weight	Operating Weight	Center of Gravity			Corner Weights			
	lbs (kg)	lbs (kg)	X	Y	Z	LF	LB	RF	RB
420	2930	2930	67.9	28.0	405	315	315	1243	964
Approx. Main Cabinet LXW: 90 X 64									2/14/2022

* Corner weights along the main cabinet (Including Condenser section if applicable)

TOP VIEW - Corner Weights										
M4 = 390 lb					M3 = 709 lb					M6 = 284 lb
(0,64)					(90,64)					(162,76)
					CONDENSER SECTION					
(0,0)					(90,0)					(162,-12)
M1 = 409 lb					M2 = 842 lb					M5 = 293 lb

ADDLT071

"The weight estimates generated by this tool are based on empirical relations and should be used as reference only. The actual weights may vary due to other external factors. The user is completely responsible for the accuracy of the input data, modifications and results obtained."

AIR FLOW MEASUREMENT

A piezometer (manometer) is an instrument used to measure the pressure of a fluid at a specific location (Figure 1). By measuring the pressure drop across the fan inlet it is possible to determine the volume of air supplied by a fan.



The formula to make this determination is as follows:

$$\text{CFM} = 9.36 (k) (\sqrt{\Delta p})$$

K—Calibration Factor provided by Comefri. Varies for each fan.

Assumes Standard and Actual Air Density Same. Otherwise requires proportional change to pressure drop.



There is a growing need in the air movement industry for a reliable, compact, precise, and economical instrument for measuring and controlling a fan's airflow. Comefri meets this need with its new electronic digital display Cometer (Figure 2). Within the normal operating range of a fan, the Cometer is precise within $\pm 5\%$. The electronic Cometer is a programmable pressure transducer that displays the pressure drop and airflow delivered by the fan. The pressure meter range is 0 to 10.0 Inches wg. The electronic Cometer includes a 0—10 V DC output which can also be used with another control system to adjust the fan speed and volume. The required pressure connection locations are made for high pressure (Fan Inlet Chamber) and low pressure (Fan Inlet Cone).

The high pressure connection should be made to a convenient location in the air supply chamber (ie interior wall adjacent to control). The low pressure connection is made to the inlet cone. This inlet



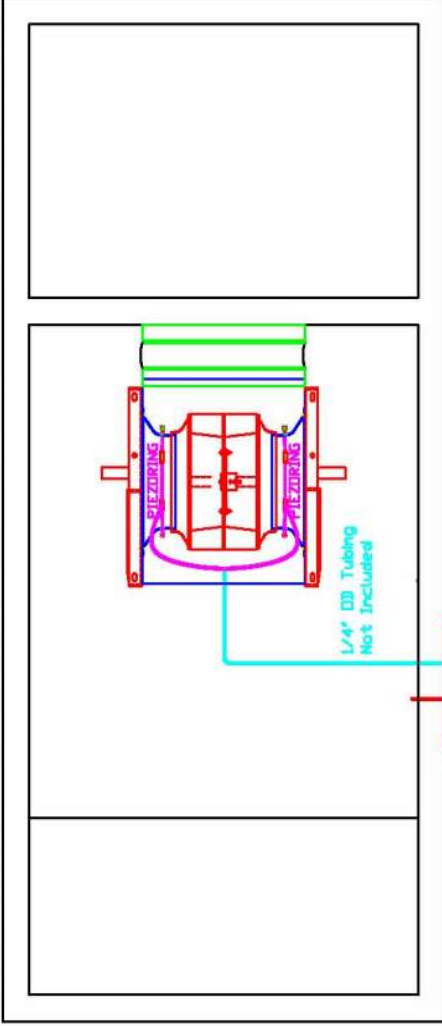
connection maybe one point (Figure 3) or it may be an average of points. The fan industry often refers to combining and averaging multiple pressure taps on an inlet cone as a piezoring (Figure 4). Plenum fans have one piezoring and housed fans have two piezorings. The piezoring option is available on all airfoil fans and most forward curve fans. When not available the alternative single point is available.



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PIEZORING & COMETER MODEL – HOUSED FAN



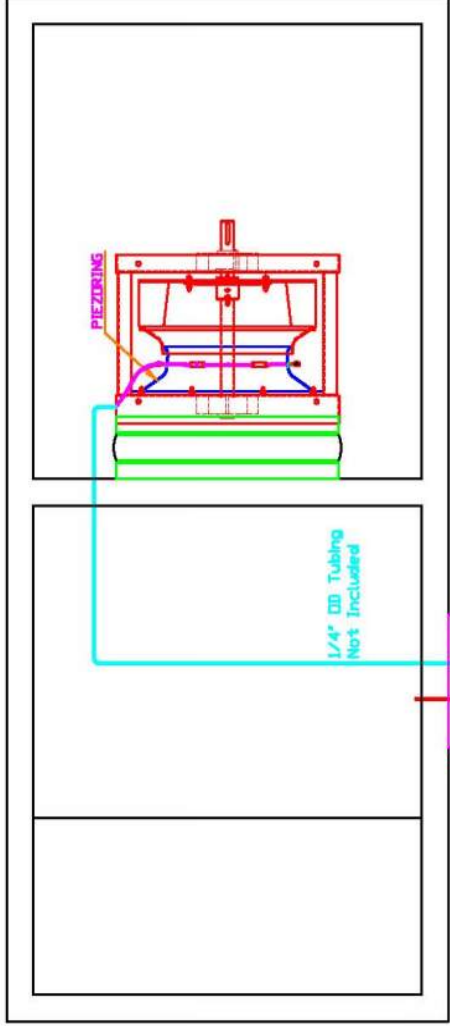
ATLI, ATZAF & THLZ

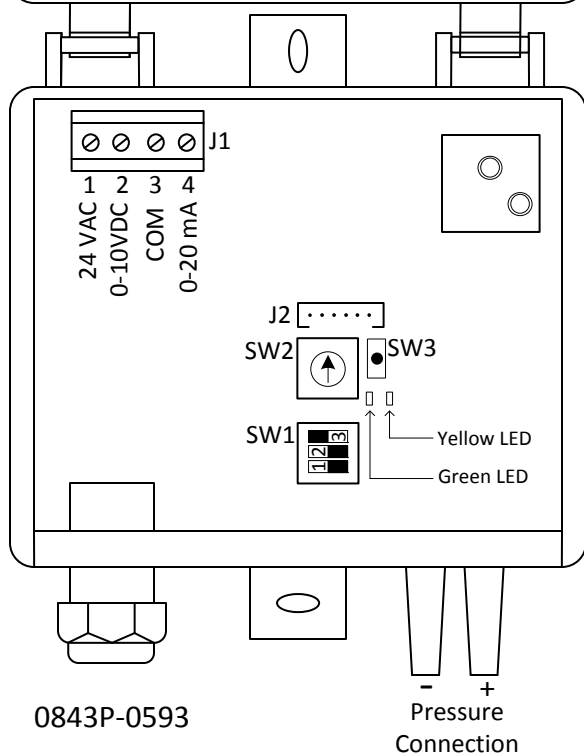
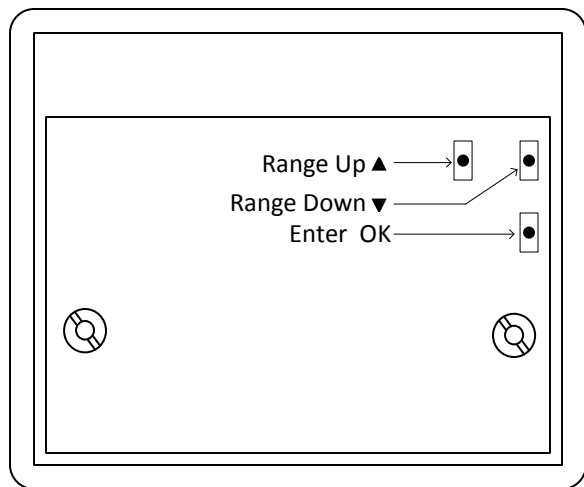
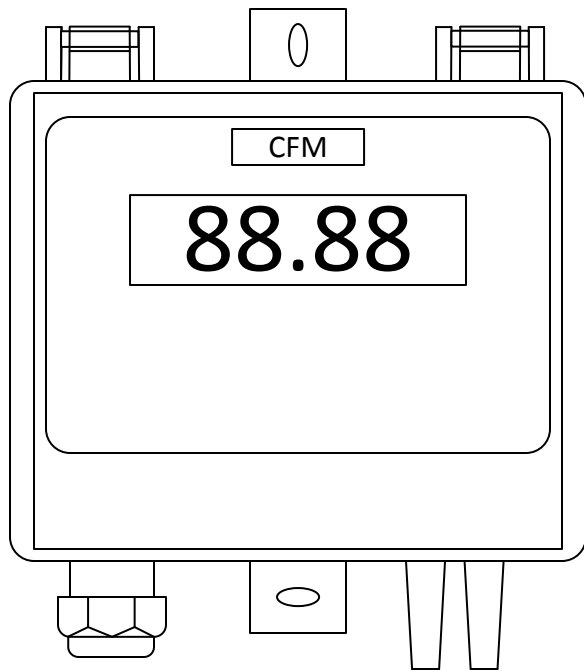


NAPAF, ANPA,
ANPL & ATE



PIEZORING & COMETER MODEL – PLENUM FAN





0843P-0593

Pressure
Connection

This document is intended to service as basic instructions for setting up a Cometri Electronic Cometer to display the correct CFM and output 0-10VDC to Addisons ALC controller

- Set Dip Switch #3 to the on Position to enable flow monitoring.
- Look up the type and size of the specific blower on page 2 or 3.
- Please note that PR series units use ANPA blowers for "Airfoil" blowers and ANPL blowers for backwards inclined "BI" blowers.
- Press the "OK" switch to access the "Flow Rate". Using the "UP" and "DOWN" buttons set the "Flow Rate" to 1000, 3000, 5000, 9999, or 30.00 based on the CFM of the blower. Press "OK". This figure must match maximum AMS range on the "AMS SETTINGS" screen of the ALC
- Use the "UP" and "Down" buttons to set the first digit of the Blower Types K-factor. Press "OK"
- Use the "UP" and "Down" buttons to set the second digit of the Blower Types K-factor. Press "OK"
- Use the "UP" and "Down" buttons to set the third digit of the Blower Types K-factor. Press "OK"
- Use the "UP" and "Down" buttons to set the fourth digit of the Blower Types K-factor. Press "OK"
- Use the "UP" and "Down" buttons to set the place value of the ".". Press "OK"
- The Cometer should now be set.
- Place label near Cometer that states "K-Factor may require adjustment during test and balance."
- Field calibration can be achieved by adjusting the K-Factor upwards or downwards as needed to match test and balance

Flow Rate

5000

K-Factor Example for a THLZ 250
Blower with Comfri supplied
K-Factor of 173.75

173.3

0962I-4912 Rev.D

Cometer Setup

06/26/2017

Page 1 of 2

DWG LWF CHK JW

Ziehl-Abegg GR45C - K-Factor = 115.9

**ANPA BLOWERS ARE USED AS
"Airfoil" BLOWERS ON PR UNITS**

ANPA Blowers	K- Factor
ANPA 12	76.74
ANPA 14	101.82
ANPA 16	131.45
ANPA 18	145.89
ANPA 20	196.8
ANPA 22	249.99
ANPA 25	313.82
ANPA 28	423.99
ANPA 32	518.98
ANPA 36	667.15
ANPA 40	864.71
ANPA 44	974.88
ANPA 49	1271.22
ANPA 55	1594.92

**ANPL BLOWERS ARE USED AS
BACKWARDS INCLINED "BI"
BLOWERS ON PR UNITS**

ANPL Blowers	K- Factor
ANPL 10	37.3
ANPL 11	45.48
ANPL 12	56.28
ANPL 14	75.91
ANPL 16	105.36
ANPL 18	135.13
ANPL 20	165.56
ANPL 22	203.52
ANPL 25	264.7
ANPL 28	345.2
ANPL 32	429.61
ANPL 36	531.05
ANPL 40	651.78
ANPL 44	814.89
ANPL 49	941.62
ANPL 55	1180.64

Sequence of Operation

Dedicated Outdoor Air System ASC - Ver. 3.0 - 10/08/18

WORKORDER#: XXXXXXXXX

MODEL #: PROA

TAG #:

CUSTOMER: Midwest Mechanical Solutions

PROJECT: TARGET

EQUIPMENT: OD 2-Pos., SF VSC by AMS, C1 with VFD., C2 Std., 4 Cond. Fans, Clg. En By OAT/SAT, Lead MHGRH w/Sub-Cooling, DH by OADP, Mod. Gas Htg., Htg. En By OAT, SF-AMS, SD

ISSUE DATE: 1/6/2019

APPROVED: _____

DATE: _____



INTRODUCTION

The ALC controller is turned on by a switch located on its front upper left corner. Several Occupancy Control options are available for starting the unit. These can be selected from the Equipment Interface on the Controls screen (requires user password). The Resident Program has an adjustable scheduler that uses the internal time clock to allow for separate Sequences for Occupied and Unoccupied periods. This can be accessed from the Equipment Interface on the Schedules screen (requires user password). NOTE: All temperature-related events have an additional 10 second (fixed) "delay on make" to allow temperatures to settle.

NOTE: The Supply Air Temperature/ Humidity (SAT/RH) Sensor to be furnished with unit that will be field installed in the supply duct. EMC to furnish Zone Temperature and Humidity sensor.

OCCUPIED MODE:

When the **Internal** Schedule calls for the start of the Occupied Mode, and the **ALC** controller has verified that there are no fault or shutdown conditions, after a **30-second** (fixed) delay the unit goes into Occupied Mode:

1. Outdoor Air Damper (OD):

- After the unit goes into Occupied Mode, the Outdoor Air (**OA**) damper will open. As the **OA** damper opens, the Outdoor Air Damper Actuator (**OADA**) auxiliary switches close.
- The **OA** damper stays open until the system reaches the end of the Occupied Mode period. It will remain open until the supply fan turns off. After the supply fan turns off, the **OA** damper will close.

2. Supply Fan (SF):

- As the **OA** damper opens, the **OADA** auxiliary switch will close and the **SF** will turn on.
- The **SF** will run for **30** seconds (fixed) before cooling, dehumidification, or heating will be enabled.
- The **SF** shall operate continuously while the unit is in the Occupied Mode. When the system reaches the end of the Occupied Mode period, the **SF** will continue to run for an additional **2** minutes before turning off.

- **SF-VSC:** Supply Fan with Variable Speed Control.
 - The **SF-VSC** will modulate its speed based on the **SF** Air Monitoring Station (**SF-AMS**) signal and the **SF** air flow set point.
 - **Optional:** For constant air volume (CAV), select “Manual Override” in the Equipment Interface and input the required speed (%) as determined in the field by Test and Balancing.

3. Cooling Mode:

- Cooling Mode is available when the Outdoor Air Temperature (**OAT**) is **1°F** (fixed) above the **OAT** cooling lower limit (**60°F**, adjustable) and there is a demand for cooling.
- When the Outdoor Air Temperature (**OAT**) is **1°F** (adjustable) or more above the **OAT** cooling set point (**70°F**, adjustable), compressor #1 turns on.
- When compressor # 1 has been running for more than 10 minutes and the **SAT** goes **2°F** (adjustable) or more above the **SAT** cooling set point (**70°F**, adjustable) and compressor # 1 is at **95%** capacity, after **10 minutes** time delay (adjustable), compressor #2 turns on..
- When the **SAT** is **2°F** (adjustable) or more below the **SAT** cooling set point (**70°F**, adjustable), compressor #2 turns off.
- When the **OAT** is **1°F** (adjustable) or more below the **OAT** cooling set point (**70°F**, adjustable), compressor #1 turns off.
- Factory suggested minimum **SF-VSC** modulation shall be **50%** (adjustable).
- Compressor enabling logic includes a **5-minute** (fixed) minimum run-time and a **5-minute** (fixed) minimum time-off delay to prevent compressor short cycling.
- **Bitzer Compressor with VFD: Compressor # 1**
 - The **ALC** controller sends an analog signal to the compressor **VFD** and controls the modulation of the compressor # 1.
 - The Compressor # 1 will modulate based upon the DX Leaving Air Temperature (**DX LAT**) set point (**55°F**, adjustable). **This can be adjusted to higher set point.**
- **If the DX LAT drops to 38°F or less for 10 minutes, the compressor stops and the ALC controller will issue an alarm. When the DX LAT warms back up to 55°F or more, the compressor turns back on.**
- If there is a current call for 1st stage cooling and compressor #1 is shut down due to an alarm (**HPS1**, **LPS1**, or **DX LAT1**), compressor #2 will be turned on to take its place until it returns.
- **Hot Gas Reheat (HGRH) – Modulating:**
 - When the **SAT** is **1°F** (adjustable) or more below the **SAT** cooling set point (**70°F**, adjustable), **HGRH** turns on and modulates based upon the **SAT** cooling set point.
 - When **SAT** is **2°F** (adjustable) or more above the **SAT** cooling set point, **HGRH** turns off.

4. Dehumidification Mode:

- Dehumidification Mode is available if the **OAT** is **1°F** (fixed) above the dehumidification lower limit of **60°F** (adjustable) and there is no call for heating.
- When the Outdoor Air Dew Point (**OADP**) is **1°F** (adjustable) or more above the Supply Air Dew Point (**SADP**) set point (**51°F**, adjustable), Dehumidification Mode is enabled. After the minimum time-off delay, compressor #1 turns on.
- When the **SADP** is **2°F** (adjustable) or more above the **SADP** set point (**51°F**, adjustable), and after minimum time-off delay, compressor #2 turns on -- not less than 10 minutes (adjustable) after compressor #1 turned on. Both compressors respond in sequence and compressor # 1 modulates based on the **SADP** set point.

- **The ALC controller records the SADP when the C2 turns on. When the SADP has remained within half a degree within 2 minutes, as determined by the ALC controller, the controller will subtract the current reading from the SADP when the C2 turned on. It will use that value as the lower deadband. The SADP set point minus the lower deadband is when the C2 turns off.**
- When the **OADP** is **2°F** (adjustable) or more below the **SADP** set point (**51°F**, adjustable), compressor #1 turns off and Dehumidification Mode is disabled.
- **Bitzer Compressor with VFD: Compressor # 1**
 - Compressor # 1 will modulate based upon the **SADP** set point (**51°F**, adjustable).
- **Hot Gas Reheat (HGRH) – Modulating:**
 - When the **SAT** is **1°F** (adjustable) or more below the **SAT** dehumidification set point, **HGRH** turns on and modulates based upon the **SAT** dehumidification set point.
 - When the **SAT** is **2°F** (adjustable) or more above the **SAT** dehumidification set point, **HGRH** turns off.
 - If the **HGRH** is unable to maintain the **SAT** dehumidification set point (**70°F**, adjustable), the compressor # 1 modulation will be increased to provide more capacity for reheat.
- **Switchable Sub-Cooling is only enabled during dehumidification mode. It is off on cooling mode.**
 - When either of the compressors are enabled, the sub-cooling coil is enabled.
 - When both of the compressors are disabled, the sub-cooling coil is disabled.

5. Heating Mode:

- Heating Mode is available when the **OAT** is **1°F** (fixed) below the **OAT** heating upper limit (**60°F**, adjustable) and there is a demand for heating.
- When the **OAT** is **1°F** (adjustable) or more below the **OAT** heating set point (**55°F**, adjustable), heating is enabled and operates based upon **SAT** heating set point (**70°F**, adjustable).
- When **OAT** is **1°F** (adjustable) or more above the **OAT** heating set point (**55°F**, adjustable), heating is disabled.
- **Modulated Heat:**
 - **Modulating Gas Furnace:** On demand for heating, the **ALC** controller modulates the gas furnace controller to control the gas flow based upon the **SAT** heating set point (**70°F**, adjustable). **The heater turns off and on based on upper deadband (2°F, adj.) and lower deadband (2°F,adj.).**

UNOCCUPIED MODE:

- When the **Occupancy Control** indicates the end of the Occupied Mode, the compressor(s) and outdoor fan(s) will turn off (subject to minimum run-time), or the heating system will turn off. The **SF** will continue to run for **2** minutes before turning off.
- After this, the **OA** damper will close. The unit is now off.

Safety Switches:

- **High Pressure Switch (HPS1):** If **HPS1** is open, compressor #1 will turn off and the **ALC** controller will issue an alarm. After manually resetting **HPS1 at the unit**, the **HPS1** alarm will reset. Following a minimum time off delay, compressor #1 will turn on. If the **ALC** controller records 3 high pressure start/restart failure incidents within 1 hour, compressor #1 is locked out and the **ALC** controller will issue an alarm. The compressor lock-out can be reset in the Equipment Interface or by cycling the power of the **ALC** controller.
 - This sequence is the same for compressor #2, **Y2**, and **HPS2**.
- **Low Pressure Switch (LPS1):** If **LPS1** is open after the **LPS1** by-pass time, the **ALC** controller will issue an alarm and compressor #1 turns off. After 30 seconds (fixed), the **LPS1** alarm will reset. Following a minimum time off delay, compressor #1 will turn on. If the **ALC** controller records 3 low pressure start/restart failure incidents within **24 hours**, compressor #1 is locked out and the **ALC** controller will issue an alarm. The compressor lock-out can be reset in the Equipment Interface or by cycling the power of the **ALC** controller.
 - This sequence is the same for compressor #2, **Y2**, and **LPS2**.

Safety Shutdown:

- **Smoke Detector:** A smoke detector relay is provided by factory. Field control (**BAS or Smoke Detector control**) shall energize this relay whenever the unit is enabled and there is no smoke detected. If smoke is detected, the smoke detector relay shall be de-energized by the **BAS** or Smoke Detector control and this will turn off the unit. The **ALC** controller will send an alarm.
- If a compressor fails to start **3** times in an hour due to high pressure switch lock out.
- If a compressor fails to start **3** times in a **24**-hour period due to low pressure switch lock out.
- If a compressor fails to start **3** times in an hour due to DX leaving air temperature lock out.
- If the **ALC** controller detects an **SAT** sensor failure.

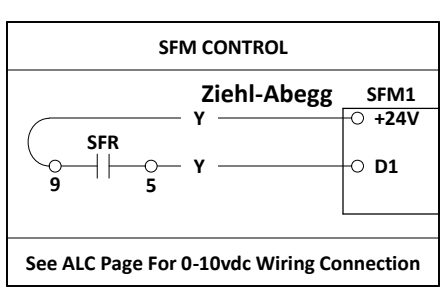
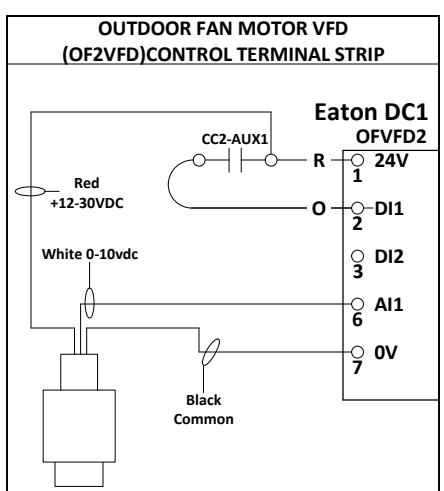
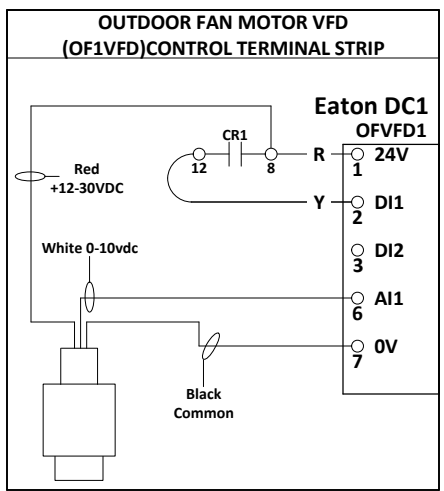
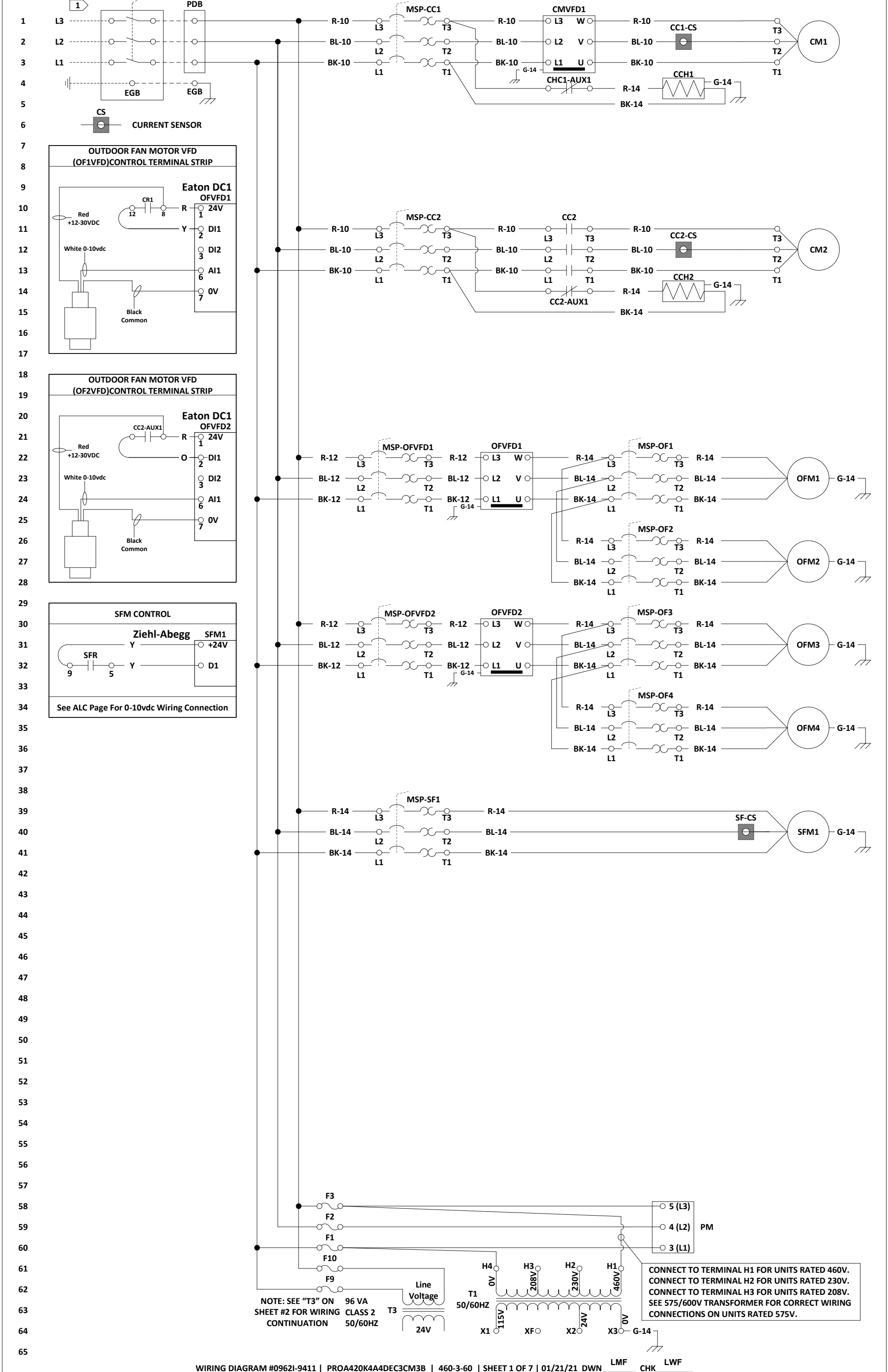
Start-up Settings, Controls, and Options

- Refer to the Addison Quick Start Guide for procedures to modify operating parameters and select options.

Standard Alarms: (alarms require reset in the Equipment Interface or cycling the power of the ALC controller unless noted)

1. **OADA Alarm:** When the OADA fails to open or closes due to OADA-A (adj.) being open; following 2 minute (adjustable) delay. Unit will automatically shut down.
2. **OADA Hand:** When the OADA is commanded closed but the OADA-A (adj.) still indicates to the ALC it is open; following 2 minute (adjustable) delay.
3. **Supply Fan Alarm:** When the SF fails to start and the SF-APS does not confirm air flow to ALC, following 1 minute (adjustable) delay. Unit will automatically shut down.
4. **Supply Fan Hand:** When the SF is commanded off and the SF-APS still indicates air flow to ALC, following 1 minute (adjustable) delay. OA Damper (if existing) will be commanded to remain open.
5. **Compressor #1 Alarm:** Compressor stops due to CC1-CS open; following 60 second (fixed) delay. Compressor lock out occurs if alarm happens 3 times in 1 hour (Compressor #1 STOP).
6. **Compressor #1 Hand:** Compressor is commanded off but the CC1-CS still indicates to the ALC it is on; following 60 second (fixed) delay.
7. **High Pressure Switch #1 Alarm:** Compressor stops due to HPS1 open; following 30 second (fixed) delay. Requires HPS1 manual reset **at the unit**. Compressor lock out occurs if alarm happens 3 times in 1 hour (High Pressure Switch #1 STOP).
8. **Low Pressure Switch #1 Alarm:** Compressor stops due to LPS1 open; following 90 second (fixed) delay. Compressor lock out occurs if alarm happens 3 times in 24 hours (Low Pressure Switch #1 STOP).
9. **Freeze Protection #1 Alarm:** Compressor stops due to DX LAT1 freeze condition; following **10** minute (adjustable) delay. Compressor lock out occurs if alarm happens 3 times in 1 hour (FP #1 STOP).
10. **Compressor #2 Alarm:** Compressor stops due to CC2-CS open; following 60 second (fixed) delay. Compressor lock out occurs if alarm happens 3 times in 1 hour (Compressor #2 STOP).
11. **Compressor #2 Hand:** Compressor is commanded off but the CC2-CS still indicates to the ALC it is on; following 60 second (fixed) delay.
12. **High Pressure Switch #2 Alarm:** Compressor stops due to HPS2 open; following 30 second (fixed) delay. Requires HPS2 manual reset **at the unit**. Compressor lock out occurs if alarm happens 3 times in 1 hour (High Pressure Switch #2 STOP).
13. **Low Pressure Switch #2 Alarm:** Compressor stops due to LPS2 open; following 90 second (fixed) delay. Compressor lock out occurs if alarm happens 3 times in 24 hours (Low Pressure Switch #2 STOP).
14. **Freeze Protection #2 Alarm:** Compressor stops due to DX LAT2 freeze condition, following **8** minute (adjustable) delay. Compressor lock out occurs if alarm happens 3 times in 1 hour (FP #2 STOP).
15. **Sensor Failure:** Readings exceed sensor limits, following 2 minute (fixed) delay. Alarms reset automatically.
16. **SAT Sensor Failure:** Open: -60.2°F, Short: 296°F. Unit will automatically shut down.
17. **High SAT Alarm:** SAT high limit, 130°F (adjustable) with Gas Furnace Heat. Alarm resets automatically.
18. **Low SAT Alarm:** SAT low limit, 40°F (adjustable), following 10 minute (adjustable) delay. Unit will automatically shut down.

19. **Heat Failure:** In heating mode and the SAT falls below 50°F (adjustable), following 10 minute (adjustable) delay. Alarm resets automatically.
20. **Smoke Detector Alarm:** When smoke is detected, following 30 second (fixed) delay. Unit will automatically shut down.



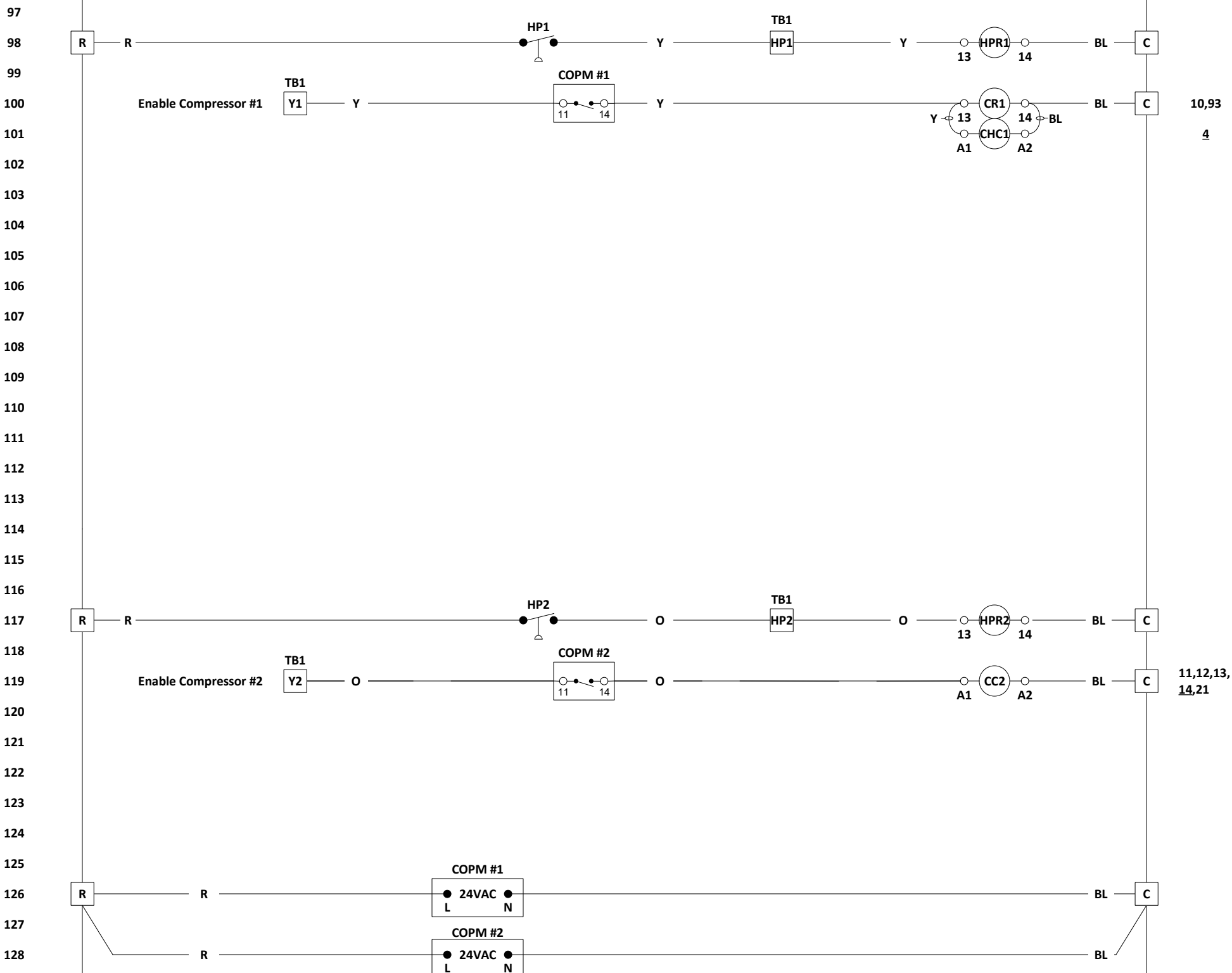
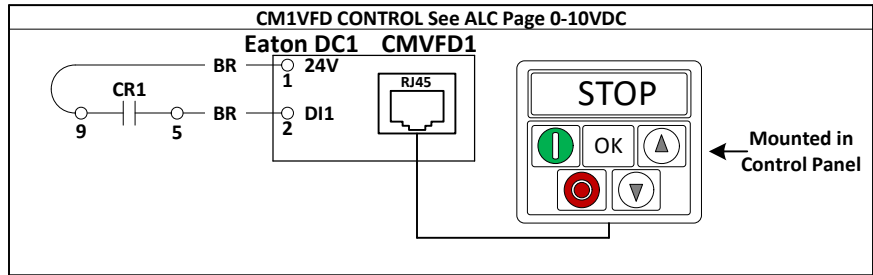
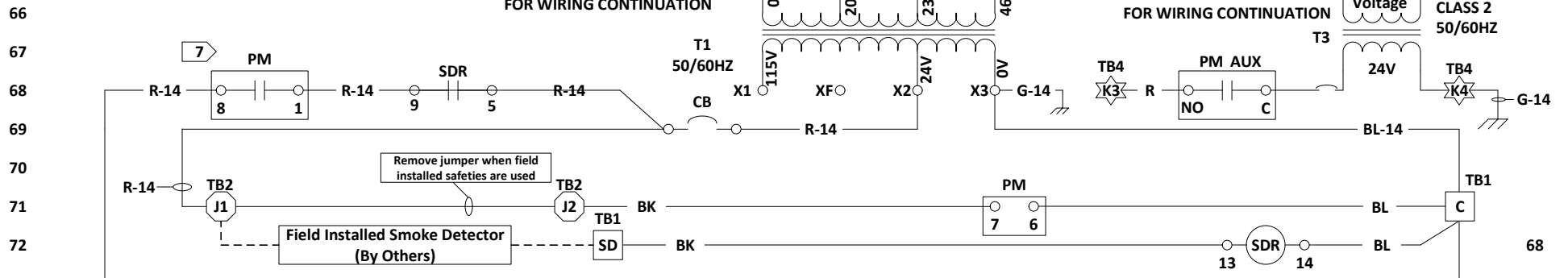
NOTE: SEE "T3" ON SHEET #2 FOR WIRING CONTINUATION

CONNECT TO TERMINAL H1 FOR UNITS RATED 460V. CONNECT TO TERMINAL H2 FOR UNITS RATED 230V. CONNECT TO TERMINAL H3 FOR UNITS RATED 208V. SEE 575/600V TRANSFORMER FOR CORRECT WIRING CONNECTIONS ON UNITS RATED 575V.

NOTE: SEE "T1" ON SHEET 1 FOR WIRING CONTINUATION

NOTE: SEE "T3" ON SHEET 1 FOR WIRING CONTINUATION

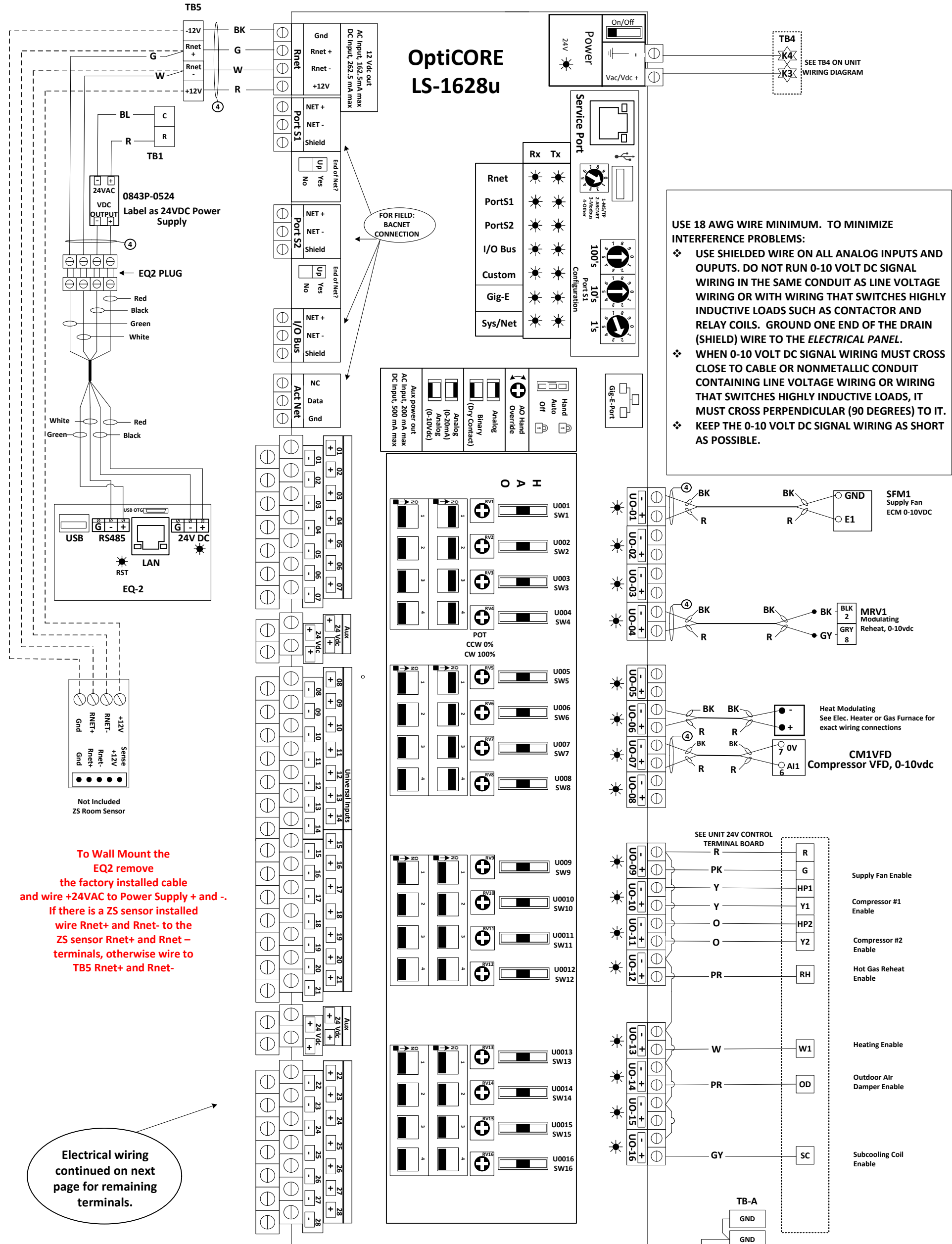
Line Voltage
96 VA
CLASS 2
50/60HZ



CONTINUED ON SHEET 3

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OptiCORE LS-1628u



USE 18 AWG WIRE MINIMUM. TO MINIMIZE INTERFERENCE PROBLEMS:

- ❖ USE SHIELDED WIRE ON ALL ANALOG INPUTS AND OUTPUTS. DO NOT RUN 0-10 VOLT DC SIGNAL WIRING IN THE SAME CONDUIT AS LINE VOLTAGE WIRING OR WITH WIRING THAT SWITCHES HIGHLY INDUCTIVE LOADS SUCH AS CONTACTOR AND RELAY COILS. GROUND ONE END OF THE DRAIN (SHIELD) WIRE TO THE ELECTRICAL PANEL.
- ❖ WHEN 0-10 VOLT DC SIGNAL WIRING MUST CROSS CLOSE TO CABLE OR NONMETALLIC CONDUIT CONTAINING LINE VOLTAGE WIRING OR WIRING THAT SWITCHES HIGHLY INDUCTIVE LOADS, IT MUST CROSS PERPENDICULAR (90 DEGREES) TO IT.
- ❖ KEEP THE 0-10 VOLT DC SIGNAL WIRING AS SHORT AS POSSIBLE.

To Wall Mount the EQ2 remove the factory installed cable and wire +24VAC to Power Supply + and -. If there is a ZS sensor installed wire Rnet+ and Rnet- to the ZS sensor Rnet+ and Rnet- terminals, otherwise wire to TB5 Rnet+ and Rnet-

Electrical wiring continued on next page for remaining terminals.

Adjustable Power Supply 0843P-0524

- Failure to properly configure the 0843P-0524 adjustable power supply before applying power may result in damage to the power supply or connected equipment.
- Configure for "HALF" wave mode.

- Before applying power for the first time remove the wires from VDC + & - and connect a volt meter, then apply power. LED1 should light.
- Adjust the "P1" adjustment screw by turning the screw to the labeled voltage, 24VDC.
- If the desired voltage is less than the current voltage shown by the volt meter turn the "P1" adjustment screw clockwise. If it is more then the current voltage turn counter clockwise

4 WIRE ALL SHIELD WIRES TO CLOSEST TB-A OR TB-D "GND" TERMINAL AT THE CONTROL PANEL

USE SHIELDED WIRE FOR ALL ANOLOG INPUTS

SYMBOL LEGEND	
	FACTORY WIRING
	FIELD WIRING
	TERMINAL BOARD

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① Note: THE SUPPLY/DISCHARGE AIR TEMPERATURE/RELATIVE HUMIDITY (SA-T/RH) IS FACTORY SUPPLIED FOR FIELD INSTALLATION IN SUPPLY AIR DUCT. SENSOR MUST BE INSTALLED DOWNSTREAM OF HEATER WHERE IT CANNOT "SEE" ANY HEATING ELEMENTS AND WHERE SUFFICIENT MIXING OF DISCHARGE AIR OCCURS. USE 18 AWG SHIELDED WIRE. DO NOT RUN SENSOR WIRING IN THE SAME CONDUIT AS LINE VOLTAGE WIRING OR WITH WIRING THAT SWITCHES HIGHLY INDUCTIVE LOADS SUCH AS CONTACTOR AND RELAY COILS.

② Install OA-T/RH under the OA hood, sensing the ambient temp/humidity.

④ WIRE ALL SHIELD WIRES TO CLOSEST TB-A or TB-D "GND" TERMINAL AT THE CONTROL PANEL

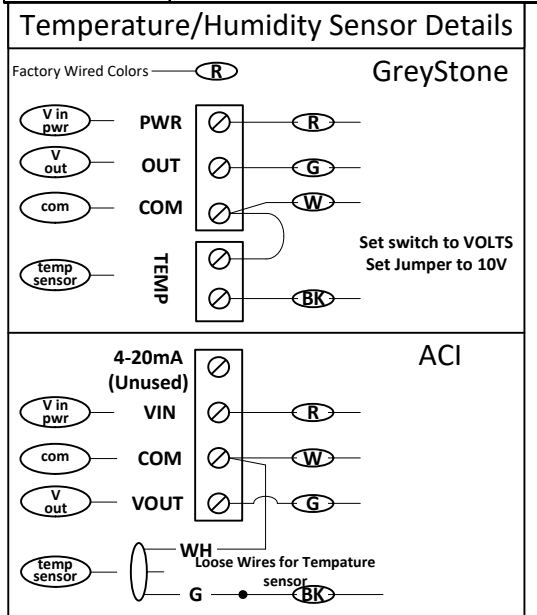
Adjustable Current Switch Adjustment

ECM Motors
With the ECM motor off, turn the potentiometer clockwise until the "RED LED" is lit. Turn the potentiometer counter-clockwise until the "RED LED" turns off and the "BLUE LED" is lit. Please note that with very small loads the "BLUE LED" will be very dim.

AC Motors and Compressors
With the motor or compressor on and at its lowest speed turn the potentiometer clockwise until the "RED LED" is lit.

If the "RED LED" fails to turn on while the motor is in operation and the current switch is at its lowest adjustment additional wraps of wire may be needed.

SENSORS	DESCRIPTION
CFI	Clogged Filter Indicator
DPT-260	Differential Pressure Transmitter
SAT	Supply Air Temperature Sensor
OA-T/RH	Outdoor Air Temp/Relative Humidity Sensor
SA-RH	Supply Air Relative Humidity
ZS	Zone Temperature Sensor - Standard
CC1-CS, CC2-CS	Compressor #1 & #2 Current Sensor
DxLAT	Dx Leaving Air Temperature Sensor
WM-CS	Wheel Motor Current Sensor
SF-APS, EF-APS	Supply Fan / Exhaust Fan Air Press. Switch
WFR	Water Flow Relay
LP1, LP2	Low Pressure Switch, Ckt. #1 & #2
SD	Smoke Detector



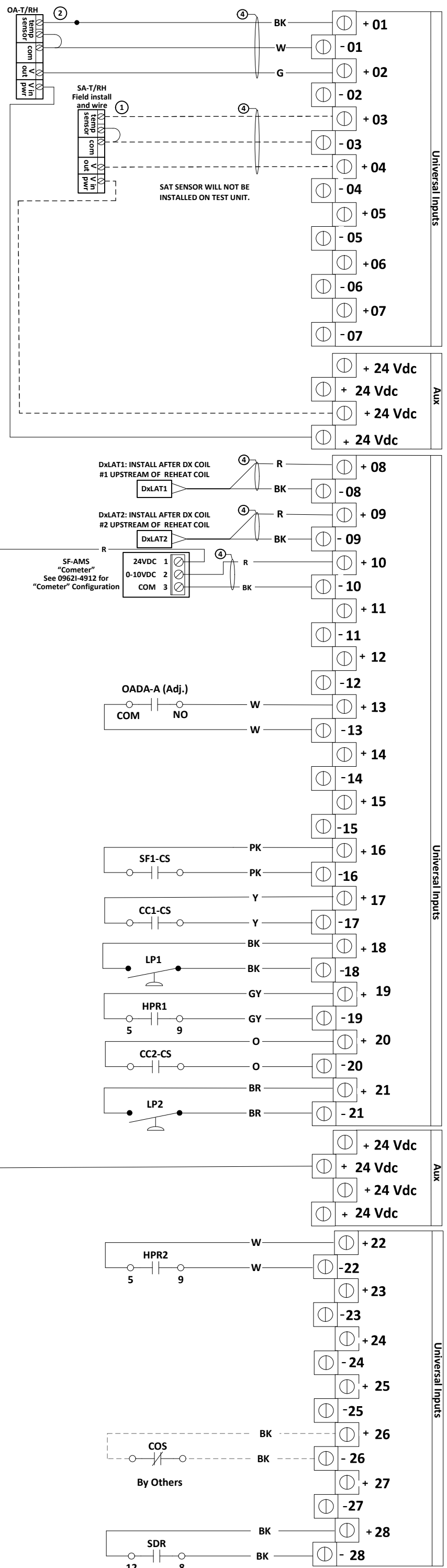
Enabling Condensate Overflow Switch

On the Equipment Touch navigate to the "Options" screen.
Home → Config → Options.
Scroll to "Misc Options A" and set to "COS, SD".
To archive the change navigate to the "Archive" screen.
Home → Technical → Archive.
Touch the box next to where it says "touch to archive memory". Confirm that the archive date changed to the current date. This will take several seconds.
Open the Condensate Overflow Switch Contact to verify the configuration change. The Equipment Touch should say "Shutdown/COS Alarm".

ALL FIELD INSTALLED SENSORS SHOULD BE WIRED TO THE CONTROLLER FOR FACTORY TESTING WITH TEMPORARY WIRING AND LEFT IN THE UNIT AFTER TEST. TEMPORARY WIRING SHOULD BE REMOVED FOR PERMANENT INSTALLATION DURING UNIT INSTALLATION. LABEL SENSORS PER THE WIRING DIAGRAM.

SYMBOL LEGEND	
	FACTORY WIRING
	FIELD WIRING
	TERMINAL BOARD

USE SHIELDED WIRE FOR ALL ANALOG INPUTS



LEGEND - ITEMS INSIDE CONTROL PANEL			
ITEM	FUNCTIONAL DESIGNATION	LINE NUMBER	DESCRIPTION
101	CC1-CS	2	Compressor #1 - Current Switch
102	CC2	119	Compressor Contactor no. 2
103	CC2-AUX1	#	CC2 - Auxiliary Contact no. 1
104	CC2-CS	12	Compressor #2 - Current Switch
105	CHC1	101	Crankcase Heater Contactor #1
106	CHC1-AUX1	#	CHC1 - Auxiliary Contact no. 1
107	CMVFD1	1,92	Compressor #1 VFD
108	CR1	100	Compressor Relay #1
109	EGB	4	Equipment Grounding Bar
110	HPR1, HPR2	98, 117	High Pressure Relay #1, #2
111	HR	179,448	Heat Relay
112	MSP-CC1	1	Motor Starter Protection - CC1
113	MSP-CC2	11	Motor Starter Protection - CC2
114	MSP-OF1	22	Motor Starter Protection- Outdoor Fan no. 1
115	MSP-OF2	26	Motor Starter Protection- Outdoor Fan no .2
116	MSP-OF3	30	Motor Starter Protection- Outdoor Fan no .3
117	MSP-OF4	34	Motor Starter Protection- Outdoor Fan no .4
118	MSP-OFVFD1, MSP-OFVFD2	22,30	Motor Starter Protection- OFVFD1, OFVFD2
119	MSP-SF1	39	Motor Starter Protection - Supply Motor #1
120	OFVFD1, OFVFD2	10,22,21,30	Outdoor Fan VFD #1, #2
121	PDB	1,391	Power Distribution Block
122	PM	59,68,68,71	Power/Phase Monitor
123	RHR	153	Reheat Relay
124	SDR	72	Smoke Detector Interlock Relay
125	SF-CS	40	Supply Fan - Current Switch
126	SFR	146	Supply Fan Motor Relay
127	SSR	136	Switchable Subcooling relay

SEE LINE NUMBER TO THE RIGHT OF CONTACTOR COIL ON WIRING DIAGRAM.

LEGEND - ITEMS OUTSIDE CONTROL PANEL			
ITEM	FUNCTIONAL DESIGNATION	LINE NUMBER	DESCRIPTION
101	BCTL	179,449	Blower Compartment Thermal Limit
102	BOS1	134	Bleed Off Solenoid #1
103	CCH1	4	Crankcase Heater #1
104	CCH2	14	Crank Case Heater #2
105	CM1	2	Compressor Motor No.1
106	CM2	12	Compressor Motor No.2
107	COPM #1	100,126	Compressor Overload Protection Module #1
108	COPM #2	119,128	Compressor Overload Protection Module #2
109	HP1	98	High Pressure Switch #1
110	HP2	117	High Pressure Switch #2
111	LSS1A, LSS1B	138,139	Liquid Sub-Cooling Solenoid no. 1A, 1B
112	LSS2A, LSS2B	140,141	Liquid Sub-Cooling Solenoid no. 2A, 2B
113	MRV1	155	Modulating Reheat Valve #1
114	OADA	187	Outside Air Damper Acuator
115	OFM1	23	Outdoor Fan Motor #1
116	OFM2	27	Outdoor Fan Motor #2
117	OFM3	31	Outdoor Fan Motor #3
118	OFM4	35	Outdoor Fan Motor #4
119	SFM1	31,40,217	Supply Fan Motor #1

SYMBOL LEGEND			
	FACTORY WIRING		NORMALLY OPEN CONTACTS
	FIELD WIRING		NORMALLY CLOSED CONTACTS
	EARTH GROUND		IDENTIFIABLE TERMINAL
	CHASSIS (PANEL) GROUND		NON-IDENTIFIABLE TERMINAL, OTHER WIRE JUNCTIONS, INCLUDING SCHEMATIC
	COIL		

WIRE COLOR LEGEND	
ABBREVIATION	COLOR
BK	BLACK
BL	BLUE
BR	BROWN
G	GREEN
O	ORANGE
PK	PINK
PR	PURPLE
R	RED
W	WHITE
Y	YELLOW

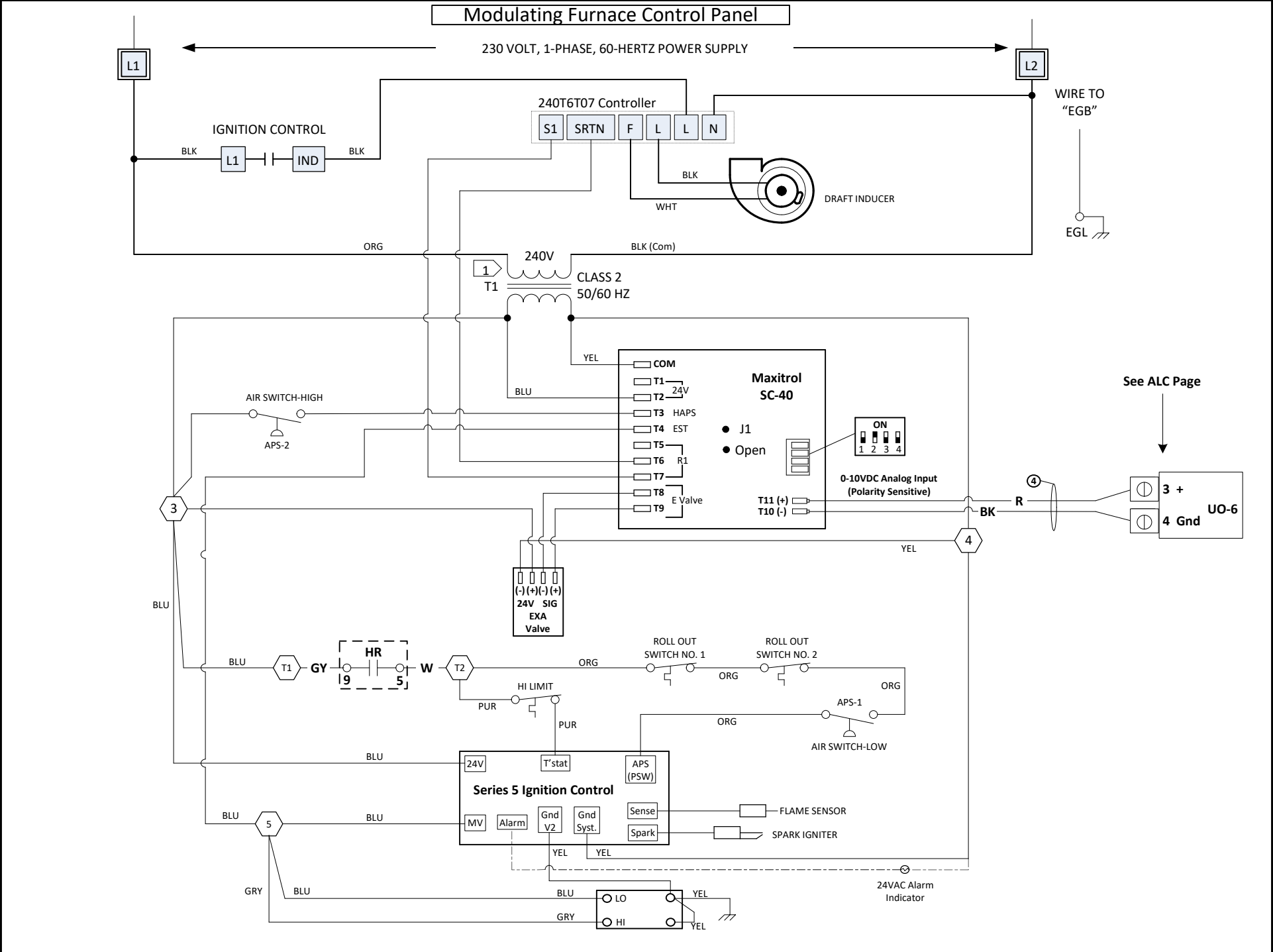
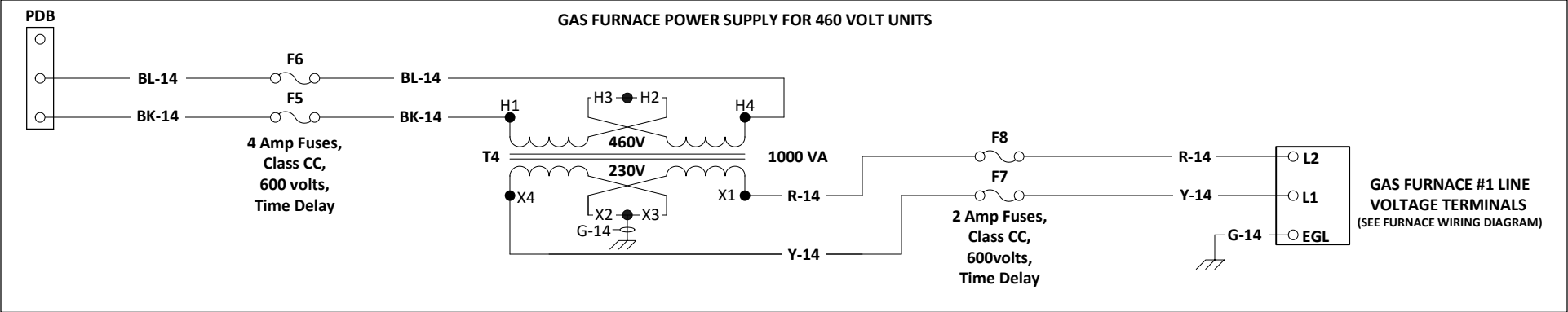
NOTE: NUMBER PLACED AFTER DASH FOLLOWING COLOR CODE INDICATES WIRE GAGE. EX. - BK-12 IS A BLACK, 12 AWG WIRE. NO NUMBER AFTER COLOR CODE INDICATES 18 AWG WIRE. EX. - BK IS A BLACK 18 AWG WIRE.

FUUSE TABLE						
FUSE NO.	CLASS	VAC	AMPS-208/230V	AMPS-460V	XFMR	TIME DELAY
F1, F3	CC	600	3	2	350VA	YES
	CC	600	2	1.5	250VA	YES
	CC	600	2	1.5	200VA	YES
	CC	600	1.5	3/4	150VA	YES
F2, F9, F10	CC	600	1	1	N/A	YES
CB	CC	600	16	16	350VA	YES
	CC	600	10	10	250VA	YES
	CC	600	10	10	200VA	YES
	CC	600	6	6	150VA	YES

- FIELD POWER SUPPLY 208/230/460/575-3-60. MINIMUM CIRCUIT AMPACITY AND MAXIMUM SIZE AND TYPE OF BRANCH-CIRCUIT SHORT-CIRCUIT AND GROUND-FAULT PROTECTION PER UNIT RATING PLATE. PROVIDE DISCONNECTING MEANS AS REQUIRED.
- TYPICAL MOTORS AND COMPRESSORS SHOWN. SEE CONNECTION DIAGRAM ON MOTOR OR COMPRESSOR FOR ACTUAL WIRING DETAIL.

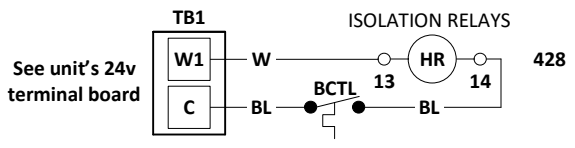
- SET TIME DELAY PERIOD TO 5-MINUTES. UPON INITIAL APPLICATION OF POWER TO "TD", CONTACTOR "CC" IS ENERGIZES AFTER A 5-MINUTE START DELAY. WHEN POWER IS REMOVED, A LOCKOUT CONDITION AND 5-MINUTE TIME DELAY PERIOD (ADJUSTABLE) IS INITIATED. DURING THIS PERIOD, CONTACTOR "CC" CANNOT BE ENERGIZED.

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SYMBOL LEGEND

	HEATER-FACTORY WIRING		POWER SUPPLY TERMINAL CONNECTION
	FACTORY WIRING		RELAY COIL
	TIMER RELAY- TR1-090LH15		NORMALLY OPEN CONTACTS
	EARTH GROUND		NORMALLY CLOSED CONTACTS
	CHASSIS (PANEL) GROUND		IDENTIFIABLE TERMINAL
	Isolation Relays TERMINAL BOARD		



**Example Drawing Only
See electrical drawing supplied by
furnace manufacture for actual
wiring connection.**

4 WIRE ALL SHIELD WIRES TO CLOSEST TB-A or TB-D "GND" TERMINAL AT THE CONTROL PANEL

SUBMITTAL

Duct Humidity Transducer

Part Number:

PRODUCT SELECTION INFORMATION:

MODEL	Product Description
RH200	Duct Humidity Transducer

CODE	Enclosure
A	ABS enclosure, standard
M	Metal utility box
E	Round ABS, w/gasketed cover
W	Aluminum weatherproof box

CODE	Accuracy
02	2%
03	3%
05	5%

CODE	Optional Temperature Sensor
L	PT100-100 Ω Plat. IEC 751, 385 Alpha, thin film
C	PT1000-1000 Ω Platinum, IEC 751, 385 Alpha, thin film
F	1801 Ω, NTC Thermistor, ±0.2 C
E	3000 Ω, NTC Thermistor, ±0.2 C
H	100,000 Ω, NTC Thermistor, ±0.2 C
D	10,000 Ω, Type 3, NTC Thermistor, ±0.2 C
J	10,000 Ω, Type 2, NTC Thermistor, ±0.2 C
K	20,000 Ω, NTC Thermistor, ±0.2 C
M	1000 Ω Nickel
B	10,000 Ω, Type 3, NTC Thermistor, ±0.2 C w/ 11K shunt resistor
G	2,252K Ω, NTC Thermistor, ±0.2 C

CODE	Options
AC	LCD display (ABS Enclosure only)

RH200 A 02 K -

Greystone Energy Systems, Inc. reserves the right to make design modifications without prior notice.

EXAMPLE: Duct humidity, ABS Enclosure, 2% c/w 20 K Thermistor

LCD Specifications:

Display Units % RH (Factory set)
 Display Range 0 – 99.9%
 Display Resolution 0.5% for display of 00.0 to 99.9
 Display Update Rate 3 times per second
 Display Size 24 mm W x 11 mm H (0.95" x 0.45") three digit

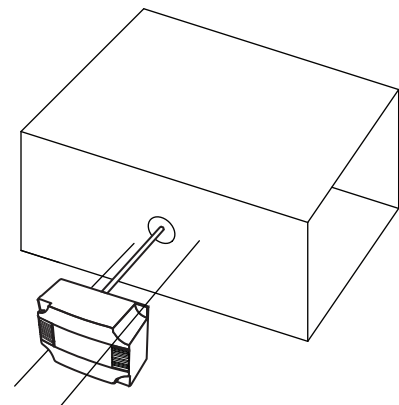
The RH200 series uses a highly accurate and reliable Thermoset Polymer based capacitance humidity sensor and state-of-the-art digital linearization and temperature compensated circuitry to monitor humidity levels. The sensor is encapsulated in a 9" (228.60 mm) long by 0.5" (12.7 mm) diameter 304 S/S probe. An 60 micron HDPE filter protects the sensor for contaminants. A variety of enclosures are available. Additional options such as integrated temperature sensor and LCD display are available.

Sensor Type	Thermoset Polymer based capacitive
Range	0 to 100% RH
Accuracy	±2, 3, or 5 % (5 to 95% RH)
Response	15 Seconds typical
Stability	±1% RH typical @ 50% RH in 5 years
Operating Temperature	-40 to 70 °C (-40 to 158 °F)
Power Supply	18 to 30 Vdc, 15 to 26 Vac
Output Signal	Jumper-selectable 4-20 mA current loop 0-1, 0-5, or 0-10 Vdc
Consumption	22 mA maximum
Enclosure	Standard - ABS - UL94-V - NEMA 1 (IP10) Round (E) - ABS - NEMA 4X (IP56) Metal (M) - Galvanized Steel - NEMA 1 (IP10) Weatherproof (W) - Cast Aluminum - NEMA 3R (IP14)
Probe	304 series stainless steel w/ 60 micron HDPE filter
Optional Temperature Sensor	Various RTD's and thermistors available as 2 wire resistance outputs (See ordering chart)
Wiring Connections	Screw terminal block (14 to 22 AWG)

Installation:

The duct type probes are installed through a hole in the side of the duct to monitor a single point humidity within the duct. Install the probe in a straight section of duct at a suitable distance downstream from any heating, cooling or humidification devices.

Each enclosure style provides mounting tabs on the outside of the enclosure for ease of installation .



GREYSTONE

ACCURACY BY DESIGN

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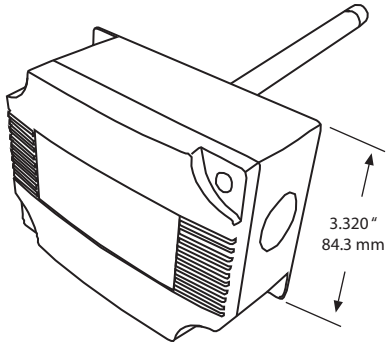
RoHS
 COMPLIANT



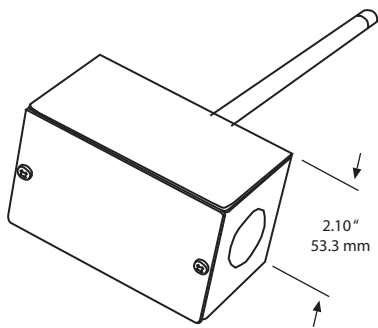
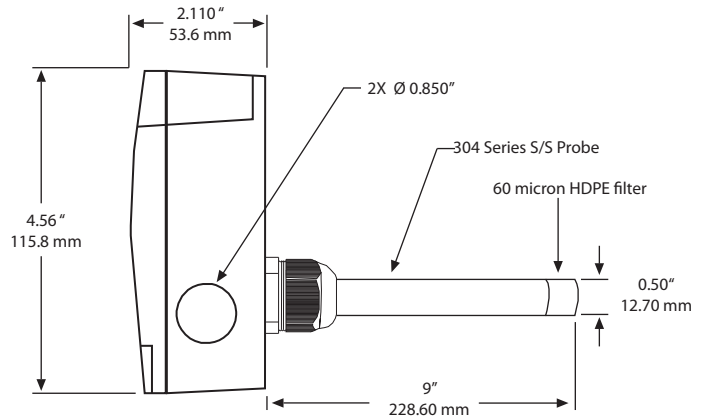
Dimensions:



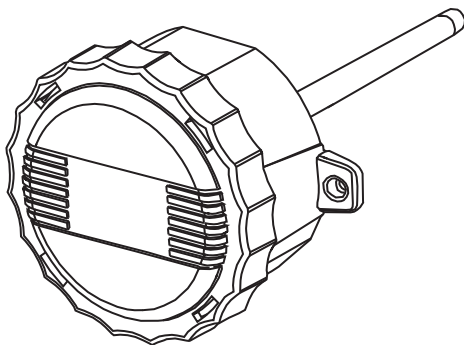
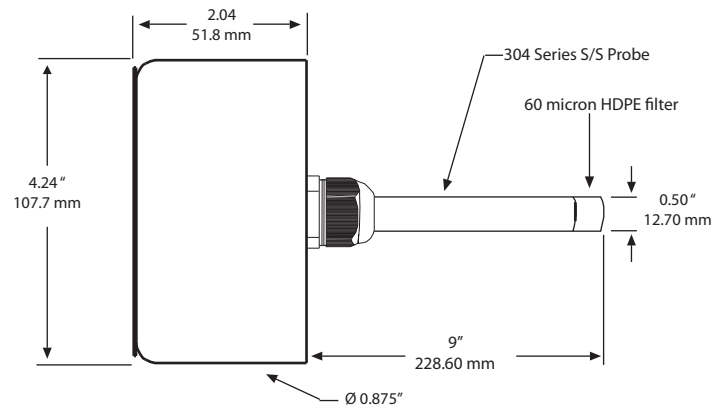
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ACCURACY BY DESIGN



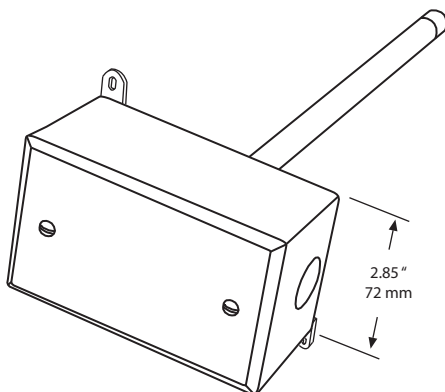
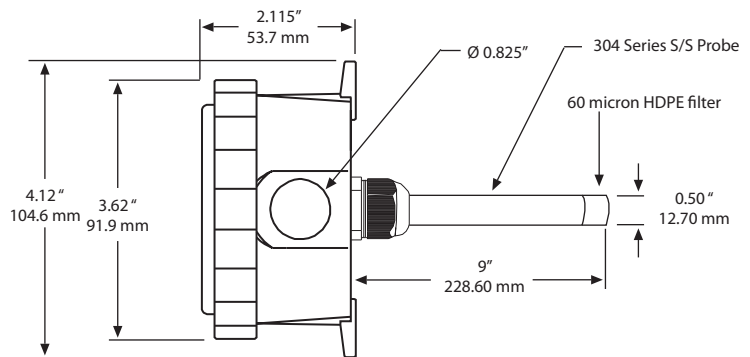
ABS Enclosure



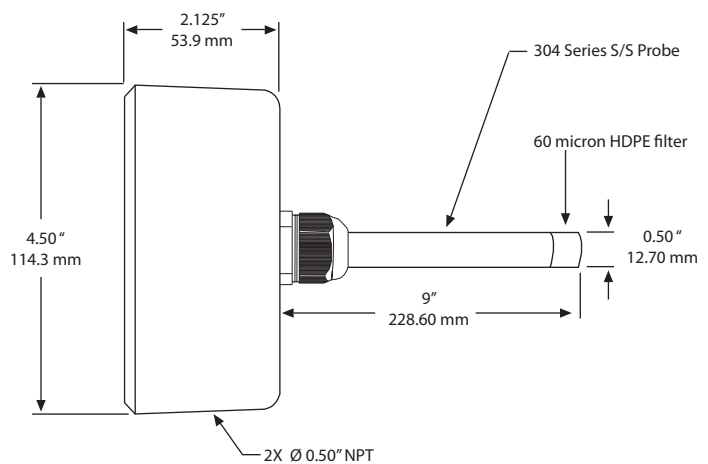
Metal Enclosure (M)

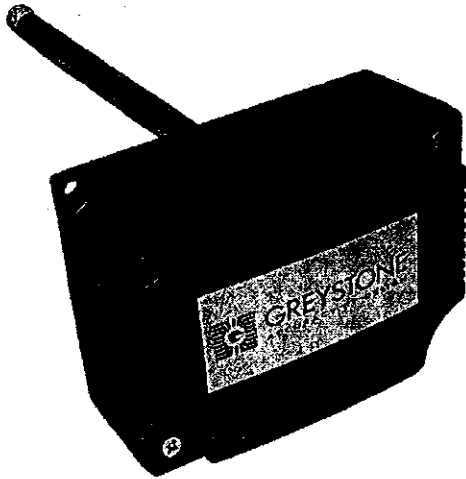


Round ABS Enclosure (E)



Weatherproof Enclosure (W)





Specifications

Accuracy	+/- 2,3,5 % RH
Power Supply	24Vac/dc
Wiring Connections	Screw connectors (18-24 awg)
Output (scaled 0-100%)	4-20mA, 0-1, 0-5, 0-10 Vdc (jumper selectable)
Operating Temperature	0-70 °C (Space), -40-80 °C (Duct/OSA)

Mounting

Room - Unit should be mounted away from any supply air exhausts or other sources of heat or cold. Mount the unit to an electrical box on an inside wall approximately 3 to 5 feet from the floor.

Duct - Drill a 5/8" (or larger) hole in the return air duct. Remove the protective plastic sleeve from the probe and place it through the hole and secure the enclosure to the duct with sheetmetal screws. Orientation of the enclosure and probe will have no effect on the operation of the device.

Outside Air - For best results locate the sensor on the north side of the structure high under an eave to prevent incorrect readings from direct sunlight and damage due to the elements. Mount the OSA enclosure with the sensor module facing down to prevent the accumulation of dirt or water.

Relative Humidity Transmitter

The Relative Humidity transmitter uses a capacitive type humidity sensor and microprocessor temperature compensation for reliable, accurate readings.

Electrical Connection

Anti-static precautions should be followed to prevent damage to the device. The transmitter should be connected to the controller using 18 to 22 AWG wire and requires three wires for voltage and AC operation while only two wires are required for DC 4-20mA loop-powered operation. Use shielded cable for the highest noise immunity. Do not route signal wires in the same conduit with power cables as signal degradation may occur. The controller Analog Input (AI) must be selected to match the transmitter output before power is applied. The AI type must be a high impedance voltage input for use with 0-1, 0-5 or 0-10 Vdc transmitters, or a current input with 250 or 500 ohm impedance. Room transmitters have an operating range of 0 - 70 °C (32 - 158 °F) and the Duct and O.S.A. is -40 - 80 °C (-40 - 170 °F). The transmitter board should not be mounted where temperatures will exceed these values. See the connection diagram for more details.

If the unit is equipped with an optional temperature sensor (RTD or thermistor), the sensor output is available through the 'TEMP' terminals as a resistive signal.

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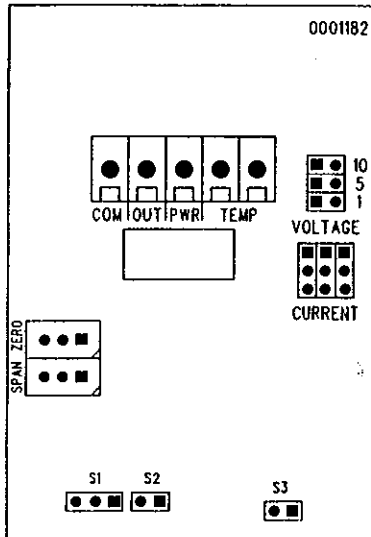
Output Selection

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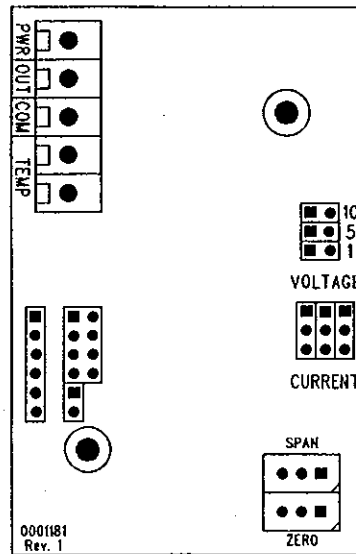
Remove power to the transmitter before changing between voltage and current output signal types. Ensure the wiring is correct for the selected output signal type. Use caution when changing jumper positions as not to damage the circuit board, any components or the sensing elements.

The unit comes factory set for current output. To change the output signal to voltage, carefully remove the 3-position shorting jumper and replace it in the 'VOLTAGE' position. Place the two-position shorting jumper in the correct position for the required span (10 = 0 to 10 Vdc, 5 = 0 to 5 Vdc, 1 = 0 to 1 Vdc). NOTE: the voltage span jumper does not function when the output signal is set to 'CURRENT'.

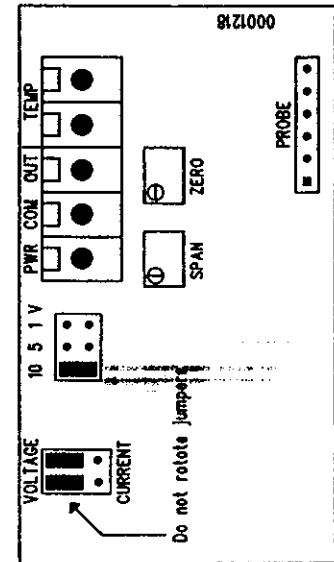
WIRE CONNECTIONS FOR RELATIVE HUMIDITY BOARDS



RH100

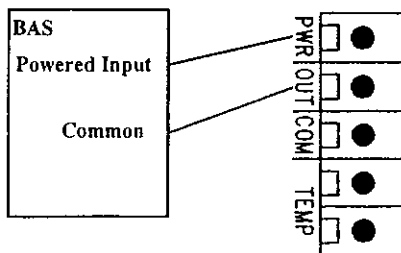


RH200/300

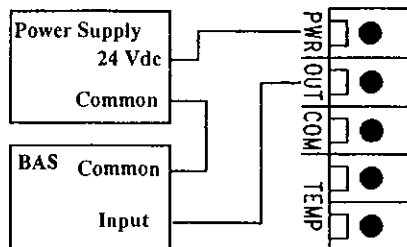


RH200E

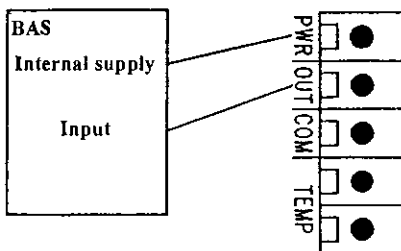
The wiring for the RH100, RH200 and RH300 use the same terminals. The temperature sensor option output is on the two terminals marked TEMP.



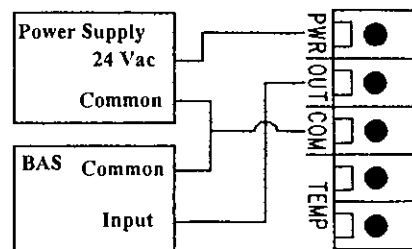
Live/active input / 4-20mA output loop



External 24Vdc supply / 4-20mA output loop



Internal power supply (min 18Vdc) / 4-20mA output loop



External 24Vac supply / 4-20mA 3-wire output or voltage output

Wiring is the same for 24Vdc supply / voltage output