TRION RE Herrmersion Owner's Manual

-------- Manual continues below --------

HERRMIDIFIER®
By TRION

READ & SAVE THESE INSTRUCTIONS

Herrmersion RE Series

Installation, Operation, & Maintenance

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I. WARRANTY

Limited 2-Year Warranty

Seller warrants the equipment of its manufacturing to be free from defects in workmanship and material for a period of 24 months after shipment or 18 months after initial commissioning, whichever occurs first. This warranty is limited, however, to the repair or replacement of defective equipment, which is returned, freight prepaid, to Seller's factory.

This limited warranty does not apply to any part or component that is damaged in transit or when handling, has been subject to misuse, negligence or accident, has not been installed, operated or serviced according to Seller's instructions, or has been operated beyond the factory-rated capacity or has been altered in any way.

Seller's liability is limited to replacement of defective parts or components and does not include any cost of labor (including, but not limited to, labor required to remove and/or reinstall any defective part) other than TRION/HERRMIDIFIER factory labor.

TRION/HERRMIDIFIER shall not be responsible for loss of use of any product, loss of time, inconvenience, or damage to other equipment, or any other indirect or consequential damage with respect to property whether as a result of breach of warranty, neglect, or otherwise.

THE WARRANTIES AND LIABILITIES SET FORTH ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, EXPRESSED OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE.

The foregoing shall constitute the total liability of seller in the case of defective performance of all or any of the equipment or services provided to Buyer. Buyer agrees to accept and hereby accepts the foregoing as the sole and exclusive remedy for any breach or alleged breach of warranty by Seller.

II. GENERAL WARNINGS & INSTALLER RESPONSIBILITY

ATTENTION

READ THIS MANUAL, FACTORY INSTALLED OPTIONS MANUAL, UNIT SUBMITTAL DATA SHEETS AND ALL LABELS ATTACHED TO THE UNIT CAREFULY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THESE UNITS. CHECK DATA PLATES FOR ELECTRICAL SPECIFICATIONS AND MAKE CERTAIN THAT THESE AGREE WITH THOSE AT THE POINT OF INSTALLATION. RECORD THE UNIT MODEL AND SERIAL NUMBER IN THE SPACE PROVIDED. RETAIN THIS DOCUMENT FOR FUTURE REFERENCE.

WARNING

IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. THIS APPLIANCE MUST BE INSTALLED BY A LICENSED CONTRACTOR OR QUALIFIED SERVICE PERSONNEL. READ THESE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR SERVICING THE UNIT.

WARNING

INSTALL, OPERATE AND MAINTAIN UNIT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS TO AVOID ANY CIRCUMSTANCES THAT MAY CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

INSTALLER'S RESPONSIBILITY

THIS EQUIPMENT HAS BEEN RUN TESTED AND INSPECTED THOROUGHLY. IT HAS BEEN SHIPPED FREE FROM DEFECTS FROM OUR FACTORY. HOWEVER, DURING SHIPMENT AND INSTALLATION, PROBLEMS SUCH AS LOOSE WIRES, LEAKS OR LOOSE FASTENERS MAY OCCUR. IT IS THE INSTALLER'S RESPONSIBILITY TO INSPECT AND CORRECT ANY PROBLEMS THAT MAY BE FOUND.

RECEIVING INSTRUCTIONS

INSPECT SHIPMENT IMMEDIATELY UPON ARRIVAL TO DETERMINE IF ANY DAMAGE HAS OCCURRED TO THE UNIT DURING SHIPMENT. AFTER THE UNIT HAS BEEN UNCRATED, CHECK FOR ANY VISIBLE DAMAGE TO THE UNIT. IF ANY DAMAGE IS FOUND, THE CONSIGNEE SHOULD SIGN THE BILL OF LADING INDICATING SUCH DAMAGE AND IMMEDIATELY FILE A CLAIM FOR DAMAGE WITH THE TRANSPORTATION COMPANY.

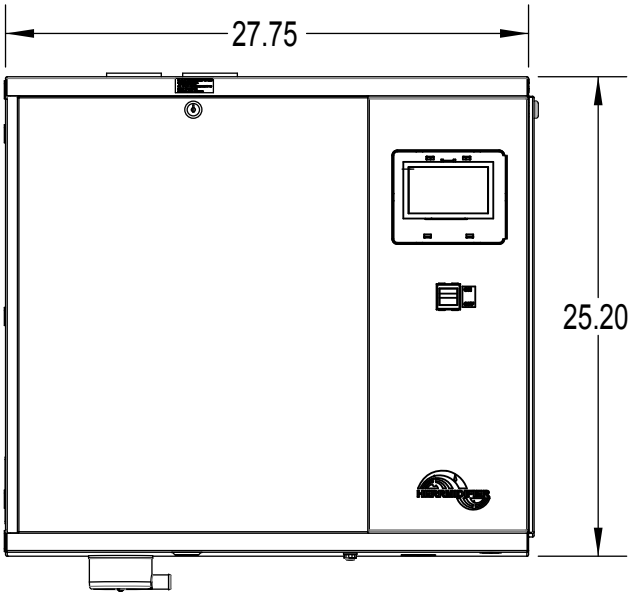
III. MODEL NUMBER NOMENCLATURE

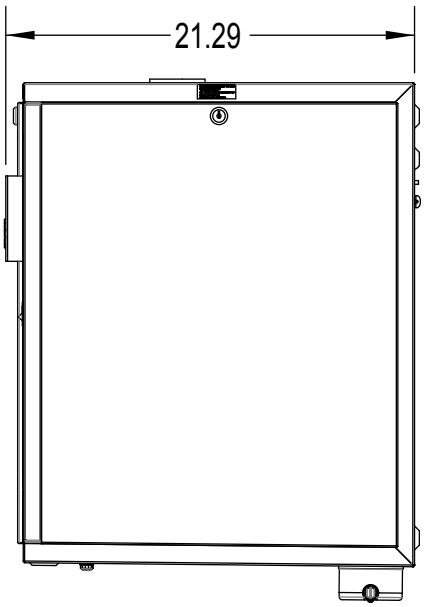
RE	*	*	*	*	*
Model Prefix	1	2	3	4	5

RE	S	P	480	3	45
Model Prefix	1	2	3	4	5

Position	Meaning	Option	Description
Prefix	Product Family	RE	RE Electric-to-steam
1	Size (number of tanks)	S	Single Tank
		D	Dual Tank
2	Control Type	P	Proportional Control
		I	Proportional + Integral
		H	Custom (on/off humidistat)
3	Voltage	208	
		240	
		380	
		415	
		480	
		600	
4	Phase	1	Single Phase
		3	Three Phase
5	Capacity (lb/hr)	30	(2) 5 KW heaters
		45	(3) 5 KW heaters
		90	(6) 5 KW heaters

IV. OVERALL UNIT DIMENSIONS





V. RECEIVING INSTRUCTIONS

Inspect shipment immediately upon arrival to determine if there is any noticeable freight damage to the packaging.

If any damage is found, the consignee should sign the bill of lading indicating such damage and immediately file a claim for that damage with the transportation company.

After the unit has been unpacked, check for any damage to the unit. Take notice that the drain cup mounted to the underside of the unit is not cracked or damaged.

VI. PRE-INSTALLATION INSTRUCTIONS

After the unit is received and unpacked, check the external data plate and all labels on the unit for electrical and operational specifications to confirm that these agree with those at point of installation.

Note: It is the owner's responsibility to provide any scaffolding or other apparatus required to perform emergency service or annual/periodic maintenance to this equipment.

VII. GENERAL SAFETY REQUIREMENTS

WARNING

Open all disconnect switches before installing the unit. Failure to do so could result in personal injury or death from electrical shock.

WARNING

Failure to comply with the general requirements may result in extensive property damage, severe personal injury or death.

WARNING
Never service any component without first disconnecting all electrical supplies to the unit or severe personal injury or death could occur.

CAUTION
Insure that all power sources conform to the unit requirements or damage to the unit may result.

These units have been designed for any tap, softened, de-ionized (DI) or reverse osmosis (RO) water applications. With tap/softened water, an adjustable drain cycle and skimmer cycle are provided to automatically drain away some water contaminants; reducing the amount of cleaning intervals. For DI/RO water, the system is virtually maintenance free. The skimming cycle may be deactivated via the touchscreen.

Follow installation instructions CAREFULLY to avoid creating unsafe conditions. All electrical wiring should be done and checked by a qualified electrician using copper conductors only. All piping connections should be made and leak-tested by a qualified service technician, per instructions in this manual.

Make certain that the power source conforms with to the electrical requirements of the unit. Disconnect power before installing or servicing the unit. If power disconnect is out of visual sight, lock it into open position and tag it to prevent unexpected application of power. Failure to do so could result in fatal electrical shock.

WARNING
Do not depend upon a unit control switch or other switch as the sole means of disconnecting power when installing or servicing the unit. Always disconnect power at main circuit breaker. Failure to do so could result in fatal electrical shock.

Special attention should be given to grounding this unit. To prevent the risk of electrocution, the unit must be securely and adequately grounded. This should be accomplished by connecting a grounded conductor from the service panel to the grounding lug located inside the control section of the unit. To ensure proper ground, a qualified field technician must test the grounding means.

Do not defeat safety interlocks, such as the high temperature limit or door interlock switch. Do not attempt to operate the unit without the doors installed.

In cases where property damage may result from malfunction of this unit, a backup system should be used in the event that the unit is not operational.

WARNING
Do not place unit in a location where service personnel can not safely service this equipment or personal injury could occur.

VIII. INSTALLATION

UNIT LOCATION & MOUNTING

The Herrmersion – RE unit is designed to be mounted on a wall and should be located as close to the dispersion means as possible (i.e. close to the duct being served with the steam). This will minimize energy losses.

The unit requires electrical and plumbing connections and should be mounted in such a way to facilitate access to these connections.

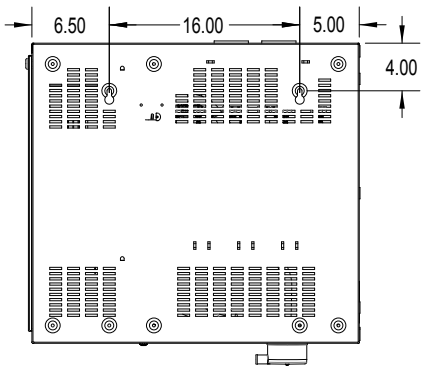
In order for the magnetic water level switches and the skimmer function to operate properly, the unit must be mounted level and plumb with reference to the front and top of the unit.

The cabinet is designed to safely dissipate heat to protect the electronics. Herrmersion – RE humidifiers, steam piping and any other accessories should be located in a manner that facilitates routine inspection and any necessary maintenance. The unit should not be located above (false ceilings) or around valuable property where a malfunction could cause damage. Minimum clearance around the cabinet must be maintained.

Minimum Access Requirements	
Left	2”
Right	24”
Top	12”
Bottom	10”
Front	36”

Minimum access is 36” to the front for periodic removal of the steam tank for service and 24” to the right side for access to the electrical components.

Four lag bolts (2) 5/16” and (2) ¼” are supplied for securing the unit to the wall. Install the top two lag bolts (5/16”) according to the dimensions shown below. Hang the unit on the wall, and then install the bottom two lag bolts (1/4”). Finally, secure all four lag bolts. Be sure the unit is level and mounted directly to a wall constructed of wood studs at least 2” thick (or equivalent).



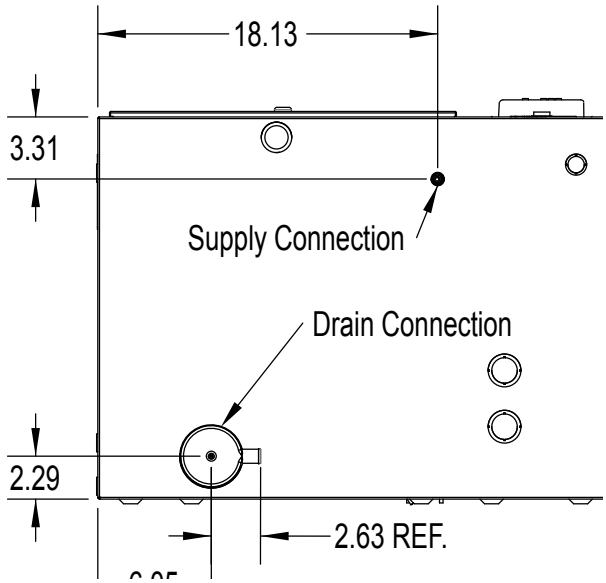
Mounting location must be capable of supporting the entire weight of the unit. Please refer to the following table for operating weight of the unit.

Model Number	Shipping Weight	Operating Weight
RESX-XXX-X-30	125 lbs.	237 lbs.
RESX-XXX-X-45	128 lbs.	240 lbs.
RESX-XXX-X-90	134 lbs.	246 lbs.

"X" denotes weight independent portion of model number

PLUMBING

To make the necessary connections for water fill, drain, and overflow/skim; the following steps are required. Refer to the illustration below for dimensional information regarding the fill & drain overflow connections.



1. Install an external shut-off valve between the water supply and the humidifier for ease in servicing the unit.
2. Connect the water supply to the bottom of the unit using 1/4" push-to-lock fitting. Supply water line should be sized so that line pressure loss is minimal.
3. A drain line should be extended from the drain air gap connection to a sanitary waste. A minimum 1" ID copper tube is recommended. If PVC is used, local codes may require lower drain water temperature; enable the drain tempering feature (see the control section of this manual).
4. The skim/overflow connection on the front of the tank only needs to be connected if the humidifier is being supplied raw water containing significant mineral concentrations. Deionized or reverse osmosis (technical waters) may be used and do not require the use of this feature. The skimming cycle allows floating debris to leave the tank through the overflow drain and will reduce maintenance intervals.
5. If using the skimmer connection, a trap (minimum 12") must be installed in the line so that steam can not escape from the skimming connection during operation.

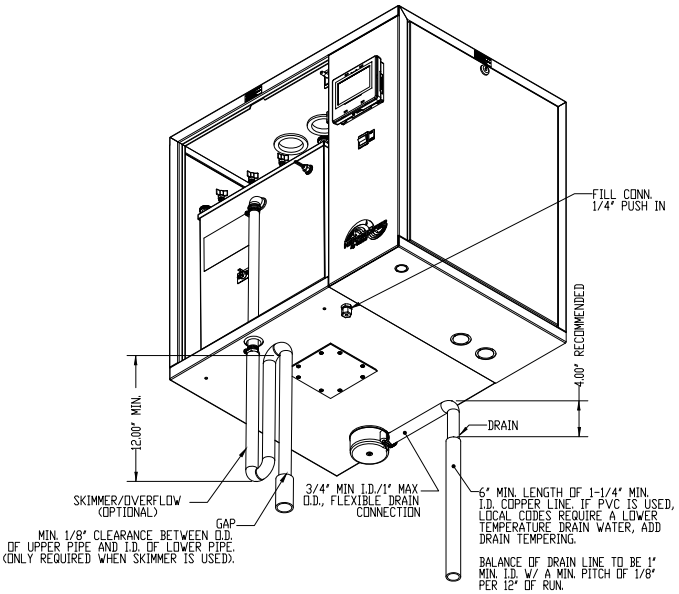
STEAM DISTRIBUTION

Herrmersion units may be used with stainless steel duct dispersion tube(s) for injecting steam directly into the ductwork. A minimum of 3 feet downstream clearance is required for many applications; however differing psychrometric conditions may require a greater distance. If required, consult the factory to design a guaranteed short absorption Herricane – CS Steam Distribution System.

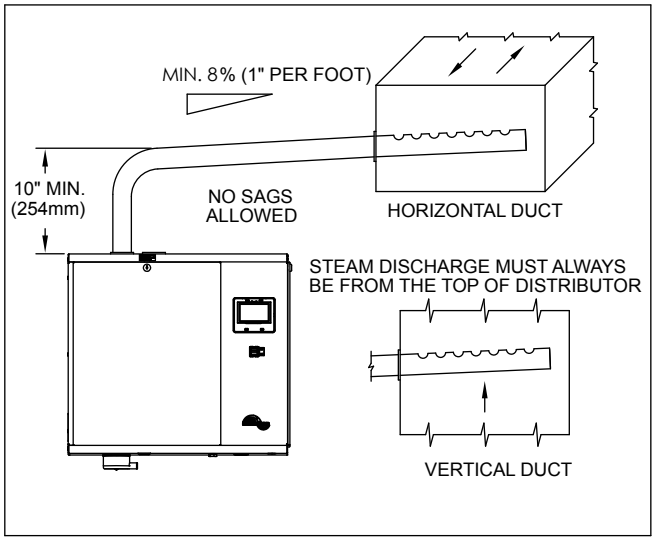
Mount the unit as close to the dispersion tube as possible. Use 1.5" Type L insulated copper whenever the length of run exceeds 20 feet. Do not exceed a 30 foot run as the capacity of the humidifier may be decreased by as much as 15% and the increased static pressure could cause problems with the fill system. The maximum duct static pressure is 5" W.C. Any insulation inside the bulk evaporation zone (inside the ductwork) should be removed.

Steam holes in standard factory supplied duct dispersion tubes are located 2" from the mounting plate and are designed for a maximum 1" thick duct wall. Consult the factory if special hole locations are required.

Do not install or mount standard dispersion tube(s) in a vertical position or in a vertical downflow airflow application. Special dispersion tube(s) are available from the factory for installations which require vertically mounted tubes or horizontal tube(s) with vertical downflow airflow.

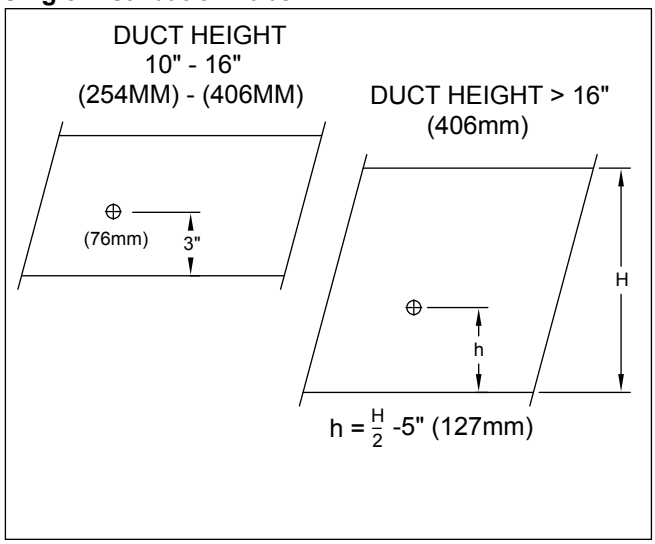


Standard Duct Distribution



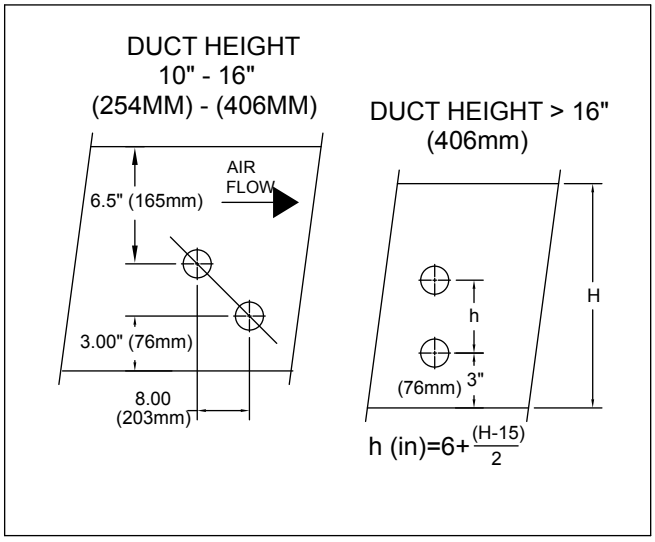
The rubber vapor hose carries the steam to the dispersion tube and condensate back to the unit tank. It must have an 8% (1" per foot) pitch back to the unit. Support the vapor hose so that it maintains proper pitch when the unit is in operation.

Single Distribution Tube



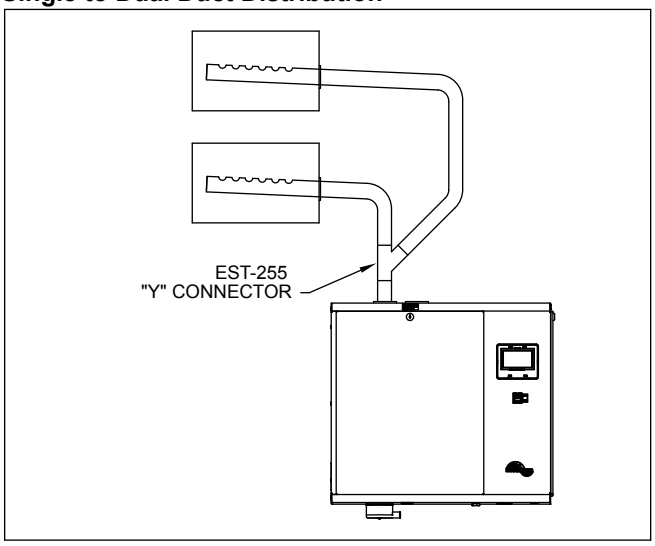
Units up to 45 pounds per hour of steam will use one steam distribution tube. Refer to the diagram above for mounting location.

Dual Distribution Tubes



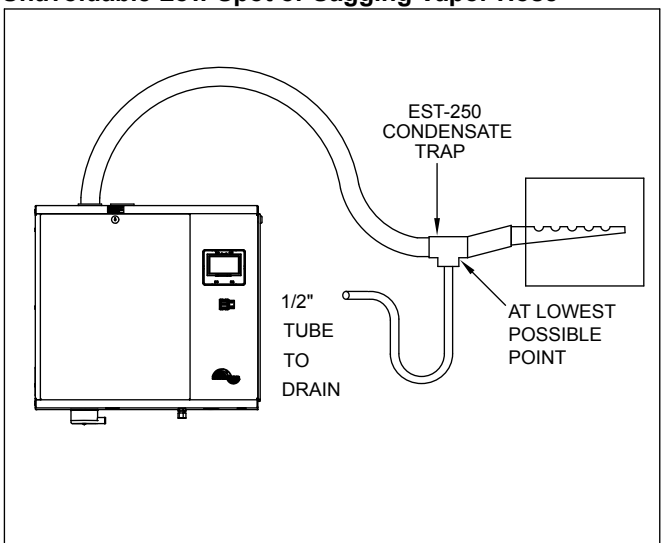
Units above 45 pounds per hour of steam will use two duct dispersion tubes. Refer to the diagram above for mounting location.

Single to Dual Duct Distribution



If you must split the discharge of one steam outlet into two ducts with the same static pressure, a "Y" connector is available from the factory. The length of vapor hose after the "Y" connector must be the same to ensure equal steam distribution.

Unavoidable Low Spot or Sagging Vapor Hose



If any low spots are present in the vapor line or the unit is mounted higher than the dispersion system, a condensate trap must be mounted at the lowest point in the line. This will act to remove any pooled condensate from the steam line and prevent spitting in the duct.

ELECTRICAL

WARNING

Open all disconnect switches before installing the unit. Failure to do so could result in personal injury or death from electrical shock.

Ensure that adequate service is available to carry 125% of the rated unit amperage. Field wiring of the main power supply is connected directly to the main power contactor located inside the right side electrical compartment. Please refer to the wiring diagram appropriate for the model Herrmersion you have (pages 10-15). A separate grounding lug is provided for the ground wire. This is also located inside the right side electrical compartment. Install short circuit & over-current protection in accordance with the National Electric Code, State, and local electrical codes.

A wiring diagram is located inside the control cabinet. The wiring between the control cabinet and the humidifier unit must be 105 °C rated wire. Use copper conductors only.

Please refer to the Control section in this manual for information regarding electrical connections to be made directly to the control system.

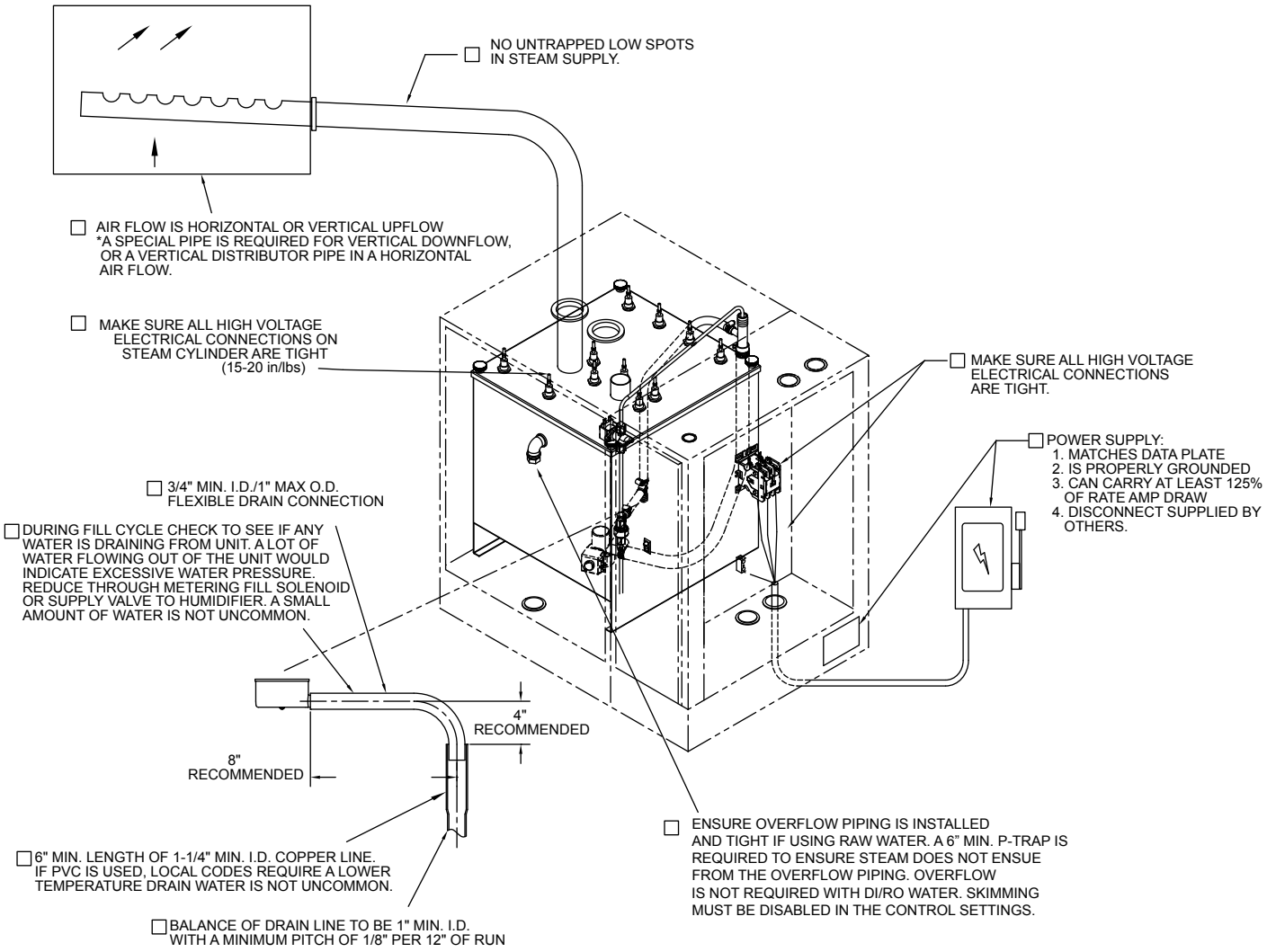
NOTE: Only qualified electrical personnel should perform installation and start-up procedures.

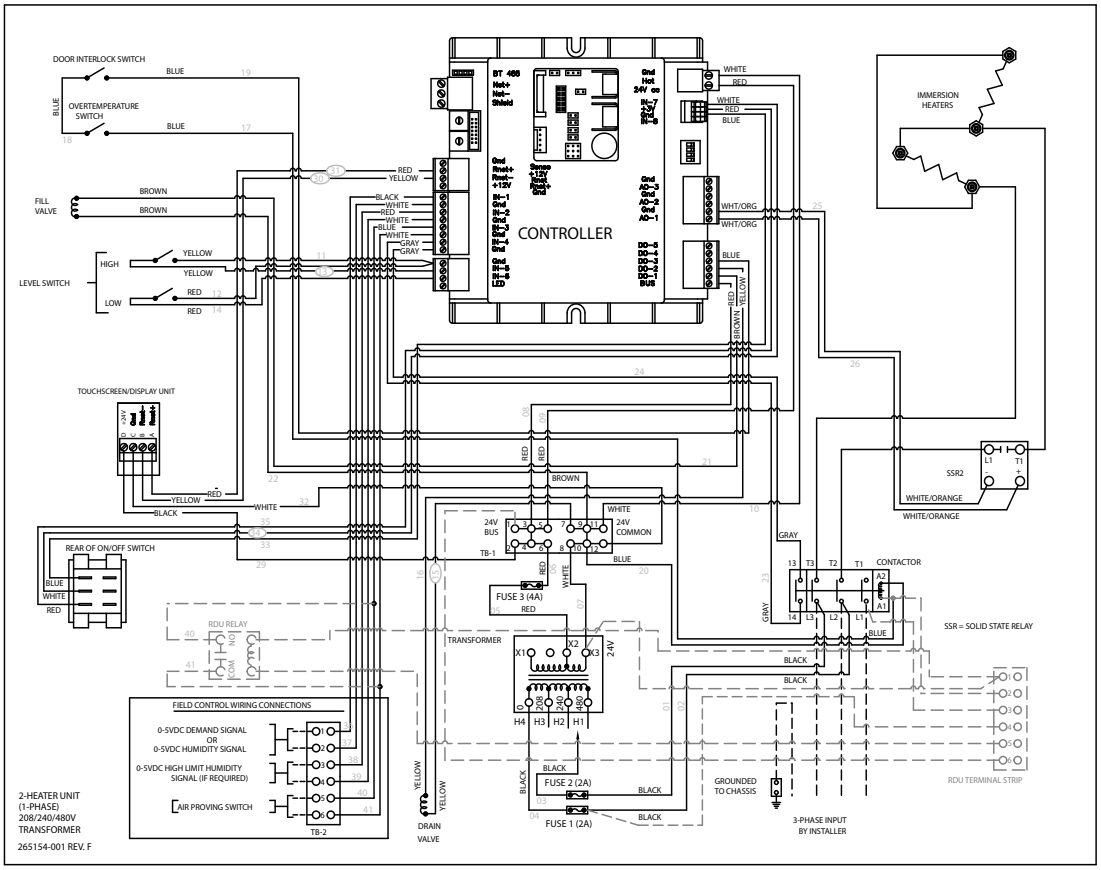
Model Capacity/Amperage Table

Unit Model	Max. Capacity	Voltage/ Phase	Qty. Elements	Total Amps
RES_-240-1-30	30 lb/hr	240/1	2	41.7
RES_-480-1-30	30 lb/hr	480/1	2	20.8
RES_-208-3-45	45 lb/hr	208/3	3	41.6
RES_-240-3-45	45 lb/hr	240/3	3	36.1
RES_-480-3-45	45 lb/hr	480/3	3	18.0
RES_-600-3-45	45 lb/hr	600/3	3	14.4
RES_-480-3-90	90 lb/hr	480/3	6	36.1
RES_-600-3-90	90 lb/hr	600/3	6	28.9

The following pages contain unit wiring diagrams. Please identify the applicable wiring diagram primarily by the number of heating elements present on your unit. Refer to the chart above. Single phase units are designed for 30 lbs/hr of steam output will have 2 heating elements. Three phase units are designed for 45 lbs/hr of steam output will have 3 heating elements, and max three phase units designed for max 90 lbs/hr of steam output will have 6 heating elements. The only other difference between these diagrams pertains to the control transformer. Please identify the appropriate wiring diagram for your unit on the following pages.

INSTALLATION CHECK LIST




DOOR INTERLOCK SWITCH
OVERTEMPERATURE SWITCH
FILL VALVE
LEVEL SWITCH
HIGH
LOW
TOUCHSCREEN/DISPLAY UNIT
REAR OF ON/OFF SWITCH
CONTROLLER
IMMERSION HEATERS
SSR2
WHITE/ORANGE
CONTACTOR
SSR = SOLID STATE RELAY
24V BUS
24V COMMON
TB-1
FUSE 3 (4A)
TRANSFORMER
RDU RELAY
FIELD CONTROL WIRING CONNECTIONS
0-5VDC DEMAND SIGNAL
OR
0-5VDC HUMIDITY SIGNAL
0-5VDC HIGH LIMIT HUMIDITY SIGNAL (IF REQUIRED)
AIR PROVING SWITCH
TB-2
DRAIN VALVE
FUSE 2 (2A)
FUSE 1 (2A)
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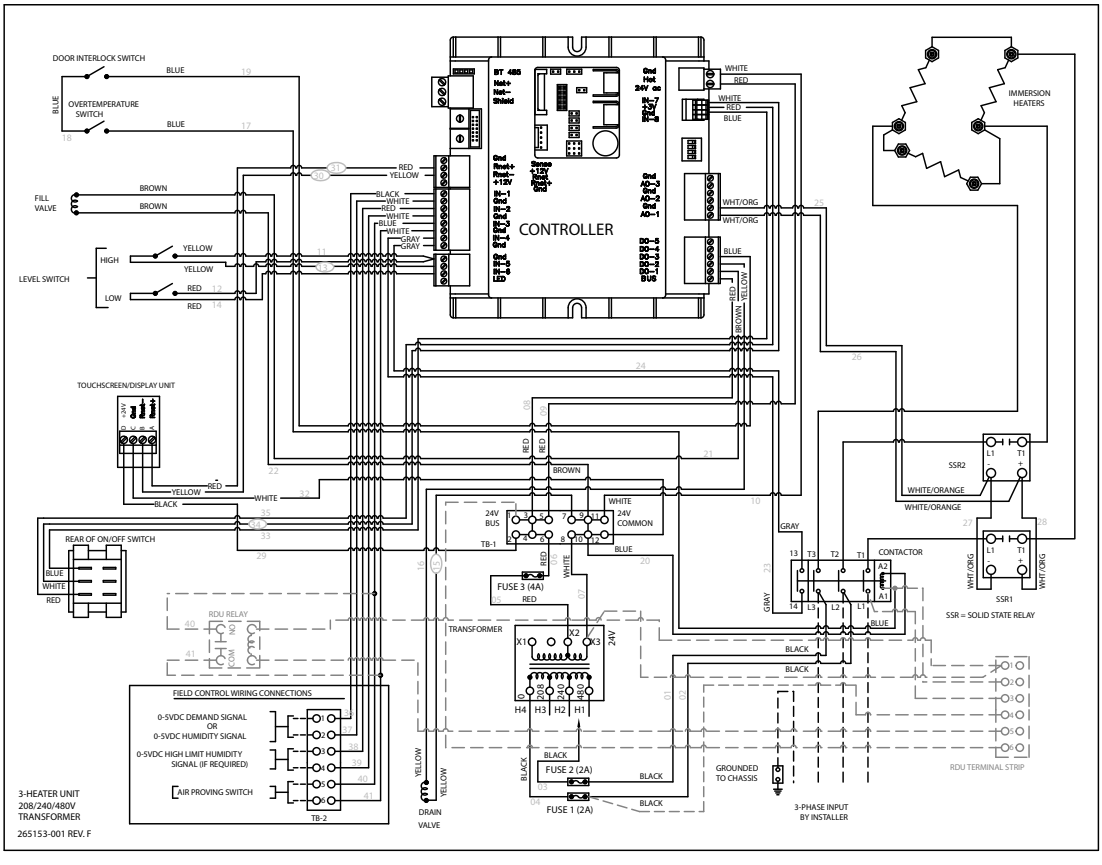
3-PHASE INPUT BY INSTALLER
RDU TERMINAL STRIP
2-HEATER UNIT
(1-PHASE)
208/240/480V
TRANSFORMER
265154-001 REV. F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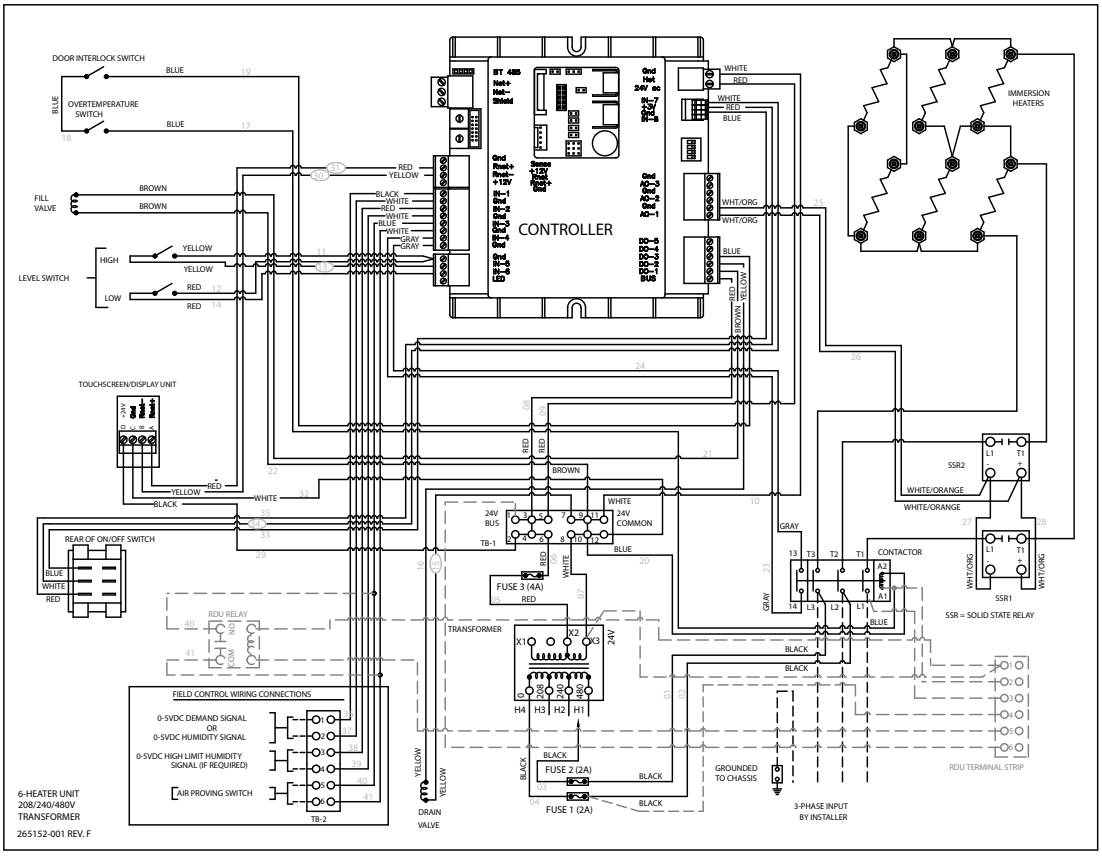
265153-001 REV. F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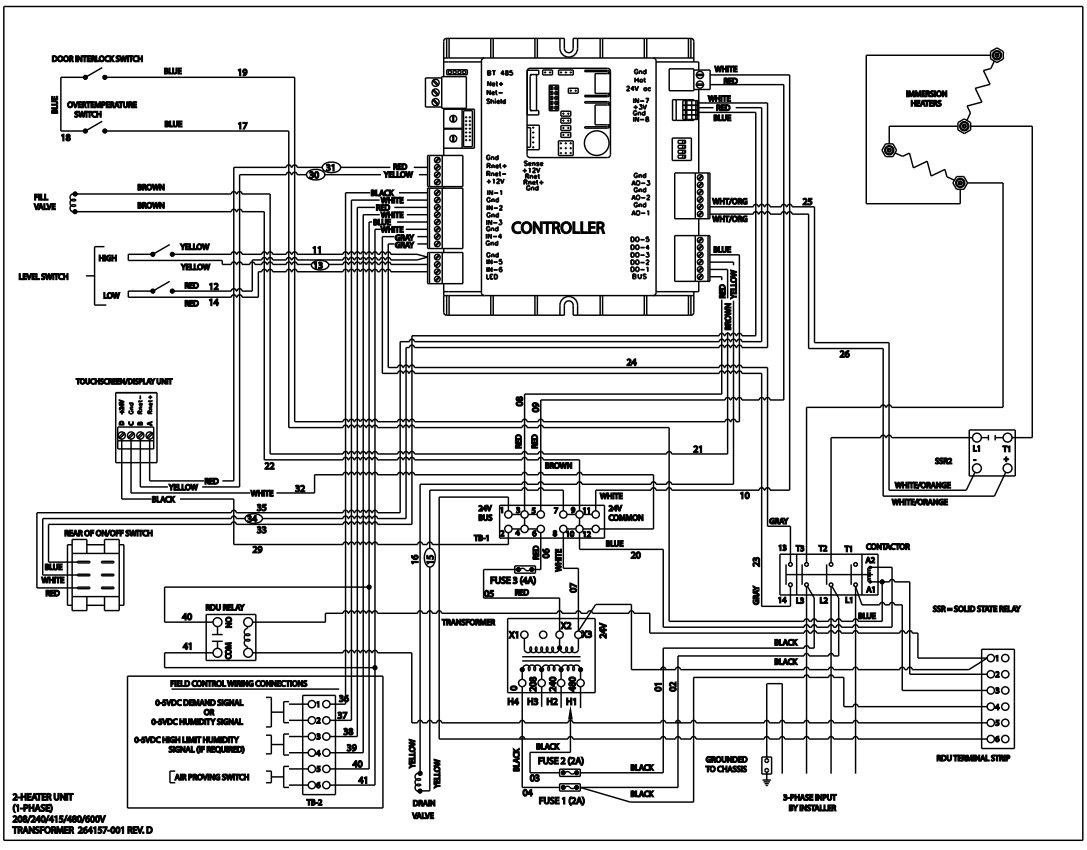
TRANSFORMER
265152-001 REV. F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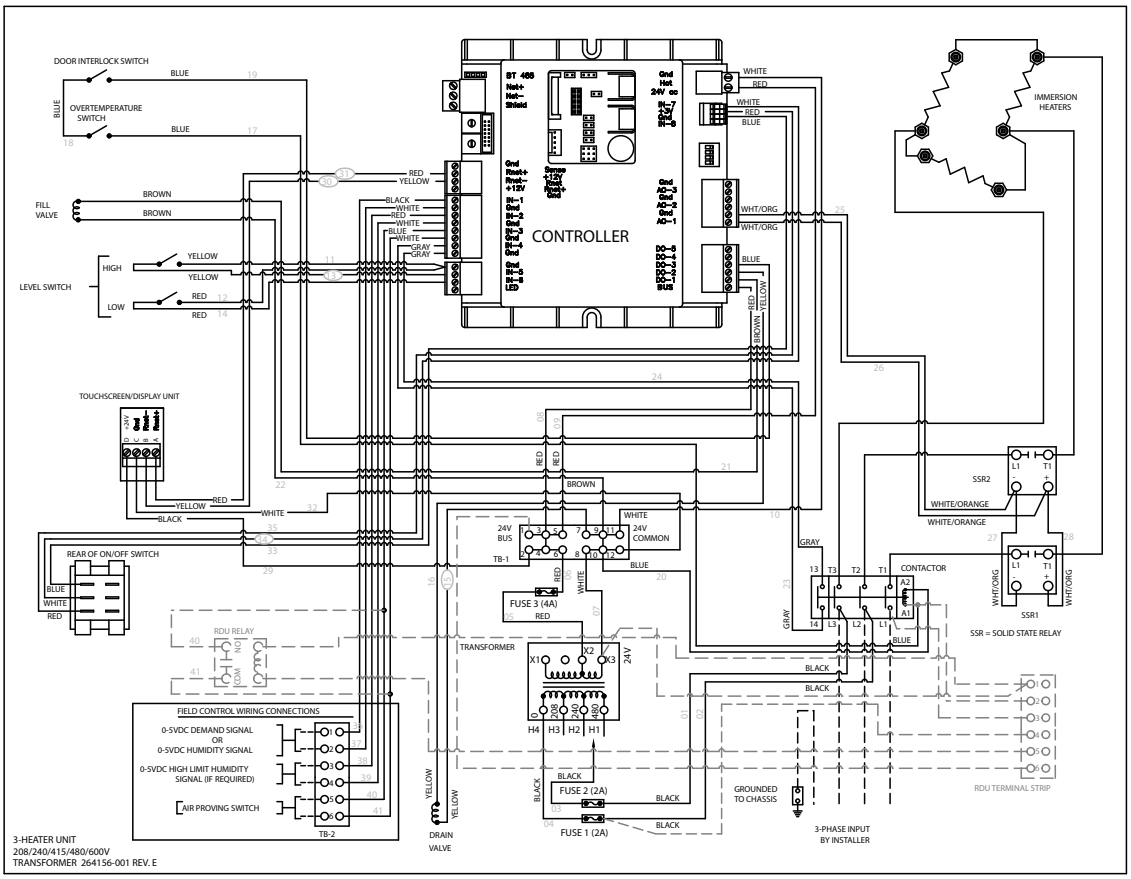
TRANSFORMER 264157-001 REV. D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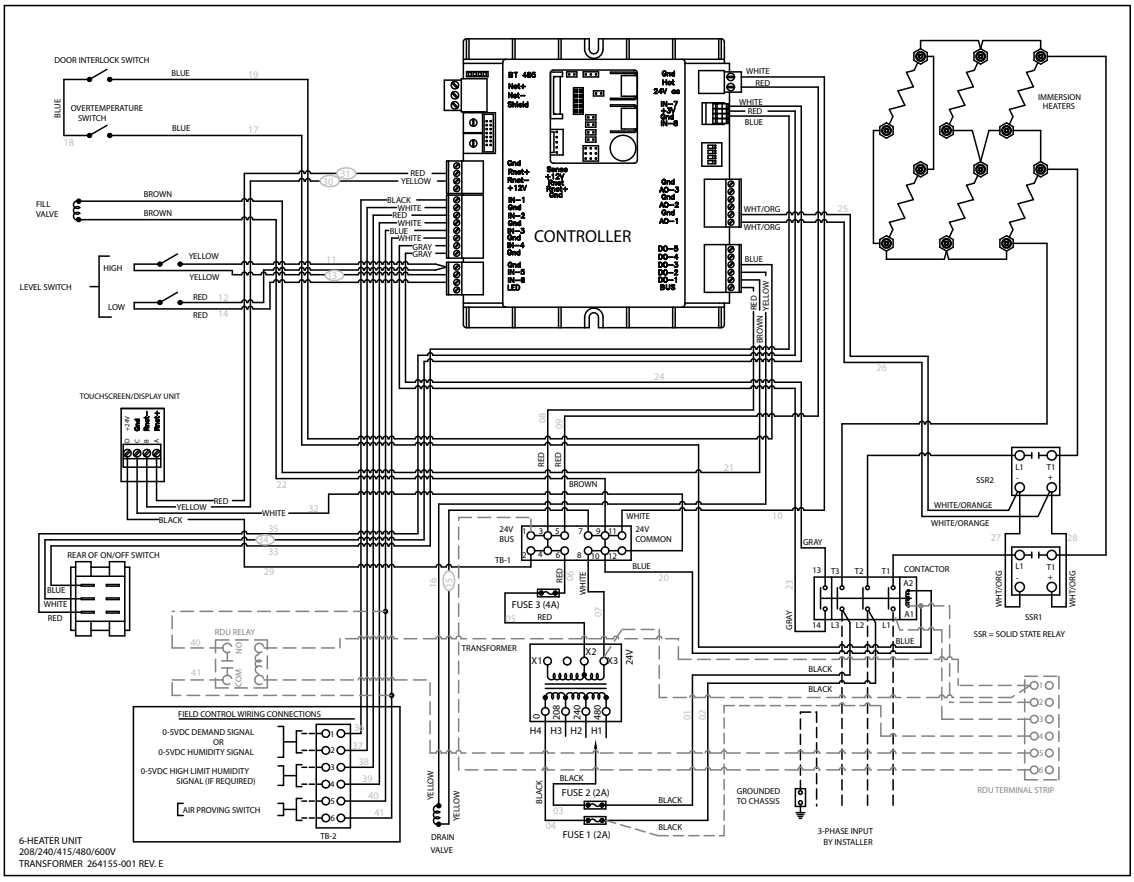
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IX. CONTROL SYSTEM

The Herrmersion – RE is supplied with a microprocessor based native BACnet controller that provides complete control of humidifier operations. The controller comes pre-programmed for optimum performance. System settings can be adjusted via the on-board touchscreen user interface. When connected to a building management system, the Herrmersion – RE communicates via some typical communication protocols; such as, BACnet or Modbus.

Display Unit

The display unit is a 4.3 inch backlit touchscreen display that provides easy access to system input information, system status, adjustable system parameters, and system alarms. An intuitive button selection allows simple navigation of the screen system. An alarm icon illuminates when the system encounters an alarm condition or enters an automatic drain cycle configurable through the touchscreen.

Standby Screen

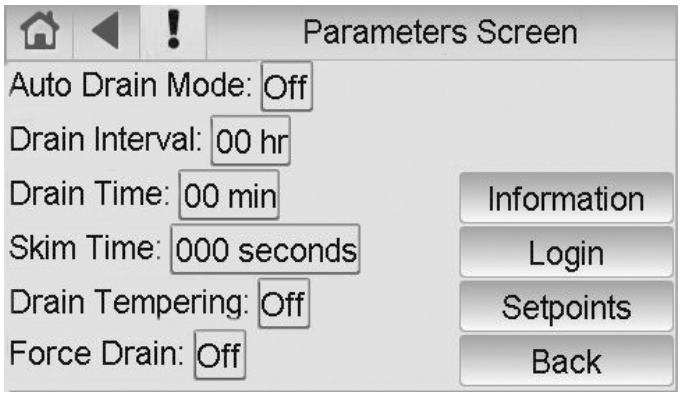
The Standby Screen is active only when the keypad is not being used. It displays basic information such as the unit model configuration, Operating Status, Output Percentage, date, and time. When the screen is touched, the unit will display the Home screen.

Home Screen

The Home screen displays a list of buttons which are links to other screens where the user can modify system parameters, check the status of inputs/outputs/alarm, configure set-points, set the clock, or access the factory configuration menu. The Set-points menu will only be displayed if the unit is configured for stand-alone P+I control. The Config menu will only be displayed if the operator is logged into the system as Administrator. The standard Administrator password is factory set to 2222. Setpoints and Parameters may only be changed if a User is logged into the system.

To exit a screen and return to the home screen, press HOME button that is shaped like a small house in the upper left part of any screen.

Parameters Screen

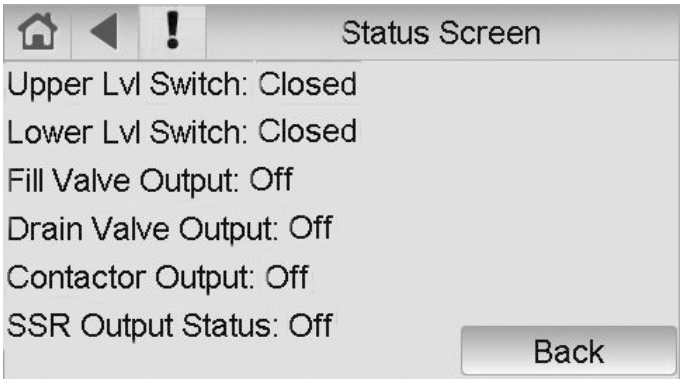


The Parameters menu contains a list of system parameters that may be configured by the operator. In order to modify the parameters, the user will have to press the LOGIN button and enter the password. If the unit is configured for P&I (stand-alone) operation, the Setpoints button will be visible; otherwise it will not be displayed.

- Auto Drain Mode – If ON, unit will drain periodically according to the values set by the Drain Interval & Drain Time parameters. If OFF, the unit will never initiate a timed drain. De-ionized or reverse osmosis water applications rarely require the Auto DRN feature to be enabled as the water contains very low dissolved solids.

- Drain Interval– This parameter is the interval at which the unit will initiate a timed drain. The default interval is factory set to 24 hours.
- Drain Time – This parameter is the amount of time the drain valve will remain open if a timed drain is active. The Drain Time is factory set to 5 minutes.
- Skim Time – Skim Time is the amount of time the unit will continue filling to skim the surface of the water every time a fill cycle is active. This feature may be set to zero if the system is operating with very clean water; such as de-ionized water. The factory Skim Time is 60 seconds. Low water pressure may require that this setting be increased so that the unit will skim.
- Drain Tempering – This parameter will activate the fill valve anytime the drain valve is active. This feature acts to lower the drain water temperature by diluting the drain water with cold fill water. Water ensuing from the skimmer port on the tank is not tempered. An external drain water tempering device may be required. Please consult the factory for information about the Drain Tempering Reservoir, available separately.
- Force Drain – This parameter is used to manually initiate a drain cycle. The drain valve will remain active until this parameter is set to OFF by the operator.
- The Back button may be used to return to the previous screen.

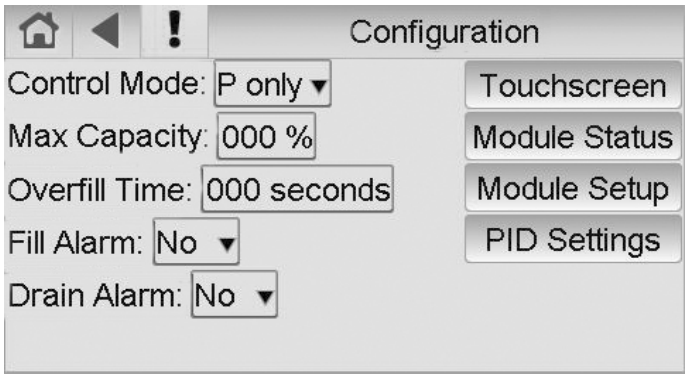
Status Screen



The Status screen contains a list of system inputs/outputs that may be monitored by the operator.

- Input – This displays the percentage of demand when the unit is configured for Proportional only operation. The demand signal is received from a building management system or from a remote humidity controller. This displays the controlled relative humidity percentage when the unit is configured for stand-alone P+I control. The signal is received from a humidity transmitter mounted in the controlled environment.
- Output – This displays the percentage of maximum unit output.
- Air Proving Switch – This displays whether the air proving switch is OPEN or MADE. OPEN indicates a lack of airflow. MADE indicates that the switch contacts are closed indicating that airflow is present.
- Contactor Output – This displays ON/OFF status of the main power contactor. This is monitoring the status of the auxiliary contact on the main power contactor.
- Drain Valve Output – This displays the ON/OFF status of the drain valve output.
- Fill Valve Output – This displays the ON/OFF status of the fill valve output.
- Upper Level Switch – This displays the OPEN/MADE status of the upper water level float switch. Each time this switch opens, the unit will act to refill the tank for continued humidification if a demand is present.
- Lower Level Switch – Displays the OPEN/MADE status of the lower water level float switch. This switch must be MADE in order for the heating elements to be energized.
- High Humidity Limit Input – Displays the relative humidity percentage being sensed by the High Limit humidity sensor. This item will not show in the menu unless the unit is configured for stand-alone P+I control. If the unit has a High Limit humidistat in lieu of a transmitter, this menu item will read High Limit and the status will read OPEN or MADE to indicate the status of the humidistat (switch).

Configuration Screen



The Configuration Screen allows the operator to adjust system parameters that the typical operator usually would not need to adjust under normal circumstances. The unit type may be selected as P or P&I. A “P” unit operates according to a 0-5VDC demand signal sent from another control system; such as a building management system or DDC controller. A unit configured for “P&I” is ready to accept 0-5VDC input signal(s) from a humidity transmitter and a high limit humidity transmitter. The unit will then modulate the unit according to the setpoint entered by the operator.

- P/I Control – The Administrator may change the unit control type so that the unit will react to a demand signal from an external control system or the unit can control itself according to an operator setpoint by reacting to a signal from a humidity transmitter connected directly to the control board.
- Max. Capacity - The Administrator may adjust the maximum output percentage of the unit.
- Overfill – The Administrator may adjust the length of a fill cycle using this configuration parameter. Default = 60s. This is the length of time the fill valve will remain

open during a fill cycle plus the skim time set in the Parameters menu.
- Interval – This allows the Administrator to change the interval at which the PID loop calculates and updates the unit output. Default = 60s. Increasing this time will slow down the reaction time of the unit. Decreasing this time will cause the unit to react faster to changes in humidity level.
- P-Gain – The Proportional Gain adjusts the control band in which the unit will begin to adjust capacity. As the sensed humidity approaches the setpoint, the unit will reduce the output percentage.
- I-Gain – The Integral Gain changes how the controller will adjust the output percentage as time passes during operation. If the setpoint is not achieved quickly enough, increasing this gain will cause the unit to increase the output percentage.
- Deadband – This may be adjusted to allow for a range of input percentage or setpoint where no action is to be taken. Default = 0%.
- Ramp Time – This Ramp Time allows the system to be slowed by setting a minimum allowable time for the unit to ramp from 0 to 100% output. Default = 0%.

Alarm Screen

The Alarm Screen allows the operator to check the status of the system alarms. This screen can scroll through the currently active alarms; as well as alarm conditions that have returned to normal. The date/time of the alarm is recorded when the alarm goes active and when the alarm returns to normal. Some alarms will lock out the unit and will require a manual reset. This is performed by turning the unit ON/OFF switch to the OFF position, waiting until the red LED goes out, and then returning the switch to the ON position. Timed Drain operations will illuminate the alarm LED. The drain will show up as an active alarm while the unit is draining and return to normal upon completion of the drain cycle. This allows the control system to date/time stamp the drain operation so the user may refer to it if needed. Upon completion of the timed drain the unit will return to normal operation.

Alarm Descriptions

The following alarm messages may appear on the Alarm screen. Refer to the specific alarm message below for a description of what circumstances will cause the alarm to become active.

- AF Switch Open: Upon a call for humidity or anytime during the operation of the humidifier, if the air proving switch opens, the unit will cease to produce steam until the air proving switch closes again; indicating that airflow is present again.

- EOS Drain: If a call for humidity is absent for greater than 72 hours, the humidifier will drain the tank and shutdown. Upon a new call for humidity, the unit will refill the tank and commence normal operation.

- High Humidity: If the high limit humidity transmitter value falls below the HL Fault setpoint (in CONFIG menu), the unit will cease to produce steam. This will indicate a problem with the sensor only. The default setting is 5% rh. This alarm can only become active on units configured for proportional + integral control (RES-I).

- Low Humidity: If the controlled humidity falls below the low humidity setpoint, the unit will cease to operate until the problem is corrected and the alarm is acknowledged and reset via the ON/OFF switch.

- Slow Drain: If during a timed drain cycle, the upper water level float switch remains closed. This alarm will become active thirty seconds before the end of the timed drain cycle. The unit will cease to operate. The operator should verify that the drain line is clear by invoking a manual drain cycle. If the drain is open, the alarm may be reset via the ON/OFF switch. The unit will return to normal operation.

- Slow Fill: During any fill cycle, if both water level float switches do not close within thirty minutes, this alarm will become active. This may be caused by low water pressure, an obstruction in the fill line, or a failed fill solenoid valve. The unit will cease to operate until the alarm is reset via the ON/OFF switch.

- Timed Drain: During any timed drain cycle, the alarm light will illuminate for the duration of the drain cycle. This is to provide indication only. The drain cycle will be time stamped and stored in the ALARM screen of the display module. No user intervention is needed. The unit will commence normal operation upon the completion of the drain cycle. Timed drain cycles may be deactivated via the keypad.

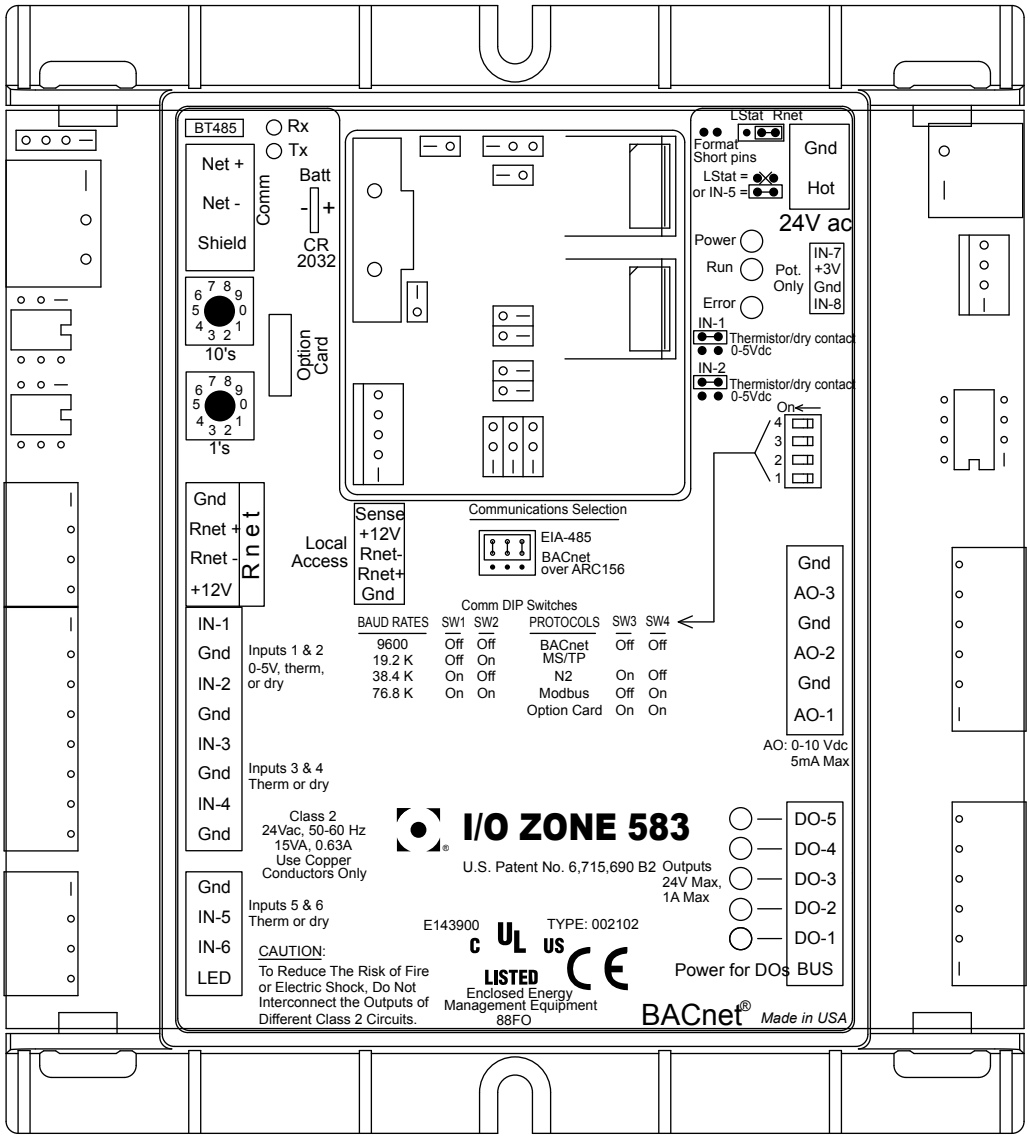
- Water Lvl Err: This alarm indicates that the float switches may be dirty and stuck open or closed. If the upper water level float switch is closed and the lower water level float switch is open, this alarm will become active. The tank should be cleaned and the float switches checked for proper operation. The alarm may be reset via the ON/OFF switch.

X. Control Module Specifications:

Power	24 Vac ± 10%, 50-60 Hz, 18 VA power consumption (24 VA with Bacview attached), 26 Vdc (25 V min, 30 V max), Single Class 2 source only, 100 VA or less
Physical	Rugged GE C2950 Cycoloy plastic
Operating Range	-0° to 130°F (-18.5° to 54.4°C); 10 to 90% relative humidity, non-condensing
Digital Outputs	5 digital outputs, relay contacts rated at 1 A resistive @ 24 Vac, configured as dry contact, normally open
Analog Outputs	3 analog outputs, rated as 0-10Vdc, 5mA (max). 8 bit D/A resolution
Universal Inputs	8 universal inputs. Inputs 1-6 configurable as thermistor or dry contact; inputs 1 and 2 also configurable as 0-5 Vdc type inputs; inputs 7 and 8 are reserved to use with 1k-10 koHm adjustment potentiometers. Resolution of 10 bit A/D.
Communication Ports	Port 1: Jumper configurable for ARCNET or EIA-485 communication. In ARCNET mode, the port speaks BACnet (at 156k bps). In EIA-485 mode, the communication protocol and baud rate desired are DIP switch selectable between BACnet MS/TP, Modbus RTU, or N2. Rnet port: Interface with a BACview5, BACview6 , RS sensors, or local laptop
Optional Card Port	LonWorks Option Card for connection to Free Topology LON networks (TP/FT-10 Channel)
Status Indication	Visual (LED) status of serial communication, running, errors, power, and all digital outputs
Battery	Battery CR123A has a life of 10 years with 720 hours of cumulative power outage
Protection	Built-in surge transient protection circuitry. Module protected by internal solid state Polyswitches on incoming power and network connections. Polyswitches do not need to be replaced as they will reset themselves once the condition that caused them to “trip” returns to normal.
Listed by	FCC Part 15 - Subpart B - Class A. Pending listings at the time of publishing this document: UL 916 (PAZX), cUL C22.2 No. 205-M1983 (PAZX7), CE (1997). BTL (BACnet Test Labs) - BACnet Advanced Application Controller (B-AAC) http://www.bacnetinternational.net/btl/index.php?m=47

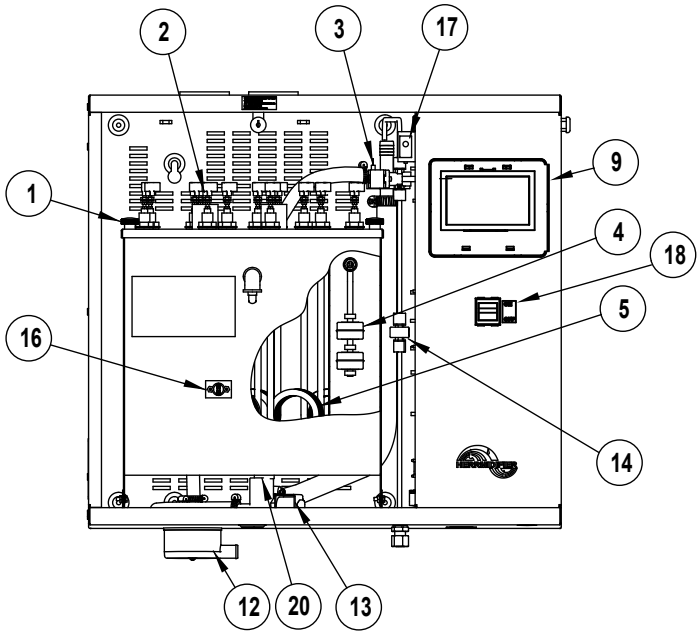
Display Module Specifications:

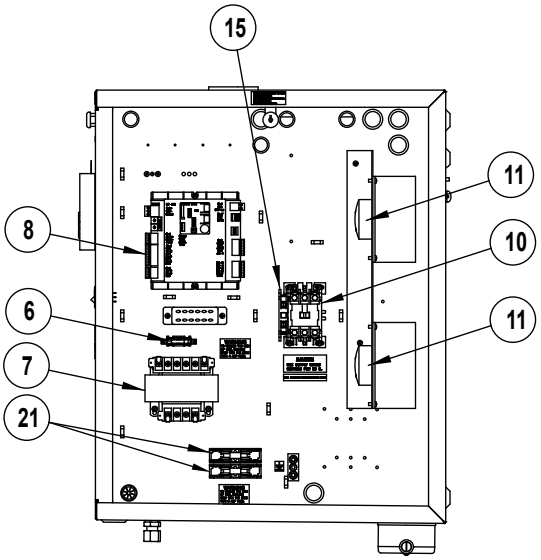
Power	24VAC, 5VA, 50-60 Hz, Class 2
Physical	4.3” resistive touchscreen color LCD display with backlighting WQVGA 480x272 px.
Operating Range	-4° to 140°F (-20°C to 60°C), 10%-90% RH non-condensing
Listed by	UL 916 (PAZX), CE, FCC Part 15 - Subpart B - Class A.
Mounting	Wall or panel mounting; remote mounting up to 500 feet.
Dimensions.	5 - 7/16” (width) by 4 -1/16” (height) by 1 - 3/8” (thick) 138mm (width) by 116mm (height) by 30mm (thick).


BT485
Rx
Tx
Net +
Net -
Shield
Comm
Batt
CR 2032
10's
1's
Option Card
LStat Rnet
Format Short pins
LStat = or IN-5 =
Gnd
Hot
24V ac
Power
Run
Error
Pot. Only
IN-7 +3V Gnd IN-8
IN-1
Thermistor/dry contact 0-5Vdc
IN-2
Thermistor/dry contact 0-5Vdc
On
Gnd
Rnet +
Rnet -
+12V
Rnet
Local Access
Sense +12V Rnet- Rnet+ Gnd
Communications Selection
EIA-485
BACnet over ARC156
Comm DIP Switches
BAUD RATES SW1 SW2
9600 Off Off
19.2 K Off On
38.4 K On Off
76.8 K On On
PROTOCOLS SW3 SW4
BACnet MS/TP Off Off
N2 On Off
Modbus Off On
Option Card On On
Gnd
AO-3
Gnd
AO-2
Gnd
AO-1
AO: 0-10 Vdc 5mA Max
IN-1
Gnd
IN-2
Gnd
IN-3
Gnd
IN-4
Gnd
Inputs 1 & 2 0-5V, therm, or dry
Inputs 3 & 4 Therm or dry
Class 2 24Vac, 50-60 Hz 15VA, 0.63A Use Copper Conductors Only
I/O ZONE 583
U.S. Patent No. 6,715,690 B2
Outputs 24V Max, 1A Max
DO-5
DO-4
DO-3
DO-2
DO-1
Power for DOs
BUS
Gnd
IN-5
IN-6
LED
Inputs 5 & 6 Therm or dry
E143900
TYPE: 002102
LISTED
Enclosed Energy Management Equipment 88FO
CAUTION:
To Reduce The Risk of Fire or Electric Shock, Do Not Interconnect the Outputs of Different Class 2 Circuits.
BACnet®
Made in USA

XI. REPLACEMENT PARTS

No.	Part Number	Description	Comments/Application
1	155787-001	Knurled Knob	For top tank access
2	155793-001	3-Prong Knob	Tank wiring connector
3	GT-118	Fill Solenoid	With metering screw
4	265136-001	Float Switch Assembly	(2) floats
5	259895-002	5KW Heater 208VAC	
5	259895-004	5KW Heater 240VAC	
5	259895-001	5KW Heater 480VAC	
5	259895-003	5KW Heater 600 VAC	
6	EST-120	Fuse	4 amp
7	259097-001	Control Transformer	208/230/460 Pri.
7	255991-001	Control Transformer	208/240/380/460/600 Pri.
8	265135-001	Main Control Board	* Must be programmed before shipment need model #, control scheme & limit scheme)
9	269597-001	Touchscreen Display	
10	EST-109	Contactor	50 Amp rated
11	265005-001	Solid State Relay	50 Amp rated
12	EST-1225-KIT	Drain Reservoir Kit	Under unit
13	GT-142	Drain Valve	Under tank
14	GT-153	Fill Strainer	In fill line before solenoid
15	EST-109-2	Auxiliary Contact	Contactor side mount
16	265004-001	High Temp. Limit Switch	On front of tank (235F)
17	1845	Door Interlock Switch	Top-right tank compartment
18	EST-112	Control Switch	On front of unit
19	EST-428-1	Tank Strainer	(not shown)
20	EST-1060-3	O-Ring	(not shown) on tank stem
21	EST-354	Fuse	2 Amp





XII. MAINTENANCE RECORD SHEET

Maintenance Record Sheet

Installation Date (MM/DD/YYYY)		
Model #:		
Serial #:		
Service Dates (below):		
Notes:		

TRION®

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Form No. 165158-001 Rev. 07/18