



READ & SAVE THESE INSTRUCTIONS

Herrmidicool TM
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 24 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 CAREFULLY 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.

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.

DANGER OF ELECTRIC SHOCK

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

DANGER OF WATER LEAKS

THE HUMIDIFIER AUTOMATICALLY AND CONSTANTLY FILLS/DRAINS CERTAIN QUANTITIES OF WATER. MALFUNCTIONS IN THE CONNECTIONS OR IN THE HUMIDIFIER MAY CAUSE LEAKS. A DRAIN PAN IS RECOMMENDED UNDER THE UNIT TO PROTECT PROPERTY FROM DAMAGE IN THE CASE OF WATER LEAKAGE OR SPILLAGE.

DANGER OF BURNS

THE HUMIDIFIER CONTAINS HIGH TEMPERATURE COMPONENTS AND DELIVERS STEAM AT 100°C/212°F.

Important

- The installation of the product must include an earth connection.
- The environmental and power supply conditions must conform to the values specified on the product rating labels.
- The product is designed exclusively to humidify rooms either directly or through distribution systems (ducts).
- Only qualified personnel who are aware of the necessary precautions and able to perform the required operations correctly may install, operate, or carry out technical service on the product.
- Only water with the characteristics indicated in this manual must be used for steam production.
- All operations on the product must be carried out according to the instructions provided in this manual and on the labels applied to the product. Any uses or modifications that are not authorized by the manufacturer are considered improper.
 Seller declines all liability for any such unauthorized use.
- Do not attempt to open the humidifier in ways other than those specified in the manual.
- Observe the standards in force in the place where the humidifier is installed.
- Keep the humidifier out of the reach of children and animals.
- Do not install and use the product near objects that may be damaged when in contact with water (or condensate).
 Seller declines all liability for direct or indirect damage following water leaks from the humidifier.
- Do not use corrosive chemicals, solvents, or aggressive detergents to clean the inside and outside parts of the humidifier, unless specifically indicated in the user manual.
- Do not drop, hit, or shake the humidifier, as the inside parts and the linings may be irreparably damaged.

I. INTRODUCTION

The Herrmidicool system is an in-duct air/water atomization system designed to introduce atomized water into the airstream. The unit uses a native BACnet controller that responds to an analog 0-5 VDC demand signal to start the humidification process. An input for proving airflow prior to starting the system is provided as well as alarm indication. The touchscreen display allows the operator to interact with the system. Network communications are available to allow system monitoring and control.

II. OPERATIONAL CHARACTERISTICS

Upon an increase in demand signal above 20%, the controls will energize the compressed air solenoid valve. An air pressure switch will close if sufficient air pressure is present to allow for proper atomization. When the air pressure switch contacts close, the water solenoid valve will energize and atomization will begin. Each nozzle is equipped with a clean out pin that helps keep the water orifice clear of mineral build-up each time the nozzle is cycled. Periodically, the controls will de-energize the water solenoid valve in order to actuate the clean-out pin to keep the water orifice clear. During operation if the air proving switch contacts open, the system will stop. If the system on/off switch is opened the system will stop. See the Controls section for additional details.

Allowable Operating Conditions

Ambient Temperature: 40°-120°F (4°-50°C) Ambient Relative Humidity: 0% - 90% Line Voltage: -15% to +10% Nominal

Frequency: 50/60 Hz

Supply Air Pressure: 60-200 psig

Supply Air Quality: Filter clean and dry to 35°F dewpoint.

Supply Water Temperature: 40°-100°F (4°-38°C)

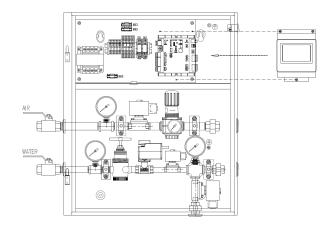
Supply Water Pressure: 50-100 psig

Supply Water TDS less than 50 ppm: Consult Factory with water analysis and application data prior to selecting equipment.

NOTE: If units are mounted in outdoor enclosures, conditions inside enclosure must be maintained as listed above.

III. MOUNTING

The Herrmidicool system consists of two basic components: the control cabinet and the atomizing-head manifold assembly. The control cabinet should be mounted so that the water outlet of the control cabinet is level or below the water manifold in the air handler. Air vents must be mounted on any loops necessary to connect the cabinet to the manifolds.



Minimum Cabinet Clearances:

Top: 1" Bottom: 12" Sides: 2" Front: 4"

32" Working Area Clearance

Hang the cabinet on the wall or unistrut mounting frame. Two keyhole slots and two additional mounting holes are provided. Be sure the unit is level and mounted directly to the wall to wood studs as least 2" thick (or equivalent). The atomizing head manifolds consisting of air manifolds, atomizing heads, water manifold and unistrut brackets are to be located as shown on specific layout drawings with each job. Typically, a "unistrut" style mounting structure is field fabricated to support the atomizing manifold.

Manifold Installation:

- 1. Install the air/water manifolds per the layout drawing included with this package.
- 2. Use only copper, plastic or stainless steel piping as specified in your print package.
- 3. Keep runs between control cabinets and heads as short as possible.
- 4. Piping runs between control cabinets and manifolds should be as direct as possible. If loops are unavoidable, automatic air vents must be supplied and installed.

IV. PLUMBING

Each cabinet has an air inlet, water inlet, air outlet(s), water outlet(s) and a drain. All air connections are $\frac{1}{2}$ " and all water connections, including drain, are $\frac{1}{2}$ ".

- 1. Drain loop must extend 3" above highest location of heads or water outlet port on cabinet. This loop allows water pressure to be relieved on system shutdown.
- 2. Piping from control cabinet to manifolds without draining should be $\frac{3}{4}$ " for the air and $\frac{1}{2}$ " for the water piping unless otherwise shown on your job specific drawings provided for your project.

WARNING

Do not mount any controls inside the unit or tap power from any location in the unit, except as stated in these instructions. Do not place objects near the cabinet. Do not attach to dry wall without studs.

NOTE:

Inlet water pressure must be in range of 50-100 psig. Consult the factory if you are outside this range. Supply Power

- 1. Supply power of 120 VAC, 5 amps is required.
- 2. Field wiring of the main power supply is connected directly to the line power-filter in the control cabinet. A ground lug is provided for the ground wire.
- 3. Install external overcurrent protection and provide wiring in accordance with the NEC, state and local codes.
- 4. Power supply must be "clean;" free of spikes, surges and sags; +10%, -15% of nominal. Ground should be true earth ground.

CAUTION

Any minerals that are in the water will be injected into the airstream. Your application/process may require some means of air or water filtration to complete a successful application. Consult the factory if you should have any questions. Softening the water only increases the TDS level.

V. CONTROLS

Controls may be supplied by the factory or others. The following information applies to all controls factory supplied or furnished by others. All external electrical control circuits are to be connected to the unit using the terminal strip located in the electrical compartment. Field wiring from humidistat to humidifier and between safety devices, such as high limit humidistat and air proving switches, should be 18 AWG stranded or 20 AWG solid wire. Wall devices should be mounted at a height similar to that of a typical thermostat and should be located in an area that will provide good representation of the overall space being humidified. Do not mount wall devices directly in the air stream of a supply grille or room distribution unit.

Duct control devices should be mounted in a location where the humidity and temperature are uniform, usually the return duct.

Duct high limit devices should be mounted downstream of the evaporative surface far enough that under normal conditions in the air stream, the water has been completely evaporated, typically 10 ft. The device should be located such that it can sense humidified air as it approaches saturation. Do not mount in dead air spaces such as inside of comers.

Air proving devices should be mounted so that they sense airflow (or the absence of it). Wire the device so that it closes when airflow is present and will open when there is no airflow. The purpose of the device is to prove that airflow is present

before mist is distributed into the duct.

Your application specific wiring diagram, included with this package will detail exact filed wiring connection points for your unit.

Control Circuit Connections

On/Off (OPTIONAL – Limited Application)

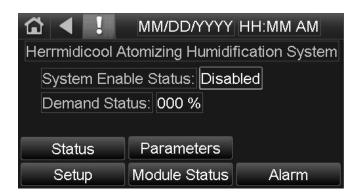
- 1. Control Input Unit will operate with any two-position device. Demand for humidity will close the contact.
- 2. Limit Input Unit will operate with any two-position device. The humidistat contact will open on humidity rise.

VI. CONTROL BOARD OPERATION

The Herrmidicool system is equipped with a native BACnet controller. When power is applied to the system, the display turns on and displays the STANDBY screen (shown below). The STANDBY screen displays System Enable Staus (enabled or disabled), the System Output, and the cumulative hours of runtime. The number indicated represents the total number of hours that the system solenoid valves have been energized and spraying water for humidification.



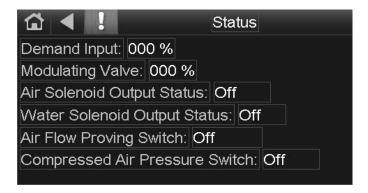
Touching the screen anywhere will take you to the HOME screen (shown below).



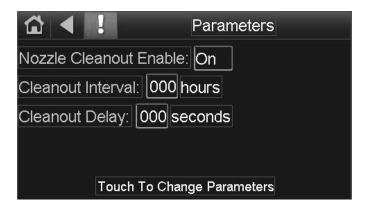
The HOME screen is a gateway to other screens. The system may be Enabled or Disabled by touching the box next to System Enable Status. A window will pop-up and the user can make their selection. Upon being enabled, the system will respond to increases or decreases in the Demand Input

(0-5 VDC). When the demand is greater than 20% (1 VDC), the system will enable the compressed air solenoid valve; starting the system. On any screen, the user may return to the HOME screen by touching the house pictured in the upper left of the screen.

The STATUS, PARAMETERS, & ALARM, screens are described below.



The STATUS screen (shown above) displays the state of the inputs and outputs. The demand Input displays the percentage of demand being supplied to the controller input. This screen will show the user the status of the inputs and ouputs.



The PARAMETERS screen (shown above) allows the user to change the way the system works regarding nozzle cleanout. If enabled, at the interval set by the parameter, the water solenoid will de-energize for the duration set by the Cleanout Duration parameter. If Nozzle Cleanout is disabled, the system will operate continuously whenever there is a demand input.

The ALARM screen (not shown) allows the user to check the status of active alarms and alarm history. Whenever the red exclamation point is shown on the screen, there is an active alarm. If the exclamation point is gray, there are no active alarms. The user may go to the alarm screen at any time to check the history of alarms that have returned to normal conditions.

There are two possible alarm conditions that may present themselves during operation. They are the Air Proving Switch and the Compressed Air Pressure Switch. After a demand is present and the unit attempts to start, if either of these two switch inputs fails to close, the unit will shut down and an alarm will be present. Once the condition is corrected, the unit will commence normal operation automatically.

The SETUP and MODULE STATUS screens are gateways to lower level settings that should only be adjusted by a system administrator. CHANGING SOME OF THESE SETTINGS MAY RENDER THE FACTORY WARRANTY VOID

When touching SETUP or MODULE STATUS, the administrator will be prompted for a password. Enter 2222 to log in to the controller. Network settings, date and time may be adjusted via the SETUP screen. The MODULE STATUS screen should not be used without the direction of the factory. The CLOCKSET screen allows the date, time, and daylight savings time details to be programmed into the controller. Unless the date & time are set, the controller will report incorrectly on the ALARM screen.

VII. START-UP CHECKLIST

This Check List is intended to highlight critical installation points. A poor installation frequently results in start-up difficulties, and always results in less than ideal operation of the humidifier.

- 1. Insure all valves and valve cocks through the system (especially at every head) are shut-off.
- 2. Electric power is connected to the control cabinet per the diagram.
- 3. All sensors, airflow switches and external inputs are connected to the cabinet.
- 4. Air compressor is primed, oiled and air supply is connected to the cabinet.
- 5. Air supply line has been purged and blown down to remove any installation dirt.
- 6. Air supply line has been charged, leak tested and has a minimum of 60 psi pressure to the cabinet.
- 7. Water supply is connected to the cabinet and has been purged and blown down to remove installation dirt.
- 8. Water supply is charged and leak tested and has a minimum of 50 psi pressure at the cabinet.
- 9. Drain loop has been connected to the bottom of the cabinet and has been plumbed to an open drain.
- 10. Drain piping is installed with a loop a minimum of 3" above atomizing heads and all piping after the cabinet.
- 11. All water piping from the cabinet to the manifolds is level and without loops or automatic float type air vents have been installed at high points to remove trapped air.
- 12. Air handler is completely operational and has been balanced.
- 13. All air and water lines at the ends of the manifolds have been terminated with hose bibs.
- 14. Mist eliminators, if used, have been installed properly over drain pan that is trapped.

VIII. START-UP

After all checklist items are completed (and the total installation is complete) the Herrmidicool system is ready to start. Refer back to the Start-Up Checklist prior to Start-Up below.

IMPORTANT:

Before scheduling factory start-up, please have any issues relating to the "Check List" resolved. If additional trips are required, additional start-up costs will be incurred!

- 1. Blow out air and water lines to the control cabinet.
- 2. Set all controls to their lowest setting (control and limit if applicable). This allows the system to be turned "on" without the atomization process being started.
- 3. Once the units get the signal to run and unit is turned "on," the air solenoid will energize within 5 seconds. Once the air pressure switch detects sufficient air pressure, the water solenoid will open.
- 4. With individual air and water valves at atomizing heads closed, blow out the air and water lines through the hose bibs.
- 5. A factory-trained technician will complete the balance of the start-up.

If used, blowdown tanks, air vent check valve assemblies, and balancing air regulators are installed as shown on the installation layout drawing provided with this manual.

Call your local TRION/HERRMIDIFIER representative to schedule a trouble-free start-up. Minimum two week notice is required.

IX. ATOMIZING HEAD OPERATION

The HERRMIDIFIER atomizing heads operate with the water pressure higher than the air pressure. As air enters the atomizing head, it flows in a centrifugal motion inside the air nozzle and outside of the water nozzle. As the water enters the atomizing head, it creates pressure against the diaphragm and compresses the spring located on the opposite side of the diaphragm. The motion of the diaphragm pulls the water seat away from the bottom of the water nozzle allowing water to flow through the water nozzle. As the water exits the water nozzle, it become atomized by the compresses air inside the air nozzle and exits the atomizing head as a fine spray.

X. PRESSURE SETTINGS

IMPORTANT: The air and water pressures to the atomizing head should only be adjusted when the humidifier is at full output. In other words, when the modulating water valve is 100% open the controls are calling for maximum capacity. Do not attempt to adjust the air and water pressure settings at any other time. The instructions below assume that the atomizing heads are installed at the same elevation as the water control section. Adjustment from this standard must be made to compensate for any elevation differences between the water control section and the atomizing head manifold.

1. Set the air pressure at 30 psig.

- 2. Set the water pressure at 33-38 psig according to the atomizing head capacity as listed below:
 - a. 6 lb/hr. 34.5 psig
 - b. 8 lb/hr. 38 psig
 - c. 10 lb/hr. 33 psig
 - d. 12 lb/hr. 34.5 psig
 - e. 15 lb/hr. 37 psig

The water pressure settings listed above will allow the atomizing heads to perform at their rated capacity (lb/hr.). It may be desired to deviate slightly (1-2 psig) from the standard settings in order to enhance performance. Slightly lower water pressures will result in a finer atomized spray (smaller droplet size). Be aware that any adjustments such as this will also reduce the rated capacity of the heads. Use caution accordingly.

XI. MAINTENANCE

- Air Compressor follow manufacturer's recommended instructions.
- Atomizing Heads clean dust and debris from outside of heads as required. If raw water is used, we recommend removing the atomizing nozzles and strainer screens once a year for disassembly and cleaning. DO NOT use a wire or other foreign object to clean nozzle as this could ruin orifice.
- •Air & Water Lines blow out once a year. Check joints for leaks once a year.
- Strainers on air/water control sections should be cleaned once a year.
- Sensors/transmitters should be checked once per year
- Solenoid valves should be checked once a year for proper operation and closure.

XII. EXTENDED SHUTDOWN

After an extended shutdown, air and water lines should be blown out prior to resuming normal operation

XIII. ATOMIZING HEAD ADJUSTMENT

The atomizing heads are factory adjusted and tested. Typically, no adjustment is required unless the atomizing heads have been disassembled for maintenance. Do not adjust individual atomizing heads to reduce capacity or enhance performance. This is done only by changing the operating pressures for the entire system.

- 1. Turn the Herrmidicool System on to full output and check that the air and water pressures are correct.
- 2. Remove the cap from the back of the atomizing head.
- 3. Using a screwdriver, slowly turn the spring tension nut clockwise until the atomizing heads stops spraying.
- 4. Note the position of the spring tension nut.
- 5. Back the spring tension nut out two full turns counterclockwise.
- 6. If head is not spraying at start of procedure, back out spring tension nut until head starts to spray and then begin step 3.

XIV. NOZZLE TROUBLESHOOTING

- A. Heavy spray pattern (droplets too large)
 - 1. All heads This is caused by incorrect air and water pressure settings. Review settings and adjust as required. Never allow air pressure to exceed the water pressure.
 - 2. Individual Heads These heads are not getting enough air for one of the following reasons:
 - a. Foreign matter may be clogging the screen (AH-21) in the air strainer union of the head. Clean or replace it.
 - b. One or more of the heads may have been improperly adjusted or the individual shut-off valve may be throttled. No valves should ever be throttled. Readjust if necessary.
 - c. Water nozzle (AH-942) orifice may have been enlarged due to bent cleaning needle. Replace parts as required.
 - d. Atomizer nozzle (AH-941) orifice may have been enlarged due to improper cleaning or dirty air. Replace part as required. Standard air orifice sizes for the various heads are as follows.

6 lbs/hr	0.95 mm
8 lbs/hr	1.10 mm
10 lbs/hr	1.15 mm
12 lbs/hr	1.35 mm
15 lbs/hr	1.45 mm

- B. Spray pattern too light at full capacity
 - 1. All heads This is caused by incorrect air and water pressure settings. Review settings and adjust as required. Never allow air pressure to exceed the water pressure.
 - 2. Individual heads These heads are not getting enough water for one of the following reasons:
 - a. One or more of the heads may have been improperly adjusted or the individual shut-off valve may be throttled. No valves should ever be throttled.
 - b. Foreign matter may be restricting water flow in the water nozzle (AH-942). Turn off the air and water valves at the head.

Remove the atomizer nozzle and water nozzle. Blow water nozzle with air. Do not use wire or other hard object that will score the inside of the nozzle.

- C. Sputtering heads air pressure at the atomizing heads exceeds water pressure.
 - 1. Adjust air and water pressures to correct operating pressures.
 - 2. Normally open drain solenoid on water control section may have a malfunction allowing water to leak into drain line during operation. Solenoid valve seat may have foreign matter under the seat causing it to leak. Solenoid may have defective seat.
- D. Inoperative heads (all heads)
 - 1. The atomizing heads may be shutdown because the system controls and setpoints are satisfied.
 - 2. If the desired RH level has not been achieved, check calibration of the controls and adjust as required.
 - 3. Air and water supply valves are not open.
 - 4. No supply air pressure. If supply valves are open and the gauges indicate no air pressure, check compressed

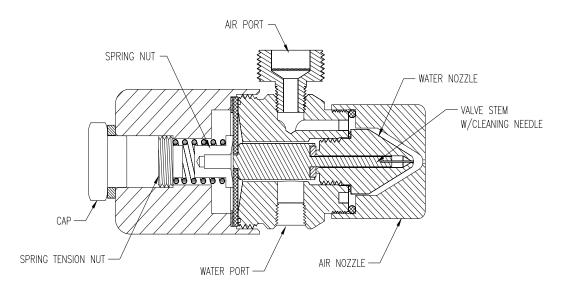
air source.

5. No power to the air and water solenoid valves. Check controls and control cabinet fuses.

Individual heads

- 6. Be sure air and water valves to the atomizing heads are open.
- 7. Possible defective parts inside atomizing head. Shut-off air and water valves to the head and remove head from the system. Disassemble and examine internal parts. Repair and reassemble as required. Rebuilding kits are available from your local TRION/HERRMIDIFIER representative. Perform a complete restart and readjustment of the atomizing head upon reassembly and repair.
- E. Air Without Water Be sure water valve to control section is open. Check modulating water valve, water solenoid and drain solenoid on water control section.

XVI. NOZZLE DIAGRAM



Brass Nozzle Consists of:		SS Nozzle Consists of:	
Part #	Description	Part #	Description
253205-001	Nozzle Body	253205-002	Nozzle Body
253209-001	Bonnet	253209-002	Bonnet
AH-941-1-"X"	Air Nozzle	AH-941-2-"X"	Air Nozzle
AH-942-1(R)	Water Nozzle	AH-942-2(R)	Water Nozzle
253206-001	Сар	253206-002	Сар
253207-001	Spring Tension Nut	253207-002	Spring Tension Nut
253208-001	Spring Nut	253208-002	Spring Nut
AH-12(R)	Valve Stem w/ Needle	AH-12(R)-SS	Valve Stem w/ Needle
AH-19A	Air Port	AH-19ASS	Air Port
AH-18A	Union Tail Piece	AH-18ASS	Union Tail Piece
AH-20	Union Nut	AH-20SS	Union Nut
AH-1RK (Note 1)	Rebuild Kit	AH-1RK	Rebuild Kit

[&]quot;X" Denotes nozzle rating in pounds/hour (6, 8, 10, 12 or 15 lb/hr).

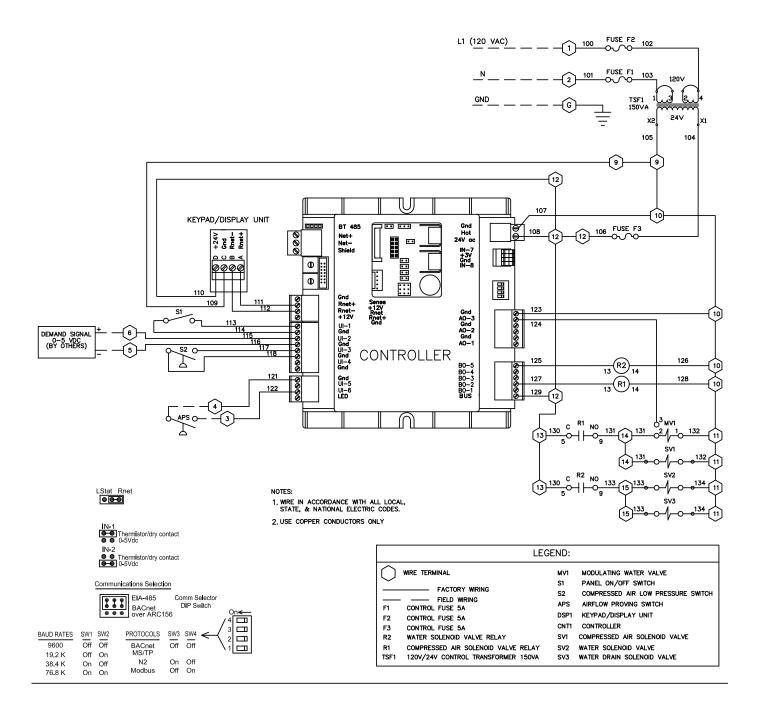
Notes

- AH-1RK Kit includes: AH-10, AH-122 "O" Ring, AH-14 Air Nozzle Gasket, AH-15 Water Nozzle Gasket, AH-16 Valve Disk, AH-21 Strainer Screen, AH-23 Diaphragm Washer, AH-8 Spring, FV-17-1 Union Washer
- 2. Always specify nozzle rating in lbs/hr on any nozzle parts order.
- 3. The notation for (R) is used when capacity of head is 6 or 8 lbs/hr.

XVI. WIRING DIAGRAM

WARNING

Absolutely no other components may be mounted inside or electrically tapped into the humidifier without voiding the warranty.



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