Simplified INSTALLATION MANUALand Detailed Installation manual are included in this package.

HU315 HUMIDIFIER SERIES

Note: HU315 has replaced the HU313 as of Jan. 1, 2005

Filename: Quatro/HU315 03/05/04

30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

SIMPLIFIED INSTALLATION GUIDE

1) **Upon receiving your new HU315 humidifier, remove from packaging and verify that you have all the following items depicted in figures 1 & 2**

2) Humidifier casing and blower distribution module (fig.2) a

3) Plastic bag with plastic water adapter, rubber seal, clamps ,8 Pin electrical connector , mounting screws and anchors

4) Wall mounted sensor box located in the humidifier control section (fig.1) c

5) One plastic white humidifier cylinder (fig.1) d

6) Humidifier wall mounting bracket (fig. 2) e

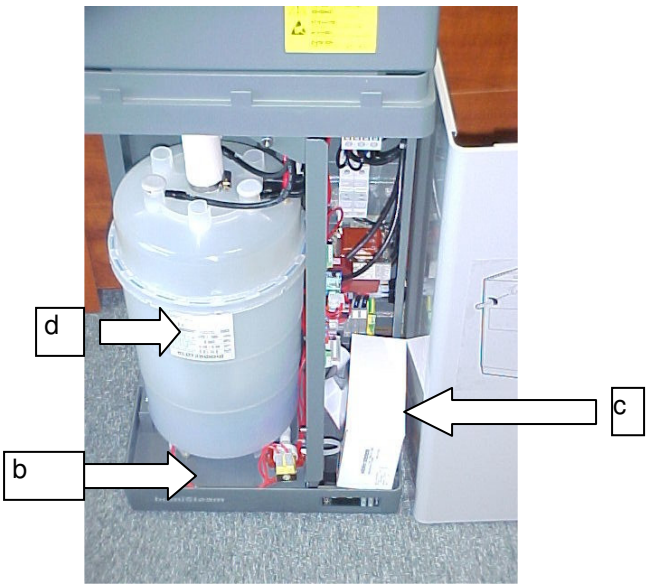


Figure 1

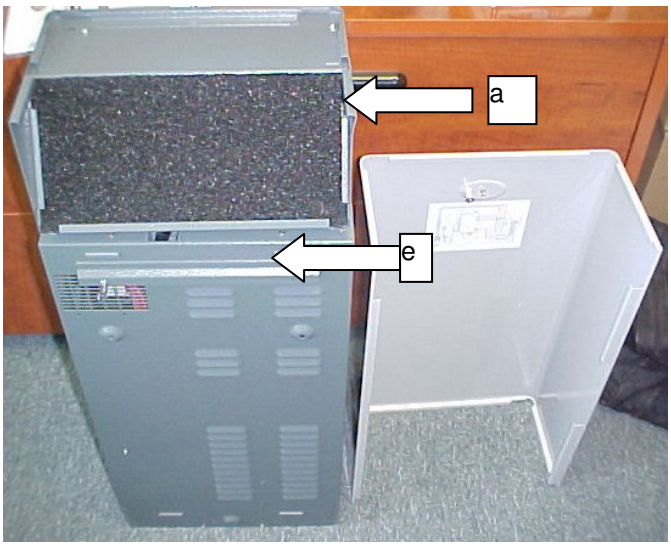
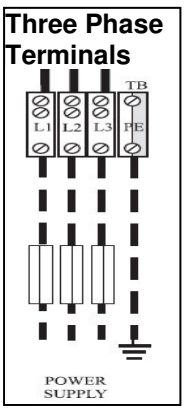


Figure 2

2) **Electrical power wiring required as follows:**

3 High voltage wires 208/3/60 (31.2amps) to be installed by certified licensed electrician into terminals tagged L1, L2, & L3



30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

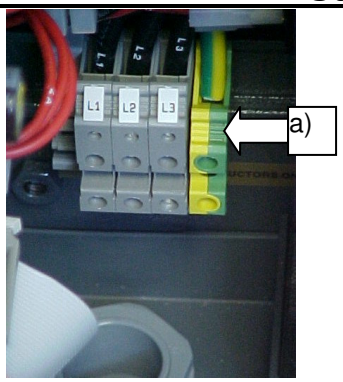


Figure 3

3) **Control Wiring from wall mounted sensor**

a. Humidity sensor (see figure 4) must be mounted to the wall (with dimple on left hand side and holes on right hand side) using the mounting screws provided in the sensor box.

b. Remove the cover plate from the sensor to expose the terminal strip inside. (See figures 5&6)
3 control wires (not supplied) need to be wired from the wall mounted sensor to the green connector terminals 4I, 5I, and 6I (See figure 7) as follows:

On the sensor from left to right, wire as follows (see figure 5 & 6)

position	# 1 should be wired to …….……..	terminal 4I
position	# 2 ……	not wired
position	# 3 ……	not wired
position	#4 should be wired to ……	terminal 6I
position	#5 should be wired to ……	terminal 5I

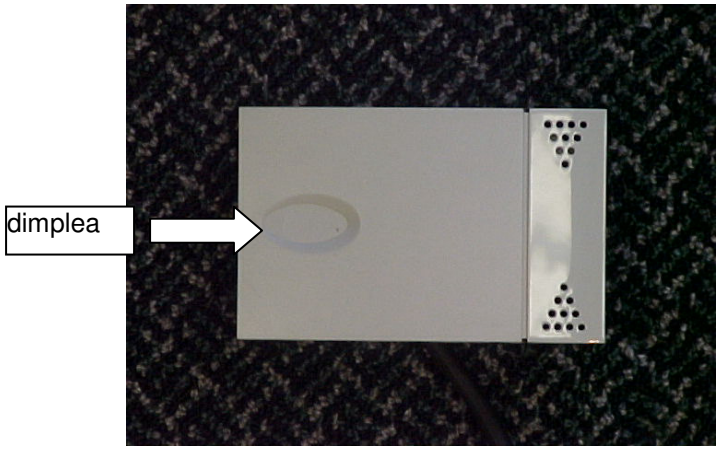


Figure 4

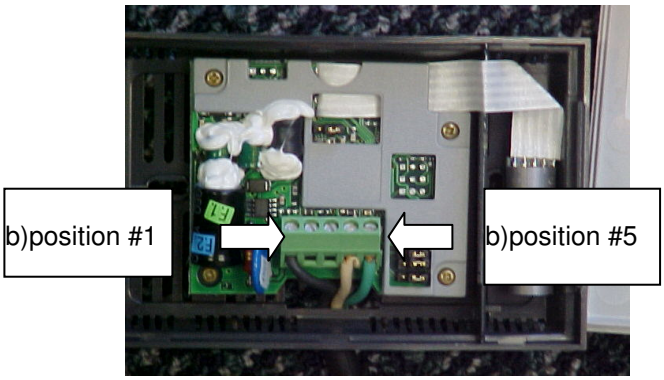


Figure 5

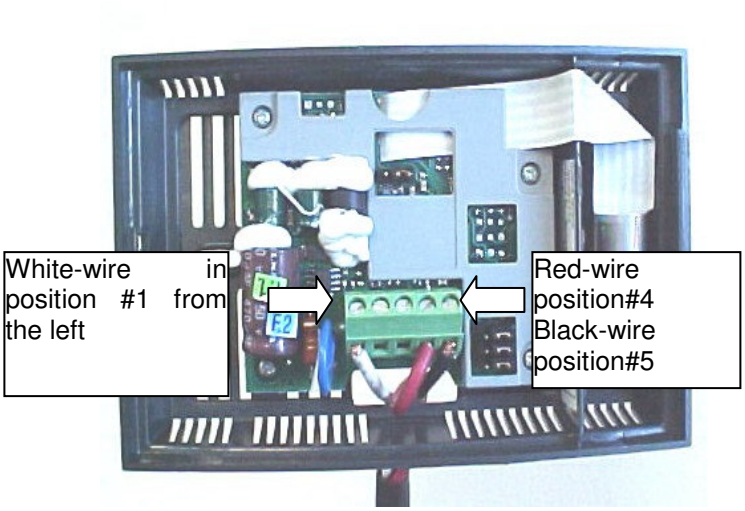


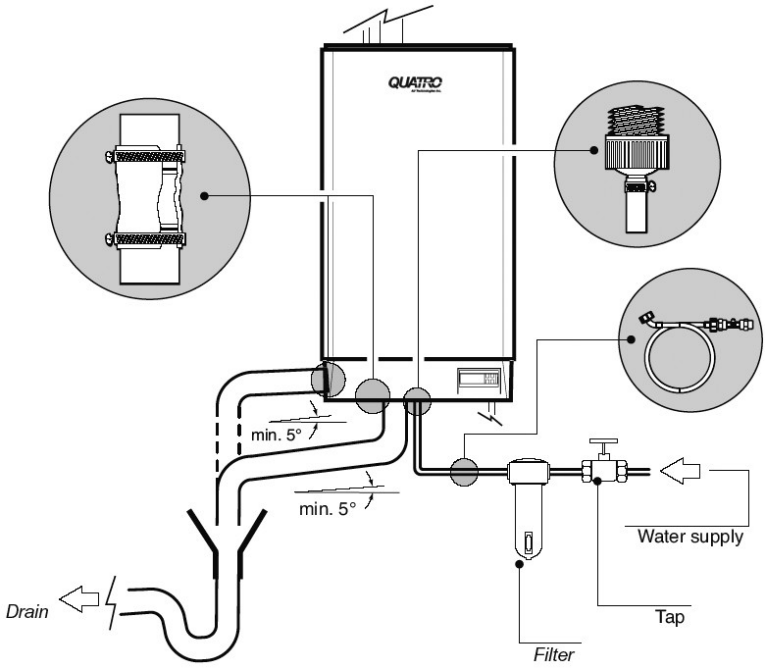
Figure 6 Inside Humidity Sensor

Figure 7:Connector terminals ON HU315

* Ensure that there is a jumper installed across 7I and 8I as in figure 7

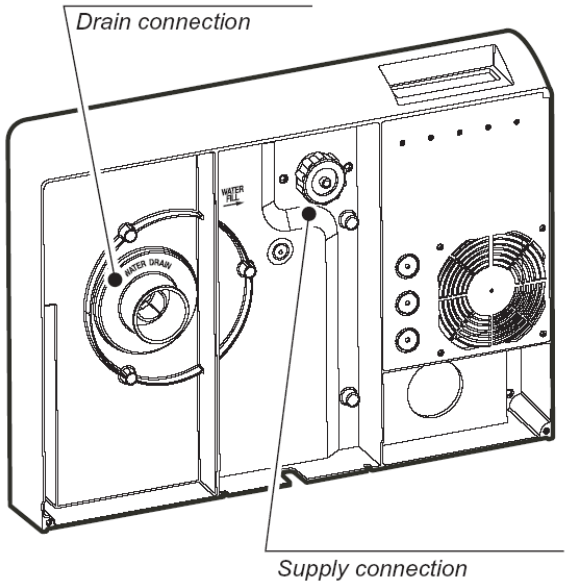
4) Connect Plumbing

Water supply and drain connections are made according to the following diagram.



NOTE: Drain line must be trapped under the unit to prevent flash steam from condensing in the unit cabinet. Physical location of the supply and drain connections are located as shown below.

QUATRO----------"We Make Clean Air"
30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com



NOTE: Quatro can provide a drain tempering system which limits the water drain to no more than 140°F.
NOTE: Softened water should NOT be used as it is generally corrossive to the electrode plating.

Water drain

The HU315 also requires connection to a drain. The drain water characteristics are:

Drain rate per hour	**11 gph**
Instant drain rate	**1.3 gpm**
Connection	**1-1/2" nominal diameter**
Typical temperature	**212 F**

Water supply

The HU315 must be supplied with cold water (not softened) having the following characteristics:

	Model HU315
Instant flow rate	0.3 gpm
Connection	1/4" O.D. Compression
Temperature limits	34 to 104°F
Pressure limits	15 to 116 psi
Hardness limits	<= 400 ppm CaCO3
Conductivity range	125 to 1250 µS/cm (micromhos)

The above simplified installation manual is to assist in installing the equipment rapidly. The complete manual should be read and referred to prior to starting the system to ensure everything has been installed correctly.

IMPORTANT

BEFORE INSTALLING OR HANDLING THE HU315 HUMIDIFIER PLEASE FULLY READ AND FOLLOW THE INSTRUCTIONS AND SAFETY STANDARDS DESCRIBED IN THIS MANUAL AND ILLUSTRATED ON THE LABELS ATTACHED TO THE MACHINE.

This humidifier produces non-pressurized steam by means of electrodes immersed in the water contained in the cylinder-boiler (hereafter called the **cylinder**). The electrodes pass current through the water, which also provides resistance, heating the water into steam, which is used to humidify environments or industrial processes, using special distributors.

The quality of the water used affects the process of evaporation, so the humidifier may be supplied with untreated water, **as long as this is drinkable and not softened or demineralized**; the evaporated water is automatically replaced using a fill valve. This humidifier has been designed exclusively to directly humidify rooms or ducts, using a distribution system. The installation, use and maintenance operations must be carried out according to the instructions contained in this manual and on the labels applied internally and externally.

The conditions of the environment and the power supply voltage must comply with the specified values.

All other uses and modifications made to the humidifier that are not authorized by the manufacturer are considered incorrect.

Liability for injury or damage caused by the incorrect use of the humidifier lies exclusively with the user.

Please note that the humidifier contains powered electrical devices and hot surfaces.

All service and/or maintenance operations must be performed by specialist and qualified personnel who are aware of the necessary precautions and are capable of performing the operations correctly.

Disconnect the humidifier from the main power supply before accessing any internal parts.

The humidifier must be installed in accordance with the local standards in force.

The local safety standards in force must be applied in all cases.

The humidifier is made up of metallic and plastic parts. All parts must be disposed of according to the local standards on waste disposal.

30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

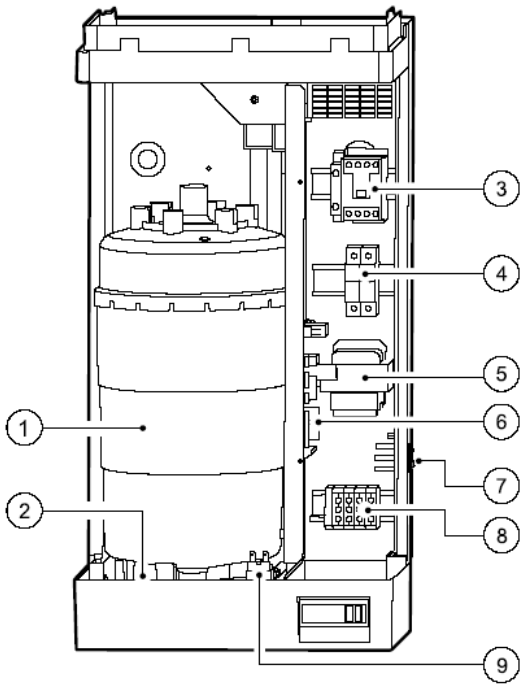
DETAILED MANUAL
Table of Contents

IMPORTANT: BEFORE beginning installation:

- Check for shipping damage to cartons. Mark the shipping waybill accordingly
- Open cartons and check for any hidden damage. Mark the shipping waybill accordingly.
- Check packing slip to ensure all items have been received. Notify Quatro of any shortages or damaged parts. **You must notify Quatro within 5 working days of any shortages.**

Description Of The Components

HU315 , 33 lbs/hr modulating steam humidifier, 208/3/60

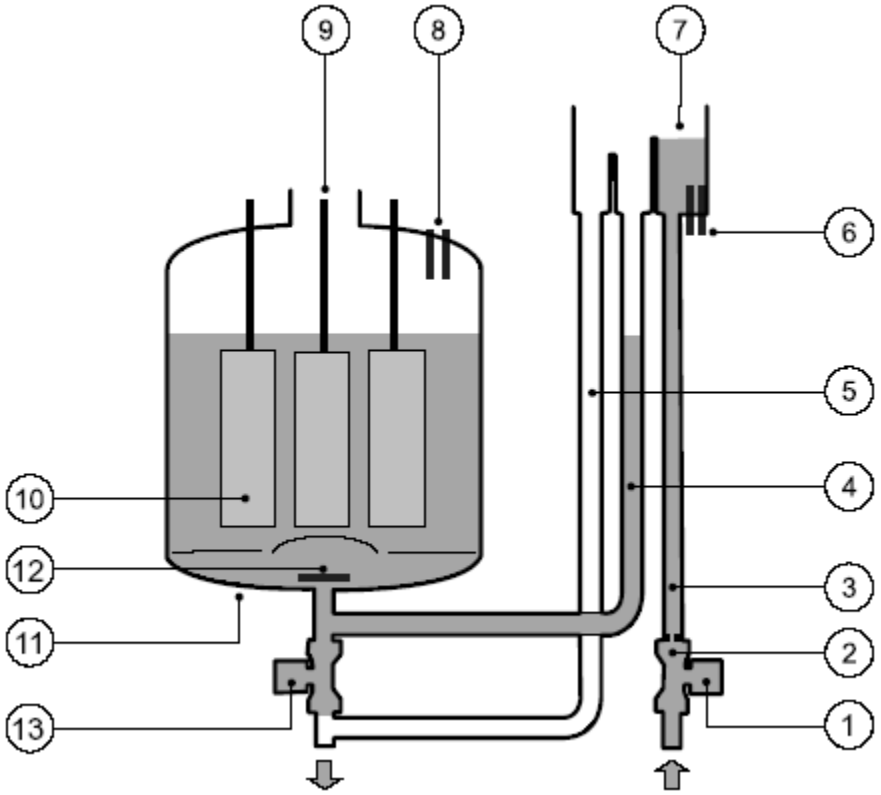


Model HU315	
No.	**Description**
1	Steam generator cylinder
2	Water drain valve
3	Power contactor
4	Fuses
5	Power transformer
6	Relay board
7	On/Off and Manual drain switch
8	Wiring terminal block
9	Water fill valve

QUATRO----------"We Make Clean Air"
30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

How The HU315 Works

HU315 is an electrode humidifier. It produces steam for humidification by passing electrode current through the water in the steam generator cylinder between metal electrodes. There are no heater elements. Steam output is directly proportional to the conductivity of the water, and the amount of electrode immersed in the water.



On a call for humidity, the HU315 controller will open the water fill valve (1) and allow water to enter the system. A flow restrictor (2) prevents the unit from filling too quickly or with too much pressure. The water flows up the fill tube (3) and into the fill cup (7), where it flows over the conductivity probes (6), which feed the water conductivity back to the controller for analysis. Water then flows over the dam in the fill cup (7), which creates a 1" air gap to prevent backflow of contaminated water into the feed lines, and through the fill tube (4) and into the bottom of the steam cylinder (11).

As the water fills the cylinder, it will reach the electrodes (10) and current will begin to flow. As the water continues to fill the cylinder, the current will increase, and this is monitored by an amperage transformer placed on one of the power wires (9). When the desired current is reached, the fill valve will close (1) and the water will then begin to warm and produce steam. If the water reaches the cylinder full probes (8) prior to reaching the desired current level, the fill valve (1) will be closed to prevent overflow. If the current rises too much as the water fills the cylinder, the drain valve or pump (13) will be activated to drain away some water and reduce the current flow.

Periodically, based on the incoming water conductivity, the unit will drain some water to reduce the mineral concentration. A strainer (12) in the cylinder helps to prevent mineral debris from jamming the drain valve (13).

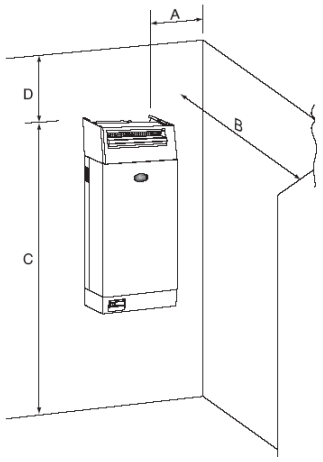
If there is no water in the cylinder, there will be no current flow and no steam production. The electrodes do not burn out, but they will eventually become comletely coated with mineral and the cylinder will then need to be replaced or cleaned.

Installation

Positioning

The HU315 has been designed for wall mounting (although it can be placed on a stand) and, since it is an atmospheric steam humidifier, should be placed close to the point where the steam will be used, to minimize the steam hose length (and condensate). **Certain clearances must be maintained around the unit:**

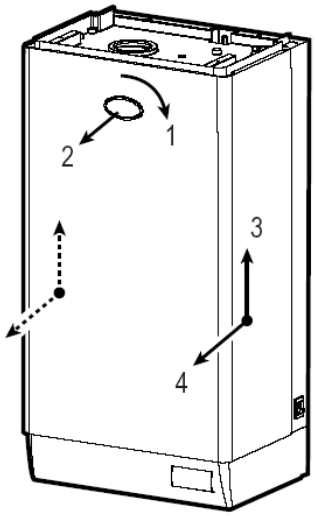
	A	B	C	D
Minimum dimension (inches)	20	72	72	24



Mounting

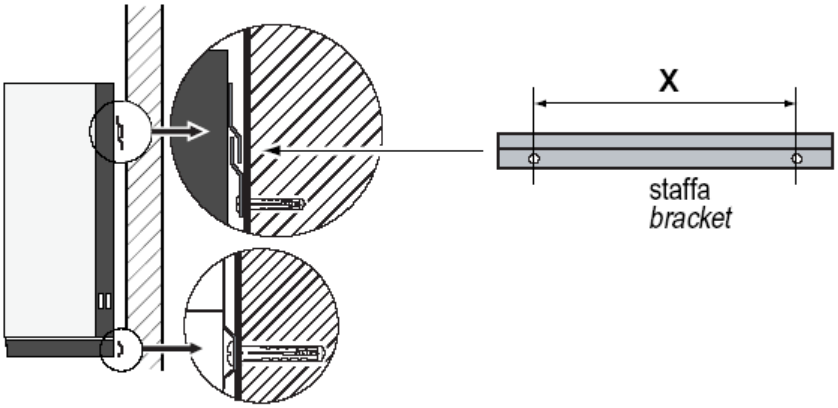
Removing the front cover

The front cover is secured by a capture screw located underneath the QUATRO logo. Twist the QUATRO logo to reveal the screw, and use a phillips head screwdriver to remove it. Then simply lift the front cover and pull out to remove it. Return it in reverse order.



Fastening to the wall

Using the screws and anchors supplied, fasten the mounting bracket to the wall. Be sure that the screws anchor firmly into studs or supports. Note the unit installed weights from the Positioning section.



Once the mounting bracket is secured to the wall, hang the unit on the bracket. Fasten the remaining capture screws through the bottom holes in the unit to secure it to the wall.

QUATRO----------"We Make Clean Air"
30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

Plumbing

Water supply

The HU315 must be supplied with cold water (not softened) having the following characteristics:

	Model HU315
Instant flow rate	0.3 gpm
Connection	1/4" O.D. Compression
Temperature limits	34 to 104°F
Pressure limits	15 to 116 psi
Hardness limits	<= 400 ppm CaCO3
Conductivity range	125 to 1250 µS/cm (micromhos)

LIMIT VALUES FOR THE SUPPLY WATER TO AN IMMERSED ELECTRODE HUMIDIFIER RUNNING ON NORMAL WATER

				LIMITS	
				Min	Max
Hydrogen ions	*pH*	-		*7*	*8.5*
Specific conductivity at 20°C	$\sigma_{R\ 20°C}$	-	*µS/cm*	*300*	*1250*
Total dissolved solids	c_R	-	*mg/l*	*(*)*	*(*)*
Dry residue at 180°C	R_{180}	-	*mg/l*	*(*)*	*(*)*
Total hardness	*TH*	-	*mg/l $CaCO_3$*	*150*	*400*
Temporary hardness		-	*mg/l $CaCO_3$*	*=*	*200*
Iron + Manganese		-	*mg/l Fe + Mn*	*=*	*0.2*
Chlorides		-	*ppm Cl*	*=*	*30*
Silica		-	*mg/l SiO_2*	*=*	*20*
Chlorine residue		-	*mg/l Cl-*	*=*	*0.2*
Calcium sulphate		-	*mg/l $CaSO_4$*	*=*	*100*

LIMIT VALUES FOR THE SUPPLY WATER TO AN IMMERSED ELECTRODE HUMIDIFIER RUNNING ON WATER WITH A LOW SALT CONTENT

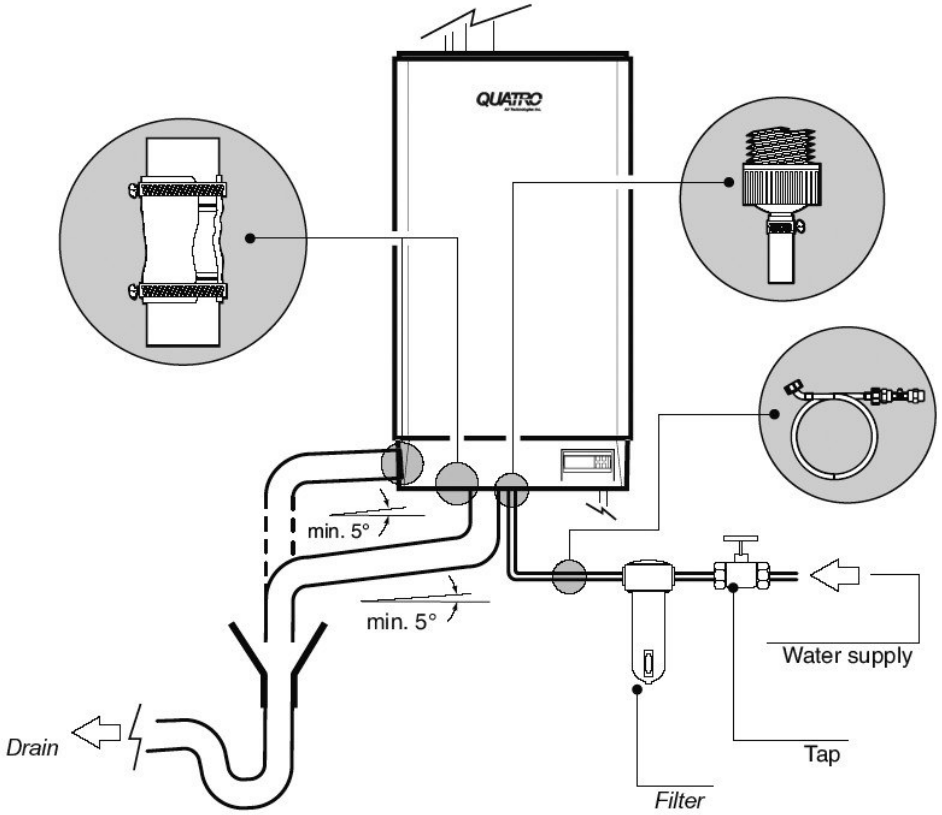
				LIMITS	
				Min	Max
Hydrogen ions	*pH*	-		*7*	*8.5*
Specific conductivity at 20°C	$\sigma_{R\ 20°C}$	-	*µS/cm*	*125*	*500*
Total dissolved solids	c_R	-	*mg/l*	*(*)*	*(*)*
Dry residue at 180°C	R_{180}	-	*mg/l*	*(*)*	*(*)*
Total hardness	*TH*	-	*mg/l $CaCO_3$*	*=*	*200*
Temporary hardness		-	*mg/l $CaCO_3$*	*=*	*150*
Iron + Manganese		-	*mg/l Fe + Mn*	*=*	*0.2*
Chlorides		-	*ppm Cl*	*=*	*20*
Silica		-	*mg/l SiO_2*	*=*	*20*
Chlorine residue		-	*mg/l Cl-*	*=*	*0.2*
Calcium sulphate		-	*mg/l $CaSO_4$*	*=*	*60*

Water drain

The HU315 also requires connection to a drain. The drain water characteristics are:

Drain rate per hour	**11 gph**
Instant drain rate	**1.3 gpm**
Connection	**1-1/2" nominal diameter**
Typical temperature	**212 F**

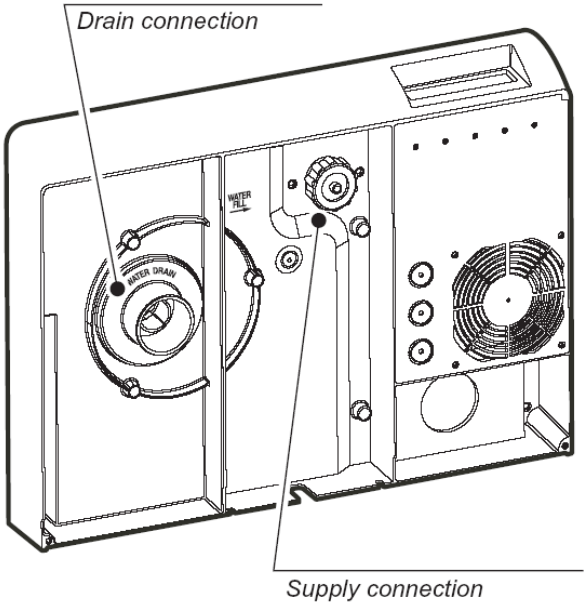
Water supply and drain connections are made according to the following diagram.



NOTE: Drain line must be trapped under the unit to prevent flash steam from condensing in the unit cabinet.

Physical location of the supply and drain connections are located as shown below.

HU315



NOTE: Quatro can provide a drain tempering system which limits the water drain to no more than 140°F.
NOTE: Softened water should NOT be used as it is generally corrossive to the electrode plating.

QUATRO----------"We Make Clean Air"
30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

Power wiring

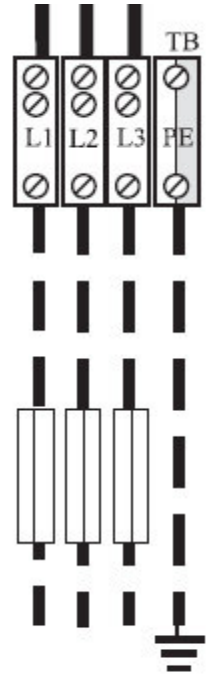
Check that the power supply voltage to be connected matches the value indicated on the rating plate inside the electrical panel. Insert the power and ground connection cables into the electrical panel compartment using the strain reliefs supplied, and connect to the terminals. An external fused disconnect must be installed.

All wiring must be in accordance with local, state and national electric codes.

NOTE: to avoid unwanted interference, the power cables should be kept separate from any control wiring.

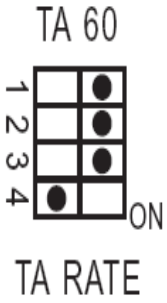
Per the table on the following page, make sure that the unit has the proper number of turns through the TAM (Torroid Amperage Monitor), which is on the control board. Also make sure that the TA Rate DIP switches on the control board are set correctly per the table.

Three Phase Terminals

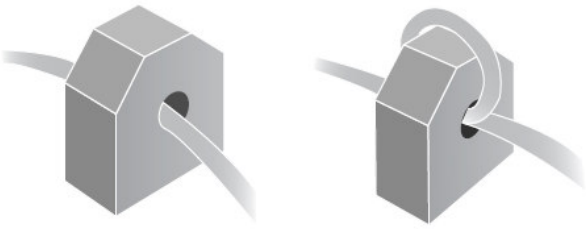


POWER SUPPLY

In models HU315 make sure that the TAM on the circuit board has the proper number of power wire turns through it, and that the TA Rate DIP switches on the control board are set as per TA 60 on the table below.



TA RATE



1 TURN 2 TURNS

Model	Voltage Code	Voltage Phase	Nominal Current (Amps)	Power (kW)	Output (kg/hr)	Output (lbs/hr)	Turns Through TAM	TA Rate	Wire Size (mm)
HU315	W	208 - 3~	31.2	11.25	15	33	1	60	16

NOTE: Tolerance allowed on main voltage = -15%, +10%

Control wiring

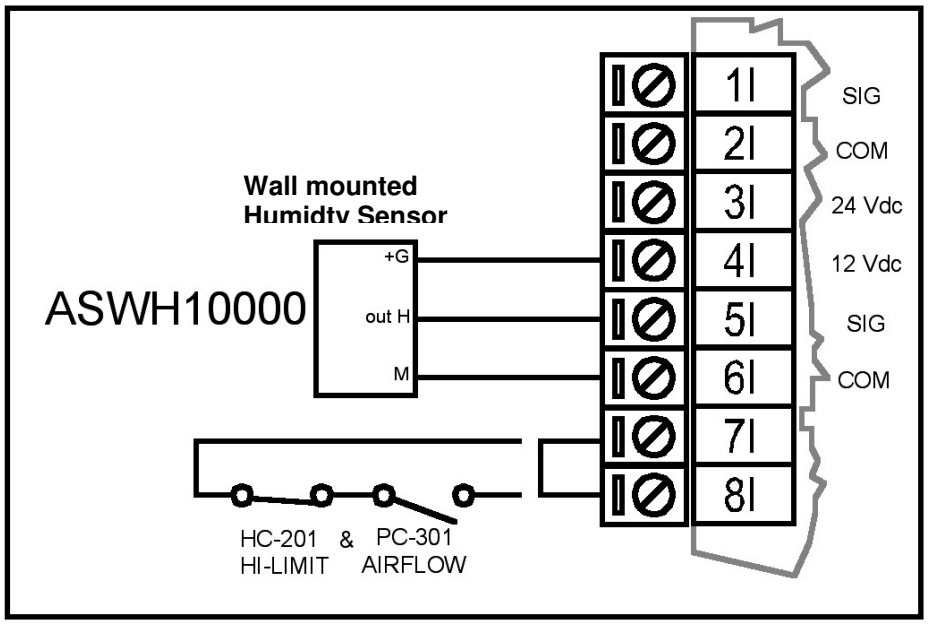
The HU315 control system allows up to two sensors to be connected, as well as various safety devices, remote on/off, alarm and serial communications.

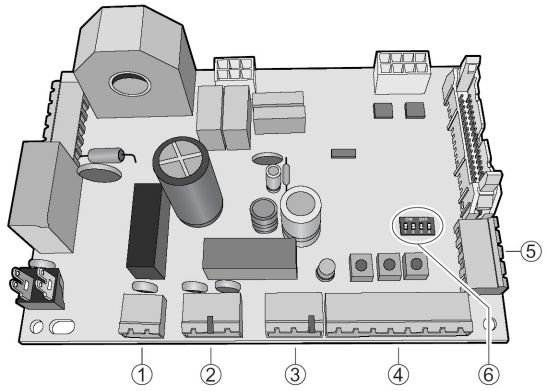
Generally, the control sensor or humidistat (HT) is located in the room . In the case where the HU315 uses a direct discharge blower unit, this is the only control needed.

Control wiring is made directly to the control board terminals:

1. terminal block G (dehumidification contact);
2. terminal block H (alarm contact);
3. terminal block K (on/off, manual drain switch);
4. terminal block I (control signals);
5. terminal block J (to remote terminal or supervisory system);
6. dip-switch for selecting TA RATE.

For Stand-Alone Modulating Operation:
Connect a high limit sensor and control sensor per the diagram at right.





30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

Parameter A0 must be set to 2 if no high limit sensor, 3 if a high limit sensor is used.
Parameter A2 must be set per the OUT signal from the sensor:

- voltage: 0 to 1 Vdc; 0 to 10 Vdc; 2 to 10 Vdc;
- current: 0 to 20 mA; 4 to 20 mA.

Terminal 4I (+(G)) = 12 Vdc
Terminals 2I & 6I (M) = common

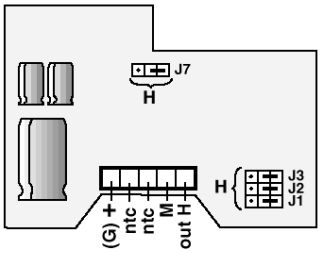
ASWH Wall Humidity Sensors/ Humidistat

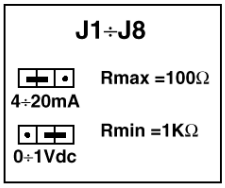
Model	Description	
Humidity (0-1 VDC or 4-20 mADC)		**Humidity:** Thin film capacitor Linear 0-1 Vdc or 4-20 mAdc from 10 to 90%RH Accuracy: +- 3%RH from 20 to 90%RH calibrated at 55%RH and 25°C (77°F) +- 5%RH above 90%RH and below 20%RH **Response time:** 60 seconds **Power:** 12 to 24 Vac/dc or +12 to –12 Vdc **Housing:** Wall: ABS with glassfiber fill
ASWH100000	Wall Humidity sensor (replaces SHWOOP)	

Start-Up

IMPORTANT WARNINGS:

1. Before starting, check that the humidifier is in perfect condition, that there are no water leaks and that the electrical parts are dry;
2. Do not connect power if the humidifier is damaged or even partially wet!





When installation is completed, flush the supply pipe for around 30 minutes by piping water directly into the drain, without sending it into the humidifier; this will eliminate any scale or residues that may cause foam when boiling.

Startup Checklist

Before starting the humidifier, the following should be checked:

_____ Water is connected, the line has been flushed, and external valves are open.

_____ Drain is connected, run to an open drain, and has a trap under the unit.

_____ Electricity is connected in accordance with instructions, local codes and data labels in the unit.

_____ The power fuses are installed and intact.

_____ All control wiring is done and tested.

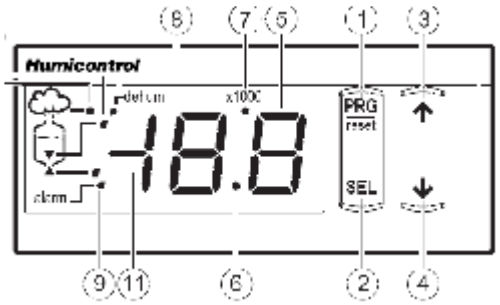
_____ Airflow switch is wired to open on air flow loss.

_____ Unit wires have been checked to make sure they and all connectors are tight from shipping.

_____ The steam hose(s) are tight with no sags or kinks and sloped properly according to the manual.

_____ Condensate hoses are run correctly with no sags or kinks and sloped properly according to the manual.

The HU315 Controller



1: PRG - Access to most frequently used parameters. Also resets alarm relay.

2: SEL - Displays unit of measure. Press for 2 seconds to access set point. Press with PRG for 5 seconds to enter parameters.

3: ↑ - Displays control sensor value. In programming mode increases value or moves to previous parameter.

4: ↓ - Displays high limit sensor value. In programming mode decreases value or moves to following parameter.

5: 2-1/2 digit display for values and parameters.

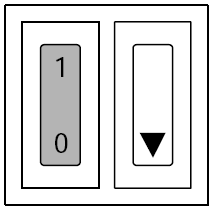
6: LED to indicate decimal point.

7: LED to indicate value must be multiplied by 1000.

8: LED to indicate dehumidify mode.

9: LED to indicate alarm.

10: LED to indicate humidifier is producing steam. Flashing indicates lower than required production.

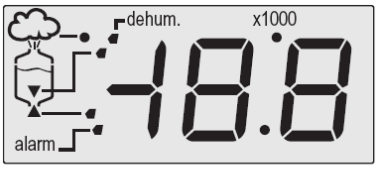


11: LED to indicate when unit is filling.

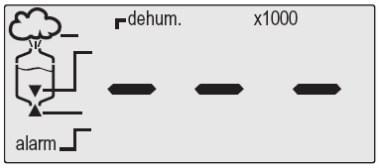
12: LED to indicate when unit is draining.

Start-up Procedure

After closing the external fused disconnect to put power to the humidifier, press the top (I) part of the I/O switch on the side of the unit

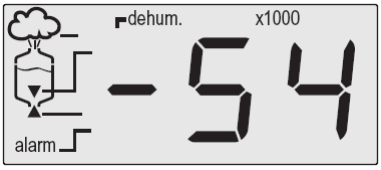


Initially, all LEDs light - this lasts about 1-2 seconds.



Then the initialization phase begins with 3 dashes. During this phase diagnostics are conducted. This phase lasts about 4 seconds.

After running the diagnostics, the unit will start operation and display either the % of steam production (On/off and Modulating modes), the %RH (Stand-Alone Modulating mode), or two dashes will light, indicating the humidifier is disabled or in alarm. The alarm code will flash.



Starting with a new cylinder

When starting with a new cylinder, you should activate the cylinder cleaning function by pressing the **SEL** and ↓ buttons simultaneously for 2 seconds after the initialization phase. This forces the unit to open both the drain and fill valves for 10 minutes to flush the lines, then fills and drains the cylinder 3 times to wash out any mold release or dirt. Once started, this function can be stopped by pressing the **SEL** and ↓ buttons simultaneously for 2 seconds again.

When starting the unit with a new or empty cylinder, it may take a significant amount of time (hours) for the unit to build up enough mineral concentration to reach rated capacity. This time can be shortened by the addition of Alka-Seltzer or salt (teaspoon) through the steam outlet on top of the cylinder.

Operation

Display Information

Pressing the **SEL** button displays the unit of measure currently in use for the main display
Holding the ↑ button displays the value of the control sensor preceded by the unit of measure.
Holding the ↓ button displays the value of the high-limit sensor preceded by the unit of measure.

Changing The Set Point

Press the **SEL** button for 2 seconds until "St" appears. On releasing the button, the unit of measure is displayed followed by the current set point value. To change the set point, press the ↑ or ↓ button to increase or decrease the value. Press **SEL** or **PRG** to lock in the new set point. Waiting 5 seconds without pressing **SEL** or **PRG** will revert to the old value.

Activating Manual Drain

In addition to the manual drain switch on the side of the humidifier, pressing the ↑ and ↓ buttons simultaneously for 2 seconds will force a manual drain which will completely empty the cylinder without having to hold the manual drain switch. This procedure can be stopped at any time by pressing the ↑ and ↓ buttons simultaneously for 2 seconds again.

Accessing/Changing Configuration Parameters

The numerical, configuration and control parameters are grouped into three levels:

LEVEL 1 - set point parameters: the value of the humidifier's main set point "St", accessible directly via the keypad for both reading and modification. See "Changing The Set Point".

LEVEL 2 - control parameters and measurements: the physical values measured and the operating parameters involving the control of the humidification process; these too can be accessed directly via the keypad for reading and modification.

LEVEL 3 - configuration parameters: consisting of the data needed to customize the controller's operation. These parameters can be accessed only by password.

To display the Level 2 Control Parameters:

- Press and hold the PRG button for 5 seconds until P0 is displayed;
- Press the ↑ and ↓ buttons to scroll through the Px and dx parameters;
- Press the SEL button to display the value of any parameter (the unit of measure will display first for 1 second).

Code	Range	Default	Unit	Description	
P0	20 to 100	100	%	Maximum output for H controllers	
		100		Maximum output for P controllers	
P1	2.0 to 19.9	5	%RH, °C	Humidification differential	accessible only in control mode (A0=2, 3 or 4)
P2 (1)	P3 to 100	100	%RH	High humidity or high	

Code	Range	Default	Unit	Description	
	P3 to 60	60	℃	temperature alarm set point	
P3 (1)	0 to P2	0	%RH, ℃	Low humidity/temp. alarm set point	
P4	0 to 100	1	min	Alarm delay (0*= 30 s)	
P5	2 to 100	10	%RH	Dehumidification dead zone	accessible only with the dehumidification function enabled
P6	1.0 to 19.9	5	%RH	Dehumidification differential	(b1 odd number) in humidity control mode (A0 = 2 or 3)
P7 (1)	St to 100	100	%RH	Hi-limit set point	Accessible only with hi-limit control (A0=3)
P8	2.0 to 19.9	5	%RH	Hi-limit differential	
P9	0 to 100	100	%RH	Hi-limit alarm set point	

Code	Range	Default	Unit	Description	
d1 (2)	0.0 to 199	read only	%RH, ℃, %	Signal from external controller or sensor	Not accessible in on/off mode (A0=0)
d2	0.0 to 199		%RH	Signal from hi-limit or temperature sensor	Accessible only with hi-limit control (A0=3)
d3	0.0 to 199		kg/h	Steam output (actual)	
d4	0.0 to 19999		h	Run time hours	
d5	0 to 1555		µS/cm	Conductivity of the feed water	
d6	0.0 to 199		A	Current (Amperage)	
d9	0.0 to 199		kg/h	Rated steam output	

(1): when accessing parameter A0, parameters P2, P3, P7 and St are automatically reset to the corresponding default value.
(2): in proportional operation (A0=1), d1 displays the % of the control signal

To display the Level 3 Configuration Parameters:

- Press and hold the PRG and SEL buttons simultaneously for 5 seconds until 00 is displayed;
- Press the ↑ and ↓ buttons to enter the password value of 77;
- Press the SEL button and A0 should display;
- Press the ↑ and ↓ buttons to scroll through the configuration parameters;
- Press the SEL button to display the value of any parameter (the unit of measure will display first for 1 second);
- Press the ↑ and ↓ buttons to change the value;
- Press SEL when the change is complete and then continue scrolling through the parameters;
- To leave the programming mode, press PRG at any time. NOTE: after more than 5 seconds without a button press, the display will begin to blink. 60 seconds after a button press, the controller will erase all changes and return to operating mode with the previous parameters.

30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

Parameters for configuring standard operation:

Code	Range	Default	Unit	Description	
A0 (1)	0 to 4	2		Operating mode	0=ON/OFF control 1=modulating 2=humidity control 3=humidity control with hi-limit control 4=steam baths
A1	0, 1	0		Unit of measure	0=°C, kg/h 1=°F, lbs/hr
A2	0 to 4	0		Type of room sensor; not accessible in ON/OFF mode (A0=0)	0=0 to 1V; 1=0 to 10V; 2=2 to 10V; 3=0 to 20mA; 4=4 to 20mA
A3 (2)	0 to A4	0	%RH, ºC	Room sensor minimum	Accessible only in control mode (A0=2, 3 or 4) Used for scaling sensors
A4 (2)	A3 to 255	100	%RH, ºC	Room sensor maximum	
A5	-10.0 to 10.0	0	%RH, ºC	Room sensor offset	
A6	0 to 4	0		Type of outlet sensor; accessible only in humidity control with outlet limiting (A0=3)	0=0-1V; 1=0-10V; 2=2-10V; 3=0-20mA; 4=4-20mA
A7	0 to A8	0	%RH	Hi-limit sensor minimum	Accessible only in humidity control with outlet limiting, (A0=3)
A8	A7 to 100	100	%RH	Hi-limit sensor maximum	
A9	-10.0 to 10.0	0	%RH	Hi-limit sensor offset	

(1): when accessing parameter A0, parameters P2, P3, P7 and St are automatically reset to the corresponding default value.
(2): see WARNING to the side of Fig. 7.1.

Parameters for configuring the operation of accessory devices:

Code	Range	Default	Unit	Description	
b1	0 to 127	0		Special functions To enable more than one, sum the corresponding values and assign them to b1; e.g.: b1=1+2+8=11 dehumidifier management active + drain under power + disable draining for inactivity of at least 7 consecutive days (the other functions are deactivated)	0= no function 1= dehumidifier management active 2= drain under power 4= disable draining on set point reduction 8= disable draining for inactivity 16= disable cylinder being depleted and cylinder depleted warnings 32= reverse the operation of the alarm relay 64= enable periodic draining
b2	0 to 120	0	s	Shut-down delay time	
b3	-10.0 to 10.0	0	%	Current measurement gain	
b4	0 to 199 0k2, ….2k0	0	µS/cm	Water conductivity (0=automatic measurement)	
b5	0 to 199 0k2, ….2k0	1k5	µS/cm	Conductivity pre-alarm set point	
b6	0 to 199 0k2, …, 2k0	2k0	µS/cm	Conductivity alarm set point	
b7	0 to 100	50	%	Foam detection set point (0=no foam detect, 1=max sens., 100=min sens.)	
b8	50 to 200	100	%	Internal conductivity reached by the cylinder in stable conditions against rated value	
b9	50 to 200	100	%	Adjust the duration of the drain for dilution	
bb	0* to 4000	1500	h	Cylinder maintenance limit time (in hours) 0*= disable life alarm “Cy” and maintenance alarm “Mn” 100 hour step if bb>199 hours, hour step if bb<199 hours	
bE	1 to 120	24	h	Time limit between two periodic drain cycles	Accessible only if periodic draining is enabled (64 in "b1")
bF	1 to 199	3	days	Days to wait to drain due to inactivity	Not accessible if draining due to inactivity is disabled, (8 in "b1")

30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

Parameters for setting the serial connections and remote control:

Code	Range	Unit	Description	
C0	1 to 6	1	Value normally displayed	1= room sensor measurement 2= outlet sensor measurement 3= steam output 4= hour counter 5= conductivity 6= current
C1	0 to 4	4	Enable keypad and remote control keypad: 0= read of all param., (modify C1 only) 1= read and modifiy all parameters 2= read of all param., (modify C1 only) 3= read and modify all parameters 4= read and modify all parameters	remote control: read and modify param. P, d and St read and modify param. P, d and St read parameters P, d and St read parameters P, d and St read and modify all parameters
C2	0 to 99	0	Remote control enabling code (see paragraph 8.2)	
C3	0 to 199	1	Serial address	
C4	0 to 3	3	Supervisor: baud-rate	0=1200, 1=2400, 2=4800, 3=9600
C5	0 to 11	0	Supervisor: frame 0=8,N.2 1=8,N,1 2=8,E.2 3=8,E,1 4=8,O.2 5=8,O,1	(character bits, parity, stop bits) 6=7,N.2 7=7,N,1 8=7,E.2 9=7,E,1 10=7,O,2 11=7,O,1
C6	0 to 199	0	Ms	serial reply send delay
C7	0 to 3	0	Graphic terminal configuration in cases 1,2,3 the OFF command is forced on start-up	0=terminal 1=terminal with ON/OFF control 2=term. with ON/OFF and room sensor 3=term. with ON/OFF and hi-limit sensor

Notes about special parameters

b1, setting 2: Drain under power

If parameter b1 includes setting 2, the humidifier will continue to produce steam during drain cycles. If this setting is turned off, the humidifier will open the power contactor during drain cycles.

b1, setting 4: Draining due to a significant reduction in the demand

If parameter b1 includes setting 4, then the humidifier will not drain if the demand for humidification decreases. This helps to conserve conductivity and is useful in low conductivity waters. If b1, setting 4 is off, then the humidifier will drain to reduce the output if the demand is reduced by 33%.

b1, setting 8: Automatic draining of the cylinder after period of non-use

If parameter b1 includes setting 8, parameter “bF” may be used to cause the humidifier to empty the steam cylinder if there has been no demand for humidification for an extended period of time. This helps prevent premature corrosion of the electrodes and/or contamination of the water in the cylinder. The default setting is for 3 days. The unit will display “idr” when this drain function occurs.

b1, setting 64: Complete periodic draining

If parameter b1 includes setting 64, then parameter “bE” can be used to set the hours between total drains of the cylinder. This is useful if the water contains impurities that can cause erratic behavior.

STANDARD FACTORY SETTINGS

HU315 Parameters

H Controller

Parameter	HU315 STAND ALONE
A0	2
A1	1
A2	0
A3	0
A4	100
A5	0
A6	N/A
A7	N/A
A8	N/A
A9	N/A
b1	2
b2	0
b3	0.0
b4	0
b5	15
b6	20
b7	75
b8	100
b9	100
bb	0
bE	N/A
bF	3
C0	1
C1	4
C2	0
C3	1
C4	3
C5	0
C6	0
C7	0
d1	*
d2	*
d3	*
d4	*
d5	*
d9	*
P0	100
P1	5
P2	100
P3	0
P4	1
ST	50

N/A - Not Accessible

* - Read Only

30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

Seasonal Shut Down

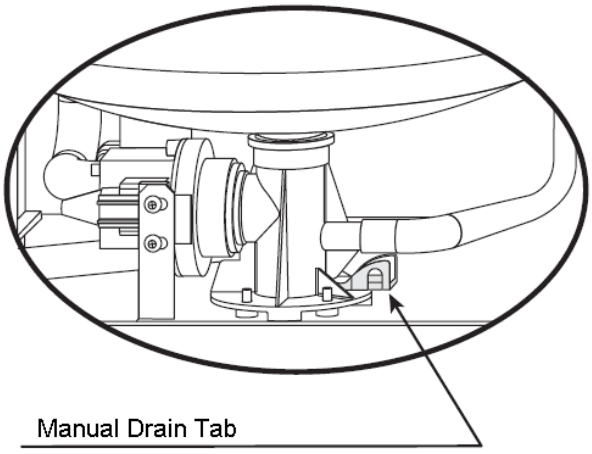
During seasonal shut-down or alternatively shut-down for maintenance of the electrical parts and/or the plumbing, the humidifier should be placed out-of-service.

NOTE: the water cylinder should be emptied before shutting down the humidifier, to prevent corrosion of the electrodes.

Follow these instructions:

- Press and hold the manual drain switch until the steam cylinder is empty, or use the Manual Drain procedure listed under “Activating Manual Drain”;
- Turn off the On/Off (I/O) rocker switch on the side of the humidifier, and disconnect power from the humidifier;
- Shut off the water to the humidifier.

In the event of malfunction of the drain valve, the cylinder can be emptied manually by lifting it out of the drain manifold and pouring the water into the bottom drain pan.



Resetting the Hour Counter

To reset the hour counter (parameter d4), proceed as follows:

- press the PRG button for 5 seconds, until the code P0 is displayed, indicating the first modifiable parameter; using the ↑ and ↓ buttons, scroll the parameters until d4 is displayed;
- press the SEL button to display the value of the hour counter (preceded for 1 second by the unit of measure);
- press the ↑ and ↓ buttons together for 5 seconds until the value is set to zero, preceded by a brief flash.

Alarms

In the event of an alarm, the alarm LED (9) will flash, the alarm relay will close, and the alarm code will flash in the display. Multiple alarms will flash in sequence, alternating with the main display. Pressing the PRG button will reset the alarms, although still active alarms will continue to display.

Controller H	Causes	Solution	Action H	Reset display	Alarm relay	Reset relay
EH	Over-current at the electrodes; probable electrode malfunction or water conductivity temporarily too high (especially when starting after a short stop)	1. Check the operation of the drain valve 2. Check for fill valve leakage 3. Drain part of the water and re-start	Shut-down	N/A	Active	N/A
EL	Power not available; no steam production when on	1. With the machine off and disconnected from the main power, check the internal electrical connections	Shut-down	N/A	Active	N/A
EC	High supply water conductivity	1. Check limit set for b6 2. Turn the machine off and clean the water conductivity probes 3. If the problem persists, change the source of supply water or install a suitable treatment system (demineralization, even partial). Note: the problem will not be resolved by softening the supply water.	Shut-down	N/A	Active	N/A
EP	Excessive reduction in output	1. Cylinder completely spent or water with excessive foam. Perform maintenance on the cylinder.	Shut-down	Manual	Active	Manual
EF	Lack of water	1. Check that the fill pipe from the main to the humidifier and the internal pipe are not blocked or bent and that there is sufficient pressure (0.1-0.8 mpa, 1-8 bar) 2. Check the operation of the fill valve 3. Check that the steam outlet is not working against excessive back-pressure, preventing the flow of water into the cylinder by gravity 4. Check that the steam outlet pipe is not is kinked and that there are no sags.	Shut-down	Automatic when water returns	Active	Automatic when water returns

Controller H	Causes	Solution	Action H	Reset display	Alarm relay	Reset relay
EA	Excessive foam in the cylinder during boiling	The formation of foam is generally due to the presence of surfactants in the water (lubricants, solvents, detergents, water treatment agents, softeners) or an excessive concentration of dissolved salts: 1. Drain the water supply lines 2. Clean the cylinder 3. Check for the presence of softeners (in this case, use another type of water or reduce the softening)	Signal only	Manual	Active	Manual
Ed	Drain malfunction	Check the drain circuits and the correct operation of the drain valve	Shut-down	Manual	Active	Manual
Ec	High water conductivity pre-alarm	Check the conductivity of the supply water if necessary, install a suitable treatment system Note: the problem will not be resolved by softening the supply water.	Signal only	Auto	Not active	-
E-	High humidity in the room (high temp.for T control)	Check the operation of the probe and the limit set for parameter P2	Signal only	Manual	Active	Auto
E_	Low humidity in the room (low temp.for T control)	Check the operation of the probe and the limit set for parameter P3	Signal only	Manual	Active	Auto
E=	High hi-limit humidity	Check the operation of the outlet probe	Signal only	Manual	Active	Auto

Controller H	Causes	Solution	Action H	Reset display	Alarm relay	Reset relay
E0	Internal memory error	1. Reset the default parameters (see Chap. 7.5) 2. If the problem persists, contact the Quatro	Shut-down	Reprog. By Quatro	Active	Reprog. By Quatro
EI	Error in the user parameters	1. With the machine off check that there are no defective electrical connections or faults, then reprogram the parameters 2. Reset the default parameters (see Chap. 7.5) 3. If the problem persists, contact the Quatro	Shut-down	Reprog. Params.	Active	Reprog. Params.
E2	Hour counter error	With the machine off check that there are no defective electrical connections or faults, then reset the hour counter (see par. 7.6)	Hour counter	Reset manual	Not active	N/A
E3	Room sensor not connected	Check the connection of the probe, parameter A2 for the room probe and the setting of parameter A0 (see chap. 7)	Shut-down	Manual	Active	Auto
E4	Hi-limit sensor not connected	Check the connection of the probe, parameter A6 for the outlet probe and the setting of parameter A0 (see chap. 7)	Signal only	Manual	Active	Auto
CP	Cylinder being depleted signal	Perform maintenance and/or replace the cylinder	Signal only	Manual	Not active	Auto
CL	Cylinder depleted signal cylinder	Perform maintenance and/or replace the only	Signal only	Not available	Not active	N/A
EU	Cylinder full with machine off signal	With the machine off: 1. Check for any leaks from the fill valve or the condensate return pipe 2. Check that the level sensors are clean total shut-down	Shut-down	Manual	Active	Manual
PC	Cleaning cylinder started signal	You have activated the automatic cylinder flushing sequence	-	-	-	-
Cy	Timeout signal (see parameter "bb") for maintenance exceeded	Perform maintenance and/or replace the cylinder	Signal only	Manual reset hour counter	Active	After the manual reset hour counter
Nn	Reached final limit (1.5xbb) of cylinder operating life	Replace the cylinder	Shut-down	Manual reset hour counter	Active	After the manual reset hour counter

QUATRO----------"We Make Clean Air"
30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

Controller H	Causes	Solution	Action H	Reset display	Alarm relay	Reset relay
Dr	Complete draining of the cylinder activated	You have activated the manual drain sequence. Sequence ends on its own.	-	-	-	-
Idr	Complete draining for extended inactivity	The unit is emptying the cylinder after an extended period of non-use. Sequence ends on its own.	-	-	-	-
Dr	Complete periodical draining active	The unit has activated the periodic drain to flush excessive minerals. Sequence ends on its own.	-	-	-	-
AF	Anti-foam algorithm active	The unit is working to eliminate foaming.	-	-	-	-

Trouble-Shooting

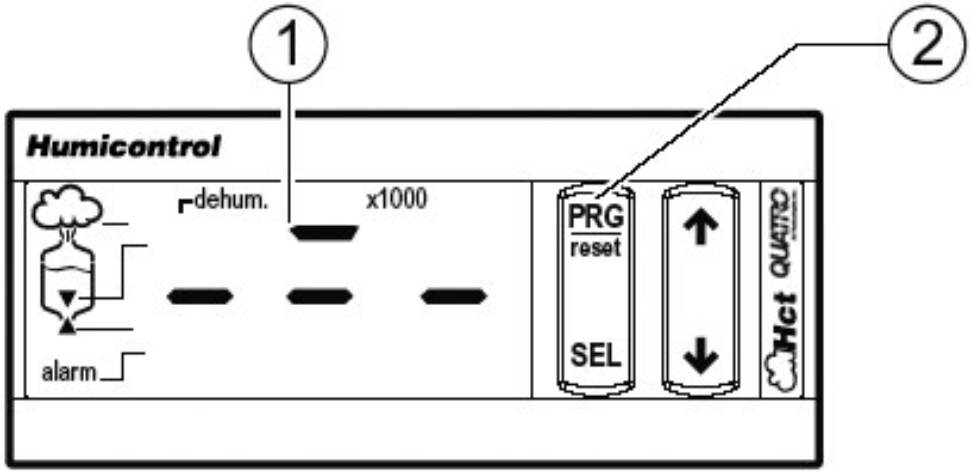
problem	causes	solutions
the humidifier does not turn on	1. no electrical power 2. on/off switch of the humidifier in position 0 (open) 3. control connectors improperly connected 4. blown fuses 5. transformer failure	1. check the safety devices upstream from the humidifier and the presence of power 2. close the switch on the panel: position I 3. check that the connectors are properly inserted in the terminal block 4. check the condition of fuses F1/F2/F3 5. check that the voltage across the secondary winding of the transformer is 24Vac
the humidifier does not start operation	1. remote ON/OFF contact open (relay/terminals AB - AB or 7I - 8I) 2. the humidistat has not been connected correctly 3. humidistat failure 4. control signal not compatible with the type set 5. value measured by the sensor/s higher than the corresponding set point	1. close ON/OFF contacts (relay/terminals 7I - 8I) 2. check the external connection 3. replace the humidistat 4. set parameters A0, A2-A9 correctly 5. check the values of the set point St and P7
the humidifier fills with water without producing steam	1. high steam back pressure 2. fill valve strainer clogged 3. mineral in the fill cup 4. drain solenoid valve leaking	1. check that the steam hose is not kinked or sagging, trapping condensate 2. clean the fill valve strainer 3. clean the fill cup 4. check for 24Vac at the drain solenoid valve and/or drain solenoid replacement
the thermal-magnetic overload switch is activated	1. thermal-magnetic overload switch is under-rated 2. over-current at the electrodes	1. check that the thermal-magnetic overload switch is rated for a current of at least 1.5 times the rated current of the humidifier 2. see description for alarm EH
the humidifier wets the duct	1. the distributor is not installed correctly (too near the top of the duct or the condensate return is blocked) 2.system over-sized 3.humidifier active when the fan in the duct is off	1. check that the steam distributor is installed correctly 2. decrease the steam production set on the control 3. check the connection of the device (flow switch or differential pressure switch) slaving the humidifier to the ventilation in the duct (terminals 7I - 8I)
the humidifier wets the floor below	1. the humidifier drain is blocked 2. the supply water or overflow circuit has leaks 3. the condensate drain pipe does not bring the water back to the drain pan 4. the steam hose is not properly fastened to the cylinder	1. clean the drain assembly and pan 2. check the entire water circuit 3. check the correct position of the condensate drain hose in the drain pan 4. check the fastening of the hose clamps on the steam outlet

30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com

problem	causes	solutions
Water in the cylinder turns black	1. minerals in the cylinder have over concentrated and are deteriorating the electrodes.	1. Check for sags & kinks that could trap condensate in the steam hoses that could cause a back pressure on the cylinder. 2. Check the duct static pressure. 3. Check the fill valve and inlet strainer. 4. Check the drain valve operation. 5. Correct installation problems and replace cylinder.
Heavy arcing occurs within hours of startup	1. The feed water contains large amounts of Iron, Copper or other conductive contaminants.	1. Contact the factory for an optional drain timer to force additional drains to control the minerals. 2. If you are using a softener, check the salt being used. If it contains any additives, discontinue use, flush all lines and convert to pure salt or unsoftened water. 3. Check the electrodes in the cylinder to be sure they were not damaged in shipping.
Humidifier continuously fills and drains without producing steam	1. Mineral has bridged between the electrodes. 2. There is back pressure from the steam hoses or duct. 3. The flow regulator in the fill valve is broken or out of place. 4. Water conductivity is very high. 5. Water is foaming excessively.	1. Clean or replace the cylinder. 2. Check the steam hoses for kinks or gullys that might be trapping condensate. 3. Replace the fill valve. 4. Consider using a mix of demineralized water with raw water. 5. Check cylinder - replace if exhausted. If feed water contains silica or nitrates, install a 1 micron water filter.

Resetting Factory Defaults

If errors have occurred when setting the parameters, the controller may be reset to the factory default values:



- in the first 5 seconds from start-up (while the three dashes are displayed), press the PRG button (2) until the upper dash in the center flashes (1);
- release the PRG button within 3 seconds to confirm the permanent reset of the factory defaults; to confirm the reset, the upper dash will stay on for 2 seconds;
- the factory reset is not carried out if the PRG button is pressed for more than 3 seconds, until the upper dash disappears.

Recalling the default parameters does not change the parameter relating to the unit of measure (A1), and it is thus recommended to check and if necessary select and save the unit of measure as required, and then recall the default parameters. In this way the default values will automatically be converted.

Maintenance

Periodic checks

- **After one hour of operation:** For both disposable and cleanable cylinders, check that there are no significant water leaks.
- **Every fifteen days or no more than 300 operating hours:** For both disposable and openable cylinders check operation, that there are no significant water leaks and the general condition of the cylinder. Check that during operation there is no arcing between the electrodes.
- **Every three months or no more than 1000 operating hours:** For disposable cylinders, check operation, that there are no significant water leaks and, if necessary, replace the cylinder; for cleanable cylinders, check that there are no blackened parts of the cylinder. If there are blackened parts of the cylinder, check the condition of the electrodes, and if necessary replace them together with the o-rings and the cover gasket.
- **Annually or no more than 2500 operating hours:** For disposable cylinders, replace the cylinder; for cleanable cylinders check operation, that there are no significant water leaks, the general conditions of the cylinder, check that there are no blackened parts of the cylinder: if this is the case, check the condition of the electrodes, and if necessary replace them together with the o-rings and the cover gasket.
- **After five years or no more than 10,000 operating hours:** For both disposable and openable cylinders, replace the cylinder. After extended use or alternatively when using water with a high salt content, the solid deposits that naturally form on the electrodes may reach the stage where they also stick to the inside wall of the cylinder; in the event of especially conductive deposits, the consequent heat produced may overheat the plastic and melt it, and, in more severe cases, puncture the cylinder,

allowing water to leak out. As a precaution, check the deposits and the blackening of the wall of the cylinder, and replace the cylinder if necessary.

CAUTION: always disconnect the main power before touching the cylinder in the event of leaks, as current may flow through the water.

Cylinder maintenance

The life of the cylinder depends on a number of factors, including: the amount and type of mineral in the water, the correct use and sizing of the humidifier, and the output, as well as HU315ful and regular maintenance. Due to the aging of the plastic and the consumption of the electrodes, even an openable steam cylinder has a limited life, and it is therefore recommended to replace it after 5 years or 10,000 operating hours.

Important warnings

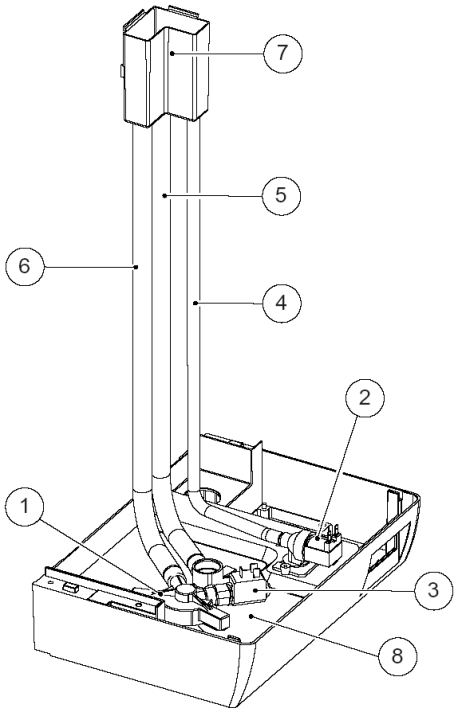
The humidifier and its cylinder contain live electrical components and hot surfaces, and therefore all service and/or maintenance operations must be performed by expert and qualified personnel, who are aware of the necessary precautions. Before performing any operations on the cylinder, check that the humidifier is disconnected from the power supply. Remove the cylinder from the humidifier only after having drained it completely using the manual drain button or procedure. Check that the model and the power supply voltage of the new cylinder correspond to the data on the rating label.

Replacing the cylinder

IMPORTANT WARNING: the cylinder may be hot. Allow it to cool before touching it or use protective gloves. To replace the cylinder:

- completely drain the cylinder by pressing and holding the manual drain switch or by pressing the ↑ and ↓ buttons simultaneously for 2 seconds to force a manual drain. This procedure can be stopped at any time by again pressing the ↑ and ↓ buttons for 2 seconds;
- turn the humidifier off and disconnect the main power;
- open and remove the cover;
- remove the steam hose from the cylinder;
- disconnect the electrical connections from the top of the cylinder;
- release the cylinder from its holding bracket and lift it up to remove it;
- install the new cylinder in the humidifier by performing the previous operations in reverse.

WARNING: Electrical connections to the cylinder must be tight or possible fire hazard may result.



Maintenance of the other plumbing components

IMPORTANT WARNINGS:

- When cleaning the plastic components do not use detergents or solvents;
- Scale can removed using a solution of Lime-A-Way ®, CLR®, or 5% phosphoric acid, then rinse with water.
- External power must always be disconnected when performing any maintenance on the humidifier.

- **Fill valve:**

After having disconnected the cables and the hoses, remove the valve and check the condition of the inlet filter; clean if necessary using the same cleaning solution as for the steam cylinder and a soft brush.

- **Supply and drain manifold**:

Check that there are no mineral deposits in the cylinder attachment and clean if necessary. Check that the seal (o-ring) is not damaged or cracked; replace if necessary.

- **Drain valve /drain pump**:

Remove the valve body or pump, clean if necessary using the same cleaning

Item No.	Description
1	fill/drain manifold
2	fill valve
3	drain valve
4	fill cup fill pipe
5	cylinder supply pipe
6	overflow pipe
7	fill cup
8	drain pan
9	drain column
10	drain pipe
11	drain pump
12	conductivity meter

solution as for the steam cylinder and a soft brush.

- **Drain pan**:

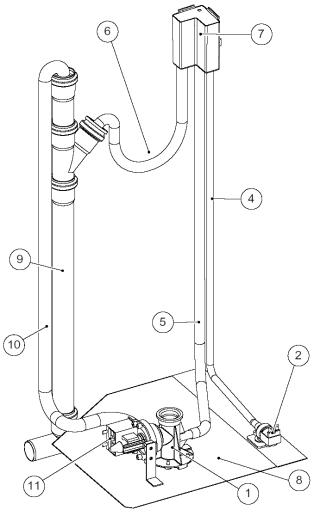
Clean the pan of any mineral deposits and check that the water flows freely from the pan to the drain at the drain valve.

- **Supply, fill, overflow pipes**:

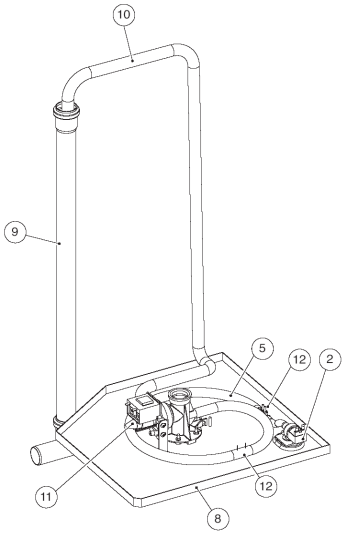
Check that these are clear and clean or replace if necessary.

replaced

correctly
humidifier
drain
any water



IMPORTANT WARNING: after having or checked the plumbing, check that components have been reconnected with the proper seals. Re-start the and perform a number of supply and cycles (from 2 to 4), then check for leaks.

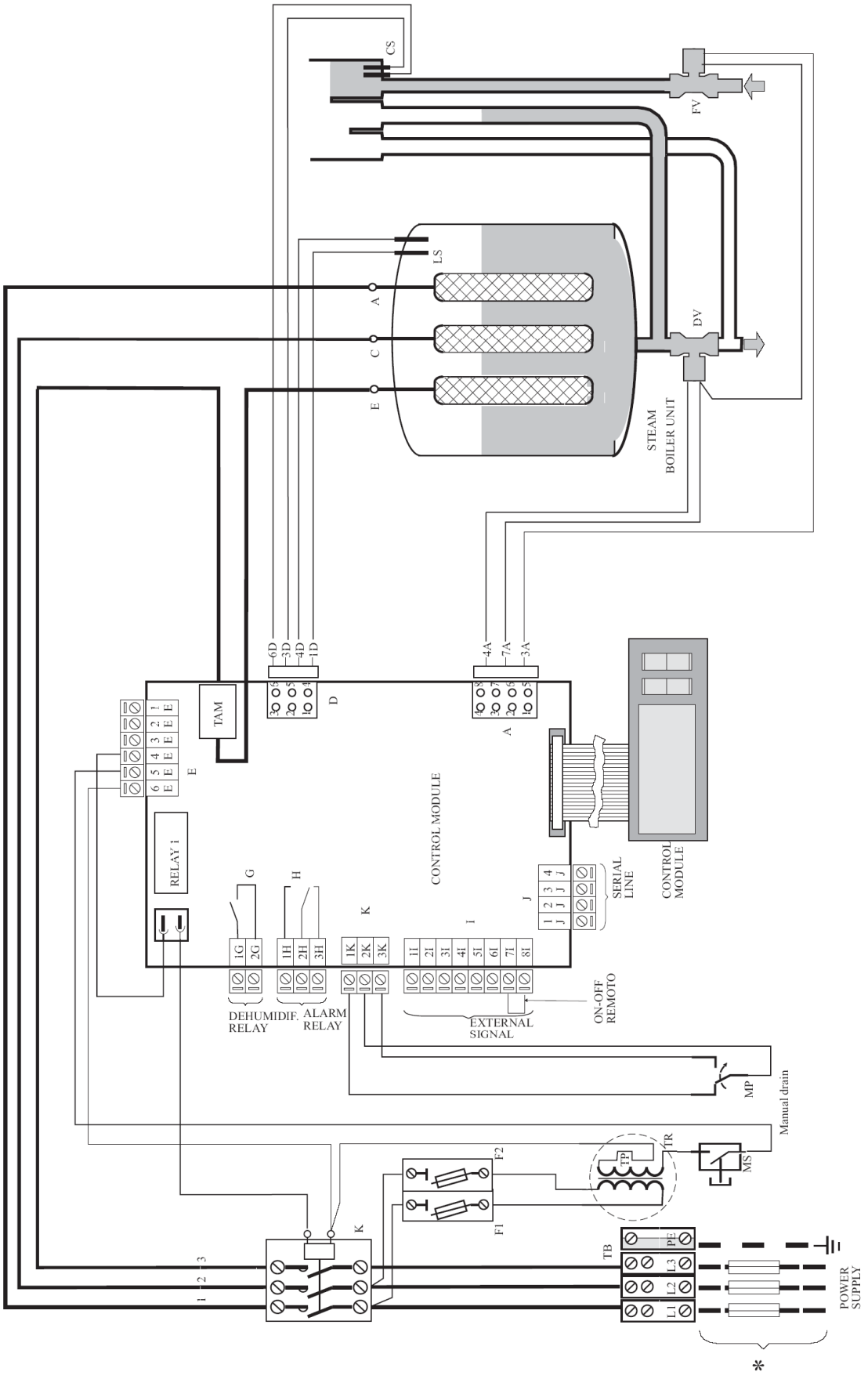


Replacement Parts

Three Phase Humidifiers

	HU315 Part #'s
Water Parts	
Fill Cup + Conductivity Meter	18C453A008
Fill Valve Kit	KITVC00012
Drain Valve Kit	13C499A030
Internal Pipe Kit	UEKT00000M
Conductivity Probe:	
208-230V	18C431A004
Disposable Cylinders:200/230 Vac 3~, Conductivity 350/1250 µS/cm	H525
Electrical Parts	
Contactors	0203001AXX
Power Transformers:	
208-24 Vac	09C476A027
Fuse Holders	0606192AXX
Fuses 1,2:	
208-230V	0605319AXX
Electrical Parts	
Led Display Ver. C-P	UEKDP00000
Control Module Ver. H-T	UEH0000001
Control Board Ver. C-P **	UEP0000001
Control Board Ver. H-T	UEI0000000
Flat Connection Cable	59C460A003

HU315 Three Phase Humidifier


CS
FV
LS
A
C
E
DV
STEAM
BOILER UNIT
6D
3D
4D
1D
4A
7A
3A
D
A
TAM
E
RELAY 1
G
H
K
J
i
CONTROL MODULE
SERIAL LINE
CONTROL MODULE
1G
2G
1H
2H
3H
1K
2K
3K
1I
2I
3I
4I
5I
6I
7I
8I
DEHUMIDIF. RELAY
ALARM RELAY
EXTERNAL SIGNAL
ON-OFF REMOTO
MP
Manual drain
TR
TP
MS
F2
F1
K
1 2 3
TB
PE
L3
L2
L1
POWER SUPPLY
*

HU315 208/3/60	Factor	MODEL HU315, 208/3/60 STEAM GENERATING HUMIDIFIER
Capacity	Lbs/hr	33
Capacity	kg/h	15
Amperage	Amps	31.2
Wattage	KW	11.25
Height	In. (mm)	28.0 (710)
Width		14.4 (365)
Depth		10.8 (275)
Dry weight	Lbs. (kg)	44.0 (20)
Wet weight	Lbs. (kg)	59.5 (27)
Water Feed	gpm (l/min)	0.32 (1.2)
Water Inlet	In. (mm)	1/4" O.D. Comp.
Max. Drain	gpm (l/min)	1.32 (5)
Drain Size	In. (mm)	1-5/8" hose (40)
Min. Drain	In. (mm)	3/4 (19)
Cylinders		1 part # H525
Steam outlets	In. (mm)	1-1/4" (30) x 1
Pressure	In. WC (Pa)	6.8" WC (1700)
Control		24 VAC 50/60 Hz., 30 VA
Operating	°F (°C)	34-140 °F (1-40°C), 10-60 %RH
Water Type		15 - 116 psi (1-8 bar), 125-1250 MicroMhos conductivity
Ventilated steam distributor		30 Watts 100 CFM (170 m3/h) 50 dBA 10 to 104°F (-10 to 40°C) 10 to 60%RH

LIMITED WARRANTY

All products manufactured by Quatro are warranted to the original purchaser to be free from defects in materials and workmanship in the course of normal and reasonable use for a period of 1 year from the date of shipment , humidifier replacement parts warranty is 60 days from date of Invoice. Warranty replacement parts are warranted for remainder of original unit warranty or 60 days, whichever is longer, so long as the product has been installed and operated in accordance with all appropriate manuals and wiring diagrams. Any product or part that is found to be defective will, at the option of Quatro be replaced or repaired. Quatro reserves the right to inspect any part or installation before replacing or repairing defective parts. After startup of the product, labor for repairs or replacement of parts is not covered by this warranty. Products not included in this warranty are NTC and PTC probes, transformers (TRA series), and routinely replaceable parts such as steam cylinders and gaskets. Quatro assumes no liability for consequential or inconsequential damage, or damage due to negligence or improper use. Under the terms of this warranty, the original purchaser may have certain legal rights and other rights, which may vary from state to state. The Warranty will not be considered valid if a product is damaged due to negligence, mishandling or misapplication, or if the product label is missing. Quatro will attempt to repair or replace the products within two (2) months of the receipt of the returned goods.

30 Hymus Boulevard, Montreal, Quebec, H9R 1C9 Tel.: (514) 630-4444 Fax: (514) 630-4454 website: www.quatro-air.com