humiSteam electrode steam humidifiers

Installation
Operation
User Manual

Read and save these instructions.

Models UE001 to UE065
Single Cylinder Units

CAREL

Warning!

L'installazione del prodotto deve obbligatoriamente comprendere la connessione di messa a terra, usando l'apposito morsetto giallo-verde in morsettiera. Non utilizzare il neutro come connessione a terra.

The product must be installed with the earthconnected, using the special yellow-green terminal on the terminal block. Do not use the neutral for the earth connection.

Le produit doit être installé avec la connexion terre branchée, en utilisant la signalisation et les bornes spécifiques (jaune/vert) à la mise à la terre. Ne pas utiliser le neutre comme mise à la terre.

Das Produkt muss geerdet werden. Verwenden Sie hierfür den gelb-grün Anschluss an der Klemmleiste. Verwenden Sie nicht den Null-Leiter für die Erdung.

La instalación del producto debe obligatoriamente incluir la conexión de la toma de tierra, utilizando el borne amarillo/verde del regletero. No utilizar el neutro como conexión a tierra.

IMPORTANT

BEFORE INSTALLING OR HANDLING THE HUMIDIFIER PLEASE CAREFULLY 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.

Certification: the quality and safety of CAREL products are assured by CAREL's **ISO 9001** certified design and production system, as well as listings from UL, cUL, CE, TUV, ETL and others.

WARNING: Your humidifier requires water to operate. Do NOT mount it above materials or machinery that could be damaged if a leak occurs. Carel assumes no responsibility for consequential or inconsequential damage as a result of any leaks.

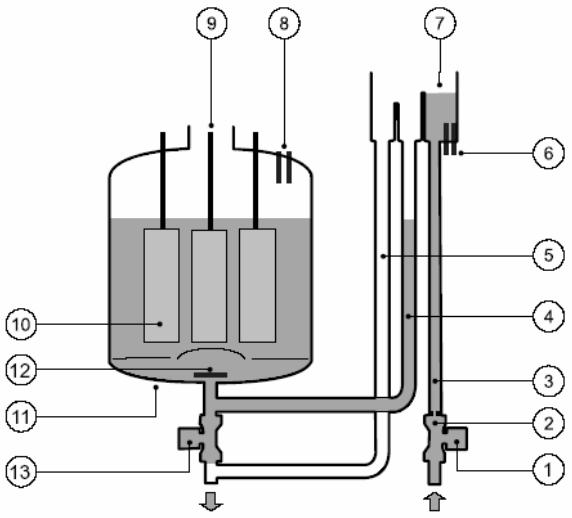
Table of Contents

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 Carel LLC of any shortages or damaged parts. **You must notify Carel LLC within 5 working days of any shortages.**

How The Humisteam Works

HumiSteam 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.

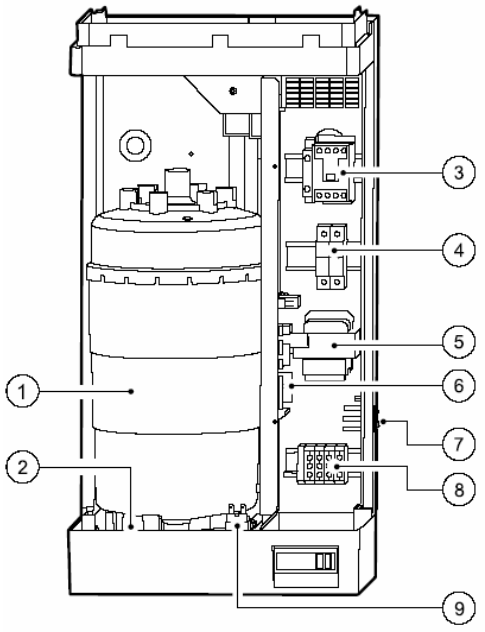


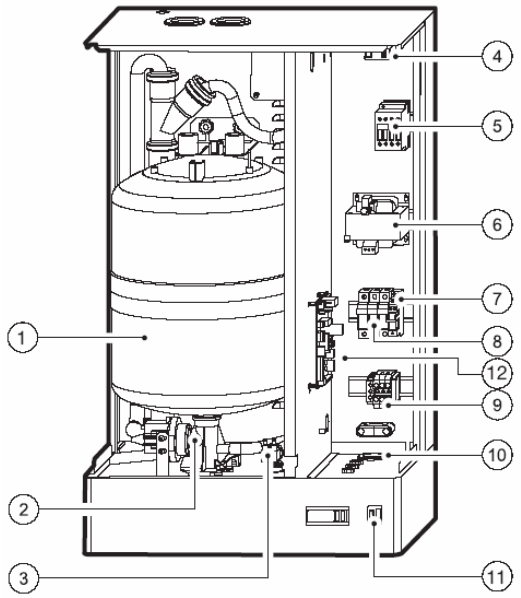
On a call for humidity, the HumiSteam controller will open the water fill valve (1) and allow water to enter the system. A flow restrictor (2) prevents the unit from filling too quickly or with too much pressure. The water flows up the fill tube (3) and into the fill cup (7), where it flows over the 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 completely coated with mineral and the cylinder will then need to be replaced or cleaned.





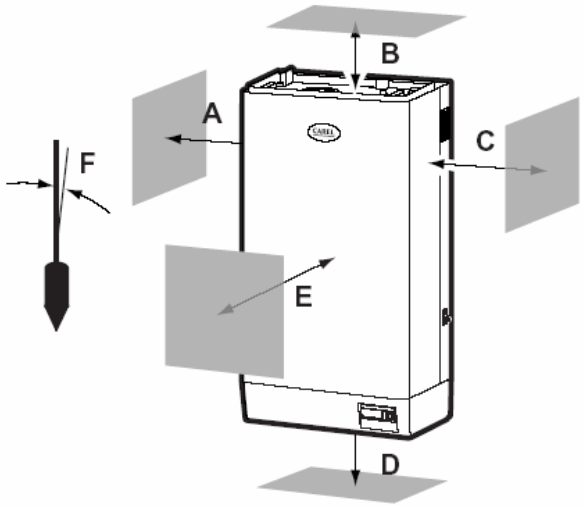
UE 001 through UE 015	
No.	**Description**
1	Steam generator cylinder
2	Water drain valve
3	Power contactor
4	Fuses
5	Power transformer
6	Relay board
7	On/Off and Manual drain switch
8	Wiring terminal block
9	Water fill valve

UE 025 through UE065	
No.	**Description**
1	Steam generator cylinder
2	Water drain pump
3	Water fill valve
4	Amperage transformer
5	Power contactor
6	Power transformer
7	Relay
8	Fuses
9	Wiring terminal block
10	Cable raceway
11	On/Off and Manual drain switch

1 Installation

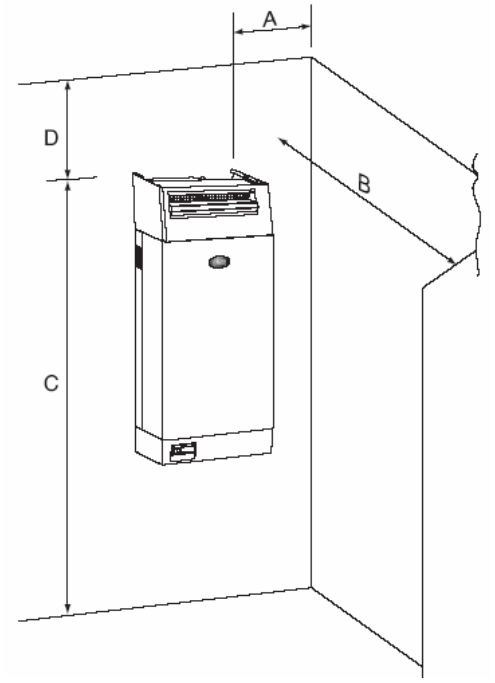
1.1 Positioning

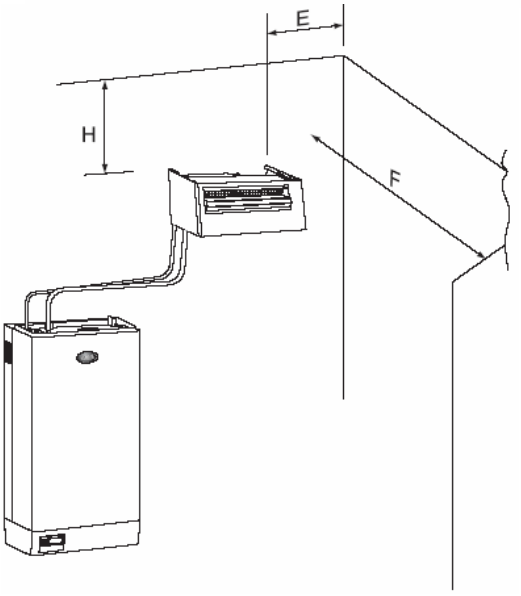
The HumiSteam has been designed for wall mounting (although it can be placed on a stand) and, since it is an atmospheric steam humidifier, should be placed close to the point where the steam will be used, to minimize the steam hose length (and condensate). **Certain clearances must be maintained around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



	A	B	C	D	E	F
Minimum Dimension (inches)	12	8	8	16	28	<0.5°

With room blower units, other clearances are needed:

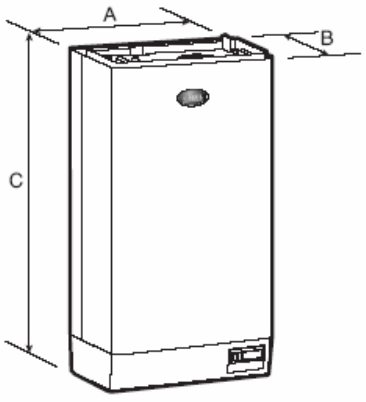




	VSDU0A						
	A	**B**	**C**	**D**	**E**	**F**	**H**
Minimum dimension (inches)	20	72	72	24	20	72	24
	VRDXL						
	36	120	72	48	36	120	48

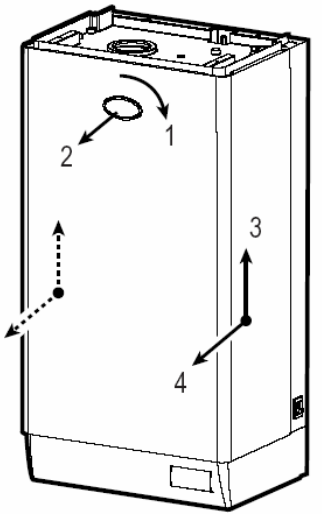
Unit Dimensions:

		Model - UE			
		001-008	**009-015**	**025-045***	**045**-065**
Dimensions (inches)	**A**	15	15	22	26
	B	11	11	15	18
	C	25	28	35	38
Weight (lbs)	**packaged**	36	44	86	113
	empty	30	38	75	97
	installed	42	60	134	207



*** = UE045 for 460-575/3 Vac**
**** = UE045 for 208-230/3 Vac**

1.2 Mounting

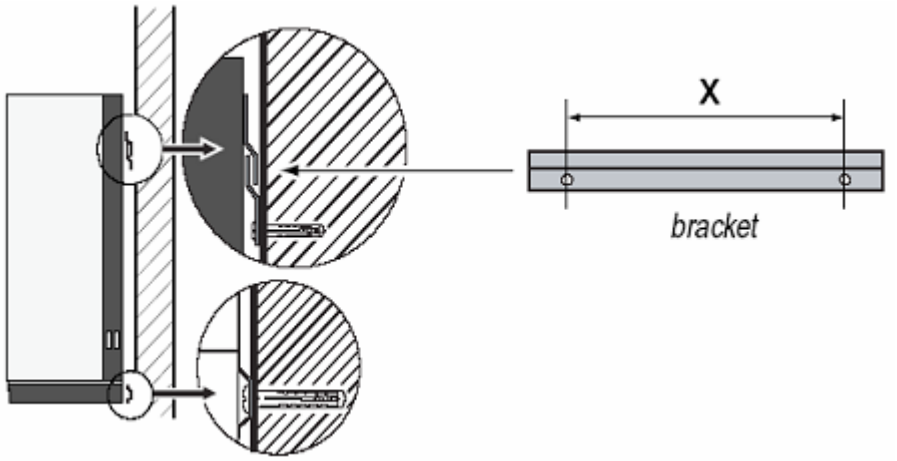


1.2.1 Removing the front cover

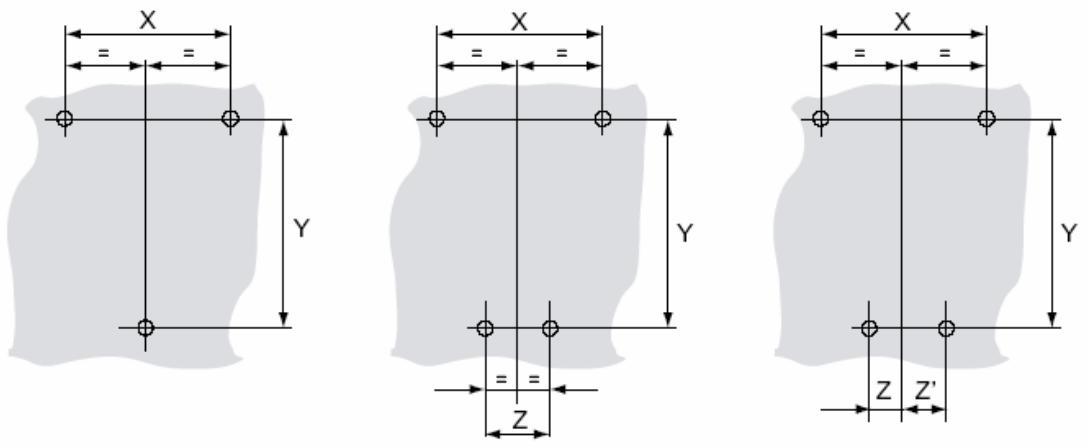
The front cover is secured by a capture screw located underneath the CAREL logo. Twist the CAREL logo to reveal the screw, and use a phillips head screwdriver to remove it. Then simply lift the front cover and pull out to remove it. Return it in reverse order.

1.2.2 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.



	Model UE			
	001-008	**009-015**	**025-045**	**065**
X	8.67	8.67	12.21	15.75
Y	19.69	23.23	28.55	30.91
Z			4.53	1.5
Z'				4.41

1.3 Plumbing

1.3.1 Water supply

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

	Model UE			
	001-008	**009-015**	**025-045**	**65**
Instant flow rate	0.2 gpm	0.3 gpm	1 gpm	1.9 gpm
Connection	1/4" O.D. Compression		3/8" 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 water feed line should be 1/2” copper, PVC or poly tubing run to within 3 feet of the humidifier, then bushed down to 1/4” O.D. or 3/8” O.D. copper or poly to make the final connection to the 1/4” O.D. or 3/8” O.D. compression fitting underneath the humidifier. With poly tubing an insert should be used to support the tubing and prevent leaks. This insert is not provided.

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

NOTE: Softened water should NOT be used as it is generally corrossive to the electrode plating.

1.3.2 Water drain

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

	Model UE										
	001	**003**	**005**	**008**	**009**	**010**	**015**	**025**	**035**	**045**	**065**
Drain rate per hour	0.7 gph	2.2 gph	3.7 gph	5.9 gph	6.6 gph	7.3 gph	11 gph	18.3 gph	25.7 gph	33 gph	47.7 gph
Instant drain rate	1.3 gpm							6 gpm			
Connection	1-1/2" nominal diameter										
Typical temperature	212°F										

The drain line can be 1-1/2” schedule 40 CPVC, 1-1/2” copper, or 1-1/2” Polypropylene. In all cases, the drain tube is slipped over the drain outlet on the bottom of the humidifier. It is not glued or otherwise attached to the humidifier, so it must be supported by itself.

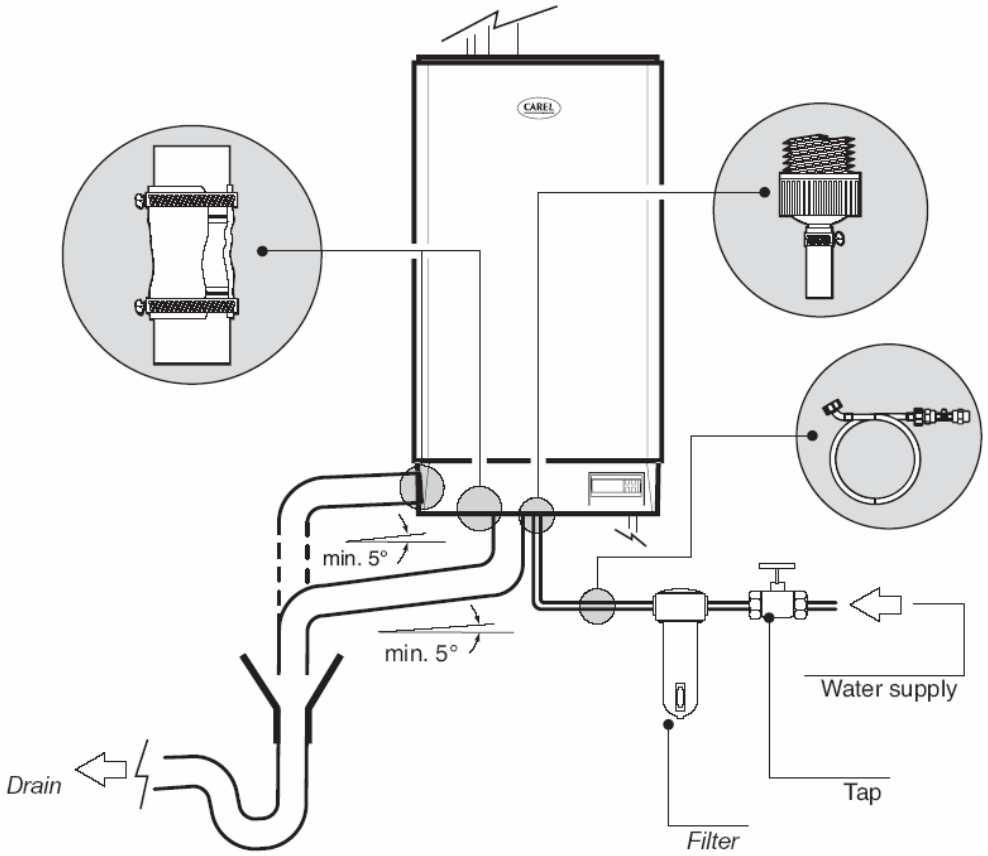
Drain line must be installed and plumbed to an open drain immediately after the unit.
For proper operation of the unit, the open drain should be installed before the trap (if allowed by local code).

See the following diagram for a drain line installation diagram

Note: If utilizing the optional drain tempering devices, the drain line needs to be increased to a 2" minimum nominal size for the UE025 to UE065.

WARNING: Do NOT use PVC piping unless the unit has the optional drain tempering valve installed.

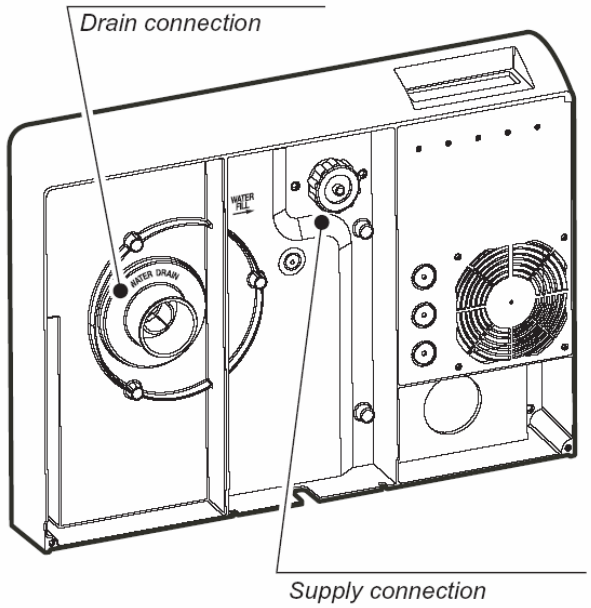
Water supply and drain connections are made according to the following diagram.



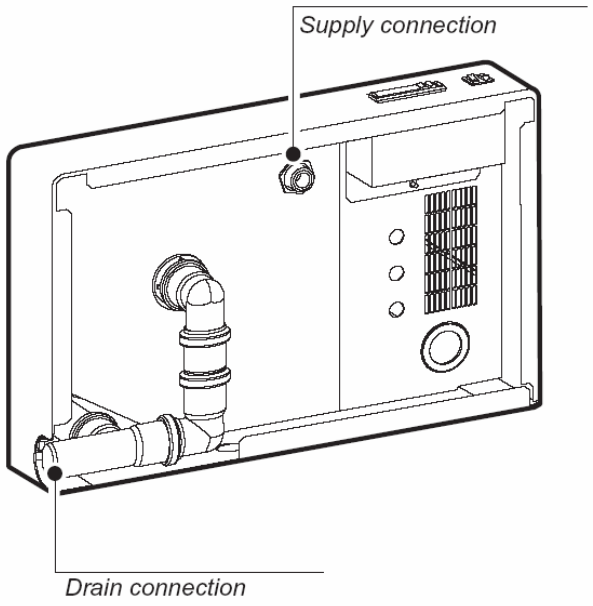
Note: Drain line must be installed and plumbed to an open drain immediately after the unit. For proper operation of the unit, the open drain should be installed before the trap (if allowed by local code).

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

UE 010-015



UE 025-065



NOTE: Carel can provide a drain tempering system which limits the water drain to no more than 140°F.

1.4 Steam distribution

1.4.1A Duct injection

NOTE: If the ventilated steam distributor is to be used, then go to section 1.4.1B.

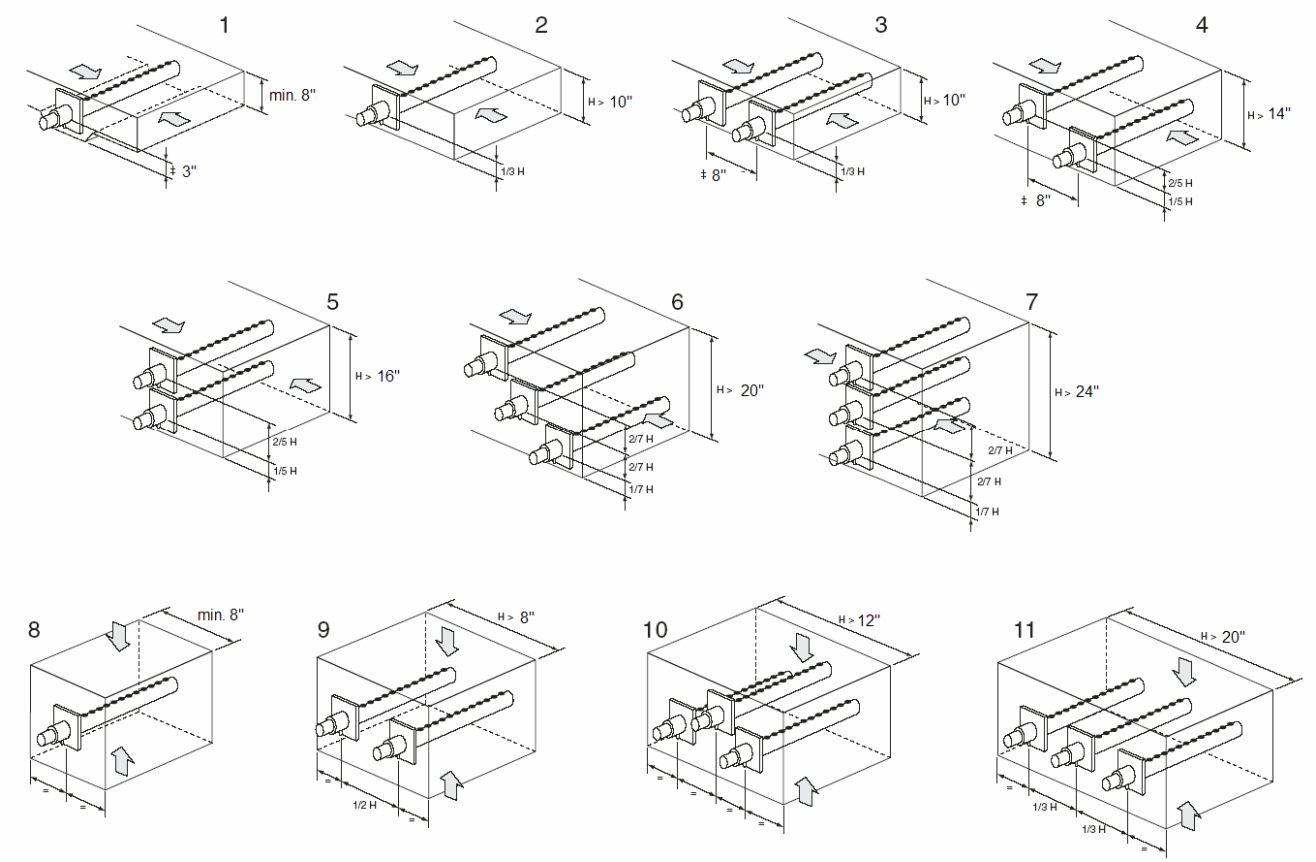
Each unit has either 7/8" (22 mm), 1-1/4" (30 mm) diameter outlet or 1-5/8" (40 mm) diameter outlets. Some units have multiple outlets. The duct distributors and steam hose must be matched in size to the diameter of the steam outlets for the units:

	UNIT MODEL NUMBER										
	UE001	**UE003**	**UE005**	**UE008**	**UE009**	**UE010**	**UE015**	**UE025**	**UE035**	**UE045**	**UE065**
No. Cylinders	1										
Steam outlets	22mm x 1		30mm x 1					40mm x 1		40mm x 2	

Duct steam distributors must also be matched to the duct size they will be inserted into:

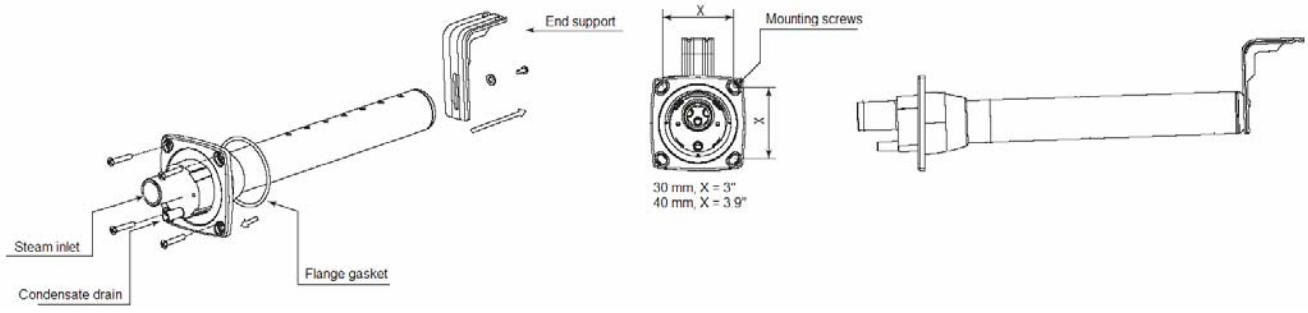
				Quantity Required per Unit			
			Humidifier Steam Outlets, mm	**22**	**30**	**40**	**2x40**
			Humidifier Steam Outlets, inches	**7/8**	**1-1/4**	**1-5/8**	**2x1-5/8**
Nominal Duct Size, Inches	**Distributor Length, Inches**	**Ordering Code**	**Description**	**UE 001,003**	**UE 005,008,009,010,015**	**UE 025,035,045HM,045HN**	**UE 045HW,045HK,065**
		22 mm Duct Distributors:					
12	11.9	DP030D22RU	Duct steam distributor, 22mm, 12", 20 lbs/hr	1			
18	17.8	DP045D22R0	Duct steam distributor, 22mm, 18", 20 lbs/hr	1			
24	23.7	DP060D22R0	Duct steam distributor, 22mm, 24", 20 lbs/hr	1			
36	33.5	DP085D22R0	Duct steam distributor, 22mm, 36", 20 lbs/hr	1			
		30 mm Duct Distributors:					
12	11.9	DP030D30RU	Duct steam distributor, 30mm, 12", 33 lbs/hr		1		
18	17.8	DP045D30RU	Duct steam distributor, 30mm, 18", 42 lbs/hr		1		
24	23.7	DP060D30RU	Duct steam distributor, 30mm, 24", 42 lbs/hr		1		
36	33.5	DP085D30R0	Duct steam distributor, 30mm, 36", 47 lbs/hr		1		
48	41.4	DP105D30R0	Duct steam distributor, 30mm, 48", 47 lbs/hr		1		
60	49.3	DP125D30R0	Duct steam distributor, 30mm, 60", 47 lbs/hr		1		
72	65	DP165D30RU	Duct steam distributor, 30mm, 72", 47 lbs/hr		1		
		40 mm Duct Distributors:					
24	23.7	DP060D40RU	Duct steam distributor, 40mm, 24", 99 lbs/hr			1	2
36	33.5	DP085D40R0	Duct steam distributor, 40mm, 36", 103 lbs/hr			1	2
48	41.4	DP105D40R0	Duct steam distributor, 40mm, 48", 103 lbs/hr			1	2
60	49.3	DP125D40R0	Duct steam distributor, 40mm, 60", 103 lbs/hr			1	2
72	65	DP165D40R0	Duct steam distributor, 40mm, 72", 103 lbs/hr			1	2
84	80.8	DP205D40R0	Duct steam distributor, 40mm, 84", 103 lbs/hr			1	2

Distributor pipes should be mounted per the diagrams shown below, with a minimum of 6” from the center of the distributor pipe to the top of the duct and 3” minimum to the bottom.



To install the distributor pipes:

1. Cut a key shaped hole in the side of the duct to match the steam pipe and condensate return.
2. Apply silicone sealant to the mounting plate and insert the pipe through the hole and secure it with 4 sheet metal screws.
3. Connect the steam and condensate hoses using the hose clamps supplied.

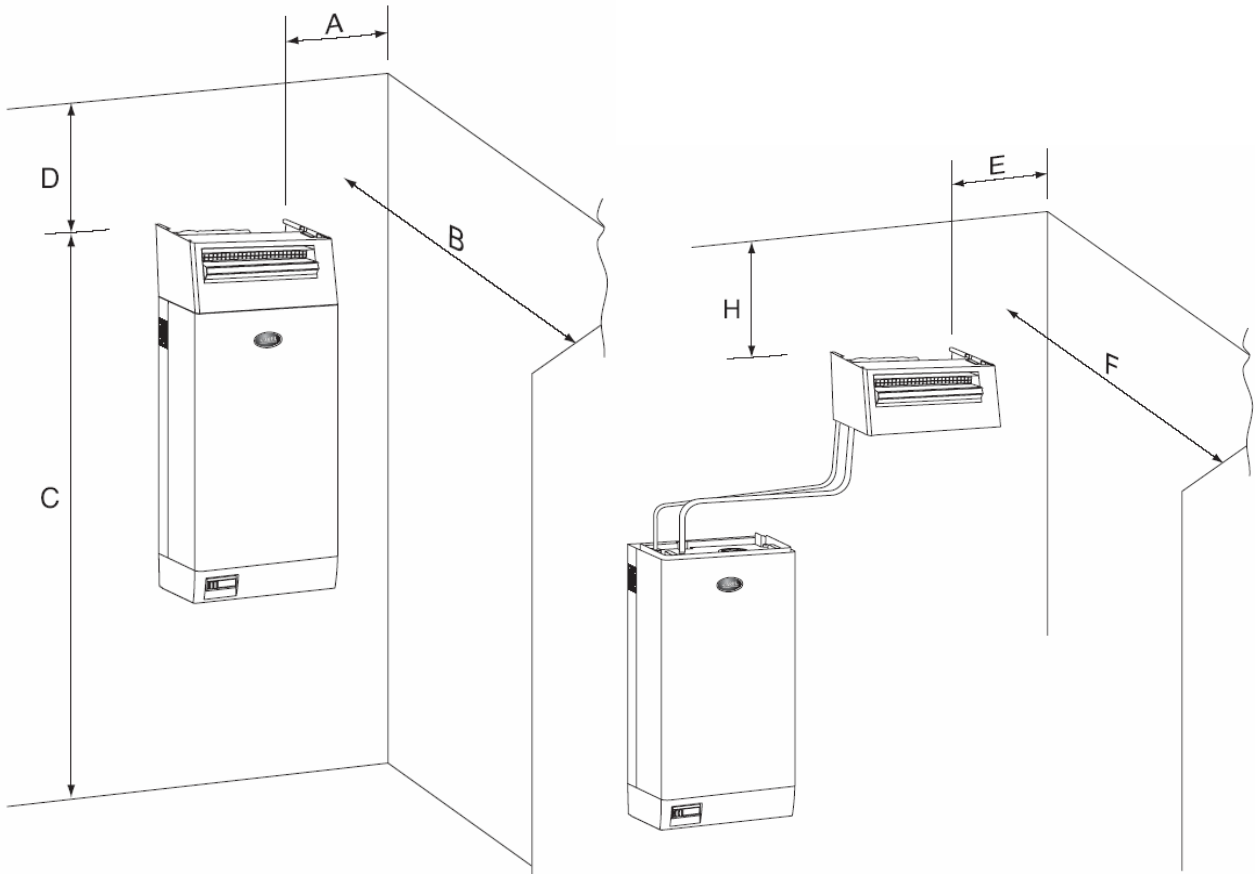


(Note: end support bracked supplied only with 36” and longer distributors.)

IMPORTANT: Allow 2 feet of straight duct downstream of the distributor pipes when the air temperature will be >55^{O}F. Allow 3 feet of straight duct if the air temperature will be <50^{O}F. Always allow 2 feet upstream. Turbulent air flow may require longer lengths.

1.4.1B Room distribution blower units

Refer to the manual supplied with the Room Distribution Units for specifics on the blower units themselves. Clearances required are shown below.



	VSDU0A						
	A	**B**	**C**	**D**	**E**	**F**	**H**
Minimum dimension (inches)	20	72	72	24	20	72	24
	VRDXL						
	36	120	72	48	36	120	48

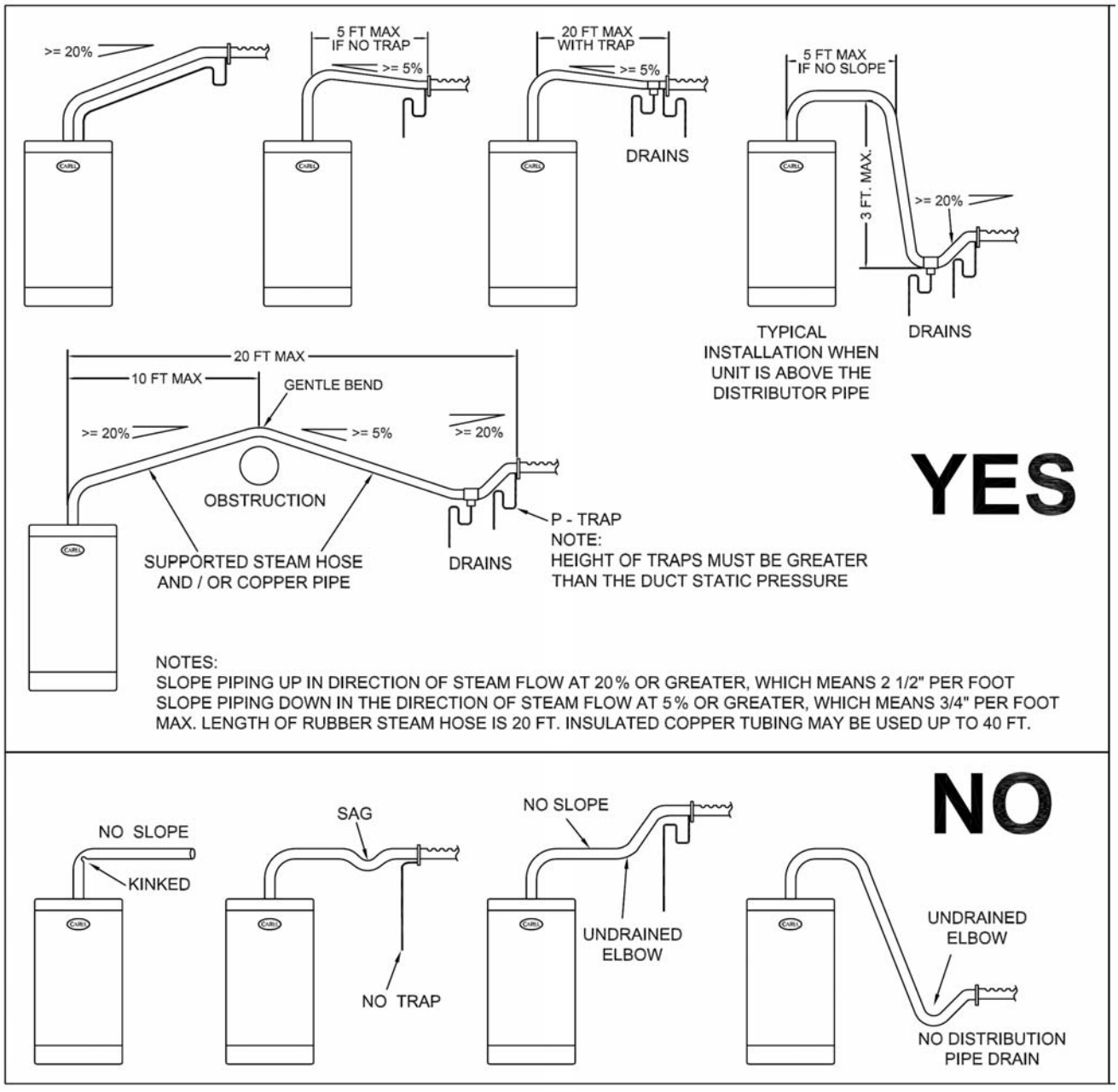
	Model										
	UE001	**UE003**	**UE005**	**UE008**	**UE009**	**UE010**	**UE015**	**UE025**	**UE035**	**UE045**	**UE065**
Room Blower Unit Model	**VSDU0A**							**VRDXL**			
Rated Power Watts	30							35			
Air Volume CFM	100							380			
Noise Level dBA	50							40			
Operating Temp/Humidity (°F / %RH)	14 to 104°F / 10 to 60%							14 to 140°F / 10 to 80%			

Cold rooms can be humidified using a Room Distribution Unit, making sure that this operates within its operating limits. The room must have operating temperatures of between -10°C and +20°C, with a percentage of relative humidity of no greater than 80% RH. If these limits are not possible, the steam can be distributed in the cold room using a distributor pipe in duct work. In any case, the steam must not come into direct contact with air discharge from the refrigeration unit in the cold room, to avoid possible condensation.

1.4.2 Steam Hoses

NINETY PERCENT (90%) OF ALL OPERATION PROBLEMS ARE CREATED BY IMPROPER STEAM PIPING FROM THE HUMIDIFIER UNIT TO THE DUCT DISTRIBUTOR PIPES. To avoid these problems, remember one simple fact when running the steam hose: steam naturally flows up hill, and condensate naturally flows down hill. Run the steam hose or piping to avoid any kinks, sharp elbows, or low spots that could collect or restrict the flow of steam to the distributor pipe, or the flow of condensate back to the humidifier. Support the hose adequately to avoid sags.

The following diagrams are to provide you with some guidelines. If you have a situation you are unsure of, *please* contact the factory for instructions.



IMPORTANT: Maximum length of rubber steam <u>hose</u> is 20 feet. Insulated copper tubing may be up to 40 feet. In all cases, minimize sharp bends and elbows – use 2-45° elbows instead of 90°s.
Hose size for UE 001, 003 = 22 mm.
Hose size for UE 005, 008, 009 and 015 = 30 mm.
Hose size for UE 025, 035, 045, 065 = 40 mm.
UE045 208-230V & UE065 need 2 hoses and distributors.

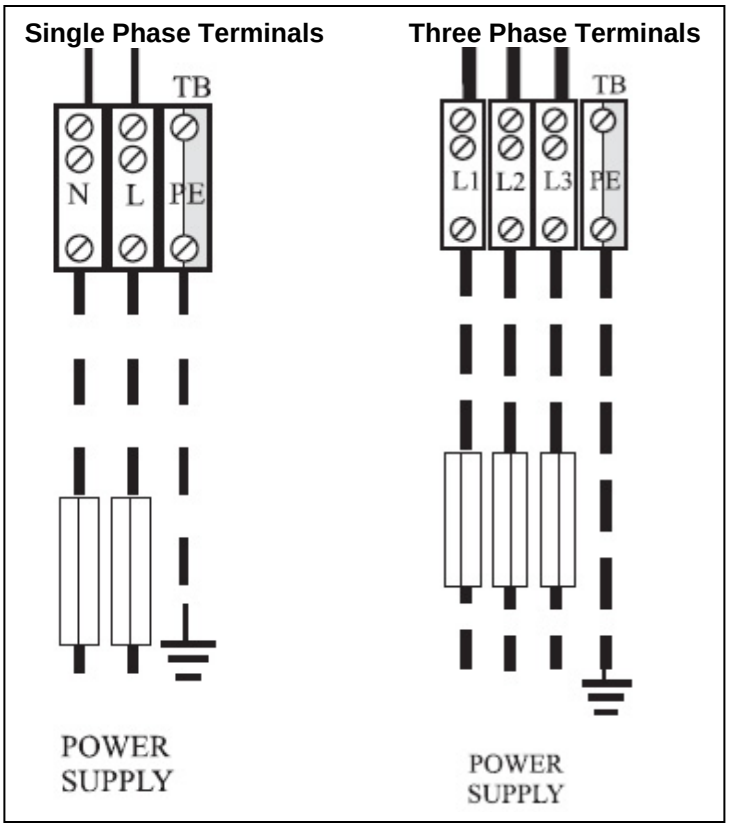
1.5 Power wiring

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.

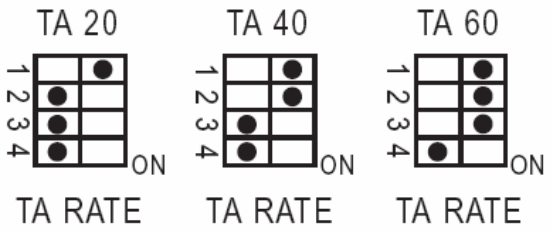
All wiring must be in accordance with local, state and national electric codes.

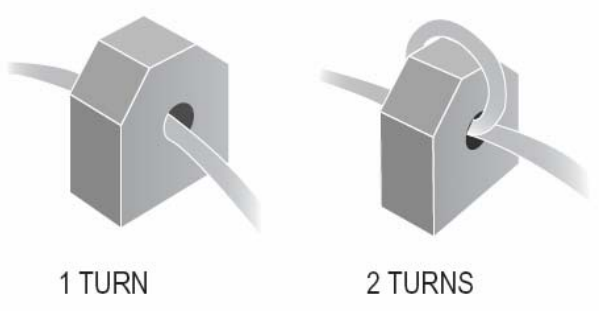
NOTE: to avoid unwanted interference, the power cables should be kept separate from any control wiring.

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 in models UE001 through UE015, and separate in models UE025 through UE065. Also make sure that the TA Rate DIP switches on the control board are set correctly per the table.

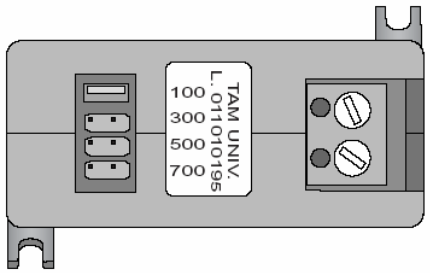


In models UE001 - UE015 make sure that the TAM on the circuit board has the proper number of power wire turns through it, and that the TA Rate DIP switches on the control board are set per the table on the following page.





In models UE025 - UE065 the TAM is independent and the jumper must then be on the right terminals per the table on the following page.



Model	Voltage Code	Voltage Phase	Nominal Current (Amps)	Power (kW)	Output (kg/hr)	Output (lbs/hr)	Turns Through TAM	TA Rate
UE001	U	208 - 1~N	5.4	1.12	1.5	3.3	1	20
	D	230 - 1~N	4.9				2	20
UE003	U	208 - 1~N	10.8	2.25	3	6.6	2	60
	D	230 - 1~N	9.8				1	20
	W	208 - 3~	6.2				1	20
	K	230 - 3~	5.6				1	20
	M	460 - 3~	2.8				2	20
UE005	U	208 - 1~N	18	3.75	5	11	1	40
	D	230 - 1~N	16.3				1	40
	W	208 - 3~	10.4				1	20
	K	230 - 3~	9.4				1	20
	M	460 - 3~	4.7				2	20
	N	575 - 3~	3.8				2	20
UE008	W	208 - 3~	16.7	6	8	17.6	1	40
	K	230 - 3~	15.1				2	60
	M	460 - 3~	7.5				1	20
	N	575 - 3~	6				1	20
UE009	U	208 - 1~N	31.4	6.52	9	20	1	60
	D	230 - 1~N	29.3				1	60
UE010	W	208 - 3~	20.8	7.5	10	22	1	40
	K	230 - 3~	18.8				1	40
	M	460 - 3~	9.4				1	20
	N	575 - 3~	7.5				1	20
UE015	W	208 - 3~	31.2	11.25	15	33	1	60
	K	230 - 3~	28.2				1	60
	M	460 - 3~	14.1				1	20
	N	575 - 3~	11.3				1	20
UE025	W	208 - 3~	52	18.75	25	55	1	300
	K	230 - 3~	47.1				1	300
	M	460 - 3~	23.5				1	300
	N	575 - 3~	18.8				1	300
UE035	W	208 - 3~	72.9	26.25	35	77	1	500
	K	230 - 3~	65.9				1	500
	M	460 - 3~	32.9				1	500
	N	575 - 3~	26.4				1	300
UE045	W	208 - 3~	93.68	33.75	45	99	1	500
	K	230 - 3~	84.72				1	500
	M	460 - 3~	42.4				1	500
	N	575 - 3~	33.9				1	500
UE065	M	460 - 3~	61.19	48.75	65	143	1	300
	N	575 - 3~	48.95				1	300

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

1.6 Connect Control Wiring

A typical humidifier control system includes a wall or return duct sensor or controller, a high limit duct humidistat and an air-proving switch. Placement of these devices is critical to proper operation of the overall system.

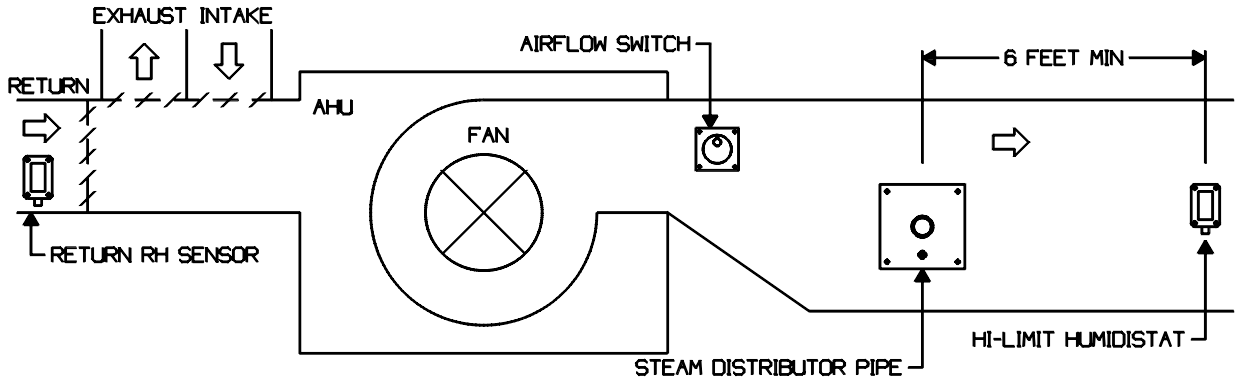
1.6.1 Controls Placement

(See following diagram)

The return air RH sensor must always be located BEFORE any outside air intake, in order to insure accurate sensing of the air from the space. Alternatively, a room RH sensor or humidistat can be used. Room sensors should be located on an inside wall or post and should not be hit by any discharge air streams from ducts. In a 100% outside air system, the RH sensor may be placed in the supply duct, at least 10 feet down stream of the distributor pipe to act as both hi-limit and control.

The airflow switch must be positioned to accurately open on a loss of airflow, to prevent the humidifier from running when there is no air to absorb the moisture.

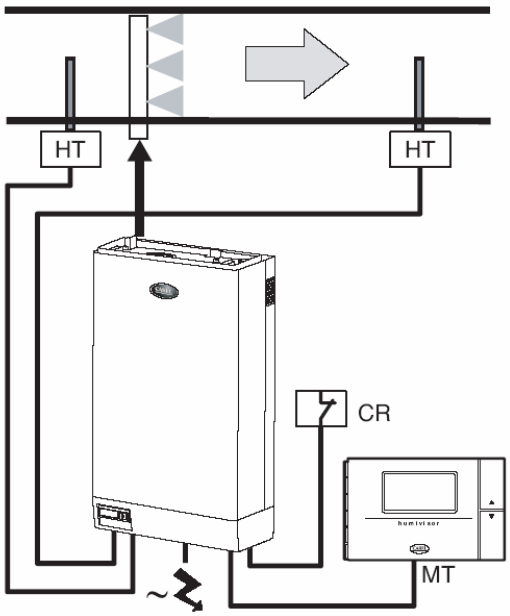
The hi-limit humidistat must be positioned far enough down stream of the steam distributor pipe(s) to prevent it from getting wet, but still allow it to accurately prevent over humidification of the duct that could result in condensation.

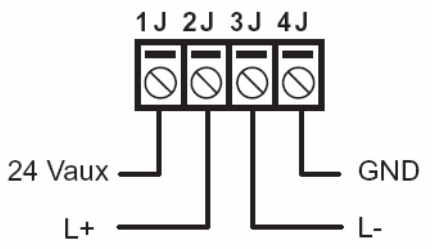


1.7 Control wiring

The HumiSteam 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 or return air duct. In the case where the HumiSteam uses a direct discharge blower unit, this is the only control needed. In ducts or air handlers, a high limit humidistat or sensor is usually added to act as a safety (CR), as well as an air flow proving device. The remote terminal HumiVisor (MT) may be added.



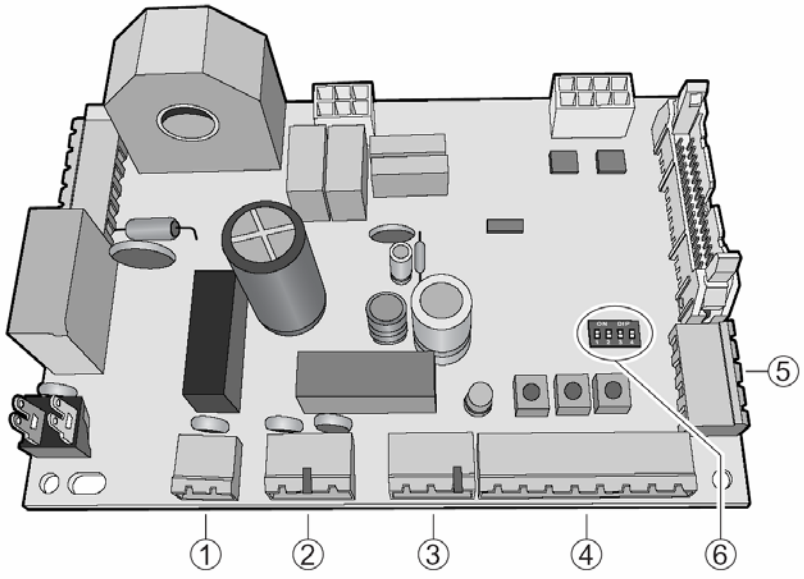


Remote Supervisor / Serial Communications:

This is a standard RS485 serial connection. It is recommended to keep wiring under 3,200 feet. Request Carel's communications documentation for additional information on this option.

Control wiring is made directly to the control board terminals:

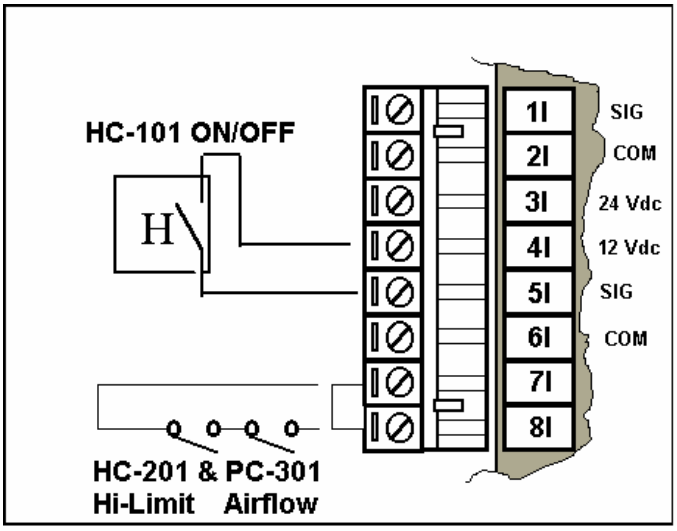
1. terminal block G (dehumidification contact);
2. terminal block H (alarm contact);
3. terminal block K (on/off, manual drain switch);
4. terminal block I (control signals);
5. terminal block J (to remote terminal or supervisory system);
6. dip-switch for selecting TA RATE.



For On/Off Operation:
Connect any simple humidistat, high-limits, air flow switch, and remote contacts in series from terminals 7I to 8I. **DO NOT apply any voltage to 7I & 8I.**

Circuits must be completed from 4I to 5I by a jumper and from 7I to 8I for the unit to operate. Use jumpers if devices are not connected.

Parameter A0 must be set to 0.

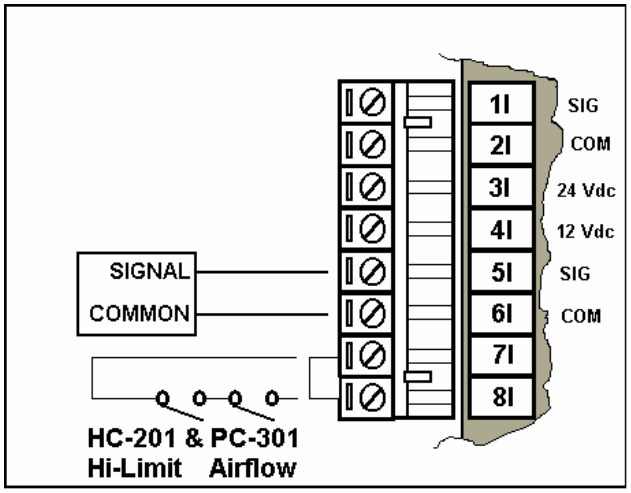


For Modulating Operation with External Controller:
Connect any external controller (0-1 Vdc, 0-10 Vdc

Parameter A0 must be set to 1.
Parameter A2 must be set per the OUT signal from the regulator:

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

NOTE: Safeties are high-limit humidistat, air flow switch, and/or external enable. **DO NOT apply any voltage to 7I & 8I.**

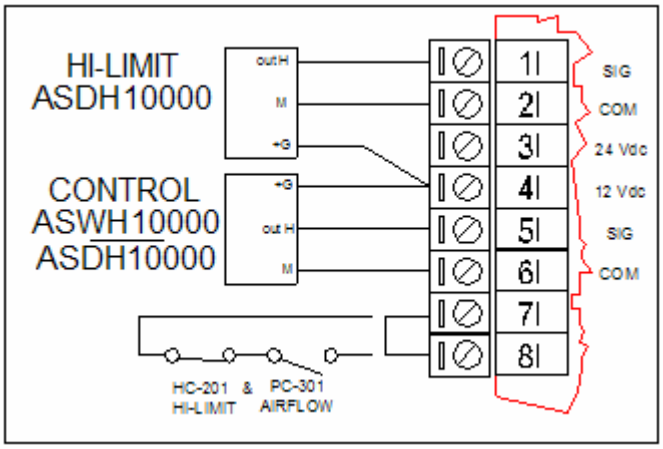


For Stand-Alone Modulating Operation:
Connect a high limit sensor and control sensor per the diagram at right. **DO NOT apply any voltage to 7I & 8I.**

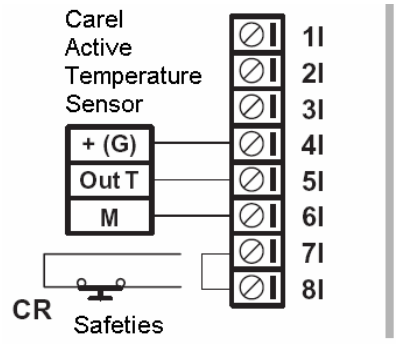
Parameter A0 must be set to 2 if no high limit sensor, 3 if a high limit sensor is used.
Parameter A2 must be set per the OUT signal from the sensor:

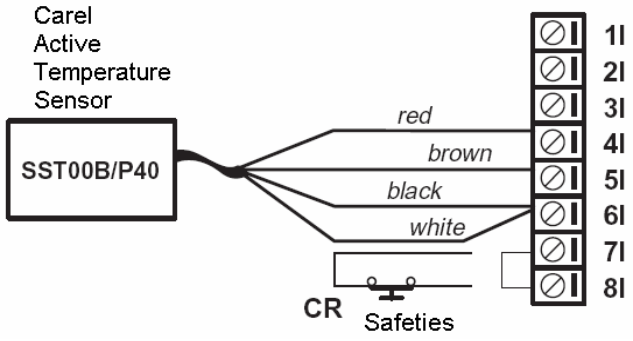
- voltage: 0 to 1 Vdc; 0 to 10 Vdc; 2 to 10 Vdc;
- current: 0 to 20 mA; 4 to 20 mA.

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



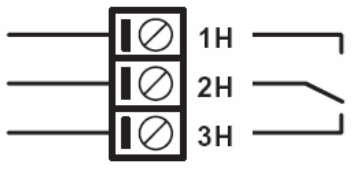
For Steam Baths (Turkish Baths):
In this case a temperature sensor is used to control the humidifier. Connect sensors per the diagrams below.





Parameter A0 must be set to 4. Parameter A2 must be set to 0.

Alarm Output:
The H terminals allows connection to an on-board SPDT alarm relay that provides No and NC contacts for remote indication of alarms.



Dehumidify Output:
Dehumidify contacts are also provided which can be used to control a dehumidifier from the humidifier control system (stand-alone modulating mode only). The contact is rated for 250 Vac, 8 Amp resistive and 2 Amp inductive loads.

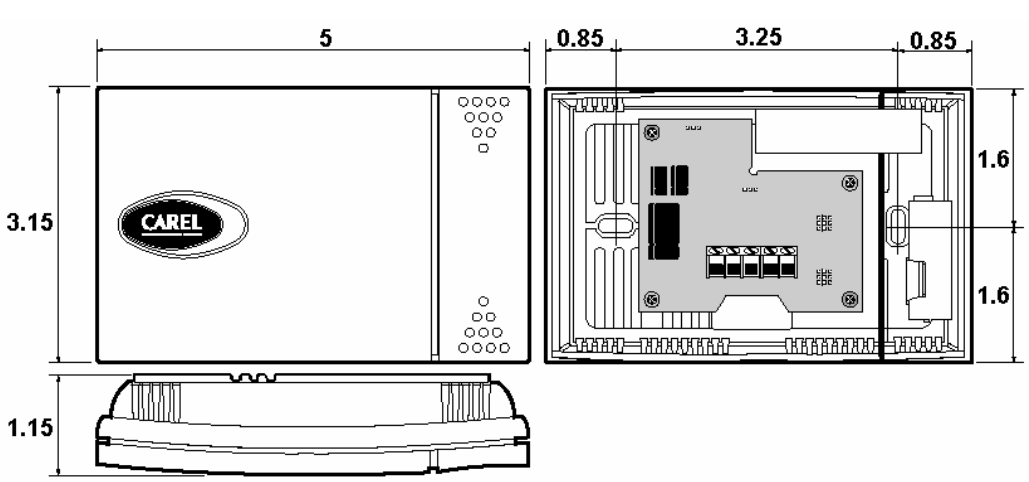
ASWH / ASDH – ASDH / ASDC Wall – Duct Temperature/Humidity Sensors

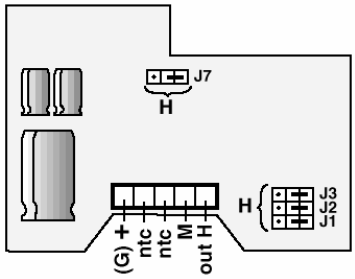
Model	Description
Humidity (0-1 VDC or 4-20 mADC)	
ASWH100000	Wall Humidity sensor (replaces SHWOOP)
ASDH100000	Duct Humidity sensor (replaces SSDOMH00/1)
Temperature & Humidity (NTC temp, 0-1 VDC or 4-20 mADC humidity)	
ASWC111000	Wall Temp/hum sensor (replaces SWNTCTH0/1 & STHONTC0/1)
ASWC110000	Wall Temp/hum sensor (replaces STHOAP)
Temperature & Humidity (0-1 VDC or 4-20 Madc temp & humidity)	
ASDC111000	Duct temp/hum sensor (replaces SDNTCTH0/1)
ASDC110000	Duct temp/hum sensor (replaces SSDOMHT0/1)

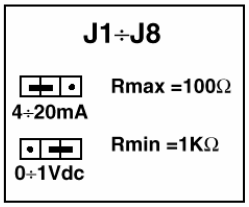
Temperature: NTC thermistor, 10 Kohm at 25°C (77°F) (ASWC/ASDC only)
Accuracy: +- 0.25°C from 0 to 50°C (32 to 122°F)

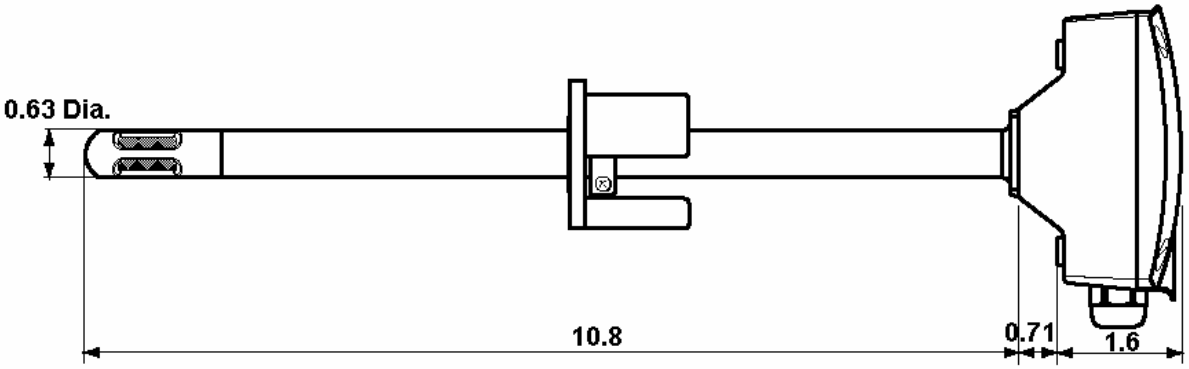
Humidity: Thin film capacitor
Linear 0-1 Vdc or 4-20 mAdc from 10 to 90%RH
Accuracy: +- 3%RH from 20 to 90%RH
calibrated at 55%RH and 25°C (77°F)
+- 5%RH above 90%RH and below 20%RH

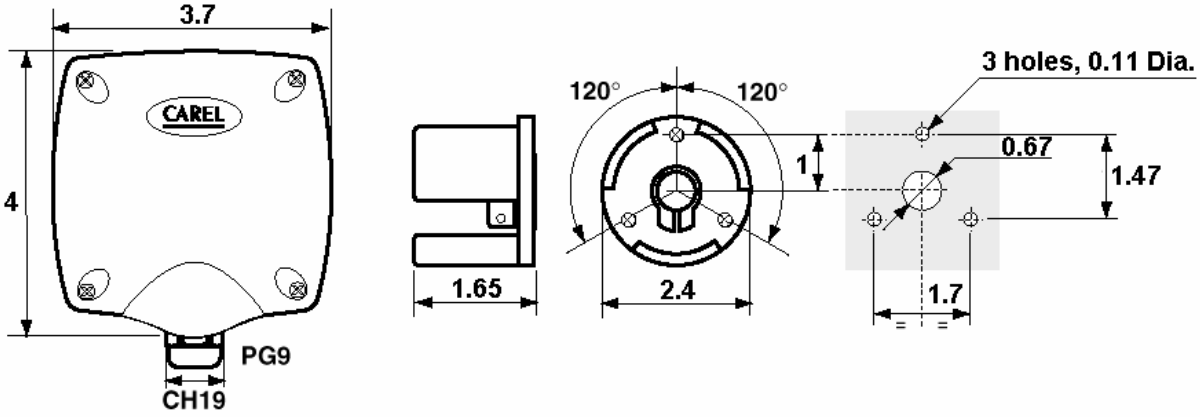
Response time: 60 seconds
Power: 12 to 24 Vac/dc or +12 to –12 Vdc
Housing: Wall: ABS with glassfiber fill
Certifications: Calibrated to NIST traceable humidity/temperature standard, CE Approved











HC-101 and HC-201 Wall and Duct Humidistats

Mounting the HC-101 room humidistat: Mount the HC-101 humidistat to an inside wall or post in the area to be humidified. Position it so that no drafts from registers or outlets are blowing on it. Be sure that it is not placed over a device that could generate heat or vapor ie: stove, machinery, cleaning vat. The unit has three wire leads, Orange, Brown and Red. Use the Orange and Brown leads for control operation. Use the Orange and Red leads for hi-limit operation.

HC-101

HC-201

Mounting the HC-201 duct humidistat: Cut a hole in the side of the duct and mount the HC-201 humidistat to the duct, using the screws provided, at least 6 feet down stream of any live steam or mist. The unit has three wire leads, Orange, Brown and Red. Use the Orange and Brown leads for hi-limit operation.

Wiring Diagram

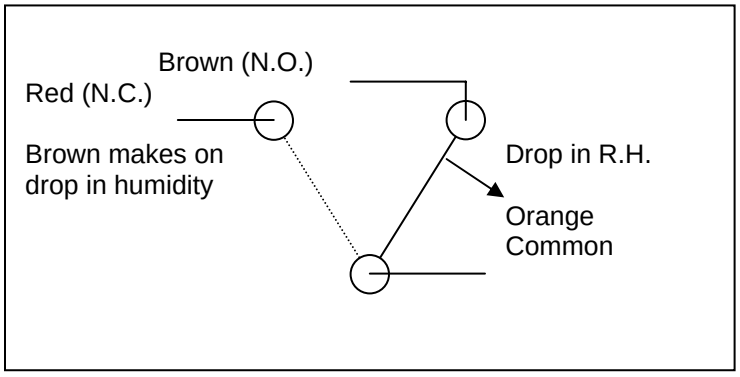


TABLE 1. SPECIFICATIONS

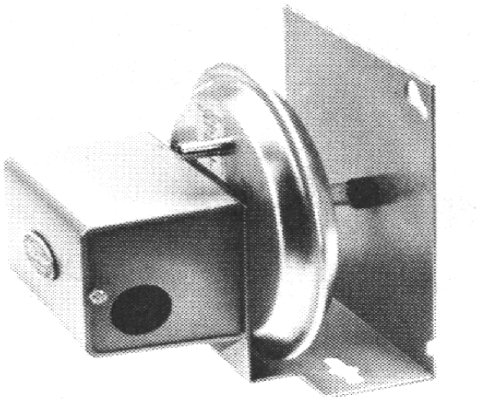
Part No.	Type	Scale Range %RH	Diff. %RH	Operating Limits °F (°C)	Shipping & Storage °F (°C)	Connection	Cover	Dimensions In. (mm)
HC-101	Wall	10 to 90	5	40 to 125 (4 to 2)	-40 to 140 (-40 to 60)	6" (150 mm) color coded leads	Beige plastic	4-3/8 x 2-7/8 x 1-5/8 (111 x 73 x 41)
HC-201	Duct	15 to 95	5	40 to 125 (4 to 2)	-40 to 140 (-40 to 60)	Coded screw terminals	Metal	4-3/4 x 6-1/2 x 2-1/4 (121 x 165 x 57)

TABLE 2. MAXIMUM ELECTRICAL RATINGS

Part No.	AC Volt 50/60 Hz	FLA	LRA	Resistive Amps	Pilot Duty VA
HC-101 HC-201	24	-	-	8	60
	120	7.2	43.2	8	345
	240	3.6	21.6	8	345

PC-301 Air Proving Switch

Mounting the PC-301 air flow switch:
Mount the airflow switch in the supply or return duct using the screws supplied. Mount the device so that the diaphragm is in a vertical position as shown at right.



If the airflow switch is to be mounted on the return duct (vacuum), then mount it in a vertical position by the small plate. Drill a 7/16" hole in the side of the duct and connect the supplied tubing to the low pressure tap on the airflow switch and then run it through the drilled hole in the duct. Put no more than 2" of tubing into the duct. Caulk around the tubing where it enters the duct. The high pressure tap is left open to atmosphere.

If the airflow switch is to be mounted to the supply duct (pressure), then simply drill a 7/16 hole in the side of the duct, apply caulking to the large plate, and mount the device with the large plate to the duct and the high pressure tap/tubing mated the hole. The low pressure tap is left open to atmosphere.

MOUNTING DIAGRAMS

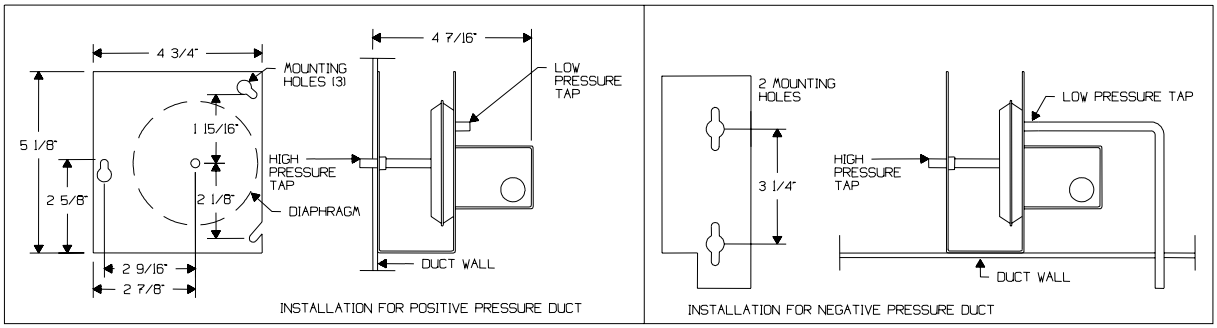
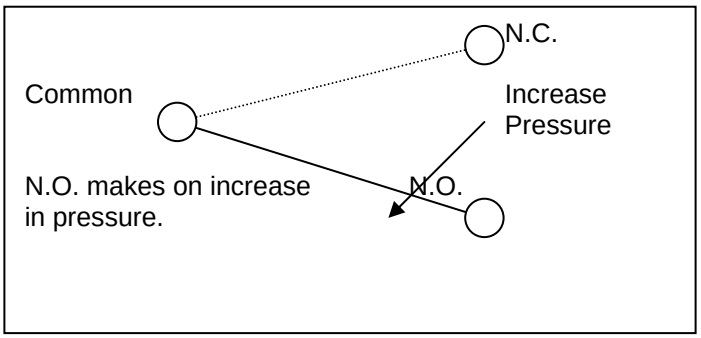


TABLE 1. MAXIMUM ELECTRICAL SWITCH RATINGS

Vac	Full Load Amps	Locked Rotor Amps	Pilot Duty (VA)	Non-Inductive Amps
24V	-	-	60	10
120V	6.25	37.5	300	10
240V	3.1	18.6	300	10
277V	2.7	16.2	300	10

WIRING DIAGRAM



2 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.

NOTE: for humidifiers with control H only, the same function can be performed automatically after staring the appliance (see par. 6.2.1).

2.1 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.

☐ Hi-limit humidistat is wired to open on humidity rise above set point.

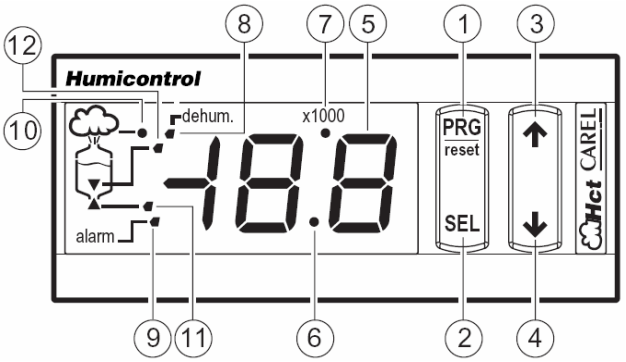
☐ Unit wires have been checked to make sure they and all connectors are tight from shipping.

☐ The steam hose(s) are run correctly 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.

NOTE: If you ordered a factory startup, this checklist will be required. Failure to complete this checklist may result in additional charges.

2.2 The HumiControl 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.

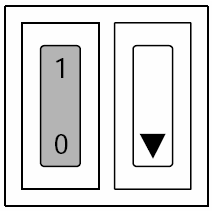
10: LED to indicate humidifier is producing steam. Flashing indicates lower than required production.

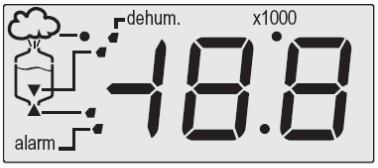
11: LED to indicate when unit is filling.

12: LED to indicate when unit is draining.

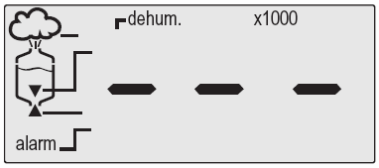
2.3 Start-up Procedure

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



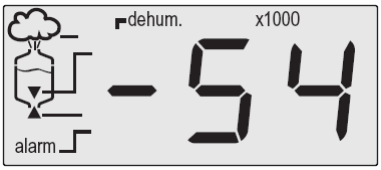


Initially, all LEDs light - this lasts about 1-2 seconds.



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.



2.3.1 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.

3 Operation

3.1 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.

3.2 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.

3.3 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.

3.4 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 proportional band	accessible only in stand-alone mode (A0=2, 3 or 4)
P2 (1)	P3 to 100	100	%RH	High humidity or high temperature alarm set point	
	P3 to 60	60	°C		
P3 (1)	0 to P2	0	%RH, °C	Low humidity/temp. alarm set point	
P4	0 to 100	1	min	Alarm delay (0 = 30 seconds)	
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 stand-alone mode (A0 = 2 or 3)

Code	Range	Default	Unit	Description	
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, °C, %	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.

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 calibration	
b4	0 to 199 0k2, ….2k0	0	µS/cm	Water conductivity (0=automatic measurement), otherwise the unit uses the value as the conductivity to control drain cycles.	
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")

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

3.5 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 CONFIGURATION SETTINGS

HumiSteam Parameters
H Controller

Parameter	DDC 0-10 vdc	DDC 4-20ma	ON / OFF	STAND ALONE	STAND ALONE WITH HIGH LIMIT
A0	1	1	0	2	3
A1	1	1	1	1	1
A2	1	4	N/A	0	0
A3	N/A	N/A	N/A	0	0
A4	N/A	N/A	N/A	100	100
A5	N/A	N/A	N/A	0	0
A6	N/A	N/A	N/A	N/A	0
A7	N/A	N/A	N/A	N/A	0
A8	N/A	N/A	N/A	N/A	100
A9	N/A	N/A	N/A	N/A	0
b1	2	2	2	2	2
b2	0	0	0	0	0
b3	0.0	0.0	0.0	0.0	0.0
b4	0	0	0	0	0
b5	1.5	1.5	1.5	1.5	1.5
b6	2.0	2.0	2.0	2.0	2.0
b7	75	75	75	75	75
b8	100	100	100	100	100
b9	100	100	100	100	100
bb	0	0	0	0	0
bE	N/A	N/A	N/A	N/A	N/A
bF	3	3	3	3	3
C0	1	1	1	1	1
C1	4	4	4	4	4
C2	0	0	0	0	0
C3	1	1	1	1	1
C4	3	3	3	3	3
C5	0	0	0	0	0
C6	0	0	0	0	0
C7	0	0	0	0	0
d1	*	*	*	*	*
d2	*	*	*	*	*
d3	*	*	*	*	*
d4	*	*	*	*	*
d5	*	*	*	*	*
d9	*	*	*	*	*
P0	100	100	100	100	100
P1	N/A	N/A	N/A	5	5
P2	N/A	N/A	N/A	100	100
P3	N/A	N/A	N/A	0	0
P4	N/A	N/A	N/A	1	1
P5	N/A	N/A	N/A	N/A	N/A
P6	N/A	N/A	N/A	N/A	N/A
P7	N/A	N/A	N/A	N/A	100
P8	N/A	N/A	N/A	N/A	5
P9	N/A	N/A	N/A	N/A	100
ST	N/A	N/A	N/A	50	50

N/A - Not Accessible

* - Read Only

3.6 Seasonal Shut Down

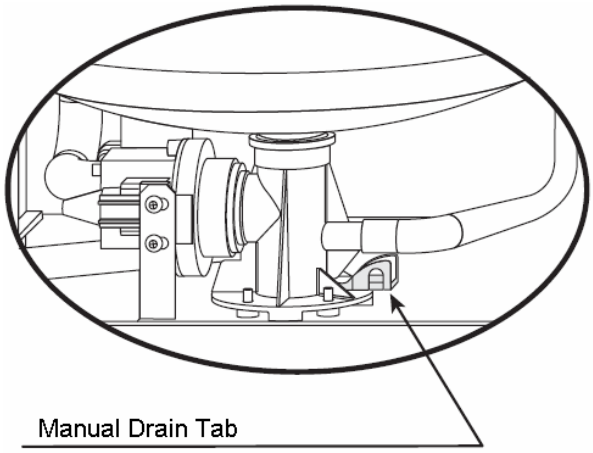
During seasonal shut-down or alternatively shut-down for maintenance of the electrical parts and/or the plumbing, the humidifier should be placed out-of-service.

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

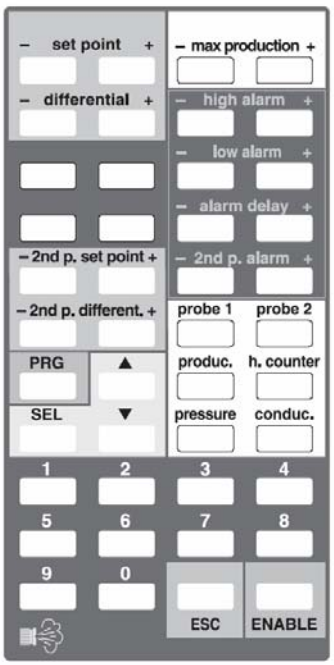
Follow these instructions:

- 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. For UE025 and larger humidifiers, use the manual drain device on the manifold, pulling the manual drain tab until it releases (see sketch at right).



3.7 The Remote Control



A hand-held infra-red remote control is available for the HumiSteam. This device permits programming the humidifier(s) from across the room and also makes available buttons with specific functions.

NOTE: To use the remote control, parameter C2 must be set on each humidifier to give it an access code so that the remote control can address it. If all humidifiers in range of the remote control have the same access code, then they will respond simultaneously to commands from the remote control. Setting C2 to 0 on the humidifier will allow the remote control to be used without the need of a code.

To use the remote control, aim it at the humidifier and press ENABLE. All the humidifiers in range will display their activation codes. If a humidifier has its C2 parameter set to 0, it will skip this step and display the first parameter.

To program a humidifier, enter its access code into the remote control. If successful, the humidifier will display the first parameter.

To program main parameters, simply press the + or - button on the remote control of the parameter you want to modify and the humidifier will display that parameter code. Press the SEL button on the remote control and the value will be displayed. Modify the value by using the ↑ and ↓ buttons on the remote control. Then press the next parameter button and so on. Values are saved when you exit the programming phase.

To program other parameters, press any + or - button on a parameter, then use the SEL and ↑ and ↓ buttons on the remote control in the same way as the buttons on the front of the humidifier controller.

To exit the programming phase and save the modifications made to the parameters, press the PRG button.
To exit without saving the modifications, press the ESC button.
To exit the programming phase without confirming the modifications made:

- do not press any button for 60 seconds, if the parameter code is displayed;
- do not press any button for 120 seconds, if the value of the parameter is displayed.

3.8 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.

3.9 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	**Humivisor**	**Causes**	**Solution**	**Action**	**Reset display**	**Alarm relay**	**Reset relay**
H				**H**			
EH	E102	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	E103	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	E105	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	E113	Excessive reduction in output	1. Cylinder completely spent or water with excessive foam. Perform maintenance on the cylinder.	Shut-down	Manual	Active	Manual

Controller H	Humivisor	Causes	Solution	Action H	Reset display	Alarm relay	Reset relay
EF	E114	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
EA	E115	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	E116	Drain malfunction	Check the drain circuits and the correct operation of the drain valve	Shut-down	Manual	Active	Manual
Ec	E131	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-	E121	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_	E122	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=	E124	High hi-limit humidity	Check the operation of the outlet probe	Signal only	Manual	Active	Auto

Controller H	Humivisor	Causes	Solution	Action H	Reset display	Alarm relay	Reset relay
E0	E101	Internal memory error	1. Reset the default parameters (see Chap. 7.5) 2. If the problem persists, contact the CARE service center	Shut-down	Reprog. By Carel	Active	Reprog. By Carel
EI	E112	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 CARE service center	Shut-down	Reprog. Params.	Active	Reprog. Params.
E2	E130	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	E120	Room sensor or control signal not connected	Check the connection of the probe, parameter A2 for the room probe and the setting of parameter A0 (see page 23)	Shut-down	Manual	Active	Auto
E4	E123	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	E132	Cylinder being depleted signal	Perform maintenance and/or replace the cylinder	Signal only	Manual	Not active	Auto
CL	E133	Cylinder depleted signal cylinder	Perform maintenance and/or replace the only	Signal only	Not available	Not active	N/A
EU	E134	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	E135	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	E136	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

Controller H	Humivisor	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.	-	-	-	-

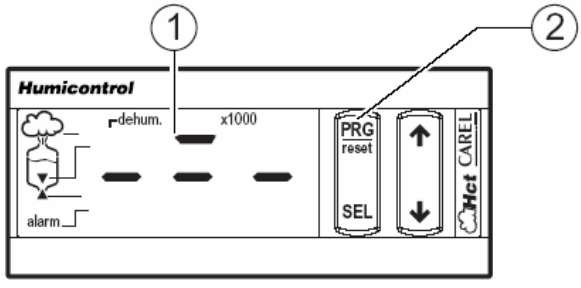
3.10 Trouble-Shooting

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

problem	causes	solutions
Water in the cylinder turns black	1. minerals in the cylinder have overconcentrated 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.

3.11 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.

4 Maintenance

4.1 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.

4.2 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 careful 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.

4.2.1 Replacing the cylinder

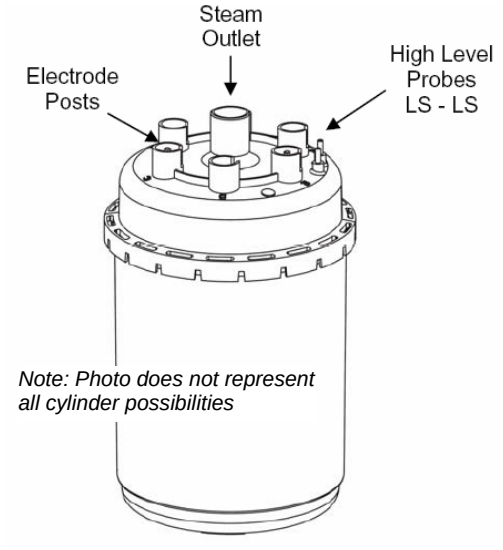
IMPORTANT WARNING: the cylinder may be hot. Allow it to cool before touching it or use protective gloves.
To replace the cylinder:

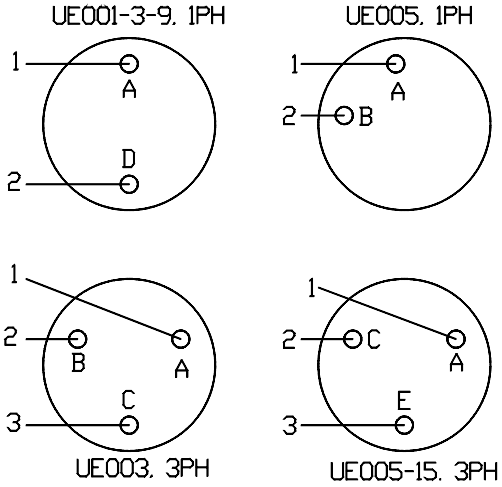
- completely drain the cylinder by pressing and holding the manual drain switch or by pressing the ↑ and ↓ buttons simultaneously for 2 seconds to force a manual drain. This procedure can be stopped at any time by again pressing the ↑ and ↓ buttons for 2 seconds;
- turn the humidifier off and disconnect 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. Threaded nuts on power wires must be connected with 22 to 29 inch-pounds of torque.

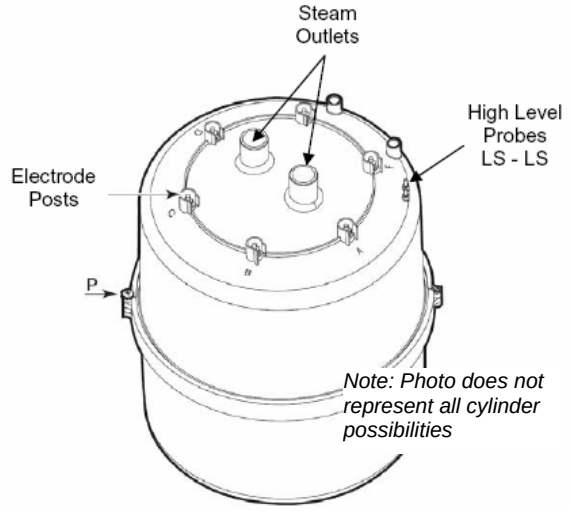
Wiring of cylinders for UE025, UE035, UE045, UE065 units and voltages

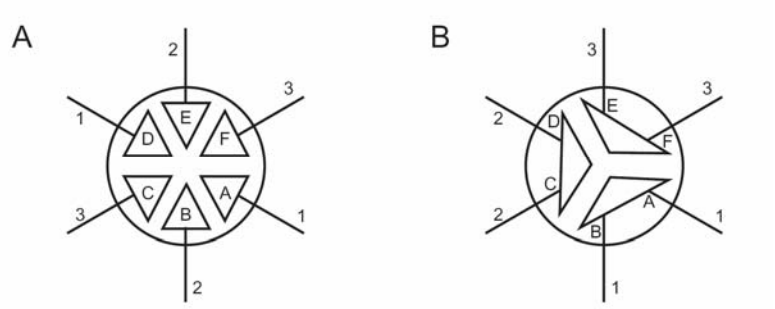
Connection of single or three phase UE 001 to 015 models





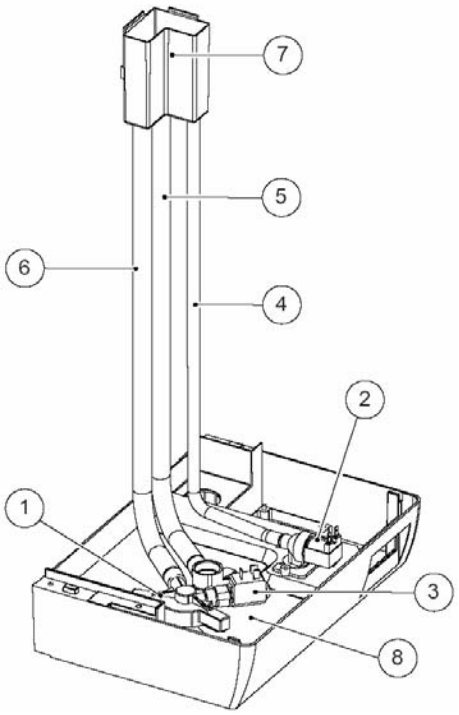
Connection of three phase UE 025 to 065 models





Model	Conductivity	Power Supply (Vac)			
		208	230	460	575
025	125/350	A	A	B	B
	350/1250	B	B	B	B
035	125/350	A	A	B	B
	350/1250	A	A	B	B
045	125/350	A	A	B	B
	350/1250	A	A	B	B
065	125/350	/	/	B	B
	350/1250	/	/	B	B

UE001-UE015



4.2.2 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.

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

- **Drain valve /drain pump**:

Remove the valve body or pump, clean if necessary using the same cleaning solution as for the steam cylinder and a soft brush.

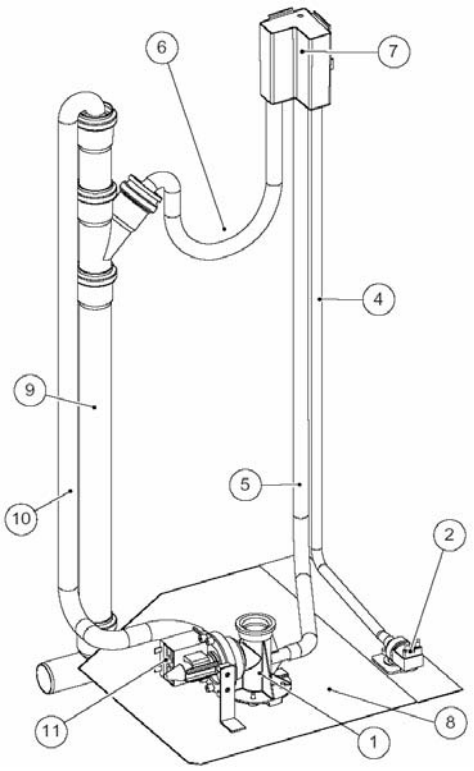
- **Drain pan**:

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**:

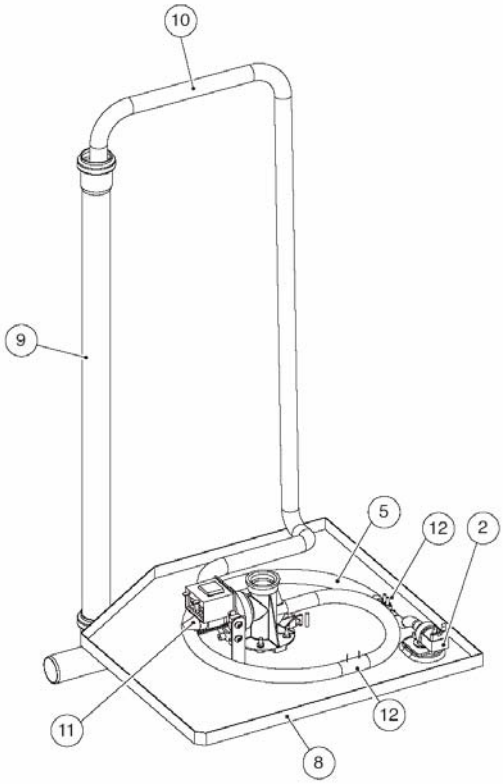
Check that these are clear and clean or replace if necessary.

UE025, UE035



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

UE045, UE065



4.3 ***Replacement Parts***

4.3.1 Single Phase Humidifiers

Standard spare parts	Model			
	UE001	**UE003**	**UE005**	**UE009**
Water parts				
fill cup + conductivity meter	18C453A008	18C453A008	18C453A008	18C453A008
fill valve kit	KITVC00006	KITVC00006	KITVC00006	KITVC00012
Drain valve kit	13C499A030	13C499A030	13C499A030	13C499A030
internal pipe kit	UEKT00000S	UEKT00000S	UEKT00000S	UEKT00000M
Electrical parts				
Contactor	0203000AXX	0203000AXX	0203001AXX	0203001AXX
power transformer: 208/230/460/575-24 Vac, 100 VA NEW (>1/1/06)	09C565A002	09C565A002	09C565A002	09C565A002
fuse holder	0606192AXX	0606192AXX	0606192AXX	0606192AXX
fuse	0605319AXX	0605319AXX	0605319AXX	0605319AXX
Electronic parts				
LED display ver.C-P	UEKDP00000	UEKDP00000	UEKDP00000	UEKDP00000
control module ver.H-T	UEH0000000U00	UEH0000000U00	UEH0000000U00	UEH0000000U00
control board ver.C-P **	UEP0000000U00	UEP0000000U00	UEP0000000U00	UEP0000000U00
control board ver.H-T	98C474C004	98C474C004	98C474C004	98C474C004
flat connection cable	59C460A003	59C460A003	59C460A003	59C460A003
remote control	TELUE0E000	TELUE0E000	TELUE0E000	TELUE0E000

4.3.2 Three Phase Humidifiers

Standard Spare Parts

Model	UE003	UE005	UE008	UE010	UE015	UE025	UE035	UE045	UE065
Water Parts									
Fill Cup + Conductivity Meter	18C453A008	18C453A008	18C453A008	18C453A008	18C453A008	18C453A008	18C453A008	18C453A008	
Fill Valve Kit	KITVC00006	KITVC00006	KITVC00006	KITVC00012	KITVC00012	KITVC00040	KITVC00040	KITVC00040	KITVC00070
Drain Valve Kit	13C499A030	13C499A030	13C499A030	13C499A030	13C499A030	KITPS00000	KITPS00000	KITPS00000	KITPS00000
Internal Pipe Kit	UEKT00000S	UEKT00000S	UEKT00000S	UEKT00000M	UEKT00000M	UEKT00000L	UEKT00000L	UEKT00000L	UEKT0000XL
Conductivity Probe:									
208-230V								18C480A011	
400-460-575V									18C480A011
Electrical Parts									
Contactors	0203000AXX	0203000AXX	0203000AXX	0203001AXX	0203001AXX	0203001AXX	0203008AXX	0203009AXX(5)	0203007AXX(2)(3)
								0203007AXX (2,3,4)	
Power Transformers:									
208/230/460/575-24 Vac, 100VA NEW (>1/1/06)	09C565A002	09C565A002	09C565A002	09C565A002	09C565A002	09C479A062	09C479A062	09C479A062	09C479A062
Fuse Holders	0606192AXX	0606192AXX	0606192AXX	0606192AXX	0606192AXX	0606193AXX	0606193AXX	0606193AXX	0606193AXX
Fuses 1,2:									
208-230V	0605319AXX	0605319AXX	0605319AXX	0605319AXX	0605319AXX	0605319AXX	0605319AXX	0605319AXX	0605319AXX
400-460-575V						0605318AXX	0605318AXX	0605318AXX	0605318AXX
Fuse 3						0605319AXX	0605319AXX	0605319AXX	0605319AXX
Fuse 4						0605624AXX	0605624AXX	0605624AXX	0605624AXX
Pump Relay						0102001AXX	0102001AXX	0102001AXX	0102001AXX
Electrical Parts									

Standard Spare Parts

Model	UE003	UE005	UE008	UE010	UE015	UE025	UE035	UE045	UE065
Control Module Ver. H-T	UEH0000000U00								
Control Board Ver. C-P **	UEP0000000U00								
Control Board Ver. H-T	98C474C004	98C474C004	98C474C004	98C474C004	98C474C004	98C474C005	98C474C005	98C474C005	98C474C005
Flat Connection Cable	59C460A003	59C460A003	59C460A003	59C460A003	59C460A003	59C460A003	59C460A003	59C460A003	59C460A003
Remote Control	TELUE0*000	TELUE0*000	TELUE0*000	TELUE0*000	TELUE0*000	TELUE0*000	TELUE0*000	TELUE0*000	TELEUE*000

4.3.3 Replacement Steam Cylinders & Parts

Single Phase Humidifiers

Model	UE001	UE003	UE005	UE009
Steam Cylinders - disposable				
200-230/1 VAC Standard conductivity	BL0S1F00H1	BL0S1F00H1	BL0S2F00H0	BL0S3F00H0
200-230/1 VAC Low conductivity	BL0S1E00H1	BL0S1E00H1	BL0S2E00H0	BL0S3E00H0
Steam Cylinders - cleanable				
200-230/1 VAC Standard conductivity			BLCS2F00W0	BLCS3F00W0
200-230/1 VAC Low conductivity			BLCS2E00W0	BLCS3E00W0
Replacement Electrodes				
electrode kit 200-230/1 V Standard conductivity			KITBLCS2F0	KITBLCS3F0
electrode kit 200-230/1 V Low conductivity			KITBLCS2E0	KITBLCS3E0
electrode gasket kit			KITBLC2FG0	KITBLC3FG0

Three Phase Humidifiers

Model	UE003	UE005	UE008	UE010	UE015	UE025	UE035	UE045	UE065, 090, 130
Steam Cylinders - disposable									
200-230/3 VAC Standard conductivity	BL0T1B00H1	BL0T2B00H0	BL0T2B00H0	BL0T3B00H0	BL0T3B00H0	BL0T4C00H0	BL0T4B00H0	BL0T5A00H1	
460/3 VAC Standard conductivity	BL0T1D00H1	BL0T2D00H0	BL0T2D00H0	BL0T3D00H0	BL0T3D00H0	BL0T4D00H0	BL0T4D00H0	BL0T4D00H0	BL0T5D00H0
575/3 VAC Standard conductivity		BL0T2D00H0	BL0T2D00H0	BL0T3D00H0	BL0T3D00H0	BL0T4D00H0	BL0T4D00H0	BL0T4D00H0	BL0T5D00H0
200-230/3 VAC Low conductivity	BL0T1A00H1	BL0T2A00H0	BL0T2A00H0	BL0T3A00H0	BL0T3A00H0	BL0T4B00H0	BL0T4B00H0	BL0T5A00H1	
460/3 VAC Low conductivity	BL0T1B00H1	BL0T2C00H0	BL0T2C00H0	BL0T3C00H0	BL0T3C00H0	BL0T4D00H0	BL0T4C00H0	BL0T4C00H0	BL0T5C00H0
575/3 VAC Low conductivity		BL0T2C00H0	BL0T2C00H0	BL0T3C00H0	BL0T3C00H0	BL0T4D00H0	BL0T4D00H0	BL0T4D00H0	BL0T5D00H0
Steam Cylinders - cleanable									
200-230/3 VAC Standard conductivity		BLCT2B00W0	BLCT2B00W0	BLCT3B00W0	BLCT3B00W0	BLCT4C00H0	BLCT4B00H0	BLCT5B00H0	
460/3 VAC Standard conductivity		BLCT2D00W0	BLCT2D00W0	BLCT3D00W0	BLCT3D00W0	BLCT4D00H0	BLCT4D00H0	BLCT4D00H0	BLCT5D00H0
575/3 VAC Standard conductivity		BLCT2D00W0	BLCT2D00W0	BLCT3D00W0	BLCT3D00W0	BLCT4D00H0	BLCT4D00H0	BLCT4D00H0	BLCT5D00H0
200-230/3 VAC Low conductivity		BLCT2A00W0	BLCT2A00W0	BLCT3A00W0	BLCT3A00W0	BLCT4B00H0	BLCT4B00H0	BLCT5B00H0	
460/3 VAC Low conductivity		BLCT2C00W0	BLCT2C00W0	BLCT3C00W0	BLCT3C00W0	BLCT4D00H0	BLCT4C00H0	BLCT4C00H0	BLCT5C00H0
575/3 VAC Low conductivity		BLCT2C00W0	BLCT2C00W0	BLCT3C00W0	BLCT3C00W0	BLCT4D00H0	BLCT4D00H0	BLCT4D00H0	BLCT5D00H0
Replacement Electrodes									
electrode kit 200-230/3 V Standard conductivity		KITBLCT2B0	KITBLCT2B0	KITBLCT3B0	KITBLCT3B0	KITBLCT4C0	KITBLCT4B0	KITBLCT5B0	
electrode kit 460/3 VAC Standard conductivity		KITBLCT2D0	KITBLCT2D0	KITBLCT3D0	KITBLCT3D0	KITBLCT4D0	KITBLCT4D0	KITBLCT4D0	KITBLCT5D0
electrode kit 575/3 VAC Standard conductivity		KITBLCT2D0	KITBLCT2D0	KITBLCT3D0	KITBLCT3D0	KITBLCT4D0	KITBLCT4D0	KITBLCT4D0	KITBLCT5D0
electrode kit 200-230/3 V Low conductivity		KITBLCT2A0	KITBLCT2A0	KITBLCT3A0	KITBLCT3A0	KITBLCT4B0	KITBLCT4B0	KITBLCT5B0	

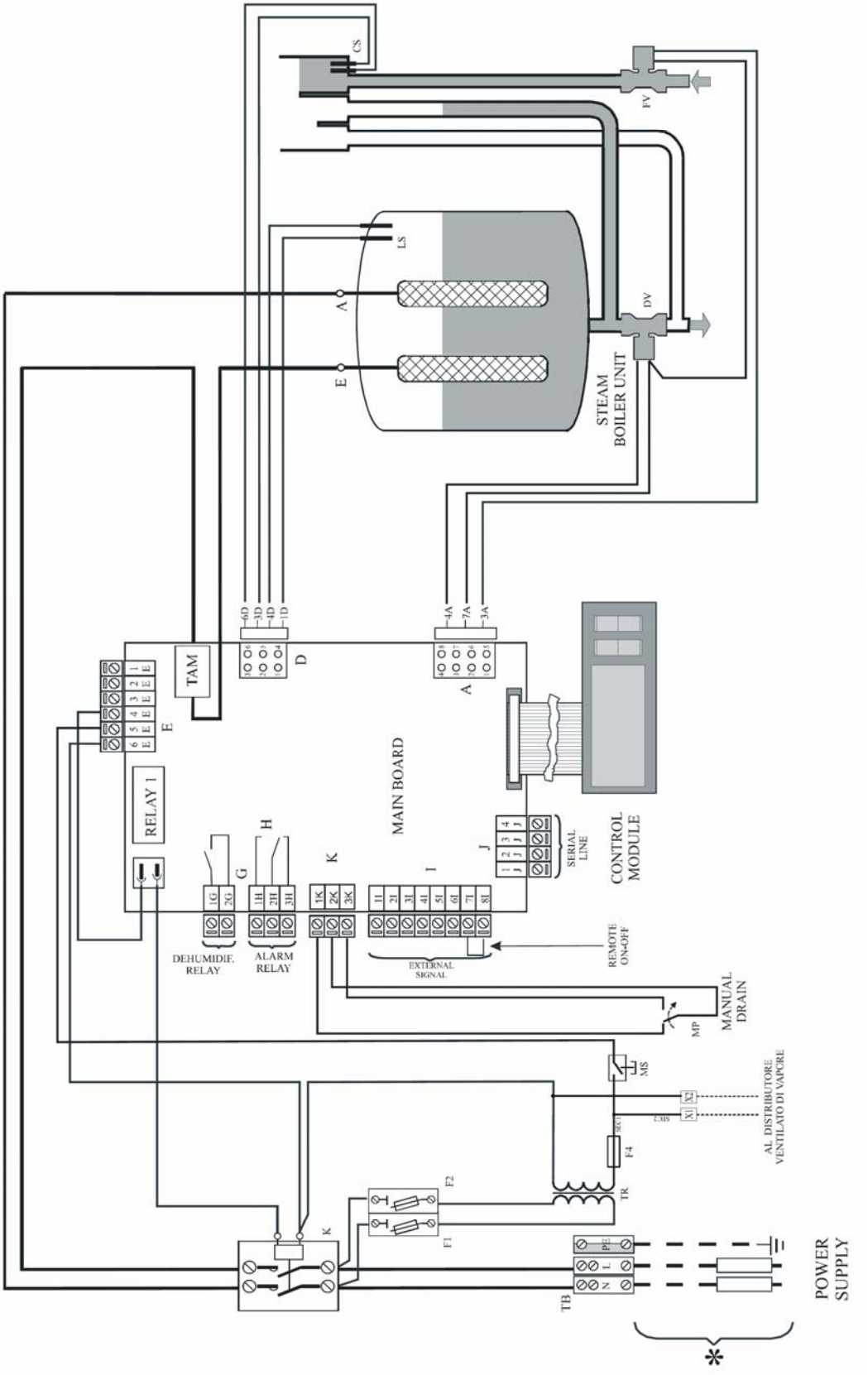
electrode kit 460/3 VAC Low conductivity		KITBLCT2C0	KITBLCT2C0	KITBLCT3C0	KITBLCT3C0	KITBLCT4D0	KITBLCT4C0	KITBLCT4C0	KITBLCT5C0
electrode kit 575/3 VAC Low conductivity		KITBLCT2C0	KITBLCT2C0	KITBLCT3C0	KITBLCT3C0	KITBLCT4D0	KITBLCT4D0	KITBLCT4D0	KITBLCT5D0
electrode gasket kit		KITBLC2FG0	KITBLC2FG0	KITBLC3FG0	KITBLC3FG0	KITBLC4FG0	KITBLC4FG0	KITBLC4FG0 KITBLC5FG0	KITBLC5FG0

Low Conductivity cylinders for water conditions between 125-350 µS/cm

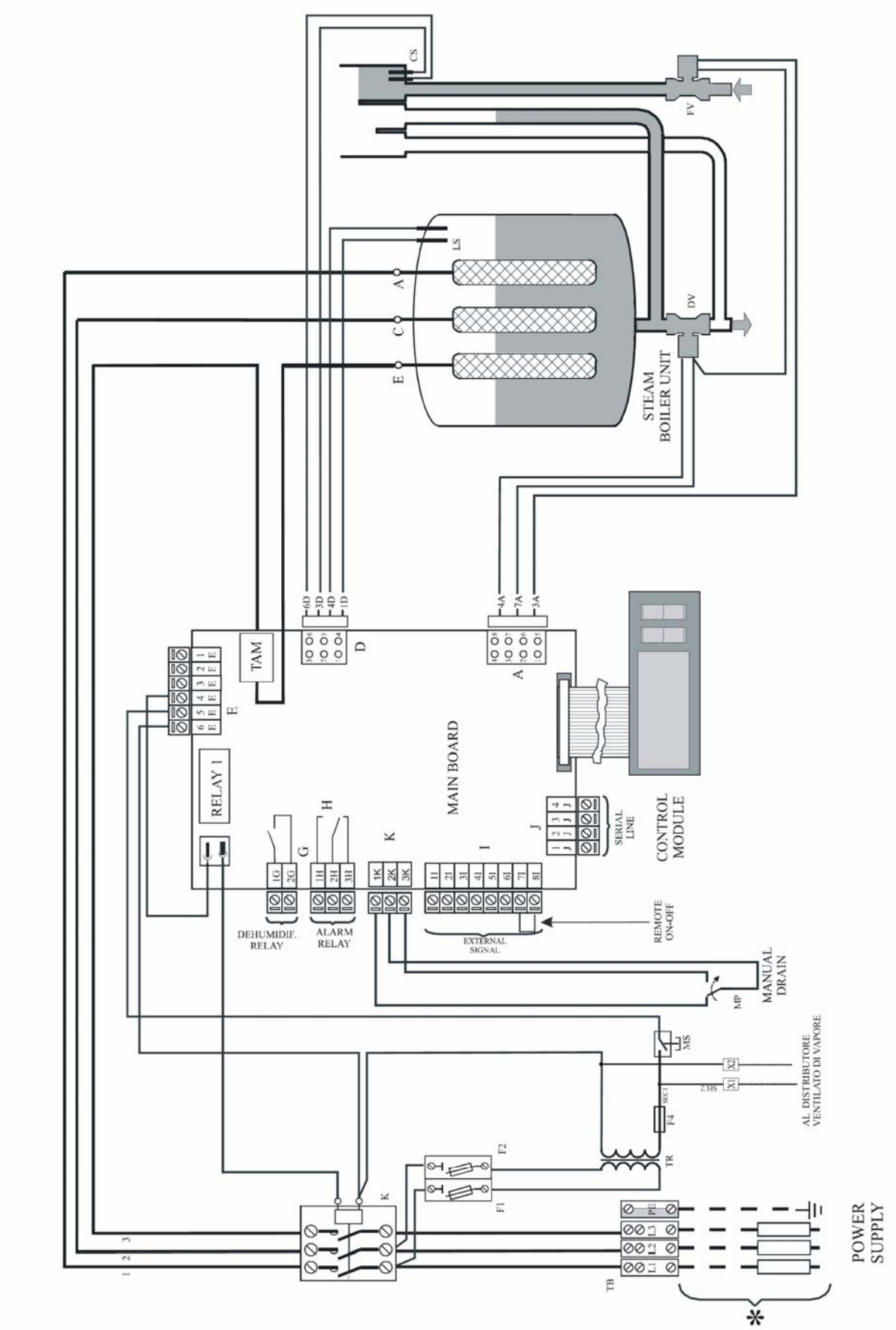
Standard Conductivity cylinders for water conditions between 350-1250 µS/cm

5 Wiring Diagrams

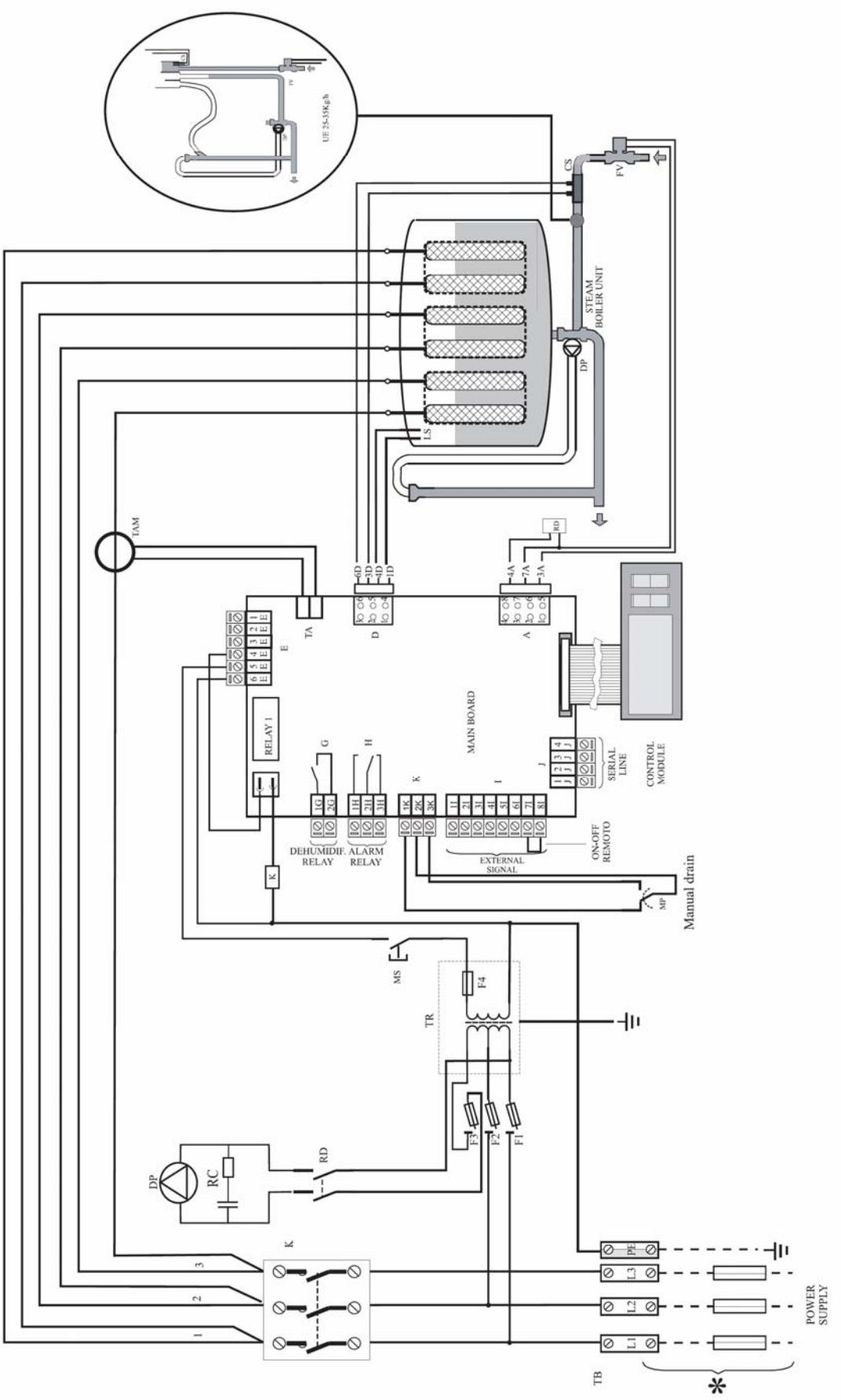
UE001, UE003, UE005, UE009 Single Phase



UE003, UE005, UE008, UE010, UE015 Three Phase



UE025, UE035, UE045, UE065 Three Phase



6 Technical Specifications

VAC/ Phase	Factor	UNIT MODEL NUMBER: Capacity, Amperage, Kilowatts													
		UE 001	UE 003	UE 005	UE 008	UE 009	UE 010	UE 015	UE 025	UE 035	UE 045	UE 045	UE 065	UE 090	UE 130
208/1 (U)	Lbs/hr	3.3	6.6	11.0		19.1									
	kg/h	1.5	3	5		8.7									
	Amps	5.4	10.8	18.0		31.3									
	KW	1.12	2.25	3.75		6.52									
230/1 (D)	Lbs/hr	3.3	6.6	11.0		19.8									
	kg/h	1.5	3	5		9									
	Amps	4.9	9.8	16.3		29.3									
	KW	1.12	2.25	3.75		6.75									
208/3 (W)	Lbs/hr		6.6	11.0	17.6		22	33	55	77		99			
	kg/h		3	5	8		10	15	25	35		45			
	Amps		6.2	10.4	16.7		20.8	31.2	52.0	72.9		93.7			
	KW		2.25	3.75	6.00		7.50	11.25	18.75	26.25		33.75			
230/3 (K)	Lbs/hr		6.6	11.0	17.6		22	33	55	77		99			
	kg/h		3	5	8		10	15	25	35		45			
	Amps		5.6	9.4	15.1		18.8	28.2	47.1	65.9		84.7			
	KW		2.25	3.75	6.00		7.50	11.25	18.75	26.25		33.75			
460/3 (M)	Lbs/hr		6.6	11.0	17.6		22	33	55	77	99		132	198	286
	kg/h		3	5	8		10	15	25	35	45		60	90	130
	Amps		2.8	4.7	7.5		9.4	14.1	23.5	32.9	42.4		61.2	84.7	122.4
	KW		2.25	3.75	6.00		7.50	11.25	18.75	26.25	33.75		48.75	67.50	97.50
575/3 (N)	Lbs/hr			11.0	17.6		22	33	55	77	99		132	198	286
	kg/h			5	8		10	15	25	35	45		60	90	130
	Amps			3.8	6.0		7.5	11.3	18.8	26.4	33.9		49.0	67.8	97.9
	KW			3.75	6.00		7.50	11.25	18.75	26.25	33.75		48.75	67.50	97.50
Height		24.4" (620 mm)				28.0" (710 mm)			35.0" (890 mm)			37.2" (945mm)		37.2" (945mm)	
Width		14.4" (365 mm)				14.4" (365 mm)			21.9" (555 mm)			25.6" (650mm)		45.5" (1156mm)	
Depth		10.8" (275 mm)				10.8" (275 mm)			14.2" (360 mm)			17.9" (455mm)		17.9" (455mm)	
Dry weight		35.3 lbs (16 kg)				44.0 lbs (20 kg)			75.0 lbs (34 kg)			97.0 lbs (44 kg)		160 lbs (73 kg)	
Wet weight		41.9 lbs (19 kg)				59.5 lbs (27 kg)			133.4 lbs (60.5 kg)			207.2 lbs (94 kg)		330 lbs (150 kg)	
Max. water feed		0.16 gpm (0.6 l/min)				0.32 gpm (1.2 l/min)			1.06 gpm (4.0 l/min)			1.85 gpm (7 l/min)		4 gpm (15 l/min)	
Water feed connection		3/4" MPT (19 mm) bushed to 1/4" O.D. compression													
Max. drain rate		1.32 gpm (5 l/min)							6.0 gpm (22.5 l/min)					12 gpm (45 l/min)	
Drain connection		1.6" hose (40mm)													
Min. drain piping		¾" (19 mm)							1 ½" (38 mm)						
No. cylinders		1												2	
Steam outlet (No.x size)		1 x 22/30 mm	1 x 30 mm						1 x 40 mm			2 x 40 mm			4 x 40 mm
Control voltage		24 VAC 50/60 Hz.													
Ambient conditions		34-140°F (1-40°C), 0-80 % RH, up to 8 inches W.C. duct static pressure (200 mm W.C.)													
Feed water conditions		15 – 116 psi (1-8 bar), 125-1250 MicroMhos conductivity													
Ventilated steam distributors		VSDU0A							VRDXL (One (1) required for each steam outlet. i.e. four (4) for UE130)						
		Power: 24 volt powered by unit							Power: 220/1/50-60, 35 Watts						
		Air volume: 112 cfm (192 m3/h)							Air volume: 380 cfm (646 m3/h)						
		Height/Remote: 6.3/10.75" (160.273 mm)							Height = 10.5" (267 mm)						
		Weight: 13.2 lbs. (6 kg)							Weight: 63 lbs. (24 kg)						
		Noise: 30 dBA (50)							Noise: 40 dBA						

6.1 Model Numbers

UE	025	H	D	000	U	1	0
UE = Electrode	Capacity	H Control	Power supply	Version number	USA	Cylinder Type	Optional Equipment
	001 = 3.3 lbs/hr	For use with:	U = 208/1	Internal use only		1 = Disposable Standard Conductivity	0 = Standard
	003 = 7 lbs/hr	On/off	D = 230/1				
	005 = 11 lbs/hr	or	W = 208/3			2 = Disposable Low Conductivity	B = Direct Mount Blower
	008 = 18 lbs/hr	Modulating	K = 230/3				
	010 = 22 lbs/hr	or	M = 460/3				
	015 = 33 lbs/hr	DDC	N = 575/3				
	025 = 55 lbs/hr						
	035 = 77 lbs/hr						
	045 = 99 lbs/hr						
	065 = 132 lbs/hr						

Limited Warranty

All products manufactured by Carel USA, LLC 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 2 years and 1 month from the date of shipment (The OEM controls warranty is 2 years from date of manufacture), humidifier replacement parts warranty is 90 days from date of Invoice. Warranty replacement parts are warranted for remainder of original unit warranty or 90 days, whichever is longer, so long as the product has been installed and operated in accordance with all appropriate manuals and wiring diagrams, and started up by a qualified Carel USA technician. Any product or part that is found to be defective will, at the option of Carel USA, LLC be replaced or repaired. Carel USA, LLC 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. Carel USA, LLC 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. Carel USA will attempt to repair or replace the products within two (2) months of the receipt of the returned goods.

CAREL USA, LLC
385 S. Oak Street
Manheim, PA 17545

Form: +030221907, Rev. 0.6