



Instruction & Operation Manual



Electric Resistive Steam HUMIDIFIERS ERS Series

ERS Series

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1. SAFETY INSTRUCTIONS

1.1 INTRODUCTION

You recently purchased the Armstrong ERS humidifier and we hope you enjoy this product. Thank you for the trust you place in us. The safety instructions contained in this manual are intended for specialized, qualified, and authorized personnel.

To get the best results from the humidifier, we recommend to:

- Read carefully the assembly and installation instructions in this manual.
- Keep this manual in a safe place for future reference.
- Transmit this manual in case of sale or transfer of the device, in order to guarantee the transmission of information about it.

SAFETY WARNINGS AND SYMBOLS USED IN THE MANUAL	
	Danger! Caution. General safety instruction, whose violation could lead to malfunctions and / or bodily harm to person and / or property damage.
	Danger! High voltage. There are high voltages inside the device or one of its components, the negligence of this warning can lead to serious bodily injury or death to people and / or significant material malfunctions.
	Danger! High temperature. The ERS uses steam during the operation and therefore surfaces and pipe-work become very hot. Ensure that equipment not sustaining high temperatures is kept away.
	Electrostatic hazard. The components of the device may be subject to deterioration as they are very sensitive to electrostatic discharge.
	Möbius strip. Some components of the device are recyclable, the user is responsible for the removal of these. Follow the recycling recommendations adapted to the materials according to the geographical area.

- If your package is damaged or missing, please make a complaint to your carrier with a receipt acknowledgment letter within 24 hours and make a declaration to your Armstrong agent.
- Pictures, graphics, and values may be subject to technical changes without notice.
- Keep this instruction manual carefully, and if you have any questions that are not answered in this manual, do not hesitate to contact us or consult your Armstrong agent.

Our team will be pleased to be of assistance!

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1.2 IMPORTANT REMARKS

<p>GENERAL</p>	<p>This manual is a translation of the original French version. This manual contains all the details concerning the commissioning, operation, and maintenance of the Armstrong humidifier ERS series.</p> <p>Maintenance, service, repairs, as well as the study of the risks and dangers associated with these operations must be carried out by qualified, competent, and authorized personnel.</p> <ul style="list-style-type: none"> - Make sure that all risks or dangers are defined beforehand by an authorized person, especially for works-at-height. - We also recommend installing a security perimeter. - Make sure that the power supply is switched off before performing maintenance. - Please screw periodically all the connection terminals of the power cable.
<p>INTENDED USE</p>	<p>This ERS is manufactured by Armstrong is intended solely for humidification purposes, in air treatment station or in ambiance. The user undertakes to use it according to the safety instructions given in this manual.</p> <p>Improper use could result in serious hazards and damages to the user, third parties and materials.</p>
<p>STORAGE & MAINTENANCE</p>	<p>The device must be stored in a dry, frost-free place, protected from shocks and vibrations. Maintenance must be carried out by at least two people or suitable lifting equipment.</p>
<p>WATER</p>	<p>Steam humidifiers can be used with potable, demineralized, or softened water. It is absolutely forbidden to inject a chemical into the hydraulic system. Make sure that the water supply pressure does not exceed 8 bar. Always be careful that the installation meets local standards.</p>
<p>ELECTRICITY</p>	<p>The user ensures that electrical installation will be carried out by an authorized technician in this field. The installer must provide the correct cable section as well as the thermal-magnetic circuit breaker protection, adapted to the regulations in place in the country of installation.</p>
<p>WARRANTY</p>	<p>Armstrong guarantees that its devices are one (1) year warranty.</p> <p>Armstrong's liability will be limited exclusively to Armstrong's repair or replacement of the part or product, excluding labor, disassembly, or installation costs. Armstrong may also decide to refund the purchase price of the product or part of it, at its discretion. The non-compliance of these above recommendations, additional mounting and / or transformation with components other than those provided with the device or any use other than what is explicitly stated, shall be considered as not in compliance with the prescriptions, and will invalidate the warranty.</p>
<p>LIABILITY</p>	<p>Armstrong shall be not made liable for the consequences of incorrect installation, improper use of the devices and/or their components.</p> <p>We are committed to provide you the most complete manual, although, in the air treatment field, variations are so common that the information found in this document may be subject to changes without notice.</p>

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1.3 IMPORTANT REMARKS

The devices identified by serial numbers between 600 000 and 699 999, meets the requirements of the following European Directives:

2014/30/UE
2014/35/UE

DEVICE TYPE	Humidifier
MODEL NAME	ERS
MANUFACTURER	Devatec / Armstrong 185 Boulevard des Frères Rousseau 76550 Offranville - FRANCE

We the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s). Valid for units with serial number starting from n° 600 001.

FRAMBOT Jean-François
General Manager
05/01/2021



1.4 ROHS DECLARATION

Devatec,

Confirms that the ERS humidifier is manufactured in compliance with the following European regulations:

2011/65/UE

This guideline regulates, after July 1st, 2006, the use of mercury, cadmium, lead (soldering processes), chrome VI as well as PBB and PBDE.

MINFRAY Jean-Marie
R&D Engineer
05/01/2021



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2. PRODUCT PRESENTATION

2.1 CHARACTERISTICS

The ERS humidifier is an electric humidifier, designed for air humidification in air handling unit. Like all the other humidifiers of the range, it is compatible with the Blower Pack.

Standard delivery includes:

1. Steam humidifier
2. Technical documentation
3. 3 hose clamps per tank (2 for the steam hose and 1 for the drain hose)

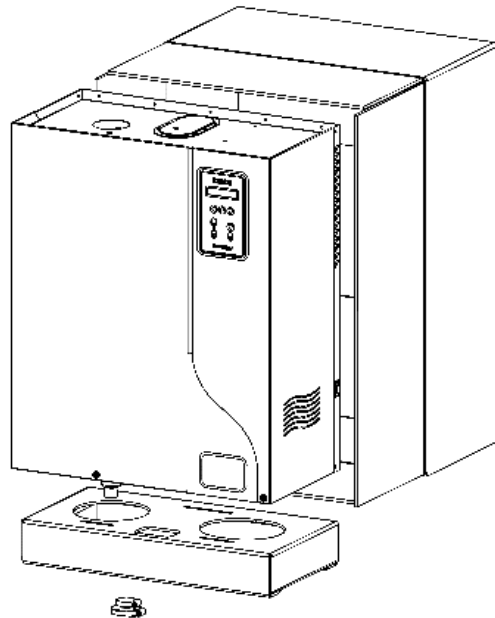


Fig. 2-1. Humidifier

ACCESSORIES (Not supplied)

- Stainless steel steam dispersion tubes
- ExpressPack®
- BlowerPack fan unit
- Steam and condensate hose
- Duct or room humidity sensor
- High Limit Humidistat
- Stainless steel braided hose in 3/4" FF (with gaskets) for connection to water network.
- Drain hose
- Remote information board
- Filling cup extension
- Transformer 380-690V/1x230V
- Additional cooling kit
- Outdoor protective cabinet
- Mounting bracket
- Collecting water tank
- Bluetooth kit for mobile application

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2.2 SIZE

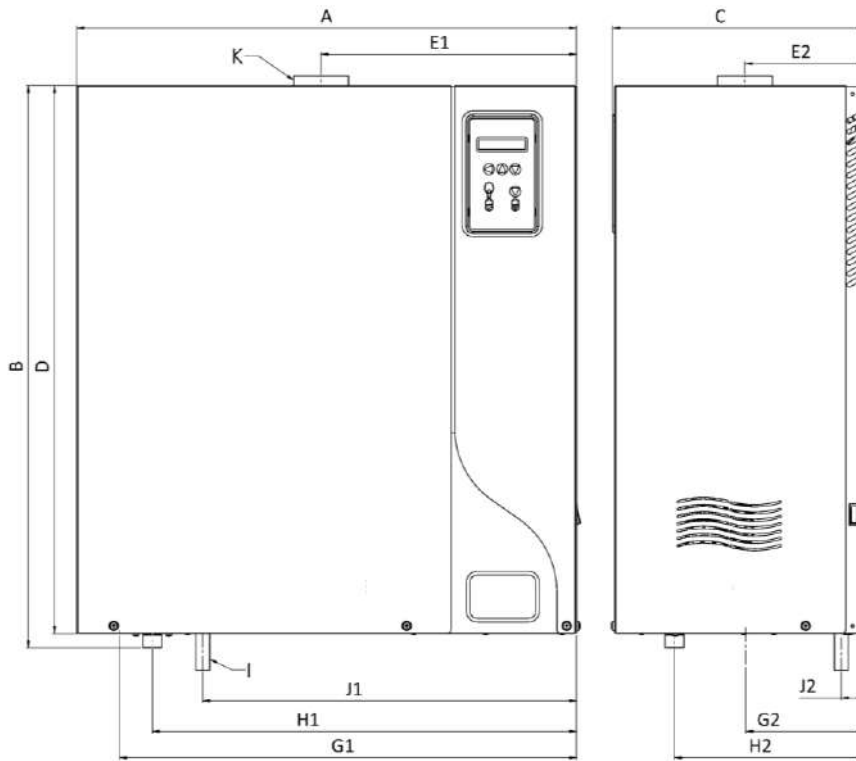


Fig. 2-2. Humidifier sizes

	ERS 5-50	ERS 60-100
Number of steam outputs	1	2
Dimension [mm] / [in]		
A: Width	690 / 27.2	1130 / 27.2
B: Height	775 / 30.5	775 / 30.5
C: Depth	350 / 13.8	350 / 13.8
D: Cabinet Height	755 / 29.7	755 / 29.7
E1: Steam outlet position	362 / 14.25	351 / 2
E2: Steam outlet position	165 / 6.5	165 / 6.5
E3: Distance between steam outlets		592 / 23.3
G1: Drain water position	627 / 24.7	616 / 24.25
G2: Drain water position	164 / 6.5	164 / 6.5
H1: Water inlet position	582 / 22.9	702 / 27.7
H2: Water inlet position	261 / 10.3	261 / 10.3
I: Overflow Diameter	12 / 0.48	12 / 0.48
J1: Overflow Position	642 / 25.3	861 / 33.9
J2: Overflow Position	32 / 1.26	32 / 1.26
K: Steam output diameter	∅60 / 2.36	∅60 / 2.36
Mass [kg] / [lb]		
Weight in operation	75 / 166	140 / 309
Gross weight (packed)	45 / 100	70 / 155

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2.3 HUMIDIFIER COMPONENT PARTS

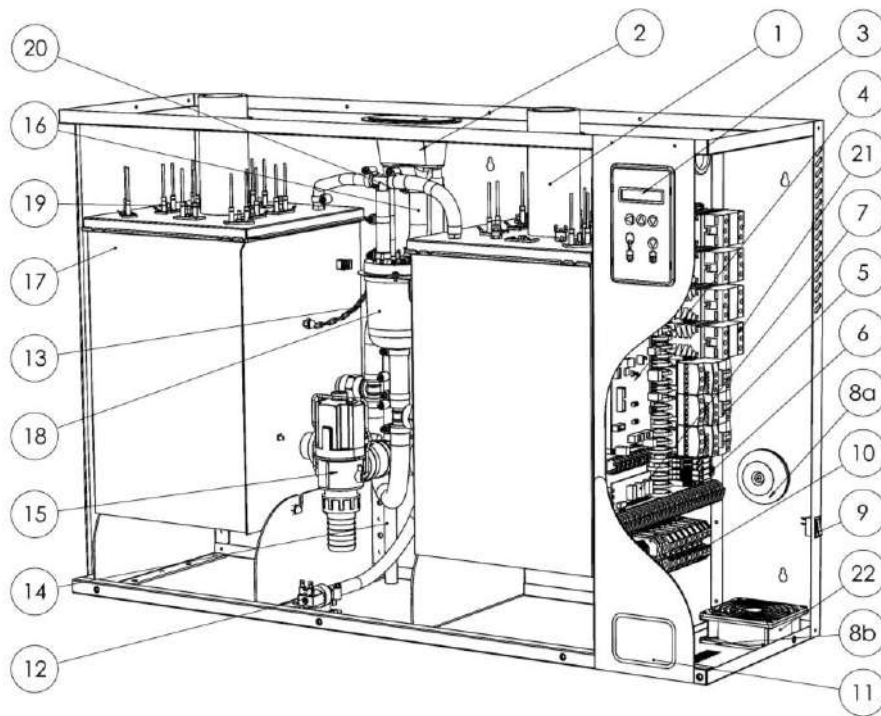


Fig. 2-3. Humidifier component parts

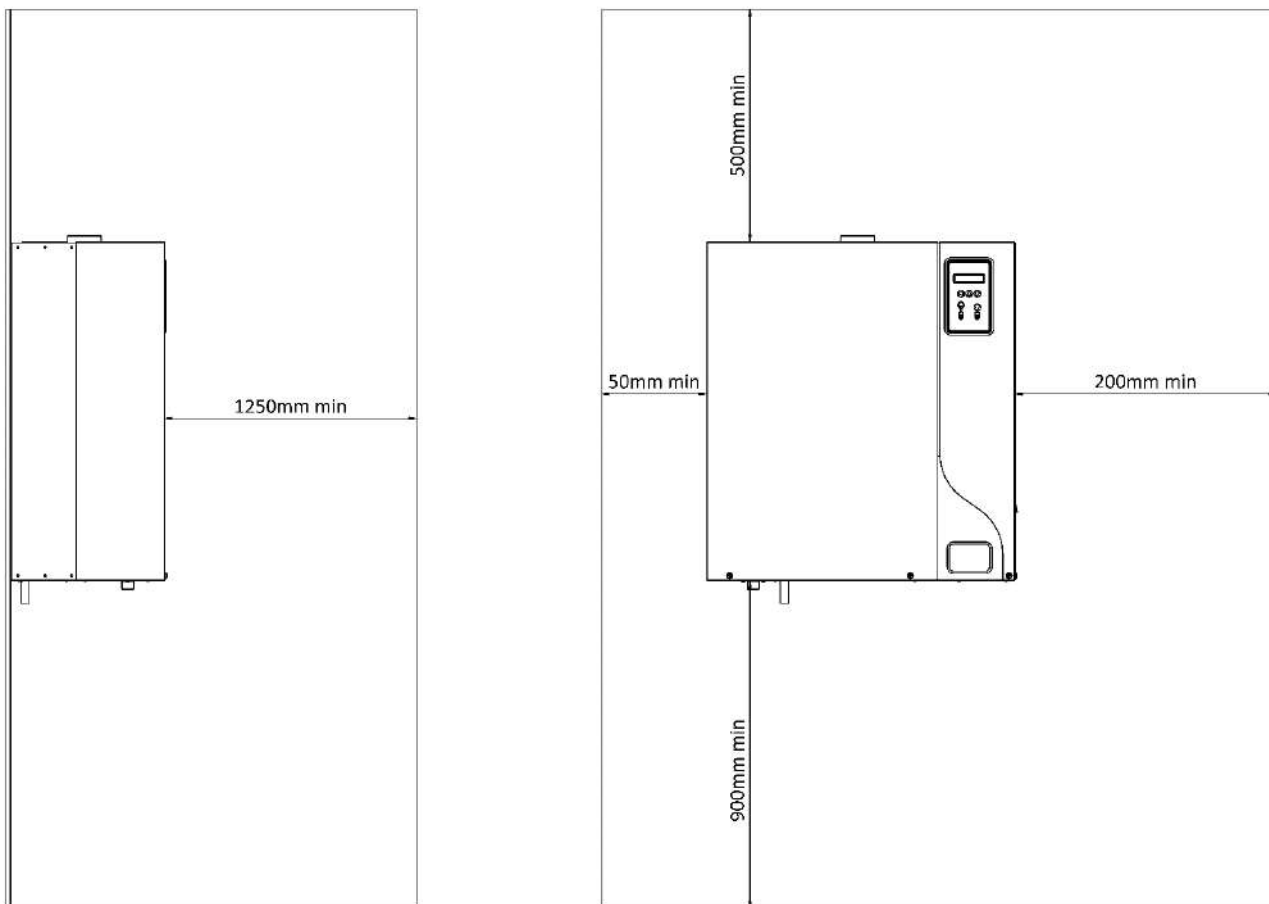
1	Steam hose (optional)
2	Filling cup
3	Display board
4	Main board
5	Contactora
6	Fuse holders
7	3 relay board (optional)
8a	Transformer 2x115 / 2x12V S: 50VA
8b	Option: Transformer UL
9	ON/ OFF Switch
10	Power rail
11	Identification label
12	Inlet valve
13	Funnel
14	Overflow hose
15	Drain valve
16	Filling hose
17	Tank
18	Water level sensor
19	Heater
20	Water level hose
21	Static relay
22	Fan

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2.4 IMPORTANT INSTRUCTIONS

- Ambient temperature: between 5 and 40°C
- Ambient humidity: < 80% Relative humidity
- Back side: this component heats during operation (up to 60°C). Make sure that the support of the device is not made of a heat-sensitive material.
- Wall mounting: Please be careful that the support material receiving the device (pillar, wall, etc.) can support it.
- Fixation: use a fastening system adapted to the support material.
- Make sure that the mounting distances are met.

Fig.2-4. *Mounting distances*



Please read and follow the enclosed safety information and the warning labels inside the humidifier before installation or maintenance.

Some steps can be dangerous.

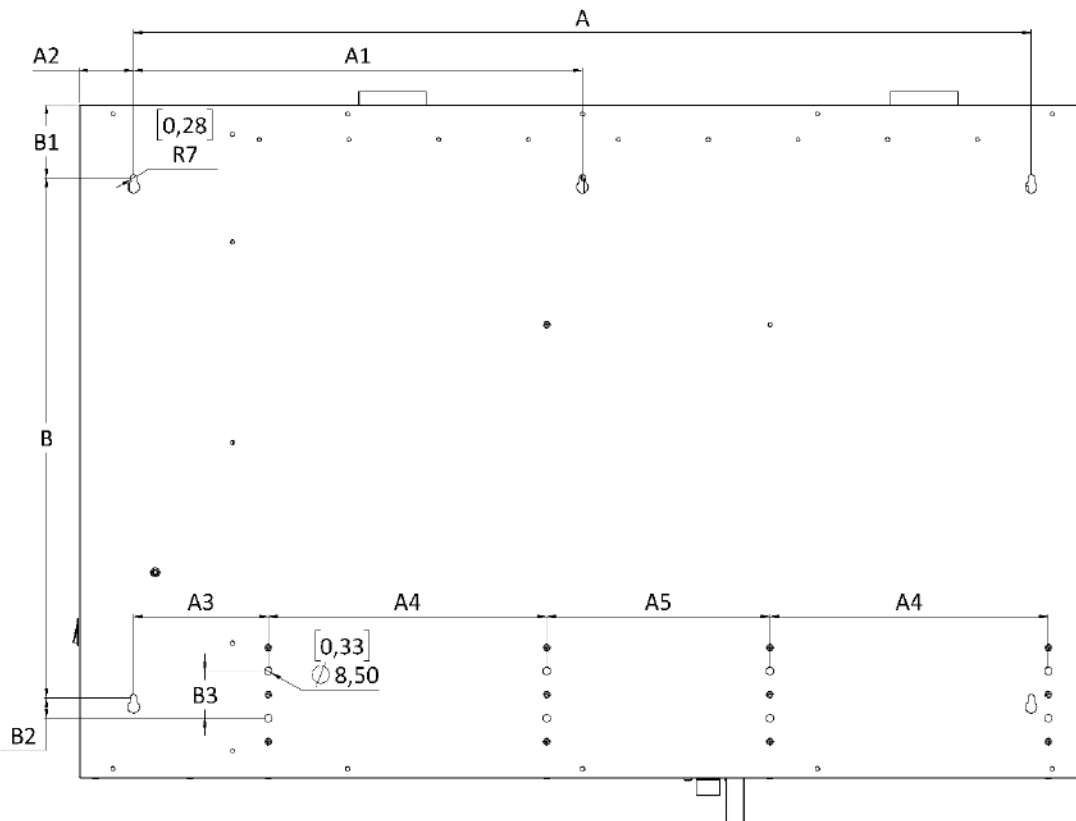
Visit our website or contact our operators for technical support.

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3. INSTALLATION

3.1 PROCEDURE

- Mark and drill where indicated (holes size depends on the selected dowels and support materials).
- Put the dowels in the holes.
- Screw the top screws into the dowels (M6 recommended), let them protrude by about 10 mm/0.39in.
- Hang the device to the top screws and align it vertically and horizontally with a bubble level.
- Tighten up all screws.



	ERS 5 - 50	ERS 60 - 100
	[mm]/ [in]	
A	640 / 25.2	1000 / 39.4
A1		500 / 19.7
A2	22 / 0.86	61 / 2.4
A3	201 / 7.9	150 / 5.9
A4	310 / 12.2	310 / 12.2
A5		249 / 9.8

	ERS 5 - 50	ERS 60 - 100
	[mm]/ [in]	
B	580 / 22.8	580 / 22.8
B1	81 / 3.2	81 / 3.2
B2	23 / 0.9	23 / 0.9
B3	53 / 2.1	53 / 2.1

Fig. 3-1. Installation holes

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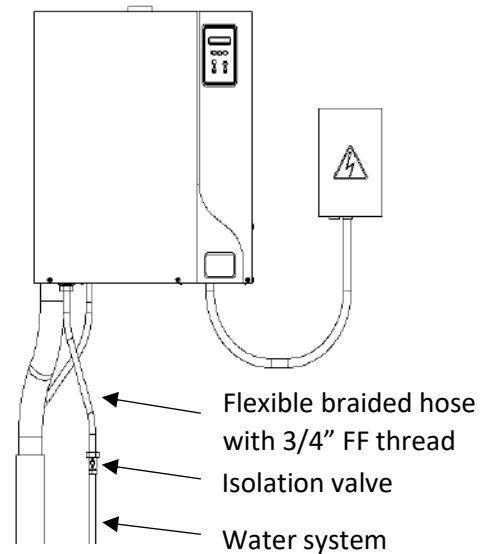
3.2 WATER SUPPLY

3.2.1 Recommendation

Our device is designed to be used with any following water type:

- ✓ drinking water (according to Directive 98/83/EEC),
- ✓ softened water use possible under conditions.
Please contact our services
- ✓ demineralized water, reverse osmosis water

Fig. 3-2. Humidifier water supply



The demineralized water is corrosive; use appropriate piping material: stainless steel, PVC.

Softened water: Its use is not necessary, but possible. **TH 12°FH minimum.**
Water analysis is recommended to determine the level of sodium chloride.
Do not hesitate to contact our services for support.



An excess of sodium chloride may generate foam which disturbs the correct running of the humidifier.
It is essential to install a duplex softener.
Max. chloride content: 80 mg/l

3.2.2 Recommendations on connection

Network water pressure: The pressure must be stable and between 2 bar and 8 bar MAX.
Network water temperature: < 40 °C.

Please note that the water supply is connected at the lower part of the unit.
For easy maintenance, the water inlet valve is equipped with a filter strainer which should be checked periodically. It is essential to install an isolation valve near the humidifier to facilitate maintenance.



OVERFLOW RISKS: it is recommended to install a collecting water tank under the humidifiers to prevent overflow. This is essential if the unit is installed in false ceilings or above important rooms (example: museum room, showroom, laboratory etc.). Make sure the container is connected to the wastewater system.

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3.3 DISPERSION TUBE POSITIONING

Steam dispersion tubes:

the steam from the humidifier is injected in a duct or an air handling unit via a steam dispersion tube. To obtain the best performance of the humidifier, select the longest pipe.

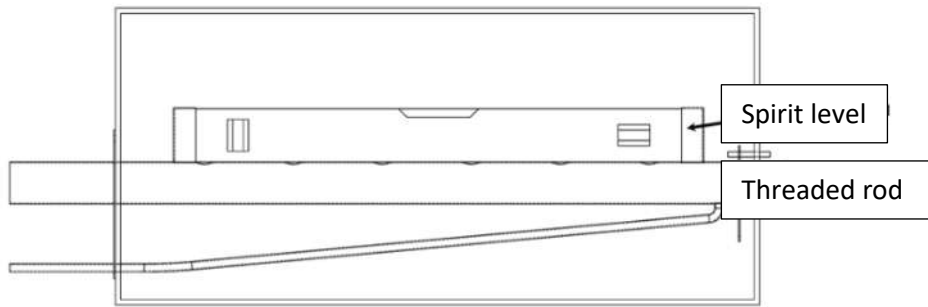


Fig. A 3-3. *Steam dispersion tubes positioning*

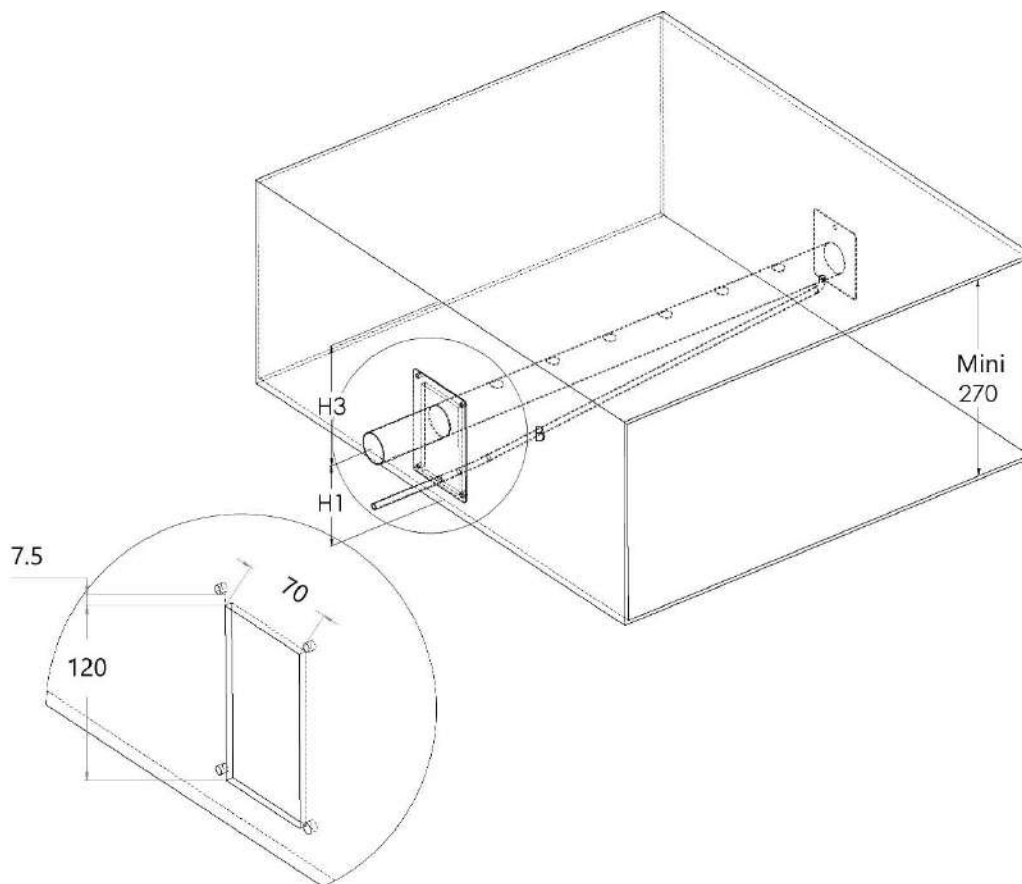


Fig. B 3-3. *Hole dimension to be cut in the duct*

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3.3.1 Absorption distance "D"

Make sure that the absorption distance is met to let the air absorb the steam dispersed by the tubes. In this absorption distance, the steam is still visible in the air stream in the form of fog. If any furniture is placed in this area, condensate may occur. For this reason, it is imperative to consider this absorption distance when placing the humidifiers.

3.3.2 How to calculate absorption distance « D »

In order to determine the absorption distance, the attached calculation table can be used:

- RH1 = relative humidity of air before humidification in %.
- RH2 = relative humidity of air after humidification in %.
- D mini = minimum absorption distance in meters (m).

Outlet RH2 [%]	Inlet RH1 [%]							
	5	10	20	30	40	50	60	70
	Minimum absorption distance "D" [m]							
40	0,9	0,8	0,7	0,5	-	-	-	-
50	1,1	1	0,9	0,8	0,5	-	-	-
60	1,4	1,3	1,2	1	0,8	0,5	-	-
70	1,8	1,7	1,5	1,4	1,2	1	0,7	-
80	2,3	2,2	2,1	1,9	1,7	1,5	1,2	0,8
90	3,5	3,4	3,2	2,9	2,7	2,4	2,1	1,7

This calculation table is to be used for temperatures between 20°C and 25°C (68°F to 77°F) (Maximum air speed 5m/s). For calculated distances, contact your Armstrong agent.

3.3.3 Minimum absorption distance

The steam dispersion pipes must be positioned after the minimum specified absorption distance. Please follow the guidelines depending on the configuration of your air handling unit.

Fig. B 3-3. Before/after a fan

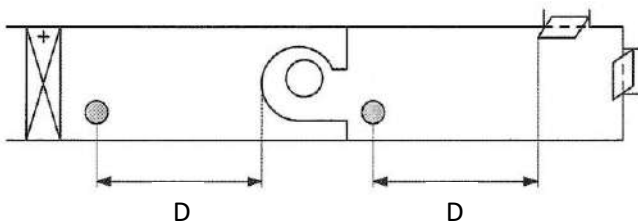
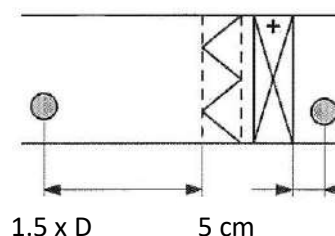


Fig. C 3-3. Before/after heating battery or filter



1.5 x D before a particle filter or absolute filter

● = Dispersion tube

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3.3.4 Minimum installation distances

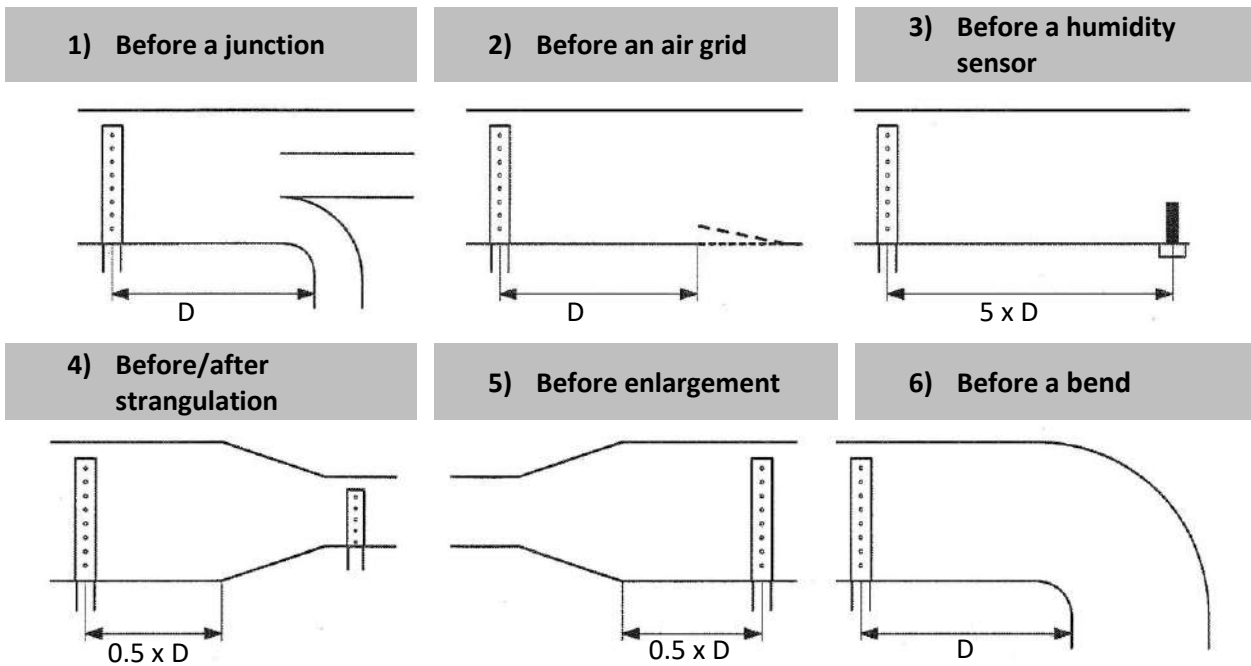


Fig. D 3-3. Installation distances

- A high limit humidistat must be installed in the duct to stop the humidifier in case the level of humidity exceeds the preset value.
- If the recommended distances cannot be met, please contact Armstrong or their authorized agent for an alternative solution.
- Make sure the distances are met, if this is not possible, please contact your Armstrong agent.

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Make sure that spaces and distances are respected. If you have any doubts about the calculation, please contact us.


H1 = 110 mm = Minimum height between the duct floor and the axle of the steam pipe.

H2 = 140 mm minimum for a standard mounting / 110 mm minimum for a stair mounting.

H3 = 160 mm = Minimum height between the axle of the dispersion tube and the top of the duct wall.

The H3 distance can be 80 mm at the shortest if the steam pipe is installed at a 30° angle.

In the case of a stair mounting, minimum distance between tubes = 100 mm.

 Air flow direction

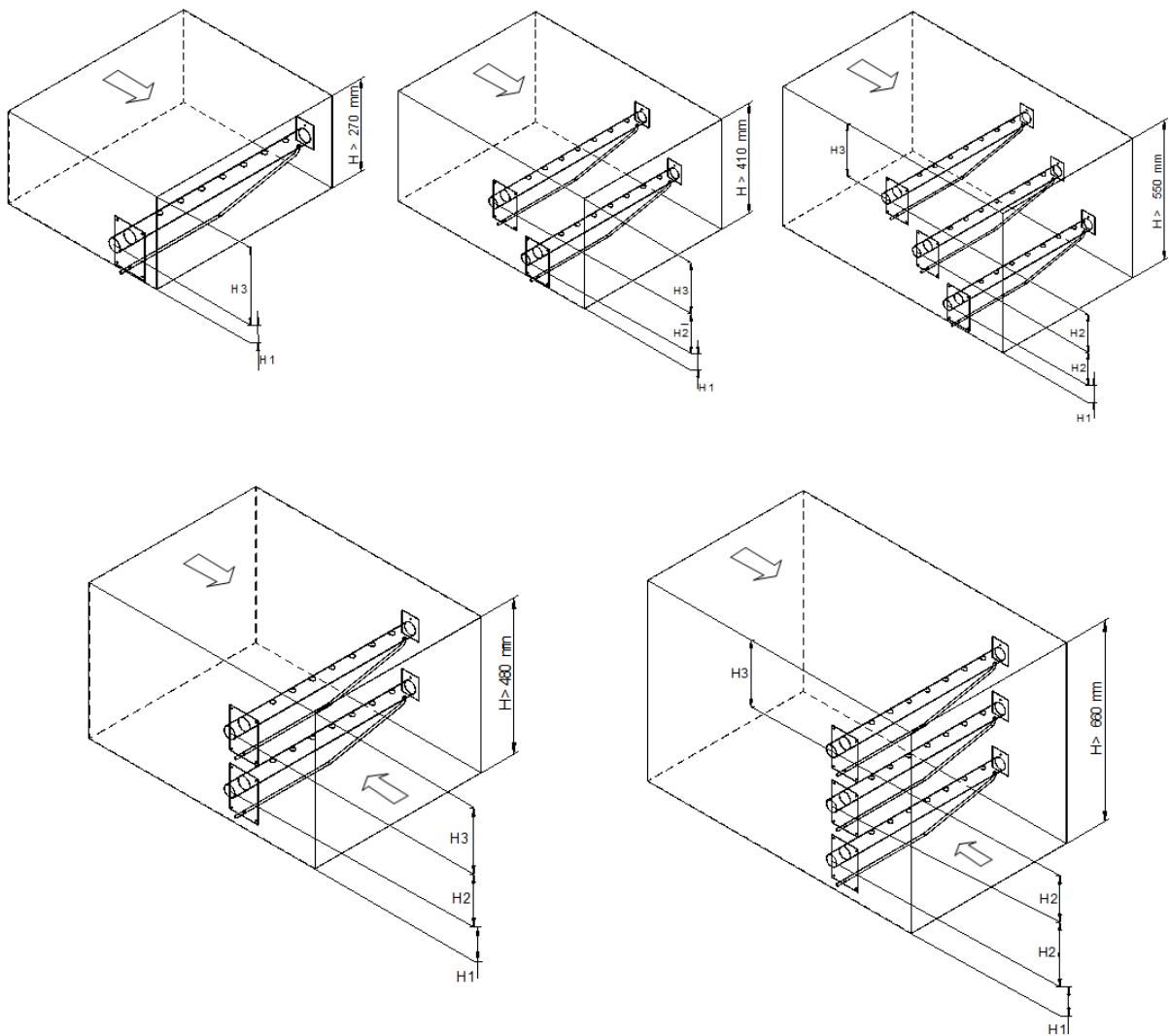


Fig. E 3-3. Minimum heights & flow directions

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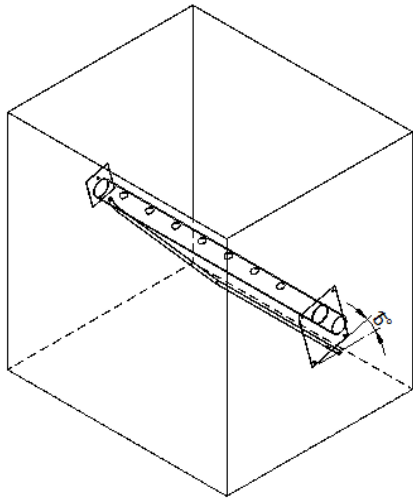


Fig. F 3-3. Vertical ducts

In vertical ducts where the air flow is upward or downward, the steam distribution pipe(s) must be tilted by 15° sideways

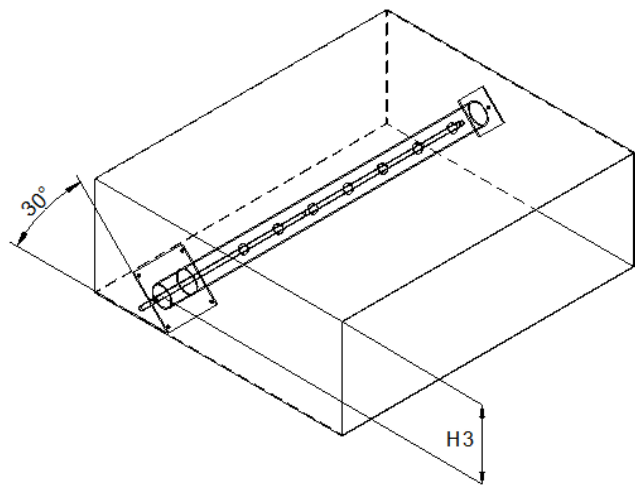


Fig. G 3-3. Ducts with limited height

In ducts with limited height, the distribution pipe(s) can be tilted by 30° to get the 80 mm minimum height

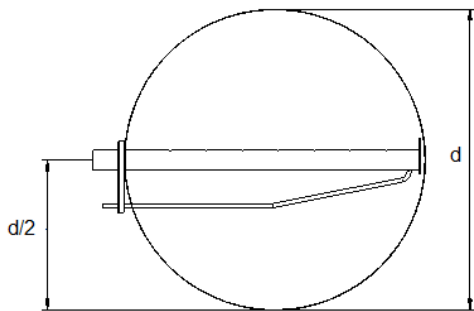


Fig. H 3-3. d = Diameter of the duct

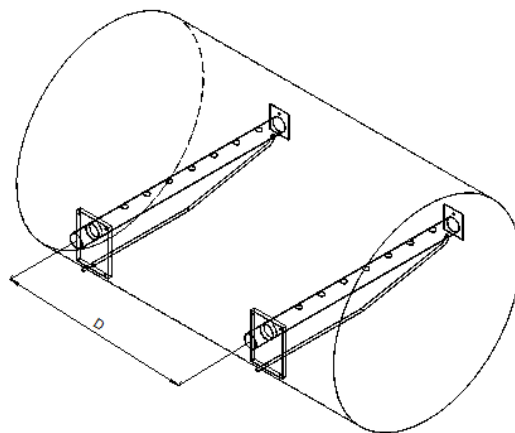


Fig. I 3-3. D = Distance between two tubes

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3.4 STEAM OUTLET

1. Preferably use a flexible steam hose that is resistant to a temperature of 100°C.

NB: when new hoses are installed, a smell of burnt plastic may be smelt during the first running of the steam humidifier. This is normal and will eventually diminish.

2. Steam hose selection:

Model	ERS 5 to 50	ERS 60 to 100
Number of steam outlets	1	2
Steam outlet diameter	Ø 60mm/2"1/2	Ø 60mm/2"1/2

3. ERS humidifiers can operate with a pressure (P) higher than the atmospheric pressure in the ducts, but under the following conditions:

- If P is less than 220 mm WC or 2157 Pa.
- If P is greater than 220 mm WC (2157 Pa), options are available up to 1200 mm WC (11 768 Pa).

4. For the installation of the steam hose, depending on your environment, please respect the recommendations below and use the appropriate tangential hose clamps.

- Flexible steam hose length 3 m max.
- Stainless steel or copper pipe with a slightly larger diameter, grounded. Use a flexible steam hose cuff to connect the humidifier to the steam distribution pipe. The length of the pipe must be thermally insulated and should not exceed 6 m.



Always have a slope in the same direction (up or down); the steam hose must be free of kinks and sags to allow for gravity drainage of condensate. Make sure that the steam hose is not leaky. Failure to follow these instructions can lead to serious malfunctions.

Radius of the diameter steam pipe:

- Ø 60 - 600mm minimum

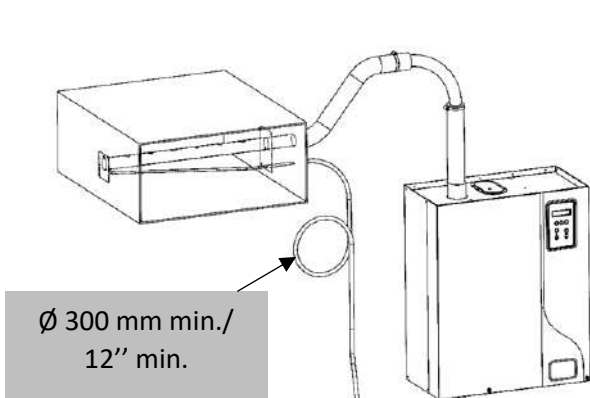


Fig. A 3-4. Standard installation

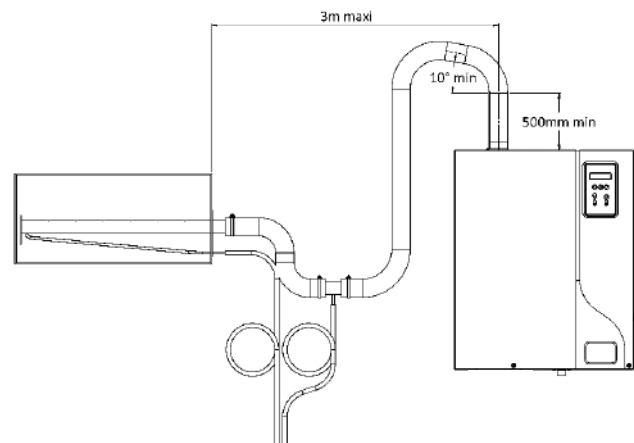


Fig. B 3-4. Additional drip leg when steam distribution below humidifier

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3.5 CONDENSATE DRAINING WITH SIPHON

POSITIVE PRESSURE SIPHON

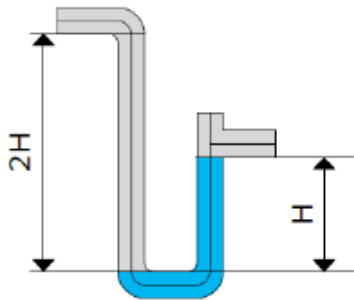


Fig. A 3-5.

NEGATIVE PRESSURE SIPHON

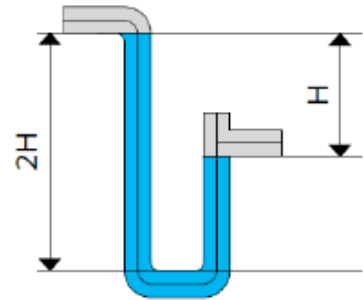


Fig. B 3-5.

The condensate hose must not be directly connected to the public sewerage network.

$$H \text{ min. (mm)} = P \text{ (Pa)} / 10$$

with P = absolute pressure of the air handling unit or the ventilation duct

3.6 DRAIN HOSE CONNECTION

The following drawing shows the drain hose connection that should be made.

Use a \varnothing 40 mm rubber drain hose with the 2 supplied hose clamps, heat-resistant (up to 100°C). Connect the hose to the draining system. Regular replacement is recommended.

If rigid piping is used, it must be a heat-resistant PVC material (up to 100 °C).

The discharge hose must be free from any obstacle.

It is recommended that each humidifier has its own drain pipe.

If possible, use a collecting water tank with a lid (see the picture below).

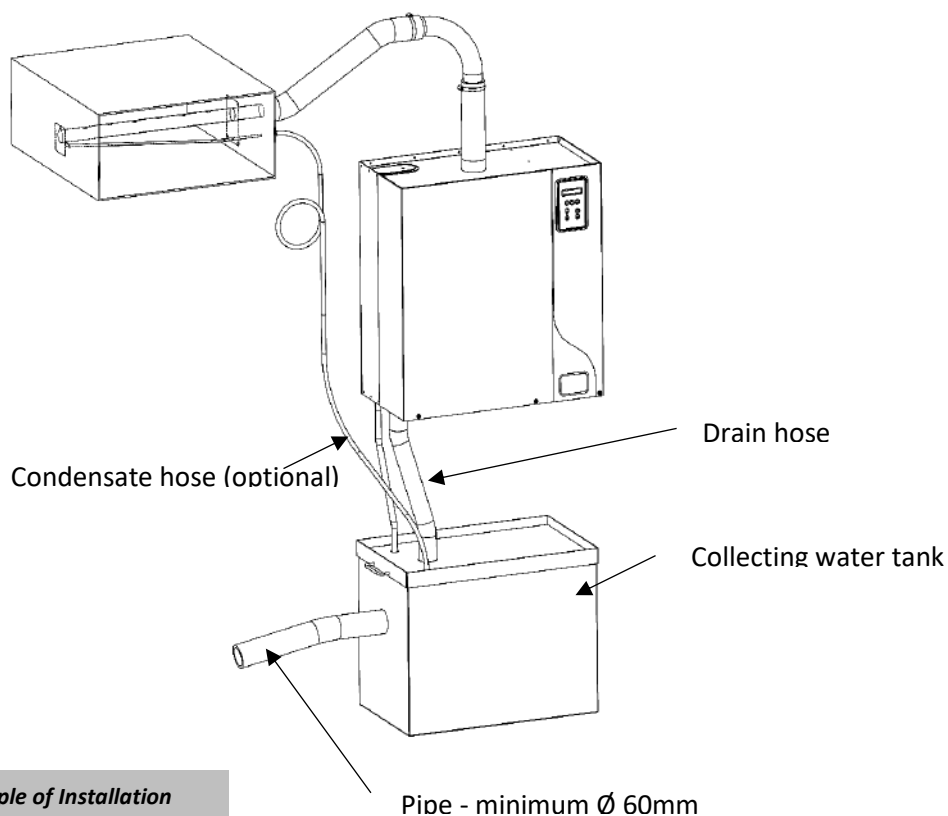


Fig. A 3-6. Example of Installation

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A funnel can also be used (see picture below), but it should be offset from the underside of the unit to prevent any steam and/or condensation from getting into the cabinet.

CAUTION: keep a minimum downward slope of 10° for both the draining & overflow hoses of the humidifier and for the general drain pipe.

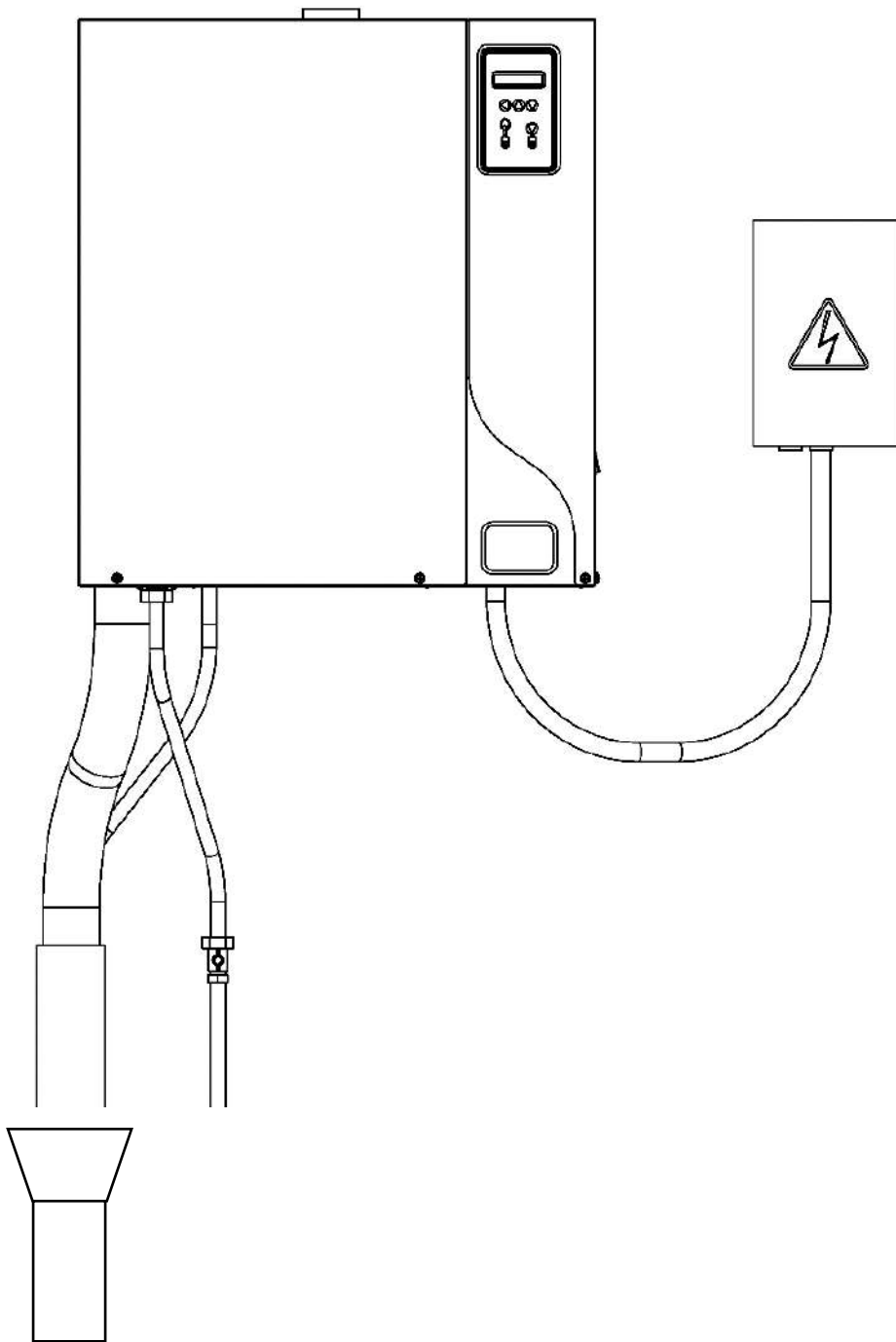


Fig. B 3-6. Example of Installation with funnel

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3.7 ELECTRICAL CONNECTIONS

3.7.1 Technical data

Voltage (V)	RTH -HC	3	5	7	8	10	15	20	30	40	50	60	70	80	90	100
230V - 1 ph	kg/h	2.5	5.7	-	8.3	-	-	-	-	-	-	-	-	-	-	-
	kW (Pn)	1.9	4.3	-	6.2	-	-	-	-	-	-	-	-	-	-	-
	I (A)	8.3	18.7	-	27.1	-	-	-	-	-	-	-	-	-	-	-
208V - 3 ph	kg/h	-	-	-	6.2	-	-	-	-	-	-	-	-	-	-	-
	kW (Pn)	-	-	-	4.7	-	-	-	-	-	-	-	-	-	-	-
	I (A)	-	-	-	13.0	-	-	-	-	-	-	-	-	-	-	-
230V - 3 ph	kg/h	-	-	-	7.6	-	-	-	-	-	-	-	-	-	-	-
	kW (Pn)	-	-	-	5.7	-	-	-	-	-	-	-	-	-	-	-
	I (A)	-	-	-	14.4	-	-	-	-	-	-	-	-	-	-	-
380V - 3 ph	kg/h	-	4.7	6.9	-	10.8	15.6	21.5	26.4	38.1	46.8	52.6	62.5	76.3	85	93.7
	kW (Pn)	-	3.6	5.2	-	8.1	11.7	16.2	19.8	28.7	35.2	39.5	47.0	57.3	63.9	70.4
	I (A)	-	5.5	7.9	-	12.4	18	24.8	30.3	43.9	53.9	60.5	71.9	87.7	97.8	107.8
400V - 3 ph	kg/h	-	5.3	7.6	-	11.9	17.3	23.9	29.2	42.2	51.9	58.5	69.2	84.5	94.2	103.8
	kW (Pn)	-	4.0	5.7	-	9.0	13.0	17.9	22.0	31.8	39	44.0	52.0	63.5	70.8	78.1
	I (A)	-	5.8	8.4	-	13.0	18.9	26.1	31.9	46.2	56.7	63.9	75.6	92.3	102.9	113.4
415V - 3 ph	kg/h	-	5.7	8.2	-	12.8	18.6	25.7	31.5	45.5	55.9	62.9	74.5	91.0	101.3	111.7
	kW (Pn)	-	4.3	6.2	-	9.7	14.0	19.3	23.7	34.2	42.0	47.3	56.0	68.4	76.2	84.0
	I (A)	-	6.0	8.7	-	13.5	19.6	27.1	33.1	47.9	58.9	66.3	78.5	95.8	106.8	117.7
440V - 3 ph	kg/h	-	-	6.4	-	-	14.4	20.8	28.9	35.2	43.3	49.7	57.7	70.5	78.5	86.6
	kW (Pn)	-	-	4.8	-	-	10.9	15.6	21.7	26.5	32.6	37.4	43.4	53.0	59.1	65.1
	I (A)	-	-	6.3	-	-	14.3	20.7	28.7	35.0	43.0	49.4	57.4	70.0	78.0	86.0
460V - 3 ph	kg/h	-	-	7.0	-	-	15.8	22.7	31.6	38.5	47.3	54.3	63.1	77.0	85.9	94.7
	kW (Pn)	-	-	5.2	-	-	11.9	17.1	23.7	29	35.6	40.8	47.4	57.9	64.5	71.2
	I (A)	-	-	6.6	-	-	15.0	21.6	30.0	36.6	45.0	51.6	60.0	73.2	81.6	90.0
480V - 3 ph	kg/h	-	-	7.6	-	-	17.2	24.8	34.4	41.9	51.5	59.1	68.7	83.9	93.5	103.1
	kW (Pn)	-	-	5.7	-	-	12.9	18.6	25.8	31.5	38.7	44.5	51.7	63.1	70.3	77.5
	I (A)	-	-	6.9	-	-	15.6	22.6	31.3	38.2	46.9	53.8	62.6	76.4	85.1	93.9
575V - 3 ph	kg/h	-	-	7.0	-	-	15.8	22.8	31.6	38.6	47.4	54.4	63.2	77.1	86.0	94.8
	kW (np)	-	-	5.2	-	-	11.9	17.1	23.8	29.0	35.6	40.9	47.5	58.0	64.6	71.3
	I (A)	-	-	5.3	-	-	12.0	17.3	24.0	29.3	36.0	41.3	48.0	58.6	65.4	72.1
600V - 3 ph	kg/h	-	-	7.6	-	-	17.2	24.8	34.4	42.0	51.6	59.2	68.8	84.0	93.6	103.2
	kW (np)	-	-	5.7	-	-	12.9	18.6	25.9	31.6	38.8	44.5	51.7	63.2	70.4	77.6
	I (A)	-	-	5.5	-	-	12.5	18.1	25.1	30.6	37.6	43.1	50.1	61.2	68.2	75.2

ERS Series

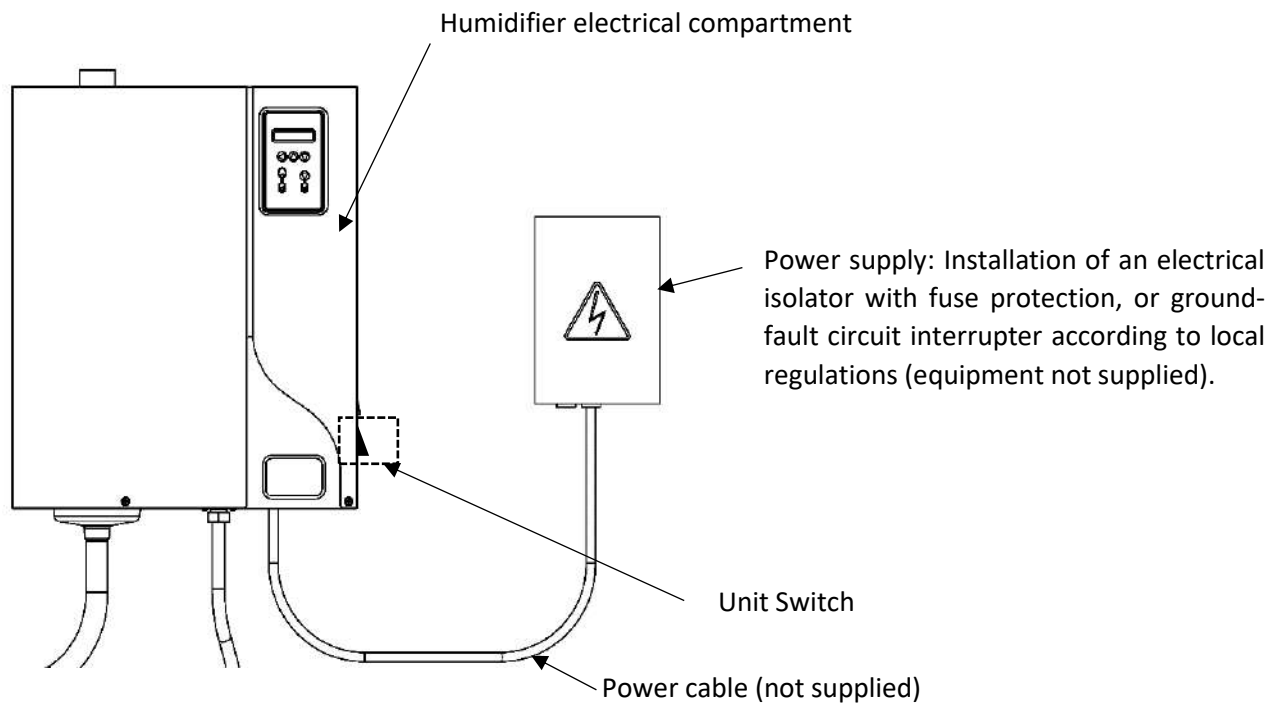


Fig. A 3-7. *Electrical connections*

	All electrical wiring must enter the unit through a cable gland (not supplied).
	Unit switch: when the unit is switched off, there is still high voltage inside the unit. Electric shock may be fatal, electrical isolator must be switched off.
	All work on the electrical parts must be carried out by qualified and authorized personnel. In addition, before making any electrical connections, check that your installation has been determined from the values in the table on page 21. Respect local regulation concerning electrical connections.
	Electronic components are sensitive to electrostatic charges. When working on these components, take appropriate measures to avoid electrostatic discharges.

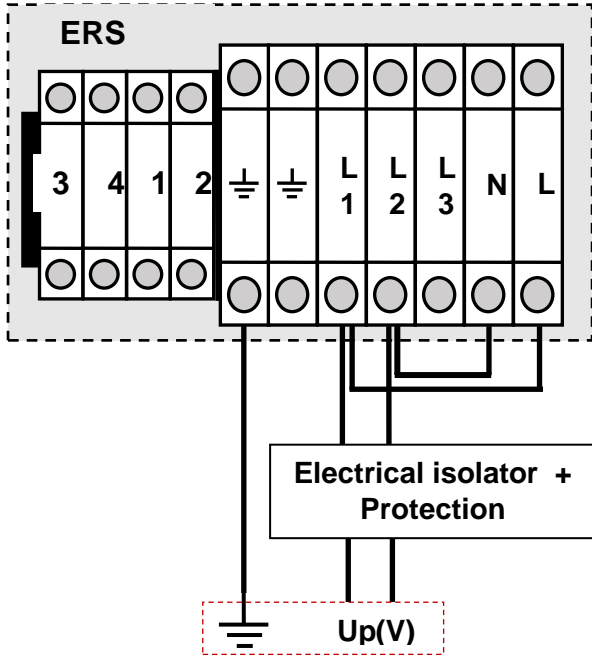
ERS Series

3.8 ELECTRICAL WIRING

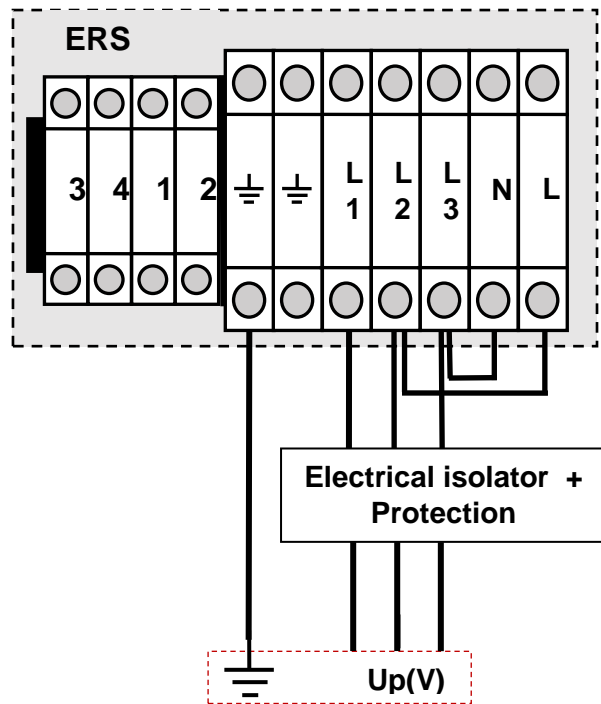
Up [V] = POWER VOLTAGE

Uc [V] = CONTROL VOLTAGE

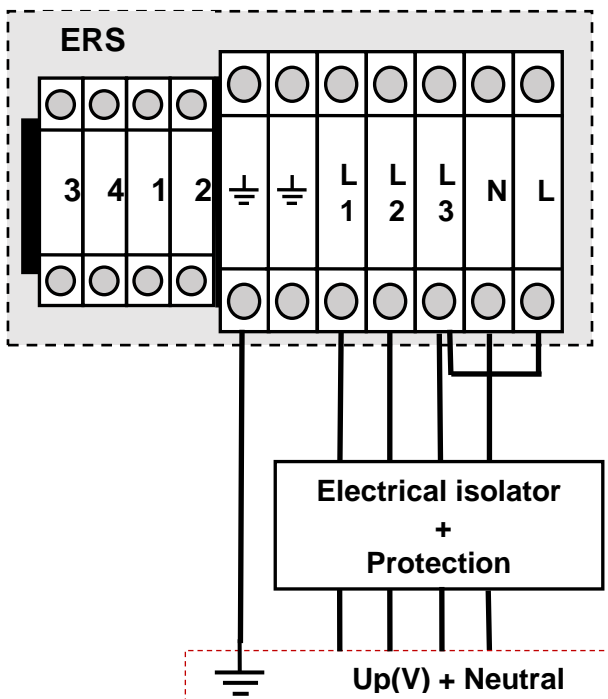
Up(V) = 1x200 - 230Vac (50-60Hz)



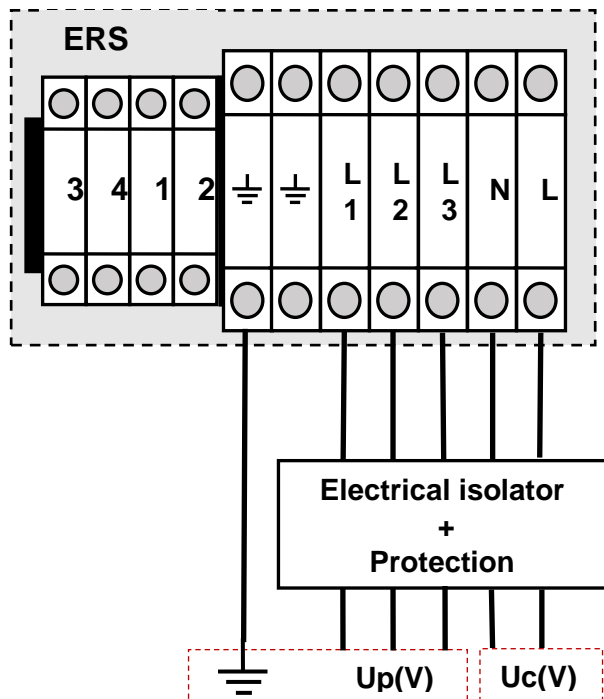
Up(V) = 3x200 - 230Vac (50-60Hz)



Up(V) = 3x380 - 420Vac (50-60Hz)
with neutral



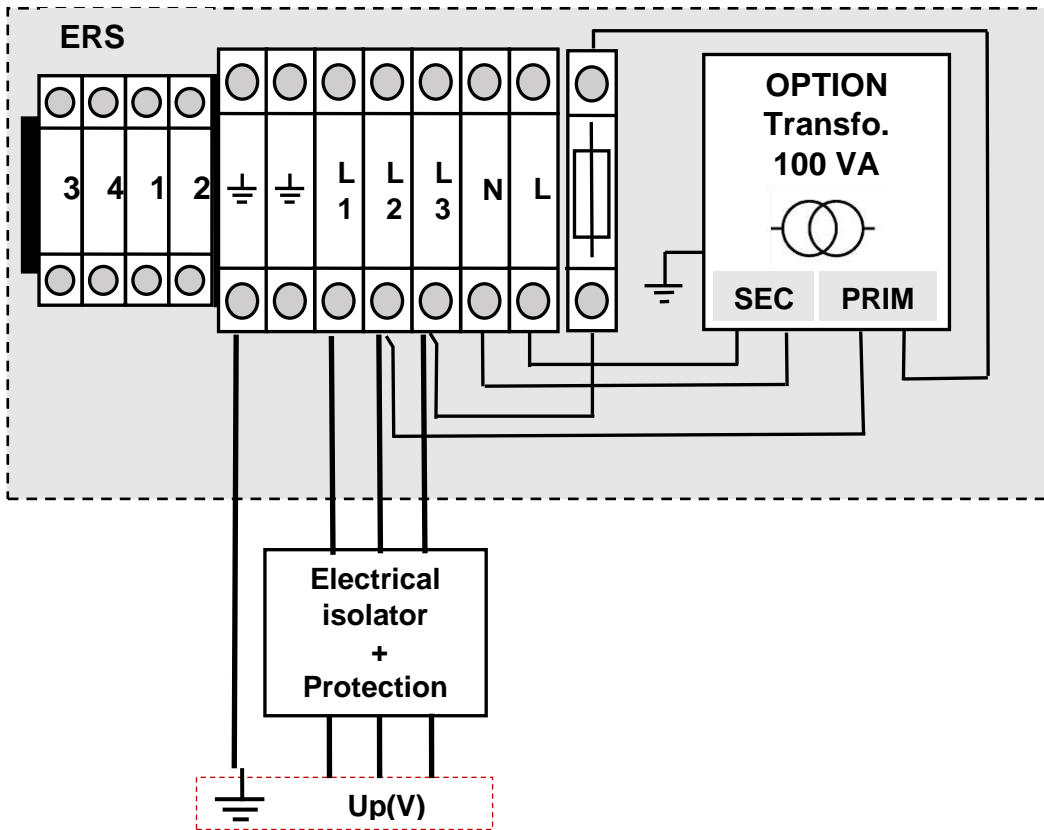
Up(V) = 3x380 - 690Vac (50-60Hz)
Uc (V) = 1x200 - 230Vac (50-60Hz)



ERS Series

Up(V) = 3x380–690Vac (50-60Hz)

Avec **OPTION** : Transformer : sec : 2x115V

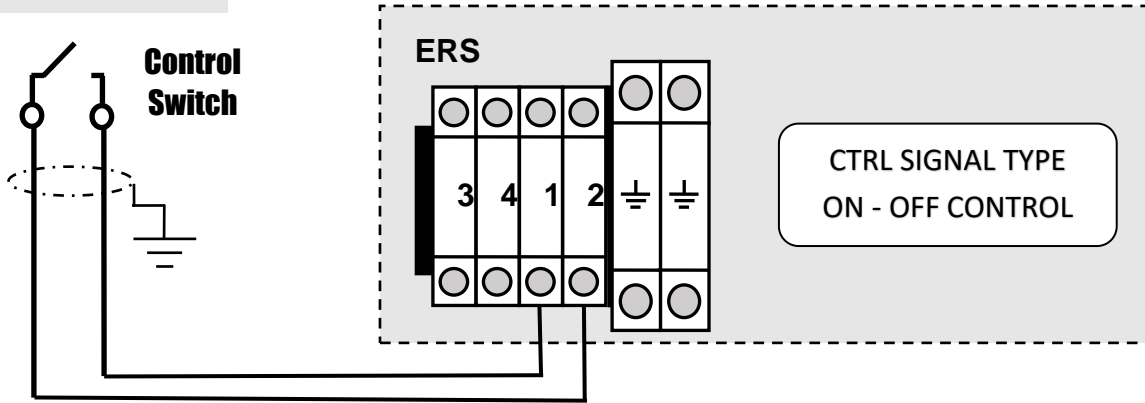


ERS Series

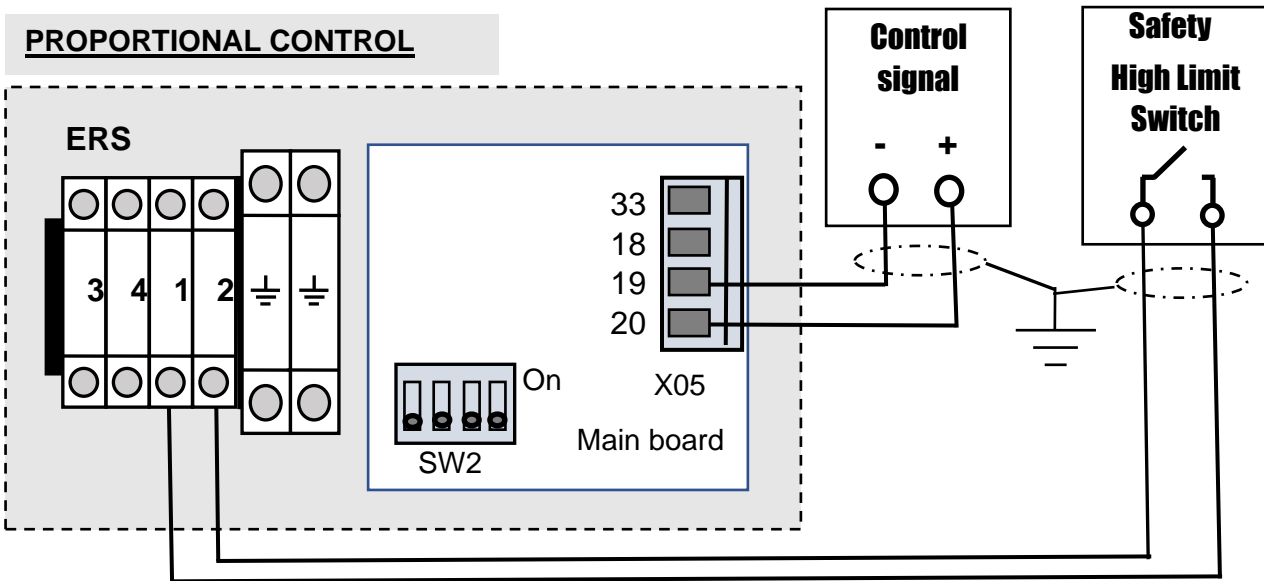
3.9 CONTROL SIGNAL CONNECTION

The wiring of the optional equipment must be made with 0.75 mm² shielded cable. This control signal wire should not be routed with a power cable.

ON/OFF CONTROL

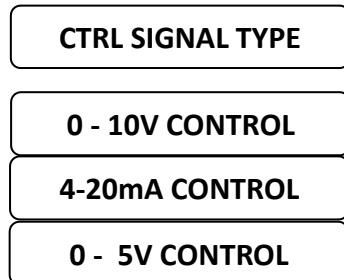
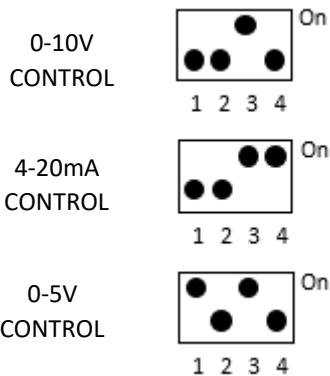


PROPORTIONAL CONTROL



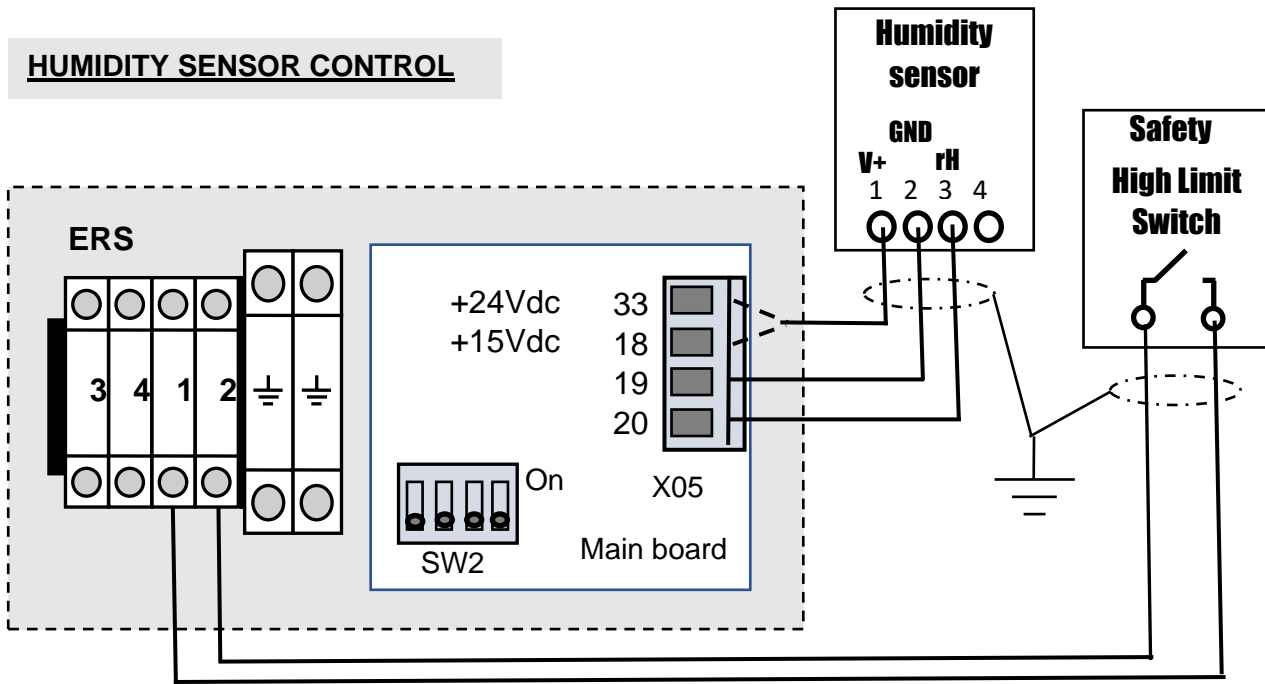
SW2 Dip switch setting to do on main board

Control signal type setting in humidifier menu

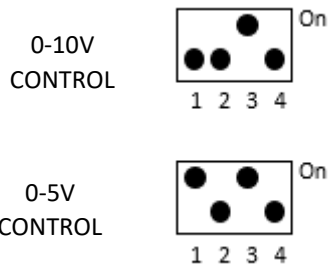


ERS Series

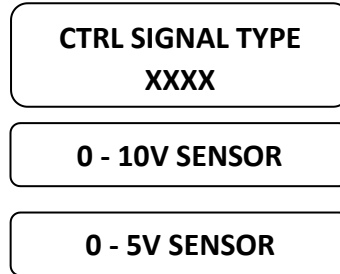
HUMIDITY SENSOR CONTROL



SW2 Dip switch setting to do on main board

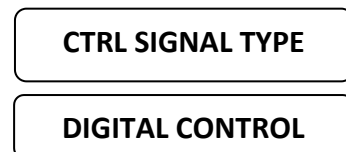


Control signal type setting in humidifier menu



WITH DIGITAL CONTROL

Control signal type setting in humidifier menu

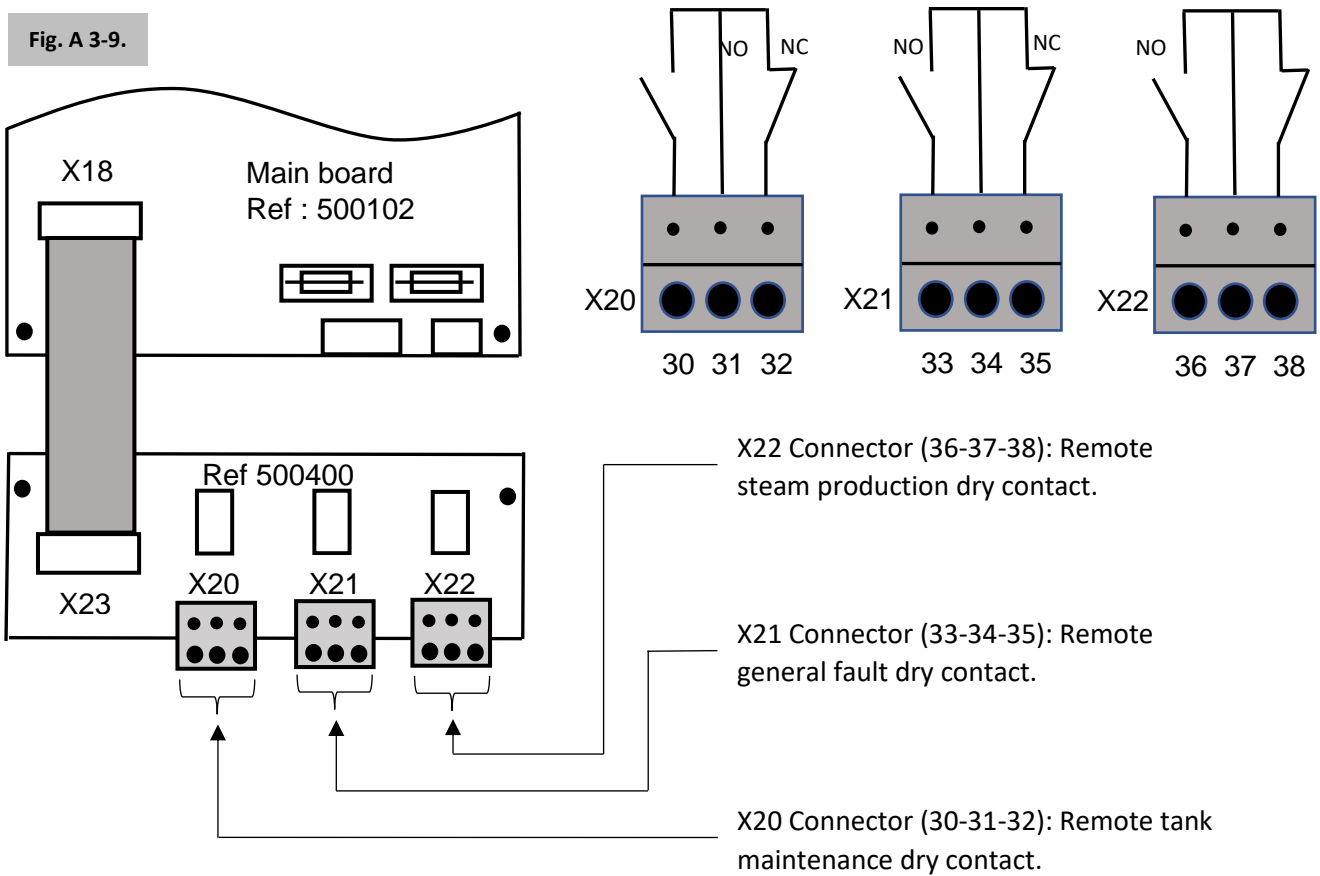


ERS Series

3.9.1 Remote information board (optional)

The contact can be changed to NO or NC by wiring according to the following diagrams (e.g. wiring on 30 & 31 = NO contact).

Fig. A 3-9.



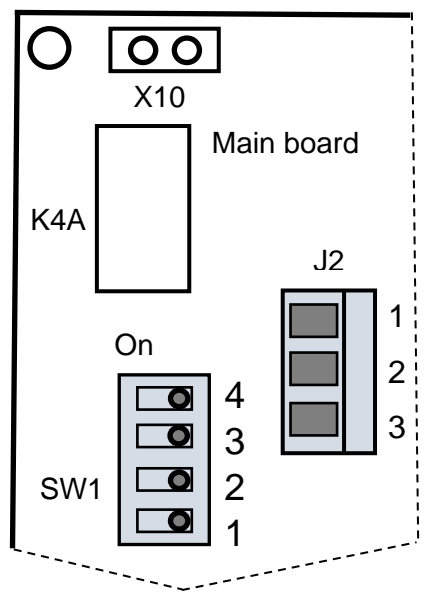
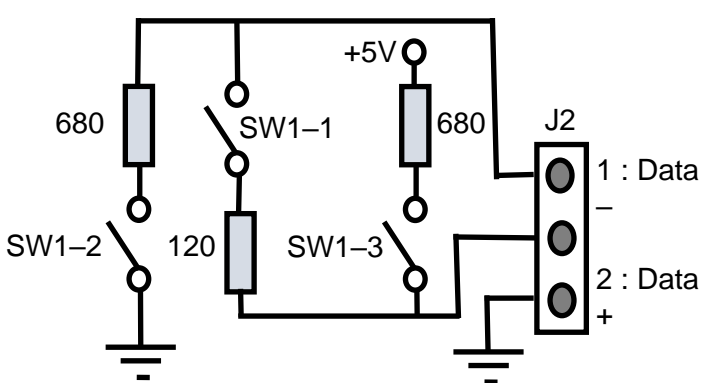
3.9.2 RS485 – Hardware connection

RS485 connection must be plugged on the J2 connector:

- Terminal 1: Data -
- Terminal 2: Data +
- Terminal 3: GND

The SW1 switch is used to turn line resistance on or off. Depending on your needs, these resistances can be activated or deactivated (see diagram).

Fig. B 3-9.



ERS Series

3.9.3 MODBUS RTU and BACNET MSTP communication parameters

	Modbus RTU	Bacnet MSTP
Speed of communication	2400 / 4800 / 7200 / 9600 (default) / 14400 / 19200 / 28800 / 38400 / 57600 / 115200 / 230400	
Packet size	8 bits	
Parity Bit	Not	
Stop bit	2	1
Timeout response	5000ms (5sec)	
Time between requests (After a response received)	Min. 100ms	Standard

3.9.4 Communication protocol for RS485 interface - MODBUS and BACNET

Modbus Register Address	Bacnet Object Class / instance # / ID (hex)			Description	Value
	Class	Instance #	ID (hex)		
10001	BI	0	00C00000	Fill valve	1 = filling -- 0 = no filling
10002	BI	1	00C00001	Drain valve	1 = draining -- 0 = no draining
10003	BI	2	00C00002	Contactora 1	1 is ON -- 0 is OFF
10004	BI	3	00C00003	Contactora 2	1 is ON -- 0 is OFF
10005	BI	4	00C00004	Blower pack	1 is on -- 0 is off
10006	BI	5	00C00005	Service relay	1 is ON -- 0 is OFF
10007	BI	6	00C00006	Alarm relay	1 is ON -- 0 is OFF
10008	BI	7	00C00007	On/off Relay	1 is ON -- 0 is OFF
10009	BI	8	00C00008	High limite sw	1: detected -- 0: not detected
10010	BI	9	00C00009	Alarm A1 state	1 is ON -- 0 is OFF
10011	BI	10	00C0000A	Alarm A2 state	1 is ON -- 0 is OFF
10012	BI	11	00C0000B	Alarm A3 state	1 is ON -- 0 is OFF
10013	BI	12	00C0000C	Alarm A4 state	1 is ON -- 0 is OFF
10014	BI	13	00C0000D	Alarm A5 state	1 is ON -- 0 is OFF
10015	BI	14	00C0000E	Alarm A6 state	1 is ON -- 0 is OFF
10016	BI	15	00C0000F	Alarm A7 state	1 is ON -- 0 is OFF
10017	BI	16	00C00010	Alarm A8 state	1 is ON -- 0 is OFF
10018	BI	17	00C00011	Alarm A9 state	1 is ON -- 0 is OFF
10019	BI	18	00C00012	Alarm A10 state	1 is ON -- 0 is OFF
10020	BI	19	00C00013	Rh sensor error	1 is ON -- 0 is OFF

ERS Series

1	BO	0	01000000	On/Off BMS command	1 = ON : Start requested / 0 = Off: Stop Unit
2	BV	1	01400001	EOS drain statue	1 = on / 0 = off
30001	AI	0	00000000	Type unit	4 : ERS 5 : ERS-LC 6 : ERS 7 : ERS LC
30002	AI	1	00000001	Reg version	1
30003	AI	2	00000002	Demand	(%)
30004	AI	3	00000003	Steam output	10 x (Kg/hr)
30005	AI	4	00000004	Run status	1 : Idle 2 : Warm up cycle 3 : Steam production 4 : Manual Drain 5 : Ready for service 6 : Need for service operation 7 : Default 8 : Aquasta operating
30006	AI	5	00000005	Estimated time to service	(hours)
30007	AI	6	00000006	Production since last service (MSB)	(Kg)
30008	AI	7	00000007	Production since last service (LSB)	(Kg)
30009	AI	8	00000008	Total production (MSB)	(Kg)
30010	AI	9	00000009	Total production (LSB)	(Kg)
30011	AI	10	0000000A	Total run time (MSB)	(Hours)
30012	AI	11	0000000B	Total run time (LSB)	(Hours)
30013	AI	12	0000000C	Remaining idle time to EOS drain	(Hours)
30014	AI	13	0000000D	Control signal value	10 x V or 10 x ma or %
30015	AI	14	0000000E	Temperature tank 1	(°C)
30016	AI	15	0000000F	Temperature tank 2	(°C)
30017	AI	16	00000010	Alarm A2 counter	Counter for A2 default
30018	AI	17	00000011	Alarm A3 counter	Counter for A3 default
30019	AI	18	00000012	Alarm A6 counter	Counter for A6 default
30020	AI	19	00000013	Alarm A7 counter	Counter for A7 default
30021	AI	20	00000014	Alarm A8 counter	Counter for A8 default
30022	AI	21	00000015	Partial drain timer	10 x (s)
30023	AI	22	00000016	PWM main supply	Trigger value
30024	AI	23	00000017	PWM counter	Counter
30026	AI	25	00000019	Max production capability	
30027	AI	26	0000001A	Number of tank	1 or 2

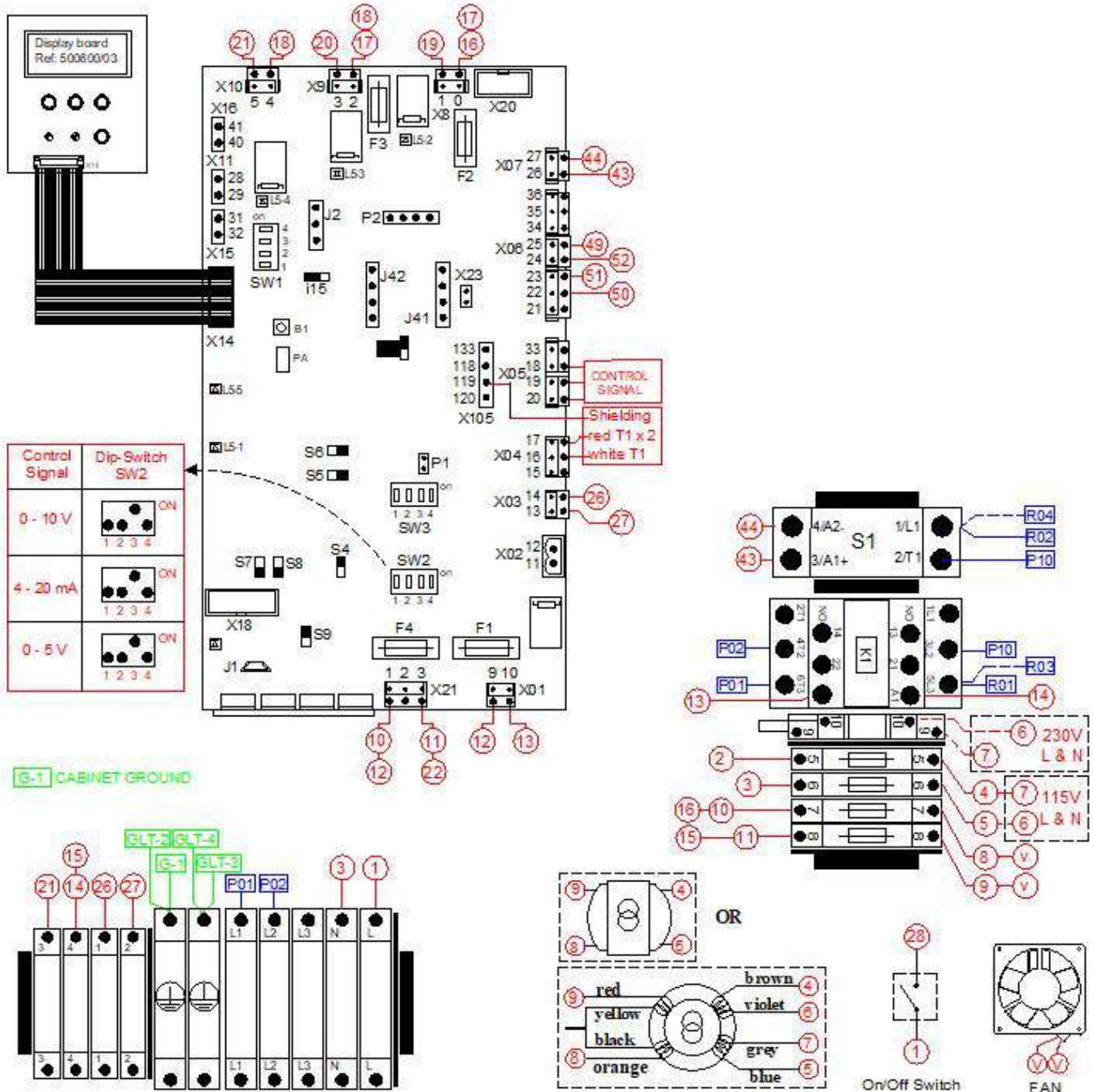
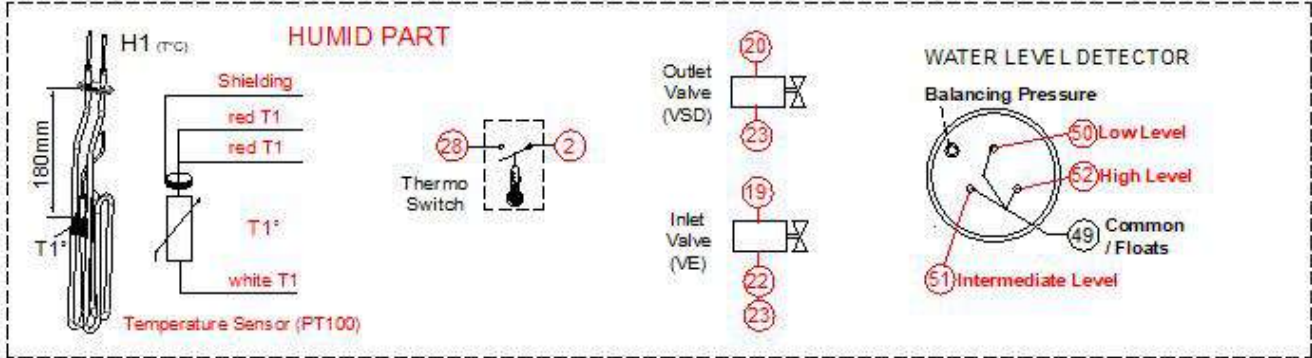
ERS Series

30028	AI	27	0000001B	Unit type ID	Unit code name
30029	AI	28	0000001C	Unit voltage type	Voltage type code
30030	AI	29	0000001D	Water level status	Level detected from 0 to 3
30031	AI	30	0000001E	Power consumed	(kw)
30032	AI	31	0000001F	Max power rating	(kw)
40004	A0	3	00000003	Digital Rh value or digital demand	(%) mini = 1 and maxi = 100
40005	AV	4	00800004	Rh set point	(%) mini = 1 and maxi = 100
40006	AV	5	00800005	EOS drain timer	(Hour) mini = 1 and maxi = 120
40007	AV	6	00800006	Service counter	(kg / 100) from 1 to 65000
40008	AV	7	00800007	Aquastat status	1 : enable -- 2 : disable
40009	AV	8	00800008	Aquastat setpoint	Mini 10 max 80 (°C)
40010	AV	9	00800009	Control signal type	20 : onoff 21 : digital ctrl 22 : digital sensor 23 : 0-10V ctrl 24 : 1-5V ctrl 25 : 4-20ma ctrl 26 : 0-10V sensor 27 : 0-5V sensor
40012	AV	11	0080000B	Control signal adjustment	(-128 %) mini 123, max 133
40014	AV	13	0080000D	Temperature 1 adjustment	(-128 %) mini 123, max 135
40015	AV	14	0080000E	Temperature 2 adjustment	(-128 %) mini 123, max 136
40016	AV	15	0080000F	Proportional factor of PID	Typ. : 20 mini 0 maxi 50
40017	AV	16	00800010	Integral factor PID	Mini 0 maxi 50
40018	AV	17	00800011	Derivative factor PID	Mini 0 maxi 50

ERS Series

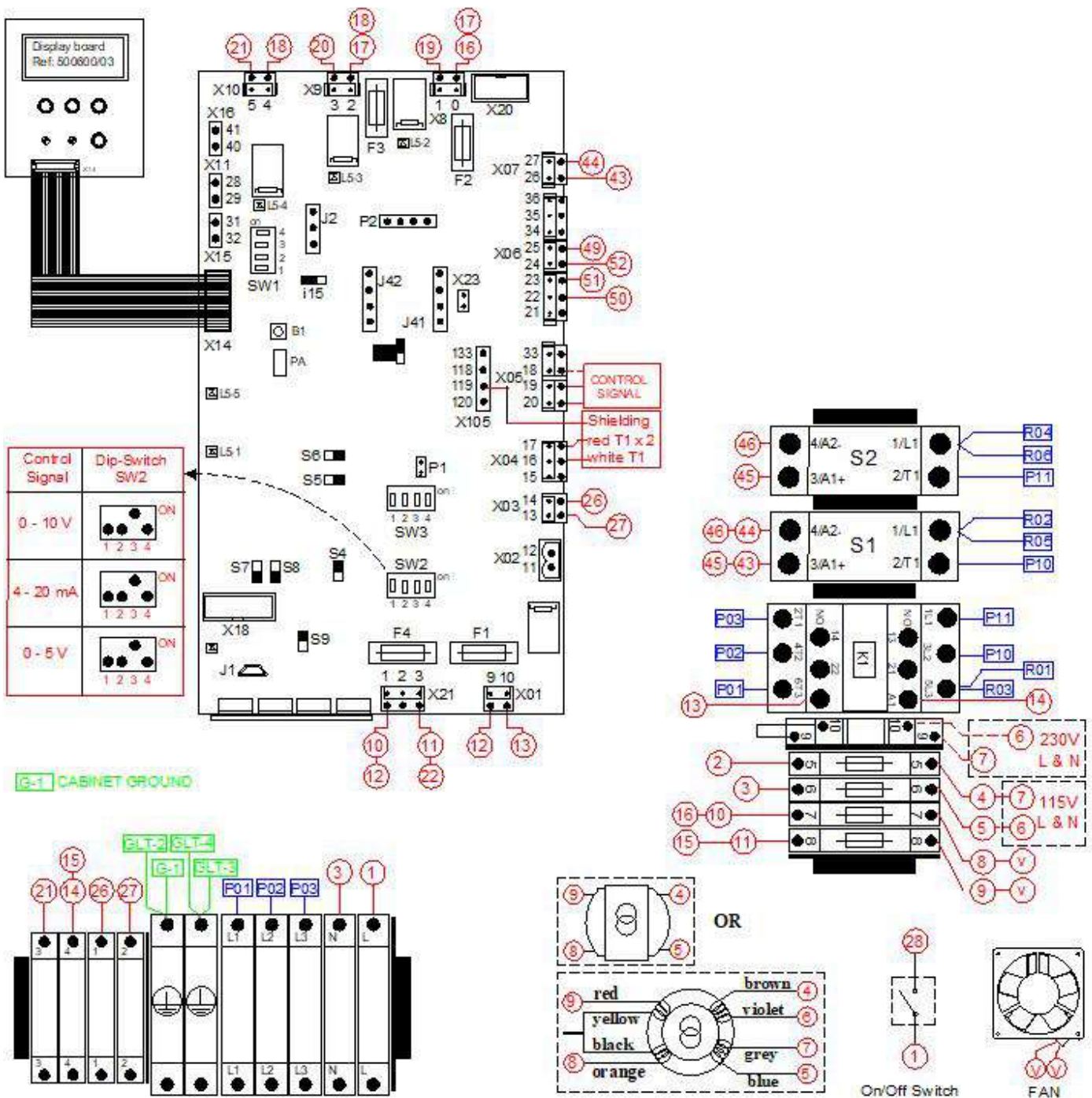
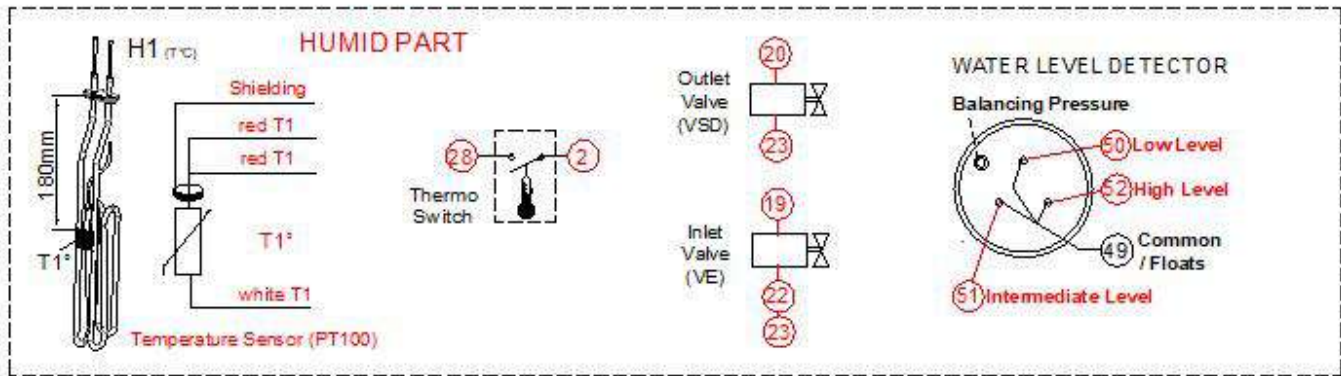
3.10 WIRING DIAGRAMS

Up[V] - 1x200-240V 50-60Hz



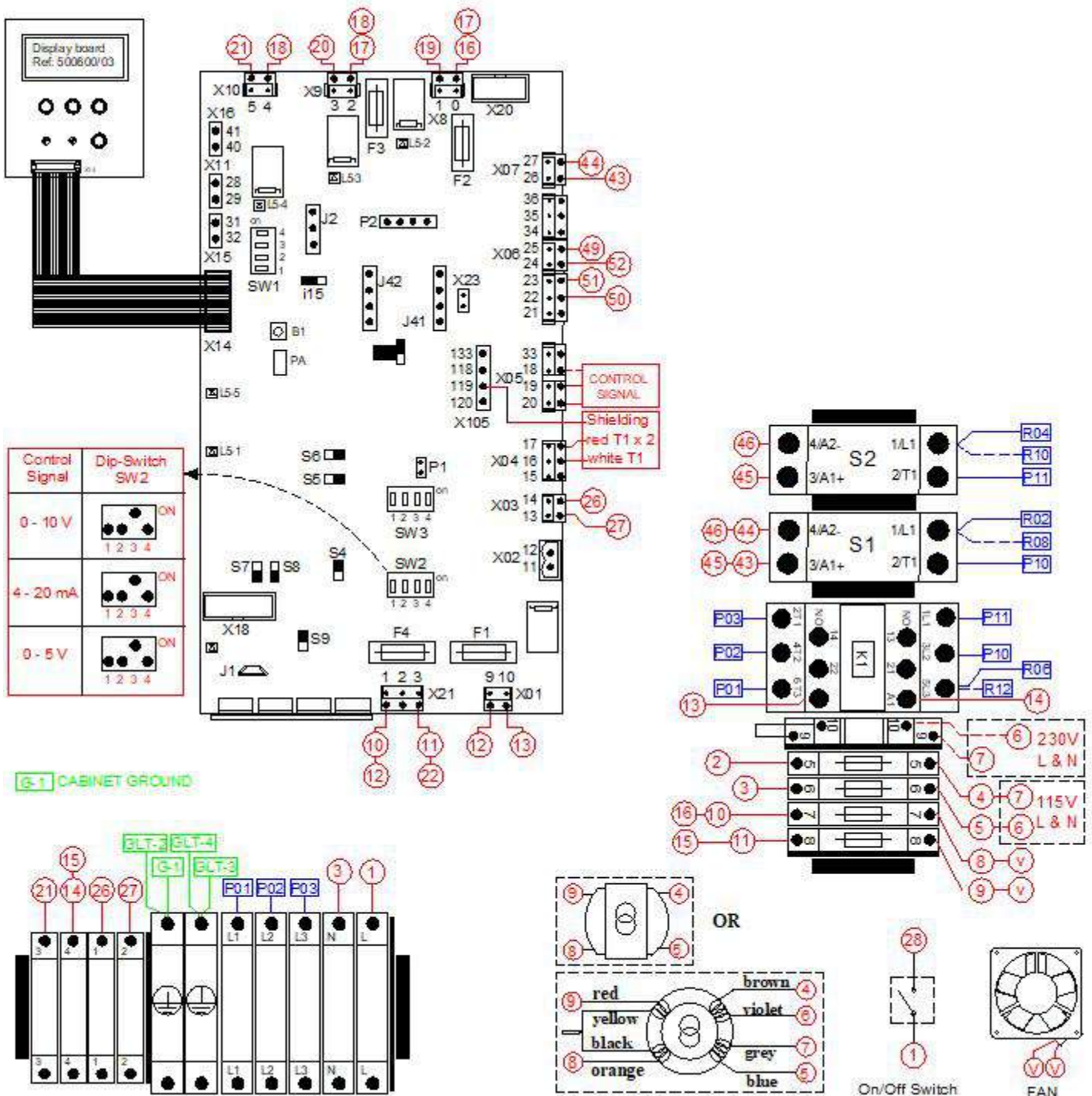
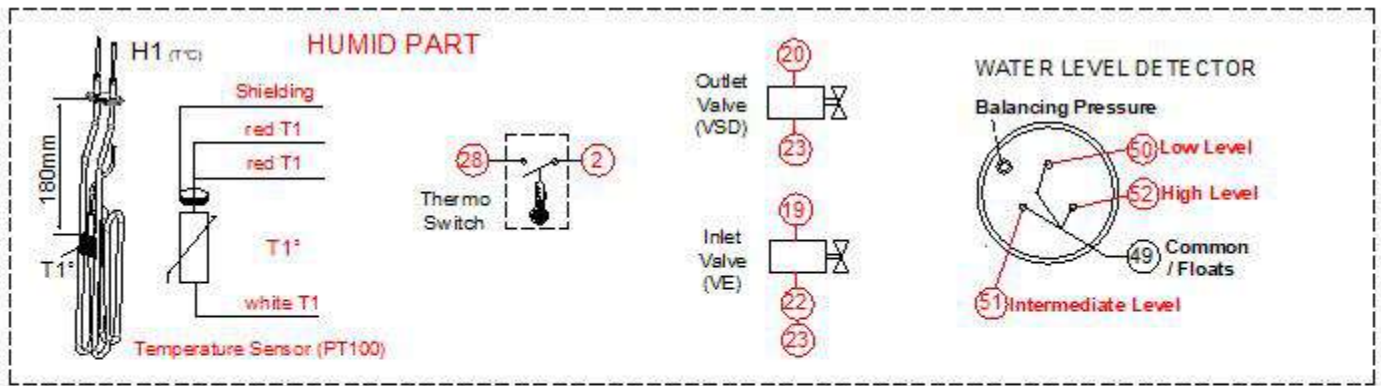
ERS Series

ERS 8-18, Up[V] - 3x200-240V 50-60Hz



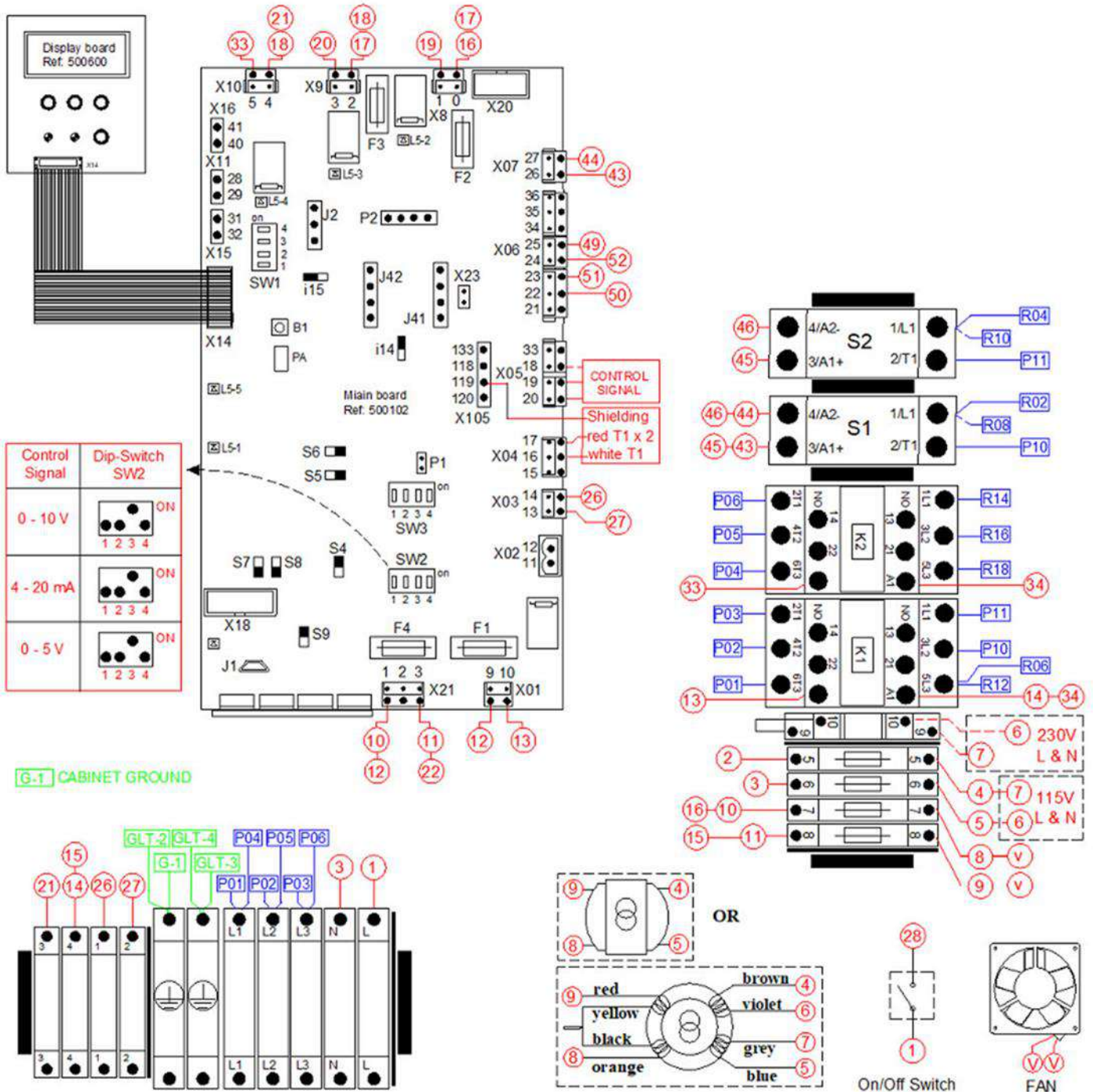
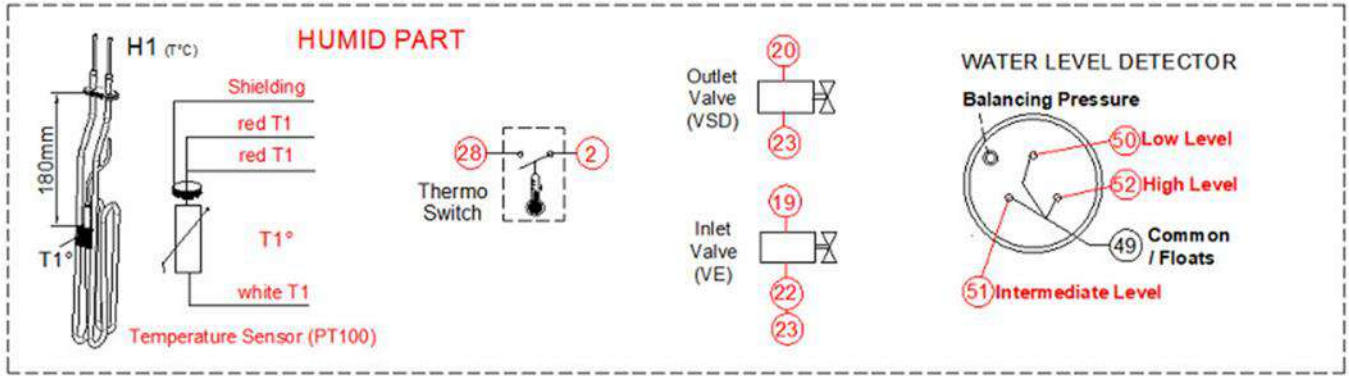
ERS Series

ERS 5-30, Up[V] - 3x380-690V 50-60Hz



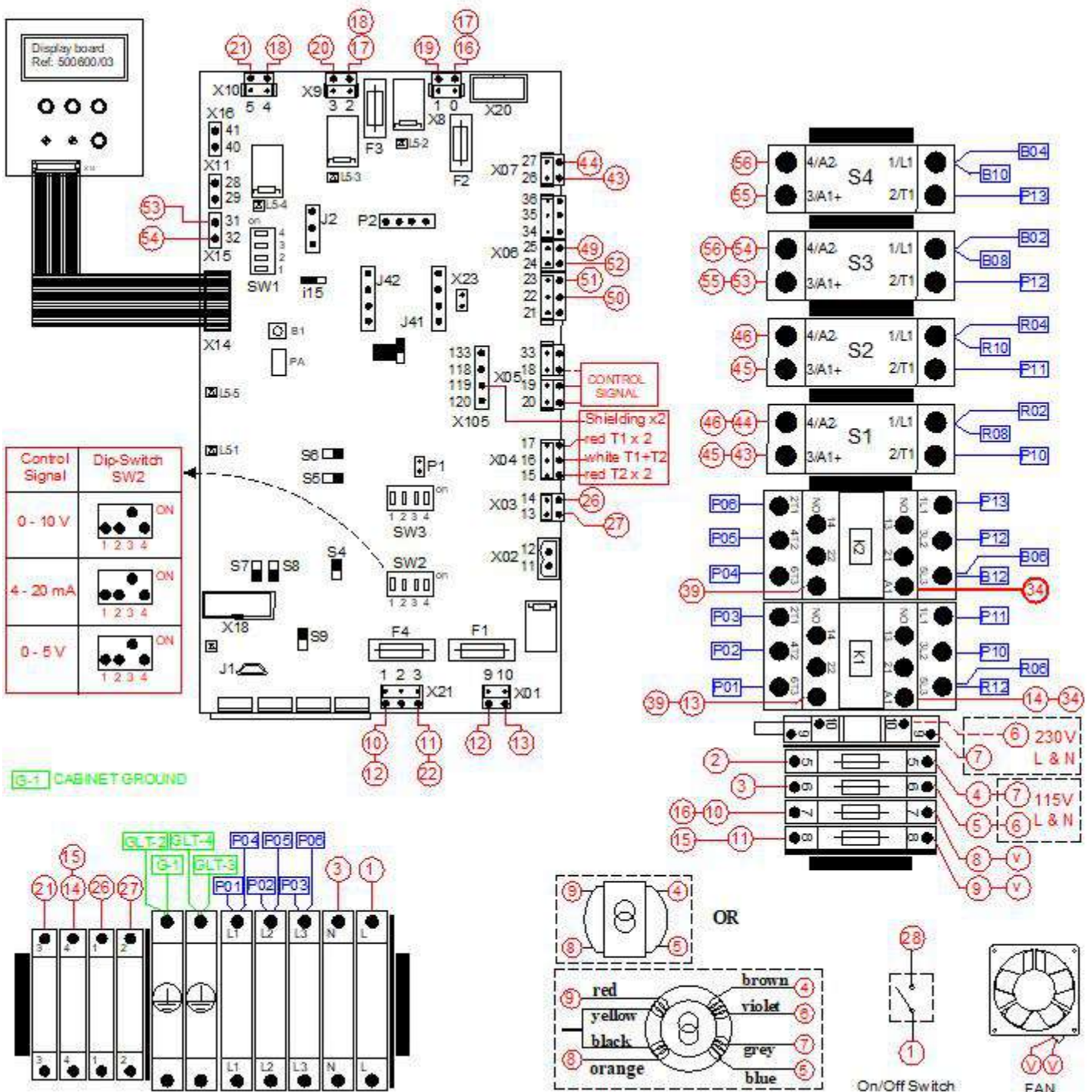
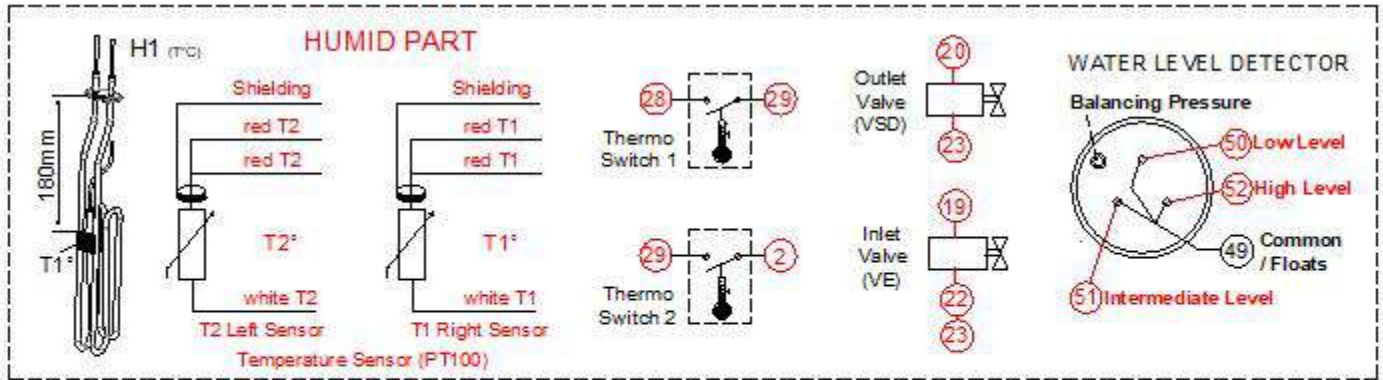
ERS Series

ERS 40-50, Up[V] - 3x380-690V 50-60Hz



ERS Series

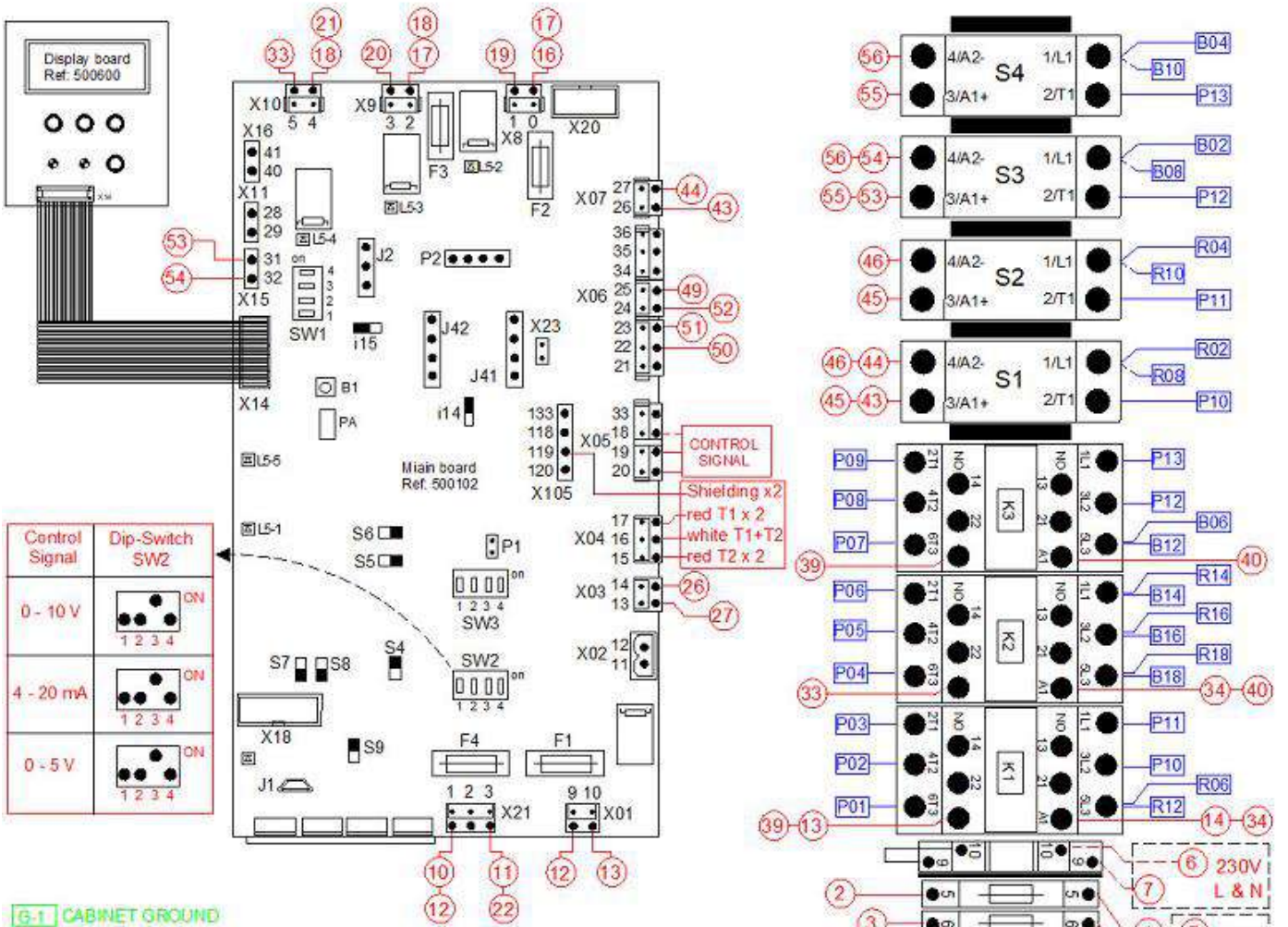
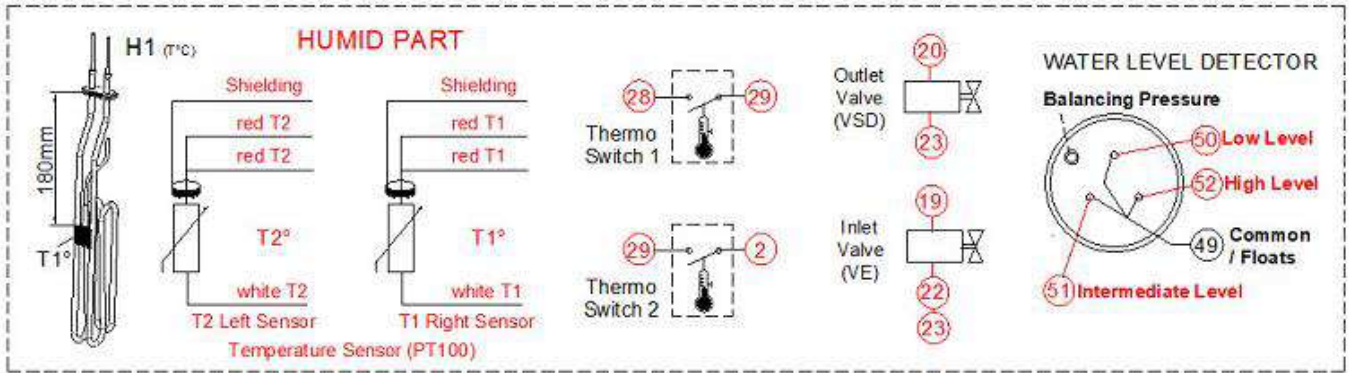
ERS 60-70, Up[V] - 3x380-690V 50-60Hz



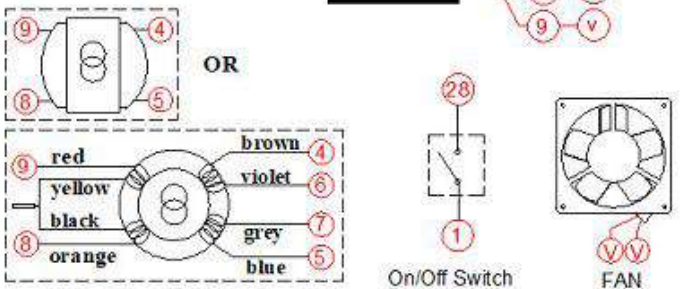
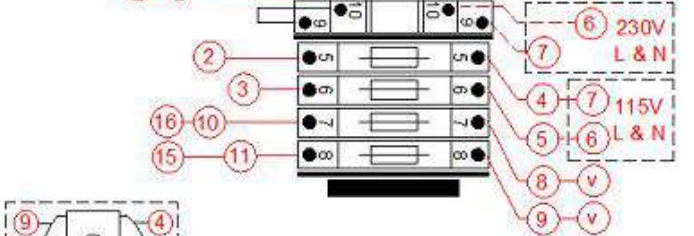
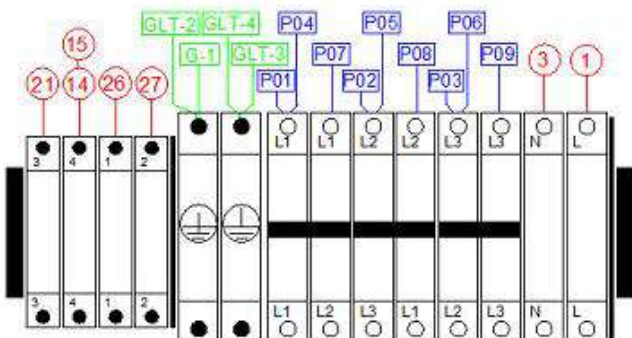
[G-1] CABINET GROUND

ERS Series

ERS 80-100, Up[V] - 3x380-690V 50-60Hz

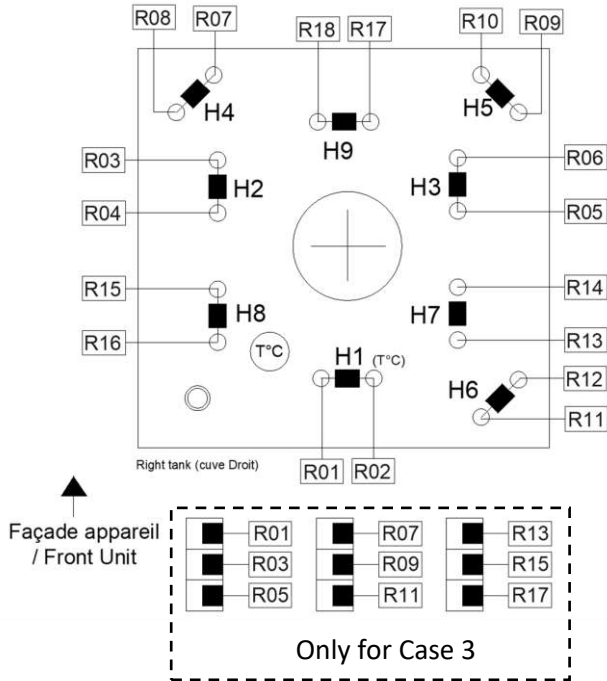


G-1 CABINET GROUND



ERS Series

3.11 HEATING ELEMENTS WIRING DIAGRAMS



Case 3: Up[V] - 3x380-690V 50-60Hz

ERS	U(V)	TANK								
		H1	H2	H3	H4	H5	H6	H7	H8	H9
5	3x380	1,9K	1,9K	1,9K	-	-	-	-	-	-
	3x400	277V	277V	277V	-	-	-	-	-	-
	3x415	230V	230V	230V	-	-	-	-	-	-
7	3x380	1,9K	1,9K	1,9K	-	-	-	-	-	-
	3x400	230V	230V	230V	-	-	-	-	-	-
	3x415	277V	277V	277V	-	-	-	-	-	-
	3x440	1,9K	1,9K	1,9K	-	-	-	-	-	-
	3x460	277V	277V	277V	-	-	-	-	-	-
	3x480	277V	277V	277V	-	-	-	-	-	-
10	3x575	1,9K	1,9K	1,9K	-	-	-	-	-	-
	3x600	346V	346V	346V	-	-	-	-	-	-
	3x615	346V	346V	346V	-	-	-	-	-	-
15	3x690	1,9K	1,9K	1,9K	-	-	-	-	-	-
	3x380	4,3K	4,3K	4,3K	-	-	-	-	-	-
	3x400	277V	277V	277V	-	-	-	-	-	-
20	3x415	230V	230V	230V	-	-	-	-	-	-
	3x380	4,3K	4,3K	4,3K	-	-	-	-	-	-
	3x400	230V	230V	230V	-	-	-	-	-	-
	3x415	277V	277V	277V	-	-	-	-	-	-
	3x440	4,3K	4,3K	4,3K	-	-	-	-	-	-
	3x460	277V	277V	277V	-	-	-	-	-	-
30	3x480	277V	277V	277V	-	-	-	-	-	-
	3x575	4,3K	4,3K	4,3K	1,9K	1,9K	1,9K	-	-	-
	3x600	346V	346V	346V	346V	346V	346V	-	-	-
40	3x615	346V	346V	346V	-	-	-	-	-	-
	3x690	4,3K	4,3K	4,3K	1,9K	1,9K	1,9K	-	-	-
	3x380	4,3K	4,3K	4,3K	4,3K	4,3K	4,3K	1,9K	1,9K	1,9K
	3x400	230V	230V	230V	277V	277V	277V	230V	230V	230V
	3x415	277V	277V	277V	277V	277V	277V	277V	277V	277V
	3x440	4,3K	4,3K	4,3K	4,3K	4,3K	4,3K	1,9K	1,9K	1,9K
50	3x460	277V	277V	277V	-	-	-	-	-	-
	3x480	277V	277V	277V	-	-	-	-	-	-
	3x575	4,3K	4,3K	4,3K	4,3K	4,3K	4,3K	1,9K	1,9K	1,9K
55	3x600	346V	346V	346V	346V	346V	346V	346V	346V	346V
	3x615	346V	346V	346V	346V	346V	346V	346V	346V	346V
	3x690	4,3K	4,3K	4,3K	4,3K	4,3K	4,3K	1,9K	1,9K	1,9K

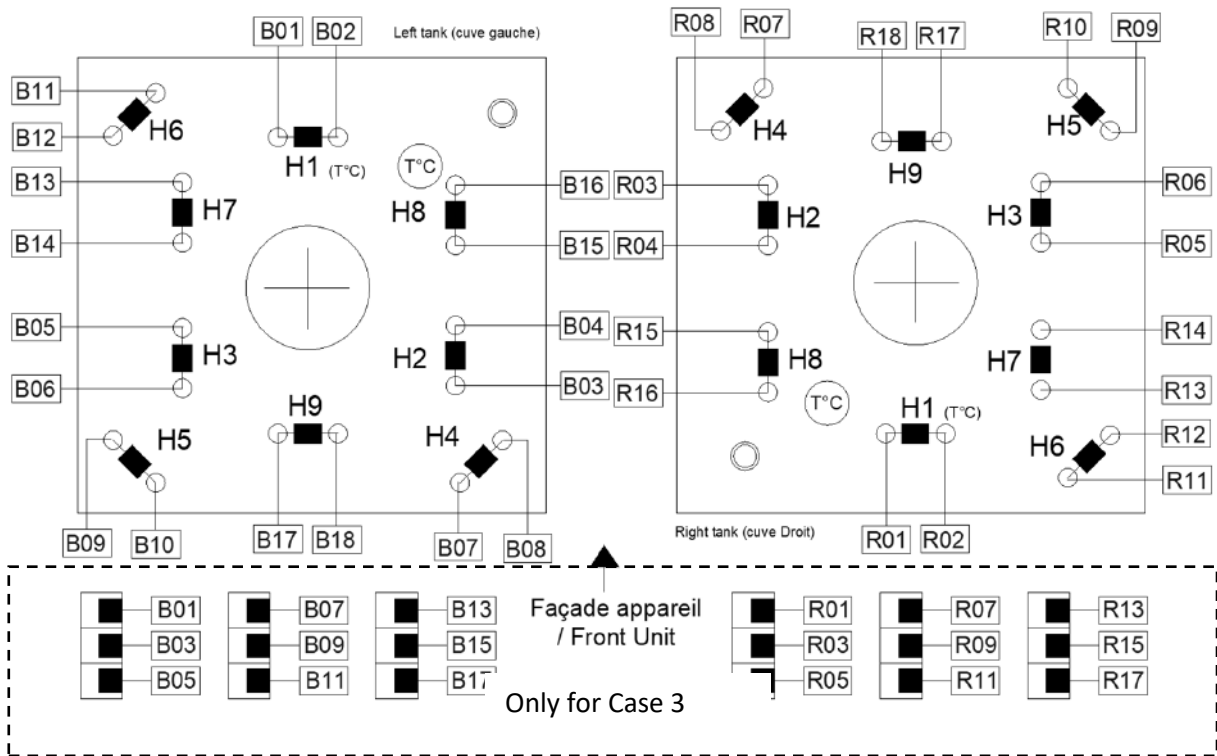
Case 1: Up[V] - 1x200-240V 50-60Hz

ERS	U(V)	R1	R2	R3	R4	R5	R6
3	1x208	1,9K	-	-	-	-	-
	1x220	230V	-	-	-	-	-
	1x230	230V	-	-	-	-	-
5	1x208	4,3K	-	-	-	-	-
	1x220	230V	-	-	-	-	-
	1x230	230V	-	-	-	-	-
8	1x208	4,3K	1,9K	-	-	-	-
	1x220	230V	230V	-	-	-	-
	1x230	230V	230V	-	-	-	-

Case 2: Up[V] - 3x200-240V 50-60Hz

ERS	U(V)	TANK								
		H1	H2	H3	H4	H5	H6	H7	H8	H9
8	3x200	1,9K	1,9K	1,9K	-	-	-	-	-	-
	3x220	230V	230V	230V	-	-	-	-	-	-
	3x230	230V	230V	230V	-	-	-	-	-	-
18	3x200	4,3K	4,3K	4,3K	-	-	-	-	-	-
	3x220	230V	230V	230V	-	-	-	-	-	-
	3x230	230V	230V	230V	-	-	-	-	-	-
25	3x200	4,3K	4,3K	4,3K	1,9K	1,9K	1,9K	-	-	-
	3x220	230V	230V	230V	230V	230V	230V	-	-	-
	3x230	230V	230V	230V	230V	230V	230V	-	-	-
36	3x200	4,3K	4,3K	4,3K	4,3K	4,3K	4,3K	-	-	-
	3x220	230V	230V	230V	230V	230V	230V	-	-	-
	3x230	230V	230V	230V	230V	230V	230V	-	-	-
44	3x200	4,3K	4,3K	4,3K	4,3K	4,3K	4,3K	1,9K	1,9K	1,9K
	3x220	230V	230V	230V	230V	230V	230V	230V	230V	230V
	3x230	230V	230V	230V	230V	230V	230V	230V	230V	230V

ERS Series



Case 2: Up[V] - 3x200-240V 50-60Hz

ERS	U(V)	RIGHT TANK									LEFT TANK								
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H1	H2	H3	H4	H5	H6	H7	H8	H9
51	3x200																		
	3x220	4,3K 230V	4,3K 230V	4,3K 230V	1,9K 230V	1,9K 230V	1,9K 230V	-	-	-	4,3K 230V	4,3K 230V	4,3K 230V	1,9K 230V	1,9K 230V	1,9K 230V	-	-	-
	3x230																		
62	3x200																		
	3x220	4,3K 230V	4,3K 230V	4,3K 230V	4,3K 230V	4,3K 230V	4,3K 230V	-	-	-	4,3K 230V	4,3K 230V	4,3K 230V	1,9K 230V	1,9K 230V	1,9K 230V	-	-	-
	3x230																		

ERS Series

3.12 WATER LEVEL DETECTOR WIRING

- 49: Common cable float detector
- 50: Low level
- 51: Intermediate level
- 52: High level

Fig. C 3-12. FLOAT LEVEL DETECTOR

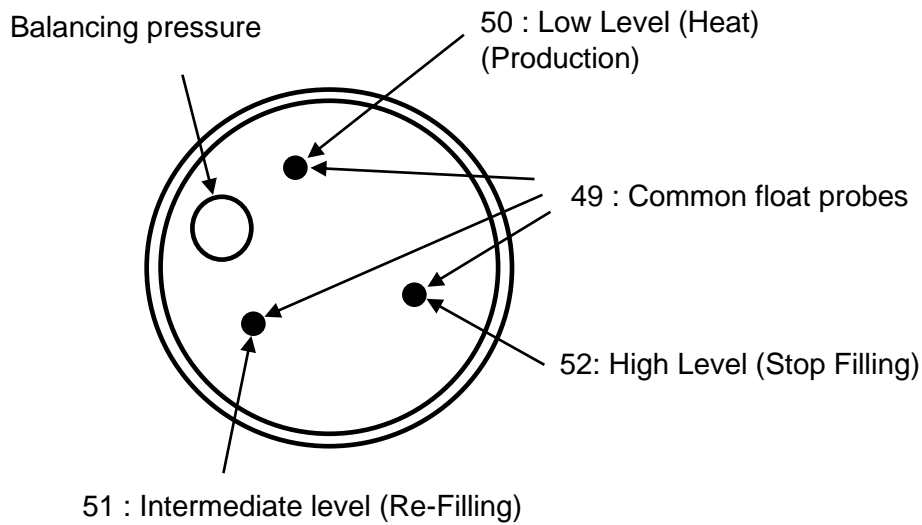
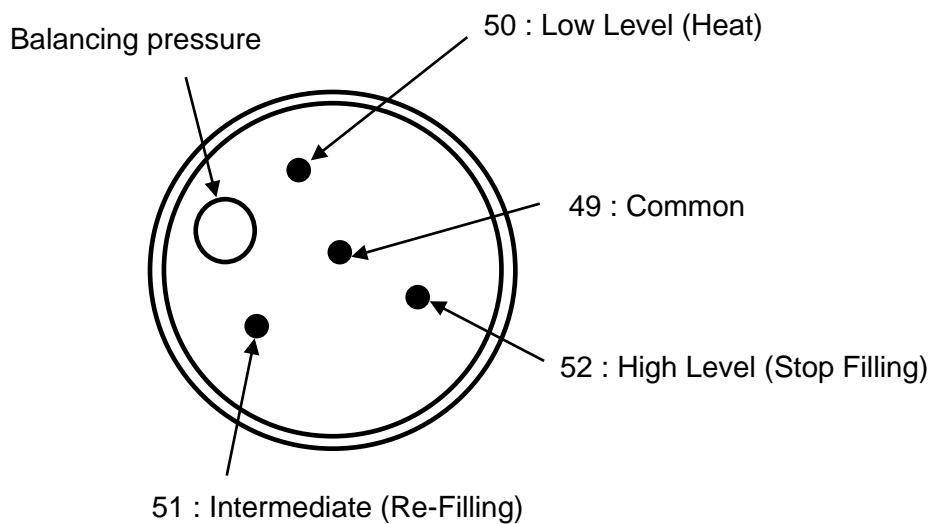


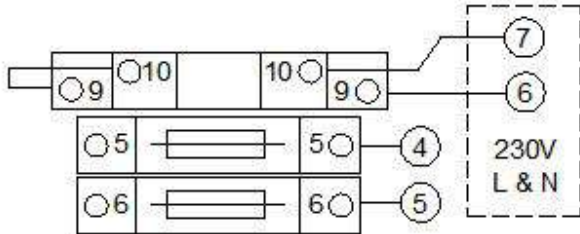
Fig. D 3-12. (OPTION) ELECTRODES LEVEL DETECTOR



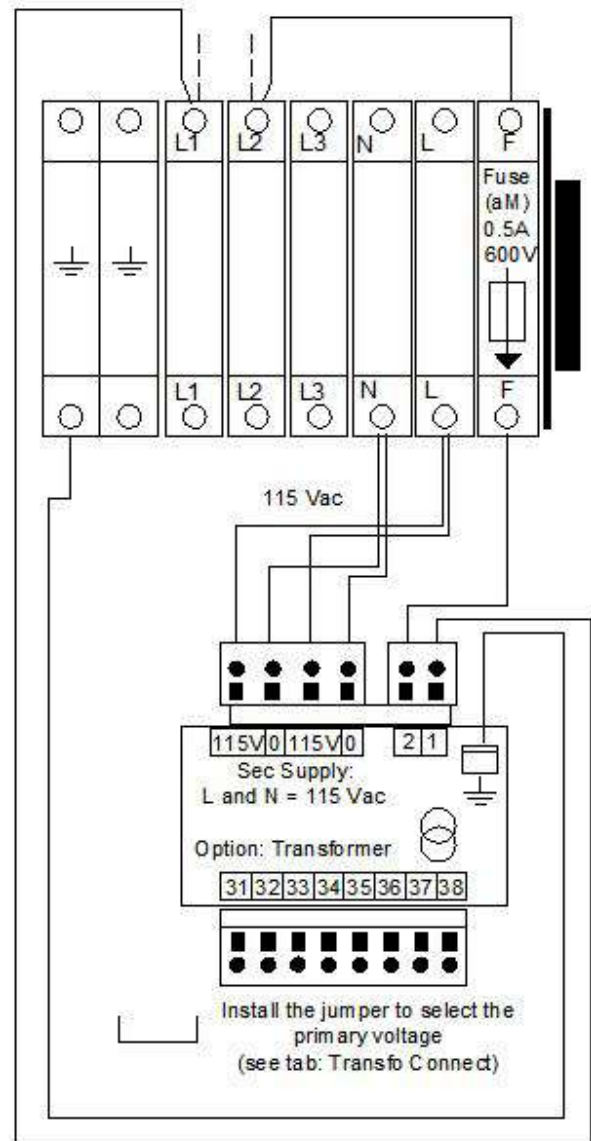
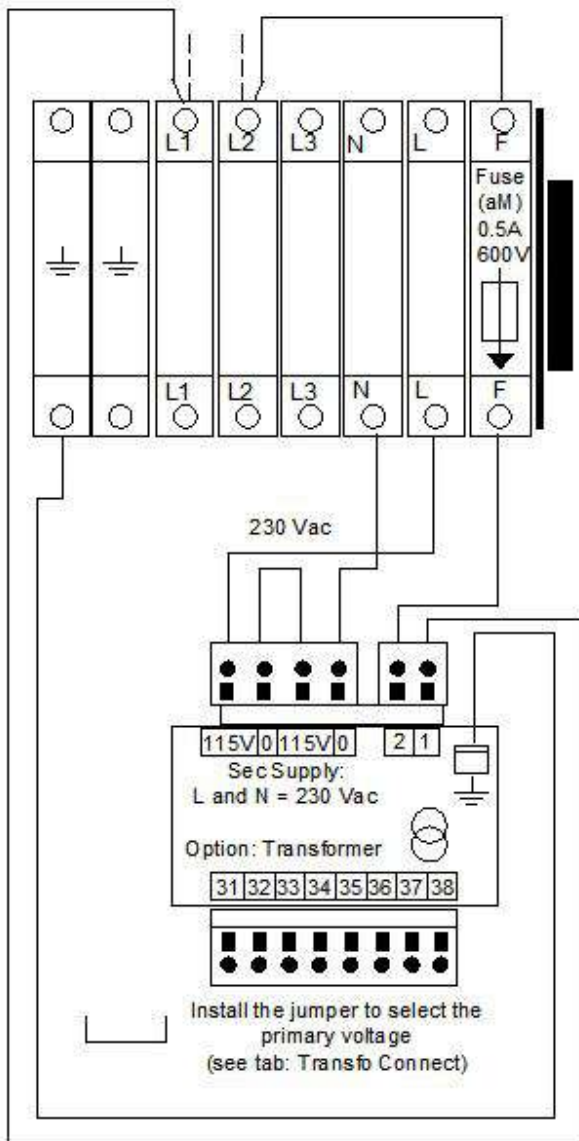
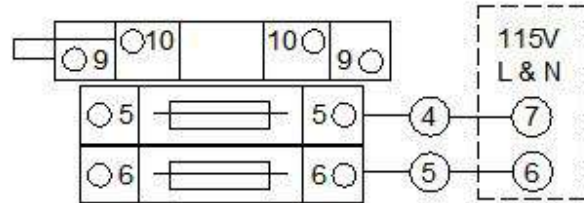
ERS Series

3.13 OPTION : TRANSFORMER CONNECTION

Supply: L and N = 230 Vac



Supply: L and N = 115 Vac



Primary voltage	600V	575V	480V	460V	440V	415V	400V	380V
Jumper position	34-35	33-35	33-36	32-36	32-37	31-37	32-38	31-38

Tab: Transfo Connect

ERS Series

4. COMMISSIONING



Before operation, please check that your installation complies with the manufacturer's technical recommendations. Check all power cables electrical connections. Remove the blocking blue foam ring from the tank.

Marker 1: Validation & change menu button
Marker 2: Upward button
Marker 3: Downward button
Marker 4: Manual drain button for maintenance
Marker 5: LED = Steam production indication

- Open the main water supply valve.
- Switch on the main power supply (power and control voltages).
- Switch on the unit switch.
- If the unit asks you for a commissioning code, note the serial number on the nameplate and contact your agent to obtain this code.

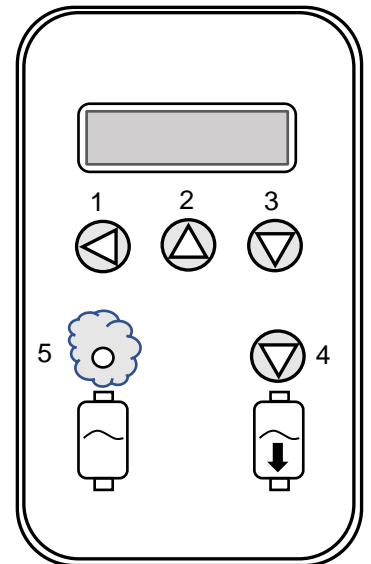


Fig. 4 Humidifier display

- Enter your three-digit code by doing this:
Press one of the keys 1, 2, 3 and the display will show you OXX, with the flashing zero to eventually change it by pressing 2 or 3.
Once arrived at your digit, validate it by pressing key 1 and your second digit flashes. Repeat the previous two operations to show the last two digits.

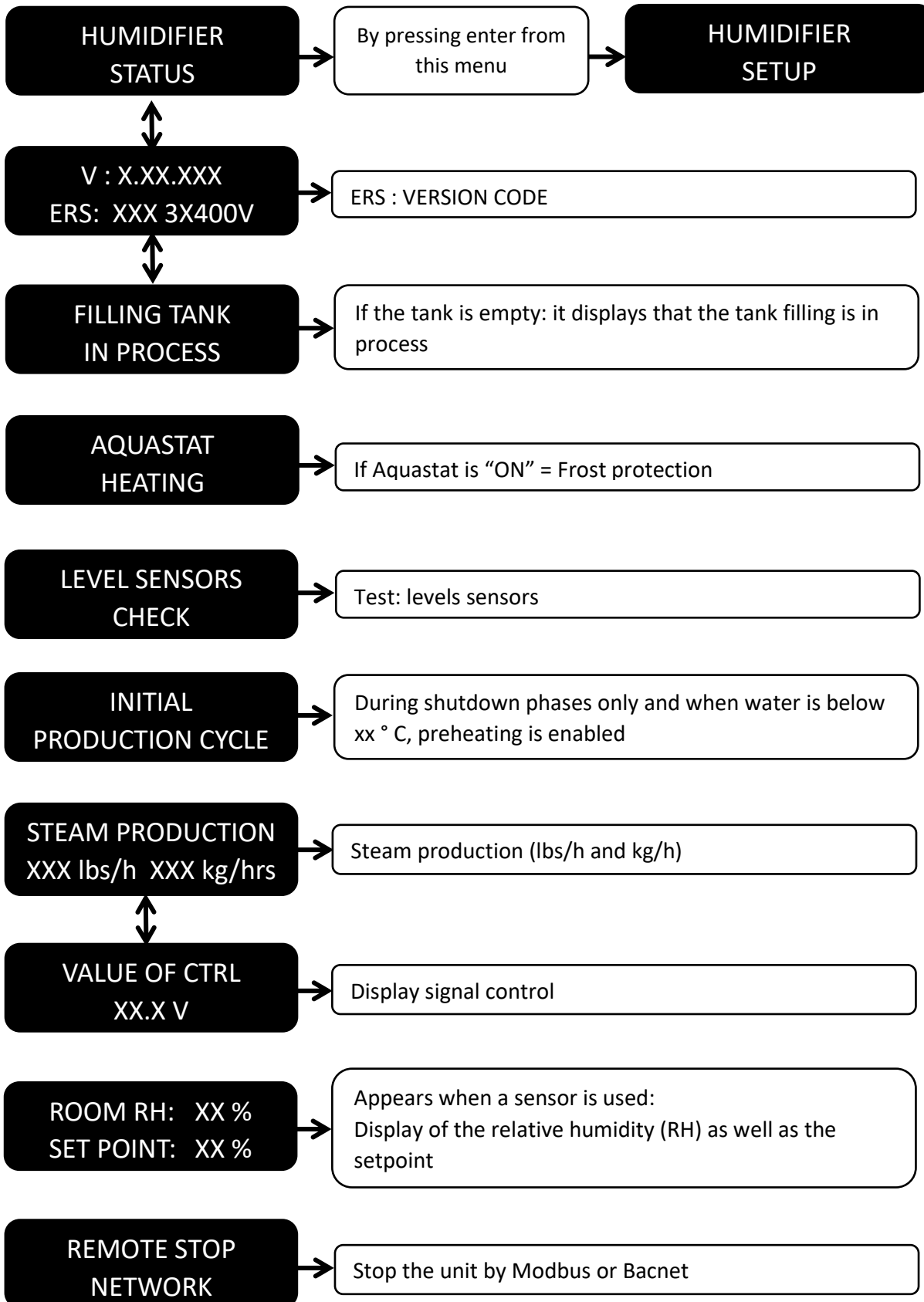
Very important: don't forget to validate the last digit.

- Enter water quality in the displayed menu.
- The device is ready to respond any production request.
- During steam production, the LED (5) lights up.

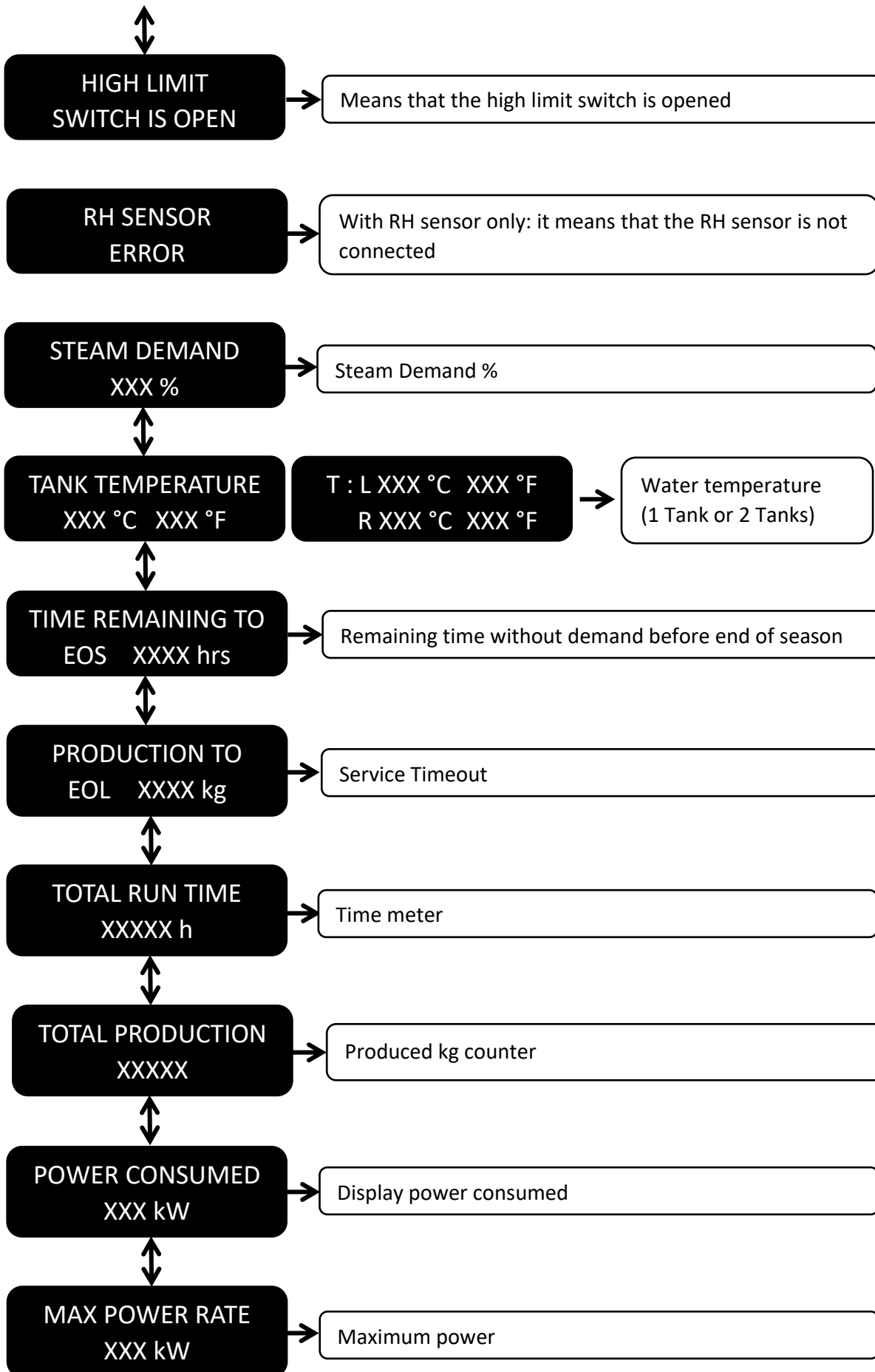
ERS Series

5. SYSTEM MANAGEMENT

5.1 STATUS MENU (READ ONLY)

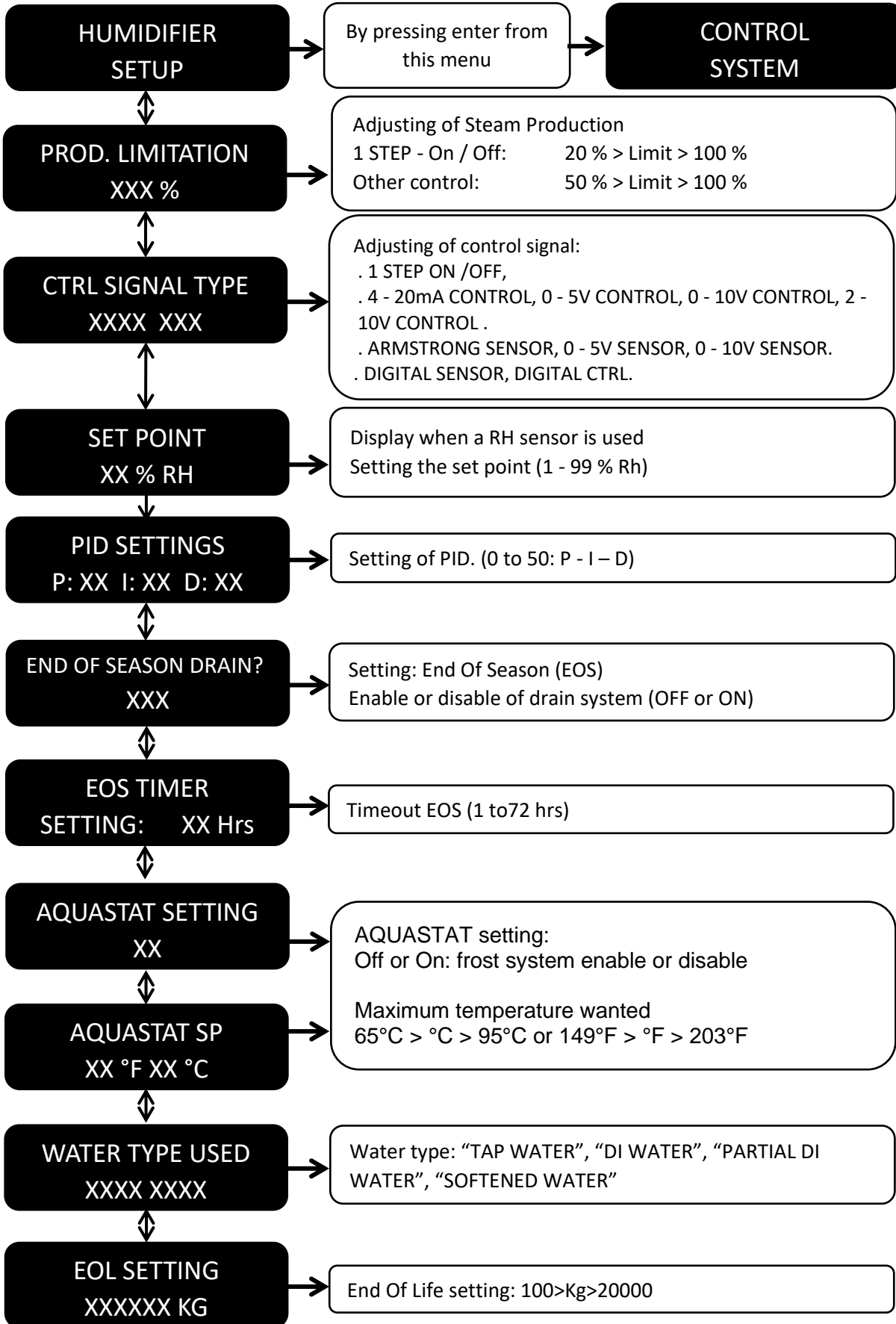


ERS Series



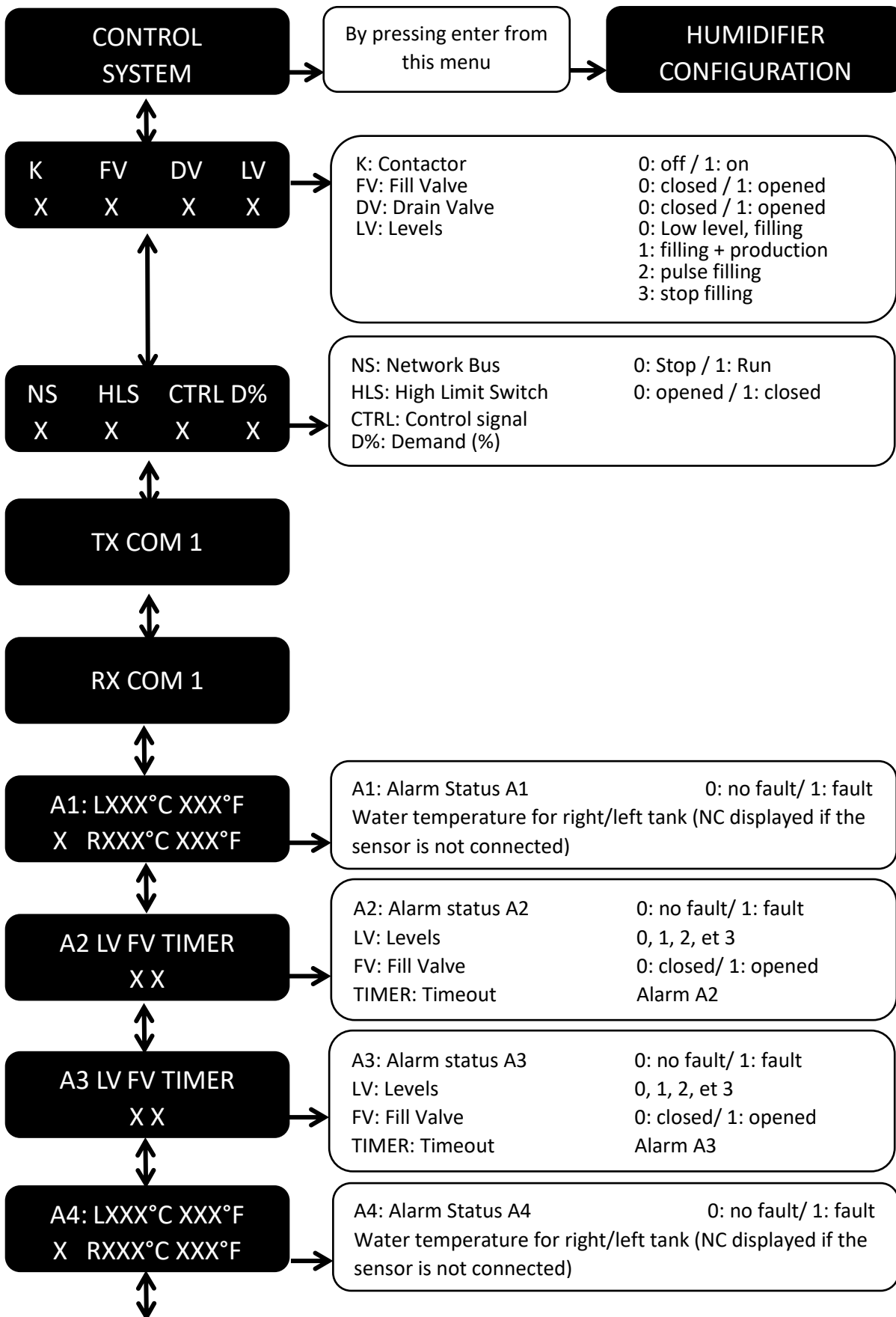
ERS Series

5.2 SETUP MENU

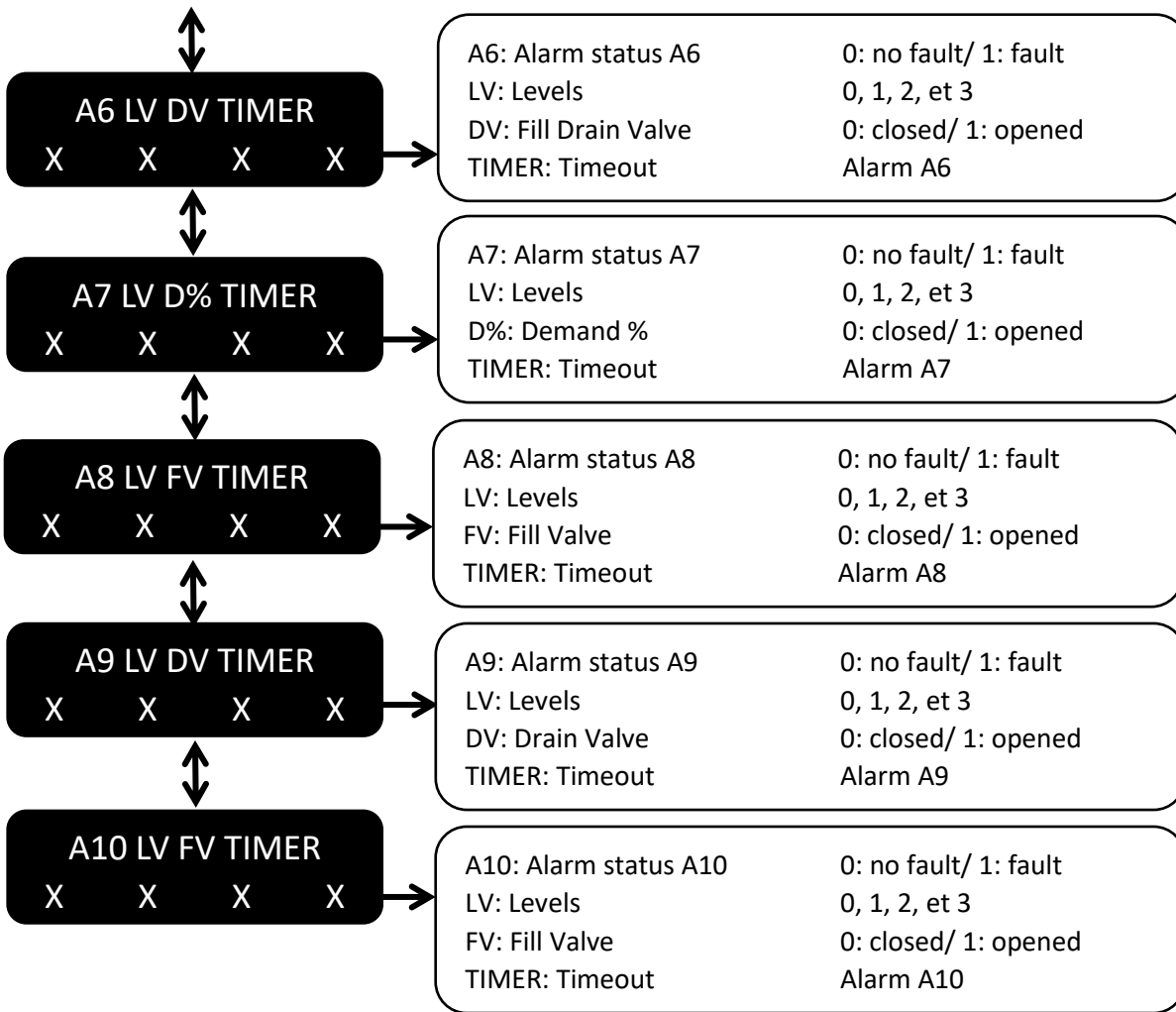


ERS Series

5.3 CONTROL SYSTEM MENU

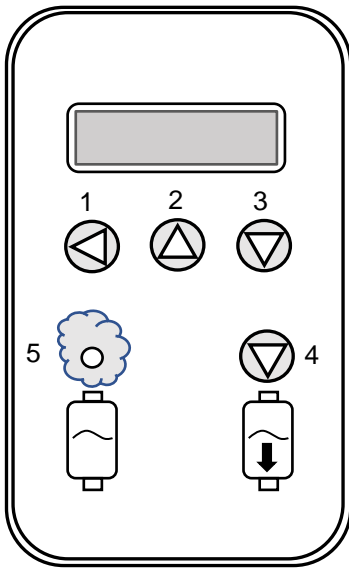


ERS Series



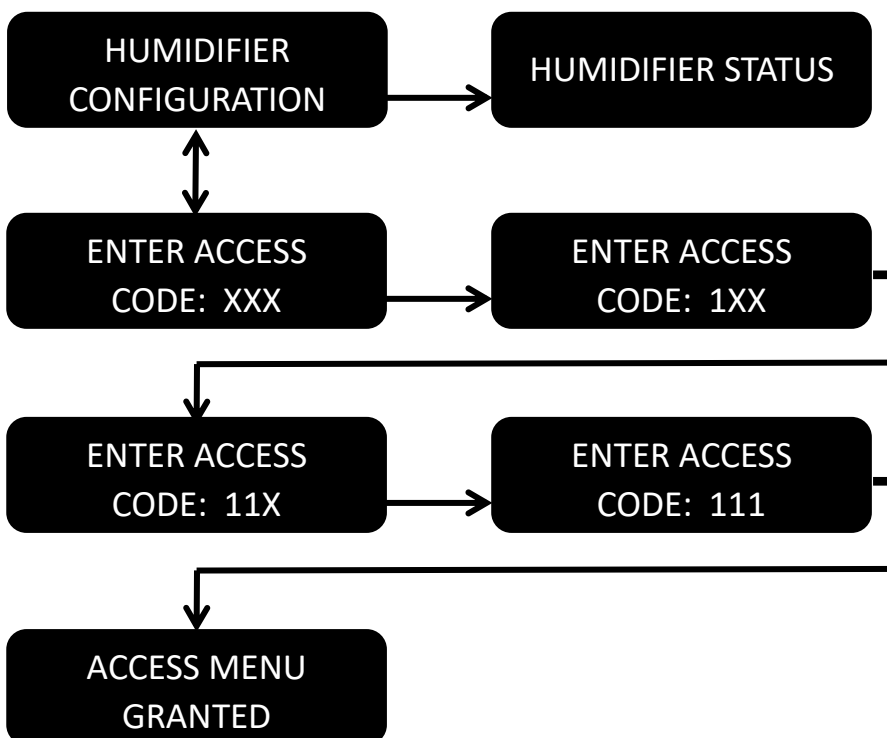
ERS Series

5.4 CHANGE SETTINGS MENU

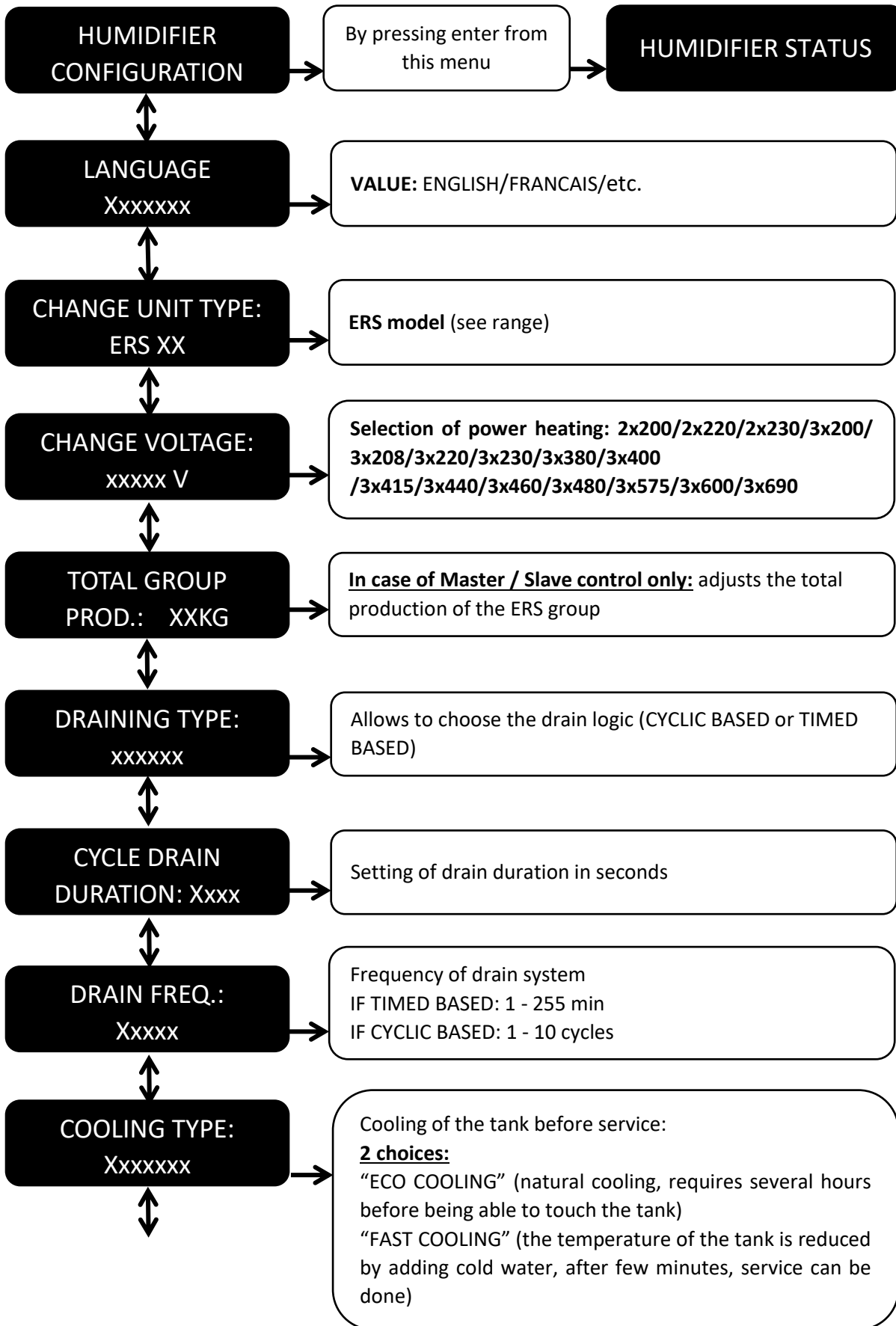


Procedure to enter the access code:

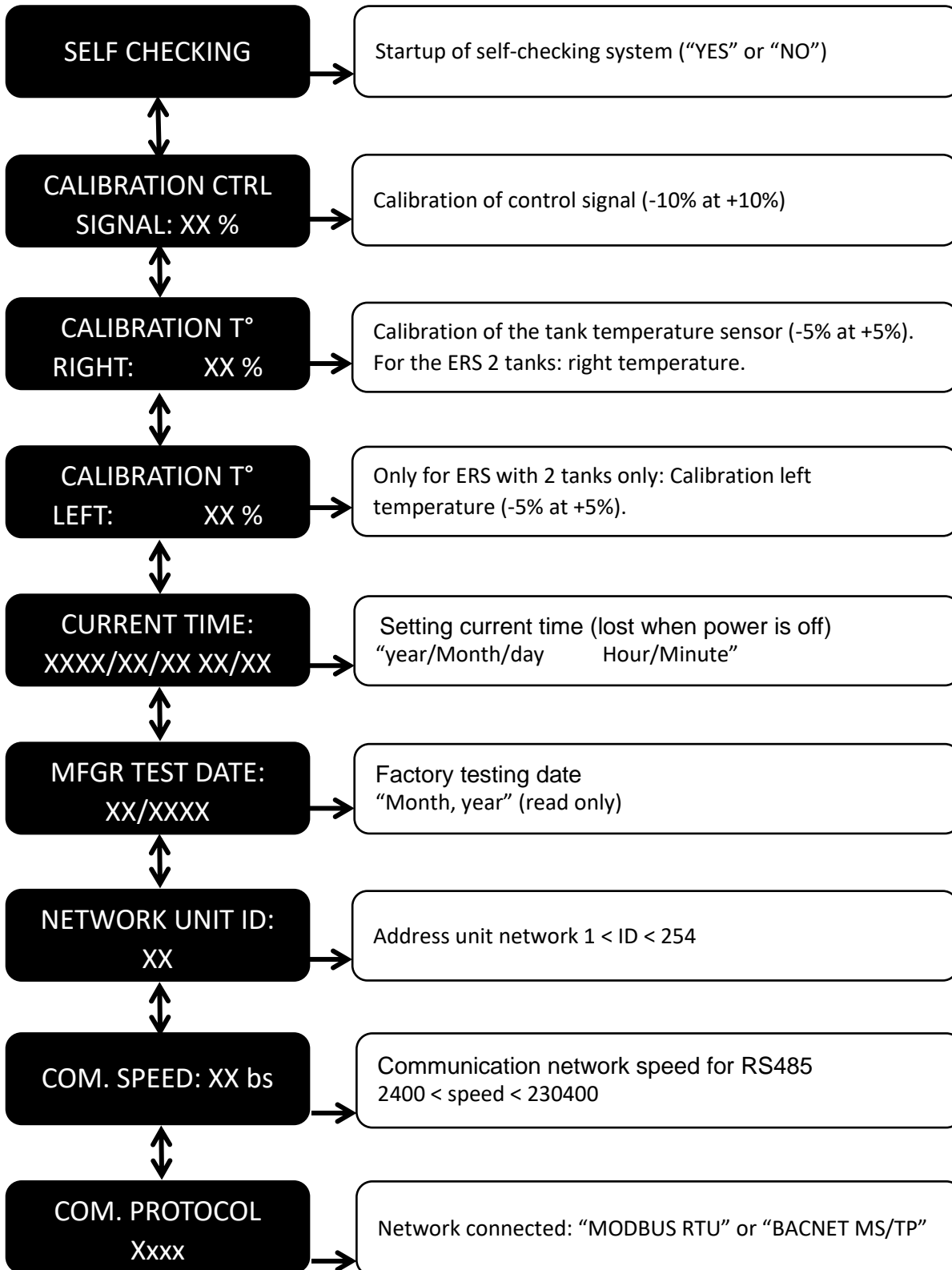
- Press the "1" key: the first cross flashes.
- Press the "2" key to increase the digit or the "3" key to decrease it.
- Once you have reached the desired digit of the code, press the "1" key to validate it: the 2nd cross flashes.
- Proceed in the same way for the following digits, and do not forget to validate the code by pressing the "1" key.



ERS Series



ERS Series



ERS Series

5.5 MAINTENANCE ALERTS

M1: CHECKING 50hr
DUE

This message is displayed 50 hours after the first start-up. It is then necessary to check the tightness of the electrical and hydraulic connections (steam pipe, drain circuit, water supply, etc.). The device is not stopped.

M2: MAINTENANCE
DUE

The maintenance timer has arrived at 0, it is necessary to maintain the device. The device is not stopped.

M3: SERVICE OVER
DUE: DRAINING

M3: SERVICE OVER
DUE: COOLING

M3: SERVICE OVER
DUE: STOP UNIT

The message M3 is displayed when the M2 display is displayed and 100 hours have elapsed without maintenance.

Then the unit is shut down, drained, the tank cooled, and put on hold of mandatory maintenance.

MANUAL DRAIN IN
PROCESS

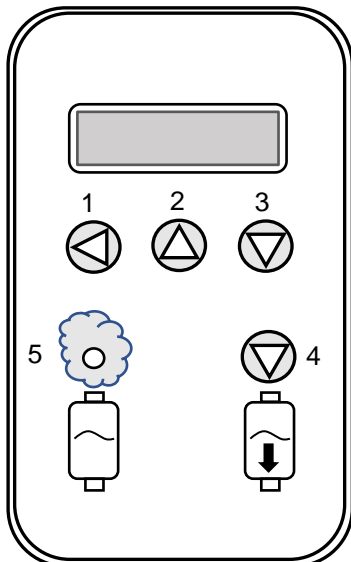
This message is displayed once after pressing the manual drain button. The drain is activated.

COOLING CYCLE
IN PROCESS

This means that the manual drain is complete, and you must wait for the tank temperature to go down before servicing.

MAINTENANCE
DUE

The tank is empty and cooled, maintenance can be done. See technical manual.



TO CARRY OUT A RESET FOR THE ABOVE MESSAGES, FOLLOW THIS PROCEDURE:

- Switch the unit to drain by pressing the manual drain button (4).
- Press button 3 for at least 5 seconds.

ERS Series

5.6 DEFAULT MESSAGE

A1: TANK TEMP. OVER-HEAT	Meaning: The temperature inside the tank is too high: 110 °C. The heating elements are no longer completely immersed.
	In this case: When this message appears, the tank is drained, the general fault contact is activated, and the unit is then stopped.

Possible causes and resolutions:

1. **Poor water supply from the tank.** A block of limestone obstructs the tank water inlet. The tank must be cleaned.
2. **Level sensor issue.** Check the correct electrical connection between the level sensor and the main board (see wiring diagrams, pg. 29). Floats visual checking and cleaning if needed.
3. **Defective temperature sensor or calibration to be redone.** If this message appears when the tank is cold, the temperature sensor (PT100) must be tested and replaced if necessary. Then contact your agent to recalibrate.
4. **Water quality issue.** Foam occurs in the tank; the purging time must be increased. From the "CHANGE PARAMETERS" menu find the "DRAIN TYPE" menu and activate the mode: "TIMED". Also check the regeneration times of the softener if it is supplied with softened water.
5. **Electronic issue.** Replace the main board and check that there is no steam or water flow in the electrical compartment.

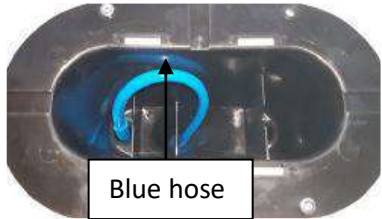
ERS Series

A2: DEFECTIVE TANK FILLING	Meaning: The filling of the tank is not carried out correctly. The water level does not reach the low water detection level. (Maximum duration of filling before alarm: 20 min).
A3: FILLING PRODUCTION AREA	Meaning: No filling between low level and intermediate level.
A8: WATER RE-FILL DEFAULT	Meaning: No filling between intermediate level and high level.

In this case:

When this message appears, the tank is drained, the general fault contact is activated, and the unit is then stopped.

Possible causes and resolutions:

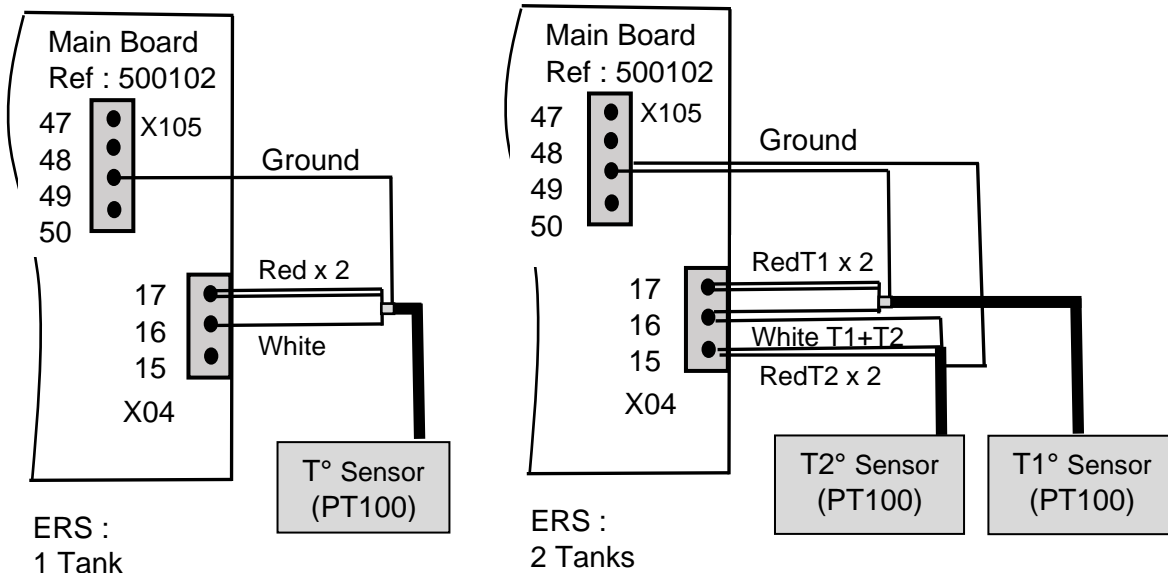
1. **Check water supply.** The pressure must be constant and between 2 and 8 bar. If in doubt, install a pressure regulator set at 2 bar on the supply pipe. Also check the condition of the water inlet valve, the electrical connection and the condition of fuse F2 (2A). Change the valve and fuse if defective.
2. **Blue hose inside the filling cup incorrectly positioned or pinched.** Replace the hose as shown in the picture.

3. **Check for proper condensate drainage.** Must absolutely be drained, otherwise it will accumulate in the steam hose, creating water projections and pressure rise in the tank, preventing the unit from being filled.
4. **Verify that the bleed valve is properly closed.** A piece of scale can block the valve closure and cause a leak, preventing proper filling of the unit.
5. **Electronic issue.** Replace the main board and check that there is no steam or water flow in the electrical compartment.

ERS Series

A4: TEMP. SENSOR DISCONNECTED	Meaning: The temperature sensor is either defective or disconnected.
	In this case: When this message appears, the tank is drained, the general fault contact is activated, and the unit is then stopped.

Possible causes and resolutions:

1. **Check the electrical connections.** The temperature sensor must be connected to the main board on connector X04 terminals 17 (2 red wires) and 16 (white wire). The ground wire is connected to connector X105 on terminal 49.



2. **Defective temperature sensor.** Disconnect the temperature sensor from connector X04. Use a multimeter to measure the resistance value of the PT100 at room temperature and compare this value with the PT100 resistance table.

If the value is different, the sensor is defective, replace the sensor.

3. **Electronic issue.** Replace the main board and check that there is no steam or water flow in the electrical compartment.

ERS Series

A6: HIGH LEVEL BLOCKED	Meaning: This means that the high level is continuously activated (time before detection: 14 minutes).
	In this case: When this message appears, the tank is drained, the general fault contact is activated and the unit is then stopped.

Possible causes and resolutions:

1. **Level sensor issue.** Check the correct electrical connection between the level sensor and the main board (see wiring diagrams). Floats visual checking and cleaning if needed.
2. **Electronic issue.** Replace the main board and check that there is no steam or water flow in the electrical compartment.

A7: VAPORIZATION TOO LONG	Meaning: Steam production is not enough.
	In this case: When this message appears, the tank is drained, the general fault contact is activated, and the unit is stopped.

Possible causes and resolutions:

1. **Incorrect power supply.** Using a voltmeter, check supply voltage (Vac) on terminals L1, L2 and L3 of the heating elements). If the supply voltages are not identical, check the supply circuit up to each heating element and replace the defective components.
 1. **Continuous water supply.** Check water supply pressure ($2 > P \text{ (bar)} > 8$), replace filling valve if necessary.
 3. **Level sensor issue.** Check the correct electrical connection between the level sensor and the main board (see wiring diagrams, pg. 29). Floats visual checking and cleaning if needed.
 4. **Electronic issue.** Replace the main board and check that there is no steam or water flow in the electrical compartment.

ERS Series

A9: COMPLETE DRAIN TOO LONG	Meaning: Water drainage problem.
	In this case: When this message appears, the tank is drained, the general fault contact is activated, and the unit is then stopped.

Possible causes and resolutions:

1. **The drain circuit is clogged.** Press the "MANUAL DRAINING" button, and check for proper water flow. Perform the following maintenance: tank (pg. 58), drain valve (pg. 59) and level detector (pg. 60). Also remember to check that nothing is obstructing the drain pipe.
2. **Blown F3 fuse.** Replace F3 fuse, located on the main board, and the drain valve.
3. **Electronic issue.** Replace the main board and check that there is no steam or water flow in the electrical compartment.


A10-AX : LEVEL CHECK FAILED	Meaning: Problem with the water level detector or with the draining system.
	In this case: When this message appears, the tank is drained, the general fault contact is activated, and the unit is then stopped.

Possible causes and resolutions:

1. **A float level sensor is blocked.** Check and clean the water level detector.
2. **The drain valve is out of order and / or blown F3 fuse.** Replace F3 fuse, located on the main board, and the drain valve.
3. **The drain circuit is blocked.** Clean the drain circuit, tank, drain valve, drain hose, the collecting water tank (option))
4. **Electronic issue.** Replace the main board and check that there is no steam or water flow in the electrical compartment.

ERS Series

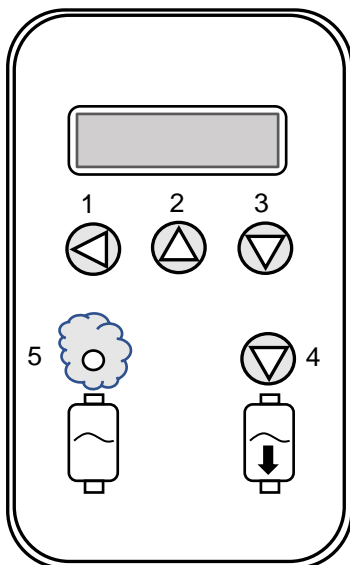
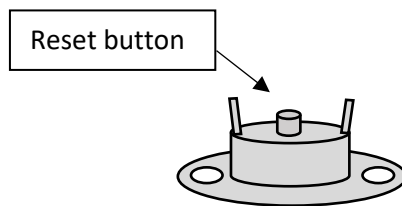
Black screen: Power switch On / display and unit Off after a potential overheat

	Meaning: Problem “Overheating” is detected by high temperature switch (this switch is installed on the lid of the tank)
	In this case: When this display is off, the control voltage is cut by the high temperature switch and the unit is stopped.

Possible causes and resolutions:

1. **An overheating in the tank has been detected.** Check the water level detector, the cables and the heating elements.
Replace the float sensor or / and the heating element out of order, the tank seal and the temperature sensor.

Once the problem is solved, press the reset button of high-temperature switch located on the cover of the tank.



TO CARRY OUT A RESET FOR THE ABOVE MESSAGES, FOLLOW THIS PROCEDURE:

- Switch the unit to drain by pressing the manual drain button (4).
- Press button 3 for at least 5 seconds.

ERS Series

6. MAINTENANCE

6.1 STAINLESS STEEL TANK

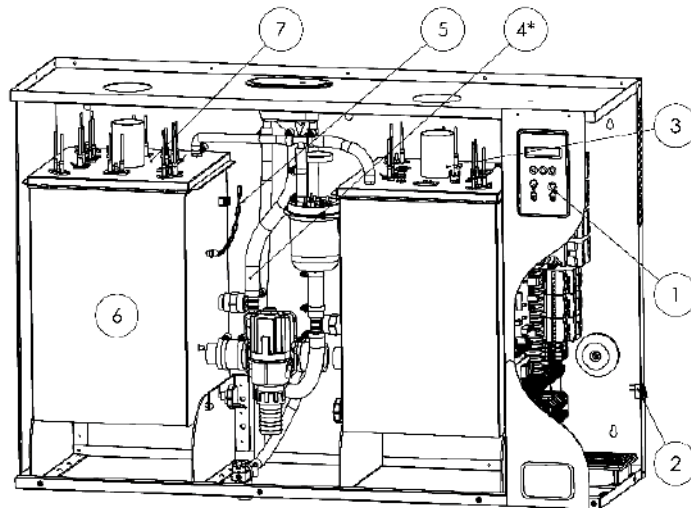


Fig. 6-1. Humidifier Stainless steel tank

- Drain the water by pressing the drain button (1). Wait for «DO MAINTENANCE » display.
- Cut the power supply to the power circuits (in the general electrical cabinet) and control circuits located on the side of the unit (2).
- Remove the door and unscrew the clamp (3). Completely disconnect the steam hose and remove it from the unit.
- Untighten clamp (s) and disconnect the water hose from the filling cup (4).
- Disconnect the pressure level hose and uncap the water level tank.
- Unscrew the union junction to disconnect the drain hose.
- Swing the tank down to intermediate position.
- Unlock the 4 locks of the tank.
- Lift the tank lid (7), mind the positioning marks and lay it upside down on the top of the humidifier.
- Release the tank holding steel cord and swing down the tank (5): the limescale deposit falls into a basin or our flexible bag (optional).
- Swing the tank (6) back to its intermediate position.
- Take off the collecting container and swing back the tank in intermediate position. Fasten the tank holding steel chain.
- Grease the tank gasket with silicon grease.
- Put back the tank lid onto the tank body taking care to align the positioning mark. Pay particular attention that no power wires be jammed between the tank and the bottom and gathered them in the insert bundle clip
- Wipe the high-water level floats or electrodes and put the water level detector back. Do not forget to reconnect the pressure level hose. Swing the tank up.
- Reassemble the drain valve in its original position and retighten the collar clamps.
- Tighten up the black knob, reconnect the drain and steam hoses and hang back the doors.

Take care: the tank gasket should be changed whenever the tank is maintained. Retighten all clamps.

Do not scratch harshly, hit or use corrosive liquids on the heating elements.

Very important:

- Do not use solvents to clean the water level detector. If you need to intervene on the detector, do not use special glues but only Teflon.
- **Check that the “ T ” and the anti-clogging system** of the tank have not been pulled down with the limescale deposit. Otherwise, pick it up from the collecting bag and reinstall it

ERS Series

6.2 DRAIN VALVE

The drain valve should be maintained whenever the steam tank is maintained or changed.

- Once your tank is out of the humidifier, disconnect the drain valve supply cables (Item 3).
- Unscrew the clamp (Item 1).
- Now you can remove the complete valve.
- Wash the filter.
- Check and clean, if necessary, the inside of the valve body by running water through the hole.

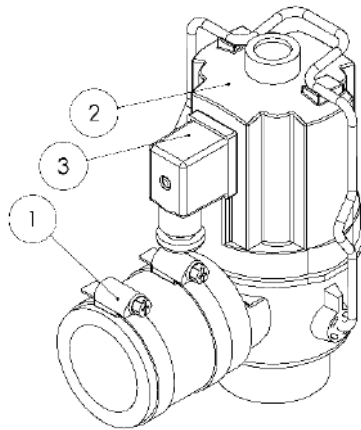


Fig. 6-2. Humidifier drain valve

Reassemble the drain valve as original, before repositioning the tank, by proceeding as follows:

1. Install the cleaned cover.
2. Tilt back the tank.
3. Install the chain and cap nut.
4. Connect the drain valve
5. Install the steam hose and do not forget to tighten the hose clamp.

Ensure that all the clamps are properly tightened whenever the humidifier is maintained.

ERS Series

6.3 WATER INLET VALVE

Maintenance of the water inlet valve is to be done after the first 50 hours of operation. Thereafter, twice a year (minimum).

- Switch the appliance off.
- Switch off the water supply to the humidifier and unscrew the water supply hose.
- Disconnect the cables from the water inlet valve of your humidifier (Item 1).
- Loosen the clamp and remove the water supply hose. (Item 2)
- Unscrew the two screws securing the valve (Item 3).
- Pull out your valve, remove the filter with pliers and remove the coil (Item 4) by prying it off with a screwdriver.
- Run water through the valve body and over the filter to remove any particles.

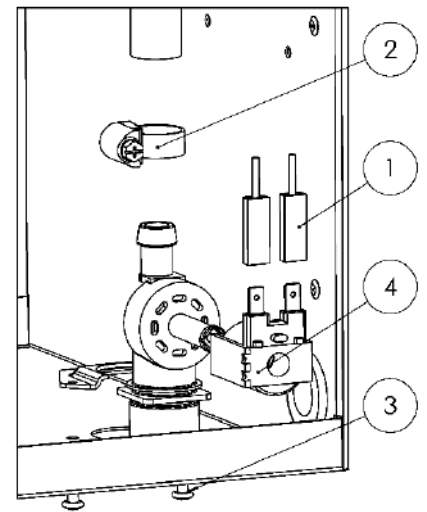


Fig. 6-3. Humidifier water inlet valve

Once all these operations completed, please reassemble the unit, taking care to check the condition of the water supply hose clamp. You can put your appliance back into service.

Ensure that all the clamps are properly tightened whenever the humidifier is maintained.

6.4 WATER LEVEL DETECTOR

Maintenance of the detector should be done during each tank maintenance.

- Disconnect the cables of the water level sensor (1).
- Unscrew the clamp of the pressure balancing tube (2) and disconnect it from the cover.
- To release the sensor, unscrew the hose clamp (3) and disconnect the hose. Caution, there may still be water inside the tube.
- Clean the hose without unscrewing it.
- Unscrew the 3 screws (4) in order to clean the floats and the body of the level sensor.

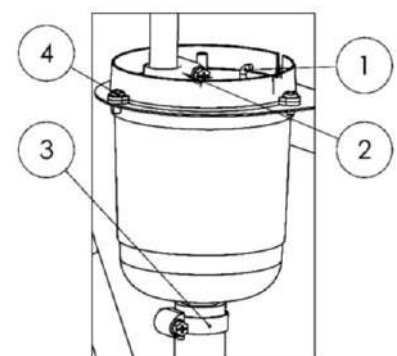


Fig. 6-4. Humidifier water level detector

ERS Series

7. SPARE PARTS

7.1 STAINLESS TANK

No	Code	Description
1	D111781-SP	Heating element nut M5
2	D110830-SP	Heating Element support
3	D110829-SP	Tank seal
4	D110754-SP	High-temperature switch
5	D94057	Cable gland
6	D94058	Temperature sensor
7	D110765-230-SP	Electrical Resistors 230V 1900W
	D110765-277-SP	Electrical Resistors 277V 1900W
	D110765-346-SP	Electrical Resistors 346V 1900W
	D110765-398-SP	Electrical Resistors 398V 1900W
	D110761-230-SP	Electrical Resistors 230V 4300W
	D110761-277-SP	Electrical Resistors 277V 4300W
	D110761-346-SP	Electrical Resistors 346V 4300W
	D110761-398-SP	Electrical Resistors 398V 4300W
8	D110747-SP	"T" Water supply tank
9	D94061-SP	Anti-clogging system
10	D110750-SP	Stainless steel tank

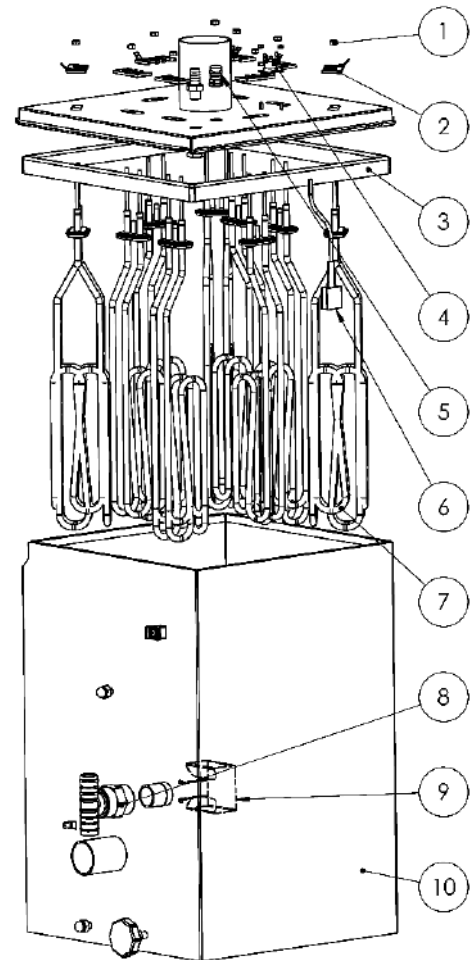


Fig. 7-1. Tank exploded view

If the tank is completely changed, use the reference below:

Complete tank Voltage ERS model

↓ ↓ ↓

D110769-3x400-40

ERS Series

7.2 WATER INLET VALVE

N°	Code	Description
1-2	D110771-SP	Water inlet valve
2	D116645-24	Coil 24V
	D116645-24-UL	UL coil 24V
3	D111775-SP	Valve bracket

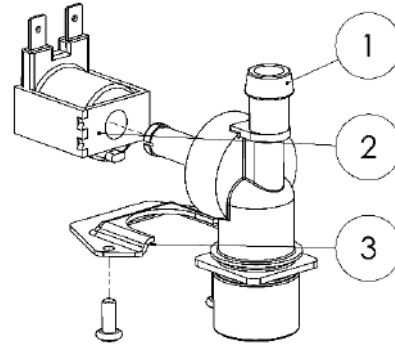


Fig. 7-2. Water inlet valve exploded view

7.3 WATER LEVEL DETECTOR

N°	Code	Description
1 - 4 & 6	D110232-DI-SP	Complete float water level detector
1	D108231-SP	Polypropylene upper body
2	D108237-SP	Flat gasket for float (set of 3)
3	D80985-SP	Level sensor (set of 3)
4	D110734-SP	O-ring seal
5	D108230-SP	Stainless steel sensor support
6	D110735-SP	Polypropylene lower body

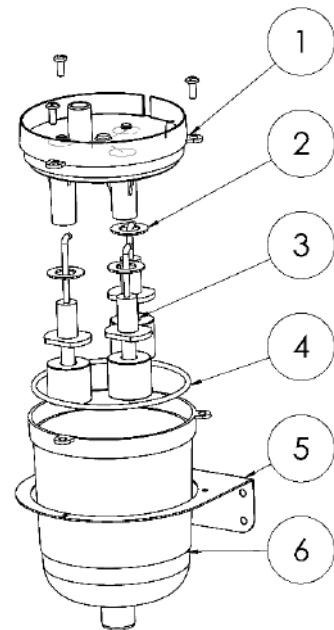


Fig. 7-3. Water level detector exploded view

7.4 DRAINING CIRCUIT

N°	Code	Description
1 - 3	D99228-SP	Complete valve
1	D108256-SP	Adapter ring
2	D110205-SP	Drain valve filter
3	D128002-SP	Drain valve connector

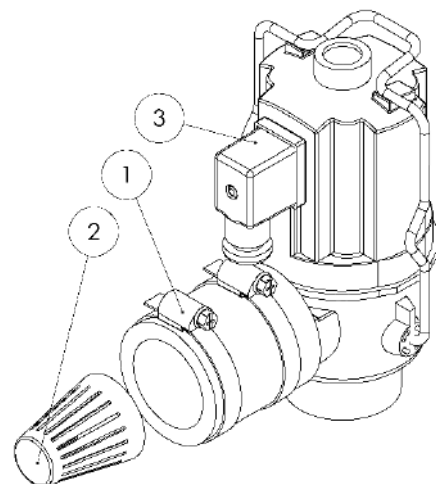


Fig. 7-4. Drain valve

ERS Series

7.5 ELECTRICAL PART

N°	Code	Description
1	D110124-SP	Display board
2	D121388-5-SP	Main board ERS (OTI)
3	D50931-SP	Remote information board
4	D109737-SP	Power terminal 35mm ² (L1, L2, L3)
5	D110168-SP	Control terminal 16mm ² (L, N)
6	D107491-SP	Terminal 2,5mm ² (1, 2, 3, 4)
7	D110163-SP	Ground terminal 35mm ² .
8	D110806-600-60-SP D110806-600-90-SP D110806-690-75-SP	Static relay ERS 5 - 15 if Up[v] = 230-600V Static relay ERS 20 - 100 if Up[v] = 230-600V Static relay ERS if Up[v] = 690V
9	D50932-SP	24Vac Contactor
10	D110173-SP	Setting terminal 115/230V
11	D110768-SP	Fuse protection terminal 6mm ² .
12	D110166-SP	Stop terminal
13	D110128-50-SP	Control transformer Prim :2x115V Sec :2x12V
14	D92393-SP	On/Off switch
	D116631-SP	Fast Fuse 2A – 5 x 20 mm (Bag of 6)
	D116718-SP	Fast fuse 5A - 5 x 20mm (Bag of 6)

Location	Amp.	Fuse protection
F1	2AT	Power contactor coil
F2	2AT	Inlet valve coil
F3	2AT	Drain valve coil
F4	2AT	Electronic boards
Din rail 5 & 6	2AT	Transformer
Din rail 7 & 8	5AT	Transformer

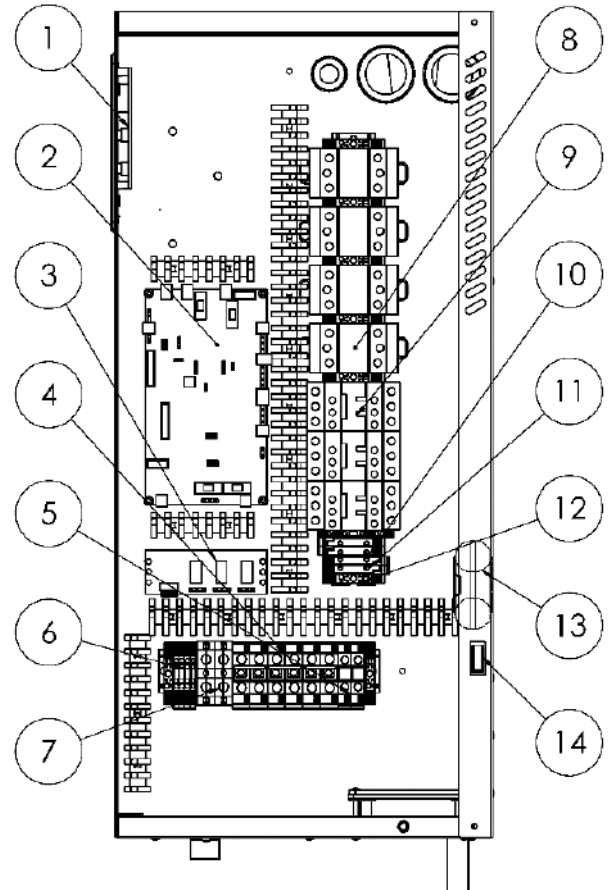


Fig. 7-5. Humidifier electrical compartment



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