

# INSTALLATION AND OPERATION MANUAL FOR THE HEF2E-NS CONTROL PANEL (CC-NS3.0) FOR FISAIR EVAPORATIVE HUMIDIFIERS

Software version 1.0 | MCC-NS3.0-ES-22-1

In compliance with the Rules and Standards of the European Union on Machine Safety, it is essential to read this protocol carefully before installing any equipment.



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**ANEX:**

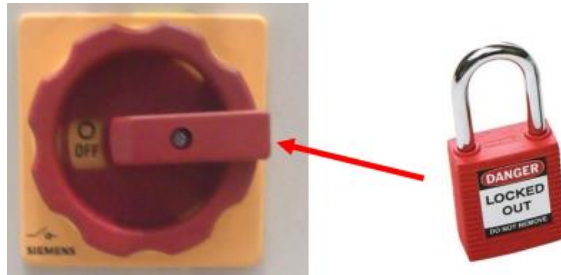
WIRING DIAGRAM: E10665

## 1. Safety notes

### Need to consign the control panel for maintenance and revision



The machine controlled by CC-NS3.0 panel must not be manipulated when it is in operation. Facing any problem that is detected in the machine during its operation, **disconnect it and set the main switch of the CCE2.0 panel using a padlock.**



### Installation of a residual current device in the power supply line.



The installer has to install a specific residual current device in the machine's electrical power circuit.

**FISAIR disclaims any liability if not all the installation and operating instructions it has provided are complied with; if the products have been modified or altered without the written consent of FISAIR; or if the products have been subjected to improper use, mishandling, alteration, improper maintenance or show signs of negligent use or being involved in an accident. These situations could include an incorrect power connection, impacts with other objects, removal or disarming of security fittings/measures, etc.**

## 2. General description

The stages control panel has been specifically designed for the interconnection and supervision of the accessories supplied with the *FISAIR Evaporative Humidifiers*. The incorporation of the CC-NS3.0 provides a more accurate, simple and reliable integration for this in air handling units.

The control panel manages all the field components of FISAIR Evaporative Humidifiers:

- Water recirculation pump
- Detector of the minimum and maximum basin water level
- Basin water supply solenoid valve
- Emptying/draining motor-valve in the basin
- Solenoid valves for different Stages
- UV lamp water treatment system (optional)
- Water conductivity control (optional)
- Modbus TCP/IP (optional)
- Modbus RTU (optional)
- BACnet/IP (optional)

\* For the MAXIMUM distance of the conductivity probe, ask FISAIR when CC-NS3.0+ Conductivity Control

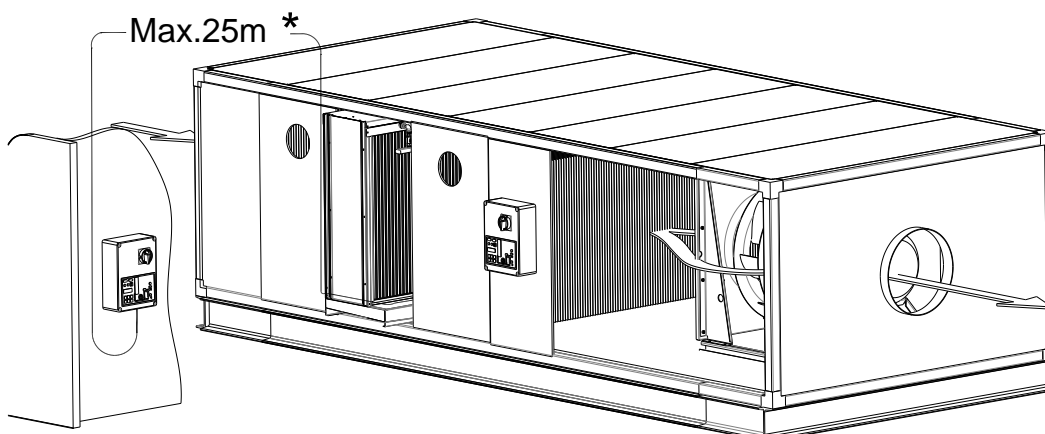


Figure 1: Examples of installation of CC-NS3.0 on vertical wall and CC-NS3.0 integrated in the AHU

### 3. Operating environment

The Stages Control panel is supplied in an insulating box composed of a bottom and a hinged lid made of steel with a surface finish of RAL7035 grey weather-resistant epoxy-polyester powder with IP54 degree of protection according to IEC-60529 and IK10 impact protection according to IEC62262.

Operating environment temperature and humidity conditions:

- Relative humidity [5%... 95% HR], no condensation.
- Temperature [-10 °C ... +40°C] \*

The recommended gaps for connection, inspection and maintenance must be observed during installation. If the box is drilled in the locations indicated for mounting, it must be ensured that a degree of protection  $\geq$  IP56 is maintained.

The basic control panel weighs 18 kg and must be installed vertically on the wall (see Figure 1) to maintain the degree of protection IP54. Figures 2.1 and 2.2 show the minimum service spaces to be observed and the drill hole measurements for mounting.

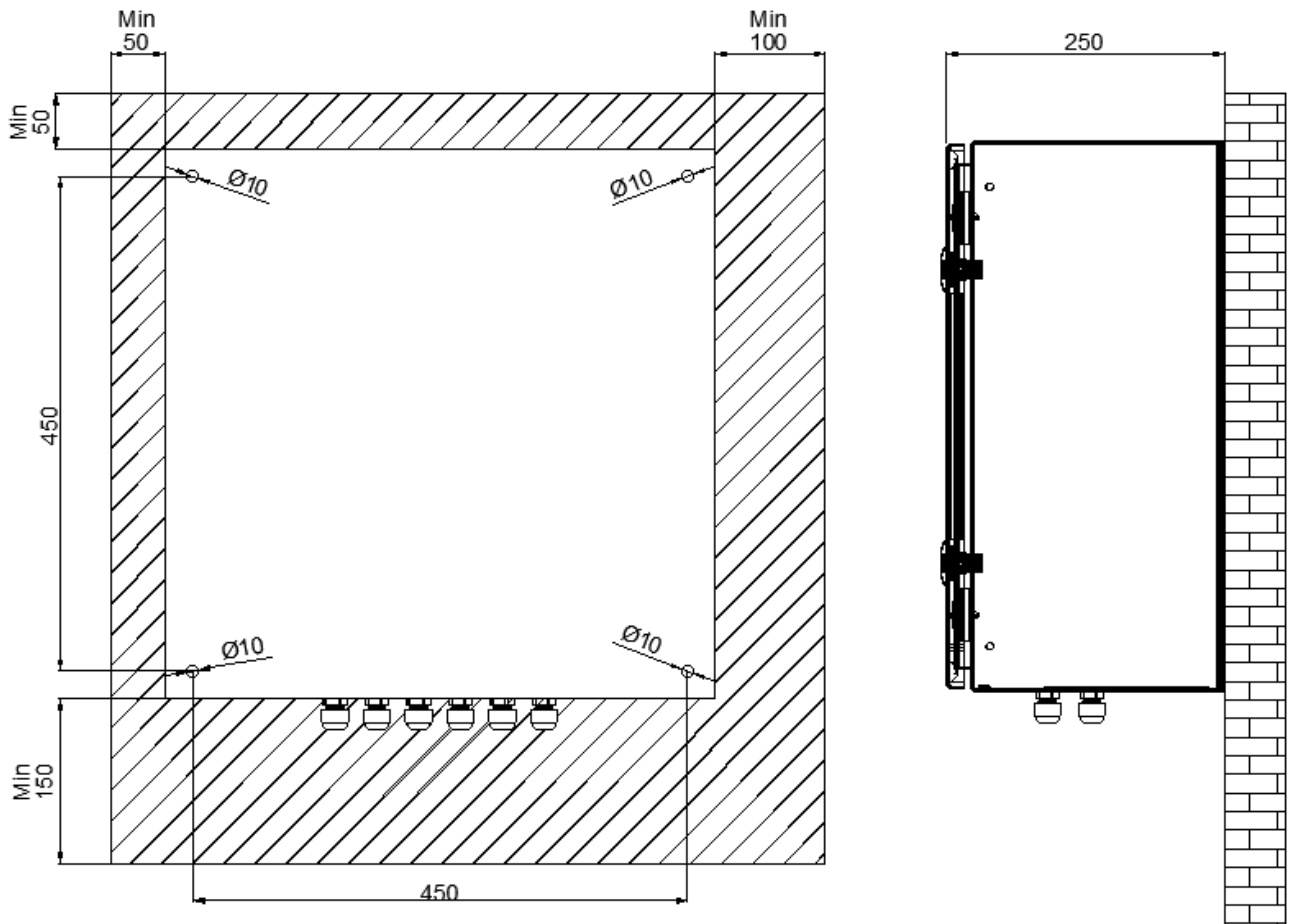


Figure 3.1: Front view - open door.

Right view – close door

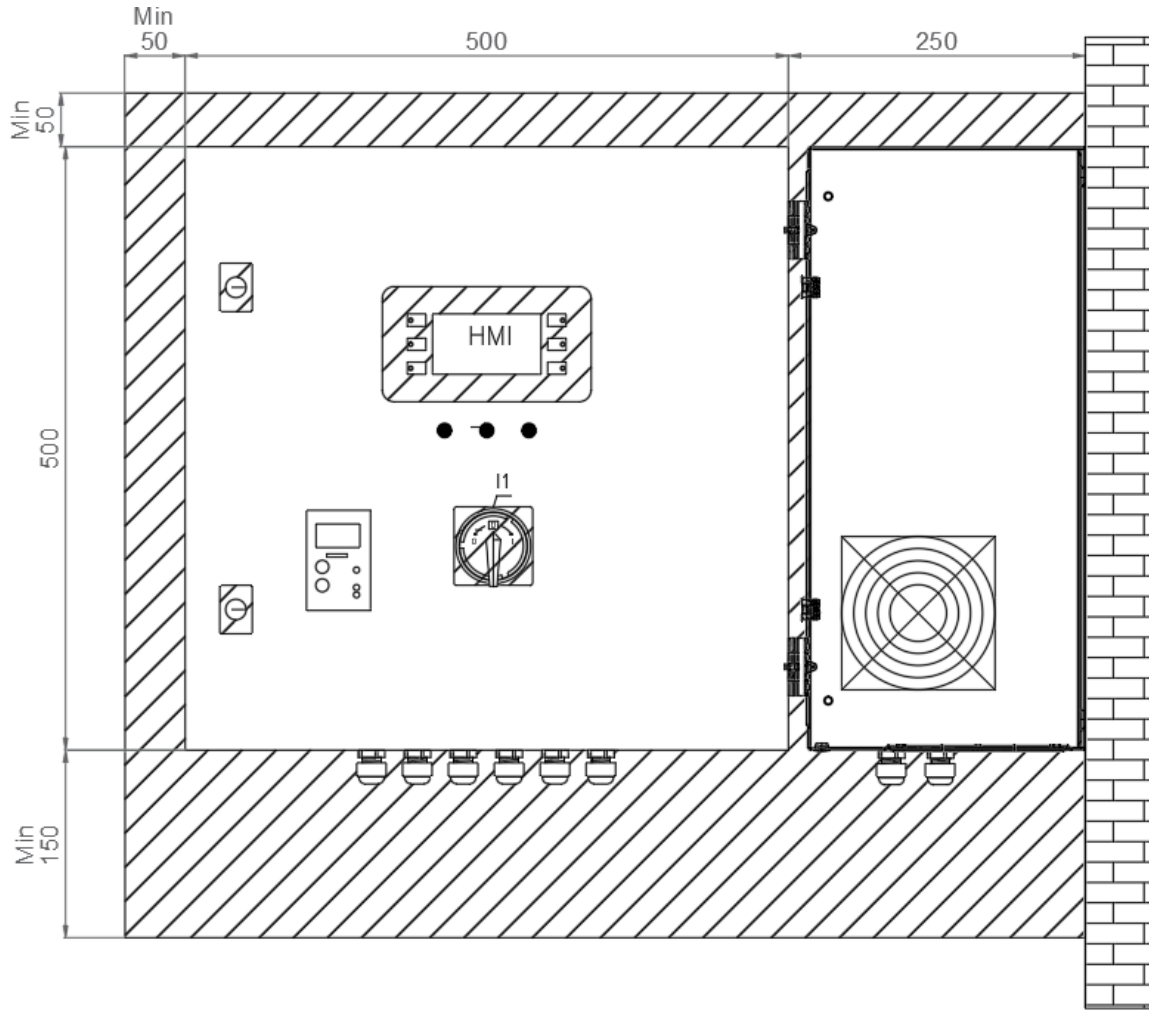
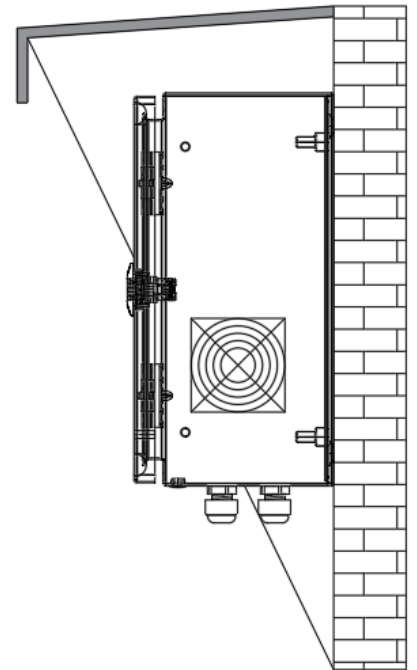


Figure 3.2: Right view – open door

## INSTALLATION OF THE CONTROL PANEL OUTSIDE:



Whenever the control panel is installed outdoors, it must be placed under an appropriate cover to protect it from the direct incidence of rain and sun (considering that 40°C cannot be exceeded in the installation area):



#### 4. Rating plate and machine classification:

The rating plate provides essential information about the technical features of the machine.

The EC Machinery Safety Regulation requires all machinery operated within the European Economic Community to have a rating plate indicating its main features, the machine serial number and the manufacturer's name inscribed in a durable manner.

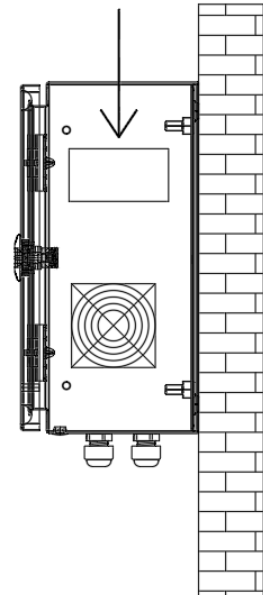
According to article 2, section g of the Machinery Directive 2006/42/CE - RD 1644/2008, 'partly completed machinery' means

*“an assembly which is almost machinery, but which cannot in itself perform a specific application. A drive system is partly completed machinery. Partly completed machinery is intended only to be incorporated into or assembled with other machinery or other partly completed machinery or equipment, thereby forming machinery to which this Directive applies”*

Therefore, the **CC-NS3.0 stages control panel is classified as a “partly completed machinery”**





**Note: If the CC-NS3.0 stages control panel is supplied together with a device from the HEF range, the set is classified as "machine"**

Location of the rating plate:



The rating plate shows the following information for the CC-NS3.0 stages control panel:

- Model
- Serial No.: equipment serial number
- Power supply
- Maximum power
- Rated current
- Wiring diagram
- Configuration program
- Machine type
- Designed according to the directive:
- FISAIR equipment you can join
- Year and place of manufacture.
- Service QR code and Warranty activation

		FISAIR S.L.U. C/ Uranio, 20 - P.I. AIMAYR 28330 San Martín de la Vega MADRID (SPAIN) www.fisair.com		After Sales Service Servicio Postventa Mail: sat@fisair.com Tel: +349169 21514		 	
<b>Modelo</b> <b>Model</b> <b>Typ</b>	CC-NS3.0	<b>Nº Serie</b> <b>Serial Number</b> <b>Seriennummer</b>	202000--01				
<b>Alimentación Eléctrica</b> <b>Power Supply</b> <b>Energieversorgung</b>	-----	<b>Potencia Máxima</b> <b>Maximum Power</b> <b>Maximale Leistung</b>	600 W				
<b>Intensidad Nominal</b> <b>Rated Current</b> <b>Bemessungsstrom</b>	2,2 A	<b>Tipo de máquina</b> <b>Machine type</b> <b>Maschinentyp</b>	Quasi Máquina Quasi Machine Quasi Maschine				
<b>Esquema Eléctrico</b> <b>Wiring Diagram</b> <b>Schaltplan</b>	E09489	<b>Diseñada dea cuerdo a directiva</b> <b>Designed according to directive</b> <b>Entwickelt nach richtlinien</b>	2006/42/CE				
<b>Programa Configuración</b> <b>Configuration Program</b> <b>Konfigurationsprogramm</b>	11_03A03009.bin	<b>Equipos de FISAIR a los que pue de incorporarse</b> <b>FISAIR equipment you can join</b> <b>FISAIR-Ausrüstung, an der Sie teilnehmen können</b>	HEF2E				
<b>Fabricado en España (UE)</b> <b>Made in Spain (EU)</b> <b>Made in Spain (UE)</b>		--/2020					

## 5. Hardware description

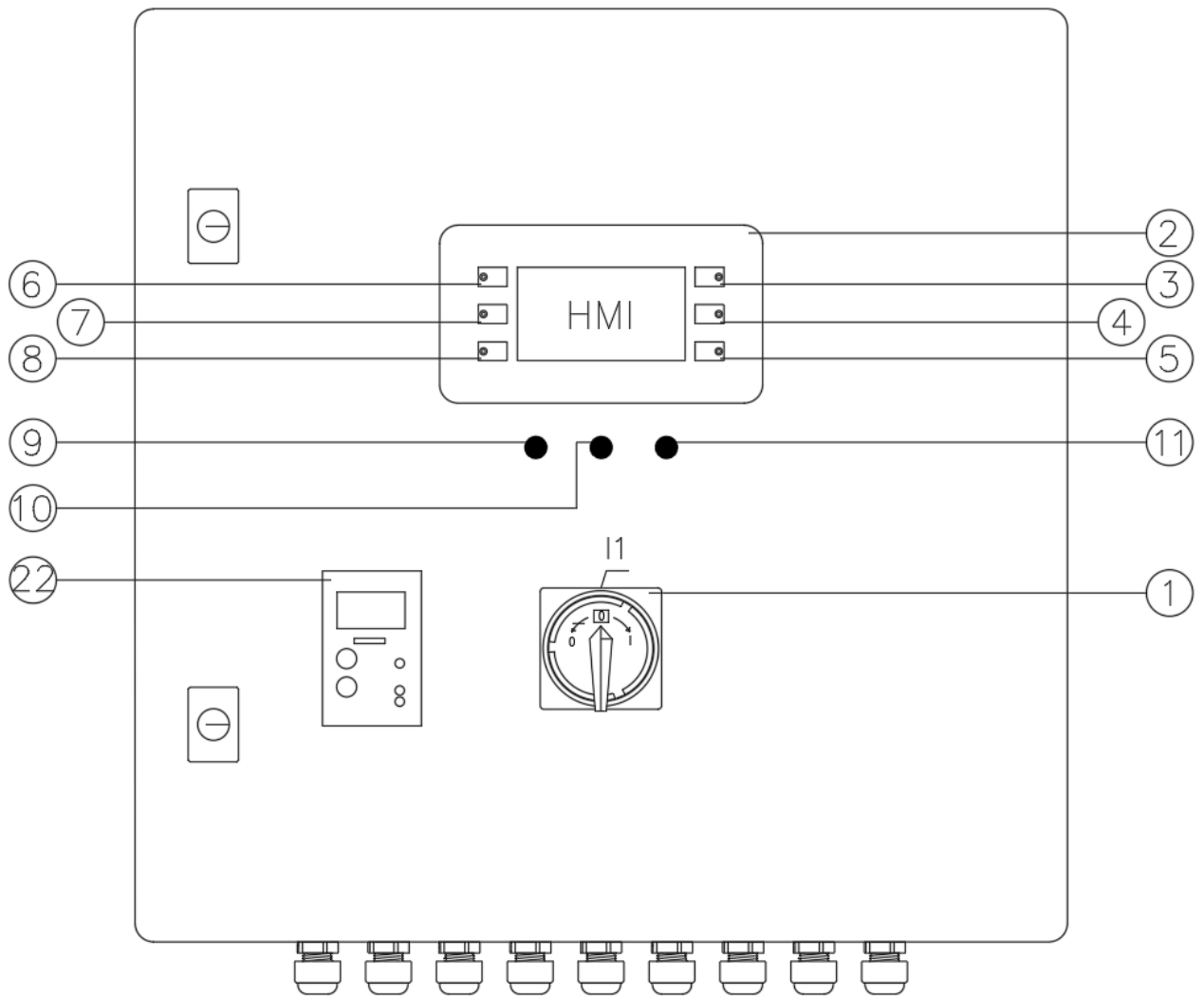


Figura 5.1: CC-NS3.0 front cover

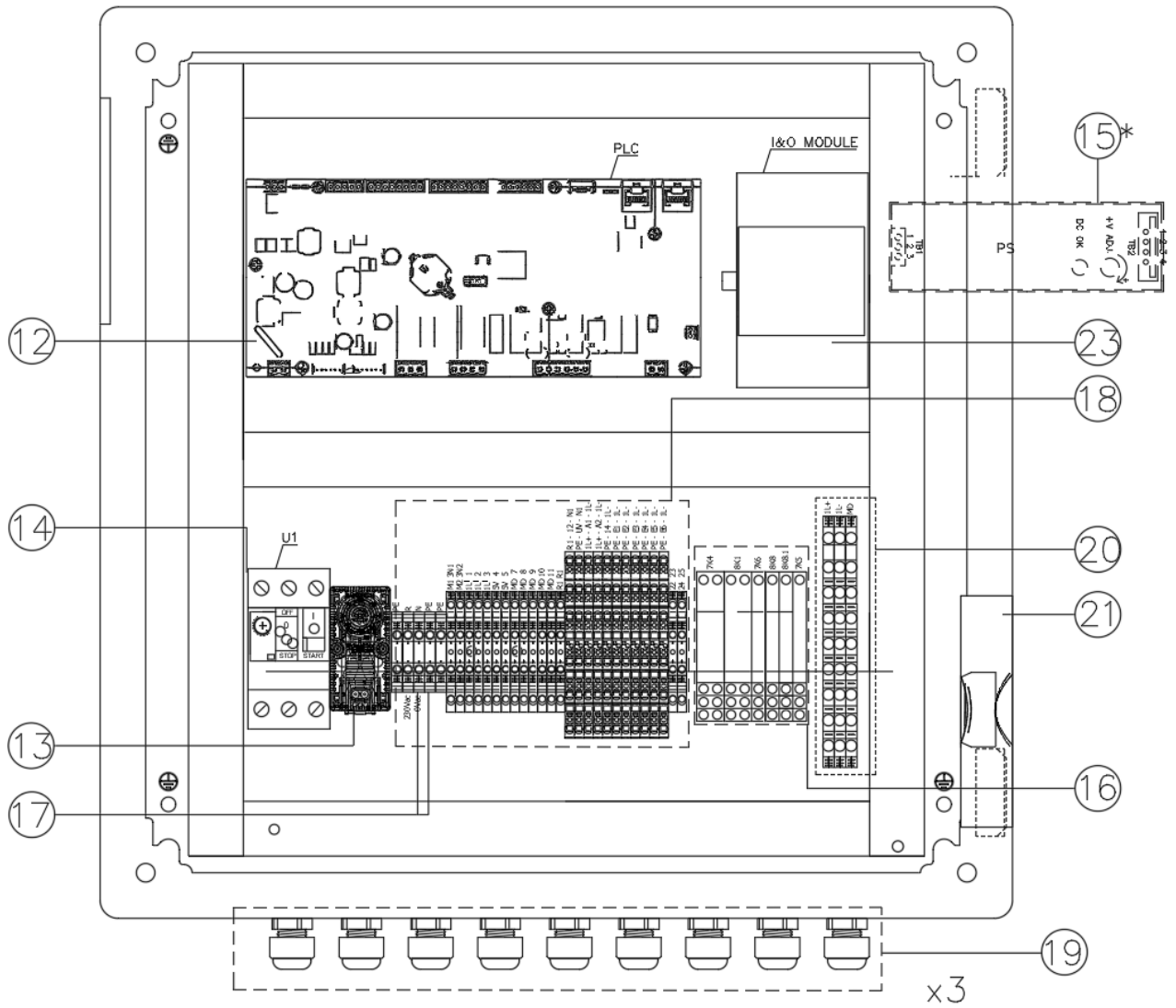
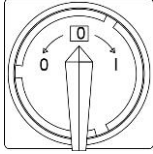










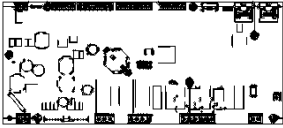
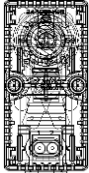
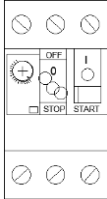
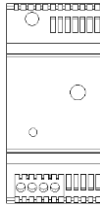


Figure 5.2: CC-NS3.0 Inside cover

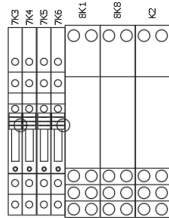
(\*) Located on the right side of the panel

LED / Key/ Component	No.	Description, Function and Article Code
	1	Disconnecter switch (I1) for cutting and isolating the supply voltage; possibility of locking by padlock (not supplied)
	2	HMI. Command and display interface
	3	HMI navigation key to scroll up
	4	HMI navigation key to scroll down
	5	HMI key to accept selection
	6	HMI key for information: Access to main screen
	7	HMI key for alarm
	8	HMI key to go back.
	9	Green LED. Equipment functioning
	10	Orange LED. Equipment under power
	11	Red LED. Alarm
	12	PLC
	13	Fan regulation thermostat (S1)
	14	Magneto-thermal circuit breaker (U1 in electrical diagram) to protect water pump

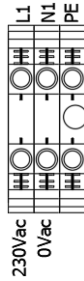
LED / Key/ Component	No.	Description, Function and Article Code
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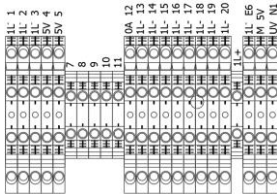
15 PS 24 Vac power supply



16 Pump activation relays, motorised valves and UV lamp.



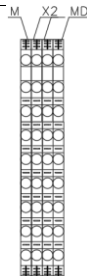
17 Equipment power supply terminals



18 Terminal block X1 for PLC connections (see section 6)



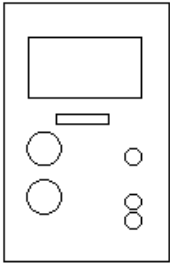
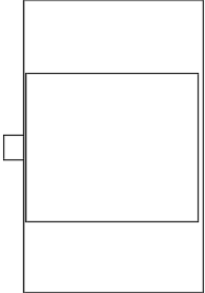
19 Wiring entry cable gland



20 Power supply terminal block 1L+, 1L-, MD



21 Panel cooling fan

LED / Key/ Component	No.	Description, Function and Article Code
	22	Conductivity controller (optional)
	23	Module I/O

## 6. Connections

1) Connection of standard accessories to terminal block X1. See *figure 6.1*.

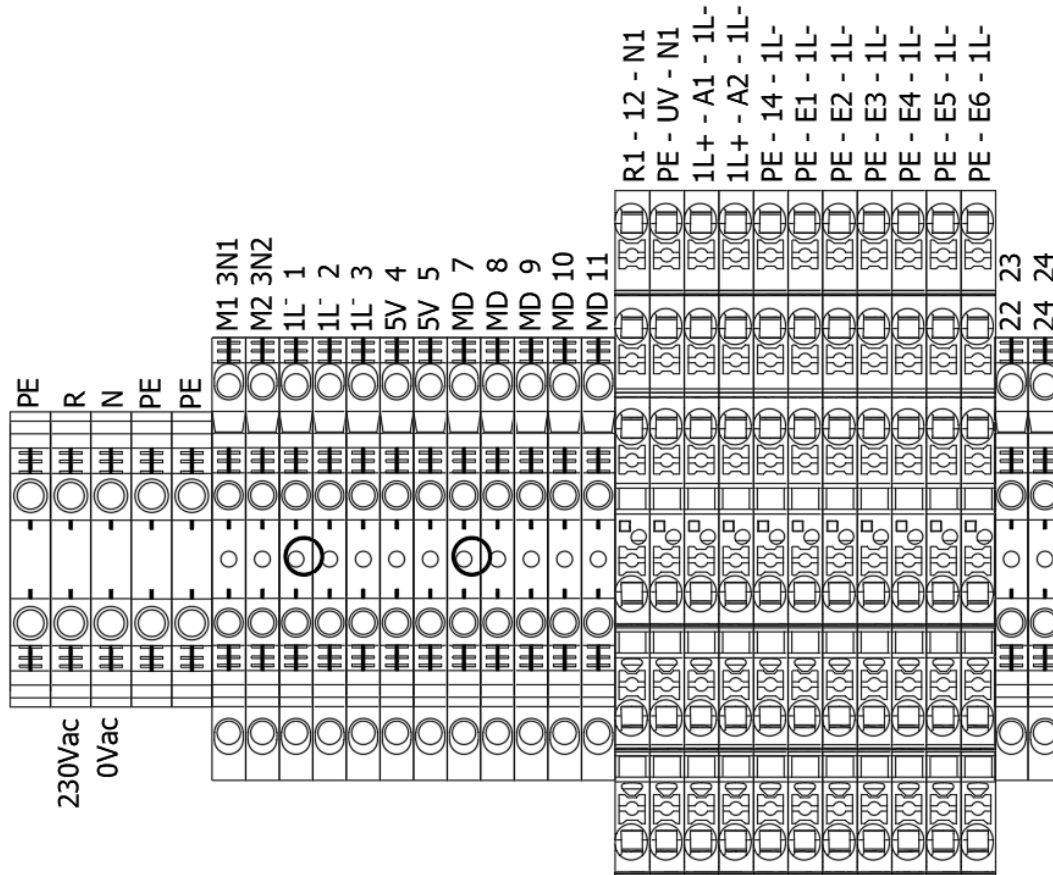


Figure 6.1: Connection terminal blocks

Type of connection	Connection	Description	Max. Power Max. Voltage
Mandatory	M1(230V)- 3N1(N)-PE(GND)	M1 Connection	230Vac/370W
Mandatory	M2(230V)- 3N2(N)-PE(GND)	M2 Connection	230Vac/370W
Optional	3-1L <sup>-</sup>	External control stages 0-10V <sub>DC</sub> (proportional value)	10V <sub>DC</sub> / -
Optional	4-5V	Feedback open 3-way motor-valve selection MV2	5V <sub>DC</sub>
Optional	5-5V	Feedback closed 3-way motor-valve selection MV2	5V <sub>DC</sub>
Mandatory	MD-7	H1 remote operation signal.	Not powered

Type of connection	Connection	Description	Max. Power Max. Voltage
Optional	MD-8	External signal for forced drainage	Not powered
Mandatory	MD-9	High level detector (NO)	Not powered
Mandatory	MD-10	Intermediate level detector (NO)	Not powered
Mandatory	MD-11	Low level detector (NO)	Not powered
Mandatory	12-R1-N1	Feedback position motor valve MV1 drain/empty (limit switch opening performed)	230V <sub>AC</sub> / -
Optional	PE-UV-N1	UV lamp supply	230V <sub>AC</sub> /460W
Mandatory	1L <sup>+</sup> - A1 -1L <sup>-</sup> *	MV1 power connection	24V <sub>DC</sub> /48W
Optional	1L <sup>+</sup> A2 -1L <sup>-</sup> **	MV2 power connection	24V <sub>DC</sub> /48W
Mandatory	PE-14-1L <sup>-</sup>	EV1 Water supply solenoid valve	24V <sub>DC</sub> /48W
Optional	PE-E1-1L <sup>-</sup>	EVE1 Solenoid valve stage 1	24V <sub>DC</sub> /48W
Optional	PE-E2-1L <sup>-</sup>	EVE2 Solenoid valve stage 2	24V <sub>DC</sub> /48W
Optional	PE-E3-1L <sup>-</sup>	EVE3 Solenoid valve stage 3	24V <sub>DC</sub> /48W
Optional	PE-E4-1L <sup>-</sup>	EVE4 Solenoid valve stage 4	24V <sub>DC</sub> /48W
Optional	PE-E5-1L <sup>-</sup>	EVE5 Solenoid valve stage 5	24V <sub>DC</sub> /48W
Optional	PE-E6-1L <sup>-</sup>	EVE6 Solenoid valve stage 6	24V <sub>DC</sub> /48W
Mandatory	22-23	"Alarm" status signal	Not powered
Mandatory	24-25	OFF forced by external alarm signal	24V <sub>DC</sub>
Mandatory	See W.D.	Equipment under voltage signal	Not powered
Mandatory	See W.D.	Equipment in operation signal	Not powered

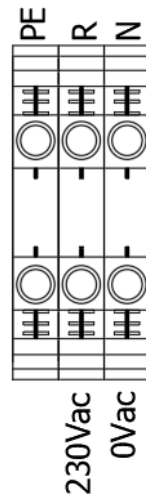
\*Emptying/drainage motor-valve actuator connection MV1:

	Actuator	
	Cable no. (Code) actuator	Cable colour actuator
<b>A1</b>	3	white
<b>1L<sup>+</sup></b>	2	red
<b>1L<sup>-</sup></b>	1	Black
<b>12</b>	S1	Purple
<b>R1</b>	S3	White

\*\*Pump selection motor-valve actuator connection MV2:

Terminal	Actuator	
	Cable no. (Code) actuator	Cable colour actuator
<b>A2</b>	2	red
<b>1L<sup>-</sup></b>	1	black
<b>4</b>	S4	Orange
<b>5V</b>	S6	Grey
<b>5</b>	S1	Purple
<b>5V</b>	S3	White

- 2) With the disconnecter in position 0, connect the appropriate mains supply for each case to the supply terminals X1:



**Proper wiring prevents electrical noise.**

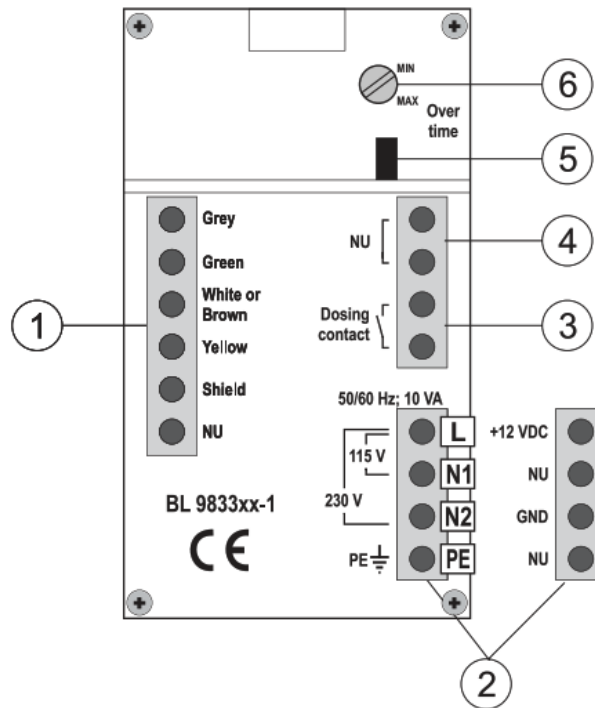
Electrical noise can produce undesirable effects on electronic control circuits, which affects controllability. Electrical noise is generated by electrical equipment, such as: inductive loads, electric motors, solenoid coils, welding machinery, or fluorescent light circuits. The electrical noise or interference generated from these sources (and the effect on controllers) is difficult to define, but the most common symptoms are erratic control or intermittent operational problems.

**Important.**

For maximum EMC effectiveness, wire all humidity, high limit, and airflow controls using multicolored shielded/screened plenum-rated cable with a drain wire for the shield/screen. Connect the drain wire to the shield/screen ground terminal with wire less than 2" (50 mm) in length.

Do not ground shield at the device end.

- 3) (Optional) Connect the conductivity probe to the controller at the rear of the panel cover (1)



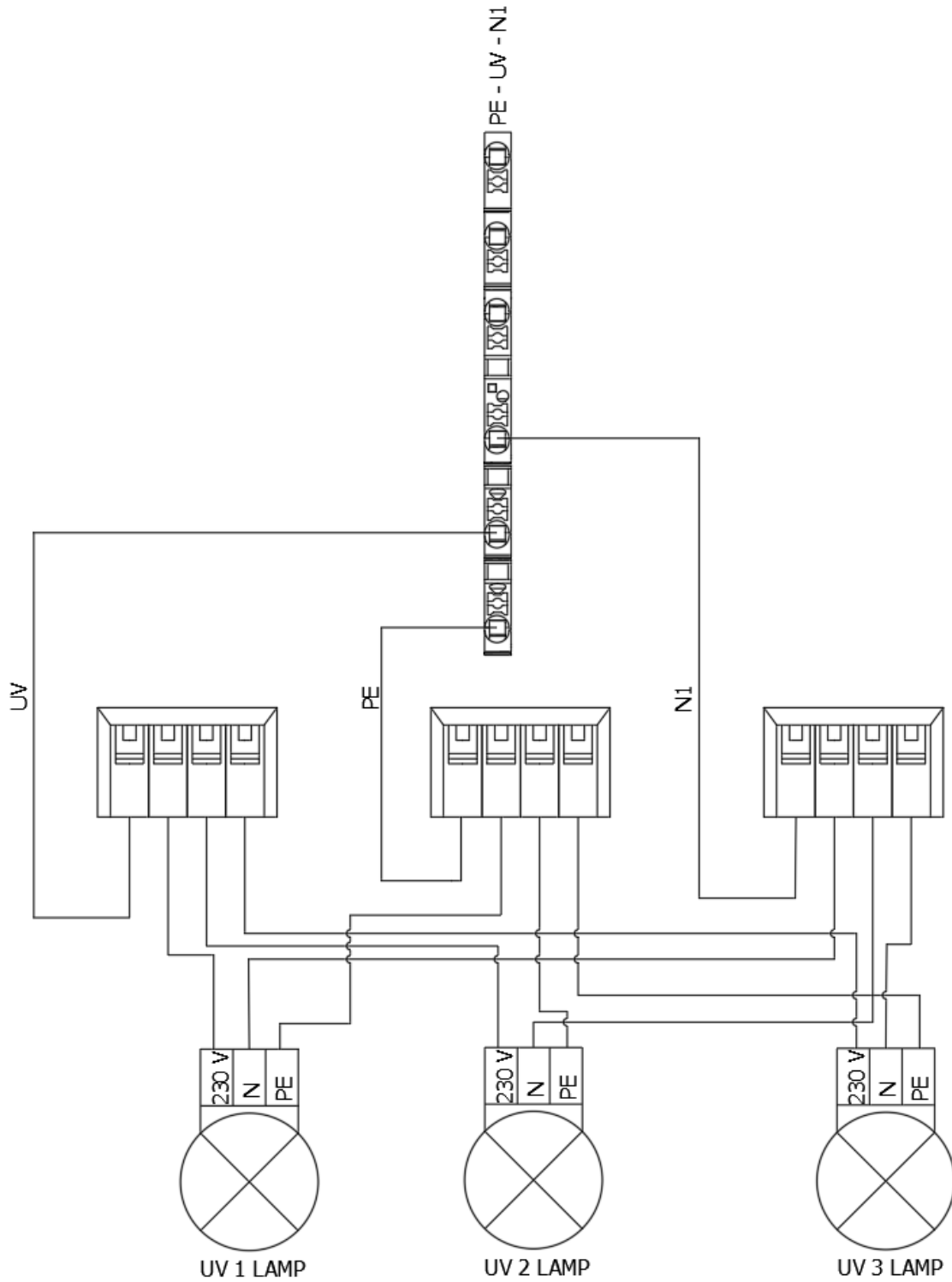
Connection	Cable
Grey	Grey
Green	Green
White or Brown	White
Yellow	Yellow
Shield	Black
NU	-

**Note 1:** Before starting up the equipment, make sure the jumper (5) is removed. (The contact must remain open).

- 4) In the case of having more than one U.V. lamp unit (due to high pond water volumes), they should be connected as shown in the diagram below.

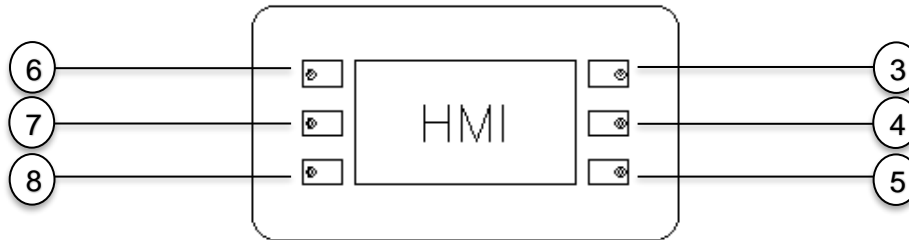
For this purpose, 4-connector quick-connect terminals are recommended.

Example for basin with 3 U.V. lamps:



## 7. HMI operation and navigation

The HMI keys have the following functionalities:



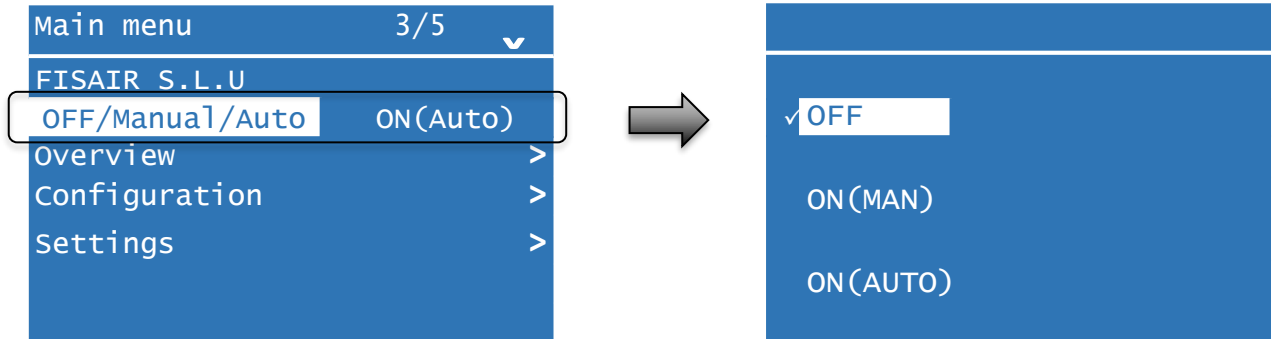
KEY	DESCRIPTION
3	HMI navigation key to scroll up
4	HMI navigation key to scroll down
5	HMI key to accept selection
6	HMI key for information: Access to main screen
7	HMI key for alarm
8	HMI key to go back.

HMI information is displayed in rows. These rows can be display-only parameters, user-modifiable parameters and screen/menu access:

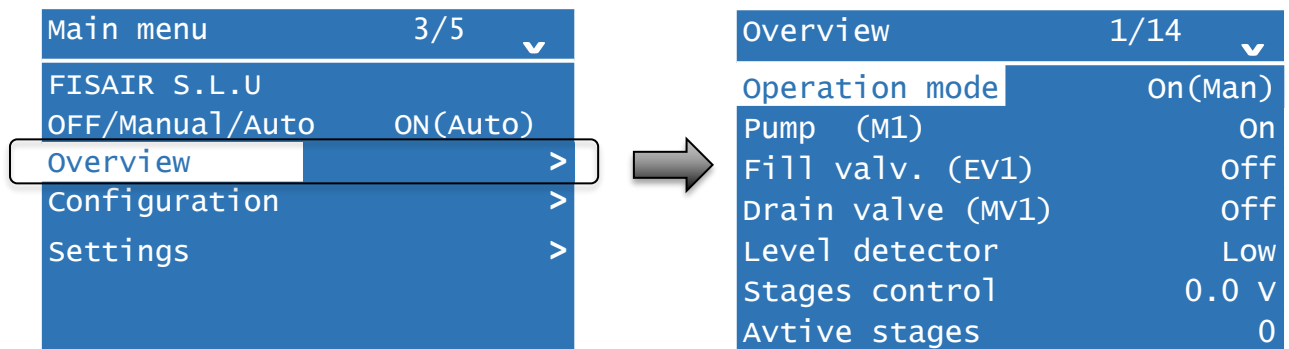
**Display parameter:** These parameters are for display only. Only the parameter name lights up.

Overview	1/14
<b>Operation mode</b>	On(Man)
Pump (M1)	On
Fill valv. (EV1)	off
Drain valve (MV1)	off
Level detector	Low
Stages control	0.0 v
Active stages	0

**User modifiable parameter:** These parameters can be modified by pressing key 5. Once the key is pressed, a new parameter value selection screen is accessed. The entire row is illuminated in white.



**Access to menus:** This parameter lets you access another menu. To do it, press key 5.



## 8. User login

You need to log in with the login password to modify certain equipment configuration parameters. Contact the FISAIR S.L.U. technical services to obtain the password.

To access this screen, you need to press the button for a few seconds to accept the HMI selection (5).

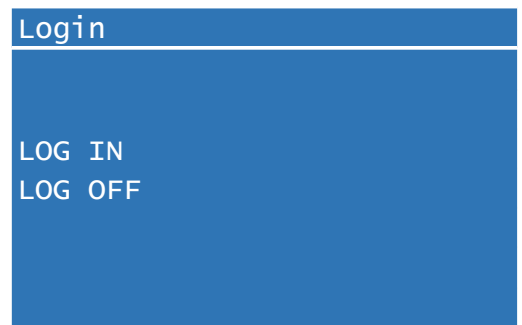
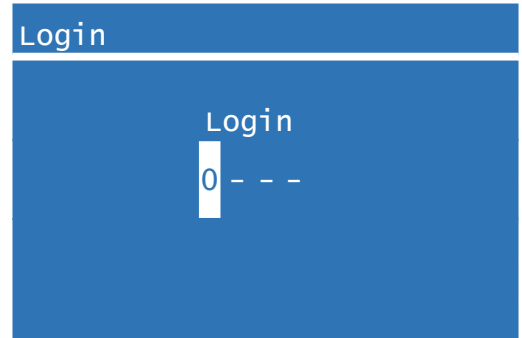
Each of the values is entered manually when entering the password. Enter the value of each password number using the HMI up and down navigation keys (3&4). Press OK (5) to accept each number.

If the password is correct, certain key symbols appear on the top right of the HMI.

Once logged in, a key symbol is displayed in the upper right corner of the HMI.

Once the key appears, those parameters that require a login to be modified can be adjusted.

After finishing modifying the parameters, keep the OK button (5) pressed for a few seconds to end the session. The access screen will appear with the LOG IN options (to change to another user, only accessible by FISAIR technical personnel) and LOG OFF. Press OK (5) in LOG OFF to close the session and the login key disappears.



## 9. Supervision

This is the main Display screen that belongs to the supervision menu. It appears once the equipment is powered by the disconnect switch (I1) and after a refresh time set at 10 minutes if another screen is activated.

In the supervision menu, the status information for the different field components the equipment has, as well as its operating mode, is indicated. Use the navigation keys to scroll through the different lines of field components. The list of items displayed is shown below:

Overview	1/14
Operation mode	On(Man)
Pump (M1)	On
Fill valv. (EV1)	off
Drain valve (MV1)	off
Level detector	Low
Stages control	0.0 v
Active stages	0

Overview	8/14
Stages State	>
UV	Disable
Feedback MV1	Close
Pump 2 (M2)	Disable
Selection valve(MV2)	Disable
Feedback MV2	Disable
Main menu	>

- **Operation mode:** (display only) Indicates the operating status of the machine:
  - Off: The equipment is off.
  - Manual: The equipment is working in manual mode
  - Auto: The equipment is working in automatic mode.
  - Launching: The equipment is cleaning before start-up.
  - Forced drainage: The equipment is draining due to the external digital signal introduced at terminals X1 (1L—8)
  - Operational drainage: The equipment is draining during manual or automatic operation.
  - Partial drainage: The equipment with conductivity configuration is performing a partial drain.
- **M1 Water recirculation pump** (only display): On/Off
- **EV1 filling solenoid valve**(only display): On/Off
- **MV1 drain motor valve** (only display): On/Off

- **Basin water level detector** (display only):  
Insufficient/Low/Medium/High
- **Stage control signal** (display only): 0-10VDC/4-20mA
- **Active stages** (only display): Number of active stages. 1-6 stages.
- **Stage status** (access to menu): Access to the stage status menu indicating the number of active stages and which of these are shown as active.

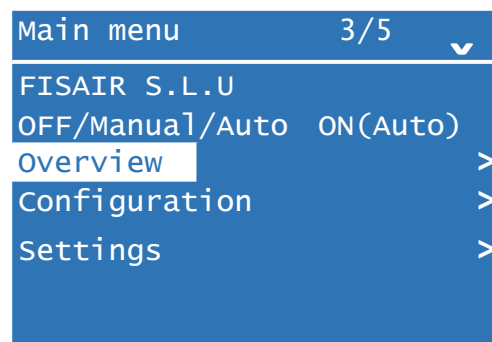
Stages	2/7
Active Stages	
✓ S1 (EV-E1)	On
S2 (EV-E2)	On
S3 (EV-E3)	off
S4 (EV-E4)	off
S5 (EV-E5)	off
S6 (EV-E6)	off

- **UV lamp** (only display) On/Off
- **Feedback electro-valve MV1** (display only): closed/open
- **Second M2 Water recirculation pump** (only display): Disabled/On/Off (only for units with pump duplication option)
- **3-way valve MV2** (display only): Disabled/On/Off (only for units with pump duplication)
- **MV2 3-way valve** (display only): Disabled/On/Off
- **Main menu** (\*) (menu access): Gives access to the main menu screen.

## 10. Main menu

The main menu screen is reached, which gives access to the rest of the supervision, configuration and adjustment menus. In addition, the machine can be stopped and started using the OFF/Manual/Auto parameter.

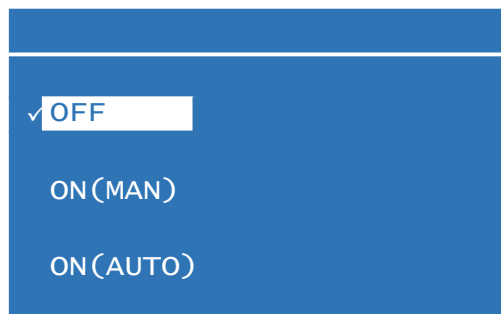
To do this, use the navigation keys to select the menu line to be accessed and press the selection key (5).



### Modifying the OFF/Manual/Auto parameter:

- **OFF/MAN/AUTO** (modifiable):

The equipment can be stopped (OFF) or turned on (ON) and the Automatic (AUTO) or Manual (MAN) mode established as the standard machine operating mode during its operation.



- **OFF:** The machine is electrically powered, but stopped. If this comes from the manual or automatic status, it drains whenever it enters this status (except when it is turned on with the I1 disconnecter switch). See Timer T06
- **MANual:** Equipment in operation with all the stages (optional) of the watering cassettes open.
- **AUTOMATIC:** Equipment in operation, commanded by the external control signal H1 and external signal 0-10 VDC for stage regulation (optional). (\*)

\*The pump(s) M1 and M2 (optional) are turned off if the external 0-10 V stage regulation signal has a value lower than 0.2V.

To access the main menu, press the button (6) from any other menu.

## 11. Configuration

Configure the control panel according to your air handling needs as part of the process incorporating the Fisair Evaporative Humidifier. Pay special attention to the water supply quality, the application hygiene requirements and the required work cycles.

Configuration	1/12	▼
Drain Mode	Oper+Est	
Commissioning		>
Stages config.		>
Stages Control Mode	Analogic	
Enable UV	Disable	
Startup date		>
System date		>

Using the navigation keys, select the line of settings to be modified, then press the selection key to access it.

Configuration	8/12	▲
Startup date		>
System date		>
Enable 2 Pumps	Disable	
Selection Pump	Both	
Language selection	English	
Comm. Config.		>
Application Save		>

## 11.1 Conf. Drainage mode

Configures the basin drainage according to the following options:

### 11.1.1 Opert+Estnd:

#### Operational/Periodic Drainage (Opert):

While the equipment is running, it is fully emptied periodically according to the time value set in T05.

**If the value 0 is chosen, the equipment does not periodically drain during operation.**

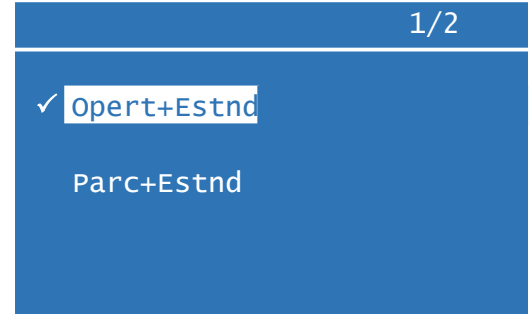
The timer T04 regulates the motorised drain valve opening time during each operational/periodic drain cycle.

#### Standard Drainage (Estnd):

When the equipment stops, it is emptied once the time value chosen for T06 has elapsed. Then, 10 emptying cycles begin, which ensure complete drying of the cassette and the basin.

The timer T04 regulates the motorised drain valve opening time during each operational/periodic drain cycle.

The time between openings in the cycles is 6 hours.



### 11.1.2 Cond + Estnd (partial drainage):

#### Drainage by conductivity control

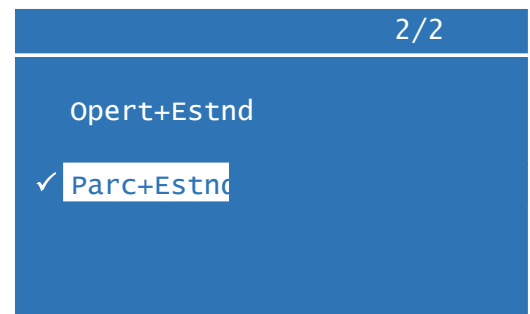
(Cond): This drainage type is used when the conductivity control option is available, according to the "Set Point" and the following Timers\*

#### ❖ Conductivity Set-Point (0-1999 µS/cm)

The desired water conductivity in the basin is established in the SET-POINT Timer. If the conductivity sensor exceeds this value, it is partially emptied.

#### ❖ Timer T02 (Min. 1min / Max. 15min)

The time between partial emptyings is established by the conductivity control according to the time value set in T02.



❖ Timer T07 (Min. 5 s / Max. 360 s)

The time between partial emptying with conductivity control is set according to the time value selected in TO2.

❖ Timer T10 (Min. 5 s / Max. 360 s)

The drain motor-valve MV1 opening time value during emptying by conductivity is configured.

Standard Drainage (Estnd):

When the equipment stops, it is emptied once the time value chosen for T06 has elapsed. Then, 10 emptying cycles begin, which ensure complete drying of the cassette and the basin.

The timer T04 regulates the motorised drain valve opening time during each operational/periodic drain cycle.

The time between openings in the cycles is 6 hours.

### **11.1.3 Forced drainage.**

Using the external signal connected to the MD-8, a forced drain is performed until this signal is no longer active. It consists of the following procedure:

10 emptying cycles are carried out to ensure complete drying of the cassette and the basin. The timer T04 regulates the motorised drain valve opening time during each operational/periodic drain cycle. The time between openings in the cycles is 6 hours.

This signal prevails over previous configurations

## 11.2 Configuration Prior to Start-Up (Start-up)

The pre-start-up process can be enabled and the number of cycles to be repeated specified.

This process consists of carrying out the start-up cycle established below: Keep the water recirculation pump running for 10 minutes then empty the basin for 10 minutes.

This process cleans dust produced in the manufacturing process from the panel.

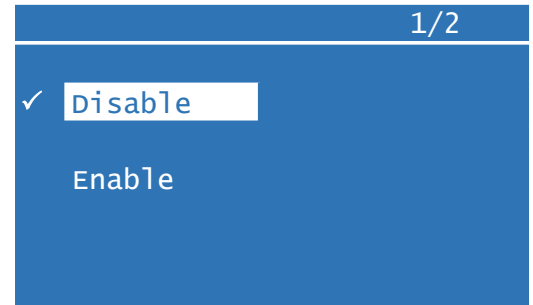
During the pre-start-up cycle, the duct fans for the air to be treated must be turned off. The UV lamp must not be switched on during this process.

Once this function is enabled, the equipment must be started manually (MAN) before continuing with the start-up cycles.

The following control options are available:

- ❖ Enabled Start-up\*

Enables/disables the start-up process.

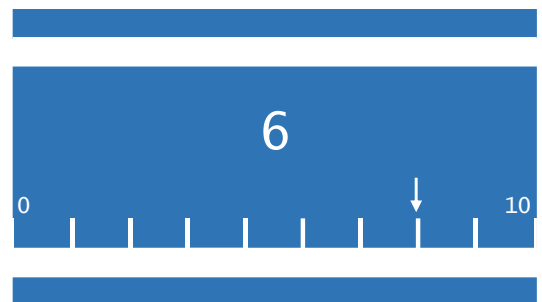


\*This configuration must be disabled if the device is to be started in the standard way.

- ❖ No. cycles:(min. 0 cycles /Max. 10 cycles)

Sets the start-up process cycles number.

The factory set value is 5 cycles



- ❖ Counter Start-up

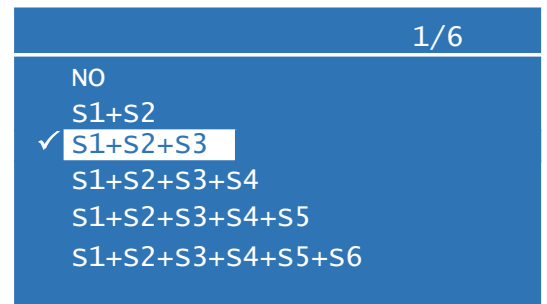
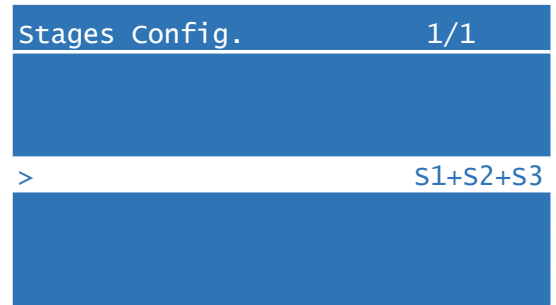
Shows the completed cycles in the current start-up.

### 11.3 Conf. Stages:

Sets the number of available Cassette watering stages. Once the Stage configuration submenu is accessed, it displays the number of stages the equipment currently has established.

To change the number of stages, select the line that shows the currently selected stages and access the screen with all the available stage options. Within this screen, select the number of stages the particular equipment has.

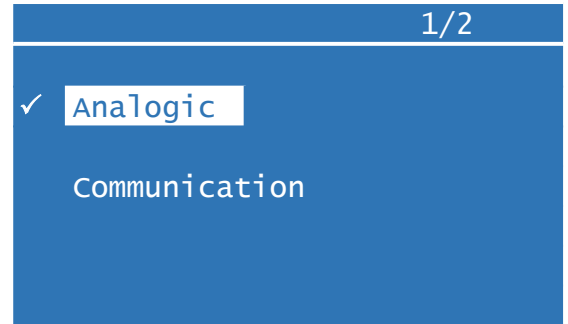
These stages are regulated by the external analogue signal entered in the CC-NS3.0. Remember to connect this input signal on the MPCB-IN01 card to J1 for the 0-10 VDC input range. (See section Connections 4.2). All possible configuration options are shown below:



Number of stages Available	Analogue signal range VDC	Number of active solenoid valves
6 stages	0-0,2	All OFF
	0,3-1,9	S1
	2-3,5	S1+S2
	3,6-5	S1+S2+S3
	5,1-6,7	S1+S2+S3+S4
	6,8-8,3	S1+S2+S3+S4+S5
	8,4-10	S1+S2+S3+S4+S5+S6
5 Stages	0-0,2 V <sub>DC</sub>	All OFF
	0,3-2 V <sub>DC</sub>	S1
	2,1-4 V <sub>DC</sub>	S1+S2
	4,1-6 V <sub>DC</sub>	S1+S2+S3
	6,2-8 V <sub>DC</sub>	S1+S2+S3+S4
	8,1-10 V <sub>DC</sub>	S1+S2+S3+S4+S5
4 Stages	0-0,2 V <sub>DC</sub>	All OFF
	0,3-2,5 V <sub>DC</sub>	S1
	2,6-5 V <sub>DC</sub>	S1+S2
	5,1-7,5 V <sub>DC</sub>	S1+S2+S3
	7,6-10 V <sub>DC</sub>	S1+S2+S3+S4
3 Stages	0-0,2 V <sub>DC</sub>	All OFF
	0,3-3,3 V <sub>DC</sub>	S1
	3,4-6,6 V <sub>DC</sub>	S1+S2
	6,7-10 V <sub>DC</sub>	S1+S2+S3
2 Stages	0-0,2 V <sub>DC</sub>	All OFF
	0,3-5 V <sub>DC</sub>	S1
	5,1-10 V <sub>DC</sub>	S1+S2

### 11.4 Control Mode. Stages

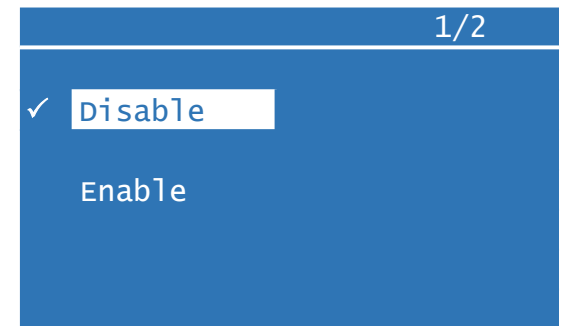
Select whether the stages are managed with the 0-10 VDC analogue signal or by Bus communication.



### 11.5 UV Lamp configuration (Enable UV)

Switches the UV water treatment system on or off:

- ❖ Disabled
- ❖ Enabled



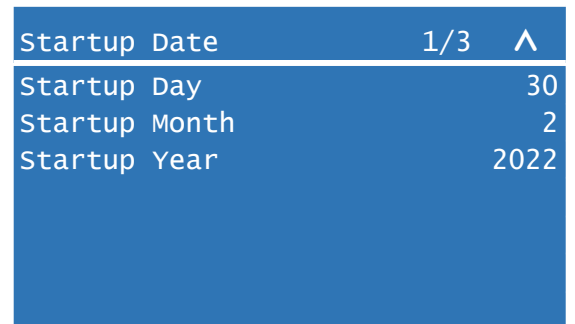
**Note 1:** Each time the UV lamp is switched on, an internal 15,000 hr operating counter is activated, only when the equipment is running. After these 15,000 hours of operation, the A51 error is triggered to replace the lamp.

**Note 3:** Once the error A51 appears and the lamp has been replaced, the counter must be reset. See section “10 Adjustments”.

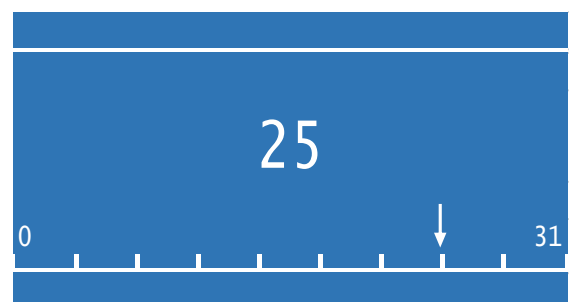
### 11.6 Start-up date

Set the machine start-up date by entering the data shown on the screens:

- ❖ Day of the week
- ❖ Month
- ❖ Year



To enter the data to be modified, select the line corresponding to the data using the navigation keys and press the selection key to access the modification screen for these data.



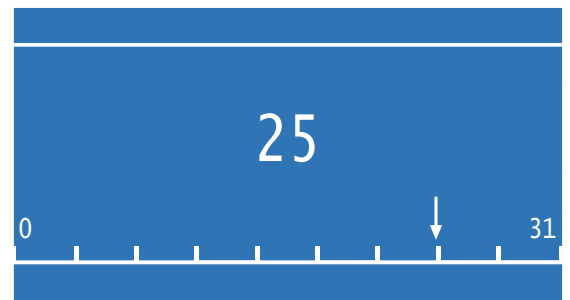
### 11.7 System date/time

Set the date and time of the machine system by entering the data shown on the screens:

- ❖ Hour
- ❖ Minute
- ❖ Second
- ❖ Day of the week
- ❖ Month
- ❖ Year

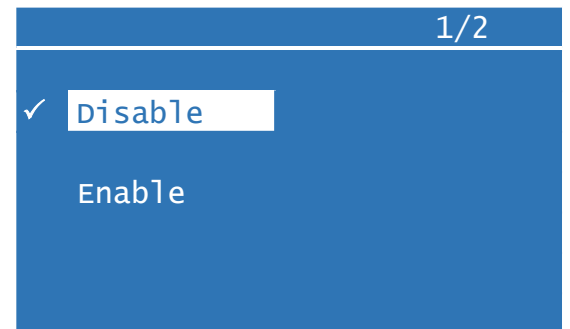
To enter the data to be modified, select the line corresponding to the data using the navigation keys and press the selection key to access the modification screen for these data.

Date/time settings	1/7	^
Date/Time input		
Hour		10
Minute		47
Second		21
Day		7
Month		10
Year		2021



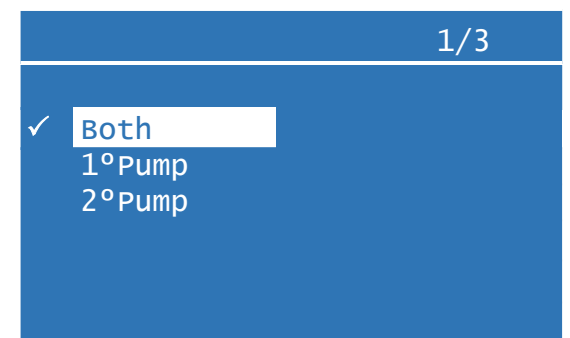
### 11.8 Enabling 2 pumps (optional duplication)

Enable or disable the double recirculation hydraulic pump if this option is available for the equipment.



### 11.9 Pump selection (optional duplication)

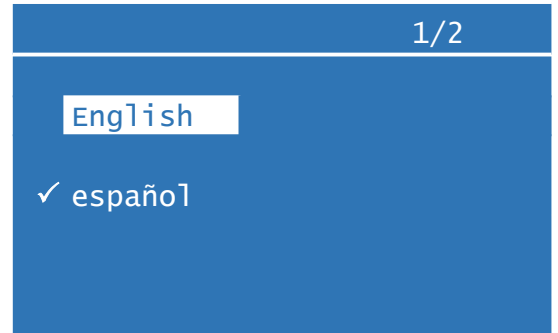
Select whether to work with the first pump, the second pump or both (standard operation with duplicity of pumps).



### 11.10 Language selection

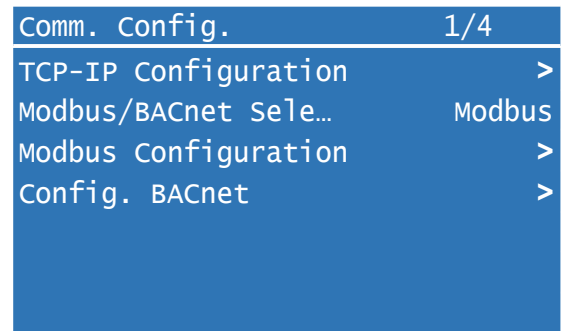
Select the desired language for the application. Available languages:

- ❖ Spanish
- ❖ English



### 11.11 Conf. Communications

3 types of data bus can be configured (Modbus RTU, Modbus TCP/IP and BACnet TCP/IP). Its configuration protocol varies depending on the type:



**Note:** Once the communications have been configured as required, the equipment must be reset to save the configuration. This is to cut the disconnecter I1, wait min 10 seconds and reset the disconnecter I1.

**Note:** Remember to have the parameter corresponding to the stage control mode (within the configuration menu) in communication mode. See point 11.4

**11.11.1 TCP/IP configuration:**

**Note:** This setting is required for Modbus TCP/IP and BACnet TCP/IP communications.

If the network is configured in dynamic host mode (DHCP), the IP will be masked, and the gateway will be assigned automatically by the BMS.

TCP-IP Configuration		1/7
Actual IP		>
Actual Mask		>
Actual Gateway		>
DHCP		Active
Given IP		>
Given Mask		>
Given Gate		>

- ❖ **Actual IP:** Shows the current IP address of the computer.

Actual IP		1/4
1° Act IP Number		168.0
2° Act IP Number		254.0
3° Act IP Number		98.0
4° Act IP Number		99.0

- ❖ **Actual mask:** Shows the current masking of the equipment.

Actual Mask		1/4
1° Act.Msk Number		255.0
2° Act.Msk Number		255.0
3° Act.Msk Number		255.0
4° Act.Msk Number		0

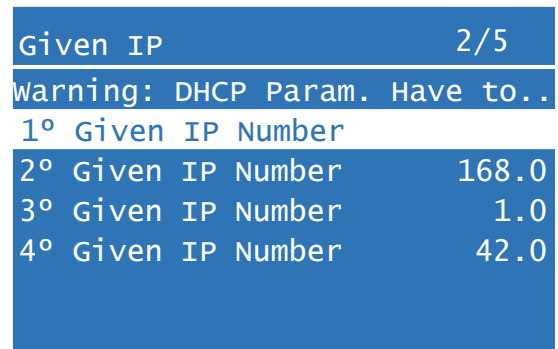
- ❖ **Actual gateway:** Shows the current gateway of the equipment

Actual Gateway		1/4
1° Act.Gate Number		192.0
2° Act.Gate Number		168.0
3° Act.Gate Number		1.0
4° Act.Gate Number		1.0

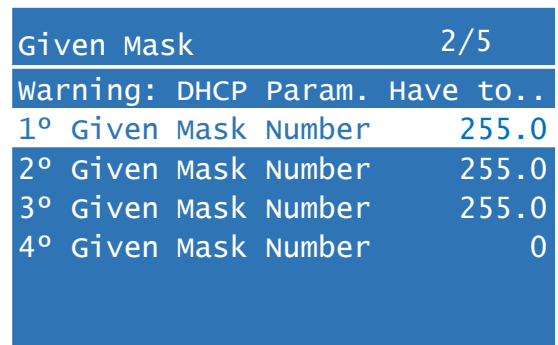
- ❖ **DHCP:** This parameter configures the equipment so it is in a DHCP network:
  - Active: The IP, masking and gateway are assigned automatically.
  - Passive: The network does not have DHCP configuration (IP, masking and gateway values must be assigned manually).



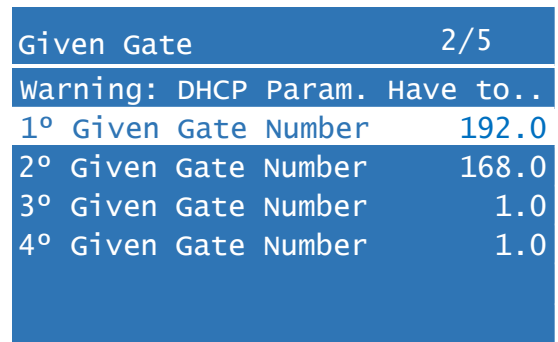
- ❖ **Fixed IP (Passive DHCP):** Enter the computer IP. (ONLY VALID WITH DHCP PARAMETER SET TO PASSIVE). Factory setting: Byte 1: 192 – Byte 2: 168 – Byte 3: 1 – Byte 4: 42



- ❖ **Fixed mask:** Enter the equipment subnet mask. (ONLY VALID WITH DHCP PARAMETER SET TO PASSIVE). Factory setting: Byte 1: 255 – Byte 2: 255 – Byte 3: 255 – Byte 4: 0



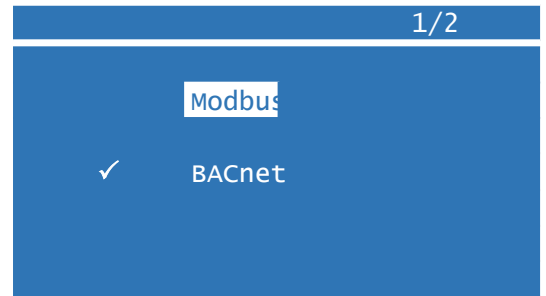
- ❖ **Fixed gateway:** Enter the current gateway of the equipment. (ONLY VALID WITH DHCP PARAMETER SET TO PASSIVE). Factory setting: Byte 1: 192 – Byte 2: 168 – Byte 3: 1 – Byte 4: 1



### 11.11.2 Modbus/BACnet selection

Selects communication protocol:

- ❖ Modbus
- ❖ BACnet

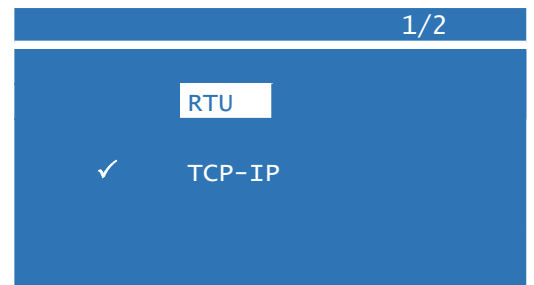


**NOTE:** To select between Modbus RTU or Modbus TCP-IP see section “Modbus configuration”

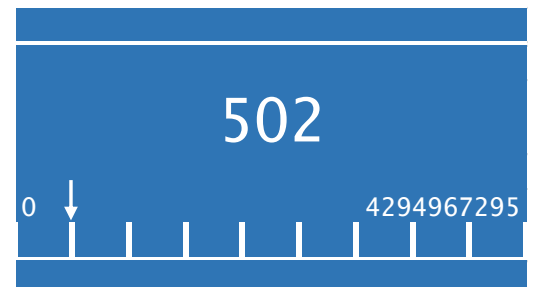
### 11.11.3 Modbus configuration

- ❖ **Modbus RTU/TCP-IP:** Select Modbus RTU or Modbus TCP-IP:
  - RTU
  - TCP-IP

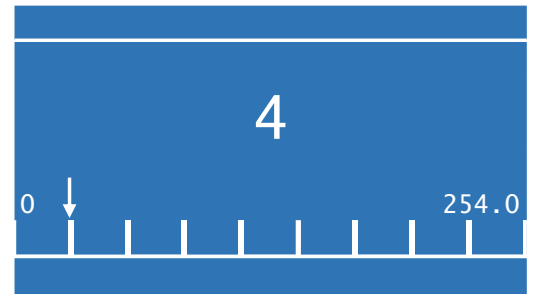
Modbus Configuration		1/7
Modbus RTU/TPC-IP		RTU
Port Modbus TCP-IP		502
Modbus Address		4.0
Modbus RTU Bauds/s		9600
Modbus RTU Parity		None
Modbus Delay		200
Modbus Time Out		200



- ❖ **Modbus TCP-IP Port:** Select the port number of the Modbus TCP-IP communication. Factory setting: 502

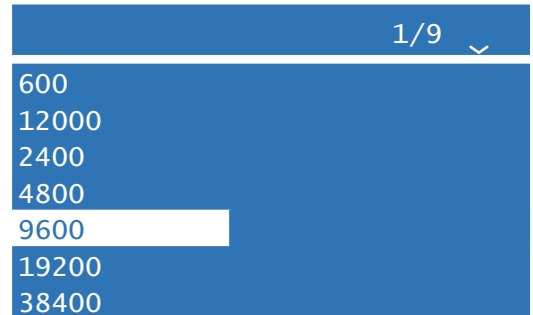


- ❖ **Modbus-RTU address:** Selects the slave address of the device in Modbus RTU communication. Factory setting: 4.



- ❖ **Bauds/s Modbus RTU:** Selects the Modbus RTU communication speed [Bauds/s]:

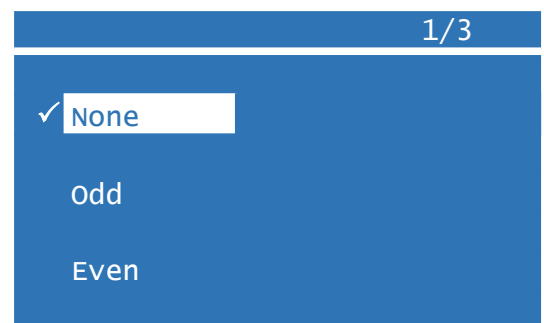
- 600
- 1200
- 2400
- 4800
- 9600
- 19200
- 38400
- 57600
- 115200



Factory setting: 9600 (bauds/s)

- ❖ **Modbus-RTU parity:** Selects the Modbus communication parity:

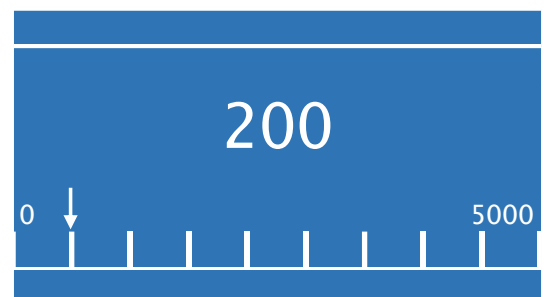
- None
- Odd
- Even



Factory setting: None

- ❖ **Modbus delay (ms):** Selects the Modbus device delay time.

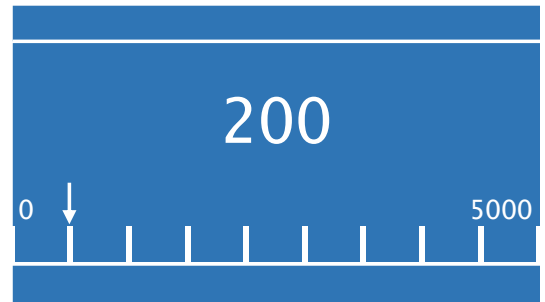
Factory setting: 200 (ms)



❖ **Modbus wait time (ms):**

Selects the device slave response time in Modbus.

Factory setting: 200(ms)



**11.11.4 Configuration BACnet**

❖ **BACnet Port:** Select the BACnet TCP-IP communication port number. Factory setting: 47808

❖ **BACnet ID:** Shows the equipment identification number in the BACnet network.

Config. BACnet	
1/2	
BACnet Port	47808
BACnet ID	855944

### 11.11.5 Mapping for MODBUS communication protocols

**NOTE: All write functions:** The following table shows the write function of each communication address:

Address	Description	Writing
1010	Write ON-OFF position	0→OFF, 1→ON(MAN) 2→ON(AUTO) (Subject to function by interlocking in H1)(*)
1060	Write 0-10Vdc analog signal for stages control	Writing range: 0-100,
1064	Write drainage/emptying configuration signal	0→Estandard, 1→Conductivity control
1066	Write pre-startup configuration	0→Disabled 1→Enabled
1068	Write pre-startup cycles	Writing range 0-10 cycles
1070	Write language	0→Spanish 1→English
1072	Enable pump duplicity (Optional)	0→ Disabled 1→Enabled
1074	Pump selection Module A (only with pumps duplicity)	0→Both 1→ Only 1 <sup>o</sup> pump working → Only 2 <sup>o</sup> pump working
1076	Pump selection Module A (only with pumps duplicity)	→Both 1→ Only 1 <sup>o</sup> pump working → Only 2 <sup>o</sup> pump working
1078	Enable stage control by communication	00-Analog Control (Only obeys signal through terminals 3-1L-) 1-> Communication Control (Only obeys value from address 1060)
1092	Enable forced drainage by communication	0→ No drainage (***) 1→ Forced drainage (***)
1094	Force External Failure by communication	0→ No external fault 1→External fault active
1096	Enable Module Control by H3	0→ Disabled 1→Enabled
1098	Write H3 status by Communication	0→ H3 Disabled (**) 1→H3 Activated (**)

\*For equipment with stage control, the write ON(AUTO) must always be sent to turn on and 0 to turn off, with a jumper on H1 (terminals 7-MD) and the stages managed with write 1060.

(\*\*) In this case, to avoid incompatibility problems between the state of H3 physically at the corresponding terminals (see section 6) and the state of H3 via communications bus, it is recommended that if you choose to operate via communications, remove the jumper at these terminals (see section 6) and activate or deactivate them in register 1098.

(\*\*\*) In this case, to avoid problems of incompatibilities between the state of H2 physically forced drainage in the corresponding terminals (see section 6) and the state of H2 by communications bus, it is recommended that, if it is chosen to perform the operation by communications, the jumper is removed in these terminals (see section 6) and they are activated or deactivated in register 1094.

Address	Description	Writing range (increment)	Factory setting
1030	Write Timer T01	30-1000s(Increment 1s)	90s
1032	Write Timer T02	1-15 min(Increment 1min)	5min
1034	Write Timer T03	1-60 min(increment 1min)	10min
1036	Write Timer T04	30-400min(increment 1min)	60min
1038	Write Timer T05	0-24h(increment 1h)	0min=never
1040	Write Timer T06	0-24h(increment 1h)	1h
1042	Write Timer T07	5-360s(increment 1s)	30s
1044	Write Timer T08	10-60min(increment 1min)	15min
1046	Write Timer T10	90-150s(increment 1s)	90s
1048	Write Timer T11	5-600min(increment 1min)	60min

**Read:** The following table shows the read function of each communication address:

Address	Description	Reading
1200	Status read On/Off	Off →0, On →1
1206	Read analogue input of signal 0-10 V (Range 0-100)	Reading range 0-100. Divide the result by 10. Ej. 80 →8 V

Address	Description	Reading range	Factory setting
1210	Read Timer T01	30-1000s	90s
1212	Read Timer T02	1-15 min	5min
1214	Read Timer T03	1-60 min	10min
1216	Read Timer T04	30-400min	60min
1218	Read Timer T05	0-24h	0min=never
1220	Read Timer T06	0-24h	1h
1222	Read Timer T07	5-360s	30s
1224	Read Timer T08	10-60min	15min
1226	Read Timer T09	0-120s	120s
1228	Read Timer T10	90-150s	90s
1230	Read Timer T11	5-600min	60min

Address	Description	Reading
1232	Read equipment live	0→not live(orange led [10] Off) 1→live(orange led [10] On)
1234	Read general equipment failure	0→no equipment failure(red led [11] Off) 1→equipment failure(red led [11] On)
1236	Read general equipment operation status	0→not working (green LED [9] Off) 1→working (Green LED [9] On)
1238	Read UV lamp operation status	0→Off 1→On
1240	Read filling solenoid valve status	0→Off 1→On
1242	Read drainage motor valve power status	0→No power 1→Powered

Address	Description	Reading
1244	Drain motor valve position reading (feedback)	1 → closed 0 → open
1246	Read Level position status	0 → Level default error 1 → Level insufficient 2 → Level low 3 → Level intermediate 4 → Level high
1248	Read pump status M1	0 → Not working 1 → in operation
1250	Motor pump circuit breaker status	0 → Circuit breaker fault 1 → Circuit breaker correct
1252	Sample active stages:	0 → 0 active stages 1 → 1 active stages 2 → 2 active stages 3 → 3 active stages 4 → 4 active stages 5 → 5 active stages 5 → 6 active stages
1254	Physical Drain H2 Jumper Status	0 → Jumper disabled 1 → Jumper enabled
1256	Pump 2 status (only with duplicity of pumps)	0 → OFF /disabled 1 → In operation
1258	V3V status (only with duplicity of pumps)	0 → OFF /disabled 1 → In operation
1260	Reading of current equipment operating mode	0 – No operation (ERROR) 1 - OFF 2 – Forced drainage 3 – Operational drainage 4 - Start-up 5 – Reserved 6 – Manual Mode 7 – Auto Mode 8 – Partial Drainage

1400	<p>Alarm, shows the equipment alarm code</p> <p>The alarm code has binary treatment:</p> <p>0→No alarm  <math>2^0 = 1</math> → Alarm communication module.  <math>2^1 = 2</math> → Alarm CPU.  <math>2^2 = 4</math> → External Alarm.  <math>2^3 = 8</math> → Pump circuit breaker alarm.  <math>2^4 = 16</math> → EV1 fill failure alarm  <math>2^5 = 32</math> → MV1 feedback fault alarm  <math>2^6 = 64</math> → Emptying failure alarm  <math>2^7 = 128</math> → Level detector fault alarm  <math>2^8 = 256</math> → High conductivity alarm  <math>2^9 = 512</math> → UV hours alarm  <math>2^{10} = 1024</math> → V3V failure alarm (pump selection)  <math>2^{11} = 2048</math> → High water level alarm</p> <p>If there is more than one active alarm, the record number has to be translated into binary to see the combination in binary.</p> <p>For example: Recorded value 1300: <math>264 = 8(2^3) + 254(2^8) = 0000\ 0001\ 0000\ 1000</math></p> <p>Active alarms:</p> <ul style="list-style-type: none"> <li>• Pump circuit breaker alarm</li> <li>• High conductivity alarm</li> </ul>
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### 11.11.6 Mapping for BACnet communication protocols

#### BACnet/IP protocol:

- Type: Bacnet/IP over Udp

#### Mapping for BACnet communication protocols

**Write:** The following table shows the write function of each communication object.

These objects are read-write:

Objects	Description	Writing
SET OFF_ON(MAN-AUTO) (Multi_state_Value)	Write position disconnecter switch I1	1→OFF, 2→ON, 3→AUTO (Subject to interlock function at J21)
SET STG.CONTROL MODE (Multi_state_Value)	Selects Stage control by analogue value or by BMS communication (VALID FOR V or mA)	1→ Analogue value – X1(3 - 1L-) 2→ Communication Control
SET V CONTROL (Analog_Value)	Write analogue signal 0-10 Vdc step control	Write range 0-100
SET DRAIN CONFIG. (Multi_state_Value)	Write signal configuration empty	1→Standard 2→ Conductivity control
SET_LANGUAGE (Multi_state_Value)	Write Language	1→English 2→Spanish
SET EXTERNAL FAIL (Multi_state_Value)	Activate alarm signal	1→External fault Off 2→External fault On
SET FORCED DRAIN - (Multi_state_Value)	Force drain from J19	1→ Forced drainage Off 2→Forced drainage ON
SET LANGUAGE (Multi_state_Value)	Sets the equipment language	1→ English 2→Spanish
SELECT PUMP (Multi_state_Value)	Selects the pump in operation when there is an optional pump duplication	1→ Both (Each pump operates in turn) 2→Only 1st Pump 3→Only 2nd Pump
ENABLE 2 PUMPS	Enables the equipment to work with 2 optional pumps	1→ Disabled 2→ Enabled

Objects	Description	Reading range (increment)	Factory setting
SET TIMER 1 (Analog_Value)	Write Timer T01	30-1000s	90s
SET TIMER 2 (Analog_Value)	Write Timer T02	1-15 min	5min
SET TIMER 3 (Analog_Value)	Write Timer T03	1-60 min	10min
SET TIMER 4 (Analog_Value)	Write Timer T04	30-400min	60min
SET TIMER 5 (Analog_Value)	Write Timer T05	0-24h*(increase 1h)	0min=never
SET TIMER 6 (Analog_Value)	Write Timer T06	0-24h(increase 1h)	1h
SET TIMER 7 (Analog_Value)	Write Timer T07	5-360s(increase 1s)	30s
SET TIMER 8 (Analog_Value)	Write Timer T08	10-60min(increase 1min)	15min
SET TIMER 10 (Analog_Value)	Write Timer T10	90-150S (increase 1s)	90s
SET TIMER 11 (Analog_Value)	Write Timer T11	5-600min(increase 1min)	60min

**Read:** The following tables show the write function of each communication

These objects are read only:

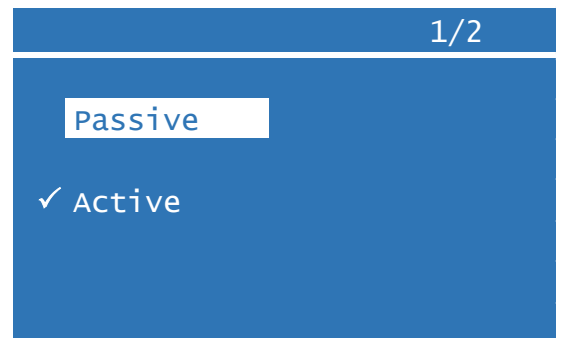
Object	Description	Reading
GET V VALUE (Analog_Value)	Read analogue input of signal 0-10 V (Range 0-10)	Ej. 8 →8 V
POWER ON (Multi_State_Value)	Read equipment live	1→not live(yellow led [3] Off) 2→live(yellow led [3] On)
GET ALARM STATUS (Multi_State_Value)	Read general equipment failure J23	1→no equipment failure(red led [4] Off) 2→equipment failure(red led [4] On)
UNIT RUNNING (Multi_State_Value)	Read general equipment operation status	1→not working 2→in operation
UV STATUS (Binary Output)	Read UV lamp operation status	0→Off 1→On

Object	Description	Reading	De
EV1 STATUS (Binary Output)	Read filling solenoid valve status	0→Off 1→On	
DRAIN VALVE STATUS (Binary Output)	Read drainage motor valve power status (MV1)	0→No power 1→Powered	
DRN.VALVE FEEDBACK (Binary_Input)	Read drain motor valve position	1→closed(green led [14] Off) 0→open(green led [14] On)	
DTL STATUS (Multi_State_Value)	Read Level position status	1→Error 2→Insufficient 3→Low 4→Intermediate 5→High	
PUMP 1 STATUS (Binary_Output)	Read pump status	0→Not working 1→working (Green LED)	
CIRCUIT BREAKER STATUS (Binary Input)	Motor pump circuit breaker status	0→Circuit breaker fault 1→Circuit breaker correct	
ACTUAL OP.MODE (Multi_State_Value)	Reading of current equipment operating mode	1 – No operation (ERROR) 2 - OFF 3 – Forced drainage 4 – Complete drainage 5 - Start-up 6 – Reserved 7 – Manual Mode 8 – Auto Mode 9 – Partial Drainage	
GET FRC.DRAIN INPUT STATUS - X1(8-MD) (Binary Input)	J19 Drain reading	0: Off (jumper open) 1 On (jumper closed)	

Object	Description & Reading
CHECK ERROR VALUE (Analog Value)	<p>Alarm, shows the equipment alarm code</p> <p>The alarm code has binary treatment:</p> <p>0→No alarm  <math>2^0 = 1 \rightarrow</math> Alarm communication module.  <math>2^1 = 2 \rightarrow</math> Alarm CPU.  <math>2^2 = 4 \rightarrow</math> External Alarm.  <math>2^3 = 8 \rightarrow</math> Pump circuit breaker alarm.  <math>2^4 = 16 \rightarrow</math> EV1 fill failure alarm  <math>2^5 = 32 \rightarrow</math> MV1 feedback fault alarm  <math>2^6 = 64 \rightarrow</math> Emptying failure alarm  <math>2^7 = 128 \rightarrow</math> Level detector fault alarm  <math>2^8 = 256 \rightarrow</math> High conductivity alarm  <math>2^9 = 512 \rightarrow</math> UV hours alarm  <math>2^{10} = 1024 \rightarrow</math> V3V failure alarm (pump selection)  <math>2^{11} = 2048 \rightarrow</math> High water level alarm</p> <p>If there is more than one active alarm, the record number has to be translated into binary to see the combination in binary.</p> <p>For example: Recorded value 1300: <math>264 = 8(2^3) + 254(2^8) = 0000 0001 0000 1000</math></p> <p>Active alarms:</p> <ul style="list-style-type: none"> <li>• Pump circuit breaker alarm</li> <li>• High conductivity alarm</li> </ul>

### 11.12 Application saved

All settings and adjustments established at that moment are saved in the equipment system internal memory.



## 12. Settings

The desired values for the different parameters to be adjusted are configured in this section. The values for the different Timers and the UV lamp are adjusted. Each parameter has a range of values it can be set to, as well as its pre-determined factory value.

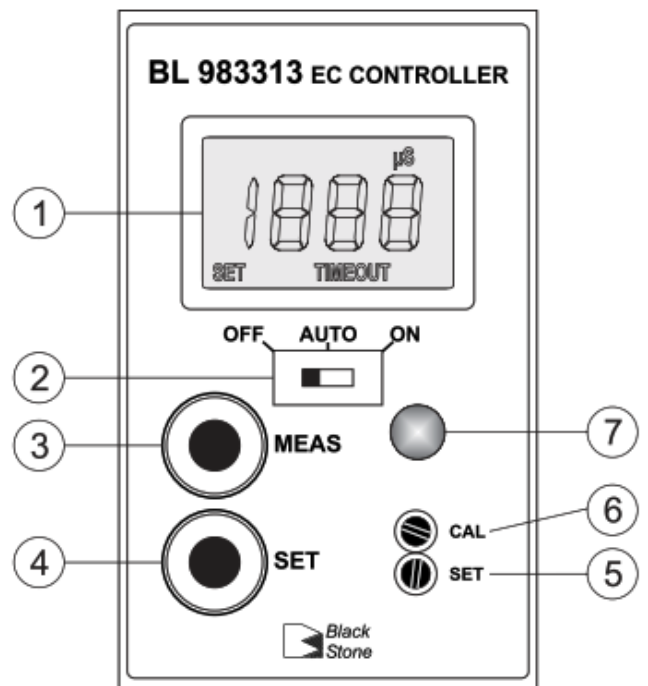
Settings	1/12	▼
Timer 01 (s)	90	
Timer 02 (min)	5	
Timer 03 (min)	10	
Timer 04 (m)	60	
Timer 05 (h)	0	
Timer 06 (h)	1	
Timer 07 (s)	30	

To adjust a timer, select the menu line to be modified using the navigation keys and press the selection key.

### 12.1 SET-POINT $\mu\text{S}/\text{cm}$ (if applicable)

The conductivity set-point is entered from the conductivity controller located on the exterior front panel. (See section 5). The following procedure must be followed:

1. Make sure the conductivity probe is connected to the conductivity controller. (See section 5)
2. Position the selector in "Auto" mode (2)
3. Press the "Set" button (4)
4. Insert a precision screwdriver into the "Set" Trimmer (5) until the desired set-point is obtained. Turning the screwdriver clockwise raises the set-point and vice versa.
5. Pressing the MEAS key (3) to display the value measured by the probe.



For more information, consult the particular controller instruction manual.

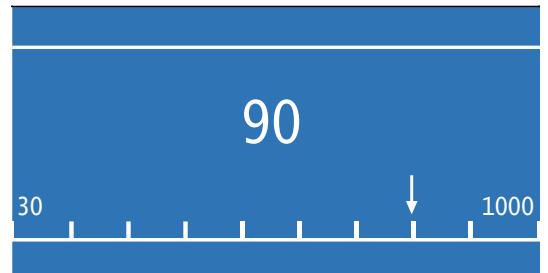
It must be remembered that the TIMER T07 regulates the time for the set-point value to be exceeded before opening the drain valve, while TIMER T02 established the time between partial emptyings.

The **range** varies from 0-1999  $\mu\text{S}/\text{cm}$ .

### 12.2 TIMER T01 (ex SW1 AB)

Enter the time value for the start-up delay of the recirculation pump from the insufficient level (below the minimum level) in the basin to the change of status to the low level that reactivates the pump (to prevent the pump from misfiring)..

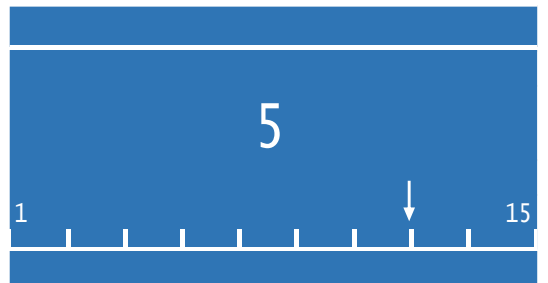
The Timer **range** is from 30 s to 1000 s. The factory set value is 90 s.



### 12.3 TIMER T02 (ex SW1 CD)

Enter the time between partial emptying of the basin with conductivity control.

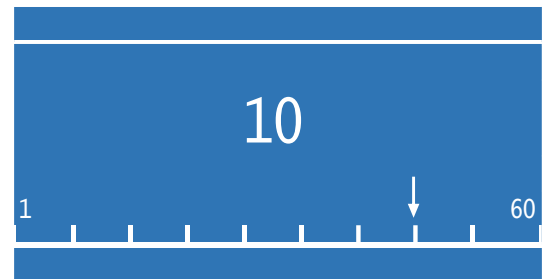
The Timer **range** is from 1 min to 15 min. The factory set value is 5 min.



### 12.4 TIMER T03 (ex SW2 AB)

Enter the complete emptying confirmation time. This is the maximum time for the level sensor to confirm the minimum water level after the emptying command.

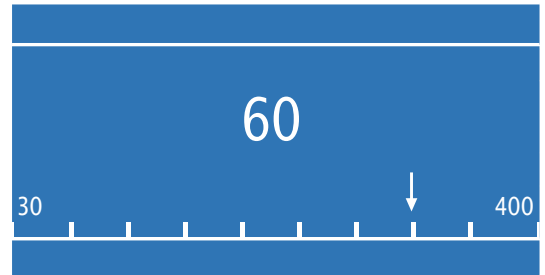
The Timer **range** is from 1 min to 60 min. The factory set value is 10 min.



### 12.5 TIMER T04 (ex SW2 CD)

Enter the additional complete emptying time, during which the emptying motor valve will be open.

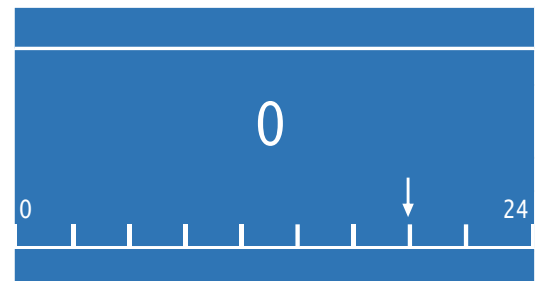
The Timer **range** is from 30 min to 400 min. The factory set value is 60 min.



### 12.6 TIMER T05 (ex SW3 AB)

Enter the operational drain frequency during operation.

The Timer **range** is from 0-24 h. The factory set value is 0 h(0 h= never)

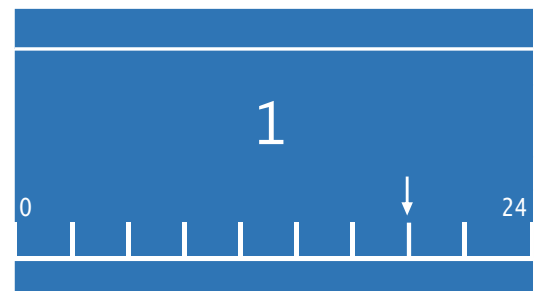


### 12.7 TIMER T06 (ex SW3 CD)

Enter the delay before complete emptying after the equipment has been turned off.

The Timer **range** is from 0-24 h. The factory set value is 1 h.

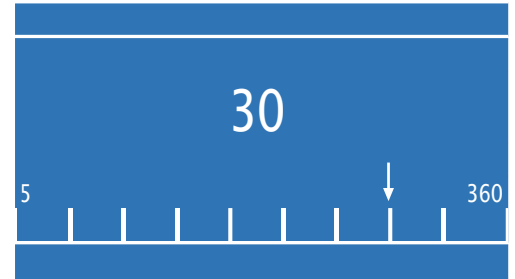
0 h = Empties as soon as the equipment is switched off.



### 12.8 TIMER T07 (ex SW4 CD)

Enter the set-point time before partial emptying, by opening the drain motor-valve, due to the conductivity being continuously exceeded.

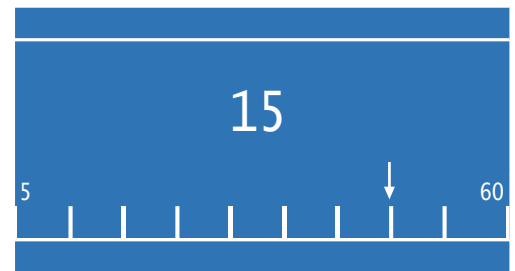
The Timer **range** is from 5 s to **360 s**. The factory set value is 30 s.



### 12.9 TIMER T08

Enter the maximum filling time: Time for the low level to be reached once the basin is being filled (change of status from insufficient level to low level).

The Timer **range** is from 5 min to **60 min**. The factory set value is 15 min.



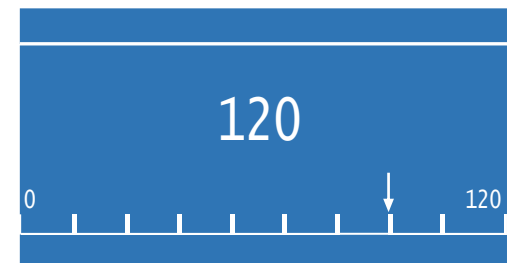
### 12.10 TIMER T09

Enter the maximum time for the pump to be turned on after been turned off. To meet the maximum number of pump start cycles per hour, set by the manufacturer at 30 cycles or a start every 120 seconds.

This is a pump protection timer.

**It is accessible only by means of a password in the user login (see point 8).**

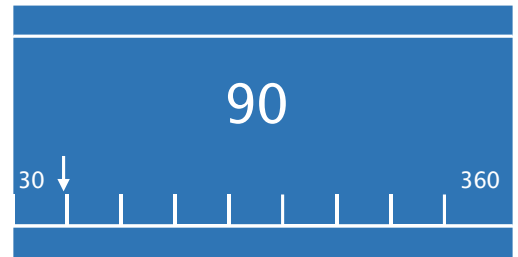
The Timer **range** is from 0s to **120s**. The factory set value is 120s.



### 12.11 TIMER T10

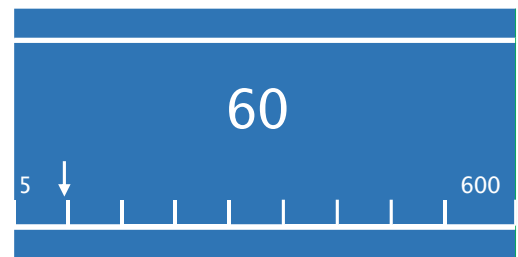
Modify the drain motor-valve MV1 opening time during partial emptying due to conductivity.

The Timer **range** is from 30s to **360s**. The factory set value is 90 s.



### 12.12 TIMER T11

Enter the maximum time for the conductivity to fall below the high conductivity set-point. If this time is exceeded, the high conductivity alarm is activated. See section 15 “alarms”.



### 12.13 UV ADJUSTMENTS

The UV lamp operating hours are shown.

Once it has exceeded 15,000 h of operation, a warning appears indicating that the lamp must be replaced.

Once the lamp is replaced with a new one, enable the reset for the UV lamp operating hours counter.

Uv Settings	
UV Op. Hours	0 h
UV Op. Hours RST	off

### 13. Calibration

Calibration is recommended every 12 months.

This is done as follows:

- I. Immerse the probe tip in the HI 7061 Cleaning Solution (item code 69510002) for at least one hour. If thorough cleaning is required, wipe the metal tips with very fine sandpaper or a non-abrasive brush.
- II. Fill a clean container with high conductivity liquid. This must be done with the HI 7031 solution of 1413  $\mu\text{S}/\text{cm}$  (item code 69510001).
- III. Make sure the controller is in MEAS (measuring) mode.
- IV. Insert the probe into the container to measure the conductivity. Shake it gently until the reading stabilises.
- V. Using a precision screwdriver, adjust the "CAL" trimmer until a measurement of 1413  $\mu$  is obtained on the screen.

## 14. Puesta en marcha

### IMPORTANTE:

Solicite puesta en marcha de sus unidades contactando con:

sat@fisair.com o service@fisair.com

<https://fisair.com/es/servicio/puestas-en-marcha/> (solicitud en castellano)

<https://fisair.com/service/start-ups/> (solicitud en inglés)

Cumplidas las premisas de instalación y una vez realizadas todas las conexiones, según el E.E. correspondiente: (Ver el número de esquema eléctrico en la placa de características en el interior del cuadro de control)

- 1st. Check the mains voltage corresponds to the control panel power supply voltage, according to its corresponding electrical diagram.
- 2nd. Switch the disconnecter I1 status from position 0 to 1.

The yellow led L1 lights up indicating that the equipment is electrically powered. The HMI screen shows everything in OFF status.

Led L1 On:



Module A Supervision menu:

Supervisión	1/15	▼
Modo Operación		OFF
OFF/Manual/Auto		OFF
Bomba (M1)		off
Válv.Llenado (EV1)		off
Válv.Drenaje (MV1)		off
Det. Nivel		Bajo
Etapas Activas		0

- 3rd. The initial adjustments (configuration and settings) to the working mode choice are made.

- a) UV lamp (if applicable): Enable UV lamp using the navigation keys. See section 11.5.

- b) Conductivity probe (if applicable): Make sure the conductivity probe wiring is correct and adjust the SET-POINT: The conductivity SET-POINT is adjusted as in section 11.1.
- c) Solenoid valves for watering stages: Make sure the analogue input command signal wiring of the watering solenoid valves are connected to the wiring of the watering solenoid valves. See section 6.

Check you have configured the number of stages available in the equipment. See section 10.3

- Recommendation:

The conductivity set-point in the HANNA controller should be set 20% higher than the first reading, when the basin is filled with clean water for the first time.

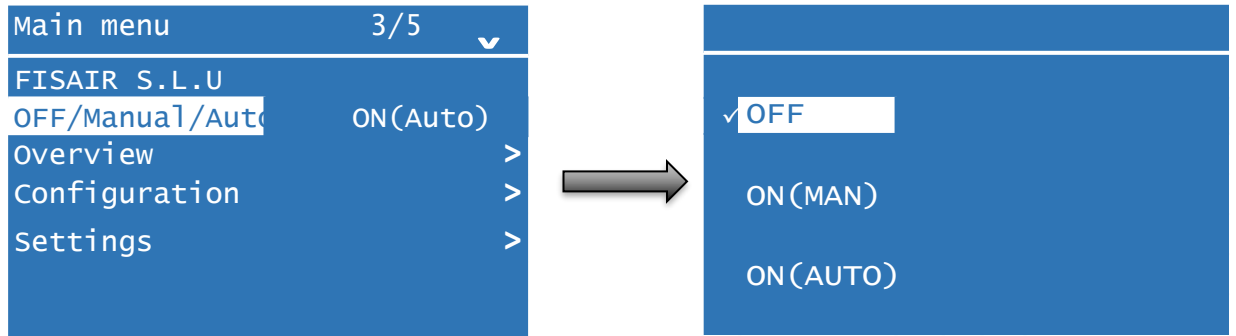
The **TIMER T01** must be coded to perform this reading (see section 11.2) at 1000 s, so the reading can be done without starting the pump; as starting the pump would contaminate the water in the basin. Once this reading is Noted, re-set the **TIMER T01** to the factory setting or according to contractual requirements.

Partial emptying operation (if Conductivity Control is applied):

- \* Once the *SET-POINT* and **TIMER T07** are exceeded (the latter establishes the time the set-point has to be continuously exceeded), the emptying motor valve will open and the water in the basin will be renewed, due to the filling solenoid valve staying open (the filling solenoid valve is controlled and closes only when the medium level is detected).
- \* A minimum partial emptying of 90s will be performed (adjustable in timer 10), the motor valve will be closed and the basin filled until the float valve cuts out.
- \* A new partial emptying cycle will start, taking into account the **TIMER T02** for the minimum time between partial emptying and **TIMER T07** for the conductivity set-point time continuously exceeded.
- \* The complete cycle of this operation is performed without the pump being shut down.

**4th.** Selecting the working mode that best suits your needs: automatic or manual:

In the main menu section, select the “OFF/Manual/Auto” row to access the operation mode options. (Remember to have the I1 disconnecter in position 1)



See section 9 “Supervision” to display the equipment status.


**5th.** Operation:

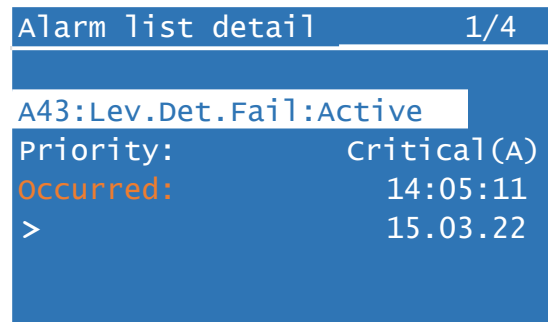
- I. If the UV lamp is enabled, the UV ON line will be displayed on the monitoring screen. After the lamp life time has elapsed, an operating hours limit error will appear, indicating that the lamp needs to be replaced.
- II. Once the work mode (MAN or AUTO) has been chosen, the supervision screen indicates the water supply solenoid valve EV1 is ON until the intermediate level of the level detector has been reached.
- III. Once the low water level has been reached, the water recirculation pump is powered on after the time recorded in **TIMER T01**. It is shown on the supervision screen in the row corresponding to pump M1, which is active ON.
- IV. During operation, whether MAN or AUTO, any anomaly can be displayed on the alarm button by flashing the alarm button LED 7. Alarm LED 11 also lights up. (see section 5 “hardware description”).


## 15. Alarms

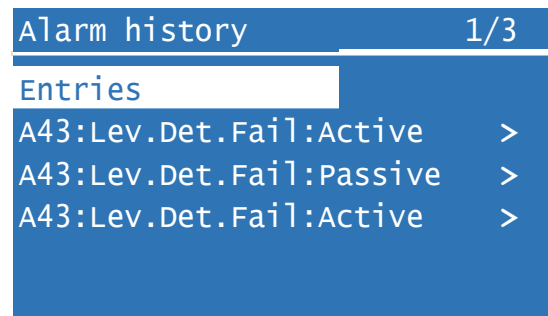
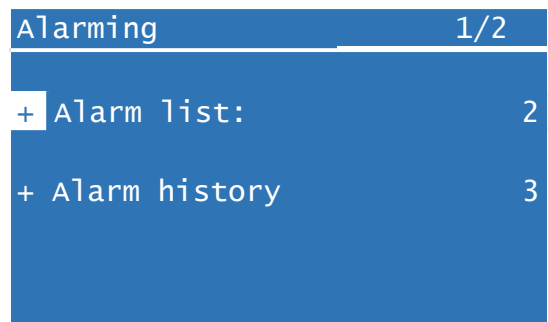
Pressing the alarm button  (7) shows the screen with the last active alarm.



Enter acknowledge to get more details of the alarm. To do this, press the alarm button (7)  again.



Pressing the alarm button  (7) again gives access to the alarm menu to view the list of active alarms (previous screen alarm list) as well as the history of alarms previously reset.




List of alarms:

Signal for alarm	Component	Description of the alarm	Recommended action
40*	CPU	Internal card failure: POL468.65	Contact Technical Services
43*	Level switch	Connection error or damaged component	Contact Technical Services
44*	Magneto-thermal circuit breaker	Connection error, over current or lack of phases	Check the connection, ensure the power network is correct. Fault repaired: Reset circuit breaker
46	Drain/emptying motor-valve	After the emptying confirmation time has elapsed, no minimum level of water is detected	Check proper operation of the emptying motor-valve
47	Water supply	After the established fill time has elapsed, no minimum level of water is detected	Check proper operation of the water supply solenoid valve
48	Drain/emptying motor-valve	Established time has elapsed without detecting feedback from the drain/emptying motor valve	Check proper operation of the motor valve feedback connection
49	Conductivity	Unable to reduce water conductivity	Check proper operation of the conductivity sensor. Check conductivity set-point
50*	External fault	Terminal block X2, terminal 24-25 open, if an external component is installed (check terminals)	-
51	UV lamp immersion in basin	This lamp has been used for over 15,000 hours	Replace UV lamp with a new one. Reset timer 15,000 h according to section 10.11 UV Adjustments
52	3-way motorised valve	Feedback failure of the 3-way motorised valve. Only with optional pump duplication.	Check the status of the 3-way motorised valve and its connection to the PLC.
53	I/O module	The I/O module does not communicate with the PLC.	Check communication connection and/or I/O module status
54	High level exceeded	The water is coming out of the safety overflow	Check the status of the EV1 supply solenoid valve and/or level detector

\* These alarms stop the operation of the equipment. Once the fault is fixed, it is automatically reset.

## 16. Declaration of conformity


### 16.1 D.C. Machine

		<p><b>DECLARACIÓN CE DE CONFORMIDAD</b> EC CONFORMITY DECLARATION EG KONFORMITÄTSERKLÄRUNG DECLARATION CE DE CONFORMITÉ</p>	
<p><b>Departamento de Dirección de Calidad</b> Quality Management Department</p>		<p>Qualitätsmanagement-Abteilung Département de gestion de la qualité</p>	
		<p>FISAIR S.L.U. C/ Ciudad de Frias,33-(P.L. Camino de Getafe) 28021 Madrid SPAIN Tel.: (+34) 916921514 info@fisair.com</p>	
<p><b>La presente declaración de conformidad se expide bajo exclusiva responsabilidad del fabricante.</b> This declaration of conformity is issued under the sole responsibility of the manufacturer. Diese Konformitätserklärung wird in der alleinigen Verantwortung des Herstellers ausgestellt. Cette déclaration de conformité est délivrée sous la seule responsabilité du fabricant.</p>			
<p><b>Descripción/</b> Product description/ <b>Produktbeschreibung/</b> Description du produit: <b>CC-NS3.0</b> <b>Tipo de máquina/</b> Machine type/ <b>Maschinentyp/</b> Type de machine: <b>MÁQUINA/ MACHINE/ MASCHINE/ MACHINE</b> <b>Marca/</b> Brand/ <b>Marke/</b> Marque: <b>FISAIR</b></p>			
<p><b>Es conforme con la legislación de armonización pertinente a la unión europea:</b> It complies with the harmonization legislation relevant to the European Union: Es entspricht den für die Europäische Union relevanten Harmonisierungsgesetzen</p>		<p><b>2006/42/CE</b> <b>2014/30/UE</b> <b>2014/35/UE</b></p>	
<p><b>Es conforme con las siguientes normas:</b> It complies with the following standards: Es entspricht den folgenden Normen: Il est conforme aux normes suivantes:</p>		<p><b>UNE-EN ISO 12.100:2012</b> <b>UNE-EN 60204-2:2019</b> <b>UNE-EN 61000-6-6:2012</b> <b>UNE-EN 61000-6-3:2012</b></p>	
<p><b>FISAIR se exime de cualquier responsabilidad a menos que se cumplan con todas las instrucciones de instalación y funcionamiento proporcionadas por FISAIR, o si los productos han sido modificados o alterados sin el consentimiento por escrito de FISAIR, o si tales productos han sido sometidos a un mal uso, mala manipulación, alteración, mantenimiento inadecuado o muestran consecuencias de accidente o utilización negligente.</b> FISAIR disclaims any liability unless all installation and operating instructions provided by FISAIR are followed, or if products have been modified or altered without FISAIR's written consent, or if such products have been subjected to misuse, use, mishandling, alteration, improper maintenance or show consequences of accident or negligent use.</p>			
<p><b>Con exclusión de responsabilidades sobre las partes o componentes adicionados o montados por el cliente.</b> With no liability for the parts or components added or assembled by the customer. Unter Ausschluß der Verantwortung über die vom Kunden bereitgestellten und/oder angebaute Teile. Avec exclusion des responsabilités concernant les parties ou les composants ajoutés ou assemblés par le.</p>			
<p>Juan Boeta Tejera -Chairman and CEO- July 2020 Property of FISAIR</p>		<p>Rev01</p>	

## 16.2 D.C. Partly completed machinery

		<p><b>DECLARACIÓN CE DE CONFORMIDAD</b> EC CONFORMITY DECLARATION EG KONFORMITÄTSERKLÄRUNG DECLARATION CE DE CONFORMITÉ</p>	
<p>Departamento de Dirección de Calidad Quality Management Department</p>		<p>Qualitätsmanagement-Abteilung Département de gestion de la qualité</p>	
		<p>FISAIR S.L.U. C/ Ciudad de Frias,33-(P.L. Camino de Getafe) 28021 Madrid SPAIN Tel.: (+34) 916921514 info@fisair.com</p>	
<p><b>La presente declaración de conformidad se expide bajo exclusiva responsabilidad del fabricante.</b> This declaration of conformity is issued under the sole responsibility of the manufacturer. Diese konformitätserklärung wird in der alleinigen verantwortung des herstellers ausgestellt. Cette déclaration de conformité est délivrée sous la seule responsabilité du fabricant.</p>			
<p><b>Descripción/ Product description/ Produktbeschreibung/ Description du produit: CC-NS3.0</b></p>			
<p><b>Tipo de máquina/ Machine type/ Maschinentyp/ Type de machine: CUASI MÁQUINA/ QUASI MACHINE/ QUASI MASCHINE/ QUASI MACHINE</b></p>			
<p><b>Marca/ Brand/ Marke/ Marque: FISAIR</b></p>			
<p><b>Es conforme con la legislación de armonización pertinente a la unión europea:</b> <b>2006/42/CE</b> It complies with the harmonization legislation relevant to the European Union: <b>2014/30/UE</b> Es entspricht den für die Europäische Union relevanten Harmonisierungsgesetzen <b>2014/35/UE</b></p>			
<p><b>Es conforme con las siguientes normas:</b> <b>UNE-EN ISO 12.100:2012</b> It complies with the following standards: <b>UNE-EN 60204-2:2019</b> Es entspricht den folgenden Normen: <b>UNE-EN 61000-6-6:2012</b> Il est conforme aux normes suivantes: <b>UNE-EN 61000-6-3:2012</b></p>			
<p><b>FISAIR se exime de cualquier responsabilidad a menos que se cumplan con todas las instrucciones de instalación y funcionamiento proporcionadas por FISAIR, o si los productos han sido modificados o alterados sin el consentimiento por escrito de FISAIR, o si tales productos han sido sometidos a un mal uso, mala manipulación, alteración, mantenimiento inadecuado o muestran consecuencias de accidente o utilización negligente.</b> FISAIR disclaims any liability unless all installation and operating instructions provided by FISAIR are followed, or if products have been modified or altered without FISAIR's written consent, or if such products have been subjected to misuse. use, mishandling, alteration, improper maintenance or show consequences of accident or negligent use.</p>			
<p><b>Lea el Manual de Instalación, Funcionamiento y Mantenimiento antes de utilizar este equipo.</b> <b>La puesta en servicio de quasi máquina estará prohibida hasta que la quasi máquina sea montada en una máquina y esta cumpla las disposiciones de la Directiva 2006/42/CE y se disponga de la declaración de conformidad de acuerdo con lo dispuesto en el Anexo II A. En el manual se determinan medidas de seguridad que deberá cumplir la máquina en la que se monte la quasi máquina. FISAIR no se responsabiliza de la seguridad.</b> Read the Installation, Use and Maintenance Manual before using this equipment. The commissioning of the quasi-machine shall be prohibited until the quasi-machine is mounted on a machine and the machine complies with the provisions of Directive 2006/42/CE and the declaration of conformity is available in accordance with the provisions of Annex II A. The manual determines the safety measures that the machine on which the quasi-machine is mounted must comply. FISAIR is not responsible for security.</p>			
<p><b>Con exclusión de responsabilidades sobre las partes o componentes adicionados o montados por el cliente.</b> With no liability for the parts or components added or assembled by the customer. Unter Ausschluß der Verantwortung über die vom Kunden bereitgestellten und/oder angebauten Teile. Avec exclusion des responsabilités concernant les parties ou les composants ajoutés ou assemblés par le.</p>			
<p>Juan Boeta Tejera -Chairman and CEO- July 2020 Property of FISAIR</p>			<p>Rev01</p>

## 17. Warranty

	<h3>PÓLIZA DE GARANTÍA DE FISAIR S.L.U.</h3>	
<p><b>Quality Department</b> Departamento de Calidad</p>		
<div style="display: flex; justify-content: space-between; align-items: center;"> <div data-bbox="502 450 746 571">  </div> <div data-bbox="790 450 1276 571"> <p><b>FISAIR S.L.U.</b> C/ Uranio, 20 (Pol. Ind. Aimayr) 28330 San Martín de la Vega (Madrid) SPAIN ☎ Tº (34) 916921514 ☎ Fax (34) 916916456</p> </div> </div>		
<p><b>2 Años de Garantía Limitada</b></p>		
<p>FISAIR garantiza al cliente que su producto no presentará defectos en materiales y partes por un periodo de 2 años desde la instalación, o veintisiete meses desde la fecha de envío del producto, lo que suceda primero.</p>		
<p>Si cualquier producto de FISAIR, resulta ser defectuoso en material o ensamblaje durante el periodo de garantía, FISAIR es completamente responsable, y el único derecho exclusivo del consumidor, es la reparación o reemplazo del producto o pieza defectuosa.</p>		
<p><b>Ausencia de Garantía y Limitación de Responsabilidad</b></p>		
<p>FISAIR no será responsable de ningún coste o gasto, directo o indirecto, relacionado con la instalación, desmontaje o reinstalación de cualquier producto defectuoso.</p>		
<p>La garantía limitada no incluye consumibles, tales como, juntas, poleas, filtros, o panel evaporativo.</p>		
<p>La garantía limitada de FISAIR no será efectiva o enjuiciable:</p>		
<ul style="list-style-type: none"> <li>a) Si todo o parte de lo facturado por ese producto no está al corriente o satisfecha en forma y plazo.</li> <li>b) A menos que se cumplan con todas las instrucciones de instalación y funcionamiento proporcionadas por FISAIR, o si los productos han sido modificados o alterados sin el consentimiento por escrito de FISAIR, o si tales productos han sido sometidos a un mal uso, mala manipulación, alteración, mantenimiento inadecuado o muestran consecuencias de accidente o utilización negligente. Estas situaciones pueden ser una conexión de alimentación incorrecta, golpes con otros objetos, anulación de seguridades, etc.</li> <li>c) En aquellos componentes y/o fabricados afectados o deteriorados por los efectos de la corrosión (desgaste paulatino de los cuerpos metálicos por acción de agentes externos no controlados por FISAIR).</li> </ul>		
<p>Cualquier reclamación de garantía deberá presentarse a FISAIR por escrito dentro del periodo de garantía establecido.</p>		
<p><b>Garantía de Piezas</b></p>		
<p>FISAIR puede requerir las piezas defectuosas. En caso de que se reclame cualquier pieza defectuosa, FISAIR, pedirá al cliente que envíe de vuelta a fábrica la mercancía para su análisis. Si la pieza está fallando por cualquiera de las circunstancias descritas con anterioridad, (ver apartado de Ausencia de Garantía y Limitación de Responsabilidad), o debido a un fallo efectivo de la pieza.</p>		
<p>Si la pieza ha de ser reemplazada inmediatamente, FISAIR enviará otra pieza nueva, y facturará dicha pieza con pago a treinta días desde su envío. Si en esos treinta días, el cliente devuelve la pieza defectuosa, FISAIR analizará las causas que han provocado el defecto, y emitirá informe pericial de cobertura basado en las condiciones descritas en este documento.</p>		
<p>1/2</p>		



## PÓLIZA DE GARANTÍA DE FISAIR S.L.U.



**Quality Department**  
Departamento de Calidad

En caso de que la parte esté fallando debido a un defecto fabricación, mala calidad en el producto, o manipulación por parte de FISAIR, FISAIR abonará la factura a fin de detener el pago. En caso de que FISAIR no reciba la pieza en el plazo establecido, o si el problema se debe a las razones incluidas en la nota del párrafo garantía, la factura se hará efectiva.

En caso de que parte del producto se pierda en el envío, o de que encuentre alguna incidencia en el transporte, el cliente lo notificará antes de tres días desde la fecha de recepción del envío.

### Servicio Cubierto por la Garantía

En el caso de que algún producto FISAIR se deba someter a alguna intervención técnica de post-venta para recuperar el uso adecuado diseñado originalmente, FISAIR autorizará a la/s persona/s al cargo de esta operación. Estos técnicos deben estar cualificados, y tener el conocimiento suficiente para dar servicio a los equipos de FISAIR.

Ninguna empresa debe llevar a cabo un servicio de garantía sin el consentimiento por escrito de FISAIR que autorice a realizarlo, y si FISAIR debe cubrir algún costo, este debe ser comunicado a FISAIR antes de llevar a cabo el trabajo/servicio. En caso de que FISAIR deba enviar personal propio para resolver la solución, los gastos de viaje no están cubiertos por la garantía.

La garantía limitada de FISAIR está hecha en lugar de otras garantías y FISAIR niega cualquier responsabilidad de otra garantía, incluyendo, pero sin limitarse a garantías implícitas de comerciabilidad o cualquier garantía de idoneidad para un rendimiento determinado por otros. FISAIR no será responsable, bajo ninguna circunstancia, de cualquier daño directo, indirecto, incidental, especial o consecuente. Tampoco de cualquier daño a personas o propiedades derivado del uso de nuestros productos. Por la compra de estos productos, el comprador acepta las condiciones de esta garantía.

### Extensión de Garantía

El usuario puede ampliar los términos de la garantía limitada de FISAIR por un número limitado de meses, una vez concluido el periodo de garantía inicial. Todas las condiciones aplicables a la Garantía Limitada durante el periodo inicial, serán aplicados durante cualquier periodo extendido.

Cada caso será evaluado según el tipo de producto, aplicación del equipo y ubicación del producto.

Para que cualquier ampliación de la Garantía limitada tenga validez bajo estas condiciones, debe estar por escrito, aceptada y firmada por FISAIR, y pagada en su totalidad por el comprador.

### Director de calidad:

Hugo J. López Álvarez  
San Martín de la Vega, febrero 2016