



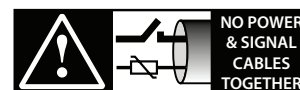
humiFog Multizone Touch Oil-free

pumping station and zone panel



COMMISSIONING MANUAL

→ **LEGGI E CONSERVA
QUESTE ISTRUZIONI** ←
**READ AND SAVE
THESE INSTRUCTIONS**



**NO POWER
& SIGNAL
CABLES
TOGETHER**

READ CAREFULLY IN THE TEXT!

humiFog Multizone Touch Oil-free

+0300127EN - ENG

Updated version available on

www.carel.com

GENERAL WARNINGS



FAILURE TO CAREFULLY HEED THE WARNINGS SHOWN IN THIS MANUAL COULD LEAD TO FIRE OR EXPLOSION AND CONSEQUENT DAMAGE TO PROPERTY, INJURY OR DEATH.

CAREL Industries humidifiers are advanced products, whose operation is specified in the technical documentation supplied with the product or can be downloaded, even prior to purchase, from the website www.carel.com. Each CAREL product, in relation to its advanced level of technology, requires setup/configuration/programming to be able to operate in the best possible way for the specific application. Failure to complete such operations, which are required/indicated in the user manual, may cause the final product to malfunction; CAREL accepts no liability in such cases. The customer (manufacturer, developer or installer of the final equipment) accepts all liability and risk relating to the configuration of the product in order to reach the expected results in relation to the specific final installation and/or equipment. CAREL may, based on specific agreements, act as a consultant for the installation/commissioning/use of the unit, however in no case does it accept liability for the correct operation of the humidifier and the final installation if the warnings or suggestions provided in this manual or in other product technical documents are not heeded. In particular, as well as observing the above warnings and suggestions, the following warnings must be **OBSERVED** for correct use of the product:

ELECTRIC SHOCK HAZARD: the humidifier contains live electrical components. Disconnect the mains power supply before accessing inside parts or during maintenance and installation.

WATER LEAK HAZARD: the humidifier automatically and constantly fills drains certain quantities of water. Malfunctions in the connections or in the humidifier may cause leaks.

IMPORTANT

The installation of the product must include an earth connection, using the special yellow-green terminal available in the humidifier.

IMPORTANT:

- Disconnect the appliance from the mains power supply before accessing any internal parts.
- Environmental and power supply conditions must conform to the values specified on the product rating labels.
- The product is designed exclusively to humidify rooms either directly or through distribution systems (ducts).
- Only qualified personnel who are aware of the necessary precautions and able to perform the required operations correctly may install, operate or carry out technical service on the product.
- Only water with the characteristics indicated in the humidifier manual must be used to produce the spray.
- All operations on the product must be carried out according to the instructions provided in this manual and on the labels applied to the product. Any uses or modifications that are not authorised by the manufacturer are considered improper. CAREL declines all liability for any such unauthorised use.
- Do not attempt to open the appliance in any way other than described in the manual.
- Observe the standards in force in the place where the humidifier is installed.
- The appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Do not install and use the product near objects that may be damaged when in contact with water (or condensate). CAREL declines all liability for direct or indirect damage following water leaks from the humidifier.
- Do not use corrosive chemicals, solvents or aggressive detergents to clean the inside and outside parts of the humidifier, unless specifically indicated in the user manual.
- Do not drop, hit or shake the humidifier, as the inside parts and the lin-

ings may be irreparably damaged,

CAREL adopts a policy of continual development. Consequently, CAREL reserves the right to make changes and improvements to any product described in this document without prior warning. The technical specifications shown in the manual may be changed without prior warning. The liability of CAREL in relation to its products is specified in the CAREL general contract conditions, published on the website www.carel.com and/or by specific agreements with customers; specifically, to the extent where allowed by applicable legislation, in no case will CAREL, its employees or subsidiaries/affiliates be liable for any lost earnings or sales, losses of data and information, costs of replacement goods or services, damage to things or people, downtime or any direct, indirect, incidental, actual, punitive, exemplary, special or consequential damage of any kind whatsoever, whether contractual, extra-contractual or due to negligence, or any other liabilities deriving from the installation or use of the product, even if CAREL or its subsidiaries/affiliates are warned of the possibility of such damage.

DISPOSAL

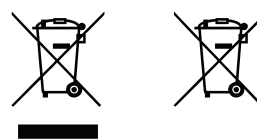


Fig. 1

Fig. 2

PLEASE READ AND KEEP.

WITH REFERENCE TO EUROPEAN UNION DIRECTIVE 2012/19/EU ISSUED ON 4 JULY 2012 AND RELATED NATIONAL LEGISLATION, PLEASE NOTE THAT:

- Waste Electrical and Electronic Equipment (WEEE) cannot be disposed of as municipal waste but must be collected separately so as to allow subsequent recycling, treatment or disposal, as required by law;
- users are required to take Electrical and Electronic Equipment (EEE) at end-of-life, complete with all essential components, to the WEEE collection centres identified by local authorities. The directive also provides for the possibility to return the equipment to the distributor or retailer at end-of-life if purchasing equivalent new equipment, on a one-to-one basis, or one-to-zero for equipment less than 25 cm on their longest side;
- the equipment may contain hazardous substances: the improper use or incorrect disposal of such may have negative effects on human health and on the environment;
- the symbol (crossed-out wheeled bin, see Figure 1), is shown on the product or on the packaging, indicates that the equipment must be disposed of separately at end-of-life;
- if at end-of-life the EEE contains a battery (Figure 2), this must be removed following the instructions provided in the user manual before disposing of the equipment. Used batteries must be taken to appropriate waste collection centres as required by local regulations;
- in the event of illegal disposal of electrical and electronic waste, the penalties are specified by local waste disposal legislation.

Warranty on materials: 2 years (from production date, excluding consumables).

Approval: the quality and safety of CAREL products are guaranteed by the

ISO 9001 certified design and production system, as well as the ,



EnergyMark & WaterMark marks.

Index

1. Purpose of the manual.....	7
2. How to read the manual	7
3. General safety information and instructions	8
3.1 Intended use.....	8
3.2 General safety instructions	8
3.3 Personal protective equipment.....	9
4. System identification	10
4.1 Types and components.....	10
4.2 System configuratio	10
4.3 Identification of the pumping statio	13
4.4 Identification of accesso ies.....	13
4.5 User terminal	16
5. Preparing for operation	19
5.1 Preliminary operations	19
5.2 Installation checklist.....	20
5.3 Commissioning checklist.....	21
6. Commissioning.....	22
6.1 Starting humiFog Multizone Touch.....	22
6.2 Start-up sequence for system configuratio	22
6.3 Zone panel configuratio	23
6.4 humiFog Multizone Touch configuratio	25
6.5 Pump air purge procedure	36
6.6 Backup pumping station configuratio	38
7. Complete menu tree	42
7.1 humiFog Multizone Touch settings menu access.....	42
7.2 humiFog Multizone Touch complete menu tree	42
8. Advanced configuration parameters	45
8.1 humiFog Multizone Touch settings menu access.....	45
8.2 System	45
8.3 Pump.....	55
8.4 Zones.....	61
8.5 Display	68
8.6 pGDx interface software update.....	68
8.7 c.pco controller (zone) software update.....	70
9. Connectivity.....	72
9.1 Webserver	72
9.2 Supervisor (BMS) connection.....	75
9.3 ModBus parameter list	78
9.4 BACnet parameter list	87
10. Alarms list.....	97
10.1 Alarms	97
10.2 Warnings (addition to existing content)	99
10.3 Notification	100

1. PURPOSE OF THE MANUAL

This manual contains the instructions for the commissioning and use of the humiFog Multizone Touch high-pressure adiabatic humidification system, manufactured by:

CAREL INDUSTRIES
Via dell'Industria, 11, 35020
Brugine - Padova (Italy)
Tel. (+39) 049.9716611 - Fax (+39) 049.9716600
e-mail: carel@carel.com - www.carel.com

2. HOW TO READ THE MANUAL

The manual is divided into chapters and paragraphs. Each paragraph is a sub-level of the corresponding chapter. References to headings or paragraphs are indicated by the abbreviation "Chap." or "Par." followed by the number. Example: "Chap. 2" or "Par. 2.1". The figures in this manual are numbered consecutively according to the corresponding chapter, for example Figure 1.c is the third figure in chapter one. References to the figures are indicated by the abbreviation "fig." followed by the number. Example: "Fig. 1.c".

The components shown in the figures are marked with numbers. A reference to component 1 in figure 2, chapter 3 will be indicated as follows: "See 1 - Fig. 3.b" or simply "(1 - Fig. 3.b)".



CAUTION

The figures shown in this manual are purely indicative. The actual components may vary from those illustrated. If in doubt, contact an authorised service centre.

In addition to the instructions for installation, use and maintenance, this manual contains safety information that requires special **ATTENTION**. This information is denoted by the symbols described below:



DANGER

Failure to comply with this warning will lead to an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Failure to comply with this warning will lead to a potentially hazardous situation which, if not avoided, could result in death or serious injury.



TAKE CARE

Failure to comply with this warning will lead to a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



CAUTION

Failure to comply with this warning will lead to a potentially hazardous situation which, if not avoided, could cause minor damage to the unit.



Notice: provides supplementary information to the above safety instructions.

3. GENERAL SAFETY INFORMATION AND INSTRUCTIONS

3.1 Intended use

humiFog Multizone Touch is a high pressure adiabatic humidification system for humidity control and evaporative cooling. It can be used both to condition the air in an AHU (Air Handling Unit), and for direct humidification or cooling in rooms.



CAUTION: The product must only be used for its intended purpose, as envisaged by CAREL. CAREL declines all liability, both contractual and extra-contractual, for any damage to people, animals or things due to installation, control or maintenance errors or improper use.

3.2 General safety instructions

When using products that require electricity and a source of high-pressure water, a number of fundamental safety rules need to be observed, including:

- The appliance must not be used by children or people with reduced physical, sensory or mental capabilities, or people lacking the necessary experience or knowledge or who are not familiar with the operating instructions.
- People without specific qualifications and skills must not use the pumping station.
- People must not come into contact with the appliance if barefoot or any of the parts of their body are wet.
- No technical or cleaning operations are allowed until the appliance has been isolated from the power supply by moving the main system switch to "off" and the main switch on the appliance to "OFF".
- The safety and control devices must never be adjusted without the manufacturer's authorisation.
- The pictograms and labels affixed to the pumping station must not be removed. These must remain legible and the corresponding instructions must be observed at all times. If they are no longer legible, they must be replaced with equivalent pictograms or safety labels.
- The water connections must never be loosened during operation. Improperly secured pipes or hoses may detach without warning, resulting in injury.
- Do not block or obstruct the water drain.
- Do not pull, disconnect or twist the electrical cables coming out of the appliance, even when this is disconnected from the mains power supply.
- Never expose the appliance to the elements. It is designed for indoor use only.
- Do not dispose of the packaging material in the environment and keep it out of the reach of children, as it is a potential hazard. It must be disposed of in accordance with current legislation in the country where the appliance is installed.
- Do not activate the pumping station without it being adequately supplied with water.
- The user is responsible for ensuring that the humidification system complies with local guidelines on occupational health and safety and prevention of bacterial proliferation.
- In the event of water leaks, disconnect the pumping station from the power supply, shut off the water supply and promptly notify CAREL's Technical Service or other professionally qualified personnel.
- Periodically check that the water circuit operating pressure is above 1 bar and below than the maximum limit specified for the appliance. Otherwise, contact CAREL's Technical Service or other professionally qualified personnel.
- If the pumping station is not used for an extended period, the following operations need to be carried out:
 - Turn the main switch on the appliance to "OFF"
 - Turn the main system switch to "off"
 - Close the system water taps
 - Empty the system if there is the risk of freezing.
- This instruction manual is an integral part of the appliance and consequently must be kept with care and must ALWAYS accompany the pumping station even if it is transferred to another owner or installed in another system. If damaged or lost, another copy can be ordered from CAREL's local Technical Service.
- Read this instruction manual carefully to ensure proper and safe installation, operation and maintenance of the appliance. The user must be adequately informed and trained on how to use the appliance. Users must be familiar with all the information needed for safe operation of the system.
- Before connecting the pumping station to the water and power supply, it can be exposed to temperatures between -10°C and 40°C. Once commissioned, it can be exposed to temperatures between 5°C and 40°C.
- Periodically check that the water drains are not blocked.

3.3 Personal protective equipment



DANGER Strictly follow the instructions provided in the manual.

Personal protective equipment (PPE) means any equipment intended to be worn and kept by workers in order to protect themselves against one or more risks likely to threaten their health or safety during work, as well as any device or accessory intended for this purpose.

All PPE described in this manual are intended to protect personnel from health and safety risks.

Below is a list of personal protective equipment to be used to protect workers from the residual risks that exist during the various phases of the humidifier's life cycle.



GLOVES TO PROTECT AGAINST PHYSICAL ELEMENTS: these must protect the person's hands against cuts, abrasions and heat.

NON-SLIP SAFETY FOOTWEAR: these must prevent falls on slippery surfaces and protect the person's feet from impact, crushing and puncture wounds.

SAFETY HARD HAT: this must protect the person's head against bumps or material accidentally falling from above.

SAFETY GLASSES: these must protect the person's eyes from all risks due to contact with hazardous substances or materials.

PROTECTIVE MASK: this protects the wearer's respiratory tract against all risks associated with the inhalation of dangerous substances.

PROTECTIVE CLOTHING: this guarantees the body adequate protection against thermal and chemical agents.

EARMUFFS: these must attenuate noises that would otherwise be harmful to the person's hearing.

INSTRUCTION MANUAL: this must be referred to whenever necessary, in order to avoid adopting unsafe procedures.

4. SYSTEM IDENTIFICATION

Before proceeding with configuration and therefore commissioning the system, the type of system installed and its specific components need to be identified.

4.1 Types and components

The system comprises the following components:

- pumping station (par. 4.3) comprising the system pump and the electrical panel;
- zone electrical panel (par. 4.4);
- distribution system (rack) and droplet separator for humidification in ducts (AHU - Air Handling Unit) (par. 4.4.2);
- blower unit for in-room humidification (par. 4.4.1).

The system can be arranged differently depending on whether it is used for humidification in ducts (par. 4.2.1) or in rooms (par. 4.2.2), and based on the number of zones provided by the system:

- single zone: 1 pumping station with 1 atomisation system;
- multizone: 1 pumping station that supplies up to 12 independent atomisation systems.

The following diagrams provide an overview for identifying the correct type of system and its components.

4.2 System configuration

4.2.1 AHU - Air Handling Unit

Single zone

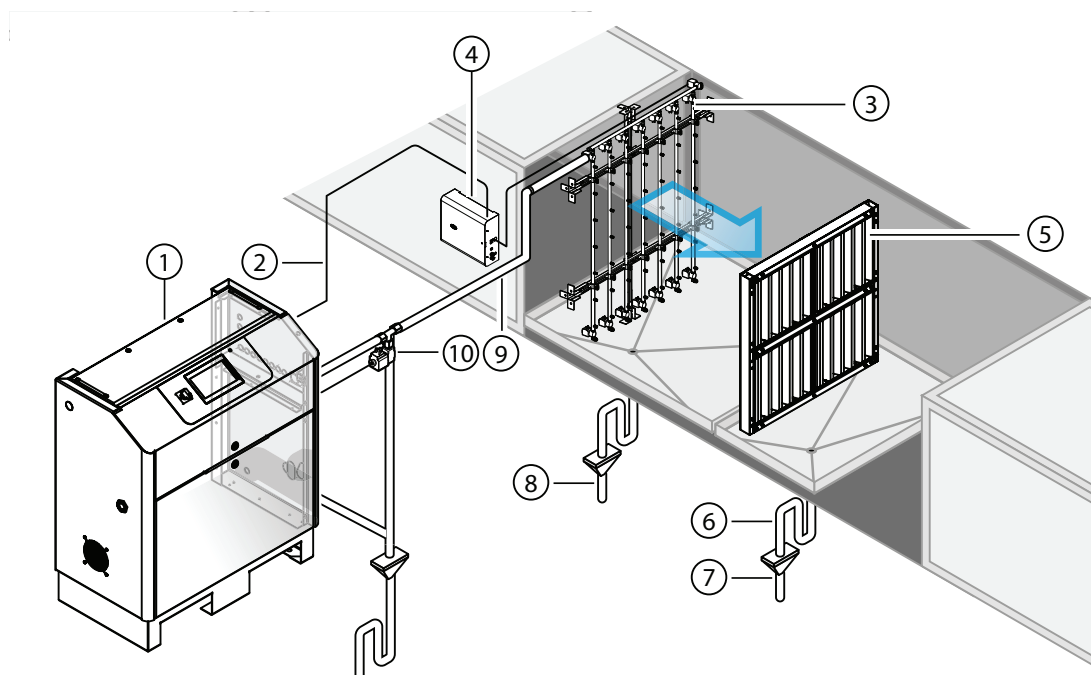


Fig. 4.a

Ref.	Description
1	Pumping station
2	Ethernet cable
3	Distribution manifolds (racks)
4	Zone electrical panel
5	Droplet separator
6	Drain trap
7	Open funnel drain (after droplet separator)
8	Open funnel drain (before droplet separator)
9	High pressure water line
10	Line drain valve

Tab. 4.a

Multizone

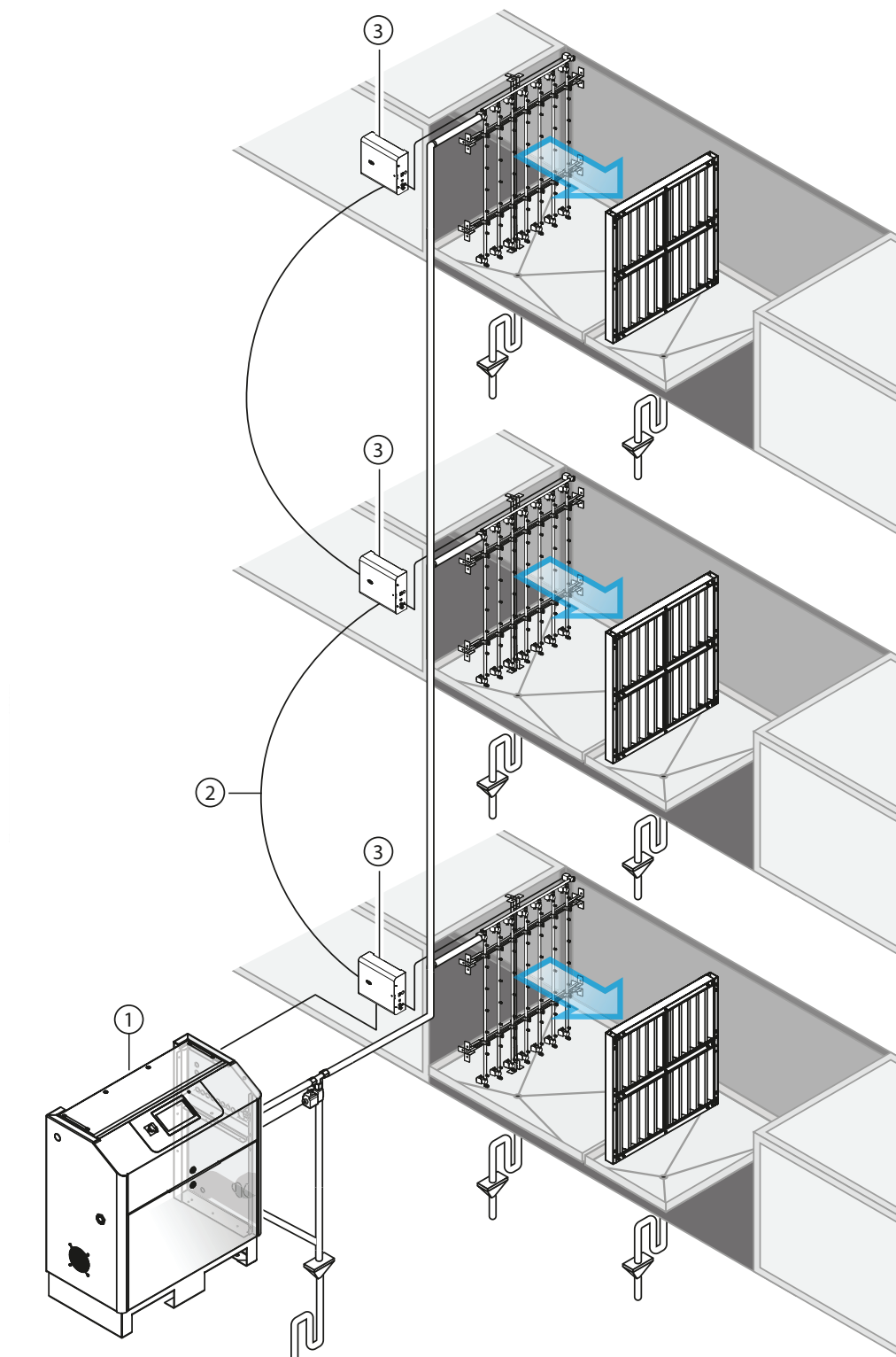


Fig. 4.b

Ref.	Description
1	Pumping station
2	Ethernet cable
3	Zone electrical panel

Tab. 4.b

4.2.2 Room

Single zone

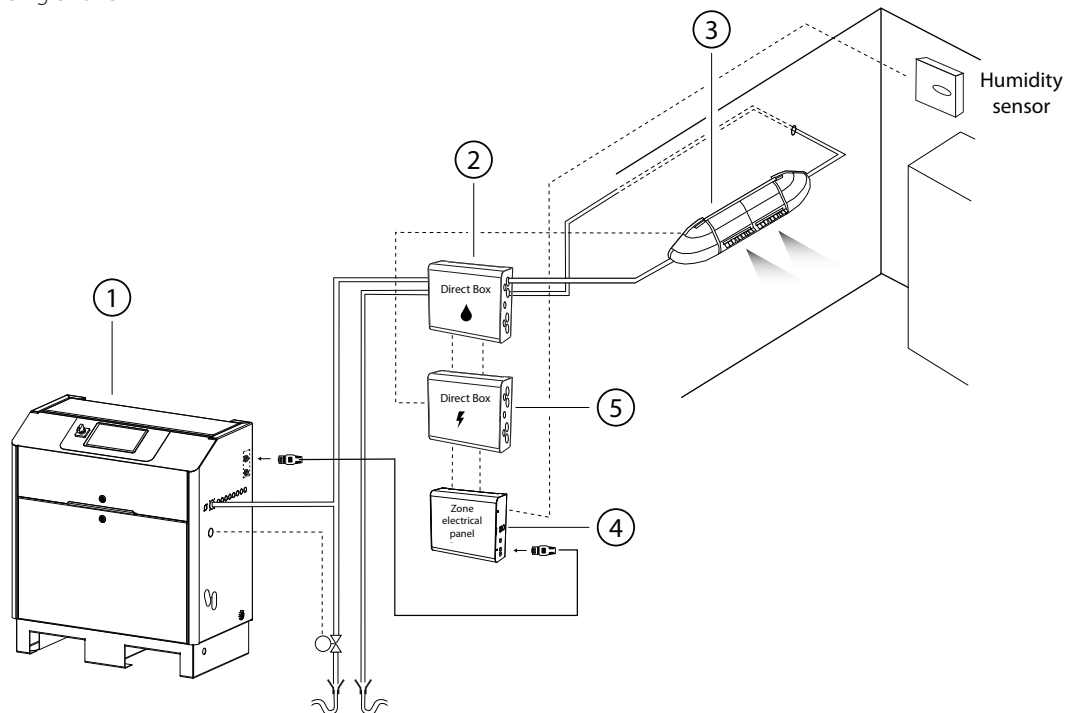


Fig. 4.c

Multizone

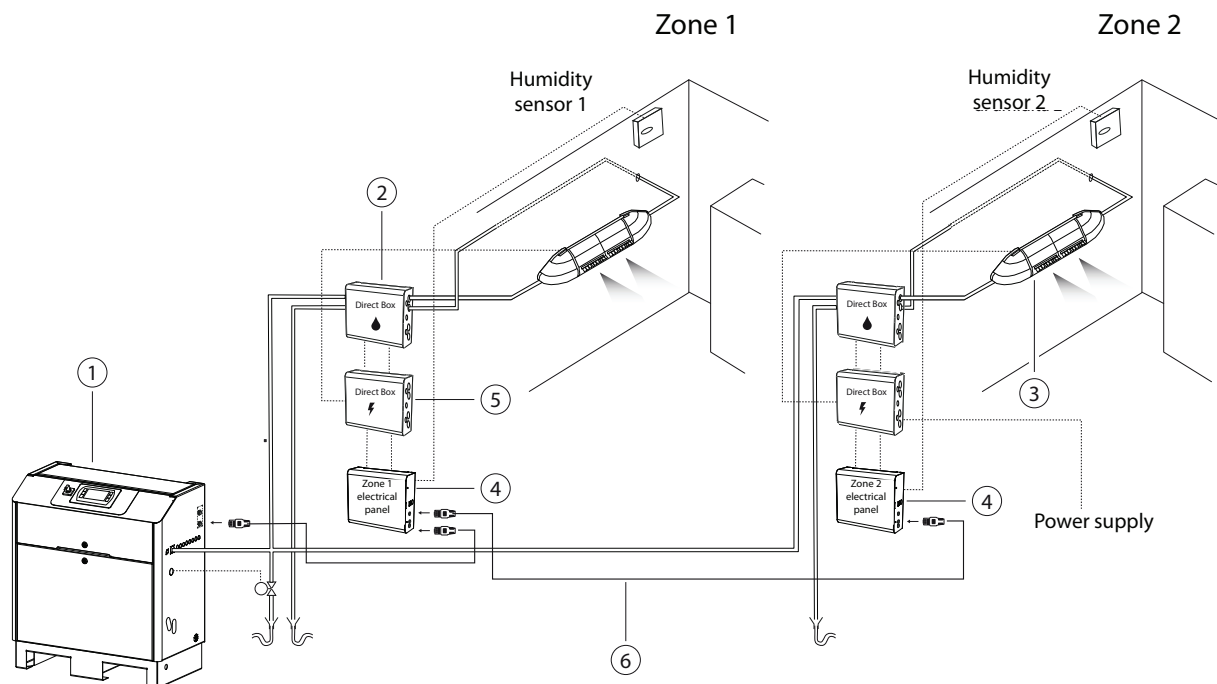


Fig. 4.d

Ref.	Description
1	Pumping station
2	Directbox hydraulic
3	Blower unit
4	Zone electrical panel
5	Directbox electric
6	Ethernet cable

Tab. 4.c

4.3 Identification of the pumping station

The pumping station can be identified by the rating plate located inside the electrical panel.

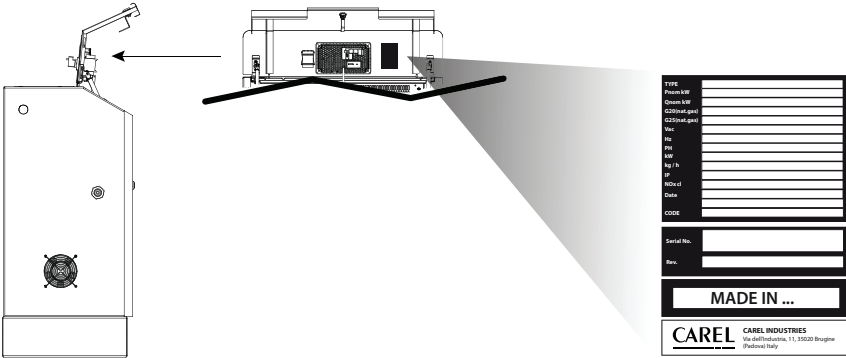


Fig. 4.e

The pumping station is available on the humiFog Multizone and humiFog Multizone Touch models, which differ in terms of the components supplied, the accessories available and the different system configuration modes (pa .4.5).

4.3.1 Part numbers

U	A	*	*	*	*	*	5	0	*
Range	Flow-rate kg/h	Model	Power supply and approval			Revision no.	Customisation	Pump type	
UA: humiFog	250: 250 kg/h 600: 600 kg/h 1K3: 1350 kg/h	1: humiFog Multizone Touch	D: 230 Vac 50/60 Hz, 1~, CE L: 400 Vac 50/60 Hz, 3~, CE 2: 230 Vac 50/60 Hz, 1~, UL U: 208 Vac 50/60 Hz, 1~, UL M: 460 Vac 50/60 Hz, 3~, UL			5: Fifth revision	0: Carel	4: Oil-free stainless steel silicone-free	

Tab. 4.d

4.4 Identification of accessories

Zone electrical panel

Electrical panel connected to the pumping station for managing multizone in-room or duct systems. See technical leaflet +0300114**.



Fig. 4.f

Ref.	Description
UA000SD500	230 V electrical panel
UA000SU500	208 V 60 Hz electrical panel
UA000S2500	230 V 60 Hz electrical panel

Tab. 4.e

4.4.1 In-room humidification

directBOX hydraulic

Water circuit assembly for interfacing the pumping station with the blowers for in-room humidification. This contains the solenoid valves for pressurising 1/2 water lines (zone/step). See technical leaflet +050001828



Fig. 4.g

Ref.	Description
UAKDLASV10	directBOX hydraulic for managing 1 zone/step
UAKDLASV20	directBOX hydraulic for managing 2 zones/steps

Tab. 4.f

directBOX electric

Electrical panel for interfacing the pumping station with the blowers for in-room humidification. This receives the control signal for the fill and drain valve (1 or 2 zones/steps) and relays this to the directBOX hydraulic to actuate the valves. At the same time it controls the blower fans, which are only activated when there is a humidification request.

See technical leaflet +050001828



Fig. 4.h

Ref.	Description
UAKDLAEL10	directBOX electric for managing 1 zone/step
UAKDLAEL20	directBOX electric for managing 2 zones/steps

Tab. 4.g

Blower unit

The blowers are positioned directly in the room to be humidified and cooled. They differ in terms of flow rate and direction of spray. They are connected to the pumping station via the directBOX hydraulic and directBOX electric accessories. See technical leaflet +050001852



Fig. 4.i

D	L	A	O	*	*	*	*	O	O
range				Number of nozzles	Power supply	Distribution	Nozzle size (l/h)		
				2	D: 230 Vac 50 Hz, 1~,	F: front outlet	0: 1.45		
				4	U: 115 Vac 60 Hz, 1~	B: front and rear	1: 2.80		
				8			2: 4.00		

Tab. 4.h

Manifolds with nozzles

The distribution system is designed according to the specific application and comprising manifolds, solenoid valves, nozzles, pipes and fitting .

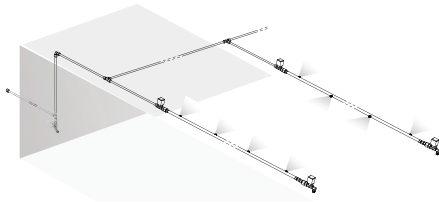


Fig. 4.j

4.4.2 Ducted humidification

Racks

The distribution system is designed according to the specific application and comprising manifolds with nozzles and fixing frame in the duct, available in the fully- or partially-assembled versions.

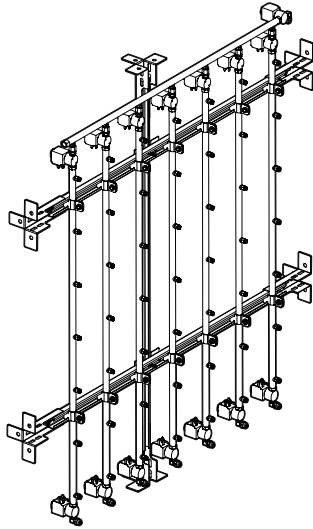


Fig. 4.k

The racks are available with:

- horizontal or vertical collectors;
- solenoid valves included on the rack.



Notice: for the humiFog Multizone system configuration and commissioning procedures, refer to the technical drawings to identify the characteristics of the racks installed.

Droplet separator

Frame with stainless steel or fibreglass modules.



Notice: the modules are sized according to the specific application



Fig. 4.l



Notice: for further information, see the humiFog Multizone Touch installation manual.

4.5 User terminal

The user terminal is located at the top-front of the pumping station (1 - Fig. 4.m) and allows the user to interact with the control system.

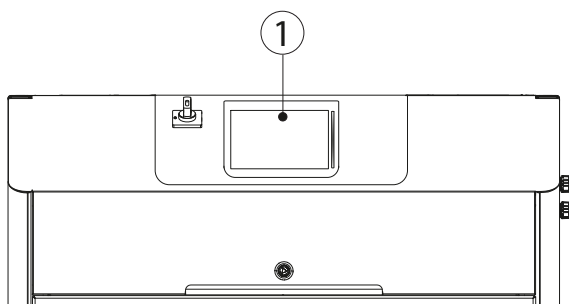


Fig. 4.m

The user terminal and the system configuration procedure vary according to the model of pumping station installed, which can be identified as described in par. 4.3.

4.5.1 humiFog Multizone Touch

The Homepage (Fig. 4.n) shows information relating to the pumping station and the zones, including current production and other unit status information.

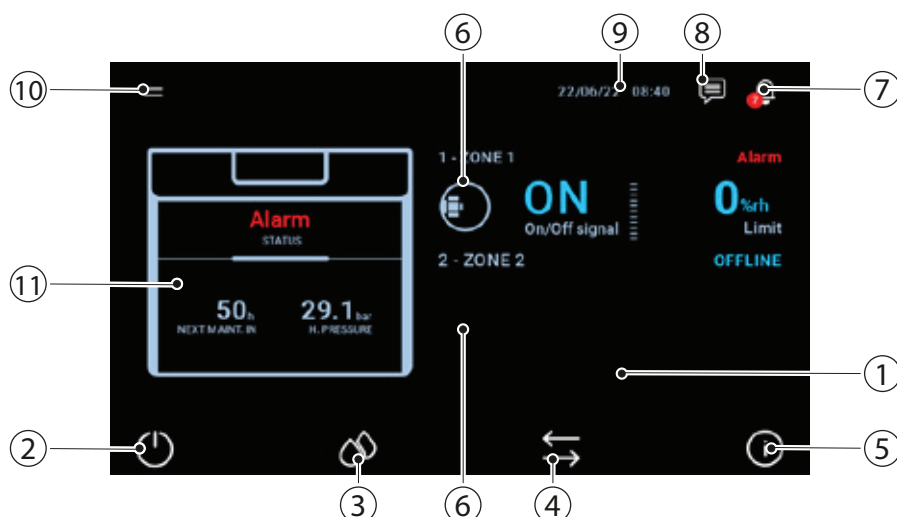


Fig. 4.n

Ref.	Description	Function
1	Interactive touch display	
2	ON/OFF quick menu	
3	SETPOINT quick setup menu	
4	INPUT/OUTPUT quick menu	
5	INFO quick menu	
6	Descriptive icon of zone status	
7	Alarm list	
8	Notification center	
9	System date and time	
10	Main menu	
11	Descriptive icon of the pumping station	

Tab. 4.i

humiFog Multizone Touch quick menu

The Quick menus provide quick access to the system functions and information directly from the main screen, without needing to log in.

There are four Quick menus:

- ON/OFF
- SETPOINT
- INPUT/OUTPUT
- INFO

When the main screen is displayed, touch a Quick menu icon to access the selected Quick menu.

Icon	Description	Function
	ON/OFF quick menu	Screens for displaying and enabling/disabling the entire system or individual zones. To enable the specific unit, press the corresponding button.
	SETPOINT quick menu	Screens used to modify the control set point values, based on the type of control selected. Press the desired numeric value to change the value. Touch the name of the zone to access the drop-down menu with the system zones. Scroll through the options and select the desired zone.
	INPUT/OUTPUT quick menu	Screens that display: • an overview of system operating status in real time • the values measured by the probes • the status of the mechanical components in the water circuit • the status of the analogue and digital I/Os corresponding to the pumping station and the zone panels.
	INFO quick menu	Read-only screens that display the main unit and system zone status values, and software and hardware information.

Tab. 4.j

humiFog Multizone Touch status bar

On the right side of the user terminal is a status bar (12 - Fig. 4.o) that provides immediate information on the status of the humidifier. If the humidifier is powered on, the status bar is always illuminated (even when the display is off).

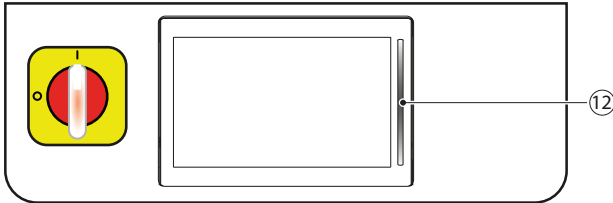


Fig. 4.o

Bar colour	Bar status	Humidifier status
White	On steady	Unit off (off or standby)
Green	On steady	Unit producing, start-up, water fill
Green	Flashing	Unit slowing down
Blue	On steady	Unit washing/filling
Blue	Flashing	Unit checking for water
Red	Flashing	Unit alarm
Cyan	On steady	Unit in manual mode
Yellow	Flashing	Unit warning

Tab. 4.k

4.5.2 humiFog multizone Touch commands

The touchscreen graphic terminal provides an interface with colour animated icons to use the software features simply and intuitively. The main interactive elements on the interface are illustrated below.

Buttons

Icon	Description	Function
	Scrolling arrows	Buttons to move forwards/backwards through the software screens or between the different pages of a screen.
	Scrolling arrows	Buttons to: • change the values selected on the screen • scroll the various submenus
	Scrolling indicators	Indicators that show how many pages there are on a screen.
	ON/OFF buttons	Buttons to enable/disable or activate/deactivate the corresponding function.
	MENU button	Button to access to the main system menu.
	HOME button	Button to immediately return to the main screen.
	LOGOUT button	Button to log out of the system.
	Close button	Button to close the currently displayed screen.

Tab. 4.l

Drop-down menu

In certain cases, the interface shows a drop-down menu (13 - Fig. 4.p) to select the desired option from those available in the system. Display the list and then select the desired option.

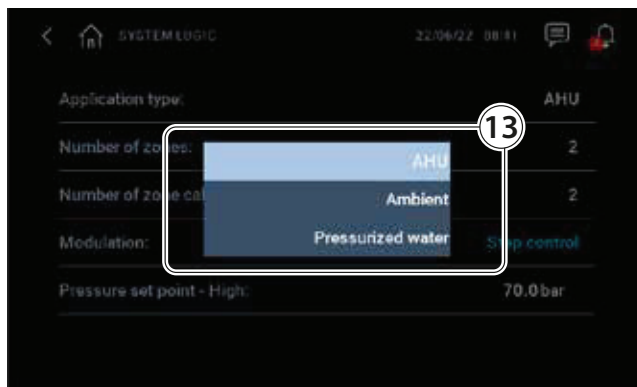


Fig. 4.p



Notice: on some screens, the drop-down menus are highlighted by the ▼ symbol alongside the name of the current view.

Selection bar

In certain cases, the interface shows a selection bar at the top of the screen (14 - Fig. 4.q) to move more easily between the various submenus available.

Select the desired option to display the corresponding screens.

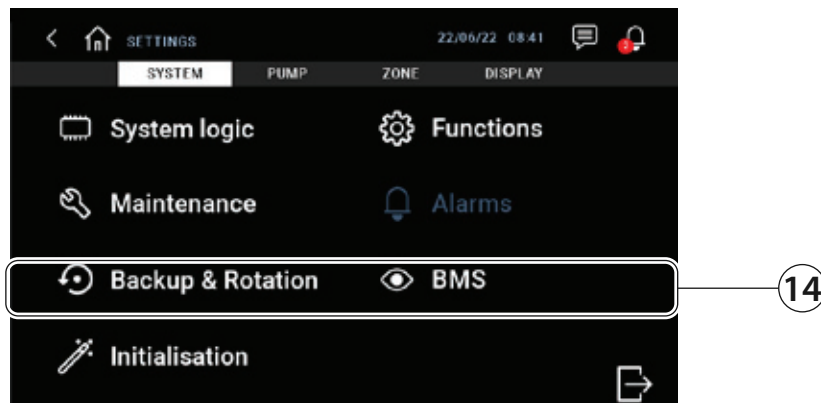


Fig. 4.q

Keypad

If a value needs to be entered, the interface shows a keypad (Fig. 4.r) at the bottom of the screen. To bring up the keypad, touch the value or text to be changed.



Fig. 4.r

Press to delete the last character entered.

Press to cancel the entry and close the keypad.

Press to confirm the entered value and hide the keypad.



Notice: the minimum and maximum values that can be entered are shown in the top left corner of the keypad (15 - Fig. 4.r).

5. PREPARING FOR OPERATION

5.1 Preliminary operations

Once the type of system, the components and the type of control system installed have been identified, the following preliminary checks need to be completed:

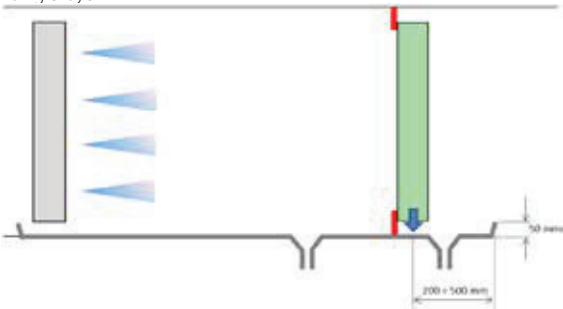
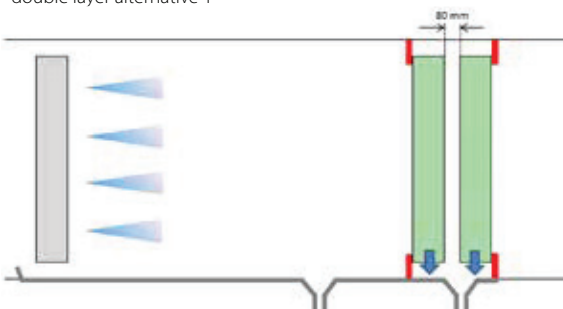
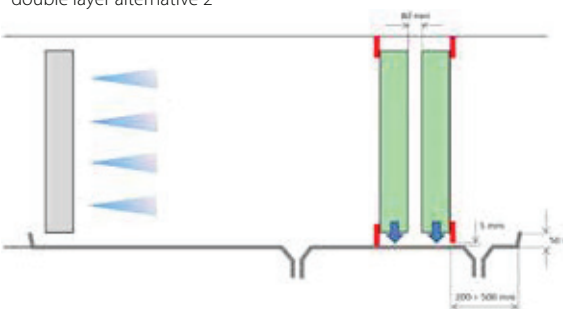
- complete the installation checklist (par. 5.2);
- complete the commissioning checklist (par. 5.3).

5.1.1 Material required

The following are required to configure humiFog Multizone Touch:

- humiFog Multizone Touch installation manual
- zone panel installation manual
- drawings of distribution manifolds (racks), if included
- USB pen drive (optional)

5.2 Installation checklist

Final installation checklist			
1. Installation site		Yes	No
1.a	Temperature range 1 – 40 °C (34 – 104 °F).		
1.b	Protected against rain and humidity.		
1.c	Protected against direct sunlight.		
2. Water line		Yes	No
2.a	All water connections fitted correctly.		
2.b	Materials compatible for use with water treated by reverse osmosis (stainless steel/plastic).		
2.c	Piping on pumping station feedwater line suitable for an operating pressure range of 2 to 5 bars.		
2.d	Piping of water outlet line from pumping station to the atomisation system suitable for pressures of up to 100 bars.		
2.e	Length of the outlet line from the pumping station to the atomisation system within the limits specified by the manufacturer (par. 5.2 of the installation manual).		
2.f	NOL drain solenoid valves installed at the lowest points of the circuit to facilitate drainage of water (Fig. 5.c in the installation manual).		
2.g	Drain pipe and drain tank installed in accordance with the manufacturer's instructions (par. 4.2 of the installation manual).		
3. Electrical connections		Yes	No
3.a	Solenoid valves wired in accordance with the manufacturer's instructions (par. 6.2 of the installation manual).		
3.b	Sizes of the connection cables suitable for the maximum distance between the zone panels and the corresponding racks (par. 6.3 of the installation manual).		
3.c	Enabling and control signals wired in accordance with the manufacturer's instructions (par. 6.4 of the installation manual).		
3d	Ethernet connection in accordance with the manufacturer's instructions.		
4. Droplet separator		Yes	No
4.a	Double droplet separator at a distance of 80 mm (3.15").		
4.b	Size of the drain tank underneath the separator from 200 to 500 mm (7.87" to 19.70").		
4.c	Separator installed in accordance with the manufacturer's instructions provided in the quick guide +0500066IE, depending on the type: - single layer		
			
- double layer alternative 1			
			
- double layer alternative 2			
			

5.3 Commissioning checklist

Final commissioning checklist		
1. Preliminary checks		
1.a	Inlet water line pressure range 2 - 5 bars (29 - 73 psi)	
1.b	Purge water line	
1.c	Red pump oil cap replaced with yellow cap	
2. Water line		
2.a	All water connections fitted correctly.	
2.b	Visually check pressurised water line for any leaks	
2.c	Manually test NOL and NOV valves	
2.d	Manually test NO and NC valves	
2.e	Drain line installed at the right slope to guarantee drainage (at least 2 - 3°)	
2.f	NOL drain solenoid valves installed at the lowest points of the circuit to facilitate drainage of water (Fig. 5.c in the installation manual).	
2.g	Pump venting procedure	
3. Electrical connections		
3.a	Control signal properly connected	
3.b	Control signal functioning properly: E.g.: 0-10 V proportional signal • 0 V » STOP/STAND-BY • 5 V » 50% atomised water production • 10 V » 100% atomised water production For different types of signals, see this document (par. 8.4.1)	
3.c	Limit probe installed (high humidity control downstream of the humidification section)	
3.d	NTC probe installed (low temperature control before the humidification section)	
3.e	Remote ON/OFF contact correctly connected to the ventilation system	
3.f	Test remote ON/OFF contact operation	
3.g	Test alarm switch operation (check NO/NC logic)	
3.h	Check the working pressure at the minimum flow-rate by carrying out the minimum rack production calibration procedure (see par. 8.4.3)	

6. COMMISSIONING

When first starting the humiFog Multizone Touch high-pressure adiabatic humidification system, the main components need to be checked (par. 4.1) from the user terminal.

6.1 Starting humiFog Multizone Touch

Before starting the system check that the water and electrical connections have been completed correctly in accordance with the instructions provided by the manufacturer.

Switch the system on as follows:

1. switch on the pumping station by turning the disconnect switch (1 - Fig. 6.a) from O (OFF) to I (ON)

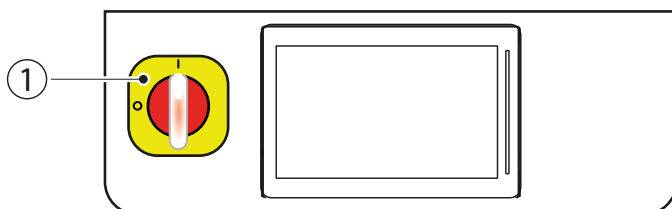


Fig. 6.a

2. switch on all the zone panels by pressing the power button on the side of the device (2 - Fig. 6.b).



Notice: if desired, it is also possible at this time to set the number and configuration of the multi-network of the zone relative to the panel in which you are operating (see par. 6.3).

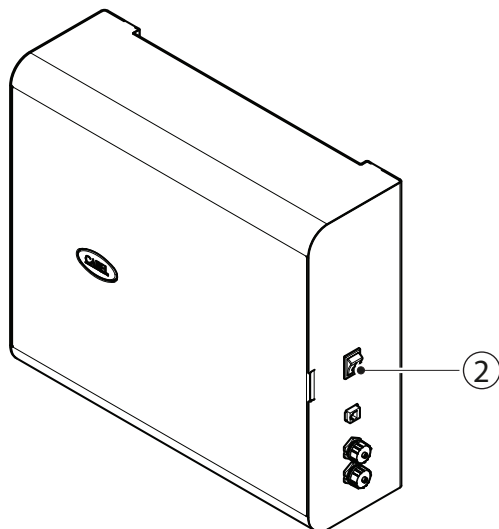


Fig. 6.b

3. The unit can now be configured (see par. 6.2).

6.2 Start-up sequence for system configuration

The start-up sequence is described below, with reference to the paragraphs illustrating the steps in the configuration wizard.

- **humiFog Multizone Touch (digital)**

1. Set the zone number and configure the multi-network function of the zone panels (see par. 6.3)
2. humiFog Multizone Touch configuration (see par. 6.4)
3. Backup pumping station configuration (optional) (see par. 6.6)



Notice: If the system foresees the presence of a backup pumping station, this must necessarily be isolated from the rest of the system before being configured. Only once the configuration has been completed, according to the instructions in the above paragraphs, can the backup pumping station be connected to the rest of the system.

6.3 Zone panel configuration

The zone panel can be configured as follows:

1. Using the display on the device
2. Using a mobile analogue display (optional) that can be connected to the device

6.3.1 Using the display inside the zone panel

To use the display inside the zone panel, unscrew the side screws (3 - Fig. 6.c) with a Phillips-head screwdriver and remove the front panel (4 - Fig. 6.c). The display inside the zone panel can now be used (5 - Fig. 6.c).

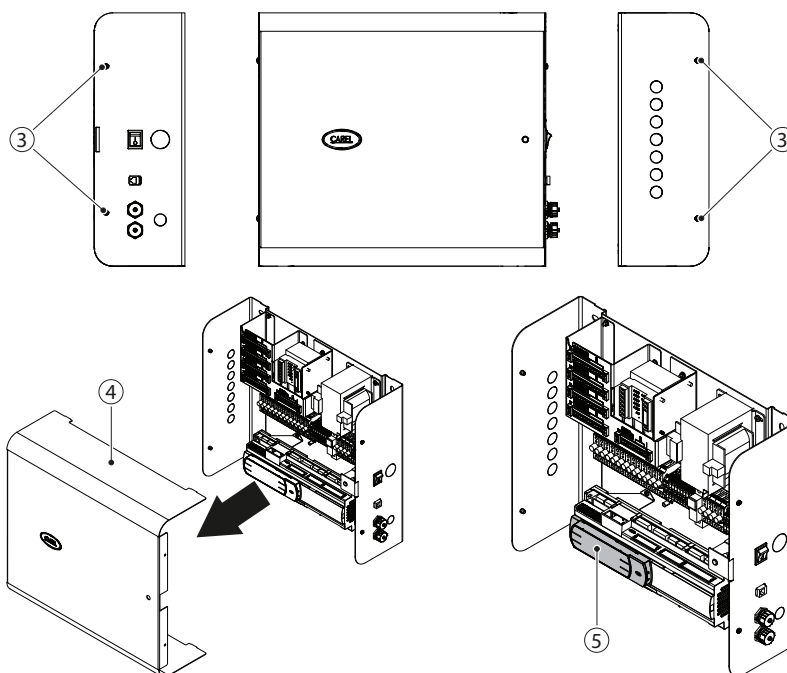


Fig. 6.c

6.3.2 Using a mobile analogue display (optional)

To use a mobile analogue display (optional), connect the mobile display (6 - Fig. 6.d) using an RJ11 cable to port (7 - Fig. 6.d) on the side of the zone panel.

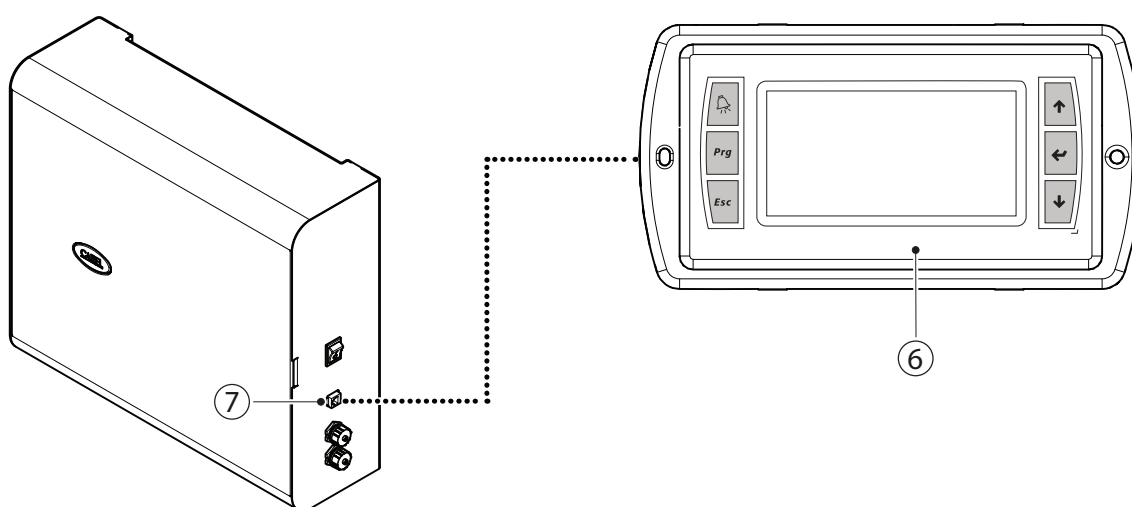


Fig. 6.d

6.3.3 Setting of the zone number and configuration of the multi-network of the zone panel

Each zone panel has a unique identification number that must be set during the configuration phase. If the zone panel identification number is not known, contact the Carel humidification system reference personnel for the correct correspondence between zone name in the Carel CPQ configuration or, zone identification number and rack position number.

If several humiFog Multizone Touch systems are to be connected to the same local network, in addition to specifying the zone number to discriminate it within its reference system, the multi-network functionality must be configured appropriately. For further details, please refer to the Multi-network section described in paragraph 8.2.3 BMS.

Example of zone panel configuration in a system:

Carel CPQ "System Outline"			Zone number for zone panel
	Multizone System (e.g. Hospital XYZ)		
	1 st zone name (e.g. AHU A)	» » »	Zone number: 1
	2 nd zone name (e.g. AHU B)	» » »	Zone number: 2
	3 rd zone name (e.g. AHU C)	» » »	Zone number: 3
	n th zone name (e.g. AHU N)	» » »	Zone number: n

Tab. 6.a

When the unit is switched on, the CAREL logo is shown on the display. The software language setting prompt is then displayed.

Press  to scroll through the options.

Press **Esc** to confirm the selected language.

During commissioning, a wizard is shown to help the operator quickly configure the main unit parameters.

Press  to start the wizard.

- Use  &  to scroll the screens for the various configuration parameters.
- Use  to select the desired parameter on the screen.
- Use  &  to change the value of the selected parameter.
- Use  to confirm the parameter value.
- To modify the parameters on the other screens, press  until the cursor is back on the screen header and use  &  to scroll the screens for the various configuration parameters.

The following steps describe how to configure the zone panels using the humiFog Multizone (analogue) interface. The screen indexes (where relevant) are shown in brackets.



Notice: select the desired option based on the specific characteristics of the installed system.

Step 1

Set the zone unit model (only if not already set).

Step 2 [12]

Set the number of the zone relative to the panel in which you are operating. Enable multi-network functionality and set the network number (if necessary).

Step 3

Press **Esc** to exit the wizard and confirm by pressing .

Step 4

Choose whether to display the wizard again the next time the unit is switched on or press **Esc** to return directly to the main screen.

Step 5

The zone number setting is now complete.



Notice: if using the default network settings for the system, setting the zone number automatically assigns a unique IP address to that unit, so that the network structure is consistent. If needing to use settings other than the default values, the IP addresses of each unit in the system will need to be set manually (see chap. 8)

Zone panel wizard screen index

Screen title	Index	Description
Unit model		Set the unit model
Number of zones	12	Setting of the current zone number and multi-network configuratio
Zone distribution system	30	Set the number of steps
	31	Set the step fl w-rates
	32	Display the rated zone rack capacity (sum of the set step fl w-rates)
Zone control	40	Set the type of control
	41	Set the main probe (humidity)
	41	Set the on/off cont ol signal logic
	41	Set the main probe (temperature)
	41	Set the external proportional signal
	41	Set the proportional control (supervisor)
	42	Set the limit probe/second probe (humidity)
	42	Set the limit probe/second probe (temperature)
	43	Set the rack probe/third probe (humidity)
	43	Set the rack probe/third probe (temperature)
	44	Set the probe weight (two probe control)
	44	Set the probe weight (three probe control)
	45	Set the modulating control set point and differential (humidity)
	45	Set the modulating control set point and differential (temperature)
	46	Set the modulating control PID (humidity)
	46	Set the modulating control PID (temperature)
	47	Set the limit probe set point and differential (humidity)
	47	Set the limit probe set point and differential (temperature)
	48	Set the minimum-maximum production range
Date/time	50	Set the date and time
	51	Set the time zone

Tab. 6.b

6.4 humiFog Multizone Touch configuration

When the unit is switched on, the humiFog Multizone Touch logo is shown on the display. The software language setting prompt is then displayed.

- Tap the language name to access the drop-down menu with the options.
- Scroll through the options and select the desired language.
- Touch  to confi m the selection.

After having set the language, the system configuration can be comple ed in two ways:

- using a configuration file on a USB flash drive (see par. 6.4.1)
- by manually setting the parameters in the software (see par. 6.4.2)



Notice: If the system foresees the presence of a backup pumping station, remember that the latter must be insulated from the rest of the system before starting with the configuration

6.4.1 Configuration wizard with USB flash drive

During commissioning, a wizard is shown to help the operator quickly configur e the main unit parameters. Before starting configuration via USB flash drive, the following steps must have been completed:

- Have the .txt file generated by the Carel CPQ configurator. If the file is not available, request it from the humidification system contact person.
- Verify that the file name is **UA_Touch_CPQ_Cfg.txt**, if not, rename it correctly.
- Save the file to a USB flash drive (type A 2.0 or higher - formatted with the FAT32 file system). Do not save the file inside a folder. The USB flash drive can only contain one file of this type. If multiple systems need to be booted, either configur e one system at a time or use multiple USB flash drives.

Step 1

Use the key provided to open the panel (8 - Fig. 6.e) and access the electrical panel.

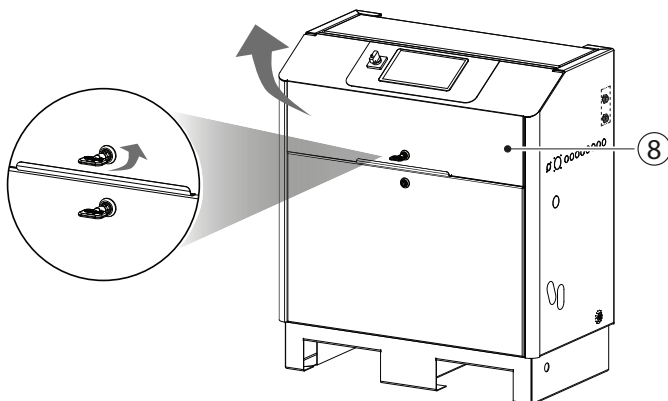


Fig. 6.e

Step 2

Open the cover (9 - Fig. 6.f) and plug the USB flash drive into the USB type A socket (10 - Fig. 6.f).

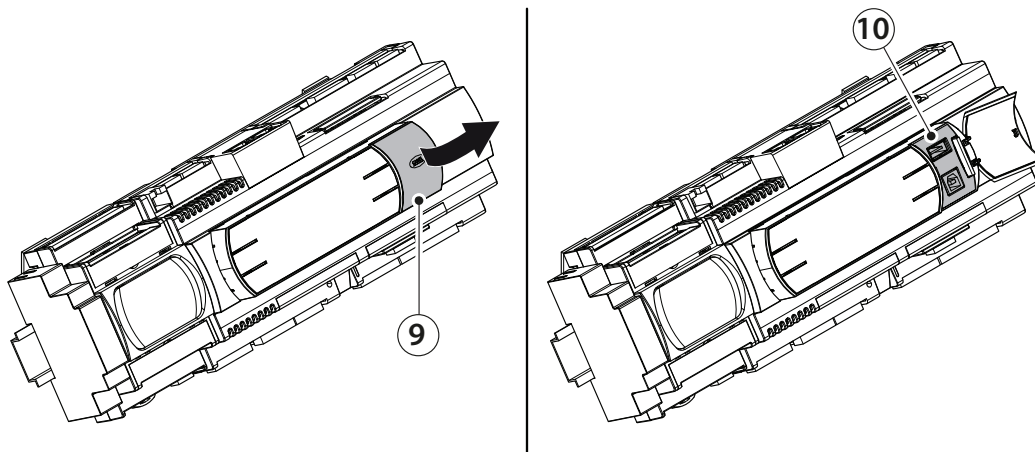


Fig. 6.f

Step 3

Click Start configuration (11 - Fig. 6.g) to start the configuration procedure.

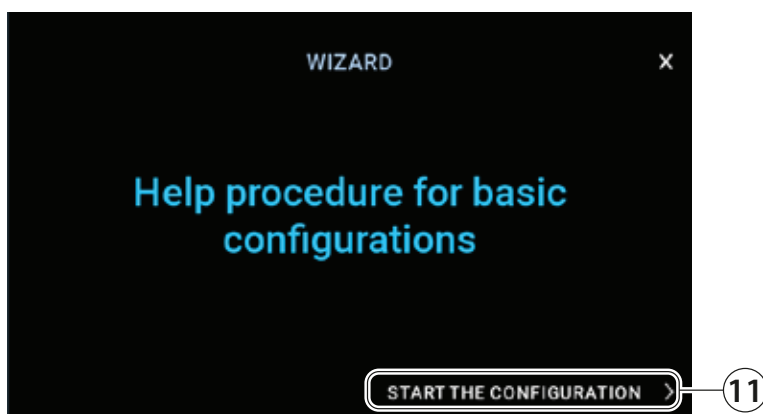


Fig. 6.g

Step 4

To use the configuration file saved on a USB flash drive, press YES when the prompt is shown on the screen.



Fig. 6.h

Step 5

Select the number of zones (12 - Fig. 6.i) in the system and press CONFIRM.



Notice: set the number of zones based on the specific characteristics of the installed system.

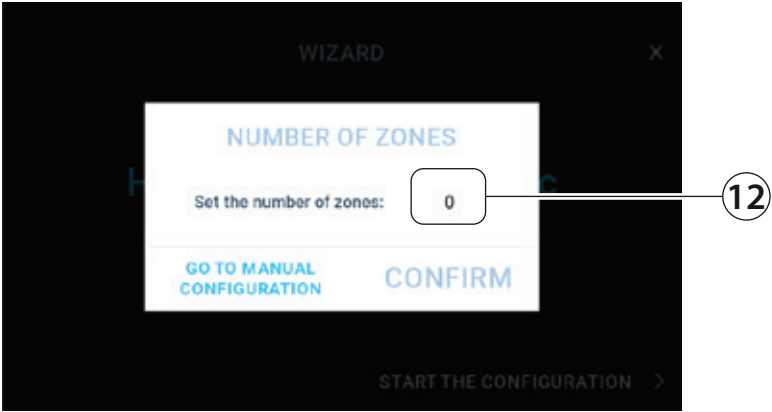


Fig. 6.i

Step 6

Press OK.

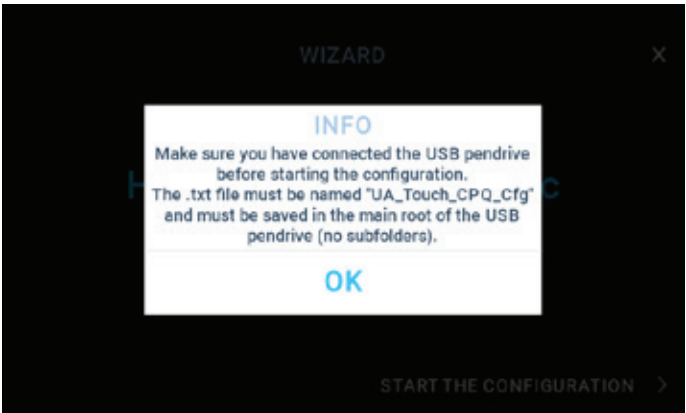


Fig. 6.j

Step 7

The system starts scanning to check if all zones are online. If no errors are found, press START IMPORT CONFIGURATION (13 - Fig. 6.k).

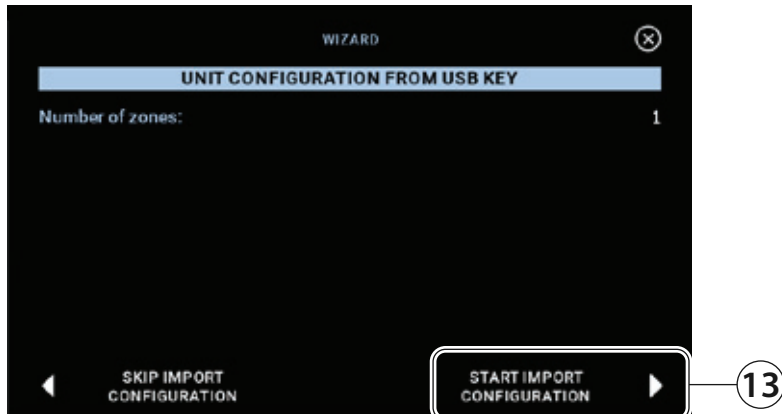


Fig. 6.k

Step 8

The system starts importing the data from the USB flash drive.



Fig. 6.l

Step 9

At the end of the import procedure, the screen for configuring the pump will be displayed.



Notice: the procedure for importing the parameters from the USB flash drive is now complete. Now configure the control parameters for each zone and, at the same time, check the parameters imported from USB.

Check the type of the pumping station unit (main/secondary).

Specify the type of pumping station unit in relation to whether there is a second backup pumping station. When the systems include two pumping stations that operate alternately, one needs to be defined as the primary unit and the other the secondary. This avoids conflicts and overlaps in role between the two pumping stations.

Check the type of application. The following options are available:

- AHU (Air Handling Unit)
- Room
- Pressurised water



Notice: the Pressurised water configuration allows the appliance to be used exclusively as a pressurised water generator (in this configuration, the operating pressures can be specified)

Configure multi-network functionality if necessary. Enabling of the multi-network allows several humiFog Multizone Touch systems connected to the same local network to co-exist, using the network number as an identification parameter for the different systems. For further details, please refer to the Multi-network section described in paragraph 8.2.3 BMS.

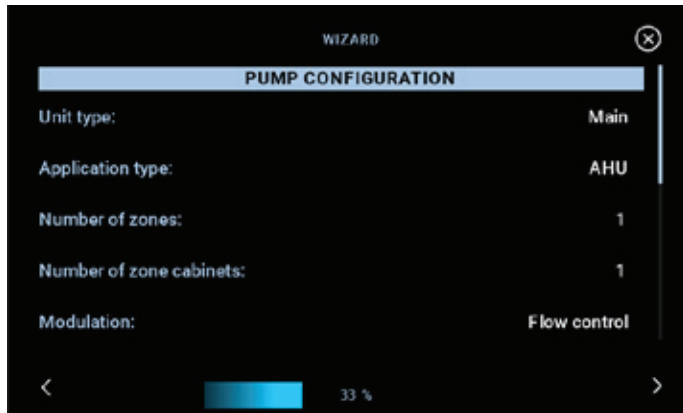


Fig. 6.m

Step 10

This screen is used to check the operating parameters corresponding to the displayed zone.



Notice: set the following parameters based on the specific characteristics of the installed system.

If there are multiple zones, check the parameters for each zone in the system.

If needing to modify the parameters, the configuration can be copied from one zone to another by selecting Copy zone configuration (14 - Fig. 6.n).

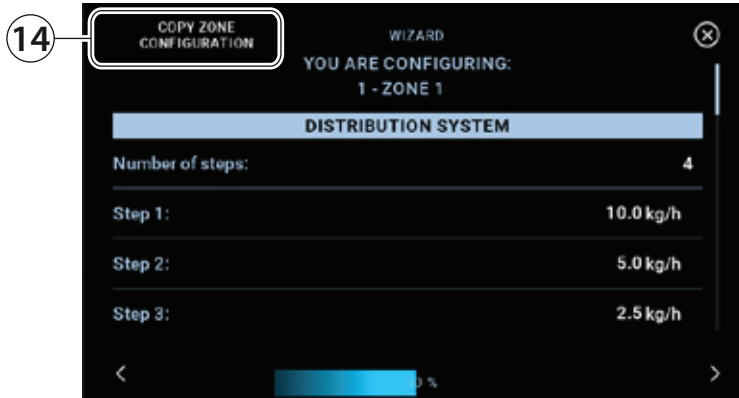


Fig. 6.n

Check the parameters corresponding to the distribution system:

Function	Parameter	Description
Distribution system	Number of steps	Set the number of steps in the displayed zone. Press the editable area to enter the desired value.
	Step 1-6	Set the flow-rate for each step in the displayed zone. Press the editable area to enter the desired value.
	Nominal rack flow-rate	Display the nominal rack capacity. This is calculated based on the values entered for Step 1.6

Check the control parameters:

Function	Parameter	Description
Controller	Control type	Set the type of controller. The available options vary according to the type of application set, as shown in the following table (Tab. 6.d).

Type of control

Humidity (single probe)
External signal + temperature limit
External signal + humidity limit
External proportional signal
ON/OFF signal + temperature limit
ON/OFF signal + humidity limit
ON/OFF signal
Dew point temperature + humidity limit
Dew point temperature
Adjustment by supervisor
Temperature + humidity limit
Temperature + temperature limit
Temperature (single probe)
Humidity + temperature limit
Humidity + humidity limit
Two temperature probes + humidity limit
Two humidity probes
Two temperature probes
Three humidity probes
Three temperature probes

Tab. 6.c

Check the parameters relating to the probe configuration, which may vary according to the control logic set.

Function	Parameter	Description
Configuration - Main probe	Options available for the type of probe signal: 0-10V / 4-20mA / 0-20mA / 0-1V / 2-10V / NTC (temperature probe only)	The probe operating range can also be set (if modifiable), as well as the relative correction offsets and management of probe alarm activation.
Configuration - Limit probe / Second probe	Options available for the type of probe signal: 0-10V / 4-20mA / 0-20mA / 0-1V / 2-10V / NTC (temperature probe only)	The probe operating range can also be set (if modifiable), as well as the relative correction offsets and management of probe alarm activation.
Configuration - Third probe	Options available for the type of probe signal: 0-10V / 4-20mA / 0-20mA / 0-1V / 2-10V / NTC (temperature probe only)	The probe operating range can also be set (if modifiable), as well as the relative correction offsets and management of probe alarm activation.

Verify the parameters relating to the weight of the probes when measuring the values (control with two/three probes only).

Function	Parameter	Description
Control - Probes	Weight of probes 1 to 3	Set the parameters relating to the weight the probes have the final value measured. Press the editable area to enter the desired value.

Set the parameters relating to modulating control (temperature or humidity):

Function	Parameter	Description
Control - Modulating control	Set point	Set the modulating control set point. Press the editable area to enter the desired value.
	Differential	Set the modulating control differential. Press the editable area to enter the desired value.
	Integral time	Set the integral time for modulating control. Press the editable area to enter the desired value.
	Dead band (PID)	Set the modulating control dead band. Press the editable area to enter the desired value.

Verify the parameters relating to modulating control on the limit probe (limit probe only):

Function	Parameter	Description
Control - Limit probe	Set point	Set the modulating control set point. Press the editable area to enter the desired value.
	Differential	Set the modulating control differential. Press the editable area to enter the desired value.

Verify the parameters corresponding to the distribution system:

Function	Parameter	Description
Control - Production range	Minimum production	Set the minimum production value. Press the editable area to enter the desired value.
	Current limit	Display the minimum production value.
	Maximum production	Set the maximum production value. Press the editable area to enter the desired value.
	Current limit	Display the maximum production value.

Step 11

This screen is used to check the time and date and time zone parameters.
To save all the configuration setting , press the save icon (15 - Fig. 6.o).



Fig. 6.o



Notice: the new date and time and/or time zone is broadcast from the pumping station to the online zone controllers.

Step 12

The wizard is now finished.
On this screen, select whether or not to display the wizard the next time the unit is started.

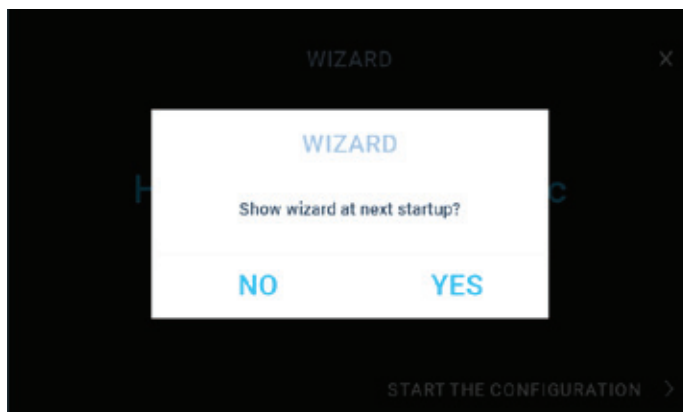


Fig. 6.p

Once the configuration is complete, if the system also foresees the backup pumping station, it is recommended to perform a check on the network configuration of the two pumping stations in order to ensure correct communication between the different units. It is specified that the correct network configuration (compatible subnetwork and unique IP address) of both the control and the pGDx display must be ensured. For further details on the network configuration of individual system elements, please refer to par. 9.1.2.

Path for accessing the network configuration of the control: Settings > System > BMS > Port Conf.
For further details, please refer to par. 8.2.3.

Path for accessing the network configuration of the display: Settings > Display > Network configuration.
For further details, please refer to par. 8.5.

Errors when configuring using a USB flash drive

During the procedure for importing data from the USB flash drive, two types of errors may occur that cause the configuration to fail: **import errors** and **operational errors**.

Import errors indicate that the data import procedure (reading the file on the drive) has failed.

Operational errors indicate that the data import procedure was successful, yet there are errors in the imported data (file formatting or parameter values contained in the file)

For the latter type of error, an identification code is displayed as a reference number for Technical Service.

Operational errors usually occur when the configuration file supplied by Carel has been corrupted.

Below is a list of possible import errors:

- Invalid file name
- Disk access error
- File access error
- File I/O error
- Invalid file
- Invalid value
- Insufficient buffer memory
- Empty file
- Invalid time parameter
- Module busy
- Logger not running
- Log export failed
- Function not available
- API configuration error
- Invalid value

6.4.2 Manual configuration wizard

During commissioning, a wizard is shown to help the operator quickly configure the main unit parameters.

Step 1

Press Start configuration (Fig. 6.q) to start the procedure.

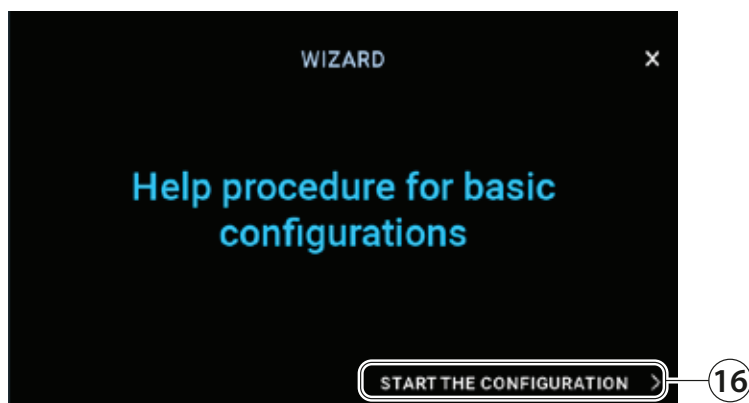


Fig. 6.q

Step 2

To configure the system manually, press NO when the request to import from USB flash drive is shown on the screen.

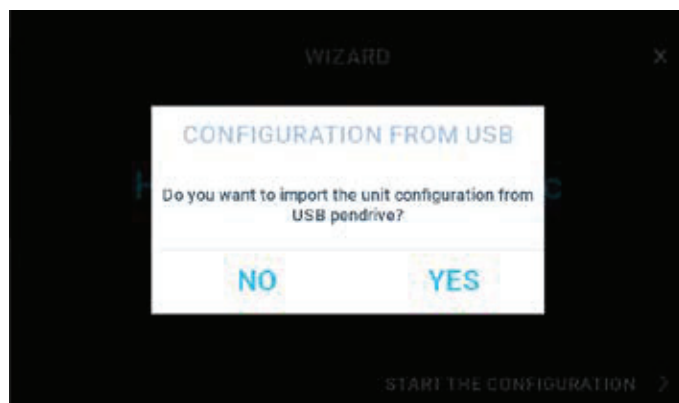


Fig. 6.r

Step 3

Set the type of pumping station unit (primary/secondary).

Specify the type of pumping station unit in relation to whether there is a second backup pumping station. When the systems includes two pumping stations that operate alternately, one needs to be defined as the primary unit and the other the secondary. This avoids conflicts and overlaps in role between the two pumping stations.

Check the type of application. The following options are available:

- AHU (Air Handling Unit)
- Room
- Pressurised water



Notice: the Pressurised water configuration allows the appliance to be used exclusively as a pressurised water generator (in this configuration, the operating pressures can be specified)

Configure multi-network functionality if necessary. Enabling of the multi-network allows several humiFog Multizone Touch systems connected to the same local network to co-exist, using the network number as an identification parameter for the different systems. For further details, please refer to the Multi-network section described in paragraph 8.2.3 BMS.

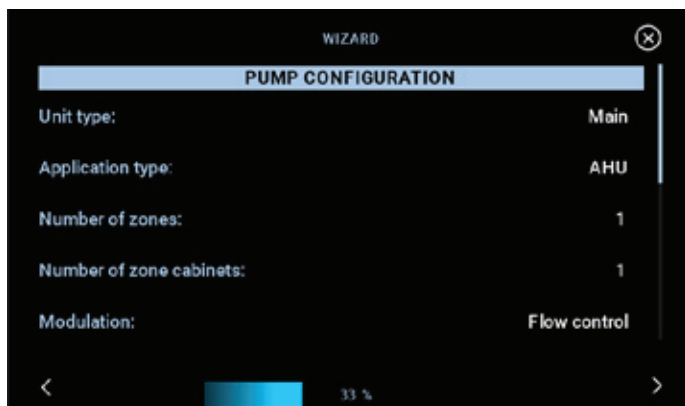


Fig. 6.s

Step 4

This submenu is used to set the operating parameters for the displayed zone.



Notice: set the following parameters based on the specific characteristics of the installed system.

If there are multiple zones, the parameters need to be set for each zone in the system.

However, the configuration parameters for the displayed zone can be copied and replicated in the next zone, by pressing Copy zone configuration (17 - Fig. 6.t).



Fig. 6.t

Set the parameters corresponding to the distribution system:

Function	Parameter	Description
Distribution system	Number of steps	Set the number of steps in the displayed zone. Press the editable area to enter the desired value.
	Step 1-6	Set the flow-rate for each step in the displayed zone. Press the editable area to enter the desired value.
	Nominal rack flow-rate	Display the nominal rack capacity. This is calculated based on the values entered for Step 1.6

Set the control parameters:

Function	Parameter	Description
Controller	Control type	Set the type of controller. The available options vary according to the type of application set, as shown in the following table (Tab. 6.d).

Type of control

Humidity (single probe)
External signal + temperature limit
External signal + humidity limit
External proportional signal
ON/OFF signal + temperature limit
ON/OFF signal + humidity limit
ON/OFF signal
Dew point temperature + humidity limit
Dew point temperature
Adjustment by supervisor
Temperature + humidity limit
Temperature + temperature limit
Temperature (single probe)
Humidity + temperature limit
Humidity + humidity limit
Two temperature probes + humidity limit
Two humidity probes
Two temperature probes
Three humidity probes
Three temperature probes

Tab. 6.d

Set the probe configuration parameters:



Notice: The parameters displayed change according to the control logic set.

Function	Parameter	Description
Configuration - Main probe	Options available for the type of probe signal: 0-10V / 4-20mA / 0-20mA / 0-1V / 2-10V / NTC (temperature probe only)	The probe operating range can also be set (if modifiable), as well as the relative correction offsets and management of probe alarm activation.
Configuration - Limit probe / Second probe	Options available for the type of probe signal: 0-10V / 4-20mA / 0-20mA / 0-1V / 2-10V / NTC (temperature probe only)	The probe operating range can also be set (if modifiable), as well as the relative correction offsets and management of probe alarm activation.
Configuration - Third probe	Options available for the type of probe signal: 0-10V / 4-20mA / 0-20mA / 0-1V / 2-10V / NTC (temperature probe only)	The probe operating range can also be set (if modifiable), as well as the relative correction offsets and management of probe alarm activation.

Set the parameters relating to the weight of the probes when measuring the values (control with two/three probes only):



Notice: The parameters displayed change according to the control logic set.

Function	Parameter	Description
Control - Probes	Weight of probes 1 to 3	Set the parameters relating to the weight the probes have the final value measured. Press the editable area to enter the desired value.

Set the parameters relating to modulating control (temperature or humidity):

Function	Parameter	Description
Control - Modulating control	Set point	Set the modulating control set point. Press the editable area to enter the desired value.
	Differential	Set the modulating control differential. Press the editable area to enter the desired value.
	Integral time	Set the integral time for modulating control. Press the editable area to enter the desired value.
	Dead band (PID)	Set the modulating control dead band. Press the editable area to enter the desired value.

Set the parameters relating to modulating control on the limit probe (limit probe only):

Function	Parameter	Description
Control - Limit probe	Set point	Set the modulating control set point. Press the editable area to enter the desired value.
	Differential	Set the modulating control differential. Press the editable area to enter the desired value.

Set the parameters relating to the production range:

Function	Parameter	Description
Control - Production range	Minimum production	Set the minimum production value. Press the editable area to enter the desired value.
	Current limit	Display the minimum production value.
	Maximum production	Set the maximum production value. Press the editable area to enter the desired value.
	Current limit	Display the maximum production value.

Step 5

This screen is used to set the time and date and time zone parameters.
To save all the configuration setting , press the save icon (18 - Fig. 6.u).



Fig. 6.u



Notice: the new date and time and/or time zone is broadcast from the pumping station to the online zone controllers.

Step 6

The wizard is now finishe .
On this screen, select whether or not to display the wizard the next time the unit is started.

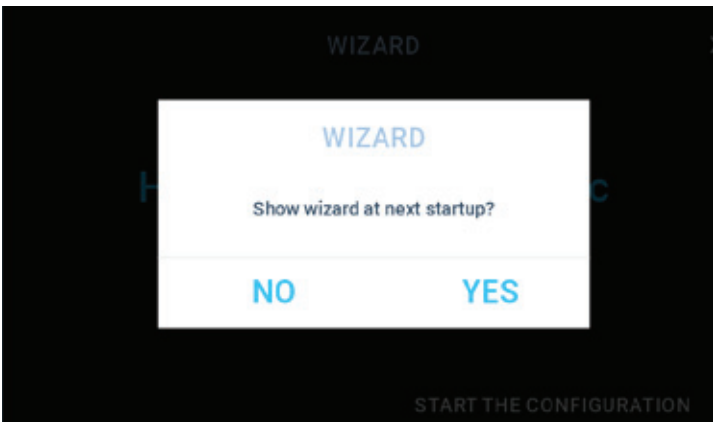


Fig. 6.v

Once the configuration is complete, if the system also foresees the backup pumping station, it is recommended to perform a check on the network configuration of the two pumping stations in order to ensure correct communication between the different units. It is specified that the correct network configuration (compatible subnetwork and unique IP address) of both the control and the pGDx display must be ensured. For further details on the network configuration of individual system elements, please refer to par. 9.1.2.

Path for accessing the network configuration of the control: Settings > System > BMS > Port Conf.
For further details, please refer to par. 8.2.3.

Path for accessing the network configuration of the display: Settings > Display > Network configuration.
For further details, please refer to par. 8.5.

6.5 Pump air purge procedure

Once the configuration wizard has been completed, when first started the system requires the pump venting procedure to be performed, so as to ensure that it starts without any air inside.

If the conditions are met, a pump venting warning is activated and the display shows a pop-up message with the following request:

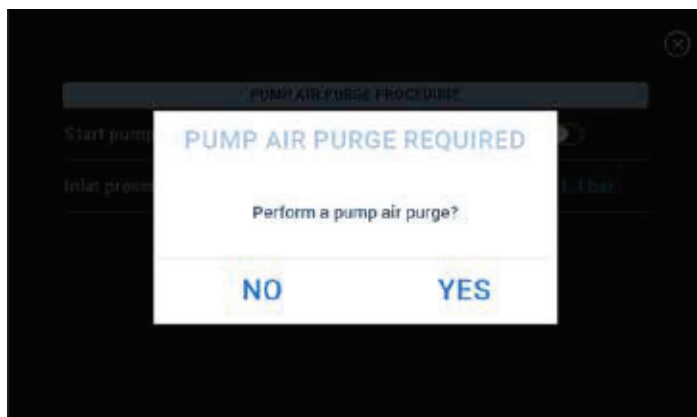


Fig. 6.w

The user can confirm or reject the request to carry out the procedure. In the latter case, the following message is displayed to remind the user to perform it manually later, otherwise the system will not start:

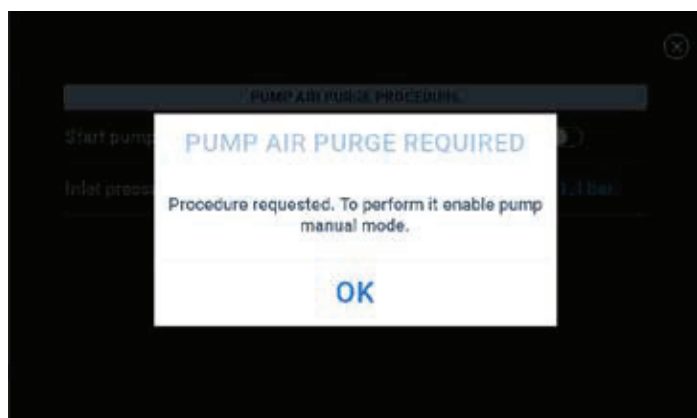


Fig. 6.x

If on the other hand the request is confirmed, the display shows the pump venting screen to activate the procedure, by enabling the "Start pump venting:" option.

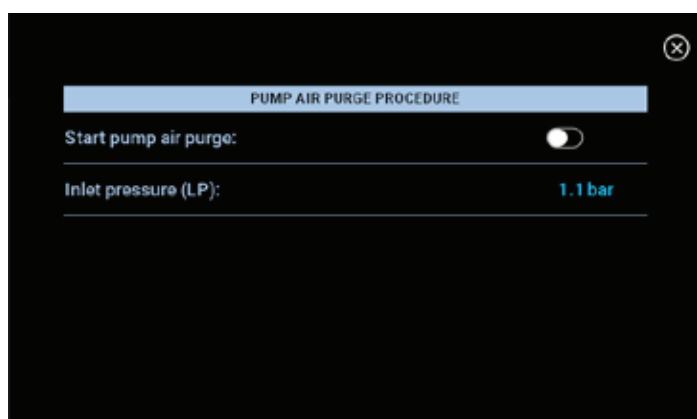


Fig. 6.y

The procedure automatically feeds water through the cabinet fill valve opening into the pump circuit for a short time (default 60 s), and consists of two phases: fill the pump circuit and venting, the latter to be performed manually.

When starting the procedure, the following message is shown on the pump venting screen:

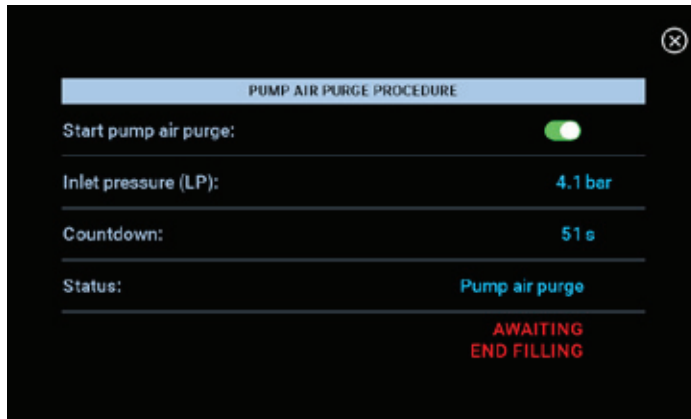


Fig. 6.z

Once the fill time has elapsed, the user is then requested to activate the vent valve to completely vent any air present:

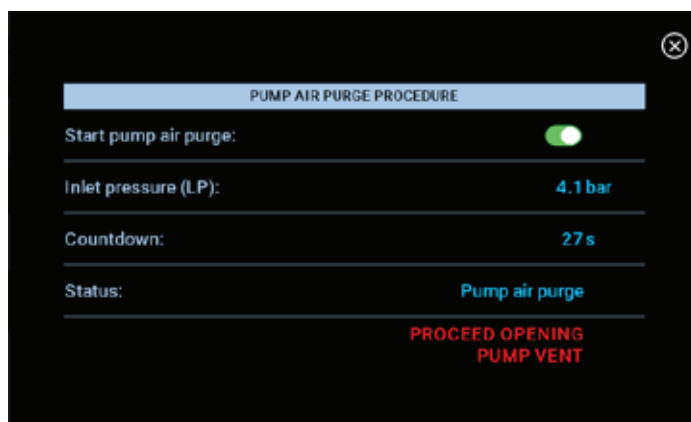


Fig. 6.aa

Check that the pump circuit is completely filled by opening the pump vent valve until water flows out of the vent valve, being the only outlet available. Once the time set for the procedure has elapsed, it is possible to confirm or repeat the venting procedure on the confirmation screen:

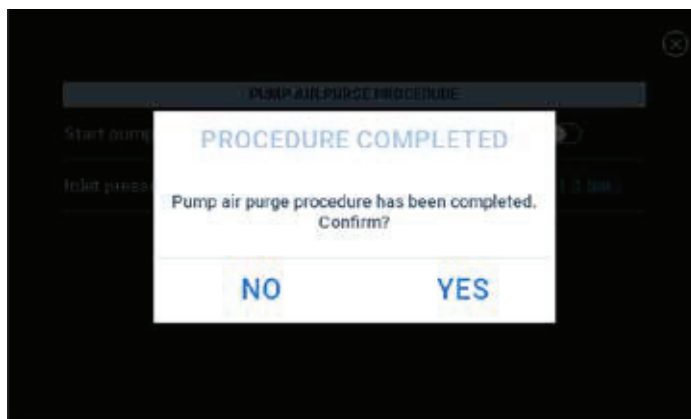


Fig. 6.ab

Confirmation of the completed procedure closes the pop-up request, if not cleared manually, and automatically resets the pump venting warning. In addition to when first starting the system, each pump maintenance procedure in which the operating hour counter is reset, according to the instructions provided in the installation manual +0300125EN, activates a venting procedure request. When the pump vent request conditions are triggered for the first time, the system will not be able to produce and execute any manual command involving the pump until the procedure has been completed and confirmed. If the procedure is not performed, an automatic request to perform the pump venting procedure will be displayed in a pop-up message each time the system restarts. If the pump venting request pop-up is refused, it will remain hidden until the system next restarts (when the previous conditions are met). Pump venting is also available as a manual procedure in manual pump mode (see par. 8.3.3)

Even if not signalled by a pop-up on the display, it is recommended to carry out the pump venting procedure every time maintenance is carried out on the water line that supplies the humidifier, and in general whenever there is the risk of air entering the water circuit.



Fig. 6.ac

6.6 Backup pumping station configuration

To configure the backup (secondary) pumping station, proceed in the same way as for manual configuration of the primary pumping station, without importing data from the USB flash drive, as the zone parameters do not need to be set again.

During configuration of the backup pumping station, a wizard is shown to help the operator quickly configure the main unit parameters.



Notice: The backup pumping station must necessarily be isolated from the rest of the system before it is configured.

Step 1

Press Start configuration (19 - Fig. 6.ad) to start the procedure.

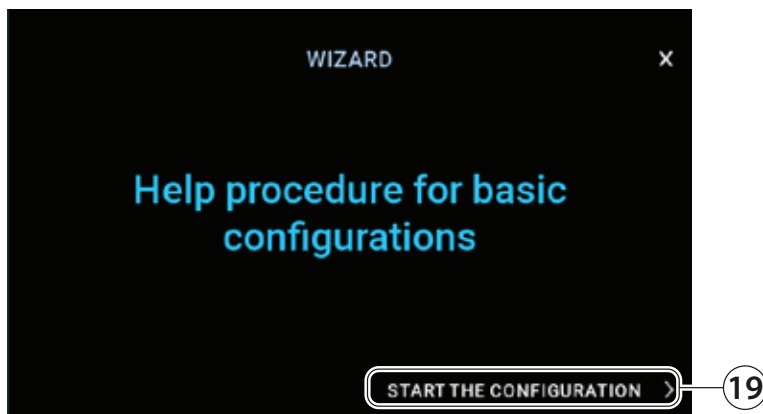


Fig. 6.ad

Step 2

Press NO when the request to import from USB flash drive is shown on the screen.

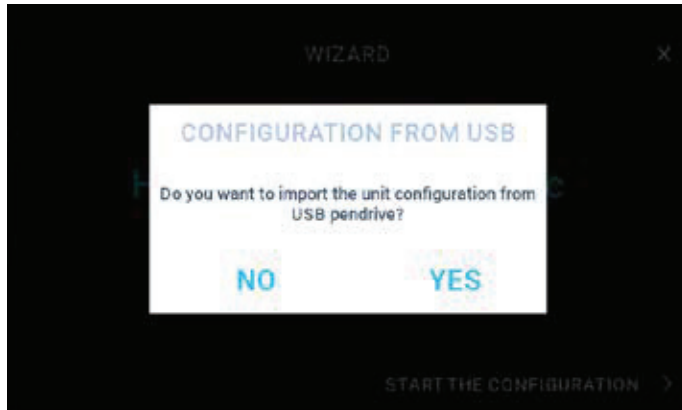


Fig. 6.ae

Step 3

Set the type of the pumping station unit (secondary).

Specify the type of pumping station unit in relation to whether there is a second backup pumping station. When the systems includes two pumping stations that operate alternately, one needs to be defined as the primary unit and the other the secondary. This avoids conflicts and overlaps in role between the two pumping stations.

Check the type of application. The following options are available:

- AHU (Air Handling Unit)
- Room
- Pressurised water



Notice: the Pressurised water configuration allows the appliance to be used exclusively as a pressurised water generator (in this configuration, the operating pressures can be specified)

Configure multi-network functionality if necessary. Enabling of the multi-network allows several humiFog Multizone Touch systems connected to the same local network to co-exist, using the network number as an identification parameter for the different systems. For further details, please refer to the Multi-network section described in paragraph 8.2.3 BMS.

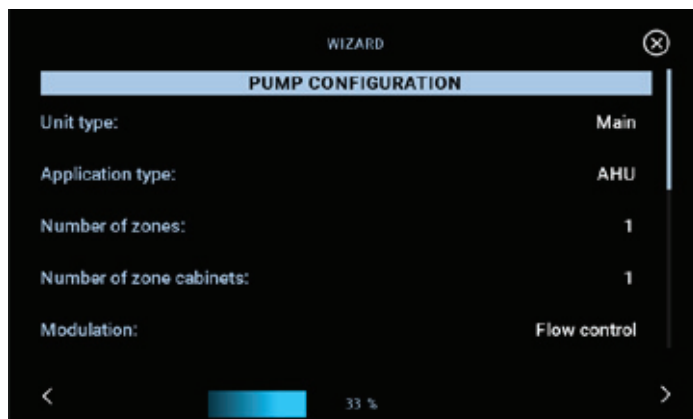


Fig. 6.af

Step 4

This submenu is used to set the operating parameters for the displayed zone.

If the zone parameters have already been set during configuration of the primary unit, this step can be skipped by pressing Skip zone configuration (20 - Fig. 6.ag).

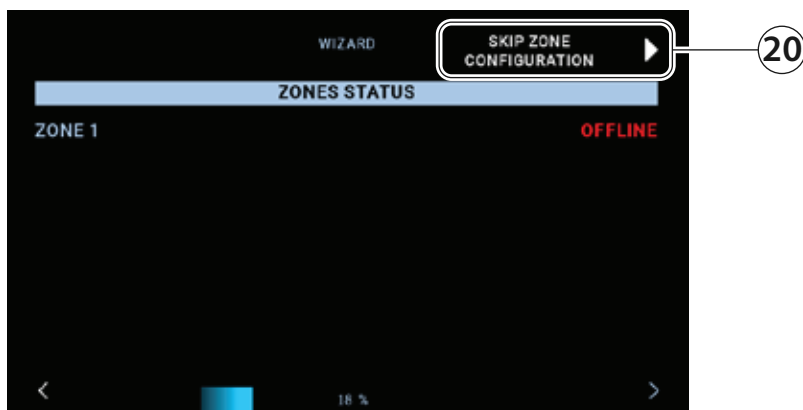


Fig. 6.ag

Step 5

This screen is used to set the time and date and time zone parameters.

To save all the configuration setting, press the save icon (21 - Fig. 6.ah).

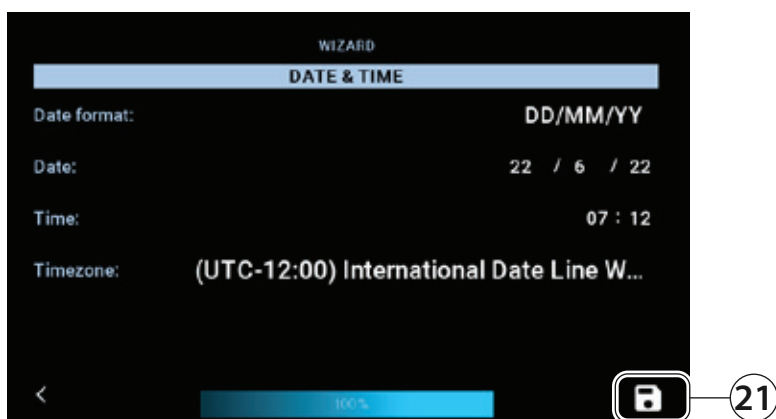


Fig. 6.ah

Step 6

The wizard is now finished.

On this screen, select whether or not to display the wizard the next time the unit is started.

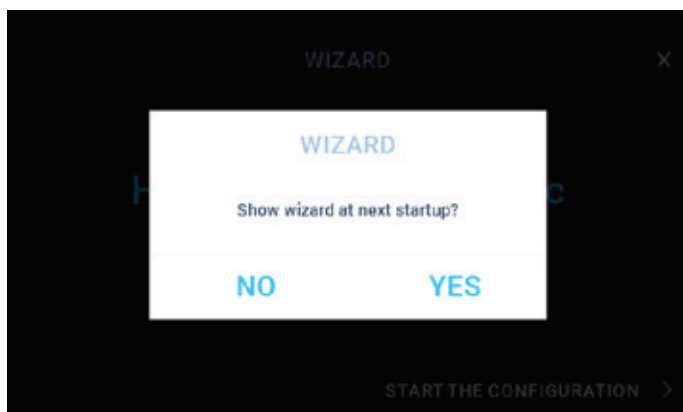


Fig. 6.ai

Once the configuration is complete, it is recommended to perform a check on the network configuration of the two pumping stations. It is specified that the correct network configuration (compatible subnetwork and unique IP address) of both the control and the pGDx display must be ensured. For further details on the network configuration of individual system elements, please refer to par. 9.1.2.



Notice: When configuring the pGDx display for the pumping station declared as a secondary type unit, it is always necessary to set the IP address manually.

Path for accessing the network configuration of the control: Settings > System > BMS > Port Conf.

For further details, please refer to par. 8.2.3.

Path for accessing the network configuration of the display: Settings > Display > Network configuration.

For further details, please refer to par. 8.5.

Only after both pumping stations have been correctly configured can the backup pumping station be connected to the rest of the system.

7. COMPLETE MENU TREE

Below is the complete tree of the programming menu.

7.1 humiFog Multizone Touch settings menu access

To access the Settings menu, proceed as follows:

- Press  Menu.
- Press  Settings.



Notice: to access the Settings menu, first log in to the system.

- Log in to the system.
The access password used can be installer level (77) to activate all the software functions, or maintenance (44) to only activate the functions required for maintenance operations.
- Click OK



Notice: after 5 minutes of inactivity, the user is automatically logged out.

7.2 humiFog Multizone Touch complete menu tree

Clock menu

Title	Description	Level
Clock	Set date and time, display format and time zone	Service

Scheduler menu

Title	Description	Level
Enable scheduler	Enable time bands	Service
Daily scheduler	(visible if the scheduler is enabled) Set the ordinary time bands (day, switch-on time, switch-off time) and the set point (optional)	Service
Special periods	(visible if the scheduler is enabled) Set the time bands for special periods (day, switch-on time, switch-off time) and the set point (optional)	Service
Special days	(visible if the scheduler is enabled) Set the time bands for special days (switch-on time, switch-off time) and the set point (optional)	Service

Trend menu (graphs)

Title	Description	Level
Pump	Display graphs relating to the pump operating values (inlet pressure reading, conductivity, unit enabled, alarm status)	Service
Zone	Display graphs relating to the zone operating values (production request and current production, set point, unit enabled, alarm status)	Service

Language menu

Title	Description	Level
	Select language	Service

Rename zone menu

Title	Description	Level
	Rename zones	Service

Settings menu

Title		Description	Level
System	System logic	Select type of application (AHU/room/pressurised water), set the number of zones	Installer
	Functions	Fill	Installer
		Washing	Installer
		Standby	Installer
		WTS cooling	Installer
		I/O	Installer
		Bypass	Installer
		Racks	Installer
		Other	Installer
	Maintenance	Display unit operating hours, pump operation and next scheduled maintenance, reset pump operating hours command and display last reset date/time, set 8000h maintenance pre-alert activation time, pump and/or controller replacement command for unit control/ pump operating hours	Service
	Alarms	Setting of the low delivery pressure alarm delay and enabling of the high conductivity alarm	Installer
	Backup & rotation	Enable pump backup and rotation, set rotation time and unit type	Installer
	BMS	Channel 1	Installer
		Channel 2	Installer
		Channel 3	Installer
		Port configuration	Installer
		Monitoring service	Installer
		Multi-network	Installer
	Initialisation	Wizard	Installer
		Save/Load configuration	Installer
		Restore system factory settings	Installer
Pump	Manual mode	Manual mode	Service
		Bypass calibration	Service
		Pump air venting	Service
	Initialisation	Model	Installer
		Export configuration	Installer
		Import configuration	Installer
		Unit of measure	Installer
		SW update	Installer
		Export log	Service
		Export alarms	Service

Title		Description	Level	
Zone	Control		Select control type, probe and set control parameters, set minimum-maximum production range	Installer
	Distribution system		Set the number and nominal flow-rates of the distribution system steps, display the total nominal rack capacity	Installer
	Functions	Pressure relief	Set the pressure relief duration for the rack (air handling unit applications only) or the individual steps (room applications only)	Installer
		Rack probe	Configure the rack temperature probe (type, range, offset, set point, differential and warning return threshold) (air handling unit applications only), set enable production reduction with rack temperature probe, set point and proportional band (air handling unit applications only)	Installer
		I/O logic	Set the logic of digital inputs (enable rack and flow switch) and outputs (zone status and alarm), configure digital output with programmable relay (NO7)	Installer
		Other	Set humidity probe alarm delay and alarm control delay	Installer
		Step rotation	Activate and set step rotation (can be activated only if all the steps have the same nominal flow-rate)	Installer
	Alarms		Set the main probe alarm range and limit and alarm activation delay	Installer
	Manual mode	Manual mode	Activate zone manual mode, enable filling in manual mode, set zone manual request, manual SV control (ventilation, rack step fill, rack step drain), manual relay digital output control (alarm, pump, zone), display zone digital output status (enable rack and flow switch) (only if manual mode enabled)	Service
		Minimum rack calibration	Enable minimum rack production calibration (only if manual mode enabled), set minimum production for rack calibration and reset default value command (only if manual mode enabled)	Service
	Initialisation	Factory reset	Reset unit factory data command	Installer
		Export configuration	Command to export parameters and select destination drive	Installer
		Import configuration	Command to import parameters and select source drive	Installer
	BMS	Monitoring service	Display unit paused by monitoring service status, unit paused bypass command, set disabling of paused bypass	Installer
Display	Configuration		Set display backlight brightness and timeout	Service
	Initialisation		Reset alarm log command	Service
	Initial language page		Enable language selection page at startup	Service
	Password		Set the access passwords	Service
	System menu		Access display settings	Installer
	Network configuration		Configure the Ethernet port (enable DHCP, IP address, subnet mask, gateway, DNS)	Installer

8. ADVANCED CONFIGURATION PARAMETERS

The following paragraphs provide a description of the most important configuration parameters for the installer. All these parameters can be found under the Software settings menu.



Notice: the parameters shown on the user terminal display may vary according to the system configuration. These parameters are indicated in the Description field in the following tables.

8.1 humiFog Multizone Touch settings menu access

To access the Settings menu, proceed as follows:

- Press Menu.
- Press Settings.



Notice: to access the Settings menu, first log in to the system.

- Log in to the system.
The access password used can be installer level (**77**) to activate all the software functions, or maintenance (**44**) to only activate the functions required for maintenance operations.
- Click OK



Notice: after 5 minutes of inactivity, the user is automatically logged out.

8.2 System

The System menu is active only on the humiFog Multizone Touch user terminal (not on the zone panels).

8.2.1 Functions

Depending on the system configuration, different parameters can be set for each available function.

- Press Menu.
- Press Settings (see par. 8.1).
- Press System
- Press Functions.

Fill

For correct system operation, the line must not contain any air, so as to avoid vibrations, long transients and poor atomisation quality. To eliminate air from the lines, the fill time needs to be set correctly.

When commissioning the system, measure the time needed for the water to reach the end of the circuit and wait until only water comes out of the circuit. The longer the water circuit, the longer the fill time needs to be.

For multi-zone systems, two types of filling can be selected: one zone at a time or all zones together. Based on the characteristics of the distribution system, evaluate the most suitable type of filling cycle for the specific application. In some applications with just a few drain valves in the distribution system, it may be useful to set all zones together, in order to avoid high pressure during operation of the function.

Path: Menu > Settings > System > Functions > Fill

Function	Display	Description	Range	Default
	Enable fill	If enabled, when the water outlet line is empty during start-up, the pump delivers fl w for a set time, in order to fill the line before starting atomisation.	On/Off	On
	Fill type	Selection of the type of fill (active only if filling is enabled)	One zone at a time All zones together	All zones together
	Fill with request only	Filling will only be activated in the zones that require production. (active only if filling is enabled and the fill type is set to One zone at a time)	Yes/No	Yes
	Fill time	System fill time . The fill time can be set individually for each zone in the system. (active only if filling is enabled)	1-60 min	2 min

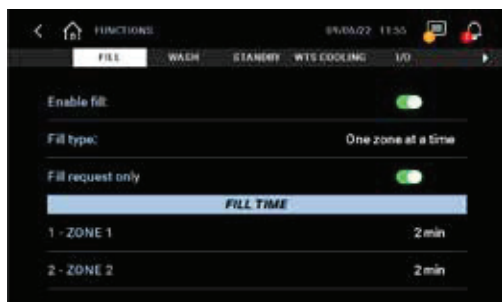


Fig. 8.a

Washing

The washing function involves running water through all the piping for a set time. The aim is to completely flush the system and avoid water stagnation.

It is managed in the same way as filling, yet lasts longer: it is recommended to set the time so that the water used for washing is at least three times the volume of water contained in the entire system. Washing is performed every day at the same time (e.g. every day at 4 in the morning) or periodically, set by parameter. In addition, a washing cycle is also performed at power on (production must be enabled in at least one zone, even if system production is not requested).

For multi-zone systems, two types of washing can be selected: one zone at a time or all zones together. Based on the characteristics of the distribution system, evaluate the most suitable type of washing cycle for the specific application. In some applications with just a few drain valves in the distribution system, it may be useful to set all zones together, in order to avoid high pressure during operation of the function.

Path: Menu > Settings > System > Functions > Wash

Function	Display	Description	Range	Default
	Wash mode	Set washing daily, after a period of inactivity or disable washing.	Inactivity wash Daily wash Wash disabled	Daily wash
	Wash type	Select the type of washing cycle (active only if washing is enabled)	One zone at a time All zones together	All zones together
	Inactivity threshold	Number of hours of inactivity after which a wash is performed. (active only if the Wash mode is set to Inactivity)	1-99 hours	24 hours
	Time (hh:mm)	Time of day when the daily washing cycle is performed (active only if the Wash mode is set to Daily)	00:00 - 23:59	00:00
	Wash time	Duration of the daily washing cycle in minutes. The wash time can be set individually for each zone in the system. (active only if the Wash type is set to All zones together)	1-10 min	2 min

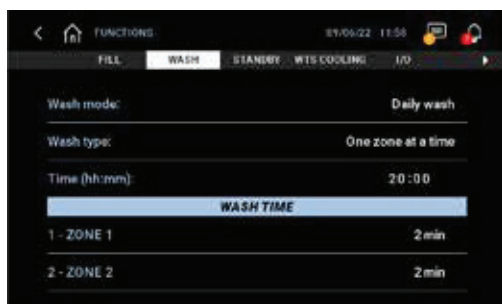


Fig. 8.b

Emptying

For reasons of hygiene, it is recommended to empty the distribution system so as to prevent water from stagnating inside when there is no humidification request for an extended period.

Path: Menu > Settings > System > Functions > Standby

Function	Display	Description	Range	Default
Empty rack after		Set emptying of the rack in a specific zone after a set time (zone 1-12)		
	Zone 1-12 - Enable	Enable/disable rack emptying in the specified zone	On/Off	On
	Zone 1-12 - Time	Number of hours after which an emptying cycle is performed (active only if the Wash mode is set to Inactivity)	0-48 hours	24 hours
Line pump-zone		Set emptying of the line that connects the pumping station to the zones		
	Enable	Enable/disable emptying of the line	On/Off	On
	Empty after	Set the line emptying interval	0-120 min	60 min
Racks	Rack fill valve open for:		1-120 min	5 min



Fig. 8.c

Water treatment system

Path: Menu > Settings > System > Functions > WTS water change

Function	Display	Description	Range	Default
	Enable WTS water change procedure	Enable/disable the water treatment system water change procedure	On/Off	Off
	Inactivity threshold	Number of hours of inactivity after which the WTS water change procedure is performed. (active only if the WTS water change procedure is enabled)	1-999 hours	24 hours
	Duration	Duration of the water treatment system water change procedure (active only if the WTS water change procedure is enabled)	1-99 min	15 min

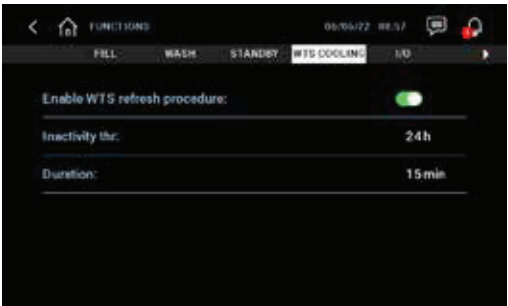


Fig. 8.d

Input/Output

Path: Menu > Settings > System > Functions > I/O

Function	Display	Description	Range	Default
Input logic	Enable pump (PEN)	Set the logic of the digital signals for the enable pumping unit input	N.O./N.C.	N.C.
	Reverse osmosis alarm input logic (ROAL)	Set the logic of the digital signals for the reverse osmosis alarm input	N.O./N.C.	N.C.
	Water leak alarm input logic (WL)	Set the logic of the digital signals for the water leak alarm input	N.O./N.C.	N.C.
Output logic NO7 (programmable relay)	Alarm output logic (AL)	Set the logic of the digital signals for the alarm output	N.O./N.C.	N.C.
	Configuratio	Set the output configuration or the programmable relay NO7	Unit life status / Water temperature alarm / Low inlet pressure alarm / Low inlet pressure warning / No water warning / Pump maintenance warning / Pump status / Rack low temperature warning	Unit life status
	Relay logic	Set the logic for the programmable relay NO7 signals	N.O./N.C.	N.O.



Fig. 8.e

Bypass

This function is used to bypass one or more system zones for maintenance. The system will continue to work with the remaining zones.



Notice: make sure that there are manual shut-off valves on the water lines in the bypassed zones.

Path: Menu > Settings > System > Functions > Bypass

Function	Display	Description	Range	Default
	Bypass zones 1-12	Set which zones are to be bypassed (zones 1-12) (active only in multizone systems)	On/Off	Off

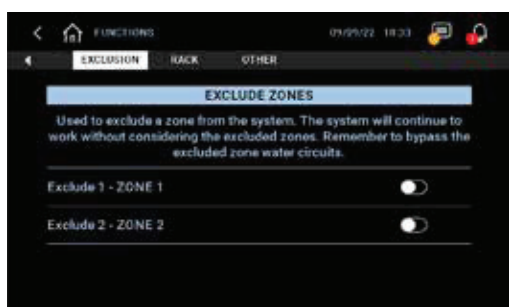


Fig. 8.f

Type of rack

humiFog Multizone Touch supports two types of distribution system rack: standard (RH*00*****) and with external valves (RH*E0*****). Select the type of rack based on the installed solution. The type of rack is the same for all distribution system zones.

Path: Menu -> Settings -> System -> Functions -> Rack

Function	Display	Description	Range	Default
Rack configuratio	Rack type	Set the rack type	Standard/External valves	Standard

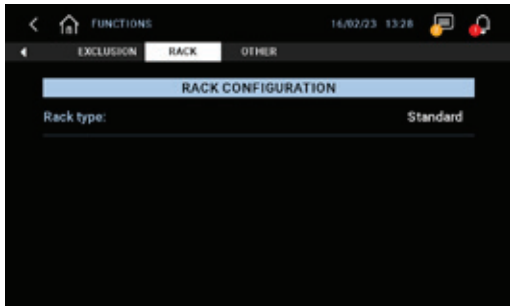


Fig. 8.g

Other functions

Chattering

Chattering is used to try and eliminate any debris that may form inside the solenoid valves during operation, preventing them from opening/closing correctly.
The function is activated when the unit detects a low outlet pressure (HP) warning.

Line pressure relief

This function allows the pressure in the system to be monitored. In the event of overpressure, the system activates the opening of the solenoid valves (SV) to discharge the excess water, bringing the pressure back to safe levels.

Flow rate limitation during filling/washing

This function allows you to limit the pump flow rate during washing or filling phases in the following ways:

- Washing/Filling for single zone: the flow rate is limited to that of the active zone - i.e. the sum of the flow rates of the steps belonging to that zone.
- Simultaneous washing/filling of all zones: the flow rate is limited to the sum of the flow rates of all the zones involved.

Pump start delay

The pump start delay parameter is aimed at ensuring that advance opening of the cabinet fill valve supplies water to the pump before it starts, so that it operates in the correct conditions.

Pump venting time

The pump venting time is the duration of the procedure after which it can be considered completed. If the default (60 s) is not sufficient, the parameter must be increased until water overflows from the vent valve.

Pump fill

Pump fill is a feature that ensures proper operation of the water-lubricated oil-free pump when the distribution system fill function is disabled. Following a low inlet pressure alarm or, in general, when the unit is switched on, the pump can only be restarted in the presence of water after a fill cycle. In this case only the pump circuit is filled, for a sufficient time to fill the pump water supply circuit and ensure safe pump operation, without necessarily filling the entire distribution system.

Path: Menu > Settings > System > Functions > Other

Function	Display	Description	Range	Default
Chattering		The function is active by default and involves rapid 1-second opening/closing cycles of the NO solenoid valves (except for the cabinet drain valve).		
	Chattering cycles number	Set number of chattering cycles	01 to 10	5
Line pressure relief	Duration	Line pressure relief: maximum time for managing line pressure after slowdown	0 to 40 s	20
Fill & wash control	Flow rate limitation during fill/wash	Enabling of flow rate limitation during washing and filling	Yes-No	No
Pump management	Pump start delay	Pump start delay after cabinet fill valve opening	10 to 60 s	10 s
	Pump air purge time	Duration of the pump venting procedure before confirmation	40 to 120 s	60 s
	Pump fill time	Pump fill duration (only if the distribution system fill function is disabled)	1 to 60 min	1 min

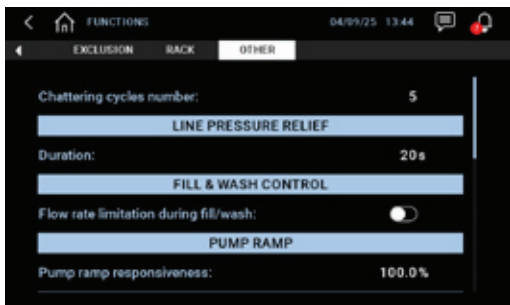


Fig. 8.h

8.2.2 Backup and rotation

In some critical applications where relative humidity control is very important, it may be essential have a backup unit available in the event of malfunctions on the main unit. A second backup unit can be useful in the event of a main unit malfunction in applications that require continuous humidity control.

- Press Menu.
- Press Settings (see par. 8.1).
- Press System.
- Press Backup & rotation.

This screen is used to enable the backups, set the pump rotation time and the type of unit.

Path: Menu > Settings > System > Functions > Backup & rotation

Function	Display	Description	Range	Default
Configure backup & rotation	Enable backup	Enable/disable the backup function	On/Off	Off
	Unit type	Set the type of cabinet. The type of cabinet type defines the priority of the unit that will attempt to start first when the units are powered on simultaneously. After powering on, there is no difference in operation between the two devices. (active only if backup is enabled)	Main/ Secondary	Main
	Enable rotation	Enable/disable the rotation function between backup units (active only if backup is enabled)	On/Off	On
	Rotation time	Set the rotation time between pumping stations. (active only if backup and rotation are enabled)	1-24 hours	8 hours

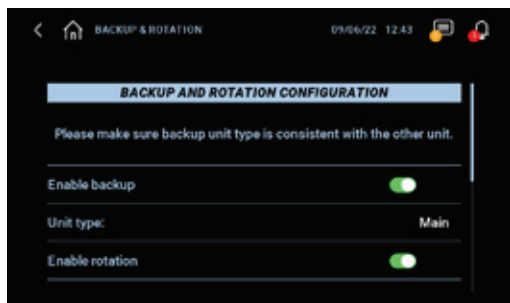


Fig. 8.i

8.2.3 BMS

The humidifier can be connected to a supervisor (BMS) via serial or Ethernet network. The ModBus and BACnet protocols are supported as standard by the units.



Notice: only one instance of the BACnet protocol is available, therefore it is not possible to activate BACnet on the BMS port and on the Ethernet port at the same time.

- Press Menu.
- Press Settings (see par. 8.1).
- Press System.
- Press BMS.

Channel 1

Path: Menu > Settings > System > Functions > Channel 1

Function	Display	Description	Range	Default
	Enable channel	Enable/disable the selected communication channel	On/Off	Off
	Channel type	Set the channel operating mode: (active only if the channel is enabled)	Supervisor Supervisor + Controller	Supervisor
	Select protocol + port	Set the type of communication protocol and port (active only if the channel is enabled)	ModBus BMS / ModBus ETH / BACnet BMS / Bacnet ETH	ModBus BMS
	Enable supervisor offline alarm	Enable/disable the alarm that signals when the supervisor is offline (active only if the Channel type is set to Supervisor + Controller)	On/Off	On
	Alarm delay	Set the delay time for alarm activation (active only if the Channel type is set to Supervisor + Controller)	1-999 sec	180 sec
Control mode	Zone 1-12	Indicates the zone for setting the control mode from the supervisor channel	None Control only On-Off + control On-Off only	None

Channel 2

Path: Menu > Settings > System > Functions > Channel 2

Function	Display	Description	Range	Default
	Enable channel	Enable/disable the selected communication channel	On/Off	Off
	Channel type	Set the channel operating mode: (active only if the channel is enabled)	Supervisor Supervisor + Controller	Supervisor
	Select protocol + port	Set the type of communication protocol and port (active only if the channel is enabled)	ModBus BMS / ModBus ETH / BACnet BMS / Bacnet ETH	ModBus BMS
	Enable supervisor offline alarm	Enable/disable the alarm that signals when the supervisor is offline (active only if the Channel type is set to Supervisor + Controller)	On/Off	On
	Alarm delay	Set the alarm activation delay time (active only if the Channel type is set to Supervisor + Controller)	1-999 sec	180 sec
Control mode	Zone 1-12	Indicates the zone for setting the control mode from the supervisor channel	None Control only On-Off + control On-Off onl	None

Channel 3

Path: Menu > Settings > System > Functions > Channel 3

Function	Display	Description	Range	Default
	Enable channel	Enable/disable the selected communication channel	On/Off	Off
	Channel type	Set the channel operating mode: (active only if the channel is enabled)	Supervisor Supervisor + Controller	Supervisor
	Select protocol + port	Set the type of communication protocol and port (active only if the channel is enabled)	ModBus BMS / ModBus ETH / BACnet BMS / Bacnet ETH	ModBus BMS
	Enable alarm for supervisor offline	Enable/disable the alarm that signals when the supervisor is offline (active only if the Channel type is set to Supervisor + Controller)	On/Off	On
	Alarm delay	Set the alarm activation delay time (active only if the Channel type is set to Supervisor + Controller)	1-999 sec	180 sec
Control mode	Zone 1-12	Indicates the zone for setting the control mode from the supervisor channel	None Control only On-Off + control On-Off onl	None

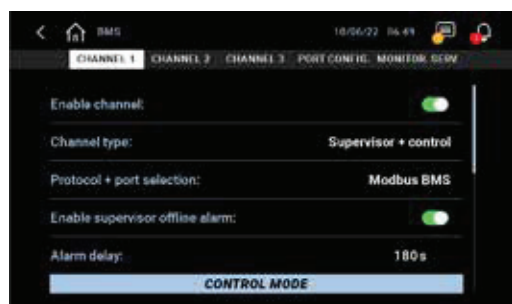


Fig. 8.j

Port configuration



Notice: the configuration parameter values must be provided by the local network administrator.

Path: Menu > Settings > System > Functions > Port config.

Function	Display	Description	Range	Default
Ethernet port		Settings relating to the unit's Ethernet connection		
	DHCP		On/Off	Off
	IP	Unit IP address:		192.168.1.1
	Mask	Subnet mask		255.255.255.0
	Gateway			0.0.0.0
	DNS Update	After having modified the parameters, the IP address can be updated.	On/Off	Off
BMS port		Settings relating to the unit's BMS connection		
	Address		0 to 247	1
	Baud rate		1200/2400/4800 9600/19200/38400 57600/76800/ 115200/375000	19200
	Stop bits		1/2	2
	Parity		None Even Odd	None
MS/TP BACnet configuratio	Station address		0 to 127	0
	Max masters		0 to 127	127
	Max frames		5 to 25	10
MS/TP BACnet configuratio	Device inst.		0 to 4194302	77000

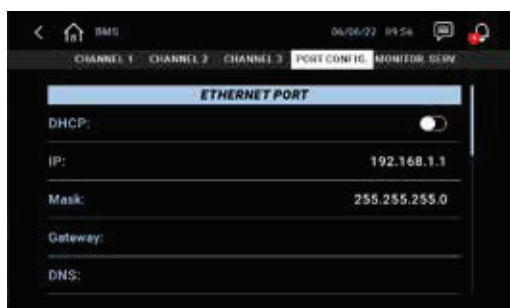


Fig. 8.k

Monitoring service

The paused by monitoring service function allows the devices configured for supervisor control to enable the unit (pumping station) independently. The paused unit is not enabled to operate in the system.



Notice: if the paused unit is the pumping station, then the entire system cannot produce humidity.

If necessary, the paused by monitoring service can be bypassed in local mode: the operator can use the local controller to enable production (despite the unit being paused by the monitoring service), by enabling the Paused unit bypass parameter. To avoid forgetting that the pause bypass is active, a (settable) timer has been included so that the bypass is removed after a set period of time.

Path: Menu > Settings > System > Functions > Monit. serv.

Function	Display	Description	Range	Default
Monitoring service		Settings relating to the paused by monitoring service function.		
	Unit pause status	Display the unit paused from monitoring service status	On/Off	
	Paused unit bypass	Enable/disable the monitoring service pause bypass. Bypass activation is notified by displaying the status of the bypass reset timer.	On/Off	Off
	Unit pause bypass reset delay	Set the delay for disabling the monitoring service pause bypass.	1-999 hours	2 hours

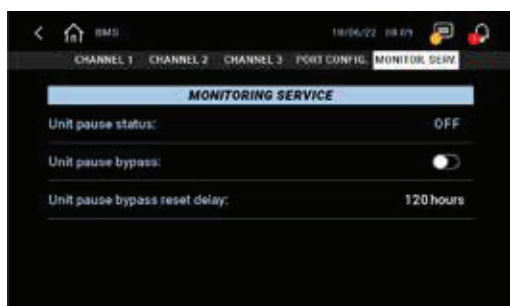
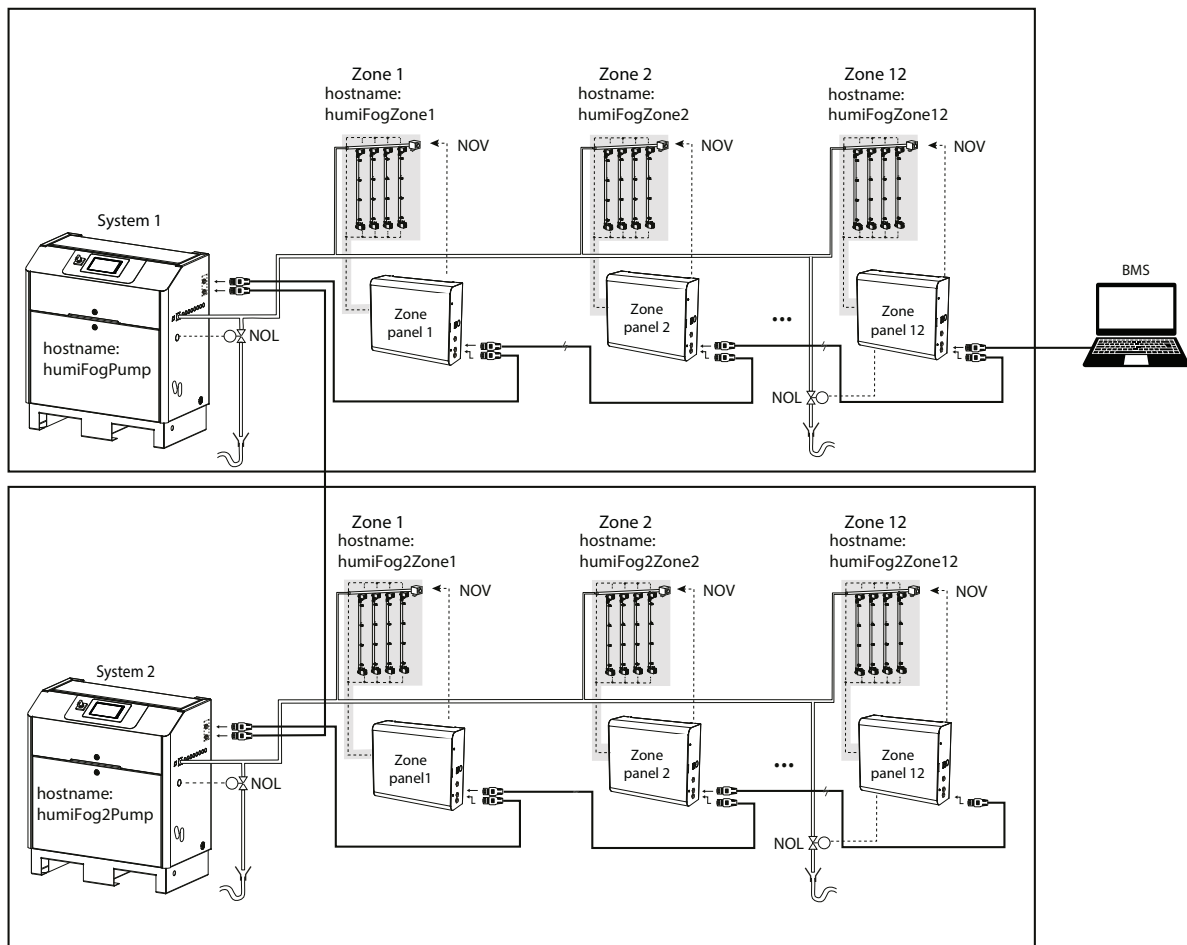


Fig. 8.l

Multi-network

The multi-network function allows to manage several humiFog Multizone/humiFog Multizone Touch systems connected to the same local network. An application example could be a supervision system that requires access to all humidifiers via a single Ethernet connection.

By way of example only, a possible type of network corresponding to the above requirements is shown:



Below are the steps for configuring multi-network functionality on all elements of the humiFog systems to be connected together.

It is strongly recommended to follow the instructions in the order given:

1. Isolate the humiFog Multizone Touch systems so that there is no connection between the elements of one and the other; only the pumping station and its zones must be connected via Ethernet. Also disconnect any external supervision/gateway systems.
2. The first humiFog Multizone Touch system requires no configuration.
3. Activate and configure the multi-network function on all zones of the second humiFog Multizone Touch system by assigning network number 2 (zones will stop communicating with the reference pumping station).
4. Activate and configure the multi-network function on the pumping station of the second humiFog Multizone Touch system via pGDx by assigning network number 2. After a few seconds, the zones that were initially offline should be detected again by the pumping station.
5. Repeat steps 3. and 4. for every other humiFog system besides the first two, assigning an appropriate network number different from the previous ones.
6. Connect the humiFog Multizone Touch systems together and check the integrity of the parameters on each system; each pumping station should have maintained communication with its assigned zones.
7. Connect any external supervision/gateway systems to the humiFog Multizone Touch system network, repeating the tests in point 6.

Path: Menu > Settings > System > BMS > Multi-network

Functionality	Display	Description	Range	Default
Multi-network	Enable	Enabling of the multi-network function	Yes/No	No
	Network number	Network number setting	1/9	1



Fig. 8.m

8.2.4 Initialisation

The Initialisation function offers another way to access the system wizard and save the set configuration

- Press Menu.
- Press Settings (see par. 8.1).
- Press System
- Press Initialisation.

Save/load system configuration

It is good practice to save the system configuration after commissioning/setup and in any case when the system is functioning, so that it can be recalled later if necessary.

If replacing one of the controllers (pumping station/zone), the system configuration will need to be saved again after configuring the new controller.



Notice: make sure to save/load the system configuration when all zones are online.

Path: Menu > Settings > System > Initialisation > Save/Load configuration

Function	Display	Description	Range	Default
Save configuration	Last save date:	Shows the date/time the system configuration was last saved		
	Save system configuration	Operation that saves the system configuration	Yes/No	No
	STATUS	Display the result of the operation (only after saving)		
Load configuration	Last load date:	Shows the date/time the system configuration was last loaded		
	Load system configuration	Operation that loads the system configuration	Yes/No	No
	STATUS	Display the result of the operation (only after saving)		

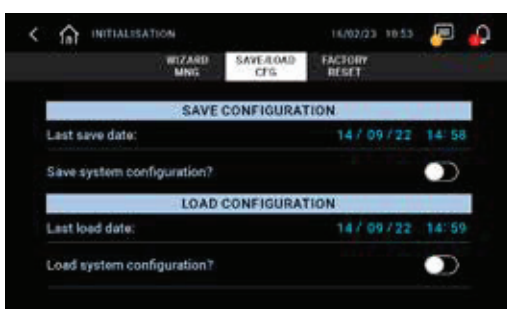


Fig. 8.n

8.2.5 Alarms

The Alarms submenu allows to configure the activation parameters of certain system alarms.

- Press on Menu.
- Press on Settings (see par. 8.1).
- Press on System
- Press on Alarms.

Path: Menu > Settings > System > Alarms

Functionality	Display	Description	Range	Default
Low pressure on HP	Alarm delay	Low delivery pressure alarm/warning delay	20:1200 s	90 s
High conductivity	Enable alarm	Enable high conductivity alarm	Yes/No	Yes



Fig. 8.0

8.3 Pump

The System menu is active only on the humiFog Multizone Touch user terminal (not on the zone panels). In this submenu, manual pump operation can be enabled and the corresponding parameters set.

- Press Menu.
- Press Settings (see par. 8.1).
- Press Pump.

Path: Menu > Settings > Pump > Manual mode

Function	Display	Description	Range	Default
Mode manual	Manual mode	Press the button to activate manual mode. Press Manual mode to enter the pump control dashboard.	On/Off	Off
	Bypass calibration	Set the calibration parameters and enable bypass (active only with the pump in manual mode)		

8.3.1 Manual mode

When accessing manual mode, a screen is shown that represents the pumping station control panel dashboard.

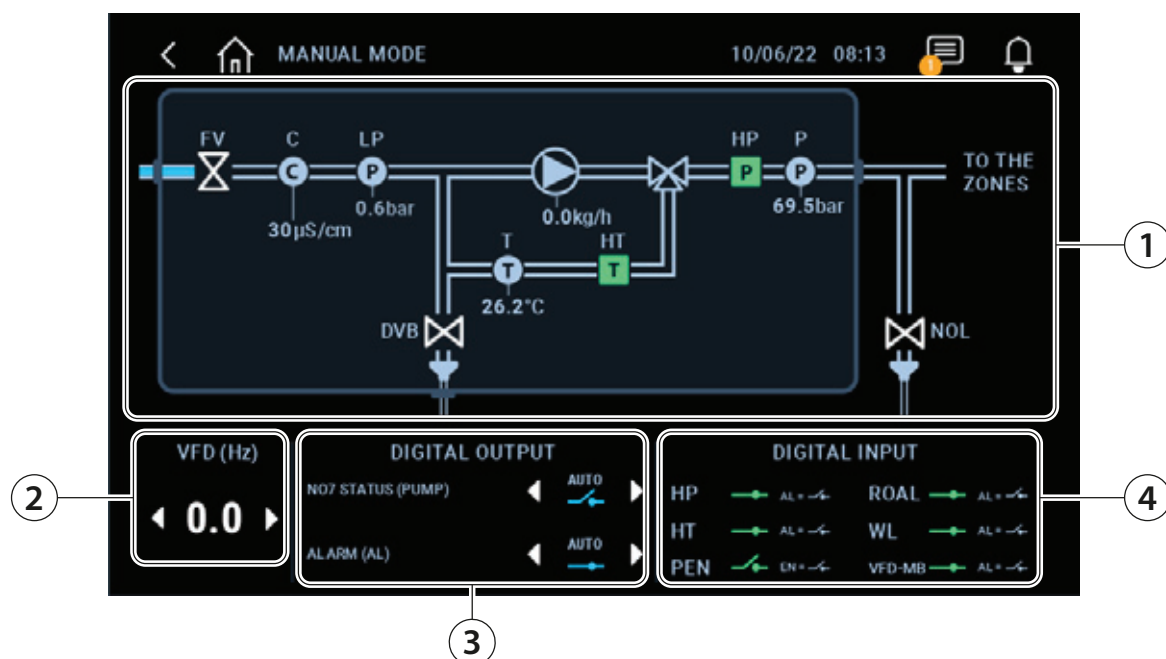


Fig. 8.p

Ref.	Description
1	Pump operating circuit
2	Set inverter speed (VFD)
3	Digital output commands
4	Display digital input readings

Pump operating circuit

This section of the control dashboard shows, schematically, the pumping station's internal operating circuit. To override the status of the solenoid valves (for example, for testing) press the corresponding icons.

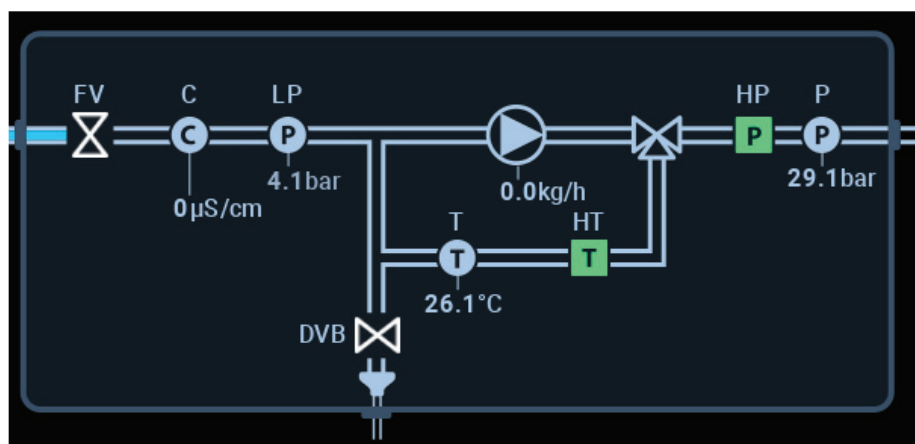


Fig. 8.q

Component	Icon	Status	Description
Solenoid valve		No flow	FV: cabinet fill valve DVB: cabinet drain valve NOL: line drain valve
		Flow present	
Pressure sensor			LP: low inlet pressure sensor HP: high outlet pressure sensor
Pressure switch			HP: high outlet pressure sensor

Conductivity sensor			C: inlet conductivity sensor
Temperature sensor			T: temperature sensor
			HT: high temperature sensor
Pump			Cabinet pump

Tab. 8.e

Digital outputs

This section of the control dashboard is used to manually control the pumping station digital outputs.

Component	Icon	Status	Description
NO7 status (PUMP)		Auto Open	Activate/deactivate the pump digital output (active only with the pump in manual mode)
		Closed	
Alarm (AL)		Auto Open	Activate/deactivate the alarm digital output (active only with the pump in manual mode)
		Closed	

Tab. 8.f

Digital inputs

This section of the control dashboard is used to view the pumping station digital input readings.

Icon	Status	System components
	Open	HP: High pressure switch HT: Water thermostat PEN: Enable water production
	Closed	ROAL: Reverse osmosis system status WL: Flood sensor status VFD-MB: Inverter status

8.3.2 Bypass calibration

This screen is used to set the bypass calibration parameters.

Path: Menu > Settings > Pump > Manual mode > Bypass calibration

Function	Display	Description	Range	Default
Bypass calibration	Enable fill before calibration	Enable/disable filling before performing the bypass calibration (active only with the pump in manual mode)	On/Off	On
	Bypass calibration fill time	Set the fill time (active only with Fill before calibration enabled)	1-60 min	1 min
	Start bypass calibration	Begin the bypass calibration procedure (active only with the pump in manual mode)	On/Off	Off
	Pressure	Display the outlet pressure reading (active only with Start bypass calibration enabled)		
	Flow-rate	Display the current flow-rate reading (active only with Start bypass calibration enabled)		
	Zone NC fill SV command	Control the fill solenoid valves for the zone steps (active only with Start bypass calibration enabled)	Auto Closed (24V) Open (0V)	Auto

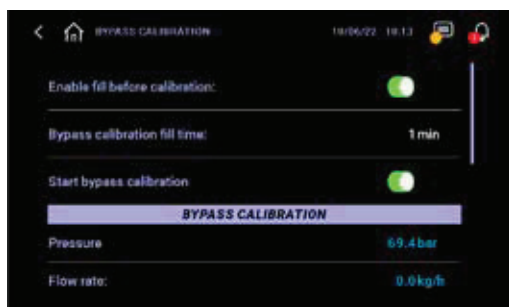


Fig. 8.r

8.3.3 Pump air purge

This screen is used possible to activate the pump venting procedure.

The pump venting procedure ensures that the pump is filled following pump maintenance and mandatory when the pump venting request warning is active.

For further details, see par. 6.5.

Path: Menu > Settings > Pump > Manual mode > Pump air purge

Function	Display	Description	Range	Default
Start pump air purge		Enable/disable pump venting	Yes/No	No
Inlet pressure (LP)		Display the inlet pressure reading		
Countdown		Shows the countdown after which the procedure can be confirmed or repeated after completion		
Status		Show system status		



Fig. 8.s

8.3.4 c.pco controller (pumping station) software update

Carel periodically releases controller software updates due to improvements or new functions.

The most up-to-date version of the software and the description of the latest implementations can be downloaded from ksa.carel.com.

The software update package, if downloaded in .zip format, must first be unzipped. It contains three files. The same update package can be used to update both the pumping station controller and the system zone controllers.

The pumping station controller and zone controllers are however updated using different procedures.

The three files need to be copied onto a USB flash driver (type A 2.0 or higher - formatted with the FAT32 file system), in a folder called "UPGRADE".

Then proceed as follows for the update:

Step 1

Use the key provided to open the panel (8 - Fig. 8.t) and access the electrical panel.

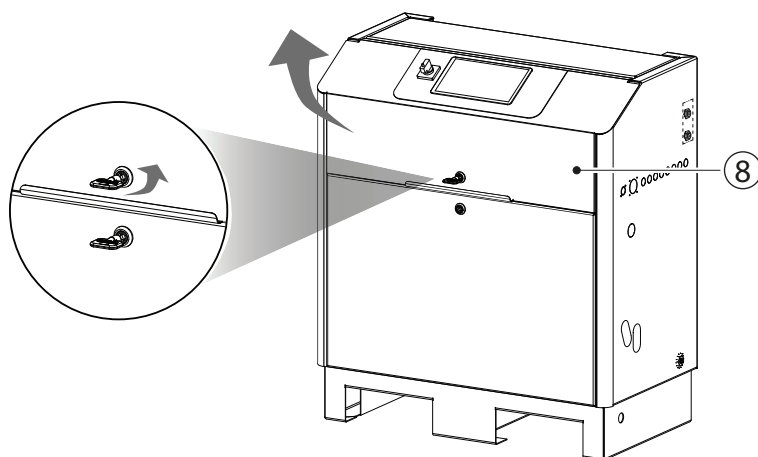


Fig. 8.t

Step 2
Open the cover (9 - Fig. 8.u) and plug the USB flash drive into the USB type A socket (10 - Fig. 8.u).

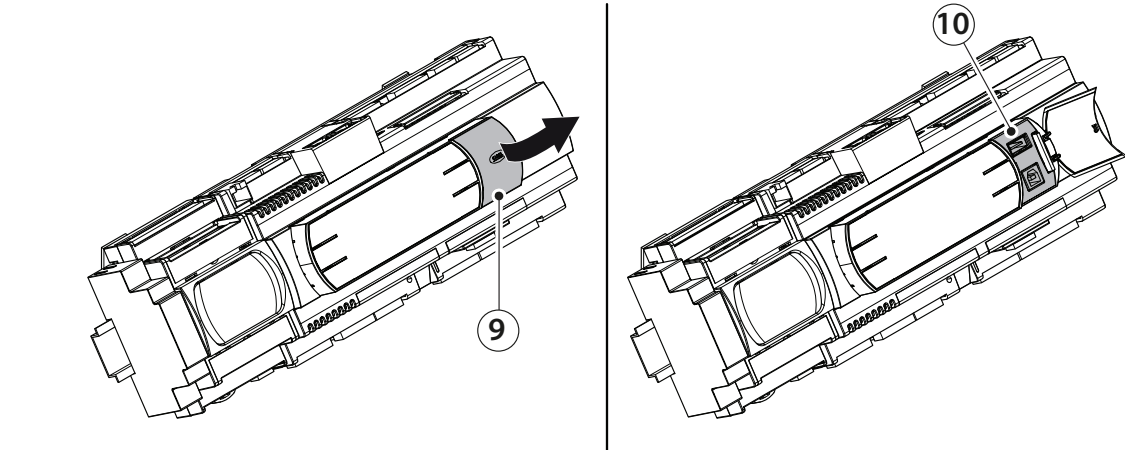


Fig. 8.u

Step 3
Access the update section in the pump settings on the pGDx display.

Path: Menu > Settings > Pump > Initialisation > SW update

Function	Display	Description	Range	Default
	Update software application	Enable/disable controller software update	Yes/No	No

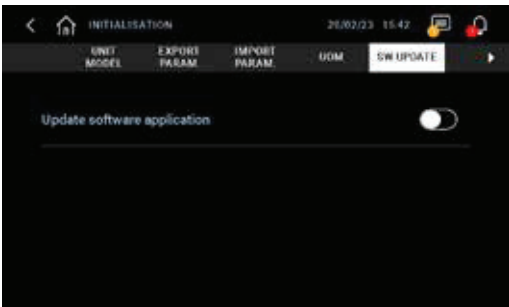


Fig. 8.v

Step 4
Activate the software update, the following message will be displayed; confirm to proceed with the operation:



Fig. 8.w

Once the procedure has been started, the update comprises three steps: save the current parameters, download the software and load the previously saved parameters. In this way, the update does not alter the existing system configuration, which will be exactly the same as before performing the operation.

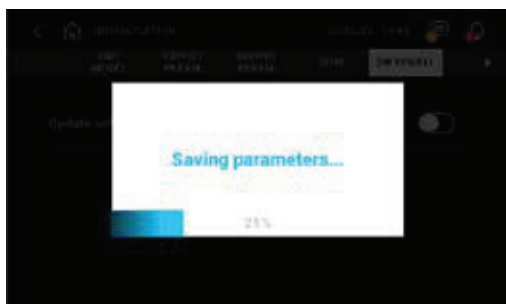


Fig. 8.x



Fig. 8.y

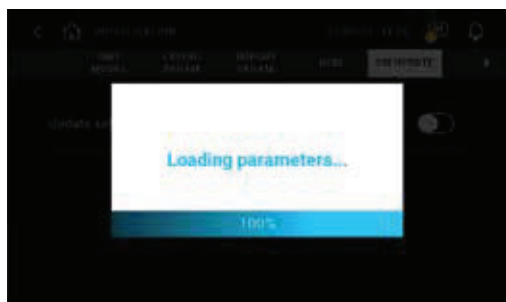


Fig. 8.z

If, on the other hand, the flash drive is not plugged in correctly or the files it contains are not stored as described previously, the update will not be performed and an error message will be displayed. Below is a list of possible errors during the update procedure:

- Invalid file nam
- Disk access
- File access
- File I/O error
- File not valid
- Value not valid
- Memory buffer too small
- File empty
- Invalid time parameter
- Module busy
- Logger not running
- Log export failed
- Function unavailable
- Cfg API error
- Invalid value
- Unknown error

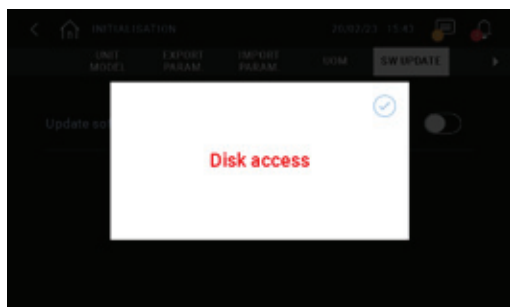


Fig. 8.aa

8.4 Zones

This menu is used to set the operating parameters for the various system zones.



Notice: The parameters displayed change according to the control logic set.

8.4.1 Control

- Press Menu.
- Press Settings (see par. 8.1).
- Press Zones.
- Press Control.



Notice: select the desired option based on the specific characteristics of the installed system.

Path: Menu > Settings > Zones > Control

Function	Display	Description	Range	Default
Control	Control type	Set the type of controller. The available options vary according to the type of application set, as shown in the following table (Tab. 8.c).		
	Control logic	Set the type of control logic (The availability of the function varies according to the Control type set)	Proportional / Proportional + Integral	Proportional

Type of control

Humidity (single probe)
External signal + temperature limit
External signal + humidity limit
External proportional signal
ON/OFF signal + temperature limit
ON/OFF signal + humidity limit
ON/OFF signal
Dew point temperature + humidity limit
Dew point temperature
Adjustment by supervisor
Temperature + humidity limit
Temperature + temperature limit
Temperature (single probe)
Humidity + temperature limit
Humidity + humidity limit
Two temperature probes + humidity limit
Two humidity probes
Two temperature probes
Three humidity probes
Three temperature probes

Tab. 8.g



Notice: set the parameter values based on the characteristics of the probes used and the specific characteristics of the system.

Path: Menu > Settings > Zones > Control

Function	Display	Description	Range	Default
Configuration - Main humidity probe (U6)	Type	Set the probe type	0-10V - 4-20mA - 0-20mA - 0-1V - 2-10V - NTC	0.10V
	Min	Set the minimum value readable by the probe	0-100% rH	0% rH
	Max	Set the maximum value readable by the probe	0-100% rH	100% rH
	Offset	Set the offset value to compensate for any inaccurate readings	-999.9 to 999.9	0
	Enable alarms	Enable/disable the alarm that signals any probe faults	On/Off	On
	Delay	Set the delay for activating the alarm after the fault is detected	0-9999 sec	30 sec
Configuration - Main temp. broken (U6)	Type	Set the probe type	0-10V - 4-20mA - 0-20mA - 0-1V - 2-10V - NTC	0.10V
	Min	Set the minimum value readable by the probe	-999.9 - 999.9 °C	-20 °C
	Max	Set the maximum value readable by the probe	-999.9 - 999.9 °C	70 °C
	Offset	Set the offset value to compensate for any inaccurate readings	-999.9 to 999.9	0
	Enable alarms	Enable/disable the alarm that signals any probe faults	On/Off	On
	Delay	Set the delay for activating the alarm after the fault is detected	0-9999 sec	30 sec
Configuration - Main outside probe (U6)	Type	Set the probe type	0-10V - 4-20mA - 0-20mA - 0-1V - 2-10V - NTC	0.10V
	Min	Set the minimum value readable by the probe	0-100 %	0%
	Max	Set the maximum value readable by the probe	0-100 %	100%
	Offset	Set the offset value to compensate for any inaccurate readings	-999.9 to 999.9	0
	Enable alarms	Enable/disable the alarm that signals any probe faults	On/Off	On
	Delay	Set the delay for activating the alarm after the fault is detected	0-9999 sec	30 sec
Configuration - Main probe dig. signal	Logic	Set the logic of the main probe digital signals	N.O./N.C.	N.O.
Configuration - Limit/2nd humid. (U7)	Type	Set the probe type	0-10V - 4-20mA - 0-20mA - 0-1V - 2-10V - NTC	0.10V
	Min	Set the minimum value readable by the probe	0-100% rH	0% rH
	Max	Set the maximum value readable by the probe	0-100% rH	100% rH
	Offset	Set the offset value to compensate for any inaccurate readings	-999.9 to 999.9	0
	Enable alarms	Enable/disable the alarm that signals any probe faults	On/Off	On
	Delay	Set the delay for activating the alarm after the fault is detected	0-9999 sec	30 sec
Configuration - Limit/2nd temp. (U7)	Type	Set the probe type	0-10V - 4-20mA - 0-20mA - 0-1V - 2-10V - NTC	0.10V
	Min	Set the minimum value readable by the probe	-999.9 - 999.9 °C	-20 °C
	Max	Set the maximum value readable by the probe	-999.9 - 999.9 °C	70 °C
	Offset	Set the offset value to compensate for any inaccurate readings	-999.9 to 999.9	0
	Enable alarms	Enable/disable the alarm that signals any probe faults	On/Off	On
	Delay	Set the delay for activating the alarm after the fault is detected	0-9999 sec	30 sec
Configuration - Third humidity probe (U8)	Type	Set the probe type	0-10V - 4-20mA - 0-20mA - 0-1V - 2-10V - NTC	0.10V
	Min	Set the minimum value readable by the probe	0-100% rH	0% rH
	Max	Set the maximum value readable by the probe	0-100% rH	100% rH
	Offset	Set the offset value to compensate for any inaccurate readings	-999.9 to 999.9	0
	Enable alarms	Enable/disable the alarm that signals any probe faults	On/Off	On
	Delay	Set the delay for activating the alarm after the fault is detected	0-9999 sec	30 sec
Configuration - Third temp. probe (U8)	Type	Set the probe type	0-10V - 4-20mA - 0-20mA - 0-1V - 2-10V - NTC	0.10V
	Min	Set the minimum value readable by the probe	-999.9 - 999.9 °C	-20 °C
	Max	Set the maximum value readable by the probe	-999.9 - 999.9 °C	70 °C
	Offset	Set the offset value to compensate for any inaccurate readings	-999.9 to 999.9	0
	Enable alarms	Enable/disable the alarm that signals any probe faults	On/Off	On
	Delay	Set the delay for activating the alarm after the fault is detected	0-9999 sec	30 sec
Control - 2 probes	Weight of probe 1	Set the importance (weight) of probe 1 to calculate the reading	0-100 %	50%
	Weight of probe 2	Set the importance (weight) of probe 2 to calculate the reading	0-100 %	50%
Control - 3 probes	Weight of probe 1	Set the importance (weight) of probe 1 to calculate the reading	0-100 %	33%
	Weight of probe 2	Set the importance (weight) of probe 2 to calculate the reading	0-100 %	33%
Configuration - Main outside probe (U6) Control	Hysteresis	Set the activation hysteresis for proportional control	0.5-100% rH	5%
Control - Modulating humidity control	Set point	Set the set point for modulating control	0-100% rH	50.0% rH
	Differential	Set the differential for modulating control	0-100% rH	3% rH
Control - Modulating temp. control	Set point	Set the set point for modulating control	0 - 100 °C	25 °C
	Differential	Set the differential for modulating control	0 - 100 °C	5 °C
Control - Limit humidity probe	Set point	Set the set point for proportional control of the limit probe	0-100% rH	20% rH
	Differential	Set the differential for proportional control of the limit probe	0-100% rH	5% rH
Control - Limit temp. probe	Set point	Set the set point for proportional control of the limit probe	0 - 100 °C	25 °C
	Differential	Set the differential for proportional control of the limit probe	0 - 100 °C	5 °C
Control - Production range	Minimum production	Set the minimum production value as a percentage	0-100 %	
	Current limit	Display the corresponding production value in kg/h		
	Maximum production	Set the maximum production value as a percentage	0-100 %	100%
	Current limit	Display the corresponding production value in kg/h		

8.4.2 Functions

- Press Menu.
- Press Settings (see par. 8.1).
- Press Zones.
- Press Functions.

Pressure relief

When the steps close, in order to quickly lower the pressure and avoid unwanted dripping, the N.O. step valves are temporarily opened. The N.O. valve opening time needs to be selected during commissioning, making sure to verify the absence of dripping when the steps close by draining as much water as possible.

Path: Menu > Settings > Zones > Pressure relief

Function	Display	Description	Range	Default
Pressure relief (Control type set to AHU)	Duration	Set the rack pressure relief duration	0-30 sec	1 sec
Pressure relief (Control type set to Room)	Step 1- 6 -> time	Set the pressure relief duration for the single steps	0-30 sec	2 sec

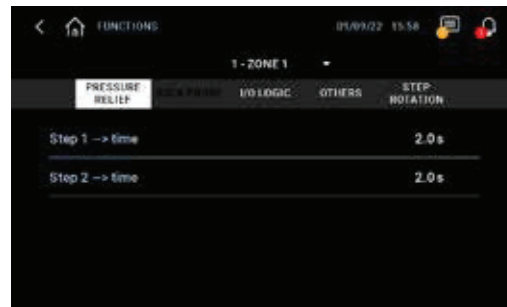
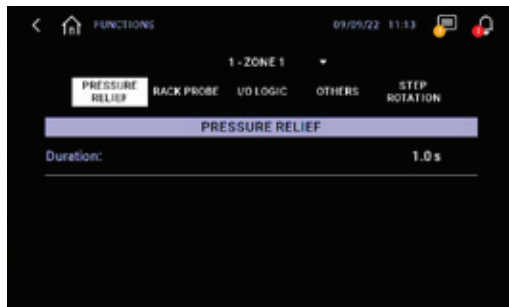


Fig. 8.ab

Rack temperature probe

A temperature probe can be installed just before the distribution system in order to check that the air pre-heating temperature is optimal for correct absorption of the atomised water.

Path: Menu > Settings > Zones > Rack probe

Function	Display	Description	Range	Default
Rack temperature probe	Enable the rack temperature probe	Enable/disable the temperature probe on the rack (enabling is only possible with Control type set to AHU)	On/Off	Off
	Type	Set the probe type	0-10V - 4-20mA - 0-20mA - 0-1V - 2-10V NTC	0..10V
	Min	Set the minimum value readable by the probe	-999.9 - 999.9 °C	-20 °C
	Max	Set the maximum value readable by the probe	-999.9 - 999.9 °C	70 °C
	Offset	Set the offset value to compensate for any inaccurate readings	-999.9 - 999.9 °C	0 °C
	Enable reduced production	Enable a reduction in production if the temperature in the atomisation zone falls below the set point. The reduction is applied in proportion to the deviation from the ideal atomisation temperature. (active only with the rack temperature probe enabled)	On/Off	Off
	Set point	This represents the minimum recommended temperature for atomisation (active only if Reduced production is enabled)	5 - 50 °C	20 °C
	Proportional band	Define a modulation range in which production is modulated. Below this range, production is at the minimum. Above the range, standard production restarts. (active only if Reduced production is enabled)	0.5 - 10 °C	5 °C
	Notification type	Represents the minimum recommended temperature for atomisation	Notification/ Warning	Notification
	Differential	This defines the interval outside of which the alarm message is cleared	0.5 - 10 °C	2 °C
	Warning reset threshold	Display the threshold to reset the alarm message based on the configured probe parameters.		



Fig. 8.ac

I/O logic

Path: Menu > Settings > Zones > I/O logic

Function	Display	Description	Range	Default
Digital inputs	Rack enabling logic (RACKEN)	Set the operating logic of the rack enabling circuit	N.O./N.C.	N.C.
	Flow switch logic (FLUX)	Set the flow switch operating mode	N.O./N.C.	N.C.
Digital outputs	Zone status logic (ZONE)	Set the zone status operating logic	N.O./N.C.	N.C.
	Alarm status logic (AL)	Set the alarm status operating logic	N.O./N.C.	N.C.
NO7 (Programmable relay)	Configuration	Set the output configuration or the programmable relay NO7	Rack life status/low temperature warning	Life status
	Relay logic	Set the logic for the programmable relay NO7 signals	N.O./N.C.	N.O.

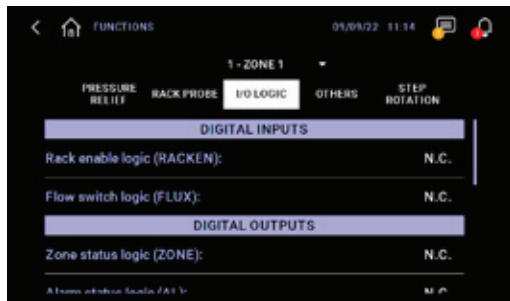


Fig. 8.ad

Other functions

Path: Menu > Settings > Zones > More

Function	Display	Description	Range	Default
	Humidity control probe alarm delay at pump start-up	Disable the probe disconnected alarm for a set time. This time is counted from when the pump starts. (active only with the rack temperature probe enabled)	On/Off	Off
	Alarm activation delay	Set the time the disconnected probe alarm is disabled. (active only with Humidity probe control alarm delay at pump start-up enabled)	1-99 min	5 min

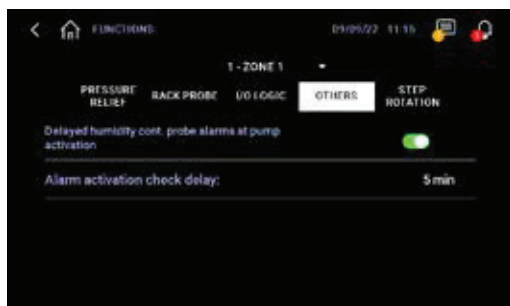


Fig. 8.ae

Step rotation

Step rotation is a function that can be activated only if all the steps in the distribution system relating to the zone in question are set with the same nominal flow-rate. In this case, when function is activated, after a settable time one or more steps currently in production are replaced by other steps that are currently inactive. This function makes it possible to standardise the use of the atomisation and distribution system as much as possible in direct in-room installations.

Path: Menu -> Settings -> Zone -> Functions -> Step rotation

Function	Display	Description	Range	Default
	Enable zone step rotation	Enable/disable step rotation	Yes/No	No
	Zone step rotation delay	Set the step rotation activation time	1 to 9999 min	15 min

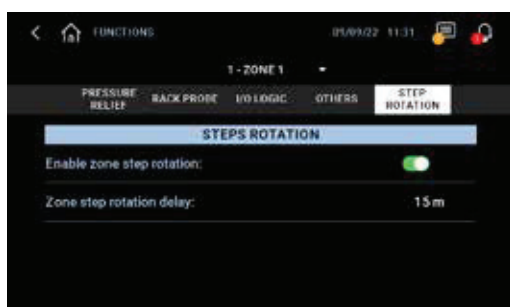


Fig. 8.af

8.4.3 Manual mode

During commissioning or maintenance, “manual mode” may be useful in order to check the operation of the main devices that make up the system. All the operations carried out from this menu have a direct effect on the system, i.e. they effectively activate/deactivate the components or modify their status.

- Press Menu.
- Press Settings (see par. 8.1).
- Press Zones.
- Press Manual mode.

Path: Menu > Settings > Zones > Manual mode

Function	Display	Description	Range	Default
Mode manual	Manual mode	Press the button to activate manual mode. Press Manual mode to enter the control screens.	On/Off	Off
	Enable manual zone fill	Enable/disable filling of the zone in manual mode. (active only if manual mode is enabled)	On/Off	On
	Minimum rack production calibration	Enable/disable the minimum rack production calibration procedure. (active only with manual mode enabled in single zone systems and Flow control set)		



Fig. 8.ag

Manual mode

When accessing manual mode, a screen can be displayed that represents the zone control panel dashboard, as well as a screen that shows the status of the zone digital inputs and outputs.

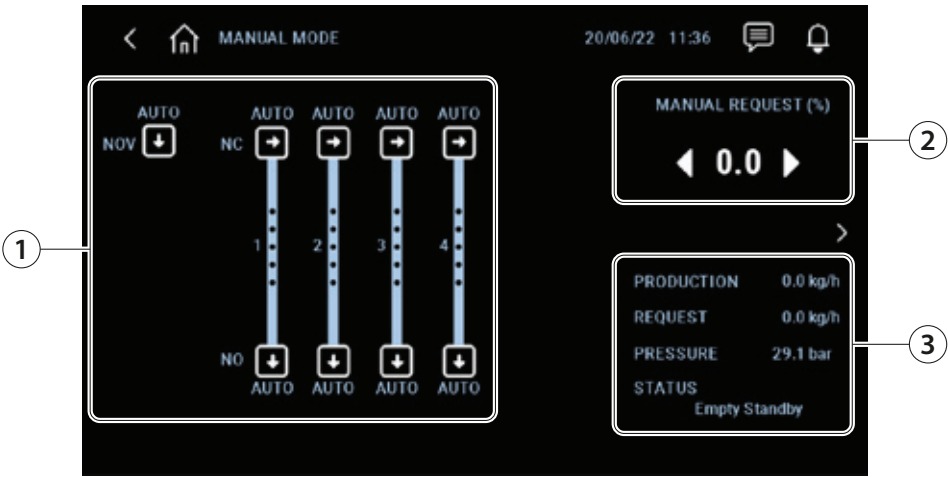


Fig. 8.ah

Ref.	Description
1	Operation of the rack steps
2	Zone manual request
3	Current production status

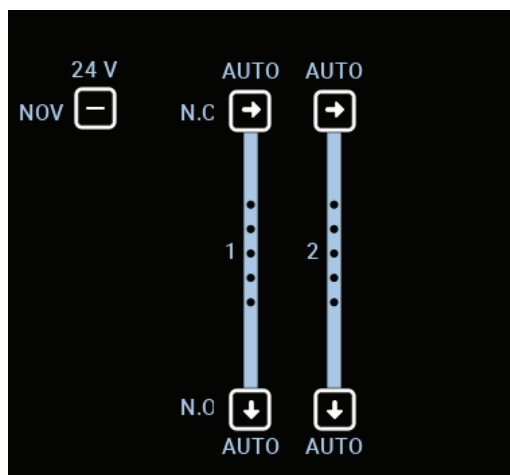


Fig. 8.ai

This section of the screen shows, schematically, the operation of the zone rack steps. To override the status of the components (for example, for testing) press the corresponding icons/symbols.

Component	Icon	Status	Default	Description
Solenoid valve NOV		Auto Open	Auto	NOV: Activate/deactivate the ventilation solenoid valve.
		Closed		
NC solenoid valve		Auto Open	Auto	NC 1-6: Activate/deactivate the rack step fill solenoid valves.
		Closed		
NO solenoid valve		Auto Open	Auto	NO 1-6: Activate/deactivate the rack step drain solenoid valves.
		Closed		

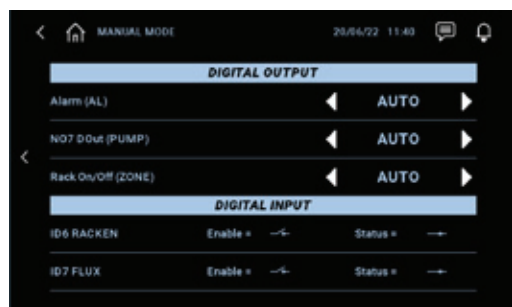


Fig. 8.aj

Path: Menu > Settings > Zones > Manual mode > Manual mode

Function	Display	Description	Range	Default
Digital outputs	Alarm (AL)	Activate/deactivate the alarm digital output (active only if manual mode is enabled)	Auto Closed (24V) Open (0V)	Auto
	Output NO7 (PUMP)	Activate/deactivate the pump digital output (active only if manual mode is enabled)	Auto Closed (24V) Open (0V)	Auto
	Rack On/Off (ZONE)	Activate/deactivate the zone digital output (active only if manual mode is enabled)	Auto Closed (24V) Open (0V)	Auto

Path: Menu > Settings > Zones > Manual mode > Manual mode

Function	Display	Description	Icon	Status
Digital inputs	ID6 RACKEN	Display the status of the enable rack digital input		Enabled
	ID7 FLUX	Display the status of the flow switch digital input		Disabled

Minimum rack production calibration

This procedure is used to calibrate the minimum rack production for the current zone. Minimum rack production calibration involves verifying that, at the minimum flow rate, the operating pressure is higher than the minimum threshold (20 bars). Otherwise, during the procedure the minimum production value needs to be increased until it reaches the minimum pressure. Once calibration has been completed, the procedure can be disabled.



Notice: rack min. production calibration is required with flow control for low outlet pressure with a low production request.

Path: Menu > Settings > Zones > Manual mode > Minimum rack calibration

Function	Display	Description	Range	Default
Minimum rack production	Start calibration	Enable/disable the minimum rack production calibration procedure. (active only if manual mode is enabled)		
	Minimum production	Set the minimum production for rack calibration. (active only if manual mode is enabled)	0-100 %	100%
	Current limit	Display the value (in kg/h) corresponding to the minimum production set.		
	Pressure HP	Display the outlet pressure reading.		
	Maximum production	Manually set the minimum rack production.	0-100 %	100%
	Reset the default min. production	Manually reset the minimum rack production to the default value.	On/Off	Off



Fig. 8.ak

8.4.4 BMS

The zone BMS menu is used to configure the parameters relating to the monitoring service.



Notice: the zone supervisor channel on a Touch system can only be set from the zone panel display.

- Press Menu.
- Press Settings (see par. 8.1).
- Press Zones.
- Press BMS.

Paused by monitoring service

The paused by monitoring service function allows the devices configured for supervisor control to enable the unit (zone panel) independently. The paused unit is not enabled to operate in the system.



Notice: if a zone panel is paused, production in that zone is temporarily stopped. However, any other zones in the system can continue atomising.

If necessary, the paused by monitoring service can be bypassed in local mode: the operator can use the local controller to enable production (despite the unit being paused by the monitoring service), by enabling the Paused unit bypass parameter. To avoid forgetting that the pause bypass is active, a (settable) timer has been included so that the bypass is automatically removed after a set period of time.

Path: Menu > Settings > Zones > BMS

Function	Display	Description	Range	Default
Monitoring service	Unit pause status	Display unit paused by monitoring service status	On/Off	
	Paused unit bypass	Enable/disable the monitoring service pause bypass.	On/Off	Off
	Unit pause bypass reset delay	Set the delay for disabling the monitoring service pause bypass.	1-999 hours	2 hours

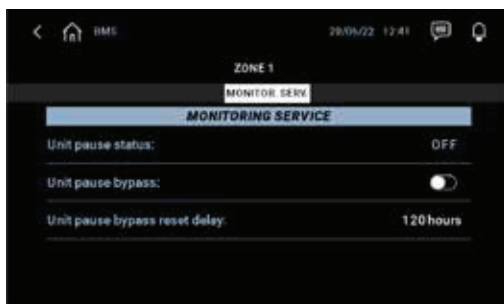


Fig. 8.al

8.5 Display

This menu is used to set the operating parameters for the touch display.

Path: Menu > Settings > Display

Function	Display	Description	Range	Default
Settings	Brightness	Set the brightness of the display	0:255	255
	Backlight time-out (0 = disabled)	Set the backlight timeout	0:32767	360 s
Initialisation	Reset alarm history	Reset the alarm log	Yes/No	No
Start language page	Show language selection at startup?	Enable language selection at startup	Yes/No	No
Update display	Update package for display available	Start the display software update	Yes/No	No
Password	Current password: Maintenance	Display the current 'Service' level password		
	New password: Maintenance	Set the new 'Service' level password		
	Current password: Service	Display the current 'Installer' level password		
	New password: Service	Set the new 'Installer' level password		
System menu	It is recommended to enter system menu only with Unit off. Proceed?	Access the display system menu		
Network configuratio	DHCP	Enable/disable DHCP protocol	On/Off	Off
	MAC	Show the display MAC address		
	IP	Set the display IP address		192.168.1.2
	Subnet mask	Set the subnet mask		255.255.255.0
	Gateway	Set the gateway IP address		0.0.0.0

8.6 pGDx interface software update

In the same way as for the c.pco controller software update, periodic software updates are also released for the pGDx interface. The most up-to-date version of the software and the description of the latest implementations can be downloaded from ksa.carel.com. The software update package (UpdatePackage.zip) must be kept in its original format and must not be renamed. To update the pGDx interface, copy the file into the main folder on a USB flash drive (type A 2.0 or higher - formatted with the FAT32 file system). Then proceed as follows for the update.

Step 1

Plug the flash drive into the corresponding port on the pGDx display.

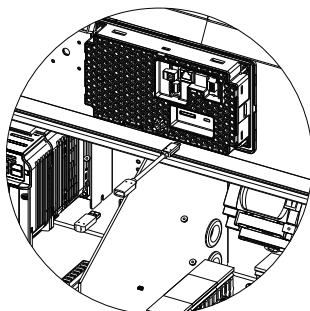


Fig. 8.am

Step 2

Access the update section in the display settings.

Path: Menu > Settings > Display > Update display

Function	Display	Description	Range	Default
	Update package for display available	Enable/disable the pGDx software update	Yes/No	No

The "Update display" starts updating the pGDx interface, and will only be enabled if the instructions described above have been followed correctly.

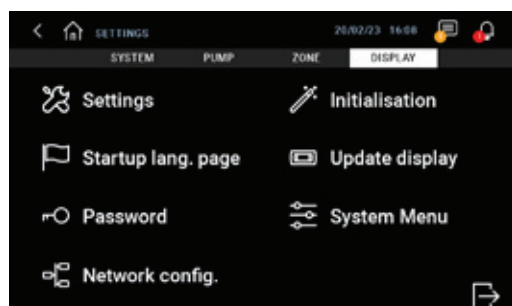


Fig. 8.an

If the flash drive is not plugged in correctly or the files it contains are not stored as described previously, the update option will not be enabled and pressing it will show an error message.

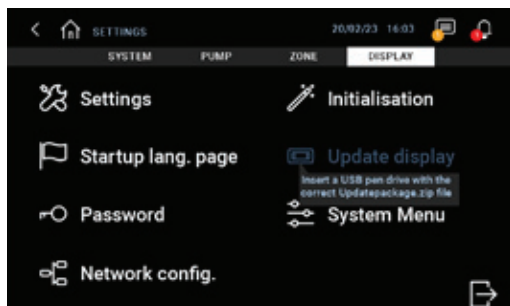


Fig. 8.a0

Step 3

Select "Update display". The following message will be shown to confirm whether to start the procedure:

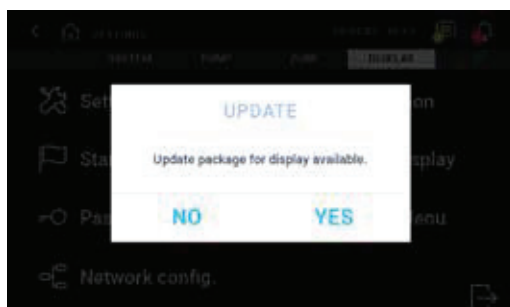


Fig. 8.ap

Step 4

Confirm the start update prompt. The progress of the operation is shown as follows:

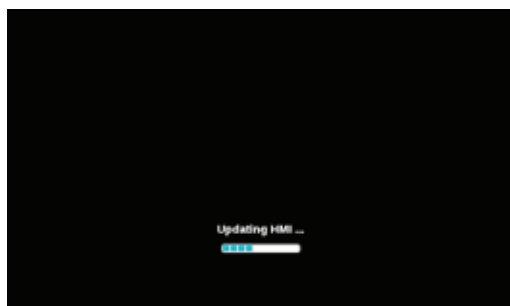


Fig. 8.aq

Completion of the update is shown on the following screen, after which the application will restart automatically:

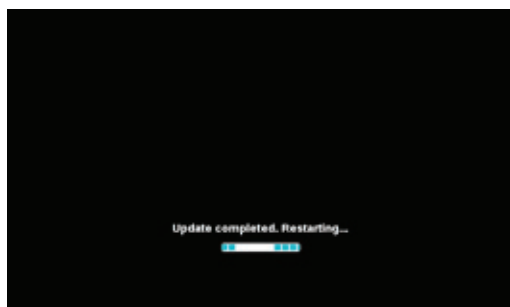


Fig. 8.ar

Step 5

Make sure to unplug the USB flash drive used for the update only at the end of the procedure.

8.7 c.pco controller (zone) software update

Carel periodically releases controller software updates due to improvements or new functions. The most up-to-date version of the software and the description of the latest implementations can be downloaded from ksa.carel.com. The software update package, if downloaded in .zip format, must first be unzipped. It contains three files. The same update package can be used to update both the pumping station controller and the system zone controllers. The pumping station controller and zone controllers are however updated using different procedures. The three files need to be copied onto a USB flash driver (type A 2.0 or higher - formatted with the FAT32 file system), in a folder called "UPGRADE". Then proceed as follows for the update.

Step 1

To use the display inside the zone panel, unscrew the side screws (3 - Fig. 8.as) with a Phillips-head screwdriver and remove the front panel (4 - Fig. 8.as). The display inside the zone panel can now be used (5 - Fig. 8.as).

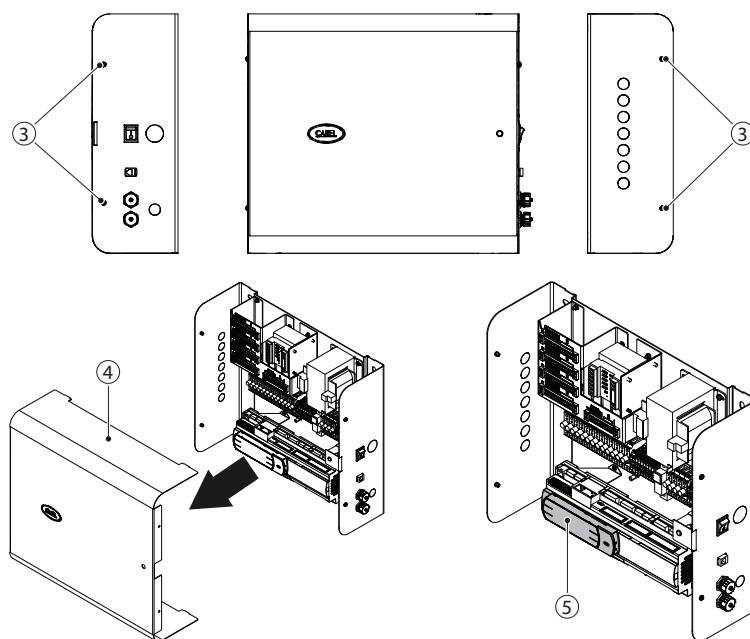


Fig. 8.as

Step 2 (Using an optional mobile analogue display)

If preferring to use a mobile analogue display (optional), connect the mobile display (6 - Fig. 8.at) using an RJ11 cable to port (7 - Fig. 8.at) on the side of the zone panel.

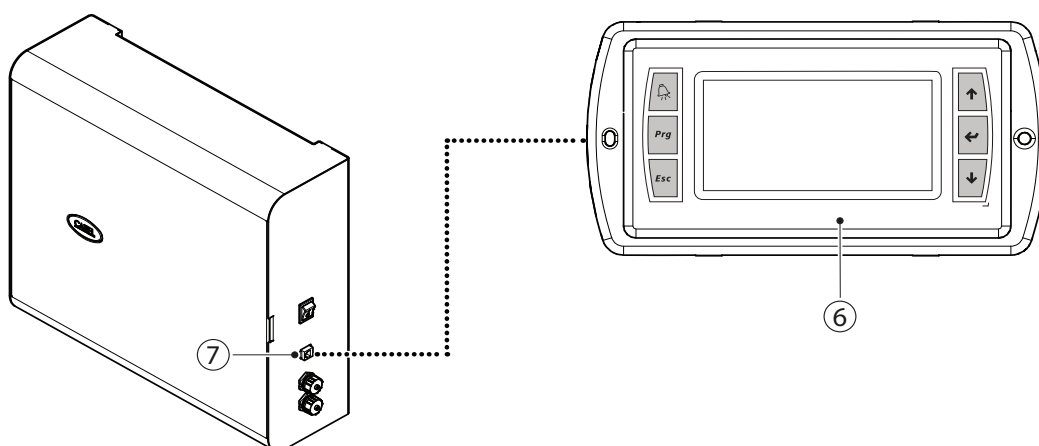


Fig. 8.at

Step 3

Open the cover (9 - Fig. 8.au) and plug the USB flash drive into the USB type A socket (10 - Fig. 8.au).

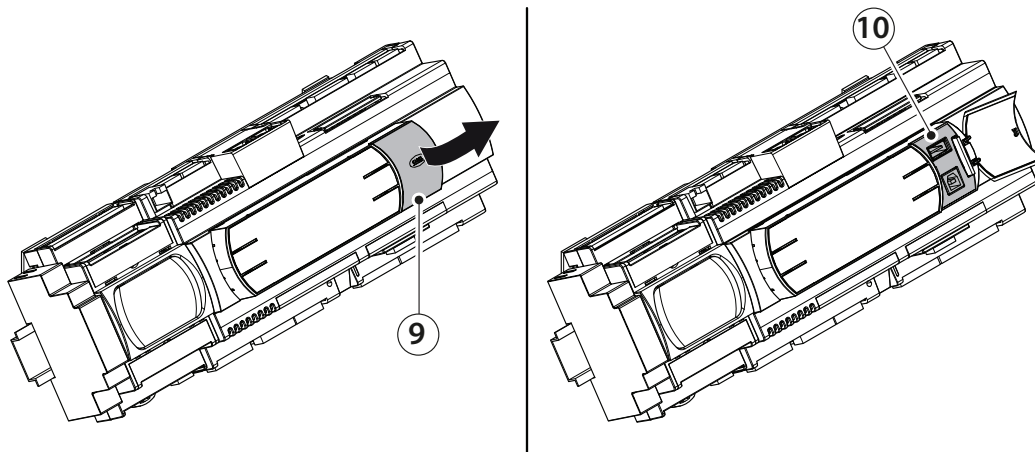


Fig. 8.au

Step 4

Access the update section in the zone settings.

The path to access the zone controller update screen on the pGD1 analogue interface is as follows:

- Enter the E. Settings menu
- Select g. Initialisation and configuration by pressing ←.
- Use ↑ and ↓ to scroll to screen Eg09.

Step 5

Start the update function on the controller

9. CONNECTIVITY

9.1 Webserver

The webserver is a very interesting feature when the user has a local network available for connecting humiFog Multizone Touch. The physical connection to the local network is made using the RJ45 Ethernet port on the humidifier controller and a standard Ethernet cable (category 5).

The built-in webserver on the humiFog Multizone Touch c.pCO controller allows the main unit parameters to be set and monitored directly from a PC, tablet or smartphone connected to the network. Opening an internet browser, the user can connect to the humidifier from the local network by entering the humiFog Multizone Touch unit IP address.

The webserver can be accessed for each unit (controller) in the system. Depending on the system configuration, the following can be accessed:

- pumping station controller webserver
- controller webserver for each zone panel (if present)



Notice: when logging into the pumping station webserver, information relating to the entire system can be displayed, while the zone panel webserver only displays information relating to the specific one.

9.1.1 Local network connection

The local network connection is made using an Ethernet cable. Two different connection modes are available (see Fig. 9.a):

- a free port on the pumping station (1 - Fig. 9.a)
- a free port on the last zone panel in the network (2 - Fig. 9.a)



CAUTION: the maximum allowed length of an Ethernet connection between two devices is 100 m (for longer distances, use switch P/N KITSE08000).

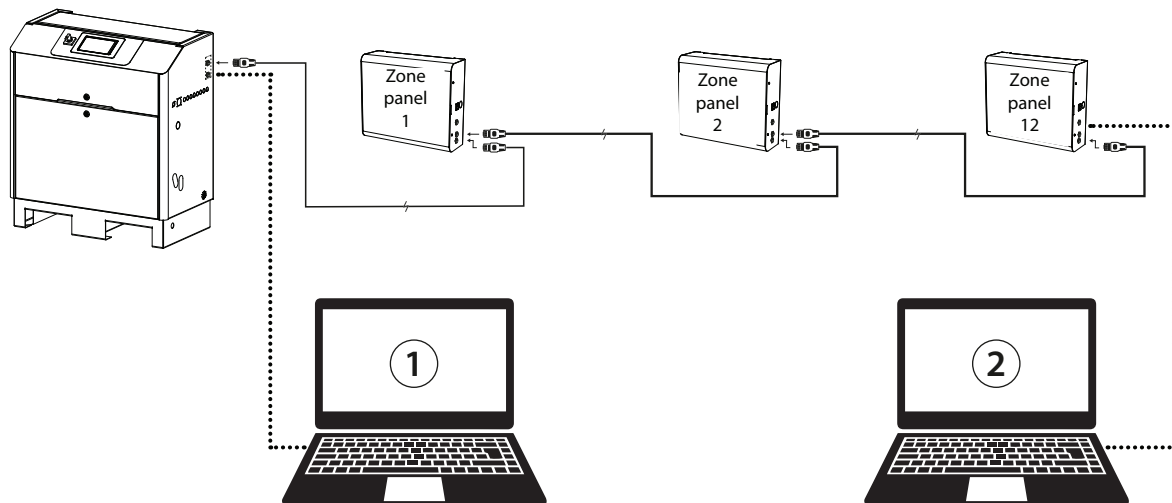


Fig. 9.a



CAUTION: the zone number is assigned when the network is already wired, so the last zone in the network may not be the one with the highest zone number.

9.1.2 IP address and network configuration

The IP address is a numerical code that identifies modems, computers, smartphones and all other devices connected to a network so that these can communicate with each other. As a rule, the IP addresses of multiple devices connected to the same network are identical to each other, except for the last few digits.

EXAMPLE:

- 192.168.1.1 device #1 connected to the network
- 192.168.1.2 device #2 connected to the same network
- 192.168.1.11 device #3 connected to the same network

The IP address of the humiFog Multizone Touch unit can be displayed:

- in the Quick INFO menu (see par. 4.5.1)
- (pumping station) Settings > BMS > Port configuration
- (zone panel) E. Settings > f. BMS > Screen Ef06

Ethernet port configuration: DHCP and IP address.



Fig. 9.b



Notice: unless there are specific system connection requirements, it is recommended to use the default settings provided for the individual units.

To access the webserver, open an internet browser and enter the IP address, followed by /commissioning/index.html (in this case enter 10.10.10.157/commissioning/index.html).

IP addresses can be:

- dynamic (if the DHCP function is available; this automatically assigns an IP address when a device is connected)
- static (if DHCP is not available or cannot be used, the IP address is assigned manually by the user).

For dynamic IP addresses with DHCP enabled on the server, the IP assignment mode must be set to DHCP on the configuration screen (on humiFog Multizone Touch for the pumping station or Ef06 on the zone panel). The IP address shown on the screen will be assigned automatically by the DHCP server.

The advantage of this setting mode is that the server and humiFog Multizone communicate directly, and there is no need to configure the network parameters (Subnet mask and Gateway).

The disadvantage is that when adding other devices to the same network with humiFog Multizone Touch switched off and not connected, the IP address originally assigned to the unit may change, and therefore it will be necessary to access the configuration screen (on humiFog Multizone Touch for the pumping station or Ef06 on the zone panel) to get the new address and copy it into the browser's address bar.

If needing to set a specific static IP address for the controller other than the default (with DHCP OFF as default), enter the network parameters manually on the configuration screen (on humiFog Multizone Touch for the pumping station or Ef06 on the zone panel), according to the instructions provided by the local network administrator. If needing to use a static IP and a subnet other than the default values, both the controller (Fig. 9.b) and display (Fig. 9.c) settings need to be changed, ensuring these are consistent.



Notice: Supervision and web server always refer to the controller, never to the display.

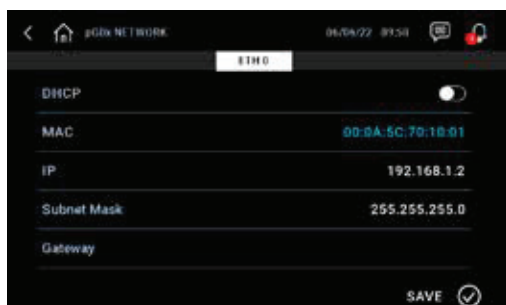


Fig. 9.c

Usually, Subnet mask and Gateway have default values (which need to be known), while the IP address can be assigned sequentially with reference to another device connected to the same network.

The default network configurations are:

PUMP CONTROLLER

- unit's IP address: 192.168.1.1
- subnet mask: 255.255.255.0
- gateway: 0.0.0.0
- DNS: 0.0.0.0

ZONE CONTROLLER

- unit's IP address: 192.168.1.X (where X = 9 + zone number set for that unit)
- subnet mask: 255.255.255.0
- gateway: 0.0.0.0
- DNS: 0.0.0.0

PGDX DISPLAY

- display's IP address: 192.168.1.2
- subnet mask: 255.255.255.0
- gateway: 0.0.0.0
- DNS: 0.0.0.0

In the case of an active backup function and pumping station with a 'secondary' role, the default configuration automatically changes to:

PUMP CONTROL (secondary)

- IP address: 192.168.1.3
- Subnet mask: 255.255.255.0
- Gateway: 0.0.0.0
- DNS: 0.0.0.0

If a backup pumping station is present, ensure that the pGDx displays for the pumping stations have appropriate network configuration (belonging to the same local subnetwork and unique IP address). In particular, the display belonging to the pumping station with a secondary role must be manually changed. When using the default network configuration, the following network configuration is recommended:

DISPLAY PGDX (secondary)

- Display IP address: 192.168.1.4
- Subnet mask: 255.255.255.0
- Gateway: 0.0.0.0
- DNS: 0.0.0.0

Refer to par. 8.2.3 for more information.

9.1.3 Webserver features

Once having entered the webserver, to log in and access the various menu items, the credentials to be entered depend on the type of user (see Tab. 9.a).

ID	PW
Service	77
Maintenance	44

Tab. 9.a

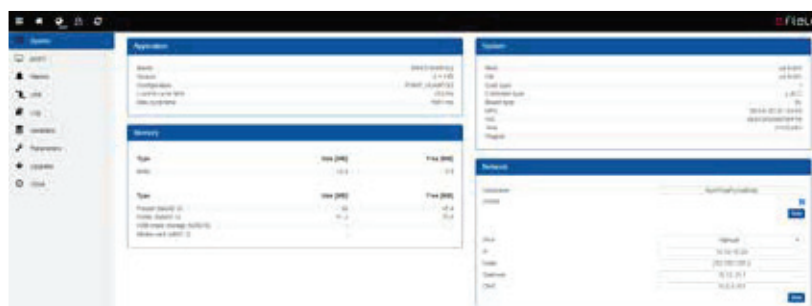


Fig. 9.d

Web interface

Once logged in, the various webserver pages can be accessed:

Menu	Description
System	View the main information on the application, available memory, network and system settings.
pGD1	This page accesses the keypad display for advanced unit configuration
Alarms	Display the active alarms and alarm log.
Unit	Display the status of the unit inputs and outputs.
Log	This page is used to create graphs of the selected variables using the logged data, and export them in .csv format.
Variables	Display all the variables logged by the unit. The variables are available grouped into predefined categories, all active by default. ➡ Notice: some categories of parameters may not be part of the specific system. It is recommended to deselect the categories relating to any zones that are not present in the system.
Parameters	Display all the parameters that can be set on the unit. The parameters are available grouped into predefined categories, all active by default. ➡ Notice: some categories of parameters may not be part of the specific system. It is recommended to deselect the categories relating to any zones that are not present in the system.
Upgrade	Page for managing the remote software upgrade.
Clock	View and set the unit clock

Tab. 9.b



Notice: to avoid incorrect settings, some of the main unit operating parameters can only be modified via the webserver when the unit is off (off from keypad, also set from the webserver).

9.2 Supervisor (BMS) connection

The system or one of its units can be connected to external control systems by activating one or more supervisor channels. Each supervisor channel needs to be configured by selecting the communication port and protocol and setting the various options. The supervisor can manage the entire system by configuring one or more supervisor channels on the pumping station, or control a single zone unit.

To set up the supervisor channels correctly, the characteristics of the supervisor need to be known. It is therefore strongly recommended to read the supervisor manual and/or contact the person responsible for installing the supervisor network.

9.2.1 Supervisor connection

The connection to the supervisor network can be made in two ways:

- between the Ethernet port on the pumping station or any of the zone panels (if present) and the supervisor network (see par. 9.1.1).
- via RS485 serial link between the BMS2 port on the unit in question and the supervisor network.



Notice: if the supervisory system has been designed to connect via serial to multiple units, make sure that the serial configuration selected for each unit is compatible and that each unit has a unique BMS address.

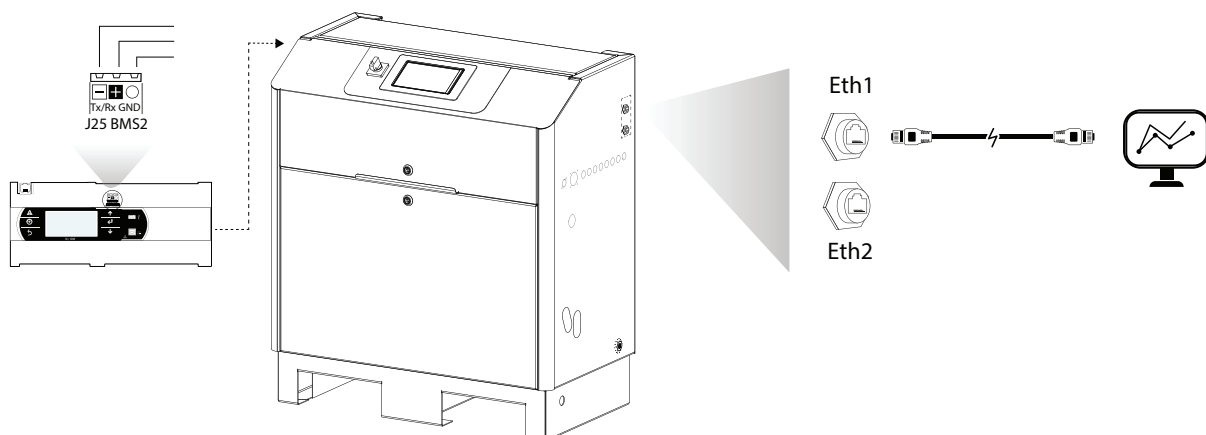


Fig. 9.e

9.2.2 System BMS

The BMS functions can be accessed via the connection to the pumping station, which provides information on the entire system (pumping station + zones).

There are two types of connection available:

- RS485 port (supported protocols: MODBUS, BACNET)
- Ethernet port (supported protocols: MODBUS, BACNET)

BMS channel types

For each single channel, independent of the selected port and protocol, there are two options: SUPERVISOR or SUPERVISOR + CONTROLLER. This differentiation lets the software enable or disable certain screens, so as to help the user configure the channel.

- SUPERVISOR: read the status and set the unit configuration parameters, with the possibility of pausing production (this can be bypassed locally). There is no remote production request modulation command.
- SUPERVISOR + CONTROLLER: in addition to the SUPERVISOR options, a dedicated signal can be managed to enable production (which cannot be bypassed) and/or assign a direct modulation command to the zone, if a compatible control type is set. "Controller" mode verifies unit-BMS communication and manages (optional) a dedicated offline alarm.

A maximum of three channels can be connected at the same time. This is reduced to two channels if the backup function is activated.

Channel configuration

For information on configuring the pumping station BMS channels, see par. 8.2.3.

The channel configuration submenu provides the following settings.

Parameter	Description
Enable the channel	Enable the use of the channel and make the subsequent settings available.
Channel type	Supervisor/Supervisor + controller
Port + protocol combination	Selection of the protocol will depend on the configurations of the devices that are already enabled, i.e. the same resource or protocol (single instance or for that specific port) cannot be selected multiple times. Example: if selecting the BACnet protocol via Ethernet for a specific channel, BACnet cannot be configured as the protocol for any other device associated with another supervisor channel.
With Channel type: Supervisor + controller	
Zone control modes	• On/Off: the supervisor can send a signal to enable production for all control types set (even control based on probe readings). • control: the supervisor sends the production request and the control type needs to be set as "Control by supervisor". • On/Off + control: to manage both the enabling signal and request from the supervisor.
Enable offline alarm	Enable/disable the alarm that signals when the supervisor is offline
Communication offline timeout alarm delay	When there is no communication between the supervisory system and the unit for the set timeout, the offline supervisor alarm is activated. This alarm shuts down the unit and is automatically reset once communication is re-established.

On/off by supervisor

This function is used to enable production regardless of the control type selected. This is managed in series with all the other enabling signals needed to start production.

Production control by supervisor

In this mode, the zone panel determines the production request based on the value of a read/write variable sent by the supervisor + controller.

OFFLINE alarm

This setting is only available when at least one of the functions is enabled, "ON/OFF by supervisor" and "Production control by supervisor".

By enabling this function and when there is no communication between the supervisor and the controller, the SUPERVISOR OFFLINE ALARM is generated when the OFFLINE TIMEOUT parameter, set on this screen, elapses.

9.2.3 Zone BMS

The BMS functions can be accessed via the connection to the zone pane, which provides information on that specific zone. There are two types of connection available:

- RS485 port (supported protocols: MODBUS, BACNET)
- Ethernet port (supported protocols: MODBUS, BACNET)

BMS channel types

For the communication channel, independent of the selected port and protocol, there are two options: SUPERVISOR or SUPERVISOR + CONTROLLER. This differentiation lets the software enable or disable certain screens, so as to help the user configure the channel.

- SUPERVISOR: read the status and set the zone configuration parameters, with the possibility of pausing production (this can be bypassed). There is no remote production request modulation command.
- SUPERVISOR + CONTROLLER: in addition to the SUPERVISOR options, a dedicated signal can be managed to enable production (which cannot be bypassed) and/or assign a direct modulation command to the zone, if a compatible control type is set. "Controller" mode verifies zone-BMS communication and manages (optional) a dedicated offline alarm.

Channel configuration

For information on configuring the zone BMS channels, see par. 8.4.4.

The channel configuration submenu provides the following settings.

Parameter	Description
Enable the channel	Enable the use of the channel and make the subsequent settings available.
Channel type	Supervisor/Supervisor + controller
Port + protocol combination	Selection of the protocol will depend on the configurations of the devices that are already enabled, i.e. the same resource or protocol (single instance or for that specific port) cannot be selected multiple times. Example: if selecting the BACnet protocol via Ethernet for a specific channel, BACnet cannot be configured as the protocol for any other device associated with another supervisor channel.
With Channel type: Supervisor + controller	
Zone control modes	• On/Off: the supervisor can send a signal to enable production for all control types set (even control based on probe readings). • control: the supervisor sends the production request and the control type needs to be set as "Control by supervisor".
Enable offline alarm	Enable/disable the alarm that signals when the supervisor is offline
Communication offline timeout alarm delay	When there is no communication between the supervisory system and the unit for the set timeout, the offline supervisor alarm is activated This alarm shuts down the zone and is automatically reset once communication is re-established.

On/off by supervisor

This function is used to enable production regardless of the control type selected. This is managed in series with all the other enabling signals needed to start production.

Production control by supervisor

In this mode, the zone panel determines the production request based on the value of a read/write variable sent by the supervisor + controller.

OFFLINE alarm

This setting is only available when at least one of the functions is enabled, "ON/OFF by supervisor" and "Production control by supervisor".

By enabling this function, the SUPERVISOR OFFLINE ALARM is generated when the OFFLINE TIMEOUT parameter, set on this screen, elapses.

9.3 ModBus parameter list

The variables shown in the list are a set of all the internal variables on the humidifier.



CAUTION

Do not configure any variables that are not shown in the tables, otherwise system operation may be affected.



Notice: all system zones can be supervised only by connecting to the pumping station.

In the following tables relating to the pumping station supervisor variables, only the zone variables relating to system zone 1 are shown.

The codes of the variables relating to the other zones can be determined as follows:

- The zone 1 variables have addresses up to 300. For the following zones, add 200 to the zone 1 address (example zone 5 = zone (1 + 4) - zone 5 address: 300 + (200 x 4) = 1100).
- Zone variables are typically associated with the ZonesData_C[X] structure, where **X** is the zone index. (example for zone 5: ZonesData_C[5].Z_FctsCfg.RackTempMng.EnRackTMng).

In the supervisor tables for the specific zones, on the other hand, the variable addresses always start from 300, as when connecting to the zone controllers, only the parameters relating to that specific zone can be supervised.

Reference zone	Address	Variable name
Zone 1	300	ZonesData_C[1].Z_FctsCfg.RackTempMng.EnRackTMng
	304	ZonesData_C[1].Z_FctsCfg.RackEnLogic
Zone 2	500	ZonesData_C[2].Z_FctsCfg.RackTempMng.EnRackTMng
	504	ZonesData_C[2].Z_FctsCfg.RackEnLogic
Zone 3	700	ZonesData_C[3].Z_FctsCfg.RackTempMng.EnRackTMng
	704	ZonesData_C[3].Z_FctsCfg.RackEnLogic
Zone 4	900	ZonesData_C[4].Z_FctsCfg.RackTempMng.EnRackTMng
	904	ZonesData_C[4].Z_FctsCfg.RackEnLogic
Zone 5	1100	ZonesData_C[5].Z_FctsCfg.RackTempMng.EnRackTMng
	1104	ZonesData_C[5].Z_FctsCfg.RackEnLogic
Zone 6	1300	ZonesData_C[6].Z_FctsCfg.RackTempMng.EnRackTMng
	1304	ZonesData_C[6].Z_FctsCfg.RackEnLogic
Zone 7	1500	ZonesData_C[7].Z_FctsCfg.RackTempMng.EnRackTMng
	1504	ZonesData_C[7].Z_FctsCfg.RackEnLogic
Zone 8	1700	ZonesData_C[8].Z_FctsCfg.RackTempMng.EnRackTMng
	1704	ZonesData_C[8].Z_FctsCfg.RackEnLogic
Zone 9	1900	ZonesData_C[9].Z_FctsCfg.RackTempMng.EnRackTMng
	1904	ZonesData_C[9].Z_FctsCfg.RackEnLogic
Zone 10	2100	ZonesData_C[10].Z_FctsCfg.RackTempMng.EnRackTMng
	2104	ZonesData_C[10].Z_FctsCfg.RackEnLogic
Zone 11	2300	ZonesData_C[11].Z_FctsCfg.RackTempMng.EnRackTMng
	2304	ZonesData_C[11].Z_FctsCfg.RackEnLogic
Zone 12	2500	ZonesData_C[12].Z_FctsCfg.RackTempMng.EnRackTMng
	2504	ZonesData_C[12].Z_FctsCfg.RackEnLogic

Tab. 9.a

9.3.1 Pumping station ModBus variables table - Coils

RO = Read Only

RW = ReadWrite

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
100	1	ResetPmpHrs	Partially reset pump operating hours	Bool		0	1	0	RW
101	1	EnFill	Enable fill function (0 = disabled, 1 = enabled)	Bool	1	0	1	0	RW
102	1	FillOnlyReqZones	Function to fill zones only with production request, if filling zone by zone (0 = disabled, 1 = enabled)	Bool	1	0	1	0	RW
103	1	ZonesData_C[1].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 1 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW
104	1	ZonesData_C[2].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 2 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW
105	1	ZonesData_C[3].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 3 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW
106	1	ZonesData_C[4].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 4 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW
107	1	ZonesData_C[5].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 5 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
108	1	ZonesData_C[6].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 6 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW
109	1	ZonesData_C[7].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 7 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW
110	1	ZonesData_C[8].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 8 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW
111	1	ZonesData_C[9].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 9 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW
112	1	ZonesData_C[10].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 10 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW
113	1	ZonesData_C[11].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 11 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW
114	1	ZonesData_C[12].Z_FctsCfg.EnRack-FullStandby	Enable full standby function for zone 12 (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)	Bool		0	1	0	RW
115	1	ZoneData_S.Z_FctsCfg.RelayLogicNO7	Digital output logic for PUMP "programmable relay NO7" (0 = NC, 1 = NO)	Bool	0	0	1	0	RW
116	1	EnHiConductAlrm	Enable pumping station high inlet water conductivity alarm	Bool	1	0	1	0	RW
118	1	UnitPause	Unit setting paused (0=not paused; 1=paused)	Bool	0	0	1	0	RW
119	1	EnMstFullStandbyMaxT	Enable emptying of pump-zone line in standby	Bool	1	0	1		RW
120	1	EnMultiNet	Enabling of the multi-network	Bool	0	0	1	0	RW
121	1	EnFillWashProdLim	Enabling of production limitation during filling/washin	Bool		0	1	0	RW
300	1	ZonesData_C[1].Z_FctsCfg.Rack-TempMng.EnRackTMng	Enable production modulation function from rack temperature probe reading (0 = disabled, 1 = enabled)	Bool	0	0	1	0	RW
301	1	ZonesData_C[1].Z_FctsCfg.Rack-TempMng.EnRackTReducedProd	Enable reduced production based on rack temperature	Bool	0	0	1	0	RW
302	1	ZonesData_C[1].Z_FctsCfg.Rack-TempMng.EnRackTWarn	Select type of signal for low rack temperature (0 = notification, 1 = warning)	Bool	0	0	1	0	RW
303	1	ZonesData_C[1].Z_FctsCfg.EnDlyd-HumPrbAlrmCtrl	Enable humidity probe control delay for alarm activation	Bool	0	0	1	0	RW
304	1	ZonesData_C[1].Z_FctsCfg.RackEn-Logic	Enable zone production digital input (RACKEN) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RW
305	1	ZonesData_C[1].Z_FctsCfg.AirFlow-SwitchLogic	Flow switch digital input (FLUX) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RW
306	1	ZonesData_C[1].Z_FctsCfg.ZoneStatusDout_Logic	"Zone status" ZONE digital output logic (0 = NC, 1 = NO)	Bool	0	0	1	0	RW
307	1	ZonesData_C[1].Z_FctsCfg.AlrmD-OutLogic	"Alarm status" AL digital output logic (0 = NC, 1 = NO)	Bool	0	0	1	0	RW
308	1	ZonesData_C[1].Z_FctsCfg.Relay-LogicNO7	"Programmable relay NO7" digital output logic (0 = NC, 1 = NO)	Bool	0	0	1	0	RW
309	1	ZonesData_C[1].Z_FctsCfg.ZoneMan-ModeEnFill	Enable filling function for zone manual mode (0 = disabled, 1 = enabled)	Bool	1	0	1	0	RW
310	1	ZonesData_C[1].Z_WorkPar.UnitPause	Unit setting paused (0=not paused; 1=paused)	Bool	0	0	1	0	RW
311	1	ZonesData_C[1].Z_WorkPar.SVEnReg	Enable zone control from supervisor	Bool	0	0	1	0	RW
312	1	ZonesData_C[1].Z_WorkPar.SVEnOnOff	Enable zone 1 on/off from supervisor	Bool	0	0	1	0	RW
313	1	ZonesData_C[1].Z_WorkPar.SVOnOff	Zone 1 on/off from supervisor	Bool		0	1	0	RW
314	1	ZonesData_C[1].Z_RackCfg.EnRotSteps	Enable step rotation in zone 1	Bool	0	0	1	0	RW

9.3.2 Pumping station ModBus variables table - Discrete Inputs

RO = Read Only

RW = ReadWrite

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
100	1	CurrAlrmStatus.isPresent	At least 1 alarm active	Bool		0	1	0	RO
102	1	HP_SwitchStatus_NoLogic	High pressure switch digital input (HP) status (0 = contact closed, 1 = contact open)	Bool		0	1	0	RO
103	1	HT_ThermostatStatus_NoLogic	High temperature thermostat digital input (HT) status (0 = contact closed, 1 = contact open)	Bool		0	1	0	RO
104	1	PumpEnDinStatus_NoLogic	Enable pumping station digital input (PEN) status (0 = contact closed, 1 = contact open)	Bool		0	1	0	RO
105	1	RevOsmStatus_NoLogic	Reverse osmosis alarm status digital input (ROAL) status (0 = contact closed, 1 = contact open)	Bool		0	1	0	RO
106	1	WaterLeakStatus_NoLogic	Flood sensor digital input (WL) status (0 = contact closed, 1 = contact open)	Bool		0	1	0	RO
107	1	Cabinet_UI.SupplyW	Water fill solenoid valve and pump cooling fan digital input (FV) status (0 = output not energised, 1 = output energised)	Bool		0	1	0	RO
108	1	Cabinet_UI.Drain	Pumping station water drain digital input (DVB) status (0 = output not energised, 1 = output energised)	Bool		0	1	0	RO
109	1	ZoneData_S.Z_RackSteps.LineDrain	Line drain solenoid valve digital input (NOL) status (0 = output not energised, 1 = output energised)	Bool		0	1	0	RO
110	1	ZoneData_S.Z_DigIO.NO7_PrgDout	Programmable relay NO7 digital input (PUMP) status (0 = output not energised, 1 = output energised)	Bool		0	1	0	RO
111	1	ZoneData_S.Z_DigIO.Alrm_Dout	Alarm status digital input (AL) status (0 = output not energised, 1 = output energised)	Bool		0	1	0	RO

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
112	1	LowInletFlow	Low inlet water pressure (0 = not present, 1 = low pressure present)	Bool		0	1	0	RO
113	1	Alrm_Retain.Active	ALG01 - Alarm: error in number of retain memory writes	Bool		0	1	0	RO
114	1	Alrm_Err_retain_write.Active	ALG02 - Alarm: too many retain memory writes	Bool		0	1	0	RO
115	1	Warn_LowPressLP.Active	WRP01 - Warning: low inlet pressure (LP) during production	Bool		0	1	0	RO
116	1	Warn_RetMem.Active	WRG03 - Warning: too many retain memory writes	Bool		0	1	0	RO
117	1	Alrm_Inv_Overvoltage.Active	ABV01 - Inverter alarm: overvoltage	Bool		0	1	0	RO
118	1	Alrm_NoModel.Active	ABC01 - Alarm: no model configured	Bool		0	1	0	RO
119	1	Warn_Cu_Maint.Active	WRM01 - Maintenance warning: visual water circuit check required	Bool		0	1	0	RO
120	1	Alrm_HighTemp.Active	ABP02 - Alarm: high water temperature	Bool		0	1	0	RO
121	1	Alrm_Inv_General.Active	ABV02 - Inverter alarm: general alarm	Bool		0	1	0	RO
122	1	Alrm_InvOFF_STATUSline.Active	ABV03 - Inverter alarm: inverter offli	Bool		0	1	0	RO
123	1	Alrm_LowTemp.Active	ABP03 - Alarm: low water temperature	Bool		0	1	0	RO
124	1	Alrm_Inv_Overtorque.Active	ABV04 - Inverter alarm: overtorque	Bool		0	1	0	RO
125	1	Alrm_Inv_HeatsinkOverH.Active	ABV05 - Inverter alarm: overheating	Bool		0	1	0	RO
126	1	Warn_HighTemp.Active	WRP04 - Warning: high water temperature	Bool		0	1	0	RO
127	1	Warn_HighPressHP.Active	WRP05 - Warning: high outlet pressure (HP)	Bool		0	1	0	RO
128	1	Alrm_Inv_Overcurrent.Active	ABV06 - Inverter alarm: overcurrent	Bool		0	1	0	RO
129	1	Alrm_Inv_MotorOverload.Active	ABV07 - Inverter alarm: motor overload	Bool		0	1	0	RO
130	1	Alrm_LowPressHP.Active	ABP06 - Alarm: low outlet pressure (HP)	Bool		0	1	0	RO
131	1	Alrm_Inv_DriveOverload.Active	ABV08 - Inverter alarm: drive overload	Bool		0	1	0	RO
132	1	Warn_WMiss.Active	WRP07 - Warning: no inlet water	Bool		0	1	0	RO
133	1	Alrm_LowPressLP.Active	ABP08 - Alarm: low inlet pressure (LP) during production	Bool		0	1	0	RO
134	1	Alrm_HighPressHP.Active	ABP09 - Alarm: high outlet pressure (HP)	Bool		0	1	0	RO
135	1	Alrm_HighPressLP.Active	ABP10 - Alarm: high inlet pressure (LP)	Bool		0	1	0	RO
136	1	Alrm_Slave1.Active	ALZ01 - Alarm: zone 1 panel alarm	Bool		0	1	0	RO
137	1	Alrm_Slave2.Active	ALZ02 - Alarm: zone 2 panel alarm	Bool		0	1	0	RO
138	1	Alrm_Slave3.Active	ALZ03 - Alarm: zone 3 panel alarm	Bool		0	1	0	RO
139	1	Alrm_Slave4.Active	ALZ04 - Alarm: zone 4 panel alarm	Bool		0	1	0	RO
140	1	Alrm_Slave5.Active	ALZ05 - Alarm: zone 5 panel alarm	Bool		0	1	0	RO
141	1	Alrm_Slave6.Active	ALZ06 - Alarm: zone 6 panel alarm	Bool		0	1	0	RO
142	1	Alrm_Slave7.Active	ALZ07 - Alarm: zone 7 panel alarm	Bool		0	1	0	RO
143	1	Alrm_Slave8.Active	ALZ08 - Alarm: zone 8 panel alarm	Bool		0	1	0	RO
144	1	Alrm_Slave9.Active	ALZ09 - Alarm: zone 9 panel alarm	Bool		0	1	0	RO
145	1	Alrm_Slave10.Active	ALZ10 - Alarm: zone 10 panel alarm	Bool		0	1	0	RO
146	1	Alrm_Slave11.Active	ALZ11 - Alarm: zone 11 panel alarm	Bool		0	1	0	RO
147	1	Alrm_Slave12.Active	ALZ12 - Alarm: zone 12 panel alarm	Bool		0	1	0	RO
148	1	Alrm_Water_Leakage.Active	ABR01 - Alarm: water flooding detected (WL)	Bool		0	1	0	RO
149	1	Alrm_RevOsmNotReady.Active	ABR02 - Alarm: reverse osmosis system not ready (ROAL)	Bool		0	1	0	RO
150	1	Alrm_BypassTPb.Active	ABA03 - Alarm: bypass temperature probe broken or disconnected	Bool		0	1	0	RO
151	1	Alrm_InletPressPrb.Active	ABA04 - Alarm: water inlet pressure probe (LP) broken or disconnected	Bool		0	1	0	RO
152	1	Alrm_OutletPressPrb.Active	ABA05 - Alarm: water outlet pressure probe (HP) broken or disconnected	Bool		0	1	0	RO
153	1	Warn_HighConduct.Active	WRA07 - Warning: high water conductivity measured	Bool		0	1	0	RO
154	1	Alrm_ConductPrb.Active	ABA08 - Alarm: conductivity probe broken or disconnected	Bool		0	1	0	RO
155	1	Alrm_HighConduct.Active	ABA09 - Alarm: high water conductivity measured	Bool		0	1	0	RO
156	1	Warn_ReqTooHigh.Active	WRC03 - Warning: production request is too high for pump nominal flow rate	Bool		0	1	0	RO
157	1	Alrm_HighPressHPWashFill.Active	ABP11 - Alarm: high water outlet pressure (HP) during wash or fill	Bool		0	1	0	RO
160	1	Warn_LowPressHP.Active	WRP11 - Warning: low outlet pressure (HP)	Bool		0	1	0	RO
161	1	Warn_SVOffline_Channel1 ctive	WRO02 - Warning: supervisor channel 1 offli	Bool		0	1	0	RO
162	1	Warn_SVOffline_Channel2 ctive	WRO03 - Warning: supervisor channel 2 offli	Bool		0	1	0	RO
163	1	Warn_SVOffline_Channel3 ctive	WRO04 - Warning: supervisor channel 3 offli	Bool		0	1	0	RO
164	1	Alrm_SVOffline_Channel1 ctive	ALO06 - Alarm: supervisor channel 1 offli	Bool		0	1	0	RO
165	1	Alrm_SVOffline_Channel2 ctive	ALO07 - Alarm: supervisor channel 2 offli	Bool		0	1	0	RO
166	1	Alrm_SVOffline_Channel3 ctive	ALO08 - Alarm: supervisor channel 3 offli	Bool		0	1	0	RO
167	1	Warn_BackupFail.Active	WRB01 - Warning: backup pump activation failed	Bool		0	1	0	RO
168	1	Warn_BackupOffli .Active	WRB02 - Warning: backup pump offli	Bool		0	1	0	RO
169	1	Alrm_BackupOffli .Active	WRB03 - Warning: backup pump offli	Bool		0	1	0	RO
170	1	DisableVarUnitPause	Disable pause from monitoring service (0: pause not disabled, 1: pause disabled)	Bool	0	0	1	0	RO
171	1	CurrAlrmStatus.Warning	At least 1 warning active	Bool		0	1	0	RO
172	1	UnitCfg.isMasterSec	Pumping unit type set to secondary (only with backup function enabled)	Bool	0	0	1	0	RO
173	1	UnitCfg_UI.PressWaterMode	Pressurised water mode selected	Bool		0	1	0	RO
174	1	Slave_1_ComStatus.isOnline	Zone 1 online status	Bool		0	1	0	RO
175	1	Slave_2_ComStatus.isOnline	Zone 2 online status	Bool		0	1	0	RO
176	1	Slave_3_ComStatus.isOnline	Zone 3 online status	Bool		0	1	0	RO
177	1	Slave_4_ComStatus.isOnline	Zone 4 online status	Bool		0	1	0	RO
178	1	Slave_5_ComStatus.isOnline	Zone 5 online status	Bool		0	1	0	RO
179	1	Slave_6_ComStatus.isOnline	Zone 6 online status	Bool		0	1	0	RO
180	1	Slave_7_ComStatus.isOnline	Zone 7 online status	Bool		0	1	0	RO
181	1	Slave_8_ComStatus.isOnline	Zone 8 online status	Bool		0	1	0	RO
182	1	Slave_9_ComStatus.isOnline	Zone 9 online status	Bool		0	1	0	RO
183	1	Slave_10_ComStatus.isOnline	Zone 10 online status	Bool		0	1	0	RO
184	1	Slave_11_ComStatus.isOnline	Zone 11 online status	Bool		0	1	0	RO
185	1	Slave_12_ComStatus.isOnline	Zone 12 online status	Bool		0	1	0	RO
186	1	UnitCfg.isZone1Remoted	Zone 1 remote	Bool		0	1	0	RO
191	1	Warn_AirPurge.Active	WRM05 - Warning: pump venting required	Bool		0	1	0	RO
192	1	Warn_Maint_ResMan_OilFree.Active	WRM04 - Warning: pump inspection required	Bool		0	1	0	RO
193	1	Warn_DefInst_Pmp.Active	WRC04 - Warning: reset defaults from pumping station	Bool	0	0	1	0	RO
301	1	ZonesData_C[1].Z_DigIO.RackEnStatus_NoLogic	Enable zone production digital input (RACKEN) status (0 = contact closed, 1 = contact open)	Bool		0	1	0	RO
302	1	ZonesData_C[1].Z_DigIO.AirFlow-SwitchStatus_NoLogic	Flow switch digital input (FLUX) status (0 = contact closed, 1 = contact open)	Bool		0	1	0	RO

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
303	1	ZonesData_C[1].Z_RackSteps.LineDrain	Line drain digital output (NOL) status (0 = output not energised, 1 = output energised)	Bool		0	1	0	RO
304	1	ZonesData_C[1].Z_DigIO.NO7_PrgD-out	Programmable relay NO7 digital output status (0 = output not energised, 1 = output energised)	Bool		0	1	0	RO
305	1	ZonesData_C[1].Z_DigIO.Alrm_Dout	Alarm status digital input (AL) status (0 = output not energised, 1 = output energised)	Bool		0	1	0	RO
306	1	ZonesData_C[1].Z_RackSteps.Ventilation	Rack ventilation solenoid valve digital output (NOV) status (0 = output energised, 1 = output not energised)	Bool		0	1	0	RO
313	1	ZonesData_C[1].Z_RackSteps.Step[1].Fill	Rack fill solenoid valve status - step 1 (0 = closed, 1 = open)	Bool		0	1	0	RO
314	1	ZonesData_C[1].Z_RackSteps.Step[2].Fill	Rack fill solenoid valve status - step 2 (0 = closed, 1 = open)	Bool		0	1	0	RO
315	1	ZonesData_C[1].Z_RackSteps.Step[3].Fill	Rack fill solenoid valve status - step 3 (0 = closed, 1 = open)	Bool		0	1	0	RO
316	1	ZonesData_C[1].Z_RackSteps.Step[4].Fill	Rack fill solenoid valve status - step 4 (0 = closed, 1 = open)	Bool		0	1	0	RO
317	1	ZonesData_C[1].Z_RackSteps.Step[5].Fill	Rack fill solenoid valve status - step 5 (0 = closed, 1 = open)	Bool		0	1	0	RO
318	1	ZonesData_C[1].Z_RackSteps.Step[6].Fill	Rack fill solenoid valve status - step 6 (0 = closed, 1 = open)	Bool		0	1	0	RO
319	1	ZonesData_C[1].Z_RackSteps.Step[1].Drain	Rack drain solenoid valve status - step 1 (0 = closed, 1 = open)	Bool		0	1	0	RO
320	1	ZonesData_C[1].Z_RackSteps.Step[2].Drain	Rack drain solenoid valve status - step 2 (0 = closed, 1 = open)	Bool		0	1	0	RO
321	1	ZonesData_C[1].Z_RackSteps.Step[3].Drain	Rack drain solenoid valve status - step 3 (0 = closed, 1 = open)	Bool		0	1	0	RO
322	1	ZonesData_C[1].Z_RackSteps.Step[4].Drain	Rack drain solenoid valve status - step 4 (0 = closed, 1 = open)	Bool		0	1	0	RO
323	1	ZonesData_C[1].Z_RackSteps.Step[5].Drain	Rack drain solenoid valve status - step 5 (0 = closed, 1 = open)	Bool		0	1	0	RO
324	1	ZonesData_C[1].Z_RackSteps.Step[6].Drain	Rack drain solenoid valve status - step 6 (0 = closed, 1 = open)	Bool		0	1	0	RO
331	1	ZonesData_C[1].Z_Alrms.Alrm_MainPrb	ALA01 - Zone 1 alarm: main probe broken or disconnected	Bool		0	1	0	RO
332	1	ZonesData_C[1].Z_RackSteps.Ventilation	ALA02 - Zone 1 alarm: limit probe broken or disconnected	Bool		0	1	0	RO
333	1	ZonesData_C[1].Z_Alrms.Alrm_NoRack	ABC02 - Zone 1 alarm: distribution system not configured	Bool		0	1	0	RO
334	1	ZonesData_C[1].Z_Alrms.Alrm_MasterOffli	ABO01 - Zone 1 alarm: pumping station offline	Bool		0	1	0	RO
335	1	ZonesData_C[1].Z_Alrms.Alrm_RackTPrb	ABA06 - Zone 1 alarm: rack temperature probe broken or disconnected	Bool		0	1	0	RO
336	1	ZonesData_C[1].Z_Alrms.Warn_LowRackTemp	WRA10 - Zone 1 warning: low rack temperature	Bool		0	1	0	RO
337	1	ZonesData_C[1].Z_Alrms.Warn_HighHumMainPrb	WRA11 - Zone 1 warning: high humidity measured by main probe	Bool		0	1	0	RO
338	1	ZonesData_C[1].Z_Alrms.Warn_LowHumMainPrb	WRA12 - Zone 1 warning: low humidity measured by main probe	Bool		0	1	0	RO
339	1	ZonesData_C[1].Z_Alrms.Warn_HighTempMainPrb	WRA13 - Zone 1 warning: high temperature measured by main probe	Bool		0	1	0	RO
340	1	ZonesData_C[1].Z_Alrms.Warn_LowTempMainPrb	WRA14 - Zone 1 warning: low temperature measured by main probe	Bool		0	1	0	RO
341	1	ZonesData_C[1].Z_Alrms.Warn_HighHumLimPrb	WRA15 - Zone 1 warning: high humidity measured by limit probe	Bool		0	1	0	RO
342	1	ZonesData_C[1].Z_Alrms.Warn_LowTempLimPrb	WRA16 - Zone 1 warning: low humidity measured by limit probe	Bool		0	1	0	RO
343	1	ZonesData_C[1].Z_Alrms.Warn_HighHumTwoPrbsAvg	WRA17 - Zone 1 warning: high humidity measured by average of 2 probes	Bool		0	1	0	RO
344	1	ZonesData_C[1].Z_Alrms.Warn_LowHumTwoPrbsAvg	WRA18 - Zone 1 warning: low humidity measured by average of 2 probes	Bool		0	1	0	RO
345	1	ZonesData_C[1].Z_Alrms.Warn_HighTempTwoPrbsAvg	WRA19 - Zone 1 warning: high temperature measured by average of 2 probes	Bool		0	1	0	RO
346	1	ZonesData_C[1].Z_Alrms.Warn_LowTempTwoPrbsAvg	WRA20 - Zone 1 warning: low temperature measured by average of 2 probes	Bool		0	1	0	RO
347	1	ZonesData_C[1].Z_Alrms.Warn_HighHumThreePrbsAvg	WRA21 - Zone 1 warning: high humidity measured by average of 3 probes	Bool		0	1	0	RO
348	1	ZonesData_C[1].Z_Alrms.Warn_LowHumThreePrbsAvg	WRA22 - Zone 1 warning: low humidity measured by average of 3 probes	Bool		0	1	0	RO
349	1	ZonesData_C[1].Z_Alrms.Warn_HighTempThreePrbsAvg	WRA23 - Zone 1 warning: high temperature measured by average of 3 probes	Bool		0	1	0	RO
350	1	ZonesData_C[1].Z_Alrms.Warn_LowTempThreePrbsAvg	WRA24 - Zone 1 warning: low temperature measured by average of 3 probes	Bool		0	1	0	RO
351	1	ZonesData_C[1].Z_Alrms.Warn_SVOFFlin	WRO05 - Zone 1 warning: supervisor offline	Bool		0	1	0	RO
352	1	ZonesData_C[1].Z_Alrms.Alrm_SVOFFlin	WRO09 - Zone 1 alarm: supervisor offline	Bool		0	1	0	RO
353	1	ZonesData_C[1].Z_Alrms.Alrm_Retain	ALG01 - Zone 1 alarm: error in number of retain memory writes	Bool		0	1	0	RO
354	1	ZonesData_C[1].Z_Alrms.Alrm_Errretain_write	ALG02 - Zone 1 alarm: too many retain memory writes	Bool		0	1	0	RO
355	1	ZonesData_C[1].Z_Alrms.Warn_RetMem	WRG03 - Zone 1 warning: too many retain memory writes	Bool		0	1	0	RO
356	1	ZonesData_C[1].Z_Alrms.Alrm_NoModel	ABC01 - Zone 1 alarm: no model configured	Bool		0	1	0	RO
357	1	ZonesData_C[1].Z_WorkPar.DisableVarUnitPause	Disable pause from monitoring service (0: pause not disabled, 1: pause disabled)	Bool		0	1	0	RO
358	1	ZonesData_C[1].Z_Info.ZoneAlrmPresent	At least 1 alarm active in zone	Bool		0	1	0	RO
359	1	ZonesData_C[1].Z_Info.ZoneWarning	At least 1 warning active in zone	Bool		0	1	0	RO

9.3.3 Pumping station ModBus variable table - HoldingRegister variables

RO = Read Only

RW = ReadWrite

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
100	1	ZonesData_S.Z_FctsCfg.FillT	Fill duration if "all zones together" option selected	UInt	2	1	60	[min]	RW
101	1	FillMultiType	Type of filling or multi-zone system (0 = all zones together, 1 = one zone at a time)	UInt	0	0	1	0	RW
102	1	ZonesData_C[1].Z_FctsCfg.FillT	Fill duration zone 1	UInt	2	1	60	[min]	RW
103	1	ZonesData_C[2].Z_FctsCfg.FillT	Fill duration zone 2	UInt	2	1	60	[min]	RW
104	1	ZonesData_C[3].Z_FctsCfg.FillT	Fill duration zone 3	UInt	2	1	60	[min]	RW
105	1	ZonesData_C[4].Z_FctsCfg.FillT	Fill duration zone 4	UInt	2	1	60	[min]	RW
106	1	ZonesData_C[5].Z_FctsCfg.FillT	Fill duration zone 5	UInt	2	1	60	[min]	RW
107	1	ZonesData_C[6].Z_FctsCfg.FillT	Fill duration zone 6	UInt	2	1	60	[min]	RW
108	1	ZonesData_C[7].Z_FctsCfg.FillT	Fill duration zone 7	UInt	2	1	60	[min]	RW
109	1	ZonesData_C[8].Z_FctsCfg.FillT	Fill duration zone 8	UInt	2	1	60	[min]	RW
110	1	ZonesData_C[9].Z_FctsCfg.FillT	Fill duration zone 9	UInt	2	1	60	[min]	RW
111	1	ZonesData_C[10].Z_FctsCfg.FillT	Fill duration zone 10	UInt	2	1	60	[min]	RW
112	1	ZonesData_C[11].Z_FctsCfg.FillT	Fill duration zone 11	UInt	2	1	60	[min]	RW
113	1	ZonesData_C[12].Z_FctsCfg.FillT	Fill duration zone 12	UInt	2	1	60	[min]	RW
114	1	WashMode	Wash mode (0 = wash disabled, 1 = wash due to inactivity, 2 = daily wash)	USInt	2	0	2	0	RW
115	1	WashMultiType	Type of washing for multi-zone system (0 = all zones together, 1 = one zone at a time)	UInt		0	1	0	RW
116	1	ZoneData_S.Z_FctsCfg.WashT	Wash time, if "wash all zones together" enabled	UInt	2	1	10	[min]	RW
117	1	PerWashHrThr	Inactivity time to activate the wash due to inactivity	UInt	24	1	99	0	RW
118	1	DailyWashHr	Select hours for daily wash	UInt	0	0	23	0	RW
119	1	DailyWashMin	Select minutes for daily wash	UInt	0	0	59	0	RW
120	1	ZonesData_C[1].Z_FctsCfg.WashT	Wash duration zone 1	UInt	2	1	10	[min]	RW
121	1	ZonesData_C[2].Z_FctsCfg.WashT	Wash duration zone 2	UInt	2	1	10	[min]	RW
122	1	ZonesData_C[3].Z_FctsCfg.WashT	Wash duration zone 3	UInt	2	1	10	[min]	RW
123	1	ZonesData_C[4].Z_FctsCfg.WashT	Wash duration zone 4	UInt	2	1	10	[min]	RW
124	1	ZonesData_C[5].Z_FctsCfg.WashT	Wash duration zone 5	UInt	2	1	10	[min]	RW
125	1	ZonesData_C[6].Z_FctsCfg.WashT	Wash duration zone 6	UInt	2	1	10	[min]	RW
126	1	ZonesData_C[7].Z_FctsCfg.WashT	Wash duration zone 7	UInt	2	1	10	[min]	RW
127	1	ZonesData_C[8].Z_FctsCfg.WashT	Wash duration zone 8	UInt	2	1	10	[min]	RW
128	1	ZonesData_C[9].Z_FctsCfg.WashT	Wash duration zone 9	UInt	2	1	10	[min]	RW
129	1	ZonesData_C[10].Z_FctsCfg.WashT	Wash duration zone 10	UInt	2	1	10	[min]	RW
130	1	ZonesData_C[11].Z_FctsCfg.WashT	Wash duration zone 11	UInt	2	1	10	[min]	RW
131	1	ZonesData_C[12].Z_FctsCfg.WashT	Wash duration zone 12	UInt	2	1	10	[min]	RW
132	1	ZonesData_C[1].Z_FctsCfg.FullStandbyMaxT	Zone 1 full standby duration	UInt	24	0	48	[h]	RW
133	1	ZonesData_C[2].Z_FctsCfg.FullStandbyMaxT	Zone 2 full standby duration	UInt	24	0	48	[h]	RW
134	1	ZonesData_C[3].Z_FctsCfg.FullStandbyMaxT	Zone 3 full standby duration	UInt	24	0	48	[h]	RW
135	1	ZonesData_C[4].Z_FctsCfg.FullStandbyMaxT	Zone 4 full standby duration	UInt	24	0	48	[h]	RW
136	1	ZonesData_C[5].Z_FctsCfg.FullStandbyMaxT	Zone 5 full standby duration	UInt	24	0	48	[h]	RW
137	1	ZonesData_C[6].Z_FctsCfg.FullStandbyMaxT	Zone 6 full standby duration	UInt	24	0	48	[h]	RW
138	1	ZonesData_C[7].Z_FctsCfg.FullStandbyMaxT	Zone 7 full standby duration	UInt	24	0	48	[h]	RW
139	1	ZonesData_C[8].Z_FctsCfg.FullStandbyMaxT	Zone 8 full standby duration	UInt	24	0	48	[h]	RW
140	1	ZonesData_C[9].Z_FctsCfg.FullStandbyMaxT	Zone 9 full standby duration	UInt	24	0	48	[h]	RW
141	1	ZonesData_C[10].Z_FctsCfg.FullStandbyMaxT	Zone 10 full standby duration	UInt	24	0	48	[h]	RW
142	1	ZonesData_C[11].Z_FctsCfg.FullStandbyMaxT	Zone 11 full standby duration	UInt	24	0	48	[h]	RW
143	1	ZonesData_C[12].Z_FctsCfg.FullStandbyMaxT	Zone 12 full standby duration	UInt	24	0	48	[h]	RW
144	1	FunctSelNO7_Mst	Select function for PUMP programmable relay NO7 *	USInt	0	0	7	0	RW
145	1	P_SetPLowPAIrmDly	Pumping station low outlet pressure alarm delay	UInt	90	20	120	[s]	RW
146	1	HiConductAlrmThrsh	High water conductivity alarm threshold	UInt	200	HiConductWarnThrsh	2500	[uS/cm]	RW
147	1	HiConductWarnThrsh	High water conductivity warning threshold	UInt	100	20	2500	[uS/cm]	RW
148	1	HiConductWarnHyst	High water conductivity warning deactivation hysteresis	UInt	10	1	2500	[uS/cm]	RW
149	1	HiConductAlrmDlyT	High water conductivity alarm delay	UInt	10	0	99	[min]	RW
150	1	T_SetPAFreezeSetP	Low water temperature alarm threshold	Real	5.0	3.0	10.0	0.1 [°C - °F]	RW
151	1	T_SetPAFreezeHyst	Low water temperature alarm deactivation hysteresis	Real	1.0	0.5	6.0	0.1 [°C - °F]	RW
152	1	T_SetPAFreezeAlrmDly	Low water temperature alarm delay	UInt	15	1	30	[s]	RW
153	1	T_SetPByPassTDrainOpen	Drain solenoid valve DVB opening threshold for high water temperature bypass	Real	45.0	35.0	60.0	0.1 [°C - °F]	RW
154	1	T_SetPByPassTWarnResetHyst	High water temperature warning deactivation hysteresis	Real	5.0	1.0	10.0	0.1 [°C - °F]	RW
155	1	T_SetPByPassTWarnSet	High water temperature warning threshold	Real	52.0	45.0	65.0	0.1 %	RW
164	1	UoM_SV	Unit of measure (2: Imperial system, 6: International system)	USInt	6	1	7	0	RW
165	1	MstFullStandbyMaxT	Pump-zone line emptying delay in standby	UInt	60	0	120		RW
166	1	MstEmptyStandbyMaxTFill	Pump-zone line emptying duration in standby	UInt	5	1	120		RW
167	1	OilFreePmpAirPurgeT	Pump venting procedure duration	UInt	30	20	60	[s]	RW
168	1	OilFreePmpStartDly	Oil-free pump start delay	UInt	10	10	60	[s]	RW
171	2	NetNum	Network number for multi-network	UDInt	1	1	9	0	RW
181	1	P_SetPLinePressRelT	Line pressure release: maximum time for managing line pressure after slowdown	UInt	20	1	40		RW
300	1	ZonesData_C[1].Z_WorkPar.GlbSetP_Hum	Set zone 1 humidity set point	Real	50.0	0.0	100.0	0.1 [%rh]	RW
301	1	ZonesData_C[1].Z_WorkPar.GlbSetP_Temp	Set zone 1 temperature set point	Real	25.0	0.0	100.0	0.1 [°C - °F]	RW

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
302	1	ZonesData_C[1].Z_WorkPar.GlbSet-PLim_Hum	Set zone 1 humidity limit set point	Real	50.0	0.0	100.0	0.1 [%rh]	RW
303	1	ZonesData_C[1].Z_WorkPar.GlbSet-PLim_Temp	Set zone 1 temperature limit set point	Real	25.0	0.0	100.0	0.1 [°C - °F]	RW
304	1	ZonesData_C[1].Z_Reg.RackMax-Prod	Set zone 1 maximum production	Real	100.0	0.0	100.0	0.1 [%]	RW
305	1	ZonesData_C[1].Z_Reg.RegTyp	Control mode **	USInt	6	0	18	0	RW
306	1	ZonesData_C[1].Z_FctsCfg.Press-ReliefT[1]	Pressure relief function duration for step 1	Real	1.0	0.0	30.0	0.1 [s]	RW
307	1	ZonesData_C[1].Z_FctsCfg.Press-ReliefT[2]	Pressure relief function duration for step 2	Real	1.0	0.0	30.0	0.1 [s]	RW
308	1	ZonesData_C[1].Z_FctsCfg.Press-ReliefT[3]	Pressure relief function duration for step 3	Real	1.0	0.0	30.0	0.1 [s]	RW
309	1	ZonesData_C[1].Z_FctsCfg.Press-ReliefT[4]	Pressure relief function duration for step 4	Real	1.0	0.0	30.0	0.1 [s]	RW
310	1	ZonesData_C[1].Z_FctsCfg.Press-ReliefT[5]	Pressure relief function duration for step 5	Real	1.0	0.0	30.0	0.1 [s]	RW
311	1	ZonesData_C[1].Z_FctsCfg.Press-ReliefT[6]	Pressure relief function duration for step 6	Real	1.0	0.0	30.0	0.1 [s]	RW
312	1	ZonesData_C[1].Z_PrbcCfg.RackTPrb, UIType	Select rack temperature probe type (0 = 0-1 V, 1 = 0-10 V, 2 = 2-10 V, 3 = 0-20 mA, 4 = 4-20 mA, 5 = NTC)	USInt	5	0	5	0	RW
313	1	ZonesData_C[1].Z_PrbcCfg.RackTPrb, Mi_Temp	Minimum rack temperature probe value	Real	-20.0	-999.9	999.9	0.1 [°C - °F]	RW
314	1	ZonesData_C[1].Z_PrbcCfg.RackTPrb, Ma_Temp	Maximum rack temperature probe value	Real	70.0	-999.9	999.9	0.1 [°C - °F]	RW
315	1	ZonesData_C[1].Z_PrbcCfg.RackTPrb, Off	Rack temperature probe reading offset	Real	0.0	-999.9	999.9	0.1 [°C - °F]	RW
316	1	ZonesData_C[1].Z_FctsCfg.Rack-TempMng.RackTSetP	Temperature set point for production modulation function from rack probe	Real	20.0	5.0	50.0	0.1 [°C - °F]	RW
317	1	ZonesData_C[1].Z_FctsCfg.Rack-TempMng.RackTBand	Proportional band for production modulation function from rack probe	Real	5.0	0.5	10.0	0.1 [°C - °F]	RW
318	1	ZonesData_C[1].Z_FctsCfg.Rack-TempMng.RackTDiff	Differential for disabling the production modulation function from rack probe warning	Real	2.0	0.5	10.0	0.1 [°C - °F]	RW
319	1	ZonesData_C[1].Z_FctsCfg.HumPrbAlrmCtrlDel	Enable control probe alarm delay at start of production (0 = disabled, 1 = enabled)	UInt	5	1	99	[min]	RW
320	1	ZonesData_C[1].Z_FctsCfg.Funct-SelNO7_Slv	Select programmable relay NO7 function (0 = Unit life status, 1 = Low rack temperature warning)	USInt	0	0	1	0	RW
340	1	ZonesData_C[1].Z_FctsCfg.High-MainHum_WarnThrsh	Set main probe high humidity alarm threshold	Real	100.0	0.0	100.0	0.1 [%rh]	RW
341	1	ZonesData_C[1].Z_FctsCfg.High-MainTemp_WarnThrsh	Set main probe high temperature alarm threshold	Real	40.0	5.0	70.0	0.1 [°C - °F]	RW
342	1	ZonesData_C[1].Z_FctsCfg.Low-MainHum_WarnThrsh	Set main probe low humidity alarm threshold	Real	0.0	0.0	100.0	0.1 [%rh]	RW
343	1	ZonesData_C[1].Z_FctsCfg.Low-MainTemp_WarnThrsh	Set main probe low temperature alarm threshold	Real	15.0	5.0	70.0	0.1 [°C - °F]	RW
344	1	ZonesData_C[1].Z_FctsCfg.High-LimitHum_WarnThrsh	Set limit probe high humidity alarm threshold	Real	100.0	0.0	100.0	0.1 [%rh]	RW
345	1	ZonesData_C[1].Z_FctsCfg.Low-LimitTemp_WarnThrsh	Set limit probe low temperature alarm threshold	Real	15.0	5.0	70.0	0.1 [°C - °F]	RW
346	1	ZonesData_C[1].Z_FctsCfg.PrbcThrsWarnDly	High/low humidity/temperature alarm delay	UInt	1	0	99	[min]	RW
347	1	ZonesData_C[1].Z_WorkPar.SVReq	Zone production request from supervisor	Real		0.0	100.0	0.1 [%]	RW
349	1	ZonesData_C[1].Z_RackCfg, RotStepsT	Enable step rotation in zone 1	UInt	15	1	9999	[min]	RW

* (0=Unit life status, 1=Low rack temp. warning, 2=Pump status, 3=Pump maintenance warning, 4=No water warning, 5=Low inlet press. warning, 6=Low inlet press. alarm, 7=Low water temp. alarm)

** (0=on/off, 1=on/off + humidity limit, 2=on/off + temperature limit, 3=external signal, 4=external signal + humidity limit, 5=external signal + temperature limit, 6=humidity, 7=humidity + limit humidity, 8=humidity + temperature limit, 9=temperature, 10=temperature + temperature limit, 11=temperature + humidity limit, 12=2 humidity probes, 13=2 temperature probes, 14=3 humidity probes, 15=3 temperature probes, 16=2 temperature probes + humidity limit, 17=dewpoint, 18=dewpoint + humidity limit)

9.3.4 Pumping station ModBus variable table - InputRegister variables

RO = Read Only

RW = ReadWrite

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
100	1	OnOffStatu	Pump status *	UInt		0	65535	0	RO
101	1	SwVer.X	Software version X (Major)	UInt		0	65535	0	RO
102	1	SwVer.Y	Software version Y (Minor)	UInt		0	65535	0	RO
103	1	SwVer.Z	Software version Z (Patch)	UInt		0	65535	0	RO
104	2	PmpCurrReq	Production request to the pump	Real		0.0	3.40E+43	0.1 [kg/h - lb/h]	RO
106	2	PmpCurrProd	Current pump production	Real		0.0	3.40E+43	0.1 [kg/h - lb/h]	RO
108	1	OSVer.X	Operating system version X (Major)	UInt		0	65535	0	RO
109	1	OSVer.Y	Operating system version Y (Minor)	UInt		0	65535	0	RO
110	1	OSVer.Z	Operating system version Z (Patch)	UInt		0	65535	0	RO
111	1	Core	c.pCO core version	UInt		0	65535	0	RO
112	2	PmpHrs_PAR	Partial count of pump operating hours	UDInt		0	4294967295	[h]	RO
114	1	PmpNextMaintThrsh	Hours threshold for next pump maintenance	UInt		0	65535	[h]	RO
115	2	PmpHrs_TOT	Total count of pump operating hours	UDInt		0	4294967295	[h]	RO
117	2	UnitHrs	Total count of unit operating hours	UDInt		0	4294967295	[h]	RO
119	1	PmpResDate.Day	Pump partial operating hours reset date - Day	UInt		0	65535	[d]	RO
120	1	PmpResDate.Month	Pump partial operating hours reset date - Month	UInt		0	65535	[m]	RO
121	1	PmpResDate.Year	Pump partial operating hours reset date - Year	UInt		0	65535	[y]	RO
122	1	PmpResDate.Hour	Pump partial operating hours reset date - Hours	UInt		0	65535	[h]	RO
123	1	PmpResDate.Minute	Pump partial operating hours reset date - Minutes	UInt		0	65535	[m]	RO
124	1	UnitCfg.UnitModel	Unit model	UInt		0	65535	0	RO
125	2	InletPress_Msk	Pumping station inlet water pressure	Real		-3.40E+42	3.40E+43	0.1 [bar - psi]	RO

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
127	2	OutletPress	Pumping station outlet water pressure	Real		-9999.9	9999.9	0.1 [bar - psi]	RO
129	2	BypassTPrb	Pumping station bypass water temperature	Real		-999.9	999.9	0.1 [°C - °F]	RO
131	1	Conductivity	Pumping station inlet water conductivity	UInt		0	65535	[uS/cm]	RO
132	1	PmpManModeWait	Pump manual mode activation status **	UInt		0	65535	0	RO
133	1	MaxInvOutFreq_Corr	Maximum inverter frequency	Real		-999.9	999.9	0.1 [Hz]	RO
134	1	PmpFlowRate	RESERVED	Real		-999.9	999.9	0.1 [kg/h - lb/h]	RO
135	1	Year	Current year (YYYY)	UInt		0	99	[y]	RO
136	1	Month	Current month (MM)	UInt		1	12	[m]	RO
137	1	Day	Current day (DD)	UInt		1	31	[d]	RO
138	1	Hour	Current hours	UInt		0	23	[h]	RO
139	1	Minute	Current minutes	UInt		0	65535	min	RO
140	1	DayOfWeek	Day of the week	USInt		1	7	0	RO
141	2	VerFrom_pgdxF	pGdx user interface software version	UDInt		0	4294967295	0	RO
143	2	ZoneData_S_Z_Info. IPConfigI2	Pump IP address	UDInt		0	4294967295	0	RO
145	1	UnitCfg.ZonesNum	Set the number of zones in the system	UInt	1	1	12	0	RO
146	1	Bckp_Status	RESERVED	UInt		0	65535	0	RO
147	1	PmpMaintCntDwn	Countdown to next pump maintenance	UInt		0	65535	[h]	OR
300	1	ZonesData_C[1].Z_Info. ZoneStatus	Zone 1 status ***	UInt		0	65535	0	RO
301	2	ZonesData_C[1].Z_Info. FlowReq	Zone 1 production request	Real		0.0	9999.9	0.1 [kg/h - lb/h]	RO
303	2	ZonesData_C[1].Z_Info. CurrProd	Current zone 1 production	Real		0.0	9999.9	0.1 [kg/h - lb/h]	RO
305	2	ZonesData_C[1].Z_Info. RealReq	Zone 1 request from control signal	Real		0.0	100.0	0.1 [%]	RO
307	1	ZonesData_C[1].Z_Info. MainPrb	Zone 1 main probe reading	Real		-999.9	999.9	0	RO
308	1	ZonesData_C[1].Z_Info. LimitPrb	Zone 1 limit probe reading	Real		-999.9	999.9	0	RO
309	1	ZonesData_C[1].Z_Info. RackTPrb	Zone 1 rack temperature probe reading	Real		-999.9	999.9	0	RO
310	1	ZonesData_C[1].Z_Rack- Cfg.RackFlowRate	Nominal rack fl w-rate	Real		0.0	999.9	0.1 [kg/h - lb/h]	RO
311	1	ZonesData_C[1].Z_Sys- Info.SwVer.X	Software version X (Major)	UInt		0	65535	0	RO
312	1	ZonesData_C[1].Z_Sys- Info.SwVer.Y	Operating system version Y (Minor)	UInt		0	65535	0	RO
313	1	ZonesData_C[1].Z_Sys- Info.SwVer.Z	Software version Z (Patch)	UInt		0	65535	0	RO
314	1	ZonesData_C[1].Z_Sys- Info.OSVer.X	Operating system version X (Major)	UInt		0	65535	0	RO
315	1	ZonesData_C[1].Z_Sys- Info.OSVer.Y	Operating system version Y (Minor)	UInt		0	65535	0	RO
316	1	ZonesData_C[1].Z_Sys- Info.OSVer.Z	Operating system version Z (Patch)	UInt		0	65535	0	RO
317	1	ZonesData_C[1].Z_Sys- Info.CoreType	c.pCO core version	UInt		0	65535	0	RO
318	1	ZonesData_C[1].Z_Sys- Info.UnitModel	Unit model	UInt		0	65535	0	RO
319	1	ZonesData_C[1].Z_Info. ZoneManModeWait	Zone manual mode activation status **	UInt		0	65535	0	RO
320	2	ZonesData_C[1].Z_Info. IPConfigI2	Zone IP address	UDInt		0	4294967295	0	RO
322	1	ZonesData_C[1].Z_Info. TempDewPoint	Zone dew point temperature calculation	Real		-999.9	999.9	0.1 [°C - °F]	RO
323	1	ZonesData_C[1].Z_Info. TwoPrbsAvg	Two zone probe reading average calculation	Real		-32768	32767	0	RO
324	1	ZonesData_C[1].Z_Info. ThreePrbsAvg	Three zone probe reading average calculation	Real		-32768	32767	0	RO
325	1	ZonesData_C[1].Z_Info. OnOffStatu	RESERVED	UInt		0	65535	0	RO

* (1=Off from keypad, 2=Off from supervisor, 3=Standby, 4=Production, 6=Wash, 7=Fill, 8=Warning, 9=Alarm, 12=Off from scheduler, 13=Off from DIN, 15=Off from fl w switch, 16=Off from zone, 18=Pump alarm, 19=Off from pump, 20=Off from pump DIN, 22=Zone manual mode, 23=Slowdown, 27=Off from zones, 28=Bypass calibration, 31=Unit paused, 32=Pump venting, 33=Pump fill

** (0 = manual mode available, 1 = waiting for wash to finish, 2 = waiting or fill o finish, 3 = waiting or production to finish

*** (0=Power On, 10=Software initialisation, 20=Awaiting network, 30=Wash, 40=Fill, 50=Standby empty, 60=Standby full, 70=Water control, 80=Production, 90=Slowdown, 100=Pre-wash, 110=Alarm, 120=Bypass calibration fil, 130=Bypass calibration, 140=Waiting for control, 150=WTS water change, 160=Disabled, 170=Pump venting, 180=Pump fill

9.3.5 Zone ModBus variable table - Coil variables

RO = Read Only

RW = ReadWrite

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
300	1	ZoneData_S_Z_FctsCfg.Rack- TempMng.EnRackTMng	Enable production modulation function from rack temperature probe reading (0 = disabled, 1 = enabled)	Bool	0	0	1		RW
301	1	ZoneData_S_Z_FctsCfg.Rack- TempMng.EnRackTReducedProd	Enable reduced production based on rack temperature	Bool	0	0	1		RW
302	1	ZoneData_S_Z_FctsCfg.Rack- TempMng.EnRackTWarn	Select type of signal for low rack temperature (0 = notific - tion, 1 = warning)	Bool	0	0	1		RW
303	1	ZoneData_S_Z_FctsCfg.EnDlyd- HumPrbAlrmCtrl	Enable humidity probe control delay for alarm activation	Bool	0	0	1		RW
304	1	ZoneData_S_Z_FctsCfg.Rack- EnLogic	Enable zone production digital input (RACKEN) status (0 = contact closed, 1 = contact open)	Bool	0	0	1		RW
305	1	ZoneData_S_Z_FctsCfg.AirFlow- SwitchLogic	Flow switch digital input (FLUX) status (0 = contact closed, 1 = contact open)	Bool	0	0	1		RW

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
306	1	ZoneData_S_Z_FctsCfg.ZoneStatusDout_Logic	"Zone status" ZONE digital output logic (0 = NC, 1 = NO)	Bool	0	0	1		RW
307	1	ZoneData_S_Z_FctsCfg.AlrmD-OutLogic	"Alarm status" AL digital output logic (0 = NC, 1 = NO)	Bool	0	0	1		RW
308	1	ZoneData_S_Z_FctsCfg.Relay-LogicNO7	"Programmable relay NO7" digital output logic (0 = NC, 1 = NO)	Bool	0	0	1		RW
309	1	ZoneData_S_Z_FctsCfg.ZoneMan-ModeEnFill	Enable filling function for zone manual mode (0 = disabled, 1 = enabled)	Bool	1	0	1		RW
310	1	ZoneData_S_Z_WorkPar.UnitPause	Unit setting paused (0=not paused; 1=paused)	Bool	0	0	1		RW
311	1	ZoneData_S_Z_WorkPar.SVEnReg	Enable zone control from supervisor	Bool	0	0	1		RW
312	1	ZoneData_S_Z_WorkPar.SVEnOnOff	Enable zone on/off from supervisor	Bool	0	0	1		RW
313	1	ZoneData_S_Z_WorkPar.SVOnOff	Zone on/off from supervisor	Bool		0	1		RW
314	1	ZoneData_S_Z_RackCfg.EnRot-Steps	Enable zone step rotation	Bool	0	0	1	0	RW
315	1	EnMultiNet	Enabling of the multi-network	Bool	0	0	1	0	RW

9.3.6 Zone ModBus variable table - DiscretInput variables

RO = Read Only

RW = ReadWrite

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
301	1	ZoneData_S_Z_DigIO.RackEnStatus_NoLogic	Enable zone production digital input (RACKEN) status (0 = contact closed, 1 = contact open)	Bool		0	1		RO
302	1	ZoneData_S_Z_DigIO.AirFlowSwitch-Status_NoLogic	Flow switch digital input (FLUX) status (0 = contact closed, 1 = contact open)	Bool		0	1		RO
303	1	ZoneData_S_Z_RackSteps.LineDrain	Line drain digital output (NOL) status (0 = output not energised, 1 = output energised)	Bool		0	1		RO
304	1	ZoneData_S_Z_DigIO.NO7_PrgDout	Programmable relay NO7 digital output status (0 = output not energised, 1 = output energised)	Bool		0	1		RO
305	1	ZoneData_S_Z_DigIO.Alrm_Dout	Alarm status digital input (AL) status (0 = output not energised, 1 = output energised)	Bool		0	1		RO
306	1	ZoneData_S_Z_RackSteps.Ventilation	Rack ventilation solenoid valve digital output (NOV) status (0 = output energised, 1 = output not energised)	Bool		0	1		RO
313	1	ZoneData_S_Z_RackSteps.Step[1].Fill	Rack fill solenoid valve status - step 1 (0 = closed, 1 = open)	Bool		0	1		RO
314	1	ZoneData_S_Z_RackSteps.Step[2].Fill	Rack fill solenoid valve status - step 2 (0 = closed, 1 = open)	Bool		0	1		RO
315	1	ZoneData_S_Z_RackSteps.Step[3].Fill	Rack fill solenoid valve status - step 3 (0 = closed, 1 = open)	Bool		0	1		RO
316	1	ZoneData_S_Z_RackSteps.Step[4].Fill	Rack fill solenoid valve status - step 4 (0 = closed, 1 = open)	Bool		0	1		RO
317	1	ZoneData_S_Z_RackSteps.Step[5].Fill	Rack fill solenoid valve status - step 5 (0 = closed, 1 = open)	Bool		0	1		RO
318	1	ZoneData_S_Z_RackSteps.Step[6].Fill	Rack fill solenoid valve status - step 6 (0 = closed, 1 = open)	Bool		0	1		RO
319	1	ZoneData_S_Z_RackSteps.Step[1].Drain	Rack drain solenoid valve status - step 1 (0 = closed, 1 = open)	Bool		0	1		RO
320	1	ZoneData_S_Z_RackSteps.Step[2].Drain	Rack drain solenoid valve status - step 2 (0 = closed, 1 = open)	Bool		0	1		RO
321	1	ZoneData_S_Z_RackSteps.Step[3].Drain	Rack drain solenoid valve status - step 3 (0 = closed, 1 = open)	Bool		0	1		RO
322	1	ZoneData_S_Z_RackSteps.Step[4].Drain	Rack drain solenoid valve status - step 4 (0 = closed, 1 = open)	Bool		0	1		RO
323	1	ZoneData_S_Z_RackSteps.Step[5].Drain	Rack drain solenoid valve status - step 5 (0 = closed, 1 = open)	Bool		0	1		RO
324	1	ZoneData_S_Z_RackSteps.Step[6].Drain	Rack drain solenoid valve status - step 6 (0 = closed, 1 = open)	Bool		0	1		RO
331	1	ZoneData_S_Z_Alrms.Alrm_MainPrb	ALA01 - Zone alarm: main probe broken or disconnected	Bool		0	1		RO
332	1	ZoneData_S_Z_Alrms.Alrm_LimitPrb	ALA02 - Zone alarm: limit probe broken or disconnected	Bool		0	1		RO
333	1	ZoneData_S_Z_Alrms.Alrm_NoRack	ABC02 - Zone alarm: distribution system not configured	Bool		0	1		RO
334	1	ZoneData_S_Z_Alrms.Alrm_Master-Offli	ABO01 - Zone alarm: pumping station offli	Bool		0	1		RO
335	1	ZoneData_S_Z_Alrms.Alrm_RackTPrb	ABA06 - Zone alarm: rack temperature probe broken or disconnected	Bool		0	1		RO
336	1	ZoneData_S_Z_Alrms.Warn_LowRack-Temp	WRA10 - Zone warning: low rack temperature	Bool		0	1		RO
337	1	ZoneData_S_Z_Alrms.Warn_HighHum-MainPrb	WRA11 - Zone warning: high humidity measured by main probe	Bool		0	1		RO
338	1	ZoneData_S_Z_Alrms.Warn_LowHum-MainPrb	WRA12 - Zone warning: low humidity measured by main probe	Bool		0	1		RO
339	1	ZoneData_S_Z_Alrms.Warn_HighT-empMainPrb	WRA13 - Zone warning: high temperature measured by main probe	Bool		0	1		RO
340	1	ZoneData_S_Z_Alrms.Warn_LowTemp-MainPrb	WRA14 - Zone warning: low temperature measured by main probe	Bool		0	1		RO
341	1	ZoneData_S_Z_Alrms.Warn_HighHum-LimPrb	WRA15 - Zone warning: high humidity measured by limit probe	Bool		0	1		RO
342	1	ZoneData_S_Z_Alrms.Warn_LowTemp-LimPrb	WRA16 - Zone warning: low humidity measured by limit probe	Bool		0	1		RO
343	1	ZoneData_S_Z_Alrms.Warn_High-HumTwoPrbsAvg	WRA17 - Zone warning: high humidity measured by average of 2 probes	Bool		0	1		RO
344	1	ZoneData_S_Z_Alrms.Warn_Low-HumTwoPrbsAvg	WRA18 - Zone warning: low humidity measured by average of 2 probes	Bool		0	1		RO
345	1	ZoneData_S_Z_Alrms.Warn_HighT-empTwoPrbsAvg	WRA19 - Zone warning: high temperature measured by average of 2 probes	Bool		0	1		RO
346	1	ZoneData_S_Z_Alrms.Warn_LowTempTwoPrbsAvg	WRA20 - Zone warning: low temperature measured by average of 2 probes	Bool		0	1		RO
347	1	ZoneData_S_Z_Alrms.Warn_HighHum-ThreePrbsAvg	WRA21 - Zone warning: high humidity measured by average of 3 probes	Bool		0	1		RO
348	1	ZoneData_S_Z_Alrms.Warn_LowHum-ThreePrbsAvg	WRA22 - Zone warning: low humidity measured by average of 3 probes	Bool		0	1		RO
349	1	ZoneData_S_Z_Alrms.Warn_HighT-empThreePrbsAvg	WRA23 - Zone warning: high temperature measured by average of 3 probes	Bool		0	1		RO
350	1	ZoneData_S_Z_Alrms.Warn_LowTempThreePrbsAvg	WRA24 - Zone warning: low temperature measured by average of 3 probes	Bool		0	1		RO
351	1	ZoneData_S_Z_Alrms.Warn_SVOffli	WRO05 - Zone warning: supervisor offli	Bool		0	1		RO
352	1	ZoneData_S_Z_Alrms.Alrm_SVOffli	WRO09 - Zone alarm: supervisor offli	Bool		0	1		RO
353	1	ZoneData_S_Z_Alrms.Alrm_Retain	ALG01 - Zone alarm: error in number of retain memory writes	Bool		0	1		RO
354	1	ZoneData_S_Z_Alrms.Alrm_Err-retain_write	ALG02 - Zone alarm: too many retain memory writes	Bool		0	1		RO
355	1	ZoneData_S_Z_Alrms.Warn_RetMem	WRG03 - Zone warning: too many retain memory writes	Bool		0	1		RO
356	1	ZoneData_S_Z_Alrms.Alrm_NoModel	ABC01 - Zone alarm: no model configured	Bool		0	1		RO

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
357	1	ZoneData_S_Z_WorkPar.DisableVar-UnitPause	Disable pause from monitoring service (0: pause not disabled, 1: pause disabled)	Bool		0	1		RO
358	1	ZoneData_S_Z_Info.ZoneAlarmPresent	At least 1 alarm active in zone	Bool		0	1		RO
359	1	ZoneData_S_Z_Info.ZoneWarning	At least 1 warning active in zone	Bool		0	1		RO

9.3.7 Zone ModBus variable table - HoldingRegister variables

RO = Read Only

RW = ReadWrite

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
300	1	ZoneData_S_Z_WorkPar.GlbSetP_Hum	Set zone humidity set point	Real	50.0	0.0	100.0	0.1 [%rh]	RW
301	1	ZoneData_S_Z_WorkPar.GlbSetP_Temp	Set zone temperature set point	Real	25.0	0.0	100.0	0.1 [°C - °F]	RW
302	1	ZoneData_S_Z_WorkPar.GlbSetP_Lim_Hum	Set zone humidity limit set point	Real	50.0	0.0	100.0	0.1 [%rh]	RW
303	1	ZoneData_S_Z_WorkPar.GlbSetP_Lim_Temp	Set zone temperature limit set point	Real	25.0	0.0	100.0	0.1 [°C - °F]	RW
304	1	ZoneData_S_Z_Reg.RackMaxProd	Set zone maximum production	Real	100.0	0.0	100.0	0.1 [%]	RW
305	1	ZoneData_S_Z_Reg.RegTyp	Control mode *	USInt	6	0	18		RW
306	1	ZoneData_S_Z_FctsCfg.PressReliefT[1]	Pressure relief function duration for step 1	Real	1.0	0.0	30.0	0.1 [s]	RW
307	1	ZoneData_S_Z_FctsCfg.PressReliefT[2]	Pressure relief function duration for step 2	Real	1.0	0.0	30.0	0.1 [s]	RW
308	1	ZoneData_S_Z_FctsCfg.PressReliefT[3]	Pressure relief function duration for step 3	Real	1.0	0.0	30.0	0.1 [s]	RW
309	1	ZoneData_S_Z_FctsCfg.PressReliefT[4]	Pressure relief function duration for step 4	Real	1.0	0.0	30.0	0.1 [s]	RW
310	1	ZoneData_S_Z_FctsCfg.PressReliefT[5]	Pressure relief function duration for step 5	Real	1.0	0.0	30.0	0.1 [s]	RW
311	1	ZoneData_S_Z_FctsCfg.PressReliefT[6]	Pressure relief function duration for step 6	Real	1.0	0.0	30.0	0.1 [s]	RW
312	1	ZoneData_S_Z_PrCbfg.RackTPrb.UlTyp	Select rack temperature probe type (0 = 0-1 V, 1 = 0-10 V, 2 = 2-10 V, 3 = 0-20 mA, 4 = 4-20 mA, 5 = NTC)	USInt	5	0	5		RW
313	1	ZoneData_S_Z_PrCbfg.RackTPrb.Mi_Temp	Minimum rack temperature probe value	Real	-20.0	-999.9	999.9	0.1 [°C - °F]	RW
314	1	ZoneData_S_Z_PrCbfg.RackTPrb.Ma_Temp	Maximum rack temperature probe value	Real	70.0	-999.9	999.9	0.1 [°C - °F]	RW
315	1	ZoneData_S_Z_PrCbfg.RackTPrb.Offs	Rack temperature probe reading offset	Real	0.0	-999.9	999.9	0.1 [°C - °F]	RW
316	1	ZoneData_S_Z_FctsCfg.RackTemp-Mng.RackTSetP	Temperature set point for production modulation function from rack probe	Real	20.0	5.0	50.0	0.1 [°C - °F]	RW
317	1	ZoneData_S_Z_FctsCfg.RackTemp-Mng.RackTBand	Proportional band for production modulation function from rack probe	Real	5.0	0.5	10.0	0.1 [°C - °F]	RW
318	1	ZoneData_S_Z_FctsCfg.RackTemp-Mng.RackTDiff	Differential for disabling the production modulation function from rack probe warning	Real	2.0	0.5	10.0	0.1 [°C - °F]	RW
319	1	ZoneData_S_Z_FctsCfg.HumPrbAlrmCtrlDel	Enable control probe alarm delay at start of production (0 = disabled, 1 = enabled)	USInt	5	1	99	[min]	RW
320	1	ZoneData_S_Z_FctsCfg.FunctSel-NO7_Slv	Select programmable relay NO7 function (0 = Unit life status, 1 = Low rack temperature warning)	USInt	0	0	1		RW
340	1	ZoneData_S_Z_FctsCfg.HighMain-Hum_WarnThrsh	Set main probe high humidity alarm threshold	Real	100.0	0.0	100.0	0.1 [%rh]	RW
341	1	ZoneData_S_Z_FctsCfg.HighMain-Temp_WarnThrsh	Set main probe high temperature alarm threshold	Real	40.0	5.0	70.0	0.1 [°C - °F]	RW
342	1	ZoneData_S_Z_FctsCfg.LowMain-Hum_WarnThrsh	Set main probe low humidity alarm threshold	Real	0	0.0	100.0	0.1 [%rh]	RW
343	1	ZoneData_S_Z_FctsCfg.LowMain-Temp_WarnThrsh	Set main probe low temperature alarm threshold	Real	15.0	5.0	70.0	0.1 [°C - °F]	RW
344	1	ZoneData_S_Z_FctsCfg.HighLim-itHum_WarnThrsh	Set limit probe high humidity alarm threshold	Real	100.0	0.0	100.0	0.1 [%rh]	RW
345	1	ZoneData_S_Z_FctsCfg.LowLimit-Temp_WarnThrsh	Set limit probe low temperature alarm threshold	Real	15.0	5.0	70.0	0.1 [°C - °F]	RW
346	1	ZoneData_S_Z_FctsCfg.PrbThrsWarnDly	High/low humidity/temperature alarm delay	USInt	1	0	99	[min]	RW
347	2	ZoneData_S_Z_WorkPar.SVReq	Zone production request from supervisor	Real		0.0	100.0	0.1 [%]	RW
348	1	UoM_SV	Unit of measure (2: Imperial system, 6: International system)	USInt	6	1	7		RW
349	1	ZoneData_S_Z_RackCfg.RotStepsT	Enable zone step rotation	USInt	15	1	9999	[min]	RW
350	2	NetNum	Network number for multi-network	UDInt	1	1	9	0	RW

* (0=on/off, 1=on/off + humidity limit, 2=on/off + temperature limit, 3=external signal, 4=external signal + humidity limit, 5=external signal + temperature limit, 6=humidity, 7=humidity + limit humidity, 8=humidity + temperature limit, 9=temperature, 10=temperature + temperature limit, 11=temperature + humidity limit, 12=2 humidity probes, 13=2 temperature probes, 14=3 humidity probes, 15=3 temperature probes, 16=2 temperature probes + humidity limit, 17=dewpoint, 18=dewpoint + humidity limit)

9.3.8 Zone ModBus variable table - InputRegister variables

RO = Read Only

RW = ReadWrite

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
300	1	ZoneData_S_Z_Info.ZoneStatus	Zone status *	USInt		0	65535		RO
301	2	ZoneData_S_Z_Info.FlowReq	Zone production request	Real		0.0	9999.9	0.1 [kg/h - lb/h]	RO
303	2	ZoneData_S_Z_Info.CurrProd	Current zone production	Real		0.0	9999.9	0.1 [kg/h - lb/h]	RO
305	2	ZoneData_S_Z_Info.RealReq	Zone request from control signal	Real		0.0	100.0	0.1 [%]	RO

Add.	Occ.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
307	1	ZoneData_S_Z_Info. MainPrb	Zone main probe reading	Real		-999.9	999.9		RO
308	1	ZoneData_S_Z_Info. LimitPrb	Zone limit probe reading	Real		-999.9	999.9		RO
309	1	ZoneData_S_Z_Info. RackTPrb	Zone rack temperature probe reading	Real		-999.9	999.9		RO
310	1	ZoneData_S_Z_RackCfg. RackFlowRate	Nominal rack fl w-rate	Real		0.0	999.9	0.1 [kg/h - lb/h]	RO
311	1	ZoneData_S_Z_SysInfo. SwVer.X	Software version X (Major)	UInt		0	65535		RO
312	1	ZoneData_S_Z_SysInfo. SwVer.Y	Operating system version Y (Minor)	UInt		0	65535		RO
313	1	ZoneData_S_Z_SysInfo. SwVer.Z	Software version Z (Patch)	UInt		0	65535		RO
314	1	ZoneData_S_Z_SysInfo. OSVer.X	Operating system version X (Major)	UInt		0	65535		RO
315	1	ZoneData_S_Z_SysInfo. OSVer.Y	Operating system version Y (Minor)	UInt		0	65535		RO
316	1	ZoneData_S_Z_SysInfo. OSVer.Z	Operating system version Z (Patch)	UInt		0	65535		RO
317	1	ZoneData_S_Z_SysInfo. CoreType	c.pCO core version	UInt		0	65535		RO
318	1	ZoneData_S_Z_SysInfo. UnitModel	Unit model	UInt		0	65535		RO
319	1	ZoneData_S_Z_Info. ZoneManModeWait	Zone manual mode activation status **	UInt		0	65535		RO
320	2	ZoneData_S_Z_Info. IPConfigI2	Zone IP address	UDInt		0	4294967295		RO
322	1	ZoneData_S_Z_Info. TempDewPoint	Zone dew point temperature calculation	Real		-999.9	999.9	0.1 [°C - °F]	RO
323	1	ZoneData_S_Z_Info. TwoPrbsAvg	Two zone probe reading average calculation	Real		-32768	32767		RO
324	1	ZoneData_S_Z_Info. ThreePrbsAvg	Three zone probe reading average calculation	Real		-32768	32767		RO
325	1	ZoneData_S_Z_Info. OnOffStatu	RESERVED	UInt		0	65535	0	RO

*** (0=Power On, 10=Software initialisation, 20=Awaiting network, 30=Wash, 40=Fill, 50=Standby empty, 60=Standby full, 70=Water control, 80=Production, 90=Slowdown, 100=Pre-wash, 110=Alarm, 120=Bypass calibration fil , 130=Bypass calibration, 140=Waiting for control, 150=WTS water change, 160=Disabled, 170=Pump venting, 180=Pump fill

** (0 = Manual mode available, 1 = waiting for wash to finish, 2 = waiting or fill o finish, 3 = waiting or production to finish

9.4 BACnet parameter list

The variables shown in the list are a set of all the internal variables on the humidifier .



CAUTION

Do not configure any variables that are not shown in the tables, otherwise system operation may be affected.



Notice: all system zones can be supervised only by connecting to the pumping station.

In the following tables relating to the pumping station supervisor variables, only the zone variables relating to system zone 1 are shown.

The codes of the variables relating to the other zones can be determined as follows:

- The zone 1 variables have addresses up to 300. For the following zones, add 200 to the zone 1 address (example zone 5 = zone (1 + 4) - zone 5 address: 300 + (200 x 4) = 1100).
- Zone variables are typically associated with the ZonesData_C[X].Z_Info.LimitPrb structure, where **X** is the zone index. (example for zone 5: ZonesData_C[5].Z_Info.LimitPrb).

In the supervisor tables for the specific zones, on the other hand, the variable addresses always start from 300, as when connecting to the zone controllers, only the parameters relating to that specific one can be supervised.

Reference zone	Address	Variable name
Zone 1	300	ZonesData_C[1].Z_Info.FlowReq
	304	ZonesData_C[1].Z_Info.LimitPrb
Zone 2	500	ZonesData_C[2].Z_Info.FlowReq
	504	ZonesData_C[2].Z_Info.LimitPrb
Zone 3	700	ZonesData_C[3].Z_Info.FlowReq
	704	ZonesData_C[3].Z_Info.LimitPrb
Zone 4	900	ZonesData_C[4].Z_Info.FlowReq
	904	ZonesData_C[4].Z_Info.LimitPrb
Zone 5	1100	ZonesData_C[5].Z_Info.FlowReq
	1104	ZonesData_C[5].Z_Info.LimitPrb
Zone 6	1300	ZonesData_C[6].Z_Info.FlowReq
	1304	ZonesData_C[6].Z_Info.LimitPrb
Zone 7	1500	ZonesData_C[7].Z_Info.FlowReq
	1504	ZonesData_C[7].Z_Info.LimitPrb
Zone 8	1700	ZonesData_C[8].Z_Info.FlowReq
	1704	ZonesData_C[8].Z_Info.LimitPrb
Zone 9	1900	ZonesData_C[9].Z_Info.FlowReq
	1904	ZonesData_C[9].Z_Info.LimitPrb

Zone 10	2100	ZonesData_C[10].Z_Info.FlowReq
	2104	ZonesData_C[10].Z_Info.LimitPrb
	2300	ZonesData_C[11].Z_Info.FlowReq
Zone 11	2304	ZonesData_C[11].Z_Info.LimitPrb
	2500	ZonesData_C[12].Z_Info.FlowReq
Zone 12	2504	ZonesData_C[12].Z_Info.LimitPrb

Tab. 9.b

9.4.1 Pumping station BACnet variable table - AnalogValue variables

RO = Read Only

RW = ReadWrite

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
100	PmpCurrReq	Production request to the pump	Real	0	0.0	3,40E+43	0.1 [kg/h - lb/h]	RO
101	PmpCurrProd	Current pump production	Real	0	0.0	3,40E+43	0.1 [kg/h - lb/h]	RO
102	InletPress_Msk	Pumping station inlet water pressure	Real	0	-3,40E+42	3,40E+43	0.1 [bar - psi]	RO
103	OutletPress	Pumping station outlet water pressure	Real	0	-9999.9	9999.9	0.1 [bar - psi]	RO
104	BypassTPrb	Pumping station bypass water temperature	Real	0	-999.9	999.9	0.1 [°C - °F]	RO
105	T_SetPAFreezeSetP	Low water temperature alarm threshold	Real	5.0	3.0	10.0	0.1 [°C - °F]	RW
106	T_SetPAFreezeHyst	Low water temperature alarm deactivation hysteresis	Real	1.0	0.5	6.0	0.1 [°C - °F]	RW
107	T_SetPByPassTDRAINOpen	Drain solenoid valve DVB opening threshold for high water temperature bypass	Real	45.0	35.0	60.0	0.1 [°C - °F]	RW
108	T_SetPByPassTWarnResetHyst	High water temperature warning deactivation hysteresis	Real	5.0	1.0	10.0	0.1 [°C - °F]	RW
109	T_SetPByPassTWarnSet	High water temperature warning threshold	Real	52.0	45.0	65.0	0.1 %	RW
110	MaxInvOutFreq_Corr	Maximum inverter frequency	Real	0	-999.9	999.9	0.1 [Hz]	RO
112	PmpFlowRate	RESERVED	Real	0	-999.9	999.9	0.1 [kg/h - lb/h]	RO
300	ZonesData_C[1].Z_Info.FlowReq	Zone 1 production request	Real	0	0.0	9999.9	0.1 [kg/h - lb/h]	RO
301	ZonesData_C[1].Z_Info.CurrProd	Current zone 1 production	Real	0	0.0	9999.9	0.1 [kg/h - lb/h]	RO
302	ZonesData_C[1].Z_Info.RealReq	Zone 1 request from control signal	Real	0	0.0	100.0	0.1 [%]	RO
303	ZonesData_C[1].Z_Info.MainPrb	Zone 1 main probe reading	Real	0	-999.9	999.9	0	RO
304	ZonesData_C[1].Z_Info.LimitPrb	Zone 1 limit probe reading	Real	0	-999.9	999.9	0	RO
305	ZonesData_C[1].Z_Info.RackTPrb	Zone 1 rack temperature probe reading	Real	0	-999.9	999.9	0	RO
306	ZonesData_C[1].Z_WorkPar.GlbSetP_Hum	Set zone 1 humidity set point	Real	50.0	0.0	100.0	0.1 [%rh]	RW
307	ZonesData_C[1].Z_WorkPar.GlbSetP_Temp	Set zone 1 temperature set point	Real	25.0	0.0	100.0	0.1 [°C - °F]	RW
308	ZonesData_C[1].Z_WorkPar.GlbSetPLim_Hum	Set zone 1 humidity limit set point	Real	50.0	0.0	100.0	0.1 [%rh]	RW
309	ZonesData_C[1].Z_WorkPar.GlbSetPLim_Temp	Set zone 1 temperature limit set point	Real	25.0	0.0	100.0	0.1 [°C - °F]	RW
310	ZonesData_C[1].Z_Reg.RackMaxProd	Set zone 1 maximum production	Real	100.0	0.0	100.0	0.1 [%]	RW
311	ZonesData_C[1].Z_RackCfg.RackFlowRate	Nominal rack fl w-rate	Real	0	0.0	999.9	0.1 [kg/h - lb/h]	RO
312	ZonesData_C[1].Z_FctsCfg.PressReliefT[1]	Pressure relief function duration for step 1	Real	1.0	0.0	30.0	0.1 [s]	RW
313	ZonesData_C[1].Z_FctsCfg.PressReliefT[2]	Pressure relief function duration for step 2	Real	1.0	0.0	30.0	0.1 [s]	RW
314	ZonesData_C[1].Z_FctsCfg.PressReliefT[3]	Pressure relief function duration for step 3	Real	1.0	0.0	30.0	0.1 [s]	RW
315	ZonesData_C[1].Z_FctsCfg.PressReliefT[4]	Pressure relief function duration for step 4	Real	1.0	0.0	30.0	0.1 [s]	RW
316	ZonesData_C[1].Z_FctsCfg.PressReliefT[5]	Pressure relief function duration for step 5	Real	1.0	0.0	30.0	0.1 [s]	RW
317	ZonesData_C[1].Z_FctsCfg.PressReliefT[6]	Pressure relief function duration for step 6	Real	1.0	0.0	30.0	0.1 [s]	RW
318	ZonesData_C[1].Z_PrbCfg.RackTPrb.Mi_Temp	Minimum rack temperature probe value	Real	-20.0	-999.9	999.9	0.1 [°C - °F]	RW
319	ZonesData_C[1].Z_PrbCfg.RackTPrb.Ma_Temp	Maximum rack temperature probe value	Real	70.0	-999.9	999.9	0.1 [°C - °F]	RW
320	ZonesData_C[1].Z_PrbCfg.RackTPrb.Offs	Rack temperature probe reading offset	Real	0.0	-999.9	999.9	0.1 [°C - °F]	RW
321	ZonesData_C[1].Z_FctsCfg.RackTempMng.RackTSetP	Temperature set point for production modulation function from rack probe	Real	20.0	5.0	50.0	0.1 [°C - °F]	RW
322	ZonesData_C[1].Z_FctsCfg.RackTempMng.RackTBand	Proportional band for production modulation function from rack probe	Real	5.0	0.5	10.0	0.1 [°C - °F]	RW
323	ZonesData_C[1].Z_FctsCfg.RackTempMng.RackTDiff	Differential for disabling the production modulation function from rack probe warning	Real	2.0	0.5	10.0	0.1 [°C - °F]	RW
325	ZonesData_C[1].Z_FctsCfg.HighMainHum_WarnThrsh	Set main probe high humidity alarm threshold	Real	100.0	0.0	100.0	0.1 [%rh]	RW
326	ZonesData_C[1].Z_FctsCfg.HighMainTemp_WarnThrsh	Set main probe high temperature alarm threshold	Real	40.0	5.0	70.0	0.1 [°C - °F]	RW
327	ZonesData_C[1].Z_FctsCfg.LowMainHum_WarnThrsh	Set main probe low humidity alarm threshold	Real	0.0	0.0	100.0	0.1 [%rh]	RW
328	ZonesData_C[1].Z_FctsCfg.LowMainTemp_WarnThrsh	Set main probe low temperature alarm threshold	Real	15.0	5.0	70.0	0.1 [°C - °F]	RW
329	ZonesData_C[1].Z_FctsCfg.HighLimitHum_WarnThrsh	Set limit probe high humidity alarm threshold	Real	100.0	0.0	100.0	0.1 [%rh]	RW
330	ZonesData_C[1].Z_FctsCfg.LowLimitTemp_WarnThrsh	Set limit probe low temperature alarm threshold	Real	15.0	5.0	70.0	0.1 [°C - °F]	RW
331	ZonesData_C[1].Z_WorkPar.SVReq	Zone production request from supervisor	Real	0	0.0	100.0	0.1 [%]	RW

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
332	ZonesData_C[1].Z_Info.TempDewPoint	Zone dew point temperature calculation	Real	0	-999.9	999.9	0.1 [°C - °F]	RO
333	ZonesData_C[1].Z_Info.TwoPrbsAvg	Two zone probe reading average calculation	Real	0	-32768	32767	0	RO
334	ZonesData_C[1].Z_Info.ThreePrbsAvg	Three zone probe reading average calculation	Real	0	-32768	32767	0	RO

9.4.2 Pumping station BACnet variable table - AnalogValue variables

RO = Read Only

RW = ReadWrite

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
100	CurrAlarmStatus.isPresent	At least 1 alarm active	Bool	0	0	1	0	RO
102	ResetPmpHrs	Partially reset pump operating hours	Bool	0	0	1	0	RW
103	EnFill	Enable fill function (0 = disabled, 1 = enabled)	Bool	1	0	1	0	RW
104	FillOnlyReqZones	Function to fill zones only with production request, if filling zone by zone (0 = disabled, 1 = enabled)	Bool	1	0	1	0	RW
105	ZonesData_C[1].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 1 *	Bool	0	0	1	0	RW
106	ZonesData_C[2].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 2 *	Bool	0	0	1	0	RW
107	ZonesData_C[3].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 3 *	Bool	0	0	1	0	RW
108	ZonesData_C[4].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 4 *	Bool	0	0	1	0	RW
109	ZonesData_C[5].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 5 *	Bool	0	0	1	0	RW
110	ZonesData_C[6].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 6 *	Bool	0	0	1	0	RW
111	ZonesData_C[7].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 7 *	Bool	0	0	1	0	RW
112	ZonesData_C[8].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 8 *	Bool	0	0	1	0	RW
113	ZonesData_C[9].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 9 *	Bool	0	0	1	0	RW
114	ZonesData_C[10].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 10 *	Bool	0	0	1	0	RW
115	ZonesData_C[11].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 11 *	Bool	0	0	1	0	RW
116	ZonesData_C[12].Z_FctsCfg.EnRackFullStandby	Enable full standby function for zone 12 *	Bool	0	0	1	0	RW
117	ZoneData_SZ_FctsCfg.RelayLogicNO7	Digital output logic for PUMP "programmable relay NO7" (0 = NC, 1 = NO)	Bool	0	0	1	0	RW
118	HP_SwitchStatus_NoLogic	High pressure switch digital input (HP) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RO
119	HT_ThermostatStatus_NoLogic	High temperature thermostat digital input (HT) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RO
120	PumpEnDinStatus_NoLogic	Enable pumping station digital input (PEN) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RO
121	RevOsmStatus_NoLogic	Reverse osmosis alarm status digital input (ROAL) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RO
122	WaterLeakStatus_NoLogic	Flood sensor digital input (WL) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RO
123	Cabinet_UI.SupplyWV	Water fill solenoid valve and pump cooling fan digital input (FV) status (0 = output not energised, 1 = output energised)	Bool	0	0	1	0	RO
124	Cabinet_UIDrain	Pumping station water drain digital input (DVB) status (0 = output not energised, 1 = output energised)	Bool	0	0	1	0	RO
125	ZoneData_SZ_RackSteps.LineDrain	Line drain solenoid valve digital input (NOL) status (0 = output not energised, 1 = output energised)	Bool	0	0	1	0	RO
126	ZoneData_SZ_DigIOAO7_PrgDout	Programmable relay NO7 digital input (PUMP) status (0 = output not energised, 1 = output energised)	Bool	0	0	1	0	RO
127	ZoneData_SZ_DigIOAlrm_Dout	Alarm status digital input (AL) status (0 = output not energised, 1 = output energised)	Bool	0	0	1	0	RO
128	EnHiConductAlrm	Enable pumping station high inlet water conductivity alarm	Bool	1	0	1	0	RW
130	LowInletFlow	Low inlet water pressure (0 = not present, 1 = low pressure present)	Bool	0	0	1	0	RO
131	Alrm_Retain.Active	ALG01 - Alarm: error in number of retain memory writes	Bool	0	0	1	0	RO
132	Alrm_Err_retain_write.Active	ALG02 - Alarm: too many retain memory writes	Bool	0	0	1	0	RO
133	Warn_LowPressLP.Active	WRP01 - Warning: low inlet pressure (LP) during production	Bool	0	0	1	0	RO
134	Warn_RetMem.Active	WRG03 - Warning: too many retain memory writes	Bool	0	0	1	0	RO
135	Alrm_Inv_Overvoltage.Active	ABV01 - Inverter alarm: overvoltage	Bool	0	0	1	0	RO
136	Alrm_NoModel.Active	ABC01 - Alarm: no model configured	Bool	0	0	1	0	RO
137	Warn_Cu_Maint.Active	WRM01 - Maintenance warning: visual water circuit check required	Bool	0	0	1	0	RO
138	Alrm_HighTemp.Active	ABP02 - Alarm: high water temperature	Bool	0	0	1	0	RO
139	Alrm_Inv_General.Active	ABV02 - Inverter alarm: general alarm	Bool	0	0	1	0	RO
140	Alrm_Inv_OFF_STATUline.Active	ABV03 - Inverter alarm: inverter off	Bool	0	0	1	0	RO
141	Alrm_LowTemp.Active	ABP03 - Alarm: low water temperature	Bool	0	0	1	0	RO
142	Alrm_Inv_Overtorque.Active	ABV04 - Inverter alarm: overtorque	Bool	0	0	1	0	RO
143	Alrm_Inv_HeatsinkOverH.Active	ABV05 - Inverter alarm: overheating	Bool	0	0	1	0	RO
144	Warn_HighTemp.Active	WRP04 - Warning: high water temperature	Bool	0	0	1	0	RO
145	Warn_HighPressHP.Active	WRP05 - Warning: high outlet pressure (HP)	Bool	0	0	1	0	RO
146	Alrm_Inv_Overcurrent.Active	ABV06 - Inverter alarm: overcurrent	Bool	0	0	1	0	RO
147	Alrm_Inv_MotorOverload.Active	ABV07 - Inverter alarm: motor overload	Bool	0	0	1	0	RO
148	Alrm_LowPressHP.Active	ABP06 - Alarm: low outlet pressure (HP)	Bool	0	0	1	0	RO
149	Alrm_Inv_DriveOverload.Active	ABV08 - Inverter alarm: drive overload	Bool	0	0	1	0	RO
150	Warn_WMiss.Active	WRP07 - Warning: no inlet water	Bool	0	0	1	0	RO
151	Alrm_LowPressLP.Active	ABP08 - Alarm: low inlet pressure (LP) during production	Bool	0	0	1	0	RO
152	Alrm_HighPressHP.Active	ABP09 - Alarm: high outlet pressure (HP)	Bool	0	0	1	0	RO
153	Alrm_HighPressLP.Active	ABP10 - Alarm: high inlet pressure (LP)	Bool	0	0	1	0	RO

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
154	Alrm_Slave1.Active	ALZ01 - Alarm: zone 1 panel alarm	Bool	0	0	1	0	RO
155	Alrm_Slave2.Active	ALZ02 - Alarm: zone 2 panel alarm	Bool	0	0	1	0	RO
156	Alrm_Slave3.Active	ALZ03 - Alarm: zone 3 panel alarm	Bool	0	0	1	0	RO
157	Alrm_Slave4.Active	ALZ04 - Alarm: zone 4 panel alarm	Bool	0	0	1	0	RO
158	Alrm_Slave5.Active	ALZ05 - Alarm: zone 5 panel alarm	Bool	0	0	1	0	RO
159	Alrm_Slave6.Active	ALZ06 - Alarm: zone 6 panel alarm	Bool	0	0	1	0	RO
160	Alrm_Slave7.Active	ALZ07 - Alarm: zone 7 panel alarm	Bool	0	0	1	0	RO
161	Alrm_Slave8.Active	ALZ08 - Alarm: zone 8 panel alarm	Bool	0	0	1	0	RO
162	Alrm_Slave9.Active	ALZ09 - Alarm: zone 9 panel alarm	Bool	0	0	1	0	RO
163	Alrm_Slave10.Active	ALZ10 - Alarm: zone 10 panel alarm	Bool	0	0	1	0	RO
164	Alrm_Slave11.Active	ALZ11 - Alarm: zone 11 panel alarm	Bool	0	0	1	0	RO
165	Alrm_Slave12.Active	ALZ12 - Alarm: zone 12 panel alarm	Bool	0	0	1	0	RO
166	Alrm_Water_Leakage.Active	ABR01 - Alarm: water flooding detected (WL)	Bool	0	0	1	0	RO
167	Alrm_RevOsmNotReady.Active	ABR02 - Alarm: reverse osmosis system not ready (ROAL)	Bool	0	0	1	0	RO
168	Alrm_BypassPrb.Active	ABA03 - Alarm: bypass temperature probe broken or disconnected	Bool	0	0	1	0	RO
169	Alrm_InletPressPrb.Active	ABA04 - Alarm: water inlet pressure probe (LP) broken or disconnected	Bool	0	0	1	0	RO
170	Alrm_OutletPressPrb.Active	ABA05 - Alarm: water outlet pressure probe (HP) broken or disconnected	Bool	0	0	1	0	RO
171	Warn_HighConduct.Active	WRA07 - Warning: high water conductivity measured	Bool	0	0	1	0	RO
172	Alrm_ConductPrb.Active	ABA08 - Alarm: conductivity probe broken or disconnected	Bool	0	0	1	0	RO
173	Alrm_HighConduct.Active	ABA09 - Alarm: high water conductivity measured	Bool	0	0	1	0	RO
174	Warn_ReqTooHigh.Active	WRC03 - Warning: production request is too high for pump nominal flow rate	Bool	0	0	1	0	RO
175	Alrm_HighPressHPWashFill.Active	ABP11 - Alarm: high water outlet pressure (HP) during wash or fill	Bool	0	0	1	0	RO
178	Warn_LowPressHP.Active	WRP11 - Warning: low outlet pressure (HP)	Bool	0	0	1	0	RO
179	Warn_SVOffline_Channel1.ctive	WRO02 - Warning: supervisor channel 1 offline	Bool	0	0	1	0	RO
180	Warn_SVOffline_Channel2.ctive	WRO03 - Warning: supervisor channel 2 offline	Bool	0	0	1	0	RO
181	Warn_SVOffline_Channel3.ctive	WRO04 - Warning: supervisor channel 3 offline	Bool	0	0	1	0	RO
182	Alrm_SVOffline_Channel1.ctive	ALO06 - Alarm: supervisor channel 1 offline	Bool	0	0	1	0	RO
183	Alrm_SVOffline_Channel2.ctive	ALO07 - Alarm: supervisor channel 2 offline	Bool	0	0	1	0	RO
184	Alrm_SVOffline_Channel3.ctive	ALO08 - Alarm: supervisor channel 3 offline	Bool	0	0	1	0	RO
185	Warn_BackupFail.Active	WRB01 - Warning: backup pump activation failed	Bool	0	0	1	0	RO
186	Warn_BackupOffli .Active	WRB02 - Warning: backup pump offline	Bool	0	0	1	0	RO
187	Alrm_BackupOffli .Active	WRB03 - Warning: backup pump offline	Bool	0	0	1	0	RO
188	UnitPause	Unit setting paused (0=not paused; 1=paused)	Bool	0	0	1	0	RW
189	DisableVarUnitPause	Disable pause from monitoring service (0: pause not disabled, 1: pause disabled)	Bool	0	0	1	0	RO
190	CurrAlrmStatus.Warning	At least 1 warning active	Bool	0	0	1	0	RO
191	UnitCfg.isMasterSec	Pumping unit type set to secondary (only with backup function enabled)	Bool	0	0	1	0	RO
192	UnitCfg_UI.PressWaterMode	Pressurised water mode selected	Bool	0	0	1	0	RO
193	Slave_1_ComStatus.isOnline	Zone 1 online status	Bool	0	0	1	0	RO
194	Slave_2_ComStatus.isOnline	Zone 2 online status	Bool	0	0	1	0	RO
195	Slave_3_ComStatus.isOnline	Zone 3 online status	Bool	0	0	1	0	RO
196	Slave_4_ComStatus.isOnline	Zone 4 online status	Bool	0	0	1	0	RO
197	Slave_5_ComStatus.isOnline	Zone 5 online status	Bool	0	0	1	0	RO
198	Slave_6_ComStatus.isOnline	Zone 6 online status	Bool	0	0	1	0	RO
199	Slave_7_ComStatus.isOnline	Zone 7 online status	Bool	0	0	1	0	RO
200	Slave_8_ComStatus.isOnline	Zone 8 online status	Bool	0	0	1	0	RO
201	Slave_9_ComStatus.isOnline	Zone 9 online status	Bool	0	0	1	0	RO
202	Slave_10_ComStatus.isOnline	Zone 10 online status	Bool	0	0	1	0	RO
203	Slave_11_ComStatus.isOnline	Zone 11 online status	Bool	0	0	1	0	RO
204	Slave_12_ComStatus.isOnline	Zone 12 online status	Bool	0	0	1	0	RO
205	UnitCfg.isZone1Remoted	Zone 1 remote	Bool	0	0	1	0	RO
206	EnMstFullStandbyMaxT	Enable pump-zone line emptying in standby	Bool	1	0	1	0	RW
211	Warn_AirPurge.Active	WRM05 - Warning: pump venting required	Bool	0	0	1	0	RO
212	Warn_Maint_ResMan_OilFree.Active	WRM04 - Warning: pump inspection required	Bool	0	0	1	0	RO
213	Warn_DefInst_Pmp.Active	WRC04 - Warning: reset defaults from pumping station	Bool	0	0	1	0	RO
214	EnMultiNet	Enabling of the multi-network	Bool	0	0	1	0	RW
215	EnFillWashProdLim	Enabling of production limitation during filling/washin	Bool	0	0	1	0	RW
301	ZonesData_C[1].Z_FctsCfg.RackTempMng.EnRackTMng	Enable production modulation function from rack temperature probe reading (0 = disabled, 1 = enabled)	Bool	0	0	1	0	RW
302	ZonesData_C[1].Z_FctsCfg.RackTempMng.EnRackTReducedProd	Enable reduced production based on rack temperature	Bool	0	0	1	0	RW
303	ZonesData_C[1].Z_FctsCfg.RackTempMng.EnRackTWarn	Select type of signal for low rack temperature (0 = notification, 1 = warning)	Bool	0	0	1	0	RW
304	ZonesData_C[1].Z_FctsCfg.EnDlydHumPrbAlrmCtrl	Enable humidity probe control delay for alarm activation	Bool	0	0	1	0	RW
305	ZonesData_C[1].Z_FctsCfg.RackEnLogic	Enable zone production digital input (RACKEN) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RW
306	ZonesData_C[1].Z_FctsCfg.AirFlowSwitchLogic	Flow switch digital input (FLUX) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RW
307	ZonesData_C[1].Z_FctsCfg.ZoneStatusDout_Logic	"Zone status" ZONE digital output logic (0 = NC, 1 = NO)	Bool	0	0	1	0	RW
308	ZonesData_C[1].Z_FctsCfg.AlrmDOutLogic	"Alarm status" AL digital output logic (0 = NC, 1 = NO)	Bool	0	0	1	0	RW
309	ZonesData_C[1].Z_FctsCfg.RelayLogicNO7	"Programmable relay NO7" digital output logic (0 = NC, 1 = NO)	Bool	0	0	1	0	RW
310	ZonesData_C[1].Z_DigIO.RackEnStatus_NoLogic	Enable zone production digital input (RACKEN) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RO
311	ZonesData_C[1].Z_DigIO.AirFlowSwitchStatus_NoLogic	Flow switch digital input (FLUX) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RO
312	ZonesData_C[1].Z_RackSteps.LineDrain	Line drain digital output (NOL) status (0 = output not energised, 1 = output energised)	Bool	0	0	1	0	RO
313	ZonesData_C[1].Z_DigIO.NO7_PrgDout	Programmable relay NO7 digital output status (0 = output not energised, 1 = output energised)	Bool	0	0	1	0	RO
314	ZonesData_C[1].Z_DigIO.Alrm_Dout	Alarm status digital input (AL) status (0 = output not energised, 1 = output energised)	Bool	0	0	1	0	RO
315	ZonesData_C[1].Z_RackSteps.Ventilation	Rack ventilation solenoid valve digital output (NOV) status (0 = output energised, 1 = output not energised)	Bool	0	0	1	0	RO

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
316	ZonesData_C[1].Z_FctsCfg.ZoneMan-ModeEnFill	Enable filling function for zone manual mode (0 = disabled, 1 = enabled)	Bool	1	0	1	0	RW
323	ZonesData_C[1].Z_RackSteps.Step[1].Fill	Rack fill solenoid valve status - step 1 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
324	ZonesData_C[1].Z_RackSteps.Step[2].Fill	Rack fill solenoid valve status - step 2 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
325	ZonesData_C[1].Z_RackSteps.Step[3].Fill	Rack fill solenoid valve status - step 3 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
326	ZonesData_C[1].Z_RackSteps.Step[4].Fill	Rack fill solenoid valve status - step 4 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
327	ZonesData_C[1].Z_RackSteps.Step[5].Fill	Rack fill solenoid valve status - step 5 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
328	ZonesData_C[1].Z_RackSteps.Step[6].Fill	Rack fill solenoid valve status - step 6 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
329	ZonesData_C[1].Z_RackSteps.Step[1].Drain	Rack drain solenoid valve status - step 1 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
330	ZonesData_C[1].Z_RackSteps.Step[2].Drain	Rack drain solenoid valve status - step 2 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
331	ZonesData_C[1].Z_RackSteps.Step[3].Drain	Rack drain solenoid valve status - step 3 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
332	ZonesData_C[1].Z_RackSteps.Step[4].Drain	Rack drain solenoid valve status - step 4 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
333	ZonesData_C[1].Z_RackSteps.Step[5].Drain	Rack drain solenoid valve status - step 5 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
334	ZonesData_C[1].Z_RackSteps.Step[6].Drain	Rack drain solenoid valve status - step 6 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
341	ZonesData_C[1].Z_Alrms.Alrm_MainPrb	ALA01 - Zone 1 alarm: main probe broken or disconnected	Bool	0	0	1	0	RO
342	ZonesData_C[1].Z_RackSteps.Ventilation	ALA02 - Zone 1 alarm: limit probe broken or disconnected	Bool	0	0	1	0	RO
343	ZonesData_C[1].Z_Alrms.Alrm_NoRack	ABC02 - Zone 1 alarm: distribution system not configured	Bool	0	0	1	0	RO
344	ZonesData_C[1].Z_Alrms.Alrm_MasterOffli	ABO01 - Zone 1 alarm: pumping station offline	Bool	0	0	1	0	RO
345	ZonesData_C[1].Z_Alrms.Alrm_RackTPrb	ABA06 - Zone 1 alarm: rack temperature probe broken or disconnected	Bool	0	0	1	0	RO
346	ZonesData_C[1].Z_Alrms.Warn_Low-RackTemp	WRA10 - Zone 1 warning: low rack temperature	Bool	0	0	1	0	RO
347	ZonesData_C[1].Z_Alrms.Warn_High-HumMainPrb	WRA11 - Zone 1 warning: high humidity measured by main probe	Bool	0	0	1	0	RO
348	ZonesData_C[1].Z_Alrms.Warn_Low-HumMainPrb	WRA12 - Zone 1 warning: low humidity measured by main probe	Bool	0	0	1	0	RO
349	ZonesData_C[1].Z_Alrms.Warn_HighTempMainPrb	WRA13 - Zone 1 warning: high temperature measured by main probe	Bool	0	0	1	0	RO
350	ZonesData_C[1].Z_Alrms.Warn_Low-TempMainPrb	WRA14 - Zone 1 warning: low temperature measured by main probe	Bool	0	0	1	0	RO
351	ZonesData_C[1].Z_Alrms.Warn_High-HumLimPrb	WRA15 - Zone 1 warning: high humidity measured by limit probe	Bool	0	0	1	0	RO
352	ZonesData_C[1].Z_Alrms.Warn_Low-TempLimPrb	WRA16 - Zone 1 warning: low humidity measured by limit probe	Bool	0	0	1	0	RO
353	ZonesData_C[1].Z_Alrms.Warn_High-HumTwoPrbsAvg	WRA17 - Zone 1 warning: high humidity measured by average of 2 probes	Bool	0	0	1	0	RO
354	ZonesData_C[1].Z_Alrms.Warn_Low-HumTwoPrbsAvg	WRA18 - Zone 1 warning: low humidity measured by average of 2 probes	Bool	0	0	1	0	RO
355	ZonesData_C[1].Z_Alrms.Warn_HighTempTwoPrbsAvg	WRA19 - Zone 1 warning: high temperature measured by average of 2 probes	Bool	0	0	1	0	RO
356	ZonesData_C[1].Z_Alrms.Warn_Low-TempTwoPrbsAvg	WRA20 - Zone 1 warning: low temperature measured by average of 2 probes	Bool	0	0	1	0	RO
357	ZonesData_C[1].Z_Alrms.Warn_High-HumThreePrbsAvg	WRA21 - Zone 1 warning: high humidity measured by average of 3 probes	Bool	0	0	1	0	RO
358	ZonesData_C[1].Z_Alrms.Warn_Low-HumThreePrbsAvg	WRA22 - Zone 1 warning: low humidity measured by average of 3 probes	Bool	0	0	1	0	RO
359	ZonesData_C[1].Z_Alrms.Warn_HighTempThreePrbsAvg	WRA23 - Zone 1 warning: high temperature measured by average of 3 probes	Bool	0	0	1	0	RO
360	ZonesData_C[1].Z_Alrms.Warn_Low-TempThreePrbsAvg	WRA24 - Zone 1 warning: low temperature measured by average of 3 probes	Bool	0	0	1	0	RO
361	ZonesData_C[1].Z_Alrms.Warn_SVOfflin	WRO05 - Zone 1 warning: supervisor offline	Bool	0	0	1	0	RO
362	ZonesData_C[1].Z_Alrms.Alrm_SVOfflin	WRO09 - Zone 1 alarm: supervisor offline	Bool	0	0	1	0	RO
363	ZonesData_C[1].Z_Alrms.Alrm_Retain	ALG01 - Zone 1 alarm: error in number of retain memory writes	Bool	0	0	1	0	RO
364	ZonesData_C[1].Z_Alrms.Alrm_Err_retain_write	ALG02 - Zone 1 alarm: too many retain memory writes	Bool	0	0	1	0	RO
365	ZonesData_C[1].Z_Alrms.Warn_Ret-Mem	WRG03 - Zone 1 warning: too many retain memory writes	Bool	0	0	1	0	RO
366	ZonesData_C[1].Z_Alrms.Alrm_No-Model	ABC01 - Zone 1 alarm: no model configured	Bool	0	0	1	0	RO
367	ZonesData_C[1].Z_WorkPar.UnitPause	Unit setting paused (0=not paused; 1=paused)	Bool	0	0	1	0	RW
368	ZonesData_C[1].Z_WorkPar.DisableVar-UnitPause	Disable pause from monitoring service (0: pause not disabled, 1: pause disabled)	Bool	0	0	1	0	RO
369	ZonesData_C[1].Z_Info.ZoneAlrm-Present	At least 1 alarm active in zone	Bool	0	0	1	0	RO
370	ZonesData_C[1].Z_Info.ZoneWarning	At least 1 warning active in zone	Bool	0	0	1	0	RO
371	ZonesData_C[1].Z_WorkPar.SVEnReq	Enable zone control from supervisor	Bool	0	0	1	0	RW
372	ZonesData_C[1].Z_WorkPar.SVEnOnOff	Enable zone 1 on/off from supervisor	Bool	0	0	1	0	RW
373	ZonesData_C[1].Z_WorkPar.SVOnOff	Zone 1 on/off from supervisor	Bool	0	0	1	0	RW
374	ZonesData_C[1].Z_RackCfg.EnRotSteps	Enable step rotation in zone 1	Bool	0	0	1	0	RW

* (0 = the zone will always remain in full standby at the end of production, 1 = the zone, once the full standby time has elapsed, will go to empty standby)

9.4.3 Pumping station BACnet variable table - PositiveIntegerValue variables

RO = Read Only

RW = ReadWrite

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
100	OnOffStatu	Pump status *	UInt	0	0	65535	0	RO

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
101	SwVer.X	Software version X (Major)	UInt	0	0	65535	0	RO
102	SwVer.Y	Software version Y (Minor)	UInt	0	0	65535	0	RO
103	SwVer.Z	Software version Z (Patch)	UInt	0	0	65535	0	RO
104	OSVer.X	Operating system version X (Major)	UInt	0	0	65535	0	RO
105	OSVer.Y	Operating system version Y (Minor)	UInt	0	0	65535	0	RO
106	OSVer.Z	Operating system version Z (Patch)	UInt	0	0	65535	0	RO
107	Core	c.pCO core version	UInt	0	0	65535	0	RO
108	PmpHrs_PAR	Partial count of pump operating hours	UDInt	0	0	4294967295	[h]	RO
109	PmpNextMaintThresh	Hours threshold for next pump maintenance	UInt	0	0	65535	[h]	RO
110	PmpHrs_TOT	Total count of pump operating hours	UDInt	0	0	4294967295	[h]	RO
111	UnitHrs	Total count of unit operating hours	UDInt	0	0	4294967295	[h]	RO
112	PmpResDate.Day	Pump partial operating hours reset date - Day	UInt	0	0	65535	[d]	RO
113	PmpResDate.Month	Pump partial operating hours reset date - Month	UInt	0	0	65535	[m]	RO
114	PmpResDate.Year	Pump partial operating hours reset date - Year	UInt	0	0	65535	[y]	RO
115	PmpResDate.Hour	Pump partial operating hours reset date - Hours	UInt	0	0	65535	[h]	RO
116	PmpResDate.Minute	Pump partial operating hours reset date - Minutes	UInt	0	0	65535	[m]	RO
117	UnitCfg.UnitModel	Unit model	UInt	0	0	65535	0	RO
118	ZoneData_S_Z_FctsCfg.FillT	Fill duration if "all zones together" option selected	UInt	2	1	60	[min]	RW
119	FillMultiType	Type of filling: or multi-zone system (0 = all zones together, 1 = one zone at a time)	UInt	0	0	1	0	RW
120	ZonesData_C[1].Z_FctsCfg.FillT	Fill duration zone 1	UInt	2	1	60	[min]	RW
121	ZonesData_C[2].Z_FctsCfg.FillT	Fill duration zone 2	UInt	2	1	60	[min]	RW
122	ZonesData_C[3].Z_FctsCfg.FillT	Fill duration zone 3	UInt	2	1	60	[min]	RW
123	ZonesData_C[4].Z_FctsCfg.FillT	Fill duration zone 4	UInt	2	1	60	[min]	RW
124	ZonesData_C[5].Z_FctsCfg.FillT	Fill duration zone 5	UInt	2	1	60	[min]	RW
125	ZonesData_C[6].Z_FctsCfg.FillT	Fill duration zone 6	UInt	2	1	60	[min]	RW
126	ZonesData_C[7].Z_FctsCfg.FillT	Fill duration zone 7	UInt	2	1	60	[min]	RW
127	ZonesData_C[8].Z_FctsCfg.FillT	Fill duration zone 8	UInt	2	1	60	[min]	RW
128	ZonesData_C[9].Z_FctsCfg.FillT	Fill duration zone 9	UInt	2	1	60	[min]	RW
129	ZonesData_C[10].Z_FctsCfg.FillT	Fill duration zone 10	UInt	2	1	60	[min]	RW
130	ZonesData_C[11].Z_FctsCfg.FillT	Fill duration zone 11	UInt	2	1	60	[min]	RW
131	ZonesData_C[12].Z_FctsCfg.FillT	Fill duration zone 12	UInt	2	1	60	[min]	RW
132	WashMode	Wash mode (0 = wash disabled, 1 = wash due to inactivity, 2 = daily wash)	USInt	2	0	2	0	RW
133	WashMultiType	Type of washing for multi-zone system (0 = all zones together, 1 = one zone at a time)	UInt	0	0	1	0	RW
134	ZoneData_S_Z_FctsCfg.WashT	Wash time, if "wash all zones together" enabled	UInt	2	1	10	[min]	RW
135	PerWashHrThr	Inactivity time to activate the wash due to inactivity	UInt	24	1	99	0	RW
136	DailyWashHr	Select hours for daily wash	UInt	0	0	23	0	RW
137	DailyWashMin	Select minutes for daily wash	UInt	0	0	59	0	RW
138	ZonesData_C[1].Z_FctsCfg.WashT	Wash duration zone 1	UInt		1	10	[min]	RW
139	ZonesData_C[2].Z_FctsCfg.WashT	Wash duration zone 2	UInt	2	1	10	[min]	RW
140	ZonesData_C[3].Z_FctsCfg.WashT	Wash duration zone 3	UInt	2	1	10	[min]	RW
141	ZonesData_C[4].Z_FctsCfg.WashT	Wash duration zone 4	UInt	2	1	10	[min]	RW
142	ZonesData_C[5].Z_FctsCfg.WashT	Wash duration zone 5	UInt	2	1	10	[min]	RW
143	ZonesData_C[6].Z_FctsCfg.WashT	Wash duration zone 6	UInt	2	1	10	[min]	RW
144	ZonesData_C[7].Z_FctsCfg.WashT	Wash duration zone 7	UInt	2	1	10	[min]	RW
145	ZonesData_C[8].Z_FctsCfg.WashT	Wash duration zone 8	UInt	2	1	10	[min]	RW
146	ZonesData_C[9].Z_FctsCfg.WashT	Wash duration zone 9	UInt	2	1	10	[min]	RW
147	ZonesData_C[10].Z_FctsCfg.WashT	Wash duration zone 10	UInt	2	1	10	[min]	RW
148	ZonesData_C[11].Z_FctsCfg.WashT	Wash duration zone 11	UInt	2	1	10	[min]	RW
149	ZonesData_C[12].Z_FctsCfg.WashT	Wash duration zone 12	UInt	2	1	10	[min]	RW
150	ZonesData_C[1].Z_FctsCfg.FullStandbyMaxT	Zone 1 full standby duration	UInt	24	0	48	[h]	RW
151	ZonesData_C[2].Z_FctsCfg.FullStandbyMaxT	Zone 2 full standby duration	UInt	24	0	48	[h]	RW
152	ZonesData_C[3].Z_FctsCfg.FullStandbyMaxT	Zone 3 full standby duration	UInt	24	0	48	[h]	RW
153	ZonesData_C[4].Z_FctsCfg.FullStandbyMaxT	Zone 4 full standby duration	UInt	24	0	48	[h]	RW
154	ZonesData_C[5].Z_FctsCfg.FullStandbyMaxT	Zone 5 full standby duration	UInt	24	0	48	[h]	RW
155	ZonesData_C[6].Z_FctsCfg.FullStandbyMaxT	Zone 6 full standby duration	UInt	24	0	48	[h]	RW
156	ZonesData_C[7].Z_FctsCfg.FullStandbyMaxT	Zone 7 full standby duration	UInt	24	0	48	[h]	RW
157	ZonesData_C[8].Z_FctsCfg.FullStandbyMaxT	Zone 8 full standby duration	UInt	24	0	48	[h]	RW
158	ZonesData_C[9].Z_FctsCfg.FullStandbyMaxT	Zone 9 full standby duration	UInt	24	0	48	[h]	RW
159	ZonesData_C[10].Z_FctsCfg.FullStandbyMaxT	Zone 10 full standby duration	UInt	24	0	48	[h]	RW
160	ZonesData_C[11].Z_FctsCfg.FullStandbyMaxT	Zone 11 full standby duration	UInt	24	0	48	[h]	RW
161	ZonesData_C[12].Z_FctsCfg.FullStandbyMaxT	Zone 12 full standby duration	UInt	24	0	48	[h]	RW

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
162	FunctSelNO7_Mst	Select function for PUMP programmable relay NO7 (0=Unit life status, 1=Low rack temp. warning, 2=Pump status, 3=Pump maintenance warning, 4=No water warning, 5=Low inlet press. warning, 6 = Low inlet press. alarm, 7=Low water temp. alarm)	USInt	0	0	7	0	RW
163	Conductivity	Pumping station inlet water conductivity	UInt	0	0	65535	[uS/cm]	RO
164	P_SetPLowPAlarmDly	Pumping station low outlet pressure alarm delay	UInt	90	20	120	[s]	RW
165	HiConductAlarmThrsh	High water conductivity alarm threshold	UInt	200	HiConductWarn-Thrsh	2500	[uS/cm]	RW
166	HiConductWarnThrsh	High water conductivity warning threshold	UInt	100	20	2500	[uS/cm]	RW
167	HiConductWarnHyst	High water conductivity warning deactivation hysteresis	UInt	10	1	2500	[uS/cm]	RW
168	HiConductAlarmDlyT	High water conductivity alarm delay	UInt	10	0	99	[min]	RW
169	T_SetPAFreezeAlarmDly	Low water temperature alarm delay	UInt	15	1	30	[s]	RW
171	PmpManModeWait	Pump manual mode activation status (0 = manual mode available, 1 = waiting for wash to finish, 2 = waiting for fill o finish, 3 = waiting or production to finish)	UInt	0	0	65535	0	RO
178	Year	Current year (YYYY)	UInt	0	0	99	[y]	RO
179	Month	Current month (MM)	UInt	0	1	12	[m]	RO
180	Day	Current day (DD)	UInt	0	1	31	[d]	RO
181	Hour	Current hours	UInt	0	0	23	[h]	RO
182	Minute	Current minutes	UInt	0	0	65535	min	RO
183	DayOfWeek	Day of the week	USInt	0	1	7	0	RO
184	UoM_SV	Unit of measure (2: Imperial system, 6: International system)	USInt	6	1	7	0	RW
185	VerFrom_pgdxF	pGDx user interface software version	UDInt	0	0	4294967295	0	RO
186	ZoneData_S.Z_Info.IPConfig[2	Pump IP address	UDInt	0	0	4294967295	0	RO
187	UnitCfg.ZonesNum	Set the number of zones in the system	UInt	1	1	12	0	RO
188	MstFullStandbyMaxT	Pump-zone line emptying delay in standby	UInt	60	0	120	0	RW
189	MstEmptyStandbyMaxTFill	Pump-zone line emptying time in standby	UInt	5	1	120	0	RW
190	Bckp_Status	RESERVED	UInt	0	0	65535	0	RO
191	OilFreePmpAirPurgeT	Pump venting procedure duration	UInt	30	20	60	[s]	RW
192	OilFreePmpStartDly	Oil-free pump start delay	UInt	10	10	60	[s]	RW
195	NetNum	Network number for multi-network	UDInt	1	1	9	0	RW
202	PmpMaintCntDwn	Countdown to next pump maintenance	UInt	0	0	65535	[h]	OR
203	P_SetPLinePressRelT	Line pressure release: maximum time for managing line pressure after slowdown	UInt	20	1	40		RW
300	ZonesData_C[1].Z_Info.ZoneStatus	Zone 1 status **	UInt	0	0	65535	0	RO
301	ZonesData_C[1].Z_Reg.RegTyp	Control mode ***	USInt	6	0	18	0	RW
302	ZonesData_C[1].Z_SysInfo.SwVer.X	Software version X (Major)	UInt	0	0	65535	0	RO
303	ZonesData_C[1].Z_SysInfo.SwVer.Y	Operating system version Y (Minor)	UInt	0	0	65535	0	RO
304	ZonesData_C[1].Z_SysInfo.SwVer.Z	Software version Z (Patch)	UInt	0	0	65535	0	RO
305	ZonesData_C[1].Z_SysInfo.OSVer.X	Operating system version X (Major)	UInt	0	0	65535	0	RO
306	ZonesData_C[1].Z_SysInfo.OSVer.Y	Operating system version Y (Minor)	UInt	0	0	65535	0	RO
307	ZonesData_C[1].Z_SysInfo.OSVer.Z	Operating system version Z (Patch)	UInt	0	0	65535	0	RO
308	ZonesData_C[1].Z_SysInfo.CoreType	c.pCO core version	UInt	0	0	65535	0	RO
309	ZonesData_C[1].Z_SysInfo.UnitModel	Unit model	UInt	0	0	65535	0	RO
310	ZonesData_C[1].Z_PrbCfgrackPrb.UlTyp	Select rack temperature probe type (0 = 0-1 V, 1 = 0-10 V, 2 = 2-10 V, 3 = 0-20 mA, 4 = 4-20 mA, 5 = NTC)	USInt	5	0	5	0	RW
311	ZonesData_C[1].Z_FctsCfg.HumPrbAlarmCtrlDel	Enable control probe alarm delay at start of production (0 = disabled, 1 = enabled)	UInt	5	1	99	[min]	RW
312	ZonesData_C[1].Z_FctsCfg.FunctSelNO7_Slv	Select programmable relay NO7 function (0 = Unit life status, 1 = Low rack temperature warning)	USInt	0	0	1	0	RW
314	ZonesData_C[1].Z_Info.Zone-ManModeWait	Zone manual mode activation status (0 = manual mode available, 1 = waiting for wash to finish, 2 = waiting for fill o finish, 3 = waiting or production to finish)	UInt	0	0	65535	0	RO
332	ZonesData_C[1].Z_FctsCfg.PrbThrshsWarnDly	High/low humidity/temperature alarm delay	UInt	1	0	99	[min]	RW
333	ZonesData_C[1].Z_Info.IPConfig[2	Zone IP address	UDInt	0	0	4294967295	0	RO
335	ZonesData_C[1].Z_Info.OnOffStatu	RESERVED	UInt		0	65535	0	RO
336	ZonesData_C[1].Z_RackCfg.RotStepsT	Zone 1 step rotation delay	UInt	15	1	9999	[min]	RW

* (1=Off from keypad, 2=Off from supervisor, 3=Standby, 4=Production, 6=Wash, 7=Fill, 8=Warning, 9=Alarm, 12=Off from scheduler, 13=Off from DIN , 15=Off from fl w switch, 16=Off from zone, 18=Pump alarm, 19=Off from pump, 20=Off from pump DIN, 22=Zone manual mode, 23=Slowdown, 27=Off from zones, 28=Bypass calibration, 31=Unit paused, 32=Pump venting, 33=Pump fill)

*** (0=Power On, 10=Software initialisation, 20=Awaiting network, 30=Wash, 40=Fill, 50=Standby empty, 60=Standby full, 70=Water control, 80=Production, 90=Slowdown, 100=Pre-wash, 110=Alarm, 120=Bypass calibration fil , 130=Bypass calibration, 140=Waiting for control, 150=WTS water change, 160=Disabled, 170=Pump venting, 180=Pump fill)

*** (0=on/off, 1=on/off + humidity limit, 2=on/off + temperature limit, 3=external signal, 4=external signal + humidity limit, 5=external signal + temperature limit, 6=humidity, 7=humidity + limit humidity, 8=humidity + temperature limit, 9=temperature, 10=temperature + temperature limit, 11=temperature + humidity limit, 12=2 humidity probes, 13=2 temperature probes, 14=3 humidity probes, 15=3 temperature probes, 16=2 temperature probes + humidity limit, 17=dewpoint, 18=dewpoint + humidity limit)

9.4.4 Zone BACnet variable table - AnalogValue variables

RO = Read Only

RW = ReadWrite

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
300	ZoneData_S_Z_Info.FlowReq	Zone production request	Real	0	0.0	9999.9	0.1 [kg/h - lb/h]	RO
301	ZoneData_S_Z_Info.CurrProd	Current zone production	Real	0	0.0	9999.9	0.1 [kg/h - lb/h]	RO
302	ZoneData_S_Z_Info.RealReq	Zone request from control signal	Real	0	0.0	100.0	0.1 [%]	RO
303	ZoneData_S_Z_Info.MainPrb	Zone main probe reading	Real	0	-999.9	999.9	0	RO
304	ZoneData_S_Z_Info.LimitPrb	Zone limit probe reading	Real	0	-999.9	999.9	0	RO
305	ZoneData_S_Z_Info.RackTPrb	Zone rack temperature probe reading	Real	0	-999.9	999.9	0	RO
306	ZoneData_S_Z_WorkPar. GlbSetP_Hum	Set zone humidity set point	Real	50.0	0.0	100.0	0.1 [%rh]	RW
307	ZoneData_S_Z_WorkPar. GlbSetP_Temp	Set zone temperature set point	Real	25.0	0.0	100.0	0.1 [°C - °F]	RW
308	ZoneData_S_Z_WorkPar. GlbSetPLim_Hum	Set zone humidity limit set point	Real	50.0	0.0	100.0	0.1 [%rh]	RW
309	ZoneData_S_Z_WorkPar. GlbSetPLim_Temp	Set zone temperature limit set point	Real	25.0	0.0	100.0	0.1 [°C - °F]	RW
310	ZoneData_S_Z_Reg.Rack- MaxProd	Set zone maximum production	Real	100.0	0.0	100.0	0.1 [%]	RW
311	ZoneData_S_Z_RackCfg. RackFlowRate	Nominal rack fl w-rate	Real	0	0.0	999.9	0.1 [kg/h - lb/h]	RO
312	ZoneData_S_Z_FctsCfg. PressReliefT[1]	Pressure relief function duration for step 1	Real	1.0	0.0	30.0	0.1 [s]	RW
313	ZoneData_S_Z_FctsCfg. PressReliefT[2]	Pressure relief function duration for step 2	Real	1.0	0.0	30.0	0.1 [s]	RW
314	ZoneData_S_Z_FctsCfg. PressReliefT[3]	Pressure relief function duration for step 3	Real	1.0	0.0	30.0	0.1 [s]	RW
315	ZoneData_S_Z_FctsCfg. PressReliefT[4]	Pressure relief function duration for step 4	Real	1.0	0.0	30.0	0.1 [s]	RW
316	ZoneData_S_Z_FctsCfg. PressReliefT[5]	Pressure relief function duration for step 5	Real	1.0	0.0	30.0	0.1 [s]	RW
317	ZoneData_S_Z_FctsCfg. PressReliefT[6]	Pressure relief function duration for step 6	Real	1.0	0.0	30.0	0.1 [s]	RW
318	ZoneData_S_Z_PrbCfg. RackTPrb.Mi_Temp	Minimum rack temperature probe value	Real	-20.0	-999.9	999.9	0.1 [°C - °F]	RW
319	ZoneData_S_Z_PrbCfg. RackTPrb.Ma_Temp	Maximum rack temperature probe value	Real	70.0	-999.9	999.9	0.1 [°C - °F]	RW
320	ZoneData_S_Z_PrbCfg. RackTPrb.Offs	Rack temperature probe reading offset	Real	0.0	-999.9	999.9	0.1 [°C - °F]	RW
321	ZoneData_S_Z_FctsCfg. RackTempMng.RackTSetP	Temperature set point for production modulation function from rack probe	Real	20.0	5.0	50.0	0.1 [°C - °F]	RW
322	ZoneData_S_Z_FctsCfg. RackTempMng.RackTBand	Proportional band for production modulation function from rack probe	Real	5.0	0.5	10.0	0.1 [°C - °F]	RW
323	ZoneData_S_Z_FctsCfg. RackTempMng.RackTDiff	Differential for disabling the production modulation function from rack probe warning	Real	2.0	0.5	10.0	0.1 [°C - °F]	RW
325	ZoneData_S_Z_FctsCfg.High- MainHum_WarnThrsh	Set main probe high humidity alarm threshold	Real	100.0	0.0	100.0	0.1 [%rh]	RW
326	ZoneData_S_Z_FctsCfg.High- MainTemp_WarnThrsh	Set main probe high temperature alarm threshold	Real	40.0	5.0	70.0	0.1 [°C - °F]	RW
327	ZoneData_S_Z_FctsCfg. LowMainHum_WarnThrsh	Set main probe low humidity alarm threshold	Real	0	0.0	100.0	0.1 [%rh]	RW
328	ZoneData_S_Z_FctsCfg.Low- MainTemp_WarnThrsh	Set main probe low temperature alarm threshold	Real	15.0	5.0	70.0	0.1 [°C - °F]	RW
329	ZoneData_S_Z_FctsCfg.High- LimitHum_WarnThrsh	Set limit probe high humidity alarm threshold	Real	100.0	0.0	100.0	0.1 [%rh]	RW
330	ZoneData_S_Z_FctsCfg.Low- LimitTemp_WarnThrsh	Set limit probe low temperature alarm threshold	Real	15.0	5.0	70.0	0.1 [°C - °F]	RW
331	ZoneData_S_Z_WorkPar. SVReq	Zone production request from supervisor	Real	0	0.0	100.0	0.1 [%]	RW
332	ZoneData_S_Z_Info.Temp- DewPoint	Zone dew point temperature calculation	Real	0	-999.9	999.9	0.1 [°C - °F]	RO
333	ZoneData_S_Z_Info.Two- PrbsAvg	Two zone probe reading average calculation	Real	0	-32768	32767	0	RO
334	ZoneData_S_Z_Info. ThreePrbsAvg	Three zone probe reading average calculation	Real	0	-32768	32767	0	RO

9.4.5 Zone BACnet variable table - BinaryValue variables

RO = Read Only

RW = ReadWrite

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
301	ZoneData_S_Z_FctsCfg.RackTemp- Mng.EnRackTMng	Enable production modulation function from rack temperature probe reading (0 = disabled, 1 = enabled)	Bool	0	0	1	0	RW
302	ZoneData_S_Z_FctsCfg.RackTemp- Mng.EnRackTReducedProd	Enable reduced production based on rack temperature	Bool	0	0	1	0	RW
303	ZoneData_S_Z_FctsCfg.RackTemp- Mng.EnRackTWarn	Select type of signal for low rack temperature (0 = notification, 1 = warning)	Bool	0	0	1	0	RW
304	ZoneData_S_Z_FctsCfg.EnDlydHum- PrbAlrmCtrl	Enable humidity probe control delay for alarm activation	Bool	0	0	1	0	RW
305	ZoneData_S_Z_FctsCfg.RackEnLogic	Enable zone production digital input (RACKEN) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RW
306	ZoneData_S_Z_FctsCfg.AirFlow- SwitchLogic	Flow switch digital input (FLUX) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RW
307	ZoneData_S_Z_FctsCfg.ZoneStatusD- out_Logic	"Zone status" ZONE digital output logic (0 = NC, 1 = NO)	Bool	0	0	1	0	RW
308	ZoneData_S_Z_FctsCfg.AlrmDOOut- Logic	"Alarm status" AL digital output logic (0 = NC, 1 = NO)	Bool	0	0	1	0	RW

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
309	ZoneData_S_Z_FctsCfg.RelayLogicNO7	"Programmable relay NO7" digital output logic (0 = NC, 1 = NO)	Bool	0	0	1	0	RW
310	ZoneData_S_Z_DigIO.RackEnStatus_NoLogic	Enable zone production digital input (RACKEN) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RO
311	ZoneData_S_Z_DigIO.AirFlowSwitchStatus_NoLogic	Flow switch digital input (FLUX) status (0 = contact closed, 1 = contact open)	Bool	0	0	1	0	RO
312	ZoneData_S_Z_RackSteps.LineDrain	Line drain digital output (NOL) status (0 = output not energised, 1 = output energised)	Bool	0	0	1	0	RO
313	ZoneData_S_Z_DigIO.NO7_PrgDout	Programmable relay NO7 digital output status (0 = output not energised, 1 = output energised)	Bool	0	0	1	0	RO
314	ZoneData_S_Z_DigIO.Alrm_Dout	Alarm status digital input (AL) status (0 = output not energised, 1 = output energised)	Bool	0	0	1	0	RO
315	ZoneData_S_Z_RackSteps.Ventilation	Rack ventilation solenoid valve digital output (NOV) status (0 = output energised, 1 = output not energised)	Bool	0	0	1	0	RO
316	ZoneData_S_Z_FctsCfg.ZoneManModeEnFill	Enable filling function for zone manual mode (0 = disabled, 1 = enabled)	Bool	1	0	1	0	RW
323	ZoneData_S_Z_RackSteps.Step[1].Fill	Rack fill solenoid valve status - step 1 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
324	ZoneData_S_Z_RackSteps.Step[2].Fill	Rack fill solenoid valve status - step 2 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
325	ZoneData_S_Z_RackSteps.Step[3].Fill	Rack fill solenoid valve status - step 3 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
326	ZoneData_S_Z_RackSteps.Step[4].Fill	Rack fill solenoid valve status - step 4 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
327	ZoneData_S_Z_RackSteps.Step[5].Fill	Rack fill solenoid valve status - step 5 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
328	ZoneData_S_Z_RackSteps.Step[6].Fill	Rack fill solenoid valve status - step 6 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
329	ZoneData_S_Z_RackSteps.Step[1].Drain	Rack drain solenoid valve status - step 1 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
330	ZoneData_S_Z_RackSteps.Step[2].Drain	Rack drain solenoid valve status - step 2 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
331	ZoneData_S_Z_RackSteps.Step[3].Drain	Rack drain solenoid valve status - step 3 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
332	ZoneData_S_Z_RackSteps.Step[4].Drain	Rack drain solenoid valve status - step 4 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
333	ZoneData_S_Z_RackSteps.Step[5].Drain	Rack drain solenoid valve status - step 5 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
334	ZoneData_S_Z_RackSteps.Step[6].Drain	Rack drain solenoid valve status - step 6 (0 = closed, 1 = open)	Bool	0	0	1	0	RO
341	ZoneData_S_Z_Alrms.Alrm_MainPrb	ALA01 - Zone alarm: main probe broken or disconnected	Bool	0	0	1	0	RO
342	ZoneData_S_Z_Alrms.Alrm_LimitPrb	ALA02 - Zone alarm: limit probe broken or disconnected	Bool	0	0	1	0	RO
343	ZoneData_S_Z_Alrms.Alrm_NoRack	ABC02 - Zone alarm: distribution system not configured	Bool	0	0	1	0	RO
344	ZoneData_S_Z_Alrms.Alrm_MasterOffli	ABO01 - Zone alarm: pumping station offline	Bool	0	0	1	0	RO
345	ZoneData_S_Z_Alrms.Alrm_RackTPrb	ABA06 - Zone alarm: rack temperature probe broken or disconnected	Bool	0	0	1	0	RO
346	ZoneData_S_Z_Alrms.Warn_LowRackTemp	WRA10 - Zone warning: low rack temperature	Bool	0	0	1	0	RO
347	ZoneData_S_Z_Alrms.Warn_HighHumMainPrb	WRA11 - Zone warning: high humidity measured by main probe	Bool	0	0	1	0	RO
348	ZoneData_S_Z_Alrms.Warn_LowHumMainPrb	WRA12 - Zone warning: low humidity measured by main probe	Bool	0	0	1	0	RO
349	ZoneData_S_Z_Alrms.Warn_HighTempMainPrb	WRA13 - Zone warning: high temperature measured by main probe	Bool	0	0	1	0	RO
350	ZoneData_S_Z_Alrms.Warn_LowTempMainPrb	WRA14 - Zone warning: low temperature measured by main probe	Bool	0	0	1	0	RO
351	ZoneData_S_Z_Alrms.Warn_HighHumLimPrb	WRA15 - Zone warning: high humidity measured by limit probe	Bool	0	0	1	0	RO
352	ZoneData_S_Z_Alrms.Warn_LowTempLimPrb	WRA16 - Zone warning: low humidity measured by limit probe	Bool	0	0	1	0	RO
353	ZoneData_S_Z_Alrms.Warn_HighHumTwoPrbsAvg	WRA17 - Zone warning: high humidity measured by average of 2 probes	Bool	0	0	1	0	RO
354	ZoneData_S_Z_Alrms.Warn_LowHumTwoPrbsAvg	WRA18 - Zone warning: low humidity measured by average of 2 probes	Bool	0	0	1	0	RO
355	ZoneData_S_Z_Alrms.Warn_HighTempTwoPrbsAvg	WRA19 - Zone warning: high temperature measured by average of 2 probes	Bool	0	0	1	0	RO
356	ZoneData_S_Z_Alrms.Warn_LowTempTwoPrbsAvg	WRA20 - Zone warning: low temperature measured by average of 2 probes	Bool	0	0	1	0	RO
357	ZoneData_S_Z_Alrms.Warn_HighHumThreePrbsAvg	WRA21 - Zone warning: high humidity measured by average of 3 probes	Bool	0	0	1	0	RO
358	ZoneData_S_Z_Alrms.Warn_LowHumThreePrbsAvg	WRA22 - Zone warning: low humidity measured by average of 3 probes	Bool	0	0	1	0	RO
359	ZoneData_S_Z_Alrms.Warn_HighTempThreePrbsAvg	WRA23 - Zone warning: high temperature measured by average of 3 probes	Bool	0	0	1	0	RO
360	ZoneData_S_Z_Alrms.Warn_LowTempThreePrbsAvg	WRA24 - Zone warning: low temperature measured by average of 3 probes	Bool	0	0	1	0	RO
361	ZoneData_S_Z_Alrms.Warn_SVOffli	WRO05 - Zone warning: supervisor offline	Bool	0	0	1	0	RO
362	ZoneData_S_Z_Alrms.Alrm_SVOffli	WRO09 - Zone alarm: supervisor offline	Bool	0	0	1	0	RO
363	ZoneData_S_Z_Alrms.Alrm_Retain	ALG01 - Zone alarm: error in number of retain memory writes	Bool	0	0	1	0	RO
364	ZoneData_S_Z_Alrms.Alrm_Err_retain_write	ALG02 - Zone alarm: too many retain memory writes	Bool	0	0	1	0	RO
365	ZoneData_S_Z_Alrms.Warn_RetMem	WRG03 - Zone warning: too many retain memory writes	Bool	0	0	1	0	RO
366	ZoneData_S_Z_Alrms.Alrm_NoModel	ABC01 - Zone alarm: no model configured	Bool	0	0	1	0	RO
367	ZoneData_S_Z_WorkPar.UnitPause	Unit setting paused (0=not paused; 1=paused)	Bool	0	0	1	0	RW
368	ZoneData_S_Z_WorkPar.DisableVarUnitPause	Disable pause from monitoring service (0: pause not disabled, 1: pause disabled)	Bool	0	0	1	0	RO
369	ZoneData_S_Z_Info.ZoneAlrmPresent	At least 1 alarm active in zone	Bool	0	0	1	0	RO
370	ZoneData_S_Z_Info.ZoneWarning	At least 1 warning active in zone	Bool	0	0	1	0	RO
371	ZoneData_S_Z_WorkPar.SVEnReq	Enable zone control from supervisor	Bool	0	0	1	0	RW
372	ZoneData_S_Z_WorkPar.SVEnOnOff	Enable zone on/off from supervisor	Bool	0	0	1	0	RW
373	ZoneData_S_Z_WorkPar.SVOnOff	Zone on/off from supervisor	Bool	0	0	1	0	RW
374	ZoneData_S_Z_RackCfg.EnRotSteps	Enable zone step rotation	Bool	0	0	1	0	RW
375	EnMultiNet	Enabling of the multi-network	Bool	0	0	1	0	RW

9.4.6 Zone BACnet variable table - PositiveIntegerValue variables

RO = Read Only

RW = ReadWrite

Add.	Variable name	Description	Data type	Def.	Min	Max	UoM	Access
300	ZoneData_S_Z_Info.ZoneStatus	Zone status *	UInt	0	0	65535	0	RO
301	ZoneData_S_Z_Reg.RegType	Control mode **	UInt	6	0	18	0	RW
302	ZoneData_S_Z_SysInfo.SwVer.X	Software version X (Major)	UInt	0	0	65535	0	RO
303	ZoneData_S_Z_SysInfo.SwVer.Y	Operating system version Y (Minor)	UInt	0	0	65535	0	RO
304	ZoneData_S_Z_SysInfo.SwVer.Z	Software version Z (Patch)	UInt	0	0	65535	0	RO
305	ZoneData_S_Z_SysInfo.OSVer.X	Operating system version X (Major)	UInt	0	0	65535	0	RO
306	ZoneData_S_Z_SysInfo.OSVer.Y	Operating system version Y (Minor)	UInt	0	0	65535	0	RO
307	ZoneData_S_Z_SysInfo.OSVer.Z	Operating system version Z (Patch)	UInt	0	0	65535	0	RO
308	ZoneData_S_Z_SysInfo.CoreType	c.pCO core version	UInt	0	0	65535	0	RO
309	ZoneData_S_Z_SysInfo.UnitModel	Unit model	UInt	0	0	65535	0	RO
310	ZoneData_S_Z_PrCb.RackPrb.UITyp	Select rack temperature probe type (0 = 0-1 V, 1 = 0-10 V, 2 = 2-10 V, 3 = 0-20 mA, 4 = 4-20 mA, 5 = NTC)	UInt	5	0	5	0	RW
311	ZoneData_S_Z_FctsCfg.HumPrbAlrmCtrlDel	Enable control probe alarm delay at start of production (0 = disabled, 1 = enabled)	UInt	5	1	99	[min]	RW
312	ZoneData_S_Z_FctsCfg.FunctSelNO7_Slv	Select programmable relay NO7 function (0 = Unit life status, 1 = Low rack temperature warning)	UInt	0	0	1	0	RW
314	ZoneData_S_Z_Info.ZoneManModeWait	Zone manual mode activation status **	UInt	0	0	65535	0	RO
332	ZoneData_S_Z_FctsCfg.PrbThrshsWarnDly	High/low humidity/temperature alarm delay	UInt	1	0	99	[min]	RW
333	ZoneData_S_Z_Info.IPConfig2	Zone IP address	UDInt	0	0	4294967295	0	RO
334	UoM_SV	Unit of measure (2: Imperial system, 6: International system)	UInt	6	1	7	0	RW
335	ZoneData_S_Z_Info.OnOff-Status	RESERVED	UInt		0	65535	0	RO
336	ZoneData_S_Z_RackCfg.RotStepsT	Zone step rotation delay	UInt	15	1	9999	[min]	RW
337	NetNum	Network number for multi-network	UDInt	1	1	9	0	RW

*** (0=Power On, 10=Software initialisation, 20=Awaiting network, 30=Wash, 40=Fill, 50=Standby empty, 60=Standby full, 70=Water control, 80=Production, 90=Slowdown, 100=Pre-wash, 110=Alarm, 120=Bypass calibration fill, 130=Bypass calibration, 140=Waiting for control, 150=WTS water change, 160=Disabled, 170=Pump venting, 180=Pump fill)

** (0=on/off, 1=on/off + humidity limit, 2=on/off + temperature limit, 3=external signal, 4=external signal + humidity limit, 5=external signal + temperature limit, 6=humidity, 7=humidity + limit humidity, 8=humidity + temperature limit, 9=temperature, 10=temperature + temperature limit, 11=temperature + humidity limit, 12=2 humidity probes, 13=2 temperature probes, 14=3 humidity probes, 15=3 temperature probes, 16=2 temperature probes + humidity limit, 17=dewpoint, 18=dewpoint + humidity limit)

*** (0 = manual mode available, 1 = waiting for wash to finish, 2 = waiting or fill to finish, 3 = waiting or production to finish)

10. ALARMS LIST

When a fault occurs, the system generates an alarm and the corresponding button starts flashing. If an alarm is signalled, press the alarm button once to display the type of alarm (for more information, see par. 4.5.1).

In the event of potentially dangerous alarms, the humidifier automatically stops production.

For certain types of alarm, as well as the alarm signal, the alarm relay is activated (see the following table).

The system displays three types of messages and applies different actions:

Type	Unit status
Alarms	Unit operation shuts shown
Warning	The unit continues operating with limited functions
Notification	The unit operates normally (signal only)

Tab. 10.a

10.1 Alarms

Description	Causes	Possible solutions	Reset	Alarm relay	Action
ALG01 Alarm: error in number of retain memory writes	Problem in the software application	Check SW version and request updated version	Manual	Active	Signal only
ALG02 Alarm: too many retain memory writes	Problem in the software application	Check SW version and request updated version	Manual	Active	Signal only
ALA01 Zone alarm: main probe broken or disconnected	Main probe or first probe not connected or damaged	Check probe connection and the selected control type settings	Manual	Active	Stop zone production
ALA02 Zone alarm: limit probe broken or disconnected	Limit probe or second probe not connected or damaged	Check probe connection and the selected control type settings	Manual	Active	Stop zone production
ABP02 Alarm: high water temperature	Bypass circuit safety thermostat activated	Check the correct reading of the bypass circuit temperature probe and make sure the thermostat is functioning correctly	Manual	Active	Stop system production
ABC02 Zone alarm: distribution system not configured	Distribution system not configured or not valid	Set a number of steps > 0 and correct zone rack step flow values	Automatic	Active	Stop system production
ABV02 Inverter alarm: general alarm	General inverter alarm	Check the alarm code on the inverter display.	Manual	Active	Stop system production
ABP03 Alarm: low water temperature	Water temperature inside the cabinet close to the freezing threshold	Check that the cabinet is positioned in a place with suitable environmental conditions	Automatic	Active unless specifically signalled via NO7	Stop system production
ABP06 Alarm: low outlet pressure (HP)	Water leak from the distribution circuit on the high pressure side	Check the conditions of the pipes, SV, pump seals, inverter speed reference wiring	Manual	Active	Stop system production
ABP08 Alarm: low inlet pressure (LP) during production	Insufficient water supply pressure or failure to open cabinet fill S	Check external water supply system and cabinet fill SV operation	Manual	Active unless specifically signalled via NO7	Stop system production
ABP09 Alarm: high outlet pressure (HP)	High pressure safety switch activated	Check for failure to open or obstruction of distribution system NC SV and for any choking of high pressure pipes	Manual	Active	Stop system production
ABP10 Alarm: high inlet pressure (LP)	Inlet water pressure higher than the maximum allowed threshold	Check external water supply system	Manual	Active	Stop system production
ALZ01 Alarm: zone 1 panel alarm	Zone 1 offline or alarm	Check the type of active alarms on the zone 1 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass
ALZ02 Alarm: zone 2 panel alarm	Zone 2 offline or alarm	Check the type of active alarms on the zone 2 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass
ALZ03 Alarm: zone 3 panel alarm	Zone 3 offline or alarm	Check the type of active alarms on the zone 3 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass
ALZ04 Alarm: zone 4 panel alarm	Zone 4 offline or alarm	Check the type of active alarms on the zone 4 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass
ALZ05 Alarm: zone 5 panel alarm	Zone 5 offline or alarm	Check the type of active alarms on the zone 5 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass
ALZ06 Alarm: zone 6 panel alarm	Zone 6 offline or alarm	Check the type of active alarms on the zone 6 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass
ALZ07 Alarm: zone 7 panel alarm	Zone 7 offline or alarm	Check the type of active alarms on the zone 7 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass
ALZ08 Alarm: zone 8 panel alarm	Zone 8 offline or alarm	Check the type of active alarms on the zone 8 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass

Description	Causes	Possible solutions	Reset	Alarm relay	Action
ALZ09 Alarm: zone 9 panel alarm	Zone 9 offline or alarm	Check the type of active alarms on the zone 9 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass
ALZ10 Alarm: zone 10 panel alarm	Zone 10 offline or alarm	Check the type of active alarms on the zone 10 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass
ALZ11 Alarm: zone 11 panel alarm	Zone 11 offline or alarm	Check the type of active alarms on the zone 11 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass
ALZ12 Alarm: zone 12 panel alarm	Zone 12 offline or alarm	Check the type of active alarms on the zone 12 panel; if the zone is offline, check the network connection between the pumping station and the zone panel	Automatic until a set number of periodic events	Active	Signal only or stop production, based on the type of alarm and zone bypass
ABO01 Zone alarm: pumping station offline	Pumping station offline	Check the network connection between the pumping station and the zone panel	Auto reset	Active	Stop zone production
ABR01 Alarm: water flooding detected (WL)	Flood sensor activated	Check for water leaks in the pump cabinet; check the flood sensor electrical connection and the status/logic of the associated digital input	Automatic until a set number of periodic events	Active	Stop system production
ABR02 Alarm: reverse osmosis system not ready (ROAL)	Alarm signal from external water treatment system	Check the status of the water treatment system, check the alarm signal electrical connection and the status/logic of the associated digital input	Automatic until a set number of periodic events	Active	Stop system production
ABA03 Alarm: bypass temperature probe broken or disconnected	Bypass temperature probe not connected or damaged	Check the probe connection	Manual	Active	Stop system production
ABA04 Alarm: water inlet pressure probe (LP) broken or disconnected	Inlet water pressure probe not connected or damaged	Check the probe connection	Manual	Active	Stop system production
ABA05 Alarm: water outlet pressure probe (HP) broken or disconnected	Outlet water pressure probe not connected or damaged	Check the probe connection	Manual	Active	Stop system production
ABA06 Zone alarm: rack temperature probe broken or disconnected	Rack probe or third probe not connected or damaged	Check probe connection and the selected control type settings	Manual	Active	Stop zone production
ABA08 Alarm: conductivity probe broken or disconnected	Conductivity meter not connected or damaged	Check the connection of the conductivity meter for measuring feedwater conductivity	Manual	Active	Stop system production
ABA09 Alarm: high water conductivity measured	Inlet water conductivity reading above the alarm threshold	Check correct operation of the reverse osmosis water supply system	Manual	Active	Stop system production
ABP11 Alarm: high water outlet pressure (HP) during wash or fill	Pump outlet pressure reading above the wash/fill alarm threshold	Check for failure to open or obstruction of distribution system NC SV and for any choking of high pressure pipes; evaluate whether to change the wash/fill type Check the setting of the type of washing/filling cycle; if set to "zone by zone", change to "all zones together"	Manual	Active	Stop system production
ALO06 Alarm: supervisor channel 1 offline	Supervisor channel 1 offline	Check the network connection and supervisor channel settings	Automatic	Active	Stop production in zones controlled by the supervisor channel
ALO07 Alarm: supervisor channel 2 offline	Supervisor channel 2 offline	Check the network connection and supervisor channel settings	Automatic	Active	Stop production in zones controlled by the supervisor channel
ALO08 Alarm: supervisor channel 3 offline	Supervisor channel 3 offline	Check the network connection and supervisor channel settings	Automatic	Active	Stop production in zones controlled by the supervisor channel
WRO09 Zone alarm: supervisor offline	Zone supervisor offline	Check the network connection and zone supervisor settings	Automatic	Not active	Stop production in zones controlled by the supervisor channel

Tab. 10.b

10.2 Warnings (addition to existing content)

Description	Causes	Possible solutions	Reset	Alarm relay	Action
WRP01 Warning: low inlet pressure (LP) during production	Insufficient water supply pressure or failure to open cabinet fill S	Check the stability of the external water supply system and cabinet fill SV operation	Manual	Not active	Stop system production, timed restart attempts
WRG03 Warning: too many retain memory writes	Problem in the software application	Check SW version and request updated version	Automatic	Not active	Signal only
WRM01 Maintenance warning: visual inspection of the water circuit required	The pump has been operating for a number of hours above the maintenance threshold	Check the conditions of the cabinet water circuit and reset the warning	Manual	Not active	Signal only
WRP04 Warning: high water temperature	Water temperature probe reading above the warning threshold	Check that the cabinet is positioned in a place with suitable environmental conditions	Automatic	Not active	Signal only
WRP05 Warning: high outlet pressure (HP)	Pump outlet pressure reading above the warning threshold	Check for failure to open or obstruction of distribution system NC SV and for any choking of high pressure pipes	Automatic	Not active	Signal only
WRP07 Warning: no inlet water	Insufficient water supply pressure or failure to open cabinet fill S	Check the stability of the external water supply system and cabinet fill SV operation	Manual	Not active	Stop system production, timed restart attempts
WRA07 Warning: high water conductivity measured	Inlet water conductivity reading above the warning threshold	Check correct operation of the reverse osmosis water supply system	Manual	Not active	Signal only
WRA10 Zone warning: low rack temperature	Air temperature reading at rack inlet below set point	Check the humidification section air inlet temperature	Automatic	Not active	Signal only
WRA11 Zone warning: high humidity measured by main probe	Humidity reading from main probe above the higher warning threshold	Check the main probe high humidity warning threshold setting	Automatic	Not active	Signal only
WRA12 Zone warning: low humidity measured by main probe	Humidity reading from main probe below the lower warning threshold	Check the main probe low humidity warning threshold setting	Automatic	Not active	Signal only
WRA13 Zone warning: high temperature measured by main probe	Temperature reading from main probe above the higher warning threshold	Check the main probe high temperature warning threshold setting	Automatic	Not active	Signal only
WRA14 Zone warning: low temperature measured by main probe	Temperature reading from main probe below the lower warning threshold	Check the main probe low temperature warning threshold setting	Automatic	Not active	Signal only
WRA15 Zone warning: high humidity measured by limit probe	Humidity reading from limit probe above the higher warning threshold	Check the limit probe high humidity warning threshold setting	Automatic	Not active	Signal only
WRA16 Zone warning: low humidity measured by limit probe	Humidity reading from limit probe below the lower warning threshold	Check the limit probe low humidity warning threshold setting	Automatic	Not active	Signal only
WRB03 Warning: backup pump offline	Backup pump (not powered or not connected) offline	Check the network connection between the pumps, the network settings and the backup function on both pumps	Automatic	Not active	Signal only
WRC03 Warning: production request is too high for pump nominal flow rate	Pump not able to meet all production requests, production is limited to the maximum manageable value. Possible distribution system configuration error	Check the distribution system configuration	Automatic	Not active	Signal only
WRC04 Warning: factory reset from pump unit	System factory reset from pumping station	Check unit settings	Manual	Not active	Signal only
WRM04 Warning: pump inspection required	The pump has been operating for a number of hours above the maintenance threshold (8000h)	Perform routine pump maintenance and reset the pump operating hour counter	Automatic	Not active	Signal only
WRM05 Warning: pump air purge required	First system start-up or pump inspection/maintenance performed	Carry out the pump venting procedure	Automatic	Not active	Signal only
WRP11 Warning: low outlet pressure (HP)	Water leak from the distribution circuit on the high pressure side	Check the conditions of the pipes, SV, pump seals, inverter speed reference wiring	Manual	Not active	Stop system production, chattering, restart system production
WRA17 Zone warning: high humidity measured by average of 2 probes	Average humidity reading from probes above the higher warning threshold	Check the high humidity warning threshold setting	Automatic	Not active	Signal only
WRA18 Zone warning: low humidity measured by average of 2 probes	Average humidity reading from probes below the lower warning threshold	Check the low humidity warning threshold setting	Automatic	Not active	Signal only
WRA19 Zone warning: high temperature measured by average of 2 probes	Average temperature reading from probes above the higher warning threshold	Check the high temperature warning threshold setting	Automatic	Not active	Signal only
WRA20 Zone warning: low temperature measured by average of 2 probes	Average temperature reading from probes below the lower warning threshold	Check the low temperature warning threshold setting	Automatic	Not active	Signal only
WRA21 Zone warning: high humidity measured by average of 3 probes	Average humidity reading from probes above the higher warning threshold	Check the high humidity warning threshold setting	Automatic	Not active	Signal only

Description	Causes	Possible solutions	Reset	Alarm relay	Action
WRA22 Zone warning: low humidity measured by average of 3 probes	Average humidity reading from probes below the lower warning threshold	Check the low humidity warning threshold setting	Automatic	Not active	Signal only
WRA23 Zone warning: high temperature measured by average of 3 probes	Average temperature reading from probes above the higher warning threshold	Check the high temperature warning threshold setting	Automatic	Not active	Signal only
WRA24 Zone warning: low temperature measured by average of 3 probes	Average temperature reading from probes below the lower warning threshold	Check the low temperature warning threshold setting	Automatic	Not active	Signal only
WRB01 Warning: backup pump activation failed	Backup pump not ready to replace currently active pump due to an alarm	Reset the alarms on the inactive pump	Manual	Not active	Stop backup pump rotation procedure, re-enable timed rotation attempts
WRB02 Warning: backup pump offline	Backup pump (not active) offline	Check the network connection between the pumps, the network settings and the backup function on both pumps	Automatic	Not active	Signal only

Tab. 10.c

Step rotation

Step rotation is a function that can be activated only if all the steps in the distribution system relating to the zone in question are set with the same nominal flow-rate. In this case, when function is activated, after a settable time one or more steps currently in production are replaced by other steps that are currently inactive. This function makes it possible to standardise the use of the atomisation and distribution system as much as possible in direct in-room installations.

10.3 Notifications

Description	Causes	Possible solutions	Reset	Alarm relay	Action
NT01 Maintenance required	The pump has been operating for a number of hours close to the maintenance threshold	Schedule maintenance	Automatic	Not active	Signal only
NT02 Low outlet pressure (HP)	Pump outlet pressure reading below the notification threshold	Wait for the system outlet pressure to stabilise	Automatic	Not active	Signal only
NT03 Low rack temperature.	Air temperature reading at rack inlet below set point	Check the humidification section air inlet temperature	Automatic	Not active	Signal only
NT05 Automatic restart	The unit has restarted automatically after a shutdown	Check for possible blackouts/accidental unit shutdown	Manual	Not active	Signal only
NT07 Default parameters reset	Unit parameters reset to the default values	Reconfigure the unit with the desired operating parameters	Manual	Not active	Signal only
NT10 Software updated.	Application software update completed	-	Manual	Not active	Signal only
NT11 Low inlet pressure (LP).	Pump inlet pressure reading below the notification threshold	Check the stability of the external water supply system and cabinet fill SV operation	Automatic	Not active	Signal only
NT12 Incompatible graphic interface	The software version of the display is obsolete compared to the application	Update the display software	Automatic	Not active	Signal only
NT13 Update the display software	The software version of the application is obsolete compared to the display	Update the application software to the specified version	Automatic	Not active	Signal only
NT14 Paused by monitoring service bypass	The paused by remote monitoring service function for the pump has been bypassed locally. It will be automatically reset when the countdown expires	If no longer needed, deactivate the paused by monitoring service bypass locally	Manual	Not active	Signal only
NT15 Warnings auto-reset	One or more warnings automatically reset by the system	Check the alarm log to view the reset warnings	Manual	Not active	Signal only
NT16 Zone paused by monitoring service bypass	The paused by remote monitoring service function for the zone has been bypassed locally. It will be automatically reset when the countdown expires	If no longer needed, deactivate the paused by monitoring service bypass locally	Manual	Not active	Signal only

Tab. 10.d

CAREL

CAREL INDUSTRIES - Headquarters

Via dell'Industria, 11 - 35020 Brugine - Padova (Italy)
Tel. (+39) 049.9716611 - Fax (+39) 049.9716600
e-mail: carel@carel.com - www.carel.com

Agenzia / *Agency*:



Umecto AB – del av Klimatbyrån AB
Tel: +46 (0)10-288 92 90
info@umecto.se | www.umecto.se
Sverige | Sweden