

Cetetherm AquaEfficiency Neo / Pilot / Pilot+ / Pre-Heater

Installation, service and operating instructions



EN

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1 General Presentation

Cetetherm AquaEfficiency Neo is a compact tap water systems (TWS) product, including a heat exchanger, motorised control valve and managed variable speed primary and secondary pumps, as per versions. It is equipped with a control box including a dedicated PCB and communicant temperature controller. Piping is made of specially designed brass parts combined with flat gaskets for easy maintenance.

Each unit has been tested hydraulically and electrically at the factory.

AquaEfficiency Neo is available in three plate sizes:

- Series EFF52 and EFF76 using Fusion bonded (FB) 100% stainless steel heat exchangers.
- Series EFB60 and EFB112 using Copper Brazed (CB) with stainless steel plates heat exchangers.
- Series EFP3000 / EFP5000 and EFP7000 using Gasketed Plate Heat Exchangers (GPHE).

All models are declined in different plates' number and different pump(s) arrangement. All types can have single or double pumps.

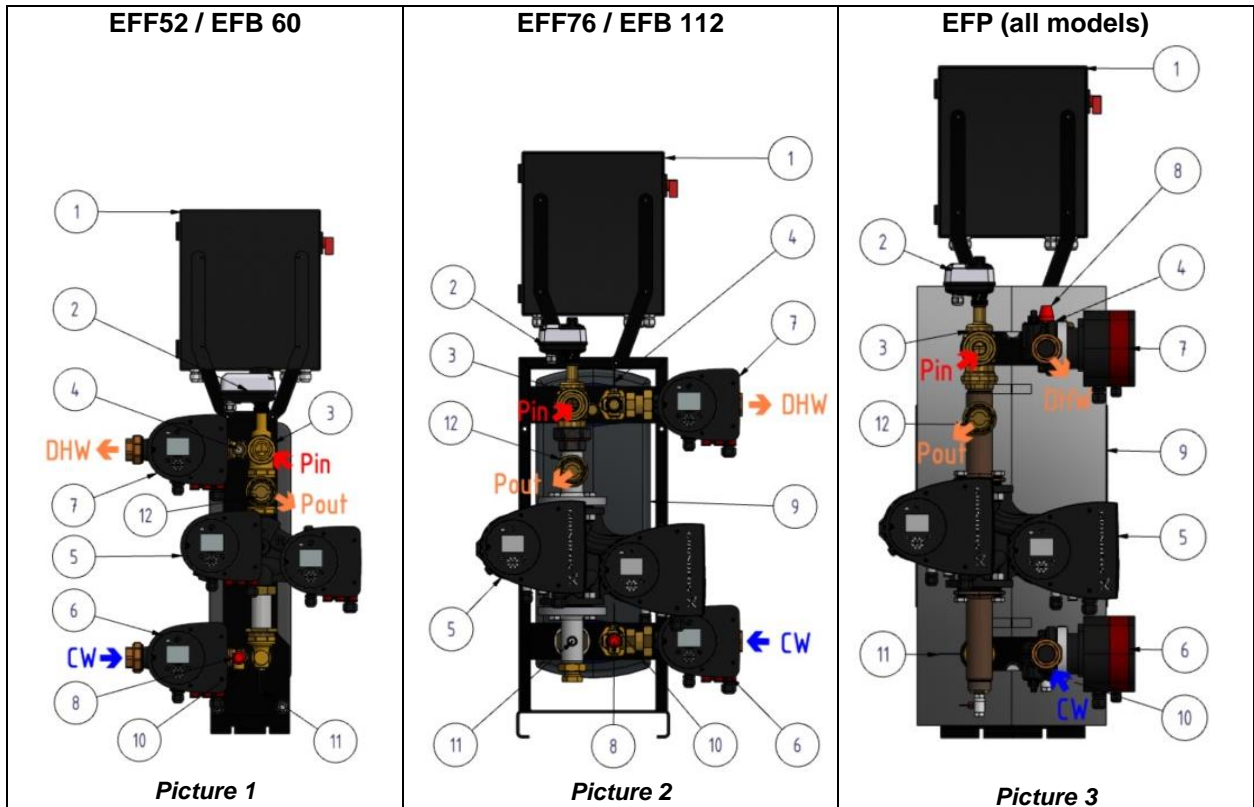
Options :

- Extra temperature sensor S4
- Extra temperature sensor(s) PT1 and/or PT2 to manage primary tank loading
- Extra temperature sensor PT1 to be used with pre-heat function on instantaneous units
- Siemens control valve and actuator
- ASTB TOR kit including extra PT1 temperature sensor plus added diverting 3 port control valve and actuator to be used with Pilot function

These tap water systems must be connected to a primary heating source, like a boiler, a heat exchanger or a primary tank heated by a heat pump. The secondary side is connected to cold water inlet and to domestic hot water network, see flowcharts for more details.

The tap water modules are designed for indoor installation, for example in a plant room. The ambient temperature in the room must be min 0°C and max 40°C, max humidity 85% without condensation.

1.1 Product overview AquaEfficiency Neo



Rep.	Designation	Rep.	Designation
Pin	Primary inlet (hot water from heat source)	5	Primary pump, single or double with 0-10V signal input
Pout	Primary Outlet (cooled water back to heat source)	6	Secondary pump (SS/DS versions) with 0-10V signal input
CW	Cold sanitary Water or recycling loop	7	Secondary pump (DD versions) with 0-10V signal input
DHW	Domestic Hot Water heated by primary	8	Secondary safety valve
1	Control box	9	Heat exchanger with insulation
2	24V AC actuator with 0-10V DC signal	10	S2 temperature sensor (secondary inlet)
3	3 Port mixing control valve	11	S3 temperature sensor (on primary outlet)
4	S1 temperature sensor (master)	12	Check valve (on primary outlet)

Operating principle:

- Primary water enters the 3-port modulating valve (2)+(3) that opens more or less, depending of the heat demand.
- The primary water circulates help with the primary pump (5).
- When no demand, the 3-port valve is almost closed and primary water loops between primary pump and heat exchanger at low speed as pump is at its minimal signal input.
- When big demand (peak period), the primary control valve is almost fully open and water circulates at the primary inlet temperature through the heat exchanger and leave the unit on the primary outlet port. The pump is almost at full speed also.
- Cold water enters at bottom part of the secondary side, is heated into the heat exchanger and leaves the unit on the secondary top part of the heat exchanger.
- The S1 temperature sensor measures the DHW temperature and indicates to the controller if the 3-port modulating valve must open or close proportionally and to increase or decrease pump signal / speed in parallel.
- Integrated patented DeltaT(S3-S2) function ensures that the primary outlet is at the minimal possible temperature, this to help boilers condensing.

2 Installation



The installation work must be carried out by an authorized installation contractor



The tap water modules are designed for indoor installation, typically in a plant room only accessible by qualified technicians. The ambient temperature in the room must be min 0°C and max 40°C, max humidity 85% without condensation.



The temperature and the pressure of the water are very high. Only qualified technicians are allowed to work on the unit. Incorrect operation may cause serious personal injury and result in damage to the building



Minimum pressure/temperature on primary side: 1.0 bar/ 7°C, 1.5 bar / 100°C
Maximum pressure/temperature on primary side :10 bar /100°C
Minimum pressure/temperature on secondary side: 1 bar/ 7°C
Maximum pressure/temperature on secondary side: 10 bar/ 85°C

2.1 Unpacking / Preparation / Mounting

- Before installation this manual must be read carefully.
- Unit must be connected as per one of indicated flowcharts in this manual.
- Rinse the pipes, before connecting them to the tap water module.

Pipe works may contain solid particles that could block or prevent the modulating valve to operate correctly.

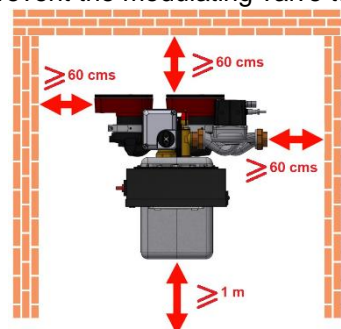
- Also check:

- Air vent position
- Settling pot presence on primary side
- Boiler installation and capacity conformity
- Pressure breaker (primary vessel, mixing bottle or equivalent) presence on primary side
- Balancing valve on secondary side of semi-instantaneous installations

- Accessibility of unit and components: **leave at least 60 cms on the left, right and back sides around the heat exchanger the front side should be fully accessible.**

- Pipe the primary and the secondary of the module.
- Fill-up both sides progressively with water.
- Purge air at high parts.
- Purge all the pump bodies.
- Install electrically the unit respecting electrical installation information see chapter 6

Picture 4



2.2 Commissioning

- Switch the power on.
- Check controller setting and enable the required functions.
- The controller has been set at the factory. If any function needs tuning, values can be changed with reference to this manual for parameter setting.
- Initially, the commissioning process should be carried out with the factory settings.
- Fill out the form in chapter "Commissioning report".



Do not turn pump head, keep it in delivery position.

3 Flowcharts



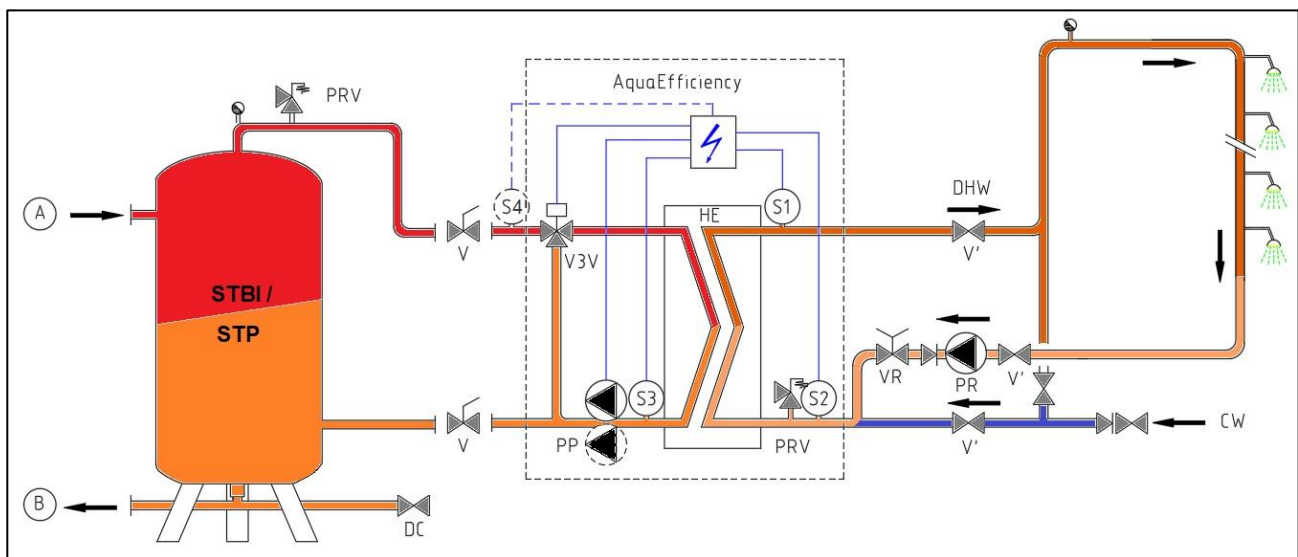
The tap water modules should be installed according to the following schematics. Whatever type, unit model and production type (Instantaneous or Semi Instantaneous), each pump (or pump motor when double ones) delivers 10% to 100% of the nominal primary pump signal and 25% to 100% of the nominal secondary pump signal, to stick to the actual demand.

Cetetherm does not recommend the use of a mixing bottle on primary side of an AquaEfficiency installation, because the mixing effect destroys the low return temperature. But the need for the differential pressure breaker functionality of this mixing bottle is still mandatory. On AquaEfficiency Cetetherm recommends replacing the traditional mixing bottle by a small buffer tank, named STBI, that serves as an inertial storage tank and avoids any boiler pumping. In case a primary vessel, named STP, is required or designed on the installation, the STBI tank becomes unnecessary.

3.1 Installation of an AquaEfficiency Instantaneous

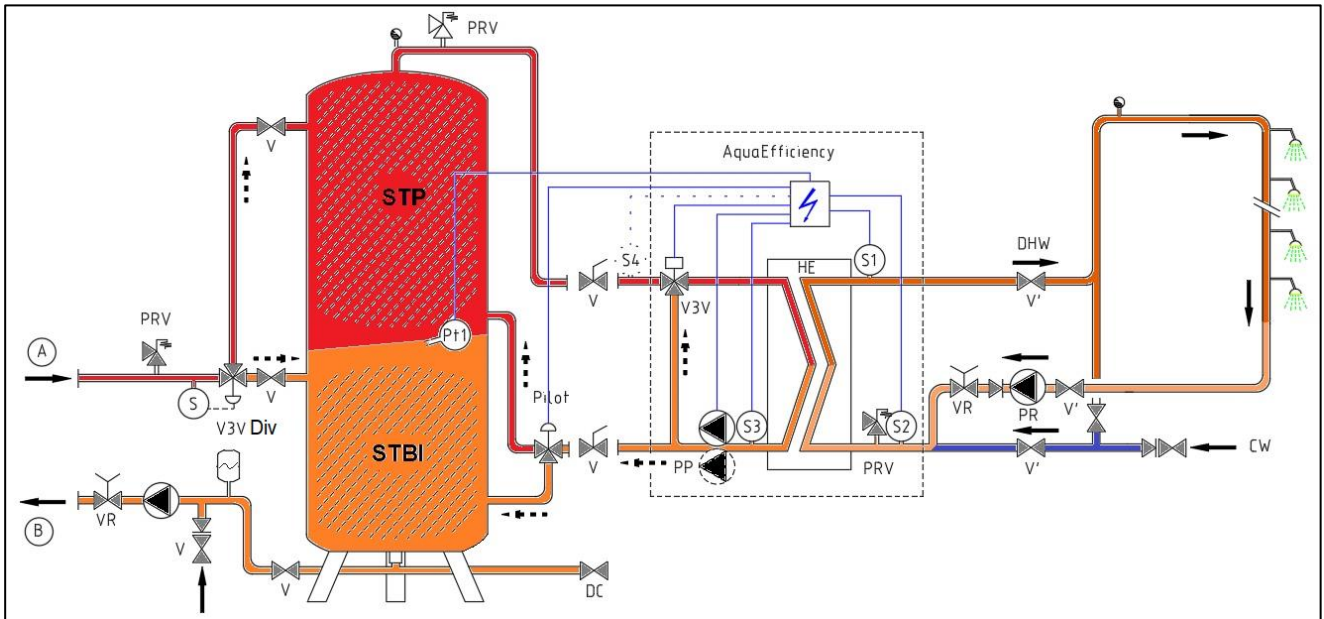
ID.	NAME	ID.	NAME
A	Primary inlet	Pt1	Primary tank temperature sensor optional, refer to extended functions
B	Primary outlet	S1	DHW temperature sensor (master)
CW	Cold Water inlet	S2	Secondary inlet temperature sensor
DC	Drain valve	S3	Primary return temperature sensor
V3VDiv	Diverting 3 port control valve	S4	Primary inlet temperature sensor (option)
DHW	Domestic Hot water	V, V'	Shut-off valve
HE	Heat Exchanger	V3V	3-port control valve with actuator
		VR	Balancing valve
PP	Primary pump	STBI	Inertial condensation boiler storage tank
PR	DHWC pump	STP	Primary storage tank
PRV	Safety valve	STS	Secondary storage tank

3.1.1 Standard flowchart for Instantaneous version



Picture 5

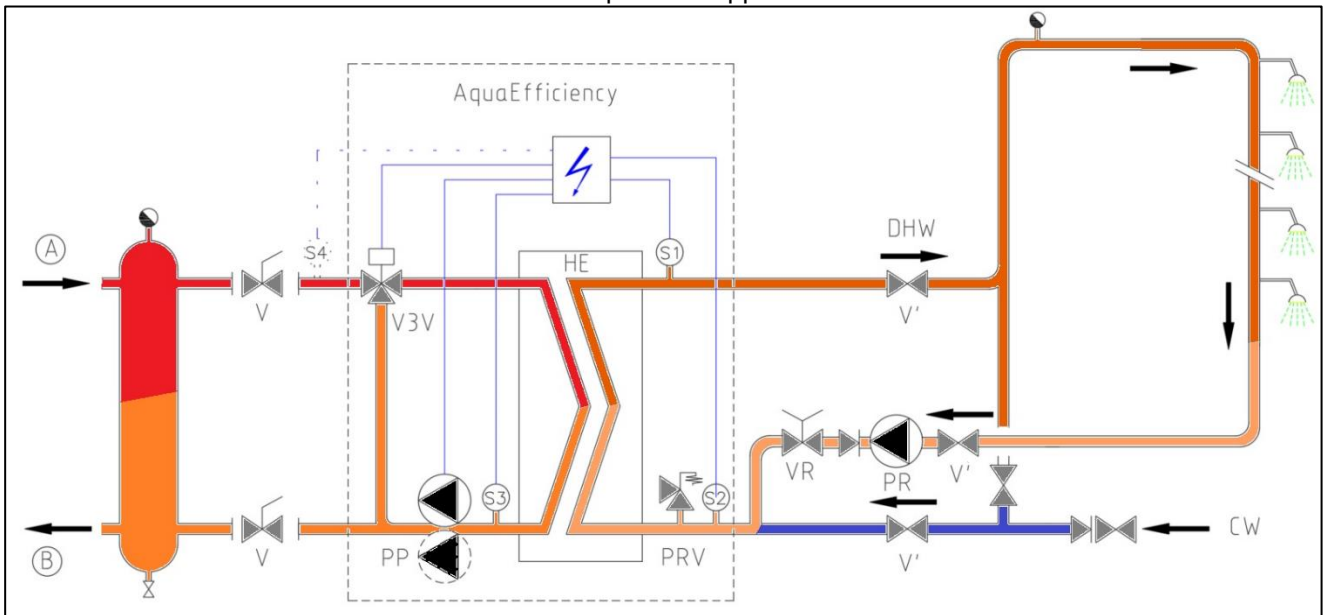
3.1.2 Example of Flowchart with eventual optimised use of primary vessel



Picture 6

3.1.3 Other possible installation

Not recommended for low return temperature applications.



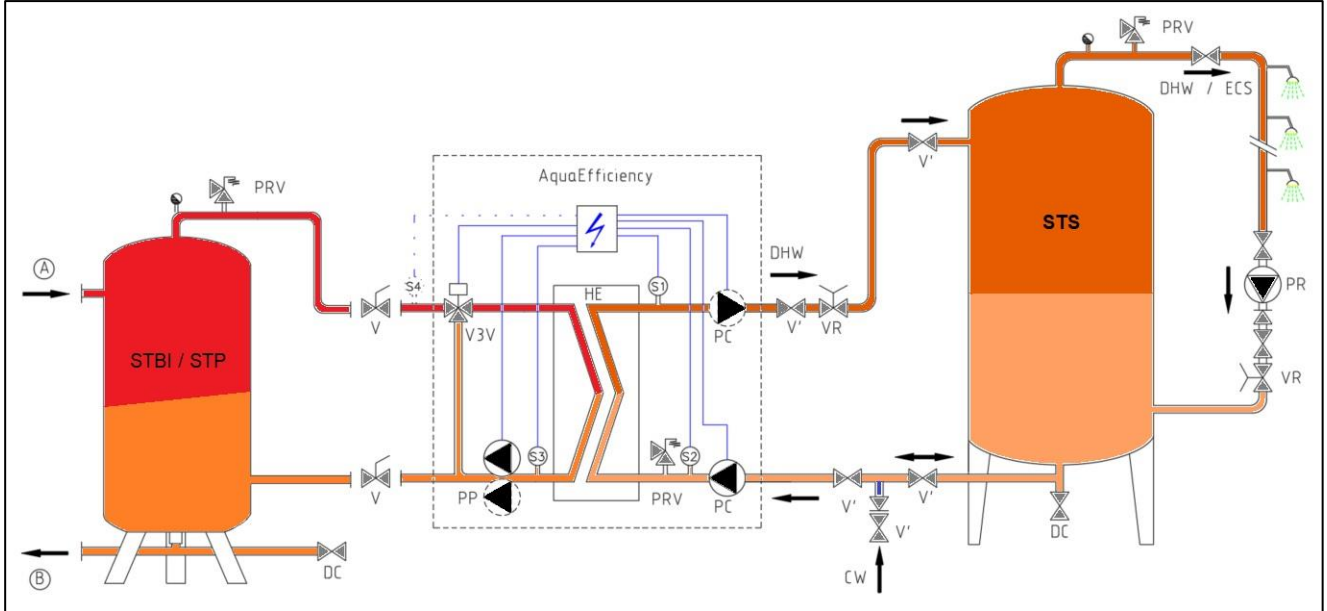
Picture 7

3.2 Installation of an AquaEfficiency Semi Instantaneous

ID.	NAME	ID.	NAME
A	Primary inlet	S1	DHW temperature sensor (master)
B	Primary outlet	S2	Secondary inlet temperature sensor
CW	Cold Water inlet	S3	Primary return temperature sensor
DC	Drain valve	S4	Primary inlet temperature sensor (option)
DHW	Domestic Hot water	V, V'	Shut-off valve
HE	Heat Exchanger	V3V	3-port control valve with actuator

PRV	Safety valve	VR	Balancing valve
PC	Charging pump (secondary)	STBI	Inertial condensation boiler storage tank
PP	Primary pump	STP	Primary storage tank
PR	DHWC pump	STS	Secondary storage tank

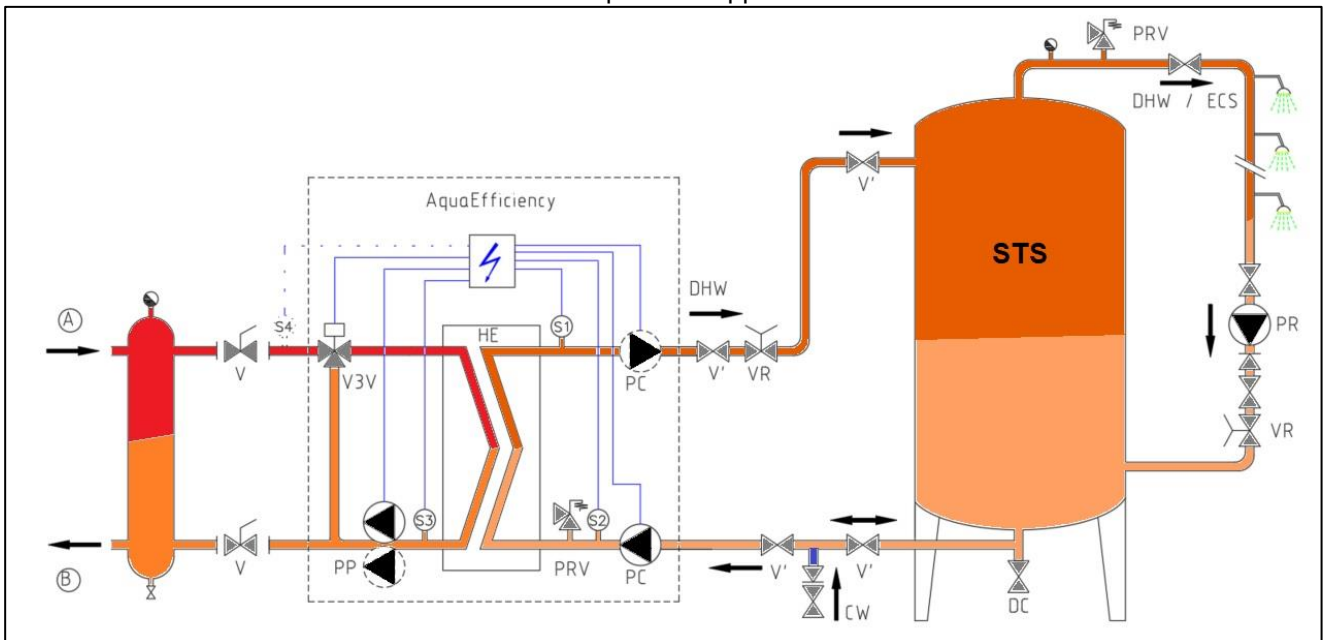
3.2.1 Standard flowchart for Semi-Instantaneous version



Picture 8

3.2.2 Other possible setup

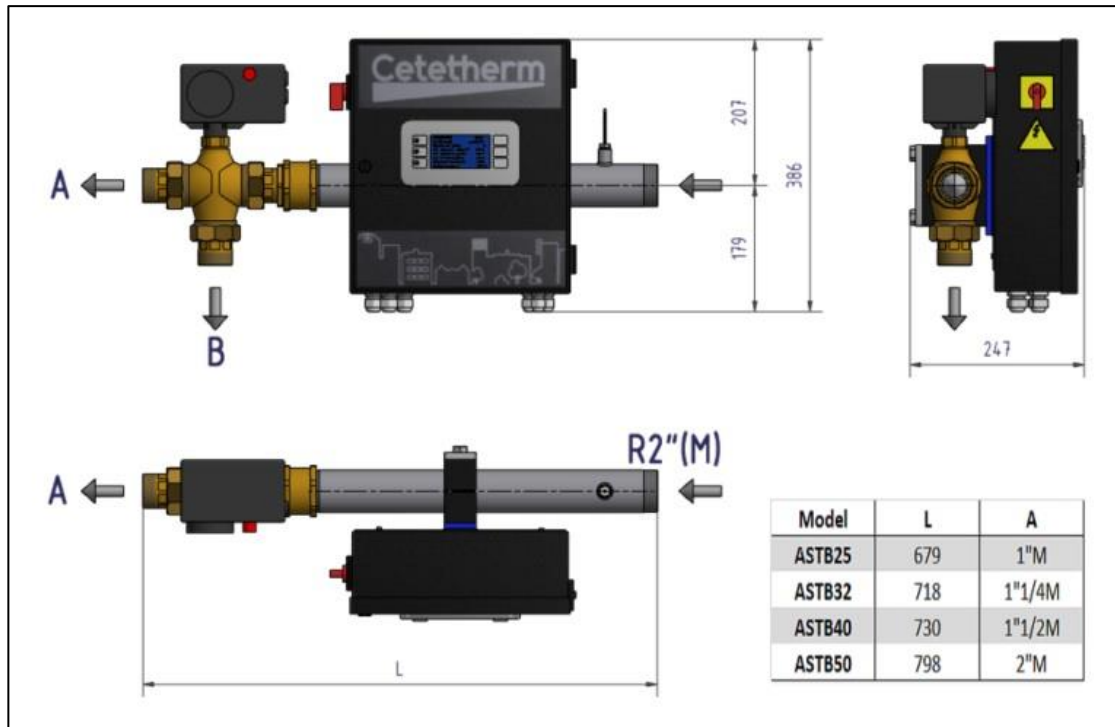
Not recommended for low return temperature applications.



Picture 9

4 Installation of a Pilot(+) unit

4.1 General Dimensions (mm):



Picture 10

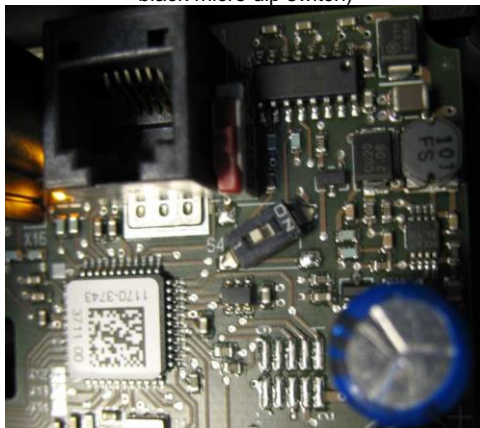
4.2 Specific wirings

Both Pilot and Pilot + actuator should be wired the same way.
 Depending on connected actuator, terminals may have different names or labels.
 See below the corresponding table between several brands:

Control box wirings on power PCB terminals' nos:

50	51	64	65	66	76	77
0V	S3	24V AC	Y4	0V	0V	Pt1
S3		Ctrl Valve 2			Pt1	

Samson 5824 actuators: the red switch (signal inversion) must be in low position (pointing towards the black micro dip switch)



Picture 11

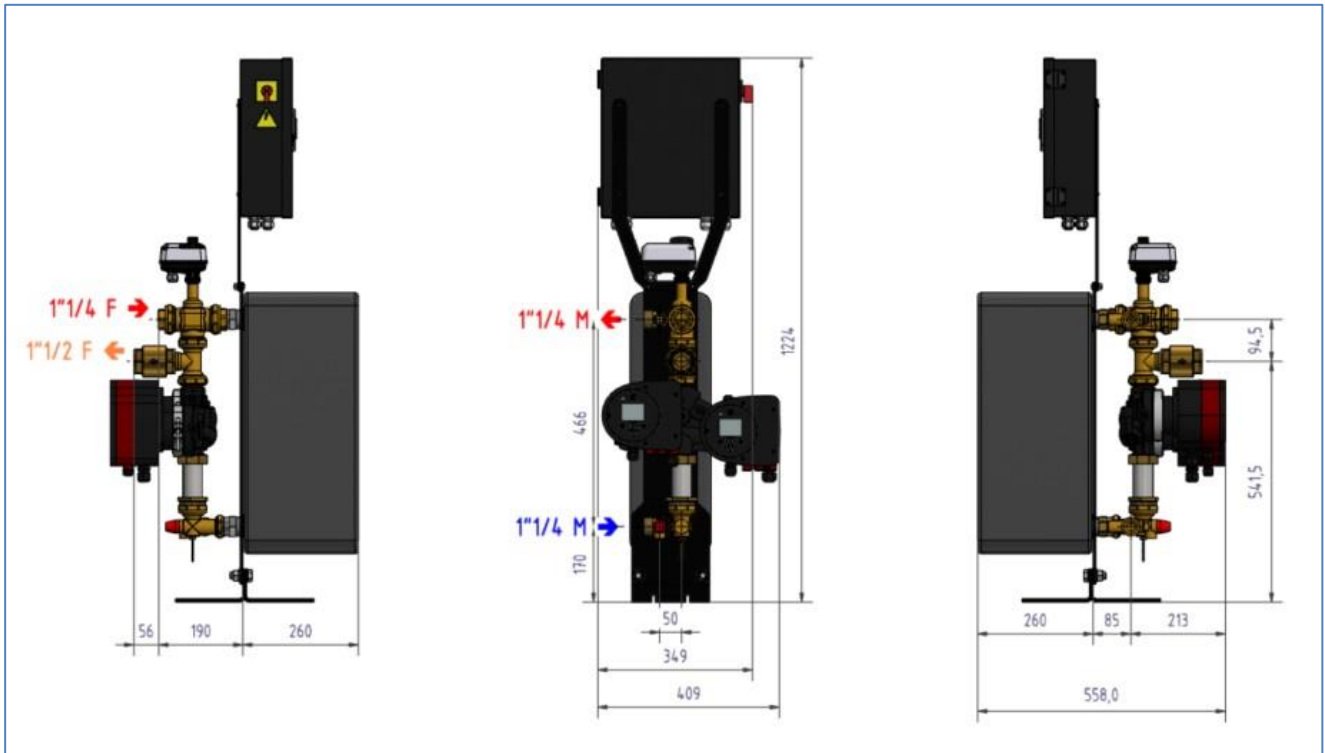
Wiring to actuator as per brandmark
 Raccordement au servomoteur selon marque

	24V	0V	0-10V
Siemens	G	G0	Y
Samson 5824/5825	L	N/N+12	13
Sauter AVM125	01	MM	03
Sauter AVF125	01+06	MM	03
Sauter AR30W	2	1	3

Samson 5824/5825 : Shunt terminals N and 12.

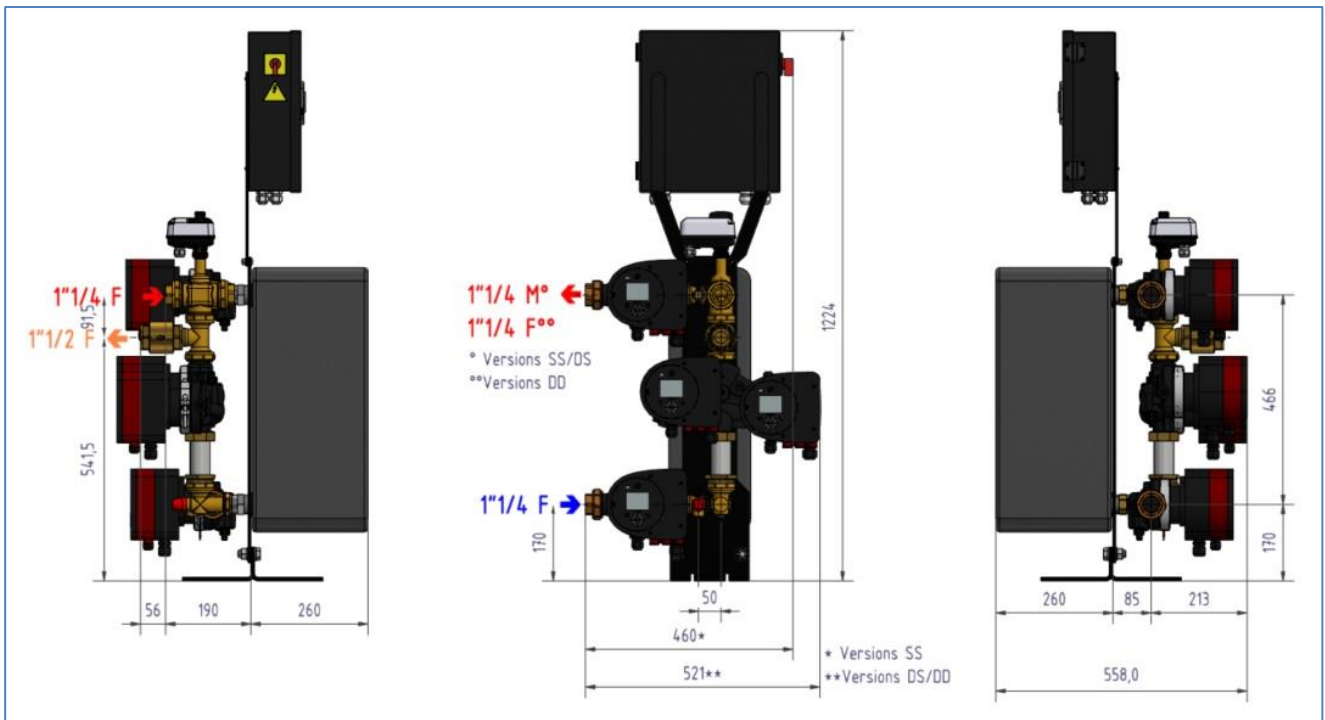
5 Measure sketches

5.1 AquaEfficiency EFB60/EFF52 Instantaneous



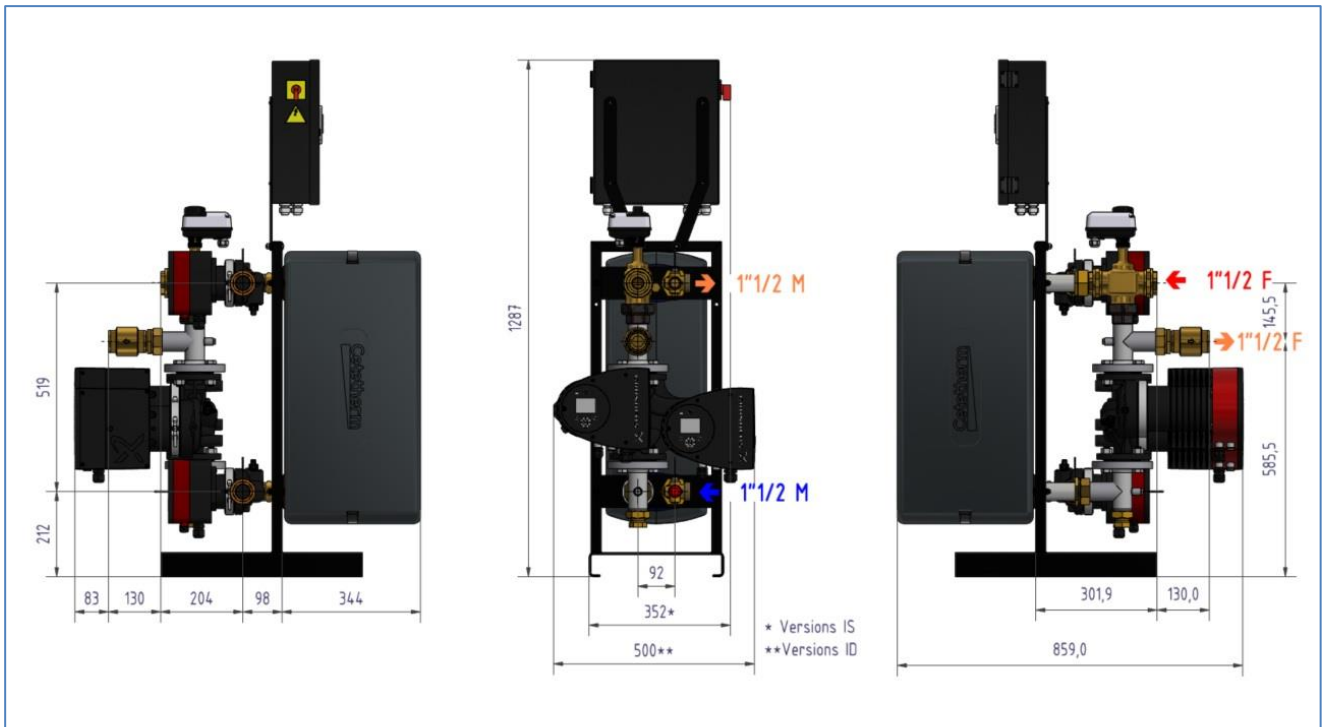
Picture 12

5.2 AquaEfficiency EFB60/EFF52 Semi-Instantaneous



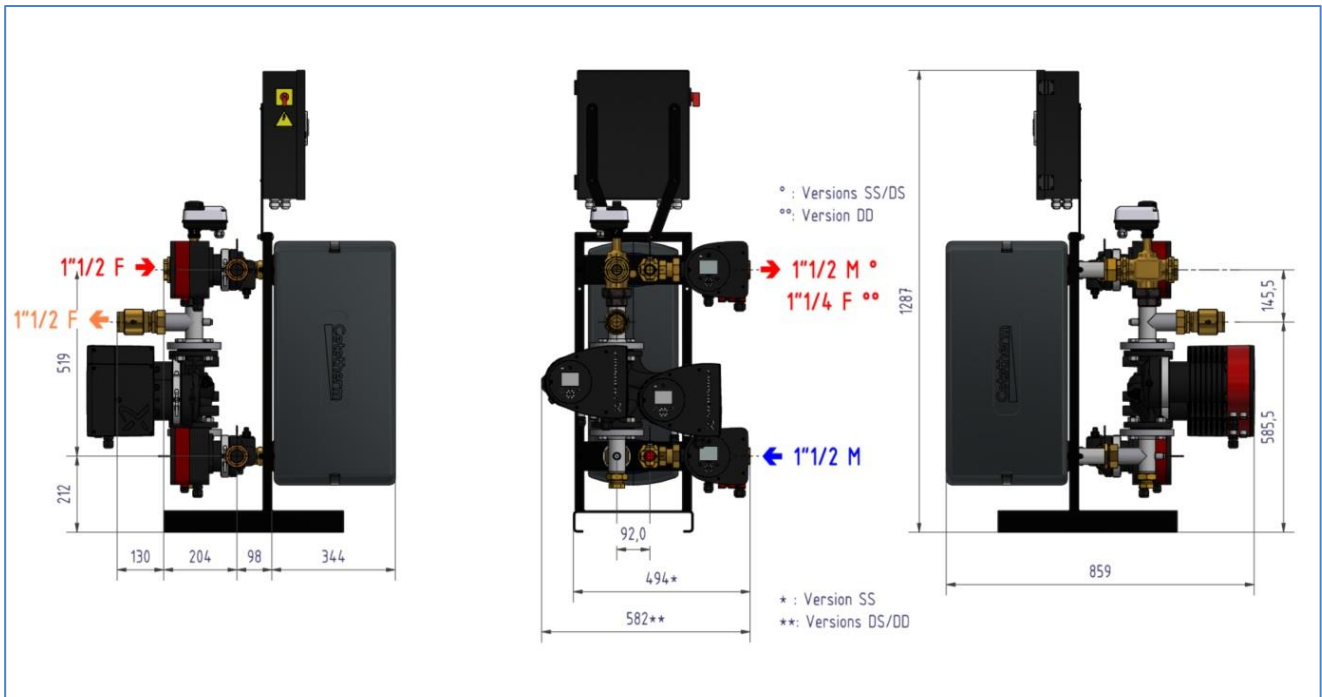
Picture 13

5.3 AquaEfficiency EFF76 / EFB112 Instantaneous



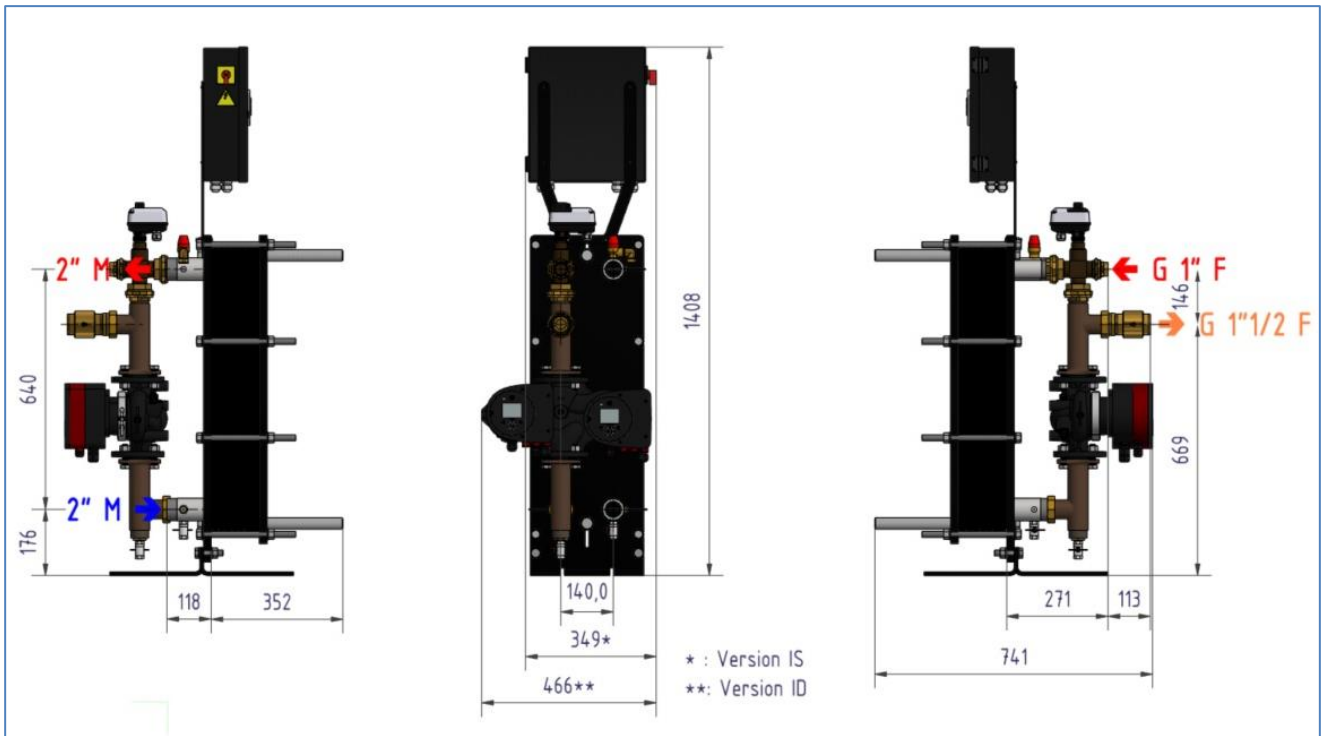
Picture 14

5.4 AquaEfficiency EFF76 / EFB112 Semi-Instantaneous



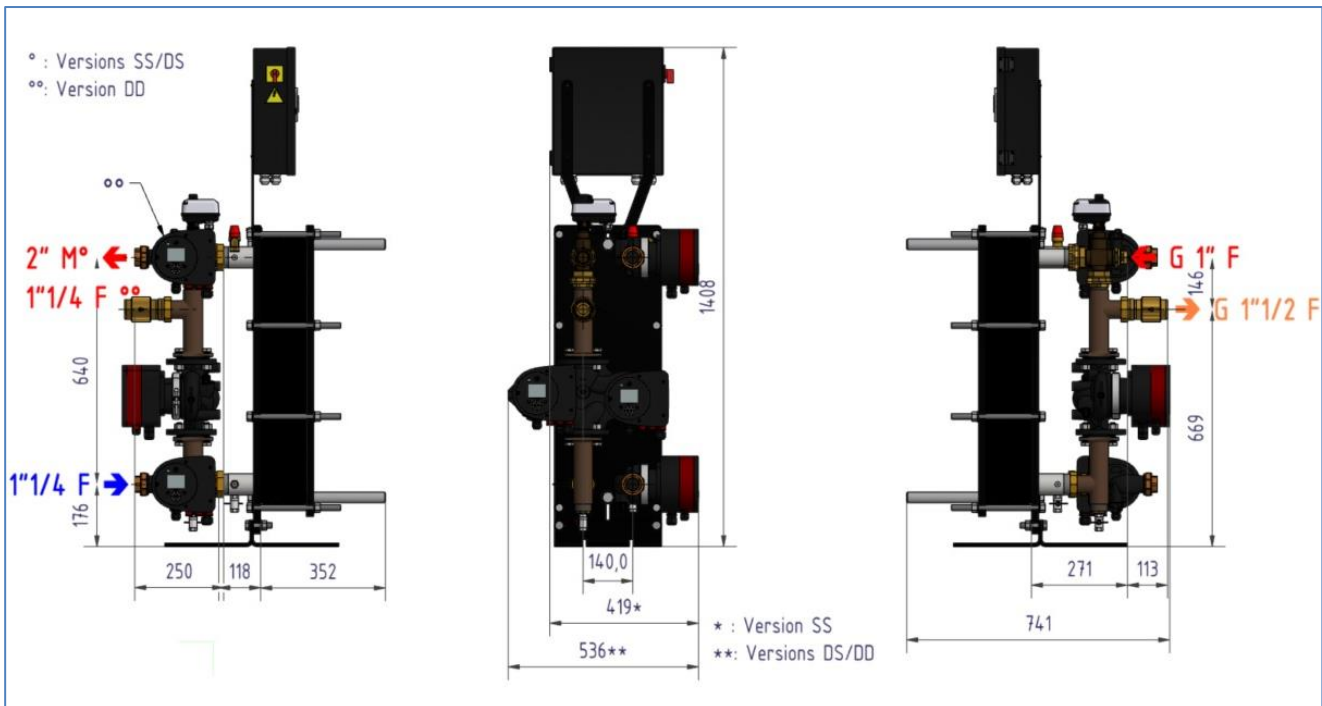
Picture 15

5.5 AquaEfficiency EFP3000 Instantaneous



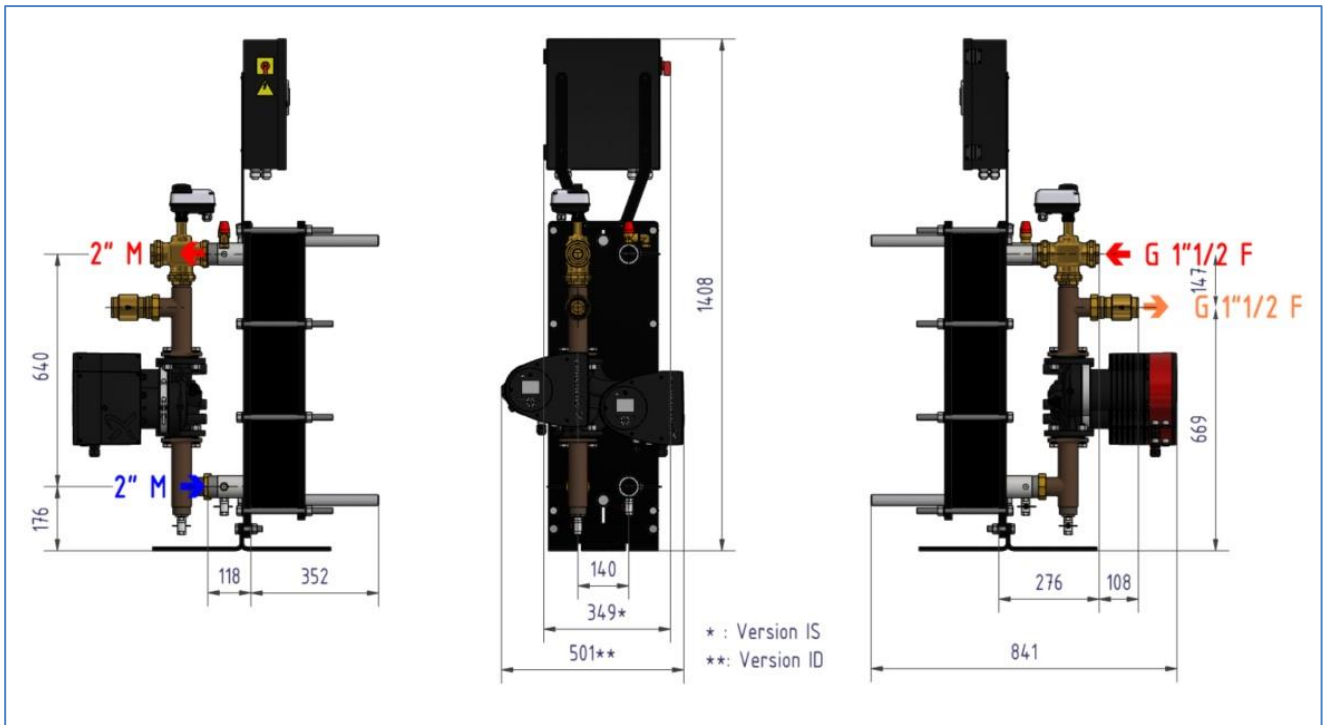
Picture 16

5.6 AquaEfficiency EFP3000 Semi-Instantaneous



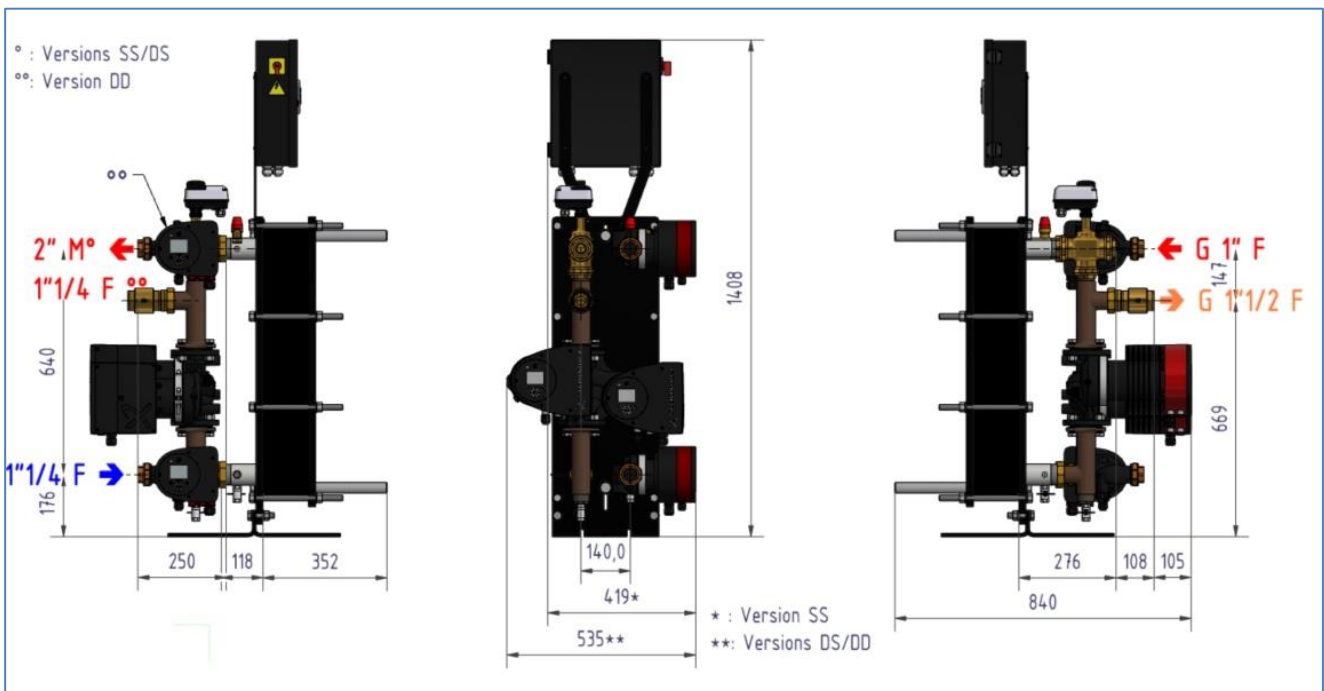
Picture 17

5.7 AquaEfficiency EFP 5000 / 7000 Instantaneous



Picture 18

5.8 AquaEfficiency EFP5000/7000 Semi-Instantaneous



Picture 19

6 Electrical installation

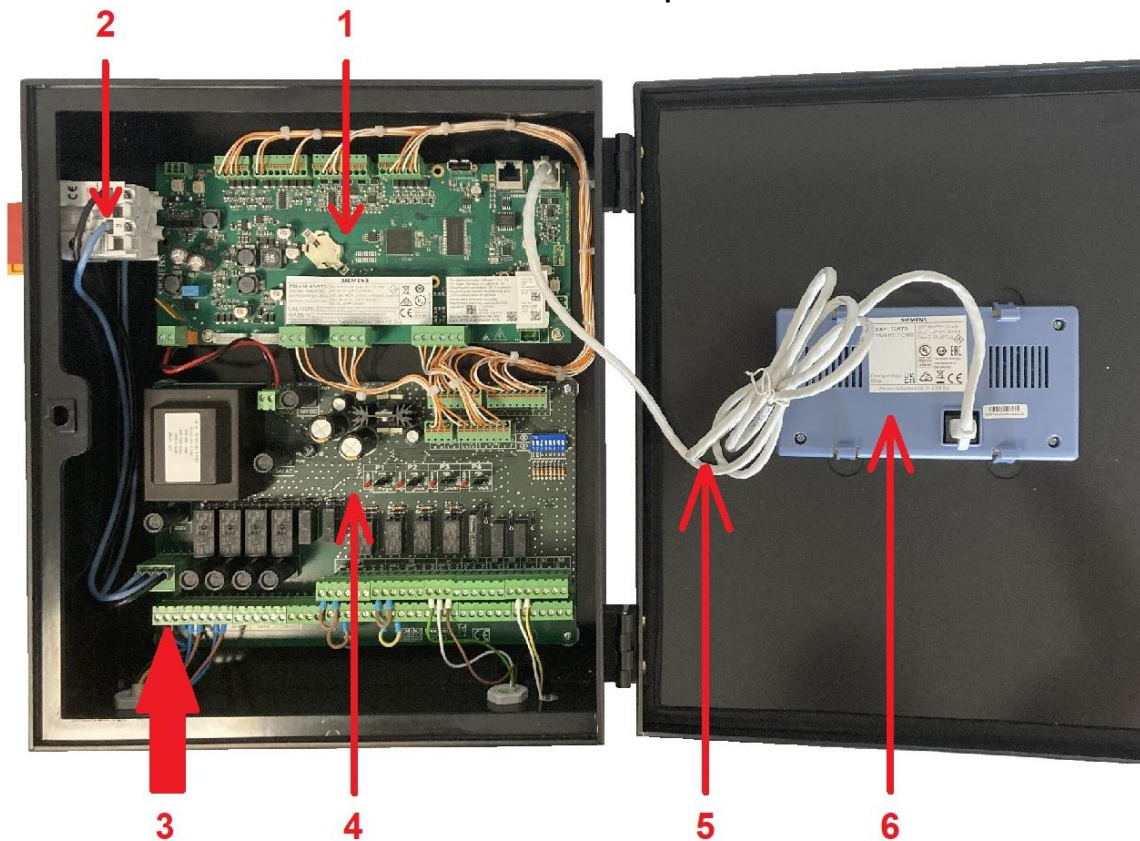


Power supply the control box with 230V 50 Hz + Earth, using electric protection in the main electric power box. The TWS control box is a secondary electrical control box. Human protections and protections against short circuits and over intensity must be installed in the main electric box.



Earth (Ground) must be wired to the control box to avoid any risk of electrical shock when touching the unit. Neutral and Phase must be respected: do not invert.

Control box components



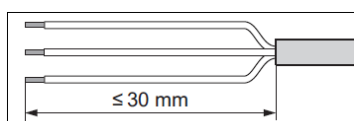
Picture 20

- | | | | |
|---|--|---|---------------------|
| 1 | Temperature Controller | 4 | Power PCB ADE-432 |
| 2 | Main switch, bipolar. | 5 | Display cable |
| 3 | Protected customer power supply (N, L, Earth) | 6 | Display (rear view) |



Use a 3 poles power supply cable with yellow/green earth wire of the following types: H05-VVH2-F, H05-V2V2-F, H05-V2V2H2-F, H05-Z1Z1-F, H05-Z1Z1H2-F, H05-RR-F, H05-VV-F. Wire section : 2,5mm².

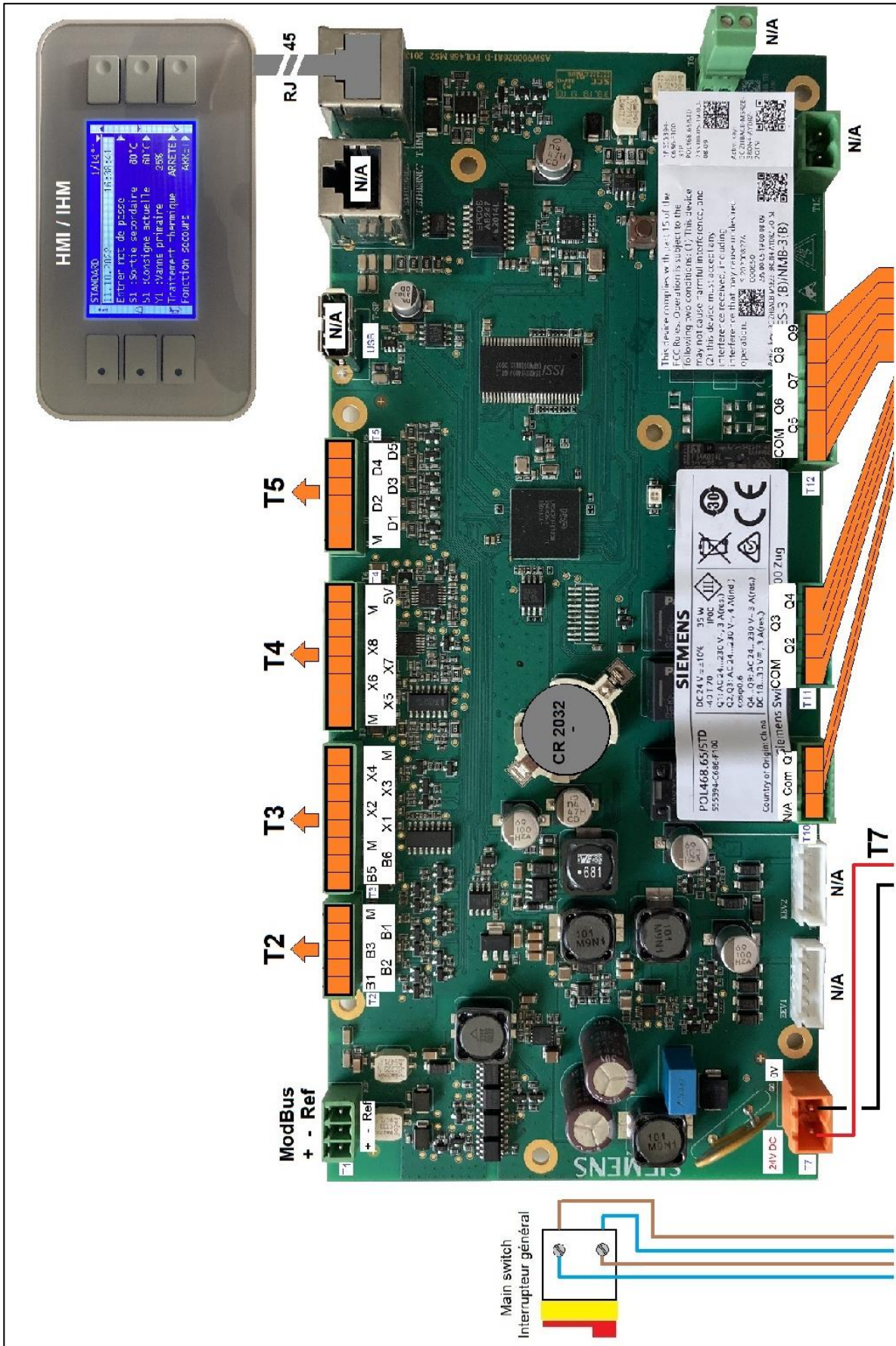
Do not tin the cable ends which will be exposed to contact pressure in the terminal blocks.



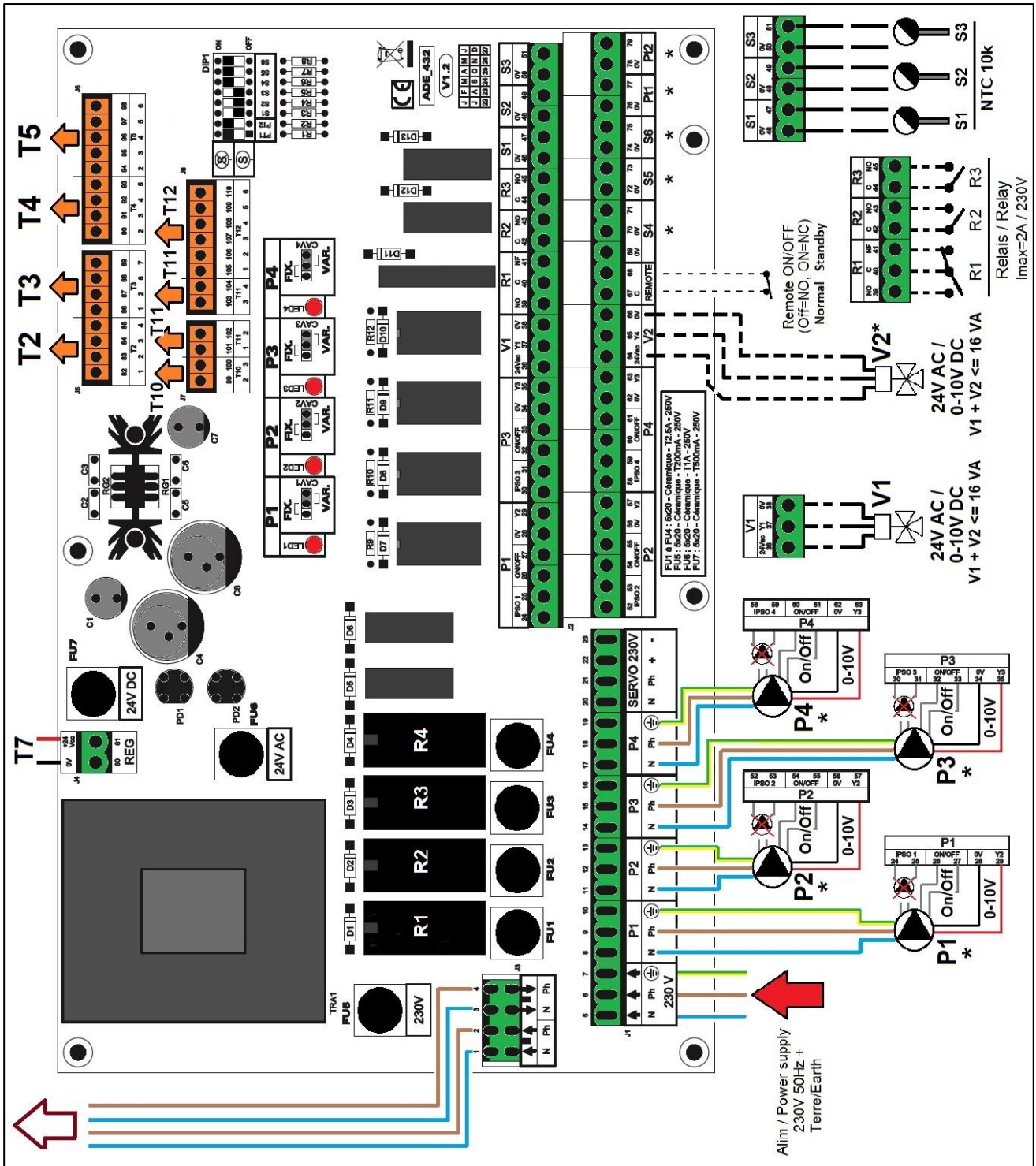
Strip the cables as shown opposite. Be careful not to damage the insulation of the various electrical wires.

Picture 21

6.1 Electrical wiring diagram



Picture 22



Picture 23



The earth must be connected to terminal 7 of the power PCB.
Protect the power supply upstream of the product by means of a fixed connection and a separator with a cut-off interval of at least 3mm (fuse or switch)
Input: 30A, $I_{\Delta n}$: 30mA, trip characteristic: C.

Wiring details:

Power terminal on PCB (lower part of control box, left side)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
N	Ph	N	Ph				N	Ph	±	N	Ph	±	N	Ph	±	N	Ph	±
↑	↑	↓	↓	↑	↑	↑	Pump 1 (Primary)			Pump 2 (Primary)			Pump 3 (Secondary)			Pump 4 (Secondary)		
Main switch already wired				N	Ph	±												

Unit power supply 230V 50Hz + Terre on terminals 5,6 and 7.

Terminals 8 to 19 power supply up to 4 pumps P1, P2, P3, P4 (as per equipment)



Do not exceed 2.5 A per pump.

230V 3 points actuator terminals (lower part of control box)

20	21	22	23
N	Ph	+	-
230V 3 points actuator			

Opening of the actuator is made sending 230V pulses between terminals 20 (N) and 22 (Ph +).
Closing of the actuator is made sending 230V pulses between terminals 20 (N) and 23 (Ph -).
Terminal 21 (permanent Phase) can be used with return to zero (RTZ) actuators.



3 points 230V pulses are effective ONLY IF activated into the « Configuration » menu.
At the opposite, the 0-10V actuator signal is always effective.
In a standard configuration, these 3 points' signals are not used.

Low voltage outputs on PCB (lower part of control box, right side)

I/O terminal, pumps

24	25	26	27	28	29	30	31	32	33	34	35
IPSO 1	On/Off	0V	Y2	IPSO 3	On/Off	0V	Y3				
Pump 1*						Pump 3*					
52	53	54	55	56	57	58	59	60	61	62	63
IPSO 2	On/Off	0V	Y2	IPSO 4	On/Off	0V	Y3				
Pump 2*						Pump 4*					

IPSO=Pump fault contact
On/Off=Pump start/Stop contact
Y2=P1/P2 0-10v signal
Y3=P3/P4 0-10V signal

* As per equipment

Valves' signals

36	37	38
24V AC	Y1	0V
Ctrl Valve 1		

Control valve #1= Primary control valve.
Actuator power supply between 38 and 36 terminals (24V AC)
Actuator control signal between 38 and 37 terminals (0-10V DC)

64	65	66
24V AC	Y4	0V
Ctrl Valve 2*		

Control valve #2= External control valve, used for extended fcts
Actuator power supply between 66 and 64 terminals (24V AC)
Actuator control signal between 66 and 65 terminals (0-10V DC)



Total available power for valves' actuators is 12VA, for both control valve.

Relays' contacts

39	40	41	42	43	44	45
NO	C	NF	C	NO	C	NO
Relay 1			Relay 2		Relay 3	

Please refer to Configuration menu to check / change relays' assignment.
Do not exceed 250V 2.5A by relay

Temperature sensors' inputs

46	47	48	49	50	51
0V	S1	0V	S2	0V	S3
S1		S2		S3	



Use only Cetetherm NTC10k temperature sensors. No polarity.

69	70	71	72	73	74	75	76	77	78	79
0V	0V	S4	0V	S5	0V	S6	0V	Pt1	0V	Pt2
		S4*		S5*		S6*		Pt1*		Pt2*

* as per equipment

Remote contact

67	68
C	
Remote	



Volt free contact.
Open Contact (by default) = unit operating normally
Closed contact= unit in standby = no temperature regulation

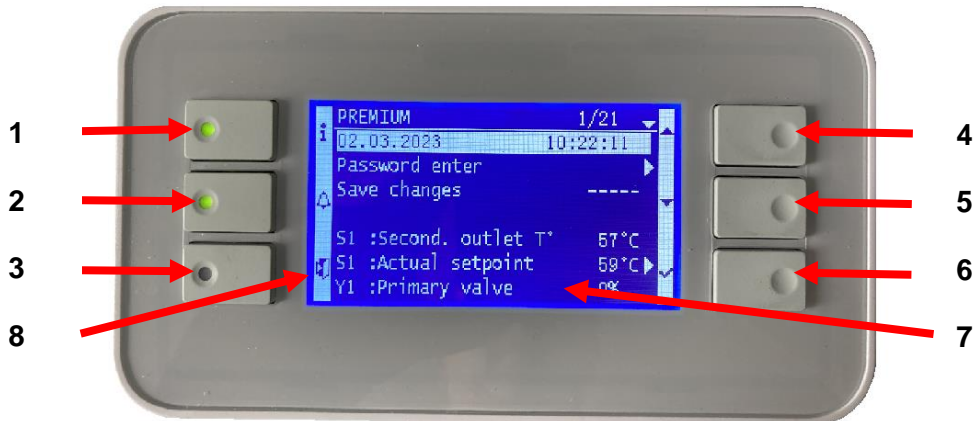
Modbus terminal T1 on controller board (upper left corner on control box)



Modbus cable's wires must be connected directly on T1 terminal on the temperature controller PCB. Please refer to corresponding chapter.

7 Using the temperature controller

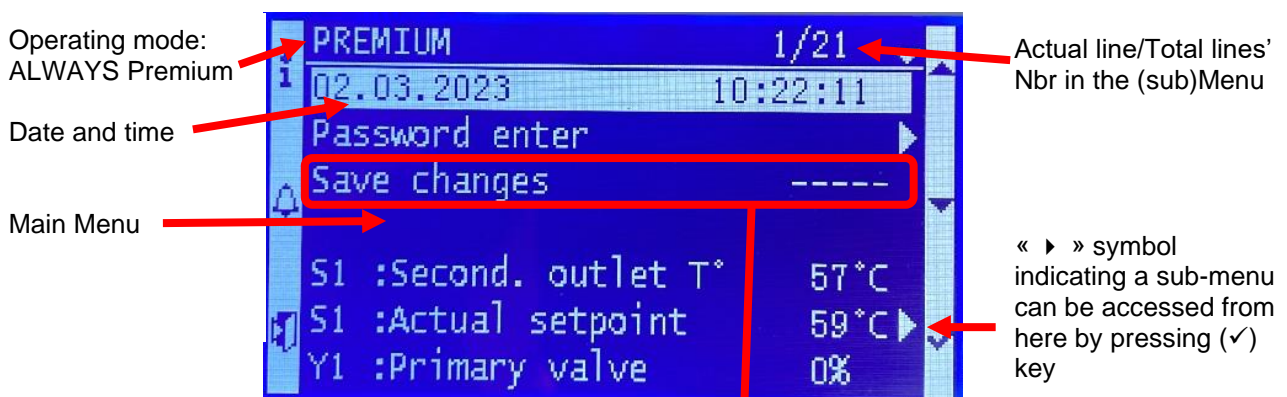
When the unit is power supplied, wait one minute before navigating into the menu.



Picture 24

Rep	Designation
1	ⓘ key to display firmware/software versions. It is equipped of a orange LED if point in manual OR Green flashing if modbus connection with BMS writing priority. Please refer to specific chapters.
2	Alarm(s)/Function(s) 🔔 key, refer to specific chapters. Equipped with a LED. In case of pending alarm a red LED is flashing. In case of pending function (like thermal treatment, Eco...), led will green flash. In case of multiple functions, it will orange flash until last function has ended.
3	«Escape» key, to step backwards into the menu structure or to cancel pending parameter value. Long press to access HMI settings.
4	▲/+ key, to access to previous menu line OR to increase setting value.
5	▼/- key, to access to next menu line OR to decrease setting value.
6	Enter (✓) key, to validate a parameter value or a choice (like On or Off). Long press to enter password and log in / log out.
7	Display (1 title line + 7 menu lines of 30 characters).
8	Keys' functions

Home screen Display:



Picture 25



For any modification of setpoint(s), parameter(s) or function(s), it is mandatory to save changes. Otherwise, the changes will be lost in the event of a power cut. Go to line 3, then press Enter (✓) key and select "Yes" then Enter to save data. **An automatic data saving is also performed every day at night (1h00).**

7.1 Display settings (HMI)

<p>1. Press a few seconds on « Escape » key to access to HMI settings: Then press (✓) key</p>	<p>1 / 2</p> <p>HMI settings Local connection</p>
<p>2. Press on ▼ key then on ✓ key to change backlight colour. There are 2 possible choices: White or Blue. Change colour by pressing ▼ and ▲ keys. Once done, press on ✓ to validate the choice. Press on ▼ key to access to next line.</p>	<p>HMI settings 2 / 6 Vxx.xx xxxx Backlight color Blue ...</p>
<p>3. Press on ✓ key to change backlight duration. Use ▼ and ▲ keys to change the value and press ✓ key to validate. 0 (default value) = permanent backlight 300 = Backlight stop after 300 seconds (5 mins) if no key pressed. <u>Note:</u> When backlight is off, pressing any key will activate it for the defined duration. Press ▼ key to access to next line</p>	<p>HMI settings 3 / 6 ... Backl.turn off ti. 0 ...</p>
<p>4. Process the same way to adjust contrast and brightness if needed.</p>	<p>HMI settings 4-5 / 6 Contrast 60 Brightness 60</p>
<p>5. The last line is not effective. Keep the value to « No ».</p>	<p>HMI settings 6 / 6 ... Firmware Update No</p>
<p>6. Press « Escape» key, then ▼ to point « Local Connection» line and press ✓ key to exit from HMI settings and get back to the main menu (home screen).</p>	<p>2 / 2 HMI settings Local connection</p>

7.2 Setting Date and Hour

<p>1. Go to Line #1. This can be done by pressing several times « Escape » key or by pushing ▲ key several times if needed.</p>	<p>PREMIUM 1/14 11.10.2022 14 :06 :57 ...</p>
<p>2. Press on ✓ key and using ▲ and ▼ keys, change the current date. Then, press on ✓ key to change the month and process the same way to change the year if needed.</p>	<p>PREMIUM 1/14 11.10.2022 14 :06 :57 ...</p>
<p>3. Setting hour. Process the same way as above to change hours, minutes and seconds still by using ▲ / ▼ keys and confirming by pressing ✓ each time. When settings are done, line #1 remains highlighted.</p>	<p>PREMIUM 1/14 11.10.2022 14 :06 :57 ... PREMIUM 1/14 11.10.2022 14 :06 :57 ...</p>
<p>4. It is now possible to navigate into the menu by pressing ▲ / ▼ keys.</p>	

8 End user mode

Following changes can be done in end-user mode:

- Change date and time
- Change simple temperature setpoint
- Activate safety function

These changes (except date and hour) are indicated by the logo « ▶ » at the end of corresponding line.

8.1 Changing the Simple DHW S1 setpoint.

Please set a hot water production temperature in line with current national legislation and recommendations (UTD, Standards EN, ISO etc.)

All countries have different rules for how hot or cold tap water should be.

Cetetherm recommends the hot water temperature is at least 55°C and a hot water recirculation not less than 50°C.

At a temperature below 50°C there is a risk of bacterial growth.

Note that at temperatures above 60°C the risk of scalding increases.

Set points above 63°C result in an increased risk of precipitation of lime scaling on the surfaces of the heat exchanger.

Here is an example where the setpoint has been changed to 58°C and you want it back to the default temperature setpoint which is 60°C. To change it, refer to instructions below:

<p>1. From the main menu, use ▲ / ▼ keys to go to line #4 as shown here:</p> <p>Then press on ✓ key.</p>	<pre>PREMIUM 4/14 ... Password enter ▶ S1 : Second.outlet T° 58°C S1 : Actual setpoint 58°C ...</pre>
<p>2. S1 menu appears. Select line #2 using ▼ key. Then press twice on ✓ key.</p> <p>3. Adjust setpoint value using ▲ / ▼ keys and confirm by pressing ✓ key. To cancel new setpoint value, just press « Esc » instead of ✓ key.</p>	<pre>S1 MENU 2/2 Measure 58°C S1 setpoint 58°C ▶</pre> <p style="text-align: center;">60 °C</p> <p>0°C ↓ 85°C</p>
<p>4. To get back to the main menu, press « Esc » twice.</p>	<pre>[--- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---]</pre>



If the green led of ⓐ key is flashing, it is not possible to change the setpoint. To solve this, access to technician level (see further on), go to “Communication” sub-menu and select « Modbus RTU », then press ✓ key. Go to the last line « Writing priority » and select « POL468 » then press ✓ key. The green LED will stop flashing. You can now change the setpoint. When done, do not forget to go back to Communication\Writing priority and to select “GTC”.

8.2 Safety function

This function power supplies the 4 pumps’ relays (even if there are no 4 pumps connected). This energises the 4 pumps power supplies without checking if the pump is faulty or not.

Furthermore, pump(s) signals (for variable speed ones on P1/P2) and actuator signal are also forced to a preset value.

Valve signal is 50%, (5V)

Pump(s) signal is 100%, 10V.

<p>1. From the main menu and using ▲ / ▼ keys, go to line "Safety function" as shown: Then press ✓ key.</p>	<pre> PREMIUM 7/14 ... Thermal treatment OFF Safety function OFF ▶ ... </pre>
<p>2. To activate the safety function, press on ✓ key</p>	<pre> Safety function 1/3 Enable OFF Pump signal setpoint 100% Valve signal setpoint 50% </pre>
<p>3. Select « ON » using the ▼ key and press ✓ key.</p>	<pre> ✓OFF ON </pre>
<p>4. Now, display has changed to « Enable ON » and the alarm key red flashes, indicating a function is on-going: Note : It is possible to view the actual function by pressing ⏏ key. Please refer to « Alarm(s)/Function(s) button » part</p>	<pre> Safety function 1/3 Enable ON Pump signal setpoint 100%* Valve signal setpoint 50%* </pre>
<p>5. To stop the function from line#1 of safety function menu, press twice on ✓ key (OFF state on display). The alarm/function button stops flashing (except if another alarm/function is on-going). Exit this sub-menu by pressing « Esc » key.</p>	

NOTE: * It is not possible at this access level to change pump and valve signal setpoint values

9 Technician access level

Technician access level allows to:

- Enable all sub-menu access (not possible from end-user access level)
- Adjust temperature setpoint(s) as per clock program(s)
- Enable/Disable functions like Eco, Booster, Thermal treatment...
- Check and/or force contact(s) or signal(s) output(s)
- Access to extended functions for specific applications, like primary tanks' charging pump(s) management or heat recovery for solar or geothermal applications
- Enable/Disable Modbus communication with priority or not to BMS writing.

9.1 Login

Access code is 1000.

1. From the main menu, go to line#2 : Password enter ▶. Then press ✓ key
OR Press a few seconds on ✓ key
2. Display indicates « Login » and a cursor is placed on **0 - - -**
3. Using ▲ / ▼ keys (meaning + / -), enter the 1st digit and validate by pressing ✓ key.
The 1st digit must be 1. So you have to display **1 - - -** by pressing once the + key, then pressing ✓ key.
4. Now comes the 2nd digit that must be 0 (zero). Just press on ✓ key as the default digit value is already zero.
5. Repeat the same operation for 3rd and 4th digits that must be zero also. For that, just press twice the ✓ key.
6. Once correct code is entered, information display appears (hardware/software versions, controller reference...). Press « Esc » key to come back to the main menu. The display now shows one key on its top right corner, indicating technician access level is activated. Now, most of the lines show « ▶ » at their end, meaning their access is now possible:



Picture 26

Remark: After 10 minutes without pressing any key, the software logs out from technician level, the key disappears, and the software is back to end-user access level.

9.2 Log out

It is not necessary to wait 10 minutes to log out. This can be done at any time. For that :

1. Press a few seconds on ✓ key
2. Select « Log off » by pressing ∇ key
3. Press ✓ key
4. The key symbol disappears from the display. Access level is now back to end-user.



Except for specific reason, **DO NOT** log off if points let in manual mode (with the ⓘ button orange lit). Please refer to « Wired inputs-outputs » sub-menu.

9.3 Main Menu

To access to the first line, press several times « Esc » key OR ▲ key.

Display		Meaning
PREMIUM	n/t ↔	Premium mode (always). n=No of curret line, t=total lines'number (variable, as per sensor(s)'number and activated extended funct)
jj.mm.aaaa	hh :mm :ss	Date and time
Password enter	▶	Log in / Log out
Save changes	-----	At any parameter(s) change or activated function(s), press on "✓" and select "Yes" to save.
S1 : Second. Outlet T°	60°C	S1 (DHW) temperature sensor, reading only
S1 : Actual setpoint	60°C ▶	Access to S1 sub-menu
Y1 : Primary valve	nnn%	Primary control valve signal to the actuator, reading only
S2 : Second. Inlet T°	nn°C ▶	S2 temperature reading + access to S2 sub-menu.
S3 : Primary outlet T°	nn°C	S3 temperature sensor, read-only.
S4 : Primary Inlet T° *	nn°C	S4 temperature sensor, read only. *Option, if S4 is not activated, this line is hidden
S5 : Outdoor temperature	nnn°C**	** Visible if S1 setpoint configured on "Curve" into S1 Menu
S6 : Top sec. tank T°	nn°C***	*** : Depending of extended functions 'selection. Please refer to corresponding chapters.
Pt1: Top prim.tank T°	nn°C***	
Pt2: Bot. prim. Tank T°	nn°C***	
Delta.T°(S3-S2)	nn°C ▶	Access to efficiency function
Thermal treatment	OFF ▶	Access to thermal treatment sub-menu
Safety function	OFF ▶	Access to safety function sub-menu
ECO / BOOSTER	OFF ▶	Access to ECO/Booster function(s)' sub-menu
Fouling function	NORMAL ▶	Access to fouling function sub-menu
Pump(s) menu	P1/P2/P3/P4 ▶	Access to pump(s) menu + configured pump(s)' number
S4 T°Limit.function *	OFF ▶	Access to S1 setpoint limitation function
Extended functions	▶	Access to extended functions sub-menu.
Test sequence	▶	Access to test sequence sub-menu
Communication	▶	Access to Modbus RTU communication sub-menu
Wired inputs – outputs	▶	Access to inputs / outputs reading / writing sub-menu

Please refer to next pages to get detail of each sub-menu.



All functions: Thermal treatment, Eco, Booster, Fouling, Safety are disabled. Each installation is different. Functions 'parameters have to be set according to the site and then can be enabled if required.

9.4 S1 Sensor menu

This menu allows to:

- Adjust one or more daily or weekly temperature setpoint(s) as per clock program(s).
- Adjust high and low temperature alarm setpoints
- Adjust PID parameters

Temperature Setpoint(s) and clock program(s)



If the green led of Ⓢ key is flashing, it is not possible to change the setpoint(s). To solve this, access to technician level (see further on), go to "Communication" sub-menu and select « Modbus RTU », then press ✓ key. Go to the last line « Writing priority » and select « POL468 » then press ✓ key. The green LED will stop flashing. You can now change the setpoint. When done, do not forget to go back to Communication/Writing priority and to select "BMS".

1. From the main menu and using ▲ / ▼ keys, go to line No.6 as shown: Then press ✓ key to access to S1 sub-menu	PREMIUM 6 / t ⇄ ... S1 : Actual setpoint 58°C ▶
2. Press ▼ key to go to line No.2	S1 MENU 2 / 10 ⇄
3. To change the setpoint selection, press ✓ key, then ▲ / ▼ keys to change from Fixed to Curve Ⓢ : Tap water applications require FIXED setpoint. Curve selection is used for heating circuit.	Measure nn°C Setpoint selection FIXED
4. Press ✓ key to validate or "Esc" to cancel	✓ FIXED CURVE
5. If any change done (Fixed to Curve or Curve to Fixed), controller must be restarted. Use this line to do so, by pressing ✓ key, then ▼ and ✓ key. If no change applied, skip this step.	S1 MENU 3 / 10 ⇄ Setpoint selection FIXED >Restart required! OFF
6. Press ▼ key to access to next line.	
7. Go to line No. 4, "S1 Setpoint" and press ✓ key to access to setpoint(s) settings and clock program(s)	S1 MENU 4 / 10 ⇄ S1 setpoint 60°C ▶

IF CURVE Setpoint SELECTED (Specific applications):

The corresponding screen appears:	S1 setpoint curve 2/9 ⇄
Variable setpoint is defined by 5 points curve you can modify navigating into the lines 2 to 6.	Outside T° nnn°C
Select a line using ▲ / ▼ keys and press enter to change value(s) still using ▲ / ▼ keys and ✓ key to confirm or "Esc" key to cancel.	X1= -10°C -> Y1= 85°C
Min and max limits are defined below, lines 7 and 8:	X2= 0°C -> Y2= 80°C
The minimal calculated output is defined here:	X3= 10°C -> Y3= 65°C
The maximal calculated output is defined here:	X4= 20°C -> Y4= 40°C
Current calculated setpoint:	X5= 25°C -> Y5= 25°C
	Mini flow T°setpoint 25°C
	Maxi flow T°setpoint 85°C
	Calculated setpoint nn°C
Press « Esc » to get back to S1 Menu.	

IF FIXED Setpoint SELECTED (Tap Water Systems' applications):

There are 2 methods to adjust setpoints:	S1 setpoint schedule 1/11 ⇄
a) Default setpoint if no time program defined →	Setpoint w/o Schedule 60°C
	Monday 60°C

Cetetherm AquaEfficiency Neo, Pilot, Pilot+, Pre-heater
Installation, service and operating instructions

<p>b) Different setpoints or not depending of week day and hours of the day. It is possible to get up to 6 different setpoints per day and different from day to day.</p> <p>We describe here the 2nd method, the first one being described in the end-user access level (simple setpoint without clock program).</p> <p>① : Current day of the week is indicated by a cross (x) into the S1setpoint schedule menu.</p>	<table border="0"> <tr><td>Tuesday</td><td>x</td><td>60°C</td></tr> <tr><td>Wednesday</td><td></td><td>60°C</td></tr> <tr><td>Thursday</td><td></td><td>60°C</td></tr> <tr><td>Friday</td><td></td><td>60°C</td></tr> <tr><td>Saturday</td><td></td><td>60°C</td></tr> <tr><td>Sunday</td><td></td><td>60°C</td></tr> <tr><td>Copy Monday from Tue. To Sun</td><td></td><td></td></tr> <tr><td>Activate copy</td><td></td><td>NO</td></tr> </table>	Tuesday	x	60°C	Wednesday		60°C	Thursday		60°C	Friday		60°C	Saturday		60°C	Sunday		60°C	Copy Monday from Tue. To Sun			Activate copy		NO
Tuesday	x	60°C																							
Wednesday		60°C																							
Thursday		60°C																							
Friday		60°C																							
Saturday		60°C																							
Sunday		60°C																							
Copy Monday from Tue. To Sun																									
Activate copy		NO																							
<p>Clock program. Let's take the following sample:</p> <ul style="list-style-type: none"> • S1 setpoint 60°C from 6h00 to 22h00 Monday to Friday • S1 setpoint 55°C from 22h00 to 6h00 Monday to Friday • S1 setpoint 55°C the week-end, all day (Saturday+Sunday) <p>Access to line #2 and press ✓ key.</p> <p>ALWAYS START ON MONDAY TO COPY TIME SCHEDULE ON OTHER WEEK DAYS</p>	<table border="0"> <tr><td>S1 setpoint schedule</td><td>2/11</td><td>↔</td></tr> <tr><td>S1 Sp without schedule</td><td>60°C</td><td></td></tr> <tr><td>Monday</td><td>60°C</td><td></td></tr> <tr><td>...</td><td></td><td></td></tr> </table>	S1 setpoint schedule	2/11	↔	S1 Sp without schedule	60°C		Monday	60°C		...														
S1 setpoint schedule	2/11	↔																							
S1 Sp without schedule	60°C																								
Monday	60°C																								
...																									
<p>Display looks like this: * : * means all the time=the whole day. If the same temperature setpoint is required during all day, let « * : * » and just indicate the setpoint temperature.</p> <p>① : 0°C value means last current setpoint will be used. If all days get 0°C, the simple temperature setpoint will be used (60°C by default).</p>	<table border="0"> <tr><td>d01 : Monday</td><td>1/12</td><td>↔</td></tr> <tr><td>Time 1</td><td>* : *</td><td></td></tr> <tr><td>Value 1</td><td>0°C</td><td></td></tr> <tr><td>...</td><td></td><td></td></tr> <tr><td>Time 6</td><td>* : *</td><td></td></tr> <tr><td>Value 6</td><td>0°C</td><td></td></tr> </table>	d01 : Monday	1/12	↔	Time 1	* : *		Value 1	0°C		...			Time 6	* : *		Value 6	0°C							
d01 : Monday	1/12	↔																							
Time 1	* : *																								
Value 1	0°C																								
...																									
Time 6	* : *																								
Value 6	0°C																								
<p>Press on ✓ key and use ▲ / ▼ keys to display 0 (0 hour or midnight) then press ✓ key to validate. Next, set minutes that can also be changed using ▲ / ▼ keys.</p> <p>Here we want 0 minute, so press on ▲ key to remove the star and display 0 then press ✓ key.</p> <p>Then press ▼ key to go to next line. Here, we input the temperature setpoint (55°C).</p> <p>Press ✓ key and using ▲ / ▼ keys, display 60 (60°C) then press ✓ key to validate. Display indicates:</p>	<table border="0"> <tr><td>Time 1</td><td>0 : *</td><td></td></tr> <tr><td>Time 1</td><td>0 : 00</td><td></td></tr> <tr><td>Time 1</td><td>0 : 00</td><td></td></tr> <tr><td>Value 1</td><td>0°C</td><td></td></tr> <tr><td>Value 1</td><td>55°C</td><td></td></tr> </table>	Time 1	0 : *		Time 1	0 : 00		Time 1	0 : 00		Value 1	0°C		Value 1	55°C										
Time 1	0 : *																								
Time 1	0 : 00																								
Time 1	0 : 00																								
Value 1	0°C																								
Value 1	55°C																								
<p>Press ▼ key to access next line. Here, we indicate the 2nd time progr.: Process the same way as before to change time. Here we indicate 6h00.</p> <p>Then press on ▼ key to access to next line. Here, we input 2nd setpoint value (60°C).</p> <p>Process the same way as before to change S1 temperature setpoint. Display indicates :</p>	<table border="0"> <tr><td>Time 2</td><td>* : *</td><td></td></tr> <tr><td>Time 2</td><td>6 : 00</td><td></td></tr> <tr><td>Value 2</td><td>60°C</td><td></td></tr> </table>	Time 2	* : *		Time 2	6 : 00		Value 2	60°C																
Time 2	* : *																								
Time 2	6 : 00																								
Value 2	60°C																								
<p>Press ▼ key to access next line. Here, we indicate the 3rd time progr.: Process the same way as before to change time. Here we indicate 22h00.</p> <p>Then press on ▼ key to access to next line. Here, we input 3rd setpoint value (55°C).</p> <p>Process the same way as before to change S1 temperature setpoint. Display indicates :</p>	<table border="0"> <tr><td>Time 3</td><td>* : *</td><td></td></tr> <tr><td>Time 3</td><td>22 : 00</td><td></td></tr> <tr><td>Value 3</td><td>55°C</td><td></td></tr> </table>	Time 3	* : *		Time 3	22 : 00		Value 3	55°C																
Time 3	* : *																								
Time 3	22 : 00																								
Value 3	55°C																								
<p>Then press « Esc » key to get back one step and press several times ▼ key to go to line No.10: Press ✓ key. In our sample, we want to duplicate values except Saturday and Sunday. So we have to select « Tue. To Fri. ». To do this, press ✓ key.</p> <p>Note: If you want to duplicate all the days of the week, select "Tue. To Sun. » instead.</p> <p>Display indicates: Go to next line Press ✓ key, select « YES » and press ✓ key to validate.</p>	<table border="0"> <tr><td>Copy Monday from Tue.to Sun.</td><td></td></tr> <tr><td>Tue. To Fri.</td><td></td></tr> <tr><td>✓Tue. To Sun.</td><td></td></tr> <tr><td>Copy Monday from Tue.to Fri.</td><td></td></tr> <tr><td>Activate copy</td><td>NO</td></tr> </table>	Copy Monday from Tue.to Sun.		Tue. To Fri.		✓Tue. To Sun.		Copy Monday from Tue.to Fri.		Activate copy	NO														
Copy Monday from Tue.to Sun.																									
Tue. To Fri.																									
✓Tue. To Sun.																									
Copy Monday from Tue.to Fri.																									
Activate copy	NO																								
<p>Now go to Saturday and press ✓ key.</p>	<table border="0"> <tr><td>Saturday</td><td>60°C</td></tr> </table>	Saturday	60°C																						
Saturday	60°C																								

Required setpoint is 55°C all the day, so let * : * or input 0h00 for Time 1. Go to line #2. Press ✓ key and using ▲ / ▼ keys, display 55°C, corresponding to required setpoint. Press « Esc » key and select now Sunday line. Repeat same procedure as for Saturday, required setpoint being 55°C all day.	<table border="1"> <tr><td>Time 1</td><td>0h00</td></tr> <tr><td>Value 1</td><td>0°C</td></tr> <tr><td>Value 1</td><td>55°C</td></tr> <tr><td>Sunday</td><td>60°C</td></tr> <tr><td>Sunday</td><td>55°C</td></tr> </table>	Time 1	0h00	Value 1	0°C	Value 1	55°C	Sunday	60°C	Sunday	55°C
Time 1	0h00										
Value 1	0°C										
Value 1	55°C										
Sunday	60°C										
Sunday	55°C										
Clock program is now completed and effective. Press « Escape » key twice to go back to S1 menu.											

High and Low S1 temperature alarms

High temperature alarm:

The controller includes a security closing the primary control valve AND stopping primary pump(s) in case of too high S1 measured temperature, compared to the S1 temperature setpoint. 2 parameters define this alarm :

- Delta T (DT) high alarm, 10°C by default above S1 setpoint. This delta T follows the current setpoint. If setpoint is 60°C, high alarm condition will appear if S1>70°C (60+10°C).
- High alarm temporisation, 1 minute by default. If delta T is exceeded, the temporisation starts. When it ends, if delta T still exceeded, the high temperature alarm will be effective: Primary pump(s) stopped and primary control valve signal at 0% (request for closing). Alarm button will red flash and event stored into memory. Furthermore, relay 1 and 2 will be activated by default as relay 1 is general default and relay 2 is high temperature alarm. Temporisation is the same for high and low temperature alarms.
- Acknowledgement type: acknowledgement can be manual or automatic, depending of local rules. Manual restart = need to acknowledge default on site (or via modbus if connected). Automatic restart = if temperature drops down, the unit will start.

Low temperature alarm :

- The same way, an alarm indicates if S1 temperature is too low. Alarm condition = S1 < S1 setpoint – DT after the temporisation. This alarm acknowledges automatically (automatic restart by default), doesn't stop pump and doesn't close the primary control valve.
- Alarm button will red flash and event stored into memory. Furthermore, relay 1 will be activated by default as relay 1 is general default. Temporisation is the same for high and low temperature alarms.

Alarms parameters' settings

8. Go to line #5 of S1 Menu and press ✓ key to access to high alarm Delta T setting. Press ▲ / ▼ keys to change the value. Setting range: 0 to 50°C. ⓘ : The 10°C default value suits almost all cases. Only few installations can motivate a value change.	<table border="1"> <tr><td>S1 MENU</td><td>5 / 10 ⇐→</td></tr> <tr><td>...</td><td></td></tr> <tr><td>DT° High alarm Sp.</td><td>10°C</td></tr> <tr><td>...</td><td></td></tr> </table>	S1 MENU	5 / 10 ⇐→	...		DT° High alarm Sp.	10°C	...	
S1 MENU	5 / 10 ⇐→								
...									
DT° High alarm Sp.	10°C								
...									
9. Then press ✓ to confirm or « Escape » to cancel value change 10. Press ▼ key to go to next line									
11. Low temperature alarm delta T is set the same way. Setting range: 0 to 50°C. ⓘ : The -10°C default value suits almost all cases. Only few installations can motivate a value change.	<table border="1"> <tr><td>S1 MENU</td><td>6 / 10 ⇐→</td></tr> <tr><td>...</td><td></td></tr> <tr><td>DT° Low alarm Sp.</td><td>-10°C</td></tr> <tr><td>...</td><td></td></tr> </table>	S1 MENU	6 / 10 ⇐→	...		DT° Low alarm Sp.	-10°C	...	
S1 MENU	6 / 10 ⇐→								
...									
DT° Low alarm Sp.	-10°C								
...									
12. Then press ✓ to confirm or « Escape » to cancel value change 13. Press ▼ key to go to next line									
14. High and Low alarm delay before it activates. Press ▲ / ▼ keys to change the value. Setting range: 0 to 60 mins.	<table border="1"> <tr><td>S1 MENU</td><td>7 / 10 ⇐→</td></tr> <tr><td>...</td><td></td></tr> </table>	S1 MENU	7 / 10 ⇐→	...					
S1 MENU	7 / 10 ⇐→								
...									

<p>ⓘ : This delay ensures the actuator has had sufficient time to close (high alarm) or open (low alarm) before alarm occurs. For slow actuators (>60 secs) it is recommended to increase the value higher than actuator's running time.</p> <p>15. Then press ✓ to confirm or « Escape » to cancel value change</p> <p>16. Press ▼ key to go to next line</p>	<p>Alarm delay 1.0min</p> <p>...</p>
<p>17. This parameter is set to acknowledge high temperature alarm AUTOMATICALLY or MANUALLY. Press ✓ key and use keys ▲ / ▼ to change the value NO<>YES. Validate by pressing ✓ key.</p> <p>ⓘ : Please refer to local rules to check if Automatic restart is allowed.</p> <p>18. Press ▼ key to go to next line</p>	<p>S1 MENU 8 / 10 ⇄</p> <p>...</p> <p>High Al.T° AutoReset NO</p> <p>...</p>

S1 Temperature controller

This is the main PID control loop of the unit, connected to S1 temperature sensor and acting on primary control valve and primary pump speed. Default values are suitable for most of installations and might not be changed. Only particular installations may need parameters' change.

<p>The right number indicates the actual PID output (%).</p> <p>1. Press ✓ key to access to PID settings</p>	<p>S1 MENU 9 / 10 ⇄</p> <p>S1 T° controller nnn% ▶</p>
<p>2. Press ✓ key to change the proportional band (P factor of PID). Use ▲ / ▼ keys to change its value and press ✓ key to validate or "Esc" key to cancel change. Setting values: 0 to 1000°C.</p> <p>3. Press ▼ key to go to next line.</p>	<p>S1 T° controller 1 / 6 ⇄</p> <p>Proportional band: 40.0°C</p> <p>...</p>
<p>4. Press ✓ key to change the integral factor (I factor of PID). Use ▲ / ▼ keys to change its value and press ✓ key to validate or "Esc" key to cancel change. Setting values: 0 to 2000 s.</p> <p>5. Press ▼ key to go to next line.</p>	<p>S1 T° controller 2 / 6 ⇄</p> <p>...</p> <p>Integral factor : 15s</p> <p>...</p>
<p>6. Press ✓ key to change the derivative factor (D factor of PID). Use ▲ / ▼ keys to change its value and press ✓ key to validate or "Esc" key to cancel change. Setting values: 0 to 2000s.</p> <p>7. Press ▼ key to go to next line.</p>	<p>S1 T° controller 3 / 6 ⇄</p> <p>...</p> <p>Differential factor : 2s</p> <p>...</p>
<p>Lines No.4 to 6 are read only informations.</p> <p>Line 4 : Measured S1 temperature</p> <p>Line 5: S1 current setpoint temperature</p> <p>Line 6: S1 PID controller output in %</p>	<p>S1 T° controller 4-6 / 6 ⇄</p> <p>Present value: 60°C</p> <p>Setpoint : 60°C</p> <p>Controller output: nnn%</p>
<p>8. Press twice « Esc » key to get back to main menu.</p>	

9.5 S2 Menu

In this menu, you can

- Define charging pump(s) speed PID and delta T(S1-S2). ONLY FOR SEMI-INSTANTANEOUS UNITS
- Adjust the S2 gradient function

Working principle of DT(S1-S2):

Based on a DT setpoint (5°C by default), the charging pump (P3/P4) will accelerate if DT increases and decelerate when DT approaching from setpoint. This allows to load a secondary tank at 100% pump speed and when the tank is almost charged the S2 temperature is increasing up to 55°C. At this moment, the pump speed will quickly slow down to its minimal signal, typically 25%. So charging pump is used at its capacity when needed and is small speed the rest of the time, to save electricity consumption.

Settings* :

<p>1. From the main menu and using ▲ / ▼ keys, go to line "S2:Second.inlet T°" as shown here: Then press ✓ key to access this sub-menu</p>	<p>PREMIUM 8 / t ⇄</p> <p>...</p> <p>S2 : Second. Inlet T° nn°C ▶</p>
--	---

<p>2. First line indicates measured S2 temperature. Press ∇ key to access line 2.</p> <p>3. Press \checkmark key to change setpoint value, using \blacktriangle / \blacktriangledown keys and pressing \checkmark to confirm or Esc to cancel. Setting range: -30°C to 30°C.</p> <p>4. Press ∇ key to go to next line.</p>	<pre>S2 MENU 2/t ⇄ Present value nn°C D.T°(S1-S2) setpoint 5°C 5 °C -30°C ↓ 30°C [--- --- --- --- --- --- --- --- --- --- ---</pre>
<p>5. Press \checkmark key to access to DT(S1-S2) controller parameters</p>	<pre>S2 MENU 3/t ⇄ Delta T° controller nnn% ▶</pre>
<p>6. Press \checkmark key to adjust proportional band value, using \blacktriangle / \blacktriangledown keys and pressing \checkmark to confirm or Esc to cancel. Setting range: 0°C to 1000°C. ① : We recommend you keep this value except if particular case</p> <p>7. Press ∇ key to go to next line.</p>	<pre>Delta T° controller 1/6 ⇄ Proportional band : 5°C 5 °C 0°C ↓ 1000°C [--- --- --- --- --- --- --- --- --- --- ---</pre>
<p>8. Press \checkmark key to adjust integral time value, using \blacktriangle / \blacktriangledown keys and pressing \checkmark to confirm or Esc to cancel. Setting range: 0s to 2000s. ① : We recommend you keep this value except if particular case</p> <p>9. Press ∇ key to go to next line.</p>	<pre>Delta T° controller 2/6 ⇄ Integral Factor : 35 s 60 s 0s ↓ 2000s [--- --- --- --- --- --- --- --- --- --- ---</pre>
<p>10. Press \checkmark key to adjust derivative time value, using \blacktriangle / \blacktriangledown keys and pressing \checkmark to confirm or Esc to cancel. Setting range: 0s to 2000s. ① : We recommend you keep this value except if particular case</p> <p>11. Press ∇ key to go to next line.</p>	<pre>Delta T° controller 3/6 ⇄ Differential Factor : 2 s 2 s 0s ↓ 2000s [--- --- --- --- --- --- --- --- --- --- ---</pre>
<p>12. Next lines are readings only</p> <p style="text-align: right;">Current measured DT(S1-S2) value :</p> <p style="text-align: right;">Current DT(S1-S2) setpoint value :</p> <p>Current control loop output on DT(S1-S2) to Y3 signal, speed P3P4</p>	<pre>Delta T° controller 4-6/6 ⇄ Present value : nn°C Setpoint : 5°C Controller output : nnn%</pre>
<p>13. Press « Esc » key to get back one step into S2 Menu.</p>	

* Steps 2 to 13 are not applicable if no pump P3/P4 (hidden lines).

Working principle of Gradient function:

This function is based on S2 temperature sensor and especially its temperature variation in time. If S2 temperature increases more than defined setpoint, it will generate a signal removed to the main PID signal. At the opposite, if S2 decreases more than defined setpoint, it generates a signal that will be added to the main PID. Signal is proportional to the difference between measured changes and setpoint.

This function allows to anticipate temperature variations, by removing heat exchanger plus S1 temperature sensor constant times.


Settings :

<p>14. Press ∇ key twice, go to line “S2 gradient factor” as shown here: ① : Line 4 indicates the current measured gradient on S2</p> <p>15. Press \checkmark key to adjust value, using \blacktriangle / \blacktriangledown keys and pressing \checkmark to confirm or Esc to cancel. Setting range: 0 to 7200. ① : this value allows to amplify the function action</p> <p>16. Press ∇ key to go to next line.</p>	<pre>S2 MENU 5/ t ⇄ S2 Gradient n°C/s S2 Gradient factor 0.75 0.75 0↓ 7200 [--- --- --- --- --- --- --- --- --- --- ---</pre>
<p>17. Press \checkmark key to change gradient setpoint value, using \blacktriangle / \blacktriangledown keys and pressing \checkmark to confirm or Esc to cancel. Setting range: -5°C to 5°C.</p> <p>18. Press ∇ key to go to next line.</p>	<pre>S2 MENU 6/t ⇄ S2 Gradient setpoint n°C/s 5 °C -5°C ↓5°C [--- --- --- --- --- --- --- --- --- --- ---</pre>
<p>19. Press \checkmark key to change gradient setpoint value, using \blacktriangle / \blacktriangledown keys and pressing \checkmark to confirm or Esc to cancel. Setting range: 0% to 100%. ① : this value allows to reduce the signal value</p> <p>20. Press ∇ key to go to next line.</p>	<pre>S2 MENU 7/t ⇄ Influence nnn% 100 % 0% 100%↓ [--- --- --- --- --- --- --- --- --- --- ---</pre>
<p>21. Current gradient signal value added to main PID.</p> <p>22. Press « Esc » key to get back to main menu.</p>	<pre>S2 MENU 8/t ⇄ S2 Gradient signal nnn%</pre>

9.6 Delta T (S3-S2) function

Principle:

This patented function limits the primary return temperature S3 at its maximum, acting on primary pump signal (speed). It acts like a virtual setting valve, limiting the primary flow rate by minimizing (or not) the signal sent to the pump, taking care of the differences S3-S2. So if S3 temperature is too high, compared with delta T setpoint and S2 measured temperature, the primary pump slows down to let more time to primary water to exchange and the to cool down. This allows to get the coldest possible primary return temperatures, which is helpful especially when using condensing boilers or renewable primary heating sources.


	<p>Delta T value should remain around 15°C, the default value, as if too high (>25°C) no effect and if too low (<10°C) unit will be clamped as temperature physically unreachable and primary pump at its minimal speed even during tapping periods.</p> <p>Typically, for GPHE recommended value is 15°C to 20°C. For BHE/FHE, recommended value is 10°C to 20°C, these ones being more efficient.</p>
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
Settings :

1. From the main menu and using \wedge / \vee keys, go to line "Delta.T°(S3-S2)" as shown here: Then press \checkmark key to access this sub-menu	<pre> PREMIUM / t ⇄ Delta T°(S3-S2) nn°C ▶ ... </pre>
2. Function is enabled by default but can be disabled for other application: heating loop, 2 port primary ctrl valve.... To disable the function, press \checkmark key twice. At this moment you can see the DeltaT controller output will pass to 0%	<pre> Delta.T° (S3-S2) 1/3 ⇄ Enable ON OFF ✓ ON </pre>
3. For function settings, press \vee key to access next line	
4. Press \checkmark key to change setpoint value, using \wedge / \vee keys and pressing \checkmark to confirm or Esc to cancel. Setting range: -50°C to 50°C.	<pre> Delta.T°(S3-S2) 2/3 ⇄ Setpoint 15°C 15 °C -50°C ↓ 50°C [--- --- --- --- --- --- --- --- --- ---] </pre>
5. Press \vee key to go to next line.	
6. Press \checkmark key to access to DT(S3-S2) controller parameters	<pre> Delta.T°(S3-S2) 3/3 ⇄ Delta T° controller nnn% ▶ </pre>
7. Press \checkmark key to adjust proportional band value, using \wedge / \vee keys and pressing \checkmark to confirm or Esc to cancel. Setting range: 0°C to 1000°C. ① : We recommend you keep this value except if particular case	<pre> DT(S3-S2) controller 1/6 ⇄ Proportional band : 80°C 80 °C 0°C ↓ 1000°C [--- --- --- --- --- --- --- --- --- ---] </pre>
8. Press \vee key to go to next line.	
9. Press \checkmark key to adjust integral time value, using \wedge / \vee keys and pressing \checkmark to confirm or Esc to cancel. Setting range: 0s to 2000s. ① : We recommend you keep this value except if particular case	<pre> DT(S3-S2) controller 2/6 ⇄ Integral Factor : 60 s 60 s 0s ↓ 2000s [--- --- --- --- --- --- --- --- --- ---] </pre>
10. Press \vee key to go to next line.	
11. Press \checkmark key to adjust derivative time value, using \wedge / \vee keys and pressing \checkmark to confirm or Esc to cancel. Setting range: 0s to 2000s. ① : We recommend you keep this value except if particular case	<pre> DT(S3-S2) controller 3/6 ⇄ Differential Factor : 2 s 2 s 0s ↓ 2000s [--- --- --- --- --- --- --- --- --- ---] </pre>
12. Press \vee key to go to next line.	
13. Next lines are readings only Current measured DT(S3-S2) value : Current DT(S3-S2) setpoint value : Current ctrl loop output on DT(S3-S2) from 0% (no action) to 100% (full action)	<pre> DT(S3-S2) controller 4/6 ⇄ Present value : nn°C Setpoint : 15°C Controller output : nnn% </pre>
14. Press twice « Esc » key to get back to main menu.	

9.7 Thermal treatment function

Principle:




This function increases temperature setpoint (70°C by default) as per a clock program for a certain time to define, depending of secondary flow rate and storage vessel volume (in general, this duration is between 1 and 2 hours). When treatment starts, the  button green flashes (except if pending alarm).

Function includes an alarm which indicates that temperature level has not been reach, exception of tolerance (2°C by default, settable). In this case, the  button red flashes.





















Example : If S1 temperature doesn't reach 68°C for a 70°C treatment setpoint, alarm will start after function duration.

When function stops, normal S1 temperature setpoint replaces thermal treatment setpoint and high temperature alarm is inhibited for a settable time (if thermal treatment setpoint >70°C and high buffer tank volume, it will take time to cool down and it could be S1 higher than high temperature level).



If the green led of  key is flashing, it is not possible to change the thermal treatment setpoint. To solve this, access to technician level (see further on), go to "Communication" sub-menu and select « Modbus RTU », then press  key. Go to the last line « Writing priority » and select « POL468 » then press  key. The green LED will stop flashing. You can now change the setpoint. When done, do not forget to go back to Communication\Writing priority and to select "BMS".

Settings :

<p>1. From the main menu and using  /  keys, go to line "Thermal treatment" as shown here: Then press  key to access this sub-menu</p>	<pre>PREMIUM /t ↔ ... Thermal treatment OFF ▶</pre>
<p>2. Press  key to enable (ON) / disable (OFF) the thermal treatment, using  /  keys and pressing  to confirm.</p>	<pre>Thermal treatment 1 / 6 ↔ Enable OFF</pre>
<p>3. Press  key to go to next line.</p>	<pre>... Thermal treatment 2 / 6 ↔ Setpoint 70°C</pre>
<p>4. Press  key to change setpoint value, using  /  keys and pressing  to confirm. Setting range: 60°C to 80°C.  : Primary inlet temperature should be at least 7 to 10°C higher than this setpoint to reach thermal treatment temperature setpoint. If not the case, thermal treatment failure alarm may appear at the end.</p>	<pre>60°C 70 °C 80°C ↓ [--- --- --- --- --- --- --- --- --- ---]</pre>
<p>5. Press  key to go to next line.</p>	<pre>Thermal treatment 3 / 6 ↔ Schedule ▶</pre>
<p>7. Use  /  keys to change value and  key to confirm date(s) and time(s).  DATES / TIMES FORMATS EXPLANATIONS « * » symbol means « all ». For a daily treatment at 2h00, you need to input: Date= *. *. *.**** (all the days of the week, all the monthes, all the year.) and Time= 02.00 (2 h 00) For a weekly treatment, every Monday at 2h00(recommanded frequency), you need to input: For a monthly treatment, each 1st of the month at 2h00, without taking care of the day it is, you have to input: Date= *.01. *.**** and Time=02.00 (not the best frequency)</p>	<pre>Date *. *. *.**** (dw.dd.mm.yyyy) Time *. * (hh.mm) Date *. *. *.**** Time *. * Date Mo.* *.**** Time 02.00</pre>
<p>8. Press « Escape » key to get back to thermal treatment sub-menu 9. Press  key to go to next line.</p>	<pre>Thermal treatment 4 / 6 ↔ ... Duration 0min</pre>
<p>10. Press  key to change treatment's duration. Duration is voluntary set to zero, as you have to estimate tank/installation loading time, depending of nominal secondary flow rate, recycling loop flow rate and storage tank volume.</p>	<pre>Thermal treatment 4 / 6 ↔ ... Duration 0min</pre>

Cetetherm AquaEfficiency Neo, Pilot, Pilot+, Pre-heater
Installation, service and operating instructions

Duration setting : 0 to 240 min (4 hours) Example : Sec. Flow rate Q=2m ³ /h, Tank volume 500L=V=0,5m ³ and recycling flow rate=q=1000 l/h. Tank loading time, so minimal treatment duration = V/(Q-q) Let 0,5/(2-1)=0,5 hour. If you wish to maintain at this temperature for 1 hour, you need 1h30 duration (0.5h+1h) or 90 minutes. 11. Press \checkmark key to access to next line.	0 min ↓0min [--- --- --- --- --- --- --- --- --- ---] 240min [--- --- --- --- --- --- --- --- --- ---]
12. Press \checkmark key to change tolerance value. Use \uparrow / \downarrow keys to change value and \checkmark key to validate. Setting values : 0 to 10°C. <i>① : If setpoint temperature – tolerance is not reached, an error message will appear at the end of treatment duration.</i> 13. Press \checkmark key to access to next line.	Thermal treatment 5/6 \rightarrow ... Tolerance 2°C 0°C \downarrow 2 °C 10°C [--- --- --- --- --- --- --- --- --- ---]
14. Press \checkmark to change S1 high temperature alarm inhibition time. Press \uparrow / \downarrow keys to change value and \checkmark key to validate. Setting values : 0 to 240 minutes.	Thermal treatment 6/6 \rightarrow ... Inhibition time 30min
15. Press twice « Esc » key to get back to main menu.	

9.8 Safety function

Principle:

This function activates the 4 pumps' relays at the same time without considering pumps faults' inputs.

Valve and pump(s)' signals are settable, at the opposite of end-user access level.

It is possible to adjust Y2 and Y3, 100% by default and actuator signal Y1=50% by default.

Settings :

1. From the main menu and using \uparrow / \downarrow keys, go to line "Safety function" as shown here: Then press \checkmark key to access this sub-menu	PREMIUM / t \rightarrow ... Safety function OFF \triangleright
2. To activate the function, press \checkmark key	Safety function 1/3 \rightarrow Enable OFF
3. Select « ON » using \downarrow key then press \checkmark key	\checkmark OFF ON
4. Display indicates « Enable ON » and the alarm/function button red flashes, showing a function is on-going: <i>① : It is possible at any time to check the on-going function(s) (or alarm(s)) by pressing \triangleleft button, please refer to "Alarm/function button part."</i> 5. Press \downarrow key to access to next line.	Safety function 1/3 \rightarrow Enable ON Pump signal setpoint 100% Valve signal setpoint 50%
6. Press \checkmark key to change P1 to P4 signal value (Y2+Y3 signals). Use \uparrow / \downarrow keys to change its value and press \checkmark key to validate or "Esc" key to cancel change. Setting values: 0 to 100%. <i>① : If not 0-10V primary pump(s), no effect.</i> 7. Press \downarrow key to access to next line.	Safety function 2/3 \rightarrow Pump signal setpoint 100% 100 % 0°C 100% \downarrow [--- --- --- --- --- --- --- --- --- ---]
8. Press \checkmark key to change primary valve signal value (Y1 signal). Use \uparrow / \downarrow keys to change its value and press \checkmark key to validate or "Esc" key to cancel change. Setting values: 0 to 100%.	Safety function 3/3 \rightarrow Valve signal setpoint 50% 50 % 0°C \downarrow 100% [--- --- --- --- --- --- --- --- --- ---]
9. To stop the function, go to line#1 and press twice \checkmark key (state OFF on display). The alarm button then stops flashing, except if other alarm(s) or/and function(s) are pending. 10. Press « Esc » key to get back to main menu. Press again "Esc" to point 1 st line of Main menu.	



When the safety function is ON, the Alarm(s)/Function(s) button green flashes.

9.9 ECO / Booster functions.

Eco function principle:

When control valve is sufficiently closed (valve signal ≤ "Y1 setpoint") during a sufficient long time ("switch-on delay"), primary pump(s) switch(es) off and primary mixing valve closes down.

The system is switched ON when S1 temperature has gone down more than the S1 setpoint value – "Hysteresis" parameter. It is normal that the primary control valve starts to open during the function. This to anticipate valve opening when the pump will start again. If secondary pumps are connected (SS/DS/DD series) they are still in operation during the Eco function.

NOTE: ECO function needs at least one primary pump. If not the case (2 port control valve systems for example, the function disappears from the menu.

Settings :

1. From the main menu and using \blacktriangle / \blacktriangledown keys, go to line "ECO/Booster" as shown here: Then press \checkmark key to access this sub-menu	PREMIUM / t \leftrightarrow ... ECO/Booster OFF \blacktriangleright
2. To activate ECO function, press \blacktriangledown key and then press \checkmark key	ECO/Booster 1/11 \leftrightarrow ECO function OFF Enable OFF
3. Select « ON » using \blacktriangledown key then press \checkmark key	... \checkmark OFF ON
4. Display indicates « Enable ON » Press \blacktriangledown key to access to next line.	ECO/Booster 2/11 \leftrightarrow ... Enable ON
5. Press \checkmark key to change the switch-on delay. Use \blacktriangle / \blacktriangledown keys to change its value and press \checkmark key to validate or "Esc" key to cancel change. Setting values : 0 to 20 minutes. $\text{\textcircled{i}}$: Delay to be adjusted as per installation characteristics.	ECO/Booster 3/11 \leftrightarrow Switch-on delay 5min 5 min
6. Press \blacktriangledown key to access to next line.	0min \downarrow 20min [--- --- --- --- --- --- --- --- --- --- ---
7. Press \checkmark key to change the hysteresis value on S1. Use \blacktriangle / \blacktriangledown keys to change its value and press \checkmark key to validate or "Esc" key to cancel change. Setting values : 0 to 20 °C. $\text{\textcircled{i}}$: To avoid repetitive and frequent pump start/stop, select a value above 5°C.	ECO/Booster 4/11 \leftrightarrow Hysteresis 5°C 5 °C
8. Press \blacktriangledown key to access to next line.	0°C \downarrow 20°C [--- --- --- --- --- --- --- --- --- --- ---
9. Press \checkmark key to change the Y1 setpoint value (max allowed signal on the valve to allow the function to start). Use \blacktriangle / \blacktriangledown keys to change its value and press \checkmark key to validate or "Esc" key to cancel change. Setting values : 0 to 80%. $\text{\textcircled{i}}$: Do not input too high value. The pump would be stopped under medium-high load!	ECO/Booster 5/11 \leftrightarrow ... Y1 setpoint 10%
10. Press \blacktriangledown key to access to next line.	0% \downarrow 80% [--- --- --- --- --- --- --- --- --- --- ---
11. To stop the function at any time, go to line #1, press twice \checkmark key (state OFF on display). The alarm button then stops flashing if function was running, except if other alarm(s) or/and function(s) are pending.	
12. Press « Esc » key to get back to main menu. Press again "Esc" to point 1 st line of Main menu.	



When ECO function is running, display indicates « ECO function RUNNING », the main menu indicates "ECO/Booster RUNNING" and the Alarm(s)/Function(s) key green flashes.

Booster function principle:

If DHW temperature is dropping down faster than "S1 Gradient setpoint" parameter, the second primary pump (if existing) is energized, to increase the primary flow rate and raise faster the secondary outlet temperature S1.

Function stops when DHW temperature is back to the setpoint value and after "Switch-off delay" parameter temporisation. Then, the second primary pump is stopped.

NOTE: Booster function requires 2 primary pumps installed on the unit, P1+P2 (séries ID/DS/DD). If not the case, the function will be hidden from menu.

Settings:

1. From the ECO/Booster sub-menu, go to line 7	ECO/Booster 7/11 ↔
2. To activate Booster function, press ✓ key	Enable OFF
3. Select « ON » using ▼ key then press ✓ key	✓OFF ON
4. Display indicates « Enable ON » Press ▼ key to access to next line.	ECO/Booster 7/11 ↔ Enable ON
5. Press ✓ key to change temporization before stopping the 2 nd pump, once S1 setpoint has been reached on S1. Use ▲ / ▼ keys to change its value and press ✓ key to validate or "Esc" key to cancel change. Setting values : 0 to 200 seconds.	ECO/Booster 8/11 ↔ Switch-on delay 2s 2 s
6. Press ▼ key to access to next line.	0s↓ 200s [--- --- --- --- --- --- --- --- --- ---]
This is a read-only value, indicating the actual temperature gradient or variation rate on S1 (in degrees celsius / second).	ECO/Booster 9/11 ↔
7. Press ▼ key to access to next line.	... S1 Gradient 0°C/s
This is a read-only value, indicating the impact of gradient value on main PID. 0.75=75%.	ECO/Booster 10/11 ↔
8. Press ▼ key to access to next line.	S1 Gradient factor 0.75 Cons.Gradient T°S1 2°C/s
9. Press ✓ key to change the gradient setpoint value. Use ▲ / ▼ keys to change value and press ✓ key to validate or "Esc" key to cancel change. Setting values: 1 to 20 °C/second. ⓘ : The higher value, the lower effect and the lower value, the higher effect. Value should be set as per installation characteristics	ECO/Booster 11/11 ↔ S1 Gradient setpoint 2°C/s 2 °C
	1°C 20°C ↓ [--- --- --- --- --- --- --- --- --- ---]
10. To stop the function, go to line #7, press twice ✓ key (state OFF on display). The alarm button then stops flashing if function was running, except if other alarm(s) or/and function(s) are pending.	
11. Press « Esc » key to get back to main menu. Press again "Esc" to point 1 st line of Main menu.	



When Booster function starts, the main menu indicates "ECO/Booster RUNNING" and the Alarm(s)/Function(s) key green flashes.

9.10 Fouling function

Function Principle:

It is based on S3 (primary outlet temperature sensor) scrutation. If S3 gets higher than defined setpoint (65°C, settable) that means heat exchanger is fouled. A temporization (10 hours, settable) eliminates potential transitory temperatures, like thermal treatment which could interfer. If fouling conditions are reached, this will generate an alarm and will make the alarm button flashing.

Settings:

1. From the main menu and using ▲ / ▼ keys, go to line "Fouling function" as shown here: Then press ✓ key to access this sub-menu	PREMIUM l/t ↔ ... Fouling function NORMAL ▶
2. To activate the function, press ✓ key and ▼ key, then press ✓ key	Fouling function 1/3 ↔ Enable OFF
3. Select « ON » using ▼ key then press ✓ key	✓OFF ON
4. Display indicates « Enable ON » Press ▼ key to access to next line.	Fouling function 1/3 ↔ Enable ON

5. Press ✓ key to change the fouling temperature setpoint on S3. Use ▲ / ▼ keys to change its value and press ✓ key to validate or “Esc” key to cancel change. Setting values : 30 to 80 °C.	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="border-bottom: 1px solid black;">Fouling function</td><td style="text-align: right;">2/3↔</td></tr> <tr><td style="border-bottom: 1px solid black;">S3 fouling setpoint</td><td style="text-align: right;">65°C</td></tr> <tr><td style="text-align: center;">65 °C</td><td style="text-align: center;">↓</td></tr> <tr><td style="text-align: center;">30°C</td><td style="text-align: center;">80°C</td></tr> <tr><td colspan="2" style="text-align: center;">[--- --- --- --- --- --- --- --- --- ---]</td></tr> </table>	Fouling function	2/3↔	S3 fouling setpoint	65°C	65 °C	↓	30°C	80°C	[--- --- --- --- --- --- --- --- --- ---]	
Fouling function	2/3↔										
S3 fouling setpoint	65°C										
65 °C	↓										
30°C	80°C										
[--- --- --- --- --- --- --- --- --- ---]											
6. Press ▼ key to access to next line.											
7. Press ✓ key to change the temporization before activating the alarm. Use ▲ / ▼ keys to change its value and press ✓ key to validate or “Esc” key to cancel change. Setting values: 0 to 240 hours.	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="border-bottom: 1px solid black;">Fouling function</td><td style="text-align: right;">3/3↔</td></tr> <tr><td style="border-bottom: 1px solid black;">Switch-on delay</td><td style="text-align: right;">10h</td></tr> <tr><td style="text-align: center;">10 h</td><td></td></tr> <tr><td style="text-align: center;">0h↓</td><td style="text-align: center;">240h</td></tr> <tr><td colspan="2" style="text-align: center;">[--- --- --- --- --- --- --- --- --- ---]</td></tr> </table>	Fouling function	3/3↔	Switch-on delay	10h	10 h		0h↓	240h	[--- --- --- --- --- --- --- --- --- ---]	
Fouling function	3/3↔										
Switch-on delay	10h										
10 h											
0h↓	240h										
[--- --- --- --- --- --- --- --- --- ---]											
8. To stop the function, scroll-up to line 1 and press twice on ✓ key (state OFF on display).											
9. Press « Esc » key to get back to main menu. Press again “Esc” to point 1 st line of Main menu.											



If function criteria are reached, the fouling state is active and display indicates “DEFAULT » on corresponding line and Alarm/Function button red flashes.

9.11 Pump(s) menu



This menu appears if at least one pump is declared. Otherwise it is not visible into the main menu. Furthermore, depending of pumps’ number, some lines will appear or not.

Settings :

1. From the main menu and using ▲ / ▼ keys, go to line “Pump(s) Menu” as shown here: *Note that declared pump(s) is(are) displayed on the right side. Then press ✓ key to access this sub-menu	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="border-bottom: 1px solid black;">PREMIUM</td><td style="text-align: right;">l/t ↔</td></tr> <tr><td>...</td><td></td></tr> <tr><td style="border-bottom: 1px solid black;">Pump(s) menu</td><td style="text-align: right;">P1/P2/P3/P4* ▶</td></tr> <tr><td>...</td><td></td></tr> </table>	PREMIUM	l/t ↔	...		Pump(s) menu	P1/P2/P3/P4* ▶	...																			
PREMIUM	l/t ↔																										
...																											
Pump(s) menu	P1/P2/P3/P4* ▶																										
...																											
2. Full menu pump represented here: * Depending of pumps’ number, menu length (nn) varies from 3 up to 12 lines. ** If only 1 configured pump (only P1 or only P2 /only P3 or only P4) this line doesn’t appear *** No effect if P1/P2/P3/P4 not 0-10V controlled	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="border-bottom: 1px solid black;">Pump(s) Menu</td><td style="text-align: right;">1 / nn* ↔</td></tr> <tr><td style="border-bottom: 1px solid black;">- P1P2-</td><td></td></tr> <tr><td>Minimum speed***</td><td style="text-align: right;">25%</td></tr> <tr><td>Maximum speed***</td><td style="text-align: right;">100%</td></tr> <tr><td>Priority pump choice **</td><td style="text-align: right;">AUTO</td></tr> <tr><td>Cycling time**</td><td style="text-align: right;">12h</td></tr> <tr><td>Overlap time**</td><td style="text-align: right;">6s</td></tr> <tr><td style="border-bottom: 1px solid black;">-P3P4-</td><td></td></tr> <tr><td>Minimum speed***</td><td style="text-align: right;">25%</td></tr> <tr><td>Maximum speed***</td><td style="text-align: right;">100%</td></tr> <tr><td>Priority pump choice **</td><td style="text-align: right;">AUTO</td></tr> <tr><td>Cycling time**</td><td style="text-align: right;">12h</td></tr> <tr><td>Overlap time**</td><td style="text-align: right;">6s</td></tr> </table>	Pump(s) Menu	1 / nn* ↔	- P1P2-		Minimum speed***	25%	Maximum speed***	100%	Priority pump choice **	AUTO	Cycling time**	12h	Overlap time**	6s	-P3P4-		Minimum speed***	25%	Maximum speed***	100%	Priority pump choice **	AUTO	Cycling time**	12h	Overlap time**	6s
Pump(s) Menu	1 / nn* ↔																										
- P1P2-																											
Minimum speed***	25%																										
Maximum speed***	100%																										
Priority pump choice **	AUTO																										
Cycling time**	12h																										
Overlap time**	6s																										
-P3P4-																											
Minimum speed***	25%																										
Maximum speed***	100%																										
Priority pump choice **	AUTO																										
Cycling time**	12h																										
Overlap time**	6s																										
3. Press ▼ key to access to next line.																											
4. Press ✓ key to change the minimum speed. Use ▲ / ▼ keys to change its value and press ✓ key to validate or “Esc” key to cancel change. Setting values : 0 to 100%	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="border-bottom: 1px solid black;">Pumps(s) menu</td><td style="text-align: right;">2/nn ↔</td></tr> <tr><td style="border-bottom: 1px solid black;">- P1P2-</td><td></td></tr> <tr><td style="border-bottom: 1px solid black;">Minimum speed</td><td style="text-align: right;">25%</td></tr> <tr><td>...</td><td></td></tr> </table>	Pumps(s) menu	2/nn ↔	- P1P2-		Minimum speed	25%	...																			
Pumps(s) menu	2/nn ↔																										
- P1P2-																											
Minimum speed	25%																										
...																											
5. Press ▼ key to access to next line.																											
6. Press ✓ key to change the maximum speed. Use ▲ / ▼ keys to change its value and press ✓ key to validate or “Esc” key to cancel change. Settings values : 0 to 100%	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="border-bottom: 1px solid black;">Pumps(s) menu</td><td style="text-align: right;">3/nn ↔</td></tr> <tr><td>...</td><td></td></tr> <tr><td style="border-bottom: 1px solid black;">Maximum speed</td><td style="text-align: right;">100%</td></tr> <tr><td>...</td><td></td></tr> </table>	Pumps(s) menu	3/nn ↔	...		Maximum speed	100%	...																			
Pumps(s) menu	3/nn ↔																										
...																											
Maximum speed	100%																										
...																											
7. Press ▼ key to access to next line.																											
8. Press ✓ key to change P1/P2 pump priority (only if 2 primary pumps). Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting values: AUTO / P1 /P2. AUTO = allows to shift pumps (or pump’s motors) P1 = No permutation. Only P1 will be used (locked) P2 = No permutation. Only P2 will be used (locked)	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="border-bottom: 1px solid black;">Pumps(s) menu</td><td style="text-align: right;">4/nn ↔</td></tr> <tr><td>...</td><td></td></tr> <tr><td style="border-bottom: 1px solid black;">Priority Pump Choice</td><td style="text-align: right;">AUTO</td></tr> <tr><td>✓ AUTO</td><td></td></tr> <tr><td>P1</td><td></td></tr> <tr><td>P2</td><td></td></tr> </table>	Pumps(s) menu	4/nn ↔	...		Priority Pump Choice	AUTO	✓ AUTO		P1		P2															
Pumps(s) menu	4/nn ↔																										
...																											
Priority Pump Choice	AUTO																										
✓ AUTO																											
P1																											
P2																											
9. Press ▼ key to access to next line.																											
10. Press ✓ key to change P1/P2 operating hour(s) (only if 2 primary pumps).	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="border-bottom: 1px solid black;">Pumps(s) menu</td><td style="text-align: right;">5/nn ↔</td></tr> <tr><td>...</td><td></td></tr> </table>	Pumps(s) menu	5/nn ↔	...																							
Pumps(s) menu	5/nn ↔																										
...																											

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<p>Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting values: 0 to 24h (12h default value).</p> <p>11. Press ▼ key to access to next line.</p>	<p>Cycling time 12h ...</p>
<p>12. Press ✓ key to change P1/P2 overlapping time (only if 2 primary pumps). Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting values: 0 to 60s (6s default value).</p> <p>13. Press twice ▼ key to access to line+2.</p>	<p>Pumps(s) menu 6/nn ↔ ... Overlap time 6s ...</p>
<p>14. Press ✓ key to change the minimum speed. Use ▲ / ▼ keys to change its value and press ✓ key to validate or “Esc” key to cancel change. Setting values : 0 to 100%</p> <p>15. Press ▼ key to access to next line.</p>	<p>Pumps(s) menu 8/nn ↔ - P3P4- Minimum speed 25% ...</p>
<p>16. Press ✓ key to change the maximum speed. Use ▲ / ▼ keys to change its value and press ✓ key to validate or “Esc” key to cancel change. Settings values : 0 to 100%</p> <p>17. Press ▼ key to access to next line.</p>	<p>Pumps(s) menu 9/nn ↔ ... Maximum speed 100% ...</p>
<p>18. Press ✓ key to change P3/P4 pump priority (only if 2 secondary pumps). Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting values: AUTO / P3 /P4. AUTO = allows to shift pumps (or pump’s motors) P3 = No permutation. Only P3 will be used (locked) P4 = No permutation. Only P4 will be used (locked)</p> <p>19. Press ▼ key to access to next line.</p>	<p>Pumps(s) menu 10/12 ↔ -P3P4- Priority Pump Choice AUTO ✓ AUTO P3 P4</p>
<p>20. Press ✓ key to change P3/P4 operating hour(s) (only if 2 secondary pumps). Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting values: 0 to 24h (12h default value).</p> <p>21. Press ▼ key to access to next line.</p>	<p>Pumps(s) menu 11/12 ↔ ... Cycling time 12h ...</p>
<p>22. Press ✓ key to change P3/P4 overlapping time (only if 2 secondary pumps). Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting values: 0 to 60s (6s default value).</p> <p>23. Press « Esc » key to get back to main menu.</p>	<p>Pumps(s) menu 12/12 ↔ ... Overlap time 6s</p>

9.12 S4 Temperature limitation function menu



This menu appears ONLY if S4 has been activated into the configuration menu, as it requires optional S4 temperature sensor placed on the primary inlet. Please refer to the configuration menu in next pages.

Principle :

This function compares current S1 temperature setpoint with S4, primary inlet temperature. If $S4 < S1 \text{ setpoint} - \Delta T \text{ setpoint}$, then S1 setpoint is decreased to $S4 - \Delta T$ setpoint. This function allows to charge quicker installations with primary tank as heating source without disturbing too long the secondary supply. ΔT is called “setpoint” into this menu.

Settings :

<p>1. From the main menu and using ▲ / ▼ keys, go to line “S4 T°Limit.function” as shown here: Then press ✓ key to access this sub-menu</p>	<p>PREMIUM / t ↔ ... S4 T°Limit.function OFF ▶</p>
<p>2. To activate the function, press ✓ key and ▼ key, then press ✓ key</p>	<p>S4 T°Limit.function 1/2 ↔ Enable OFF</p>
<p>3. Select « ON » using ▼ key then press ✓ key</p>	<p>✓OFF ON</p>

4. Display indicates « Enable ON »	S4 T°Limit.function 1/2 ↔ Enable ON
5. Press ▼ key to access to next line.	...
6. Press ✓ key to change setpoint value. Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting values: 0 to 50°C (10°C default value).	S4 T°Limit.function 2/2 ↔ Setpoint 10°C
7. Press « Esc » key to get back to main menu. Press again “Esc” to point 1 st line of Main menu.	

9.13 Extended Functions



Extended functions require to add temperature sensor(s) PT1 and/or PT2 and/or S6 that must be connected on corresponding PCB terminals. Please refer to wiring diagram to connect these extra sensor(s).

Pre-heating Function

Principle:

In the flowchart RS means a renewable source, eg solar, heat pump, condensate or else recover unit.

The 3-port mixing valve is activated only if temperature in STP or RS is hot enough, to limit DHW over heating on S1.

Temperature on Pt1 placed at the top of STP primary storage buffer vessel is compared with S2 and allows or not, the primary pump, of the AquaEfficiency, to be started.

If $Pt1 < S2 + \Delta T$ then the primary pump is stopped. ΔT by default 5° can be adjusted.

Thanks to the AquaEfficiency control, the temperature at S3 is compared with the temperature at S2 to adjust the primary flow rate and obtain low temperature returns on primary side.

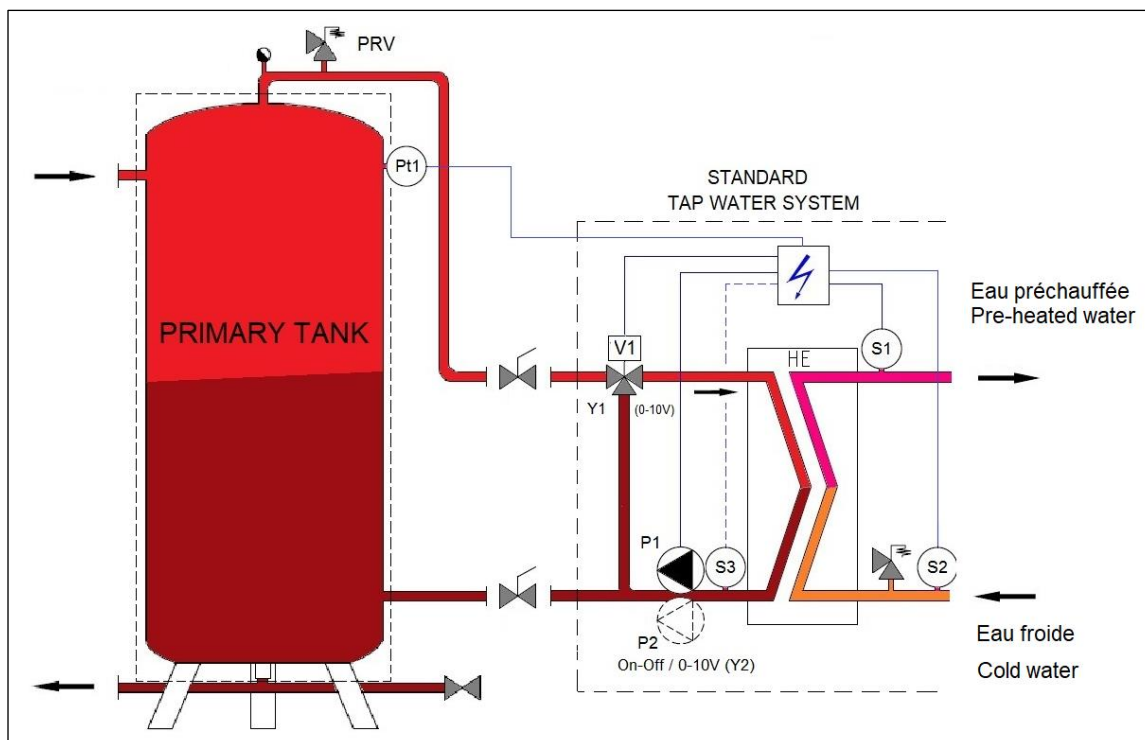
The “leaking flow” on secondary side, coming from the recycling loop, allows S2 sensor to be irrigated and to keep SolarFlow “awaken” without the need of any flow switch.

If a flow switch must be used because of leaking flow could not be installed, connect it on Remote control contact terminal.

After secondary outlet, a standard tap water system can be used to complete DHW heating OR a secondary storage tank equipped with electrical heater.


Schematic diagram :

ID.	Description	ID.	Description
CW	Cold Water inlet	Pt1	Primary vessel temperature sensor
DC	Drain valve	S1	DHW temperature sensor (master)
DHW	Domestic Hot water	S2	Secondary inlet temperature sensor
HE	Heat Exchanger	S3	Primary return temperature sensor
NR	Non-Return Valve	V	Shut-off valve
PP	Primary pump	V3V	3-port control valve with actuator
PR	DHWC pump	VR	Balancing valve
PRV	Safety valve	STP	Primary storage tank
RS	Renewable source		



Picture 27

Settings :

1. Press several times ∇ key to access to « Extended functions » line and press \checkmark key.	PREMIUM I/t \leftrightarrow Extended functions \blacktriangleright
2. Press \checkmark key.	Extended Functions 1/2 \leftrightarrow Function selection NONE
3. Press ∇ key to select « PREHEATING » and press \checkmark key	\checkmark NONE PREHEATING ...
4. Press ∇ key then \checkmark and ∇ keys to put state ON	Extended functions 1/2 \leftrightarrow Fction Selection PREHEATING
5. Press \checkmark key to RESTART the controller.	Restart required ! OFF
 It is MANDATORY to restart the controller. Otherwise PT1 and defined function won't be effective and not visible into the menus. Wait the controller restarts before going on.	Restart required ! OFF \checkmark ON
6. When restarting, new line is visible: PT1 temperature sensor into the main menu:	PREMIUM I/t \leftrightarrow ... PT1:Top prim.tank T° yy°C
7. Press several times on ∇ key to access to « Extended functions » line and press \checkmark key	PREMIUM I/t \leftrightarrow ... Extended functions \blacktriangleright
8. Press twice ∇ key to access to line 3 and press \checkmark key to eventually adjust the Delta T value.	Extended functions 3/3 \leftrightarrow Delta.T Min.setpoint 5°C
9. Use \uparrow / \downarrow keys to change value and press \checkmark key to validate or “Esc” key to cancel change. Setting range: 0 to 40°C (5°C default).	0°C \downarrow 5 °C 40°C [--- --- --- --- --- --- --- --- --- --- --- --- --- --- ---]
10. Press « Esc » key to get back to main menu. Press again “Esc” to point 1 st line of Main menu.	

Function is now activated.

Pilot function ,1 sensor

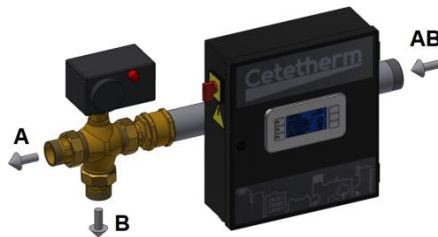
Principle:

Pilot is a simple and reliable system based on comparative measure of primary return, S3, and primary storage vessel temperature, Pt1. It is made of a 3-port diverting valve acting as full closed or open position (0 or 10 volts signal). Pilot acts as a “piston” effect on the primary storage vessel allowing fulfilling peak demands of Domestic Hot Water.

If the temperature in Pt1 is higher than the temperature in S3+ΔT (ΔT is settable, default value is 5°C), stored hot water in the primary vessel will be sent to the boiler/generator or the heating network. The primary vessel will be filled up with cold water from the primary return, before the Pilot, until measured temperature in Pt1 becomes lower or equal to the temperature in S3 + ΔT.

The colder the temperature is in S3, the more efficient is the Pilot.
Pay attention when making the settings of flow rates and temperature difference on the tap water systems primary side.

In the case, $PT1 \leq S3 + \Delta T$, the primary storage vessel is by-passed and heat recovery in the primary storage vessel goes on with help from solar panels or other renewable heating source, for example heat pump or geothermal. The 3-port valve V2 full opens, and flow goes from AB to A port.



Picture 28

The primary return water enters the modulating valve in port 'AB'.

If the water is sufficiently cold, return water flows through port 'B' to the bottom part of the primary storage vessel.

If the water is too hot, return water flows through the 'A' port, towards the boiler/heat generator.

Pilot can be a standalone product, as shown above, or is combined with AquaEfficiency by adding extra Pt1 sensor and extra control valve on the primary outlet ASTB TOR kit). This one doesn't need extra control box as the standard control system manages an extra valve control signal, Y4.

In the next pages, you will find several possible flowcharts corresponding to Pilot use.

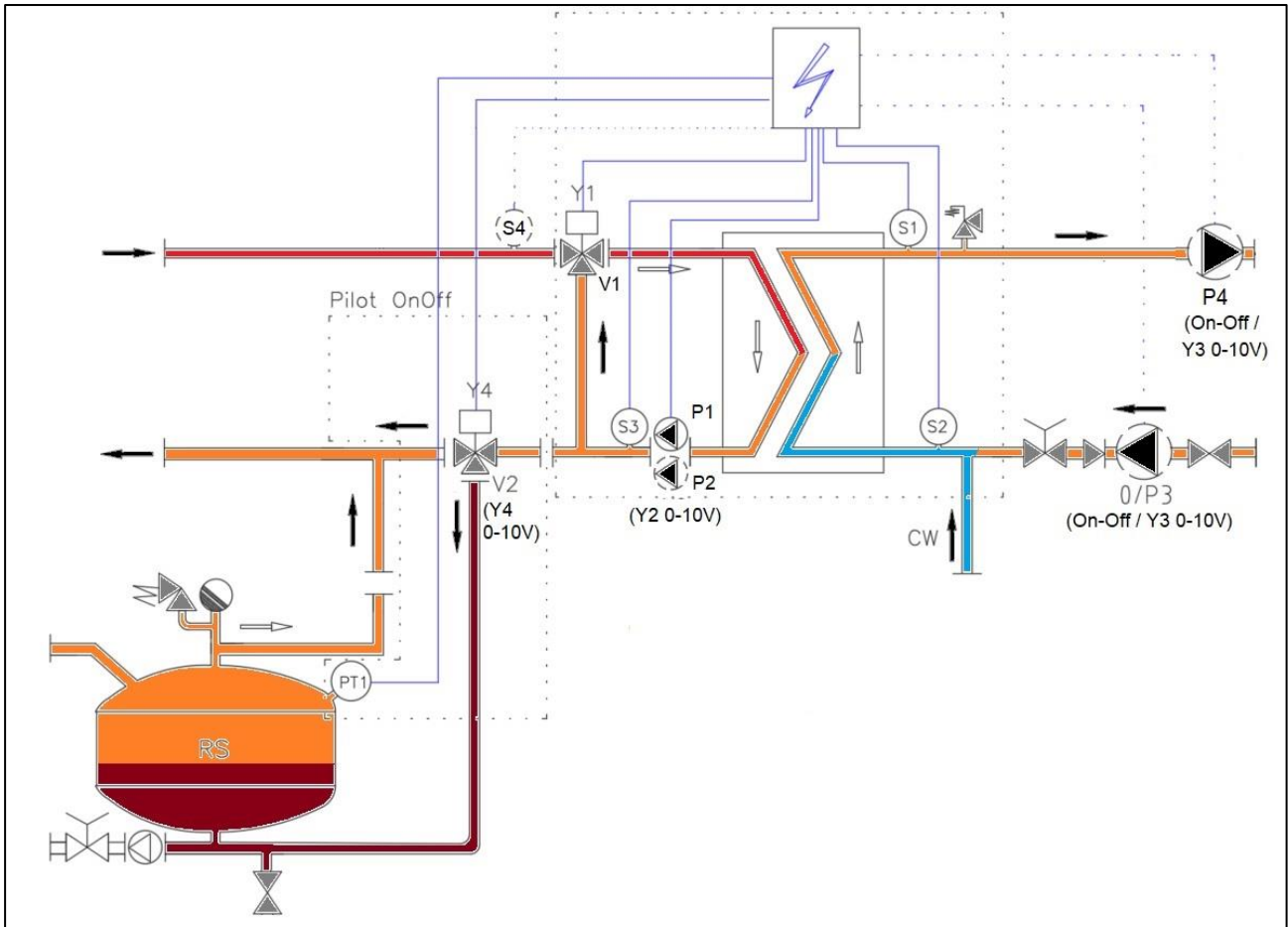
AquaEfficiency with kit ASTB TOR (Pilot function)

Not recommended on solar installations when recycling flow rates is too high on DHW side (hospitals for example). RS is primary stored renewable heat source.

Flowcharts' designations:


ID.	NAME	ID.	NAME
A	Primary inlet	Pt1	Primary vessel temperature sensor
B	Primary outlet	S1	DHW temperature sensor (master)
CW	Cold Water inlet	S2	Secondary inlet temperature sensor
DHW	Domestic Hot water	S3	Primary return temperature sensor
P1/P2	Primary pump	S4	Primary inlet temperature sensor (option)
P3/P4	Charging pump(s) (secondary)	RS	Renewable source
V1	3 port mixing control valve	Y3	0-10V signal for P3/P4
Y1	0-10V signal for V1 actuator	V2	Pilot 3 port diverting control valve
Y2	0-10V signal for P1/P2	Y4	0-10V signal for V2 actuator

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Picture 29

Settings :

1. Press several times ∇ key to access to « Extended functions » line and press \checkmark key.	PREMIUM I/t \leftrightarrow Extended Functions \blacktriangleright
2. Press \checkmark key to activate the corresponding function	Extended functions 1/5 \leftrightarrow Function selection NONE
3. Press several times ∇ key until reaching « PILOT ON OFF » line, then press \checkmark key.	3/8 \leftrightarrow \checkmark NONE ... PILOT ONOFF
4. Press ∇ key to access next line. Press \checkmark key then ∇ key to put indicator on ON state	Extended functions 1/2 \leftrightarrow Fction selection PILOT ONOFF
5. Press \checkmark key to restart the controller.	Restart required ! OFF
 It is MANDATORY to restart the controller. Otherwise, extra sensor and defined function won't be effective and not visible into the menus. Wait the controller restarts before going on.	\checkmark OFF ON
6. A new line appears into the menu:	PREMIUM I/t \leftrightarrow ... PT1: Top Prim.tank T° yy°C ...
7. Press several times on ∇ key to access to « Extended functions » line and press \checkmark key to enter sub-menu	PREMIUM I/t \leftrightarrow Extended functions \blacktriangleright
8. Using ∇ key, go to line 3 and press \checkmark key to eventually adjust the valve output signal inversion*	Extended functions 3 / 4 \leftrightarrow Pilot inverted NO

9. Use ▲ / ▼ keys to change value NO YES and press ✓ key to validate or “Esc” key to cancel change.	✓ NO YES
10. Press ▼ key to go to next line.	
11. Using ▼ key, go to line #4 and press ✓ key to eventually adjust delta T value.	Extended functions 4/4↔ Delta.T°Min.setpoint 5°C
12. Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting range: 0 to 40°C (5°C default).	5 °C 0°C ↓ 40°C [--- --- --- --- --- --- --- --- --- ---]
13. Press « Esc » key to get back to main menu. Press again “Esc” to point 1 st line of Main menu.	

Function is now activated.

*: The Pilot inverted parameter is used to reverse signal as some valve+actuator brands operate reversely.

In Pilot mode signal is 0V or 10 volts (no intermediate values).

If current Y4 signal is 0V, setting “Pilot inverted” parameter from NO to YES will change Y4 to 10 volts.

At the opposite, If current Y4 signal is 10V, setting “Pilot inverted” parameter from NO to YES will change Y4 to 0 volt.

Pilot+ function ,2 sensors

Principle:

The general operating principle is the same as Pilot function, except added temperature sensor Pt2 and optionally S5.

The control valve associated to S3, Pt1 and Pt2 sensors allows the Pilot+ mode.

The Pt2 sensor is placed on the generator (boiler) inlet.

When $Pt1 > (S3 + DT \text{ Min})$ the function is activated and opens the second control valve wired on Y4 output, extra actuator.

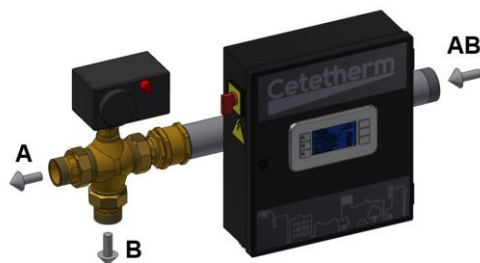
The regulation is proportional at the opposite of Pilot mode and operates around a Pt2 set point compared to the measured temperature on Pt2.

This setpoint is either Internal OR External:

- Internal: Calculated setpoint is the maximum of “Internal Pt2 sp” and calculated setpoint of a heat curve issued from S5 (if present)
- External: The setpoint is written in the parameter “External Pt2 setpoint” via Modbus

All other AquaEfficiency functions are operational.

A control loop based on outlet temperature in Pt2, modulates the 3-port valve to avoid that water with high temperature is sent back to the boiler/generator or to the network. This avoids increased thermal losses in the pipes.



Picture 30

The primary return water flow enters the modulating valve in port ‘AB’.

If the water is sufficiently cold, return water flows through port ‘B’ to the bottom part of the primary storage vessel proportionally to control loop applied on Pt2 temperature sensor (control loop).

If the water is too hot, return water flows through the ‘A’ port, towards the boiler/heat generator.

Pilot+ can be a standalone product, as shown above, or combined with AquaEfficiency by adding extra Pt1, Pt2 and optional S5 temperature sensors and extra control valve on the

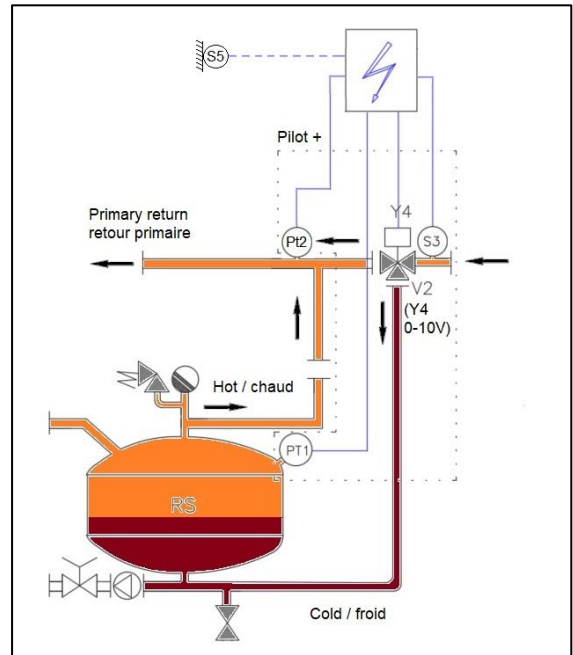
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primary outlet. This one doesn't need extra control box as the standard control system manages an extra valve control signal, Y4.

In the next pages, you will find several possible flowcharts corresponding to Pilot+ use.

Pilot+ as standalone product

Can be added to existing installation to take benefit of renewable energy stored into RS primary tank.

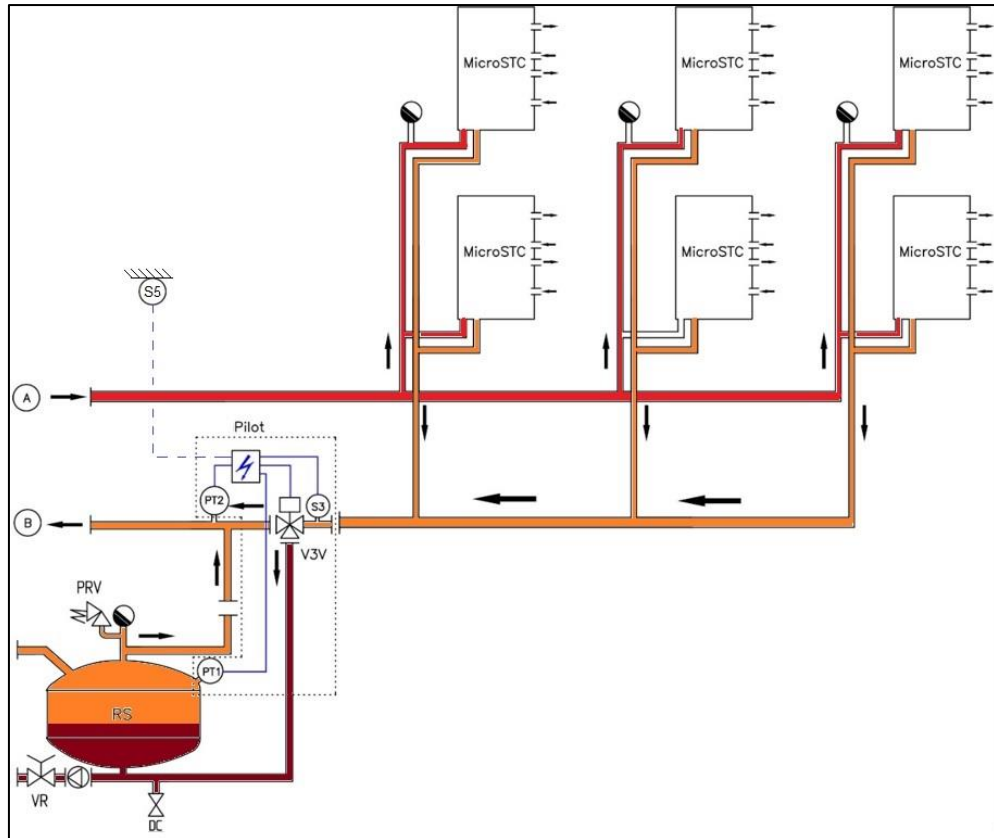


Picture 31

Pilot+ as standalone product combined with domestic heating units

Flowcharts' designations:

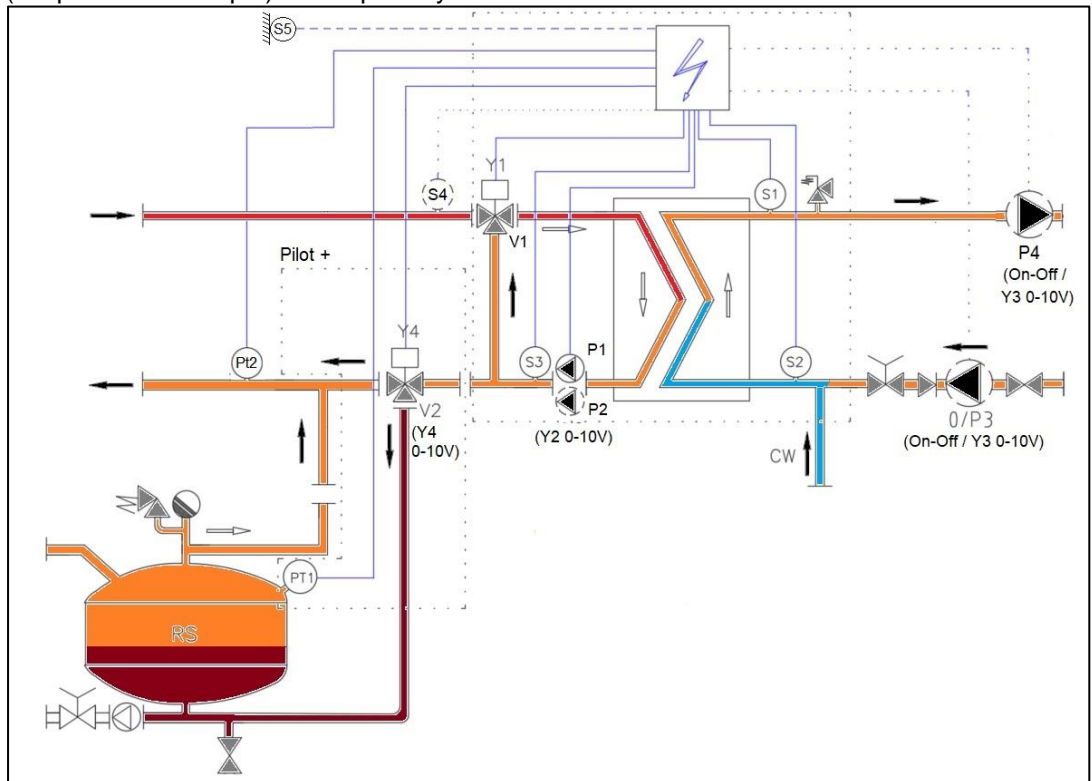
ID.	NAME	ID.	NAME
A	Primary inlet	Pt1	Primary vessel temperature sensor
B	Primary outlet	Pt2	Mixing Pilot outlet temperature sensor
DHW	Domestic Hot water	S1	DHW temperature sensor (master)
CW	Cold Water inlet	S2	Secondary inlet temperature sensor
P1/P2	Primary pump(s)	S3	Primary return temperature sensor
P3/P4	Secondary pump(s)	S4	Primary inlet temperature sensor (option)
V1	3 port control valve	S5	Outdoor temperature sensor (option)
Y1	0-10V signal for V1 actuator	RS	Renewable source
Y2	0-10V signal for P1/P2	V2	Pilot+ 3 port diverting control valve
Y3	0-10V signal for P3/P4	Y4	0-10V signal for V2 actuator



Picture 32

Pilot+ with AquaEfficiency

Not recommended on solar installations when recycling flow rates is too high on DHW side (hospitals for example). RS is primary stored renewable heat source.



Picture 33

Cetetherm AquaEfficiency Neo, Pilot, Pilot+, Pre-heater
Installation, service and operating instructions

11. Press ✓ key to eventually adjust PT2 temperature setpoint.	Extended functions 4/5 ←→
12. Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting range: 10 to 90°C (65°C default).	PT2 T° setpoint 65°C 65 °C 10°C ↓ 90°C [--- --- --- --- --- --- --- --- --- ---]
13. Press ▼ key to go to next line.	
14. Press ✓ key to eventually adjust PT2 temperature controller ① : <i>In most of cases the default parameters should not be changed</i>	Extended functions 5/5 ←→ PT2 T° controller nnn% ▶
15. Press ✓ key to eventually adjust proportional band.	PT2 T° controller 1/6 ←→
16. Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting range: 0 to 1000°C (40°C default). ① : <i>Increasing value gives smaller pump speed variation</i>	Proportional band : 40°C 40 °C 0°C ↓ 1000°C [--- --- --- --- --- --- --- --- --- ---]
17. Press ▼ key to go to next line.	
18. Press ✓ key to eventually adjust integral value.	PT2 T° controller 2/6 ←→
19. Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting range: 0 to 2000s (10s by default). ① : <i>Increasing value gives smaller pump speed variation</i>	Integral factor : 10 s 10 s 0s ↓ 2000s [--- --- --- --- --- --- --- --- --- ---]
20. Press ▼ key to go to next line.	
21. Press ✓ key to eventually adjust integral value.	PT2 T° controller 3/6 ←→
22. Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting range: 0 to 2000s (10s by default). ① : <i>We recommend you keep 0 second setting</i>	Differential factor : 0 s 0 s 0s ↓ 2000s [--- --- --- --- --- --- --- --- --- ---]
23. Press ▼ key to go to next line.	
24. The next 3 lines are read-only informations :	PT2 T° controller 4>6/6 ←→
Current Pt2 temperature sensor value :	Present value : nn°C
Pt2 temperature setpoint value :	Setpoint : xx °C
PID control loop output on Pt2 compared to Pt2 setpoint :	Controller output : yyy %
25. Press « Esc » key to get back to main menu. Press again “Esc” to point 1 st line of Main menu.	

Function is now activated.

Primary tank 2 sensors function (PT1 +PT2)

Principle:

This function allows to manage a primary tank load, source of accumulated energy using P3 and/or P4 pumps. It uses 2 optional temperature sensors, Pt1 and Pt2.

When tank is discharged (meaning cold), P3/P4 is energized until water in the tank top is hot enough (measured by PT1 sensor) AND tank bottom is also hot enough (measured by PT2 sensor) as the tank is loaded from top to bottom.

Loading pump(s) P3/P4 stops when PT1 and PT2 >= PT2 setpoint. Before stopping, P3/P4 pumps' speed will decrease when approaching from the temperature setpoint as per a PID control loop.

When tapping occurs, tank discharges in energy and PT2 cools down first (the tank flow from the tap water system is from bottom to top when discharging) until tank top (PT1) cools down also. The charging pump will start when PT1 <= PT2 setpoint – Delta T. A new cycle begins.

Schematic diagram:

<p>① : In most of cases the default parameters should not be changed</p>	<pre> ... PT2 T° controller nnn% ▶ </pre>
<p>15. Press ✓ key to eventually adjust proportional band. 16. Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting range: 0 to 1000°C (40°C default). ① : Increasing value gives smaller pump speed variation 17. Press ▼ key to go to next line.</p>	<pre> PT2 T° controller 1/6 ↔ Proportional band : 40°C 40 °C 0°C ↓ 1000°C [--- --- --- --- --- --- --- --- --- ---] </pre>
<p>18. Press ✓ key to eventually adjust integral value. 19. Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting range: 0 to 2000s (10s by default). ① : Increasing value gives smaller pump speed variation 20. Press ▼ key to go to next line.</p>	<pre> PT2 T° controller 2/6 ↔ ... Integral factor : 10 s 10 s 0s ↓ 2000s [--- --- --- --- --- --- --- --- --- ---] </pre>
<p>21. Press ✓ key to eventually adjust integral value. 22. Use ▲ / ▼ keys to change value and press ✓ key to validate or “Esc” key to cancel change. Setting range: 0 to 2000s (10s by default). ① : We recommend you keep 0 second setting 23. Press ▼ key to go to next line.</p>	<pre> PT2 T° controller 3/6 ↔ ... Differential factor : 0 s 0 s 0s ↓ 2000s [--- --- --- --- --- --- --- --- --- ---] </pre>
<p>24. The next 3 lines are read-only information's:</p>	<pre> PT2 T° controller 4>6/6 ↔ ... Current Pt2 temperature sensor value: Present value : nn°C Pt2 temperature setpoint value: Setpoint : xx °C PID control loop output on Pt2 compared to Pt2 setpoint: Controller output : yyy % </pre>
<p>25. Press « Esc » key to get back to main menu. Press again “Esc” to point 1st line of Main menu.</p>	

Function is now activated.

AQUATANK

Principle:

This function allows to manage a SECONDARY tank load, source of accumulated energy using P3 and/or P4 pumps. This function uses S2 AND optional S6 temperature sensor.

When tank is discharged (meaning cold), unit is operating and P3/P4 is energized until water in the tank bottom is hot enough (measured by delta T(S1-S2 sensor)) AND top of tank is also hot enough (measured by delta T(S1-S6)) as the tank is loaded from top to bottom.

The whole unit is put in standby mode (same as the remote function) when delta T(S1-S2) AND delta T(S1-S6) reach defined setpoints.

When tapping occurs, tank discharges in energy and S2 cools down first (the tank flow is from bottom to top when discharging) until tank top (S6) cools down also. At this moment, the unit starts up, leaving the standby mode. A new cycle begins.



Please check that this operating mode is in accordance with local rules. In some countries, it is not allowed to standby the secondary pump (so the unit).

Schematic diagram:

Function is now activated.

AQUAPROTECT



**Used for AquaProtect products' line.
Please refer to specific manual of this product.**

9.14 Test sequence



This function is used at the factory and is part of manufacturing process of the unit to check control valve, pump(s), relays are operating. However, we recommend using the « Wired inputs-outputs » sub-menu for a deeper inputs/outputs tests, especially for commissioning or maintenance operations.

Settings :

<p>1. From main menu, use \uparrow / \downarrow keys to go to « Test sequence » line : Then Press \checkmark key</p>	<p>PREMIUM l/t \leftrightarrow ... Test sequence \rightarrow</p>
<p>2. To activate the sequence, press \checkmark key then \downarrow key to select ON and press \checkmark key. Then controller activates outputs (contacts and signals) in the following order : All signals to 0V \rightarrow Relay R1 \rightarrow Command P1 \rightarrow Command P2 \rightarrow Command P3 \rightarrow Command P4 \rightarrow 230V 3pts - \rightarrow 230V 3pts + \rightarrow Relay R2 \rightarrow Relay R3 \rightarrow Y1 to 10V \rightarrow Y2 to 10V \rightarrow Y3 to 10V \rightarrow Y4 to 10V \rightarrow End of sequence and back to normal control.</p>	<p>Test Sequence 1 / 4 \leftrightarrow Enable OFF \checkmark OFF ON Y1=Actuator 0-10V control signal Y2=Primary pump(s) 0-10V ctrl signal Y2=Second. pump(s) 0-10V ctrl signal Y4=Actuator#2 (used on some extended fcts) 0-10V control signal</p>
<p>3. Press \downarrow key to go to next line.</p>	
<p>4. Press \checkmark key to change pumps' test duration. Use \uparrow / \downarrow keys to change value and press \checkmark key to validate or "Esc" key to cancel change. Setting range: 0 to 60 secondes (4 sec by default).</p>	<p>Test Sequence 2/4 \leftrightarrow Enable OFF Pump test time 4s ...</p>
<p>5. Press \downarrow key to go to next line.</p>	
<p>6. Press \checkmark key to change 0-10V signals' duration. Use \uparrow / \downarrow keys to change value and press \checkmark key to validate or "Esc" key to cancel change. Setting range: 0 to 60 secondes (4 sec by default).</p>	<p>Test Sequence 3/4 \leftrightarrow ... Signal test time 4s ...</p>
<p>7. Press \downarrow key to go to next line.</p>	
<p>8. Press \checkmark key to change contacts' tests duration. Use \uparrow / \downarrow keys to change value and press \checkmark key to validate or "Esc" key to cancel change. Setting range: 0 to 60 secondes (4 sec by default).</p>	<p>Test Sequence 4/4 \leftrightarrow ... Relay test time 4s</p>
<p>9. Press « Esc » key to get back to main menu. Press again "Esc" to point 1st line of Main menu.</p>	

9.15 Modbus RTU Communication Menu



Be sure modbus cable wires are connected on T1 terminal (upper left corner of the control box) to get Modbus communication.^{T1} Wiring made on terminals labelled A+ and B-. If cable length exceeds 3 meters, it is recommended to use a shielded cable, connecting shield to REF terminal.



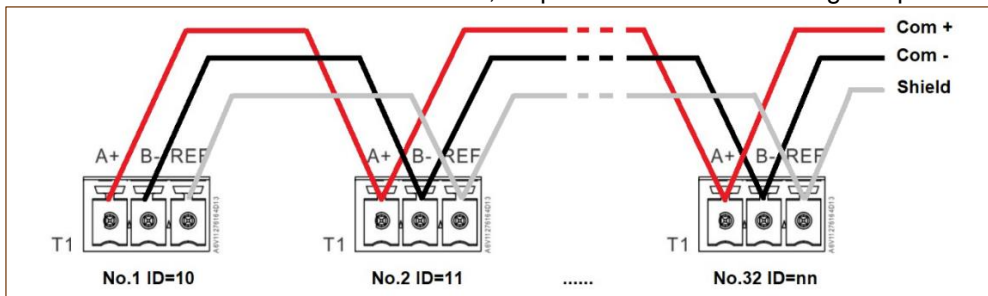
Settings :

1. From main menu, use ▲ / ▼ keys to go to « Communication » line: Then Press ✓ key	PREMIUM I/t ⇌ ... Communication ▶
2. Press ▼ key, then ✓ key to check/modify communication parameter(s). If a least one parameter is modified, you have to RESTART the controller. For that, go to line#1 and press ✓ key, then select ON by pressing ▼ key and finally press ✓ key.	Communication 1 / 2 ⇌ Restart OFF Modbus RTU (RS485) COMM.OK
3. Press ✓ key to access to communication parameters. Use ▲ / ▼ keys to select line and press ✓ to access line. 4. Use ▲ / ▼ keys to change value and press ✓ to validate or “Esc” key to cancel. Explanations bellow: Controller address from de 0 to 32 (10 by default) Communication speed from 600 to 115200 baud (defaut=19200) Parity : Even/Odd/None (by default) Bit stop number : 1 (by default) / 2 For any change, RESTART controller (same as previous screen) See below :	Modbus RTU (RS485) 1/6 ⇌ Slave Address 10 Baud rate 19200 Parity None Stop 1 bit Restart required ! OFF Writing priority POL468
5. Writing priority: POL486 (by default) / GTC (or BMS) If priority let to controller (POL468), it is not possible to write value from BMS, but only possibility to read values. If it is necessary to write values from BMS to controller, select « GTC ». In this case, it is not possible to modify some values from controller. Concerned parameters are listed bellow : • S1 temperature setpoint • Thermal treatment setpoint	Writing priority POL468 POL 468 BMS
6. If no restart required, press twice « Esc » key to get back to the main menu.	

Connecting several control boxes (units) :

Controller address being changeable, it is then possible to connect up to 32 units.

In the case of several units connected each other, respect Modbus cable wirings as per bellow diagram:



Picture 37

Modbus parameters' list :

Cetetherm AquaEfficiency Neo, Pilot, Pilot+, Pre-heater Installation, service and operating instructions

Default values

MODBUS PARAMETERS / PARAMETRES	Speed / Vitesse :	19200
	Bit number / Nbre de	8
	Stop bit / Bit de stop	1
	Parity / Parité :	None / Aucune
	Mode :	RTU
MODBUS :	Adresse* :	10

* In case of multiple controllers, change ModBus slave number
* Si plusieurs appareils connectés, changer le N° d' esclave du Modbus

** On some BMS, add/subtract one
** sur certains superviseurs, ajouter/soustraire 1

ModBus Points (English)	Points ModBus (Français)	MODBUS address** Adresse ModBus**	Type	Mode	Value Valeur	Comment Commentaire
----------------------------	-----------------------------	--------------------------------------	------	------	-----------------	------------------------

Read Only digital / Lecture seule Digitaux

P1 Command	Commande P1	14	HR_16	R	0=Off, 1=On	Command(e) P1
P2 Command	Commande P2	15	HR_16	R	0=Off, 1=On	Command(e) P2
P3 Command	Commande P3	16	HR_16	R	0=Off, 1=On	Command(e) P3
P4 Command	Commande P4	17	HR_16	R	0=Off, 1=On	Command(e) P4
P1 Alarm	Alarme P1	18	HR_16	R	0=OK, 1=Alarm	P1 Fault / Défaut P1
P2 Alarm	Alarme P2	19	HR_16	R	0=OK, 1=Alarm	P2 Fault / Défaut P2
P3 Alarm	Alarme P3	22	HR_16	R	0=OK, 1=Alarm	P3 Fault / Défaut P3
P4 Alarm	Alarme P4	23	HR_16	R	0=OK, 1=Alarm	P4 Fault / Défaut P4
High S1 T° Alarm	Alarme T° S1 Haute	26	HR_16	R	0=OK, 1=Alarm	S1 High Temp Alarm/Alarme haute S1
General Default	Alarme de Synthèse	27	HR_16	R	0=OK, 1=Alarm	General default / Défaut synthèse
fooling Alarm	Alarme Encrassement	29	HR_16	R	0=OK, 1=Alarm	fooling alarm (S3) / Alarme encrassement (S3)
ThermTr Alarm	Alarme Trait.Thermique	31	HR_16	R	0=OK, 1=Alarm	Therm.Treat. Failed / Echec traitement therm.
Th_Tr_running	Trait.Therm. en cours	35	HR_16	R	0=Off, 1=On	Therm.Treat. On going / Trait. Therm. En cours
Remote contact	Contact remote	36	HR_16	R	0=Off, 1=On	Unit in standby / Appareil en standby
Pt2 Sp Int/External	Csgne Pt2 Int/Externe	37	HR_16	R	0=Internal, 1=External	Pilot+ external setpoint/Consigne Pilot+ externe
Heat./Cool. mode	Mode chaud/froid	38	HR_16	R	0=HEAT, 1=COOL	Heating/cooling mode / Mode chaud/froid
BOOSTER function	fonction BOOSTER	40	HR_16	R	0=Off, 1=On	BOOSTER active
ECO function	Fonction ECO	41	HR_16	R	0=Off, 1=On	ECO activated
Pump(s) Fault	Défaut pompe(s)	42	HR_16	R	0=Off, 1=On	Synthesis pump(s) fault / Défaut synthèse pompe(s)
Tank loaded	Ballon chargé	43	HR_16	R	0=Off, 1=On	Tank loaded / Ballon chargé
S1 Sp limitation	Limitation Csgne S1	70	HR_16	R	0=Off, 1=On	S1 Sp limitation fct activated / Fct limitation consigne active
Safety function	Fonction Secours	75	HR_16	R	0=Off, 1=On	Safety function / Fonction Secours

(16 bit integer/Entier 16 bit)*

Read Only Analogic / Lecture seule Analogiques

SW AL Version	SW AL Version	33	HR_16	R		Software version / Version logiciel
P1P2 Nbr of pump	Nbre pompe P1P2	71	HR_16	R	0/1=P1/2=P2/3=P1+P2	Primary pumps' number / Nbre de pompe(s) primaire
P3P4 Nbr of pump	Nbre pompe P3P4	72	HR_16	R	0/1=P3/2=P4/3=P3+P4	Second. pumps' number / Nbre de pompe(s) second.
Signal P1P2	Signal P1P2	44	HR_16	R	%	Primary pump signal Y2 / Signal pompe primaire Y2
Signal P3P4	Signal P3P4	45	HR_16	R	%	Secondary pump signal Y3/ Signal pompe secondaire Y3
Signal Valve	Signal Vanne	46	HR_16	R	%	Control valve 1 signal Y1/ Signal servomoteur 1, Y1
Signal Valve2	Signal Vanne2	47	HR_16	R	%	Control valve 2 signal Y4 / Signal servomoteur 2, Y4
Pilot+ internal Sp	PC interne Pilot+	48	HR_16	R	°C	Pilot(+) Setpoint / Consigne Pilot(+)
S1	S1	49	HR_16	R	°C	Sensor 1 measurement / Mesure Sonde S1
S2	S2	50	HR_16	R	°C	Sensor 2 measurement / Mesure Sonde S2
S3	S3	51	HR_16	R	°C	Sensor 3 measurement / Mesure Sonde S3
S4	S4	52	HR_16	R	°C	Sensor 4 measurement / Mesure Sonde S4
S5	S5	53	HR_16	R	°C	Sensor 5 measurement / Mesure Sonde S5
S6	S6	54	HR_16	R	°C	Sensor 5 measurement / Mesure Sonde S6
Pt1	Pt1	55	HR_16	R	°C	Sensor Pt1 measurement / Mesure Sonde Pt1
Pt2	Pt2	56	HR_16	R	°C	Sensor Pt2 measurement / Mesure Sonde Pt2
Delta T	Delta T	60	HR_16	R	°C	Min DT energy recov / Delta T min récup énergie
Curve calculated Sp	Consigne calculée	61	HR_16	R	°C	Calc.S1 Sp in heating mode/Csgne calc. S1 en mode Chauff.
Relay1 Fct	Fct Relais 1	62	HR_16	R	0=Nothing/Rien 1=General alm/Déf.synthèse 2=High T° Alm/Alme T° haute	
Relay2 Fct	Fct Relais 2	63	HR_16	R	3=Low T° Alm/Alm T°basse 4=ECO fct/Fct ECO 5=Clock/Horloge 6=Th.Tr./Tr.Th.	
Relay3 Fct	Fct Relais 3	64	HR_16	R	7=Tk loaded/Bal.chargé 8=P fault/Défaut P 9= fool.HE/Ech.encr. 10=S4 Low/basse	
XFcts	XFcts	65	HR_16	R	0=Nothing/Rien 1=Pre-heat 2=Pilot01 3=Pilot+	
Mode	Mode	66	HR_16	R	4=Primary tank Pt2 5=PrimTank Pt1+Pt2 6=AquaTank 7=AquaProtect	
					0=Standard, 1=PREMIUM	

(16 bit integer/Entier 16 bit)*

Read-Write digital / Lecture-Ecriture Digitaux

Alarm(s) acknowledge	Acquit.alarme(s)	200	HR_16	R/W		1=Reset fault. Pulse point necessary 30 seconds On/Off
----------------------	------------------	-----	-------	-----	--	--

(16 bit integer/Entier 16 bit)*

1=Acquittement. Fréquence impulsion max On/Off=30 secondes

Read-Write Analogic / Lecture-Ecriture Analogiques

S1 T° Setpoint	Consigne T° S1	210	HR_16	R/W	°C	S1 fixed setpoint (DHW) / Consigne fixe S1 (ECS)
Pilot+ external Sp	Csgne externe Pilot+	211	HR_16	R/W	°C	Pilot+ external setpoint / Consigne externe Pilot+
Therm.Treat. setpoint	Consigne Trait.Therm.	212	HR_16	R/W	°C	Thermal treatment setpoint / Consigne trait. thermique

(16 bit integer/Entier 16 bit)*


Picture 38


9.16 Inputs / Outputs menu



This sub-menu is very useful to commission or to diagnostic a unit: control valve opening/closing, check that pump(s) is(are) running with speed adjustment, or check contacts' relays. It is more powerful than the « Test sequence » sub-menu.

Settings :

<p>1. From the main menu, use ▲ / ▼ keys to go to the line « Wired inputs – outputs »: Then press ✓ key.</p>	<p>PREMIUM I/t ⇌ ... Wired inputs-outputs ▶</p>
<p>2. Press ▼ / ▲ keys to access to selected line and press ✓ to validate. AI=Analog inputs=temperature sensors AO=Analog outputs=Y1, Y2, Y3, Y4 0-10V signal(s) DI=Digital inputs=Pump(s) fault + Remote contact DO=Digital outputs=Command pump(s) + Relays contacts + 230V 3pts contacts</p>	<p>Wired inputs – outputs 1 /4 ⇌ Analog Inputs ▶ Analog Outputs ▶ Digital Inputs ▶ Digital Outputs ▶</p>
<p>Analog inputs Inputs (like outputs) are gathered on the controller by blocks labelled T1 to T12. On these blocks, each terminal is labelled. Example: S1 sensor is connected to terminals B1 of T2 block</p> <p>All inputs are read only, no possibility to change a sensor value.</p> <p>* Optional sensor(s). These sensors are activated into the « Configuration » and/or into the « Extended functions » sub-menus. Please refer to corresponding chapters.</p>	<p>AI-IO Aut.st. 12/12 ⇌ ----- T2 CONNECTOR ----- B1 :S1 : 60°C B2 :S2 : 20°C B3 :S3 : 37°C B4 :S4* : 0°C ----- T3 CONNECTOR ----- B5 :S5* : 0°C B6 :S6* : 0°C X1 :--- : 0°C X2 :--- : 0°C X3 : PT1* : 70°C X4 : PT2* : 70°C</p>
<p>Analog outputs Navigate into the display using ▲ / ▼ keys and press ✓ key to change value. Signal Y1 = Primary Valve control signal, 0 to 10 volts. Signal Y2 = Primary pump signal P1/P2, 0 to 10 volts (used with variable speed pump(s) only) « AUT » value indicates the controller controls this signal nnn% indicates the actual signal value (0%=0V up to 100%=10V).</p> <p>PASS INTO MANUAL MODE It is possible to override the original signal. To do that, select the line and press ✓ key. Now, using ▲ / ▼ keys, change from « AUT » to «MAN» value, meaning «MANUAL». Now press ✓ key and using ▲ / ▼ keys, input the signal value you want.</p> <p>Example: To check the actuator is moving and the primary valve fully closes, enter 0%. At the opposite, to check it fully opens, input 100%.</p> <p>To reup a point into automatic mode, select MAN and by pressing ▲ or ▼, display «AUT» and validate by pressing ✓ key, then press « Esc ».</p> <p> Once at least 1 point is in manual mode, Ⓢ button is orange lit. DO NOT FORGET TO PUT THE POINT(S) IN AUTO BEFORE LEAVING THIS SUB-MENU. To see easily which point(s) are in manual mode, a « Ⓢ » logo is displayed on the corresponding line:</p>	<p>AO-IO Aut.st. 1/5 ⇌ ----- T4 CONNECTOR ----- X5 :Y1 SIGNAL : AUT-nnn% X6 :Y2 SIGNAL : AUT-nnn% X7 :Y3 SIGNAL : AUT-nnn% X8 :Y4 SIGNAL** : AUT-nnn%</p> <p>** : Only for extended function Pilot, Pilot+ or AquaProtect</p> <p>AUT → MAN → nnn%</p> <p>To find back a point let in manual mode corresponding to our example, you can see the « Ⓢ » symbol :</p> <p>Wired inputs – outputs 1 /4 ⇌ Analog Inputs ▶ Analog Outputs Ⓢ ▶ Digital Inputs ▶ Digital Outputs ▶</p>

<p>Binary (or digital) inputs All inputs are read only, no possibility to change a sensor value.</p> <p>* Depending of pump(s)'number. If no pump, display indicates ' --- '</p> <p>External stop = remote contact. If ON, Remote is active and the unit is in standby mode.</p>	<p>BI-IO Aut.st 1/6 ⇄ ----- T5 CONNECTOR ----- D1 :P1 Alarm : NORMAL D2 :P2 Alarm* : NORMAL D3 :P3 Alarm* : NORMAL D4 :P4 Alarm* : NORMAL D5 :External stop : OFF</p>
<p>Binary (or digital) outputs As for analog outputs, it is possible to force these contacts to ON or OFF. To do that, pass from AUTO to MANual mode. R1=Relay 1, R2=Relay 2, R3=Relay 3. *Pn Command (1 to 4) commands corresponding pump ON/OFF. If no pump, display indicates ' --- '</p> <p>Com. FER.Y1 = Closing contact for 230V 3 points actuator (-) Com. OUV.Y1 = Opening contact for 230V 3 points actuator (+)</p> <p>Example: We want to Start P2 pump (considering it is present). Select line #5, press ✓ key, press ▼ key then ✓ key and press ▼ then ✓ key to pass from OFF to ON. Do not forget to repass in automatic mode after the test.</p> <p> Once at least 1 point is in manual mode, Ⓢ button is orange lit. DO NOT FORGET TO PUT THE POINT(S) IN AUTO BEFORE LEAVING THIS SUB-MENU. To see easily which point(s) are in manual mode, a « ⌘ » logo is displayed on the corresponding line →</p> <p>Press « Esc » key to get back to main menu. Press again "Esc" to point 1st line of Main menu.</p>	<p>BO-IO Aut.st 1/12 ⇄ ----- T10 CONNECTOR ----- Q1: COMMANDE R1 : AUT-OFF</p> <p>----- T11 CONNECTOR ----- Q2: P1 COMMAND : AUT-ON Q3: P2 COMMAND* : AUT-OFF Q4: P3 COMMAND* : AUT-ON</p> <p>----- T12 CONNECTOR ----- Q5: P4 COMMAND* : AUT-OFF Q6: Y1 CLOSE.COM.: AUT-ON Q7: Y1 OPEN COM. : AUT-OFF Q8: R2 COMMAND : AUT-OFF Q9: R3 COMMAND : AUT-OFF</p> <p>Wired inputs – outputs 1 / 4 ⇄ Analog Inputs ▶ Analog Outputs ▶ Digital Inputs ▶ Digital Outputs ⌘ ▶</p>

10 Configuration access level

This access level is identical to technician level EXCEPT it displays an extra « Configuration » sub-menu.

The configuration sub-menu allows to configure sensor(s)' number and also pump(s)' number. It is a part of the factory manufacturing process, as each unit must have its sensor(s)/pump(s) configured.

10.1 Login

Access code is 2000.

- From the main menu, go to line#2: Password enter ▶. Then press ✓ key
OR
Press a few seconds on ✓ key
- Display indicates « Login » and a cursor is placed on **0 - - -**
- Using ▲ / ▼ keys (meaning + / -), enter the 1st digit and validate by pressing ✓ key. The 1st digit must be 1. So you have to display **2 - - -** by pressing once the + key, then pressing ✓ key.
- Repeat the same operation for other digits that must be zero also. For that, just press 3x ✓ key.
- Once correct code is entered, information display appears (hardware/software versions, controller reference...). Press « Esc » key to come back to the main menu.
The display now shows 2 keys on its top right corner, indicating configuration sub-menu is now accessible.

Remark: After 10 minutes without pressing any key, the software logs out, the keys disappear and the software is back to end-user access level.

10.2 Logout

It is not necessary to wait 10 minutes until logging out. It is possible to log out at any time. For that:



1. Press a few seconds on ✓ key
2. Select « Log off » by pressing ▼ key
3. Press ✓ key
4. The key symbol has disappeared from the display. Access level is now back to end-user.



10.3 Configuration menu

Note ! If Reseted controller or spare part controller, pump(s) and sensor(s) number MUST be configured using this sub-menu.

Settings :

1. From the main menu, use ▲ / ▼ keys to go to the line « Configuration »: Then press ✓ key.	PREMIUM n/t ⇄⇄ ... Configuration ▶
2. Press ✓ key to change daylight saving time parameters. By default it set on automatic mode	Configuration 1/ 18 ⇄⇄ Daylight sav.time
Here is the description of possible settings : Use ▲ / ▼ keys to change line or value, ✓ key to validate or “Esc” to cancel. Enable/Disable auto time change. Keep on yes. Time to add/substract, should be kept to 1 hour Month for summer time (should be kept to March) Day for summer time (should be kept to Sunday) Do not change Time change will occur at 2h00 at night Month for winter time (should be kept to October) Day for winter time (should be kept to Sunday) Do not change Time change will occur at 3h00 at night UTC reference time (European UTC by default)	Daylight sav.time 1/11 ⇄⇄ Enable Yes Time 1h Start month Mar Start week day Su Start offset 4 Start hour 2h End month Oct End week day Su End offset 4 End hour 3 UTC difference -60min
4. Press Esc to get back to the configuration sub-menu.	
5. Press twice ▼ key then ✓ key to select PREMIUM. If STANDARD is indicated, put on premium mode using ▲ / ▼ keys and ✓ key to validate.	Configuration 3/ 18 ⇄⇄ Model selection PREMIUM
6. Press ▼key to access to next line.	
7. Press ✓ key to change actuator’s type. Use ▲ / ▼ keys to change value and ✓ key to confirm or “Esc” key to cancel. For AquaEfficiency, select Aq.E ① : Other values correspond to other products.	Configuration 4/ 18 ⇄⇄ Actuator type Aq.F ✓Aq.F Aq.E 15s ...
8. Press ▼ key to access to next line	
9. Keep on OFF state. Press ▼ key to access to next line	Configuration 5/ 18 ⇄⇄ Cooling Mode OFF
10. Press ✓ key to enable/disable S4 temperature sensor. Press ▲ / ▼ keys to change value to YES/NO and press ✓ key to validate or “Esc” key to cancel. ① : S4 activation enables the limitation function.	Configuration 6/ 18 ⇄⇄ ... S4 Activation NO ...
11. Press ▼ key to access to next line	

<p>12. Press ✓ key to define primary pump(s)'number. Use ▲ / ▼ keys to change value NONE/P1/P2/P1+P2 and press ✓ key to confirm.</p> <p> THIS STEP IS MANDATORY TO GET AN OPERATING UNIT!</p> <p>13. Press ▼ key to access to next line</p>	<p>Configuration 7/ 18 ⇌ ⇌</p> <p>...</p> <p>P1P2 pump selector None/P1/P2*</p> <p>...</p> <p>* Actual configuration appears on the right side of the line</p>
<p>14. Press ✓ key to define primary pump(s)'number. Use ▲ / ▼ keys to change value NONE/P3/P4/P3+P4 and press ✓ key to confirm.</p> <p> THIS STEP IS MANDATORY TO GET AN OPERATING UNIT!</p> <p>15. Press ▼ key to access to next line</p>	<p>Configuration 8/ 18 ⇌ ⇌</p> <p>...</p> <p>P3P4 pump selector None/P3/P4*</p> <p>...</p> <p>* Actual configuration appears on the right side of the line</p>
<p>16. Press ✓ key to change relay 1 function. Use ▲ / ▼ keys to change value and ✓ key to validate. Default value is General alarm: will be activated for any default Possible values are:</p> <p style="text-align: right;">No action Any default (default value) High temperature alarm on S1 Low temperature alarm on S1 ECO function running Clock program Thermal treatment running Secondary tank loaded Pump(s) default Fouling function on alarm Limitation function (needs optional S4 sensor)</p> <p>17. Press ▼ key to access to next line</p>	<p>Configuration 9/ 18 ⇌ ⇌</p> <p>...</p> <p>Relay 1 function General alarm</p> <p>...</p> <p>Nothing ✓General alarm High T° alarm Low T° alarm ECO function Timer** Th.Tr activated Tank loaded Pump default HE fouled Primary too low</p>
<p>18. Press ✓ key to change relay 2 function. Use ▲ / ▼ keys to change value and ✓ key to validate. Default value is High T° alarm: will be activated with high temp alarm Possible values are the same as relay 1, see above (step 13)</p> <p>19. Press ▼ key to access to next line</p>	<p>Configuration 10/ 18 ⇌ ⇌</p> <p>Relay 2 function High T° alarm</p> <p>...</p> <p>General alarm ✓High T° alarm Low T° alarm</p> <p>...</p>
<p>20. Press ✓ key to change relay 3 function. Use ▲ / ▼ keys to change value and ✓ key to validate. Default value is nothing (no action). Possible values are the same as relay 1, see above (step 13)</p> <p>21. Press ▼ key to access to next line</p>	<p>Configuration 11/ 18 ⇌ ⇌</p> <p>Relay 3 function Nothing</p> <p>...</p> <p>✓Nothing General alarm</p> <p>...</p>
<p>22. Press ✓ key to enable 230V 3 points output. Use ▲ / ▼ to change value OFF/ON, press ✓ to enable or « Esc » to cancel. ① : 230V 3 points output is disabled as not used on standard units and to avoid noise and to avoid wear of the corresponding relays.</p> <p>23. Press ▼ key to access to next line</p>	<p>Configuration 12/ 18 ⇌ ⇌</p> <p>...</p> <p>3 points valve on Y1 OFF</p> <p>...</p>
<p>24. Press ✓ key to modify 3 points valve opening time. Use ▲ / ▼ keys to change value and press ✓ key to validate or "Esc" key to cancel. ① : No action if 3 points valve is set to OFF.</p> <p>25. Press ▼ key to access to next line</p>	<p>Configuration 13/ 18 ⇌ ⇌</p> <p>...</p> <p>- Opening time 30s</p> <p>...</p>
<p>26. Press ✓ key to modify 3 points valve closing time. Use ▲ / ▼ keys to change value and press ✓ key to validate or "Esc" key to cancel. ① : No action if 3 points valve is set to OFF.</p>	<p>Configuration 14/ 18 ⇌ ⇌</p> <p>...</p> <p>- Closing time 30s</p> <p>...</p>


27. Press ∇ key to access to next line	
28. Press \checkmark key to change the display language. Use \wedge / ∇ keys to change value and press \checkmark key to validate or "Esc" key to cancel. \textcircled{i} : All menus will be displayed in the selected language***	Configuration 15/ 18 \leftrightarrow \leftrightarrow ... Language selection English ...
29. Press ∇ key to access to next line	
30. Press \checkmark key to production reset the controller. Use \wedge / ∇ keys to change value NO/YES and press \checkmark key to validate or "Esc" key to cancel.  At the opposite of describe restart found in some sub-menus, this production reset put all parameters by default, as described into this manual, putting the controller in its original state, before factory configuration of pump(s) and sensor(s). It will be necessary to reconfigure these last ones.	Configuration 16/ 18 \leftrightarrow \leftrightarrow ... Production reset NO ...
31. Press ∇ key to access to next line	
32. Software version. Read only. Also visible into the info menu or by pressing the \textcircled{i} key.	Configuration 17/ 18 \leftrightarrow \leftrightarrow ... Software version V.nn ...
33. Press ∇ key to access to next line	
34. Press \checkmark key then use \wedge / ∇ to change value OFF/ON, press \checkmark to enable or « Esc » to cancel.  ANY CHANGE INTO THIS MENU, EXCEPT LANGUAGE SELECTION REQUIRES A CONTROLLER RESTART!	Configuration 18/ 18 \leftrightarrow \leftrightarrow ... Restart required ! OFF ...
35. Press « Esc » key to get back to main menu. Press again to point 1 st line of Main menu.	

** If Timer selected, and extra line will be displayed. This will add a clock program, with 6 possible daily time schedules to ON/OFF relay contact. Please refer to S1 clock program as settings are similar (except they apply to ON/OFF instead of a setpoint value).


*** It is not necessary to restart the controller when changing the language only.

11 Alarms/Functions and acknowledgement

11.1 Alarms

Alarms are indicated via  key that red flashes.



To acknowledge an alarm, press twice on  key, press \checkmark key, then on ∇ key (Execute) and finally on \checkmark key to confirm. If several alarms are displayed but not active anymore, they will all be cleared and their status passes from FAULT to NORMAL.

Possible alarms are listed below:



Display :	Meaning :
Alarm history nn/tt	Nn=Alarm(s) number, tt=Total lines number
Acknowledge	Press \checkmark , then ∇ and \checkmark to acknowledge ALL alarms
S1 150°C \blacktriangleright	S1 sensor is faulty or wires disconnected.
S2 150°C \blacktriangleright	S2 sensor is faulty or wires disconnected.
S3 150°C \blacktriangleright	S3 sensor is faulty or wires disconnected.
S4 150°C* \blacktriangleright	S4 sensor is faulty or wires disconnected.

S5 150°C*	▶	S5 sensor is faulty or wires disconnected.
S6 150°C*	▶	S6 sensor is faulty or wires disconnected.
PT1 150°C*	▶	Pt1 sensor is faulty or wires disconnected.
PT2 150°C*	▶	Pt2 sensor is faulty or wires disconnected.
P1 Alarm FAULT	▶	Primary pump 1 default.
P2 Alarm FAULT*	▶	Primary pump 2 default.
P3 Alarm FAULT*	▶	Pump 3 default (secondary or primary tank charge pump as per config.).
P4 Alarm FAULT*	▶	Pump 4 default (secondary or primary tank charge pump as per config.).
S1 high T° FAULT	▶	High temperature alarm measured by S1 temperature sensor.
S1 low T° FAULT	▶	Low temperature alarm measured by S1 temperature sensor.
S4 too low T° FAULT*	▶	Limitation function activated and low temperature measured on S4
Therm. treat. FAILURE	▶	Thermal treatment temperature not reached as per fct parameters
Fouled exch. FAULT	▶	Fouling function activated and too high S3 temperature measured

* As per equipment.

To get alarm detail (date and time it occurred), select requested alarm into the list and press ✓ key.

11.2 Functions

Running functions are indicated with  button led green flashing. Pressing  button indicates the last function event, with its occurrence details (date and time).




It is not possible to acknowledge an active alarm or function.

The different functions are listed below:

Display :	Meaning :
Alarm list detail nn/tt	Nn=Function(s) number, tt=Total lines number
SAFETY ACTIVE ▶	Safety function running
SAFETY INACTIVE ▶	End of safety function
Therm. Treat. Started ▶	Thermal treatment running
Therm. Treat. Stopped ▶	End of Thermal treatment
ECO MODE STARTED ▶	ECO function running
ECO MODE STOPPED ▶	End of ECO function
MODE BOOSTER STARTED ▶	BOOSTER function running
MODE BOOSTER STOPPED ▶	End of BOOSTER function
STANDBY ACTIVE ▶	Standby function activated. Remote contact closed, unit in standby
STANDBY INACTIVE ▶	Standby function not active. Unit operating normally

11.3 Events'list

If  button is not flashing, press it once. If flashing, press it 3 times to access to events' list. The last 50 events are displayed from more recent to oldest. To get more info, select one and press ✓ key to get occurrence date and time.

12 Production RESET

If lot of parameters have been changed (PID, extended functions...) and you want to find back all default settings at once, you should proceed the production reset.

Access code is 2000.

- From the main menu, go to line#2: Password enter ▶. Then press ✓ key
OR
Press a few seconds on ✓ key
- Display indicates « Login » and a cursor is placed on **0 - - -**

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3. Using \wedge / \vee keys (meaning + / -), enter the 1st digit and validate by pressing \checkmark key. The 1st digit must be 2. So you have to display **2 - - -** by pressing once the + key, then pressing \checkmark key.
4. Now comes the 2nd digit that must be 0 (zero). Just press on \checkmark key as the default digit value is already zero.
5. Repeat the same operation for 3rd and 4th digits that must be zero also. For that, just press twice the \checkmark key.
6. Once correct code is entered, information display appears (hardware/software versions, controller reference...). Press « Esc » key to come back to the main menu.
The display now shows two keys on its top right corner, indicating the factory level access is activated. Now, most of the lines show « \blacktriangleright » at their end, meaning their access is now possible and the configuration menu can be accessed now.
7. Go to “Configuration” line and press \checkmark key.
8. Go to “Production Reset” line and press \checkmark key.
9. Press \vee key to select **YES** and press \checkmark key to confirm
10. Controller restarts
11. Repeat steps 1 to 7 to access again to Configuration sub-menu
12. Adjust parameters: AT LEAST pumps’ number: P1/P2 and P3/P4
13. Then go to the last line “Restart required!”, press \checkmark key, then \vee and \checkmark key to restart.
14. Controller restarts with new configuration.

Remark: After 10 minutes without pressing any key, the software logs out from factory level, the key disappears and the software is back to end-user access level.

Log out

It is not necessary to wait 10 minutes until logging out. It is possible to log out at any time.
For that :

1. Press a few seconds on \checkmark key
2. Select « Log off » by pressing \vee key
3. Press \checkmark key
4. The key symbol has disappeared from the display. Access level is now back to end-user.



Once a production reset is done, it is **MANDATORY** to configure the unit, especially operating mode (Standard or Premium) **AND** pumps’ number.
For that, check [Configuration](#).

13 Trouble shooting

FINDINGS	PROBABLE CAUSES	REMEDIES
Controller doesn't start	No power from mains or PCB transformer	Check FU5 (230V transfo), FU7 (24VDC transfo) and mains supply
Pump not operating	Locked rotor or damaged	Force to rotate. Replace if required
	Corresponding led is not lit on PCB	Check FU5 and FU6 fuses
	Pump relay damaged	Replace Power Board
	Pump protection fuse blown	Check then replace if necessary
	High Alarm condition detected	Clear alarm then reset system
	No voltage to control board terminals	Check power supply cable and fuses
	No voltage to pump motor terminals	Check protection fuse on main board, cable condition and connections

	Controller improperly set	Check pumps' configuration into Configuration menu
Low temp alarm condition	Primary pump stopped	See "Pump not operating"
	Too low primary temperature	Check for a closed valve on the primary side
	Too high tap water flow rate (SI)	Reduce buffer vessel charging flow rate
	S1 set point too high	Adjust setpoint into S1 Menu
	Control valve remains closed	See "Modulating valve does not operate"
Modulating valve does not operate	Damaged or broken actuator	Test and replace if necessary
	Broken or improperly tightened coupling	Check and replace if necessary
	Valve blocked	Replace
	No signal from the controller	Check FU6 then replace if necessary
	Supply wires improperly tightened	Check wires, re-tighten connections
	Actuator stroke restricted	Dismount then clean the valve
High alarm condition detected	Charging pump stopped (SI versions)	Refer to "Pump not operating" above
	Low recirculation flow rate (I versions)	Check and fix problem
	Alarm differential too low	Check and set the controller into S1 Menu
	Actuator not closing	Refer to "The actuator does not operate".
	Too much differential pressure across the control valve	Check the way the TWM is piped-up. Eventually install small bypass before the unit to break DP
Correct temperatures across the exchanger not obtained. Valve and pumps operating satisfactorily	Excessive exchanger scaling at the primary or secondary side	Open and clean the exchanger according to cleaning instructions
	Primary pipe work obstructed or strainer upstream clogged	Inspect primary pipe work. Clean strainer on the primary side
	Shut-off valves closed	Open shut-off valves
	Air presence in the primary circuit	Purge. Check no high parts where air could be trapped exist
	Excessive pressure drops	Check pipe size is suitable for nominal flow rate
Temperature does not increase in the buffer tank and the tap water value is correct. (S.I.)	Recirculation flow rate exceeds charging flow rate.	Check and measure charging and recirculation flow rates. Adjust when necessary
		Recirculation flow rate < 0.6 x Charging flow rate

14 Maintenance and repairs

Cetetherm AquaEfficiency and/or Pilot don't require any specific maintenance.

The frequency of the inspections depends on the water hardness, temperature and flow rate.

- Weekly inspection to check for leaks from pipes or components.
- Weekly inspection to make sure that the operation control systems is stable and that the temperature does not fluctuate. Temperature hunting causes unnecessary wear of valves, actuators.
- The control box does not require any specific maintenance; annually check the electrical connections tightening.
- Annually check the control valve that no leaks are detected.
- Regularly check lime scaling on the connected devices as scaling depends of water quality, hardness and temperatures levels.

Scaling of the secondary side will be evidenced by:

- A high pressure drop on the secondary side of the exchanger. This one should not exceed 50 kPa on all models (heat exchanger only)

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- Improper temperature range on the secondary side of the exchanger
- Low temperature difference between inlet and outlet on the primary side of the exchanger when the control valve is fully open.
- An alarm message if fouling function is set correctly and activated.



Only replace any defective parts with the **original** spare parts.
Please contact your Cetetherm distributor for spare parts, note serial number and model designation.



Maintenance work must be carried out by a qualified and authorized technician.



Hazard of severe electrical shock or burn.
Before cleaning and servicing, disconnect power supplies.



Risk of burns. Let the pipes and exchanger cool down before starting out with maintenance work.

14.1 Cleaning the plates and gaskets heat exchangers (P-series)

Opening heat exchanger should be done as per following procedure:

1. Isolate primary and secondary hydraulic circuits.
2. Open the purge cocks to drop the internal pressure of each side.
3. Measure the distance between the two frames of the exchanger (Plate pack thickness) and note it down.
4. Open the exchanger by unscrewing and removing the frame compression bolts.

Plates' pack thickness PHE in between frames  (EFP series):

Plates Number 0,5mm SS316	15	19	29	39	47	71	85
Plates' pack thickness (mm)	35	44	66	88	105	158	189

NOTE: To avoid injuries owing to sharp edges, protective gloves should always be worn when handling plates and protective sheets (like the ones for insulation).

5. Remove the plates without damaging the gaskets and note their orientation and position.
6. Clean the plates using a soft plastic brush and water or a solution of diluted acid in accordance with PHE plate general cleaning instructions.



DO NOT USE hydrochloric acid or any acid that could corrode stainless steel plates.



DO NOT USE water with more than 330 ppm Cl when making a cleaning solution.



Nitric (for calcium carbonate), sulfamic (for calcium sulphate) or citric (for silt) acids can be used. Concentration should not exceed 4% at 60°C. Protective gloves and glasses should always be worn while these operations.

7. Carefully rinse the plates with clean water after cleaning.
8. Remount the plates in the same order and at the same position they were before.
9. Screw the frames to the same distance they were before (Plate pack thickness dimension).
10. Clean the control sensor pocket.

14.2 Cleaning Copper Brazed and Fusion Bonded heat exchangers (B/F-series)

Accessing to the heat exchanger is a quick process, following the next steps:



Be sure the heat exchanger has been isolated, using primary and secondary closing valves



Wait water contained in system has cooled down enough before unscrewing CIP connections to lose pressure and then draining circuit, to remove water from it.



Only the specially designed, pre-fitted cleaning kit and compatible agents should be used for cleaning fusion-bonded or soldered plate heat exchangers. Protective gloves and glasses should always be worn while these operations.



Picture 39

Open top and bottom clips to remove insulation.

To process cleaning, use CIP connections 3/4" (CB60/FB52) or 1"1/2 (CB/FB76). Remove the caps on the connections and plug in the cleaning system.



Picture 40

Cetetherm recommends the use of a pre-fitted cleaning unit together with a specific cleaning agent that is environmentally friendly. There are several product solutions available depending on the cleaning job to be tackled. Use a neutralizing solution before rinsing. For further information's, contact a dedicated heat exchangers' cleaning company.



DO NOT USE hydrochloric acid or any other acid that may corrode stainless steel plates.



DO NOT USE water containing more than 300 ppm Cl for the preparation of cleaning solutions.

Nitric acid (for calcium carbonate), sulphamic acid (for calcium sulphate) or citric acid (for silt clay) can be used. The concentration should not exceed 4% at 60 ° C. Gloves and goggles should always be worn during these operations.

Gently rinse the plates with clean water before cleaning.

14.3 Opening the control box

Open the front panel by turning the lock button counterclockwise and pull the front panel.



Picture 41

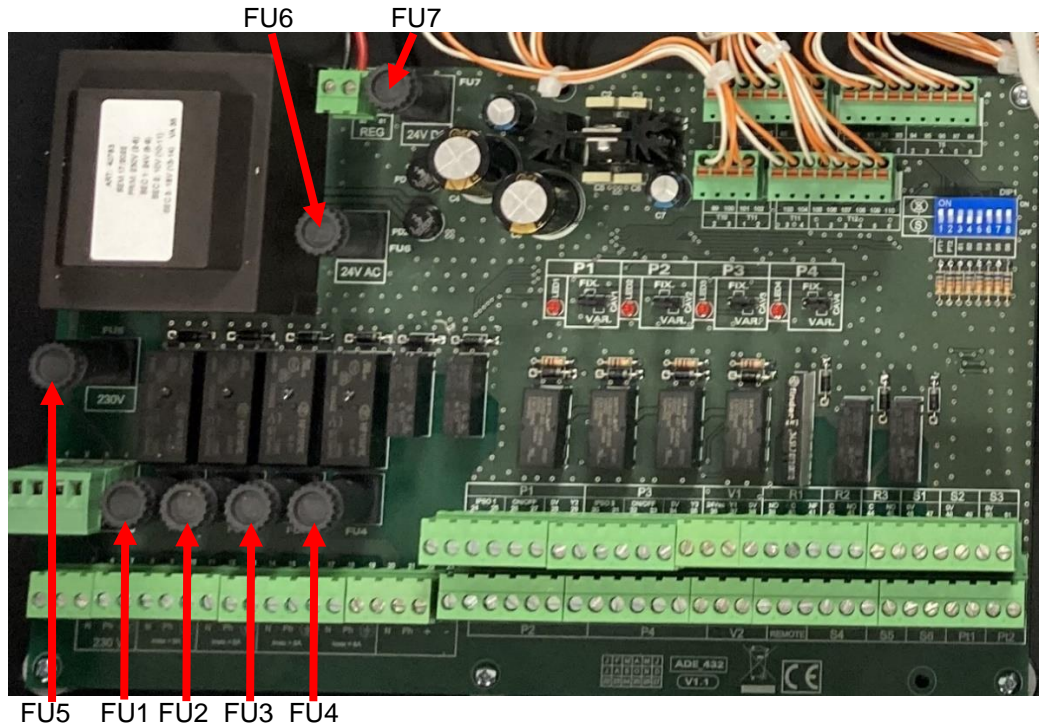
14.4 Change fuses

The control box is fitted with a set of fuses to protect the different components against overload.

Extra fuses are included in the control box for quick servicing.



The service work must be carried out by an authorized service technician. Turn off the power supply before starting to work.



Picture 42

Fuse	FU1	FU2	FU3	FU4	FU5	FU6	FU7
Protection	P 1	P 2	P 3	P 4	230V Transfo. primary (Power PCB protection)	24V AC actuator	24V DC Controller
Size	5 x 20	5 x 20	5 x 20	5 x 20	5 x 20	5 x 20	5 x 20
Rating	2,5 A	2,5 A	2,5 A	2,5 A	200 mA	1 A	500 mA
Voltage	250 V	250 V	250 V	250 V	250 V	250 V	250 V

14.5 Replace / add a pump

Pumps' configuration and connections are factory made. It could happen a pump is added (recycling pump on P3 typically). In a servicing situation the correct pump must be identified. The below table gives pump used depending of the unit.

Codification	Meaning	Connected pump(s)
EFxxxIS	Instantaneous Single	P1 or P2
EFxxxID	Instantaneous Double	P1+P2
EFxxxSS	Semi-instantaneous Single / Single	P1 or P2 + P3 or P4
EFxxxDS	Semi-instantaneous Double / Single	P1+P2+ P3 or P4
EFxxxDD	Semi-instantaneous Double / Double	P1+P2+P3+P4



Control that the fuse has the correct size compared to the pump consumption. Pump consumption mustn't exceed 2.5 A

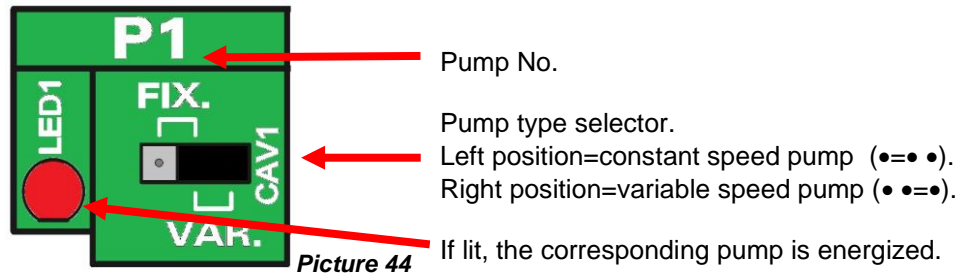
To add / replace a pump:

1. Switch off main power
2. Open the control box and pump cover.
3. Wire pump power supply from the power terminal in the control box.

Connection on PCB terminal	Connection on Magna 3 pump		
	N	Ph	⊥
Pump 1	8	9	10
Pump 2	11	12	13
Pump 3	14	15	16
Pump 4	17	18	19

Picture 43

4. Select the pump type
On the right side of the printed circuit board, PCB; find the selector for the actual pump. Place the pump type selector according to pump type.



5. Isothermic or default pump contact wiring
NC and C are alarm output. There is no polarity. NO terminal not used.

	Connection on PCB terminal		Connection on Magna 3 pump
	C	NC	
Pump 1	24	25	<p>Picture 45</p>
Pump 2	52	53	
Pump 3	30	31	
Pump 4	58	59	

6. **ON/OFF (or Start/Stop) contact wiring**
No polarity. Must be a potential-free contact.

	Connection on I/O terminal		Connection on Magna 3 pump
	⊥	S/S	
Pump 1	24*	25	<p>Picture 46</p>
Pump 2	51*	52	
Pump 3	30*	31	
Pump 4	57*	58	

7. **0-10V Contact**
Respect the polarity.

	Connection on I/O terminal		Connection on Magna 3 pump
	0V ⊥	0/10V IN	
Pump 1	28	29	<p>Picture 47 Connect ⊥ and IN.</p>
Pump 2	56	57	
Pump 3	34	35	
Pump 4	62	63	

Once pump is electrically wired, remember to declare it into "Configuration" menu. Also don't forget to set the pump (see further on for Magna3 pumps)

14.6 Relays' wiring

Relay 1 is NO/NC (Normally Open or Normally Closed), Relays 2 and 3 are NO only (normally open).

Relay number	Operating mode	Connection on PCB terminal		
		C	NO	NC
1	NO/NC	40	39	41
2	NO	42	43	
3	NO	44	45	

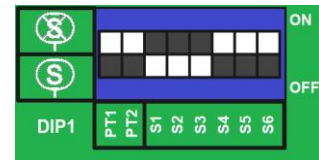


If using 230V phase through this contact, do not exceed 2A load.

14.7 Change or add an extra temperature sensor

Please see [6.1 Electrical wiring diagram](#).

Temperature sensors are real or simulated thanks to micro switches (DIP1). If a sensor is not present, corresponding micro switch must be *ON* (up position). If the sensor is present and wired, put the micro switch to *OFF* (down position).



Picture 48

Temperature sensors

Sensor	Location	PCB terminal	
		0V	Sn
S1	Secondary outlet (DHW)	46	47
S2	Secondary inlet (CW/Recycling),	48	49
S3	Primary outlet	50	51
S4*	Primary Inlet	70	71
S5*	Outdoor (for heating curve)	72	73
S6*	Top of secondary tank ("AQUATANK" extended fct only)	74	75
PT1*	Multiple, used for Primary tank or Pre-heat or Pilot/Pilot+ extended functions	76	77
PT2*	Multiple, used for Primary tank or Pilot+ extended fcts	78	79

*: Optional


14.8 Remote control wiring

The unit can be placed in "standby" mode, via the remote contact. To do so, a volt free contact should be connected directly on the controller in the upper part of the control box. The contact is wired on terminals D5 and M of T5 block.



Please refer to [Electric wiring diagram](#) chapter for connections.
DO NOT power supply this contact, Volt free contact only.

Working principle :

When contact is open (by default), unit is operating normally.
If contact closes, pump(s) is (are) stopped and control valve(s) closes (0V signal). The unit is then in standby mode, but still power supplied as the controller. The  key flashes and pressing on it you can read « STANDBY ACTIF ».

14.9 Add Pilot or Pilot+ functionalities

It is possible to wire an extra control valve, to add Pilot(+) functionalities to AquaEfficiency. It is also necessary to add extra temperature sensor(s) PT1, PT2*, S5*, please refer to [14.7 Change or add an extra temperature sensor](#).



Total actuators' power consumption should not exceed 15VA. Please refer to [Electric wiring diagram](#) chapter for connections.

Description	PCB Terminal	
	No	Marked
24VAC, (15-V1va) VA max	64	24VAC
0-10 VDC	65	Y4
0V	66	0V
PT1	76+77	Pt1
PT2, only for Pilot +	78+79	Pt2
S5, optional outdoor temperature sensor for Pilot+	72+73	S5

Once hardware has been wired, it is necessary to activate the corresponding function on the controller.

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Please refer to 9.13 Extended Functions chapter, section Pilot with AquaEfficiency or Pilot+ with AquaEfficiency.

14.10 Technical data

All models are power supplied 230V 50Hz + Ground.

Model	PRIMARY SIDE					SECONDARY SIDE (SS/DS/DD models only)		
	3 port Valve DN	Valve Kvs	Pump type	I _{max} (A)	P _{max} (W)	Pump type	I _{max} (A)	P _{max} (W)
EFF52/EFB60	32	16	Para Maxo 30 -10 Magna 3D 32-80	1,2	144	Magna 3 32-40N	0,61	74
EFF76/EFB112	40	25	Magna 3(D) 40-100	1,61	361	Magna 3 32-100N	1,47	180
EFP3000	25	10	Magna 3(D) 40-60	1,47	178	Magna 3 32-40N	0,61	74
EFP5000	40	25	Magna 3(D) 40-60	1,47	178	Magna 3 32-40N	0,61	74
EFP7000	40	25	Magna 3(D) 40-120	1,95	440	Magna 3 32-100N	1,47	180

Model	Instantaneous*		Semi-Instantaneous*		Max Weight	Max Dim (LxWxH)
	Total Electrical Consumption				(kg)	(mm)
EFF52/EFB60	1.8 A	159 W	2.41 A	233 W	86	520x560x1225
EFF76/EFB112	2.21 A	376 W	3.68 A	556 W	135	580x860x1290
EFP3000	2.07 A	193 W	2.68 A	267 W	191	540x850x1410
EFP5000	2.07 A	193 W	2.68 A	267 W	199	540x850x1410
EFP7000	2.55 A	455 W	4.02 A	635 W	281	540x970x1410

* : For normal operating mode, without Booster nor Safety function activated.

In case of Booster function, add the standard primary concerned pump consumption (only if double pumps on primary side).

In case of Safety function, add the standard primary pump consumption (only if double pumps on primary side) and add the standard secondary pump consumption (only if double pumps on secondary side).

15 Pump settings



Pumps of delivered units have all been factory programmed. This guide is more applicable in case of adding a pump or pump replacement for which it is not set.

Picture 49

Button	Function
	Goes to the "Home" menu.
	Returns to the previous action.
	Navigates between main menus, displays and digits. When the menu is changed, the display will always show the top display of the new menu.
	Navigates between submenus.
	Saves changed values, resets alarms and expands the value field.

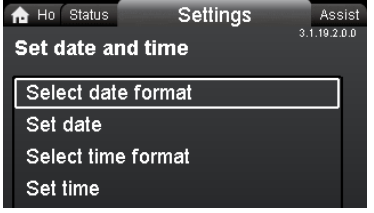
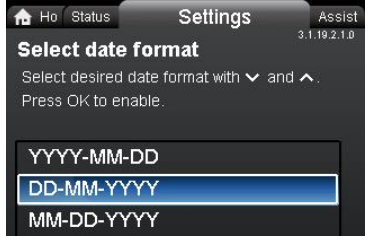
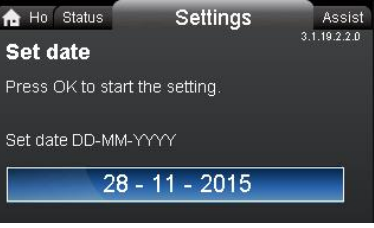
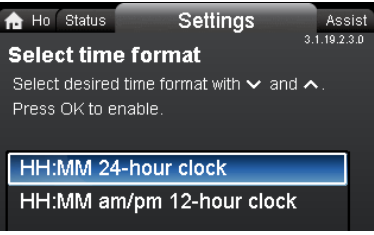
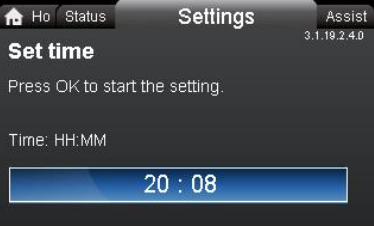
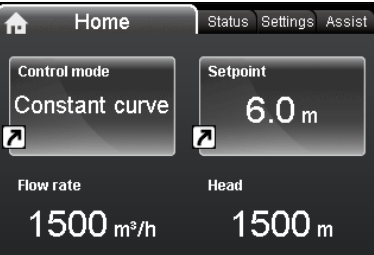
The pump incorporates a startup guide which is started at the first startup. After the startup guide, the four main menus will appear in the display.

The startup guide will guide you through the general settings of the pump, such as language, date and time.

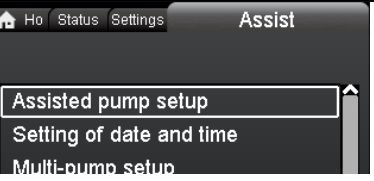
15.1 Setting Language


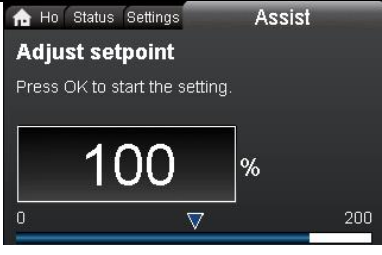
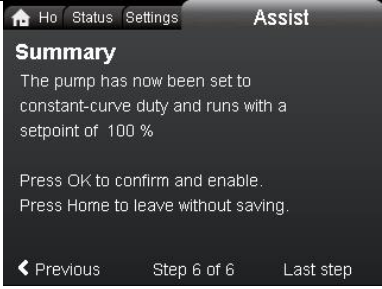
<p>NOTE: Measuring units are automatically changed according to selected language.</p> <ol style="list-style-type: none"> 1. Navigate from "Home" to "Settings". 2. Select the line "General settings". 3. Press [OK]. 	
<ol style="list-style-type: none"> 4. Select the line "Language". 5. Press [OK]. 6. Select what language to use. 7. Press [OK] to enable. 	

15.2 Set date and time

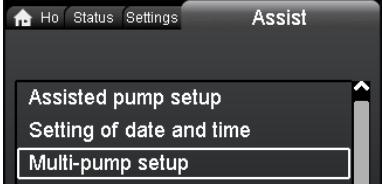
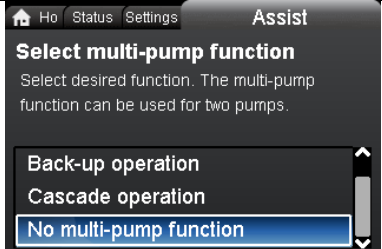

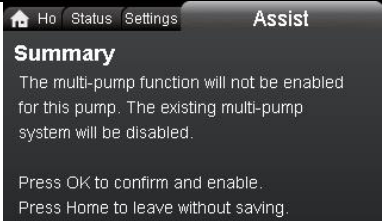
<ol style="list-style-type: none"> 1. Navigate from "Home" to "Settings". 2. Select the line "General settings". 3. Press [OK]. 4. Select the line "Set date and time". 5. Press [OK]. 	
<ol style="list-style-type: none"> 6. Select the line "Select date format". 7. Select format using ^ v keys 8. Press [OK] to enable. 9. Press < to return to the menu "Set date and time" 	
<ol style="list-style-type: none"> 10. Select the line "Set date". 11. Press [OK]. 12. Press [OK] to start setting and select digit with < > and adjust with ^ v . 13. Press [OK] to save. 14. Press < to return to the menu "Set date and time" 	
<ol style="list-style-type: none"> 15. Select the line "Select time format". 16. Press [OK] to enable. 17. Press < to return to the menu "Set date and time" 	
<ol style="list-style-type: none"> 18. Select the line "Set time". 19. Press [OK]. 20. Press [OK] to start setting and select digit with < > and adjust with ^ v . 21. Press [OK] to save. 22. Press < to return to the menu "Set date and time" 	
<ol style="list-style-type: none"> 23. When all settings are done, press < to return to the main menu "Settings" or on Home to come back to the home screen. 	

15.3 Setting pump control mode

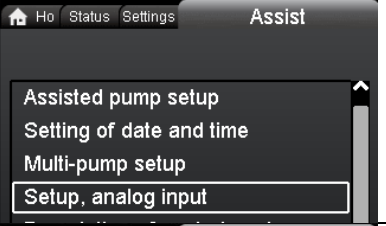
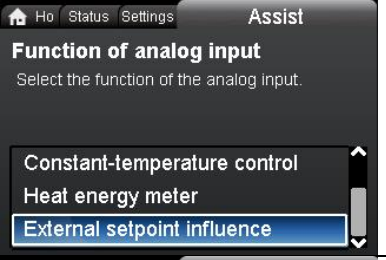
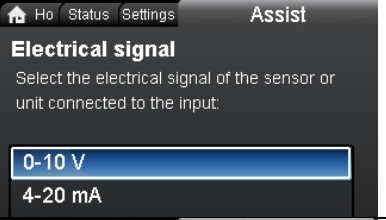
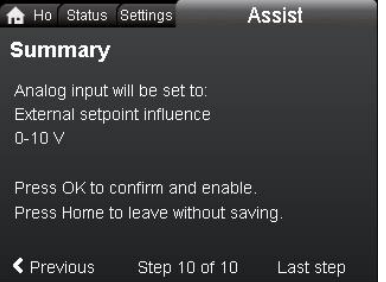
<p>Note: Cetetherm recommend to use, Constant Curve and with setpoint 100%.</p> <ol style="list-style-type: none"> 1. Navigate from "Home" to "Assist". 2. Select the line "Assisted pump setup". 3. Press [OK] then > twice 	
---	---

<ol style="list-style-type: none"> 4. Go to the submenu “Select control mode”. 5. Select the line “Constant curve”. 6. Press [OK] to save. 	
<ol style="list-style-type: none"> 7. Go to the submenu “Adjust setpoint”, press [OK] to start the setting. 8. Select digit with < > and adjust with ^ v . 9. Press [OK] to save. 	
<ol style="list-style-type: none"> 10. Press > to see setting summary. 11. Press [OK] to confirm and enable. 	


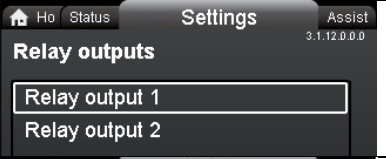

15.4 Settings for double pumps

<ol style="list-style-type: none"> 1. Navigate from “Home” to “Assist”. 2. Select the line “Multi-pump setup”. 3. Press [OK]. 	
<ol style="list-style-type: none"> 4. Go to submenu “Select multi-pump function”. 5. Select the line “No multi-pump function”. 6. Press [OK] to save the setting. 	
<ol style="list-style-type: none"> 7. Press > to see settings summary. 8. Press [OK] to confirm and enable. 9. Press  to get back to home screen. 	

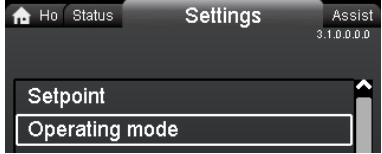
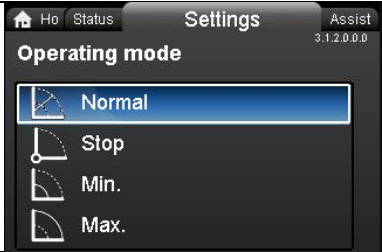
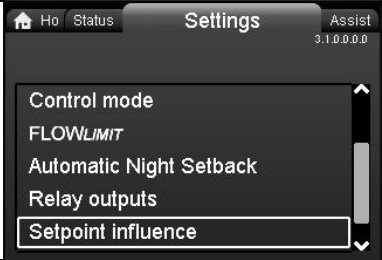

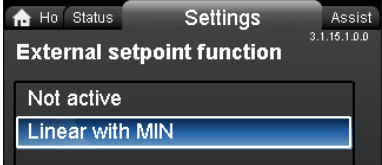
15.5 Setup analog inputs

<ol style="list-style-type: none"> 1. Navigate from “Home” to “Assist”. 2. Select the line “Setup, analog input”. 	
<ol style="list-style-type: none"> 3. Go to the submenu “Function of analog input”. 4. Select the line “External setpoint influence”. 5. Press [OK]. 	
<ol style="list-style-type: none"> 6. Go to the submenu “Electrical signal”. 7. Select the line “0-10V”. 8. Press [OK] to save the setting. 	
<ol style="list-style-type: none"> 9. Press > to see settings summary. 10. Press [OK] to confirm and enable. 	

15.6 Setup Relay1 output

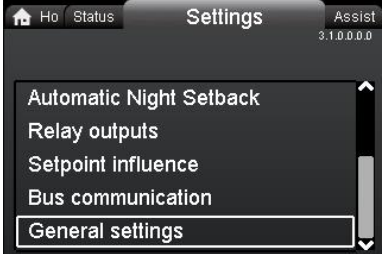
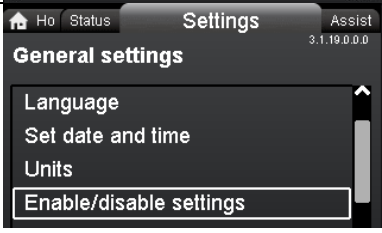
<ol style="list-style-type: none"> 1. Navigate from “Home” to “Settings”. 2. Select the line “Relay outputs”. 3. Press [OK]. 	
<ol style="list-style-type: none"> 4. Select the line “Relay output 1”. 5. Press [OK]. <p><i>ⓘ: Relay#2 is not used</i></p>	
<ol style="list-style-type: none"> 6. Select “Alarm”. 7. Press [OK] to save the setting. 	






15.7 Pump settings

<ol style="list-style-type: none"> Navigate from "Home" to "Settings". Select the line "Operating mode". Press [OK]. 	
<ol style="list-style-type: none"> Select "Normal". Press [OK] to save the setting. 	
<ol style="list-style-type: none"> Return to the main menu "Settings". Select the line "Setpoint influence". Press [OK]. 	
<ol style="list-style-type: none"> Select "External setpoint function". Press [OK]. 	
<ol style="list-style-type: none"> Select "Linear with MIN". Press [OK] to save the setting. <p>Note: The operating mode must be set to "Normal" before a control mode can be enabled.</p>	








15.8 Enable/disable settings

The possibility of making settings can be disabled for protective reasons.

<ol style="list-style-type: none"> Navigate from "Home" to "Settings". Select the line "General settings". Press [OK]. 	
<ol style="list-style-type: none"> Select the line "Enable/disable settings". Press [OK]. 	

<p>6. To lock the pump, use   and select "Disable".</p> <p>7. Press [OK] to save the setting.</p> <p>The pump will now be locked for settings. Only the "Home" display will be available.</p> <p>To unlock the pump and allow settings, press both   simultaneously for at least 5 seconds.</p>	
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15.9 Grundfos Eye operating indications

Grundfos Eye	Indication	Cause
	No light on	Power off Pump not running
	Two opposite green indicator lights running in the direction of rotation of the pump.	Power on. Pump running.
	Two opposite green indicator lights permanently on.	Power on. Pump not running.
	One yellow indicator light running in the direction of rotation of the pump.	Warning. Pump running.
	One yellow indicator light permanently on.	Warning. Pump stopped.
	Two opposite red indicator lights flashing simultaneously.	Alarm. Pump stopped.
	One green indicator light in the middle permanently on (in addition to another indication).	Remote-controlled. The pump is currently being accessed by the Grundfos GO.

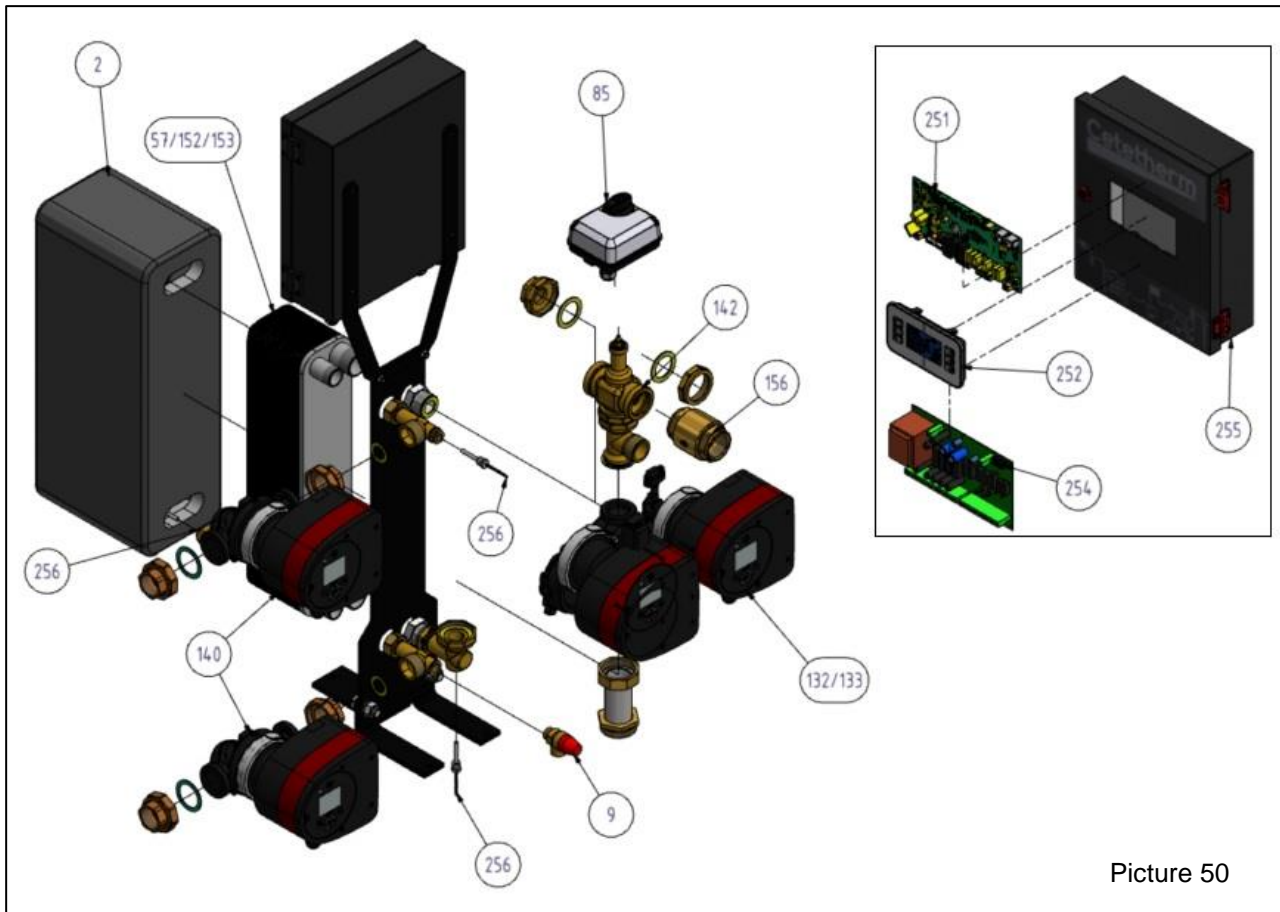
Warning and alarm codes	Fault	Auto restart?	Corrective actions
Pump communication fault (10) Alarm	Communication fault between different parts of the electronics.	Yes	Replace the pump or call GRUNDFOS SERVICE for assistance. Check if the pump is running in turbine operation. See code (29) Forced pumping.
Forced pumping (29) Alarm	Other pumps or sources force flow through the pump even if the pump is stopped and switched off.	Yes	Switch off the pump on the main switch. If the light in the Grundfos Eye is on, the pump is running in forced-pumping mode. Check the system for defective non-return valves and replace, if necessary. Check the system for correct position of non-return valves, etc.
Undervoltage (40, 75) Alarm	Supply voltage to the pump too low.	Yes	Check that the power supply is within the specified range.
Blocked pump (51) Alarm	The pump is blocked.	No	Dismantle the pump and remove any foreign matter or impurities preventing the pump from rotating.
Dry running (57) Alarm	No water at the pump inlet or the water contains too much air.	No	Air vent the pump before a new startup. Check that the static pressure is correct. If still issues after, replace the pump, or call GRUNDFOS SERVICE for assistance.
High motor temperature (64) Alarm	Temperature in stator windings too high.	No	Check the winding resistance.
Internal fault (72, 84, 155, 157) Warning/alarm	Internal fault in the pump electronics.	Yes	Replace the pump, or call GRUNDFOS SERVICE for assistance
Overvoltage (74) Alarm	Supply voltage to the pump too high.	Yes	Check that the power supply is within the specified range.

Cetetherm AquaEfficiency Neo, Pilot, Pilot+, Pre-heater
Installation, service and operating instructions

Communication fault, twin-head pump (77) Warning	Communication between pump heads disturbed or broken.	Yes	Check that the second pump head is powered or connected to the power supply.
Internal sensor fault (88) Warning	The pump is receiving a signal from the internal sensor which is outside the normal range.	Yes	Check that the plug and cable are connected correctly in the sensor. The sensor is located on the back of the pump housing. Replace the sensor or call GRUNDFOS SERVICE for assistance.
External sensor fault (93) Warning	The pump is receiving a signal from the external sensor which is outside the normal range.	Yes	Does the electrical signal set (0-10 V or 4-20 mA) match the sensor output signal? If not, change the setting of the analog input. Check the sensor cable for damage. Check the cable connection at the pump and at the sensor. Correct the connection, if required. See section 16.2 Sensor condition. The sensor has been removed, but the analog input has not been disabled. Replace the sensor or call GRUNDFOS SERVICE for assistance.

16 Exploded views and spare part list

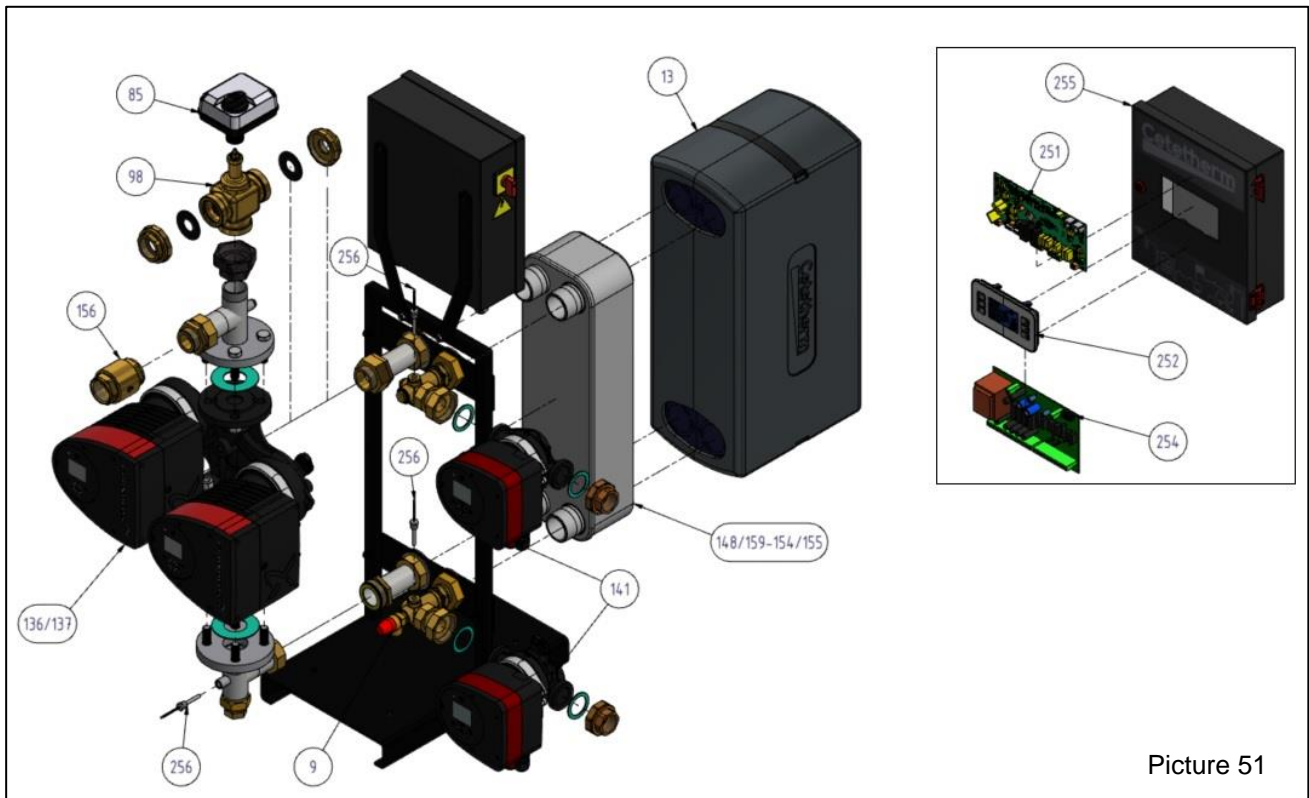
16.1 EFF52/EFB60



Picture 50

REP	DESCRIPTION
251	Temperature controller Micro 4000
252	HMI display with cable for Micro 4000
254	ADE_432 power board with connectors
255	Control box, empty
256	Temperature sensor Micro 4000
9	Safety valve 15/21 10B
156	1"1/2 F Non return valve
152	Fusion bonded 100% stainless steel heat exchanger (FB52) 30 plates
153	Fusion bonded 100% stainless steel heat exchanger (FB52) 50 plates
57	Fusion bonded 100% stainless steel heat exchanger (FB52) 60 plates
180	Copper brazed heat exchanger (CB60) 30 plaques
181	Copper brazed heat exchanger (CB60) 50 plaques
59	Copper brazed heat exchanger (CB60) 60 plaques
132	Pump MAGNA3 32-80 1*230V
133	Pump MAGNA3D 32-80 1*230V
140	Pump MAGNA3 32-40 N 1*230V
85	Actuator 24V supply 0-10 Volts signal 15 s
142	Kit body 3 Port control valve DN32
2	Insulation

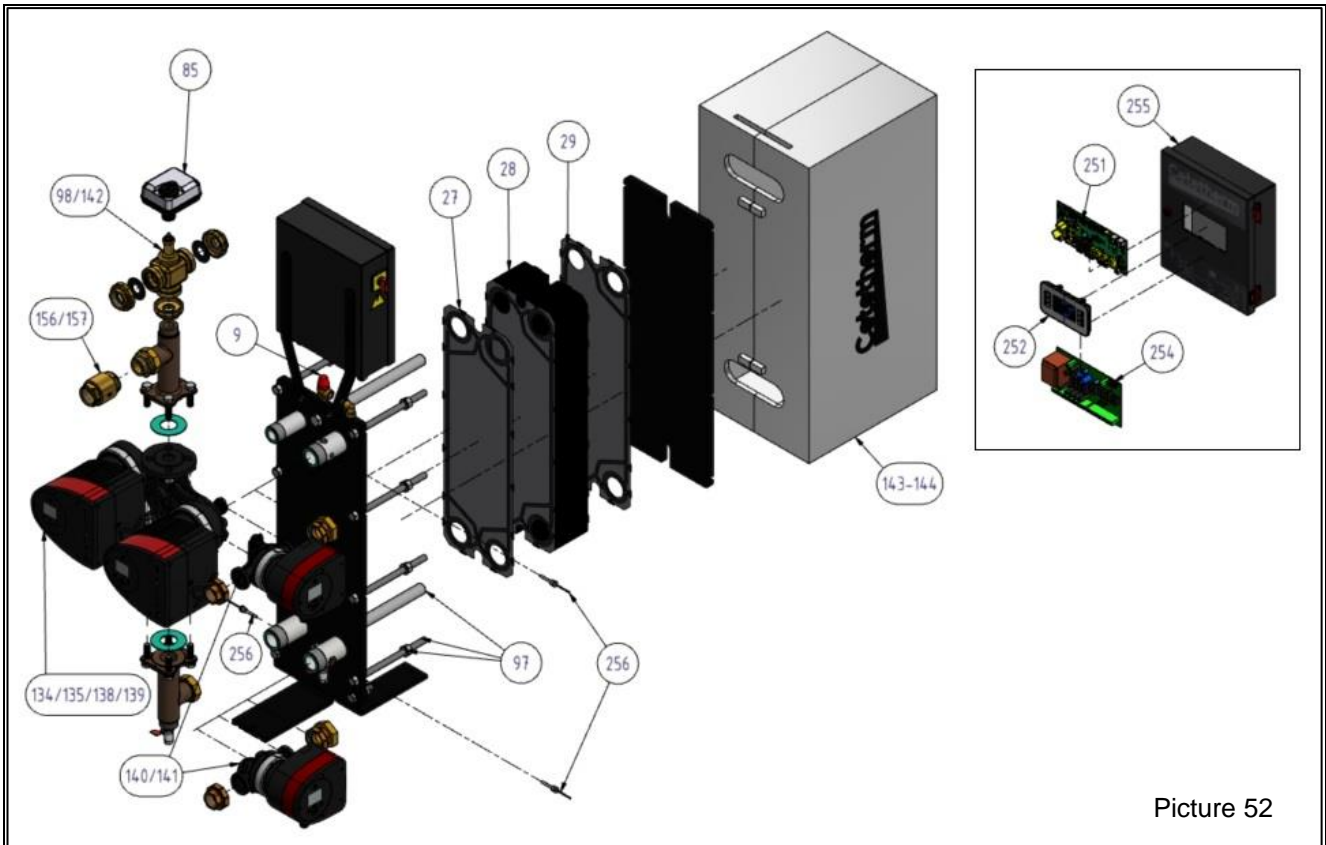
16.2 EFF76/EFB112



Picture 51

REP	DESCRIPTION
251	Temperature controller Micro 4000
252	HMI display with cable for Micro 4000
254	ADE_432 power board with connectors
255	Control box, empty
256	Temperature sensor Micro 4000
9	Safety valve 15/21 10B
156	1"1/2 F Non return valve
154	Fusion bonded 100% stainless steel heat exchanger (FB76) 50 plates
155	Fusion bonded 100% stainless steel heat exchanger (FB76) 70 plates
148	Copper brazed heat exchanger (CB112) 50 plaques
149	Copper brazed heat exchanger (CB112) 70 plaques
136	Pump MAGNA3 40-100 F 1*230
137	Pump MAGNA3 D40-100 F 1*230
141	Pump MAGNA3 32-100 N 1*230
85	Actuator 24V supply 0-10 Volts signal 15 s
98	Kit body 3 Port control valve DN40
13	Insulation ALFANOVA CB76-90

16.3 EFP All models



Picture 52

REP	DESCRIPTION
251	Temperature controller Micro 4000
252	HMI display with cable for Micro 4000
254	ADE_432 power board with connectors
255	Control box, empty
256	Temperature sensor Micro 4000
9	Safety valve 15/21 10B
27	Start plate SS316 with 4 rings EPDM W gasket
28	Middle plate SS316 with standard EPDM W gasket
29	End plate SS316 0 hole with standard EPDM W gasket
134	Pump MAGNA3 40-60 F 1*230V
135	Pump MAGNA3 D40-60 F 1*230V
138	Pump MAGNA3 40-120 F 1*230V
139	Pump MAGNA3 D40-120 F 1*230V
140	Pump MAGNA3 32-40 N 1*230V
141	Pump MAGNA3 32-100 N 1*230V
142	Kit body 3 Port control valve DN25
98	Kit body 3 Port control valve DN40
85	Actuator 24V supply 0-10 Volts signal 15 s
97	Set of tightening bolts for AquaEfficiency
156	1"1/2 F Non return valve
144	Insulation for AquaEfficiency

17 Commissioning report

COMMISSIONING REPORT																															
Installation																															
Heat source type and capacity	<input style="width: 100%; height: 20px;" type="text"/>																														
Air vent position	<input style="width: 100%; height: 20px;" type="text"/>																														
Settling Pot presence on primary	<input style="width: 100%; height: 20px;" type="text"/>																														
Mixing bottle required / Presence	<input style="width: 100%; height: 20px;" type="text"/>																														
Balancing valve presence on Semi Instantaneous installations	<input style="width: 100%; height: 20px;" type="text"/>																														
Primary filled, air vented and under pressure	<input style="width: 30px; height: 20px;" type="text"/>										Primary working pressure	<input style="width: 30px; height: 20px;" type="text"/>																			
Secondary filled, air vented and under pressure	<input style="width: 30px; height: 20px;" type="text"/>										Secondary working pressure	<input style="width: 30px; height: 20px;" type="text"/>																			
Accessibility of unit and components	<input style="width: 30px; height: 20px;" type="text"/>																														
Unit Configuration																															
Sensors	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 10%;">S1</th> <th style="width: 10%;">S2</th> <th style="width: 10%;">S3</th> <th style="width: 10%;">S4</th> <th style="width: 10%;">S5</th> <th style="width: 10%;">S6</th> <th style="width: 10%;">Pt1</th> <th style="width: 10%;">Pt2</th> </tr> </thead> <tbody> <tr> <td>Specific function</td> <td colspan="10" style="height: 40px;"></td> </tr> </tbody> </table>												S1	S2	S3	S4	S5	S6	Pt1	Pt2	Specific function										
	S1	S2	S3	S4	S5	S6	Pt1	Pt2																							
Specific function																															
Primary Pumps:	<table style="width: 100%;"> <tr> <td>Pump 1</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td>0-10V signal :</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td>Pump 2</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td>0-10V signal :</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td>Accept</td> <td colspan="3"></td> </tr> </table>											Pump 1	<input style="width: 30px; height: 20px;" type="text"/>	0-10V signal :	<input style="width: 30px; height: 20px;" type="text"/>	Pump 2	<input style="width: 30px; height: 20px;" type="text"/>	0-10V signal :	<input style="width: 30px; height: 20px;" type="text"/>	Accept											
Pump 1	<input style="width: 30px; height: 20px;" type="text"/>	0-10V signal :	<input style="width: 30px; height: 20px;" type="text"/>	Pump 2	<input style="width: 30px; height: 20px;" type="text"/>	0-10V signal :	<input style="width: 30px; height: 20px;" type="text"/>	Accept																							
Secondary Pumps:	<table style="width: 100%;"> <tr> <td>Pump 3</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td>0-10V signal :</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td>Pump 4</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td>0-10V signal :</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td colspan="4"></td> </tr> </table>											Pump 3	<input style="width: 30px; height: 20px;" type="text"/>	0-10V signal :	<input style="width: 30px; height: 20px;" type="text"/>	Pump 4	<input style="width: 30px; height: 20px;" type="text"/>	0-10V signal :	<input style="width: 30px; height: 20px;" type="text"/>												
Pump 3	<input style="width: 30px; height: 20px;" type="text"/>	0-10V signal :	<input style="width: 30px; height: 20px;" type="text"/>	Pump 4	<input style="width: 30px; height: 20px;" type="text"/>	0-10V signal :	<input style="width: 30px; height: 20px;" type="text"/>																								
Electrical bridges control for pumps on power plate	<table style="width: 100%;"> <tr> <td>Pump1</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td>Pump2</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td>Pump3</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td>Pump4</td> <td><input style="width: 30px; height: 20px;" type="text"/></td> <td colspan="4"></td> </tr> </table>											Pump1	<input style="width: 30px; height: 20px;" type="text"/>	Pump2	<input style="width: 30px; height: 20px;" type="text"/>	Pump3	<input style="width: 30px; height: 20px;" type="text"/>	Pump4	<input style="width: 30px; height: 20px;" type="text"/>												
Pump1	<input style="width: 30px; height: 20px;" type="text"/>	Pump2	<input style="width: 30px; height: 20px;" type="text"/>	Pump3	<input style="width: 30px; height: 20px;" type="text"/>	Pump4	<input style="width: 30px; height: 20px;" type="text"/>																								
Sensors' switches control	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 10%;">Pt1</th> <th style="width: 10%;">Pt2</th> <th style="width: 10%;">S1</th> <th style="width: 10%;">S2</th> <th style="width: 10%;">S3</th> <th style="width: 10%;">S4</th> <th style="width: 10%;">S5</th> <th style="width: 10%;">S6</th> </tr> </thead> <tbody> <tr> <td>Control valve working</td> <td colspan="10" style="height: 20px;"></td> </tr> </tbody> </table>												Pt1	Pt2	S1	S2	S3	S4	S5	S6	Control valve working										
	Pt1	Pt2	S1	S2	S3	S4	S5	S6																							
Control valve working																															
Settings																															
S1 (DHW) setpoint :	<input style="width: 30px; height: 20px;" type="text"/>	Curve Sp:	<input style="width: 30px; height: 20px;" type="text"/>	Cooling?	<input style="width: 30px; height: 20px;" type="text"/>																										
Special PID setting: P	<input style="width: 30px; height: 20px;" type="text"/>	I	<input style="width: 30px; height: 20px;" type="text"/>	D	<input style="width: 30px; height: 20px;" type="text"/>																										
High alarm setting DT:	<input style="width: 30px; height: 20px;" type="text"/>	Manual	<input style="width: 30px; height: 20px;" type="text"/>	Auto	<input style="width: 30px; height: 20px;" type="text"/>	restart	Tempo :	<input style="width: 30px; height: 20px;" type="text"/>																							
Thermal Treatment	<input style="width: 30px; height: 20px;" type="text"/>	Setpoint:	<input style="width: 30px; height: 20px;" type="text"/>	Freq.:	<input style="width: 30px; height: 20px;" type="text"/>	Time :	<input style="width: 30px; height: 20px;" type="text"/>																								
Efficiency DT(S3-S2)	<input style="width: 30px; height: 20px;" type="text"/>	Delta T Sp:	<input style="width: 30px; height: 20px;" type="text"/>																												
Eco function:	<input style="width: 30px; height: 20px;" type="text"/>	Booster fct:	<input style="width: 30px; height: 20px;" type="text"/>	Fouling fct:	<input style="width: 30px; height: 20px;" type="text"/>	Limitation fct (S4):	<input style="width: 30px; height: 20px;" type="text"/>																								
Booster function:	<input style="width: 30px; height: 20px;" type="text"/>																														
Relay 1 fct :	General	High T	Low T	Eco	Timer	Th.Tr.	Tank loaded	Pump alm	Fouled	S4 low																					
Relay 2 fct :	General	High T	Low T	Eco	Timer	Th.Tr.	Tank loaded	Pump alm	Fouled	S4 low																					
Relay 3 fct :	General	High T	Low T	Eco	Timer	Th.Tr.	Tank loaded	Pump alm	Fouled	S4 low																					
Remote contact wired ?	<input style="width: 100%; height: 20px;" type="text"/>																														
Other comments:																															
Identification of the unit:																															
Unit ID:	<input style="width: 100%; height: 20px;" type="text"/>					Type:	<input style="width: 100%; height: 20px;" type="text"/>																								
Installer / Company Name						Site adress			Date :																						
Name:						Signature:																									

Picture 53

18 Declaration of conformity

PED 2014/68/EU art. 4.3, LVD, EMC, RoHS
Declaration of Conformity
Déclaration de Conformité
Konformitätserklärung
Conformiteitsverklaring

Manufacturer / Fabricant / Hersteller / Fabrikant:

Cetetherm SAS

Route du Stade ZI du Moulin, 69490 Pontcharra sur Turdine, France

- Heat exchanger unit, District heating system for heating and/or Domestic Hot Water
- Echangeur thermique, Système de chauffage urbain pour le chauffage et l'eau chaude sanitaire
- Fernwärme-Kompaktstationen für Heizung und/oder Trinkwarmwasser
- Warmtewisselaarunit, stadsverwarmingssysteem voor verwarmingswater en/of sanitair warm water

Products / Produits / Produkte / Producten	Models / Modèles / Varianten / Modellen
AQUAEFFICIENCY	EFB60 / EFB112 / EFF52 / EFF76 / EFP3000 / EFP5000 / EFP7000
PILOT / PILOT+	ASTB25 / ASTB32 / ASTB40 / ASTB50

- Above mentioned products are in article 4.3 according to PED 2014/68/EU
- Les produits susmentionnés figurent à l'article 4.3 conformément à la DESP 2014/68/EU
- Vorstehend benannte Produkte fallen unter Artikel 4.3 der DGRL 2014/68/EU
- Bovengenoemde producten zijn conform artikel 4.3 van Richtlijn Drukapparatuur 2014/68/EU

Used directives / Directives utilisées / Angewendete Direktiv / Gebruikte richtlijnen :

- PED 2014/68/EU
- LVD 2014/35/EU
- EMC 2013/35/EU
- RoHS 2011/65/EU

Used other standards and specifications / Autres normes et spécifications utilisées / Weitere angewendete Standards / Andere gebruikte standaarden en specificaties :

- EN 60335-1 partly / EN 60335-1 en partie / EN60335-1 teilweise / EN6335-1 gedeeltelijk
- EN 60204-1 partly / EN 60204-1 en partie / EN 60204-1 teilweise / EN60204-1 gedeeltelijk

Jean-Michel Montoni

Pontcharra sur Turdine, Mai 2022

Jean-Michel Montoni

Product manager / Chef de produit / Bevollmächtigter / Conformiteits verantwoordelijke

19 Warranty

Our equipment comes with a 24-month warranty from the date of shipment.

The manufacturer's liability is limited to the replacement of any defective part that cannot be repaired. No other financial compensation may be claimed in any case under the warranty

The nature and probable cause of the defect must be reported to the manufacturer before any action is taken. The defective part should then be returned to our factory in France for assessment unless written agreement to proceed otherwise has been obtained from Cetetherm. The results of the assessment can only state whether the terms of the warranty apply.

Exclusion factors:

Non-compliance with the guidelines for installation, configuration and maintenance:
Over pressures, water-hammer, scaling, noncompliant water quality

Also excluded from the warranty:

- Fitting costs, refitting costs, packaging, transport, and any accessories or equipment not manufactured by Cetetherm, which will only be covered by any warranties issued by said third-party manufacturers.
- Any damage caused by connection errors, insufficient protection, misapplication or faulty or careless operations.
- Equipment disassembled or repaired by any other party than Cetetherm.

Non-payment will lead to all operational warranties covering the delivered equipment being terminated.

19.1 How to contact Cetetherm

Our contact details are updated on our website www.cetetherm.com.

Cetetherm sas
ZI du Moulin, Route du Stade
69490 Pontcharra sur Turdine - France
www.cetetherm.com

Cetetherm

The logo for Cetetherm features the company name in a bold, black, sans-serif font. A solid green horizontal bar is positioned directly beneath the text, extending from the start of the 'C' to the end of the 'm'.