



AquaModule

Operating & Instruction Manual

30 -790 kW
Instantaneous
DHW

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1. Principle of Operation

In the tap water system, energy is exchanged through a heat exchanger, from the primary to the DHW side. On the primary side, the Aquamodule AMP has to be fed by a heating source that can be provided. For example, by a local boiler, a primary tank or a solar system.

The temperature of the water entering the heat exchanger on the primary side is adapted to meet the demand detected on the domestic side. The mixing valve eliminates thermal shock in the heat exchanger and reduces the potential build-up of lime-scale inside the heat exchanger.

On the secondary (DHW) side, the Aquamodule AMP is connected to the main water circuit and provides domestic hot water to the distribution pipe-work when there is demand.

A circulation pump - which is usually used to limit the time needed to deliver domestic hot water to the tap at the right temperature, maintains a minimum flow rate through the heat exchanger and through the distribution pipe-work.

1.1 Available Models and Technical Information

Unit Type	Pump Type	Pri Flow Rate (L/Sec)	Pri Free Press (kPa)	Pri 82°C Kw	Secondary 10-60°C			Pri 70°C Kw	Secondary 10-60°C			FLA (Amp)	Dims (approx.) L x W x Hmm	Weight (kg)			
					Flow Rate (L/Sec)	Press Drop (kPa)	Free Press (kPa)		Flow Rate (L/Sec)	Press Drop (kPa)	Free Press (kPa)						
AMP5	S	0.31	5	30	0.14	9	n/a	18	0.09	4	n/a	1.2	450 x 400 x 1050	70			
	D											1.2/1.8*		75			
	SS											n/a		65	2.2	71	75
	DS														2.2/2.8*		80
AMP10	S	0.81	5	100	0.48	14	n/a	60	0.29	5	n/a	1.8	450 x 400 x 1050	71			
	D											1.8/3.0*		76			
	SS											n/a		55	2.72	68	76
	DS														2.72/4.5*		81
AMP20	S	1.44	5	190	0.91	19	n/a	115	0.55	8	n/a	1.8	450 x 400 x 1050	72			
	D											1.8/3.0*		76			
	SS											n/a		43	2.72	60	76
	DS														2.72/4.5*		82
AMP30	S	1.75	5	280	1.34	16	n/a	175	0.84	7	n/a	1.8	450 x 400 x 1050	73			
	D											1.8/3.0*		78			
	SS											n/a		37	2.72	56	78
	DS														2.72/4.5*		83
AMP35	S	2.64	5	320	1.53	19	n/a	185	0.89	7	n/a	2.2	1010 x 500 x 1410	153			
	D											2.2/3.8*		171			
	SS											n/a		30	3.15	56	161
	DS														3.15/4.15*		179
AMP45	S	3.33	5	460	2.20	16	n/a	260	1.24	5	n/a	2.2	1010 x 500 x 1410	158			
	D											2.2/3.8*		176			
	SS											n/a		16	3.15	51	166
	DS														3.15/4.15*		184
AMP65	S	3.89	5	640	3.06	9	n/a	400	1.91	4	n/a	2.2	1010 x 500 x 1410	169			
	D											2.2/3.8*		187			
	SS											n/a		30	3.67	66	177
	DS														3.67/5.32*		195
AMP80	S	4.25	5	790	3.78	6	n/a	520	2.49	3	n/a	2.2	1010 x 500 x 1410	192			
	D											2.2/3.8*		210			
	SS											n/a		8	3.67	53	200
	DS														3.67/5.32		218

*with BOOSTER function active

Pump Description: S = Single Primary D = Double Primary SS = Single Primary / Single Secondary DS = Double Primary / Single secondary

Connection Details:

Aquamodule Unit Type	Pump configuration S & D		Pump Configuration SS & DS		
	Primary Flow/Return	Secondary Flow/Return	Primary flow/Return	Secondary Flow	Sec. Pump Inlet
AMP5 - AMP30	DN32	DN32	DN32	DN32	DN32
AMP35 - AMP80	DN40	DN50	DN40	DN50	DN32

Operation Limits

	Primary	Secondary
Max Press (bar)	10	10
Max Temp (°C)	110	100

*All weights & Dimensions are approximate and for information only. Please refer to GA drawings for detailed information. The Company reserves the right to modify, at any time, the features and appearance of the equipment presented here.

2. General

Aquamodule AMP is a compact DHW system product including a heat exchanger, motorised control valve and managed primary and secondary pumps, as per versions. It is equipped with a control box including a dedicated PCB and communicant temperature controller, and the piping is made of specially designed brass parts. Aquamodule AMP has been tested hydraulically and electrically at the factory.

The Aquamodule is available in two plate heat exchanger sizes:

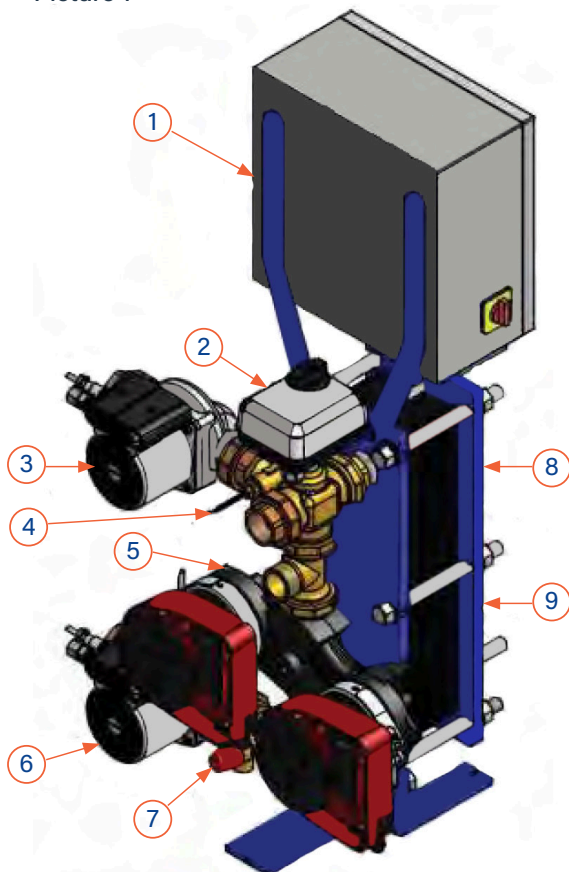
- AMP5 - AMP30
- AMP35 - AMP80

There are in total 32 models of the Aquamodule AMP, 16 direct and 16 indirect. All types can have single or double primary pump(s) and single secondary. there is also an option of insulation.

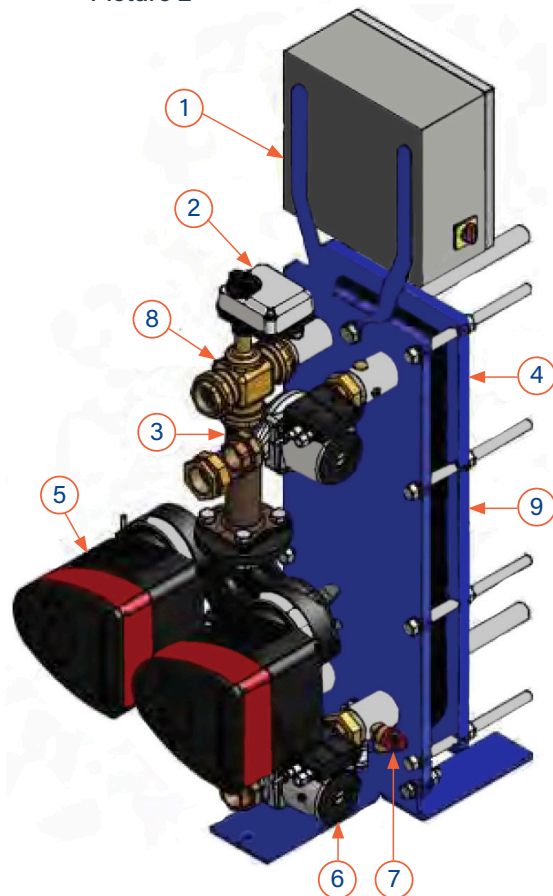
The Aquamodule AMP has to be connected to a primary heating source, like a boiler or a heat exchanger. The secondary side is connected to the cold water inlet and to the domestic hot water network, (see flowcharts for more details), and is designed for indoor installation, for example in a plant room. The ambient temperature in the room must be a minimum of 0°C and a maximum of 40°C, with a maximum humidity of 85% without condensation.

2.1 Product Overview - Aquamodule AMP5 - AMP30

Picture 1



Picture 2

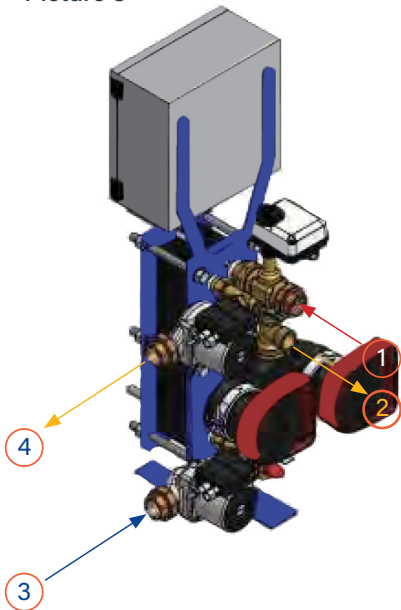


- 1 Control Box including Micro3000
- 2 Signal Actuator
- 3 Secondary Charging Pump
- 4 Temperature Sensor S1
- 5 Primary Single or Double Pump (as per version)

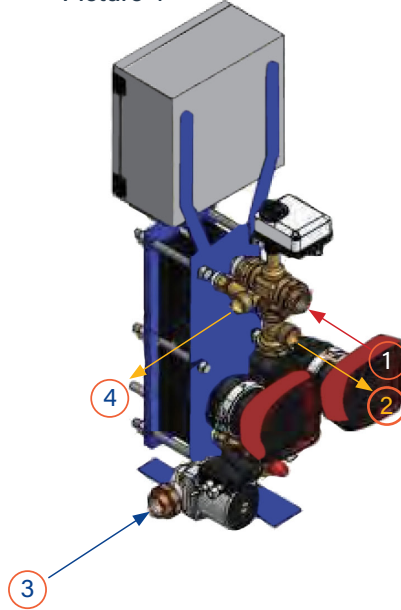
- 6 Scondary Charging Pump
- 7 Safety Valve
- 8 3-Port Mixing Control valve
- 9 Plates Heat exchanger with Insulation (optional)

3. Operating Principle

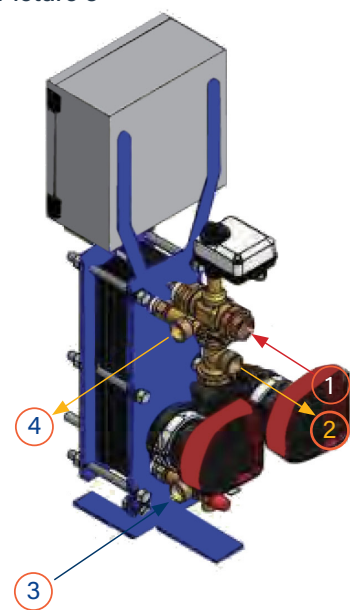
Picture 3



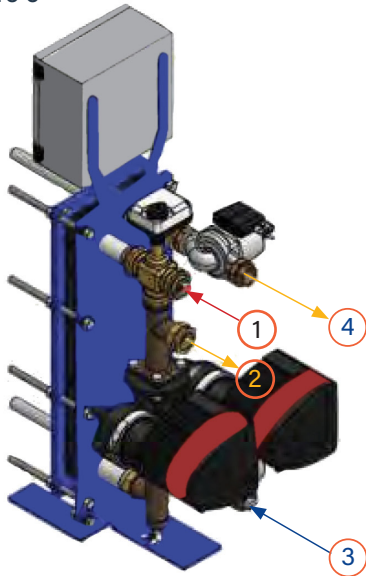
Picture 4



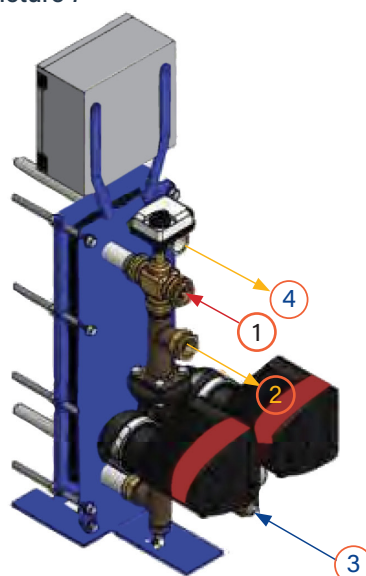
Picture 5



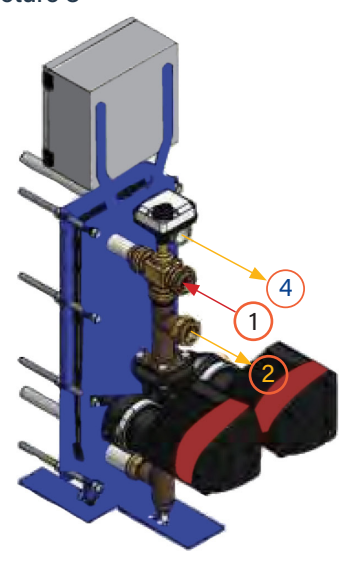
Picture 6



Picture 7



Picture 8



- The primary water enters the 3 port modulating valve (1) and leaves through the fitting (2).
- Cold water enters at the bottom part (3) and leaves to the required temperature at high part (4).
- The secondary circuit should be equipped with a recirculation or a charging pump.
- Modules suitable for 230V 1 phase / 50 Hz + Earth.
- Make sure the power supply in the field corresponds to the above voltage.
- A fuse protection should be provided on site.
- Relays: Volt Free Contacts (VFCs), 2 Amps max, each under 230V.

4. Installation



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



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



Minimum pressure/temperature on primary side : 1.0 bar/ 2°C, 1.5 bar / 110°C

Maximum pressure/temperature on primary side :10 bar /110°C

Maximum pressure on secondary side : 10 bar/ 100°C

4.1 Unpacking / Preparation / Mounting

- Rinse the pipes, before connecting them to the Aquamodule AMP.
- Pipe works may contain solid particles that could block or prevent the modulating valve to operate correctly.
- 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.
- Switch the power on.
- Check controller setting and enable the required functions.

4.2 Commissioning

Before installation this manual must be read.

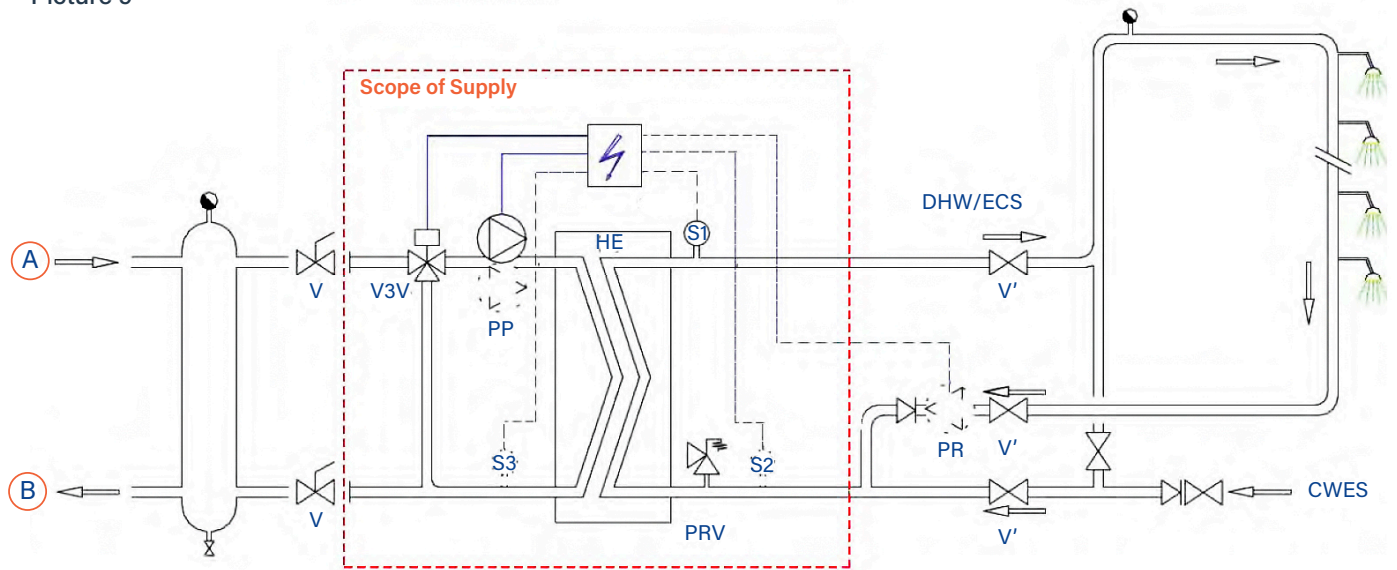
The controller has been set at the factory. If any function needs tuning, values can be changed with reference to this manual for parameter setting. Initially, the commissioning process should be carried out with the factory settings.

Contact us to arrange a commissioning engineer's visit. See front cover for contact details.

4.3 Installation of an Aquamodule AMP S & D Range

The Aquamodule AMP should be installed according to the following schematics.

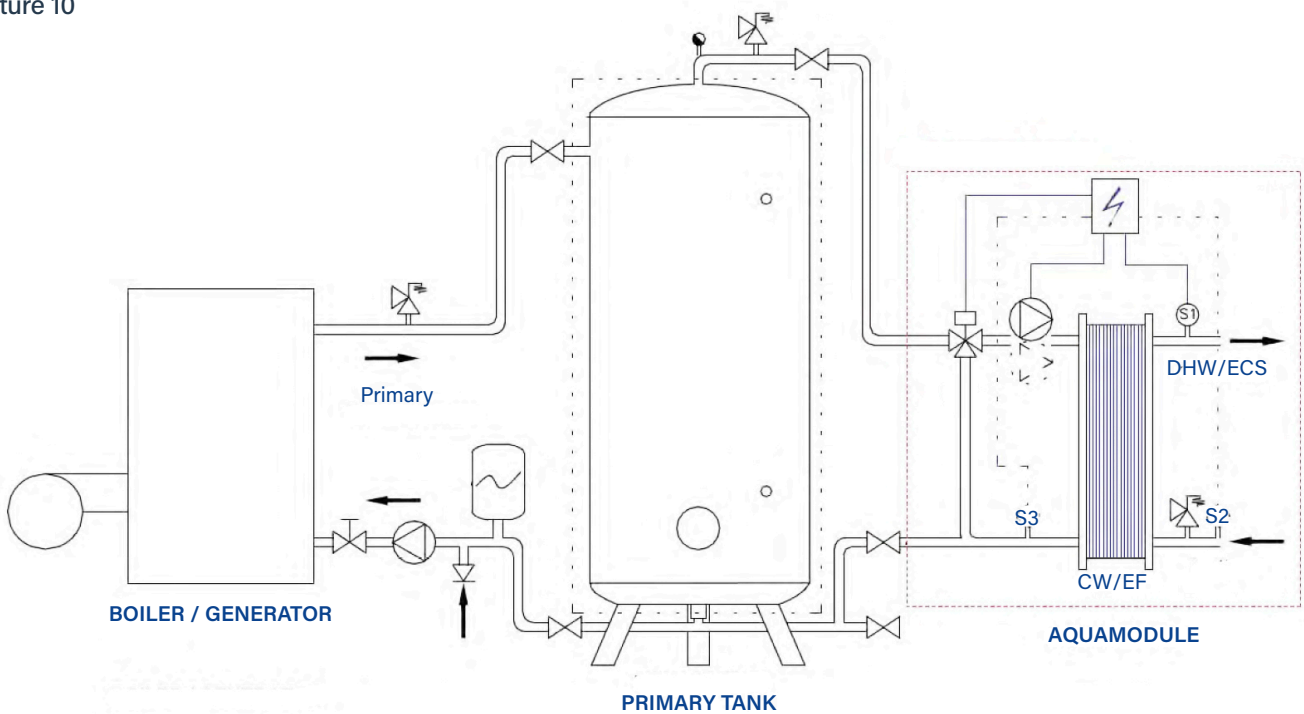
Picture 9



A	Primary Inlet	HE	Heat exchanger (PHE)
B	primary Outlet	PP	Primary Pump (single/double)
CW	Cold Water Inlet	PR	Recycling Pump (option)
V3V	Mixing 3 Port Control Valve with Actuator	V	Manual Gate Valve
PRV	Pressure Relief valve	S1	DNW Temperature Sensor (master)

The primary water tank is limited by the boiler capacity

Picture 10



4.4 Installation of an Aquamodule AMP SS & DS Range

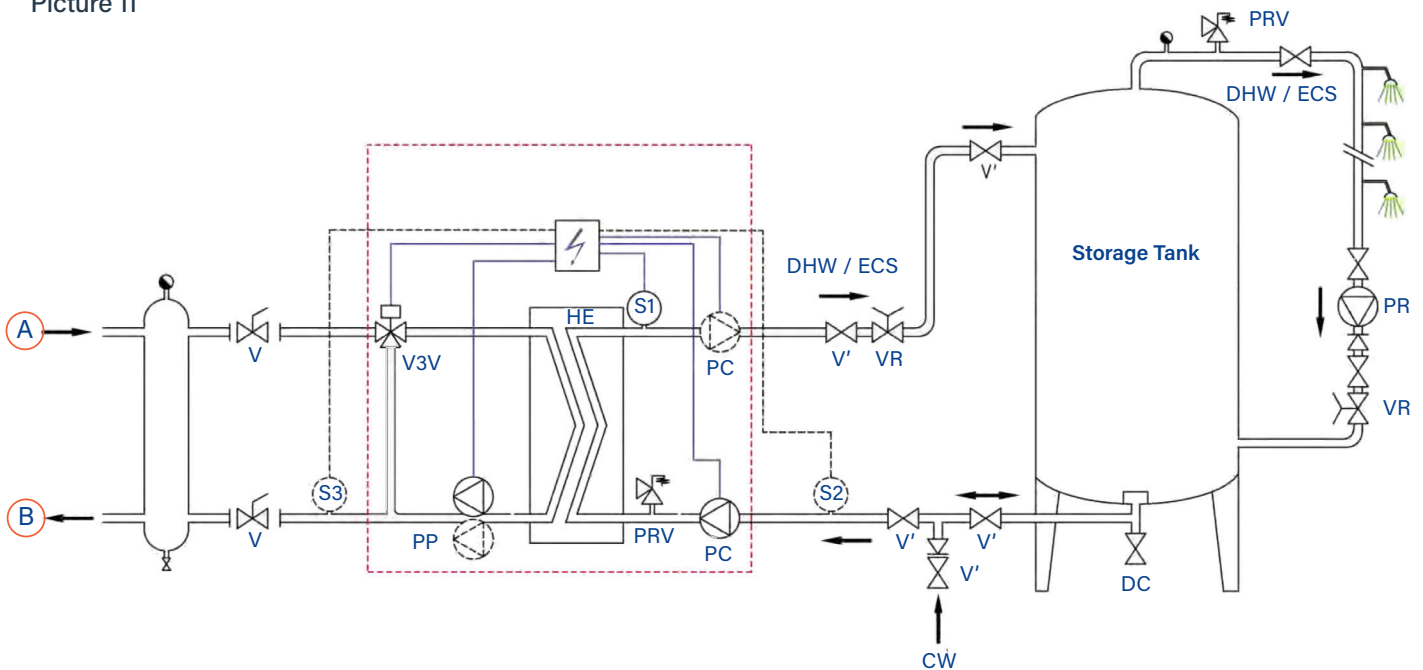


Flow rate PR must be <60% PC flow rate

Protect the storage tank by installing the added safety valve. Pressure gage=tank MAX working pressure and can be different from tap water module's safety valve pressure gauge. The safety valve protects the storage vessel and not the tap water system.

Secondary charging pumps have the following limitations as per water quality: pH 6 to 9 and TH<25 French degrees (25°TH) or 14 German degrees (14°dH).

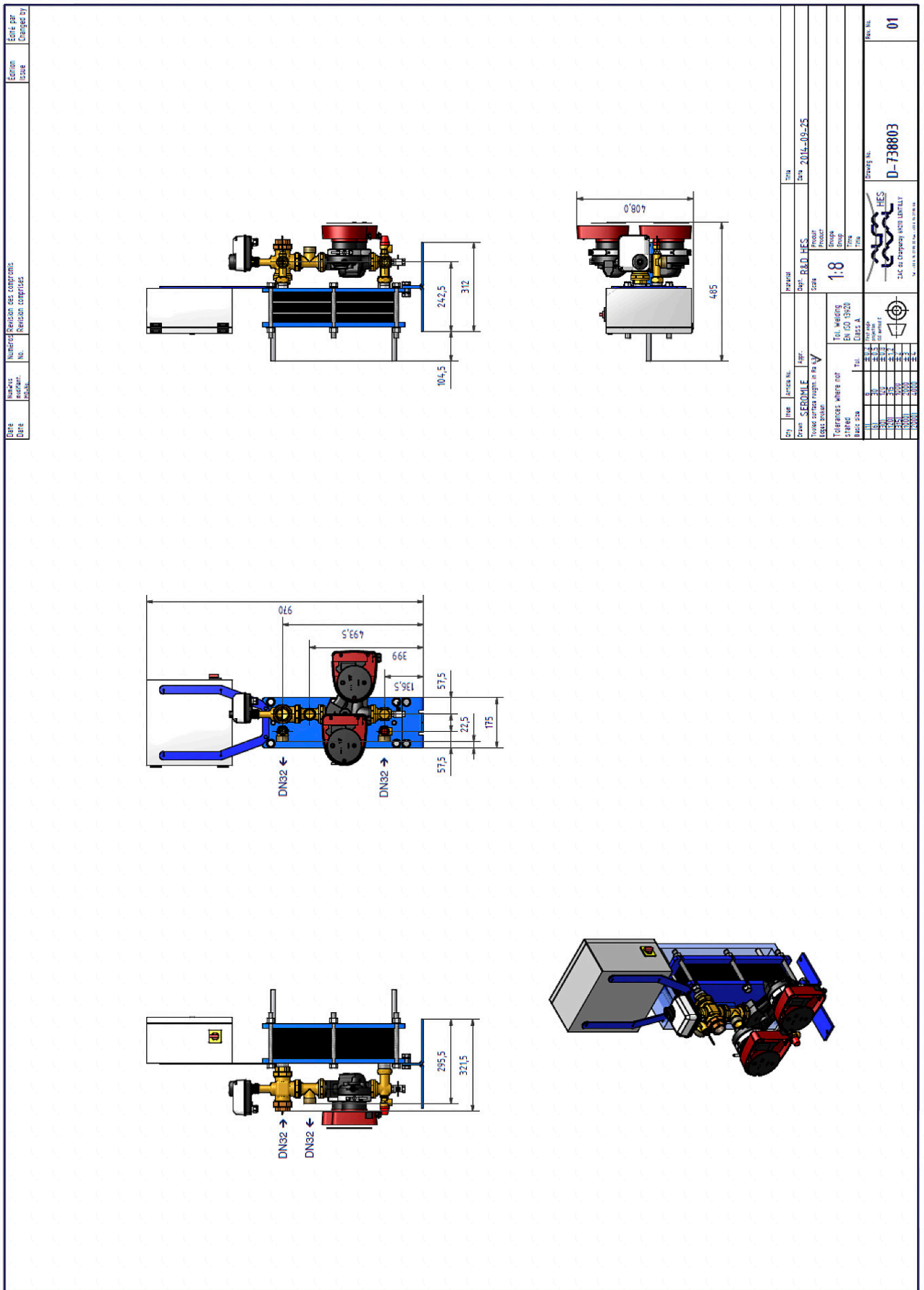
Picture 11



REP	DESIGNATION
A	Primary Inlet
B	primary Outlet
VR	Setting Valve
CW	Cold Water Inlet
V3V	Mixing 3 Port Control Valve with Actuator
PRV	Pressure Relief Valve

REP	DESIGNATION
HE	Heat exchanger (PHE)
PP	Primary Pump (single/double)
PC	Charging pump (1 or 2)
PR	Recycling Pump (on installation)
V	Manual Gate Valve
S1	DNW Temperature Sensor (master)

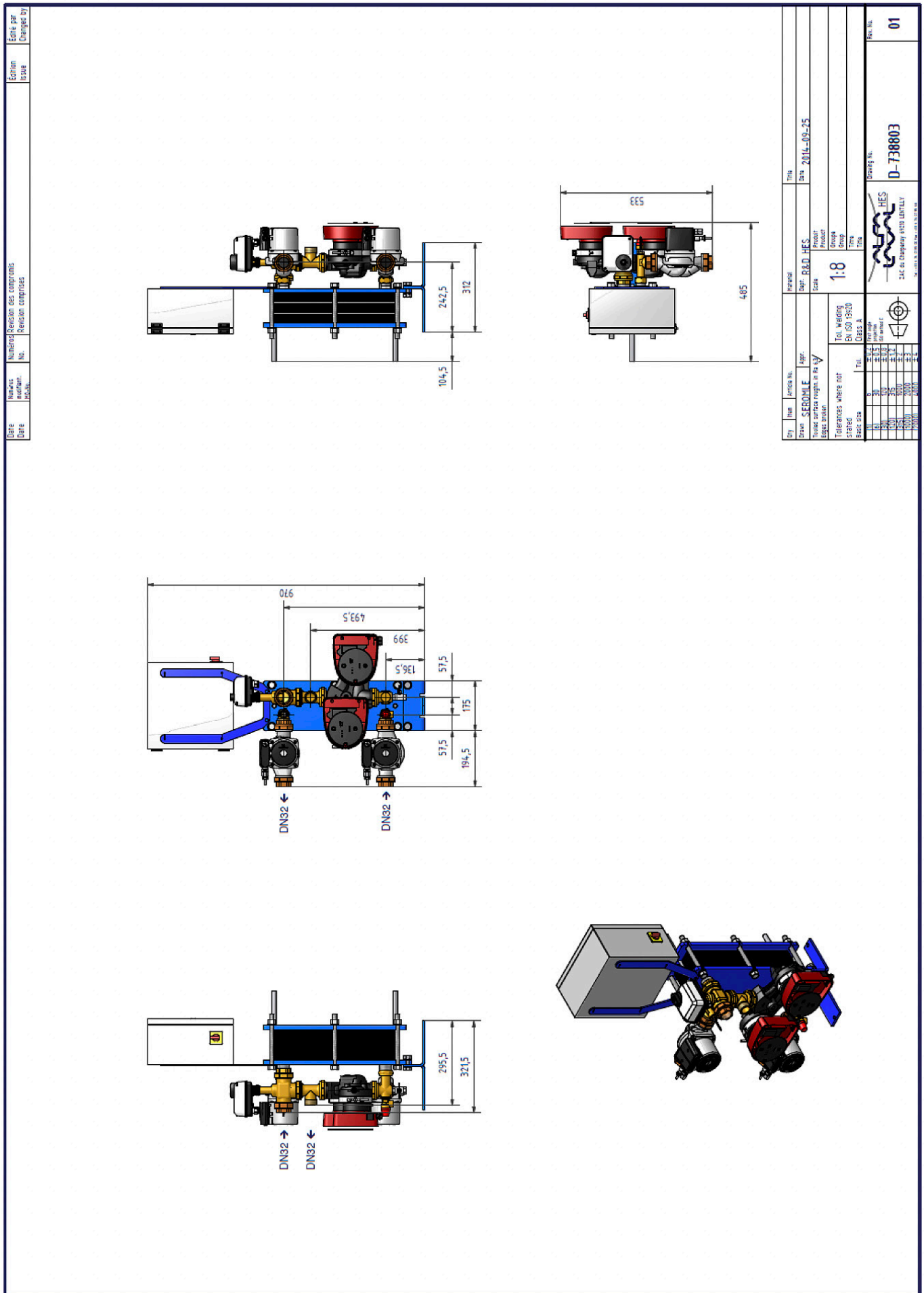
4.5 GA Drawing Aquamodule AMP5 - AMP30 S & D Range



Picture 12

* Pump Type single or double

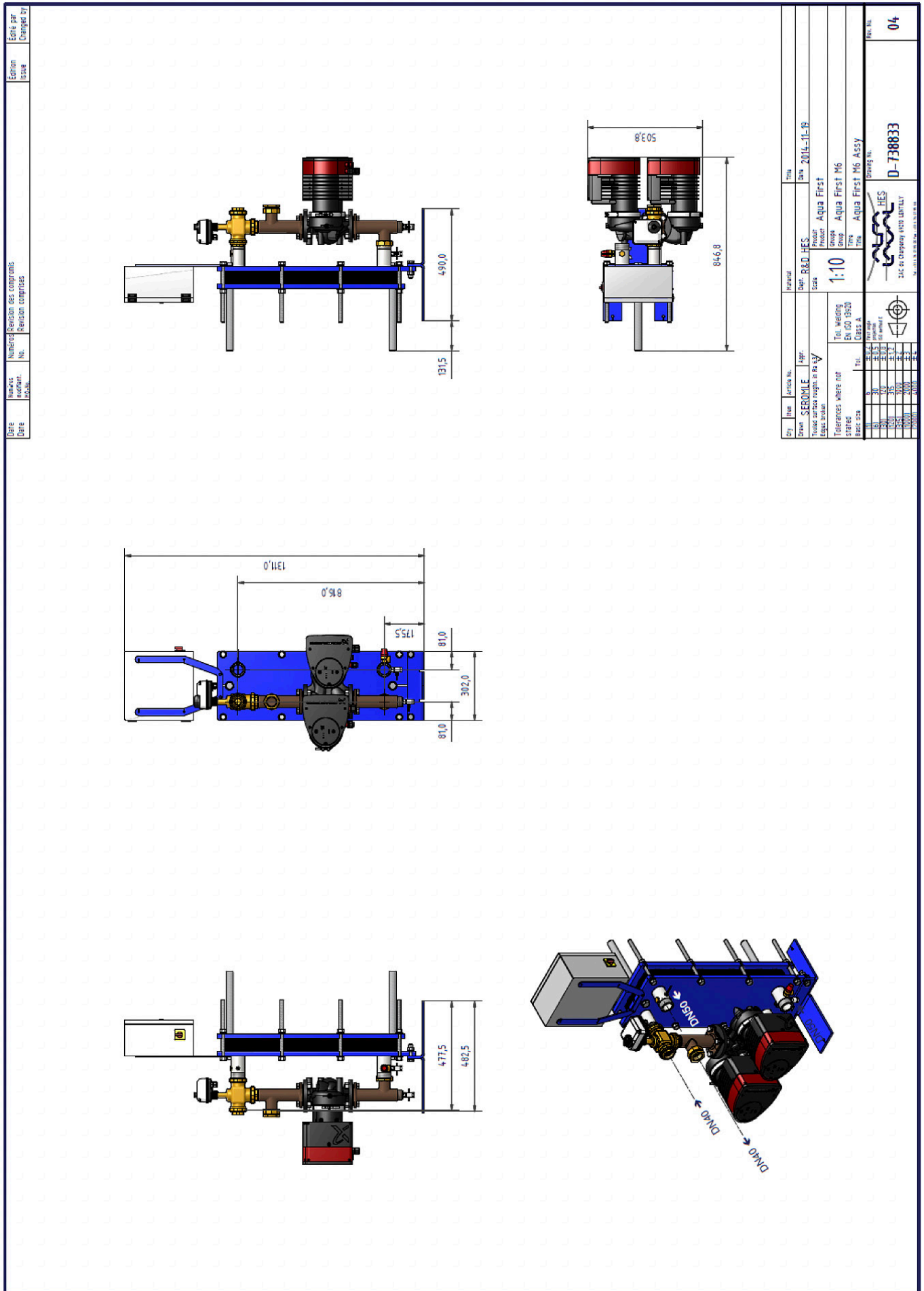
4.6 GA Drawing Aquamodule AMP5 - AMP30 SS & DS Range



Picture 13

* Pump Type single or double

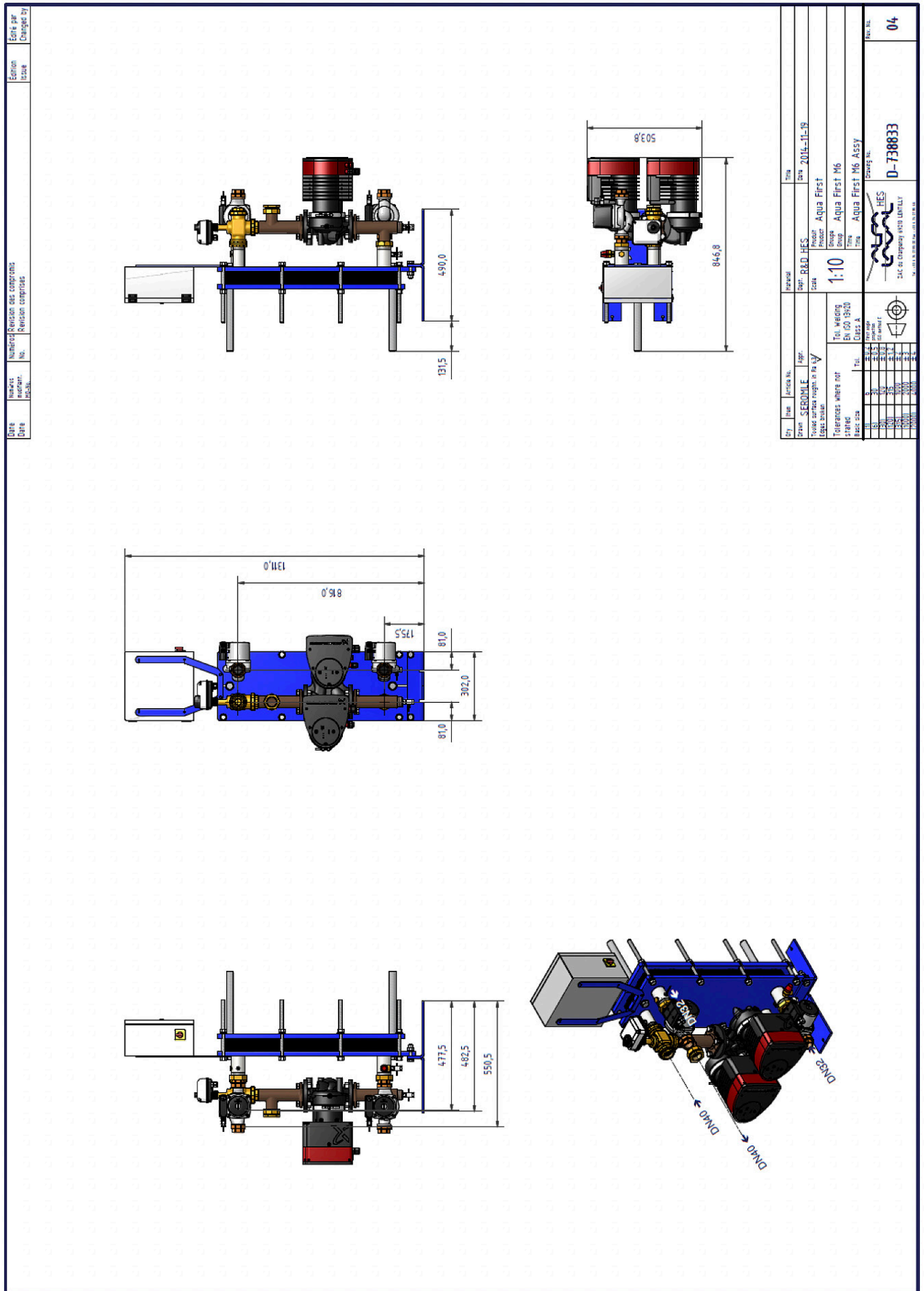
4.7 GA Drawing Aqua AMP35 - AMP80 S & D Range



Picture 14

* Pump Type single or double

4.8 GA Drawing Aquamodule AMP35 - AMP80 SS & DS Range



Picture 15

* Pump Type single or double

City	France	Service No.	2014-11-19
Drawn	R&D HES	Product	Aqua First
Checked	SEROMME	Group	Aqua First M6
Approved		Time	Aqua First M6 Assy
Title		Scale	1:10
Tol. Welding		EN ISO 1520	
Surface		CLASS A	
Material		SAC to company specification	
Drawing No.		D-738833	
Rev. No.		04	

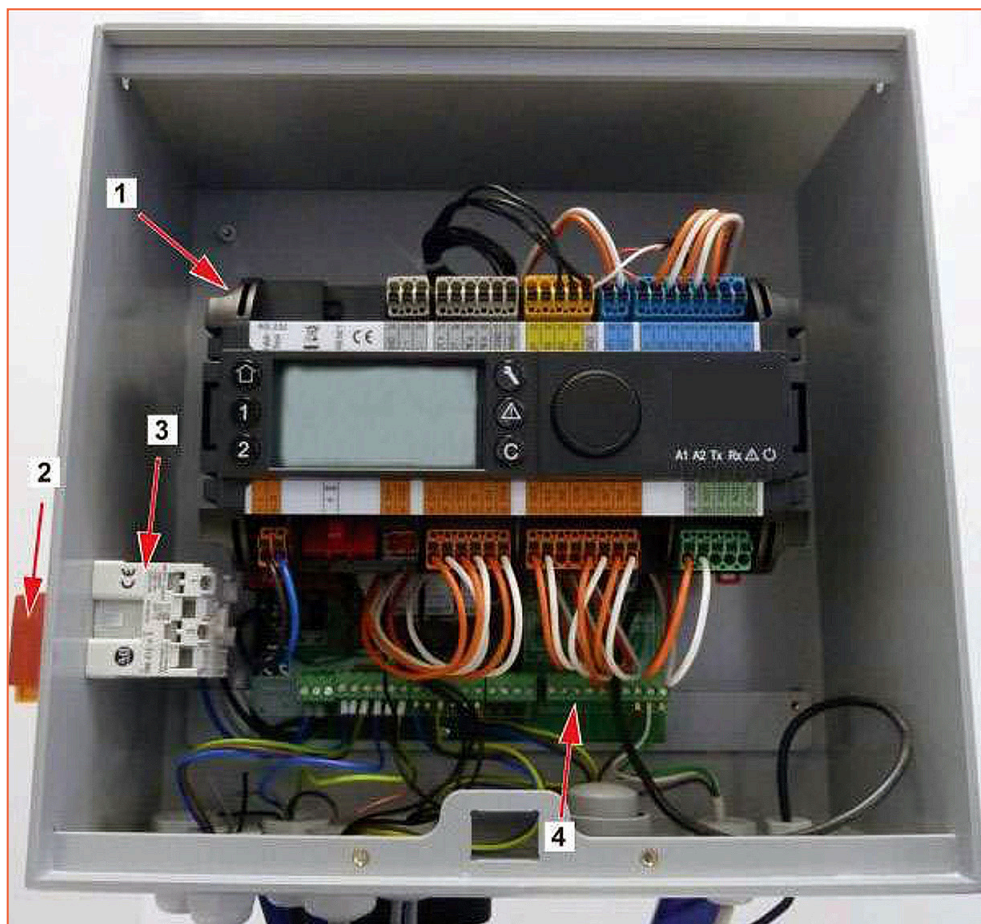
5. Electric Installation

Power supply the control box with 230V 50 Hz + Earth, using electric protection in the main electric power box. Micro 3000 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.

5.1 Regulator Components

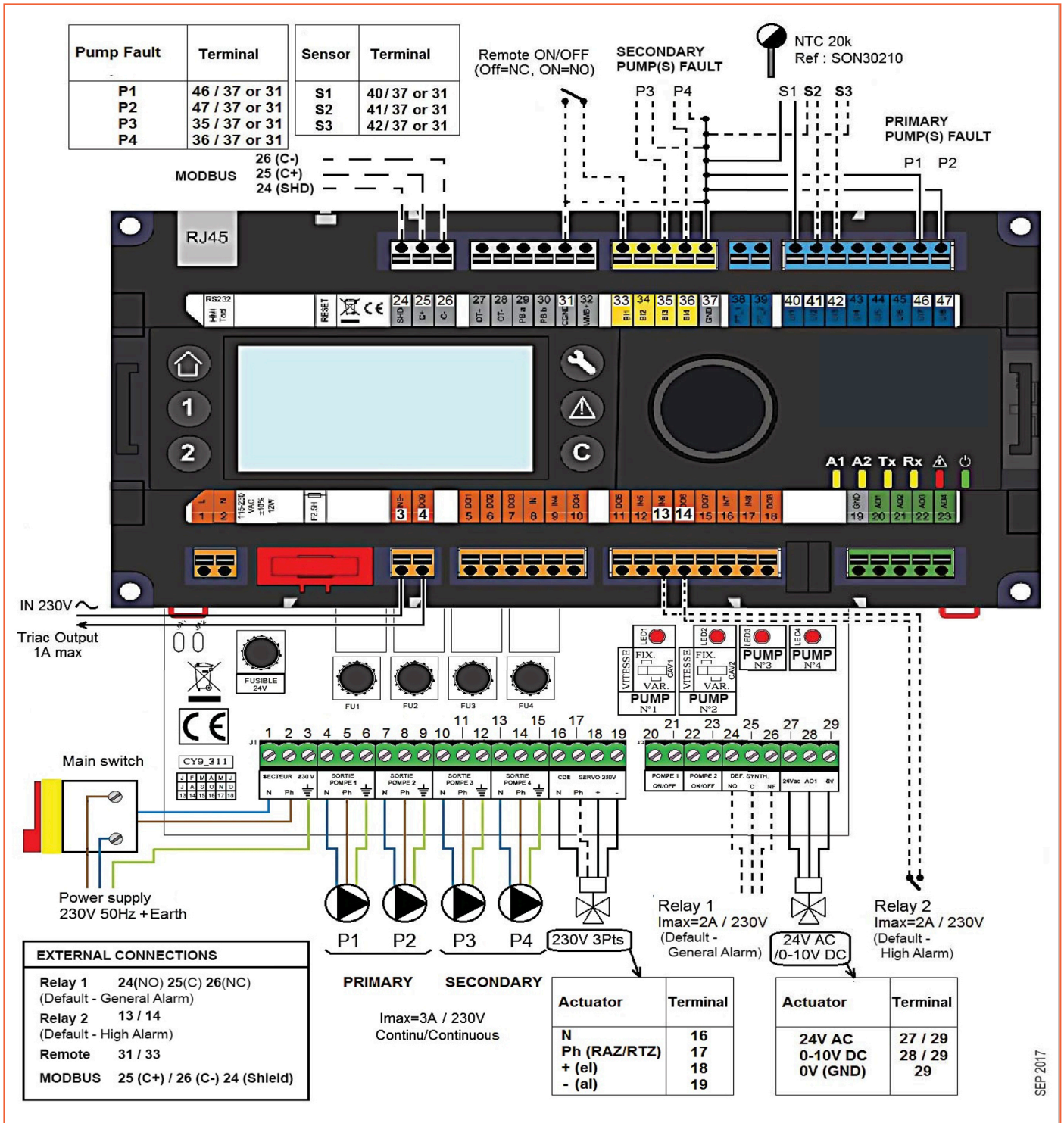


Picture 16

- | | | | |
|---|------------------------|---|-----------------------|
| 1 | Controller, Micro 3000 | 3 | Power Supply |
| 2 | Main Switch | 4 | Printed Circuit Board |

5.2 Electrical Wiring Diagram

Note: When the remote-control contact is open, the unit operates normally. If it is closed, the unit is in standby.



Picture 17

SEP 2017

6. User Instruction Operator Control panel Micro 3000

Picture 18

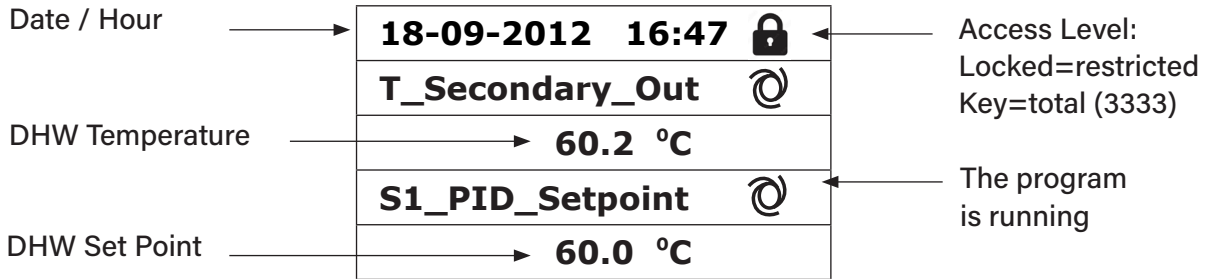


Button	Function
	Rotary button for scrolling through the menus. Access sub-menus and change settings by pressing it. To activate the line, or change a highlighted value, simply press the wheel. Works like an 'Enter' key.
	Press to exit a level to the previous menu / parameter. Works like an 'ESC' key.
	Press to access the maintenance / monitoring menu. NOTE: Requires a password.
	Press to go to the 'Home' screen, Main menu.
	Press to access the 'Alarm' menu.
	Not used
	Not used
	Relay 1 activated.
	Relay 2 activated.
	Active data transmission.
	Active data reception.
	Alarm indicator
	The contro box is switched on.

6.1 Home Screen

When starting up the Micro 3000 controller, this menu displays on the screen. The menu is called the Home Screen.

The screen shows the following information:



Picture 19

The controller has password protection, allowing access to different menus.

- End user level - requires no login. Marked with a lock in the upper right corner.
- Technician level - access to all menus requires login. marked with a key in the upper right corner.

NOTE: If there is an ongoing alarm when starting up the Aquamodule, an alarm text will be displayed on the screen. Press the House button to enter the Home screen.

6.2 Command Symbols



Auto

Datapoint is in automatic operation and can be switched into manual operation.



Manual

Datapoint is in manual operation and can be switched into automatic operation.



Today Function

Datapoint value can be overridden for a particular time within the next 24 hours. Datapoint must have a daily time program assigned.



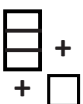
Time Program

Datapoint has a daily time program assigned. Daily time program can be selected and edited.



Edit

Item (datapoint, time program etc.) can be edited.



Add

Item (datapoint, time program etc.) can be added to a list e.g., datapoint can be put to a list of trended datapoints.



Deleted

Item can be deleted.



Enable / disable

- Checked: Item is enabled
- Unchecked: Item is disabled

6.3 Setting the Time and Date

1. Turn the wheel anticlockwise to highlight the line with time and date at the top of the screen. Press the wheel to enter the Date/Time menu.

18-09-2012 16:47	
T_Secondary_Out	
60.2 °C	
S1_PID_Setpoint	
60.0 °C	



2. Press the wheel to change the first variable, the year.
3. When the year flashes, increase, or reduce the set value by rotating the wheel. Once the right value is displayed, press the wheel to confirm the setting. Next parameter to change starts to flash.
4. Proceed in the same way to set the month, date, and time (hour: minute).

Date / Time	
Date:	18-09-2012
Time:	16:49
Format:	31-12-2009
Daylight Saving Time	

Date / Time	
Date:	18-09-2012
Time:	16:55
Format:	31-12-2009
Daylight Saving Time	

6.4 Changing the Date Format

In the Date/Time menu the date format can be changed. Choose between the following formats:

- yyyy-mm-dd mm-dd-yyyy
- **dd-mm-yyyy** **dd.mm.yyyy**
- **dd/mm/yyyy**

The formats in bold are the most used in the UK.

Date / Time	
Date:	18-09-2012
Time:	16:56
Format:	31-12-2009
Daylight Saving Time	

6.5 Setting the Daylight-Saving Time

Summertime



Changing between summer/wintertime can be automatic or turned off. You can also define the dates for changes if they are altered.

The default settings for summertime are:
Last Sunday in March to last Sunday in October.

Daylight Saving Time	
Sunday of Month	
Begin:	Last Mar
End:	Last Oct

6.6 Saving Changes

Once a value has been changed and confirmed by pressing the wheel, the corresponding change will be immediately updated.

Press the  or  to return to the home screen.

7. End User Mode

The following changes can be done in end user mode:

- Settings which are identical/different for each day of the week at defined times.
- Normal temperature(s).
- Lower temperature(s).
- Special period of defined duration during the current year.
- Waiver with change of setting at a specific time.

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.

Ormandy Rycroft Engineering, recommends the hot water temperature is at least 55°C and a hot water circulation 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 surface of the heat exchanger.

7.1 Time Programs

The time programs used in Aquamodule are adjusted the same way.

The time programs:

- SP_T_Sec_Outlet, to be found in the menu *S1 Menu Secondary Outlet*. It is to set the DHW temperature
- ThTr_Activated to be found in *Thermal Treatment Menu*, to activate a thermal treatment (1 sensor mode).

The time program has two different temperature modes, week-temperature or weekend-temperature.

Define for each day of the week which mode to use.

By default the weekend-temperature mode has the same settings as the week-temperature mode.

It is even possible to customize the temperature programs with special dates (holidays periods or free days).

Each temperature mode can have a number of different times set per day. For each time a different temperature can be selected, that are then in effect until the next time occurs. If only one time is set, the program will run with the selected temperature.





7.2 Changing Time and Temperature in a Time Program

By default the DHW set point (SP_T_Sec_Outlet), is set to 60°C by default, at any time, all the days of the week.




Add extra temperature set points at different times of the day.

These changes will be reported to all days within the time program week, excluding the time program; weekend.


1. Use the wheel and mark the clock logo. Press the wheel.


S1 Menu.Sec Outlet 	
SP_T_Sec_Outlet 	
60.0 °C 	


2. Mark the day you want to change. Press the wheel.

Main	Spcl.Day
Mo Week	
Tu Week	
Wed Week	

Now you can choose to:


a) Change a time or temperature.
Mark the line and press the wheel. Change the value by turning the wheel.
Confirm the new setting by pressing the wheel. 

b) Add a new time or set point; choose 


c) To delete a time or set point; choose 

In this example the set point is 60°C at 22h00.

You can choose to reduce the temperature during the night, in this example the night temperature is set to 55°C.

Week	
06:00 SP_T_Sec 60.0	
22:00 SP_T_Sec 60.0	

Week	
06:00 SP_T_Sec 60°C	
22:00 SP_T_Sec 60°C	

Week	
23:00 SP_T_Sec Outlet	
55.0	

7.2.1 Special Days

Exception days, so called special days, can be defined. The calendar in the controller, controls the exceptions that can be selected in the Time program. Exception days override the weekly schedule.

1. In the Main screen menu, mark 'Spcl.Days' and press the wheel. Choose between:

- Annual - holiday periods where you have to specify beginning date, end date and DHW set point. This mode is applicable to schools, offices and so on.
- Bank Holiday - special days during the year where set points can be different eg: Christmas, New Year.
- Daily programs - particular days where you want to change the temperature set point.





Main	Spcl.Day
Mo Week	

Special Day
Annual
Bank Holiday
Daily Programs


7.3 Making a Quick Temperature Change

You can quickly define a “one time” temperature change, a period of the day with a different setting. When the change period has expired, the temperature set point goes back to a standard time schedule program.

1. In the home-screen, mark the hour glass icon and choose it, by pressing the wheel.

S1 Menu.Sec Outlet 
SP_T_Sec_Outlet  
60.0 °C 

2. Define the starting and ending time, and the temperature set point value.

SP T Sec Outlet 
11:47 to 12:30
Value: 55.0 °C

8. Technician Menu, Total Read and Write level

In the Technician menu you can: .


- Make settings for the secondary outlet temperature.
- Enable/disable functions like Eco, booster, thermal treatment.
- Enable/disable the fouling function (option).
- Start an auto test.
- Clear alarm.

You need to be logged in to:

- See all sub-menus and change pre-set values.
- Have full read and write access in the technician menu.


Note: You will be automatically logged out after ten minutes if no data has been entered.

8.1 Login

- 1 Mark the lock  in the upper right corner of the screen and press the wheel.
- 2 Enter: 3333, to access the technician level.

Note: You will automatically logout after ten minutes if no data has been entered.

8.2 The Technician Main Menu

To enter the Main menu you press the  key.

The grey marked parameters or menus are not available in the Aquasave application. Their value does not have any impact on the Aquasave.

Main Menu		
T_Secondary_Out	Read Only	Measured temperature ECS
S1_PID_Setpoint	Read Only	DHW temperature setpoint
T_Secondary_Inlet	Read Only	N/A
T_Primary_Outlet	Read Only	The temperature measured by S3 (option)
T_Primary_Inlet	Read Only	N/A
T_Renewable1	Read Only	N/A
T_Renewable2	Read Only	N/A
T_Outdoor	Read Only	N/A
Configuration	Sub Menu	See 7.3 configuration menu
S1 Menu Sec.Outlet	Sub Menu	See 7.4 S1 Menu Secondary Outlet
S2 Menu Sec.Inlet	Sub Menu	N/A
Delta T (S3-S2)	Sub Menu	N/A
S4 Menu Prim Inlet	Sub Menu	N/A
S5 Menu Outdoor T	Sub Menu	N/A
Thermal Treatment	Sub Menu	See 7.5 Thermal Treatment Menu
SAFETY Function	Sub Menu	See 7.6 Safety Function
Eco Booster Fcts	Sub Menu	See 7.7 Eco-Booster Function
Fouling Function	Sub Menu	See 7.8 Scaling Function
Pumps Menu	Sub Menu	See 7.10 Pumps Menu
Solar Menu	Sub Menu	N/A
Aquaprot_Heating		N/A
230V Triac Menu	Sub Menu	See 7.9 230V Triac Menu
Auto Test	Sub Menu	See 7.11 Autotest Menu
Clear Alarm(s)	Sub Menu	See 7.12 Clear Alarm Menu

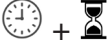
8.3 Configuration Menu

NOTE: After resetting the controller, this sub menu should be accessed to configure the number of pumps.

Parameter	Factory Default Setting	Optional Setting	Description
S1 activated	1	0 Disables / 1 Enables sensor	Set to 1
S2 activated	0	0 Disables / 1 Enables sensor	Set to 0
S3 activated	0	0 Disables / 1 Enables sensor	Set to 0
S4 activated	0	0 Disables / 1 Enables sensor	Set to 0
S5 Active Heating	0	0 Disables / 1 Enables heat curve	Set to 0
Cooling Mode AO1	0	0 = Heating/	Set to 0
P12 Nbr of Pumps	2	0/1/2	Primary pump(s) number
P34 Nbr of Pumps	2	0/1/2	Secondary pump(s) number
Modbus Coeff	1	1/10/100	1=integer value, e.g., 58°C 10=1 decimal, e.g., 583/10=58,3°C 100=2 decimals, e.g., 5836/100=58,36°C
Relay 1 function*	1	0.7	0=No action 1=General Default (GD) 2=High temp alarm (HA) 3=Eco function (E) 4=Booster function (B) 5=Thermal Treatment (TT) 6=Pump Fault (PF) 7=Tank loaded (TL) Requires sensor S2
Relay 2 function	2	0.7	
Renewable Config	Keep 0	N/A	N/A
Pilot Inverted	Keep 0	N/A	N/A
SP distrib	i	N/A	0=Internal Setpoint 1=External Setpoint
FIRMWARE_Version	xx	N/A	Firmware Version

* Both relay 1 and 2 are programmable

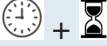
8.4 S1 Menu Secondary Outlet

Parameter	Factory Default Setting	Optional Setting	Description
SP_T_Sec_Outlet 	60°C	DHW Setpoint	Change setpoint value in clock program
Delta T S1 HiAlm	10°C	0 - 50	SP_T_Sec_Outlet+Delta Ts1 HiAlm
High T Alarm Tempo	1 min	0 - 60	High temp alarm is effective after this temporisation.
High Alarm Auto Reset	0	0 / 1	0 = MANUAL alarm clear / 1 = AUTO alarm clear
High_Alm_Reset	Off	Off / On	Put ON to clear a high temp alarm, then put off.
P_Main Prop Band	20	In general 20<P< 40°C	<input type="checkbox"/> P to be less reactive
	(-100 to 100)	Negative values in cooling	<input type="checkbox"/> P to be less reactive (be careful of "pumping" effect).
I Main Integral	50	0 - 120	<input type="checkbox"/> P to be less reactive
			<input type="checkbox"/> P to be more reactive (be careful of "pumping" effect).
D Main Derivative	2 sec	0 - 50	
Seq_Valve_life	N/A	Internal Settings	Not accessible

8.5 Thermal Treatment Menu

This function is activated as per a time program. It is disabled by default.

The user must define a one sensor mode - fixed duration as per Therm. Tr duration parameter.

Parameter	Factory Default Setting	Optional Setting	Description
ThTr_Setpoint	70°C		Usual value
TrTh_Activated 	Off	Off / On	Enable or disable the function as per clock program.
Sensor_Nbr	Auto	Auto/1 sensor/ 2 sensors	Use 1 sensor
ThermTr duration	1 min	1-240 min (4 hours max)	Adjust value according to the installation + buffer vessel capacity.
Fixed duration (1 sensor)	0	0/1	Set to 1
TT Max try time	1 min	1-240 min (4 hours max).	Not used
DeltaT S1S2 ThTr	7°C	1 - 20°C	Not used
Inhibition time	30 min	0-180 (0 to 3 hours)	High temp alarm inhibition time after thermal treatment

8.6 Safety Function

This function activates the four pumps power relays at the same time, without considering ipsothermic contacts' inputs.

Note: This function can be enabled from base access level.

Parameter	Factory Default Setting	Optional Setting
SAFETY_Speed	75%	Not used
SAFETY FCT	Off	Off / On



In case of high temperature alarm on S1, the primary pumps are stopped, even if the function is activated.

8.7 Eco-Booster Function

One or both functions can be activated at the same time.

- **ECO:** Activates a temporisation Eco Temporisation, as soon as valve is closed less than hysteresis valve (called Eco Valve Hyst) and DHW is higher than {Setpoint - "Eco Hysteresis"} parameter. After this temporisation, the start/stop contact of primary variable speed pumps OR primary cst speed pumps' power supply is stopped.
- **Booster:** If DHW temperature is dropping down faster than "Booster Gradient", the second primary pump (if existing) is energized, to increase the primary flow rate. Function stops when DHW temperature is back to the setpoint value and after "Booster Tempo" parameter.

Parameter	Factory Default Setting	Optional Setting	Description
1: Eco 2: Booster 3: EcoBoost	0	0/1/2/3	0 = No function 1 = Eco Function only 2 = Booster function only 3 = Accumulated two functions
Fct_Selection	Normal	Normal/Eco/Boost/ EcoBoost	Playback function selected in 1: Eco 2: Booster 3: EcoBoost
Eco Delay	10 min	1-30 min	Scan time before switching function to the extent possible.
Eco Hysteresis	5°C	1 - 20°C	Temperature range in which the function is applicable.
Valve Hysteresis	4%	1 - 10%	Maximum opening of the valve before switching function.
Booster Delay	2 sec	0 - 30 sec	Additional holding time of the second pump to stop the function.
Booster Gradient	1°C/s	1 - 5°C/sec	Minimum temperature fall speed at which the function operates.

8.8 Fouling Function

Fouling function can be activated when the sensor S3 is connected. Accessing the scaling-menu requires login at Technician level.



If the temperature in S3 is too high for a long time this function activates an alarm that consider the heat exchanger fouled.

Parameter	Factory Default Setting	Optional Setting	Description
Fouling alm activ	0	0/1	0 = disabled / 1 = enabled
Fouling_alarm	Norma/Default		Read only
SP_Fouling	65°C	60-80	Depends on the HE types and Primary inlet temperature.

8.9 230V Triac Menu

Accessing the 230C Triac-menu, requires login at Technician level.

This menu allows using a 230VAC Triac output.

Parameter	Factory Default Setting	Optional Setting	Description
Multi P  + 	Off	Off / On	Enable or disable the 230V output as per clock program.
Pulse Duration	5 sec	1-3600	230V pulse duration in seconds
BypassS4S3	N/A	N/A	N/A
DeltaT bypass	N/A	N/A	N/A

8.10 Pumps Menu

P12 = Primary Pump(s) P34 = Secondary Pump(s) Parameter	Factory Default Setting	Optional Setting	Description
P12 Diff. work time	100 hrs	1 - 1000 hours	P1 or P2 working time.
P12 Permut.Type	2	0 = Fixed time	0: See P12 Permut Hour
		1 = Fixed time + diff. work time	1: If diff reached at this time, pump shift.
		2 = Immediately after Diff.hrs	2: Permutation Day+hour not required.
P12 Permut.Period	0	0 = None 1 = Daily 2 = Weekly 3 = Monthly	
P12 Permutation Day	1	From 1st to 31st	
P12 Permutation Hour	10h00 pm	00h00 - 23h59 (11h59 pm)	Pump shift time
P1P2 Superposition	6	0-10 seconds	Time to start P2 (P1) before stopping P1 (P2), to let the other pump start.
Parameter	Factory default setting	Optional Setting	Description
P34 Diff.work time	100 hrs	1 - 1000 hours	P1 or P2 Working time.
P34 Permut.Type	2	0 = Fixed time	0: See P12 Permut Hour
		1 = Fixed time + diff. work time	1: If diff reached at this time, pump shift.
		2 = Immediately after Diff.hrs	2: Don't care of Permutation Day+hour
P34 Permut.Period	0	0 = None 1 = Daily 2 = Weekly 3 = Monthly	
P34 Permutation Day	1	From 1st to 31st	
P34 Permutation Hour	10h00 pm	00h00 - 23h59 (11h59 pm)	
P3P4 Superposition	6	0-10 seconds	Time to start P2 (P1) before stopping P1 (P2), to let the other pump start.
Pump_Fault_Reset	Off	Off/On	To clear a pump default, set to On, then Off.

8.11 Autotest Menu

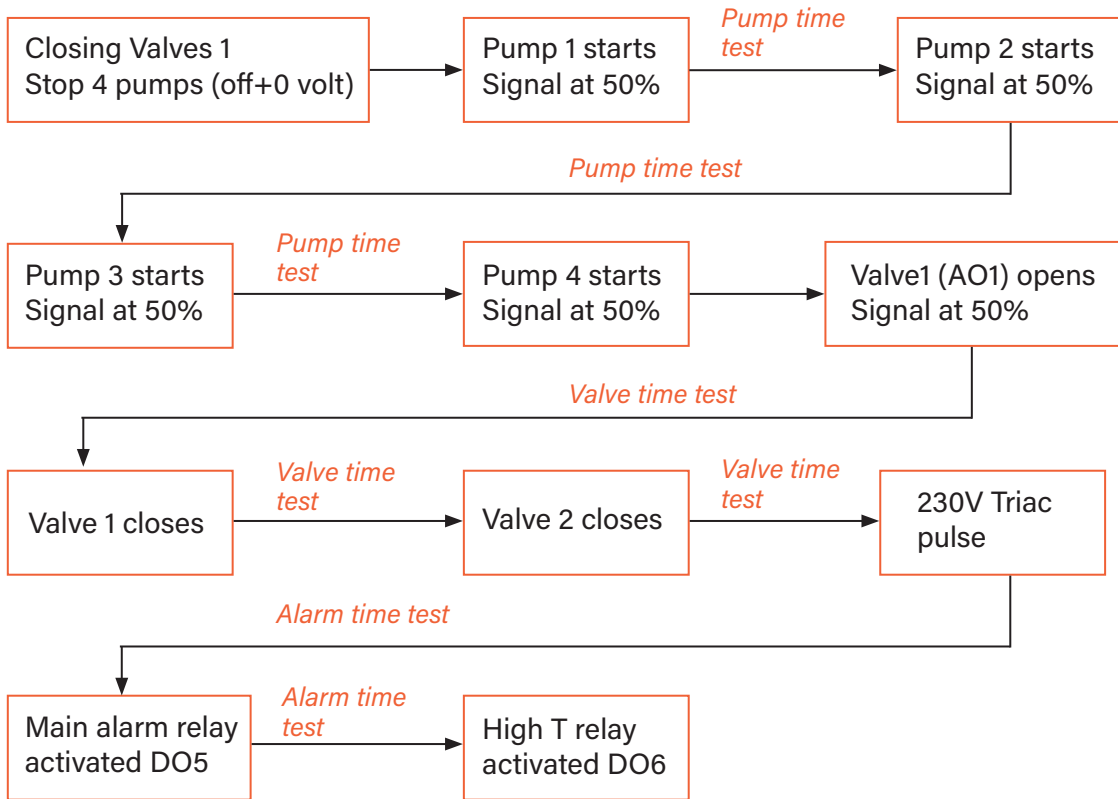
This submenu allows testing analog and digital outputs. It is possible to run an automatic sequence or to test manually each output individually. In case of Auto test (automatic sequence), it is possible to reduce or increase tests' temporizations. Pump, valve, and relays test times can be adjusted individually. The time test value will impact on the total auto test time sequence.

Accessing the Autotest menu requires login at Technician level.

In this menu an auto test can be started that will activate binary and analog outputs, to activate valve, alarm relays, 230V Triac. It is also possible to read/write these different values manually.

Parameter	Factory Default Setting	Optional Setting	Description
Start Auto Test	0	0/1	Set 1 to start auto test. When finished, the value goes back to zero
Pump time test	16 sec	1-60 sec	Not used
Valve time test	16 sec	1-60 sec	Temporisations to adjust test duration
Alarm time test	5	1-60 sec	Individual output reading / writing
Cmd_P1	On/Off		Actively relay 1 (pump 1)
Cmd_P2	Off/On		Actively relay 2 (pump 2)
Speed_P1P2	xx %	0-100 %	Not used
Cmd_P3	On/Off		Actively relay 3 (pump 3)
Cmd_P4	Off/On		Actively relay 4 (pump 4)
Speed_P3P4	xx %	0-100 %	Not used
High_Temp_Alarm	Off	On/Off	} Individual output reading / writing
Main_Alarm	Off	On/Off	
Triac_Output	Off	On/Off	
Valve signal	xx %	0-100 %	
Valve2 signal	xx %	0-100 %	
3 Pts valve signal	xx %	0-100 %	

Picture 19



Note: A pump fault may occur after Auto test. In this case, clear the alarm according to 7.12 Clear alarm menu


8.12 Clear Alarm Menu

Accessing the Clear Alarm menu, requires login at Technician level.

All alarms are cleared the same way.

Parameter	Factory Default Setting	Optional Setting	Description
High_Alm_Reset	Off	Off / On	Select On to clear the alarm, then return to Off or wait a few seconds for automatic return to Off . Off: the alarm is cleared.
Pump_Fault_Reset	Off	Off / On	Select On to clear the alarm, then return to Off or wait a few seconds for automatic return to Off . Off: the alarm is cleared.

9. Service Menu


Press the  key to enter the service menu. In the service menu, you can:

- Change password for technician level.
- Trending parameters.
- Display the trend buffer.
- Check operating hours.

From Point Data sub-menu, you can, read or change binary or analog outputs to start/stop a pump, open/close control valve for example.

9.1 Change Password for Technician Level

Note: To change the password, you need the password for the Technician level, level 3.

1. Press  key to access to Service Menu. Go to "Login Installer" then press the wheel.

2. Enter the current password. Press he wheel to validate.

Service Menue
Continue
Login Installer

3. Mark "Change password", then press the wheel.

Enter your password

Next
Change Password

4. Go to Level 3 line and then click on the password to change it. Press the wheel to validate.

Change Password	
Level 2:	2222
Level 3:	3333
Installer Service	

Note: Level 2 password is not in use.

9.2 Login Installer

Login Installer	****		Enter 3333 if not in technician mode
	Change password		

9.3 Menu Continued

Menu	Sub-menu	Sub menu	Description
Continue	Operating hours		Viewing operating hours of internal parameters.
	Trending	Points in trend	Selected variables to trend, for example, temperature sensors.
		Display trend Buffer	View the records
	Interface Config (com)	C-bus active	Factory pre-set
		Ctr#1 9600	Factory pre-set
		B-port 9600	Factory pre-set
		Append bus	Factory pre-set
		RF Teach in (N/A)	Factory pre-set
	Time Program	Solar	Not used
		Main	It is SP_T_Sec_Outlet (main temperature program). <i>See 7.4 S1 menu Secondary Outlet.</i>
		TSP_Amb	Not used
		Multi Pulse	Not used
		Therm. treatment	<i>See 7.5 Thermal Treatment Menu</i>
	Point Data		Internal parameters +I/O visualisation
		Analog Input	Sensor values
		Pseudo Analog	Can be set points or internal parameters
		Analog Output	Valve and pump output signals
		Binary Input	Isothermic contacts from pumps, remote contact
		Pseudo Binary	Internal flags
		Binary Output	Pump start / stop contacts, relays contacts, 230V Triac
		Totalizer	N/A
		Remote Analog	N/A
		Remote Binary	N/A
	System Data		System information
		Parameters	N/A
		Date / Time	Clock settings
		System Info	Hardware / software info (version, date)
		Interface Config	Hardware / software info (version, date)
		DDC Times	Programs time constant
		Flash Memory	Info on flashing

9.4 Operating Hours

Operating hours for the following variables can be checked:

- Therm_Protec_P1/P2/P3/P4
- Cmd_P1/P2/P3/P4
- High_Temp_Alarm
- Main_Alarm
- Main_Alarm
- AFF_leg_active SAFETY_FCT
- ThTr_Activated

For more information and descriptions, see 10 Parameter list.


1. Press  key to access to Service Menu, then go to "continue".

Service Menu
Continue
Login Installer

2. Select "Operating Hours" in the menu.

The first time you enter this menu, the list is empty.

Service
Operating hours
Trending
Interface Config
Time Program

3. To add a variable to trend, choose  +

Activate Oper. Hours
Cmd Distant
Therm_Protec_P1
Therm_Protec_P2


4. Mark one variable to follow and press the wheel.


Activate Oper. Hours
Therm Protec_P4
Cmd_P1
Cmd_P2

5. Validate the variable by ticking in the Operating Hours box. If this box is empty the variable is in the list, but it is not recorded.

Operating Hours 
--

When you go back in the menu ( Key), you can see the list with "Cmd_P1" parameter, and on the right side, the operating hours.

Cmd_P1
Operating Hours 

Operating Hours (h) 
Cmd_P1 0


For more details, click on the line to open the sub-menu.
 Here you can read that P1 has been operating less than 1 hour, has been switched one time and status is On.

Cmd_P1	
Operating Hours	<input checked="" type="checkbox"/>
Hours:	0
Switches:	1
Status:	On

Proceed the same way to add extra variables.

9.5 Trending Parameters

A lot of different variables can be recorded or trended. It can be temperatures' measurement, valves, or pumps' signals, isothermic contacts, alarms, thermal treatments etc.

1. Press  key to access to Service Menu, then click on "Continue."


Service Menu
Continue
Login Installer

2. Select "Trending" in the menu.

Service
Operating hours
Trending
Interface Config
Time Program

3. Select "Points in Trend"; choose
 The first time you enter this menu, the list is empty.

Trending
Points in Trend
Display Trend Buffer

4. To add a variable to trend; choose 

5. Mark the variable to follow and press the wheel.
 In this example the Secondary outlet temperature, S1.

Set Points in Trend
Pilot_Signal
Pt1
Pt2
S1

6. Validate the variable by ticking in the Trend Log box. If this box is empty the variable is in the list, but it is not record.

S1	
Trend Log:	<input checked="" type="checkbox"/>
Trend Hyst:	1
Trend Cycle:	0 min

There are two different ways to record (method a and b):

a) Only the temperature change is recorded. This saves memory and allows a longer sampling period compared to method b.

Select the record hysteresis. In our case, every 1°C temperature change is recorded. You can change the hysteresis value by clicking on it.

- b) Record on a time base, whether the temperature changes or not. Note that this method consumes memory, especially if a long-time base is selected. Here is the time base selected to 10 minutes recording (1 record every 10 minutes).

For method "a" set "Trend cycle" different to zero, for method "b", set "Trend Hyst" different to zero.

S1		
Trend Log:		<input checked="" type="checkbox"/>
Trend Hyst:		1
Trend Cycle:	10	min

9.6 Display the Trend Buffer

1. Press  key to access to Service Menu, then click on "Continue".

Service Menu
Continue
Login Installer

2. Select "Trending" in the menu.

Service
Operating hours
Trending
Interface Config

3. Select "Display Trend Buffer".

Trending
Points in Trend
Display Trend Buffer

4. Select the variable to display, S1 in this case, and press the wheel.


Trend Buffer
S1

Date, time and temperature at the time, can be read. For example, on 21st of September at 14h22, the temperature of S1 was 58°C

S1		
21-09	14:22	58
21-09	14:22	60
21-09	14:22	59
21-09	14:22	57

10. Alarm Menu

Alarm indication: Is Volt Free Contacts (VFCs), 2 Amps maxi, each under 230 V.

Press  key to access to Alarm menu. The menu contains four different lists:

- **Alarm Buffer**
Lists all events with, date, time and type of event.
- **Points in Alarm**
Lists all events with alarm condition.
- **Critical Alarms**
Lists all alarms with critical alarm condition.
Critical alarms are important alarms, like high temp.
- **Non-Critical Alarms**
Lists all non-critical alarm condition.
These alarms are more information, like power failure.

For example, in the alarm buffer, you can read:

15.52	SAFETY_FCT
15.51	SAFETY_Speed
15.41	SAFETY_Speed
15.40	SAFETY_FCT

Note that the alarms are listed with the latest at the top.

Press a line to see more information about the alarm.

Displayed	Meaning
19-06-2012 15.52 SAFETY_FCT On Auto Operation	The safety function has been set to auto mode, stopping the safety function at 15h52.
19-06-2012 15.51 SAFETY_Speed 100% Auto Operation.	The safety speed has been set in Auto mode at 100% at 15h51.
19-06-2012 15.41 SAFETY_Speed 75% Manual Operation	The speed pump has been set manually to 75% at 15h41.
19-06-2012 15.40 SAFETY_FCT On Manual Operation	The safety function has been activated manually the 19th of June 2012 at 15h40.



11. Parameter List

There are more than 100 different variables used in the controller. Most of them are used for internal programs and calculations. Here we describe the main points.

Name	Description	Unit	Modbus Address*
Therm_Protec P1	Isothermic input from P1 pump	0/1	11
Therm_Protec P2	Isothermic input from P2 pump	0/1	12
Therm_Protec P3	Isothermic input from P3 pump	0/1	13
Therm_Protec P4	Isothermic input from P4 pump	0/1	14
Cmd_P1	P1 command. It is the pump start/stop output	On/Off	15
Cmd_P2	P2 command. It is the pump start/stop output	On/Off	16
Cmd_P3	P3 command. It is the pump start/stop output	On/Off	17
Cmd_P4	P4 command. It is the pump start/stop output	On/Off	18
PriP1_Alarm_On	Primary pump 1 default	0/1	21
PriP2_Alarm_On	Primary pump 2 default	0/1	22
Sec_P3_Fault	Secondary pump 3 default	0/1	25
Sec_P4_Fault	Secondary pump 4 default	0/1	26
Main_Alarm	General Alarm	0/1	28
High_Temp_Alarm	High temperature alarm on S1 sensor	0/1	29
Fouling_Alarm	Fouling heat exchange alarm	0/1	30
Ret_High_Alarm	High temperature alarm on S2	0/1	31
ThermTr_Alarm	Thermal treatment failed	0/1	32
SAFETY_FCT	The safety function state	0/1	35
ThTr_Activated	Thermal treatment running	0/1	36
Remote_Control	The unit is remotely controlled	0/1	37
BOOSTER	Boost function activated	0/1	41
ECO	ECO function activated	0/1	42
Tank Load	Tank loaded (Sensor S2 need to be connected)	0/1	44
Valve	Primary valve actuator	0-100%	47
S1_10	Secondary outlet temperature measurement (S1 sensor)	°C	50
S2_10	Secondary Inlet temperature measurement (S2 sensor if present)	°C	51
S3_10	Primary Outlet temperature measurement (S3 sensor if present)	°C	52
S1_PID_Setpoint	Current temperature set point of the main control loop on S1	°C	62
High_Alm_Reset	To reset a high temperature alarm	On/Off	201
Pump_Fault_Reset	Resets a pump fault	On/Off	202
AFF_Legio	Thermal treatment function On/Off	On/Off	203
SP_T_Sec_Outlet	Domestic Hot water Setpoint (S1)	°C	211
THTR_Setpoint	Thermal treatment temperature set point	°C	213

* Please refer to "MODBUS" section in the next pages.

12. Factory Reset

Press both  and  for 5 seconds. Display appears as shown here. Rotate the wheel; select the last line (program name with a star at the end). Press the wheel a few seconds and the program will start after 1 minute. Settings are now factory settings.

Adjust if necessary, the pumps' number and sensors influence in the configuration menu.

Note that on some software versions, the displayed language can be changed. Rotate the wheel clockwise to display English or French. Select and press the wheel. Then, press on "Factory" line to start the controller.

15-10-2012	13.41
Wiring Check	
C-Bus	<input checked="" type="checkbox"/>
CTR# 1	19200
AL 09 2ST	12-10-12*

02/07/2013	15:27
Startup	
C-Bus config	<input checked="" type="checkbox"/>
CTR# 1	38400
Select Language:	

English (1)
French



After a reset, the controller must be configured, see *7.3 Configuration menu*. Especially the number of pumps must be configured.

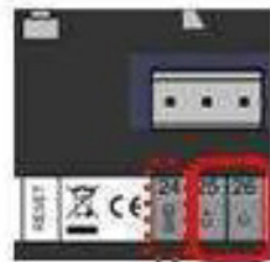
13. Modbus Add On

13.1 Modbus Communication

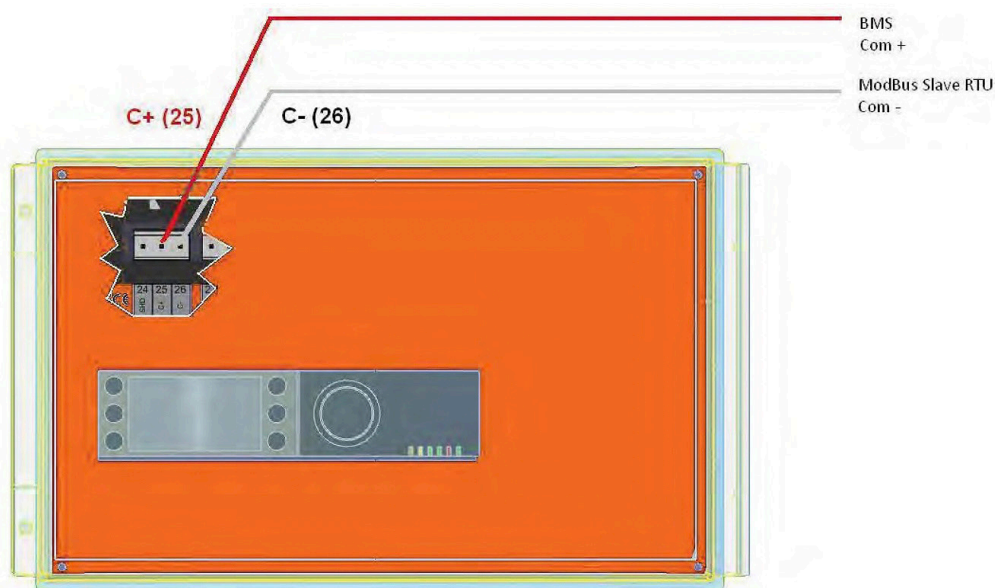
The controller includes a Modbus slave communication protocol - type Modbus RTU RS485.

Connection between BMS (building management system) and Micro 3000 requires two polarized wires on C+ and C-, respectively labelled 25 and 26 on controller C Bus terminal.

The connection via shielded cable is not required but can be performed with the terminal 24. For this, it is necessary to unscrew the front panel.



Picture 20



Picture 21

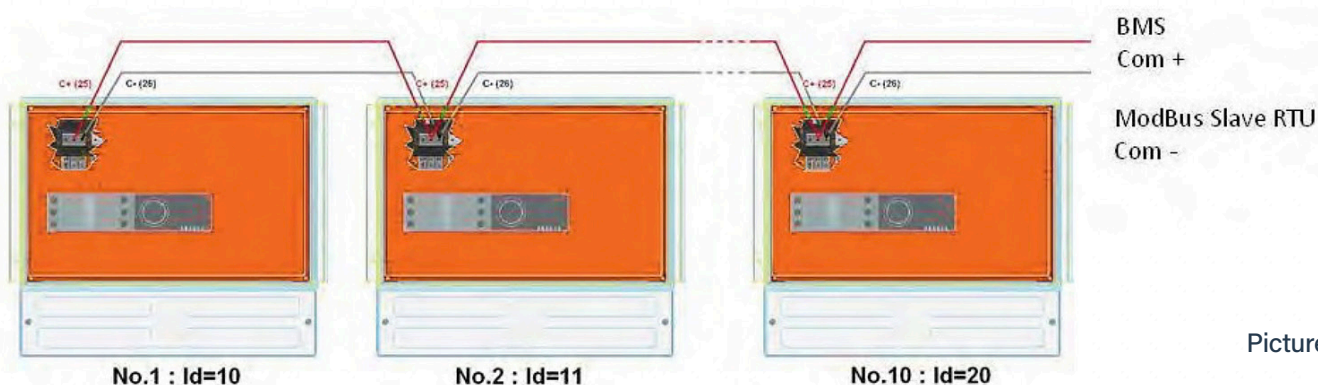
13.2 Connecting Multiple Micro 3000 Control Boxes



Rules to respect


Max length between BMS and farer control box: 500 meters

Connection continuity (C+ and C-) must be done directly on the controller C Bus terminal, without using derivation boxes. Respecting this, there are two wires per terminal, except in the last control box.



Picture 22

13.3 Change Modbus Parameters

1. Press  key to access to Service Menu. Go to "Login Installer" then press the wheel.
2. Enter the current password. Press the wheel to validate.
3. Mark "Next", then press the wheel.

Service Menu
Continue
Login Installer

Enter your password

Next
Change Password

Select "Interface Config"

Service
Operating hours
Trending
Interface Config

Select "Modbus"

Interface Config
Append bus number to data point name <input checked="" type="checkbox"/>
RF Teach-in
Modbus

Select the variable to change.

Press the wheel to validate.

- Device ID = Modbus Address of the controller
- Baud Rate - Com speed
- Parity = None (0) / Even / Odd
- No of Stop Bits = 0/1

Modbus Communication	
Device ID:	10
Baud Rate:	9600
Parity:	NONE
No. Stop Bits:	1

13.4 Modbus Slave Communication Parameters

Modbus Parameters	Speed	9600
	Bit Number	8
	Stop bit	1
	Parity	None
	Mode	RTU

In case of multiple controllers, change ModBus slave number.

Read Only FDigital						
Modbus Points	Modbus Address*	Type	Sub Type	Mode	Value	Comment
PD_Cmd_P1	15	HR_16	BOOL	R	0=Off, 1=On	Command P1
PD_Cmd_P3	17	HR_16	BOOL	R	0=Off, 1=On	Command P3
PriP1_Alarm_On	19	HR_16	BOOL	R	0=OK, 1=Alarm	PI Fault
PriP2_Alarm_On	20	HR_16	BOOL	R	0=OK, 1=Alarm	P2 Fault
SecP3_Alarm_On	23	HR_16	BOOL	R	0=OK, 1=Alarm	P3 Fault
PD_High_Alarm	27	HR_16	BOOL	R	0=OK, 1=Alarm	S1 High Temp Alarm
PD_Main_Alarm	28	HR_16	BOOL	R	0=OK, 1=Alarm	General Default
Fooling_Alarm	30	HR_16	BOOL	R	0=OK, 1=Alarm	Fooling Alarm (S3)
Reserved for future use	32	HR_16	BOOL	R	0=Off, 1=On	Reserved for future use
PD_Triac_Output	33	HR_16	BOOL	R	0=Off, 1=On	230V Triac. output
SAFETY_FCT	35	HR_16	BOOL	R	0=Off, 1=On	safety Function
Disp_Leg_Active	36	HR_16	BOOL	R	0=Off, 1=On	Therm. Treat. Ongoing
Remote_Control_Rev	37	HR_16	BOOL	R	0=Off, 1=On	Remote Control
AFF_FD20	39	HR_16	BOOL	R	0=Off, 1=On	Heating Mode
AFF_FD22	40	HR_16	BOOL	R	0=Off, 1=On	Cooling Mode
EcoMode	42	HR_16	BOOL	R	0=Off, 1=On	ECO Activated
PD_Pumps_Fault	43	HR_16	BOOL	R	0=Off, 1=On	Synthesis Pump(s) Fault
Tank_Load	44	HR_16	BOOL	R	0=Off, 1=On	Tank Loaded
(16 bit integer)*						

Read Only Analogic						
Modbus Points	Modbus Address*	Type	Sub Type	Mode	Value	Comment
SW AL Version	34	HR_16	int16	R		Software Version
PA10 valve1	47	HR_16	int16	R	%	Control valve 1 signal
S1_10	50	HR_16	int16	R	°C	Sensor 1 measurement
S2_10	51	HR_16	int16	R	°C	Sensor 2 measurement***
S3_10	52	HR_16	int16	R	°C	Sensor 3 measurement***
S1_PID_SP_10	62	HR_16	int16	R	°C	Calculated S1 setpoint
(16 bit integer)*						

Read-Write					
Modbus Points	Modbus Address*	Type	Sub Type	Mode	Comment
High_Alm_Reset	201	HR_16	BOOL	R/W	1=Reset fault. Pulse point necessary, 30 seconds On/Off
Pump_Fault_Reset	202	HR_16	BOOL	R/W	1=Reset fault. Pulse point necessary, 30 seconds On/Off
(16 bit integer)*					

Read-Write Analogic/Lecture						
Modbus Points	Modbus Address*	Type	Sub Type	Mode	Value	Comment
SP_T_Sec_Outlet	211	HR_16	int16	R/W	°C	S1 fixed setpoint (DHW)
THTr_setpoint	213	HR_16	int16	R/W	°C	Thermal treatment setpoint
(16 bit integer)*						

- * For some supervisors, it is necessary to implement BOOL as int16
- ** For some supervisors, remove 1 to address number (ex: S1_10 address=49)
- *** If present

14. Trouble Shooting

Findings	Probable Causes	Remedies
Pump not operating	Locked rotor or damaged	Force to rotate. replace if required
	Corresponding led is not lit	Replace Power Board
	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
Low temp alarm condition	Controller improperly set	Contact After Sales Service
	Primary pump stopped	see "pump not operating"
	Too low primary temperature	Check for closed valve in the primary
	Too high tap water flow rate (S1)	Reduce buffer vessel charging flow rate
Modulating valve does not operate.	Set point too high. 3-way valve remains closed	See "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, then replace if necessary
	Supply wires improperly tightened	Check wires, re-tighten connections
High alarm condition detected	Actuator stroke restricted	Dismount, then clean the valve
	Charging pump stopped (S1 versions)	Refer to, "Pump not operating", above
	Low recirculation flow rate (I version)	Check and fix problem
	Alarm differential too low	Check and set the controller
	Modulating valve not closing	Refer to previous box above
Correct temperatures across the exchanger not obtained. Valve and pumps operating satisfactorily	Too much differential of pressure across the modulating valve	Check the way the TWM is piped up. Mixing arrangements should be used
	excessive exchanger scaling at the primary or secondary side	Open and clean the exchanger according to cleaning instructions
	Primary pipework obstructed or strainer upstream clogged	Inspect primary pipe work. Clean strainer on the primary side
	Isolation valve closed	Open isolation valves.
	Air presence in the primary	Purge. Check no high parts where air could be trapped, exist
Temperature does not increase in the buffer vessel and the tap water value is correct	Excessive pressure drops	Check pipe size is suitable for nominal flow rate
	Recirculation flow rate exceeds charging flow rate	Check and measure charging and recirculation flow rates. adjust when necessary Recirculation FR < 0.6 x Charging FR

15. Maintenance and Repairs

We recommend that you take out a low cost annual service contract from Heat Exchange Spares.com, which covers all parts and labour. Please contact us for more information.

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

Weekly Inspections

- Check for leaks on pipes and components.
- Check that the operation control system is stable and that the temperature does not fluctuate. Temperature hunting causes unnecessary wear of valves, actuators.

Annually

- Check the control box electrical connections tightening.
- Check the control valve that no leaks are detected.
- Lime scaling on the connected devices.

Scaling of the secondary side will be evidenced by:

- High pressure drop on the secondary side of the exchanger.
- 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.



Only replace any defective parts with **original** spare parts.
Please contact your HeatExchangerSpares.com for spare parts, noting the serial number and model designation.



Maintenance work must be carried out by a qualified and authorised technician



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



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

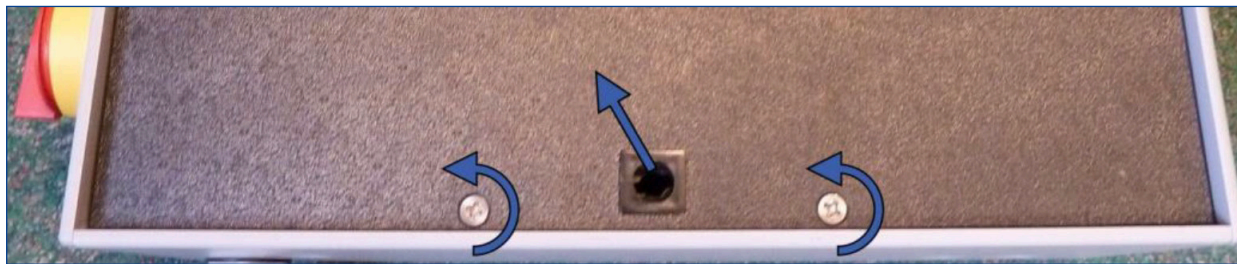
15.1 Open the Control Box

Remove the front panel by turning the lock button counter clockwise and lift up the cover.



Picture 23

Then, unscrew the two screws in bottom and lift up the black panel.



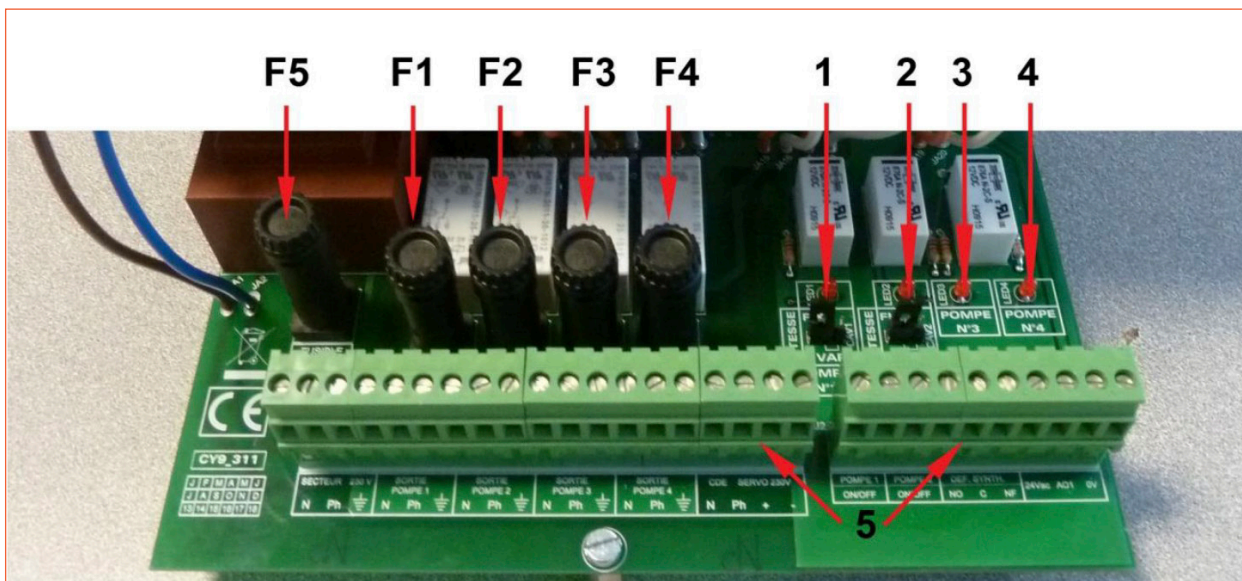
Picture 24

15.2 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 25

F5	Fuse F5
F1	Fuse F1
F2	Fuse F2
F3	Fuse F3
F4	Fuse F4

1	LED 1, lit when pump P1 is power supplied
2	LED 2, lit when pump P2 is power supplied
3	LED 3, lit when pump P3 is power supplied
4	LED 4, lit when pump P4 is power supplied
5	Terminal block

Fuse	FU1	FU2	FU3	FU4	FU5
Protection	PUMP 1	PUMP 2	PUMP 3	PUMP 4	Power Card
Size	6.3 x 32	6.3 x 32	6.3 x 32	6.3 x 32	6.3 x 32
Rating	2,5 A	2,5 A	2,5 A	2,5 A	250 mA
Voltage	250 V	250 V	250 V	250 V	250 V

15.3 Pumps Number

The pump configuration and connections is factory made.
In a servicing situation the correct pump must be identified.

Codification	Meaning	Connected pump(s)
S	Instantaneous Single	P1
D	Instantaneous Double	P1 + P2
SS	Semi-Instantaneous Single / Single	P1 + P3
DS	Semi-Instantaneous Double / Single	P1 + P2 + P3

15.4 Add a Recycling Pump to an Aquamodule AMP Direct

A recycling pump can be added to an Aquamodule AMP direct. The pump must be connected to P3.

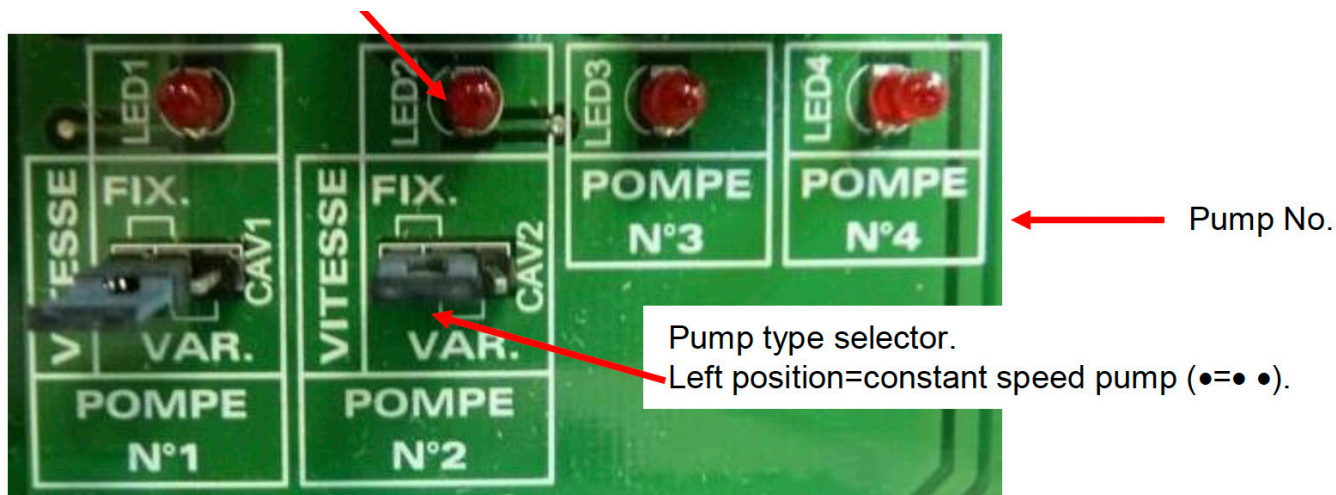
15.5 Add an Extra Pump

Aquamodule uses class A constant speed pumps.

NOTE: After adding a pump, make sure that the pump selector is correctly set.

1. Open the control box.
2. On the right side of the printed circuit board, PCB; find the selector for the actual pump.
3. Place the pump type selector to the left, constant speed pump.

If lit, the corresponding pump is energised.



Picture 26

15.6 Add an extra sensor



Please see 6.2 *Electrical wiring diagram*.
S1-S3 are temperature sensors, NTC20k.

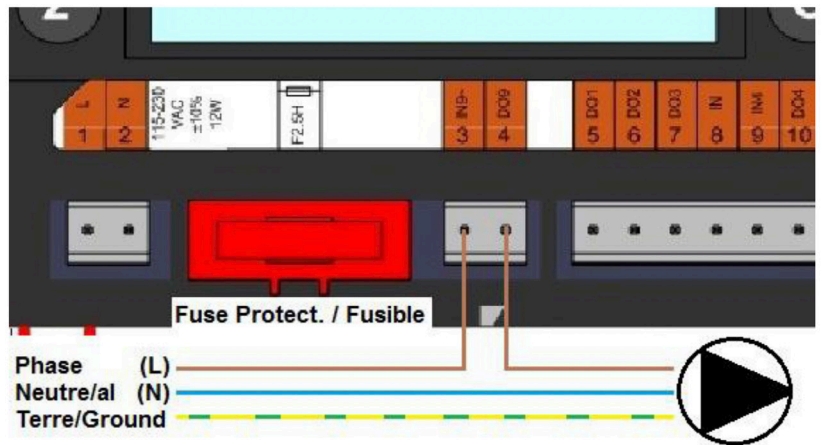
15.7 230V Triac Output

The 230V electrical output can be configured as a pulse function. For example it can be used to shortly activate an electrical drain valve.

In this configuration, you can program pulse duration, day, week or special days you want this to happen.

For example each Sunday at 10h00 for 5 seconds

See 7.9 230V Triac menu.



Picture 27

Connected device must not exceed 230VAC 1A.

15.8 Relay 1 and 2 Contacts

Relay 1 can be NO (normally open) or NC (normally closed).

Relay 2 is always NO (normally open).

Connect the relay 1:

Operating Mode	Connections on PCB bottom terminal
No	C-NO (25-24)
NC	C-NF (25-26)

Connect relay 2 to the controller terminal 13 (IN6) and 14 (OUT6).

See 6.2 Electrical wiring diagram.



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

15.9 Remote Control Contact

The Aquasave can be operated by a remote controller. To enable that, connect a volt free contact between BI1 and GND.

Wire Terminal Name	Wire Terminal Number
BI1	33
GND	31 Or 37

See 6.2 Electrical wiring diagram.

15.10 Change Plate Heat Exchangers

Disassembling of the exchanger can be done very quickly according to the 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' package thickness PHE inbetween frames.



Aquamodule AMP5 - AMP30

Unit Type	AMP5	AMP10	AMP20	AMP30
'A' Dim 0,5mm SS316	21,8	50,8	79,8	132,0

Aquamodule AMP35 - AMP80

Unit Type	AMP35	AMP45	AMP65	AMP80
'A' Dim 0,5mm SS316	40	61	110	194

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 330ppm 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 doing these operations.

Carefully rinse the plates with clean water after cleaning.

7. Remount the plates in the same order and same position they were before.
8. Screw the frames to the same distance they were before (plate pack thickness dimension).
9. Clean the control sensor pocket.

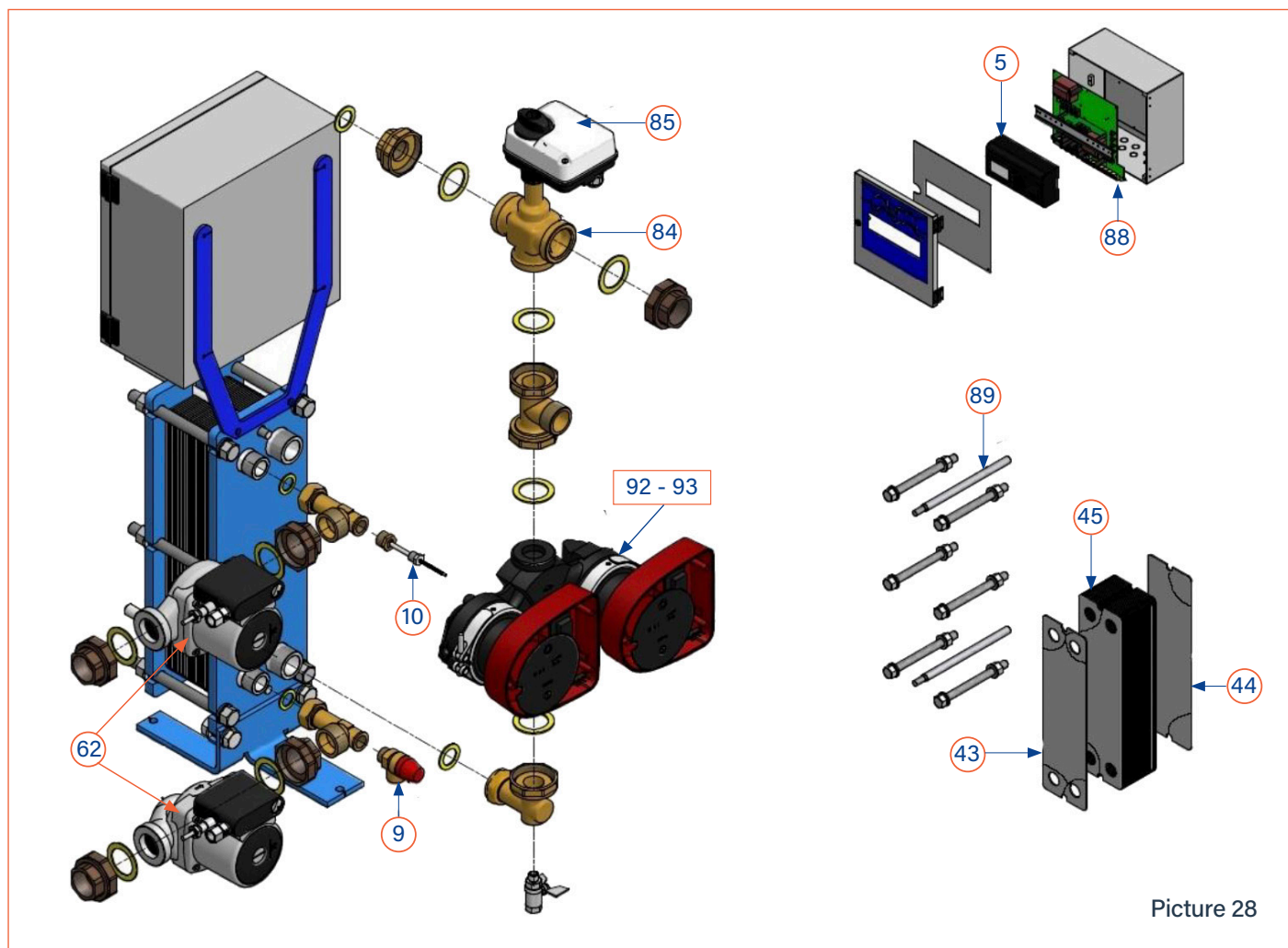
15.11 Technical Data

	Aquamodule AMP5 - AMP30	Aquamodule AMP35 -AMP80
Electrical Data:	230V 50Hz 1-phase	230V 50Hz 1-phase
Main Measurements:	Max. 485 x 535 x 970mm (LxWxH)	Max. 850 x 505 x 1315mm (LxWxH)
Weight:	70 - 103 kg	153 - 226 kg
Electrical Consumption, Pmax (W)	Pmax (W) 85-750* Imax (A) 1, 2-5, 7*	Pmax (W) 380-1440* Imax (A) 2, 2-6, 8*

* With Booster Function Activated

15.12 Spare Parts - Aquamodule AMP5 - AMP30

Only replace any defective part with the **original** spare part. Please contact Heatexchangespares.com.



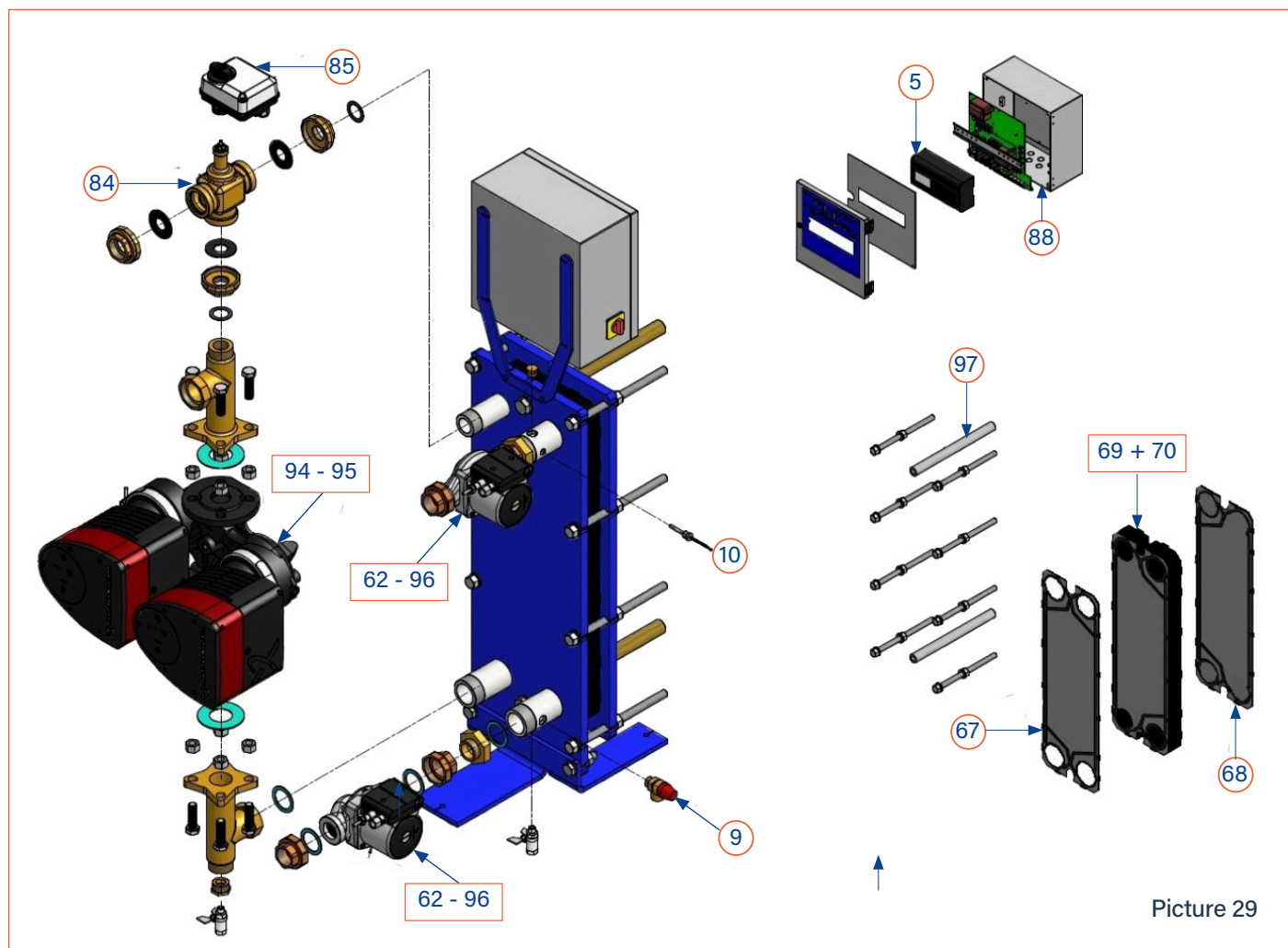
Picture 28

Position	Description Spare Parts Aquamodule AMP3 - AMP30
5	Micro 3000 controller
9	Safety valve - Male - DN 15 - 10 Bar
10	NTC20k temp sensor + 2m cable
43	Plate - 316 - 0, 5mm EDP-M 1st plate
44	Plate - 316 - 0, 5mm EDP-M End plate
45	Plate - 316 - 0, 5mm EDP-M Std plate
62	UPS 32.80N AL 230V SS316 wired
84	3 Port valve body DN32 Kvs 16
85	Actuator ML7430E1005 0-10 Volts
88	Arma First interface card with connectors
89	Set of tightening bolts Aquamodule AMP3 - AMP30
92	MAGNA1 32-80, 1*230 pump*
93	MAGNA1 D 32-80, 1*230 pump*
	Insulation for Aquamodule AMP3 - AMP30

*Magna1 (D) 32-40 of AMP3 & AMP10 range is replaced by Magna1 (D) 32-80 on spare parts for standardisation reasons.

15.13 Spare Parts - Aquamodule AMP35 - AMP80

Only replace any defective part with the **original** spare part. Please contact Heatexchangespare.com.



Picture 29

Position	Description Spare Parts Aquamodule AMP35 - AMP80
5	Micro 3000 controller
9	Safety valve - Male - DN 15 - 10 Bar
10	NTC20k temp sensor + 2m cable
62	UPS 32.80N AL 230V SS316 wired for AMP35 & AMP45
67	Plate - 316 - 0,5 EDPM gasket 1st plate
68	Plate - 316 - 0,5 EDPM gasket End plate
69	Plate - 316 - 0,5 EDPM gasket Std plate
70	Plate - 316 - 0,5 EDPM gasket Std plate
85	Actuator ML7430E1005 0-10 Volts
88	Arma First interface card with connectors
94	MAGNA1 40-100, 1*230V pump*
95	MAGNA1 D 40-100, 1*230V pump*
96	UPS 32.100N IMU 230V SS316 wired for AMP65 & AMP80
97	Set of tightening bolts Aquamodule AMP35 - AMP80
98	3 Port valve body DN40 Kvs 25
	Insulation for Aquamodule AMP35 - AMP80

16. Commissioning Report

Installation							
Tightening Dimension Control							
Air Vent Position							
Settling Pot presence on primary							
Boiler Brend, Installation and Power							
Mixing bottle required / presence							
Balancing valve presence on indirect (semi-instantaneous) installations							
Close drain valves							
Primary conformity							
Secondary conformity							
Accessibility of unit and components							
Configuration Menu							
Sensors							
Pumps							
Other							
Primary Pumps				Secondary pumps			
Pump 1		Pump 2		Pump 3		Pump 4	
Electrical bridges control for pumps on power plate							
Pump 1		Pump 2		Pump 3		Pump 4	
Control valve working							
Settings							
DHW secondary outlet T° settings: S1							
PID setting							
High alarm setting		Manual		Auto			
Thermal Treatment:		Type:		Setting:		Time:	
Eco function activation							
Booster function activation							
Other functions activated							
Relay 1 functon							
Relay 2 function							
Trending and/or Modbus valve activated							
Volt free Remote contact wired or not							
TRIAC 230V connections wired or not							
Other comments							
Identification of the unit							
Unit ID No.	Installer/Company Name			Installation Site		Date	

17. Warranty

Our equipment comes with a 12-month warranty from the date of shipment. This may be extended to an additional 6 months from the date of commissioning of the equipment, subject to commissioning by Heat Exchange Spares.com. The warranty period is limited to 18 months from the actual date of shipment from the factory. 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 or Head Office for assessment unless written agreement to proceed otherwise has been obtained from Ormandy Rycroft Engineering. The results of the assessment can only state whether or not 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 supplied by Ormandy Rycroft Engineering, 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 Ormandy Rycroft Engineering or HeatExchangerSpares.com.

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

17.1 How to contact us

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

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