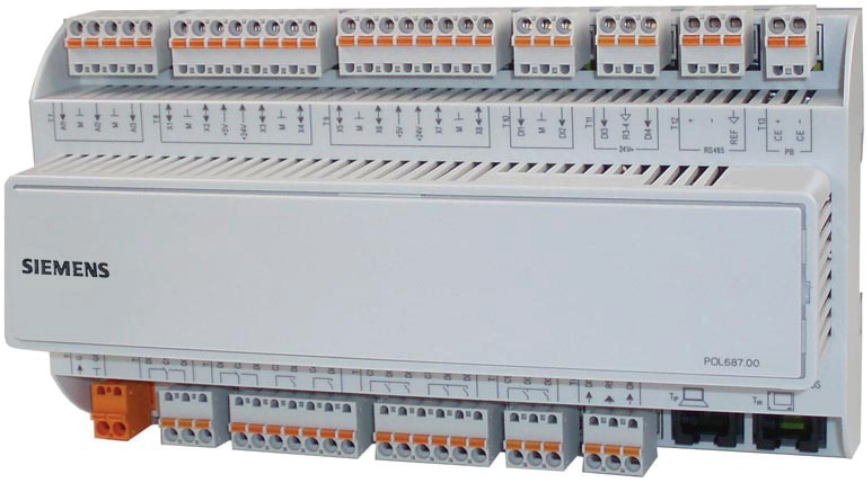
COSMOGAS®



INSTALLATION, USE AND MAINTENANCE MANUAL

CASCADE SEQUENCE, HEATING AND COOLING SYSTEM CONTROLLER

TUTORbit

62403737 - R05 21-11-2023_UK

INDEX

INDEX

Installation, changes

- ☞ Installation, calibration or modification of the appliance must be carried out by professionally qualified personnel, in compliance with the national and local regulations as well as the instructions in this manual.
- ☞ Incorrect installation or poor maintenance may injure people, animals and damage property, for which the manufacturer cannot be held liable.
- ☞ Domestic hot water temperature exceeding 51°C can even cause permanent damage to persons, animals and property. Above all, children, the elderly and the disabled must be protected against the potential risk of scalds by inserting devices that limit the temperature of domestic water use to the utilities.
- ☞ Do not leave packaging and replaced parts within the reach of children.
- ☞ Under the terms of use, the user is obliged to keep the installation in good condition and ensure that the appliance operation is safe and reliable.
- ☞ Disconnect the appliance from the power mains, possibly by actuating the specific shut-off devices, before performing any cleaning or maintenance.
- ☞ This appliance must not be used by people (including children) with reduced physical, sensory or mental abilities or with no experience and knowledge unless they are supervised or instructed on how to use the appliance by the person responsible for their safety.
- ☞ This manual is an integral and essential part of the product and must be carefully stored by the user for possible future consultation. If the appliance is to be transferred or moved and left to another user, always make sure that this manual is given to the new user and/or installer.
- ☞ Any optional accessories or kits added subsequently must nevertheless be original Cosmogas ones.
- ☞ The manufacturer is excluded from any contractual or non-contractual liability for damage caused by errors in installation or use and, in any case, for failure to comply with the manufacturer's instructions or with the applicable national and/or local laws.
- ☞ For safety reasons and environmental protection, the packaging items must be disposed of in appropriate waste collection centres.

In case of failure

In case of failure and/or appliance malfunction, deactivate it and do not attempt any repairs. Always contact a professionally qualified technician. If the repair involves the replacement of components, these must be original spare parts only. Failure to do so may compromise the safety of the appliance.

Professionally qualified technician.

A professionally qualified Technician is a person with specific technical expertise in the components of heating systems and production of hot water for hygienic and sanitary purposes in residential environments, electrical systems and systems in which combustible gas is used. Such personnel must be qualified in accordance with the law.

Technical drawings

All drawings in this manual relating to electrical, hydraulic or gas installation systems, are purely indicative. All safety and auxiliary devices as well as the diameters of electrical, hydraulic and gas ducts must always be checked by a professionally qualified technician, to verify their compliance with applicable laws and standards.

1.1 - National installation laws

This appliance must be installed in accordance with the national and/or local laws in force in the country of installation.

2 - GENERAL INFORMATION

2.1 - Introduction

This manual is for the TutorBit system which may consists of the following products

Code	Description	Use
62612791	TutorBit_ System controller consisting of a POL687 model controller and a POL895 remote control	System controller able to control: - Up to 4 heat generators - Two heating circuits - One DHW circuit controlled by a temperature sensor (or alternatively by an ON/OFF thermostat) - One DHW recirculation circuit - One alarm output - One outdoor sensor - One DHW able/enable input - Modbus communication towards the MYDENS T or AGUADENS T range of heat generators - Ethernet communication toward the PC (WEB Server connection) and/or communication toward an Internet Cloud. - KNX communication for Room Sensor QMX3 - Connection to a remote control POL895
62612792	POL945_ Multifunction expansion in logical address position “1”	Expansion able to control: - Solar circuit - An heating circuit - Anti-legionella start from external input - Shuffle pump for the hot water tank or anti-legionella mixing
62612792	POL945_ Multifunction expansion in logical address position “2”, “3” or “4”	Expansion able to control an heating circuit
62612793	POL955_Expansion for Heat pump	Expansion to control an Heat pump
62612822	QMX3 Room Unit	Room temperature sensor, modulating, multifunction connectable via KNX bus

The products listed below are not covered in this manual, but described in dedicated documents.

62110067	Outdoor temperature sensor
62110071	Temperature sensor for supply circuits or for a hot water tank
62111020	PT1000 solar panel supply sensor

2.2 - Meaning of the symbols used

ATTENTION !!!
Risk of electric shock. Failure to follow these warnings can jeopardise proper appliance operation or cause serious damage to persons, animals or property.

Generic danger !!!
Failure to follow these warnings can jeopardise proper appliance operation or cause serious damage to persons, animals or property.

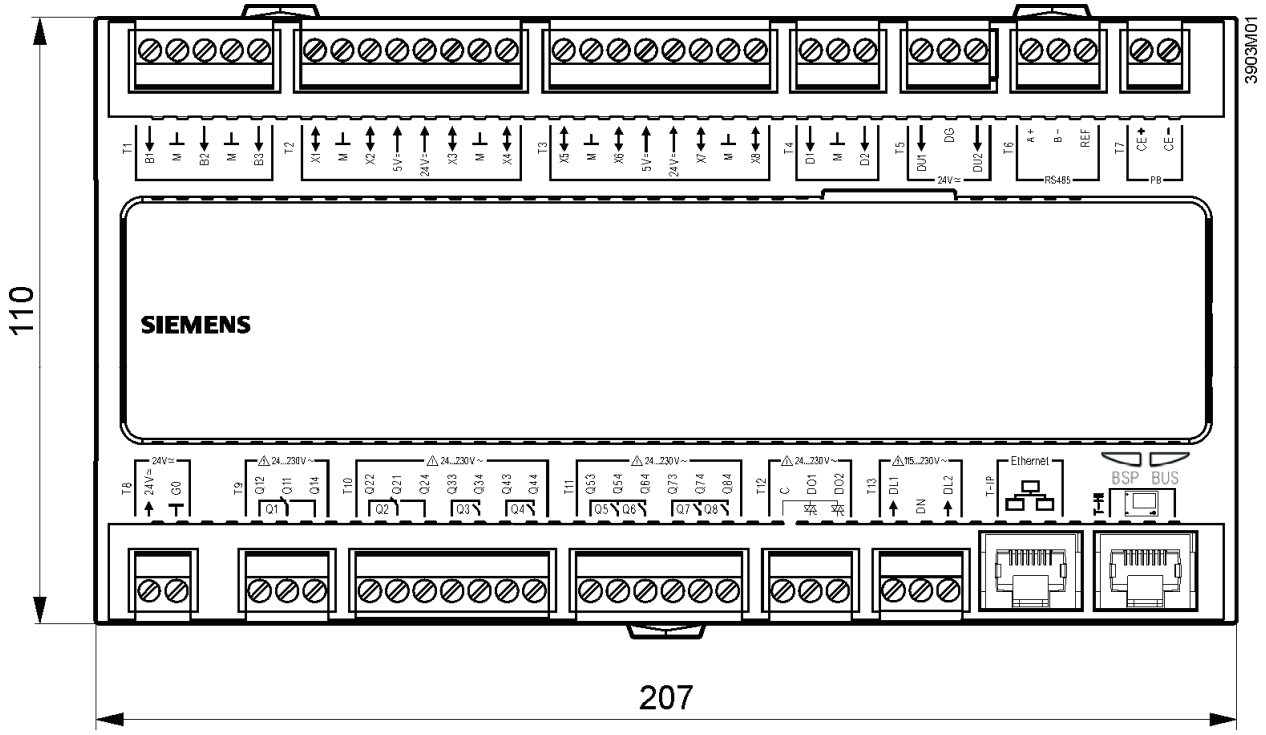
☞ Important instruction symbol

2.3 - Disposal

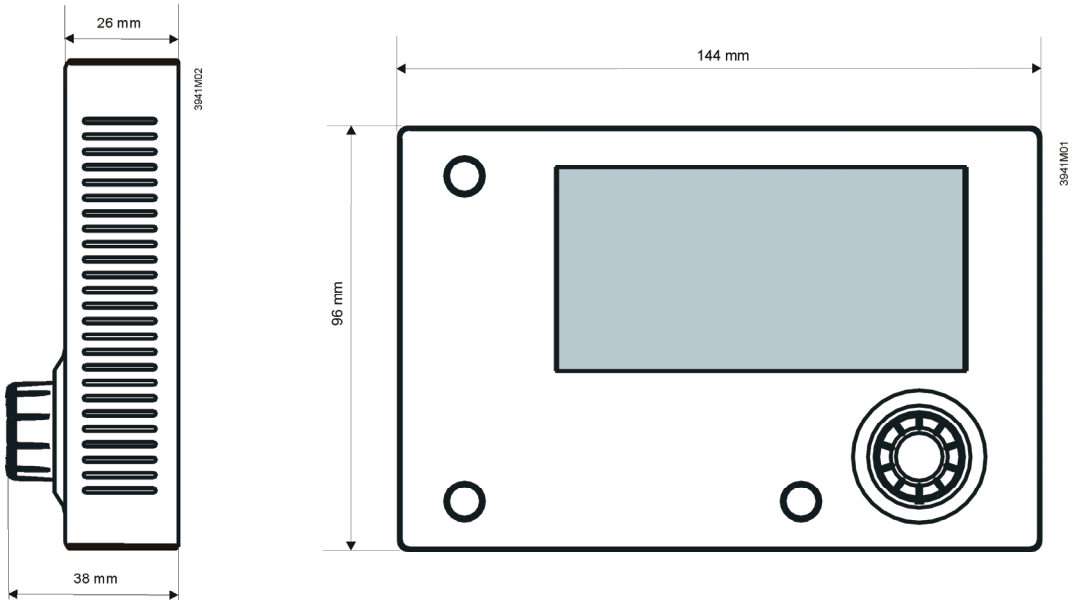
The crossed wheelie bin symbol means that the product must not be thrown away in the ordinary rubbish bin (i.e. in with “mixed urban rubbish”); it must be dealt with separately, in order to undergo suitable operations for it to be reused or treated, so that any substances that are dangerous for the environment can be removed and disposed of safely. This will enable all the raw materials to be recycled. The user is responsible for getting rid of the boiler at the end of its life, delivering it to a recycling centre run by the local authority or city hygiene companies, or, when he/she buys a new boiler, giving the product that has been replaced to the dealer, who is obliged to take it under the terms of EU Directive 2012/19/EU. For further information regarding correct decommissioning of these units, users can contact the public service in charge or retailers.

3.1 - Dimensions

POL687 controller



POL895 Remote control



The remote control must be connected to the T_HI connector on TutorBit. The cable can be extended up to 30m.

ATTENTION !!! Since the control cables are subjected to very low safety voltage (24Vdc), they must flow in conduits other than 230Vac power supplies.

Figure 3-1 - Dimensions of the TUTORBIT composed of the controller and the remote control

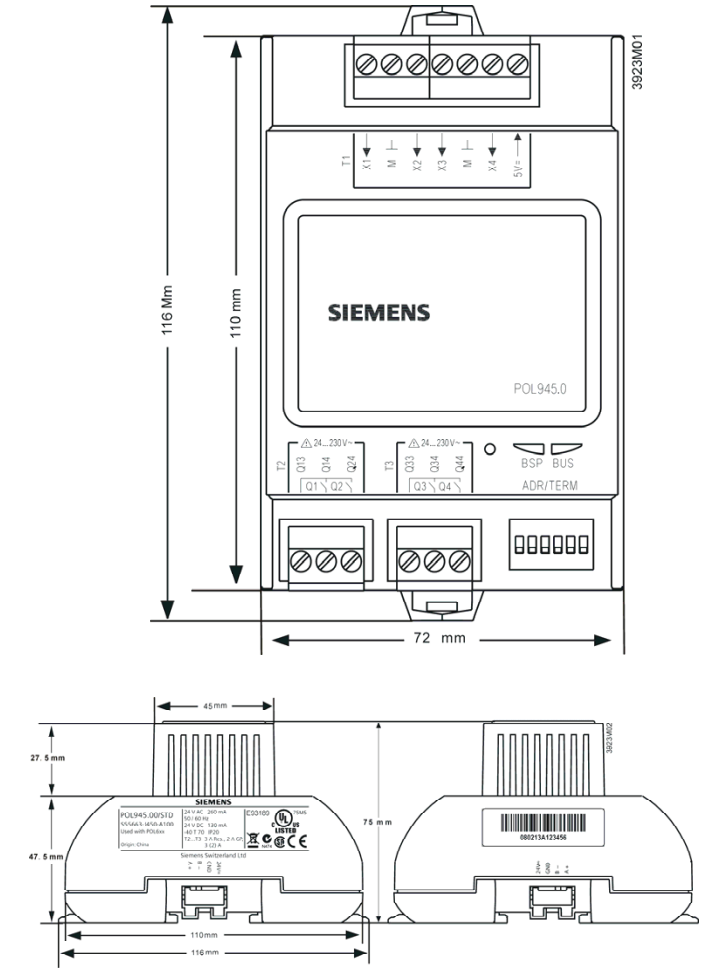


Figure 3-2 - Dimensions of the expansion POL945

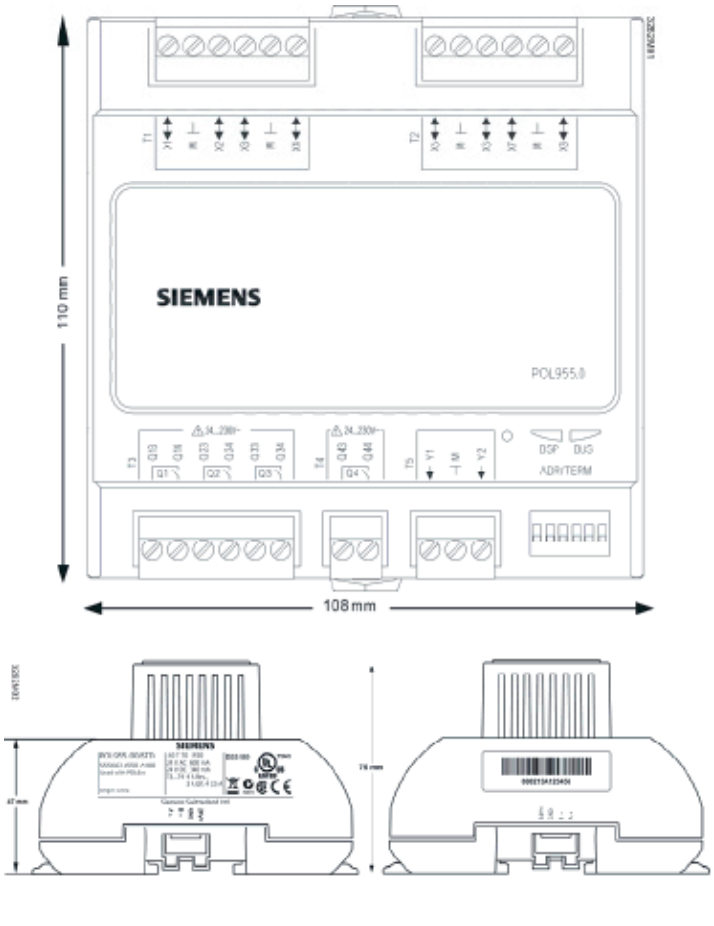
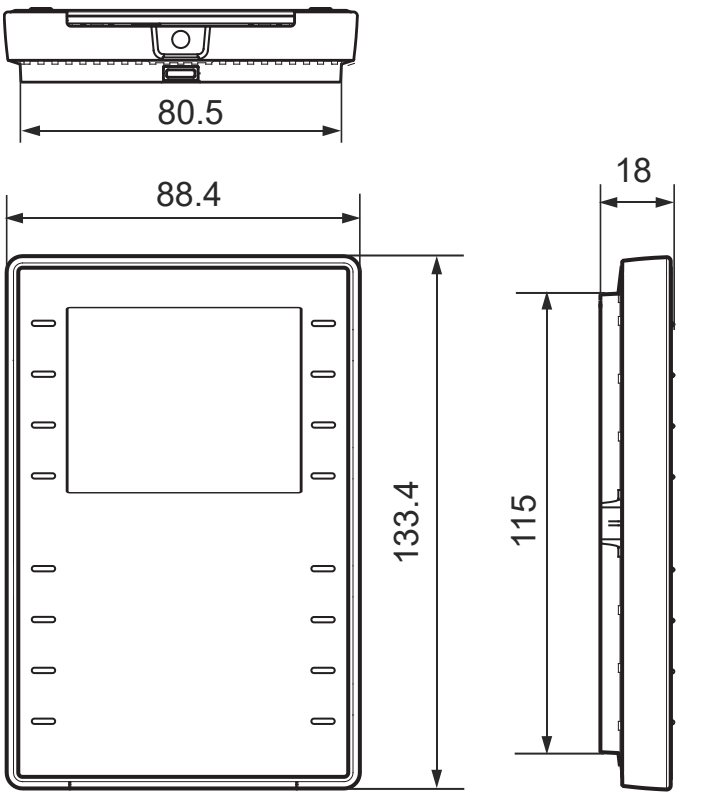


Figure 3-3 - Dimensions of the expansion POL955



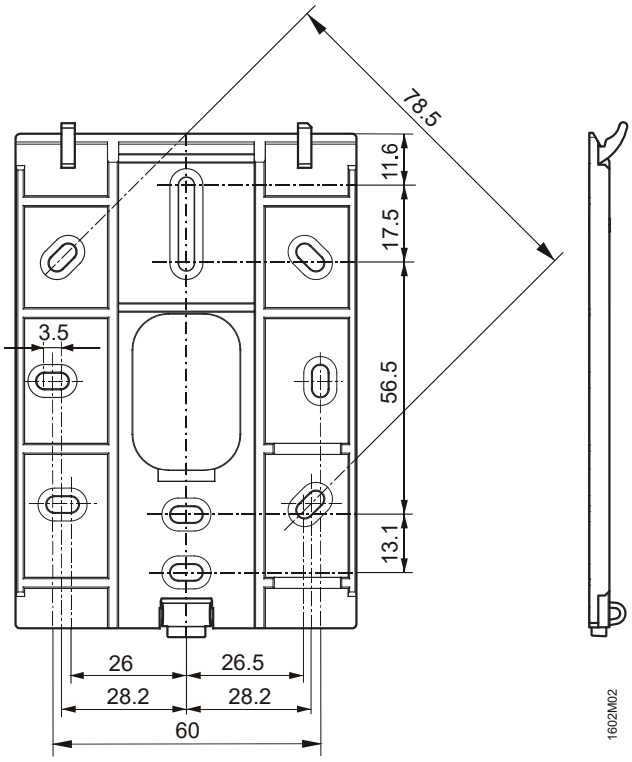


Figure 3-4 - Dimensions of QMX3 Room sensor

4.1 - TutorBit electrical connections

The TutorBit controller is a system manager able to control:
- until 4 heater modules;
- two heating zones;
- a DHW zone controlled by a temperature sensor (or alternatively by an ON / OFF thermostat);
- a DHW return zone;
- an alarm output;
- on outdoor sensor;
- a DHW enable / disable input;
- Modbus communication to the MYDENS T or AGUADENS T models heat generators;
- Ethernet communication to PC (WEB Server connection) and / or communication toward an Internet Cloud;
- KNX communication for room sensor QMX3;
- connection to a remote control POL895;
- until 3 POL 945 expansions (see Section 4.2);
- one POL 955 expansion (see Section 4.3).

In Figure 4-2 you can see the detail of the electrical connections and in Section 4.22 you can consult some of the most common systems diagrams.

TutorBit can be installed on a DIN rail and is supplied with terminals for electrical connections.

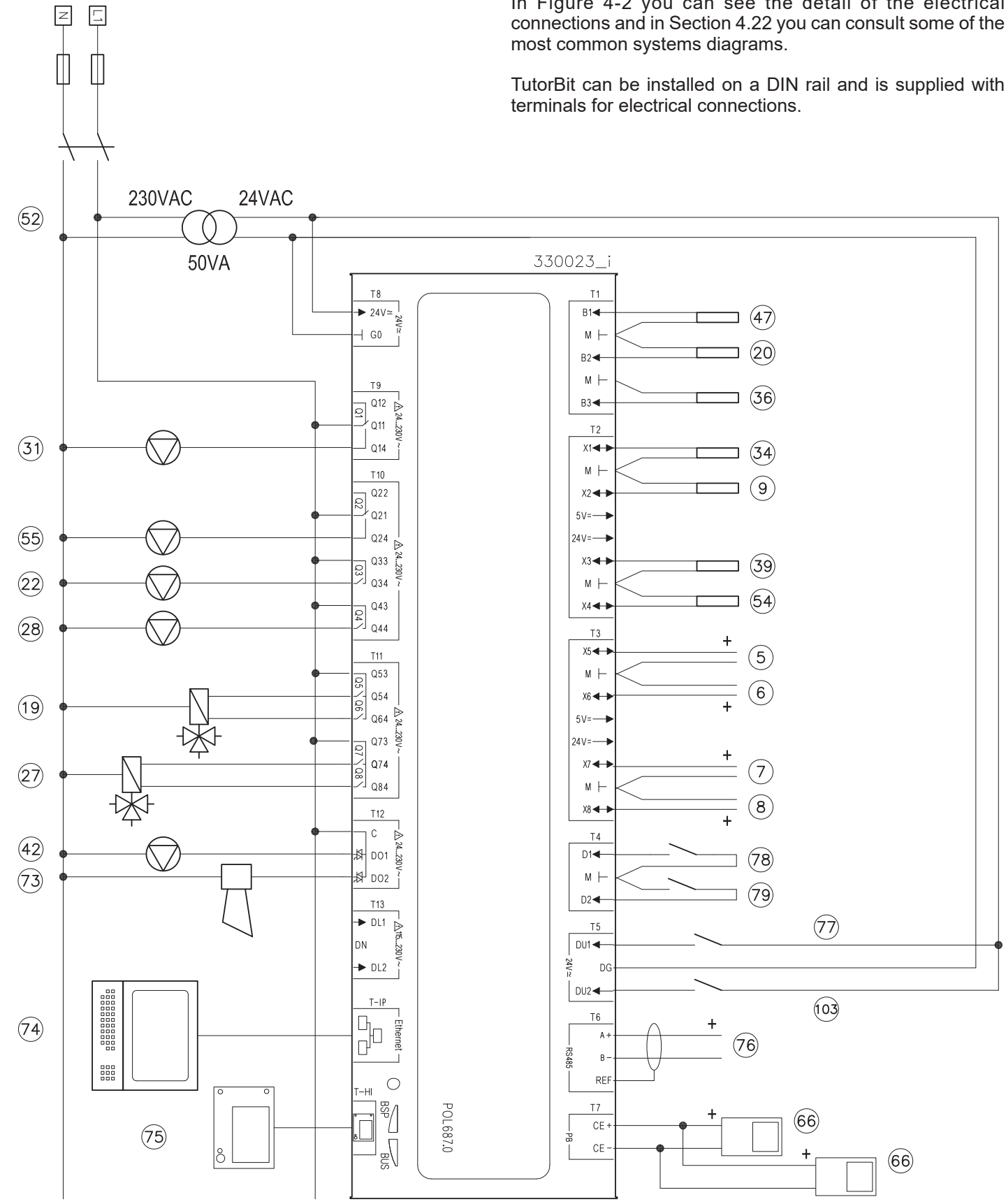
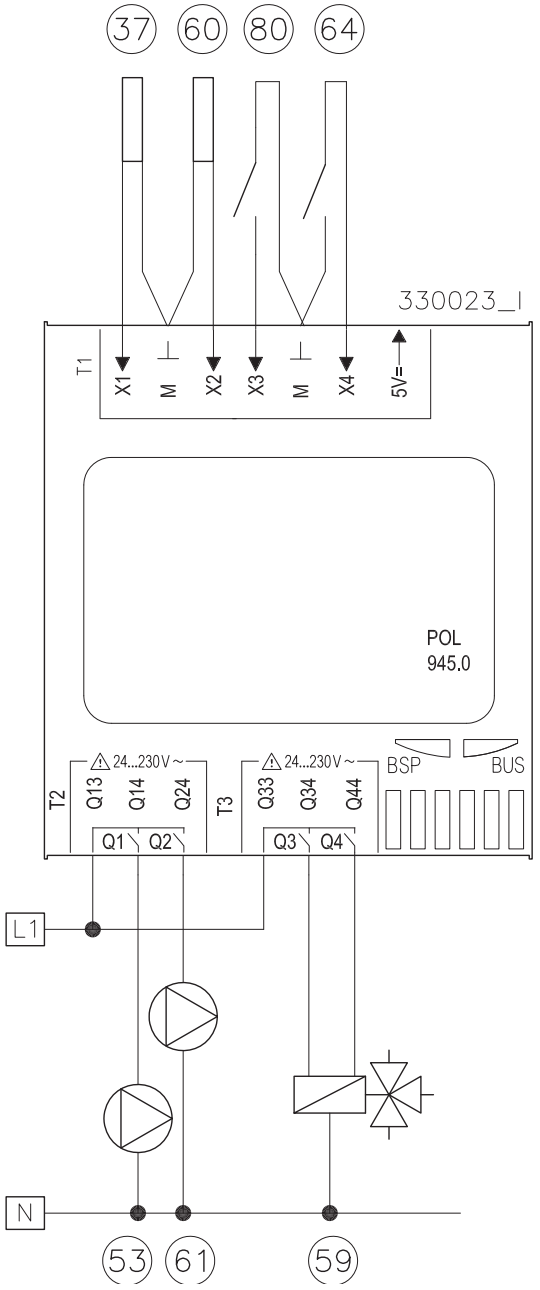


Figura 4-1 - TutorBit electrical connections

Legend Figure 4-1	Input/output description	Corresponding terminals on controller POL687	Characteristics of the cables to be used and maximum electrical absorption
5	0-10V Mod1 (0-10V for module 1 or ON/OFF heater control where ON=24Vdc 25mA max)	X5;M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
6	0-10V Mod2 (0-10V for module 2 or ON/OFF heater control where ON=24Vdc 25mA max)	X6;M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
7	0-10V Mod3 (0-10V for module 3 or ON/OFF heater control where ON=24Vdc 25mA max)	X7;M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
8	0-10V Mod4 (0-10V for module 4 or ON/OFF heater control where ON=24Vdc 25mA max)	X8;M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
9	Outdoor sensor (NTC 10kohm B3435)	X2; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
19	3 way valve Zone 1 open	Q53; Q54	Ø 2,5 mm² / 50 m Max / 3A Max;
	3 way valve Zone 1 close	Q53; Q64	Ø 2,5 mm² / 50 m Max / 3A Max;
20	Zone 1 sensor (NTC 10kohm B3435)	B2; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
22	Zone 1 pump	Q33; Q34	Ø 2,5 mm² / 50 m Max / 3A Max;
27	3 way valve Zone 2 open	Q73; Q74	Ø 2,5 mm² / 50 m Max / 3A Max;
	3 way valve Zone 2 close	Q73; Q84	Ø 2,5 mm² / 50 m Max / 3A Max;
28	Zone 2 pump	Q43; Q44	Ø 2,5 mm² / 50 m Max / 3A Max;
31	Tank pump / DHW side diverter	Q11; Q14	Ø 2,5 mm² / 50 m Max / 3A Max;
34	DHW tank sensor (NTC 10kohm B3435)	X1; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
36	Zone 2 sensor (NTC 10kohm B3435)	B3; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
39	Solar panel sensor (Pt1000)	X3; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
42	Solar pump	C; D01 (Triac output)	Ø 1,5 mm² / 500mA Max / 50 m Max;
47	“Water Heater Temperature” sensor (NTC 10kohm B3435)	B1; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
52	Transformer 230/24VAC	24V; G0	(1) Ø 2,5 mm² / 50 m Max / 3A Max;
54	DHW return sensor (NTC 10kohm B3435)	X4;M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
55	DHW return pump	Q21; Q24	Ø 2,5 mm² / 50 m Max / 3A Max;
66	QMX3 modulating room temperature sensor	CE+; CE -	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
73	Alarm	C; D02 (Triac output)	Ø 1,5 mm² / 500mA Max / 50 m Max;
74	Ethernet (connection to PC or Internet) (RJ45 connector)	T-IP	/
75	Remote control POL895 (RJ45 connector)	T-HI	Ø 1,5 mm² / 30 m Max;
76	MODBUS (RS485)	A+; B-; Ref	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
77	DHW Enable/Disable	DU1; DG	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
78	Circuit 1 RT	D1; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
79	Circuit 2 RT	D2; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
103	Hot water tank thermostat	DU2; DG	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;

ATTENTION !!! The terminals marked with (1), being subjected to very low safety voltage (24Vdc), must flow in conduits other than 230Vac power supplies.

Figure 4-2 - Table of correspondence to the terminals of the TutorBit



4.2 - Electrical connections of POL 945 expansion

The POL 945 expansion can be used for different purposes, depending on the logical address that is set (see Section 4.4). When the logical address “1” is set, the POL 945 expansion can control:

a.- An heating zone;
b.- A solar zone;
c.- The start of the anti-legionella cycle from an external input;
d.- The shuffle pump for multiple tanks or for anti-legionella with solar.

If the POL 945 expansion is used with logical address “2”, “3” or “4” (see Section 4.4), it can only control one heating zone (see diagrams in Section 4.22).

The POL 945 expansion can be installed on a DIN rail and is supplied with the terminals for the electrical connections and the bayonet for the electrical connection to TutorBit.

ATTENTION!!! The “Solar tank sensor” (37), “Anti-legionella forcing” (64) and “Shuffle pump” (53) devices of the table in Figure 4-3 can only be connected to the expansion “POL 945 (Circuit 3)” (see Figure 4-5).

Legend	Input/output description	Corresponding terminals on expansion POL945	Characteristics of the cables to be used and maximum electrical absorption
37	Solar tank sensor (NTC 10kohm B3435)	X1; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
53	Shuffle pump	Q13; Q14	Ø 2,5 mm² / 50 m Max / 3A Max;
59	3 way valve zone “n” open	Q33; Q34	Ø 2,5 mm² / 50 m Max / 3A Max;
	3 way valve zone “n” close	Q33; Q44	Ø 2,5 mm² / 50 m Max / 3A Max;
60	Supply sensor “n” (NTC 10kohm B3435)	X2; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
61	Zone “n” pump	Q13; Q24	Ø 2,5 mm² / 50 m Max / 3A Max;
64	Anti-legionella Forcing	X4; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;
80	Circuit “n” RT	X3; M	(1) Ø 1,5 mm² / 20 m Max o 100 m shielded cable;

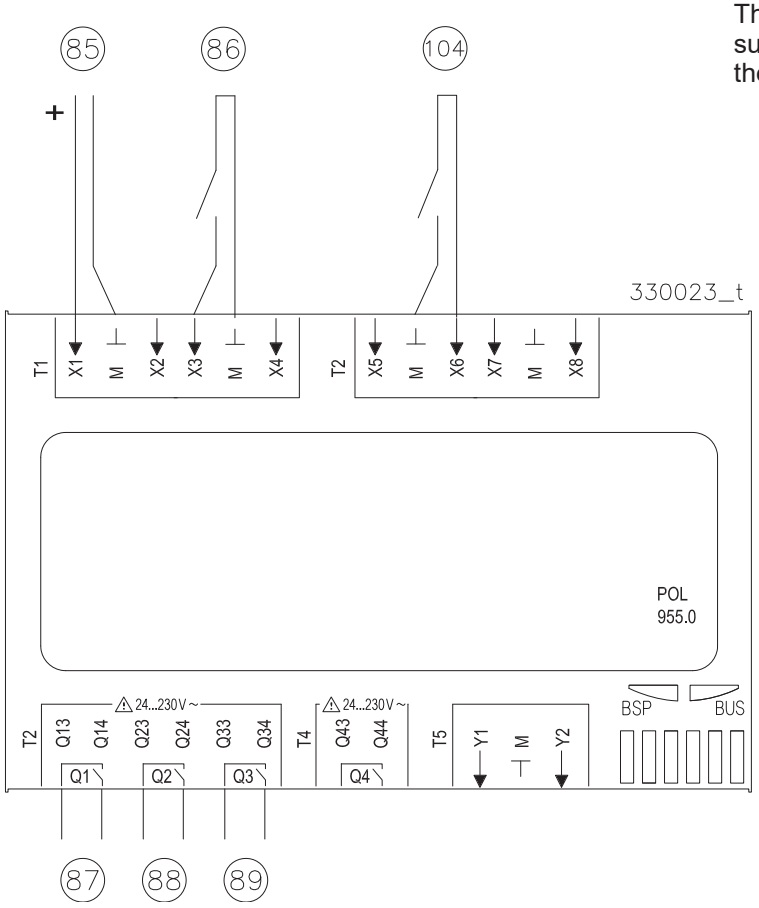
ATTENTION !!! The terminals marked with (1), being subjected to very low safety voltage (24Vdc), must flow in conduits other than 230Vac power supplies.

Figure 4-3 - Electrical connections POL945

4.3 - Electrical connections of POL955 expansion

The POL955 expansion is used to control only a heat pump. For this purpose, various configurable inputs and outputs have been provided (see detail in Figure 4-4), in order to adapt the controller to most of the heat pumps on the market.
To properly communicate the expansion with the regulator, it is always necessary to set logical address “5”, by positioning the microswitches (Section 4.4).

The POL 955 expansion can be installed on a DIN rail and is supplied with the terminals for the electrical connections and the bayonet for the electrical connection to TutorBit.



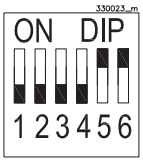
Legend	Input/output description	Corresponding terminals on expansion POL955	Characteristics of the cables to be used and maximum electrical absorption
85	Output 0-10V for heat pump control	X1; M	(1) Ø 1,5 mm^2 / 20 m Max o 100 m shielded cable;
86	Alarm contact from the heat pump	X3; M	(1) Ø 1,5 mm^2 / 20 m Max o 100 m shielded cable;
87	ON / OFF or “Cool” demand heat pump	Q13; Q14	Ø 2,5 mm^2 / 50 m Max / 3A Max;
88	“Heat”/”Cool” or “Heat” domand heat pump	Q23; Q24	Ø 2,5 mm^2 / 50 m Max / 3A Max;
89	DHW demand o double setpoint	Q33; Q34	Ø 2,5 mm^2 / 50 m Max / 3A Max;
104	PV contact	X6; M	(1) Ø 1,5 mm^2 / 20 m Max o 100 m shielded cable;

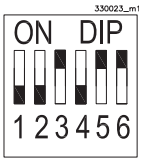
ATTENTION !!! The terminals marked with (1), being subjected to very low safety voltage (24Vdc), must flow in conduits other than 230Vac power supplies.

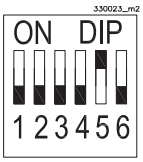
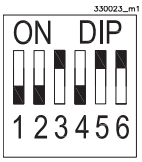
Figura 4-4 - Electrical connections POL 955

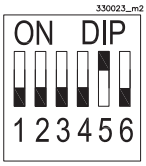
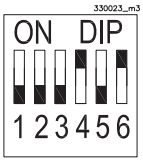
4.4 - Expansions and logical addresses

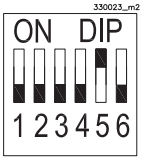
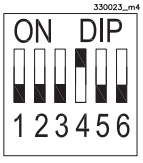
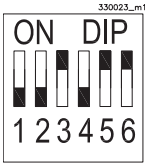
Up to 3 POL945 expansions and one POL955 expansion can be connected to the TutorBit regulator. In order to identify each expansion, by the operating program, it is necessary to give it a logical recognition address, by positioning the microswitches in each expansion (see Figure 4-5).
TutorBit can control two heating zones, called ***Zone 1*** and ***Zone 2***.
If up to three additional POL945 expansions are connected, up to 5 heating zones can be reached respectively: ***Zone 3***, ***Zone 4*** and ***Zone 5.***
If the POL 955 expansion is added, a heat pump (HP) can be added.
In Figure 4-5 you can see all the possible combinations of expansions and relative positioning of the microswitches.

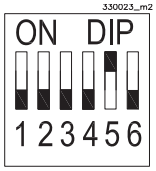
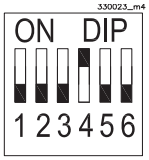
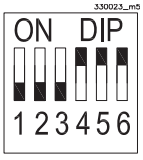
POL 687	POL 945 (Zone 3)
Slave Addresses	1
Switch position	

POL 687	POL 955 (HP)
Slave Addresses	5
Switch position	

POL 687	POL 945 (Zone 3)	POL 955 (HP)
Slave Addresses	1	5
Switch position		

POL 687	POL 945 (Zone 3)	POL 945 (Zone 4)
Slave Addresses	1	2
Switch position		

POL 687	POL 945 (Zone 3)	POL 945 (Zone 4)	POL 955 (HP)
Slave Addresses	1	2	5
Switch position			

POL 687	POL 945 (Zone 3)	POL 945 (Zone 4)	POL 945 (Zone 5)
Slave Addresses	1	2	3
Switch position			

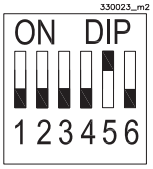
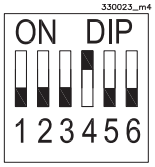
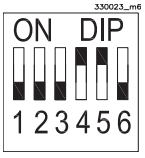
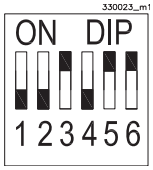
POL 687	POL 945 (Zone 3)	POL 945 (Zone 4)	POL 945 (Zone 5)	POL 955 (HP)
Slave Addresses	1	2	3	5
Switch position				

Figura 4-5 - Position of the microswitches on the expansions

4.5 - QMX3 Room sensor

The QMX3 room sensor, if combined with a mixed circuit, is able to regulate the temperature of the heating / cooling zone in a modulating way with respect to the temperature of the room where the sensor is located. Through this sensor it is possible:

- set the zone to “Automatic” (time program) or select the desired manual heating range (Antifreeze, Precomfort, Comfort);
- see the current and desired room temperature;
- see the outdoor temperature (if the outdoor sensor is installed).

Install the room sensor in a place in the house where the temperature is the most characteristic of the home and, however, in an area that is not subjected to repeated temperature changes, away from windows or doors which open directly to the outside.

The room sensor must be connected to the Tutorbit to terminals CE + and CE- (KNX bus) and it is essential to respect the polarity of the electrical connections.
On the same terminals CE + and CE- it is possible to install as many room sensors as there are mixed circuits.
To install room sensor see Section 4.20.

Figura 4-6 - QMX3 Room sensor

4.6 - Outdoor temperature sensor

Install the outdoor temperature sensor outside the building on a wall facing NORTH or NORTH-EAST, at a height of between 2 metres and 2.5 metres from the ground. For buildings with several floors, it must be installed at about half way up the second floor. Do not install it above windows, doors or ventilation outlets or directly below balconies or gutters. Do not plaster over the outdoor temperature sensor. Do not install the sensor on walls without eaves, i.e. where not protected from rain.
Where the sensor is installed on a wall that has yet to be plastered, it must be installed with a suitable thickness or be removed before plastering.
Proceed as section 4.1 to connect the outdoor temperature sensor cable.

WARNING! As the cables are subjected to a very low safety voltage (24 VDC), they must flow in wires different from the 230 VAC power supplies.

4.7 - Operation

The TutorBit is a controller able to manage a cascade of up to 4 heat modules and an heat pump, that can be used to produce heating, heating and domestic hot water or only domestic hot water.

TutorBit can also perform the following functions:
- Control up to 5 heating zones, with or without 3 way valve (the 3 way valve must be 3-point), depending on the room temperature, the outside temperature or both;
- Control of the tank load for the preparation of DHW, via temperature sensor or contact by thermostat;
- Control of a solar zone for loading the domestic hot water tank;
- Checking the anti-legionella of the DHW storage tank;
- Control of a shuffle pump for the DHW;
- DHW recirculation control;
- Anti-legionella request for the DHW return zone;
- Contact of DHW able/enable.

When a system is used to produce heating and domestic hot water, there are two different configurations that can be chosen by the installer: **“All power”** configuration and **“Distributed power”** configuration

“All power” configuration
Figure 4-9 shows the application diagram of a system where all the heat modules are controlled in parallel to produce heating or all to produce domestic hot water. This system, where all the power is intended for heating or DHW, is subsequently called “All power” system.

"Distributed power" configuration
Figure 4-10 shows the application diagram of a system where all the heat modules are controlled in parallel to produce heating, whereas a single module is intended to produce domestic hot water. This system, where the power can be distributed in a varied way to the DHW or to the heating, is subsequently called **"Distributed power".**

Figure 4-31 shows the application diagram of a system where all the heat modules are controlled in parallel to produce domestic hot water. In this case, the modules must be "**AGUADENS T"** water heaters models.

4.8 - Installation

Install the TutorBit in the room where the heat modules are installed or nearby, and follow all the electrical connections shown in diagrams of Section 4.22.

4.9 - Choosing and setting up the system

Some diagrams of the most common systems, with their own electrical system and controller setting, are shown in Section 4.22.
To browse through the menus and edit a parameter, see section 7.4.
Using the ***Configuration->System*** menu, you can access the following parameters to set up your system:

***- Modules Qty*:**
number of heat module you want to install in cascade (from 1 to 4);

- Module 1
Indicates if heat module 1 is used to produce heating and DHW in "**All power**" or "**Distributed power**" (Section 4.7).

- Module 2
Same function as Module 1, but refers to Module 2.

- Module 3
Same function as Module 1, but refers to Module 3.

- Module 4
Same function as Module 1, but refers to Module 4.

- Outdoor Sensor
Select "Yes" if you want to enable the outdoor sensor and all its functions: antifreeze protection and climatic adjustment.

- DHW
Select "Yes" if you want to produce DHW with a storage tank.

- DHW return sensor
The DHW return zone can be controlled with the time programme in the menu ***Parameters->DHW->DHW return timer prog.*** However, if you want to control the return zone also based on your temperature, select "Yes" in the ***"DHW return sensor"*** parameter**.**

- DHW mode
Select "***Sensor***" if the hot water tank is controlled by a temperature sensor. Select "***Thermostat***" if the hot water tank is controlled by an On-Off thermostat.

ATTENTION!!! If the DHW mode is "*Thermostat*", the Anti-legionella service cannot be completed. The installer must take all necessary precautions to prevent the legionella bacteria from growing in order to avoid seriously harming the health of people or animals

NOTE! For correct operation of the system, if the hot water tank is controlled by a thermostat, the DHW setpoint (*Parameters->DHW->DHW setpoint*) must always be higher than the thermostat setpoint.

ATTENTION!!! The parallelism of the tank filling with the heating is only guaranteed with mixed heating circuits.

- Unit of measure
Select °C to display the units of measure according to the international system. Select °F to display the units of measure according to the imperial system.

- Number of Zones
Select the number of heating zones you want to control.

- Anti-legionella
Select "Yes" if you want to enable the anti-legionella service or select "No".

ATTENTION!!! Disable the Anti-legionella service can seriously harm the health of people or animals.

- Shuffle pump type
This parameter controls a possible shuffle pump installed on the domestic hot water tank. It can be used for the "***Tank load***" function when there are several hot water tanks connected in series, or it can be used for the mix "***Anti-legionella***" function when the hot water tank is also filled by a solar panel.

ATTENTION!!! With a solar zone, it is very important to have an anti-legionella shuffle pump that works. If this pump is missing, the installer must use alternative solutions to run the Anti-legionella. Not doing so, could seriously harm the health of people or animals.

- Solar
Select "***Yes***" if you want to fill the domestic hot water tank also using a solar panel, or select "***No***"

- Solar Antistagn.
Select "***Yes***" if you want to enable the Anti-stagnation function, or select "***No***"
The anti-stagnation system tries to prevent the solar panel from boiling, especially in the summer.

NOTE! Disable the Solar Anti-Stagnation system can cause malfunctions in the filling system of the hot water tank using the solar panel.

- Solar Antif.
Select "***Yes***" if you want to enable the solar antifreeze function, or select "***No***" if you want to disable it.

ATTENTION!!! Disable the solar antifreeze system can seriously damage the solar panels.

- Modbus enable
Modbus enable or not if you want to read the Modbus parameters of the heat modules.

- Heat pump
Enable or not a heat pump for heating / cooling and / or DHW. Access the menu ***Configuration->Heat pump->HP mode*** to set the heat pump type being connected (The subsequent references to **Q1**, **Q2**, **Q3**, and **Q4**, correspond to the contact identified in the POL 955 expansion):

HP Mode 1: Heat pump for heating and cooling, driven by an ON-OFF digital output (**Q1** closed contact = ON, open contact = OFF) and a digital heat / cool switching output (**Q2** closed contact = cool, open contact = heat).

HP Mode 2: Heat pump for heating and cooling, driven by a digital output for the cool demand, which also turns on the HP (**Q1** contact closed, the HP turns on and goes into cool; contact open, the HP turns off), and a digital output for heat demand, which also turns on the HP (**Q2** contact closed, the HP turns on and goes into heat, the HP contact turns off).

HP Mode 3: Heat pump for heating and cooling, controlled via 0-10Vdc signal: a digital output ON-OFF (**Q1** contact closed = ON; contact open = OFF), an analog output 0-10Vdc (X1; M) and a digital output switching heat / cool (**Q2** contact open = heat; contact closed = cool).

HP Mode 4: Heat pump for heating and cooling, controlled via 4-20mA signal: a digital output ON-OFF (**Q1** contact closed = ON; contact open = OFF), an analog output 4-20mA (***X1; M***) and a digital output switching heat / cool (**Q2** contact open = heat; contact closed = cool).

-Save & Reset
Every time you change a parameter in the "***Configuration***" menu, you must select "***Yes***" in the "***Save & Reset***" menu. The Tutorbit then resets to reload the new configuration selected.

4.9.1 - Modbus communication with boilers/water heaters

TutorBit is able to communicate with MYDENS T or AGUADENS T model heat modules with MODBUS protocol. In Figure 4-2 it is possible to see the terminals in which the wires for this communication must be connected.
MODBUS communication is optional, as it has no effect on the operating mode of TutorBit or the system. This communication only serves to read some parameters of the heat module, including:
- 0-10Vdc analog signal read by the module;
- Water pressure of the module;
- Single burner error (MYDENS T and AGUADENS T appliances can have up to 4 burners inside their casing);
- Percentage power of the single burner;
- Status of the module pump;
- Supply temperature of the module.

These data can be consulted in the menu ***System state -> Modules state.***

4.10 - Heating / Cooling management

To enable cooling, a heat pump must be installed as shown in the diagrams in Section 4.22. Through the menu ***Parameters->System control*** it is possible to select:

Antifrost: the system is switched off and switches on only to guarantee frost protection.

Heating:
The system heats the rooms and produces domestic hot water (if provided). There is always a parallel between DHW production and heating production.
TutorBit can also control hybrid systems, which provide for the integration of energy by a heat pump. If the outside temperature is in an economically viable range of the heat pump (temperatura esterna maggiore di ***Parameters -> Heat pump -> CutOff Temp.)***, Tutorbit assigns the work priority to the latter.
If the outside temperature drops below ***Parameters -> Heat pump -> CutOff Temp.***, the heat pump is switched off and the modules remain to serve the heating.
When the heat pump work, if it cannot reach the required supply temperature within ***Parameters -> Heat pump -> Saturation time***, TutorBit turns on the modules to integrate the temperature up to the desired value.
If the atmospheric conditions (temperature / humidity) reach values such that the heat pump starts defrosting cycles, Tutorbit automatically adjusts the threshold of the minimum usable outdoor temperature.
If the outside temperature rises above ***Parameters -> Modules -> Spring Temp.***, the heat pump is automatically switched off.

Cooling:
Tutorbit can also be used to control a heat pump that is cooling. The heat pump demand occurs automatically when the outside temperature rises above ***Parameters -> Modules-> Autumn Temp***.
The system can cool and heat the rooms and produce domestic hot water (if provided).

4.11 - Heat modules and Heat pumps

The 0-10Vdc output controls the heat modules, on a PID basis, according to the error between the temperature of the cascade sensor (Water heater t.) and its required temperature. By setting the parameter ***Configuration->Cascade->Burner Out Type = On/Off*** it is possible to transform the outputs from modulating 0-10V to ON-OFF, where for ON a voltage of 24Vdc 25mA max is emitted. The required temperature at which the sensor ***Water heater t.*** must be placed corresponds to the highest required temperature among those of the heating zones.
In order to compensate for any temperature losses, generated by the hydraulic backflow preventer, it is possible to increase the required temperature of the ***T. Generator*** by a fixed value, settable on ***Parameters->Modules->Casc. setp offsetup***.
Likewise, the heat pump increases its required temperature by a fixed value of 5 ° C.

4.12 - Heating / Cooling zones

The heating zones can work independently to each other and in various modes, which can be selected in ***Configuration->Zones ->Zone n. mode***.
The heating modes are:

- *FixSp-RT* (heating/cooling at constant temperature): closing the room thermostat input generates a heat/cool demand and the start of the sensor temperature control cycle ***Water Heater T.***
With the ***Parameters->Zones->Action*** command you can set the heating zone in ***Automatic*** (weekly programme) or ***Manual*** (fixed setpoint) mode.
If the RT corresponding to that circuit is opened, the heating will always stop.

- *Outd Reset-RT* (Heating/Cooling according to the outdoor reser). The calculation algorithm (see Figure 4-7 or 4-8) of the outdoor sensor generates the setpoint of the heating/cooling zone.
With the ***Parameters->Zones->Action*** is possible set the circuit in ***Automatic*** (weekly programme) or ***Manual*** (fixed setpoint) mode.
The heating also stops when the outdoor temperature has exceeded ***Parameters->Modules->Spring Temp.***. Similarly, cooling ends when the outside temperature drops below ***Parameters->Modules->Autumn Temp.***

Opening the room thermostat input, corresponding to that circuit, always causes a stop of the service.
The parameters for adjusting the outdoor reset can be found in ***Parameters->Modules->Heat. Outdoor Reset*** and are:

- ***Incline***
The incidence of this parameter can be seen in figure 4-7.
- ***Slippage***
The incidence of this parameter can be seen in figure 4-7.
- ***Minimum Temp.***
Minimum temperature of the heating supply, for any ***Incline*** or ***Slippage*** condition.
- ***Maximum Temp.***
Maximum temperature of the heating supply, for any ***Incline*** or ***Slippage*** condition.

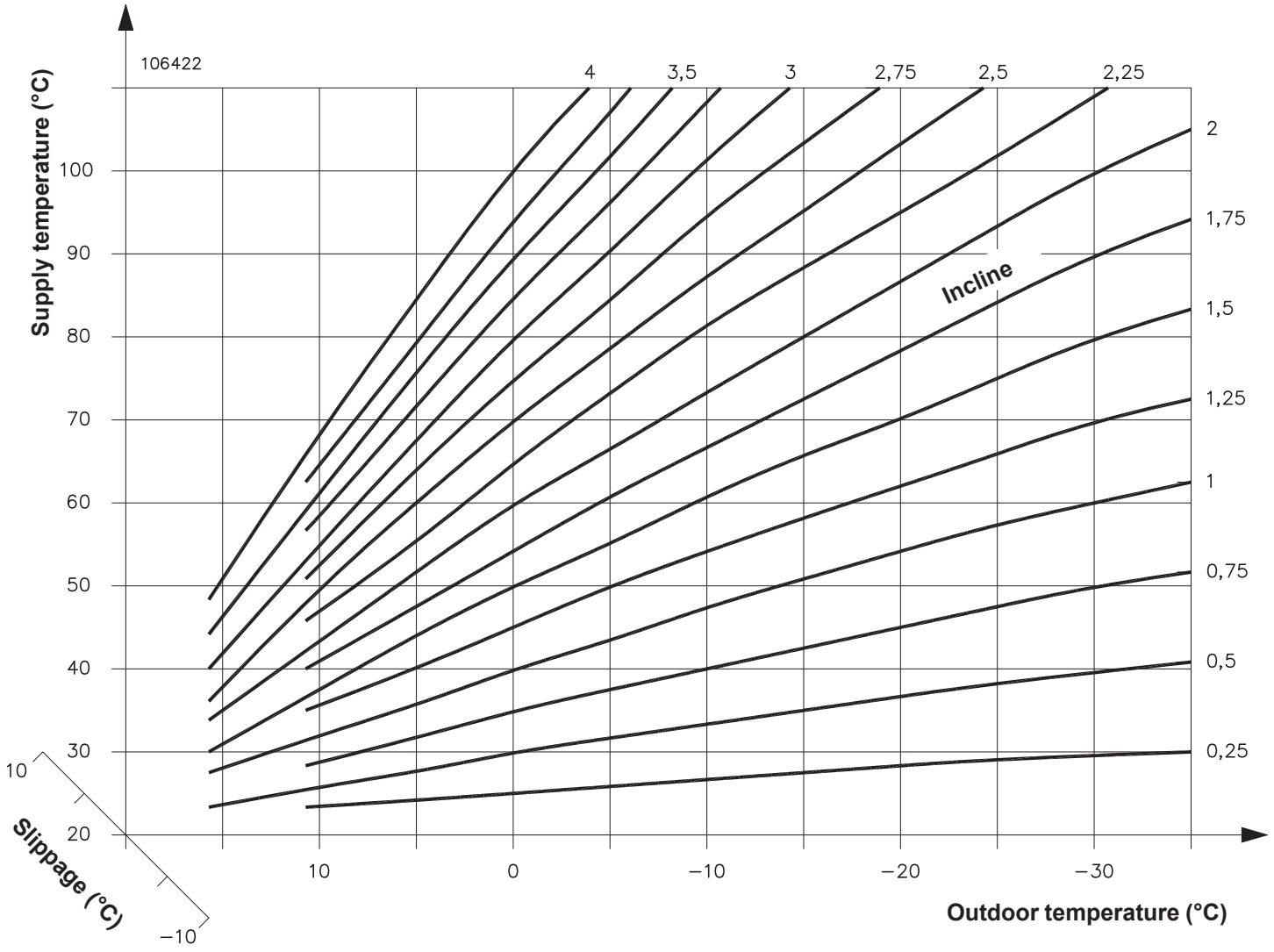


Figure 4-7 - Heating Outdoor reset

Similarly, for cooling, the parameters for adjusting the outdoor reset can be found in ***Parameters->Modules->Cool. Outdoor Reset*** and are:

- ***Set Minimum***
  Minimum supply temperature. The incidence of this parameter can be seen in Figure 4-8.
- ***Set Maximum***
  Maximum supply temperature. The incidence of this parameter can be seen in Figure 4-8.
- ***Set T. est. 25***
  Supply temperature when the outdoor temperature is 25°C. The incidence of this parameter can be seen in Figure 4-8.
- ***Set T. est. 35***
  Supply temperature when the outdoor temperature is 35°C. The incidence of this parameter can be seen in Figure 4-8.

- Outd Reset comp-RT(Heating/Cooling according to outdoor reset, with room sensor compensation).
This mode is exactly the same as the previous ***Outd Reset-RT*** mode, the only difference being that if the RT is opened, the heating is not stopped but the supply temperature is reduced, corresponding to ***Parameters->Modules->Night setback.*** Similarly, for the cooling phase, the opening of the room thermostat input corresponds to an increase in the supply temperature of ***Parameters->Modules->Cool Night setback.***

- FxSp-Comp.RT (Heating/Cooling at constant temperature with room sensor compensation).
This mode is exactly the same as the ***FxSp-RT*** mode, the only difference being that if the RT is opened, the heating is not stopped but the supply temperature is reduced, corresponding to ***Parameters->Modules->Night setback***. Similarly, for the cooling phase, the opening of the room thermostat input corresponds to an increase in the supply temperature of ***Parameters->Modules->Cool Night setback.***

- FixSp-RS (Heating/Cooling controlled by the room sensor QMX3).
In this heating/cooling mode, a QMX3 room sensor must be connected to the corresponding zone, following the instructions in section 4.5. The room sensor will adjust the temperature of that zone with a PID algorithm, to keep the room temperature at the desired value. The opening of the room thermostat input causes a stop of heating/cooling.

- Outd Reset-RS (Heating/Cooling according to outdoor reset, with room sensor compensation).
In this heating/cooling mode, a QMX3 room sensor must be connected to the corresponding zone, following the instructions in section 4.5.
The supply temperature of the zone is regulated with the same rules as for the ***Outd Reset-RT*** mode***.*** If the room temperature exceeds the temperature set in the room sensor, the heating switches off; vice versa, if the room temperature drops below the temperature set in the room sensor, the heating switches on again.
The opening of the room thermostat input causes a stop of heating/cooling.

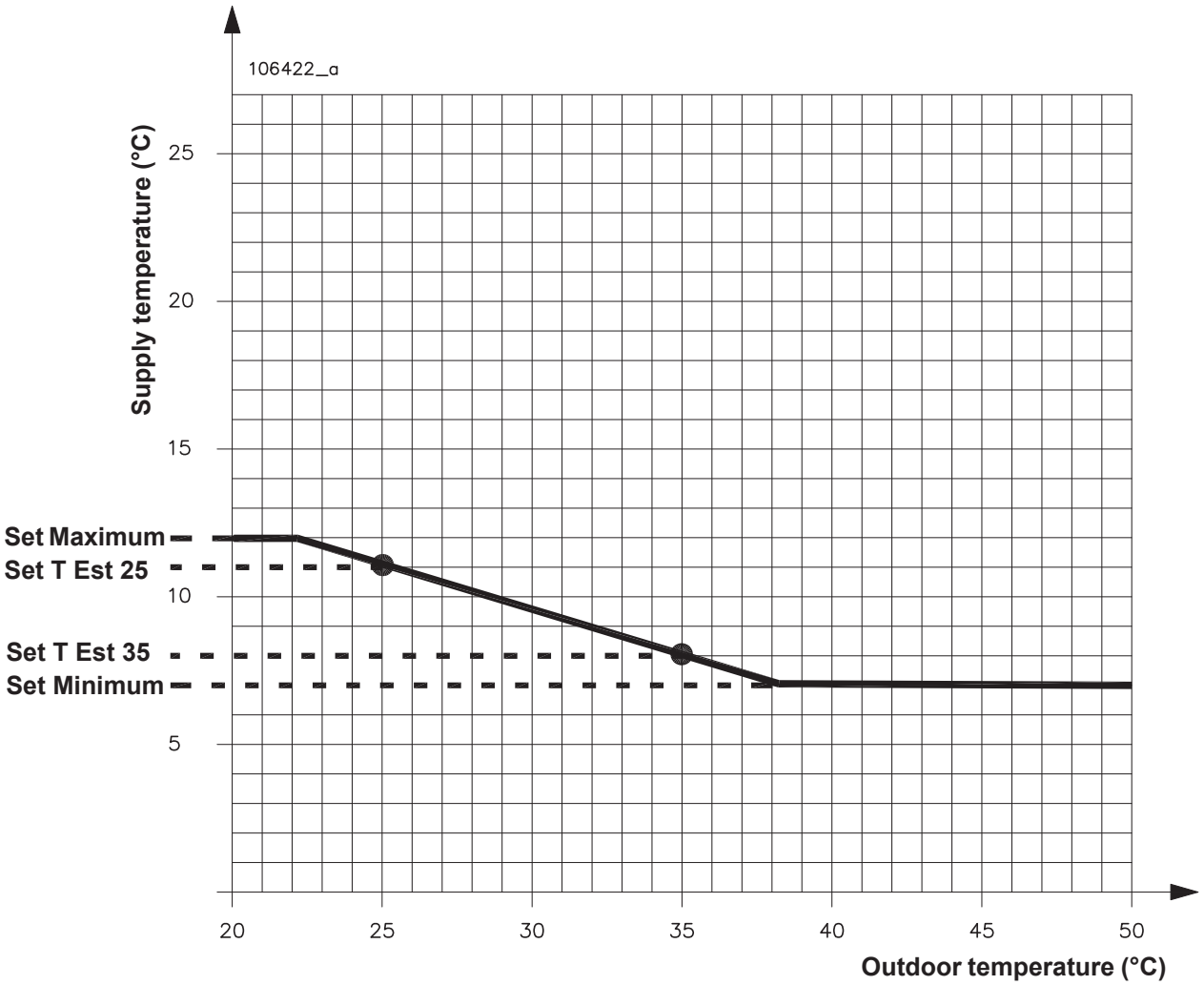


Figure 4-8 - Cooling Outdoor reset

4.13 - DHW management

The DHW temperature is set in ***Parameters->DHW->DHW setpoint***.
There are two DHW modes:

- ”All power” DHW
The heating service for the DHW tank is carried out with the “All power” mode: when DHW is requested, all the modules are converted to meet the DHW requirement and when the request for DHW is stopped, all the modules return to perform the heating service.
To have this operating mode, the ***Configuration->System->Module n*** parameter must be on **Heating** for all the heat modules making up the cascade. The hydraulic diagram for this operating mode is shown in Figure 4-9.

For mixed heating circuits, parallelism is controlled between the DHW and the heating: when DHW is requested, if the cascade sensor in ***Parameters->DHW priority->Pump lock offsetup*** drops below its setpoint, the active heating circuit(s) switch off and only switch on when the sensor temperature ***Water Heater T.*** has returned to its setpoint, minus ***Parameters->DHW priority->Pump unlock offsetup***.

- “Distributed power” DHW
The heating service for the hot water tank is carried out with the “Distributed power” mode: when DHW is requested, only the module(s) in the ***Configuration->System->Module n = DHW*** parameter convert(s) to load the DHW tank and when the hot water tank is full, the module(s) return to the heating service. The hydraulic diagram for this operating mode is shown in Figure 4-10.

DHW produced by heat pump
Tutorbit is able to integrate the production of DHW with a heat pump when the outdoor temperature is higher than ***Parameters -> Heat Pump -> DHW Cutoff Temp***. In this case, any heating demand are interrupted to give total priority to the heating of the boiler by the heat pump.
If time has passed ***Parameters -> Heat Pump -> Maximum time DHW*** and the storage tank has not yet warmed up, Tutorbit stops the heat pump and the heating cycle of the storage tank is ended by the module.

ATTENTION!!! This operation system may leave the heating inactive for a long time. If this should happen and it is not very comfortable, it is advisable to exclude the heat pump from the production of domestic hot water by setting *Parameters -> Heat Pump -> DHW Cutoff Temp = 45°C.*

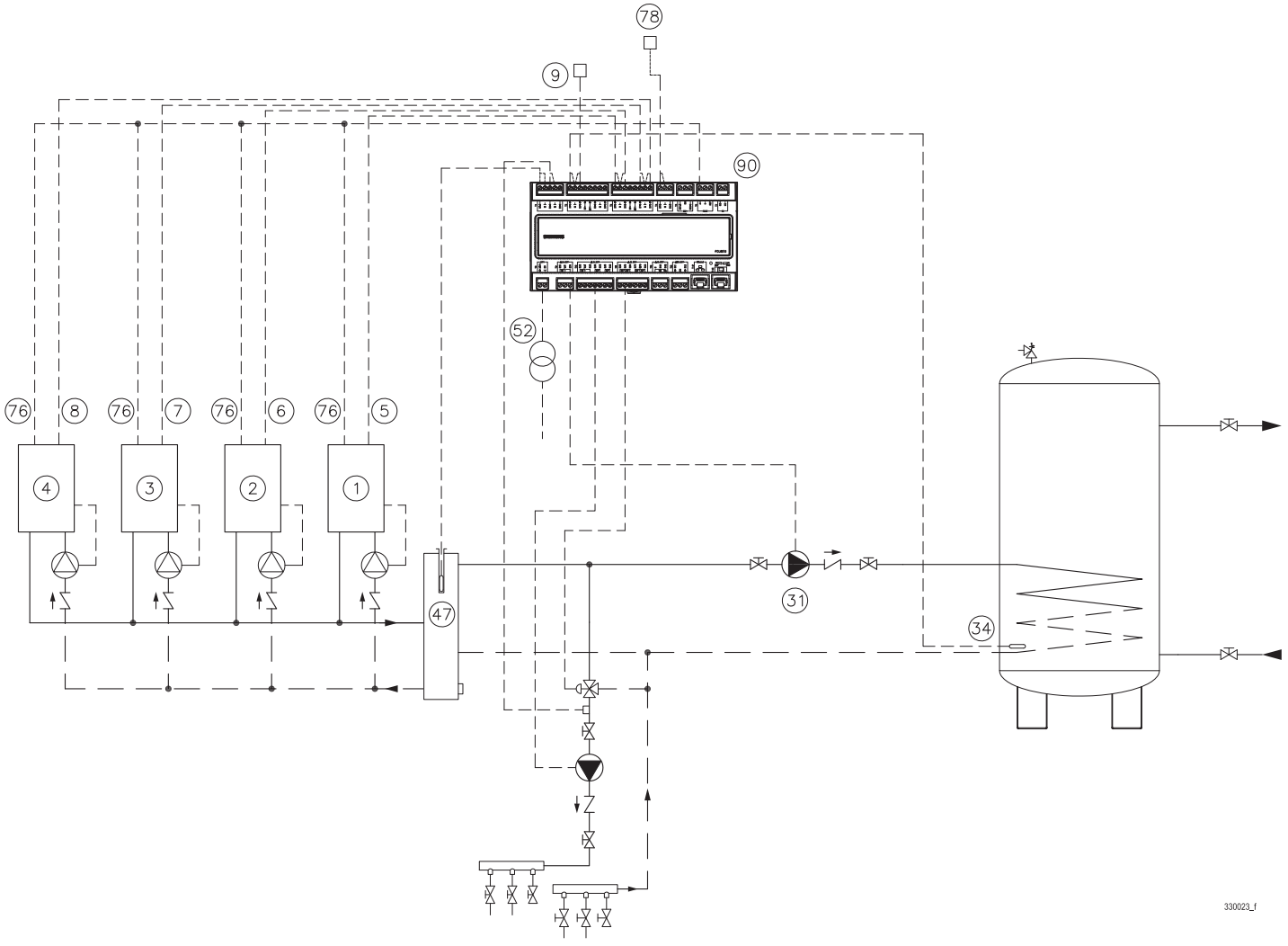


Figure 4-9 - “All power” DHW diagram

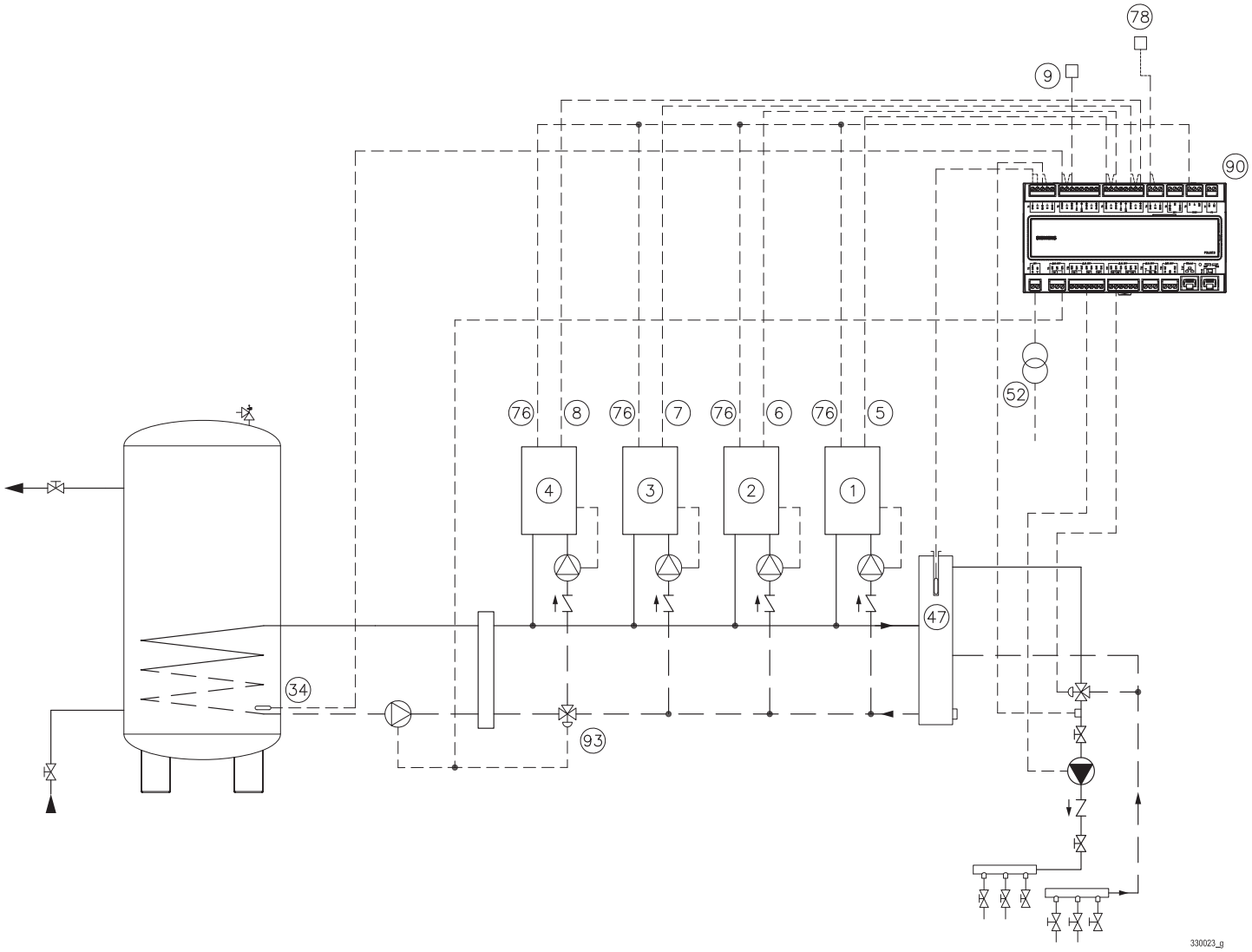


Figure 4-10 - “Distributed power” DHW diagram

Key to Figures 4-9 and 4-10
1,2,3,4 - Module
5 - 0-10V connection
9 - Thermoregulator’s outdoor temperature sensor (Outdoor Temp.)
31 - Pump to load the hot water tank (Tank pump)
34 - Hot water tank temperature sensor (DHW tank sens.)
47 - Thermoregulator supply sensor (Water Heater T.)
52 - 230Vac - 24Vac transformer
76 - Modbus communication connection (optional)
78 - Heating zone 1 room thermostat (Zone 1 RT)
90 - Thermoregulator
93 - 3-way valve

4.13.1 - Anti-legionella

The anti-legionella function differs depending on whether the hot water tank is loaded only by the modules or also by the solar zone.

ATTENTION!!! If the *Configuration->System->DHW Mode = Thermostat* parameter is selected, the menu for the anti-legionella parameters is not displayed because it is impossible to ensure that the anti-legionella disinfection is carried out properly with a manual thermostat

- Hot water tank load by the modules and there is no solar zone

The function is enabled with these parameters:
- ***Configuration->System->DHW = Yes***
- ***Configuration->System->DHW Mode = Sensor***
- ***Configuration->System->Anti-legionella = Yes***
- ***Configuration->System->Solar = No***

In this case, the anti-legionella function is carried out on the hot water tank sensor, connected to terminals X1-M (see Figure 4-1).

- Hot water tank load by the modules and by the solar zone

The function is enabled with these parameters:
- ***Configuration->System->DHW = Yes***
- ***Configuration->System->DHW Mode = Sensor***
- ***Configuration->System->Anti-legionella = Yes***
- ***Configuration->System->Shuffle pump type = Anti-legionella***
- ***Configuration->System->Solar = Yes***

In this case, the anti-legionella function is carried out on the hot water tank sensor but the Anti-legionella cycle start is requested by the solar hot water tank sensor connected to terminals X1-M of the POL 945 expansion (see Figure 4-3).
The anti-legionella cycle starts for every period set in ***Parameters->Anti-legionella->Frequence*** and, once this period has elapsed, the cycle starts at the time set in ***Parameters->Anti-legionella->Light-on hour.***
The condition of DHW in anti-legionella is displayed as "**ANL**" on the main page.

- Anti-legionella Forcing from an external input

The Anti-legionella function can be requested with an external input at any time via the ***Anti-legionella forcing*** contact (Figure 4-3).
The function is enabled if there is the POL 945 expansion with address "1"and the DHW is with the sensor.

NOTE! To enable the expansion, it is necessary to enable at least the shuffle pump or solar or heating zone 3.

When the contact ***Anti-legionella forcing*** is closed, a DHW demand is forced to the temperature in ***Parameters->Anti-legionella->Setpoint*** and will remain in this condition for as long as the external input is closed.

NOTE! The anti-legionella cycle, as described at the beginning of this section, takes precedence over closure of the *Anti-legionella forcing* contact.

NOTE! When the *Anti-legionella forcing* input is closed, the word "ANL" does not appear in the synoptic as it is a simple DHW demand to a different setpoint.

4.14 - Shuffle pump

The shuffle pump is set in ***Configuration->System->Shuffle pump type*** and has the following selections:
- Anti-legionella
- Tank load
- Absent

- Anti-legionella

To select the shuffle pump as "Anti-legionella", the solar zone must first be enabled in ***Configuration->System->Solar = Yes***.

Together with the solar system, there is a solar hot water tank sensor that is used to start or stop the anti-legionella cycle and, at the same time, the shuffle pump is also started to guarantee thermal disinfection of the bottom part of the hot water tank. When the shuffle pump is set as "Anti-legionella", provides the solar heat recovery function in the following way: the difference temperature between the storage tank sensor "37" and the solar storage tank sensor "34" is monitored. If the difference is higher than ***Parameters->Solar->Solar Recovery Hyst***, the anti-legionella pump is activated to transfer heat to a second tank. This pump switches off again when the difference temperature between sensors "34" and "37" is equal to the value of the ***Solar Recovery Hyst*** minus 5°C.

If ***Solar Recovery Hyst*** value drops below 5°C, the solar recovery function switches off.

- Tank load

If the shuffle pump is set to load tank, it starts each time the hot water tank pump starts.

This function is particularly used to load multiple hot water tanks in series or in parallel.

- Absent

The shuffle pump is missing.

4.15 - DHW return pump

The DHW return pump is controlled by the time slot in ***Parameters->DHW->Timer DHW return.***
If the DHW return sensor is enabled in ***Configuration->System->DHW return sensor = Yes***, the adjustment temperature can be set in ***Parameters->DHW->DHW return setp***. In this last case, during the operating time slot, the DHW return pump stops and then starts again also according to the set temperature.

4.16 - Solar

To enable the "Solar" function, you need to set ***Configuration->System->Solar = Yes***.
The solar zone works by controlling the temperature differential between the solar panel sensor and the solar hot water tank sensor.
If the differential is higher than ***Parameters->Solar->Solar pump DT on*** , the solar zone pump starts working.
If the differential is lower than ***Parameters->Solar->Solar pump DT off***, the solar zone pump switches off.
In ***Parameters->Solar->Max. Temp.***, you can set the maximum loading temperature of the solar hot water tank.

If the solar panel sensor cools below the ***Parameters->Solar->Min. Temp.***, the solar load function stops.
When the solar pump is switched on or off to load the hot water tank, the relative state is displayed on the row dedicated to the solar on the main page with ***ON*** or ***OFF***.

If the solar panel sensor heats above ***Parameters->Solar->Antistagn On Temp***, the solar pump switches on again. This condition is shown on the system main with ***ASG***, i.e. the anti-stagnation cycle is working to prevent the water inside the solar panel from boiling.
If the solar panel sensor continues to heat up over ***Parameters->Solar->Antistagn Off Temp***, the solar pump switches off again.

Solar Antifrost
The solar panel is protected by an antifrost cycle. When the antifrost cycle is working, "**ANF**" is displayed on the main page. The antifrost cycle can be disabled by setting ***Configuration->System->Solar Antif = No***.

ATTENTION!!! Disable the "Solar Antif" function can seriously damage the solar panel.

4.17 - Rotation of the modules

The modules are rotated to keep them all at the same length of operation. There are three rotation modes that can be set in ***Parameters->Output rotation->Mode***:
- Absent
- Fix
- Time base

- Absent
The rotation of the modules is disabled.

- Fix
The modules are rotated only on a time basis. In ***Parameters->Output rotation->Fix Rotation Interval***, the days are loaded after which the modules are rotated. If, for example, the rotation interval is set at 6 (days), the sequence for switching the modules on is as follows:

Days	Ignition Sequence
Day 0-6	1-2-3-4
Day 7-13	2-3-4-1
Day 14-20	3-4-1-2
Day 21-27	4-1-2-3
Day 28-34	1-2-3-4

- Time base
The modules are rotated based on the maximum ageing difference set in ***Parameters->Output rotation->Max Ancient diff..*** This parameter represents the maximum days of ageing difference that a module can accumulate compared to the one that has worked less.
When a module has reached the maximum ageing difference compared to the one with the least ageing difference, the modules are rotated. Each time heat is requested, the modules switch on giving precedence to those with the least number of working hours.

4.17.1 - Rotation of the "Heating" and "DHW" modules

If at least two modules are set in ***Configuration->System->Module n = DHW*** ("Distribuited power" DHW see Section 4.13), this means that there is one cascade for the heating function and one cascade for the DHW function. In the ***Parameters->Output rotation->DHW*** menu you can set the rotation rules for the modules responsible for producing DHW. The rules are the same as those described in Section 4.17.

4.18 - Antifrost

If you want to stop the system for a long period of time (for example, if you go on holiday), you can set the system in antifrost.
To activate the antifrost, first set the outdoor sensor in ***Configuration->System->Outdoor sensor = Yes.***
If the antifrost is enabled without the outdoor sensor, a ***Non-configured Outdoor sensor alarm*** will be triggered.

ATTENTION!!! The "Non-configured Outdoor sensor alarm" is not able to activate the "Alarm" output (contacts C; D02 in Figure 4-2).

To activate the antifrost, use ***Parameters->System control = Antifrost***. In this mode, all heating and/or DHW demand are ignored. The antifrost is shown on the main page with ***ANF*** on the state of the heating zone(s) displayed.

ATTENTION!!! If the hot water tank is controlled by a thermostat (*Configuration->System->DHW mode=Thermostat*) and the system is in antifrost, when the hot water tank thermostat closes, a demand for heat is generated for the hot water tank corresponding to "*Parameters->Antifreeze function->Heating setpoint*". This could correspond to a continuous DHW demand because it is very likely that the hot water tank thermostat will have a setpoint that is higher than this parameter.

ATTENTION!!! The antifrost function guarantees antifrost protection to the modules and to the hot water tank. The antifrost function cannot guarantee protection to the remaining parts of the system.

4.19 – Connection of TutorBit to Heat Pump (HP)

To connect to HP it is necessary to connect a POL 955 expansion to Tutorbit (see Section 4.3) and set the parameter ***Configuration -> System -> Heat pump = Yes***.
Many functions of the HP are related to the outside temperature, so when connecting an HP it is necessary to set also ***Configuration -> System -> Outdoor sensor = Yes.***

TutorBit is able to manage different HP models, in relation to the type of commands it can receive. The following HP modes can be set on the menu ***Configuration -> Heat pump -> HP Mode*** (the reference to contacts Q1, Q2, Q3 and terminals X1 - M, can be seen directly on the POL 955 expansion):

- HP Mode = 1; HP controlled by a digital output for switching on and off and one for HEAT / COOL switching:

Q1 open > HP in OFF
Q1 closed > HP in ON

Q2 open > HP in HEAT
Q2 closed > HP in COOL

- HP Mode = 2; HP controlled by a digital output for ignition in COOL and one for ignition in HEAT:

Q1 open > HP in OFF
Q1 closed > HP in ON and in COOL

Q2 open > HP in OFF
Q2 closed > HP in ON and in HEAT

- HP Mode = 3; HP controlled by two digital outputs and an analogue output 0-10Vdc:

Q1 open > HP in OFF
Q1 closed > HP in ON

Q2 open > HP in HEAT
Q2 closed > HP in COOL

X1 - M 0-10Vdc analog output for power control with PID algorithm. 0V = minimum power, 10V = maximum power.

- HP Mode = 4; HP controlled by two digital outputs and an analogue output 4-20 mA:

Q1 open > HP in OFF
Q1 closed > HP in ON

Q2 open > HP in HEAT
Q2 closed > HP in COOL

X1 - M 4-20 mA analog output for power control with PID algorithm. 4mA = minimum power, 20 mA = maximum power.

NOTE: In all the ***HP mode***, previously envisaged, it is however possible to command a DHW demand to HP via the digital output Q3 where:

Q3 open > heating demand
Q3 closed > DHW demand or high setpoint

4.19.1 - System operation with heat pump (HP) in heating

HP has a good operating efficiency only for certain outdoor temperatures. Outside these temperatures it is convenient to operate the module.
For this purpose, on ***Parameters -> Modules -> Spring Temp.*** is possible to set the outdoor temperature below which the HP starts automatically.
If the temperature drops below ***Parameters -> Heat Pump -> CutOff Temp,*** the HP shuts down again to prevent it from continuing to operate at too low efficiency**.** The heating function will be guaranteed by the module.

When the HP is running, it checks the sensor temperature ***Water Heater T.*** (see diagrams at Section 4.22). If the temperature of ***Water Heater T.*** rises by 5°C (fixed value) beyond its required temperature, the HP stops. If the temperature of ***Water Heater T.*** drops below its required temperature, the HP switches on again.

When the heat pump is running, help from the module is provided:
- if the sensor temperature ***Water Heater T.*** cannot reach its required temperature within ***Parameters -> Heat Pump -> Saturation Time***, TutorBit also turns on the module to help HP until the temperature ***Water Heater T.*** has reached its required temperature. Thereafter, TutorBit switches the module off again.
- if the FV contact is close (there is photovoltaic production) TutorBit adds ***Parameters -> Heat Pump -> Photovoltaic time*** at time ***Parameters -> Heat Pump -> Saturation Time***.
- if the sensor temperature ***Water Heater T.*** drops below its required temperature by a value corresponding to ***Parameters -> Heat Pump -> Saturation hysteresis***, TutorBit starts counting the ***Saturation Time*** again and so on.

ECO function in defrost with dynamic cut-off:
If the temperature of the ***Water Heater T.*** sensor drops suddenly, it means that a defrost is in progress. Then, TutorBit immediately turns on the module to help HP finish its defrost cycle and increases the parameter ***Parameters -> Heat Pump -> CutOff Temp,*** so as to prevent the heat pump from performing these uneconomic defrost cycles. When the weather conditions have returned to such that the HP no longer performs the defrost cycles, TutorBit returns the parameter ***Parameters -> Heat Pump -> CutOff Temp*** to its original value.

ECO function in defrost with PV contact close:
If PV contact is close it means that there is free energy and the appliance remains in heating mode for longer even if it is performing defrost cycles.

4.19.2 - System operation with heat pump (HP) in cooling

The cooling function is activated only if the outside temperature is higher than ***Parameters -> Modules -> Autumn Temp***.
When the heat pump is running, it meets the required sensor temperature ***Water Heater T.*** (see diagrams in Section 4.22).
If the temperature of the sensor ***Water Heater T.*** drops below the lower of the temperatures required for the cooling zones of ***Parameters -> Heat Pump -> Shutdown Differential HP,*** HP is put on standby. If the temperature of the sensor ***Water Heater T.*** returns higher than the required temperatures, the HP switches on again.

The cooling zone continues to operate with its rules as if it were in heating only that, instead of following a demand temperature in heat, it follows one in cool.

During the “Cool” phase, the time program of the cooling zone can only have two states: “Off” or “Comfort” (on).The other states “Reduced” and “Precomfort” have no function.

4.19.3 - DHW function with heat pump

When Tutorbit receives a DHW demand, it communicates it to HP by closing the digital output Q3:

Q3 open > HP not in DHW or low setpoint (depends on how it is interpreted by HP).

Q3 closed > HP in DHW o high setpoint (depends on how it is interpreted by HP).

In order to get HP to work in climatic conditions where efficiency is reasonable, TutorBit calls HP in DHW only if the outside temperature is higher than ***Parameters -> Heat Pump -> DHW Cutoff Temp***.

The DHW demand to HP is carried out by closing the Q3 contact, which can be used by the heat pump to change its logic or increase the supply temperature. Any heating demands are interrupted to give total priority to the heating of the boiler by HP.
If the storage tank does not reach the desired temperature within the DHW cycle ***Parameters -> Heat Pump -> Maximum Time DHW***, the HP is interrupted and the boiler heating cycle is ended by the module.
If the PV contact is closed (photovoltaic energy production is present), the HP is cut off if the boiler does not reach the desired temperature within ***Parameters -> Heat Pump -> Maximum Time DHW*** to which ***Parameters -> Heat Pump -> Tempo Max San Foto***.

ATTENTION!!! This operation system may leave the heating inactive for a long time. If this should happen and it is not very comfortable, it is advisable to exclude the heat pump from the production of domestic hot water by setting *Parameters -> Heat Pump -> DHW Cutoff Temp = 45°C.*

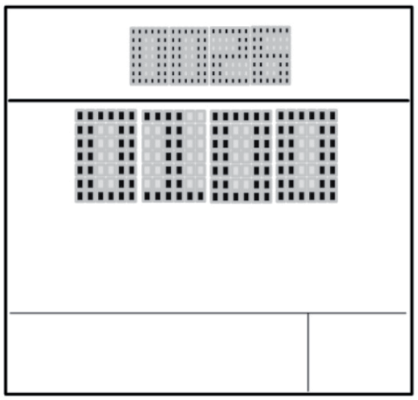
If the system has to do heating, sanitary and cooling, it is necessary to set at least one boiler as per parameter ***Configuration -> System -> Generator 2 = Sanitary*** (Example in section 4.22.16).

ATTENTION!!! If this procedure is not carried out, during the sanitary request, the cooling phase stops.

4.20 – Room sensor QMX3 model

The QMX3 room control is connected to TutorBit via the KNX bus, which requires respect for polarity in the connections.

When QMX3 turns on, the build number and version number of the device are displayed for 3 seconds:



UCFG" is then displayed for 102 seconds, which means that the device has not yet been configured (Section 4.20.1).

4.20.1 - Programming QMX3

Connect QMX3 to TutorBit to terminals CE + and CE- and choose which zone you want to combine in ***Configuration -> Zones -> Zone Mode***: ***FixSp-RS*** or ***Outd Reset-RS*** (mode with room sensor).
Save the configuration with the command ***Save & Reset*** present in the menu ***Zones***.
It will appear in the main TutorBit menu ***Room Unit Programming N*** which will be used to program these units.
Proceed as follow:

1.- Set ***Room Unit Programming -> Prog room unit n -> Start programming = Yes***;
2.- Wait until ***Room Unit State = Ok***;
3.- Repeat the procedure for how many room units there are;
4.- Go to ***Configuration -> Zones ->SN Zone N*** and write the ID number of the QMX3 that you want to combine with that heating zone (the ID number is shown on the front of the QMX3).

Attention! These operations must be performed directly with the Tutorbit and not via a pc.

Attention! When entering the QMX3 ID, the upper / lower case letters are not recognized and at the end of the ID always write with "h" and "#".

5.- Once the ID is set, go to ***Configuration -> Zones -> Associate SN Circuit N = Yes*** for how many zones are there;
6.- Close with ***Save/Reset.***

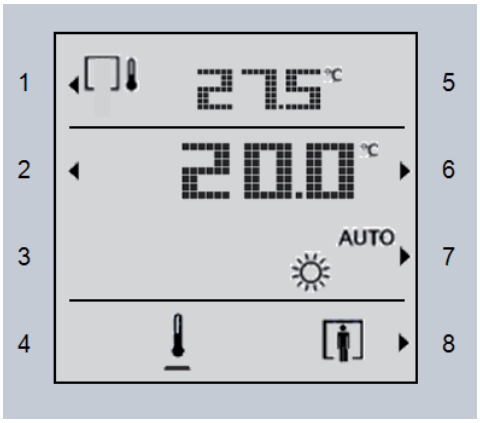
If the configuration was successful, in ***Configuration -> Zones -> Room Unit N Association*** will change from ***Not Performed*** to ***Performed***.

4.20.2 - How to disassociate QMX3 from a zone:

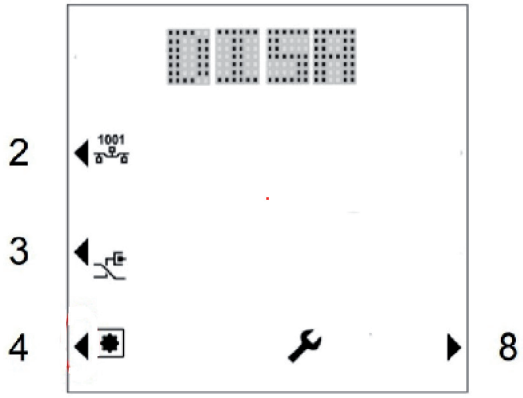
To disassociate a room sensor , simply go to the menu ***Configuration -> Zones -> Zone Mode*** and choose a solution that does not include the RS (Room Sensor).

4.20.3 - Restore the factory settings of QMX3

From the QMX3 home page, press the top left (1) and bottom right (8) keys simultaneously for at least 5 seconds.



The display will show the following screen:



Press the 4 key.

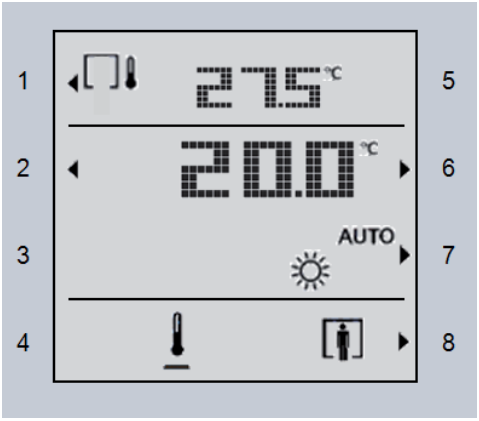
The device restarts after 10 seconds and will show:

Attention! This operation restores all factory settings and is irreversible.

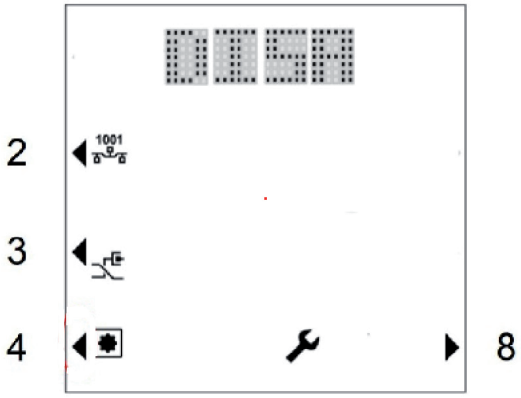
To reconnect QMX3 it will be necessary to follow the procedure again in Section 4.20.1.

4.20.4 - Connection test

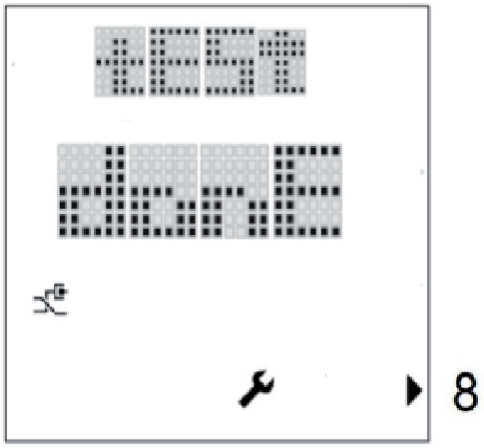
To check if the QMX3 room sensor communicates correctly with TutorBit, press keys 1 and 8 simultaneously for 5 seconds,



until the word “DISA” appears.

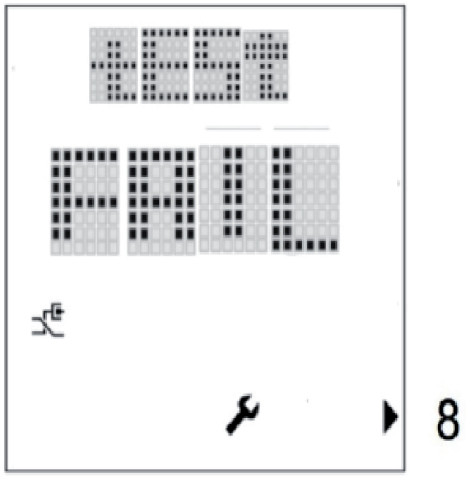


Then press the 3 key.
In the case of a good connection, the display will show “TEST DONE”:



Press the 8 key to return to the main menu.

If the connection is not good, the display will show “TEST FAIL”:



If the connection test has failed, check the connection cables between QMX3 and Tutorbit.

NOTE: the cables must not run together with high voltage cables and must be shorter than 100 m.

4.21 - Connecting TutorBit to a Personal computer

TutorBit can be connected to a PC to display an interactive operating diagram and to easily browse through the menu (Section 7.13). To this end, proceed as follows:

1.- Connect an Ethernet cable to the “T-IP” port on the TutorBit (See Figure 4-2);
2.- Connect the other end of the Ethernet cable to the PC;
3.- In the ***Configuration->DT Control->Ethernet*** menu, set the Ethernet parameters for correct communication between the TutorBit and the PC;
4.- Open “Google Chrome” and type in the appropriate IP address;
5.- Enter the user “ADMIN” and the password “SBTAdmin!”;
6.- Enter the password “1000” for a user or “0300” for an installer.

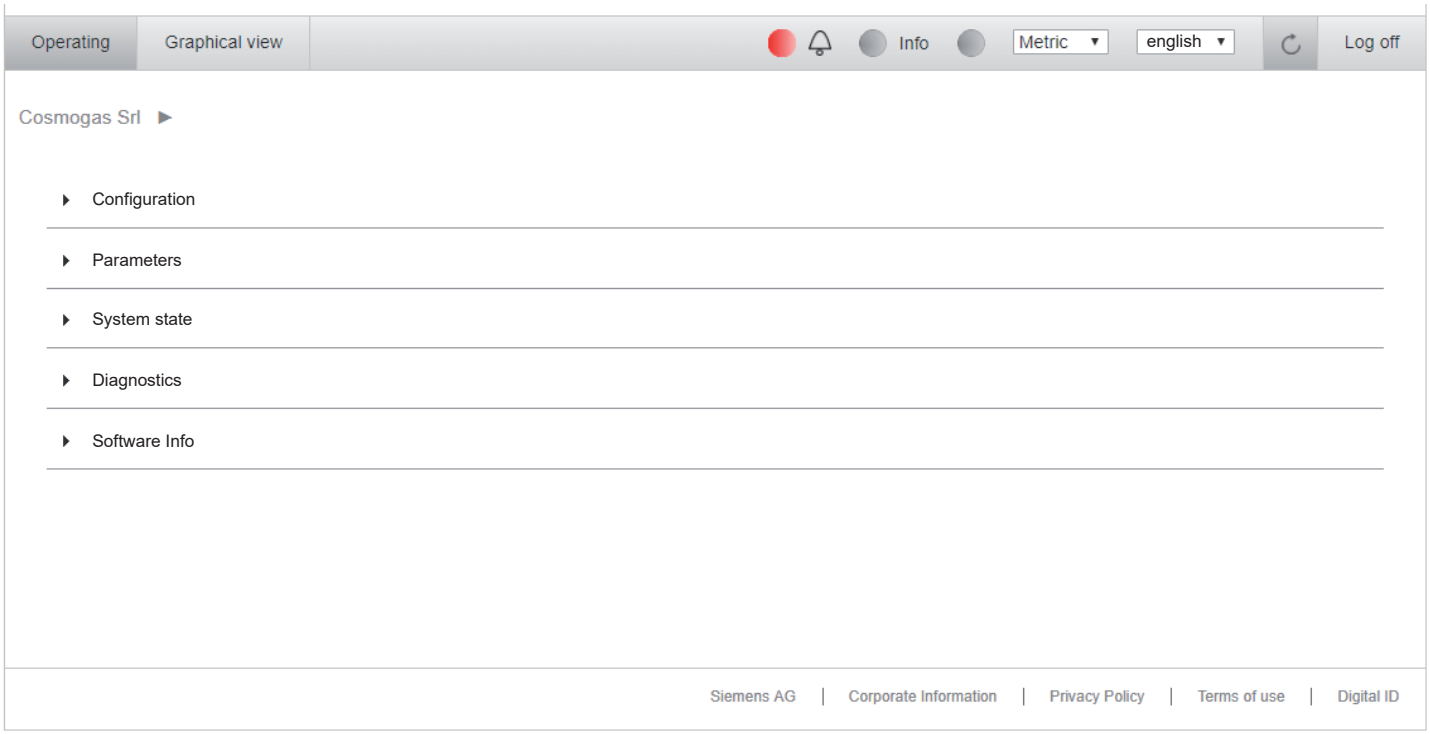
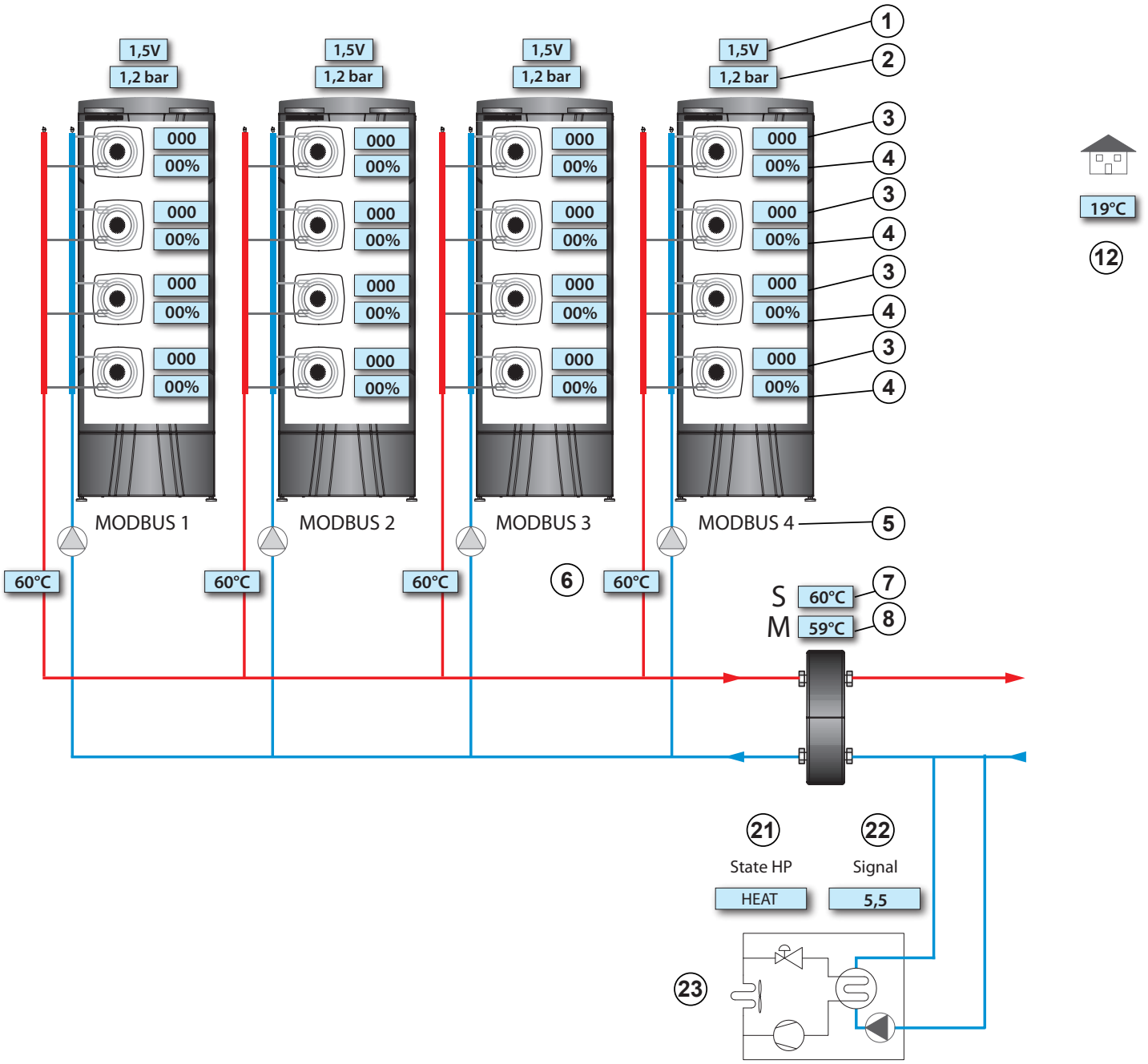
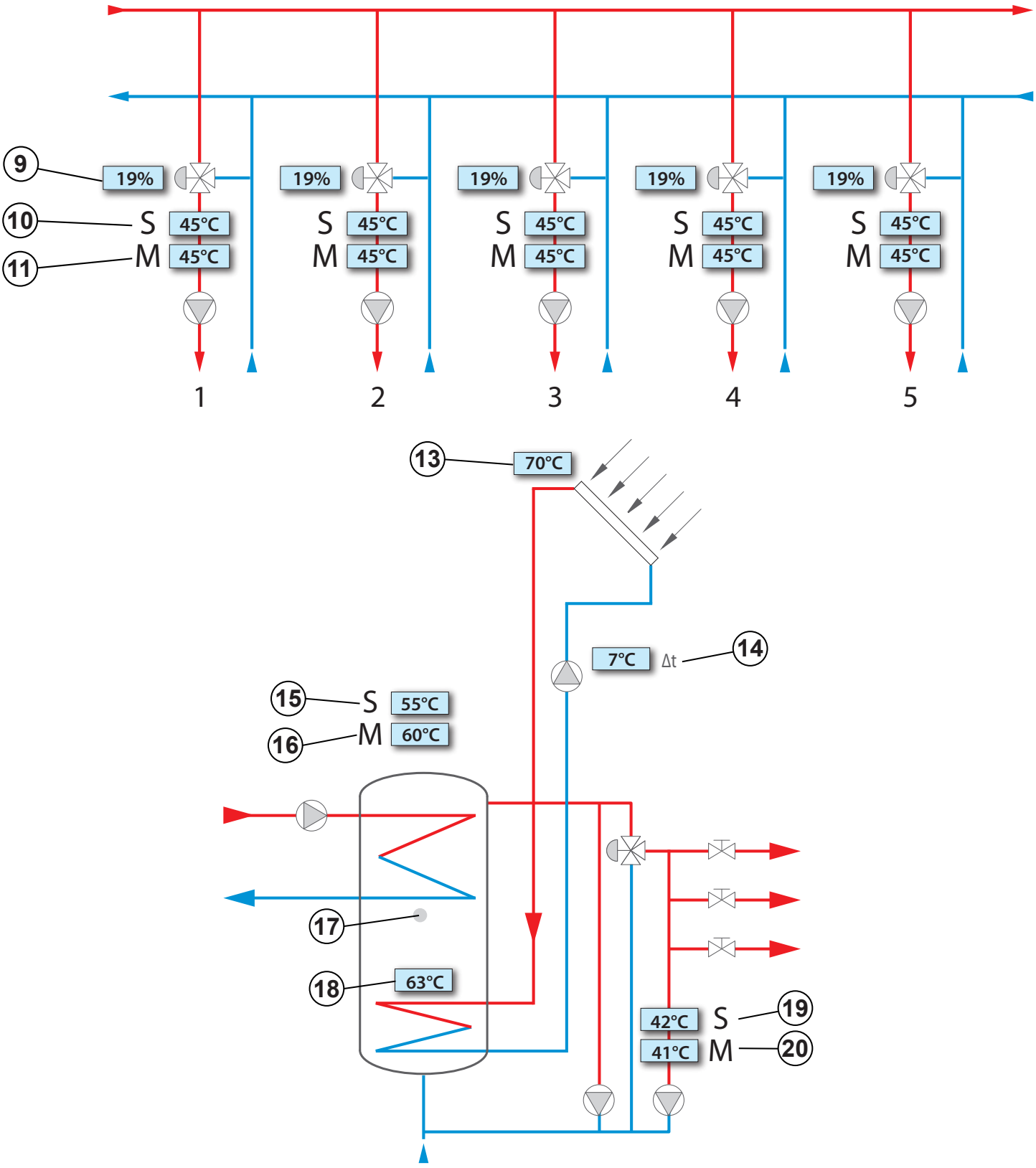


Figure 4-11 - Main screen for PC connection



1	0-10V signal from the TutorBit
2	Module water pressure
3	Burner error
4	Burner power level
5	MODBUS address
6	Module supply temperature
7	Cascade setpoint
8	Measured cascade temperature sensor
12	Outdoor temperature
21	HP State
22	Analog command signal of the HP
23	Heat Pump

Figure 4-12 - Graphical view



8	Measured cascade temperature sensor
9	3 way valve opening level
10	Heating zone supply setpoint
11	Heating zone measured temperature
13	Solar panel temperature
15	Hot water tank setpoint

16	Hot water tank sensor measured temperature
17	DHW enable/disable input (enabled = Green / disabled = Red)
18	Solar hot water tank sensor
19	DHW return setpoint
20	DHW return sensor measured temperature

Figure 4-12 - Graphical view

4.22 - Installation diagrams of cascade sequencer with boiler

Tutorbit can be used to create an innumerable type of systems. The most common types with the settings and the relative wiring diagram are shown below. The Legend, shown below, applies to all these diagrams.

LEGEND:
1 - Module 1
2 - Module 2
3 - Module 3
4 - Module 4
5 - 0-10 signal to Module 1
6 - 0-10 signal to Module 2
7 - 0-10 signal to Module 3
8 - 0-10 signal to Module 4
9 - Thermoregulator outdoor temperature sensor (Outdoor Temp.)
19 - 3 way valve for heating zone 1 (Zone 1)
20 - Heating zone sensor 1 (T. Zone 1)
22 - Heating zone pump 1 (Zone 1 pump)
23 - Non-return valve
27 - 3 way valve for heating zone 2 (Zone 2)
28 - Heating zone pump 2 (Zone 2 pump)
31 - Tank load pump (Tank pump)
34 - Tank temperature sensor (DHW Tank sens)
36 - Heating zone sensor 2 (T. Zone 2)
37 - Temperature sensor for solar charge and shuffle control (Solar Tank sens)
39 - Solar panel temperature sensor (T. Solar)
42 - Solar zone pump (Solar pump)
47 - Water Heater Temperature (Water Heater T.)
52 - Trasformer 230Vac 24Vac
53 - Shuffle Pump
54 - DHW return sensor (DHW return)
55 - DHW return pump
59 - 3 way valve for heating zone 3 (Zone 3)
60 - Heating zone sensor 3 (T. Zone 3)
61 - Heating zone pump 3 (Zone 3 pump)
62 - Enable/disable DHW (Enab/Disab DHW)
63 - DHW thermostat (DHW thermostat)
64 - Recirculation anti-legionella forcing
65 - External 0-10Vdc input (use POL 955 expansion)
66 - Modulating room sensor QMX3, can be installed one for each heating circuit in the same KNX bus (parallel connection).
67 - Mixing valve for heating zone 4 (Zone 4)
68 - Heating temperature sensor zone 4 (T. Zone 4)
69 - Heating zone pump 4 (Zone 4 pump)
70 - 3 way valve for heating zone 5 (Zone 5)
71 - Heating temperature sensor zone 5 (T. Zone 5)
72 - Heating zone pump 5 (Zone 5 pump)
73 - Alarm (acoustic or luminous signal)
74 - Connection to PC / Internet (Cloud)
75 - Display connection
76 - Modbus connection
77 - Enable / Disable DHW
78 - RT Zone 1
79 - RT Zone 2
80 - RT Zone 3
81 - Cold water inlet
82 - RT Zone 4
83 - RT Zone 5
84 - Heat pump
85 - 0-10 V out heat pump control
86 - Heat pump alarm
87 - ON / OFF or cool demand heat pump
88 - Heat / Cool or heat demand heat pump
89 - DHW demand or double heat pump setpoint
90 - Thermoregulator TUTORBIT
91 - Expansion POL 945
92 - Expansion POL 955
93 - DHW / heating diverter valve
94 - Support relay to stop AGUADENS - T water heater
95 - Support relay for solar transfer pump
96 - Inertial puffer
97 - Puffer with thermodynamic separator
98 - Double effect (or 4 pipes) heat/cool or DHW heat pump
99 - Winter summer diverter valve

4.22.1 - 4 modules MYDENS T with 2 heating zones, DHW and DHW return

Settings:

Configuration > System >

Number of modules	4
Module 1	Heating
Module 2	Heating
Module 3	Heating
Module 4	Heating
Outdoor sensor	Yes
DHW	Yes
DHW return sensor	Yes
DHW Mode	Sensor
Unit of measure	°C
Zones number	2
Antilegionella	Yes
Shuffle pump type	Absent
Solar	No
Solar Antistagnation	No
Solar Antifrost	No
Modbus enable	No
Heat pump	No

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone type = Mix

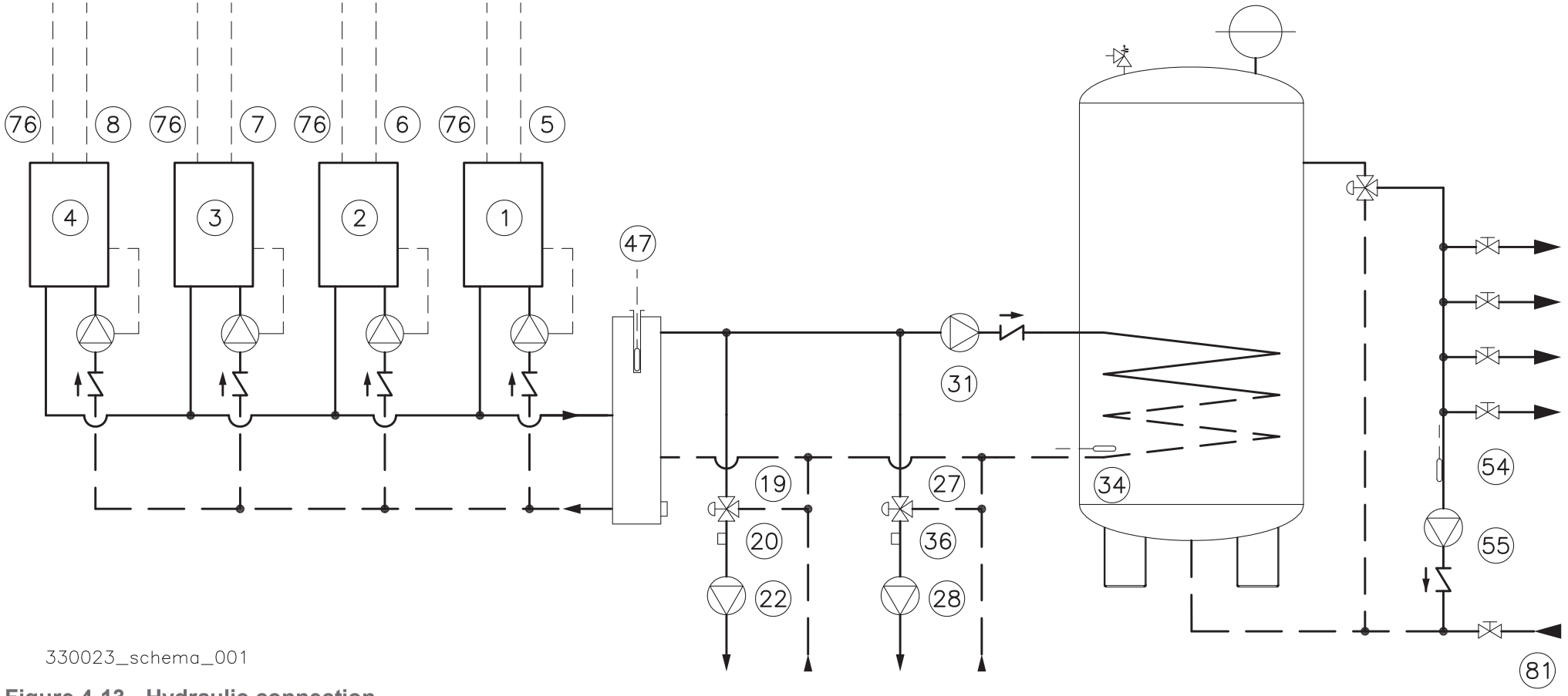


Figure 4-13 - Hydraulic connection

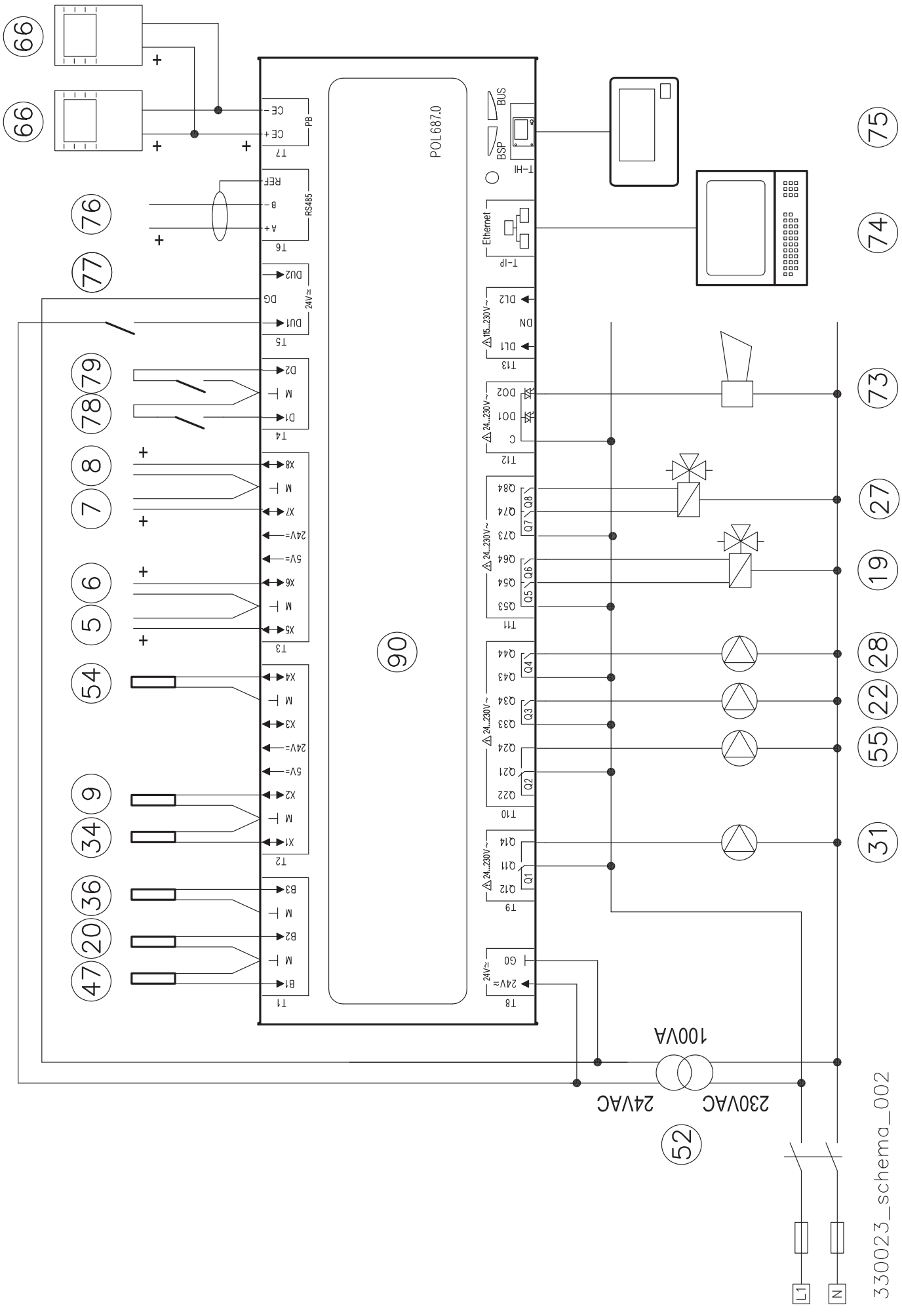


Figure 4-14 - Electrical connection

4.22.2 - 3 heating zone, DHW, DHW ruturn, solar and anti-legionella shuffle pump.

Settings:

Configuration > System >

Number of modules	4
Module 1	Heating
Module 2	Heating
Module 3	Heating
Module 4	Heating
Outdoor sensor	Yes
DHW	Yes
DHW return sensor	Yes
DHW Mode	Sensor
Unit of measure	°C
Number of Zones	3
Antilegionella	Yes
Shuffle pump type	Antilegionella

Solar	Yes
Solar Antistagnation	Yes
Solar Antifrost	Yes
Modbus enable	No
Heat pump	No

Configuration > Zones > 3 way valve > 3 way valve 1> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 3> Zone Type = Mix

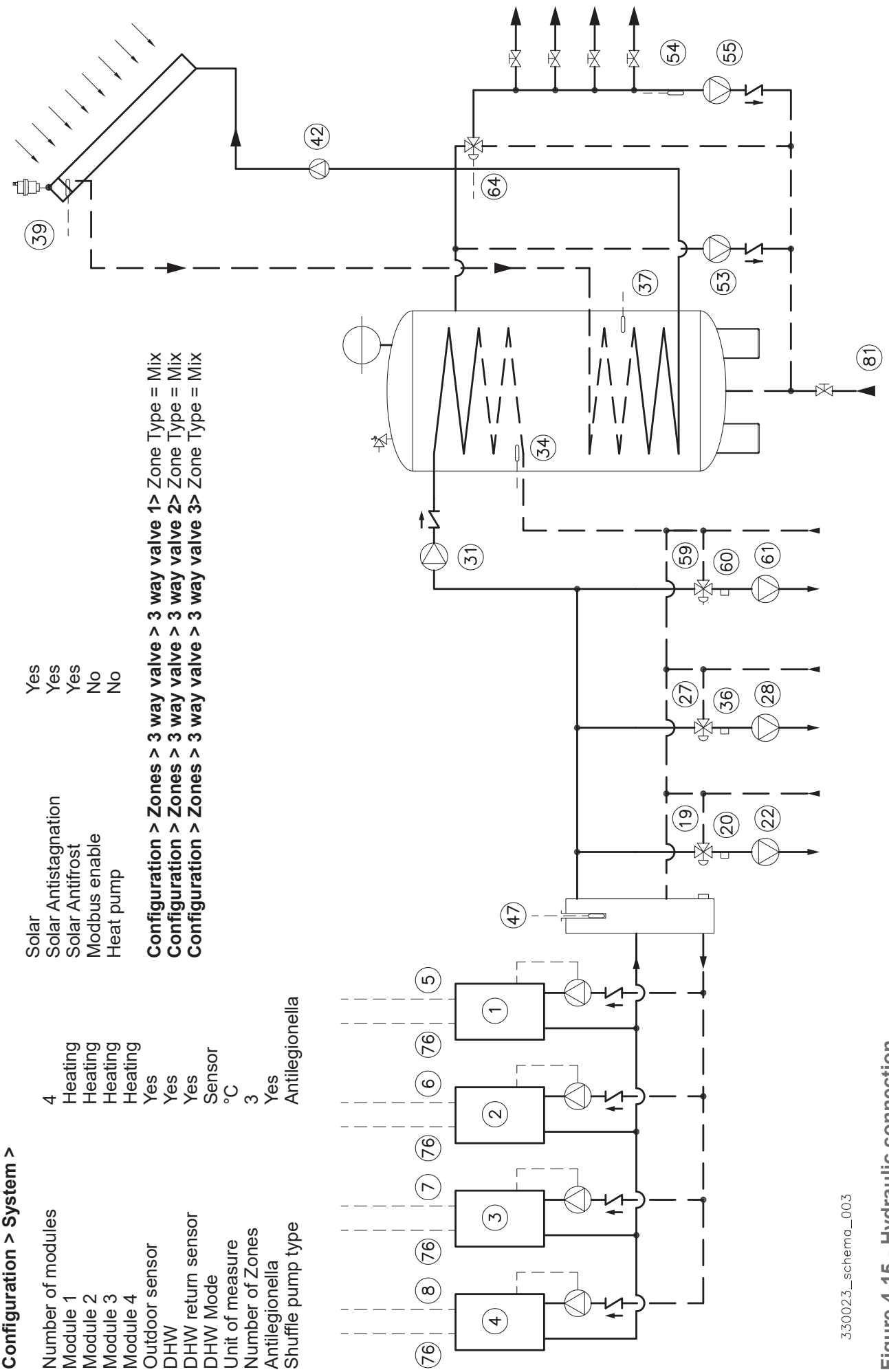


Figure 4-15 - Hydraulic connection

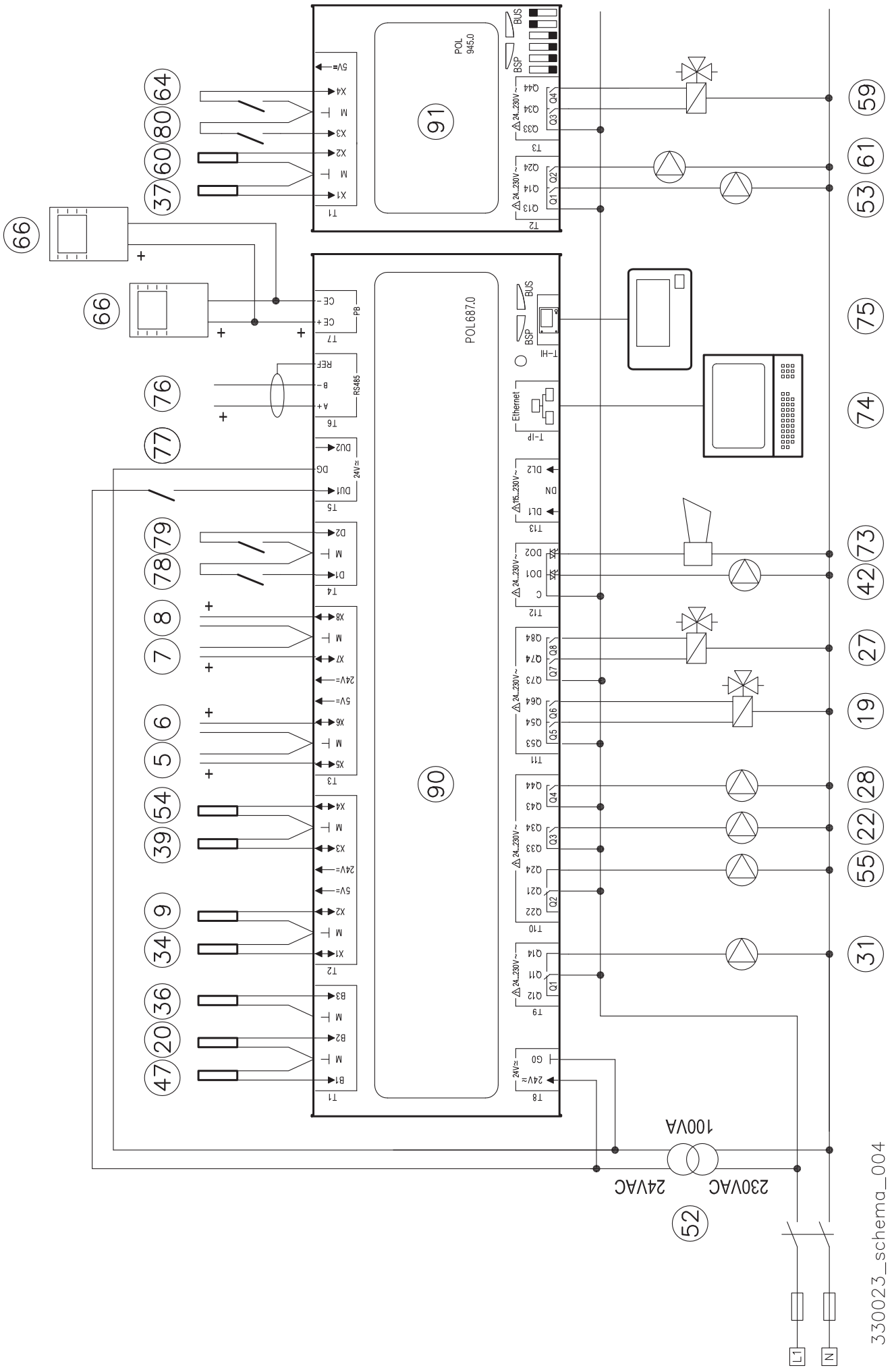


Figure 4-16 - Electrical connections

4.22.3 - 4 heating zones, DHW, DHW return, solar and anti-legionella shuffle pump.

Settings:

Configuration > System >

Number of modules	1
Module 1	Heating
Outdoor sensor	Yes
DHW	Yes
DHW return sensor	Yes
DHW Mode	Sensor
Unit of measure	°C
Number of Zones	4
Antilegionella	Yes
Shuffle pump type	Antilegionella
Solar	Yes

Solar Antistagnation	Yes
Solar Antifrost	Yes
Modbus enable	No
Heat pump	No

Configuration > Zones > 3 way valve > 3 way valve 1> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 3> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 4> Zone Type = Mix

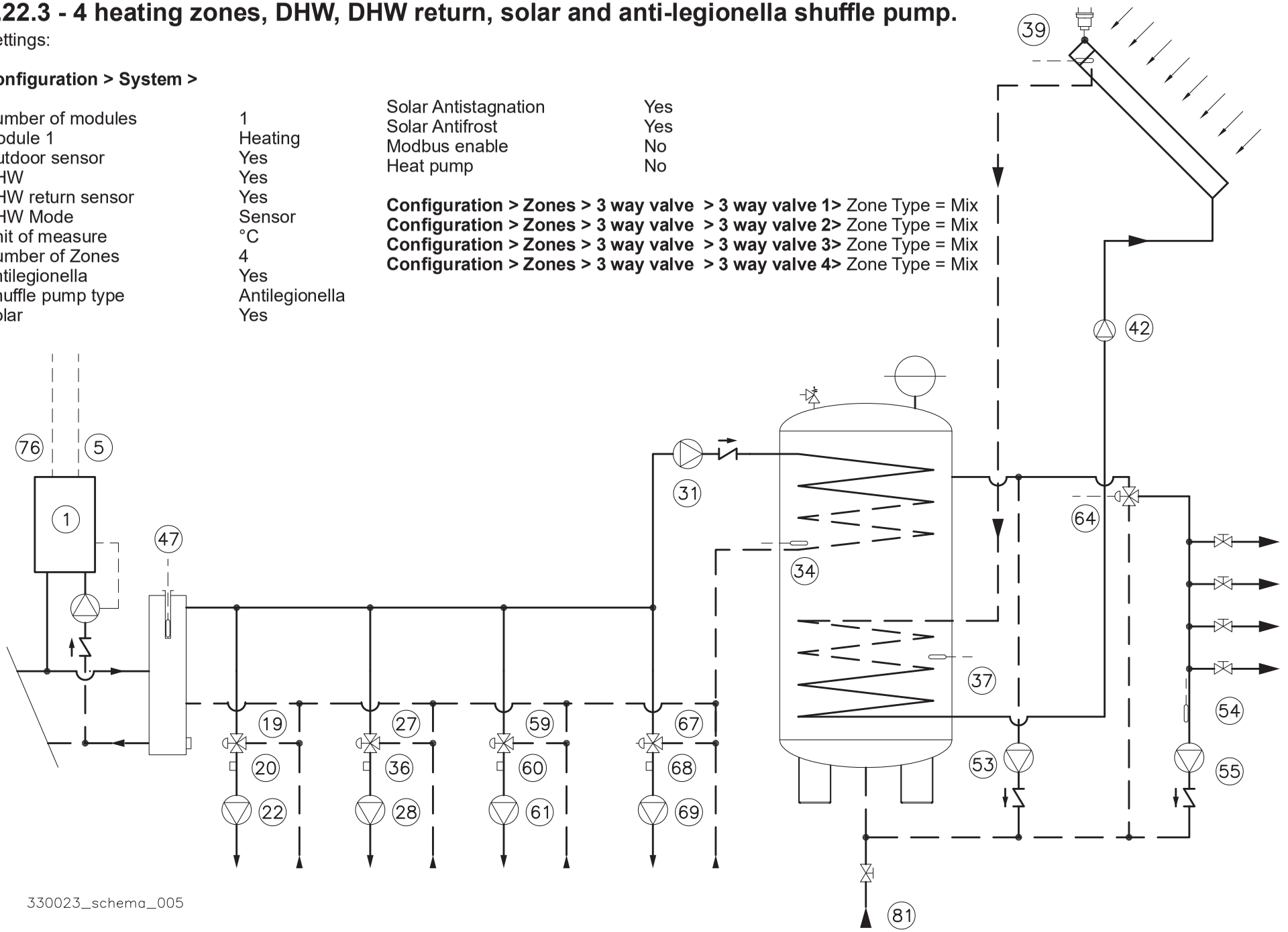


Figure 4-17 - Hydraulic connections

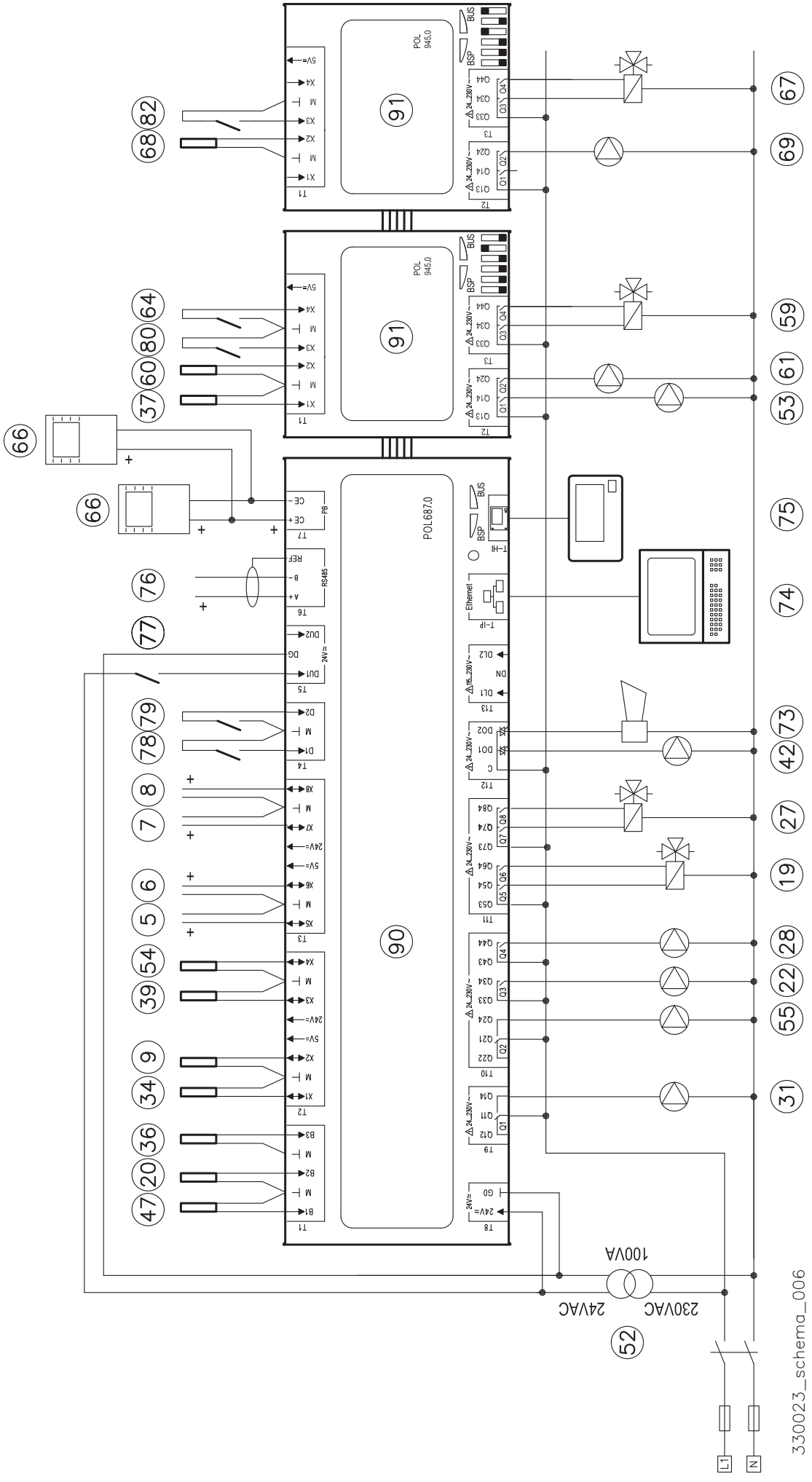


Figure 4-18 - Electrical connections

4.22.4 - 5 heating zones, DHW, DHW return, solar and anti-legionella shuffle pump.

Settings:

Configuration > System >

Number of modules	1
Module 1	Heating
Outdoor sensor	Yes
DHW	Yes
DHW return sensor	Yes
DHW Mode	Sensor
Unit of measure	°C
Number of Zones	5
Antilegionella	Yes
Shuffle pump type	Antilegionella
Solar	Yes
Solar Antistagnation	Yes
Solar Antifrost	Yes
Modbus Enable	No
Heat pump	No

Configuration > Zones > 3 way valve > 3 way valve 1> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 3> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 4> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 5> Zone Type = Mix

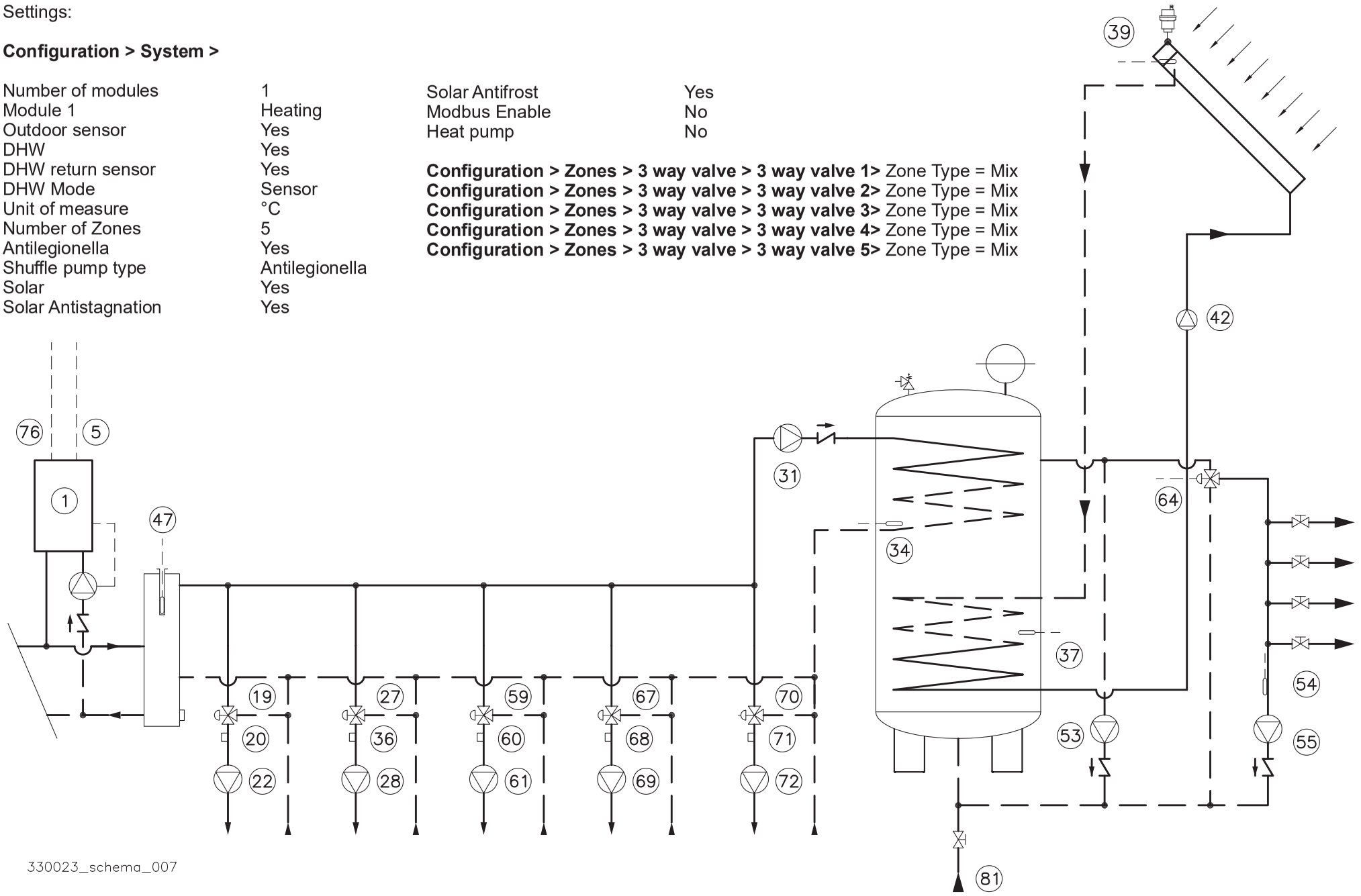


Figure 4-19 - Hydraulic connection

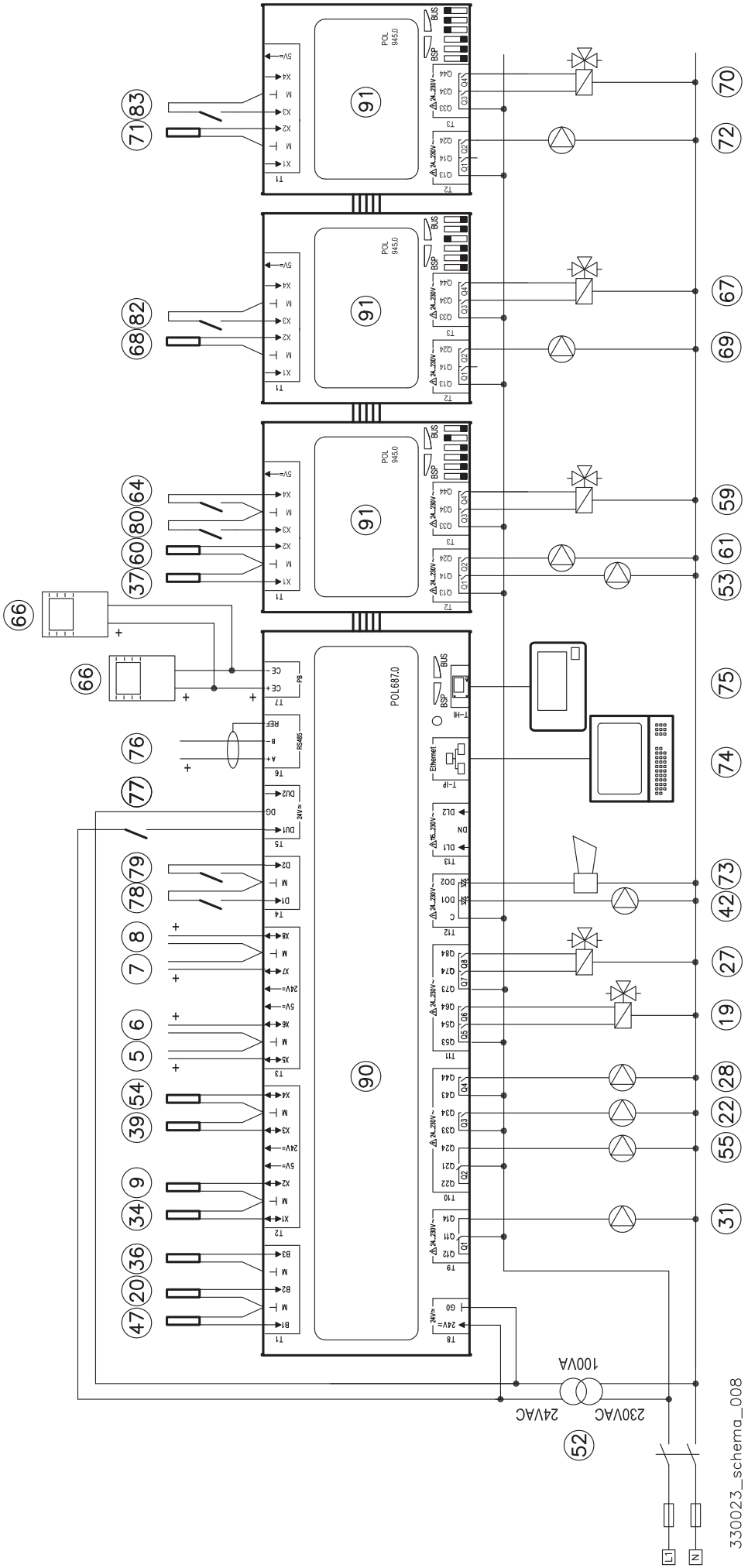


Figure 4-20 - Electrical connection

4.22.5 - 3 heating zones, DHW, DHW return, solar, Anti-legionella shuffle pump, heat pump for heating and DHW integration

Settings:

Configuration > System >

Number of Modules	1	Solar Antifrost	Yes
Module 1	Heating	Modbus enable	No
Outdoor sensor	Yes	Heat pump	Yes
DHW	Yes		
DHW return sensor	Yes		
DHW Mode	Sensor		
Unit of measure	°C		
Number of Zones	3		
Antilegionella	Yes		
Shuffle type pump	Antilegionella		
Solar	Yes		
Solar Antistagnation	Yes		

Configuration > Zones > 3 way valve > 3 way valve 1> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 3> Zone Type = Mix

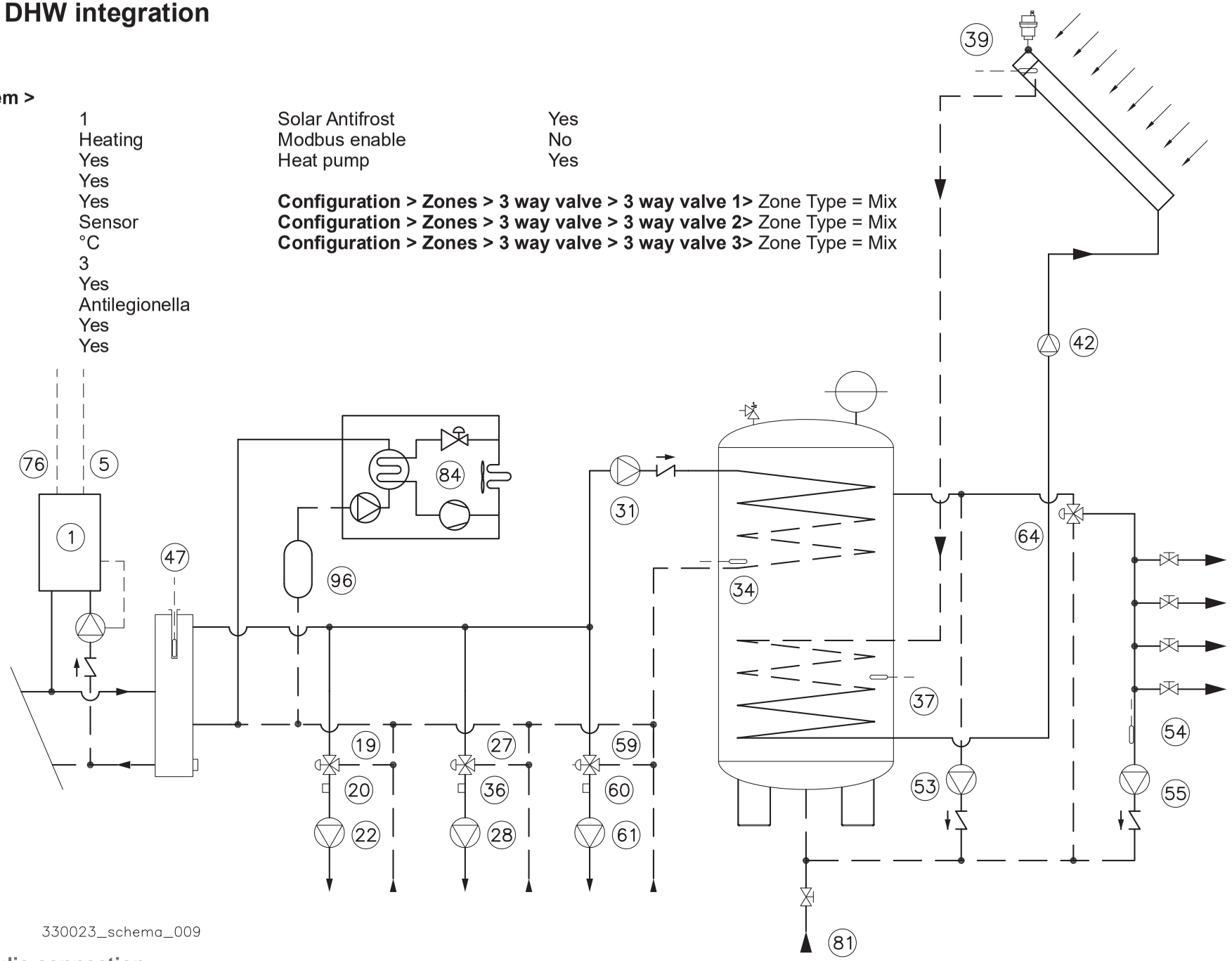


Figure 4-21 - Hydraulic connection

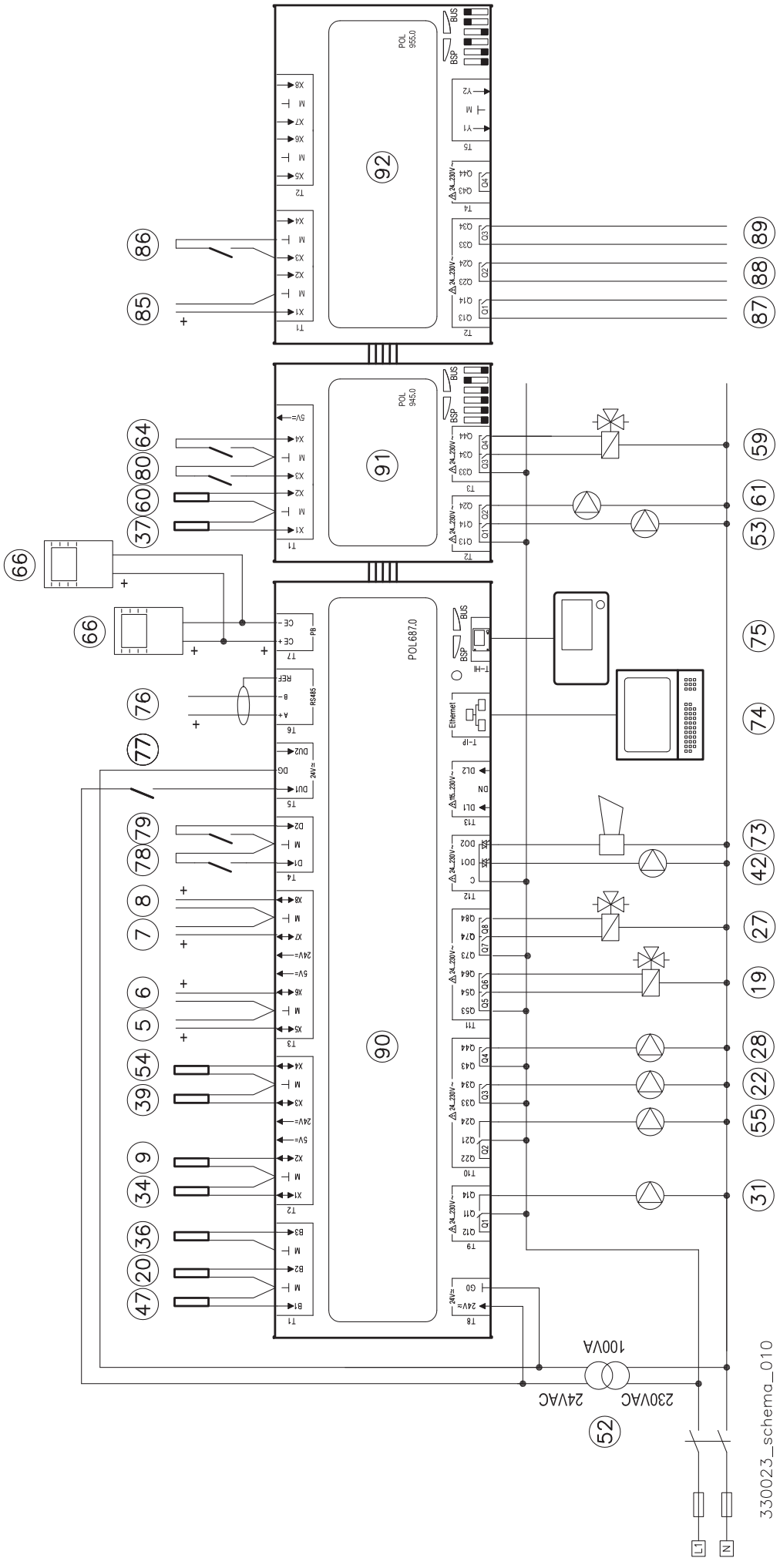


Figure 4-22 - Electrical connection

4.22.6 - 3 heating zones, DHW, DHW return, solar, anti-legionella shuffle pump and only one module switch to DHW

Settings:

Configuration > System >

Number of Modules	4
Module 1	Heating
Module 2	Heating
Module 3	Heating
Module 4	DHW
Outdoor sensor	Yes
DHW	Yes
DHW return sensor	Yes
DHW Mode	Sensor
Unit of measure	°C
Number of Zones	3
Antilegionella	Yes

Shuffle type pump	Antilegionella
Solar	Yes
Solar Antistagnation	Yes
Solar Antifrost	Yes
Modbus enable	No
Heat pump	No

Configuration > Zones > 3 way valve > 3 way valve 1> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone Type = Mix
Configuration > Zones > 3 way valve > 3 way valve 3> Zone Type = Mix

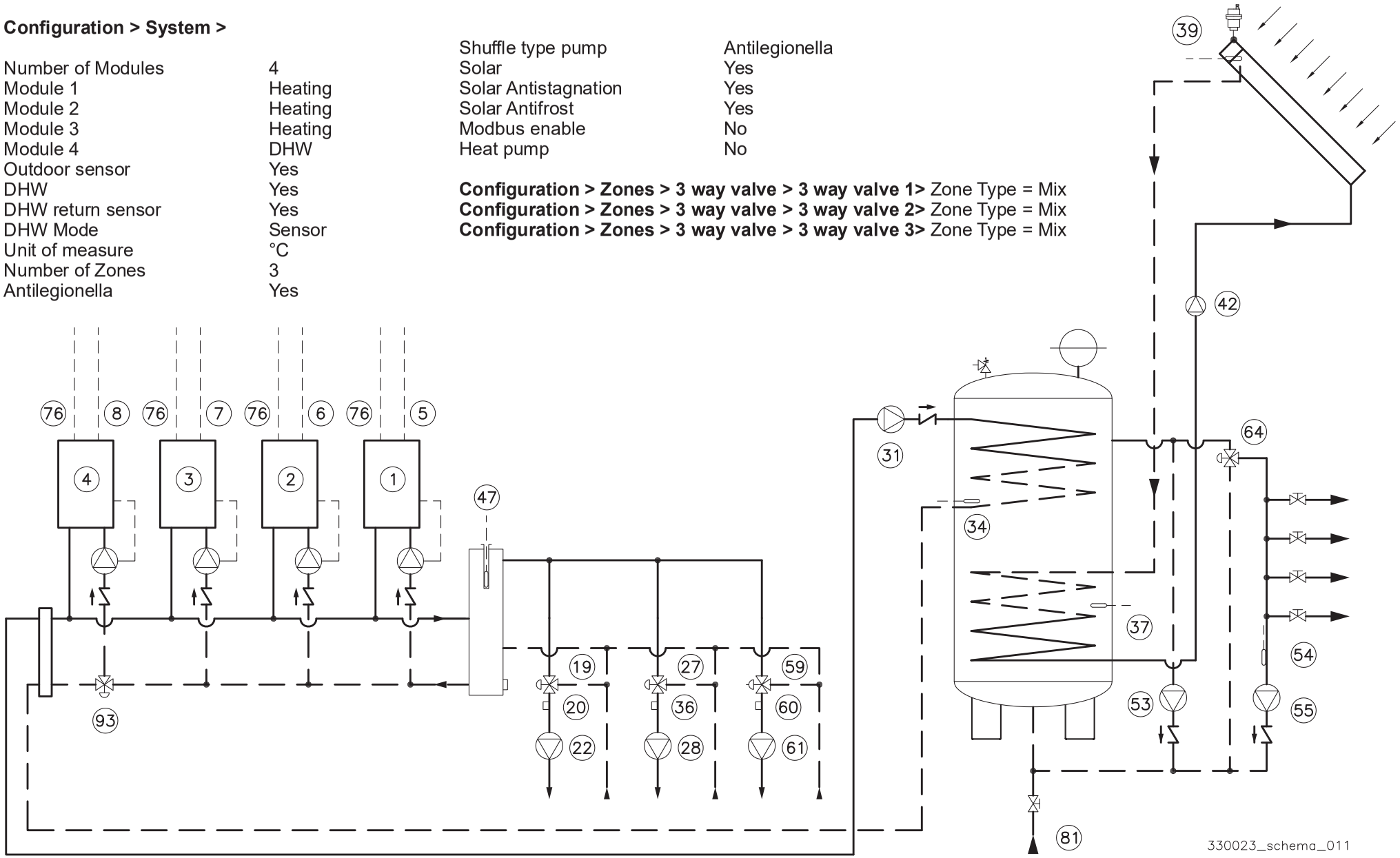


Figure 4-23 - Hydraulic connection

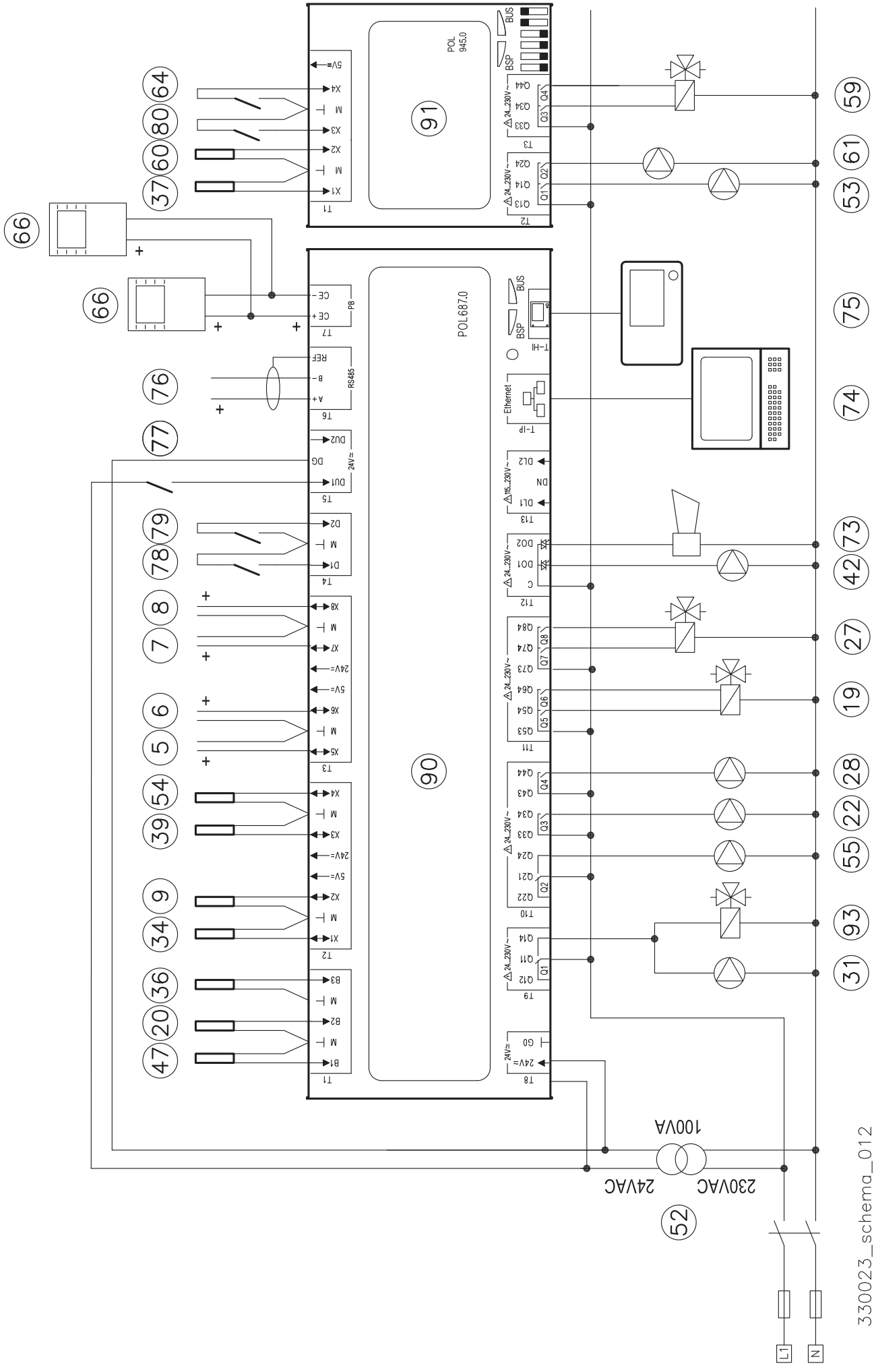


Figure 4-24 - Electrical connection

4.22.7 - 3 heating zones, heat pump with heating and cooling integration

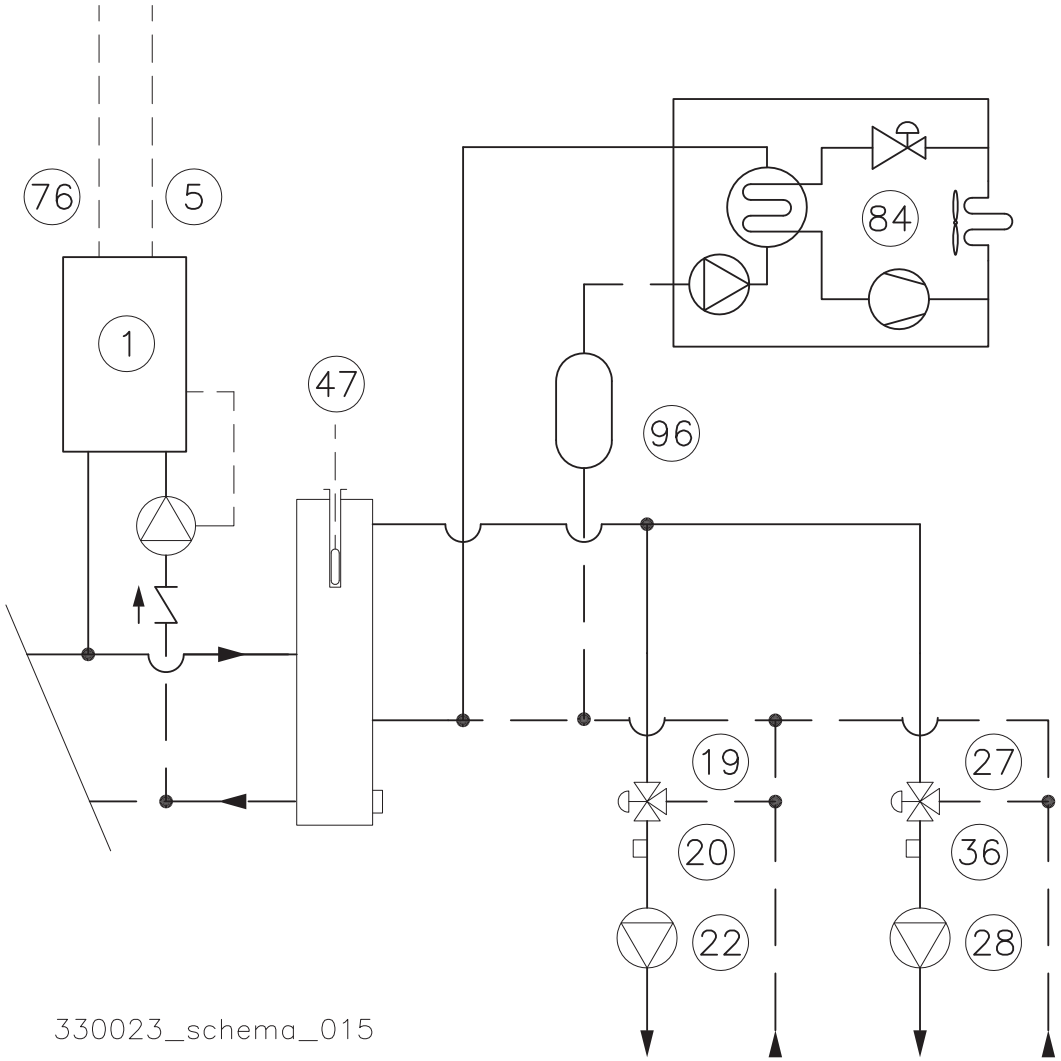


Figure 4-25 - Hydraulic connection

Settings:

Configuration > System >

Number of Modules	1
Module 1	Heating
Outdoor sensor	Yes
DHW	No
Unit of measure	°C
Number of Zones	2
Modbus enable	No
Heat pump	Yes

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone type = Mix

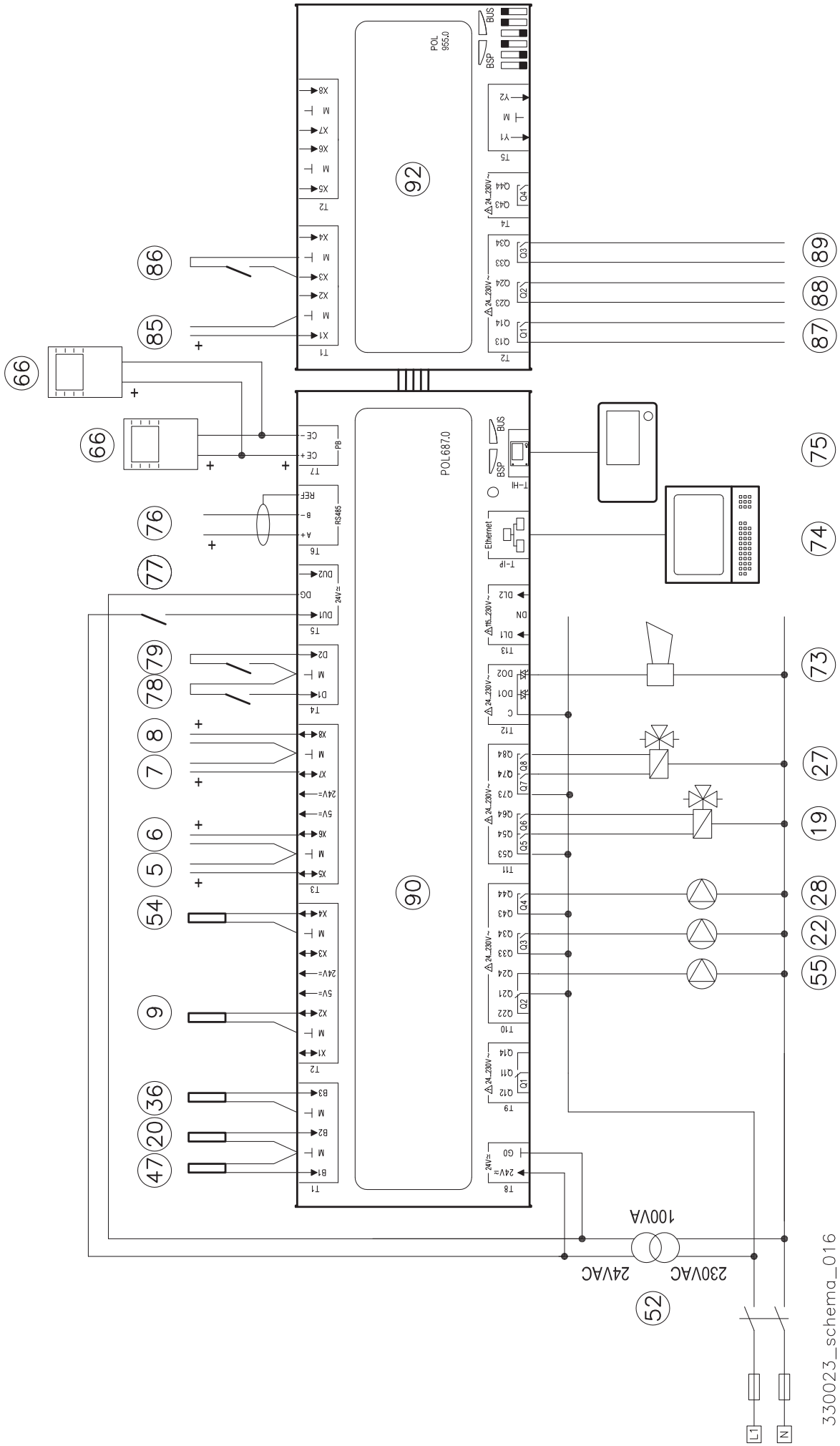


Figure 4-26 - Electrical connection

4.22.8 - 3 heating zones, DHW, DHW return, solar, 2 tanks (one solar and one of the module)

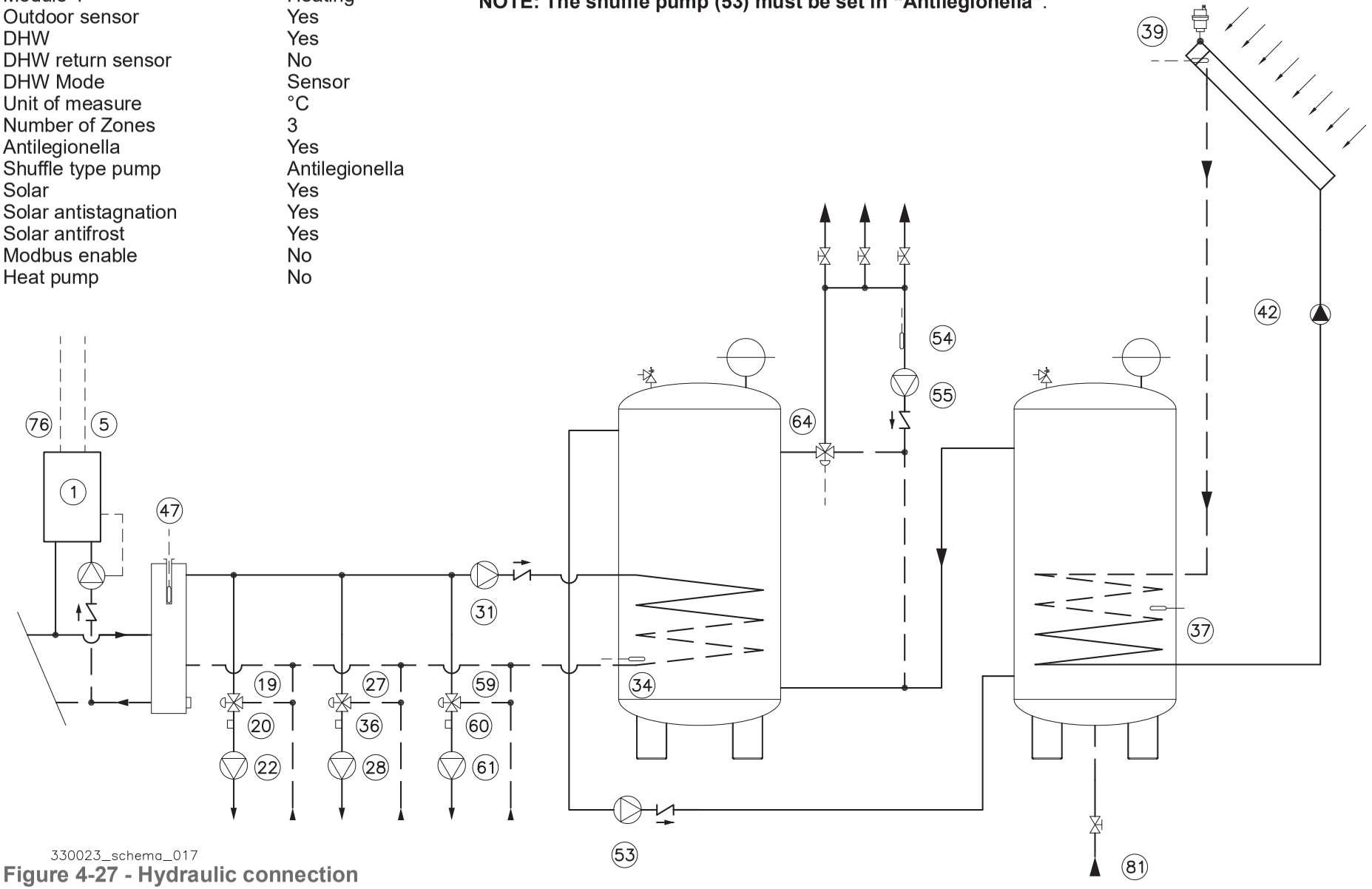
Settings:

Configuration > System >

Number of Modules	1
Module 1	Heating
Outdoor sensor	Yes
DHW	Yes
DHW return sensor	No
DHW Mode	Sensor
Unit of measure	°C
Number of Zones	3
Antilegionella	Yes
Shuffle type pump	Antilegionella
Solar	Yes
Solar antistagnation	Yes
Solar antifrost	Yes
Modbus enable	No
Heat pump	No

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 3> Zone type = Mix

NOTE: The shuffle pump (53) must be set in "Antilegionella".



330023_schema_017

Figure 4-27 - Hydraulic connection

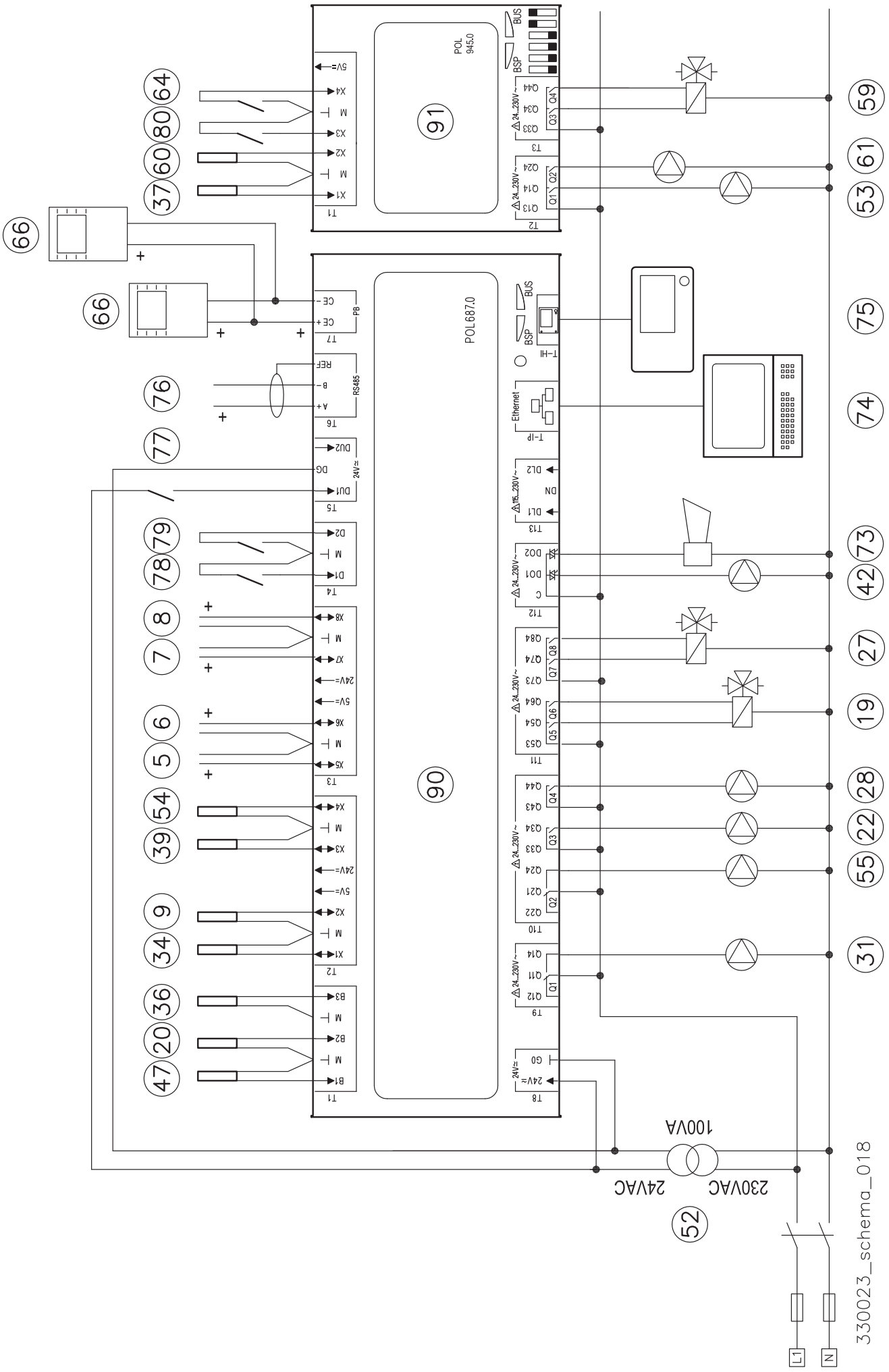


Figure 4-28 - Electrical connection

4.22.9 - 3 heating zones, DHW, DHW return, 2 tanks

Settings:

Configuration > System >

Number of Modules	1
Module 1	Heating
Outdoor sensor	Yes
DHW	Yes
DHW return sensor	No
DHW Mode	Sensor
Number of Zones	3
Antilegionella	Yes
Shuffle type pump	Tank Load
Solar	No
Modbus enable	No
PHeat pump	No

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 3> Zone type = Mix

NOTE: The shuffle pump (53) must be set in “Tank Load”.

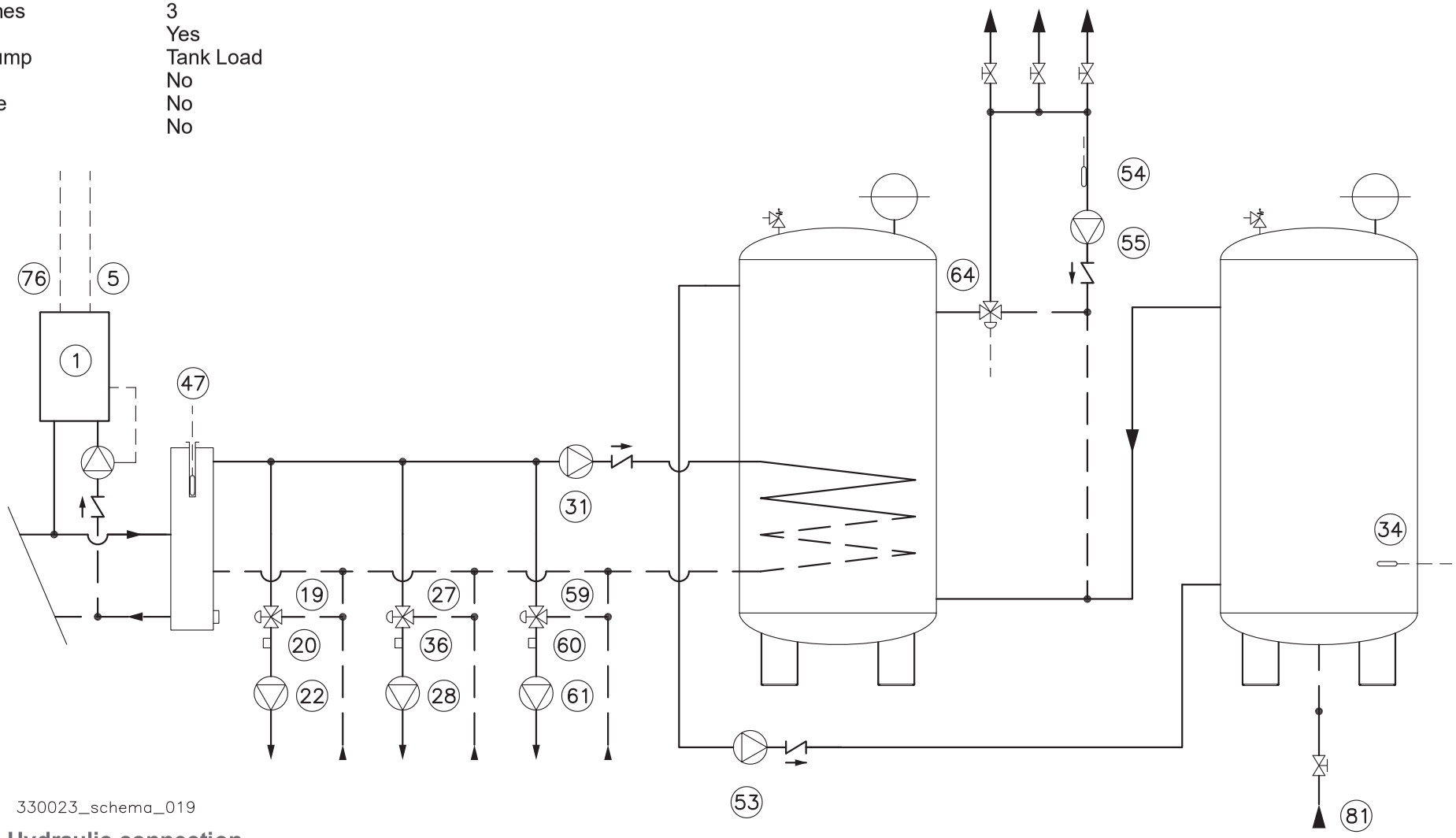


Figure 4-29 - Hydraulic connection

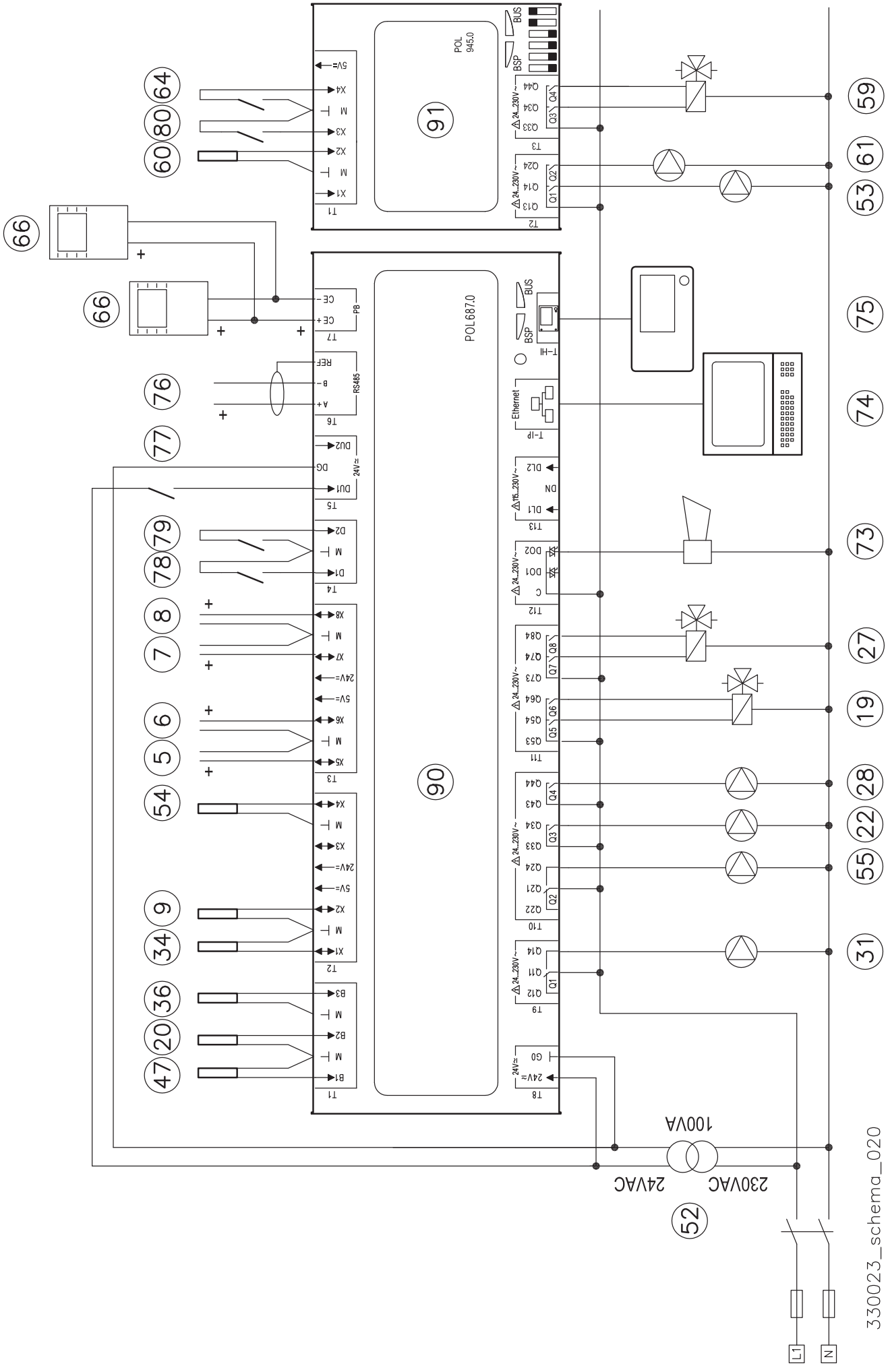


Figure 4-30 - Electrical connection

4.22.10 - 3 heating zones, DHW produced by AGUADENS-T, DHW return, solar, antilegionella shuffle pump and 3 modules dedicated to heating

Settings:

Configuration > System >

Number of Modules	4
Module 1	Heating
Module 2	Heating
Module 3	Heating
Module 4	DHW
Outdoor sensor	Yes
DHW	Yes
DHW return sensor	Yes
DHW Mode	Sensor
Unit of measure	°C
Number of Zones	3
Antilegionella	Yes
Shuffle type pump	Antilegionella
Solar	Yes
Solar Atistagnation	Yes
Solar Antifrost	Yes
Modbus enable	No
Heat pump	No

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 3> Zone type = Mix

Pay attention to Relè R1 (94) to stop AGUADENS-T when the storage tank charging is finished.

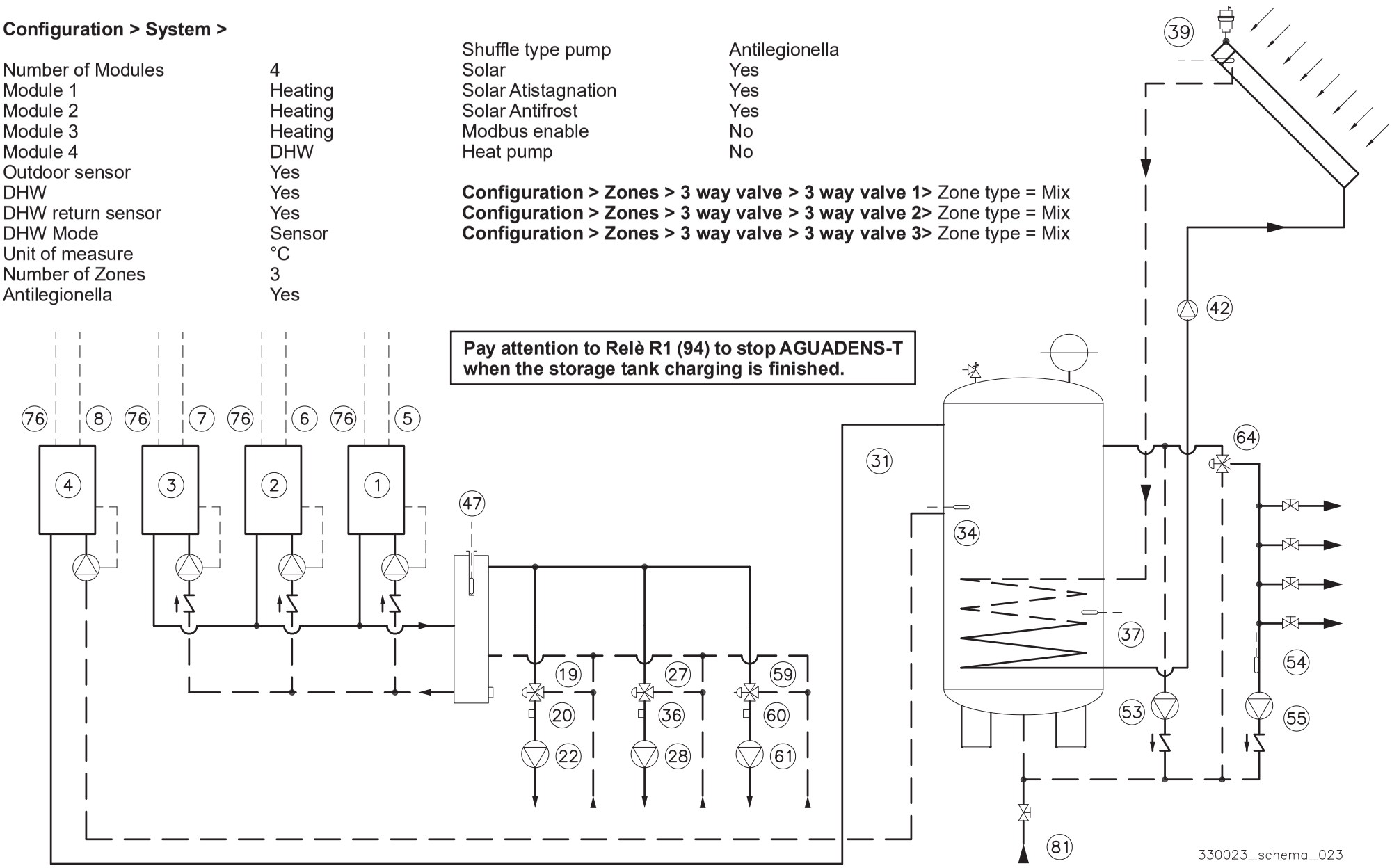


Figure 4-31 - Hydraulic connection

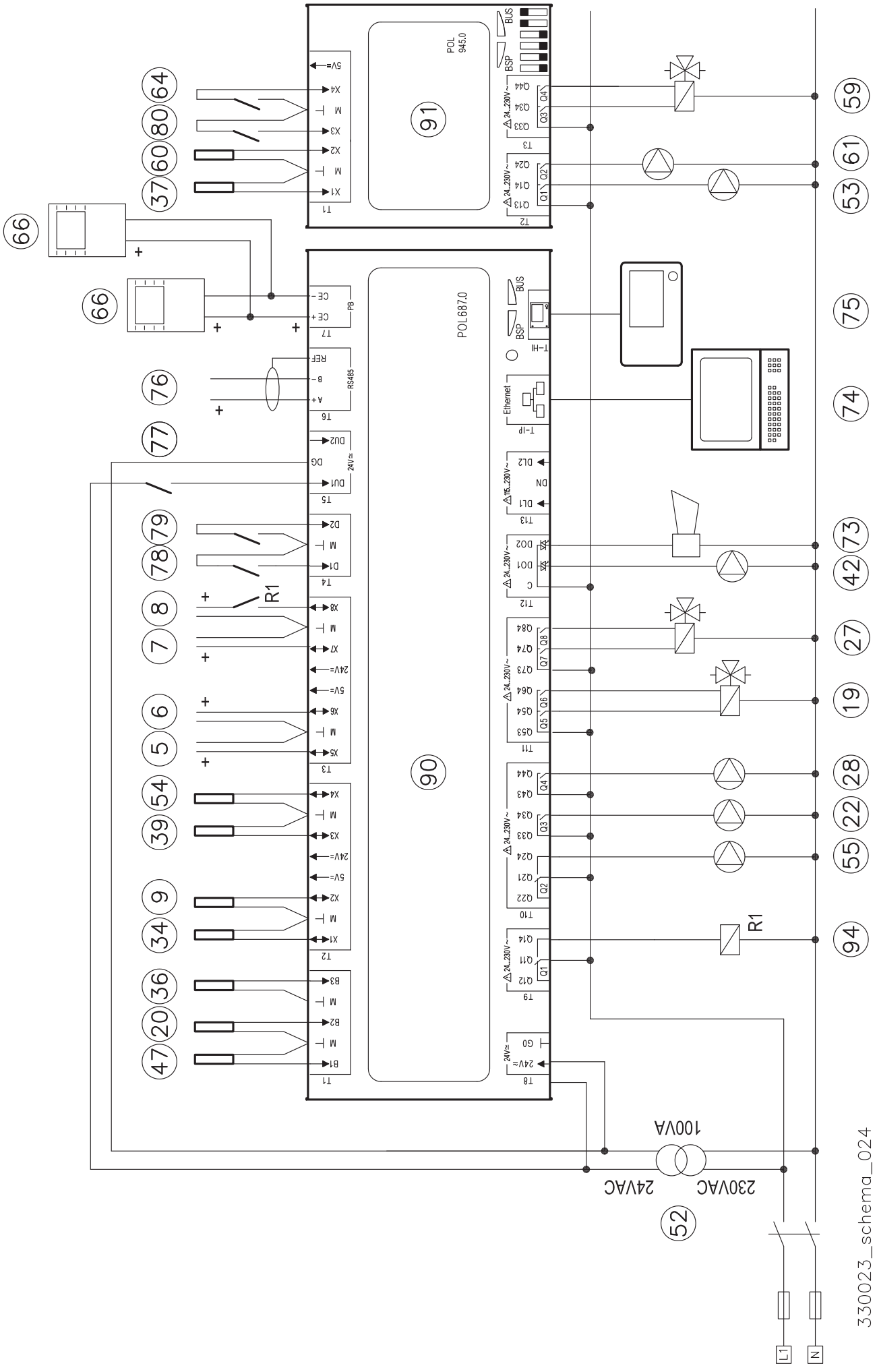


Figure 4-32 - Electrical connection

4.22.11 - 1 heating zones, DHW, DHW return, solar, 2 tanks (1 for solar and 1 for boiler) and solar transfer function

Settings:

Configuration > System >

Number of Modules	1
Module 1	Heating
Outdoor sensor	No
DHW	Yes
DHW return sensor	Yes
DHW Mode	Sensor
Unit of measure	°C
Number of Zones	1
Antilegionella	Yes
Shuffle type pump	Antilegionella
Solar	Yes
Solar Atistagnation	Yes
Solar Antifrost	Yes
Modbus enable	No
Heat pump	No

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix

NOTE: The mixing pump (53) must be set as “Anti-legionella”.
NOTE: The mixing pump (53) also acts as a transfer by means of relay R1.

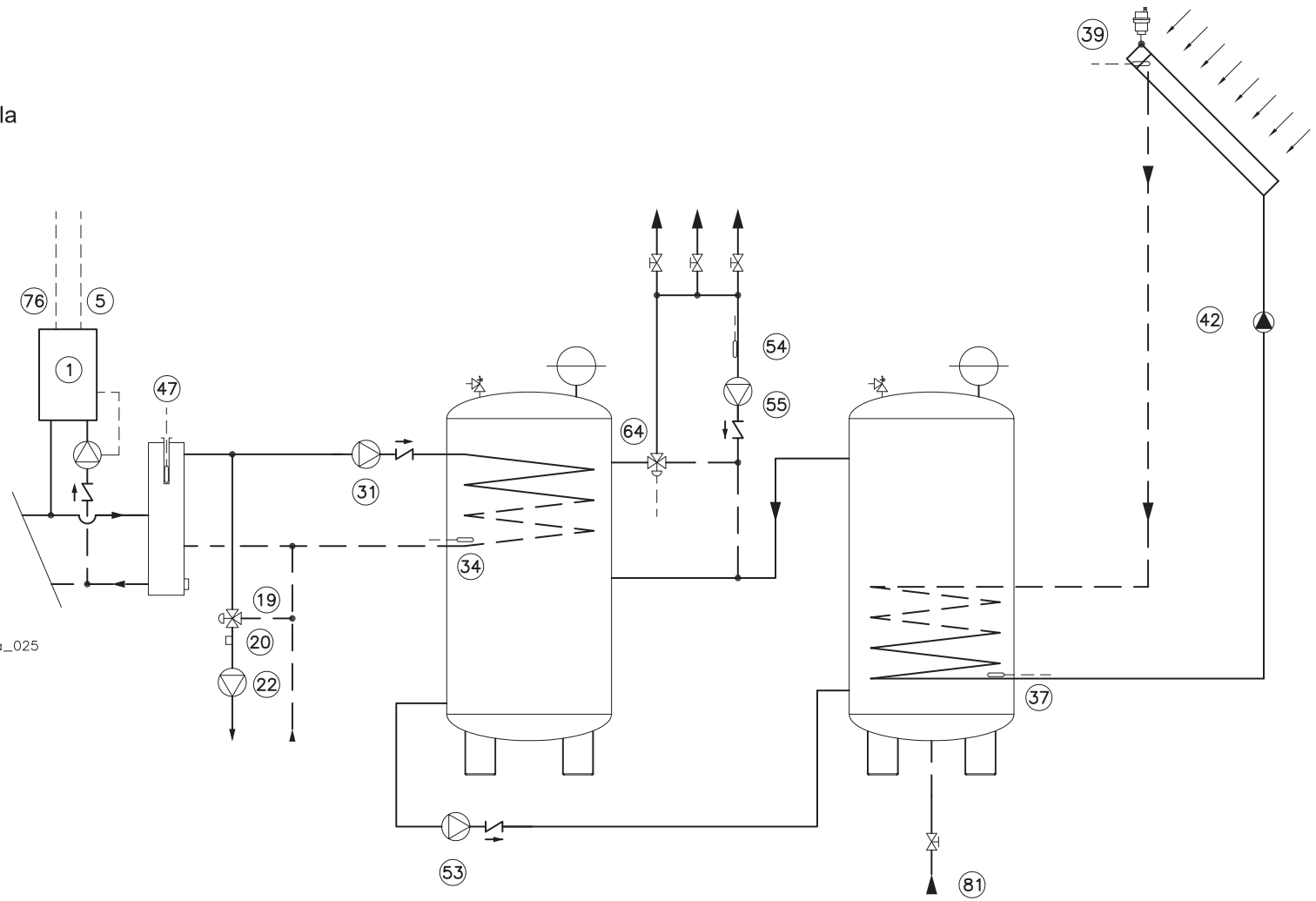


Figure 4-33 - Hydraulic connection

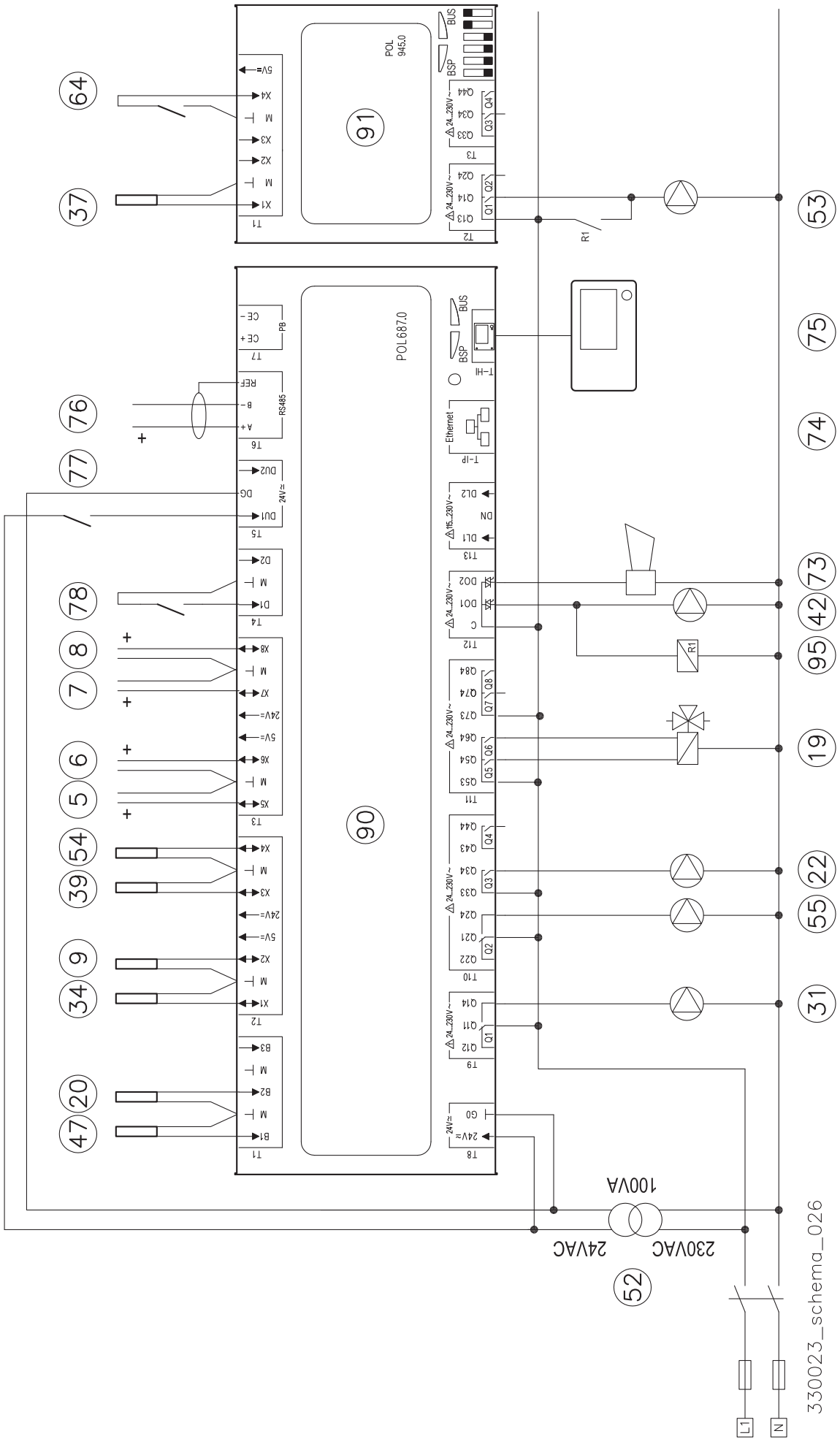


Figure 4-34 - Electrical connection

4.22.12 - 1 heating circuit with heat pump integration that support heating-DHW-cooling, DHW, DHW from Pdc, DHW return, solar, 2 tanks (1 solar and 1 boiler) and solar transfer function

Settings:

Configuration > System >

Number of Modules	1
Module 1	Heating
Outdoor sensor	Yes
DHW	Yes
DHW return sensor	Yes
DHW Mode	Sensor
Unit of measure	°C
Number of Zones	1
Antilegionella	Yes
Shuffle type pump	Antilegionella
Solar	Yes
Solar Atistagnation	Yes
Solar Antifrost	Yes
Modbus enable	No
Heat pump	Yes

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix

NOTE: The mixing pump (53) must be set as Anti-legionella.
NOTE: The mixing pump also acts as solar transfer by means of relay R1 and as transfer Pdc by means of relay R2.
NOTE: DHW through the Pdc must be managed independently by the same and not through Tutorbit.

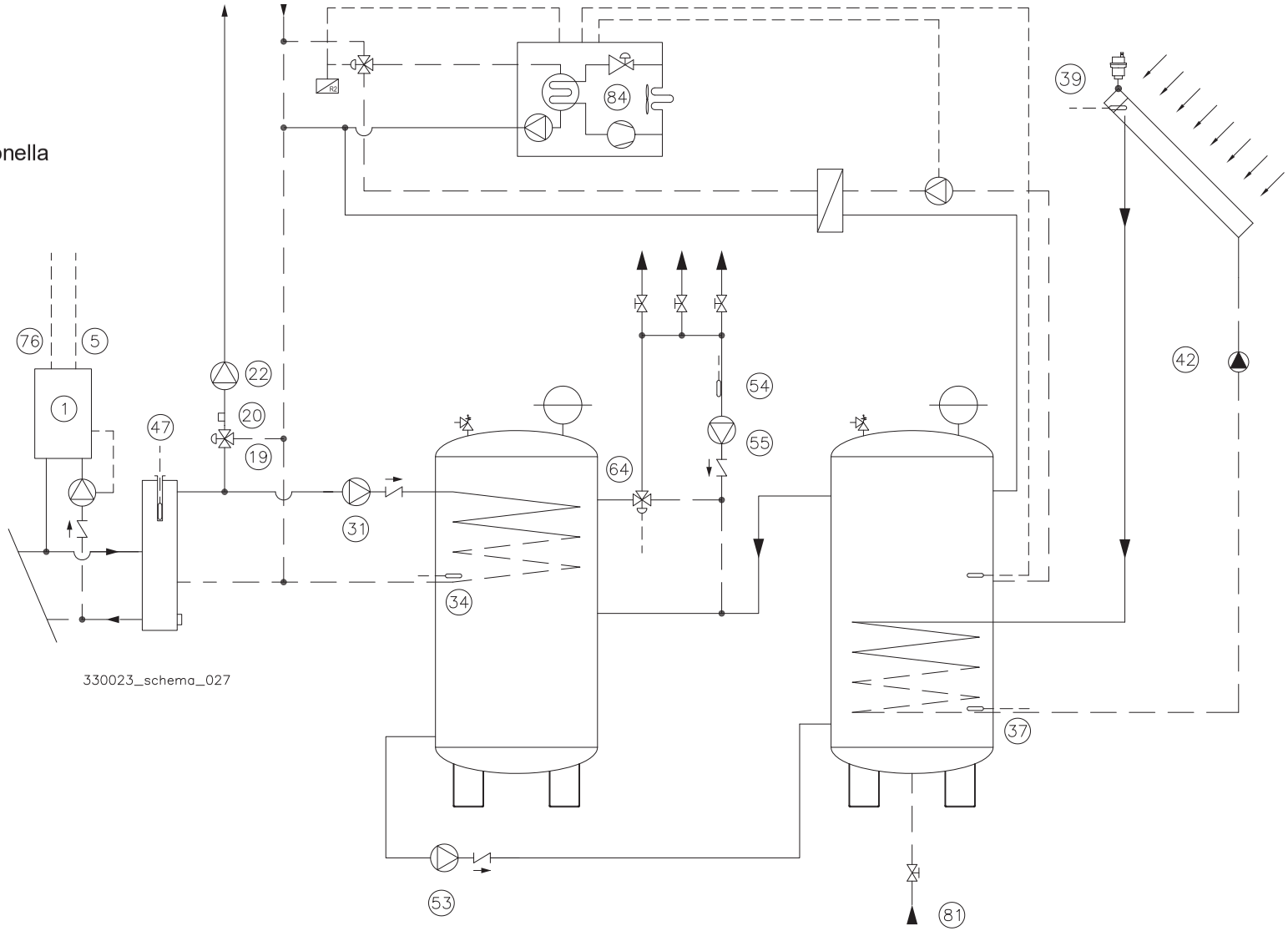


Figure 4-35 - Hydraulic connection

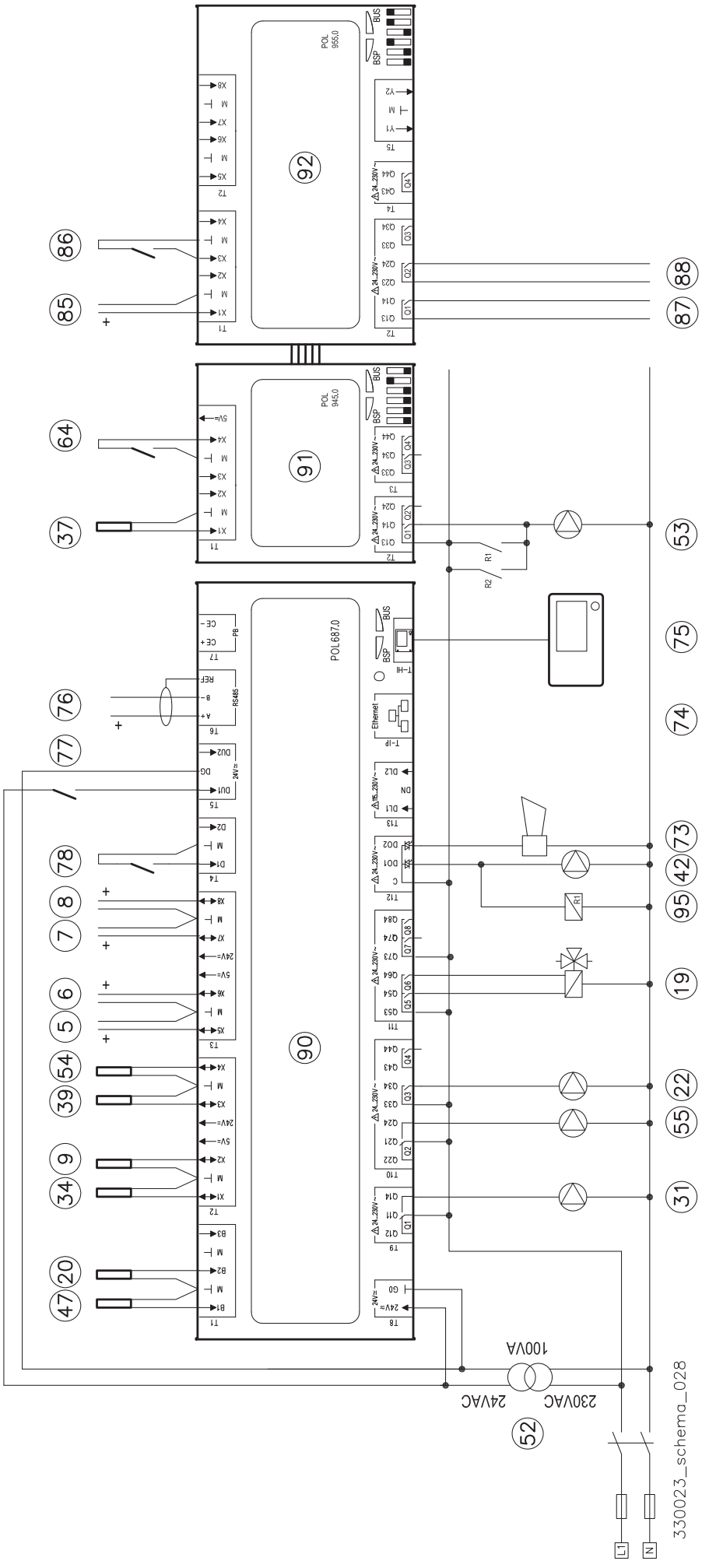


Figure 4-36 - Electrical connection

4.22.13 - 1 heating and DHW circuit with heat pump integration

Settings:

Configuration > System >

Number of Modules =	1
Module 1 =	Heating
Outdoor sensor =	Yes
DHW =	Yes
DHW return sensor =	No
DHW Mode =	Sensor
Unit of measure =	°C
Number of Zones =	1
Antilegionella =	Yes
Shuffle type pump =	Absent
Solar =	No
Modbus enable =	No
Heat pump =	Yes

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix

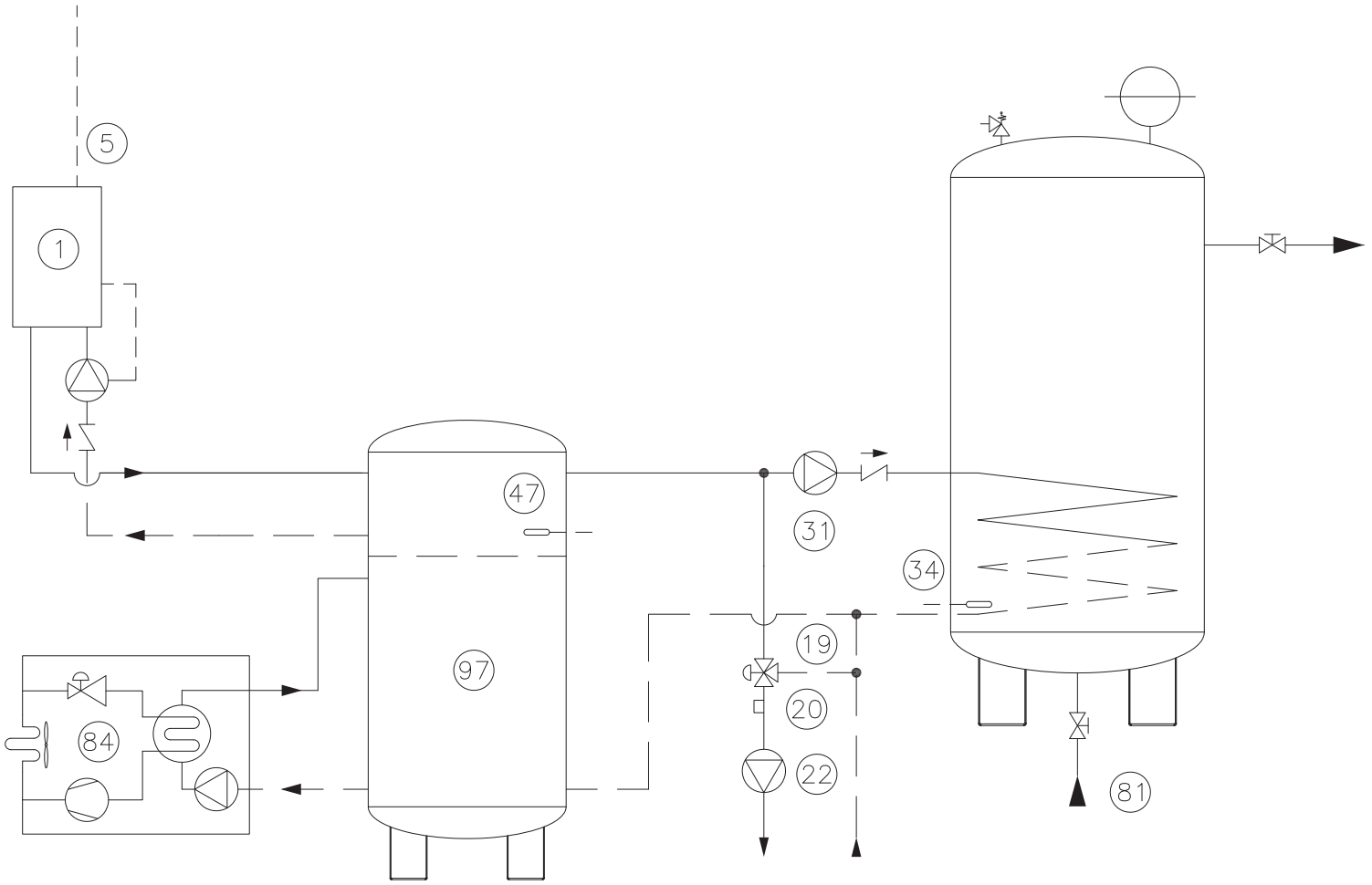


Figure 4-37 - Hydraulic connection

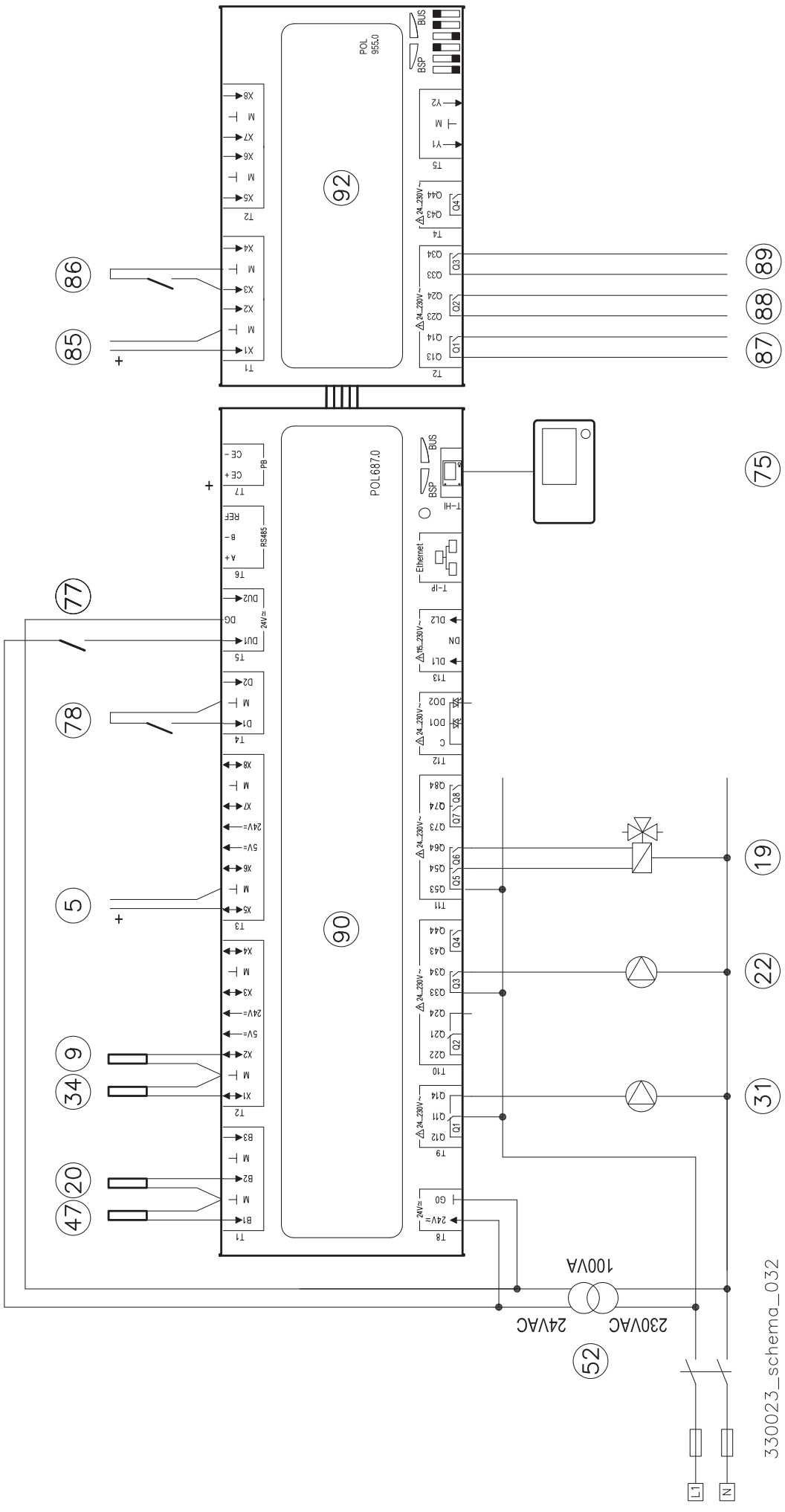


Figure 4-38 - Electrical connection

4.22.14 - 3 heating and DHW circuit with heat pump integration, DHW return, solar and antilegionella shuffle pump

Settings:

Configuration > System >

Number of Modules =	1
Module 1 =	Heating
Outdoor sensor =	Yes
DHW =	Yes
DHW return sensor =	No
DHW Mode =	Sensor
Unit of measure =	°C
Number of Zones =	3
Antilegionella =	Yes
Shuffle type pump =	Tank Load
Solar =	No
Modbus enable =	No
Heat pump =	Yes

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 3> Zone type = Mix

NOTE: The mixing pump (53) must be set as Anti-legionella.

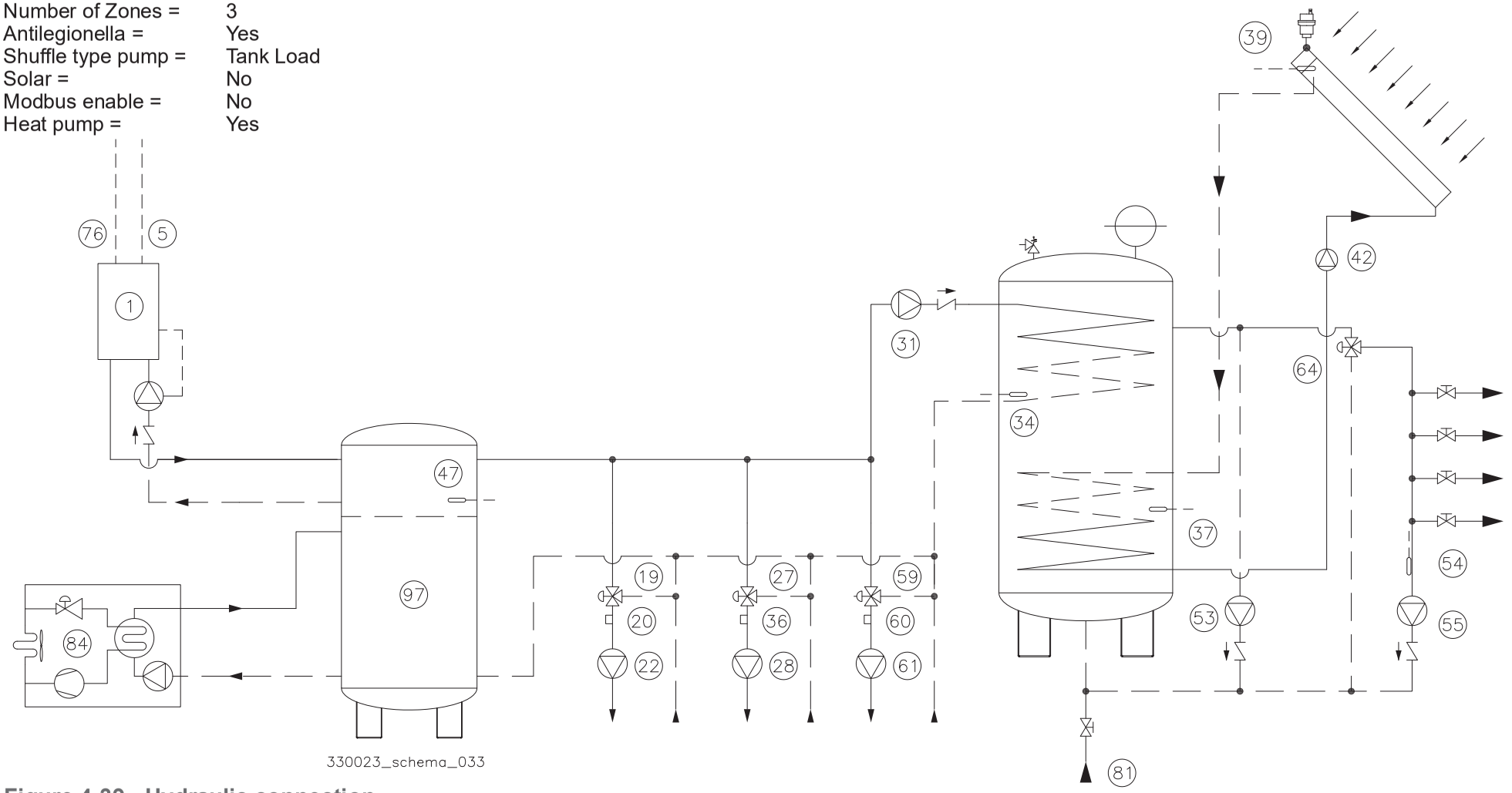


Figure 4-39 - Hydraulic connection

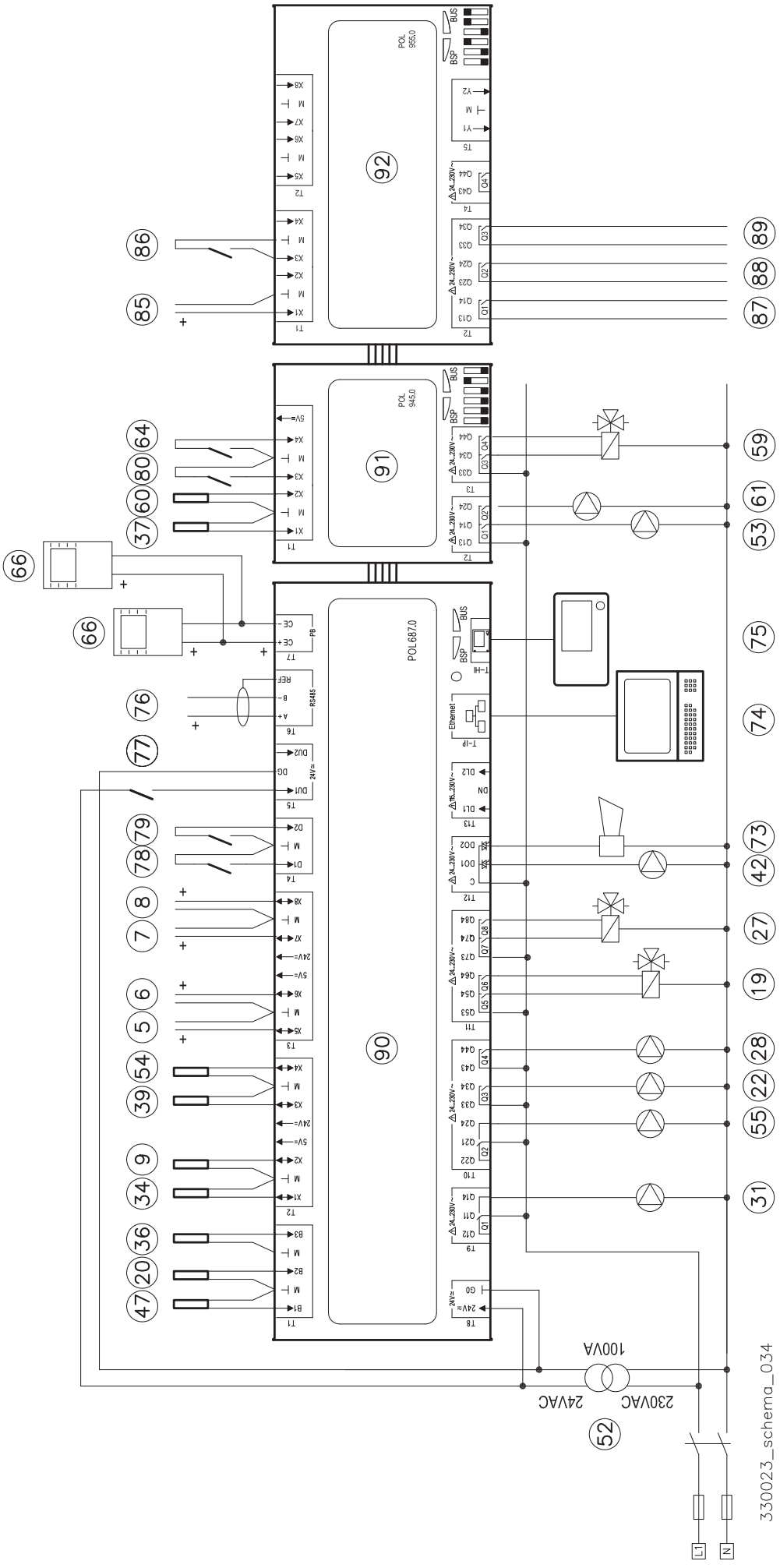


Figure 4-40 - Electrical connection

4.22.15 - 2 heating and DHW circuit with heat pump integration

Settings:

Configuration > System >

Number of Modules =	1
Module 1 =	Heating
Outdoor sensor =	Yes
DHW =	No
Unit of measure =	°C
Number of Zones =	2
Solar =	No
Modbus enable =	Yes
Heat pump =	Yes

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone type = Mix

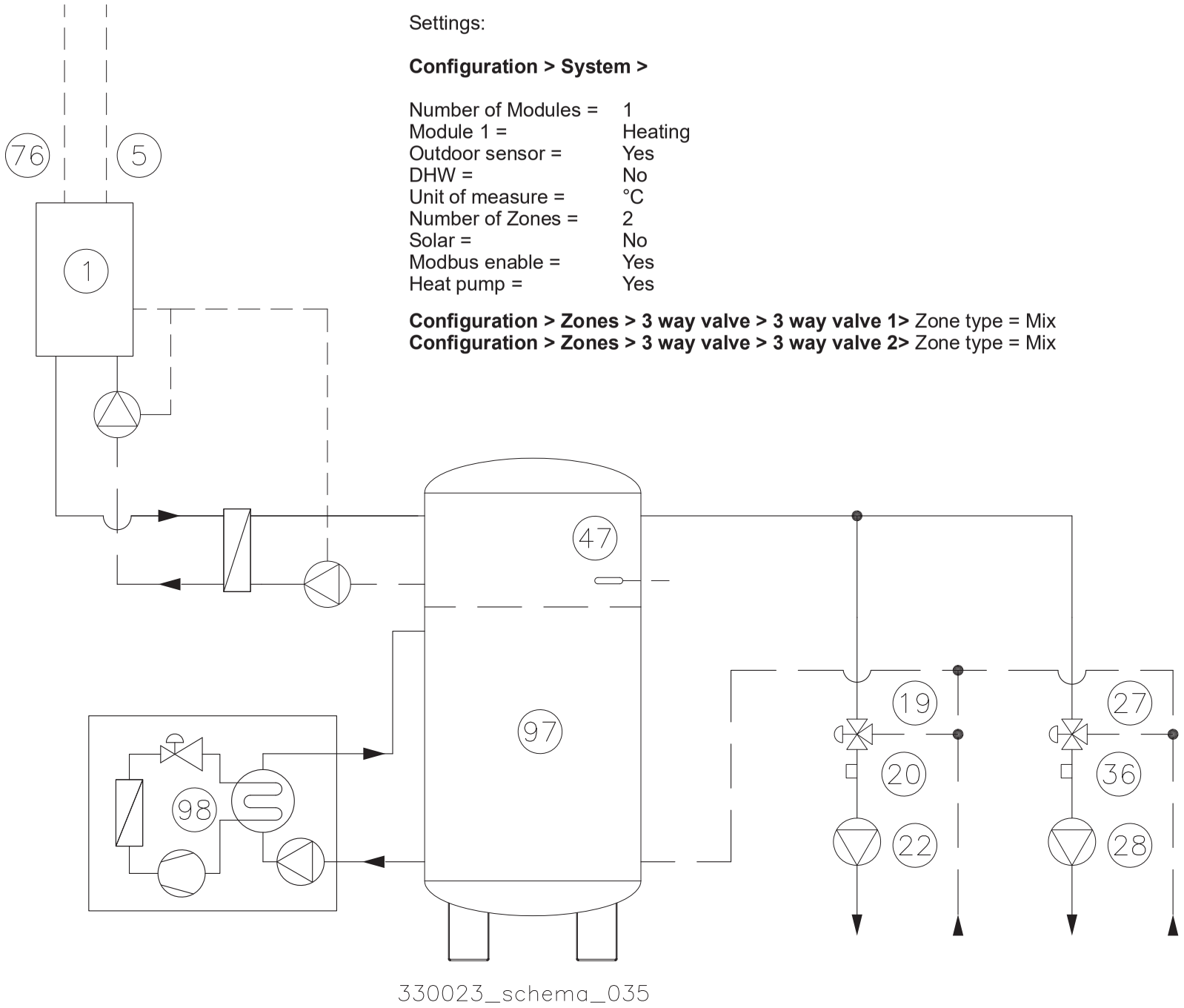


Figure 4-41 - Hydraulic connection

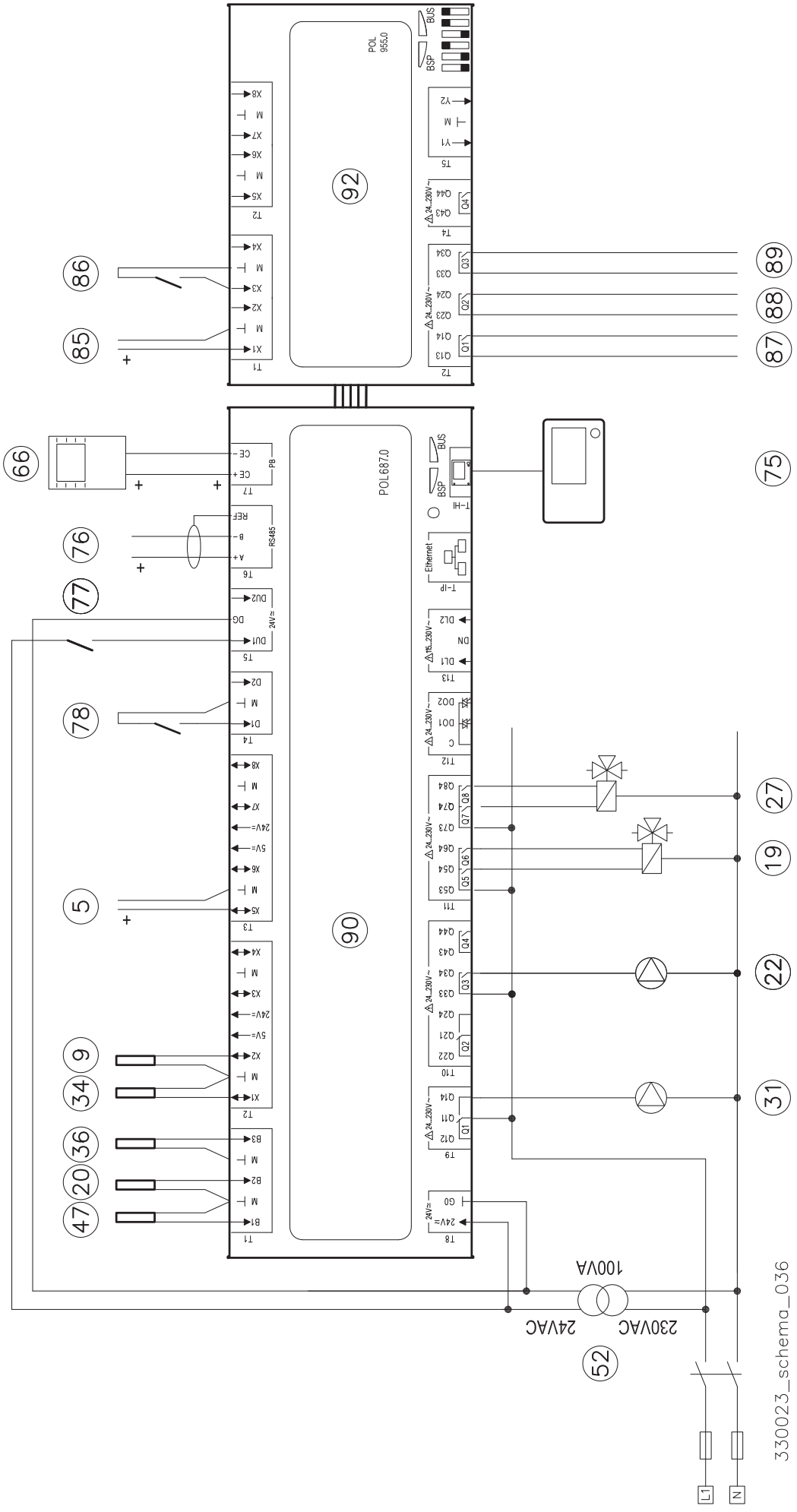


Figure 4-42 - Electrical connection

4.22.16 - 3 heating/cooling circuit and DHW circuit with heat pump integration,DHW, DHW return, solar and antilegionella shuffle pump

Settings:

Configuration > System >

Number of Modules =	2
Module 1 =	Heating
Module 2 =	DHW
Outdoor sensor =	Yes
DHW =	Yes
DHW return sensor =	Yes
DHW Mode =	Sensor
Unit of measure =	°C
Number of Zones =	3
Antilegionella =	Yes
Shuffle type pump =	Antilegionella
Solar =	Yes
Solar Atistagnation =	Yes
Solar Antifrost =	Yes
Modbus enable =	Yes
Heat pump =	Yes

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 3> Zone type = Mix

NOTE: The mixing pump (53) must be set as Anti-legionella.
NOTE: The mixing pump also acts as solar transfer by means of relay R1 and as transfer Pdc by means of relay R2.
NOTE: DHW through the Pdc must be managed independently by the same and not through Tutorbit.

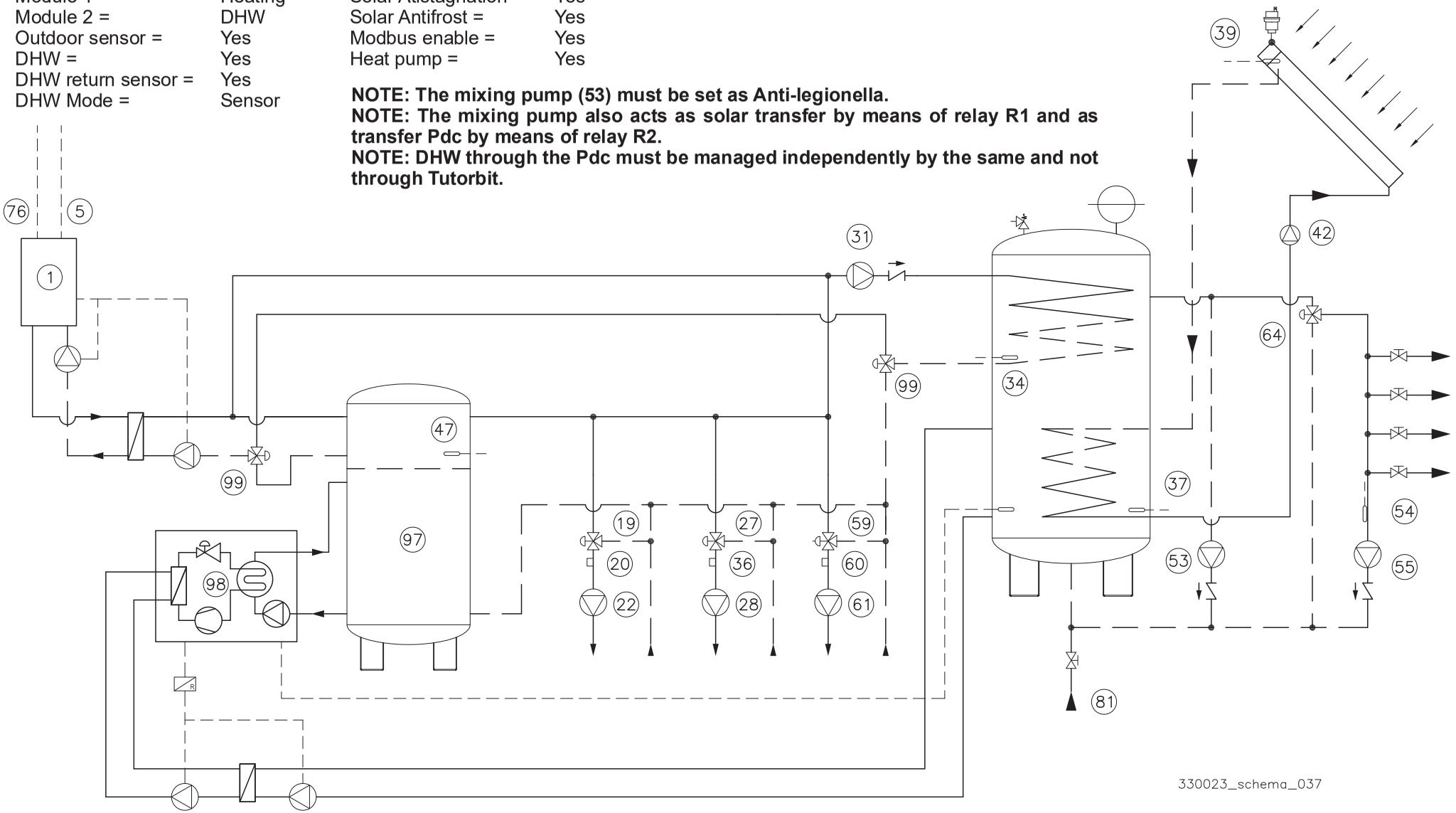


Figure 4-43 - Hydraulic connection

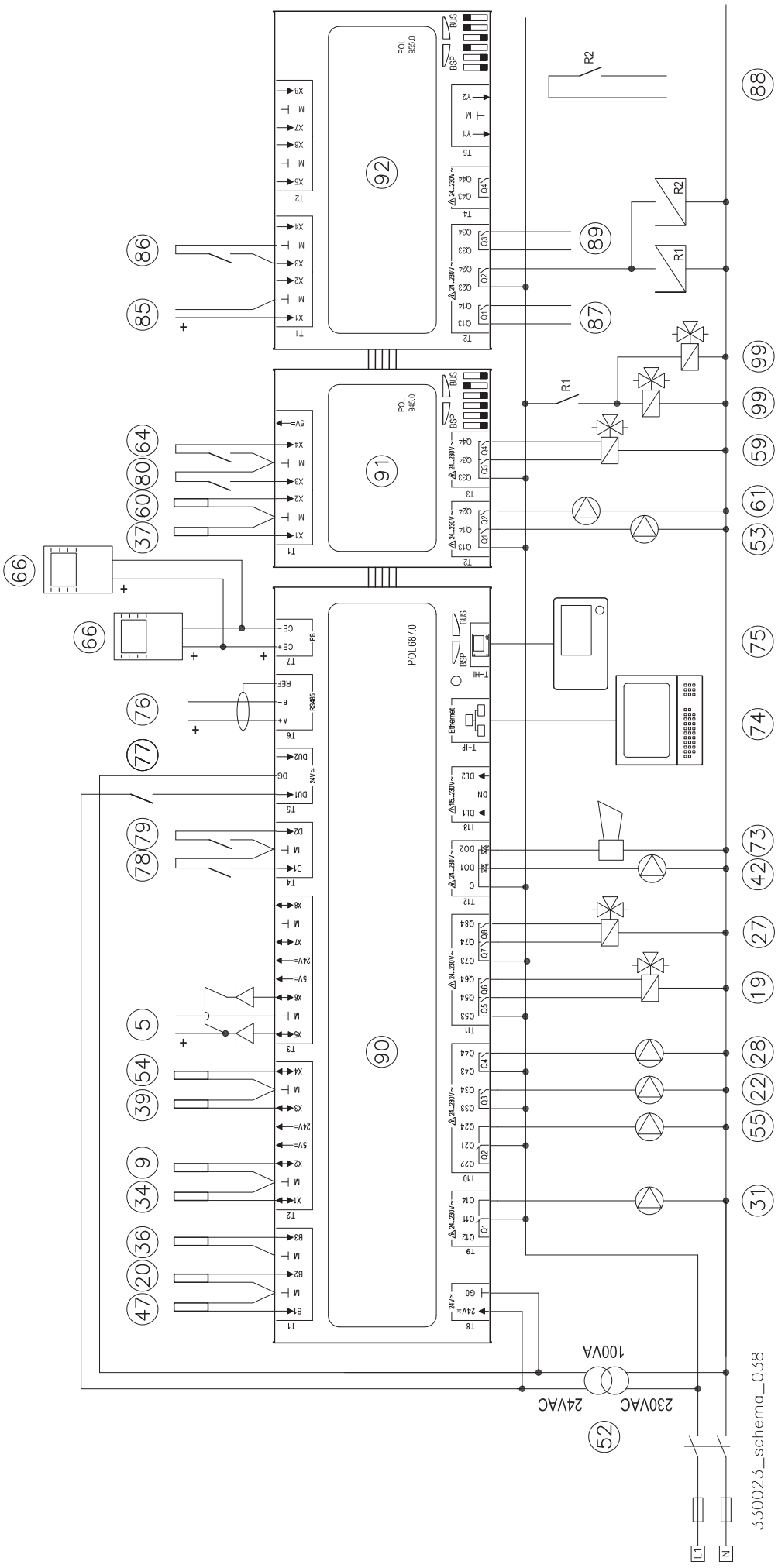


Figure 4-44 - Electrical connection

4.22.17 - 3 heating/cooling circuit and DHW circuit with 4 tubes heat pump integration,DHW, DHW return and antilegionella shuffle pump

Settings:

Configuration > System >

Number of Modules =	2
Module 1 =	Heating
Module 2 =	DHW
Outdoor sensor =	Yes
DHW =	Yes
DHW return sensor =	Yes
DHW Mode =	Sensor
Unit of measure =	°C
Number of Zones =	3
Antilegionella =	Yes
Shuffle type pump =	Antilegionella
Solar =	No
Modbus enable =	Yes
Heat pump =	Yes

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 2> Zone type = Mix
Configuration > Zones > 3 way valve > 3 way valve 3> Zone type = Mix

NOTE: The mixing pump (53) must be set as Anti-legionella.
NOTE: DHW through the Pdc must be managed independently by the same and not through Tutorbit.

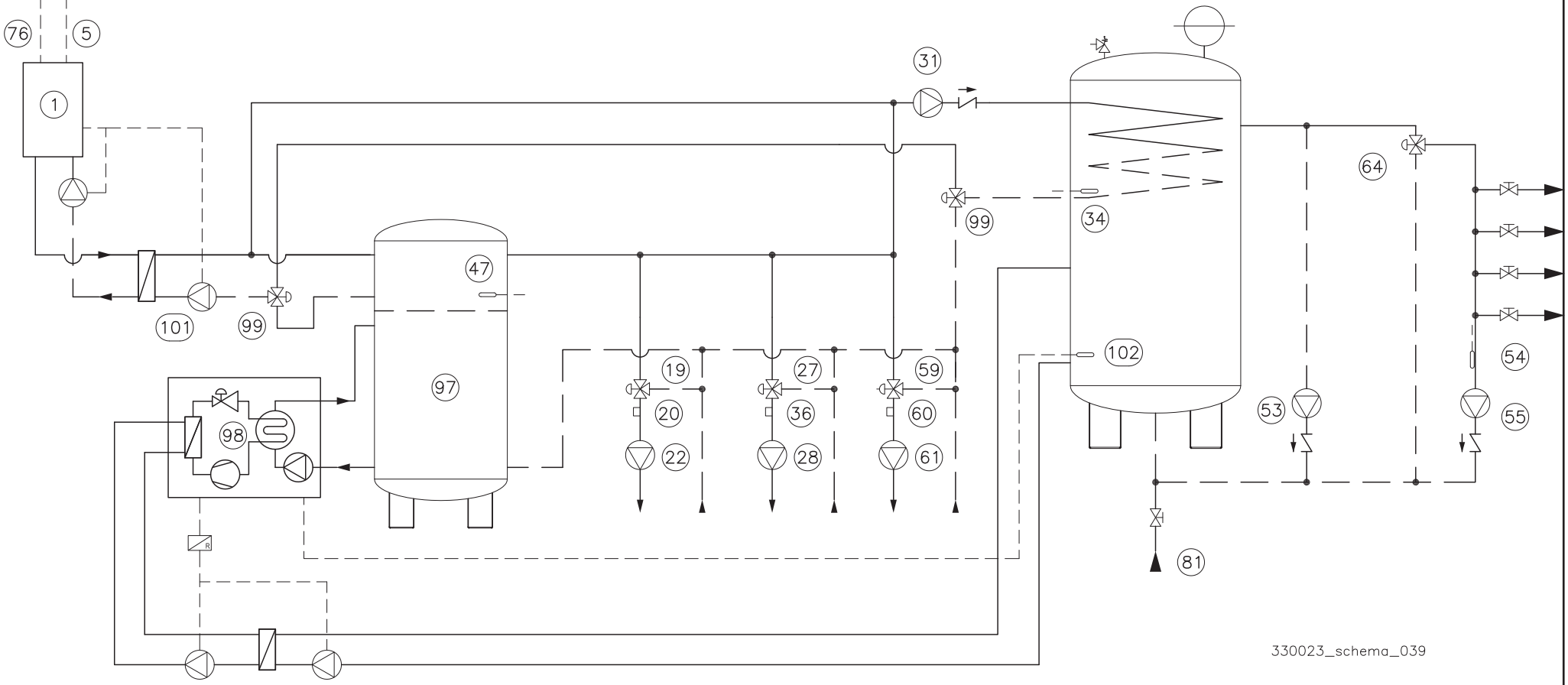


Figure 4-45 - Hydraulic connection

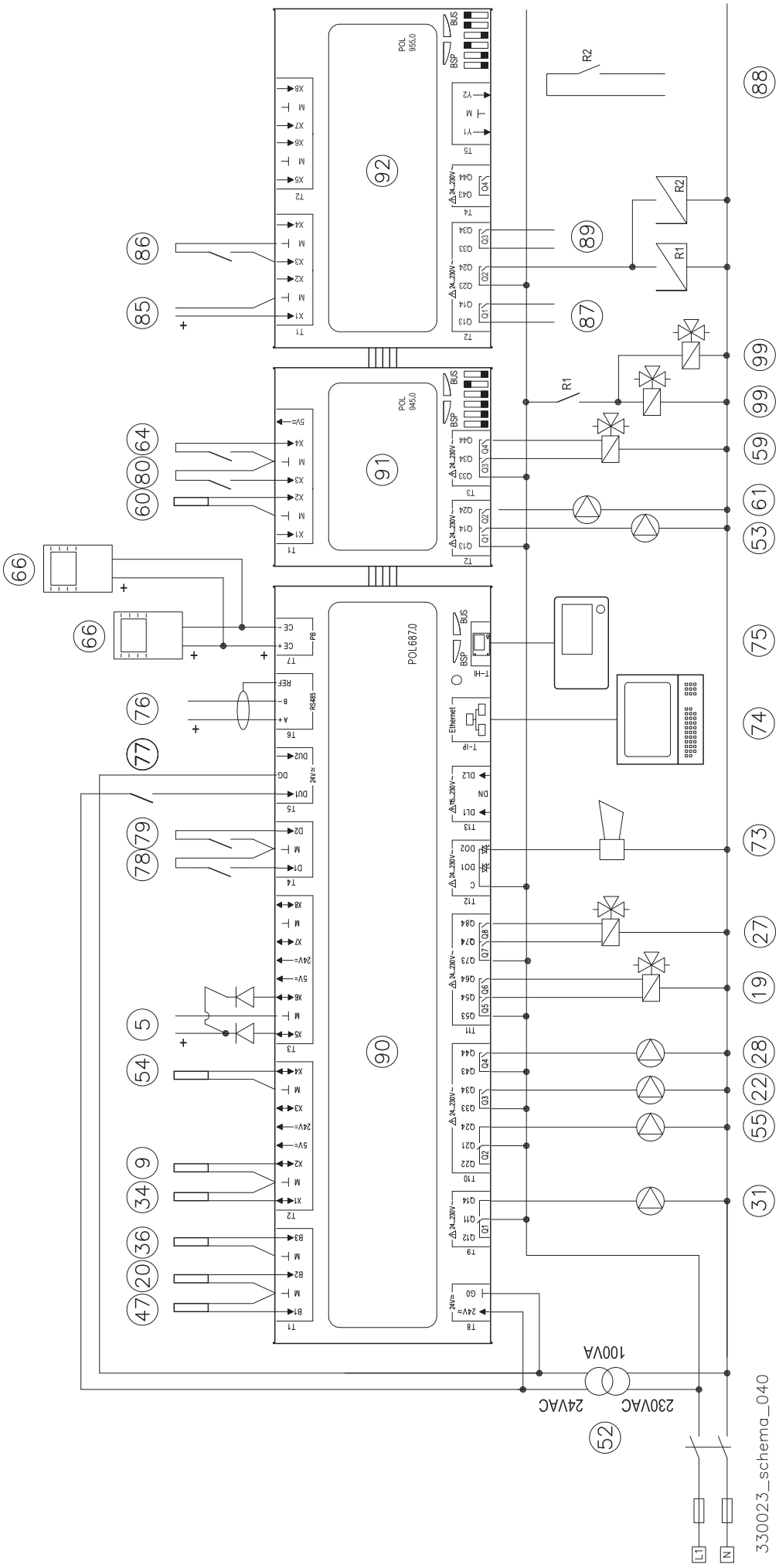


Figure 4-46 - Electrical connection

EMPTY PAGE

4.23 - Installation diagrams of cascade sequencer with water heater

Tutorbit can be used to create an innumerable type of systems. The most common types with the settings and the relative wiring diagram are shown below. The Legend, shown below, applies to all these diagrams.

LEGEND:
1 - Module 1
2 - Module 2
3 - Module 3
4 - Module 4
5 - 0-10 signal to Module 1
6 - 0-10 signal to Module 2
7 - 0-10 signal to Module 3
8 - 0-10 signal to Module 4
9 - Thermoregulator outdoor temperature sensor (Outdoor Temp.)
19 - 3 way valve for heating zone 1 (Zone 1)
20 - Heating zone sensor 1 (T. Zone 1)
22 - Heating zone pump 1 (Zone 1 pump)
23 - Non-return valve
27 - 3 way valve for heating zone 2 (Zone 2)
28 - Heating zone pump 2 (Zone 2 pump)
31 - Tank load pump (Tank pump)
34 - Tank temperature sensor (DHW Tank sens)
36 - Heating zone sensor 2 (T. Zone 2)
37 - Temperature sensor for solar charge and shuffle control (Solar Tank sens)
39 - Solar panel temperature sensor (T. Solar)
42 - Solar zone pump (Solar pump)
47 - Water Heater Temperature (Water Heater T.)
52 - Trasformer 230Vac 24Vac
53 - Shuffle Pump
54 - DHW return sensor (DHW return)
55 - DHW return pump
59 - 3 way valve for heating zone 3 (Zone 3)
60 - Heating zone sensor 3 (T. Zone 3)
61 - Heating zone pump 3 (Zone 3 pump)
62 - Enable/disable DHW (Enab/Disab DHW)
63 - DHW thermostat (DHW thermostat)
64 - Recirculation anti-legionella forcing
65 - External 0-10Vdc input (use POL 955 expansion)
66 - Modulating room sensor QMX3, can be installed one for each heating circuit in the same KNX bus (parallel connection).
67 - Mixing valve for heating zone 4 (Zone 4)
68 - Heating temperature sensor zone 4 (T. Zone 4)
69 - Heating zone pump 4 (Zone 4 pump)
70 - 3 way valve for heating zone 5 (Zone 5)
71 - Heating temperature sensor zone 5 (T. Zone 5)
72 - Heating zone pump 5 (Zone 5 pump)
73 - Alarm (acoustic or luminous signal)
74 - Connection to PC / Internet (Cloud)
75 - Display connection
76 - Modbus connection
77 - Enable / Disable DHW
78 - RT Zone 1
79 - RT Zone 2
80 - RT Zone 3
81 - Cold water inlet
82 - RT Zone 4
83 - RT Zone 5
84 - Heat pump
85 - 0-10 V out heat pump control
86 - Heat pump alarm
87 - ON / OFF or cool demand heat pump
88 - Heat / Cool or heat demand heat pump
89 - DHW demand or double heat pump setpoint
90 - Thermoregulator TUTORBIT
91 - Expansion POL 945
92 - Expansion POL 955
93 - DHW / heating diverter valve
94 - Support relay to stop AGUADENS - T water heater
95 - Support relay for solar transfer pump
96 - Inertial puffer

4.23.1 - Water Heater with tank without coil, DHW and a DHW return zone

Settings:

Configuration > System >

Number of Modules	4
Module 1	Heating
Module 2	Heating
Module 3	Heating
Module 4	Heating
Outdoor sensor	No
DHW	Yes
DHW return sensor	Yes
DHW Mode	Sensor
Unit of measure	°C
Number of Zones	1
Antilegionella	Yes
Shuffle type pump	Absent
Solar	No
Modbus enable	No
Heat pump	No

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type No Mix
Parameters > DHW > Adjustement > Temp offset up = 0

Note: The sensor "47" has no function but must be connected.

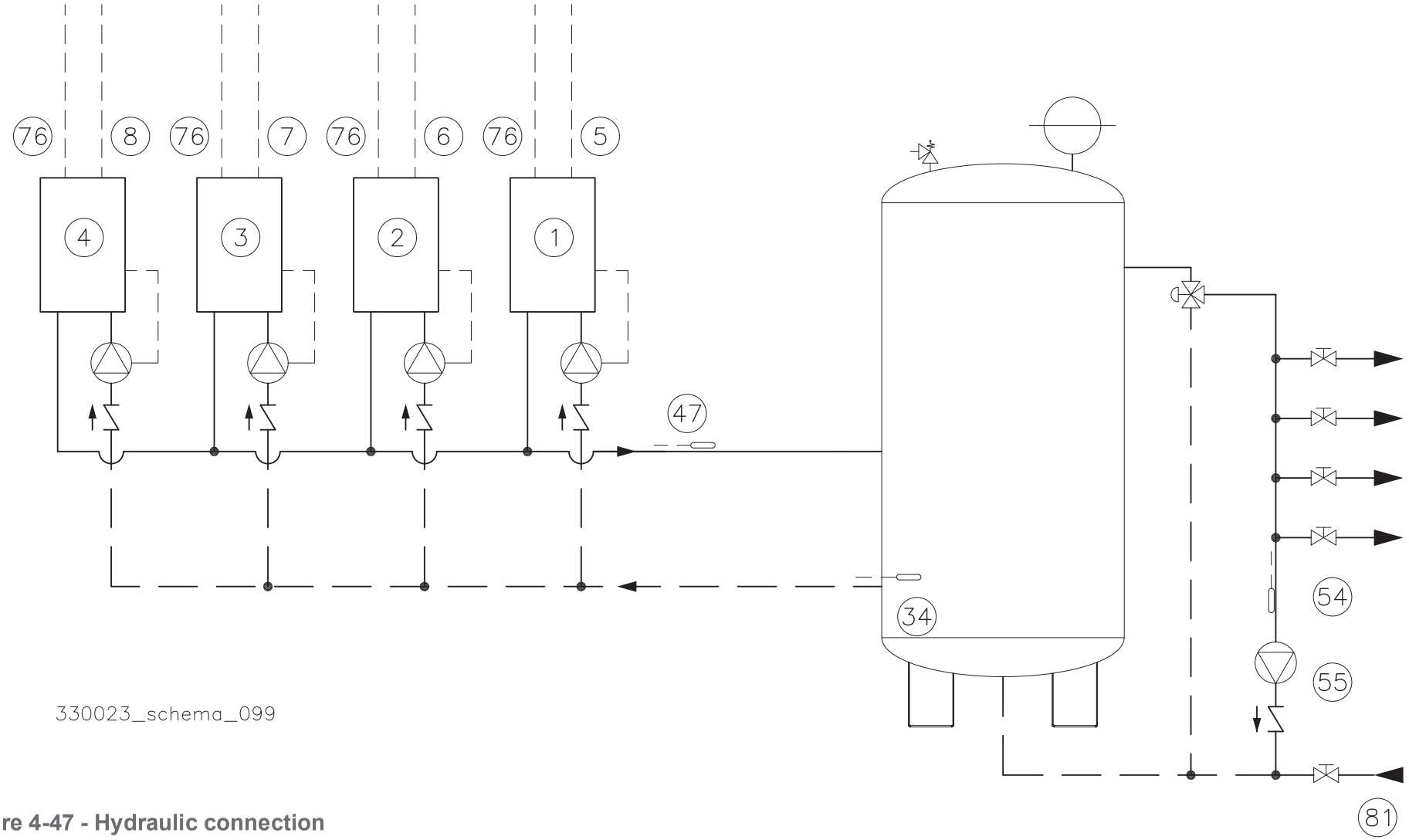


Figure 4-47 - Hydraulic connection

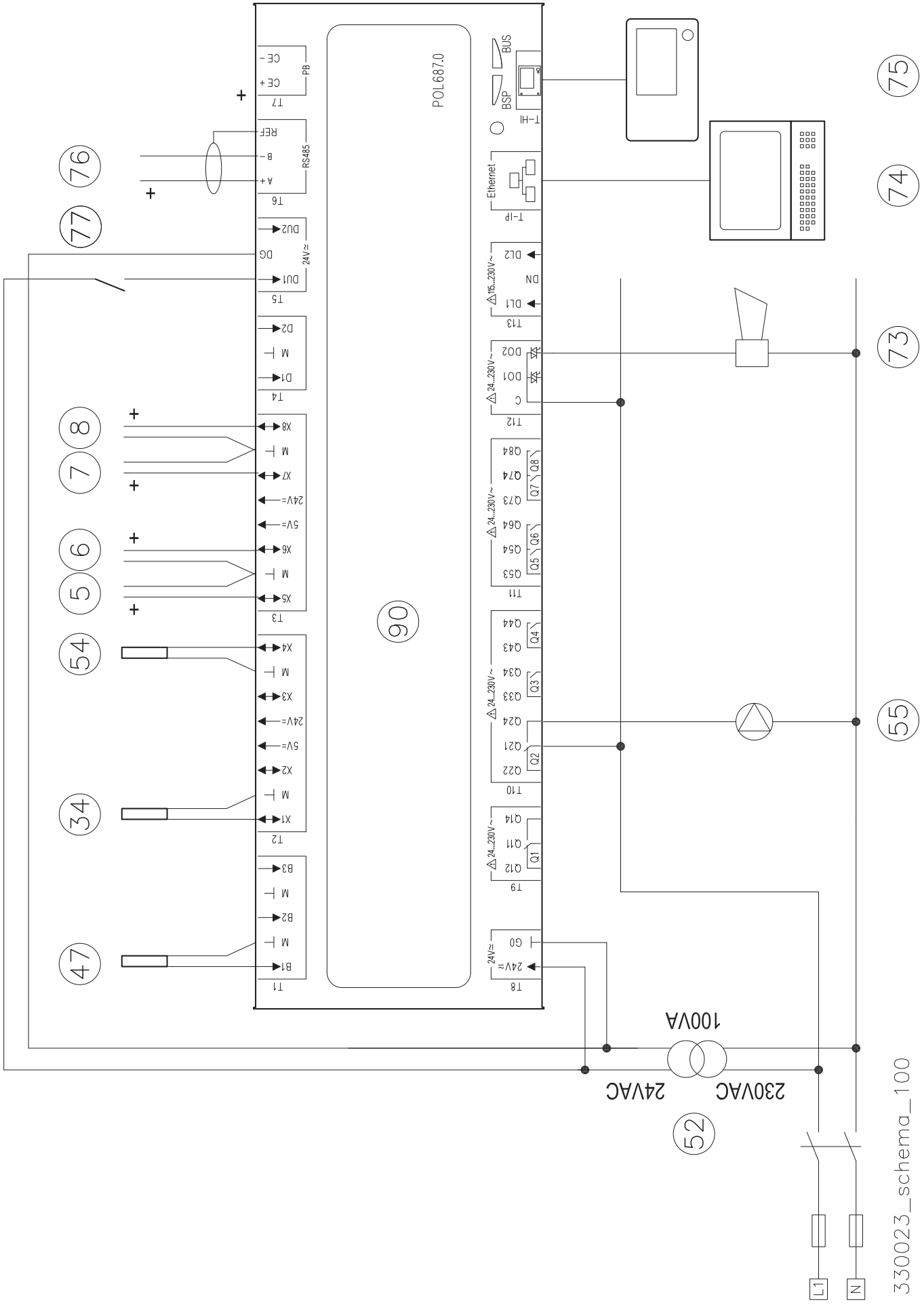


Figure 4-48 - Electrical connection

4.23.2 - Water Heater with tank without coil, DHW, DHW return and solar

Settings:

Configuration > System >

Number of Modules	4
Module 1	Heating
Module 2	Heating
Module 3	Heating
Module 4	Heating
Outdoor sensor	No
DHW	Yes
DHW return sensor	Yes
DHW Mode	Sensor
Unit of measure	°C

Number of Zones	1
Antilegionella	Yes
Shuffle type pump	Antilegionella
Solar	Yes
Solar Atistagnation	Yes
Solar Antifrost	Yes
Modbus enable	No
Heat pump	No

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type No Mix
Parameters > DHW > Adjustement > Temp offset up = 0

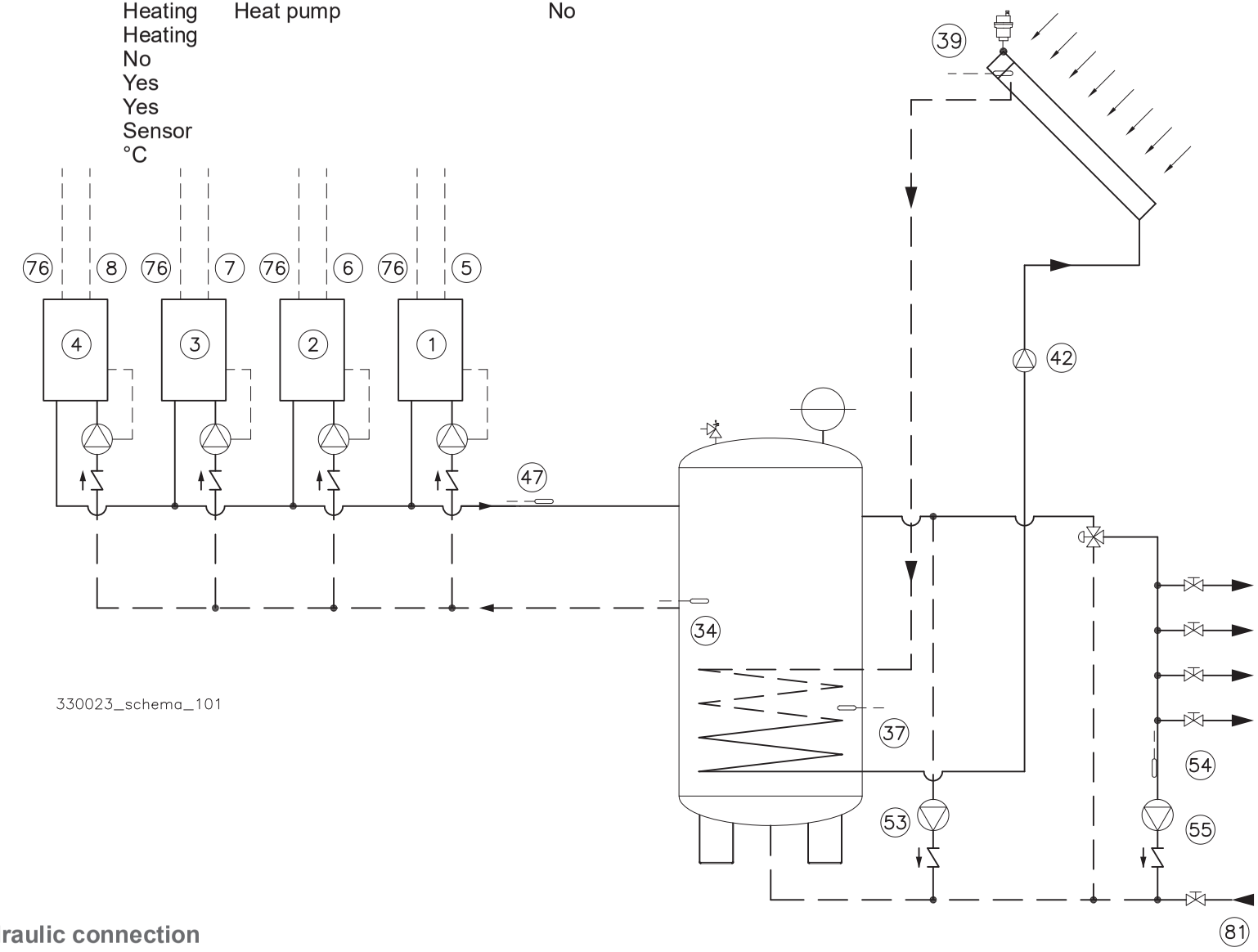


Figure 4-49 - Hydraulic connection

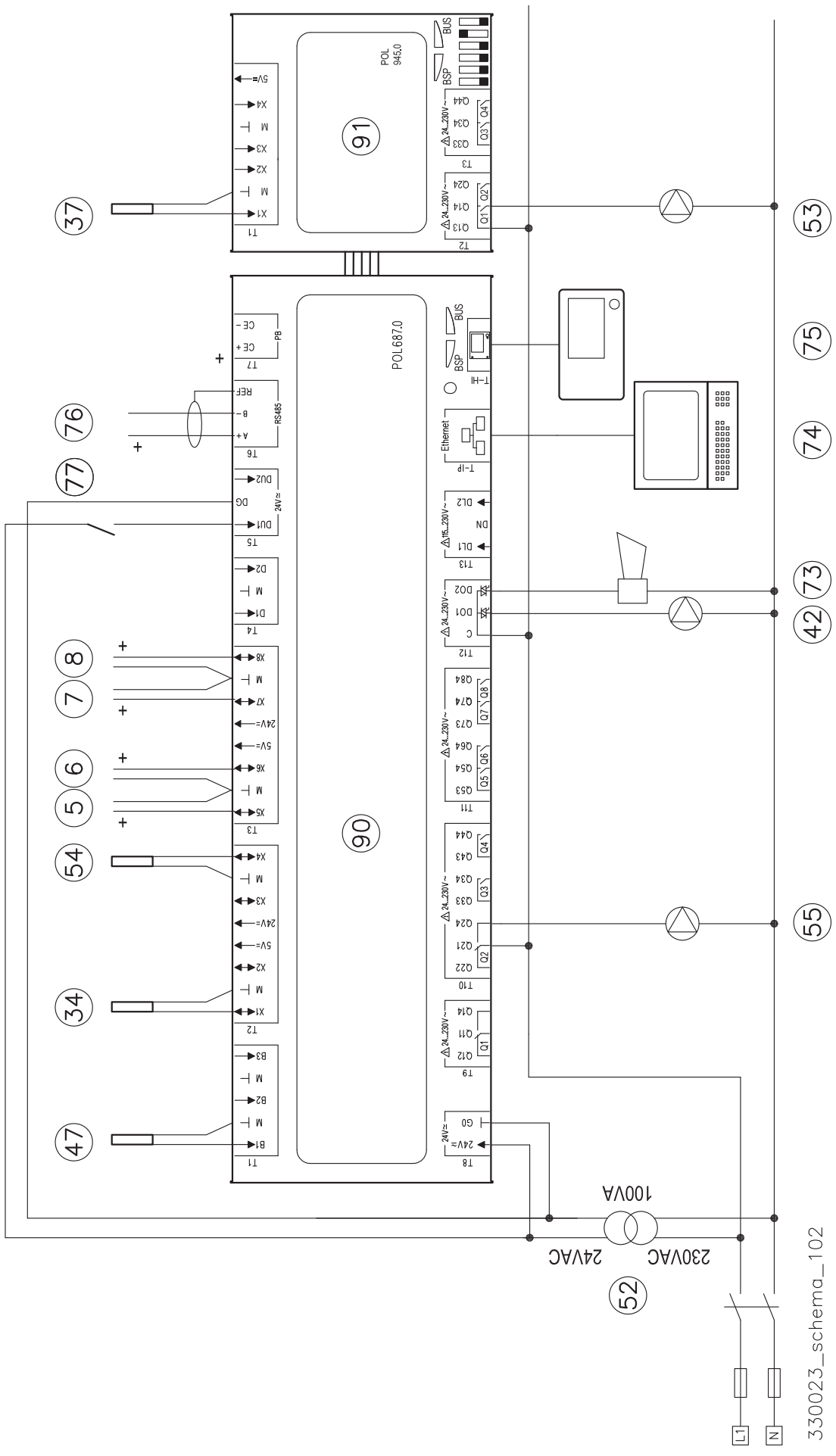


Figure 4-50 - Electrical connection

4.23.3 - DHW, DHW return, solar, 3 tanks (1 for water heater, 1 solar, 1 for transfer) and solar transfer function

Settings:

Configuration > Zones > 3 way valve > 3 way valve 1> Zone type No Mix
Parameters > DHW > Adjustement > Temp offset up = 0

NOTE: The mixing pump also acts as solar transfer by means of relay R1.

Configuration > System >

Number of Modules	4
Module 1	Heating
Module 2	Heating
Module 3	Heating
Module 4	Heating
Outdoor sensor	No
DHW	Yes
DHW return sensor	Yes
DHW Mode	Sensor
Unit of measure	°C
Number of Zones	1
Antilegionella	Yes
Shuffle type pump	Antilegion.
Solar	Yes
Solar Atistagnation	Yes
Solar Antifrost	Yes
Modbus enable	No
Heat pump	No

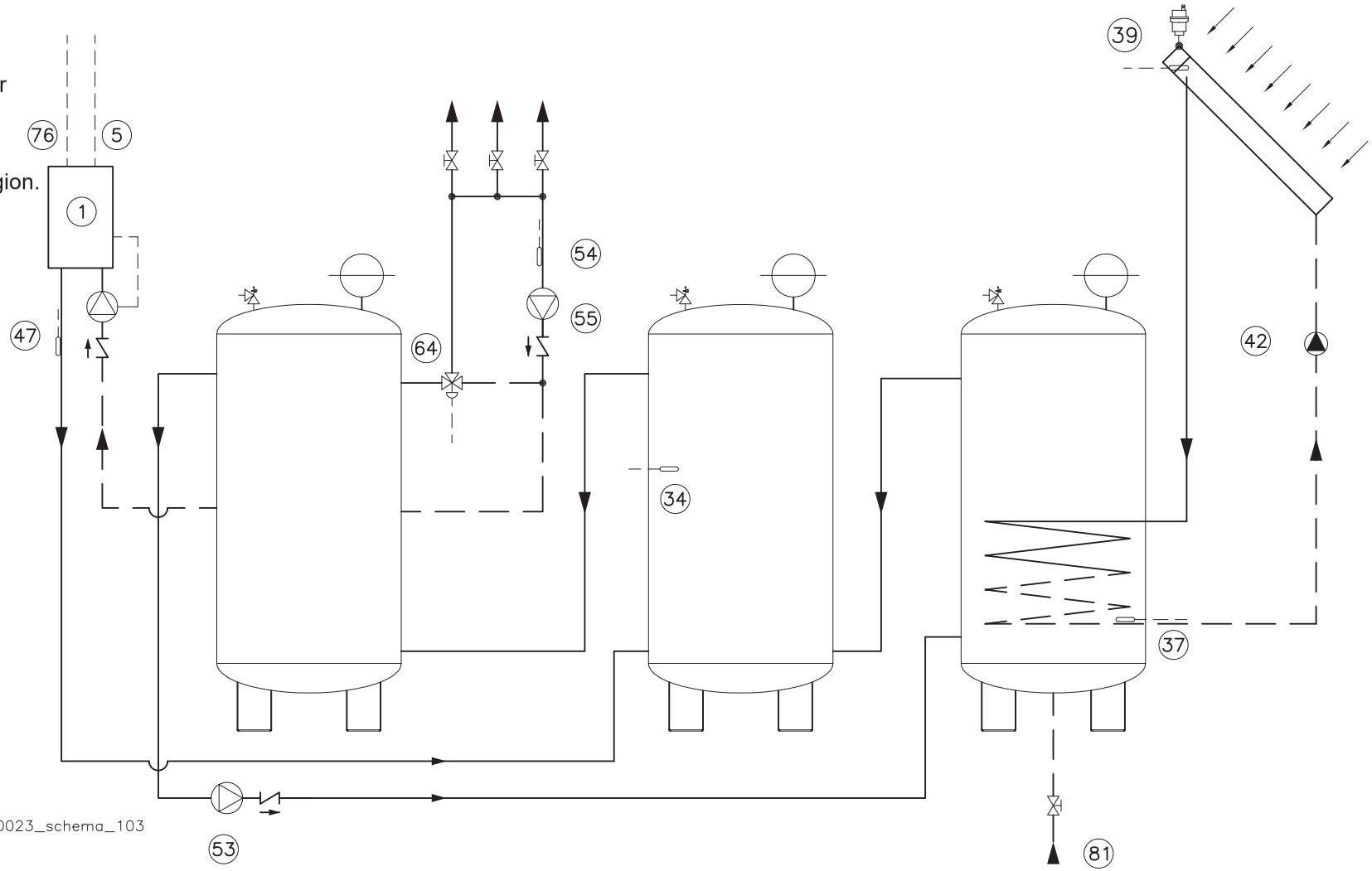


Figure 4-51 - Hydraulic connection

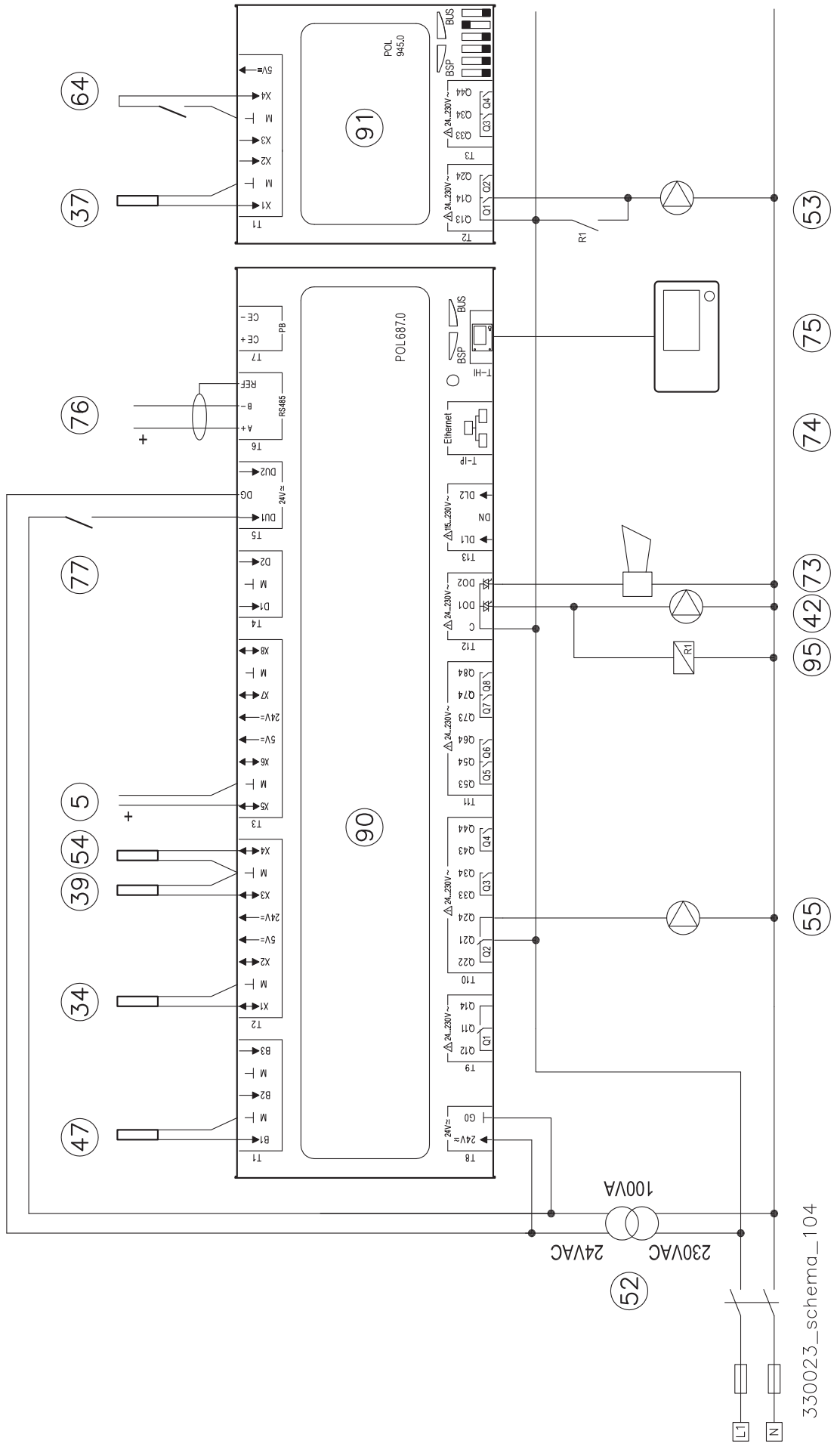


Figure 4-52 - Electrical connection

4.24 - Communication protocols towards home automation systems

TutorBit can be connected to a supervisor via the protocols:
- MODBUS TCP / IP
- MODBUS RTU
- KNX
- BACNET

The MODBUS TCP / IP connection is made through the same Ethernet port.

The MODBUS RTU connection must be made on the “RS485” terminals by interposing a POL902.00 / STD module (code 63501075).

The KNX connection must be made directly on the “CE” terminals.

The BACNET connection must be carried out by adding to the system a POL908.00 / STD module (code 63501076) that connects to the slide on the right of TutorBit.

5.1 - Start-up

To commission Tutorbit, it is necessary to verify that all the system configuration parameters are set as per the principle diagrams shown on the previous pages.

Therefore the following parameters could hinder the commissioning or verification of the operation of the system.

- If you want to test the Heating or Cooling function, you need to make sure that:

a. **Parameters->System control = Heating** or **Cooling** is in the state you want to test.

b. **Parameters->Zones->Action = Automatic** (weekly program) or **Manual**. If it's in **Automatic** and the time does not correspond to the ignition phase, the system does not turn on.

c. **Parameters->Modules->Spring Temp.** check that this parameter is higher than the external temperature otherwise the heating will not turn on.

d. **Parameters->Modules->Autumn Temp.** check that this parameter is lower than the external temperature otherwise the cooling will not turn on.

e. Check that the room thermostat input of the heating circuit concerned is in heating/cooling mode via **Diagnostic->Input->Enab Zone 1->Present Value = Yes**. If **Present Value = No** it means that the input is open and the system does not turn on. Operate on the system to close the CT input of the heating circuit in question.

After the tests, restore the above parameters to the original or desired values.

- At each exit from a heating, cooling or DHW function, always wait 2 minutes of post circulation before seeing a subsequent effect.

- The heat pump always takes precedence over heating over any boilers. To test the system and check that the boilers are working, reduce the saturation time of the heat pump to turn on the boilers; operate on **Parameters->Heat pump->Saturation Time** and set it to 2 minutes. After the test, return the parameter to the original value.

- If the outside temperature is lower than **Parameters->Heat pump->Temp Cutoff** the heat pump does not turn on. Reduce the value of the Temp Cutoff parameter to turn on the heat pump. After the test, return the parameter to the original value.

- If the heat pump is also responsible for the production of sanitary fixtures, this always takes precedence in carrying out the function over any boilers. To test the system and verify that the boilers work during the DHW phase, operate on **Parameters->Heat pump->Maximum time DHW** and set it to 2 minutes. After the test, return the parameter to the original value.

- If the system has a heat pump but it does not have to provide DHW, set the parameter **Parameters->Heat pump->Maximum Time DHW = 1** and leave it at that value.

- If you want to limit the heating flow temperature, with or without climate control, you will have to act on the parameter: **Parameters -> Modules- -> Zone 1 -> outdoor reset -> Maximum Temp**

- If you want to limit the temperature of the cooling flow, with or without climate control, you will have to act on the parameter: **Parameters > Modules- > Cooling Outdoor reset > Minimum Temp.**

Once the configuration and parameters of the system have been set, it is possible to save this setting to the parameter **Configuration-->DT Control->Save/restore->Sett.service save = Executed**.

If you want to reload the same image go to **Configuration-->DT Control->Save/restore->Sett.service load = Executed**.

If you want to clean TutorBit and restart from the configuration at the time of purchase, simply access the command **Configuration-->DT Control->Save/restore->Set Default = Executed**.

6.1 - Alarms

A bell is displayed on the screen when there is an alarm (see Figure 7-2, detail 3).

Proceed as follows to query an alarm:
1.- Press the “Bell” key on the main menu;
2.- Select the ***Alarms list*** menu;
3.- Press the knob;
4.- The alarm(s) present at that time are displayed;
5.- Turn the knob, select the alarm, then press the knob to display the details of when the alarm was triggered.

The following table lists the alarms that can be displayed by Tutorbit.

Alarm Displayed	Alarm Description	Checks	Solutions
A001 External probe : ShortLoop;	Outdoor sensor in short circuit;	Check if the probe is in short circuit;	Replace the probe;
A001 External probe : noSensor / openLoop;	Outdoor sensor Circuit open;	Check probe connection;	Restore the connection;
A002 Hot water tank probe : ShortLoop;	Probe in short circuit;	Check if the probe is in short circuit;	Replace the probe;
A002 Hot water tank probe : noSensor / openLoop;	Probe Circuit open;	Check probe connection;	Restore the connection;
A003 Cascade probe : ShortLoop;	Probe in short circuit;	Check if the probe is in short circuit;	Replace the probe;
A003 Cascade probe : noSensor / openLoop;	Probe Circuit open;	Check probe connection;	Restore the connection;
A004 Supply 1 probe : ShortLoop;	Probe in short circuit;	Check if the probe is in short circuit;	Replace the probe;
A004 Supply 1 probe : noSensor / openLoop;	Probe Circuit open;	Check probe connection;	Restore the connection;
A005 Supply 2 probe : ShortLoop;	Probe in short circuit;	Check if the probe is in short circuit;	Replace the probe;
A005 Supply 2 probe : noSensor / openLoop;	Probe Circuit open;	Check probe connection;	Restore the connection;
A006 Supply 3 probe : ShortLoop;	Probe in short circuit;	Check if the probe is in short circuit;	Replace the probe;
A006 Supply 3 probe : noSensor / openLoop;	Probe Circuit open;	Check probe connection;	Restore the connection;
A006 Supply 3 probe : CommFault;	Probe in communication error;	Check Expansion connection;	Restore the connection;
A007 Expansion IO : Fault;	Expansion IO POL945 configured but not connected;	Check Expansion connection;	Restore the connection;
A008 Pump 3A025 Circuit 3 pump : CommFault;	Pump 3 faulty due to faulty expansion;	Check Expansion connection;	Restore the connection;
A009 Mix 3 Open A024 Circ3 3pt Open : CommFault;	1.- Mix 3 Open faulty due to faulty expansion;	Check Expansion connection;	Restore the connection;
A010 Mix 3 Close A026 Circ3 3pt close : CommFault;	1.- Mix 3 Close faulty due to faulty expansion;	Check Expansion connection;	Restore the connection;
A011 Valve 1 leak : Alarm;	Mix valve leak alarm;	Check for leaks from mix valve;	Replace valve;
A012 Valve 2 leak : Alarm;	Mix valve leak alarm;	Check for leaks from mix valve;	Replace valve;
A013 Valve 3 leak : Alarm;	Mix valve leak alarm;	Check for leaks from mix valve;	Replace valve;
A014 Solar hot water tank probe : ShortLoop;	Probe in short circuit;	Check if the probe is in short circuit;	Replace the probe;
A014 Solar hot water tank probe : noSensor / openLoop;	Probe Circuit open;	Check probe connection;	Restore the connection;
A014 Solar hot water tank probe : CommFault;	Probe in communication error;	Check Expansion connection;	Restore the connection;
A015 Anti-stagnation : Alarm;	Solar circuit Anti-stagnation alarm;	a.- Check actual solar circuit temperature; b.- Check the state of the solar probe;	a.- Wait for the temperature to drop; b.- Replace the solar probe;
A016- Sp 0-10V external : Low limit alarm;	Low communication signal alarm (< 0V);	Check the signal voltage;	Increase the value of the 0-10V >0V signal;
A016- Sp 0-10V external : High limit alarm;	High communication signal alarm (> 12V);	Check the signal voltage;	Reduce the value of the 0-10V <12V signal;
A017 Input/output forcing : Warning;	An input / output has been forced in manual mode;		Reset automatic mode;
A018 External T.Probe Not Configured : Alarm;	External probe not configured;	Check that the external probe is active;	Activate the external probe;
A019 Solar panel probe : ShortLoop	Probe in short circuit;	Check if the probe is in short circuit;	Replace the probe;
A019 Solar panel probe : noSensor / openLoop;	Probe Circuit open;	Check probe connection;	Restore the connection;
A020 Anti-legionella alarm : Alarm;	Anti-legionella cycle not completed;	a.- Make sure the hot water tank probe is in the correct position; b.- Make sure the flow rate is correct between the hot water tank and the heat generator;	a.- Restore the probe position; b.- Restore the correct flow rate;
A021 Antileg:No Solar & Mix. pump	Mixing pump configured for anti-legionella and solar is not enabled;		Enable solar;
A022 Recirculation Temperature Probe : ShortLoop	Probe in short circuit;	Check if the probe is in short circuit;	Replace the probe;
A022 Recirculation Temperature Probe : noSensor / openLoop;	Probe Circuit open;	Check probe connection;	Restore the connection;
A023 Mixing Pump : CommFault;	Communication error;	Check Expansion connection;	Restore the connection;

Figure 6-1 - Diagnostics table

Alarm Displayed	Alarm Description	Checks	Solutions
A024 Circ3 3pt Open : CommFault;	Communication error;	Check Expansion connection;	Restore the connection;
A025 Circuit 3 pump : CommFault;	Communication error;	Check Expansion connection;	Restore the connection;
A026 Circ3 3pt Close : CommFault;	Communication error;	Check Expansion connection;	Restore the connection;
A030 Gener. 1 Burner 1	Module 1 error alarm;	Check the type of error on the generator 1 display;	Restore by following the instructions provided with the generator;
A031 Gener. 1 Burner 2	Module 1 error alarm;	Check the type of error on the generator 1 display;	Restore by following the instructions provided with the generator;
A032 Gener. 1 Burner 3	Module 1 error alarm;	Check the type of error on the generator 1 display;	Restore by following the instructions provided with the generator;
A033 Gener. 1 Burner 4	Module 1 error alarm;	Check the type of error on the generator 1 display;	Restore by following the instructions provided with the generator;
A034 Gener. 2 Burner 1	Module 2 error alarm;	Check the type of error on the generator 2 display;	Restore by following the instructions provided with the generator;
A035 Gener. 2 Burner 2	Module 2 error alarm;	Check the type of error on the generator 2 display;	Restore by following the instructions provided with the generator;
A036 Gener. 2 Burner 3	Module 2 error alarm;	Check the type of error on the generator 2 display;	Restore by following the instructions provided with the generator;
A037 Gener. 2 Burner 4	Module 2 error alarm;	Check the type of error on the generator 2 display;	Restore by following the instructions provided with the generator;
A038 Gener. 3 Burner 1	Module 3 error alarm;	Check the type of error on the generator 3 display;	Restore by following the instructions provided with the generator;
A039 Gener. 3 Burner 2	Module 3 error alarm;	Check the type of error on the generator 3 display;	Restore by following the instructions provided with the generator;
A040 Gener. 3 Burner 3	Module 3 error alarm;	Check the type of error on the generator 3 display;	Restore by following the instructions provided with the generator;
A041 Gener. 3 Burner 4	Module 3 error alarm;	Check the type of error on the generator 3 display;	Restore by following the instructions provided with the generator;
A042 Gener. 4 Burner 1	Module 4 error alarm;	Check the type of error on the generator 4 display;	Restore by following the instructions provided with the generator;
A043 Gener. 4 Burner 2	Module 4 error alarm;	Check the type of error on the generator 4 display;	Restore by following the instructions provided with the generator;
A044 Gener. 4 Burner 3	Module 4 error alarm;	Check the type of error on the generator 4 display;	Restore by following the instructions provided with the generator;
A045 Gener. 4 Burner 4	Module 4 error alarm;	Check the type of error on the generator 4 display;	Restore by following the instructions provided with the generator;
A046 Gen. 1 Modbus Commun. : Faulty	Module 1 communication error	Check the connection with the generator;	Restore the connection;
A047 Gen. 2 Modbus Commun. : Faulty	Module 1 communication error	Check the connection with the generator;	Restore the connection;
A048 Gen. 3 Modbus Commun. : Faulty	Module 1 communication error	Check the connection with the generator;	Restore the connection;
A049 Gen. 4 Modbus Commun. : Faulty	Module 1 communication error	Check the connection with the generator;	Restore the connection;
A050 Supply 4 probe : ShortLoop	Probe in short circuit;	Check if the probe is in short circuit;	Replace the probe;
A050 Supply 4 probe : No sensor, open-loop	Probe Circuit open;	Check probe connection;	Restore the connection;
A051 Supply 5 probe : ShortLoop	Probe in short circuit;	Check if the probe is in short circuit;	Replace the probe;
A051 Supply 5 probe : No sensor, open-loop	Probe Circuit open;	Check probe connection;	Restore the connection;
A053 Expansion IO : Fault Ind.2	Expansion IO POL945 configured but not connected;	Check Expansion connection;	Restore the connection;
A054 Expansion IO : Fault Ind.3	Expansion IO POL945 configured but not connected;	Check Expansion connection;	Restore the connection;
A055 Expansion IO : Fault Ind.4	Expansion IO POL945 configured but not connected;	Check Expansion connection;	Restore the connection;
A056 Circuit 4 pump : CommFault	Communication error;	Check Expansion connection;	Restore the connection;
A057 Mix 4 Open	Communication error;	Check Expansion connection;	Restore the connection;

Alarm Displayed	Alarm Description	Checks	Solutions
A058 Mix 4 Close	Communication error;	Check Expansion connection;	Restore the connection;
A059 Circuit 5 pump : CommFault	Communication error;	Check Expansion connection;	Restore the connection;
A060 Mix 5 Open	Communication error;	Check Expansion connection;	Restore the connection;
A061 Mix 5 Close	Communication error;	Check Expansion connection;	Restore the connection;
A065 Valve 4 leak : Alarm	Mix valve leak alarm;	Check for leaks from mix valve;	Replace valve;
A066 Valve 5 leak : Alarm	Mix valve leak alarm;	Check for leaks from mix valve;	Replace valve;
A068 Room Unit Association 1	Communication error with QMX3	Check connection;	Restore the connection;
A069 Room Unit Association 2	Communication error with QMX3	Check connection;	Restore the connection;
A070 Room Unit Association 3	Communication error with QMX3	Check connection;	Restore the connection;
A071 Room Unit Association 4	Communication error with QMX3	Check connection;	Restore the connection;
A072 Room Unit Association 5	Communication error with QMX3	Check connection;	Restore the connection;
A074 Expansion IO : Fault Ind.5	Expansion IO POL945 configured but not connected;	Check Expansion connection;	Restore the connection;
A075 HP Alarm	HP error	Check the HP	Restore by following the instructions provided with the HP;
A076 Outside probe NOT configured: Alarm	Alarm related to configuration of outside probe with HP selected	Check the connection and the configuration of the heat pump	Restore the connection or check the HP configuration

6.1.1 - BSP and BUS lights on Tutorbit

Tutorbit has two lights, BSP and BUS (see Figure 3-1), the state of which indicates device operation. The diagnostics can be checked in the table below.

BSP light	Meaning
Red and yellow alternating every second	Software update
Green	In operation
Yellow	Programme loaded but not working
Flashing yellow	Programme not loaded
Flashing red	Software error
Steady red on	Hardware error

BUS light	Meaning
Off	Modem not connected
Yellow	Modem connected and initialised but communication is missing
Green	Modem connected and communication active
Red	Modem connected but there is a communication error (for example, the provider has disappeared)
Flashing red	Software or hardware error

6.1.2 - Expansion BSP and BUS lights

The expansion has two lights, BSP and BUS (see Figure 3-2 and 3-3), the state of which indicates device operation. The diagnostics can be checked in the table below.

BSP light	Meaning
Flashing red	Software error
Green	In operation

BUS light	Meaning
Red	Communication error
Green	Correct communication
Yellow	Communication correct but parameters not fully configured

6.1.3 - Anti-legionella alarm

The anti-legionella alarm is the only alarm "with acknowledgement". If the system is not able to complete the anti-legionella cycle, the anti-legionella alarm is displayed. To reset this alarm, it must be acknowledged so that the user is aware of the fact that the system is not able to complete this cycle.
Proceed as follows to acknowledge the alarm:
1.- Press the "Bell" key on the main menu;
2.- Select the ***Alarms list*** menu and press the knob;
3.- The alarm (or alarms) present at that time are displayed;
4.- Select ***Acknowledge*** by pressing the knob;
5.- Press the knob to confirm;
6.- Select ***Execute*** and press the knob;
7.- Press the ***ESC*** key to return to the main menu.

NOTE! Acknowledgement of the error relating to the fact that the anti-legionella cycle has not been executed satisfactorily remains in the device register.

ATTENTION!!! Failure to complete the anti-legionella cycle can seriously harm the health of people and animals.

6.2 - Degraded operation

For the purpose of diagnostics or to solve an emergency situation, you can use the ***Diagnostics*** menu at any time to give a command to activate, in selected mode, a temperature sensor, an analogue or digital output (outputs controlling heat generators or pumps) or a digital input (RT or DHW enabe/disable input).

To this end, proceed as follows:
1.- Select the ***Diagnostics*** menu;
2.- Select the type of item (***Sensors***, ***Outputs*** or ***Inputs***) to be forced;
3.- Select ***Manual*** and switch the item to ***Active*** or enter a value directly;
4.- Select ***Actual value*** and set the value to be forced for this item;
5.- Then the ***A017 Inputs/outputs forcing*** alarm is displayed to draw attention to the fact that the system is in forced operation.

ATTENTION!!! The *"A017 Inputs/outputs forcing"* alarm is not able to activate the "Alarm" output (contacts C; D02 in Figure 4-1).

6.3 - Saving and/or restoring the configuration

Once the system configuration has been set, together with all the various operating parameters, this setting can be saved and recalled at any time by setting the "***Configuration->Dt Control->Save/restore->Sett.service save = Executed*** parameter.
An image of all the settings has now been saved in the TutorBit memory.
If you want to reload the same image, simply use the ***Configuration->Dt Control->Save/restore->Sett.service load = Executed*** command.

If you want to clear the TutorBit and start from the default settings, simply access the ***Configuration->Dt Control->Save/restore->Set Default = Executed*** command.

7.1 - Main page

When you switch on TutorBit, you automatically access the home screen that shows the status of the system.
Figure 7-1 shows the main screen in its maximum configuration, with the explanation of each row.

Information on the home screen	Description of the contents
`Cosmogas Srl 8/8`	Cosmogas Srl = company name; 8/8 = Cursor position
`DDD DD.MM.YYYY hh:mm:ss`	DDD=Weekday; DD.MM.YYYY = Current date; hh:mm:ss = Current time
`State 100% 100% 100% 100%`	State of each module. There can be a maximum of 4. The state can display the following values: OFF = module off Stb = module in stand by 1…100% = output range requested to the module, corresponding to the 0-10V signal output from TutorBit.
`Cascade S 70°C M 69°C`	Cascade sensor state ***Water Heater T.***, where; “S”= Setpoint; “M”= Measured temperature.
`1 OFF S 45°C M 44°C`	***Zone 1*** state and setting, where: ANF = Antifrost; Stb = stand-by; ON = heat demand; OFF = circuit off; S = Setpoint temperature; M = Measured temperature
`2 OFF S 45°C M 44°C`	Same meaning as ***Zone 1*** but relative to ***Zone 2.***
`3 OFF S 45°C M 44°C`	Same meaning as ***Zone 1*** but relative to ***Zone 3.***
`4 OFF S 45°C M 44°C`	Same meaning as ***Zone 1*** but relative to ***Zone 4.***
`5 OFF S 45°C M 44°C`	Same meaning as ***Zone 1*** but relative to ***Zone 5.***
`DHW OFF M 10°C`	DHW circuit state and setting, where: ANL = Anti-legionella; Stb = stand-by; ON = heat demand; OFF = circuit off; M = Temperature measured by the domestic hot water tank sensor.
`Solar OFF M 100°C`	Solar circuit state and setting, where: ANF = Antifrost; ASG = Anti-stagnation; Stb = stand-by; ON = heat demand; OFF = circuit off; M = Temperature measured by the solar panel sensor
`HP OFF S 45°C M 44°C`	Heat pump state and setting, where: HPP = HP helped by PV; Stb = stand-by; Heat = HP on Heating; Cool = HP on cooling; DHW= HP on domestic hot water; S = Required temperature; M = Temperature measured by sensor ***Water Heater T.*** NOTE: When HP = DHW, s = 0 and M= 0 because the values on the “DHW” line apply.

Figure 7-1 - Main page

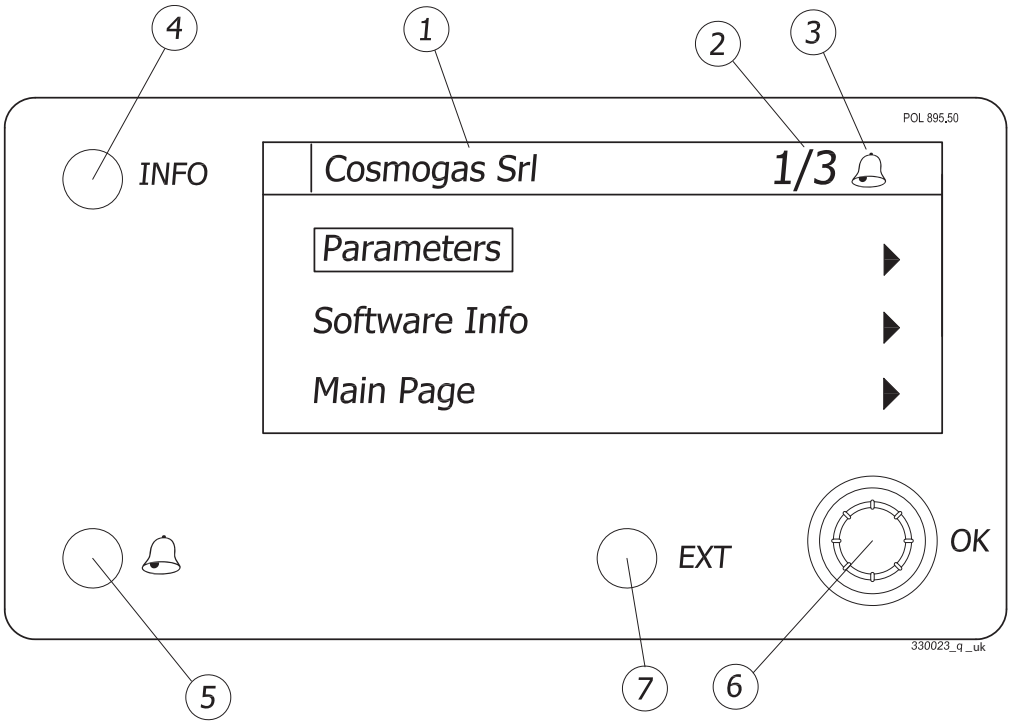


Figure 7-2 - Control panel

Figure 7-2 key			
①	Display;		
②	Selected parameter (highlighted) / Number of parameters displayed;		
③	Triggered alarm symbol;		
④	INFO key (N/A);		
⑤	“Bell” key to display the alarms menu;		
⑥ Browsing knob ;	Rotate to browse through the menu parameters;		
	Press once to	enter the selected parameter;	
		confirm the set value;	
	Keep pressed to change the display mode;	1000 : user profile (see parameters table in section 7.13);	
		0300 : installer profile (see parameters table in section 7.13);	
⑦	ESC key to return to the main menu in single steps;		

7.2- General information

The appliance leaves the factory set with standard parameters. However, these parameters can be consulted or changed using the controls (See section 7.4).
When Tutorbit is switched on it will display the main screen; select ***State*** to access the navigation menu (See section 7.13).

7.3 - Access profile

The menus on TutorBit can be displayed according to the access profile:

- User Profile
- Installer Profile
- Factory Profile

The "**User**" profile is displayed directly with the wheel control (knob) on the front of the TutorBit.

The "**Installer**" profile is accessed by setting password 0300. The "**Factory**" profile is accessed by setting a suitable password.

The various parameters can be profiled as described in section 7.13.
To set the password and have an "installer" profile, proceed as follows (refer to Figure 7-2):

1.- Power the Tutorbit;
2.- Press and hold knob "6" until "***Entry 0---"*** is displayed. Release knob "6";
3.- Press and release knob "6". The display will show the first digit marked with a zero "***0--"***;
4.- Turn knob "6" to edit the value of the selected digit;
5.- Once the required value is reached, press knob "6" again to confirm the value and move to the next digit;
6.- When the knob is pressed last to confirm, if the password is correct, the display will return to show the main menu.
7.- Move the cursor to Status and press the knob "6" to access the navigation menu.

The installer password can be entered from anywhere in the navigation menu.

To exit the "***Installer***" profile, de-energise and power the device again or press and hold knob "6" for 2 seconds. When the screen changes, select ***Register off.***

7.4 - Browsing through menus and editing parameters

Browsing through menus
Proceed as follows to browse through the menus:

1.- From the main screen, select ***State*** and press the knob "6". Now you access the main menu;
2.- Turn knob "6" to scroll through the various menus;
3.- When the chosen menu is highlighted, press knob "6" once to open a sub-menu;
4.- Turn knob "6" again to scroll through the parameters in the sub-menu;
5.- Press the "Esc" key to go from a sub-menu to a higher level menu.

Editing a parameter
Proceed as follows to edit a parameter:

1.- Browse through the menus as described in the paragraph above until the required parameter is displayed;
2.- Press knob "6": the parameter to be edited will be highlighted;
3.- Turn knob "6" to edit the value of the highlighted parameter;
4.- press knob "6" to confirm the changed value or press "Esc" to exit the parameter without saving the change.

ATTENTION!!! For the changes to be effective in the "Configuration" menu, "Yes" must be selected in relation to the "Save&Reset" parameter in the changed sub-menus.

7.5 - DHW adjustment

To set the DHW, open ***Parameters->DHW->DHW setpoint*** and set the required temperature

To operate the DHW according to the time programme, set ***Parameters->DHW->DHW Action = Automatic*** then set the DHW time programme on the ***Parameters->DHW->Timer Program*** menu (see the programme setting instructions in section 7.8)

To deactivate the DHW, select ***Parameters->DHW->DHW Action = Off***

To adjust the recirculation temperature, open ***Parameters->DHW->DHW return setp*** and set the required temperature.

Adjust the recirculation time programme from the ***Parameters->DHW->DHW return timer prog.*** menu and set the programme by following the instructions in section 7.9.

Note! DHW return only functions based on the times set in this programme.

7.6 - Heating adjustment

To deactivate or set the heating to zones “n” (intended as “n” of any of the 5 zones) automatically (operation according to the time bands) or manually (operation at constant temperature) set ***Parameters-> Zones -> Zone n -> Action = Off or Automatic or Manual.***

If a QMX3 room sensor is present, this ***Action*** parameter is not present and the ***Off*** or ***Automatic*** action must be performed directly on the room sensor.

When the ***Action*** parameter is set in ***Manual***, the supply temperature to Zone “n” is performed on ***Parameters-> Zones -> Heat Supply Setp***.

To adjust the compensation reduction in Zone “n”, edit the ***Parameters->Zones->Night setback*.**

Select the required outdoor reset for Zone “n” with the ***Parameters->Zones->Outdoor reset*** control, then set the curve parameters as shown in Section 4.12.

Set the time programme for heating Zone “n” with the ***Parameters->Zones->Timer Program*** control, then set the parameters as shown in section 7.10.

7.6.1.- Switching between Cooling and Heating mode

If the system is in ***Cooling mode***, set ***Parameters->System control*** on ***Heating***. Now the system is in heating mode, produces space heating and domestic hot water (if expected).If the outdoor temperature rises above ***Parameters->Modules->Spring Temp.***, the ***Heating*** switch off.

7.7 - Cooling adjustmen

To deactivate or set the cooling to zones “n” (intended as “n” of any of the 5 zones) automatically (operation according to the time bands) or manually (operation at constant temperature) set ***Parameters-> Zones -> Zone n -> Action = Off or Automatic or Manual.***

If a QMX3 room sensor is present, this ***Action*** parameter is not present and the ***Off*** or ***Automatic*** action must be performed directly on the room sensor.

When the ***Action*** parameter is set in ***Manual***, the supply temperature to Zone “n” is performed on ***Parameters-> Zones -> Cool Supply Setp.***

o adjust the compensation reduction in Zone “n”, edit the ***Parameters->Zones->Cool Night setback*.**

Select the required outdoor reset for Zone “n” with the ***Parameters->Zones->Cooling Outdoor reset*** control, then set the curve parameters as shown in section 4.12.

Set the time programme for heating Zone “n” with the ***Parameters->Zones->Cool Timer Program*** control, then set the parameters as shown in section 7.10.

7.7.1.- Switching between Heating and Cooling mode

If the system is in ***Heating mode***, set ***Parameters->System control*** on ***Cooling***.Now the system is in cooling mode and produces domestic hot water (if expected). If the outdoor temperature drops below ***Parameters->Modules->Autumn Temp.,*** the ***Cooling*** switch off.

7.8 - DHW time program

TutorBit is able to set a programme on 3 daily time slots. Open the ***Parameters->DHW->Time Programme->*** menu
The menu displays the following parameters, in order:
Reset=Yes. to reset the time programme;
Copy=Yes to copy the programme from one day to another.
To copy, you need to indicate the programmed day:
From: Monday (example);
and the one you want to copy the programme on:
To: Tuesday (example);

For programming, enter the start and end times of each time slot.

If the time slots are different for each day of the week, you need to set them as described above for every day.
If the time slots are the same as those set for the first day, you can use the “Copy” command to copy them to the other days, as explained above.
Once the time programme is completed, simply activate it by setting ***Parameters->DHW->DHW action = Automatic.***

7.9 - Timer DHW return

Set the timer DHW return by opening the menu ***Parameters->DHW->Timer DHW return->.***
The menu displays the following parameters, in order:
Reset=Yes to reset the time programme;
Copy=Yes o copy the programme from one day to another.
To copy, you need to indicate the programmed day:
From: Monday (example);
and the one you want to copy the programme on:
To: Tuesday (example);

For programming, enter the start and end times of each time slot.

If the time slots are different for each day of the week, you need to set them as described above for every day.
If the time slots are the same as those set for the first day, you can copy the others, as explained above.

7.10 - Heating circuits time setting

For the heating circuits time setting, open the ***Parameters->Zones->Programme->*** menu
Reset=Yes to reset the time programme set;
Copy=Yes to copy the programme from one day to another.
To copy, you need to indicate the programmed day:
From: Monday (example);
and the one you want to copy the programme on:
To: Tuesday (example);

For programming, enter the start and end times of each time slot.

If there is no room sensor, the selectable time bands are: ***Comfort*** (on) or ***Off***.

If the QMX3 room sensor is present, the selectable time bands are: ***Comfort, Precomfort, Reduced, Protection*** whose corresponding room temperatures are set to ***Parameters-> Room unit data n->***

If the time slots are different for each day of the week, you need to set them as described above for every day.
If the time slots are the same as those set for the first day, you can copy the others, as explained above.
Once the time programme is completed, simply activate it by setting ***Parameters->Zone n->Action = Automatic.***

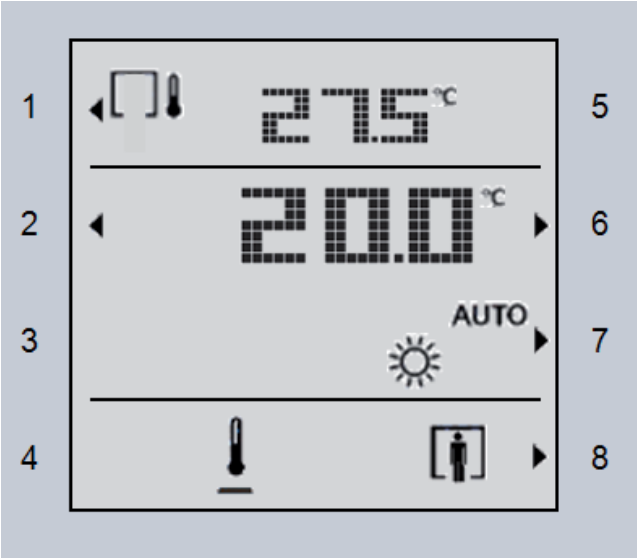
7.11 - Cooling circuits time setting

At the first access of the menu ***Parameters->Zones->Cool Timer program*** anomalous default times will result. In order to restore consistent values, select ***Reset = Yes***. Then proceed to fill in the weekly program in the same way as in section 7.10.

If there is no room sensor, the selectable time bands are: ***Comfort*** (on) or ***Off***.

If the QMX3 room sensor is present, the selectable time bands are: ***Comfort, Precomfort, Reduced, Protection*** whose corresponding room temperatures are set to ***Parameters-> Room unit data n->.***

7.12 - QMX3 room sensor using



- Key 1: Switches the display between the outdoor and room temperature;

- Key 2 and 6: Room temperature setpoint adjustment;

- Keys 3, 4, 5 and 8: No function;

- Key 7: Selecting the room operating mode:

  - AUTO = Heating / Cooling according to the time slots inserted in the corresponding zone in TutorBit;
  - Comfort = Heating / Cooling at a fixed Comfort temperature (generally the highest temperature for that room);
  - PreComfort = PreComfort fixed temperature heating / cooling (generally a room temperature lower than the one selected on Comfort);
  - Reduced = Fixed temperature heating / cooling for the night (generally a lower room temperature than the one selected on PreComfort;
  - Antifrost Heating / Cooling off. It lights up only in the cases provided for by the antifrost procedure.

7.12.1.- Setting the desired room temperatures

To change the temperature values corresponding to Comfort / Precomfort / Reduced / Antifreeze, proceed as follows:

1.- Press the key 7 until appears (Comfort) and press keys 5 and 6 to adjust the desired temperature for this threshold. Wait for 5 seconds. Now this value will be taken as a reference for this Comfort band;

2.- Press the key 7 until appears (Precomfort) and press keys 5 and 6 to adjust the desired temperature for this threshold. Wait for 5 seconds. Now this value will be taken as a reference for this Precomfort band;

3.- Press the key 7 until appears (Reduced) and press keys 5 and 6 to adjust the desired temperature for this threshold. Wait for 5 seconds. Now this value will be taken as a reference for this Reduced band;

4.- Press the key 7 until appears (Spento) and press keys 5 and 6 to adjust the desired temperature for this threshold (Antifrost). Wait for 5 seconds. Now this value will be taken as a reference for guarantee antifrost when the zone is off;

5.- Press the key 7 to select “Auto”. Now the heating circuit controlled by this QMX3 room sensor will work with the times and time slots set in the appropriate menu on TUTORBIT and the time slots will assume the aforementioned temperatures.

NOTE! After changing the temperatures in the QMX3, it is necessary to wait at least 1 or 2 seconds for the data to be written on TutorBit.

It is possible to change the Comfort / Precomfort / Reduced / Antifreeze setpoints directly via TutorBit, by accessing the menu ***Parameters -> Room unit data n->*** e qui impostare i vari valori delle fascie di riscaldamento sui parametri:

- ***Comfort Setpoint Heating***
- ***Heating Precomfort Set***
- ***Reduced Heating Set***
- ***Heating Protection Set*** (corresponding to “Off”)

- ***Comfort Setpoint Cooling***
- ***Cooling Precomfort Set***
- ***Reduced Cooling Set***
- ***Cooling Protection Set*** (corresponding to “Off”)

7.12.2.- Time program of the heating / cooling zones served by the QMX3 room sensor

When there is a room sensor connected to a heating / cooling zone, the time program of this circuit takes place directly on TutorBit, at the relative menu ***Parameters -> Zones -> Zone n -> Heating / Cooling Timer Program***.

In the heating timer program, if the QMX3 room sensor is present, it is possible to manage three temperature thresholds:

- Off = Circuit off and in any case in antifrost;

- Reduced = Reduced night time heating / cooling time band to which a corresponding temperature can be associated;

- Precomfort = Daytime reduced heating / cooling time band with which it is possible to associate a corresponding temperature;

- Comfort = Daytime heating / cooling time band with which it is possible to associate a corresponding temperature;

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7.13 - Tutorbit menus

Tutorbit has many parameters for setting and customising the system. The following pages show the menu with the browsing levels (shown in the “Parameters” field), the description, the access profiles, the adjustment field, the default values (from when it leaves the factory) and an empty field for the installer to note down any customisation made to the system.
However, a menu for saving the configuration and all the parameters is available for the installer, see Section 6.3.

Parameter	Description	Access profile	Adjustment range	Default value	Custom value
Configuration	System configuration menu	User			
System	Heating system configuration menu	Installer			
Modules Qty	Number of heat generators composing the cascade	Installer	1...4	1	
Module 1	Select “DHW” to have the specific heat generator controlled independently to fill a hot water tank. Otherwise leave “heating”. The “DHW” selection is only enabled if Configuration>System>DHW=Yes.	Installer	Heating; DHW;	Heating	
Module 2	Select “DHW” to have the specific heat generator controlled independently to fill a hot water tank. Otherwise leave “heating”. The “DHW” selection is only enabled if Configuration>System>DHW=Yes.	Installer	Heating; DHW;	Heating	
Module 3	Select “DHW” to have the specific heat generator controlled independently to fill a hot water tank. Otherwise leave “heating”. The “DHW” selection is only enabled if Configuration>System>DHW=Yes.	Installer	Heating; DHW;	Heating	
Module 4	Select “DHW” to have the specific heat generator controlled independently to fill a hot water tank. Otherwise leave “heating”. The “DHW” selection is only enabled if Configuration>System>DHW=Yes.	Installer	Heating; DHW;	Heating	
Outdoor sensor	Outdoor sensor enable	Installer	Yes...No	Yes	
DHW	Enable the DHW service to load a hot water tank	Installer	Yes...No	No	
DHW return sensor	Enable the DHW return sensor. The recirculation circuit can also work without the sensor. In this case, it will be controlled based on time. With the sensor it can be controlled based on time and temperature	Installer	Yes...No	No	
DHW mode	Type of hot water tank control: with temperature sensor or with ON/OFF thermostat	Installer	Sensor; Thermostat;	Sensor	
Unit of measure	Temperature and pressure units of measurement	Installer	°C...°F	°C	
Zones Qty	Number of heating circuits. To enable the third circuit, you need to add an expansion POL945.0	Installer	1...3	1	
Anti-legionella	EnablE or not the anti-legionella disinfection. The anti-legionella can only be enabled if Configuration>System>DHW=Yes.	Installer	Yes...No	Yes	
Shuffle pump type	Type of shuffle pump for the hot water tank. Select “absent” if there is no solar circuit. Select “tank load” if there are multiple hot water tanks in parallel. Select “Anti-legionella” for solar, to disinfect the bottom part of the hot water tank. To enable the mixing pump, you need to add an expansion POL945.0	Installer	Absent; Fill hot water tank; Anti-legionella;	Absent	
Solar	Enable the solar circuit. To enable the solar circuit, you need to add an expansion POL.945.0	Installer	Yes...No	No	
Solar anti-stagnation	Enable the anti-stagnation of the solar panel	Installer	Yes...No	Yes	
Solar antifreeze	Enable the antifreeze service of the solar circuit	Installer	Yes...No	Yes	
Enable Modbus	Enable the reading of the heat generators’ Modbus protocol	Installer	Yes...No	Yes	
Save & Reset	Each time this menu is changed, you need to save and reset in order to load the changes in the temperature controller	Installer	Yes...No	No	
Cascade	Configuration of the 0-10V outputs to control the heat generators	Installer			
Burner Out Type	Configuration to transform the outputs from 0-10V to ON/OFF with ON = 24Vdc 25mA max	Installer	0-10V; On-Off;	0-10V;	
Heating adjustment curve	Adjustment curve for when the generators are set as “Heating”	Installer			

Continued on the next page

Maximum voltage	Voltage for defining the “Maximum temperature” of the heat generator	Installer	1.5...10	10 V	
Minimum voltage	Voltage for defining the “Minimum temperature” of the heat generator	Installer	1.5...10	1.5 V	
Stand-by voltage	Voltage at which the heat generator goes in Stand-by	Factory	0...3	0.5 V	
DHW adjustment curve	Adjustment curve for when the generators are set as “DHW”	Installer			
Maximum temperature	Maximum temperature that can be reached by the generator when the signal is “Maximum voltage”	Installer	20...90	75 °C	
Minimum temperature	Minimum temperature that can be reached by the generator when the signal is “Minimum voltage”	Installer	20...50	32 °C	
Maximum voltage	Voltage for defining the “Maximum temperature” of the heat generator	Installer	1.5...10	10 V	
Minimum voltage	Voltage for defining the “Minimum temperature” of the heat generator	Installer	1.5...10	1.5 V	
Modbus adjustment curve	Adjustment curve not available for these models of temperature controller. Do not change.	Installer			
Maximum temperature	N/A	Installer	20...90	75 °C	
Minimum temperature	N/A	Installer	20...50	32 °C	
Maximum voltage	N/A	Installer	1.5...10	10 V	
Minimum voltage	N/A	Installer	1.5...10	0.5 V	
Stand-by voltage	N/A	Factory	0...3	0.5 V	
Save & Reset	Each time this menu is changed, you need to save and reset in order to load the changes in the temperature controller	Installer			
Zones	Setting menus of the heating circuits	Installer			
Zone 1 mode	“Type of heating circuit control: “”FixSp-RT”” = Fixed setpoint set in the “”Parameters>Zones>Heat Supply Setp” parameter. Opening of the corresponding RT switches the heating off. “”Outd Reset-RT”” = Climatic adjustment with outdoor sensor. The outdoor reset settings must be done in the “”Parameters>Zones>Outdoor reset ”” menu. Opening of the corresponding RT switches the heating off. “”Outd Reset comp-RT”” = Climatic adjustment with outdoor sensor. The outdoor reset settings must be done in the “”Parameters>Zones>Outdoor reset”” menu. Opening of the corresponding RT generates a reduction in the supply temperature corresponding to the value set in the “”Parameters>Zones>Night setback”” parameter. “”FxSp-Comp.RT”” = Fixed setpoint set in the “”Parameters>Zones>Heat Supply Setp”” parameter. Opening of the corresponding RT generates a reduction in the supply temperature corresponding to the value set in “”Parameters>Zones>Night setback”” parameter. “”ModbusInput”” = Not applicable for this model of heat generator ““FixSp-RS”” = fixed setpoint with room sensor QMX3. ““Outd Reset-RS”” = Outdoor with room sensor QMX3.	Installer	FixSp-RT; Outd Reset-RT; Outd Reset comp-RT; FxSp-Comp. RT; ModbusInput; FixSp-RS; Outd Reset-RS;	FixSp-RT	
Zone 2 mode	The same as the “Zone 1 Mode” menu	Installer	as above	FixSp-RT	
Zone 3 mode	The same as the “Zone 1 Mode” menu	Installer	as above	FixSp-RT	
3 way valves	Menu to set common parameters of the heating circuits	Installer			
Proportional band	PID proportional parameter that controls the opening and closure of the mixing valve	Installer	0...50	15 °C	
Integral time	PID integral parameter that controls the opening and closure of the mixing valve	Installer	0...600	70 s	
Pump delay	Delay of pump switch-on after receiving the start command	Installer	0...3600	1 s	
Pump post-circulation	Pump post-circulation	Installer	0...3600	60 s	

Continued on the next page

Parameter	Description	Access level	Adjustment range	Default value	Custom value
3 way valve 1	Heating circuit 1 parameters	Installer			
Thermostat name	Customisable circuit name; present if Configuration>Zones>Zone 1 Mode = FixSp-RT/ Outd Reset-RT/ Outd Reset comp-RT/ FxSp-Comp.RT	Installer			
Type of zone	Type of zone: MIX = Mixed (with 3 way valve), No Mix = direct heating circuit (without 3 way valve)	Installer	Mix...No Mix	Mix	
Time to open	3 way valve opening time; present if Configuration>Zones>3 way valve 1>Type of Zone=Mix	Installer	2...900	150 s	
Time to close	3 way valve closing time; present if Configuration>Zones>3 way valve 1>Type of Zone=Mix	Installer	2...900	150 s	
Leak alarm	Mixing valve leak alarm. E.g. If the mixing valve breaks and remains open, this alarm will show this	Installer			
Check each	Supply temperature inspection frequency	Installer	0...30	10 min	
Differential	Maximum variation allowed in the verification period (at a time when the 3 way valve should be closed and therefore no temperature increases are expected).	Installer	2...15	5 K	
Floor Inertia	With regard to the temperature measured by the room sensor, a calculation is made on the floor inertia which increases the supply temperature to overcome or give this inertia first. Present only if Configuration>Zones>Zone Mode N = Outd Reset-RS / FixSp-RS	Installer	15...100	60%	
Room Comp. Offset Heat	Maximum deviation of the temperature calculated in heating, with respect to the calculation due to the floor inertia. Present only if Configuration>Zones>Zone Mode N = Outd Reset-RS / FixSp-RS	Installer	0...20	15 K	
Room Comp. Offset Cool	Maximum deviation of the temperature calculated in cooling, with respect to the calculation due to the floor inertia. Present only if Configuration>Zones>Zone Mode N = Outd Reset-RS / FixSp-RS	Installer	0...20	5 K	
3 way valve 2	Heating circuit 2 parameters (submenu equal to 3 way vale 1)	Installer			
3 way valve 3	Heating circuit 3 parameters (submenu equal to 3 way vale 1)	Installer			
3 way valve 4	Heating circuit 4 parameters (submenu equal to 3 way vale 1)	Installer			
3 way valve 5	Heating circuit 5 parameters (submenu equal to 3 way vale 1)	Installer			
SN Circuit 1	Serial Number of QMX3 room sensor. Present only if Configuration>Zones>Zone Mode N = Outd Reset-RS / FixSp-RS	Installer	Value	Value	
Associate SN Circuit 1	Association of the QMX3 room sensor with the circuit. Present only if Configuration>Zones>Zone Mode N = Outd Reset-RS / FixSp-RS	Installer	Yes..-	-	
Room Unit Association 1	Parameter indicating whether the association with the SN Circuit n took place or not. VPresent only if Configuration>Zones>Zone Mode N = Outd Reset-RS / FixSp-RS	Installer	Performed-Not performed	Not performed	
Save & Reset	Each time this menu is changed, you need to save and reset in order to load the changes in the temperature controller	Installer	Yes...No	No	
Modbus	Heat generator Modbus communication parameters	Installer			
Slave 1 address	Logical address of the Modbus protocol for the first heat generator	Installer	1...253	1	
Slave 2 address	Logical address of the Modbus protocol for the second heat generator	Installer	1...253	2	
Slave 3 address	Logical address of the Modbus protocol for the third heat generator	Installer	1...253	3	
Slave 4 address	Logical address of the Modbus protocol for the fourth heat generator	Installer	1...253	4	

Continued on the next page

Heat Pump		Installer			
HP Mode	HP Mode 1: one digital output ON-OFF (Q1 closed contact = ON, open contact = OFF) + one digital output for heat / cool switching (Q2 closed contact = cool, open contact = heat). HP Mode 2: a digital output in cool demand which also turns on the HP (Q1 contact closed, HP turns on and goes into cool; contact open, HP turns off) + a digital output in heat demand which also turns on of the HP (Q2 contact closed, the HP turns on and goes into heat, the HP contact turns off). HP Mode 3: one digital output ON-OFF (Q1 contact closed = ON; contact open = OFF) + one analog output 0-10V (X1 0-10) + digital output for heat / cool switching (Q2 contact open = heat; contact closed = cool) . HP Mode 4: one digital output ON-OFF (Q1 contact closed = ON, contact open = OFF) + one analog output 4-20mA (X1 4-20mA) + digital output for heat / cool switching (Q2 contact open = heat; contact closed = cool)	Installer	1...4	1	
Prop.Heating Band	Proportional band for heating regulation 0-10V at HP	Installer	0...100	40°C	
Integr. Heat. Time	Integral time for heating regulation 0-10V at HP	Installer	0...600	90 s	
Prop.Cooling Band	Proportional band for cooling regulation 0-10V at HP	Installer	0...100	20°C	
Integr. Cool. Time	Integral time for cooling regulation 0-10V at HP	Installer	0...600	90 s	
Save & Reset	Each time this menu is changed, you need to save and reset in order to load the changes in the temperature controller	Installer	Yes...No	No	
DT Control	Parameters setting menu of the TutorBit controller	Installer			
Date and Hour adjust		Installer			
Time	TutorBit time setting	Installer	hh:mm:ss		
Date	TutorBit date setting	Installer	dd.mm.yy		
Summer times	Activation of automatic time change when summer times passes	Installer	Yes...No	Yes	
Summer time start-up	Summer / winter time settings	Installer			
Month	Month when Summer times starts	Installer	0, January... December	March	
Last week day	Day when Summer times starts	Installer	Monday... Sunday	Sunday	
Hour	Hour when Summer times starts	Installer	1...24	2 h	
End Summer times		Installer			
Month	Month when Summer times ends	Installer	January... December	October	
Last week day	Day when Summer times ends	Installer	Monday... Sunday	Sunday	
Hour	Hour when Summer times ends	Installer	1...24	3 h	
Language	Select TutorBit language	Installer	Italian; English; German (NA); Spanish (NA); Swedish (NA);	Italian	
Ethernet	Ethernet communication parameters	Installer			
DHCP	“Active” for Cloud connection. “Inactive” for direct connection to a PC via WEB Server	Installer	Active...Inactive	Inactive	
IP address		Installer		192.168.1.101	
Subnet mask		Installer		255.255.252.0	

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Parameter	Description	Access level	Adjustment range	Default value	Custom value
Default gateway		Installer		192.168.4.150	
Pref. DNS server		Installer		194.25.2.129	
Altern. DNS server		Installer		194.25.2.130	
Host name		Installer		POL687_EB5A02	
MAC address		Installer		00-A0-03-EB-5A-02	
Link		Installer		Inactive	
100 Mbit		Installer		Inactive	
Special settings		Installer			
Controller		Installer	Active...Inactive	Active	
Port		Installer	0...65535	4242	
Web HMI (HTTP)		Installer	Active...Inactive	Active	
Port		Installer	0...65535	80	
FTP		Installer	Active...Inactive	Active	
Port		Installer	0...65535	21	
TFTP		Installer	Active...Inactive	Active	
Port		Installer	0...65535	69	
After changing the values		Installer			
Reset required!!!		Installer			
After changing the values		Installer			
Reset required!!!	Each time this menu is changed, you need to save and reset in order to load the changes in the temperature controller	Installer			
Save/Restore	TutorBit data save settings	Installer			
SD-card	SD card state: “No card” = there is no SD card; “Read only” = The SD card is read-only; “ReadWrite” = The SD card can be read and overwritten;	Installer	No card; Read only; ReadWrite;		
Formatting	SD card formatting command	Installer	Executed	Executed	
>		Installer		No	
Available Memory	Free space on the SD card	Installer	Value	Value	
Save Config. In SD	Save TutorBit configuration in the SD card	Installer	Executed-√	Executed	
>		Installer			
Load conf. From SD	Load TutorBit configuration from the SD card	Installer	Executed- Partial-√	Executed	
>		Installer			
Set Default	Set factory settings and parameters	Factory	Executed-√	Executed	
BSP version	Command for loading a new software version from the SD card	Installer	Executed-√	Executed	
Sett.service load	Load the Service parameters and settings, as saved in Configuration>DT Control>Save/Restore> Sett.service save	Installer	Executed-√	Executed	

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Sett.factory load	Load the “Factory” parameters and settings, as saved in Configuration>DT Control>Save/Restore> Sett. factory save	Installer	Executed-√	Executed	
Sett.service save	Save the Service parameters and settings, as changed by the installer	Installer	Executed-√	Executed	
Sett.factory save	Save the Factory parameters and settings, as changed by the installer	Factory	Executed-√	Executed	
Save & Reset	Each time this menu is changed, you need to save and reset in order to load the changes in the temperature controller	Installer	Yes...No		
Cloud configuration		Factory			
Activate	Cloud connection activation: No=disabled, Yes=Active, BSPonly=enabled only to update files	Factory	No; BSP only; Yes;		
Serial number	TutorBit serial number	Factory	Value	Value	
State	Status of the communication to the cloud as specified in the following two parameters.	Factory			
Comm. mapping	Communication state: “OK” = Communication with the Cloud; “ - “ = Communication with the Cloud not configured; “IP error” = Communication with the Cloud interrupted; “Server Error” = the Cloud server is not available;	Factory			
Cloud server	Cloud connection state: “ - “ = Communication with the Cloud not configured; “IP error” = IP communication error or communication interrupted; “Init” = TutorBit initialises communication with the Cloud; “Init Err” = Initialisation of the communication has failed; “Reg” = TutorBit is trying to register with the Cloud; “RegErr” = Registration failed; “Description” = The description of the Cloud is overwritten in the Cloud; “Connected” = Connection to the Cloud is running and stable.	Factory			
Distributor		Factory			
> 8W9uNA#4/4	Tenant encryption key	Factory			
Communication protocols	Communication protocol parameters setting menu	Installer			
Modbus TCP/IP		Installer			
State	MODBUS TCP / IP communication status	Installer	Value	Value	
Error	MODBUS TCP / IP communication error	Installer	Value	Value	
Modbus RTU		Installer			
Baud rate	MODBUS RTU communication baud rate	Installer	2400...34800	9600	
Parity	MODBUS RTU communication parity	Installer	Odd - Even - None	None	
Stop bits	MODBUS RTU communication stop bits	Installer	1-2\	1	
POL902 State	POL 902 expansion status for MODBUS RTU	Installer	Value	Value	
POL902 Communication	POL 902 expansion status for MODBUS RTU	Installer	Value	Value	
POL902 Active	POL 902 expansion status for MODBUS RTU	Installer	Value	Value	

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Parameter	Description	Access level	Adjustment range	Default value	Custom value
Parameters		User			
System control	Antifreeze = TutorBit ignores all heating requests and only runs the Antifreeze function; Heating = TutorBit works normally for the set heating requests, also set together with HP. Cooling = Tutorbit works in connection with a heat pump to make cooling.	Installer	Antifreeze; Heating; Cooling;		
Modules	Heat generator operating parameters	Installer			
Casc. setp offsetup	Increase of the module setpoint with respect to the general cascade sensor setpoint	Installer	0...20	5 K	
Start hyst	Temperature differential on the cascade setpoint when heat generators are switched on	Installer	0...20	5 K	
Stop hyst	Temperature differential on the cascade setpoint when heat generators are switched off	Installer	0...20	5 K	
Light-on delay	Module switch-on delay time	Installer	0...900	180 s	
Switch-off delay	Module switch-off delay time	Installer	0...900	180 s	
Modulation delay	Delay time to modulation of the modules on the cascade setpoint	Installer	0...20	4 min	
PID propor. band	Proportional band of the generator output adjustment PID for controlling the cascade setpoint	Factory	0...100	40 °C	
PID integral time	Integral band of the generator output adjustment PID for controlling the cascade setpoint	Factory	0...900	80 s	
All Off Hyst	Cascade setpoint differential of switch-off of all modules	Installer	0...25	7.0 K	
Spring Temp.	Spring temperature for switch-off of the module and HP heating function. This parameter is only implemented when a heating circuit is controlled by an outdoor reset (Configuration>Zones>Zone Mode> Outd Reset-RT/ Outd Reset comp-RT/ Outd Reset-RS)	Installer	10...40	21 °C	
Modules setpoint incr.	Increase or decrease gradient of the modules setpoint	Installer	0.1...20	2.0 d°C/s	
Autumn Temp.	COOL function shutdown temperature for HP	Installer	10...40	28 °C	
DHW	DHW operating parameters	User			
DHW Setpoint	Hot water tank setpoint	User	35...90	50 °C	
DHW action	Manual = operation according to the setpoint; Automatic = operation according to the weekly programme; Off = DHW service switched off;	User	Manual; Automatic; Off;	Manual	
Time program	DHW time programme	Installer			
Reset	Delete time programme	Installer	No...Yes	No	
Copy	Copy time programme command	Installer	No...Yes	No	
From:	Selection of the first day to start copying	Installer	Monday... Sunday	Monday	
To:	Selection of the last day to end copying	Installer	Monday... Sunday	Monday	
Monday Start 06:00 12:00 18:00 Stop 8:00 14:00 22:00	Setting the 3 operating time slots on Monday, Tuesday, Wednesay,Thursday and Friday.	Installer			
Time program		Installer			
Saturday Start 06:00 12:00 18:00 Stop 8:00 14:00 22:00	Setting the 3 operating time slots on Saturday.	Installer			
Sunday	Setting the 3 operating time slots on Sunday.	Installer			

Continued on the next page

Adjustment		Factory			
Start hyst	Switch-on differential of the heat generators with respect to the DHW setpoint	Factory	0...20	3 K	
Stop hyst	Switch-off differential of the heat generators with respect to the DHW setpoint	Factory	0...20	3 K	
Light-on delay	Heat generators switch-on delay time	Factory	0...900	1 s	
Light-off delay	Heat generator switch-off delay time	Factory	0...900	1 s	
Temp offset up	Increase of the heat generators setpoint with respect to the DHW setpoint	Factory	0...20	10 K	
Post pumping	DHW pump post-circulation	Factory	0...900	60 s	
DHW return setp	DHW recirculation circuit setpoint (enabled only if Configuration>System>DHW return sensor = Yes)	User	0...100	50 °C	
DHW return timer prog.	DHW return timer program	Installer			
Reset	Delete time programme	Installer	No...Yes	No	
Copy	Copy time programme command	Installer	No...Yes	No	
From:	Selection of the first day to start copying	Installer	Monday... Sunday	Monday	
To:	Selection of the last day to end copying	Installer	Monday... Sunday	Monday	
Monday Start Stop 06:00 8:00 12:00 14:00 18:00 22:00	Setting the 3 operating time slots on Monday, Tuesday, Wednesay,Thursday and Friday.	Installer			
Time program		Installer			
Saturday Start Stop 06:00 8:00 12:00 14:00 18:00 22:00	Setting the 3 operating time slots on Saturday.	Installer			
Sunday	Setting the 3 operating time slots on Sunday.	Installer			
Antifreeze setpoint	Antifreeze setpoint that is enabled when “Parameters>System control = Antifreeze”	User	5...90	10 °C	
Zones	Heating circuits operating parameters	User			
Zone1	Heating circuit 1	User			
Operative mode	Room sensor operating mode. Auto = room temperature adjustment according to the time program set on the controller; Comfort = room temperature regulation; Precomfort = room temperature regulation; Reduced = fixed temperature room regulation; Protection = setting of the frost protection environment. (Appears only when room sensor QMX3 is combined with Zone 1)	User	Auto-Comfort-Precomfort-Reduced-Off	Comfort	
Action	Manual = manual setpoint adjustment; Automatic = adjustment according to the weekly program; Off = service off. This parameter it is not visible if Configuration>Zones>Zone mode 1 = Outd Reset-RS/ FixSp-RS.	User	Manual; Automatic; Off	Manual	
Heat Supply Setp	Manually adjusted fixed setpoint.Visible only if Configuration>Zones>Zone mode 1=FixSp-RT/ FxSp-Comp.RT	User	20...90	60 °C	
Night setback	Reduction of the supply temperature generated by theRT opening. Visible only if Configuration>Zones>Zone mode 1 = Outd Reset comp-RT/FxSp-Comp.RT	Installer	0...20	10 K	
Antifreeze setpoint	Antifreeze setpoint at which the circuit is set when “Parameters>System control = Antifreeze”	Installer	20...90	30 °C	

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Parameter	Description	Access level	Adjustment range	Default value	Custom value
Cool Supply Setp	Fixed setpoint manually adjusted for cooling. Visible only if Configuration>Zones>Zone mode 1 = FixSp-RT/ FxSp-Comp.RT	User	5...90	18°C	
Cool Night setback	Raising the cooling supply temperature generated by the opening of the RT. Visible only if Configuration>Zones>Zone mode 1 = Outd Reset comp-RT/ FxSp-Comp.RT.	Installer	0...20	10°C	
Heating Outdoor reset	Operating parameters of the outdoor reset for Zone 1	Installer			
Slope	Slope of the curve	Installer	0.1...4	2.5	
Sliding	Curve slippage	Installer	-10...10	0 K	
Min Temp.	Minimum setpoint temperature for Zone 1	Installer	20...55	20 °C	
Max Temp.	Maximum setpoint temperature for Zone 1	Installer	20...90	75 °C	
Cooling Outdoor reset	Operating parameters of the outdoor reset for Zone 1	Installer			
Set Minimum	Minimum cooling supply temperature	Installer	3...30	3°C	
Set Maximum	Maximum cooling supply temperature	Installer	5...30	12°C	
T. Ext 25 Set	Cooling supply temperature when outdoor temperature is 25°C	Installer	5...30	9°C	
T. Ext 35 Set	Cooling supply temperature when outdoor temperature is 35°C	Installer	5...30	11°C	
Heating Timer program	Heating Timer program for Zone 1, only if Parameters>Zones>Action=Automatic	Installer			
Reset	Delete time programme	Installer	No...Yes	No	
Copy	Copy time programme command	Installer	No...Yes	No	
From:	Selection of the first day to start copying	Installer	Monday... Friday	Monday	
To:	Selection of the last day to end copying	Installer	Monday... Friday	Monday	
Monday Start Stop 06:00 8:00 12:00 14:00 18:00 00:00	Setting the 3 operating time slots on Monday, Tuesday, Wednesay,Thursday and Friday.	Installer	Off Reduced Comfort Precomfort		
Heating Timer program		Installer			
Saturday Start Stop 06:00 8:00 12:00 14:00 18:00 22:00	Setting the 3 operating time slots on Saturday and Monday	Installer			
Cooling Timer program	Cooling Timer program for Zone 1, only if Parameters>Zones>Action=Automatic	Installer			
Reset	Delete time programme	Installer	No...Yes	No	
Copy	Copy time programme command	Installer	No...Yes	No	
From:	Selection of the first day to start copying	Installer	Monday... Friday	Monday	
To:	Selection of the last day to end copying	Installer	Monday... Friday	Monday	

Continued on the next page

Monday Start 06:00 12:00 18:00 Stop 8:00 14:00 00:00	Setting the 3 operating time slots on Monday, Tuesday, Wednesay,Thursday and Friday.	Installer	Off Reduced Comfort Precomfort		
Cooling Timer program		Installer			
Saturday Start 06:00 12:00 18:00 Stop 8:00 14:00 22:00	Setting the 3 operating time slots on Saturday and Monday	Installer			
Zone2	Heating circuit 2 (submenu equal to Zone 1)	User			
Zone3	Heating circuit 2 (submenu equal to Zone 1)	User			
Zone4	Heating circuit 2 (submenu equal to Zone 1)	User			
Zone5	Heating circuit 2 (submenu equal to Zone 1)	User			
Anti-legionella	Anti-legionella setting parameters for the DHW tank	Installer			
Frequence	Cycle frequency	Installer	1...30	7 days	
Light-on hour	Cycle start time	Installer	0...23	6 h	
Setpoint	Hot water tank filling setpoint during the anti-legionella cycle	Installer	50...70	65 °C	
Max light-on delay	Maximum time for reaching the anti-legionella setpoint	Installer	1...360	30 min	
Hold on timer	Minimum time for maintaining the anti-legionella temperature	Installer	1...360	15 min	
Output rotation	Rotation of the heat generators	Installer			
Heating	Rotation of the heat generators assigned to the “Heating” service	Installer			
Mode	Type of rotation: Fixed = rotation on a time basis; Absent = no rotation; Timed = Rotation based on the ageing time;	Installer	Fixed; Absent; Timed;	Fixed	
Fix Rotation	“Fix rotation” parameters	Installer			
Interval	Time for the next rotation	Installer	0...15	6 days	
Base time rotation	“Base time rotation” parameters	Installer			
Max ancient diff	Maximum ageing time of a heat generator after which rotation occurs.	Installer	0...10	6 days	
DHW	Rotation of the heat generators assigned to the “DHW” service	Installer			
Mode	Type of rotation: Fixed = rotation on a time basis; Absent = no rotation; Timed = Rotation based on the ageing time;	Installer	Fixed; Absent; Timed;	Fixed	
Fix Rotation	“Fix rotation” parameters	Installer			
Interval	Time for the next rotation	Installer	0...15	6 days	
Base time rotation	“Base time rotation” parameters	Installer			
Max ancient diff	Maximum ageing time of a heat generator after which rotation occurs.	Installer	0...10	6 days	
Outdoor temperature	Outdoor sensor parameters	Installer			
Building type	Delay generated by the building’s insulation before an external temperature variation affects the room temperature	Installer	0...20	0 hs	
Actual	Actual outdoor temperature	Installer	Value	Value	

Continued on the next page

Parameter	Description	Access leve	Adjustment range	Default value	Custom value
Compound (OutReset)	Outdoor temperature lessened by the “Building type”	Installer	Value	Value	
Soft (Spring)	Outdoor temperature lessened by the “Building type” for the spring period	Installer	Value	Value	
DHW Priority	Management of DHW/heating priority	Installer			
Module T. hyst		Installer			
Pump lock offsetup	Negative differential with respect to the hot water tank setpoint, after which the heating is switched off.	Installer	0...20	10 K	
Pump unlock offsetup	Negative differential with respect to the hot water tank setpoint, after which the heating is switched on.	Installer	0...20	5 K	
Antifrost function	Antifreeze function parameters	Installer			
Outdoor T.	Outdoor temperature value	Installer	Value	Value	
Circulation Setpoint	Outdoor temperature below which the circuit pumps switch on	Installer	-10...20	5.0 °C	
Circ Setp hyst	Hysteresis on the outdoor switch-on and off temperature of the circuit pumps	Installer	0...10	1.0 K	
Heating Setp	Outdoor temperature below which the heat generators switch on	Installer	-10...20	1.0 °C	
Heat Setp hyst	Hysteresis on the outdoor switch-on and off temperature of the heat generators	Installer	0...10	1.0 K	
Frequence	Frequence of the heat generators switch-on cycles	Installer	0...1000	2.0 h	
Timer	Heat generators switch-on duration	Installer	0...200	10 min	
Solar	Solar parameters	Installer			
Solar pump DT On	Differential between the solar panel and solar hot water tank temperature above which the solar pump switches on	Installer	4...64	8.0 K	
Solar pump dT Off	Differential between the solar panel and solar hot water tank temperature below which the solar pump switches off	Installer	2...10	4.0 K	
Min Temp.	Minimum temperature of the solar panel below which the solar pump always remains off	Installer	5...60	20 °C	
Max Temp.	Maximum temperature of the hot water tank above which the solar pump remains off	Installer	40...70	60 °C	
Max load hyst	Maximum temperature increase of the solar hot water tank during the anti-stagnation cycle	Installer	3...15	5 °C	
Antistagn On Temp	Solar panel temperature when anti-stagnation cycle starts	Installer	100...120	105 °C	
Antistagn Off Temp.	Maximum solar panel temperature after which the anti-stagnation cycle is switched off to prevent cavitation to the solar pump	Installer	120...140	120 °C	
Antistagn Hysteresis	Negative hysteresis with respect to the “Antistagn On temp.” to switch-off the anti-stagnation cycle	Installer	5...15	10 K	
Antifrost Setpoint	Solar panel temperature for activating the antifreeze cycle on the solar panel	Installer	-10...140	4.0 °C	
Antif hysteresis	Positive hysteresis to switch-off the antifreeze cycle on the solar panel	Installer	2...10	4 K	
Solar Recovery Hyst	Solar heat recovery function of the anti-legionella pump 53. If the value is lower than 5 the function switches off.	Installer	0...15	10 °C	
Room Unit data n	QMX3 room sensor settings, visible only if Configuration>Zones>Zone Mode n = Outd Reset-RS/ FixSp-RS	Installer			
SN	Serial number of room unit connected	Installer	Value	Value	
Temperature	Temperature read con room unit	Installer	Value	Value	
Operative mode	Operative mode of Heating/Coolin circuit	Installer	Auto, Comfort, Precomfort, Reduced, Protected		
Setpoint	Actual setpoint circuit	Installer	Value	Value	
Comfort Setpoint Heating	Band settings for QMX3 Room sensor	Installer	8...40	Value	

Continued on the next page

	Heating Precomfort Set	Band settings for QMX3 Room sensor	Installer	8...40	Value	
	Reduced Heating Set	Band settings for QMX3 Room sensor	Installer	8...40	Value	
	Heating Protection Set	Band settings for QMX3 Room sensor	Installer	-2...10	Value	
	Comfort Setpoint Cooling	Band settings for QMX3 Room sensor	Installer	8...40	Value	
	Cooling Precomfort Set	Band settings for QMX3 Room sensor	Installer	8...40	Value	
	Reduced Cooling Set	Band settings for QMX3 Room sensor	Installer	8...40	Value	
	Cooling Protection Set	Band settings for QMX3 Room sensor	Installer	10...20	Value	
	Hysteresis	Activation or deactivation hysteresis of the heating / cooling demand	Installer	0...2	0.5°C	
Heat Pump			Installer			
	Shutdown Differential HP	Shutdown Differential HP in cooling if the system does not absorb enough cold	Installer	0...100	3°C	
	CutOff Temp.	Outdoor shutdown temperature of the HP in hot because it no longer performs well	Installer	-20...20	5°C	
	Temp. Cutoff Hyst.	Hysteresis on the cascade setpoint to switch off the boiler and leave the HP on	Installer	0...3	1°C	
	Saturation time	Time of the HP in HEAT to reach the setpoint. If it does not succeed in this time, the boiler switches on	Installer	0...120	120°C	
	Saturation hysteresis	Hysteresis on saturation	Installer	0...10	1°C	
	Tempo fotovoltaico	Additional time to allow the HP in HEAT to reach the set point if the photovoltaic contact is closed	Installer	1...999	60 min	
	Defrost In Time	Time during which the temperature drop “Differ. defrost In” due to defrosting is monitored	Installer	0...90	5 min	
	Differ. defrost In	Temperature drop due to defrost	Installer	0...20	5°C	
	Defrost Out Time	Time during which the temperature rise “Differ. defrost Out” due to defrosting is monitored	Installer	0...90	5 min	
	Differ. defrost Out	Temperature rise due to defrost	Installer	0...20	5°C	
	Incr. Temp. CutOff	Increase of the Cutoff temperature at each defrost	Installer	0...120	1°C	
	Decreasing time CutOff	Time after which I return to lower the Cutoff temperature	Installer	0...360	180 min	
	Tempo Foto Defrost in	Additional time to Defrost In Time in case of closed photovoltaic contact to try to keep HP on longer	Installer	0...90	1 min	
	DHW CutOff Temp.	DHW cutoff outdoor temperature	Installer	-20...50	5°C	
	DHW Cutoff Hyst. Temp.	Hysteresis on the outdoor temperature of the DHW cutoff	Installer	0...3	1°C	
	Maximum time DHW	Maximum time to tank load then the boiler is switched on	Installer	0...300	60 min	
	Post DHW Circulation	Post circulation which is activated after the HP has finished a DHW cycle, before diverting to the boiler	Installer	0...300	60s	
	Rid Temp Cutoff San Foto	Reduction of the external cut-off temperature in domestic hot water, in the case of closed photovoltaic contact	Installer	0...10	2°C	
	Tempo Max San Foto	Additional time at Maximum time DHW to load the boiler with HP, after which the boiler is switched on	Installer	0...90	60 min	
System state		System state parameters (read-only)	Installer			
	System	N/A	Installer	Value	Value	
	Request	DHW or Heating request	Installer	Value	Value	
	Sensors state	State of the temperature measurement sensors	Installer			
	Actual outdoor temp	Outdoor temperature	Installer	Value	Value	
	Water heater t.	General cascade temperature	Installer	Value	Value	
	Zone1 supply t.	Circuit 1 supply temperature; visible only with 3 way valve so Configuration>Zones>3 way valve n>Type Zone=Mix	Installer	Value	Value	
	Zone2 supply t.	Circuit 2 supply temperature; visible only with 3 way valve so Configuration>Zones>3 way valve n>Type Zone=Mix	Installer	Value	Value	
	Zone3 supply t.	Circuit 3 supply temperature; visible only with 3 way valve so Configuration>Zones>3 way valve n>Type Zone=Mix	Installer	Value	Value	
	Zone4 supply t.	Circuit 4 supply temperature; visible only with 3 way valve so Configuration>Zones>3 way valve n>Type Zone=Mix	Installer	Value	Value	
	Zone5 supply t.	Circuit 5 supply temperature; visible only with 3 way valve so Configuration>Zones>3 way valve n>Type Zone=Mix	Installer	Value	Value	

Continued on the next page

Parameter	Description	Access level	Adjustment range	Default value	Custom value
DHW tank sens	Hot water tank temperature	Installer	Value	Value	
Solar hot water tank T.	Solar hot water tank temperature	Installer	Value	Value	
Solar tank sens	Solar panel tank temperature	Installer	Value	Value	
Solar panel temp	Solar panel temperature	Installer	Value	Value	
Recirculation T.	Recirculation circuit temperature	Installer	Value	Value	
CH modules state	State of the heat generators used for the heating service	Installer			
Actual setpoint	Actual setpoint of the heat generators	Installer	Value	Value	
Water heater t.	General cascade temperature	Installer	Value	Value	
Phase	N/A	Installer	Value	Value	
Light-on delay	Light-on delay time	Installer	Value	Value	
Light-off delay	Light-off delay time	Installer	Value	Value	
Modulation delay	Delay time to modulation of the heat generators setpoint	Installer	Value	Value	
1 (Heating/DHW)	Module1 service (DHW/Heating)	Installer	Value	Value	
2 (Heating/DHW)	Module 2 service (DHW/Heating)	Installer	Value	Value	
3 (Heating/DHW)	Module 3 service (DHW/Heating)	Installer	Value	Value	
4 (Heating/DHW)	Module 4 service (DHW/Heating)	Installer	Value	Value	
1 Standby/Active 1 %	Module 1 (Standby/Active) and percentage of 0-10V signal	Installer	Value	Value	
2 Standby/Active 1 %	Module 2 (Standby/Active) and percentage of 0-10V signal	Installer	Value	Value	
3 Standby/Active 1 %	Module 3 (Standby/Active) and percentage of 0-10V signal	Installer	Value	Value	
4 Standby/Active 1 %	Module 4 (Standby/Active) and percentage of 0-10V signal	Installer	Value	Value	
Alarm output	Alarm contact status	Installer	ON...OFF		
DHW modules state	State of the heat generators used for the DHW service	Installer			
Light-on delay	Light-on delay time	Installer	Value	Value	
Light-off delay	Light-off delay time	Installer	Value	Value	
DHW tank sens	Hot water tank temperature	Installer	Value	Value	
Actual setpoint	Actual setpoint of the hot water tank	Installer	Value	Value	
Type State Cmd Temp 1 Heat/DHW off 0.0% 2 Heat/DHW off 0.0% 3 Heat/DHW off 0.0% 4 Heat/DHW off 0.0%	Service, state and percentage of the 0-10V signal of each heat generator used for the DHW service	Installer			
Antileg counter days	Counter for the days when the hot water tank is below the Anti-legionella temperature	Installer	Value	Value	
Antileg cycle Counter	Antilegionella cycle counter	Installer	Value	Value	
Tank pump	Tank pump state	Installer	Value	Value	
Shuffle pump	Shuffle pump state	Installer	Value	Value	
DHW return pump	DHW return pump state	Installer	Value	Value	
DHW return sensor	Temperatur measured by DHW return sensor	Installer	Value	Value	

Continued on the next page

DHW return setp	Setpoint of DHW return sensor	Installer	Value	Value	
Modules state	State of the heat generators – used for heating or for DHW	Installer			
Module 1	Service supplied by heat generator 1	Installer	Value	Value	
Module 2	Service supplied by heat generator 2	Installer	Value	Value	
Module 3	Service supplied by heat generator 3	Installer	Value	Value	
Module 4	Service supplied by heat generator 4	Installer	Value	Value	
T. Module 1	Heat generator 1 supply temperature. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
T. Module 2	Heat generator 2 supply temperature. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
T. Module 3	Heat generator 3 supply temperature. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
T. Module 4	Heat generator 4 supply temperature. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
Pressure 1	Heat generator 1 water pressure read on the Modbus channel. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
Pressure 2	Heat generator 2 water pressure read on the Modbus channel. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
Pressure 3	Heat generator 3 water pressure read on the Modbus channel. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
Pressure 4	Heat generator 4 water pressure read on the Modbus channel. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
0-10V 1	0-10V signal value received by the heat generator and read on the Modbus channel. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
0-10V 2	0-10V signal value received by the heat generator and read on the Modbus channel. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
0-10V 3	0-10V signal value received by the heat generator and read on the Modbus channel. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
0-10V 4	0-10V signal value received by the heat generator and read on the Modbus channel. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
ON/OFF 1	Status of the output that drives an ON/OFF boiler (Visible only if Configuration>Cascade>Burner Out Type = ON/OFF)	Installer	Value	Value	
ON/OFF 2	Status of the output that drives an ON/OFF boiler (Visible only if Configuration>Cascade>Burner Out Type = ON/OFF)	Installer	Value	Value	
ON/OFF 3	Status of the output that drives an ON/OFF boiler (Visible only if Configuration>Cascade>Burner Out Type = ON/OFF)	Installer	Value	Value	
ON/OFF 4	Status of the output that drives an ON/OFF boiler (Visible only if Configuration>Cascade>Burner Out Type = ON/OFF)	Installer	Value	Value	
Burners mod 1	Modbus parameters read on Heat generator 1. Visible only if Configuration>System>Modbus enable=Yes	Installer			
Burner 1 Error	Error on Burner 1. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
Burner 1 Power	Burner 1 power percentage. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
Burner 2 Error	Error on Burner 2. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
Burner 2 Power	Burner 2 power percentage. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
Burner 3 Error	Error on Burner 3. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
Burner 3 Power	Burner 3 power percentage. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	

Continued on the next page

Parameter	Description	Access level	Adjustment range	Default value	Custom value
Burner 4 Error	Error on Burner 4. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
Burner 4 Power	Burner 4 power percentage. Visible only if Configuration>System>Modbus enable=Yes	Installer	Value	Value	
Burners mod 2	Modbus parameters read on Heat generator 2. Visible only if Configuration>System>Modbus enable=Yes	Installer			
Same menu as for “Burners mod 1”		Installer			
Burners mod 3	Modbus parameters read on Heat generator 3. Visible only if Configuration>System>Modbus enable=Yes	Installer			
Same menu as for “Burners mod 1”		Installer			
Burners mod 4	Modbus parameters read on Heat generator 4. Visible only if Configuration>System>Modbus enable=Yes	Installer			
Same menu as for “Burners mod 1”		Installer			
Time Cmd 1 0.0% 2 0.0% 3 0.0% 4 0.0%	Percentage of 0-10V signal sent to heat generators 1, 2, 3, 4.	Installer			
Cmd Volt 1 0mV 2 0mV 3 0mV 4 0mV	Absolute value of 0-10V signal sent to heat generators 1, 2, 3, 4.	Installer			
Zones State	State of the heating circuits				
Zone 1					
System	N/A	Installer	Value	Value	
Type of Zone	For how it is set in Configuration>Zones->3 way valve->Type of Zone parameter	Installer	Value	Value	
RT input	State of the RT input (Yes = heat demand; No = No heat demand)	Installer	Value	Value	
Action	As set in Parameters>Zones->Action parameter. It is not visible if the room sensor is connected (Configuration>Zones>Zone Mode 1> FixSp-RS/ Outd Reset-RS)	Installer	Value	Value	
Heating Mode	As set in Configuration>Zones>Zone Mode parameter	Installer	Value	Value	
Request	Heat request yes or no. It is not visible if the room sensor is connected (Configuration>Zones>Zone Mode 1> FixSp-RS/ Outd Reset-RS)	Installer	Value	Value	
Selected setp	Actual setpoint. It is not visible if the room sensor is connected (Configuration>Zones>Zone Mode 1> FixSp-RS/ Outd Reset-RS)	Installer	Value	Value	
3 way valve State	3 way valve state	Installer	Value	Value	
Supply sens	Current circuit supply temperature	Installer	Value	Value	
Pump control	On or off	Installer	Value	Value	
Valve control	Opening (100%) or closing (0%) percentage of the mixing valve	Installer	Value	Value	
Pump	State of the circuit pump	Installer	Value	Value	
Vlv 3pt Open	State of the relay that controls the opening of the mixing valve	Installer	Value	Value	
Vlv 3pt Close	State of the relay that controls the closing of the mixing valve	Installer	Value	Value	
Zone 2					
Same menu as for “Zone 1”		Installer			

Continued on the next page

Zone 3					
Same menu as for “Zone 1”		Installer			
Zone 4					
Same menu as for “Zone 1”		Installer			
Zone 5					
Same menu as for “Zone 1”		Installer			
Outputs rotat. state	Rotation state of the heat generators	Installer			
Heating	Heat generators to be used for heating	Installer			
Mode	As set in Parameters>Outputs rotation>Mode menu	Installer	Value	Value	
Fix rotation		Installer			
Interval	Rotation time	Installer	Value	Value	
Base time rotation		Installer			
Max ancient diff.	Maximum ageing difference of the heat generators	Installer	Value	Value	
Check phase	N/A	Installer	Value	Value	
Check time	N/A	Installer	Value	Value	
Stop time	N/A	Installer	Value	Value	
Module MaxHH	Maximum hours of ageing between the heat generators	Installer	Value	Value	
Sequence change	Enable or not the sequence change	Installer	Value	Value	
Mod 1 Work Min.	Working minutes of heat generator 1	Installer	Min value	Min value	
Mod 2 Work Min.	Working minutes of heat generator 2	Installer	Min value	Min value	
Mod 3 Work Min.	Working minutes of heat generator 3	Installer	Min value	Min value	
Mod 4 Work Min.	Working minutes of heat generator 4	Installer	Min value	Min value	
Sequence value value value value	Heat generators switch-on sequence	Installer			
DHW	Heat generators to be used for DHW	Installer			
Mode	As set in the Parameters>Outputs rotation>Mode menu	Installer	Value	Value	
Fix rotation	The rotation of the 0-10 volt outputs occurs every time set on “interval”	Installer			
Interval	Time after which the outputs are rotated	Installer	Value	Value	
Base time rotation	The rotation of the 0-10 volt outputs occurs after the time “Max ancient diff.”. Whenever a CH request for heat occurs, the 0-10v outputs rise in sequence giving precedence to those with the least number of working hours	Installer	Value	Value	
Max ancient diff.	Maximum ageing difference of the heat generators, after which the rotation begins	Installer	Value	Value	
Check time	N/A	Installer	Value	Value	
Stop time	N/A	Installer	Value	Value	
Module MaxHH	Maximum hours of ageing between the heat generators	Installer	Value	Value	
Sequence change	Enable or not the sequence change	Installer	Value	Value	
Mod 1 Work Min.	Working minutes of heat generator 1	Installer	Min value	Min value	
Mod 2 Work Min.	Working minutes of heat generator 2	Installer	Min value	Min value	
Mod 3 Work Min.	Working minutes of heat generator 3	Installer	Min value	Min value	

Continued on the next page

Parameter	Description	Access level	Adjustment range	Default value	Custom value
Mod 4 Work Min	Working minutes of heat generator 4	Installer	Min value	Min value	
Sequence value value value value	Heat generators switch-on sequence	Installer			
Solar state		Installer			
Solar pump dT On	Delta between the solar panel sensor and the solar storage tank sensor, to start the solar pump	Installer	Value	Value	
Solar pump dT On	Delta between the solar panel sensor and the solar storage tank sensor, to stop the solar pump	Installer	Value	Value	
Min Temp.	Setpoint of the solar panel sesor, below which the solar pump always remains stopped	Installer	Value	Value	
Max Temp.	Setpoint of the solar panel sesor, above which the solar pump always remains stopped	Installer	Value	Value	
Max load hyst	Loading delta with respect to “Max. Temp” to carry out the anti-stagnation function. Beyond this delta the solar pump will always remain stopped	Installer	Value	Value	
Antistagn On Temp	Solar panel setpoint to start the solar pump as anti-stagnation	Installer	Value	Value	
Antistagn Off Temp	Solar panel setpoint to stop the solar pump as anti-stagnation, as an excessive temperature has been reached and the pump is stopped to prevent it from burning. In this case an alarm is generated “A015 Antistagnation: Alarm”	Installer	Value	Value	
Antistagn hysteresis	Solar pump shutdown hysteresis with respect to “Antistagn On Temp”	Installer	Value	Value	
Antifrost Setpoint	Antifreeze setpoint on the solar panel sensor. If the sensor falls below this value, the solar pump turns on.	Installer	Value	Value	
Antif hysteresis	Solar pump shutdown hysteresis with respect to “Antifrost Setpoint”	Installer	Value	Value	
Solar tank sens	Temperature of solar tank sensor	Installer	Value	Value	
Solar Panel Temp	Solar panel temperature	Installer	Value	Value	
DT control	On or off of the solar pump generated by the temperature delta “Solar pump dT On” and “Solar pump dT On”	Installer	Value	Value	
Antistag. Ctl	State of Antistagnation function	Installer	Value	Value	
Pump	Solar pump state	Installer	Value	Value	
Heat Pump state		Installer			
HP Mode	Heat pump setting for as in Configuration>Heat pump> HP Mode	Installer	Value	Value	
State	Heat pump state (Stb = stand-by; Heat = heating; Cool = cooling; DHW= domestic hot water;)	Installer	Value	Value	
Autumn condition	If the outdoor temperature is greater than Parameters>Modules>Autumn temp. +1°C, the autumn condition is activated for which cooling does not work	Installer	Active-NonActive		
Q1_Pdc	Status of relay Q1 of the HP control	Installer	On-Off		
Q2_Pdc	Status of relay Q2 of the HP control	Installer	On-Off		
Q3_Pdc	Status of relay Q3 of the HP control (OFF when it is heating, ON in DHW)	Installer	On-Off		
Q4_Pdc	N/A	Installer	On-Off		
Defrost state	State of the defrost	Installer	Active-NonActive		
Forced Ignition		Installer	On-Off		
Increase Cutoff	Increase cutoff setpoint to avoid defrost	Installer	Value	Value	
Mod 1 Modbus State	Address readings of the modbus module 1. Visible only if Configuration>System>Modbus Enable=Yes.	Installer			

Continued on the next page

Comm Error MB 1	N/A	Installer	Value	Value	
Unit of measure	N/A	Installer	°C...°F		
Type of device	N/A	Installer	Slave...Master		
Single-burner condition	N/A	Installer	2 = Waiting; 9 = In operation; 13 = Fan in post-ventilation; 15 = Pump in post-circulation;		
Single-burner state	N/A	Installer	0 = Waiting; 16 = Heat demand;		
Single-burner err code	N/A	Installer	?? = No burner; 255 = No error; See the heat generator's manual for any other codes;		
Heating Setp	N/A	Installer	Value	Value	
DHW setpoint	N/A	Installer	Value	Value	

Heating mode	N/A	Installer	0: Heating with RT (N/A); 1: Heating with outdoor sensor (N/A) 2: Heating with outdoor sensor and RT compensation (N/A); 3: Permanent heating (N/A); 4: Heating controlled by 0-10V input;		
DHW mode	N/A	Installer	0 = No domestic hot water; 1 = Hot water tank with sensor; 2 = Hot water tank with thermostat; 3 = N/A; 4 = N/A; 5 = N/A;		
Burner 1 supply temp	N/A	Installer	Value	Value	
Burner 1 return temp	N/A	Installer	Value	Value	
Hot water tank temp	N/A	Installer	Value	Value	
Burner 1 flue temp	N/A	Installer	Value	Value	
Water heater t.	Heat generator supply temperature (Measured in the supply manifold)	Installer	Value	Value	
Single-burner power	N/A	Installer	Value	Value	
Burner 1 ionisation current	N/A	Installer	Value	Value	
Water pressure	Heat generator water pressure	Installer	Value	Value	
0-10V input signal	0-10V signal received from the heat generator	Installer	Value	Value	
Burner 1 pump state	N/A	Installer	0 = Closed; 100 = Open;		
Burner 1 Cond.	N/A	Installer	2 = Waiting; 9 = In operation; 13 = Fan in post-ventilation; 15 = Pump in post-circulation;		
Burner 1 state	N/A	Installer	0 = Waiting; 16 = Heat demand;		

Continued on the next page

Parameter	Description	Access level	Adjustment range	Default value	Custom value
Burner 1 err code	Burner 1 error code. See the heat generator's manual for diagnostics	Installer	?? = No burner; 255 = No error; See the heat generator's manual for any other codes;		
Burner 1 power	Burner 1 power level	Installer	Value	Value	
Burner 2 Cond.	N/A	Installer	2 = Waiting; 9 = In operation; 13 = Fan in post-ventilation; 15 = Pump in post-circulation;		
Burner 2 state	N/A	Installer	0 = Waiting; 16 = Heat request;		
Burner 2 err code	Burner 2 error code. See the heat generator's manual for diagnostics	Installer	?? = No burner; 255 = No error; See the heat generator's manual for any other codes;		
Burner 2 power	Burner 2 power level	Installer	Value	Value	
Burner 3 Cond.	N/A	Installer	2 = Waiting; 9 = In operation; 13 = Fan in post-ventilation; 15 = Pump in post-circulation;		
Burner 3 state	N/A	Installer	0 = Waiting; 16 = Heat request;		
Burner 3 err code	Burner 3 error code. See the heat generator's manual for diagnostics	Installer	?? = No burner; 255 = No error; See the heat generator's manual for any other codes;		
Burner 3 power	Burner 3 power level	Installer	Value	Value	
Burner 4 Cond.	N/A	Installer	2 = Waiting; 9 = In operation; 13 = Fan in post-ventilation; 15 = Pump in post-circulation;		
Burner 4 state	N/A	Installer	0 = Waiting; 16 = Heat request;		
Burner 4 err code	Burner 4 error code. See the heat generator's manual for diagnostics	Installer	?? = No burner; 255 = No error; See the heat generator's manual for any other codes;		
Burner 4 power	Burner 4 power level	Installer	Value	Value	
Spring outdoor temp	N/A	Installer	Value	Value	
Spring supply temp	N/A	Installer	Value	Value	
Winter supply temp.	N/A	Installer	Value	Value	
Hold off outdoor temp	N/A	Installer	Value	Value	

Continued on the next page

T Night reduction		N/A	Installer	Value	Value	
Outdoor temperature		N/A	Installer	Value	Value	
Mod 2 Modbus State		Address readings of the modbus module 2. Visible only if Configuration>System>Modbus Enable=Yes.	Installer			
Mod 3 Modbus State		Address readings of the modbus module 3. Visible only if Configuration>System>Modbus Enable=Yes.	Installer			
Mod 4 Modbus State		Address readings of the modbus module 4. Visible only if Configuration>System>Modbus Enable=Yes.	Installer			
Diagnostics			Installer			
Sensor		Temperature sensor settings	Installer			
Water heater sensor		General cascade temperature sensor	Installer			
	Manual	Inactive = Automatic reception of the ohmic value; Active = Manual setting of the ohmic value using the next parameter	Installer	Value	Value	
	Actual value	Temperature read or temperature setting if Diagnostics>Sensor>Water Heater sensor>Manual=Active	Installer	Value	Value	
	Error	Reading error	Installer	Value	Value	
	High limit	Indication of an error when it exceeds a certain value	Installer	Value	Value	
	Low limit	Indication of an error when it drops below a certain value	Installer	Value	Value	
	Sensor calibration	Positive or negative offset for calibrating a sensor	Installer	-150...150	0 K	
	HW filter PT1	N/A	Installer	0...28800	0 s	
	High limit	High error threshold	Installer	-50...150	150 °C	
	Low limit	Low error threshold	Installer	-50...150	-50 °C	
	Alarm config	N/A	Factory	0x01FF		
Outputs			Installer			
	Alarm delay	Delay in signalling a sensor alarm	Installer	0...3600	0 s	
Outdoor sensor		Same menu as for “Water heater sensor”	Installer			
Zone1 sensor		Same menu as for “Water heater sensor”. Visible only if Configuration>Zones>3 way valve> Type of Zone=Mix.	Installer			
Zone2 sensor		Same menu as for “Water heater sensor”. Visible only if Configuration>Zones>3 way valve> Type of Zone=Mix.	Installer			
Zone3 sensor		Same menu as for “Water heater sensor”. Visible only if Configuration>Zones>3 way valve> Type of Zone=Mix.	Installer			
Zone4 sensor		Same menu as for “Water heater sensor”. Visible only if Configuration>Zones>3 way valve> Type of Zone=Mix.	Installer			
Zone5 sensor		Same menu as for “Water heater sensor”. Visible only if Configuration>Zones>3 way valve> Type of Zone=Mix.	Installer			
Zone6 sensor		Same menu as for “Water heater sensor”. Visible only if Configuration>Zones>3 way valve> Type of Zone=Mix.	Installer			
DHW tank sens		Same menu as for “Water heater sensor”	Installer			
Solar panel sensor		Same menu as for “Water heater sensor”	Installer			
DHW return sensor		Same menu as for “Water heater sensor”	Installer			
Solar tank sens		Same menu as for “Water heater sensor”	Installer			
0-10V Module1		0-10V output setting for heat generator 1	Installer			
	Manual control	Automatic or manual control of the output	Installer	Auto; 0...100 %	Auto	
	Actual value	Output value percentage of the 0-10V signal	Installer	Value	Value	
	Error	Possible output error	Installer	Value	Value	
0-10V Module2		Same menu as for “0-10V Module1”	Installer			
0-10V Module3		Same menu as for “0-10V Module1”	Installer			

Continued on the next page

Parameter	Description	Access level	Adjustment range	Default value	Custom value
0-10V Module4	Same menu as for “0-10V Module1”	Installer			
Tank pump	Domestic hot water tank pump control relay	Installer			
Manual control	Manual or automatic control of the relay	Installer	Off; On; Auto;	Auto	
Actual value		Installer	Value	Value	
Error	Possible output error	Installer	Value	Value	
_+operating hours		Installer	1 h	1 h	
Operation (Reset)	N/A	Installer	Execute	Execute	
Last heat.sys.hour	N/A	Installer	Value	Value	
> Value Date	N/A	Installer			
Contact function	Normally closed or open function of the contact	Installer	NO...NC	NO	
DHW return pump	Same menu as for “Tank pump”	Installer			
Zone1 pump	Same menu as for “Tank pump”	Installer			
Zone2 pump	Same menu as for “Tank pump”	Installer			
Zone3 pump	Same menu as for “Tank pump”	Installer			
Zone4 pump	Same menu as for “Tank pump”	Installer			
Zone5 pump	Same menu as for “Tank pump”	Installer			
Zone6 pump	Same menu as for “Tank pump”	Installer			
3 way valve zone1	Visible only if Configuration>Zones>3way valve n>Type of Zone=Mix.	Installer			
Manual control	Manual or automatic control of the relay	Installer	Off; On; Auto; Percentage value;	Auto	
Actual value		Installer	Value	Value	
Error	Possible output error	Installer	Value	Value	
3 way valve zone2	Same menu as for “3 way valve zone1”. Visible only if Configuration>Zones>3way valve n>Type of Zone=Mix.	Installer			
3 way valve zone3	Same menu as for “3 way valve zone1”. Visible only if Configuration>Zones>3way valve n>Type of Zone=Mix.	Installer			
3 way valve zone4	Same menu as for “3 way valve zone1”. Visible only if Configuration>Zones>3way valve n>Type of Zone=Mix.	Installer			
3 way valve zone5	Same menu as for “3 way valve zone1”. Visible only if Configuration>Zones>3way valve n>Type of Zone=Mix.	Installer			
3 way valve zone6	Same menu as for “3 way valve zone1”. Visible only if Configuration>Zones>3way valve n>Type of Zone=Mix.	Installer			
Solar Pump	Same menu as for “Tank pump”	Installer			

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Alarm Output		Same menu as for “Tank pump”	Installer			
Shuffle pump		Same menu as for “Tank pump”	Installer			
Q1_Pdc		Same menu as for “Tank pump”	Installer			
Q2_Pdc		Same menu as for “Tank pump”	Installer			
Q3_Pdc		Same menu as for “Tank pump”	Installer			
Q4_Pdc		Same menu as for “Tank pump”	Installer			
Inputs			Installer			
Circuit 1 RT			Installer			
	Manual	Passive = Automatic reception of the opening or closure contact; Active = Manual setting of the contact using the next parameter	Installer	Active; Passive;	Passive	
	Actual value	Reading of the contact state or contact state setting if the previous parameter is set as “Active”	Installer	Active; Passive;	Passive	
	Error	Input error	Installer	Value	Value	
	Alarm config	N/A	Installer	0x01FC (?...?)		
	Alarm delay	Delay between the alarm and it being signalled	Installer	0...3600	0 s	
	Contact function	Contact function normally open or closed	Installer	NO...NC	NO	
Circuit 2 RT		Same menu as for “Circuit 1 RT”	Installer			
Circuit 3 RT		Same menu as for “Circuit 1 RT”	Installer			
Circuit 4 RT		Same menu as for “Circuit 1 RT”	Installer			
Circuit 5 RT		Same menu as for “Circuit 1 RT”	Installer			
Circuit 6 RT		Same menu as for “Circuit 1 RT”	Installer			
Enab DHW		Same menu as for “Circuit 1 RT”	Installer			
Alarm input Heat Pump		Same menu as for “Circuit 1 RT”	Installer			
PV input		Same menu as for “Circuit 1 RT”	Installer			
DHW thermostat		Same menu as for “Circuit 1 RT”	Installer			
Anti-legionella forcing		Same menu as for “Circuit 1 RT”	Installer			
Software info			User			
Boiler Cascade		Software version and date	User			
Main page			User			
Day Date Time			User			
State 100% 100% 100% 100%		State of the heat generators intended as Stb = stand-by or percentage of 0-10V signal received	User			
Cascade S 100°C M 100°C		Cascade sensor setting S = Setpoint temperature; M = Measured temperature	User			
1 OFF S 100°C M 50°C		Heating circuit 1 state and setting: ANF = Antifreeze; Stb = stand-by; ON = heat demand; OFF = circuit off; S = Setpoint temperature; M = Measured temperature	User	Heating circuit 1 state		
2 OFF S 100°C M 50°C		Heating circuit 2 state and setting: ANF = Antifreeze; Stb = stand-by; ON = heat demand; OFF = circuit off; S = Setpoint temperature; M = Measured temperature	User	Heating circuit 2 state		
3 OFF S 100°C M 50°C		Heating circuit 3 state and setting: ANF = Antifreeze; Stb = stand-by; ON = heat demand; OFF = circuit off; S = Setpoint temperature; M = Measured temperature	User	Heating circuit 3 state		
4 Stb 60°C M 63°C		Heating circuit 4 state and setting: ANF = Antifreeze; Stb = stand-by; ON = heat demand; OFF = circuit off; S = Setpoint temperature; M = Measured temperature	User	Heating circuit 4 state		

DHW OFF 100°C	DHW circuit state and setting: ANL = Anti-legionella; Stb = stand-by; ON = heat demand; OFF = circuit off; Temperature measured by the domestic hot water tank sensor	User	State and temperature measured by the DHW sensor (when present)	
Solar OFF 100°C	Solar circuit state and setting: ANF = Antifreeze; ASG = Anti-stagnation; Stb = stand-by; ON = heat demand; OFF = circuit off; Temperature measured by the solar panel sensor	User	State and temperature measured by the solar panel sensor	
“ESC” key pressed quickly: If you are viewing the synoptic screen, go to the main menu. If you are at any step within the menu, go back without saving.				
“ESC” key pressed for 2sec. (Only valid for HMI POL895)				

HMI settings	Remote control settings	User			
V10.50 B0122		User			
Backlight colour		User	Blue...White	Blue	
Backlight timed switch-off		User	0...300	0	
Contrast		User	0...60	60	
Brightness		User	0...100	100	
Firmware update		User	Yes...No	No	

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COSMOGAS s.r.l.
Via L. da Vinci 16 - 47014
MELDOLA (FC) ITALY
info@cosmogas.com
www.cosmogas.com