

“LOGICO” MULTIFUNCTIONAL COMPACT HYDRAULIC MODULE



SAFETY: Please read carefully the mounting and the setting working instructions before starting the unit, in order to avoid accidents and failures caused by an incorrect use of the product. Please keep this manual for future consultations. Please also read the technical features and the instructions of the controller.

Main components list and basic features

(R1) High efficiency circulating pump for the mixed circuit

High efficiency circulating pump with variable Δp and constant Δp to control the differential pressure or control for the constant speed.

(V1) 3 ways mixing valve

3 ways Mixing Valve with double supply and proportional servomotor 0-10V. It allows an efficient use of the energy back from the high temperature circuit. This guarantees a very low return temperature to the boiler, by helping the condensation and then by increasing the efficiency of the installation, independently from the ambient conditions and the heating circuit settings.

(D) Isolating valves

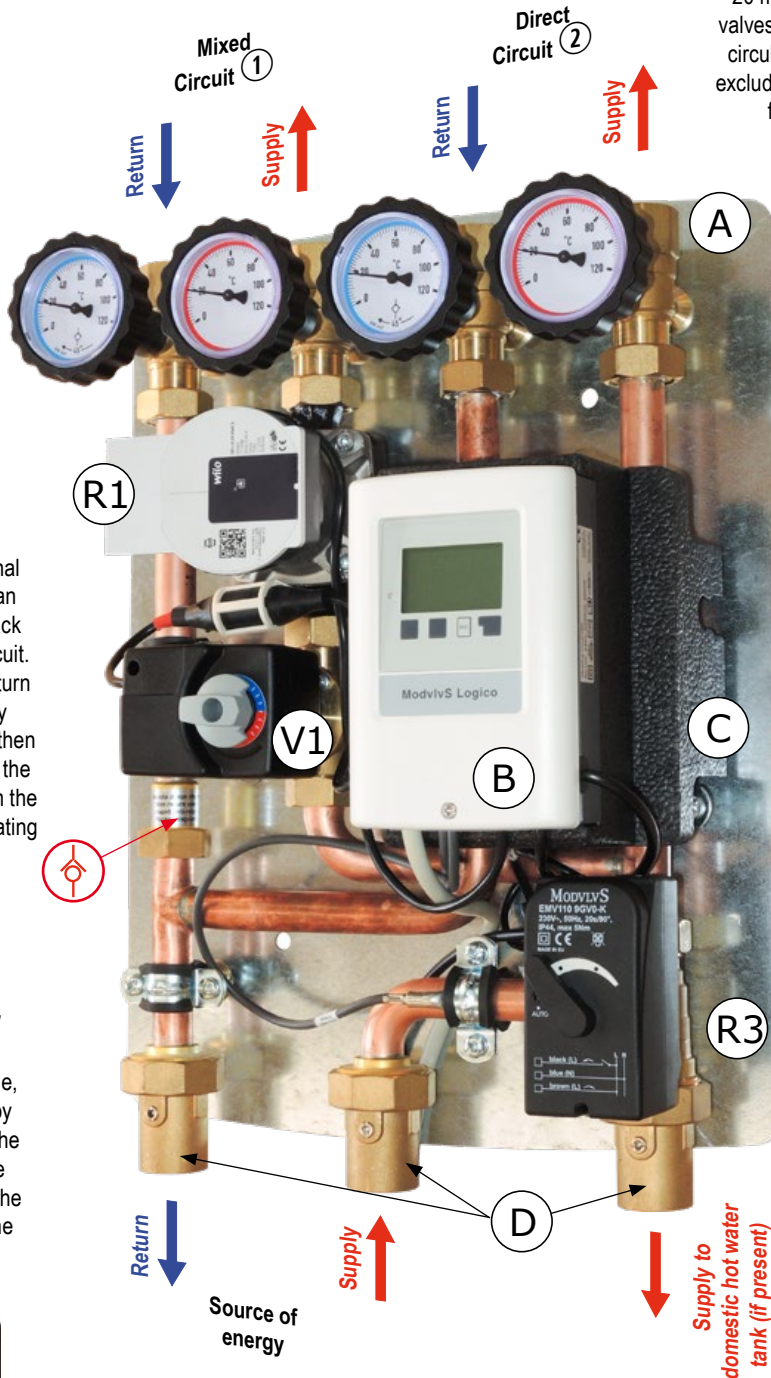
Isolating valves operated by cutting screwdriver.

For a possible maintenance/substitution of component integrated in the Logico module, close all the isolating valves by rotating 90 degree clockwise the screws. When terminated the maintenance operation, open the isolating valves and restore the pressure in the installation.



EPP insulation box

Dimensions: 400 x 516 x 180 mm. A special metallic bracket located at the back of the module, allows an easy installation on the wall.



(A) Isolation ball valves

Isolation ball valves with thermometer handle. The 20 mbar Check Valves inside the isolating ball valves of the two return ways, prevent the natural circulation of the fluid (thermosiphon effect). To exclude the check valves, rotate by 45° clockwise from the opening position the handle .



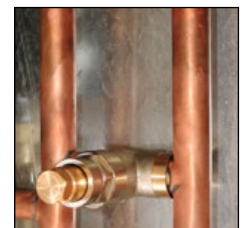
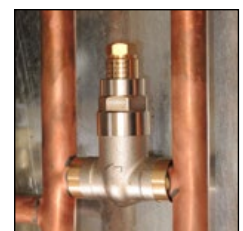
(B) Climate control unit

Climate Control Unit “Logico” with large LCD display for the management of the selected hydraulic system.

(C) Differential bypass valve

Overpressure differential bypass valve. It's located under the slot that houses the Control Unit. It can be rotated from the usual position to ease its regulation.

When the operations have been completed, return the valve to its initial position.



(R3) Diverting Valve

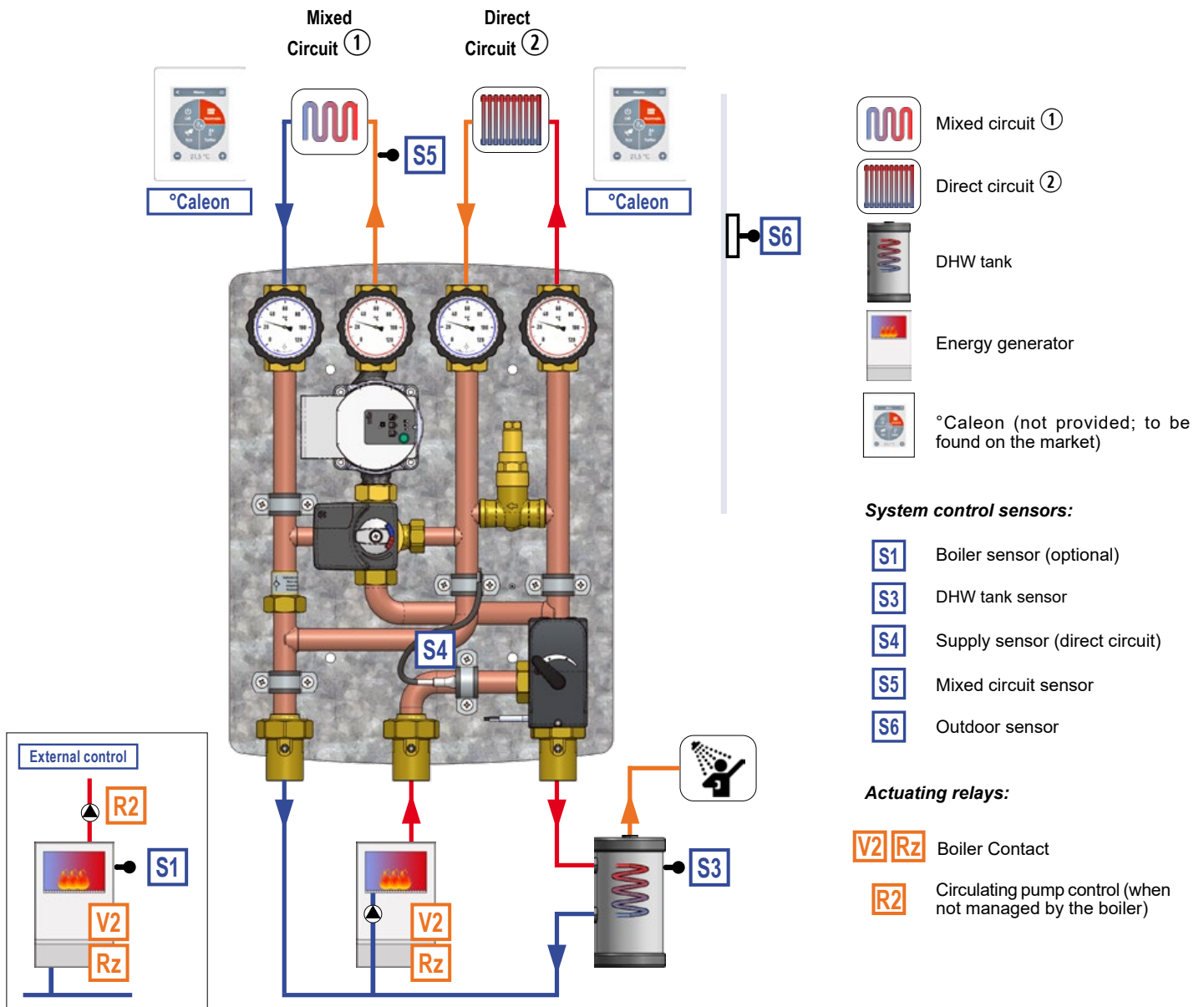
(available only in the Logico type ACS)

3 ways Diverting Valve, 2 points, 230 V. It diverts the flow coming from the heat source (i.e. wall hung gas boiler) towards the DHW buffer tank, when its temperature drop down under the temperature set in the Logico's Control Unit.

“LOGICO” MULTIFUNCTIONAL COMPACT HYDRAULIC MODULE

Hydraulic connection diagram

Requirements: The energy generator must have a circulator. Otherwise, the *Logico* control unit can handle an external circulating pump (R2), by means of an additional probe (S1) to be purchased separately.



Field of utilization

Maximum total power: 35 kW.

Direct circuit: Maximum power of 35 kW (with Δt 20 K) and a maximum flow of 1510 l/h. Kvs value: 5,0

Mixed circuit: Maximum power of 12 kW (with Δt 8 K) and a maximum flow of 1300 l/h. Kvs value: 4,0

DHW circuit: Maximum power of 35 kW (with Δt 15 K) and a maximum flow of 2010 l/h. Kvs value: 10,0

Technical Specifications

Centre distance: 90 mm to the circuits; 125 mm to the generator.

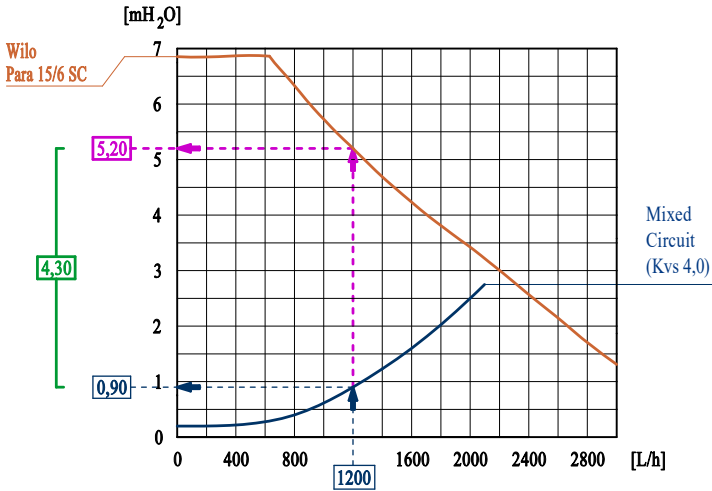
PN 10, maximum temperature 95°C.

Available external connections: 1" Female.

Caution. The scheme is purely indicative: no hydraulic components of security or devices required by specific rules or laws are represented.

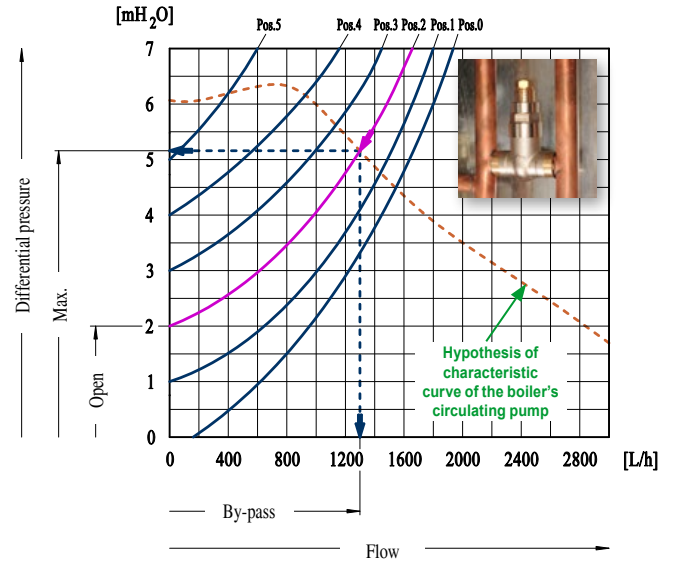
“LOGICO” MULTIFUNCTIONAL COMPACT HYDRAULIC MODULE

Characteristic curves



Pic.1: Characteristic curve of the circulating pump and the mixing circuit

The diagram shows how to calculate the residual height of the circulating pump for the mixed circuit. When defining the maximum required flow (as in example 1200 L/h), it can be seen from the graph that the circulating pump at this range has a height of 5,20 mH₂O, while the mixed circuit has 0,90 mH₂O of height's loss. As a result, the available height of the circulating pump, in order to top the height's loss of the mixed circuit, is 4,30 mH₂O.



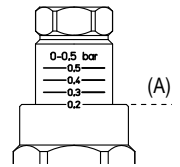
Pic.2: Characteristic curve and differential by-pass valve's adjustment (by-pass)

The by-pass ensures a flow recirculation proportional to the number of valves shut down by the end user limiting the maximum differential pressure generated by the supply circulating pump (boiler).

By-pass adjustment. It is necessary to know the characteristic curve of the circulating pump. Then plot the curve on diagram above. *There is a curve dotted line as example.* The intersection with the by-pass characteristic curves at different settings (0-5), allows obtaining the maximum allowed pressure that in the system with that adjustment and the flow rate that will circulate through the by-pass.

The reference for the adjustment scale is the top of the cap (A).

In the shown example, differential pressure is set to the recommended value of 0,2 bar.



Recommended value: 0,2 bar (Pos. 2)

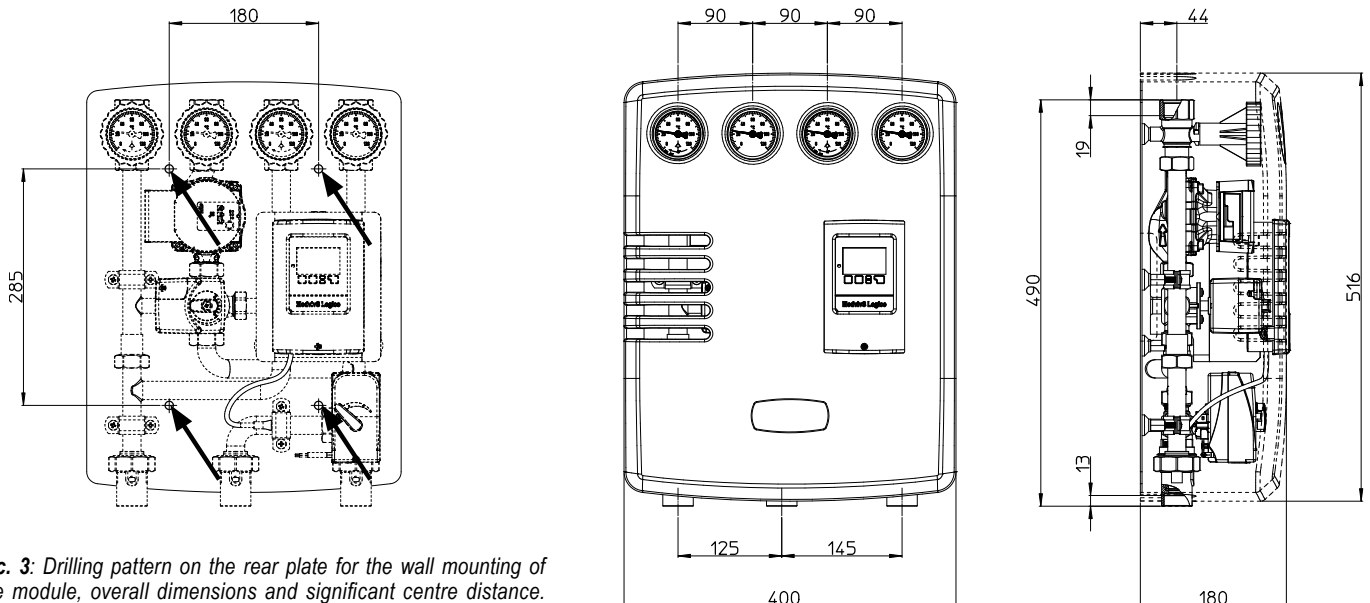
Materials

Fitting	Piping	Insulation	Gaskets	Circulating pump
Copper alloy CW617N	Copper	EPP	EPDM	Cast iron body

Installation

The hydraulic module is mounted vertically on the wall, with flow from the bottom up or vice versa: in this case, the control unit can be rotated by 180°. Proceed as follows:

- ✓ finding and identifying the position of the 4 holes to be made on the wall according to the diagram in Pic. 3;
- ✓ Drill and insert the wall plug suitable for the wall type;
- ✓ Remove the cover and place the hydraulic module firmly;
- ✓ Connect the pipes according to the connection diagram, by following the indications shown in Pic. 3



Pic. 3: Drilling pattern on the rear plate for the wall mounting of the module, overall dimensions and significant centre distance.

“LOGICO” MULTIFUNCTIONAL COMPACT HYDRAULIC MODULE

Wiring

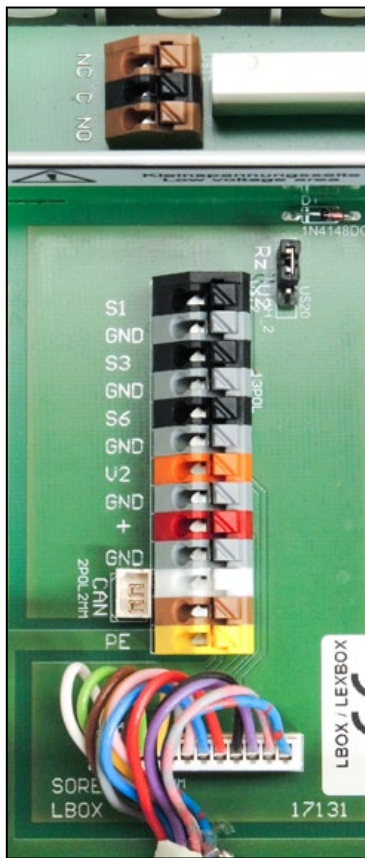
The control unit is supplied pre-wired. The power cord must be connected to 230 VAC power supply only after having completed the connection of the temperature sensors and the boiler contact. For fast and functional connection, it is not necessary to operate on the control unit but simply insert the cables into the push-in terminal of the sensor box.

To carry out these operations, rely on qualified personnel.

Proceed with the installation according to all listed below.



All connections must be done via the terminals inside the sensor box according to the diagram of figure 4. The sensor box must be fixed to the wall near by the hydraulic module.



Pict. 4: Detail of the internal terminal board

✓ To connect the sensors (all PT1000)

S1: Boiler temperature sensor (optional). Necessary for managing the pump outside the boiler;

S3: Temperature sensor TT/P4 immersion type for DHW tank (medium to high position)

S6: External temperature sensor TA55. To be fixed to the wall on the north side of the building. Wiring must be carried out by the installer using cables of a minimum section of 0,75 mm² up to a maximum length of 30 m. For higher length, it is necessary to increase the section and possibly check the resistance of the assembly sensor plus wire, as shown in Table 1 (the wires connection does not require to observe polarity).

Table 1: Resistance/temperature for wiring the sensors

°C	0	10	20	30	40	50	60	70	80	90	100
Ω	1000	1039	1077	1116	1155	1194	1232	1270	1308	1347	1385

GND: Connect the second wire of each sensor;

°Caleon: Room thermostat for the direct of the direct or mixed circuit. See specific information.



- +24 VDC ; Red terminal
- GND ; Grey terminal
- CAN High ; White terminal
- CAN Low ; Brown terminal

✓ Connect the energy source command

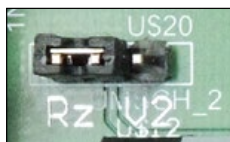
If the energy source needs a dry contact:

Rz: Connect the power source control to the **NC/NO** terminals to obtain a dry contact (voltage-free). Max. 2A.

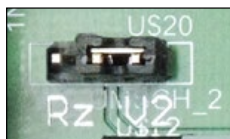
If the energy source needs a modulating command:

V2: If the power source is modulating, it can be connected directly to the **V2 / GND** terminal to get the 0-10 V command signal.

It is necessary to move the jumper to the “V2” position.



Factory Configuration



“LOGICO” MULTIFUNCTIONAL COMPACT HYDRAULIC MODULE



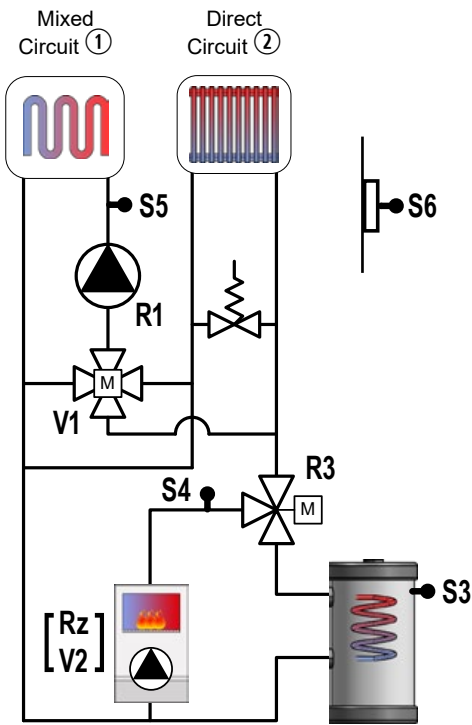
Figure 5: Connection for the temperature touch sensor to the supply

✓ **Install the TR/S1.5 temperature touch sensor**

Having completed all the connections of the wires in the sensor box, secure the S5 (TR/S1.5) temperature touch sensor to the supply pipe (metallic) of the mixed circuit ① downstream of the ball valve with the red colour ring indicator, by using the supplied clip as shown in *Figure 5*. It is also advisable to apply a thin coat of thermoconductive paste between the sensor and the pipe.

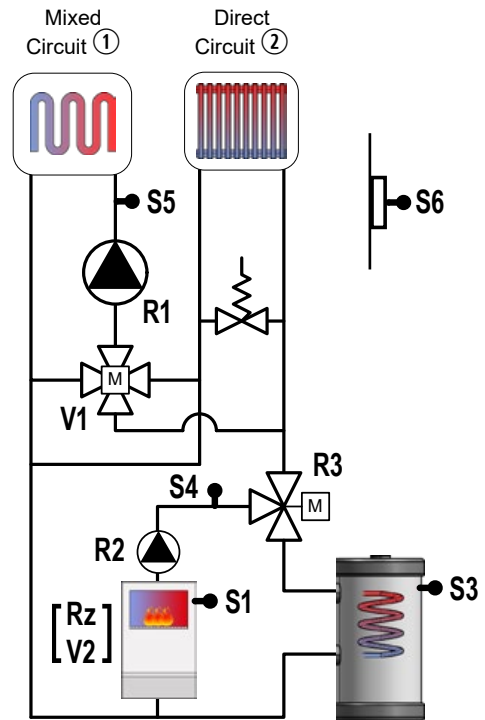
General scheme

✓ **Energy generator with integrated circulating pump**

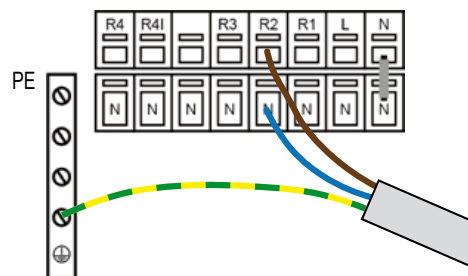


✓ **Variant with boiler pump**

If the energy generator does not have a circulating pump built in, Logico can control a circulating pump (not supplied). It is necessary the use of an additional sensor (S1, not supplied). The scheme becomes as follows:



In this case, the cable **R2** powering the pump (230 VAC, max. 480 W) must be connected directly to the terminals inner the control unit.



“LOGICO” MULTIFUNCTIONAL COMPACT HYDRAULIC MODULE

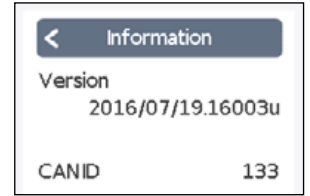
Room Thermostat °Caleon (not provided; to be found on the market)


It is possible to connect the room thermostat °Caleon for more efficient management of one or both circuits.

It is necessary to link the Caleon with the direct circuit, the mixed circuit, or both.

Proceed as follows:

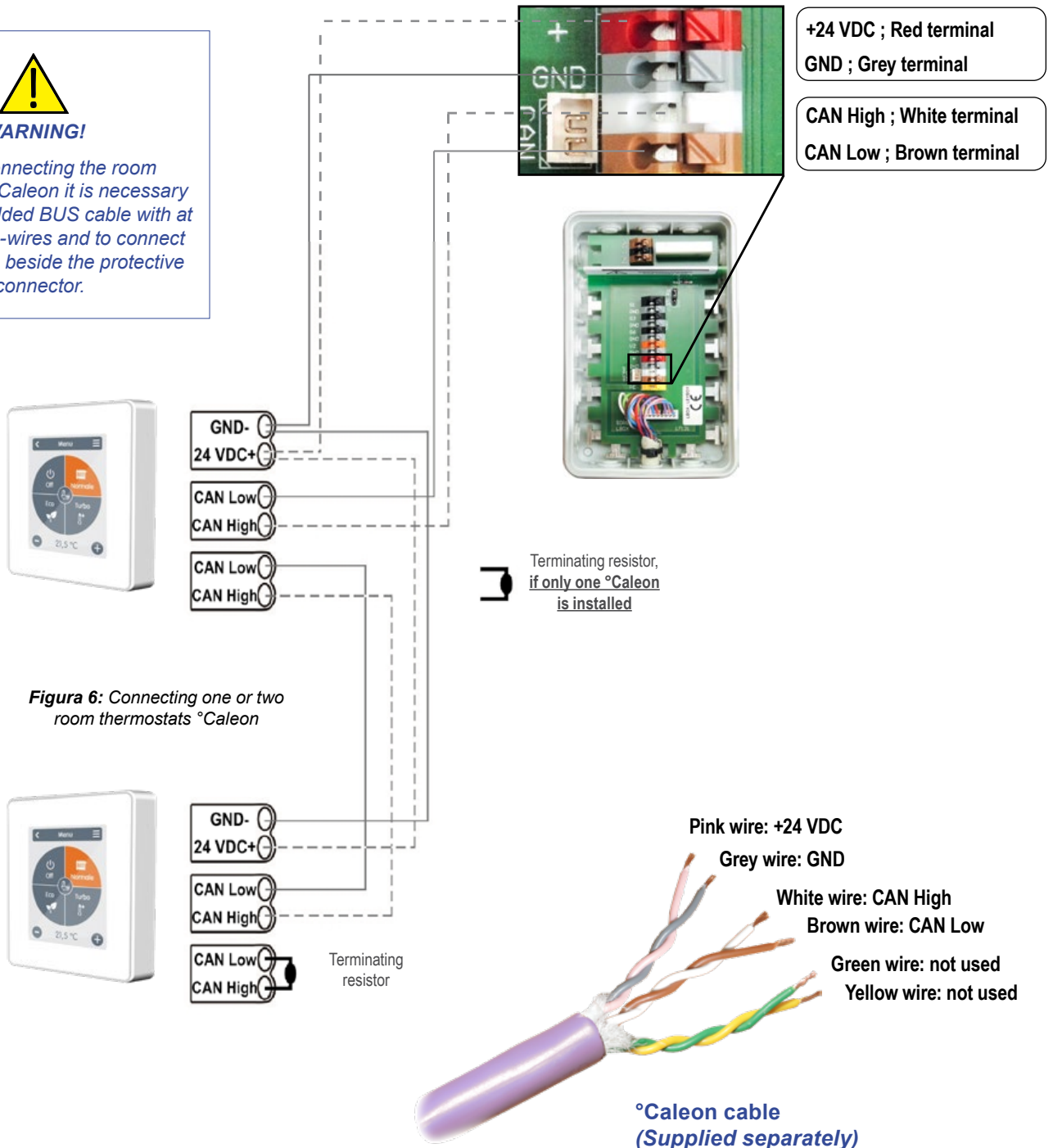
- ✓ Having done the electrical connections as shown in *Figure 6*, recover the Canbus ID for each single °Caleon: enter the °Caleon menu, select the “Expert” icon, click “4. Network” and write down the number next to the Canbus ID (in the example it is 133).
- ✓ Enter the menu “5. Settings” of the Logico Control Unit, select “5.1 Heating circ. 1” or “5.2 Heating circ. 2” according to the circuit selected and confirm with [Ok]. Scroll through the menu using the [+] and [-] key until you reach “Room controller” (1 or 2) and confirm with [Ok]. Scroll through the menu until you reach “Thermostat” and enter the settings menu pressing [Info] key.
- ✓ Use the [+] and [-] keys to scroll through the proposed options until you find the identified °Caleon through the previously noted number and confirm the link by pressing the [Ok] key.
- ✓ Repeat the operation for the other °Caleon.





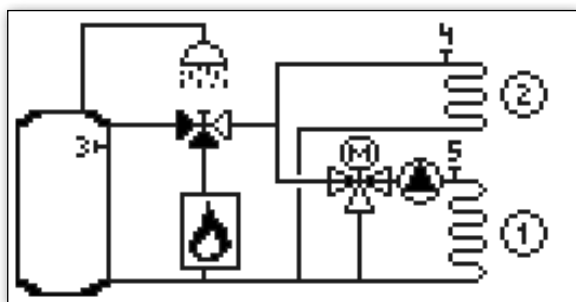
WARNING!

When connecting the room thermostat °Caleon it is necessary to use a shielded BUS cable with at least 4 pairs-wires and to connect the shield to beside the protective connector.

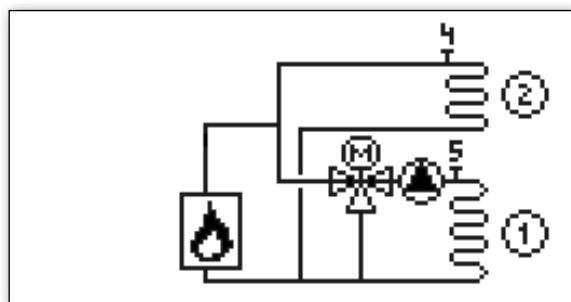


“LOGICO” MULTIFUNCTIONAL COMPACT HYDRAULIC MODULE

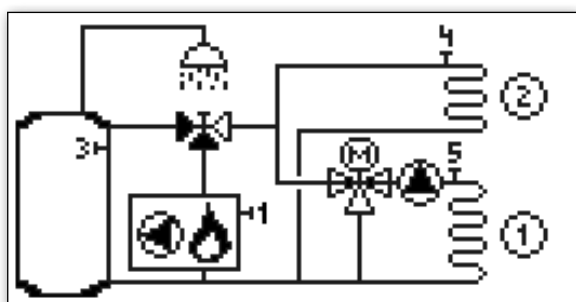
Hydraulic schemes



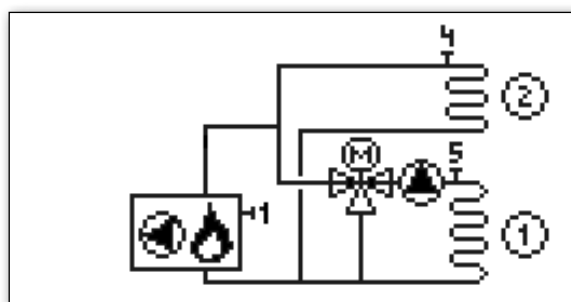
Logico ACS



Logico



Logico ACS with boiler pump (*)



Logico with boiler pump (*)

(*) These hydraulic schemes activate automatically when the control unit detects the probe connected to S1.

Setting up

- ✓ Read carefully the control unit instructions;
- ✓ Make all connections as indicated in the previous sections;
- ✓ Plug the power plug;
- ✓ Wait the program loading (approx. 2 min.)
- ✓ Enter the language for the interface and follow step by step the instructions of the system start-up wizard.
- ✓ The wizard proposes, for simplicity, only the default settings of the mixed circuit ①.
If necessary, end the wizard, you can customize the circuit ② and the DHW settings.

Electrical connections



DANGER

The pump unit is pre-wired.
A Shuko plug is necessary to connect it to the electric system. Voltage: 230 VAC ± 10%.
Frequency: 50±60 Hz.
Maximum absorbed power: 50 W.

“LOGICO” MULTIFUNCTIONAL COMPACT HYDRAULIC MODULE

Tips

The **Logico** module manages the boiler and its external circulating pump (when it is not built-in the boiler itself) based on the highest value of the calculated temperatures for mixed circuit ① and the direct circuit ② (*Pict. 7*).

HC1	Day	HC2	Day
Tg	37.5°C	Tg	63.0°C
Flow	38.0°C	Flow	59.0°C
Outdoor	-2.0°C	U1	60%
Burner	60.0°C	U2	0%
DHW sen	55.0°C		

Pict. 7

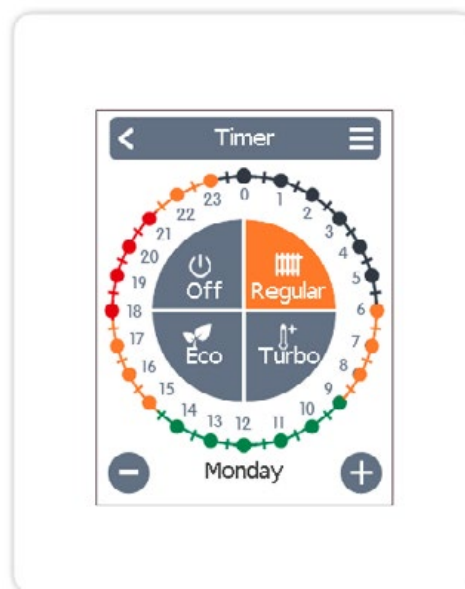
To manage the direct ② and mixed ① circuits more effectively, we recommend installing a °Caleon thermostat (*Pict. 8*) in each circuit (**not provided; to be found on the market**).

In the mixed circuit ① the °Caleon thermostat allows you to set up to 8 daily time slot, and to set up operating modes such as Normal, Turbo, Eco and Off (*Pict. 9*) with a specific set point temperature and holiday program.

For the direct circuit ② the °Caleon also allows, if necessary, to level the flow temperature of the direct circuit ② to the calculated value of the mixed circuit ① which is generally lower (for example by selecting Off mode in the desired time slots), thus ensuring greater comfort and better performance.



Pict. 8

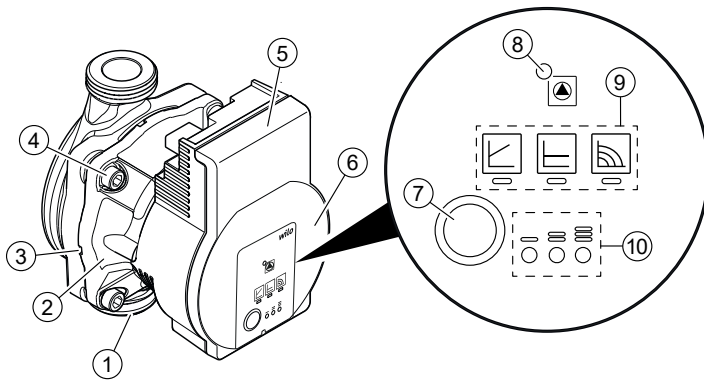


Pict. 9

NB: When setting one of the two circuits in Off mode, the calculated circuit temperature is set to the value of “Tmin. flow “ saved in the corresponding menu. If you want a lower temperature, take action on this parameter.

“LOGICO” MULTIFUNCTIONAL COMPACT HYDRAULIC MODULE

Circulating pump



1. Pump housing with screwed connections
2. Glandless motor
3. Condensate drain openings (4x around circumference)
4. Housing screws
5. Control module
6. Rating plate
7. Operating button for pump adjustment
8. Run/fault signal LED
9. Display of selected control mode
10. Display of selected pump curve (I, II, III)

Indicator lights (LEDs)



- Signal display
- LED is lit up in green in normal operation
- LED lights up/flashes in case of fault



- Display of selected control mode Δp -v, Δp -c and constant speed



- Display of selected pump curve (I, II, III) within the control mode



- LED indicator combinations during pump venting function, manual restart and key lock



Operating button

Press

- Select control mode
- Select pump curve (I, II, III) within the control mode

Press and hold

- Activate the pump venting function (press for 3 seconds)
- Activate manual restart (press for 5 seconds)
- Lock/unlock button (press for 8 seconds)

Funzioni

Venting

The pump venting function is activated by pressing and holding the operating button (for 3 seconds) and automatically vents the pump.

The top and bottom LED rows flash in turn at 1 second intervals. To cancel, press and hold the operating button for 3 seconds.

The heating system is not vented.

Manual restart

A manual restart is initiated by pressing and holding the operating button (for 5 seconds) and unblocks the pump if required

(e.g. after long standstill period in summer).

Lock/unlock the button

The key lock is activated by pressing and holding the operating button (for 8 seconds) and locks the pump's current settings. It protects against undesired or unauthorised adjustment of the pump.

Control modes

- The LED selection of control modes and corresponding pump curves takes place in clockwise succession.
- Press the operating button briefly (approx. 1 second).
- LEDs display the set control mode and pump curve.

	LED display	Control mode	Pump curve
1		Constant speed	II
2		Constant speed	I
3		Variable differential pressure Δp -v	III
4		Variable differential pressure Δp -v	II

	LED display	Control mode	Pump curve
5		Variable differential pressure Δp -v	I
6		Constant differential pressure Δp -c	III
7		Constant differential pressure Δp -c	II
8		Constant differential pressure Δp -c	I
9		Constant speed	III