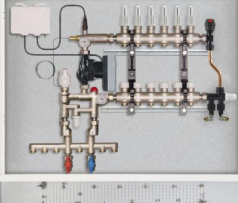
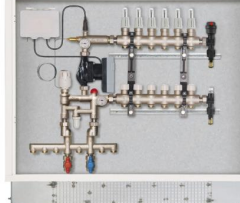
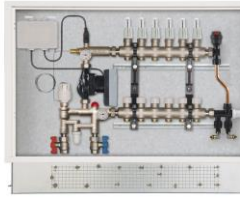
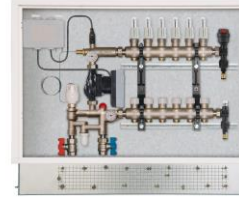




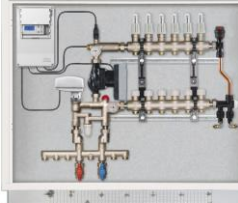
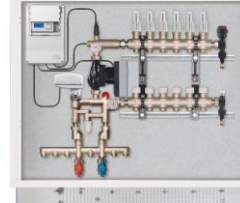
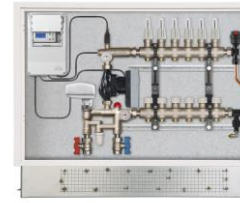
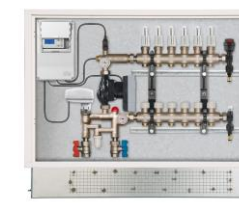
FLOOR HEATING KILMA EVO CONTROL UNITS

CT770.B_07
August
2020

KILMA EVO-RF

Fixed regulation 1	Fixed regulation 2	Fixed regulation 3	Fixed regulation 4
			
78X.06.60 e 790.06.60	78X.06.90 e 790.XX.90	77X.XX.60	77X.XX.90

KILMA EVO-RM

Modulating regulation 1	Modulating regulation 2	Modulating regulation 3	Modulating regulation 4
			
78X.06.50 e 790.XX.50	78X.06.80 e 790.XX.80	77X.XX.50	77X.XX.80

PRODUCTION RANGE

	Number of high temperature ways*	Code				Number of low temperature ways**
		High-low water temperature distribution		Only low temperature water distribution		
		EVO RF1	EVO RF2	EVO RF3	EVO RF4	
FIXED REGULATION	3 + 3	782.06.60	782.06.90	770.06.60	770.06.90	3 + 3
		783.06.60	783.06.90	771.06.60	771.06.90	4 + 4
		784.06.60	784.06.90	772.06.60	772.06.90	5 + 5
		785.06.60	785.06.90	773.06.60	773.06.90	6 + 6
		786.06.60	786.06.90	774.06.60	774.06.90	7 + 7
		787.06.60	787.06.90	775.06.60	775.06.90	8 + 8
		788.06.60	788.06.90	776.06.60	776.06.90	9 + 9
		789.06.60	789.06.90	777.06.60	777.06.90	10 + 10
		790.06.60	790.06.90	778.06.60	778.06.90	11 + 11
		790.12.60	790.12.90	778.12.60	778.12.90	12 + 12
		790.13.60	790.13.90	778.13.60	778.13.90	13 + 13
Manifold terminal by-pass	Yes	No	Yes	No		
Manifold A.T.	Yes	Yes	No	No		
	Number of high temperature ways*	Code				Number of low temperature ways**
		High-low water temperature distribution		Only low temperature water distribution		
		EVO RM1	EVO RM2	EVO RM3	EVO RM4	
MODULATING REGULATING	3 + 3	782.06.50	782.06.80	770.06.50	770.06.80	3 + 3
		783.06.50	783.06.80	771.06.50	771.06.80	4 + 4
		784.06.50	784.06.80	772.06.50	772.06.80	5 + 5
		785.06.50	785.06.80	773.06.50	773.06.80	6 + 6
		786.06.50	786.06.80	774.06.50	774.06.80	7 + 7
		787.06.50	787.06.80	775.06.50	775.06.80	8 + 8
		788.06.50	788.06.80	776.06.50	776.06.80	9 + 9
		789.06.50	789.06.80	777.06.50	777.06.80	10 + 10
		790.06.50	790.06.80	778.06.50	778.06.80	11 + 11
		790.12.50	790.12.80	778.12.50	778.12.80	12 + 12
		-	790.13.80	-	778.13.80	13 + 13
Manifold terminal by-pass Yes	Yes	No	Yes	No		
Manifold A.T.	Yes	Yes	No	No		

* Foreseen only for codes 78X.06.X0 and 79X.06.X0, coupled to fittings (not included in the control unit) with a standard RBM thread (W 24.5 x 19F) and a diameter of 3/4" on the main way.

** The pipe manifolds for low temperature have EUROCONUS (G3/4") and a diameter of 1" on the main way. The floor system pipe fittings and (where present) for the connections to the HT (high temperature) circuit are supplied separately.

PURPOSE

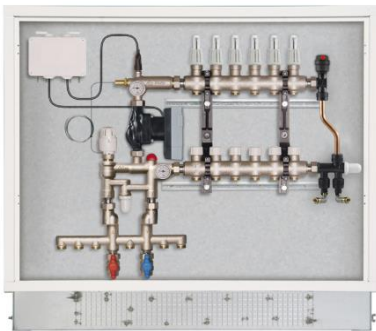
The RBM Kilma system is integrated and used in heat regulation, distribution and management for floor heating systems.

For designers, installers and final users, this product solves all problems deriving from the use of components with autonomous management, by permitting the use of just one system capable of dialoguing with and managing heat regulation and distribution functions, also able to guarantee comfort in every room by switching the heat generation system on and off.

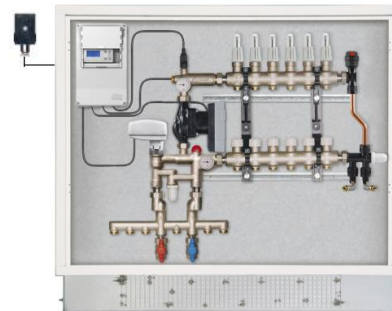
The nerve centre of the RBM Kilma system is comprised of the Kilma EVO distribution control unit, which together with the optional components supplied by RBM, is the heart of the supply systems of heating systems with terminal elements comprised of radiating floor panels.

As summarised in the table below, the RBM Kilma control unit fed by a normal wall-mounted boiler, or by a more complex centralised distribution system, has diverse management options.

Functions that can be potentially managed	Control unit model							
	RF1	RF2	RF3	RF4	RM1	RM2	RM3	RM4
The production of low temperature mixed water for supplying floor radiating panels.	X	X	X	X	X	X	X	X
The circuits (up to a maximum of 3) necessary for supplying the high temperature radiators, such as bathroom radiators, or those used for heat integration, for example.	X	X	-	-	X	X	-	-
The circuits (up to a maximum of 13) operating on low temperature necessary for supplying panel heating systems.	X	X	X	X	X	X	X	X
The control and management of all the functions concerning the production of mixed hot water with control and climatic compensation of the flow water.	-	-	-	-	X	X	X	X
Remote boiler switching on and off (in the case of an autonomous system), or of the thermal zone (in the case of a centralised or multi-user system).	X	X	X	X	X	X	X	X
The autonomous management of all the single rooms comprising an apartment, or the thermal zone served by high and low temperature systems supplied by the Kilma Evo control unit, with the possibility of setting differentiated temperatures according to the different usages of the rooms (bathroom, day rooms, night time rooms, etc).	X	X	X	X	X	X	X	X



Kilma Evo RF system (Model RF1)



Kilma Evo RM system (Model RM1)

USE

As we can see from the table, the system for managing heating is divided into two large families: the RBM KILMA EVO RF family and the RBM KILMA EVO RM family.

The difference lies in the different regulation methods:

- *RBM Kilma EVO RF* (Fixed Regulation), regulates the mixing group of the control unit via a thermostatic head, and therefore at a fixed value;
- *RBM Kilma EVO RM* (Modulating Regulation), on the other hand works on the mixing group via a continuous regulation and control action on the project parameters set.

This action is performed by a climatic regulator which reads the temperature of the external environment (via a sensor) and adjusts the circuit flow temperature value accordingly.

Each family is then subdivided into two subgroups, depending if the high temperature water distribution modules are present or not (RM and RF 1 or 2 rather than RM and RF 3 or 4).

Finally each subgroup is divided into two distinct groups, distinguished on the simple basis of if manifold circulation is permitted or not (or better, if they have the by-pass terminal for manifolds or the Vasatre valve group).

THE CHOICE

RBM Kilma RM is a clearly more complex system than the Kilma RF system, but it permits the progressive reduction of the flow temperature as the external temperature increases.

In this way, by exploiting the direct proportionality existing between the external temperature and the thermal dispersions of a building we can reduce energy consumption.

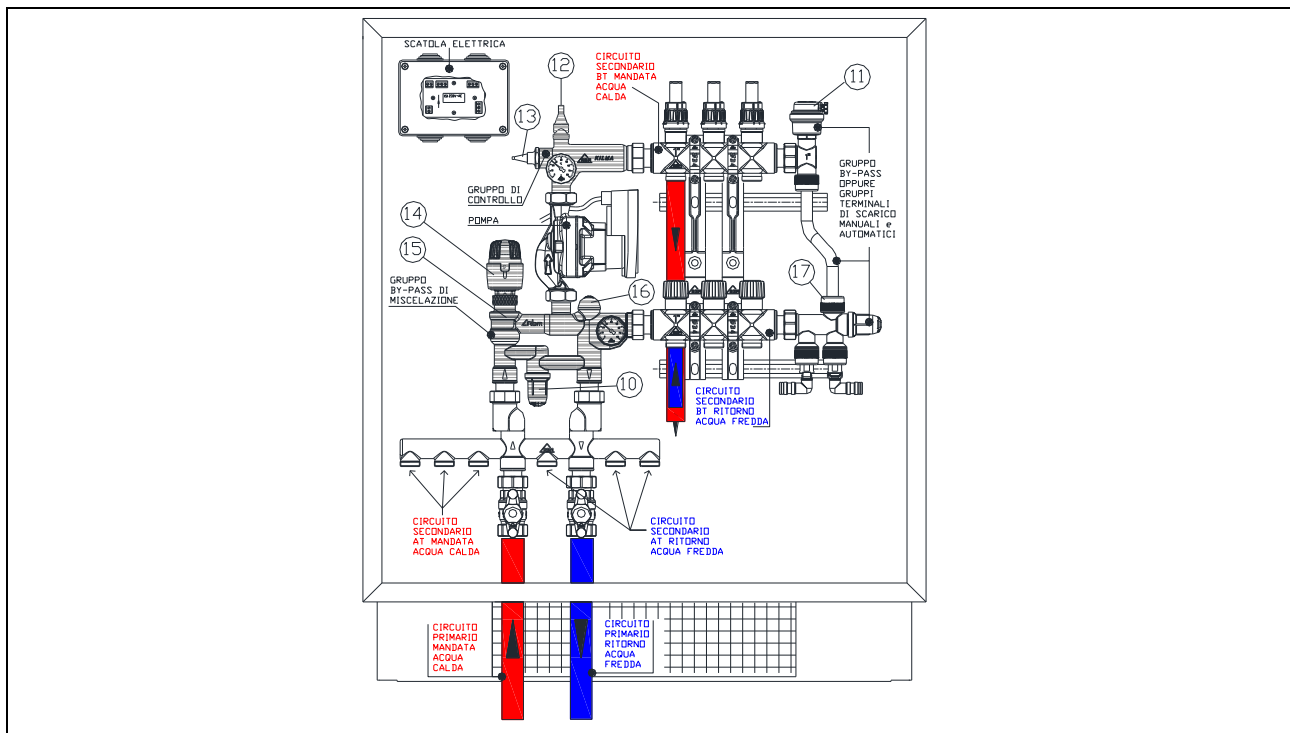
We also remind that in order to respect current Italian legislation disciplining energy containment, the climatic regulator is required in all those cases where the heat production regulator supplies several zones and exceeds 35 KW of thermal power.

In particular, D.P.R. 412/93, implementing law 10/91 article 7 paragraph 2 reads as follows:

"In centralised thermal systems designed for room heating with several usages, if the nominal power of the heat generator or that of the overall power of the heat generators is 35 KW or higher, the law requires the adoption of a thermal regulation group equipped with a programmer on two levels at values which can be sealed over the period of 24 hours. The thermal regulation group must be piloted by a thermometric sensor for reading the external temperature.

Omissis."

Description of the control units with fixed regulation



Control unit with fixed modulating RF1

Electrical box

A box for the supply connections to the electricity supply mains, the pump, safety thermostat (12) to any room thermostat/timer-thermostat, or to the auxiliary micro-switch of the optional electro-thermal actuators. The box also permits the electrical connection of any burner start consensus.

The pump and the safety thermostat are already electrically wired; on the other hand the contact for the room thermostat is bridged (to insert a thermostat or another device, the bridge must be removed).

Control group

This is comprised of a temperature detection group with thermometer, a housing (embedded) for inserting the safety thermostat (12) and a housing for the TL50 (13) sensor.

The group permits the regulation of the mixing temperature and performs a safety action by guaranteeing that the flow temperature to the radiating panels never exceeds the limit value of $55^{\circ}\text{C} \pm 3\text{K}$: if this should happen, the safety thermostat interrupts the supply to the circulation device, which only restarts when the thermostat itself is reset (resetting is automatic when the temperature returns to acceptable values).

Mixing by-pass group

This is comprised of a thermostatic head (14) complete with sensor TL50 (13) and a hydraulic group comprised of a differential valve (10), a valve to which a thermostat can be fitted (15) and a lock-shield valve (16).

The mixing group permits the setting of the flow temperature to the secondary circuit via manual regulation of the thermostatic head. The temperature set in this way is maintained constant thanks to the retro action of the TL 60 sensor: this sensor in fact monitors the temperature of the thermostatic head, which consequently opens and closes the valve with thermostatic option.

Secondary LT (Low Temperature) circuit

This is comprised of a multi-way manifold (from 3 to 13) complete with micrometric regulation lock-shields with a graduated knob, for the hot water flow to the radiating panels and of a multi-way manifold (from 3 to 13) complete with thermostatic option valves with manual knobs, for the return of the cold water from the radiating panels.

The thermostatic option valves can be servo-controlled via electro-thermal actuators (optional) for closing/opening the single circuits supplying the radiating panels..

HT (high temperature) circuit (only RF 1-2)

This is comprised of a three-way manifold for the flow of hot water to high temperature radiators, and a three-way manifold for the return of cold water from the high temperature radiators (such as bathroom radiators for example, or those used for heating integration).

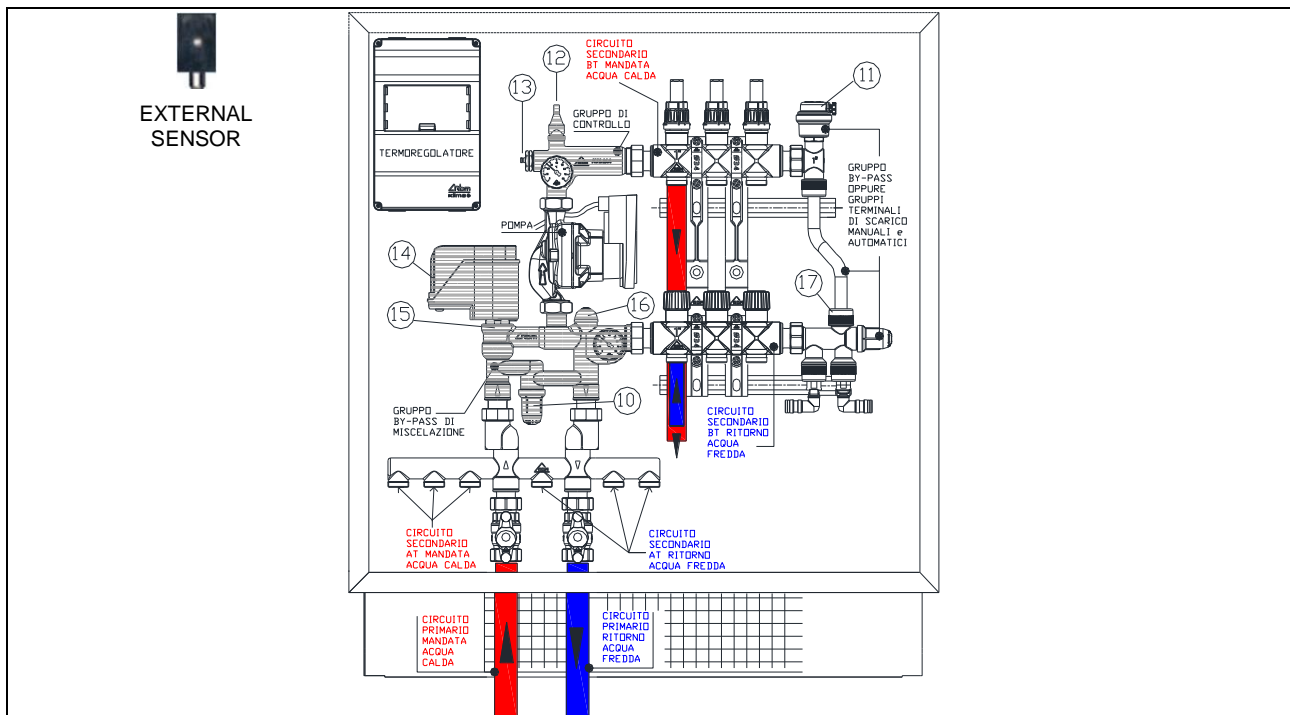
Terminal by-pass group for manifolds (only RF1-3)

Comprised of a discharge valve with a red, holed cap (11), a shaped copper pipe and a two-way by-pass discharge group (17).

This group permits the by-pass for water circulation when all the low temperature ways are closed and the pump is still running. This group also permits system filling and air purging (see the relevant chapter).

Vasatre valve group (only RF 2-4)

This is comprised of two Vasatre discharge valves: one (11) with a red, holed cap, inserted into the hot water flow manifold to the radiating panels (secondary circuit flow), the other with a blue cap, inserted into the cold water return manifold.



Control unit with modulating regulation RM1

Thermo-regulator

An electronic modulating regulator with an operating algorithm of the proportional-integrative type which regulates the flow temperature in function to the external and internal temperature, the chosen heating program pre-set values and thanks to the retro action implemented by the flow sensor (13).

The device manages the opening or closing of the regulation group (15) in function both to the variation in the internal thermal loads and in the variation of the external thermal loads.

The thermo-regulator also controls the circulation pump and eventual burner consensus.

Apart from the terminal blocks for the supply connections to the electricity mains, pump, safety thermostat (12), servo-control (14) and to the flow sensor (13), another terminal block is also available for the connections to an eventual room thermostat/timer thermostat or to the auxiliary micro-switch of the optional electro-thermal actuators. Finally, the climatic regulator has a terminal block for the electrical connections for eventual burner start consensus.

The pump, safety thermostat (12), servo-control (14), and the flow sensor (13) are already electrically wired..

Control group

This is comprised of a temperature detection group with thermometer, a housing (embedded) for inserting the safety thermostat (12) and a housing for the flow sensor (13).

The group permits the regulation of the mixing temperature and performs a safety action by guaranteeing that the flow temperature to the radiating panels never exceeds the limit value of 55°C+/- 3K: if this should happen, the safety thermostat interrupts the supply to the circulation device, which only restarts when the thermostat itself is reset (resetting is automatic when the temperature returns to acceptable values).

Mixing by-pass group

This is comprised of a thermostatic head (14) and of a hydraulic group composed of a differential valve (10) a mixing regulation group (15) and a lock-shield valve (16).

Secondary LT (Low Temperature) circuit

This is comprised of a multi-way manifold (from 3 to 11) complete with micrometric regulation lock-shields with a graduated knob, for the hot water flow to the radiating panels and of a multi-way manifold (from 3 to 11) complete with thermostatic option valves with manual knobs, for the return of the cold water from the radiating panels.

The thermostatic option valves can be servo-controlled via electro-thermal actuators (optional) for closing/opening the single circuits supplying the radiating panels.

HT (high temperature) circuit (only for RM 1-2)

This is comprised of a three-way manifold for the flow of hot water to high temperature radiators, and a three-way manifold for the return of cold water from the high temperature radiators (such as bathroom radiators for example, or those used for heating integration).

Terminal by-pass group for manifolds (only for RM1-3)

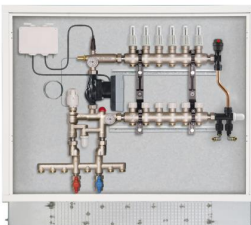
Comprised of a discharge valve with a red, holed cap (11), a shaped copper pipe and a two-way by-pass discharge group (17).

This group permits the by-pass for water circulation when all the low temperature ways are closed and the pump is still running. This group also permits system filling and air purging (see the relevant chapter).

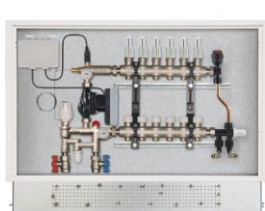
Vasatre valve group (only for RM 2-4)

This is comprised of two Vasatre discharge valves: one (11) with a red, holed cap, inserted into the hot water flow manifold to the radiating panels (secondary circuit flow), the other with a blue cap, inserted into the cold water return manifold.

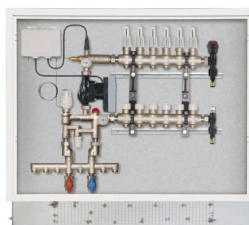
2 KLIMA EVO-RF TECHNICAL CHARACTERISTICS



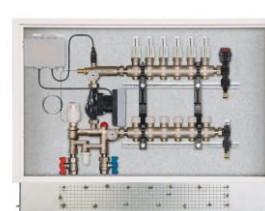
78X.06.60 e 790.XX.60



77X.XX.60



78X.06.90 e 790.XX.90



77X.XX.90

Main performance

Description	Value	Measurement units
Primary thermal carrier fluid	Water	-
Circuit class	PN 6	-
Power supply	230V 50Hz	
Maximum electrical power	200	W
Minimum electrical protection level	IP 40	-
Primary circuit connections	G 3/4" (F-UNI-EN-ISO 228) - ball valve with swivel shank	
High temperature circuit connections	G 3/4" Euroconus (M-UNI-EN-ISO 228)	
Low temperature circuit connections	G 3/4" Euroconus (M-UNI-EN-ISO 228)	
Primary circuit inlet temperature	45÷80	°C
Optimum temperature for secondary circuit flow	40	°C
Max supply temperature of the high temperature circuit	80	°C
Intervention temperature of the self-setting safety thermostat (max flow temperature to the secondary circuit)	55°C±3K	
Differential valve regulation	0÷60	KPa

Box for the electrical contacts for regulation to set-point

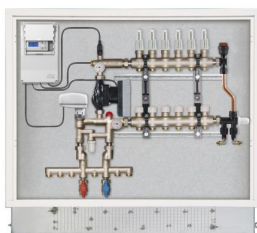


Description	Value
Power supply voltage	230V 50Hz
Electrical protection level in the box	IP42
Auxiliary outlet relay	10 A 230V 50Hz (clean contact on switching)
Input (for circulating pump) controlled by safety thermostat or eventually by room thermostat	- (contact under voltage)

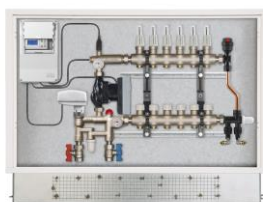
TL50 thermostatic head for regulation to set-point



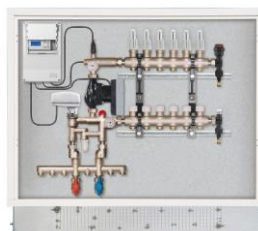
Description	Value	Measurement units
Thermostatic head position	✱ 1 2 3 4 5	-
Flow temperature to the secondary circuit	25 28 34 40 46 52	°C
Maximum differential pressure	100	KPa
Bulb liquid composition	95% thermostatic ethyl acetate	



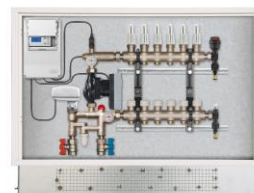
78X.06.50 e 790.XX.50



77X.XX.50



78X.06.80 e 790.XX.80



77X.XX.80

Main performance

Description	Value	Measurement units
Primary thermal carrier fluid	Water	-
Circuit class	PN 6	-
Power supply	230V 50Hz	
Maximum electrical input power	200	W
Minimum electrical protection level	IP 40	-
Primary circuit connections	G $\frac{3}{4}$ " (F-UNI-ISO 228) EUROCONUS - ball valve with swivel shank	
High temperature circuit connections	G $\frac{3}{4}$ " (M-UNI-ISO 228) EUROCONUS	
Low temperature circuit connections	G $\frac{3}{4}$ " (M-UNI-ISO 228) EUROCONUS	
Primary circuit inlet temperature	45÷80	°C
Optimum temperature for secondary circuit flow	40	°C
Max supply temperature of the high temperature circuit	80	°C
Intervention temperature of the self-setting safety thermostat (max flow temperature to the secondary circuit)	55°C±3K	
Differential valve regulation	0÷60	kPa

Electronic modulating control unit for regulation to set-point (conforming to law 10/91 and DPR 412/93)



Description	Value
Power supply voltage	240V 50/60Hz
Maximum electrical input	17VA
Electrical protection level in the box	IP20 CEI/EN60529
Operating temperature	-40÷50°C

Servo-control with three points for set-point regulation



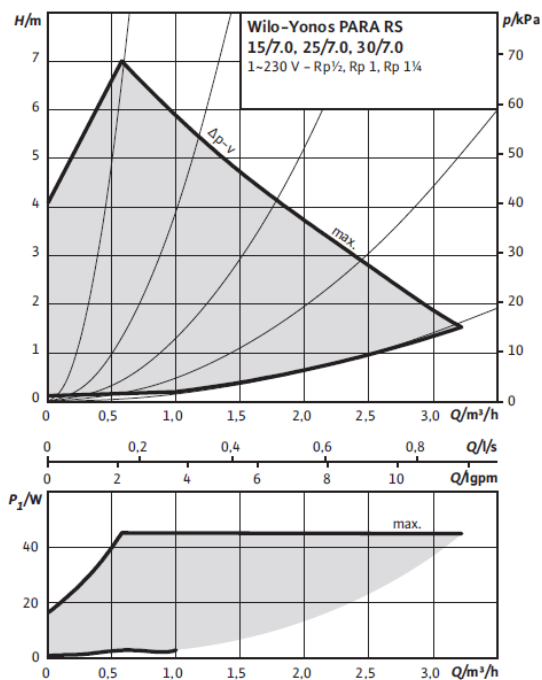
Description	Value	Measurement units
Nominal voltage	230V 50Hz	
Input power	4	W
Rotation	180°	-
Rotation time through 180	240	second
Ambient temperature	-5 ÷ +60	°C
Electrical protection level	IP42	
Casing material	PA6 self-extinguishing resin UL94-V2 recyclable (without halogens and phosphorous, with low fume toxicity)	
Internal component materials	Polypropylene resin	

Circulator Yonos Para RS 15/7 130 (cod. 1614.06.02)

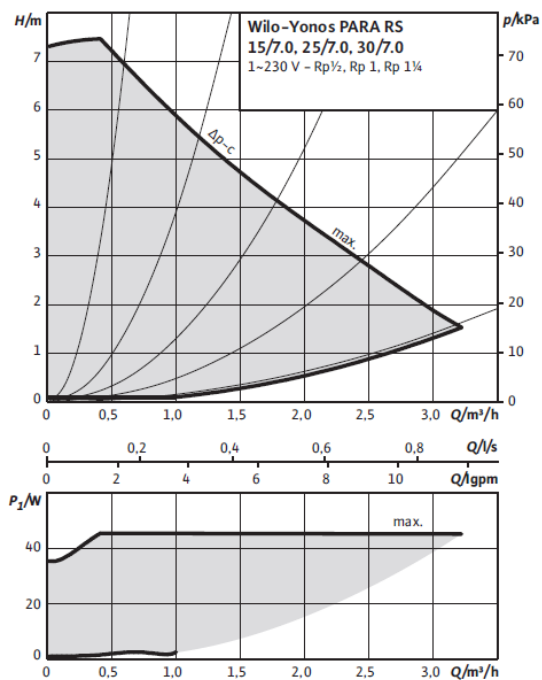


Description	Value		
Power supply	230 V 50/60 Hz		
Maximum current I	I [A]	P _{1,max} [W]	Speed [rpm]
Maximum input power P _{1,max}	0,03 – 0,44	3 - 45	800 - 4460
Degree of efficiency	EEI < 0,21		
Insulation class	Class F		
Protection level	IPX4D		
Nominal pump pressure	PN6		


Δp-v (variable)



Δp-c (constant)







3-way distribution manifold for high temperatures with thermostatic option valves and regulation lock-shields

Accessory description	Description of the features	Value	Code
 <p><u>Thermostatic option manifold with 3 distribution ways for high temperature</u> thermostatic option valve connections pre-arranged for NC electro-thermal actuator with 2 and 4 wires</p>	Thermostatic option valve connections	3	3972.003
	Regulation lock-shield option connections	3	
	Thermostatic valve connections	G 3/4" EUROCONUS	
	Regulation lock-shield connections	G 3/4" EUROCONUS	

KILMA EVO CONTROL UNIT RANGE WITH THERMOSTATIC OPTION MANIFOLD

FIXED REGULATION	Code		MODULATING REGULATION	Code	
	RF1	RF2		RM1	RM2
	1782.06.60	1782.06.90		1782.06.50	1782.06.80
	1783.06.60	1783.06.90		1783.06.50	1783.06.80
	1784.06.60	1784.06.90		1784.06.50	1784.06.80
	1785.06.60	1785.06.90		1785.06.50	1785.06.80
	1786.06.60	1786.06.90		1786.06.50	1786.06.80
	1787.06.60	1787.06.90		1787.06.50	1787.06.80
	1788.06.60	1788.06.90		1788.06.50	1788.06.80
	1789.06.60	1789.06.90		1789.06.50	1789.06.80
	1790.06.60	1790.06.90		1790.06.50	1790.06.80
	1790.12.60	1790.12.90		1790.12.50	1790.12.80

Thermostat and chronothermostat

Description	Description of the features	Value	Code
 <p><u>Electromechanical room thermostat</u> ON-OFF Wall mounted.</p>	Power supply	2 wire connection + 230 Vac for indicator light	386.00.22
	Operating temperature	5÷30°C	
	Thermal gradient	1K / 15 min	
	Thermal differential	0,8 K	
	Switching contact	16 (2,5) A 250 V	
 <p><u>Digital electronic room chronothermostat</u> Wall mounted - ON/OFF - Summer/Winter - Manual/Automatic</p>	Power supply battery	2 x 1,5V AA Alkaline	2726.00.02
	Operating temperature	+5÷+35°C	
	Thermal differential	+ 0,4 K / -0,2 K	
 <p><u>Electronic room thermostat</u> Recessed installation - Summer/Winter</p>	Power supply battery	2 x 1,5V AA Alkaline	1552.00.02 1552.00.12
	Operating temperature	5÷30°C	
	Accuracy	0,5 °C	
	Thermal differential	0,3 K	
	Electrical protection rating	IP 40 (frontale) IP 20 (cestello)	
	Contact capacity	250 Vac 5(3) resistive load	
 <p><u>Digital electronic room chronothermostat</u> Recessed installation - ON/OFF - Summer/Winter - Manual/Automatic</p>	Power supply battery	2 x 1,5V AA Alkaline	1553.00.02 1553.00.12
	Operating temperature (WINTER mode)	5÷30°C	
	Operating temperature (SUMMER mode)	15÷40°C	
	Accuracy	0,5 °C	
	Thermal differential	0,3 K	
	Electrical protection rating	IP 40 (frontale) IP 20 (cestello)	
	Contact capacity	230 Vac 5(3) resistive load	

Description of the symbols used

The symbols shown as follows, together with their wordings, indicate the risk potential deriving from failure to respect the prescription they are combined with.

**Caution.**

This warns that failure to observe the prescription leads to the risk of damage to the equipment comprising the mixing group.

**Danger, risk of electrical shocks.**

An instruction concerning electrical safety; failure to observe the same compromises electrical safety

**Danger.**

This indicates that failure to observe the prescription leads to a risk of damage to persons, animals and/or property.

Cautions before installation

The mixing group described in this technical sheet, distributes water at a temperature lower than boiling point at atmospheric pressure.

The mixing group must be connected to a hot water distribution system for room heating (*primary circuit*), within the limits of its performance and potential.

Before using the machine, carefully read the cautions contained here as they supply important indications about safe installation, use and maintenance.

Using the equipment for purposes other than the specified purpose is forbidden.

Kilma-Evo is supplied with hot water produced by an autonomous or centralised heating system: check that the operating conditions are compatible with the operating characteristics shown in the “Technical characteristics” and “Fluid dynamic characteristics” items. Also check that the electrical supply is suitably protected.

(Remember that the installation must only be performed by professionally specialised personnel, qualified according to the law of 5 March 1990 no. 46, respecting current legislation and regulations).



During the electrical and hydraulic connections, ensure that both the water supply mains and the electrical power supply are isolated



Before installation, ensure that the electrical system, hot water supply system (*primary circuit*), low temperature heating distribution system (*secondary circuit*) and the hot temperature circuit (if present) have been correctly executed by requesting their respective “Conformity Declarations”.

General cautions for safe use

Poor installation can cause harm to persons, animals or property: the constructor is not liable for damage caused by installation errors, failure to observe these instructions or from improper use of the equipment..

Also observe the instruction listed as follows:

- Do not wet the equipment and do not install it without protection, in humid environments or close to jets or sprays of water or other liquids.
- Given the presence of hot fluids, do not place paper and/or plastic coated objects on the equipment.
- The packaging (plastic bags, expanded polystyrene, etc.) must not be left within the reach of children as it is a potential source of danger



Children and incapable persons must be prevented from using the command and control equipment, as well as from using the entire equipment.



Given the presence of hot fluids, contact burns may be provoked: before performing any maintenance operations, suitably cool the internal components, by closing the interception valves of the primary water circuit and by letting the fluid circulate in the secondary circuit. Also adopt all the protective measures necessary to reduce the risk of injury.



Any intervention on the electric and/or hydraulic circuit concerning ordinary or extraordinary maintenance operations, must only be performed by professionally specialised personnel qualified according to the law of 5 March 1990 no. 46, respecting current legislation and regulations: do not intervene personally.



For better system operation, we highly recommend following the relative maintenance indications, and if any machine parts have to be replaced, using original spare parts supplied by the constructor

Before performing any cleaning or maintenance operation, respect the following prescriptions:

- The power supply must be isolated.
- It is very dangerous to operate the machine without any one of its components, especially if they are accident protection elements or mechanical and/or electrical safety devices.
- Cleaning, oiling or greasing parts and elements of the machine in motion by hand is forbidden.
- Performing any maintenance, regulation or adjustment of the parts of bodies in motion is forbidden.
- The mixer group must not be started for any reason at all by non-qualified persons, after checking the conclusion of the maintenance operations.



In the event of a fault, or poor equipment operation, switch it off, close the interception valves of the primary circuit and isolate the electrical power supply.



Do not tamper with the equipment.

For reactivation and/or repair, contact the installation company of the thermal system which issued the conformity declaration, or alternatively, contact an installation company you trust if there are no warranty constraints.



Kilma-Evo is exempt from I.S.P.E.S.L. inspection obligations, as its primary circuit is supplied with water at a temperature below boiling point at atmospheric pressure.


The mixer group is not subject to the maintenance obligations of “thermal systems” falling within the definition of article 1 paragraph 1f of D.P.R. no. 412/93, as foreseen by article 11 of D.P.R. no. 412/93, as it is not a steam generator.

Identification of the product and the constructor

Correct product identification is very important over time: this allows the constructor the possibility of giving the customer the technical information requested in a rapid and certain manner and it facilitates spare parts management. The means of identification is the plate fitted to all Kilma-Evo models.

As clearly visible in the figure below (facsimile of the product identification plate) the plate contains the information to report to the installation company, or in the case of need, to the constructor:

RBM S.p.A. – via S.Giuseppe, 1 – 25075 Nave (BS) Tel.: +039-030-25.37.211, Fax: +039-030-25.31.798.

	MODELLO KILMA	
	ANNO - MATRICOLA	
	PROTEZIONE MINIMA	IP 40
	ALIMENTAZIONE	230V 50Hz
	POTENZA ELETTRICA	max 200 W
	FLUIDO PRIMARIO	H ₂ O < 90°C
CLASSE CIRCUITI	PN 6	
- Manufacturer plate -		

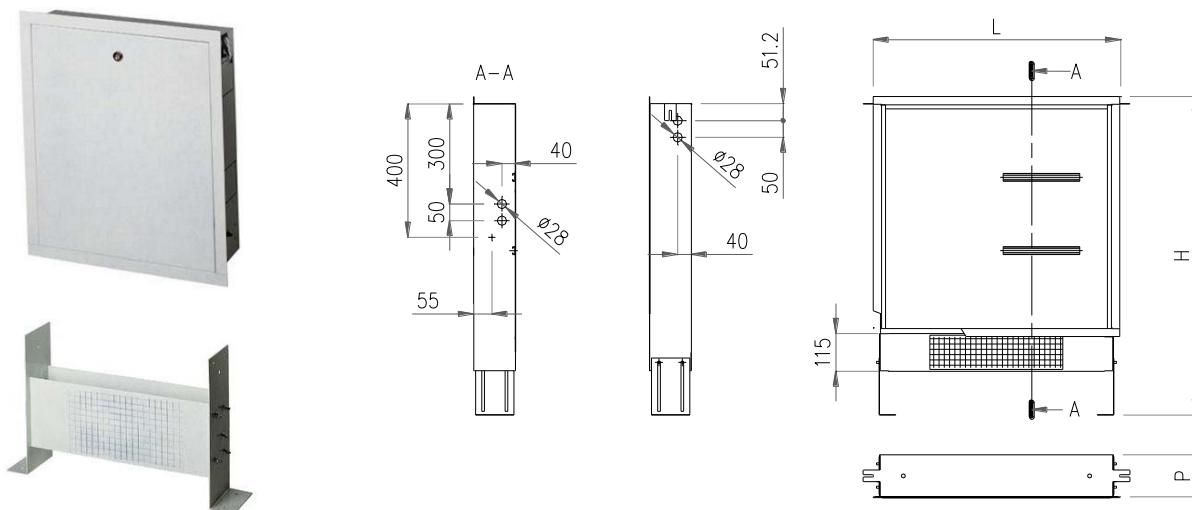
This is the sole plate recognised by the constructor as a means of product identification. The means necessary for machine identification must not therefore be tampered with, ruined or removed.

3 INSTALLATION – MASONRY ASSISTANCE AND DIMENSIONAL CHARACTERISTICS

Kilma-Evo distribution control units require several simple masonry assistance operations in order to insert the containment box into the wall.

The containment box

Kilma-Evo range distribution control units are contained in a galvanised, painted, metal box for flush fitting in walls. The inspection cover, inserted in an adjustable external frame, can be completely removed and has a latch for closing. Its external dimensions are those of the perimeter frame of the box. The containment boxes are supplied in 5 standard lengths, adjustable in height and depth.



Control unit Kilma-Evo	Depth P [mm]	Height H [mm]	Ways number L.T.										
			3	4	5	6	7	8	9	10	11	12	13
RF1	125÷165	800÷935	700	800	800	900	900	1000	1000	1100	1100	1200	1200
RF3	110÷150	680÷815	700	800	800	900	900	1000	1000	1100	1100	1200	1200
RF2	125÷165	800÷935	700	700	800	800	900	900	1000	1000	1100	1200	1200
RF4	110÷150	680÷815	700	700	800	800	900	900	1000	1000	1100	1200	1200
RM1	125÷165	800÷935	700	800	800	900	900	1000	1000	1100	1200	1200	-
RM3	110÷150	680÷815	700	800	800	900	900	1000	1000	1100	1200	1200	-
RM2	125÷165	800÷935	700	700	800	800	900	900	1000	1000	1100	1200	1200
RM4	110÷150	680÷815	700	700	800	800	900	900	1000	1000	1100	1200	1200

Length
L [mm]

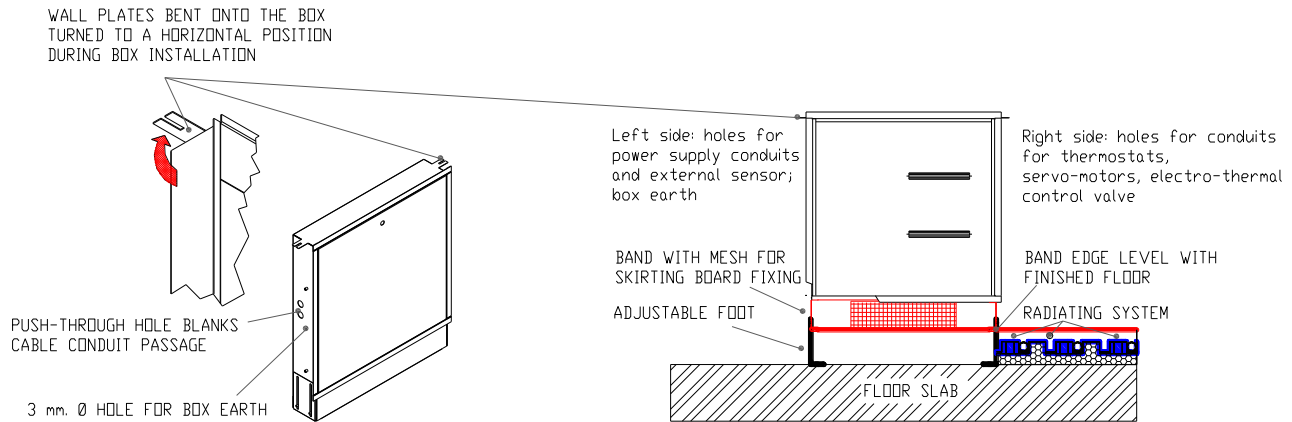
Positioning and finishing

Insert the box in the opening made in the wall, taking care to rest the support feet directly on the rough floor slab surface.


Adjust the height of the box in function to the height of the future radiating system: generally, in order to permit correct inspection hatch opening, and given the presence of the perimeter skirting board, the height adjustment must be made so that the bottom of the box coincides with the level of the finished floor.

If the box is inserted in a wall still to be plastered, position it so that it protrudes on the inspection hatch side by at least 10 mm. to permit the correct flush application of the plasterwork.

Before completely walling in, also remember to guarantee the passage of the conduits for the electrical connections (see the "Installation – electrical connections" section).



After positioning the box, we recommend securing it inside the niche in the wall, by applying quick-setting cement.

 We advise against removing the protective plastic film from the perimeter frame and from the inspection cover to prevent deterioration of the surface coating

Plaster all round the perimeter and on the low front band. As soon as the plaster hardens, the perimeter frame supporting the inspection cover, can be adjusted and secured (to the vertical elements of the box). Remove the protective plastic film completely at the end of the installation and start-up works (chapters 3 and 4).

3 INSTALLATION – PLUMBING CONNECTIONS

Cautions before installation



The installation must only be performed by *professionally specialised personnel*, qualified according to the law of 5 March 1990 no. 46, respecting current legislation and regulations.

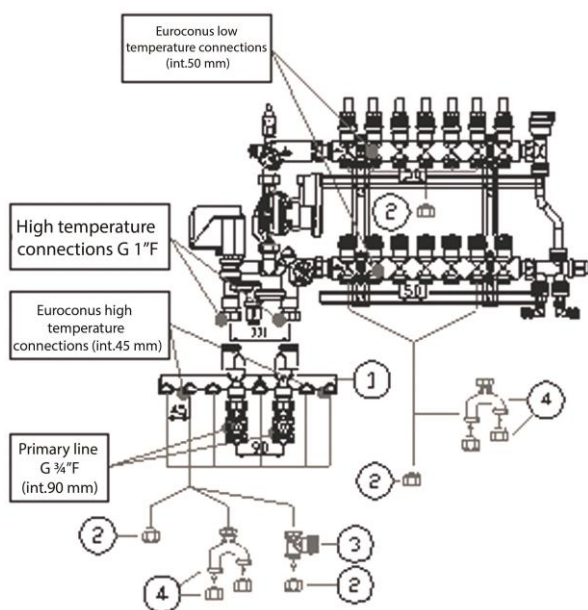
Before connecting Kilma-Evo, *carefully wash all the system pipes – incoming and outgoing – to eliminate threading, welding and solvent residues possibly present in the various components of the heating circuit.*

In order to protect the valve seats from impurities in the piping, we recommend fitting a common Y filter with a removable metallic element to the primary circuit.

Main plumbing components

Kilma-Evo versions can be equipped with **optional hydraulic accessories** chosen for specific application by the heating project designer or by the installer.

In the following scheme you can find the main connection options to the terminal equipments:



High temperature/Low temperature M G3/4" Euroconus connection)

Pos.	Description	Pos.	Description
1	 3792.003 3-way distribution manifold for high temperature	3	 267.05.50 Valve with thermostatic option
2	 217.XX.00 Compression fitting for polyethylene pipe	4	 215.05.50 Straight lockshield shut-off and regulating valve
2	 224.XX.00 Compression fitting for multilayer pipe	-	 311.05.00 + 71.12.00 Y-shaped fitting for Ø12 pipe
2	 240.05.00 Blind cap for manifold ways		 1213.005 Pressure control manometer

Connections to the primary circuit (G3/4" FF UNI-EN-ISO 228) do not need fittings: ball valves are equipped with union connections

Cautions before installation

The installation must only be performed by *professionally specialised personnel*, qualified according to the law of 5 March 1990 no. 46, respecting current legislation and regulations.

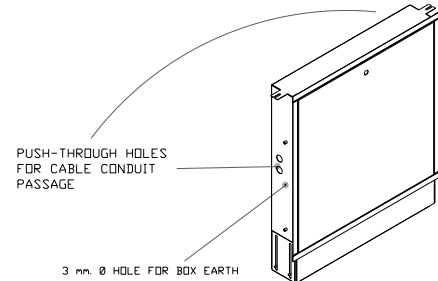
When connecting the electrical wires, ensure that the electrical power supply is isolated.

**Electrical pre-arrangements**

A series of push-through blanks are present on the sides of the metal containment box, which permit the passage of the cable conduits, after removing the blanks.

In particular, before completing the walling, it is necessary to ensure the protection of the conduits for:

- 230V + Earth mains power supply cable
- Cable for eventual connection to the boiler
- External sensor connection cable (only for Kilma –Evo RM)
- Connection cable for possible thermostats/timer-thermostats, servo-motors etc.



The cables are inserted into flexible conduits or dedicated channelling separated from the electrical system so as to avoid interference problems generated by other equipment without the CE mark.

With the Kilma-Evo RM models we recommend arranging the passage of the power supply connection cables through a separate conduit to the one used for the connection cables of the external sensor and the flow.



The cable must be inserted into the piping without tearing, so as not to damage the internal conductors. Also, during installation, take care not to trample on the cable or place weights on it, so as not to alter the existing space between the internal conductors.

In order to guarantee the continuity of the electrical protection of the entire system, we recommend connecting the passage conduits directly to the electrical junction boxes of the command and control equipment, preferably using the specially designed grommets (Kilma-Evo RM model) or the grommets (Kilma-Evo RF) already fitted to the electrical boxes themselves.

230V power supply line

The terminal blocks in the electrical section of Kilma-Evo must be connected electrically to a suitably protected single phase 230V power supply mains.

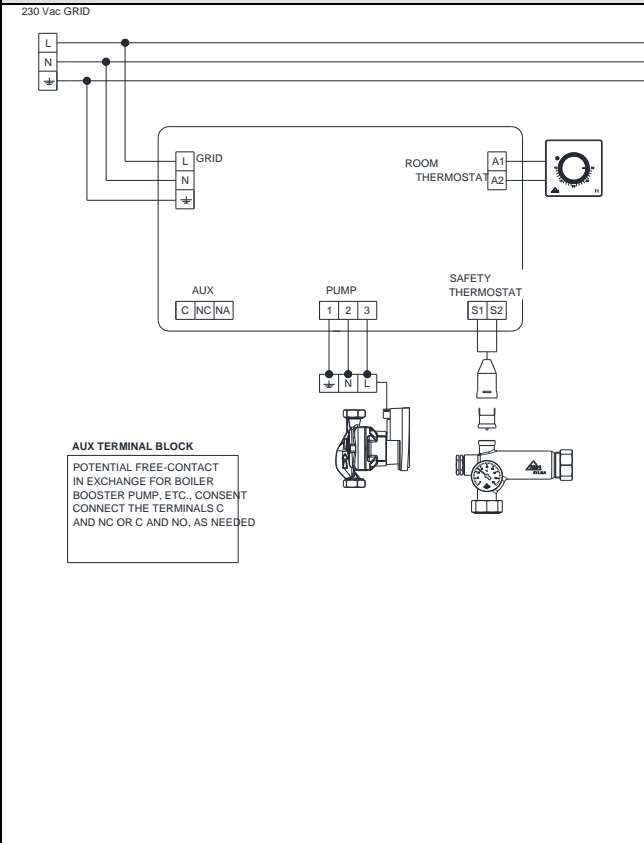


When making the connection, respect the Phase-Neutral polarity, as indicated in the Kilma-Evo RF or Kilma-Evo RM electrical diagrams (depending on the product purchased).

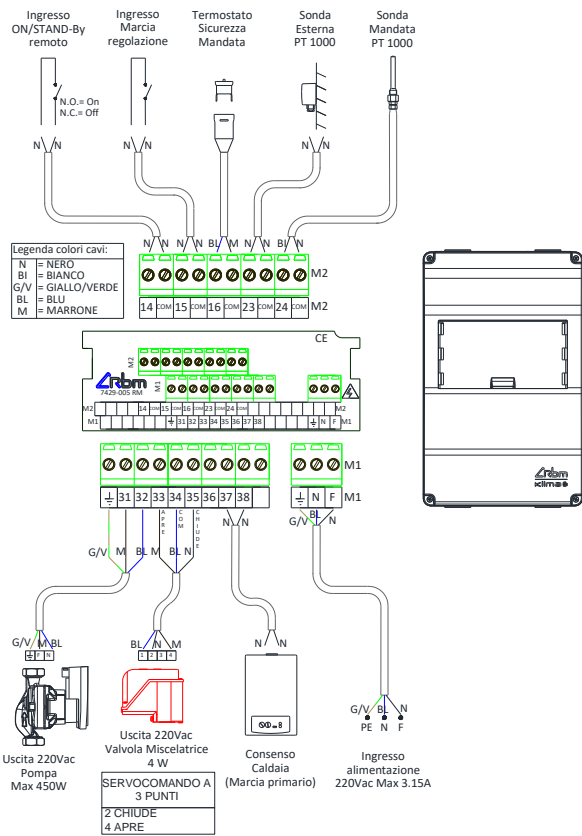


We advise that the electrical safety of Kilma-Evo is only achieved when it is connected to an efficient earth system, executed according to the current regulations disciplining system safety.

KILMA EVO electrical schematic



Kilma Evo RF electrical schematic



Kilma Evo RM electrical schematic

Thermostat contacts operation

In order for thermal energy to be supplied, the following conditions are necessary: the safety thermostat closes terminals S1 and S2, while the room thermostat closes terminals A1 and A2: when terminals S1 and S2 or terminals A1 and A2 are open, thermal energy can no longer be supplied.

Use of the auxiliary contact for boiler consensus

The Kilma-Evo system has a "clean" contact called Auxiliary for boiler start consensus (or for the restart pump) to interrupt the thermal energy supply when the system has satisfied all demands.

Kilma-Evo RF 1-2 and RM 1-2 (high temperature circuit present) use

For efficacious use of the auxiliary contact, it is necessary to fit the thermostatic option valves (cod. 556.00.00) on the high temperature circuit manifolds.

The Kilma-Evo configuration must also foresee the use of the optional NC electro-thermal actuators, cod. 306.00.X2, both on the thermostatic option valves of the secondary circuit and on those of the high temperature circuit.

When the zones served by the floor system are satisfied, and it is still necessary to heat high temperature zones (such as bathrooms, if managed with very high room temperatures), the Auxiliary contact outlet is deactivated (the NA type contact opens, while the NC type closes).

The micro-switch (of the actuators fitted to the high temperature circuit) is still active however: the primary boiler circuit is maintained in operation, while the mixing system for low temperature supply is deactivated.

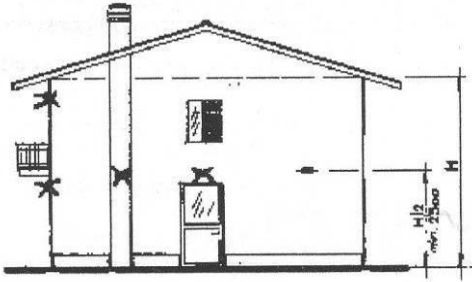
When the system has satisfied all demands, the actuator micro-switch fitted to the high temperature circuit is also deactivated and the boiler switches off.

Kilma-Evo RF3 and RM3-4 (no high temperature circuit present) use

If the condition arises whereby all the thermostatic option valves are closed occurs, (via the optional NC electro-thermal actuators cod. 306.00.X2), the mixing group is completely "Closed", the pump is at a standstill and the Auxiliary outlet contact is deactivated: the NA contact opens and the NC contact closes.

3 INSTALLATION – POSITIONING THE EXTERNAL SENSOR AND THERMOSTATS

External heat sensor (only for Kilma-Evo RM)



The installation constraints are illustrated in the figure.

The heat sensor must be installed on a North, North-West side of the building.

The minimum installation height must not be less than 2.5 metres from the reference road level of the side of the building.

Where possible, correct installation would be at half the useful height of the heated building.

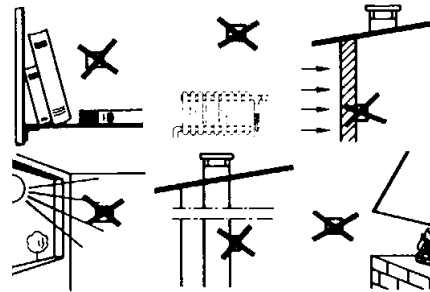
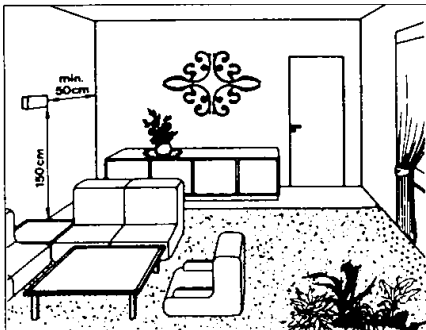
The device should be positioned away from any possible sources of heat (chimneys), away from doors, terraces and lofts, and away from areas where there may be areas of stagnant air.

Room thermostats/timer-thermostats

The figures below show the possible installation prescriptions.

The minimum installation height must be 1.5 metres from the floor and the distance from the adjoining wall must not be less than 0.5 metres, to avoid probable areas of air stagnation.

The room thermostat/timer-thermostat must be positioned so that it is accessible to persons for inspection and regulation.



It is also necessary for the reading to be free from direct or indirect disturbances. Consequently, it is normally necessary to exclude the following installations:

- Close to sources of heat
- On an internal wall receiving sunlight
- On a wall in direct contact with the outside
- Close to doors and windows
- Segregated or obscured by furnishing items (furniture, books, etc.)

4 START-UP - STARTING THE HYDRAULIC SYSTEM

Cautions before the initial start-up



Check and make certain that:

- The plate data matches the data of the supply networks (boiler primary circuit)
- The installation conforms to current regulations
- The conditions exist for the regular endorsement of the Guarantee certificate

System filling procedure (follow the instructions on the next page)

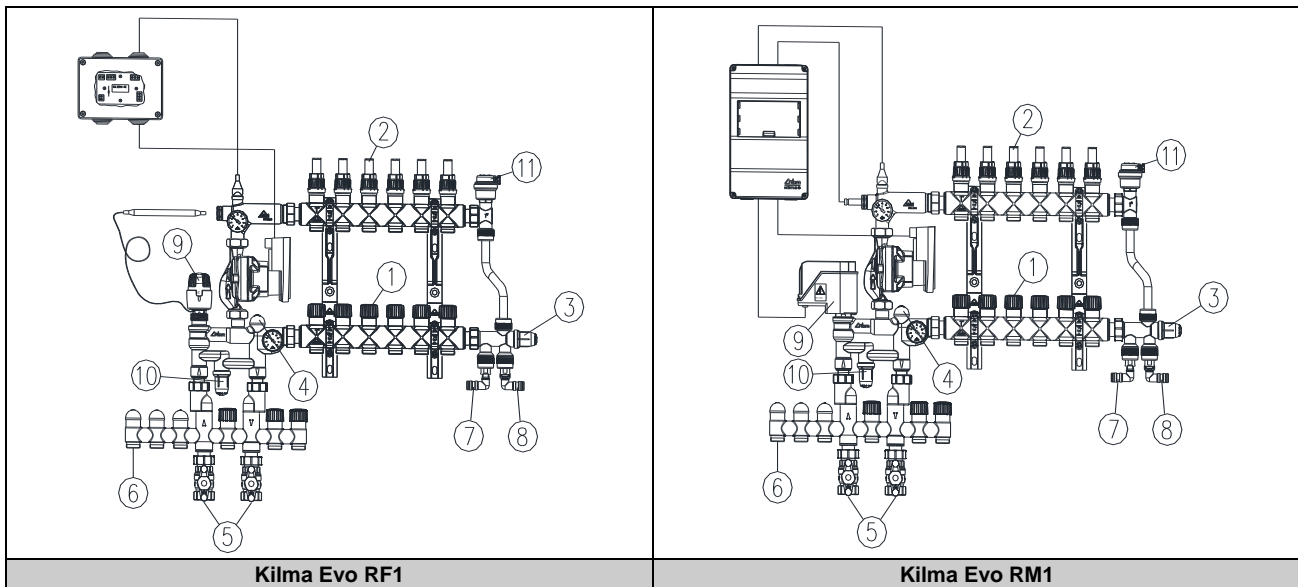
After making all the connections properly (electrical and hydraulic) the water supply mains can be turned back on, and the system can be filled.

As follows, we supply an example of the procedures to follow for the filling operations of the Kilma-Evo RF (1 and 3) and of the Kilma-Evo RM (1 and 3) and of the circuits connected to them. For the numbered references, use the enclosed schemes on the next page.

A) Filling low temperature circuits

- Ensure that the electrical parts are disconnected
- Close all the thermostatic option valves (1 indicates the first thermostatic option valve) located on the manifold (clockwise knob rotation)
- Close all the lock-shield valves (2 indicates the first lock-shield valve) located on the manifold (knob release by turning clockwise)
- Close the lock-shield valve (3) of the bypass group (remove the cap and turn the screw head clockwise with a Allen key – CH 5).
- Close the lock-shield valve (4) of the mixer group (remove the cap and turn the screw head clockwise with a Allen key – CH 5).

System filling procedure (following the previous page)



- Close the ball valves (5)
- Close any circuits (6) connected to the high temperature (radiators, bathroom heater elements, etc.)
- Insert a plastic pipe connected to a valve connected to the water mains, into the connector (8) of the bypass group
- Insert a plastic pipe connected to a drain into the connector (7) of the bypass group
- Open the shut-off connected to the connector (8) all the way (anticlockwise rotation with a CH18 Allen key)
- Open the thermostatic option valve (1) and the first lock-shield valve (2)
- Begin to fill the system by opening the valve connected to the water mains
- Fill the entire circuit keeping the drain valve connected to the connection (7) open (anticlockwise rotation with spanner CH 18), until all the air in the floor circuit is completely eliminated*
- Re-close the valve (1) and the lock-shield valve (2)
- Repeat this operation for the remaining circuits on the low pressure manifold

B) High temperature circuit filling for Kilma-Evo RF

- Remove the TL 50 (9) head and open the differential valve (10) to maximum (remove the knob and turn the screw head anticlockwise)
- Keeping all the thermostatic option valves and all the lock-shield valves of low temperature circuits closed, open and fill any high temperature circuits (6)
- Fill the entire circuit keeping the drain valve (8) open and the air purging valves of the single heating elements open until all the air contained in the circuit is completely expelled*.
- Close the drain valves connected to connectors (7) and (8) of the bypass group, re-open all the thermostatic option valves and all the lock-shield valves of the low temperature circuits, regulate the bypass group (3), the mixer group (4) and (10) and refit the head TL50 (9).

B) High temperature circuit filling for Kilma-Evo RM

- Remove the motor (9) and fit the knob provided to fully open the valve, open the differential valve (10) fully (remove the knob and turn the screw head anticlockwise)
- Keeping all the thermostatic option valves and all the lock-shield valves of low temperature circuits closed, open and fill any high temperature circuits (6)
- Fill the entire circuit keeping the drain valve (8) open and the air purging valves of the single heating elements open until all the air contained in the circuit is completely expelled*.
- Close the drain valves connected to connectors (7) and (8) of the bypass group, re-open all the thermostatic option valves and all the lock-shield valves of the low temperature circuits, regulate the bypass group (3), the mixer group (4) and (10) and refit the head TL50 (9).

Putting under pressure (see also standard UNI-EN 1264-4:2003)

On concluding the circuit filling operations, perform the pressurisation of KILMA EVO (via the filling system provided with the boiler) and the circuits supplied by the same.

- Raise the system pressure to 1.5 times the design pre-load value (but do not exceed the calibration pressure of the safety valve on the boiler)
- After around 2 hours, check that there are no leaks or visible blow-bys and that the pressure has remained about the same
- Close the interception valves (5) to prevent the intervention of the boiler safety valve
- With the aid of a manual filling pump, connected to KILMA EVO via a connector (7) or (8), raise the pressure to 600 kPa (6 bar)
- Leave the circuit pressurised for the entire duration of laying and curing of the floor slab constituting the radiating floor.



To insert anti-freeze additives and for the specific prescriptions concerning the floor system circuits, consult the specific use and maintenance manual and the installation instructions.

* The air is completely eliminated when the flow of water from the screw head connected to the connector (7) is continuous and free from air bubbles: we advise against unscrewing the protection cap from the vasatre drain group (11)

Cautions before start-up

Check and ensure that:

- The plate data matches that of the electrical power supply mains
- The installation conforms to current regulations
- The conditions exist for the regular endorsement of the guarantee certificate

Procedure to follow to permit starting-up the Kilma RF system

Once all the connections (hydraulic and electrical) have been correctly made, and once the hydraulic system has been put into operation, there are no particular prescriptions to observe: in order to start-up the system, re-activate the electrical power supply mains.

If on the other hand thermostats/timer-thermostats have been fitted (optional components) so as to permit also the regulation of room temperature, consult the instructions of the component or components chosen in order to proceed with the electrical start-up.

Procedure to follow to permit starting-up the Kilma RM system

Once all the connections (hydraulic and electrical) have been correctly made, and once the hydraulic system has been put into operation, reactivate the electrical power supply mains and follow the prescriptions in the Kilma thermoregulation unit use manual and in the instructions of ant thermostats/timer-thermostats used (optional components) used.



Before performing any maintenance operation, make sure that the water and electrical supplies are isolated.

We also remind that maintenance operations must only be performed with the system at a standstill and cold, exclusively by professionally specialised personnel, qualified according to the law of 5 March 1990 no. 46, respecting current legislation and regulations.

For the first thermal season, we advise a monthly control; successively, above all when the phenomenon of the formation of "air" in the pipes and generally in the heating system has been eliminated, the controls can take place quarterly.

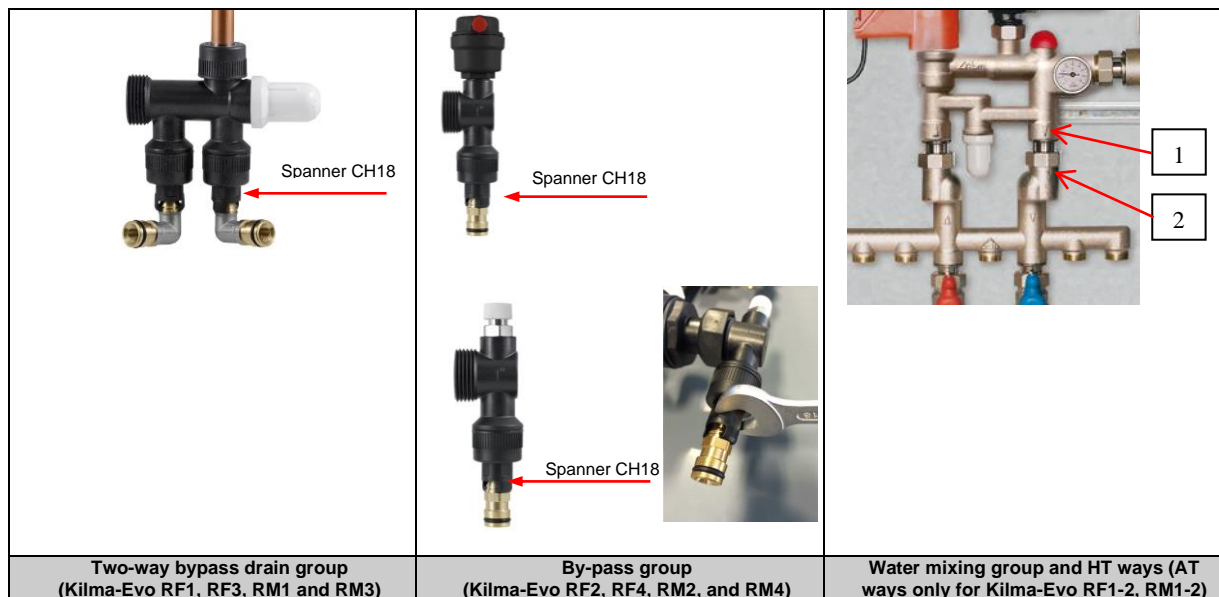
When maintaining your heat generator it is advisable to have your maintenance personnel check the conservation and operation of the Kilma-Evo system, always remembering to have this technical documentation to hand.

On the next page we indicate the main maintenance and management aspects concerning Kilma-Evo USE.

Periodical controls

- Check for the presence of dripping or lime scale encrustation at all the threaded joints. If any such signs are found replace the seal gaskets after carefully cleaning the seats.
- Check the filling pressure of the heating system according to the designer's and/or installer's instructions. Without this information, check that the system fill pressure (measured with the system cold and switched off), is no lower than the following values:
 - ☞ 100 KPa (in other words 1 bar – around 10 m H₂O) for systems in which the boiler is located on the same floor as the heating system
 - ☞ 100 KPa + 10 KPa for every meter of height difference between the boiler and the system in cases where the boiler is located in a room beneath the system to serve (e.g. if the height difference is 3 metres, the fill pressure must not be less than 130 KPa)
- Periodically the drain valves must be slightly opened (anticlockwise rotation using CH18 spanner at the points indicated in the figures below) in order to let the fluid out for a moment. This measure is necessary to prevent the formation of material over time which would compromise the good operation of the drain valves and thus also of the entire system.

At the end of this operation, re-close the open drain valves and restore the system pressure of the entire system.



- Periodically, specialised technical maintenance personnel (qualified according to the law of 5 March 1990 no. 46) must check the condition of the non-return valves 1, 2, and 3 (non-return valve 3 is inserted in the HT ways, and is therefore only present in the Kilma-Evo RF1-2 and RM1-2 versions).

If necessary, remove any encrustation and/or foreign bodies; if this is insufficient to restore optimum system conditions, replace the non-return valves (cod. Valve 3000.005; snap ring 3227.005).

The control above is necessary above all when reduced system performance is noticed (for example, when the system has difficulty in maintaining the room temperature previously easily reached, or when the thermometers (inserted in the control group and in the water mixing group) indicate temperatures much lower than the mixing temperature (for Kilma-Evo RF, see the setting on the thermostatic head, while for Kilma-Evo RM, the mixing temperature indication is shown on the display).

Circuit cleaning

As indicated in chapter 3 (Installation – Water connections) we recommend providing the primary circuit with a common Y type filter with a removable metal braid to protect the valve seats from impurities present in the pipes.

When performing annual boiler maintenance, clean the internal cage and before replacing it, check the condition of the seal seat gasket of the plug and replace it if necessary.



Before use, check and maintain Kilma-Evo; consult chapter 3 (Installation – General cautions) of this manual.

Also check the existence of any boiler use and maintenance limitations, as well as the recommendations issued by the installer when installing the floor heating system..

APPENDIX

KILMA EVO RM SERIES CONTROL UNIT ELECTRICAL DIAGRAMS



KILMA EVO-RM			
Modulating regulation 1	Modulating regulation 2	Modulating regulation 3	Modulating regulation 4
78X.06.50 e 790.XX.50	78X.06.80 e 790.XX.80	77X.XX.50	77X.XX.80

PRODUCTION RANGE

MODULATING REGULATION	No. of high temperature ways*	Code				No. of low temperature ways**
		High-low temperature water distribution		Only low temperature water distribution		
		RM1	RM2	RM3	RM4	
3 + 3	782.06.50	782.06.80	770.06.50	770.06.80	.	
	783.06.50	783.06.80	771.06.50	771.06.80	4 + 4	
	784.06.50	784.06.80	772.06.50	772.06.80	5 + 5	
	785.06.50	785.06.80	773.06.50	773.06.80	6 + 6	
	786.06.50	786.06.80	774.06.50	774.06.80	7 + 7	
	787.06.50	787.06.80	775.06.50	775.06.80	8 + 8	
	788.06.50	788.06.80	776.06.50	776.06.80	9 + 9	
	789.06.50	789.06.80	777.06.50	777.06.80	10 + 10	
	790.06.50	790.06.80	778.06.50	778.06.80	11 + 11	
	790.12.50	790.12.80	778.12.50	778.12.80	12 + 12	
	-	790.13.80	-	778.13.80	13 + 13	
Manifold terminal bypass	Yes	No	Yes	No		
Thermostatic option HT manifold	Yes	Yes	No	No		

DESCRIPTION

Electrical diagrams for KILMA EVO RM1, RM2, RM3, RM4 control units with three distribution ways for high temperature with thermostatic option valves and regulation lock-shield valves and in the variation with thermostatic actuators installed.

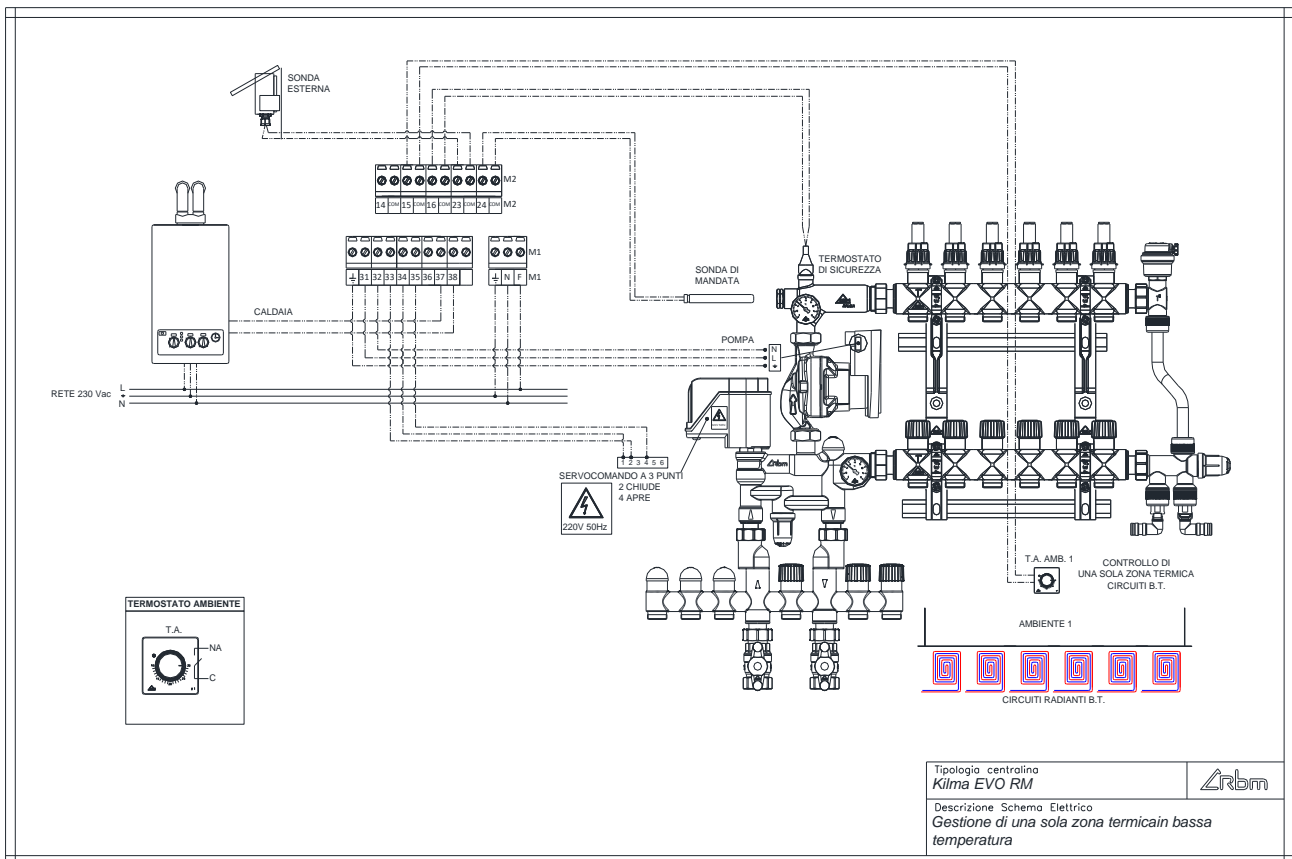
Electrical connection of the KILMA EVO RM range control unit with modulating regulation and digital electronic temperature regulator with climatic compensation function (cod. 2237.00.10).

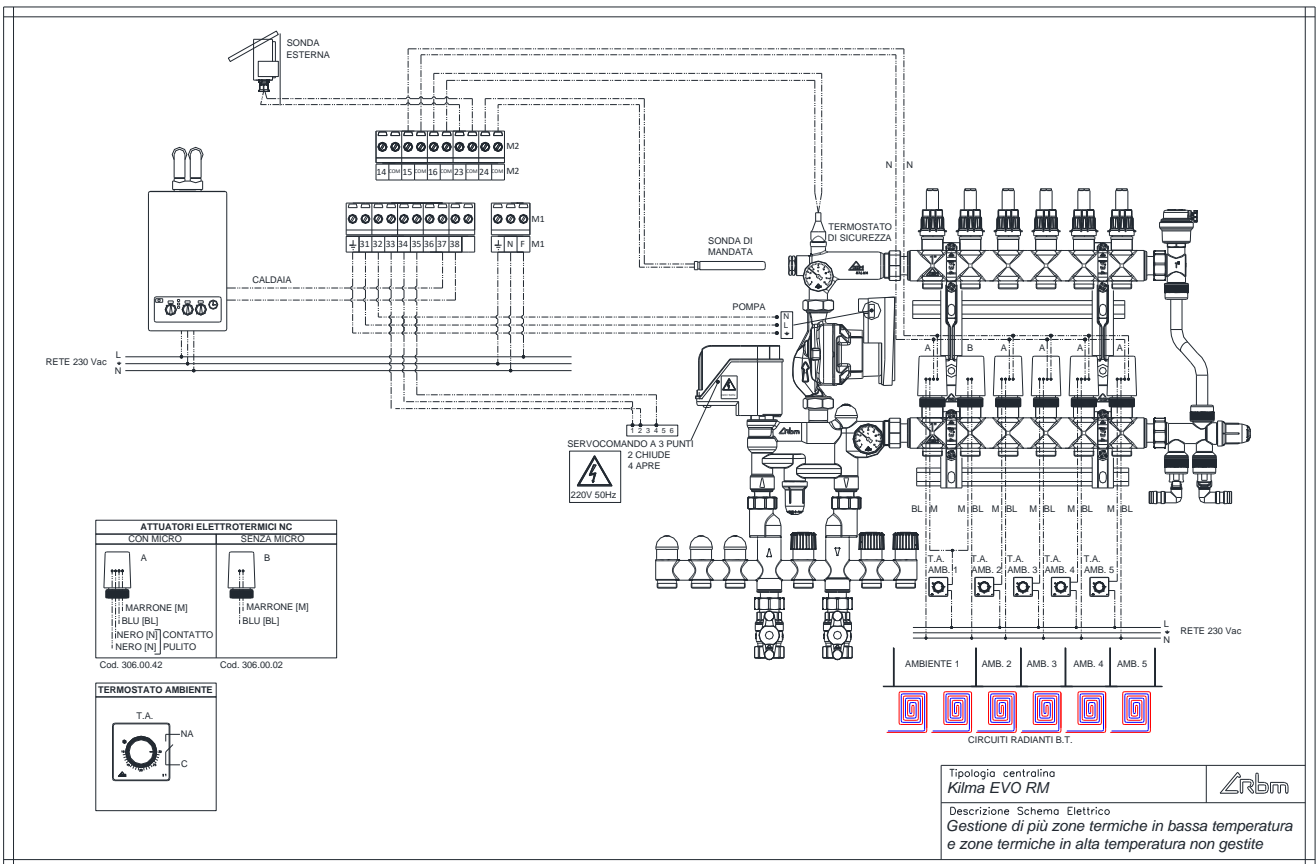
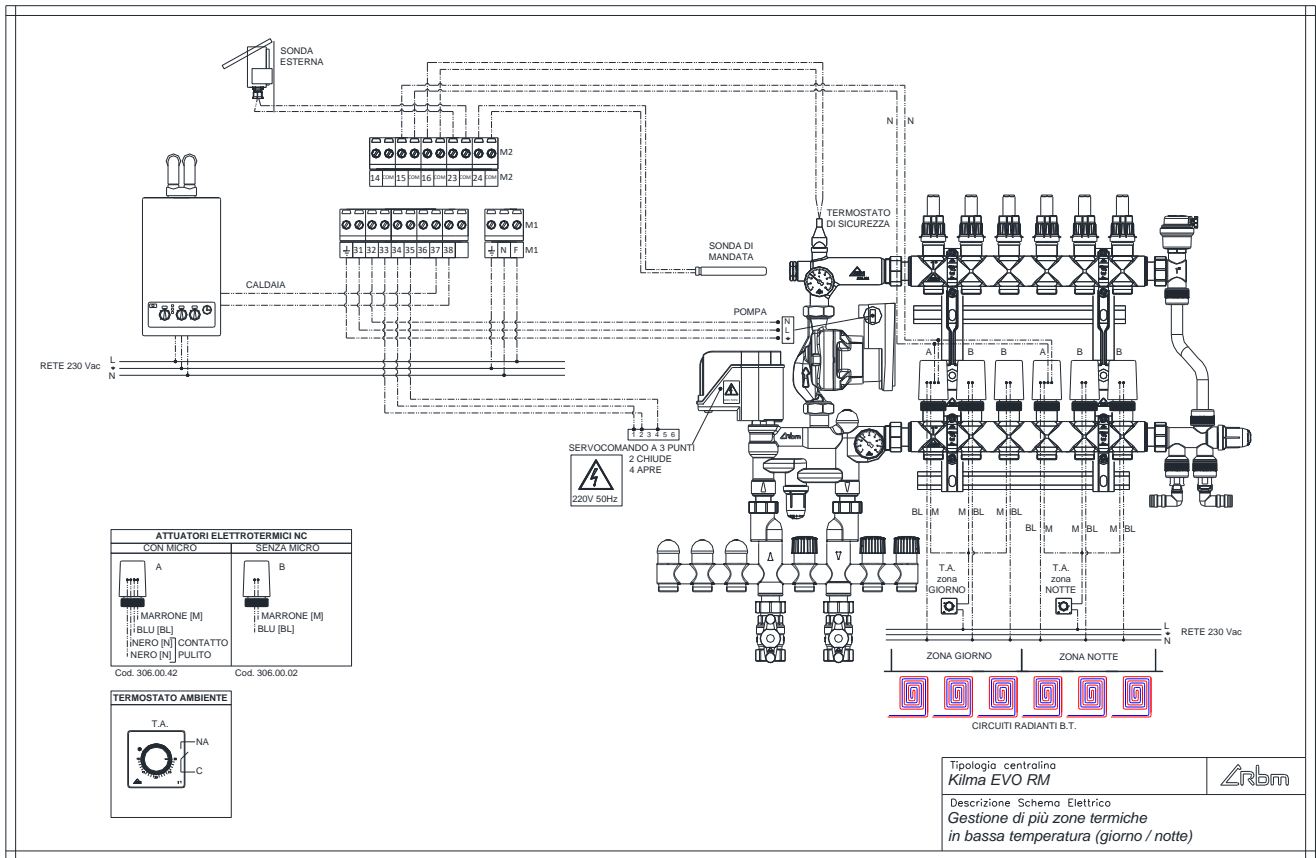
The installation must only be performed by *professionally specialised personnel*, qualified according to the law of 5 March 1990 no. 46, respecting current legislation and regulations.

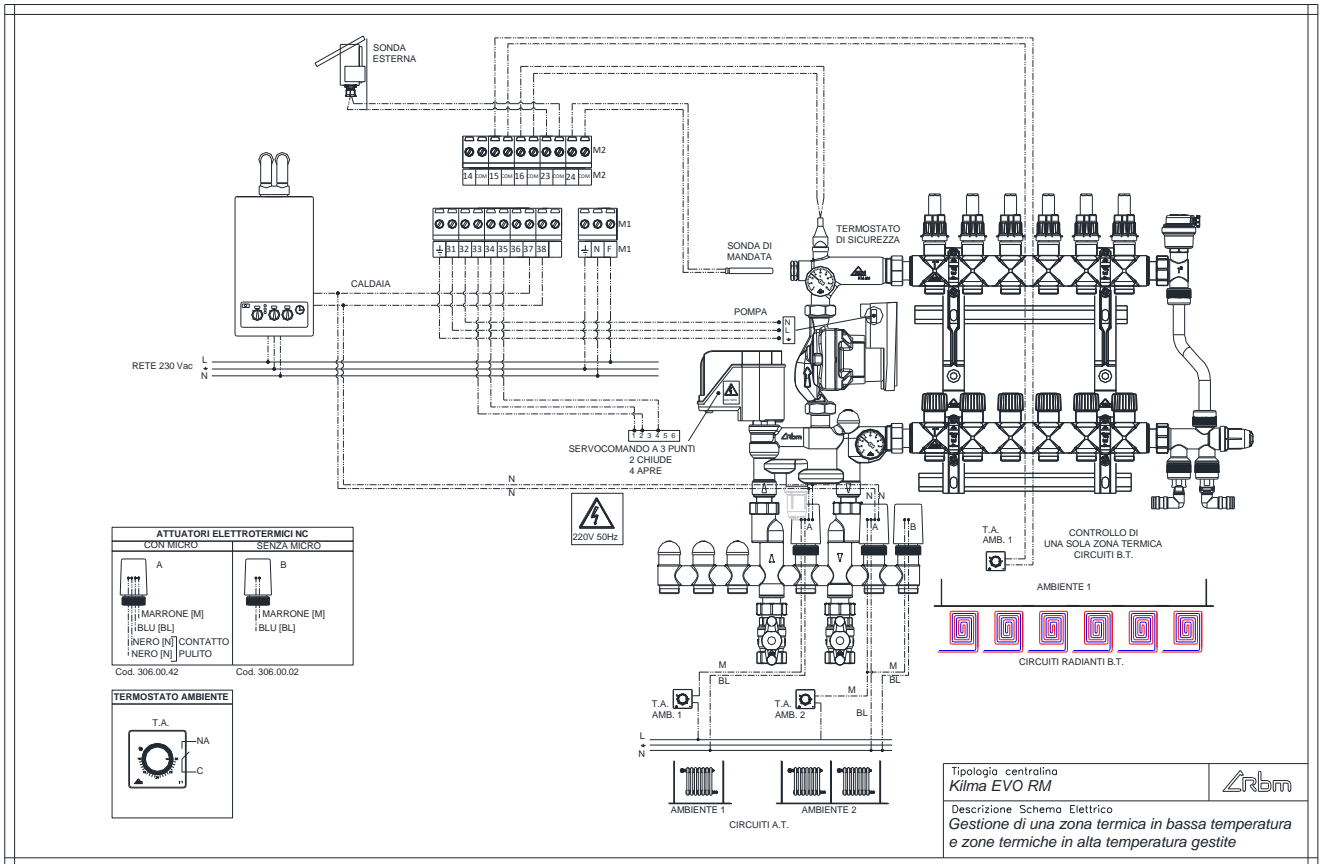
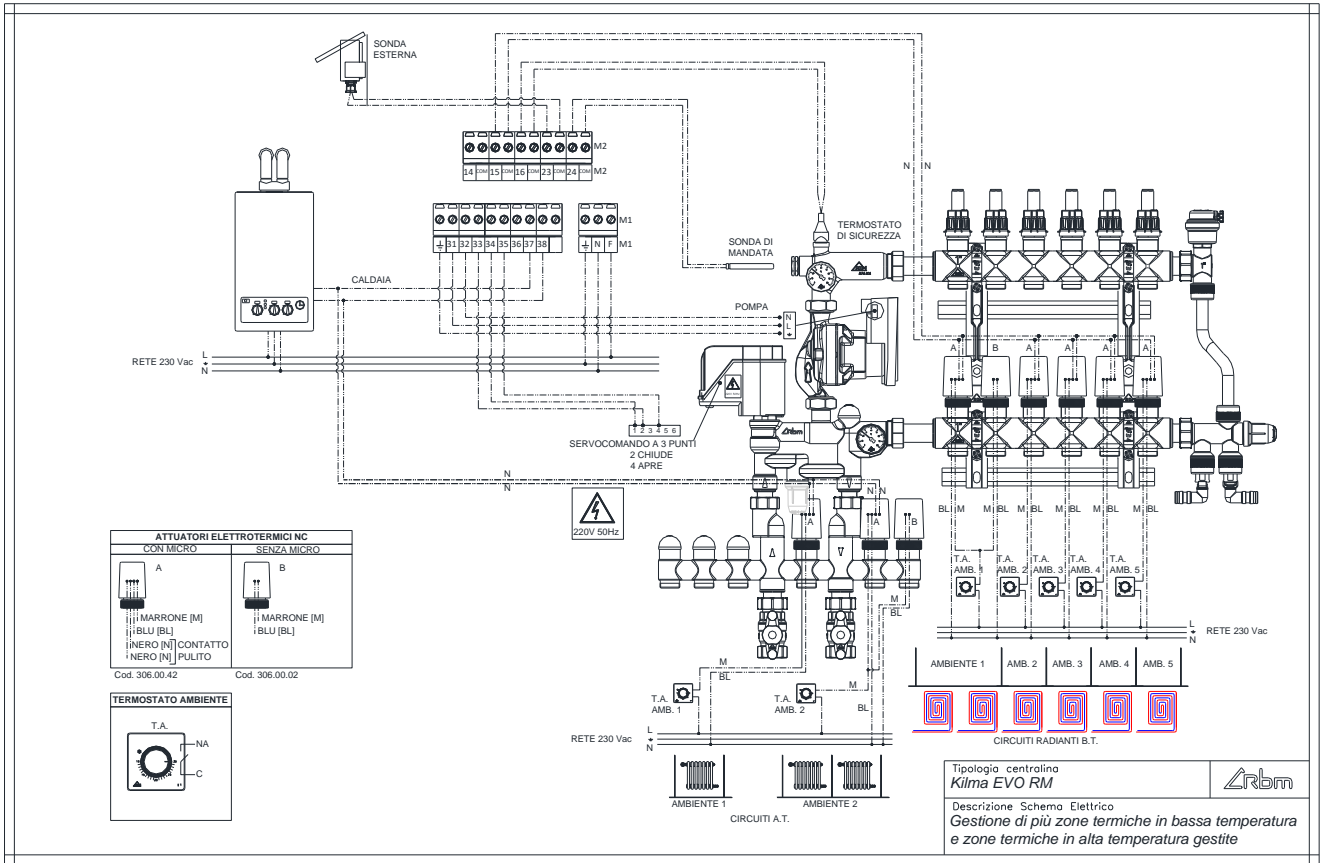


During the electrical and hydraulic connections, ensure that both the water supply and the electrical power supply mains are isolated

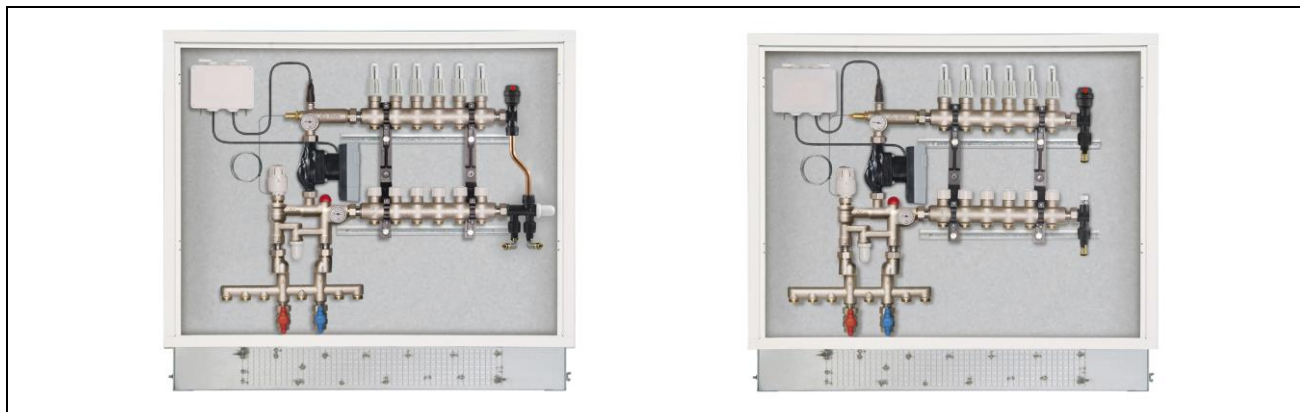
The electrical connections shown have the sole purpose of supplying the technician with a rapid guide for connecting the entire system electrically. The electrical connections shown are not binding and do not therefore represent the performance limits of the components.







KILMA EVO RF SERIES CONTROL UNIT ELECTRICAL DIAGRAMS



KILMA EVO-RF			
Fixed Regulation 1	Fixed Regulation 2	Fixed Regulation 3	Fixed Regulation 4
78X.06.60 e 790.XX.60	78X.06.90 e 790.XX.90	77X.06.60	77X.06.90

PRODUCTION RANGE

FIXED REGULATION	No. of high temperature ways	Code				No. low temperature ways
		High-low temperature water distribution		Only low temperature water distribution		
		EVO RF1	EVO RF2	EVO RF3	EVO RF4	
3 + 3		782.06.60	782.06.90	770.06.60	770.06.90	3 + 3
		783.06.60	783.06.90	771.06.60	771.06.90	4 + 4
		784.06.60	784.06.90	772.06.60	772.06.90	5 + 5
		785.06.60	785.06.90	773.06.60	773.06.90	6 + 6
		786.06.60	786.06.90	774.06.60	774.06.90	7 + 7
		787.06.60	787.06.90	775.06.60	775.06.90	8 + 8
		788.06.60	788.06.90	776.06.60	776.06.90	9 + 9
		789.06.60	789.06.90	777.06.60	777.06.90	10 + 10
		790.06.60	790.06.90	778.06.60	778.06.90	11 + 11
		790.12.60	790.12.90	778.12.60	778.12.90	12 + 12
		790.13.60	790.13.90	778.13.60	778.13.90	13 + 13
	Manifold terminal bypass		Yes	No	Yes	No
Thermostatic option HT manifold		Yes	Yes	No	No	

DESCRIPTION

Electrical diagrams for KILMA EVO RF1, RF2, RF3, RF4 control units with three distribution ways for high temperature with thermostatic option valves and regulation lock-shield valves and in the variation with thermostatic actuators installed.

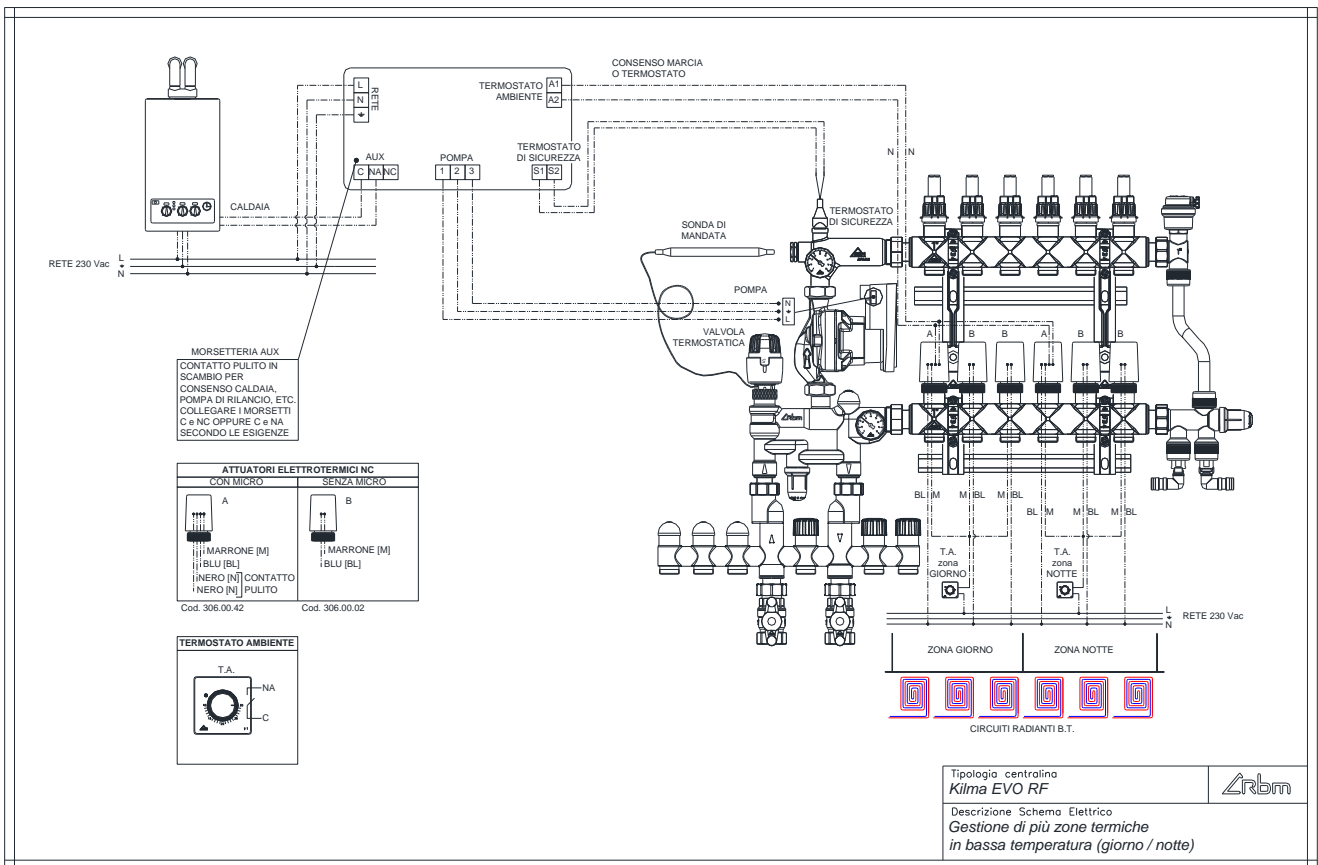
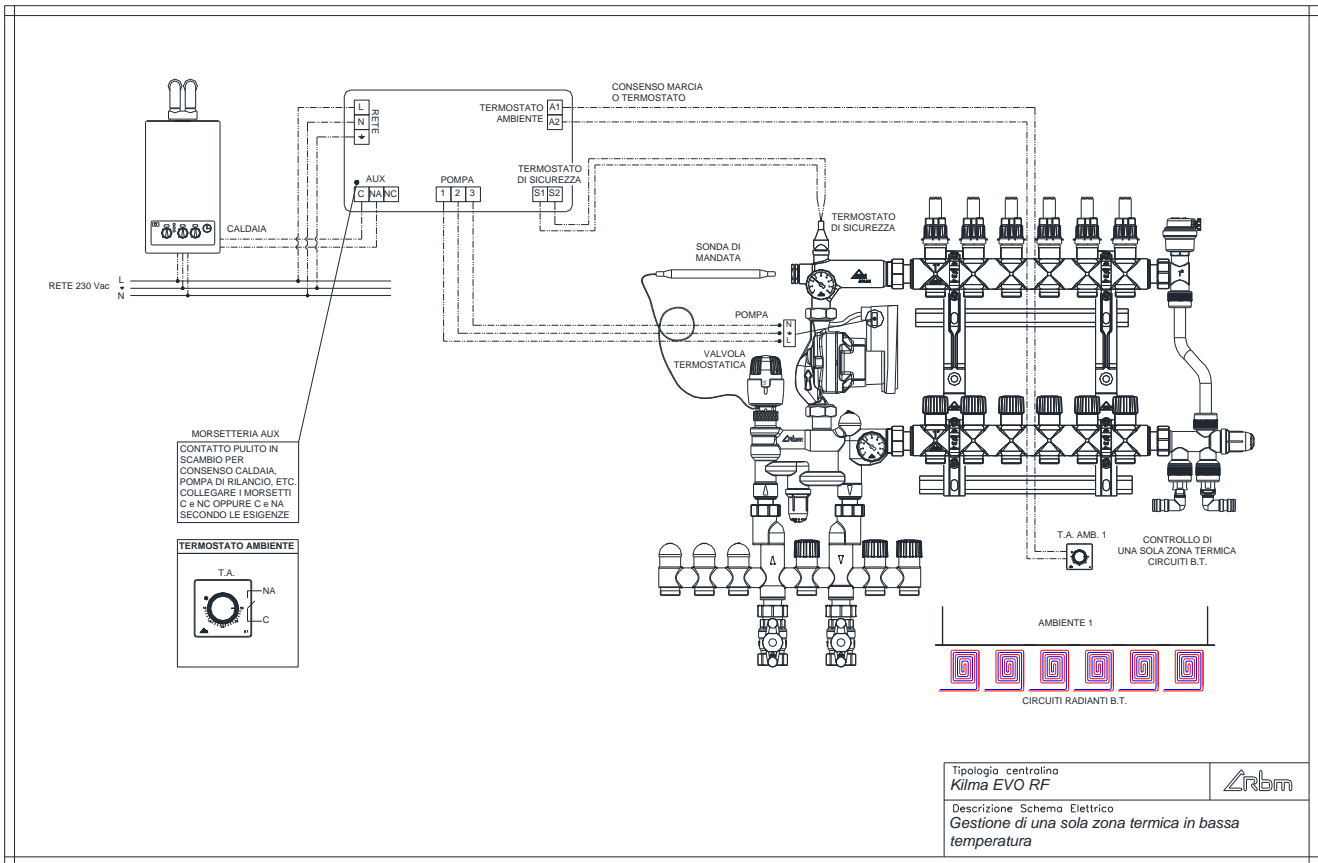
Electrical connection of the KILMA EVO RF range control unit with modulating regulation and digital electronic temperature regulator with climatic compensation function (cod. 2237.00.10).

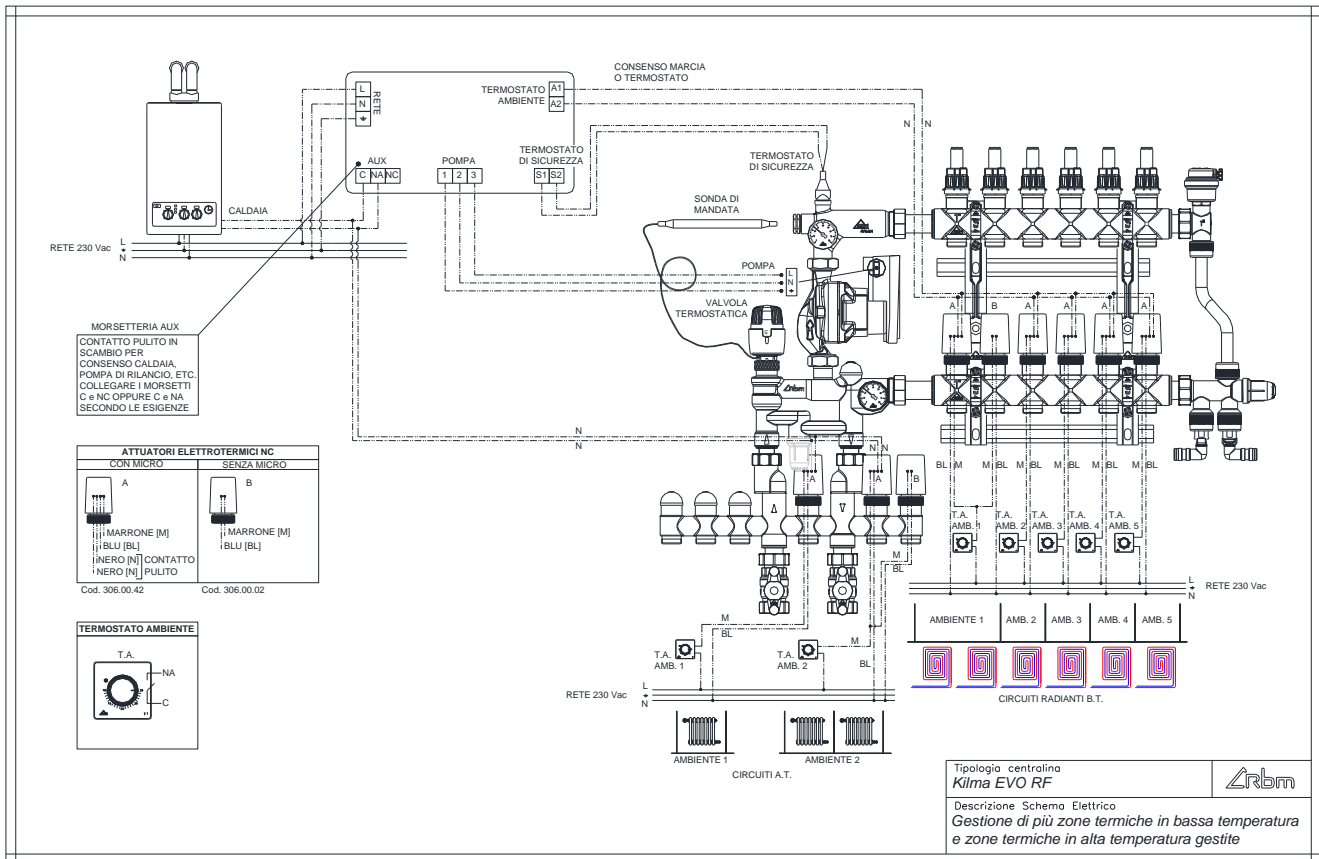
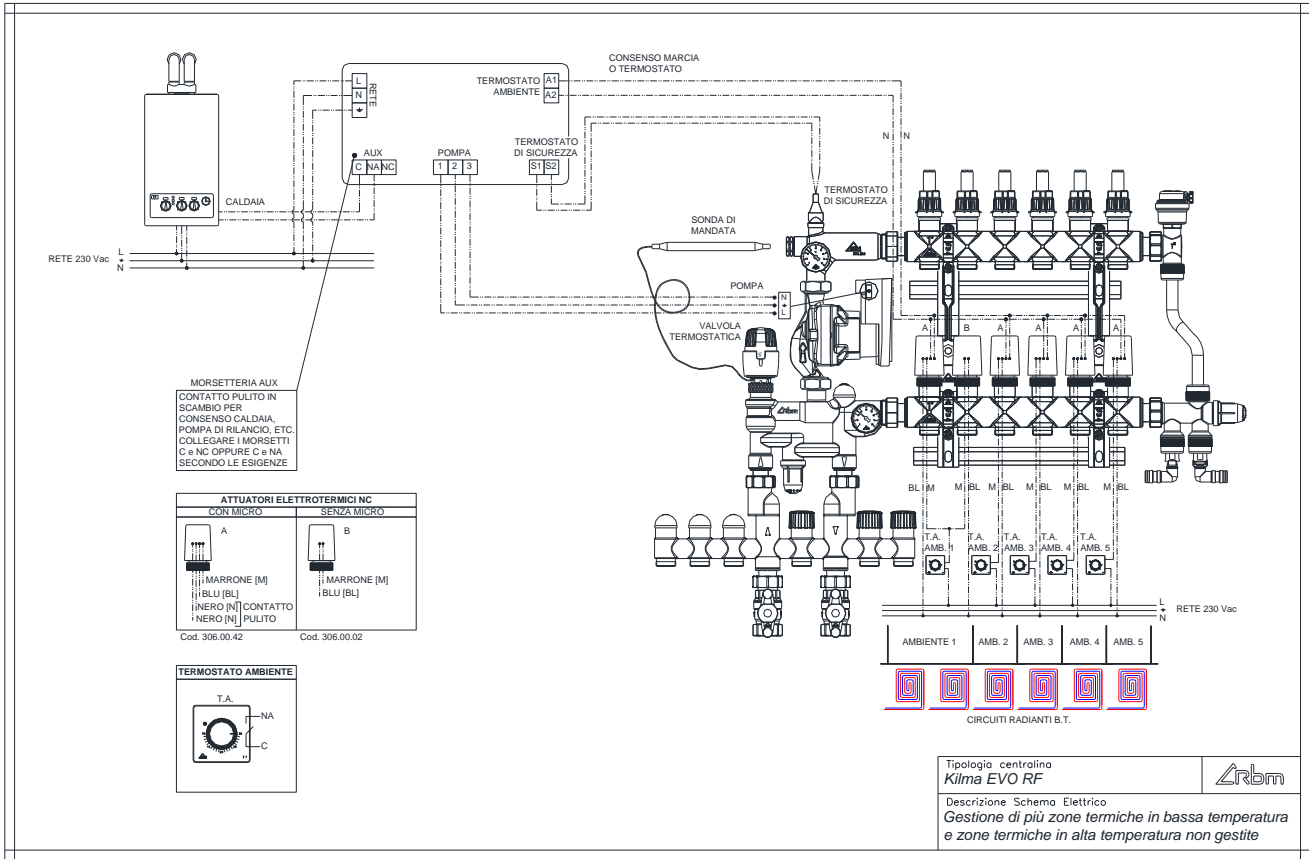
The installation must only be performed by professionally specialised personnel, qualified according to the law of 5 March 1990 no. 46, respecting current legislation and regulations.

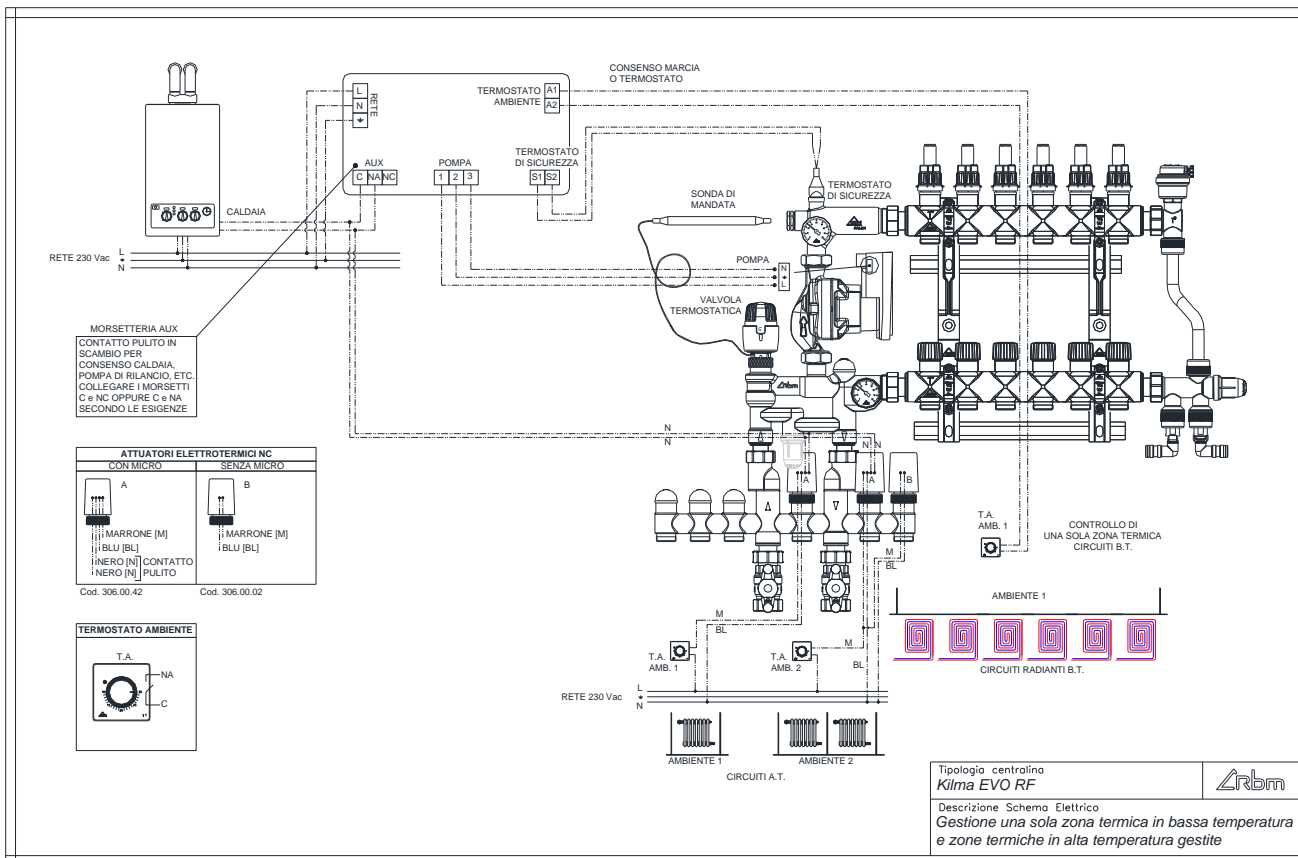



During the electrical and hydraulic connections, ensure that both the water supply and the electrical power supply mains are isolated

The electrical connections shown have the sole purpose of supplying the technician with a rapid guide for connecting the entire system electrically. The electrical connections shown are not binding and do not therefore represent the performance limits of the components.







 RBM spa si riserva il diritto di apportare miglioramenti e modifiche ai prodotti descritti ed ai relativi dati tecnici in qualsiasi momento e senza preavviso: riferirsi sempre alle istruzioni allegate ai componenti forniti, la presente scheda è un ausilio qualora esse risultino troppo schematiche. Per qualsiasi dubbio, problema o chiarimento, il nostro ufficio tecnico è sempre a disposizione.

RBM

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