

# Compact System

## Distribution systems

### USE

A **compact wall hanging distribution system** which can independently regulate each thermal zone, making the system independent of the generator thanks to the integrated hydraulic separation function.

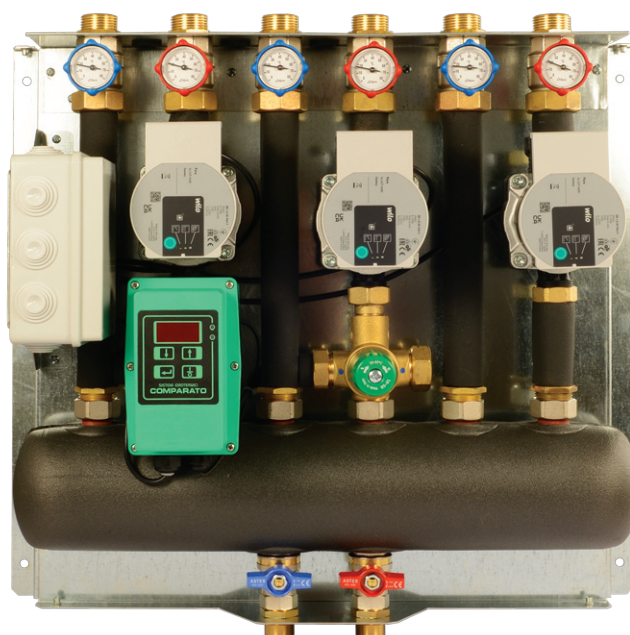
**Compact System** is used in combination with heat pumps, gas boilers and biomass boilers and is suitable for heating and cooling systems.

Up to 3 zones can be configured:

- **direct zone:** for heating and cooling;
- **mixing fixed-point zone:** with thermostatic valve adjustable between 30°C and 60°C - heating only;
- **mixing modulating zone with integrated electronics:** for radiant panel heating and cooling.

**Compact System** are complete with multi-function manifold, high-efficiency pumps, flow and return thermometers, system-side and generator-side interception valves and non-return valves.

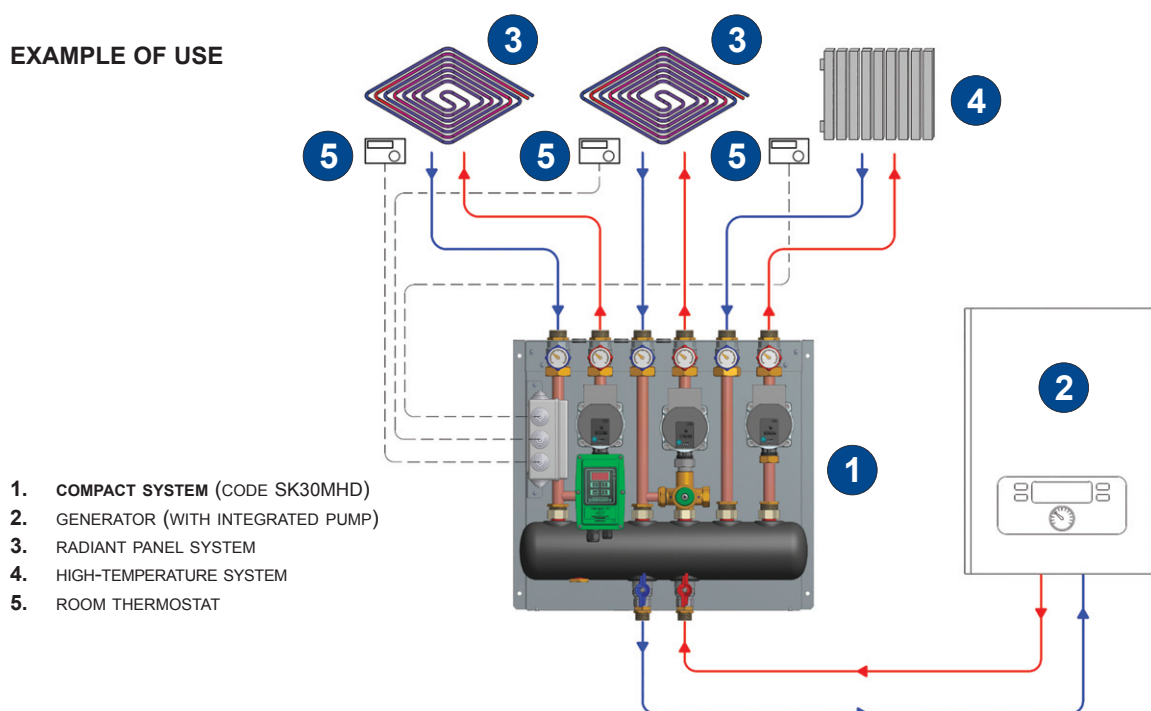
The heating versions are equipped with pipe insulation and an insulating shell for the multifunctional manifold; the cooling versions are equipped with additional insulation shells for all its hydraulic components.



### MAIN FEATURES

- Wall hanging installation with ultra-compact size
- Integrated hydraulic separator
- Suitable for heating and cooling systems
- Painted cover (optional)
- Simplified electrical connections thanks to control unit (optional)
- Flexible use and easy installation

### EXAMPLE OF USE



# Compact System

## VERSIONS AND CODE BUILDERS

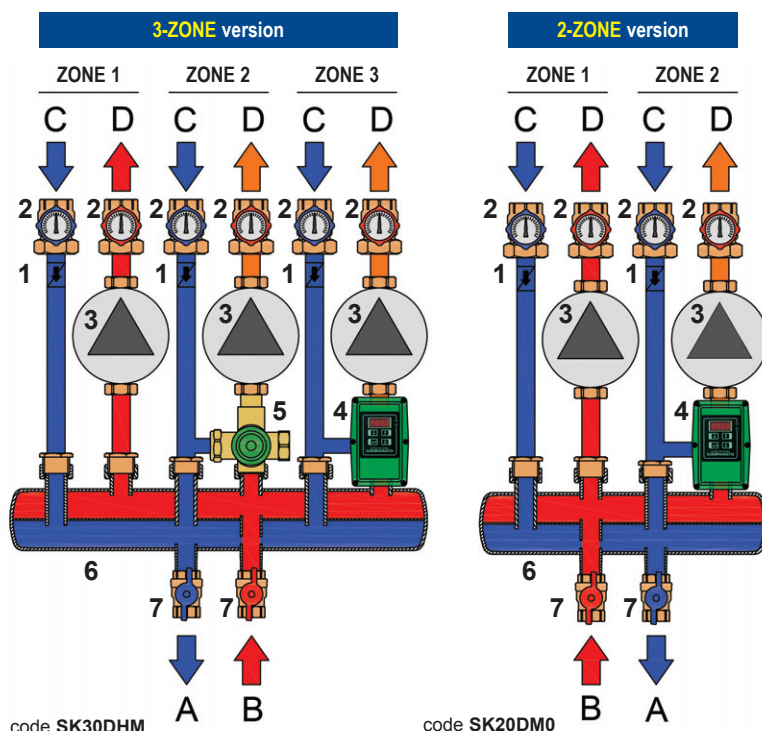
EXAMPLE • code **SK30MHD**: compact 3-zone distribution system for heating consisting of: zone 1 - direct; zone 2 - mixing fixed-point; zone 3 - mixing modulating.

SK3	0	M	H	D
<b>MODEL</b>				
SK2 = 2-zone SK3 = 3-zone				
<b>FUNCTION</b>				
0 = heating R = heating and cooling				
<b>1st ZONE TYPE • LEFT</b>				
D = direct H = mixing fixed-point, only for heating function (code 0) M = mixing modulating with integrated electronics				
<b>2nd ZONE TYPE • CENTRAL</b>				
D = direct H = mixing fixed-point, only for heating function (code 0) M = mixing modulating with integrated electronics				
<b>3rd ZONE TYPE • RIGHT</b>				
D = direct H = mixing fixed-point, only for heating function (code 0) M = mixing modulating with integrated electronics				
<b>ACCESSORIES</b>				
CSGE = electromechanical management unit				
CSK = white cover				
RFSNDAE = outdoor temperature probe for weather compensation *				
RFTRUEE10 = room temperature and relative humidity probe **				

\* only in combination with mixing modulating zone (M) with integrated electronics

\*\* only in combination with mixing modulating zone (M) and cooling function (R)

## HYDRAULIC DIAGRAM



- A. Return to generator
- B. Flow from generator
- C. Return from plant
- D. System flow
- 1. Non-return valve (pipeline-integrated)
- 2. Shut-off valve with thermometer
- 3. Zone pump
- 4. Electronic mixing motorised valve
- 5. Thermostatic mixing valve
- 6. Manifold with integrated hydraulic separation
- 7. Generator-side shut-off valve

# Compact System

## TECHNICAL FEATURES

PERFORMANCE	
Nominal diameter	DN20
Maximum operating pressure	PN6
Maximum temperature	90°C
Minimum temperature	5°C
Fluid type	water (max glycol 30%)
Maximum flow *	
• Direct	2100 l/h
• Mixing fixed-point	1400 l/h
• Mixing modulating	1900 l/h

\* with residual head of 20 kPa

HYDRAULIC CONNECTIONS	
Material	brass
Type	1" M plant side ISO 228/1 3/4" M generator side ISO 228/1
Centre span	80 mm

USE	
Installation	frost-protected indoor
Room temperature	5-55°C
Humidity	25-85% no condensing

SIZE	
Size	551x570x222 mm
Empty weight	max 25 kg without cover

COMPONENTS	
Pump	15/7 absorption max 50W
Check valve	on system return line
Thermometers	range 0°C-80°C
Thermostatic valve	range 30°C - 60°C
Actuator	see accessories
Control unit	see accessories
Electronic mixing valve	Diamix PR for radiant panels. • Heating: range 24°C - 50°C • Cooling: range 10°C - 30°C

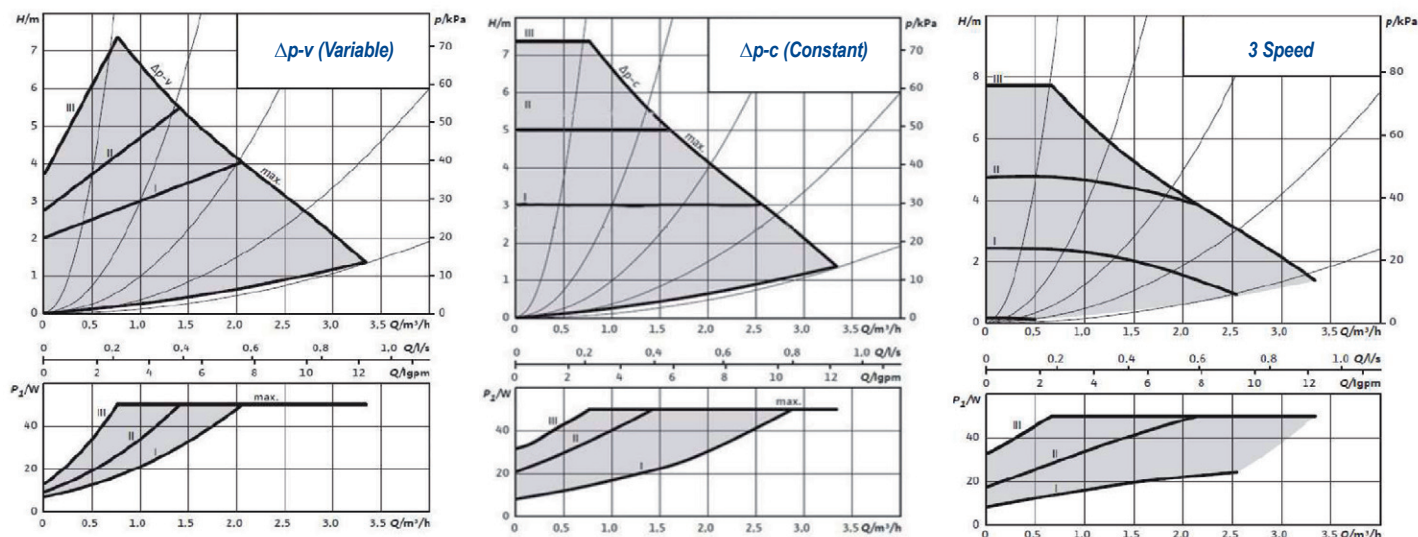
MATERIALS	
Piping	copper Ø22 mm
Multifunctional manifold	carbon steel
Support sheet	galvanised sheet metal 10/10 mm
Insulation for heating version	• Pipes: closed-cell elastomer foam • Multifunctional manifold: closed-cell polyethylene foam
Insulation for heating and cooling version	• Pipes: closed-cell elastomer foam • Multifunctional manifold: closed-cell polyethylene foam • Components: closed-cell polyethylene foam shell

## TABLE OF POWERS

Flow (l/h)	Delivered power			
	Radiators with thermostatic valves $\Delta T = 30^\circ\text{C}$	Radiators with thermostatic valves $\Delta T = 20^\circ\text{C}$	Fan convectors or radiators without thermostatic valves $\Delta T = 10^\circ\text{C}$	Radiant panels $\Delta T = 5^\circ\text{C}$
	(kW)	(kW)	(kW)	(kW)
600	21	14	7	3,5
1200	42	28	14	7
1800	63	42	21	10,5

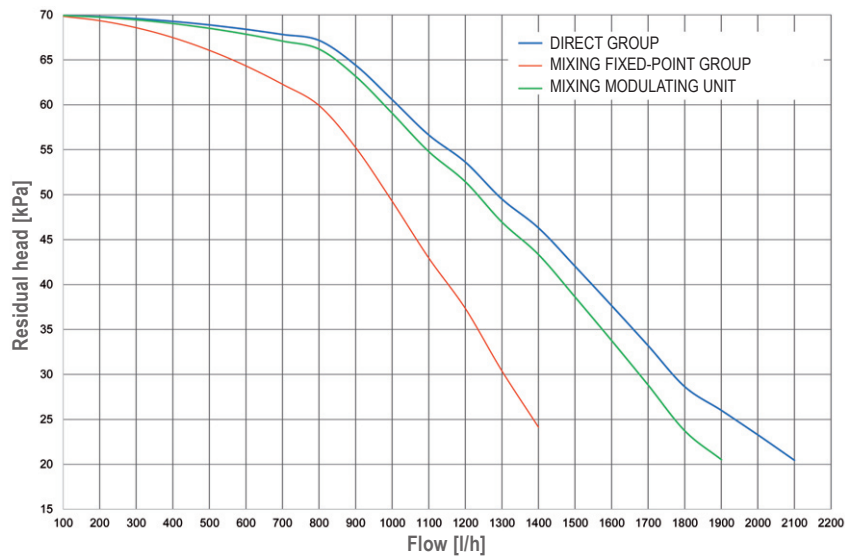
## HYDRAULIC FEATURES

### PUMP CURVES

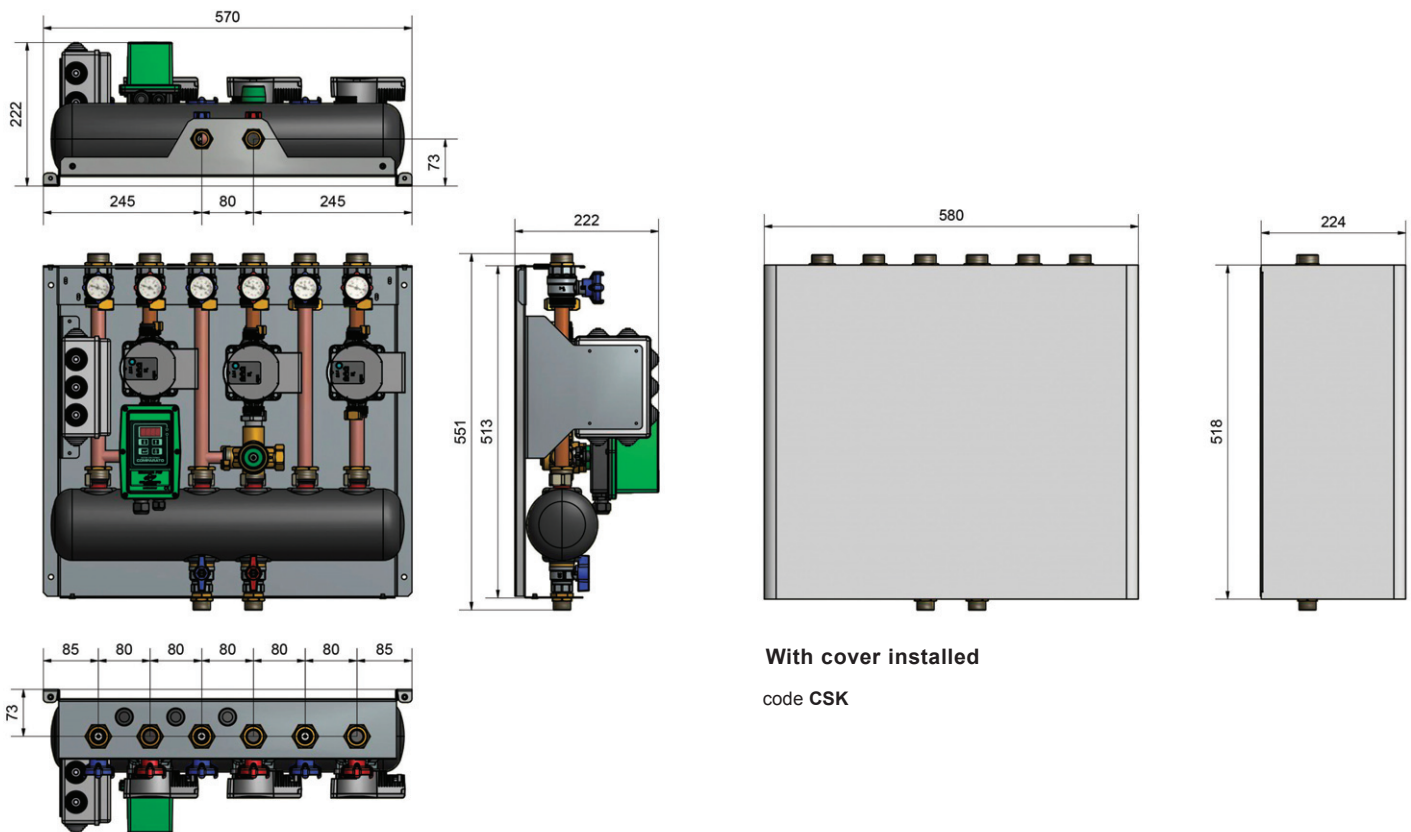


# Compact System

## RESIDUAL PREVALENCE



## OVERALL SIZE



code **SK2...**

code **SK3...**

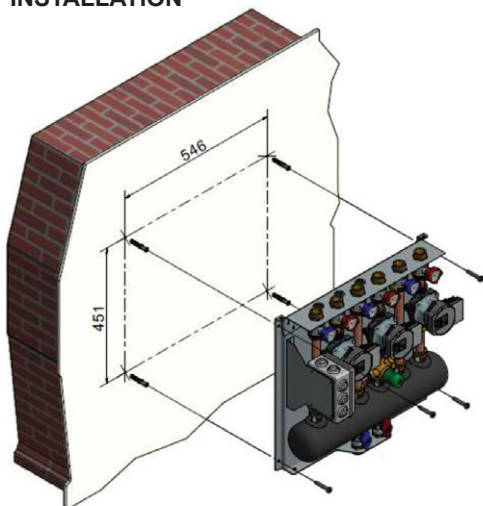
**With cover installed**

code **CSK**

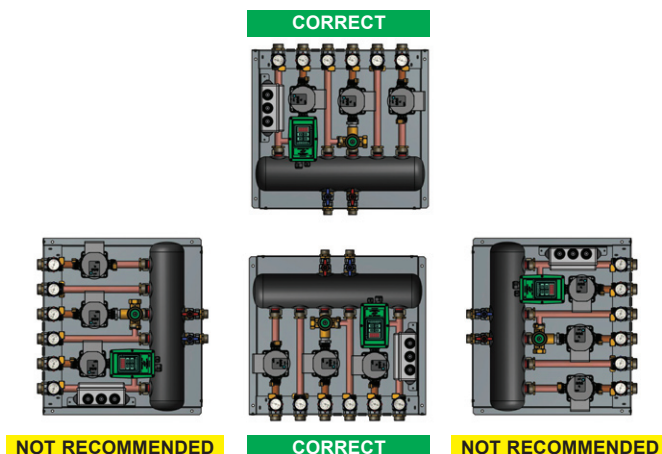


# Compact System

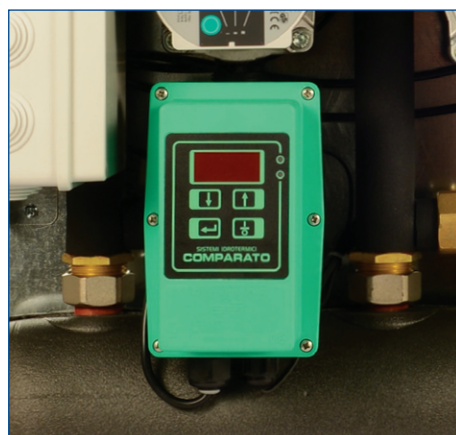
## INSTALLATION



The installation is intended to be wall hanging, in technical rooms. A cover is available as an optional (cod. CSK), white.



## DIAMIX PR ELECTRONIC MIXING VALVE for radiant panels



DIAMIX PR electronic mixing motorised valve regulates and controls heating and cooling zones equipped with radiant floor, wall and ceiling panels.

TECHNICAL FEATURES	
Power supply	230V 50/60 Hz
Maximum power consumption	15 VA
Operating time	35 s (90°)
Class protection	IP65
Temperature probe	NTC 10 kΩ contact type
Electronic adjuster	PID
Fixed-point temperature setting range	Heating: 24°C ÷ 50°C Cooling: 10°C ÷ 30°C
Weather compensation limits	25°C ÷ 45°C
Accuracy	±1°C
Communication protocol	Modbus RTU
Serial interface	RS 485

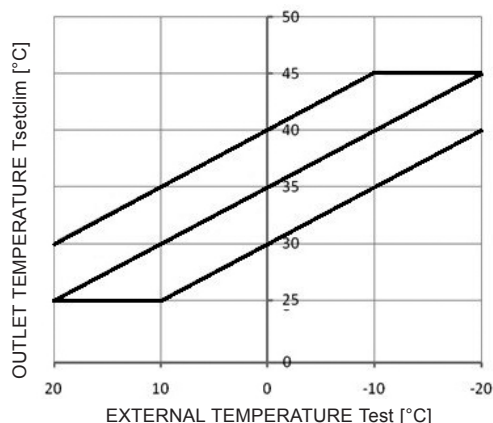
## FUNCTIONS

### HEATING

- **Fixed-point regulation:** the setpoint temperature for winter heating is set by means of the actuator keyboard and display. The motorised valve is activated by the room thermostat and keeps the outlet temperature constant on the setpoint value with an accuracy of +/- 1°C.
- **Weather compensation:** the outlet temperature to the radiant system is automatically calculated by the software according to the external temperature detected by the relevant probe (optional), following programmable climatic curves. The setpoint value is calculated by means of the following equation:

$$T_{setpoint} = - (T_{external} * C1) + C2$$

EXAMPLE WITH C1 = 0.5



Where:

$T_{external}$  = temperature measured by the external probe.

C1 = slope of the weather compensation.

C2 = outlet temperature to the system when the outside temperature is 0°C.

The setpoint temperature is constrained to a temperature range of [+25°C; +45°C].

# Compact System

## COOLING

- **Fixed-point regulation:** the temperature delivered to the radiant system is kept constant according to the design value. In this configuration, the relative humidity adjustment within the air-conditioned rooms is managed by dedicated management devices. If the relative humidity and ambient temperature probe (optional) is connected, if the outlet temperature reaches the calculated dew point, the motorised valve triggers an alarm by closing a digital contact and a warning appears on the display. Moreover, the relative humidity value is constantly monitored and compared with a programmable reference value: if the threshold value is exceeded, the motorised valve activates a special alarm by closing a digital contact and a warning appears on the display.
- **Continuous cooling adjustment with relative humidity control:** the outlet temperature to the radiant system is kept close to the dew point temperature calculated by means of the relative humidity and room temperature probe (optional). In order to keep the relative humidity below a reference value, the dehumidification system is activated or deactivated depending on the maximum relative humidity set on the motorised valve. If the dehumidifiers have an integration function, it is possible to set a minimum room temperature beyond which the motorised valve activates the function in order to introduce dry air at a lower temperature than the room temperature into the housing unit.

## SUMMER / WINTER SWITCHING

The summer/winter function modifies the control and management logic of the mixing valve during the transition from summertime (cooling) to wintertime (heating). The switching can be done locally using the keyboard and display or remotely by means of a digital contact.

## SYSTEM MANAGEMENT

The mixing valve receives the activation command from the room thermostat (not included). The system pump (not included) starts and the electronic system, which operates by means of PID algorithm, controls the outlet temperature according to the pre-set values. When the room thermostat sends the signal to cut the power supply to the system, the mixing valve locks the pump, stops the regulation and connects the outlet (mixed) way to the system return: this avoids any temperature fluctuation at system restart, which could activate the thermal security devices.

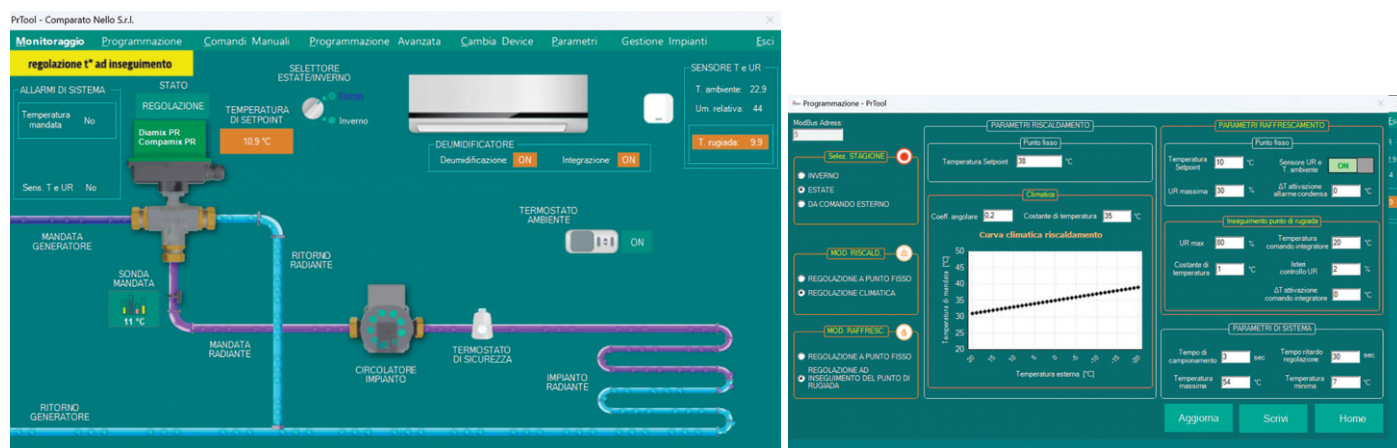
## ELECTRONIC SAFETY

It is possible to set two limit temperature for the fluid: one for winter heating and one for summer cooling. When these values are exceeded, the mixing valve enters the "safety" mode: it stops the pump and connects the common (mixed) way to the system return. The display shows an alarm message and the system resumes its normal operation only when the temperature returns within the normal operation temperature limits.

## REMOTE MANAGEMENT - Modbus RTU

**DIAMIX PR** is equipped with MODBUS RTU interface; using the RS485 serial connection, you can modify all operating parameters, send commands to the valve and receive information on the operating status. **DIAMIX PR** mixing valves are suitable for the connection with modern Building Management Systems (BMS).

The Modbus address table can be downloaded from [www.comparato.com](http://www.comparato.com). Thanks to the RS485-USB device (optional) and to **COMPARATO PRTool software** it is possible to connect to it through a PC.



# Compact System

## ELECTRONIC MIXER ACCESSORIES



code **RFSONDAE**



code **RFTRUEE10**

### EXTERNAL TEMPERATURE PROBE

TECHNICAL FEATURES	
Housing material	plastic
Thermowell material	stainless steel
Environmental and working conditions	- 40°C ÷ 100°C, relative humidity: 0% ÷ 100%
Probe	NTC
Minimum insulation resistance	100Ω at 100Vdc
Class protection	IP65 / IP67 according to iec60529

**note: one external probe for each modulating mixing zone**

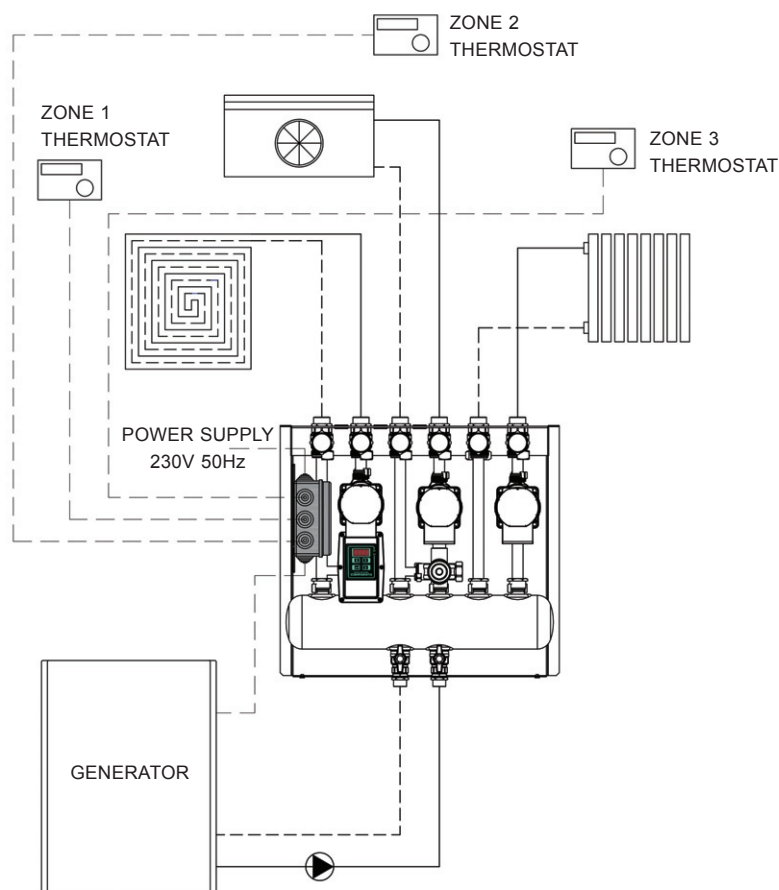
### TEMPERATURE AND RELATIVE HUMIDITY PROBE

TECHNICAL FEATURES	
Installation	wall hanging
Class protection	IP30
Working range humidity	0...95% RH
Analogue output	0-10V relative humidity
Temperature probe	NTC
Power supply	15 - 40V DC / 24V AC

## ACCESSORIES

### ELECTROMECHANICAL MANAGEMENT UNIT code **CSGE**

The management unit allows the control of individual zones and the control of the generator via voltage-free contacts. Below is an example of an electrical connection for **Compact System** with 3 zones.



# Compact System

## COVER code CSK

Sheet metal cover painted with epoxy powder in white RAL9010.



## INSTALLATION WARNINGS

It is advisable to use flexible hydraulic connection in order to compensate for any thermal expansion and possible misalignment between the system connections.

## CERTIFICATIONS

### EC Machinery Directive

2006/42/CE.

### EC Low Voltage Directive

2014/35/ue: 26/04/2014

### EC Electromagnetic Compatibility Directive

2014/30/UE

## EXAMPLE OF SPECIFICATIONS

**COMPACT SYSTEM** with two zones for the heating system, wall-mounted installation and G1" connections on the system side and G3/4" on the generator side; featuring: • distribution manifold with integrated separator • manual shut-off valves • system-side thermometers • integrated check valves • polyethylene manifold insulation and elastomer foam piping • direct zone with 15/7 pump, maximum flow rate 2100 l/h • modulating mixing zone with integrated electronics, 15/7 pump, maximum flow rate 1900 l/h. Nominal diameter DN20, maximum working pressure 6 bar, maximum temperature 90°C, minimum temperature 5°C, copper piping Ø22mm, electrical supply 230V 50 Hz, dimensions 570x551x222mm.

Brand: **COMPARATO**

Code: **SK20DM0**

**SHEET METAL COVER**, painted with epoxy powder in white RAL9010; dimensions 580x518x224mm.

Brand: **COMPARATO**

Code: **CSK**

## UPDATED DATA SHEETS AVAILABLE AT [www.comparato.com](http://www.comparato.com)

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**HYDROTHERMAL SYSTEMS**  
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