

# Under-Boiler units

## distribution systems

### USE

The **UNDER-BOILER UNITS** with built-in installation, which can deliver the right flow and proper head to the thermo-carrier fluid in domestic hydraulic systems with wall-mounted boilers.

They can be configured during the ordering process, up to a maximum of 3 zones:

- **direct zone:** high temperature
- **mixing fixed-point zone:** with thermostatic valve, adjustable between 30°C and 60°C
- **mixing modulating zone:** with control unit and weather compensation

The under-boiler units have a multifunction manifold with integrated hydraulic separator, high efficiency pumps, flow and return thermometers, interception valves on the plant and boiler sides, non-return valve and insulation.

They are also equipped with an **electric box to manage the zones and control the boiler**.

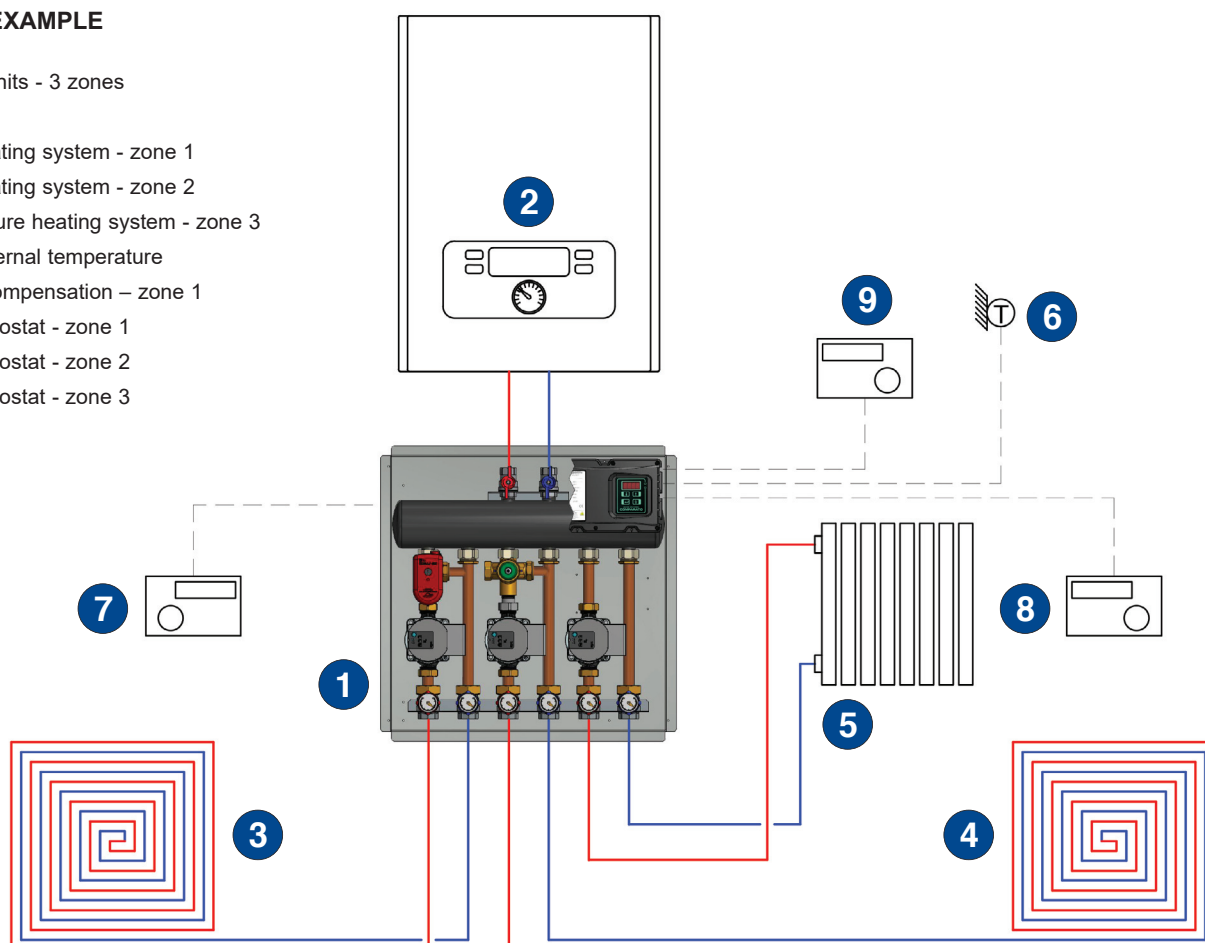


### KEY FEATURES

- Built-in hydraulic compensator
- Simplified hydraulic connections
- Easy installation
- Ultra compact size
- Electromechanical control unit for zone management and boiler activation

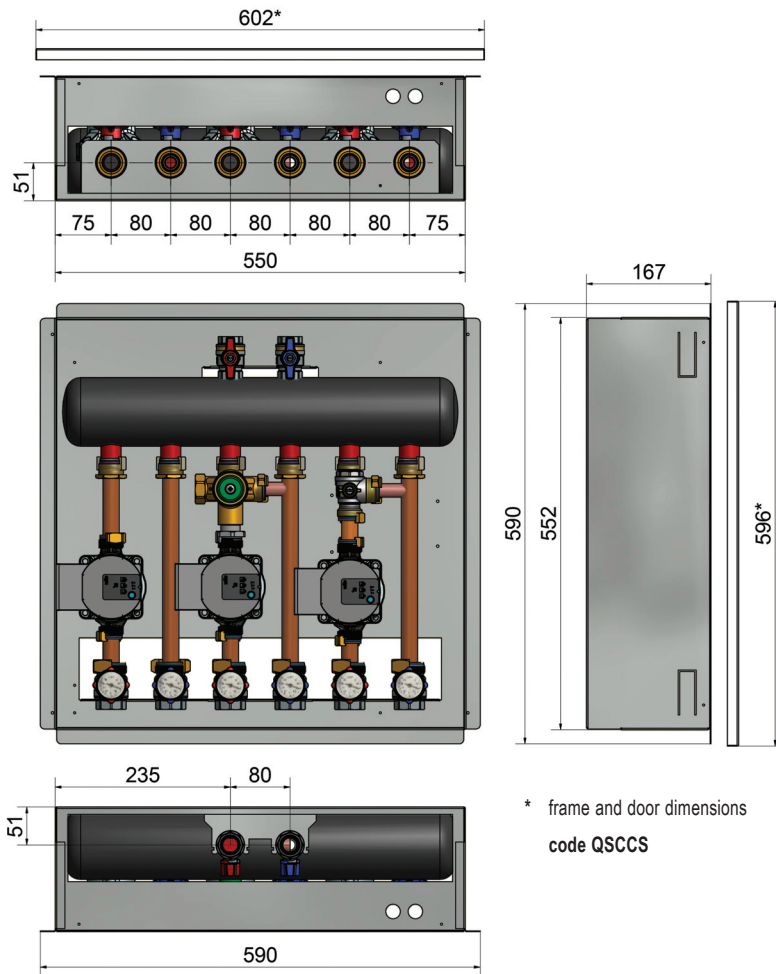
### APPLICATION EXAMPLE

1. Under-boiler units - 3 zones
2. Boiler
3. Underfloor heating system - zone 1
4. Underfloor heating system - zone 2
5. High temperature heating system - zone 3
6. Sensor for external temperature for weather compensation – zone 1
7. Ambient thermostat - zone 1
8. Ambient thermostat - zone 2
9. Ambient thermostat - zone 3

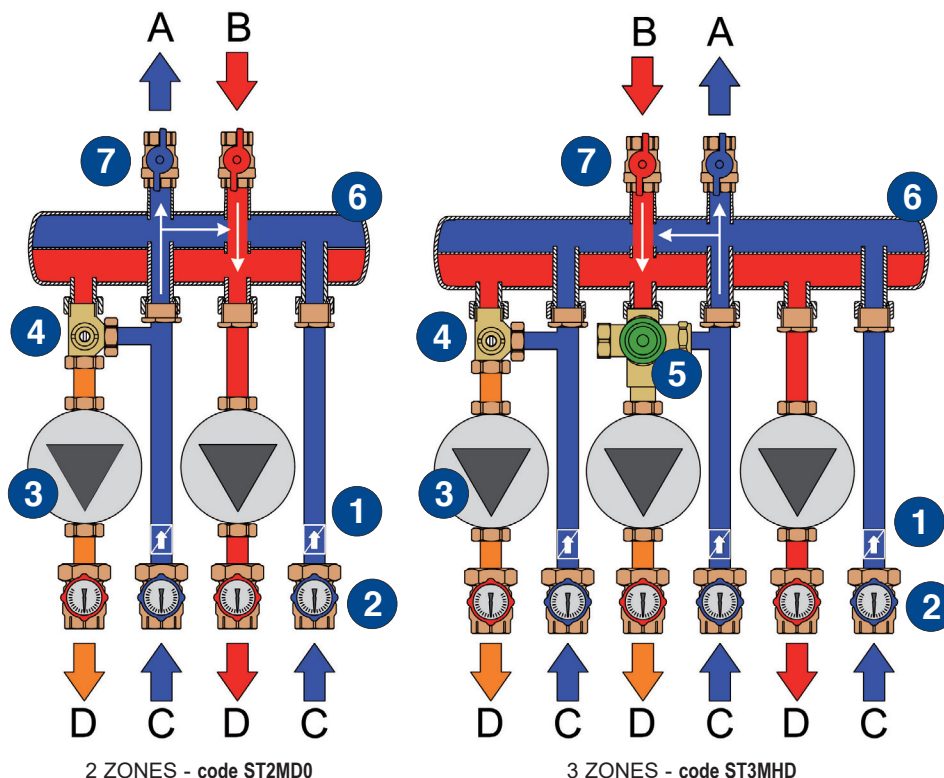


# Under-Boiler Units

## OVERALL SIZE



## HYDRAULIC DIAGRAM



## VERSION AND CODE BUILDER

EXAMPLE • **ST3MHD** code: 3-zone under-boiler unit with mixing modulating left-hand zone, mixing fixed-point central zone and direct right-hand zone

| ST3   | M | H | D |
|---|---|---|---|
| <b>MODEL</b>  |   |   |   |
| ST2 = 2 zones<br>ST3 = 3 zones  |   |   |   |
| <b>ZONE 1 type • LEFT</b>   |   |   |   |
| D = direct zone<br>H = mixing fixed-point zone<br>M = mixing modulating zone                    |   |   |   |
| <b>ZONE 2 Type • CENTER</b>   |   |   |   |
| D = direct zone<br>H = mixing fixed-point zone<br>M = mixing modulating zone                    |   |   |   |
| <b>ZONE 3 Type • RIGHT</b>  |   |   |   |
| D = direct zone<br>H = mixing fixed-point zone<br>M = mixing modulating zone<br>0 = not present |   |   |   |

## ACCESSORY

**QSCCS** = frame and door with lock

1. Non-return valve (integrated into the pipe)
  2. Interception valve with thermometer
  3. System pump
  4. Mixing valve (to be motorised)
  5. Thermostatic mixer
  6. Multi-function manifold
  7. Interception valve
- A. Return to boiler  
B. Outlet from boiler  
C. Return from the system  
D. Flow to the system

# Under-Boiler Units

## TECHNICAL FEATURES

### PERFORMANCES

|                            |                        |
|----------------------------|------------------------|
| 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 prevalence of 20 kPa

### HYDRAULIC CONNECTIONS

|          |   |
|----------|---|
| Material | brass   |
| Type     | 1" female on plant side<br>3/4" female on boiler side |
| Span     | 80mm  |

### USAGE

|                  |   |
|------------------|---|
| Installation     | flush-mounted<br>in indoor environments |
| Room temperature | 5-55°C                                  |
| Humidity         | 25-85% non-condensing                   |

### COMPONENTS

|                    |   |
|--------------------|---|
| Pump               | 15/7                                    |
| Interception valve | integrated on the<br>system return line |
| Thermometers       | 0-80°C                                  |
| Thermostatic mixer | range 30°C - 60°C                       |
| Electrical box     | IP55                                    |
| Actuators          | see accessories                         |
| Control unit       | see accessories                         |

### MATERIALS

|                         |                                      |
|-------------------------|--------------------------------------|
| Piping                  | copper Ø22 mm                        |
| Multi-function manifold | carbon steel                         |
| Insulation              | closed-cell expanded<br>polyethylene |
| Metal box               | galvanized sheet 10/10mm             |
| Frame and door          | RAL9010 epoxy powder<br>coated sheet |

### SIZE

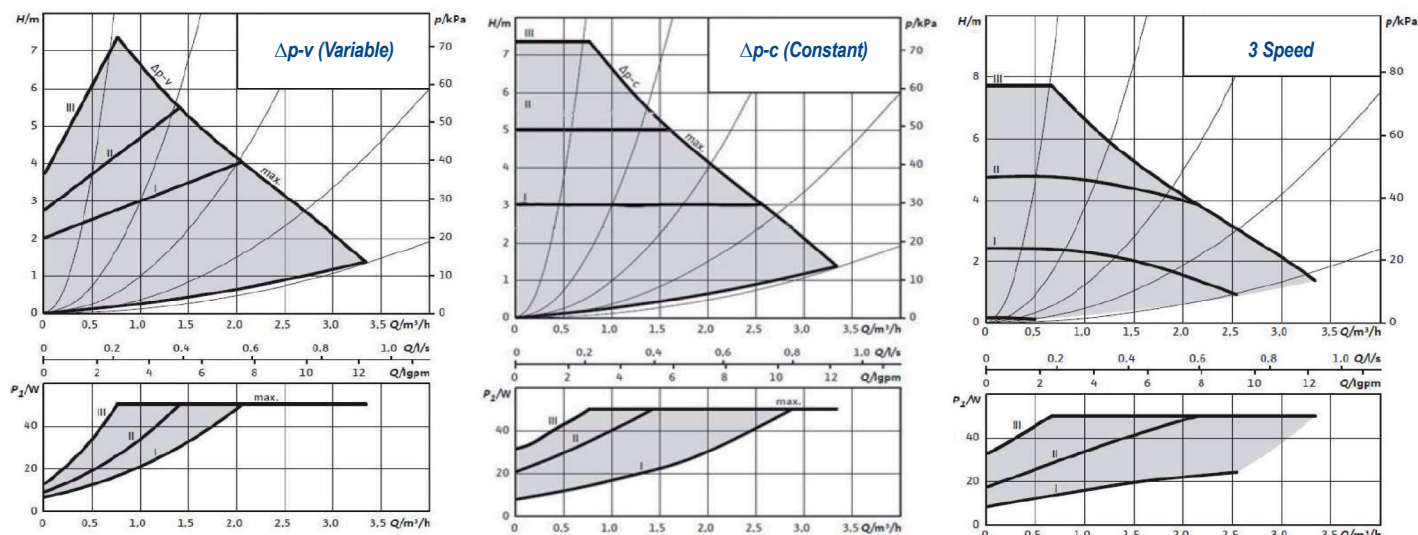
|                   |                |
|-------------------|----------------|
| Recess dimensions | 550x550x150 mm |
|-------------------|----------------|

## POWER TABLES

| Flow rate | Power output   |  |  |  |
|-----------|--|--|--|--|
|           | Radiators<br>with thermostatic valves<br>$\Delta T = 30^\circ\text{C}$ | Radiators<br>with thermostatic valves<br>$\Delta T = 20^\circ\text{C}$ | Fan coils or radiators<br>without thermostatic valves<br>$\Delta T = 10^\circ\text{C}$ | Radiant panels<br>$\Delta T = 5^\circ\text{C}$ |
|           | (l/h)  | (kW)   | (kW)   | (kW)   |
| 600       | 21   | 14   | 7  | 3,5  |
| 1200      | 42   | 28   | 14   | 7  |
| 1800      | 63   | 42   | 21   | 10,5   |

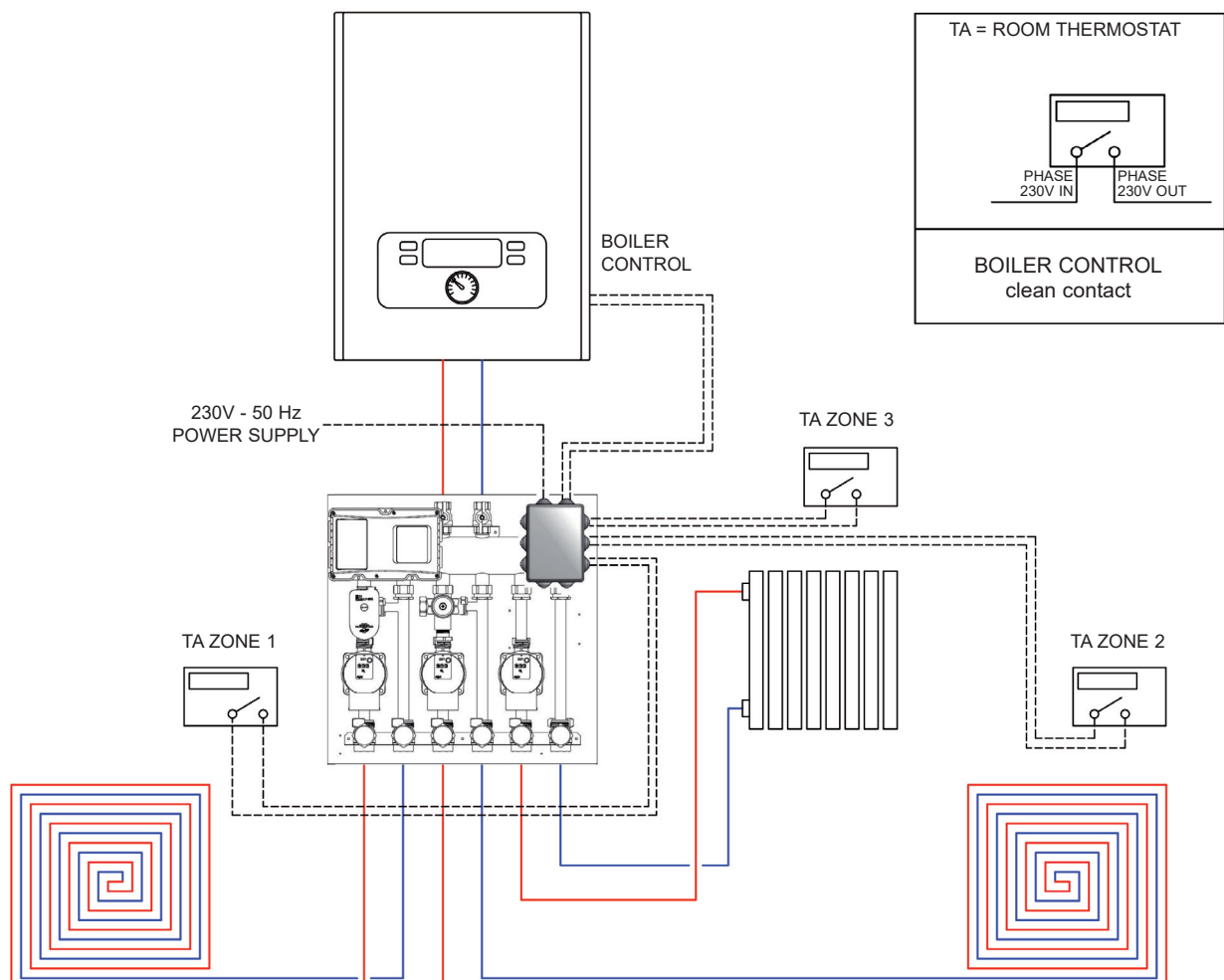
## ELECTRICAL FEATURES

### PUMP CURVES



| Flow rate [m³/h] | DIRECT UNIT [kPa] | MIXING MODULATING FIXED-POINT [kPa] | MIXING MODULATING [kPa] |
|------------------|-------------------|-------------------------------------|-------------------------|
| 100              | 70                | 70                                  | 70                      |
| 200              | 69.5              | 69                                  | 69.5                    |
| 300              | 69                | 67.5                                | 69                      |
| 400              | 68.5              | 66                                  | 68.5                    |
| 500              | 68                | 64.5                                | 68                      |
| 600              | 67.5              | 63                                  | 67.5                    |
| 700              | 67                | 61.5                                | 67                      |
| 800              | 66.5              | 60                                  | 66.5                    |
| 900              | 64                | 55                                  | 64                      |
| 1000             | 60                | 48                                  | 60                      |
| 1100             | 56                | 42                                  | 56                      |
| 1200             | 53                | 37                                  | 53                      |
| 1300             | 49                | 31                                  | 49                      |
| 1400             | 46                | 24                                  | 46                      |
| 1500             | 42                | -                                   | 42                      |
| 1600             | 38                | -                                   | 38                      |
| 1700             | 34                | -                                   | 34                      |
| 1800             | 30                | -                                   | 30                      |
| 1900             | 26                | -                                   | 26                      |
| 2000             | 23                | -                                   | -                       |
| 2100             | 20                | -                                   | -                       |

The room thermostats must be clean contacts, i.e. voltage-free.



# Under-Boiler Units

## ACCESSORIES FOR MIXING MODULATING ZONES



code SS2221BI (35s)

code SS2221BC2I (120s)

### SINTESI actuator - MODULATING 3-POINT

| TECHNICAL FEATURES           | SS2221BI  | SS2221BC2I |
|------------------------------|---|------------|
| Electric control             | 3-point   |            |
| Connection to the ball valve | fast push connection  |            |
| Rotation                     | 90°   |            |
| Operating time               | 35 s  | 120 s      |
| Position indicator           | rotating arrow  |            |
| Power supply                 | 230V 50/60 Hz   |            |
| Input power                  | 3,9 VA  |            |
| Microswitch                  | closed position<br>(mixing valve oriented toward system return) |            |
| Microswitch power output     | 1 A resistive - 250 V   |            |
| Protection degree            | IP54  |            |
| Cable length                 | 80 cm   |            |

### SINTESI SMART actuator - PROPORTIONAL

| TECHNICAL FEATURES           |                      |
|------------------------------|----------------------|
| Positioning control          | 0-10V DC *           |
| Connection to the ball valve | fast push connection |
| Rotation                     | 90°                  |
| Operating time               | 30 s **              |
| Position indicator           | rotating arrow       |
| Power supply                 | 24V DC/AC 50/60 Hz   |
| Power consumption            | 3,5 VA               |
| Positioning feedback         | 2-10V DC             |
| Protection degree            | IP54                 |
| Cable length                 | 80cm                 |

\* more positioning signals available upon request

\*\* more operating times available upon request

code SM4010F030I

Note: one actuator for each modulating mixing zone

### CONTROL UNIT for radiant panels with actuator

| TECHNICAL FEATURES   |   |
|--|---|
| The electronic control unit, equipped with actuator and delivery temperature probe, regulates and manages heating systems with floor, wall or ceiling radiant panels. Functions: |   |
| Fixed-point regulation   | The heating setpoint temperature is set via the keypad and display. The room thermostat is activated by the room thermostat and keeps the outlet temperature constant on the setpoint value.  |
| Sliding adjustment<br>weather compensation function  | The software automatically calculates the setpoint temperature according to the external temperature detected by the relevant probe (optional), following programmable climatic curves.   |
| System management  | The control unit receives the activation command from the room thermostat (not included). The pump is activated 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 control unit stops the pump, stops the regulation and connects the outlet (mixing) way to the system return. |
| Electronic security  | You can set the heating limit temperature. When this value is exceeded, the mixing valve enters the "safety" mode: it stops the pump and connects the common (mixing) 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.  |



code CGRMS1 • management of 1 modulating zone

code CGRMS2 • management of 2 modulating zones

code CGRMS3 • management of 3 modulating zones

remarks: CGRMS2 and CGRMS3 references are constituted of two and three control units respectively.

# Under-Boiler Units



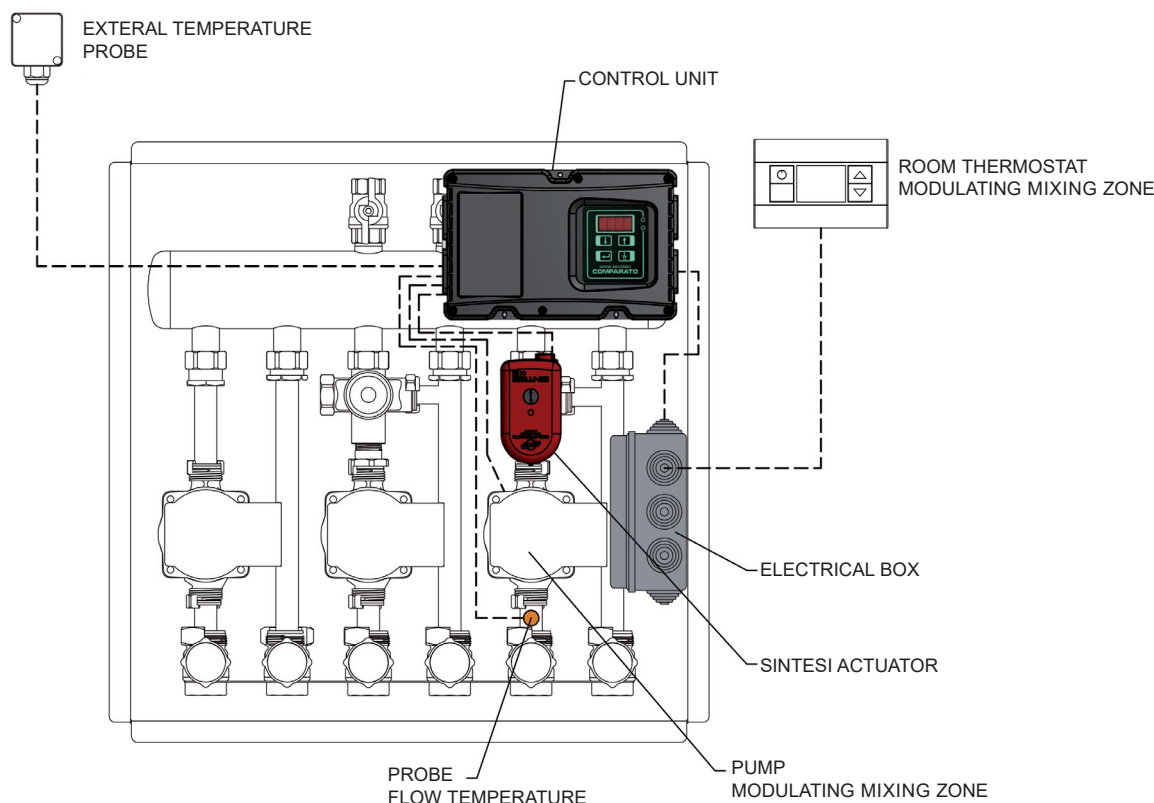
code RFSONDAE

## EXTERNAL TEMPERATURE PROBE

| TECHNICAL FEATURES                     |  |
|--|--|
| Case material                          | plastic                                    |
| Thermal well material                  | stainless steel                            |
| Operating and environmental conditions | -40°C ÷ 100°C, relative humidity: 0 ÷ 100% |
| Probe                                  | NTC  |
| Minimum insulation resistance          | 100Ω a 100Vdc                              |
| Protection degree                      | IP65 / IP67 according to iec60529          |

**note: one external probe for each modulating mixing zone in the under-boiler unit**

## CONTROL UNIT CONNECTION DIAGRAM



## EXAMPLE OF SPECIFICATIONS

**UNDER-BOILER UNIT** for 2-zone heating systems, flush-mounted installation and hydraulic connections G1" complete with: • Distribution manifold with integrated separator • Manual interception valves • Heating side thermometers • Integrated check valves • Expanded polyethylene insulation • Direct zone with 15/7 pump, maximum flow rate 2100 l/h • Mixing fixed-point zone with Wilo Para 15/7 pump, thermostatic mixer adjustable between 30°C and 60°C, maximum flow rate 1400 l/h • Electric box with zone and boiler control.

Nominal diameter DN20, maximum working pressure 6 bar, maximum temperature 90°C, minimum temperature 5°C, copper pipes Ø22mm, brass hydraulic connections G1", carbon steel multifunction manifold, electric power supply 230V 50 Hz, built-in dimensions 550x550x150mm.

Brand: **COMPARATO** • Code: **ST2DH0**

**FRAME AND DOOR** with lock for Comparato under-boiler unit, white powder-coated RAL9010.

Brand: **COMPARATO** • Code: **QSCCS**

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

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**HYDROTHERMAL SYSTEMS**  
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