
21.0
OFF

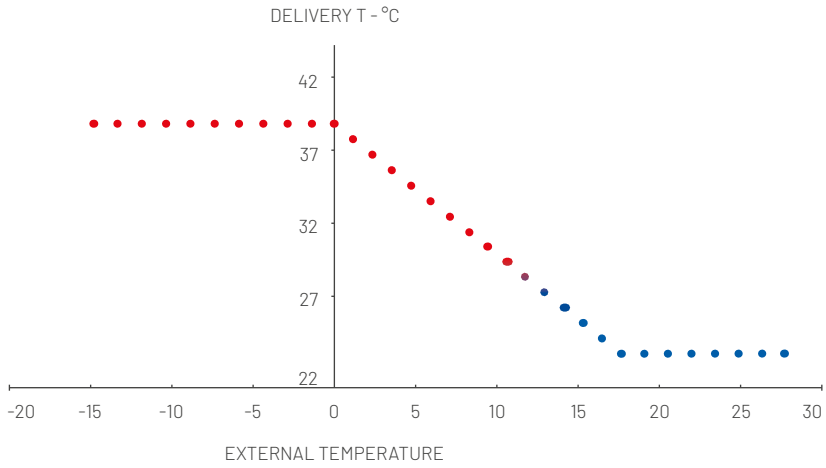
HEATING: FIXED-POINT SETTING

This is the most basic control method: constant temperature is guaranteed for the delivery fluid by setting the thermostatic valve manually.
However, there is a major limit: the user must set up the system every time the external conditions change. To satisfy this requirement, installers generally set the thermostatic valve on the project temperature (i.e. max. temperature required on the coldest winter day) and mount electro-thermal actuators controlled by zone thermostats on the circuits. The thermostat just needs to be connected to the circulator supplying all the other circuits if no zoning is required for the heated room.
The thermostat can open the actuator by comparing the temperature set by the user with the actual one to fill the radiant circuit with hot water.

HEATING: WINTER CLIMATE COMPENSATION

Adjustment of the heating delivery temperature is provided by a **characteristic climate curve (fig. 5.1)** based on which the heat generators are required low delivery temperatures when the external one is relatively high. When the external temperature gradually drops to minimum values, the delivery temperature climbs up to the maximum value provided for by the system project. A safety thermostat prevents the delivery water from accidentally overheating.
This approach is particularly important for uninterrupted operational applications and aims at modulating the system thermal emission based on the increasing dispersion of the building or apartment. This may also enhance the heat generator output and reduce the dispersions of the distribution network to the minimum.

5.1



COOLING: MAXIMUM OUTPUT SET-POINT

When cooling, setting of the delivery temperature aims at finding the **value maximizing the radiant floor cooling output**.
This control technique requires thermostats with integrated relative-humidity sensors by which the user can read the dew temperature of every single room; the delivery temperature set-point is promptly set according to the highest dew temperature read so as to reach the highest output:

$$T_m = \text{Max}\,(T_{min}, T_{dp} + F_s)$$

The delivery temperature T_m is then selected as the maximum value out of two: the minimum delivery temperature T_{min} set for the controller and the highest dew temperature T_{dp} increased by an appropriate safety factor F_s.

Control systems by Giacomini

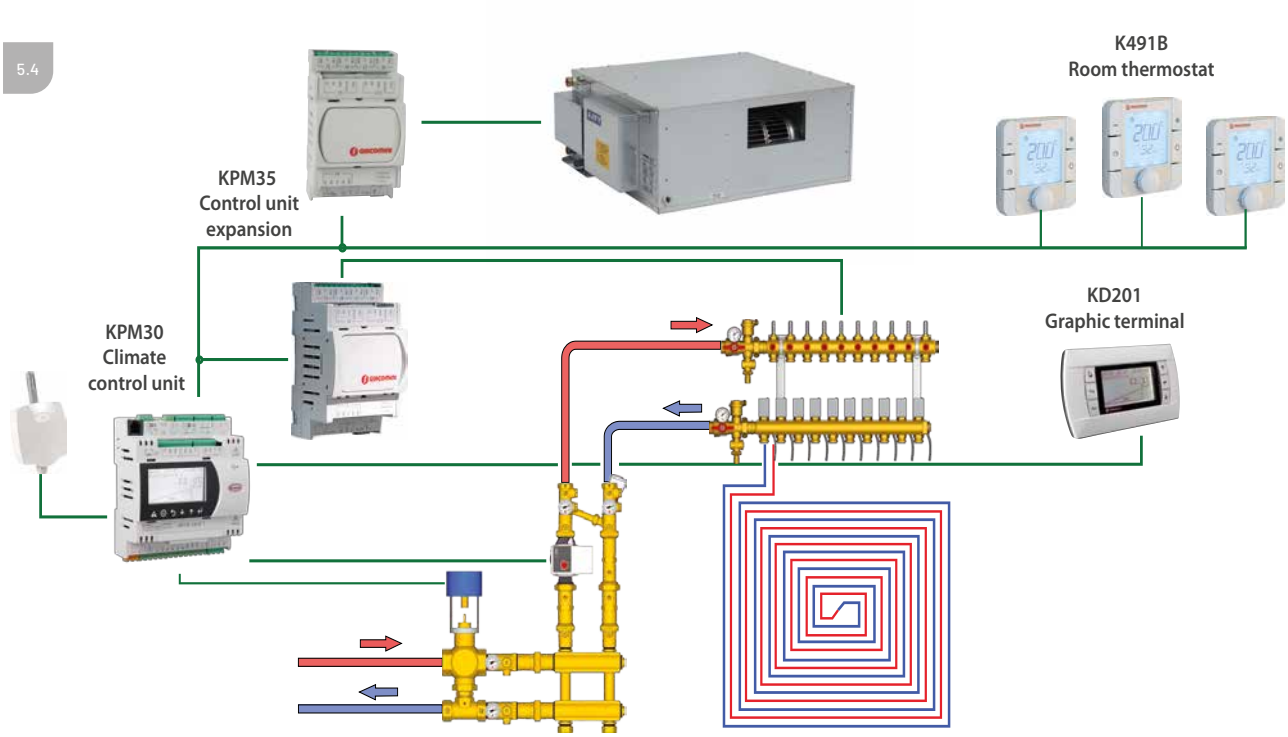
To exploit at best the radiant system, it is not sufficient to control the temperature of the water delivered to the radiant circuits centrally as this may affect the comfort levels or overheat some rooms. Needs vary based on the individual perception of heat and cold, use of the rooms, their exposition or the free external/internal energy contributions. Individual thermoregulation offers a rational and convenient solution providing the most appropriate temperature for each room or zone and combining at best comfort and energy saving. The wide range of thermostats and thermoregulation units by Giacomini covers any installation need, from basic up to the most refined and automated systems which have become by now highly in demand for modern buildings. The range includes two different technological classes:

- the stand alone range including thermostats, chronothermostats and chronothermohumidistats able to work as units autonomous from the control units
- the klimabus range including blind probes and thermostats with relative humidity sensors part of a logic, smart and articulated system culminating with the master controller. This type of device enables radiant floors to work at best.

KLIMABUS

A field bus-based thermoregulation system to achieve top-notch performance in terms of efficiency and comfort.
The devices of this range can share information as they are wired one to the other - **the bus - to transfer messages with a dedicated encoding**.
The connected devices can communicate based on their addressing. The basic diagram of reference to better understand their potential is shown in fig. 5.4.

5.4



Unit KPM30 works as master and exchanges information with the zone thermostats (up to three with the basic version KPM30Y003) through its bus. The KPM30Y003 control unit provides three output clean contacts to activate the actuators corresponding to each zone; it also exposes two clean contacts for dehumidification to integrate the dehumidifier or a fan coil. The operational set-point can also be controlled or modified through the integrated display and chronoprograms can be defined and associated to each thermostat. The display-free version of the KPM31 control unit can be combined to the KD201 graphic terminal as programming interface.
Management of the boiler room unit is extremely rational: the thermostats activate the mixing valve and the radiant floor circulator by interrogating the room thermoregulation unit. The thermoregulation unit reads the dew point for each of the three zones through the field bus. According

to these values it can adjust the temperature set-point of the water delivered to the radiant floor so as to enhance the output cooling power while preventing the formation of moisture.
For control of four or more zones, the field bus must be extended: each KPM30Y004 or KPM30Y005 thermoregulation unit, controlling respectively one or tow mixing valves, can serve up to 16 thermostats and 7 dehumidifiers. The special KPM35 expansion modules are designed to control this type of extended systems.
This approach requires an expansion module for each pair of thermostats to control the actuators based on a temperature signal, while other expansion modules are dedicated exclusively to the dehumidifiers (or fan coils, when installed) - based on the installation set up - according to one or multiple humidity alarm signals.

The klimabus **flexibility and potential** becomes even greater when adding special cards to the regulation modules **that make it easy to integrate other communication protocols**: thermoregulation can then become part of a more extended domotic installation enabling the user to control the system via web.

KLIMABUS BENEFITS

Extendibility

The system modularity enables to correctly size the installation and easily extend it according to the client's actual needs.

Comfort and energy saving

The "smarter" devices enhance the level of comfort and control individually each room to achieve top-notch levels of energy saving.

Communication

Every device can communicate on the bus to set up centralized functions. In addition, the end user, service operator or owner can display more information.

Versatility

The system can be configured for a variety of control methods (fixed-point or climate compensation), thus efficiently meeting the requirements of different types of buildings.

Safety

The numerous data available and the possibility to interface the bus system on site or remotely offer new opportunities to enhance its operation, maintenance and management of events and alarm signals.

KPM30 / Climate control units

DESCRIPTION

The KPM30 thermoregulation modules and the KPM35 expansion units represent the core of Giacomini's thermoregulation system. They can control both single mixing modules, for heating and cooling, and machines for dehumidification, sensible thermal power integration and HRVs.
Based on the model, they can be used in "stand alone" or "klimabus" systems.
The KPM30 thermoregulation modules include an integrated display and six multifunction buttons to program the system parameters and their monitoring through a smart menu. The module provides rapid connection to the thermostats from the Giacomini KPM35 product range and expansions; it also controls automatically the circulator and the mixing valve servocontrol. The range includes: two "stand alone" models to control one or two mixing valves, three models compatible with the "klimabus" protocol for integrated management – combined to the KPM35 expansion modules – mixing valves (up to 2), room thermostats (1 to 16) and air treatment machines (up to 7).

WHY CHOOSING IT?

- User-friendly programming
- Wide range of versions
- Optional expansions
- Configuration and monitoring through integrated graphic display (KPM30) or optional Open-end communication protocol for domotic integration

TECHINCAL DATA

Product code	Technology	N. of mixing valves	N. of room thermostats	N. of air units
KPM30Y001	Stand Alone	1	-	-
KPM30Y002	Stand Alone	2	-	-
KPM30Y003	Klimabus	1	1÷3	1
KPM30Y004	Klimabus	1	1÷16 (with KPM35)	7 (with KPM35)
KPM30Y005	Klimabus	2	1÷16 (with KPM35)	7 (with KPM35)

KPM30 / Climate control units

KPM35

Expansion module

KD201

Graphic terminal

K465P / K463P

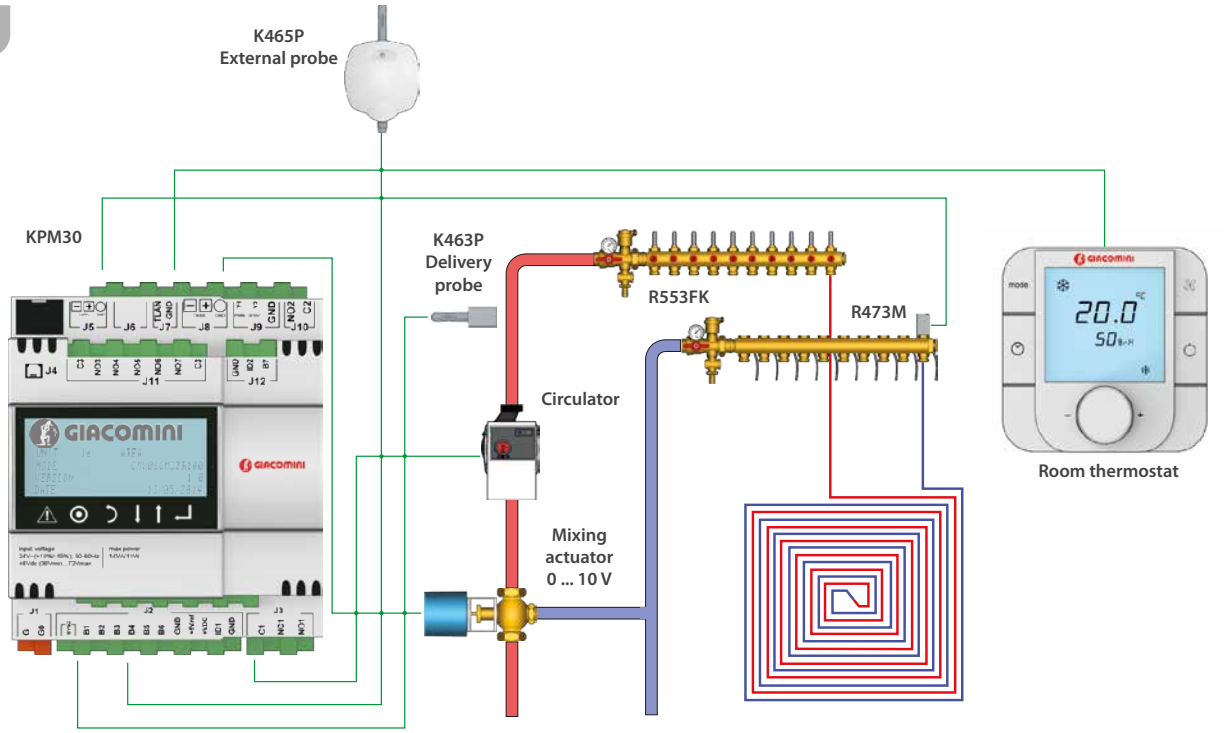
External probe and delivery probe

KPM36

Interface card for domotic systems

CONNECTION EXAMPLE

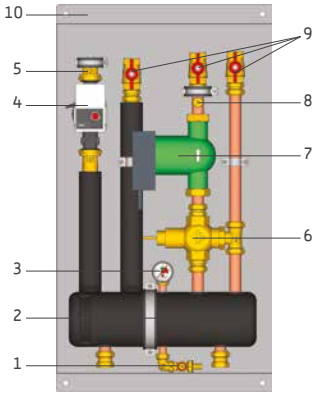
5.5



R586P / Mixing unit

DESCRIPTION

R586P mixing units control the delivery temperature of radiant systems based on the indications provided by the primary regulation devices. In addition to the mixed zone, they serve a direct non-mixed outlet as the perfect solution for radiant installations requiring an integration of high-temperature radiators in winter or low-temperature fan coils in summer. The electronic regulation unit, sold separately, controls both heating and cooling. The available versions are all equipped with self-modulating circulators complying with the ErP 2009/125/CE directive and include motorized mixers to manage a wide range of flow rates.



WHY CHOOSING IT?

- Complete preassembled solution
- Wide range of solutions (Kv mixing valves)
- Easy to assemble

1 Drain cock (interchangeable with pressure gauge)
2 Hydraulic separator
3 Pressure gauge (interchangeable with drain)
4 Zone circulator with direct connection
5 Shut-off valve
6 Mixing valve
7 Zone circulator with mixed connection
8 Safety thermostat probe housing
9 Shut-off valve
10 Template with wall-mount fitting holes

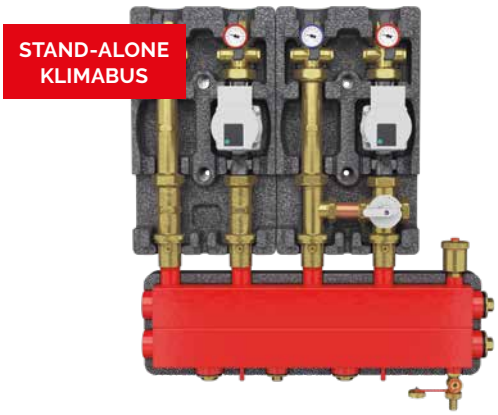
TECHINCAL DATA

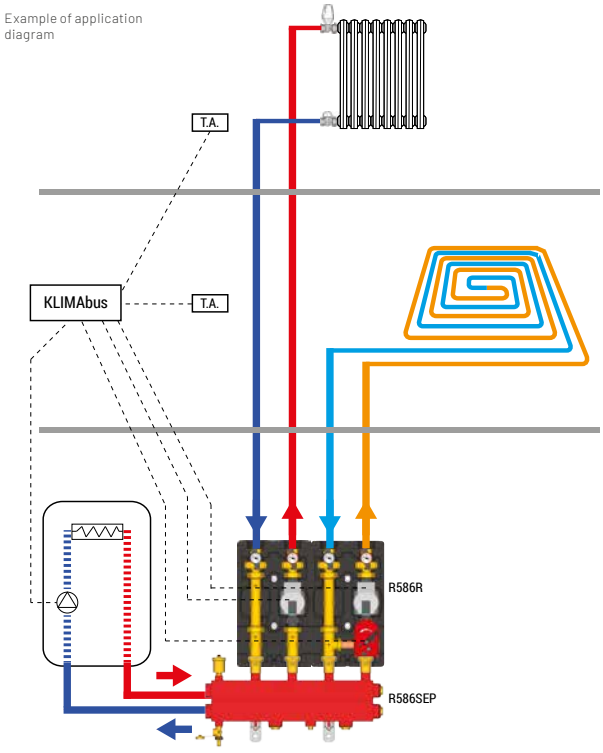
Product code	R586PY014	R586PY015	R586PY016
Primary circuit connection - " F	3/4	1	1
Primary circuit flow-rate range - m^3/h	1 ÷ 3	2 ÷ 4	2 ÷ 5
Mixing valve DN / Kv	DN20 / Kv 5	DN25 / Kv 10	DN32 / Kv 16
Mixed connection flow-rate range - m^3/h	0,6 ÷ 1,6	1.6 ÷ 3	3 ÷ 5
Non-mixed connection flow-rate range - m^3/h	1 ÷ 3	1 ÷ 3	1 ÷ 3

R586R / Mixing unit

DESCRIPTION

The R586R units are preassembled modules for mixing or basic circulation which can be combined to control multiple zones of systems with temperatures from mixed delivery or non-mixed direct delivery. Highly flexible, they can be assembled in parallel to the R146IR hydraulic separator to create, for example, a mixed zone and one with direct connection. When positioned upstream, they can work as re-launching units – combined to the R586I special modular connection unit – for multiple mixed zones deriving from the same K297R mixing unit. Just like the R586P units, they can be combined to an electronic thermoregulation unit – sold separately – for both heating and cooling. The version equipped with fixed-point mixing through thermostatic actuator is available for heating only. To enjoy top-notch levels of energy efficiency, all available versions include self-modulating circulators complying with the ErP 2009/125/CE directive and a cross-linked polyethylene foam insulation shell.





WHY CHOOSING IT?

- Complete preassembled solution
- Compact dimensions
- Optional expansion
- Flexibility of use

K492B / Room thermostat

DESCRIPTION

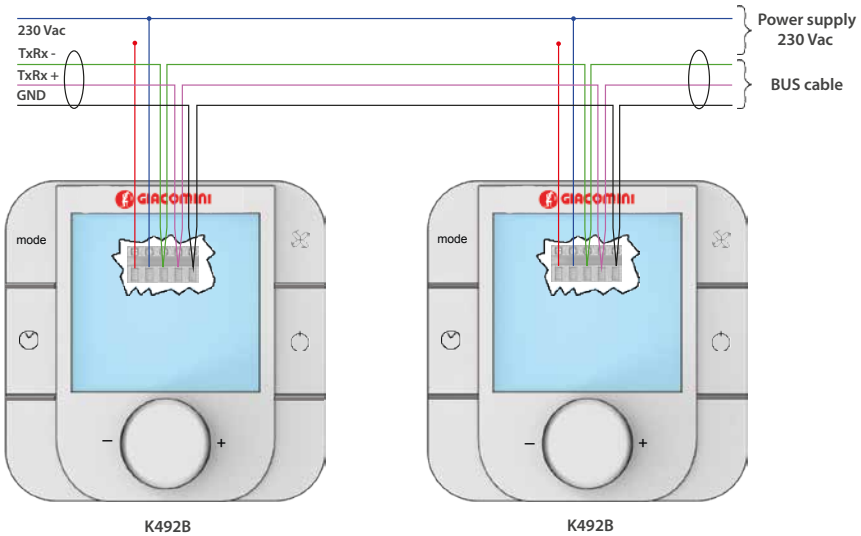
The K492B thermostat enables users to control the local temperature and humidity by means of a temperature and humidity probe. The set-point can be adjusted in an easy and intuitive way using the front knob. It requires bus connection with regulation modules KPM30 or KPM31. Voltage 230 Vac. The K492B Thermostat can be used with the most popular wall flush-mount boxes available on international markets (type 502, Ø 65 mm and min. depth 31 mm)."

KLIMABUS

WHY CHOOSING IT?

- Product for semi-flush mounting
- User-friendly display
- Easy to use
- Equipped with temperature and humidity sensor

CONNECTION DIAGRAM



K492L / Room thermostat

DESCRIPTION

The K495L thermostat with temperature and humidity sensor controls heating and cooling systems when combined to a KPM30 o KPM31 regulation module: the thermostat communicates the room temperature and relative humidity to the regulation module through bus connection.
Voltage 24 Vac.

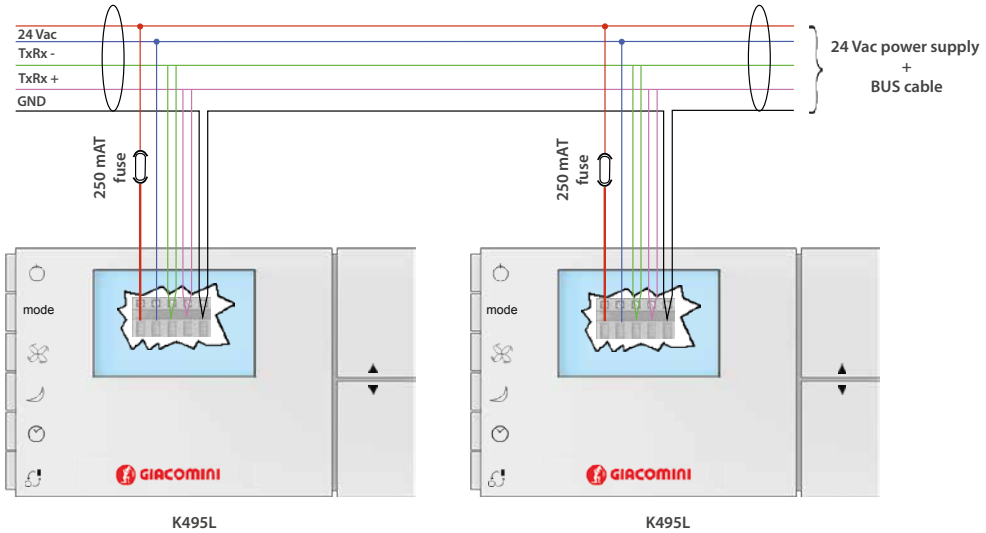
The K495L Thermostat can be installed on an Italian standard 3-module wall-mount box (type 503) or directly on the wall with screws and screw anchors.
The user can read and set the desired room temperature directly on the back-lit display or centrally from the regulation module.

KLIMABUS

WHY CHOOSING IT?

- Wall-mounting
- Easy to use (+/- button)
- Equipped with temperature and humidity sensor

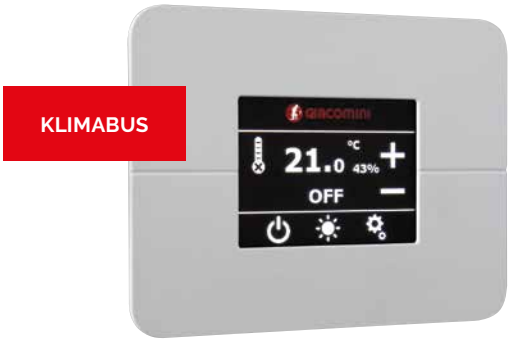
CONNECTION DIAGRAM



K493T / Touch thermostat

DESCRIPTION

The K493T thermostat with temperature and humidity sensor controls heating and cooling systems through bus connection with a KPM30 or KPM31 regulation module. Voltage 12 Vac. Featuring the same functions of K492B and K495L, it also includes a winning user-friendly "touch" display which makes all set-up and display operations even easier. For wall or semi-flush mounting on standard 3-module box (type 503).



WHY CHOOSING IT?

- Touch display
- Winning design
- Easy to use
- Equipped with temperature and humidity sensor

K495B / K493I / Blind probes

DESCRIPTION

The K495B and K493I Blind probes work as thermohumidistats for all heating and cooling applications where no local temperature/humidity set-up and display is required. "All parameters can be entered or monitored through the KPM30 regulation module (or KPM31 combined to the KD201 display) to which the blind probe is connected through field bus. K493I requires flush-mounting installation on civil hole covers.

WHY CHOOSING THEM?

- the perfect solution to prevent direct modification of the parameters (school, public offices, etc.)
- Compatible with all flush-mount civil ranges (K493I)

K373 / Safety thermostat

DESCRIPTION

The K373 device works as a limiting thermostat for overheating of radiant floor systems: should the delivery water temperature exceed the pre-set limit in case of operational anomalies, the thermostat sends out a signal (clean contact) which can be used to block the circulator. This is a safety device, provided for by the technical standard, which must function also in case of power blackout. The K373 safety thermostat includes an immersion probe, LEDs as visual alarms of the operational status and automatic reactivation. The triggering temperature can range between 40÷80 °C (factory setting 50 °C). Network voltage 230 Vac.

Thermo-electric actuators

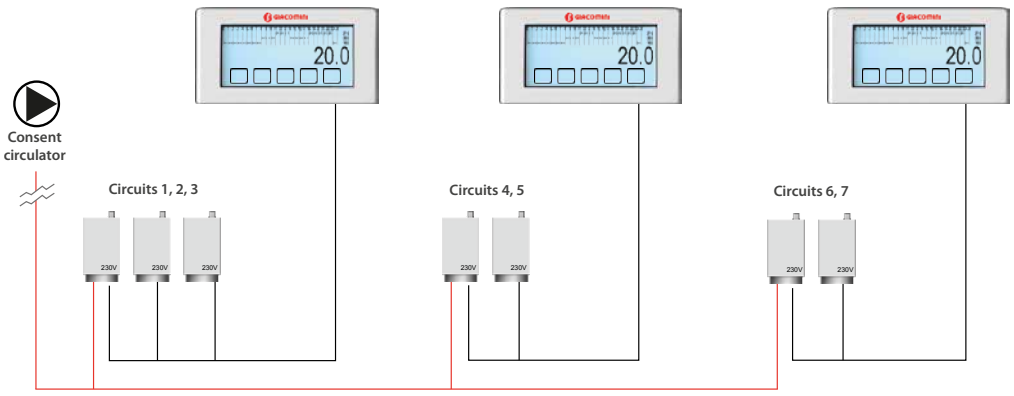
DESCRIPTION

The need for state-of-the-art temperature control of single rooms is fulfilled by using thermo-electric actuators installed on the distribution manifolds to shut off every single circuit. They can be fitted directly on stand-alone thermostats or integrated in klimabus thermoregulation systems (and therefore controlled through KPM30 or KPM31 thermoregulation units.
There are two versions available:
– normally open: the circuits are supplied hydraulically when power is down. These are the R478 with 2-thread power wires) and R478M (with 4-thread power wires and micro-limit switch) heads
– normally closed: the circuits are supplied hydraulically when power is on. These are the R473 (with 2-thread power wires) and R473M (with 4-thread power wires and micro-limit switch) heads.

WHY CHOOSING THEM?

– Individual shutting off of every circuit
– Individual temperature control of every room
– Wide range of versions
– Easy to assemble
– Extremely quiet

EXAMPLE OF THERMO-ELECTRIC ACTUATOR CONNECTION DIAGRAM



K490I / Chronothermostat

DESCRIPTION

K490I is a "stand alone" digital electronic chronothermostat with weekly programming to control heating and cooling systems. Available in two versions: battery-powered and electric-powered. Designed for installation in flush-mounting 3-module boxes, it can be matched to a wide range of covers, frames and adaptors to apply plates from the most popular civil ranges. Connection to a GSM phone activator (K499 optional) enables to program and control the room temperature also remotely.

STAND ALONE

WHY CHOOSING IT?

- Weekly programming
- Back-lit LCD display
- Refined design
- Compatible with the most popular civil ranges

K494I / K494 / Thermostat

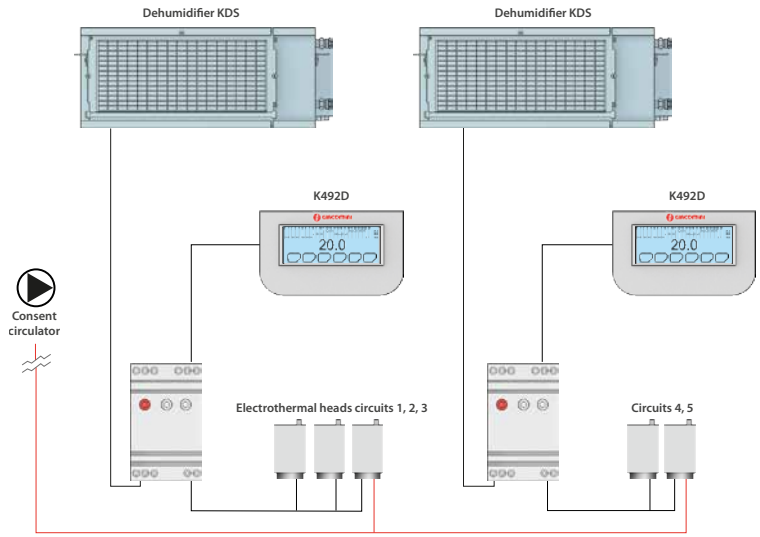
DESCRIPTION

The K494 and K494I thermostats are "stand alone" devices to control the room temperature of heating and cooling systems.
K494I for flush-mounting installation in 3-module boxes is available in the battery-powered version (winter-only control) or 230Vac-powered version (summer/winter control). K494 for exposed wall-mount installation is available in the battery-powered version only.

WHY CHOOSING THEM?

- Great quality-price ratio
- Easy to use
- Compatible with the most popular civil ranges (for flush-mounting version K494I)

CONNECTION DIAGRAM FOR K492D WITH THERMO-ELECTRIC ACTUATORS AND DEHUMIDIFIERS



K492D / Chronothermostat with humidistat

DESCRIPTION

The K492 range, which includes K492D with integrated relative-humidity sensor, features "stand alone" weekly chronothermostats for exposed wall-mount installation with a large touch-screen display. All models can control the thermo-electric actuators for room thermoregulation.

The integrated humidity probe makes this product particularly suitable for control of cooling systems. With its special exposed module, K492D can also control the dehumidifiers. In addition, it can be combined to the "stand-alone" versions of the KPM30 or KPM31 control units.

STAND ALONE

WHY CHOOSING IT?

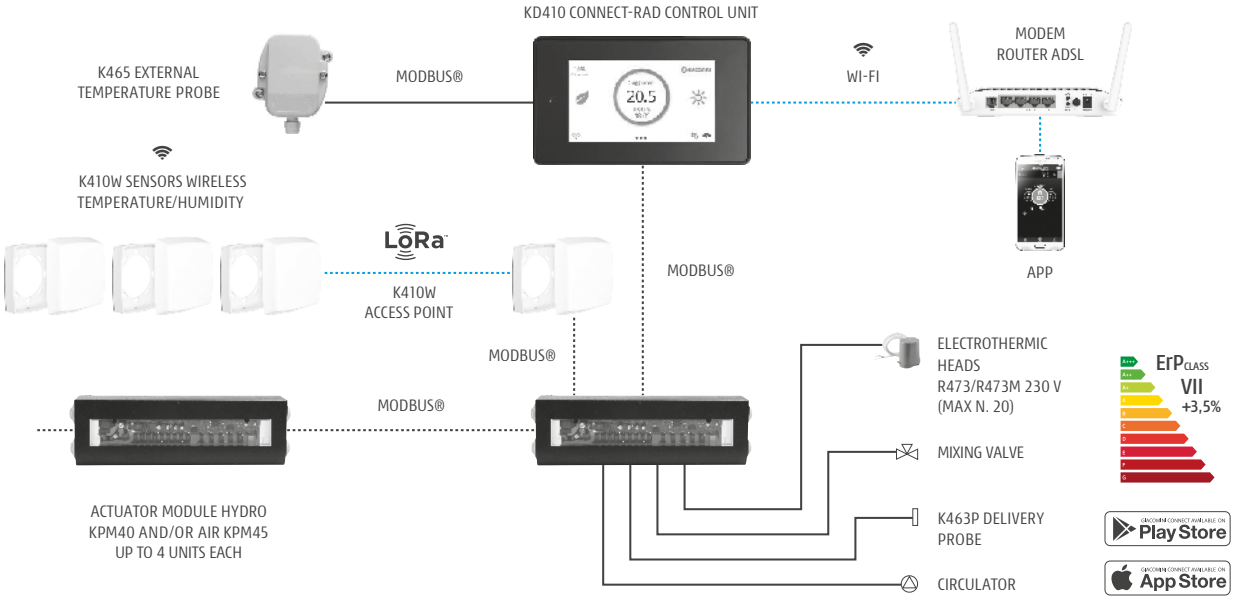
- Weekly programming
- Humidity sensor included
- Dehumidifier control (K492D)

KLIMAdomotic thermoregulation / Room control

A COMPLETE PLATFORM TO CONTROL INDOOR COMFORT

KLIMAdomotic is an enhanced smart control system for radiant panel or thermoregulation systems with remote-control (wireless) thermostatic valves. It enables to control every element of indoor comfort - from heating to summer air conditioning, air exchange and humidity control - through one single user interface.
The KD410 Connect control unit is set up based on the system installed. The product will have a software version specific for the different types of installations: Connect-Rad for radiant systems and Connect-TRV for thermoregulation systems with thermostatic valves. With KD410 Connect, the user is connected to his system 24/7: easy to set up thanks to the user-friendly graphic interface, it can be controlled remotely with most smartphones through the "Giacomini Connect" dedicated app.

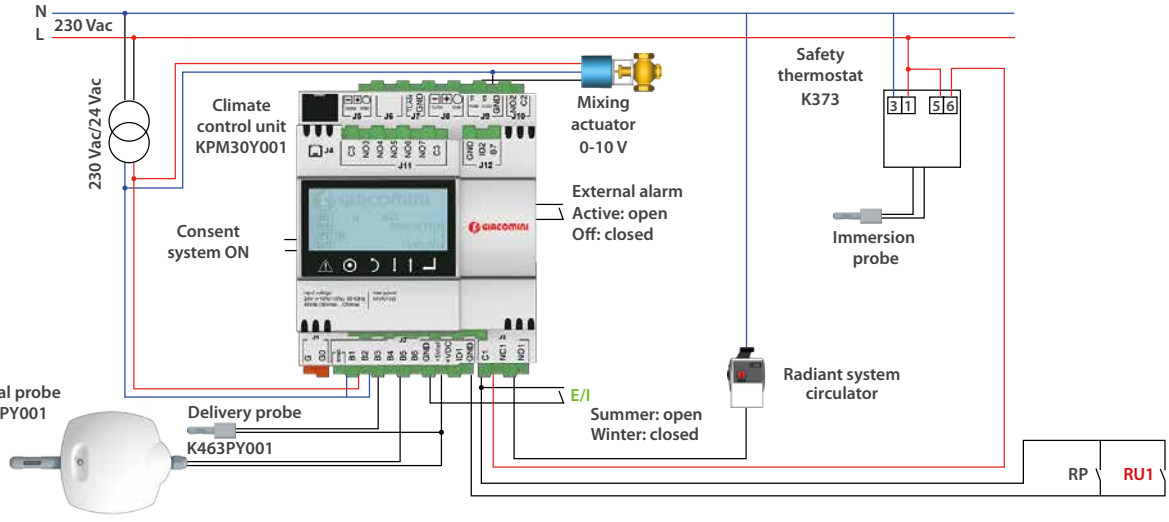
LoRa
Wi Fi
Modbus®



STAND ALONE

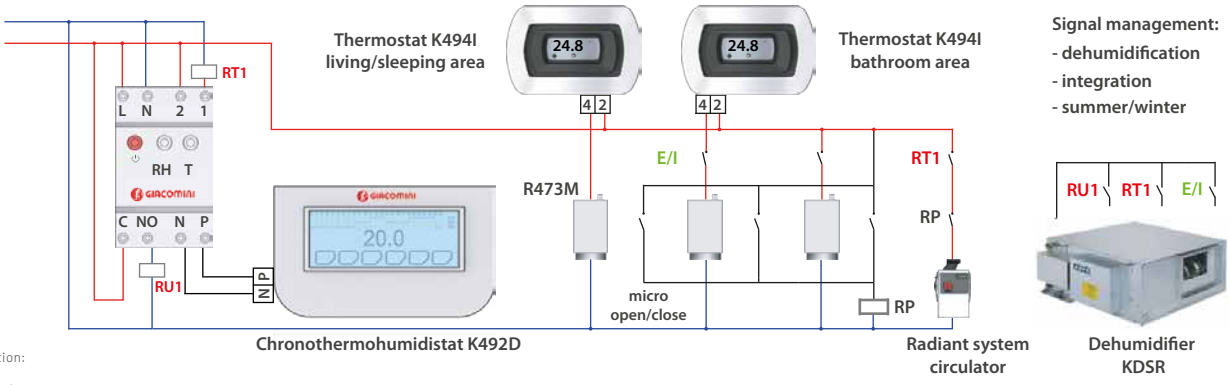
The stand-alone regulation system is characterized by an interface between primary – in the boiler room – and secondary regulation inside the room; this is achieved through basic exchange of a clean contact. Diagrams of fig. 5.2 and 5.3 clearly show this feature.
The strategy provides for separation of room control from boiler room regulation. The room is equipped with a chronothermohumidistat which provides for master functions and activates the dehumidifier in addition to adjusting its zone temperature; other thermostats control the temperature of the corresponding zones. Should the system be installed in an apartment with a heat metering module, the master chronothermohumidistat can also turn ON/OFF the zone valve installed in the metering module itself. The thermoregulation unit turns ON/OFF the circulator and controls the mixing valve serving the radiant system.
Its simplicity represents the true value of this thermoregulation technique: a limited number of devices successfully controls a complex system. However, this approach prevents the radiant floor from expressing its maximum power when cooling.

5.2



Stand-alone thermoregulation: control of mixing valve

5.3



Stand-alone thermoregulation: control of radiant floor and dehumidifier

K492T

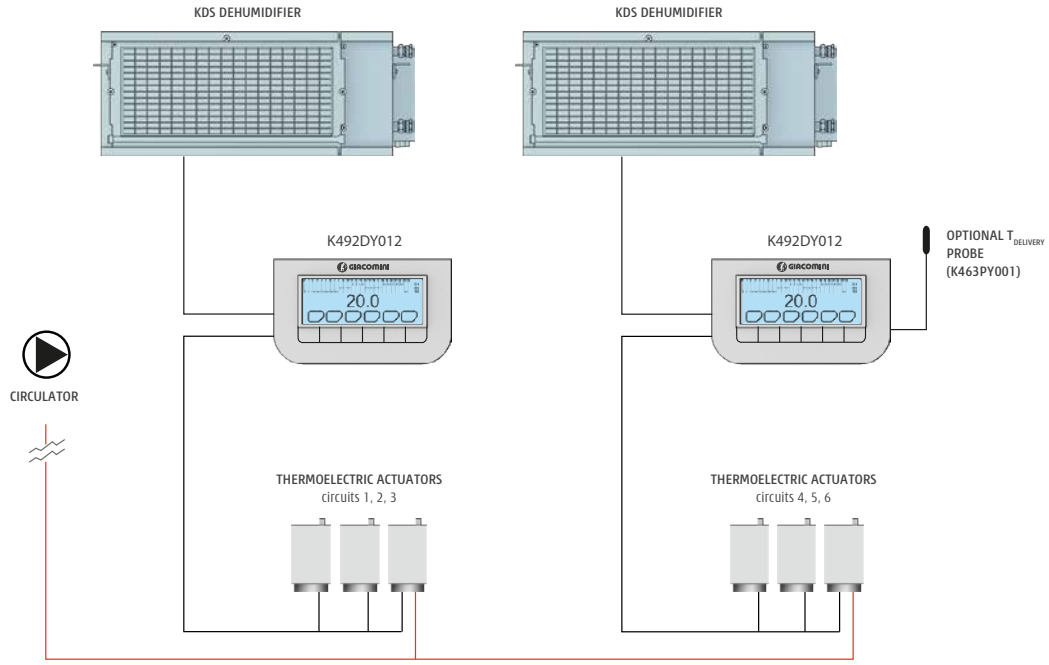
The new K492T thermostat is a Wi-Fi weekly chronothermohumidistat with back-lit touchscreen. The white unit can be installed on the wall or on a 503 3-module civil box. Based on the version, it can control thermo-electric actuators, dehumidifiers and fan coils. Powered at 230 V. Programmable for weekly, daily and manual operation, both for heating and cooling, with an integrated sensor to read relative humidity. The K-Domo dedicated app is available for remote control.

Compatible with ''Termostato Wi-Fi Giacomini'' by Alexa and Google Home

WHY CHOOSING IT?

- Extremely easy to use
- Voice and App control
- Appealing design
- Optional control of fancoils or dehumidifiers

GIACOMINI CONNECT AVAILABLE ON Play Store
GIACOMINI CONNECT AVAILABLE ON App Store



Connection diagram for K492DY012 with thermo-electric actuators and dehumidifiers