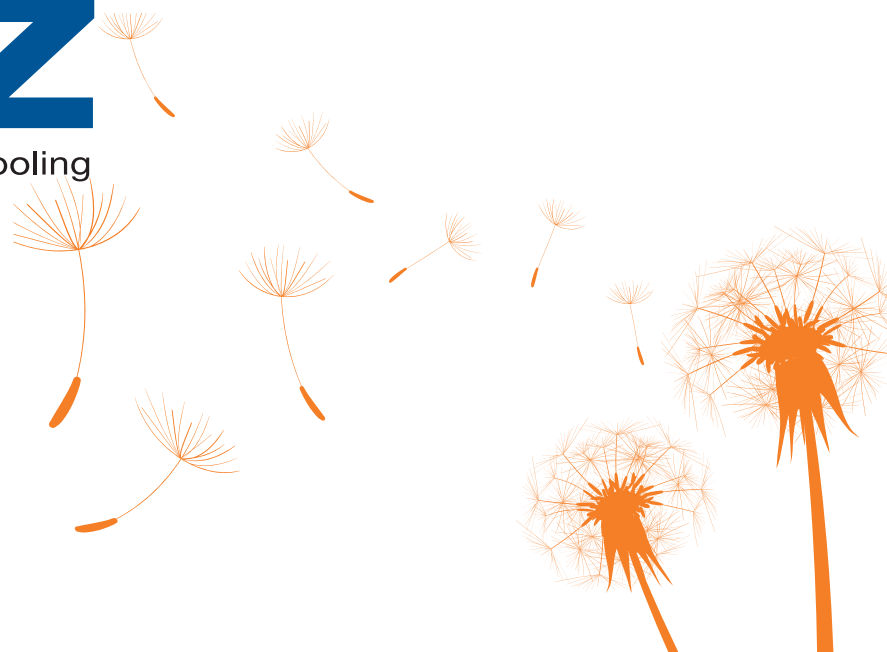# Dehumidification and Thermoregulation

RDZ

invisible heating and cooling

✦RDZ

We have been working in an ideal climate for thirty years.

A climate that has brought us to a position of leadership in Italy in the field of radiant heating and cooling. RDZ was the first company to receive the management system quality certification (today UNI EN ISO 9001:2008).

RDZ has been a quality-oriented company since its very beginning, using the finest materials, developing new solutions, constantly providing excellent service. And also by creating a positive climate in the company to promote the exchange of ideas and stimulate cooperation for constant improvement.

Table of Contents

Underfloor, Ceiling, Wall Heating and Cooling: A Complete Solution.

Underfloor, ceiling, wall heating and cooling systems do not consist only in radiant panels, but they are integrated systems including thermoregulation devices as well as air handling and air renewal units, which make it possible to control water temperature, room temperature and air humidity. As a result, in order to obtain top performance and top comfort, it is necessary to combine three main elements:

1 Radiant Systems

Underfloor radiant systems enable thermal energy – either heat or cold, depending on seasonal requirements – to be transferred to the rooms. RDZ boasts a wide range of different systems to suit all requirements.

2 Dehumidification Systems

RNW dehumidifiers are specially designed for radiant systems. They allow air humidity to be kept under control simply and easily, thus avoiding the risk of floor surface condensation.
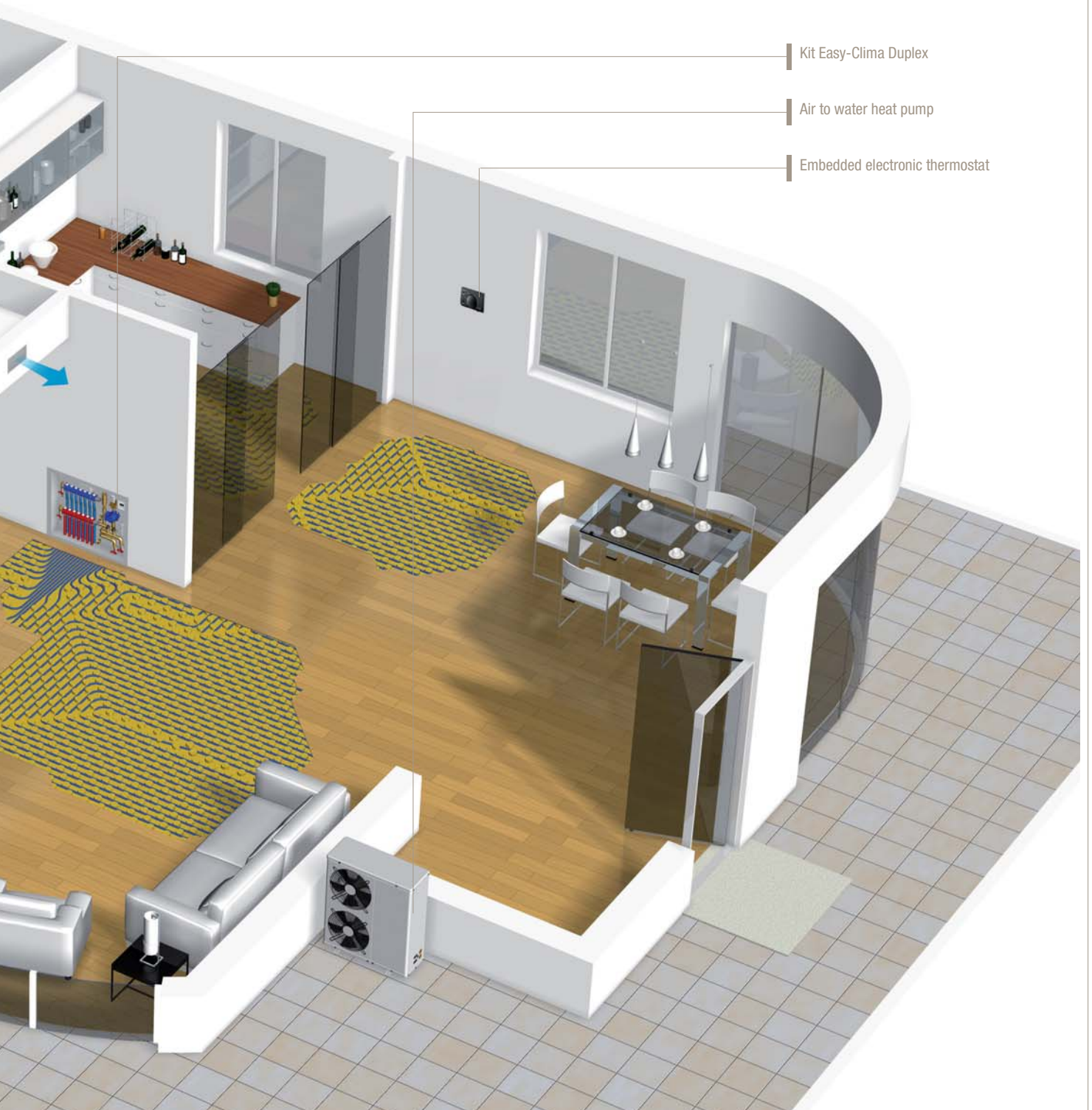
3 Thermoregulation Systems

Thermoregulation guarantees optimal system efficiency and total control of all system parameters with water temperature, room temperature and relative humidity controlled in real time.

Example of a Complete Underfloor Heating and Cooling System

Cover underfloor heating system

This picture shows an example of underfloor heating and cooling application, where you can find the combination of the three essential components for its ideal functioning: the radiant panels, the thermoregulation devices and the dehumidification units. In this sample house of 90 m² with one kitchen, one living room, one dining room, two bedrooms, one bathroom, and one access, the main components of the system are: radiant floor system with Cover 30 panel, RDZ Clima pipe made of PE-Xc 17-13, thermoregulation Kit Easy-Clima Duplex, RNW 404 CS dehumidifier with air intake and supply.

The same is valid for ceiling and wall heating and cooling.

Kit Easy-Clima Duplex

Air to water heat pump

Embedded electronic thermostat

Thermoregulation Kit

RDZ Kit consists of complete units containing all the necessary elements of distribution, regulation, and control for the right functioning of small radiant floor systems.

Kit DUPLEX functions with wall boilers with integrate circulation pump and can feed high-temperature heating units too, for example in bathrooms, where the underfloor installation is often combined with a radiator. RDZ Kit is available with different thermoregulation devices: set-point thermostatic control, electronic climatic heating and cooling control, room compensation and relative humidity control.

> **Pre-assembled complete solution.**
> **Compact unit.**
> **Electric wiring.**
> **Easy installation.**
> **Low installation costs.**

1

Kit PF Duplex

Kit for distribution and regulation with double temperature is used for RDZ underfloor systems and a high-temperature system with a closing by-pass for the primary circuit. It includes: a zinc-plates steel cabinet with adjustable feet, brackets, a protective cover, a white door with adjustable frame and lockset, CONTROL manifolds, a three-way mixing valve with thermostatic control, temperature range up to 50 °C (only for heating), a three-speed circulation pump, a micrometric lockshield valve, a unidirectional valve, shut-off valves, thermometers, a balancing lockshiled valve, two-way manifolds for high-temperature circuits (suitable for thermo-electric actuators), vent valves and fill/drain valves, a safety electric thermostat, an air trap, and a connector to the electrical installation and a wired system.

Pipe (Ø 14)	Pipe (Ø 17)	Pipe (Ø 20)	Version	Size lxhxd (cm)
3411403	3411703	3412003	Kit PF Duplex 3	65x83÷89x13
3411404	3411704	3412004	Kit PF Duplex 4	65x83÷89x13
3411405	3411705	3412005	Kit PF Duplex 5	65x83÷89x13
3411406	3411706	3412006	Kit PF Duplex 6	80x83÷89x13
3411407	3411707	3412007	Kit PF Duplex 7	80x83÷89x13
3411408	3411708	3412008	Kit PF Duplex 8	80x83÷89x13
3411409	3411709	3412009	Kit PF Duplex 9	100x83÷89x13
3411410	3411710	3412010	Kit PF Duplex 10	100x83÷89x13
3411411	3411711	3412011	Kit PF Duplex 11	100x83÷89x13
3411412	3411712	3412012	Kit PF Duplex 12	100x83÷89x13

Kit Easy-Clima Duplex

Kit for distribution and regulation with double temperature is used for floor systems and high-temperature systems. It is equipped with: a metal cabinet with adjustable feet, brackets, a protective cover against plaster, a white door with adjustable frame and lockset, Control manifolds, a three-way mixing valve, a synchronous, reversible motor, a three-speed circulation pump, a micrometric lockshield, a single-acting valve, intercepting valves, thermometers, a valve to balance flow rates, two-way manifolds for high-temperature circuits (suitable for the electrothermal head), air vent valves and valves for load and discharge of the system, a safety electric thermostat, an air trap, and a connector to the electrical system and wired system. It includes a climatic electronic controller with Proportional-Integral technology to control flow temperature in low-temperature systems, and electronic safety thermostat. The control system is equipped with keypad and 4-digit display to set and control the parameters. Direct control from keypad or digital input for Winter/Summer, Comfort/Economy and On/Off commutation. The system can be controlled through external thermostats and humidistats. It can be also equipped with Easy Clima Controller as optional component, which makes it possible to control the information recorded by Easy-Clima control unit. If it is combined with a temperature/humidity sensor, the system can control winter temperature and summer temperature and dehumidification.

Pipe (Ø 14)	Pipe (Ø 17)	Pipe (Ø 20)	Version	Size lxhxd (cm)
3451403	3451703	3452003	Kit Easy-Clima Duplex 3	65x83÷89x13
3451404	3451704	3452004	Kit Easy-Clima Duplex 4	65x83÷89x13
3451405	3451705	3452005	Kit Easy-Clima Duplex 5	65x83÷89x13
3451406	3451706	3452006	Kit Easy-Clima Duplex 6	80x83÷89x13
3451407	3451707	3452007	Kit Easy-Clima Duplex 7	80x83÷89x13
3451408	3451708	3452008	Kit Easy-Clima Duplex 8	80x83÷89x13
3451409	3451709	3452009	Kit Easy-Clima Duplex 9	100x83÷89x13
3451410	3451710	3452010	Kit Easy-Clima Duplex 10	100x83÷89x13
3451411	3451711	3452011	Kit Easy-Clima Duplex 11	100x83÷89x13
3451412	3451712	3452012	Kit Easy-Clima Duplex 12	100x83÷89x13

Kit VJ 0-10 Duplex

Kit for distribution and regulation, VJ 0-10 DUPLEX version with double temperature, is used for underfloor systems and high-temperature systems. It includes: a metal cabinet with adjustable feet, brackets, a protective cover, a white door with adjustable frame and lockset, CONTROL manifolds, a three-way mixing valve, an analogue motor 0-10, a three-speed circulation pump, a micrometric lockshield valve, a unidirectional valve, shut-off valves, thermometers, a balancing lockshield valve, two-way manifolds for high-temperature circuits (suitable for thermo-electric actuators), vent valves and fill/drain valves, a safety electric thermostat, an air trap, and a connector to the electrical installation and a wired system. It can be combined with external controllers.

Pipe (Ø 14)	Pipe (Ø 17)	Pipe (Ø 20)	Version	Size lxhxd (cm)
3415403	3415703	3415003	Kit VJ 0-10 Duplex 3	65x83÷89x13
3415404	3415704	3415004	Kit VJ 0-10 Duplex 4	65x83÷89x13
3415405	3415705	3415005	Kit VJ 0-10 Duplex 5	65x83÷89x13
3415406	3415706	3415006	Kit VJ 0-10 Duplex 6	80x83÷89x13
3415407	3415707	3415007	Kit VJ 0-10 Duplex 7	80x83÷89x13
3415408	3415708	3415008	Kit VJ 0-10 Duplex 8	80x83÷89x13
3415409	3415709	3415009	Kit VJ 0-10 Duplex 9	100x83÷89x13
3415410	3415710	3415010	Kit VJ 0-10 Duplex 10	100x83÷89x13
3415411	3415711	3415011	Kit VJ 0-10 Duplex 11	100x83÷89x13
3415412	3415712	3415012	Kit VJ 0-10 Duplex 12	100x83÷89x13

Note: Controller is not supplied as standard.

Compact Thermoregulation Kit

New range of regulation and distribution kit with single-block group made of thermo-plastic material. It is equipped with a mixing valve and a thermostatic head with temperature range between 10-50 °C, a 3-speed or electronic circulation pump with variable flow and pressure, ideal for regulation and control in small underfloor heating systems.

Next production: kit with climatic regulation or external controller for small underfloor heating and cooling systems. Very easy installation and modular supply according to the working stages in the building site.

> **Compact group with mixer/pump.**
> **Easy installation.**
> **Modularity.**
> **Split supply.**

Example of application

STAGE 1:
cabinet installation

STAGE 2:
installation of low- and high-temperature manifolds

STAGE 3:
installation of COMPACT mixing module/pump

STAGE 4:
installation of painted door and frame

An important aspect is represented by the fact that during the installation in the building site only the cabinet is installed. This reduces the risks of theft or damage.

1

Kit Compact PF-C

New KIT COMPACT PF-C for distribution and set-point regulation. It includes a single thermoplastic block from highly innovative technology, made up of a mixing valve and a thermostatic head with temperature range 10 – 50 °C, and a 3-speed or electronic circulation pump with variable flow and pressure. It represents the ideal solution to control small underfloor heating systems or combined systems with RDZ floor systems and high-temperature installations.

KIT COMPACT PF-C also contains unidirectional valve, shut-off valves, thermometers, balancing lockshield valve with closing by-pass for primary circuit, fill/drain and vent valves, electronic safety thermostat, thermoplastic air trap, and thermoplastic TOP COMPOSIT manifolds Ø 1"

with push-fit fittings for RDZ CLIMA pipe Ø 14-10 or 17-13, connector for electric installation and wired system. In addition, it includes a metal cabinet with adjustable mounts, brackets, a protective cover and white door with adjustable frame and lockset.
NOTE: In C versions the manifolds for the underfloor systems are TOP COMPOSIT.

NB. High-temperature manifolds and variable-flow circulation pump are not included and shall be ordered separately.

Pipe (Ø 14)	Pipe (Ø 17)	Version	Size lxhxd (cm)
3111403	3111703	Kit Compact PF-C 3	75x85÷91x14
3111404	3111704	Kit Compact PF-C 4	75x85÷91x14
3111405	3111705	Kit Compact PF-C 5	75x85÷91x14
3111406	3111706	Kit Compact PF-C 6	75x85÷91x14
3111407	3111707	Kit Compact PF-C 7	90x85÷91x14
3111408	3111708	Kit Compact PF-C 8	90x85÷91x14
3111409	3111709	Kit Compact PF-C 9	90x85÷91x14
3111410	3111710	Kit Compact PF-C 10	110x85÷91x14
3111411	3111711	Kit Compact PF-C 11	110x85÷91x14
3111412	3111712	Kit Compact PF-C 12	110x85÷91x14

2

Kit Compact PF-OT

New KIT COMPACT PF-OT for distribution and set-point regulation. It includes a single thermoplastic block from a highly innovative technology, made up of a mixing valve and a thermostatic head with temperature range 10 – 50 °C, and a 3-speed or electronic circulation pump with variable flow and pressure. It represents the ideal solution to control small underfloor heating systems or combined systems with RDZ floor systems and high-temperature installations.

KIT COMPACT PF-OT also contains unidirectional valve, shut-off valves, thermometers, balancing lockshield valve with closing by-pass for primary circuit, fill/drain and vent valves, electronic safety thermostat, thermoplastic air trap, and brass CONTROL manifolds Ø 1"1/4 for RDZ CLIMA pipe Ø 14-17-20, connector for electric installation and wired system. In addition, it includes a metal cabinet with adjustable mounts, brackets, a protective cover and white door with adjustable frame and lockset.
NOTE: In OT versions the manifolds for the underfloor systems are CONTROL.

NB. High-temperature manifolds and variable-flow circulation pump are not included and shall be ordered separately.

Pipe (Ø 14)	Pipe (Ø 17)	Pipe (Ø 20)	Version	Size lxhxd (cm)
3110403	3110703	3110203	Kit Compact PF-OT 3	75x85÷91x14
3110404	3110704	3110204	Kit Compact PF-OT 4	75x85÷91x14
3110405	3110705	3110205	Kit Compact PF-OT 5	75x85÷91x14
3110406	3110706	3110206	Kit Compact PF-OT 6	90x85÷91x14
3110407	3110707	3110207	Kit Compact PF-OT 7	90x85÷91x14
3110408	3110708	3110208	Kit Compact PF-OT 8	90x85÷91x14
3110409	3110709	3110209	Kit Compact PF-OT 9	110x85÷91x14
3110410	3110710	3110210	Kit Compact PF-OT 10	110x85÷91x14
3110411	3110711	3110211	Kit Compact PF-OT 11	110x85÷91x14
3110412	3110712	3110212	Kit Compact PF-OT 12	110x85÷91x14

MTR Modules

MTR module is a small central thermal heating unit, hydraulic and electric pre-assembled, which contains all the necessary elements for the right functioning of a mixed installation with radiant panels and radiators. It is the ideal solution for underfloor heating and cooling in medium- and large-sized houses and in commercial applications. The low-temperature circulation pump is able to ensure high performance and can control more than 300 m². MTR module is equipped with pre-assembled and pre-wired control board for easy, rapid installation with no additional costs. It shall be combined with an independent heat generator, since it includes the necessary regulation and safety components.

> **Pre-assembled complete solution.**
> **Ideal for multizone systems.**
> **Control board included.**
> **It solves all problems concerning hydraulic circulation with autonomous and wall boilers.**
> **Underfloor cooling.**
> **Easy installation.**

1   MTR PF

MTR PF module is a pre-assembled mini-thermal unit, which is used to regulate underfloor systems and radiators. It includes: a cabinet with adjustable feet, made of steel painted with powders, brackets, a white door with lockset, a three-way mixing valve with thermostatic control, temperature range up to 50 °C (for heating only), check valves, a micrometric balancing lockshield valve, ball valves with tail pieces, thermometers with scale labels, MAGNA 25-100 electric circulation pump with variable pressure and flow rate, vent valves and fill/drain valves, a safety electronic thermostat, a connector to the electrical system and a wired system both for low-temperature zone valves and high-temperature thermo-electric actuators.

Code	Size lxhxd mm
3500100	603x1155x176

MTR Easy-Clima

MTR-Easy Clima module is a pre-assembled mini-thermal unit, which is used to regulate underfloor systems and radiators. It includes: a cabinet with adjustable feet, made of steel painted with powders, brackets, a white door with lockset, a three-way mixing valve with integrated by-pass, an analogue motor 0-10, check valves, a micrometric balancing lockshield valve, ball valves with tail pieces, dial thermometers, MAGNA 25-100 electronic circulation pump with variable pressure and flow rate, vent valves and fill/drain valves, a safety electronic thermostat, a connector to the electrical system and a wired system both for low-temperature zone valves and high-temperature thermo-electric actuators. The thermoregulation of the low temperatures is managed by a P.I. action electronic climate control unit with electronic safety thermostat, based on microprocessor technology which is used to manage underfloor heating and cooling. The control system is equipped with keypad and 4-digit display to set and control the parameters. Direct control from keypad or digital input for Winter/Summer, Comfort/ Economy and On/Off commutation. The system can be controlled through external thermostats and humidistats.

Code	Size lxhxd mm
3500600	603x1355x176

MTR VJ

MTR VJ 0-10 module is a pre-assembled mini-thermal unit, which is used to regulate underfloor systems and radiators. It includes: a cabinet with adjustable feet, made of steel painted with powders, brackets, a white door with lockset, a three-way mixing valve with integrated by-pass, an analogue motor 0-10, check valves, a micrometric balancing lockshield valve, ball valves with tail pieces, thermometers with scale labels, MAGNA 25-100 electric circulation pump with variable pressure and flow rate, vent valves and fill/drain valves, a safety electronic thermostat, a connector to the electrical system and a wired system both for low-temperature zone valves and high-temperature thermo-electric actuators. It can be combined with RDZ EVO or Wi controllers.
Note: Thermoregulation control unit is not supplied as standard.

Code	Size lxhxd mm
3500700	603x1355x176

Wi Control Units

Wi controllers are complete and expandable regulation systems to manage radiant floor, ceiling and wall heating and cooling systems. The limited number of components and the great versatility of use are the strong points of Wi regulation units which, in fact, can handle small family installations or large multi-zone plants and centralized energy plants, providing temperature control for every single user.

Thanks to room temperature/humidity sensors (wired, via bus or wireless), Wi controllers constantly keep calculating the dew point and act on the water temperature and on the dehumidification system in order to reach the top performance of the installation, thus avoiding the condensation risk on the radiant surface.

Each controller can be interfaced with the external module and communicates with domotic systems or outside supervisors.

These thermoregulation devices are particularly suitable for the combination with b!klimax ceiling radiant system, since they ensure high performance both in terms of heat exchange and in terms of reaction speed of the installation.

> **Ideal solution for radiant systems even with a large number of zones.**
> **High performance and rapid reaction.**
> **Dew point control.**
> **Versatile sensors: wired, via bus and wireless.**
> **Control over 64 temperature/ humidity zones.**
> **Control over 8 mixing valve and 8 AHU.**

Wi Regulation Components

System central unit Wi-M1, Wi-S2/S3/S4

It receives signals from the outside sensor and from the delivery sensors, and it controls the mixing valves.

Expansion unit Wi-Z

WI-Z expansion unit controls the temperature and humidity sensors and relevant dehumidifiers.

Expansion unit Wi-U

WI-U expansion unit controls the dehumidifiers as air handling units.

Expansion unit Wi-Mix

WI-Mix expansion unit manages the second mixing valve of the central unit Wi-M1, Wi-S2/S3/S4 by controlling the servomotor 0-10 V.

User interface IU-Pro

The graphical display makes it possible for the end user to display all system parameters and to interact with the regulation system by setting temperature, humidity and time slots.

Wi Regulation Components

Sensors TA and TA/H

Room sensor to detect temperature or temperature and humidity with wire connection.

Bus Terminal Wi-BT

Bus terminal to detect and display temperature and humidity.
The terminal makes it possible to control temperature and humidity sets as well as the on/off switching in each room.

Bus Sensors TA/H Wi-BP

Room sensor to detect temperature or temperature and humidity with Bus connection.

Wireless terminal TA/H Wi-WT

Electronic component to detect and display room temperature and humidity. Wireless installation. By using the keys it is possible to change the setting and functioning directly from the terminal.
This implies the use of an Access Point and a Repeater, if necessary.

Home or Pro Supervisor Wi-TP

"Touch-screen" control board to manage the system. It is available in two versions: Home for local use, Pro for the remote control through Ethernet port and information diplay on a PC connected with Lan or Web network through any Browser (e.g. Internet Explorer).

Wi Regulation Categories

Wi regulation units are divided into two distinct families:

1. Wi-SA controllers
2. Wi.NET controllers

1 Wi-SA Regulation Unit

Wi-SA controllers are expandable climatic units to control heating and cooling in underfloor/ceiling/wall systems with independent energy production.

In their top configuration they can control:
- 8 mixing valves
- 8 air handling units with dehumidification
  (with analogue servomotor 0-10V), ventilation, air renewal and integration
- 64 dehumidifiers functioning as dehumidification
- 64 temperature and humidity sensors
- External input for low-temperature call
- External input for high-temperature call

The abbreviation which typifies each configuration of Wi-SA control units consists of three values with the following meaning:
Wi "**xxyy-a**"
xx: number of mixing valves - up to 8
yy: number of zones: each zone is provided with a temperature control and a humidity control - up to 64
a: number of air handling units (dehumidification, ventilation, air renewal, integration) - up to 8

Basic configuration: Wi-SA 0100-0.
Top configuration: Wi-SA 0864-8.

2 Wi.NET Regulation Unit

Climatic regulation to control underfloor/ceiling/wall heating and cooling in systems with centralised energy production.
NET regulation unit uses MASTER unit that controls the heat production functions and the central unit pump and communicates with a maximum of 64 peripheric units. The peripheric units are a configuration variant of the standard control units Wi-SA, which means that each control unit uses a RS485 Serial Board.

Wi-SA Configuration

Electronic regulation unit. This multi-zone EXPANDABLE controller is used to manage heating and cooling in floor/ceiling/wall systems with independent power production. Functioning with 24 V AC transformer (not included).
Wi-SA controllers are able to manage very large systems, and they can be combined with different kinds of room sensors also within the same system, from traditional TA/H sensors to wireless terminals.

Basic configuration Wi-SA 0100-0 (room sensor excluded)

component	name	code	description	control	qty
	Wi-M1	6610010	System central unit Wi-M1 +Kit Connectors	Up to 2 mixing valves Up to 8 Wi-Z (max 16 temperature / humidity sensors) max 2 Wi-U (AHU dehumidification - ventilation - air renewal - integration)	1
	IU-Pro	6610165	User Interface Pro (larger screen)	Data display and control	1
	TE	6600090	Outside Sensor	Outside temperature recording	1
	TM	6600085	Mean Water Sensor	Mean temperature recording N. 1 for each mixing valve	1

Temperature/Humidity Sensors for Wi-SA

component	name	code	description	control	max qty
	TA	6600080	Room temperature sensor	Room temperature recording	64
	TA/H	6600075	Room sensor for temperature/humidity	Room temperature and humidity recording	64
	Wi-BP BUS	6610175	Bus room sensor for temperature/humidity	Room temperature and humidity recording	64
	Wi-BT BUS	6610250	Bus terminal with sensor TA/H and key setting	Room temperature and humidity recording and setting	64
	Wi-WT	6610210	Wireless terminal with temperature/humidity sensor and key setting	Room temperature and humidity recording and setting	64
	Wi-WP	6610310	Wireless temperature/humidity sensor	Room temperature and humidity recording and setting	64

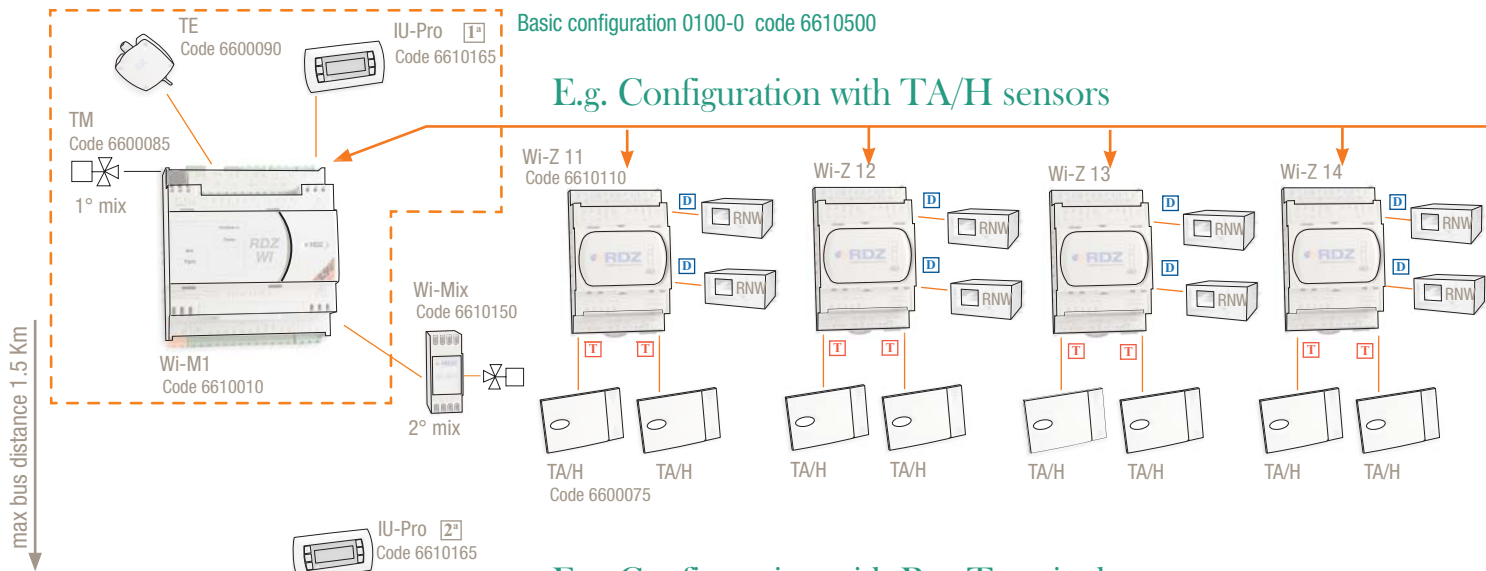| | Wi-TP HOME | 6610400 | User interface touch panel | System display and control in local modality only | next prod. |
| | Wi-TP PRO | 6610450 | User interface touch panel | System display and control in local modality and supervision through ethernet | next prod. |
| | Wi-TP BOX | 6610425 | Embedded box touch panel | It contains the touch panel for wall embedded installation | next prod. |

Wi-SA Configuration

Starting from Wi-SA 0100-0 basic configuration you can add other components to create all the configurations up to the top 0864-8. Wi-SA controller can be provided with different room sensors, also within the same system. Each controller shall be therefore configured according to the installation and shall be provided with customized parameters.
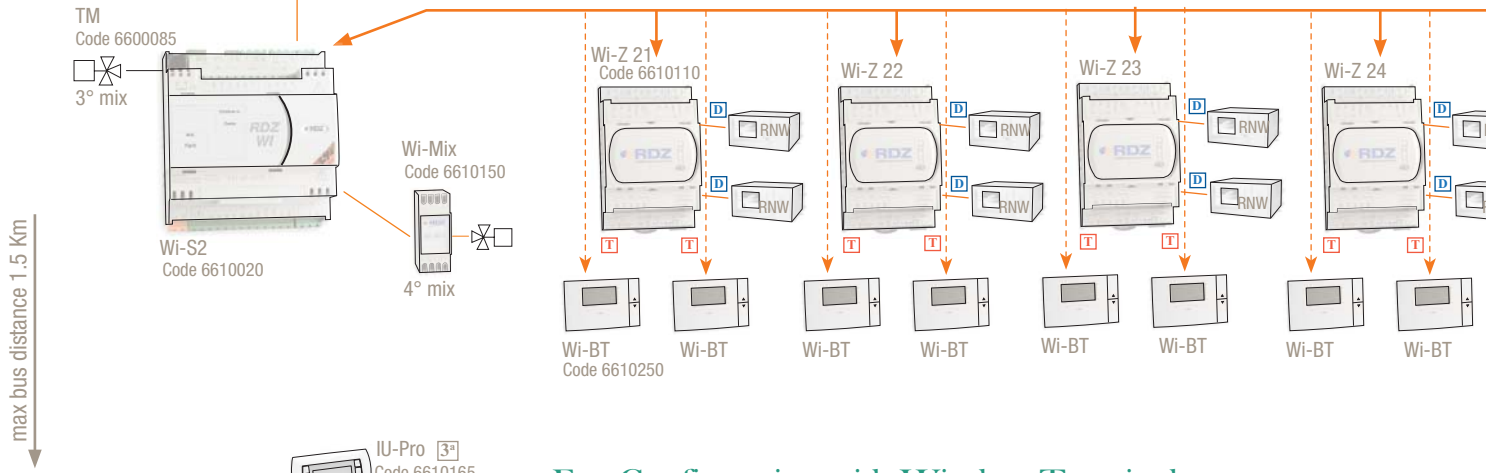
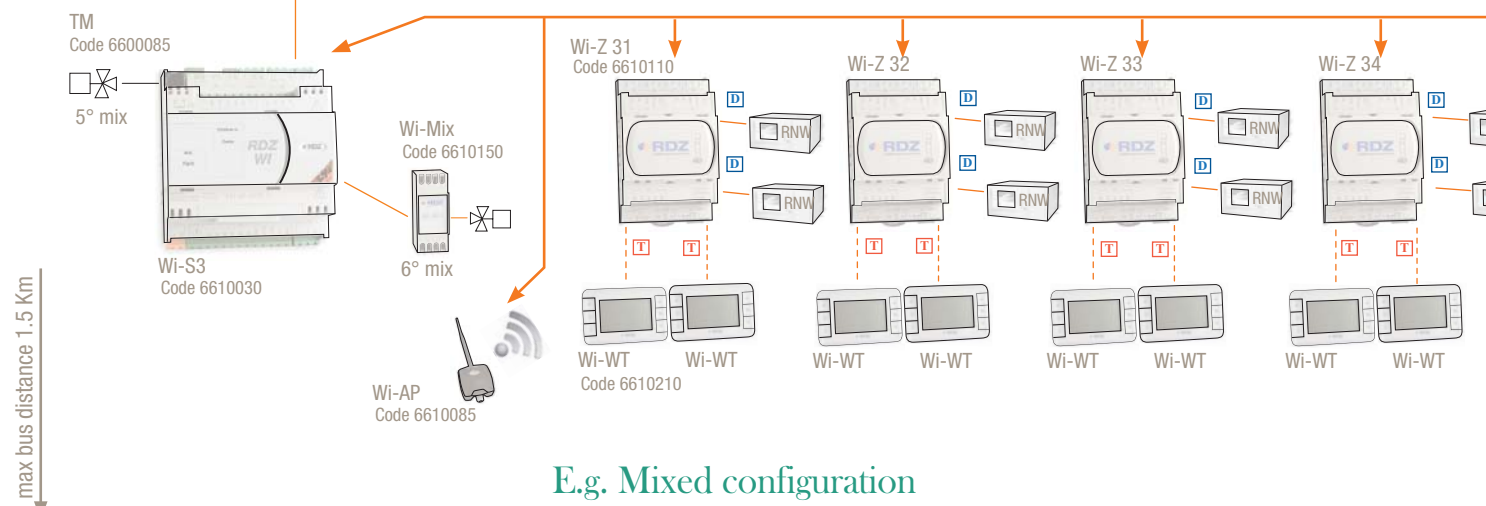| component	name	code	description	control	q.tà
List of components for the top expansion: Wi-SA "0864-8"					
	Wi-S2	6610020	System unit SLAVE-S2 +Kit Connectors	Up to 2 mixing valves with Wi-Mix (second mixer) Up to 8 Wi-Z (max 16 temperature / humidity sensors) max 2 Wi-U (AHU dehumidification - ventilation - air renewal - integration)	1
	Wi-S3	6610030	System unit SLAVE-S3 +Kit Connectors	Up to 2 mixing valves with Wi-Mix (second mixer) Up to 8 Wi-Z (max 16 temperature / humidity sensors) max 2 Wi-U (AHU dehumidification - ventilation - air renewal - integration)	1
	Wi-S4	6610040	System unit SLAVE-S4 +Kit Connectors	Up to 2 mixing valves with Wi-Mix (second mixer) Up to 8 Wi-Z (max 16 temperature / humidity sensors) max 2 Wi-U (AHU dehumidification - ventilation - air renewal - integration)	1
	Wi-MIX	6610150	Additional unit to control mixing valves	It controls the second mixer for each central unit: Wi-M1 / S2 / S3 / S4	4
	Wi-Z	6610110	Wi zone expansion unit +Kit Connectors	Data display and control Max N.1 for each unit Wi-M1 / S2 / S3 / S4 Max 3 units in all	32
	Wi-U	6600120	AHU expansion unit +Kit Connectors	Max 1 AHU functioning as dehumidification - ventilation - air renewal - integration for each unit	8
	IU-Pro	6600165	User Interface Pro (larger screen)	Data display and control Max N.1 per each Wi-M1 / S2 / S3 / S4 unit Max 3 units in all	2
	TM	6600085	Mean Water Sensor	Mean temperature recording N. 1 for mixing valve	7
	Wi-AP	6610085	Access point	Antenna to communicate with wireless components	4
	Wi-RP	6610095	Repeater	Antenna repeater to communicate with wireless components	4
	TC	6600087	Channel Temperature Sensor	Channel temperature sensor for expansion unit Wi-Ux, which makes it possible to control the mean temperature of the air handling unit by the modular control of the flow rate on the post-treatment coils.	4
	QA	6600145	Air Quality Sensor	Channel sensor for the quality of the air with VOC sensor for expansion unit Wi-Ux. This makes it possible to control the quality of the air in rooms thanks to the renewal function of the air handling unit.	4

max bus distance 1.5 Km

TE
Code 6600090

IU-Pro 1ª
Code 6610165

TM
Code 6600085

1° mix

RDZ
WI

Wi-M1
Code 6610010

Wi-Mix
Code 6610150

2° mix

E.g. Configuration with TA/H sensors

Wi-Z 11
Code 6610110

Wi-Z 12

Wi-Z 13

Wi-Z 14

RNW D
RNW D

RNW D
RNW D

RNW D
RNW D

RNW D
RNW D

T T

T T

T T

T T

TA/H   TA/H
Code 6600075

TA/H   TA/H

TA/H   TA/H

TA/H   TA/H

IU-Pro 2ª
Code 6610165

TM
Code 6600085

3° mix

RDZ
WI

Wi-Mix
Code 6610150

Wi-S2
Code 6610020

4° mix

E.g. Configuration with Bus Terminals

Wi-Z 21
Code 6610110

Wi-Z 22

Wi-Z 23

Wi-Z 24

RNW D
RNW D

RNW D
RNW D

RNW D
RNW D

RN D
RN D

T T

T T

T T

T T

Wi-BT   Wi-BT
Code 6610250

Wi-BT   Wi-BT

Wi-BT   Wi-BT

Wi-BT   Wi-BT

IU-Pro 3ª
Code 6610165

TM
Code 6600085

5° mix

RDZ
WI

Wi-Mix
Code 6610150

Wi-S3
Code 6610030

6° mix

E.g. Configuration with Wireless Terminals

Wi-Z 31
Code 6610110

Wi-Z 32

Wi-Z 33

Wi-Z 34

RNW D
RNW D

RNW D
RNW D

RNW D
RNW D

D
D

T T

T T

T T

T T

Wi-AP
Code 6610085

Wi-WT   Wi-WT
Code 6610210

Wi-WT   Wi-WT

Wi-WT   Wi-WT

Wi-WT   Wi-WT

TM
Code 6600085

7° mix

RDZ
WI

Wi-Mix
Code 6610150

Wi-S4
Code 6610040

8° mix

E.g. Mixed configuration

Wi-Z 41
Code 6610110

Wi-Z 42

Wi-Z 43

Wi-Z 44

RNW D
RNW D

RNW D
RNW D

RNW D
RNW D

D
D

T T

T T

T T

T T

Wi-AP
Code 6610085

Wi-WT   Wi-WT
Code 6610210

Wi-WT   Wi-WT

Wi-BT   Wi-BT

Wi-BT   Wi-BT
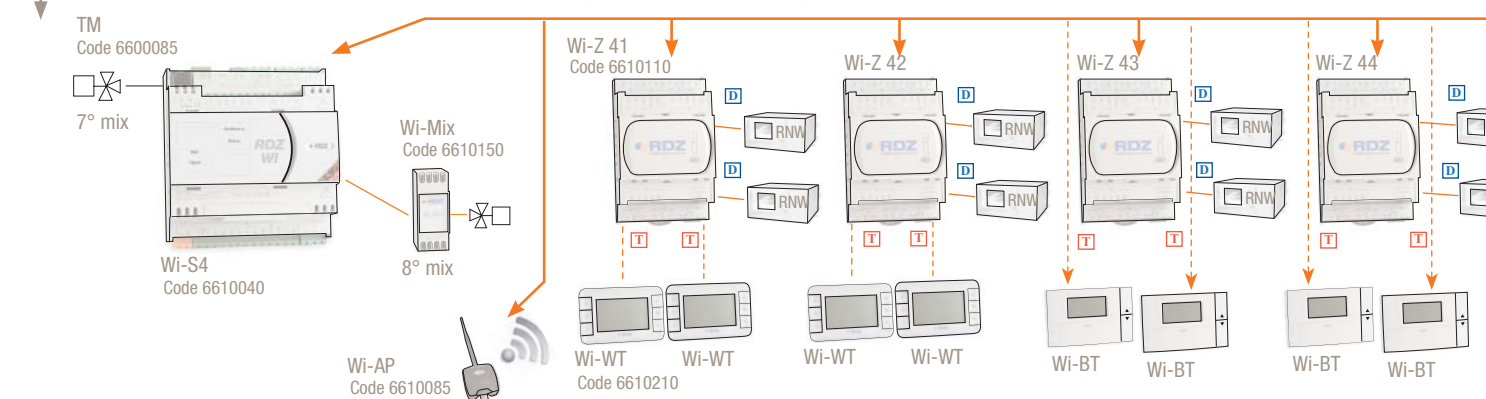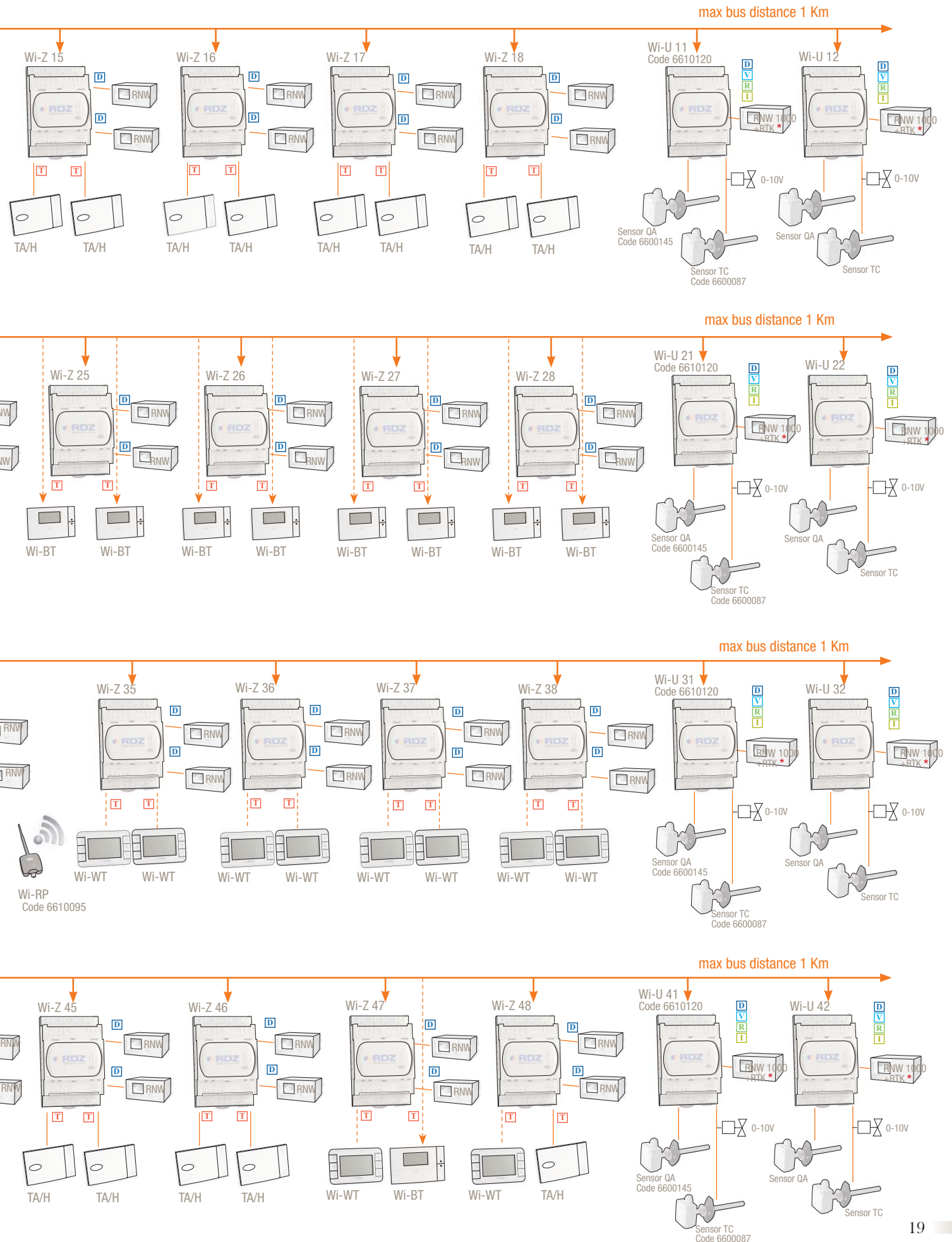
key to symbols: T Zone output D Dehumidification Consent V Ventilation R Air renewal I Integration

Graphic example to choose Wi-SA configuration

max bus distance 1 Km

Wi-Z 15 — RNW (D), RNW (D) — TA/H, TA/H
Wi-Z 16 — RNW (D), RNW (D) — TA/H, TA/H
Wi-Z 17 — RNW (D), RNW (D) — TA/H, TA/H
Wi-Z 18 — RNW (D), RNW (D) — TA/H, TA/H
Wi-U 11 Code 6610120 — D V R I — RNW 1000 +RTK * — 0-10V — Sensor QA Code 6600145, Sensor TC Code 6600087
Wi-U 12 — D V R I — RNW 1000 +RTK * — 0-10V — Sensor QA, Sensor TC

max bus distance 1 Km

Wi-Z 25 — RNW (D), RNW (D) — Wi-BT, Wi-BT
Wi-Z 26 — RNW (D), RNW (D) — Wi-BT, Wi-BT
Wi-Z 27 — RNW (D), RNW (D) — Wi-BT, Wi-BT
Wi-Z 28 — RNW (D), RNW (D) — Wi-BT, Wi-BT
Wi-U 21 Code 6610120 — D V R I — RNW 1000 +RTK * — 0-10V — Sensor QA Code 6600145, Sensor TC Code 6600087
Wi-U 22 — D V R I — RNW 1000 +RTK * — 0-10V — Sensor QA, Sensor TC

max bus distance 1 Km

Wi-Z 35 — RNW (D), RNW (D) — Wi-WT, Wi-WT
Wi-Z 36 — RNW (D), RNW (D) — Wi-WT, Wi-WT
Wi-Z 37 — RNW (D), RNW (D) — Wi-WT, Wi-WT
Wi-Z 38 — RNW (D), RNW (D) — Wi-WT, Wi-WT
Wi-RP Code 6610095
Wi-U 31 Code 6610120 — D V R I — RNW 1000 +RTK * — 0-10V — Sensor QA Code 6600145, Sensor TC Code 6600087
Wi-U 32 — D V R I — RNW 1000 +RTK * — 0-10V — Sensor QA, Sensor TC

max bus distance 1 Km

Wi-Z 45 — RNW (D), RNW (D) — TA/H, TA/H
Wi-Z 46 — RNW (D), RNW (D) — TA/H, TA/H
Wi-Z 47 — RNW (D), RNW (D) — Wi-WT, Wi-BT
Wi-Z 48 — RNW (D), RNW (D) — Wi-WT, TA/H
Wi-U 41 Code 6610120 — D V R I — RNW 1000 +RTK * — 0-10V — Sensor QA Code 6600145, Sensor TC Code 6600087
Wi-U 42 — D V R I — RNW 1000 +RTK * — 0-10V — Sensor QA, Sensor TC

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NOTE: ALL COMBINATIONS ARE VALID

* Wi-U expansion unit can be replaced with UC 410 HE, whose control board includes the relevant regulation.

Wi.NET Configuration

Wi-MASTER.NET for centralized system

This climatic regulation is used to control radiant heating and cooling systems with CENTRALIZED POWER PRODUCTION. Functioning with AC 24 V transformer (not included). Centralized regulation can be carried out through EVO-MASTER.NET controller or Wi-MASTER.NET controller.

Master.NET controller includes:
- outside sensor
- mean water sensor
- user interface

It controls:
- heat and cold energy generators
- the regulation of the general temperature (water)
- the central pump

MASTER.NET control units can be connected with 64 peripheral devices (to control the system) through BUS RS485 connection. MASTER.NET control units give the following information:

- outside temperature
- general clock
- central alarms

Wi-MASTER.NET Configuration					Code 6610700
component	name	code	description	control	q.ty
	MASTER WI	6610010	Control Unit with Centralized Thermal Production + Kit Connectors	It controls max. 64 System Central Units connected with each other in .NET configuration 1 Outside Sensor 1 General Mean Water Sensor 1 Mixing valve (general pre-mixing) 1 Chiller contact 1 Boiler contact 1 General pump contact 1 SEASON contact 1 RS485 board	1
	IU-Pro	6610165	User Interface Pro (larger screen)	Data display and control	1
	TE	6600090	Outside Sensor	Outside temperature recording	1
	TM	6600085	Mean Water Sensor	Mean temperature recording N. 1 for each mixing valve	1

NOTE: BUS cable used to connect Wi-MASTER.NET control unit to the peripheral devices is 1000 m long.

Wi.NET Controller for Satellite Systems

The system control is managed by "peripheric units": Wi.NET system.

.NET mode is a configuration variant of the standard products, which uses a RS485 serial board for every system control unit. In this way, the individual control units differ from the basic configuration due to the addition of the serial board and due to the lack of outside sensor and clock card.

Basic Configuration Wi.NET 0100-0					Code 6610600
component	name	code	description	control	q.ty
	WI-M1	6610010	System central unit Master-M1 +Kit Connectors	Up to 2 mixing valves with Wi-Mix (second mixer) Up to 8 Wi-Z (max 16 temperature / humidity sensors) max 2 Wi-U (AHU dehumidification - ventilation - air renewal - integration)	1
	IU-Pro	6610165	User Interface Pro (larger screen)	Data display and control	1
	TM	6600085	Mean Water Sensor	Mean temperature recording N. 1 for each mixing valve	1
	RS485	6600155	Serial Board RS485	Data reception and transmission through BUS cable	1

NOTE: For Wi.NET expansion we can use the same Wi-SA controllers.

Example of centralized system control.
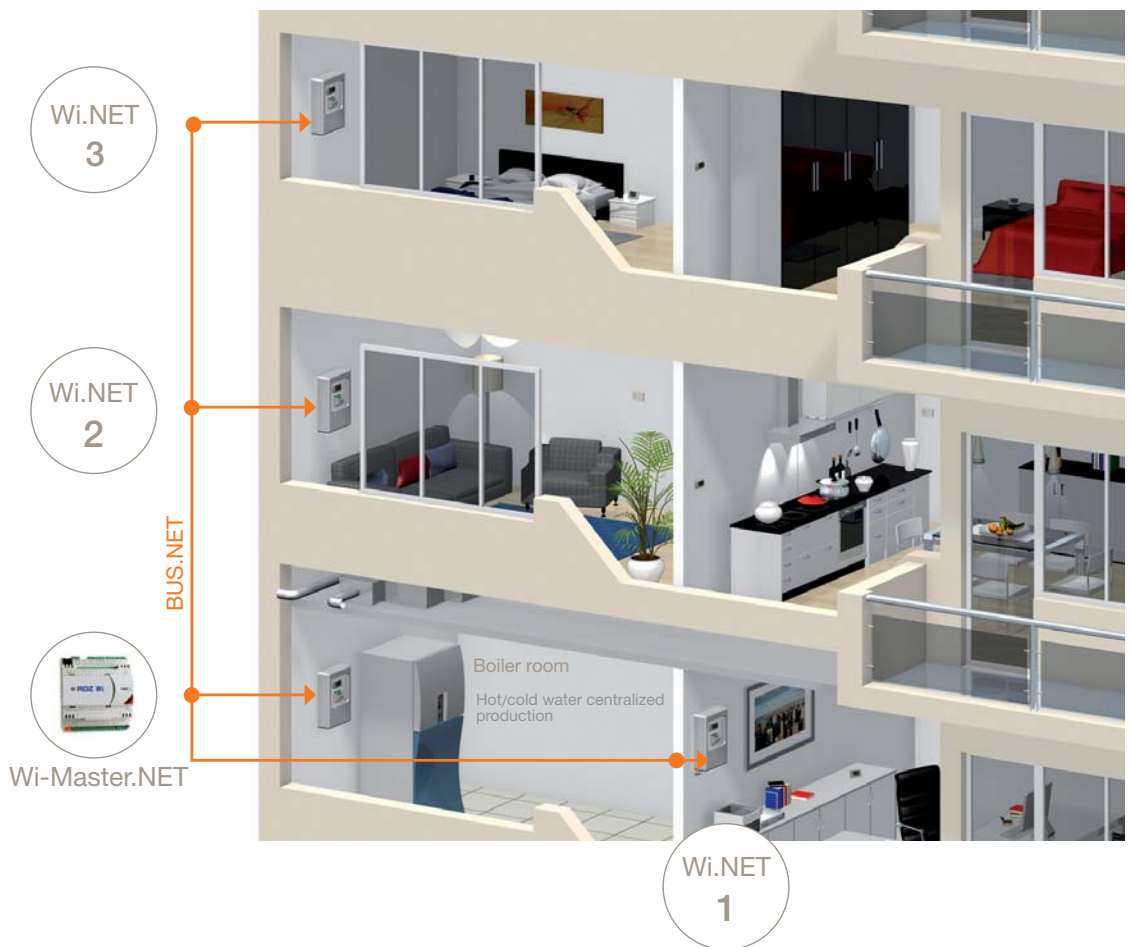
Note: the largest number of flats controlled by Wi-Master.NET is 64 units.

RNW Dehumidifiers for Relative Humidity Control in Radiant Cooling Systems

RDZ radiant cooling systems ensure top performance when they are combined with suitable dehumidification units, which are fundamental to keep room comfort and to avoid condensation risks. That is why RDZ offers a wide range of units, called RNW dehumidifiers, for air renewal and dehumidification, specific for radiant systems and available in different versions according to their applications.

Each machine is a cooling unit equipped with 2 additional heat exchangers that exploit the availability of chilled water (15-18°C) used by the radiant panels. The pre-treatment coil, situated under the evaporator, reduces the temperature of the air, lessening the sensible load on the evaporating coil. The post-treatment coil, located after the condenser, reduces the temperature of the air before sending it back to the room. This treatment produces dehumidified air with the same temperature as the air inside the room. Basically, RNW dehumidifiers control the "latent load"; this increases the efficiency of the cooling unit, which supplies the panels with water at higher temperatures than the temperature usually required for dehumidifying.

RNW Dehumidifiers

RNW 204 I embedded/wall dehumidifier - code 7040010

Power consumption	Watt	340
Air flow rate	m³/h	200
Water flow rate at 15°C	L/h	240
Size (lxhxd)	mm	760x619x207
Weight	kg	45
Dehumidification capacity*	L/24h	24,0
Residential application	m²	80-100

RNW 204 E external/wall dehumidifier - code 7040028

Power consumption	Watt	340
Air flow rate	m³/h	200
Water flow rate at 15°C	L/h	240
Size (lxhxd)	mm	800x650x230
Weight	kg	49,6
Dehumidification capacity*	L/24h	24,0
Residential application	m²	80-100

RNW 404 CS embedded/ceiling dehumidifier - code 7040030

Power consumption	Watt	360
Air flow rate	m³/h	220
Water flow rate at 15°C	L/h	240
Size (lxhxd)	mm	711x242x546
Weight	kg	36
Dehumidification capacity*	L/24h	26,6
Residential application	m²	100-130

RNW 508 CS embedded/ceiling ductable dehumidifier - code 7040050

Power consumption	Watt	500
Standard air flow rate	m³/h	500
Dehumidification capacity*	L/24h	42
Size (lxhxd)	mm	840x290x600
Weight	kg	47
Static pressure (average speed)	Pa	52
Residential application	m²	150-200

RNW 600 CS embedded/ceiling ductable dehumidifier - code 7040035

Power consumption	Watt	900
Standard air flow rate	m³/h	600
Dehumidification capacity*	L/24h	62
Size (lxhxd)	mm	690x349x718
Weight	kg	53
Houses and offices	m²	280

* Room temperature of 26°C, HR 65% and inlet water temperature of 15°C

Comfort Unit UC 410 HE
Ductable Unit for Air Renewal and
Dehumidification in Residential Application

Comfort Unit UC 410 HE is an innovative product for radiant systems, which includes an integrate cross-flow heat recovery unit in the same body. Apart from the standard functioning of RNW dehumidifiers, UC 410 HE can also guarantee forced and controlled renewal of the air in the room and can recover part of the heat.

It is also provided with motorized dampers to control the quantity of new air intake and a thermostatic valve to control the supply air temperature. Moreover, the unit makes it possible to use free integrative sensible power in summer thanks to a heat discharge component using the expelled air, and it also assures night free-cooling.

Comfort Unit 410 HE includes a specific controller for independent management, or it can be connected with an external EVO/Wi controller via BUS.

> **Integrate heat recovery unit with dampers in the same body.**
> **Residential application.**
> **Standard air flow rate 250 m³/h.**
> **Dehumidification capacity (about 36 L/24h).**
> **Installation into false ceilings.**
> **Dehumidification, recirculation, air renewal, integration and free-cooling.**

Technical Specifications		
Standard power consumption	W	660
Standard water flow rate of the hydraulic circuit	L/h	300
Standard pressure drop of the hydraulic circuit	kPa	4
Head with 200 m³/h	Pa	37
Head with 250 m³/h	Pa	22
Refrigerant (R134a)	gr	410
Overall Dimensions		
Height	mm	276
Width	mm	1106
Depth	mm	965
Weight	kg	76

Functions

Comfort Unit 410 HE includes 5 functioning modes:

Dehumidification

Dehumidification starts once the room humidity exceeds the set value, thus activating the compressor.

Recirculation

Recirculation is controlled at time slots and works by acting on the dampers, so that the room air recirculates in the unit (this is possible both with or without dehumidification).

Air renewal

Air renewal can be controlled at time slots by acting on the dampers properly; it ensures the air inlet from outside, and it ejects the same quantity of air through the expulsion duct.

Integration (free in summer)

The integration function changes the gas flow of the cooling circuit toward the condensation coil of the expulsion side, thus avoiding to heat the air for the room. This makes it possible to reduce the temperature in a considerable way.

Free-cooling

Free-cooling means air renewal without using cold water from the chiller and from the compressor. This function is activated only if it is enabled and if the conditions of the room and outside temperature are suitable.
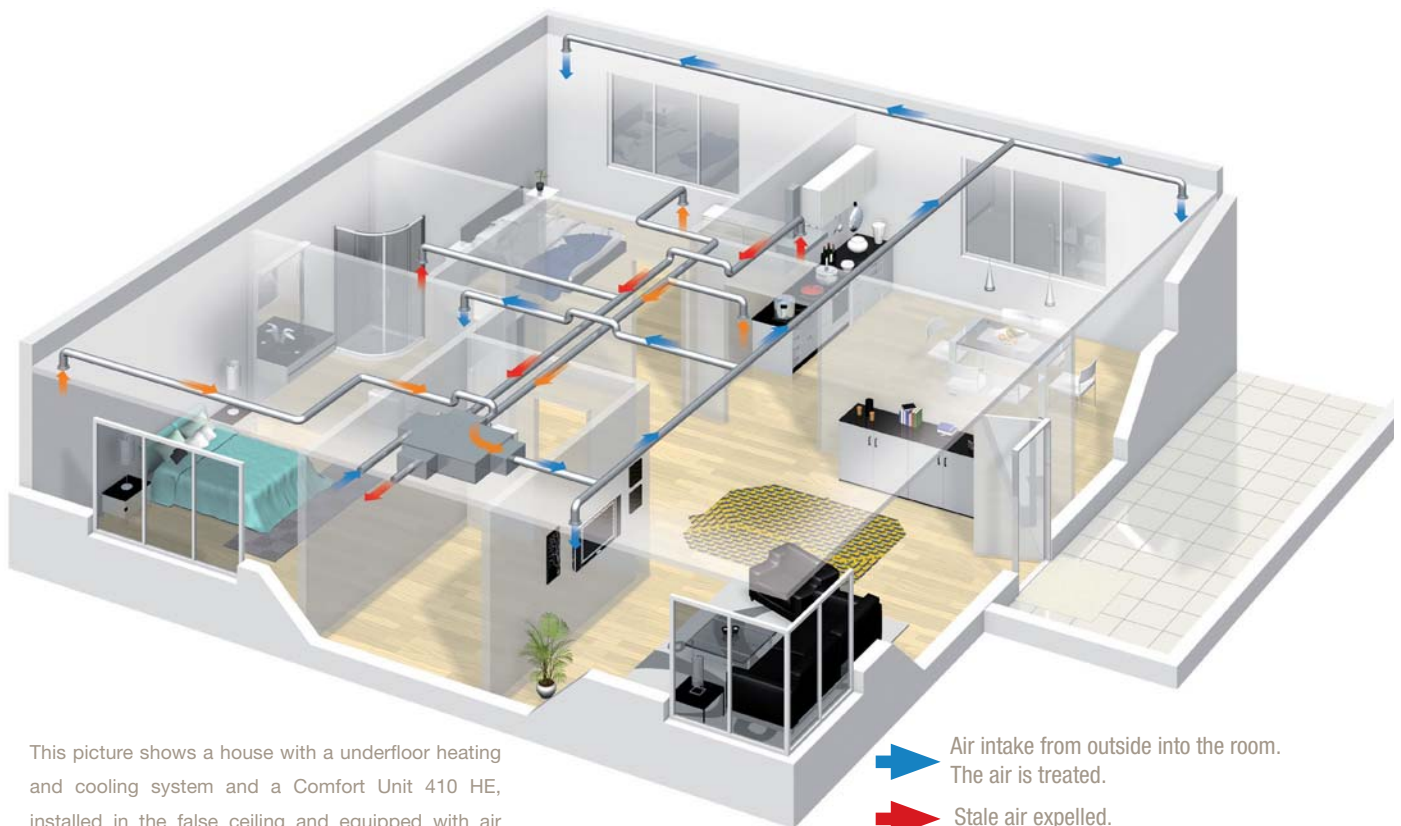
This picture shows a house with a underfloor heating and cooling system and a Comfort Unit 410 HE, installed in the false ceiling and equipped with air intake and air supply ducts.

Air intake from outside into the room. The air is treated.

Stale air expelled.

Air intake and renewal from clean rooms.

RNW 1000 - RTK 1000
Ductable Units for Air Renewal and Dehumidification in Commercial Application

RNW 1000 is an air handling unit used in cooling radiant systems for floors, ceilings and walls in commercial applications. RNW 1000 includes a refrigerating cycle with direct expansion, and it is equipped with additional coils of thermal exchange for air pre-treatment and post-treatment. During summer running the unit dehumidifies the room by introducing air at neutral temperature; if necessary, the unit can integrate the radiant system by giving extra sensible power.

RTK 1000 heat recovery unit is combined with RNW 1000 dehumidifier for applications with air renewal. It is equipped with high-efficiency plate heat exchangers made of aluminium in order to take sensible energy from the expelled air. RTK 1000 is a very versatile product in terms of ducts positioning, and it can be installed upside down.

> **Room comfort.**
> **Dehumidification and ventilation.**
> **No condensation.**
> **Integration of sensible power (RNW 508 and 600 CS).**
> **Wide range of versions.**
> **Compact solutions.**

Technical Specifications RNW 1000 - code 7030040		
Supply tension	V/ph/Hz	230/1~ +N/50
Dehumidification capacity**	l/24h	50,2
Rated power consumption	watt	950
Air flow rate	m³/s - m³/h	0,278 - 1000
Refrigerant R407C	kg	1,2
Sound pressure level****	dB[A]	410
Available static pressure of fan	Pa	100
Size (lxhxd)	mm	875x398x761
Weight	Kg	73

Technical Specifications RTK 1000 - code 7030050		
Supply tension	V/ph/Hz	230/1~ +N/50
Rated power consumption	watt	150
Air flow rate	m³/s - m³/h	0,278 - 1000
Available static pressure of fan	Pa	100
Size (lxhxd)	mm	875x398x980
Weight	Kg	47

Functions

RNW 1000 dehumidifier combined with RTK 1000 heat recovery unit includes 5 functioning modes:

Dehumidification

Dehumidification is activated by the electronic regulation through a simple digital consent. Capacity ranges from 1.46 kW to 5.2 kW depending on dehumidification with simple recirculation or with total outside air renewal.

Ventilation

Ventilation can be activated through a simple digital contact and makes it possible to keep air movement with extra sensible power. Dampers are set in the recirculation mode.

Air Renewal

Air renewal can be activated through a simple digital contact and changes the position of the dampers into the renewal mode. Ventilation is activated both in RNW and in RTK, thus introducing outside air into the rooms with extra sensible power.

Integration

This function, even if it does not appear in the switchboard of the unit, is activated increasing the water flow rate to the hydronic coil of post-treatment (in order to offer more sensible power). At the same time, the regulation selects one of the 3 functions mentioned above, thus ensuring dehumidification, ventilation or air renewal with extra sensible power in synergy with the system.

Free-cooling

This function does not appear in the terminal board, but it can be activated through the regulation system by activating the air renewal with the central pump off. In this way , if the conditions of the outside temperature are suitable it is possible to give free power to the room, while energy comsuption only involves the fans.

Supply duct   Intake duct
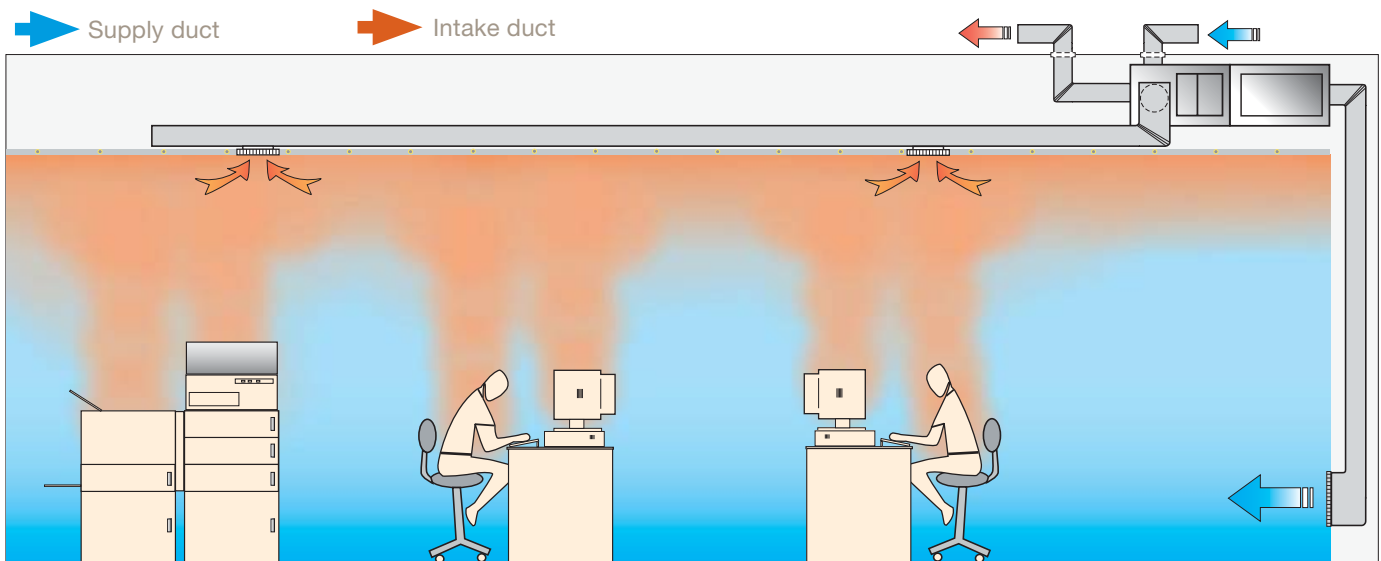
This example shows an office with heating and cooling ceiling system and RNW 1000 dehumidifier combined with RTK 1000 heat recovery unit, which are installed in the false ceiling with suitable supply and intake ducts.

RDZ
invisible heating and cooling

All Valve Industries

Unit 2, 18-28
Sir Joseph Banks Drive
Kurnell NSW 2231

Ph: 02 8543 9811
Fax: 02 8543 9822

info@allvalve.com.au
www.allvalve.com.au / www.rdz.it