DUCTZONE
HVAC SOFTWARE

EXAMPLE_RESIDENTIAL

RESIDENTIAL FLAT 4 BEDROOMS (MULTIZONING EASYZONE SOLUTION)

AIRZONE

Parque Tecnológico Andalucía · Calle Marie Curie 21 · 29590 Málaga

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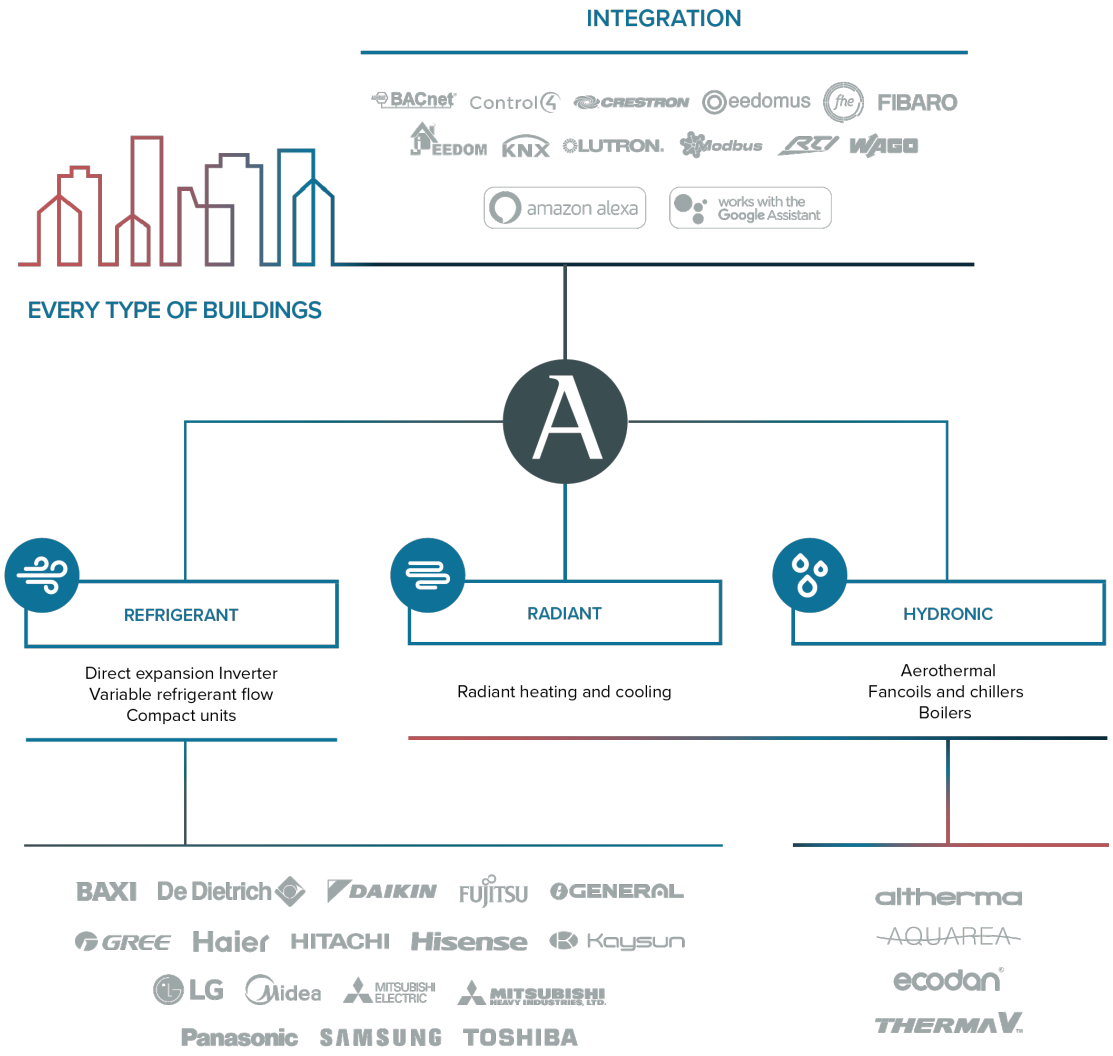
Airzone, Smart Climate Control

Airzone is the world leader in smart climate control systems. With over 20 years of experience, it is one of the most prestigious companies in the HVAC industry. Airzone systems allow the user to control different types of technologies and integrate underfloor heating systems.

ALL AIRZONE SYSTEMS CAN BE COMBINED INTO THE SAME PROJECT, INTEGRATED WITH OTHER CONTROL SYSTEMS AND ALSO CONTROLLED REMOTELY.



If you have any questions, please contact us at projects@airzonecontrol.com and our Projects Department will help you with everything you need.

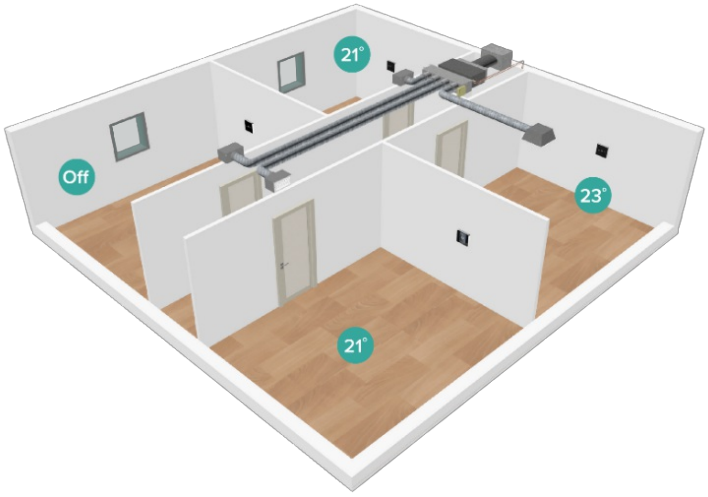
	Easyzone	Flexa 3.0
Single split	✓	✓
Multi-split	✓	✓
VRF (heat pump)	✓	✓
VRF (heat recovery)		
Fancoil (2 pipes)	✓	✓
Underfloor heating	✓	✓

The concept of smart control by Airzone

The smart control performed by our systems allows the user to achieve an optimal level of thermal and acoustic comfort as **every single zone is controlled independently**.

Airzone controllers manage the entire installation and favor a more rational use of energy.

We offer numerous possible combinations so that our solutions can be adapted to the needs of the user and the installation.



An Airzone Integrated Zoning System transforms a traditional ducted HVAC system into a multizone system, basing its operation on two main factors:

- **Optimization** of the HVAC system in energy use.
- Providing the highest thermal comfort range to every zone.

Integrated zoning systems allow to increase energy savings as well as diminish first costs. This happens by means of the communications between Inverter units and zoning system, as well as efficiency algorithms.

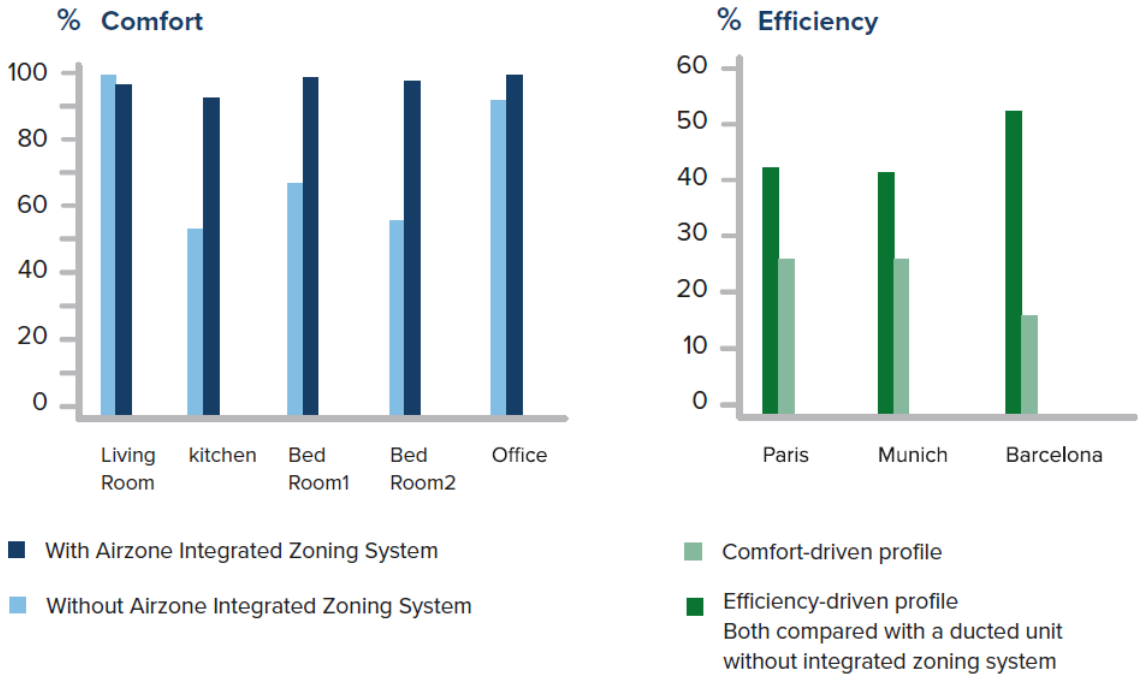
It allows to individually control the temperature of every zone conditioned by the same ducted indoor unit. This occurs thanks to the communications that exist between the sensors installed on each zone and the motorized elements installed on ducts. Therefore, the system covers only the thermal load of those zones where both thermal demand and occupancy exist.

Zoning systems

The Integrated Zoning System developed by **Airzone allows to regulate the air flow** supplied to each airconditioned zone and may satisfy the thermal needs of each one of them. In addition, it includes several efficiency algorithms which **by controlling Inverter heat pumps** (operation mode, set point temperature, fan speed, etc.) **optimizes energy usage**.

These facts generate an **increase both in comfort** during many hours and in **energy savings** as can be seen in the following figures extracted from an independent study from the Energy

Researching Group of the University of Malaga, Spain, with the title “Report over the Airzone integrated zoning model and its comparison to a non-zoned system”.



Quality assurance

Our commitment to the highest quality is our hallmark. We design, develop and produce all our products. They are environmentally friendly and they comply with all the international directives in terms of energy efficiency.

- Certificate of electromagnetic compatibility
- Certificate of electrical safety
- Certificate of radio frequency
- US FCC certificate
- Intertek 4008862 UL Listed
- ISO Certificates: 9001 and 14001

For further information about our certifications, please contact us at projects@airzonecontrol.com

eu.bac certification

The accuracy of control of Airzone solutions has been certified by the European Building Automation and Controls Association (license number 215562). The certified accuracy is 0.3°C **for both cooling and heating**. This certification confirms the high level of performance of Airzone systems, highlighting them as a great option for projects which pursue a high level of efficiency.

eu.bac Cert
215562

BREEAM

BREEAM(Building Research Establishment Environmental Assessment Methodology) is a system of assessing, rating and certifying the sustainability of buildings. Using this system, buildings are given an overall score based on an objective evaluation.

The BREEAM ratings range from Acceptable to pass, Good, Very Good, Excellent to Outstanding. BREEAM evaluates 10 categories, and Airzone can improve the score in the following categories:

- Management: "Sustainable Management"
- Health and Wellbeing: "Thermal Comfort" and "Thermal Zoning"
- Energy: "Energy efficiency"
- Pollution: "GWP refrigerant – Building facilities"
- Innovation: "Exemplary level in Energy efficiency and Sustainable management"

For further information, please visit www.breeam.com.

LEED

LEED (Leadership in Energy and Environmental Design) is a system for assessing environmental performance in the construction or renovation of buildings, which aims to achieve a rational and effective use of energy of materials and water.

In LEED you can reach four levels: Certificate, Silver, Gold and Platinum. This certification method evaluates buildings according to 8 criteria and Airzone can obtain extra points in the following categories:

- Energy and atmosphere: "Optimization of energy efficiency" and "Energy consumption measurement"
- Indoor environmental quality: "Thermal Comfort"
- Innovation in design: "Optimization of energy efficiency"

For further information, please visit https://new.usgbc.org/leed.

Energy consumption optimization

To achieve a high degree of comfort and reduce energy consumption, the communication between the control system and AC unit is required to be perfect. **The Airzone communication gateway®** is the device that enables this bi-directional communication, improving fundamental features of the operation of the AC units.

Thanks to **the Airzone communication gateway®**, Inverter/VRF systems **work in partial load most of the time**, resulting in the optimization of their performance. Our systems modify the Partial Load Ratio (PLR) by adjustingthe set-point temperature of the AC unit based on the

return temperature, boosting the performance of the unit. Thanks to this optimization of the energy consumption, zoned AC units can save up to **53% more than non-zoned Inverter AC units**.

Airzone communications gateways® are compatible with most AC units of the main manufacturers in the HVAC industry.

Effective control

Airzone has developed a series of energy-efficiency algorithms that improve the energy performance of the installation. Additionally, they offer multiple benefits to both installers and users.

Eco-Adapt algorithm

Airzone systems allow you to limit the highest and lowest set-point temperature both in cooling and heating. Whether it is from the Airzone Cloud webserver or from the Airzone Blueface thermostat, the user can choose among the different Eco-Adapt modes, depending on the desired limit temperatures, to optimize the energy consumption and save money.

Smart control for the whole installation

The user can perform a complete and effective control of the installation thanks to our interfaces, either from our state-of-the-art thermostats or remotely using the Airzone Cloud webserver.

Our interfaces allow the user to control the temperature, set schedules, change the operating mode or refer to the weather information, among many other features.

BMS Integration

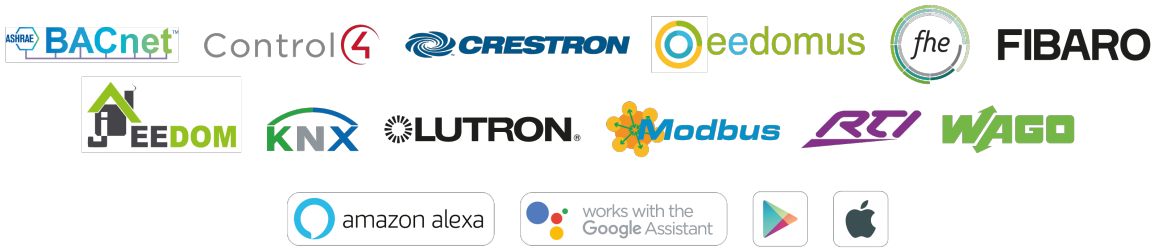
Our Communication with building management control systems is carried out using the **Modbus RTU native protocol**.

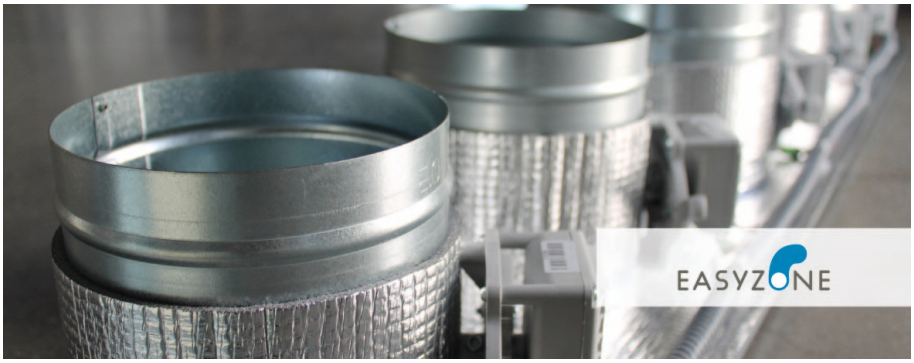
We can apply Airzone control to other home and building automation systems, thanks to the

development of integration gateways that use different protocols such **as BACnet and KNX**, as well as enable communication with other open protocols, such as **LonWorks**.

In order to continue to offer fully integrated solutions, we work directly with integrated building management companies. An example is our collaboration with **Wago and Lutron**.

Users with an Airzone Cloud webserver connected to their systems will be able to enjoy voice control functionalities, using **Amazon Alexa or Google Assistant**.





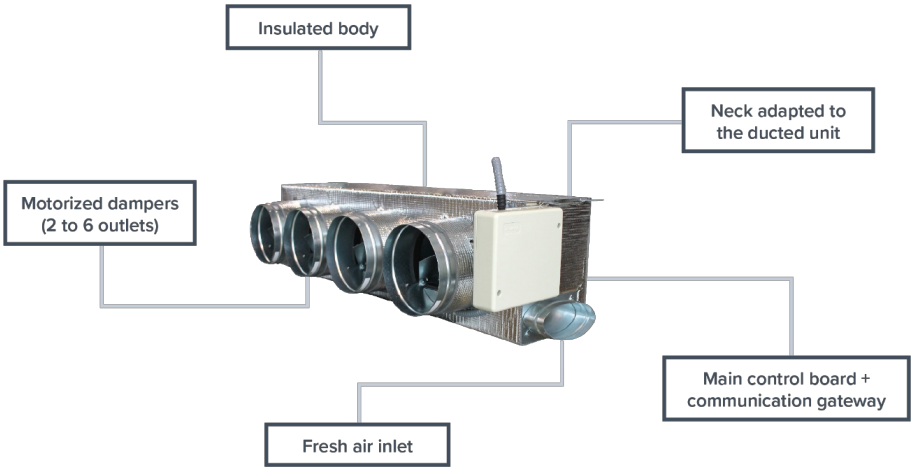
Easyzone, all-in-one system

Easyzone is a plug&play system that turns ducted AC units into highly efficient zoning systems. It is the perfect solution to optimize the performance of installations with Inverter or VRF units. Besides, it enables you to control your radiant zoned heating thanks to the radiant control module.

Integrated motorized plenum

The system is factory wired to avoid wiring errors. All fixing elements (ceiling fixing, damper-to-duct fixing flange) are included.

Available for standard and low-profile indoor units.



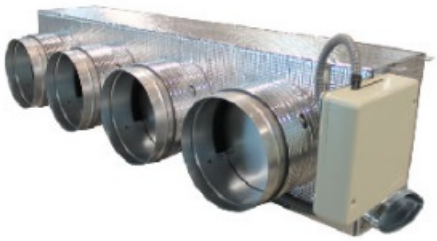
Compatible with the leading manufacturers around the world:

BAXI De Dietrich DAIKIN FUJITSU GENERAL GREE Haier HITACHI Hisense
Kaysun LG Midea MITSUBISHI ELECTRIC MITSUBISHI HEAVY INDUSTRIES, LTD. Panasonic SAMSUNG TOSHIBA

Easyzone is available in three different models:

Standard

Airzone standard motorized plenum with neck for mechanical adjustment to the ducted units of the main manufacturers. It includes dampers of 200 mm in diameter and it also has a separate input for the controlled mechanical ventilation.

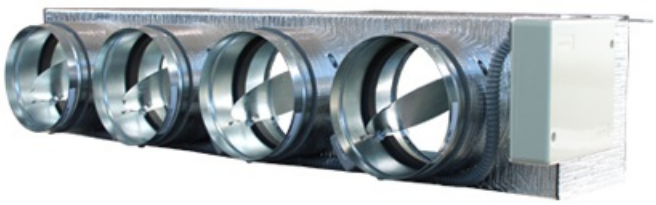


Slim

Airzone Slim motorized plenum is reduced in size to fit with smaller AC units. It includes dampers of 150 mm in diameter and it also has a separate input for the controlled mechanical ventilation.

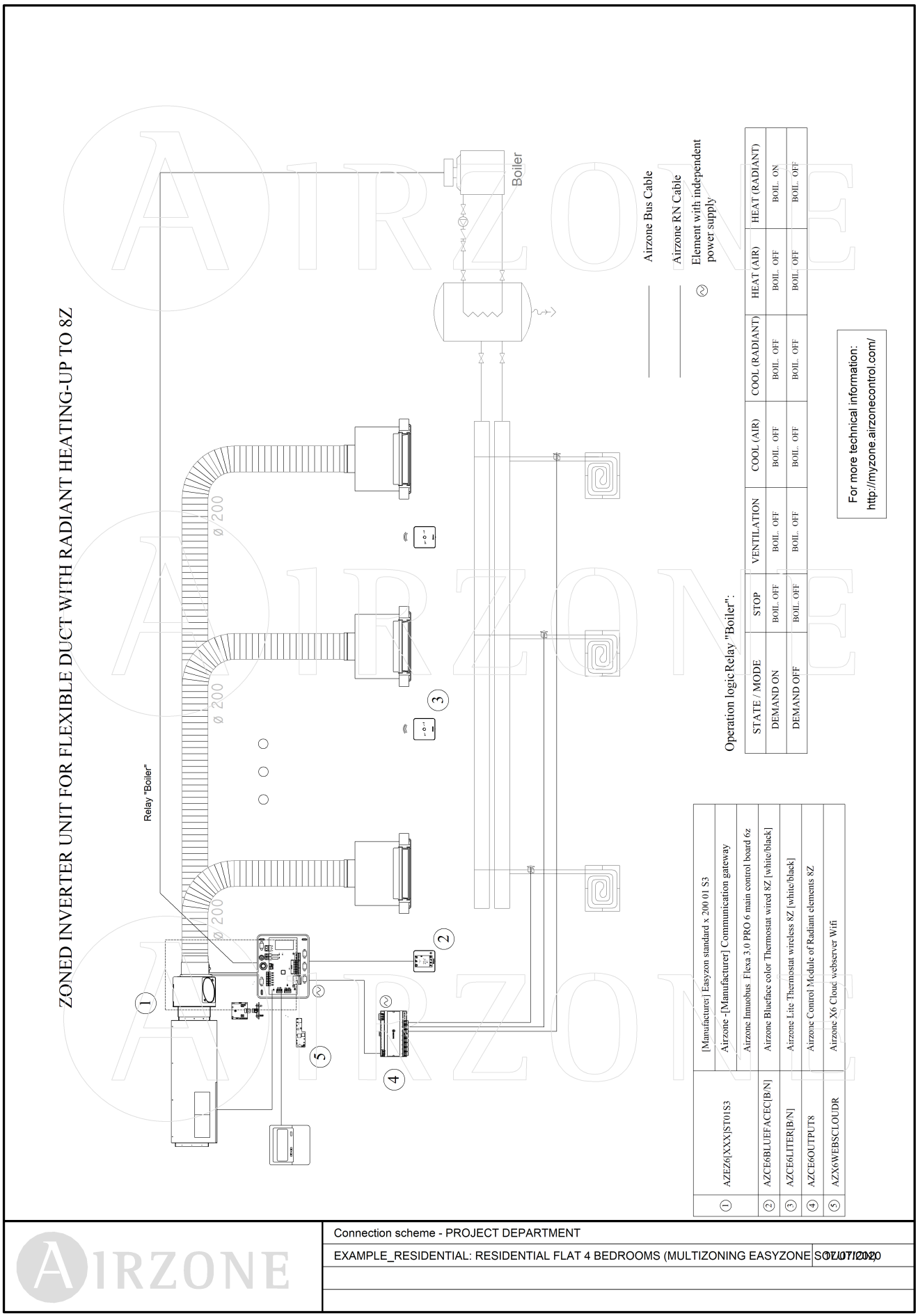
Medium

Airzone Medium motorized plenum with neck for mechanical adjustment to the ducted units of the main manufacturers. It includes dampers of 200 mm in diameter, the difference with the standard version is that it does not have a separate input for the controlled mechanical ventilation. In this way the height is reduced from 300mm to 250mm.



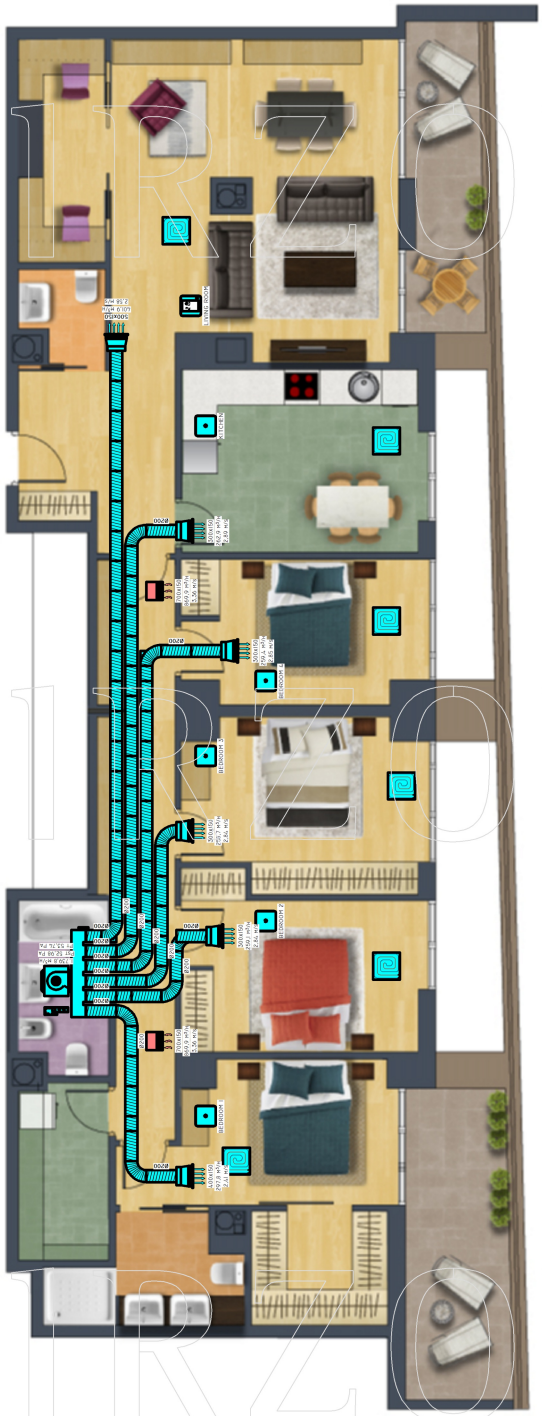
For more technical information please visit ***http://myzone.airzonecontrol.com/***

Connection scheme



STATE / MODE	STOP	VENTILATION	COOL (AIR)	COOL (RADIANT)	HEAT (AIR)	HEAT (RADIANT)
DEMAND ON	BOIL. OFF	BOIL. OFF	BOIL. OFF	BOIL. OFF	BOIL. OFF	BOIL. ON
DEMAND OFF	BOIL. OFF	BOIL. OFF	BOIL. OFF	BOIL. OFF	BOIL. OFF	BOIL. OFF

Installation scheme



For more technical information:
http://myzone.airzonecontrol.com/

AIRZONE	Installation scheme - PROJECT DEPARTMENT
	EXAMPLE_RESIDENTIAL: RESIDENTIAL FLAT 4 BEDROOMS (MULTIZONING EASYZONE SOLUTION) 07/07/2020

Duct calculation details

EQUIPMENT FEATURES						
Reference	Technology	Air flow (m³/h)	Total pressure (Pa)	Static pressure (Pa)	Gateway	Bypass damper
DAIKIN FBA100A	Direct expansion DX	1.739,8	53,74	52,98		-

ZONES				
Reference	Surface area (m²)	Air flow (m³/h) Supply/Return	Diffusion	Control
BEDROOM 1	10,9	297,8/0,0	BEDROOM 1	Term. BEDROOM 1: LITE THERMOSTAT
BEDROOM 2	9,4	259,1/0,0	BEDROOM 2	Term. BEDROOM 2: LITE THERMOSTAT
BEDROOM 3	9,4	258,7/0,0	BEDROOM 3	Term. BEDROOM 3: LITE THERMOSTAT
BEDROOM 4	9,4	259,4/0,0	BEDROOM 4	Term. BEDROOM 4: LITE THERMOSTAT
KITCHEN	12,0	262,9/0,0	KITCHEN	Term. KITCHEN: LITE THERMOSTAT
LIVING ROOM	24,4	401,9/0,0	LIVING ROOM	Term. LIVING ROOM: BLUEFACE THERMOSTAT
Total	75,6	1.739,8/0,0	-	-

RESULTS IN DUCTS											
Section	Dimensions (Horz.xVert.) or Ø (mm)	Area (m²)	eqv. Ø (mm)	Leng. (m)	eqvL. (m)	Air flow (m³/h)	Veloc. (m/s)	ΔPs (Pa)	ΔPf (Pa)	ΔPt (Pa)	Pt. Final (Pa)
Duct BEDROOM 1	Ø200	0,03142	200	3,50	11,73	297,8	2,63	11,67	3,48	15,15	23,26
Duct BEDROOM 2	Ø200	0,03142	200	2,50	11,66	259,1	2,29	9,01	1,93	10,94	19,05
Duct BEDROOM 3	Ø200	0,03142	200	3,00	5,83	258,7	2,29	4,49	2,31	6,80	14,91
Duct BEDROOM 4	Ø200	0,03142	200	7,00	11,67	259,4	2,29	9,03	5,42	14,44	22,55
Duct KITCHEN	Ø200	0,03142	200	7,50	11,67	262,9	2,32	9,25	5,95	15,20	23,31
Duct LIVING ROOM	Ø200	0,03142	200	10,00	5,96	401,9	3,55	10,23	17,16	27,40	35,51

RESULTS AT VENTS									
Ref.	Dimensions (Horz.xVert.) or Ø (mm)	Rat. Q (m³/h)	S. level (dBA)	Out. s. (m²)	Out. v. (m/s)	ΔPs (Pa)	ΔPb (Pa)	Throw (m)	ΔPv (Pa)
BEDROOM 1	400x150	297,8	< 15	0,03430	2,41	1,90	2,75	4,34	27,91
BEDROOM 2	300x150	259,1	< 15	0,02530	2,84	2,22	3,96	4,40	25,23
BEDROOM 3	300x150	258,7	< 15	0,02530	2,84	6,37	3,95	4,39	25,23
BEDROOM 4	300x150	259,4	15	0,02530	2,85	2,23	3,97	4,41	28,75
KITCHEN	300x150	262,9	15	0,02530	2,89	2,29	4,08	4,46	29,67
LIVING ROOM	500x150	401,9	< 15	0,04330	2,58	2,60	3,06	5,21	41,17
R01	700x150	869,9	27	0,07200	3,36	4,03	8,44	9,81	12,58
R02	700x150	869,9	27	0,07200	3,36	4,03	8,44	9,81	12,58

Abbreviations:

Rat. Q: Rated air flow
S. level.: Regenerated individual sound level at head unit
Out. s.: Effective output surface area
Out. v: Output velocity
ΔPs: Total pressure loss at input transformation piece
ΔPb: Total pressure loss at vent
ΔPv: Total pressure loss from fan
eqv. Ø: Equivalent diameter
Leng: Duct length
eqvL: Equivalent length of transformation pieces
ΔPs: Total pressure loss at input transformation piece
ΔPf: Pressure loss due to friction
ΔPt: Total pressure loss
ΔPt Final: Total pressure loss from fan

List of materials

File code:	EXAMPLE_RESIDENTIAL
Description:	RESIDENTIAL FLAT 4 BEDROOMS (MULTIZONING EASYZONE SOLUTION)
Date:	17/07/2020

Item	Description	Units
AZEZ6DAIBS07L6	EASYZONE MEDIUM 6 OUTPUTS 200	1
AZCE6BLUEFACECB	AIRZONE BLUEFACE COLOR THERMOSTAT WIRED WHITE	1
AZCE6LITECB	AIRZONE LITE THERMOSTAT WIRED WHITE	5
AZCE6OUTPUT8	AIRZONE CONTROL MODULE OF RADIANT ELEMENTS	1
AZX6WEBSCLOUDC	AIRZONE CLOUD WEBSERVER ETHERNET	1
AZX6CABLEBUS100	AIRZONE BUS CABLE (2X0,5+2X0,22) 100 M	1

Other materials:

m	Circular / Flexible Ø200 duct	31,88

NOTE: Duct length is not exact since the ductwork has been sized by means of a simplified template.

Plenum Easyzone	
Reference:	AZEZ6DAIBS07L6
Manufacturer:	Daikin
Indoor unit Model:	FBA100A
Number of dampers:	6
Plenum technical sheet:	AZEZ6DAIBS0
Dimensions (mm) [Length x Width x Depth]:	1638x250x454