

Benefits for Your Project

Solutions Guide





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Company Profile

Manufactured in Europe

Airzone, a company owned by the Altra Business Corporation, was created in 1997 with the main mission of improving the energy efficiency of HVAC installations and improving comfort and connectivity.

From its headquarters in Malaga (Spain), Airzone controls and coordinates its products' life cycle: from component design and development phases through to the manufacturing and distribution of control systems.



More than 24 years of experience More than 300,000 systems

More than 1.6 million thermostats installed

In recent years, Airzone has undergone enormous international growth and the company has consolidated its position as the **global benchmark for** smart control systems.



Remote management, international coverage

Thanks to the research conducted by its R&D team and the implementation of cutting-edge advances in heating and air conditioning, Airzone guarantees comprehensive coverage and assessment to professionals in the sector, no matter where you are.

This coverage is achieved through the **Airzone** Cloud Webserver, a device that permits remote access to any system.

This enables the Airzone technical team to verify the status of any installation, perform a diagnosis and report any incident to the installer.

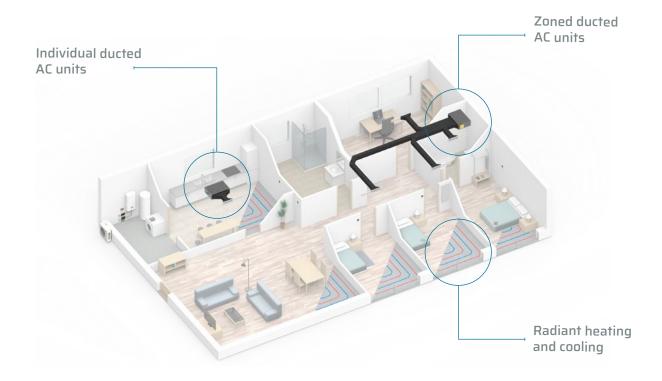


Company Profile

Smart control solutions

Airzone offers 360° control solutions that facilitate the centralised management of any installation, while also improving energy performance. These systems can be adapted to the different AC unit technologies and building types.

Airzone control systems allow you to manage everything, from individual and zoned AC units to HVAC systems using underfloor heating or cooling. Management of the installation is made simple thanks to unified control from a single master thermostat.



The cornerstones of Airzone solutions

- Energy saving and energy optimisation.
- Improvement of thermal comfort for users.
- Remote control via Airzone Cloud.
- Control of all types of HVAC units from a single point or remotely through Airzone Cloud.
- Maximum connectivity and integration between all the elements of the installation.

Optimised and smooth operation

Our systems have been conceived to integrate perfectly with any type of HVAC installation:

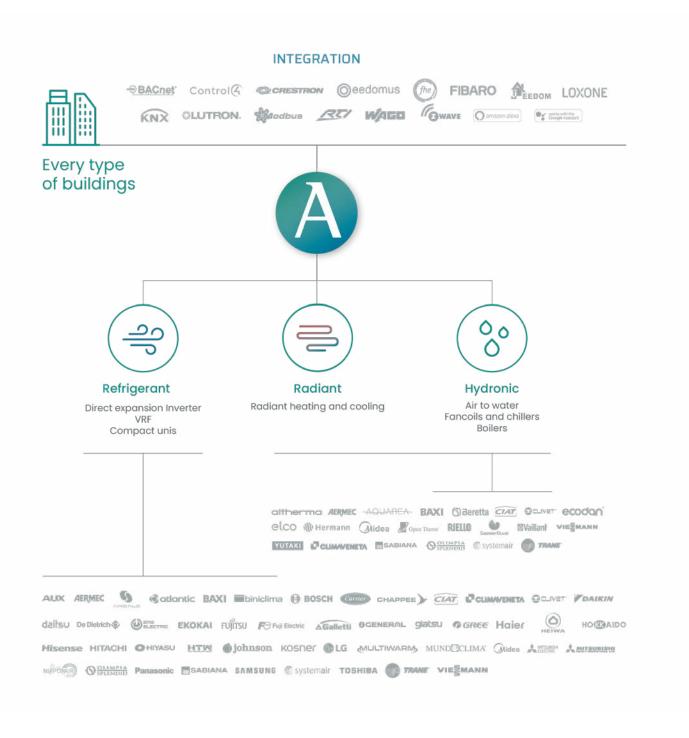
Underfloor heating, zoned ducted AC units, splits, cassettes, etc.

Thanks to our communication gateways, the performance of these AC units is improved through the simple and centralised management of the installation.



A single integration solution

Airzone solutions allow you to combine several HVAC technologies in just one installation. They can also be tailored to the specific needs of each type of building, be they offices, hotels, residential blocks, family homes and clinics, to name but some.



Quality Commitment

Certifications

Airzone holds all the major national and international certifications in air conditioning and energy efficiency:

- Electromagnetic compatibility certificate.
- · Diffusion certificates.
- Electrical safety certificate.
- · Radiofrequency certificate.
- US FCC certification.
- Intertek 4008862 UL Listed certificate.
- ISO 9001, 14001 and 27001 certificates.
- EU.BAC Certification.















Research studies

Airzone has carried out numerous studies jointly with Spanish universities:

- Airzone energy-saving study (UMA)
- Study of the zoning system behaviour (UCA).
- Study of the behaviour of hydronic air conditioning and radiant heating systems.







Our certificates are available at airzonecontrol.com/eu/en/projects



Regulations

All Airzone developments are performed in the legal context of the EU energy efficiency framework, pursuant to the major European directives:

- **Directive (UE) 2018/2002** on energy efficiency, implemented in the Spanish legislation by RD 56/2016 on energy audits.
- Directive 2010/31/EU on the energy performance of buildings, transposed into the national legislation of each one of the member states



Partnerships

The Airzone systems are not only integrated with the AC units of the main HVAC manufacturers, but also with other control and automation systems.

Besides BMS systems, the Airzone systems also guarantee integration with the latest technologies on the market, such as the **OpenTherm protocol.**

This is being embraced by the leading boiler manufacturers due to its capacity to modulate temperature control in the production of water.

It allows production to be adjusted dynamically to actual demand upon the installation, greatly increasing its energy efficiency.



Indoor Air Quality

Improve the quality of the indoor air that you breathe

The pollution of indoor air originates from different sources, such as the building materials used and the occupants. Any circumstance can cause air quality to deteriorate.



Frequent harmful particles and target comfort

- Humidity: 50% RH (between 40% and 60% RH).
- Carbon dioxide (CO2).
- Volatile organic compounds (VOCs): total VOC 200 $\mu g/m3$ and 0.12 mg/m3formaldehyde.
- Breathable particles PM10: <50 µg/m3 (in 24
- Fine particles PM2.5: <20 µg/m3 (in 24 hours).



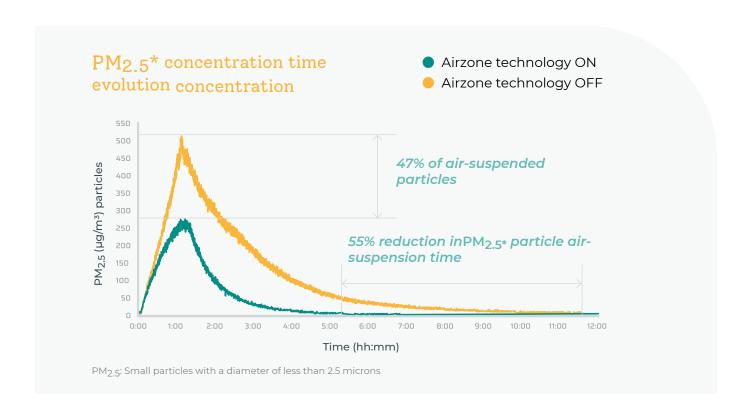






As a result of ionisation, particles undergo the agglutination process, thus increasing their weight and causing them to fall to the ground through gravity.

Ionisation is a purification technique consisting of the diffusion of negative ions to capture positively-charged ions.



Air quality from your app

With the **Airzone Cloud app**, you can manage the **indoor air quality** of both your home and business areas anywhere and any time.



3 different PM2.5 particle measurement levels



Operating modes: ON, OFF and automatic





Air quality graphics

What makes Airzone a cut above the rest?

Communication gateways

Achieving a high level of comfort while also cutting power consumption requires perfect communication between the control system and the AC unit. The Airzone communication gateway permits this two-way communication, leading to improved AC unit operation thanks to the following features:

- AC unit power-on or off control.
- Selection of operating mode.
- Smart AC unit temperature management.
- Display of AC unit errors*.
- Energy consumption information on app*.
- Anti-stratification function for heating mode.



Up to 53% savings compared to a non-zoned Inverter unit.

AC unit optimisation

The communication gateways adapt thermal power and airflow dynamically, thus optimising AC unit performance.

Technology at the service of the user

The end user can manage AC unit operation efficiently thanks to Airzone's time schedules and energy efficiency algorithms.

Main manufacturers:







New Airzone Cloud app

The Airzone Cloud app has been revamped to offer you the best control experience through a simple and user-friendly interface¹ and the latest Cloud technology.



- (¹) On/Off
- Temperature control
- Indoor air quality²
- Humidity reading
- Mode selection
- Advanced settings
- Zone navigation
- (L) Schedules
- Eco-Adapt function







Play Store Ap

App Store

Demo





Connect from anywhere

- Customisable: Rearrange and change the way that zones, groups and installations are displayed.
- **Widgets:** View all the data on air quality, consumption, weather and scenes.
- **Charts:** The graphic log of your installation's activity.
- **Airtools:** Monitors system parameters in real time and reports possible malfunctions.

Extend the warranty of your Airzone products for another year by installing the Airzone Cloud Webserver.

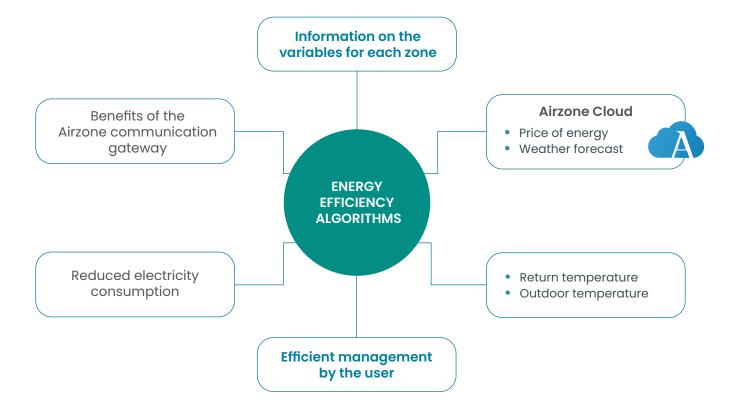
Control Technology

Energy efficiency algorithms

Airzone's research has yielded the development of a series of energy efficiency algorithms for optimising the performance of its systems.



Variables and parameters involved in the control algorithms





ECO-ADAPT

Eco-Adapt is a set of functions and algorithms oriented towards improving HVAC systems, offering multiple benefits to the installer and the user.

The Airzone systems feature a number of modes that allow the end user to limit the selectable minimum temperature in cooling mode and the maximum in heating mode. Using the Blueface thermostat or the Airzone Cloud Webserver, the end user can adjust the set-point temperature of each room to optimise savings and reduce energy consumption.

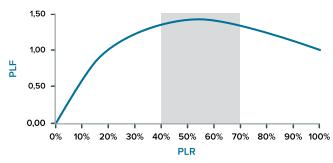
Mada				
Modes	Heating	Cooling		
Ø	-	-		
Q7	22	24		
€ A.	21.5	25		
₹ A++	21	26		

Temperature (°C)

Dynamic control of the Inverter/VRF unit's setpoint temperature

In addition, Eco-Adapt comprises a set of algorithms to improve the energy efficiency of HVAC installations. It was developed to improve the partial load ratio (PLR) by modifying the AC unit's setpoint temperature in relation to the return temperature, improving the unit's performance.

Range of operation for Eco-Adapt in an Inverter unit



PLR: Partial Load Ratio

Control Technology

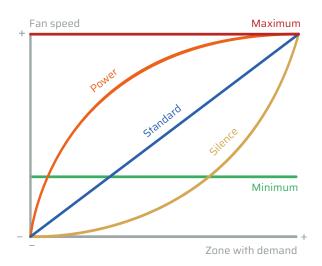
Energy efficiency algorithms

Q-ADAPT

Q-Adapt is a function that allows the end user to select the fan speed of zoned AC units depending on the zones where is demand. The resulting solution is tailored to the installation's particularities and to airflow needs in each zone.

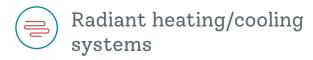
5 Q-ADAPT modes:

- Maximum: Always maintains the highest fan
- Power: Adjusts fan speed to drive increased airflow.
- **Standard:** Chooses the speed proportionally to the number of zones where is on demand.
- Silence: Adjusts fan speed to reduce the installation's noise level.
- Minimum: Always maintains the lowest fan speed.



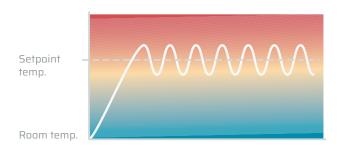
In distributed systems, Q-Adapt offers a percentage-based setting:

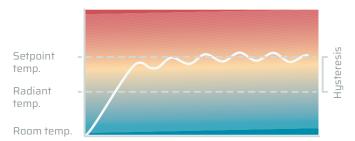
The setting assigns a percentage to each zone in the installation. This percentage-type distribution is ideal in installations with complex ductwork or numerous zones.



Conventional radiant control systems establish a safety hysteresis on room temperature to reach the setpoint temperature. Sometimes, this temperature is surpassed, resulting in excessive energy consumption and loss of comfort.

To avoid these problems, Airzone has an algorithm that controls radiant inertia. This prevents zones from overheating and stabilises both temperature and energy consumed.







Humidity control in radiant cooling

The new Airzone interfaces combine the measurement of temperature and humidity. In installations with underfloor cooling, located in places where the environmental humidity is high, there may be a risk of condensation on the floor.

The Airzone systems can reduce this risk by measuring the dew point and adapting how the production units operate.





Hydronic systems

Air-to-water units, fancoils, chillers and boilers

ECO-ADAPT

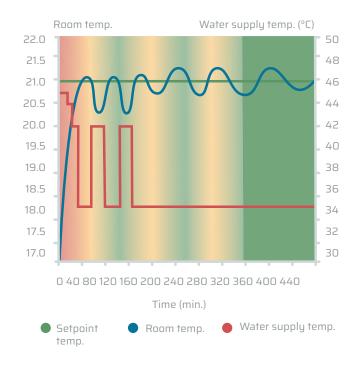
The major benefits associated with the Eco-Adapt algorithm are also obtained in water systems.

COMBINED MODE

The Airzone systems for air-to-water installations, in which cooling/heating is combined through convection and radiation, include an energy efficiency algorithm called "Combined mode" that allows the different heaters available in the installation to be used jointly to deliver the maximum level of comfort within a short period of time.

How the algorithm operates:

- 1. When there is a marked thermal difference between room and comfort temperatures, the air stage is activated first.
- 2. Once the difference begins to diminish, the radiant stage, which operates more efficiently, kicks in.
- 3. The air stage is then turned off and only the radiant stage is maintained, guaranteeing maximum energy efficiency and lower power consumption.
- 4. Once the comfort temperature is reached, the following situations may occur:



- > If the room temperature increases and rises more than 0.2°C above the maximum comfort temperature, the radiant stage is also deactivated and the system is turned off.
- > If the room temperature decreases and drops more than 0.5°C below the maximum comfort temperature, the air stage is activated to work in conjunction with the radiant stage and prevent the temperature from falling below the maximum comfort temperature.

Professional Coverage

Airzone control

Academy

Get trained on our online platform for professionals and keep up with the latest HVAC innovations.

Projects

Our team of engineers will make sure that you obtain the most viable and efficient option to control your installation.

Tools

From quotations to calculations, installation and configuration, access all the tools you need for your Airzone projects.

Support

Our team of product experts is dedicated exclusively to providing you with comprehensive support and technical assistance as promptly as possible.



Visit airzonecontrol.com/projects and find out all about our services and tools for professionals.



CONTACT OUR TEAM: projects@airzonecontrol.com

DOWNLOADS:

airzonecontrol.com/eu/en/projects/



Comprehensive assessment

We have been specialising in the sector and working with HVAC professionals for more than 20 years, which is why we can place a team of engineers at your disposal to help you develop your projects.

- Airzone Software: Ductzone, the software for calculating and designing HVAC installations.
- Certificates: Our solutions are endorsed by all the most important HVAC and energy efficiency certifications.
- Studies: The efficiency of our solutions. In conjunction with universities, we performed case studies to serve as reference points for each type of project.
- Tools and resources: Product catalogue in Revit format using BIM&CO and BIMobject. Airzone product CAD blocks.



Technical support

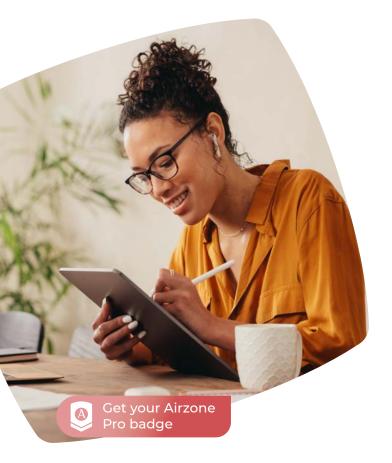
Our team of **Airzone product experts** is dedicated exclusively to providing you with comprehensive technical service and support in the shortest possible time.

- Construction support team.
- Start-up support service.
- Customised support for your project.
- Warranty and returns management.
- Remote support through: airzonecontrol.com/eu/en/

Argos

We accompany you in real time with a mobile device-based video call with no need for applications in order to give you the best possible technical support on site.

- Video calls.
- Secure communications.
- Interactive control panel.





Airzone Academy

Train with the industry leaders on our online platform for professionals and keep up with the latest developments.

- Choose the topic: Check out the list of courses and register free for the one you are most interested in
- Adapted to your schedule: We have different training modalities available to suit your schedule.
- For all profiles: All our courses are carefully structured with specific programmes to cater to the educational needs of any technical profile.

Airzone Pro Installer Learn how our control systems work.

Airzone Pro Prescriber

Learn about the different solutions by type of technology and application.





Activate the account from your email.



Enter the **Academy** and start training.

Software and Tools

In-house software

Ductzone

Our in-house software for the design and calculation of HVAC installations depending on building type. Accuracy and simplicity unite to facilitate the work of the designers and installers that recommend Airzone control solutions.

- Sizing of the AC unit.
- Sizing and calculation of the ductwork.
- Recommendation of the most optimal control
- solution depending on the HVAC technology available.





Tools and resources

Connection diagrams and blocks (CAD)

Consult our connection diagrams for the proposed solution and Airzone products CAD blocks to include them in your project. You can download them here.

Building Information Modeling (BIM)

We provide architecture, engineering and construction professionals with our 3D-modelled products so you can integrate Airzone into your BIM project. You can access our BIM products on the BIMobject and BIM&CO platforms.

Download our tools and software from: airzonecontrol.com/eu/en/projects







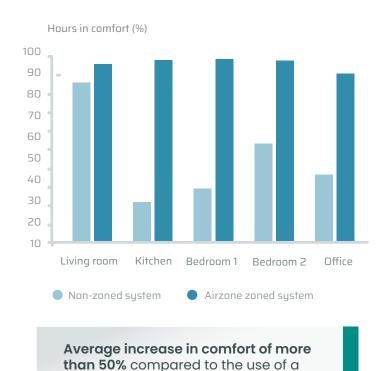
Software and Tools

Improved comfort

Independent studies carried out by the University of Malaga's Energy Group (part of the School of Industrial Engineering) comparing levels of thermal comfort between conventional ducted HVAC installations (not zoned) and installations with Airzone's system (zoned) show that it is possible to achieve an adequate level of comfort in each zone while reducing consumption.

The choice of an Airzone system impacts the hours during which thermal comfort levels are achieved, considering the limitations in relation to the interior temperature to be maintained within the habitable premises, both in winter and in summer, according to the different local regulations.

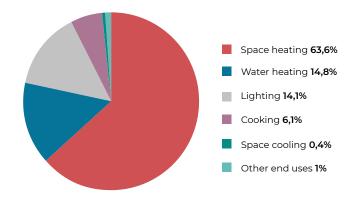
The graph presents the results of one of the studies carried out by the University of Malaga's Energy Group and shows how an increase in the number of hours of thermal comfort is achieved in all the zones considered.



non-zoned system.

Energy savings

According to Eurostat, the main use of energy by households is for heating their homes (63.6 % of final energy consumption in the residential sector), while the proportion used for water heating represents 14.8 %. Heating of space and water consequently represents 78.4 % of the final energy consumed by households.



In residential and commercial buildings, HVAC applications are responsible for the highest energy consumption; hence the need to rationalize their use and increase control over their operation.



Economic advantages

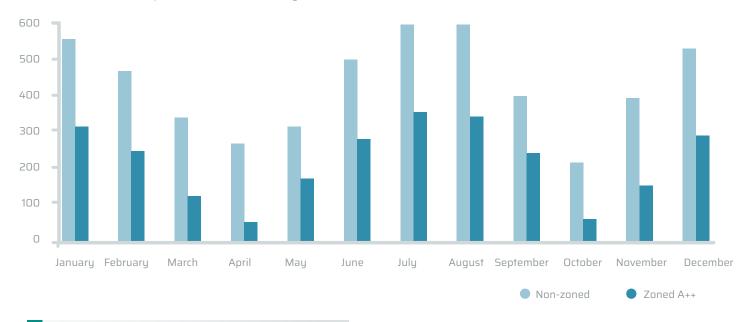
Installing a lower-capacity AC unit delivers both a reduction in the initial investment in AC units and a reduction in thermal capacity, therefore lowering costs, both at the time of installation and during use.

Furthermore, the reduction in the number of indoor units required also reduces the number of lines, support brackets and mounting accessories needed for the AC units. It also facilitates maintenance work, as the production points are centralised.

Evolution of total consumption

The study carried out by the University of Malaga's Research Group shows the savings in electricity consumption delivered through the use of an Airzone-zoned Inverter system compared to a non-zoned Inverter system:

Evolution of total consumption (kWh/month) over the year



The savings obtained in operating the installation are thanks to the use of Eco-Adapt A++ 21°C-26°C temperature limitation algorithms according to RD 1826/2009.

Return on investment

The return on investment in an Airzone system, adjusting the thermal capacity of a zoned AC unit, is achieved within the first few years of the installation's life cycle.

The Airzone Solutions Guide will itemise the return on investment according to building type.

Benefits for Your Project

Technical advantages · Zoning

The benefits of the installation of an Airzone zoned system compared to a non-zoned Inverter HVAC system include the **possibility of reducing** the capacity of the AC units to be installed thanks to the concept of simultaneous use and loads.

It therefore follows that the choice of a zoned system entails a reduction in the capacity of the selected AC unit. If a larger model is chosen, the AC unit would be over-sized and its Inverter regime would not be fully leveraged.

Non-zoned system

The distribution network has no element that lets the system deal with the needs of each zone separately.

The AC unit's rated capacity must be equal to or greater than the sum of the zones' peak thermal loads, even if they are not simultaneous.

Zoned system

The distribution network has sensors and motorized elements that allow you to adjust the system's thermal contribution to the demand of each zone separately.

The AC unit's rated capacity can be calculated taking the zones' maximum simultaneous thermal load into account.

> Minimising the number of indoor units reduces the amount of refrigerant in circulation (in accordance with the UNE-EN 378-2:2017).

The Airzone systems allow you to adapt the installed thermal capacity to the real needs of the installation. You can therefore obtain a reduction in the quantity of refrigerant, thus facilitating compliance with the safety regulations governing refrigerant leaks.



Another noteworthy aspect is that including it in the installation allows you to dispense with leak detectors on certain occasions, as the limits of refrigerant concentration mandated in the different local regulations are not surpassed.





From the technical and control standpoints, the Airzone control systems deliver significant added value to an HVAC installation.

- Integration with home and building automation systems: Compatibility between systems that manage the home and the Airzone HVAC control system. This can be performed directly through the Modbus protocol, local API, cloud API or through dedicated integration gateways.
- Increased energy efficiency: The aforementioned smart control algorithms make for more efficient operation: Q-Adapt technology, Eco-Adapt technology and Combined technology.

- Centralised management of the installation's operating mode and remote control: The Airzone Cloud Webserver permits total control of the entire installation from any location and at any time through the iOS or Android apps or the Web portal.
- A single thermostat, two control stages: The Airzone system allows you to integrate control of the air stage and the radiant stage into a single thermostat, as well as one stage combining them. This means that a single thermostat per zone can be used, with the consequent aesthetic improvement and economic savings.

Main technical and economic advantages

Technical variables

Integration



Home automation systems



Different technologies



Air and radiant control

Energy optimisation







Cloud management



Energy saving



CMV control

Economic variables

Saving



Unified control



Integration costs

Saving



Initial investment



Operating costs

Benefits for Your Project

Technical advantages · Integration

Our systems allow you to integrate your entire HVAC installation with the leading home automation and BMS systems and include the latest IoT trends, such as voice control.





Local API









Gateways

Integration gateways that fulfil the requirements of each technology.

KNX gateway

- One KNX gateway per Airzone system.
- Control up to 14 zones.
- Standard KNX data.
- Configurable from ETS.
- Compatible with KNX thermostats.

BACnet/IP gateway

- Plug&Play.
- One BACnet gateway per Airzone system.
- Control up to 32 zones.
- Accessible from Airzone Cloud.
- Ethernet/Wi-Fi connection.

Lutron gateway

- Plug&Play.
- One Lutron gateway per Airzone system.
- Control up to 32 zones.
- Accessible from Airzone Cloud.
- Ethernet/Wi-Fi connection.





KNX

gateway

Airzone

system

ŔNX

KNX

system





Local API

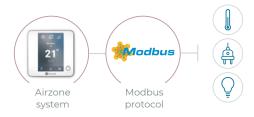
Direct IP communication with the local webserver, Airzone Cloud Webserver Ethernet.

- Plug&Play.
- Control up to 32 Airzone systems and 32 zones per system.
- Accessible from Airzone Cloud.
- Ethernet connection.

The Local API is open to integrate HVAC control with other home automation systems.







Modbus

Direct control from the home automation port included on the main control board.

- Control up to 99 Airzone systems.
- Control up to 32 zones per system.



The new Airzone Cloud Webserver HUB module **provides cloud connectivity to Airzone systems.** Stay in control of your HVAC installations by turning your devices into control interfaces. Any time and anywhere.

- Control up to 32 Airzone systems.
- Ethernet port.
- RS845 port for BACnet, MS/TP, Modbus.
- 2.4/5 GHz Wi-Fi connectivity.
- Bluetooth Low Energy (BLE) connectivity for configuration.



Benefits for Your Project

We are committed to quality and sustainability

Airzone responds to environmental issues in a specific way: by focusing on optimising buildings' thermal comfort and energy performance.

- Airzone is part of the GBCe materials platform.
- ISO 14001 and ISO 9001 certifications.
- Tools developed in-house for improved energy performance.
- Passive House standard awarded to extremely energy efficient homes.



Passive House



A building standard that combines high indoor comfort with very low energy consumption at an affordable price thanks to the maximum care taken with the building envelope and the efficiency of the HVAC systems. Airzone systems provide improvements that help to meet the mandatory requirements of the Passive House Buildings standard.



Reduction in energy consumption



Reduction in installed capacity



Zoned control



Limitation of overheating hours

WFII



Certification that guarantees that the certified space works towards the occupants' health and wellbeing. It consists of 7 areas of action, and Airzone's impact is highly pronounced in:



Thermal comfort

BREEAM



This system for assessing and certifying a building's environmental performance the method that promotes more sustainable construction. The system evaluates 10 categories.

Airzone optimizes the operation of HVAC systems and can improve the score in the following categories:



Management



Pollution



Energy



Innovation



Health and Wellbeing



LEED



System that assesses environmental performance in building construction or renovation to improve the use of energy in terms of materials and water.

It evaluates buildings based on 8 criteria, and Airzone can chalk up extra points in the following categories:

-)

Energy and Atmosphere

Indoor Environmental Quality

Innovation in Design

Eu.bac



Airzone is certified by the European Building Automation and Controls (EU.BAC) association of professionals for the control and regulation of the building trade.

Airzone is the first Spanish manufacturer in its sector to obtain this certification, with an A rating, which endorses us as a European benchmark in energy saving and in the optimal balance of automation controls and systems in new and existing buildings.





Control Solutions

One product for each installation

Our systems provide the most efficient control solution for each installation. They are compatible with the different technologies available on the market.

	Flexa 3.0	Easyzone IAQ	Acuazone	RadianT365	Aidoo
HVAC					
DIRECT EXPANSION SYSTEMS					
Multi-zone AC units	Yes	Yes	Yes	-	-
Single-zone AC units	-	-	Yes	-	Yes
VRF SYSTEMS					
Multi-zone AC units	Yes	Yes	Yes	-	-
Single-zone AC units	-	-	Yes	-	Yes
HYDRONIC SYSTEMS					
Multi-zone AC units	Yes	Yes	Yes	-	-
Single-zone AC units	-	-	Yes	-	Yes
DHW	Yes	Yes	Yes	Yes	Yes
RADIANT HEATING SYSTEMS					
Underfloor heating	Yes	Yes	Yes	Yes	-
Underfloor cooling	-	-	Yes	Yes	-
Radiators	Yes	Yes	Yes	Yes	-
AIR QUALITY					
Multi-zone AC units	-	Yes	-	-	-
Single-zone AC units	-	-	-	-	-
VENTILATION					
Heat recovery	Yes	Yes	Yes	-	-
Humidifier/Dehumidifier	Yes	Yes	Yes	Yes	-
DIFFUSION					
Motorized diffusion	Yes	Yes	Yes	-	-

Airzone Control Interfaces

The Airzone interfaces have been designed to offer **the user the best control experience** regardless of the device used.



Airzone Blueface Zero



Airzone Think



Airzone Lite



Airzone Cloud

Features	Airzone Blueface Zero	Airzone Think	Airzone Lite	Airzone Cloud
Zone name editing	-	-	-	Yes
Time scheduling for all zones	-	-	-	Yes
Operating mode ¹	Yes	Yes	-	Yes
Zone setpoint temperature	Yes	Yes	-	Yes
Read room temperature and relative humidity	Yes	Yes	Yes	Yes
Eco-Adapt function ¹	Yes	-	-	Yes
Access to weather information ²	-	-	-	Yes
Zone On/Off control	Yes	Yes	Yes	Yes
Remote access to the other zones in the system	Yes	Yes	-	Yes
Indoor Air Quality ³	Yes	Yes	-	Yes

 $^{^{\}mathrm{1}}$ Functionality available only if the thermostat is configured as the main thermostat.

² Functionality available when the Airzone Cloud Webserver is connected to the installation.

³ Only available in systems with purification technology.



Designed and manufactured in Europe

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