DUCTZONE
HVAC SOFTWARE

US210000X
OFFICES - VAF 3 ZONES

AIRZONE

Parque Tecnológico Andalucía · Calle Marie Curie 21 · 29590 Málaga

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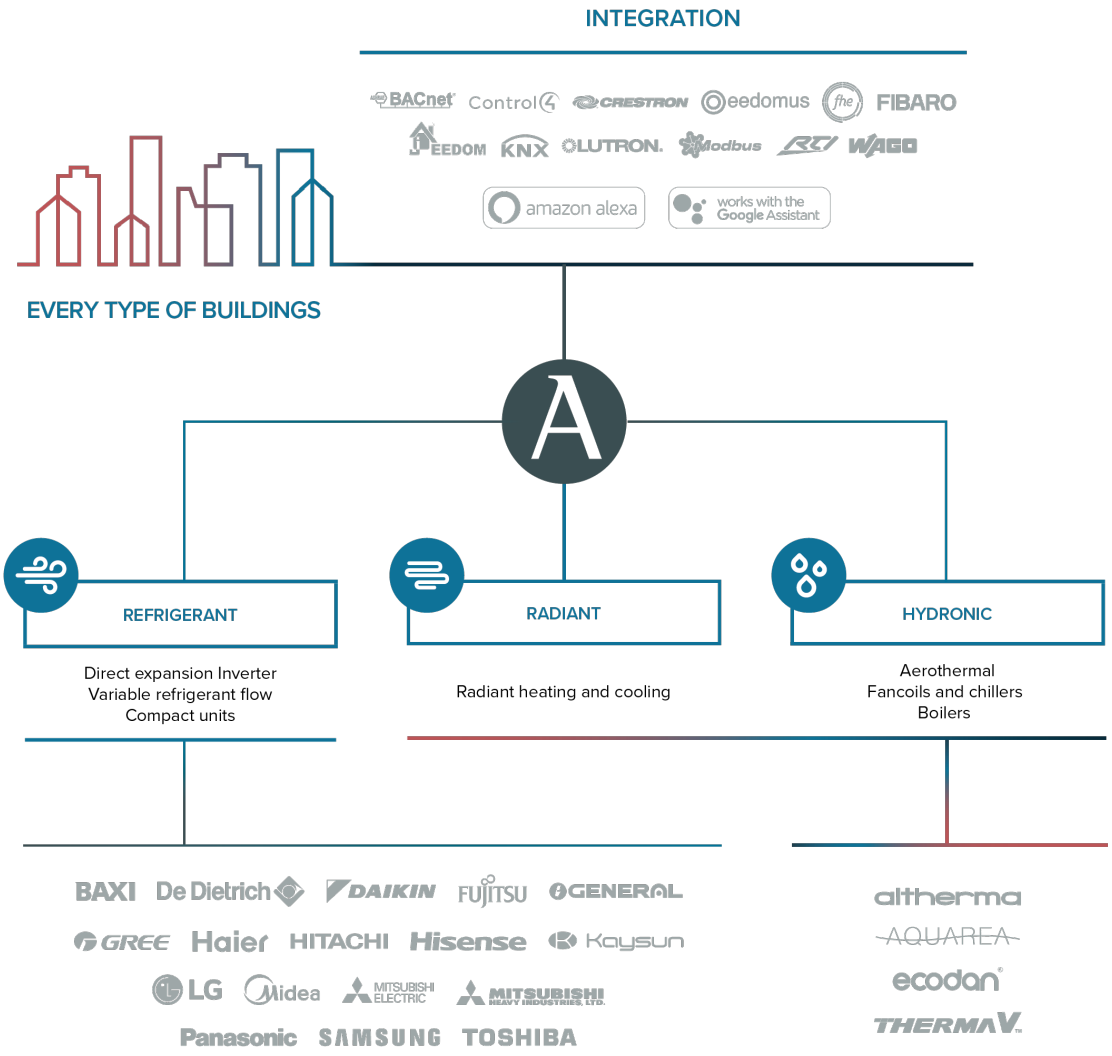
Airzone, Smart Climate Control

Airzone is the world leader in HVAC climate control systems. With over 20 years of experience, it is one of the most prestigious companies in the HVAC industry. Airzone Solutions allow the user to control different types of technologies with the same interface.

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 in anything you need.

	VAF
Single split	✓
Multi-split	✓
VRF (heat pump)	✓
VRF (heat recovery)	✓

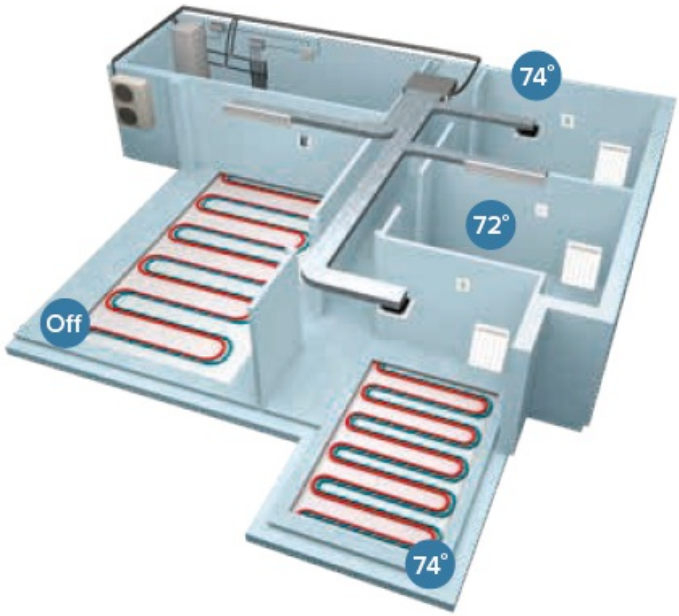
COMPATIBLE TECHNOLOGIES WITH THE AIRZONE SOLUTIONS

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 energy use, thanks to the dedicated Airzone Communication Gateways.
- Providing the highest thermal comfort range to every zone.

The Airzone 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 Airzone system, as well as efficiency algorithms.

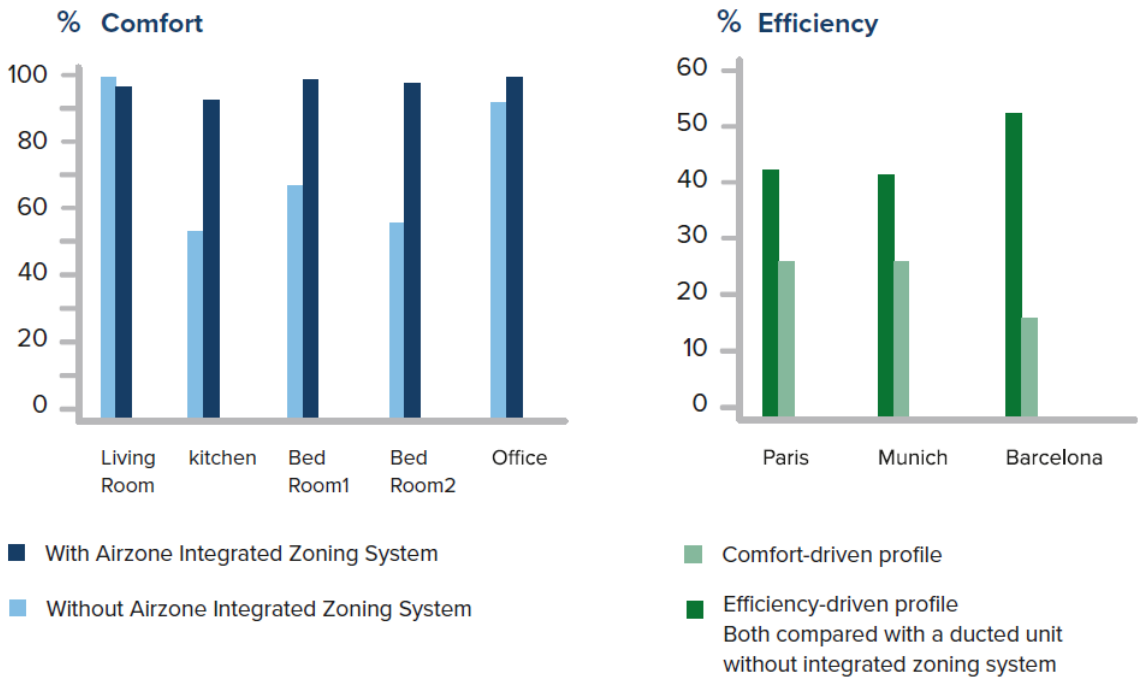
It allows to individually control the temperature of every zone conditioned by the same ducted indoor unit. This occurs thanks to the communications that exist between the sensors installed on each zone and the motorized elements installed on ducts. Therefore, the system covers only the thermal load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

These facts produce an **increase of both comfort** number of hours and **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 manufacture all our products. They are respectful with the environment and comply with all the international directives in terms of energy efficiency.

- US FCC certificate
- Intertek 4008862 UL Listed
- ISO Certificates: 9001 and 14001

For further information about US FCC certificate, please visit https://fccid.io/SVS

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

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 scoring 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

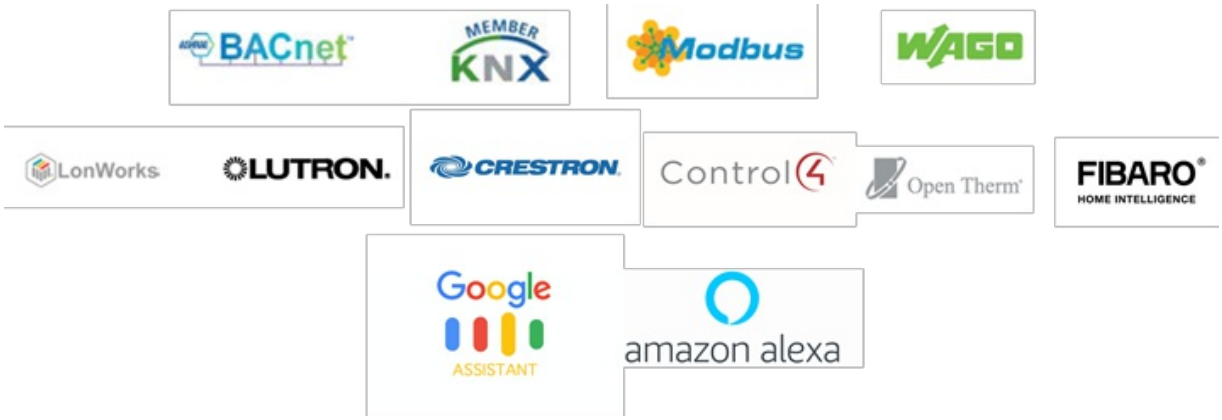
Our Communication with building management control systems is carried out using the **Modbus RTU native protocol**.

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**.



What is VAF System?

VAF is the ideal control system for HVAC since it combines the control of multi-zone and individual fancoils with the control of radiant heating. Moreover, it can also integrate different technologies such as chilled water and direct expansion in the same interface.

The performance of the VAF system lies on the combination of different types of Zone Modules: individual indoor unit control, radiant element control and motorized dampers for air supply. All these modules are connected to the Main Control Board through the Communication Bus. Other elements such as Airzone Communication Gateways with zoned indoor units or the Airzone Cloud Webserver connect directly with the Main Control Board.

System Features

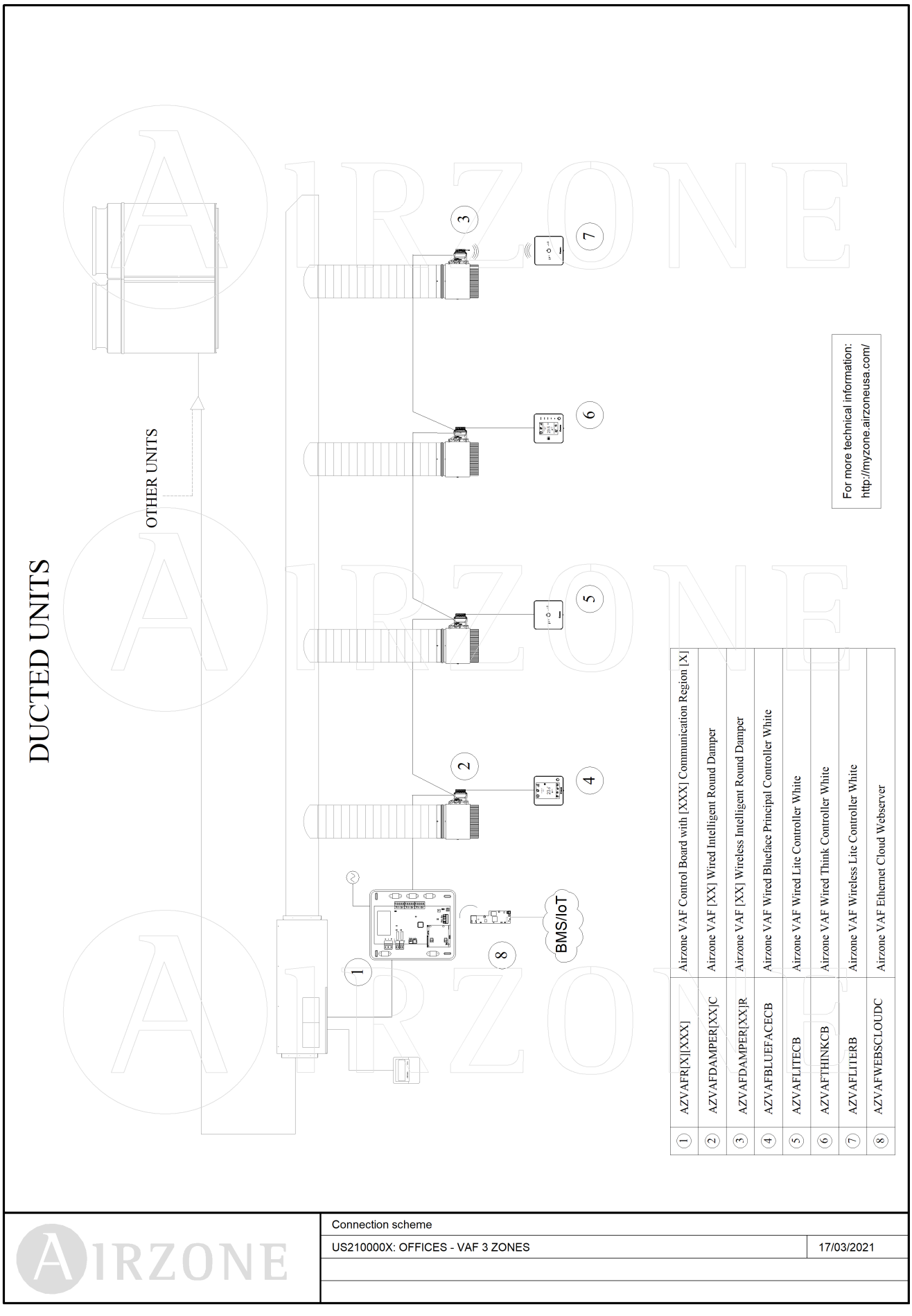
- ✓ Individual control up to 10 zones.
- ✓ In the same zone it is possible to control both air conditioning and radiant heating.
- ✓ Integrated control of the AC units thanks to the dedicated Communication Gateways.
- ✓ Communication Gateways of 3 speeds and 0-10 V for chilled water ducted indoor units available.
- ✓ Combination of ducted and ductless units.
- ✓ Flow distribution with weight adjustment through the Q-Adapt algorithm.
- ✓ Adjustable Air.
- ✓ All zone modules can be connected to wired or wireless thermostats.
- ✓ Notifications of the AC unit errors on Airzone thermostats.
- ✓ Integration into Modbus and/or BACnet Building Management Systems.

Features by Zone

- ✓ Selection of the operation mode.
- ✓ Automatic power off by window contact.
- ✓ Delayed power off by occupancy detection.
- ✓ Input for remote temperature sensing.

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

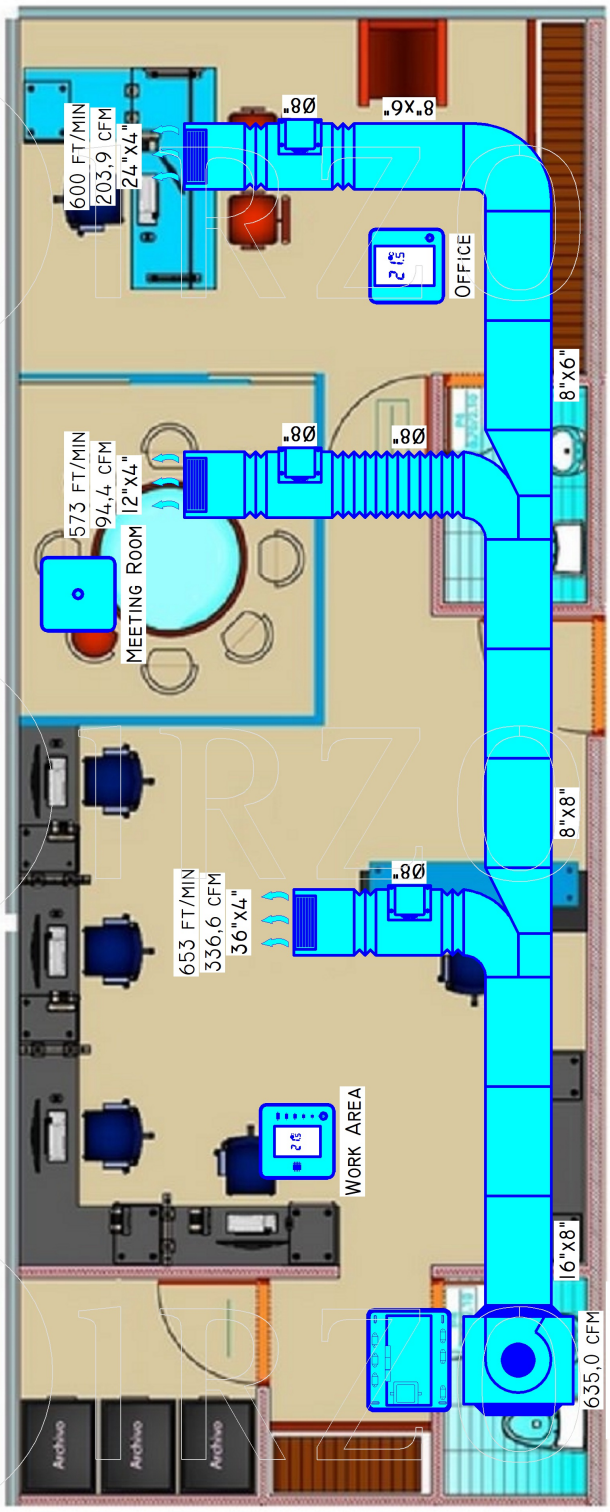
Connection scheme



①	AZVAFR[X][XXX]	Airzone VAF Control Board with [XXX] Communication Region [X]
②	AZVAFDAMPER[XX]C	Airzone VAF [XX] Wired Intelligent Round Damper
③	AZVAFDAMPER[XX]R	Airzone VAF [XX] Wireless Intelligent Round Damper
④	AZVAFBLUEFACECB	Airzone VAF Wired Blueface Principal Controller White
⑤	AZVAFLITECB	Airzone VAF Wired Lite Controller White
⑥	AZVAFTHINKCB	Airzone VAF Wired Think Controller White
⑦	AZVAFLITeRB	Airzone VAF Wireless Lite Controller White
⑧	AZVAFWEBSCLOUDC	Airzone VAF Ethernet Cloud Webserver

AIRZONE	Connection scheme	
	US210000X: OFFICES - VAF 3 ZONES	17/03/2021

Installation scheme



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

AIRZONE	Installation scheme	
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Duct calculation details

EQUIPMENT FEATURES						
Reference	Technology	Air flow (cfm)	Total pressure (inH2O)	Static pressure (inH2O)	Gateway	Bypass damper
Fan	Direct expansion DX	635,0	0,128	0,126	AZVAFR2DAI	-

ZONES					
Reference	Surface area (ft²)	Height (ft)	Air flow (cfm) Supply/Return	Diffusion	Control
Meeting Room	87,7	8,2	94,4/0,0	B02	Term. Meeting Room: LITE THERMOSTAT
Office	189,3	8,2	203,9/0,0	B03	Term. Office: BLUEFACE THERMOSTAT
Work Area	312,6	8,2	336,6/0,0	B01	Term. Work Area: THINK THERMOSTAT
Total	589,6	-	635,0/0,0	-	-

RESULTS IN DUCTS											
Section	Dimensions (Horz.xVert.) or Ø (in)	Area (ft²)	eqv. Ø (in)	Leng. (ft)	eqvL. (ft)	Air flow (cfm)	Veloc. (ft/min)	ΔPs (inH2O)	ΔPf (inH2O)	ΔPt (inH2O)	Pt. Final (inH2O)
C01	16"x8"	0,8607	12	3,28	1,63	635,0	738	0,001	0,003	0,004	0,004
C02	16"x8"	0,8607	12	3,28	0,00	635,0	738	0,000	0,003	0,003	0,007
C03	16"x8"	0,8607	12	3,28	0,00	635,0	738	0,000	0,003	0,003	0,010
C04	Ø8"	0,3382	8	3,28	18,62	336,6	996	0,074	0,013	0,087	0,097
C05	8"x8"	0,4303	9	3,28	1,84	298,4	693	0,002	0,004	0,006	0,015
C06	8"x8"	0,4303	9	3,28	0,00	298,4	693	0,000	0,004	0,004	0,019
C07	8"x8"	0,4303	9	3,28	0,00	298,4	693	0,000	0,004	0,004	0,023
C08	Ø8"	0,3382	8	3,28	77,61	94,4	279	0,031	0,001	0,032	0,055
C09	Ø8"	0,3382	8	3,28	0,00	94,4	279	0,000	0,001	0,001	0,056
C10	8"x6"	0,3229	7	3,28	1,62	203,9	631	0,002	0,004	0,005	0,028
C11	8"x6"	0,3229	7	3,28	0,00	203,9	631	0,000	0,004	0,004	0,032
C12	8"x6"	0,3229	7	3,28	5,94	203,9	631	0,007	0,004	0,010	0,042
C13	Ø8"	0,3382	8	3,28	0,00	203,9	603	0,000	0,005	0,005	0,047

RESULTS AT VENTS									
Ref.	Dimensions (Horz.xVert.) or Ø (in)	Rat. Q (cfm)	S. level (dBA)	Out. s. (ft²)	Out. v. (ft/min)	ΔPs (inH2O)	ΔPb (inH2O)	Throw (ft)	ΔPv (inH2O)
B01	36"x4"	336,6	20	0,5156	653	0,010	0,020	23,13	0,128
B02	12"x4"	94,4	< 15	0,1647	573	0,000	0,018	11,51	0,074
B03	24"x4"	203,9	17	0,3401	600	0,003	0,018	17,27	0,068

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:	US210000X
Description:	OFFICES - VAF 3 ZONES
Date:	17/03/2021

Item	Description	Units
AZVAFR2DAI	CONTROL BOARD WITH DAIKIN COMMUNICATION REGION 2	1
AZVAFBLUEFACECB	BLUEFACE PRINCIPAL CONTROLLER	1
AZVAFTHINKCB	WIRED THINK CONTROLLER	1
AZVAFLITERB	WIRELESS LITE CONTROLLER	1
AZVAFDAMPER08C	8" WIRED INTELLIGENT ROUND DAMPER	2
AZVAFDAMPER08R	8" WIRELESS INTELLIGENT ROUND DAMPER	1

Other materials:

ft²	Rectangular / Insulation panels duct (plus 10% offcuts)	162,07
ft	Circular / Flexible Ø8" duct	14,75

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