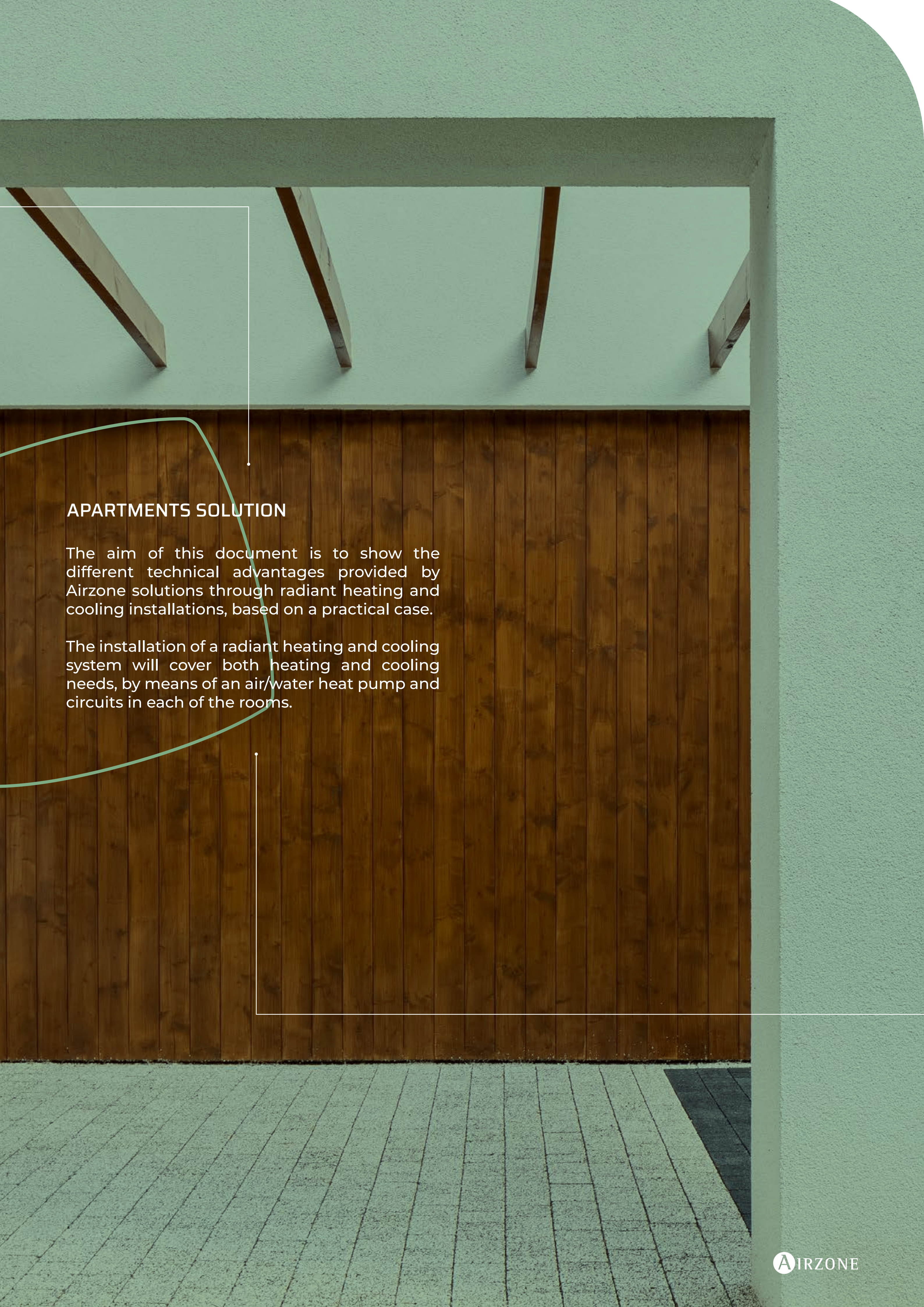
Apartments Solution



APARTMENTS SOLUTION

The aim of this document is to show the different technical advantages provided by Airzone solutions through radiant heating and cooling installations, based on a practical case.

The installation of a radiant heating and cooling system will cover both heating and cooling needs, by means of an air/water heat pump and circuits in each of the rooms.

Apartments Solution

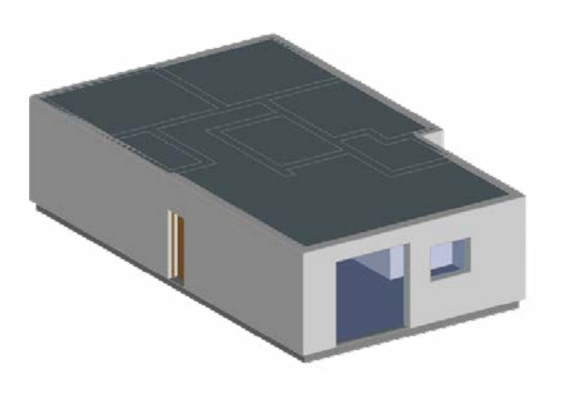
Solution without integrating Airzone

The Airzone Projects Department has studied an apartment building located on a housing development with the following characteristics.

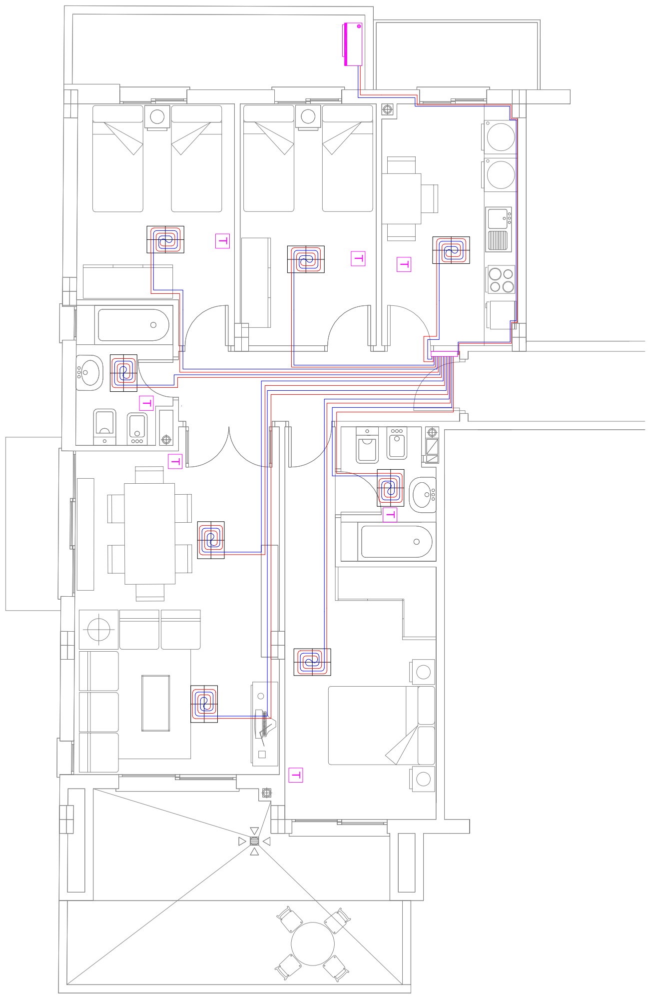
Apartments Amsterdam, the Netherlands

Specifications:

- **Location:** Amsterdam, the Netherlands
- **Total surface area:** 73 m2
- **Use:** Apartment



The energy study of the apartments was carried out using a 3D model, making it possible to calculate the heat losses, the thermal demand, the level of comfort, and so forth, through simulations.

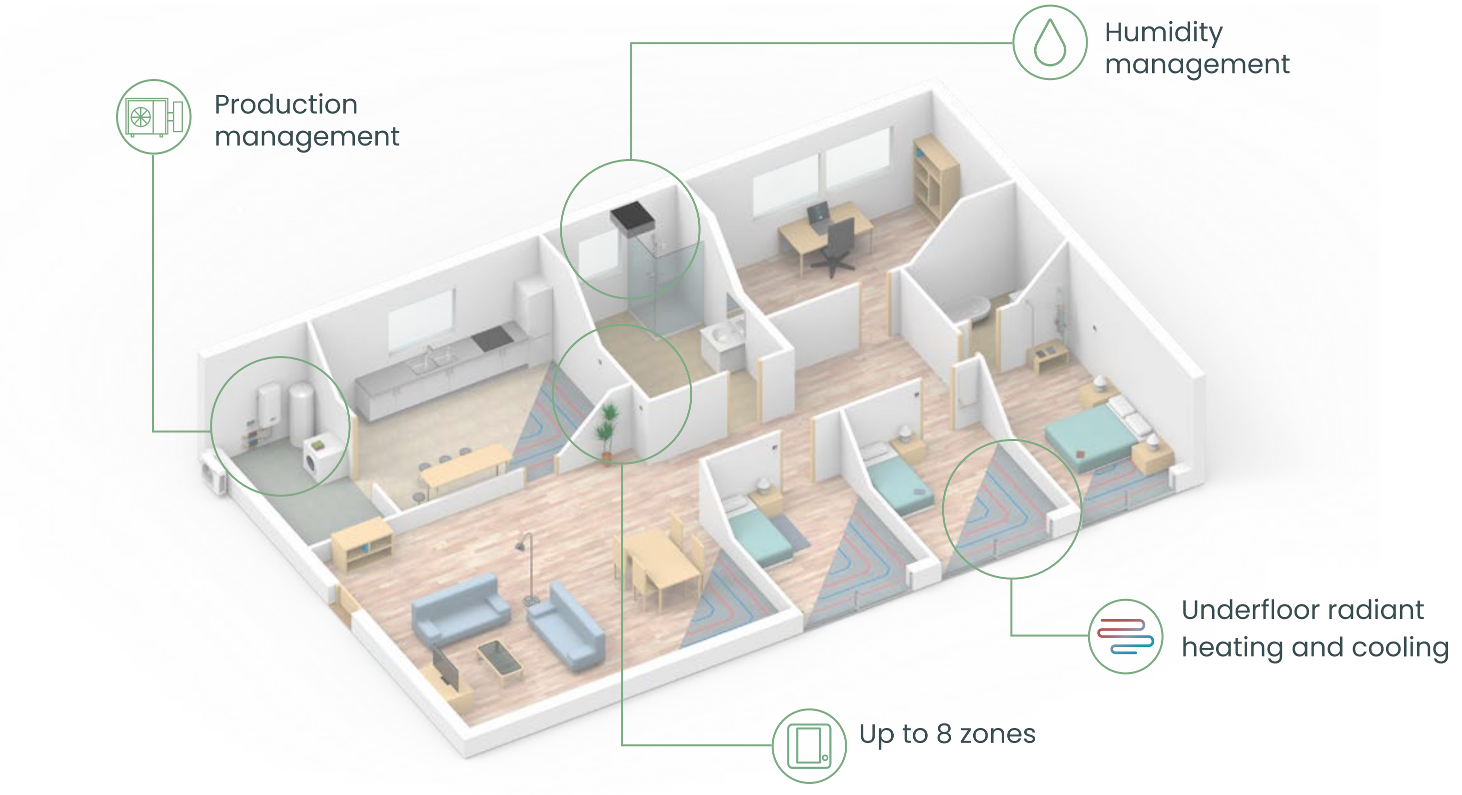


Apartments Solution

Solution integrating Airzone

The RadianT365 solution is **a zoned control system for underfloor radiant heating and cooling** that optimizes the thermal inertia of the underfloor heating to guarantee comfort and ensure efficient management of the installation. It also incorporates protection functions to extend the life of the installation and reduce maintenance actions.

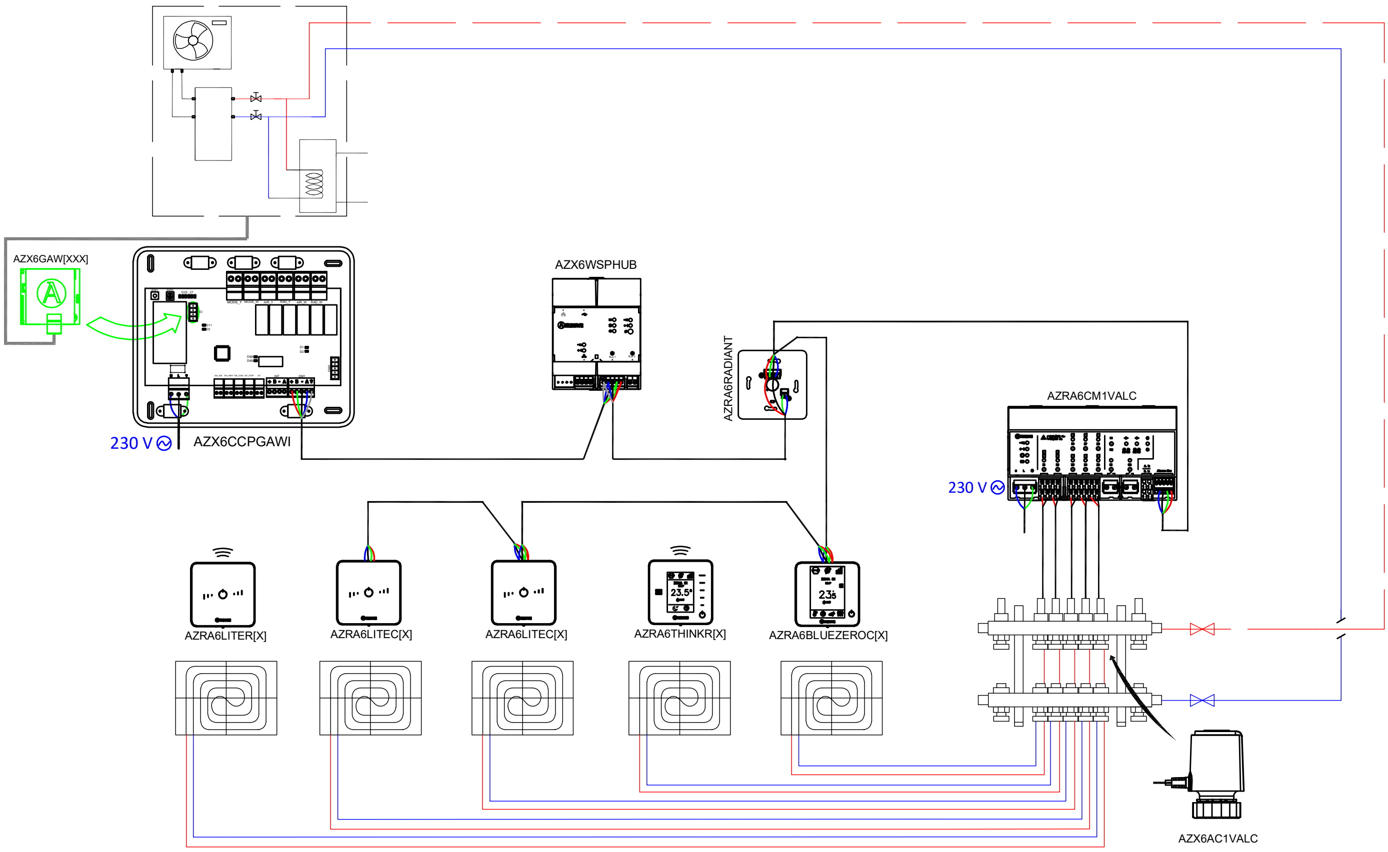
The control value of Airzone is guaranteed thanks to our eu.bac certification with a CA value (Time Variant) of 0.5 K for underfloor heating systems.



System Characteristics

- Control of heating/cooling operation mode
- Control of zoned room temperature
- Measurement of the humidity level to prevent condensation by monitoring the dew point, and option to control a dehumidifier
- Airzone thermostatic heads supplied with 230 Vac for managing the vents of each zone
- Thermal inertia taken into account to prevent overheating of areas and stabilize the temperature
- Anti-limescale and frost protection functions to prevent problems associated with freezing of the pipes
- Limitation of minimum and maximum temperatures for effective control with the Eco-Adapt function
- Production management by means of communication gateways and action on the recirculation pumps

Radiant365 System



Apartments Solution

Justification for the RadianT365 control solution

The installation of an Airzone system significantly benefits buildings, whether technically, economically or in terms of comfort. **From a technical and control point of view,** the RadianT365 system brings significant added value to the HVAC installation.

Here are some of the advantages of a zoning system:

- Thermal comfort and independent temperatures with one zoned thermostat
- Stable temperature thanks to thermal inertia control
- Cooling floor: condensation control
- Possibility of combining the system with electric heating (towel dryer)
- Efficient control and production management
- Recirculation pump control
- Dehumidifier control
- Prevention of overheating of the building
- Time schedules
- Remote control
- Voice command
- Home automation integration
- eu.bac certification with a CA value (Time Variant) of 0.5 K for underfloor heating systems

Many of these benefits come from the algorithm for controlling the thermal inertia of the underfloor heating.

From an economic point of view, it makes it possible to reduce the cost of primary energy and optimize the energy of the installation. It has the following advantages:

- Savings on operating and installation costs in terms of energy efficiency
- Savings on maintenance actions

List of equipment

RADIANT MAIN CONTROL BOARD - AZRA6RADIANT

- Control and management of the status of the thermostats, up to 8 zones. Communication with the integral control units of the installation.
- Communication with other external control systems via the integration bus.
- System certified by the eu.bac European standard.

WIRED SOLENOID VALVE CONTROL MODULE - AZRA6CM1VALC

- Management of up to 8 zones and 20 Airzone wired valve actuators. Maximum number of valves allowed: 2 for each outlet (20 valves in total). Communication with the integral control units of the installation.
- It has two configurable relay outputs for controlling cold/hot air stages and demand from 12 A to 230 VCA.
- It has an analog input for measuring the temperature of the production water, using a temperature probe.
- Forced operation button.

WIRED THERMOSTATIC HEAD 110/230V - AZX6AC1VALC

- Operation as normally closed.
- Visual indication of the opening/closing of the valve by the movement of its central red piston.

Apartments Solution

MAIN CONTROL FOR AIRZONE HYDRAULIC PRODUCTION - AZX6CCPGAWI

- Control up to 32 zones.
- 7 control relays for cooling/heating mode, cold/hot air demand, cold/hot radiant element.
- Semi-forced mode, boiler sensor and DHW production inputs.
- Configuration and control of zone settings (room and set-point temp., operating mode, etc.) and systems via cloud platform.
- Setting of time schedules for temperature and operating mode.
- Updating of firmware and remote management of errors.
- Multi-user and multi-session.

AIRZONE AIR-WATER HEAT PUMP GATEWAY - AZX6GAWDA2

- Two-way communication of basic control settings (on/off, set-point temperature, operating mode and fan speed) based on demand from the Airzone control system.
- Reading of errors from the controlled unit.
- Imposition of the production water temperature according to demand.

BLUEFACE WIRED COLOR THERMOSTAT - AZRA6BLUEZEROC(B/W)

Color graphic interface with capacitive screen and steel and glass finish that enables the control of a zone in an Airzone system. Powered through the main control board of the system. Available in white and black.

- 6 languages available (French, Spanish, English, Italian, German and Portuguese).
- Control of temperature and operating mode (master thermostat).
- Display of room temperature and relative humidity of the zone.
- Eco-Adapt and Sleep Function.
- Time schedules for temperature and operating mode.
- Remote access to other zones in the system.
- Unit climate and consumption information (optional).

WIRED THERMOSTAT / RADIO LITE 8 - AZRA6LITE[C/R]

Thermostat with capacitive buttons and steel and glass finish, for controlling the temperature of a zone in an Airzone system. Communications via cable or radio. Powered through the main control board or a CR2450 button cell battery. Available in white and black.

- On/Off of the zone.
- Modification of the set-point temperature already assigned by increments of 1°C, up to a maximum of ±3°C.
- Reading of room temperature and relative humidity.

AIRZONE CLOUD DUAL WEBSERVER - AZX6WSPHUB

- Control of up to 32 systems.
- Configuration and control of zone settings (room and set-point temp., operating mode, etc.) and systems via cloud platform.
- Router access via App by Bluetooth connection.
- Multi-user and multi-session.
- Port for integration via the Modbus protocol.
- Local API integration.
- Remote firmware update of Webserver and connected systems.
- Remote management and solution of system errors.

Airzone bus cable (2 x 0.5 + 2 x 0.22) – 100 m - AZX6CABLEBUS100