

## iQ ZONE™ SYSTEM



### SAFETY AND WARNING NOTES

Before operation, ensure you have read and understood all the information and instructions in this leaflet. For more detail, refer to the iQ Zone Technical Data Sheet.

**ATTENTION:** Disconnect the system from the power supply before undertaking any installation, maintenance, modification or removal.

As a minimum, the following conditions must be met before operation:

- All wires must be properly secured in terminal blocks.
- Unit and power supply cables must be properly fused.
- All output lines must be correctly rated and connected with the correct polarity.
- No modification should be made while the unit is in operation.
- Do not introduce any object into the unit.
- Keep away from fire and water.

## COMPONENTS

The Zoning System is composed of four types of electronic components and a number of mechanical components including dampers and a bypass, depending on the installation.

The electronic components are:

- 1) Airzone Controller (1 per installation)
- 2) Zone Modules (1 per damper)
- 3) Touch Zone Thermostats (1 per zone)
- 4) Power Supply (1 per installation)

Optionally, the system may be fitted with remote temperature sensors.

## ZONING SYSTEM OPERATION

Some important characteristics of the iQ Zoning System are:

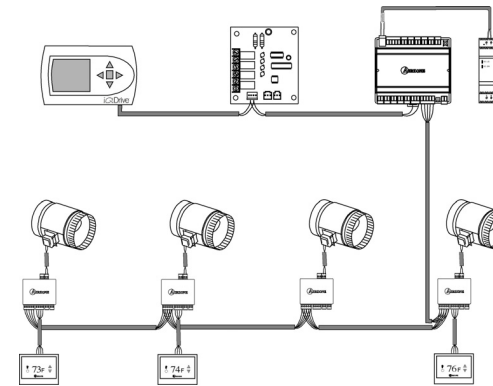
- 1) It operates with 12 VDC.
- 2) It requires a single 4 conductor, stranded and shielded cable to all system elements.
- 3) The dampers are power open/power close.
- 4) The way the Airzone Controller communicates with the Zone Modules, is based on a proprietary communication protocol.
- 5) It communicates with the iQ Controller with only two data wires.

## WIRING INFORMATION

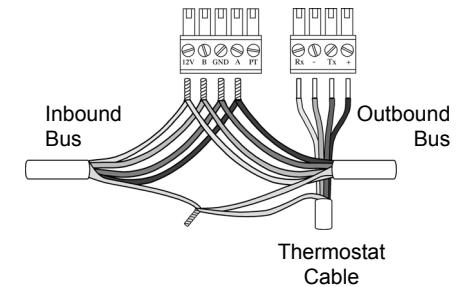
The zoning system wiring is very simple, but great care must be taken during its layout and connection. All wiring must be made with stranded shielded communication cable, AWG20, Belden type 6402FE, CAT5e, or equivalent. The cable should NOT be stapled in place. If it is required to have the cable fixed to any part of the building structure, clamps with cable protection should be used. DO NOT crush or kink the cable.

**IMPORTANT:** Failure to follow these recommendations may result in an unreliable installation that will seriously affect the operation of the iQ Zoning system.

See the typical wiring layout and Daisy chain connection below:

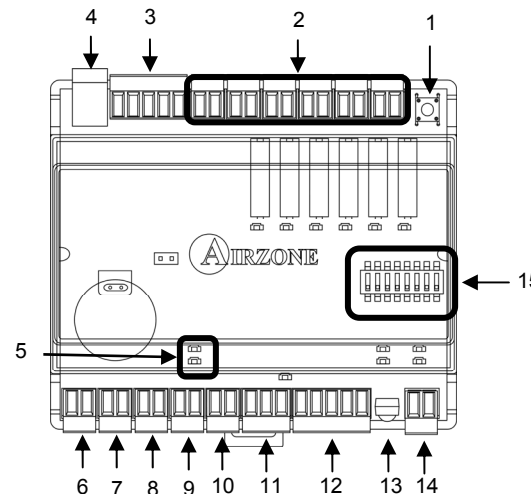


Connection Diagram



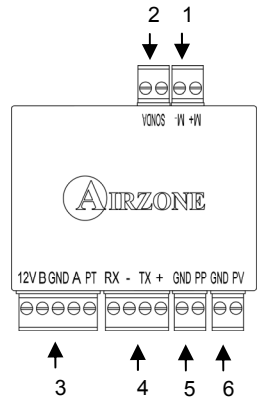
Connections detail

## AIRZONE CONTROLLER



| N° | Description                    | N° | Description                        |
|----|--------------------------------|----|------------------------------------|
| 1  | Set configuration push button  | 9  | Fire Alarm Contact                 |
| 2  | Not used                       | 10 | Not used                           |
| 3  | Bypass Connector               | 11 | iQ bus connection                  |
| 4  | 12VDC Input                    | 12 | Local zoning system bus Connection |
| 5  | J2 Jumper                      | 13 | Not used                           |
| 6  | Supply Temperature Probe input | 14 | Not used                           |
| 7  | Not used                       | 15 | Switches for system configuration  |
| 8  | Not used                       |    |                                    |

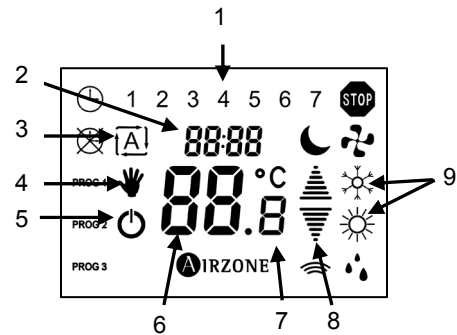
ZONE MODULE



| N° | Description                     |
|----|---------------------------------|
| 1  | Motor Control Output            |
| 2  | Remote Temperature Sensor Input |
| 3  | Zoning Bus Connector            |
| 4  | Thermostat Connector            |
| 5  | Occupancy Detector Input        |
| 6  | Door/Window Contact Input       |

THERMOSTAT DESCRIPTION

The Touch Thermostat is the user interface for the installer to configure the Zone Module, and also for the user to change the temperature settings for the zone and configure time scheduled setpoints.

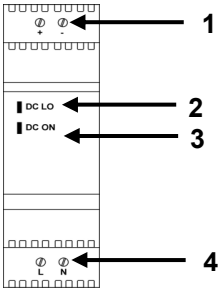


| N° | Description          |
|----|----------------------|
| 1  | Days of the week     |
| 2  | Hour display (24 hr) |
| 3  | Automatic Mode       |
| 4  | Manual Mode          |
| 5  | Zone ON/OFF icon     |
| 6  | Temperature display  |
| 7  | Temperature units    |
| 8  | Selection arrows     |
| 9  | System Mode          |

POWER SUPPLY

The universal auto detection AC power supply has been designed to provide the necessary current and voltage to the Airzone zoning system.

| N° | Description                |
|----|----------------------------|
| 1  | Power supply 12 Vdc        |
| 2  | Error indication LED (red) |
| 3  | Operation LED (green)      |
| 4  | Power supply 110 to 240Vac |

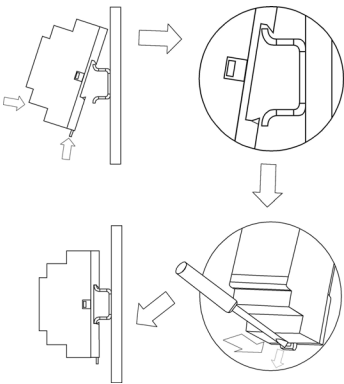


ASSEMBLY INSTRUCTIONS

AIRZONE CONTROLLER

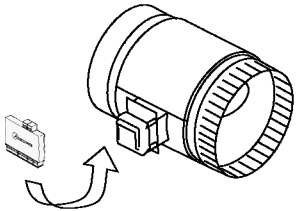
This unit must be assembled on a standard DIN rail– 35mm x 75mm.

Place the upper part of the controller (with the power supply on the upper left) on the upper edge of the rail. Using a screwdriver, gently pull downward on the release tab (at the center of the lower edge), and snap it onto the rail. To disassemble, gently pull downward on the release tab until the controller can be lifted from the DIN rail.



ZONE MODULE

The Zone Module is normally installed mounted to the Damper Motor, as shown in the figure on the right. In this case it should be assembled onto the guides located on the motorized damper motor frame. Disconnect all the connectors, fit the local-module box on the rail in the motor case, and slide until fully seated.

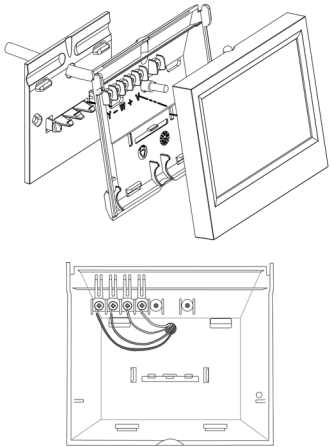


Alternatively, the module may be located remote from the damper motor for convenience or in order to comply with bus wire length limitations.

THERMOSTAT

The thermostat consists of three parts: base, cover, and touch screen. Follow these steps for correct installation:

- 1) Attach the base to the wall with two screws, passing the communication-bus wires through the circular hole provided.
- 2) Separate the cover from the touch screen, using the slot provided in the bottom of the cover (use a coin to do this rather than a sharp object).
- 3) Pass the communication bus wires through the hole in the cover. Mount the cover onto the two top hinges, and snap the tabs of the base into the cover.
- 4) Connect the communication bus wires to the terminals on the cover (see electrical diagram). Insert them under the metal tabs and screw firmly in place.
- 5) Mount the top of the touch screen onto the hinges on the cover. Pull gently down and back until the two parts are joined.



POWER SUPPLY

Ventilation holes must be kept clear for a minimum clearance of 1 inch (25 mm) on all sides. To mount, tilt the top of the unit backwards and clip the top edge of the lock onto the metal rail. Tilt the bottom of the unit backwards and click into place.

Ensure that the cables used are suitable for the load, see technical data below. Ensure that cables are correctly stripped and connected. Ensure correct polarity at the output terminals (red +, black -).

The internal fuse protects the unit and is not user-replaceable. In the event of an internal failure, the unit must be replaced.

## PLANNING THE INSTALLATION

Before beginning the physical installation, it is essential that the installer plan out the entire zoning system. This includes deciding (along with the homeowner) the following:

- the total number of zones to be set up
- which spaces and which ducts are to be included in each zone
- the zone number (1 - 8) for each zone location
- the location for each zone thermostat
- the location for each damper in the ductwork system
- the module number to be assigned to each damper (1 - 8 for master modules which will be connected to zone thermostats, 9 - 32 for subordinate modules)
- the routing path of the communication cable that will interconnect the components (for troubleshooting purposes)

At the end of this document a Module/Damper Location Sheet, Zone Identification Sheet, and Zone and Module Identification Sheet are provided to aid in the planning process.

## CONNECTION

These are the recommended installation steps.

- 1) Have a layout drawing of the house and locate where each thermostat and each damper will be installed. Define the address each module will be assigned and the path the communications wire will follow. Keep that document in your records for future maintenance. Forms are included at the end of this document.
- 2) Install all dampers according to your design and where the customer wants to have controlled airflow. Be sure that the dampers are in good condition (not deformed). Install the dampers according with the local building recommendations. Be sure that these two conditions are followed:
  - a) Mount the damper in such way that the motor is accessible
  - b) Be sure that the damper will be accessible for service.
- 3) If a bypass is required for this installation, install it now.
- 4) Lay out the communication cable and attach the cables to the connectors as indicated in the Training Manual.
- 5) Install the Airzone Controller and the 12VDC power supply on their DIN rails, near the air handler unit or furnace.
- 6) Wire the power supply, connect power on the Airzone Controller, and verify that the power LED is ON
- 7) Disconnect the DC power from the Airzone controller.
- 8) Connect all the modules to the communication bus, thermostat sub bases and damper motor cables, but do not install the thermostat touch screens.
- 9) Power on the Airzone Controller.
- 10) Verify that there is 3 VDC between the contacts + and – of the thermostat bases.
- 11) Install the thermostat touch screens into their bases
- 12) Proceed with the initial configuration for all master modules connected to the thermostats.
- 13) Using a separate Installation thermostat, proceed with the initial configuration of all subordinate zone modules.
- 14) Configure any additional module parameters if required (remote temperature sensor, door contact, motion contact, etc.)
- 15) Save the configuration in the Airzone Controller. (IMPORTANT: follow the procedure explained in the Training Manual).
- 16) Cycle the power OFF then ON in the Airzone Controller.
- 17) All dampers should be open.
- 18) Install the J2 jumper in the Airzone controller
- 19) Install the supply air temperature probe and connect to input 6 of the Airzone Controller. (IMPORTANT: Do not proceed until this step is completed)
- 20) Proceed to install the iQ thermostat as indicated in its manual.
- 21) Connect the iQ communication bus in the Air handler/Furnace unit to the Airzone Controller (please, see both Training Manuals)
- 22) Verify that the iQ thermostat shows under the current mode, “Zone Control”.

| Error | Description                       | Corrective action                                                                                                                                |
|-------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Err 1 | Damper blocked                    | Check that the zone control's connection to the motorized system has not shorted out.<br>Check that the motorized system is not blocked.         |
| Err 2 | No zone control sensor            | Check that the circuit of the sensor connected to the zone control (if any) is not open. Check the configuration of the “ZcPc” parameter.        |
| Err 3 | Zone-control sensor short-circuit | Check that the circuit of the sensor connected to the zone control (if any) has not shorted out. Check the configuration of the “ZcPc” parameter |
| Err 4 | Local communication error         | Check the connections and wiring between the zone control and the thermostat                                                                     |
| Err 5 | Bus communications error          | Check the zone control's connection to the bus.                                                                                                  |
| Err 6 | Damper not connected              | Check the zone control's connection to the motorized system. Check that the motorized system is not free.                                        |

## CONFIGURATION

The Zone Module has a number of parameters that have to be configured. As indicated before, the Zone Module requires the use of a Zone Thermostat to proceed with its configuration.

This is a list of the parameters, its description and ranges of selection.

| Parameter | Description                                             | Value                                                                                                     |
|-----------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| ZCR       | Zone Module Role                                        | MR5 : Master<br>SUB : Subordinate                                                                         |
| ZCID      | Zone Module ID Number (the address of the zone module)  | If Master : 1 to 8 (this defines the zone number)<br>If Subordinate : 9 to 32                             |
| PERC      | Zone weight Percentage                                  | 10% to 100%                                                                                               |
| ECID      | (for subordinate modules only)<br>Zone Number           | Must match one of the zone numbers assigned to a master module (1 - 8)                                    |
| ZCPC      | Zone Module Probe Configuration                         | OFF : default value<br>rPt : measurement by a remote temperature sensor                                   |
| ZCSI      | Zone Module Sleep Input (motion detector)               | OFF : default value<br>nD : activates when closing the circuit<br>nC : activates when opening the circuit |
| ZCRI      | Zone Module Remote Input (door or window contact)       | OFF : default value<br>nD : activates when closing the circuit<br>nC : activates when opening the circuit |
| Sbdt      | Stand By Display Temperature                            | Rt : ambient temperature<br>St : set point temperature                                                    |
| OFSt      | Offset (adjust the zone temperature reading)            | -5°F to +5°F (-3 to +3°C)                                                                                 |
| ZCFv      | Zone Module Firmware Version                            | Current firmware version (Read Only)                                                                      |
| ZtFv      | Zone Thermostat Firmware Version                        | Current firmware version (Read Only)                                                                      |
| SCFv      | System Controller Firmware Version (Airzone Controller) | Current firmware version (Read Only)                                                                      |

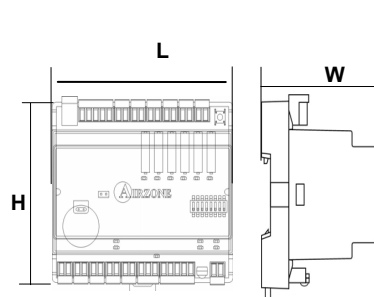
| AIRZONE CONTROLLER                  |                               |                                  |
|-------------------------------------|-------------------------------|----------------------------------|
| SUPPLY                              | Power Supply Voltage          | 12Vdc $\pm$ 10%                  |
|                                     | Current Supply                | I <sub>max</sub> = 1A            |
| PORT OF THE LOCAL COMMUNICATION BUS | Communication Wires           | 2 Wires                          |
|                                     | Supply Wires                  | 2 Wires                          |
|                                     | Bus Voltage Supply            | 12Vdc $\pm$ 10%                  |
| ALARM BRIDGE                        | Input Type                    | Free Voltage                     |
|                                     | Maximum Resistance            | 2K $\Omega$                      |
| REMOTE ON/OFF                       | Input Type                    | Free Voltage                     |
|                                     | Maximum Resistance            | 2K $\Omega$                      |
| TEMPERATURE PROBE                   | Analogue Inputs               | NTC Airzone                      |
| PHYSICAL FEATURES                   | Dimensions (W x L x H) in(mm) | 2.87(73) x 6.2(157.5) x 3.54(90) |

| POWER SUPPLY           |                                |                                  |
|------------------------|--------------------------------|----------------------------------|
| INPUT                  | Rated input voltage            | 100 Vac $\sim$ 240 Vac           |
|                        | AC Voltage Range               | 90 Vac $\sim$ 264 Vac            |
|                        | DC Voltage Range               | 120 $\sim$ 375 Vdc               |
|                        | Frequency                      | 47 $\sim$ 63 Hz                  |
|                        | Rated Input Current (max)      | I <sub>max</sub> = 300 mA        |
| OUTPUT                 | Ripple                         | < 50 Vp-p                        |
|                        | Output short circuit           | Hiccup Mode                      |
|                        | Hold-up Time (230 Vac)         | > 30 ms                          |
| OPERATING TEMPERATURES | Temperature (Storage) °F(°C)   | -13 to 185 (-25 to 85)           |
|                        | Temperature (Operation) °F(°C) | -13 to 160 (-25 to 71)           |
|                        | Humidity                       | 20% $\sim$ 95% RH                |
| PHYSICAL FEATURES      | Dimensions H x W x D in(mm)    | 3.58(91) x 0.71(18) x 2.21(56.2) |

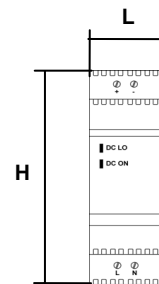
| THERMOSTAT                   |                                                           |                                                    |
|------------------------------|-----------------------------------------------------------|----------------------------------------------------|
| POWER SUPPLY AND CONSUMPTION | Power supply voltage                                      | 3,3Vdc $\pm$ 10%                                   |
|                              | Stand By power consumption                                | 108 mW                                             |
| OPERATING TEMPERATURES       | In storage °F(°C)                                         | -4 to 158 (-20 to 70)                              |
|                              | In operation °F(°C)                                       | 23 to 95 (-5 to 35)                                |
|                              | Reading precision °F(°C)                                  | 0.2 (0.1)                                          |
|                              | Display precision °F(°C)                                  | 1.0 (0.5)                                          |
| CONECTION                    | Communications                                            | 2 wires (W , Y)                                    |
|                              | Power supply                                              | 2 wires (+ , -)                                    |
|                              | Distance from the zone controller ft(m)                   | 14 (4.26)                                          |
|                              | Cable Cut in(mm)                                          | 0.25 (6)                                           |
|                              | Lineal Resistor                                           | 8 $\Omega$ /km                                     |
| PHYSICAL FEATURES            | Dimensions W <sub>1</sub> x W <sub>2</sub> x L x H in(mm) | 0.82(20.9) x 1.08(27.4) x 4.12(104.9) x 3.59(91.2) |

| ZONE MODULE                    |                               |                                 |
|--------------------------------|-------------------------------|---------------------------------|
| LOCAL BUS COMMUNICATIONS PORT  | Power Supply Voltage          | 12Vdc $\pm$ 10%                 |
|                                | Max. Power Current            | I <sub>max</sub> = 300mA        |
|                                | Power Current on StandBy      | I <sub>sb</sub> = 7 mA          |
|                                | Communication wires           | 2 wires                         |
|                                | Power wires                   | 2 wires                         |
| THERMOSTAT COMMUNICATIONS PORT | Power supply                  | 3,3Vdc $\pm$ 10%                |
|                                | Current                       | 10 mA                           |
| ANALOGUE INPUTS                | Temperature Probe Input       | NTC Airzone                     |
| MOTOR POWER SUPPLY             | Power Voltage                 | $\pm$ 12 Vdc                    |
|                                | Voltage at rest               | 0 Vdc                           |
|                                | Maximum Current Input         | 280 mA                          |
| PHYSICAL FEATURES              | Dimensions (W x L x H) in(mm) | 0.67(17) x 2.32(59) x 1.75(4.5) |

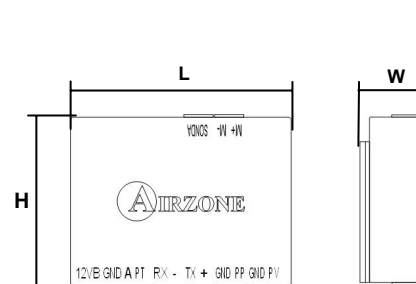
AIRZONE CONTROLLER



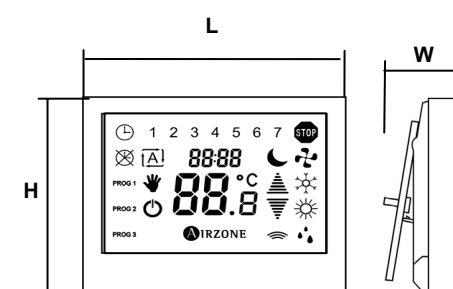
POWER SUPPLY



ZONE MODULE



THERMOSTAT





**iQZone™**  
POWERED BY AIRZONE

### Zone Identification

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