



AcuMen Control System Installation Guide

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Touch-screen 10.4"

Mounting

There are a number of options for mounting the touch-screen, which depend on the space and access available. These options include:

- Keyhole mounting
- Flange attachment
- Frame mounting



Installation

Keyhole Mounting

There are 4 keyhole slots on the back of the unit, which are engaged with screw heads on a "set-back" mounting surface 80mm inside the wall or panel. To allow full engagement of the screw heads with the rear of the touch-screen, the cut-out must allow at least 10mm of vertical movement to drop the unit into its secure position. This method allows mounting/demounting without the need for tools. See detail drawing Fig. 1 on page 2.

Flange Attachment

There are 8 x M3 blind tapped holes in the back metal front flange; these holes are used to secure the unit to a cabinet door or panel where access is made from the rear in order to fit screws.

There are two ways in which this can be achieved, either the unit is held in position in the appropriate sized cut-out and screws are fitted from the rear, or M3 studs are screwed into the flange and pushed through holes in the panel where nuts and washers are fitted from the back. Only 4 of the 8 holes are needed for this operation.

When the touch screen is flange mounted only four screw holes will be required. Screws 5-6mm longer than the thickness of the wall or panel are required for this method of mounting. Use washers to spread the load of the screw head



Frame mounting

Where there isn't enough depth inside a stud partition and other mounting methods are not suitable, a wooden frame can be fabricated that attaches to the back of the flange, which can then be screwed to the wall.

Making a cut-out

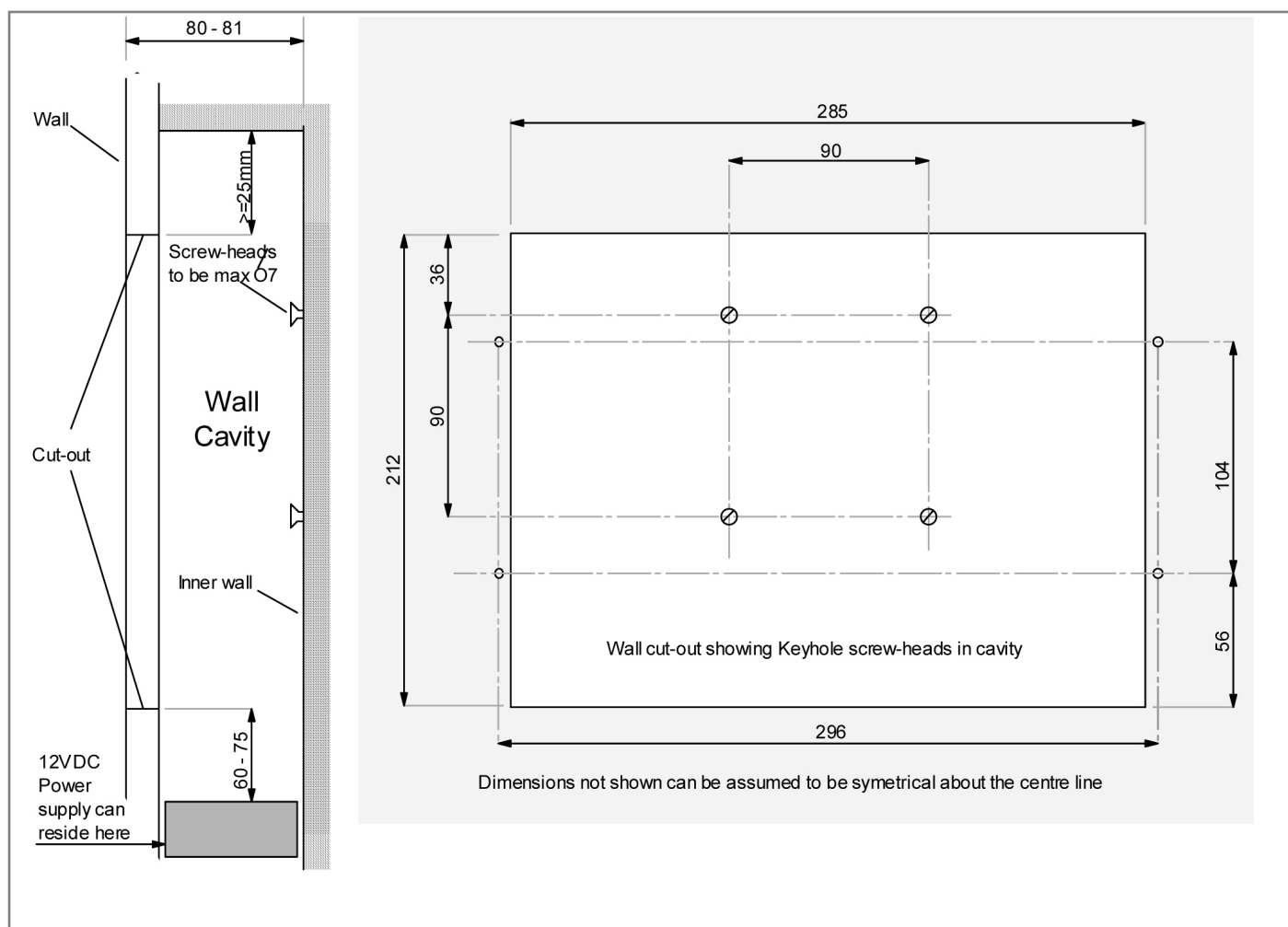
When making a cut-out in a panel or wall it is important that there is clearance around the body of the touch-screen as there are some protruding screw heads. A cut-out of 285 x 212 will be sufficient to allow the unit to fit through.

This allows for the downward drop required to engage the screw heads with the keyhole slots and also for maneuvering into position. See Fig.1 below for details of the cut-out and back face clearance.

Clearance is also required above and below the wall cavity or panel for cable management and positioning of the 12VDC power supply, see Fig.1 below.



Fig. 1





General

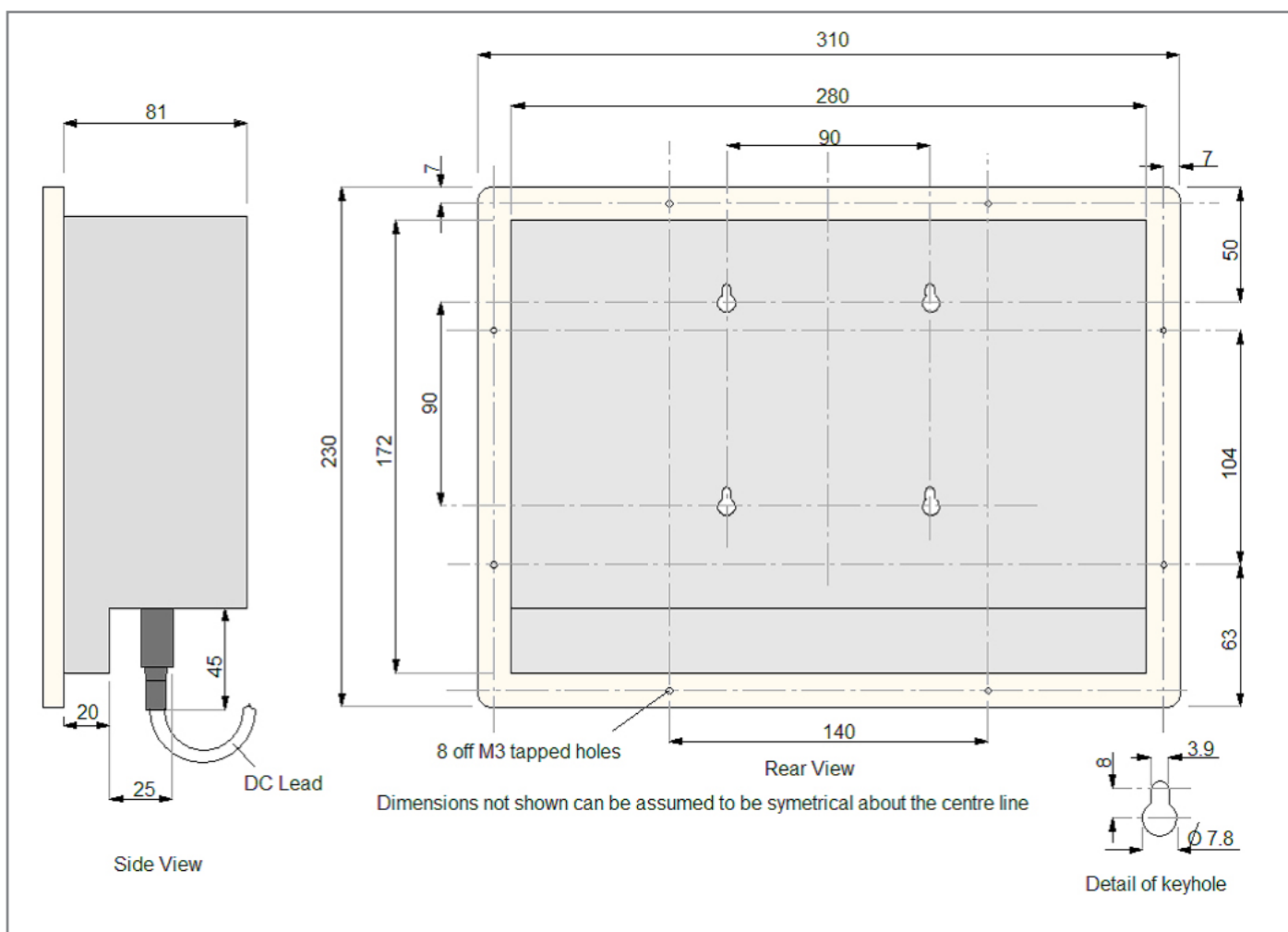
Fig.2 below shows detailed dimensions of the touch-screen itself these may be used to create alternative mountings alluded to above.

The DC and network connectors or associated cables will protrude beyond the lower edge of the metal flange and the final fitting of the unit will need to take this into account by tilting or otherwise maneuvering it into position before engaging the fasteners.

Power and Reset

In view of the limited access to the touch screen once installed, the 12VDC power supply must be fed from a triac output of the AcuMen controller, in order for it to be power cycled by the system.

Fig. 2

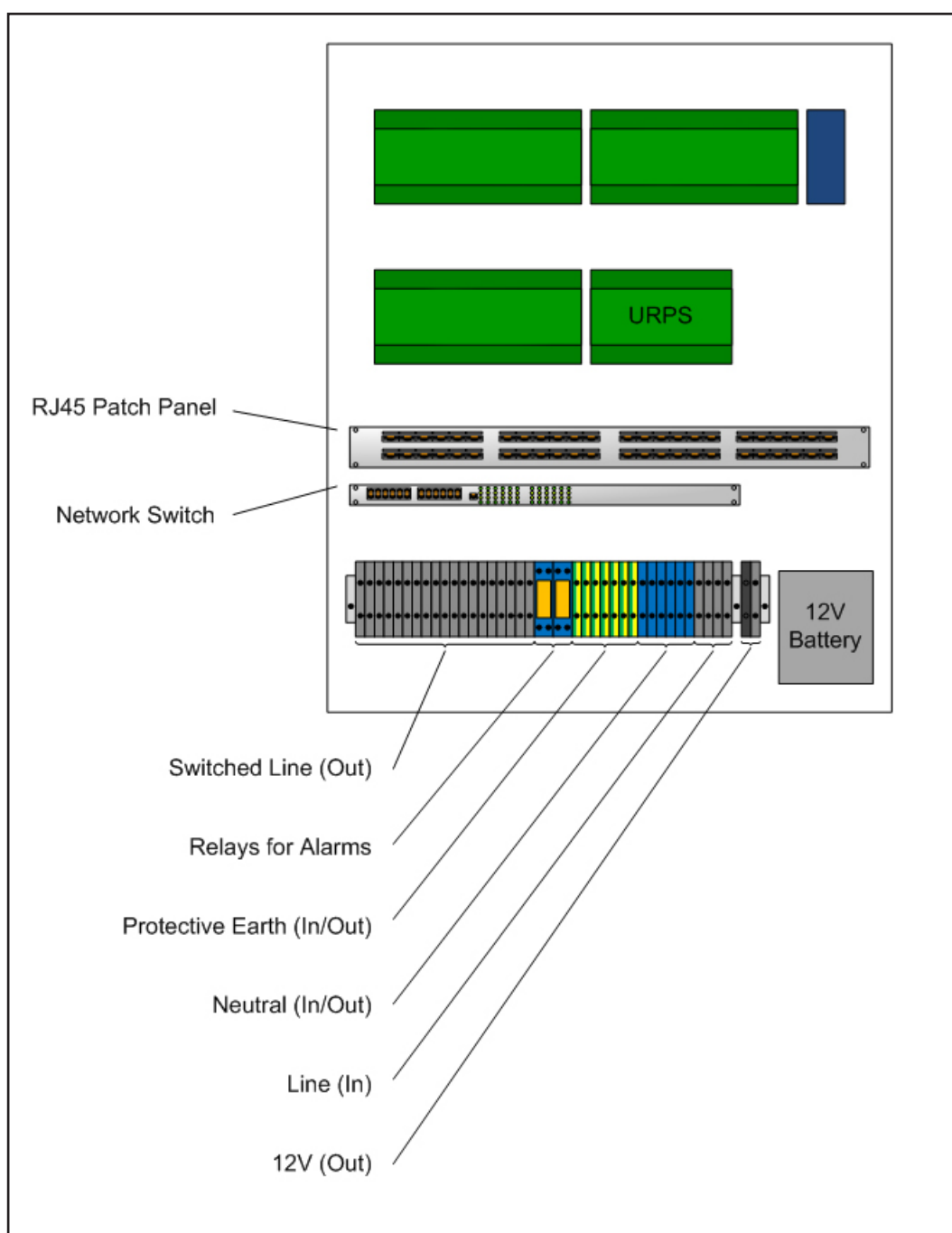


Master Panel for Plant Room

The master panel should be located in the plant room of the building. The Standard dimensions are - 600mm X 500mm X 230mm

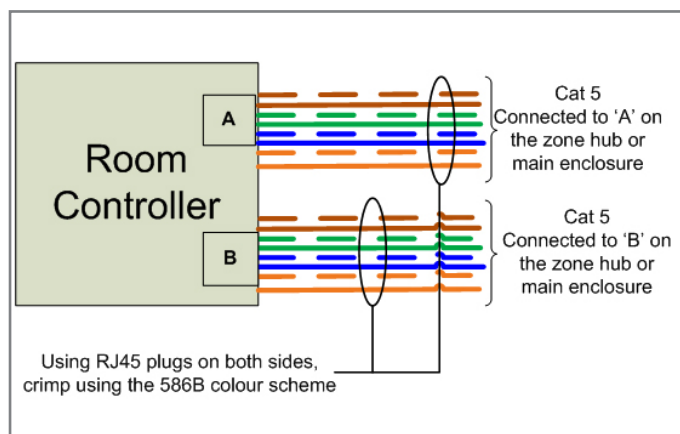
The master panel Din Rail features the following from left to right:

1. Numbered Terminals for mains outputs (pumps, valves etc)
2. Numbered relays to pick up alarm states of Boiler and ASHP
3. INPUT Section (Protective Earth, Neutral, Live) this section does not have numbers, but can easily be identified because the terminals are bussed.
4. Low Voltage outbound (to Touch screen and Zone Hubs)



Room Controller

- The room controller is powered on its own circuit and only control signals are provided from the zone hub or master panel.



8 Channel - AC Driver

The 8 Channel - AC Driver is designed to expand the capabilities of the controller so the low power digital outputs can be extended to control devices such as heating actuators.

Applications

- Heating zone control
- For use where optical-isolation from the controller is necessary
- Boosting output capability of the controller

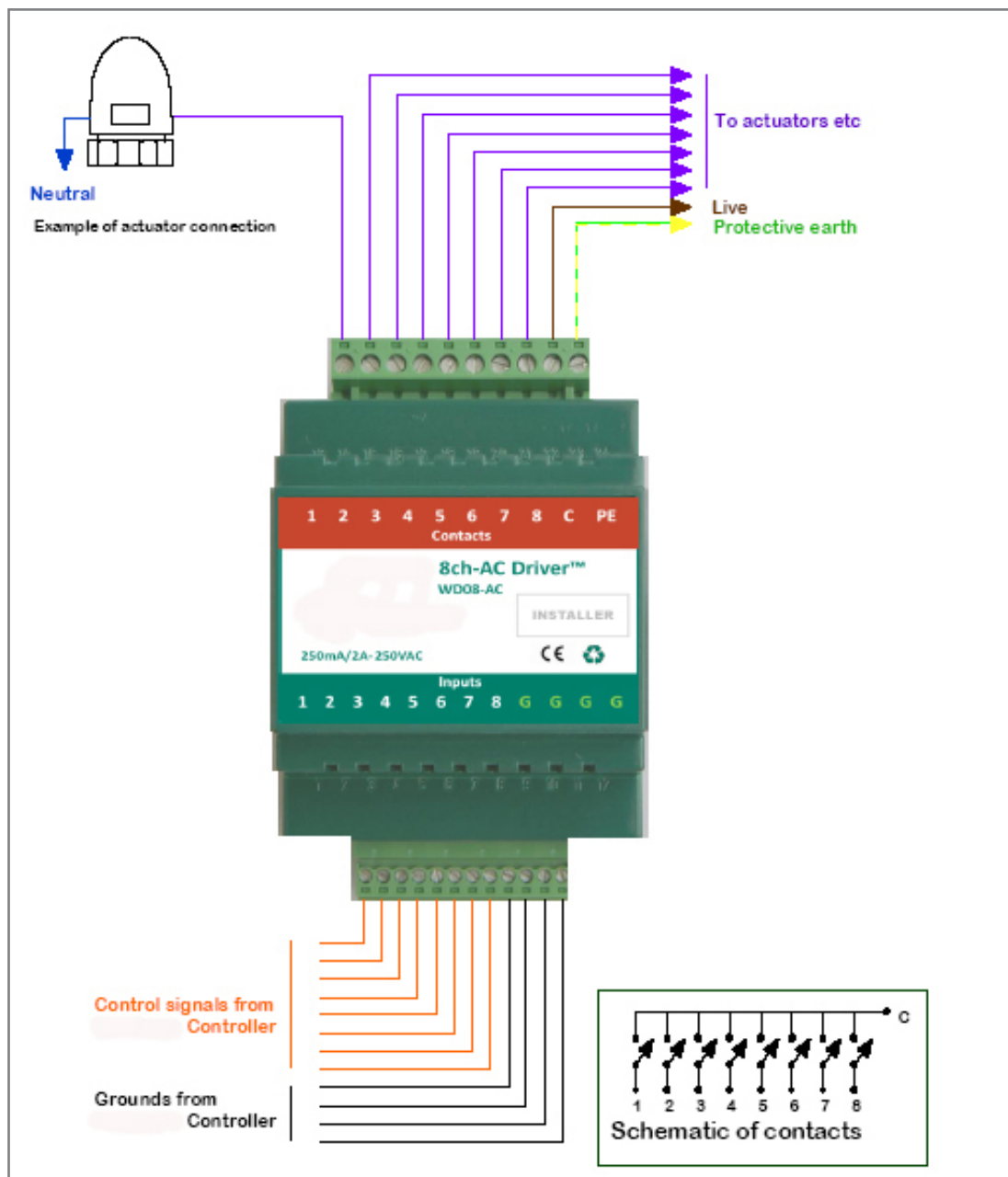
Installation Notes

- The 8ch-AC Driver's inputs are driven directly from the controller's digital outputs although other outputs can be used if set-up correctly.
- At least one of the ground connections must be connected to the controller's ground; all 4 ground connections are commoned inside the 8ch-AC Driver.
- Analogue outputs can be used if set to the fastest fade rate and only 0 and 100% settings are used.

- Mimic outputs can be used on either 5V or 12V levels and provided the fastest fade rate and only maximum and minimum levels are used.
- At the "Contact" side, the common (C) is connected to one side of all the output "contacts" and this is where the live power to the valves etc is normally wired, see Fig 3. on page 6.
- The contacts 1-8 are normally connected to each of the live sides of the heating valves to be controlled and a neutral link taken from the valve to the power supply's neutral, see Fig 3. on page 6.



Fig 3. Connection Diagram



8 Channel AC Driver Specification

Input

- Input signal between + 5V and +12V DC WRT ground to energise its respective relay output
- Maximum allowable input current draw, 40 mA @ +12V
- Inputs have common ground connection

Output

- 250mA maximum continuous current through each of the contacts, 2A surge each output (10 seconds)
- 2A total continuous current, aggregate of all outputs
- Output contacts rated for AC only 24V to mains 250V RMS

Alert

It is the installer's responsibility to ensure the actuator's peak load does not exceed the rating of the 8ch-AC Driver.

Temperature Sensor

Features

- Digital temperature sensor for loss-free operation.
- Connect up to 5 temperature sensors directly to the controller.
- Accuracy: Within 0.5°C.
- Resolution: Is 0.125°C, although this is less than the accuracy of the temperature sensor it is very useful for determination of whether a temperature is rising or falling.

Installation Notes

Up to five sensors are connected to the data bus on the controller within the following limits:

- Cable: Cat 5E cable is recommended for temperature sensor connections. Temperature sensors are supplied with pre-attached 2m Cat5E. It is recommended to cut these as short as practically possible before connecting to the bus, see Fig. 4 on page 8 for preferred connection scheme.
- The connection scheme shown in Fig. 4 should be followed when using more than one temperature sensor with the controller. This scheme ensures there are no impedance mismatches by emulating a single run of cable.

- Bus Length: We recommend a maximum bus length of 90m for a single sensor and 70m for multiple sensors. The 90m limit includes all the cable runs to the punch-down panel.
- Unused cores: We recommend that unused cores are connected to ground.
- It will be necessary to determine which of the temperature sensors will be the last to be connected in the sequence and ensure that the white/orange is left unconnected, see Fig. 4 on page 8.
- The sensors must be connected to the controller whilst it is powered down. Each sensor is recognised at power-up and their unique serial numbers logged in to the controller's memory. Further sensors can be added to the system provided it is powered down when doing so.
- The order in which the sensors are recognised by the system is independent of the physical position on the bus.
- At the zone hub or master panel terminate the Cat 5 cable using an RJ45 plug (according to the 586B convention) and patch into the appropriate port in the patch panel.
- All ports are labeled on the diagram in the zone hub or master panel.
- At the Temperature Sensor the Cat 5 cable is punched down into the ICD connector using the 586B colour scheme.

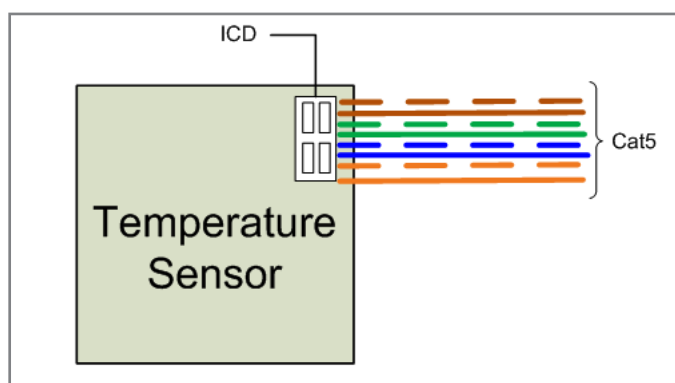
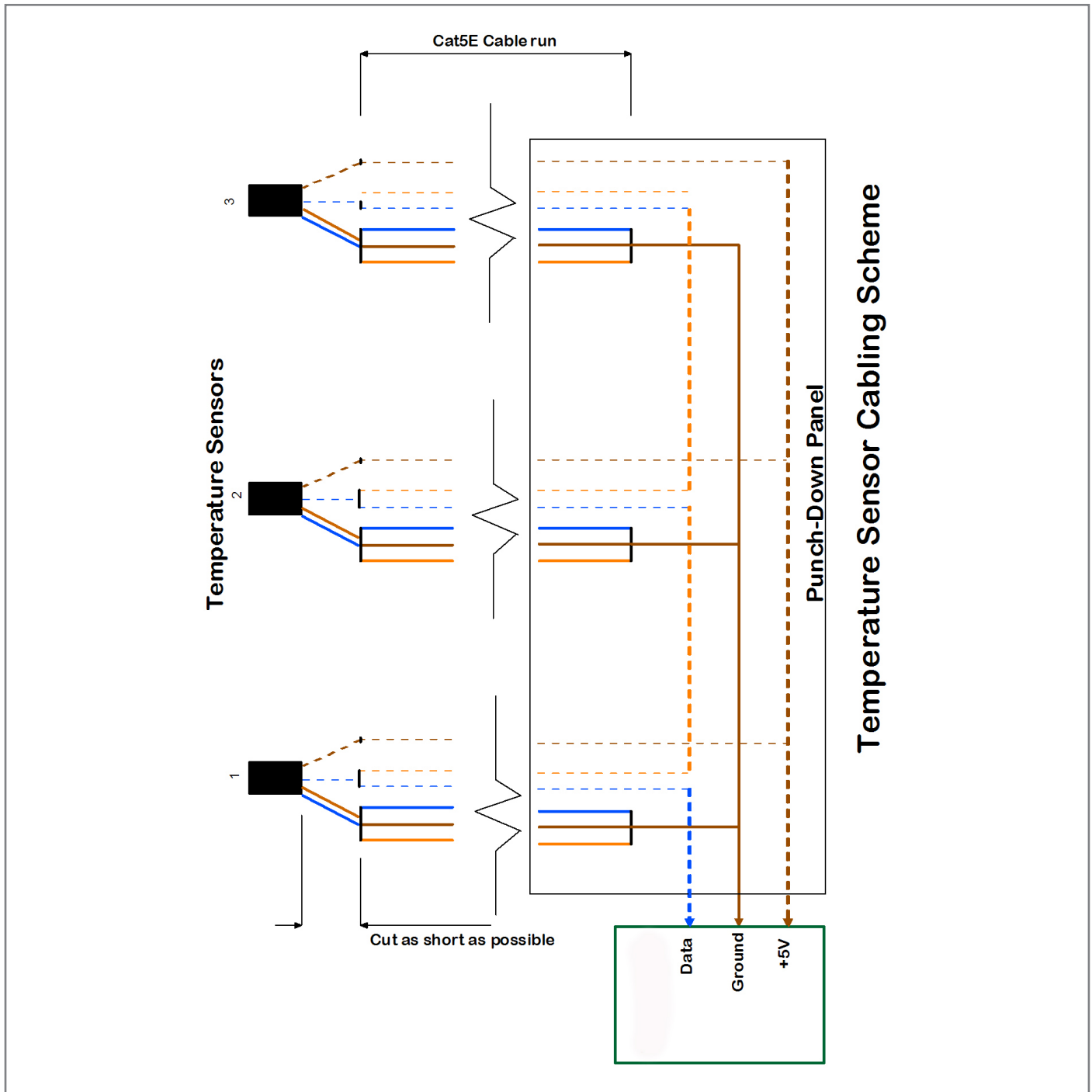


Fig. 4



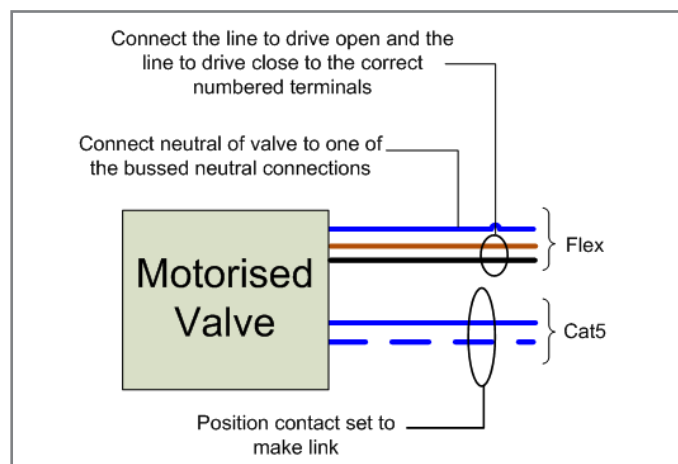
Connections

- Brown-White: +5V.
- Blue-White: Data.
- Blue: Ground.
- Brown: Ground. This core is not connected to the temperature sensor, grounding this core satisfies the EMC conditions of CE marking.



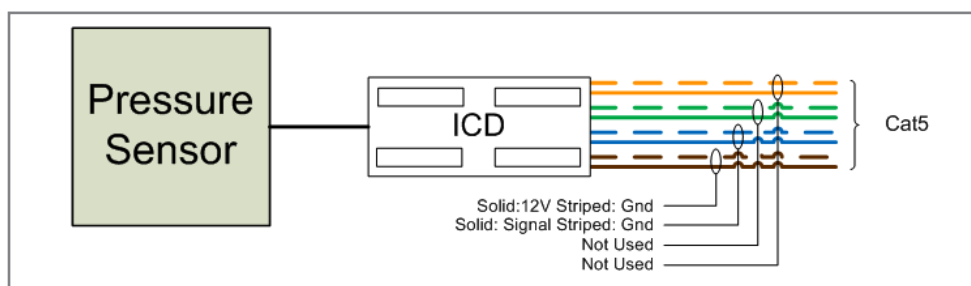
Motorised Valve

- The motorised valves are powered directly from the master panel.
- Motorised valves have 3 connections; neutral (blue), line to drive open (usually brown), line to drive closed (usually black).



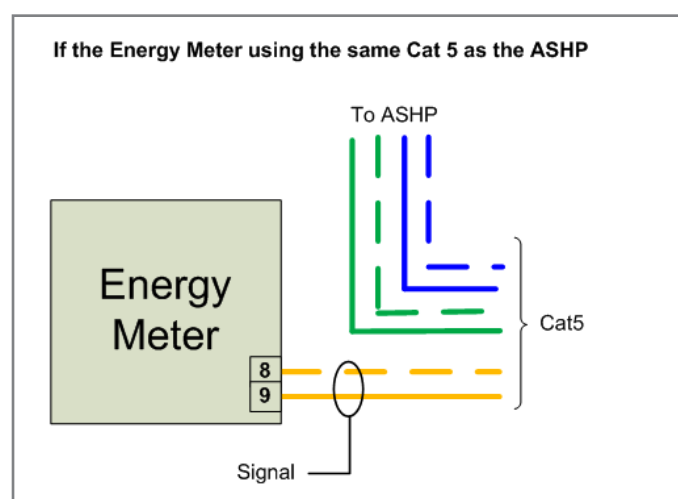
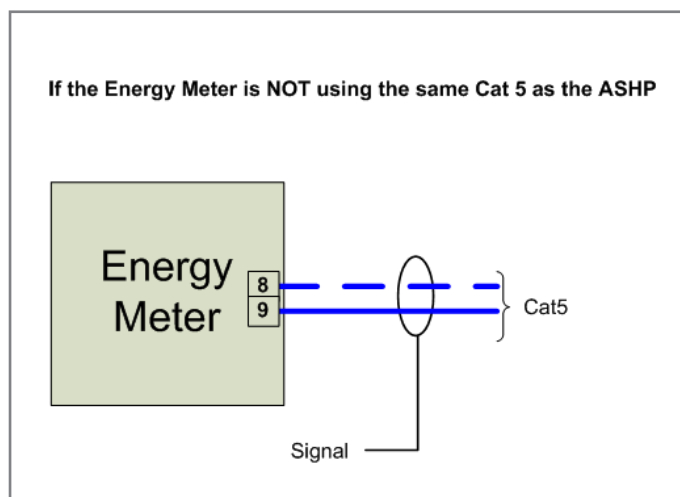
Pressure Sensor

- The pressure sensor is an analogue device that delivers a 0.5-3.5V output depending on input pressure.
- The pressure sensor is connected to an analogue input on the AcuMen controller.



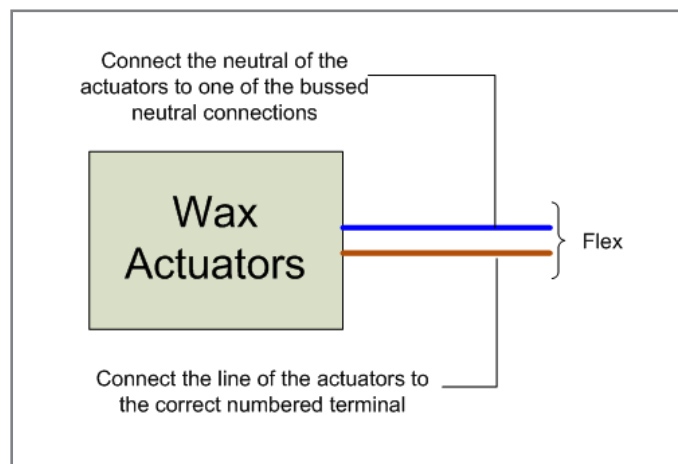
Energy Meter

- The energy meter is powered on its own circuit and only monitoring signals are taken back to the master panel.
- The energy meter is connected to the digital input on the controller.



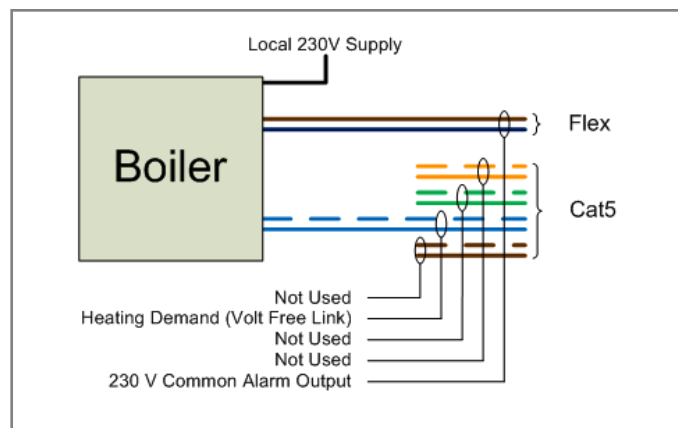
Wax Actuators

- The wax actuators are powered directly from the zone hub.
- Neutrals going to the same enclosure can be bussed at the manifold and brought together to that zone hub.



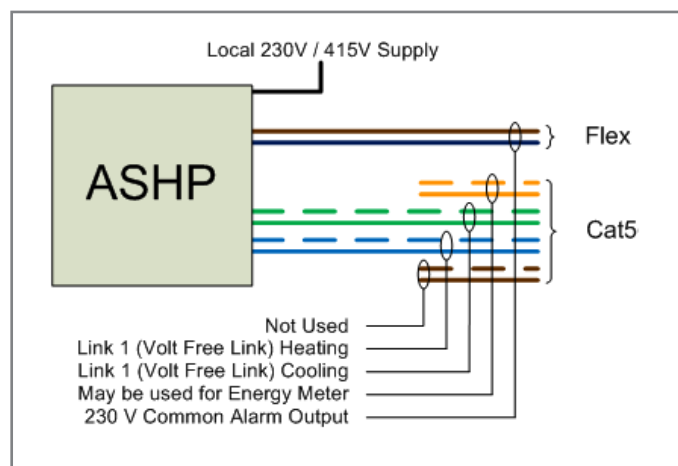
Boiler

- The boiler is powered on its own circuit and only control signals are provided from the master panel.
- The boiler has a volt free link interface which can be used to indicate demand.
- The volt free link is made or broken on one of the controller internal relays.



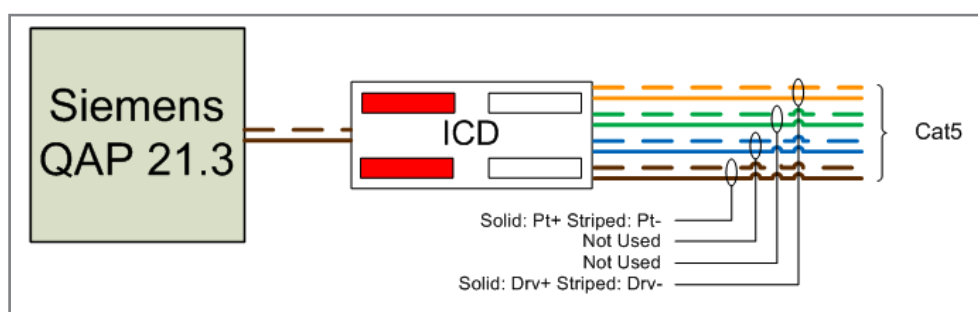
Air Source Heat Pump

- The ASHP is powered on its own circuit and only control signals are provided from the master panel.
- The ASHP has two volt free link interfaces, which can be used to indicate heating or cooling demand.
- If Link 1 is closed this indicates a heating demand. If Link 1 and Link 2 are closed then this indicates a cooling demand.
- The volt free link is made or broken on one of the controller internal relays.



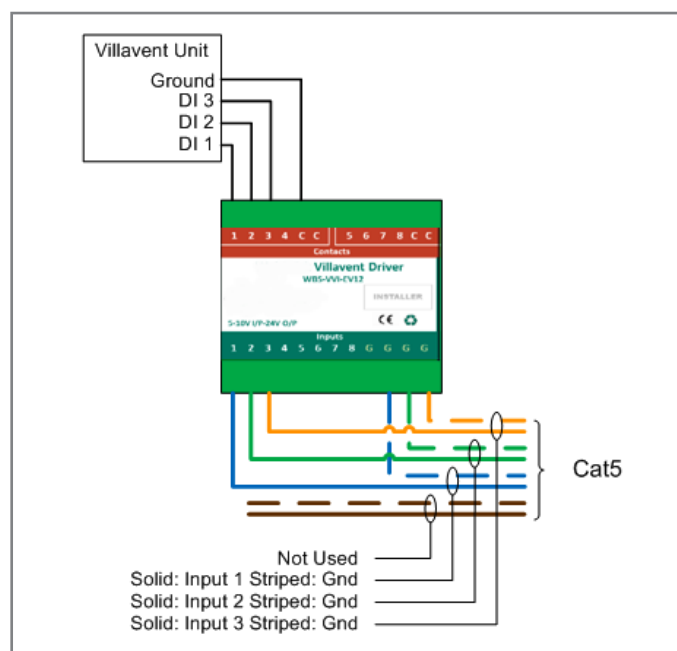
Solar Sensor

- The RTI is a resistive temperature sensor interface designed to give a 0-5V signal over the input range - 50 to 200°C.
- The RTI is connected to an analogue input on the AcuMen controller.



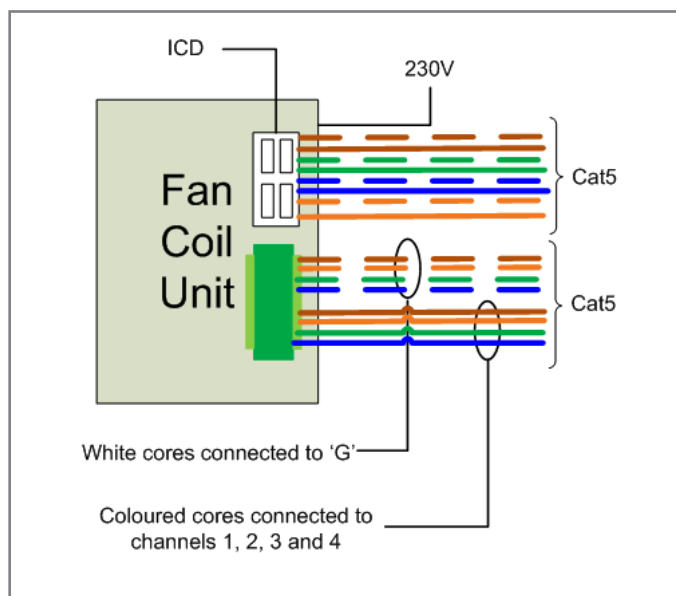
Villavent

- Two Cat 5 cables are allocated for control and monitoring of the Villavent HRV unit but only one is currently used.
- At the master panel terminate one of the Cat 5 cables using an RJ45 plug (according to the 586B convention) and patch into the appropriate port in the patch panel.
- All ports are labeled on the diagram in the master panel.
- At the Villavent HRV unit the Cat 5 that was terminated in the master panel is terminated as follows:
 - All striped cores are connected to 'G'
 - The blue core is connected to channel 1
 - The green core is connected to channel 2
 - The orange core is connected to channel 3
 - The brown core can be connected to channel 4 or can be left unconnected
- The Outputs (Contacts) of the Villavent Driver must be connected to the control board of the Villavent unit as follows:
 - Contact 1 to DI 1
 - Contact 2 to DI 2
 - Contact 3 to DI 3
 - C (Common) to Ground



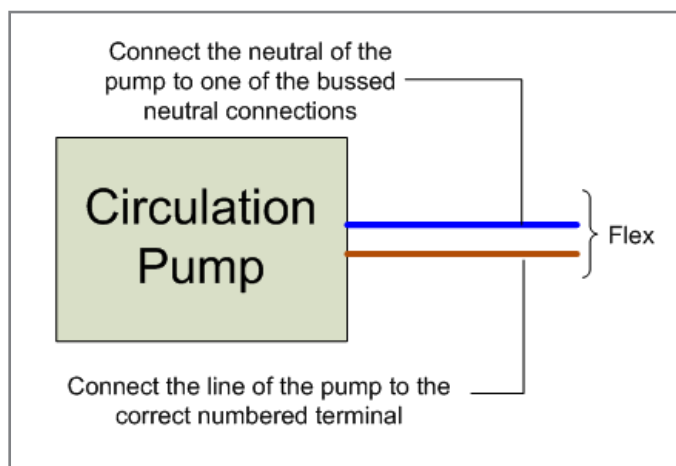
Fan Coil Unit

- The fan coil unit is powered on its own circuit and only control signals are provided from the zone hub.



Circulation Pumps

- The circulation pumps are powered directly from the master panel.



Outside Sensor

The outside sensor alters the temperature of the heating provided to the building based on the actual outside air temperature.

An increase of the outside temperature by 1 or 2 degrees centigrade will reduce the heating flow temperature by 2 or 4 degrees, which will then reduce the room temperature within the building.

It is therefore of the utmost importance that the outside sensor is correctly located to ensure the correct operation of the heating system and to ensure heating comfort for the end user.

The outside sensor must be located as follows:

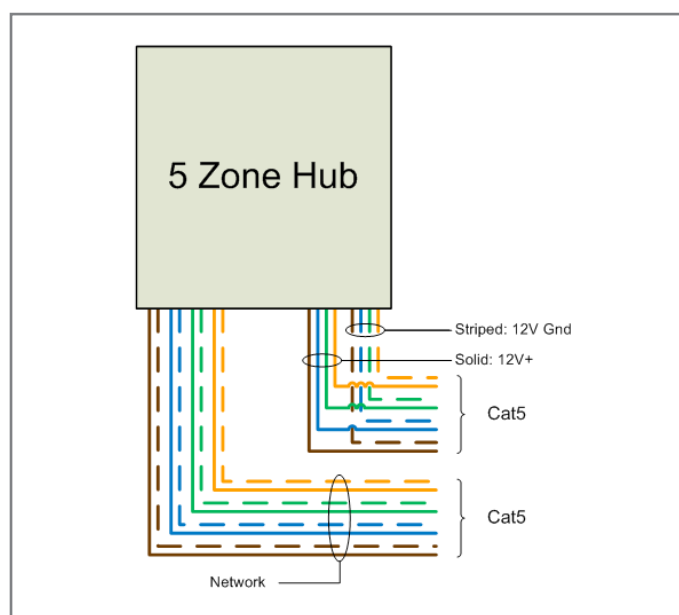
1. The sensor must be located on the North elevation or at the worst the North/North West.
2. The sensor must not be exposed to the morning sun.
3. Mounting height should preferably be in the middle of the building on an open wall and at least 2.5m above the ground.
4. The sensor must not be fitted at the following locations:
 - Above windows, doors, air extracts or other heat sources such as heat pumps or boiler flues.
 - Below balconies or the eaves of the roof.
 - In an internal corner.
 - Next to or behind a downpipe.
 - Next to or close to outside lights.
 - Any other location which is sheltered from the real outside air temperature.
5. To prevent measuring errors due to air circulation, the cable conduit at the sensor should be sealed.
6. The sensor may not be painted over.

Connecting Zone Hubs

All zone hubs require a power connection, which is provided using a single Cat5e cable. All solid cores of this cable must be connected to the appropriately labeled (12V+) fused din rail terminal on the master panel and the zone hub. All striped cores of the Cat5e must be connected to the appropriately labeled (12V Gnd) din rail terminal on the master panel and the zone hub.

The 5 zone hub has a single network connection. On the master panel network connections must be made on the switch, whilst in the zone hubs network connections are made on the patch panel. In a 5 zone hub the single network connection is made through port 6 on the patch panel (labeled "Network").

The 5 zone hub dimensions are: 340mm x 285mm x 100mm.



Resetting the System

The AcuMen system can be hard reset by pressing the silver button located at the left front corner on the bottom of the master panel. To reset the system firmly press the button and hold it down for at least 3 seconds.

Technical Information:

Disconnecting the 240V supply will not work as a reset because the system has an internal back up battery. The hard reset button on the bottom of the master panel cuts the 12V power supply to all zone hubs, the touchscreen and all components (Controller, Gateway and Switch) inside the master panel.



Evinox reserves the right to make changes and improvements which may necessitate alteration to the specification without prior notice.

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