

Addressable Damper Control Systems

Systems 42 & 42 (S)



Fully Addressable

Bespoke Systems Available

“Value Engineered” Solutions

Life Saving Damper Control Systems

from **Advanced Air** 

Advanced Air being the market leader of life safety damper control in ventilation systems offer a complete solution with the System 42 intelligent damper control and monitoring system.

Our system offers both the Consulting Design Engineer and Facility managers a comprehensive solution, to meet the complex control requirements for current fire safety regulations. The straight forward design, incorporating a 120mm x 90mm LCD screen that is user friendly, provides live damper status and allows easy testing and maintenance checks.



Advanced Air have continuously developed this product as a result of the changing design requirements over the last 10 years which has seen an increase in the number of fire smoke damper installed. With the System 42 software the number of dampers it can control is practically unlimited, along with the complex cause and effect requirements on hospitals, office buildings, hotels and level of occupancy

Sample Major Projects

- Churchill Hospital, Oxford
- Queens Hospital, Romford
- Ormskirk Hospital, Lancashire
- Royal University Hospital, Bath
- Stobhill Hospital, Glasgow
- Victoria Hospital, Glasgow
- The New Scottish Parliament
- Bank of America, Canary Wharf

The system 42 can also communicate with the building management system (BMS) to give live damper status allowing full panel monitoring without to need to visit our panel. When in alarm condition the System 42 takes full control, and operates the dampers and associated equipment to a pre-programmed cause and effect.

By using the override facility of the system 42, the BMS can control the operation of the dampers, either on a network connection or hard-wired direct via panels.

With over 200 projects successfully supplied and commissioned, Advanced Air have built up a wealth of knowledge, understanding and practical

experience so we can offer customers valued engineering solutions. We now offer dampers and the system decoders with plug and socket arrangement that reduces the need for site wiring and reduces the time taken to commission the system.

This comprehensive brochure covers our current range of panel systems but as we have a continuous product development programme to ensure we meet demands of the future systems and regulations, our sales office will be able to advise on technical advances that are available.



Please contact Advanced Air Sales
for more information on 01842 855545

Projects

Advanced Air damper control systems have been, and continue to be used, on a variety of different projects, including extensively on both new build and refurbishment Hospital projects.

When using the Advanced Air addressable system 42, you can be assured that with its true bi-directional communication, control and monitoring of the installed equipment can be achieved at all times. Maintenance or replacement of any damper or fan decoder is quick and simple. By using a 'plug and play' method, replacement decoders can be sent to site pre-programmed for installation by the Hospitals maintenance team. Eliminating the need for costly engineering visits.

Hospitals Projects

- Queens Hospital, Romford
4 System 42 Panels Controlling 786 Damper Decoders
- Ormskirk Hospital, Lancashire
8 System 12 Panels
- Royal University Hospital, Bath
Fireman's Override Panel with 19 Fan Switches
- Stobhill Hospital, Glasgow
1 System 42 Panel c/w with Fireman's Override Panel
- Victoria Hospital, Glasgow
1 System 42 Panel c/w with Fireman's Override Panel
- Churchill Hospital, Oxford
3 System 42 Panels & 1 Hard-wired System 11
- Royal Glamorgan, Wales
- West Berkshire
- Royal Shrewsbury
- St David's, Cardiff
- Yeovil Hospital, Somerset
- Glasgow Royal Infirmary
- Stoke Mandeville
- Royal Gloucestershire
- Taunton Hospital, Devon
- Derby Royal Infirmary
- Halton General, Cheshire
- West Cheshire Hospital, Chester
- St Mary's Hospital, Roehampton
- Queens Medical Centre, Nottingham

- Wythenshawe Hospital, Greater Manchester
- Good Hope Hospital, West Midlands
- Royal Victoria Hospital, Belfast
- The Ulster Hospital, Belfast

Other Projects

- The New Scottish Parliament
5 System 42 Panels Supplied, Controlling over 500 Damper Decoders
- Bank of America, Canary Wharf
30 System 12 Panels
- RAF Lakenheath, Suffolk
- RAF Mildenhall, Suffolk
- Norfolk Records Office
- NATO Headquarters, Northwood
- Dublin Port Tunnel
- Takeda Pharmaceuticals, Republic of Ireland
- ABN Amro Bank Headquarters, London
- Glaxo Pharmaceuticals, Ware
- Palace of Westminster, London
- Northern Rock Headquarters
- Millennium Centre, Durham
- Dungavel Immigration Centre
- Bank of America, Croydon
- Inverness Shopping Centre
- Cork University, Republic of Ireland

This list is a sample of a number of projects where Advanced Air control equipment has been used. Please contact Advanced Air Sales if you require any further information.

Hospital Installations

Due to operational limitations in Hospitals, it is not always an option to closed down the whole system on alarm detection. By using the Advanced Air System 42, each damper(s) or area(s) can be programmed to close/open or have no action. This is carried out by down loading a pre-agreed cause and effect. Any late or last minute changes that may be required can be easily and quickly carried out by the commissioning engineer on site during, before or after full commissioning.

An additional feature of the Advanced Air system is that during the installation of the dampers, and before the communication network or main panel is available, the dampers can be opened and closed to check for correct operation as soon as the decoders have been connected to the damper and power is connected. This increases efficiency and accessibility should any issues occur, especially when it comes to time restrictions when commissioning.

Service and Maintenance

Advanced Air offer yearly service and maintenance check on their complete range of equipment.

Please contact Advanced Air Sales for further details.

The Addressable Control System

Advanced Air System 42 and 42(S) addressable systems actively prevents smoke and fire spreading through a ductwork system to other parts of the building.

The System 42 (max 8 panels) controls and monitors over 4000 dampers on up to 960 input zones.

The System 42 (S) (1 panel) controls and monitors over 500 dampers on up to 120 inputs zones.

Features

- Addressable loop system
- Bi-directional communication
- Programmed smoke control strategy
- Building Management System (BMS) communication link
- Activation of extract fans
- Fireman's override control
- On-site commissioning
- Each system is bench tested before despatch.



Standards

The design of Advanced Air panels allows the relevant sections of the British Standards to control smoke in buildings if a fire occurs, to be addressed. The applicable parts of the British Standards for control panels are taken into account together with conformity to the current EMC regulations.

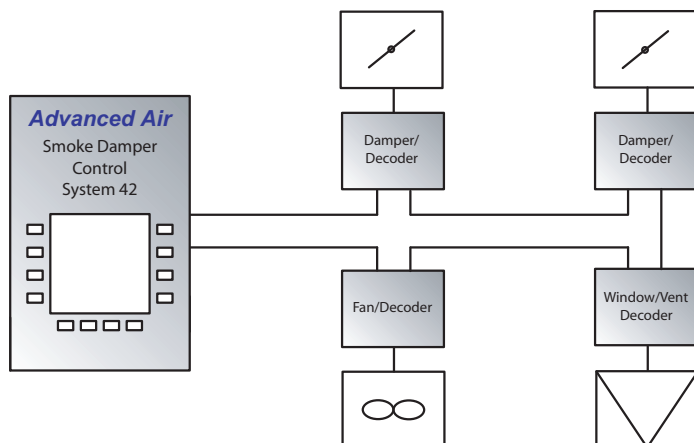
System Design

The system consists of the following main components:

- Main Control Panel(s)
- An individually addressable decoder for each damper actuator or fan in the system.
- Motorised dampers or fans
- Remote Fireman's switch (optional)

Loops and Zones

Typically each loop is used to control one or more floors or areas of the building. You can control up to 126 decoders on any loop but not exceeding 1000 km. in length. The ease and efficiency of cabling is usually the deciding factor. The building can also be divided into zones, each of which has an alarm input into the main control panel. A single panel can control up to 4 loops and 96 inputs (alarms or overrides). Decoders within different zones can be part of the same cable loop and decoders on different loops can be within the same loop.

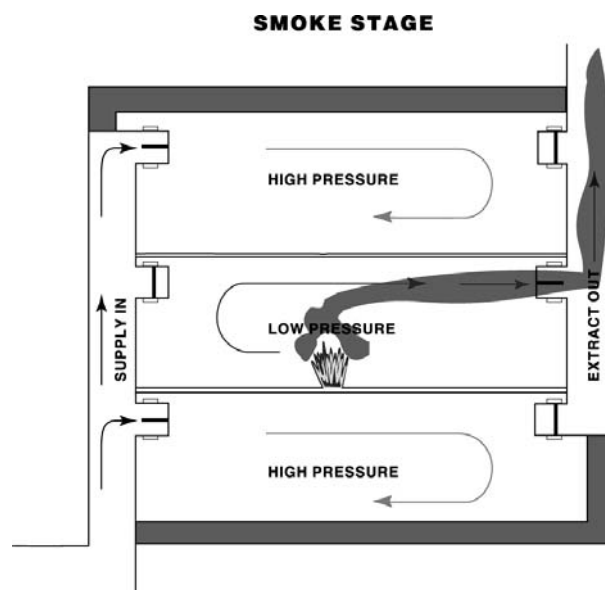


The control panel will be programmed to meet the exact requirements of the smoke management philosophy devised for the specific project. The instructions for each zone and damper are loaded into the panel via a lap-top computer during commissioning.

The following smoke control strategies are suggested as examples of a possible option.

| | |
|--|---|
| All Shut | Fire Zone—all dampers to close |
| | Adjacent Zones—all dampers to close |
| Pressurisation | Fire Zone—all dampers to close |
| | Adjacent Zones—all supply dampers to open, all extract dampers to close |
| Pressurisation With Extract (Illustrated) | Fire Zone—all supply dampers to close, all extract dampers open |
| | Adjacent Zones—all supply dampers to open, all extract dampers to close |
| Pressurisation With Purge | Fire Zone—all supply dampers to open, all extract dampers open |
| | Adjacent Zones—all supply dampers to open, all extract dampers to close |
| Zonal Extract | Fire Zone—all supply dampers to close, all extract dampers open |
| | Adjacent Zones—all dampers to close |
| Zonal Purge | Fire Zone—all supply dampers to open, all extract dampers open |
| | Adjacent Zones—all dampers to close |
| Total Extract | Fire Zone—all supply dampers to close, all extract dampers open |
| | Adjacent Zones—all supply dampers to close, all extract dampers to open |
| Total Purge | Fire Zone—all supply dampers to open, all extract dampers open |
| | Adjacent Zones—all supply dampers to open, all extract dampers to open |

Other options are available to be programmed into the panel.



Smoke extract in a building

Operation

Normal Operation

The LCD display on the face of the control panel will show a simple message that the system is working normally. The panel is in continuous communication with all of the damper decoders, monitoring their status and reporting any faults. The condition of the network will also be monitored and any line breaks detected. The location of any break in a control loop will be displayed on the panel.

If a fault is detected, the "Attention" LED will flash, the "Attention" alarm will sound and the display will provide information regarding the nature of the fault.

Safe Mode

If a decoder loses communication with the control panel for more than 60 seconds, it will automatically default to "Safe Mode" and the damper that it is controlling will be sent to its safe position. The occurrence will be reported on the panel display.

Alarm Mode

If the control panel receives an alarm signal, the programmed smoke control strategy will be activated at each decoder and all dampers will go to their safe positions. Removal of the alarm input will not cancel the activation. The alarm will sound and the "Attention" LED will flash. The alarm will take precedence over any faults being displayed or manual control being undertaken. Only the built- in or remote Fireman's Switch can take precedence over the programmed strategy.

Manual Mode

Use of the manual control button on the built- in Fireman's Switch will generate a list of zones, dampers and fans on the display. Individual dampers or zones can be opened or closed.

Standby Mode

This facility allows dampers and fans to be closed or turned off for a period of time, eg. nights or weekends.

Dimensions

Typical LCD screen display.

Screen size is 120mm x 90mm

Main Control Panel

The main standard panel is 350mm wide x 600mm high x 120mm deep, constructed from galvanised mild steel with a textured polyester powder finish.

The panel has a glass lockable front door and comes as a surface enclosure complete with flush mounting kit for optional on-site installation.



Technical Information

Decoders

The decoder is a small metal box, 200mm wide x 150mm high x 80mm deep. One of many connected in a loop in the system. The decoder controls the status of dampers or fans.

Damper Decoder

One damper decoder is generally required for each damper actuator. However on multi section dampers with more than one actuator, it may be possible to connect up to four actuators to one decoder. Please contact the office for advice.



The decoder controls the main voltage to the damper actuator (230vac or 24v) instructing the damper to open or close according to the information received from the main panel. At the same time the position of the damper is monitored by the decoder. This information is constantly being sent back to the main panel to show the status of each damper on the system.

As from December 2007, all Advanced Air damper decoders have the option to be fitted with the following:

- 300mm Long power cable
- 2x Compression glands for the installation of the communication cable
- Multi point socket for connection to the damper
- 2 metre multi core cable with socket fitted to the damper for quick connection to the decoder.

(This option greatly reduces the cost of the site wiring to the installer and minimises problems that may occur with connections during installation)-please contact the office for further details.

Fan Decoder

The fan decoder instructs fans to switch on or off according To the signal received from the main panel. Fan decoders do not have inverters to adjust fan volume.

Remote Fireman's Switch

The remote fireman's switch allows manual control of Fire/Smoke dampers, please contact Advanced Air Sales for more details.

Cabling

The type of cable to be used for the communication loops, to be supplied by others, should be approved by Advanced Air. A specification can be obtained from the Systems Department. The Signal is an RS 485 and as such the cabling must not be installed along-side or together with mains power cables. Wiring diagrams and connection details will be provided to enable electrical installation (by others).

Further Technical Details

A full technical description of the system components and requirements is available separately.

Technical Advice

For further details and guidance on designing a system incorporating an Advanced Air addressable control panel and network, please contact the Projects Department.

Smoke & Fire Damper Control System 42

Actively prevents the spread of smoke and fire through a ductwork system

Introduction

The System 42 has been developed from the popular System 42 (S) specifically for particularly large projects. It is suitable for projects where the client wants to control the Fire/Smoke dampers from more than one location and minimises cable installation cost by reducing the necessity to run all of the control loops back to one main panel. The System 42 is a purpose-made damper control system which operates via an RS 485 loop signal from each damper decoder to the main panel(s), and can have up to 8 master control panels networked together via a RS232 signal connected to each panel.



Features

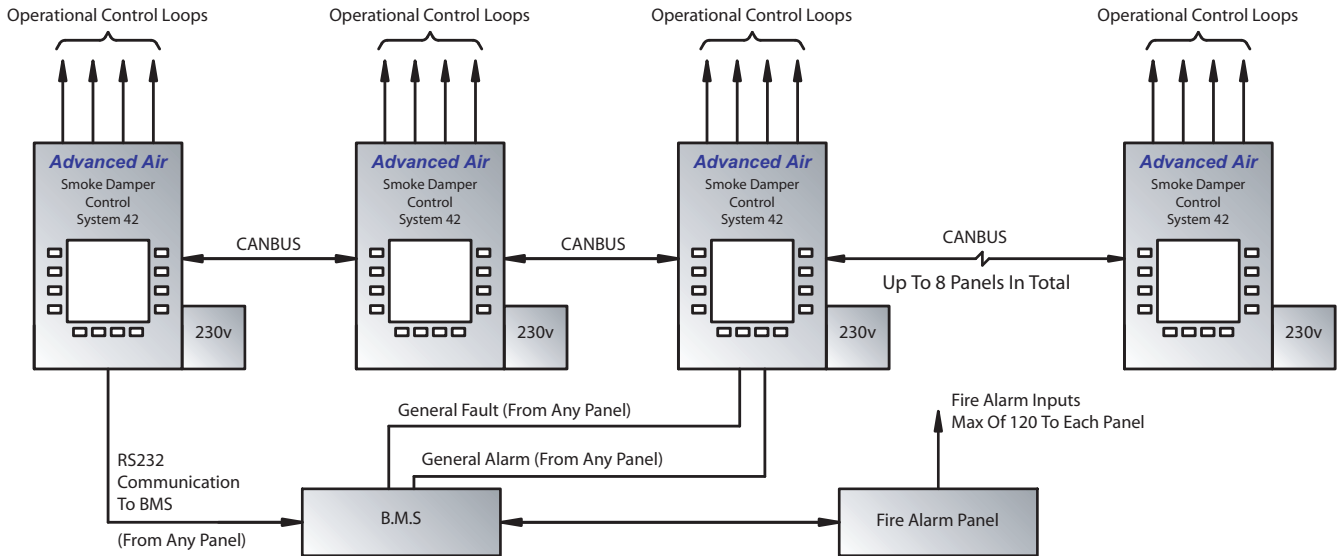
- Monitors and controls up to 504 dampers per panel (max of 4032 dampers per system)
- Up to 120 fire alarm/override control inputs per panel (max of 960 inputs per system)
- Addressable loop system
- 4 loops per panel (max of 32 loops per system)
- Up to 23,000 outputs available for damper indication, remote alarm and faults
- Bi-directional communication
- Programmed smoke control strategy
- Building Management System (BMS) communication link
- Fireman's override control at panel
- Flush or surface panel mounting panel
- 240 Vac/1 ph./50 Hz. supply to main panel
- 240 Vac/1 ph./50 Hz supply to damper decoders via local distribution board as standard (24Vac options on request)
- Test switch on damper decoders to facilitate local testing of the damper operation
- On-site commissioning

Standards

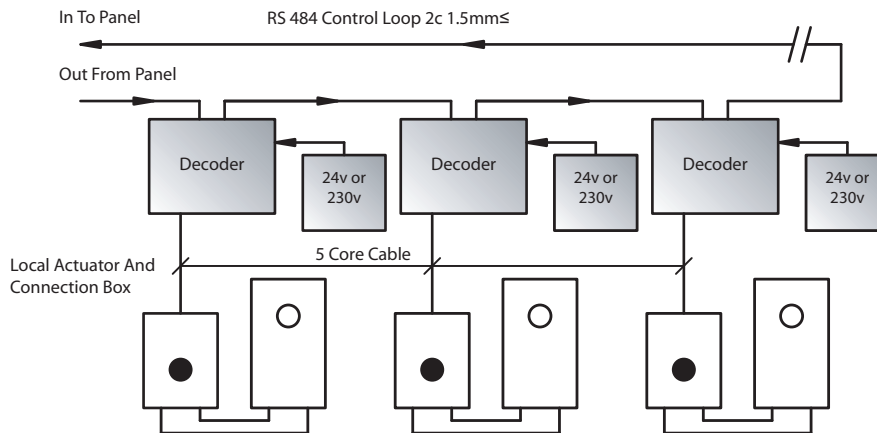
The design of Advanced Air control panels allows the relevant sections of BS5588, to control smoke in buildings if a fire occurs, to be addressed. The applicable parts of BS5839 are taken into account, together with conformity to EMC regulations (EN60204)

General Wiring Arrangement Advanced Air System 42 Addressable Damper Control Panel

General System Arrangement



General Wiring Arrangements



Control Loop Length = 1000m Max.
 Loop Cable = 2c 1.5mm² FP200 Gold/MICC/Draka Enhanced Or EQ.
 Number Of Loops Per Panel = 4 (32 Per System)
 Number Of Decoders Per Loop = 126 max
 Number Of Decoders Per Panel = 504 max (4032 Per System)
 Number Of Alarm/Override Inputs Per Panel = 120 (960 Per System)
 Damper Actuator Voltage = 24Va.c./230Va.c. (T.B.C.)
 Decoder Voltage = 24Va.c./230Va.c. (T.B.C.)
 Panel Voltage = 230Va.c.
 Number Of Outputs Per System = 23,000

Note 1:

Fire Alarm Inputs Come From The Fire Alarm System.
 All Fire Alarm Inputs Are Hardwired.
 RS 232 From BMS To Damper Panel Is Status Only.
 BMS To Provide Driver For Status Signal.
 Damper Panel Protocol Is MODBUS.
 General Fault Is Hardwired From Damper Panel To BMS.
 General Alarm Is Hardwired From Damper Panel To BMS.

Smoke & Fire Damper Control System 42 (S)

Actively prevents the spread of smoke and fire through a ductwork system

Introduction

The System 42 (S) has been developed specifically for medium to large projects, where the cost and complexity of a hard-wired system outweighs the initial cost of the System 42 (S). The System 42 (S) is a purpose-made Fire/Smoke damper control system which operates via a RS 485 loop signal from each damper decoder to the main panel.

Features

- Monitors and controls up to 504 dampers
- 24 fire zones as standard
- 72 further fire zones/override control inputs (optional extra)
- Addressable loop system
- 4 loops per panel
- Up to 23,000 outputs available for damper indication, remote alarm and faults
- Bi-directional communication
- Programmed smoke control strategy
- Building Management System communication link
- Fireman's override control at panel
- Flush or surface-mounting panel
- 240 Vac/1 ph./50 Hz. supply to main panel
- 240 Vac/1 ph./50 Hz. supply to damper decoders via local distribution board as standard (24Vac optional, other voltages available on request)
- Test switch on damper decoders to facilitate local testing of the damper operation
- On-site commissioning

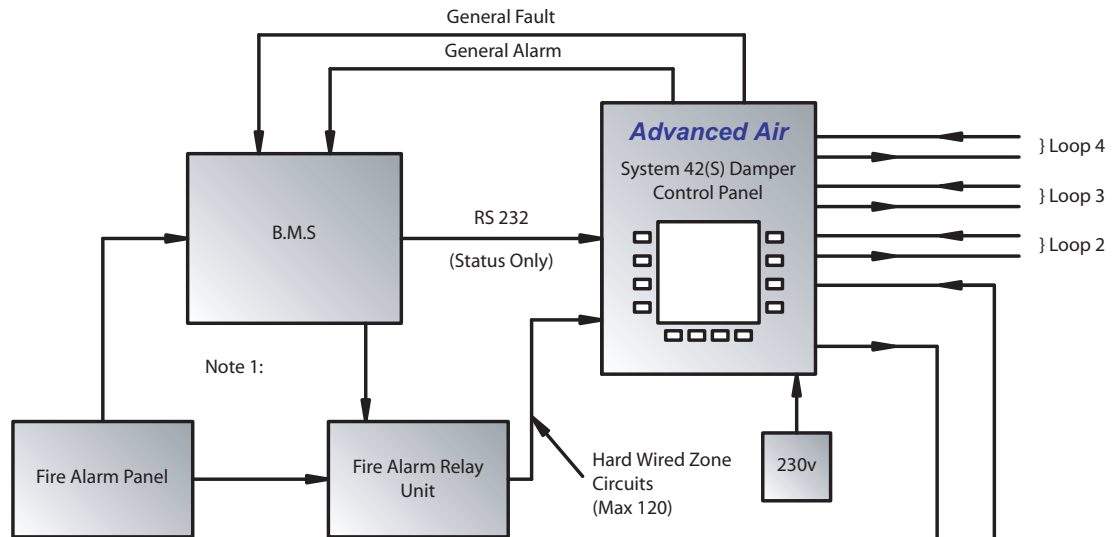
Standards

The design of Advanced Air control panels allows the relevant sections of BS5588, to control smoke in buildings if a fire occurs, to be addressed. The applicable parts of BS5839 are taken into account, together with conformity to EMC regulations (EN60204).

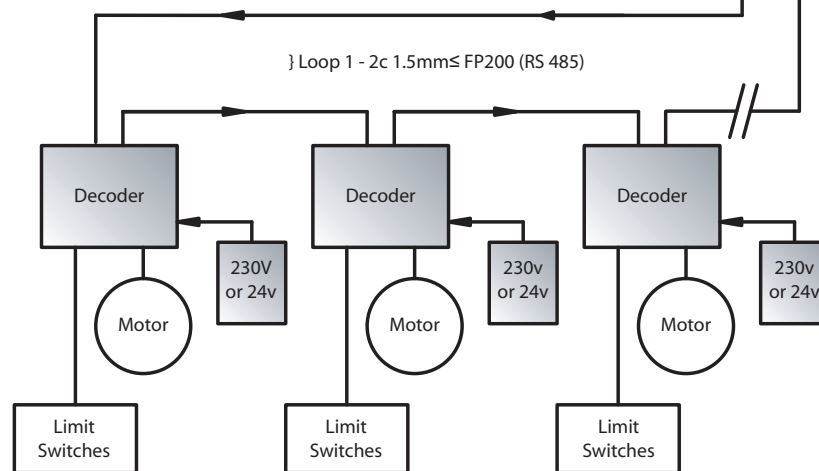


General Wiring Arrangement Advanced Air System 42 (S) Addressable Damper Control Panel

General System Arrangement



General Wiring Arrangement



Control Loop Length = 1000m Max.
 Loop Cable = 2c 1.5mm² FP200 Gold Or EQ.
 Number Of Loops Per Panel = 4
 Number Of Decoders Per Loop = 126
 Number Of Decoders Per Panel = 504
 Number Of Fire Alarm Inputs Zones = 96 Max (1 Panel)
 Motor Voltage = 230Va.c./24Va.c.
 Decoder Voltage = 230Va.c./24Va.c.

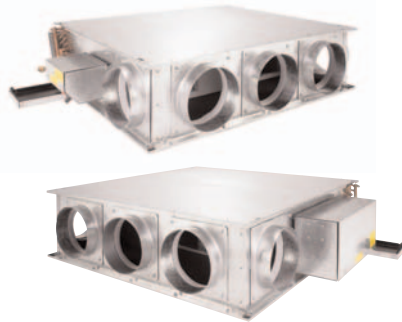
Note 1:
 Fire Alarm Zones May Come From B.M.S. Or Fire Alarm Panel.
 All Fire Alarm Zones Are Hard Wired.
 RS 232 From B.M.S. To Damper Panel Is For Status Only.
 Hard Wired General Fault From Damper Panel To B.M.S.
 Hard Wired General Alarm From Damper Panel To B.M.S.
 B.M.S. To Provide Motor Drive For Status Signal.
 Damper Panel Protocol Is MODBUS.

Other Products From Advanced Air

Air Control Products

We offer a range of Low leakage fire smoke dampers, tested to BS ISO 10294, which are used to prevent the spread of fire and smoke in a ventilation system. Our range also includes smoke and high temperature smoke dampers, which can be used up to 300°C for 120 mins. The Advanced Air curtain fire dampers provide a wide range of models suitable for most applications.

A variety of control dampers from value solutions to a low leakage, low pressure drop, airfoil blade type can be supplied with a variety of control options, including motorised and manual control.



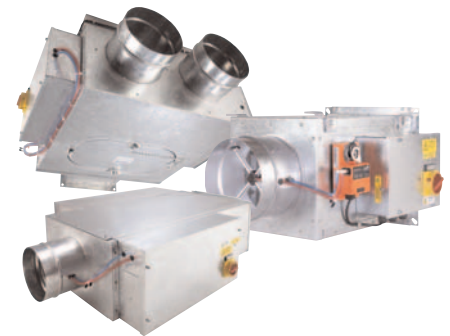
Fan Coil Units

Advanced Air and Nailor Industries have over 10 years experience in manufacturing bespoke and project specific fan coil units. As a result Advanced Air have invested in the development of the latest range of Energy Efficient and versatile Fan Coil Units in accordance with today's building regulations.

Advanced Air's energy efficient EPIC range of fan coil units offer infinite volume control and pressure independence and the CLASSIC range can be supplied with brush-less dc (EC), AC external rotor motor or fan deck options.

VAV Terminal Units

Advanced Air offers a variety of Single Duct and Dual Duct units for different types of variable air volume systems. We also manufacture Fan Powered VAV units that use advance brushless dc motors to give lower energy consumption and simpler commissioning.



Air Distribution Equipment

We manufacture an extensive range of grilles and diffusers including louvre face diffusers, linear slot diffusers, linear bar grilles, eggcrate grilles and door transfer grilles. All are supplied in a variety of finishes, powder coated to RAL9010 as standard, with other colours available.

In addition, we manufacture floor swirl diffusers which supply a low velocity, helical discharge air pattern, and also the "Twister" ceiling swirl diffuser. Also available is a range of external weather louvers that compliment the building design and are suitable for most wall configurations.

For more information on these products,
Please contact Advanced Air Sales on + 44 (0) 1842 855545

Advanced Air 

A Member of the Nailor Industries International Group

Fan Coil Units - Air Distribution Equipment - VAV Terminal Units
Air Control Products - Damper Control Panels - Electric Duct Heaters - Access Doors

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