k-con®

Bespoke solutions for Air conditioning

Premium products for a changing world

ENVIRONMENTAL ISO CERTIFIED 14001 isoassured

SAFETY ISO CERTIFIED OHSAS 18001 isoassured

QUALITY ISO CERTIFIED 9001 isoassured

kooltech

Manufactured & Engineered in the UK by Kooltech

k-con®

Energy, efficiency, environment

It's all under control

At K-con, we understand the value of keeping ahead of the industry. That means our technical experts are continually researching and developing new products and solutions, helping you stay ahead of your competition.

It's all about you
When we work together, we don't just offer a one-size-fits-all solution. We get to know you, understanding your drivers and project requirements so we can offer you the best bespoke solution.

Our project sales and applications engineers relish a challenge, too – we take every opportunity to innovate, adding real value to the mechanics of a building any way we can. Our innovations are developed and honed by listening to you and using our experience and expertise to solve your application challenges.

It's all in the teamwork
Our engineers communicate and work closely with our design and project teams to make sure we meet your exact specifications. We offer an end-to-end service, from the start of the project through to final commissioning.

We're experienced in a variety of products and unusual applications – from applying K-con products to meet EN378 or BREEAM requirements, future extension plans of a hotel through to providing weatherproof housings so air conditioning equipment can be installed externally. Our engineers and the K-con products work alongside Mitsubishi Electric to maximise the potential of the installation, so you can rest assured that you're getting the best value and quality at every level.

Design, manufacturing and distribution

Taking pride in our products

Our solutions are second to none, with our bespoke offerings carefully crafted to bring maximum benefits to your business.

A heritage of experience and expertise
K-con's bespoke solutions are manufactured in the UK by Kooltech, from our purpose-built, state-of-the-art facility in Glasgow. Kooltech is one of the UK's largest independently owned distributors of air conditioning and refrigeration equipment.

In 1994, Kooltech began distributing Mitsubishi Electric's full range of air conditioning products and we are proud to now be branded Mitsubishi Electric's exclusive UK distributor. The K-con range of bespoke solutions work in conjunction with and offer enhancements to the Mitsubishi Electric products.

Innovation and inspiration
The first K-con product was developed in 2013, when we discovered how to fit isolation valves to Mitsubishi Electric's BC Box Controllers. This meant they could isolate specific branches on the controller, enabling service and maintenance to progress without shutting down the full system.

We discovered the requirement through listening to our customers, understanding their specific issues and innovating a solution through our R&D team and the K-con factory.

This approved solution was installed on one of the largest Mitsubishi Electric jobs in the UK to date. Simple, but highly effective...

MITSUBISHI ELECTRIC

EN378

Our services

Bringing our expertise to your business

Our teams of specialists are on hand to support, train and advise you every step of the way.

Kooltech: the industry experts
Bringing experience and technical expertise, our Kooltech team offers a wealth of knowledge and support right across the UK. Trusted by the industry to provide cost-effective solutions, the team works on all aspects of your project. From design and quotation through to delivery, commissioning and after-sales support, they will be there for you at all times. The team welcome a challenge, as they embrace innovation and enjoy developing new solutions.

Our bespoke technical services
Not only do we design, specify and deliver but we also have a range of excellent technical services.

These include commissioning equipment so it works exactly as it should, and offering you extensive training so you are comfortable using the controls.

Our team of experienced engineers also provide an array of services on site, providing invaluable troubleshooting for contractors and consultants alike.

On-site services for K-con, Mitsubishi Electric equipment and controls include:

- Stripping down and rebuilding P-Series and VRF
- Commissioning (including controls)
- Fault finding
- Diagnostic health checks

We build trust by engaging with our customers, so that their beliefs become our business.

Our premium products

Superior quality with a name you can trust

Our products are made with you in mind, designed and manufactured to the highest specifications. These special products work in conjunction with and offer enhancements to the Mitsubishi Electric range of air conditioning products.

"We listen to feedback from our customers. They tell us any enhancements that we suggest to be applied alongside the Mitsubishi Electric products would need to be fully approved and freely available... K-con is that solution."

Deane Flint, UK & IRE Branch Vice-President and Joint Divisional Manager - Mitsubishi Electric

Mitsubishi Electric modifications

KS8 BC box modification with port isolation valves

Quick and easy maintenance with uninterrupted cooling and heating

K-con supply the Mitsubishi Electric Branch Controller (BC) box with factory-fitted isolation valves on each port. By isolating individual ports, and therefore fan coils, this product enables the VRF system to still operate whilst installation or maintenance is carried out in individual rooms.

- Suitable for office development or refurbishment
- Ideal for hotel or retail & residential applications
- Allows quick & easy maintenance
- Ensures uninterrupted cooling & heating
- Unique bespoke design solution

This enables quick and easy installation and maintenance to be carried out on individual rooms without affecting the rest of the system. Additionally each isolation valve is fitted with a schrader valve to facilitate access to field pipework.

This provides the added benefit of assisting to reduce the annual leakage rate as maintenance of individually isolated units would not require recovery of 100% of the system refrigerant volume.

Mitsubishi Electric BC Controller Model No.	K-con KS8 Port Isolation Model	Modification Description	Length (mm)	Height (mm)	Depth (mm) Box + valves	Weight (kg) Box + valves	K-con Mod Code
CMB-P104V-J	KS8-CMB-P104V-J	Standard BC 4 Way	596	246	495+280	23 + 4.2	10100970
CMB-P104V-KB	KS8-CMB-P104V-KB	Slave BC 4 Way	596	246	495+280	21+ 4.2	10100976
CMB-P106V-J	KS8-CMB-P106V-J	Standard BC 6 Way	596	246	495+280	27+ 5.9	10100971
CMB-P108V-JA	KS8-CMB-P108V-JA	Master BC 8 Way	911	246	639+280	45+ 7.9	10100972
CMB-P108V-KB	KS8-CMB-P108V-KB	Slave BC 8 Way	596	246	495+280	31+7.9	10100977
CMB-P1012V-JA	KS8-CMB-P1012V-JA	Master BC 12 Way	1135	246	639+280	55+11.1	10100973
CMB-P1016V-JA	KS8-CMB-P1016V-JA	Master (P900) BC 16 Way	1135	246	639+280	63+14.5	10100974
CMB-P1016V-KA	KS8-CMB-P1016V-KA	Master (1100) BC 16 Way	1135	246	639+280	65+14.5	10100975

KS5 BC box with acoustic lining

Shush... accomplish noise level reduction

K-con now provide an acoustic lining to reduce the noise levels of the Mitsubishi Electric BC Box branch controllers on VRF installations to ensure specific acoustic standards.

- Jackets are supplied in silver as standard and black upon request
- Typical noise reduction of up to 5dBA on standard CMB-P BC controllers
- Factory fitted to ensure correct fitting and best acoustic results

Site fitting is available, however performance cannot be guaranteed, as this is reliant upon access to the BC Box controller.

Typical sound power level reduction using KS5 acoustic lining in typical installation conditions.

CMB-P BC Controller	Typical sound power reduction
Standard model	As per data book
Using K-con KS5 acoustic lining	*Up to 5dBA reduction

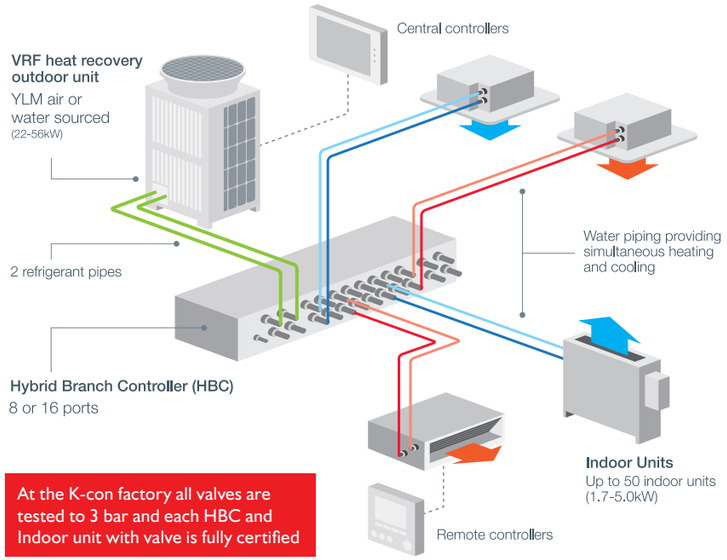
*BS EN ISO 3746:2010
Tested using CMB-P1016V-JA and PURY-EP500YLM

Mitsubishi Electric BC Controller Model No.	K-con Model*	Length (mm)	Height (mm)	Depth (mm)	Weight (kg)		K-con Code
					Inc BC Box (Kg)	Inc BC Box & Port Isolation (Kg)	
CMB-P104V-J CONTROLLER R410A	KS5-SBCAJ-A	610	280	500	34.35	38.45	10070427
CMB-P104V-KB CONTROLLER R410A	KS5-SBCAJ-A	610	280	500	34.35	36.45	10070427
CMB-P106V-J CONTROLLER R410A	KS5-SBCAJ-A	610	280	500	38.25	44.15	10070427
CMB-P108V-JA CONTROLLER R410A	KS5-MBCAJ-A	925	280	650	58.11	66.01	10070428
CMB-P108V-KB CONTROLLER R410A	KS5-SBCAJ-A	610	280	500	42.25	50.15	10070427
CMB-P1012V-JA CONTROLLER R410A	KS5-LBCAJ-A	1145	280	650	82	93.10	10070429
CMB-P1016V-JA CONTROLLER R410A	KS5-LBCAJ-A	1145	280	650	90	104.50	10070429
CMB-P1016V-KA CONTROLLER R410A	KS5-LBCAJ-A	1145	280	650	92	106.50	10070429

* Also available in black finish

K-con R32/Hybrid VRF System Solution

Hybrid VRF is a 2-pipe heat recovery VRF with water between the Hybrid Branch Controller (HBC) and the indoor units. With water at the indoor units, Hybrid VRF gives comfortable and stable air temperatures without the need for refrigerant in occupied spaces, meaning simple compliance to EN378 and removing the need for refrigerant leak detection.



At the K-con factory all valves are tested to 3 bar and each HBC and Indoor unit with valve is fully certified

KS8 HBC (Hybrid Branch Controller) valve modification

K-con offer a factory fitted and tested port isolation valve modification to the Mitsubishi Electric HBC and indoor ports. Isolation of individual ports and indoor units enables uninterrupted cooling and heating of the system whilst individual indoor units are serviced or maintained.

- Suitable for office developments or refurbishments
- Ideal for Hotel, retail or residential applications
- Easy maintenance, service and future expansion without the need to shut down the whole system ensures uninterrupted cooling and heating
- Quality assured - Factory fitted and tested valve solution

Valves include isolation, ½" capped outlet for positioning of the Auto-Air Vent (flow), Fixed Drain-off Cock (return), 22mm capped copper stub. (Auto-Air Vents are supplied with the indoor unit valve kits).

Mitsubishi Electric BC Controller Model No.	K-con Model (box and modification)	K-con Code
CMB-WM1108V-AA	KS8-CMB-WM1108V-AA master	10101004
CMB-WM1016V-AA	KS8-CMB-WM1016V-AA master	10101005
CMB-WM1108V-AB	KS8-CMB-WM1108V-AB slave	10101006
CMB-WM1016V-AB	KS8-CMB-WM1016V-AB slave	10101007

KS8 HBC indoor assembled valve kits

Each kit includes both a flow and a return valve. Valves include isolation, ½" capped outlet (flow) for positioning of Auto-Air Vent, fixed Drain-off Cock (return). Auto-Air Vents are included separate to position on the indoor or the HBC flow valve. Finished with ¾" or 1 ¼" female connection to suit press-fit pipework.

Model	Full Description	K-con Code
KS8 3/4 HBC Valve Kit	KS8 3/4" HBC valve kit assy inc. Auto-Air vent	10100978
KS8 1 1/4 HBC Valve Kit	KS8 1 1/4" HBC valve kit assy inc. Auto-Air vent	10100979

Fast, simple and effective piping solutions

Kooltech also offer a full range of braze-free Multi-layered Composite Press-Fit pipe-work systems, expansion vessels and water filling components designed to meet Mitsubishi Electric specifications.

Traditional brazing of copper pipework and fittings is not recommended for this application due to the risk of system contamination.

MLC Press Fit-Multi layered composite pipe with aluminium barrier (BSEN/ISO 21003)

System benefits:

- Available in 50m coils reducing the number of joints and improving productivity
- Press-fit, no hot works or brazing required
- Inspection windows on fittings – visual check to ensure correct application
- Light weight for easy handling and transportation
- Formstable pipework – holds its shape once formed
- Low heat expansion (up to 10x less than plastic pipes) 25 year guarantee (50 years on application)
- Full training with certification will be provided nationally

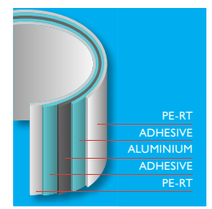
For more information on Hybrid VRF installation materials contact us.

All available at kooltech.co.uk

kooltech

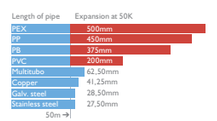
MULTIPIPE MLCP

Multi-layered composite pipe and press-fit for Hybrid VRF combining the benefits of both plastic and metal pipes

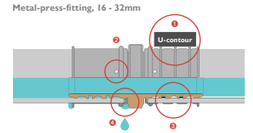


- 5 layers combining the benefits of plastic and metal pipes
- 100% Oxygen barrier – Aluminium barrier safeguards against oxygen penetration
- Form-stable – Holds its shape when formed
- 25 years guarantee (50 years on application)

- Low heat expansion (up to 10x less than plastic systems)
- Full training and certification



Metal-press-fitting, 16 - 32mm



1. Double pressing jaw guide 16mm - 32mm
2. Inspection window for easy check of insertion depth of pipe
3. Special profile geometry with O-rings made of EPDW
4. Additional test safety

- Installation times reduced
- No hot works
- U-profile press jaws, fully compatible with alternative systems
- Secure double press

KVA Vertical alterations to ducted units

Reduced noise, reduced space

K-con now offer vertical conversions to a range of Mitsubishi Electric Ducted Units. These have their place in multi-residency applications where noise reduction, space and capacity are factors that standard floor standing concealed indoor units cannot achieve.

- Narrower and quieter horizontal ducted indoor units are adapted to be installed vertically
- Suitable for multi-residency applications
- Alterations to a wide range of Mitsubishi Electric ducted indoor units with high stactic pressures allowing longer ductwork runs and higher capacities

K-con offer alterations to the following;

- City Multi Range-PEFY-P VMS & VMA units*
- S Series Range SEZ-M units
- P Series Range PEAD-M units*

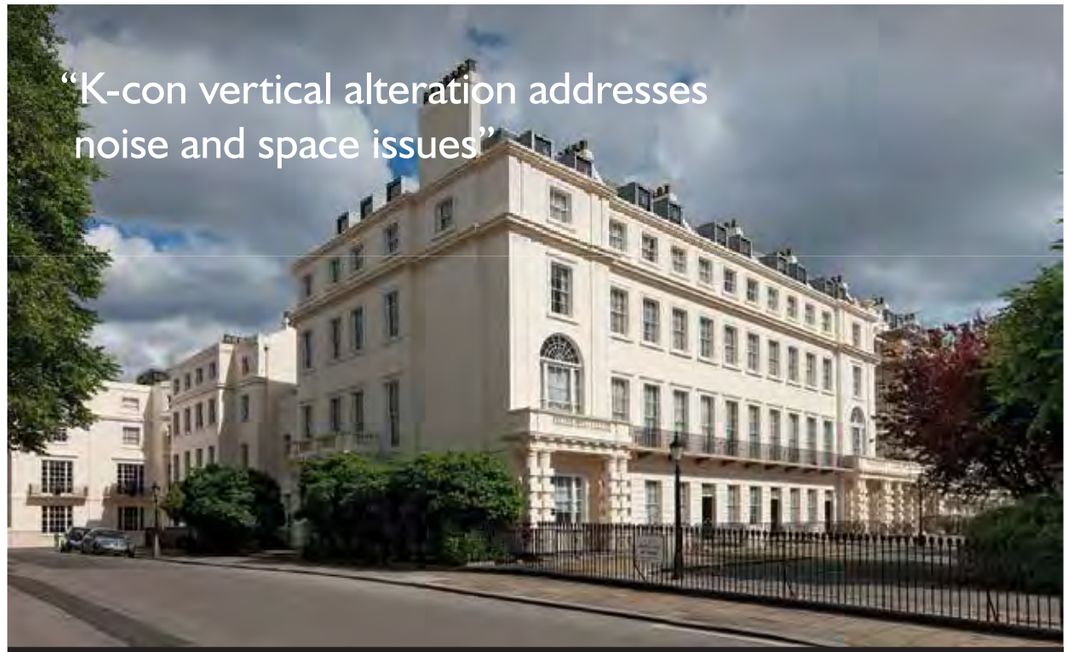
Model Vertical Alteration	K-con Code	Model Vertical Alteration	K-con Code
KVA PEFY-P15VMS1-E	10100870	KVA PEFY-P20VMA-E	10100877
KVA PEFY-P20VMS1-E	10100871	KVA PEFY-P25VMA-E	10100878
KVA PEFY-P25VMS1-E	10100872	KVA PEFY-P32VMA-E	10100879
KVA PEFY-P32VMS1-E	10100873	KVA PEFY-P40VMA-E	10100880
KVA PEFY-P40VMS1-E	10100874	KVA PEFY-P50VMA-E	10100881
KVA PEFY-P50VMS1-E	10100875	KVA PEFY-P63VMA-E	10100882
KVA PEFY-P63VMS1-E	10100876	KVA PEFY-P80VMA-E	10100883
		KVA PEFY-P100VMA-E	10100884
		KVA PEFY-P125VMA-E	10100885

KVA-PEAD-M35JA	10100856	KVA-SEZ-M25DA	10100863
KVA-PEAD-M50JA	10100857	KVA-SEZ-M35DA	10100864
KVA-PEAD-M60JA	10100858	KVA-SEZ-M50DA	10100865
KVA-PEAD-M71JA	10100859	KVA-SEZ-M60DA	10100866
KVA-PEAD-M100JA	10100860	KVA-SEZ-M71DA	10100867
KVA-PEAD-M125JA	10100861		
KVA-PEAD-M140JA	10100862		

The electrical box can be modified with extended cabling to allow for easier access. When using PEAD and SEZ units with R32 refrigerant ensure your gas charge is within safety limits according to EN378.

* fitted with condensate pump and float switch. (SEZ-M does not include condensate pump and/or float switch)

Case Study



Client:
CPC London

Mechanical Contractor:
Priory Mechanical Services

The Quad, London

Kooltech worked closely with the professional team to support this large residential refurbishment utilising a ground-source application, from the selection of all water-cooled Mitsubishi Electric condensing units and branch control (BC) boxes to support the heating and cooling infrastructure. Kooltech's range of KS8 BC box modifications include port isolation, which in turn has helped the client with the phased installation. Service and maintenance of the system would therefore be much easier.

The engineer will be able to use the valves on the system to shut off specific areas so that they can be worked on individually. K-con range of specially modified horizontal ducted fan coil units to vertical orientation provided the client with lower noise levels in all critical areas including bedrooms.

K-con products used

KVA vertical alteration to slimline Mitsubishi Electric ducted units.
KS8 BC box modification including port isolation valves.

Environmental controls

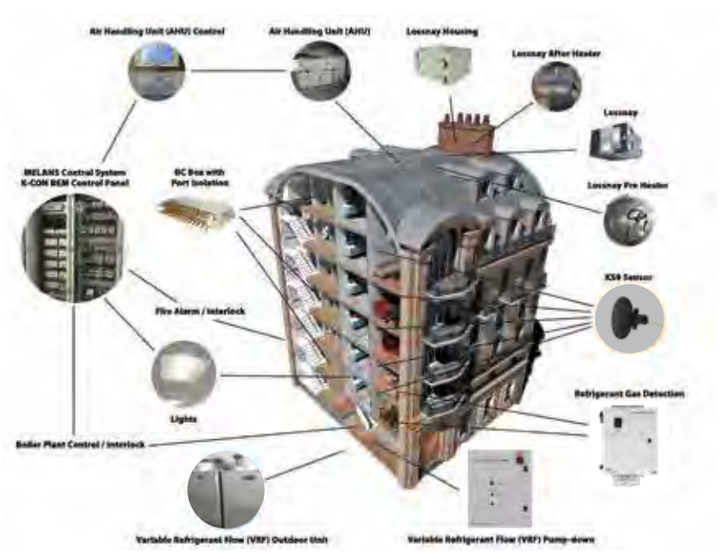
Bespoke control panels

Maximise performance and minimise running costs

Kooltech offer a range of control panels designed to maximise the efficiency of air conditioning, pumps, AHU and heating systems, whatever the application. From the simple, single unit control panels to the more complex, multi-unit controllers offering remote operation via LAN/WiFi, our specialist bespoke design and build service perfectly matches individual demand.

- Range of standard control solutions
- Bespoke design and build service for individual needs

Kooltech specialise in the design and build of bespoke control solutions to suit, whatever the size and complexity of application. To maximise performance and minimise running costs our qualified engineers work alongside clients to produce individual solutions to match individual demands. Our bespoke service sets us apart from other air conditioning equipment suppliers and complements the high quality Mitsubishi Electric products distributed by Kooltech.



We offer complex, multi-unit controllers with remote operation by LAN.

KS-ECP Air conditioning control panels

Plug and play

Mitsubishi Electric Air Conditioning equipment comes with a complete pre-wired control panel and is commissioned from a single provider. Kooltech offers a new range of pre-wired touch screen display control panels fully compatible with Mitsubishi Electric

City Multi, Mr Slim and M series units.

- Five different specifications controlling up to 200 indoor units
- Daily, weekly and annual schedules with 'Night Set Back'
- Controlled remotely, via LAN or WiFi
- Centralised and localised control options.
- Energy monitoring
- Built-in fire shutdown feature
- Fully commissioned by an approved K-con Engineer.

The panels are delivered pre-wired, tested within a Form 4 panel enclosure ready to install. Once installed, our approved K-con Engineer will commission on site with pre-determined, addressed software ready to run. The panels offer peace of mind, time-saving installation and commissioning and will provide optimum control and efficiency for your client.

Five different specifications of panel can control and monitor up to 200 different indoor units or addresses.

Model	Indoor units / addresses controlled and monitored	K-con Code
KS-ECP-01	Up to 50	10100319
KS-ECP-02	50-100	10100320
KS-ECP-03	100-150	10100321
KS-ECP-04	150-200	10100322
KS-ECP-05	200	10100323

A 10-inch colour touch screen display controller is housed in the front of the panel, which is compatible with Mitsubishi Electric City Multi, Mr Slim and M series units.

KS-ECP panels are connected to the Outdoor units via the M-net and offer display, control and monitoring of the following functions on up to 200 indoor units:

- On/Off
- Operating mode
- Set point
- Fan speed
- Return air temperature
- Louver position (if applicable)
- Timer settings (7-day schedule)
- Test run
- Fault diagnosis
- Energy consumption

Local remote controller functions can be locked:

- On/Off
- Mode
- Set point
- Filter reset

A daily, weekly and annual schedule is available. This option also allows to set-up night set back (fabric protection, HEAT 12°C). For example units can be set-up to AUTO, 23°C during the day and HEAT, 12°C during the night.

Remote connection

KS-ECP panels are fitted with a 100 Base T Ethernet port enabling it to be connected directly to a computer via an 8-port network hub fitted within the panel. It is then possible to control and monitor all the functionality listed above. Local controller set point range can be restricted through the Centralised controller (for instance 22°C to 24°C).

External connections / fire shut down

Indoor units will be turned off and the local remote controllers will be locked under fire alarm conditions. The panel will also display common run and fault via red and green Led lights mounted on the panel door.

* Full specification available upon request

ACP Communications Panels

Share the load when it really matters

Auto changeover, fault and run panel (N+1) for air conditioning units serving computer rooms where emergency backup and rota is required.

- Available from 2 to 8 indoor units per panel
- Automatically changes over operation of indoor units for equal run time and change over in case of unit fault or high room temperature.
- E-mail and SMS alert available.

Model	Full Description	K-con Code
ACP33	Auto Change Over Panel - 2 units	10100033
ACP34	Auto Change Over Panel - 3 units	10100034
ACP028	Auto Change Over Panel - 4 units	10100028
ACP COMMS 4*	Comms Panel 4 Channel	10100328
ACP COMMS 2	Comms Panel 2 Channel	10100334

* SMS version also available for up to 8 indoor units

K-con Interfaces for Mitsubishi Electric units

KTR-53-A Interface for connection to Mitsubishi Electric indoor units

- Provides remote on/off enable
- Remote controlled on/off button can be prohibited or allowed via SW1 on the KTR-53A via the 3 wire adapter, so can be used for fire shut down
- Provides volt-free outputs for run and fault signals via 5 wire adapter
- CE marked

Model	Full Description	K-con Code
KTR-53-A	Transit relay 12V DC/24V AC	10100335

KS10-RFFI-A fire alarm shutdown interface for connection to AE-200 / EW-50 (CN5)

- Provides enable signal
- Volt free run and fault signals via PAC-YG10 plugged into the CN5 on the AE-200 / EW50 interface between the fire alarm BMS and other 3rd party control
- Comes complete with PAC-YG10HA connection cable to AE-200 / EW-50

PAC-YG10HA connection cable

Model	Full Description	K-con Code
KS10-RFFI-A	AE/EW Fire shutdown interface	10100336

Case Study

Client: The Menagerie Bar & Restaurant, Manchester

Design Consultancy: Davis Partnership

Main Contractor: Cheshire Contracting and Control

HVAC Contractor: Dovebrace Ltd

The Menagerie Bar & Restaurant, Manchester

Kooltech designed a K-con Bespoke Control Panel to integrate not only the Mitsubishi Electric PURY VRF, PLFY ceiling cassettes and Lossnay heat recovery but also domestic hot water pumps, kitchen heating port valve control, boiler, LPHW pumps, gas solenoid interlock control, kitchen AHU, kitchen AHU, kitchen temperature and DHW cylinder temperature. The panel gives full control and monitoring of the HVAC services on the premises.

Kooltech provided full commissioning of the Mitsubishi Electric equipment and the control panel. All systems were thoroughly inspected and checked against design and working drawings to ensure maximum efficiency. Commissioning log books were provided with an accurate operating record of the working system.

Refrigerant Detection

Standalone and Semi Conductor

Legislation met and safety assured

Refrigerant Detection Systems help safeguard against refrigerant levels exceeding permitted concentration levels and react effectively in the event of a leak.

- Enables compliance with EN378 - Safety of Building Occupants, critical in hotel applications
- Can help achieve recognition within BREEAM Pollution Prevention Assessment, ideal for assisting in the design of modern, sustainable buildings
- Robust and tested leak detection with refrigerant pump down option
- Flexible refrigerant gas detection systems - semi-conductor or infra-red, in standalone or cost-effective aspirated panel options
- Pump-down panel incorporating all elements required
- Actuated ball valves to isolate refrigerant on pump down
- Alarm system to alert occupants and staff of any refrigerant leakages

The need for refrigerant detection systems

To protect against a worst-case scenario, EN378 is in place as safety guidance for calculating the critical concentration of refrigerant if it were all to leak into an occupied space, which for R410A refrigerant is 0.44kg/m^3.

Mitsubishi Electric's systems are designed to provide an audible and visual alarm if refrigerant leaks from an air conditioning system, which is a common requirement for hotel rooms and small occupied spaces as required by EN378. The Refrigerant Detection Systems range from simple standalone sensors to advanced multi-point aspirated systems covering multiple rooms.

Available in a range of specifications using different technologies covering all applications including R410A and R32 refrigerant.

KS8-RAD multiple digital monitor and alarm display panels

The KS8-RAD panels can connect up to 32/64 KSGD-01 Semi-conductor sensors.

RAD 32 and 64 remote interface panels for semi conductors

Model	Full Description	K-con Code
KS8-RAD 32-B	Multiple Digital Monitor Alarm Display	10100266#2
KS8-RAD 64-B	Multiple Digital Monitoring Alarm Display	10100267#2

KSIR-SP01 Infra-red sensor and alarm

Code: 10100351

Standalone/Infra-red

These systems have one sensor per space which includes refrigerant sensor and visual /audible alarm. The KS1R-SP01 can be used as a standalone refrigerant leak detection sensor (24v AC/DC power supply required) for EN-378 the KS1R-SP01 can be connected to a KSSP-RDU panel, up to 30 KSIR-SP01 can be connected.

- Suitable for R410A and R32 refrigerant.

Remote IR sensor

Model	Full Description	K-con Code
KSIR-SP01 R410A	KSIR-SP01 R410A Detector 24v with remote IR sensor	10100351
KSIR-SP01 R32	KSIR-SP01 R32 Detector 24v with remote IR sensor	10100392

KSGD Semi conductor sensor and alarm

KSGD-01 can be used as a standalone refrigerant leak detection sensor (12/24 VDC power supply required) for EN-378 the KSGD-01 can be connected to either a KS8-32 RAD-A or 62 RAD-A remote display panel.

- Suitable for R410A and R32 refrigerant.

KSGD-01 semi conductor sensors (available in a range of finishes)

Model	Full Description	K-con Code
KSGD-01W-A	White Semi-conductor sensor	10100208#1
KSGD-01S-A	Silver Semi-conductor sensor	10100207#1
KSGD-01PB-A	Brass Semi-conductor sensor	10100324
KSGD-01FLP-A	Semi-conductor sensor – ANY COLOUR	10100329
KSGD-01FLPN-A	Polished nickel Semi-conductor sensor	10100331
KSTR12	KSTR12 TRANSFORMER 0.8A,12VDC	10100230
KSTR24	KSTR24 TRANSFORMER 0.5A,24VDC	10100231

On some applications when using the above refrigerant detectors the following regulations should be observed.

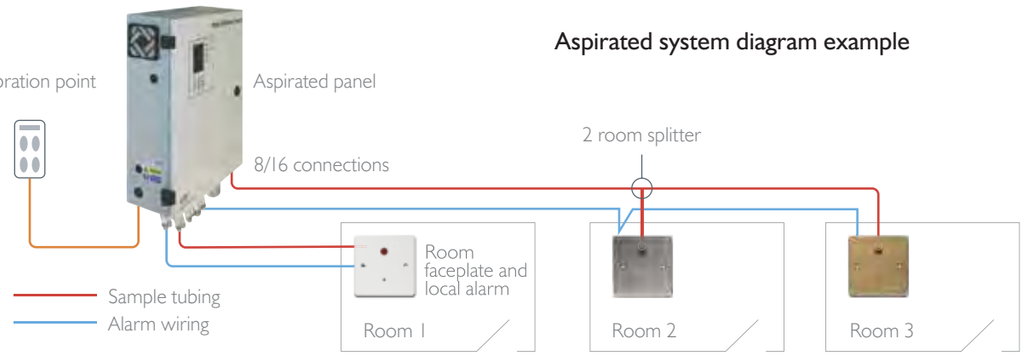
Building regulation Approved document F*(4) regarding backroom ventilators.

Refrigerant Detection

Aspirated systems

These systems have one master panel sensing from multiple spaces through tubing and termination room face plates. The panels include a refrigerant sensor but require additional local visual and audible alarm for EN378 compliance. These systems can also sample two rooms per channel, enabling up to 64 rooms to be monitored. These are ideal to install with City Multi R2 heat recovery VRF systems, as the tubing and alarm wiring can be run with the refrigerant pipes.

Aspirated system diagram example



Summary of Refrigerant Detection Systems

Technology	Sensor	How it works	Application
Semi-conductor	Metal oxide sensor	High resistance with oxygen (air). Resistance drop occurs when the oxygen is replaced with another gas	Open, clean environments (i.e. office and hotels)
Infra-red	A gas sample tube with infra-red light emitter and sensor at opposite ends	Different gases absorb different wavelengths of infra-red light, so accurate detection is possible	Ideal for an array of applications including hotels as active detection of refrigerant sets off the alarm

KS8-IR aspirated detector packs

KS8-IR aspirated packs are of Infra-red sensing type and require a 240v AC power supply. The packs come in three different sizes which can detect a max of 16/32/64 rooms (two rooms per channel).

- Suitable for R410A and R32 refrigerant.

Model	Full Description	K-con Code
KS8-IR8CIF	8 Channel Infra-Red aspirated detector pack	10100227
KS8-IR16CIF	16 Channel Infra-Red aspirated detector pack	10100228
KS8-IR32CIF	32 Channel Infra-Red aspirated detector pack	10100229

Model	Full Description	K-con Code
KS8-KSRA BP	Brass faceplate C/W alarm	10100325
KS8-KSRA SS	Satin stainless-steel faceplate C/W alarm	10100337
KS8-KSRA WS	White steel faceplate C/W alarm	10100338
KS8-SSFPA	Stainless faceplate C/W alarm	10100226
KS8-BST100	Sampling tube 100m black	10100218
KS8-BST250	Sampling tube 250m black	10100219
KS8-IF	Filter for aspirated detectors	10100221
KS8-EF	End of line filter	10100223
KS8-STSC	Sampling tube straight connector	10100224
KS8-ST2M	Sampling tube 2-way manifold	10100225

Refrigerant detector	KSGD-01W	KSIR-SP	KSGD-01S	KS8-IR8C / 16C / 32C
Description	Standalone white back box	Standalone exposed	Standalone silver back box	Aspirated panel
Sensing Type	Semi-conductor	Infra-red	Semi-conductor	Infra-red
Power Supply	12VDC (Via KSTR12)	240VAC	12VDC (Via KSTR12)	240VAC
Number of rooms	1	1	1	8 (16 max)/16 (32 max)/32 (64 max)
Audible alarm	✓	✓	✓	✓
Visual alarm	✓	✓	✓	✓

Refrigerant Detection

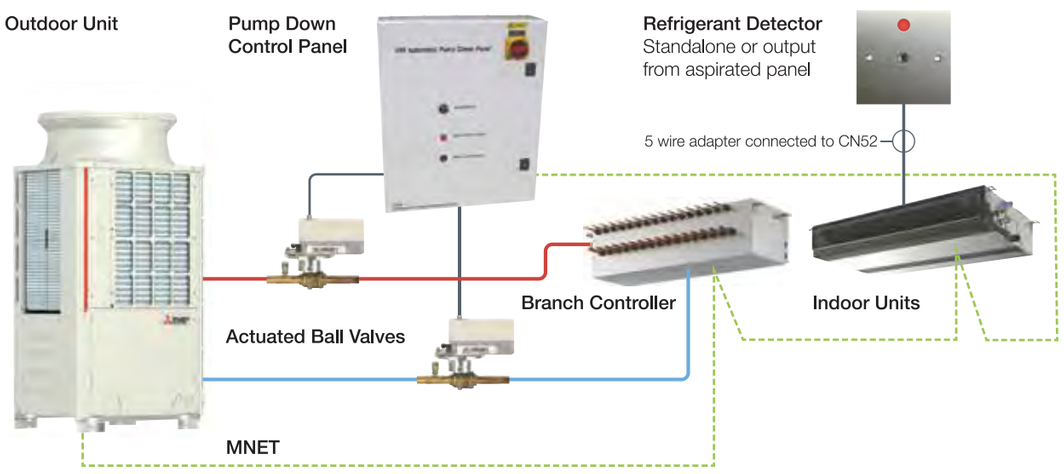
Refrigerant Pump-down Packages

Full safety and environmental protection

This system provides an option to pump down and isolate the refrigerant within City Multi R2 heat recovery VRF/HVRF systems.

Components are available to work alongside any of the leak detection systems including standalone and aspirated, to provide full safety and environmental protection from refrigerant leakage.

These systems can help achieve recognition within the Pollution section of BREEAM, subject to evaluation by an accredited BREEAM assessor. Pollution Prevention within.



KS8-OC VRF pump down panels

The controls panel is required to pump the refrigerant down in the system, providing the link detection system and the Mitsubishi Electric City Multi R2 heat recovery VRF system.

Panels are available to control from one to eight outdoor units.

Automatic pump down is only currently available on City Multi R2 heat recovery VRF (PURY, YHM, YJM, YKM, YNW models).

Model	Full Description	VRF units controlled	K-con Code
KS8-OC1	VRF Pump down control panel	1	10100096
KS8-OC2	VRF Pump down control panel	2	10100092
KS8-OC3	VRF Pump down control panel	3	10100099
KS8-OC4	VRF Pump down control panel	4	10100098
KS8-OC5	VRF Pump down control panel	5	10100100
KS8-OC6	VRF Pump down control panel	6	10100101
KS8-OC7	VRF Pump down control panel	7	10100102
KS8-OC8	VRF Pump down control panel	8	10100097

KS8-ABV Actuated ball valves

The actuated ball valves enable the system to isolate refrigerant during and after pump down to minimise the effect of any refrigerant leakage should this occur, with one on the high and one on the low pressure refrigerant pipework of each system, situated between the outdoor and branch controller.

Model	Full Description	K-con Code
KS8- 5/8ABV	5/8 Actuated ball valve	70040081
KS8-3/4ABV	3/4 Actuated ball valve	70040082
KS8-7/8ABV	7/8 Actuated ball valve	70040083
KS8-1.1/8ABV	1.1/8 Actuated ball valve	70040084
KS8-1.3/8ABV	1.3/8 Actuated ball valve	70040085
KS8-1.5/8ABV	1.5/8 Actuated ball valve	70040086

Temperature and CO_2 Sensors

Discrete, accurate and efficient

KS9-BS1 Temperature Sensors

K-con offer a remote temperature sensor designed to be a discreet means of providing accurate temperature readings. Ideal for use in hotel and residential applications where aesthetics are an important consideration.

- Low profile for discreet installation
- Can be painted to blend into surroundings
- Optimum room temperature control without the need for an unsightly box on the wall

KS-BA CO2 Sensors

Kooltech supply a range of standalone CO2 sensors that can be used to accurately detect the presence of carbon dioxide within a room. Manufactured to the highest standard, the sensor can adjust the Lossnay speed to suit the number of people within a space and therefore improve the efficiency of an already proficient Lossnay system. By adjusting the speed of the Lossnay, the system will provide a cost-saving over a 12-month period.

KS-BA CO2 Room Sensor

Wall mounted 0-10V Standalone sensor.

- 0-10 vdc stand alone CO_2 detector
- CO_2 range 0-2000pm (0-10vdc)
- 3 LED CO2 level indicators on the front of the unit
- Can control the Lossnay fan speed up to 4 steps
- Auto adjustment of speed results in energy cost savings
- The units are designed for connecting to Direct Digital Control (DDC) with 0-10V or 2-10V signal inputs.
- Also available as 12-24V DC powered,4-20 mA and 2 alarm relay versions.

Model	Description	Dimensions (L x W x H)	K-con Code
KS-BA/AQX-D	CO2 Lossnay Control Package 0-10V	111.8 x 76.2 x 27.6mm	10100366

KS-BA CO_2 Duct and Harsh Environment Sensors

These sensors are installed to ducts. A probe penetrates though into the internal of the duct and takes air samples using an aspiration tube. The Harsh Environment unit is ideal for areas such as outdoor air plenums, equipment rooms, green houses and warehouses

- 0-10 vdc sensor
- Measures CO_2 in a range of 0 to 2000 ppm
- 3 LED CO_2 level indicators on the front of the unit
- Can control the Lossnay fan speed up to 4 steps
- Auto adjustment of speed results in energy cost savings
- IP66 rated UL94 V-O enclosure (with ventilation slots on the Harsh Environment Sensor)
- Operating environments 0-50°C and 0-95% RH non-condensing

Duct Sensor

Harsh Environment Sensor

Model	Description	Dimensions (L x W x H)	K-con Code
KS-BA/DCD10-D-BB	CO2 Duct Mounted Control Sensor 0-10V	127 x 104.4 x 63.5mm Probe 132.7mm	10100367
KS-BA/DCD10-V-BB	CO2 Harsh Env Duct Control Sensor 0-10V	127 x 104.3 x 63.5mm Probe 132.7mm	10100368

Lossnay

Limited space? Put it outside.

KS4-KWH RVX Lossnay weatherproof housings

IP 43 Rated, weatherproof housing has been designed to enable outdoor installation of the entire Mitsubishi Electric Lossnay range to be installed either on the roof or at ground level. Ideal for any application where indoor space is limited or restrictive.

- High quality galvanised steel construction
- Epoxy painted
- Custom paint finishes to a RAL number available on request

Weatherproof Lossnay Housings are manufactured from A high quality powder coated galvanised steel the housings are supplied flat-packed.

For an additional charge, the housings can be supplied fully assembled around a Lossnay unit prior to despatch.

Model	Lossnay Unit	A (mm)	B (mm)	C (mm)	K-con Code
KS4-KWH25	LGH-25RVX-E	879	798	342	10070399
KS4-KWH35	LGH-35RVX-E	1012	910	383	10070400
KS4-KWH50	LGH-50RVX-E	1160	910	367	10070401
KS4-KWH65	LGH-65RVX-E	1094	926	455	10070402
KS4-KWH80	LGH-80RVX-E	1150	1164	454	10070403
KS4-KWH100	LGH-100RVX-E	1371	1164	454	10070404
KS4-KWH150	LGH-150RVX-E	1150	1164	857	10070405
KS4-KWH200	LGH-200RVX-E	1371	1164	857	10070406

Lossnay heaters

Lossnay Heaters can be positioned to be used as a preheater or after heater to the Lossnay.

After Heater

After heaters are used to prevent cold drafts when the outside ambient is at a lower temperature. This ensures full recovery from the heat exchanger core, as the heaters are thyristor control.

Only the required energy is used to bring the supply air up to the programmed set point.

The heater is also interlocked with the Lossnay for run on and control.

- Heater Capacities: 0.75Kw to 7.5Kw.
- Sizes: 100 mm - 350 mm diameter.

Preheater

Lossnay Preheaters are used to prevent condensation and freezing of the cores within the Lossnay at very low temperatures.

This can be controlled by the software within the Lossnay control. Please check what your minimum outside ambient temperature will be in operation of the Lossnay.

Model	Diameter (mm)	Back Up Heater (kW)	K-con Code
KLH-TC15-0.75	100	0.75	10070300
KLH-TC15-1.0	100	1	10070301
KLH-TC25/35-1.0	150	1	10070305
KLH-TC25/35-1.5	150	1.5	10070306
KLH-TC25/35-2.0	200	2	10070307
KLH-TC25/35-2.5	150	2.5	10070308
KLH-TC50/65-2.0	200	2	10070310
KLH-TC50/65-2.5	200	2.5	10070311
KLH-TC50/65-3.0	200	3	10070312
KLH-TC80/100-2.5	250	2.5	10070315
KLH-TC80/100-3.0	250	3	10070316
KLH-TC80-200-4.5	250	4.5	10070320
KLH-TC80-200-6.0	250	6	10070321
KLH-TC80/200-2.5	315	2.5	10070326
KLH-TC80/200-2.5	300	2.5	10070328
KLH-TC80/200-4.0	355	4	10070327
KLH-TC80/200-5.0	400	5	10070329
KLH-TC150/200-7.5	250	7.5	10070325
KLH-TC150-2.5	350	2.5	10070333
KLH-TC250-8.0	355	8	10070332

Other Products

Transformers

KSTR 12/24v Power supply units

The 12/12v transformers can be used with Mitsubishi Electric products that require 12/24v power supply.

- Used to power up KSGD-01 semi-conductor sensors
- Used with Mitsubishi Electric products that require 12/24v power supply including PAC YG66/63 interfaces.
- 1 per WR2 or CAHV system

Model	Full Description	K-con Code
KSTR12	KSTR12 Power supply 0.8A,12VDC	10100230
KSTR24	KSTR24 Power supply 0.5A,24VDC	10100231

KSTR 12/24 Mini power supply units

The 12/24 VDC transformers can be used with the standalone KSGD-01 and KSIR-SP01 gas detectors.

Model	Full Description	Dimensions (L x W x H)	K-con Code
KSTR12 MINI	KSTR12 Power supply unit 333mA 12VDC	37.8 x 23.9 x 15.7mm	10100230
KSTR24 MINI	KSTR24 Power supply unit 167mA 24VDC	37.8 x 23.9 x 15.7mm	10100231

DTS-541 Energy Meter

Code: 90014944

The MT 174 is a current transformer-operated 5 amp Multifunction electronic kWh meter.

The meter is set up as standard to show on the fixed register, Import Kwh on the Manual register Amps per phase, Volts per phase, Import kWh, Export kWh, Import kvarh, C.T ratio (X5), Fault screen and End. More parameters can be added if required.

- Four-rate fully programmable with an in built time switch.
- Large easy-to-read LCD display can be programmed with automatic scroll register, fixed register or manual scroll register.
- 1 Pulse output = 1Kw

KS10 Differential pressure switch

Code: 10100246#1

The Differential pressure switch is used to monitor the difference in two pressures.

- Monitor filter, heat pump boiler, pump condition
- Signal when flow or pressure from these devices fall or rise to an alarm condition.
- For all applications where air, oil or water is to be monitored.

PFD Stands

Kooltech have designed bespoke stands specifically for use with the Mitsubishi Electric range of PFD Close Control Units. The PFD units enable close control of temperature and humidity in critical areas and the Kooltech stands help maximise PFD performance by facilitating maximum air flow.

- Available in two sizes (250 & 500)
- Down flow air scoop for optimum operation
- Flexible height and level adjustment
- Fully approved by Mitsubishi Electric UK Living Environmental Systems

Bespoke stands for use with Mitsubishi Electric PFD Close Control Units

Mitsubishi Electric's Close Control system is specifically designed for use in computer rooms and laboratories etc, where there is a need for high sensible cooling and a close control of temperature and humidity.

Kooltech have designed bespoke stands to ensure optimum performance of the Mitsubishi Electric range of PFD Close Control Units. Manufactured from galvanised steel the square tube section is powder coated for a quality finish.

The scoop is also manufactured in galvanised steel and the full frame sits on height adjustable feet.

Kooltech offer two standard options, both factory tested to support half a ton. Further bespoke solutions are available to suit a variety of applications including those with low flooring.

Mitsubishi Electric Model	Model	Full Description	K-con Code
PFD-P250VM-E	KS6-250	Stand Pfd-250VM-E 308-400mm (Height) Black Finish	10100250
PFD-P500VM-E	KS6-500	Stand Pfd-500VM-E 308-400mm (Height) Black Finish	10100255
PFD-P500VM-E	PFD500-M LEG 1	PFD500 Middle Leg Extension 484-571mm (1Per Frame Req)	10100261
PFD-P500VM-E	PFD500-M LEG 2	PFD500 Middle Leg Extension 569-655mm (1Per Frame Req)	10100263
PFD-P500VM-E	PFD500-M LEG 3	PFD500 Middle Leg Extension 654-740mm (1Per Frame Req)	10100265
PFD-P250VM-E / PFD-P500VM-E	PFD-OS1-A LEG 1	PFD Outside Leg Extension 484-571mm (KS6-250/500 1 Per Frame Req)	10100260#1
PFD-P250VM-E / PFD-P500VM-E	PFD-OS-A LEG 2	PFD Outside Leg Extension 569-655mm (KS6-250/500 1 Per Frame Req)	10100262#1
PFD-P250VM-E / PFD-P500VM-E	PFD-OS LEG 3	PFD Outside Leg Extension 654-740mm (KS6-250/500 1Per Frame Req)	10100264#1

Our work

Find out what our clients have to say...

We've worked with a range of organisations to deliver bespoke solutions across a variety of locations. But what all our projects have in common is a commitment to getting it right before, during and after... here's what some of our clients say about us.

Client:
St George

Consultant:
Roger Preston & Partners will begin trading as Grontmij

M&E Contractor:
Haydon (Shell & Core)
Briggs and forester (Fit-out)

Air conditioning Installer:
Atmosphere Air Conditioning Ltd

St George's Tower, London

WR2 VRF was used to supply cooling and heating and the PWFY-P100-BU boilers provided hot water to each apartment, using system diversity and energy recovery, not only with in the VRF system but also from the closed water loop feeding all 98 WR2 VRF systems.

St George's Tower was the birthplace of the K-con KS8 BC box with port isolation valve modification. 98 Mitsubishi Electric BC box controllers feeding 1110 fan coils where upgraded with port isolation valves at Kooltech's K-con facility, Glasgow. All valves are fitted and pressure tested in a controlled environment. This modification has multiple benefits including simple maintenance. Repairs and maintenance can take place in a single apartment by isolation without the need to shut down other apartments heating, cooling and hot water that feed off the same BC box controller.

KS9 discreet button temperature sensors where also utilised on the project. It was a requirement that the temperature had to be monitored in all compartments where there was a fan coil. The KS9 was an ideal solution as the client did not want to see sensors on the walls.

K-con products used

KS8 BC box modification including port isolation valves. KS9 discreet temperature sensors.

Client:
Muse Developments

Contractor:
Richard Irvine Energy Solutions

Consulting Engineer:
Atelier Ten

The Marischal Square, Aberdeen

The Marischal Square Development is designed to transform the centre of Aberdeen. This 16,119m^2 scheme of BREEAM Excellence comprises of two buildings including Grade A office accommodation and a 4-star Residence Inn by Marriott hotel.

Our offering assisted in the development being awarded BREEAM Excellent.

The design was based on four systems per floor plate, all capable of providing simultaneous heating and cooling with future expansion and flexibility in mind for future tenants.

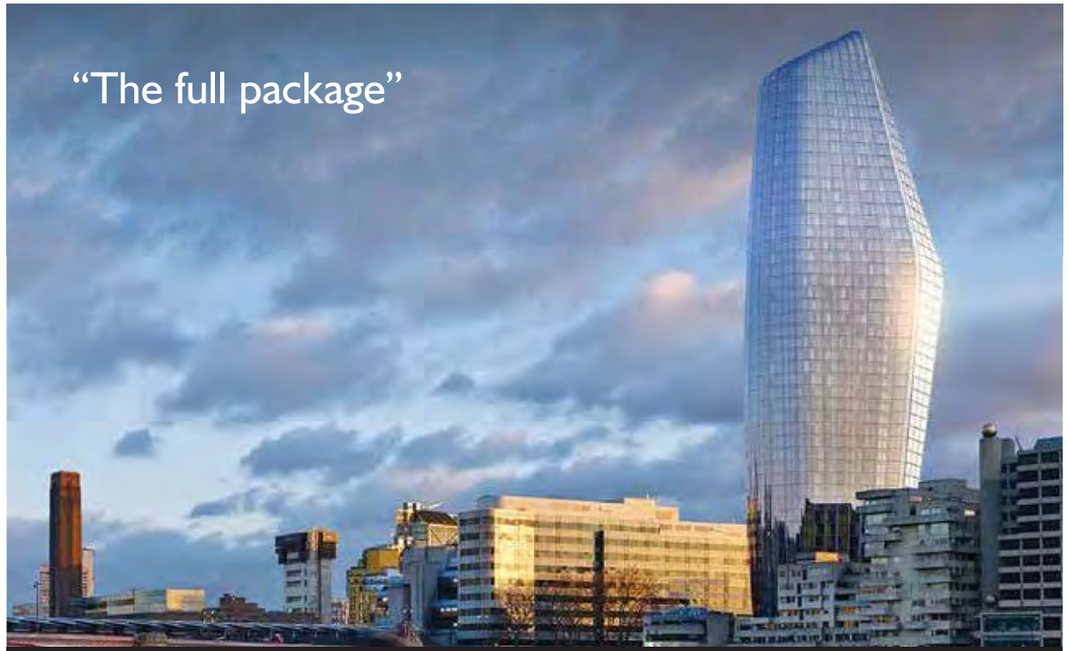
K-con KS8 BC Box controllers with port isolation valves were installed to allow for future expansion and alterations.

This BC box is perfect for use in any application where uninterrupted air conditioning is essential. With the constant rise of refrigerant gas prices, these systems can reduce annual leakage by isolating serviced units and not requiring recovery of 100% of the system refrigerant volume. The BC boxes are ideal for any office development or hotel/residential application.

K-con KS9 discreet button sensors were also used on this project. These sensors are designed to be a discreet means of providing accurate temperature readings. They are low profile and can be painted to blend into surroundings.

K-con products used

KS9 discreet temperature sensors.
KS8 BC box modification including port isolation valves.



Client: St George - Berkeley Group
Consulting Engineer: Hoare Lea

Mechanical & Electrical Contractor:
Designer Group (Shell & Core)
Briggs & Forrester (Fit-out)

Air Conditioning Contractor:
Atmosphere Air Conditioning

One Blackfriars, London

K-con range of BC Boxes with both Acoustic Pack treatment and port isolation valves have been utilised to enable phased installation and handover of all relevant areas. Future service and maintenance cost would be kept to a minimum and acoustic treatment to the BC box controllers. Along with the KS9 temperature sensors fitted within the rooms would ensure occupant comfort.

Having worked closely with the professional team and securing the Shell & Core package, Kooltech are naturally supplying all aspects of the VRF heating and cooling system for the Fit-Out works for each of the 900 apartments and supplementary areas.

Key aspects of Kooltech's involvement include: Kooltech's discreet remote temperature sensors utilised throughout. Repackaging, identification and shrink wrapping of all indoor units, together with Kooltech's ability to supply all ancillary equipment including pipework, refrigerant, bracketry and fixings, all under our accredited FORS Delivery management, offering the client a 'One Stop Shop' solution for the complete VRF systems for this prestigious development.

K-con products used

KS9 discreet temperature sensors.
KS8 BC box modification including port isolation valves.

Get in touch...

We challenge ourselves to bring new ideas and innovative solutions. We constantly look forward to the next challenge. We'd love to hear from you and are always happy to help.

Scotland Projects Office (HQ)
Strathaird, 12 Mossland Rd, Hillington Park,
Glasgow. G52 4XZ
Tel: 0345 034 4181
scotlandprojects@kooltech.co.uk

Northern Projects Office
Unit 13 Wheel Forge Way, Off Ashburton Road
West, Trafford Park, Manchester. M17 1EH
Tel: 0345 034 4182
northernprojects@kooltech.co.uk

Southern Projects Office
Tower Suite, Unit 3 Argent Centre,
Pump Lane, Hayes. UB3 3NB
Tel: 0345 034 4183
southernprojects@kooltech.co.uk

k-con®


"We build trust by engaging
with our customers, so that their
beliefs become our business"
ENVIRONMENTAL ISO CERTIFIED 14001 isoassured
SAFETY ISO CERTIFIED OHSAS 18001 isoassured
QUALITY ISO CERTIFIED 9001 isoassured

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