

ENVIRONMENTAL SOLUTIONS - Refrigerant Detection Systems

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 for safety and environmental protection along with ease of installation
- Actuated ball valves to isolate refrigerant on pump down
- Alarm system to alert occupants and staff of any refrigerant leakages



ENGINEERED AND MANUFACTURED IN THE UK BY

The need for Refrigerant Detection Systems

Mitsubishi Electric air conditioning systems use refrigerant, which if installed and maintained correctly are designed to never leak into the atmosphere.

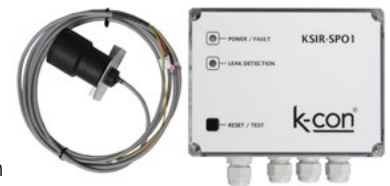
To protect against a worst case scenario, EN378, is in place as safety guidance for calculating the critical concentration of refrigerant if it were all to leak into an occupied space, which for R410A refrigerant is 0.44kg/m³.

Focusing specifically on sustainable buildings, BREEAM Pol 01 aims to minimise pollution under the unlikely event of leakage of refrigerant from the air conditioning system. Designed to reduce such pollution, the system provides an option which can help achieve recognition within BREEAM, subject to evaluation by an accredited BREEAM assessor.

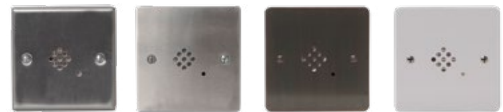
Safety of Building Occupants

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, Mitsubishi Electric can provide the solution for refrigerant detection to ensure the safety of building occupants.



KSIR-SP01 refrigerant leak detection sensor



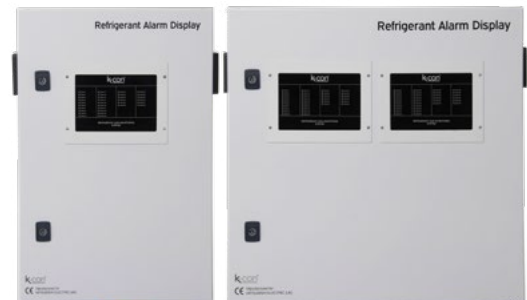
KSGD-01 semi conductor sensors (available in a range of finishes)

Standalone/Infra-red

These systems have one sensor per space which includes refrigerant sensor and visual /audible alarm. The KSIR-SP01 can be used as a standalone refrigerant leak detection sensor (240v power supply required) for EN-378 the KSIR-SP01 can be connected to a KSSP-RDU panel, up to 30 KSIR-SP01 can be connected.

Standalone/Semi conductor

KSGD-01 can be used as a standalone refrigerant leak detection sensor (12/24 rdc 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.

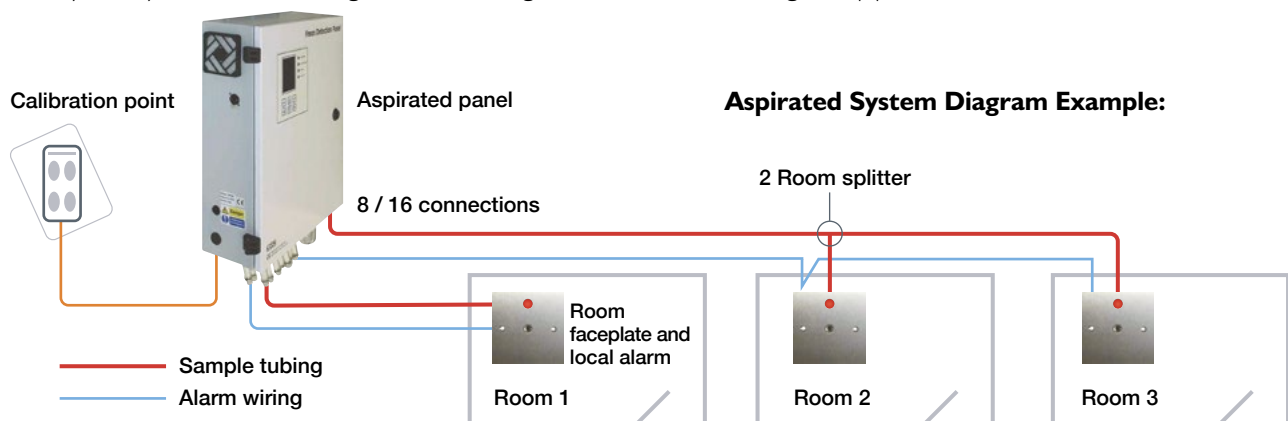


RAD 32 and 64 remote interface panels for semi conductors

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 2 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:



Pollution Prevention within BREEAM Assessment

Designed to reduce pollution under the unlikely event of refrigerant leaking from the air conditioning, the system provides an option to pump down and isolate the refrigerant within City Multi R2 heat recovery VRF 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.

City Multi Pump Down Control System KS8-OCI~8

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

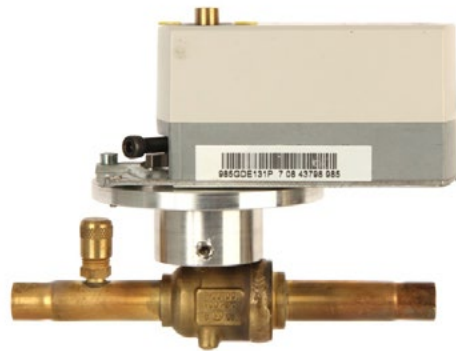
Panels are available to control from 1 to 8 outdoor units.

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

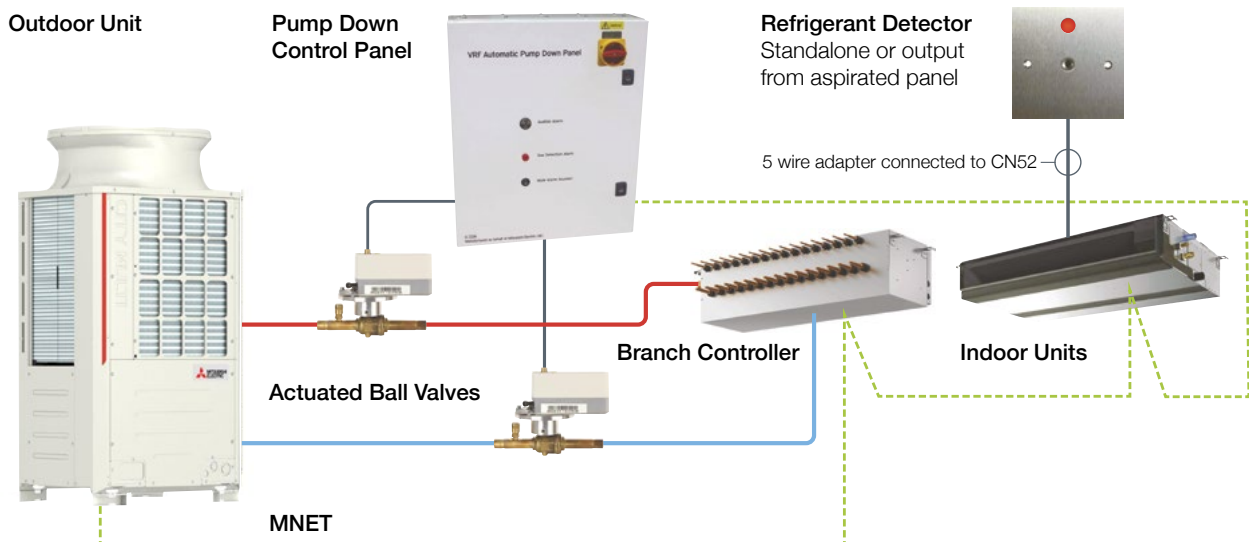


Actuated Isolation Ball Valves KS8-5/8~1.5/8ABV

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 unit and branch controller.








Refrigerant Gas Detection with City Multi VRF Automatic Pump Down Installation Example:



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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)
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

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

ADDITIONAL ITEMS FOR DETECTION SYSTEMS	MODEL REF.	CODE	REMOTE DISPLAY PANELS										
Transformer 0.8A, 12VDC	KSTR12	10100230	<table border="1"> <thead> <tr> <th>DESCRIPTION</th> <th>FUNCTION</th> </tr> </thead> <tbody> <tr> <td>KS8-IR Remote display unit</td> <td>Can connect up to 6 KS8-IR aspirated panels</td> </tr> <tr> <td>KS8-RAD32 Remote display</td> <td>Can connect up to 32 KSGD1 sensors</td> </tr> <tr> <td>KS8-RAD64 Remote display</td> <td>Can connect up to 64 KSGD1 sensors</td> </tr> <tr> <td>KSRA1 Remote display</td> <td>Can connect direct to KS8-IR aspirated panels and RAD 32/64 and KSIR-SP01</td> </tr> </tbody> </table>	DESCRIPTION	FUNCTION	KS8-IR Remote display unit	Can connect up to 6 KS8-IR aspirated panels	KS8-RAD32 Remote display	Can connect up to 32 KSGD1 sensors	KS8-RAD64 Remote display	Can connect up to 64 KSGD1 sensors	KSRA1 Remote display	Can connect direct to KS8-IR aspirated panels and RAD 32/64 and KSIR-SP01
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Transformer 0.5A, 24VDC	KSTR24	10100231											
Sampling tube 100m black	KS8-BST100	10100218											
Sampling tube 250m black	KS8-BST250	10100219											
Filter for aspirated detectors	KS8-IF	10100221											
End of line filter	KS8-EF	10100223											
Stainless faceplate C/W alarm	KS8-SSFPA	10100226											
Sampling tube straight conn	KS8-STSC	10100224											
Sampling tube 2 way manifold	KS8-ST2M	10100225											
Brass faceplate c/w alarm	KS8-KSRA BP	10100325											
Satin stainless steel faceplate c/w alarm	KS8-KSRA SS	10100337											
White steel faceplate c/w alarm	KS8-KSRA WS	10100338											

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