

City Multi

VRF & Hybrid VRF Air Conditioning Systems





City Multi is the market leader in **VRF technology**

Today's buildings need to provide so much more than just a comfortable space for occupants.

Tough government regulations and stringent environmental targets on carbon emissions mean building owners are now demanding future-proof technologies that reduce running costs, improve indoor air quality and provide optimal energy efficiencies.

Our answer to these challenging demands is the **City Multi VRF and Hybrid VRF air conditioning systems**. First developed over 30 years ago, City Multi is now the market leader, with a comprehensive range of systems that continues to grow through smart innovation.





City Multi delivers complete flexibility of design and installation. With intelligent, centralised control, these systems can be used in a wide variety of applications such as offices, hotels, hospitals, retail spaces and public buildings.

This brochure provides a comprehensive overview of the City Multi range, including features and benefits, legislation and market challenges.

Mitsubishi Electric is the first name for **comfort and efficiency**

Mitsubishi Electric was founded in 1921 and brings over 100 years of innovation and experience to the building services industry, as a global market leading environmental technologies manufacturer.

Mitsubishi Electric Living Environment Systems provide pioneering solutions that heat, cool, ventilate and control our buildings.

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The challenge to Reduce Carbon Emissions

In the UK, buildings account for over **40% of our carbon emissions**, and nearly **90%** of this is generated from heating and cooling systems.* The use of more energy efficient equipment means that operational costs are lowered for building owners, and the impact on the environment is reduced - helping us all adhere to corporate and social responsibility directives.

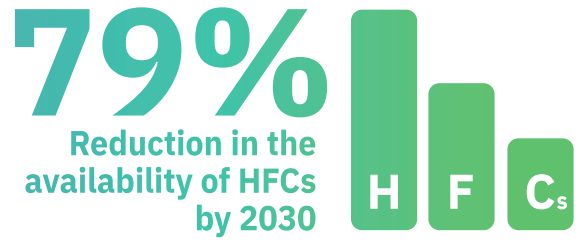
The reduction of carbon emissions

As part of the global roadmap to achieve net zero carbon, ambitious standards are being set for the energy performance of new and existing buildings. As a result, the UK needs to develop, adapt and embrace new cleaner technologies.

Significant legislation such as **F-Gas** and **Part L** of the Building Regulations is also placing demands on commercial organisations to monitor and control their energy use as never before.



*Source: UK Green Building Council



Refrigerant & Installation standards

The growing pressure of the F-Gas phase down regulation sees the market demand viable and positive solutions. R32 is a highly efficient refrigerant that is easy to recycle and is now the norm for large-scale room and split air-conditioning systems offering a lower Global Warming Potential (GWP) than R410A.

We remain the only manufacturer able to offer a complete range of R32 solutions from large scale VRF and HVRF systems, to splits and single room units. Our R32 models offer customers a future-proof solution that is fully flexible in design, reduces operating costs and simplifies maintenance regimes. In addition to lowering the Global Warming Potential (GWP) of the air conditioning, the use of R32 means that less refrigerant is required and our ability to supply large, medium and small systems means that a single refrigerant can be used across an entire building or estate.

BS EN378 is an installation standard designed to improve safety in the unlikely event of refrigerant leaking from an air conditioning system. Current UK legislation places limits on the use of refrigerants in buildings, with BS EN378 in particular intended to minimise possible risks to persons, property and the environment from refrigerating systems and refrigerants.

Energy Efficiencies

The London Energy Transformation Initiative (LETI)

The LETI has set the ambitious target that by 2030, all new buildings should operate at annual net zero carbon emissions. In addition, the LETI Industrial Strategy has set out 'Grand Challenges' that will help to put the UK at the forefront of the industries of the future. This includes the government's approach to bring businesses and organisations together to make a real positive impact on how we live our lives.

Part L

Part L of the UK Government Building Regulations addresses the conservation of fuel and power in a building. It outlines how building services such as air conditioning can help comply with carbon reduction targets. **The Non Domestic Building Services Compliance Guide (NDBSCG)** sits alongside Part L and outlines technical information and calculations to help building professionals comply with planning regulations. Both Part L and NDBSCG are advisory documents that give guidance and suggested methods of carbon reduction.

BREEAM

BREEAM is an international sustainability assessment method used in the planning of new projects; it recognises the value in higher performing assets across the built environment from new construction to refurbishments and in-use buildings. Certification is achieved with a third party assessment - by impartial experts - of a building or project by a qualified and licensed BREEAM Assessor to ensure that it meets the quality and performance required.

Mitsubishi Electric's approach is to develop **innovative, energy-efficient solutions** for our customers, that will help the UK to meet the targets being set now and in the future.



For more information, watch our video:
The Spirit of the F-Gas Regulations
Click play or Scan the QR code



City Multi Seasonal Efficiencies

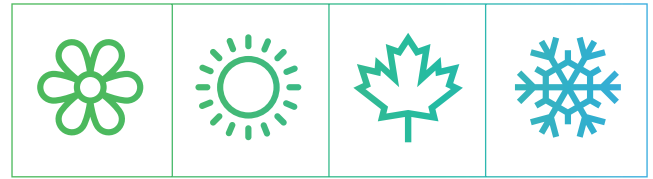
The whole building industry is being targeted to create **‘greener’ more sustainable buildings** and to equip them with air conditioning systems that provide the very best, long-term performance in terms of energy efficiency, ease of service and maintenance, as well as occupant wellbeing.

The Ecodesign for Energy-Related Products

The Ecodesign Directive for Energy Related Products (ErP) (Amendment) (EU Exit) Regulation 2020, is a European legislation designed to improve the energy efficiency of all products which “generate, transfer or measure energy” - whether through electricity, gas or other fossil fuel. Introduced in 2009, the ErP legislation covers a broad range of domestic and commercial products including everything from televisions and fridges to boilers, heat pumps and air conditioning systems.

The Ecodesign Directive deals with all aspects of product performance, from manufacture to transportation to market, use and disposal. When considering how to reduce the impact of a product, the EU legislation considers those stages of a product’s lifecycle that have the most impact on the environment.



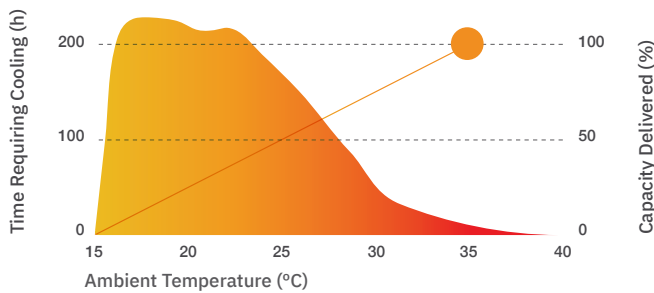


The Ecodesign Regulation

The Ecodesign Regulation reflects this by setting minimum efficiency requirements and a new method of measuring performance has been introduced. **The British Standard BS EN14825** sets the seasonal performance calculation for an air conditioning system. The use of more energy efficient equipment means that operational costs are lowered and the impact on the environment is reduced.

EN14825 - Cooling

EN14825 uses the number of hours that is spent at each degree Celsius in a cooling season. Indoor temperature conditions are 27°CDB/19°CWB.



The 100% load condition is 35°C outdoor temperature. This is the same as nominal or rated conditions as indicated by the orange circle. We have a linear capacity profile and on average, below 15°C we no longer need cooling. The standard calls for equipment to be tested at 100%, 75%, 50% and 25% part load conditions.

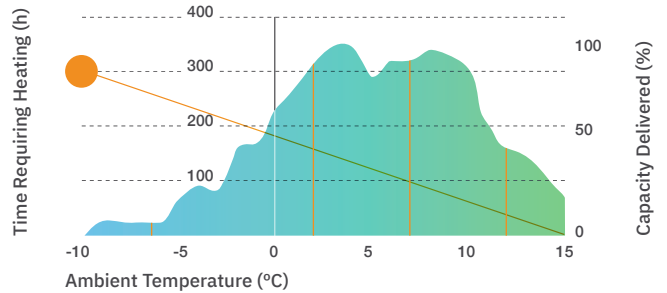
These relate to 35, 30, 25 and 20°C ambient temperature respectively. At these four conditions the capacity and power input are tested and are used to calculate a spot EER. Each individual 1° increment is then given a calculated EER. **Example:**

Ambient Temp (°C)	Hours	kW Out	kWh Out	EER	kWh In
35	13	20	260	3.0	87
34	17	19	323	3.1	104
33	24	18	432	3.2	135
32	31	17	527	3.3	160
31	39	16	624	3.4	184
30	63	15	945	3.5	270

The number of hours is multiplied by the spot capacity at each condition to give energy delivered at the particular ambient temperature. The EERs are used to calculate energy consumed. These figures are totalled to give an SEER when the unit is operating in cooling mode.

EN14825 - Heating

The “average” temperature/time profile is used for the UK heating season; we have many more hours between 2°C and 7°C. Indoor temperature condition is 20°CDB.



The calculation for heating is very similar to cooling. A design condition is selected at -10°C as the 100% value. Four points are then selected at -7°C, +2°C, +7°C and +12°C for part load conditions.

The COPs are used to calculate energy consumed. These figures are totalled to give an SCOP when the unit is operating in heating mode.

Example:

Ambient Temp (°C)	Hours	kW Out	kWh Out	EER	kWh In
-7	24	20	480	3.0	160
-6	27	19	513	3.1	165
-5	68	18	1224	3.2	382
-4	91	17	1547	3.3	469
-3	89	16	1424	3.4	419
-2	165	15	2475	3.5	707
-1	173	14	2422	3.6	673
0	240	13	3120	3.7	843
1	280	12	3360	3.8	884
2	320	11	3520	3.9	903

SCOP = total kWh out / total kWh in



For more information, read our:
Seasonal Efficiency Explained Guide

Click on the icon or Scan the QR code





City Multi delivers the best possible performance, combined with total flexibility of design and operation.



City Multi VRF & HVRF Introduction

The market-leading City Multi system offers complete flexibility in design, installation and operation with both heat recovery and heat pump models able to connect with up to 50 indoor units per outdoor unit.

City Multi R32 VRF and **HVRF** units are ideal for customers looking to future-proof their air conditioning in line with the next stage of the F-Gas Regulations and the phase down of high Global Warming Potential (GWP) refrigerants.

R32 is now the refrigerant of choice for the majority of air conditioning systems because it offers a lower GWP (675) than R410A (2088) whilst complying with the latest legislation. Using these systems enables customers to enhance their CSR (Corporate Social Responsibility) with equipment that minimises the effect on climate change.

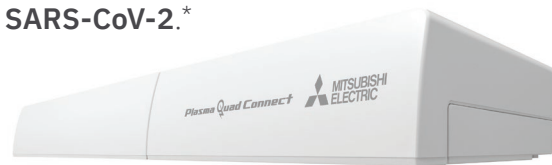
R32 is a single component refrigerant, meaning it is easier to reuse and to recycle. It is also relatively inexpensive to produce, is easier to handle because it doesn't separate and utilises familiar technology, keeping costs similar. R32 is also low-toxic, is difficult to ignite and does not explode.

Plasma Quad Connect



Plasma Quad Connect is Mitsubishi Electric's powerful bolt-on air purifying device, delivering **Plasma Quad Technology** to both new and existing installations of City Multi indoor units.

Plasma Quad Technology significantly improves indoor air quality by neutralising 6 key indoor pollutants, as well as **inhibits 99.8% of SARS-CoV-2.***



Click the icon or scan the QR code for more information on Plasma Quad Connect



* Derived from and subject to test results, for and on behalf of Mitsubishi Electric, conducted at the Microbial Testing Laboratory, Japan Textile Quality and Technology Centre, Kobe, Japan.



City Multi VRF

(Variable Refrigerant Flow)

VRF is a direct expansion type air conditioning system where one outdoor unit is connected with multiple indoor units, intelligently modulating the flow of refrigerant depending upon the capacity requirements of each zone within the building.



It's ultimate purpose is to regulate the internal room air temperature and comfort levels effectively and efficiently. Today's commercial buildings are increasingly airtight and filled with heat-generating office equipment and lighting, which presents a challenge for anyone trying to maintain a stable and comfortable internal environment.

Constant development and innovation mean that City Multi VRF can be applied as both **Heat Recovery** and **Heat Pump systems**.

Heat Recovery System

Provides simultaneous heating and cooling with the benefit of **heat recovery**. By moving energy where it's needed, power input is **reduced by up to 30%**, offering flexibility, operability, comfort and control.



This system is ideal for **hotels, offices and leisure**





Heat Pump System

One outdoor unit provides all indoor units heating or cooling at a given time




Indoor units

This system is ideal for **open plan offices, call centres or retail**

Outdoor unit

The Options

Air conditioning systems need to extract or reject energy to enable the heating and cooling process to operate. Regardless of source, using either air, water or the ground as a medium to transfer this energy, our wide range of products are designed to maximise efficiency.

		Capacity (kW)	Ambient Operating Range	Heat Recovery	Heat Pump
Air Source	Side blow small capacity	10-30	-20 to 46°C	●	●
	Medium to large capacity	22-150	-20 to 52°C	●	●
	Hybrid VRF	22-56	-20 to 52°C	●	
Water / Ground Source	Applicable to water and ground source	22-101	-5 to 45°C	●	●
	Combination of refrigerant and water	22-56	-5 to 45°C	●	






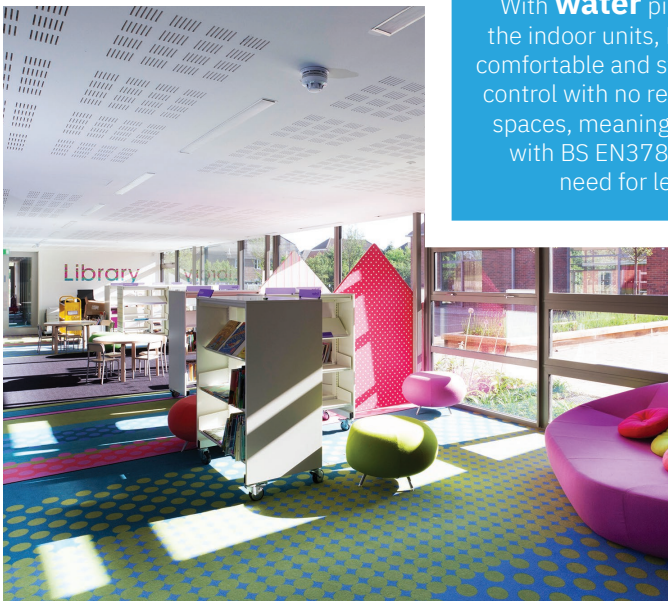
City Multi Hybrid VRF (HVRF)

HVRF is a type air conditioning system whereby the outdoor unit is connected with a 2-pipe heat recovery VRF system, and **water** is used between the Hybrid Branch Controller (HBC) and indoor units - instead of refrigerant. You can install and design the system as HVRF in the same way as other VRF systems, whilst enjoying the comfort levels normally associated with a chiller system.

Hybrid VRF offers a complete modern solution for office buildings, hotels, medical centres, schools, high-rise buildings, shopping centres and other commercial premises. Hybrid VRF is quick, easy & flexible to design and install, using the same control and network as VRF systems. Phased installation is possible, reducing cost and increasing productivity on site.



With **water** pipework connecting the indoor units, Hybrid VRF provides comfortable and stable air temperature control with no refrigerant in occupied spaces, meaning simple compliance with BS EN378 and removing the need for leak detection.

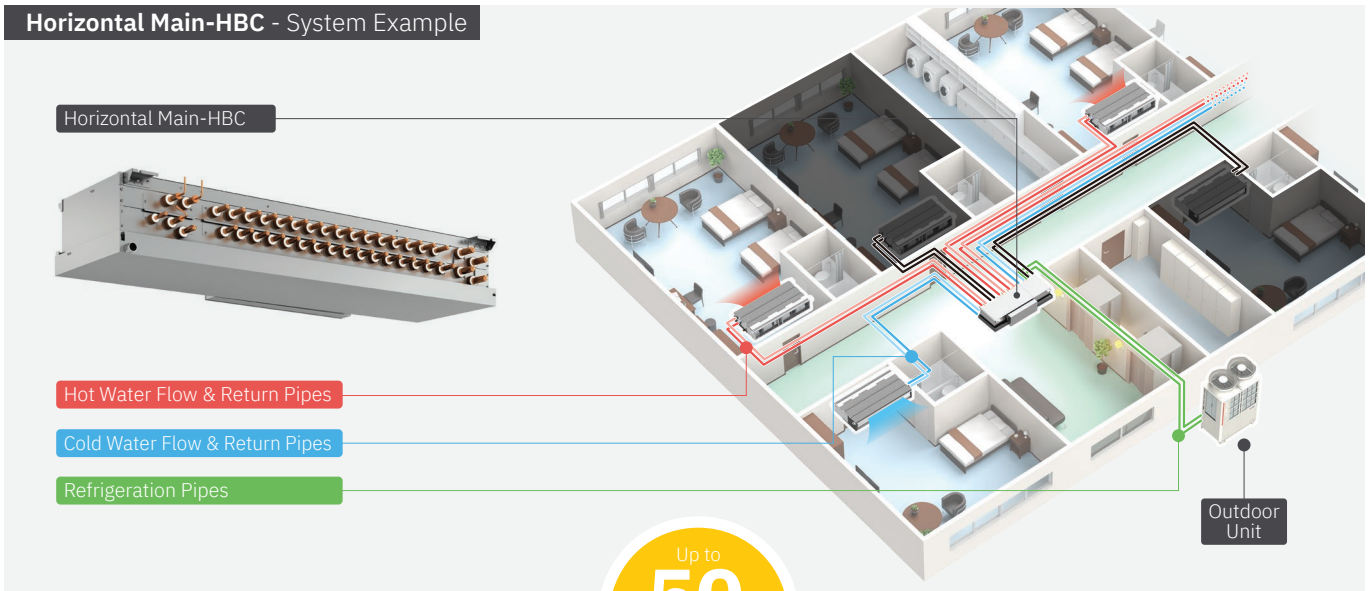


City Multi Hybrid Branch Controllers

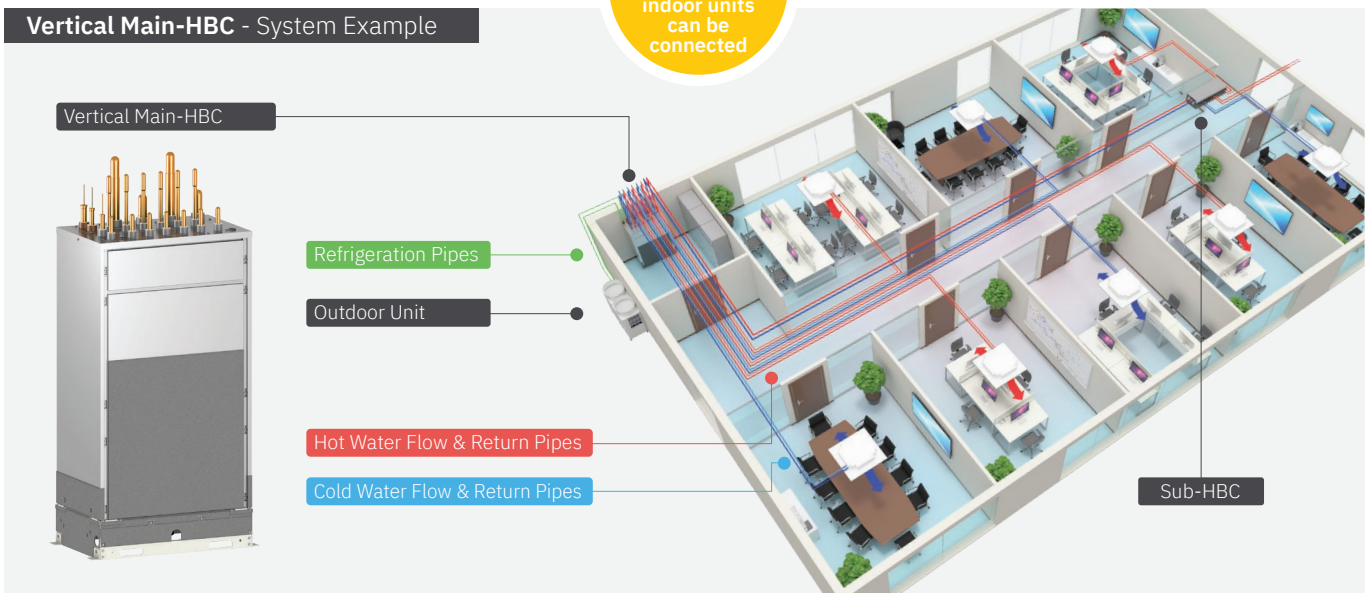
At the heart of both Air Source and Water Source system layout, the HBC Controller makes simultaneous heating and cooling possible, with improved system efficiency as energy is transferred intelligently around the building.

The **Horizontal** and **Vertical HBC Controllers** are available as a 6, 8 or 16 port model. Valves, pumps, and the heat exchanger are all contained within the Main-HBC allowing for phased, manageable installation - ideal for Cat A to Cat B applications. An overall system can be expanded using additional horizontal Sub-HBC's allowing up to 50 indoor units to be supplied by one outdoor condenser.

Horizontal Main-HBC - System Example



Vertical Main-HBC - System Example





City Multi Range Overview

Mitsubishi Electric offers the most extensive range of VRF and HVRF systems with a wide choice of indoor units available on the market.



R32 R2 Series VRF Heat Recovery Systems

- Utilises lower GWP R32 refrigerant
- Simultaneous heating & cooling with heat recovery
- Both Standard and High Efficiency models are optimised for seasonal performance

R32 Y Series VRF Heat Pump Systems

- Utilises lower GWP R32 refrigerant
- Optimised for seasonal performance in open plan spaces
- Simple & flexible solution

R32 R2 Series Hybrid VRF Heat Recovery Systems

- Utilises lower GWP R32 refrigerant
- Hybrid VRF heat recovery system with water between the Hybrid branch controller and indoor units
- Simultaneous heating & cooling with heat recovery, available in both high efficiency & standard models



R410A R2 Series VRF Heat Recovery Systems

- High efficiency & standard models available
- Connect up to 50 indoor units to one outdoor unit, up to 124kW capacity
- Simultaneous heating & cooling with heat recovery

R410A Y Series VRF Heat Pump Systems

- VRF 2 pipe technology and efficiency
- Connect up to 50 indoor units to one outdoor unit, up to 150kW capacity
- High levels of comfort, both thermally & acoustically

R410A Y Series Mini VRF Heat Pump Systems

- VRF efficiency, control and piping benefits in a low footprint, low impact solution
- Connect up to 30 indoor units to one outdoor unit, up to 33.5kW capacity
- Single and twin fan outdoor unit options





R410A

R410A WR2 Series VRF Heat Recovery Systems

- Water cooled condensing unit, with the same technology and flexibility as an air cooled system
- Simultaneous heating & cooling with double heat recovery
- High efficiency system, for use on either a closed or open loop building, or ground source application

R410A WY Series VRF Heat Pump Systems

- Water cooled condensing unit, with the same technology and flexibility as an air cooled system
- Ability to recover energy between units on the water circuit
- High efficiency system, for use on either a closed or open loop building, or ground source application

R410A WR2 Series Hybrid VRF Heat Recovery Systems

- Hybrid VRF heat recovery system using water cooled condensing unit
- Simultaneous heating & cooling with double heat recovery
- High efficiency system, for use on either a closed or open loop building, or ground source application





City Multi VRF Features & Benefits

Wide range of connectable indoor units

Available for heat recovery and heat pump systems, our extensive range of indoor units comprises of over **80 indoor options** ranging from 1kW to 25kW.

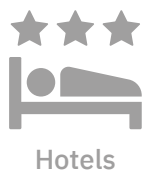
VRF systems can incorporate multiple indoor units, which can be located throughout a building. With advanced control logic, each system can provide optimum levels of comfort for any space. Our highly efficient indoor units can meet the cooling and heating needs of each area in a building, whilst also recovering heat and maximising the overall efficiency of the system.

The option to pump down and isolate the refrigerant within a VRF installation, and its ability to work alongside any leak detection system including standalone and aspirated, provides full safety and environmental protection from refrigerant leakage.

Options include: Ducted / Ceiling Cassette / Floor Standing / Wall Mounted / Ceiling Suspended



City Multi VRF is suitable for a wide range of applications:





City Multi YNW

The market-leading City Multi range is continually being updated to meet the ever-changing demands from the building services industry. We were the first to market with our innovative, patented HVRF technology, followed by the introduction of micro-channel heat exchangers that improve efficiency and reduce refrigerant volume.

We now also offer customers a future-proof solution that is fully flexible in design and reduces operating costs. R32 is a single component refrigerant, meaning it is easier to reuse and to recycle. With R32 less refrigerant is required and our ability to supply large, medium and small systems means that a single refrigerant can be used across an entire building or estate.

City Multi YNW has been designed to address some of the most fundamental challenges facing building designers today:



1 Location

- Reduced footprint achieved by a 4-sided heat exchanger
- Greater flexibility for location of outdoor units
- Up to **51kW/m²** and up to **80Pa** static fan



2 Sound

- Adjustable noise level options
- Greater flexibility to cope with different noise criteria for multiple applications
- Night time operation
- Acoustic enclosures can save costs by reducing the amount of attenuation required



3 Design Flexibility

- Reduced installation and maintenance time
- Up to **11** Sub BCs connectable
- Capacity index increased to **350** per sub BC
- BC height reduced by **14%** and overall reduction on system refrigerant volume



4 Efficiency

- Highest ever levels of efficiency
- This efficiency can result in energy savings up to **30%** over conventional systems
- **28%** increase in seasonal efficiency (34kW model)





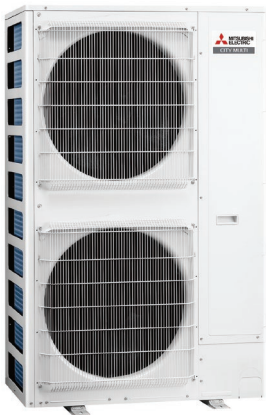
City Multi Mini VRF Features & Benefits

Utilising all the benefits of VRF technology, the City Multi Mini VRF PUMY models (10 to 33.5kW) have been designed with a focus on seasonal efficiency, making them ideal for discreet application environments.

City Multi PUMY units are designed to tackle the challenges of our modern urban environment, offering low noise levels and a range that enables outdoor units to be discreetly installed out of the line of sight.



Depending on your application, there are two solutions available:



Single fan

- Small footprint and height make this ideal for discreet location
- Standard 30Pa static fan allows outdoor units to be housed without affecting performance
- Cost effective and low refrigerant charge



Twin fan

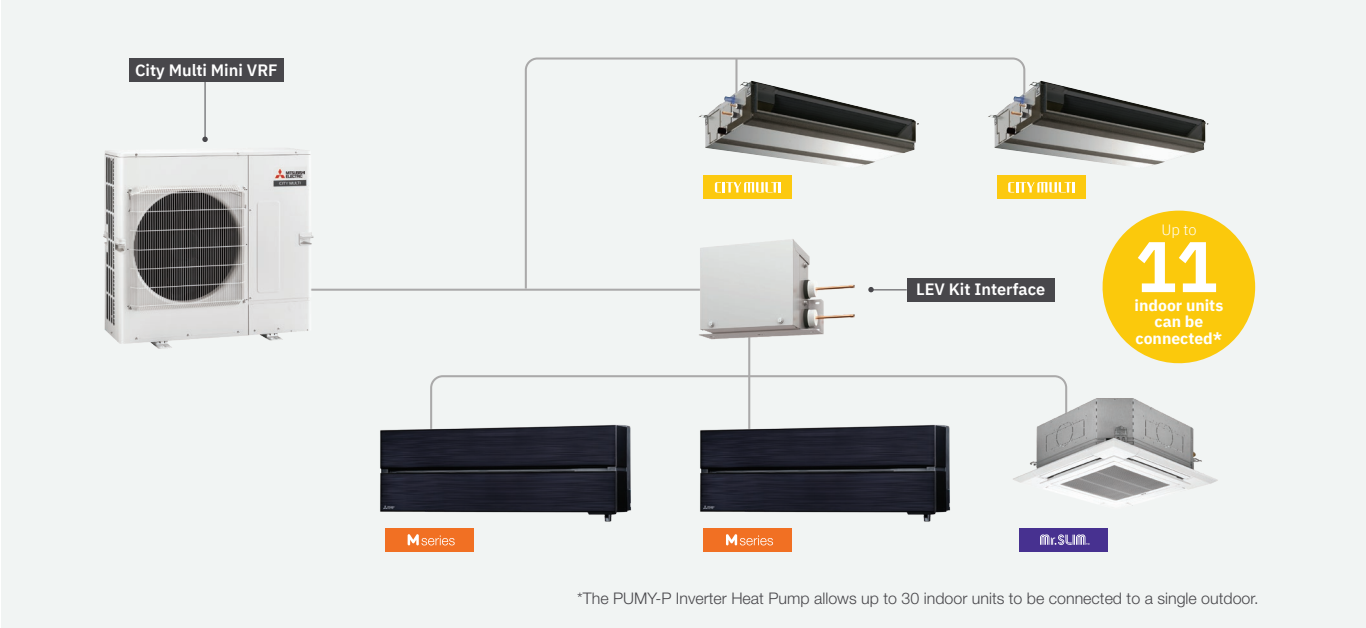


- High efficiency with longer pipe runs up to 300m total
- Optional 30Pa static fan (large units via dip switch)
- Low noise with best heating capacity available
- 33.5kW from low impact chassis



City Multi Mini VRF units provide additional design flexibility when used as a Multi-Split system, connecting to **City Multi**, **Mr Slim** or our stylish **M Series** indoor units.

Typical Multi-Split layout





City Multi VRF Water Cooled Features & Benefits

The City Multi WR2 Series VRF system is ideal where a water loop is available and outdoor space is limited.

These water cooled models utilise water instead of air as the energy transfer medium and benefit from all the of the same technology and flexibility of air sourced VRF. Available in heat pump (22-101kW) and heat recovery (22-101kW) units.



- Efficiency can be optimised by networking the energy through a water loop both within and between buildings
- System can utilise waste heat from commercial sources such as server cooling, or renewable heat from landlord loops, rivers, lakes or geothermal sources
- Flexible VRF design, with the additional benefits of quiet operation and minimising the need for outdoor plant space
- Offers additional heat recovery between the condensers, through the water loop
- System provides continuous heating in winter, without the need for defrost operation
- Advanced control options to increase or reduce water flow rate depending on unit’s operating condition



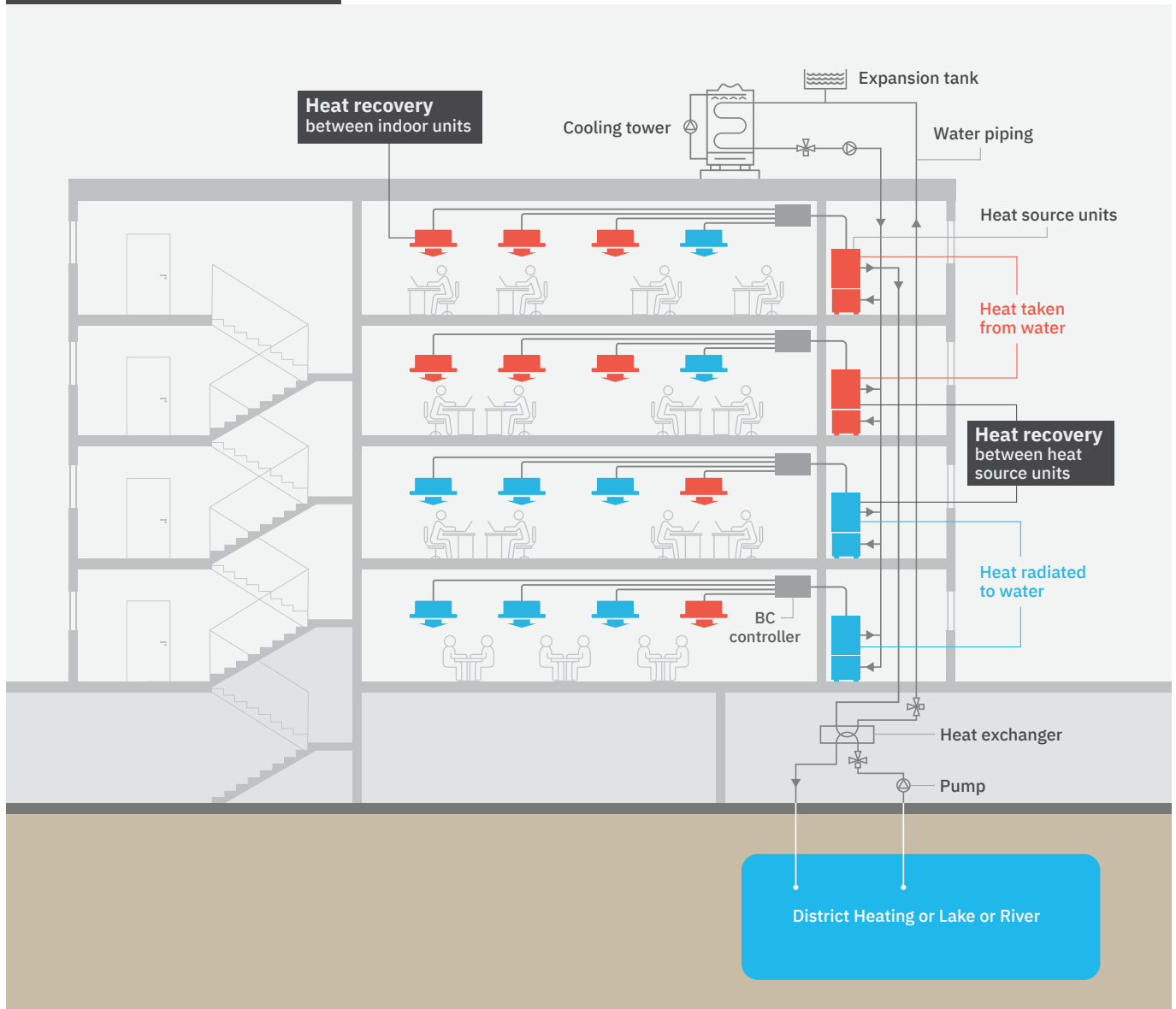
R410A

A sustainable and highly energy-efficient solution for tall buildings

Mitsubishi Electric now offers **double heat recovery operation**. The first heat recovery is within the refrigerant system. Heat is recovered between the indoor units to allow simultaneous cooling and heating operation.

The second heat recovery is within the water loop, where heat is recovered between the PQRY units. This double heat recovery operation substantially improves energy efficiency and delivers an ideal solution to the requirements of modern office buildings, where some areas require cooling even in winter.

WR2 system diagram





City Multi HVRF Features & Benefits

This unique and innovative solution is based on a 2-pipe Heat Recovery VRF System but uses water as a heat exchange medium between the Hybrid Branch Controller (HBC) and the indoor units. As such, the system combines the comfort of a traditional hydronic system with the efficiency and ease of modern VRF air conditioning.

Using these systems enables customers to enhance their CSR (Corporate Social Responsibility) with equipment that minimises the effect on climate change. Energy efficient heat recovery operation is used to provide simultaneous heating and cooling. Efficiency is further optimised by utilising the centralised control and schedule function.

■ Wide range of connectable indoor units

The system can be expanded by using a combination of Sub-HBC boxes, allowing up to **50 indoor units**, from ducted, ceiling cassette, floor mounted or wall mounted types to be supplied by one outdoor condenser.

■ Flexible application options

Air Source YNW (22-56kW) - Using the latest City Multi VRF YNW technology, including an **aluminium heat exchanger**, reduced weight and improved seasonal efficiency.

Water Source YLM (22-56kW) - Ideal where outdoor space is limited, building heat recovery and efficiency is demanded and a water loop is available.

■ High sensible cooling and stable room temperatures

Typically **10% increase** in sensible cooling vs standard VRF Provides a gradual rate of change of temperature within the air conditioned space, delivering a comfortable and stable environment.

City Multi HVRF systems deliver all the design and installation flexibility of traditional VRF with comfort levels normally associated with 4-pipe fan coil systems.



R32 | HybridVRF

HVRF provides the ideal solution for customers looking to future-proof their air conditioning in line with the next stage of the F-Gas Regulations and the phase down of high Global Warming Potential (GWP) refrigerants.

By combining R32 with the merits of a Hybrid system, more than an 80% reduction in CO₂ equivalent can be achieved as it uses up to 40% less refrigerant, when compared to an R410A VRF system.

A comfortable and stable air temperature control is provided with no refrigerant in occupied spaces, meaning simple compliance with BS EN378 and removing the need for leak detection.

Hybrid VRF + R32 = 80% Reduction in CO₂ Equivalent
when compared to an R410A VRF system

No Refrigerant in Occupied Spaces

This makes City Multi HVRF ideal for:

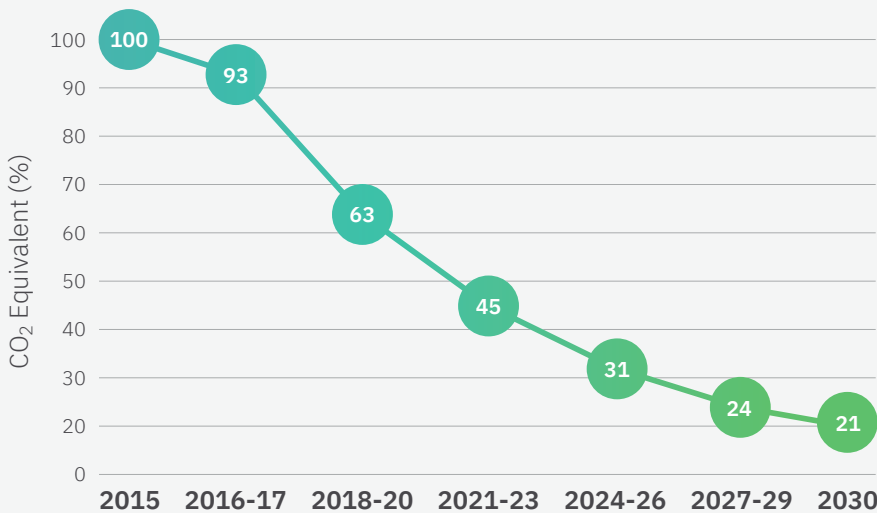


Reduction in Carbon Footprint

- The F-gas phase down was put in place to reduce the direct emission from HFC refrigerants
- Hybrid Branch Controllers use R32, the lowest GWP refrigerant in the VRF market
- R32 refrigerant has a GWP that is 66 % lower than the traditional R410A refrigerant



F-Gas - HFC Phase Down Programme*



It is the requirement of manufactures to reduce the CO₂ equivalent with options of:

- Decreased kW on the market
- Use of lower GWP refrigerant
- Reduced amount of refrigerant in the system

Hybrid VRF provides the perfect solution for both reducing refrigerant volume and utilising the lowest GWP refrigerant available now and in the future.

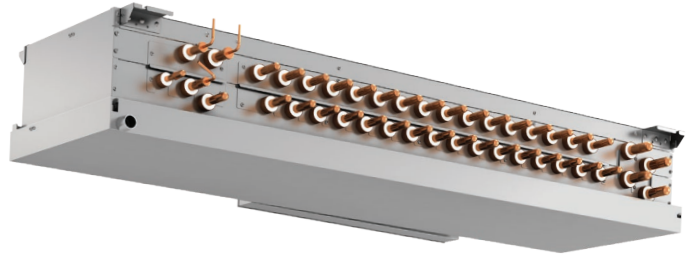
* F-Gas 2015 phase down programme: http://ec.europa.eu/clima/policies/f-gas/legislation/index_en.htm



City Multi HVRF Features & Benefits

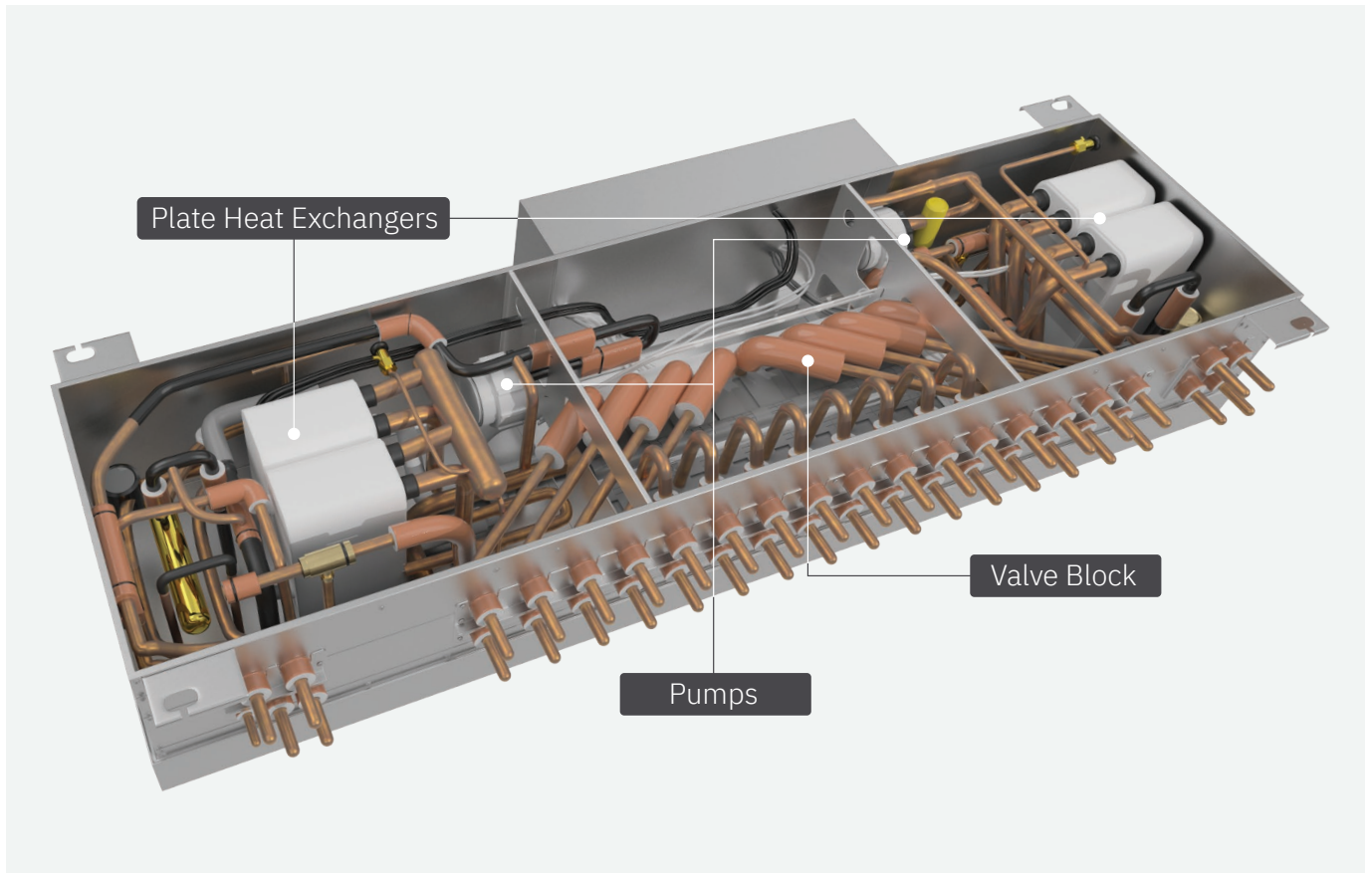
Horizontal Main-HBC

The Horizontal HBC unit was introduced to rival traditional heating and cooling, using an innovative combination of unique 2-pipe technology and water to provide simultaneous heating and cooling with heat recovery.



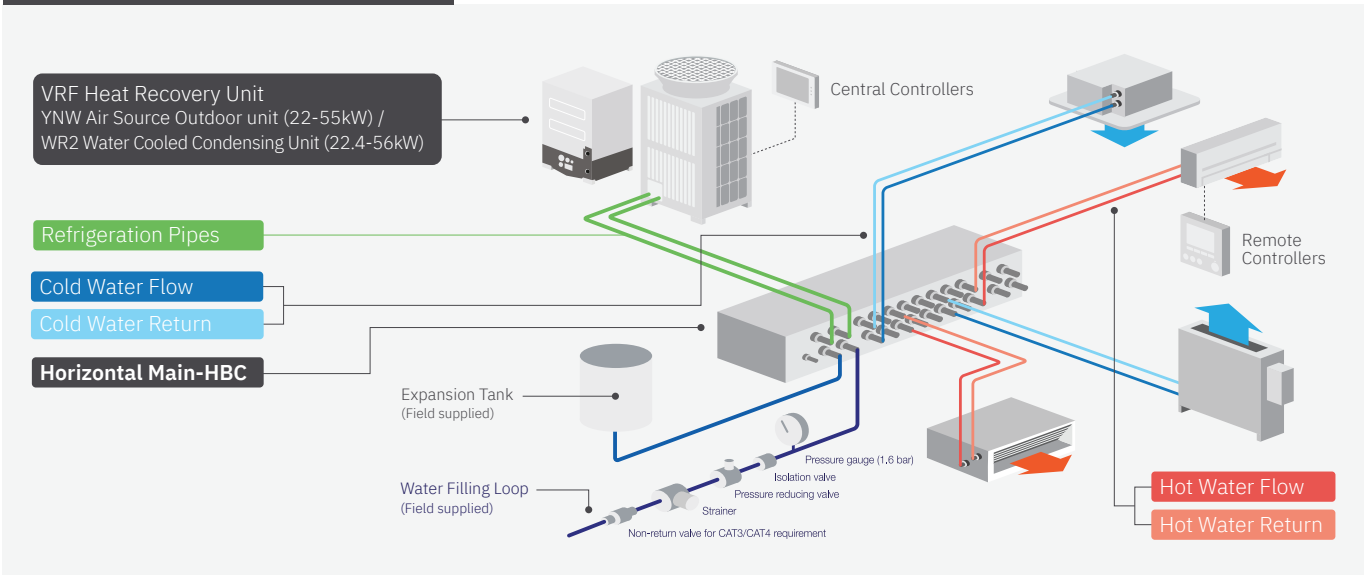
Features and Benefits

- Main-HBC with choice of 8 or 16 ports
- Valves, pumps, and heat exchangers all contained within the HBC
- Ideal for installation within a ceiling void
- Manageable phased installation through modular system design
- Intuitive load adjusting flow control valves & water pumps are optimised for variable flow control and heat recovery for maximum efficiency



R32 | HybridVRF

Horizontal Main-HBC layout



No Refrigerant in Occupied Space



Click the icon or scan the QR code for more information on HBC Controllers



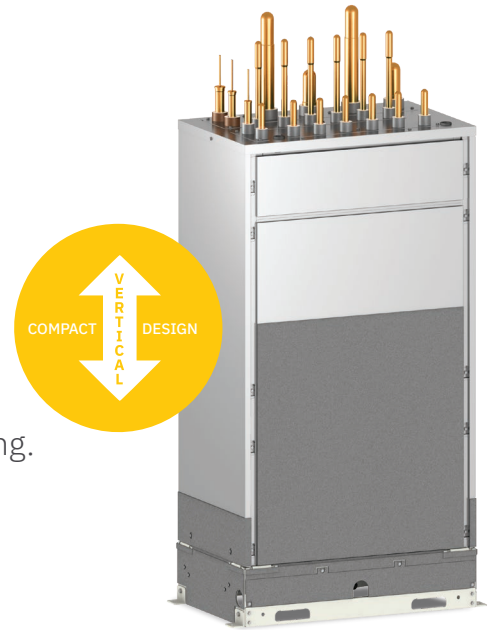


City Multi HVRF Features & Benefits

Vertical Main-HBC

Designed with complete flexibility in mind, the new Vertical HBC unit has been added to the range.

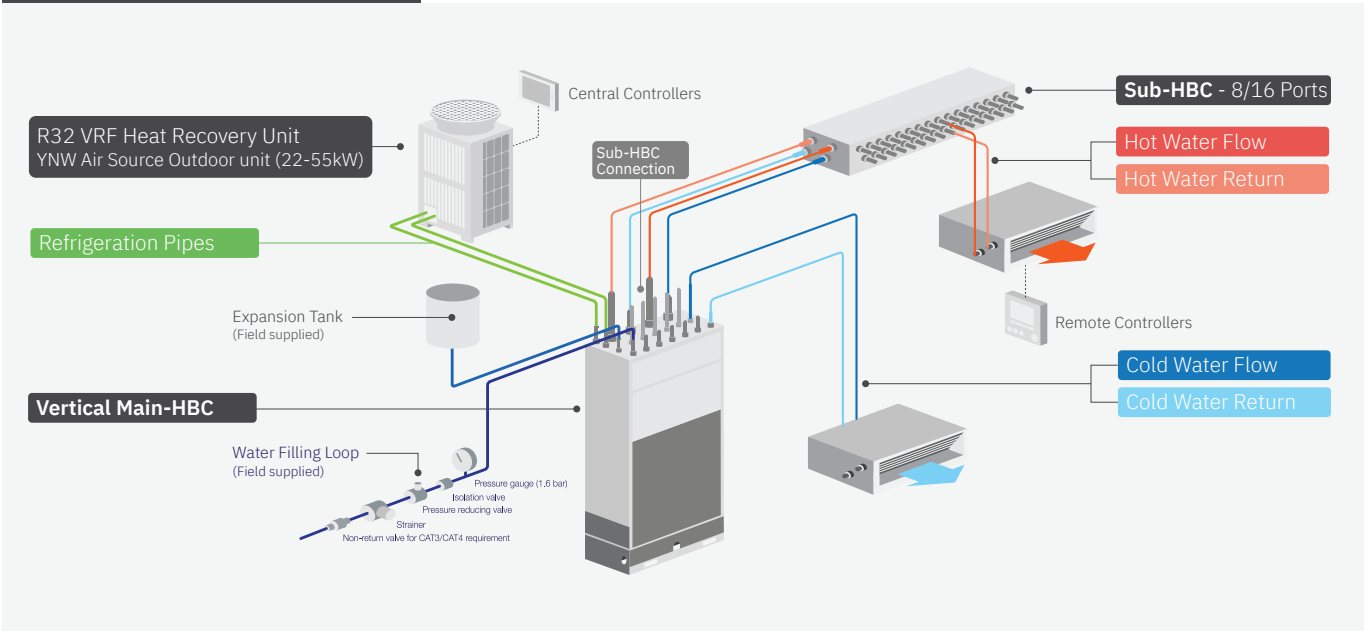
This is a floor standing solution, with all the key components accessible from the front and at floor level during commissioning. The installation of additional water-side ancillaries such as expansion vessel, water filling loop and isolation valves is also simpler, as they are all located at floor level.



Features and Benefits

- Main-HBC with 6 ports
- Compact footprint, installed at floor level in plant rooms, cupboards, or risers
- Simple to design, install, commission, and maintain
- Low noise solution
- System can be expanded using compact Sub-HBC boxes, to connect up to 50 indoor units
- Flexibility of installation also means the units can be moved and adapted if an office space is reconfigured, ideal for Cat A to Cat B applications
- Intuitive load adjusting flow control valves & water pumps are optimised for variable flow control and heat recovery for maximum efficiency

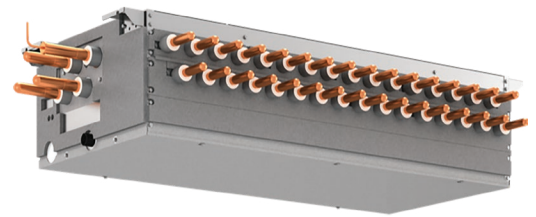
Vertical Main-HBC layout



R32 | HybridVRF

Sub-HBC for Horizontal & Vertical Layout

Additional indoor units can be connected to the Main-HBC by using an 8 or 16 port Sub-HBC. Simultaneous heating and cooling is achieved by having a four-pipe connection between the Main and Sub-HBC. The layout is then further simplified by having a two-pipe connection between the Sub-HBC and indoor units.

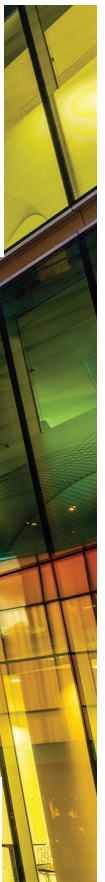


Features and Benefits

- Light & compact units that require less service space during installation and commissioning
- Contains no noise sensitive elements, therefore can be placed in any occupied spaces
- No requirement for additional water ancillaries such as expansion vessel and water-filling loop connection, simplifying design the design and installation layout



Mitsubishi Electric's **City Multi HVRF systems** are highly versatile and can be used within a retrofit application as well as phased installations



Click the icon or scan the QR code for more information on HBC Controllers



A leap into the future with large scale R32 air conditioning

A former tram station in Bristol has become the first building in the UK to benefit from large scale R32 air conditioning.

The Art Deco building in Gloucester Road was originally a main station for electric trams, and is now occupied by one of the largest environmental business network in the UK - Future Economy Networks.

The F-Gas Regulations and the Phase Down of refrigerants with high global warming potential (GWP) are affecting all air conditioning systems.

The air conditioning industry has been transitioning to R32, which has a significantly lower GWP than previous R410A systems but this has not been possible for larger VRF (Variable Refrigerant Flow) systems until the launch of the City Multi R32 VRF at the end of 2019.

“We looked across the market at a whole host of technologies for our heating and cooling and when Mitsubishi Electric’s R32 system was recommended to us by Envira-Mech Services, we quickly realised it was absolutely the right product for us,”said Alan Bailey, Director of the Future Economy Group and Future Leap Ltd. “So far, we’ve been really, really, really pleased with the end result.”

Future Leap is carbon neutral in its operation and has incorporated lots of sustainable technologies and solutions, including a carpet made from disused ghost fishing nets that have been reclaimed from the bottom of the ocean.

With the installation of the latest R32 system, the Hub is also able to deliver future-proof heating and cooling, regardless of the weather.



Click the icon or scan the QR code to read the full case study



The sweet smell of success - Lush draws on Mitsubishi Electric’s expertise to transform its air conditioning

Lush Ltd is best known for its sweet-smelling, handmade cosmetic and bath products and a highly ethical approach to business life. So when it came to the comfort of their staff in a new office, energy efficiency was a key priority.

When Lush decided to expand its office space, the company leased out a new unit in Dolphin Quays, Poole, a prestigious complex of apartments and office spaces. The leased units came with running water and electricity, but other comforts like air conditioning all needed to be arranged by the tenant.

Lush decided to bring together multiple contractors for the different elements and for its new air conditioning system, chose Modern Facilities Services Ltd to lead on the installation of Mitsubishi Electric’s City Multi VRF heat recovery system to serve the entire office area. Modern Facilities Services are an Accredited Installer of Mitsubishi Electric equipment.

Across the space, 12 indoor units have been fitted and one floor standing unit. The beauty of the City Multi system is that excess heat from an area being cooled can be moved to other parts of the building that need heating, helping improve the overall efficiency.

“We wanted a system that would create a pleasant working environment for our staff, whilst fitting comfortably into the office environment. We also wanted to make sure we avoided any draughts for our employees” said Krystal James, Project Coordinator at Lush Ltd.



Click the icon or scan the QR code to read the full case study



How to prioritise employee comfort and wellbeing, whilst reducing your carbon footprint

Nursing and care home supplier Acticare, has ensured employee comfort and environmental standards are met with the installation of new cooling, heating and ventilation systems at its new-build facility in Hereford.

The office areas, which were completed in December 2018, include open plan spaces, satellite offices and meeting rooms, all of which required a solution that would keep employees comfortable and productive at work.

The company chose the R32 Hybrid VRF system from Mitsubishi Electric to help provide energy efficient air conditioning and meet the buildings high environmental standards. The R32 units are designed to deliver high operational efficiency whilst minimising the global warming potential (GWP) of the system.

By delivering a lower GWP than current refrigerants, the R32 solution can meet both BREEAM building standards for sustainability performance and government environmental regulations - plus future proof against ongoing environmental legislation.

Mitsubishi Electric's Hybrid VRF system is fundamentally different from traditional VRF systems as it uses water throughout the majority of its pipework to transfer simultaneous heating and cooling to different rooms. However, it still maintains full flexibility in its design, lower annual maintenance costs and advanced controllability.

With both a central controller (AE-200E) and individual remote controls, employees have the power to adjust the level of heating or cooling in individual spaces, which is particularly useful for the satellite offices at the new site, which are not attached to the main building.



Large-scale Hybrid VRF installation provides the perfect temperature for guests at London's Strand Palace Hotel

London's renowned Strand Palace Hotel sits in the heart of London and has been welcoming guests since 1909. Situated within walking distance of some of the most famous music theatres in London, combined with its quirky contemporary décor, the hotel offers guests a high level of comfort and experience during their stay.

The hotel chose Mitsubishi Electric's innovative Hybrid VRF air conditioning system to provide cooling and comfort throughout its site.

After a period of incredibly hot weather, the Strand Palace knew that modernising its heating and cooling systems was fundamental to maintaining a quality experience for guests. Ensuring high levels of energy efficiency, was also a factor considered during this process.

The Hybrid VRF system was a perfect solution, with its unique 2-pipe system allowing for simultaneous heating and cooling with heat recovery, and the combination of R410a refrigerant and water providing a lower Global Warming Potential (GWP) than traditional VRF systems.

A central controller allows heating and cooling to be switched off in individual rooms, while keeping other rooms at the optimum temperature. This saves energy as there is less work to do when occupants turn the systems back on.

Overall, the systems save around 30-40% in refrigerant use when compared to traditional VRF systems.

Individual controllers, based on the iPhone layout for intuitive use, were also installed in each room. These can be connected to the Mitsubishi Electric MELCloud app, used to control and monitor Mitsubishi Electric products remotely, and smartphones via Bluetooth.



Click the icon or
scan the QR code to
read the full case study





City Multi Control Solutions

Operating an air conditioning, ventilation or heating system without effective controls can be costly in more ways than one. Not only are you likely to face higher monthly energy bills, it will also lead to an increase in carbon emissions - something that will become ever more important as businesses strive to keep up with tougher environmental legislation.

The right controls take building performance to the next level. With them, building systems become more responsive, easier to automate, monitor and maintain, and less costly to operate in the long-term. The right controls can deliver a cost-effective solution that helps manage, monitor and report on the performance of all building services systems.

Control technology is now widely available for buildings of all sizes, so it is possible to access the benefits whatever the scale or scope of your project.

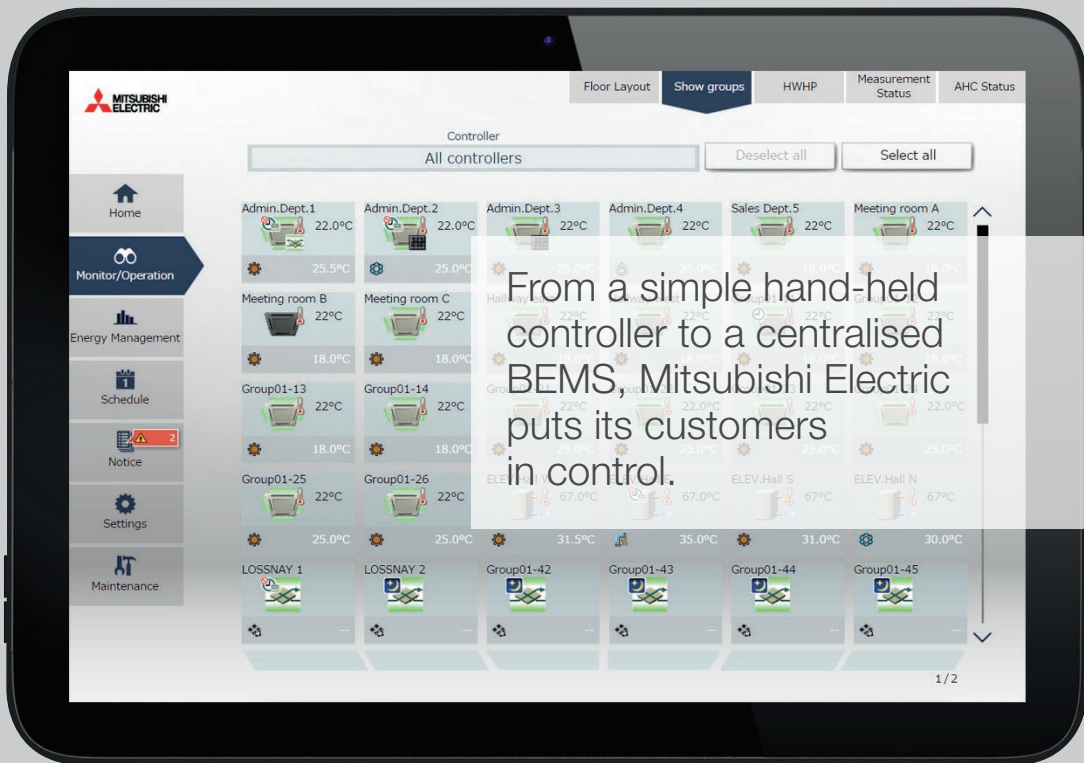


Mitsubishi Electric technology

Mitsubishi Electric has been dedicated to producing energy efficient technology for over ninety years. Controls are an essential part of that.

Mitsubishi Electric has long heritage in factory automation where the company leads the field in providing controls that enhance productivity, efficiency and energy use.

We have taken this extensive knowledge and experience and transferred it to the heart of our building services equipment. We were also one of the first manufactures to provide an open gateway to our products to make integration easier for our customers. This enables direct connection of equipment into many common building energy management system (BEMS) platforms. Recently, Mitsubishi Electric has developed internet-based building controls that put information on building performance wherever users need it most and wireless technology that makes retro-fitting into existing buildings so much easier.





City Multi Technical Services

Meeting today's energy challenges for our commercial premises demands more integrated thinking from everyone involved in the design, supply, installation, commissioning and maintenance of essential building services - whether it is for an individual property or a national estate.



MEL>SERVE

By Mitsubishi Electric

Ever increasing energy bills, the need to reduce carbon emissions and a raft of challenging legislation are driving the demand for increased energy efficiency and control in the cooling, heating, ventilation and associated technologies that we use.

As a manufacturer, we realise that product development alone is not enough. To keep our products working at their optimum, we have developed the MELServe approach to ensure our customers are able to maximise the energy efficiency of their building's services right from the start.

MELServe offers a range of support that includes:

Site Services

24/7/365 Technical Help Desk

Spare Parts, Warranty & Returns

CPD Accredited Technical Product Training



**Whatever the challenge,
we're here to help you
meet it**





City Multi Technical Services



Commissioning

Our assisted commissioning service is aimed at both new and existing customers; the objective is to demonstrate how to effectively commission our systems so that customers can carry out these tasks unassisted in the future.

Our commissioning service is available across our full product range including:

- Air Conditioning
- Hybrid VRF
- Controls

During the commissioning process, our engineers will carry out the following tasks:

- Comprehensive inspection of the installed system to ensure the system meets Mitsubishi Electric specification
- Check the system, addressing and advising on any incorrect settings
- For systems other than controls we will operate in both cooling and heating modes where applicable and record temperatures, pressures and water flow rates for the system
- Supervise the completion of commissioning logbooks

Type of Commissioning	Detail
Air Conditioning	Max 2 City Multi systems per day
Hybrid VRF	½ day pre installation visit
	½ day mid installation visit
	2 day commissioning visit
Controls	1 x AE-200 and up to 4 x EW-50E per day

Control System	Commissioning Days	Charge Pin Codes	Bacnet Pin Code
1 x AE-200E + 1-4 EW-50E	1 day	1 - 5	1 - 5
2 x AE-200E + 1-4 EW-50E	2 days	1 - 10	1 - 10
3 x AE-200E + 1-4 EW-50E	3 days	1 - 15	1 - 15
4 x AE-200E + 1-4 EW-50E	4 days	1 - 20	1 - 20
5 x AE-200E + 1-4 EW-50E	5 days	1 - 25	1 - 25

Whilst our engineer will supervise the successful completion of all tasks and address any questions or skill gaps that present themselves, it is the responsibility of the installing contractor under supervision to carry out all of the listed tasks. Whilst our engineer will supervise the successful completion of the commissioning logbooks, it is the responsibility of the customer to complete and submit the commissioning logbooks to Mitsubishi Electric unless specified.

Note: Transit bolts must be removed before we arrive on site. If transit bolts are not removed additional time and cost may be incurred.





Health Checks

Our Health Check service is carried out on existing installations to ensure that the system is operating within our design parameters. The service is available to both new and existing customers and the objective is to establish a fully operational system.

- Comprehensive visual inspection of the installed system to ensure the system meets Mitsubishi Electric specification
- System checks and advice if incorrect settings are being used
- Full operation in both cooling and heating modes where applicable
- Record operating data including temperatures, pressures and water flow rates of outdoor units, BC Boxes and indoor units to determine the correct operation

Product	Detail
Air Conditioning	Up to 3 systems per day
Hybrid VRF	Up to 2 systems per day

Note: Whilst our engineer will ensure the successful completion of all tasks and address any questions or skill gaps that present themselves, it is the responsibility of the contractor to provide access to all equipment. Whilst our engineer will identify any installation and setup issues that are affecting performance, it is the responsibility of the contractor to rectify any problems.





City Multi Technical Services



Product training

To help improve your skills and technical knowledge, we have created a series of cost-effective online courses for up to 45 engineers at a time, with full, two-way interaction and live presentations from our working training suite.

Available courses include:

City Multi VRF Design & Application Course

City Multi Installation and Commissioning Course







For more information visit:
les.mitsubishielectric.co.uk/installers/installer-training
Click on the icon or Scan the QR code
























City Multi Stripdown

For installations where the City Multi outdoor unit(s) cannot be moved to the final location, Mitsubishi Electric offer a City Multi strip down service.

Product Range	Model Reference
	<p>PURY-EM/EP YNW-A1/2 PURY-M/P YNW-A1/2 PUHY-M/P YNW-A1/2</p> <p style="text-align: right;">Small Module</p>
	<p>PURY-EM/EP YNW-A1/2 PURY-M/P YNW-A1/2 PUHY-P YNW-A2</p> <p style="text-align: right;">Large Module</p>
	<p>PURY-EM/EP YNW-A1/2 PURY-M/P YNW-A1/2 PUHY-P YNW-A2</p> <p style="text-align: right;">Extra Large Module</p>
	<p>PQRY-P YLM-A1 PQHY-P YLM-A1</p>

City Multi VRF

Outdoor / Condensing Unit Range

		Heat Recovery - R2 Series				(kW)	112	125	140	200
							12	14	16	22
↑ Air Cooled	High Efficiency PURY-EM (YNW)	R32								S
	Standard Efficiency PURY-M (YNW)	R32								S
	High Efficiency PURY-EP (YNW)	R410A								S
	Standard Efficiency PURY-P (YNW)	R410A								S
		Heat Pump - Y Series				(kW)	112	125	140	200
							12	14	16	22
↓ Air Cooled	PUHY-M (YNW)	R32								S
	PUHY-P (YNW)	R410A								S
	Mini VRF PUMY-(S)P	R410A					●	●	●	● Twin Fan
		Heat Recovery - WR2 Series				(kW)	112	125	140	200
							12	14	16	22
↑ Water Cooled	PQRY-P (YLM)	R410A								●
			Heat Pump - WY Series				(kW)	112	125	140
							12	14	16	22
↓ Water Cooled	PQHY-P (YLM)	R410A								●





For more information, read our:
City Multi Product Information Sheets
 Click on the icon or Scan the QR code



250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	
28	34	40	45	50	56	63	69	73	80	85	90	96	101	108	113	118	124	130	136	140	146	150	
S	S																						
S	S																						
S	S	L	L	L	XL	XL	S	L	L	L	L	L	L	L	XL	XL	XL	XL					
S	S	L	L	L	XL	XL	S	L	L	L	L	L	L	L	XL	XL	XL	XL					
							L	S	L	L	L	L	L	L	L	XL	XL	XL	XL				

250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	
28	34	40	45	50	56	63	69	73	80	85	90	96	101	108	113	118	124	130	136	140	146	150	
S	S																						
S	S	L	L	L	XL	S	S	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
						S	S	S	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Twin Fan	Twin Fan																						

250	300	350	400	450	500	550	600	650	700	750	800	850	900
28	34	40	45	50	56	63	69	73	80	85	90	96	101
●	●	●	●	●	●	●	●	●	●	●	●	●	●
								●	●	●	●	●	●
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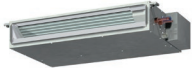












- S** Small chassis
R32 & R410A
- L** Large chassis
R410A
- XL** Extra Large chassis
R410A





City Multi VRF

Indoor Unit Range

Model	Range	Compatible with <i>Plasma Quad Connect</i>
Ceiling Concealed Ducted	PEFY-P-VMS1-E (Ultra Thin) R410A 	●
	PEFY-M-VMA-A R32 R410A 	●
	PEFY-P-VMHS-E (High Static Pressure) R410A 	●
4-Way Blow Ceiling Cassette	PLFY-M-VEM-E R32 R410A 	●
	PLFY-P-VFM-E (600x600) R410A 	●
Floor Standing	PFFY-P-VCM-E (Concealed) R410A 	●
	PFFY-P-VLEM-E (Exposed) R410A 	●
	PFFY-P-VKM-E (Exposed) R410A 	●
Wall Mounted	PKFY-P-VLM-E R410A 	●
	PKFY-P-VLM-E R410A 	●
	PKFY-P-VKM-E R410A 	●
Ceiling Suspended	PCFY-P-VKM-E R410A 	●
VRF Sanitary Water Heater	PWFY-P-VM-E-BU R410A 	●





For more information, read our:
City Multi Product Information Sheets
 Click on the icon or Scan the QR code



(kW)	10	15	20	25	32	40	50	63	80	100	125	140	200	250
	1.2	1.7	2.2	2.8	3.6	4.5	5.6	7.1	9.0	11.2	14.0	16.0	22.4	28.0
		●	●	●	●	●	●	●						
			●	●	●	●	●	●	●	●	●			
									●	●	●	●	●	●
					●	●	●	●	●	●	●			
		●	●	●	●	●	●							
			●	●	●	●	●	●						
			●	●	●	●								
	●	●	●	●	●									
						●	●							
								●						
						●		●		●	●			
										●				

Note: All kW capacity ratings may change on connected system, please contact your local sales office for confirmation.



City Multi HVRF

Outdoor / Condensing Unit Range



Heat Recovery - R2 Series			
High Efficiency PURY-EM (YNW)			
Standard Efficiency PURY-M (YNW)			
Heat Recovery - WR2 Series			
PQRY-P (YLM)			

City Multi HVRF Indoor Unit Range

Model	Range		Compatible with <i>Plasma Quad Connect</i>
Ceiling Concealed Ducted	PEFY-WP-VMS1-E (Ultra Thin)		●
	PEFY-WP-VMA-E		●
4-Way Blow Ceiling Cassette	PLFY-WL-VEM-E		●
	PLFY-WL-VFM-E (600 x 600)		
Floor Standing	PFFY-WL-VCM-A (Concealed)		
	PFFY-WL-VEM-A (Exposed)		
Wall Mounted	PKFY-WL-VLM-E / VKM-E		●





For more information, read our:
City Multi Product Information Sheets
 Click on the icon or Scan the QR code



(kW)	200	250	300	350	400	450	500
	22	28	34	40	45	50	56
	S	S	S	L	L	L	XL
	S	S	S	L	L	L	XL
(kW)	200	250	300	350	400	450	500
	22	28	34	40	45	50	56
	●	●	●	●	●	●	●

S Small chassis **L** Large chassis **XL** Extra Large chassis

(kW)	10	15	20	25	32	40	50	63	80
	1.2	1.7	2.2	2.8	3.6	4.5	5.6	7.1	9.0
	●	●	●	●	●	●	●		
			●	●	●	●	●	●	●
					●	●	●	●	●
		●	●	●	●	●			
			●	●	●	●	●		
			●	●	●	●	●		
	●	●	●	●	●	●	●	●	





Mitsubishi Electric provides market leading solutions to cool, heat, ventilate and control our buildings



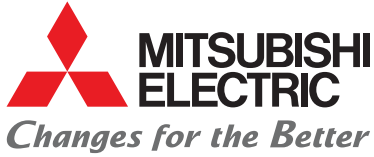


As a major manufacturer of these pivotal technologies, we hold the UK's energy challenges close to our heart.

By developing the most innovative and energy efficient technology, we are committed to helping the nation achieve its climate goals.

les.mitsubishielectric.co.uk





Telephone: 01707 282880

MELServe Customer Services & Support: 0161 866 6089

Option 2 followed by:

- Option 1 - Technical Support
- Option 2 - Spares
- Option 3 - Warranty
- Option 4 - Site Visits
- Option 5 - Product Training

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Mitsubishi Electric Living
Environmental Systems UK



Mitsubishi Electric
Cooling and Heating UK



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mitsubishielectric2



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Note: The fuse rating is for guidance only and please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R290 (GWP:3), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R454C (GWP:148), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

Effective as of May 2024



www.greengateway.mitsubishielectric.co.uk

Mitsubishi Electric UK's commitment
to the environment