

The Renewable Solutions Provider

# Making a World of Difference

## Hybrid VRF Systems



Air Conditioning | Heating  
Ventilation | Controls

# It's time to talk **Hybrid VRF**

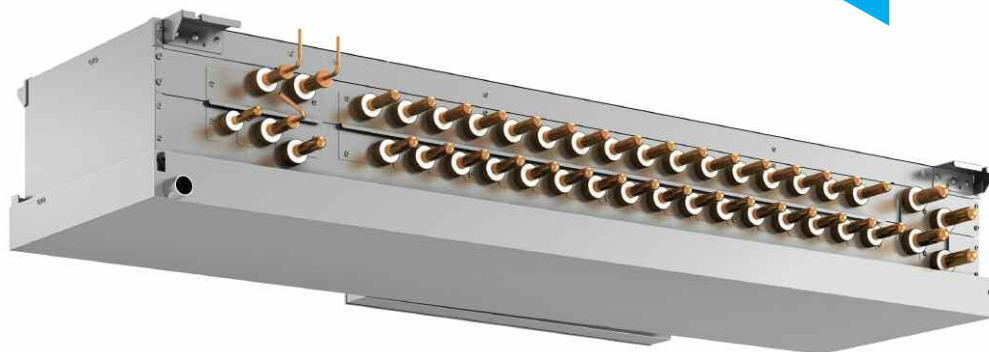
Today's buildings face tough legislation which means that traditional HVAC technologies may not always be the **best solution**.

If only there was a way of combining the best elements of VRF technology and Chiller systems to offer even more choice.

This is where the Hybrid VRF system can make a real difference - by offering a truly integrated solution both now and into the future.

The best of  
**VRF** with

the best of  
**Chillers**



# What is Hybrid VRF

Hybrid VRF is the latest addition to our City Multi family (our VRF range of air conditioning units for large scale applications). Built and assembled in the same factory as our VRF units thereby carrying its distinctive DNA in terms of technology, efficiency and reliability.

Put simply, Hybrid VRF is a 2-pipe heat recovery VRF with water between the Hybrid Branch Controller (HBC) and indoor units. You can install and design it as VRF whilst enjoying the features of a Chiller system. Providing 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. Furthermore the decentralised system means phased installation is possible with the same high levels of seasonal efficiency expected with VRF.

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

## Hybrid VRF System Example

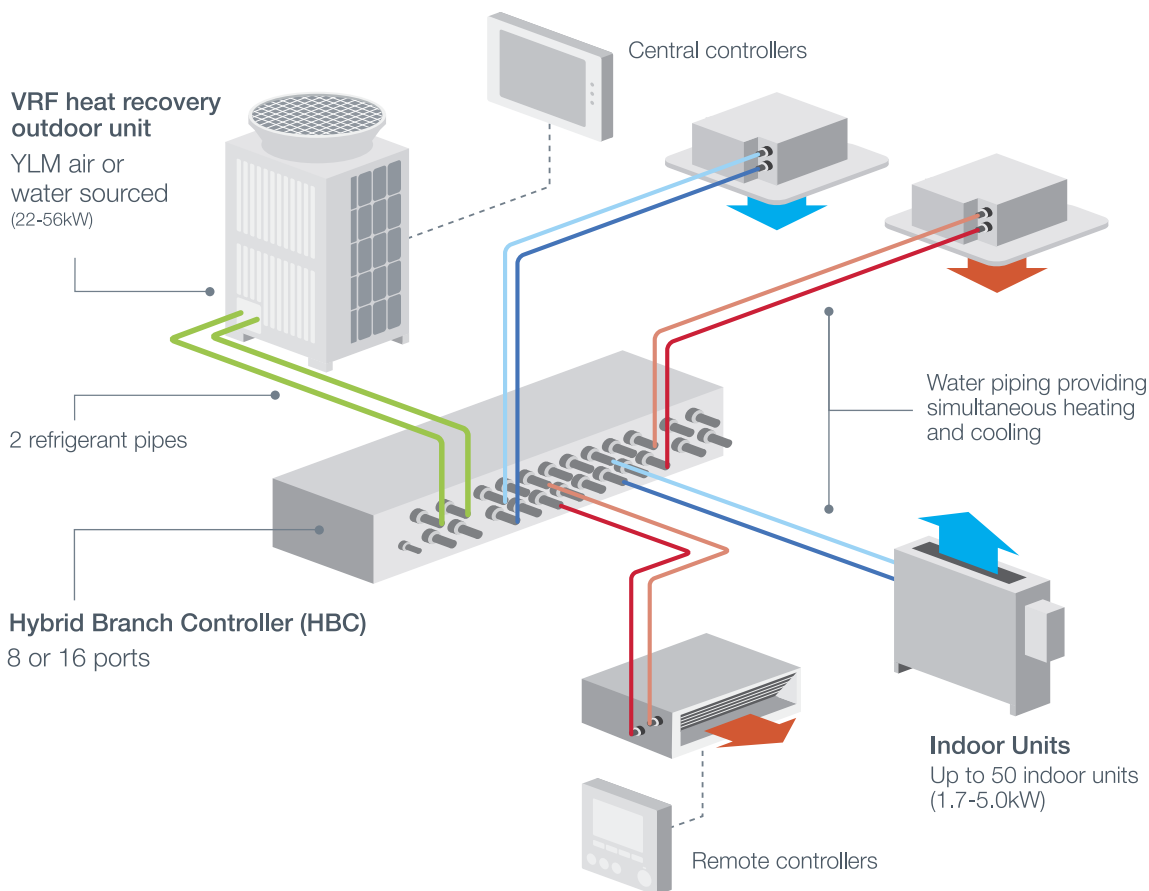


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# Hybrid Branch Controller (HBC)

## *At the heart of Hybrid VRF*

### A. Plate Heat Exchangers

**This is the point where the refrigerant circuit transfers its energy to the sealed water system.**

There are two sets of plate heat exchangers, both placed at opposite ends in the HBC box.

Both sets provide hot water in heating mode or cold water in cooling mode.

During mixed mode, one set provides hot water while the other provides cold water to its respective flow header.

### B. Pumps

**Each set of plate heat exchangers has a DC inverter driven water pump.**

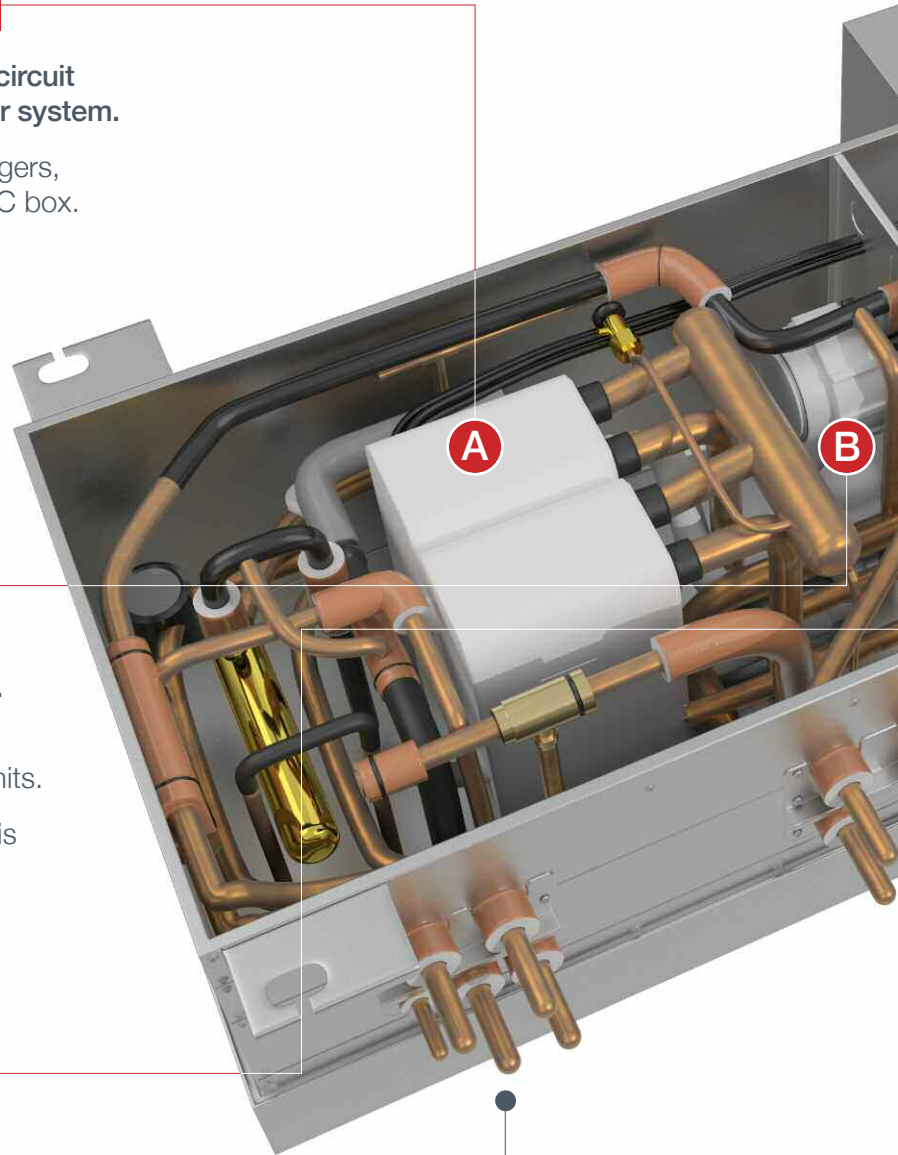
This circulates the closed loop water system between the HBC and indoor units.

The discharge flow rate from the pump is controlled by the valve block.

### C. Valve Block

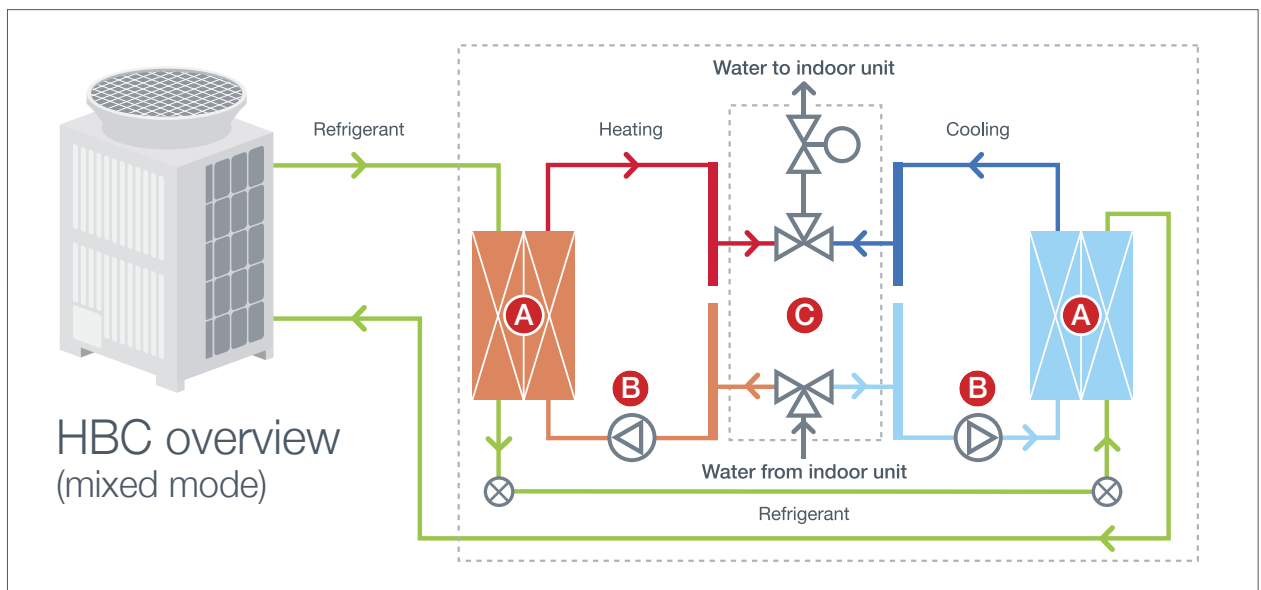
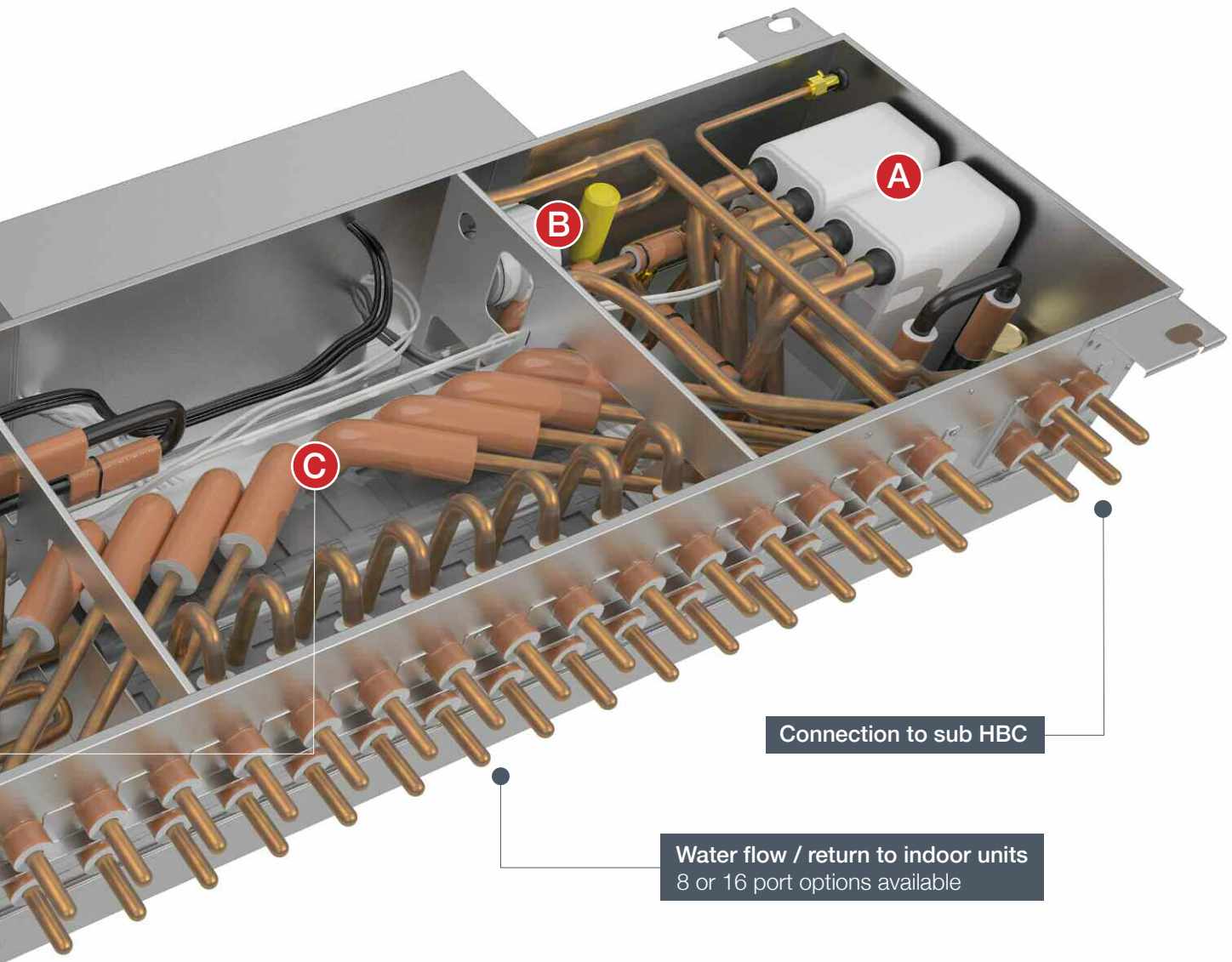
**A valve block is connected between each flow and return port of the HBC.**

This valve block has two features; firstly it has the choice of selecting between the two flow headers and secondly it controls the flow of the water sent to the indoor unit, defining the capacity.



Refrigerant pipes to outdoor unit, expansion tank (field supplied) and water filling loop (field supplied)

Image for representation only

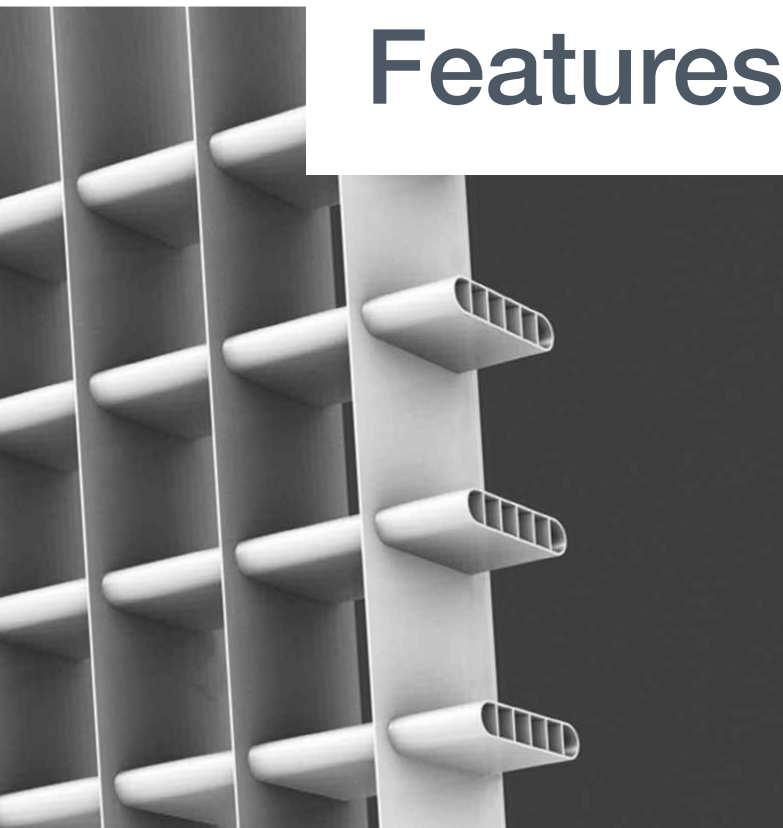






# Hybrid VRF

## Features and Benefits





## Flexible application options

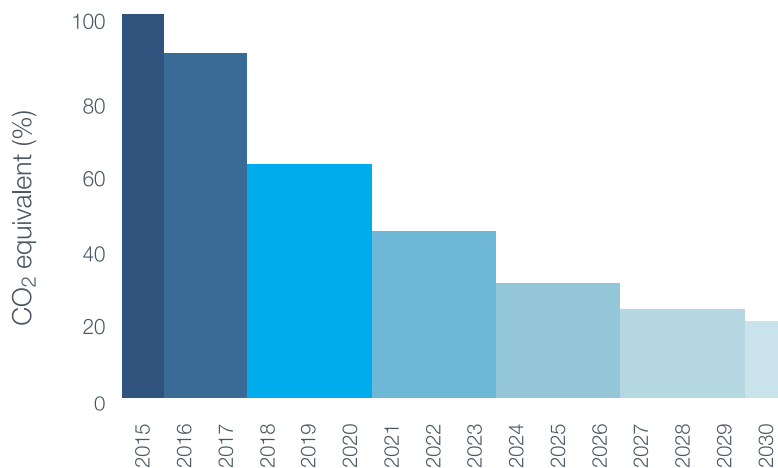
- **Air Source YLM (22-56kW)** - using the latest City Multi VRF YLM technology including an **aluminium heat exchanger**, reduced weight and improved seasonal efficiency
- **New Water Source YLM (22-56kW)** - ideal where outdoor space is limited, building heat recovery and efficiency is demanded and a water loop is available



## Meeting future requirements

- Energy and refrigerant legislation
- F-Gas phase down - adding a third viable option

### F-Gas - HFC phase down programme:\*



It is the requirement of manufacturers to reduce the CO<sub>2</sub> equivalent with options of:

- Decreased kW on the market
- Lower the GWP of refrigerant
- Reduce amount of GWP\*\* refrigerant

Hybrid VRF gives the potential for both reducing refrigerant and options for changing to a lower GWP refrigerant in the future.



## Fully packaged solution

- Valves, pumps and heat exchangers all contained within the HBC
- Commissioning is simple, pipe sizes are all defined with minor third party items required
- Uses the same controls and M-NET network as VRF



## No refrigerant in occupied spaces

- No need for leak detection according to BS EN378 refrigerant safety guidance
- Ideal for hotel bedrooms, hospitals, nursing homes, meeting rooms and living spaces where leak detection may traditionally be required

\* F-Gas 2015 phase down programme: [http://ec.europa.eu/clima/policies/f-gas/legislation/index\\_en.htm](http://ec.europa.eu/clima/policies/f-gas/legislation/index_en.htm)

\*\* Global Warming Potential (GWP)





## High sensible cooling and stable room temperatures

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



## Manageable phased installation

- Modular, smaller footprint and low weight outdoor units
- Flexible range of VRF options



YLM Air  
or Water  
Source



## Cat A to Cat B is simple

- Ideal for office fit outs
- Water piping between HBC and indoor units
- Easier to isolate and decommission, reducing install cost



## Simplified 2-pipe design and installation

- 2-pipes throughout the system - no complex 4-pipe design
- Flexible design using up to 50 fan coils per system over 4 HBCs
- Copper or plastic pipe on water side

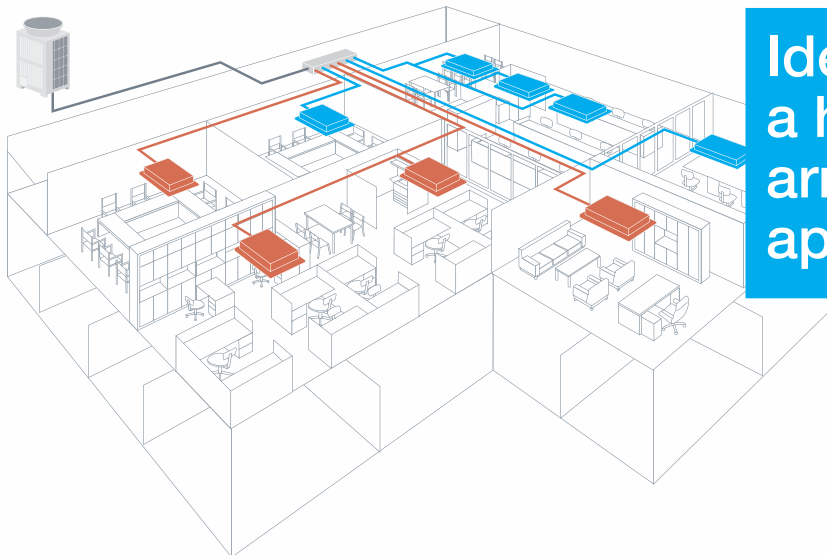






## Simultaneous heating and cooling with full heat recovery

- Between fan coils and building zones
- Optimise flexibility, operability, comfort and efficiency



**Ideal for  
a huge  
array of  
applications**



## Heat recovery defrost method

- Typical defrost times of 5 minutes with immediate return to heating
- Improving comfort throughout the heating season, ideal for office applications
- No defrost on Water Source VRF models



## Intuitive load adjusting

- The latest YLM VRF refrigerant control plus water side optimisation: flow control valves, inverter driven pumps and heat recovery
- Providing only the capacity needed, improving efficiency and comfort
- SEER up to 9.47, SCOP up to 5.37



## Quiet operation

- Water based fan coils: ducted, cassette and floor mount chassis units - based on Mitsubishi Electric VRF indoor units
- Low noise levels, variable air flow



# Where can Hybrid VRF be applied

Buildings around the UK have a high priority when it comes to energy efficiency, internal comfort and an easy control solution. We believe there is no limitation with Hybrid VRF and the possibilities are endless.

## ■ Hotel

Customer comfort is paramount with legislation focusing attention on energy use and seeking to limit the use of refrigerant in occupied spaces. Hybrid VRF removes the need for leak detection thereby reducing the total cost of the system and on-going maintenance of the leak detection systems itself.

## ■ Office

Modern offices and commercial buildings need air conditioning systems that provide the highest levels of comfort and freshness, as energy efficiently as possible. Furthermore an office can simply be transformed from a CAT A to a CAT B fit out as water pipes can easily be isolated from the Hybrid Branch Controller box making building layout changes simple.

## ■ Hospital

With regards to patient's health and safety, this system has no refrigerant in the indoor units and at the same time it can deliver mild off-coil temperatures through the water based Hybrid VRF indoor units.

## ■ Mixed use buildings

As we look for ways to balance population growth in crowded city centres, more mixed use properties are being developed, often combining retail, office, leisure and living spaces in the same building. Hybrid VRF provides a fully adaptable solution benefitting from air or water source options using an extensive range of controls to ensure optimum performance.

## ■ Education

Providing comfort through temperature stability, removal of refrigerant from the occupied space and reduced noise - **Hybrid VRF provides a truly integrated solution.**





A low-angle, upward-looking photograph of several modern skyscrapers. The most prominent building in the foreground has a vibrant orange-red facade with a repeating geometric pattern of rectangular perforations. To its left, another building features a bright yellow facade with a similar pattern. Further back, a glass-clad building is visible. The sky is a clear, bright blue with a few wispy clouds. A blue speech bubble with white text is positioned in the upper right quadrant of the image.

**Hybrid VRF**  
removes the  
need for leak  
detection in  
any room



# Hotel application - Cost analysis

Hotel customers have high demands when it comes to comfort and control whilst hotel owners have strict legislation to adhere to and costs to minimise.

Mitsubishi Electric City Multi VRF is an ideal solution for hotel applications due to its efficiencies - simultaneous heating and cooling with heat recovery, flexible control solutions, high seasonal efficiency and its modular design and installation.

## Hotel application - 17 storey, 250 bedrooms

### Option 1: VRF

The height and size of the building makes it difficult and costly to achieve BS EN378 compliance.

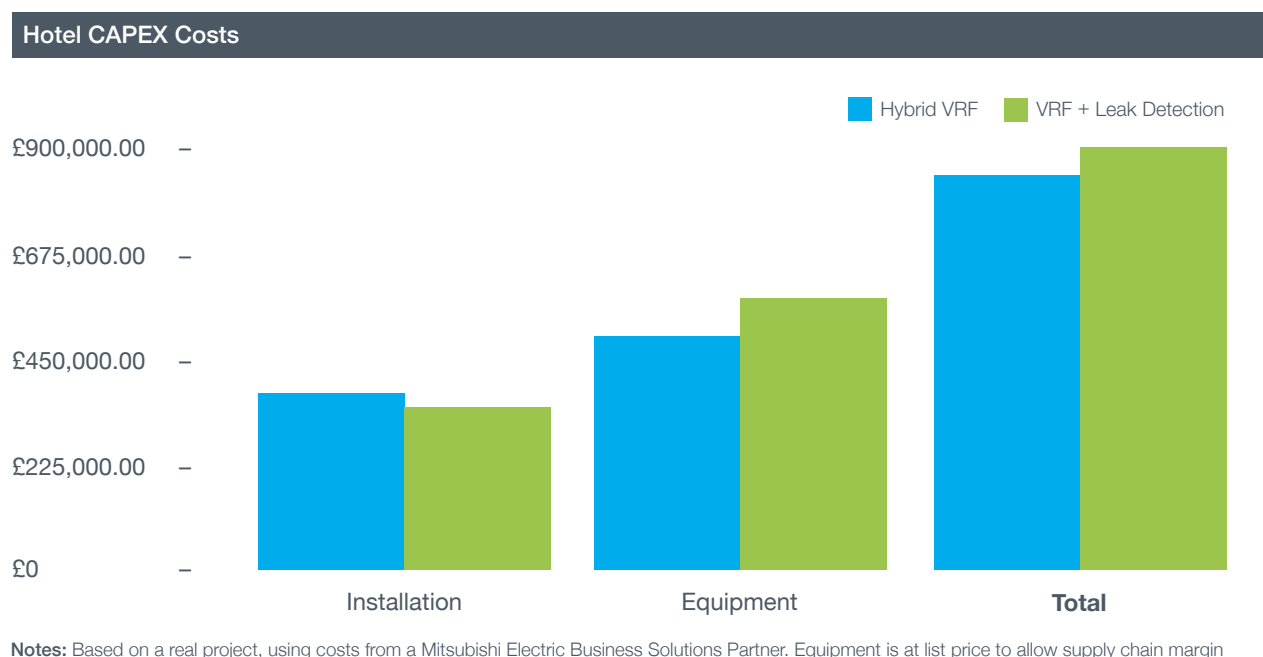
### Option 2: VRF + leak detection

Adding leak detection means applying VRF is more cost effective, but the upshot is total equipment and installation costs increase by 10% vs VRF.

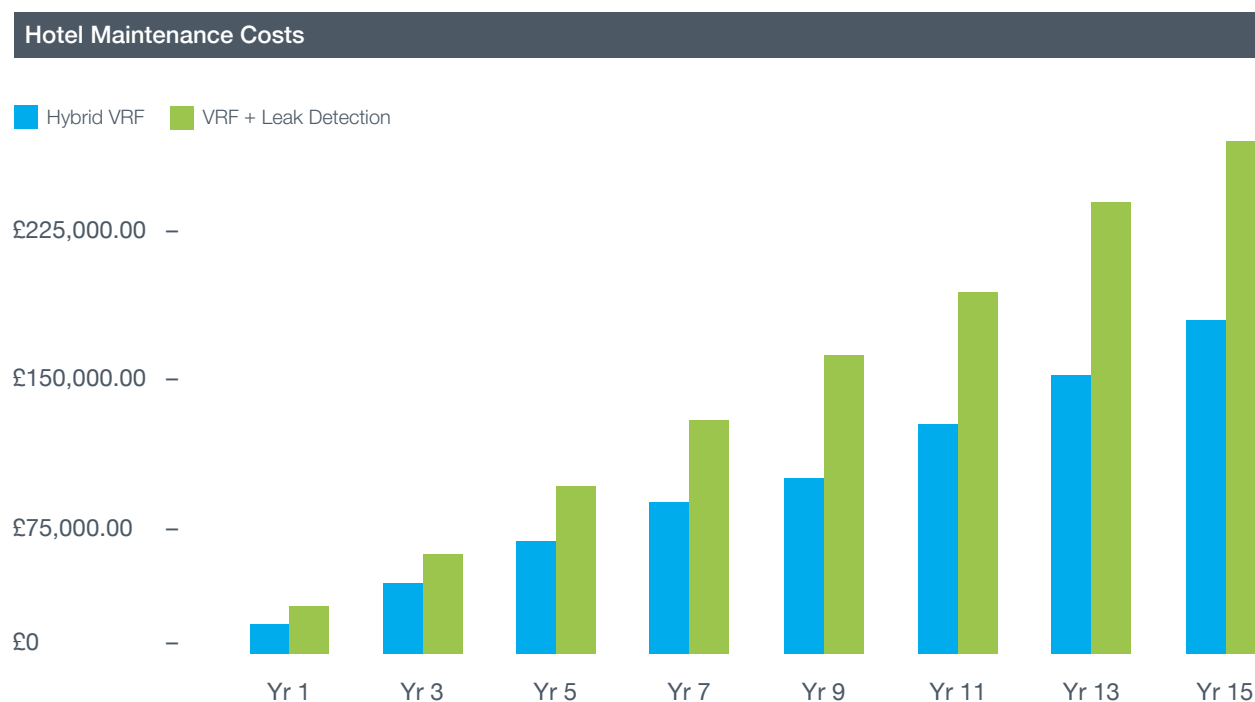
### Option 3: Hybrid VRF

No leak detection required and Hybrid VRF design can be maximised, minimising CAPEX costs.

**Hybrid VRF offers a 5% decrease in CAPEX costs** compared to the VRF + leak detection option.



Considering operational costs throughout the systems lifetime, annual testing and recalibration of leak detection sensors aren't required with Hybrid VRF, making nearly **£100,000 maintenance saving (30%)** over 15 years on this 250 bed hotel.



**Notes:** Based on a real project, using costs from a Mitsubishi Electric Business Solutions Partner





The image is a composite of two photographs. The top photograph shows a close-up of a modern office interior, featuring a glass partition with a circular ventilation grille on the ceiling and a large window looking out onto a city. The bottom photograph shows a wider view of the same office space, where a man and a woman are sitting in yellow chairs, engaged in a conversation. They are positioned in front of a large window that offers a view of a modern building and a city street. The office has a glass partition with green and blue decorative elements, and the floor is covered with a patterned carpet.

# Hybrid VRF Case Studies



# Hampton by Hilton / Humberside

## Modular hotel uses modular air conditioning

A hotel on the doorstep of North Lincolnshire's major transport hub will open its doors this winter complete with Mitsubishi Electric's innovative Hybrid VRF air conditioning system.

The Hampton by Hilton next to Humberside Airport is under modular room construction with each floor section built in a factory and transported to the site. This progressive approach is also mirrored in the use of the award-winning Hybrid VRF solution.

### The requirements:

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The appeal to the hospitality sector of Hybrid VRF is in its use of water, rather than refrigerant, which eliminates the need for provision of leak detection systems in compliance with British Standard EN378. From a commercial standpoint, this is a major financial incentive, as there are different levels of leak detection that could be offered, but even at the very basic level of compliance you would be looking at a £15,000-£20,000 capital outlay. That's before even considering the additional regular maintenance requirements.

### The solution:

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Equipment wise, the Hybrid VRF system is close to the same cost of traditional VRF, so just by using it and avoiding leak detection, the customer has saved.

To provide energy efficient heating and cooling to the hotel, five Hybrid VRF Heat Recovery units deliver simultaneous heating and cooling to 100 bedrooms, using water as the heat transfer medium, rather than refrigerant.

This completely removes the need and added cost of leak detection equipment in occupied spaces, whilst still providing individual comfort control for hotel guests.

As well as the elimination of the need for leak detection, the Hybrid VRF system allows for the use of plastic pipe instead of copper, making the installation easier and faster, as there is no brazing required.



# Hoare Lea / Cardiff

## Consultants use office as a hybrid test bed

When leading edge consultancy Hoare Lea wanted to refurbish a 12-year-old building for its Cardiff offices, the company was looking for a comfortable, energy efficient and stylish working environment for its staff, that also complied with both existing and future legislation.

### The requirements:

The office on Cardiff Gate Business Park is a recycled building which is important to Hoare Lea as it limits the amount of embodied carbon used in moving from the company's previous offices. The refurbishment of the two-storey building also had to happen over a tight 6-8 week period, which called for flexibility from both the equipment and the installer.

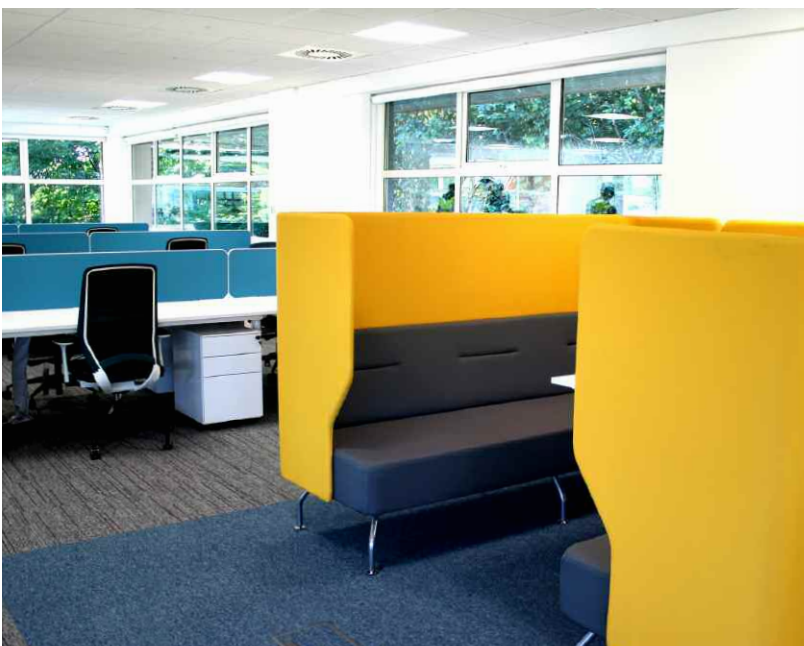
For the refurbishment, Hoare Lea could have stayed with a conventional VRF system, but the consultancy wanted to test the innovative hybrid system which combines the flexibility and control of VRF with more traditional four pipe levels of comfort.

### The solution:

Having heard about the innovative Hybrid VRF system, the company's management thought that it was worth investigating its potential, especially as the office would be full of an inquisitive bunch of engineers.

Hoare Lea is therefore using the refurbished office as a test bed which helps the consultancy evaluate the system and combine that with the technical experience of seeing how it actually operates in practice in a live, working environment. Hoare Lea staff like to keep abreast of what's going on within the building industry so that the company can know what best suits its clients.

"Mitsubishi Electric obviously believes in its own product because it is no easy feat to put a system into a consulting engineers' office, but it also means we will be able to provide some really valuable feedback to them," explains Wynne Harris, Managing Partner for Hoare Lea Cardiff.



# Kooltech / Glasgow

## Cool new HQ showcases both Hybrid VRF and VRF systems

One of the largest independently owned wholesalers of refrigeration and air conditioning products is using its new state-of-the-art headquarters to showcase traditional VRF air conditioning alongside the innovative, award-winning Hybrid VRF system. Kooltech Ltd has been a major wholesaler of Mitsubishi Electric's range for over 20 years, so is very familiar with the innovation that the company is renowned for.

### The requirements:

Kooltech's customers trust it to deliver the best solutions for them so using the new Glasgow headquarters to highlight the benefits of Mitsubishi Electric's unique 2-pipe system made a lot of sense.

The headquarters is designed to act as a distribution and warehouse hub for Kooltech's network of branches and has its own dedicated trade counter for customers in the North. On top of this, the new facility has a fully functional product showroom and training facility and serves as a manufacturing site for Kooltech's bespoke range of K-Con products.

### The solution:

City Multi Hybrid VRF and traditional VRF system are installed on the two floors of the building, with the PURY-EP350 Hybrid VRF outdoor heat recovery unit connecting 14 PEFY-WP-VMA-E indoor units serving a variety of offices and meeting rooms across the first floor of the building.

A MelcoRemote control system has also been installed and this is being used to monitoring the energy usage of both versions of the 2-pipe City Multi range.

In terms of the setup, the Hybrid VRF system behaves pretty much like VRF. The main difference is that the majority of pipework is for water. However, it still provides all of the flexibility of design and this is part of the reason City Multi systems have been chosen as the headquarters give Kooltech room to expand and grow.





# Working Environments / Southampton

## Headquarters becomes a centre of excellence

When Working Environments was looking to bring together three different company locations into one, the decision was taken to modernise their existing headquarters at Monza House in Southampton to accommodate the integration.

### The requirements:

The company's executive management objective was to provide a modern, comfortable environment for staff and customers and turn the interior of the building into a 'Centre of Excellence' that could act as a showcase for Working Environment's expertise and services. The decision was also taken to install a traditional VRF and a Hybrid VRF system.

### The solution:

The building now uses a Hybrid VRF system which was selected because it operates without using refrigerant in occupied spaces, for its ability to deliver simultaneous heating and cooling in a simplified 2-pipe design and also its delivery of high sensible cooling and stable room temperatures for maximum comfort.

The building was redeveloped in two phases which has created a new office area, seating 58 engineering and surveying staff, eight meeting rooms, an IT training suite and a staff breakout area. This area is served with two traditional VRF systems with both ducted and ceiling cassettes.

Existing ground floor offices and corridors were also modified to provide access to the new office area and completely modernise the space with new air conditioning, lighting, power and data.

Following the completion of these two phases, the existing first floor offices were modernised and this is where the Hybrid VRF system was installed, along with new lighting, power and data infrastructure. Feedback from staff has been fantastic, with everyone noticing how fresher and more balanced the internal temperatures have been.



# Radio 7 / Baden-Württemberg

## The technology calls the tune

Radio 7 is one of the three big regional stations in Baden-Württemberg, Germany. The station's live and recording studios are air conditioned, a task previously performed by the central ventilation system with a heat register supplied by a classic chiller unit. Now Hybrid VRF technology from Mitsubishi Electric offers greater comfort using less energy.

### The requirements:

The radio station's new air conditioning system had to satisfy three conditions. First, it should require less energy than standard systems for the same output. Second, it should offer users a high comfort level, primarily through individual temperature control in each studio. Third, rooms used by people should remain free of refrigerant.

Another special circumstance was that the old air conditioning unit was operated using R22 refrigerant. Due to the prohibition on this, necessary repairs and servicing could no longer be carried out, and so a replacement was required.

### The solution:

Radio 7 is now using a Hybrid VRF system. The unique technology combines the benefits of a direct evaporation unit with those of a water-based system. A special refrigerant distributor, the Hybrid BC unit, transfers the energy from the refrigerant to water as a transport medium. The indoor units, eight ceiling concealed units in this case, operate with special water coils.

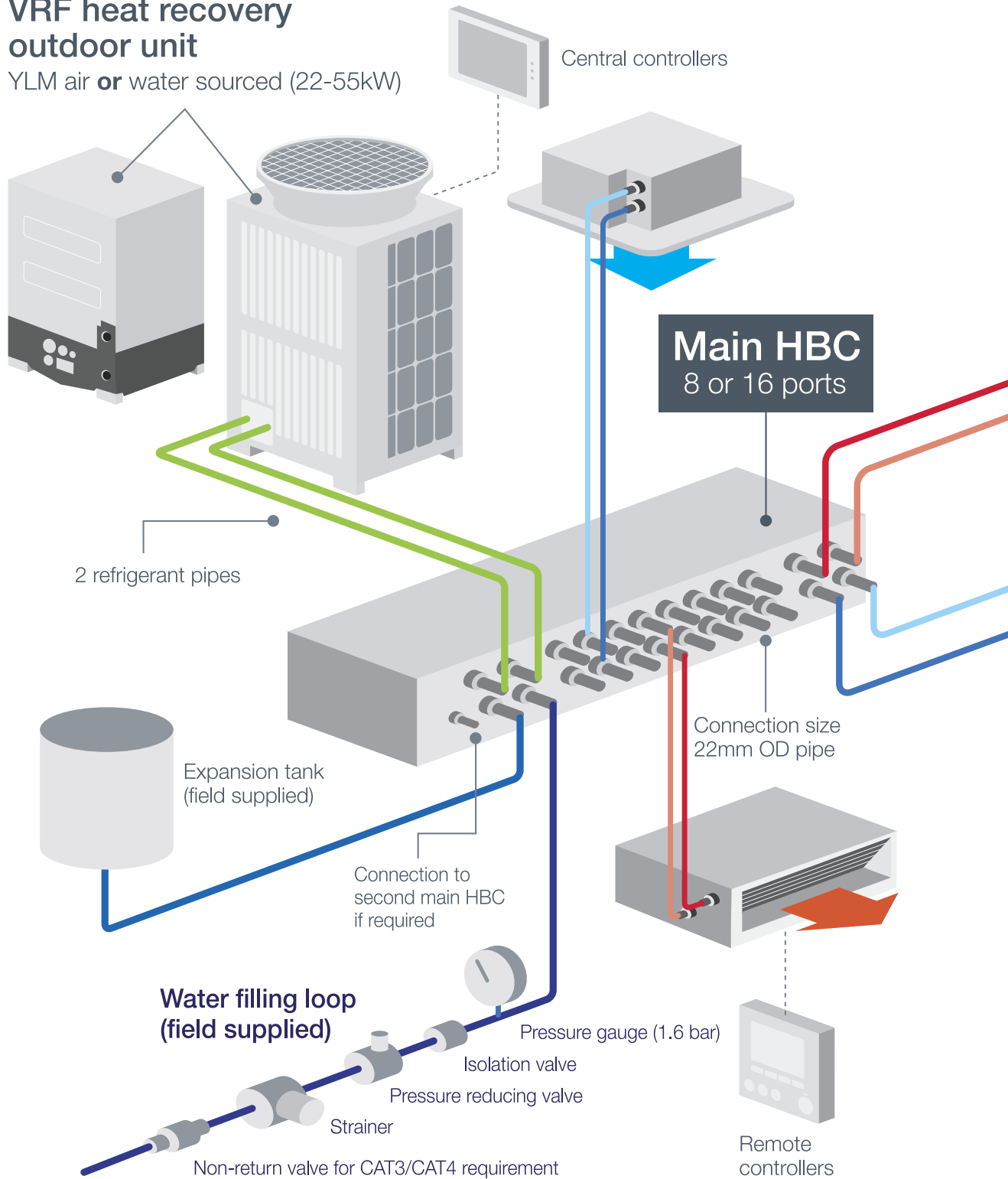
The PURY EP200YLM outdoor unit installed in the boiler room with 22.4 kW of cooling capacity and 25.0 kW of heating capacity offers an impressively high degree of efficiency. The air intake is via a decommissioned chimney, while air is blown out through a newly installed air duct. Each ceiling concealed unit can be operated independently in heating and cooling mode. Adjustment is via a PAR 31MAA cable remote controller in each case.



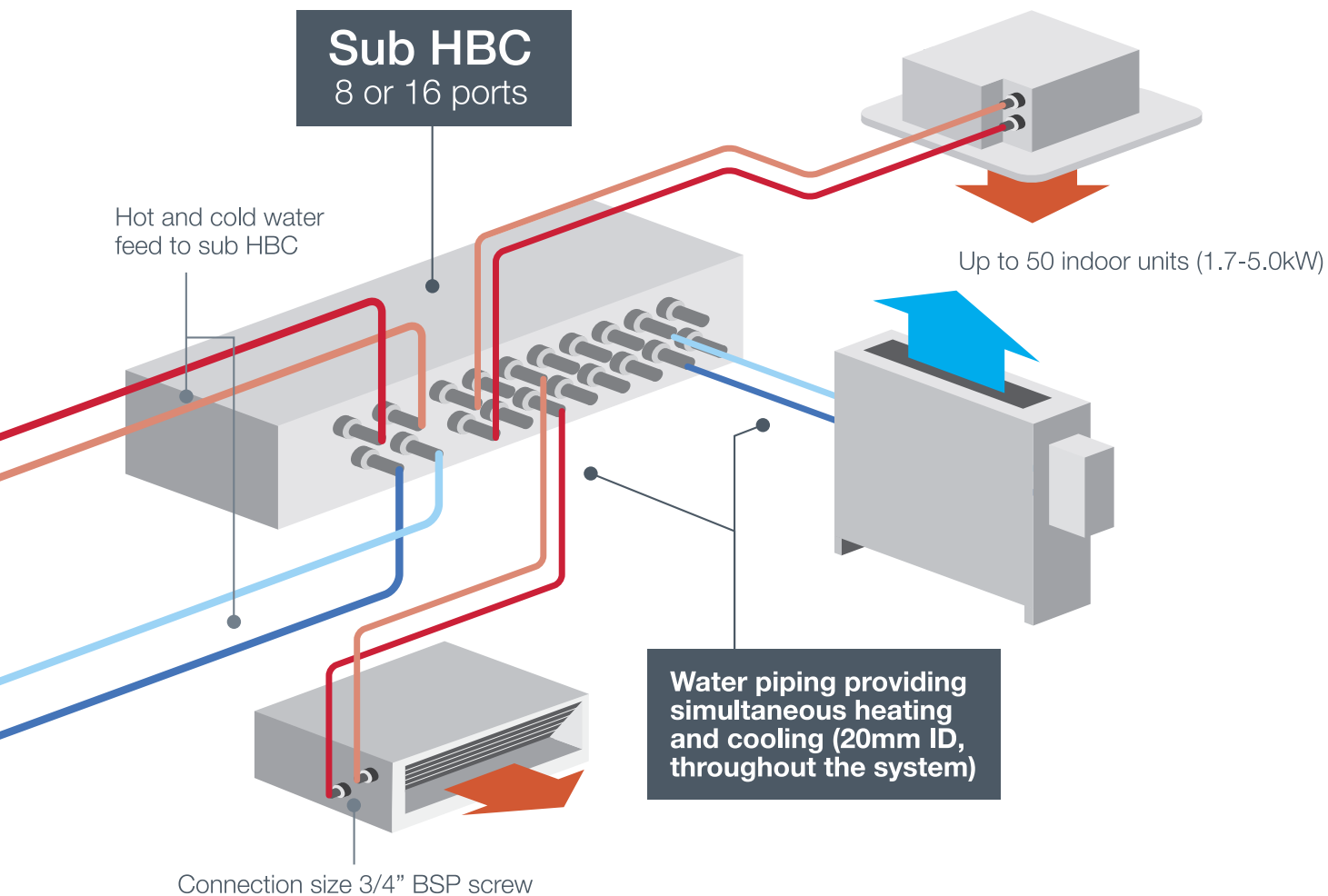
# Technical Overview

## VRF heat recovery outdoor unit

YLM air **or** water sourced (22-55kW)







- Refrigerant
- Hot water supply
- Hot water return
- Cold water supply
- Cold water return

#### Additional items required:

- Isolation valves
- Automatic air vents at high points (1 on each port)
- Drain cocks at low points

**Note:** 2 main HBCs also possible, please see R2 piping sizing restrictions section for further detail. Sub HBC is optional.

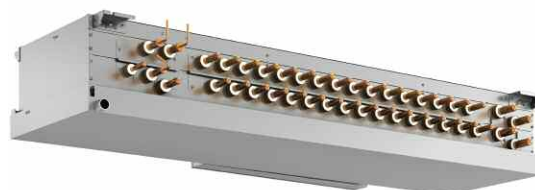
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# System Application

Hybrid VRF can be configured in various ways to optimise number of ports required, connection index, system layout, efficiency or capacity.

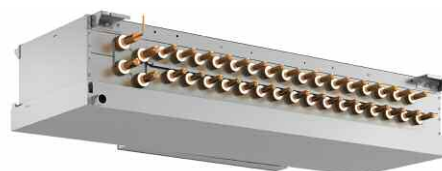
## Main HBC

The main HBC is the brains of Hybrid VRF. It takes capacity from the refrigerant in to the water which is pumped from the box through the on board pumps. The main HBC can pump water through either an 8 or 16 ports box and **optionally** through a sub HBC to another 8 or 16 ports. All capacity and piping lengths are therefore determined from the main HBC.



## Sub HBC

The sub HBC is a header extension of the main HBC in the Hybrid VRF system. It has no refrigerant running through it, therefore adds no capacity to the water. It has no pumps so does not provide any additional piping length. It provides additional ports from the water from the main HBC to extend through.



## Selection Process

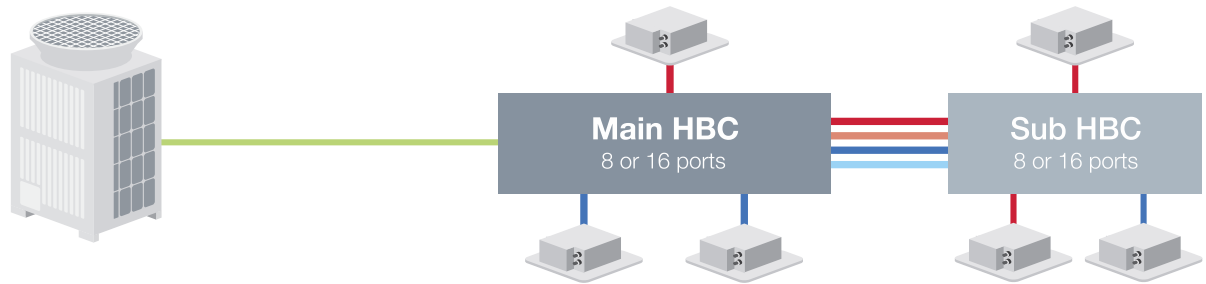
- 1 Indoor load should be determined to size indoor unit capacity
- 2 Overall system capacity is determined with any relevant de-rates applied and outdoor unit is selected
- 3 Depending on the outdoor unit selected, there is an option of HBCs available

Outdoor Unit	Main HBC	Sub HBC	Design note
(E)P200-250	One only	One optional	
(E)P300-350	<b>One</b>	One optional	Lower cost, lower efficiency
	<b>Two</b>	One optional per main HBC	Higher cost, higher efficiency
(E)P400-500	Two only	One optional per main HBC	

### Design Notes

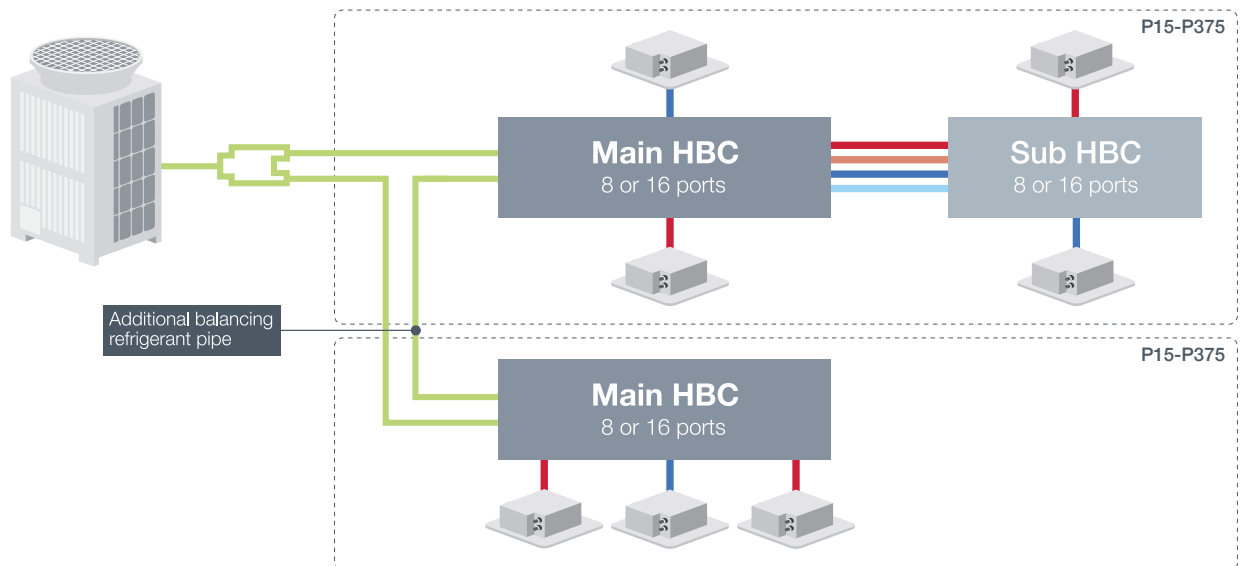
- Maximum connection index to each system is 150% of the outdoor unit capacity.
- When using 2 x main HBCs, it is recommended to balance the load between the HBCs for best efficiency and performance.
- Each main HBC / Sub HBC combination can have connected index from minimum P15 to maximum P375.

P200-250



P300-500\*

\* P300-350 optional one or two main HBCs

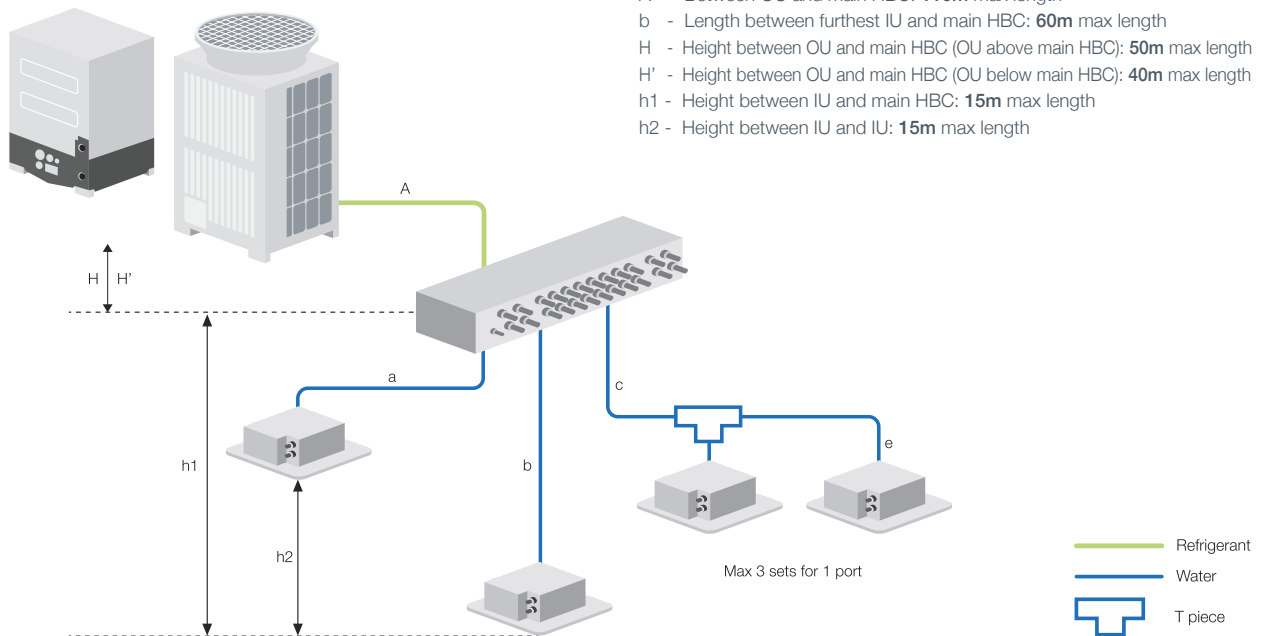




# R2 Series Piping Restrictions

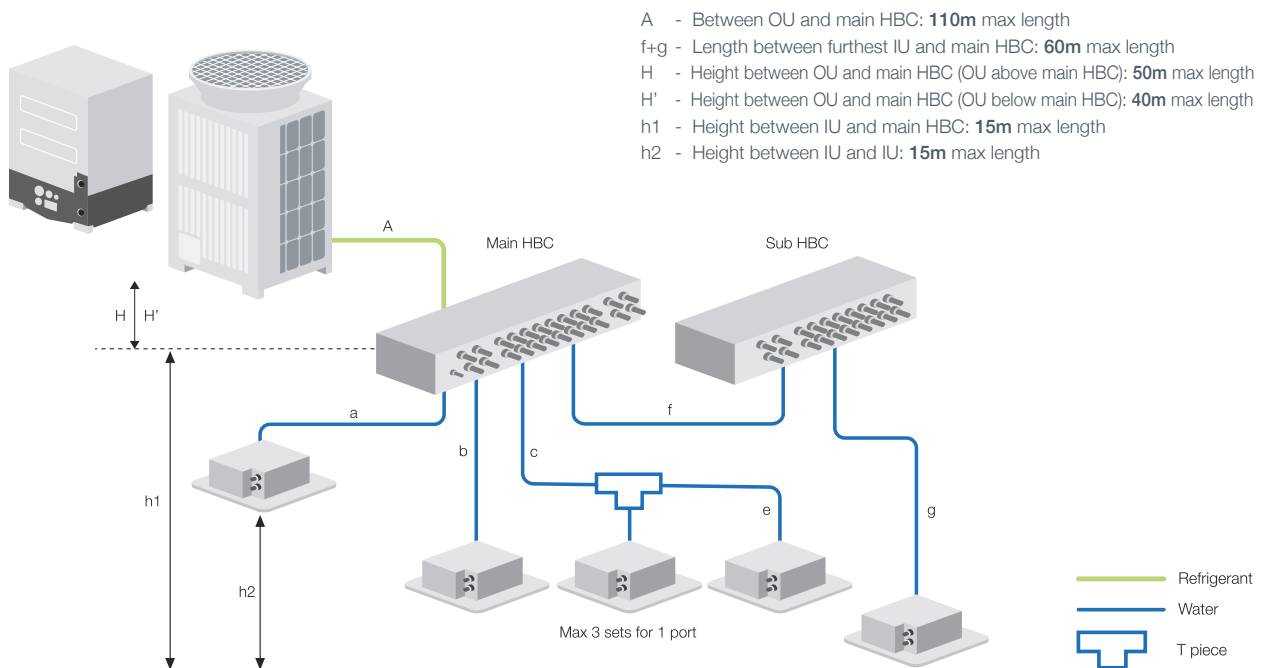
## 1 Main HBC Controller

### Pipe Selection



## 1 Main HBC Controller and 1 Sub HBC

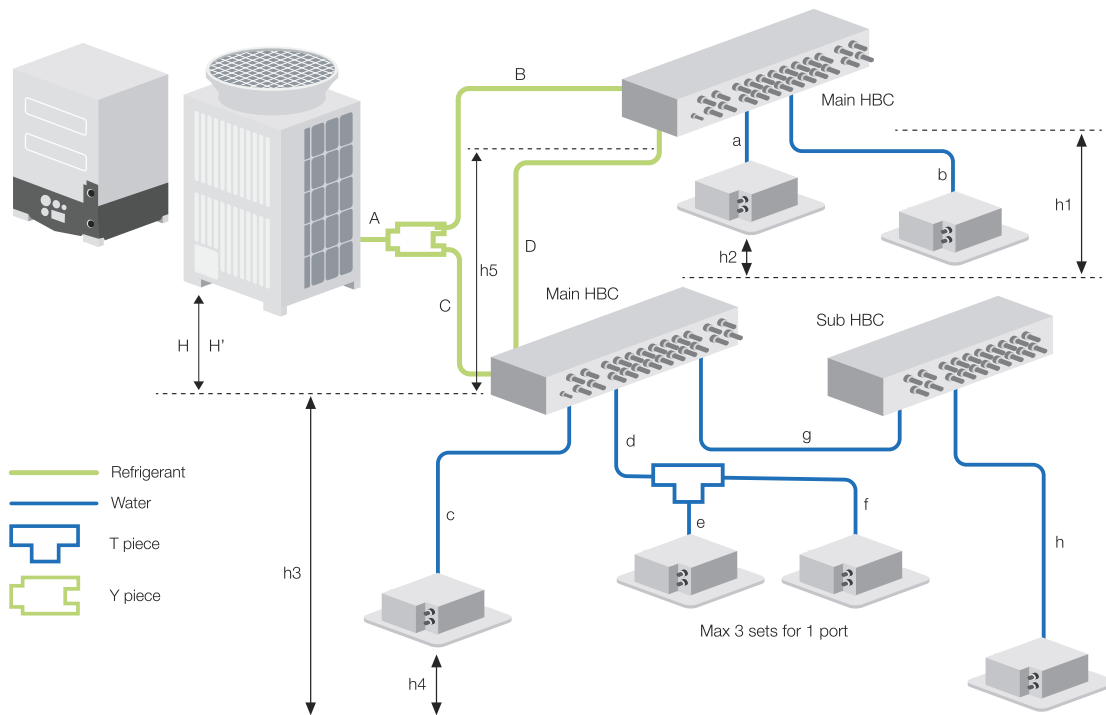
### Pipe Selection



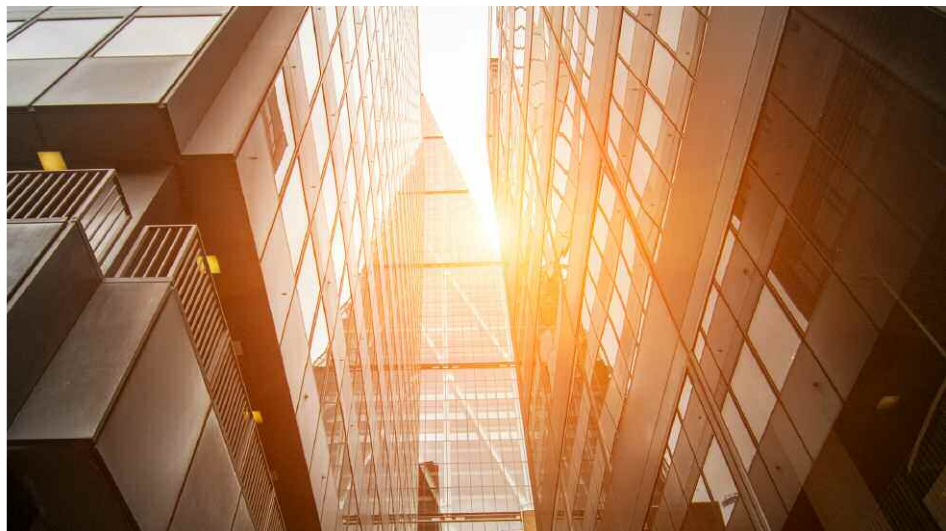
## 2 Main HBC Controller and 1 Sub HBC

### Pipe Selection

- A+B+C- Between OU and main HBC: **110m** max length
- b+g+h - Length between furthest IU and main HBC: **60m** max length
- H - Height between OU and main HBC (OU above main HBC): **50m** max length
- H' - Height between OU and main HBC (OU below main HBC): **40m** max length
- h1+h3 - Height between IU and main HBC: **15m** max length
- h2+h4 - Height between IU and IU: **15m** max length
- h5 - Height between main HBC and main HBC: **15m** max length
- D - Length between main HBC and main-HBC: **40m** max length






**KEY:** IU = Indoor Unit. OU = Outdoor Unit. HBC = Hybrid Branch Controller



# Hybrid VRF Product Range

## H-VRF Outdoor Units

MODEL	RANGE		P200 22kW	P250 28kW	P300 34kW	P350 40kW	P400 45kW	P450 50kW	P500 56kW
Air Cooled	Standard PURY-P		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	High Efficiency PURY-EP		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Cooled	WR2 Series PQRY-P		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## H-VRF Indoor Units

MODEL	RANGE		P15 1.7kW	P20 2.2kW	P25 2.8kW	P32 3.6kW	P40 4.5kW	P50 5.6kW
Ducted	Slim Ceiling PEFY-WP-VMS1-E		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Ceiling Concealed PEFY-WP-VMA-E			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor	Floor Standing High Static PFFY-WP-VLRMM-E			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cassette	4-Way Blow PLFY-WP-VBM-E					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



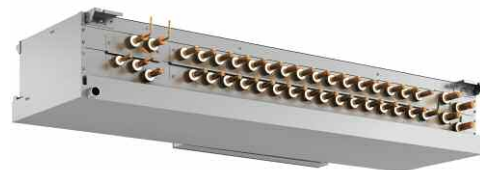




# Hybrid VRF Specifications



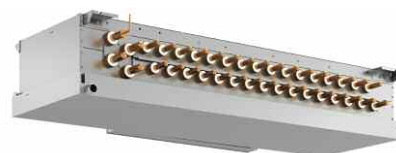
# HBC Specifications



## MASTER HBC CONTROLLERS

MODEL	CMB-WP108V-GA1	CMB-WP1016V-GA1
NUMBER OF CONNECTIONS (Size)	8 (22mm OD pipe)	16 (22mm OD pipe)
WEIGHT (kg) (Water)	85 (95)	97 (110)
DIMENSIONS (mm)		
Width	1520	1800
Depth	540 (630)	540 (630)
Height	300	300
ELECTRICAL SUPPLY	220-240v, 50Hz	220-240v, 50Hz
PHASE	Single	Single
POWER INPUT (kW)	0.46	0.46
RUNNING CURRENT (A)	2.83	2.83
FUSE RATING (BS88) – HRC (A)	6	6
MAINS CABLE NO. CORES	3	3

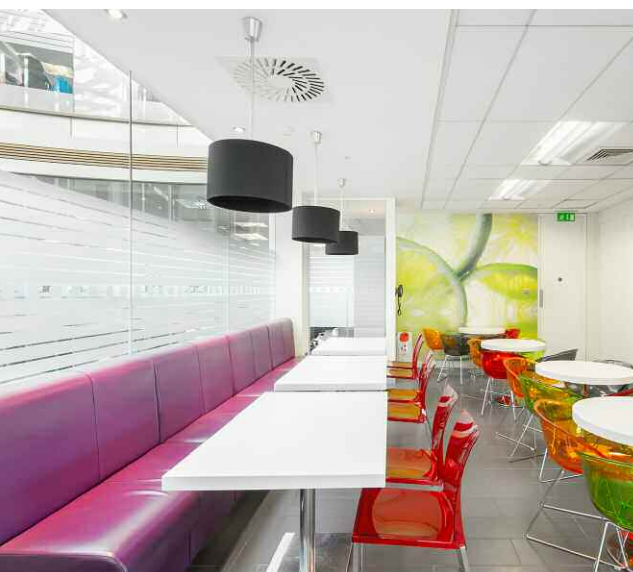
Notes: CMB-WP-V-GA1 and CMB-WP-V-GB1 units are for use with PURY-P200-500YLM-A1, PURY-EP200-500YLM-A1, PQRY-P200-500YLM-A units and H-VRF indoor units only (PEFY-WP, PFFY-WP, PLFY-WP). One main HBC can be used on outdoor units PURY-(E)P200-350YLM-A1, PQRY-P200-350YLM-A. Two main HBC's can be used in parallel on outdoor units PURY-(E)P300-500YLM-A1, PQRY-P300-500YLM-A.



## SUB HBC CONTROLLERS

MODEL	CMB-WP108V-GB1	CMB-WP1016V-GB1
NUMBER OF CONNECTIONS (Size)	8 (22mm OD pipe)	16 (22mm OD pipe)
WEIGHT (kg) (Water)	43 (48)	51 (60)
DIMENSIONS (mm)		
Width	1520	1520
Depth	540 (630)	540 (630)
Height	300	300
ELECTRICAL SUPPLY	220-240v, 50Hz	220-240v, 50Hz
PHASE	Single	Single
POWER INPUT (kW)	0.01	0.01
RUNNING CURRENT (A)	0.05	0.05
FUSE RATING (BS88) – HRC (A)	6	6
MAINS CABLE NO. CORES	3	3

Notes: CMB-WP-V-GA1 and CMB-WP-V-GB1 units are for use with PURY-P200-500YLM-A1, PURY-EP200-500YLM-A1, PQRY-P200-500YLM-A units and H-VRF indoor units only (PEFY-WP, PFFY-WP, PLFY-WP).



# Indoor Unit Specifications

## PEFY-WP-VMS1-E

### Ultra Thin Ceiling Concealed Ducted Indoor Unit (H-VRF)



INDOOR UNIT		PEFY-WP15VMS1-E	PEFY-WP20VMS1-E	PEFY-WP25VMS1-E	PEFY-WP32VMS1-E	PEFY-WP40VMS1-E	PEFY-WP50VMS1-E
CAPACITY (kW)	Heating (nominal)	1.9	2.5	3.2	4.0	5.0	6.3
	Cooling (nominal)	1.7	2.2	2.8	3.6	4.5	5.6
	UK Heating	1.9	2.5	3.2	4.0	5.0	6.3
	UK Total Cooling - Hi (Sensible)	1.50 (1.50)	2.00 (1.70)	2.50 (2.00)	3.20 (2.70)	4.00 (3.20)	5.00 (4.00)
	UK Total Cooling - Mi1	1.44	1.89	2.32	3.03	3.82	4.79
	UK Total Cooling - Lo	1.34	1.76	2.08	2.88	3.61	4.51
POWER INPUT (kW)	Heating (nominal)	0.03	0.03	0.04	0.05	0.07	0.07
	Cooling (nominal)	0.05	0.05	0.06	0.07	0.09	0.09
AIRFLOW (l/s)	Lo-Mi-Hi	83-100-117	92-108-133	92-117-150	133-150-183	158-183-217	200-233-275
EXTERNAL STATIC PRESSURE (Pa)		5-15-35-50	5-15-35-50	5-15-35-50	5-15-35-50	5-15-35-50	5-15-35-50
SOUND PRESSURE LEVEL (dBA) Lo-Mi1-Hi		22-24-28	22-25-29	23-26-30	28-30-33	30-32-35	30-33-36
WEIGHT (kg)		19	20	20	25	25	27
DIMENSIONS (mm)	Width	790	790	790	990	990	1190
	Depth	700	700	700	700	700	700
	Height	200	200	200	200	200	200
ELECTRICAL SUPPLY		220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz
PHASE		Single	Single	Single	Single	Single	Single
RUNNING CURRENT (A)	Heating / Cooling	0.33 / 0.44	0.38 / 0.49	0.40 / 0.51	0.50 / 0.61	0.62 / 0.73	0.66 / 0.77
FUSE RATING (BS88) - HRC (A)		6	6	6	6	6	6
MAINS CABLE No. Cores		3	3	3	3	3	3

Notes: H-VRF indoor units can only be configured with the CMB-WP HBC (H-VRF) and PURY-(E)P YLM-A or PQRY-P YLM outdoor units. Indoor unit water connections 3/4" BSP screw.

## PEFY-WP-VMA-E

### Ceiling Concealed Ducted Indoor Unit (H-VRF)



INDOOR UNIT		PEFY-WP20VMA-E	PEFY-WP25VMA-E	PEFY-WP32VMA-E	PEFY-WP40VMA-E	PEFY-WP50VMA-E
CAPACITY (kW)	Heating (nominal)	2.5	3.2	4.0	5.0	6.3
	Cooling (nominal)	2.2	2.8	3.6	4.5	5.6
	UK Heating	2.5	3.2	4.0	5.0	6.3
	UK Total Cooling - Hi (Sensible)	2.00 (1.80)	2.50 (2.50)	3.20 (3.00)	4.00 (3.80)	5.00 (4.20)
	UK Total Cooling - Mi1	1.92	2.40	3.07	3.84	4.80
	UK Total Cooling - Lo	1.79	2.24	2.85	3.53	4.41
POWER INPUT (kW)	Heating (nominal)	0.05	0.09	0.11	0.14	0.14
	Cooling (nominal)	0.07	0.09	0.11	0.14	0.14
AIRFLOW (l/s)	Lo-Mi-Hi	125-150-175	167-200-233	200-242-283	242-300-350	242-300-350
EXTERNAL STATIC PRESSURE (Pa)		35-50-70-100-150	35-50-70-100-150	35-50-70-100-150	35-50-70-100-150	35-50-70-100-150
SOUND PRESSURE LEVEL (dBA) Lo-Mi1-Hi		23-26-29	23-27-30	25-29-32	26-29-34	26-29-34
WEIGHT (kg)		21	26	26	31	31
DIMENSIONS (mm)	Width	700	900	900	1100	1100
	Depth	732	732	732	732	732
	Height	250	250	250	250	250
ELECTRICAL SUPPLY		220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz
PHASE		Single	Single	Single	Single	Single
RUNNING CURRENT (A)	Heating / Cooling	0.44 / 0.55	0.53 / 0.64	0.63 / 0.74	1.04 / 1.15	1.15 / 1.15
FUSE RATING (BS88) - HRC (A)		6	6	6	6	6
MAINS CABLE No. Cores		3	3	3	3	3

Notes: H-VRF indoor units can only be configured with the CMB-WP HBC (H-VRF) and PURY-(E)P YLM-A or PQRY-P YLM outdoor units. Indoor unit water connections 3/4" BSP screw.



# Indoor Unit Specifications



## PLFY-WP-VBM-E 4-Way Blow Ceiling Cassette Indoor Unit (H-VRF)

INDOOR UNIT		PLFY-WP32VBM-E	PLFY-WP40VBM-E	PLFY-WP50VBM-E
CAPACITY (kW)	Heating (nominal)	4.0	5.0	6.3
	Cooling (nominal)	3.6	4.5	5.6
	UK Heating	4.0	5.0	6.3
	UK Total cooling - Hi (Sensible)	3.20 (3.20)	4.00 (3.60)	5.00 (4.20)
	UK Total cooling - Mi2	3.16	3.95	4.87
	UK Total cooling - Mi1	3.09	3.87	4.66
	UK Total cooling - Lo	3.02	3.77	4.39
POWER INPUT (kW)	Heating (nominal)	0.03	0.03	0.04
	Cooling (nominal)	0.04	0.04	0.05
AIRFLOW (l/s)	Lo-Mi1-Mi2-Hi	217-233-250-267	217-233-250-267	217-250-283-317
SOUND PRESSURE LEVEL (dBA)	Lo-Mi1-Mi2-Hi	27-29-30-31	27-29-30-31	27-30-32-34
WEIGHT (kg)		22	22	22
DIMENSIONS (mm)	Width	840	840	840
	Depth	840	840	840
	Height	258	258	258
ELECTRICAL SUPPLY		220-240v, 50/60Hz	220-240v, 50/60Hz	220-240v, 50/60Hz
PHASE		Single	Single	Single
RUNNING CURRENT (A)	Heating / Cooling	0.28 / 0.35	0.28 / 0.35	0.38 / 0.45
FUSE RATING (BS88) - HRC (A)		6	6	6
MAINS CABLE No. Cores		3	3	3
GRILLE MODEL REFERENCE		PLP-6BA	PLP-6BA	PLP-6BA

Notes: H-VRF indoor units can only be configured with the CMB-WP HBC (H-VRF) and PURY-(EP YLM-A or PQRY-P YLM outdoor units. Indoor unit water connections 3/4" BSP screw.



## PFFY-WP-VLRMM-E Floor Standing Concealed Indoor Unit (H-VRF)

INDOOR UNIT		PFFY-WP20VLRMM-E	PFFY-WP25VLRMM-E	PFFY-WP32VLRMM-E	PFFY-WP40VLRMM-E	PFFY-WP50VLRMM-E
CAPACITY (kW)	Heating (nominal)	2.5	3.2	4.0	5.0	6.3
	Cooling (nominal)	2.2	2.8	3.6	4.5	5.6
	UK Heating	2.5	3.2	4.0	5.0	6.3
	UK Total Cooling - Hi (Sensible)	2.00 (1.50)	2.50 (2.00)	3.20 (2.50)	4.00 (3.10)	5.00 (3.90)
	UK Total Cooling - Mi1	1.96	2.42	3.07	3.86	4.82
	UK Total Cooling - Lo	1.83	2.29	2.86	3.53	4.43
POWER INPUT (kW)	Heating (nominal)	0.04	0.04	0.05	0.05	0.07
	Cooling (nominal)	0.04	0.04	0.05	0.05	0.07
AIRFLOW (l/s)	Lo-Mi-Hi	75-83-100	100-117-133	125-150-175	133-167-192	175-217-250
EXTERNAL STATIC PRESSURE (Pa)		20-40-60	20-40-60	20-40-60	20-40-60	20-40-60
SOUND PRESSURE LEVEL (dBA)	Lo-Mi1-Hi	31-33-38	31-33-38	31-35-38	34-37-40	37-42-45
WEIGHT (kg)		22	25	25	29	29
DIMENSIONS (mm)	Width	886	1006	1006	1246	1246
	Depth	220	220	220	220	220
	Height	639	639	639	639	639
ELECTRICAL SUPPLY		220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz
PHASE		Single	Single	Single	Single	Single
RUNNING CURRENT (A)	Heating / Cooling	0.35 / 0.35	0.35 / 0.35	0.47 / 0.47	0.47 / 0.47	0.65 / 0.65
FUSE RATING (BS88) - HRC (A)		6	6	6	6	6
MAINS CABLE No. Cores		3	3	3	3	3

Notes: H-VRF indoor units can only be configured with the CMB-WP HBC (H-VRF) and PURY-(EP YLM-A or PQRY-P YLM outdoor units. Indoor unit water connections 3/4" BSP screw.

# Outdoor Unit Specifications



## PURY-P200-500YLM-A1

### Heat Recovery Outdoor Unit (H-VRF)

OUTDOOR UNIT		PURY-P200YLM-A1	PURY-P250YLM-A1	PURY-P300YLM-A1	PURY-P300YLM-A1 X2 HBC	PURY-P350YLM-A1	PURY-P350YLM-A1 X2 HBC
CAPACITY (kW)	Heating (nominal)	25.0	31.5	37.5	37.5	45.0	45.0
	Cooling (nominal)	22.4	28.0	33.5	33.5	40.0	40.0
	High Performance Heating (UK)	25.0	31.5	35.6	35.6	42.8	42.8
	COP Priority Heating (UK)	22.8	28.7	32.3	32.3	38.7	38.7
	Cooling (UK)	20.0	25.0	29.8	29.8	35.6	35.6
POWER INPUT (kW)	Heating (nominal)	7.08	10.06	12.71	11.94	15.51	14.35
	Cooling (nominal)	7.00	9.90	13.34	11.31	17.93	14.59
	High Performance Heating (UK)	8.92	12.67	16.97	15.94	20.70	19.15
	COP Priority Heating (UK)	7.04	10.01	12.40	11.65	15.12	13.99
	Cooling (UK)	4.06	5.74	8.61	7.30	11.57	9.42
COP / EER (nominal)		3.53 / 3.20	3.13 / 2.82	2.95 / 2.51	3.14 / 2.96	2.9 / 2.23	3.13 / 2.74
SCOP / SEER		5.08 / 8.50	4.51 / 7.53	4.70 / 6.90	5.00 / 8.13	4.67 / 6.14	5.04 / 7.54
MAX No. OF CONNECTABLE INDOOR UNITS		20	25	30	30	35	35
MAX CONNECTABLE CAPACITY		50~150% OU Capacity	50~150% OU Capacity	50~150% OU Capacity	50~150% OU Capacity	50~150% OU Capacity	50~150% OU Capacity
AIRFLOW (m³/min)	High	185	185	230	230	230	230
	Low	185	185	230	230	230	230
PIPE SIZE mm (in)	Gas	19.05 (3/4")	22.2 (7/8")	22.2 (7/8")	22.2 (7/8")	28.58 (1-1/8")	28.58 (1-1/8")
	Liquid	15.88 (5/8")	19.05 (3/4")	19.05 (3/4")	19.05 (3/4")	19.05 (3/4")	19.05 (3/4")
SOUND PRESSURE LEVEL (dBA)		59	60	62.5	62.5	62.5	62.5
SOUND POWER LEVEL (dBA)		82.5	83.5	86	86	86	86
WEIGHT (kg)		205	205	248	248	248	248
DIMENSIONS (mm)	Width	920	920	1220	1220	1220	1220
	Depth	740	740	740	740	740	740
	Height	1710	1710	1710	1710	1710	1710
(1650mm without legs)							
ELECTRICAL SUPPLY		380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz
PHASE		Three	Three	Three	Three	Three	Three
STARTING CURRENT (A)		8	8	8	8	8	8
NOMINAL SYSTEM RUNNING CURRENT (A) Heating/Cooling [MAX]		10.9 / 10.8 [16.1]	15.5 / 15.3 [17.3]	19.6 / 20.6 [22.2]	18.4 / 17.4 [22.2]	23.9 / 27.7 [27.8]	22.2 / 22.5 [27.8]
GUARANTEED OPERATING RANGE (°C) Heating / Cooling		-20~15.5 / -5~46	-20~15.5 / -5~46	-20~15.5 / -5~46	-20~15.5 / -5~46	-20~15.5 / -5~46	-20~15.5 / -5~46
FUSE RATING (MCB sizes BS EN 60947-2) - (A)		1 x 20	1 x 20	1 x 25	1 x 25	1 x 32	1 x 32
MAINS CABLE No. Cores		4 + earth	4 + earth	4 + earth	4 + earth	4 + earth	4 + earth
CHARGE (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		9.5 / 19.8	9.5 / 19.8	10.3 / 21.5	10.3 / 21.5	10.3 / 21.5	10.3 / 21.5
MAX ADDED QUANTITY (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		27.5 / 57.4	33.5 / 69.9	37.0 / 77.3	37.0 / 77.3	39.0 / 81.4	39.0 / 81.4

OUTDOOR UNIT		PURY-P400YLM-A1	PURY-P450YLM-A1	PURY-P500YLM-A1
CAPACITY (kW)	Heating (nominal)	45.0	56.0	58.0
	Cooling (nominal)	45.0	50.0	56.0
	High Performance Heating (UK)	47.5	50.7	57.0
	COP Priority Heating (UK)	43.0	48.7	54.8
	Cooling (UK)	40.1	44.4	49.7
POWER INPUT (kW)	Heating (nominal)	13.39	17.39	17.53
	Cooling (nominal)	16.65	17.92	22.67
	High Performance Heating (UK)	17.88	19.91	20.07
	COP Priority Heating (UK)	13.05	16.00	16.13
	Cooling (UK)	10.74	11.29	14.29
COP / EER (nominal)		3.36 / 2.70	3.22 / 2.79	3.30 / 2.47
SCOP / SEER		4.66 / 6.08	4.50 / 6.34	4.63 / 5.62
MAX No. OF CONNECTABLE INDOOR UNITS		40	45	50
MAX CONNECTABLE CAPACITY		50~150% OU Capacity	50~150% OU Capacity	50~150% OU Capacity
AIRFLOW (m³/min)	High	230	320	380
	Low	230	320	380
PIPE SIZE mm (in)	Gas	28.58 (1-1/8")	28.58 (1-1/8")	28.58 (1-1/8")
	Liquid	22.2 (7/8")	22.2 (7/8")	22.2 (7/8")
SOUND PRESSURE LEVEL (dBA)		62.5	62.5	63.5
SOUND POWER LEVEL (dBA)		86	86	87
WEIGHT (kg)		246	321	321
DIMENSIONS (mm)	Width	1220	1750	1750
	Depth	740	740	740
	Height	1710	1710	1710
(1650mm without legs)				
ELECTRICAL SUPPLY		380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz
PHASE		Three	Three	Three
STARTING CURRENT (A)		8	8	8 / 8
NOMINAL SYSTEM RUNNING CURRENT (A) Heating/Cooling [MAX]		20.6 / 25.7 [32.4]	26.8 / 27.7 [35.9]	27.0 / 35.0 [41.9]
GUARANTEED OPERATING RANGE (°C) Heating / Cooling		-20~15.5 / -5~46	-20~15.5 / -5~46	-20~15.5 / -5~46
FUSE RATING (MCB sizes BS EN 60947-2) - (A)		1 x 40	1 x 40	1 x 50
MAINS CABLE No. Cores		4 + earth	4 + earth	4 + earth
CHARGE (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		10.3 / 21.5	11.8 / 24.6	11.8 / 24.6
MAX ADDED QUANTITY (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		45.0 / 94.0	44.2 / 92.3	44.2 / 92.3

Notes: A separate power supply is required for each module. Specification tables for the H-VRF outdoor units are different to the standard VRF outdoor units.

# Outdoor Unit Specifications



## PURY-EP200-500YLM-A1

### Heat Recovery Outdoor Unit (H-VRF)

OUTDOOR UNIT		PURY-EP200YLM-A1	PURY-EP250YLM-A1	PURY-EP300YLM-A1	PURY-EP300YLM-A1 X2 HBC	PURY-EP350YLM-A1	PURY-EP350YLM-A1 X2 HBC
CAPACITY (kW)	Heating (nominal)	25.0	31.5	37.5	37.5	45.0	45.0
	Cooling (nominal)	22.4	28.0	33.5	33.5	40.0	40.0
	High Performance Heating (UK)	25.0	31.5	35.6	35.6	42.8	42.8
	COP Priority Heating (UK)	22.8	28.7	32.3	32.3	38.7	38.7
	Cooling (UK)	20.0	25.0	29.8	29.8	35.6	35.6
POWER INPUT (kW)	Heating (nominal)	6.92	9.84	11.71	11.12	15.38	14.28
	Cooling (nominal)	6.27	8.77	12.05	10.24	17.16	13.98
	High Performance Heating (UK)	8.67	12.32	15.62	14.83	20.52	19.05
	COP Priority Heating (UK)	6.88	9.78	11.37	10.80	14.94	13.87
	Cooling (UK)	2.77	3.76	6.06	5.15	8.11	6.61
COP / EER (nominal)		3.61 / 3.57	3.20 / 3.19	3.2 / 2.78	3.76 / 3.74	2.92 / 2.33	3.15 / 2.86
SCOP / SEER		5.19 / 9.47	4.61 / 8.51	5.10 / 7.63	5.37 / 8.96	4.70 / 6.42	5.06 / 7.86
MAX No. OF CONNECTABLE INDOOR UNITS		20	25	30	30	35	35
MAX CONNECTABLE CAPACITY		50~150% OU Capacity	50~150% OU Capacity	50~150% OU Capacity	50~150% OU Capacity	50~150% OU Capacity	50~150% OU Capacity
AIRFLOW (m³/min)	High	185	185	230	230	230	230
	Gas	19.05 (3/4")	22.2 (7/8")	22.2 (7/8")	22.2 (7/8")	28.58 (1-1/8")	28.58 (1-1/8")
PIPE SIZE mm (in)	Liquid	15.88 (5/8")	19.05 (3/4")	19.05 (3/4")	19.05 (3/4")	19.05 (3/4")	19.05 (3/4")
SOUND PRESSURE LEVEL (dBA)		59	60	62.5	62.5	62.5	62.5
SOUND POWER LEVEL (dBA)		82.5	83.5	86	86	86	86
WEIGHT (kg)		202	202	244	244	244	244
DIMENSIONS (mm)	Width	920	920	1220	1220	1220	1220
	Depth	740	740	740	740	740	740
	Height	1710	1710	1710	1710	1710	1710
(1650mm without legs)							
ELECTRICAL SUPPLY		380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz
PHASE		Three	Three	Three	Three	Three	Three
STARTING CURRENT (A)		8	8	8	8	8	8
NOMINAL SYSTEM RUNNING CURRENT (A) Heating/Cooling [MAX]		10.6 / 9.6 [16.1]	15.2 / 13.5 [19.9]	18.1 / 18.6 [23.6]	17.1 / 15.8 [23.6]	23.7 / 26.5 [30.6]	22.0 / 21.6 [30.6]
GUARANTEED OPERATING RANGE (°C) Heating / Cooling		-20~-15.5 / -5~-46	-20~-15.5 / -5~-46	-20~-15.5 / -5~-46	-20~-15.5 / -5~-46	-20~-15.5 / -5~-46	-20~-15.5 / -5~-46
FUSE RATING (MCB sizes BS EN 60947-2) - (A)		1 x 20	1 x 20	1 x 25	1 x 25	1 x 32	1 x 32
MAINS CABLE No. Cores		4	4	4	4	4	4
CHARGE (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		6.0 / 12.5	6.0 / 12.5	8.0 / 16.7	8.0 / 16.7	8.0 / 16.7	8.0 / 16.7
MAX ADDED QUANTITY (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		27.5 / 57.4	33.5 / 69.9	37.0 / 77.3	37.0 / 77.3	39.0 / 81.4	39.0 / 81.4

OUTDOOR UNIT		PURY-EP400YLM-A1	PURY-EP450YLM-A1	PURY-EP500YLM-A1
CAPACITY (kW)	Heating (nominal)	50.0	56.0	63.0
	Cooling (nominal)	45.0	50.0	56.0
	High Performance Heating (UK)	47.5	50.7	57.0
	COP Priority Heating (UK)	43.0	48.7	54.8
	Cooling (UK)	40.1	44.4	49.7
POWER INPUT (kW)	Heating (nominal)	14.12	16.86	21.67
	Cooling (nominal)	13.88	16.83	21.22
	High Performance Heating (UK)	18.84	19.24	24.73
	COP Priority Heating (UK)	13.71	15.41	19.81
	Cooling (UK)	6.82	7.88	9.10
COP / EER (nominal)		3.54 / 3.24	3.32 / 2.97	2.9 / 2.63
SCOP / SEER		4.92 / 7.34	4.64 / 6.75	4.77 / 6.00
MAX No. OF CONNECTABLE INDOOR UNITS		40	45	50
MAX CONNECTABLE CAPACITY		50~150% OU Capacity	50~150% OU Capacity	50~150% OU Capacity
AIRFLOW (m³/min)	High	320	320	380
	Gas	28.58 (1-1/8")	28.58 (1-1/8")	28.58 (1-1/8")
PIPE SIZE mm (in)	Liquid	22.2 (7/8")	22.2 (7/8")	22.2 (7/8")
SOUND PRESSURE LEVEL (dBA)		62.5	62.5	63.5
SOUND POWER LEVEL (dBA)		86	86	87
WEIGHT (kg)		315	336	349
DIMENSIONS (mm)	Width	1750	1750	1750
	Depth	740	740	740
	Height	1710	1710	1710
(1650mm without legs)				
ELECTRICAL SUPPLY		380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz
PHASE		Three	Three	Three
STARTING CURRENT (A)		8 / 8	8 / 8	8 / 8
NOMINAL SYSTEM RUNNING CURRENT (A) Heating/Cooling [MAX]		21.8 / 21.4 [31.7]	26.0 / 26.0 [37.4]	33.4 / 32.8 [46.1]
GUARANTEED OPERATING RANGE (°C) Heating / Cooling		-20~-15.5 / -5~-46	-20~-15.5 / -5~-46	-20~-15.5 / -5~-46
FUSE RATING (MCB sizes BS EN 60947-2) - (A)		1 x 32	1 x 40	1 x 50
MAINS CABLE No. Cores		4	4	4
CHARGE (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		10.5 / 21.9	11.8 / 24.6	11.8 / 24.6
MAX ADDED QUANTITY (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		45.0 / 94.0	44.2 / 92.3	44.2 / 92.3

Notes: A separate power supply is required for each module. Specification tables for the H-VRF outdoor units are different to the standard VRF outdoor units.



# Outdoor Unit Specifications

## PQRY-P200-500YLM-A Heat Recovery Water Cooled Condensing Unit (H-VRF)



OUTDOOR UNIT		PQRY-P200YLM-A	PQRY-P250YLM-A	PQRY-P300YLM-A	PQRY-P300YLM-A (2 X MAIN)	PQRY-P350YLM-A	PQRY-P350YLM-A (2 X MAIN)
CAPACITY (kW)	Heating (nominal)	25.0	31.5	37.5	37.5	45.0	45.0
	Cooling (nominal)	22.4	28	33.5	33.5	40.0	40.0
POWER INPUT (kW)	Heating (nominal)	4.04	5.41	7.13	6.79	8.87	8.25
	Cooling (nominal)	3.97	5.44	7.55	6.71	9.98	8.72
OPERATING WATER VOLUME (m³/h)		3.0 ~ 7.2	3.0 ~ 7.2	3.0 ~ 7.2	3.0 ~ 7.2	4.5 ~ 11.6	4.5 ~ 11.6
GUARANTEED OPERATING RANGE (°C) Heating / Cooling		-5~45 / -5~45	10~45 / -5~45	-5~45 / -5~45	-5~45 / -5~45	-5~45 / -5~45	-5~45 / -5~45
COP / EER (nominal)		6.18 / 5.64	5.82 / 5.14	5.25 / 4.43	5.52 / 4.99	5.07 / 4.00	5.45 / 4.58
SCOP / SEER (system)		5.56 / 5.21	5.11 / 5.75	5.15 / 5.26	5.00 / 5.05	4.74 / 4.06	4.77 / 4.31
MAX No. OF CONNECTABLE INDOOR UNITS		20	25	30	30	35	35
MAX CONNECTABLE CAPACITY		50 ~ 150%	50 ~ 150%	50 ~ 150%	50 ~ 150%	50 ~ 150%	50 ~ 150%
PIPE SIZE mm (in)	Gas	19.05 (3/4")	22.2 (7/8")	22.2 (7/8")	22.2 (7/8")	28.58 (1 1/8")	28.58 (1 1/8")
	Liquid	15.88 (5/8")	19.05 (3/4")	19.05 (3/4")	19.05 (3/4")	22.2 (7/8")	22.2 (7/8")
SOUND PRESSURE LEVEL (dBA)		46	48	54	54	52	52
SOUND POWER LEVEL (dBA)		60	62	68	68	66	66
WEIGHT (kg)		172	172	172	172	216	216
DIMENSIONS (mm)	Width	880	880	880	880	880	880
	Depth	550	550	550	550	550	550
	Height	1100	1100	1100	1100	1450	1450
ELECTRICAL SUPPLY*		380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz
PHASE*		Three	Three	Three	Three	Three	Three
STARTING CURRENT (A)		8	8	8	8	8	8
NOMINAL SYSTEM RUNNING CURRENT (A)* Heating/Cooling [MAX]		6.1 / 5.7 [16.1]	7.8 / 7.5 [16.1]	9.6 / 9.3 [18.6]	9.6 / 9.3 [18.6]	11.6 / 11.0 [23.1]	11.6 / 11.0 [23.1]
FUSE RATING (BS88) - HRC (A)*		1 x 20A	1 x 20A	1 x 20A	1 x 20A	1 x 25A	1 x 25A
MAINS CABLE No. Cores*		4 + earth	4 + earth	4 + earth	4 + earth	4 + earth	4 + earth
CHARGE (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		5.0 / 10.4	5.0 / 10.4	5.0 / 10.4	5.0 / 10.4	6.0 / 12.5	6.0 / 12.5
MAX ADDED QUANTITY (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		27.0 / 56.4	32.0 / 66.8	33.0 / 68.9	33.0 / 68.9	52.0 / 108.6	52.0 / 108.6

OUTDOOR UNIT		PQRY-P400YLM-A	PQRY-P450YLM-A	PQRY-P500YLM-A
CAPACITY (kW)	Heating (nominal)	50.0	56.0	63.0
	Cooling (nominal)	45.0	50.0	56
POWER INPUT (kW)	Heating (nominal)	9.45	11.11	13.07
	Cooling (nominal)	10.05	12.05	14.58
OPERATING WATER VOLUME (m³/h)		4.5 ~ 11.6	4.5 ~ 11.6	4.5 ~ 11.6
GUARANTEED OPERATING RANGE (°C) Heating / Cooling		-5~45 / -5~45	-5~45 / -5~45	-5~45 / -5~45
COP / EER (nominal)		5.29 / 4.47	5.04 / 4.14	4.82 / 3.84
SCOP / SEER (system)		4.70 / 4.64	4.55 / 4.78	4.37 / 4.80
MAX No. OF CONNECTABLE INDOOR UNITS		40	45	50
MAX CONNECTABLE CAPACITY		50 ~ 150%	50 ~ 150%	50 ~ 150%
PIPE SIZE mm (in)	Gas	28.58 (1 1/8")	28.58 (1 1/8")	28.58 (1 1/8")
	Liquid	22.2 (7/8")	22.2 (7/8")	22.2 (7/8")
SOUND PRESSURE LEVEL (dBA)		52	54	54
SOUND POWER LEVEL (dBA)		66	70	70.5
WEIGHT (kg)		216	216	216
DIMENSIONS (mm)	Width	880	880	880
	Depth	550	550	550
	Height	1450	1450	1450
ELECTRICAL SUPPLY*		380-415v, 50Hz	380-415v, 50Hz	380-415v, 50Hz
PHASE*		Three	Three	Three
STARTING CURRENT (A)		8	8	8
NOMINAL SYSTEM RUNNING CURRENT (A)* Heating/Cooling [MAX]		12.9 / 12.4 [27.6]	15.1 / 14.3 [32.9]	17.6 / 17.2 [39.2]
FUSE RATING (BS88) - HRC (A)*		1 x 32A	1 x 40A	1 x 40A
MAINS CABLE No. Cores*		4 + earth	4 + earth	4 + earth
CHARGE (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		6.0 / 12.5	6.0 / 12.5	6.0 / 12.5
MAX ADDED QUANTITY (kg) / CO <sub>2</sub> EQUIVALENT (t) - R410A (GWP 2088)		52.0 / 108.6	53.0 / 110.7	55.0 / 114.8

Notes: \*A separate power supply is required for each module. Condensing unit must be installed inside a building. \*\*28.58mm(1 1/8") if furthest length ≥ 65m.

PQRY-P350 and PQRY-P450 are non-stock items - allow 16-20 weeks lead time. Specification tables for the H-VRF condensing units are different to the standard VRF condensing units.

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**Note:** The fuse rating is for guidance only. 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), R32(GWP:675), R407C (GWP:1774) or R134a (GWP:1430). \*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 January 2017 SAP No. 306692



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