BLUE STAR

VRF IV PLUS

100% INVERTER

100% capacity at 43°C.
Non-stop cooling even at 54°C.

Blue Star is India's leading HVAC solutions provider. Our expertise in providing airconditioning solutions to diverse industrial domains comes from our experience of over 7 decades in the industry.

Today, the company is a market leader in almost every aspect of the cooling business – Room ACs, VRFs, Packaged and Ducted Splits and Chillers in the airconditioning space and Water Coolers, Deep Freezers and Cold Rooms amongst refrigeration and cooling products.

Apart from its wide range of products and solutions for which the Company offers technical and service support across the length and breadth of the country, Blue Star is also known for its commitment to technology. Over the decades, Blue Star has been the pioneer in introducing the latest technologies in the industry to the Indian market. We brought in the first scroll and then the tandem scroll packaged units to give our customers heads up on power savings. We developed the first high-performance packaged units that cool high sensible loads and even at high ambients. We switched to eco-friendly refrigerants well ahead of others. We introduced Inverter technology in various product ranges. And we developed unique VRF solutions that suited the Indian tropical climatic conditions.

Cutting-edge R&D

Blue Star's innovations are born out of the high-end R&D establishment that has been painstakingly put together over decades with the brightest brains and the latest equipment in place.

Recognised by the Department of Science and Industrial Research (DSIR) - Ministry of Science and Technology, Government of India, Blue Star's R&D has enabled the Company to file more than 25 patents and win many prestigious innovation awards.

CII Innovation Award for User Interface of VRF Systems - 2013

Blue Star's R&D is equipped with advanced engineering design software such as Pro ENGINEER, Solid Edge, PRO-Mechanic, Rhino, Alias and ANSYS Fluent. There are also advanced software tools employed for system design, product performance rating, selection and heat exchanger optimisation.

World-class testing facilities

Blue Star's infrastructure for conducting various performance tests on new products is one of the largest in the country, ensuring that every product and technology is tested vigorously before being productionised.

The Company's chiller testing facility is AHRI-certified.

AHRI CERTIFIED®
www.ahridirectory.org
Air-Cooled Water Chilling Packages
AHRI Standards 550/590 and 551/591

The R&D also has psychrometric test facilities to conduct performance tests on the DX systems range in line with international testing standards.

Psychrometric Test Lab

Products designed are also subject to various reliability tests before they are cleared for manufacturing. These include endurance, vibration and shock tests along with life-cycle and ageing tests to rigorously test design reliability.

All Blue Star products are designed to perform under tropical conditions such as high ambients, high humidity, under extreme voltage conditions and fluctuations. All designs are tested for performance under high ambient conditions and extreme power conditions as prevalent in India.

Advanced psychrometric test lab at Dadra

Blue Star's Dadra factory has a modern Psychrometric Test Lab that can simulate and test VRFs under various conditions. All machines manufactured at the factory are rigorously tested for various parameters at this facility before despatch. Customers too can witness actual performance tests conducted on the new VRF IV Plus before despatch of their machines, making Blue Star one of the few companies in the airconditioning industry offering this facility.

World-class manufacturing

Blue Star's manufacturing strength is spread across seven state-of-the-art manufacturing facilities across the country. The new Blue Star VRF IV Plus units are manufactured at the contemporary and modern factory at Dadra. Set up to international standards, the products manufactured at this ISO 9001-2008 certified factory are sold not only across India but exported to various countries across the globe too.


CERTIFICATE

BLUE STAR

Blue Star Limited

ISO 9001 : 2008

Dadra Factory

Panel Punching Machine

Ensuring an excellent finish

Blue Star's production facilities use raw materials that are of the highest quality, including corrosion resistant, galvanised steel for enhanced life and rust protection. The equipment used to process the steel include CNC machines such as the Amada punch press, hydraulic press and specialised microprocessor-based protection and resistance welders. All these machines ensure superior quality in cabinet fabrication to tight tolerances.

All products are powder coated by specialised process equipment from Nordson of the USA on fully conveyorised lines. These equipments are fitted with electro-mechanical oscillators that ensure an even powder coating. A 'smart spray' mechanism senses movement of the conveyor and geometry of the component to adjust powder flow.

Paint Shop

Panel Bending Machine

Blue Star is equipped with a high-tech coil manufacturing setup using imported Burr Oak machines that can manufacture high-efficiency plain coils as well as enhanced split fins for superior heat transfer.

The copper tubes are then processed by a bank of PLC-controlled Burr Oak machines that ensure perfect bonding between the copper tubes and fins for superior performance. The coils are then tested for fine leaks with ultra-sensitive electronic leak detectors to enhance reliability.

VRF IV Plus Advantage

- 100% inverter technology
- Specially designed ODUs
- Widest range of indoor and outdoor units
- Advanced and intelligent controllers
- High IPLV
- High efficiency at high ambient conditions
- Low deration resulting in optimal installed capacity
- Precise control
- Flexibility to operate under diverse loads
- Appropriate solution to application

Schematic of the Blue Star VRF IV Plus System

Outdoor Unit

Heat Recovery Ventilation System

Treated Fresh Air Unit

Hi-Wall Units

Four-Way Cassettes

Compact Cassettes

One-Way Cassettes

Two-Way Cassettes

Floor Cum Ceiling Mounted Units

Verticools

Concealed Splits

Ductable IDUs

Floor Mounted Packaged Units

Air Handling Units

Product line-up: Outdoor Units

Appearance	ODU	7HP	8HP	10HP	12HP	14HP	16HP	18HP	20HP	22HP	No. of IDUs
	7HP	1									7
	8HP		1								8
	10HP			1							10
	12HP				1						12
	14HP					1					14
	16HP						1				16
	18HP							1			18
	20HP								1		20
	22HP									1	22
	24HP				2						24
	26HP			1			1				26
	28HP				1		1				28
	29HP	1								1	29
	30HP				1			1			30
	32HP			1						1	32
	34HP				1					1	34
	36HP					1				1	36
	38HP						1			1	38
	40HP							1		1	40
	42HP								1	1	42
	44HP									2	44
	46HP				2					1	46
	48HP				1	1				1	48
	50HP				1		1			1	50
	51HP	1								2	51
	52HP				1			1		1	52
	54HP			1						2	54
	56HP				1					2	56
	58HP					1				2	58
	60HP						1			2	60
	62HP							1		2	62
	64HP								1	2	62
	66HP									3	62
	68HP				2					2	62
	70HP				1	1				2	62
	72HP				1		1			2	62
	73HP	1								3	62
	74HP		1							3	62
	76HP			1						3	62
	78HP				1					3	62
	80HP					1				3	62
	82HP						1			3	62
	84HP							1		3	62
	86HP								1	3	62
	88HP									4	62

Product line-up: Indoor Units

Appearance	Type	0.6TR	0.8TR	1TR	1.3TR	1.5TR	1.6TR	1.7TR	2TR	2.3TR	2.5TR	2.8TR	3TR	3.2TR	4TR	5TR	6TR	8TR	10TR
	Hi-Wall Units		●	●	●	●		●	●										
	Four-Way Cassettes			●	●	●		●	●	●		●		●	●	●			
	Compact Cassettes	●	●	●	●	●													
	One-Way Cassettes	●	●	●	●	●	●												
	Two-Way Cassettes	●	●	●	●	●		●	●										
	Floor Cum Ceiling Mounted Units					●			●				●		●	●			
	Verticools								●	●		●		●	●				
	Concealed Splits		●	●	●	●			●										
	Ductable IDUs					●			●		●		●		●	●	●	●	
	Floor Mounted Packaged Units															●		●	●

Add-Ons

	Treated Fresh Air Unit	3.5 TR	5.5 TR	6.8 TR

	Heat Recovery Ventilation System	300 CMH	500 CMH	900 CMH

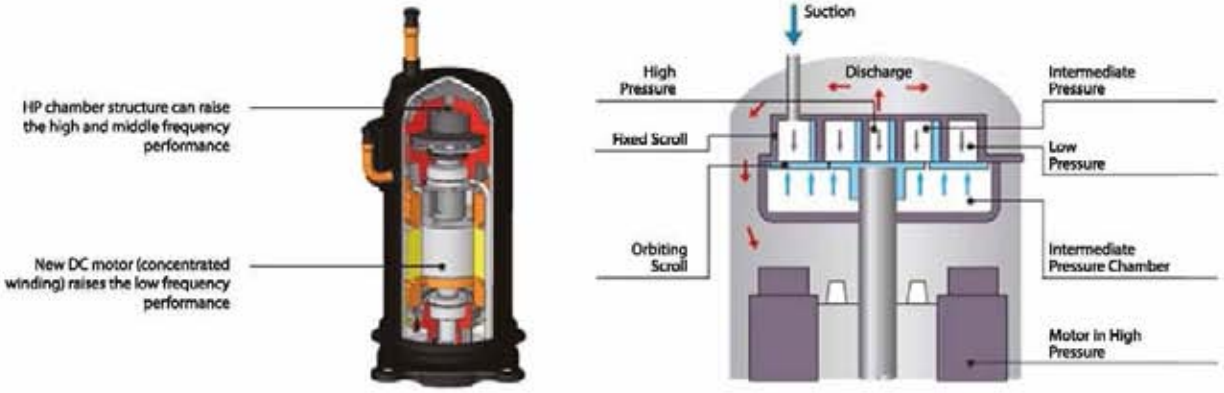
	AHU Kit	5 TR	6.5 TR	8 TR	10 TR	12.5 TR	15 TR	20 TR	25 TR	30 TR

Appearance	Type
	Cordless Remote Controller
	Wired Controller
	Group Controller
	Central Controller
	PC Monitoring System
	Keycard Controller
	Remote Monitoring System
	Tenant Billing System
	BMS Compatibility
	Mobile App
	Remote Monitoring Service
	Data Concentrator

Highly efficient inverter compressors

The unique design of the inverter compressor ensures that the refrigerant is directly injected into the compressor chamber. Since the suction gas enters directly into the scroll, there is no superheat gain due to the compressor motor assembly. This results in efficiency enhancement by up to 3%.

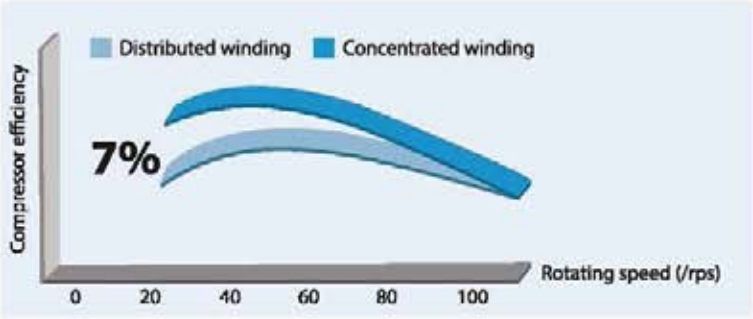
High pressure discharge chamber compressors



The speed of conventional inverter compressors is in general restricted to 30% as lower speed may affect the flow of lubricating oil in the compressor. However, the unique inverter compressor used in Blue Star's VRF IV Plus uses a high pressure discharge chamber design which ensures uniform oil flow irrespective of the speed of the compressor, giving the system the flexibility to operate under extreme low loads (even below 30%), which is not possible with other compressors.

When the hot gas from the scroll is discharged into the high pressure chamber, the velocity is reduced. Hence, the whole design acts like a muffler and reduces noise levels to a great extent.

The compressors are also fitted with concentrated windings which reduce slip loss of motors when operating at low speeds. This results in enhanced efficiency compared to other windings by up to 7% on part loads.

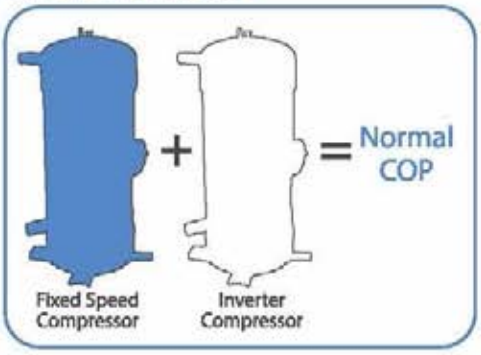


Not just that, powerful, permanent rare-earth magnets are used in the rotors of the DC inverter compressors. This allows the stators to be designed smaller which ultimately results in low power consumption.

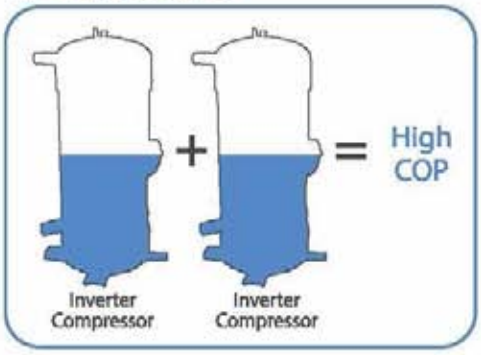
100% Inverter advantage

Blue Star's VRF IV Plus units are fitted with 100% inverter compressors. The unique logic of the system is that it optimally loads compressors in such a way that maximum efficiencies are achieved under any load condition.

Normal VRF at 50% load



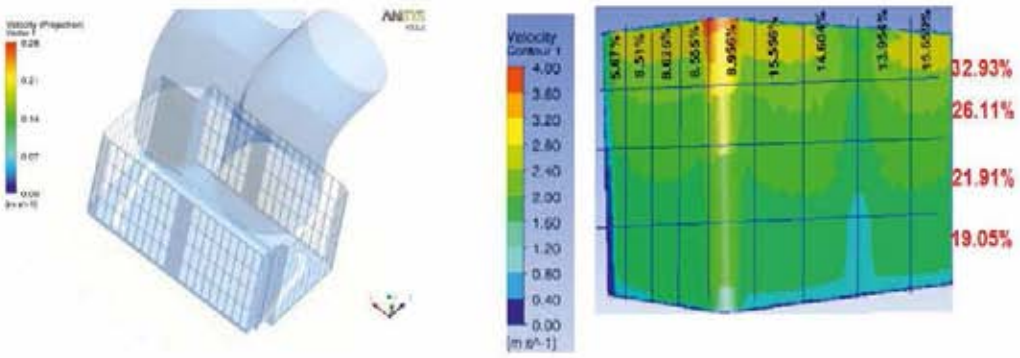
VRF IV Plus at 50% load



The other advantage of 100% inverter systems is the low starting current compared to VRF systems fitted with fixed and variable capacity compressors. This helps optimise electrical requirements, like generator capacity and cable sizes.

Specially designed ODUs

VRF IV Plus ODUs are specially designed using CFD analysis to ensure maximum air flow and minimum pressure drop. This robust design makes the system function efficiently even under high ambient conditions as well as under extremely low ambient conditions.



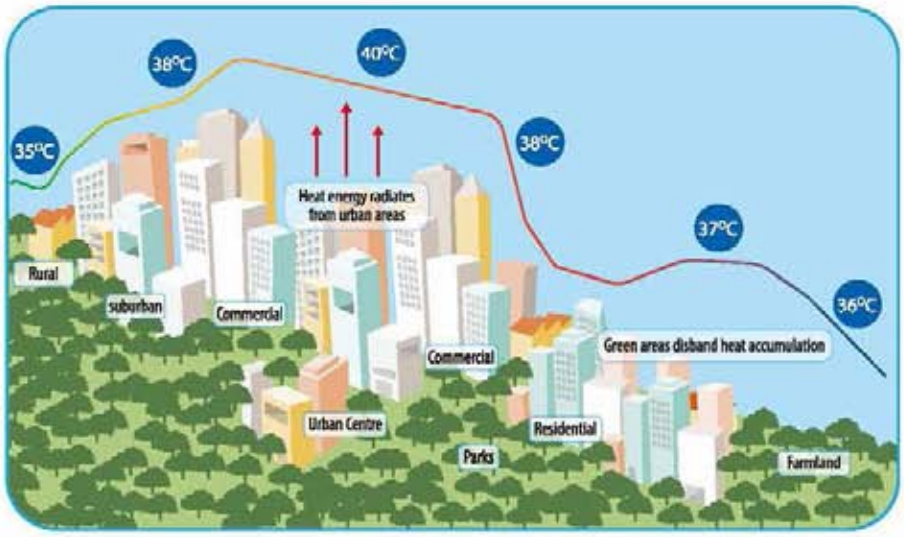
The condensers in these ODUs are precisely designed to ensure maximum efficiency of the VRF system. The specially designed condenser coil face area is at least 30% higher than in other systems.

The heat exchanger compartments are designed to ensure uniform air flow without any obstruction. This ensures efficient heat exchange and results in high efficiency. Specially designed louvre fins enhances system efficiency by up to 7%.

The copper tubes are inner-grooved for high heat transfer. The condenser fans are fitted with high-efficiency DC motors that regulate air flow depending on demand resulting in power savings. The special design features incorporated in the VRF IV Plus ODU result in:

- High COP and IPLV
- 100% capacity at 43°C
- Non-stop operation even at 54°C

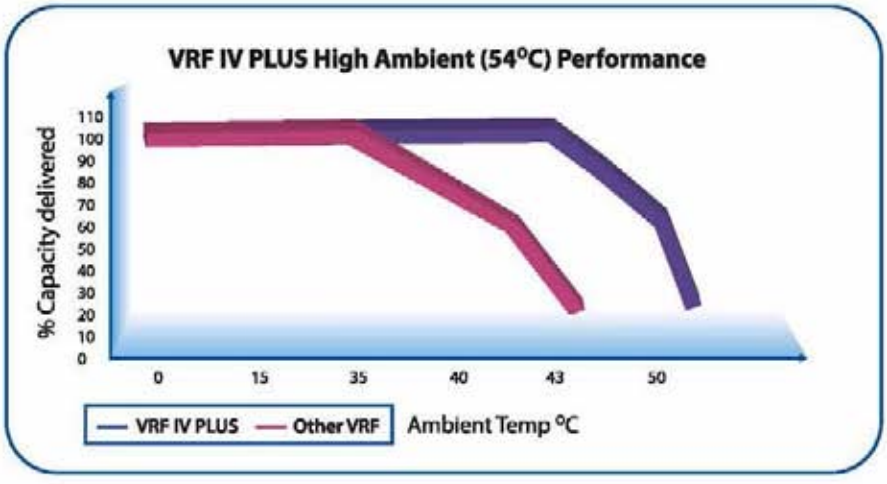
Designed for high ambient conditions



Urban heat effect

Most airconditioning systems are designed to deliver nominal capacity at 35°C. However, in a tropical country like India, ambient temperatures are much higher most of the time. The urban heat effect, whereby ambients are a couple of degrees higher than normal, makes the situation even more difficult.

Higher ambients result in system deration and higher power consumption as well. Blue Star's VRF IV Plus is specially designed to deliver 100% capacity at a higher ambient of 43°C.



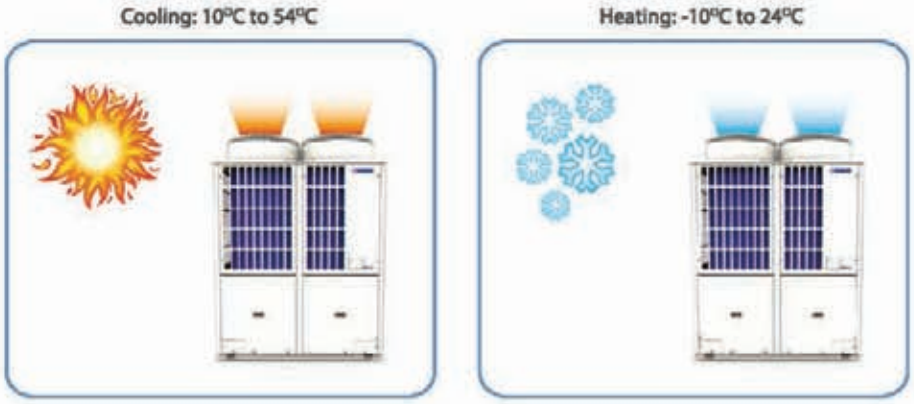
There are other reasons too why the Blue Star VRF IV Plus operates more efficiently even under high ambient conditions:

- Enhanced coil face area up to 30% more than other VRF systems ensures that 100% capacity is delivered at 43°C
- This also ensures that the system is more efficient above 43°C

- Optimally selected compressors which do not unload till 48°C. As is known, when the ambient temperature goes higher than the ambient temperature the system is designed for, inverter compressors in conventional systems ramp up speed to meet load demands. However, there are limitations to this ramp up beyond which the compressors unload. Hence, the deration of such systems is a summation of high ambient conditions as well as the drop in capacity due to compressor unloading.
- Advanced heat sink design and oil management systems ensure that the systems function non-stop till 54°C.

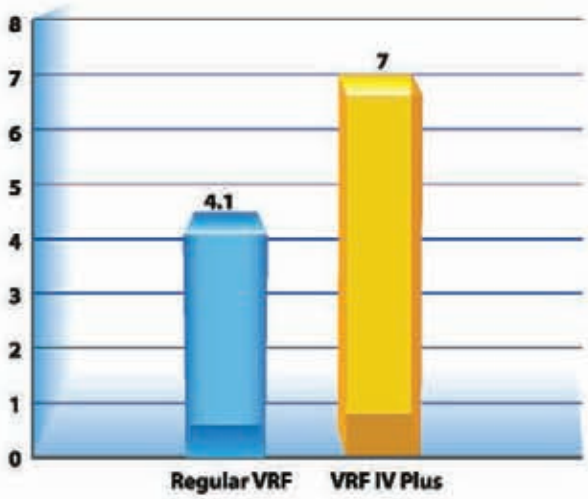
Wide operating range

The VRF IV Plus is designed with high pressure and low pressure protective systems enabling the machine to perform across a wide operating temperature bandwidth. The system can operate from 10°C to 54°C in the cooling mode and -10°C to 24°C in the heating mode.



High system efficiency

Enhanced coil face area, 100% inverter compressor advantage, and system logic for compressor efficiency optimisation together result in superior performance of the entire system.



Superior accumulator design

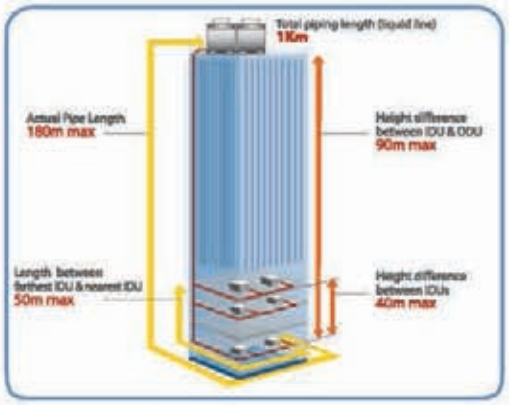
The Blue Star VRF IV Plus system is designed with the largest twin accumulator in its class. This new design allows the system to perform seamlessly in low-load conditions – even below 30% without tripping.

Superior accumulator design

VRF systems are generally suggested for applications where there could be extreme variations in internal loads. However, the system design of the VRF system will decide the minimum operatable load conditions. Conventional VRF systems are not designed to operate below 30% of the load, the primary reason being the inability to manage the liquid refrigerant and oil in low load conditions. VRF IV Plus is designed to handle load as low as 5%.

Long piping lengths

VRF systems generally need long refrigerant piping. And when pipe lengths are higher, refrigerant charge is proportionately higher. This calls for a better system design with proper accumulator sizing to handle the excess refrigerant during the functioning of the system. The Blue Star VRF IV Plus is designed to operate efficiently even with very long piping lengths of up to 1Km.

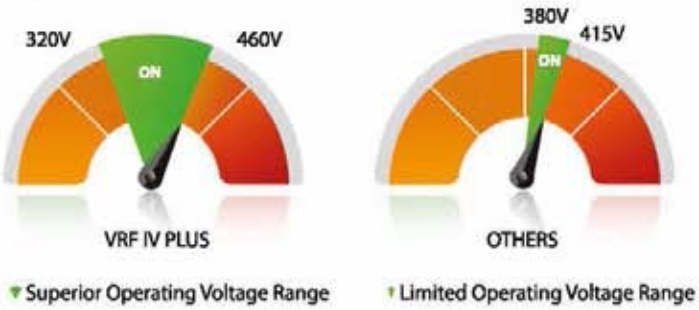


Increased reliability

If the excess liquid refrigerant is not handled effectively, it can enter the compressor and result in failure. Since the VRF IV Plus uses the best accumulator design in the industry, it ensures that no liquid enters the compressor, thus increasing reliability.

Wide voltage range

With the alarming voltage fluctuations seen in most parts of India, most AC systems operate inefficiently or shut down. Blue Star VRF IV Plus is designed to operate across a wide voltage range from 320 Volts to 460 Volts resulting in high uptime even in such erratic power conditions.



▼ Superior Operating Voltage Range ↑ Limited Operating Voltage Range

Innovative refrigerant-cooled heat sink

Inverter drives play a very important role in regulating the capacity of the system based on load requirements. Keeping the inverter drive in a controlled temperature is very important for enhanced life, improved performance and reliability. The VRF IV Plus is designed with an innovative refrigerant-cooled heat sink which helps maintain the drive within the allowable temperature range. This enhances the reliability of the system when it is working under very high ambient conditions.

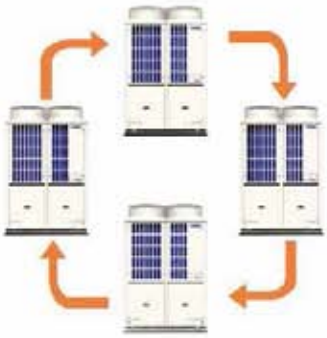
Superior oil management system

Patented oil recovery

Considering the very long piping lengths that the VRF IV Plus must handle, it is crucial to have a superior oil management system to ensure reliability. The VRF IV Plus is designed with a specially designed and patented oil separator to ensure efficient oil recovery in the VRF System.

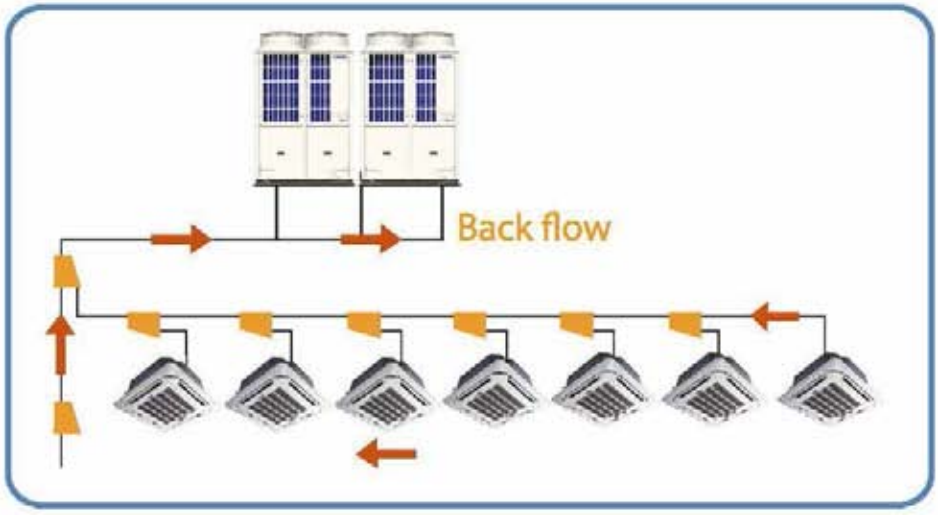
Oil swap

Oil is also swapped with the next ODU on a regular basis to maintain the oil balance in the system.



IDU oil return cycle

The cyclic oil recovery from the IDU is done by wide opening the electronic expansion valve and completely recovering the oil back to the ODU. Oil is recovered even from switched off indoor units.



Service-friendly design

All components of the outdoor unit are mounted in a separate compartment at the bottom and are accessible from all four sides. This makes these ODUs very easy to service.

Weather-proof ODU design

The Blue Star VRF IV Plus is specifically designed to handle extreme climatic conditions, corrosive and polluted atmosphere.

- Powder-coated GI sheet metal cabinets
- All hardware of anti-rust quality
- Conformal coating on PCBs to protect from dust and humidity
- Hydrophilic blue fin for better corrosion resistance
- Weather-proof enclosures for critical components

Conformal coating for PCBs

All the PCBs in the VRF IV Plus are coated with a special acrylic-based polymer film. This special conformal coat adheres to the norms of circuit board topology.

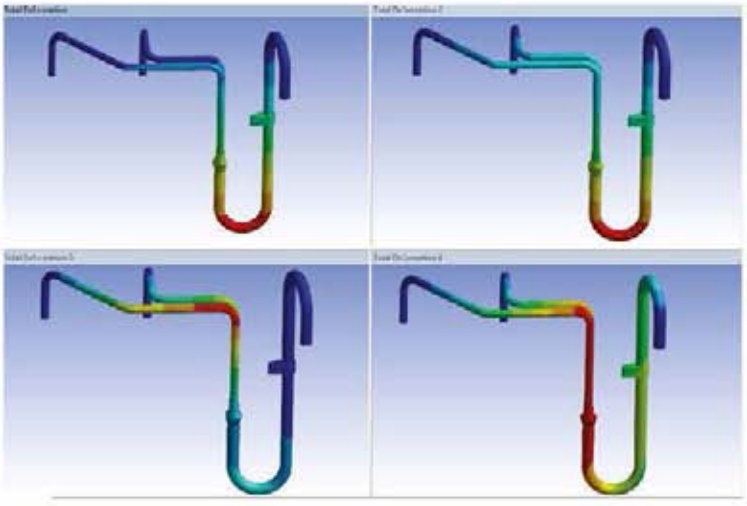
This special coating is used in various industries like automobile, defence, warehouse, space and marine applications. This protects PCBs from the harmful effects of the following:

Moisture | Heat | Fungus | Chemicals | Dust

This cover not only protects but also maintains the breathable layer of the PCB with good electrical properties. Besides, it is also eco-friendly.

Computerised design for reliability

VRF systems fitted with inverter compressors run at various compressor speeds to regulate capacities to suit actual load requirements. These variations in speed result in vibrations of the copper pipe fittings. Hence, it is important to have a reliable and tested piping load design in the ODU. In the VRF IV Plus, piping layers are created using Finite Element Analysis (FEA). This ensures reliability and trouble-free performance under various load conditions.



FEA images of ODU piping

Large capacity and wide range of ODUs

The Blue Star VRF IV Plus has a wide range of ODUs with capacities from 7HP to 22HP.

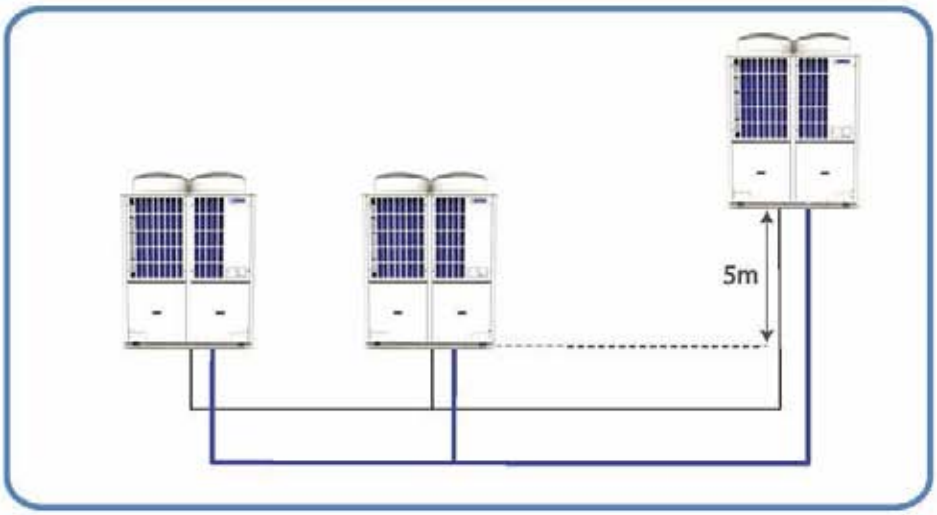
22 HP 22 HP 22 HP 22 HP

Up to 4 ODUs can be combined in one design to increase capacity up to a maximum of 88HP. From 7HP to 88HP, the Blue Star VRF IV Plus offers you up to 72 combinations, the highest in the industry.

Long and flexible piping design

The Blue Star VRF IV Plus is designed with a large accumulator and an efficient oil recovery management system, hence allowing the system to be set up with long and flexible piping.

Total piping length	1km
Elevation between ODU and IDU	90m
Elevation between IDUs	40m
Elevation between ODUs	5m



Quiet mode

When the ambient noise levels are low, as at nights, noise levels of an operating AC can be disturbing especially in residential applications. To overcome this noise issue, the VRF IV Plus has a unique 'Quiet Mode' feature which operates at two levels:

Quiet mode: Outdoor fan speed is reduced.

Super Quiet mode: Along with fan speed, compressor speed is also lowered. The start and end time of this feature can be set to suit each installation's requirements.

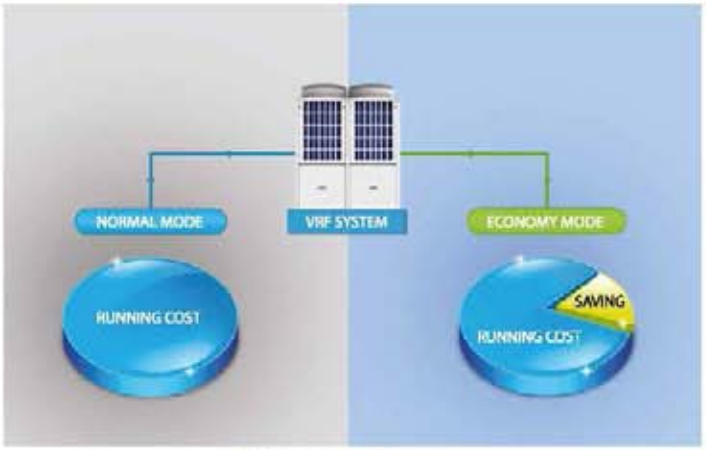
Demand Control mode or Economy mode

Under the Demand Control mode, the capacity of the ODUs of the VRF IV Plus can be set at 25% or 50% or 75% depending on the need. This mode is very useful when sufficient DG power is not available to run the entire airconditioning system.

This feature can also be effectively used to optimise the usage of the VRF system during low demand periods.

Utilise AC for critical spaces

Uniform reduction of operating conditions



Optimised running cost

Emergency backup operation

Compressor backup

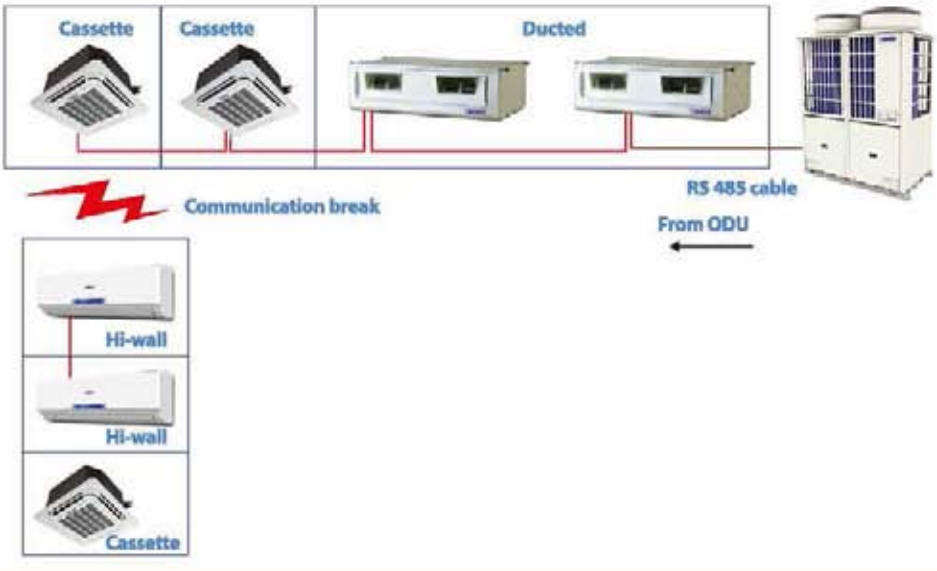
In ODUs that have two compressors, the VRF IV Plus system can function even if there is a failure or maintenance downtime of one compressor.

ODU backup

In a modular VRF IV Plus design, where multiple units have been combined to run as one larger unit, the system can operate even in case of a failure or a shutdown of one ODU. This feature helps ensure that cooling remains largely unaffected even during servicing or breakdown.

IDU emergency operation

All the IDUs in any VRF system are interconnected by the communication cables. In general, if there is a break in any communication wire, subsequent IDUs are affected and do not function. By activating the IDU emergency operation on the VRF IV Plus, the other IDUs can function despite such a break.



IDU isolation function

In the VRF IV Plus, up to five IDUs can be switched to service backup mode even while the other indoor units in the same system run uninterruptedly. This feature is very useful while servicing a particular unit or units while not disturbing the overall system.

REGULAR VRF

VRF IV PLUS

Filter clean function

A 'filter clean' reminder function indicates the need to clean the filters. This can be reset after the filters are cleaned.

Blue Star's VRF IV Plus offers you a wide choice of sophisticated and advanced controllers to suit various needs – from a simple cordless remote controller to highly advanced web-based controllers. There are also controllers available to calculate user-wise power consumption.

Cordless remote controller

- Large LCD screen for clear display
- Blue colour backlight for better clarity
- Keys with symbols and description for user convenience
- Real-time clock display
- Room temperature indication
- Display of various modes available ~ Cool mode; Heat mode; Fan mode; Dry mode
- Fan speed adjustable to suit convenience of user
- Inside room temperatures adjustable from 16°C to 30°C
- Auto swing option for the louvres
- 5 options for positioning the louvres to suit the convenience preference mode:
  - 2 settings to suit usage pattern
  - Settings include various parameters like temperature, fan speed and louvre display
  - When the preference mode key is pressed, the units function according to the preset conditions

Filter clean function

A 'filter clean' reminder function indicates the need to clean the filters. This can be reset after the filters are cleaned.

Timer function

The cordless remote controller enables the user to set on/off timings to switch the systems on or off at pre-determined times.

Key identification

Fluorescent keys enable easy identification of main keys even in the dark.

Flexible operation

The cordless remote controller has a unique feature that can communicate with the wired remote controllers. This is very useful when controlling units such as concealed splits and ductable split units which are mounted above the false ceiling.

Wired controller

Very advanced touch screen LCD, large size for clear display. Blue colour backlight for user convenience.

Filter clean reminder

A 'filter clean' reminder function indicates the need to clean the filters. This can be reset after the filters are cleaned.

Timer function

The cordless remote controller enables the user to set on/off timings to switch the systems on or off at pre-determined times.

Flexible location

The wiring of this controller can be led either from the top or from the back allowing the flexibility to position the controller as required at different sites.

Self-diagnosis

These controllers are sophisticated and designed to display error codes to precisely identify the nature of problems.

Compatibility

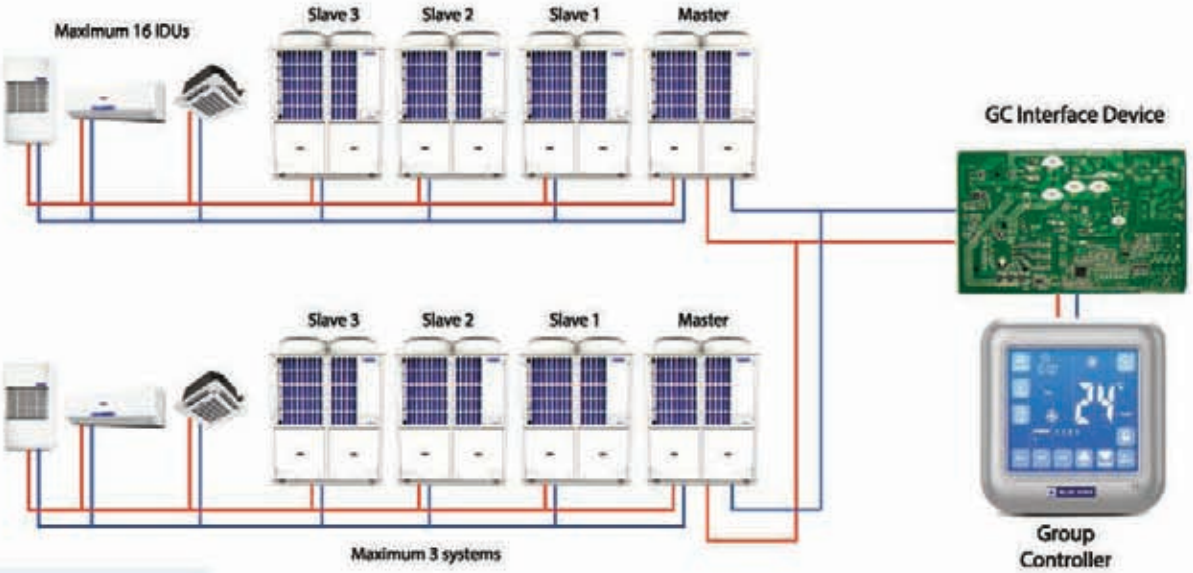
These controllers are compatible with any type of IDU selected.

Group controller

All the IDUs of the Blue Star VRF IV Plus units are connected to corded or cordless remote controllers. For small office / retail units where the number of indoor units are not more than 16, the entire control can be from Group Controllers. These controllers have the following advantages:

- Touch-screen based user-friendly controller
- Up to 16 indoor units and 3 systems can be controlled
- Parameters for individual indoor units can be set
- Remote shielding of machines can be performed
- Parameters like on/off status, mode of operation, temperature setting and fan speed can be viewed and set

When the number of IDUs is very high, it is useful to group the controllers into different categories and then segregate and control. For example, in hotels, all the rooms can be grouped under one category, all the banquet halls can be grouped under another category while the lobby could be a third category.



Central controller

In applications such as hotels, hospitals and educational institutions, the number of IDUs used will be high. In such cases, it may be convenient to integrate the control of all the IDUs into one controller for the entire system. The central controller of the VRF IV Plus allows users to control multiple IDUs and ODUs as follows:

- 16 systems of 64 ODUs can be controlled
- Upto 992 IDUs can be individually mounted and controlled

Scheduling

In large office applications, it is convenient to programme the entire operational schedule either weekly or monthly or annually depending on the usage pattern and group-wise usage. The entire system can be programmed group-wise/IDU-wise for the whole year and controlled through the central controller.

Remote Shield Functioning

Allows the locking of adjustments of key parameters like On/Off mode, temperature and fan speed in each remote controller.

Flexibility

The same Central Controller can be used as a debugger which helps diagnose and identify any problem in the system.

Dynamic display

The entire display is dynamic and is available in different colours to identify the status: Red – Faulty | Green – Functioning well | Grey – Off | Orange – Non-critical error

User convenience

The Central Controller can be directly connected to the VRF IV Plus system. There is no intermediate device required.

Auto power saving mode

The display automatically switches off if the controller is not used continuously for over a minute.

PC monitoring system

The Blue Star VRF IV Plus has an advanced PC monitoring system with the following features:

- Up to 60 systems of 240 ODUs can be controlled and monitored.
  Up to 3720 IDUs can be controlled
- Multiple groupings can be created for user convenience
- Percentage of loading on each IDU can be displayed
- Scheduling daily, weekly, monthly or annually is possible
- Very user-friendly navigation

System protection

The PC monitoring software offers the option of providing multiple usernames and multi-level passwords.

Keycard controller

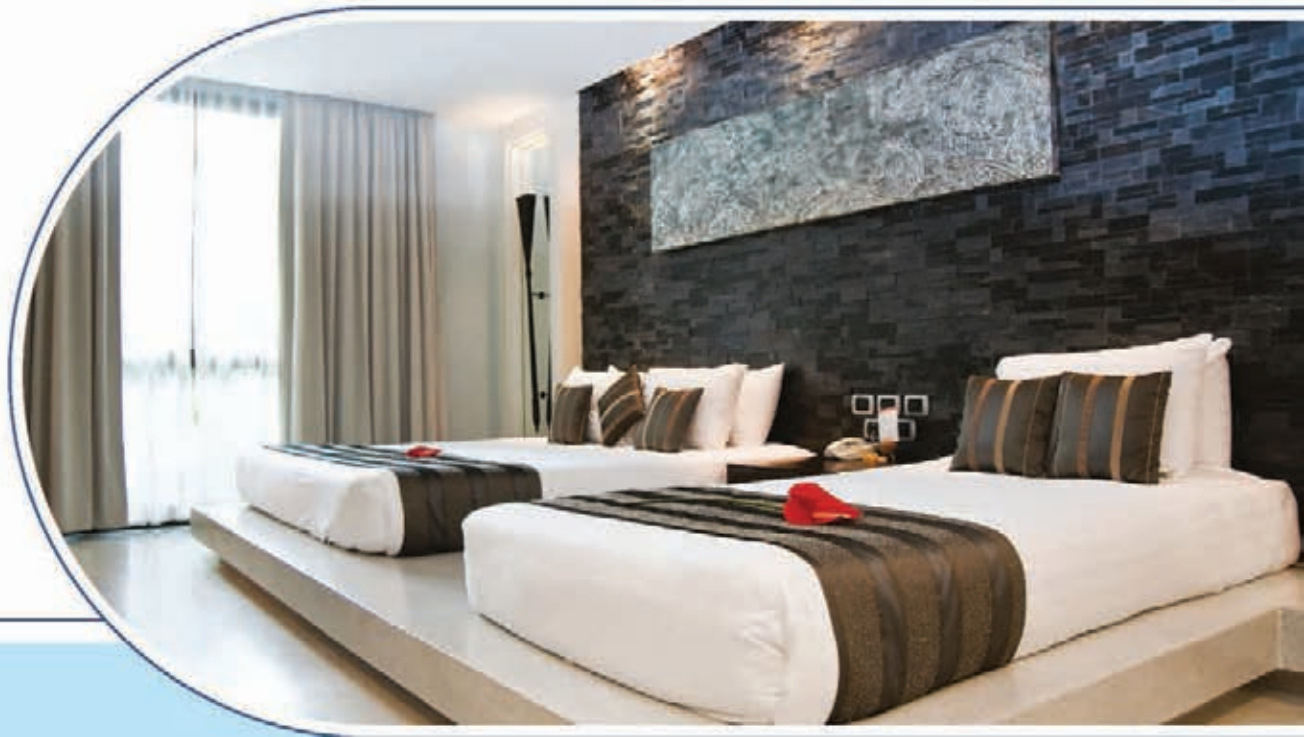
This feature is very useful for applications like hospitals, hotels and hostels. The on and off control of the IDUs can be connected with a keycard controller. The unit automatically functions based on the previous set status when the keycard is inserted and switches off when it is removed. This facility is available with most of the IDUs.

Fire alarm system

All the IDUs and ODUs of the VRF IV Plus have the provision to receive fire alarm signals. These signals can be given to any one of the IDUs or ODUs. Once the fire alarm signal is received, the entire system shuts down as a safety measure.

Remote monitoring system

- Monitor and control from anywhere in the world
- System monitoring by Blue Star as an option
- SMS and email for error intimation plus all the features of PC monitoring systems

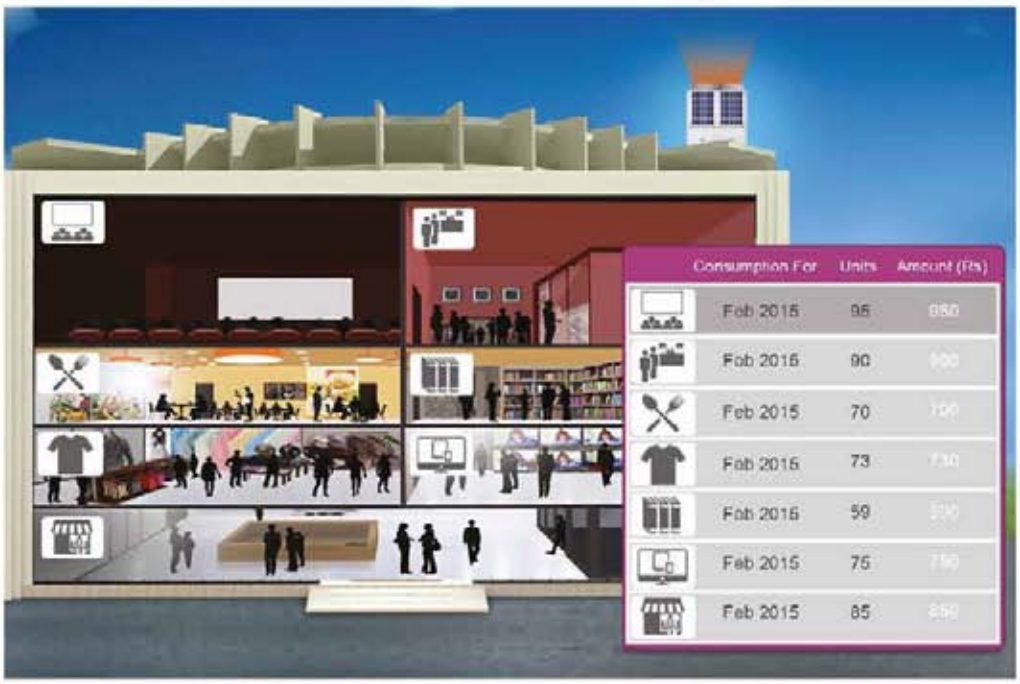


Tenant billing system

VRF systems are offered as solutions to various segments including commercial complexes where there are multiple users. When the builder/developer provides a common airconditioning facility, a tabulation of individual power consumption becomes difficult.

The Blue Star VRF IV Plus comes with an advanced Tenant Billing Software which can capture the exact power consumption by each user, generate various reports, usage patterns and user-wise monthly bills.

- Month-wise, indoor units-wise power consumption
- Month-wise power charges for each indoor unit
- Generation of reports on various parameters for each tenant
- Maintenance of database of each tenant
- Facility of extracting particular period data
- Option of grouping tenants
- Provision of incorporating the electricity unit charges
- Tenant-wise generation of bills



Mobile app

Blue Star's VRF IV Plus systems are designed to operate using an advanced mobile app to enable the customer to view system status even from a remote location. The application, designed for VRFs, works with internet-enabled smart phones and tablets. It is Android and iOS compatible. The entire system can be viewed in one screen. The unique features of the VRF app are:

Individual temperature setting for each IDU

Through the mobile app, group or individual IDU control is possible on the following parameters:

- On/Off of the IDU
- Set temperature
- Mode of operation
- Fan speed selection
- IDU louvre adjustments
- Locking of the system

Remote monitoring service (RMS)

The Blue Star VRF IV Plus is designed to operate through an advanced GPRS - based remote monitoring system, which is available as an option to all users.

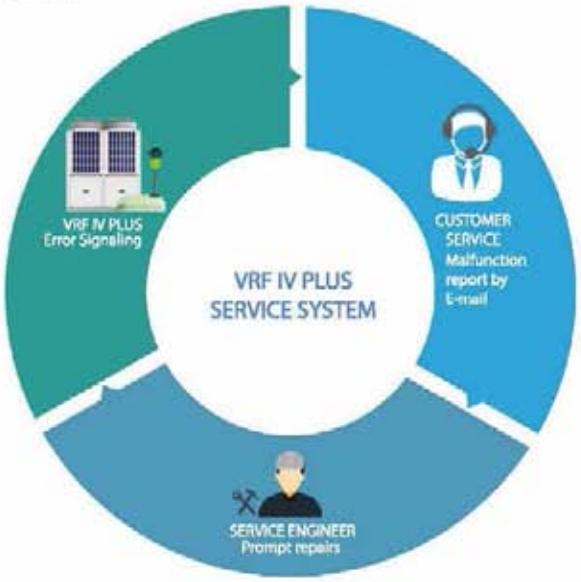
The RMS has the following advantages:

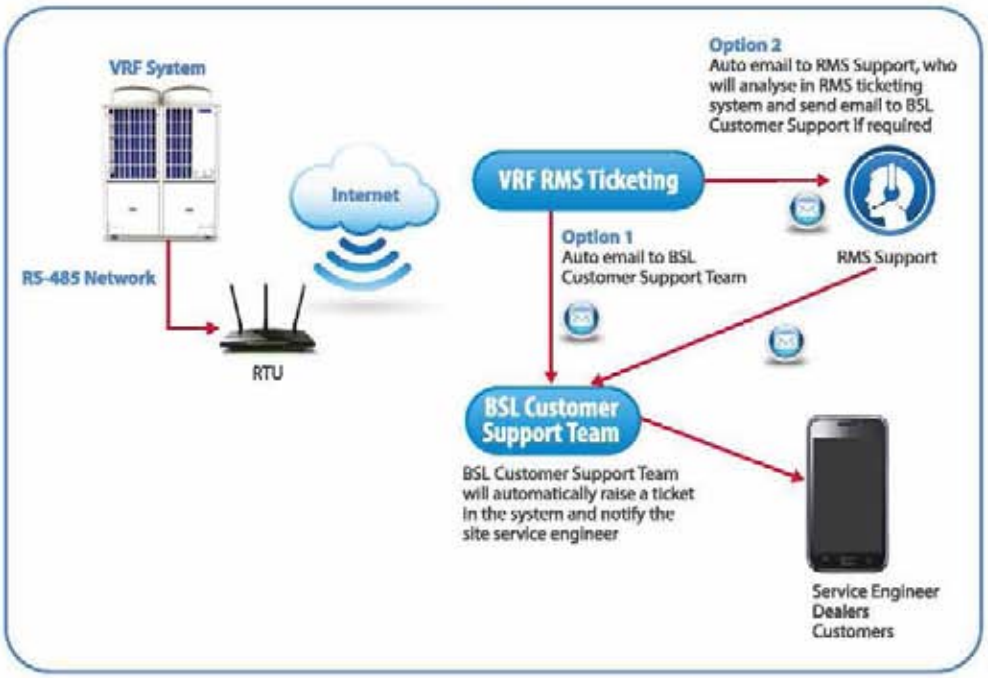
- Close monitoring of the site irrespective of the location
- Automatic notification in the form of SMS or Email in case of any error
- 24x7 auto monitoring
- Auto call login for service

The data captured and sent by RMS to the Central Service Team enables analysis by the local service team so as to be equipped with the necessary solutions to resolve any issue speedily.

This ensures:

- Very quick response time
- Faster turnaround time
- Lower downtime of the system





BMS compatibility

Blue Star VRF IV Plus systems are highly compatible with advanced BMS systems. Each ODU has a RS-485 communication port through which it can be connected to BMS through a Modbus converter. Besides, the VRF IV Plus system is specially designed to enable the Modbus gateway to be directly connected through the RS-485 port of the Master ODU.

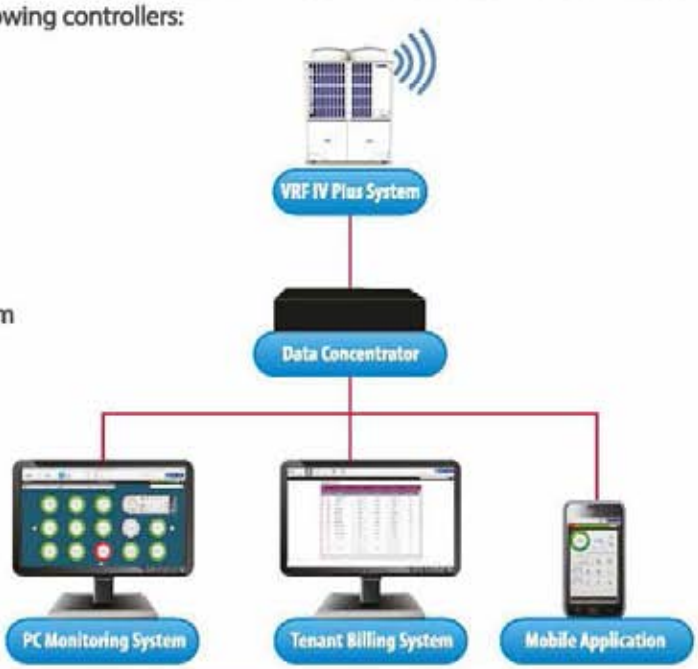
Some of the key features of the BMS module of VRF IV Plus units are:

- Up to 15 systems can be connected
- A maximum of 62 IDUs in each system and 930 IDUs can be connected
- Slave IDs for each IDU/ODU can be set
- Debugger port is available
- Options of converting to other protocols like Bacnet, Lonworks, etc., are available through additional converter

Data concentrator

As we have seen so far, the Blue Star VRF IV Plus is designed to operate with various advanced controllers. A data concentrator enables the customer to use more than one control system at a time. Using the data concentrator, up to a maximum of three interfaces can be connected simultaneously from the following controllers:

- PC monitoring
- Central controller
- Group controller
- BMS
- Tenant billing software
- Remote monitoring system
- Mobile app



Hi-Wall Units

Capacities
0.8 TR, 1.0 TR, 1.3 TR, 1.5 TR, 1.7 TR and 2.0 TR
- Aesthetically superior with stylish design
- Very low noise, quiet operation
- Wide angle air flow to ensure even air distribution throughout the conditioned space

Multi-level filtration
- Active Carbon Filter: Eliminates odour and deactivates harmful chemical gasses
- Dust Filter: Picks dust particles from the air and maintains dust-free conditioned air
- Silver Ion Filter: Efficient in sterilising indoor air and reducing bacteria levels

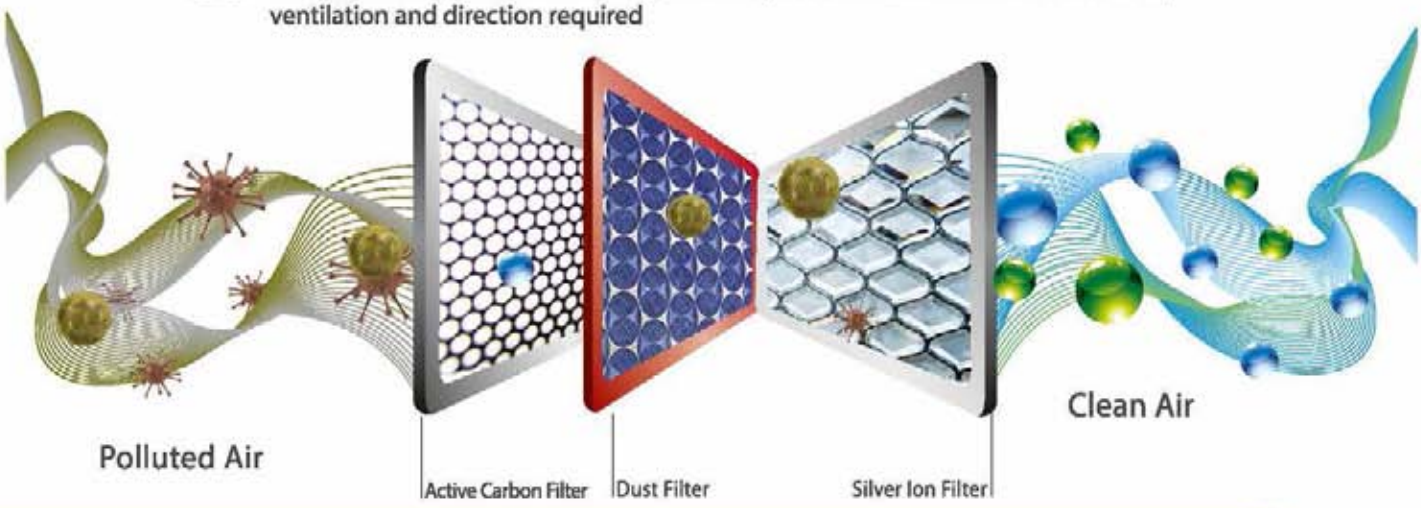
Multi-fan speed
Various levels of fan speed control are available to suit user comfort and convenience

Auto restart
Automatic restart after power cut with all previously set parameters after power is restored

Filter cleaning reminder
Indicates when the filters need cleaning

Multi-mode functions
Various modes can be selected depending on the usage pattern and the comfort levels required: • Auto • Cool • Heat • Dry • Sleep

Flexible air flow patterns
Advanced louvres where the swing can be adjusted to meet the needs of air flow, ventilation and direction required



Capacities
1.0 TR, 1.3 TR, 1.5 TR, 1.7 TR, 2.0 TR, 2.3 TR, 2.8 TR, 3.2 TR, 4.0 TR and 5.0 TR

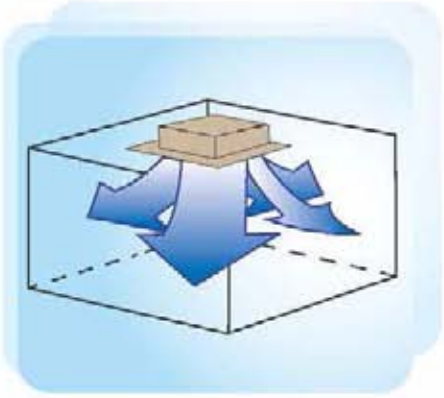
Wide angle air flow
Wide angle air flow to ensure even air distribution throughout the conditioned space

Multi-mode functions
Various modes can be selected depending on the usage pattern and the comfort levels required:
• Auto • Cool • Heat • Dry • Sleep

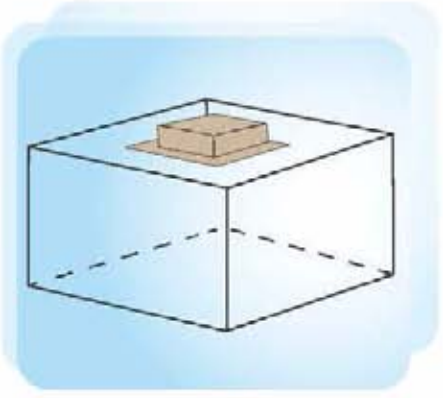
In-built drain pump
Powerful drain pump to remove condensate drain water with a lift up to 500mm

Fresh air provision
Provision to add fresh air helps maintain better indoor air quality

Filter clean reminder
Indicates when the filters need cleaning



Four-way airflow

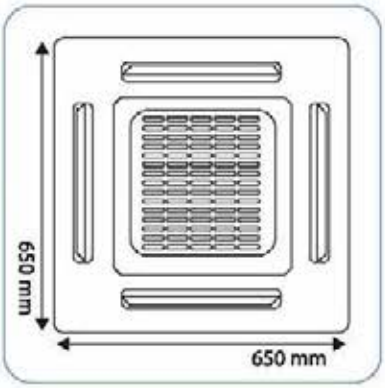


Saves wall and floor space

Compact Cassettes

Capacities
0.6 TR, 0.8 TR, 1.0 TR, 1.3 TR and 1.5 TR

Compact design
650 mm panel makes it very convenient to install in any grid type false ceiling; ideally suited for small cabins and conference rooms



Multi-mode functions
Various modes can be selected depending on the usage pattern and the comfort levels required:
• Auto • Cool • Heat • Dry • Sleep

Filter clean reminder
Indicates when the filters need cleaning

Multiple fan speeds
Various levels of fan speed available to suit user comfort and convenience

One-Way Cassettes

Capacities
0.6 TR, 0.8 TR, 1.0 TR, 1.3 TR and 1.6 TR

Ideal for small spaces
Ideally suited for small cabins, passage areas, corners of conditioned areas, applications with narrow ceiling, lobbies and interior roofs

Compact Design
Compact and slim design with ultra slim body measuring a total height of only 153mm

In-built drain pump
Powerful drain pump removes condensate drain water with a lift up to 750mm

Fresh air provision
Provision to add fresh air helps maintain better indoor air quality

Filter clean reminder
Indicates when the filters need cleaning

Multi-mode functions
Various modes can be selected depending on the usage pattern and the comfort levels required:
• Auto • Cool • Heat • Dry • Sleep

Service-friendly design
User-friendly detachable grills

Wide angle air flow
Wide angle air flow to ensure even air distribution throughout the conditioned space

Two-Way Cassettes

Capacities
0.6 TR, 0.8 TR, 1.0 TR, 1.3 TR, 1.5 TR, 1.7 TR and 2.0 TR

Ideal for narrow spaces
Ideally suited for long narrow passage areas, open offices, cabinets, meeting rooms, etc

Stylish and slim design
Suits decor and interiors of any space, and convenient for installation as well

Quiet operation
Optimised for air flow to minimise noise levels, as low as 24 decibels making it one of the quietest units in the industry

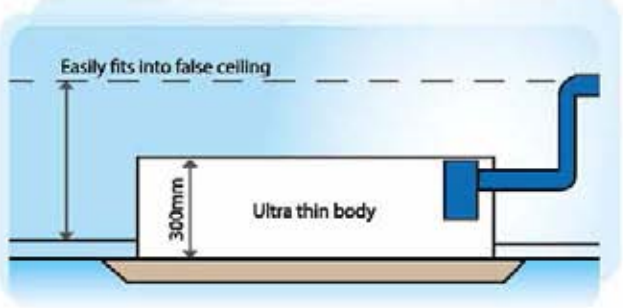
Filter clean reminder
Indicates when the filters need cleaning

Multi-mode functions
Various modes can be selected depending on the usage pattern and the comfort levels required:
• Auto • Cool • Heat • Dry • Sleep

Wide angle air flow
Wide angle air flow to ensure even air distribution throughout the conditioned space

Multiple fan speeds
Various levels of fan speed available to suit user comfort and convenience

Auto restart
Automatic restart after power cut with all previously set parameters after power is restored



Floor Cum Ceiling Mounted Units

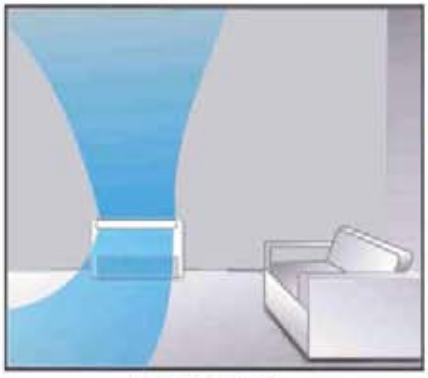
Capacities
1.0 TR, 2.0 TR, 3.0 TR, 4.0 TR and 5.0 TR

Convenient positioning
Flexible positioning – either on ceiling or on floor depending on the usage

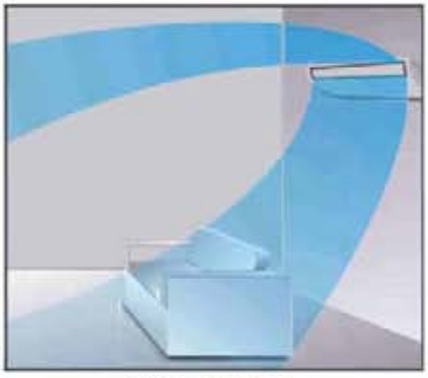
Multi-mode functions
Various modes can be selected depending on the usage pattern and the comfort levels required:
• Auto • Cool • Heat • Dry • Sleep

Multiple fan speeds
Various levels of fan speed available to suit user comfort and convenience

Filter clean reminder
Indicates when the filters need cleaning



Floor mounted



Ceiling mounted

Verticools

Capacities
2.0 TR, 2.3 TR, 2.8 TR, 3.2 TR and 4.0 TR

Ideal where there is ceiling space constraint
Ideally suited for large open halls and places where there is a limitation to use the ceiling space for mounting the indoor units

Filter clean reminder
Indicates when the filters need cleaning

Powerful air throw
Powerful blowers ensure air throw to cover maximum area

Flexible air flow patterns
Advanced louvres where the swing can be adjusted to meet the needs of air flow, ventilation and direction required

Auto restart
Automatic restart after power cut with all previously set parameters after power is restored

Verticool has powerful air throw to reach the farthest corners of the hall.

Concealed Splits

Capacities
0.8 TR, 1.0 TR, 1.3 TR, 1.5 TR and 2.0 TR

Ideal for small areas
Ideally suited for rooms in hotels, hospitals and any small area applications

Ultra slim construction
266mm height makes it very convenient to mount above false ceiling

Long life
Powder coated for long life

Service-friendly design
Detachable panel makes it easy for service

Variable fan speed
Various levels of fan speed available to suit user comfort and convenience

Quiet operation
Mounting above false ceiling reduces noise levels considerably

Ductable IDUs

Capacities
1.5 TR, 2.0 TR, 2.5 TR, 3.0 TR, 4.0 TR, 5.0 TR, 6.0 TR and 8.0 TR

Long ducting
Ideal for applications where long lengths of ducting are possible and for better air distribution in the conditioned space

Higher air quantity
400 CFM per TR high air throw

Fresh air
Designed with higher static to take care of fresh air requirements and long ducting lengths. Fresh air can be added as per quantities required by application

Long life
Powder coated for long life

Floor Mounted Packaged Units

Capacities
5.0 TR, 8.0 TR and 10.0 TR

Ideal for large spaces
Ideal for banquet halls and office areas where rooms are well defined

Higher air quantity
Floor mounted units have an advantage of higher air quantity

Fresh air
Designed with higher static to take care of fresh air requirements. Required fresh air quantities can be added depending on application

Service-friendly design
Since these units are mounted inside the room on the floor, they are easy to maintain

Long life
The units are powder coated for long life

Heat Recovery Ventilation System

Energy saving
Helps optimise the load due to fresh air by pre-cooling

Dual function
The heat recovery units of Blue Star have both heat pipe and DX coil which can be connected with the VRF ODU. This helps maintain and regulate RH levels of the fresh air entering the conditioned space

Treated Fresh Air Unit

Capacities
3.5 TR, 5.5 TR and 6.8 TR

Ideal for high latent load applications
Ideal for requirements with large fresh air in high latent load applications like hotels, hospitals, auditoriums, etc.

Higher air quantity
TFAs have an advantage of higher air quantity

AHU Kit

AHU kits are specially designed to integrate AHUs with the ODUs of the Blue Star VRF IV Plus system. There are many applications like banquet halls in hotels, operation theatres in hospitals and many special applications where there is a need to customise and provide AHUs. For these applications, it will not be viable to use the standard IDUs available in the VRF system.

Till the advent of the AHU Kit, VRFs were unable to cater to a complete facility due to the above limitations. With the introduction of the specially designed Blue Star AHU Kit, we can now connect customised AHUs to the VRF IV Plus to suit various special needs and requirements.

AHUs of up to 32 TR with various combinations of static and CFM requirements can be connected to the VRF IV Plus IDUs by using the AHU Kit.

TECHNICAL SPECIFICATIONS - INDOOR UNITS

Hi-Wall Units

DESCRIPTION	UNITS	VHW-10	VHW-12	VHW-16	VHW-18	VHW-20	VHW-24
Cooling Capacity	TR	0.8	1.0	1.3	1.5	1.7	2.0
	kW	2.8	3.5	4.6	5.3	6.0	7.0
Heating Capacity	TR	0.9	1.1	1.4	1.7	1.9	2.2
	kW	3.1	3.9	5.0	5.8	6.6	7.7
Electrical Power Supply		230 Volts, 1 Φ, 50 Hz ac supply					
Air Flow (Hi/Med/Lo/LL)	CFM	358/274/186/156	411/303/274/156	417/343/302/288	427/356/310/288	586/531/476/372	642/586/531/423
Sound Level	dB(A)	29	29	27	27	37	37
Fan Motor Input Power	W	45	45	58	58	72	72
Fan Motor Rated Current	A	0.25	0.25	0.31	0.31	0.4	0.4
Refrigerant Pipe Connections							
Liquid	mm	Φ 6.35	Φ 6.35	Φ 6.35	Φ 6.35	Φ 9.5	Φ 9.5
Gas	mm	Φ 9.5	Φ 9.5	Φ 12.7	Φ 12.7	Φ 15.9	Φ 15.9
Type of Connection		Flared					
Drain Pipe Dia.	mm	17.5	17.5	17.5	17.5	17.5	17.5
Dimension (WxDxH)	mm	800x188x275	800x188x275	940x205x275	940x205x275	1045x235x315	1045x235x315
Net Weight	kg	7.5	7.5	10	10	12.5	12.5

Four-Way Cassettes

DESCRIPTION	UNITS	DLC-12	DLC-16	DLC-18	DLC-20	DLC-24	DLC-28	DLC-34	DLC-38	DLC-48	VLC-60
Cooling Capacity	TR	1.0	1.3	1.5	1.7	2.0	2.3	2.8	3.2	4	5
	kW	3.5	4.6	5.3	6.0	7.0	8.1	9.8	11.3	14.1	17.6
Heating Capacity	TR	1.1	1.7	1.7	1.7	2.2	2.2	3.3	3.3	4.3	5.4
	kW	3.8	5.9	5.9	5.9	7.6	7.6	11.7	11.7	15.2	19.0
Electrical Power Supply		230 Volts, 1 Φ, 50 Hz ac supply									
Air Flow (Hi/Mid/Lo)	CFM	513/513/513	513/513/513	656/513/513	656/513/513	656/656/513	656/656/513	1100/800/700	1100/800/700	1100/800/700	1100/871/754
Sound Level	dB(A)	39	39	39	39	39	39	41	41	41	44
Fan Motor Input Power	W	110/100/90	110/100/90	110/100/90	110/100/90	110/100/90	110/100/90	163/116/100	163/116/100	163/116/100	147/125/110
Fan Motor Rated Current	A	0.56	0.56	0.56	0.56	0.56	0.56	0.82	0.82	0.82	0.85
Refrigerant Pipe Connections											
Liquid	mm	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5
Gas	mm	Φ 15.9	Φ 15.9	Φ 15.9	Φ 15.9	Φ 15.9	Φ 15.9	Φ 19.1	Φ 19.1	Φ 19.1	Φ 19.1
Type of Connection		Flared									
Drain Pipe Dia.	mm	32	32	32	32	32	32	32	32	32	32
Dimension (WxDxH) (Body)	mm	840x840x230	840x840x230	840x840x230	840x840x230	840x840x230	840x840x230	840x840x300	840x840x300	840x840x300	840x840x300
Dimension (WxDxH) (Panel)	mm	950x950x50	950x950x50	950x950x50	950x950x50	950x950x50	950x950x50	950x950x50	950x950x50	950x950x50	950x950x55
Net Weight (Body)	kg	24	24	24	24	24	24	30	30	30	31.5
Net Weight (Panel)	kg	6	6	6	6	6	6	6	6	6	6

Compact Cassettes

DESCRIPTION	UNITS	DCC08	DCC10	DCC12	DCC16	DCC18
Cooling Capacity	TR	0.6	0.8	1.0	1.3	1.5
	kW	2.1	2.9	3.5	4.7	5.3
Heating Capacity	TR	0.7	0.9	1.1	1.4	1.7
	kW	2.3	3.2	3.8	5.1	5.7
Electrical Power Supply		230 Volts, 1 Φ, 50 Hz ac supply				
Air Flow	CFM	353	353	400	447	505
Sound Level	dB (A)	36	36	38	36	38
Fan Motor Input Power	W	47.1	47.1	47.1	80	80
Fan Motor Rated Current	A	0.24	0.24	0.24	0.41	0.41
Refrigerant Pipe Connections						
Liquid	mm	Φ 6.35	Φ 6.35	Φ 6.35	Φ 6.35	Φ 6.35
	Inch	Φ 1/4	Φ 1/4	Φ 1/4	Φ 1/4	Φ 1/4
Gas	mm	Φ 12.7	Φ 12.7	Φ 12.7	Φ 12.7	Φ 12.7
	Inch	Φ 1/2	Φ 1/2	Φ 1/2	Φ 1/2	Φ 1/2
Type of Connection		Flared				
Drain Connection (OD)	Inch	Φ 1	Φ 1	Φ 1	Φ 1	Φ 1
	mm	Φ 25	Φ 25	Φ 25	Φ 25	Φ 25
Dimension (WxDxH) (Body)	mm	570x570x260	570x570x260	570x570x260	570x570x260	570x570x260
Dimension (WxDxH) (Panel)	mm	647x647x50	647x647x50	647x647x50	647x647x50	647x647x50
Net Weight (Body)	kg	16	16	16	19	19
Net Weight (Panel)	kg	3	3	3	3	3

One-Way Cassettes

DESCRIPTION	UNITS	VOC-08	VOC-10	VOC-12	VOC-16	VOC-19
Cooling Capacity	TR	0.6	0.8	1.0	1.3	1.6
	kW	2.2	2.8	3.5	4.6	5.6
Heating Capacity	TR	0.7	0.9	1.1	1.4	1.8
	kW	2.5	3.2	3.9	4.9	6.3
Electrical Power Supply		230 Volts, 1 Φ, 50 Hz ac supply				
Air Flow (HI/Mid/Lo)	CFM	340/270/185	340/270/185	340/270/185	510/480/415	510/480/415
Sound Level	dB(A)	30	30	30	35	36
Fan Motor Input Power	W	31/27.2/25.3	31/27.2/25.3	31/27.2/25.3	84/76/71	84/76/71
Fan Motor Rated Current	A	0.25	0.25	0.25	0.37	0.39
Refrigerant Pipe Connections						
Liquid	Inch	Φ 6.35	Φ 6.35	Φ 6.35	Φ 9.5	Φ 9.5
Gas	Inch	Φ 12.7	Φ 12.7	Φ 12.7	Φ 15.9	Φ 15.9
Type of Connection		Flared				
Drain Pipe Dia.	mm	Φ 25	Φ 25	Φ 25	Φ 25	Φ 25
Dimension (WxHxD) (Body)	mm	1054x169x425	1054x169x425	1054x169x425	1147x200x640	1147x200x640
Dimension (WxHxD) (Panel)	mm	1180x36.5x465	1180x36.5x465	1180x36.5x465	1425x10x755	1425x10x755
Net Weight (Body)	kg	13	13	13	31.5	31.5
Net Weight (Panel)	kg	3.5	3.5	3.5	9	9

Two-Way Cassettes

DESCRIPTION	UNITS	VTC-08	VTC-10	VTC-12	VTC-16	VTC-18	VTC-20	VTC-24
Cooling Capacity	TR	0.6	0.8	1.0	1.3	1.5	1.7	2
	kW	2.2	2.8	3.6	4.5	5.3	6.0	7.0
Heating Capacity	TR	0.7	0.9	1.1	1.4	1.7	1.9	2.2
	kW	2.4	3.1	4.0	5.0	5.8	6.6	7.7
Electrical Power Supply		230 Volts, 1 Φ, 50 Hz ac supply						
Air Flow (Hi/Mid/Lo)	CFM	430/350/270	430/350/270	430/350/270	580/471/395	580/471/395	580/471/395	710/590/455
Sound Level	dB(A)	24	29	29	30	30	30	34
Fan Motor Input Power	W	67	67	67	128	128	128	162
Fan Motor Rated Current	A	0.45	0.45	0.45	0.55	0.55	0.55	0.75
Refrigerant Pipe Connections								
Liquid	Inch	Φ 6.35	Φ 6.35	Φ 6.35	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5
Gas	Inch	Φ 12.7	Φ 12.7	Φ 12.7	Φ 15.9	Φ 15.9	Φ 15.9	Φ 15.9
Type of Connection		Flared						
Drain Pipe Dia.	mm	Φ 32	Φ 32	Φ 32	Φ 32	Φ 32	Φ 32	Φ 32
Dimension (WxHxD) (Body)	mm	1,172x299x591	1,172x299x591	1,172x299x591	1,172x299x591	1,172x299x591	1,172x299x591	1,172x299x591
Dimension (WxHxD) (Panel)	mm	1,430x53x680	1,430x53x680	1,430x53x680	1,430x53x680	1,430x53x680	1,430x53x680	1,430x53x680
Net Weight (Body)	kg	34	34	34	36	36	36	36
Net Weight (Panel)	kg	10.5	10.5	10.5	10.5	10.5	10.5	10.5

Floor Cum Ceiling Mounted Units

DESCRIPTION	UNITS	VFC-18	VFC-24	VFC-36	VFC-48	VFC-60
Cooling Capacity	TR	1.5	2.0	3.0	4.0	5.0
	kW	5.3	7.0	10.5	14.1	17.6
Heating Capacity	TR	1.7	2.2	3.3	4.4	5.5
	kW	5.8	7.7	11.6	15.5	19.3
Electrical Power Supply		230 Volts, 1 Φ, 50 Hz ac supply				
Air Flow (Hi/Mid/Lo)	CFM	765/618/530	825/710/590	1060/855/766	1355/1060/942	1355/1060/942
Sound Level	dB(A)	41	43	43	48	47
Fan Motor Input Power	W	125/105/85	125/105/85	148/131/122	242/208/190	242/208/190
Fan Motor Rated Current	A	0.65	0.65	0.78	0.98	0.98
Refrigerant Pipe Connections						
Liquid	mm	Φ 6.35	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5
Gas	mm	Φ 12.7	Φ 15.9	Φ 19.1	Φ 19.1	Φ 19.1
Type of Connection		Flared				
Drain Pipe Dia.	mm	25	25	25	25	25
Dimension (WxDxH)	mm	1068x675x235	1068x675x235	1285x675x235	1650x675x235	1650x675x235
Net Weight	kg	24	24	29	36.5	39

* Dimensions for ceiling mounted option. For floor mounted option, D and H will be interchanged.

Verticools

DESCRIPTION	UNITS	VVC-24	VVC-27	VVC-34	VVC-38	VVC-48
Cooling Capacity	TR	2.0	2.3	2.8	3.2	4.0
	kW	7	8.1	9.8	11.3	14.1
Heating Capacity	TR	2.2	2.5	2.9	3.5	4.4
	kW	7.7	8.8	10.2	12.4	15.5
Electrical Power Supply		230 Volts, 1 Φ, 50 Hz ac supply				
Air Flow (Hi/Lo)	CFM	655/545	655/545	655/545	1060/880	1060/880
Sound Level	dB(A)	44	44	44	51	51
Fan Motor Input Power	W	152/123	152/123	152/123	300/240	300/240
Fan Motor Rated Current	A	0.75	0.75	0.75	1.51	1.51
Refrigerant Pipe Connections						
Liquid	mm	Φ 9.5	Φ 9.5	Φ 9.5	Φ 12.7	Φ 12.7
Gas	mm	Φ 15.9	Φ 15.9	Φ 15.9	Φ 19.1	Φ 19.1
Type of Connection		Flared				
Drain Pipe Dia.	mm	17.8	17.8	17.8	17.8	17.8
Dimension (WxDxH)	mm	500x260x1680	500x260x1680	500x260x1680	540x379x1775	540x379x1775
Net Weight	kg	32	32	32	49	49

Concealed Splits

DESCRIPTION	UNITS	DCS10	DCS12	DCS16	DCS18	DCS24
Cooling Capacity	TR	0.8	1.0	1.3	1.5	2.0
	kW	2.9	3.5	4.7	5.3	7.0
Heating Capacity	TR	0.9	1.1	1.4	1.7	2.2
	kW	3.2	3.8	5.1	5.7	7.6
Electrical Power Supply		230 Volts, 1 Φ, 50 Hz ac supply				
Air Flow	CFM	350	350	450	500	650
External Static Pressure	Pa	10 ~ 20	10 ~ 20	20 ~ 25	20 ~ 25	25 ~ 30
Fan Motor Input Power	W	62	62	62	62	75
Fan Motor Rated Current	A	0.32	0.32	0.32	0.32	0.38
Sound Level	dB(A)	44	45	44	45	46
Refrigerant Pipe Connections						
Liquid	mm	Φ 6.35	Φ 6.35	Φ 6.35	Φ 6.35	Φ 9.50
	Inch	Φ 1/4	Φ 1/4	Φ 1/4	Φ 1/4	Φ 3/8
Gas	mm	Φ 12.7	Φ 12.7	Φ 12.7	Φ 12.7	Φ 15.9
	Inch	Φ 1/2	Φ 1/2	Φ 1/2	Φ 1/2	Φ 5/8
Type of Connection		Flared				
Drain Connection (OD)	Inch	Φ 3/4	Φ 3/4	Φ 3/4	Φ 3/4	Φ 3/4
	mm	Φ 19.1	Φ 19.1	Φ 19.1	Φ 19.1	Φ 19.1
Dimension (WxDxH)	mm	1090x520x266	1090x520x266	1090x520x266	1090x520x266	1090x520x266
Net Weight	kg	33	33	35	35	35

Ductable IDUs

DESCRIPTION	UNITS	DSD18	DSD24	DSD30	DSD36	DSD48	DSD60	DSD72	DSD96
Cooling Capacity	TR	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0
	kW	5.3	7.0	8.8	10.5	14.1	17.6	21.1	28.1
Heating Capacity	TR	1.7	2.2	2.7	3.3	4.34	5.5	6.5	8.7
	kW	5.7	7.6	9.5	11.4	15.2	19.0	22.8	30.4
Electrical Power Supply		230 Volts, 1 Φ, 50 Hz ac supply							
Air Flow	CFM	600	800	1000	1200	1600	1800	2300	3100
External Static Pressure	Pa	25~50	25~50	25~70	25~70	40~80	50~100	50~120	50~120
Fan Motor Input Power	W	134	134	335	335	335	670	670	670
Fan Motor Rated Current	A	0.69	0.69	1.71	1.71	1.71	3.43	3.43	3.43
Sound Level	dB(A)	38	39	41	41	48	52	53	55
Refrigerant Pipe Connections									
Liquid	mm	Φ 6.35	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5	Φ 9.5
	Inch	Φ 1/4	Φ 3/8	Φ 3/8	Φ 3/8	Φ 3/8	Φ 3/8	Φ 3/8	Φ 3/8
Gas	mm	Φ 12.7	Φ 15.9	Φ 15.9	Φ 15.9	Φ 15.9	Φ 19.1	Φ 19.1	Φ 22.2
	Inch	Φ 1/2	Φ 5/8	Φ 5/8	Φ 5/8	Φ 5/8	Φ 3/4	Φ 3/4	Φ 7/8
Type of Connection		Flared							Brazed
Drain Connection (OD)	Inch	Φ 3/4	Φ 3/4	Φ 3/4	Φ 3/4	Φ 3/4	Φ 3/4	Φ 3/4	Φ 3/4
	mm	Φ 19.1	Φ 19.1	Φ 19.1	Φ 19.1	Φ 19.1	Φ 19.1	Φ 19.1	Φ 19.1
Dimension (WxDxH)	mm	1000x600x265	1000x600x265	1000x700x318	1000x700x318	1320x800x310	1320x900x387	1320x900x387	1508X647X538
Net Weight	kg	32	33	43	43	60	70	70	75

Floor Mounted Packaged Units

DESCRIPTION	UNITS	DFM60	DFM96	DFM120
Cooling Capacity	TR	5.0	8.0	10.0
	kW	17.6	28.1	35.2
Heating Capacity	TR	5.5	8.7	10.9
	kW	19.0	30.4	38.0
Electrical Power Supply		380 - 420 Volts, 3 Φ, 50 Hz ac supply		
Air Flow	CFM	2000	3200	4000
External Static Pressure	Pa	40	60	80
Fan Motor Input Power	W	560	1500	1700
Fan Motor Rated Current	A	1.0	2.4	2.7
Refrigerant Pipe Connections				
Liquid	mm	Φ 9.5	Φ 12.70	Φ 12.70
	Inch	Φ 3/8	Φ 1/2	Φ 1/2
Gas	mm	Φ 19.1	Φ 28.6	Φ 28.6
	Inch	Φ 3/4	Φ 1⅛	Φ 1⅛
Type of Connection		Brazed		
Drain Connection (OD)	Inch	Φ 1 ¼	Φ 1 ¼	Φ 1 ¼
	mm	Φ 32	Φ 32	Φ 32
Dimension (WxDxH)	mm	900X660X1700	1160X660X1700	1160X660X1700
Net Weight	kg	136	205	210

Heat Recovery Ventilation System

DESCRIPTION	UNITS	DHRV03	DHRV05	DHRV09
Cooling Capacity	TR	0.75	1.3	2.2
	kW	2.6	4.7	7.7
Heating Capacity	TR	0.8	1.5	2.4
	kW	2.8	5.1	8.4
Electrical Power Supply		230 Volts, 1 Φ, 50 Hz ac supply		
Air Flow	CFM	170	320	530
External Static Pressure	Pa	80	80	80
Fan Motor Input Power	W	170	207	350
Fan Motor Rated Current	A	0.8	1.0	1.7
Refrigerant Pipe Connections				
Liquid	mm	Φ 6.35	Φ 6.35	Φ 9.50
	Inch	Φ ¼	Φ ¼	Φ ⅜
Gas	mm	Φ 12.7	Φ 12.7	Φ 15.9
	Inch	Φ ½	Φ ½	Φ ⅝
Type of Connection		Flared		
Drain Connection (OD)	Inch	Φ ¾	Φ ¾	Φ ¾
	mm	Φ 19.1	Φ 19.1	Φ 19.1
Dimension (WxDxH)	mm	1025x1030x355	1175x1030x355	1420x1145x355

Treated Fresh Air Unit

DESCRIPTION	UNITS	DTFA42	DTFA66	DTFA82
Cooling Capacity	TR	3.5	5.5	6.8
	kW	12.3	19.3	24.0
Heating Capacity	TR	3.8	6	7.5
	kW	13.3	20.9	26.0
Electrical Power Supply		230 Volts, 1 Φ, 50 Hz ac supply		
Air Flow	CFM	500	800	1000
External Static Pressure	Pa	80	80	80
Fan Motor Input Power	W	245	245	366
Fan Motor Rated Current	A	1.2	1.3	1.9
Refrigerant Pipe Connections				
Liquid	mm	Φ 9.5	Φ 9.5	Φ 9.5
	Inch	Φ ⅜	Φ ⅜	Φ ⅜
Gas	mm	Φ 15.9	Φ 19.1	Φ 22.2
	Inch	Φ ⅝	Φ ¾	Φ ⅞
Type of Connection		Flared		
Drain Connection (OD)	Inch	Φ ¾	Φ ¾	Φ ¾
	mm	Φ 19.1	Φ 19.1	Φ 19.1
Dimension (WxDxH)	mm	823x1056x390	963x1056x390	1163x1205x390
Net Weight	kg	55	67	88

TECHNICAL SPECIFICATIONS - OUTDOOR UNITS

Outdoor Unit

DESCRIPTION	UNITS	IVRFB-7TC/H	IVRFB-8TC/H	IVRFB-10TC/H	IVRFB-12TC/H	IVRFB-14TC/H	IVRFB-16TC/H	IVRFB-18TC/H	IVRFB-20TC/H	IVRFB-22TC/H
Cooling Capacity	HP	7	8	10	12	14	16	18	20	22
	TR	5.6	6.4	8	9.6	11.2	12.8	14.4	16.0	17.6
	kW	19.7	22.5	28.1	33.8	39.4	45.0	50.6	56.3	61.9
	btu/hr	67200	76800	96000	144000	134400	153600	172800	192000	211200
Heating Capacity	TR	6.2	7.0	8.8	10.6	12.2	14.1	15.7	17.6	19.4
	kW	21.7	24.8	30.9	37.1	42.9	49.5	55.2	61.9	68.2
	btu/hr	74400	84000	105600	127200	146400	169200	188400	211200	232800
Operating Ambient Temp. Range										
Cooling Mode	℃	10℃ to 54℃								
Heating Mode	℃	-10℃ to 24℃								
Power Supply		380 - 420 Volts, 3 Φ, 50 Hz ac supply								
Refrigerant		R410A								
Ref. Precharge Quantity	kg	9.0	9.0	9.5	9.5	12.5	13	13.5	14	14
Overall Dimensions										
Width	mm	978	978	978	978	1300	1300	1500	1500	1500
Depth	mm	800	800	800	800	800	800	800	800	800
Height	mm	1950	1950	1950	1950	1950	1950	1950	1950	1950
Weight										
Net Weight(TC/TH)	kg	257/261	260/264	260/264	260/264	362/370	374/382	401/410	410/417	410/417
Shipping Weight (apprx.) (TC/TH)	kg	261/270	264/273	264/273	264/273	382/390	394/402	424/431	433/440	433/440
Sound Level	dB(A)	56	57	58	60	63	64	66	67	67
Compressor Type		Hermetically sealed scroll DC inverter driven								
No. of Compressors	No.	1	1	1	1	2	2	2	2	2
Ref. Pipe Connections										
Liquid	mm/in	Φ 9.5/ ⅜	Φ 9.5/ ⅜	Φ 9.5/ ⅜	Φ12.7/ ½	Φ12.7/ ½	Φ12.7/ ½	Φ 15.9/ ⅝	Φ 15.9/ ⅝	Φ 15.9/ ⅝
Gas	mm/in	Φ 19.05/ ¾	Φ 19.05/ ¾	Φ22.2/ ⅞	Φ28.6/ 1⅛	Φ28.6/ 1⅛	Φ28.6/ 1⅛	Φ28.6/ 1⅛	Φ28.6/ 1⅛	Φ28.6/ 1⅛
Oil	mm/in	Φ 6.35/ ¼								
Air-Cooled Condenser										
Type		TUBE FIN TYPE								
Fan Type		AXIAL FLOW								
No. of Fans		1				2				
Air Quantity	CFM	7000	7000	7000	7000	9000	10200	12300	12300	12300
Motor Type		Brushless DC type								
Quantity	No.	1				2				
Power supply		230 Volts, 1 Φ, 50 Hz ac supply								

Notes:

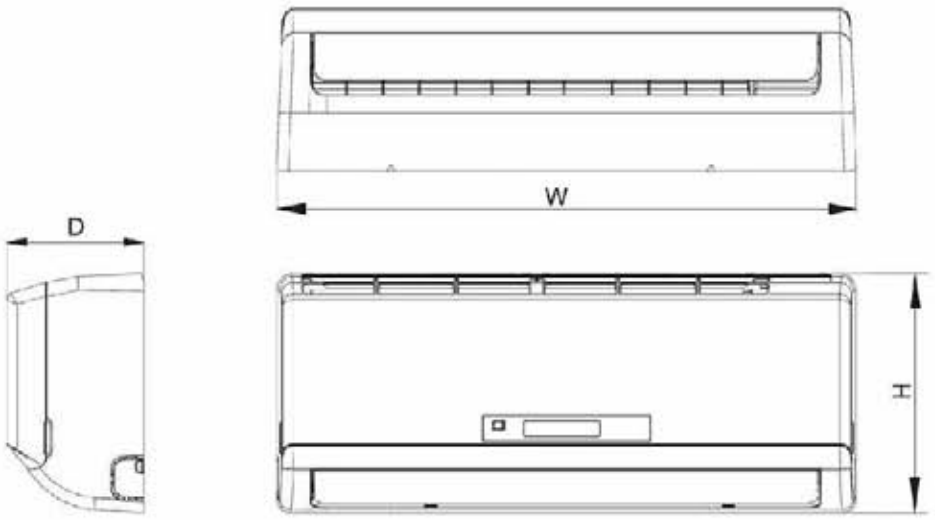
1. Actual cooling capacities delivered are based on the following conditions:
Indoor temperature: 27°CDB, 19°CWB; Outdoor temperature: **43°CDB**; Piping length: 10m, Height difference: 0m.

2. Actual heating capacities delivered are based on the following conditions:
Indoor temperature: 20°CDB; Outdoor temperature: 7°CDB, 6°CWB; Piping length: 10m, Height difference: 0m.

Specifications are subject to change due to continuous product improvement

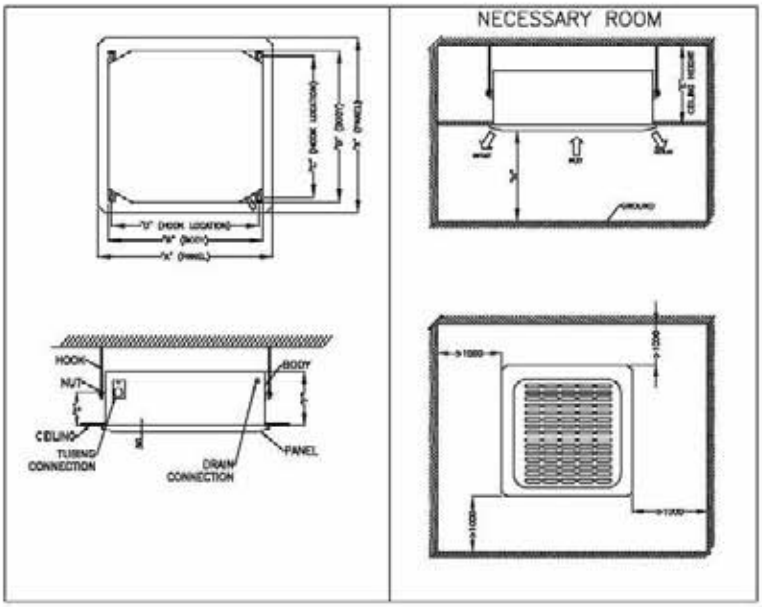
* The given sound level data are based on the measurements taken in anechoic chamber and the actual sound levels may vary depending on the environmental noise conditions.

Indoor Unit: VHW 10/12/16/18/20/24



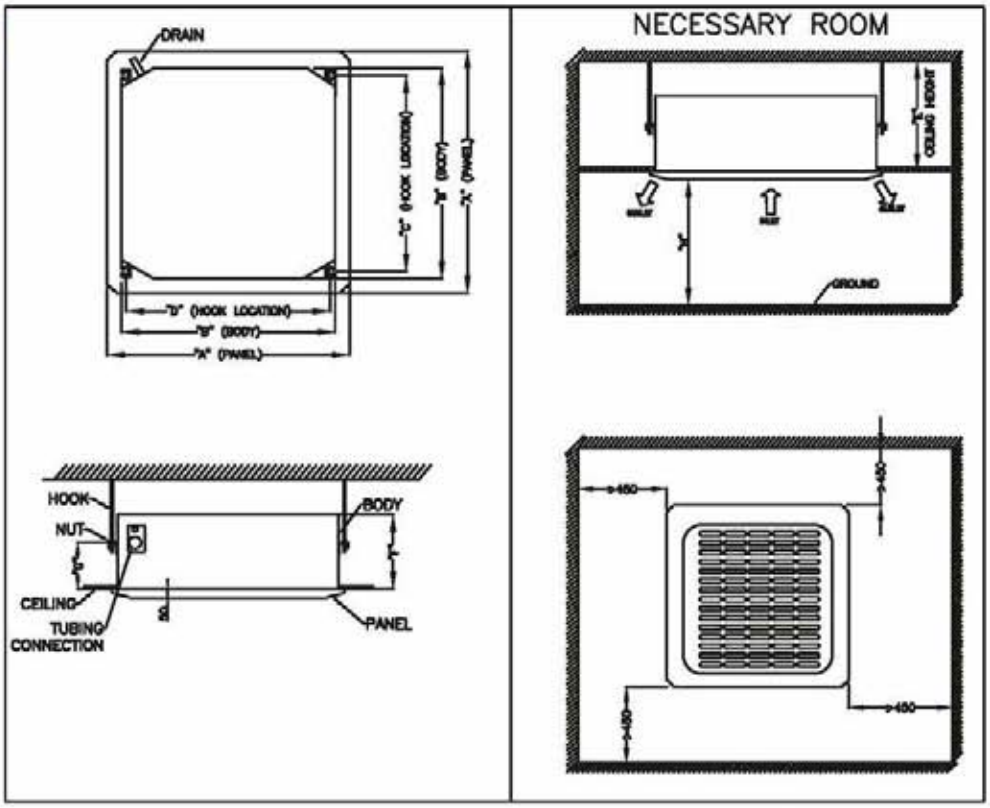
Model	W	D	H
VHW-10 / 12	800	188	275
VHW-16 / 18	940	205	275
VHW-20 / 24	1050	235	315

All dimensions in mm



MODELS	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
DLC-12	950	840	680	780	>260	230	136	>2500
DLC-16	950	840	680	780	>260	230	136	>2500
DLC-18	950	840	680	780	>260	230	136	>2500
DLC-20	950	840	680	780	>260	230	136	>2500
DLC-24	950	840	680	780	>260	230	136	>2500
DLC-27	950	840	680	780	>260	230	136	>2500
DLC-34	950	840	680	780	>300	300	136	>2500
DLC-38	950	840	680	780	>300	300	136	>2500
DLC-48	950	840	680	780	>330	300	136	>2500
VLC-60	950	840	680	780	>330	300	136	>2500

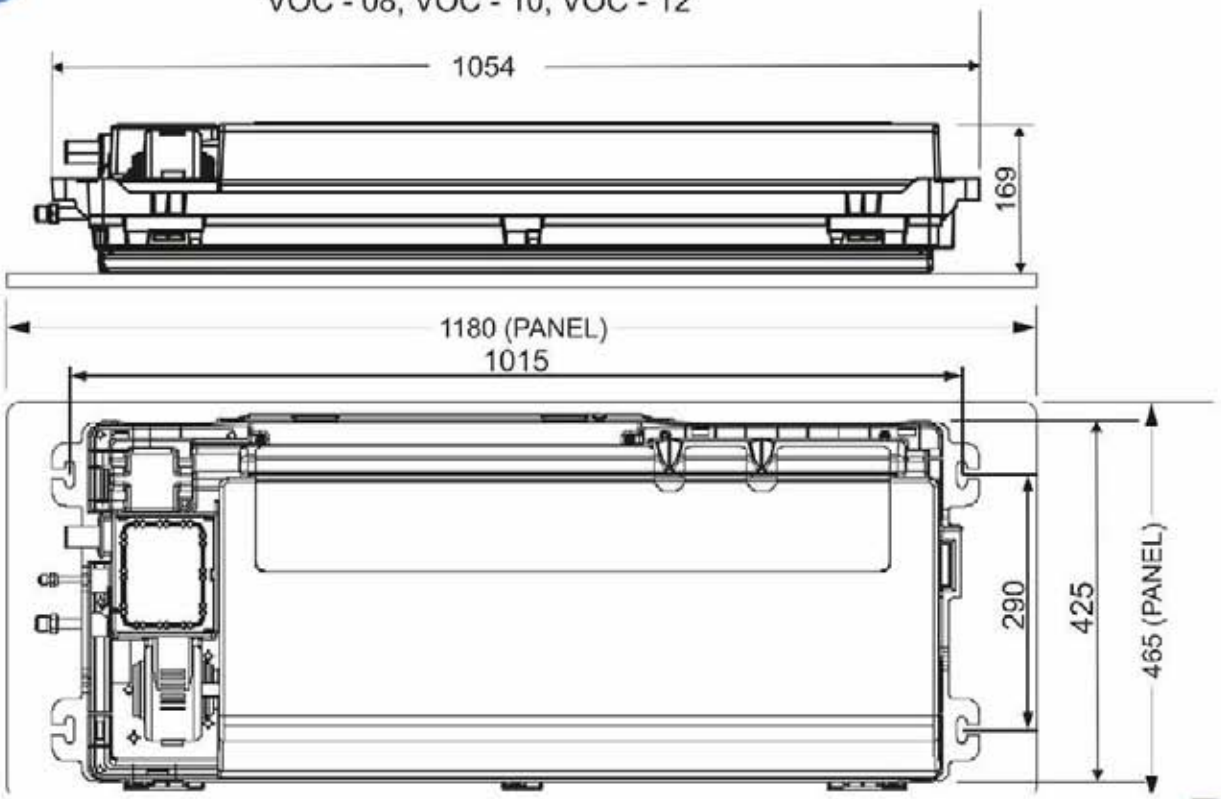
Compact Cassettes



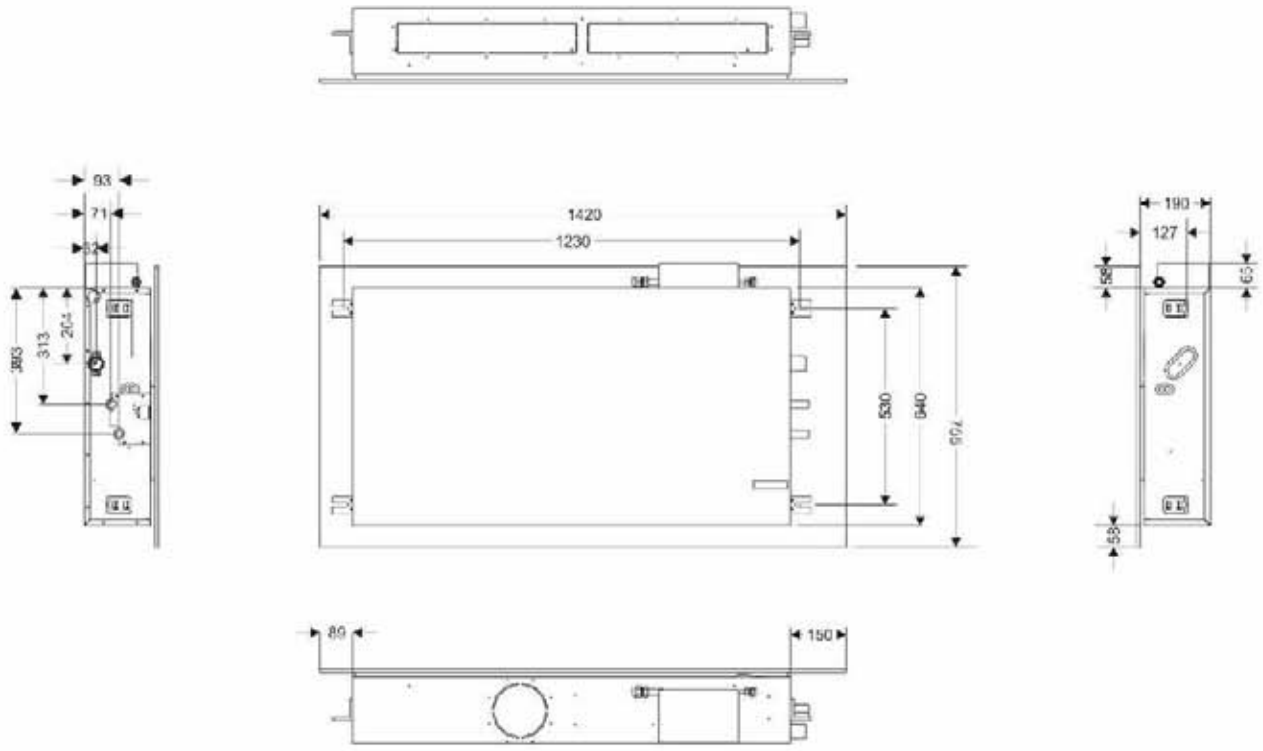
MODELS	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
DCC–08	647	570	523	545	>280	260	176	>2300
DCC–10	647	570	523	545	>280	260	176	>2300
DCC–12	647	570	523	545	>280	260	176	>2300
DCC–16	647	570	523	545	>280	260	176	>2300
DCC–18	647	570	523	545	>280	260	176	>2300

One-Way Cassettes

VOC - 08, VOC - 10, VOC - 12



VOC - 16, VOC - 18

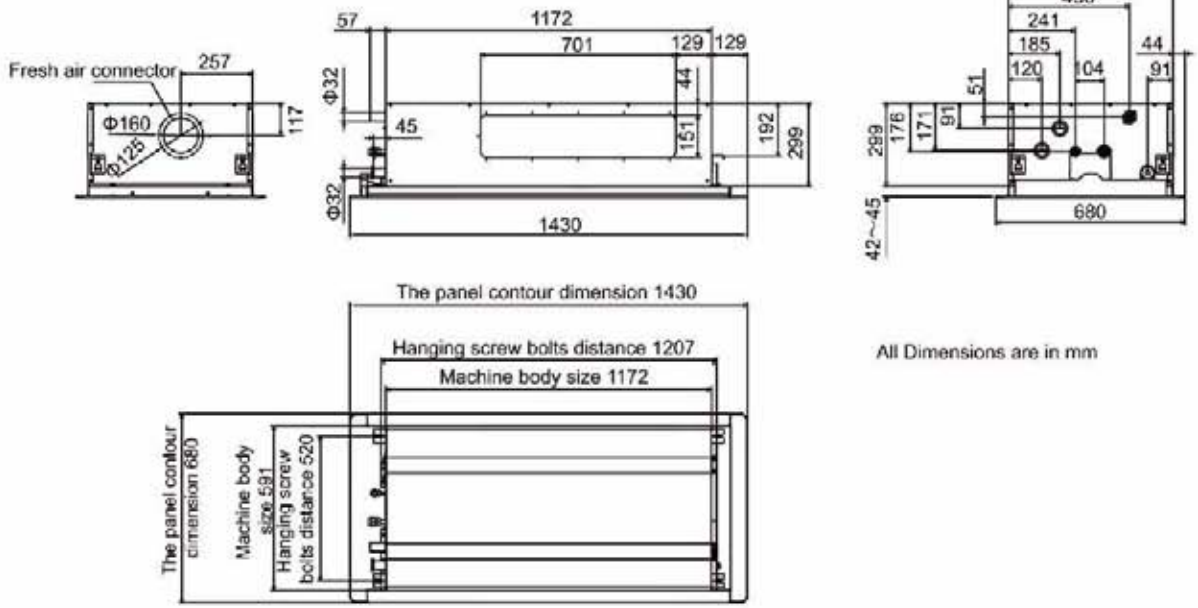


All dimensions in mm

Model	VOC-08, VOC-10, VOC-12	VOC-16, VOC-18
A	430	470
B	290	300
C	1100	1290
D	1015	1235

Two-Way Cassettes

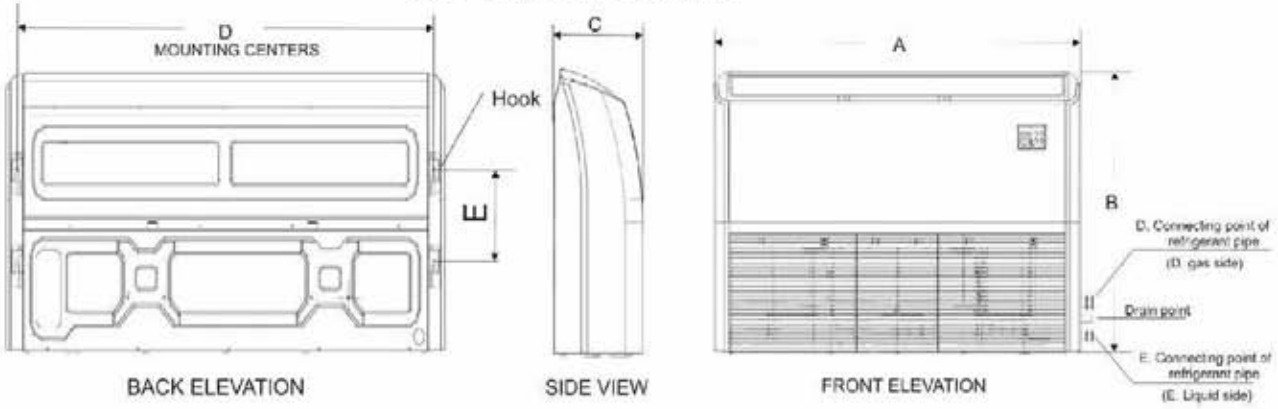
VTC- 08/10/12/16/18/20/24



All Dimensions are in mm

Floor Cum Ceiling Mounted Units

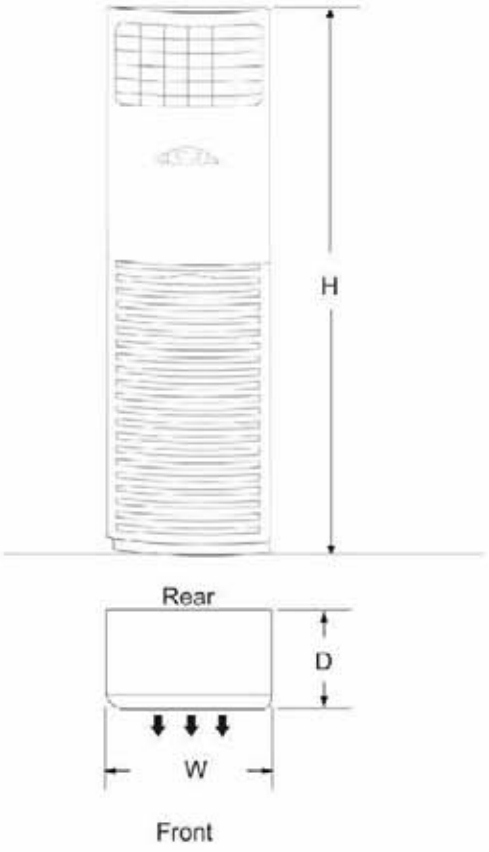
VFC- 18 / 24 / 36 / 48 / 60



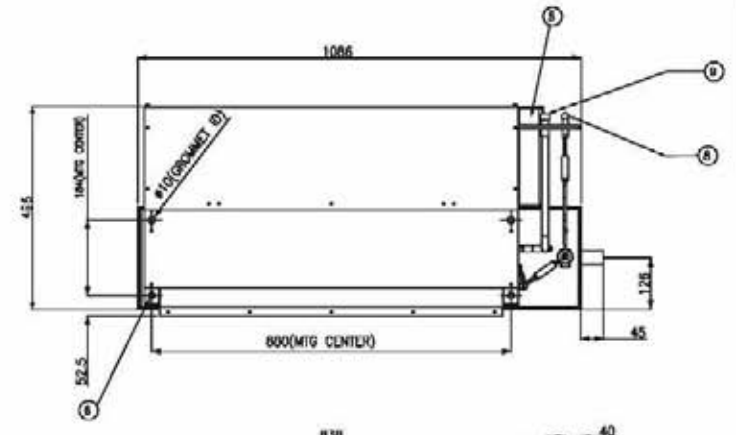
GA drawing for VFC models

Model	A	B	C	D	E
VFC-18, VFC-24	1068	675	235	983	220
VFC-36	1285	675	235	1200	220
VFC-48	1650	675	235	1565	220
VFC-60	1650	675	235	1565	220

Indoor Unit: VVC 24/27/34/38/48

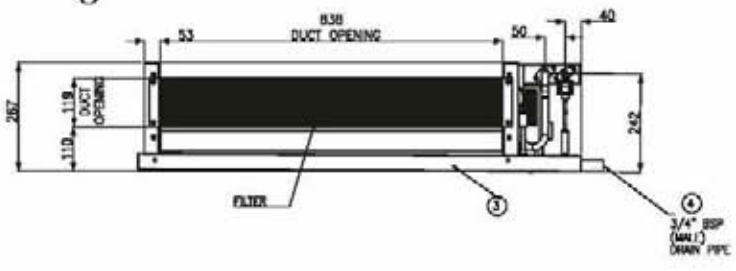


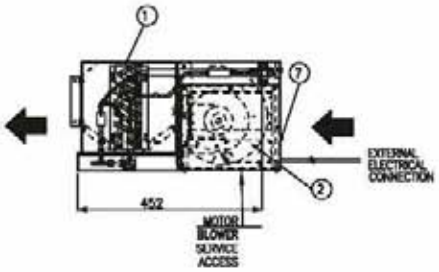
Model	H, mm	W, mm	D, mm
VVC-24 VVC-27 VVC-34	1680	500	260
VVC-38 VVC-48	1775	540	379



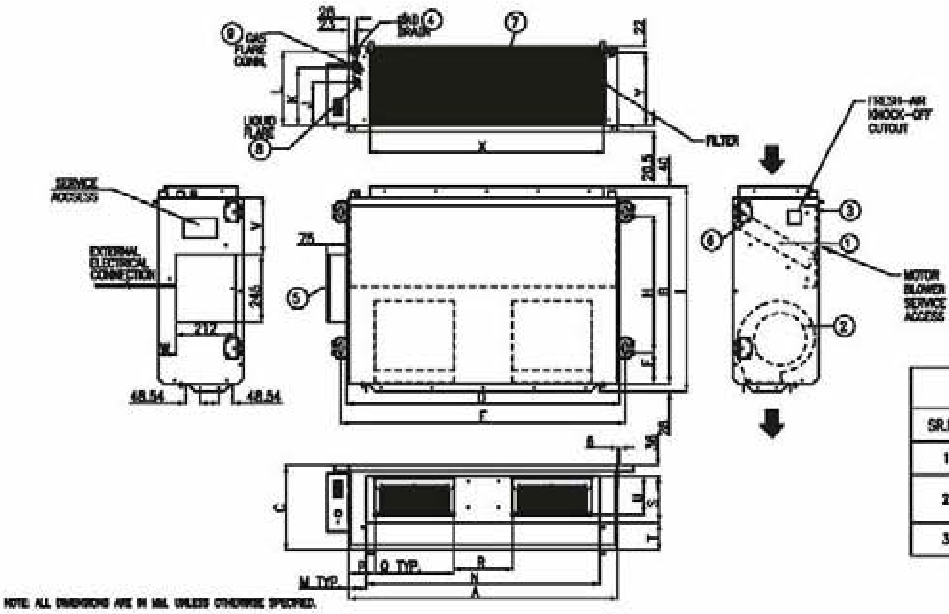
IDU CONNECTION			
SR.NO	MODELS	GAS	LIQUID
1	DCS10/12/16/18	1/2"	1/4"
2	DCS24	5/8"	3/8"

1	INDOOR COIL
2	FAN
3	DRAIN PAN
4	DRAIN CONNECTION ØND
5	ELECTRICAL BOX
6	SUPPORT HOLES
7	AIR FILTER
8	LIQUID
9	GAS





Ductable IDUs



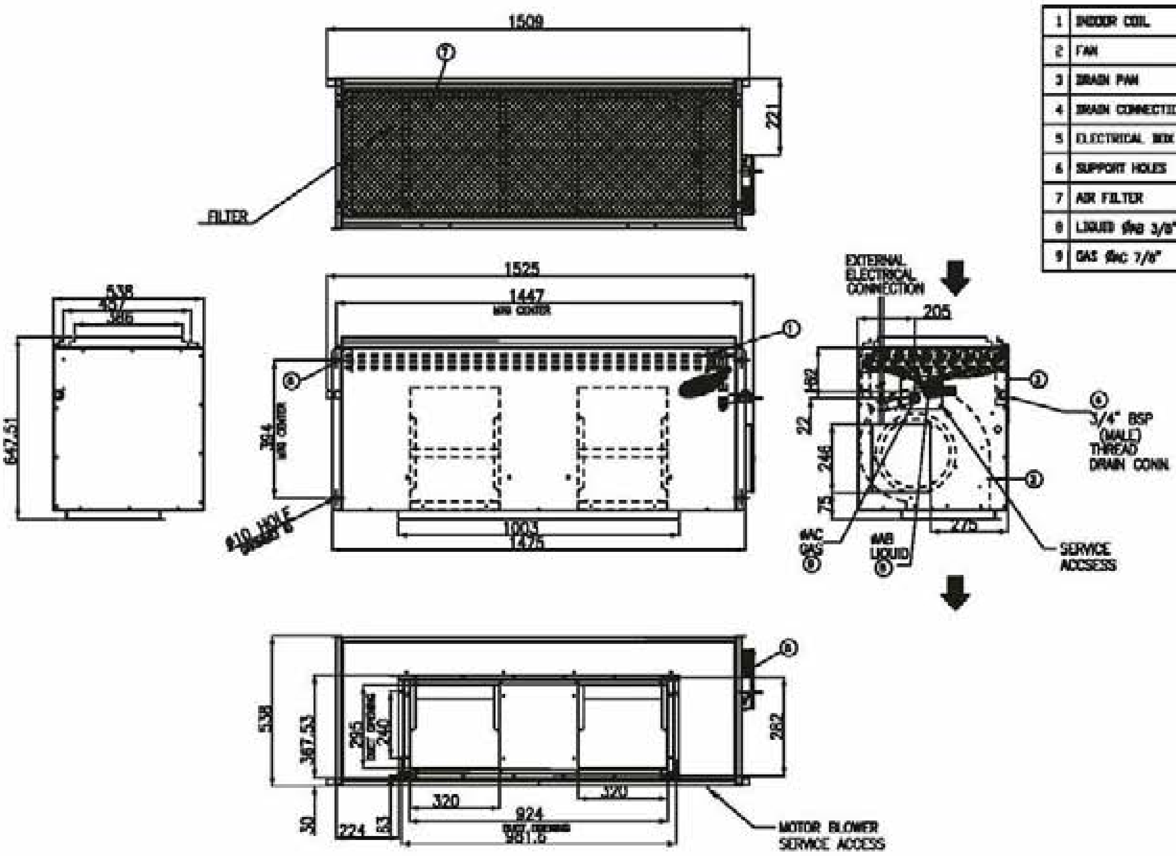
1	INDOOR COIL
2	FAN
3	DRAIN PAN
4	DRAIN CONNECTION ØAB
5	ELECTRICAL BOX
6	UNIT SUPPORT
7	AIR FILTER
8	LIQUID
9	GAS

IDU CONNECTION SIZES

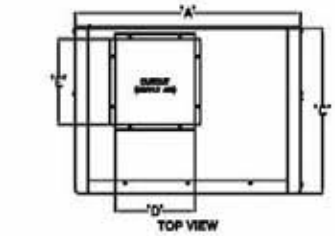
SR.NO	MODELS	GAS Ø	LIQUID Ø
1	DSD-18	1/2"	1/4"
2	DSD-24/30/36/48	5/8"	3/8"
3	DSD-60/72	3/4"	3/8"

NOTE: ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED.

MODEL	A	B	C	D	E	F	H	I	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	ØAB
DSD 18-24	903	326	263	834	875	47	433	683	139	199	846	64	797	121	230	220	162	78	162	187	48	797	2222.3	3/4" BSP MALE THREAD
DSD 30-36	925	628	218	932	972	107	463	780	174	224	1000	66	797	102.5	276	290	150	131	130	221	66	797	2472.5	
DSD 48	1248	731	332	1280	1300	107	586	609	187	218	274	113	1017	229	276	298	175	220	134	232	66	1522	2872.5	
DSD 60-72	1246	853	267	1280	1298	118	469	600	242	284	247	93	1955	182	269	240	218	122	191	284	186	1130	246	

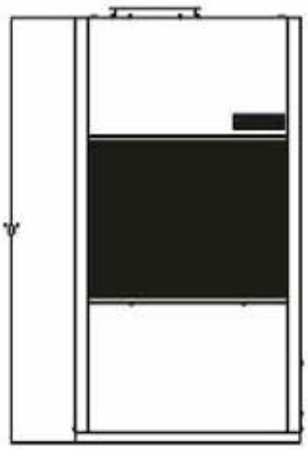


1	INDOOR COIL
2	FAN
3	DRAIN PAN
4	DRAIN CONNECTION ØAB
5	ELECTRICAL BOX
6	SUPPORT HOLES
7	AIR FILTER
8	LIQUID ØAB 3/8"
9	GAS ØAC 7/8"

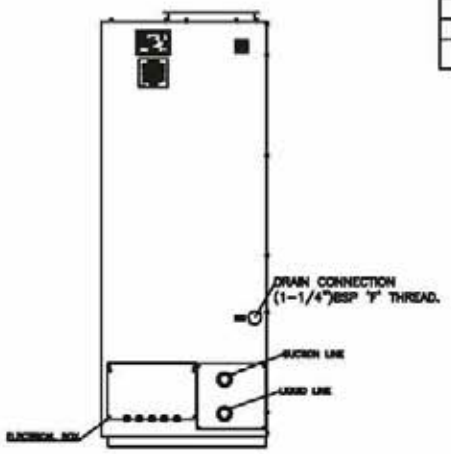


MODEL	'A'	'B'	'C'	'D'	'E'
DFM-60	900	1700	660	318	343
DFM-96/120	1160	1700	660	398	343

IDU CONNECTION			
SR.NO	MODELS	GAS ø	LIQUID ø
1	DFM-60	3/4"	3/8"
2	DFM-96/120	1-1/8"	1/2"



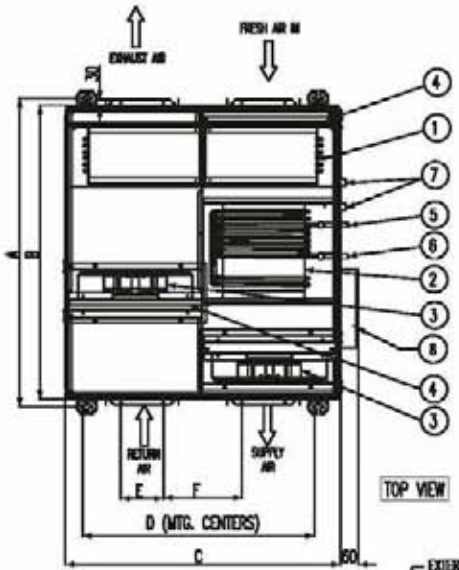
FRONT VIEW



RIGHT HAND SIDE VIEW

NOTE
RECOMMENDED CLEARENCES
FOR PROPER MAINTAINCE/SERVICE/
AIR CIRCULATION OF THE UNIT.

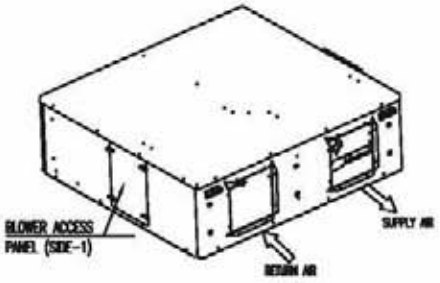
REAR TO WALL -610MM(3")MIN
FRONT TO WALL -610MM(3")MIN
TOP -1830MM(6")MIN
TOP WITH DUCT -1220MM(4")MIN

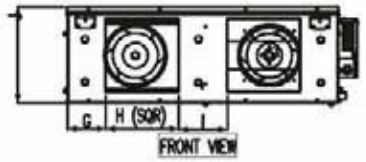


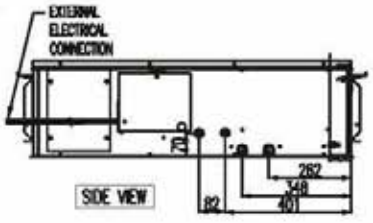
MODEL	A	B	C	D	E	F	G	H	I	J
DHRV 3	1065	1030	965	810	150	275	134	255	170	335
DHRV 5			1115	950		385	150		250	355
DHRV 9	1183	1145	1360	1130	250	380	177	350		385

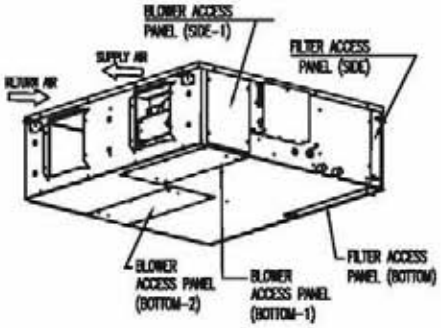
S.N.	DESCRIPTION	QTY.
1	HEAT PIPE	1
2	DX COIL WITH HEAT PIPE	1
3	BLOWER DIDW 10HP	2
4	FILTER	2
5	SUCTION CONNECTION	1
6	LIQUID CONNECTION	1
7	DRAIN CONNECTION (ALL 3/4" BSP MALE PIPE)	2
8	CONTROL BOX	1

CONNECTION DETAILS			
SR.NO	MODELS	SUCTION(ø)	LIQUID(ø)
1	DHRV-03	1/2"	1/4"
2	DHRV-05	1/2"	1/4"
3	DHRV-09	5/8"	3/8"



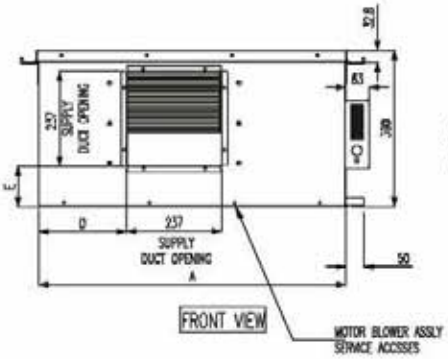




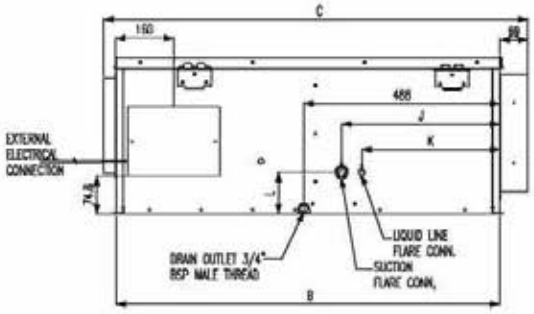


Treated Fresh Air Unit

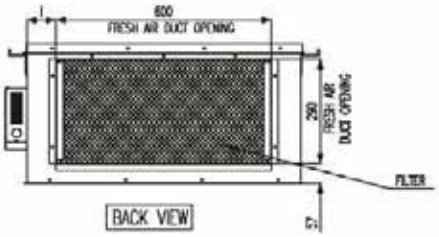
ISO VIEW



FRONT VIEW

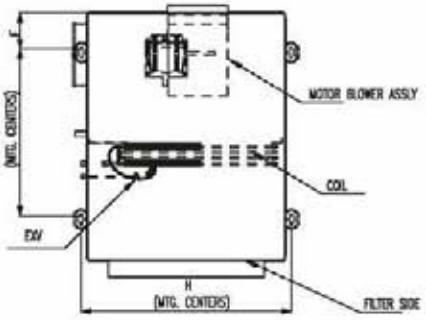


SIDE VIEW



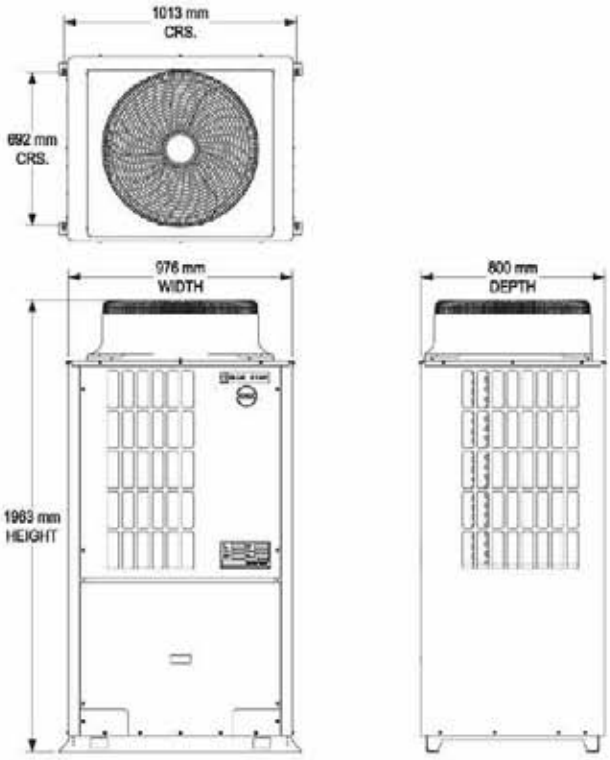
BACK VIEW

IDU CONNECTION			
SL_NO	MODELS	GAS ø	LIQUID ø
1	DTFA42	5/8"	3/8"
2	DTFA66	3/4"	
3	DTFA82	7/8"	

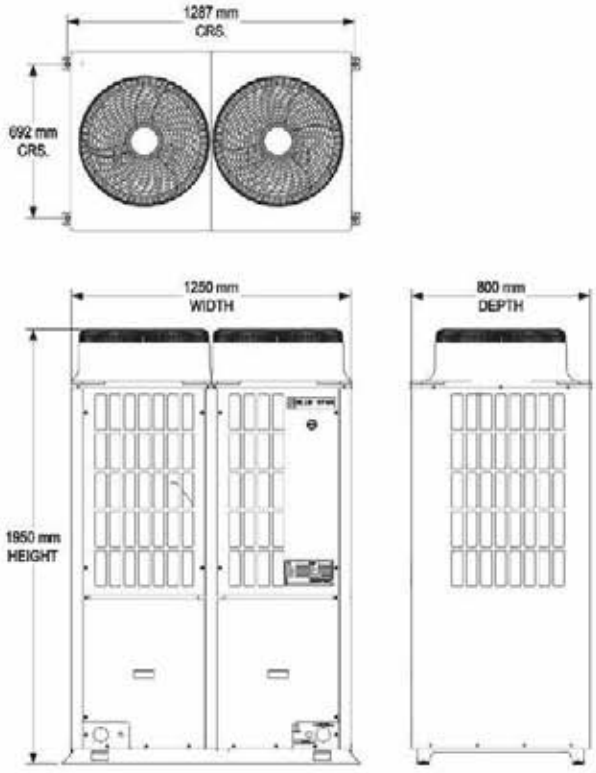


TOP VIEW

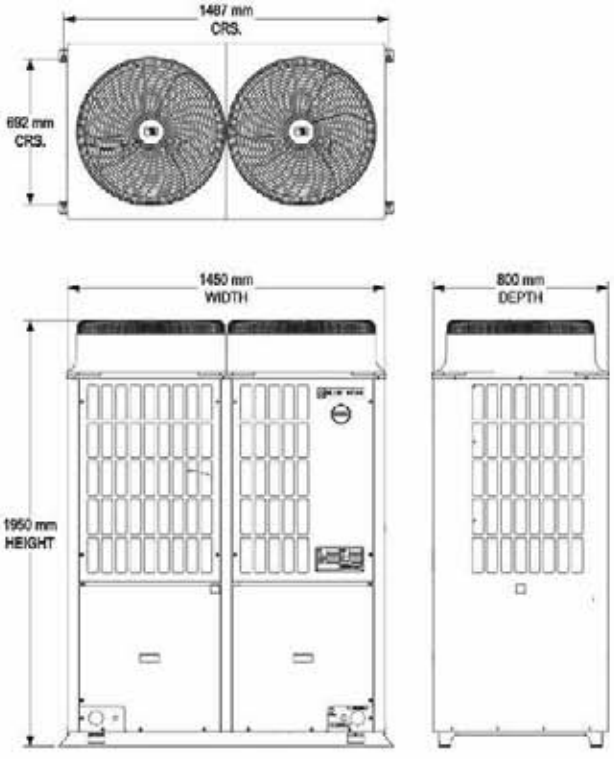
7-12 HP



14-16 HP



18-22 HP



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