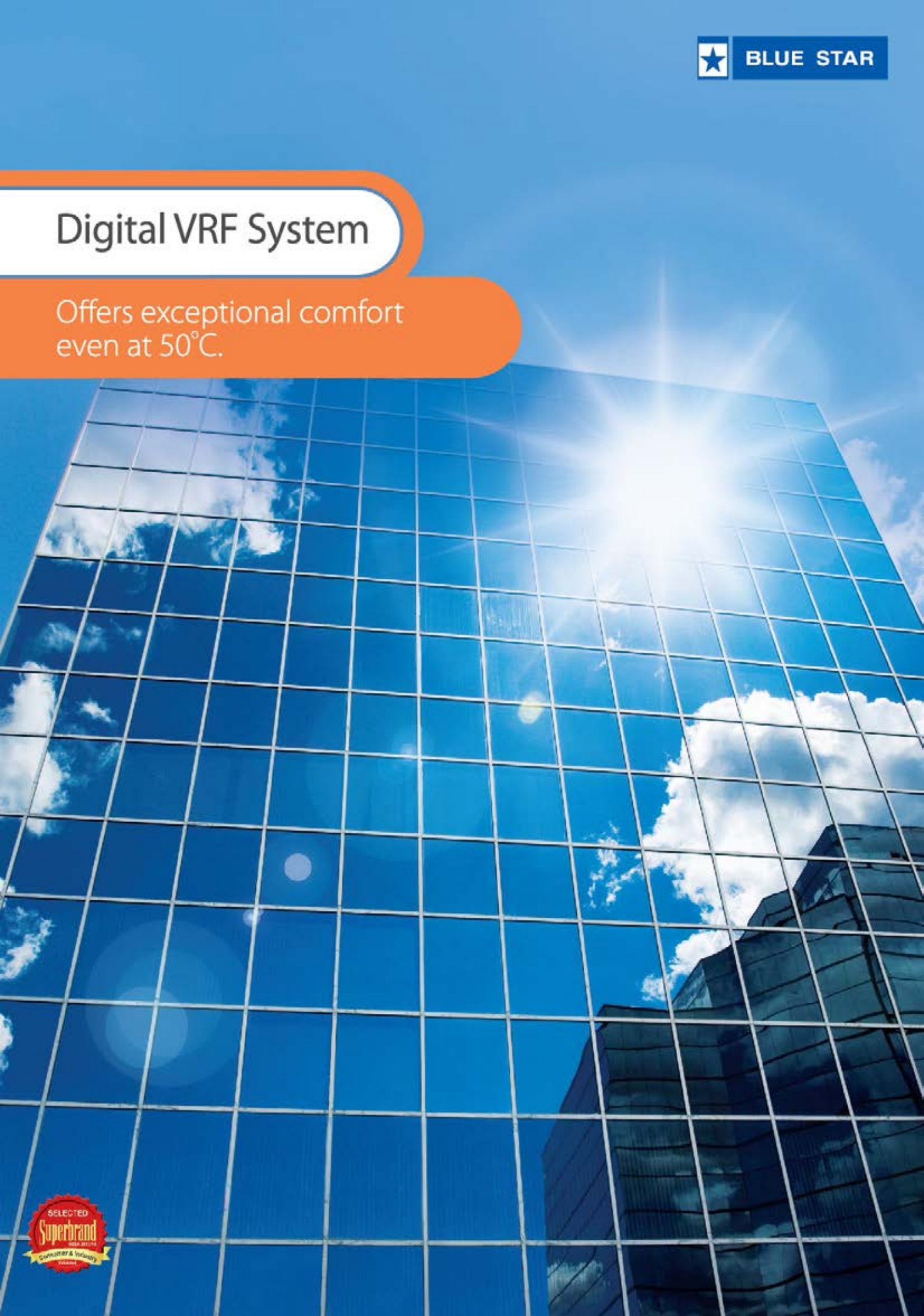
BLUE STAR

Digital VRF System

Offers exceptional comfort even at 50°C.



Blue Star, India's leading refrigeration and airconditioning company offers expert solutions for all your cooling needs. With over six decades of cooling experience, the Company has airconditioned many small, medium and large spaces across the country. These include ATMs, malls, multiplexes, IT parks, airports and landmark buildings.

Blue Star, with its complete range of ACs, from window ACs, split ACs, packaged ACs to chillers and central plants, offers reliable, efficient and state-of-the-art airconditioning solutions that suit all your needs.

Blue Star Digital VRF

The versatile cooling solution for extreme Indian operating conditions

Traditionally, multi-room spaces are airconditioned either by discrete room ACs or a central plant. While traditional DX systems are generally efficient, limitations of piping lengths and system flexibility restrict their choice in many applications.

A VRF system combines the advantages of both room AC and the central plant to offer you a third, more energy-efficient alternative. This system consists of an outdoor unit with multiple compressors, a mix of indoor units such as cassettes and high-wall splits and a sophisticated electronic control centre that ensures complete climate control in each zone. Piping lengths have also increased in VRF systems up to 1000m, thus giving enormous flexibility to users.

Hence VRF today is the first choice globally for most applications such as offices, software parks, residences, hotels and hospitals. The use of the VRF will only grow further in the years to come.

All Blue Star products bring you cutting edge technology, superior cooling and designs that are compatible with the latest building management systems.

Blue Star's latest offering, the Digital Variable Refrigeration Flow (DVRF) system is no different. It brings world-class, state-of-the-art cooling technology and higher energy efficiency to your doorstep. Based on proven Digital Compressor Technology, the DVRF system is ideal for multi-zoned spaces such as luxury apartment complexes, condominiums, villas, multi-cabin office spaces and commercial complexes.

The availability of advanced electronic controllers and the compatibility with BMS have further made the DVRF a superior cooling solution.

What's more, Blue Star DVRF is designed to suit Indian conditions. The system is designed to operate at ambients even as high as 50°C, so the Blue Star Digital VRF will cool even in the hottest parts of the country during the harshest summer months when most other AC systems would have stopped operating. To ensure that your AC investment works for you through high voltage fluctuations, the Blue Star Digital VRF is designed to operate efficiently, reliably and smoothly across a wider voltage range of 340V to 460V, a unique and extremely useful specification amongst Indian AC systems.

The Blue Star Digital VRF system has many advantages over conventional airconditioning solutions. Listed below are a few of them.

- Year-round cooling and heating system
- Modular capacities that can be built up using 12 HP to 63 HP discrete units
- Software-based piping design
- Choice of designer indoor units
- Simple unit selection, easy installation
- R410A-based eco-friendly system
- Compatibility with AHUs
- In-built fault diagnostics
- High on energy savings
- Advanced computer control systems
- Need-based cooling to suit your comfort requirements

The Digital Scroll Difference

Blue Star DVRF systems are powered by

Copeland Digital Scroll™ Compressors.

Designed and manufactured by Copeland, the world renowned manufacturers of compressors, the Digital Scroll Compressor marks the difference between Blue Star DVRF systems and other ordinary systems.

The Digital Scroll Compressor modulates the refrigerant flow to meet the varying cooling loads and delivers enormous savings on electricity bills. This high technology compressor, coupled with an advanced controller, makes the Blue Star DVRF system the highly intelligent system that it is.

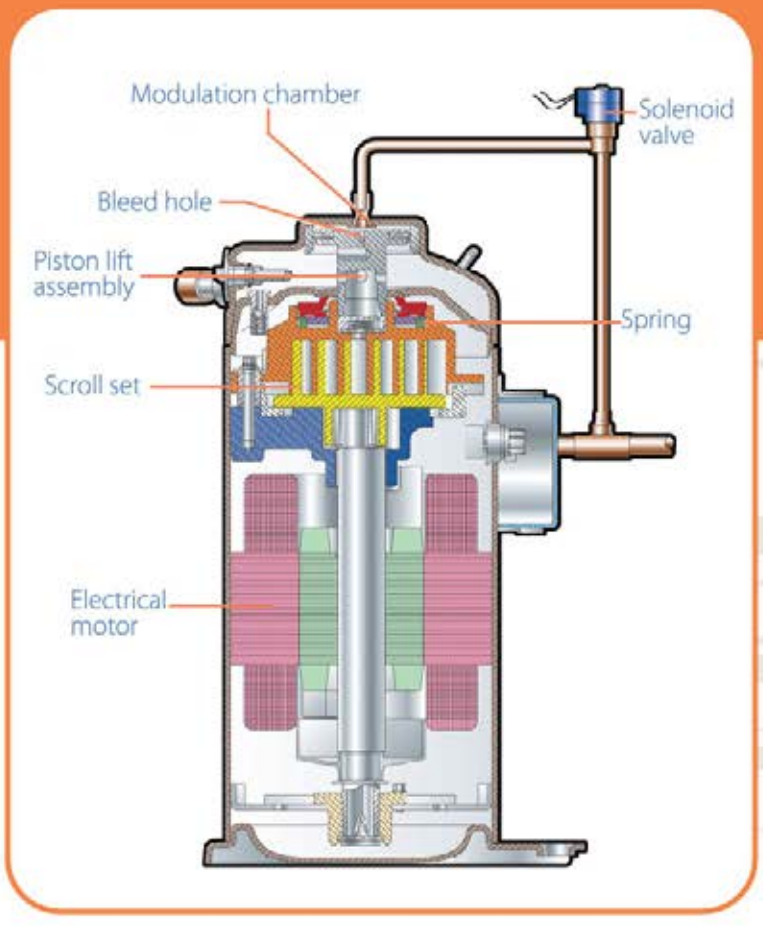
How does the Digital Compressor work?

The beauty of this technology is its inherent simplicity. Capacity modulation is achieved by the time-averaging of the loaded state and unloaded state.

The standard scroll compressor has a unique feature called 'axial compliance'. This allows the fixed scroll to move in the axial direction by very small amounts, to ensure that the fixed and orbiting scrolls are always loaded together with optimal force. This optimal force that holds the two scrolls together under all operating conditions ensure the high efficiency of Copeland scrolls.

What makes it different?

The Digital Scroll technology allows an alert external control to switch the compressor rapidly between its loaded and unloaded states.

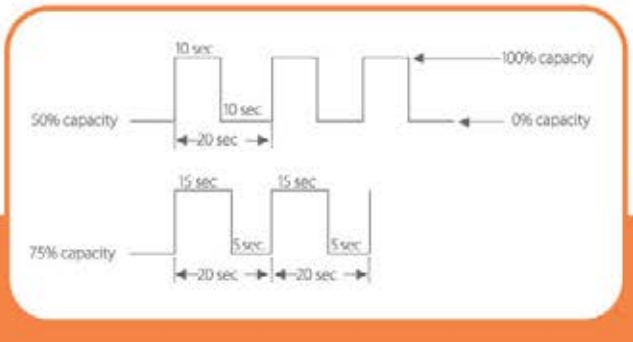


Digital Scroll Compressor

In the loaded state, the compressor is like a standard scroll, delivering full capacity, while in the unloaded state, there is no capacity. By varying the loaded state time and the unloaded state time, any capacity from 10% to 100% can be delivered by the compressor. This is a very smart way of ensuring greater efficiency, especially during partial load.

This real-time variation of the 'duty cycle' of the digital scroll compressor is what sets Blue Star DVRF systems apart from ordinary systems. While in an ordinary system, the compressor always delivers its full capacity regardless of the cooling requirement, the intelligent control in the Blue Star DVRF system ensures that only the required capacity is generated by the compressor, depending upon how many indoor units are operating at that point of time and at what load requirement.

This results in huge power savings, longer life and greater reliability. To top it all, there is no issue of electromagnetic interference.



Concept of Cycle Time

Applications of DVRF systems

Due to its versatile design, Blue Star's Digital VRF systems are best-fit solutions in almost every airconditioning application. Some examples:

Corporate Offices

- Range of indoor units to suit every need
- Individual control for cabins
- Fresh air provision
- Compatibility with BMS systems
- Savings on electricity bills
- Use of minimal outdoor units ensure that valuable space is saved

Luxury Condominiums and Villas

- Independent climate control of each room
- Compact design of outdoor units for mounting on balcony
- Use of single outdoor unit for multiple indoor units ensures external elevation is uncluttered
- High reliability
- User-friendly design
- Savings on electricity bills
- Feature-loaded indoor units
- Compatibility with BMS systems

Hotels and Serviced Apartments

- Wide range of contemporary indoor units to suit the decor of each space
- Fresh air provision
- Centralised control for easy operation and maintenance
- Minimal noise and vibration
- Savings on electricity bills
- Compatibility with BMS Systems

Commercial Complexes and Showrooms

- Compatibility with BMS Systems
- Use of minimal outdoor units ensure that valuable space is saved
- Independent control for individual shops
- Savings on electricity bills

Health care

- Individual control for consultation and patient rooms
- Savings on electricity bills
- HRV to maintain good IAQ in a cost-effective way
- Centralised control for easy operation and maintenance

Educational Institutions

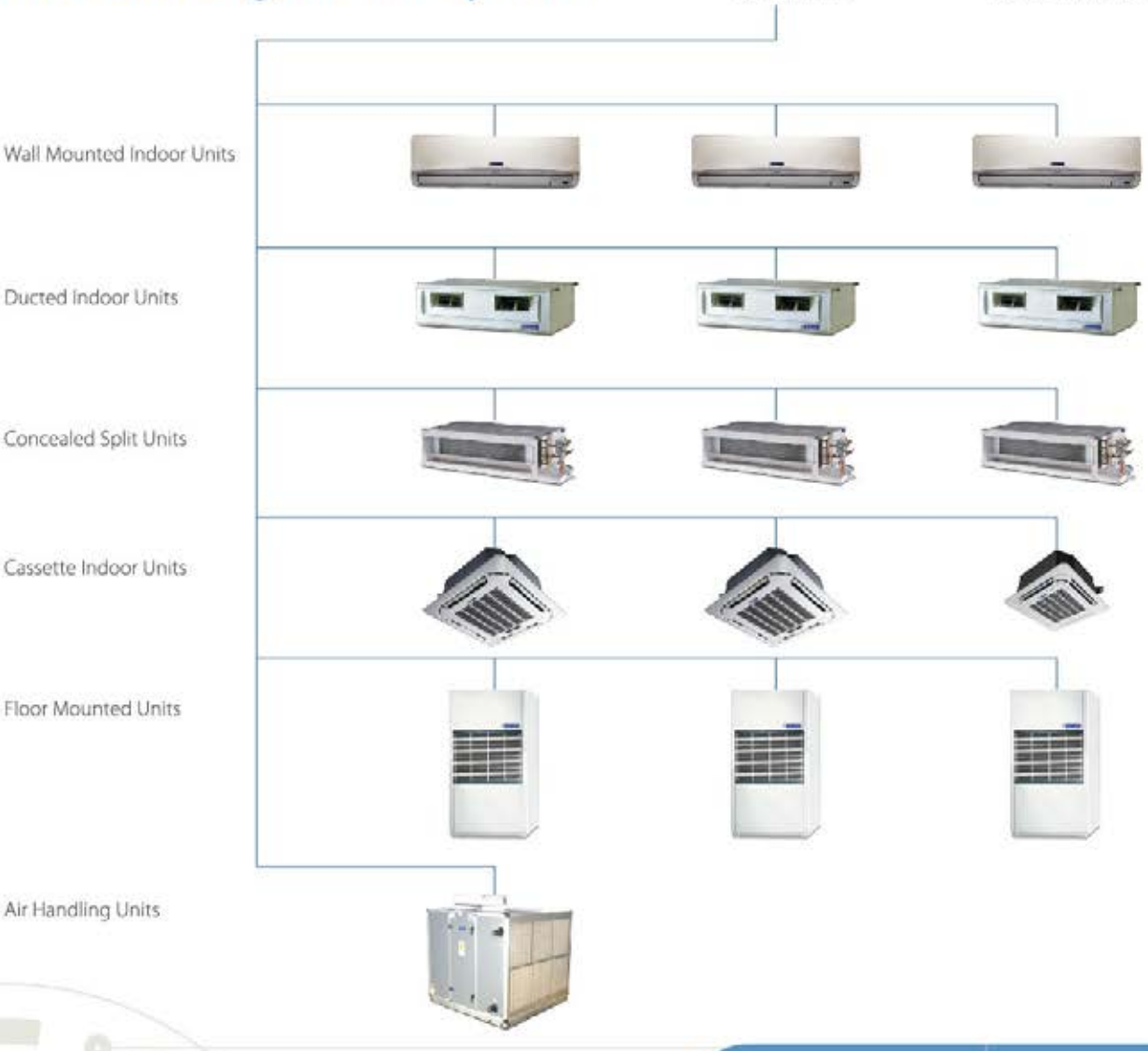
- Individual control for consultation and patient rooms
- Assures good indoor air quality
- Savings on electricity bills
- Minimal noise and vibration
- Centralised control for easy operation and maintenance

Schematic of the Blue Star Digital VRF System

Outdoor unit

Heat Recovery Ventilator with DX Coil

Treated Fresh Air Units



Product line-up: Outdoor Units

Appearance	HP	Max. no. of IDUs	Appearance	HP	Max. no. of IDUs
	6	5		44	46
	7.5	6		45	47
	12	10		46	48
				47	49
	12	13		48	50
	14	15		49	51
	18	19		50	52
	21	22		51	53
	24	25		53	55
	26	27		54	56
	28	29		56	59
	30	31		57	60
	32	33		60	62
	33	35		63	62
	35	37			
	36	38			
	39	41			
	42	44			

Product line-up: Indoor Units

Appearance	Type	0.6TR	0.8TR	1TR	1.3TR	1.5TR	1.7TR	2TR	2.3TR	2.5TR	2.8TR	3TR	3.2TR	4TR	5TR	6TR	8TR	10TR
	Wall Mounted Split		●	●	●	●	●	●										
	Large Cassette			●	●	●	●	●	●		●		●	●				
	Compact Cassette	●	●	●	●	●												
	Concealed Split		●	●	●	●		●										
	Ductable Split					●		●		●		●		●	●	●	●	
	Floor Standing Console														●		●	●

Add ons

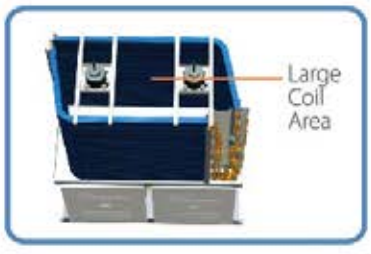
	TFA Indoor Unit	3.5 TR	5.5 TR	6.8 TR

	Heat Recovery Ventilation System	300 CMH	500 CMH	900 CMH

Blue Star Digital VRF - Feature highlights

Higher capacity

Coil sizes in the outdoor units are enhanced by 23% in the Blue Star Digital VRF system line-up. Further, the '2L' shaped coils designed with CFD analysis take air all around to obtain the maximum heat transfer efficiency. These factors improve the average total capacity delivered by at least 10% at ARI conditions at an optimal power consumption.



Operation at higher ambient

The Blue Star Digital VRF is designed to operate at rated capacities even at a high ambient of 42°C and will function at ambient even as high as 50°C.

The heat pump system too is designed to handle extreme climatic conditions. The advanced controllers and superior coil design can maintain inside conditions irrespective of the outside ambient. The temperature range across which the system operates efficiently is:

Cooling: 10°C to 50°C

Heating: -10°C to 27°C

Extreme load-handling capacity

The outdoor unit has been designed to have a larger twin accumulator which has the highest liquid handling capacity in the industry. This feature gives the system enormous flexibility while operating under diverse loads, both extremely low and extremely high.

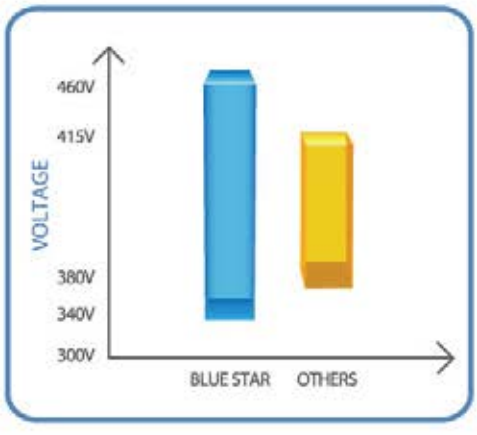
Robust design for long life

Overall, the Blue Star Digital VRF is designed for long life. Salty air in cities situated along India's long sea-shore can eat into the body work of ACs. So, Blue Star's Digital VRF comes with salt-spray tested galvanised steel plated shells that withstand rusting and exposure to the elements.

Wide voltage range

With voltages fluctuating alarmingly and low and high voltage situations being the order of the day in most parts of India, most AC systems either operate inefficiently, shut down, or even suffer damage, all of which impair the cooling within the airconditioned space.

The Blue Star DVRF system is designed to operate across a wide voltage range from 340V to 460V, resulting in higher up-time even in erratic power areas.



Compatibility

The DVRF system is highly compatible and can be clubbed with Air Handling Units (AHUs) as required in specific applications. Treated Fresh Air units (TFAs) and Heat Recovery Ventilators (HRVs) can also be connected to the DVRF to help optimize Indoor Air Quality (IAQ) as required in different applications.

Wide range of intelligent controllers

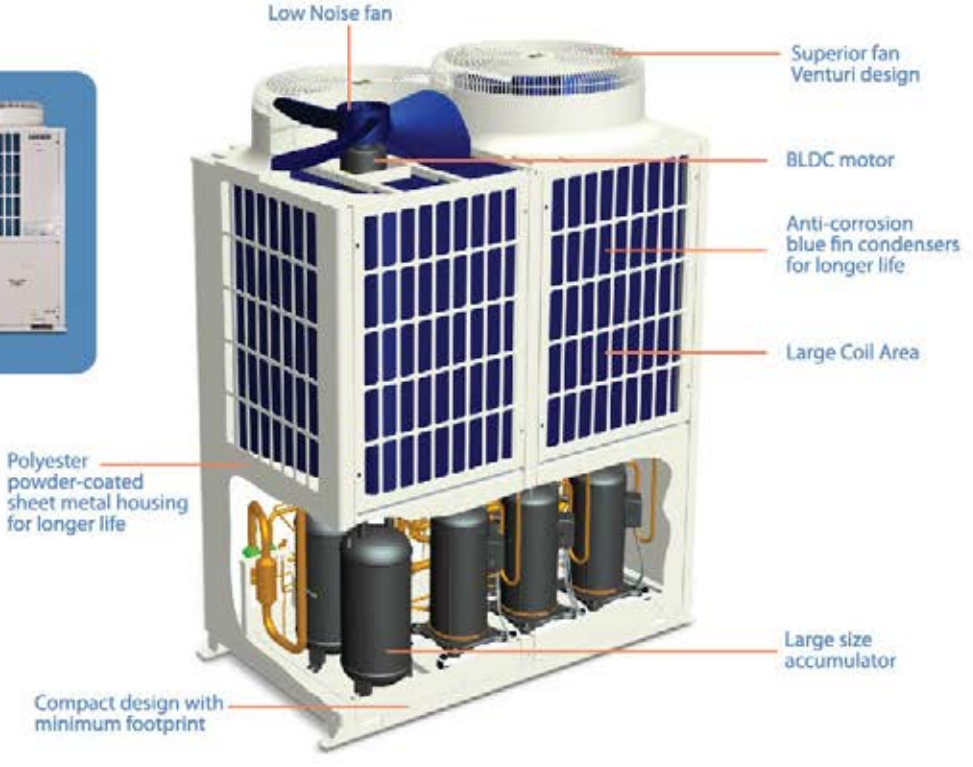
DVRF systems offer you a wide range of sophisticated controllers to suit the varied requirements of customers. These controllers help to systematically monitor and optimise running cost. From the simple wired controller to the most advanced remote monitoring systems, the Blue Star DVRF offers them all.

Tenant billing software

The Blue Star DVRF system offers you intelligent tenant billing software that helps you adapt the system easily to multiple tenancy applications such as commercial complexes, office complexes and so on. The software helps generate monthly IDU-wise power consumption and charges, reports for each tenant and so on. Up to 15 systems can be connected to one energy meter.

The Outdoor Unit

Blue Star's Digital VRF systems come with state-of-the-art outdoor units in the capacity range of 6 to 63 HP to suit a wide range of applications. These ODUs are packed with features that add immense value to each installation.



Locational flexibility

In Blue Star DVRF installations, the positive pressure oil management pipe is connected between the discharge line of one ODU and the suction line of the next ODU. This enables positioning of ODUs at different elevations with up to 5m difference in their heights. The modular ODUs can also be located next to each other resulting in an overall lower ODU footprint. The unique design of the heat exchanger ensures no compromise in performance and serviceability.

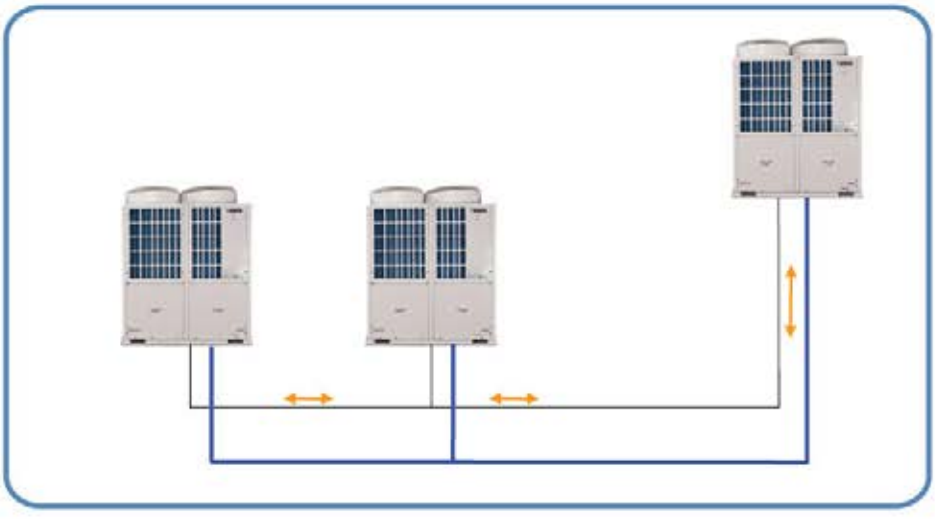
High-efficiency oil management

Oil recovery

Oil stored in the tank is pumped into the digital compressor on a periodic basis. Oil sharing between compressors in the same ODU is equalised by gravity.

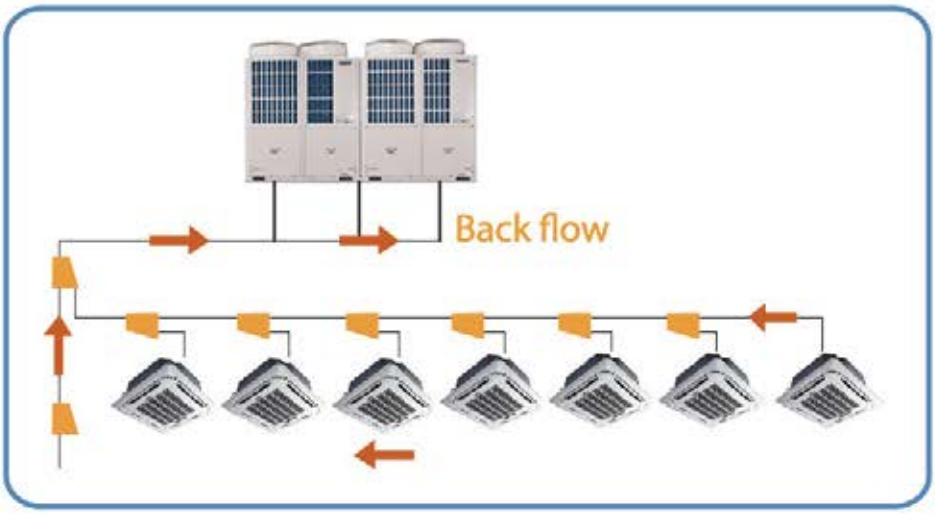
Oil swap

Oil is also swapped with the next ODU on a regular basis to maintain the oil balance between 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 to ODU. Oil is recovered even from the switched off indoor units.



Brushless DC fan motors

The ODUs are fitted with imported BLDC motors which adjust speed and run-time based on outside ambient temperature and the inside load. This optimises the running cost of the ODU, with higher energy efficiency. It also results in quieter operation during the night when load is invariably lower.

Advanced operating features

The Blue Star DVRF ODUs come with advanced PCBs that offer several unique value-added features:

Demand control mode

Enables the system to run optimally during change-over from power to gensets and vice versa, or even during periods when only limited power is available.

Night operation mode

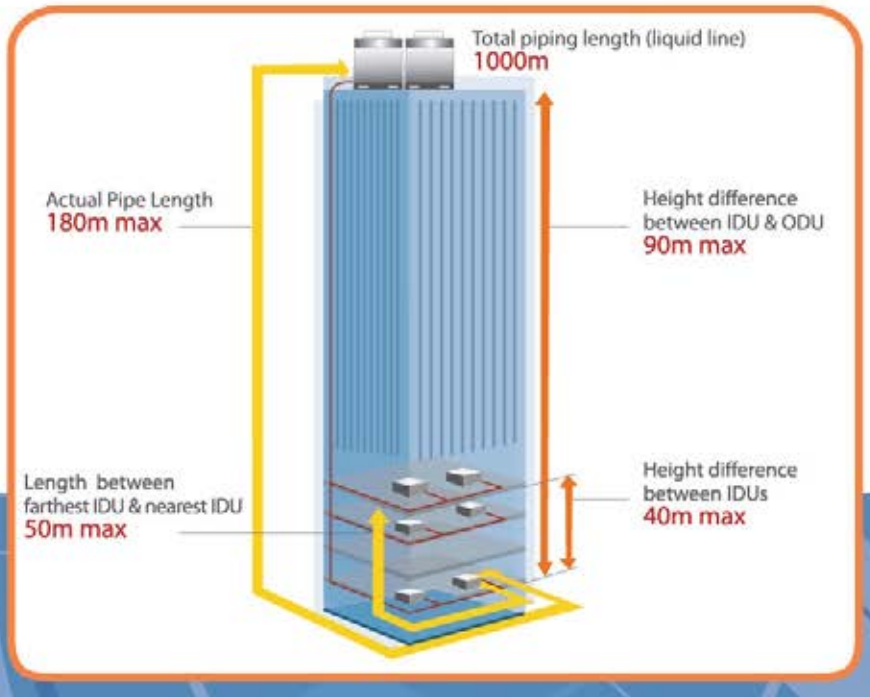
The ODU fan speed is controlled based on the night temperatures resulting in quieter operations.

Back-up mode

In the event of one ODU in a system going faulty, the back-up mode gives the system the flexibility to isolate the defective ODU and run the balance ODUs without problem for a limited period of time.

Long piping distances

Typical VRF applications require long distances of piping between ODU and IDUs. Blue Star's Digital VRF range is designed for long-distance piping, the highest in its class. All its indoor units can be connected through a single refrigerant piping that can run up to 1000m, and outdoor units can be placed at a height of up to 90m.



Discharge line temperature control

The Blue Star DVRF system is protected with the logic of discharge gas temperature (DLT) control. When the temperature of the refrigerant exceeds 85°C, a three-stage liquid injection into the compressor ensures smooth functioning of the DVRF at high discharge temperatures that may have been caused due to high ambient temperature or low internal load. Result: No tripping due to high ambients.

Anti-freeze protection

The system is programmed to cap the compressor output if the evaporating temperature reaches a preset low level, and to start unloading if the temperature falls further below. This prevents freezing and protects the system when the load is very low or if the filters are choked. This also reduces incidences of LP tripping.

Superior fan venturi design

The design of the fan venturi enables maximum air flow across the coil, resulting in high heat transfer efficiency and low air noise.

Indoor Units

High Wall Unit

- Advanced Filters
- Low Noise
- Wide angle air flow
- Air flow direction control
- Powder coated panels
- Error code display

Cassette Unit

- Quiet operation
- Built in drain pump
- Provision for fresh air
- Wide angle airflow
- LED display
- Error display

Concealed Splits

- Low height
- Quiet operation
- Provision for fresh air
- Detachable fan panel
- Powder coated panels
- 3 speed fan motor
- Touch screen controller

Ducted Type

- High air quantity
- Higher ESP
- 3 speed fan motor
- Provision of fresh air
- Powder coated panels

Floor Mounted Units

- Available in higher capacity
- Higher air quantity
- HSP — Higher ESP
- LONG LIFE — Powder coated panels
- Service friendly

Treated Fresh Air Units

Ideally suited for catering to fresh air requirements of various areas to maintain high indoor air quality within the conditioned space.
Available in 3 capacities of 500 CFM, 800 CFM and 1000 CFM.

Heat Recovery Ventilator with DX Coil

This system merges both functions of fresh air treatment and airconditioning into a single unit. HRVs also offer the advantage of significant energy savings through heat recovery by the state-of-the-art heat pipe technology.

Advanced controllers

Blue Star DVRF system offers you a wide range of sophisticated controllers to suit the varied requirements of customers. These controllers help to systematically monitor and optimise the running cost. From the simple wired controller to the most advanced remote monitoring systems, you name it we have it.

Remote controller

- Large LCD for clear display
- Blue color backlight
- Mode : Cool, Heat, Fan and Dry
- Fan speed: High, Medium, Low and Auto
- Set temperature range: 16-30°C
- 5 step swing selection and auto swing option
- Preference mode - 2 user settings
- Filter clean indication

Wired controller

- Touch screen LCD
- Large LCD for clear display
- Blue color backlight
- Mode : Cool, Heat, Fan and Dry
- Fan speed: High, Medium, Low and Auto
- Set temperature range: 16-30°C
- 5 step swing selection and auto swing option

Central controller unit

- 16 systems or 48 ODUs can be monitored and controlled
- 62 IDUs per system or 992 IDUs can be monitored and controlled
- 7" touch screen graphical LCD display
- Can also operate as a debugger tool
- USB/SD card connectivity for data logging
- Report generation using the PC
- Fault history up to 100 instances can be viewed
- Daily/weekly scheduling
- IDU grouping and controlling
- Locking of individual IDU/Groups/handset and remote parameters

PC Monitoring System

- 60 systems or 180 ODUs can be monitored and controlled
- 62 IDUs per system or 3720 IDUs can be monitored and controlled
- User-friendly navigation
- 9 groups can be displayed at a time on the screen
- Percentage of IDU used display in system status
- Dynamic multi color display for easy identification
- Continuous data logging
- Error history
- Daily/weekly and monthly scheduling
- All the features of central controller unit

Key Card Controller

- Ideally suitable for hotels, hospitals and cabins in offices
- When key card is taken out from its holder the IDU stops and saves power
- When re-inserted in the key card holder the unit starts with preset parameters
- Unit also can be set at standby mode and operated with individual settings again with wired or wireless remote

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
- All the features of PC monitoring systems

Tenant Billing Software

- Monthly IDU-wise power consumption and charges
- Report generation for each tenant
- Tenant database
- Error display
- Provision of selecting particular period data
- Data storage option in spreadsheet format
- 15 systems can be connected to an energy meter

Advantage Blue Star

Experts in airconditioning

Blue Star has close to seven decades of experience in providing world-class, airconditioning solutions. Thanks to this experience, Blue Star is an expert in airconditiong today.

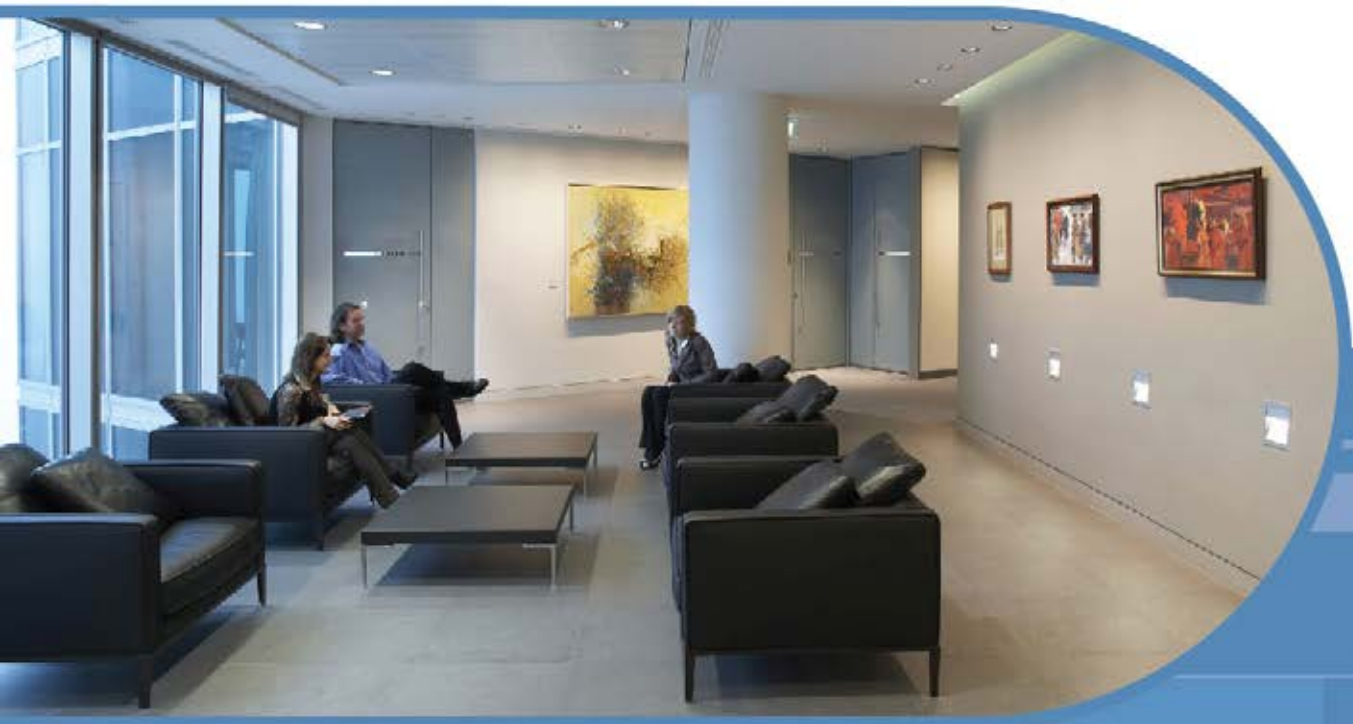
World-class manufacturing facilities

Blue Star's DVRFs are manufactured in its world-class ISO certified Dadra plant, which is well-equipped both on the shop-floor as well as in R&D and quality control facilities to ensure that products manufactured here are reliable, robust and state-of-the-art.

High quality execution

Every Blue Star project is well planned and is supervised, at every stage, to ensure a successful completion of the same.

- Accurate heat load calculations before proposal to ensure precise tonnage calculation
- Well-designed air distribution systems to avoid 'hot' and 'cold' spots
- Computer-aided duct designing to ensure efficient and minimal ducting
- Precise tools and tackles used at every installation to ensure professional finishing
- Well laid-out processes and procedures to ensure efficient time-bound installation



Superior project management skills

Airconditioning requires meticulous planning and timely execution as it involves coordination with architects, interior designers, consultants and allied agencies. Blue Star and its dealers offer you expertise that ensure a smooth and hassle-free completion of the project.

Right-fit solutions

Blue Star's portfolio of products and solutions is comprehensive and addresses all the requirements for comfort airconditioning. This gives the customer a wide variety to choose from and also provides the right solutions for their needs.

Safety at site

At any site safety is of paramount importance to Blue Star. Every aspect of design, layout and implementation is a proof of it. Labourers and contractors on-site are extremely well educated in safety practices and processes. This ensures a smooth, accident-free work environment.

After-sales support

Blue Star believes in building close ties with the customer even after a perfect execution to ensure speedy backup, support and maintenance services. After-sale service is therefore available on-call through Blue Star's offices in 17 cities across India and through Blue Star's dealers and associates who cover almost every town and city in the country. Blue Star can also be reached through the 24/7 Customer Service toll-free number- 1800 209 1177.

Technical Specifications

Hi Wall Units

Model			DHW10	DHW12	DHW16	DHW18	DHW20	DHW24
Nominal Cooling Capacity		TR	0.8	1.0	1.3	1.5	1.7	2.0
Capacity	Cooling	kW	2.9	3.5	4.7	5.3	5.9	7.0
	Heating	kW	3.2	3.8	5.1	5.7	6.3	7.6
Electrical Power Supply :			230 Volts, 1 ϕ, 50 Hz ac supply					
Air Volume		cfm	300	350	400	440	550	620
Sound Level		db A	29	30	31	32	38	40
Fan Motor	Input Power	W	49	51	54	58	68	72
	Rated Current	Amps	0.25	0.26	0.28	0.30	0.35	0.37
Refrigerant Pipe Connection Size	Gas	mm ϕ	12.7	12.7	12.7	12.7	15.8	15.8
		Inch ϕ	1/2	1/2	1/2	1/2	5/8	5/8
	Liquid	mm ϕ	6.35	6.35	6.35	6.35	6.35	6.35
		Inch ϕ	1/4	1/4	1/4	1/4	1/4	1/4
	Type		Flare connection					
Overall Dimensions	W x D x H	mm	995x200x292	995x200x292	995x200x292	995x200x292	1084x221x320	1084x221x320
Net Weight		kg	11.5	11.5	11.5	11.5	14	14
Coil	Tube Fin type							
Material of Construction	Innergroved copper tubes, Slit Aluminum fins							

Compact Cassettes

Model			DCC08	DCC10	DCC12	DCC16	DCC18
Nominal Cooling Capacity	TR		0.6	0.8	1.0	1.3	1.5
Capacity	Cooling	kW	2.1	2.9	3.5	4.7	5.3
	Heating	kW	2.3	3.2	3.8	5.1	5.7
Electrical Power Supply :			230 Volts, 1 ϕ, 50 Hz ac supply				
Air Volume		cfm	350	350	400	450	500
Sound Level		db A	36	36	38	36	38
Fan Motor	Input Power	W	47.1	47.1	47.1	80	80
	Rated Current	Amps	0.24	0.24	0.24	0.41	0.41
Refrigerant Pipe Connection Size	Gas	mm ϕ	12.7	12.7	12.7	12.7	12.7
		Inch ϕ	1/2	1/2	1/2	1/2	1/2
	Liquid	mm ϕ	6.35	6.35	6.35	6.35	6.35
		Inch ϕ	1/4	1/4	1/4	1/4	1/4
	Type		Flare connection				
Overall Dimensions W x D x H	Body	mm	570x570x260	570x570x260	570x570x260	570x570x260	570x570x260
	Panel	mm	647x647x50	647x647x50	647x647x50	647x647x50	647x647x50
Net Weight	Body	kg	16	16	16	19	19
	Panel	kg	3	3	3	3	3
Coil			Tube Fin type				
Material of Construction			Innergroved copper tubes, Slit Aluminum fins				

Large Cassettes

Model			DLC12	DLC16	DLC18	DLC20	DLC24	DLC27	DLC34	DLC38	DLC48
Nominal Cooling Capacity		TR	1	1.3	1.5	1.7	2.0	2.3	2.8	3.2	4
Capacity	Cooling	kW	3.5	4.7	5.3	6.0	7.0	8.1	10	11.1	14.1
	Heating	kW	3.8	4.7	5.7	6.5	7.6	8.7	10.6	12	15.2
Electrical Power Supply :			230 Volts, 1 ϕ, 50 Hz ac supply								
Air Volume		cfm	510	510	655	655	655	655	910	910	910
Sound Level		db A	39	39	39	39	39	39	41	41	41
Fan Motor	Input Power	W	110	110	110	110	110	110	143	143	143
	Rated Current	Amps	0.56	0.56	0.56	0.56	0.56	0.56	0.73	0.73	0.73
Refrigerant Pipe Connection Size	Gas	mm ϕ	15.9	15.9	15.9	15.9	15.9	15.9	19.1	19.1	19.1
		Inch ϕ	5/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4
	Liquid	mm ϕ	9.50	9.50	9.50	9.50	9.50	9.50	12.7	12.7	12.7
		Inch ϕ	3/8	3/8	3/8	3/8	3/8	3/8	1/2	1/2	1/2
	Type		Flare Connection								
Overall Dimensions W x D x H	Body	mm	840x840x230	840x840x230	840x840x230	840x840x230	840x840x230	840x840x230	840x840x300	840x840x300	840x840x300
	Panel	mm	950x950x55	950x950x55	950x950x55	950x950x55	950x950x55	950x950x55	950x950x55	950x950x55	950x950x55
Net Weight	Body	kg	24	24	24	24	24	24	30	30	30
	Panel	kg	6	6	6	6	6	6	6	6	6
Coil			Tube Fin type								
Material of Construction			Innergroved copper tubes, Slit Aluminum fins								

Concealed Splits

Model			DCS10	DCS12	DCS16	DCS18	DCS24
Nominal Cooling Capacity		TR	0.8	1.0	1.3	1.5	2.0
Capacity	Cooling	kW	2.9	3.5	4.7	5.3	7.0
	Heating	kW	3.2	3.8	5.1	5.7	7.6
Electrical Power Supply :			230 Volts, 1 ϕ, 50 Hz ac supply				
Air Volume		cfm	350	350	450	500	650
Sound Level		db A	44	45	44	45	46
Fan Motor	Motor output	hp	1/12	1/12	1/12	1/12	1/10
External Static Pressure		Pa	10-20	10-20	20-25	20-25	20-25
Refrigerant Pipe Connection Size	Gas	mm ϕ	12.7	12.7	12.7	12.7	15.9
		Inch ϕ	1/2	1/2	1/2	1/2	5/8
	Liquid	mm ϕ	6.35	6.35	6.35	6.35	9.50
		Inch ϕ	1/4	1/4	1/4	1/4	3/8
	Type		Flare connection				
Drain Connection	OD	Inch ϕ	3/4	3/4	3/4	3/4	3/4
Overall Dimensions W x D x H		mm	1090x520x266	1090x520x266	1090x520x266	1090x520x266	1090x520x266
Net Weight		kg	33	33	35	35	35
Coil			Tube Fin type				
Material of Construction			Innergroved copper tubes, Slit Aluminum fins				

Ceiling Suspended Ducted Units

Model			DSD18	DSD24	DSD30	DSD36	DSD48	DSD60	DSD72	DSD96
Nominal Cooling Capacity		TR	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0
Capacity	Cooling	kW	5.3	7.0	8.8	10.5	14.1	17.6	21.1	28.1
	Heating	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 Volume		cfm	600	800	1000	1200	1600	1800	2300	3100
Sound Level		db A	38	39	41	41	48	52	53	55
Fan Motor	Motor output	hp	1/10	1/10	1/4	1/4	1/4	1/2	1/2	1/2
External Static Pressure		Pa	25-50	25-50	25-70	25-70	40-80	50-100	50-120	50-120
Refrigerant Pipe Connection Size	Gas	mm ϕ	12.7	15.9	15.9	15.9	15.9	19.1	19.1	22.2
		Inch ϕ	1/2	5/8	5/8	5/8	5/8	3/4	3/4	7/8
	Liquid	mm ϕ	6.35	9.5	9.5	9.5	9.5	9.5	9.5	9.5
		Inch ϕ	1/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8
	Type		Flare Connection							Brazed
Drain Connection	OD	Inch ϕ	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Overall Dimensions W x D x H		mm	1000x600x265	1000x600x265	1000x700x318	1000x700x318	1320x800x310	1320x900x385	1325x900x385	1508x647x538
Net Weight		kg	32	33	43	43	60	70	70	75
Coil			Tube Fin type							
Material of Construction			Innergroved copper tubes, Slit Aluminum fins							

Floor Mounted Ducted

Model			DFM-60	DFM-96	DFM-120
Nominal Cooling Capacity		TR	5.0	8.0	10.0
Capacity	Cooling	kW	17.6	28.1	35.2
	Heating	kW	19.0	30.4	38.0
Electrical Power Supply :			380 - 420 Volts, 3 ϕ, 50 Hz ac supply		
Air Volume		cfm	2000	3200	4000
Fan Motor	Motor output	hp	3/4	2	2
External Static Pressure		Pa	40	60	80
Refrigerant Pipe Connection Size	Gas	mm ϕ	19.1	28.6	28.6
		Inch ϕ	3/4	1 1/8	1 1/8
	Liquid	mm ϕ	9.5	12.70	12.70
		Inch ϕ	3/8	1/2	1/2
	Type		Brazed		
Drain Connection	OD	Inch ϕ	1 1/4	1 1/4	1 1/4
Overall Dimensions W x D x H		mm	900x660x1700	1160x660x1700	1160x660x1700
Net Weight		kg	136	205	210
Coil			Tube Fin type		
Material of Construction			Innergroved copper tubes, Slit Aluminum fins		

Treated Fresh Air Units

Model			DTFA42	DTFA66	DTFA82
Nominal Cooling Capacity		TR	3.5	5.5	6.8
Capacity	Cooling	kW	12.3	19.3	24
	Heating	kW	13.3	20.9	26
Electrical Power Supply :			230 Volts, 1 ϕ, 50 Hz ac supply		
Air Volume		cfm	500	800	1000
Fan Motor	Input Power	W	245	245	366
	Rated Current	Amps	4.8	6	6.6
External Static Pressure		Pa	80	80	80
Refrigerant Pipe Connection Size	Gas	mm ϕ	15.9	19.1	22.2
		Inch ϕ	5/8"	3/4"	7/8
	Liquid	mm ϕ	9.5	9.5	9.50
		Inch ϕ	3/8	3/8	3/8
	Type		Flare Connection		
Drain Connection	OD	Inch ϕ	3/4	3/4	3/4
Overall Dimensions W x D x H		mm	823x1056x390	963x1056x390	1163x1205x390
Coil			Tube Fin type		
Material of Construction			Innergroved copper tubes, Slit Aluminum fins		

Heat Recovery Ventilator with DX Coil

Model			DHRV03	DHRV05	DHRV09
Nominal Cooling Capacity		TR	0.75	1.3	2.2
Capacity	Cooling	kW	2.6	4.7	7.7
	Heating	kW	2.8	5.1	8.4
Electrical Power Supply :			230 Volts, 1 ϕ, 50 Hz ac supply		
Air Volume		cfm	170	320	530
Fan Motor	Input Power	W	170	270	380
	Rated Current	Amps	0.8	1	1.7
External Static Pressure		Pa	80	80	80
Refrigerant Pipe Connection Size	Gas	mm ϕ	15.9	22.2	22.2
		Inch ϕ	5/8	7/8	7/8
	Liquid	mm ϕ	6.35	6.35	6.35
		Inch ϕ	1/4	1/4	1/4
	Type		Flare Connection		
Drain Connection	OD	Inch ϕ	3/4	3/4	3/4
Overall Dimensions W x D x H		mm	1025x1030x355	1175x1030x355	1420x1145x355
Coil			Tube Fin type		
Material of Construction			Innergroved copper tubes, Slit Aluminum fins		

Outdoor Units

DESCRIPTION		UNITS	DVRF-06F	DVRF-7.5F	DVRF-12F	DVRF-12T	DVRF-14T	DVRF-18T	DVRF-21T
Cooling Capacity		HP	6	7.5	12	12	14	18	21
		kW	17.5	20	35	37	42	55	63
		Btu/hr	59,800	68,300	119,500	126,300	143,300	187,700	215,000
Heating Capacity		kW	19	23	38	45	52	67	78
		Btu/hr	75,100	72,100	150,200	153,600	177,500	228,700	266,200
Noise level (dBA)			55	55	58	58	58	62	62
Refrigerant			R 410A	R 410A	R 410A	R 410A	R 410A	R 410A	R 410A
Refrigerant pre charge	Cooling	kg.	5	6	10	9.5	9.5	11.5	11.5
	Heating	kg.	5	6	10	10.5	10.5	12.5	12.5
Power Supply			380 - 420 Volts, 3Φ, 50 Hz ac Supply			380 - 420 Volts, 3Φ, 50 Hz ac supply			
Power Input	Cooling	kW	4.9	5.7	9.5	9.5	11.3	14.7	17.1
	Heating	kW	5.0	5.8	10.1	11.1	12.7	16.5	18.8
Overall Dimensions	Width	mm	1020	1020	1350	1300	1300	1500	1500
	Depth	mm	416	416	650	800	800	800	800
	Height	mm	1270	1270	1500	1950	1950	1950	1950
Compressor			Digital Scroll		Digital Scroll + Fixed Scroll				
No. of compressors			1	1	2	2	2	3	3
Refrigerant Pipe Connection Size	Gas	mmΦ	22.2	22.2	28.8	28.6	28.6	28.6	28.6
		InchΦ	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
	Liquid	mmΦ	9.52	9.52	12.70	12.7	12.7	15.9	15.9
		InchΦ	3/8	3/8	1/2	1/2	1/2	5/8	5/8
	Oil (flare)	mmΦ	12.7	12.7	12.7	6.35	6.35	6.35	6.35
		InchΦ	1/2	1/2	1/2	1/4	1/4	1/4	1/4
Net Weight	Cooling	kg.	120	120	170	367	367	430	430
	Heating	kg.	130	130	180	377	377	432	432
Condenser			Tube Fin Type						
Material of Construction			Innergroved copper tubes, Slit Aluminum fins						
Condenser Fan			Axial flow fan						
No. of Fans			2	2	2	2	2	2	2

Notes:

1. Nominal cooling capacities are based on the following conditions:
   Indoor temperature: 27°CDB, 19°CWB; Outdoor temp.: 35°CDB; Piping length: 10m, height difference: 0m.
2. Nominal heating capacities are based on the following conditions:
   Indoor temperature: 27°CDB; Outdoor temp.: 7°CDB, 6°CWB; Piping length: 10m, height difference: 0m.
3. All compressor power data is at ARI conditions. Actual power will vary depending on operating parameters

Specifications are subject to change due to continuous product development.

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