Mini VRF series

Mini VRF Full DC Inverter series units is a system dedicated for family houses, offices and other small commercial sites. Depending on the size of outdoor unit, it is possible to connect from 6 to 15 indoor units to one system.Individual control provides independent setting of required air parameters in each room.

WIDE OUTDOOR UNITS LINEUP

Outdoor units capacity range from 12.0 to 45.0 kW. Ideal for application in residences, family houses, small offices and other public utility facilities.

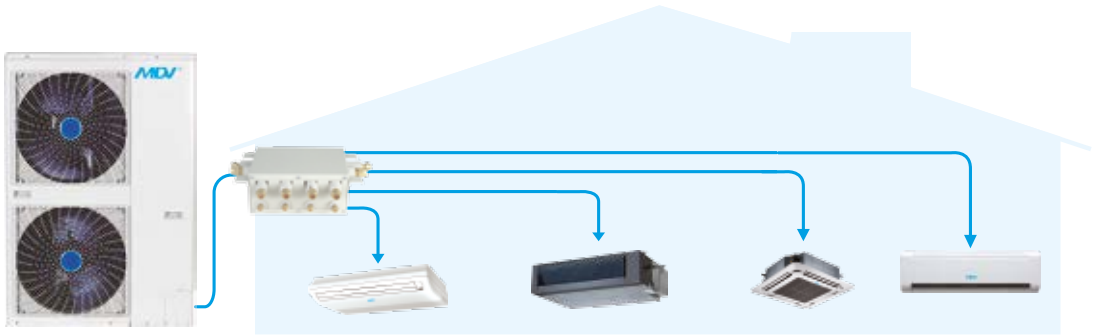
14/18 kW	22.4/26.0/40.0/45.0 kW
	

FLEXIBLE CONFIGURATION

Mini VRF system allows to connect up to 15 indoor units to one outdoor unit. Total indoor units capacity can remain in range 50-130% of outdoor unit capacity. Application of the whole lineup of the VRF indoor units ensures high flexibility in use, and independent control guarantees comfort in each room.

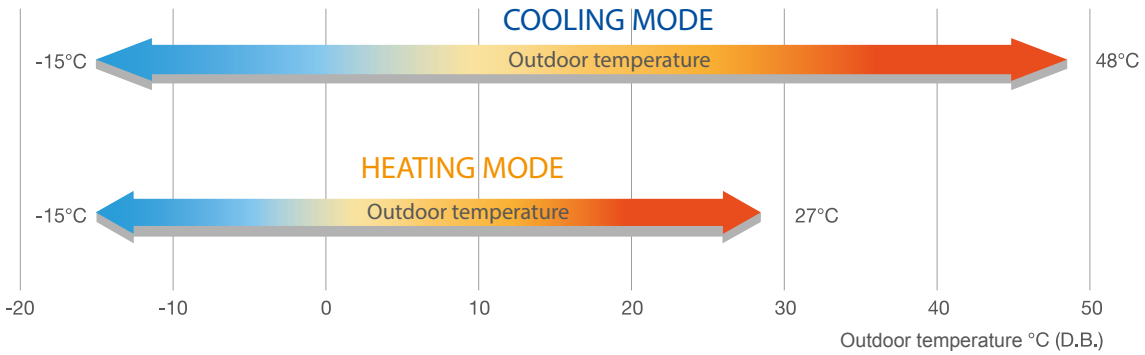
Possible connections:

- Max. 6 indoor units for a 14.0 kW outdoor unit
- Max. 9 indoor units for a 18.0 kW outdoor unit
- Max. 11 indoor units for a 22.4 kW outdoor unit
- Max. 12 indoor units for a 26.0 kW outdoor unit
- Max. 14 indoor units for a 40.0 kW outdoor unit
- Max. 15 indoor units for a 45.0 kW outdoor unit



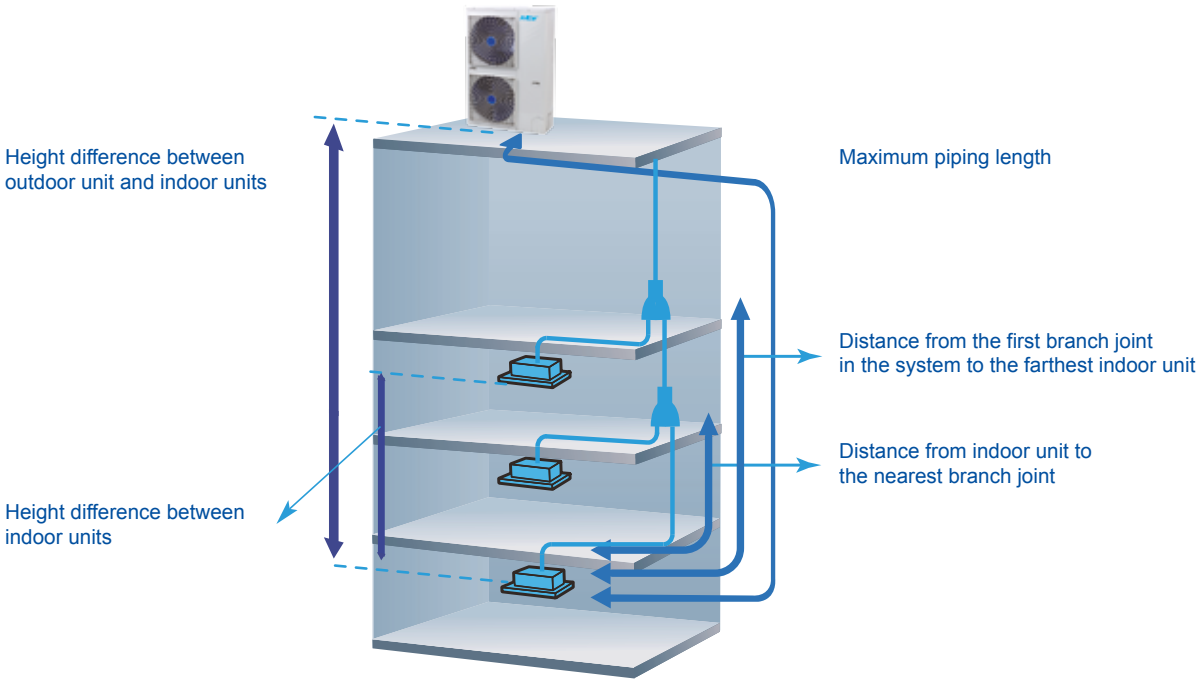
WIDE OPERATION RANGE

Mini VRF system ensures stable operation in extreme temperatures, from -15°C up to +48°C.



* The above ranges regard 14.0-26.0 kW devices.

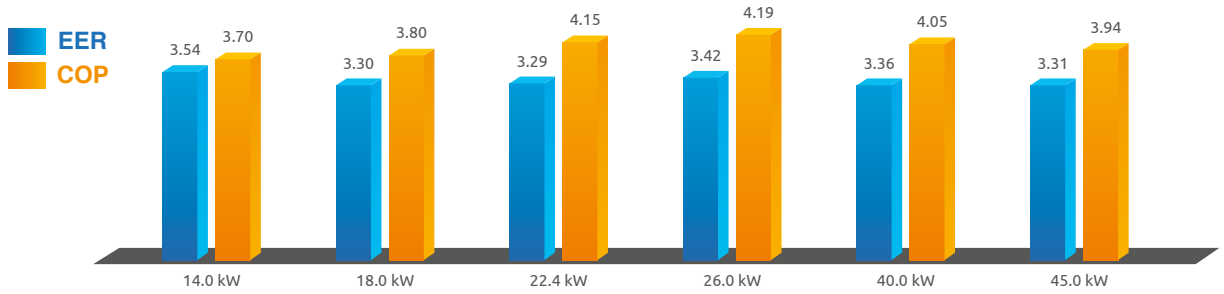
LONG REFRIGERANT PIPING – FLEXIBLE DESIGN



			Allowable value (m)		
			14/18 kW	22.4/26.0 kW	40.0/45.0 kW
Piping length	Total piping length *(actual)		100	120	250
	Maximum length (L)	Actual length	60	60	100
		Equivalent length	70	70	120
Height difference	Distance from the first branch joint in the system to the farthest indoor unit		20	20	40
	Distance from indoor unit to the nearest branch joint		15	15	15
	Between indoor and outdoor units	Outdoor unit stated above	30	30	30
		Outdoor unit stated below	20	20	20
	Between indoor units		8	8	8

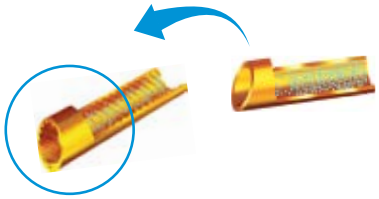
HIGH ENERGY EFFICIENCY COEFFICIENTS - EER AND COP

High-performance heat exchanger, top class inverter compressor and DC Inverter fan motor employed in the Mini VRF series air-conditioning units, enables achieving energy efficiency coefficients.

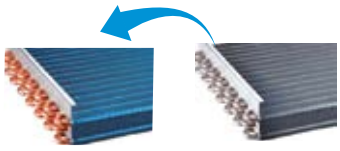


HIGH-PERFORMANCE HEAT EXCHANGER

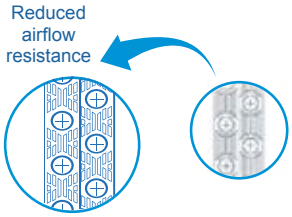
Inside the specially designed heat exchanger there are used fins with greater heat exchange surface and reduced airflow resistance. Fins outside surface is covered with hydrophilic coating. The copper pipes internal surfaces have a special groove embossed, which improves heat transfer on the refrigerant side. These solutions, together with the innovative method of exchanger pipes connection, ensure the highest heat exchange efficiency.



High performance, inner grooved pipes
of the heat exchanger with large heat exchange surface



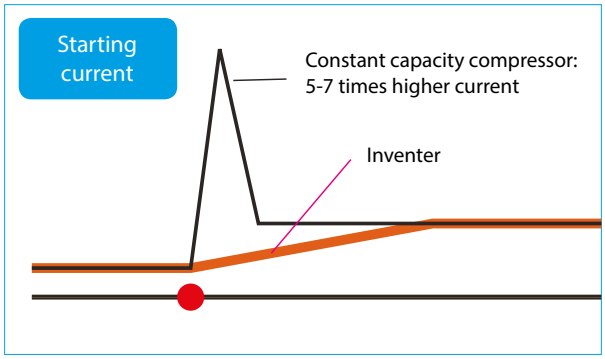
Hydrophilic fins
+ inner grooved copper pipes

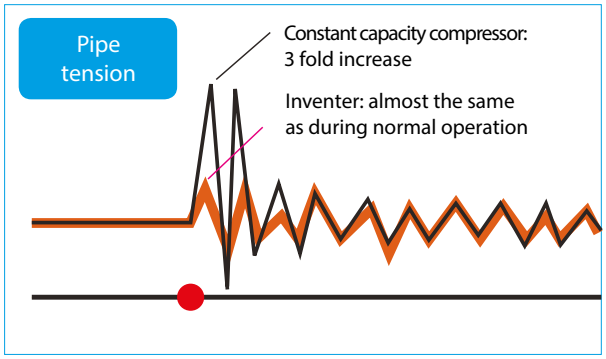


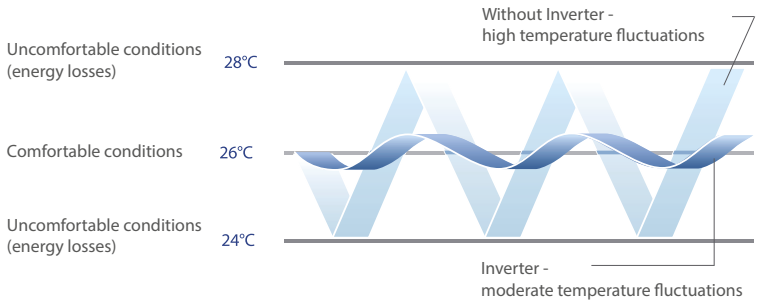
New structure Previous construction

SOFT START, PRECISE TEMPERATURE CONTROL

Inverter compressor with the soft start function limits temporary overloads and voltage drops in the building electricity system. High performance inverter compressors achieve rated capacity in a very short time, what directly influences the air-conditioned rooms cooling down or heating up time. Smaller temperature fluctuations guarantee instant feeling of comfort.

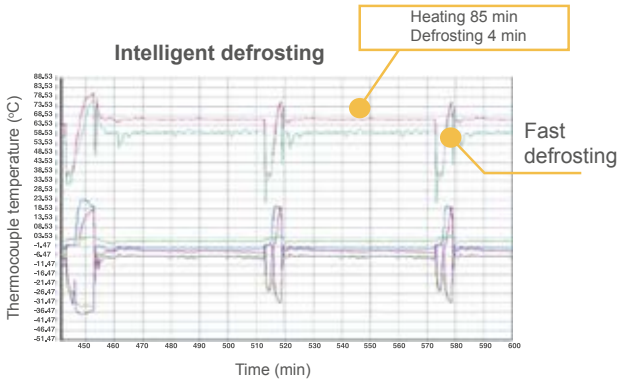


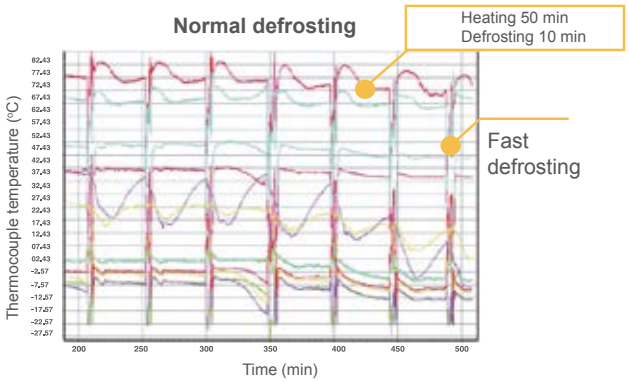




ADVANCED DEFROSTING TECHNOLOGY

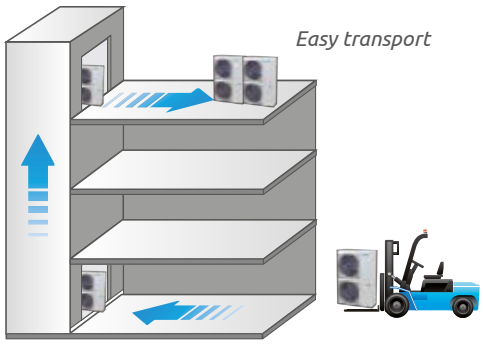
A specially designed defrosting algorithm provides the removal of ice from outdoor unit heat exchanger in optimal time. Because the defrosting time depends on actual, outside conditions, the heating intervals are reduced to the minimum necessary, what has a significant influence on keeping thermal comfort in the heated rooms.





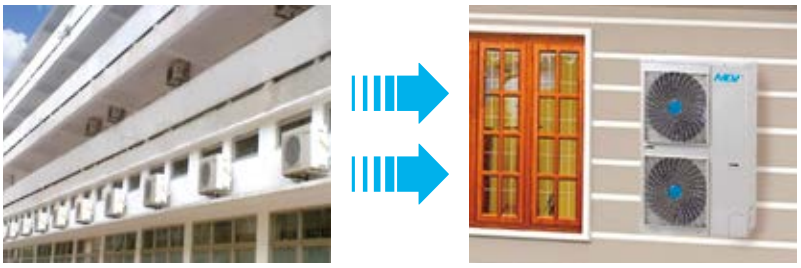
COMPACT CASING - EFFECTIVE USE OF SPACE

Compact size and limited weight facilitate transport and installation, reduce ceiling and structure loads. Now, only with help of a forklift and an elevator, the units can be placed on the roof of a high building.



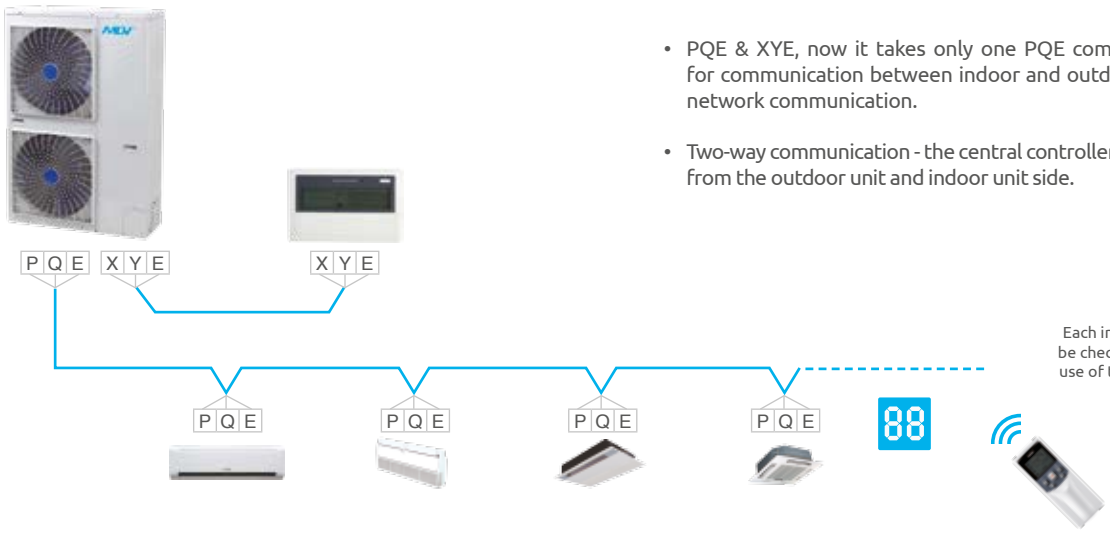
INSTALLATION SPACE SAVING - BUILDING AESTHETIC IS MAINTAINED

Outdoor unit compact casing leads to considerable savings of the installation space. Small dimensions and low weight makes it possible to install the unit even on the wall brackets. In comparison to traditional split type air-conditioners, the Mini VRF system replaces from several to dozens of smaller units, without affecting current aesthetic of the building.



SIMPLIFIED CONNECTION OF THE COMMUNICATION LINE

One, common communication cable. Depending on the requirements, the central controller CCM03 can be connected to the XYE terminal from the outdoor or indoor units side. This solution simplifies and lowers the costs of system wiring.

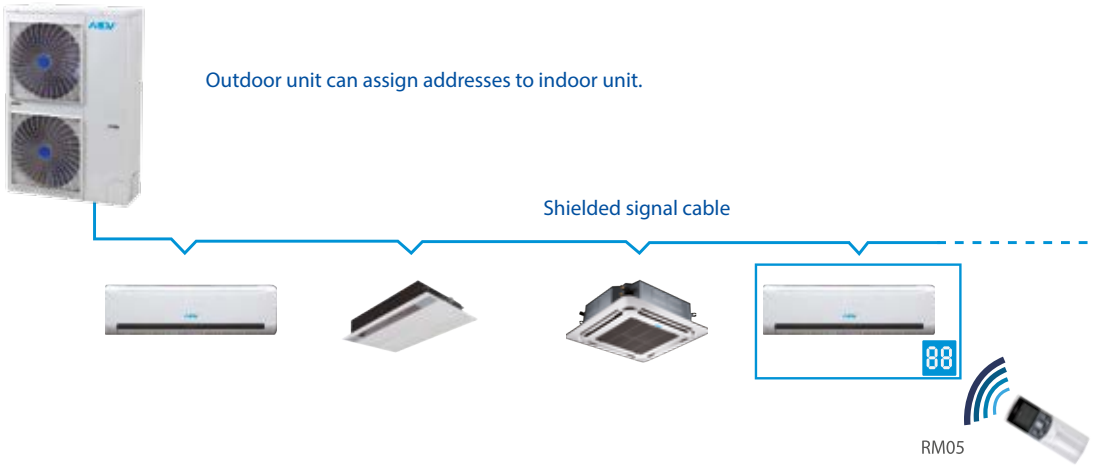


- PQE & XYE, now it takes only one PQE communication cable both for communication between indoor and outdoor units as well as for network communication.
- Two-way communication - the central controller can be connected both from the outdoor unit and indoor unit side.

Each indoor unit address can be checked and modified with use of the wireless controller.

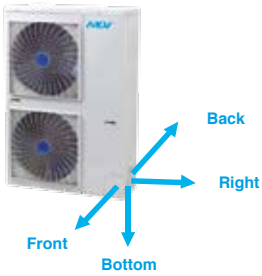
AUTOMATIC ADDRESS SETTING

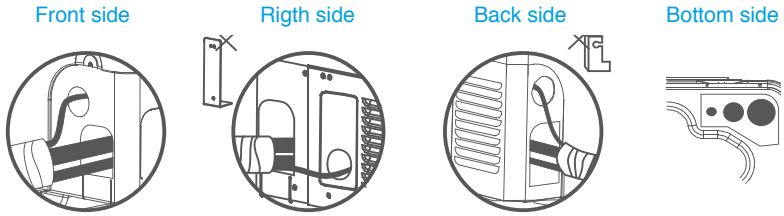
The outdoor unit can automatically assign addresses to indoor units. Indoor units addresses can be checked and in case of need modified with use of an infrared remote controller.



CONVENIENT INSTALLATION

Refrigerant system pipes and electric wires can be lead in any direction, thus considerably facilitating installation works and affects the aesthetic of the finish.





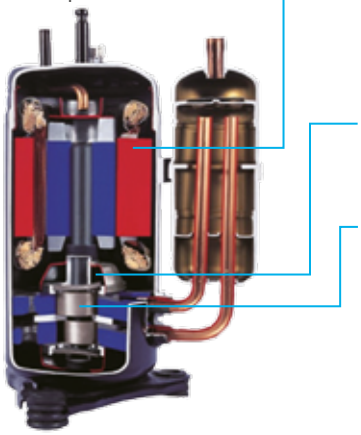
EASY MAINTENANCE

Forced cooling switch enables starting the outdoor unit in cooling mode in any conditions, which facilitate refrigerant charge in case of such need. Self-diagnosis function detects system malfunctions and displays adequate error codes, which makes it considerably easier to perform troubleshooting.

FULL DC INVERTER – HIGH EFFICIENCY COMPRESSOR

Application of new inverter technology and DC fan motor allow to achieve high capacity and energy saving, significantly reducing energy consumption during continuous operation, while ensuring stable temperature conditions in the room.

Twin rotary
DC compressor

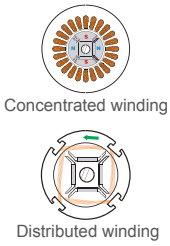


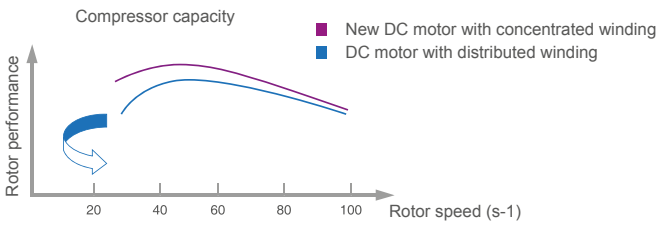
High performance DC motor
- new motor core
- high density neodymium magnet
- concentrated stator
- wide range of operational frequency

Better balance and very low vibrations
- twin eccentric discs
- two balance weights

More stable moving parts
- optimal shaft fitting
- optimisation of compressor drive technology
- extremely durable bearings
- compact construction

STRONG MAGNETS PROVIDE HIGH TORQUE AND CAPACITY



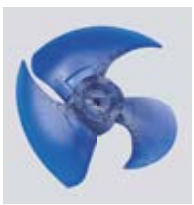


QUIET FAN WITH DC MOTOR

Special guard design and properly profiled fan blades significantly reduces noise while keeping large airflow.

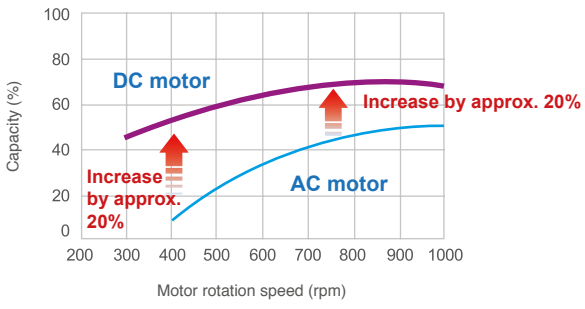
DC Panasonic fan motor
- fan speed wide adjustment range
- lower noise
- lower energy consumption

New fan shield

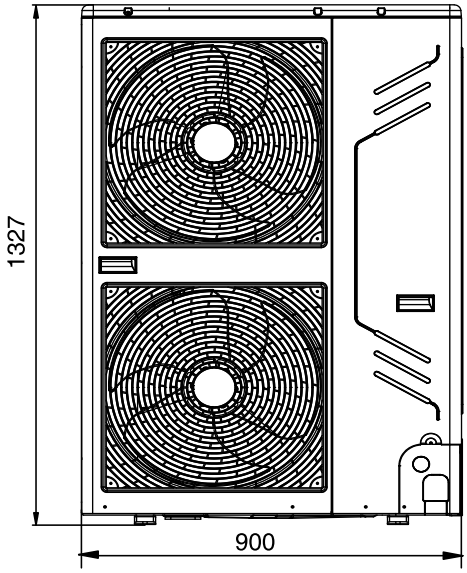


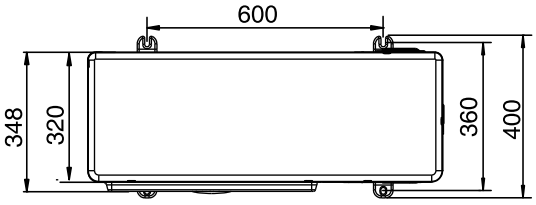
New and larger propeller

DC motor efficiency
(comparison with conventional alternating current motor)

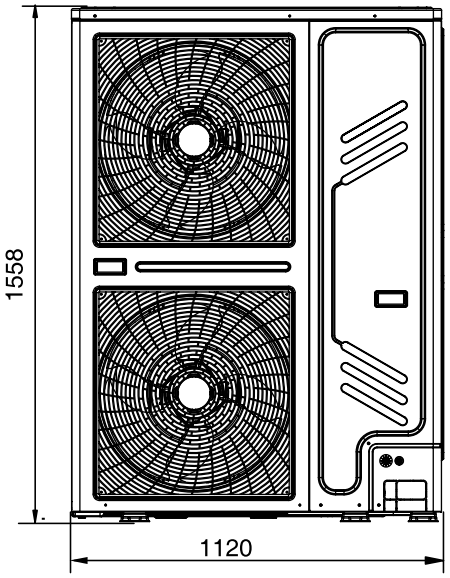


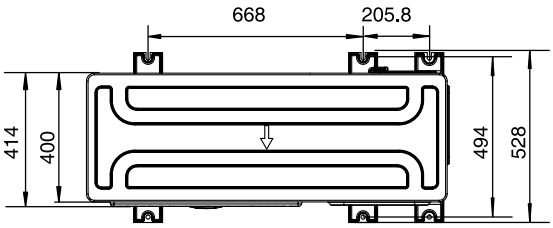
14.0, 18.0 KW



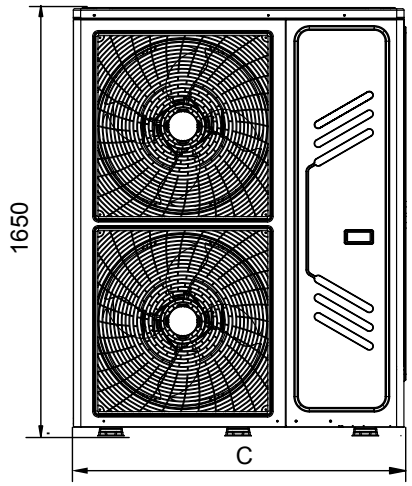


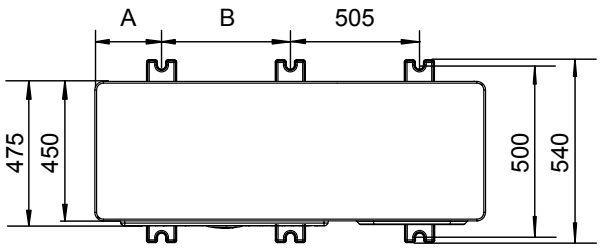
22.4, 26.0 kW





40.0, 45.0 KW





Model	A	B	C
40kW	175	505	1360
45kW	225	555	1460

14.0~18.0 kW

Model			MDV-V140W/DRN1	MDV-V180W/DRN1
Power supply		V/phase/Hz	380~415/3N/50	380~415/3N/50
Cooling	Rated capacity	kW	14.0	17.5
	Rated power input	W	3950	5300
	EER	kW/ kW	3.54	3.30
Heating	Rated capacity	kW	15.4	19.0
	Rated power input	W	4160	5000
	COP	kW/ kW	3.70	3.80
Admissible efficiency of internal units		%	45-130	45-130
Maximum connectable indoor units quantity			6	9
Compressor - DC Inverter	Type		Rotary	Rotary
	Brand		MITSUBISHI	MITSUBISHI
Fan motor	Type		DC motor	DC motor
Fan	Type		Axial fan	Axial fan
	Diameter	mm	508	508
Heat exchanger	Type		Aluminium with hydrophilic coating	
Airflow		m^3/min	100	113
Sound pressure level		dB(A)	57	59
Dimensions and weights	Net dimensions (width x height x depth)	mm	900 x 1327 x 400	900 x 1327 x 400
	Transport dimensions (width x height x depth)	mm	1030 x 1456 x 435	1030 x 1456 x 435
	Net / gross weight	kg	95/103	107/118
Refrigerant	Type		R410A	R410A
	Charge	g	3900	4500
Expansion element			EXV	
Cooling pipes	Liquid pipe/Gas pipe	mm	Ø9.52/Ø15.9	Ø9.52/Ø19.1
	Maximum length of pipes	m	100	100
	Maximum height difference	m	30	30
Electrical cables	Power supply cable	mm^2	5 conductors x 2.5	5 conductors x 2.5
	Communication cable	mm^2	3 x 0.75 screened conductors	3 x 0.75 screened conductors
Fuse recommended		A	25	25
Ambient temperature	Cooling	°C	-15 ~ 48	-15 ~ 48
	Heating	°C	-15 ~ 27	-15 ~ 27

Note:
The capacity is based on the following conditions:
Cooling: indoor temperature 27°C DB/19°C WB; outdoor temperature 35°C DB
Heating: indoor temperature 20°C DB/15°C WB; outdoor temperature 7°C DB.
Refrigerant piping length 7.5 m at the height difference of 0 m.
DB - dry bulb, WB - wet bulb
Sound pressure level measured in a reverberation chamber in a distance of 1 m from the unit front. Microphone is placed 1.3 m above the floor.
Main pipelines diameters are provided for the calculated conditions and assuming 100% oversizing of the outdoor unit. Actual diameters should be determined on the basis of the data included in the technical documentation or with use of the selection software.

22.4~26.0 kW

Model			MDV-V224W/DRN1	MDV-V260W/DRN1
Power supply		V/phase/Hz	380~415/3N/50	380~415/3N/50
Cooling	Rated capacity	kW	22.4	26.0
	Rated power input	W	6800	7600
	EER	kW/ kW	3.29	3.42
Heating	Rated capacity	kW	24.5	28.5
	Rated power input	W	5900	6800
	COP	kW/ kW	4.15	4.19
Admissible efficiency of internal units		%	50-130	50-130
Maximum connectable indoor units quantity			11	12
Compressor - DC Inverter	Type		Rotary	Rotary
	Brand		MITSUBISHI	MITSUBISHI
Fan motor	Type		DC motor	DC motor
Fan	Type		Axial fan	Axial fan
	Diameter	mm	560	560
Heat exchanger	Type		Aluminium with hydrophilic coating	
Airflow		m^3/min	175	175
Sound pressure level		dB(A)	59	60
Dimensions and weights	Net dimensions (width x height x depth)	mm	1120×1558×400	1120x1558x400
	Shipping dimensions (width x height x depth)	mm	1270×1575×480	1270x1575x480
	Net / gross weight	kg	146.5/162.5	147/163
Refrigerant	Type		R410A	R410A
	Charge	g	6200	6200
Expansion element			EXV	
Cooling pipes	Liquid pipe/Gas pipe	mm	Ø9.52/Ø19.1	Ø9.52/Ø22.2
	Maximum length of pipes	m	120	120
	Maximum height difference	m	30	30
Electrical cables	Power supply cable	mm^2	5 conductors x 6.0	5 conductors x 6.0
	Communication cable	mm^2	3 x 0.75 screened conductors	3 x 0.75 screened conductors
Fuse recommended		A	40	40
Ambient temperature	Cooling	°C	-15 ~ 48	-15 ~ 48
	Heating	°C	-15 ~ 27	-15 ~ 27

Note:
The capacity is based on the following conditions:
Cooling: indoor temperature 27°C DB/19°C WB; outdoor temperature 35°C DB
Heating: indoor temperature 20°C DB/15°C WB; outdoor temperature 7°C DB.
Refrigerant piping length 7.5 m at the height difference of 0 m.
DB - dry bulb, WB - wet bulb
Sound pressure level measured in a reverberation chamber in a distance of 1 m from the unit front. Microphone is placed 1.3 m above the floor.
Main pipelines diameters are provided for the calculated conditions and assuming 100% oversizing of the outdoor unit. Actual diameters should be determined on the basis of the data included in the technical documentation or with use of the selection software.

40.0~45.0 kW

Model			MDV-V400W/DRN1	MDV-V450W/DRN1
Power supply		V/phase/Hz	380~415/3N/50	380~415/3N/50
Cooling	Rated capacity	kW	40.0	45.0
	Rated power input	W	11900	13600
	EER	kW/ kW	3.36	3.31
Heating	Rated capacity	kW	45.0	50.0
	Rated power input	W	11100	12700
	COP	kW/ kW	4.05	3.94
Admissible efficiency of internal units		%	50-130	50-130
Maximum connectable indoor units quantity			14	15
Compressor - DC Inverter	Type		Rotary	Rotary
	Brand		MITSUBISHI	MITSUBISHI
Fan motor	Type		DC motor + AC	DC motor + AC
Fan	Type		Axial fan	Axial fan
	Diameter	mm	700	700
Heat exchanger	Type		Aluminium with hydrophilic coating	
Airflow		m^3/min	276	276
Sound pressure level		dB(A)	62	62
Dimensions and weights	Net dimensions (width x height x depth)	mm	1360x1650x540	1460x1650x540
	Transport dimensions (width x height x depth)	mm	1450x1785x560	1550x1785x560
	Net / gross weight	kg	240/260	275/290
Refrigerant	Type		R410A	R410A
	Charge	g	9000	12000
Expansion element			EXV	
Cooling pipes	Liquid pipe/Gas pipe	mm	Ø12.7/Ø22.2	Ø12.7/Ø25.4
	Maximum length of pipes	m	250	250
	Maximum height difference	m	30	30
Electrical cables	Power supply cable	mm^2	5 conductors x 10.0	5 conductors x 10.0
	Communication cable	mm^2	3 x 0.75 screened conductors	3 x 0.75 screened conductors
Fuse recommended		A	70A	90A
Ambient temperature	Cooling	°C	-5 ~ 48	-5 ~ 48
	Heating	°C	-15 ~ 25	-15 ~ 24

Note:
The capacity is based on the following conditions:
Cooling: indoor temperature 27°C DB/19°C WB; outdoor temperature 35°C DB
Heating: indoor temperature 20°C DB/15°C WB; outdoor temperature 7°C DB.
Refrigerant piping length 7.5 m at the height difference of 0 m.
DB - dry bulb, WB - wet bulb
Sound pressure level measured in a reverberation chamber in a distance of 1 m from the unit front. Microphone is placed 1.3 m above the floor.
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