

# VRF MV6i

MV6i-XMi 252T÷900T

OUTDOOR UNITS

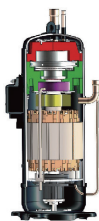


## High efficiency heat pump outdoor units

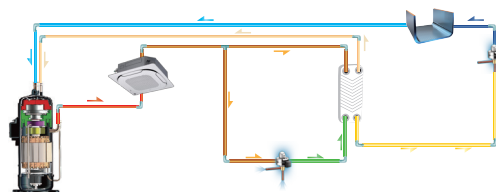
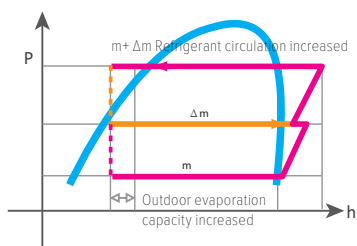
### 3 Unique Innovations

#### EVI (ENHANCED VAPOR INJECTION) COMPRESSOR

Thanks to the vapor injection DC inverter compressor, the MV6i series can run heating mode stably down to  $-25^{\circ}\text{C}$ , furthermore strongly increasing the heating capacity especially at low ambient temperature. Compressor is designed to run at 7% modulation minimum, highly improving system efficiency at part load operation.



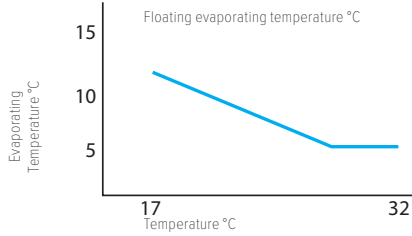
Vapor injection  
DC inverter compressor



## EMS (ENERGY MANAGEMENT SYSTEM)

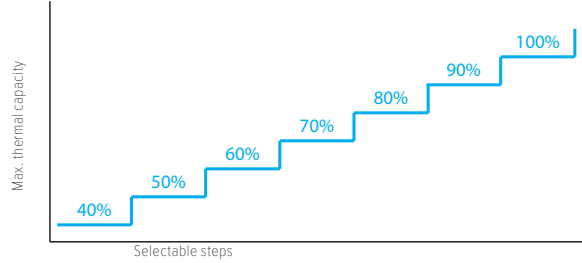
Floating refrigerant temperature for balancing comfort and efficiency

The evaporating temperature (in cooling) and condensing temperature (in heating) are automatically adjusted according to both indoor and outdoor temperature to maximize the comfort and energy efficiency.



Capacity output limitation for shortage of electricity

With the integration of EMS, for projects with limited electricity supply, MV6 can be set to output 40-100% capacity.



## MR. DOCTOR



**Force cooling /heating commissioning:** force cooling or force heating operation can check the system comprehensively and quickly.

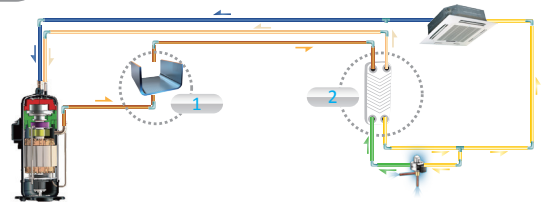


**Self-diagnosis:** all new diagnosis software to monitor all operating parameters and detailed information.

## High Efficiency

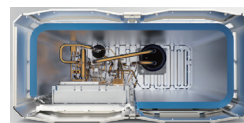
### PHE (PLATE HEAT EXCHANGER) SUBCOOLING

Plate Heat Exchanger as a secondary intercooler boosts up refrigerant subcooling and improves 10% energy efficiency.



### HIGH EFFICIENCY G-TYPE HEAT EXCHANGER

24-32HP units use high efficiency 3-rows G-type heat exchanger which heat exchange area is 1,5 times than 22HP unit. The 24-32HP units also use super big size fan which diameter is up to 750mm.

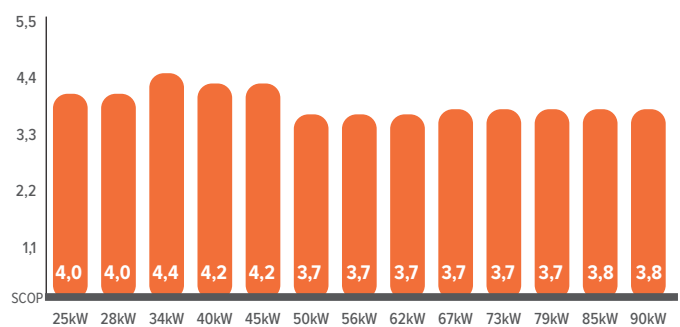
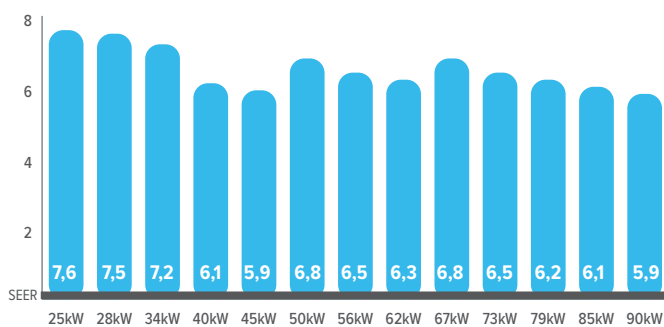


3-rows G-type heat exchanger



Super big size fan

### HIGH SEER AND SCOP VALUES



# Wide Application Range

## WIDE CAPACITY RANGE

VRF MV6i series has been designed for single module installation, with a capacity ranging from 8 HP to 32 HP.



8/10/12 HP  
(with single fan)



14/16/18 HP  
(with single fan)



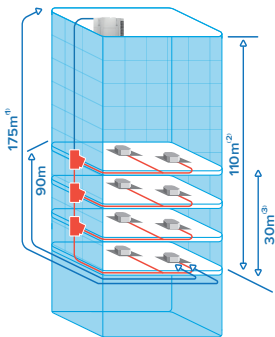
20/22 HP  
(with dual fans)



24/26/28/30/32 HP  
(with dual fans)

OUTDOOR UNITS

## LONG PIPING CAPABILITY



- (1) Longest actual piping length
- (2) Level difference between indoor units and outdoor units
- (3) Level difference between indoor units

### Piping length

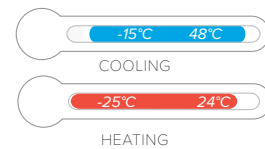
	Capability
Total piping length	1000 m
Longest length - actual (equivalent)	175 m (200 m)
Longest length after first branch	90 m*
Largest height difference between indoor and outdoor units - ODU up (down)	90 m (110 m)
Largest height difference between indoor units	30 m

\* The longest length after first branch is 40m as standard but can be extended to up to 90m under certain conditions. Please refer to technical manual for further information.

## WIDE OPERATION RANGE

VRF MV6i can operate in a wide ambient temperature range.

It can operate stably from -15°C up to 48°C in cooling mode and from -25°C to 24°C in heating mode.

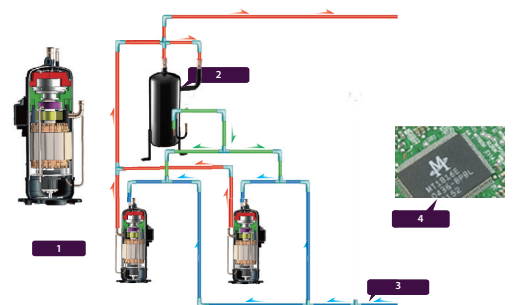


# High Reliability

## PRECISE OIL CONTROL TECHNOLOGY

Four stages of oil control technology ensure all outdoor compressor oil is always kept at a safe level, eliminating any compressor oil shortage problems.

- (1) Compressor internal oil separation.
- (2) High-efficiency centrifugal oil separator (with separation efficiency of up to 99%) ensures that oil is separated from the discharge gas and returned to the compressors in a timely fashion.
- (3) Oil balance pipes between compressors ensure even oil distribution to keep compressors running normally.
- (4) Auto oil return program monitors the running time and system status to ensure reliable oil return.



## BACKUP OPERATION



- Operation compressor
- Standby compressor
- Failed compressor

In one unit with two compressors, if one compressor is failed, the other compressor can be backup instead of the failed one to maintain up to 4 days interim capacity, allowing time for maintenance or repair while comfort remains guaranteed.

## ANTI-CORROSION PROTECTION

Outdoor units are given anti-corrosion treatment for non-extreme conditions as standard and can also be customized with heavy anti-corrosion treatment on main components for surface protection against corrosive air, acid rain and saline air (for installations in coastal regions) to extend overall useful life. The integrity of the anti-corrosion treatment is ensured by subjecting major components and parts to salt mist testing, moisture and heating testing and light aging testing.

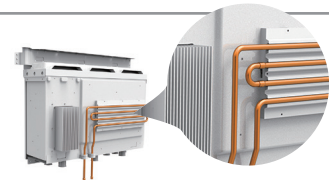
Please contact your local dealer for further information about customization price and availability.

- Fan motor
- Painted sheet metal
- Screws / Bolts / Gaskets
- Heat exchanger aluminum foil
- Heat exchanger copper pipe
- Electric Control Box Case



## REFRIGERANT COOLING PCB

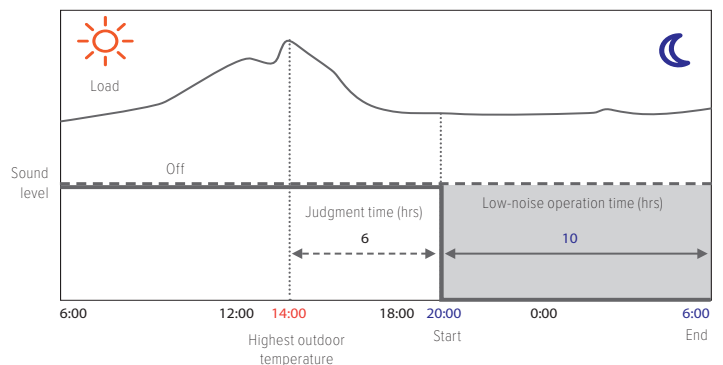
The MV6i series uses refrigerant cooling technology to cool the electric control box. It decreases the average temperature of electrical control components by about 8 degrees, guaranteeing the stable and safe running of the control system.



## Enhanced Comfort

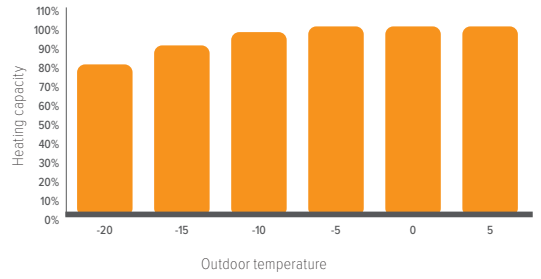
### NIGHT MODE

The night silent mode feature includes various scheduling options that can be used to reduce noise levels when low noise operation is required: only during night hours or continuously, and with different noise reductions levels limiting only maximum fan speed or compressor speed also.



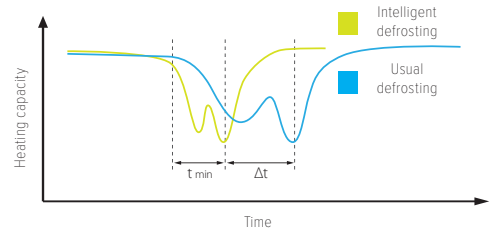
### ENHANCED HEATING CAPACITY

Thanks to the vapour injection DC Inverter compressors, heating capacity can achieve 100% output when the ambient temperature is down to -5°C and 90% output when ambient temperature is down to -15°C.



### INTELLIGENT DEFROSTING TECHNOLOGY

The intelligent defrosting program calculates the time required for defrosting according to the actual system status, eliminating heat losses from unnecessary defrosting. A specialized defrosting valve reduces time required for defrosting to as little as four minutes.



### MULTIPLE PRIORITY MODE SETTINGS AVAILABLE

Operating mode priority can be set among different modes (automatic, cooling priority, VIP indoor unit, heating only, cooling only) to satisfy every specific user's need. Setting can be performed on outdoor unit directly or by centralized controller.

### SMART INPUT/OUTPUT CONTACTS

Convenient connectors are available as standard on unit PCB, to realize some convenient operations on field with other building appliances depending on users' needs. Available contacts are heating/cooling switch as input and alarm as output.

## Easy Installation and Service

### AUTO ADDRESSING

Outdoor unit can distribute addresses to indoor units automatically. Remote and wired controllers can be used to query or modify each indoor unit's address.





VRF MV6i

Size		MV6i-XMi	252T	280T	335T	400T	450T	500T	560T	615T
Capacity	HP		8	10	12	14	16	18	20	22
Cooling <sup>(1)</sup>	Capacity	kW	25,2	28,0	33,5	40,0	45,0	50,0	56,0	61,5
	Power input	kW	6,19	7,14	8,9	11,0	12,9	14,7	16,0	20,2
	EER	-	4,07	3,92	3,75	3,65	3,50	3,40	3,50	3,05
	SEER	-	7,60	7,45	7,20	6,10	5,90	6,80	6,45	6,25
	η <sub>s,c</sub>	%	301	295	285	241	233	269	255	247
Operating temperature range (DB)		°C	-15 ~ 48	-15 ~ 48	-15 ~ 48	-15 ~ 48	-15 ~ 48	-15 ~ 48	-15 ~ 48	-15 ~ 48
Heating <sup>(2)</sup>	Capacity (Nominal/Max)	kW	25,2/27,0	28,0/31,5	33,5/37,5	40,0/45,0	45,0/50,0	50,0/56,0	56,0/63,0	61,5/69,0
	Power input	kW	5,1	5,77	7,6	9,3	10,7	12,2	13,8	17,6
	COP	-	4,94	4,85	4,40	4,30	4,20	4,10	4,05	3,50
	SCOP	-	4,00	4,00	4,41	4,20	4,20	3,65	3,65	3,65
	η <sub>s,h</sub>	%	157	157	173,4	165	165	143	143	143
Operating temperature range (DB)		°C	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24
Connectable indoor units	Total Capacity Index <sup>(3)</sup>	-	50 ~ 130 %	50 ~ 130 %	50 ~ 130 %	50 ~ 130 %	50 ~ 130 %	50 ~ 130 %	50 ~ 130 %	50 ~ 130 %
	Max quantity	-	13	16	20	23	26	29	33	36
Compressor	Type	-	DC Inverter	DC Inverter	DC Inverter	DC Inverter	DC Inverter	DC Inverter	DC Inverter	DC Inverter
	Quantity	-	1	1	1	1	1	1	2	2
Refrigerant	Factory charge	kg	11	11	11	13	13	13	17	17
	CO <sub>2</sub> equivalence	tonne	22,97	22,97	22,97	27,14	27,14	27,14	35,5	35,5
Pipe connections	Liquid pipe	mm	Ø 12,7	Ø 12,7	Ø 15,9	Ø 15,9	Ø 15,9	Ø 19,1	Ø 19,1	Ø 19,1
	Gas pipe	mm	Ø 25,4	Ø 25,4	Ø 28,6	Ø 31,8	Ø 31,8	Ø 31,8	Ø 31,8	Ø 31,8
Fan motors	Quantity	-	1	1	1	1	1	1	2	2
	Static pressure	Pa	0 ~ 40	0 ~ 40	0 ~ 40	0 ~ 40	0 ~ 40	0 ~ 40	0 ~ 40	0 ~ 40
Dimensions (Width x Height x Depth)		mm	990x1635x790	990x1635x790	990x1635x790	1340x1635x850	1340x1635x850	1340x1635x850	1340x1635x825	1340x1635x825
Weight		kg	227	227	227	277	277	295	344	344
Air flow rate		m <sup>3</sup> /h	11 000	11 000	11 000	13 000	13 000	13 000	17 000	17 000
Sound pressure level <sup>(4)</sup>		dB(A)	58	58	60	62	65	65	66	66
Sound power level <sup>(4)</sup>		dB(A)	78	78	81	85	88	88	88	88
Power supply		V/Ph/Hz	380-415/3~/50+N							



VRF MV6i

Size		MV6i-XMi	670T	730T	785T	850T	900T
Capacity	HP		24	26	28	30	32
Cooling <sup>(1)</sup>	Capacity	kW	67,0	73,0	78,5	85,0	90,0
	Power input	kW	21,6	21,6	24,9	28,3	32,1
	EER	-	3,10	3,40	3,15	3,00	2,80
	SEER	-	6,84	6,49	6,20	6,05	5,87
	η <sub>s,c</sub>	%	270,6	256,6	245	239	231,8
Operating temperature range (DB)		°C	-15 ~ 48	-15 ~ 48	-15 ~ 48	-15 ~ 48	-15 ~ 48
Heating <sup>(2)</sup>	Capacity (Nominal/Max)	kW	67,0/75,0	73,0/81,5	78,5/87,5	85,0/95,0	90,0/100,0
	Power input	kW	17,27	18,58	22,49	24,3	26,5
	COP	-	3,88	3,93	3,49	3,50	3,40
	SCOP	-	3,70	3,70	3,70	3,75	3,75
	η <sub>s,h</sub>	%	145	145	145	147	147
Operating temperature range (DB)		°C	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24
Connectable indoor units	Total Capacity Index <sup>(3)</sup>	-	50 ~ 130 %	50 ~ 130 %	50 ~ 130 %	50 ~ 130 %	50 ~ 130 %
	Max quantity	-	39	43	46	50	53
Compressor	Type	-	DC Inverter	DC Inverter	DC Inverter	DC Inverter	DC Inverter
	Quantity	-	2	2	2	2	2
Refrigerant	Factory charge	kg	22	22	22	25	25
	CO <sub>2</sub> equivalence	tonne	45,94	45,94	45,94	52,2	52,2
Pipe connections	Liquid pipe	mm	Ø 19,1	Ø 22,2	Ø 22,2	Ø 22,2	Ø 22,2
	Gas pipe	mm	Ø 31,8	Ø 31,8	Ø 31,8	Ø 38,1	Ø 38,1
Fan motors	Quantity	-	2	2	2	2	2
	Static pressure	Pa	0 ~ 40	0 ~ 40	0 ~ 40	0 ~ 40	0 ~ 40
Dimensions (Width x Height x Depth)		mm	1730x1830x850	1730x1830x850	1730x1830x850	1730x1830x850	1730x1830x850
Weight		kg	407	429	429	475	475
Air flow rate		m <sup>3</sup> /h	25 000	25 000	25 000	24 000	24 000
Sound pressure level <sup>(4)</sup>		dB(A)	67	68	68	68	68
Sound power level <sup>(4)</sup>		dB(A)	89	90	90	90	90
Power supply		V/Ph/Hz	380-415/3~/50+N				

The Product is compliant with the Erp (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign Lot21.

EER and COP according EN 14511 regulation, SEER and SCOP according EN14825 regulation

(1) Indoor temperature 27°C DB/19°C WB; Outdoor temperature 35°C DB/24°C WB. Interconnecting piping length is 7,5 m, level difference is zero.

(2) Indoor temperature 20°C DB/15°C WB; Outdoor temperature 7°C DB/6°C WB. Interconnecting piping length is 7,5 m, level difference is zero.

(3) Total Capacity Index = indoor unit total capacity/outdoor unit capacity

(4) Sound values are measured in a semi-anechoic room, at a position 1 m in front of the unit and 1,3 m above the floor.

# MINI VRF

MSAN-XMI 80M÷180T - 400T÷450T

MSAN6-XMI 200T÷335T

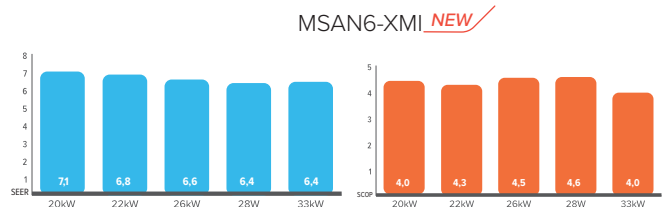
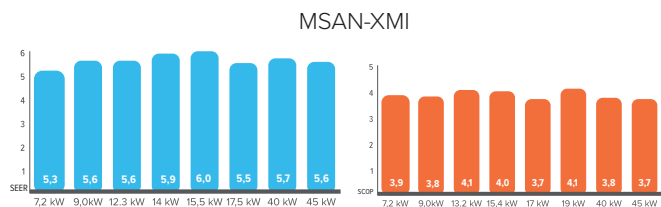
OUTDOOR UNITS



## Compact design heat pump outdoor units

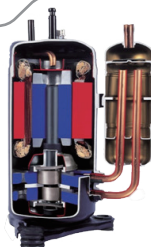
### High efficiency

#### HIGH SEER AND SCOP VALUES



#### ALL DC INVERTER COMPRESSORS

The DC inverter compressor adopts innovative design and numerous high performance key parts which can reduce power consumption by 25%.



##### Compressor (Twin Rotary) structure

- Highly Efficient DC Motor:
  - Creative motor core design
  - High density neodymium magnet
  - Concentrated type stator
  - Wider operating frequency range

##### 2. Better balance and Extremely Low Vibration:

- Twin eccentric cams
- 2 balance weights

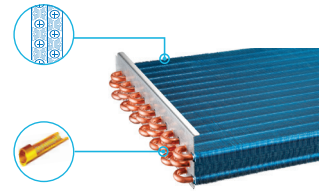
##### 3. Highly Stable Moving Parts:

- Optimal material matching rollers and vanes
- Optimize compressor drive technology
- Highly robust bearings
- Compact structure



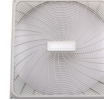
## HIGH EFFICIENCY HEAT EXCHANGER

Newly designed window type fins enlarge the heat exchange area and decrease air resistance, enhance heat exchange performance and save more energy. Hydrophilic fins and internally threaded copper pipes optimize heat exchange efficiency.



## NEW GRILL DESIGN

Optimally designed fan shape and newly designed grill ensure both safety and air volume.



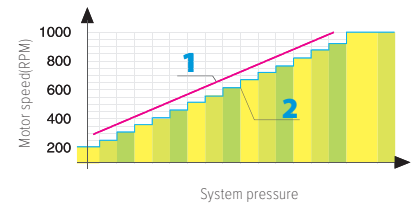
Newly designed grill



Powerful Large Propeller

## ALL DC FAN MOTORS

Fan speed is controlled according to the system pressure and system load, minimizing energy consumption.



1. DC inverter stepless adjustment
2. AC inverter multistep adjustment

## Wide application range

### WIDE CAPACITY RANGE

The outdoor units' capacity range from 7,2 kW to 45 kW which is ideal for small offices, villas, apartment and shops, making it perfect for commercial and residential application.



### WIDE RANGE OF INDOOR UNITS

Clivet provides 14 types and more than 100 models of VRF indoor units to meet varied customer requirements in a wide range of locations including shopping malls, hospitals, office buildings, hotels and airports.

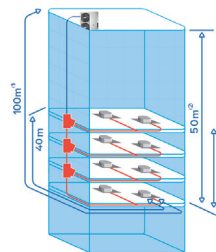


### WIDE OPERATION RANGE

Mini VRF Series operates stably under extreme conditions, ranging from -20°C to +48°C (MSAN6 series)

### LONG PIPING LENGTH

The Mini VRF provides a total piping length possibility of 250 m, a maximum height difference between outdoor and indoor units of 50 m. The height difference between indoor units can be up to 15 m. These generous allowances facilitate an extensive array of system designs.



- (1) Longest actual piping length
- (2) Level difference between indoor units and outdoor units
- (3) Level difference between indoor units

### Permitted value

			80M	105M	120M/T	140M/T	160M/T	180T	200T	224T	260T	280T	335T	400T	450T
Piping length	Total piping length	Actual length	m	100	100	100	100	100	150	150	150	150	150	250	250
		Actual length	m	45	45	60	60	60	100	100	100	100	100	100	100
	Longest piping	Equivalent length	m	50	50	70	70	70	110	110	110	110	110	120	120
Height difference	Longest length after first branch		m	20	20	20	20	20	40	40	40	40	40	40	40
	Height difference between indoor and outdoor units	Outdoor unit up	m	30	30	30	30	30	50	50	50	50	50	30	30
		Outdoor unit down	m	20	20	20	20	20	40	40	40	40	40	20	20
	Height difference between indoor units		m	8	8	8	8	8	15	15	15	15	15	8	8

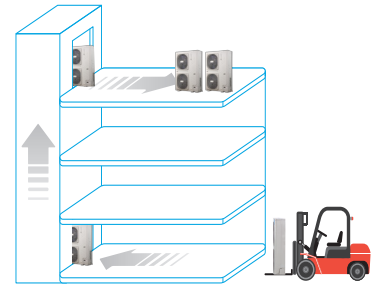


# Easy installation and service

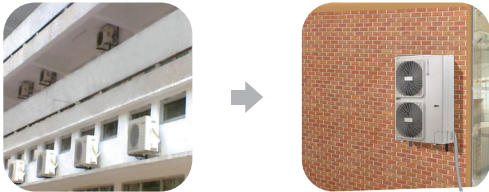
## EASY INSTALLATION

Easy installation: No special area is required for outdoor units.  
Easy transportation: All outdoor units can be transported by elevator, which greatly simplifies installation and reduces time and labor.

The Mini VRF system's indoor and outdoor units are almost as easy to install as residential airconditioning systems, making them ideal for small offices and shops.



## SPACE SAVING DESIGN



The Mini VRF units are slimmer and more compact, resulting in significant savings in installation space.

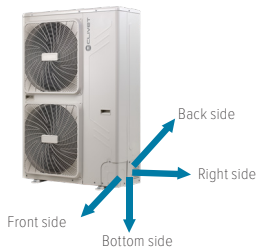
This makes the system particularly suitable for applications where it is necessary to limit the visual impact on the architecture, such as on historic or prestigious buildings.

## AUTO ADDRESSING

Outdoor unit can distribute addresses for indoor units automatically.  
Wireless and wired controllers can query and modify each indoor unit's address.



## FOUR-WAY PIPING CONNECTION



A four-direction space is available for connecting pipes and wiring in various installation sites.

## REFRIGERANT COOLING PCB

**NEW**

The MSAN6 series uses refrigerant cooling technology to cool the electric control box. It decreases the average temperature of electrical control components by about 8 degrees, guaranteeing the stable and safe running of the control system even at very high outdoor temperatures.





Mini VRF

Size	MSAN-XMI	80M	105M	120M/T	140M/T	160M/T	180T
Capacity	HP	3	4	4,5	5	6	6,5
	Capacity	kW	7,2	9,0	12,3	14,0	17,5
	Power input	kW	1,85	2,54	3,25	3,85	5,47
Cooling <sup>(1)</sup>	EER	-	3,90	3,55	3,78	3,64	3,20
	SEER	-	5,30	5,60	5,60	5,90	6,00
	η <sub>s,c</sub>	%	-	-	221	233	237
	Operating temperature range (DB)	°C	-15 ~ 43	-15 ~ 43	-15 ~ 43	-15 ~ 43	-15 ~ 43
Heating <sup>(2)</sup>	Capacity	kW	7,2	9,0	13,2	15,4	17,0
	Power input	kW	1,79	2,43	3,47	4,05	4,58
	COP	-	4,02	3,71	3,80	3,80	3,71
	SCOP	-	3,90	3,80	4,05	4,00	3,70
	η <sub>s,h</sub>	%	-	-	159	157	145
	Operating temperature range (DB)	°C	-15 ~ 27	-15 ~ 27	-15 ~ 27	-15 ~ 27	-15 ~ 27
Connectable indoor units	Total Capacity Index <sup>(3)</sup>	-	45~130 %	45~130 %	45~130 %	45~130 %	45~130 %
	Max quantity	-	4	5	6	6	7
Compressor	Type <sup>(4)</sup>	-	ROT	ROT	ROT	ROT	ROT
	Quantity	-	1	1	1	1	1
Refrigerant	Factory charge	kg	2,95	2,95	3,3	3,9	3,9
	CO <sub>2</sub> equivalence	tonne	6,16	6,16	6,89	8,14	8,14
Pipe connections	Liquid pipe	mm	Ø 9,52	Ø 9,52	Ø 9,52	Ø 9,52	Ø 9,52
	Gas pipe	mm	Ø 15,9	Ø 15,9	Ø 15,9	Ø 15,9	Ø 19,1
Dimensions (Width x Height x Depth)	mm	1075x966x396	1075x966x396	900x1327x400	900x1327x400	900x1327x400	900x1327x400
Weight	kg	75,5	75,5	95	95	M:100 / T:102	107
Fan number	-	1	1	2	2	2	2
Air flow rate	m <sup>3</sup> /h	5 500	5 500	6 000	6 000	6 000	6 800
Sound pressure level <sup>(5)</sup>	dB(A)	56	57	57	57	57	59
Sound power level <sup>(5)</sup>	dB(A)	67	68	72	73	73	74
Power supply	V/Ph/Hz	230/1~/50		M:230/1~/50 - T:400/3~/50+N			400/3~/50+N



Mini VRF

Size	MSAN6-XMI MSAN-XMI	200T	224T	260T	280T	335T	400T	450T
Capacity	HP	7	8	9	10	12	14	16
	Capacity	kW	20	22,4	26	28,5	33,5	40
	Power input	kW	5,28	6,77	10,04	12,23	15,30	15,09
Cooling <sup>(1)</sup>	EER	-	3,79	3,31	2,59	2,33	2,19	2,65
	SEER	-	7,11	6,83	6,55	6,35	6,42	5,70
	η <sub>s,c</sub>	%	281,4	270,2	259	251	253,8	225
	Operating temperature range (DB)	°C	-5 ~ 48	-5 ~ 48	-5 ~ 48	-5 ~ 48	-5 ~ 48	-5 ~ 48
Heating <sup>(2)</sup>	Capacity	kW	20	22,4	26	28,5	33,5	40
	Power input	kW	4,43	5,42	6,86	7,68	10,15	10,00
	COP	-	4,51	4,13	3,79	3,71	3,30	4,00
	SCOP	-	3,95	4,26	4,53	4,56	3,96	3,75
	η <sub>s,h</sub>	%	155	167,4	178,2	179,4	155,4	147
	Operating temperature range (DB)	°C	-20 ~ 24	-20 ~ 24	-20 ~ 24	-20 ~ 24	-20 ~ 24	-15 ~ 24
Connectable indoor units	Total Capacity Index <sup>(3)</sup>	-	50 ~ 130%	50 ~ 130%	50 ~ 130%	50 ~ 130%	50 ~ 130%	50 ~ 130%
	Max quantity	-	11	13	15	16	20	14
Compressor	Type <sup>(4)</sup>	-	ROT	ROT	ROT	ROT	ROT	ROT
	Quantity	-	1	1	1	1	1	2
Refrigerant	Factory charge	kg	6,5	6,5	6,5	6,5	8	9
	CO <sub>2</sub> equivalence	tonne	13,57	13,57	13,57	13,57	16,70	18,79
Pipe connections	Liquid pipe	mm	Ø 9.52	Ø 9.52	Ø 9.52	Ø 9.52	Ø 12.7	Ø 12.7
	Gas pipe	mm	Ø 19.1	Ø 19.1	Ø 22.2	Ø 22.2	Ø 25.4	Ø 22.2
Dimensions (Width x Height x Depth)	mm	1120x1558x528	1120x1558x528	1120x1558x528	1120x1558x528	1120x1558x528	1360x1650x540	1460x1650x540
Weight	kg	143	143	144	144	157	250	280
Fan number	-	2	2	2	2	2	2	2
Air flow rate	m <sup>3</sup> /h	9 000	9 000	10 000	11 000	11 300	16 575	16 575
Sound pressure level <sup>(5)</sup>	dB(A)	58	58	59	60	61	62	62
Sound power level <sup>(5)</sup>	dB(A)	78	78	78	78	81	82	83
Power supply	V/Ph/Hz	400/3~/50+N						

The Product is compliant with the Erp (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign Lot21.

EER and COP according EN 14511 regulation, SEER and SCOP according EN14825 regulation

(1) Indoor temperature 27°C DB/19°C WB; Outdoor temperature 35°C DB/24°C WB. Interconnecting piping length is 7,5 m, level difference is zero.

(2) Indoor temperature 20°C DB/15°C WB; Outdoor temperature 7°C DB/6°C WB. Interconnecting piping length is 7,5 m, level difference is zero.

(3) Total Capacity Index = indoor unit total capacity/outdoor unit capacity

(4) ROT = rotary compressor

(5) Sound values are measured in a semi-anechoic room, at a position 1m in front of the unit and 1m above the floor.