

# MRVS



121 Features & Benefits

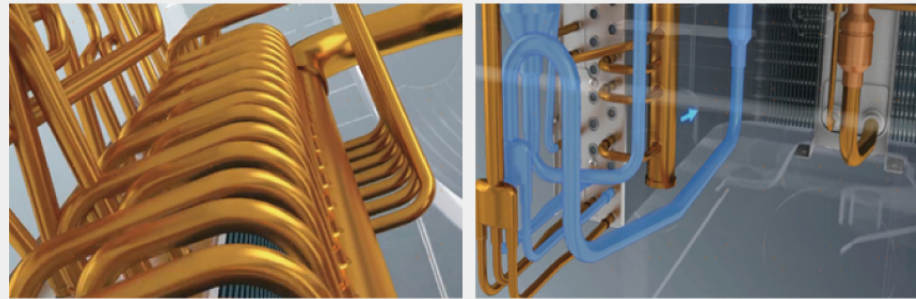
127 MRV S<sup>1</sup> Outdoor

131 MRV S<sup>1</sup> Outdoor

# MRV S<sup>II</sup> (4/5/6HP)

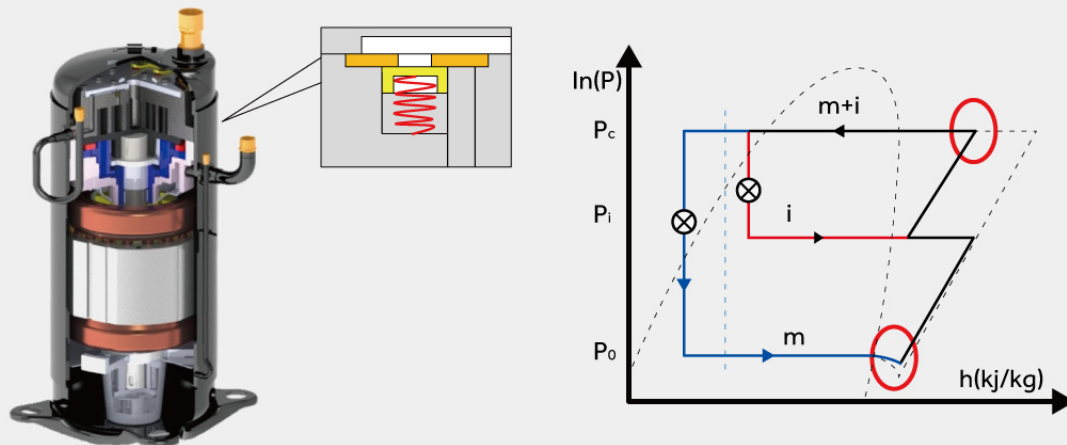
## Leadership in technology

- Two-stage supercooling cycle technology, Increased unit efficiency by 9%.
- Maximizing 30°C undercooling, Increase unit refrigerating capacity by 46%.
- Add the supercooled coil at the bottom of the outdoor exchanger, Increase the efficiency of the supercooler in system, achieve deep supercooling.



### Increasing enthalpy by replenish gas, realize the unit powerful heating capacity:

Taking the heating cycle as an example, when environment temperature is low, heat exchanged capability of outdoor unit is depressed. The amount of air returned by compressor is reduced, Increase the amount of refrigerant in the heating cycle of the indoor unit heat exchanger, Thereby achieving improved heating capacity.

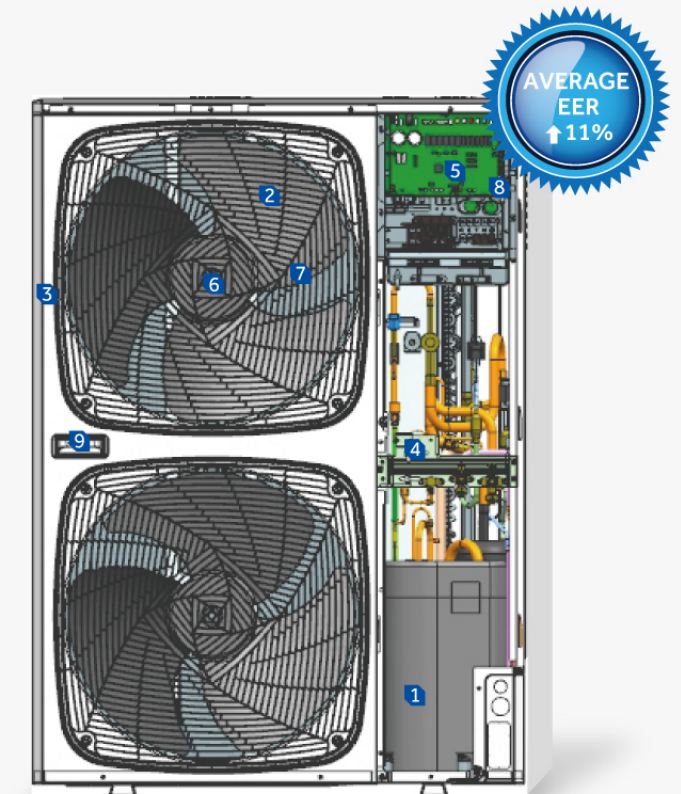


## High energy efficiency

- 1 DC inverter compressor**  
Haier takes DC INV. compressor, 5% power input lower. (14kw)
- 2 DC fan motor and 550mm big fan**  
38% power input lower and 8% airflow higher
- 3 Larger heat exchanger**  
Heat exchange area rise 10 %
- 4 Charge Valve**  
Built-in charge valve enables safer and easier maintenance
- 5 Low standby power**  
New PCB programme, reduce 20% standby power consumption

## Comfort

- 6 New aerodynamics fan**  
550mm super big diameter aerospace helix fan. lowering sound level 3dB(A)
- 7 Enlarged air inlet path and spiral air outlet path**  
Air flow direction follows the grill direction. lowering sound level 2-4 dB(A)
- 8 Automatic sound-lowering programme**  
Night mode set by PCB, 8dB(A) lower



## Convenience

- 9 Double side "4" handles**  
Easy to carry
- 10 "888" test panel**  
All running data & error code can be checked from "888" screen, which is easy for installers
- 11 "Four-way" pipe connection**  
4-way (front, back, left & right) pipe connection, easy to design and install



# MRV S<sup>II</sup> (8/10/12HP)

## Outdoor Structure (8/10/12HP Side Discharge)

Bigger Outdoor Capacity, More Flexible Application

- 1 Energy Efficiency**
- 2 Comfort Environment**
- 3 Side Discharge and Compact Design**
- 4 High Reliability**

### High efficiency DC fan motor

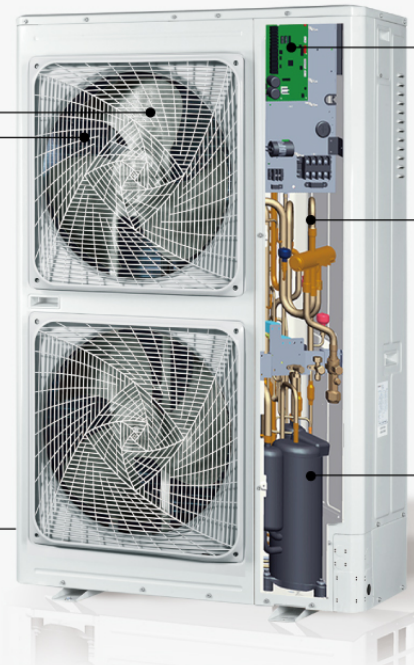
- DC fan motor with stepless inverter control, efficiency increase 45% comparing with AC motor and power input largely decrease

### Large diameter fan

- 570mm big diameter axial flow fan
- Zigzag design, reduce airflow disturbance, air volume is bigger, the noise is lower

### High efficiency condenser

- New type high efficiency Ø8 inner grooved tube
- New hydrophilic corrugated fissure fin, high efficiency



### Vector inverter control

- 180 degrees sine wave vector control, 64-bit operation
- High precision control, to achieve high efficiency and lower noise

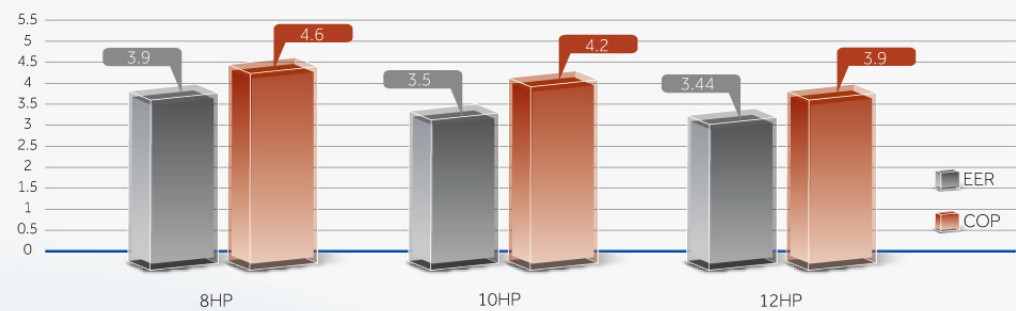
### Twin rotary DC Inverter compressor

- High chamber DC INVERTER twin rotary compressor
- Small vibration, low noise, high energy efficiency

### Double pressure sensor

- Equipped with high and low voltage Pressure double sensors
- Accurate Pressure control, the system run more smoothly, more energy efficiency

## High EER and COP



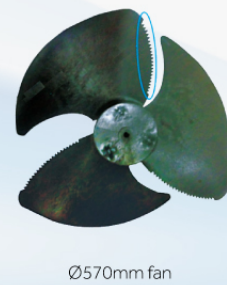
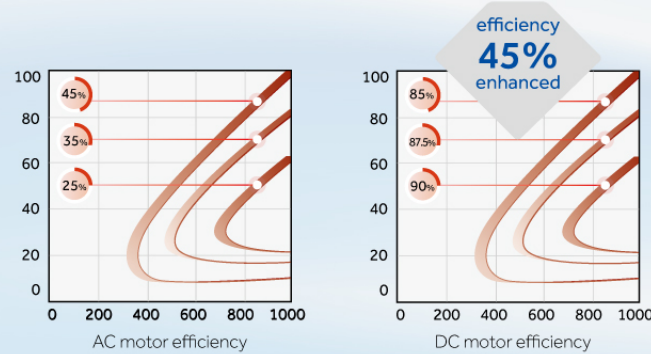
## DC Fan and Fan Motor

DC inverter fan motor more higher efficiency in part load running

- 16-stage speed control; high efficiency running especially in low speed
- Efficiency increase 45% comparing with AC motor and power input largely decrease

Big diameter fan

- 570mm big diameter fan, more big air flow and more higher efficiency

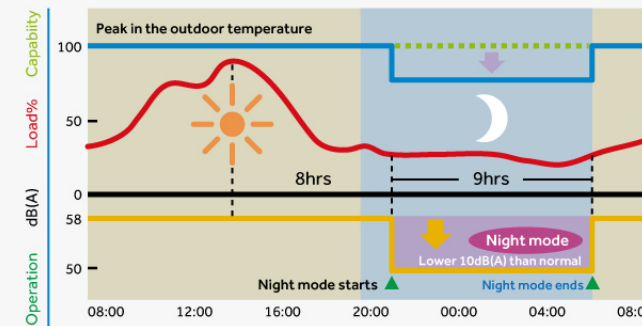


## Energy Efficiency

Low noise level

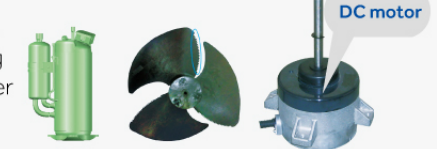
### Night Quiet Operation Function

Noise can be reduced to 45dB(A)



Low noise operation

- DC INVERTER compressor, smooth operation, no need frequent start the compressor, effectively reduce the noise outdoor
- Vector inverter control, more precise control
- DC fan motor, motor bracket used the non-resonance structure, ensure smooth running of the motor, reduce operating noise
- Big diameter fan, design according to aviation quieter principle



Easy installation

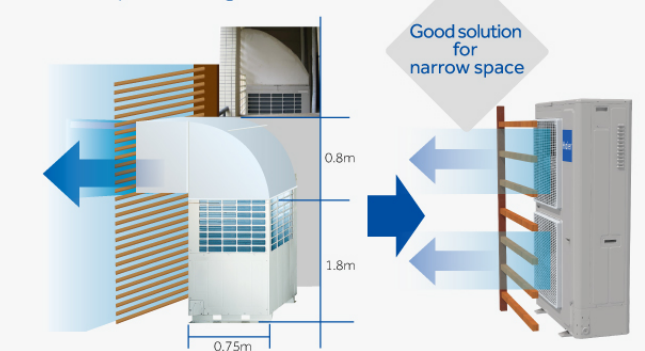
### Compact Side Discharge Design, Big Capacity, Small Footprint

Small footprint, only 0.42m<sup>2</sup>, 43% floor area can be reduced



### Compact Side Discharge Design

No need additional ventilation hood comparing with top discharge unit



Easy installation

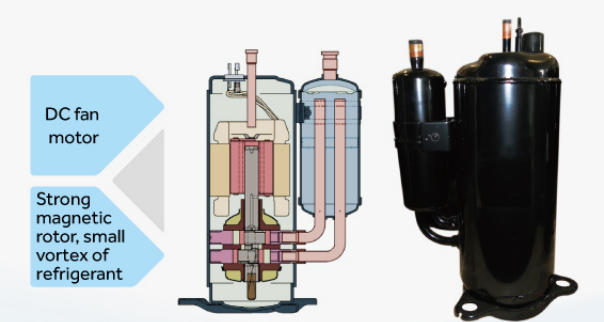
4 Way pipe connection

Front, rear, right, down 4 way pipe connection, flexible installation



### New DC inverter twin rotary compressor

- Small torque change, good dynamic balance, the system runs stably, little vibration, low noise, high efficiency
- More higher efficiency in part load running

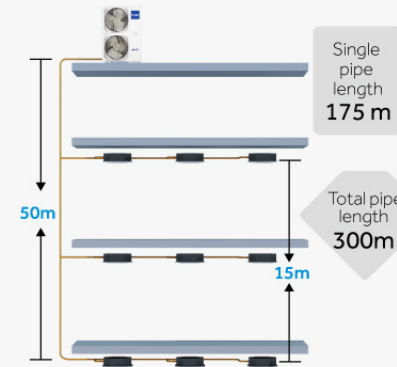


# MRV S<sup>II</sup> (8/10/12HP)

## Easy Installation

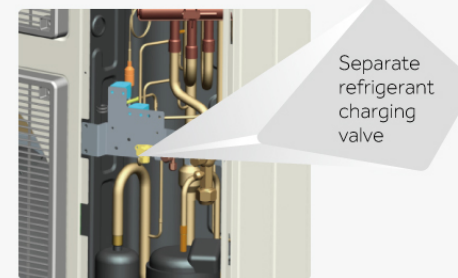
Long pipe length, high height drop

- Total pipe length: 300m
- Single pipe length: Max. 175m
- From outdoor to the first branch pipe: 135m
- From the first branch to the farthest indoor door unit: 40m
- Height drop: 50m (outdoor above)/40m (outdoor below)
- Height drop between indoor units: 15m



Separate refrigerant charging valve

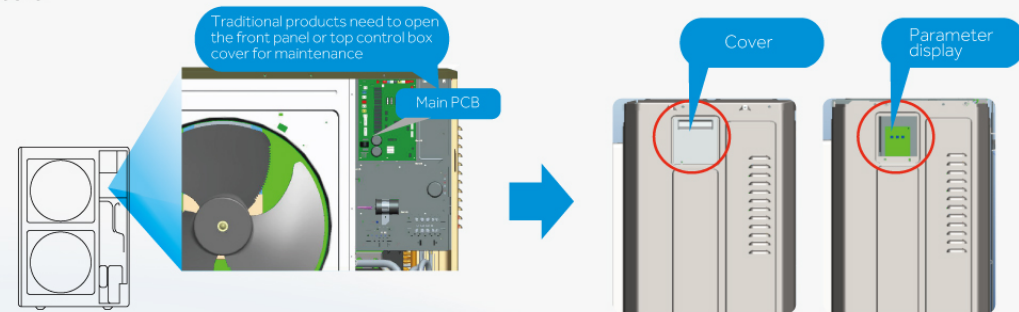
Easy for refrigerant charging



## Easy Service

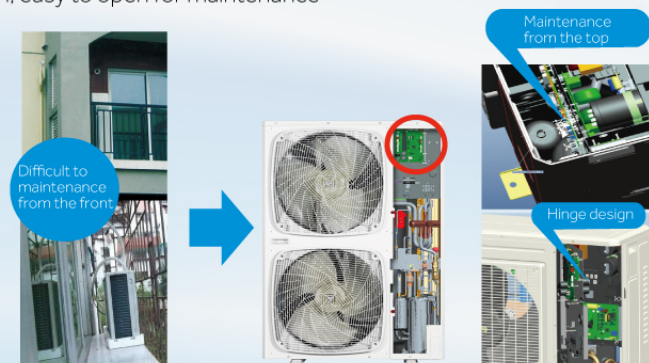
Parameter display panel

- The first original parameter display panel on the side
- The parameter can be observed directly by opening the protective cover in case of maintenance, to avoid removing the repair board



Easy maintenance for control

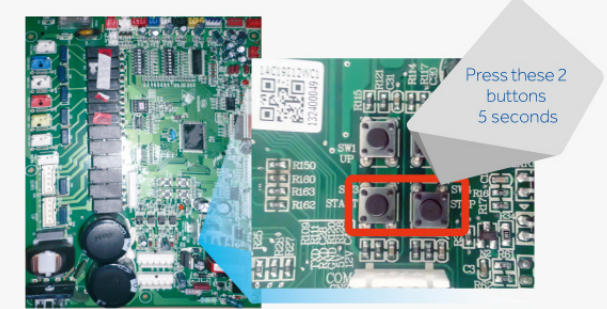
- The control box is in front, reserving space 108mm between control box and top panel, easy maintenance from the top. Control box is with hinge design, easy to open for maintenance



## High Reliability

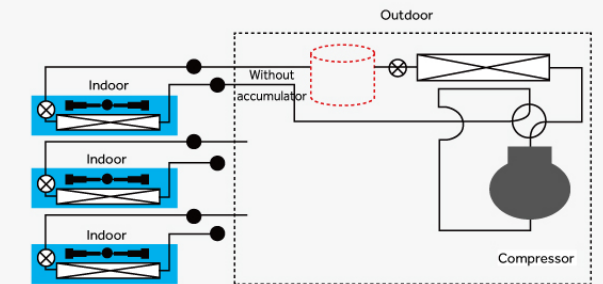
Refrigerant automatically reclaim Technology

- Set refrigerant automatically reclaim through dip switch, the refrigerant in indoor and pipe can be automatically return to outdoor, convenient in maintenance and reducing waste of refrigerant, reduce customer maintenance cost, improve the efficiency of after-sales maintenance



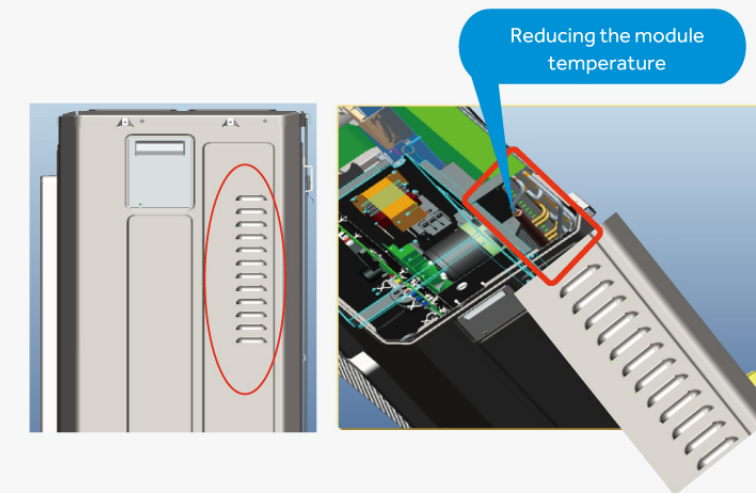
Refrigerant control technology

- Refrigerant control technology without high pressure accumulator, reducing the refrigerant volume and enhancing the running efficiency



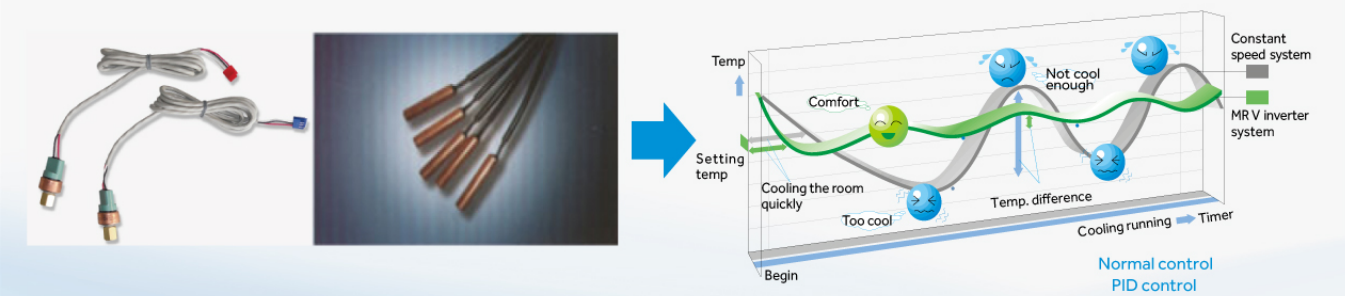
Air inlet grill design on right side panel

- Air inlet grill design, reducing the module temperature and avoid air dust into air conditioner



High and low double pressure sensor

- Double pressure sensor with PID control technology
- Together with high speed communication to realize the quick start of compressor and more precise control, the temperature can be control  $\pm 0.5^{\circ}\text{C}$



# MRV S<sup>II</sup> Specification



- AV08NMSETA
- AV10NMSETA
- AV12NMSETA



Model	T1 T3	AU042FPERA	AU052FPERA	AU062FPERA	AU04IFPERA	AU05IFPERA	AU06IFPERA		
		AU042FPERB	AU052FPERB	AU062FPERB	AU04IFPERB	AU05IFPERB	AU06IFPERB		
Capacity	Capacity range	HP	4	5	6	4	5	6	
	Cooling (T1)	kW	12.1	14	15.5	12.1	14	15.5	
	Cooling (T3)	kW	11.2	12.6	14	11.2	12.6	14	
	Heating	kW	14.2	16	18	14.2	16	18	
Electrical parameters	Power supply	Ph/V/Hz	1/220-240/50/60	1/220-240/50/60	1/220-240/50/60	3/380-415/50/60	3/380-415/50/60	3/380-415/50/60	
	Power input (Cooling T1)	kW	2.99	3.51	4.31	2.99	3.51	4.31	
	Power input (Cooling T3)	kW	3.77	4.25	5.22	3.77	4.25	5.22	
	Power input (Heating)	kW	3.18	3.72	4.39	3.18	3.72	4.39	
	EER	/	4.05	3.99	3.60	4.05	3.99	3.60	
	COP	/	4.47	4.30	4.10	4.47	4.30	4.10	
	SEER(T1)	/	6.82	6.92	6.45	6.82	6.92	6.45	
	SCOP(T1)	/	3.92	4.17	3.80	3.92	4.17	3.80	
	Performance	Air flow (H)	m <sup>3</sup> /h	7200	7200	7200	7200	7200	7200
		Sound pressure level (H)	dB(A)	57	58	59	57	58	59
Sound power level (H)		dB(A)	68	69	70	68	69	70	
Installation	External dimensions(W/D/H)	mm	950/370/1340	950/370/1340	950/370/1340	950/370/1340	950/370/1340	950/370/1340	
	Shipping dimensions(W/D/H)	mm	1023/471/1420	1023/471/1420	1023/471/1420	1023/471/1420	1023/471/1420	1023/471/1420	
	Net/Shipping weight	kg	108/123	108/123	108/123	108/123	108/123	108/123	
	Compressor type	/	Rotary	Rotary	Rotary	Rotary	Rotary	Rotary	
	Compressor brand	/	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	
	Compressor quantity	/	1	1	1	1	1	1	
	Refrigerant type	/	R410A	R410A	R410A	R410A	R410A	R410A	
	Refrigerant charge	kg	4	4	4	4	4	4	
	Refrigerant liquid pipe	mm	9.52	9.52	9.52	9.52	9.52	9.52	
	Refrigerant gas pipe	mm	15.88	15.88	15.88	15.88	15.88	15.88	
	Total pipe length	m	300	300	300	300	300	300	
	Max. pipe length(Equivalent/Actual)	m	175/150	175/150	175/150	175/150	175/150	175/150	
	Max drop between I.U.&O.U	m	50	50	50	50	50	50	
	Max drop between I.U.&I.U	m	15	15	15	15	15	15	
Connection ratio	Connectable indoor unit ratio	%	50-130	50-130	50-130	50-130	50-130	50-130	
	Maximum number of indoor units	/	8	10	13	8	10	13	
Working temp.	Cooling(T1)	°C	-15-48	-15-48	-15-48	-15-48	-15-48	-15-48	
	Cooling(T3)	°C	-15-53	-15-53	-15-53	-15-53	-15-53	-15-53	
	Heating	°C	-20-27	-20-27	-20-27	-20-27	-20-27	-20-27	

Model	AV08NMSETA		AV10NMSETA		AV12NMSETA	
Capacity	Capacity range	HP	8HP	10HP	12HP	
	Cooling	kBtu/h	77.1	95.5	114.3	
		kW	22.6	28	33.5	
	Heating	kBtu/h	85.3	107.5	128	
kW		25	31.5	37.5		
Electrical parameters	Power supply	Ph/V/Hz	3/380-400/50/60	3/380-400/50/60	3/380-400/50/60	
	Power input (Cooling)	kW	5.79	8	9.75	
	Power input (Heating)	kW	5.43	7.5	9.62	
	EER/COP		3.9/4.6	3.5/4.2	3.44/3.9	
	SEER/SCOP		5.1/3.45	4.8/3.43	4.6/3.4	
	Air flow (H)	m <sup>3</sup> /h	10000	10000	10000	
Performance	Sound pressure level (H)	dB(A)	55	58	60	
	Sound power level (H)	dB(A)	66	69	71	
	External dimensions(W/D/H)	mm	1050/400/1636	1050/400/1636	1050/400/1636	
Shipping dimensions(W/D/H)	mm	1150/510/1790	1150/510/1790	1150/510/1790		
Net/Shipping weight	kg	168/183	168/183	168/183		
Compressor type		Rotary	Rotary	Rotary		
Compressor brand		MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC		
Compressor quantity		1 INV	1 INV	1 INV		
Refrigerant type		R410A	R410A	R410A		
Refrigerant charge	kg	6.1	6.1	6.1		
Refrigerant liquid pipe	mm	9.52	12.7	12.7		
Refrigerant gas pipe	mm	19.05	22.22	25.4		
Total pipe length	m	300	300	300		
Max. pipe length(Equivalent/Actual)	m	175/150	175/150	175/150		
Max drop between I.U.&O.U	m	50	50	50		
Connection ratio	Connectable indoor unit ratio	%	50-130	50-130	50-130	
	Maximum number of indoor units		13	16	16	
Working temp.	Cooling	°C	-5-48	-5-48	-5-48	
	Heating	°C	-20-27	-20-27	-20-27	

\*All the specifications are tested under nominal condition(In cooling, Indoor temp is 27°C DB/19°C WB; Outdoor temp 35°C DB/24°C WB; In heating, Indoor temp is 20°C DB, Outdoor temp is 7°C DB/6°C WB)

\* All the specifications are tested under nominal condition(In cooling T1, indoor temp. is 27°C DB/19°C WB; Outdoor temp 35°C DB/24WB;in cooling T3, indoor temp. is 27°C DB/19°C WB; Outdoor temp 46°C DB/24WB;in heating, indoor temp.is 20°C DB.in heating, outdoor temp.is 7°C DB/6°CWB)

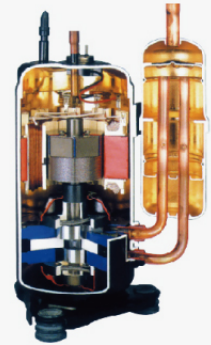
# MRV S<sup>I</sup> (3/5/7HP)

## MRV S<sup>I</sup>

### DC Inverter Twin Rotary Compressor

Realize high efficiency and compact designed compressor by the joint type motor, hot riveting fixation and composite partition technology.

Wide range inverter compressors would satisfy the customer's innovative requirement and design.



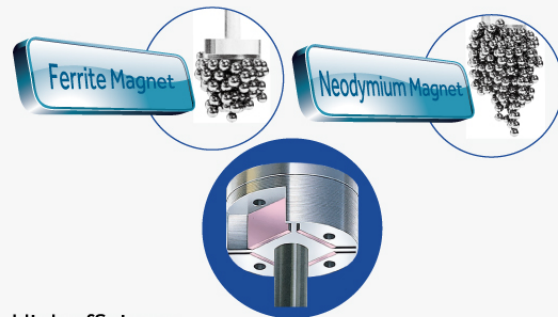
### Operation Range

- MRV S<sup>I</sup> series permits a system design considering a heating range operation under a low temperature condition from -15°C of previous model and a cooling range operation -5°C.
- For the capacities under low temperature conditions, please see technical data sheets.



### DC Inverter Technology

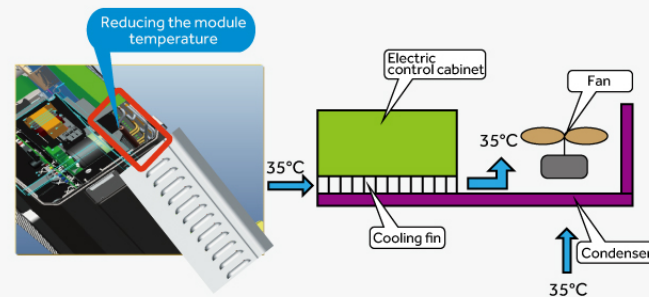
DC fan motor speed can be adjusted from 0-960r/min, it can improve the unit efficiency, at the same time, the unit can realize low ambient cooling operation.



- High efficiency
- Low vibration, low noise
- High reliability

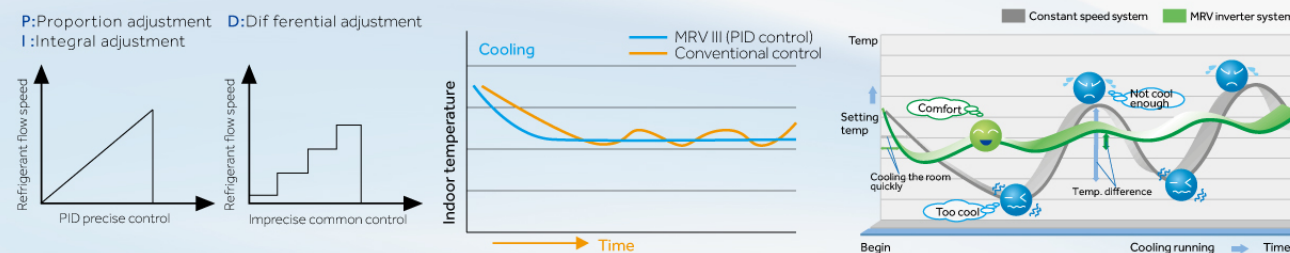
### Air inlet grill design on right side panel

The unit adopts louver at right side panel for better heat dissipation to guarantee high frequency operation at high temperature. The air inlet grill design, reduces the module temperature and avoids air dust into air conditioner.



### Precise Control

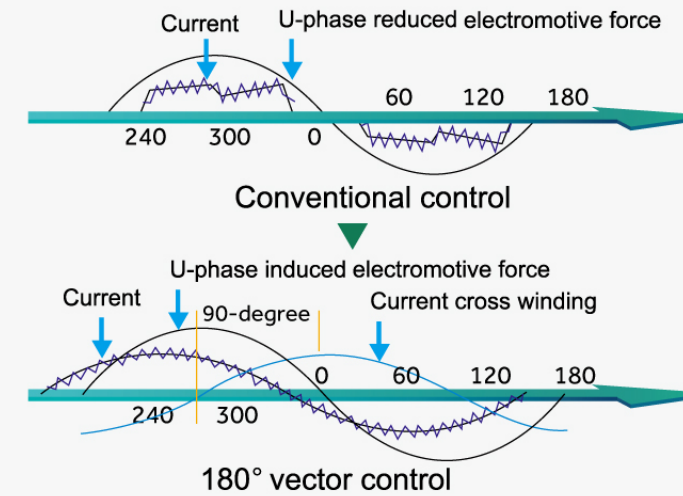
PID control adjusts the output of compressor and the open degree of EEV, balances the indoor refrigerant flow, realizes the linear output, creates a comfortable environment. The temperature could be controlled precisely.



## MRV S<sup>I</sup>

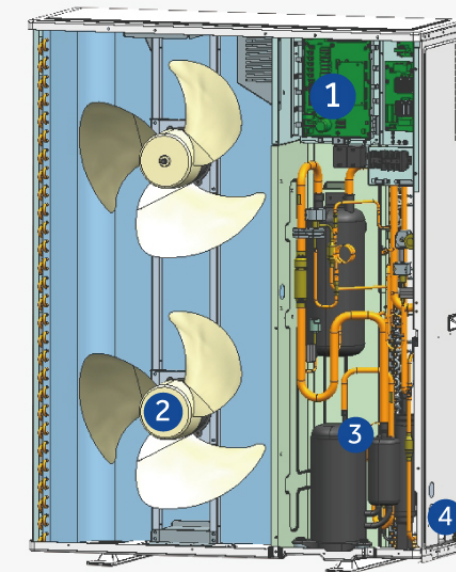
### 180° Vector Control Technology

Haier using power resistance to detect the rotor position of compressor, results in the consistency of the compressor working current and current sine waves, improve power efficiency about 17%.



### Side Discharge MRV S<sup>I</sup> Outdoor Units

- Dual Frequency 50/60Hz / DC Inverter TWIN Rotary Compressor / BLDC Fan (BrushLess DC motor)



- Control the compressor running frequency by temp. Sensor, more precise and prompt than conventional control system.
- DC fan motor (AU48/60).
- DC inverter compressor, high efficiency.
- Single set valve, easy to installation and save installation time.

# MRV S<sup>1</sup> Specification



- AU282FHera(H)
- AU482Fiera(H)
- AU48NFiera(H)
- AU60NFiera(H)

Model		AU282FHera(H)	AU482Fiera(H)	AU48NFiera(H)	AU60NFiera(H)	
Capacity	Capacity range	HP	3HP	5HP	5HP	7HP
	Cooling	kBtu/h	27.3	51.2	51.2	61.4
		kW	8	15	15	18
	Heating	kBtu/h	32.4	58	58	68.2
kW		9.5	17	17	20	
Electrical parameters	Power supply	Ph/V/Hz	1/220-230/50	1/220-230/50/60	3/380-400/50/60	3/380-400/50/60
	Power input (Cooling)	kW	2.08	3.98	3.98	5.19
	Power input (Heating)	kW	2.10	3.91	3.91	5.13
	EER/COP		3.84/4.52	3.77/4.35	3.77/4.35	3.47/3.9
	SEER/SCOP		4.79/3.31	4.61/3.15	4.61/3.15	4.14/3.06
Performance	Air flow (H)	m <sup>3</sup> /h	3500	6500	6500	6500
	Sound pressure level (H)	dB(A)	54	58	58	59
	Sound power level (H)	dB(A)	65	69	69	70
Installation	External dimensions(W/D/H) mm		960/340/830	960/340/1250	960/340/1250	960/340/1250
	Shipping dimensions(W/D/H) mm		1095/410/945	1095/410/1400	1095/410/1400	1095/410/1400
	Net/Shipping weight	kg	70/76	99/107	99/107	99/107
	Compressor type		Rotary	Rotary	Rotary	Rotary
	Compressor brand		MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC
	Compressor quantity		1 INV	1 INV	1 INV	1 INV
	Refrigerant type		R410A	R410A	R410A	R410A
	Refrigerant charge	kg	2.4	3.8	3.8	3.8
	Refrigerant liquid pipe	mm	9.52	9.52	9.52	9.52
	Refrigerant gas pipe	mm	15.88	19.05	19.05	19.05
	Total pipe length	m	100	150	150	150
	Max. pipe length(Equivalent/Actual)	m	50	70	70	70
	Max drop between I.U.&O.U	m	30	30	30	30
	Max drop between I.U.&I.U	m	10	10	10	10
Connection ratio	Connectable indoor unit ratio %		50-130	50-130	50-130	50-130
	Maximum number of indoor units		4	8	8	9
Working temp.	Cooling	°C	10-48	-5-48	-5-48	-5-48
	Heating	°C	-15-21	-15-21	-15-21	-15-21

\*All the specifications are tested under nominal condition(In cooling, Indoor temp is 27°C DB/19°C WB; Outdoor temp 35°C DB/24°C WB; In heating, Indoor temp is 20°C DB, Outdoor temp is 7°C DB/6°C WB)

