



- | 067 Features & Benefits
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Haier

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

## New platform, new outlook

**Spiral air outlet grill**  
Better outlook and lower noise

**Built-in stop valve**  
Better outlook and easier to install

**Round corner**  
Better outlook & safer



## 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% . ( 14kw)
- 4 Ball valve**  
0 pressure loss when refrigerant goes through the valve .  
capacity rise 0.5% with same power input
- 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 3 dB(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



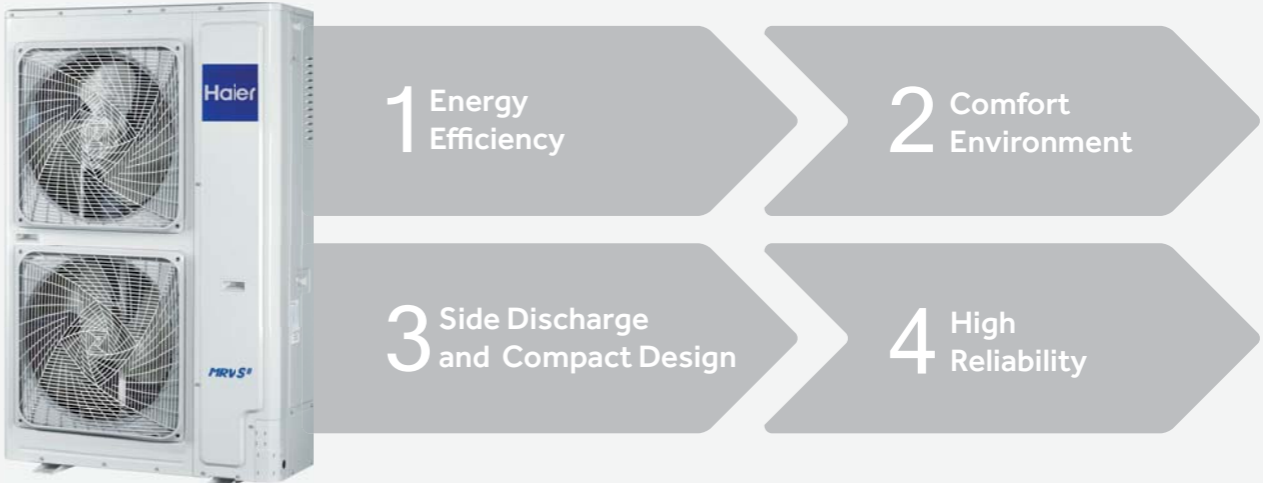
# MRV S<sup>II</sup> (8/10/12HP)

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

Bigger Outdoor Capacity, More Flexible Application

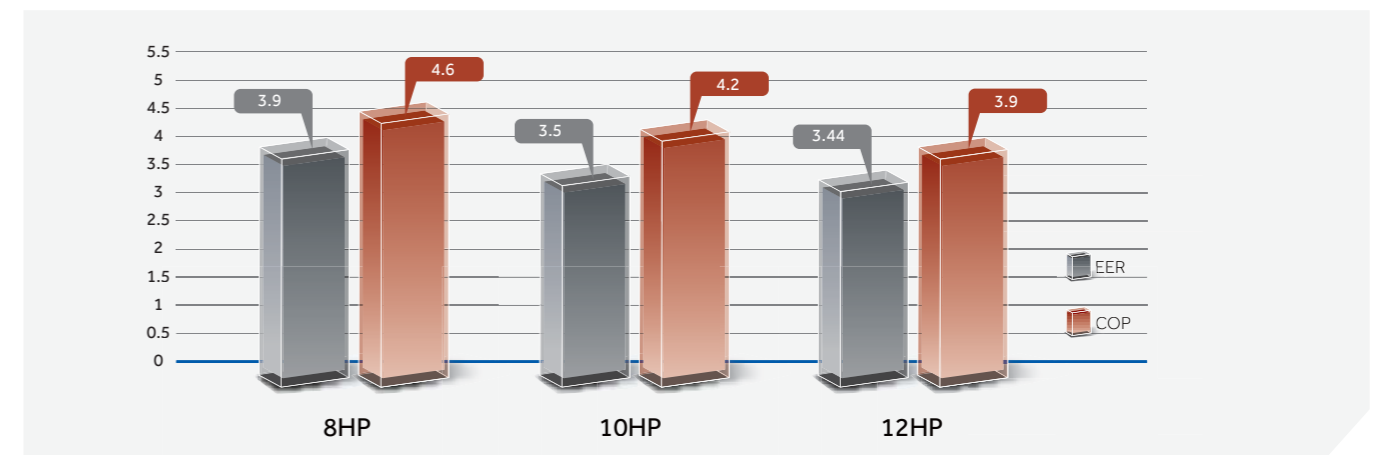


- Twin rotary DC Inverter compressor**
  - High chamber DC INVERTER twin rotary compressor
  - Small vibration, low noise, high energy efficiency
- Double pressure sensor**
  - Equipped with high and low voltage Pressure double sensors
  - Accurate Pressure control, the system run more smoothly, more energy efficiency
- 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
- High efficiency DC fan motor**
  - DC fan motor with stepless inverter control, efficiency increase 45% comparing with AC motor and power input largely decrease



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

## High EER and COP



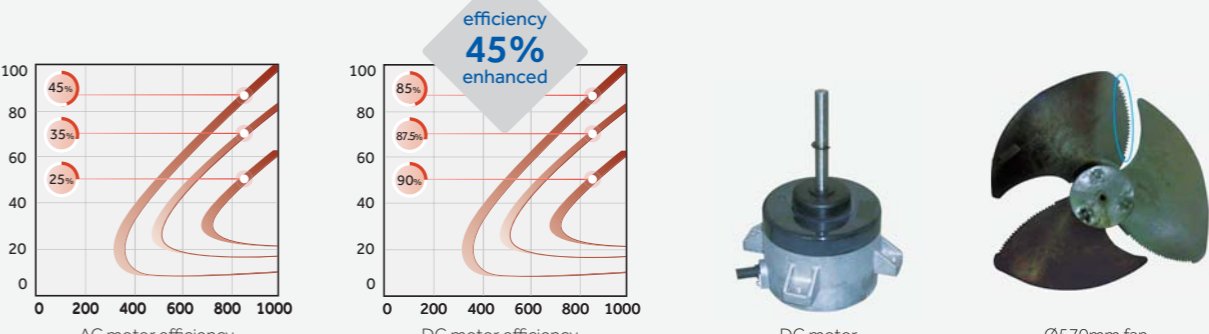
## DC Fan and Fan Motor

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



efficiency 45% enhanced

AC motor efficiency vs DC motor efficiency comparison graphs showing efficiency levels of 25%, 35%, 45%, 85%, 87.5%, and 90%.

DC motor and Ø570mm fan images.

MRV S<sup>II</sup>

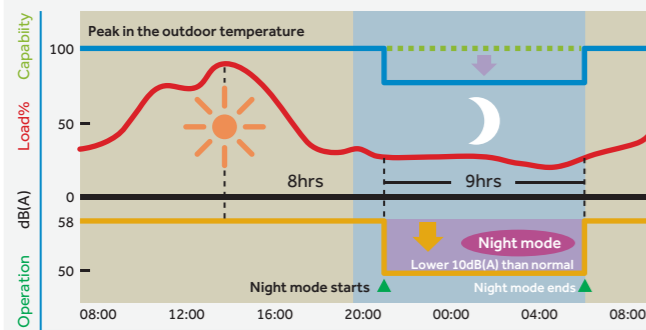
# MRV S<sup>II</sup> (8/10/12HP)

## Energy Efficiency

### Low noise level

#### Night Quiet Operation Function

Noise can be reduced to 45dB(A)



#### Low noise operation

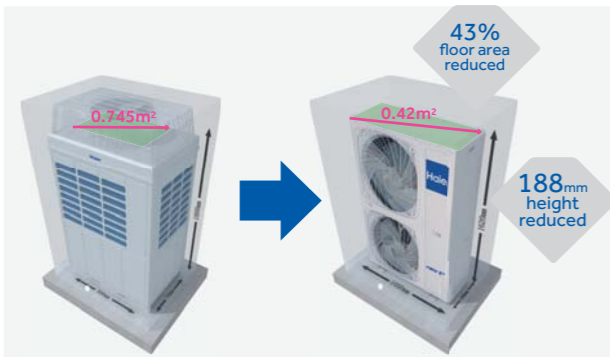
- DC INVERTER compressor, smooth operation, no need frequent start the compressor, effectively reduce the noise outdoor
- Vector inverter control, more precise control
- DC fan motor, motor bracket used the non-resonance structure, ensure smooth running of the motor, reduce operating noise
- Big diameter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



### Easy installation

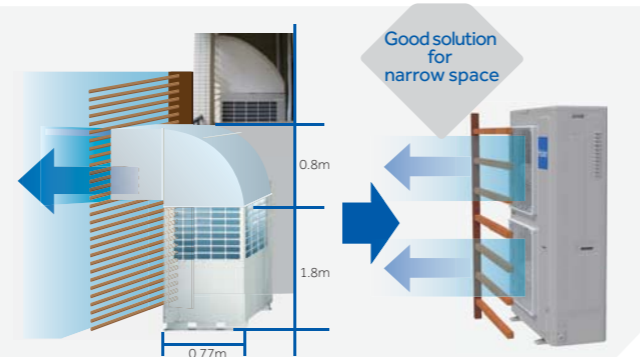
#### Compact Side Discharge Design, Big Capacity, Small Floor Area

Small floor area, 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

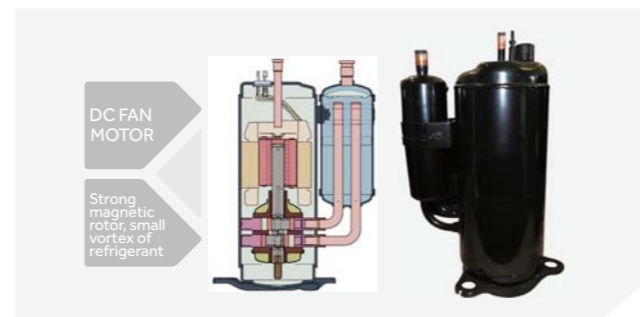
#### 4 Way pipe connection

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



### New DC inverter twin rotary compressor

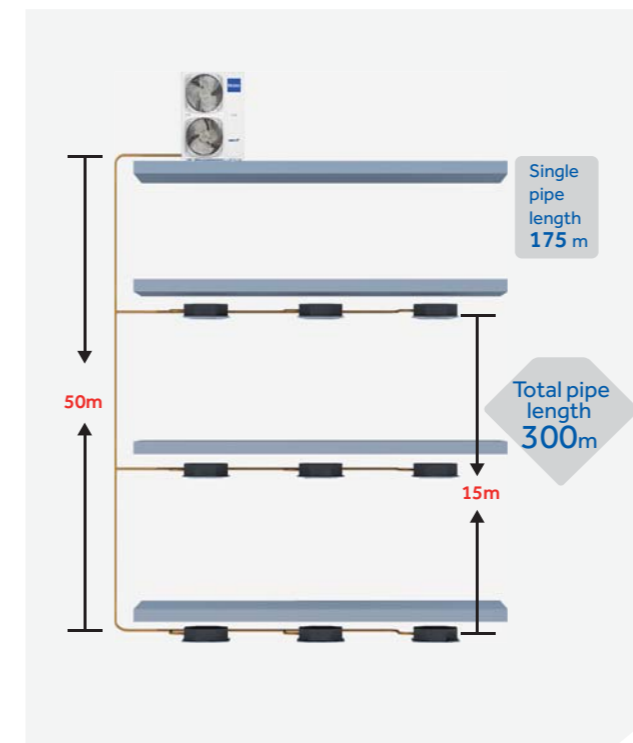
- Small torque change, good dynamic balance, the system runs stably, little vibration, low noise, high efficiency
- More higher efficiency in part load running



## Easy Installation

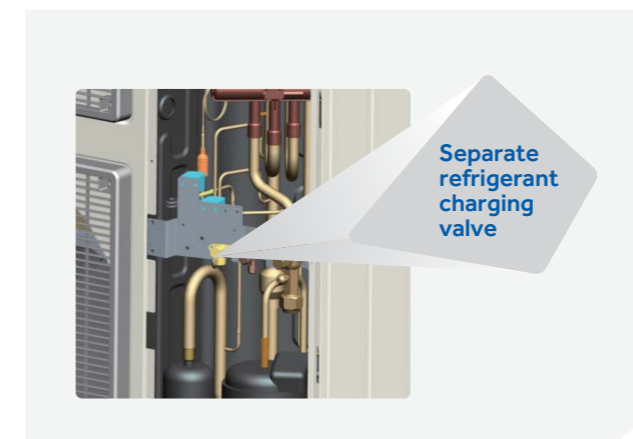
### Long pipe length, high height drop

- 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

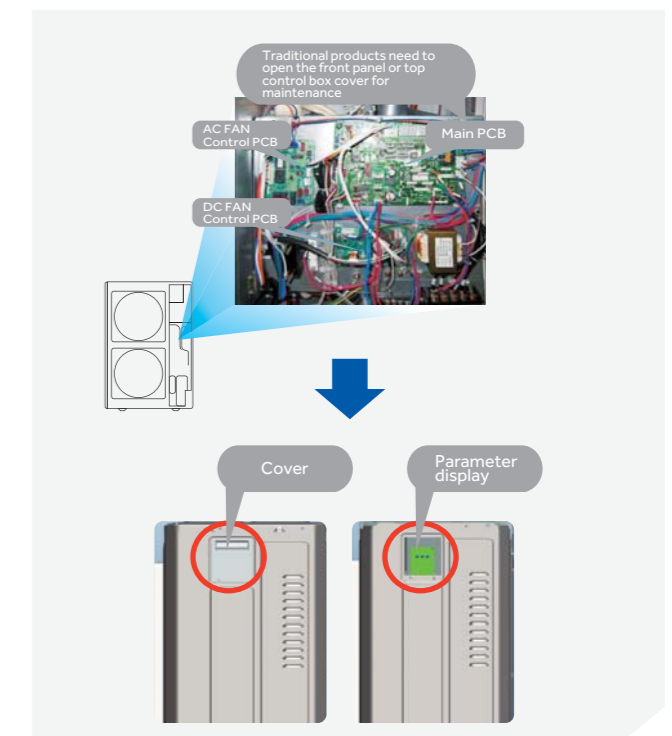
Easy for refrigerant charging



## Easy Service

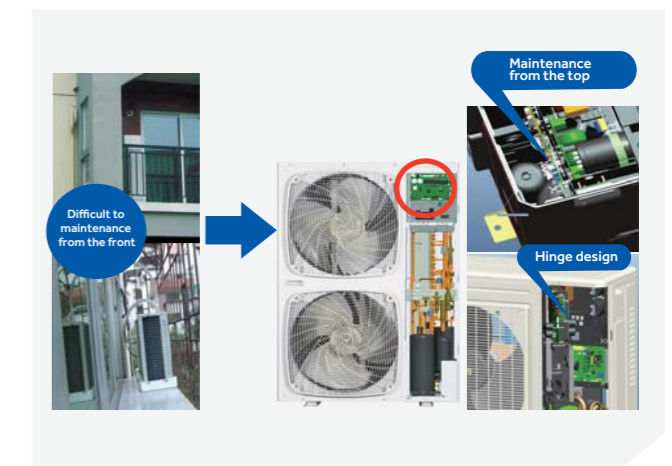
### Parameter display panel

- 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

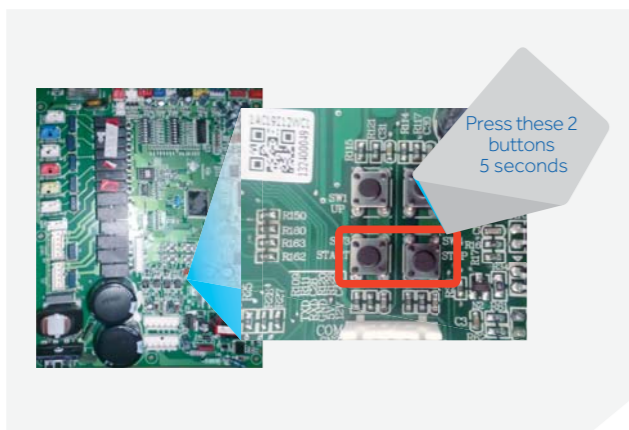


# FEATURES & BENEFITS

## High Reliability

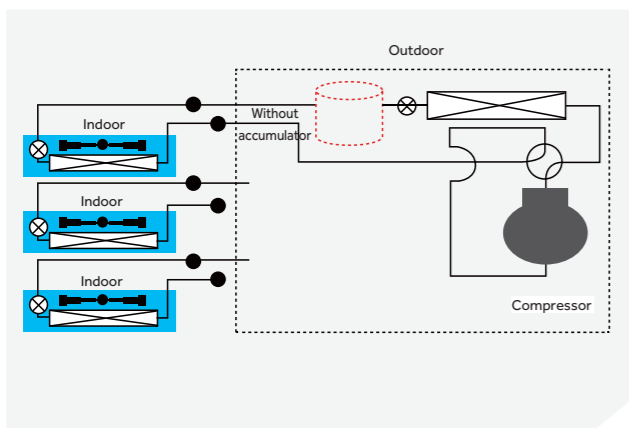
### Refrigerant automatically reclaim Technology

•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

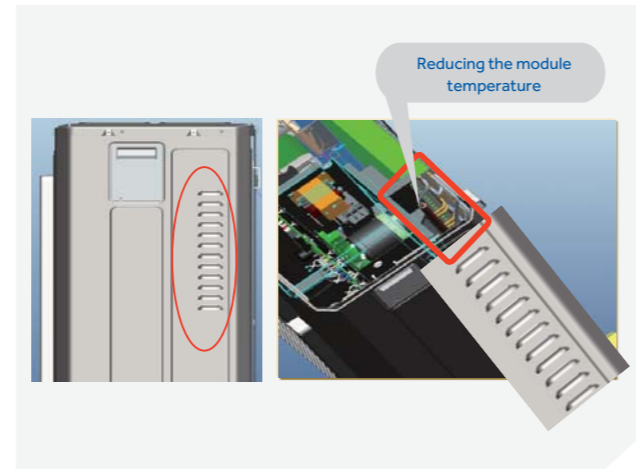
•Refrigerant control technology without high pressure accumulator, reducing the refrigerant volume and enhancing the running efficiency



## High Reliability

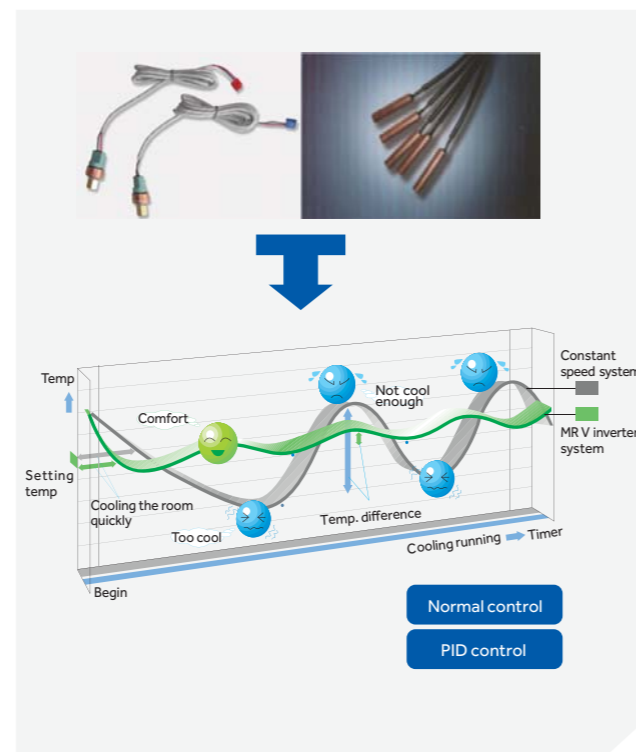
### Air inlet grill design on right side panel

•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> OUTDOOR




-  AU042FPERA
-  AU052FPERA
-  AU051FPERA
-  AU061FPERA



Model			AU042FPERA	AU052FPERA	AU051FPERA	AU061FPERA
Capacity	Capacity range	HP	4	5	5	6
	Cooling	kBtu/h	43	47.8	47.8	52.9
		kW	12.6	14	14	15.5
	Heating	kBtu/h	48.4	54.6	54.6	61.4
kW		14.2	16	16	18	
Electrical parameters	Power supply	PhV/Hz	1/220-230/50/60	1/220-230/50/60	3/380-400/50/60	3/380-400/50/60
	Power input (Cooling)	kW	3.41	3.84	3.90	4.89
	Power input (Heating)	kW	3.40	4.12	4.19	5.04
	EER/COP		3.70	3.65	3.59	3.17
Performance	Air flow (H)	m <sup>3</sup> /h	4.18	3.88	3.82	3.57
	Sound pressure level (H)	dB(A)	7200	7200	7200	7200
	Sound power level (H)	dB(A)	50	51	51	53
Installation	External dimensions(W/D/H)	mm	66	67	67	69
	Shipping dimensions(W/D/H)	mm	950/370/1340	950/370/1340	950/370/1340	950/370/1340
	Net/Shipping weight	kg	1023/471/1420	1023/471/1420	1023/471/1420	1023/471/1420
	Compressor type		115/123	115/123	115/123	115/123
	Compressor brand		Rotary	Rotary	Rotary	Rotary
			MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC
	Compressor quantity		1	1	1	1
	Refrigerant type		R410A	R410A	R410A	R410A
	Refrigerant charge	kg	4	4	4	4
	Refrigerant liquid pipe	mm	9.52	9.52	9.52	9.52
	Refrigerant gas pipe	mm	15.88	15.88	15.88	15.88
	Total pipe length	m	300	300	300	300
Max. pipe length(Equivalent/Actual)	m	150	150	150	150	
Max drop between I.U.&O.U.	m	50	50	50	50	
Connection ratio	Connectable indoor unit ratio	%	50-130	50-130	50-130	50-130
	Maximum number of indoor units		7	10	10	12
Working temp.	Cooling	°C	-15-48	-15-48	-15-48	-15-48
	Heating	°C	-20-27	-20-27	-20-27	-20-27

\* Models are under development, data is pending.

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

-  AV08NMSETA
-  AV10NMSETA
-  AV12NMSETA



Model			AV08NMSETA	AV10NMSETA	AV12NMSETA
Capacity	Capacity range	HP	8	10	12
	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	PhV/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
Performance	Air flow (H)	m <sup>3</sup> /h	10000	10000	10000
	Sound pressure level (H)	dB(A)	55	58	60
	Sound power level (H)	dB(A)	66	69	71
Installation	External dimensions(W/D/H)	mm	1050/400/1636	1050/400/1636	1050/400/1636
	Shipping dimensions(W/D/H)	mm	1150/510/1795	1150/510/1795	1150/510/1795
	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	7.4	7.4	7.4
	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	175/135	175/135	175/135
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	19
Working temp.	Cooling	°C	-5-43	-5-43	-5-43
	Heating	°C	-15-21	-15-21	-15-21

\* All the specifications are tested under normal 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.



# MRV S<sup>1</sup> (3/5/7HP)

## DC Inverter Twin Rotary Compressor

Realize high efficiency and compact designed compressor by joint wrap & earths metal magnet motor.

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



## DC Inverter Twin Rotary Compressor



## DC Inverter Technology

### DC inverter motor

•DC fan motor speed can be adjusted from 0-1000 r/min, it can improve the unit efficiency, at the same time, the unit can realize low ambient cooling operation.

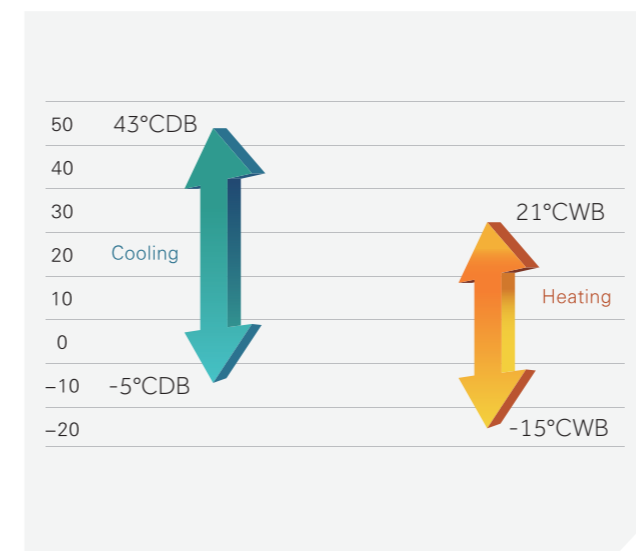
**Ferrite Magnet**      **Neodymium Magnet**

High efficiency  
Low vibration, low noise  
High reliability

## Operation Range

•MRV S<sup>1</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.



## 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.

**P** : Proportion adjustment  
**I** : Integral adjustment  
**D** : Differential adjustment

Refrigerant flow speed

PID precise control      Imprecise common control

Indoor temperature

Cooling

— MRVIII (PID control)  
— Conventional control

Time

Temp

Setting temp

Begin

Cooling the room quickly

Too cool

Comfort

Temp. difference

Not cool enough

Cooling running

Timer

Constant speed system

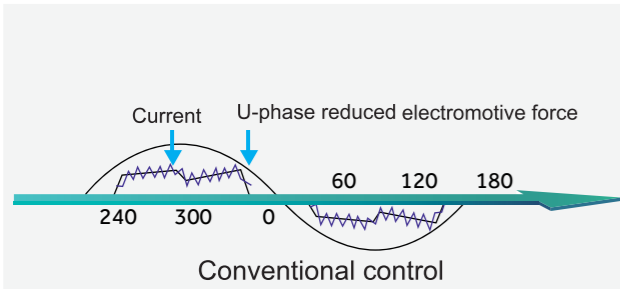
MR V inverter system

MRV S<sup>1</sup>

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

## 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 )



15kW 1 Phase  
15kW 3 Phase  
18kW 3 Phase



- 1 Control the compressor running frequency by temp. Sensor, more precise and prompt than conventional control system.
- 1 Protections: Pressure, temp., compressor, fan motor, refrigerant, oil quantity etc. Realize perfect performance.
- 1 Malfunction self-diagnose.
- 2 DC fan motor (AU48/60).
- 3 DC inverter compressor, high efficiency.
- 4 Single set valve, easy to installation and save installation time.

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

AU282FHera

- AU482FIERA(G)
- AU48NFIERA(G)
- AU60NFIERA(G)



Model		AU282FHera	AU482FIERA(G)	AU48NFIERA(G)	AU60NFIERA(G)	
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	PhV/Hz	1/220-230/50	1/220-230/50/60	3/380-400/50/60	3/380-400/50/60
	Power input (Cooling)	kW	2.2	4.2	4.2	5.5
	Power input (Heating)	kW	2.15	4	4	5.25
	EER/COP		3.64/4.42	3.57/4.25	3.57/4.25	3.27/3.8
Performance	Air flow (H)	m <sup>3</sup> /h	3500	6500	6500	6500
	Sound pressure level (H)	dB(A)	55	59	59	60
	Sound power level (H)	dB(A)	66	70	70	71
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	74/89	105/113	105/113	105/113
	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	2.6	3.6	4	4
	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	50	100	100	100	
Max pipe length(Equivalent/Actual)	m	35	70	70	70	
Max drop between I.U.&O.U	m	30	30	30	30	
Connectable indoor unit ratio	%	50-130	50-130	50-130	50-130	
Connection ratio	Maximum number of indoor units		4	8	8	9
	Cooling	°C	10-43	-5-43	-5-43	-5-43
Working temp.	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.

