GUANGDONG CHIGO HEATING & VENTILATION EQUIPMENT CO., LTD.

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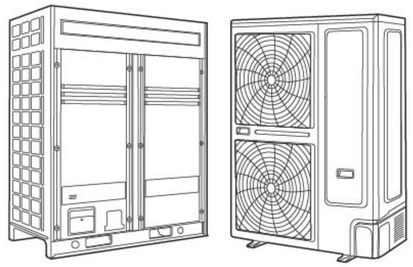
Web : www.chigo-cac.com

R410A 50Hz&60Hz CMV (X+/ X/ R/ MINI SERIES)

DC INVERTER VRF SYSTEM

CAC Catalogue



VRZQT

CHIGO
Chinese well-known mark

China energy saving products

China Compulsory Certification

ISO9001:2000 International Quality System Certification

China Acknowledged Lab

Hong Kong safty certification

European Community CB certification

America and Canada C-UL certification

American ETL certification

Germany GS certification

Canada certification

Germany EMC certification

Hong Kong Grade 1 energy effciency label

European Community CE certification

Russia GOST products qualification certification

France LCIE certification

Argentina S certification

South Africa SABS certification

SASO

TSE certification

Germany TUV certification

C-TICK

RoHS certification

SAA certification

European Eurovent Certification

American AHRI Certification

ESMA

G-mark

DOE

CAQI

CHIGO GROUP

GUANGDONG CHIGO AIR CONDITIONING CO.,LTD(Listed Member of Groups, Stock Code:449.HK)established in 1994, a modern professional AC manufacturer with a business line of designing, R&D,manufacturing as well as distributing both residential and commercial AC domestically and internationally.

As one of the biggest AC manufactures in the world, CHIGO's designed annual output are 10 million sets,which include complete series of AC products. We are one of the most complete refrigeration industrial chain. All-in-one production strategy has capacities to meet different customers' demands.

CHIGO's annual growth rate is being top all over the AC industry and CHIGO win various strict certificates in all important market. CHIGO has spread its network over 180 countries and regions worldwide.

We have invested large amount of resources to establish advanced reliability labs. CHIGO imposes more stringent pursuit and controls over the quality of finished products.By the highly precise enthalpy difference lab, well-known B&K noise testing device, Switzerland SCHAFFNER EMC device, CHIGO ensure the quality of finished products with those scientificalness of every process.

CHIGO is trying hard to be global customer's favorite brand. Through continuous improvement of the product quality and standing with the global partners, we are committed to advocate the low-carbon lifestyle, improve the environment and the life of people.

THE CHIGO HEATING & VENTILATION EQUIPMENT CO., LTD.

Chigo Central Air-conditioning established in 2002, which belongs to GUANGDONG CHIGO AIR CONDITIONING CO.,LTD, a professional Central AC equipment manufacturing and supplying enterprises, with a net of R&D, production,manufac-turing, sales, design, installation and service.

To "Be Professional Central Air-conditioning Supplier", Chigo Central Air-conditioning dedicate to research,design,manuf- acture and sale Central Air-conditioning. During 14 years developing, it has formed an annual production capacity of 1,000,000 sets, and become the most complete refrigeration industrial chain in China. All-in-one Production strategy can meet the various market demand and enable CHIGO to be the biggest scale, the width product line, the most complete product series central air-conditioning enterprise in China.

Chigo Central Air-conditioning marketing net have covered more than 150 countries and regions all over the world, and set agencies at 31 provinces in China. It has many senior engineers to provide professional design and appropriate service for customers.

Development History

2018
Become 2018 Russia World Cup HVAC equipment supplier

2016
Pass the reexamination of "High-tech Enterprise", honor of "High-tech Enterprise" again.

2015
Honor of "Provincial engineering research and development center".

2014
Honor of "Famous Brand of Guangdong Province" for Chigo CAC product; Honor of "Guangdong Provincial Technology Center for Enterprise"; Honor of "High-tech Enterprise"

2013
Newly developed office building and multi-line plant has been completed and put into use officially

2012
Successful bid ten million real estate project (Shenzhen Grade A office)
Successful bidder Luo Fu railway project
Beijing to participate in China Refrigeration Expo, launched a new "tech blog CMV DC inverter central air conditioning"

2011
The Postdoctoral Programme & The Best Growth Air Conditioner Supply & The AAA Grade for the Credit Risk Management.

2010
The Chigo (including Central Air-conditioning) own the honor "the Best Energy-saving prize of Government Procurement Air-conditioning Project in 2009"
The Top Ten Brand Enterprises of Low-carbon & Energy-saving Air-conditioning in the Eleventh Five-Year Plan

2009
The Chigo Air-cooled (Heat Pump) Chiller is included in the 2009 Energy-saving Product Catalog of National Commerce Domain
The Chigo Central Air-conditioning obtains the title "The Chinese Designers Most Trust Ten Nationality Brand of HVAC in 2009"
The Chigo industrial air-conditioner obtains "the Guangdong Province Famous Brand Goods"

2008
The Chigo Central Air-conditioning own the honor of "Top Ten National Brands"

2006
The Chigo Central Air-conditioning obtains "The Guangdong Famous Brand Goods"

2004
The Chigo central Air-conditioning had been established

2002
The Chigo Air-conditioning commence into Commercial Air-conditioning domain

Testing Center

The Testing Center is a comprehensive, multi-functional laboratory, mainly used to engage residential and commercial air-conditioner's performance, safety, reliability and authentication testing. It takes 6000 square meters, 50 million RMB permanent assets.

It has 9 Air-enthalpy Labs, 3 Condition operating labs, 1 Noise Testing Lab, 2 Long-term Operating Labs, Security Structure Analysis Lab, Air Volume Lab; and labs in planning, EMC, Wet State, Thermal Equilibrium, Capacity Testing and so on.

Chinese Energy Efficiency Label Management Center's Verification.

Long-term Cooperation with Professional Certification Test Organization.

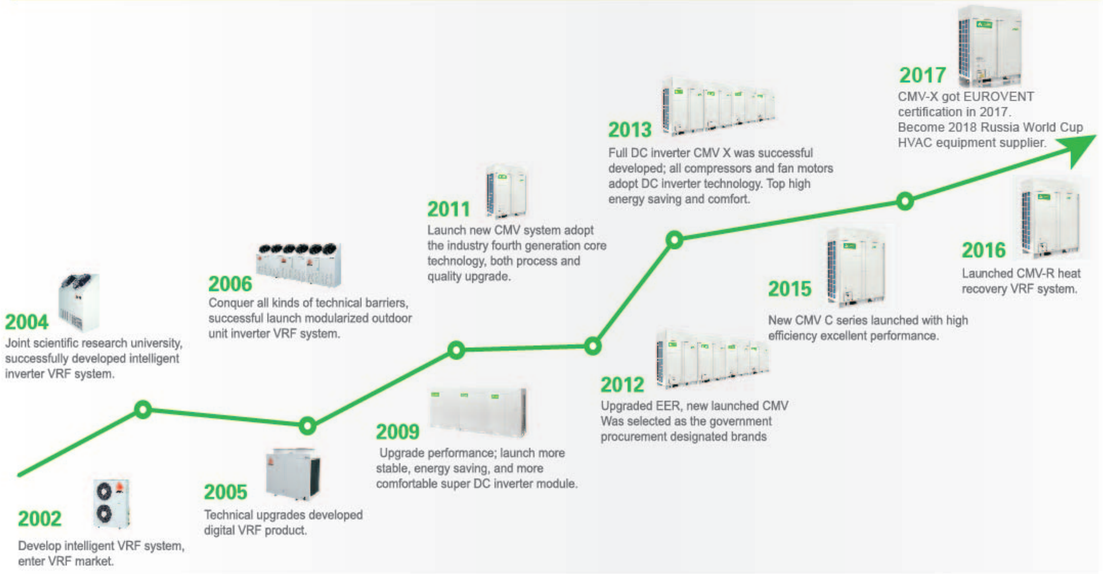
World-class Professional HR.

Denmark B&K 3560 Acousitics and Vibration Noise Test Analysis System.

15 Engineers, all had got professional training before commencement.

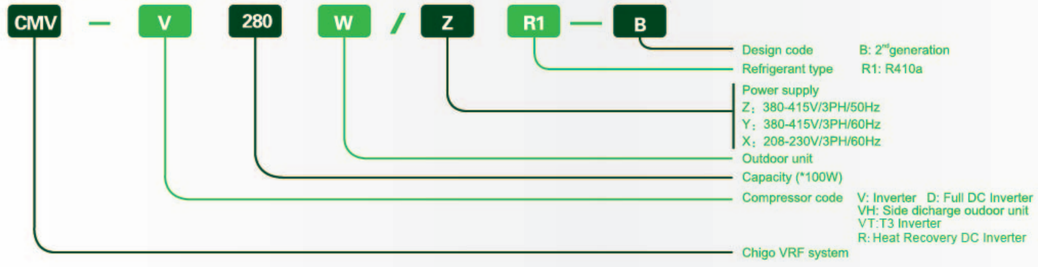
Directory

CMV Development History

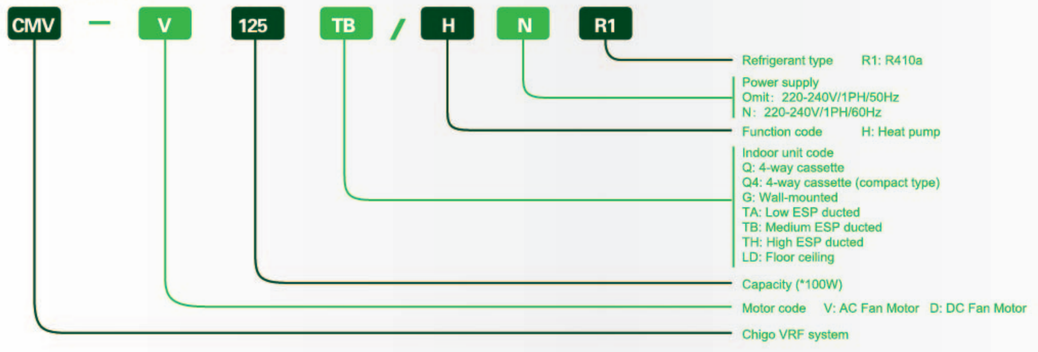


How To Read The Model Name

Outdoor unit



Indoor unit



CMV-X+ 380V - 405V/ 50Hz & 60Hz FULL DC INVERTER EVI VRF SYSTEM

Basic Modules

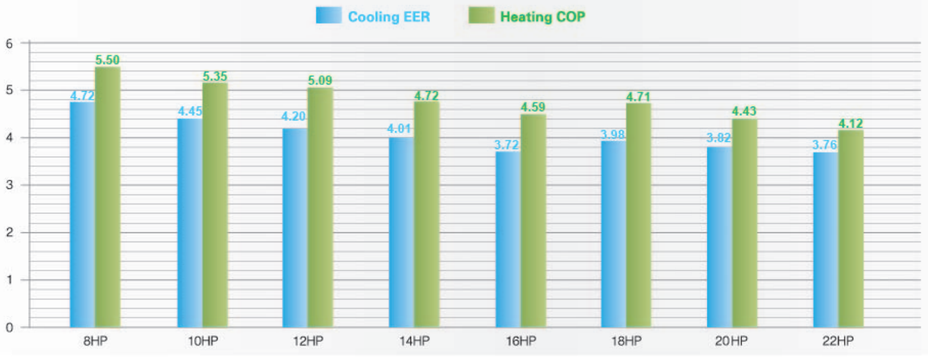
CMV-X+ is CHIGO's latest generation VRF product, all compressors and fan motors are DC brushless type, so it has more excellent energy efficiency.

8/10/12HP

14/16/18/20/22HP

Capacity	8HP	10HP	12HP	14HP	16HP	18HP	20HP	22HP
	25.2kW	28kW	33.5kW	40kW	45kW	50kW	56kW	61.5kW
Compressor	DC	DC	DC	DC	DC	DC+DC	DC+DC	DC+DC
Fan motor	DC	DC	DC	DC+DC	DC+DC	DC+DC	DC+DC	DC+DC

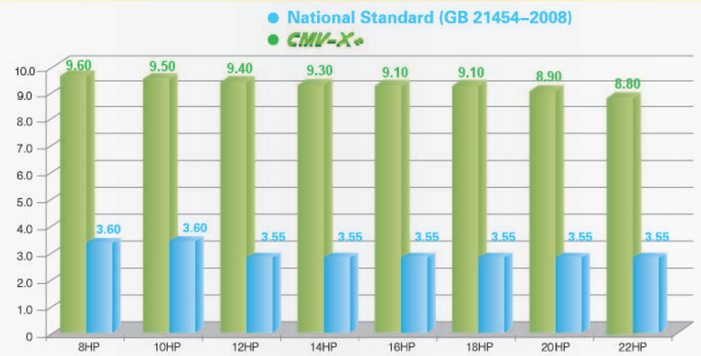
EER & COP



IPLV(C)

IPLV: Integrated Part Load Value (ARI 550/590)
(C): Cooling condition

The Integrated Part Load Value (IPLV) is a performance characteristic developed by the Air-Conditioning, Heating and Refrigeration Institute (AHRI). It is most commonly used to describe the performance of a AC system capable of capacity modulation. Unlike an EER (Energy Efficiency Ratio) or COP (coefficient of performance), which describes the efficiency at full load conditions, the IPLV is derived from the equipment efficiency while operating at various capacities. Since a VRF system does not always run at 100% capacity, the EER or COP is not an ideal representation of the typical equipment performance. The IPLV is a very important value to consider since it can affect energy usage and operating costs throughout the lifetime of the equipment.

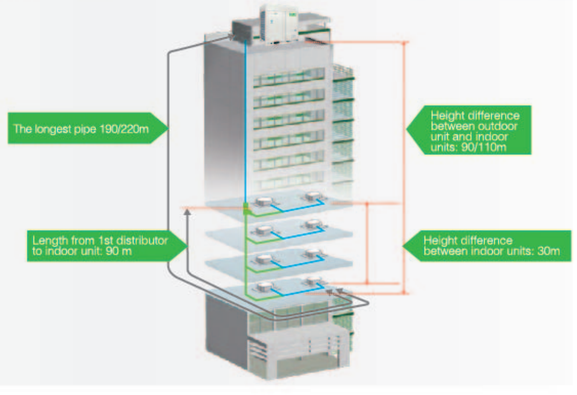


Combination Table

Cooling Capacity											
HP	Model	Cooling Capacity(KW)	8HP	10HP	12HP	14HP	16HP	18HP	20HP	22HP	Max. Connected Indoor Unit Quantity
8	CMV-D252W/ZR1-B	25.2	●								13
10	CMV-D280W/ZR1-B	28		●							16
12	CMV-D335W/ZR1-B	33.5			●						16
14	CMV-D400W/ZR1-B	40				●					20
16	CMV-D450W/ZR1-B	45					●				20
18	CMV-D500W/ZR1-B	50						●			20
20	CMV-D560W/ZR1-B	56							●		24
22	CMV-D615W/ZR1-B	61.5								●	24
24	CMV-D670W/ZR1-B	67			●●						28
26	CMV-D730W/ZR1-B	73		●			●				28
28	CMV-D780W/ZR1-B	78		●				●			28
30	CMV-D835W/ZR1-B	83.5			●			●			32
32	CMV-D895W/ZR1-B	89.5		●						●	32
34	CMV-D950W/ZR1-B	95			●					●	36
36	CMV-D1010W/ZR1-B	101					●		●		36
38	CMV-D1065W/ZR1-B	106.5					●			●	36
40	CMV-D1115W/ZR1-B	111.5						●		●	42
42	CMV-D1175W/ZR1-B	117.5							●	●	42
44	CMV-D1230W/ZR1-B	123								●●	42
46	CMV-D1285W/ZR1-B	128.5			●●					●	48
48	CMV-D1345W/ZR1-B	134.5		●			●			●	48
50	CMV-D1400W/ZR1-B	140			●		●			●	54
52	CMV-D1450W/ZR1-B	145			●			●		●	54
54	CMV-D1510W/ZR1-B	151		●						●●	54
56	CMV-D1565W/ZR1-B	156.5			●					●●	58
58	CMV-D1630W/ZR1-B	163				●				●●	58
60	CMV-D1680W/ZR1-B	168					●			●●	58
62	CMV-D1730W/ZR1-B	173						●		●●	64
64	CMV-D1790W/ZR1-B	179							●	●●	64
66	CMV-D1845W/ZR1-B	184.5								●●●	64
68	CMV-D1900W/ZR1-B	190			●●					●●	64
70	CMV-D1960W/ZR1-B	196		●			●			●●	64
72	CMV-D2015W/ZR1-B	201.5			●		●			●●	64
74	CMV-D2065W/ZR1-B	206.5			●			●		●●	64
76	CMV-D2125W/ZR1-B	212.5		●						●●●	64
78	CMV-D2180W/ZR1-B	218			●					●●●	64
80	CMV-D2245W/ZR1-B	224.5				●				●●●	64
82	CMV-D2295W/ZR1-B	229.5					●			●●●	64
84	CMV-D2345W/ZR1-B	234.5						●		●●●	64
86	CMV-D2405W/ZR1-B	240.5							●	●●●	64
88	CMV-D2460W/ZR1-B	246								●●●●	64

Long Piping & Height Difference

- The total pipe length: 1000m
- The longest pipe :
  - Actual length 190m
  - Equivalent length 220m
- Equivalent length from first indoor distributor to last indoor unit: 90m
- Height deference between indoor and outdoor unit:
  - Outdoor unit above <90m
  - Outdoor unit below <110m
- Height difference between indoor units: 30m



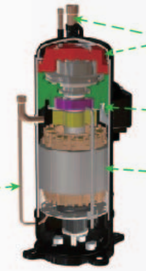
What Is EVI VRF System

Enhanced Vapor Injection Compressor

The Enhanced vapor injection compressor adopts two-stage throttling intermediate injection technology, which uses a flash vaporizer for gas-liquid separation to achieve the effect of increasing the enthalpy. It is cooled by vapor injection mixing at medium and low pressures while compressing, and then compressed normally at high pressure to increase the displacement of the compressor and achieve great heating performance improvement in a low temperature environment. This compressor could heating at -30°C,and Heating capacity increased by nearly 20%-50% at -15°C.

High pressure chamber small suction refrigerant superheat, refrigerant volume efficiency is high large refrigerant discharge buffer volume, low vi

Oil balance design, pump extra oil to other compressor.

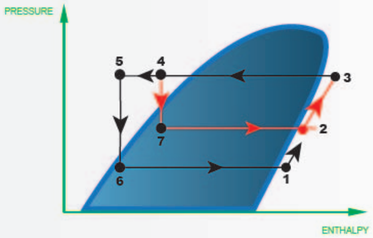


Vapor injection pipe, better performance in low temperature.

High strength bearing, high

Wide frequency

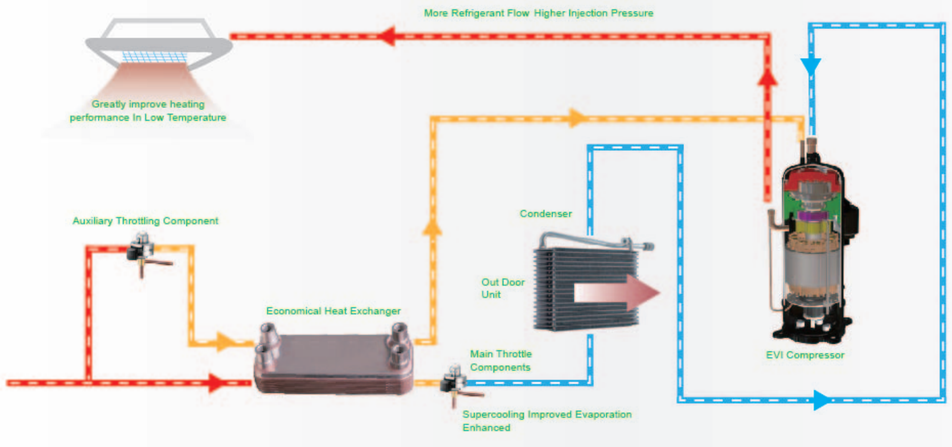
Build in oil pump, active oil supply when compressor is



Theory of Enhanced Vapor Injection

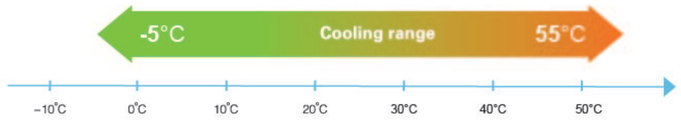
With the help of high-efficiency heat exchanger, on the one hand, the refrigerant in main circulation supercooling before throttling to increase the enthalpy difference, on the other hand, the low temperature and low pressure refrigerant which has been depressurized by the electronic expansion valve in the auxiliary circuit is appropriately preheated to achieve a suitable medium pressure, provide to the compressor for secondary compression.

When the outdoor temperature is very low, the heat exchange capacity of the outdoor unit is reduced, so the normal air return volume of the compressor is reduced, which lead to the reduction of compressor capacity, and the best effect cannot be exerted. However, the refrigerant gas is replenished through the intermediate pressure air return injection port, increase the displacement of the compressor, and the refrigerant circulating amount of the indoor unit heat exchanger is increased to improve the heating capacity. Therefore, it is more suitable for cold regions.

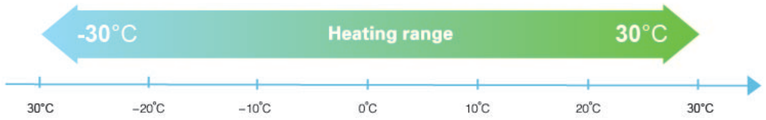


Wide Operation Range

- Due to global waming is ge'ting worse,cooling operating temperature is increased to 55°C.



- Heating operating temperature is down to-30°C.In the cold winte, CMV system can heat the room continuously.

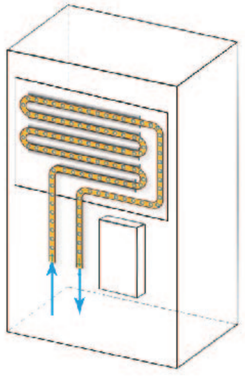


Power Saving Mode

- In case of power shortage,CMV-X+ can run as power saving mode to ease power grid pressure.

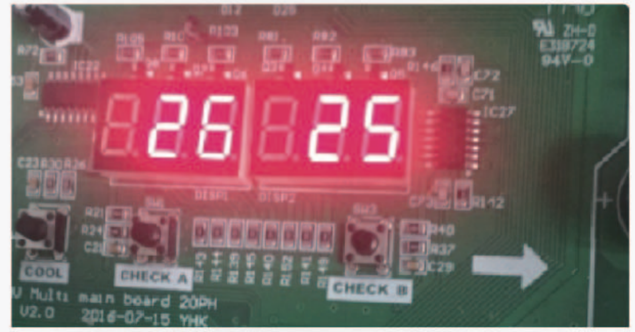
Refrigerant Cooling Design

- In CMV-X+,we use refrigerant to cool down inverter modular board,to keep unit in a safety condition.



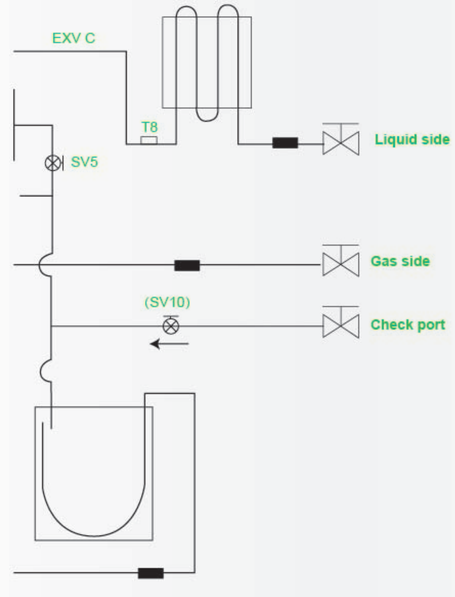
Refrigerant Status Checking

- CMV-X+ is building in smart auto checking logic, which can give suggestion about refrigerant status.
  Different code means different refrigerant staus:
  - 0:Normal
  - 1:Slightly excess
  - 2:Overmuch
  - 11:Slightly insufficient
  - 12:Insufficient
  - 13:Extremely insufficient



Refrigerant Auto Charging (Customized Function)

- CMV-X+ cans customize with auto charging refrigerant function,we will add SV10 valve in gas pipe,and outdoor unit will control SV10 to charge refrigerant or not.



CMV-X

208V - 230V / 60Hz
FULL DC INVERTER VRF SYSTEM

Basic Modules

CMV-X is CHIGO's latest generation VRF product, all compressors and fan motors are DC brushless type, so it has more excellent energy efficiency.

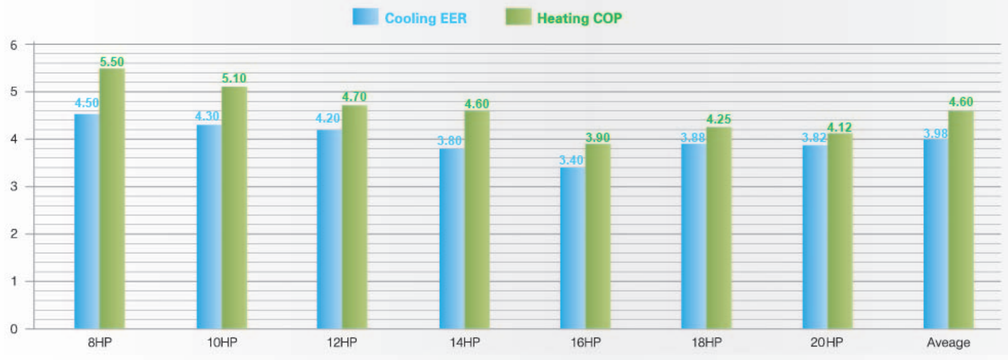
8/10HP

12/14/16HP

18/20HP

Capacity	8HP	10HP	12HP	14HP	16HP	18HP	20HP
	25.2kW	28kW	33.5kW	40kW	45kW	50kW	56kW
Compressor	DC	DC	DC	DC+DC	DC+DC	DC+DC	DC+DC
Fan motor	DC	DC	DC+DC	DC+DC	DC+DC	DC+DC	DC+DC

EER & COP



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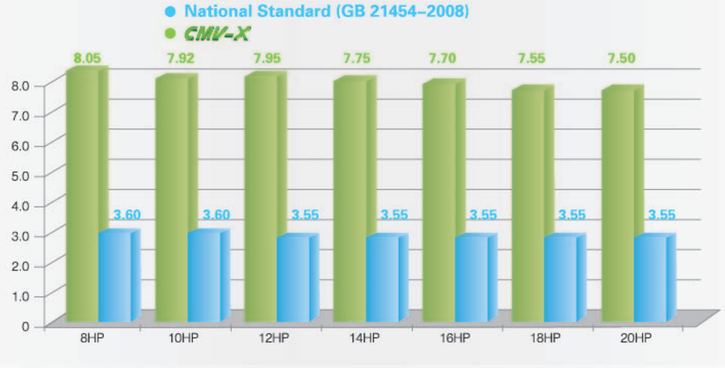

Combination Table

Cooling Capacity									
HP	Cooling Capacity(KW)	8HP	10HP	12HP	14HP	16HP	18HP	20HP	Max. Connected Indoor Unit Quantity
8	25.2	●							13
10	28		●						16
12	33.5			●					16
14	40				●				20
16	45					●			20
18	50						●		20
20	56							●	24
22	61.5		●	●					24
24	68			●●					28
26	73		●			●			28
28	78		●				●		28
30	84		●					●	32
32	89.5			●				●	32
34	95					●	●		36
36	101					●		●	36
38	106						●	●	36
40	112							●●	42
42	117.5		●	●				●	42
44	123			●●				●	42
46	129		●			●		●	48
48	134		●				●	●	48
50	140		●					●●	54
52	145.5			●				●●	54
54	152				●			●●	54
56	157					●		●●	58
58	162						●	●●	58
60	168						●●●		58
62	175.2	●					●	●●	64
64	179			●●				●●	64
66	185		●			●		●●	64
68	190		●				●	●●	64
70	196		●					●●●	64
72	201.5			●				●●●	64
74	207					●	●	●●	64
76	213					●		●●●	64
78	218						●	●●●	64
80	224							●●●●	64

Long Piping & Height Difference

- The total pipe length: 1000m
- The longest pipe :
  - Actual length 190m
  - Equivalent length 220m
- Equivalent length from first indoor distributor to last indoor unit: 90m
- Height deference between indoor and outdoor unit:
  - Outdoor unit above <90m
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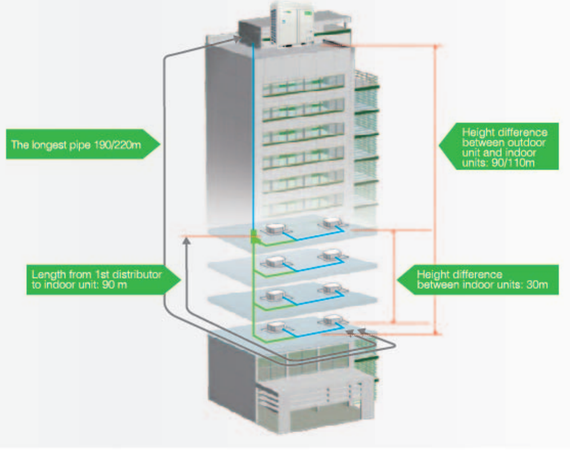
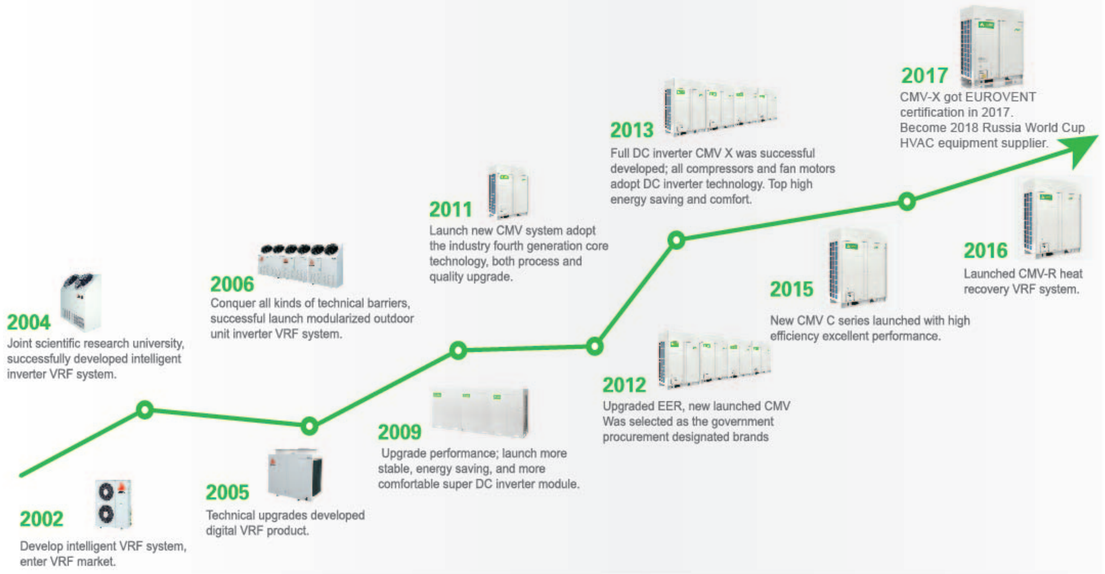
- Height difference between indoor units: 30m

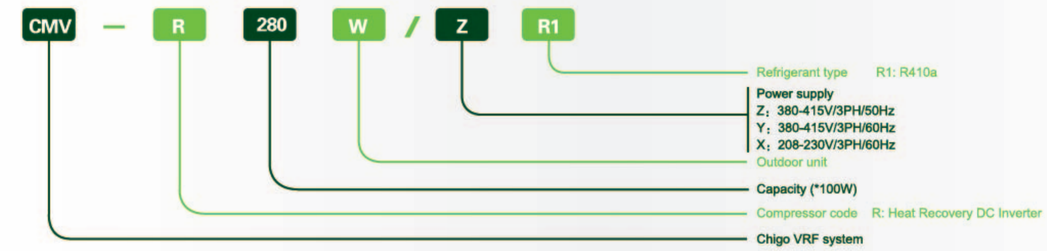


CMV Development History

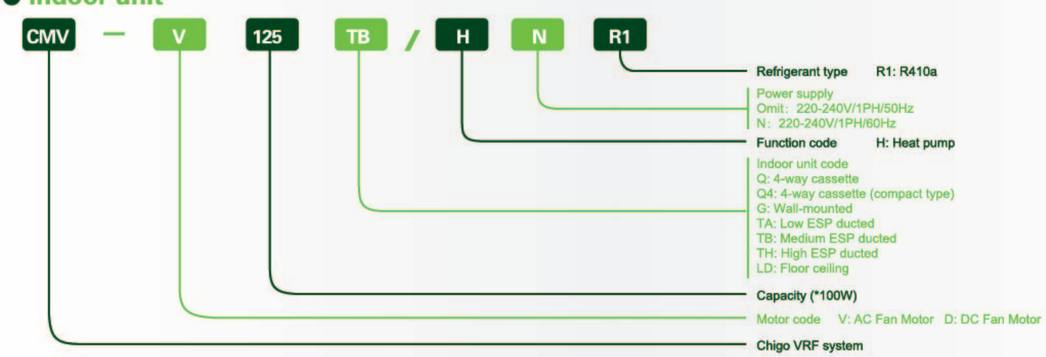


How To Read The Model Name

Outdoor unit



Indoor unit



CMV-R

380V-405V/50Hz&60Hz
HEAT RECOVERY SYSTEM

Basic Modules

CMV-R is heat recovery VRF product with all DC inverter compressors and DC brushless fan motors. It achieve high operating energy efficiency by drawing heat from the room to be cooled and transferring it as energy for rooms that are to be heated.

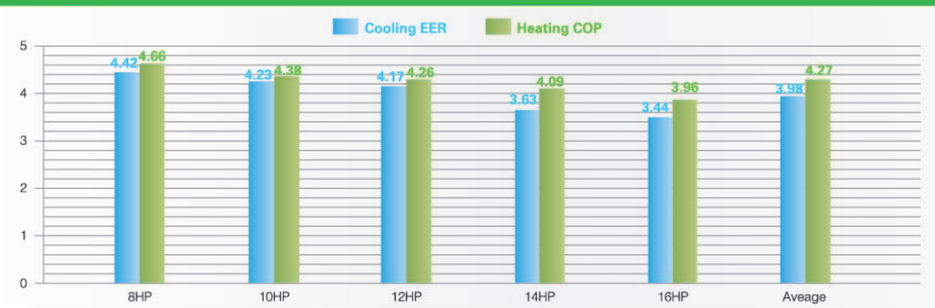
Energy saving of the operating systems has been greatly improved as heating and cooling modes can be operated at the same time on one VRF system.

8/10/12/14/16HP

Capacity	8HP	10HP	12HP	14HP	16HP
	25.2kW	28kW	33.5kW	40kW	45kW
Compressor	DC	DC	DC	DC+DC	DC+DC
Fan motor	DC+DC	DC+DC	DC+DC	DC+DC	DC+DC

Power type	208-230V	380-415V
50Hz / 3phase		●
60Hz / 3phase		●

EER & COP

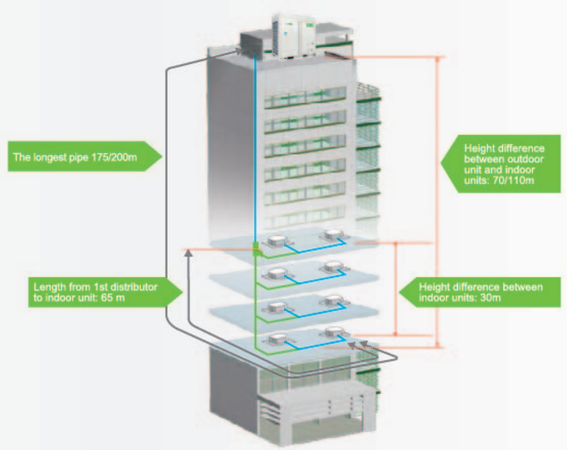


Combination Table

Cooling Capacity(KW)							
Cooling Capacity		Cooling Capacity					Max. Connected Indoor Unit Quantity
HP	KW	8HP	10HP	12HP	14HP	16HP	
8	25.2	●					13
10	28		●				16
12	33.5			●			16
14	40				●		16
16	45					●	20
18	53.2	●	●				20
20	56		●●				24
22	61.5		●	●			24
24	68		●		●		28
26	73		●			●	28
28	80				●●		28
30	85				●	●	32
32	90					●●	32
34	96		●●		●		36
36	101		●●			●	36
38	106.5		●	●		●	36
40	113		●		●	●	42
42	120				●●●		42
44	125				●●	●	42
46	130				●	●●	48
48	135					●●●	48
50	143.2	●	●			●●	54
52	146		●●			●●	54
54	151.5		●	●		●●	54
56	158		●		●	●●	58
58	165				●●●	●	58
60	170				●●	●●	58
62	175				●	●●●	64
64	180					●●●●	64

Long Piping & Height Difference

- The total pipe length: 1000m
- The longest pipe :
  - Actual length 175m
  - Equivalent length 200m
- Equivalent length from first indoor distributor to last indoor unit: 65m
- Height deference between indoor and outdoor unit:
  - Outdoor unit above <70m
  - Outdoor unit below <110m
- Height difference between indoor units: 30m

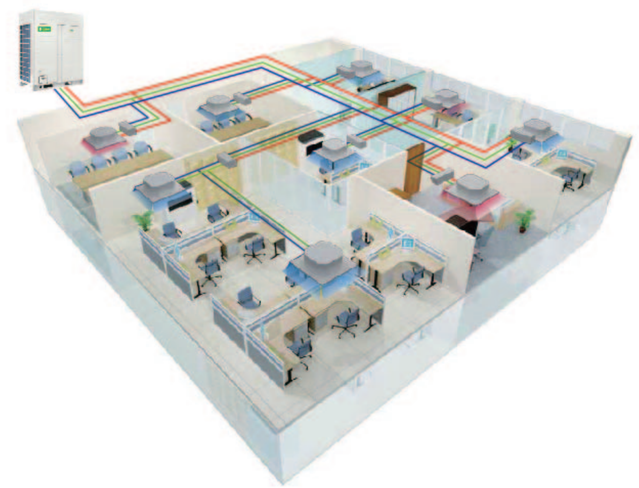


What Is Heat Recovery VRF system

Simultaneous Cooling And Heating Operation

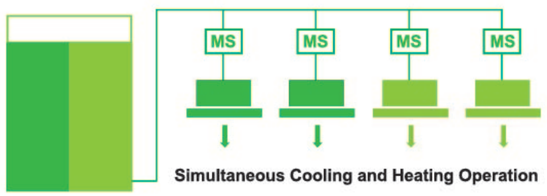
CMV-R is 3-pipe heat recovery VRF product with all DC inverter compressors and DC brushless fan motors. It offers simultaneous cooling and heating operation in one system.

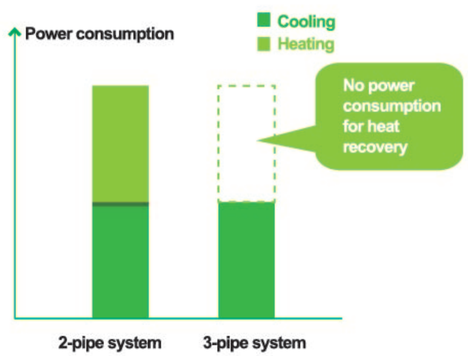
CMV-R achieves high operating energy efficiency by drawing heat from the room to be cooled and transferring it as energy for rooms that are to be heated.



Heat Recovery,More Efficiency

Simultaneous heating and cooling in different zones, more energy saving by heat recovery from one space to another which saves up to 50% in costs compared with a conventional heat pump system.





CMV-mini SMALL CAPACITY FULL DC INVERTER VRF UNIT

10 Models

8/10kW

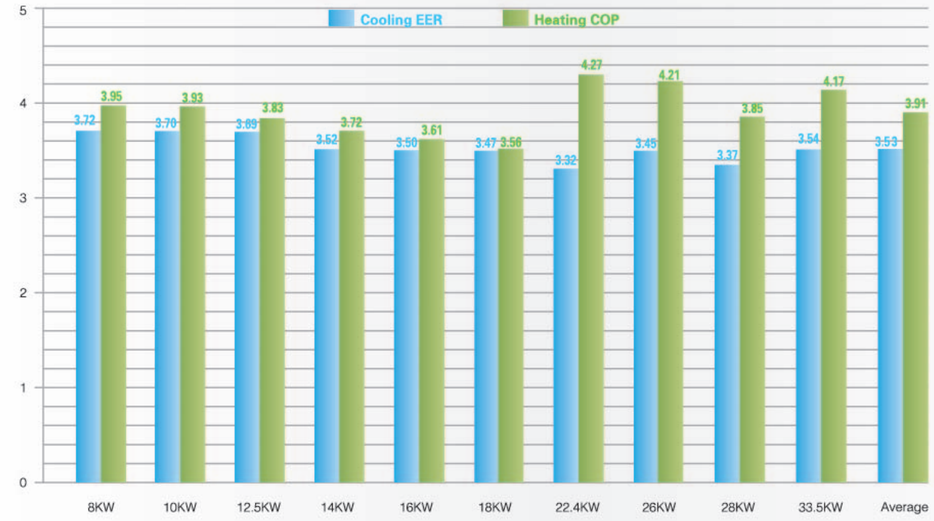
12.5/14/16/18kW

22.4/26/28/33.5kW

Capacity	8kW	10kW	12.5kW	14kW	16kW	18kW	22.4kW	26kW	28kW	33.5kW
Compressor	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC
Fan motor	DC	DC	DC+DC	DC+DC	DC+DC	DC+DC	DC+DC	DC+DC	DC+DC	DC+DC

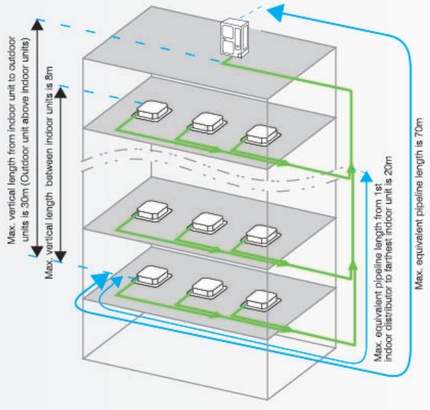
Power type	208~230V/1PH	380~415V/3PH
50HZ	8/10/12.5/14/16kW	12.5/14/16/18/22.4/26/28/33.5kW
60HZ	8/10/12.5/14/16kW	12.5/14/16/18/22.4/26/28/33.5kW

EER & COP



Long Piping & Height Difference

- The total pipe length: 100m (8-18kW), 120m (22.4-33.5kW)
- The longest pipe :
  - Actual length 60m
  - Equivalent length 70m
- Equivalent length from first indoor distributor to last indoor unit: 20m
- Height deference between indoor and outdoor unit:
  - Outdoor unit above <30m
  - Outdoor unit below <20m
- Height difference between indoor units: 8m



CMV-X+ CMV-X CMV-R

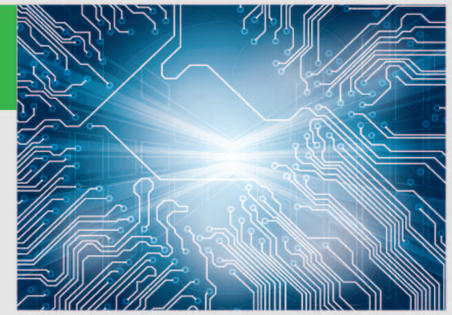
- High Efficiency
- Benefits For Users
- Benefits For Installers

Advantages

High Efficiency

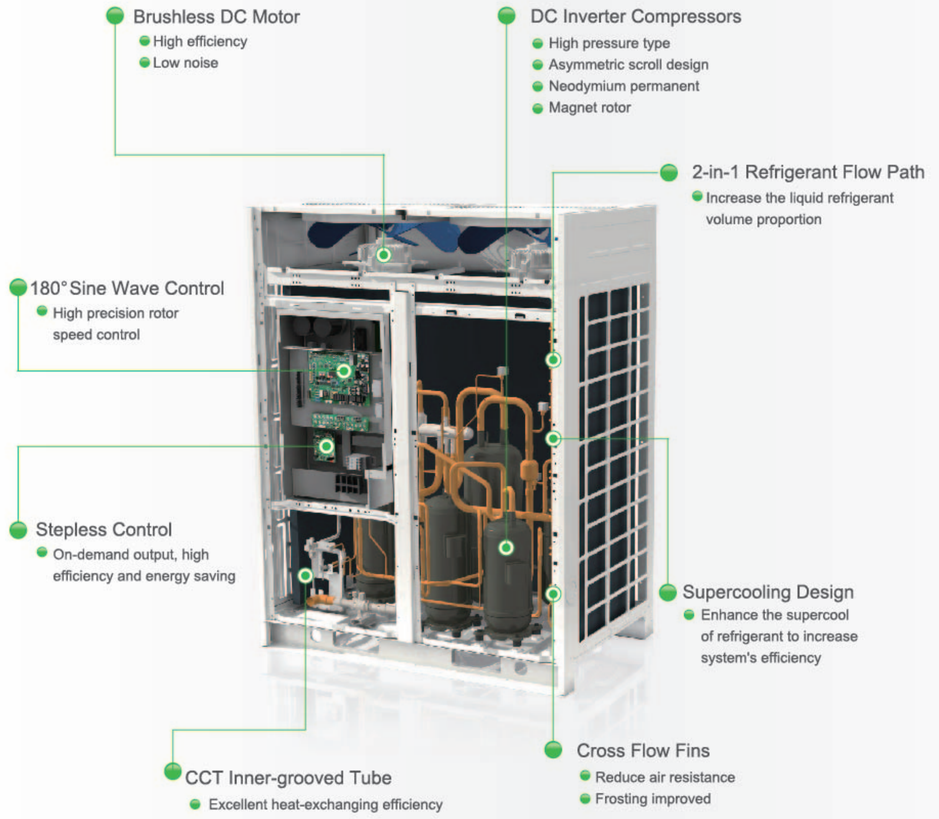
Low carbon life advocate

Chigo CAC always focus on low-carbon energy-saving products development, and spare no effort for technological research and development, to become a practitioner and advocate of low-carbon technology!



Core Technologies Make High Efficiency

CMV-X+	CMV-X	CMV-R
●	●	●

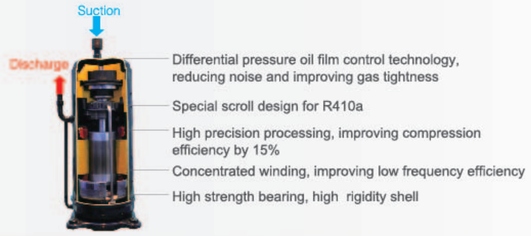


High Efficiency DC Inverter Compressor

CMV-X+	CMV-X	CMV-R
●	●	●

- From Hitachi, famous inverter compressor manufacturer.
- R410a ECO friendly refrigerant.
- Small torque fluctuation, low vibration and quiet operation.
- High efficiency due to its patent internal structure design.
- Internal oil circulation structure.
- High Reliability.
- Wide rotation speed range.

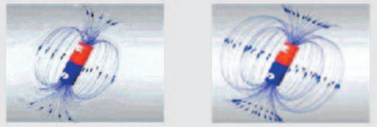
- High pressure chamber
  - Has small suction superheat and high refrigerant volume efficiency
  - Has large refrigerant discharge buffer volume, Low vibration and noise



- Neodymium permanent magnet rotor,has powerful magnetic force,large torque and high efficiency.
- Concentrated winding,improving low frequency effciency.

Neodymium permanent magnet rotor

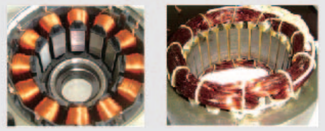
Powerful magnetic force, large force moment and high efficiency.



Ferrite magnet　　Neodymium permanent magnet

Concentrated winding

Magnetic efficiency is 12% higher than distributed winding



Concentrated winding　　Distributed winding

High Efficiency DC Motor

CMV-X+	CMV-X	CMV-R
●	●	●

- High efficiency DC fan motor is from well-known brand.
- Low noise and high efficiency because of high-density wire winding engineering.
- Brushless with built-in sensor.

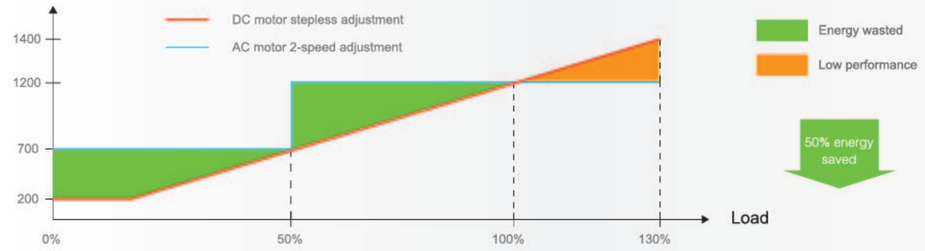
DC fan motor

Stepless Control

CMV-X+	CMV-X	CMV-R
●	●	●

DC fan motor can be stepless controlled by outdoor PCB according to system's operating pressure. And it is able to reduce the energy consumption and maintain the system in the best performance.

Load–Revolution curve



180° Sine Waveform Control

CMV-X+	CMV-X	CMV-R
●	●	●

The perfect combination of 180°Sine waveform rotor frequency drive control technology and excellent IPM inverters,reduces the reactive loss of motor-driven,increases motor efficiency by 12%.