



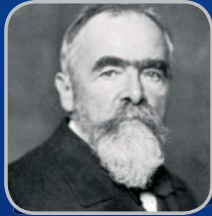
# Cold Storage

Refrigeration Total Solution





In 1902, Dr. Willis Carrier invented the first modern air conditioning system in the world, which making him one of the 100 most influential people of the 20th century.



In 1877, the first refrigeration technology invented by Mr. Carl von Linde was patented, marking the application of modern refrigeration technology in scientific research, industry and commerce and families.

## Carrier Company

Carrier is a world leader in heating, air-conditioning and refrigeration solutions.

## Haier Carrier

Haier Carrier Refrigeration Equipment Co., Ltd. (Qingdao) was a joint venture established by Haier Group and US Carrier in 2001. After more than ten years of development, it has become a world-class facility. Its products include supermarket display cabinets (more than 1,000 specifications), compressor units (scroll, piston and screw), and heat exchangers (air-cooled condenser and air cooler). It can provide customers with whole sets of freezing and refrigerating solutions. Relying on the support of Carrier's R&D centers in Mainz, Germany and Shanghai, China, the company now has a nationally recognized laboratory, and the products and system technologies of Haier Carrier are leading in the world. The company is committed to providing advanced energy-saving systems, including carbon dioxide systems, for customers in the Asia Pacific region.

In the past ten years, relying on abundant resources of the parent company, Haier Carrier has become a world-class facility that owns the ISO9001 certification and the ACE certification of United Technologies (Carrier's parent). With strong R&D strength, we are able to provide world-class freezing and refrigerating integrated solutions such as D2D hot gas defrosting (national patent), Ground Water (GSHP technology dedicated for freezing and refrigerating purposes), HybridCO2OL (carbon dioxide cascade refrigeration technology), and CO2OLtec (carbon dioxide transcritical refrigeration technology).

## Carrier new intelligent production base

Carrier is committed to innovative revolution and intelligent manufacturing. Since December 18, 2018, its new intelligent production base has been relocated to No. 3734, Tuanjie Road, Huangdao District, Qingdao.

The area of the new factory has been greatly expanded, and more newly upgraded production lines have been equipped, which has increased the production capacity by about 45%; the laboratories have been comprehensively upgraded and the number has doubled. The laboratory has a complete set of experimental verification system and experimental equipment. At present, there are 3 double-station commercial display cabinet laboratories, which adopt domestic or international advanced equipment; and product parameters meet or exceed national standards, so as to protect food safety; An 24-hour multi-functional testing laboratory for air-cooled, water-cooled condensing units, as well as air coolers and condensers, can be used for timely detection to ensure energy-saving and reliable products, responsible for the end user.

Integrated System Method

D2D

## Our Patents Refrigeration Display Case

Refrigeration Circuit, Gas-Liquid Separator and Heating And Cooling System

Carrier has obtained nearly **100** patents for its core technologies in the field of commercial refrigeration. These patents are applied in Europe, the US, China and other countries and regions in the world, making Haier Carrier ahead in the industry in terms of depth and width.

Even Cleaning a Condenser

Design Application - a New Cabinet with Front Total Transparent and Sliding Glass /Filled

a New Glass Door Freezer with Bottom Sliding Baskets/Granted

# REDUCE YOUR CARBON FOOTPRINT

# AND ENERGY COSTS. NATURALLY.

Oil Balancing Control for Compressors Working in Parallel

Refrigerated Case **Let's Work Together!**

Oil Compensation in a Refrigeration Circuit

Oil Accumulation in CO<sub>2</sub> Refrigeration Ejector Cycles

Compressor Oil Distribution Device in Systems with Different Crankcase Pressure

# Certificate of honor and qualification certificates



CHINASHOP Golden Wings



CHINASHOP Golden Wings-  
Practical Fresh Food 3<sup>rd</sup> Prize



CHINASHOP Golden Wings-  
Effective Stop-loss in Supply  
Chain 2<sup>nd</sup> Place



CHINASHOP Golden Wings-  
2018 Most Market-potential  
Products Of the Year



DNV Business Assurance  
Management System Certificate



Environmental Management  
System Certificate



Utility Model Patent Certificate



National Industrial Product Production License



2017-2018 Golden Cold Chain Award - in  
China's Cold Chain Industry  
Top Ten Refrigeration and Thermal Insulation  
Equipment Suppliers



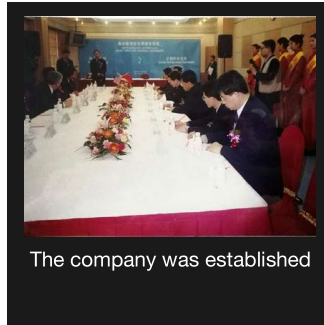
The Best Partner Award  
Lawson East China 1000 Stores  
Achievement Award



GCCA Credit Certification

# THE ROAD OF INNOVATION

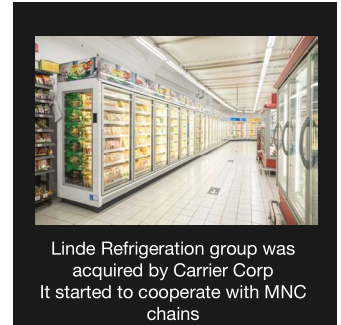
In Haier Carrier, innovation is our philosophy all the time



The company was established



It started its export business



Linde Refrigeration group was acquired by Carrier Corp  
It started to cooperate with MNC chains

2001

2003

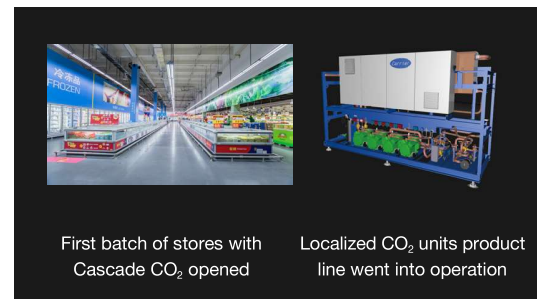
2004



EEL Energy Efficiency Certification

GCGA Credit Certification

New supermarket & C-store products were launched



First batch of stores with Cascade CO<sub>2</sub> opened

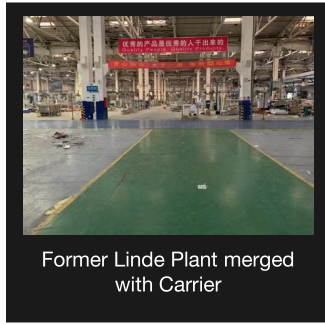
Localized CO<sub>2</sub> units product line went into operation

2014

2016



First D2D unit in China



Former Linde Plant merged with Carrier

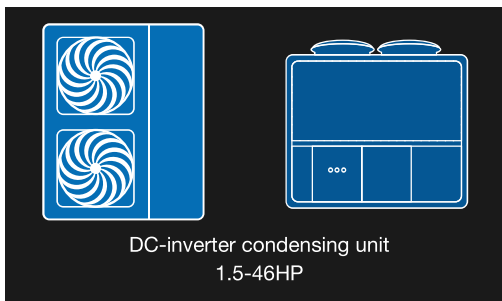


The first store with CO<sub>2</sub> pumping system opened

2007

2008

2012



DC-inverter condensing unit  
1.5-46HP



New intelligent production facility went into operation



Full series air/water cooling MT/LT DC Inverter Racks

2017

2018

2019

# GCCA Credit Certification



Carrier is

## **First One Certified by** Commercial Refrigeration Enterprise

- The scope of certification covers cabinets and condensing units, ensuring the right temperature, food safety and advantage of energy efficiency
- Certificated by Hefei General Machinery Product Certification Co., Ltd., a certification authority in refrigeration industry
- Cabinet remote type and plug-in open type





Carrier

## Your equipment doctor and store steward



Service centers

14



Service stations

200+



### Outstanding staffs for superior services

- All service engineers of Carrier are refrigeration experts
- To improve the technical capacity of each engineer, we have developed well-targeted training and development plans for each engineer



### 24/7 Call Center

- 24/7 repair call hot line
- Professionally trained customer service representatives at your services
- Advanced call-center system and database management system
- Whole-process tracking the operation of the equipment to ensure failure detection and timely repair
- All-round services including sales, complaint handling and maintenance
- Call back to listen to what the customer have to say
- Evaluating the service management for the managers provide them with services and product quality data



### Remote control

- The monitoring software monitors the equipment in your stores and sends the information to Carrier Monitoring Center
- The information is analyzed by the engineers at the monitoring center
- If necessary, the engineers at the monitoring center will inform the related service technicians to check on site
- The equipment failures in the stores are solved by Carrier before the customers are aware of them

# R410A MT DC Inverter Condensing Units



**1.5~4HP**  
Rotary Compressor  
Single Compressor  
Single Fan



**6~10HP**  
Rotary Compressor  
Single Compressor  
Dual Fans



**18HP~21HP**  
Scroll Compressor  
Dual Compressors  
Single Fan



**27HP~46HP**  
Scroll Compressor  
Dual Compressors  
Dual fans

## Customer Value

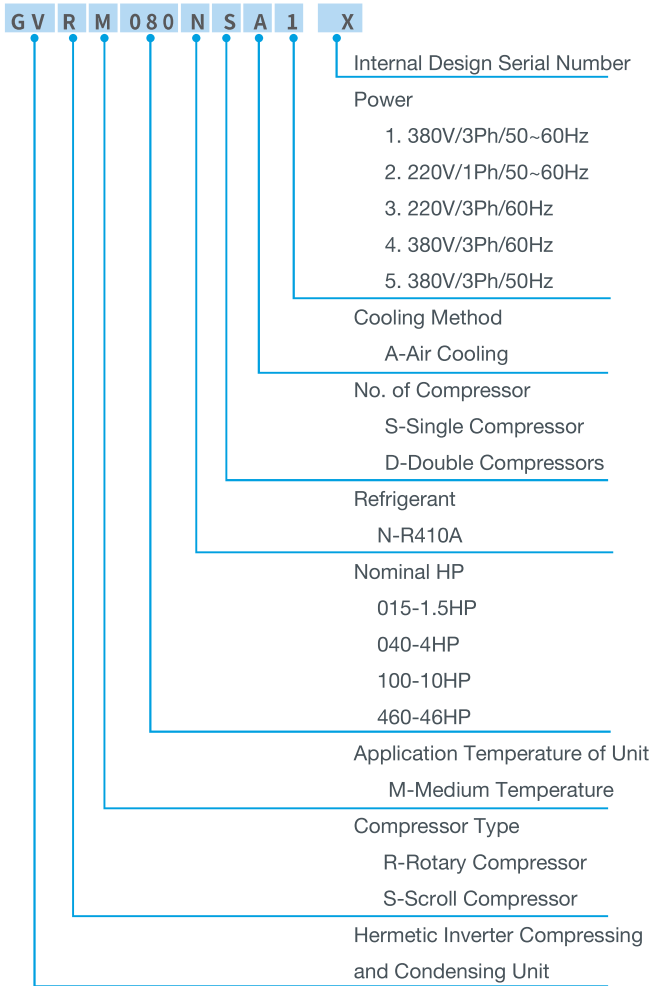
- Various models options, applicable for C-stores, supermarkets and cold storage
- Wide adjustable range for cooling capacity and small fluctuation food storage temperature
- Low operation cost and over 30% of annual energy saving compared with Fixed Speed unit
- Quiet unit with 4BA lower sound level compared with Fix speed unit
- Small pipe size to save installation cost
- Application scope is wide with the highest adaptable temperature of 43°C
- Compact structure to save footprint

## Product Features

- DC inverter compressor design with step-less regulation of load and rotary speed for maintaining high efficiency and saving energy
- DC inverter fan with automatic adjustment of fan speed for reducing noise and saving energy
- Thickened sound insulation cotton with effective noise insulation
- R410A refrigerant adopted with high volumetric efficiency
- Large areas of condensing coils adopted for ensuring operation under high temperature
- Integrated shell without separate machine room for saving space and convenient installation

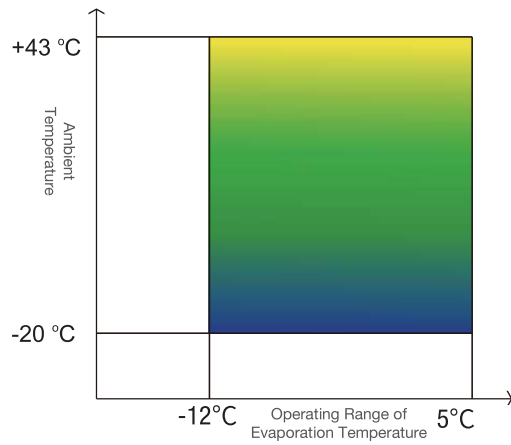


### Naming Rule of MT DC Inverter Condensing Units

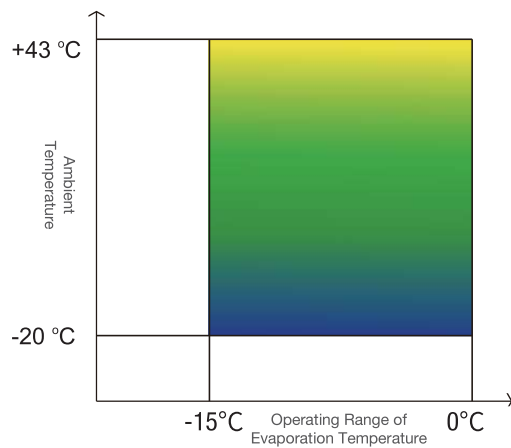


### Operation Range

#### 1.5HP~10HP



#### 18HP~46HP



## MT DC Inverter Condensing Units Technical Parameters

### Technical Parameters (1.5-10HP)

Model	GVRM 015NSA2A	GVRM 025NSA2A	GVRM 035NSA2A	GVRM 040NSA1A	GVRM 060NSA1A	GVRM 080NSA1A	GVRM 100NSA1A
Refrigerant	R410A						
Supply Voltage of Unit	220V/1Ph/50~60Hz			380V/3Ph/50~60Hz			
Compressor Model	SNB140 FCAMC	TNB220 FFEMC-L	TNB306 FPPMC-L	MNB36 FABMC	MNB42FF DMC-L	LNB53 FCAMC	LNB65F
Type of Refrigerant Oil	FV50S			FV50S			
Compressor Oil Charge (L)	0.35	0.72	1.07	1.1	1.4	1.7	2.3
Number of Fan	1			2			
Diameter of Fan (mm)	500						
Fan Speed Range (rpm)	300~850						
Maximum Air Volume (m <sup>3</sup> /h)	4030			7060			
Reservoir Volume (L)	4.5			8.8			
Maximum Cooling Capacity of Unit (kW)	4.6	7.6	9.3	10.9	14.3	17.5	18.7
Maximum Power of Unit (kW)	1.9	3.2	4.2	5.1	5.5	7.6	8.1
Noise of Unit dBA@1m	52	53	53	56	59	60	60
Nominal Running Current of Unit (A)	6	9	11	5.0	6.3	8.9	9.6
Maximum Running Current (A)	12	16	23	12	16	23	25
Diameter of Suction Pipe [in.]	1/2		5/8		3/4		
Diameter of Liquid Pipe [In.]	3/8				1/2		
Dimensions (L x W x H) (mm)	1064X424X802			1064X448X1358			
Weight (kg)	93	95	97	97	142	146	150

Cooling capacity power testing conditions: National standard medium temperature working conditions: GB/T21363-2008  
Evaporating temperature: -7°C , ambient temperature: 32°C , return temperature 18°C .

## Technical Parameters (1.5-10HP)

Model	Ambient Temperature °C	Cooling Capacity Qo Input Power Pe (kW)	Evaporating Temperature °C							
			-10		-7		-5		0	
			Min	Max	Min	Max	Min	Max	Min	Max
1.5HP	27	Q	2.7	4.2	3.1	4.8	3.4	5.1	4.1	6.3
		P	0.9	1.8	0.9	1.8	1.0	1.8	1.0	2.0
	32	Q	2.7	4.1	3.0	4.6	3.2	5.0	4.0	6.0
		P	1.0	1.9	1.0	1.9	1.1	2.0	1.1	2.1
	38	Q	2.4	3.7	2.7	4.2	2.9	4.6	3.7	5.5
		P	1.1	1.9	1.1	2.0	1.2	2.0	1.2	2.2
43	Q	2.2	3.1	2.5	3.6	2.7	3.9	3.3	4.8	
	P	1.1	2.0	1.2	2.2	1.2	2.1	1.2	2.2	
2.5HP	27	Q	4.6	7.1	5.2	8.0	5.6	8.5	6.7	10.5
		P	1.5	2.7	1.5	2.7	1.5	2.9	1.6	3.0
	32	Q	4.4	6.8	4.9	7.6	5.3	8.2	6.3	9.7
		P	1.6	2.9	1.7	3.2	1.7	3.1	1.8	3.3
	38	Q	4.1	6.4	4.6	7.0	4.9	7.6	5.9	9.1
		P	1.8	3.1	1.9	3.4	1.9	3.5	2.0	3.7
43	Q	3.8	5.5	4.3	6.3	4.6	6.7	5.6	8.4	
	P	2.0	3.5	2.0	3.6	2.1	3.8	2.2	4.1	
3.5HP	27	Q	6.2	8.8	6.9	9.8	7.5	10.6	8.9	12.5
		P	2.1	3.5	2.1	3.7	2.2	3.8	2.3	4.1
	32	Q	5.9	8.3	6.6	9.3	7.1	10.1	8.5	11.9
		P	2.3	3.9	2.4	4.2	2.4	4.3	2.6	4.5
	38	Q	5.5	7.7	6.1	8.6	6.6	9.3	7.9	11.1
		P	2.6	4.2	2.7	4.5	2.7	4.6	2.9	5.0
43	Q	5.1	6.7	5.7	7.5	6.2	8.2	7.4	10.1	
	P	2.8	4.6	2.9	4.8	2.9	5.0	3.1	5.5	
4HP	27	Q	7.2	10.8	8.0	11.9	8.6	12.7	10.1	14.8
		P	2.4	4.6	2.5	4.8	2.6	4.9	2.7	5.3
	32	Q	6.5	9.8	7.3	10.9	7.8	11.6	9.2	13.5
		P	2.7	4.9	2.7	5.1	2.8	5.3	2.9	5.7
	38	Q	5.8	8.7	6.4	9.6	6.9	10.3	8.1	12.0
		P	2.9	5.5	3.0	5.6	3.1	5.7	3.2	6.1
43	Q	4.9	6.5	5.5	7.5	5.9	8.0	7.0	9.4	
	P	3.2	5.8	3.3	6.3	3.4	6.3	3.6	6.6	
6HP	27	Q	9.1	13.6	10.2	15.2	11.0	16.4	13.3	19.5
		P	2.9	5.0	3.0	5.1	3.0	5.3	3.2	5.7
	32	Q	8.5	12.7	9.8	14.3	10.4	15.4	12.5	18.4
		P	3.2	5.3	3.3	5.5	3.3	5.7	3.5	6.1
	38	Q	7.8	11.9	8.9	13.2	9.6	14.2	11.5	17.0
		P	3.5	5.6	3.6	5.9	3.7	6.1	3.8	6.5
43	Q	7.1	9.4	8.0	10.7	8.6	11.8	10.4	14.9	
	P	3.8	6.1	4.0	6.4	4.0	6.7	4.1	7.3	
8HP	27	Q	10.9	16.6	12.2	18.7	13.2	20.1	15.9	24.1
		P	3.6	6.7	3.8	6.9	3.9	7.2	4.1	8.0
	32	Q	10.2	15.5	11.5	17.5	12.4	18.9	15.0	22.7
		P	3.9	7.2	4.1	7.6	4.2	7.8	4.5	8.5
	38	Q	9.3	14.6	10.6	16.1	11.5	17.4	13.9	20.9
		P	4.3	7.5	4.5	8.2	4.6	8.5	5.0	9.3
43	Q	8.4	11.8	9.5	13.3	10.3	14.5	12.6	18.4	
	P	4.8	8.0	5.0	8.9	5.1	9.3	5.4	10.4	
10HP	27	Q	12.9	17.9	14.3	20.2	15.3	21.7	18.2	26.0
		P	4.3	7.5	4.5	7.6	4.6	8.0	4.8	8.7
	32	Q	12.0	16.6	13.5	18.7	14.5	20.2	17.2	24.3
		P	4.7	8.0	4.9	8.1	4.9	8.8	5.4	9.2
	38	Q	11.2	15.6	12.5	17.2	13.4	18.6	15.9	22.4
		P	5.3	8.5	5.3	8.9	5.4	9.4	5.9	9.8
43	Q	10.1	12.5	11.2	14.1	12.2	15.4	14.5	19.5	
	P	5.8	9.0	5.9	9.7	6.0	10.3	6.4	10.8	

\*Max. load 90RPS, Min. load 60RPS

## MT DC Inverter Condensing Units Technical Parameters

### Technical Parameters (18-46HP)

Model	GVSM180NDA50	GVSM210NDA50	GVSM270NDA50	GVSM350NDA50	GVSM460NDA50
Refrigerant	R410A				
Supply Voltage of Unit	380V/3Ph/50Hz				
Compressor Model	SH090+VZH088	SH120+VZH088	SH161+VZH117	SH180+VZH170	SH295+VZH170
Type of Refrigerant Oil	160SZ				
Self-contained Oil in the Compressor	6.3	6.6	6.9	13.4	13.4
Complimentary Oil (Refill according to site requirements) (L)	2.5				
Number of Fan	1		2		
Diameter of Fan (mm)	800				
Fan Speed Range (rpm)	710				930
Maximum Air Volume (m <sup>3</sup> /h)	14000			19000	
Reservoir Volume (L)	4		8		
Oil Accumulator Capacity (L)	20		40		
Maximum Cooling Capacity of Unit (kW)	39.5	43.6	56.5	75.6	92.6
Maximum Power of Unit (kW)	16.4	18.5	23.7	31.2	39.2
Noise of Unit dBA@1m	65	65	67	70	72
Nominal Running Current of Unit (A)	26	30	39	45	59
Maximum Running Current (A)	60	65	80	100	125
Diameter of Suction Pipe [in.]	1-3/8"		1-5/8"		2-1/8"
Diameter of Liquid Pipe [in.]	5/8"		7/8"		1-1/8"
Dimensions (L x W x H) (mm)	1240x1050x1870			2240x1200x2250	
Weight (kg)	565	575	700	870	880

Cooling capacity power testing conditions: National standard medium temperature working conditions: GB/T21363-2008  
 GB/T21363-2008 Evaporating temperature: -7°C , ambient temperature: 32°C , return temperature 18°C .

## Technical Parameters (18-46HP)

Model	Ambient Temperature °C	Cooling Capacity Qo Input Power Pe (kW)	Evaporating Temperature °C							
			-10°C		-7°C		-5°C		0°C	
			Min	Max	Min	Max	Min	Max	Min	Max
18HP	27	Q	29.9	37.7	33.3	41.8	35.7	44.8	42.2	52.7
		P	10.8	14.7	11.0	15.1	11.1	15.4	11.6	16.2
	32	Q	28.2	35.6	31.4	39.5	33.7	42.3	40.0	49.9
		P	11.8	16.0	12.1	16.4	12.2	16.7	12.7	17.6
	38	Q	26.2	33.1	29.2	36.8	31.4	39.4	37.2	46.5
		P	13.3	17.8	13.5	18.2	13.7	18.5	14.2	19.3
43	Q	24.5	30.9	27.3	34.4	29.4	36.9	34.9	43.6	
	P	14.6	19.4	14.8	19.8	15.0	20.1	15.5	20.9	
21HP	27	Q	34.1	41.6	38.0	46.1	40.7	49.3	48.0	57.9
		P	12.4	16.4	12.8	17.0	13.0	17.4	13.8	18.6
	32	Q	32.2	39.2	35.9	43.6	38.5	46.6	45.5	54.9
		P	13.7	18.0	14.0	18.5	14.3	18.9	15.0	20.1
	38	Q	29.9	36.4	33.3	40.5	35.8	43.4	42.3	51.1
		P	15.3	19.9	15.7	20.5	16.0	20.9	16.7	22.1
43	Q	27.9	34.0	31.1	37.9	33.4	40.6	39.7	47.9	
	P	16.8	21.7	17.2	22.3	17.5	22.7	18.2	23.8	
27HP	27	Q	43.9	54.0	48.7	59.8	52.2	64.0	61.5	75.1
		P	15.8	21.1	16.1	21.6	16.4	22.0	17.0	23.1
	32	Q	41.4	51.0	46.0	56.5	49.3	60.5	58.2	71.0
		P	17.5	23.1	17.8	23.7	18.1	24.1	18.7	25.2
	38	Q	38.3	47.3	42.7	52.5	45.8	56.1	54.1	66.0
		P	19.8	25.8	20.1	26.3	20.3	26.7	20.9	27.8
43	Q	35.7	44.1	39.9	49.0	42.8	52.5	50.7	61.7	
	P	21.8	28.2	22.1	28.7	22.3	29.1	23.0	30.2	
35HP	27	Q	56.9	72.1	63.2	79.9	67.7	85.4	79.9	100.2
		P	20.7	27.9	21.0	28.6	21.2	29.1	21.9	30.5
	32	Q	53.8	68.2	59.8	75.6	64.1	80.8	75.7	94.9
		P	22.7	30.4	23.1	31.2	23.3	31.7	24.0	33.1
	38	Q	49.9	63.4	55.6	70.4	59.7	75.3	70.6	88.5
		P	25.5	33.8	25.8	34.5	26.0	35.1	26.7	36.5
43	Q	46.7	59.3	52.1	65.9	55.9	70.5	66.2	83.0	
	P	27.9	36.8	28.3	37.6	28.5	38.1	29.2	39.5	
46HP	27	Q	73.8	88.3	81.9	97.8	87.7	104.5	103.3	122.5
		P	27.9	35.2	28.5	36.2	29.0	36.9	30.2	38.9
	32	Q	69.8	83.5	77.5	92.6	83.0	99.0	97.8	116.1
		P	30.4	38.2	31.0	39.2	31.4	39.9	32.7	41.9
	38	Q	64.8	77.7	72.1	86.2	77.3	92.2	91.2	108.2
		P	33.7	42.1	34.3	43.1	34.7	43.8	35.9	45.7
43	Q	60.6	72.7	67.5	80.7	72.4	86.3	85.5	101.5	
	P	36.6	45.7	37.2	46.6	37.7	47.3	38.9	49.2	

\*Max. load Fixed Speed +80RPS and Min. load Fixed Speed +50RPS

# R410A LT DC Inverter Condensing Units



2.5~5HP



7~10HP

## Product Features

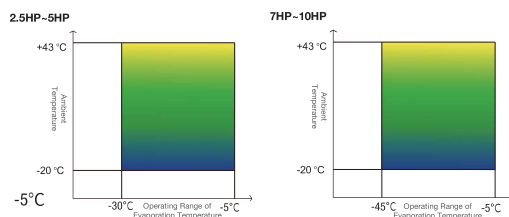
- Freezing and refrigerating integrated application for convenient store renovation and maintenance
- DC variable frequency compressor, with wide adjustable range, high energy efficiency and low operation cost
- Adopt frequency conversion fan, with low operation cost
- Compact structure design, small footprint
- Inner frame with sound insulation cotton, low noise
- R410A refrigerant, low installation cost
- Energy saving ~10%, noise reduction ~4dBA

## Operating Range

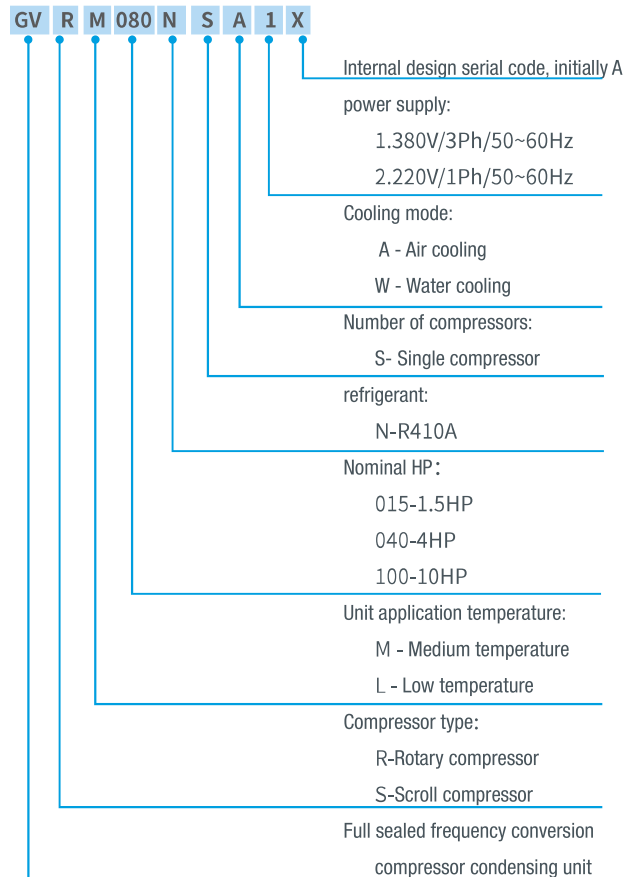
Model	Refrigerant	Minimum Evaporating Temperature	Nominal Condition Cooling Capacity @60rps(kW)*	COP	Maximum Cooling Capacity
2.5HP	R410A	-30	2.6	1.2	3.7
3.5HP			3.1	1.2	4.5
5HP			4.2	1.2	6.2
7HP	R410A	-40	6.7	1.3	9.0
10HP			10	1.3	13.0

\*The working condition is based on the ambient temperature of 32 °C and the evaporation temperature of - 30 °C .

Operation Range and Naming Rule



## Naming Rule



\* All comparisons are based on the product performances of last generation.

## Application Scenarios



### Catering chain

Chain restaurants with small cold storage

Room temperature: -18°C ~ -5°C

### Hotel cold storage

Hotels with small cold storage

Room temperature: -18°C ~ -5°C

### Supermarket

Provide cooling capacity to remote freezer

Room temperature: -18°C ~ -5°C

## Unit Performance Parameters - Low Temperature Unit

Unit Model	GVRL025NSA2A	GVRL035NSA2A	GVRL050NSA2A	GVSL070NSA1A	GVSL100NSA1A
Number of matches	2.5HP	3.5HP	5.0HP	7.0HP	10HP
Refrigerant	R410A				
Supply Voltage of Unit	220V/1PH/50~60Hz			380V/3PH/50~60Hz	
Compressor Model	WHP09500AEDPC9FD	WHP11500AEDPC9FD	WHP15600AEDPC9FD	ENK62FC-YE-C	HNK92FE-YE-C
Type of Refrigerant Oil	a68HES-H			MEL32R	
Compressor Oil Charge (L)	1.65			2.3	3
Operating Frequency Range (rps)	30~100		30~90	30~85	30~100
Minimum evaporation temperature	-30			-45	
Number of Fan	1			2	2
Diameter of Fan (mm)	500				
Fan Speed Range (rpm)	300~850				
Maximum Air Volume (m <sup>3</sup> /h)	4030			7060	
Reservoir Volume (L)	4.5			8.8	
Maximum refrigerating capacity of unit (kw)	4.8	6.2	7.1	10.5	16.9
Unit rated cooling Capacity (kW)	3.4	4.1	5.5	9	13.3
Unit rated power (kW)	2.3	2.5	3.6	5.1	7.6
Noise of Unit dBA@1m	54	54	54	57	60
Unit starting current (A)	--				
Unit rated operating current (A)	10	12	16	10	13
Maximum Running Current (A)	25	30	33	25	30
Diameter of Suction Pipe (Inch)	1/2	5/8		3/4	1-1/8
Diameter of Liquid Pipe (Inch)	3/8			1/2	
Dimensions (L x W x H) (mm)	1164*470*864			1164*470*1358	
Weight (kg)	112	112	112	172	186

Cooling capacity power testing conditions: National standard medium temperature working conditions: GB/T21363-2008  
 Evaporating temperature: -23°C, ambient temperature: 32°C, return temperature 5°C.

\* If there is any demand, please contact the technical personnel or the sales department for detailed parameters.