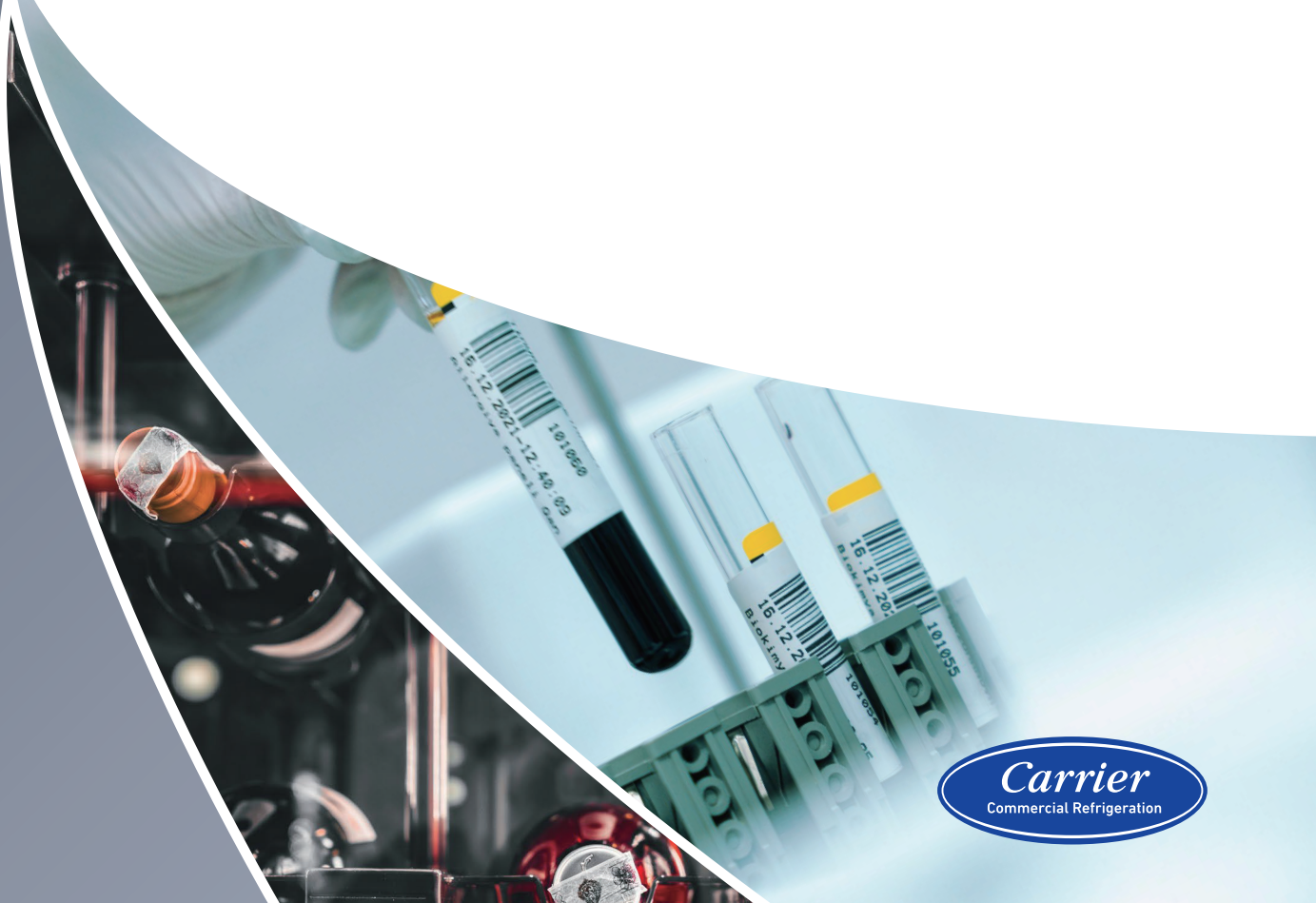




# **ETHEREAL** Series

Full DC Inverter Condensing Unit

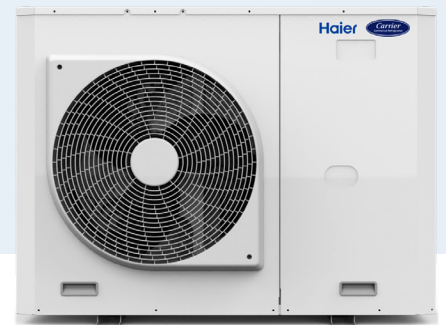


# 12 YEARS JOURNEY, INVERTER EXCELLENCE.



**2013**

Established a dedicated R&D team specializing in inverter technology.



## Over 30,000+ Projects Powered by CCR Inverter CDU

Wide Ambient Temp. Range  
**-30~48°C**

Food room temp.: -30~20°C

**Applications**

Fresh Flowers | Fruits & Vegetables |  
Daily Essentials | Wine | Electronics |  
Pharmaceuticals, etc.

Full DC Inverter-driven,  
Proven Energy Savings



**Full DC Inverter**  
Inverter Compressor  
+ Inverter Fan



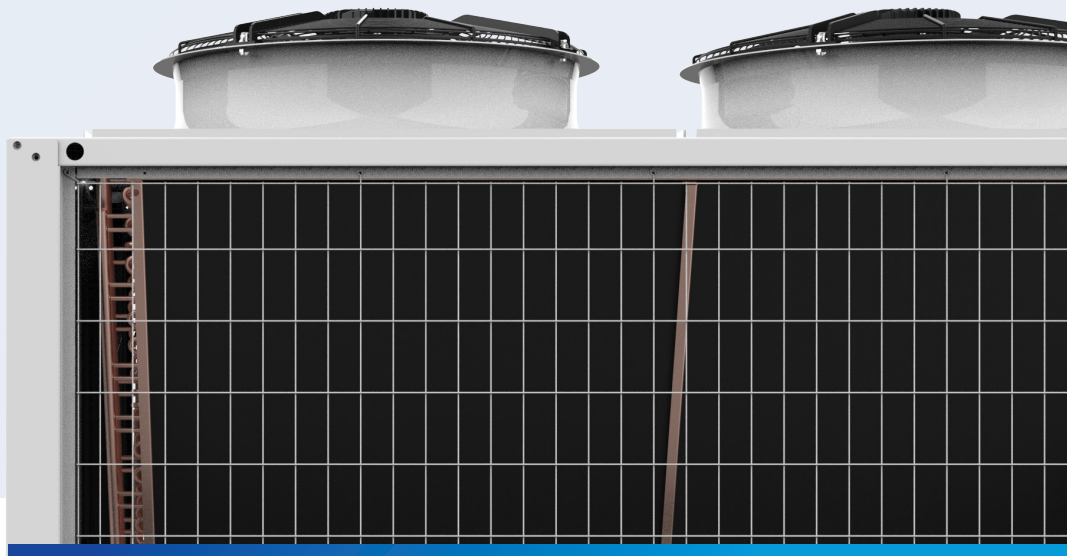
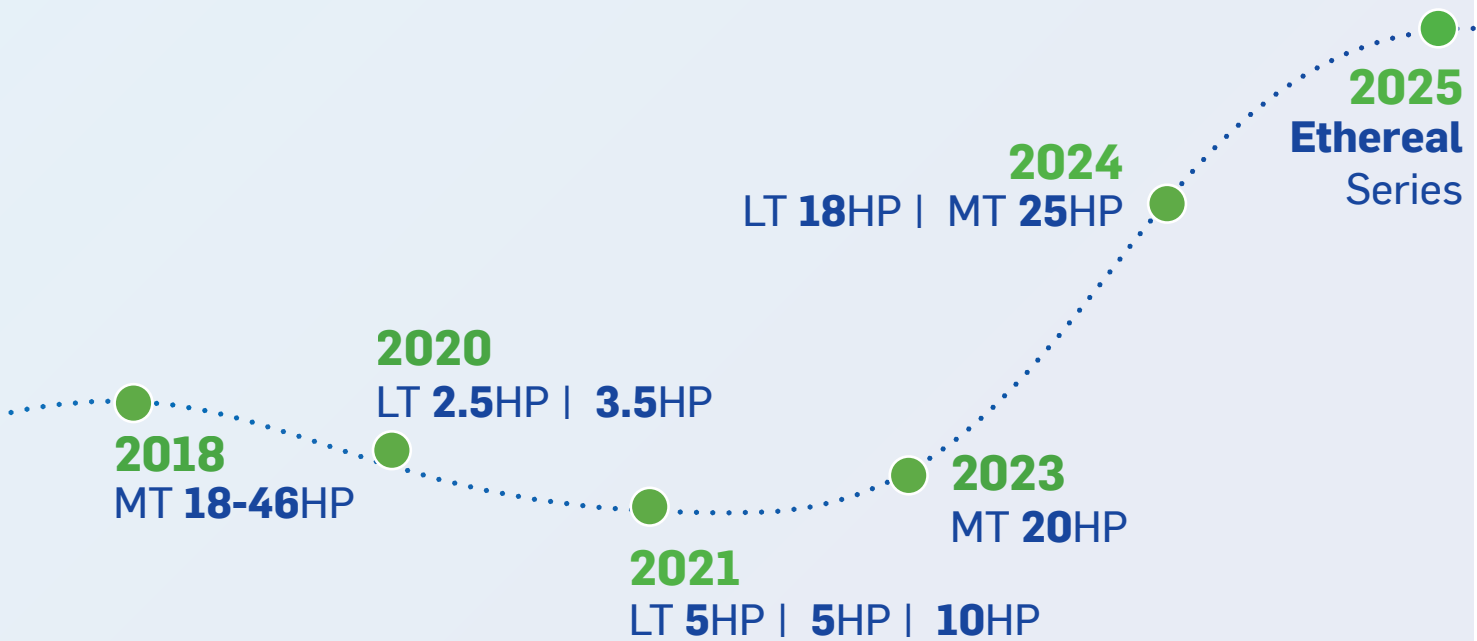
**Wide Ambient Temp. Range**  
Stable & Reliable



**Integrated / Split**  
Flexible Installation



**Energy saving 35%**  
VS. fixed-speed units



## PRODUCTS 1.5 ~ 46HP

### 12 YEARS

CCR has accumulated over 12 years of inverter technology expertise.

The **newly upgraded** structure offers more compact and flexible design.



**24/7** remote monitoring with technical expert support ensures reliable operation.



R410A LT  
DC Inverter CDU  
**2.5~5 HP**



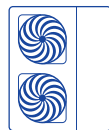
R410A MT  
DC Inverter CDU  
**1.5~4 HP**



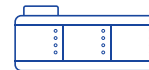
R410A MT/LT  
Water-cooled  
DC Inverter CDU  
**1.5~4.5 HP**



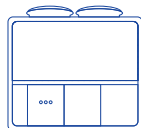
R410A LT  
DC Inverter CDU  
**7~10 HP**



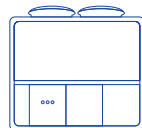
R410A MT  
DC Inverter CDU  
**6~12 HP**



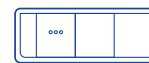
SPI R410A MT/LT  
Water-cooled  
DC Inverter  
Semi Integrated  
Solutions



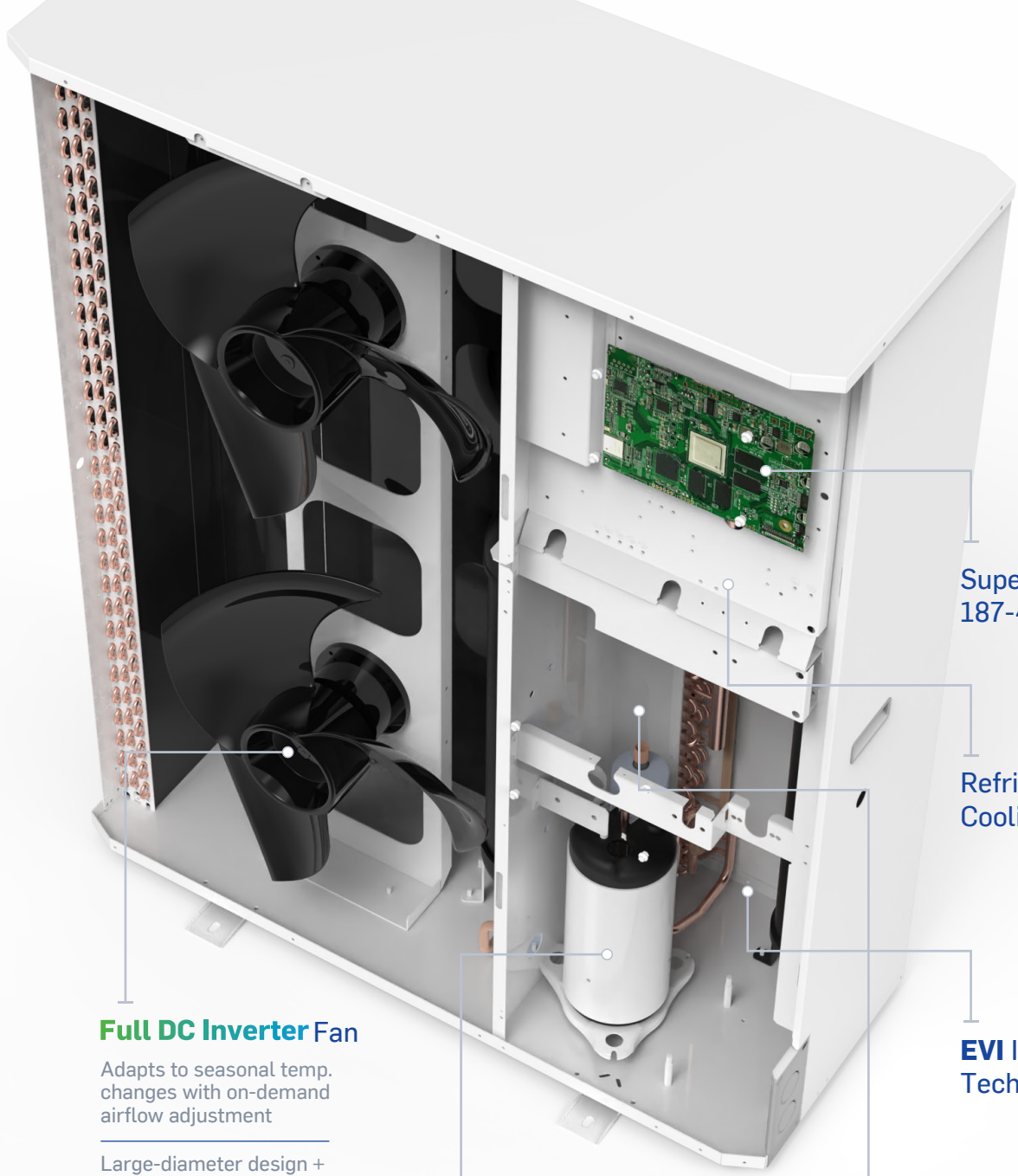
R410A MT  
Integrated  
DC Inverter CDU  
**18~46 HP**



R410A MT  
Integrated/Split  
DC Inverter CDU  
**18/20/25 HP**



R410A MT  
Split DC Inverter  
Compressor  
**27/35/46 HP**



### Full DC Inverter Fan

Adapts to seasonal temp. changes with on-demand airflow adjustment

Large-diameter design + high airflow output, 550~700mm maximize coverage efficiency

Aerodynamic streamlined blades with variable-speed motors, ensure energy-efficient operation

Super PCB 187-440V

Refrigerant Cooling

EVI Injection Technology

### Full DC Inverter Compressor

Refrigeration/freezing-optimized design, ultra-quiet operation

### EXV Electronic Expansion Valve

- Intelligent control logic coordinates three core components in synergistic operation
- Stepless adjustment responding to real-time requirements



Energy saving\* **35%**

Noise reducing\* **7~8dB**

**Full DC Inverter-Driven**

+

**Proven Energy Savings**

+

**Certified Silent Operation**

\* Compare with fixed-speed units

# Technical Parameters

Model	GVRM040 NSA1D	GVRM050 NSA1D	GVRM060 NSA1D	GVRM080 NSA1D	GVRM100 NSA1D
HP	4HP	5HP	6HP	8HP	10HP
Refrigerant	R410A				
Supply Voltage of Unit	380V/3Ph/50-60Hz			380V/3Ph/50-60Hz	
Type of Refrigerant Oil	FV50S/FVC68D			FV50S	
Number of Fan	1	2			
Diameter of Fan (mm)	550			600	
Fan Speed Range (rpm)	300-850			300-800	
Maximum Air Volume (m <sup>3</sup> /h)	5100	8300		11000	
Evaporating Temp. Range (°C)	-15-10				
Unit Rated Cooling Capacity (kW)	7.8	9.2	10.7	14.2	15.9
Unit Rated Power (kW)	2.8	3.2	4	4.8	5.6
Unit Rated COP	2.8	2.9	2.7	3.0	2.8
Maximum Cooling Capacity of Unit (kW)	11.9	13.8	15.5	20.3	22
Noise of Unit dBA@1m	53	53	56	58	58
Nominal Running Current of Unit (A)	5	5.7	6.8	7.8	9
Maximum Running Current (A)	19	20	22	27	28
Diameter of Suction Pipe (Inch)	5/8	3/4			
Diameter of Liquid Pipe (Inch)	3/8	1/2			
Dimensions (L x W x H) (mm)	950 × 370 × 965	950 × 370 × 1350		1065 × 457 × 1420	
Weight (kg)	95	106	106	126	130

Capacity and power test condition: MT condition per China National Standard GB/T21363-2018;  
 Evaporating temperature: -7°C, Outdoor Ambient temperature: 32°C, Return gas temperature: 18°C.



# Performance Parameters

Model	Ambient Temp. °C	Cooling Capacity Q Power Consumption P (kW)	Evaporating Temp. °C															
			-15		-12		-10		-7		-5		0		5		10	
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
4HP	27	Q	6	9.8	6.8	10.9	7.3	11.8	8.2	13.1	8.9	14	10.5	16.5	12.4	19	14.3	21.4
		P	2.3	4.9	2.4	5.3	2.5	5.5	2.6	5.8	2.6	6.1	2.8	6.7	3.1	7.4	3.4	8.2
	32	Q	5.6	8.8	6.3	9.9	7	10.7	7.8	11.9	8.4	12.8	9.9	14.9	11.6	17.7	13.4	18.5
		P	2.5	5.4	2.6	5.8	2.7	6	2.8	6.4	2.9	6.7	3.1	7.3	3.4	8.1	3.7	7.1
	38	Q	5	7.6	5.7	8.6	6.2	9.3	7	10.4	7.5	11.2	9.1	13.1	10.7	14.4	12.3	15.6
		P	2.8	5.8	2.9	6.2	3	6.5	3.1	6.9	3.2	7.2	3.4	7.9	3.7	7.1	4	6.2
	43	Q	4.5	6.6	5.2	7.5	5.6	8.1	6.4	9.1	6.9	9.8	8.3	11	9.9	12	11.4	12.9
		P	3	6.2	3.1	6.6	3.2	6.9	3.4	7.3	3.5	7.6	3.7	6.9	4	6.2	4.3	5.4
	48	Q	3.9	5.5	4.5	6.3	4.9	6.5	5.6	7.4	6.1	7.5	7.4	8.4	9	9	9.5	9.5
		P	3.2	6.5	3.3	6.9	3.4	6	3.6	6.4	3.7	5.5	4	5	4.5	4.5	3.5	3.5
5HP	27	Q	5.7	10.7	6.5	12.2	7.1	13.2	8	14.8	8.7	16.1	10.4	19.3	12.4	23	14.7	27
		P	2.2	5	2.2	5.2	2.3	5.4	2.3	5.6	2.4	5.7	2.5	6.1	2.6	6.6	2.7	7.1
	32	Q	5.3	9.9	6.1	11.3	6.6	12.2	7.5	13.8	8.1	14.9	9.8	18.1	11.6	21.6	13.8	25.3
		P	2.4	5.4	2.5	5.7	2.5	5.8	2.6	6.1	2.6	6.2	2.7	6.6	2.8	7.1	3	7.6
	38	Q	4.8	8.7	5.5	10	6	11	6.8	12.5	7.4	13.6	9	16.5	10.8	19.7	12.7	23.2
		P	2.6	5.8	2.7	6.1	2.8	6.3	2.9	6.6	2.9	6.8	3.1	7.3	3.2	7.8	3.3	8.2
	43	Q	4.3	7.7	5	8.9	5.5	9.8	6.2	11.2	6.8	12.2	8.3	14.9	10	17.9	11.9	21.3
		P	2.8	6	2.9	6.4	3	6.6	3.1	7	3.2	7.2	3.3	7.8	3.5	8.4	3.7	8.9
	48	Q	3.7	6.6	4.4	7.7	4.8	8.5	5.6	9.8	6.1	10.7	7.6	13.2	9.2	15.9	11	17.4
		P	3	6.3	3.1	6.7	3.2	7	3.3	7.4	3.4	7.6	3.7	8.2	3.8	8.7	4	7.7
6HP	27	Q	7	12	7.9	13.6	8.6	14.7	9.7	16.6	10.5	18	12.6	21.6	15	25.5	17.7	30
		P	2.7	6.1	2.8	6.4	2.8	6.6	2.9	6.8	3	7.1	3.2	7.5	3.3	8.1	3.5	8.8
	32	Q	6.5	11	7.4	12.5	8.1	13.7	9.2	15.5	9.8	16.7	11.8	20.1	14.1	23.9	16.7	28
		P	3	6.5	3.1	6.9	3.1	7.1	3.2	7.5	3.3	7.7	3.5	8.2	3.7	8.7	3.9	9.4
	38	Q	5.8	9.6	6.7	11.1	7.3	12.1	8.3	13.8	9	15	10.9	18.1	13	21.6	15.4	25.4
		P	3.3	6.9	3.4	7.4	3.5	7.6	3.6	8	3.7	8.3	3.9	8.9	4.1	9.6	4.3	10.3
	43	Q	5.2	8.4	6	9.8	6.6	10.8	7.6	12.2	8.2	13.3	10	16.2	12.1	19.4	14.3	23.2
		P	3.4	7.2	3.6	7.7	3.7	8	3.9	8.4	4	8.7	4.2	9.4	4.4	10.1	4.7	10.8
	48	Q	4.5	7.2	5.3	8.4	5.9	9.3	6.7	10.6	7.3	11.6	9.1	14.2	11	15.9	13.2	17.4
		P	3.6	7.6	3.8	8.1	4	8.4	4.1	8.8	4.3	9.1	4.6	9.8	4.8	8.7	5	7.7

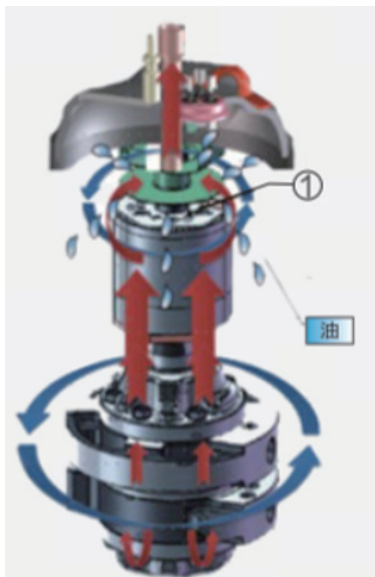
For more technical information, please consult our sales team.

## High Efficiency & Energy Saving

- All components feature DC inverter technology, including crucial compressors and fans. This significantly improves the Coefficient of Performance (COP), resulting in outstanding energy efficiency.
- By intelligently adjusting operating frequency to match cooling demand, the system avoids frequent start-stop cycles, reduces energy waste and increases operating efficiency by over 30%.

## Stable & Reliable

- The core components are made of premium materials. This guarantees operational stability and reliability with no worries, a long service life, and low maintenance costs.



Employing a dual oil separator, the system centrifugally separates oil from the oil-refrigerant mixture and returns it to the oil sump. This ensures reliable compressor lubrication and minimizes oil loss.

### Full DC Inverter Compressor

Equipped with a Mitsubishi Electric DC inverter compressor and high-precision controllers, it significantly reduces energy consumption and operating costs. The highly efficient DC inverter technology enables rapid cooling with minimal temperature fluctuation, ensuring optimal preservation of stored goods.



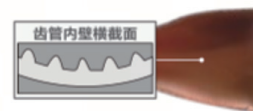
### Full DC Inverter Fan

DC inverter fans boost motor operating efficiency by 40% through inverter control technology. It enhances work efficiency while reducing energy consumption, ensuring both pressure stability and system reliability.



### High-Performance Heat Exchanger

With W-shaped inner-grooved copper tubes ( $\varnothing 7$ ) and corrugated heat exchange fins with hydrophilic films (0.11), it ensures superior heat transfer and extended service life.



### Liquid-Vapor Injection Design

With a built-in refrigerant injection valve, it prevents compressor overheating. When detecting overheating, the valve opens automatically, injecting atomized low-temperature liquid refrigerant—via a capillary tube—into the compressor. This effectively cools the unit and ensures stable operation.

### Flexible Mechanical Design

Designed for high performance, the system incorporates a flexible, large-pressure-ratio compressor specifically for refrigeration applications. This enhances overall cooling capacity while the robust mechanical construction resists liquid slugging and minimizes frictional losses, ensuring reliable operation. A segmented baffle and dual oil separation system effectively minimize lubricant discharge, guaranteeing consistent compressor lubrication. Furthermore, the compressor supports reliable operation across a broad range of conditions, with evaporation temperatures from  $-15^{\circ}\text{C}$  to  $+10^{\circ}\text{C}$  and outdoor ambient temperatures from  $-20^{\circ}\text{C}$  to  $50^{\circ}\text{C}$ .

### Variable Load Design

The system features a large-volume gas-liquid separator and liquid receiver to effectively mitigate the impact of load fluctuations, ensuring stable and efficient compressor performance.

### High-Efficiency Oil Return Design

A high-efficiency oil separator with 99% oil separation is provided as standard. Combined with Haier's proprietary oil return control technology, the system supports piping up to 25 meters without supplemental refrigerant oil and can extend to maximum 100 meters.

### Refrigerant Cooling Design

The inverter modules are cooled using a superconducting refrigerant cooling technique, where low-temperature refrigerant dissipates heat, significantly enhancing reliability in extreme conditions and allowing stable condenser operation at ambient temperatures up to  $50^{\circ}\text{C}$ .

## Quiet Operation

The DC inverter technology substantially reduces operational noise, delivering a quieter environment ideal for noise-sensitive commercial and residential applications.

### Quiet Compressor

A new symmetrical cylinder vane slot design lowers mechanical noise. Enhanced harmonic suppression and upgraded acoustic insulation further reduce audible disturbances.

### Silencing Design

Thickened sound-absorbing cotton and all-around mesh absorption materials effectively dampen compressor noise. An integrated silencing design suppresses both suction and discharge noises, targeting acoustic improvement at the source.

### Quiet Airflow Delivery

The DC inverter fan operates with minimal noise. A windmill-inspired air outlet grill balances circumferential airflow, increasing air volume by approximately 5% at the same fan speed while keeping noise to a minimum.

## Precise Temperature Control

An intelligent control system automatically adjusts cooling output based on ambient temperature and load changes, achieving precise temperature management with minimal fluctuation for improved comfort.

### Smart Temperature Control

Predictive temperature adjustment via PID and fuzzy logic control regulates compressor frequency, limiting temperature drift to  $\pm 0.9^{\circ}\text{C}$  and improving energy efficiency. High/low-pressure sensors accurately monitor refrigerant status, enabling proactive system adjustment.

## 24/7 All-Round Protection

### Easy Management

Backed by Haier's central air conditioning technical support, the system offers full-coverage services including 24/7 concierge support to maintain optimal operation.

### Data Analysis

Big data-driven energy consumption analysis helps identify efficiency opportunities and implements corrective measures to reduce energy usage and enhance operational performance.

### Real-Time Alerts

The unit performs self-diagnosis upon fault detection, issuing real-time notifications and remote alarms to facilitate rapid response.



# STAR-PRODUCT UNLEASHED SHAPING NEW STANDARDS

Delivering Superior Cooling Solutions  
Efficiency | Energy Conservation | Eco-Friendliness

**FULL DC INVERTER-DRIVEN  
PROVEN ENERGY SAVINGS**  
Pioneering  
Sustainable Cooling



Pipe Length  
**60m MAX.**  
Elevation Difference  
**20m MAX.**



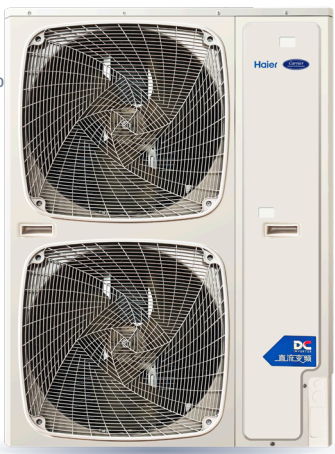
Full series large application  
temperature range  
**-30 ~ +48°C**  
Wide evaporation  
temperature range  
**-15 ~ +10°C**



Super PCB board  
Wide voltage  
compatibility  
**187~440V**



Flexible  
**Single/Dual-fan**  
configurations



**MT/LT**

## ETHEREAL Series Full DC Inverter CDU

**Full DC Inverter Compressor**  
Ultra-Quiet, Ultra-Efficient  
Energy saving **35%**  
VS. fixed-speed units

**Full DC Inverter Fan**  
Stepless Speed Control  
Whisper-Quiet  
**~5 dB@1m** retained as original

**Wireless Connectivity**  
Remote monitoring, auto-deployment



**Advanced Bluetooth-enabled smart control**

**Comprehensive component integration**  
liquid receiver,  
gas/oil separators

**Single/Dual Fan Optional**



## ETHEREAL Series Full DC Inverter Condensing Unit

Featuring a completely upgraded structure and advanced DC inverter technology, this condensing unit achieves high-efficiency and stable cooling through its intelligent control system, remote monitoring, and Bluetooth mobile connectivity. It helps users achieve efficient operation and reduce energy consumption, making it ideal for a wide range of applications including supermarkets, retail stores, restaurant chains, and e-commerce, etc.

# Note

A large grid of small dots for taking notes, consisting of 20 columns and 30 rows of dots.



**QINGDAO HAIER CARRIER REFRIGERATION EQUIPMENT CO., LTD.**  
Address: No.3734, Tuanjie Road, Huangdao District, Qingdao, CHINA  
Hot Line + 86 400-678-1888  
<http://www.haier-carrier.com>

**COOLTEC COMMERCIAL REFRIGERATION THAILAND CO., LTD.**  
Address: 14<sup>th</sup> - 15<sup>th</sup> Floor, Interlink Tower, 1858/63-74 Debaratna Road,  
KM.4.5, Bangna Tai, Bangna, Bangkok 10260, THAILAND  
Tel: + 66 (0) 2090 9990  
Fax: + 66 (0) 2751 4796  
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**CO2OLTEC COMMERCIAL REFRIGERATION B.V.**  
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122001, INDIA  
Hotline: + (91) 124 4825000  
Customer care no: 188004254250  
<http://www.haier-carrier.com/en/>

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