



GUANGDONG CHIGO HEATING & VENTILATION EQUIPMENT CO., LTD.

Address : Helangsha , Chigo Industrial District, Lishui, Nanhai, Foshan,
Guangdong, China P.C:528244

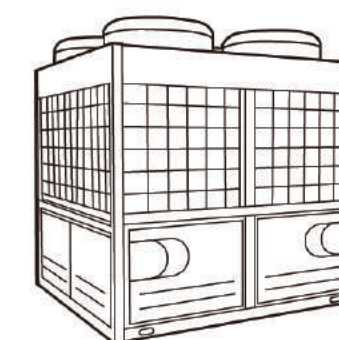
Tel : 86-757-88781037 Fax : 86-757-88789825

E-mail : isc@chigo-cac.com

Web : www.chigo-cac.com

Note:All the data in this book maybe changed without notice
for further improvement on quality and performance.

Air-cooled **HEAT PUMP** Modular chiller





Chigo Group

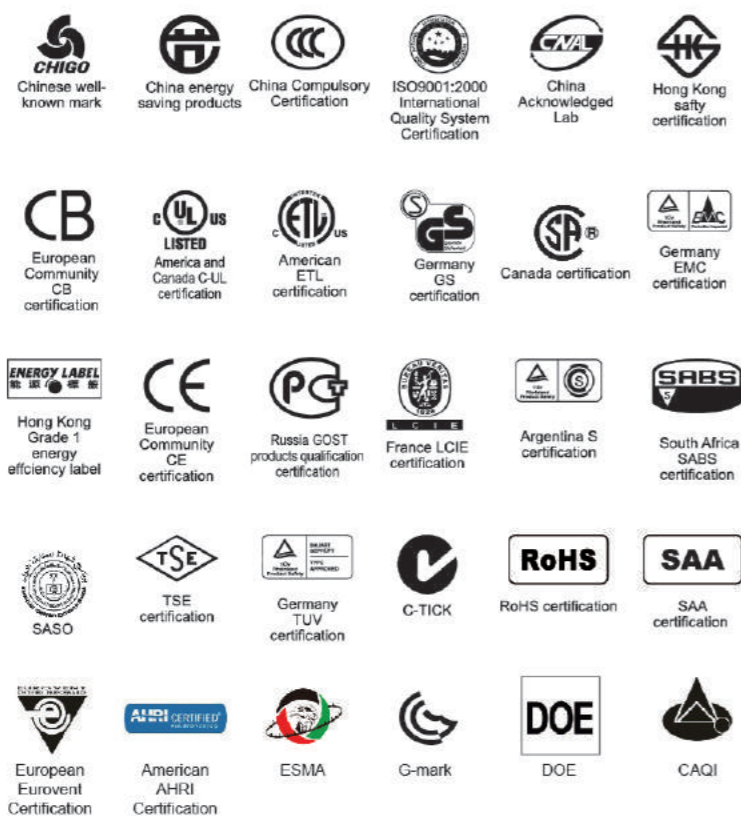
GUANGDONG CHIGO AIR CONDITIONING CO.,LTD(Listed Member of Groups, Stock Code:449.HK)established in 1994, a modern professional AC manufacturer with a business line of designing, R&D,manufacturing as well as distributing both residential and commercial AC domestically and internationally.

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 scientificness 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.





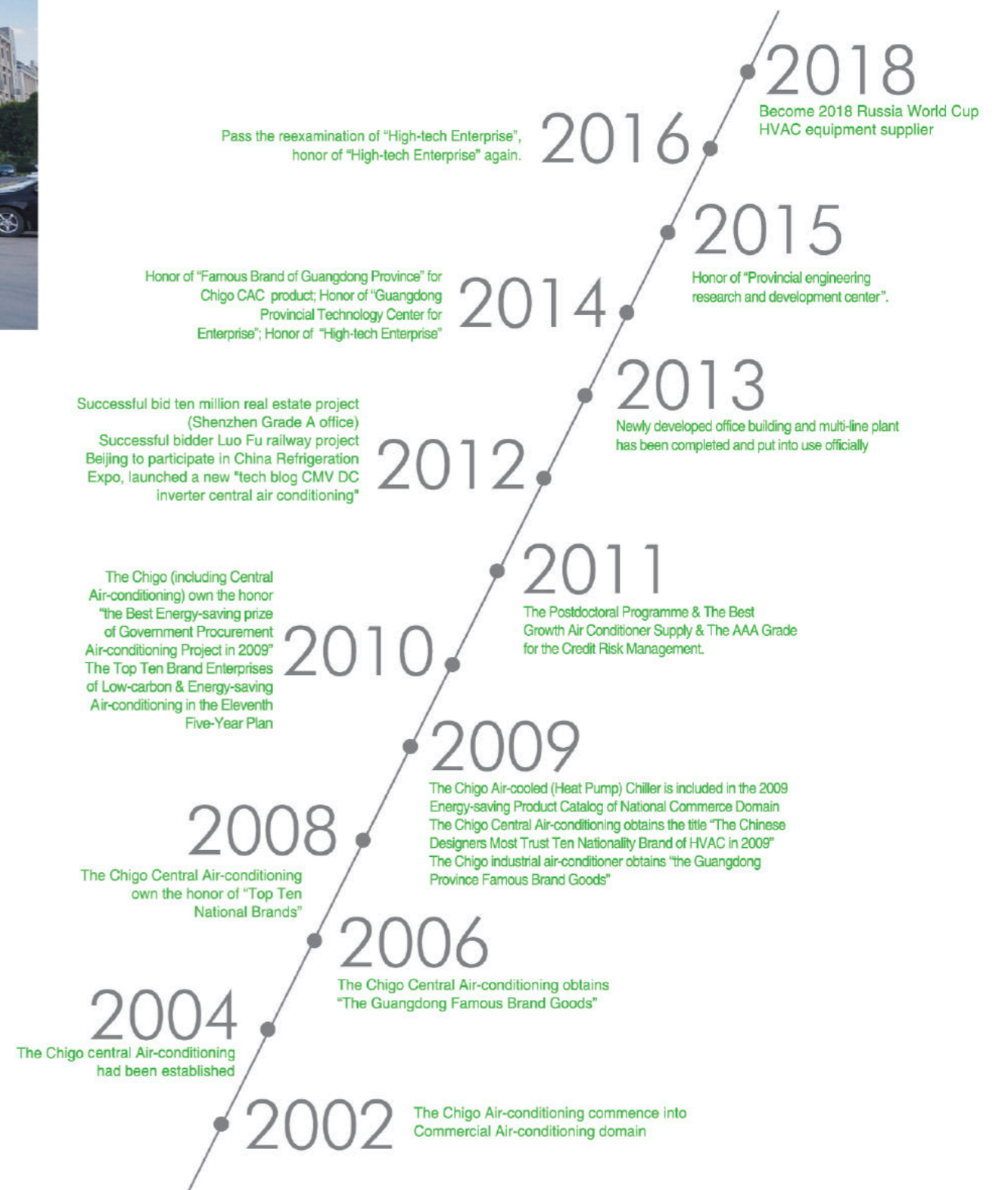
Development History

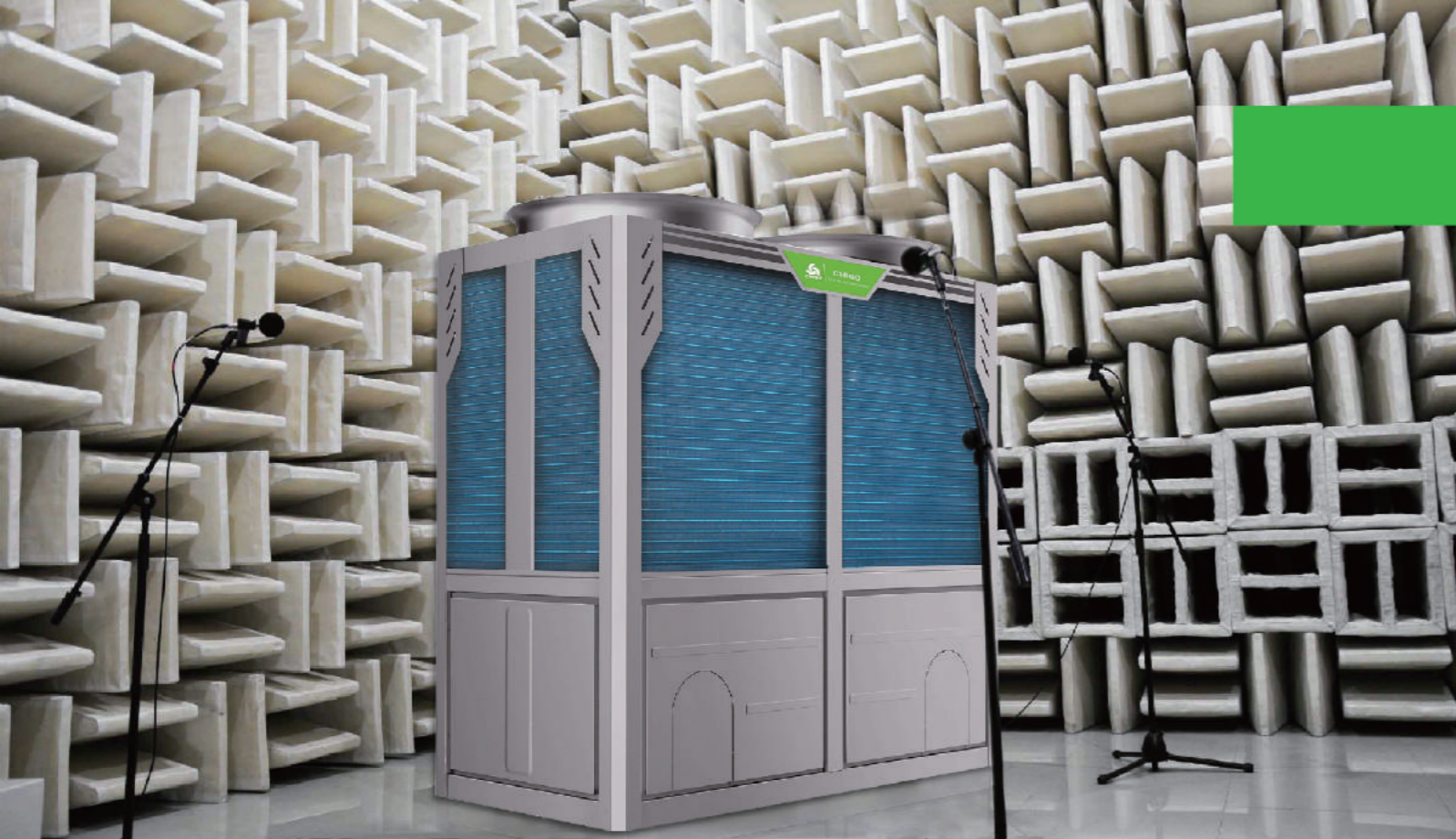
THE CHIGO HEATING & VENTILATION EQUIPMENT CO., LTD.

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,manufacturing, 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.





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.



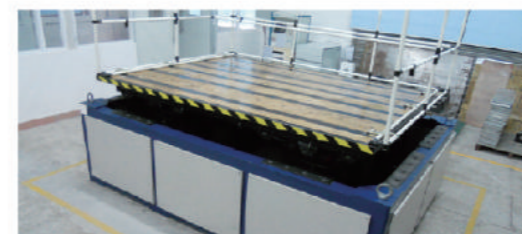
Long-term Cooperation with Professional Certification Test Organization.



World-class Professional HR.



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

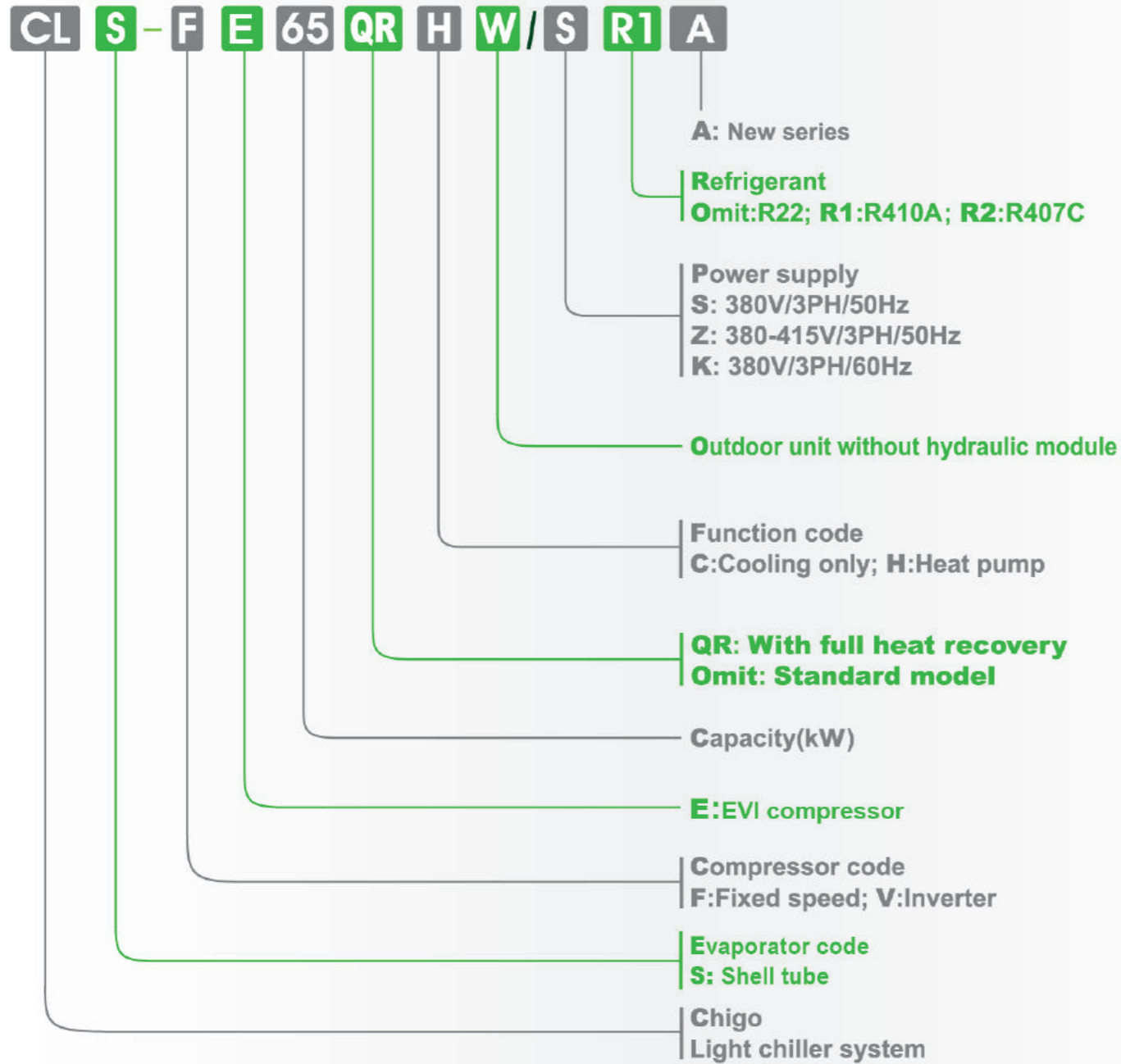


15 Engineers, all had got professional training before commencement.

Directory

- 01 How To Tead The Model
- 02 Air Soure Heat Pump Unit
- 04 New Air-cooled (Heat Pump) Modular Unit
- 06 EVI Air-cooled (Heat Pump) Modular Unit
- 08 Air-cooled (Heat Pump) Modular Unit
- 17 Air-cooled (Heat Pump) Modular Unit With Heat Recovery
- 21 Fan Coil Unit 4-Way Cassette
- 23 Duct Type
- 25 Accessories
- 26 Sample Projects

How to read the model



Air Source heat pump unit



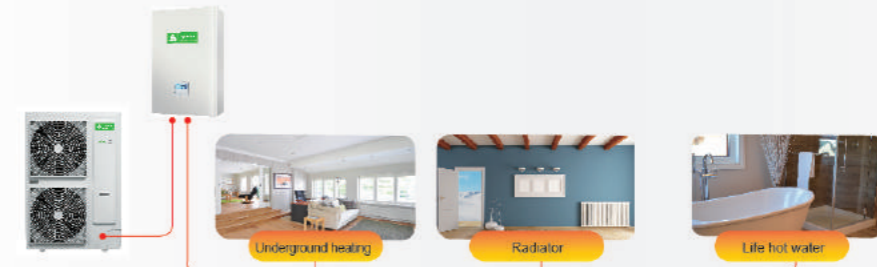
10kW

14/16kW

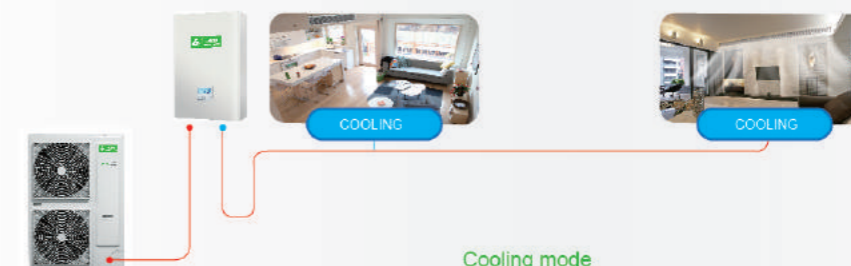
Hydronic box

Features

- High efficiency**
Using DC Inverter compressor and DC brushless motor, quick reactivity and stable operation, has more excellent energy efficiency.
- Low temperature heating**
Heating operating temperature is down to -25°C, with auto frozen protection, snow-proof function and intelligent defrosting program.
- Multi-function**
The air source heat pump can connect with floor heater, radiator and fan coil, offering comfortable air conditioning and hot living water whole year.



Heating mode



Cooling mode

Specification

Outdoor unit

Model		HFR100W-BPA	HFR140W-BPA	HFR160W-BPA
Power		220V~50Hz		
Capacity				
Rated heating(7℃)	kW	10	14	16
Power input	kW	2.35	3.3	3.77
COP	W/W	4.25	4.25	4.25
Heating(-12℃)	kW	5.7	12	12
Power input	kW	2.5	5.27	5.27
COP	W/W	2.28	2.28	2.28
Rated cooling	kW	8	12	12
Power input	kW	2.96	4.45	4.45
EER	W/W	2.7	2.7	2.7
Physical data				
F-gas		R410A/3700g	R410A/3900g	R410A/3900g
Compressor		inverter		
Dimension	mm	994x1054x400	1328x900x400	1328x900x400
Liquid/gas pipe	mm	Φ9.52/Φ15.88	Φ9.52/Φ15.88	Φ9.52/Φ15.88
Noise	dB(A)	58	60	60
Weight	Net	kg	83	100
	Packing	kg	93	110
Perform ance data				
Running tem perature	Cooling	℃	from -5 to 45	
	Heating	℃	from -25 to 35	
Minus 12℃ (outlet water 41℃)	Heat capacity	kW	5.7	12
	Power input	kW	2.5	5.27
	COP	W/W	2.28	2.28
Minus 20℃ (outlet water 41℃)	Heat capacity	kW	3.58	7.41
	Power input	kW	2.1	4.09
	COP	W/W	1.7	1.81
Minus 25℃ (outlet water 48℃)	Heat capacity	kW	2.5	5
	Power input	kW	1.78	3.57
	COP	W/W	1.4	1.4

Water modular

Model		SLMK-160N-DS	
Power		220V~50Hz	
Capacity			
Hot water outlet	℃	25~60	
Cooling water outlet	℃	5~25	
Electrical data			
Max.power input	W	3600	
Max.current	A	17	
Electric heating power input	W	3000	
Electric heating current	A	14	
Physical data			
Dimension	mm	1040x500x395	
Weight	Net	kg	62
	Packing	kg	72
Noise	dB(A)	40	
Water pump		standard	
Physical data			
F-gas pips	liquid	mm	Φ9.52
	gas	mm	Φ15.88
Water pips	inlet	mm	Φ32
	outlet	mm	Φ32
Drain pipe	mm	Φ25	

New Air-cooled (Heat Pump) Modular Unit



30kW

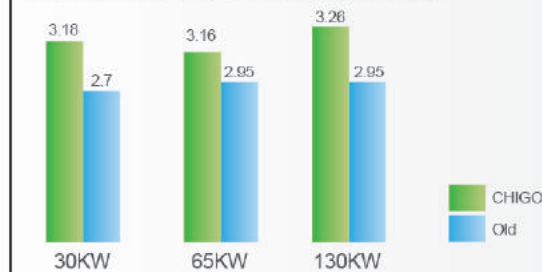
65kW

130kW

Features

1 High Cooling Performance ErP

EER improved compared with last generation.



2 Space Saving

Occupied area is decreased 30% compare with last generation.



4 Round-designed condenser

- The airflow is evener and heat exchange is more sufficient.
- CTIG inner-grooved copper tube has higher thermometric conductivity and increases heat-exchanging efficiency.
- The cross flow fins have low air resistance and great heat transfer coefficient, and frosting improves a lot.



3 Touch Centralized Control

- One controller controls 16 units.
- Built-in Modbus protocol.
- Can be connected with building management system.
- Up to 256 units can be controlled remotely.



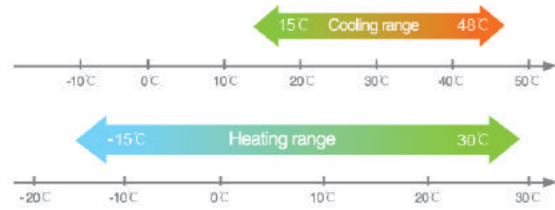
5 Build-in water flow switch

- Standard with high quality water flow switch
- Convenient for installation
- Control every chiller's water flow precisely



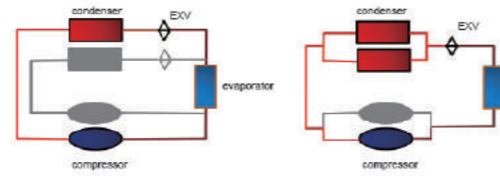
6 Wide operation range

Operate from -15°C to 48°C without failure



7 Parallel running system

- Efficiency will be increased 12% when one compressor full load running because the condenser area is 2 times than independent running system.
- Refrigerant circuit will be simpler and running condition will be more stable.



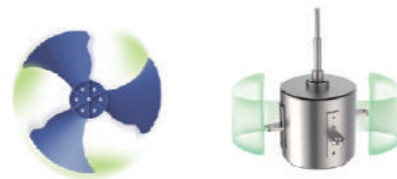
8 Unique control logic

When a system running in part load, for example 4 compressors, in ordinary control logic it will open two unit but in Chigo new control logic it will open four units to make full use of all condensers and efficiency is improved.



9 Smart motor speed control

- Two speed control independently guarantees the best condenser condition and low consumption.
- In part load running condition, the motor will run in low speed and with low consumption



EVI Air-cooled Modular (Heat Pump) Unit



30kW

60kW

120kW

Features

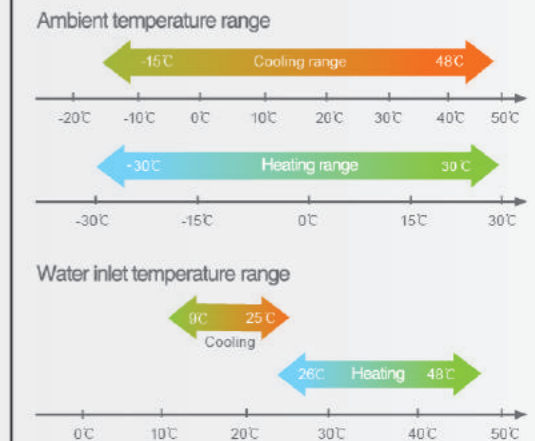
1 EVI compressor

EVI (enhanced vapor injection) compressor, enhances the compressor efficiency greatly and the system has better heating performance in low temperature.



3 Wide operation range

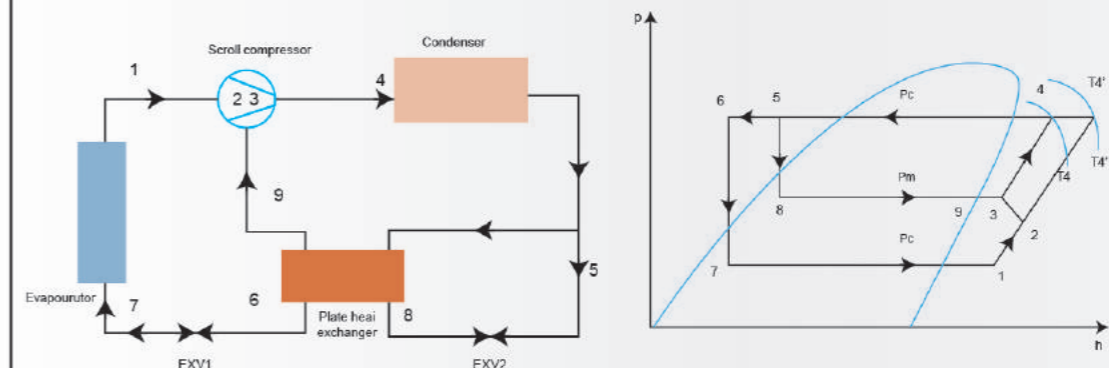
- Cooling operating temperature is up to 48°C
- Heating operating temperature is down to -30°C



2 Plate heat exchanger

Plate heat exchanger plays an important role in the system.

- Subcool the refrigerant before throttling in primary loop
- Preheat the throttled refrigerant in auxiliary loop



Specification

Model	CLS-F30HW/ZR1B		CLS-F65HW/ZR1B		CLS-F130HW/ZR1B	
Power	380-415V/3N/50Hz		380-415V/3N/50Hz		380-415V/3N/50Hz	
Capacity	Cooling	KW	30	65	130	
	Heating	KW	35	70	132	
Electrical Data						
Rated Input	Cooling	KW	9.4	20.6	39.8	
Rated Current	Cooling	A	18	38	78	
Rated Input	heating	KW	9.8	21.3	40.8	
Rated Current	heating	A	19	39	80	
Max. Input		KW	15	28	60	
Max. Current		A	30	51	106	
Basic Parameter						
EER			3.18	3.16	3.26	
Refrigerant	Type		R410A	R410A	R410A	
	Weight	kg	7.3	13.5	15*2	
Water Flow		m³/h	5.16	11.18	22.36	
Pressure Drop		kPa	30	30	40	
Max. Pressure		MPa	1.0	1.0	1.0	
Water Inlet/Outlet Diameter		mm	DN40	DN65	DN65	
Air Flow		m³/h	12000	24000	48000	
Noise		dB(A)	62	64	65	
Dimension(W*H*D)	Net	mm	1160*1920*900	2000*1920*900	2200*2200*1100	
	Packing	mm	1240*2060*950	2080*2060*920	2280*2360*1140	
	Net	kg	320	610	1010	
Weight	Packing	kg	350	630	1060	
	Running	kg	350	640	1110	
	Operation Range					
Ambient Temperature	Cooling	°C	15-48(-15-48 for 65kw)			
	Heating	°C	-15-30			
Inlet Water	Cooling	°C	9-25			
	Heating	°C	26-46			

Air-cooled (Heat Pump) Modular Unit

Specification

Model			CLS-FE30HW/ZR1A	CLS-FE60HW/ZR1A	CLS-FE120HW/ZR1A
Power			380~415V/3N/50Hz		
Cooling	Capacity	KW	30	60	120
	Input	KW	9.5	20.7	41.4
	EER	W/W	3.16	2.9	2.9
Heating	Capacity	kW	36	77	142
	Input	KW	10.3	22.6	44.3
	COP	W/W	3.49	3.41	3.21
Basic Parameter					
Refrigerant	Type		R410A	R410A	R410A
	Weight	kg	7.5	6.5*2	6.5*4
Water side heat exchanger	Type		Shell tube heat exchanger		
	Max. Pressure	MPa	1	1	1
	Water Flow	m³/h	6.2	13.2	24
	Pressure Drop	kPa	30	30	40
	Water Inlet Diameter	mm	DN32	DN65	DN65
	Water Outlet Diameter	mm	DN32	DN65	DN65
	Joint Type		1/2inch Male Connection	Flange Joint	
Noise		dB(A)	62	64	65
Dimension(W*H*D)	Net	mm	1160*1920*900	2000*1920*900	2200*2200*1100
	Packing	mm	1240*2060*950	2080*2060*920	2280*2360*1140
Weight	Net	kg	320	630	1010
	Packing	kg	350	650	1060
Operation Range					
Ambient Temperature	Cooling	°C	-5~48°C(-15~48°C for 60kW)		
	Heating	°C	-30~30°C		
Inlet Water	Cooling	°C	9~25°C		
	Heating	°C	26~48°C		



30kW



65kW



130kW

Features

1 Adopts high reliable Copeland compressor

- **Better Liquid Handling**
Radial compliance allows the scroll members to separate in the presence of liquid refrigerant, thus, providing protection against liquid damage.
- **Greater Efficiency**
With axial compliance, optimized force between two scrolls can be obtained, leading to high efficiency over the entire operating range.
- **Unmatched Reliability**
Ability to start under any system load, without start components.
Easy to service and maintain due to their compact size and lightweight, simple design.
Engineered for optimum performance with today's chlorine-free refrigerants.
No complex internal suction and discharge valves for quieter operation and higher reliability.

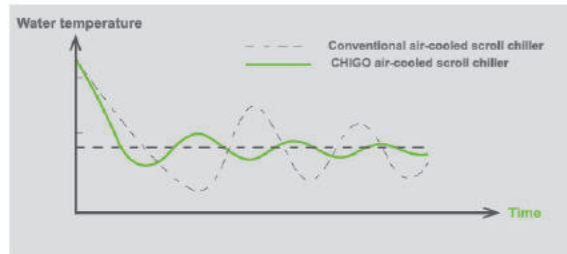
2 500 steps EXV form Saginomiya(a Famous Japanese brand)

- **Compare to TXV:**
It controls refrigerant flow as per operation mode and temperature condition, because EXV has faster load reaction speed, bigger regulation range, higher refrigerant control accuracy, so the water outlet temperature can be controlled more precisely.

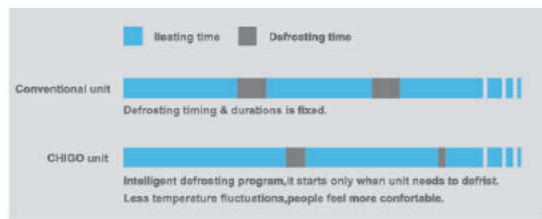


3 Optimized structure and compact size provided a larger loading quantity, 65kW unit can be loaded 12 sets, 130kW unit can be loaded 6 sets.

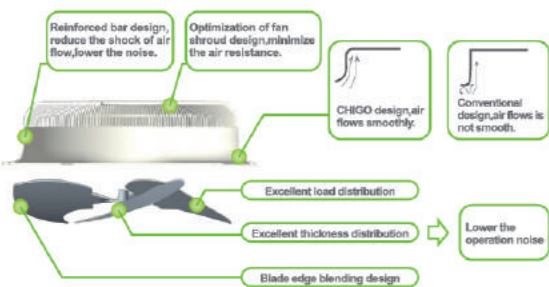
4 Precisely water temperature control, keeps room temperature stable.
Compressors in each units auto respond to the real capacity needs, system provides precisely water temperature controls



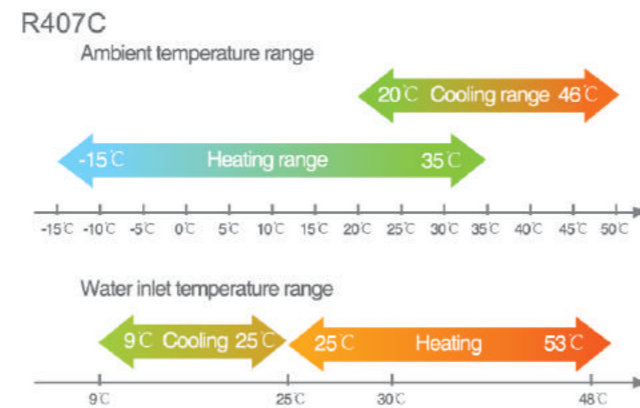
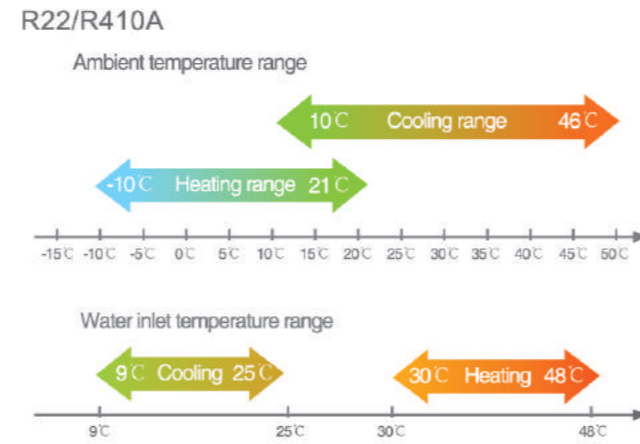
5 Intelligent defrosting program, it starts only when unit needs to.
Defrosting program starts according to a) ambient temperature, b) heat exchanging efficiency & capacity change due to the frost, whereas conventional unit's defrosting timing & duration is fixed, causing fluctuations in temperature and personal comfort.



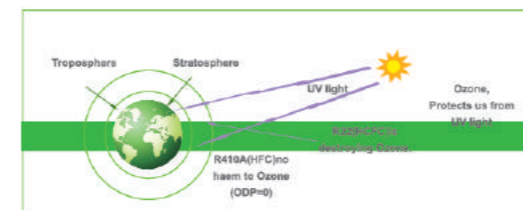
6 Optimization of fan blade and fan shroud design, bigger the air flow, lower the noise.



7 Wide operation range.



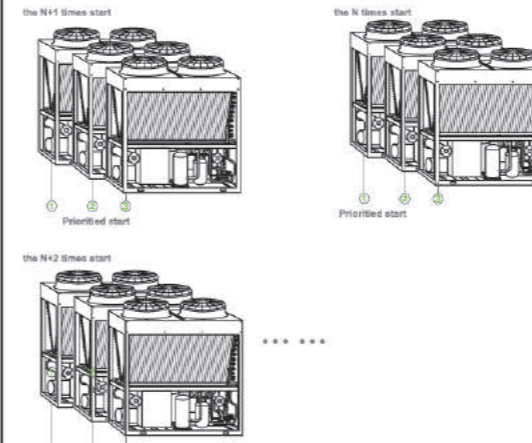
8 ECO friendly R410A(HFC), low carbon footprint, no harm to Ozone



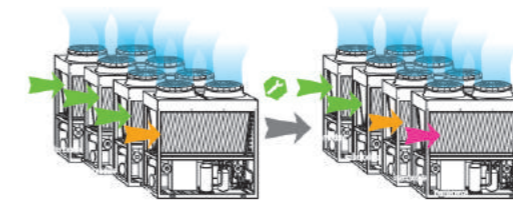
9 Modular design concept, a good solution for agencies to make stocks.
Excellent flexibility in installation, max. 16 units can be combined in group, max. capacity can be up to 2080kW.



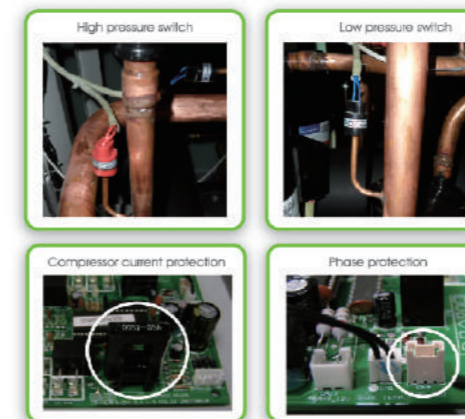
10 Balance operation program, it balances the operation time of every unit according to units accumulated operation time.



11 If master unit fails, all the units will stop. When the master unit fails, any one of the slave units can be set as master unit manually. If one slave unit fails, this unit will stop but others keep running.



12 Using varieties of protection devices to guarantee the system more safe and reliable.



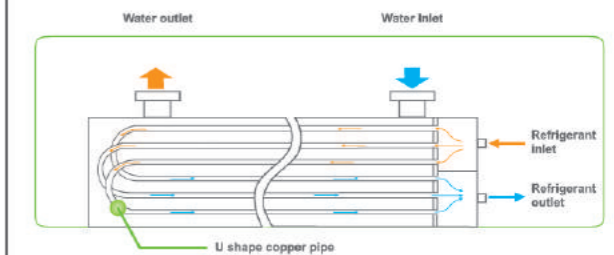
13 Comprehensive protections to guarantee system's safety.

NO.	Protections
1	Compressor high pressure protection
2	Compressor low pressure protection
3	Compressor malfunction protection
4	Compressor overload protection
5	Condenser fan overload or overheat protection
6	Phase sequence protection
7	Water flow cut-off protection

14 Ant-aging PP(polypropylene) plastic air shroud, long life span design.
Panels are galvanized steel with epoxy coating, double anti-corrosion guarantee.



15 High efficiency shell & tube evaporator
Fouling factor is 0.086m² · °C/kW, high fouling tolerance
High Heat Transfer Efficiency copper pipes are used in the heat exchanger.



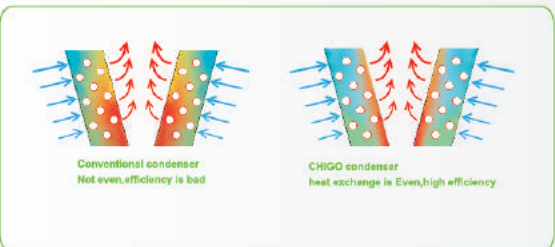
16 The refrigerant flow in traditional bow-shaped turn-back flow heat exchanger moves in "Z" path. The new spiral flow design in spiral turn-back plate heat exchanger changes the status and form of refrigerant, thus increasing heat exchange efficiency.

The main characteristics of spiral turn-back plate heat exchanger are as below:

1. High heat transfer coefficient (20%-40% increase);
2. Full coverage of heat exchange. Without Dead Heat;
3. Obvious decrease of pressure drop in the shell (around 45% drop pressure under the same flow velocity);
4. Few impurities as no retention area in the shell;
5. Better anti-vibration.



17 High efficiency condenser
Refrigerant flow paths are optimized design, especially for the lower part of condenser coil, it evens the heat exchange between upper part and lower part of condenser, to improve the efficiency of whole unit, also improve the defrosting efficiency in cold Winter.



18 Protective coaming and net are available, offering protection for key components of the unit, meeting different requirements of customers.

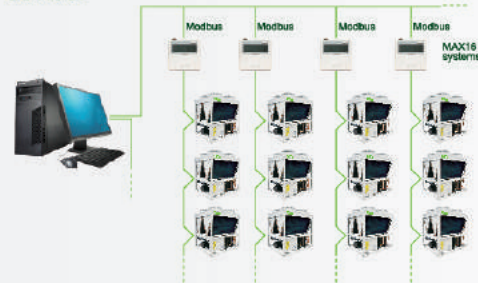


With protective coaming and net



Without coaming and net

19 Modbus gateway is built in the control logical for standard. It can realize BMS control without any device.



Specification

Type		R22/50Hz			
Model		CLS-F30HW/SA	CLS-F65HW/SA	CLS-F130HW/SA	
Power supply	V/ph/Hz	380/3/50	380/3/50	380/3/50	
Capacity					
Cooling	kW	30	65	130	
Heating	kW	32	69	140	
Electrical data					
Power input	Cooling	kW	11.1	22	44
	Heating	kW	10.8	21.3	43
	Max. power input	kW	16	28	56
Rated current	Cooling	A	19	38	78
	Heating	A	18	37	76
	Max. Current	A	29	51	102
Physical data					
Refrigerant	Weight	kg	7	6.5x2	6.2x4
	Refrigerant control		EXV+Capillary	EXV+Capillary	EXV+Capillary
Compressor	Type		R22	R22	R22
	Brand		Copeland	Copeland	Copeland
	Type		Scroll	Scroll	Scroll
Fan motor	Quantity	pcs	1	2	4
	Quantity	pcs	1	2	4
	Air flow volume	m ³ /h	12000	24000	48000
Evaporator (Water side)	Heat-exchanger type		Shell and tube	Shell and tube	Shell and tube
	Water pressure drop	kPa	30	30	40
	Water inlet/outlet diameter	mm	DN40	DN100	DN65
	Water flow volume	m ³ /h	5.16	11.18	22.36
	Max. Pressure	MPa	1.1	1.1	1.1
	Connection type		Flange connection	Flange connection	Flange connection
Dimension (W×H×D)	Net	mm	1160×2090×900	2000×2090×900	2000×2090×1700
	Packing	mm	1240×2250×950	2080×2250×950	2080×2250×1740
Weight	Net	kg	320	530	960
	Gross	kg	330	545	980
Control type			Wired controller	Wired controller	Wired controller
Sound level(semi-anechoic)	dB(A)		62	65	68
Quantity per 20GP/40GP/40HQ	Set		10/21/21	6/12/12	3/6/6
Operation range					
Water inlet temperature	Cooling	°C	9-25	9-25	9-25
	Heating	°C	30-48	30-48	30-48
Water outlet temperature	Cooling	°C	5-20	5-20	5-20
	Heating	°C	35-53	35-53	35-53
Ambient temperature	Cooling	°C	10-46	10-46	10-46
	Heating	°C	-10-21	-10-21	-10-21

Remarks(specifications are based on the following conditions):

1. Cooling: water inlet/outlet: 12°C / 7°C, outdoor ambient temp. of 35°C DB.
2. Heating: water inlet/outlet: 40°C / 45°C, outdoor ambient temp. 7°C DB/6°C CWB.
3. Water side fouling factor: 0.086m²/kW.

Type		R410A/50Hz			R407C/50Hz			
Model		CLS-F30HW/ZR1A	CLS-F65HW/ZR1A	CLS-F130HW/ZR1A	CLS-F30HW/ZR2	CLS-F65HW/ZR2	CLS-F130HW/ZR2	
Power supply	V/ph/Hz	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50	
Capacity								
Cooling	kW	30	65	130	30	65	130	
Heating	kW	35	70	140	35	70	140	
Electrical data								
Power input	Cooling	kW	11	22	44	11	22	44
	Heating	kW	10.5	21	42	10.3	21.5	43
	Max. power input	kW	15	26	52	20	40	80
Rated current	Cooling	A	19	38	78	19	38	78
	Heating	A	18	37	76	18	37	76
	Max. Current	A	29	51	102	38	76	155
Physical data								
Refrigerant	Weight	kg	6.5	6.5x2	6.5x4	6.2	6.2x2	6.2x4
	Refrigerant control		EXV+Capillary	EXV+Capillary	EXV+Capillary	EXV+Capillary	EXV+Capillary	EXV+Capillary
	Type		R410A	R410A	R410A	R407C	R407C	R407C
Compressor	Brand		Copeland	Copeland	Copeland	Copeland	Copeland	Copeland
	Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
	Quantity	pcs	1	2	4	1	2	4
Fan motor	Quantity	pcs	1	2	4	1	2	4
	Air flow volume	m ³ /h	12000	24000	48000	12000	24000	48000
Evaporator (Water side)	Heat-exchanger type		Shell and tube	Shell and tube	Shell and tube	Shell and tube	Shell and tube	Shell and tube
	Water pressure drop	kPa	30	30	40	30	30	40
	Water inlet/outlet diameter	mm	DN40	DN100	DN65	DN40	DN65	DN80
	Water flow volume	m ³ /h	5.16	11.18	22.36	5.16	11.18	22.36
	Max. Pressure	MPa	1.1	1.1	1.1	1	1	1
Dimension (W×H×D)	Net	mm	1160×2090×900	2000×2090×900	2000×2090×1700	1160×2090×900	2000×2090×900	2000×2090×1700
	Packing	mm	1240×2250×950	2080×2250×950	2080×2250×1740	1240×2245×950	2080×2245×950	2080×2245×1740
Weight	Net	kg	320	570	1100	320	570	1100
	Gross	kg	330	600	1120	330	600	1120
Control type			Wired controller	Wired controller	Wired controller	Wired controller	Wired controller	Wired controller
Sound level(semi-anechoic)	dB(A)		62	65	68	62	65	68
Quantity per 20GP/40GP/40HQ	Set		10/21/21	6/12/12	3/6/6	10/21/21	6/12/12	3/6/6
Operation range								
Water inlet temperature	Cooling	°C	9-25	9-25	9-25	9-25	9-25	9-25
	Heating	°C	30-48	30-48	30-48	25-53	25-53	25-53
Water outlet temperature	Cooling	°C	5-20	5-20	5-20	5-20	5-20	5-20
	Heating	°C	35-53	35-53	35-53	30-58	30-58	30-58
Ambient temperature	Cooling	°C	10-46	10-46	10-46	20-46	20-46	20-46
	Heating	°C	-10-21	-10-21	-10-21	-15-35	-15-35	-15-35

Remarks(specifications are based on the following conditions):

- 1.Cooling:water inlet/outlet:12°C / 7°C,outdoor ambient temp.of 35°C DB.
- 2.Heating:water inlet/outlet:40°C / 45°C,outdoor ambient temp. 7°C DB/6°CWB.
- 3.Water side fouling factor:0.086m² /kW.

Type		R22/60Hz			
Model		CLS-F30HW/KA	CLS-F65HW/KA	CLS-F130HW/KA	
Power supply	V/ph/Hz	380/3/60	380/3/60	380/3/60	
Capacity					
Cooling	kW	30	65	130	
Heating	kW	32	69	140	
Electrical data					
Power input	Cooling	kW	11.1	23	45
	Heating	kW	10.8	22	44
	Max. power input	kW	16	30	57
Rated current	Cooling	A	21	40	80
	Heating	A	19	39	78
	Max. Current	A	29	55	105
Physical data					
Refrigerant	Weight	kg	7	6.5x2	6.5x4
	Refrigerant control		EXV+ Capillary	EXV+ Capillary	EXV+ Capillary
	Type		R22	R22	R22
Compressor	Brand		SANYO	SANYO	SANYO
	Type		Scroll	Scroll	Scroll
	Quantity	pcs	1	2	4
Fan motor	Quantity	pcs	1	2	4
	Air flow volume	m ³ /h	12000	24000	48000
Evaporator (Water side)	Heat-exchanger type		Shell and tube	Shell and tube	Shell and tube
	Water pressure drop	kPa	30	30	40
	Water inlet/outlet diameter	mm	DN40	DN100	DN65
	Water flow volume	m ³ /h	5.16	11.18	22.36
	Max. Pressure	MPa	1.1	1.1	1.1
Dimension (W×H×D)	Net	mm	1160×2090×900	2000×2090×900	2000×2090×1700
	Packing	mm	1240×2250×950	2080×2250×950	2080×2250×1740
Weight	Net	kg	330	550	960
	Gross	kg	340	565	980
Control type			Wired controller	Wired controller	Wired controller
Sound level(semi-anechoic)	dB(A)		62	65	68
Quantity per 20GP/40GP/40HQ	Set		10/21/21	6/12/12	3/6/6
Operation range					
Water inlet temperature	Cooling	°C	9-25	9-25	9-25
	Heating	°C	30-48	30-48	30-48
Water outlet temperature	Cooling	°C	5-20	5-20	5-20
	Heating	°C	35-53	35-53	35-53
Ambient temperature	Cooling	°C	10-46	10-46	10-46
	Heating	°C	-10-21	-10-21	-10-21

Remarks(specifications are based on the following conditions):

- 1.Cooling:water inlet/outlet:12°C / 7°C,outdoor ambient temp. of 35°C DB.
- 2.Heating:water inlet/outlet:40°C / 45°C,outdoor ambient temp.7°C DB/6°CWB.
- 3.Water side fouling factor:0.086m² /kW.

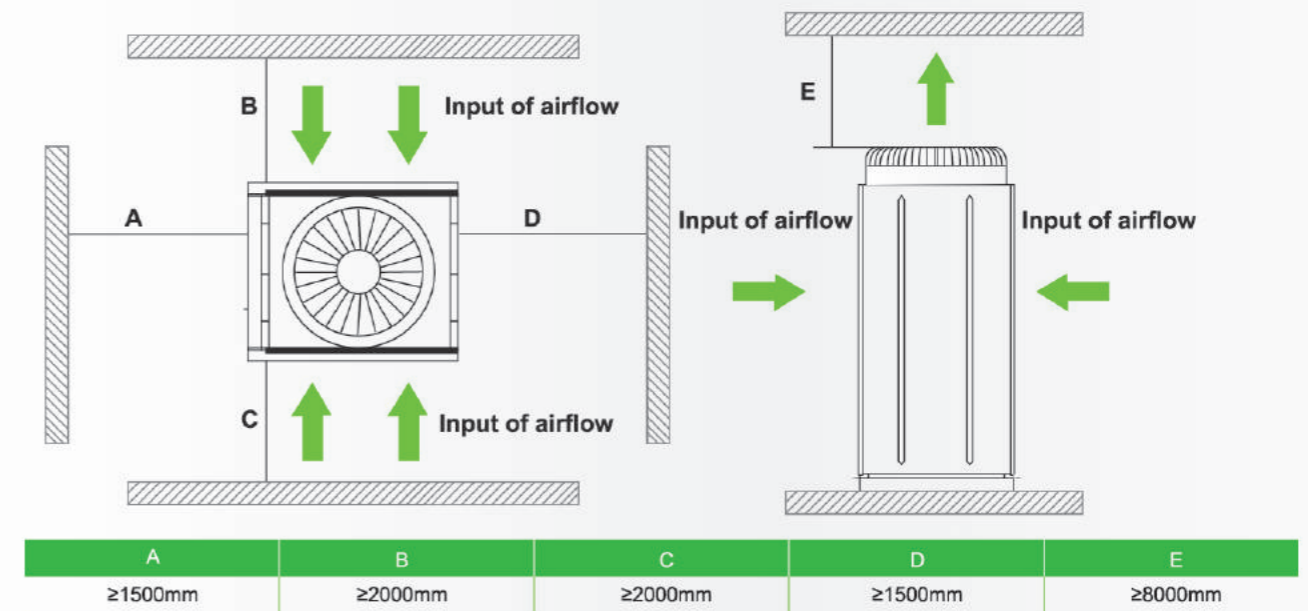
Type		R410A/60Hz			
Model		CLS-F30HW/KR1A	CLS-F65HW/KR1A	CLS-F130HW/KR1A	
Power supply	V/ph/Hz	380/3/60	380/3/60	380/3/60	
Capacity					
Cooling	kW	30	65	130	
Heating	kW	35	70	140	
Electrical data					
Power input	Cooling	kW	11	22	44
	Heating	kW	10.5	21	42
	Max. power input	kW	15	26	52
Rated current	Cooling	A	21	38	76
	Heating	A	19	36	74
	Max. Current	A	29	51	102
Physical data					
Refrigerant	Weight	kg	6.5	6.5x2	6.5x4
	Refrigerant control		EXV+ Capillary	EXV+ Capillary	EXV+ Capillary
	Type		R410A	R410A	R410A
Compressor	Brand		Danfoss	Danfoss	Danfoss
	Type		Scroll	Scroll	Scroll
	Quantity	pcs	1	2	4
Fan motor	Quantity	pcs	1	2	4
	Air flow volume	m ³ /h	12000	24000	48000
Evaporator (Water side)	Heat-exchanger type		Shell and tube	Shell and tube	Shell and tube
	Water pressure drop	kPa	30	30	40
	Water inlet/outlet diameter	mm	DN40	DN100	DN65
	Water flow volume	m ³ /h	5.16	11.18	22.36
	Max. Pressure	MPa	1.1	1.1	1.1
	Connection type		Flange connection	Flange connection	Flange connection
Dimension (W×H×D)	Net	mm	1160×2090×900	2000×2090×900	2000×2090×1700
	Packing	mm	1240×2250×950	2080×2250×950	2080×2250×1740
Weight	Net	kg	320	570	1100
	Gross	kg	330	600	1120
Control type			Wired controller	Wired controller	Wired controller
Sound level(semi-anechoic)	dB(A)		62	65	68
Quantity per 20GP/40GP/40HQ	Set		10/21/21	6/12/12	3/6/6
Operation range					
Water inlet temperature	Cooling	°C	9-25	9-25	9-25
	Heating	°C	30-48	30-48	30-48
Water outlet temperature	Cooling	°C	5-20	5-20	5-20
	Heating	°C	35-53	35-53	35-53
Ambient temperature	Cooling	°C	10-46	10-46	10-46
	Heating	°C	-10-21	-10-21	-10-21

Remarks(specifications are based on the following conditions):

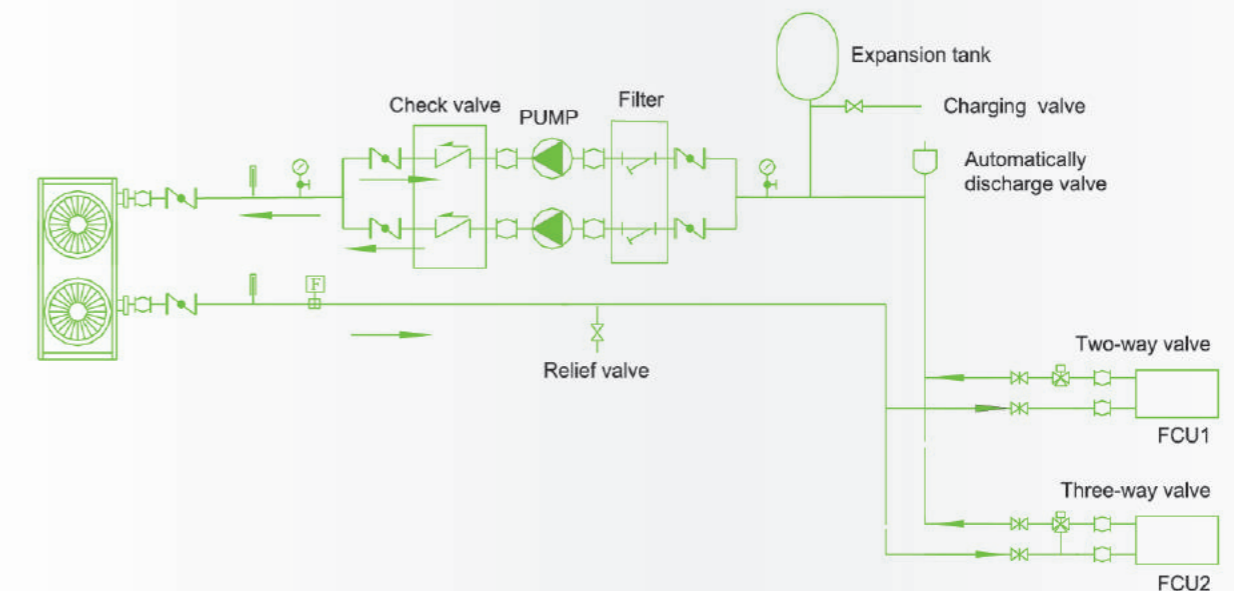
- 1.Cooling:water inlet/outlet:12°C / 7°C, outdoor ambient temp. of 35°C DB.
- 2.Heating:water inlet/outlet:40°C / 45°C, outdoor ambient temp.7°C DB/6°CWB.
- 3.Water side fouling factor:0.086m²°C /kW.

Installation

Installation space requirement



Connection of pipeline system



Stop valve	Pressure gauge	Gate valve	Flexible joint	Water flow switch
Y shaped filter	Thermometer	Circulation pump	Check Valve	Automatically discharge valve

Air-cooled (Heat Pump) Modular Unit with Heat Recovery



30kW



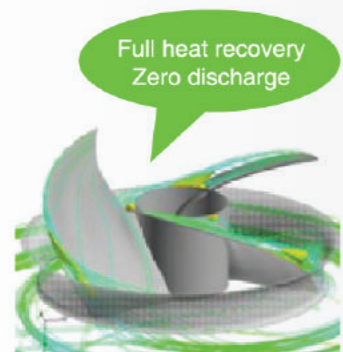
65kW

Features

- 1 Multi-function, offering air conditioning and hot living water whole year.



- 2 Full heat recovery, using total condensation heat to produce hot living water, high efficiency and great energy saving.



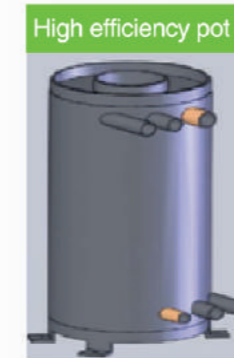
- 3 Adopting high reliable Copeland compressor
- Better Liquid Handling
Radial compliance allows the scroll members to separate in the presence of liquid refrigerant, thus, providing protection against liquid damage.
 - Greater Efficiency
With axial compliance, optimized force between two scrolls can be obtained, leading to high efficiency over the entire operating range.
 - Unmatched Reliability
Ability to start under any system load, without start components.
Easy to service and maintain due to their compact size and lightweight, simple design.
Engineered for optimum performance with today's chlorine-free refrigerants.
No complex internal suction and discharge valves for quieter operation and higher reliability.



- 4 500 steps EXV from Saginomiya (a Famous Japanese brand)
- Compare to TXV:
It controls refrigerant flow as per operation mode and temperature condition, because EXV has faster load reaction speed, bigger regulation range, higher refrigerant control accuracy, so the water outlet temperature can be controlled more precisely.



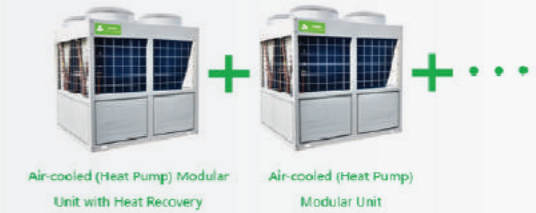
- 5 Specially designed high efficiency pot, compact structure and great heat exchange efficiency.



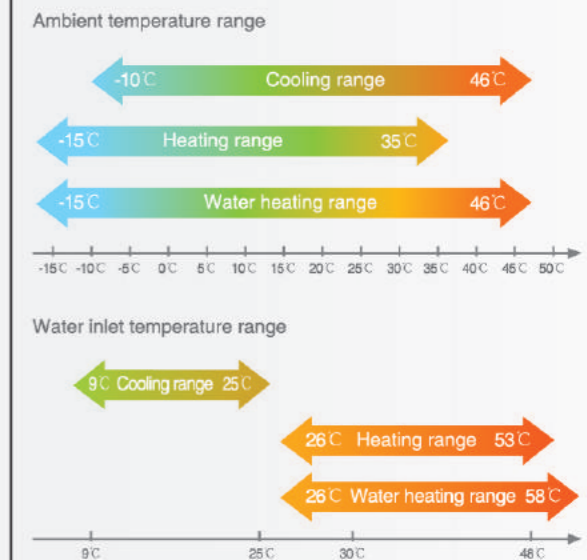
- 6 Modular design concept, a good solution for agencies to make stocks. Excellent flexibility in installation, max. 16 units can be combined in group, max. capacity can be up to 1040kW.



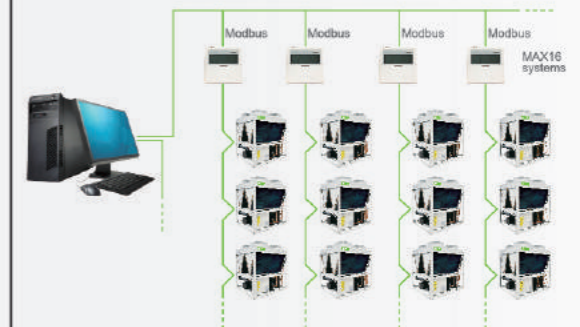
- 7 Mixed combination design, can be combined with standard air-cooled (heat pump) modular units in one system, offering flexible and convenient installation.



- 8 Wide operation range



- 9 Modbus gateway is built in the control logical for standard. It can realize BMS control without any device.



Specification

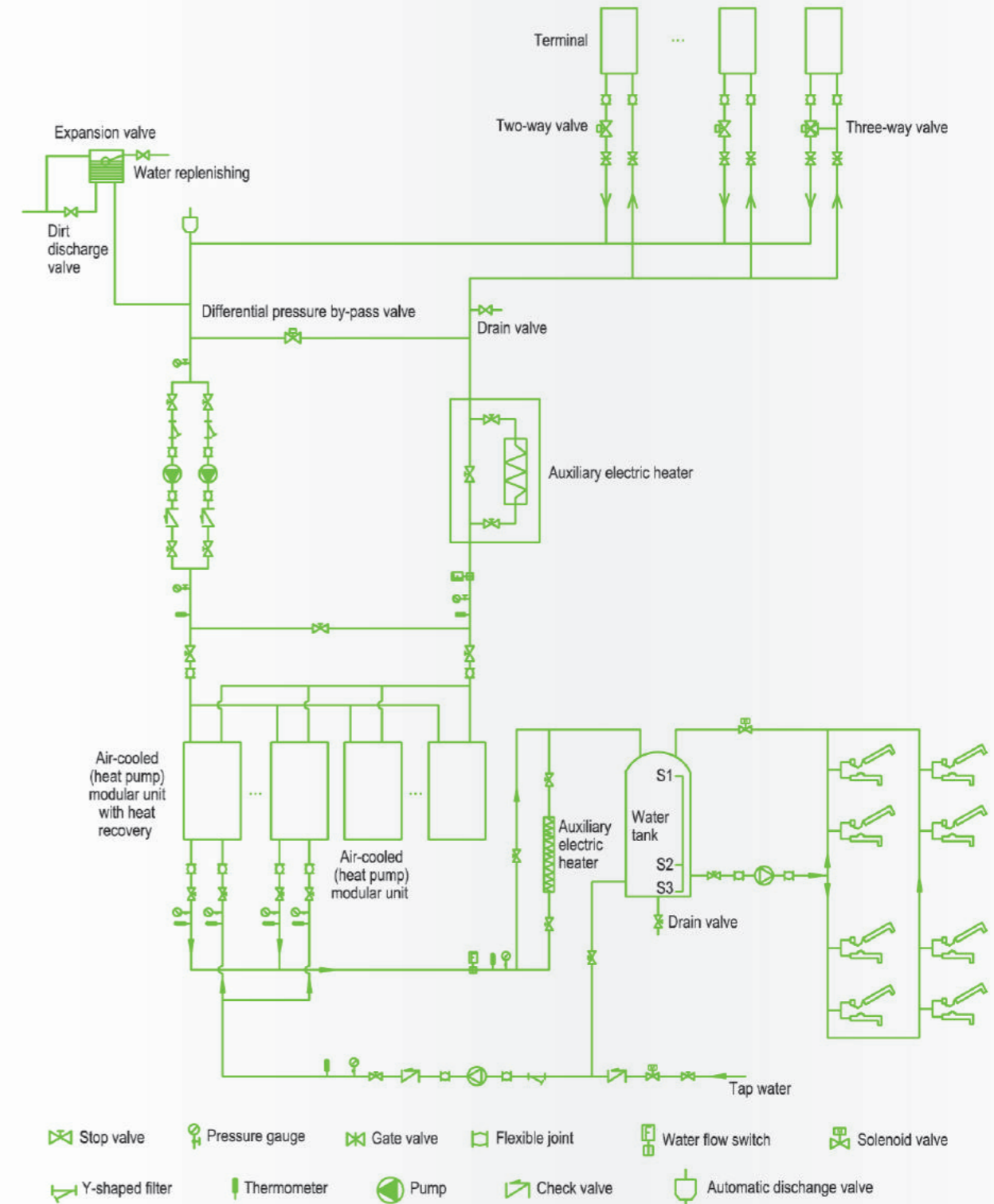
Type	R407C/50Hz		R407C/50Hz	
Model	CLS-F30QRHW/ZR2		CLS-F65QRHW/ZR2	
Power supply	V/Ph/Hz	380~415V/3N/50Hz		380~415V/3N/50Hz
Capacity				
Cooling	kW	30	65	
Heating	kW	35	70	
Water heating	kW	38	76	
Electrical data				
Power input	Cooling	kW	11	22
	Heating	kW	12	23
	Water heating	kW	10.2	20.5
	Max. power input	kW	20	40
Rated current	Cooling	A	19	39
	Heating	A	21	41
	Water heating	A	18	36
	Max. current	A	38	76
Physical data				
Refrigerant	Weight	kg	7	7×2
	Refrigerant control		EXV+ Capillary throttle	EXV+ Capillary
	Type		R407C	R407C
Compressor	Brand		Emerson	Emerson
	Type		Scroll	Scroll
	Quantity	pcs	1	2
Fan Motor	Quantity	pcs	1	2
	Air flow volume	m³/h	12000	24000
Evaporator (Water side)	Heat-exchanger type		Shell and tube evaporator	Shell and tube
	Water pressure drop	kPa	30	30
	Water inlet/outlet diameter	mm	DN40	DN65
	Water flow volume	m³/h	6	11.18
	Max. Pressure	MPa	1.0	1.0
High efficiency pot (hot water side)	Heat-exchanger type		Shell and tube evaporator	Shell and tube
	Water pressure drop	kPa	50	65
	Water inlet/outlet diameter	inch	1.5	2
	Water flow volume	m³/h	6.5	13.07
	Max. Pressure	MPa	1	1
Dimension (W×H×D)	Net	mm	1160×2090×900	2000×2090×900
	Packing	mm	1240×2245×950	2080×2245×950
Weight	Net	kg	360	650
	Gross	kg	380	680
Control type			Wired controller	Wired controller
Sound level (semi-anechoic)	dB(A)		62/58	62-65
Operation range				
Water inlet temperature	Cooling	°C	(Water return) 9~25	
	Heating	°C	(Water return) 26~53	
	Water heating	°C	(Water return) 26~58	
Ambient temperature	Cooling	°C	-10~46	
	Heating	°C	-15~35	
	Water heating	°C	-15~46	

Remark (Specifications are based on the following conditions):

1. Cooling: water inlet/outlet: 12°C / 7°C, outdoor ambient temperature is 35°C DB
2. Heating: water inlet/outlet: 40°C / 45°C, outdoor ambient temperature is 7°C DB / 6°C WB
2. Water heating: water inlet/outlet: 40°C / 45°C, outdoor ambient temperature is 20°C DB / 15°C WB

Installation

Connection of pipeline system



Fan Coil Unit

4-Way Cassette




4-way Cassette Type
600~1000CFM



Compact 4-way Cassette Type
300~470CFM

Features

- Low operation noise.
 - Streamline plate ensures quietness.
 - Creating natural and comfortable environment.
- Adopting the most advanced 3-Dimensional Screw Fan.
 - Reduce air resistance and smooth air flow.
 - Making air flow distributed uniformly to the heat exchanger.
- For standard cassette, wired controller and digital display panel are optional.
 
- Full series of controllers offer the most suitable solution according to different requirements of different customers.
- Optimized structure enhances air volume and capacity greatly.
- Improvement for easy installation and maintenance
 - Less space is required for installation in the shallow ceiling.
 - Thanks to the compactness and weight reduction, all models can be installed without hoists.
- With built-in drainage pump, the pump lift can reach to 1200mm.

Specification

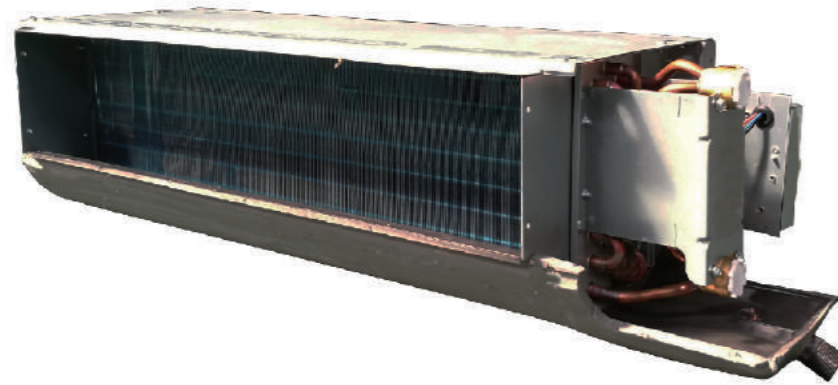
FCU type		Compact 4-way Cassette Type			
Model		CSQ4-300R-A	CSQ4-350R-A	CSQ4-470R-A	
Power supply	V/Ph/Hz	220-240/1/50	220-240/1/50	220-240/1/50	
Capacity					
Air-flow volume	Hi/Med/Lo	CFM	295	350	440
		m ³ /h	500/340/260	600/420/330	750/560/420
Cooling capacity	Hi/Med/Lo	kW	2.5/2.2/1.8	3.5/3.0/2.3	4.5/3.9/2.9
Heating capacity	Hi/Med/Lo	kW	3/2.6/2.0	4/3.2/2.4	5.2/4.2/3.3
Physical data					
Noise level (High-speed)	dB(A)		40	42	44
Water flow volume	m ³ /h		0.43	0.60	0.78
Water pressure drop	kPa		25	28	30
Indoor coil	Number Of Rows		1	2	2
	Max. Pressure	MPa	1.0	1.0	1.0
	Fin type		copper tube, aluminum fin		
Fan motor	Quantity	PCS	1	1	1
	Model		YDK-15Q-6P3	YDK-16Q-6P3	YDK-27Q-4P3
	Speed	r/min	710/690/460/360	740/640/540/440	890/790/650/550
	Capacitor	uF	2	2	1.5
	Power Input	W	55	58	90
Indoor unit	Dimension (W×H×D)	mm	580×260×580	580×260×580	580×260×580
	Packing (W×H×D)	mm	745×375×675	745×375×675	745×375×675
	Net/Gross weight	Kg	16/21.5	17/22.5	17/22.5
panel	Dimension (W×H×D)	mm	650×30×650	650×30×650	650×30×650
	Packing (W×H×D)	mm	750×95×750	750×95×750	750×95×750
	Net/Gross weight	Kg	2.7/4.0	2.7/4.0	2.7/4.0
Pipe	water-inlet pipe	mm	DN20	DN20	DN20
	water-outlet pipe	mm	DN20	DN20	DN20
	Drainage pipe	mm	DN25	DN25	DN25
Controller			remote controller(standard)		

Remark:
1. Cooling capacity test condition: air side temperature: 27DB°C/19WB°C, water inlet temperature 7°C, water temperature difference 5°C.
2. Heating capacity test condition: air side temperature: 21DB°C, water inlet temperature 45 DB°C, water temperature difference 5°C.

FCU type		4-way Cassette Type				
Model		CSQ-600R	CSQ-760R	CSQ-880R	CSQ-1000R	
Power supply	V/Ph/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	
Capacity						
Air-flow volume	Hi/Med/Lo	CFM	600/510/360	760/646/456	880/748/528	1000/850/600
		m ³ /h	1000/667/612	1300/1098/775	1500/1272/898	1700/1445/1020
Cooling capacity	Hi/Med/Lo	kW	5.3/4.6/3.4	7.2/6.3/4.7	8.5/7.4/5.5	10.0/8.7/6.5
Heating capacity	Hi/Med/Lo	kW	8.0/7.0/5.2	10.8/9.4/7.0	12.8/11.1/8.3	15.0/13.1/9.8
Physical data						
Noise level (High-speed)	dB(A)		43-48	44-48	45-52	45-53
Water flow volume	m ³ /h		1.10	1.24	1.46	1.55
Water pressure drop	kPa		36	36	38	40
Indoor coil	Number of rows		2	2	2	2
	Fin type		Copper tube, aluminum fin			
Fan motor	Quantity	pcs	1	1	1	1
	Power Input	W	140	150	160	180
Indoor unit	Dimension (W×H×D)	mm	840×230×840	840×230×840	840×285×840	840×285×840
	Packing (W×H×D)	mm	920×265×920	920×265×920	920×310×920	920×310×920
	Net/Gross weight	kg	23/28	23/28	26/31.5	29/33.5
Panel	Dimension (W×H×D)	mm	950×50×950	950×50×950	950×50×950	950×50×950
	Packing (W×H×D)	mm	1030×105×1030	1030×105×1030	1030×105×1030	1030×105×1030
	Net/Gross weight	kg	5.4/8.0	5.4/8.0	5.4/8.0	5.4/8.0
Pipe	Water inlet pipe	mm	DN20	DN20	DN20	DN20
	Water outlet pipe	mm	DN20	DN20	DN20	DN20
	Drainage pipe	mm	DN25	DN25	DN25	DN25
Controller			Remote controller (standard), wired controller (optional)			

Remark:
1. Cooling capacity test condition: air side temperature: 27DB°C/19WB°C, water inlet temperature 7°C, water temperature difference 5°C.
2. Heating capacity test condition: air side temperature: 21DB°C, water inlet temperature 60 DB°C, water temperature difference 5°C.

Duct Type



200~1400CFM

Features

- 1 | Nested in the ceiling, space-saving and noble.
- 2 | High capacity of cooling/heating performance, high efficiency and energy-saving.
- 3 | Adjust the indoor temperature rapidly and averagely.
- 4 | Low noise fan direct driven by single phase, 3 speed permanent split capacitor motor.
- 5 | Unit constructed by electrostatic galvanized sheet.
- 6 | providing maximum protection against corrosion. Heavy gauge zinc coated steel drainage pan with good insulation processing, avoiding sweating and corrosion.
- 7 | Unit tested performance comply with GB4706.32-2004, JB9063-1999 and JB/T4283-1991.
- 8 | Air return box and filter is optional . Air return method from rear and from button is changeable according to the actual installation.

Specification

FCU type		Ducted type (Pro Series)									
Model		CST3-200P12-A	CST3-300P12-A	CST3-400P12-A	CST3-500P30-A	CST3-600P30-A	CST3-800P30-A	CST3-1000P30-A	CST3-1200P30-A	CST3-1400P30-A	
Power supply	V/ph/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	
		208-230/1/60	208-230/1/60	208-230/1/60	208-230/1/60	208-230/1/60	208-230/1/60	208-230/1/60	/	/	
Capacity											
Air-flow volume	Hi/Med/Lo	CFM	200/170/120	300/250/190	400/340/250	500/410/310	600/490/370	800/680/490	1000/820/590	1200/970/780	1400/1120/840
		m ³ /h	340/290/210	510/420/320	680/580/420	850/700/520	1020/840/620	1360/1150/840	1700/1400/1000	2040/1650/1250	2380/2000/1480
Cooling	Hi/Med/Lo	kW	2.2/1.7/1.1	3.3/2.5/1.6	4.2/3.3/2.0	4.6/3.6/2.2	5.8/4.5/2.8	7.9/6.2/3.8	9.1/7.1/4.4	10.8/8.6/7.0	12.6/10/7.5
Heating	Hi/Med/Lo	kW	3.5/2.7/2.2	5.3/4.1/3.4	6.8/5.2/4.4	7.9/6.1/5.1	10.0/7.7/6.4	13.6/10.5/8.7	16.0/12.3/10.3	16.2/12.9/10.5	18.9/15/11.5
Physical data											
External static pressure	Pa	12	12	12	12	30	30	30	30	30	
Noise level (High-speed)	dB(A)	36	37	40	43	47	47	50	51	52	
Water flow volume	m ³ /h	0.37	0.56	0.72	0.83	1.00	1.36	1.56	1.98	2.24	
Water pressure drop	kPa	14	20	22	24	34	34	40	42	50	
Indoor coil	Number Of Rows	3	3	3	3	3	3	3	3	3	
	Fin type	copper tube, aluminum fin									
Fan motor	Quantity	pcs	1	1	1	1	2	2	2	2	
	Power Input	W	30	39	60	76	106	150	172	210	250
Indoor unit	Dimension (W×H×D)	mm	770*240*461	827*240*461	927*240*461	927*240*461	1140*240*461	1440*240*461	1546*240*461	1865*240*461	1865*240*461
	Packing (W×H×D)	mm	790*260*505	865*260*505	940*260*505	940*260*505	1155*260*505	1475*260*505	1565*260*505	1875*260*505	1875*260*505
Pipe	Net/Gross weight	kg	11/14	13.5/16	16/19	16/19	18/21	25/29	27/32	31/36	31/36
	Water-inlet pipe	mm	DN20	DN20	DN20	DN20	DN20	DN20	DN20	DN20	DN20
	Water-outlet pipe	mm	DN20	DN20	DN20	DN20	DN20	DN20	DN20	DN20	DN20
	Drainage pipe	mm	DN25	DN25	DN25	DN25	DN25	DN25	DN25	DN25	DN25

Remark:

1. All performance data above are based upon 12Pa ESP(200-500); 30Pa ESP(600-1000).
2. Cooling capacity test condition: air side temperature: 27DB C/19WB C, water inlet temperature 7 C, water temperature difference 5 C.
3. Heating capacity test condition: air side temperature: 21DB C, ater inlet temperature 60 DB C, water temperature difference 5 C.

Accessories



Wireless Controller (for cassette type FCUs)

- A Wireless 8m transmission
- B 5 operation modes: Auto, Cooling, Dehumidification, Heating, Fan
- C Timer ON/OFF setting up to 24Hr
- D Temperature control range 16-32°C
- E Three fan speed selection
- F Sleep mode function



Touch screen controller

- A One controller controls 16 units for 130kW or 32 units for 30kW and 65kW.
- B Build in Modbus protocol
- C Weekly schedule management
- D Operation parameter inquiry
- E Easy operation and visualized display

Sample Projects



Shopping mall in the center of Isfahan, Iran .



Government building in Inner Mongolia , China.



Office building in Istanbul, Turkey.



Office building in Kosice, Slovakia.