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Air Cooled Scroll Chiller

Ningbo Dekon Refrigeration Equipment Co., Ltd, a large-scale industry and trade integrated company , is one of the leading manufacture and supplier for air conditioner products and ventilation systems in China. Products focus on air cooled or water cooled chiller; air handling units; water fan coil units; VRF air conditioner; light commercial air conditioner and special function industrial air conditioner.

Designing and manufacturing a wide range of A/C and ventilation products, we can supply models for use in residential apartments, houses, commercial buildings, hotels, shopping malls and public venues. Marketing all series under our proprietary brand "DEKON" , we can also complete ODM and OEM orders as per customers' requirements.

DEKON strives for better air in your home, hotel, shopping Center and office buildings. And our aim is to supply our air conditioner product to each corner of the world !

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Product Introduction

ASC series Modular Heat Pump is central air conditioner unit with air as cooling (heating) source and water as cooling (heating) medium. As integrated unit both using cooling and heating source, unit applied modular design and mutually independent modules can go with any combination and centrally controlled by microcomputer. Unit can start or shut off relevant module according to changes of unit load, in order to flexibly control cooling (heating) output and effectively save energy. Unit can add with heat recovery system (optional), so that while cooling operation, it can recover condensing water heat and supply hot water as high as 65℃.

Unit applied high quality refrigerant self-control components imported from world famous manufacturer, and has gone through system match and optimum design with advanced control technology, and it has become one of the most reliable, energy saving, environment friendly, and quiet units. Dekon boasts test laboratory certified by CNAS, and every unit is ensured good quality and performance through strict testing before dispatched.

Nomenclature

ASC 020 D R E 2 H Q

- Q- Low ambient cooling function; Omitted—none
- H—Part heat recovery; Omitted—none
- Refrigerant: 2-R407C; 3- R410A; Omitted- R22
- E- Efficiency and enhanced unit; Omitted—none
- R- Heat pump; Omitted- cooling only
- Design version
- 020 refers to 20R
- Dekon Air Cooled Scroll Chiller Modular Type

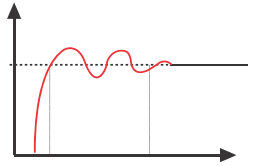
Product Features

Efficient and Energy Saving

- The unit applied the latest efficient semi scroll compressor which is with low noise, small vibration and high efficiency.

- Inner grooved tube for evaporator and condenser and optimized circuit, both of them improved the heat transfer efficiency, the total heat transfer efficiency increased by 32% comparing with normal heat exchanger.

- Apply antiseptic treatment hydrophilic aluminum fin. Not only it can adapt to heavy weather, but also it reduces the water film thickness and thermal resistance further to increase the coil heat exchanger.



- Adopt electronic expansion valve as the throttle device to control the refrigerant flow rate and evaporator outlet degree of superheat further to improve the evaporator efficiency and COP; when unit runs in defrost mode, adjust the opening of electronic expansion valve rapidly to increase refrigerant flow rate and heat production, which provides fast and complete defrost. Longer heating supply time and larger heating capacity.

Perfect Quality

- Unit applies world famous brand scroll compressor which is with less error rate. Inlayed overheat protection, there is proper heater for every compressor.

- Main refrigeration parts are all adopted famous products such as SIEMENS, OMRON, and LG and so on. All of them are with reliable quality.

- No leakage, tube connection method: welding connection, without flare connection.

- Passed seamless and vacuum test; Make sure that there is no leakage for the unit or any other devices.

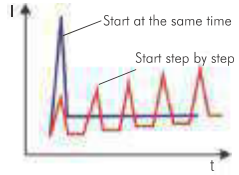
- Every unit passes corrosivity, endurance and performance test, guarantee the reliability.

Quiet Operation

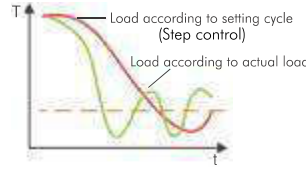
- Axial fans are comply with aerodynamic principle, quiet operation

Semi scroll compressor equipped with vibration isolator, stable operation and small vibration. Protection board is optional which further to reduce the vibration transition.

Intelligent Control



- Adopt modularization design. It starts step by step, which could reduce the power grid impaction further to save power consumption.



- Fast cooling and heating function. Automatically load the compressors according to actual requirements. It can reduce the operation cost obviously and improve comfort.

- Microcomputer controller can automatically detect the load and output the capacity accordingly according to logic fuzzy control theory; make the cooling (heating) capacity match with actual AC load to reduce the running cost.

- Microcomputer controller can automatically diagnose and protect from malfunction, intelligently defrost, energy controlling, running mode, and so on further to ensure the unit runs in high efficient and COP thus ensuring the unit a high efficiency.

- Monitor the high low pressure, exhaust temperature and water temperature. Multi protection functions ensure the unit a safety running in best condition.

- With its own frame structure, cooling system and control & protection system, every modular unit reaches the operation capacity required by air conditioning and water heating step by step, so that breakdown of one modular unit won't affect operation of others.

Low Ambient Temp. Unit Introduction

- Imported fan speed control module; it would automatically adjust the air volume to maintain the condensing pressure, when unit runs in low temp. ambient.
- Wide operation range, unit can be all day long running in -10℃~45℃ ambient temp..
- Free cooling is optional; chilled water can be obtained by using low temp. air outside in winter. Compressors can be switched off thereby saving electric power up to 90%.
- Heat pump is option; it can be heating in winter.

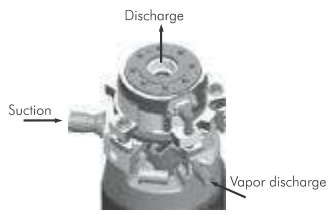
Part Heat Recovery Unit Introduction

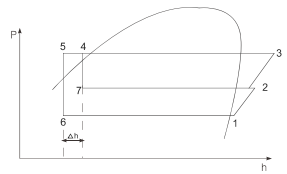
- Air cooled heat pump exhaust the waste heat to air directly when cooling, which worsen the urban heat island effect. It can easily form thermal pollution. While, part heat recovery unit takes the wasted heat to produce hot water, avoid the bad influence efficiently.
- When unit runs in part heat recovery mode, COP can increase by 5%, which can reduce AC running cost.
- In part heat recovery mode, the high temp waste heat can heat water up to 65℃ for free.
- Impendent hot water system and electric system, no security risks.

High Efficiency Enhanced Module Introduction

Cooling and heating energy efficiency improved significantly

Enhanced vapor injection and dual stages comparison circuit, COP increased by 4% (about 3.2 or more) thanks to super high under-cooling technology, enhanced heat transfer technology and intelligent defrost technology to guarantee it meets your demanding standards and specifications; heating energy efficiency increased by 5.3%





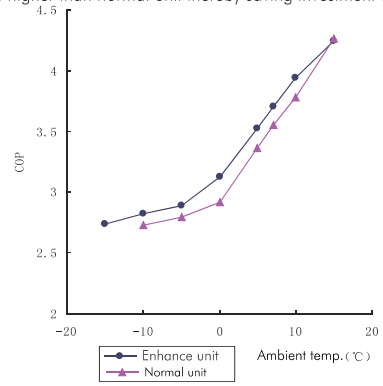
4-7-2: Air make-up; 1-2-3-4-5-6-1: main cycle
Δh system increased capacity due to air make up

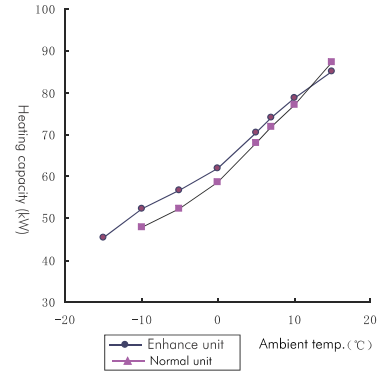
Wide heating operation range

Optimize the low temperature ambient heating performance by applying Enhanced vapor injection technology, super high under-cooling technology, enhanced heat transfer technology and intelligent defrost technology, hence, unit heating operation range can be -15℃.

Good low ambient temp. heating performance, high COP

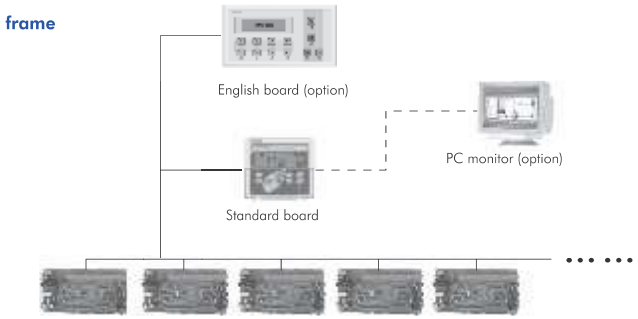
When unit runs in low ambient temp. condition, heating capacity and COP of high efficiency enhanced module are higher than normal unit thereby saving investment and running cost.





Microcomputer Controller

One System frame



Microcomputer Controller

Two Controller Display Function	
Real time display (24hrs)	Controller output port status (optional)
Operation mode: cooling, heating, auto, manual	Compressor load status
Every modular unit temperature setting and measuring display	Compressor accumulate running duration display
Quantity of ON/OFF unit display	Compressor accumulate starting number display
Information status display	Water pump accumulate operating duration display
Three Controller Control Function	
Compressor wear & tear balancing	Remote control terminal (optional)
Operation mode: cooling, heating, auto and manual	Failure alarm dialing function (optional)
ON/OFF timer function	Remote control function (dry contact control)
Self-diagnosis and protection function	Remote operation, alarm function (relay output contact)
Fuzzy logic capacity adjustment control	Automatic antifreeze protection (winter), antifreeze unit automatically selected function, and on and off duty change function
AC water antifreeze protection	Multiple modules group control function
Water outlet overheat protection	Intelligent defrost control
Temperature, pressure transducer short circuit, cut off protection	Only allow one unit defrosts at one group, others keep running or waiting
Power failure last memory function	Manual defrost
Compressor oil heat-up control	Delay on timer after unit power off
Compressor overtime operation alarm function (optional)	Auxiliary electric heater
Multiple ON/OFF operation mode	
Four Safety Alarm Function	
High pressure protection	External interlocking protection
Low pressure protection	Information failure alarm
Compressor overload, fan overload	Overtime operation alarm function (option)
Short of phase, high or low voltage protection	Sensor failure alarm
Minimum water flow rate protection	40 failure memory record (optional)
Exhaust air temperature over-high protection	Water temperature over-low, super high

Classic Unit Parameter (15RT/20RT Modules Combination)

Item \ Parameter \ Model				ASC						
				015D(R)(2)(H)(Q)-10	020D(R)(2)(H)(Q)-01	040D(R)(2)(H)(Q)-02	060D(R)(2)(H)(Q)-03	080D(R)(2)(H)(Q)-04	100D(R)(2)(H)(Q)-05	120D(R)(2)(H)(Q)-06
15RT Module quantity				1	0	0	0	0	0	0
20RT Module quantity				0	1	2	3	4	5	6
R22	Cooling capacity		kW	50.5	65	130	195	260	325	390
	Heating capacity		kW	55	72	144	216	288	360	432
	Input power		kW	15.5	20.8	41.6	62.4	83.2	104	124.8
R407C	Cooling capacity		kW	50.5	61	122	183	244	305	366
	Heating capacity		kW	55	67	134	201	268	335	402
	Input power		kW	15.5	21.2	42.4	63.6	84.8	106	127.2
R410A	Cooling capacity		kW	50.5	64	128	192	256	320	384
	Heating capacity		kW	55	70	140	210	280	350	420
	Input power		kW	15.5	20.5	41	61.5	82	102.5	123
Heat recovery capacity (optional)			kW	12.5	15	30	45	60	75	90
Power supply				380V/3N ~ /50Hz						
Compressor	Type			Hermetic scroll compressor						
	Quantity		Set	2	2	4	6	8	10	12
Air side heat exchanger				Inner grooved tube and fin						
Axial fan	Type			Water proof, weather-proof, low noise, high efficient axial fan						
	Quantity		Set	2	2	4	6	8	10	12
	Total input power		KW	1.3	1.3	2.6	3.9	5.2	6.5	7.8
Chilled water side heat exchanger	Type	R22		High efficient tube in shell heat exchanger						
	Water flow rate		m^3/h	8.7	11.2	22.4	33.5	44.7	55.9	67.1
	Water pressure drop		kPa	40	40	40	40	40	40	40
	Type	R407C		High efficient tube in shell heat exchanger						
	Water flow rate		m^3/h	8.7	10.5	21	31.5	42	52.5	62.9
	Water pressure drop		kPa	40	40	40	40	40	40	40
	Type	R401A		High efficient stainless steel plate heat exchanger						
	Water flow rate		m^3/h	8.7	11	22	33	44	55	66
	Water pressure drop		kPa	40	40	40	40	40	40	40
	Piping			DN50x1Set	DN50x1Set	DN50x2Sets	DN50x3 Sets	DN50x4 Sets	DN50x5 Sets	DN50x6 Sets
	Water side operation pressure		MPa	1.0						
	Suggest main pipe			DN50	DN50	DN65	DN80	DN100	DN100	DN125
Heat recovery side heat exchanger	Type			High efficient stainless steel plate heat exchanger						
	Water flow rate		m^3/h	2.2	2.6	5.2	7.7	10.3	12.9	15.5
	Water pressure drop		kPa	21	21	21	21	21	21	21
	Piping			R1"x2 Sets	R1"x2 Sets	R1"x4 Sets	R1"x6 Sets	R1"x8 Sets	R1"x10 Sets	R1"x12 Sets
	Water side operation pressure		MPa	1.0						
	Suggest main pipe			DN25	DN25	DN40	DN40	DN50	DN50	DN65
Outline dimension	Length		mm	1080	1080	2460	3840	5220	6600	7980
	Width		mm	2130	2130	2130	2130	2130	2130	2130
	Height		mm	2000	2000	2000	2000	2000	2000	2000
Operation weight			kg	750	800	1600	2400	3200	4000	4800

Note:
1. Cooling condition: water outlet 7 ℃, ambient temp. 35℃; heat recovery water inlet temp. 40℃, water outlet temp. 45℃.
2. Heating condition: water outlet 45℃, ambient temp. 7℃DB/6℃WB.
3. Unit working condition: normal unit cooling: 16~45℃, low ambient temperature unit cooling: -10~45℃, heating: -10~21℃; heat recovery can be only used when unit runs in cooling mode.

Classic Unit Parameter (15RT/20RT Modules Combination)

Item	Parameter / Model		ASC					
			140D(R)(2)(H)(Q)–07	160D(R)(2)(H)(Q)–08	180D(R)(2)(H)(Q)–09	200D(R)(2)(H)(Q)–0A	220D(R)(2)(H)(Q)–0B	240D(R)(2)(H)(Q)–0C
15RT Module quantity			0	0	0	0	0	0
20RT Module quantity			7	8	9	10	11	12
R22	Cooling capacity	kW	455	520	585	650	715	780
	Heating capacity	kW	504	576	648	720	792	864
	Input power	kW	145.6	166.4	187.2	208	228.8	249.6
R407C	Cooling capacity	kW	427	488	549	610	671	732
	Heating capacity	kW	469	536	603	670	737	804
	Input power	kW	148.4	169.6	190.8	212	233.2	254.4
R401A	Cooling capacity	kW	448	512	576	640	704	768
	Heating capacity	kW	490	560	630	700	770	840
	Input power	kW	143.5	164	184.5	205	225.5	246
Heat recovery capacity (optional)		kW	105	120	135	150	165	180
Power supply			380V/3N ~ /50Hz					
Compressor	Type		Hermetic scroll compressor					
	Quantity	Set	14	16	18	20	22	24
Air side heat exchanger			Inner grooved tube and fin					
Axial fan	Type		Water proof, weather-proof, low noise, high efficient axial fan					
	Quantity	Set	14	16	18	20	22	24
	Total input power	KW	9.1	10.4	11.7	13	14.3	15.6
Chilled water side heat exchanger R22	Type		High efficient tube in shell heat exchanger					
	Water flow rate	m^3/h	78.2	89.4	100.6	111.8	123	134.1
	Water pressure drop	kPa	40	40	40	40	40	40
R407C	Type		High efficient tube in shell heat exchanger					
	Water flow rate	m^3/h	73.4	83.9	94.4	104.9	115.4	125.9
	Water pressure drop	kPa	40	40	40	40	40	40
R401A	Type		High efficient stainless steel plate heat exchanger					
	Water flow rate	m^3/h	77	88	99.1	110.1	121.1	132.1
	Water pressure drop	kPa	40	40	40	40	40	40
Piping			DN50x7 Sets	DN50x8 Sets	DN50x9 Sets	DN50x10 Sets	DN50x11 Sets	DN50x12 Sets
Water side operation pressure		MPa	1.0					
Suggest main pipe			DN125	DN125	DN150	DN150	DN150	DN200
Heat recovery side heat exchanger	Type		High efficient stainless steel plate heat exchanger					
	Water flow rate	m^3/h	18.1	20.6	23.2	25.8	28.4	31
	Water pressure drop	kPa	21	21	21	21	21	21
	Piping		R1"x14 Sets	R1"x16 Sets	R1"x18 Sets	R1"x20 Sets	R1"x22 Sets	R1"x24 Sets
	Water side operation pressure	MPa	1.0					
	Suggest main pipe		DN65	DN65	DN65	DN80	DN80	DN80
Outline dimension	Length	mm	9360	10740	12120	13500	14880	16260
	Width	mm	2130	2130	2130	2130	2130	2130
	Height	mm	2000	2000	2000	2000	2000	2000
Operation weight		kg	5600	6400	7200	8000	8800	9600

Note:
1. Cooling condition: water outlet 7 ℃, ambient temp. 35 ℃; heat recovery water inlet temp. 40 ℃, water outlet temp. 45 ℃.
2. Heating condition: water outlet 45 ℃, ambient temp. 7 ℃DB/6 ℃WB.
3. Unit working condition: normal unit cooling: 16~45 ℃, low ambient temperature unit cooling: -10~45 ℃, heating: -10~21 ℃;
heat recovery can be only used when unit runs in cooling mode.

Classic Unit Parameter (20RT/30RT Modules Combination)

Item	Parameter / Model		ASC							
			030D(2)(H)–01	050D(2)(H)–11	060D(2)(H)–02	070D(2)(H)–21	090D(R)(2)(H)–03	100D(R)(2)(H)–22	110D(R)(2)(H)–13	150D(R)(2)(H)–05
20RT Module quantity			0	1	0	2	0	2	1	0
30RT Module quantity			1	1	2	1	3	2	3	5
R22	Cooling capacity	kW	97.5	162.5	195	227.5	292.5	325	357.5	487.5
	Heating capacity	kW	–	–	–	–	324	360	396	540
	Input power	kW	31.2	52	62.4	72.8	93.6	104	114.4	156
R407C	Cooling capacity	kW	91.5	152.5	183	213.5	274.5	305	335.5	457.5
	Heating capacity	kW	–	–	–	–	301.5	335	368.5	502.5
	Input power	kW	31.8	53	63.6	74.2	95.4	106	116.6	159
R401A	Cooling capacity	kW	96	160	192	224	288	320	352	480
	Heating capacity	kW	–	–	–	–	315	350	385	525
	Input power	kW	30.8	51.3	61.6	71.8	92.4	102.6	112.9	154
Heat recovery capacity (optional)		kW	22.5	37.5	45	52.5	67.5	75	82.5	112.5
Power supply			380V/3N ~ /50Hz							
Compressor	Type		Hermetic scroll compressor							
	Quantity	Set	3	5	6	7	9	10	11	15
Air side heat exchanger			Inner grooved tube and fin							
Axial fan	Type		Water proof, weather-proof, low noise, high efficient axial fan							
	Quantity	Set	2	4	4	6	6	8	8	10
	Total input power	KW	2.5	3.8	5	5.1	7.5	7.6	8.8	12.5
Chilled water side heat exchanger R22	Type		High efficient tube in shell heat exchanger							
	Water flow rate	m^3/h	16.8	27.9	33.5	39.1	50.3	55.9	61.5	83.8
	Water pressure drop	kPa	40	40	40	40	40	40	40	40
R407C	Type		High efficient tube in shell heat exchanger							
	Water flow rate	m^3/h	15.7	26.2	31.5	36.7	47.2	52.5	57.7	78.7
	Water pressure drop	kPa	40	40	40	40	40	40	40	40
R401A	Type									
	Water flow rate	m^3/h	16.5	27.5	33	38.5	49.5	55	60.5	82.5
	Water pressure drop	kPa	40	40	40	40	40	40	40	40
Piping			–	DN50x1Set	–	DN50x2Sets	–	DN50x2Sets	DN50x1Set	–
			DN65x1Set	DN65x1Set	DN65x2Sets	DN65x1Set	DN65x3Sets	DN65x2Sets	DN65x3Sets	DN65x5Sets
Water side operation pressure		MPa	1.0							
Suggest main pipe			DN65	DN80	DN80	DN100	DN100	DN100	DN125	DN125
Heat recovery side heat exchanger	Type		High efficient stainless steel plate heat exchanger							
	Water flow rate	m^3/h	3.9	6.4	7.7	9	11.6	12.9	14.2	19.3
	Water pressure drop	kPa	21	21	21	21	21	21	21	21
	Piping		R1"x1 Set	R1"x3 Sets	R1"x2 Sets	R1"x5 Sets	R1"x3 Sets	R1"x6 Sets	R1"x5 Sets	R1"x5 Sets
	Water side operation pressure	MPa	1.0							
	Suggest main pipe		DN40	DN40	DN40	DN50	DN50	DN50	DN50	DN65
Outline dimension	Length	mm	1080	2460	2460	3840	3840	5220	5220	6600
	Width	mm	2130	2130	2130	2130	2130	2130	2130	2130
	Height	mm	2200	2200	2200	2200	2200	2200	2200	2200
Operation weight		kg	950	1750	1900	2550	2850	3500	3650	4750

Note:
1. Cooling condition: water outlet 7 ℃, ambient temp. 35 ℃; heat recovery water inlet temp. 40 ℃, water outlet temp. 45 ℃.
2. Heating condition: water outlet 45 ℃, ambient temp. 7 ℃DB/6 ℃WB.
3. Unit working condition: normal unit cooling: 16~45 ℃, heating: -10~21 ℃;
heat recovery can be only used when unit runs in cooling mode.

Classic Unit Parameter (20RT/30RT Modules Combination)

Item \ Parameter \ Model				ASC						
				180D(R)(2)(H)–06	210D(R)(2)(H)–07	240D(R)(2)(H)–08	270D(R)(2)(H)–09	300D(R)(2)(H)–0A	330D(R)(2)(H)–0B	360D(R)(2)(H)–0C
20RT Module quantity				0	0	0	0	0	0	0
30RT Module quantity				6	7	8	9	10	11	12
R22	Cooling capacity		kW	585	682.5	780	877.5	975	1072.5	1170
	Heating capacity		kW	648	756	864	972	1080	1188	1296
	Input power		kW	187.2	218.4	249.6	280.8	312	343.2	374.4
R407C	Cooling capacity		kW	549	640.5	732	823.5	915	1006.5	1098
	Heating capacity		kW	603	703.5	804	904.5	1005	1105.5	1206
	Input power		kW	190.8	222.6	254.4	286.2	318	349.8	381.6
R401A	Cooling capacity		kW	576	672	768	864	960	1056	1152
	Heating capacity		kW	630	735	840	945	1050	1155	1260
	Input power		kW	184.8	215.6	246.4	277.2	308	338.8	369.6
Heat recovery capacity (optional)			kW	135	157.5	180	202.5	225	247.5	270
Power supply				380V/3N ~ /50Hz						
Compressor	Type			Hermetic scroll compressor						
	Quantity		Set	18	21	24	27	30	33	36
Air side heat exchanger				Inner grooved tube and fin						
Axial fan	Type			Water proof, weather-proof, low noise, high efficient axial fan						
	Quantity		Set	12	14	16	18	20	22	24
	Total input power		KW	15	17.5	20	22.5	25	27.5	30
Chilled water side heat exchanger	R22 Type			High efficient tube in shell heat exchanger						
	R22 Water flow rate		m^3/h	100.6	117.4	134.1	150.9	167.7	184.4	201.2
	R22 Water pressure drop		kPa	40	40	40	40	40	40	40
	R407C Type			High efficient tube in shell heat exchanger						
	R407C Water flow rate		m^3/h	94.4	110.1	125.9	141.6	157.4	173.1	188.8
	R407C Water pressure drop		kPa	40	40	40	40	40	40	40
	R401A Type			High efficient stainless steel plate heat exchanger						
	R401A Water flow rate		m^3/h	99.1	115.6	132.1	148.6	165.1	181.6	198.1
	R401A Water pressure drop		kPa	40	40	40	40	40	40	40
	Piping			–	–	–	–	–	–	–
				DN65x6 Sets	DN65x7 Sets	DN65x8 Sets	DN65x9 Sets	DN65x10 Sets	DN65x11 Sets	DN65x12 Sets
	Water side operation pressure		MPa	1.0						
	Suggest main pipe			DN150	DN150	DN200	DN200	DN200	DN200	DN200
Heat recovery side heat exchanger	Type			High efficient stainless steel plate heat exchanger						
	Water flow rate		m^3/h	23.2	27.1	31	34.8	38.7	42.6	46.4
	Water pressure drop		kPa	21	21	21	21	21	21	21
	Piping			R1"x6 Sets	R1"x7 Sets	R1"x8 Sets	R1"x9 Sets	R1"x10 Sets	R1"x11 Sets	R1"x12 Sets
	Water side operation pressure		MPa	1.0						
	Suggest main pipe			DN65	DN80	DN80	DN100	DN100	DN100	DN100
Outline dimension	Length		mm	7980	9360	10740	12120	13500	14880	16260
	Width		mm	2130	2130	2130	2130	2130	2130	2130
	Height		mm	2200	2200	2200	2200	2200	2200	2200
Operation weight			kg	5700	6650	7600	8550	9500	10450	11400

Note:
1. Cooling condition: water outlet 7 ℃, ambient temp. 35℃; heat recovery water inlet temp. 40℃, water outlet temp. 45℃.
2. Heating condition: water outlet 45℃, ambient temp. 7℃DB/6℃WB.
3. Unit working condition: normal unit cooling: 16~45℃, heating: -10~21℃;
heat recovery can be only used when unit runs in cooling mode.

Classic Unit Parameter (30RT/40RT Modules Combination)

Item \ Parameter \ Model				ASC					
				040D(R)(2)(H)–01	070D(2)(H)–11	080D(R)(2)(H)–02	100D(R)(2)(H)–21	110D(R)(2)(H)–12	120D(R)(2)(H)–03
30RT Module quantity				0	1	0	2	1	0
40RT Module quantity				1	1	2	1	2	3
R22	Cooling capacity		kW	130	227.5	260	325	357.5	390
	Heating capacity		kW	144	–	288	360	396	432
	Input power		kW	41.6	72.8	83.2	104	114.4	124.8
R407C	Cooling capacity		kW	122	213.5	244	305	335.5	366
	Heating capacity		kW	134	–	268	335	368.5	402
	Input power		kW	42.4	74.2	84.8	106	116.6	127.2
R401A	Cooling capacity		kW	128	224	256	320	352	384
	Heating capacity		kW	140	–	280	350	385	420
	Input power		kW	41	71.8	82	102.6	112.8	123
Heat recovery capacity (optional)			kW	30	52.5	60	75	82.5	9
Power supply				380V/3N ~ /50Hz					
Compressor	Type			Hermetic scroll compressor					
	Quantity		Set	4	7	8	10	11	12
Air side heat exchanger				Inner grooved tube and fin					
Axial fan	Type			Water proof, weather-proof, low noise, high efficient axial fan					
	Quantity			2	4	4	6	6	6
	Total input power		KW	3.6	6.1	7.2	8.6	9.7	10.8
Chilled water side heat exchanger	R22 Type			High efficient tube in shell heat exchanger					
	R22 Water flow rate		m^3/h	22.4	39.1	44.7	55.9	61.5	67.1
	R22 Water pressure drop		kPa	40	40	40	40	40	40
	R407C Type			High efficient tube in shell heat exchanger					
	R407C Water flow rate		m^3/h	21	36.7	42	52.5	57.7	62.9
	R407C Water pressure drop		kPa	40	40	40	40	40	40
	R401A Type			High efficient stainless steel plate heat exchanger					
	R401A Water flow rate		m^3/h	22	38.5	44	55	60.5	66
	R401A Water pressure drop		kPa	40	40	40	40	40	40
	Piping			DN65x1 Set	DN65x2 Sets	DN65x2 Sets	DN65x3 Sets	DN65x3 Sets	DN65x3 Sets
	Water side operation pressure		MPa	1.0					
	Suggest main pipe			DN65	DN100	DN100	DN100	DN125	DN200
Heat recovery side heat exchanger	Type			High efficient stainless steel plate heat exchanger					
	Water flow rate		m^3/h	5.2	9	10.3	12.9	14.2	15.5
	Water pressure drop		kPa	21	21	21	21	21	21
	Piping			–	R1"x1 Set	–	R1"x2 Sets	R1"x1 Set	–
				R1–1/2x1 Set	R1–1/2x1 Set	R1–1/2x2 Sets	R1–1/2x1 Set	R1–1/2x2 Sets	R1–1/2x3 Sets
	Water side operation pressure		MPa	1.0					
	Suggest main pipe			DN40	DN50	DN50	DN50	DN50	DN65
Outline dimension	Length		mm	1360	2740	3020	4120	4400	4680
	Width		mm	2285	2285	2285	2285	2285	2285
	Height		mm	2320	2320	2320	2320	2320	2320
Operation weight			kg	1250	2200	2500	3150	3450	3750

Note:
1. Cooling condition: water outlet 7 ℃, ambient temp. 35℃; heat recovery water inlet temp. 40℃, water outlet temp. 45℃.
2. Heating condition: water outlet 45℃, ambient temp. 7℃DB/6℃WB.
3. Unit working condition: normal unit cooling: 16~45℃, heating: -10~21℃;
heat recovery can be only used when unit runs in cooling mode.

Classic Unit Parameter (30RT/40RT Modules Combination)

Item \ Parameter \ Model				ASC					
				130D(R)(2)(H)–31	140D(R)(2)(H)–22	150D(R)(2)(H)–13	160D(R)(2)(H)–04	170D(R)(2)(H)–32	180D(R)(2)(H)–23
30RT Module quantity				3	2	1	0	3	2
40RT Module quantity				1	2	3	4	2	3
R22	Cooling capacity		kW	422.5	455	487.5	520	552.5	585
	Heating capacity		kW	468	504	540	576	612	648
	Input power		kW	135.2	145.6	156	166.4	176.8	187.2
R407C	Cooling capacity		kW	396.5	427	457.5	488	518.5	549
	Heating capacity		kW	435.5	469	502.5	536	569.5	603
	Input power		kW	137.8	148.4	159	169.6	180.2	190.8
R401A	Cooling capacity		kW	416	448	480	512	544	576
	Heating capacity		kW	455	490	525	560	595	630
	Input power		kW	133.4	143.6	153.8	164	174.4	184.6
Heat recovery capacity (optional)			kW	97.5	105	112.5	120	127.5	135
Power supply				380V/3N ~ /50Hz					
Compressor	Type			Hermetic scroll compressor					
	Quantity		Set	13	14	15	16	17	18
Air side heat exchanger				Inner grooved tube and fin					
Axial fan	Type			Water proof, weather-proof, low noise, high efficient axial fan					
	Quantity		Set	8	8	8	8	10	10
	Total input power		KW	11.1	12.2	13.3	14.4	14.7	15.8
Chilled water side heat exchanger	R22 Type			High efficient tube in shell heat exchanger					
	R22 Water flow rate		m^3/h	72.7	78.2	83.8	89.4	95	100.6
	R22 Water pressure drop		kPa	40	40	40	40	40	40
	R407C Type			High efficient tube in shell heat exchanger					
	R407C Water flow rate		m^3/h	68.2	73.4	78.7	83.9	89.2	94.4
	R407C Water pressure drop		kPa	40	40	40	40	40	40
	R401A Type			High efficient stainless steel plate heat exchanger					
	R401A Water flow rate		m^3/h	71.5	77	82.5	88	93.6	99.1
	R401A Water pressure drop		kPa	40	40	40	40	40	40
	Piping			DN65x4 Sets	DN65x4 Sets	DN65x4 Sets	DN65x4 Sets	DN65x5 Sets	DN65x5 Sets
	Water side operation pressure		MPa	1.0					
	Suggest main pipe								
Heat recovery side heat exchanger	Type			High efficient stainless steel plate heat exchanger					
	Water flow rate		m^3/h	16.8	18.1	19.3	20.6	21.9	23.2
	Water pressure drop		kPa	21	21	21	21	21	21
	Piping			R1"x3 Sets	R1"x2 Sets	R1"x1 Set	–	R1"x3 Sets	R1"x2 Sets
				R1–1/2x1 Set	R1–1/2x2 Sets	R1–1/2x3 Sets	R1–1/2x4 Sets	R1–1/2x2 Sets	R1–1/2x3 Sets
	Water side operation pressure		MPa	1.0					
	Suggest main pipe			DN65	DN65	DN65	DN65	DN65	DN65
Outline dimension	Length		mm	5500	5780	6060	6340	7160	7440
	Width		mm	2285	2285	2285	2285	2285	2285
	Height		mm	2320	2320	2320	2320	2320	2320
Operation weight			kg	4100	4400	4700	5000	5350	5650

Note:
1. Cooling condition: water outlet 7 ℃, ambient temp. 35 ℃; heat recovery water inlet temp. 40 ℃, water outlet temp. 45 ℃.
2. Heating condition: water outlet 45 ℃, ambient temp. 7 ℃DB/6 ℃WB.
3. Unit working condition: normal unit cooling: 16~45 ℃, heating: -10~21 ℃;
heat recovery can be only used when unit runs in cooling mode.

Classic Unit Parameter (30RT/40RT Modules Combination)

Item \ Parameter \ Model				ASC					
				190D(R)(2)(H)–14	200D(R)(2)(H)–05	210D(R)(2)(H)–33	220D(R)(2)(H)–24	230D(R)(2)(H)–15	240D(R)(2)(H)–06
30RT Module quantity				1	0	3	2	1	0
40RT Module quantity				4	5	3	4	5	6
R22	Cooling capacity		kW	617.5	650	682.5	715	747.5	780
	Heating capacity		kW	684	720	756	792	828	864
	Input power		kW	197.6	208	218.4	228.8	239.2	249.6
R407C	Cooling capacity		kW	579.5	610	640.5	671	701.5	732
	Heating capacity		kW	636.5	670	703.5	737	770.5	804
	Input power		kW	201.4	212	222.6	233.2	243.8	254.4
R401A	Cooling capacity		kW	608	640	672	704	736	768
	Heating capacity		kW	665	700	735	770	805	840
	Input power		kW	194.8	205	215.4	225.6	235.8	246
Heat recovery capacity (optional)			kW	142.5	150	157.5	165	172.5	180
Power supply				380V/3N ~ /50Hz					
Compressor	Type			Hermetic scroll compressor					
	Quantity		Set	19	20	21	22	23	24
Air side heat exchanger				Inner grooved tube and fin					
Axial fan	Type			Water proof, weather-proof, low noise, high efficient axial fan					
	Quantity		Set	10	10	12	12	12	12
	Total input power		KW	16.9	18	18.3	19.4	20.5	21.6
Chilled water side heat exchanger	R22 Type			High efficient tube in shell heat exchanger					
	R22 Water flow rate		m^3/h	106.2	111.8	117.4	123	128.5	134.1
	R22 Water pressure drop		kPa	40	40	40	40	40	40
	R407C Type			High efficient tube in shell heat exchanger					
	R407C Water flow rate		m^3/h	99.7	104.9	110.1	115.4	120.6	125.9
	R407C Water pressure drop		kPa	40	40	40	40	40	40
	R401A Type			High efficient stainless steel plate heat exchanger					
	R401A Water flow rate		m^3/h	104.6	110.1	115.6	121.1	126.6	132.1
	R401A Water pressure drop		kPa	40	40	40	40	40	40
	Piping			DN65x5 Sets	DN65x5 Sets	DN65x6 Sets	DN65x6 Sets	DN65x6 Sets	DN65x6 Sets
	Water side operation pressure		MPa	1.0					
	Suggest main pipe			DN150	DN150	DN150	DN150	DN200	DN200
Heat recovery side heat exchanger	Type			High efficient stainless steel plate heat exchanger					
	Water flow rate		m^3/h	24.5	25.8	27.1	28.4	29.7	31
	Water pressure drop		kPa	21	21	21	22	23	24
	Piping			R1"x1Set	–	R1"x3 Sets	R1"x2 Sets	R1"x1 Set	–
				R1–1/2x4 Sets	R1–1/2x5 Sets	R1–1/2x3Sets	R1–1/2x4 Sets	R1–1/2x5Sets	R1–1/2x6 Sets
	Water side operation pressure		MPa	1.0					
	Suggest main pipe			DN80	DN80	DN80	DN80	DN80	DN80
Outline dimension	Length		mm	7720	8000	8820	9100	9380	9660
	Width		mm	2285	2285	2285	2285	2285	2285
	Height		mm	2320	2320	2320	2320	2320	2320
Operation weight			kg	5950	6250	6600	6900	7200	7500

Note:
1. Cooling condition: water outlet 7 ℃, ambient temp. 35 ℃; heat recovery water inlet temp. 40 ℃, water outlet temp. 45 ℃.
2. Heating condition: water outlet 45 ℃, ambient temp. 7 ℃DB/6 ℃WB.
3. Unit working condition: normal unit cooling: 16~45 ℃, heating: -10~21 ℃;
heat recovery can be only used when unit runs in cooling mode.

High Efficiency Enhanced Unit Parameter

Item	Parameter / Model		ASC					
			020D(R)E	040D(R)E	060D(R)E	080D(R)E	100D(R)E	120D(R)E
Cooling capacity		kW	65	130	195	260	325	390
Heating capacity (Not for cooling only unit)		kW	74	148	222	296	370	444
Quantity of modules		set	1	2	3	4	5	6
Electrical data	Power supply		380V/3N /50HZ					
	Total input power	kW	20	40	60	80	100	120
	Total running current	A	35.7	71.4	107.1	142.8	178.5	214.2
Compressor	Type		Hermetic scroll compressor					
	Quantity	Set	2	4	6	8	10	12
	Input power	kW	18.5	37	55.5	74	92.5	11
Air side heat exchanger			Inner grooved and aluminum fin					
Axial fan	Type		Water proof, weather-proof, low noise, high efficient axial fan					
	Quantity	Set	2	4	6	8	10	12
	Motor power	kW	1.5	3	4.5	6	7.5	9
AC water side heat exchanger	Type		Efficient tube in shell heat exchanger					
	Water flow rate	m^3/h	11.2	22.4	33.6	44.8	56	67.2
	Water pressure drop	kPa	40	40	40	40	40	40
	Piping	mm	DN50 x 1 Set	DN50 x 2 Sets	DN50 x 3 Sets	DN50 x 4 Sets	DN50 x 5 Sets	DN50 x 6 Sets
	Water side working pressure	MPa	1.0					
Suggest main pipe		mm	DN50	DN65	DN80	DN80	DN100	DN100
Outline dimension	Length	mm	1080	2510	3940	5370	6800	8230
	Width	mm	2130	2130	2130	2130	2130	2130
	Height	mm	2280	2280	2280	2280	2280	2280
Refrigerant	Type		R22					
	Charge	kg	20	40	60	80	100	120
Operation weight		kg	800	1600	2400	3200	4000	4800

Note:
1. Cooling condition: water outlet 7 ℃, ambient temp. 35℃
2. Heating condition: water outlet 45℃, ambient temp. 7℃DB/6℃WB.
3. Unit working condition: cooling: 16~48℃, heating: -15~21℃.

High Efficiency Enhanced Unit Parameter

Item	Parameter / Model		ASC					
			140D(R)E	160D(R)E	180D(R)E	200D(R)E	220D(R)E	240D(R)E
Cooling capacity		kW	455	520	585	650	715	780
Heating capacity (Not for cooling only unit)		kW	518	592	666	740	814	888
Quantity of modules		set	7	8	9	10	11	12
Electrical data	Power supply		380V/3N /50HZ					
	Total input power	kW	140	160	180	200	220	240
	Total running current	A	249.9	285.6	321.3	357	392.7	428.4
Compressor	Type		Hermetic scroll compressor					
	Quantity	Set	14	16	18	20	22	24
	Input power	kW	129.5	148	166.5	185	203.5	222
Air side heat exchanger			Inner grooved and aluminum fin					
Axial fan	Type		Water proof, weather-proof, low noise, high efficient axial fan					
	Quantity	Set	14	16	18	20	22	24
	Motor power	kW	10.5	12	13.5	15	16.5	18
AC water side heat exchanger	Type		Efficient tube in shell heat exchanger					
	Water flow rate	m^3/h	78.4	89.6	100.8	112	123.2	134.4
	Water pressure drop	kPa	40	40	40	40	40	40
	Piping	mm	DN50 x 7 Sets	DN50 x 8 Sets	DN50 x 9 Sets	DN50 x 10 Sets	DN50 x 11 Sets	DN50 x 12 Sets
	Water side working pressure	MPa	1.0					
Suggest main pipe		mm	DN125	DN125	DN125	DN125	DN150	DN150
Outline dimension	Length	mm	9660	11090	12520	13950	15380	16810
	Width	mm	2130	2130	2130	2130	2130	2130
	Height	mm	2280	2280	2280	2280	2280	2280
Refrigerant	Type		R22					
	Charge	kg	140	160	180	200	220	240
Operation weight		kg	5600	6400	7200	8000	8800	9600

Note:
1. Cooling condition: water outlet 7 ℃, ambient temp. 35℃
2. Heating condition: water outlet 45℃, ambient temp. 7℃DB/6℃WB.
3. Unit working condition: cooling: 16~48℃, heating: -15~21℃.

Cooling Capacity Correction Factor

Ambient Temp. (℃)	Cooling capacity				Input power			
	Water outlet temp. (℃)				Water outlet temp. (℃)			
	5	7	9	11	5	7	9	11
28	1.03	1.08	1.13	1.18	0.88	0.89	0.91	0.94
32	0.99	1.04	1.09	1.14	0.94	0.95	0.97	1.00
35	0.95	1.00	1.06	1.10	0.97	1.00	1.03	1.05
38	0.92	0.97	1.02	1.06	1.03	1.05	1.08	1.08
40	0.90	0.94	0.99	1.04	1.06	1.08	1.11	1.11

Classic Unit Heating Capacity Correction Factor

Ambient Temp. (℃)	Heating capacity					Ambient Temp. (℃)	Input power				
	Water outlet temp. (℃)						Water outlet temp. (℃)				
	39	42	45	48	50		39	42	45	48	50
13	1.22	1.2	1.19	1.16	1.15	13	0.89	0.95	1.01	1.07	1.11
10	1.12	1.11	1.08	1.07	1.06	10	0.88	0.95	1.01	1.07	1.1
7	1.03	1.02	1.00	0.99	0.98	7	0.88	0.95	1.00	1.06	1.1
2	0.89	0.88	0.87	0.86	0.85	2	0.87	0.94	0.99	1.06	1.09
–2	0.79	0.78	0.77	0.77	0.76	–2	0.86	0.93	0.99	1.05	1.07
–6	0.7	0.69	0.68	–	–	–6	0.86	0.92	0.98	–	–
–10	0.59	0.59	–	–	–	–10	0.85	0.88	–	–	–

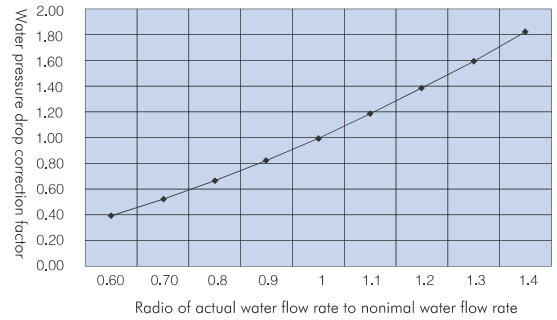
Not: "–" : exceed unit operation range.

Enhanced Unit Heating Capacity Correction Factor

Ambient Temp. (℃)	Heating capacity					Ambient Temp. (℃)	Input power				
	Water outlet temp. (℃)						Water outlet temp. (℃)				
	39	42	45	48	50		39	42	45	48	50
13	1.23	1.21	1.2	1.17	1.165	13	0.81	0.88	0.93	0.98	1.02
10	1.13	1.12	1.1	1.08	1.07	10	0.81	0.87	0.92	0.98	1.02
7	1.02	1.01	1.00	0.99	0.99	7	0.86	0.93	0.99	1.06	1.1
2	0.88	0.88	0.88	0.88	0.87	2	0.86	0.94	1.00	1.06	1.1
–2	0.79	0.79	0.79	0.79	0.78	–2	0.86	0.93	0.99	1.05	1.08
–6	0.72	0.71	0.71	–	–	–6	0.85	0.92	0.98	–	–
–10	0.62	0.62	–	–	–	–10	0.84	0.91	–	–	–
–15	0.53	–	–	–	–	–15	0.83	–	–	–	–

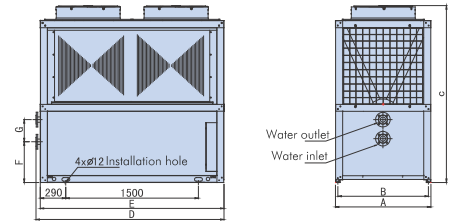
Not: "–" : exceed unit operation range.

Water Pressure Drop Correction Factor



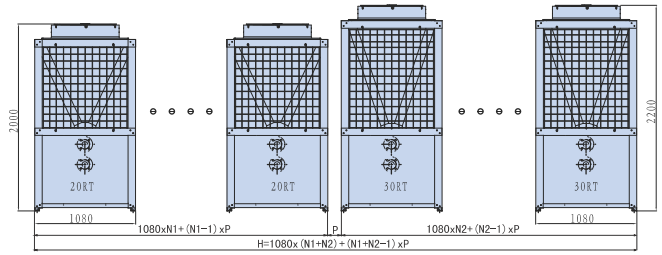
Outline Dimension

1. Single module outline dimension



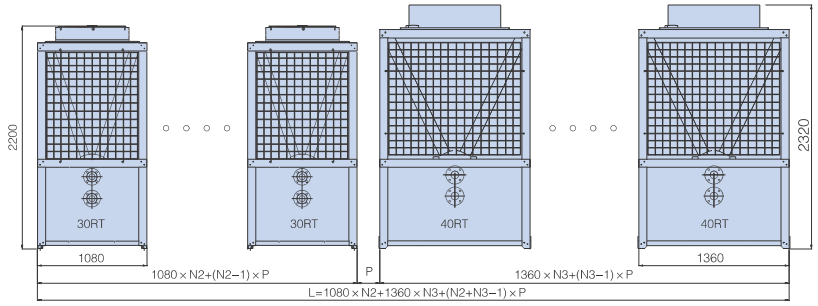
Model \ Size	A	B	C	D	E	F	G	Inlet pipe	Outlet pipe
ASC 015D(R)	1080	1024	2000	2130	2080	537	210	DN50	DN50
ASC 020D(R)	1080	1024	2000	2130	2080	537	210	DN50	DN50
ASC 030D(R)	1080	1024	2200	2130	2080	537	210	DN65	DN65
ASC 040D(R)	1360	1304	2320	2285	2235	537	210	DN65	DN65

2. 20RT,30RT modules combination



Note: N1—20RT module amount; N2—30RT module amount; N1+N2≤12, P≥300

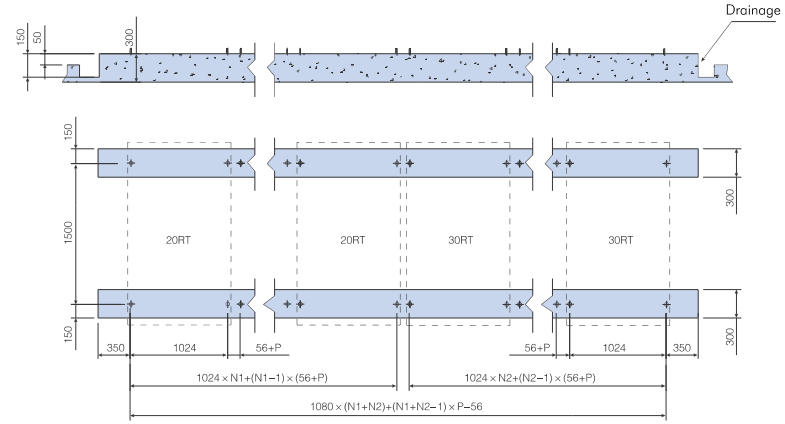
3. 30RT,40RT modules combination



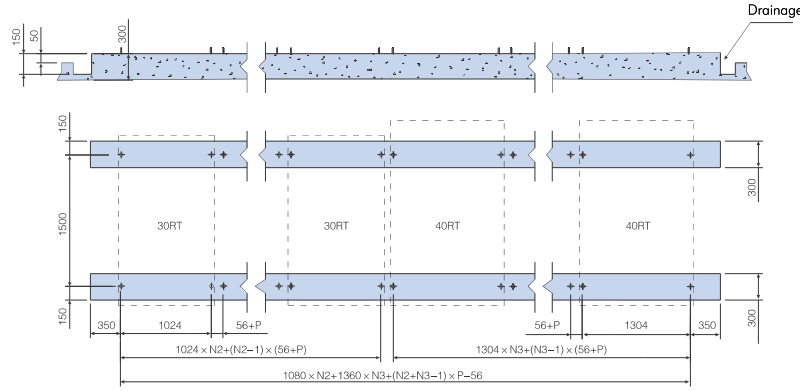
Note: N2—30RT module amount; N3—40RT module amount; N2+2*N3≤12, P≥300

Unit Installation Foundation

1. 20RT,30RT modules installation foundation



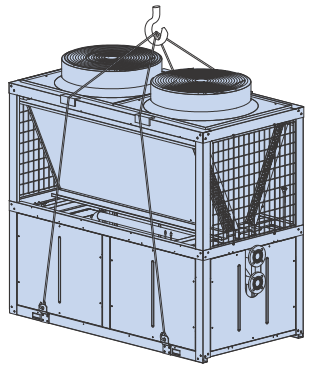
2. 30RT,40RT modules installation foundation



Note:
1. Foundation applies concrete construction or channel iron frame, enough to undertake unit operation load.
2. 20mm thick rubber shock pad or shock absorber should be added between unit and foundation.
3. Every unit is fixed by 4 pieces M10 bolt.
4. N1—20RT module amount; N2—30RT module amount; N3—40RT module amount; P—distance between modules

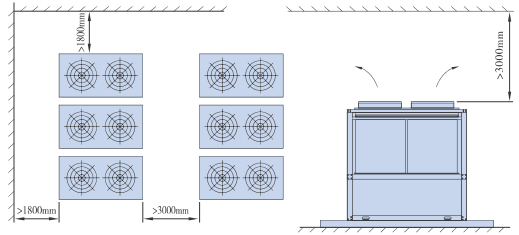
Unit Lifting and Shifting

1. Pallet truck and forklift are being used for the unit shifting or lifting by inserting the fork into the unit base pan.
2. Extra attention must be taken during unit lifting by crane. Flat belt or steel ropes are required to go through the unit base for safety lifting. The contact point between the rope and the unit must be attached with a protection cover to prevent unit from being dented, or it can also use channel steel bar or square steel bar to isolate the steel rope from the unit (shown as below diagram).



Unit Location

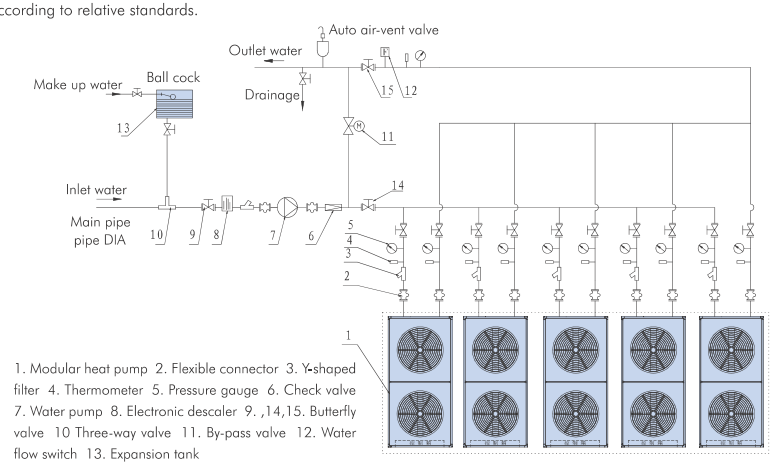
1. The unit can be installed on the roof, balcony and garden. The installation space must have good ventilation, clean and bright. Avoid places that are oily steamy and with other heating elements. The location must also be provided with a good water drainage system, and is easy for pipe connection installation.
2. To ensure there is sufficient spaces for maintenance and ventilation, installer must follow the space distance indicated in the figure above. No obstacles are allowed in the space distance; the surrounding wall must be lower than the top of the fan coil and the distance between unit top and wall should be more than 2m to avoid short circuit affects.
3. Unit assemble air intake should not be in a parallel direction with monsoon wind blowing direction.



Vertical view　　Front view

Water Piping System

1. All piping and valve must be thermal insulated. Extra protection cover is needed to prevent capacity loss, condensation problem, and water freezing in the piping during winter.
2. In order to ensure water side heat exchanger and piping system have sufficient water, a water flow switch must be installed in the unit outlet water pipe to avoid water freezing from occurring and it should be interlocking control with compressor. Insufficient water in the system will lead to water freezing, low suction pressure and insufficient compressor oil return (during cooling cycle); and high pressure during heating cycle. Directly, it will damage the compressor and shorten the compressor life spans.
3. If the water system is a close circuit system, to avoid expansion or contraction, an expansion tank should be installed 1m higher than the highest point of water system. Do not apply check valve in the outlet of the expansion tank as to avoid leakage or pipe cracking.
4. Water pump should be installed at the unit return water side. If any supplementary heater is being used, the water pump should be located at the heater inlet. Water pump should be installed at the unit outlet when outlet pressure is beyond the unit's capacity.
5. No air lock is allowed in water system. Water access valve (auto air-vent) should be installed in the highest possible location in the piping. For horizontal installation pipe, a 1/250 slide angle should be considered. Chiller unit should have a 40-mesh filter installed at the evaporator inlet. Rust and welding slag should be removed before installation in order to keep water system clean until operation.
6. The piping weight cannot be supported by the unit. When water pump inlet/outlet connects with relative pipes in unit, a flexible connector or rubber connector is required to prevent vibration transmission and noise interference.
7. The chiller unit inlet and outlet should be installed with thermometer and pressure gauge for daily inspection.
8. Neither ground water nor hard water nor dirt water is allowed as chiller circulation water. The circulation water PH value is between 6.8~8.0 ranges and the total water hardness must be less than70, regular water quality inspection is a must to maintain the efficiency of the chiller.
9. More than two multi-modular units (two contained) should use the same piping formula, please refer to figure 6
10. Below diagram is only for your reference, actual water piping installation should be carried out by professional person according to relative standards.



1. Modular heat pump 2. Flexible connector 3. Y-shaped filter 4. Thermometer 5. Pressure gauge 6. Check valve 7. Water pump 8. Electronic descaler 9. ,14,15. Butterfly valve 10 Three-way valve 11. By-pass valve 12. Water flow switch 13. Expansion tank

Normal unit water system diagram