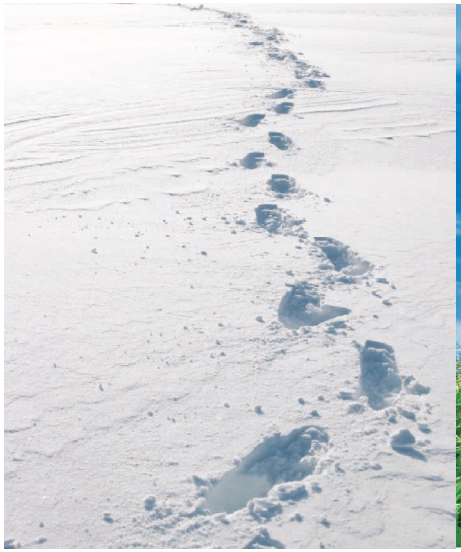

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1. Maybe there are some differences between the actual products and products in stylebook, please consult for details while purchasing.
2. Through careful verification, if there are any printing mistakes and omissions in the stylebook, Kingair won't take the according consequence.
3. The specification parameter is changed because the products are improved, please understand for no separate notice.

Please refer to product nameplate for actual parameter.

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First listed company of Taiwan investment in China

Modular Air Cooled Heat Pump

Contents

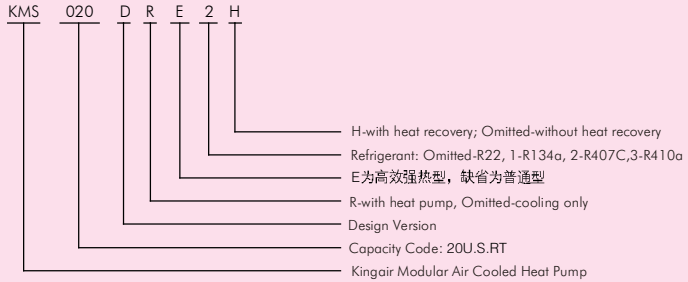
Product Introduction

KMS 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 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℃.

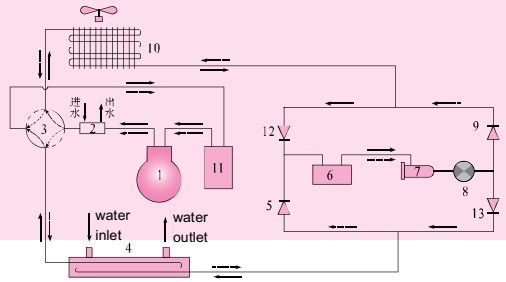
Unit applied high quality refrigerant self-control components imported from world famous manufacturer, and has gone through system match and optimum design with advanced control technology, and it has become one of the most reliable, energy saving, enviroment friendly, and quiet units. Kingair boasts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



Nomenclature



System Operation Theory



1.Compressor 2.Heat Recovery (optional) 3.Four-way Valve 4.Chiller 5/9/12/13.Inverted Valve
6.Liquid Accumulator 7.Dry filter 8.Expansion Valve 10.Condensing Coil 11.Gas-liquid Separator

(1). Cooling operational process in summer (⟶)

1⟶2⟶3⟶10⟶12⟶6⟶7⟶8⟶13⟶4⟶3⟶11⟶1

(2). Heating operational process in winter (⟶)

1⟶2⟶3⟶4⟶5⟶6⟶7⟶8⟶9⟶10⟶3⟶11⟶1

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Product Features

1) Flexible Combination, Easy Installation

- Every modular unit operates independently from each other as it has its own individual frame structure, refrigeration circuit and control protection system. Each unit will start to operate step by step in order to achieve the capacity needed. If one of them breaks down, it will not affect the other unit s' performance in the system.
- Modular unit quantity in the unit assemble can be increased for future expansion.
- Every modular unit can be installed closely or by a separate distance, in order to suit the application and space of installation.
- No special machine room is required; low installation cost. Users only need to connect water piping, ensure good water quality, then pump in clean water, and start operation.

2) Intelligent Control, Efficient Energy Saving

- Due to the modular system design, the maximum starting ampere for the whole system is decreased to the minimum (lower voltage surge) by starting the modular unit separately. This directly will save for the system energy generally.
- The microprocessor can detect and determine the required capacity automatically. It will randomly start the separate modular units until the sufficient capacity for the space heat load is supplied in order to achieve the best energy saving for the system.
- All modular units use the new hermetic scroll compressor that is of low noise, low vibration and high efficiency.
- Evaporator and condenser coil are manufactured with inner groove copper tube where for cooling and heating mode condition, the heat transfer rate is 32% higher than the normal heat exchanger rate.
- Antirust hydrophilic aluminums fin which can be applied in the worst ambient condition; it reduces the frost thickness and forming rate during heating cycle and also increases the heat exchanger rate of the coil.

3) Excellent Quality, Stable Performance

- Hermetical high efficient reliable scroll compressor is applied, with inner over-heat protection and oil heating belt with proper power is installed in the bottom of each compressor
- All main components in the refrigeration system are of branded quality products from America, Europe and Japan. Electrical parts for the units are provided by Siemens, Omron which is well-known for its quality.
- Microprocessor controller have functions such as intelligent defrost, diagnosis capacity management, antifreeze control, modular operating and etc.
- The unit is protected by high-low pressure switch, air vent, water temperature control and other safety devices which assure that the unit is safe during operation.

4) Quiet, Comfort, Easy to Maintain

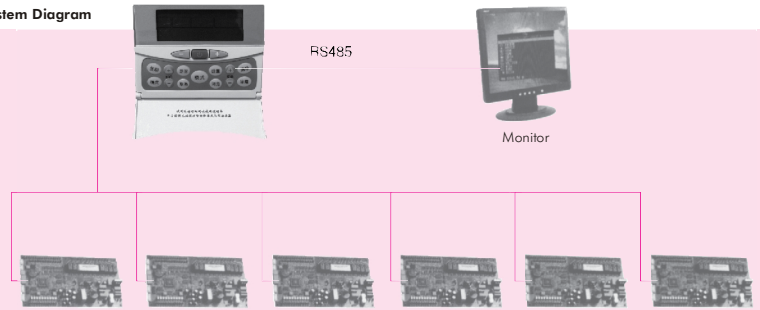
- Apply high efficient low rpm axial flow fan in line with aerodynamic principle, low noise.
- Rational layout of main components, all of which is reachable if protection net is disloaded, simply maintained
- Hermetical scroll compressor is applied, with small vibration and low noise.

5) Free Hot Water, Environment Friendly (Optional)

- Unit cooling EER under heat recovery condition is 5% higher, with lower operation cost.
- High temperature condensing waste heat in process of recovery cooling operation can be used to supply free hot water as high as 65C without any energy consumption.
- Directly use condensing waste heat and reduce waste heat dischrge; meanwhile, hot water system separate water and electricity to avoid hidden danger.

Microprocessor Controller

1. Control System Diagram



2. Controller Display Function LCD is optional)	
Real timer display (24hrs)	Controller output port status (optional)
Operation mode : cool, heat , automatic & manual	Compressor load (optional)
Temperature of setting value and sensed value	Compressors accumulate running time (optional)
Running unit amount (optional)	Compressors accmulate starting number (optional)
Communication status	
3.Controller Control Function	
Compressor wear & tear balancing	Remote control terminal (optional)
Cooling, heating, automatic, manual and other mode function	Failure alarm dialing function (optional)
Timer power on and power off	Remote control function (dry contact control)
Self-diagnosis and protection function	Remote operation, alarm function (relay output contact)
Fuzzy capacity adjustment control	Automatic antifreeze protection (winter)
Water outlet antifreeze protection	Multi module controller, total plug and play mode
Water outlet overheat protection	Intelligent defrost control
Temperature, pressure transducer short circuit, cut off protection	Only allow one unit defrosts at one time, rest operating or waiting
Power failure last memory function	Manual defrost
Preset unit control quantity	Re-start waiting time
Compressor overtime operation alarm function (optional)	Secondary heatrer control
Multiple unit start/stop mode	
4.Safety Alarm Function	
High pressure protection	External interlocking protection
Low pressure protection	Communication failure alarm
Compressor overload, crankcase heater protection	Overtime operation alarm (optional)
Wrong or short phase protection, high or low voltage protection	Transducer failure alarm
Air vent protection (high temperature)	Minimum / maximum water outlet temperature alarm.
Minimum water flow rate protection	40 Failure memory record (optional)

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Performance Parameters-Classic Model (15RT/20RT)

Parameter / Model / Item			KMS						
			015D(R)(2)(H)–10	020D(R)(2)(H)–01	040D(R)(2)(H)–02	060D(R)(2)(H)–03	080D(R)(2)(H)–04	100D(R)(2)(H)–05	120D(R)(2)(H)–06
15RT Module Qty			1	0	0	0	0	0	0
20RT Module Qty			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
	Total 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
	Total Input Power	kW	15.5	21.2	42.4	63.6	84.8	106	127.2
Heat Recovery(optional)		kW	12.5	15	30	45	60	75	90
Power Supply			380V/3N ~ /50Hz						
Compressor	Type		Hermetic Scroll Compressor						
	Quantity		2	2	4	6	8	10	12
Air-cooled Heat Exchanger			Inner Groove Copper Tube and Aluminum Fin						
Axial Flow Fan	Type		Weather-proof, low noise, high efficiency Axial Flow Fan						
	Quantity		2	2	4	6	8	10	12
	Input Power	kW	1.3	1.3	2.6	3.9	5.2	6.5	7.8
Water-cooled Heat Exchanger	Type		Shell and Tube Heat Exchanger						
	Water Flow	m^3/h	8.7	11.2	22.4	33.5	44.7	55.9	67.1
	Pressure Head Loss	kPa	40	40	40	40	40	40	40
	Pipe Diameter		DN50x1	DN50x1	DN50x2	DN50x3	DN50x4	DN50x5	DN50x6
	Operating Pressure	MPa	1.0						
	Suggested Main Pipe Diameter		DN50	DN50	DN65	DN80	DN100	DN100	DN125
Heat Recovery Side Heat Exchanger	Type		Double Pipe Heat Exchanger						
	Water Flow	m^3/h	2.2	2.6	5.2	7.7	10.3	12.9	15.5
	Pressure Head Loss	kPa	21	21	21	21	21	21	21
	Pipe Diameter		R1"x1	R1"x1	R1"x2	R1"x3	R1"x4	R1"x5	R1"x6
	Operating Pressure	MPa	1.0						
	Suggested Main Pipe Diameter		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
Refrigerant Charge		kg	17	20	40	60	80	100	120
Operation Weight		kg	750	800	1600	2400	3200	4000	4800

Note:
1. Cooling Mode : water outlet 7℃, ambient 35℃; heat recovery water inlet 40 ℃ , water outlet 45 ℃ ;
2. Heating Mode: Water outlet 45℃, ambient 7℃DB /6℃WB.
3. Operating Condition: Cooling mode 16~45℃ ambient, heating mode -10~21℃. Heat recovery is only under cooling mode.

Performance Parameters-Classic Model (15RT/20RT)

Parameter / Model / Item			KMS					
			140D(R)(2)(H)–07	160D(R)(2)(H)–08	180D(R)(2)(H)–09	200D(R)(2)(H)–0A	220D(R)(2)(H)–0B	240D(R)(2)(H)–0C
15RT Module Qty			0	0	0	0	0	0
20RT Module Qty			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
	Total 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
	Total Input Power	kW	148.4	169.6	190.8	212	233.2	254.4
Heat Recovery(optional)		kW	105	120	135	150	165	180
Power Supply			380V/3N ~ /50Hz					
Compressor	Type		Hermetic Scroll Compressor					
	Quantity		14	16	18	20	22	24
Air-cooled Heat Exchanger			Inner Groove Copper Tube and Aluminum Fin					
Axial Flow Fan	Type		Weather-proof, low noise, high efficiency Axial Flow Fan					
	Quantity		14	16	18	20	22	24
	Input Power	kW	9.1	10.4	11.7	13	14.3	15.6
Water-cooled Heat Exchanger	Type		Shell and Tube Heat Exchanger					
	Water Flow	m^3/h	78.2	89.4	100.6	111.8	123	134.1
	Pressure Head Loss	kPa	40	40	40	40	40	40
	Pipe Diameter		DN50x7	DN50x8	DN50x9	DN50x10	DN50x11	DN50x12
	Operating Pressure	MPa	1.0					
	Suggested Main Pipe Diameter		DN125	DN125	DN150	DN150	DN150	DN200
Heat Recovery Side Heat Exchanger	Type		Double Pipe Heat Exchanger					
	Water Flow	m^3/h	18.1	20.6	23.2	25.8	28.4	31
	Pressure Head Loss	kPa	21	21	21	21	21	21
	Pipe Diameter		R1"x7	R1"x8	R1"x9	R1"x10	R1"x11	R1"x12
	Operating Pressure	MPa	1.0					
	Suggested Main Pipe Diameter		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
Refrigerant Charge		kg	140	160	180	200	220	240
Operation Weight		kg	5600	6400	7200	8000	8800	9600

Note:
1. Cooling Mode : water outlet 7℃, ambient 35℃; heat recovery water inlet 40 ℃ , water outlet 45 ℃ ;
2. Heating Mode: Water outlet 45℃, ambient 7℃DB /6 ℃WB.
3. Operating Condition: Cooling mode 16~45℃ ambient, heating mode -10~21℃. Heat recovery is only under cooling mode.

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Performance Parameters-Classic Model (20RT/30RT)

Parameter / Item			KMS							
			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 Qty			0	1	0	2	0	2	1	0
30RT Module Qty			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
	Total 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
	Total Input Power	kW	31.8	53	63.6	74.2	95.4	106	116.6	159
Heat Recovery(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		3	5	6	7	9	10	11	15
Air-cooled Heat Exchanger			Inner Groove Copper Tube and Aluminum Fin							
Axial Flow Fan	Type		Weather-proof, low noise, high efficiency Axial Flow Fan							
	Quantity		2	4	4	6	6	8	8	10
	Input Power	kW	2.5	3.8	5	5.1	7.5	7.6	8.8	12.5
Water-cooled Heat Exchanger	Type		Shell and Tube Heat Exchanger							
	Water Flow	m^3/h	16.8	27.9	33.5	39.1	50.3	55.9	61.5	83.8
	Pressure Head Loss	kPa	40	40	40	40	40	40	40	40
	Pipe Diameter		–	DN50x1	–	DN50x2	–	DN50x2	DN50x1	–
			DN65x1	DN65x1	DN65x2	DN65x1	DN65x3	DN65x2	DN65x3	DN65x5
	Operating Pressure	MPa	1.0							
	Suggested Main Pipe Diameter		DN65	DN80	DN80	DN100	DN100	DN100	DN125	DN125
Heat Recovery Side Heat Exchanger	Type		Double Pipe Heat Exchanger							
	Water Flow	m^3/h	3.9	6.4	7.7	9	11.6	12.9	14.2	19.3
	Pressure Head Loss	kPa	21	21	21	21	21	21	21	21
	Pipe Diameter		R1"x1	R1"x2	R1"x2	R1"x3	R1"x3	R1"x4	R1"x4	R1"x5
	Operating Pressure	MPa	1.0							
	Suggested Main Pipe Diameter		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
Refrigerant Charge		kg	24	40	48	56	90	100	110	150
Operation Weight		kg	950	1750	1900	2550	2850	3500	3650	4750

Note:
1. Cooling Mode : water outlet 7˚C, ambient 35˚C ; heat recovery water inlet 40˚C , water outlet 45˚C ;
2. Heating Mode: Water outlet 45˚C, ambient 7˚CDB /6˚CWB.
3. Operating Condition: Cooling mode 16~45˚C ambient, heating mode -10~21˚C. Heat recovery is only under cooling mode.

Performance Parameters-Classic Model (20RT/30RT)

Parameter / Item			KMS						
			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 Qty			0	0	0	0	0	0	0
30RT Module Qty			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
	Total 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
	Total Input Power	kW	190.8	222.6	254.4	286.2	318	349.8	381.6
Heat Recovery(optional)		kW	135	157.5	180	202.5	225	247.5	270
Power Supply			380V/3N ~ /50Hz						
Compressor	Type		Hermetic Scroll Compressor						
	Quantity		18	21	24	27	30	33	36
Air-cooled Heat Exchanger			Inner Groove Copper Tube and Aluminum Fin						
Axial Flow Fan	Type		Weather-proof, low noise, high efficiency Axial Flow Fan						
	Quantity		12	14	16	18	20	22	24
	Input Power	kW	15	17.5	20	22.5	25	27.5	30
Water-cooled Heat Exchanger	Type		Shell and Tube Heat Exchanger						
	Water Flow	m^3/h	100.6	117.4	134.1	150.9	167.7	184.4	201.2
	Pressure Head Loss	kPa	40	40	40	40	40	40	40
	Pipe Diameter		–	–	–	–	–	–	–
			DN65x6	DN65x7	DN65x8	DN65x9	DN65x10	DN65x11	DN65x12
	Operating Pressure	MPa	1.0						
	Suggested Main Pipe Diameter		DN150	DN150	DN200	DN200	DN200	DN200	DN200
Heat Recovery Side Heat Exchanger	Type		Double Pipe Heat Exchanger						
	Water Flow	m^3/h	23.2	27.1	31	34.8	38.7	42.6	46.4
	Pressure Head Loss	kPa	21	21	21	21	21	21	21
	Pipe Diameter		R1"x6	R1"x7	R1"x8	R1"x9	R1"x10	R1"x11	R1"x12
	Operating Pressure	MPa	1.0						
	Suggested Main Pipe Diameter		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
Refrigerant Charge		kg	180	210	240	270	300	330	360
Operation Weight		kg	5700	6650	7600	8550	9500	10450	11400

Note:
1. Cooling Mode : water outlet 7˚C, ambient 35˚C ; heat recovery water inlet 40˚C , water outlet 45˚C ;
2. Heating Mode: Water outlet 45˚C, ambient 7˚CDB /6˚CWB.
3. Operating Condition: Cooling mode 16~45˚C ambient, heating mode -10~21˚C. Heat recovery is only under cooling mode.

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Performance Parameters-Classic Model (30RT/40RT)

Parameter / Item			KMS					
			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 Qty			0	1	0	2	1	0
40RT Module Qty			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
	Total 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
	Total Input Power	kW	42.4	74.2	84.8	106	116.6	127.2
Heat Recovery(optional)		kW	30	52.5	60	75	82.5	90
Power Supply			380V/3N ~ /50Hz					
Compressor	Type		Hermetic Scroll Compressor					
	Quantity		4	7	8	10	11	12
Air-cooled Heat Exchanger			Inner Groove Copper Tube and Aluminum Fin					
Axial Flow Fan	Type		Weather-proof, low noise, high efficiency Axial Flow Fan					
	Quantity		2	4	4	6	6	6
	Input Power	kW	3.6	6.1	7.2	8.6	9.7	10.8
Water-cooled Heat Exchanger	Type		Shell and Tube Heat Exchanger					
	Water Flow	m^3/h	22.4	39.1	44.7	55.9	61.5	67.1
	Pressure Head Loss	kPa	40	40	40	40	40	40
	Pipe Diameter		DN65x1	DN65x2	DN65x2	DN65x3	DN65x3	DN65x3
			1.0					
	Operating Pressure	MPa	DN65	DN100	DN100	DN100	DN125	DN125
Heat Recovery Side Heat Exchanger	Suggested Main Pipe Diameter		Double Pipe Heat Exchanger					
	Type		5.2	9	10.3	12.9	14.2	15.5
	Water Flow	m^3/h	21	21	21	21	21	21
	Pressure Head Loss	kPa	–	R1"x1	–	R1"x2	R1"x1	–
	Pipe Diameter		R1-1/2x1	R1-1/2x1	R1-1/2x2	R1-1/2x1	R1-1/2x2	R1-1/2x3
	Operating Pressure	MPa	1.0					
	Suggested Main Pipe Diameter		DN40	DN50	DN50	DN50	DN50	DN65
Outline Dimension	Length	mm	1480	2860	3260	4240	4640	5040
	Width	mm	2285	2285	2285	2285	2285	2285
	Height	mm	2400	2400	2400	2400	2400	2400
Refrigerant Charge		kg	40	56	80	100	110	120
Operation Weight		kg	1250	2200	2500	3150	3450	3750

Note:
1. Cooling Mode : water outlet 7℃, ambient 35℃; heat recovery water inlet 40℃ , water outlet 45℃ ;
2. Heating Mode: Water outlet 45℃, ambient 7℃DB /6℃WB.
3. Operating Condition: Cooling mode 16~45℃ ambient, heating mode -10~21℃. Heat recovery is only under cooling mode.

Performance Parameters-Classic Model (30RT/40RT)

Parameter / Item			KMS					
			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 Qty			3	2	1	0	3	2
40RT Module Qty			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
	Total 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
	Total Input Power	kW	137.8	148.4	159	169.6	180.2	190.8
Heat Recovery(optional)		kW	97.5	105	112.5	120	127.5	135
Power Supply			380V/3N ~ /50Hz					
Compressor	Type							
	Quantity		13	14	15	16	17	18
Air-cooled Heat Exchanger			Inner Groove Copper Tube and Aluminum Fin					
Axial Flow Fan	Type		Weather-proof, low noise, high efficiency Axial Flow Fan					
	Quantity		8	8	8	8	10	10
	Input Power	kW	11.1	12.2	13.3	14.4	14.7	15.8
Water-cooled Heat Exchanger	Type		Shell and Tube Heat Exchanger					
	Water Flow	m^3/h	72.7	78.2	83.8	89.4	95	100.6
	Pressure Head Loss	kPa	40	40	40	40	40	40
	Pipe Diameter		DN65x4	DN65x4	DN65x4	DN65x4	DN65x5	DN65x5
			1.0					
	Operating Pressure	MPa	DN125	DN125	DN125	DN125	DN150	DN150
Heat Recovery Side Heat Exchanger	Suggested Main Pipe Diameter		Double Pipe Heat Exchanger					
	Type		16.8	18.1	19.3	20.6	21.9	23.2
	Water Flow	m^3/h	21	21	21	21	21	21
	Pressure Head Loss	kPa	R1"x3	R1"x2	R1"x1	–	R1"x3	R1"x2
	Pipe Diameter		R1-1/2x1	R1-1/2x2	R1-1/2x3	R1-1/2x4	R1-1/2x2	R1-1/2x3
	Operating Pressure	MPa	1.0					
	Suggested Main Pipe Diameter		DN65	DN65	DN65	DN65	DN65	DN65
Outline Dimension	Length	mm	5620	6020	6420	6820	7400	7800
	Width	mm	2285	2285	2285	2285	2285	2285
	Height	mm	2400	2400	2400	2400	2400	2400
Refrigerant Charge		kg	130	140	150	160	170	180
Operation Weight		kg	4100	4400	4700	5000	5350	5650

Note:
1. Cooling Mode : water outlet 7℃, ambient 35℃; heat recovery water inlet 40℃ , water outlet 45℃ ;
2. Heating Mode: Water outlet 45℃, ambient 7℃DB /6℃WB.
3. Operating Condition: Cooling mode 16~45℃ ambient, heating mode -10~21℃. Heat recovery is only under cooling mode.

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Performance Parameters-Classic Model (30RT/40RT)

Parameter / Model / Item			KMS					
			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 Qty			1	0	3	2	1	0
40RT Module Qty			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
	Total 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
	Total Input Power	kW	201.4	212	222.6	233.2	243.8	254.4
Heat Recovery(optional)		kW	142.5	150	157.5	165	172.5	180
Power Supply			380V/3N ~ /50Hz					
Compressor	Type		Hermetic Scroll Compressor					
	Quantity		19	20	21	22	23	24
Air-cooled Heat Exchanger			Inner Groove Copper Tube and Aluminum Fin					
Axial Flow Fan	Type		Weather-proof, low noise, high efficiency Axial Flow Fan					
	Quantity		10	10	12	12	12	12
	Input Power	kW	16.9	18	18.3	19.4	20.5	21.6
Water-cooled Heat Exchanger	Type		Shell and Tube Heat Exchanger					
	Water Flow	m^3/h	106.2	111.8	117.4	123	128.5	134.1
	Pressure Head Loss	kPa	40	40	40	40	40	40
	Pipe Diameter		DN65x5	DN65x5	DN65x6	DN65x6	DN65x6	DN65x6
			1.0					
	Operating Pressure	MPa	DN150	DN150	DN150	DN150	DN200	DN200
Heat Recovery Side Heat Exchanger	Suggested Main Pipe Diameter		Double Pipe Heat Exchanger					
	Type		24.5	25.8	27.1	28.4	29.7	31
	Water Flow	m^3/h	21	21	21	22	23	24
	Pressure Head Loss	kPa	R1"x1	–	R1"x3	R1"x2	R1"x1	–
	Pipe Diameter		R1-1/2x4	R1-1/2x5	R1-1/2x3	R1-1/2x4	R1-1/2x5	R1-1/2x6
	Operating Pressure	MPa	1.0					
	Suggested Main Pipe Diameter		DN80	DN80	DN80	DN80	DN80	DN80
Outline Dimension	Length	mm	8200	8600	9180	9580	9980	10380
	Width	mm	2285	2285	2285	2285	2285	2285
	Height	mm	2400	2400	2400	2400	2400	2400
Refrigerant Charge		kg	190	200	210	220	230	240
Operation Weight		kg	5950	6250	6600	6900	7200	7500

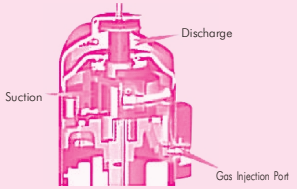
Note:
1. Cooling Mode : water outlet 7°C, ambient 35°C ; heat recovery water inlet 40°C , water outlet 45°C ;
2. Heating Mode: Water outlet 45°C, ambient 7°CDB /6°CWB.
3. Operating Condition: Cooling mode 16~45°C ambient, heating mode -10~21°C. Heat recovery is only under cooling mode.

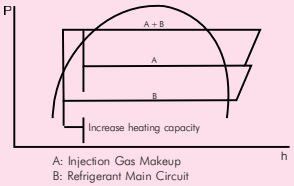
High COP Modular Unit

High COP Modular Unit is newly developed to fit in large temperature range. It has higher coefficient of performance (COP), widely used in various locations.

COP for cooling and heating is highly increased

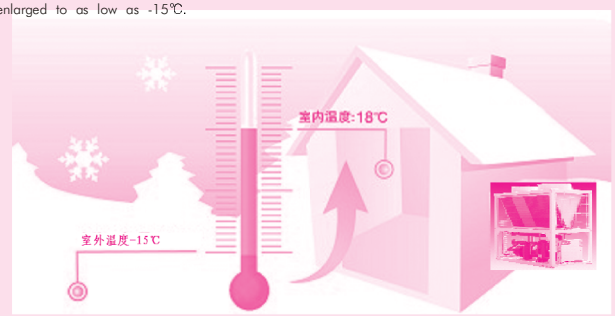
Unit applied highly efficient circulation loop of gas injection enthalpy rise and Quasi-two-stage compression. Technology of super subcooling, strengthened heat exchange and intelligent defrost has improved its cooling capacity by 15%, cooling COP by 11%, and also improved heating capacity by 18%, heating COP by 13%, compared to ordinary unit.





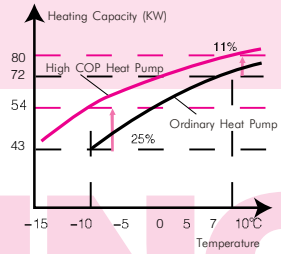
Heating operation range is larger

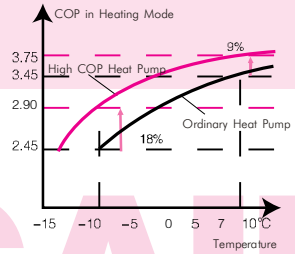
By applying gas injection enthalpy rise, super subcooling, strengthened heat exchange, intelligent defrost, etc., heating performance at low ambient temperature is highly improved. Heating operation range is enlarged to as low as -15℃.



Exellent heating performance at low ambient temperature, with high COP

Heating capacity as well as COP is higher than ordinary heat pump, no need to add auxilliary ele. heater, it saved much material cost and operating cost.





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Performance Parameters

Item \ Parameter / Model			KMS					
			020D(R)E	040D(R)E	060D(R)E	080D(R)E	100D(R)E	120D(R)E
Cooling Capacity		kW	73	146	219	292	365	438
Heating Capacity		kW	80	160	240	320	400	480
Module Qty			1	2	3	4	5	6
Electronic Performance	Power Supply		380V/3N ~ /50Hz					
	Total Input Power	kW	21.3	42.6	63.9	85.2	106.5	127.8
	Total Operating Current	A	38.1	76.1	114.2	152.3	190.4	228.4
Compressor	Type		Hermetic Scroll Compressor					
	Quantity		2	4	6	8	10	12
	Input Power	kW	20	40	60	80	100	120
Air-cooled Heat Exchanger			Inner Groove Copper Tube and Aluminum Fin					
Axial Flow Fan	Type		Weather-proof, low noise, high efficiency Axial Flow Fan					
	Quantity		2	4	6	8	10	12
	Motor Power	kW	1.3	2.6	3.9	5.2	6.5	7.8
Water-cooled Heat Exchanger	Type		Shell and Tube Heat Exchanger					
	Water Flow	m^3/h	12.4	24.8	37.2	49.6	62	74.4
	Pressure Head Loss	kPa	35	37	40	43	46	49
	Pipe Diameter	mm	DN50	DN50	DN50	DN50	DN50	DN50
	Operating Pressure	MPa	1.0					
Suggested Main Pipe Diameter		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 Mode : water outlet 7℃, ambient 35℃ ;
2. Heating Mode: Water outlet 45℃, ambient 7℃DB /6℃WB.
3. Operating Condition: Cooling mode 16~48℃ ambient, heating mode -15~21℃ .

Performance Parameters

Item \ Parameter / Model			KMS					
			140D(R)E	160D(R)E	180D(R)E	200D(R)E	220D(R)E	240D(R)E
Cooling Capacity		kW	511	584	657	730	803	876
Heating Capacity		kW	560	640	720	800	880	960
Module Qty			7	8	9	10	11	12
Electronic Performance	Power Supply		380V/3N ~ /50Hz					
	otal Input Powe	kW	149.1	170.4	191.7	213	234.3	255.6
	Total Operating Current	A	266.5	304.6	342.7	380.7	418.8	456.9
Compressor	Type		Hermetic Scroll Compressor					
	Quantity	台	14	16	18	20	22	24
	Input Power	kW	140	160	180	200	220	240
Air-cooled Heat Exchanger			Inner Groove Copper Tube and Aluminum Fin					
Axial Flow Fan	Type		Weather-proof, low noise, high efficiency Axial Flow Fan					
	Quantity		14	16	18	20	22	24
	Motor Power	kW	9.1	10.4	11.7	13	14.3	15.6
Water-cooled Heat Exchanger	Type		Shell and Tube Heat Exchanger					
	Water Flow	m^3/h	86.8	99.2	111.6	124	136.4	148.8
	Pressure Head Loss	kPa	52	56	60	64	69	74
	Pipe Diameter	mm	DN50	DN50	DN50	DN50	DN50	DN50
	Operating Pressure	MPa	1.0					
Suggested Main Pipe Diameter		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 Mode : water outlet 7℃, ambient 35℃ ;
2. Heating Mode: Water outlet 45℃, ambient 7℃DB /6℃WB.
3. Operating Condition: Cooling mode 16~48℃ ambient, heating mode -15~21℃ .

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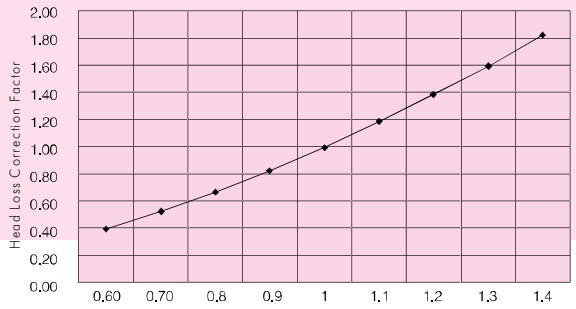
Cooling Capacity Correction

Ambient Temperature	Cooling Capacity				Input Power			
	Water Outlet Temperature(℃)				Water Outlet Temperature(℃)			
(℃)	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

Heating Capacity Correction

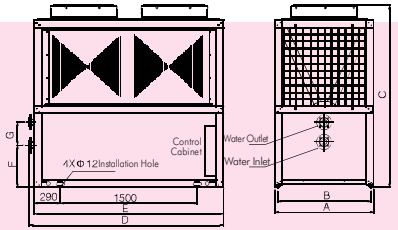
Ambient Temperature	Heating Capacity					Input Power				
	Water Outlet Temperature(℃)					Water Outlet Temperature(℃)				
(℃)	39	42	45	48	50	39	42	45	48	50
13	1.23	1.21	1.19	1.15	1.13	0.96	1.00	1.05	1.10	1.14
10	1.15	1.13	1.11	1.08	1.05	0.94	0.98	1.02	1.07	1.11
7	1.06	1.03	1.00	0.98	0.95	0.92	0.96	1.00	1.05	1.09
2	0.92	0.89	0.86	0.83	0.80	0.90	0.94	0.98	1.02	1.05
−2	0.80	0.77	0.74	0.71	0.69	0.87	0.91	0.96	1.00	1.04
−6	0.68	0.65	0.61	–	–	0.82	0.86	0.91	–	–
−10	0.57	0.55	–	–	–	0.78	0.81	–	–	–

Water Pressure Drop Correction



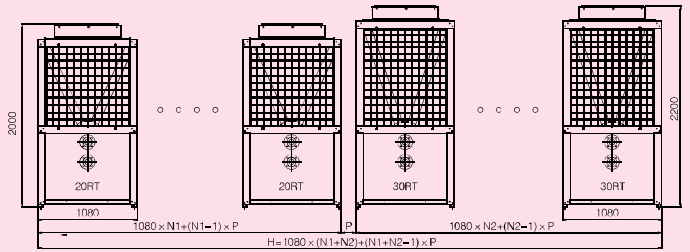
Unit Dimension

1. Single Module Dimension



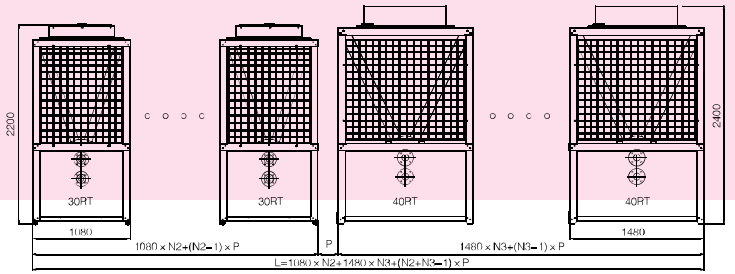
Model \ Dimension	A	B	C	D	E	F	G	Inlet Pipe	Outlet Pipe
KMS015/020D(R)	1080	1024	2000	2130	2080	522	209	DN50	DN50
KMS030D(R)	1080	1024	2200	2130	2080	522	209	DN65	DN65
KMS040D(R)	1480	1424	2400	2285	2235	522	209	DN65	DN65

2. 20rt and 30rt Module Combination Dimension



Note: N1 is amount of 20RT module, N2 is amount of 30RT module, N1 N2≤12, P≥300

3. 30rt and 40rt Module Combination Dimension



Note: N2 is amount of 30RT module, N3 is amount of 40RT module, N2+2×N3≤12, P≥300

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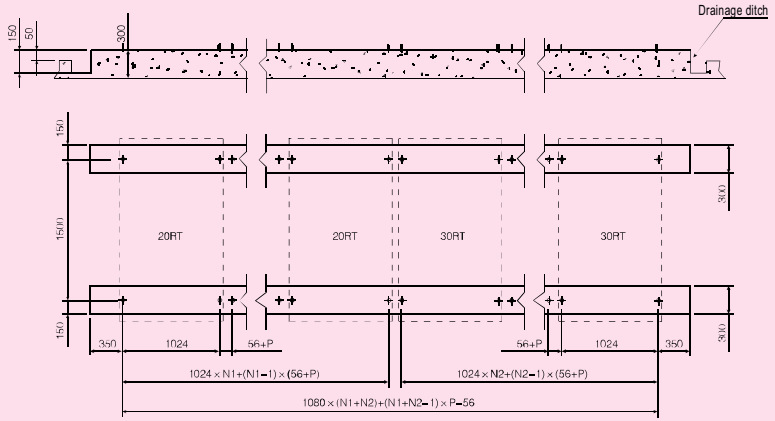
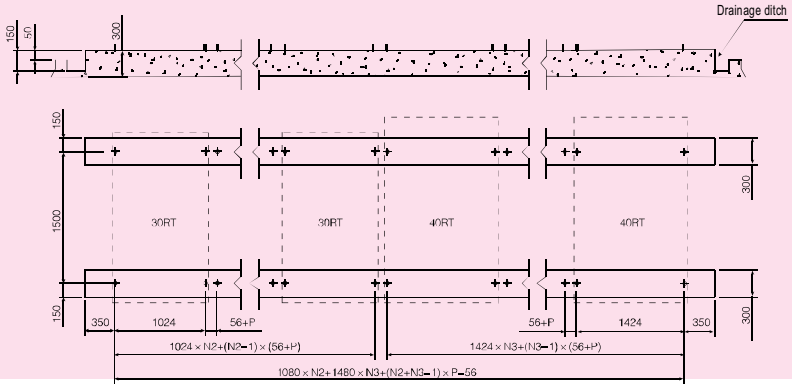
Installation Foundation

1. 20rt and 30rt Module Installation Fundation Diagram



2. 30rt and 40rt Module Installation Fundation Diagram



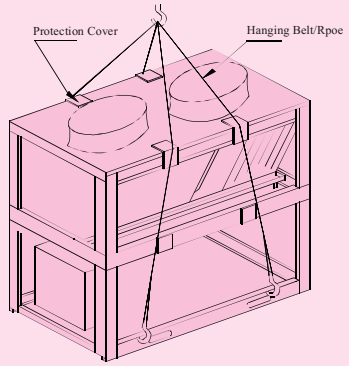
Note:

1, The base foundation must consist of either reinforced concrete cement or strong steel structure support which is able to bear unit weight.
2, 20mm thickness anti-vibration rubber grommet or isolator must be placed between the unit base and foudation.
3, Each module unit is secure with 4 M10 bolts to the ground.
4, N1 is quantity of 20RT module, N2 is quantity of 30RT module, N3 is quantity of 40RT module, P is distance between modules.

Unit Lifting

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 applied with a protection cover to prevent unit from dented. Steel rope should be tightened around the hook to avoid sliding from accrring during weight imbalance.

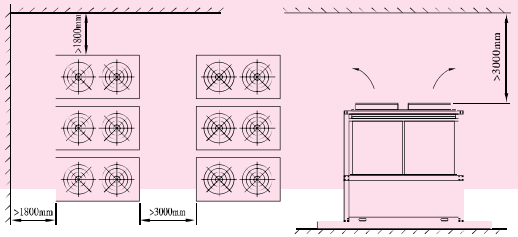


Unit Location

1. Unit can be installed on the roof, balcony and garden.The installation space must be clean and bright with good ventilation. Avoid places that are oily, steamy and with other heat source. The location should has low influence to surroundings for unit noise and hot/cold wind, while with good water drainage system and easy pipe connection.

2.To ensure there is sufficient space for maintenance and ventilation, user must save space shown in below diagram. No obstacles are allowed in the reserved space. Besides, the ceiling must be 3m higher than top panel of the unit to avoid wentilation short circuit.

3.Unit assemble air intake should not be parallel with monsoon wind blowing direction. (winter)



Plan View Side View

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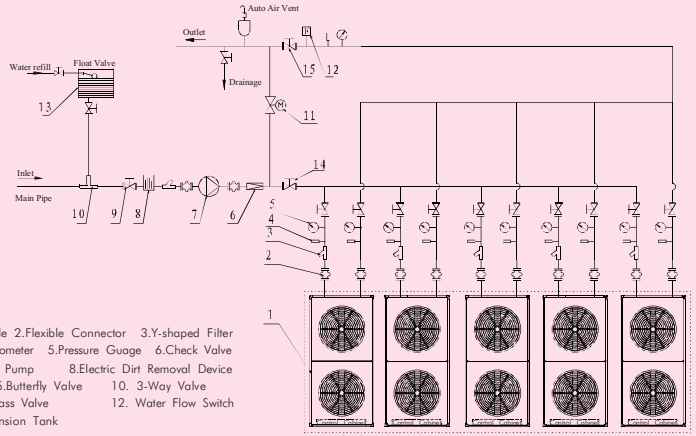
Water System Piping Connection

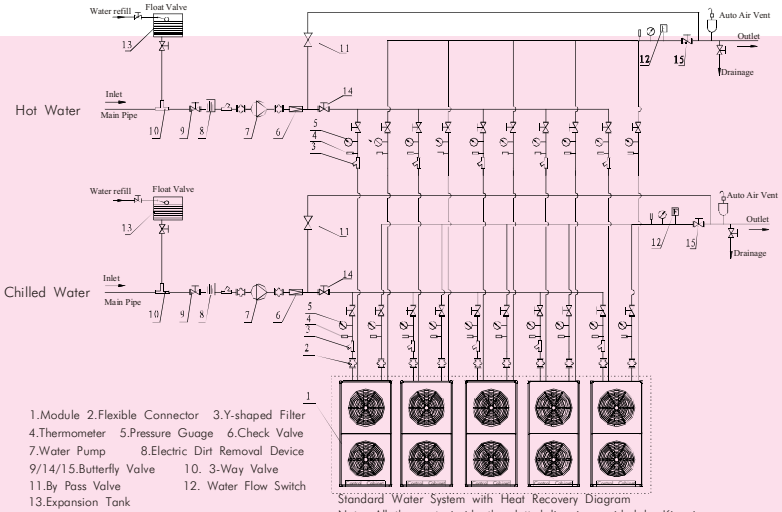
1. All the water inlet/outlet pipe and valve should be thermal insulated to prevent capacity loss or water condensation, as well as water freezing in winter.
2. To ensure the water side heat exchanger and the pipe system with sufficient water flow, a water flow switch must be installed at water outlet side and must be interloacked with the compressor, so as to avoid problems like internal freezing, low pressure too low and insufficient oil return caused by shortage of water in the heat exchanger, and also avoid abnormal high pressure in heating mode, otherwise compressor will break down or even be damaged.
3. If the evaporator water piping system is a close loop system, to resolve problem such as expansion and contraction of the water volume due to the different water temperature and isolated supply water pressure effect, an expansion tank must be installed. The height of water surface in the tank should be at least 1m higher than the highest point of the piping system. And Non-return Valve should not be installed at outlet of the expansion tank in case of pipe leakage or crack.
4. Water pump should be installed at evaporator inlet side. If unit is equipped with auxiliary heater, the pump should be installed at heater inlet side; If water pressure of the pump is larger than that of the unit, it should be installed at water supply side.
5. To avoid air lock in the water system, auto air vent must be installed at all the highest points of the water pipe system. The horizontal pipe must maintain at least 1/250 ratio sliding angle. 40-mesh water filter should be installed at water inlet side. Water piping system should be descaled, clean and without welding slag, and be kept clean bdfore unit operation.
6. Piping weight can not be supported by the chiller unit. The water pump inlet/outlet must be connect with pipes by flexible connector/rubber connector to prevent viration and noise interference.
7. The chiller unit inlet and outlet should be installed with thermometer and pressure gauge for daily inspection.
8. Unit circulating water can not use under ground water, hard water or polluted water. The PH valve should remain between 6.8~8.0. Total hardness should be less than 70. Regular water quality test should be conducted to ensure good performance.
9. Chiller group with more than 2 (2 inlcued) modules should be piped in same distance mode.
10. Below diagram is only for reference. Real project should be conducted by professional engineer according to standard and design.



1.Module 2.Flexible Connector 3.Y-shaped Filter
4.Thermometer 5.Pressure Guage 6.Check Valve
7.Water Pump 8.Electric Dirt Removal Device
9/14/15.Butterfly Valve 10. 3-Way Valve
11.By Pass Valve 12. Water Flow Switch
13.Expansion Tank

Standard Water System Diagram
Note: All the parts inside the dotted line is provided by Kingair.

Water System Piping Connection

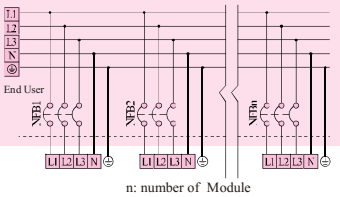


1.Module 2.Flexible Connector 3.Y-shaped Filter
4.Thermometer 5.Pressure Guage 6.Check Valve
7.Water Pump 8.Electric Dirt Removal Device
9/14/15.Butterfly Valve 10. 3-Way Valve
11.By Pass Valve 12. Water Flow Switch
13.Expansion Tank

Standard Water System with Heat Recovery Diagram
Note: All the parts inside the dotted line is provided by Kingair.

Wiring

1. The supply voltage must be maintained around ±10% and the frequency is ± 2%.
2. The current differential between 2 phase must not more than ± 2%. The supply current differential (highest and lowest) must be lower than 3% to avoid compressor from overloading.
3. The minimum starting voltage of the unit should be larger than 85% of the setting value.
4. All wiring connection must follow the electrical standard, and unit with terminal must use 500 resistance meter for checking the the current leakage. The minimum resistance is 3MΩ.
5. Every module unit must install a three phase non fuse breaker (NFB) as to reduce the risk of having electricity short circuit, avoid transformer and wiring damage, and to have a separate control of the module compressors, the wiring diagram shown:
6. For safety purposes, earthing protection installation must follow the electrical standard to avoid current leakage.
7. In the specification chart, all the operating current and input power is stated under standard testing condition. In real case, operating condition might be different in terms of capacity and ambient temperature. If ambient temperature is higher, then the capacity load will increase, and operating current and input power will increase subsequently. As a result, all the electrical controlling elements (transformer, contactor, cable lug and wiring size) must be selected based on 1.8 times of the standard value.



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Wiring

Model	Max. Operating Current	Main Power Wiring	Each Module Wiring
	A	BVR(PVF plastic-sheated cord)	
KMS015D	38.3	10mm²	
KMS020D	49.3	16mm²	
KMS030D	73.9	25mm²	
KMS040D	98.5	35mm²	
KMS050D	123.2	50mm²	
KMS060D	147.8	70mm²	
KMS070D	172.4	70mm²	
KMS080D	197.1	95mm²	
KMS090D	221.7	120mm²	
KMS100D	246.4	120mm²	Phase Line:
KMS110D	271	150mm²	15RT Module 10mm² x 3
KMS120D	295.6	185mm²	20RT Module 16mm² x 3
KMS130D	320.3	185mm²	30RT Module 25mm² x 3
KMS140D	344.9	2x70mm²	40RT Module 35mm² x 3
KMS150D	369.5	2x95mm²	Null Line:
KMS160D	394.2	2x95mm²	10mm² x 1
KMS170D	418.8	2x95mm²	Earth Wire:
KMS180D	443.4	2x120mm²	10mm² x 1
KMS200D	492.7	2x120mm²	
KMS210D	517.3	2x150mm²	
KMS220D	542	2x150mm²	
KMS230D	566.6	2x150mm²	
KMS240D	591.2	2x185mm²	
KMS270D	665.1	2x185mm²	
KMS300D	739.1	2x240mm²	
KMS330D	813	2x300mm²	
KMS360D	886.9	2x300mm²	

Note: Unit outlook is as shown in front page, there will be no further notice for any changes.
Side protection cradle is optional, please clarify in P.O. if it is needed.

KINGAIR