Air Cooled Screw Chiller / Heat Pump

R134a R407C

Literature No.: CA-UAA/UAY-202001
Supersedes: CA-UAA/UAY-201901

Overview

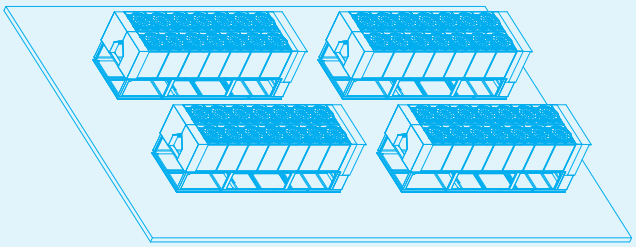
Air-cooled screw chiller/heat pump units are the central air conditioning units with air as the cold (hot) source, and water as the heat transfer medium. The units need no additional equipment room, cooling tower, cooling pump, or cooling pipe and can be installed on the building roof and outdoors. The heat pump units can provide heat as a hot water boiler.

As the designer and manufacturer of large air-cooled heat pump units, DAIKIN has been committed to the technical improvement and innovation and leads the development of air-cooled heat pump technology. For the consideration of environment protection and energy-saving, DAIKIN applies the advanced technology for the latest ultra-efficient air-cooled heat pump units. Moreover, DAIKIN has built a large 1900kW full performance lab to ensure the quality and performance.

Outstanding Features

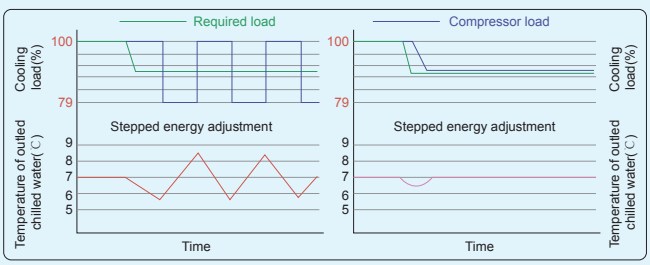
Widely applied to hotel, hospital, factory, public building, etc

Easy installation, install outside & no need equipment room

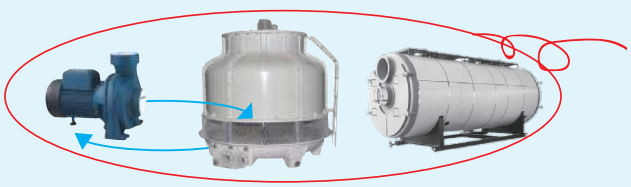


Large capacity, single unit capacity up to 1600kW

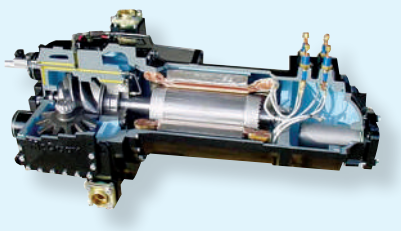
Stepless capacity modulation, automatically match the building demands, accurate water temperature control, accuracy ±0.5°C,more comfortable



No need cooling tower, no need boiler, save water source and cost



Semi-hermetic structure, maintainable



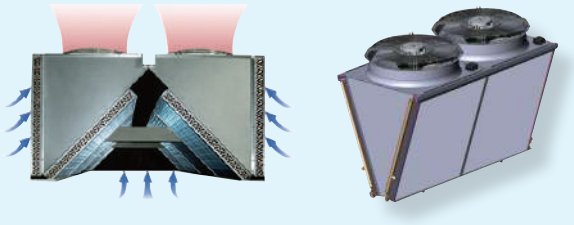
Main Parts

Compressor

- High efficiency single screw compressor
- Partial load COP is 25% higher than conventional screw compressor
- 10%-100% stepless capacity modulation

Condenser

- M-shape or V-shape for more even air distribution



Evaporator

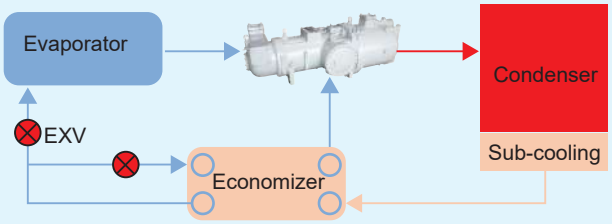
- New high efficiency counter flow shell-and-tube evaporator
- Efficient internal thread heat exchange tubes
- Anti-freezing protection, equipped with electric heater

Electronic expansion valve

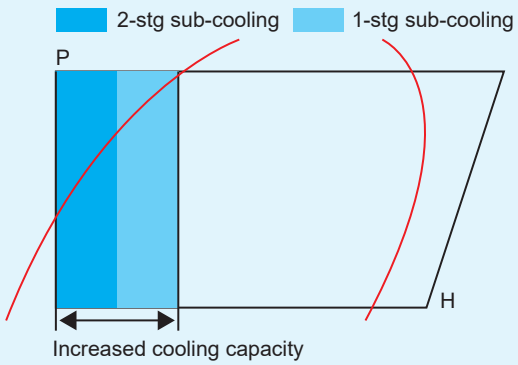
- Accurate control the refrigerant flow rate
- Capacity modulation up to 3810 steps

Economizer

- Enhancing the sub-cooling degree, much higher performance and efficiency



Pressure-enthalpy chart



PLC controller

- Automatically load/unload based on building load demand
- Common fault alarm display
- Water temperature control to an accuracy to ±0.5°C
- Output load PID control
- Balancing the operating duration of each compressor
- Compressor load control

Multiple protections

- High/low pressure protection
- Fan overload protection
- High discharge temperature protection
- Compressor overload protection
- Low compression ratio protection
- High oil pressure difference protection
- Sensor failure protection
- Compressor startup failure protection
- Phase protection
- Evaporator anti-freezing protection
- Water flow protection

Intelligent Control

Remote monitoring (option)

- External controller can be installed in indoor control room by connecting with main controller, same function as built-in controller, realize remote control

BMS control (option)

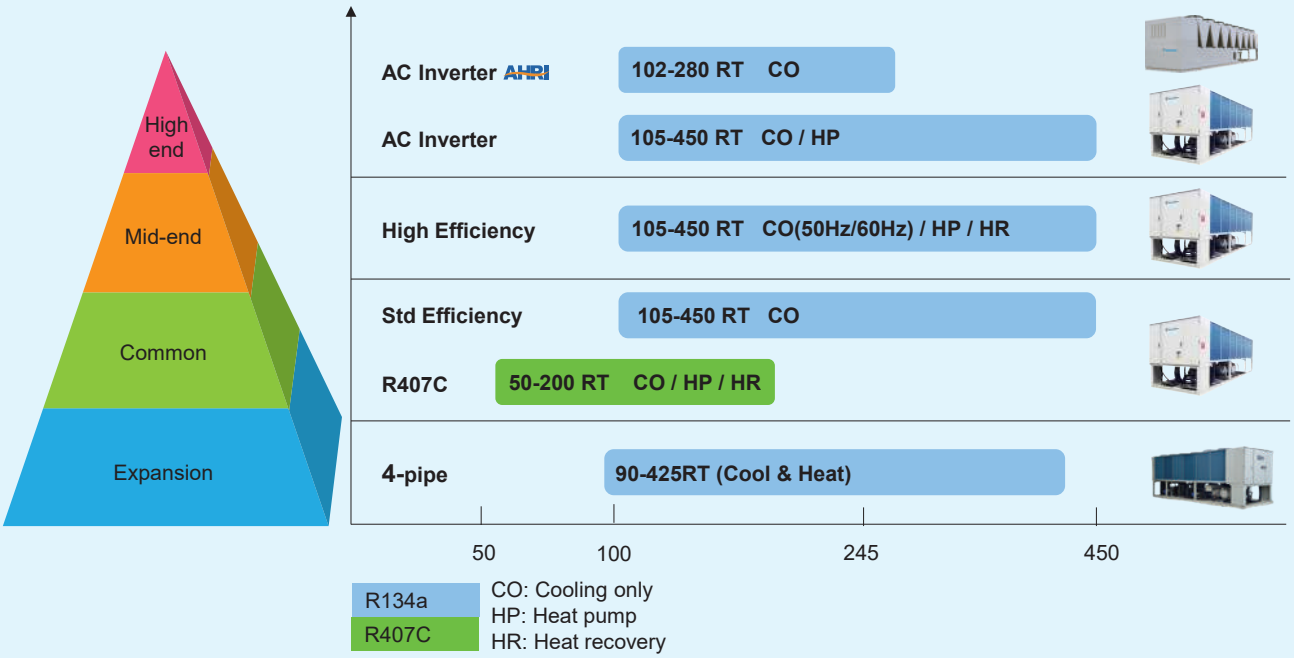
- Controller can add Modbus, Lonworks, BACnet protocol gateway, so as to connect with central control or BAS, easy to achieve intelligent management

Other optional parts

- Sealed package - Protect the unit during transportation
- Coil guard - Protect the condenser
- Compressor box - Provide sound reduction without performance reduction
- Anti-corrsion condenser (Gold fin/Copper fins/E-coating(MCHE)) - Inhibit coil corrosion and extend equipment life
- FM certified insulation (entire unit) - Excellent flame retardancy insulation
- ASME certified evaporator - Provide evaporator certificated by ASME
- Evaporator water pipe connection at right side - This option provides evaporator water pipe at right side
- Double set-point - Provides special control logic to handle low temperature glycol applications
- Dry contact of unit/compressor run state - Indicate the running state of unit/compressor
- IP55 fan motor - IP55 protection grade motor
- Main electric isolator switch - Disconnect the power supply
- 3-phase 3-wire power supply - Power supply without Neutral line
- Ammeter/Voltmeter - Monitor unit current/voltage
- Spring shock absorber - Anti-vibration
- Harmonic filter - Reduces the levels of harmonic current drawn by VFD
- Touch screen remote controller - Realizes remote control, 7" touch screen

Note: Options are variable for different models, contact DAIKIN for any inquiry.

Product Lineup



Specification

R407C series

▶ Cooling only UAA-FST4 (Heat recovery for option)

Model UAA-FST4-FEAE	50.1	60.1	70.1	80.1	100.1	120.1	135.1	150.1	170.1	185.1	200.1
Nominal Cooling Cap. (kW)	164	198	232	270	347	407	439	507	603	631	685
Partial Heat Recovery Cap. (kW)	41	49.5	58	67.5	86.8	101.8	109.8	126.8	150.8	157.8	171.3
Total Power Input (C) (kW)	60.1	72.9	85.7	98	123.8	143	149	177	212	204	230.7
Cooling & HR Power Input (kW)	58.1	70.9	82.7	95	119.8	138	144	171	204	197	221.7
Power Supply	380-400V/3N~/50Hz										
Comp. Qty / Circuit Qty	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
Evaporator / Condenser Type	DX Shell-and-tube / M-shape Crossed Fin and Tube										
Heat Recovery side Heat Exchanger	BPHE										
Unit Length (mm)	2925		3150		4045			4985		5885	
Unit Width (mm)	2260										
Unit Height (mm)	2290							2310		2410	

▶ Heat Pump UAY-FST4 (Heat recovery for option)

Model UAY-FST4-FEAE	50.1	60.1	70.1	80.1	90.1	100.1	120.1	135.1	150.1	170.1	185.1	200.1
Nominal Cooling Cap. (kW)	164	198	232	270	299	347	388	456	495	607	645	685
Nominal Heating Cap. (kW)	172	208	243	284	316	365	413	479	538	650	686	715
Partial Heat Recovery Cap. (kW)	41	49.5	58	67.5	74.8	86.8	97	114	123.8	151.8	161.3	171.3
Total Power Input (C) (kW)	60.1	72.9	85.7	98	101.3	123.8	134.1	159.1	166.9	203.5	223.4	230.7
Total Power Input (H) (kW)	63	76.8	89.6	102.8	104.7	128	140.4	155.5	171.1	222.2	227.8	239.7
Cooling & HR Power Input (kW)	58.1	70.9	82.7	95	98.3	119.8	130.1	154.1	161.9	197.5	216.4	222.7
Power Supply	380-400V/3N~/50Hz											
Comp. Qty / Circuit Qty	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
Evaporator / Condenser Type	DX Shell-and-tube / M-shape Crossed Fin and Tube											
Heat Recovery side Heat Exchanger	BPHE											
Unit Length (mm)	2925		3150			4045			4985		5885	
Unit Width (mm)	2260											
Unit Height (mm)	2290							2310	2410			

R134a standard efficiency UAA-ST3 series

Model UAA-ST3-FEAE	105	125	140	150	175	204	220	245 (105+140)	260 (105+150)
Nominal Cooling Cap. (kW)	375	441	470	562	633	684	780	845	937
Total Power Input (C) (kW)	125	146	155	185	207	227	259	280	310
Power Supply	380-400V/3N~/50Hz								
Comp. Qty / Circuit Qty	1/1	1/1	1/1	1/1	1/1	1/1	1/1	2/2	2/2
Evaporator / Condenser Type	DX Shell-and-tube / M-shape Crossed Fin and Tube								
Unit Length (mm)	3580	4480	4480	4480	5380	5380	6280	9060	9060
Unit Width (mm)	2260								
Unit Height (mm)	2440			2530				2440	2350

Model UAA-ST3-FEAE	280 (125+150)	300 (125+175)	320 (150+150)	340 (150+175)	360 (175+175)	375 (175+204)	400 (175+220)	420 (204+220)	445 (220+220)
Nominal Cooling Cap. (kW)	1003	1074	1124	1195	1266	1317	1413	1464	1560
Total Power Input (C) (kW)	331	353	371	393	414	434	466	486	518
Power Supply	380-400V/3N~/50Hz								
Comp. Qty / Circuit Qty	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Evaporator / Condenser Type	DX Shell-and-tube / M-shape Crossed Fin and Tube								
Unit Length (mm)	9960	10860	9960	10860	11760	11760	12660	12660	13560
Unit Width (mm)	2260								
Unit Height (mm)	2350								

Specification

R134a high efficiency UAA/UAY-ST3 series

▶ Cooling only UAA-ST3

Model UAA-ST3-FBBE	105	125	140	150*	175*	204*	220*	245	266 (105+150)	291
Nominal Cooling Cap. (kW)	370	449	505	586	663	717	802	898	956	1035
Total Power Input (C) (kW)	115.5	138.5	151.6	178.7	201.3	216.1	242.6	277	294.2	317.2
Power Supply	380-400V/3N~/50Hz									
Comp. Qty / Circuit Qty	1/1	1/1	1/1	1/1	1/1	1/1	1/1	2/2	2/2	2/2
Evaporator / Condenser Type	DX Shell-and-tube / M-shape Crossed Fin and Tube									
Unit Length (mm)	3530	4430	4430	5380	6280	6280	7180	8660	9310	9560
Unit Width (mm)	2260									
Unit Height (mm)	2425				2425	2425	2425	2425		

Model	300 (125+175)	348	355 (150+175)	380**	390 (175+204)	400**	415 (175+220)	424 (204+220)	450**
Nominal Cooling Cap. (kW)	1112	1172	1249	1326	1380	1434	1465	1519	1604
Total Power Input (C) (kW)	339.8	357.4	380	402.6	417.4	432.2	443.9	458.7	485.2
Power Supply	380-400V/3N~/50Hz								
Comp. Qty / Circuit Qty	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Evaporator / Condenser Type	DX Shell-and-tube / M-shape Crossed Fin and Tube								
Unit Length (mm)	11110	10490	12060	12290	12960	12290	13860	13860	14090
Unit Width (mm)	2260								
Unit Height (mm)	2425								

Note: * means 2 circuit for option; ** means dual control for option.

▶ Heat Pump UAY-ST3

Model UAY-ST3-FBBE	105	125	140	150	175	204	220	245	266 (105+150)	291	300 (125+175)
Nominal Cooling Cap. (kW)	352	448	502	583	659	703	794	891	935	1029	1107
Nominal Heating Cap. (kW)	352	452	495	577	660	696	793	905	929	1029	1112
Total Power Input (C) (kW)	110	139.1	152.1	182.1	203.3	218.3	246.1	275.8	292.1	320.5	342.4
Total Power Input (H) (kW)	116.1	138.5	164.6	175.8	194.1	207.1	238.4	278.7	291.9	315.1	332.6
Power Supply	380-400V/3N~/50Hz										
Comp. Qty / Circuit Qty	1/1	1/1	1/1	1/1	1/1	1/1	1/1	2/2	2/2	2/2	2/2
Evaporator / Condenser Type	DX Shell-and-tube / M-shape Crossed Fin and Tube										
Unit Length (mm)	3730	4630	4630	5580	6480	6480	7380	9060	9710	9960	11510
Unit Width (mm)	2260										
Unit Height (mm)	2425										

Model	348	355 (150+175)	380	390 (175+204)	400 (204+204)	415 (175+220)	424 (204+220)	450 (220+220)
Nominal Cooling Cap. (kW)	1166	1242	1325	1362	1406	1453	1497	1588
Nominal Heating Cap. (kW)	1154	1237	1319	1356	1392	1453	1489	1586
Total Power Input (C) (kW)	364.3	385.4	408.9	421.6	436.6	449.4	464.4	492.2
Total Power Input (H) (kW)	351.5	369.9	385.9	401.2	414.3	432.5	445.6	476.9
Power Supply			380-400V/3N~/50Hz					
Comp. Qty / Circuit Qty	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Evaporator / Condenser Type	DX Shell-and-tube / M-shape Crossed Fin and Tube							
Unit Length (mm)	10890	12460	12690	13360	13360	14260	14260	15160
Unit Width (mm)	2260							
Unit Height (mm)	2425							

Specification

▶ Heat Pump (Total Heat Recovery) UAY-SR3

Model UAY-SR3-FBAE	105	125	150	175	204	220
Nominal Cooling Cap. (kW)	352	448	583	659	703	794
Nominal Heating Cap. (kW)	352	452	577	660	696	793
Total Heat Recovery Cap. (kW)	445	565	738	830	887	1001
Total Power Input (C) (kW)	110	139.1	182.1	203.3	218.3	246.1
Total Power Input (H) (kW)	116.1	138.5	175.8	194.1	207.1	238.4
Cooling & HR Power Input (kW)	98	123.1	162.1	179.3	194.3	218.1
Power Supply	380-400V/3N~/50Hz					
Comp. Qty / Circuit Qty	1/1	1/1	1/1	1/1	1/1	1/1
Evaporator / Condenser Type	DX Shell-and-tube / M-shape Crossed Fin and Tube					
Heat Recovery side Heat Exchanger	BPHE					
Unit Length (mm)	3730	4630	5580	6480	6480	7380
Unit Width (mm)	2260					
Unit Height (mm)	2385		2425			

R134a inverter UAA/UAY-SV3 series

▶ Cooling Only UAA-SV3

Model UAA-SV3-FAAE	105	125	150	204	220	245	291	348 (150+150)	380 (150+204)	400 (204+204)	424 (204+220)	450 (220+220)
Nominal Cooling Cap. (kW)	341	469	571	694	818	938	1040	1142	1265	1388	1512	1636
Total Power Input (C) (kW)	109.6	149.4	180.9	217.3	261.3	298.8	330.3	361.8	398.4	434.6	478.2	522.6
Power Supply	380V/3N~/50Hz											
Comp. Qty / Circuit Qty	1/1	1/1	1/1	1/1	1/1	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Evaporator / Condenser Type	DX Shell-and-tube / M-shape Crossed Fin and Tube											
Unit Length (mm)	3710	4610	5560	6460	7360	8850	9750	11540	12440	13340	14240	15140
Unit Width (mm)	2260											
Unit Height (mm)	2530											

▶ Heat Pump UAY-SV3

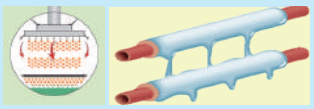
Nominal Cooling Cap. (kW)	341	469	571	694	818	938	1040	1142	1265	1388	1512	1636
Nominal Heating Cap. (kW)	364	483	588	686	820	966	1071	1176	1274	1372	1506	1640
Total Power Input (C) (kW)	109.6	149.4	180.9	217.3	261.3	298.8	330.3	361.8	398.4	434.6	478.2	522.6
Total Power Input (H) (kW)	116.9	149.8	177.1	205.9	250.7	299.6	326.9	354.2	383.1	411.8	456.2	501.4
Power Supply	380V/3N~/50Hz											
Comp. Qty / Circuit Qty	1/1	1/1	1/1	1/1	1/1	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Evaporator / Condenser Type	DX Shell-and-tube / M-shape Crossed Fin and Tube											
Unit Length (mm)	3870	4770	5810	6710	7610	9310	10250	12040	12940	13840	14740	15640
Unit Width (mm)	2260											
Unit Height (mm)	2530											

AHRI certified R134a inverter UAA-MV3 series AHRI

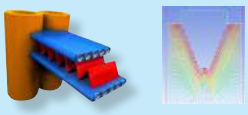
♦ INV compressor with variable volume ratio technology

INVERTER + VVR

♦ Falling film evaporator (335-395MV3)



♦ V-shape Microchannel condenser



♦ High IPLV

Model	145	185	215	240	275	315	335	365	395
Nominal Cooling Cap. (kW)	360	467	538	599	684	790	834	908	984
Total Power Input (C) (kW)	119.4	155.9	186.1	208.1	235.1	256.1	280.8	312.8	332.7
Power Supply	380V/3N~/ 50Hz								
Comp. Qty / Circuit Qty	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
Evaporator / Condenser Type	DX Shell-and-tube / MCHE						Falling film / MCHE		
Unit Length (mm)	4430	4985		5535	6640	7745		8850	9955
Unit Width (mm)	2260								
Unit Height (mm)	2530								

Specification

R134a 4-pipe Simultaneous Cooling & Heating UAY-SQ3 Series

- Applicable for hospital, comprehensive building, swimming pool and other applications which have accurate temperature and humidity requirements.
- 2 compressor 2 circuits, supply chilled water and hot water simultaneously, precisely temperature control of both chilled and hot water at the same time.
- Chilled water heat exchanger + hot water heat exchanger + airside heat exchanger design.

Model		90	105	125	140	150	175	190	204	235
Cooling Only	Nominal Cooling Cap. (kW)	315	362	430	496	535	600	663	720	820
	Total Power Input (kW)	96.6	112.8	133.7	155	166.2	186.3	206.6	225	254.1
Heating Only	Nominal Heating Cap. (kW)	325	375	440	501	542	605	670	730	830
	Total Power Input (kW)	97.4	112.5	136.2	147.8	168.1	177.2	208	218.6	248
Simultaneous Cooling & Heating	Cooling capacity (kW)	325	365	435	500	540	610	670	724	825
	Heating capacity (kW)	403	462	548	634	685	772	846	918	1048
	Total Power Input (kW)	82	102.1	118	139.2	147	166.6	181	199.2	225
Power Supply		380V/3N~/50Hz								
Comp. Qty / Circuit Qty		2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Chilled Water Side Heat Exchanger Type		BPHE		DX Shell-and-tube						
Hot Water Side Heat Exchanger Type		BPHE								
Air Side Heat Exchanger Type		M-shape Crossed Fin and Tube								
Unit Length (mm)		3880		4780	4780	5700	5700	6600	6600	7500
Unit Width (mm)		2260								
Unit Height (mm)		2425								

Model		245	260	280	300	320	355	385	400	425
Cooling Only	Nominal Cooling Cap. (kW)	855	890	970	1050	1128	1257	1355	1407	1499
	Total Power Input (kW)	265.5	275.4	302	327	346.2	389.6	419.2	425.4	454.3
Heating Only	Nominal Heating Cap. (kW)	867	900	980	1060	1138	1260	1365	1410	1500
	Total Power Input (kW)	259.6	278	298	316	328.2	367.2	408	410.9	439.6
Simultaneous Cooling & Heating	Cooling capacity (kW)	860	900	980	1060	1135	1265	1360	1415	1505
	Heating capacity (kW)	1087	1150	1240	1352	1427	1600	1720	1777	1894
	Total Power Input (kW)	232.4	252	265	298	306.2	349.6	371.2	377.1	402.3
Power Supply		380V/3N~/50Hz								
Comp. Qty / Circuit Qty		2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Chilled Water Side Heat Exchanger Type		DX Shell-and-tube								
Hot Water Side Heat Exchanger Type		BPHE								
Air Side Heat Exchanger Type		M-shape Crossed Fin and Tube								
Unit Length (mm)		7500	7500	8260	9160	10860	10860	12660	12660	13560
Unit Width (mm)		2260								
Unit Height (mm)		2425								

Notes:

- Nominal cooling conditions: LWT 7°C, water flow 0.172 [m^3/(h•kW)], outdoor temperature 35°C;
- Nominal heating conditions: LWT 45°C, water flow 0.172 [m^3/(h•kW)], outdoor dry-bulb temperature 7°C, wet-bulb temperature 6°C;
- Operating conditions of simultaneous cooling and heating: EWT/LWT 12/7°C; EWT/LWT of heating: 40/45°C;
- Partial heat recovery conditions:EWT/LWT 50/55°C;ambient DB temperature 35°C;
- Above parameters are based on voltage of 380V;
- ( ) means dual control model, for example, (105+150) means combination of UAA105 and UAA150.

Operating Range

Refrigerant Type	R407C		R134a								
Series	FST4/FSP4		ST3/SV3/MV3		SR3				SQ3		
Working Mode	Cooling	Heating	Cooling	Heating	Cooling	Heating	Heat Recovery	Hot Water	Cooling Only	Heating Only	Simultaneous Cooling & Heating
Ambient Temp Range(°C)	5~44	-15~21	5~50	-10~50	5~50	-10~50	10(Min)	-10~45	-10~50	-10~45	-10~50
Max Evaporator LWT(°C)	15	50	15	55	15	55	15	-	15	60	15(Cooling) 60(Heating)
Min Evaporator LWT(°C)	4	35	4	25	4	25	4	-	4	30	4(Cooling) 30(Heating)
Max Chilled Water del T(°C)	8	8	10	10	10	10	8	-	-	-	-
Min Chilled Water del T(°C)	4	4	4	4	4	4	4	-	-	-	-
Max HR Side Water Temp(°C)	65	65	-	-	-	-	60	60	-	-	-
Max HR Side Water del T(°C)	8	8	-	-	-	-	8	8	-	-	-
Min HR Side Water del T(°C)	4	4	-	-	-	-	4	4	-	-	-

Notes:

- Low ambient cooling for option, please contact factory;
- Leaving chilled water temp of -8~4°C &15~35°C for option, please contact factory.