

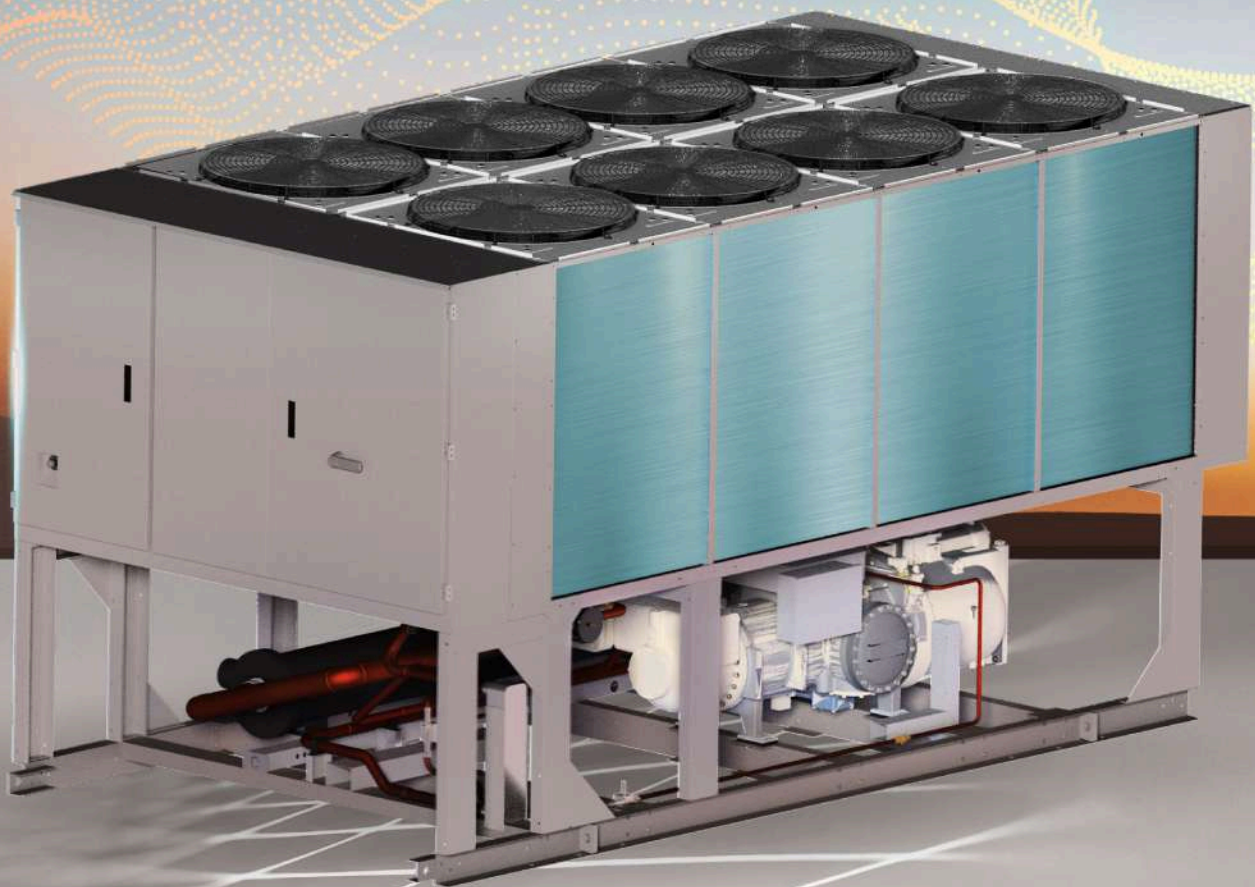
**DAIKIN**

UAA

HFC-R134a

105~450RT

AIR-COOLED  
SCREW  
CHILLER  
COOLING ONLY



# COMMITTED TO CUSTOMER'S SATISFACTION



COP UP TO  
**3.32** kW/kW  
@ standard AHRI condition

As a designer and manufacturer of large air-cooled chillers, Daikin has always been dedicated to technical improvement and innovation, leading to the development of high-efficiency air-cooled chillers.

The Air Cooled Screw Inverter Chiller, UAA series offers cooling capacity from 105 to 450RT (370 to 1604kW), utilizing the environmentally sound and zero-ODP HFC-R134A refrigerant. The chiller's compressor adopts Daikin's single screw compressor with VVR technology that takes the cooling efficiency at AHRI condition to reach up to ~3.32 kW/kW. The entire product line features high energy efficiency, ease of installation, control flexibility and advanced Microtech controller.

# PREMIUM QUALITY

## CHILLER COMPONENTS



# INNOVATIVE & SUSTAINABLE

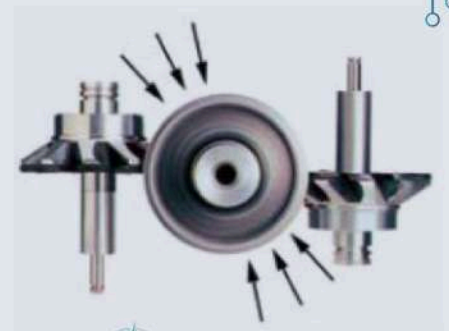
## KEY FEATURES

### 1 SINGLE SCREW COMPRESOR TECHNOLOGY

The Air Cooled Screw, UAA chiller utilizes the high-efficiency single screw compressor design. It is designed with fewer moving parts and to be mechanically balanced. The motor-driven main rotor meshes perfectly with two opposing star rotors, creating a space that compresses the refrigerant, generating a compression cycle. The two opposing star rotors are freely rotating, only being moved by the main rotor. This allows the main rotor to remain well-balanced in both radial and axial directions. A well-balanced main rotor leads to much higher compressor reliability and longer compressor lifespan. Additionally, it greatly reduces the vibration level, generating little vibration and a low acoustic value.



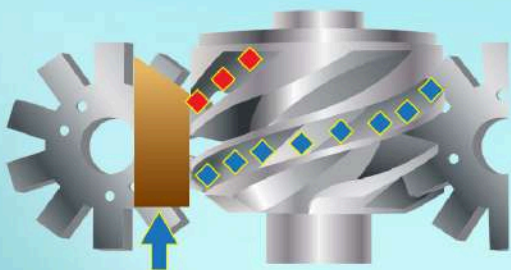
Daikin's Single Screw Compressor



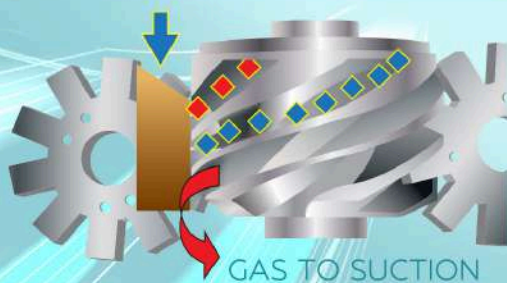
Balance Force

### 2 STEPLESS CAPACITY CONTROL

#### SLIDE VALVE (100% OF LOAD)



#### SLIDE VALVE (PART LOADS)



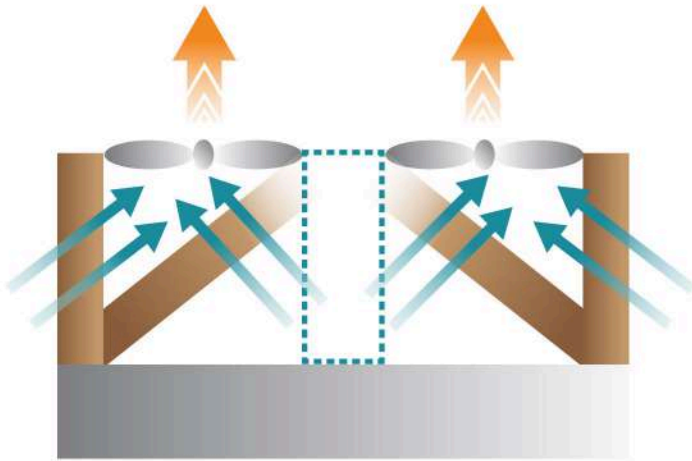
The UAA chiller integrate the slides valves technology for the capacity control. The slides valve's position will be controlled by the microprocessor that modulate the slide valve's capacity and move the slide valve to the required operating position to match closely to the required building load requirement. This will put the chiller operation at optimum efficiency at all time, and thus, maximized the energy saving of the chiller plant operation. The stepless capacity control shall modulate slide valve's capacity from 100% to 25% for each compressor (from 100% down to 10% of full load for unit with 2 compressors).



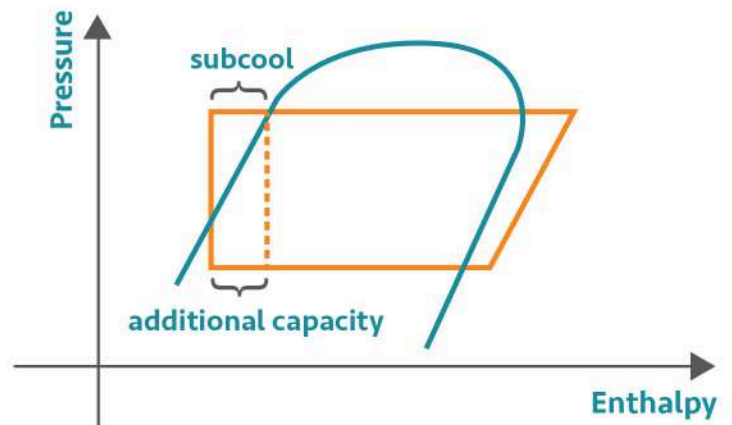
**Close meshing** between main rotor & star rotor eliminates leakage between the high and low pressure sides during compression.

# 3 OPTIMIZED PERFORMANCE CONDENSER COIL

- All units are constructed with smooth copper tubes arranged in a staggered row pattern and mechanically expanded into slit aluminium fin with full fin collars.
- “M” type coil improves heat transfer efficiency and reduces the unit footprint.
- Built-in sub-cooling cycle, optimizing cooling capacity.



 M-Coil configuration



 Condenser sub-cooling

# 4 DX SHELL & TUBE EVAPORATOR

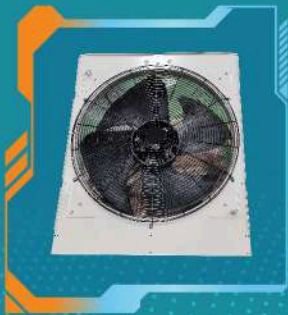
- Direct expansion type with refrigerant inside the copper tubes and polypropylene baffles.
- The copper tubes are roll expanded into carbon steel tube plates.
- An insulation with closed-cell material (standard thickness: 20mm) wrapped around the evaporator and heater for freeze protection.
- New high-efficiency counter flow with single-pass only on refrigerant side. (with one or two independent circuits)
- High-efficiency tube with new geometry allows better heat exchange efficiency due to turbulence of refrigerant flow.
- Increased vessel length without causing additional refrigerant and water pressure drop.



 DX Shell & Tube

# 5 CONDENSER AXIAL FAN

- All condenser fans are helical type.
- Fan blades made from reinforced resin fiberglass, which can withstand UV and high ambient temperature.
- Airflow without turbulences and sound spectrum without irritating frequencies.
- 3-phase motors are supplied as standard with IP54 protection and insulation class F.

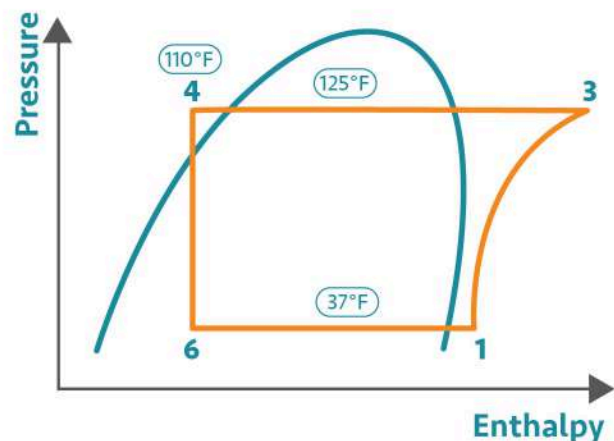
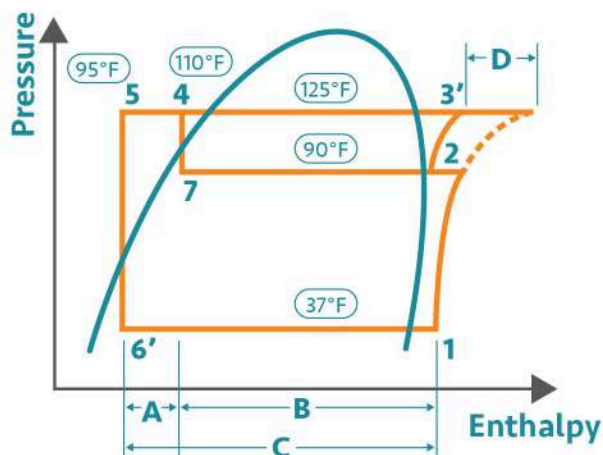


# 6 ELECTRONIC EXPANSION VALVE - EXV

- Precise control of refrigerant flow
- Internal & external corrosion-resistant design
- Optimal control of liquid injection
- Hermetic design



# 7 ECONOMIZER AS STANDARD



Economizer enhances the sub-cooling degree, increases cooling capacity and efficiency.

**A:** Additional sub-cool, capacity increased due to economizer

**B:** Original capacity without economizer

**C:** Improved capacity with economizer

**D:** Compressor work reduction due to economized cycle

**NOTE:** Temperature numbers are for reference only. Actual application may vary case by case.

# 8 INTELLIGENT NETWORK CONTROLLER

## MICROTECH CONTROLLER

UAA is designed using MicroTech as the microprocessor of choice for programmable logic controls. The MicroTech functions as the "brain" of the chiller, monitoring, controlling and protecting the chiller at all times.

### MAIN COMPONENTS

Built-in controller

- Control type: PLC programmable
- Operation language: Chinese/English
- Screen display: LCD display
- Operating environment:  
Temperature: -20°C~50°C,  
Relative: <90%

### OPERATING STATUS QUERY

- Unit status
- Temperature of inlet/outlet water
- Compressor status
- Suction and discharge pressure
- Temperature and superheat of suction and discharge
  - Opening of electrical expansion valve
  - Oil pressure
  - Ambient temperature



External remote monitoring (option)



MicroTech Controller

- Automatic load/unload based on changes of the actual air conditioning load
- Operating status display of the units
- 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
- Three-level password protection
- Stepless load adjustment
- Failure history query

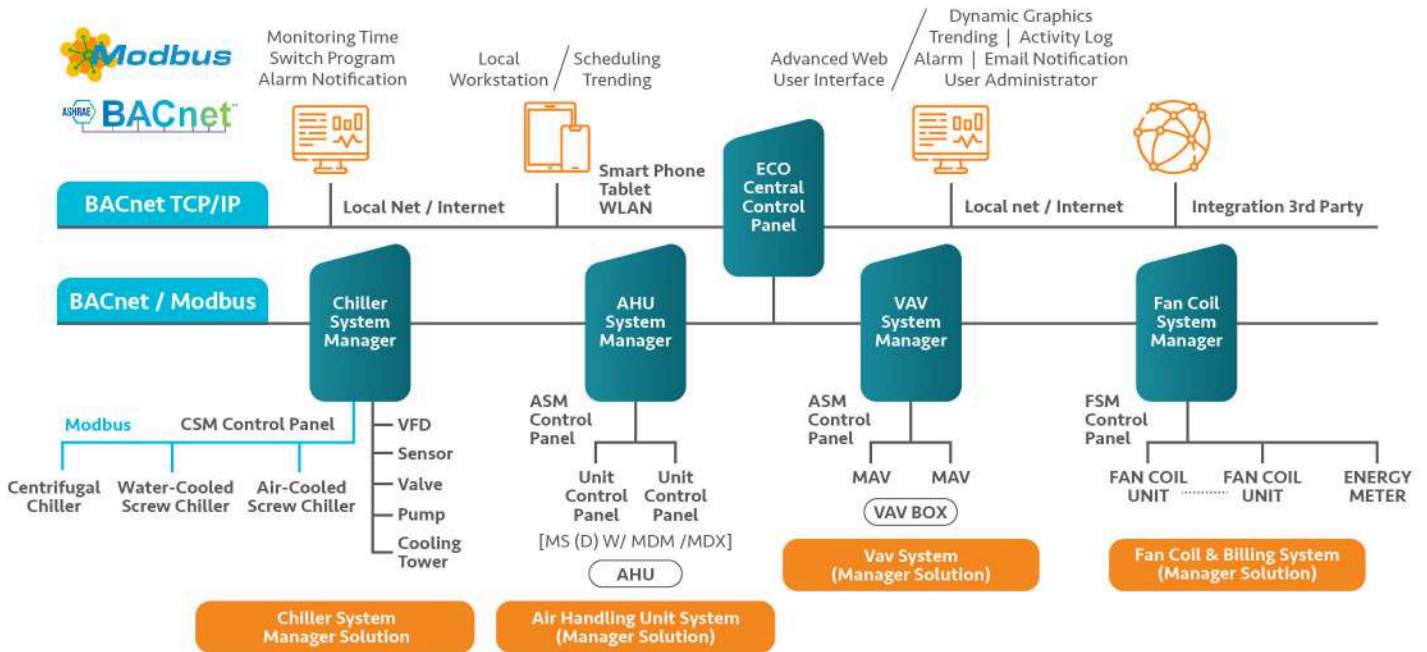
- High pressure protection
- Low pressure protection
- Fan overload protection
- High discharge temperature protection
- Compressor overload protection
- Low compression ratio protection
- High oil pressure difference protection

### MAIN FUNCTIONS

### PROTECTION FUNCTIONS

# 9 EASY INTEGRATION INTO BAS SYSTEM

UAA is capable of providing seamless data communication using common industrial protocols, such as Modbus and BACnet. This flexibly gives the customer effortless integration into BAS systems, for user-friendly monitoring and controlling of chiller.



## SCOPE OF SUPPLY

ITEMS	STANDARD	OPTIONS
Vessel Code	GB	ASME
Water Connection	Victaulic Groove	DIN Flange
Water Box	Compact Water Cover (1.0MPa)	1.6MPa Water Cover (Consult Factory)
Insulation	20mm Insulation on Evaporator and Cold Surface	40mm Insulation on Evaporator <sup>1</sup>
Flow Switch	Padded flow switch	Thermal Flow Switch
Anti-vibration	Spring Isolator	-
Warranty Extension	None	Maximum: Extended 4 Years
Test	Factory Functional Test <sup>2</sup>	Special Test (Consult Factory)
Condenser Coil Protection	Bare Fin	Hydrophilic Gold Fin / Heresite Coating
Starter	Star Delta	Soft Starter (Consult Factory)

### NOTES:

#### 1. Insulation:

- Ambient temperature lower than 30°C:  
Humidity lower than 70%, use single layer insulation (20mm); humidity higher than 70% (include), use double layer insulation (40mm).
- Ambient temperature higher than 30°C (include):  
Humidity lower than 65%, use single layer insulation (20mm); humidity higher than 65% (include), use double layer insulation (40mm).
- Double layer of insulation (40mm) must be used when chiller leaving water temperature lower than 5°C (include).
- 40mm Insulation on evaporator shell and 20mm on water head cap.

#### 2. Factory Testing:

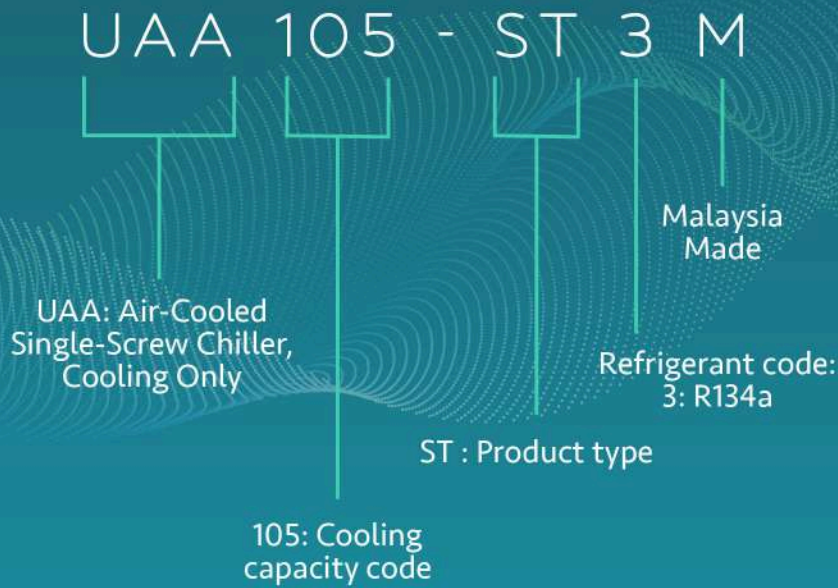
To ensure provide safe and reliable products to costumers, all Daikin applied chillers are factory tested before shipment. Operating and safety controls are checked for correct settings and operation. This testing helps reduce start-up issues and maintain critical construction schedules.

For other options, kindly contact our sales representative.



# DETAILS MATTER

## NOMENCLATURE



## UAA TECHNICAL DATA

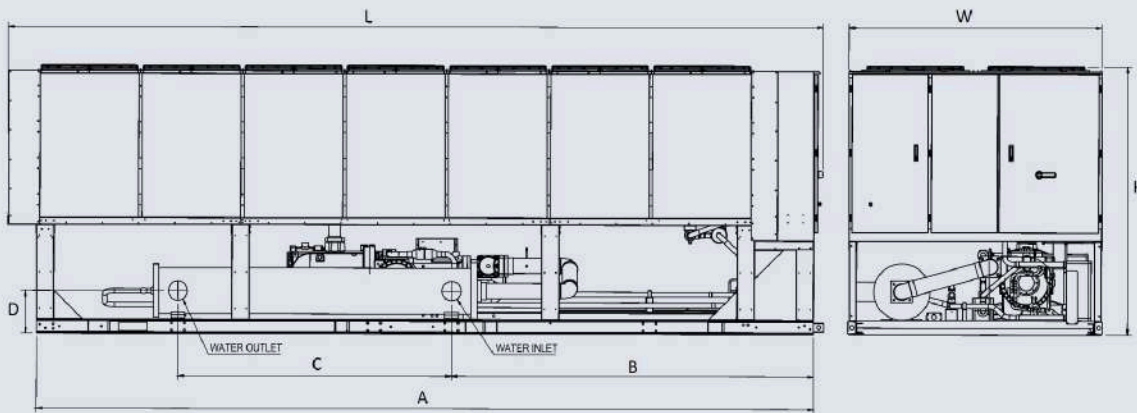
UAA-ST3M		105	125	150	175	204	220	245	291	348	380	400	450	
Nominal cooling capacity	kW	370	449	586	663	717	802	898	1,035	1,172	1,326	1,434	1,604	
	USRT	105	128	167	189	204	228	255	294	333	377	408	456	
	$\times 10^4 \text{kcal/h}$	32	39	50	57	62	69	77	89	101	114	123	138	
Total Power Input	kW	115.5	138.5	178.7	201.3	216.1	242.6	277.0	317.2	357.4	402.6	432.2	485.2	
COP	kW/kW	3.203	3.242	3.279	3.294	3.318	3.306	3.242	3.263	3.279	3.294	3.318	3.306	
Power Supply		380-400V/3N~/50Hz												
Maximum Running Current	A	321	349	431	505	540	637	698	780	861	1,011	1,080	1,275	
Starting Current	A	473	480	708	715	715	740	829	1,057	1,139	1,221	1,255	1,377	
Capacity Regulation Range		10%~100%						5%~100%						
Refrigerant	Type	R134a												
	No. of sys.	1						2						
Compressor	Control	Electronic Expansion Valve												
	Type	Semi-Hermetic Single-Screw												
	Qty. X model	HSS	1x3221b	1x3222b	1x4224a	1x4225a	1x4226a	1x4227a	2x3222b	1x3222b	2x4224a	2x4225a	2x4226a	2x4227a
	Motor Power	kW	103.5	122.5	158.7	177.3	192.1	214.6	245.0	281.2	317.4	354.6	384.2	429.2
	Oil type	FVC68D												
	Oil charge	L	22	22	28	28	28	28	44	50	56	56	56	
Condenser	Type	Aluminium Fin Copper Tube												
Fan	Type	High-Efficiency Spiral Axial												
	Qty.	n	6	8	10	12	12	14	16	18	20	24	24	28
	Total air flow	$\times 10^4 \text{m}^3/\text{h}$	10.8	14.4	18.0	21.6	21.6	25.2	28.8	32.4	36.0	43.2	43.2	50.4
	Total power	kW	12	16	20	24	24	28	32	36	40	48	48	56
Evaporator	Type	Shell and Tube												
	Nominal water flow	$\text{m}^3/\text{h}$	64	77	101	114	123	138	154	178	202	228	247	276
	Pressure drop	kPa	58	75	68	70	76	62	72	74	78	83	61	79
	"Maximum design pressure (water side)"	MPa	1											
	Victaulic connection	inch	4			5			6			8		
Dimensions	Length	mm	3,582	4,482	5,382	6,282	6,282	7,182	8,656	9,556	10,456	12,259	12,259	13,159
	Width	mm	2,246											
	Height	mm	2367						2,392					
Weight	Shipping	kg	2,880	3,630	4,560	4,930	5,050	5,690	7,220	8,030	8,820	9,570	9,800	11,180
	Operating	kg	2,950	3,740	4,700	5,100	5,300	5,940	7,480	8,340	9,120	9,950	10,320	11,690

### NOTES:

- Nominal cooling conditions: EWT/LWT 12/7°C; ambient DB temperature is 35°C.
- The transport weight including steel packaging weight.
- The operator weight including the weight of the water inside water-side heat exchanger, excluding steel packaging weight.

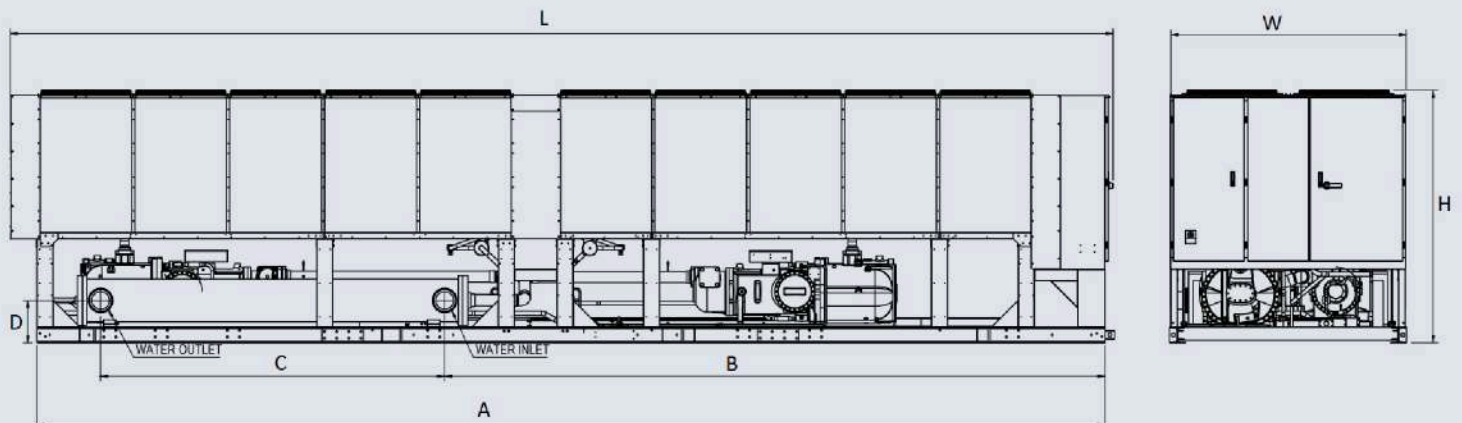
# DIMENSIONS

## SINGLE COMPRESSOR CHILLER



UNIT	NO. OF FANS	DIMENSION (MM)							SIZE OF WATER INLET / OUTLET	
		A	B	C	D	L	W	H	Inch	OD,mm
UAA105ST3M	6	3,250	1,052.0	2,588.0	318	3,582	2,246	2,367	4"	114.3
UAA125ST3M	8	4,150	1,051.0	3,537.0	318	4,482	2,246	2,367	4"	114.3
UAA150ST3M	10	5,050	2,002.0	4,452.0	348	5,382	2,246	2,367	5"	139.7
UAA175ST3M	12	6,000	1,747.5	4,747.5	348	6,282	2,246	2,367	5"	139.7
UAA204ST3M	12	6,000	2,291.0	4,703.0	377	6,282	2,246	2,367	6"	168.3
UAA220ST3M	14	6,850	3,191.0	5,603.0	377	7,182	2,246	2,367	6"	168.3

## TWO COMPRESSOR CHILLER



UNIT	NO. OF FANS	DIMENSION (MM)							SIZE OF WATER INLET / OUTLET	
		A	B	C	D	L	W	H	Inch	OD,mm
UAA245ST3M	16	8,330	5,219.5	7,631.5	402	8,656	2,246	2,392	6"	168.3
UAA291ST3M	18	9,230	5,363.5	8,625.5	402	9,565	2,246	2,392	6"	168.3
UAA348ST3M	20	10,130	6,263.5	9,525.5	402	10,456	2,246	2,392	6"	168.3
UAA380ST3M	24	12,000	8,305.0	10,665.0	440	12,259	2,246	2,392	8"	219.1
UAA400ST3M	24	12,000	7,835.0	11,045.0	440	12,259	2,246	2,392	8"	219.1
UAA450ST3M	28	13,730	9,635.0	12,845.0	440	14,057	2,246	2,392	8"	219.1



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