

Love Green High Energy Efficiency

HYBRID SOLUTIONS



## Evaporative Air-cooled Hybrid Chiller

**SABREN(Hongkong) Energy Science and Technology Co.,Limited**

薩伯倫（香港）能源科技有限公司

Add:Unit 04, 7/F, Bright way tower, No.33 Mong Kok Road, Kowloon, Hong Kong

Tel: +852-27935511

Fax: +852-27935511

Emai: info@sabren-cn.com

**Guangzhou ARLCHO Air Conditioning Equipment Co.,Ltd.**

No. 5, Chuangye Road, Yinsha Industrial Park, Zengcheng District, Guangzhou City, Guangdong Province, China.

Tel: +(86) 20 3898 9195 Fax: +(86) 20 8232 1691 Web: <http://www.arlcho.com>

We reserve the right to modify product design, specifications and information in this catalogue without prior notice and without incurring any obligations.



**ARLCHO**  
HYBRID SOLUTIONS

## About SABREN

SABREN(Hongkong) Energy Science and Technology Co.,Limited based in Hongkong, China, is a high-tech company specializing in energy saving field. We focus on R&D about energy efficiency technology of central air-conditioning and relevant equipment manufacturing. We are also the provider of comprehensive service of energy diagnosis, energy saving design, project construction, operating maintenance and so on. In a word, in central air-conditioning field, we are the leading energy service provider, equipment manufacture and integrator

SABREN Energy has always been insisting on people-oriented principle and owns an R&D team with doctoral students as backbones, leading a large number of excellent management and technical talents. We do self-independent innovation based on existing technology, lead the development of the energy efficiency field, make energy saving values to customers, and become China's first class energy saving specialist with global views. Our products has gained 15 national patents and got highly admiration from all our clients.

SABREN Energy team has completed more than 1000 successful projects with our optimal energy saving solution and products, which are applied in hospitals, hotels, large office buildings, factories, airports, and so on. Our projects are both in China and overseas.

In Saudi Arabia, SABREN is comprehensive strategic cooperation partner with ARLCHO company based in Guangzhou, who will provide evaporative hybrid chiller products and solution.



## Overview

ALCHO Evaporative Air-cooled Hybrid Chiller features European's leading edge design using large-scale evaporative air-cooled unit, patented twin screw compressor, tube-to-plate evaporative condenser design and high-efficiency flooded evaporator. It is an ideal choice for centralize air conditioning system in hotel, office building, school, hospital, industrial plant and etc. It will be an excellent retrofit existing conventional air-cooled chiller system, while achieving a higher energy efficiency, better reliability and lower maintenance cost. ARLCHO also offers the BEST Total Life Cycle Cost and BEST Total Cost of Ownership.



## Nomenclature

$\frac{A}{1}$     $\frac{E}{2}$     $\frac{V}{3}$     $\frac{SX}{4}$     $\frac{210}{5}$     $\frac{R}{6}$

- 1 ALCHO Hybrid Chiller
- 2 Evaporative Air-cooled Condensing
- 3 Special Features (V: VFD Compressor, Omitted In Standard Model)
- 4 Compressor Type: Horizontal Semi-Hermetic Screw Compressor
- 5 Cooling Capacity Code (RT)
- 6 Refrigerant Code (R134a)

## Feature

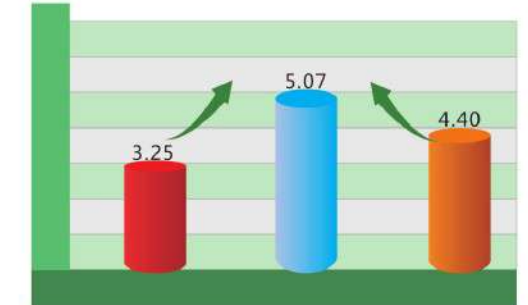
### Save Energy & Water

Environmental sustainability and energy efficiency were the foremost ideals for ARLCHO when developing its hybrid chiller. And its thoughtful design allows it to deliver an effective green cooling solution by notably reducing electricity and water consumption.

The patented Tube-to-Plate evaporative condenser coil used in the hybrid chiller provides superior heat transfer, and generates energy savings up to 40% relative to conventional air-cooled chiller systems.

With this Tube-to-Plate design, water is also utilized more efficiently, resulting in 50% less consumption compared to conventional water-cooled chiller systems.

### System COP



Conventional Air-cooled Chiller   **ALCHO Hybrid Chiller**   Conventional Water-cooled Chiller Systems

### High Efficiency Twin Screw Compressor

#### Stepless Modulation

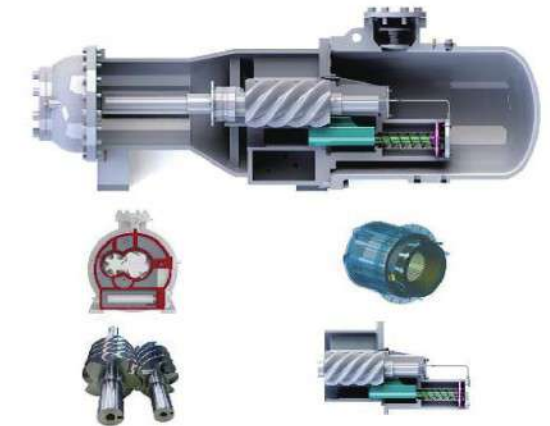
The unit features a slide valve mechanism which increases or decreases based on the workload. It also uses highly reliable and internationally recognized brand type of solenoid with a stepless capacity modulation that ranges from 12.5% to 100%. Each unit capacity can be controlled precisely to meet actual work load, resulting in a higher efficiency and lower power consumption.

#### Double-layered Shell

Made from gray cast iron and fabricated using high-precision M/C tools and 3D instruments to assure higher operating performance efficiency. Its double-layered shell not only meets pressure resistance requirements, but also helps reduce noise level. In addition, the robust and rigid compressor shell structure makes it reliable for long operating hours without breakdown.

#### Oil Separator

Designed for optimum air and oil separation giving performance up to 99.7%. It has three internal filtering sections which uses high density oil filter screen.



#### Patented Rotor Design

Precisely grinded to an asymmetrical teeth with a 5 : 6 ratio, resulting in a more stable and higher efficiency during continuous operation.



# ARLCHO'S Independent Patent: Tube To Plate Evaporative Condenser

## Advantages Of New Design Condenser

- No welding point on heat transfer area
- Pneumatic testing pressure at 520 psig, strength and reliable
- Completely made by SS304, anti-corrosion and durable
- Continuous falling film cover whole heat transfer area, no dry-spot, no scaling on surface
- Totally enhance stainless steel tube, increase heat transfer coefficient
- Proper space between each row, easy for cleaning by brush, reduce maintenance cost



## Summary:

Small in size, low pressure drop, no obstruct of dirt, no scaling form, high & stable in performance



## Reduce Noise Pollution

The ARLCHO hybrid chiller emits the lowest noise level compared to other conventional chiller systems. This virtue mitigates noise pollution and contributes to a more healthy, pleasant and comfortable environment.

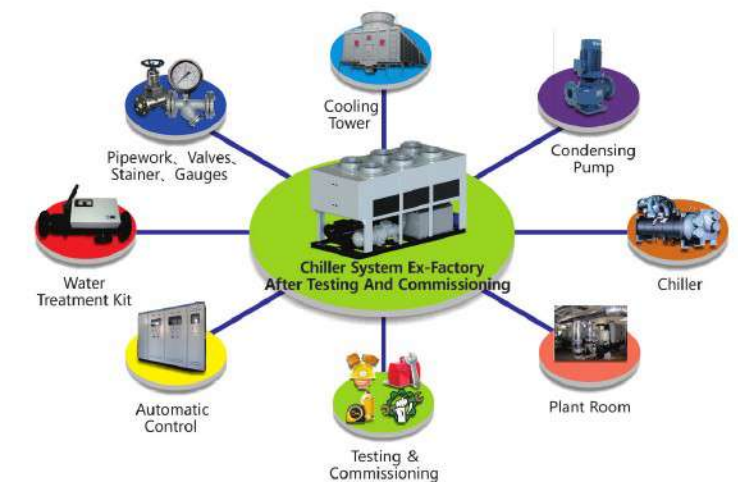
ARLCHO also provides a "super low noise Measures" which is designed with soundproof room of the compressor that further attenuate noise emission.



## Space-efficient Design

The ARLCHO hybrid chiller is engineered as an all-in-one package system, which is highly space efficient. It is unlike conventional water-cooled chiller systems which require additional cooling towers, condenser water pumps and piping system.

The total elimination of a mechanical chiller plant room also allows for greater flexibility in building space management. And it further helps reduce construction material, as well as operating and maintenance cost of the plant room.



## Low Maintenance

Compared to conventional water-cooled chiller systems, the design of the ARLCHO hybrid chiller eliminates the need for cooling towers and condenser water systems -resulting in significantly lower operation and maintenance cost.



# Technical Specifications

## Specifications (Standard Series)

AESX*R		090	115	130	145	170	190	210	230	245	260	275	290	315	340	360
Cooling Capacity	KW	321	407	460	507	600	675	728	814	867	920	967	1014	1107	1200	1275
	RT	91	116	131	144	171	191	207	231	247	262	275	288	315	341	362
Power Input	KW	64	79.2	91	99.6	119	135.5	145.2	158.4	170.2	182	190.6	199.2	218.6	238	254.5
System COP	W/W	5.01	5.14	5.05	5.09	5.04	4.98	5.01	5.14	5.09	5.05	5.07	5.09	5.06	5.04	5.01
System IPLV	W/W	6.42	6.59	6.48	6.52	6.46	6.38	6.43	6.59	6.53	6.48	6.50	6.52	6.49	6.46	6.42
Compressor P.I	KW	57	72.2	81	89.6	109	122	131.2	144.4	153.2	162	170.6	179.2	198.6	218	231

### Compressor

Type	Horizontal Semi-Hermetic Screw															
Nos.	台	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2
RLA	A	108	132	145	164	200	228	241	265	277	290	309	329	364	400	428

### Evaporator

Type	Shell and Tube															
Flow Rate	m <sup>3</sup> /h	55	70	79	87	103	116	125	140	149	158	166	174	190	206	219
Water Pressure Drop	kPa	45	81	82	82	86	87	87	87	88	89	89	90	91	92	93
Water Inlet / Outlet	in	4	5	5	5	6	6	6	6	6	8	8	8	8	8	8

### Evaporative Condenser

Type	Tube-To-Plate															
Fan Nos.	台	4	4	6	6	6	8	8	8	10	12	12	12	12	12	14
Fan P.I	kW/台	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Water Flow Rate	m <sup>3</sup> /h	72	72	108	108	108	144	72/72	72/72	72/108	108/108	108/108	108/108	108/108	108/108	108/144
Pump P.I	kW/台	4	4	5.5	5.5	5.5	7.5	4/4	4/4	4/5.5	5.5/5.5	5.5/5.5	5.5/5.5	5.5/5.5	5.5/5.5	5.5/7.5
Pump Nos.	台	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2
Water Consumption	l/h	465	590	667	735	870	976	1056	1180	1257	1334	1402	1470	1605	1740	1846

### Dimensions & Weight

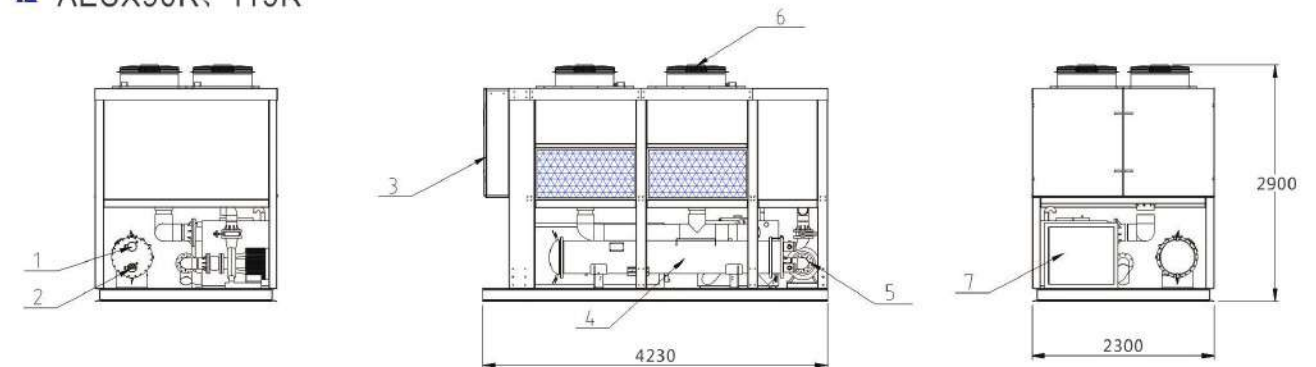
		4230	4230	4940	4940	5500	6310	8140	8140	8850	9560	9560	9560	10120	10680	11490
length	mm	4230	4230	4940	4940	5500	6310	8140	8140	8850	9560	9560	9560	10120	10680	11490
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900
Shipping Weight	kg	5500	5800	6200	6600	7500	8800	11000	11600	12000	12400	12800	13200	14100	15000	16300
Operating Weight	kg	6330	6660	7080	7800	8750	10070	12700	13330	13750	14170	14890	15610	16550	17480	19320

#### Notes:

- Rated conditions for cooling operating: temperature of inlet/outlet chilled water: 12 °C/7 °C ; Ambient dry/wet bulb temperature: 35 °C / 28 °C;
- Supply cooling water temperature: 28 °C;

# Dimension

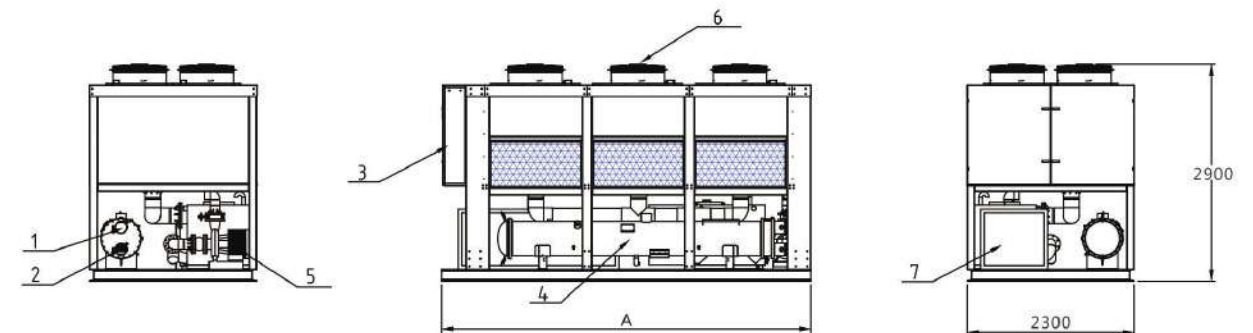
## AESX90R、115R



Model	Inlet	Outlet
AESX090R	4"	4"
AESX115R	5"	5"

1. Evaporator Outlet
2. Evaporator Inlet
3. Control Cabinet
4. Flooded Evaporator
5. Evaporative Pump
6. Condenser Fan
7. Screw Compressor

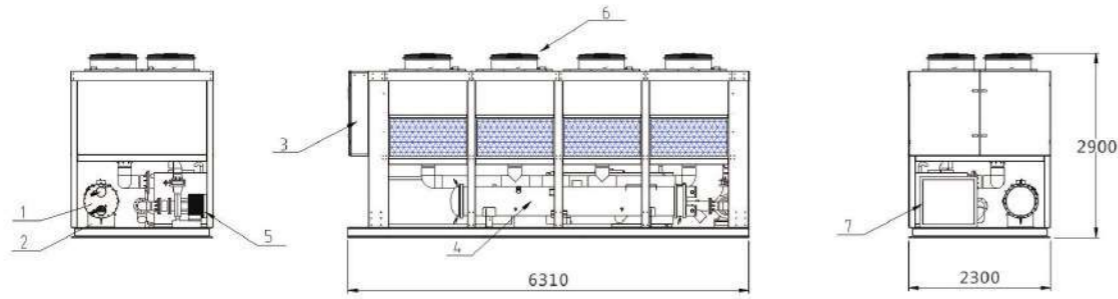
## AESX130R、145R、170R



Model	Inlet	Outlet	A
AESX130R	5"	5"	4940
AESX145R	5"	5"	4940
AESX170R	6"	6"	5500

1. Evaporator Outlet
2. Evaporator Inlet
3. Control Cabinet
4. Flooded Evaporator
5. Evaporative Pump
6. Condenser Fan
7. Screw Compressor

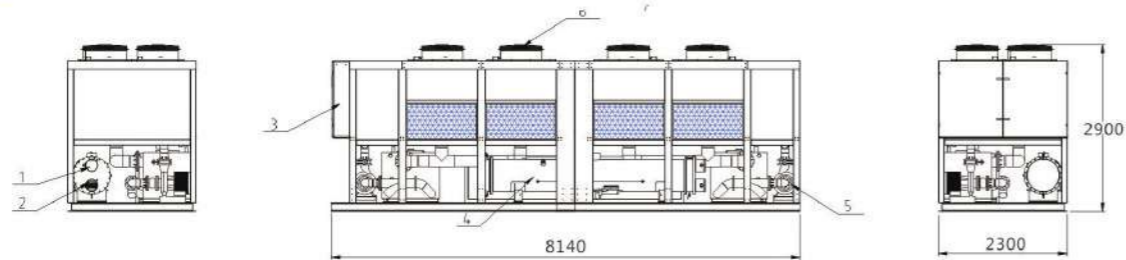
**AESX190R**



Model	Inlet	Outlet
AESX190R	6"	6"

1. Evaporator Outlet
2. Evaporator Inlet
3. Control Cabinet
4. Flooded Evaporator
5. Evaporative Pump
6. Condenser Fan
7. Screw Compressor

**AESX210R, 230R**

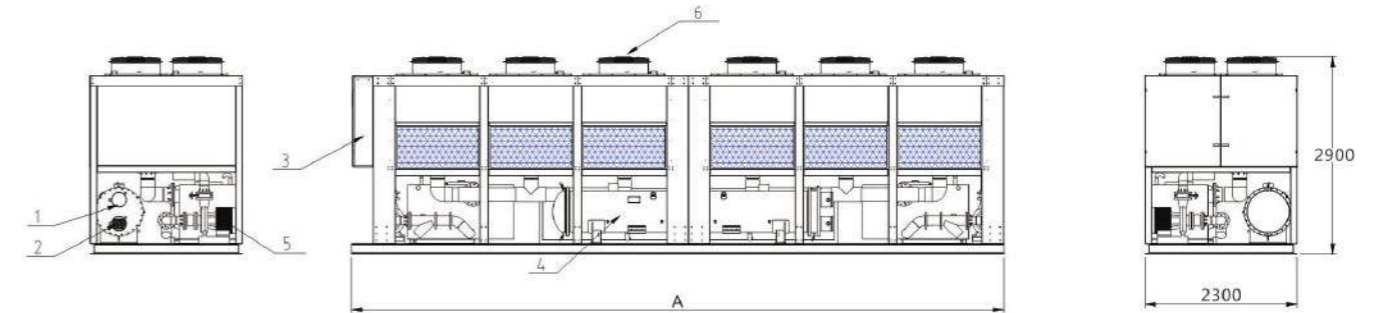


Model	Inlet	Outlet
AESX210R	6"	6"
AESX230R	6"	6"

1. Evaporator Outlet
2. Evaporator Inlet
3. Control Cabinet
4. Flooded Evaporator
5. Evaporative Pump
6. Condenser Fan
7. Screw Compressor

# Dimension

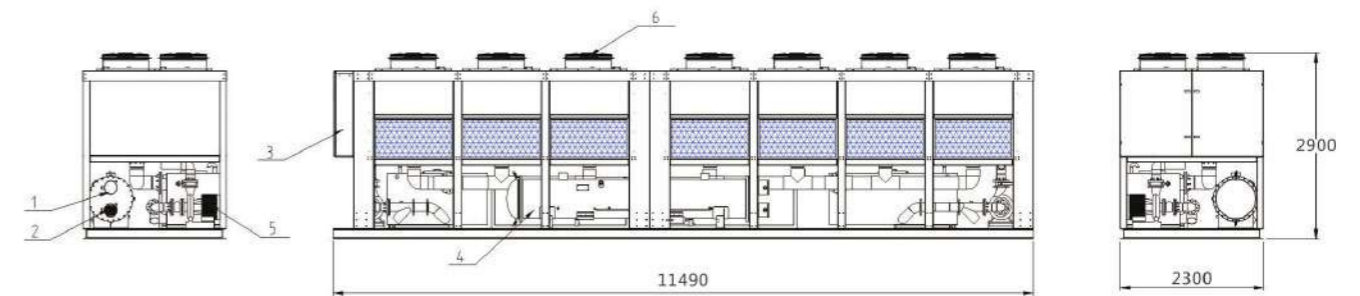
**AESX260R, 275R, 290R, 315R, 340R定频系列**



Model	Inlet	Outlet	A
AESX260R, 275R, 290R	8"	8"	9560
AESX315R	8"	8"	10120
AESX340R	8"	8"	10680

1. Evaporator Outlet
2. Evaporator Inlet
3. Control Cabinet
4. Flooded Evaporator
5. Evaporative Pump
6. Condenser Fan
7. Screw Compressor

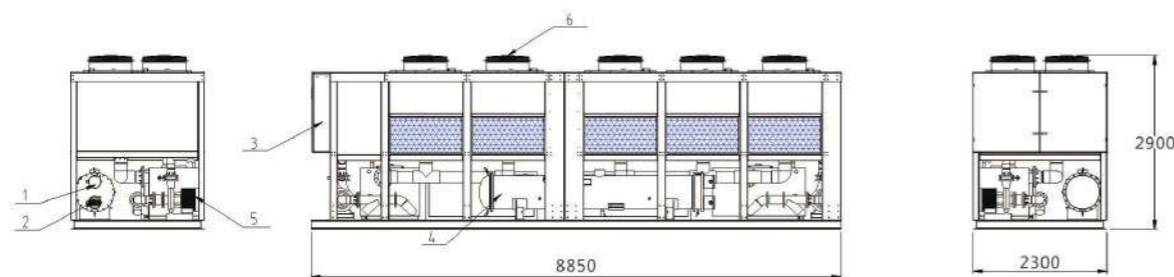
**AESX360R定频系列**



Model	Inlet	Outlet
AESX360R	8"	8"

1. Evaporator Outlet
2. Evaporator Inlet
3. Control Cabinet
4. Flooded Evaporator
5. Evaporative Pump
6. Condenser Fan
7. Screw Compressor

**AESX245R**



Model	Inlet	Outlet
AESX245R	6"	6"

1. Evaporator Outlet
2. Evaporator Inlet
3. Control Cabinet
4. Flooded Evaporator
5. Evaporative Pump
6. Condenser Fan
7. Screw Compressor

# Technical Specifications

## Specifications (VFD Series)

AEVSX*R		110	140	155	175	205	230	250	280	295	310	330	350	380
Cooling Capacity	KW	385	488	552	608	720	808	874	977	1040	1104	1160	1217	1300
	RT	110	139	157	173	205	230	248	278	296	314	330	346	370
Power Input	KW	75.4	96.6	105.3	117.5	144.3	162.3	172	193.3	201.9	210.6	222.8	235	259.5
System COP	W/W	5.11	5.05	5.24	5.18	4.99	4.98	5.08	5.05	5.15	5.24	5.21	5.18	5.01
System IPLV	W/W	7.09	7.09	7.29	7.12	6.92	6.83	7.09	7.09	7.19	7.29	7.20	7.12	6.93
Compressor P.I	KW	68.4	86.6	95.3	107.5	130.8	148.8	155	173.3	181.9	190.6	202.8	215	236

### Compressor

Type	Horizontal Semi-Hermetic Screw													
Nos.		1	1	1	1	1	1	2	2	2	2	2	2	2
RLA	A	126	159	175	197	240	273	284	318	334	350	372	395	433

### Evaporator

Type	Shell and Tube													
Flow Rate	m <sup>3</sup> /h	66	84	95	105	124	139	150	168	179	190	200	209	224
Water Pressure Drop	kPa	45	81	82	86	86	87	87	87	87	88	89	89	90
Water Inlet / Outlet	in	4	5	5	6	6	6	6	8	8	8	8	8	8

### Evaporative Condenser

Type	Tube-To-Plate													
Fan Nos.	台	4	6	6	6	8	8	10	12	12	12	12	12	14
Fan P.I	kW/台	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Water Flow Rate	m <sup>3</sup> /h	72	108	108	108	144	144	72/108	108/108	108/108	108/108	108/108	108/108	108/144
Pump P.I	kW/台	4	5.5	5.5	5.5	7.5	7.5	4/5.5	5.5/5.5	5.5/5.5	5.5/5.5	5.5/5.5	5.5/5.5	5.5/7.5
Pump Nos.	台	1	1	1	1	1	1	2	2	2	2	2	2	2
Water Consumption	l/h	559	708	800	882	1044	1171	1267	1417	1509	1601	1683	1765	1885

### Dimensions & Weight

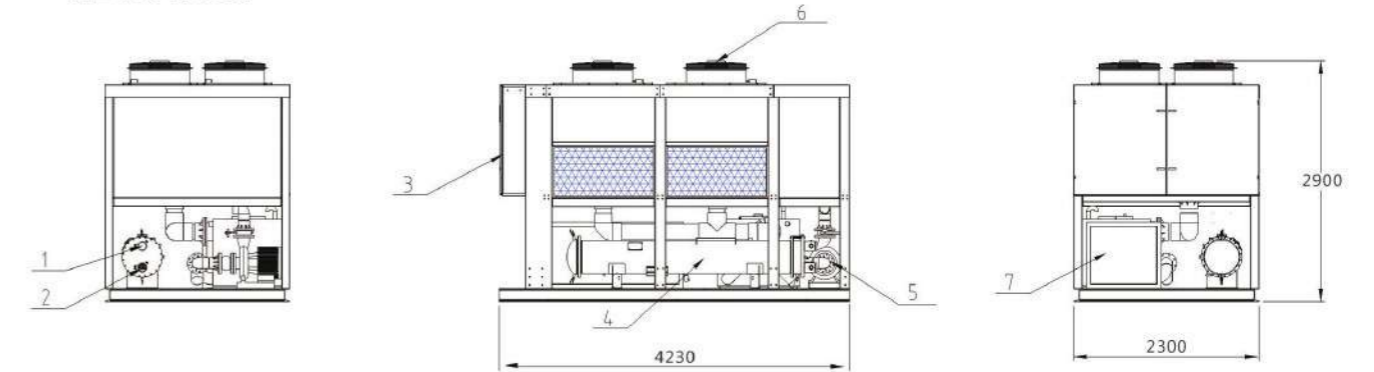
		4230	4940	5500	5500	7050	7050	8850	9560	10120	10680	10680	10680	11490
length	mm													
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900
Shipping Weight	kg	5750	6500	6800	7550	10500	12000	12250	13000	13300	13600	14350	15100	18050
Operating Weight	kg	6600	7700	8000	8800	12300	13500	14300	15400	15700	16000	16800	17600	21100

#### Notes:

- Rated conditions for cooling operating: temperature of inlet/outlet chilled water: 12 °C/7 °C ; Ambient dry/wet bulb temperature: 35 °C / 28 °C;
- Supply cooling water temperature: 28 °C;

# Dimension

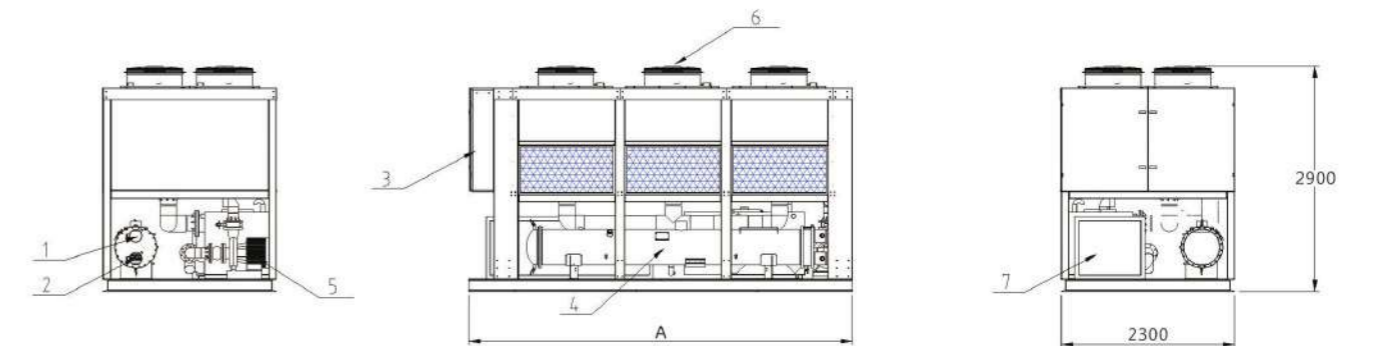
## AEVSX110R



Model	Inlet	Outlet
AEVSX110R	4"	4"

- Evaporator Outlet
- Evaporator Inlet
- Control Cabinet
- Flooded Evaporator
- Evaporative Pump
- Condenser Fan
- Screw Compressor

## AEVSX140R, 155R, 175R

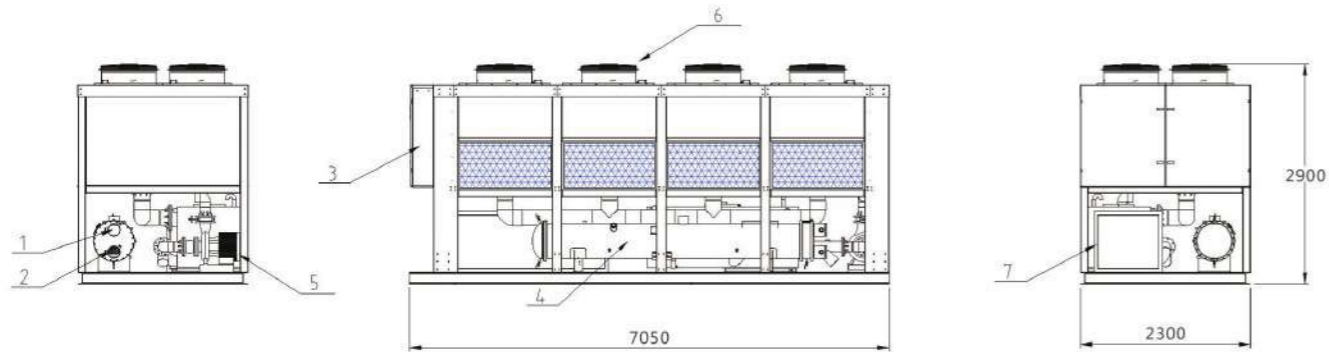


Model	Inlet	Outlet	A
AEVSX140R	5"	5"	4940
AEVSX155R	5"	5"	5500
AEVSX175R	6"	6"	5500

- Evaporator Outlet
- Evaporator Inlet
- Control Cabinet
- Flooded Evaporator
- Evaporative Pump
- Condenser Fan
- Screw Compressor

# Dimension

## ▲ AEVSX205、230R

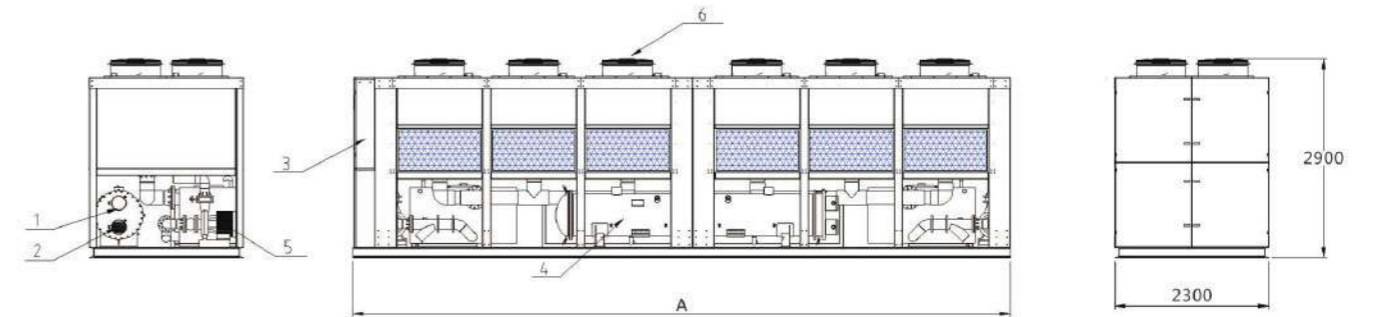


Model	Inlet	Outlet
AEVSX205R	6"	6"
AEVSX230R	6"	6"

1. Evaporator Outlet
2. Evaporator Inlet
3. Control Cabinet
4. Flooded Evaporator
5. Evaporative Pump
6. Condenser Fan
7. Screw Compressor

# Dimension

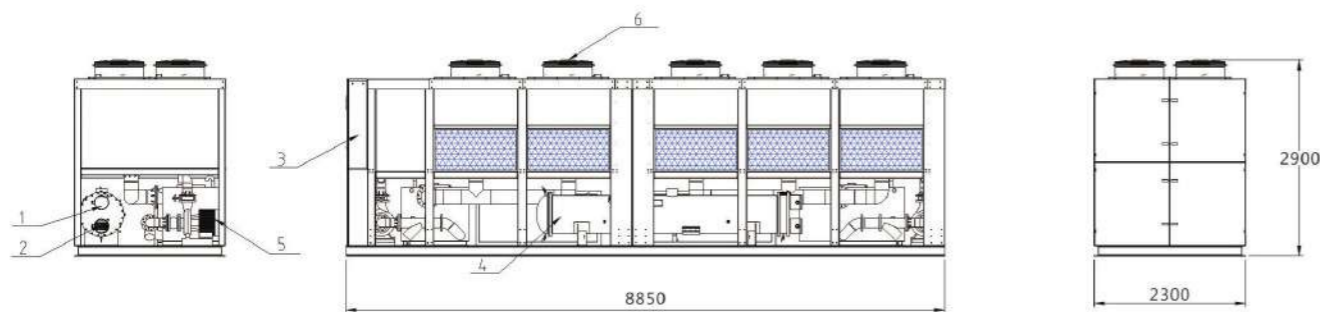
## ▲ AEVSX280R、295R、310R、330R、350R



Model	Inlet	Outlet
AEVSX280R	8"	8"
AEVSX295R	8"	8"
AEVSX310R、330R、350R	8"	8"

1. Evaporator Outlet
2. Evaporator Inlet
3. Control Cabinet
4. Flooded Evaporator
5. Evaporative Pump
6. Condenser Fan
7. Screw Compressor

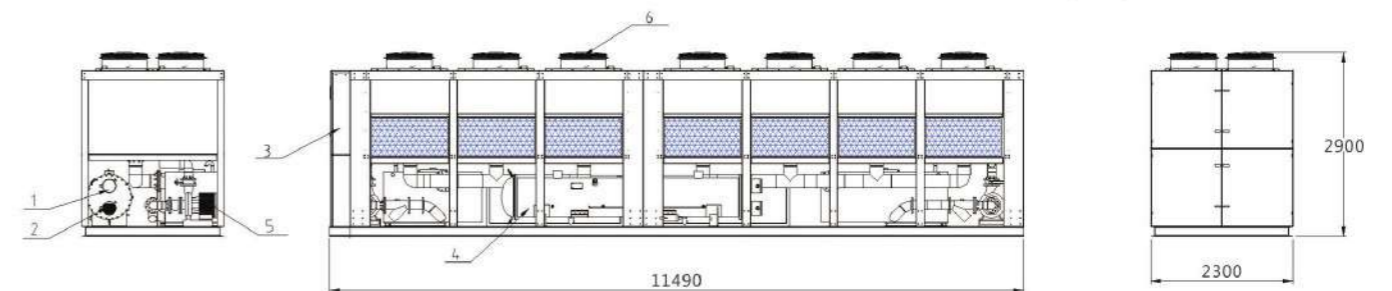
## ▲ AEVSX250R



Model	Inlet	Outlet
AEVSX250R	6"	6"

1. Evaporator Outlet
2. Evaporator Inlet
3. Control Cabinet
4. Flooded Evaporator
5. Evaporative Pump
6. Condenser Fan
7. Screw Compressor

## ▲ AEVSX380R



Model	Inlet	Outlet
AEVSX380R	8"	8"

1. Evaporator Outlet
2. Evaporator Inlet
3. Control Cabinet
4. Flooded Evaporator
5. Evaporative Pump
6. Condenser Fan
7. Screw Compressor



# JOB REFERENCES

## LOCAL PROJECT

- A L'OREAL R&D Center (Shanghai)
- B Subway Station (Hangzhou)
- C Apple Corp Branch (Hangzhou)
- D Hanban Barbecue Shop (Guangzhou)
- E SOGO Department Store (Sanya)
- F Hanban Barbecue Shop (Zengcheng)
- G South China Agricultural University (Guangzhou)
- H Zhejiang Tumor Hospital (Hangzhou)
- I Dongfeng Yueda KIA Factory (Yancheng)
- J TOKAI RIKI CO., LTD. (Foshan)
- K Dongfeng Nissan Passenger Vehicle Co., Ltd. (Guangzhou)
- L Beilun Power Plant (Ningbo)



# JOB REFERENCES

## OVERSEAS PROJECT

- A St. Teresa's Hospital(Hongkong)
- B Tin Shing Shopping Center(Hongkong)
- C Tai Po Unliever Factory(Hongkong)
- D Ho Man Tin Shopping Center(Hongkong)
- E Fu Huang Community Hall(Hongkong)
- F Sau Mao Ping Shopping Center(Hongkong)
- G Lung Cheung Shopping Center(Hongkong)
- H Tai Wo Hau Sport Hall(Hongkong)
- I Fu Shin Shopping Center(Hongkong)
- J Macau Hospital(Macau)
- K INTI College,Subang(Malaysia)
- L Rawang Specialist Hospital(Malaysia)
- M Hospital Port Dickson (Malaysia)

