



## Malaysia

Lot 5755-6,  
Kidamai Industrial Park,  
Bukit Angkat,  
43000 Kajang,  
Selangor, Malaysia

Tel: +603-8924 9000  
Fax: +603-8739 5020

## United States of America

11948 Miramar Parkway  
Miramar, Florida 33025  
United States of America

Tel: +305-883 0655  
Fax: +305-883 4467

## Singapore

2, Kallang Pudding Road  
#07-07 Mactech Building,  
Singapore 349307

Tel: +65-6842 2012  
Fax: +65-6842 2013

## Vietnam

10th Floor, Nam A Bank Tower,  
201-203 Cach Mang Thang 8 Street,  
District 3, Ho Chi Minh City,  
Vietnam

Tel: +84-8-6290 3108  
Fax: +84-8-6290 3109

**DUNHAM-BUSH®**

info@dunham-bush.com  
www.dunham-bush.com

Products that perform...By people who care®

The manufacturer reserves the right to change specifications without prior notice.  
©Dunham-Bush. All rights reserved.

## China

No.1 Dunham-Bush Road,  
Laishan District,  
Yantai,  
Shandong Province,  
China 264003

Tel: +86-535-739 7888  
Fax: +86-535-739 7999

## United Arab Emirates

Office # 2606,  
Fortune Executive Towers,  
Cluster T1, Jumeirah Lake Tower  
Dubai, UAE

Tel: +971-4-443 9207  
Fax: +971-4-443 9208

## Thailand

1 QHouse Lumpini,  
27th Floor, South Sathorn Road,  
Tungmahamek, Sathorn,  
Bangkok Thailand 10120

Tel: +66-0-2610 3749  
Fax: +66-0-2610 3601

## United Kingdom

8 Downley Road,  
Havant,  
Hampshire,  
England PO9 2JD

Tel: +44-23-9247 7700  
Fax: +44-23-9245 0396

## South Africa

No.57 Sovereign Drive  
Route 21 Corporate Park  
Irene, Pretoria  
South Africa

Tel: +27-12-345 4202  
Fax: +27-12-345 4203

## Indonesia

The Vida Building 7th Floor  
Jl. Raya Perjuangan  
No. 8 Kebon Jeruk  
Jakarta 11530, Indonesia

Tel: +62-21-2977 8100  
Fax: +62-21-2977 8001

SINCE 1894...



R410A



## ACDS(HP)H 50Hz Air Cooled Modular Chiller/ Heat Pump

Cooling Capacity: 18-40TR (62-124kW)  
Heating Capacity: 20-40TR (70-140kW)

Dunham-Bush Air Conditioning



CAT\_ACDS(HP)\_I\_HT\_01C



## MILESTONE



### DUNHAM-BUSH PROFILE

Dunham-Bush, one of the world's top commercial air conditioning manufacturers, has long been committed to offering creative solutions for the customer's requirements over its nearly 120 years history in the HVAC/R. Dunham-Bush offers a complete range of HVAC/R products such as large chillers, unitary, airside system, and cooling towers for residences, commercial buildings and industrial facilities, and even disaster area. Dunham-Bush is striving to be the leader in the commercialization of green technologies. Today, by utilizing our global network of sales and service offices, Dunham-Bush is offering our value-added products and solutions to all corners of the world.



1894 Built in USA as a professional manufacturer of HVACR equipments.

1904 Developed the first air compressor system.

1906 The second Dunham-Bush company was built.

1924 Developed the first reciprocating compressor.

1930 Manufactured the first air cooled air conditioner.

1935 Factory in Morden, Great Britain was built to produce heating products.

1948 The factory in West Hartford, Connecticut, USA was built.

1956 Engaged in the research, development and production of high standard products.

1965 Developed the first centrifugal chiller.

1967 Patented the technology to use a screw compressor for refrigeration/cooling.

1995 Dunham-Bush Yantai Co. Ltd. was jointly built by Dunham-Bush Group and Yantai Moon Group.

1996 Hartford Compressors Incorporated was built in USA.

1998 Dunham-Bush built the factory in Kajang, Malaysia. Later built Global Headquarters there in 2000.

2008 Dunham-Bush launched its new logo to match its new global brand & business strategy.

2013 New compressor R&D center was founded in UK to engage in high tier compressor technology

Today and Beyond The tradition of innovative thinking continues.



### DUNHAM-BUSH CHINA

Founded in Yantai in 1995, Dunham-Bush China adhered to the innovation system of focusing on customers' demands to drive global research & design, and superior quality manufacturing. Nowadays we Dunham-Bush China are creating innovative cooling solutions appropriate to the individual requirements of commercial buildings, schools, hospitals, airports, factories and residences. No matter where you are, what we deliver is the same: high performing, highly engineered cooling solutions developed to take on the challenges of the 21st century.



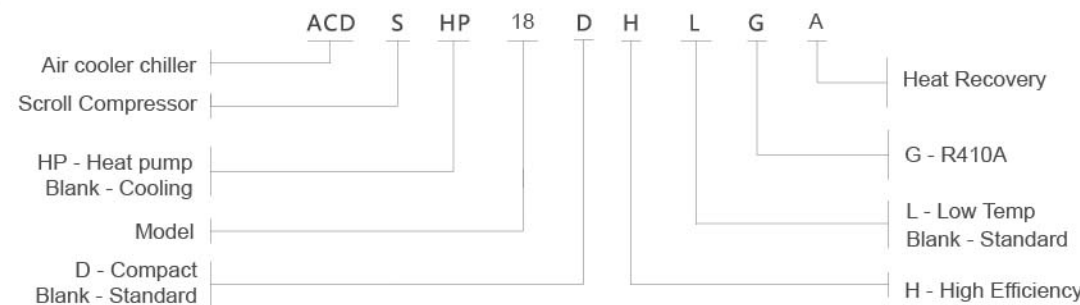


## FEATURES

Dunham Bush ACDS (HP)H air-cooled moduler chiller (heat pump) series is designed and manufactured with advanced technology and industries highest standards to ensure of its high performance and high reliability.

With it compact footprint design, neat & accessible layout, easy maintenance, energy saving and high efficiency, ACDS (HP)H provide a comfortable air-conditioned environments for wide applications like villas, school, office buildings, factories etc.

### Nomenclature

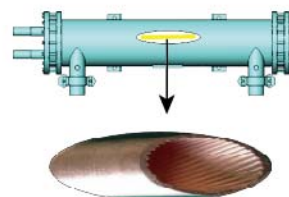


### High Efficiency, Enegry Saving & Economical

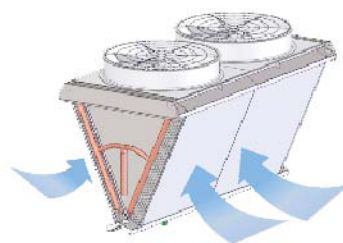
Well-known high efficiency scroll compressor brand with more safety feature, higher efficiency and longer lifespan.



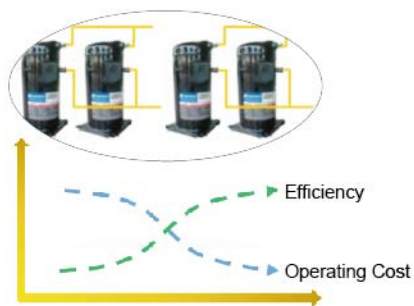
High efficiency shell and tube heat exchanger with inner finned tube; Lower water pressure drop design provide project and operation cost saving for the Air conditioning system.



"V" Coil conctruction provide a more effective air distribution, increase the heat transfer thus improve the unit efficiency



Multiple compressors design to achieve multiple steps capacity adjustment. This allowed the unit to be more energy efficient during partial load, better IPLV value and greatly reduce the operating costs.



Air cooled heat pump unit is a more energy saving, more environmental friendly and more economical method of producing hot water as compare to boilers. It is widely suitable for factories, hotels, recreation clubs, bath house, swimming pools and other places where hot water are demanded.



## FEATURES

### Safe & Reliable

Shell & Tube heat exchanger design not only greatly enhance the heat transfer efficiency but is also safer and more reliable. Shell and tube heat exchanger six main advantages:

- ✓ less chances of blockage
- ✓ less chances of freezing
- ✓ higher tolerances of water quality
- ✓ Lower water pressure drop
- ✓ better corrosion resistance and longer life span
- ✓ ease of maintenance

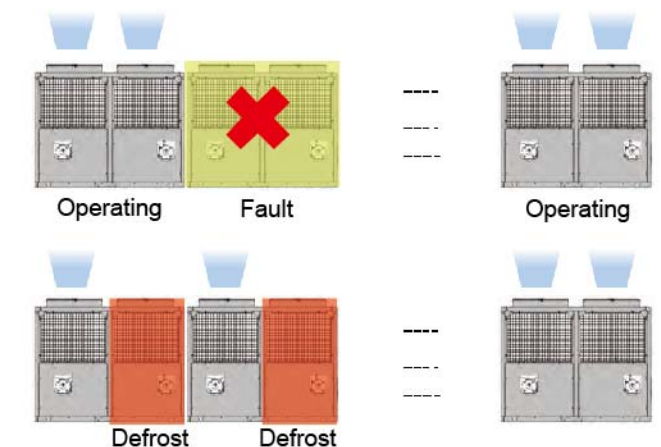


Modular combination with multiple compressors design increase the unit overall energy efficiency and also reduce the unit start up current, thus reduce the impact on power station

Modular combination allow the units to operate independently. Faulty unit can be isolated for service without affecting the normal operation of other units

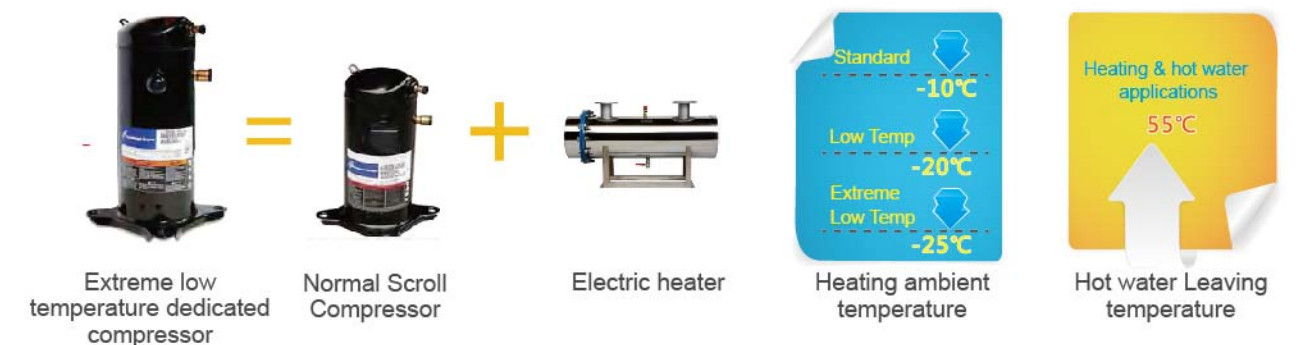
Intelligent defrost system to reduce the water temperature fluctuations

Balanced compressors running time control to ensure all compressors have equal running time thus prolong the compressor lifespan



In order to meet the different ambient temperature in various region, Dunham-Bush developed a series of different modular chiller/heat pump series that are able to safely operate from -25°C~43°C ambient temperature, fulfilling the needs of cooling in the summer and heating in the winter as well as hot water applications

Extreme low temperature air cooled heat pump series uses a dedicated extreme low temperature compressor. In addition to the advantages of standard scroll compressor, this also allow the unit to operate at wider range especially at extreme low temperature to continuous provide hot water without the needs of additional eletrical heater as compare with normal scroll compressor







## FEATURES

## TECHNICAL DATA



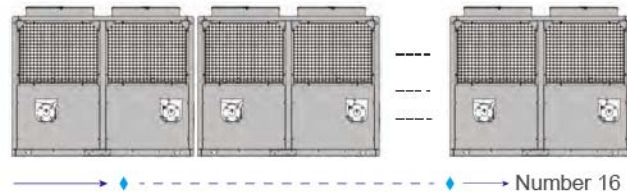
The unit has multiple safety protection functions which ensure a more intelligent, safer and stable operation of the unit and systems. (The following are part of the main protection function)

- ✓ High Low Pressure Protection
- ✓ High temperature protection
- ✓ Low water flow protection
- ✓ Compressor and motor overload protection
- ✓ Phase sequence protection
- ✓ Antifreeze protection
- ✓ High Low water temperature protection
- ✓ Sensor fault protection



### Modular design with flexible combination

The unit is able to combine with up to 16 units together, thus able to easily meet the need of large cooling applications



Easy to transport, install and maintain

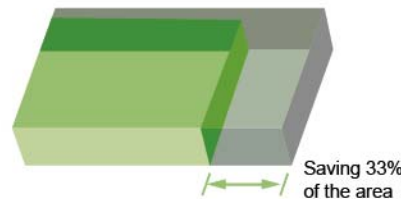
Options and Accessories:

- ✓ water flow switch
- ✓ strainer
- ✓ 40mm evaporator insulation
- ✓ Heat recovery configuration (65KW modules only)
- ✓ machine protection network
- ✓ rubber pad
- ✓ spring Isolator

Compact 130KW modular unit is smaller size and require an area lesser than other mainstream brand by nearly 1/3, thus saving installation space

Market common 130kw modular unit

Dunham-Bush compact design 130kW Modular Unit



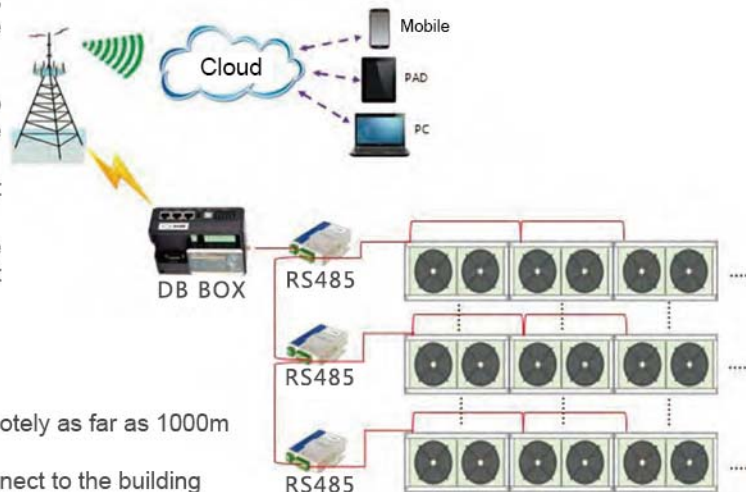
### Smart control, Easy Operation

Dunham-Bush air cooled modular chiller is equipped with advanced controller and is able to cater for various customer control needs

- Standard unit controller come with point to point controls allow easy and effective operation
- Multi level password protection to prevent unauthorized operation
- Fast fault detection and alarm. Able to store historical faults to ease the equipment maintenance and troubleshooting

Control options and accessories(Optional):

- ✓ Water pump interlock control
- ✓ Remote control; able to control the unit remotely as far as 1000m away
- ✓ RS485 communication interface; easily connect to the building group control system (BAS)
- ✓ DB BOX smart terminal; able to use mobile device connect to DB air cooled modular unit through DB cloud monitoring platform



### R410A UNIT TECHNICAL SPECIFICATION

Standard

Model	Performance		Compressor				Water side heat exchanger			Air side heat exchanger		Unit weight		
	Cooling capacity kW	Heating capacity kW	Cooling Capacity	Heating Capacity	LRA A	Qty	Nominal flow rate m <sup>3</sup> /h		Nominal pressure drop kPa	Connection Diameter in	Fan power kW	Fan qty	Shipping weight kg	Operating weight kg
			Cooling	Heating			Cooling	Heating						
ACDSHP18HG	60	70	19.9	20	135	2	11.2	12	30	2	0.75	2	650	700
ACDS18HG	62	—	20	—	135	2	11.2	—	30	2	0.75	2	610	660
ACDSHP36HG	120	140	39.8	40	135	4	22.4	24	40	2	0.75	4	1160	1260
ACDS36HG	124	—	40	—	135	4	22.4	—	40	2	0.75	4	1080	1180

Heat Recovery Unit

Model	Performance			Compressor				Water side heat exchanger			Air side heat exchanger		Unit weight		
	Cooling capacity kW	Heating capacity kW	Heat recovery capacity kW	Rated power kW		LRA A	Qty	Nominal flow rate m³/h		Nominal pressure drop kPa	Connection Diameter in	Fan power kW	Fan qty	Shipping weight kg	Operating weight kg
				Cooling	Heating/ Heat Recovery			Cooling	Heating						
ACDSHP18HGA	65	70	78	17.9	18.4	135	2	11.2	12.0	30	2	0.75	2	700	750

Low Temperature Unit

Model	Performance		Compressor			Water side heat exchanger				Air side heat exchanger		Unit weight	
	Cooling capacity kW	Heating capacity kW	Rated power kW	LRA A	Qty	Normal flow rate m <sup>3</sup> /h		Normal pressure drop kPa	Connection Diameter in	Fan power kW	Fan qty	Shipping weight kg	Operating weight kg
						Cooling	Heating						
ACDSHP18HLG	65	70	18.4	127	2	11.2	12.0	30	2	0.75	2	650	700
ACDSHP36HLG	130	140	36.8	127	4	22.4	24.1	40	3	0.75	4	1160	1260

Compact Unit

Model	Performance		Compressor				Water side heat exchanger				Air side heat exchanger		Unit weight	
	Cooling capacity kW	Heating capacity kW	Rated power kW		LRA A	Qty	Nominal flow rate m <sup>3</sup> /h		Nominal pressure drop kPa	Connection Diameter in	Fan power kW	Fan qty	Shipping weight kg	Operating weight kg
			Cooling	Heating			Cooling	Heating						
ACDSHP36DHG	138	142	36.8	38.3	260	2	23.7	24.4	40	3	2.2	2	1050	1150
ACDS36DHG	140	—	36.8	—	260	2	24.1	—	40	3	2.2	2	1000	1100

Notes:

1. Nominal rated condition:

Cooling Mode: Ambient dry / wet bulb temperature 35/24°C, water inlet / outlet temperature 12/7°C;

Heating Mode: Ambient dry / wet bulb temperature 7/6°C, water inlet / outlet temperature 40/45°C;

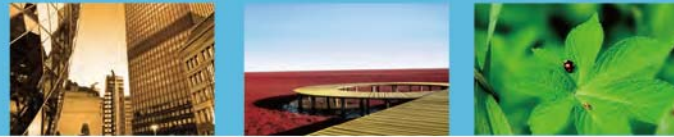
Heat recovery model, chilled water inter/outlet temperature 12/7°C, hot water inlet / outlet temperature 40/45°C.

3. Power supply: 380V / 3Φ / 50Hz. (Optional: 400V / 3Φ / 50Hz).

4. Heat recovery function is optional. The length of unit with heat recovery is 2360mm. Kindly consults Dunham-Bush sales office for new piping connection and weight.

5. Extreme low temperature unit able to produce up to 50°C hot water at -20°C ambient temperature.

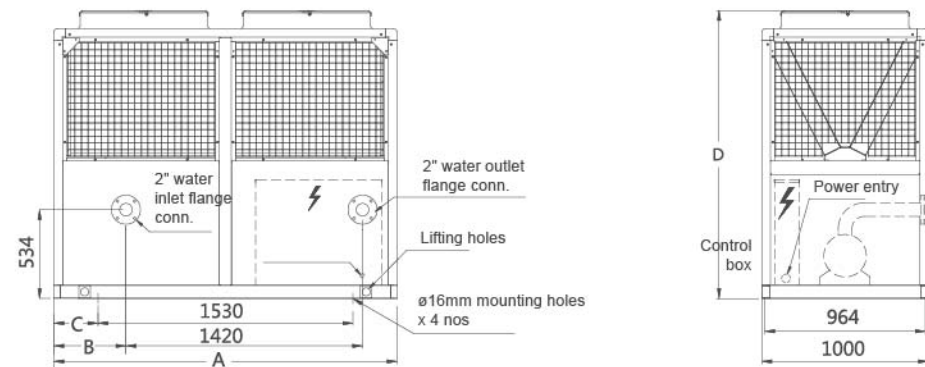




## DIMENSIONS

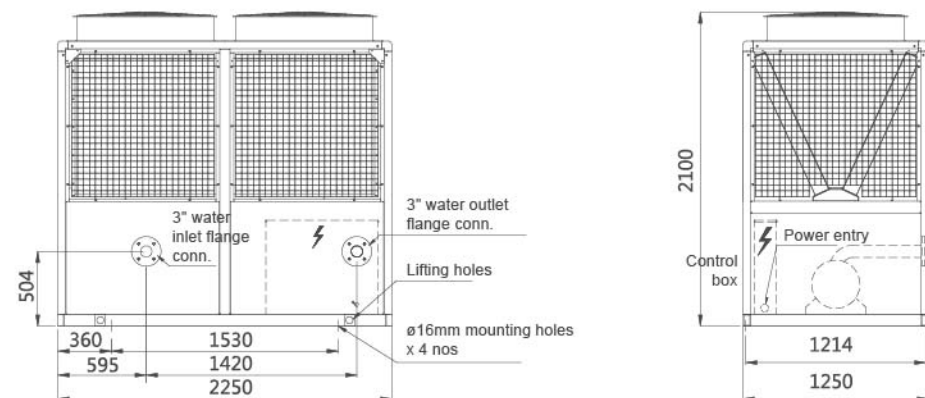
### Unit Dimensions

#### ACDS(HP)18HG、ACDS(HP)18HLG

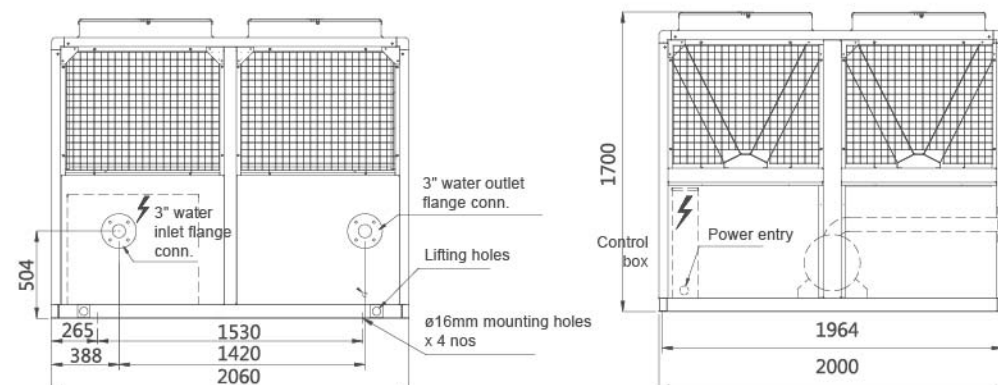


Model	A	B	C	D
ACDS(HP)18HG、ACDS(HP)18HLG	2060	433	265	1700

#### ACDS(HP)36DHG



#### ACDS(HP)36HG、ACDSHP36HLG

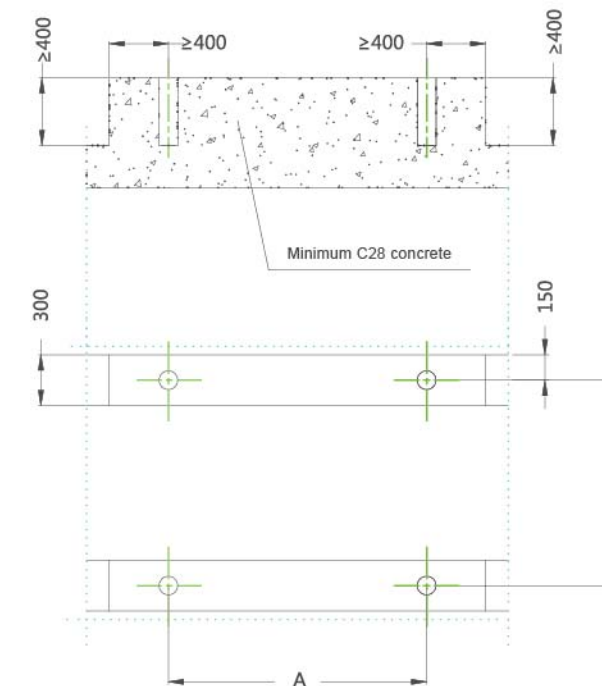


Dimensions in mm

## INSTALLATION



### Foundation Drawing



Model	A	B
ACDS(HP)18HG ACDS(HP)18HLG	1530	964
ACDS(HP)36HG ACDS(HP)36HLG	1530	1964
ACDS(HP)36DHG	1530	1214

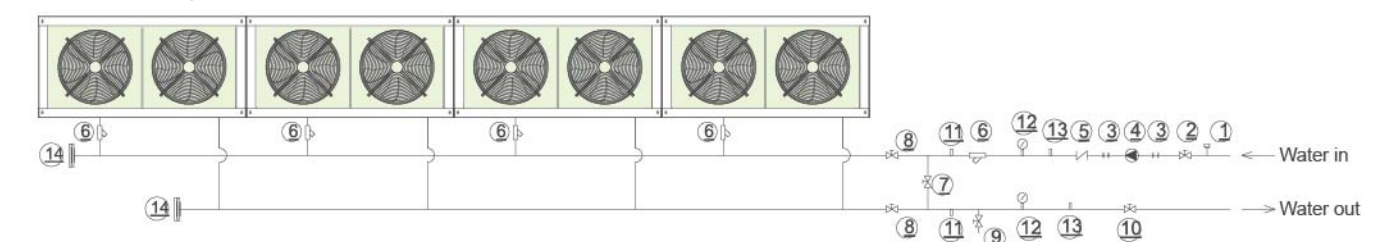
Notes:  
1) M16 anchoring bolts or L bolts should be installed if it deem necessary.  
2) 20mm thick rubber pad should be installed to absorb the vibrations.

Dimensions in mm

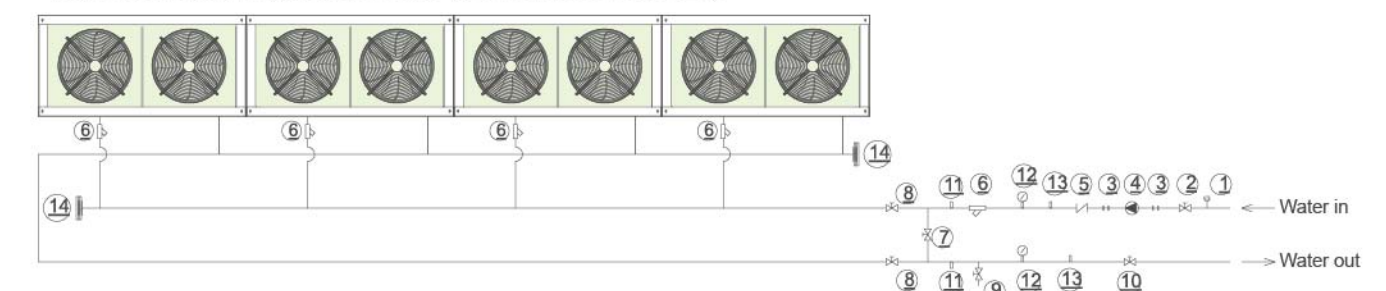
### Modular combination arrangement

#### ACDS(HP)18HG、ACDSHP18HLG、ACDS(HP)36DHG

##### Installation Option 1



##### Installation Option 2 (Recommended when number of units ≥3)

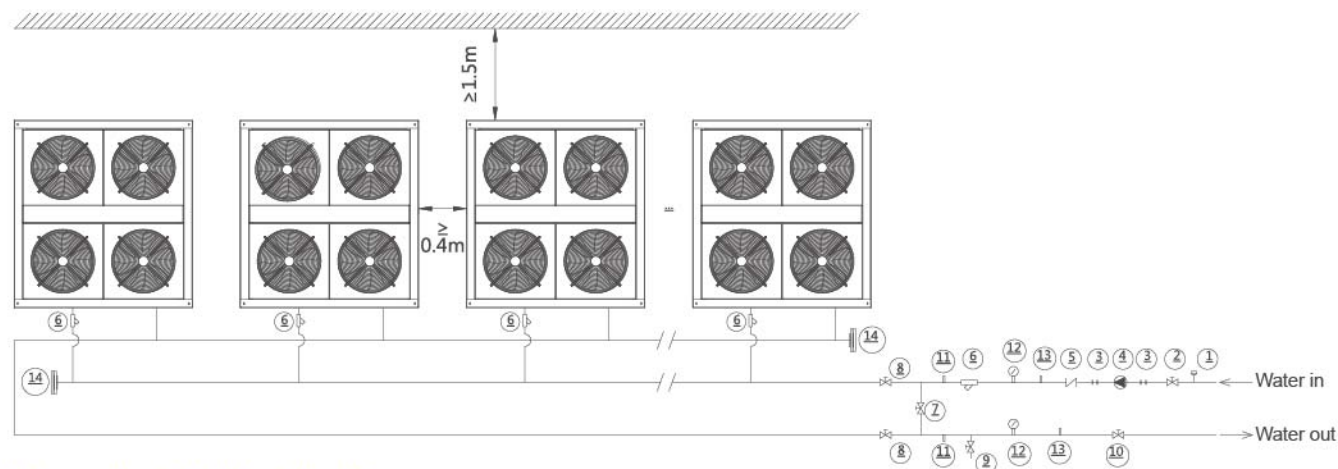






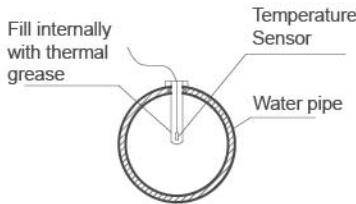
# INSTALLATION

ACDS(HP)36HG、ACDSHP36HLG



## Water system installation instructions

- Unit water piping system, valves , strainer and other components should use the same specification and external pipe support should be installed at site. Strainer<sup>6</sup> is recommended to be install at chiller water inlet.
- The highest point of the water piping system should be installed with relase valve while the lowest point of the water piping system should be installed with drain valve.
- When running for the first time, start by closing the shut-off valve<sup>8</sup> of the module inlet and outlet pipes, open the bypass valve<sup>7</sup> and run the pump to circulate the water for a period of time. Upon confirming there is no impurities in the water system in the strainer <sup>6</sup>, close the bypass valve<sup>7</sup>, open the stop valve<sup>9</sup>.
- When installing the water pipe, a sensor pocket inserted with temperature sensor should be install in the main water inlet and outlet pipe. The sensor pocket should be inserted in the middle of the pipe (as shown on the right) and heatgrease should be inserted to reduce the thermal resistance between the sensor and the water.
- The units to be combined must be of the same model. If the number of parallel units is large, the modules can be arranged in two rows. The spacing between the two rows of units should be at least 1.0M.
- When the number of units is less than 3 units, the 65kW module machine and the compact 130kW module machine can choose the option1 or the option 2 installation. When the module combination is ≥ 3 units, option 2 is recommended.



## Legend:

- |                      |                       |
|----------------------|-----------------------|
| 1-air vent           | 8-globe valve         |
| 2-shut off valve     | 9-drain valve         |
| 3-flexible connector | 10-shut off valve     |
| 4-pump               | 11-temperature sensor |
| 5-check valve        | 12-pressure gauge     |
| 6-strainer           | 13-thermometer        |
| 7-bypass valve       | 14-flange cover plate |

## Unit installation space requirements

- Single unit or multiple units can be installed directly on the outdoor ground or on the roof. Make sure there is not obstacles within 1.5 m around the unit and within 3m on top of the unit. Avoid unit installation at site surrounded with four walls as the performance will be affected. Wall height is recommended not to exceed the unit height to ensure a good ventilation for the unit.
- Unit control box side and the piping connection side should have at least 1m of spacing for operation , maintenance and servicing.
- Proper water drainage around the unit is required.

## Precautions

- The diagram is for reference only. Kindly refer to IOM for more information.
- Kindly contact Dunham Bush sales office should more assistance or information required.

# OPERATING RANGE



## Operating Range

Product Series	Ambient Temperature		Water Temperature	
	Cooling	Heating	Cooling	Heating
Standard	16°C—46°C	-15°C—25°C	-3°C—15°C	30°C—50°C
Heat Recovery	16°C—46°C	-15°C—25°C	-3°C—15°C	30°C—50°C
Low Temperature	16°C—46°C	-25°C—25°C	-3°C—15°C	30°C—55°C
Compact	16°C—46°C	-15°C—25°C	-3°C—15°C	30°C—55°C

