冰轮环境
MOON-TECH

# Steam Driven Lithium Bromide Absorption Chiller

MOON ENVIRONMENT TECHNOLOGY CO.,LTD.




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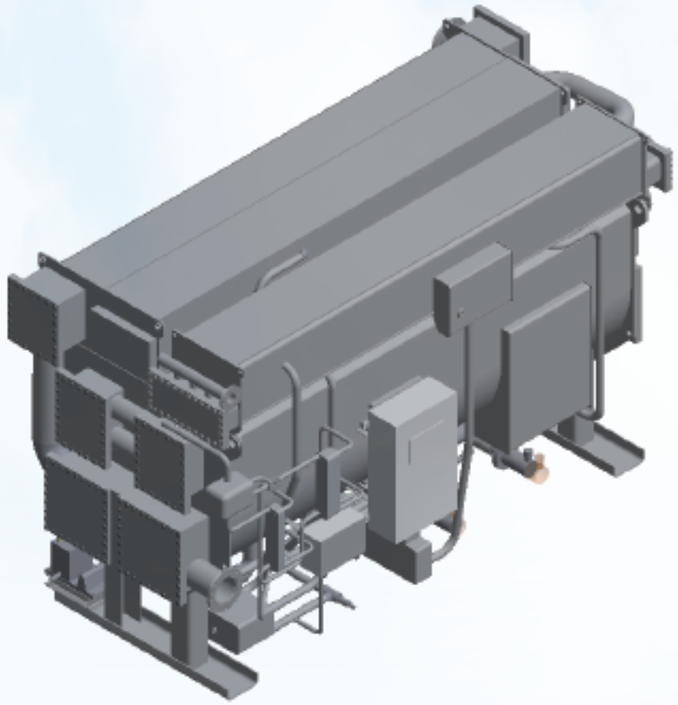
# COMPANY PROFILE

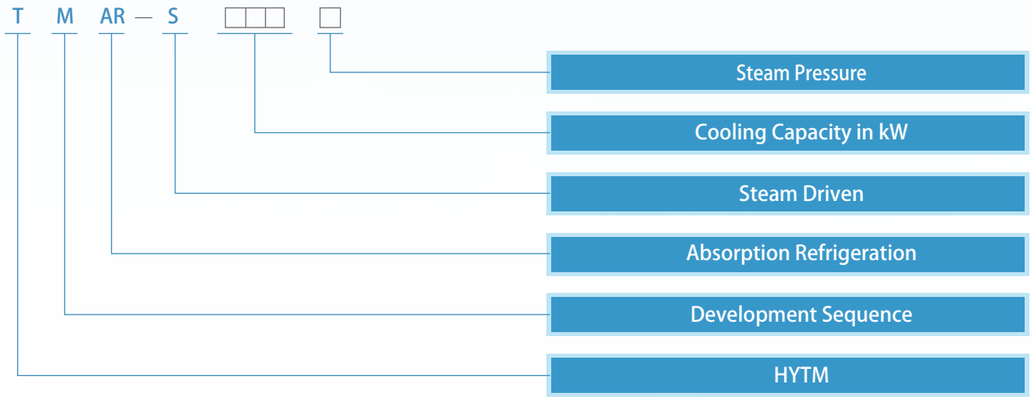
The company is owned by Yantai Moon Group who is also the owner of Dunham Bush. Supported by the strong technology research strength of Tsinghua University and the China Academy of Sciences, HYTM developed the modern design Lithium Bromide absorption chiller, including the direct-fired absorption chiller, hot water type absorption chiller, steam type absorption chiller, multi-energy chiller of exhaus t & hot water type, and more than 10 types of Lithium Bromide absorption heat pumps for heating application. The products are widely used in industries like metallurgy, chemical, textile, printing, dyeing, phar maceutical and commercial cooling.

Faced with the new situation, new task, and new goals of energy conservation for low carbon emission, HYTM will more firmly shoulder the corporate emission of “committed to improving the quality of lives” and give full play to its technological advantages and excellent services, create greater energy saving and environmental protection benefits for customers.

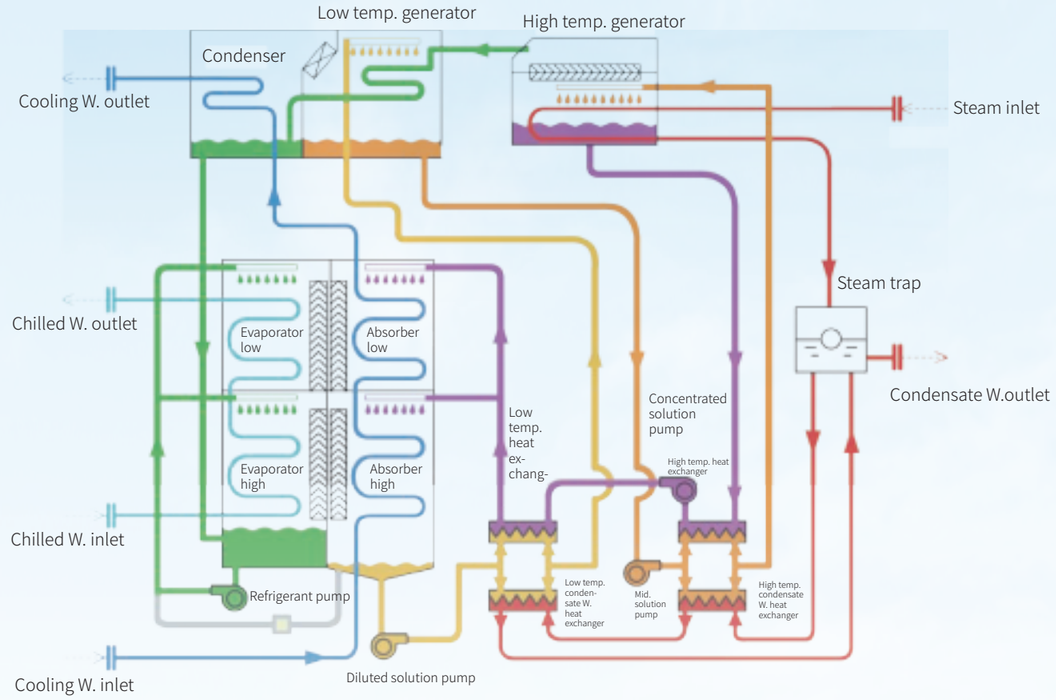
# PRODUCT APPEARANCE



# PRODUCT NOMENCLATURE




# COOLING PRINCIPLE




Cooling circle diagram

Refrigerant water
Diluted water
Cooling water
Steam
Mid. solution
Concentrated water
Chilled water

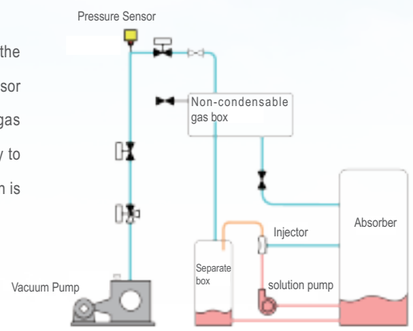
The refrigerant water absorbs the heat of the chilled water in heat transfer pipes in the evaporator and become refrigerant vapor, the chilled water temp. is reduced in this process The concentrated lithium bromide solution dilutes in the absorber after absorbing refrigerant vapor from the evaporator, and the dilute solution flows through a low-temperature heat exchanger to a low-temperature generator. The dilute solution is heated to the mid. solution in low-temperature generator by refrigerant vapor from the high-temperature generator, and the mid. solution flows through a high-temperature heat exchanger to the high-temperature generator. The mid. solution is heated to concentrated solution by steam in the high-temperature generator, and the refrigerant vapor thus generated then enters the low-temperature generator. The concentrated solution in high-temperature generator enters the absorber through the high-temperature heat exchanger and the low-temperature heat exchanger in sequence, and absorbs refrigerant vapor from the evaporator again. The refrigerant vapor generated in the low-temperature generator is condensed and cooled in the condenser and then returned to the evaporator for a new cycle.

# FEATURES OF THE UNIT

## Full-automatic air purging system

a The chiller is equipped with automatic air purging system, 3-stage protection of the chiller vacuum.

b The auto-purge system can collect the non-condensable gas inside the chiller to the gas tank automatically by the injector, the pressure sensor monitors the pressure inside the gas tank in real time. When the gas pressure reach to set value, the vacuum pump will run automatically to purge the non-condensable gas out of the chiller. No manual operation is required during this whole process.




## Multilevel anticrystallization system

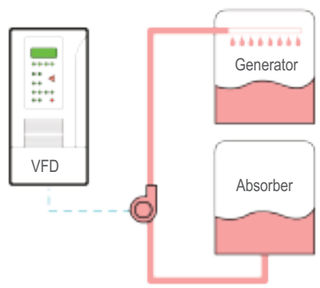
a The system monitors the crystallization allowance by the concentration of solution and adjusts the cycle in real time to avoid crystallization.

b The unit is equipped with the automatic crystal melting tube to prevent the crystallization of solution and melt the crystal.

c The unit is equipped with the optimal dilution running time control function to calculate the optimal dilution running time based on the concentration at shutdown. Ensure that the unit is safely closed down.

## VFD control system

The chiller is designed with VFD control system for the LiBr solution pump to adjust the LiBr solution recycling volume during part load operation, the chiller start up period is shorten and the chiller efficiency in part load is improved.




# FEATURES OF THE CHILLER

## Energy-efficient evaporation absorption design

a The chiller is designed with double stage evaporation and absorption. Both the evaporator and absorber are consist of two parts, the high pressure part and the low pressure part, the two times evaporation and absorption improve the chiller efficiency dramatically.

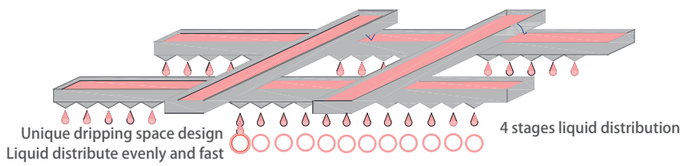
b The evaporator tubes is designed with non-equal spacing design and uses copper tubes to improve the efficiency of evaporation.

## Advanced gravity dripping technology

a The solution drop and distribution on the tube surface by gravity, no any solution spray pumps are used, and chiller power consumption is also reduced.

b The solution is distributed in 4 stages to make the whole liquid distribution system more scientific and the liquid film on the heat transfer tube more uniform, improving the absorption and evaporation efficiency.

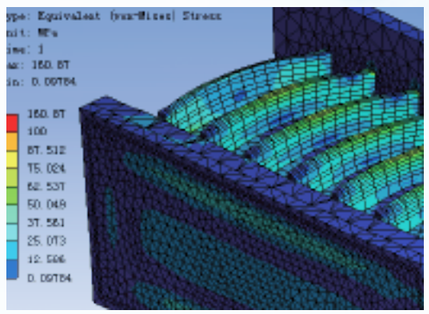
c The liquid distributor is designed with high-quality stainless steel, never blocked during operation and the chiller life span is much extended.




Liquid distribution schematic diagram

## Professional structural intensity design

The shell cylinder and water chamber of the unit are reasonably designed with stress analysis method, meeting the safety use requirements of the customers in various pressure ranges.




## Intelligent Advanced Monitoring System

a. This self-developed remote monitoring system can monitor the operation state of the machine comprehensively through computer cloud, mobile phone APP and WeChat, to provide customers with an optimal operation scheme through data and big data analysis of energy consumption.

b. The system is able to provide RS485, ethernet and other interfaces and data communication protocols; it allows acquisition, display of the machine parameters and control of the machine through the building centralized control system and industrial DCS centralized control system.

c. The advanced remote monitoring system not only can monitor the chiller real operating parameters, but also show the chiller performance curve, pre-alarms and suggestions of how to solve the alarms, the spare part replacement period, the chiller service record, and chiller daily/monthly/yearly fuel consumption cost.

# PERFORMANCE PARAMETER

## Steam Pressure 0.8MPaG

| Model | TMAR-S | — | 055E | 065E | 075E | 090E | 100E | 115E | 125E | 140E | 160E | 175E | 205E | 230E | 290E | 350E | 420E | 475E | 530E | 585E | 640E | 705E | 775E | 915E | 1020E | 1165E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling Capacity | | USRt | 150 | 180 | 210 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 580 | 660 | 830 | 1000 | 1200 | 1350 | 1495 | 1660 | 1820 | 2000 | 2200 | 2600 | 2900 | 3307 |
| | | kW | 528 | 633 | 739 | 879 | 985 | 1125 | 1266 | 1407 | 1583 | 1759 | 2040 | 2321 | 2919 | 3517 | 4220 | 4748 | 5258 | 5838 | 6401 | 7034 | 7737 | 9144 | 10199 | 11631 |
| | | $10^4$kcal/h | 45 | 54 | 64 | 76 | 85 | 97 | 109 | 121 | 136 | 151 | 175 | 200 | 251 | 302 | 363 | 408 | 452 | 502 | 550 | 605 | 665 | 786 | 877 | 1000 |
| Chilled water | Inlet/outlet temp. | °C | 12→7 | | | | | | | | | | | | | | | | | | | | | | | |
| | Flowrate | $m^3/h$ | 90.7 | 108.9 | 127.0 | 151.2 | 169.3 | 193.5 | 217.7 | 241.9 | 272.2 | 302.4 | 350.8 | 399.2 | 502.0 | 604.8 | 725.8 | 816.5 | 904.2 | 1004.0 | 1100.7 | 1209.6 | 1330.6 | 1572.5 | 1753.9 | 2000.1 |
| | Pressure drop | $mH_2O$ | 5.4 | 5.8 | 5.3 | 5.6 | 3.8 | 3.7 | 4.1 | 4.2 | 3.7 | 3.8 | 6.8 | 5.5 | 7.1 | 7.3 | 7.1 | 7.2 | 10.7 | 9.8 | 9.6 | 12.2 | 15.4 | 10.4 | 13.4 | 13.8 |
| | | kPa | 53 | 56 | 52 | 55 | 37 | 37 | 40 | 42 | 36 | 37 | 67 | 54 | 70 | 72 | 69 | 71 | 105 | 97 | 94 | 119 | 151 | 102 | 132 | 135 |
| | Pass | — | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Pipe size | mm | 100 | 100 | 125 | 125 | 150 | 150 | 150 | 150 | 200 | 200 | 200 | 200 | 250 | 250 | 300 | 300 | 350 | 350 | 400 | 400 | 450 | 450 | 500 | 500 |
| Cooling water | Inlet/outlet temp. | °C | 32→38 | | | | | | | | | | | | | | | | | | | | | | | |
| | Flowrate | $m^3/h$ | 126 | 151 | 176 | 209 | 235 | 268 | 301 | 335 | 377 | 419 | 486 | 553 | 695 | 837 | 1005 | 1130 | 1252 | 1390 | 1524 | 1675 | 1842 | 2177 | 2428 | 2769 |
| | Pressure drop | $mH_2O$ | 5.7 | 5.2 | 5.6 | 6.2 | 4.9 | 5.1 | 5.5 | 5.8 | 4.9 | 5.2 | 8.9 | 9.4 | 8.2 | 9.1 | 8.9 | 8.2 | 8.7 | 10.6 | 12.0 | 11.4 | 14.7 | 10.9 | 12.7 | 18.0 |
| | | kPa | 56 | 51 | 55 | 60 | 48 | 50 | 54 | 57 | 48 | 51 | 87 | 92 | 81 | 90 | 87 | 80 | 85 | 104 | 118 | 112 | 144 | 106 | 124 | 176 |
| | Pass | — | 3+1 | 3+1 | 3+1 | 3+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 |
| | Pipe size | mm | 125 | 150 | 150 | 150 | 200 | 200 | 200 | 200 | 250 | 250 | 250 | 250 | 300 | 300 | 350 | 400 | 400 | 450 | 450 | 500 | 500 | 500 | 600 | 600 |
| Steam | Flowrate | kg/h | 539 | 647 | 754 | 898 | 1006 | 1149 | 1293 | 1436 | 1616 | 1795 | 2083 | 2370 | 2981 | 3591 | 4309 | 4848 | 5368 | 5961 | 6535 | 7182 | 7900 | 9336 | 10413 | 11875 |
| | Steam pipe size | mm | 50 | 65 | 65 | 65 | 80 | 80 | 80 | 100 | 100 | 100 | 100 | 100 | 125 | 125 | 150 | 150 | 150 | 150 | 150 | 200 | 200 | 250 | 250 | 250 |
| | Condensate W. pipe size | mm | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 32 | 32 | 32 | 40 | 40 | 50 | 50 | 50 | 50 | 65 | 65 | 80 | 80 | 80 | 80 | 80 |
| Power | Power type | V×Hz×ϕ | 380×50×3 | | | | | | | | | | | | | | | | | | | | | | | |
| | Vacuum pump | kW | 0.75 | | | | | | | | | | | | | | | | | | | | | | | |
| | Refrigerant pump | kW | 0.4 | 0.4 | 0.4 | 0.4 | 0.75 | 0.75 | 0.75 | 1.3 | 0.75 | 0.75 | 1.1 | 1.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 3.7 | 3.7 | 3.7 | 3.7 | 7.5 | 7.5 | 7.5 |
| | Solution pump 1 | kW | 0.4 | 0.4 | 0.4 | 0.4 | 1.1 | 0.75 | 0.75 | 0.75 | 1.1 | 1.1 | 1.1 | 1.5 | 2.2 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 5.5 | 5.5 | 5.5 | 15 | 15 | 15 |
| | Solution pump 2 | kW | 0.75 | 0.75 | 0.75 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.2 | 2.2 | 3 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 9 | 9 | 9 |
| | Solution spray pump 1 | kW | 0.2 | 0.2 | 0.2 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.75 | 0.75 | 1.1 | 1.5 | 1.5 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 7.5 | 7.5 | 7.5 |
| | Solution spray pump 2 | kW | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.2 | 2.2 | 1.5 | 2.2 | 2.2 | 3 | 3 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 5.5 | 5.5 | 5.5 | 15 | 15 | 15 |
| | Power type | kVA | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1.5 | 2.5 | 3.5 |
| | Control panel | kW | 4.0 | 4.0 | 4.0 | 5.0 | 6.0 | 6.4 | 6.4 | 6.2 | 6.7 | 6.7 | 7.9 | 9.3 | 11.8 | 14.5 | 15.6 | 15.6 | 16.3 | 17.8 | 21.4 | 21.4 | 21.4 | 54.8 | 54.8 | 54.8 |
| | Total power capacity | kVA | 9.3 | 9.3 | 9.3 | 11.2 | 13.2 | 13.5 | 13.5 | 13.5 | 14.1 | 14.1 | 15.9 | 18.3 | 23.1 | 27.6 | 30.1 | 30.1 | 31.2 | 33.9 | 38.7 | 38.7 | 38.7 | 108.5 | 109.5 | 110.5 |
| Dimension | Length | mm | 3750 | 3750 | 3750 | 3750 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 6500 | 6500 | 7400 | 7400 | 7460 | 7460 | 7520 | 8050 | 8050 | 8560 | 9360 | 8850 | 9780 | 11250 |
| | Width | mm | 2080 | 2080 | 2130 | 2250 | 2300 | 2450 | 2600 | 2600 | 2750 | 2850 | 2950 | 3050 | 3150 | 3550 | 3250 | 3520 | 3750 | 3750 | 3850 | 3850 | 3850 | 4250 | 4250 | 4250 |
| | Height | mm | 2600 | 2600 | 2600 | 2700 | 2700 | 2700 | 2700 | 2700 | 2800 | 2900 | 2900 | 3100 | 3300 | 3500 | 3890 | 3980 | 4110 | 4110 | 4110 | 4110 | 4110 | 4850 | 4850 | 4850 |
| Weight | Max. shipping weight | ton | 5.2 | 6.2 | 7.2 | 8.1 | 9.1 | 10.1 | 11.0 | 12.0 | 13.0 | 13.9 | 14.6 | 16.3 | 22.5 | 24.9 | 27.9 | 31.4 | 23.1 | 25.6 | 29.3 | 31.5 | 35.2 | 42.3 | 48.5 | 55.6 |
| | Total shipping weight | ton | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 41.1 | 44.2 | 47.6 | 51.3 | 56.3 | 74.5 | 83.5 | 95.7 |
| | Operation weight | ton | 7.6 | 8.7 | 10.2 | 11.6 | 13.1 | 14.5 | 15.9 | 17.4 | 18.8 | 20.3 | 21.3 | 23.7 | 31.3 | 35.7 | 39.8 | 45.1 | 49.5 | 55.6 | 59.2 | 63.5 | 71.2 | 92.4 | 103.5 | 124.2 |

Notes:
- The fouling factor of chilled water and cooling water is 0.086m2k/kw.
- The max. working pressure at the chilled water and cooling water side is 1.0MPaG, higher working pressure is optional.
- The chiller dimension can be adjusted according to the client' s requirement.
- Chiller cooling capacity adjust range is 20%~100%. Chilled water and cooling water flowrate adjust range is 60%~100%.
- Minimum chilled water outlet temp. is 5°C. Minimum cooling water inlet temp. is 15°C.

# PERFORMANCE PARAMETER

## Steam Pressure 0.6MPaG

| Model | TMAR-S | — | 055S | 065S | 075S | 090S | 100S | 115S | 125S | 140S | 160S | 175S | 205S | 230S | 290S | 350S | 420S | 475S | 530S | 585S | 640S | 705S | 775S | 915S | 1020S | 1165S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling Capacity | | USRt | 150 | 180 | 210 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 580 | 660 | 830 | 1000 | 1200 | 1350 | 1495 | 1660 | 1820 | 2000 | 2200 | 2600 | 2900 | 3307 |
| | | kW | 528 | 633 | 739 | 879 | 985 | 1125 | 1266 | 1407 | 1583 | 1759 | 2040 | 2321 | 2919 | 3517 | 4220 | 4748 | 5258 | 5838 | 6401 | 7034 | 7737 | 9144 | 10199 | 11631 |
| | | $10^4$kcal/h | 45 | 54 | 64 | 76 | 85 | 97 | 109 | 121 | 136 | 151 | 175 | 200 | 251 | 302 | 363 | 408 | 452 | 502 | 550 | 605 | 665 | 786 | 877 | 1000 |
| Chilled water | Inlet/outlet temp. | °C | 12→7 | | | | | | | | | | | | | | | | | | | | | | | |
| | Flowrate | $m^3/h$ | 90.7 | 108.9 | 127.0 | 151.2 | 169.3 | 193.5 | 217.7 | 241.9 | 272.2 | 302.4 | 350.8 | 399.2 | 502.0 | 604.8 | 725.8 | 816.5 | 904.2 | 1004.0 | 1100.7 | 1209.6 | 1330.6 | 1572.5 | 1753.9 | 2000.1 |
| | Pressure drop | $mH_2O$ | 5.2 | 5.5 | 5.1 | 5.4 | 3.8 | 3.7 | 4.1 | 4.2 | 3.7 | 3.8 | 6.8 | 6.9 | 7.1 | 7.3 | 7.1 | 7.2 | 10.7 | 9.8 | 9.6 | 12.2 | 15.4 | 10.4 | 13.4 | 13.8 |
| | | kPa | 51 | 54 | 50 | 53 | 37 | 37 | 40 | 42 | 36 | 37 | 67 | 68 | 70 | 72 | 69 | 71 | 105 | 97 | 94 | 119 | 151 | 102 | 132 | 135 |
| | Pass | — | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Pipe size | mm | 100 | 100 | 125 | 125 | 150 | 150 | 150 | 150 | 200 | 200 | 200 | 200 | 250 | 250 | 300 | 300 | 350 | 350 | 400 | 400 | 450 | 450 | 500 | 500 |
| Cooling water | Inlet/outlet temp. | °C | 32→37.5 | | | | | | | | | | | | | | | | | | | | | | | |
| | Flowrate | $m^3/h$ | 139 | 167 | 195 | 231 | 259 | 296 | 333 | 370 | 417 | 463 | 537 | 611 | 769 | 926 | 1111 | 1250 | 1385 | 1537 | 1686 | 1852 | 2037 | 2408 | 2686 | 3063 |
| | Pressure drop | $mH_2O$ | 7.4 | 6.7 | 7.2 | 8.0 | 5.8 | 6.0 | 6.5 | 6.8 | 5.8 | 6.1 | 10.4 | 11.0 | 9.7 | 10.8 | 10.5 | 9.7 | 10.2 | 12.4 | 14.2 | 13.4 | 17.3 | 12.8 | 14.9 | 20.1 |
| | | kPa | 73 | 66 | 71 | 78 | 57 | 59 | 64 | 67 | 57 | 60 | 102 | 108 | 95 | 106 | 102 | 95 | 100 | 122 | 139 | 132 | 170 | 125 | 146 | 197 |
| | Pass | — | 3+1 | 3+1 | 3+1 | 3+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 |
| | Pipe size | mm | 125 | 150 | 150 | 150 | 200 | 200 | 200 | 200 | 250 | 250 | 250 | 250 | 300 | 300 | 350 | 400 | 400 | 450 | 450 | 500 | 500 | 500 | 600 | 600 |
| Steam | Flowrate | kg/h | 544 | 653 | 762 | 907 | 1016 | 1161 | 1307 | 1451 | 1633 | 1814 | 2105 | 2395 | 3012 | 3628 | 4354 | 4898 | 5425 | 6024 | 6604 | 7257 | 7982 | 9434 | 10522 | 11999 |
| | Steam pipe size | mm | 50 | 65 | 65 | 65 | 80 | 80 | 80 | 100 | 100 | 100 | 100 | 100 | 125 | 125 | 150 | 150 | 150 | 150 | 150 | 200 | 200 | 250 | 250 | 250 |
| | Condensate W. pipe size | mm | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 32 | 32 | 32 | 40 | 40 | 50 | 50 | 50 | 50 | 65 | 65 | 80 | 80 | 80 | 80 | 80 |
| Power | Power type | V×Hz×ϕ | 380×50×3 | | | | | | | | | | | | | | | | | | | | | | | |
| | Vacuum pump | kW | 0.75 | | | | | | | | | | | | | | | | | | | | | | | |
| | Refrigerant pump | kW | 0.4 | 0.4 | 0.4 | 0.4 | 0.75 | 0.75 | 0.75 | 1.3 | 0.75 | 0.75 | 1.1 | 1.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 3.7 | 3.7 | 3.7 | 3.7 | 7.5 | 7.5 | 7.5 |
| | Solution pump 1 | kW | 0.4 | 0.4 | 0.4 | 0.4 | 1.1 | 0.75 | 0.75 | 0.75 | 1.1 | 1.1 | 1.1 | 1.5 | 2.2 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 5.5 | 5.5 | 5.5 | 15 | 15 | 15 |
| | Solution pump 2 | kW | 0.75 | 0.75 | 0.75 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.2 | 2.2 | 3 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 9 | 9 | 9 |
| | Solution spray pump 1 | kW | 0.2 | 0.2 | 0.2 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.75 | 0.75 | 1.1 | 1.5 | 1.5 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 7.5 | 7.5 | 7.5 |
| | Solution spray pump 2 | kW | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.2 | 2.2 | 1.5 | 2.2 | 2.2 | 3 | 3 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 5.5 | 5.5 | 5.5 | 15 | 15 | 15 |
| | Control panel | kVA | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1.5 | 2.5 | 3.5 |
| | Total power | kW | 4.0 | 4.0 | 4.0 | 5.0 | 6.0 | 6.4 | 6.4 | 6.2 | 6.7 | 6.7 | 7.9 | 9.3 | 11.8 | 14.5 | 15.6 | 15.6 | 16.3 | 17.8 | 21.4 | 21.4 | 21.4 | 54.8 | 54.8 | 54.8 |
| | Total power capacity | kVA | 9.3 | 9.3 | 9.3 | 11.2 | 13.2 | 13.5 | 13.5 | 13.5 | 14.1 | 14.1 | 15.9 | 18.3 | 23.1 | 27.6 | 30.1 | 30.1 | 31.2 | 33.9 | 38.7 | 38.7 | 38.7 | 108.5 | 109.5 | 110.5 |
| Dimension | Length | mm | 3750 | 3750 | 3750 | 3750 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 6500 | 6500 | 7400 | 7400 | 7460 | 7460 | 7520 | 8050 | 8050 | 8560 | 9360 | 8850 | 9780 | 11250 |
| | Width | mm | 2080 | 2080 | 2130 | 2250 | 2300 | 2450 | 2600 | 2600 | 2750 | 2850 | 2950 | 3050 | 3150 | 3550 | 3250 | 3520 | 3750 | 3750 | 3850 | 3850 | 3850 | 4250 | 4250 | 4250 |
| | Height | mm | 2600 | 2600 | 2600 | 2700 | 2700 | 2700 | 2700 | 2700 | 2800 | 2900 | 2900 | 3100 | 3300 | 3500 | 3890 | 3980 | 4110 | 4110 | 4110 | 4110 | 4110 | 4850 | 4850 | 4850 |
| Weight | Max. shipping weight | ton | 5.4 | 6.4 | 7.4 | 8.3 | 9.4 | 10.4 | 11.3 | 12.3 | 13.3 | 14.2 | 14.9 | 16.9 | 22.9 | 25.2 | 28.3 | 31.8 | 23.1 | 25.6 | 29.3 | 31.5 | 35.2 | 42.3 | 48.5 | 55.6 |
| | Total shipping weight | ton | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 41.5 | 44.6 | 48.0 | 50.5 | 56.3 | 73.8 | 82.8 | 95.7 |
| | Operation weight | ton | 7.8 | 8.9 | 10.4 | 11.8 | 13.4 | 14.8 | 16.2 | 17.7 | 19.1 | 20.6 | 21.6 | 24.0 | 31.7 | 36.0 | 40.2 | 45.5 | 49.9 | 56.2 | 59.6 | 62.7 | 70.6 | 91.7 | 102.8 | 123.6 |

Notes:
- The fouling factor of chilled water and cooling water is 0.086m2k/kw.
- The max. working pressure at the chilled water and cooling water side is 1.0MPaG, higher working pressure is optional.
- The chiller dimension can be adjusted according to the client' s requirement.
- Chiller cooling capacity adjust range is 20%~100%. Chilled water and cooling water flowrate adjust range is 60%~100%.
- Minimum chilled water outlet temp. is 5°C. Minimum cooling water inlet temp. is 15°C.

# PERFORMANCE PARAMETER

## Steam Pressure 0.4MPaG

| Model | TMAR-S | — | 055F | 065F | 075F | 090F | 100F | 115F | 125F | 140F | 160F | 175F | 205F | 230F | 290F | 350F | 420F | 475F | 530F | 585F | 640F | 705F | 775F | 915F | 1020F | 1165F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling Capacity | | USRt | 120 | 144 | 168 | 200 | 224 | 256 | 288 | 320 | 360 | 400 | 464 | 528 | 664 | 800 | 960 | 1080 | 1196 | 1328 | 1456 | 1600 | 1760 | 2080 | 2320 | 2646 |
| | | kW | 422 | 506 | 591 | 703 | 788 | 900 | 1013 | 1125 | 1266 | 1407 | 1632 | 1857 | 2335 | 2814 | 3376 | 3798 | 4206 | 4671 | 5121 | 5627 | 6190 | 7315 | 8159 | 9305 |
| | | $10^4$kcal/h | 36 | 44 | 51 | 60 | 68 | 77 | 87 | 97 | 109 | 121 | 140 | 160 | 201 | 242 | 290 | 327 | 362 | 402 | 440 | 484 | 532 | 629 | 702 | 800 |
| Chilled water | Inlet/outlet temp. | ℃ | 12→7 | | | | | | | | | | | | | | | | | | | | | | | |
| | Flowrate | $m^3/h$ | 72.6 | 87.1 | 101.6 | 121.0 | 135.5 | 154.8 | 174.2 | 193.5 | 217.7 | 241.9 | 280.6 | 319.3 | 401.6 | 483.8 | 580.6 | 653.2 | 723.3 | 803.2 | 880.6 | 967.7 | 1064.4 | 1258.0 | 1403.1 | 1600.1 |
| | Pressure drop | $mH_2O$ | 3.4 | 3.6 | 3.3 | 3.5 | 2.4 | 2.4 | 2.6 | 2.7 | 2.3 | 2.4 | 4.3 | 4.4 | 4.5 | 4.7 | 4.5 | 4.6 | 6.8 | 6.2 | 6.1 | 7.7 | 9.7 | 6.5 | 8.5 | 8.8 |
| | | kPa | 33 | 35 | 33 | 35 | 23 | 23 | 25 | 26 | 23 | 23 | 42 | 43 | 45 | 46 | 44 | 45 | 66 | 61 | 60 | 75 | 96 | 64 | 83 | 86 |
| | Pass | — | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Pipe size | mm | 125 | 150 | 150 | 150 | 200 | 200 | 200 | 200 | 250 | 250 | 250 | 250 | 300 | 300 | 350 | 400 | 400 | 450 | 450 | 500 | 500 | 500 | 600 | 600 |
| Cooling water | Inlet/outlet temp. | ℃ | 32→37 | | | | | | | | | | | | | | | | | | | | | | | |
| | Flowrate | $m^3/h$ | 124 | 149 | 174 | 207 | 232 | 264 | 298 | 331 | 372 | 413 | 480 | 546 | 686 | 827 | 992 | 1116 | 1236 | 1373 | 1505 | 1654 | 1819 | 2150 | 2398 | 2735 |
| | Pressure drop | $mH_2O$ | 5.6 | 5.1 | 5.4 | 6.0 | 4.8 | 5.0 | 5.4 | 5.7 | 4.8 | 5.0 | 8.7 | 9.1 | 8.1 | 8.9 | 8.6 | 8.0 | 8.5 | 10.3 | 11.8 | 11.1 | 14.4 | 10.6 | 12.4 | 17.5 |
| | | kPa | 55 | 50 | 53 | 59 | 47 | 49 | 53 | 56 | 47 | 49 | 85 | 90 | 79 | 87 | 85 | 79 | 83 | 101 | 115 | 109 | 141 | 104 | 121 | 172 |
| | Pass | — | 3+1 | 3+1 | 3+1 | 3+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 |
| | Pipe size | mm | 125 | 150 | 150 | 150 | 200 | 200 | 200 | 200 | 250 | 250 | 250 | 250 | 300 | 300 | 350 | 400 | 400 | 450 | 450 | 500 | 500 | 500 | 600 | 600 |
| Steam | Flowrate | kg/h | 438 | 526 | 614 | 730 | 818 | 935 | 1052 | 1169 | 1315 | 1461 | 1694 | 1929 | 2425 | 2922 | 3506 | 3944 | 4368 | 4850 | 5318 | 5843 | 6428 | 7597 | 8473 | 9662 |
| | Steam pipe size | mm | 50 | 65 | 65 | 65 | 80 | 80 | 80 | 100 | 100 | 100 | 100 | 100 | 125 | 125 | 150 | 150 | 150 | 150 | 150 | 200 | 200 | 250 | 250 | 250 |
| | Condensate W. pipe size | mm | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 32 | 32 | 32 | 40 | 40 | 50 | 50 | 50 | 50 | 65 | 65 | 80 | 80 | 80 | 80 | 80 |
| Power | Power type | V×Hz×ϕ | 380×50×3 | | | | | | | | | | | | | | | | | | | | | | | |
| | Vacuum pump | kW | 0.75 | | | | | | | | | | | | | | | | | | | | | | | |
| | Refrigerant pump | kW | 0.4 | 0.4 | 0.4 | 0.4 | 0.75 | 0.75 | 0.75 | 1.3 | 0.75 | 0.75 | 1.1 | 1.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 3.7 | 3.7 | 3.7 | 3.7 | 7.5 | 7.5 | 7.5 |
| | Solution pump 1 | kW | 0.4 | 0.4 | 0.4 | 0.4 | 1.1 | 0.75 | 0.75 | 0.75 | 1.1 | 1.1 | 1.1 | 1.5 | 2.2 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 5.5 | 5.5 | 5.5 | 15 | 15 | 15 |
| | Solution pump 2 | kW | 0.75 | 0.75 | 0.75 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.2 | 2.2 | 3 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 9 | 9 | 9 |
| | Solution spray pump 1 | kW | 0.2 | 0.2 | 0.2 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.75 | 0.75 | 1.1 | 1.5 | 1.5 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 7.5 | 7.5 | 7.5 |
| | Solution spray pump 2 | kW | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2.2 | 2.2 | 1.5 | 2.2 | 2.2 | 3 | 3 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 5.5 | 5.5 | 5.5 | 15 | 15 | 15 |
| | Control panel | kVA | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1.5 | 2.5 | 3.5 |
| | Total power | kW | 4.0 | 4.0 | 4.0 | 5.0 | 6.0 | 6.4 | 6.4 | 6.2 | 6.7 | 6.7 | 7.9 | 9.3 | 11.8 | 14.5 | 15.6 | 15.6 | 16.3 | 17.8 | 21.4 | 21.4 | 21.4 | 54.8 | 54.8 | 54.8 |
| | Total power capacity | kVA | 9.3 | 9.3 | 9.3 | 11.2 | 13.2 | 13.5 | 13.5 | 13.5 | 14.1 | 14.1 | 15.9 | 18.3 | 23.1 | 27.6 | 30.1 | 30.1 | 31.2 | 33.9 | 38.7 | 38.7 | 38.7 | 108.5 | 109.5 | 110.5 |
| Dimension | Length | mm | 3750 | 3750 | 3750 | 3750 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 6500 | 6500 | 7400 | 7400 | 7460 | 7460 | 7520 | 8050 | 8050 | 8560 | 9360 | 8850 | 9780 | 11250 |
| | Width | mm | 2080 | 2080 | 2130 | 2250 | 2300 | 2450 | 2600 | 2600 | 2750 | 2850 | 2950 | 3050 | 3150 | 3550 | 3250 | 3520 | 3750 | 3750 | 3850 | 3850 | 3850 | 4250 | 4250 | 4250 |
| | Height | mm | 2600 | 2600 | 2600 | 2700 | 2700 | 2700 | 2700 | 2700 | 2800 | 2900 | 2900 | 3100 | 3300 | 3500 | 3890 | 3980 | 4110 | 4110 | 4110 | 4110 | 4110 | 4850 | 4850 | 4850 |
| Weight | Max. shipping weight | ton | 5.4 | 6.4 | 7.4 | 8.3 | 9.4 | 10.4 | 11.3 | 12.3 | 13.3 | 14.2 | 14.9 | 16.9 | 22.9 | 25.2 | 28.3 | 31.8 | 23.1 | 25.6 | 29.3 | 31.5 | 35.2 | 42.3 | 48.5 | 55.6 |
| | Total shipping weight | ton | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 41.5 | 44.6 | 48 | 50.5 | 56.3 | 73.8 | 82.8 | 95.7 |
| | Operation weight | ton | 7.8 | 8.9 | 10.4 | 11.8 | 13.4 | 14.8 | 16.2 | 17.7 | 19.1 | 20.6 | 21.6 | 24 | 31.7 | 36 | 40.2 | 45.5 | 49.9 | 56.2 | 59.6 | 62.7 | 70.6 | 91.7 | 102.8 | 123.6 |

Notes:
- The fouling factor of chilled water and cooling water is 0.086m2k/kw.
- The max. working pressure at the chilled water and cooling water side is 1.0MPaG, higher working pressure is optional.
- The chiller dimension can be adjusted according to the client' s requirement.
- Chiller cooling capacity adjust range is 20%~100%. Chilled water and cooling water flowrate adjust range is 60%~100%.
- Minimum chilled water outlet temp. is 5°C. Minimum cooling water inlet temp. is 15°C.

# PERFORMANCE PARAMETER

Steam Pressure 0.1MPaG

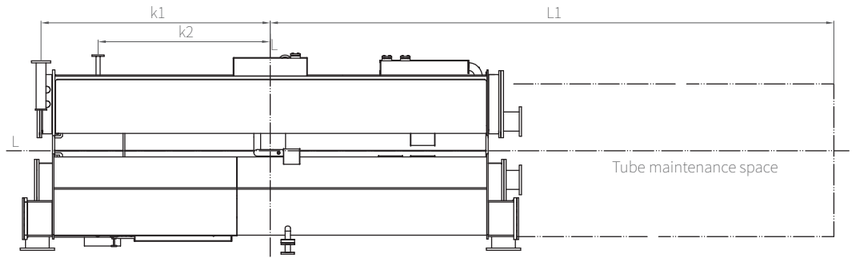
| Model | TMAR-S | — | 055N | 065N | 075N | 090N | 100N | 115N | 125N | 140N | 160N | 175N | 205N | 230N | 290N | 350N | 420N | 475N | 530N | 585N | 640N | 705N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling Capacity | | USRt | 197 | 246 | 280 | 329 | 364 | 412 | 478 | 528 | 594 | 660 | 754 | 859 | 1090 | 1322 | 1586 | 1785 | 1983 | 2181 | 2397 | 2644 |
| | | kW | 692 | 867 | 983 | 1158 | 1280 | 1448 | 1681 | 1856 | 2088 | 2320 | 2652 | 3020 | 3833 | 4649 | 5579 | 6277 | 6974 | 7671 | 8430 | 9299 |
| | | $10^4$kcal/h | 60 | 75 | 85 | 100 | 110 | 125 | 145 | 160 | 180 | 200 | 228 | 260 | 330 | 400 | 480 | 540 | 600 | 660 | 725 | 800 |
| Chilled water | Inlet/outlet temp. | ℃ | 12→7 | | | | | | | | | | | | | | | | | | | |
| | Flowrate | $m^3/h$ | 119 | 149 | 169 | 199 | 220 | 249 | 289 | 319 | 359 | 399 | 456 | 519 | 659 | 800 | 959 | 1079 | 1199 | 1319 | 1450 | 1599 |
| | Pressure drop | $mH_2O$ | 7.1 | 7.9 | 7.3 | 7.3 | 5.0 | 4.7 | 5.4 | 5.1 | 5.2 | 5.2 | 9.0 | 8.9 | 10.9 | 11.1 | 11.3 | 11.1 | 11.3 | 12.6 | 11.8 | 15.0 |
| | | kPa | 70 | 78 | 72 | 72 | 49 | 46 | 53 | 50 | 51 | 51 | 88 | 87 | 106 | 108 | 111 | 109 | 111 | 123 | 116 | 147 |
| | Pass | — | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Pipe size | mm | 150 | 150 | 200 | 200 | 200 | 200 | 200 | 250 | 250 | 250 | 300 | 300 | 350 | 350 | 350 | 400 | 400 | 400 | 450 | 450 |
| Cooling water | Inlet/outlet temp. | ℃ | 32→40 | | | | | | | | | | | | | | | | | | | |
| | Flowrate | $m^3/h$ | 170 | 213 | 242 | 285 | 315 | 356 | 413 | 456 | 513 | 570 | 652 | 742 | 942 | 1143 | 1371 | 1543 | 1714 | 1886 | 2072 | 2286 |
| | Pressure drop | $mH_2O$ | 16.7 | 7.7 | 6.7 | 6.8 | 6.8 | 5.8 | 6.7 | 6.7 | 6.8 | 7.1 | 9.7 | 10.1 | 10.3 | 10.3 | 10.0 | 10.3 | 11.3 | 14.7 | 13.5 | 16.9 |
| | | kPa | 66 | 76 | 66 | 67 | 67 | 57 | 66 | 66 | 67 | 70 | 95 | 99 | 101 | 101 | 98 | 101 | 111 | 144 | 132 | 165 |
| | Pass | — | 3+1 | 3+1 | 3+1 | 3+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 2+1 | 101 | 2+1 | 2+1 |
| | Pipe size | mm | 200 | 200 | 250 | 250 | 250 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 350 | 400 | 450 | 450 | 450 | 450 | 500 | 500 |
| Steam | Flowrate | kg/h | 1384 | 1733 | 1965 | 2315 | 2559 | 2895 | 3361 | 3709 | 4174 | 4638 | 5301 | 6036 | 7661 | 9294 | 11152 | 12546 | 13940 | 15334 | 16850 | 18587 |
| | Steam pipe size | mm | 100 | 125 | 125 | 150 | 150 | 150 | 200 | 200 | 200 | 200 | 200 | 250 | 250 | 300 | 300 | 350 | 350 | 400 | 400 | 400 |
| | Condensate W. pipe size | mm | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Power | Power type | V×Hz×ϕ | 380×50×3 | | | | | | | | | | | | | | | | | | | |
| | Total power | kW | 7.5 | 7.5 | 7.5 | 8.7 | 9.5 | 9.5 | 9.9 | 9.9 | 12.9 | 12.9 | 14 | 14 | 15.5 | 18.5 | 23.3 | 23.3 | 40.3 | 42.5 | 42.5 | 50 |
| | Total power capacity | kW | 14.4 | 14.4 | 14.4 | 15.8 | 17.1 | 17.1 | 17.9 | 18.5 | 24.9 | 24.9 | 29.3 | 31.2 | 34.1 | 41.4 | 50.3 | 50.3 | 77.7 | 79.2 | 79.2 | 79.2 |
| Dimension | Length | mm | 4070 | 4070 | 4200 | 4200 | 5250 | 5300 | 5450 | 5400 | 5400 | 5450 | 6650 | 6650 | 7705 | 7800 | 8200 | 8200 | 8200 | 9200 | 9200 | 9700 |
| | Width | mm | 2040 | 2150 | 2200 | 2200 | 2300 | 2420 | 2440 | 2500 | 2500 | 2550 | 2700 | 2800 | 3070 | 3100 | 3150 | 3300 | 3850 | 3850 | 4350 | 4350 |
| | Height | mm | 2550 | 2580 | 2630 | 2730 | 2650 | 2730 | 2770 | 2800 | 2950 | 3000 | 2950 | 2980 | 3420 | 3650 | 3820 | 4200 | 4410 | 4410 | 4680 | 4680 |
| Weight | Max. shipping weight | ton | 7.0 | 7.7 | 8.4 | 9.1 | 10.0 | 10.9 | 11.8 | 12.5 | 13.1 | 13.9 | 15.2 | 16.4 | 20.5 | 23.6 | 20.7 | 23.0 | 24.2 | 26.6 | 31.1 | 33.1 |
| | Total shipping weight | ton | 8.2 | 9.0 | 9.8 | 10.6 | 11.9 | 12.9 | 14.0 | 14.7 | 15.6 | 16.5 | 18.6 | 19.9 | 24.9 | 28.5 | 32.5 | 36.1 | 38.3 | 42.2 | 48.4 | 51.4 |
| | Operation weight | ton | 9.0 | 9.8 | 10.9 | 11.9 | 13.2 | 14.5 | 15.7 | 16.6 | 17.6 | 18.7 | 21.2 | 22.9 | 29.4 | 33.8 | 39.1 | 43.5 | 46.4 | 51.1 | 58.9 | 62.4 |

Notes:
- The fouling factor of chilled water and cooling water is 0.086m2k/kw.
- The max. working pressure at the chilled water and cooling water side is 1.0MPaG, higher working pressure is optional.
- The chiller dimension can be adjusted according to the client' s requirement.
- Chiller cooling capacity adjust range is 20%~100%. Chilled water and cooling water flowrate adjust range is 60%~100%.
- Minimum chilled water outlet temp. is 5℃. Minimum cooling water inlet temp. is 15℃.

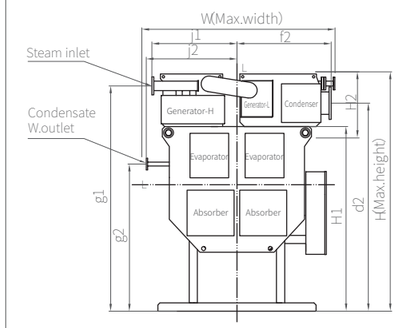
(TMAR-S055~1165)

# OUTLINE DRAWING

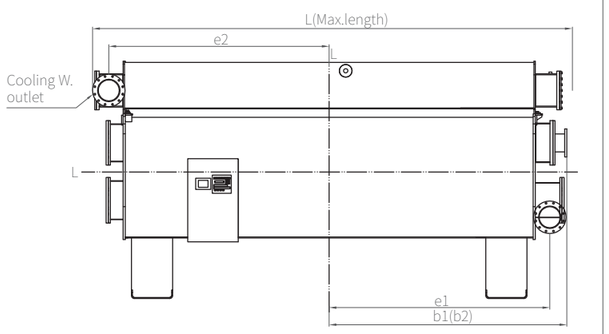
Top view



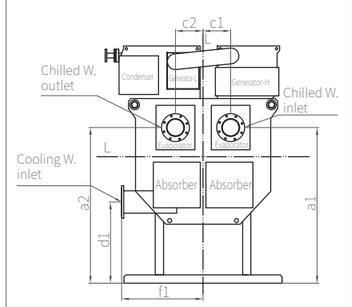

Left view




Front view

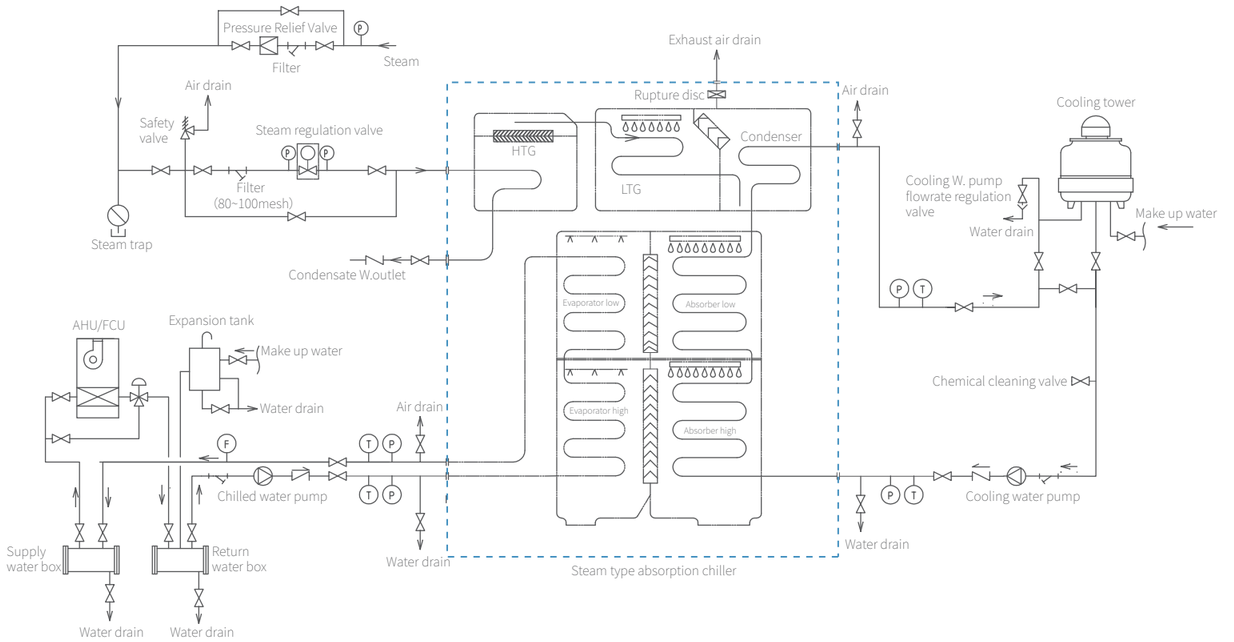



Right view




| | Chilled W. pipe | Chilled W. pass | Cooling W. pipe | Cooling W. pass | a1 | b1 | c1 | a2 | b2 | c2 | d1 | f1 | e1 | d2 | f2 | e2 | g1 | j1 | k1 | g2 | j2 | k2 | L | W | H | L1 | H1 | H2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TMAR-S055 | DN100 | 3 | DN125 | 3+1 | 1145 | 1825 | 260 | 1825 | 1825 | 260 | 770 | 500 | 1650 | 2300 | 500 | 1650 | 2250 | 450 | 1600 | 1450 | 450 | 1000 | 3750 | 1950 | 2400 | 4600 | 1890 | —— |
| TMAR-S065 | DN100 | 3 | DN150 | 3+1 | 1145 | 1825 | 275 | 1830 | 1825 | 275 | 745 | 530 | 1750 | 2300 | 530 | 1750 | 2250 | 460 | 1620 | 1450 | 460 | 1000 | 3750 | 2050 | 2530 | 4600 | 1975 | —— |
| TMAR-S075 | DN125 | 3 | DN150 | 3+1 | 1130 | 1825 | 300 | 1910 | 1825 | 300 | 745 | 580 | 1750 | 2400 | 580 | 1750 | 2320 | 460 | 1700 | 1450 | 460 | 1000 | 3750 | 2250 | 2650 | 4600 | 2080 | —— |
| TMAR-S090 | DN125 | 3 | DN150 | 3+1 | 1150 | 1825 | 320 | 1930 | 1825 | 320 | 745 | 640 | 1750 | 2430 | 640 | 1750 | 2350 | 480 | 1730 | 1450 | 480 | 1000 | 3750 | 2200 | 2760 | 4600 | 2160 | —— |
| TMAR-S100 | DN150 | 2 | DN200 | 2+1 | 1130 | 2480 | 300 | 1910 | 2480 | 300 | 770 | 620 | 2200 | 2400 | 620 | 2200 | 2320 | 510 | 2100 | 1450 | 510 | 1000 | 5000 | 2250 | 2650 | 6100 | 2080 | —— |
| TMAR-S115 | DN150 | 2 | DN200 | 2+1 | 1150 | 2480 | 320 | 1930 | 2480 | 320 | 760 | 640 | 2200 | 2420 | 640 | 2200 | 2350 | 520 | 2100 | 1450 | 520 | 1000 | 5000 | 2300 | 2760 | 6100 | 2160 | —— |
| TMAR-S125 | DN150 | 2 | DN200 | 2+1 | 1140 | 2480 | 360 | 1890 | 2480 | 360 | 760 | 665 | 2200 | 2420 | 665 | 2200 | 2350 | 530 | 2100 | 1450 | 530 | 1200 | 5000 | 2400 | 2830 | 6100 | 2195 | —— |
| TMAR-S140 | DN150 | 2 | DN200 | 2+1 | 1235 | 2480 | 380 | 2015 | 2480 | 380 | 870 | 700 | 2200 | 2510 | 700 | 2200 | 2460 | 530 | 2100 | 1650 | 530 | 1200 | 5000 | 2550 | 2900 | 6100 | 2270 | —— |
| TMAR-S160 | DN200 | 2 | DN250 | 2+1 | 1250 | 2480 | 395 | 2100 | 2480 | 395 | 820 | 775 | 2320 | 2630 | 775 | 2320 | 2570 | 560 | 2230 | 1650 | 560 | 1200 | 5000 | 2560 | 3070 | 6100 | 2390 | —— |
| TMAR-S175 | DN200 | 2 | DN250 | 2+1 | 1190 | 2480 | 405 | 2100 | 2480 | 405 | 750 | 775 | 2320 | 2630 | 775 | 2320 | 2570 | 580 | 2230 | 1650 | 580 | 1200 | 5000 | 2750 | 3150 | 6100 | 2400 | —— |
| TMAR-S205 | DN200 | 2 | DN250 | 2+1 | 1260 | 3150 | 405 | 1940 | 3150 | 405 | 730 | 775 | 2750 | 2565 | 775 | 2750 | 2480 | 595 | 2610 | 1650 | 595 | 1500 | 6500 | 2750 | 3040 | 7600 | 2350 | —— |
| TMAR-S230 | DN200 | 2 | DN250 | 2+1 | 1360 | 3150 | 430 | 2160 | 3150 | 430 | 780 | 785 | 2750 | 2800 | 785 | 2750 | 2710 | 620 | 2610 | 1650 | 620 | 1500 | 6500 | 2850 | 3150 | 7600 | 2440 | —— |
| TMAR-S290 | DN250 | 2 | DN300 | 2+1 | 1400 | 3600 | 490 | 2245 | 3600 | 490 | 740 | 850 | 3250 | 2950 | 850 | 3250 | 2830 | 640 | 3150 | 1650 | 640 | 1500 | 7400 | 3200 | 3370 | 9250 | 2625 | —— |
| TMAR-S350 | DN250 | 2 | DN300 | 2+1 | 1470 | 3600 | 515 | 2385 | 3600 | 515 | 750 | 900 | 3250 | 3140 | 900 | 3250 | 2920 | 655 | 3150 | 1650 | 655 | 1500 | 7400 | 3250 | 3560 | 9250 | 2415 | 1500 |
| TMAR-S420 | DN300 | 2 | DN350 | 2+1 | 2500 | 3620 | 560 | 2500 | 3620 | 560 | 1130 | 1400 | 3220 | 3350 | 1650 | 3220 | 3680 | 1400 | 3120 | 2500 | 1450 | 2200 | 7460 | 3250 | 3890 | 9250 | 3000 | 1500 |
| TMAR-S475 | DN300 | 2 | DN400 | 2+1 | 2540 | 3620 | 600 | 2540 | 3620 | 600 | 1140 | 1450 | 3220 | 3420 | 1830 | 3220 | 3680 | 1500 | 3120 | 2550 | 1540 | 2200 | 7460 | 3520 | 3980 | 9250 | 3100 | 1500 |
| TMAR-S530 | DN350 | 2 | DN400 | 2+1 | 2620 | 3710 | 650 | 2620 | 3710 | 650 | 1200 | 1500 | 3730 | 3510 | 1830 | 3730 | 3780 | 1620 | 3650 | 2550 | 1670 | 2700 | 7520 | 3750 | 4110 | 9250 | 3150 | 1500 |
| TMAR-S585 | DN350 | 2 | DN450 | 2+1 | 2620 | 3980 | 650 | 2620 | 3980 | 650 | 1200 | 1500 | 3730 | 3510 | 1850 | 3730 | 3780 | 1620 | 3650 | 2600 | 1670 | 2700 | 8050 | 3750 | 4110 | 10700 | 3150 | 1500 |
| TMAR-S640 | DN400 | 2 | DN450 | 2+1 | 2660 | 3980 | 680 | 2660 | 3980 | 680 | 1240 | 1550 | 3760 | 3590 | 1920 | 3760 | 3820 | 1720 | 3680 | 2600 | 1790 | 2700 | 8050 | 3850 | 4110 | 10700 | 3200 | 1500 |
| TMAR-S705 | DN400 | 2 | DN500 | 2+1 | 2660 | 4210 | 680 | 2660 | 4210 | 680 | 1240 | 1550 | 4050 | 3590 | 1920 | 4050 | 3820 | 1720 | 3950 | 2650 | 1790 | 2950 | 8560 | 3850 | 4110 | 11350 | 3200 | 1500 |
| TMAR-S775 | DN450 | 2 | DN500 | 2+1 | 2660 | 4600 | 680 | 2660 | 4600 | 680 | 1240 | 1550 | 4450 | 3590 | 1920 | 4450 | 3820 | 1720 | 4350 | 2650 | 1790 | 3350 | 9360 | 3850 | 4110 | 12500 | 3200 | 1500 |
| TMAR-S915 | DN450 | 2 | DN500 | 2+1 | 2750 | 4250 | 720 | 2750 | 4250 | 720 | 1200 | 1900 | 5050 | 4150 | 2050 | 5050 | 4390 | 1900 | 3950 | 2750 | 1950 | 2950 | 8850 | 4250 | 4850 | 11350 | 3450 | 1700 |
| TMAR-S1020 | DN500 | 2 | DN600 | 2+1 | 2750 | 4600 | 720 | 2750 | 4600 | 720 | 1200 | 1900 | 5250 | 4150 | 2050 | 5250 | 4390 | 1900 | 4350 | 2750 | 1950 | 3350 | 9780 | 4250 | 4850 | 12500 | 3450 | 1700 |
| TMAR-S1165 | DN500 | 2 | DN600 | 2+1 | 2750 | 5250 | 720 | 2750 | 5250 | 720 | 1200 | 1900 | 5250 | 4150 | 2050 | 5250 | 4390 | 1900 | 4900 | 2750 | 1950 | 3950 | 11250 | 4250 | 4850 | 14350 | 3450 | 1700 |

# PIPING FLOW




Sample: Ⓟ Pressure meter Ⓣ Thermometer Ⓕ Flow meter Filter Check valve

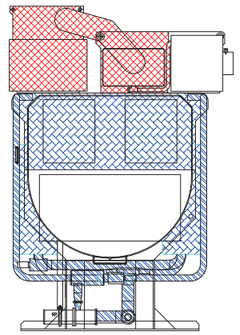
Note:

① the standard supply scope is within the range of

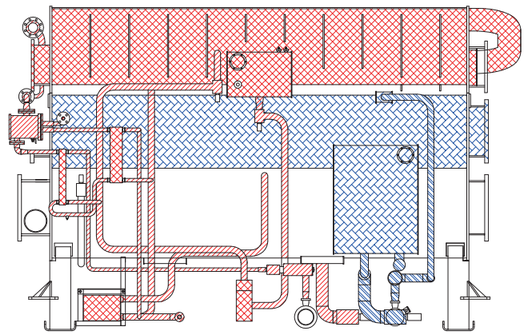
② the piping flow is just for reference.

③ pls installed 10 mesh filter at the chilled water and cooling water pipe, 2 meters far from the inlet.
Please install 80~100 mesh filter at the steam pipe, 2 meters far from the steam inlet of the chiller.

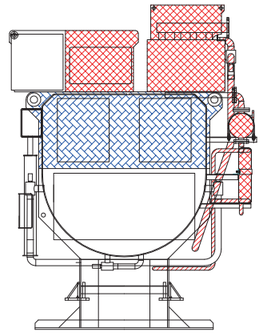
# THERMAL AND COLD INSULATION



right view



front view



left view

Heat insulation area Cold insulation area

- The chiller thermal and cold insulation should be done after the chiller installation, piping and completion of vacuum test at jobsite.
- The chiller thermal and cold insulation should be done according to the HYTM " insulation indication drawing", which is shipped together with the chiller.
- The outer package, cover and flange shall be all made into the construction for easy loading and unloading.
- Do not hide various meters, instruments, wire harnesses in the thermal and cold insulation materials, in order for the easy determination of actions and adjustment.In addition, please take care not to break or damage wire harnesses and fine ducts.
- The thermal and cold insulation materials shall be non-combustible.
- When the thermal and cold insulation materials are fixed by supporting pedestal, please make sure to use the binder, and absolutely avoid the welding process (it may cause damage to the vacuum of unit and components in the flange).

# INSTALLATION GUILDANCE

## 01 Steam piping

- The water quality of steam shall conform to the GB1576-2008 Water Quality for Industrial Boilers and GB12145-2008 Quality Criterion of Water and Steam for Generating Unit and Steam Power Equipment. Negotiation with our company shall be made to address the steam containing corrosive medium.
- The steam piping shall be provided with a safety valve in front of the steam control valve. The opening pressure of the valve must be 1.1 time of the sued pressure and the drain pipe must be connected to the outside.
- The relief valve shall be set where the steam supply pressure exceeds the rating; and the temperature reducing device shall be installed when the superheat degree of steam exceeds 10 °C.
- The 80 -100 mesh filter must be set before steam enters the machine.
- The steam water separator shall be installed if the steam dryness is less than 0.99, in order to ensure the heat transfer efficiency of the generator. The dry steam shall be guaranteed to enter the machine after separating the steam and water.
- A straight pipe more than 1m shall be set in the front and rear of the steam control valve, and the distance from the control valve to the high-temperature generator is suggested to be within 1.5-5m.
- The pressure gauge, thermometer, filter and other parts shall be installed on the steam pipeline based on the external piping flow chart before the steam enters the machine, and the steam trap or drain valve shall be installed at the lowest part of the pipeline.
- It is recommended to set by-pass pipe for the important components such as the relief valve, control valve and filter to facilitate maintenance. This allows overhaul and maintenance of the above components without closing the machine down.
- The steam system should be equipped with master manual cut-off valve so that the steam system can be shut off when the power is cut off or the machine is shut down, to prevent the damage to the machine.
- The insulation layer of flange or bolt joint, thermometer and pressure gauge shall be designed as removable type for easy inspection and maintenance under the insulation construction of the steam system.
- The recommended flow rate of steam pipe is 20-30m/s, the pipe should bend as little as possible, and the ARC structure should be adopted at the turning. The thermal deformation pipe shall be used for piping to reduce or eliminate the stress in the pipe. The piping can be implemented according to the Supervision Regulation on Safety Technology for Stationary Press Vessel and other relevant regulations.
- Check valve and drain valve shall be set on condensate piping to prevent back flow of condensate when it stops. Ponding in the pipe shall be removed before starting the machine. The condensate piping shall be designed at a gradient not less than 0.003 along the water flow direction to ensure the smooth discharge of the steam condensate.
- Upon completion of laying, safety without leakage shall be ensured for the steam system, and then the pipeline shall be cleaned and rust removed, and the insulation construction shall be carried out at last.
- The working steam pressure of the machine refers to the pressure into the machine, excluding the pressure loss of the valve. The pressure loss of the control valve is about 0.05MPa.

## 02 Water Piping

- The user shall prepare the external pipes connected from the unit.
- Please mount the chilled water pump, cooling water pump and expansion tank in the right position, so that the pressure applied to the body will not exceed the specified value.
- Each chiller shall be fitted with dedicated chilled water pump, and cooling water pump as possible, and the water pump flow rate shall meet the requirements.
- Mount the filter on the inlet side of the unit (10 mesh).
- The treatment of water quality (when the water quality is poor) is necessary to prevent the scale depositing and corrosion of heat transfer tube.

# INSTALLATION GUILDANCE

- Carry out the cleaning and rust removal through bypass pipeline after pipe laying, and then connect pipes with the unit. The washing water shall not be allowed to pass through the unit.
- In order for the management of cooling water quality, please install the regulating valve on the water supply pipe and sewage pipe of the cooling tower.
- A thermometer and a pressure gauge shall be installed near the inlet and outlet of cold water and cooling water, and a air release valve and a drain valve shall be set in an appropriate position.
- A 40A connecting pipe shall be installed between the machine and each inlet and outlet, in order to clean the whole circulation system with cleaning fluid.

## 03 Shipping & Lifting Instruction

- Choose to use the lifting capacity of lifting machinery for handling according to the handling weight as recorded in the outline drawing.
- Since there are special lifting holes on the unit, the unit may be damaged with great loss if it is lifted from other position.
- Distribute the unit weight evenly among all lifting points during handling, and please maintain a horizontal lifting and landing..
- Be careful not to damage the components or pipelines beside the lifting rope during installation and pulling of the lifting rope. Make reference to Lifting Drawing for the weight and diameter of lifting hole.
- Please absolutely avoid the contact or collision with surrounding objects.
- Especially with the front of the machine, which is surrounded and attached by a number of small matching pipes and instruments. Please take care to prevent collision and damage.
- When handling in split type, please first handle the part fitted inside and far away from the inlet.

## 04 Machine room settings

- The machine shall be arranged at the place with favorable ventilation, and the ventilation equipment shall be installed in the machine room.
- Avoid damp and dusty places which are likely to cause electrical failure.
- Control the ambient temperature of machine room at 0℃ to 40℃. The frost crack shall be caused during power-off in case it is too cold, and damage to electrical elements of the unit shall be caused in case it is too hot. Control the ambient humidity below 85%, which will affect the electrical insulation if too high.
- Daylighting shall be taken into consideration in the machine room, to facilitate the daily monitoring and inspection and maintenance.
- Install the machine in the position of easy drainage.
- Please control the levelness of water chiller-heater, as well as the length and width of cylinder below 1/1000.
- Determine the horizontal perpendicularity by means of the mounting adjustment sizing block during installation.
- Since the maintenance and repair of the machine need to be considered around the unit arrangement, at least 1m of operating space shall be left around the unit, and the space for tube drawing shall be left on any side of both ends of the unit (refer to outline drawing); 1.5m of space is recommended to be left on the side of control cabinet; it is suggested that the distance between the top of unit and the ceiling shall be no less than 0.5m. Please refer to the outline drawing of the unit for details.
- Relevant laws and regulations shall be observed to ensure a safe distance from the combustible parts of the building and combustible materials.

# INSTALLATION GUILDANCE

## 05 Foundation ground

- It is necessary to carry out the waterproof construction for the foundation ground, with the drainage ditch arranged. It is suggested that the foundation load shall be 1.5 times the operating weight. Place the unit on the foundation directly without fixing by bolts when the unit is in position. If there is a need to use anchor bolt for fixing in case of strong vibration source surrounded by the unit or demand of shock resistance by the user, please illustrate the situation when ordering.

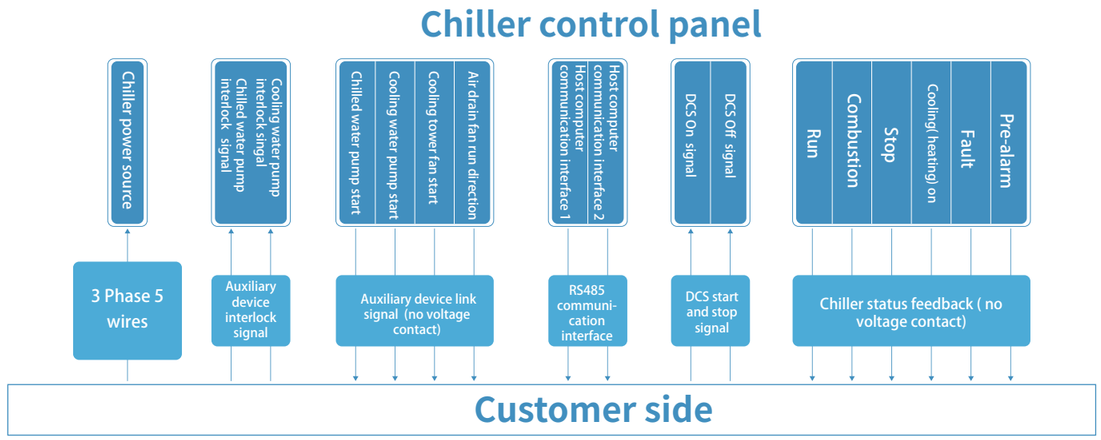
## 06 Installation position

The absorption-type unit is featured with low noise and slight vibration, which can be installed in the basement or on the roof. It is necessary to consider the actual on-site situation of customer, unit installation, and simple and convenient maintenance with respect to the final position.

## 07 Precautions

- Please arrange professionals to conduct operations of machine lifting, handling, installation, etc. Improper operations are likely to cause the machine upside down and falling, as well as major accidents such as serious injuries, deaths, etc. Be sure to observe the rules.

# INSTALLATION GUILDANCE

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