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MINI AIR-COOLED CHILLER (HEAT PUMP)

TICA CENTRAL AIR-CONDITIONING

4008-601-601

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TICA reserves the right to make changes without notice.

TVCA
FORM NO. A1114G01



誠信者，天下之結也

光阴荏苒，岁月如诗。

南京天加空调设备有限公司始终专注于中央空调的制造与销售，以专业的品质为人们创造舒适环境。

天加已成为中央空调行业中成长最迅速、发展最具活力的国际化企业之一。

DIRECTORY

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TASTE OF LIFE

TICA air conditioners fill your room with life.



INNOVATION

The Mini Air-Cooled Chiller is specially designed for residential applications. All of TICA's mini chillers deliver outstanding performance with features including stylish design, quiet operation, high energy savings and top quality. TICA's mini chiller series offers you more choices to match your dream.

Slim appearance, simple operation, safe running and convenient installation and maintenance make the unit ideal for home, villas, apartments, office buildings etc.

- ✘ The stylish design makes it easy to accessorize with your buildings design.
- ✘ Flexible installation and several types of units give you freedom to decorate accordingly.
- ✘ The slim structure provides you good solutions on saving space.

NOBAL





ENERGY SAVING

- ※ Quality brazing ensures no leakage.
- ※ Double-system design, energy control automatically for the units over 8Hp
- ※ High efficiency heat exchanger greatly reduces power consumption.

(Performance Data)

TVCA (Vertical Type)

R22

| Model TVCA | | 50C(R) | 60B(R) | 80C(R) | 80B(R) | 100B(R) | 120B(R) | 150B(R) | 200B(R) |
|-------------------------------|-------------------|------------------|--------------|-----------|-------------------|--------------|---------|-------------------|---------|
| Cooling Capacity | kW | 10.2 | 14 | 20 | 20 | 27 | 31.5 | 40 | 50 |
| Heating Capacity (Heat Pump) | kW | 12 | 15 | 23 | 23 | 30 | 34 | 43 | 54 |
| Cooling Power Input | kW | 3.4 | 4.6 | 6.7 | 6.7 | 8.8 | 10.4 | 13 | 18.1 |
| Heating Power Input | kW | 4 | 5 | 7.2 | 7.2 | 9.2 | 11 | 13.5 | 18.5 |
| Power Supply | | 220V~50Hz | 380V 3N~50Hz | 220V~50Hz | | 380V 3N~50Hz | | | |
| Water Flow Volume | m ³ /h | 1.76 | 2.41 | 3.45 | 3.45 | 4.65 | 5.43 | 6.90 | 8.6 |
| Available Head | mH ₂ O | 21 | 19 | 20 | 20 | 16 | 15 | 18 | 15 |
| Pipe Dimension | DN | | | | 32 | | | | 40 |
| Unit Weight | kg | 150 | 150 | 350 | 350 | 380 | 390 | 470 | 550 |
| Dimension(L x W x H) | mm | 850 x 480 x 1755 | | | 1180 x 480 x 1755 | | | 1880 x 480 x 1755 | |

(Note):

1. Cooling capacity is based on water temperature 7°C (outlet), Ambient temperature 35°C. Heating capacity is based on water temperature 45°C (outlet), Ambient temperature 7/6°C.
2. TICA reserves the right to make changes to the above without notice.

(Concealed Ceiling Mounted Fan Coil Unit Selection Chart)

| Model TCR | | 200F | 300F | 400F | 500F | 600F | 800F | 1000F | 1200F | 1400F |
|------------------------------|------------------------|-------|------|------|------|-------|-------|-------|-------|-------|
| Air Volume m ³ /h | High | 340 | 510 | 680 | 850 | 1020 | 1360 | 1700 | 2040 | 2380 |
| Cooling Capacity W | High | 2210 | 3200 | 4250 | 5000 | 6200 | 8100 | 9800 | 11250 | 13000 |
| Heating Capacity W | High | 3900 | 5200 | 6665 | 7870 | 10200 | 13570 | 16025 | 19800 | 22100 |
| Heat Exchanger | Pipe Dimension | Rc3/4 | | | | | | | | |
| | Water Flow Volume kg/h | 380 | 550 | 730 | 860 | 1066 | 1393 | 1685 | 1900 | 2230 |
| | Water Resistance kPa | 25 | 26 | 30 | 30 | 40 | 35 | 40 | 40 | 50 |
| Condensing Water Pipe | | R3/4 | | | | | | | | |

Note:

1. Cooling capacity is based on the following: Water temperature: 7°C (inlet)/12°C (outlet), air entering condition: 27°C DB/19.5°C WB.
2. Heating capacity is based on the following (with same water flow rate as cooling cycle): Water temperature: 60°C (inlet), air entering condition: 21°C DB.
3. The manufacturer reserves the rights to make changes to the above specifications without prior notice.

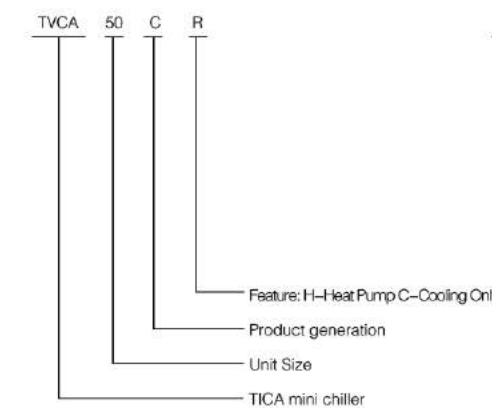
QUIET

- ※ Hermetic Scroll Compressor ensures stable running and low noise.
- ※ Large axial fan and low rotating speed reduces noise pollution.
- ※ Imported high efficiency water pump has small vibration and low noise.
- ※ Embedded insulation layer absorbs operation noise.

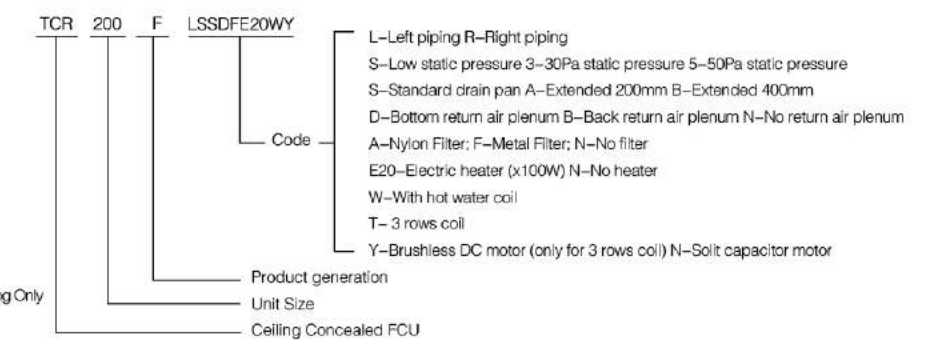


(Nomenclature)

(Packaged Type Unit)

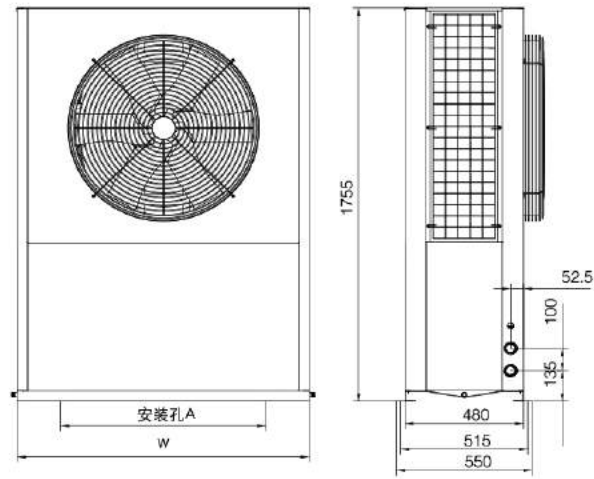


(Fan Coil Unit)



Dimension

TVCA (Vertical Unit)



| TVCA | 50C(R) | 60B(R) | 80C(R) | 80B(R) | 100B(R) | 120B(R) | 150B(R) | 200B(R) |
|------|--------|--------|--------|--------|---------|---------|---------|---------|
| W | 850 | 850 | 1180 | 1180 | 1180 | 1180 | 1880 | 1880 |
| A | 600 | 600 | 830 | 830 | 830 | 830 | 765 × 2 | 765 × 2 |



TVCA
Vertical Unit

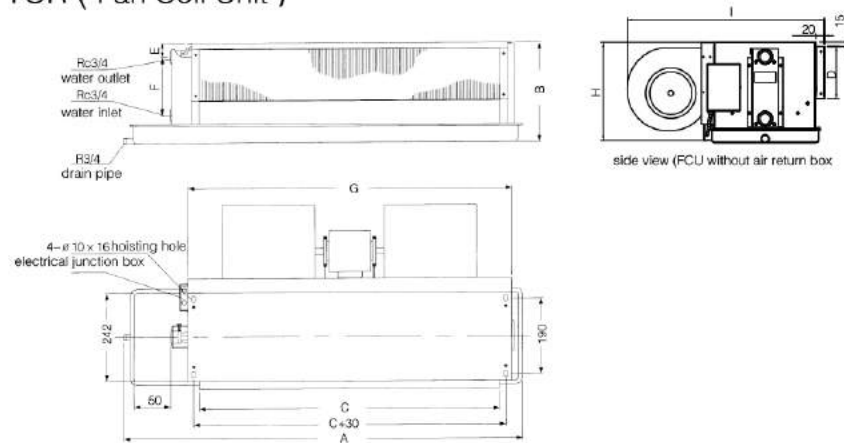
Cooling Correction factor

| Water Temp °C | Ambient Temp °C | | | | | | | | | | | |
|---------------|-----------------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|
| | 25 | | 28 | | 30 | | 35 | | 40 | | 43 | |
| | Cooling | Input Power | Cooling | Input Power | Cooling | Input Power | Cooling | Input Power | Cooling | Input Power | Cooling | Input Power |
| 4 | 1.00 | 0.85 | 0.98 | 0.88 | 0.96 | 0.91 | 0.91 | 0.96 | 0.87 | 1.00 | 0.85 | 1.06 |
| 5 | 1.03 | 0.87 | 1.01 | 0.90 | 0.99 | 0.92 | 0.94 | 0.97 | 0.89 | 1.02 | 0.87 | 1.07 |
| 6 | 1.07 | 0.88 | 1.04 | 0.91 | 1.02 | 0.93 | 0.97 | 0.99 | 0.92 | 1.04 | 0.90 | 1.09 |
| 7 | 1.10 | 0.89 | 1.07 | 0.93 | 1.05 | 0.95 | 1.00 | 1.00 | 0.95 | 1.05 | 0.93 | 1.10 |
| 8 | 1.13 | 0.91 | 1.10 | 0.94 | 1.08 | 0.96 | 1.03 | 1.01 | 0.98 | 1.07 | 0.95 | 1.12 |
| 9 | 1.16 | 0.92 | 1.13 | 0.95 | 1.11 | 0.98 | 1.06 | 1.03 | 1.00 | 1.08 | 0.98 | 1.14 |

Heating Correction factor

| Water Temp °C | Ambient Temp °C | | | | | | | | | | | |
|---------------|-----------------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|
| | -10 | | -5 | | 0 | | 5 | | 7 | | 10 | |
| | Heating | Input Power | Heating | Input Power | Heating | Input Power | Heating | Input Power | Heating | Input Power | Heating | Input Power |
| 35 | 0.64 | 0.69 | 0.75 | 0.75 | 0.87 | 0.83 | 1.00 | 0.90 | 1.06 | 0.92 | 1.14 | 0.96 |
| 40 | 0.62 | 0.72 | 0.73 | 0.78 | 0.85 | 0.86 | 0.98 | 0.93 | 1.03 | 0.96 | 1.11 | 1.00 |
| 45 | 0.60 | 0.74 | 0.71 | 0.82 | 0.83 | 0.89 | 0.95 | 0.97 | 1.00 | 1.00 | 1.08 | 1.04 |
| 50 | 0.58 | 0.77 | 0.68 | 0.85 | 0.80 | 0.93 | 0.92 | 1.01 | 0.97 | 1.04 | 1.04 | 1.08 |

TCR (Fan Coil Unit)



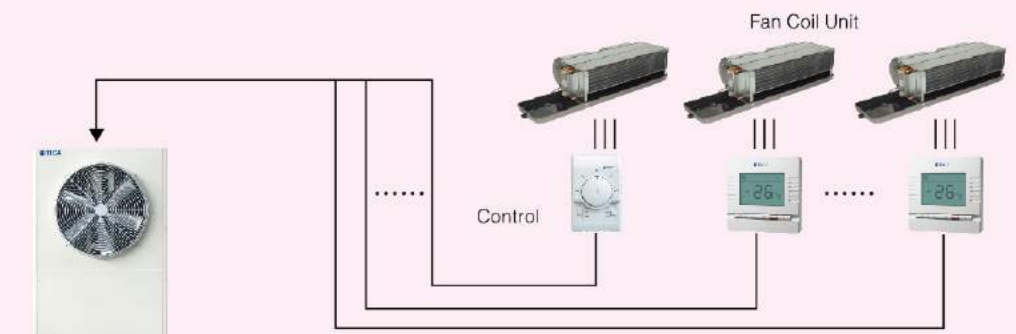
| Model TCR | A | B | C | D | E | F | G | H | I | Motor No. | Fan No. |
|-----------|------|-----|------|-----|----|-----|------|-----|-----|-----------|---------|
| 200F | 705 | 230 | 490 | 135 | 54 | 118 | 532 | 225 | 470 | 1 | 1 |
| 300F | 785 | 230 | 570 | 135 | 54 | 118 | 610 | 225 | 470 | 1 | 2 |
| 400F | 905 | 230 | 690 | 135 | 54 | 118 | 732 | 225 | 470 | 1 | 2 |
| 500F | 985 | 230 | 770 | 135 | 54 | 118 | 812 | 225 | 470 | 1 | 2 |
| 600F | 1185 | 230 | 970 | 135 | 54 | 118 | 1012 | 225 | 470 | 1 | 2 |
| 800F | 1465 | 230 | 1215 | 135 | 54 | 118 | 1257 | 225 | 470 | 2 | 3 |
| 1000F | 1585 | 230 | 1330 | 135 | 54 | 118 | 1372 | 225 | 470 | 2 | 4 |
| 1200F | 1765 | 250 | 1510 | 135 | 54 | 118 | 1552 | 240 | 490 | 2 | 4 |
| 1400F | 1765 | 305 | 1510 | 177 | 54 | 160 | 1630 | 300 | 490 | 2 | 4 |



TCR
Fan Coil Unit

Intelligent Control

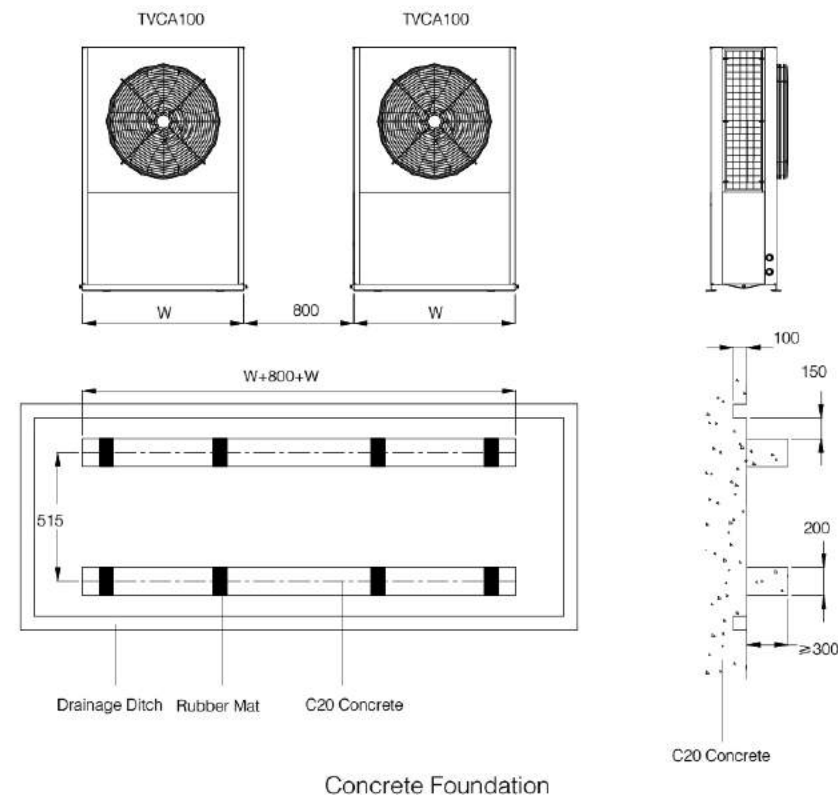
Control of standard unit can be connected to fan coil units. Thus the outdoor unit can be controlled in each room. (Namely start one fan coil unit, the outdoor unit will be started. Turning off all the fan coil units, the outdoor unit is stopped.)



LCD screen is elegant Microcomputer control is easy start and operate the unit.



Foundation



Note:

1. The above foundation is for two TVCA100 unitsP;
2. W for width of TVCA100;
3. Foundation must be made by concrete or metal bracket, be sure that the foundation can bear more 500Kg/m²
4. Isolator is needed between foundation and base frame of the unit. The thickness of the isolator must be over 20mm.
5. M10 bolts should be used for reinforcing the unit.
6. The units must be placed on rigid and solid surface.
7. The units can be fixed on the expansion bolts, fixing holes can be seen on dimension diagram.

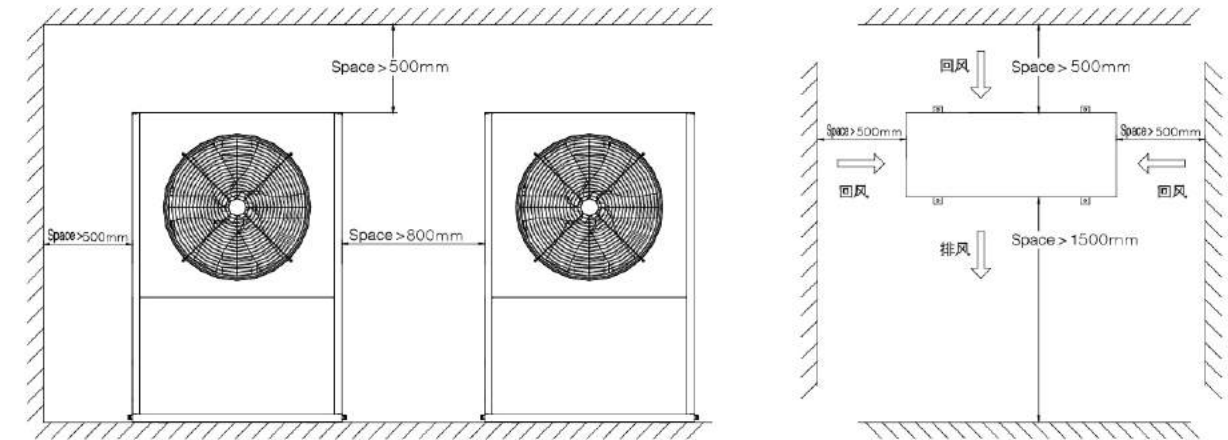
Electrical Installation

| Model | Power | Max Current A | Mini Cable Size mm ² | Cable Quantity | Note |
|-------------|--------------|---------------|---------------------------------|----------------|---|
| TVCA50C(R) | 220V~50Hz | 25 | 6 | 3 | Factory will provide 15m four core telephone line for remote controller, while FCU interlock control and host connection wirings will be provided and connected by users. |
| TVCA60B(R) | 380V 3N~50Hz | 14 | 4 | 5 | |
| TVCA80C(R) | 220V~50Hz | 45 | 15 | 3 | |
| TVCA80B(R) | 380V 3N~50Hz | 23 | 6 | 5 | |
| TVCA100B(R) | 380V 3N~50Hz | 24 | 6 | 5 | |
| TVCA120B(R) | 380V 3N~50Hz | 31 | 10 | 5 | |
| TVCA150B(R) | 380V 3N~50Hz | 35 | 10 | 5 | |
| TVCA200B(R) | 380V 3N~50Hz | 42 | 16 | 5 | |

Wiring Notice:

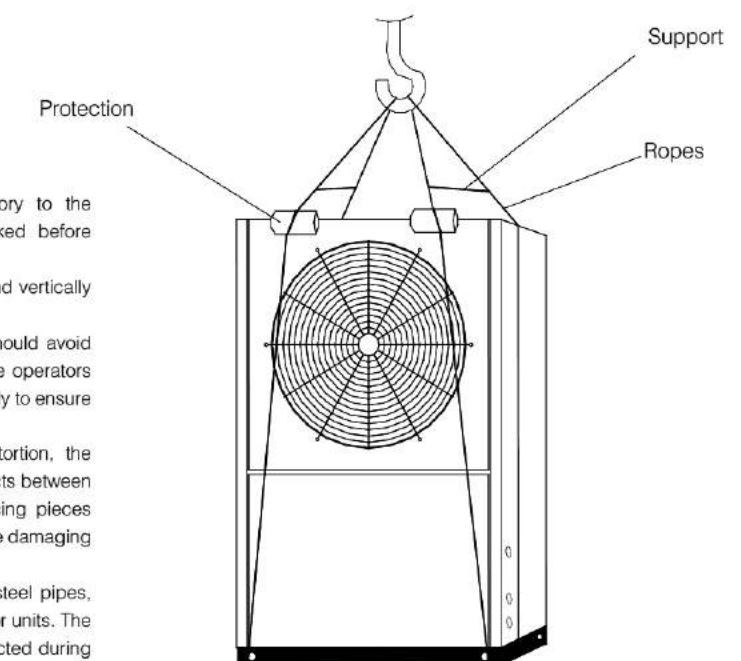
1. Connecting power supply wiring to main power supply terminal in the box;
2. Connecting wirings on the control panel to the socket of main control module panel;
3. Setting units earthed.

Unit Installation



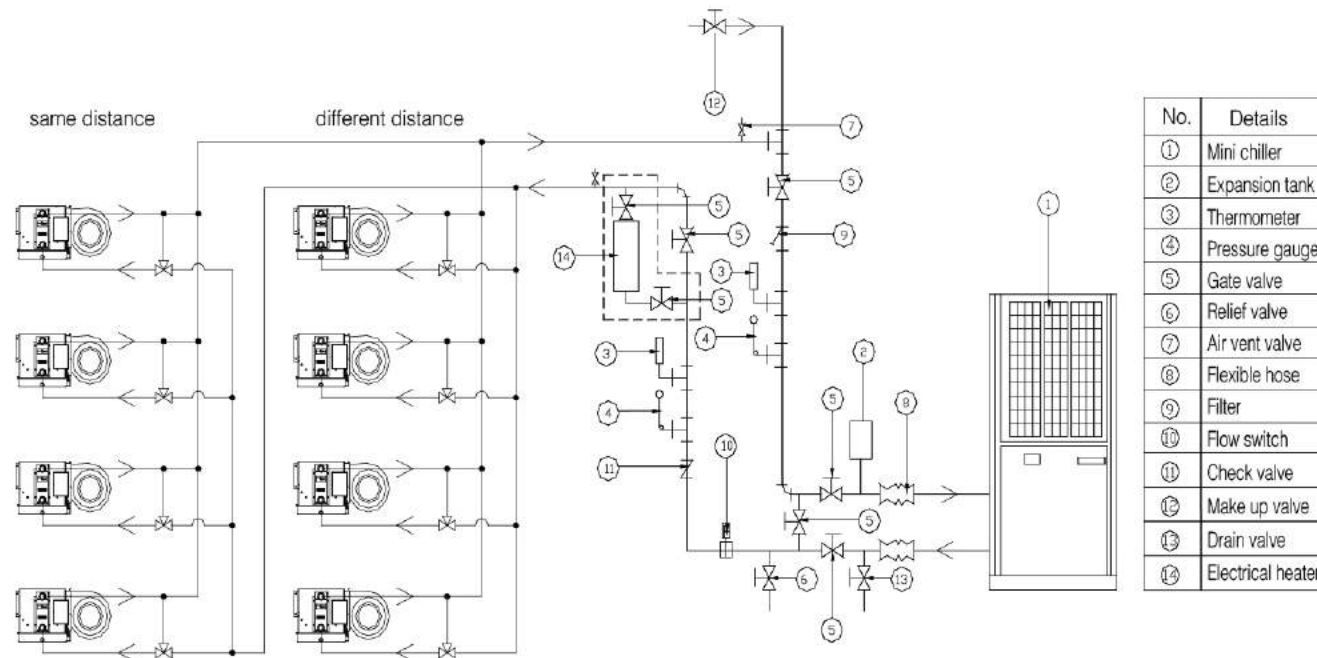
- 1.The air discharge by outdoor unit will not return, and enough maintenance space should be left around the unit.
- 2.No obstacles in the inlet/outlet of the indoor unit.
- 3.Installation must be well ventilated, to guarantee the effective intake and discharge of the air.
- 4.Installation site must be able to bear the weight of outdoor unit,and avoid the noise and vibration
- 5.Avoid direct sunlight
- 6.Nice drain function.
- 7.Ensure the unit won't be buried in snow.
- 8.Ensure the air outlet won't face against strong wind.
- 9.Ensure the noise won't disturb neighbours
- 10.No rubbish and dirt around the installation site.

Cautions for Hoisting



- 1.The unit body is transported from the factory to the construction site and should be properly packed before hoisting;
- 2.Take cares to handle to keep the unit body stand vertically during carrying.
- 3.When the unit body is hoisted upwards, you should avoid slides caused by colliding with other articles. The operators should prevent standing under or near the unit body to ensure his/hers safety.
- 4.In order to avoid the surface scrape or distortion, the protective cushion should be placed in the contracts between steel ropes and the unit body. Meanwhile, bracing pieces should be installed between ropes to avoid the rope damaging the unit body.
- 5.For the optional reference weights of hoisting steel pipes, steel ropes and cranes; see the parameter table for units. The inlet and outlet manifolds of units should be protected during hoisting to avoid collision.

Piping System



Installation Notice

- ◆ Make sure the chilled water supply and return pipe connection to heat exchanger are correct;
- ◆ Install gate valve, pressure gauge and thermometer at both chilled water supply and return pipes for ease of service and maintenance work. Pressure gauge and thermometer should be installed at visible and accessible location;
- ◆ Install manual or automatic air vent at the highest points of water system, to release the air trapped in the water system;
- ◆ Expansion tank should be corrosion proof, and must be installed at the highest point of the pipe system;
- ◆ Water tank should be installed at chilled water supply pipe, to prevent short cycling when unit is running at relatively small load;
- ◆ Flexible hose and vibration isolator should be used to reduce the piping vibration and noise;
- ◆ Water pipes should be insulated to conserve energy for optimum cooling/heating unit capacity;
- ◆ Leak test should be carried out and water pipes should be cleaned, before piping is insulated and water is supplied to chilled unit;
- ◆ Flow switch must be installed on horizontal piping. Valve body should be kept straight and vertical. It should keep a minimal 10 distance of at least 5 times the piping diameter from the adjacent bends, modulating valve and other components.

Cautions for utilizing unit

Water supply requirement for unit

- ◆ The circulating water adopts the demineralized water
- ◆ The water system must be equipped with the safety valve and the automatic replenishing valve.
- ◆ The water volume can be not less than the nominal value printed on the nameplate.
- ◆ The automatic air valve must be installed on the top of the water system.
- ◆ Set the appropriate drain valve at the bottom of the water system.
- ◆ The expansion tank must be installed on the pipeline of the water system to adapt the water capacity change at the time of the water temperature change.
- ◆ The water system must be equipped with the bypass. Only after inspect the water system clean can the water system pipeline connect with the water pipeline of the host.
- ◆ The water system should be cleaned frequently. Avoid foreign matters in evaporator to cause the unit damages.
- ◆ The total water capacity in the water system should satisfy the designed 10L/kw. In case of the insufficient capacity, the water storage tank of appropriate sizes must be installed to prevent the frequent start or stop of the unit.

Repair and Maintenance

- ◆ The unit should be equipped with the special power supply. The supply voltage fluctuates +10%. The automatic air switch should be used. The setting current is 1.5 times of running current of the unit. The inverse phase protection devices are installed. Never apply the knife switch unit.
- ◆ All the time of first application every season, the unit must be electrified and preheated for 12 hours and start later. If the cooling unit will stay for a long time, the water in the unit and the pipeline must be drain completely. After the heating pump type units stop, the master controller should correspond with the host and the power supply can never be disconnected to avoid the water pipelines or the unit frozen (the controller in accordance with the environment temperature and the temperatures of the incoming water and the outgoing water automatically implement the anti-freezing functions. As for details, see the user manual)
- ◆ The host switch cannot be operated quite often. It can be operate 4 times per hour at most. The electric control cabinet should avoid humidity.
- ◆ Keep the unit neighborhood under good ventilation environment constantly. The air side heat exchanger should be cleaned regularly.
- ◆ The water system should be equipped with the expansion tank. The recycling water should be clean and tidy. At the time of operation, a sufficient water flow should be maintained (as for details, see the nameplate), or the water side heat exchanger would be frozen. And the filter should be cleaned regularly.
- ◆ Appoint the specific person to maintain and record.
- ◆ The standard machine can not conduct the refrigeration operation when the environment temperature is lower than +16°C in case that it is necessary to conduct the cryogenic refrigeration, please indicate it on the purchase order.

