DAIKIN

Engineering Data

ED-UXEV-ST3-201701

Air-Cooled Magnetic Centrifugal Chiller

Model: UXEV090-UXEV440

Cooling capacity: 312kW-1549kW

ECOLOGICAL HFC 134a REFRIGERANT

DAIKIN INDUSTRIES, LTD.

Literature No.: ED-UXEV-ST3-201701
Supersedes: NA

Contents

1. Model Series 2

2. Nomenclature 2

3. Features 3
Overview 3
- Products Features 4
- Intelligent Network Controller 7

4. Accessories 8
Standard accessories (supplied on basic unit) 8
Optional accessories (on request) 8

5. Specitications 9
Standard efficiency series 9

6. Capacity Tables 10
Cooling Capacity Tables 10

7. Dimensions and Foundation 11
Dimensions 11
① UXEV090ST3-FAAE 11
② UXEV130ST3-FAAE 11
③ UXEV180ST3-FAAE 12
④ UXEV220ST3-FAAE 12
⑤ UXEV260ST3-FAAE 13
⑥ UXEV310ST3-FAAE 13
⑦ UXEV350ST3-FAAE 14
⑧ UXEV390ST3-FAAE 14
⑨ UXEV440ST3-FAAE 15
Foundation 16
① UXEV090ST3-FAAE 16
② UXEV130ST3-FAAE 16
③ UXEV180ST3-FAAE 17
④ UXEV220ST3-FAAE 17
⑤ UXEV260ST3-FAAE 18
⑥ UXEV310ST3-FAAE 18
⑦ UXEV350ST3-FAAE 19
⑧ UXEV390ST3-FAAE 19
⑨ UXEV440ST3-FAAE 20

8. Wiring Diagram 21
- UXEV090/130ST3-FAAE 21
- UXEV180/260ST3-FAAE 26

On-site Wiring Diagram 33

9. Operation Limits 36

10. Water Pressure Drop of the Unit 37

11. Correction 38

12. Refrigerant Piping Layout 39

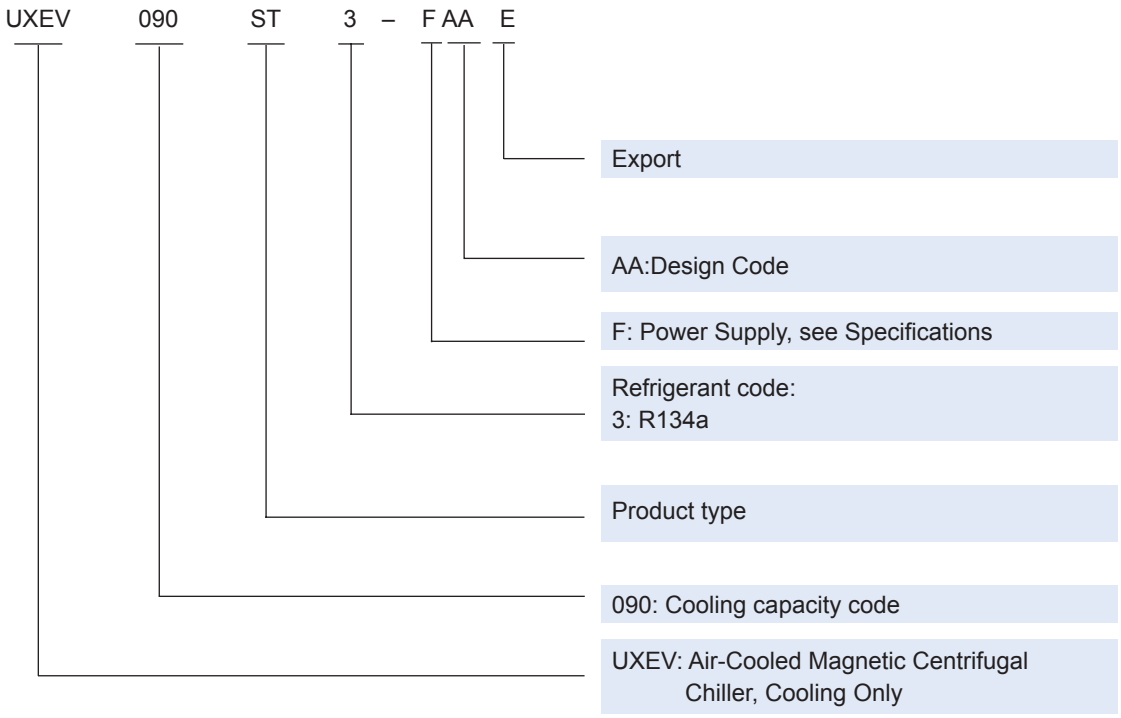
13. Installation 40

1. Model Series

Cooling Only

UXEV090ST3-FAAE
UXEV130ST3-FAAE
UXEV180ST3-FAAE
UXEV220ST3-FAAE
UXEV260ST3-FAAE
UXEV310ST3-FAAE
UXEV350ST3-FAAE
UXEV390ST3-FAAE
UXEV440ST3-FAAE

2. Nomenclature



3. Features

Overview

Air-cooled water chiller/heat pump units are the central air conditioning units with air as the cold (hot) source, and water as the heat transfer medium. The units need no additional equipment room, cooling tower, cooling pump, or cooling pipe and can be mounted on the building roof and outdoors. The heat pump units can provide heat as a hot water boiler. This series of units are applicable to various environments, such as hospitals, hotels, factories, and office buildings.

As the designer and manufacturer of large air-cooled heat pump units, DAIKIN has been committed to technical improvement and innovation and leads the development of the air-cooled heat pump technology. For the consideration of environment protection and energy saving, DAIKIN applies the advanced technology to the latest ultra-efficient air-cooled heat pump units. This series of units have a full-load COP. Moreover, DAIKIN has built a large 1900 kW full performance lab to ensure the quality and performance of the units.

FM 661837

ISO9001

Quality Management System Certification

EMS 80362

ISO14001

Environment Management System Certification

7644-1

BS-OHASA 18001

Occupational Health and Safety Assessment Series Certification

Test
CNAS L0778

Certification of China National Accreditation Service for Conformity Assessment (CNAS)

XK06-015-00378

Obtained China National Industrial Product Manufacture License

• Products Features

Maglev design

■ The magnetic bearing does not come into contact with the shaft, and mechanical friction is not produced during unit operation, thus substantially reducing the mechanical loss of compressor and improving the energy efficiency of unit, and delivering an Integrated Part Load Value (IPLV) up to 6.049.

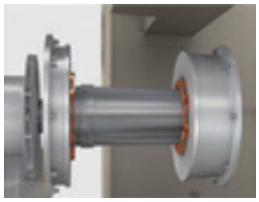


Figure 1

Oil-free design

■ The entire system operates without oil, avoiding thermal resistance formed on the heat exchanger surface after lubricating oil enters the heat exchanger and ensuring higher heat exchange efficiency.

Figure 2

Inverter design

■ The unit adopts a rare-earth permanent-magnet DC inverter motor, and the permanent magnet has no excitation loss, avoiding copper losses caused when current passes through stator and rotor windings during operation of the common motor, and improving the motor efficiency substantially. The motor's part load efficiency is increased by 25% to 40%, and full load efficiency is increased by 3% to 5%.

Figure 3

Design of efficient heat exchanger

■ In comparison with the traditional dry-expansion evaporator, the high efficiency flooded evaporator improves the heat exchange efficiency by more than 30%, enhancing the energy efficiency of unit greatly.

Figure 4

High strength material for aeronautical application

■ The compressor adopts the high strength alloy material for aeronautical application to ensure stability and reliability of the unit at a high speed.

Figure 5

Ultra-low startup current

■ The low startup current of 2 A avoids current impact and mechanical impact, and guarantees the maximum safety of power grid; the unit implements inverter operation and the compressor realizes stepless regulation and output as needed according to the user's load requirement..

Figure 6

Surge protection of magnetic bearing

■ When the compressor will stall soon, the stress of magnetic bearing is not uniform, and the feedback signal is sent to the compressor controller to send a stop instruction. The faster response and more precise control enhance the unit reliability.

Figure 7

No oil and no friction

■ The lubricating oil system does not need to be maintained, and almost all the routine inspection and maintenance items can be omitted to make operations more convenient and easier.

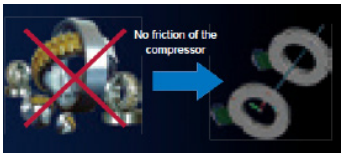


Figure 8

Power failure protection

■ When the system has a power failure unexpectedly, the DC motor of maglev compressor continues to operate at a high speed due to inertia, the AC induced current generated by the motor is fed back to the power supply IPS, and the IPS converts AC to DC to continue power supply to the magnetic bearing. The motor decelerates to the normal range, the ball bearing ensures continuous safe operation of the motor, and the unit stops smoothly.

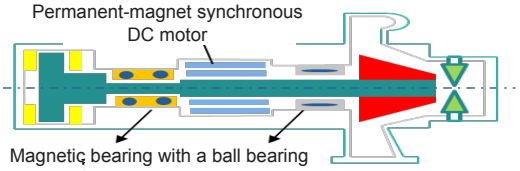


Figure 9

Low noise operation

■ The shaft does not come into contact with the bearing due to magnetic levitation during operation of the maglev compressor, and the design without lubricating oil reduces the operation noise greatly by 8 dB(A) in comparison to the common air-cooled screw unit.

Figure 10

Free hot water (optional)

■ The unit provides the heat recovery function for application places with cooling and hot water demands. Waste heat generated during condensation is recycled to prepare hot water, reducing waste heat emission, saving energy and protecting the environment.

Figure 11

Environmentally-friendly refrigerant

- The R134a environmentally-friendly refrigerant contains no chlorine atom and poses no harm to the ozone layer. It reduces CO_2 emission, mitigates the greenhouse effect and complies with the national low carbon economy requirement.

Figure 12

Maglev compressor

- The compressor has a magnetic bearing and is controlled by the magnetic force during operation. The shaft does not come into contact with the bearing, and the double-stage casting impeller is directly embedded on the shaft, avoiding the capacity loss generated by rotation of the traditional gear. The compressor adopts a permanent magnet motor to realize variable speed operation and achieve output on demand.

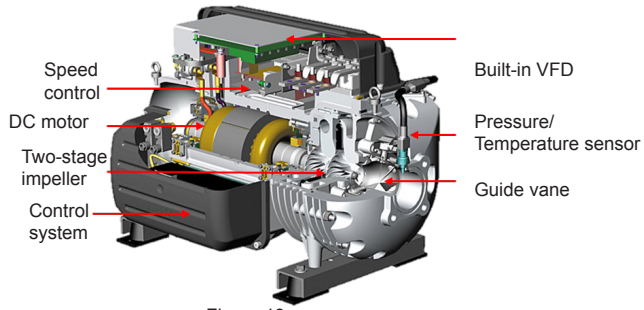


Figure 13

- Internal operation principle of the compressor: The motor rotating shaft and impeller assembly are suspended during rotation through the magnetic bearing system (as shown in the diagram below: one axial X bearing, two radial Y bearings and two Z radial bearings) of digital control. There are no contacts or friction surfaces between parts, and the sensors on the magnetic bearing and motor rotor provide real-time positioning of 6 million times/min, ensuring accurate positioning of the bearing and rotor and guaranteeing stable operation of the unit.

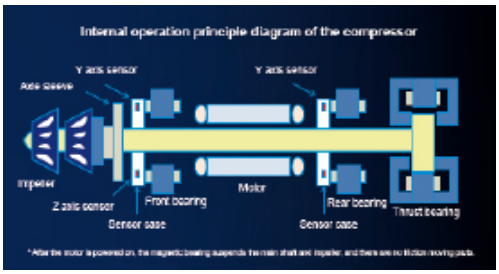


Figure 15

High efficiency flooded evaporator

- The unit adopts the shell-and-tube flooded evaporator, with the cylinder body made by roll welding of seamless carbon steel sheet. Both the internal surface and external surface of the heat exchange tube adopt the special fin design, and evaporation tubes designed with different fins are selected for different heat exchange processes, increasing the heat exchange area effectively; the unit also employs the internal thread tube design to improve the turbulent condition of fluid in the tube and enhance the heat exchange efficiency on the whole. The heat exchanger is also provided with multiple pressure alarm protections and set with the original design of double safety valves, which work in the mutual standby mode to ensure use safety of the pressure vessel and user.

Figure 17

High-precision electronic expansion valve

- The unit adopts an imported electronic expansion valve. It measures the refrigerant flow rate accurately according to the load and water temperature changes and gives feedback to the controller. Moreover, the most accurate control logic is used to set the expansion valve position according to the unit cooling capacity and suction/exhaust pressure difference.

Figure 14

Highly efficient air-side heat exchange condenser

- The air-side heat exchanger adopts 'V' shape layout, ensuring uniform airflow distribution. The deranged seamless copper tubes adopt mechanical expanding and straight flow structure and are covered with louver type aluminum condenser fins to achieve higher heat exchange efficiency. Hydrophilic aluminum fins or anti-corrosion aluminum fins are provided according to applications of different regions.

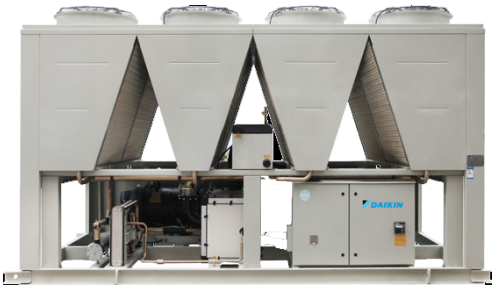


Figure 16

Efficient Economizer

- The unit uses plate heat exchanger of optimized design to implement level-1 supercooling. The high efficiency plate cooling circuit is combined to implement level-2 deep supercooling, increasing the supercooling degree of the unit and greatly improving the performance and efficiency of the unit.

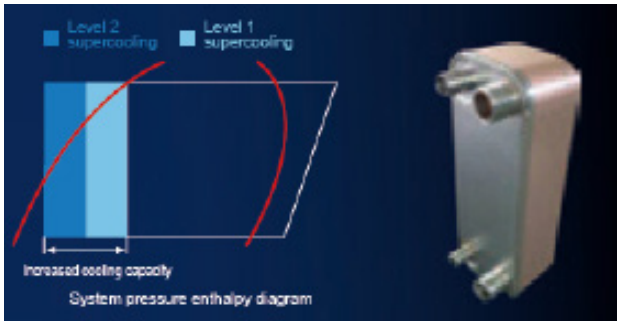


Figure 18

External wired controller (optional)

- The external wired controller is led to the control room through connection with the main controller. The external wired controller has the same function of built-in controller, thus facilitating remote control by the user.

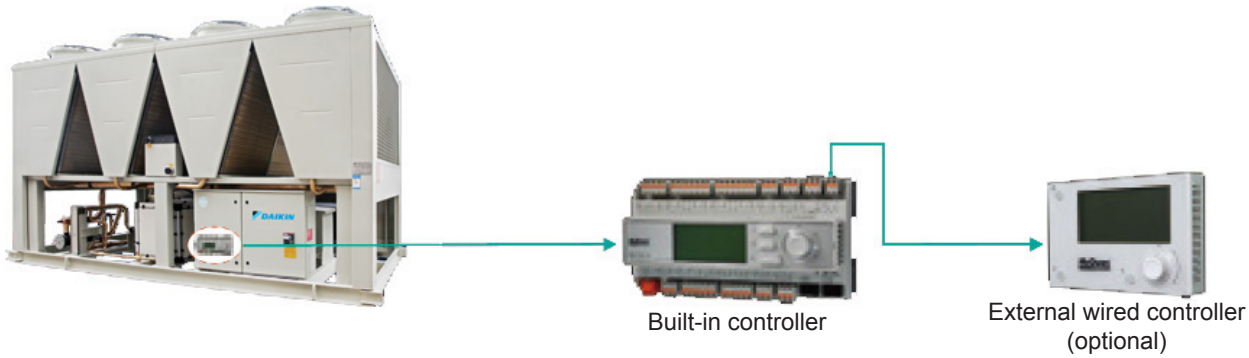


Figure 19

- The temperature of outlet water is stable. The output ability meets the workload demand of the construction system. The units can regulate the output based on the actual workload and maintains high efficiency when running at partial workload. In addition, the accurate adjustment of the energy and water temperature brings more comfortable experience to customers. (See figure 21)

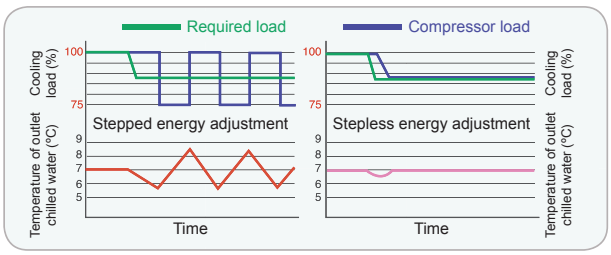


Figure 20

Low operation sound and vibration

- Integrated design and compact structure are adopted for the units. The base can balance the entire unit weight. The spring-damper on the units helps to eliminate the operation sound and vibration.
- New high efficiency condenser fans (technology by DAIKIN) Condenser using high efficiency, low noise resin spiral fan motor, direct drive, 3dB(A) noise lower compared with spiral blades. (See figure 22)

Figure 21

Easy installation and simple maintenance

- Flexible installation without additional equipment room, cooling tower, or cooling pump.
- The electric system of the units is integrated with the main unit, so an additional electric control cabinet is not required.
- An intelligent control system monitors and controls the operating status of the units and indicates the fault cause for the convenience of maintenance.

Accurate control and reliable operation

- An advanced electrical expansion valve enables the units to control the refrigerant flow accurately, adapt to various working conditions, and perform multiple control functions.
- The temperature of outlet chilled water is controlled to ± 0.5°C. In addition, various sensors in the system can transmit various kinds of signal data to the controller to implement timely protection for the unit components and ensure more reliable operation.
- The mechanism of three-level password protection ensures safe operation of the units and prevents misoperations of non-professional personnel.
- Multiple protection functions ensure safe operation of the units.

• Intelligent Network Controller

The units adopt the new-generation DAIKIN controller Micro Tech III. (See figure 6) This controller integrates the heat pump applications and technologies of DAIKIN of more than 40 years and is equipped with programmable software. This enables compressors and fans to reach the highest COP.

Main components

Built-in controller

- Control type: PLC programmable
- Operation language: Chinese/English
- Screen display: LCD display
- Operating environment: Temperature: -20°C~60°C
  Relative humidity: < 90%.

Figure 22

Figure 23

External remote monitoring (Option)

Main Functions

- Automatic load/unload based on changes of the actual air conditioning load
- Operating status display of the units
- Common fault alarm display
- Water temperature control to an accuracy to 0.5°C
- Output load PID control
- Balancing the operating duration of each compressor
- Compressor load control
- Three-level password protection
- Stepless load adjustment
- Failure history query

Network control

Multiple communication ports such as the Modbus, LonWorks, and BACnet can be added to the controller for integrated control or automatic building control to implement joint control of multiple units (optional).

Operating status query

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

Protection functions

- High pressure protection
- Low pressure protection
- Fan overload protection
- High discharge temperature protection
- Compressor overload protection
- Low compression ratio protection
- High oil pressure difference protection
- Sensor failure protection
- Compressor startup failure protection
- Phase protection
- Evaporator anti-freezing protection
- Water flow protection

4. Accessories

Standard accessories (supplied on basic unit)

Flow switch – Supplied separately to be wired and installed on the evaporator water piping (by the customer).
Spring type shock absorber – Supplied separately, these have to be positioned under the base of the unit during installation. Ideal for dampening vibrations on roofs installation and metallic structures.

Optional accessories (on request)

Glycol version – Set-point can go down to -8°C.
Cu-Cu condenser coils – To give better protection against corrosion by aggressive environments.
Blue fin / Gold Fin – Fins are protected by a special acrylic paint with a high resistance to corrosion.
ASME certification evaporator
Restart after power off
BMS (Building Management System) protocol – Modbus, LonWorks, BACnet
50/100Pa high static pressure fan

Note: These options should be factory mounted. Field modifications are not available.

5. Specitications

Standard efficiency series

UXEV-ST3			090	130	180	220*	260	310*	350*	390*	440*
Type			Integral	Integral	Integral	090+130	Integral	130+180	090+260	130+260	180+260
Nominal Cooling Capacity		kW	312.0	462.0	629.0	774.0	920.0	1091	1232	1382.0	1549
		USRT	88.71	131.4	178.8	220.1	261.6	310.2	350.3	392.9	440.4
		×10^{4}kcal/h	26.83	39.72	54.08	66.55	79.10	93.80	105.9	118.8	133.2
Total Power Input		kW	93.20	135.6	182.9	228.8	268.7	318.5	361.9	404.3	451.6
Power Supply		-	360V~440V /3N~/50.0Hz	342V~418V /3N~/50.0Hz	360V~440V /3N~/50.0Hz	360V~418V /3N~/50.0Hz	342V~418V /3N~/50.0Hz	360V~418V /3N~/50.0Hz	360V~418V /3N~/50.0Hz	342V~418V /3N~/50.0Hz	360V~418V /3N~/50.0Hz
Rated Current		A	156	233	312	389	466	545	622	699	778
Maximum Running Current			169	245	337	414	490	582	659	735	827
Refrigerant	Type		R134a								
	Number of Circuit		1		2			3			4
	Flow Control		Electronic Expansion Valve								
Compressor	Type		Magnetic Suspension Variable Frequency Centrifugal								
	Qty.×Model	TT Series	1×TT300	1×TT350	2×TT300	1×TT300 1×TT350	2×TT350	2×TT300 1×TT350	1×TT300 2×TT350	3×TT350	2×TT300 2×TT350
	Compressor Power Input	kW	83.6	122.8	163.7	206.4	243.1	286.5	326.7	365.9	406.8
Air-side Heat Exchanger	Type		Crossed Fin Heat Exchanger								
Fan	Type		High-efficiency Spiral Axial								
	Qty.	n	6	8	12	14	16	20	22	24	28
	Total Air Flow	x10^{4}m^3/h	12	16	24	28	32	40	44	48	56
	Total Power	kW	9.6	12.8	19.2	22.4	25.6	32.0	35.2	38.4	44.8
Water-side Heat Exchanger	Type		Flooded-type Shell-and-tube Heat Exchanger								
	Water Flow Rate	m^3/h	54.00	79.00	108.0	133.0	158.0	188.0	212.0	238.0	266.0
	Water Resistance	kPa	43	62	52	43/62	57	62/52	43/57	62/57	52/57
	Pipe Connection (OD)	inch	5	5	6	5/5	6	5/6	5/6	5/6	6/6
	Maximum Pressure-bearing	Mpa	1.0								
Dimensions	Length	mm	3325	4430	6640	7775	8850	11090	12195	13300	15510
	Width	mm	2260								
	Height	mm	2520								
Weight	Shipping	kg	2570	3050	5030	5620	5590	8080	8160	8640	10620
	Operating	kg	2600	3100	5150	5700	5740	8250	8340	8840	10890
Noise	dB (A)		73.0	73.4	74.0	74.0	75.0	75.6	75.6	75.6	76.0
Accessories (Standard)			Unit Installation Manual, Spring Shock Absorber and Water Flow Switch								

Notes:

- Nominal cooling conditions: EWT/LWT 12/7°C; ambient DB temperature is 35°C;
- The transport weight including steel packaging weight;
- The operation weight including the weight of the water inside water-side heat exchanger, excluding steel packaging weight;
- The models with * means dual control system.

6. Capacity Tables

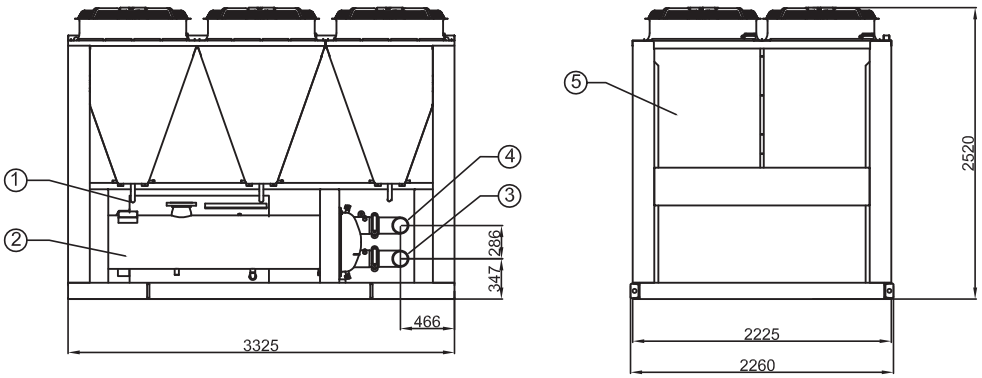
Cooling Capacity Tables

Model Unit UAA UXEV-ST3	Leaving Chiller Water Temperature	Ambient temperature(°C)									
		24		30		35		40		44	
		Cooling Cap.	Power Input	Cooling Cap.	Power Input	Cooling Cap.	Power Input	Cooling Cap.	Power Input	Cooling Cap.	Power Input
UXEV090	4	323.3	78.9	312.7	88.8	282.5	95.0	215.8	83.7	NA	NA
	7	344.0	83.0	341.6	92.8	312.0	93.2	230.3	82.1	202.2	83.7
	10	377.8	80.7	365.6	92.1	327.8	95.5	248.3	81.6	242.7	88.7
	13	404.2	80.7	390.6	91.9	355.2	96.5	267.4	80.8	264.6	88.4
	15	412.6	81.6	412.0	94.2	373.7	96.7	281.1	80.0	278.3	87.5
UXEV130	4	415.6	95.7	412.3	112.8	407.3	126	320	109.8	334.4	128.7
	7	461.1	101.9	460.8	119.2	462	135.6	340.2	107.4	351.9	124.3
	10	509	106.2	504.5	124.6	503.1	140	371.9	109.4	371.4	121.6
	13	558.8	109.4	548.6	130.3	549.2	142.8	394.9	108.3	391.1	117.7
	15	587.6	110.7	583.4	133.7	576.7	143.2	407.4	103.8	397	113.5
UXEV180	4	651.9	154.9	630.5	174.3	569.6	186.4	435.1	164.3	NA	NA
	7	693.4	162.8	688.7	182.1	629	182.9	464.3	161	407.7	164.3
	10	761.6	158.4	737.1	180.8	660.9	187.5	500.7	160.1	489.3	174.1
	13	815	158.4	787.4	180.3	716.1	189.5	539	158.5	533.4	173.4
	15	831.7	160.1	830.5	184.9	753.4	189.8	566.8	156.9	561.1	171.8
UXEV220	4	738.9	174.6	725.0	201.6	689.8	221.0	535.8	193.5	NA	NA
	7	805.1	184.9	802.4	212.0	774.0	228.8	570.5	189.5	554.1	208.0
	10	886.8	186.9	870.1	216.7	830.9	235.5	620.2	191.0	614.1	210.3
	13	963.0	190.1	939.2	222.2	904.4	239.3	662.3	189.1	655.7	206.1
	15	1000.2	192.3	995.4	227.9	950.4	239.9	688.5	183.8	675.3	201.0
UXEV260	4	827.5	189.5	821	223.5	811.2	249.6	637.3	217.5	665.8	254.9
	7	918.2	201.9	917.6	236.1	920	268.7	677.5	212.9	700.7	246.4
	10	1013.6	210.5	1004.7	246.9	1001.8	277.4	740.6	216.8	739.6	240.9
	13	1112.8	216.9	1092.4	258.2	1093.7	283	786.4	214.7	778.7	233.3
	15	1170.2	219.4	1161.7	265	1148.4	283.7	811.3	205.7	790.7	224.9
UXEV310	4	1067.5	250.6	1042.8	287.1	976.9	312.4	755.1	274.1	NA	NA
	7	1154.5	264.7	1149.5	301.3	1091	318.5	804.5	268.4	759.6	288.6
	10	1270.6	264.6	1241.6	305.4	1164	327.5	872.6	269.5	860.7	295.7
	13	1373.8	267.8	1336	310.6	1265.3	332.3	933.9	266.8	924.5	291.1
	15	1419.3	270.8	1413.9	318.6	1330.1	333	974.2	260.7	958.1	285.3
UXEV350	4	1150.8	268.4	1133.7	312.3	1093.7	344.6	853.1	301.2	NA	NA
	7	1262.2	284.9	1259.2	328.9	1232.0	361.9	907.8	295.0	902.9	330.1
	10	1391.4	291.2	1370.3	339.0	1329.6	372.9	988.9	298.4	982.3	329.6
	13	1517.0	297.6	1483.0	350.1	1448.9	379.5	1053.8	295.5	1043.3	321.7
	15	1582.8	301.0	1573.7	359.2	1522.1	380.4	1092.4	285.7	1069.0	312.4
UXEV390	4	1243.1	285.2	1233.3	336.3	1218.5	375.6	957.3	327.3	1000.2	383.6
	7	1379.3	303.8	1378.4	355.3	1382	404.3	1017.7	320.3	1052.6	370.7
	10	1522.6	316.7	1509.2	371.5	1504.9	417.4	1112.5	326.2	1111	362.5
	13	1671.6	326.3	1641	388.5	1642.9	425.8	1181.3	323	1169.8	351
	15	1757.8	330.1	1745.1	398.7	1725.1	426.9	1218.7	309.5	1187.7	338.4
UXEV440	4	1479.4	344.4	1451.5	397.8	1380.8	436	1072.4	381.8	NA	NA
	7	1611.6	364.7	1606.3	418.2	1549	451.6	1141.8	373.9	1108.4	410.7
	10	1775.2	368.9	1741.8	427.7	1662.7	464.9	1241.3	376.9	1228.9	415
	13	1927.8	375.3	1879.8	438.5	1809.8	472.5	1325.4	373.2	1312.1	406.7
	15	2001.9	379.5	1992.2	449.9	1901.8	473.5	1378.1	362.6	1351.8	396.7

7. Dimensions and Foundation

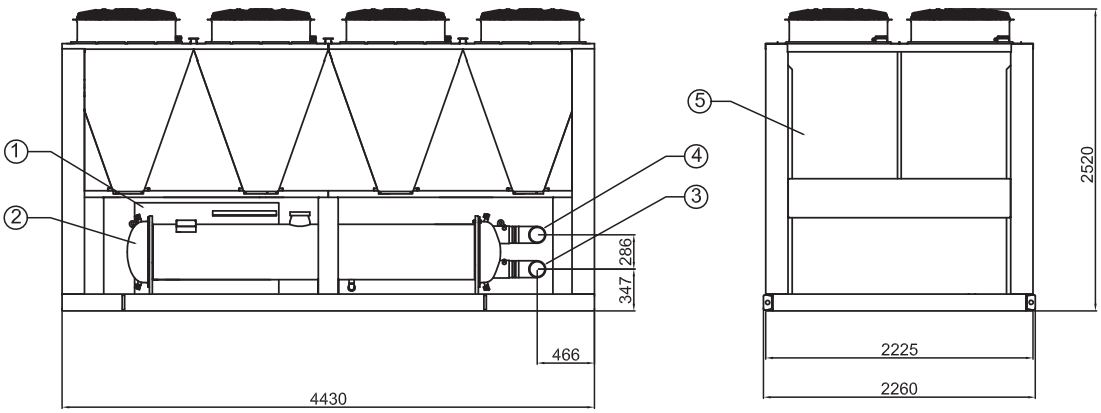
Dimensions

① UXEV090ST3-FAAE



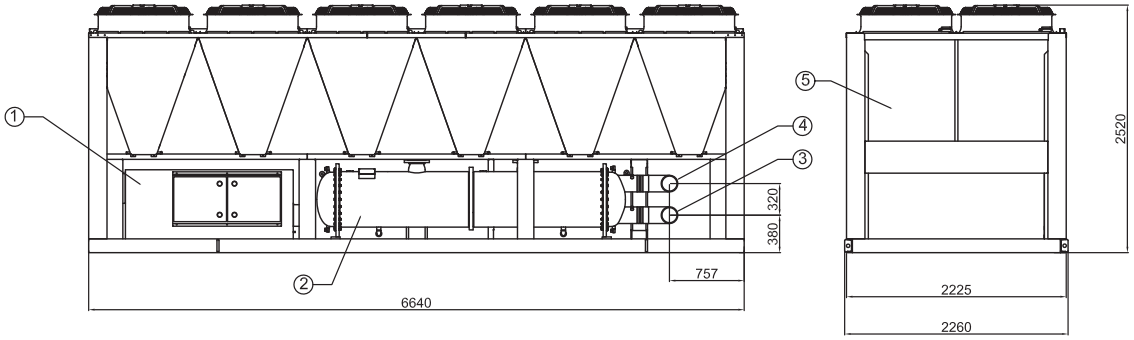
1	Control Cabinet	
2	Evaporator	
3	Evaporator Inflow	5" Clamp Connection (OD139.7 Water Pipe)
4	Evaporator Outflow	5" Clamp Connection (OD139.7 Water Pipe)
5	Condenser	

② UXEV130ST3-FAAE



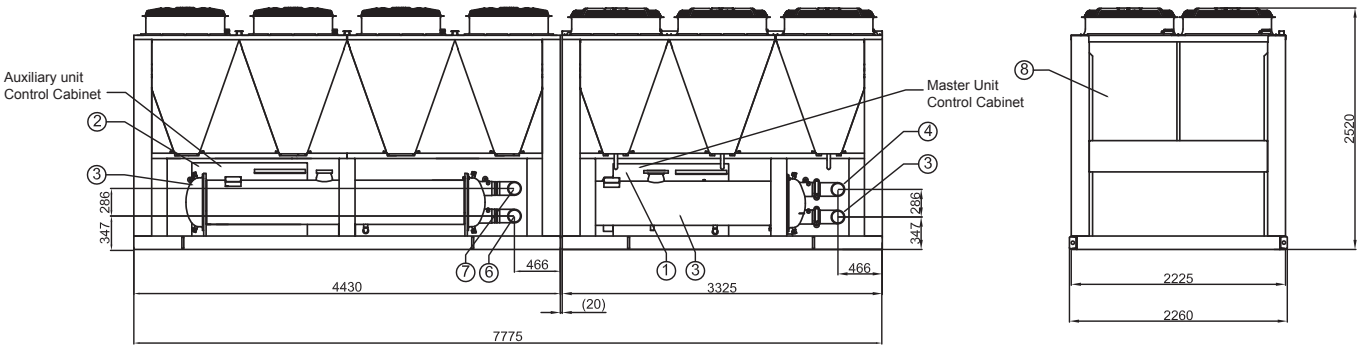
1	Control Cabinet	
2	Evaporator	
3	Evaporator Inflow	5" Clamp Connection (OD139.7 Water Pipe)
4	Evaporator Outflow	5" Clamp Connection (OD139.7 Water Pipe)
5	Condenser	

③ UXEV180ST3-FAAE



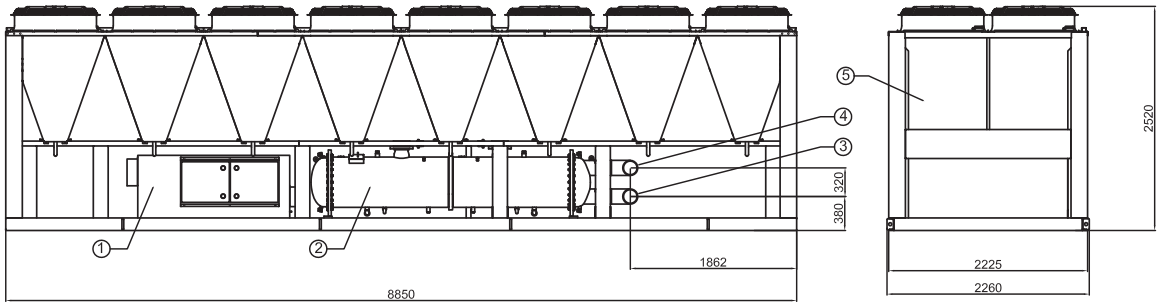
1	Control Cabinet	
2	Evaporator	
3	Evaporator Inlet	6" Victaulic joint (OD 168.3)
4	Evaporator Outlet	6" Victaulic joint (OD 168.3)
5	Condenser	

④ UXEV220ST3-FAAE



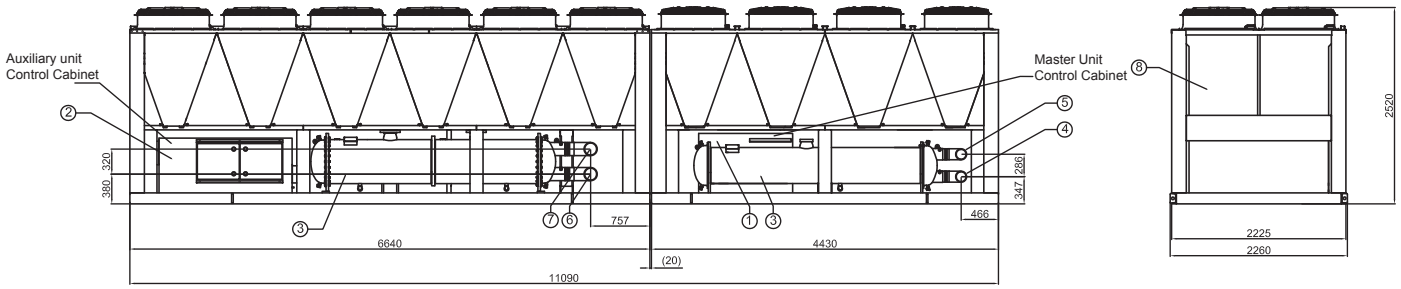
1	Master Control Cabinet	
2	Auxiliary Control Cabinet	
3	Evaporator	
4	Master Evaporator Inlet	5" Victaulic joint (OD 139.7)
5	Master Evaporator Outlet	5" Victaulic joint (OD 139.7)
6	Auxiliary Evaporator Inlet	5" Victaulic joint (OD 139.7)
7	Auxiliary Evaporator Outlet	5" Victaulic joint (OD 139.7)
8	Condenser	

⑤ UXEV260ST3-FAAE



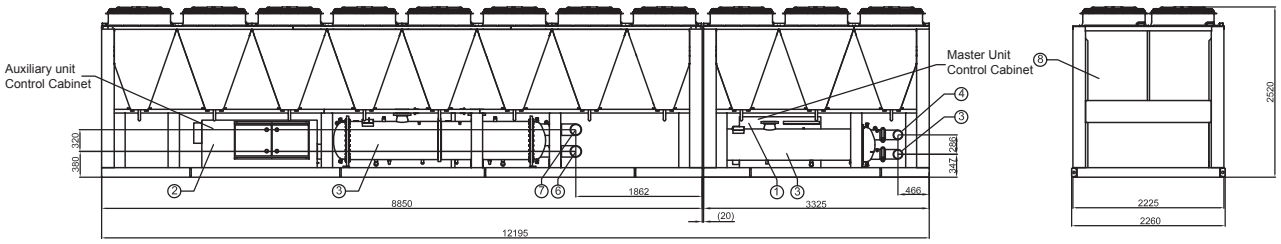
1	Control Cabinet	
2	Evaporator	
3	Evaporator Inflow	6" Victaulic joint (OD 168.3)
4	Evaporator Outflow	6" Victaulic joint (OD 168.3)
5	Condenser	

⑥ UXEV310ST3-FAAE



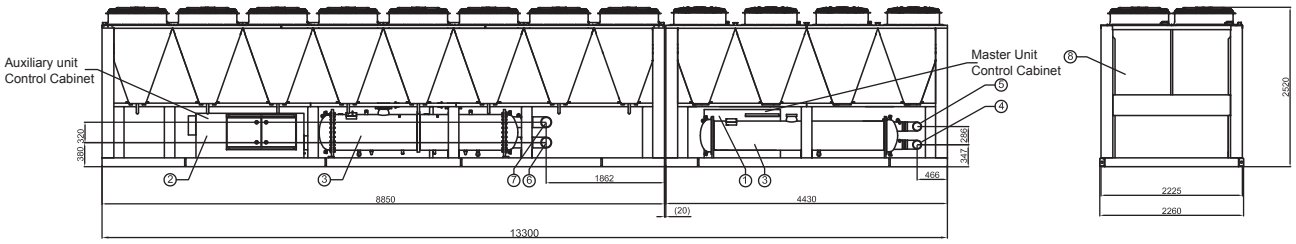
1	Master Control Cabinet	
2	Auxiliary Control Cabinet	
3	Evaporator	
4	Master Evaporator Inlet	5" Victaulic joint (OD 139.7)
5	Master Evaporator Outlet	5" Victaulic joint (OD 139.7)
6	Auxiliary Evaporator Inlet	6" Victaulic joint (OD 168.3)
7	Auxiliary Evaporator Outlet	6" Victaulic joint (OD 168.3)
8	Condenser	

⑦ UXEV350ST3-FAAE



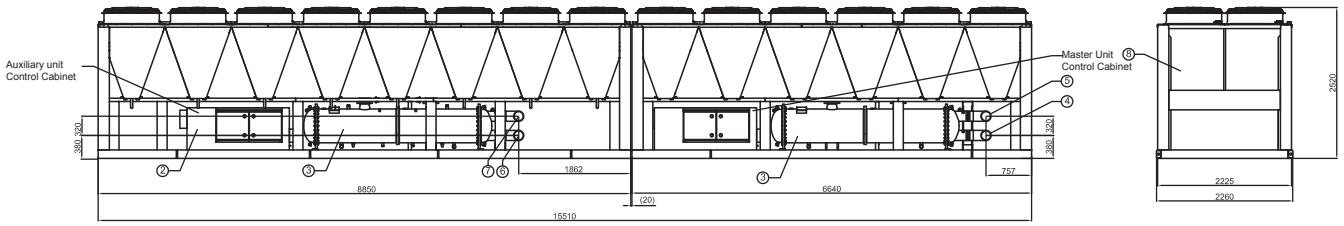
1	Master Control Cabinet	
2	Auxiliary Control Cabinet	
3	Evaporator	
4	Master Evaporator Inlet	5" Victaulic joint (OD 139.7)
5	Master Evaporator Outlet	5" Victaulic joint (OD 139.7)
6	Auxiliary Evaporator Inlet	6" Victaulic joint (OD 168.3)
7	Auxiliary Evaporator Outlet	6" Victaulic joint (OD 168.3)
8	Condenser	

⑧ UXEV390ST3-FAAE



1	Master Control Cabinet	
2	Auxiliary Control Cabinet	
3	Evaporator	
4	Master Evaporator Inlet	5" Victaulic joint (OD 139.7)
5	Master Evaporator Outlet	5" Victaulic joint (OD 139.7)
6	Auxiliary Evaporator Inlet	6" Victaulic joint (OD 168.3)
7	Auxiliary Evaporator Outlet	6" Victaulic joint (OD 168.3)
8	Condenser	

⑨ UXEV440ST3-FAAE



1	Master Control Cabinet	
2	Auxiliary Control Cabinet	
3	Evaporator	
4	Master Evaporator Inlet	5" Victaulic joint (OD 139.7)
5	Master Evaporator Outlet	5" Victaulic joint (OD 139.7)
6	Auxiliary Evaporator Inlet	6" Victaulic joint (OD 168.3)
7	Auxiliary Evaporator Outlet	6" Victaulic joint (OD 168.3)
8	Condenser	

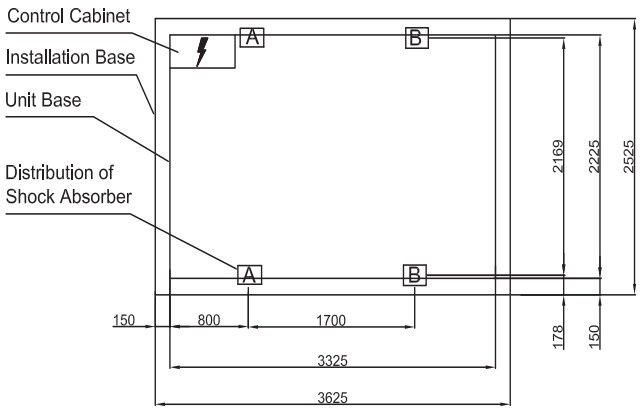
Note:

- The preceding models are delivered from the factory in forms of master unit and auxiliary units separately. On-site connections of communication cables and water pipelines between the master unit and auxiliary units are required.
- For the preceding models, dual-dot power supply wiring is adopted.
- Factory default setting small model as master unit and service engineer can change the setting at job site, default conbination as below form.

Model	Master unit	Auxillary unit
UXEV220ST3-FAAE	UXEV090ST3	UXEV130ST3
UXEV310ST3-FAAE	UXEV130ST3	UXEV180ST3
UXEV350ST3-FAAE	UXEV090ST3	UXEV260ST3
UXEV390ST3-FAAE	UXEV130ST3	UXEV260ST3
UXEV440ST3-FAAE	UXEV180ST3	UXEV260ST3

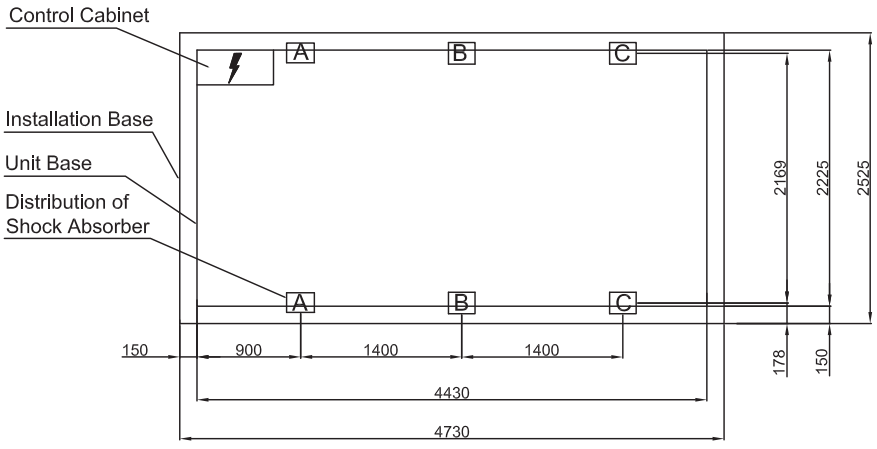
Foundation

① UXEV090ST3-FAAE



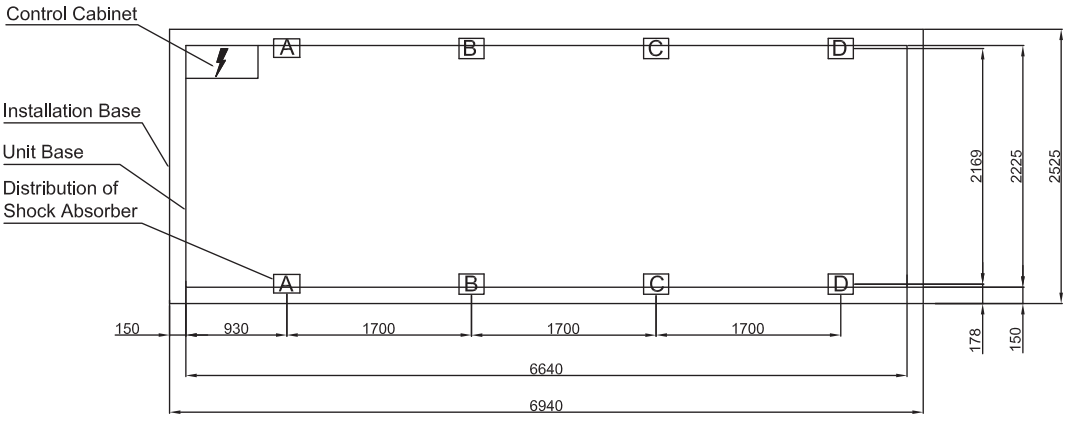
Unit Model	Spring Shock Absorber Load Bearing (kg)	
	A	B
UXEV090ST3-FAA	650	650

② UXEV130ST3-FAAE



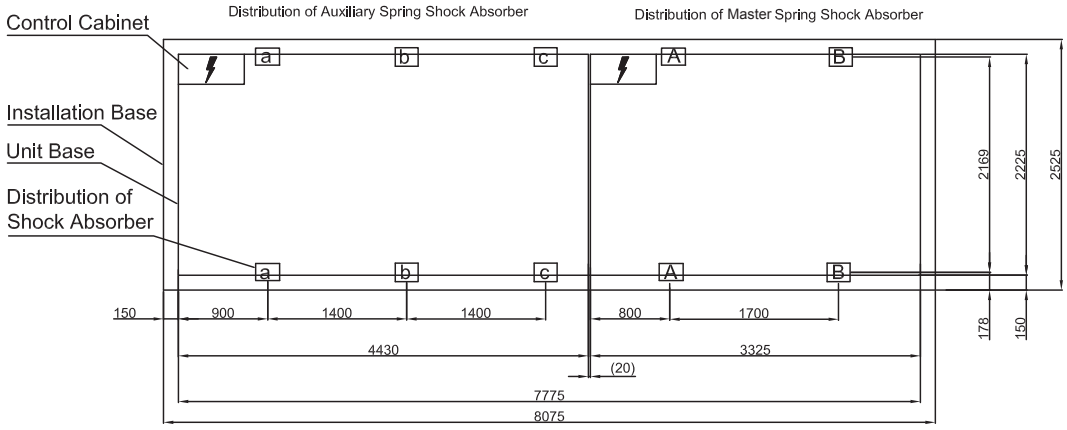
Unit Model	Spring Shock Absorber Load Bearing (kg)		
	A	B	C
UXEV130ST3-FAA	517	517	517

③ UXEV180ST3-FAAE



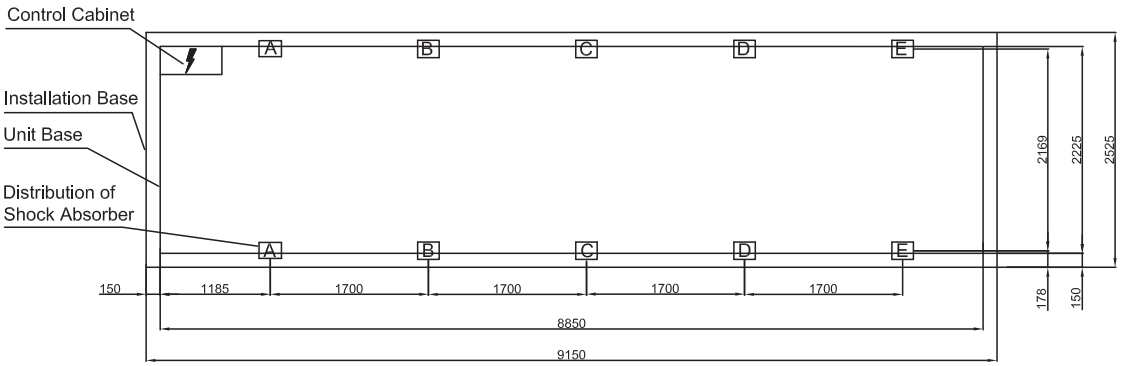
Unit Model	Spring Shock Absorber Load Bearing (kg)			
	A	B	C	D
UXEV180ST3-FAA	644	644	644	644

④ UXEV220ST3-FAAE



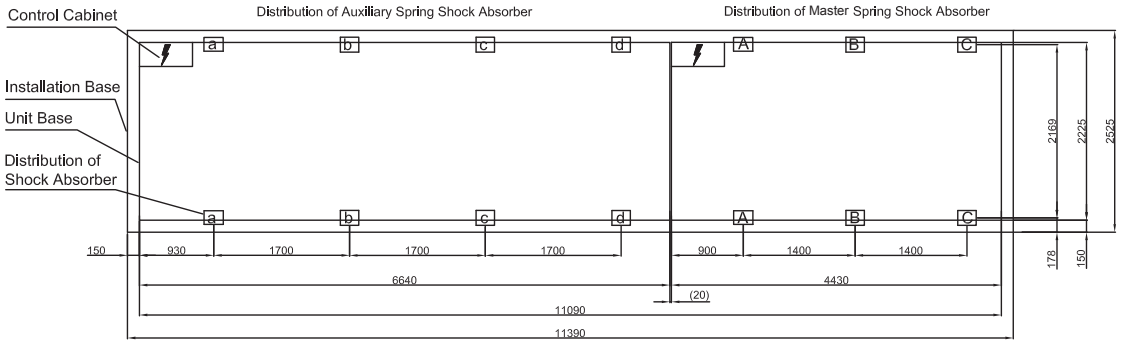
Unit Model	Spring Shock Absorber Load Bearing (kg)				
	Master		Auxiliary		
	A	B	a	b	c
UXEV220ST3-FAA	650	650	517	517	517

⑤ UXEV260ST3-FAAE



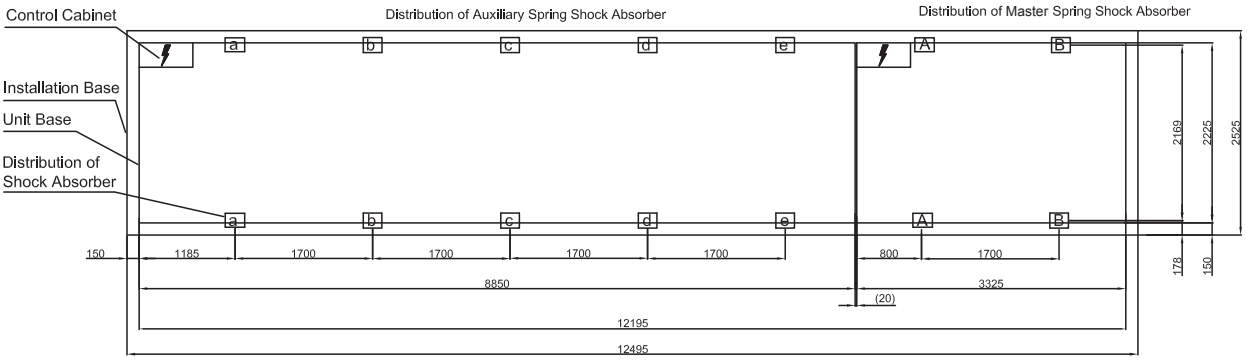
Unit Model	Spring Shock Absorber Load Bearing (kg)				
	A	B	C	D	E
UXEV260ST3-FAA	574	574	574	574	574

⑥ UXEV310ST3-FAAE



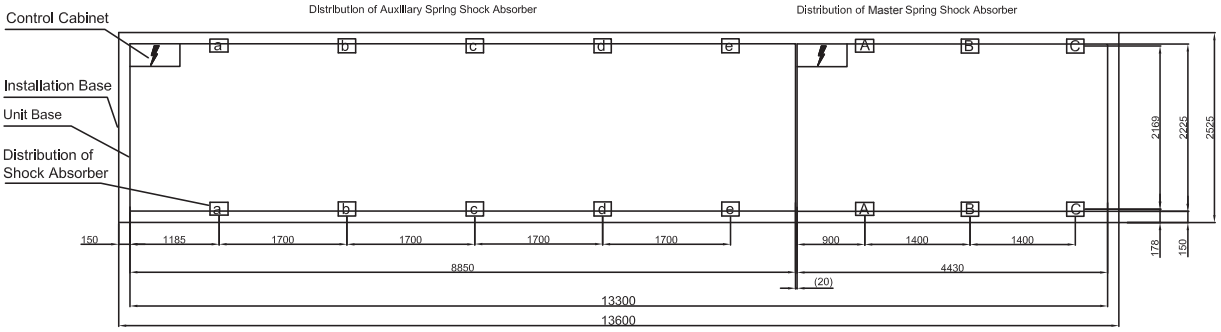
Unit Model	Spring Shock Absorber Load Bearing (kg)						
	Master			Auxiliary			
	A	B	C	a	b	c	d
UXEV310ST3-FAA	517	517	517	644	644	644	644

⑦ UXEV350ST3-FAAE



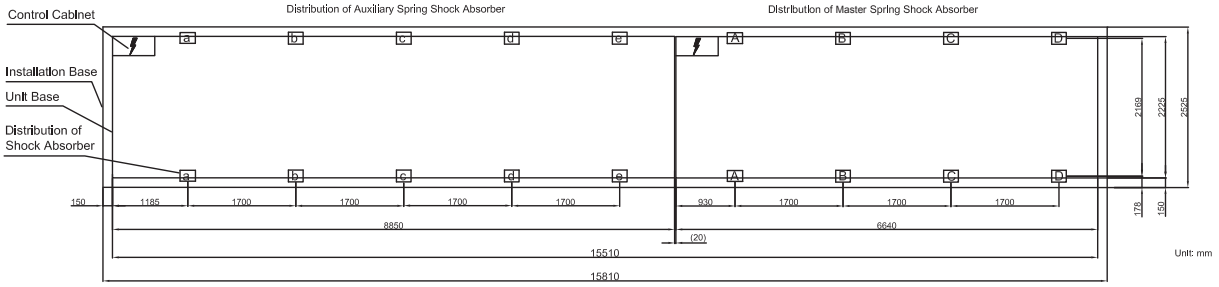
Unit Model	Spring Shock Absorber Load Bearing (kg)						
	Master		Auxiliary				
	A	B	a	b	c	d	e
UXEV350ST3-FAA	650	650	574	574	574	574	574

⑧ UXEV390ST3-FAAE



Unit Model	Spring Shock Absorber Load Bearing (kg)							
	Master			Auxiliary				
	A	B	C	a	b	c	d	e
UXEV390ST3-FAA	517	517	517	574	574	574	574	574

⑨ UXEV440ST3-FAAE

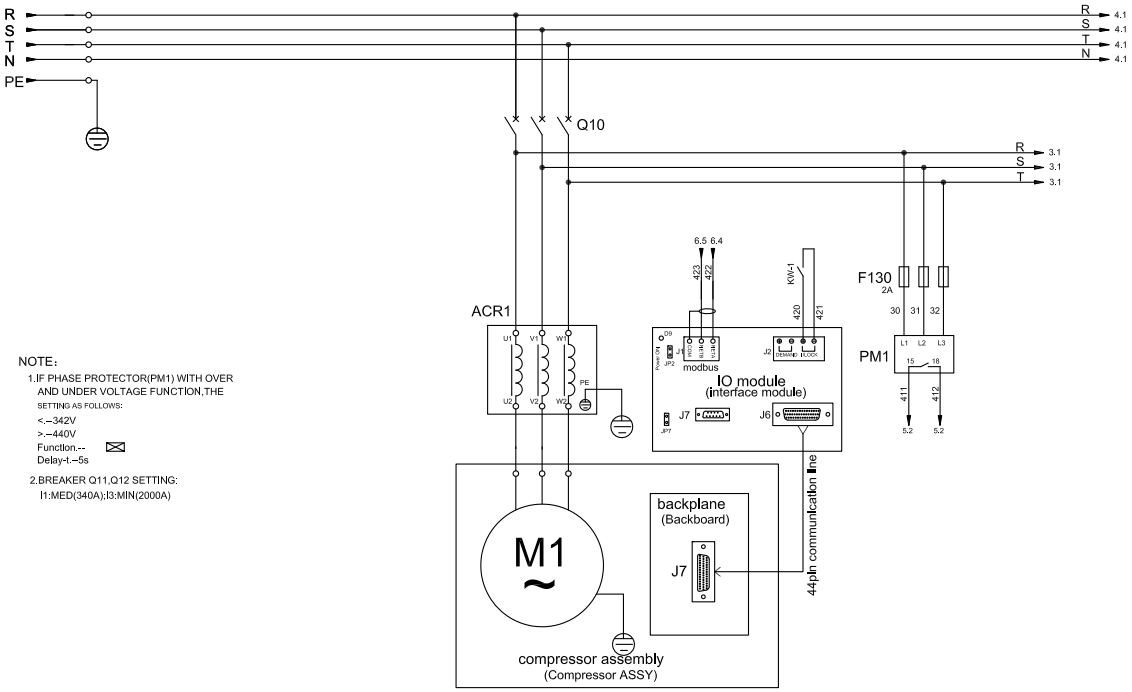


Unit Model	Spring Shock Absorber Load Bearing (kg)								
	Master				Auxiliary				
	A	B	C	D	a	b	c	d	e
UXEV440ST3-FAA	644	644	644	644	574	574	574	574	574

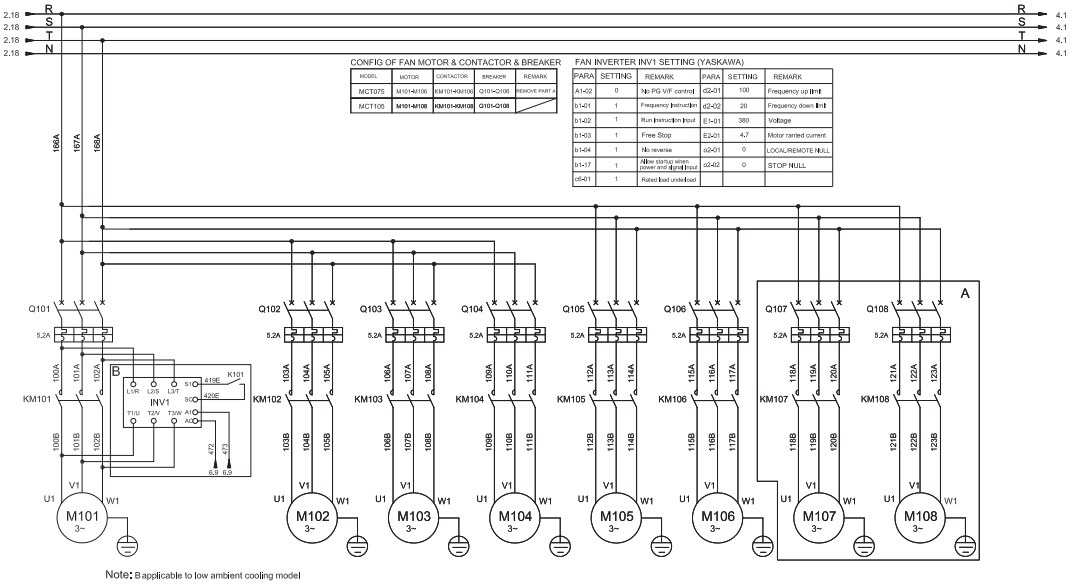
8. Wiring Diagram

● UXEV090/130ST3-FAAE

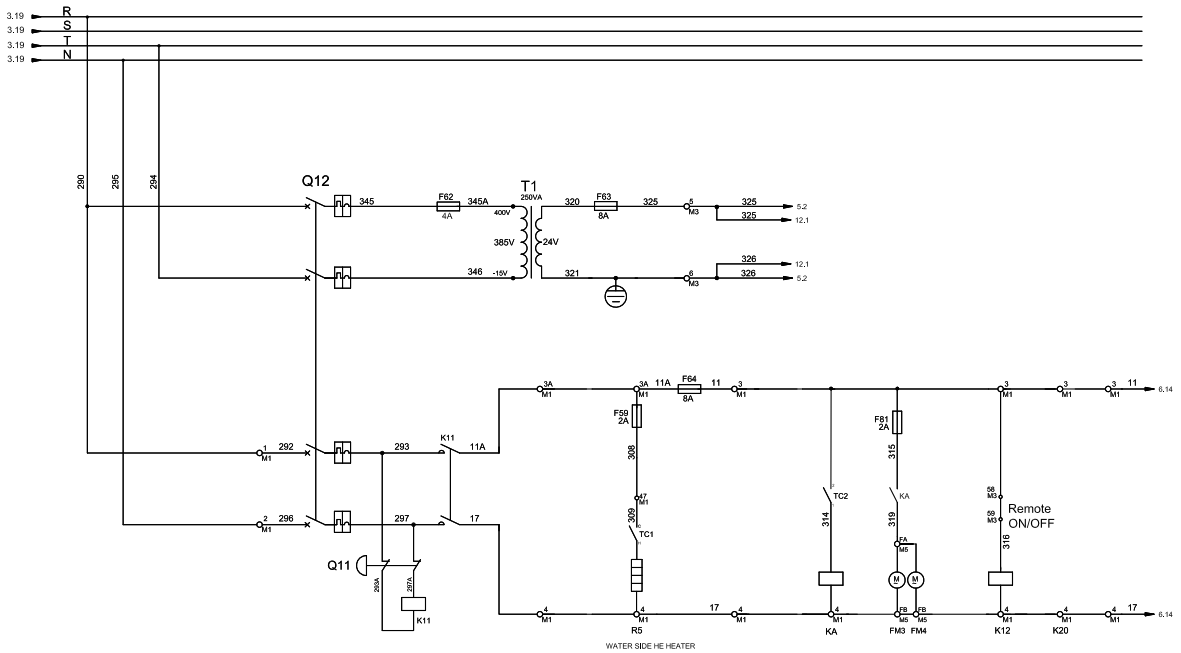
COMPRESSOR1-2 POWER SUPPLY



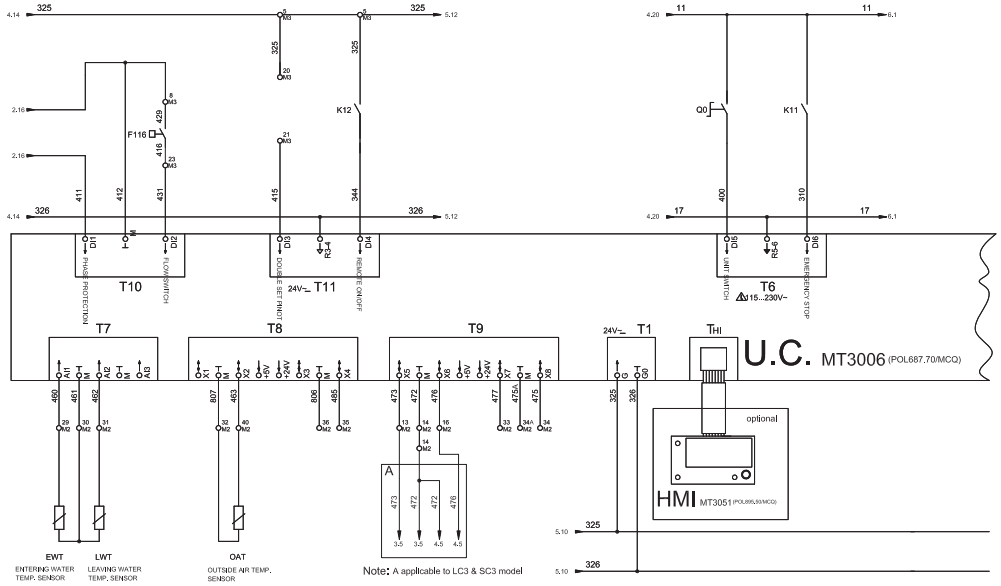
FAN1 POWER SUPPLY



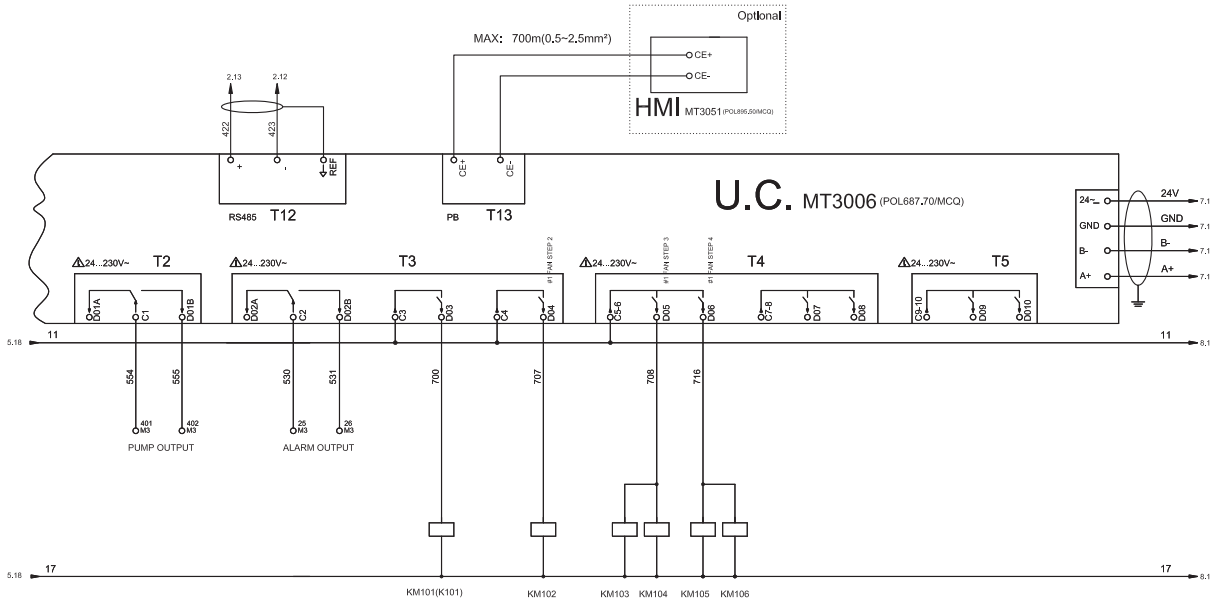
CONTROL POWER SUPPLY



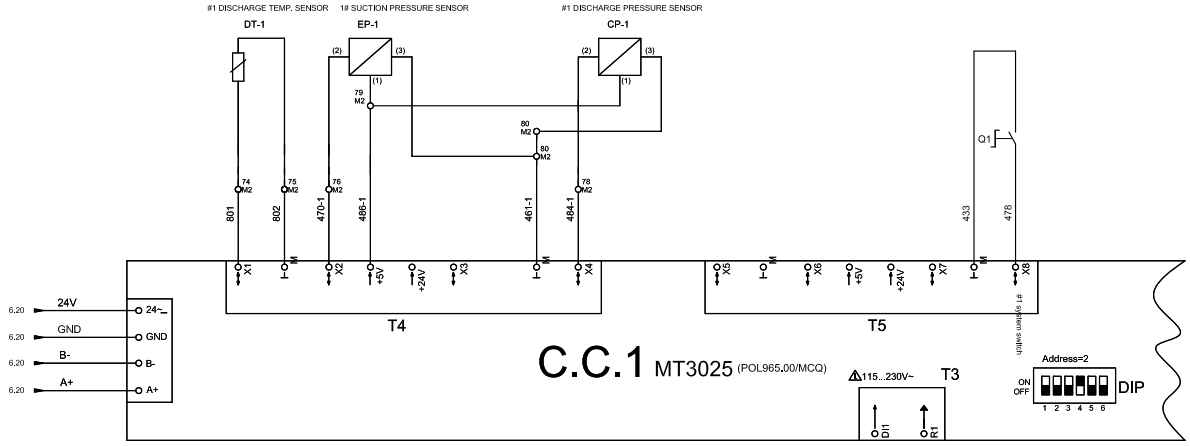
ANALOG INPUTS-OUTPUTS & DIGITAL INPUTS BOARD



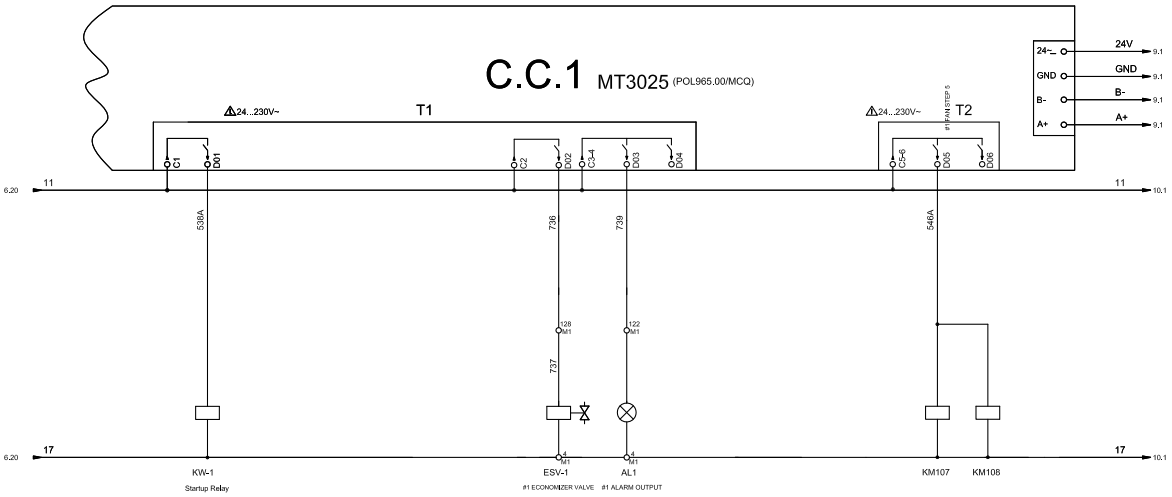
DIGITAL OUTPUTS BOARD



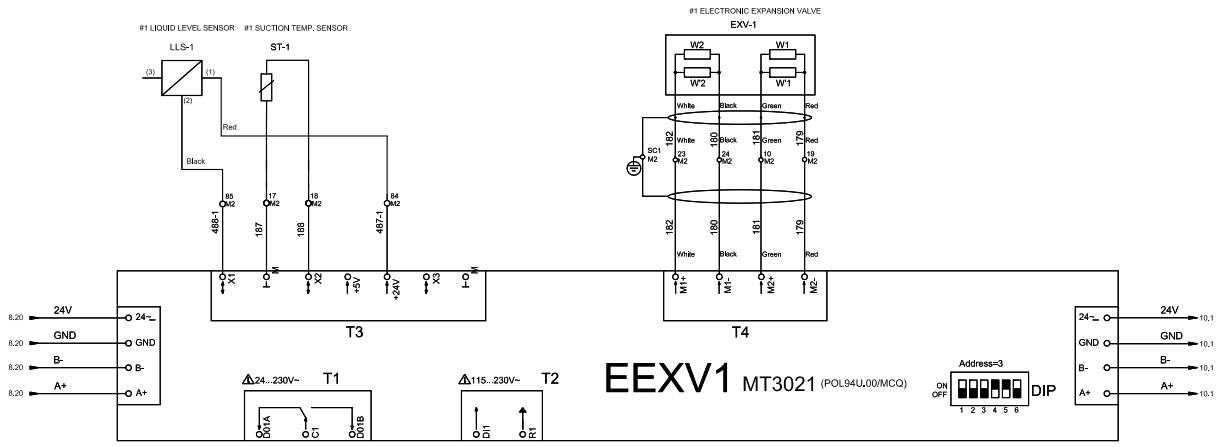
EXPANSION INPUTS, COMPRESSOR1 CONTROL



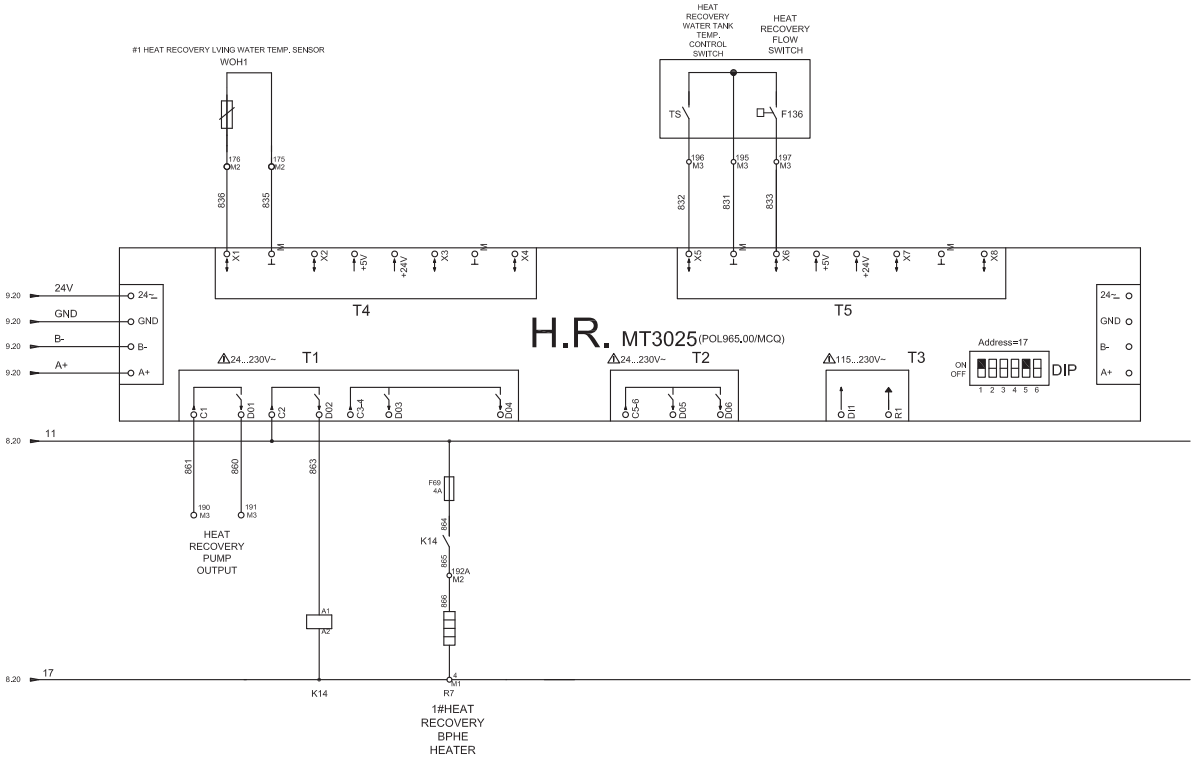
EXPANSION OUTPUTS, COMPRESSOR1 CONTROL



COMPRESSOR1 EEXV CONTROL



HEAT RECOVERY CONTROL BOARD

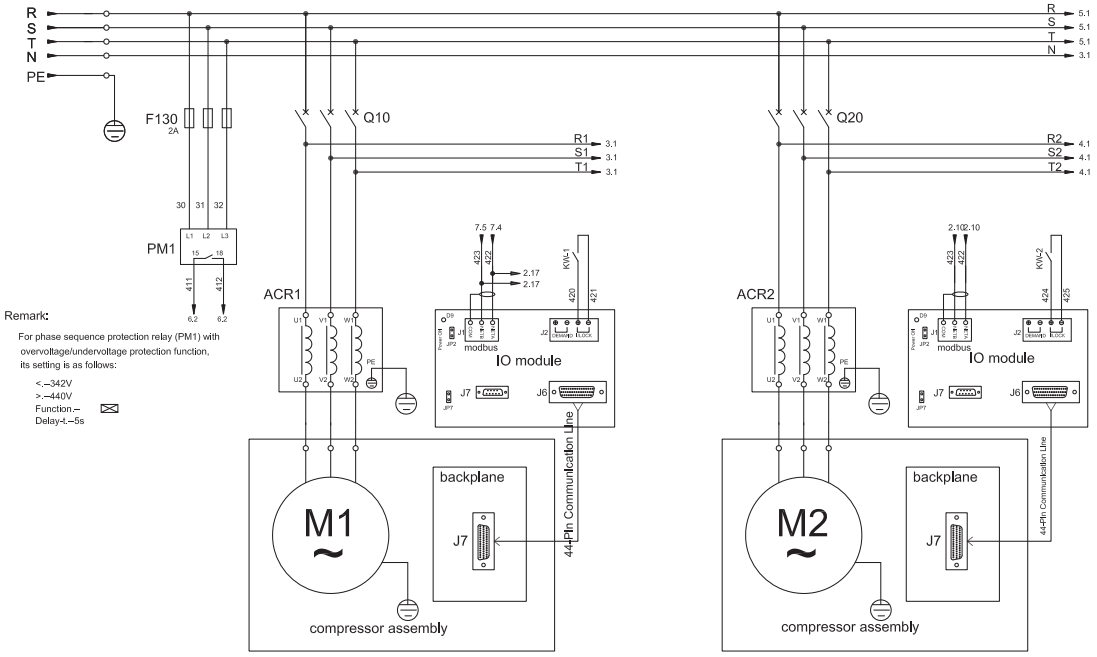


SYMBOL DESCRIPTION

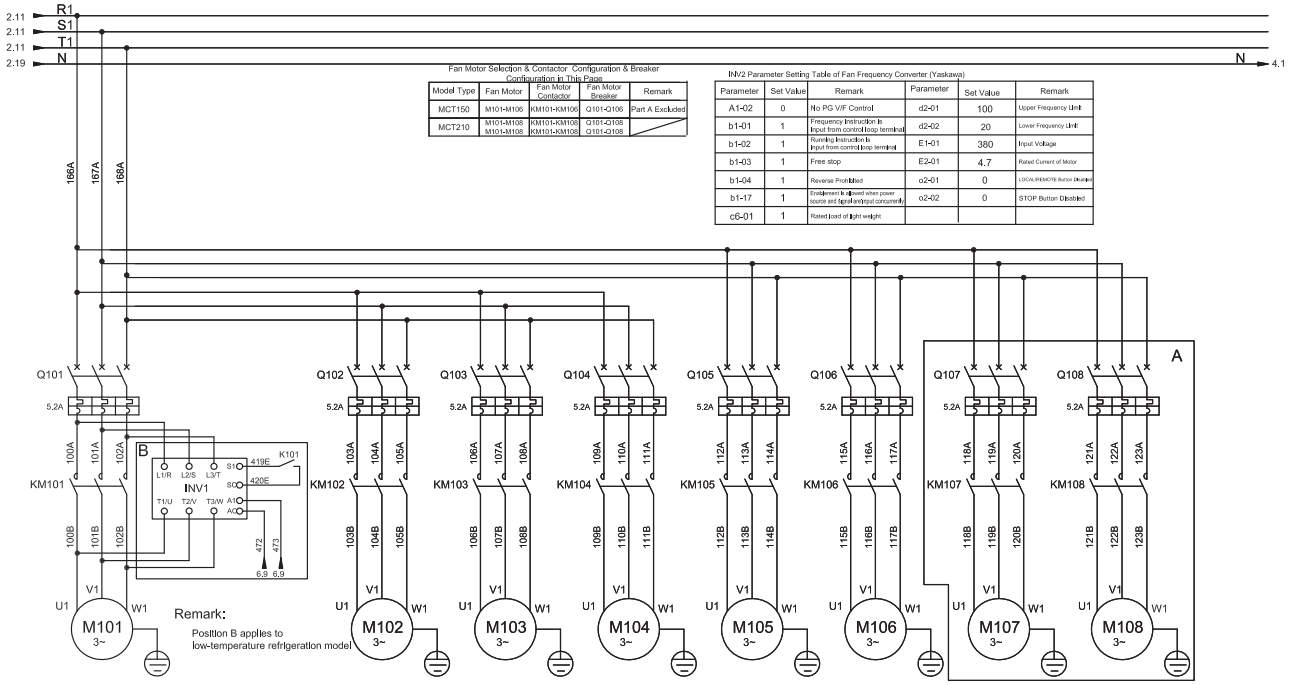
ITEM	SYMBOL	DESCRIPTION	ITEM	SYMBOL	DESCRIPTION
1	Q10	COMPRESSOR BREAKER	34	U.C.	UNIT CONTROL MODULE
2	M1	COMPRESSOR	35	C.C.1	#1 COMPRESSOR CONTROL MODULE
3	PM1	PHASE PROTECTOR	36	EEXV1	#1 EXV CONTROL MODULE
4	Q12,Q101-108	CONTROL CIRCUIT BREAKER & FAN BREAKER	37	H.C.1	#1 HEATING CONTROL MODULE
5	KM101-108	FAN CONTACTOR	38	H.R.	HEAT RECOVERY CONTROL MODULE
6	M101-108	FAN MOTOR	39	TC2	EXHAUST FAN TEMP CONTROLLER (>40°C,CLOSE)
7	F59,F62-64,F69, F79,F81.F130	FUSE	40	FM1-2	EXHAUST FAN
8	T1	CONTROL TRANSFORMER	41	INV1	#1 FAN INVERTER
9	Q11	EMERGENCY SWITCH	42	WOH1	#1 HEAT RECOVERY LVING WATER TEMP SENSOR
10	Q8	COOL/HEAT MODE SWITCH	43	TS	HEAT RECOVERY WATER TANK TEMP CONTROL SWITCH
11	R5	WATER SIDE HEAT EXCHANGER HEATER	44	F136	HEAT RECOVERY FLOW SWITCH
12	TC1	WATER SIDE HE TEMP CONTROL(<3°C,CLOSE;>6°C,OPEN)	45	R7	#1 HEAT RECOVERY HEATER
13	K11,K12,K20,KA,KW-1,KD K14,K101	RELAY	46		
14	F116	FLOW SWITCH	47		
15	Q0	ON/OFF UNIT SWITCH	48		
16	Q1	ON-OFF COMPRESSOR1 SWITCH	49		
17	QF1	#1 MANUAL DEFROST SWITCH	50		
18	ESV-1	#1 ECONOMIZER VALVE	51		
19	Y1B-1/2/3	#1 AFTER CONDENSER VALVE 1/2/3	52		
20	YP-1	#1 BALANCE VALVE	53		
21	4WV1-1,3	#1 4-WAY VALVE COIL 1,3	54		
22	4WV1-2,4	#1 4-WAY VALVE COIL 2,4	55		
23	LLS-1/2	#1 LIQUID LEVEL SENSOR	56		
24	EWT	EWT SENSOR	57		
25	LWT	LWT SENSOR	58		
26	OAT	AMBIENT TEMP SENSOR			
27	DT-1	#1 DISCHARGE TEMP SENSOR			
28	EP-1	#1 SUCTION PRESSURE SENSOR			
29	CP-1	#1 DISCHARGE PRESSURE SENSOR			
30	ST-1	#1 SUCTION TEMP SENSOR			
31	DE1-1,2	#1 DEFROST TEMP SENSOR 1,2			
32	EXV1	#1 EXV			
33	HMI	HUMAN-MACHINE INTERFACE (OPTION)			

- **UXEV180/260ST3-FAAE**

COMPRESSOR1-2 POWER SUPPLY



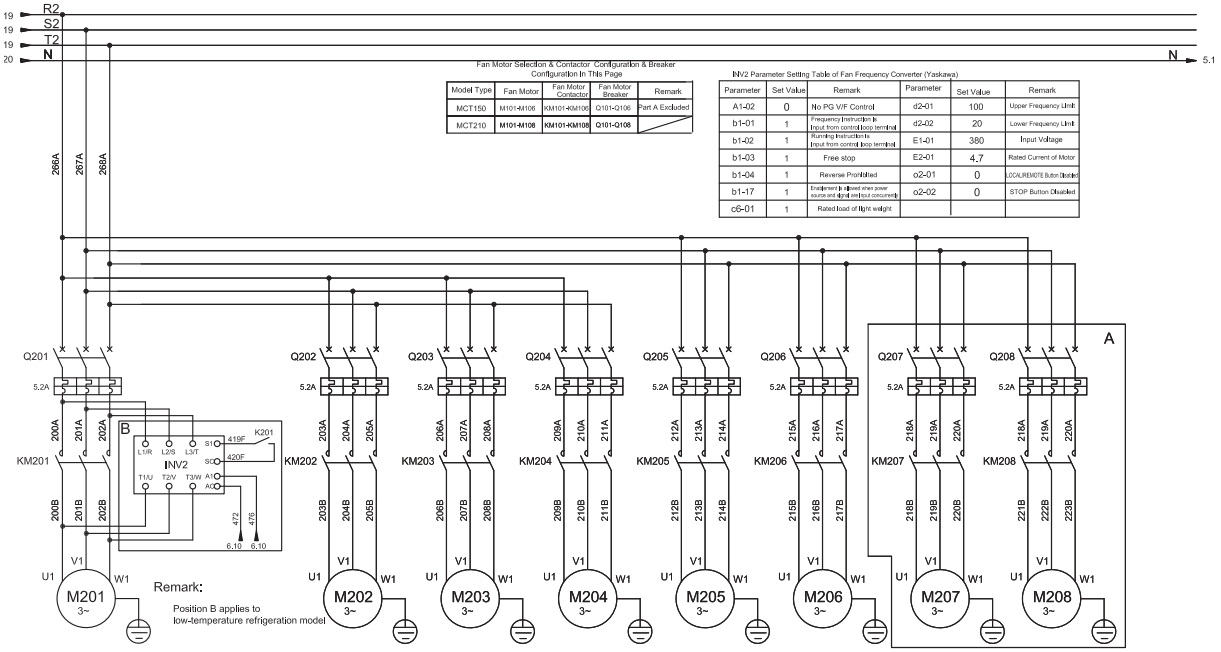
COMPRESSOR1-2 POWER SUPPLY



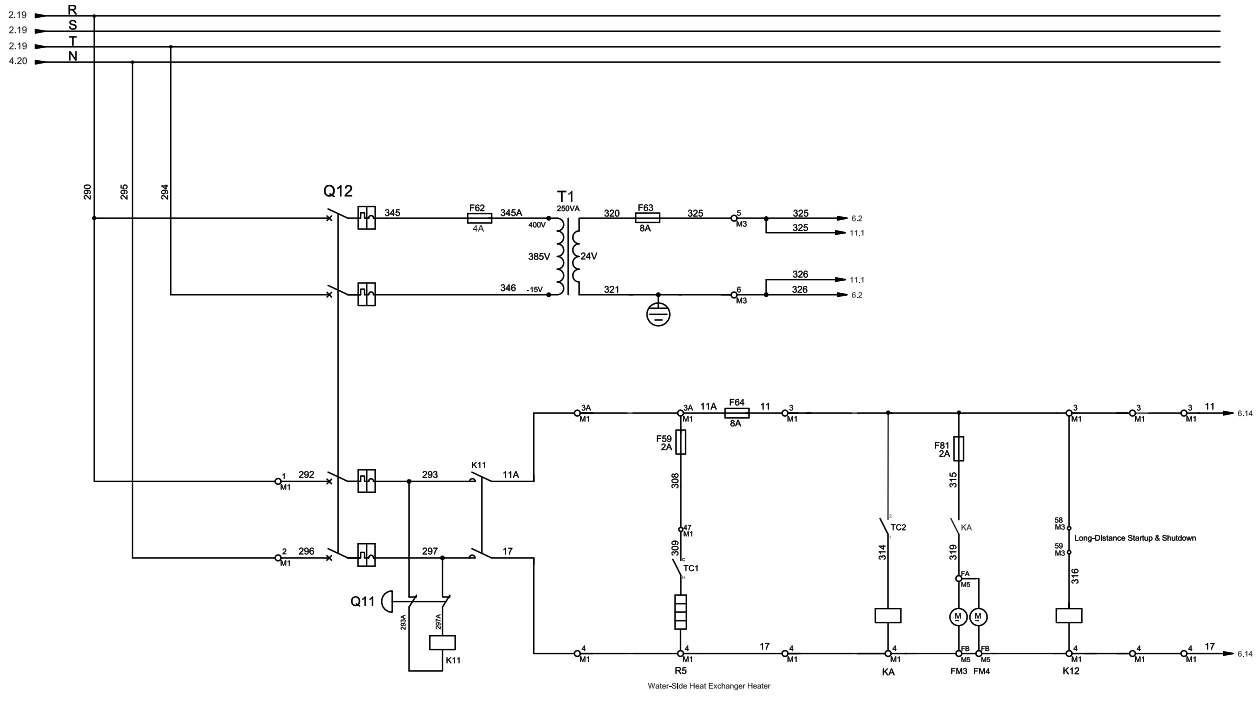
Model Type	Fan Motor	Fan Motor Contactor	Fan Motor Breaker	Remark
MCT150	M101-M106	KM101-KM106	Q101-Q106	Part A Excluded
MCT210	M101-M108 M101-M108	KM101-KM108 KM101-KM108	Q101-Q108 Q101-Q105	

Parameter	Set Value	Remark	Parameter	Set Value	Remark
A1-02	0	No PG V/F Control	d2-01	100	Upper Frequency Limit
b1-01	1	Frequency Instruction is Input from control loop terminal	d2-02	20	Lower Frequency Limit
b1-02	1	Running Instruction is Input from control loop terminal	E1-01	380	Input Voltage
b1-03	1	Free stop	E2-01	4.7	Rated Current of Motor
b1-04	1	Reverse Prohibited	o2-01	0	LOCAL/REMOTE Button Disabled
b1-17	1	Enablement is allowed when power source and signal are input concurrently	o2-02	0	STOP Button Disabled
c6-01	1	Rated load of light weight			

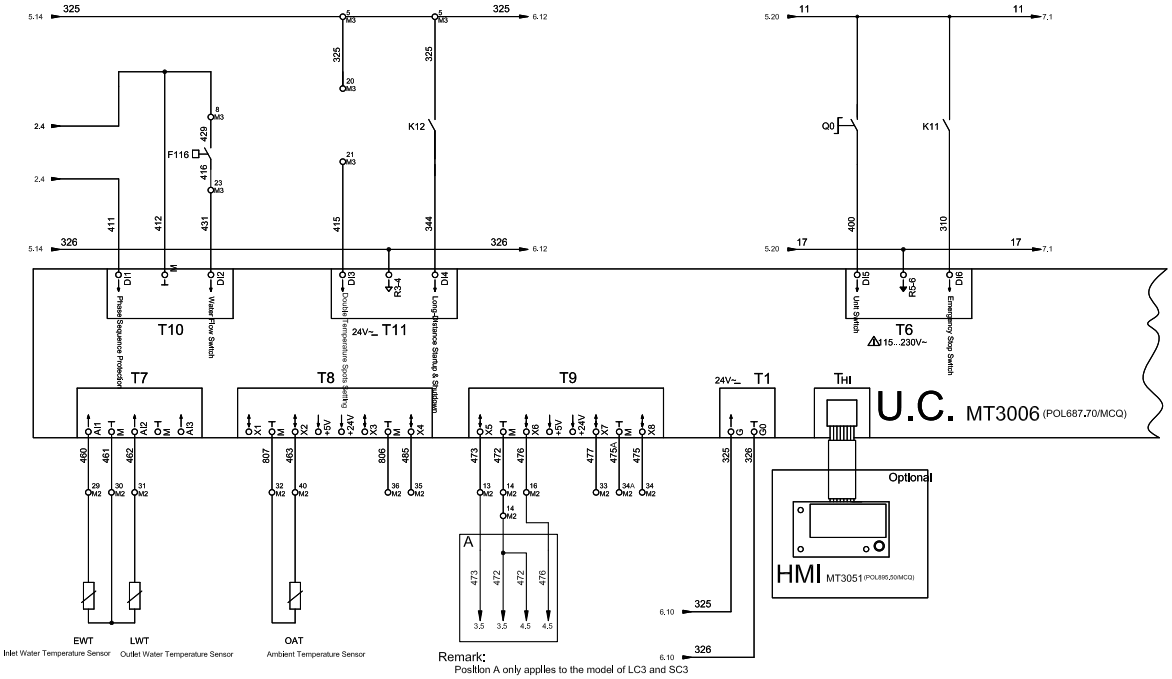
Fan 2 POWER SUPPLY



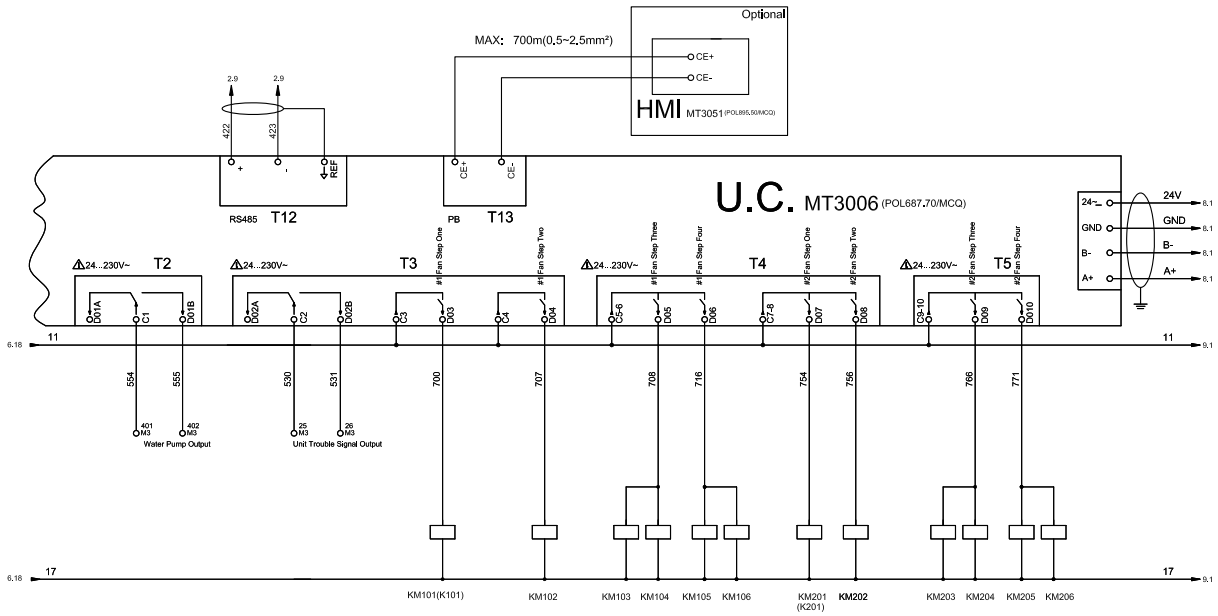
CONTROL POWER SUPPLY



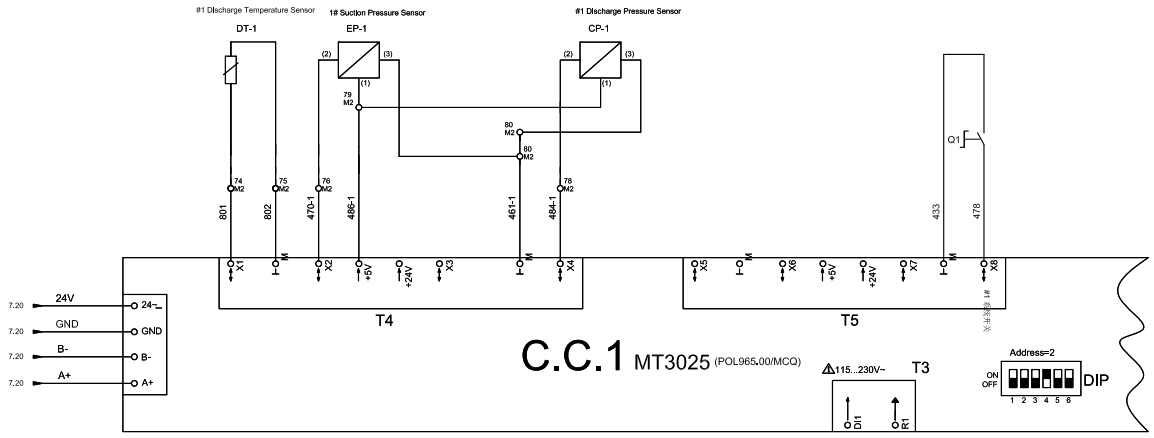
ANALOG INPUTS-OUTPUTS & DIGITAL INPUTS BOARD



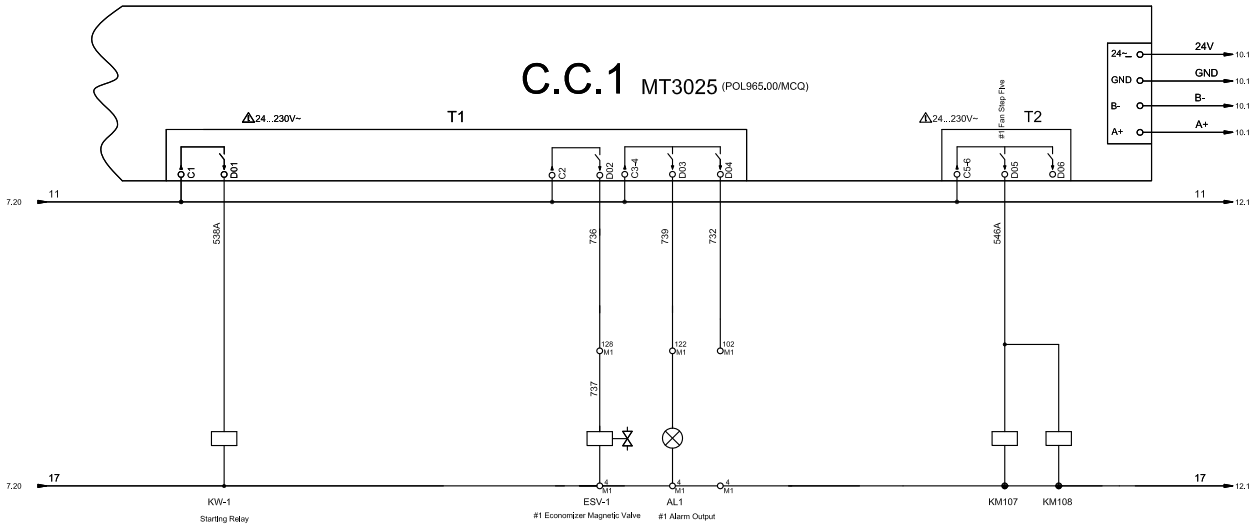
DIGITAL OUTPUT BOARD



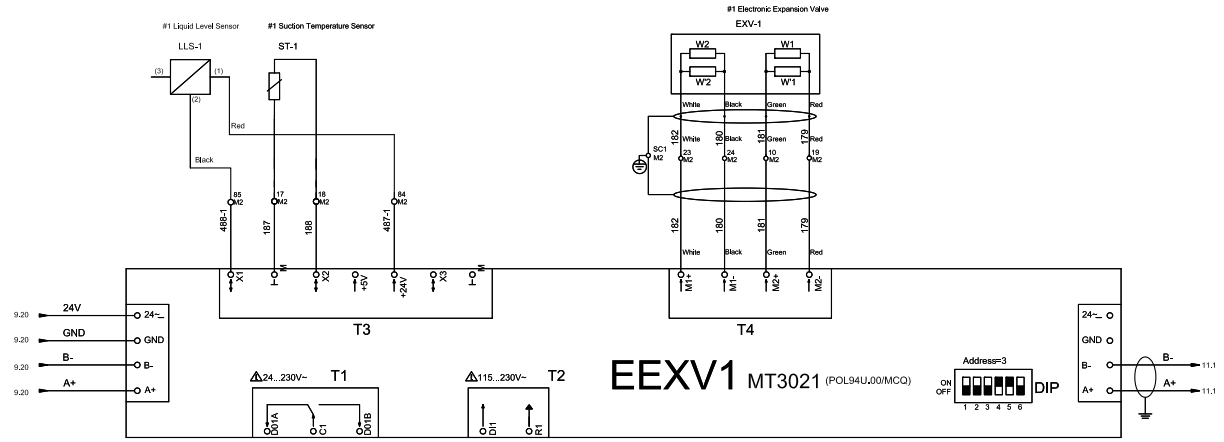
EXPANSION INPUTS, COMPRESSOR 1 CONTROL



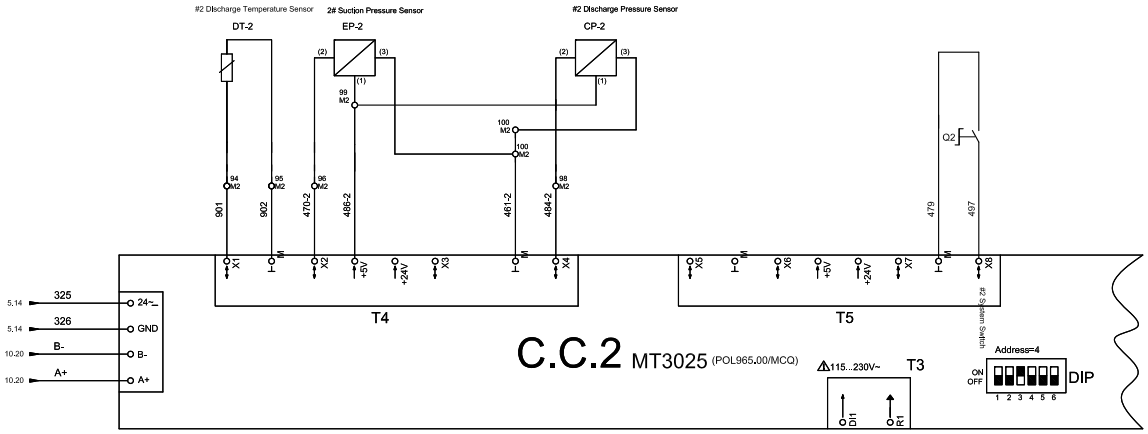
EXPANSION OUTPUT, COMPRESSOR 1 CONTROL



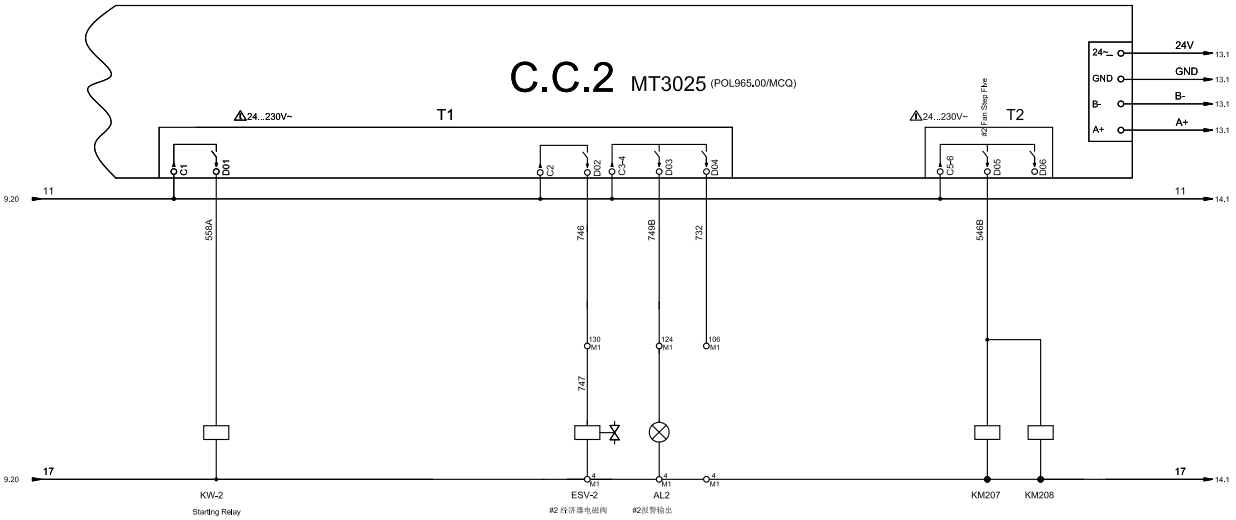
COMPRESSOR 1 EEXV CONTROL



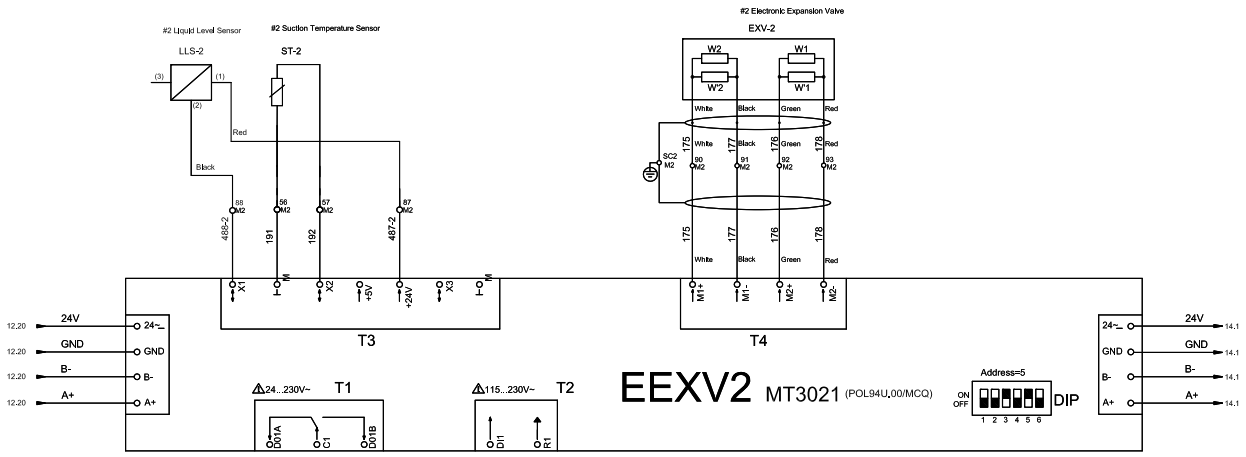
EXPANSION INPUTS, COMPRESSOR 2 CONTROL



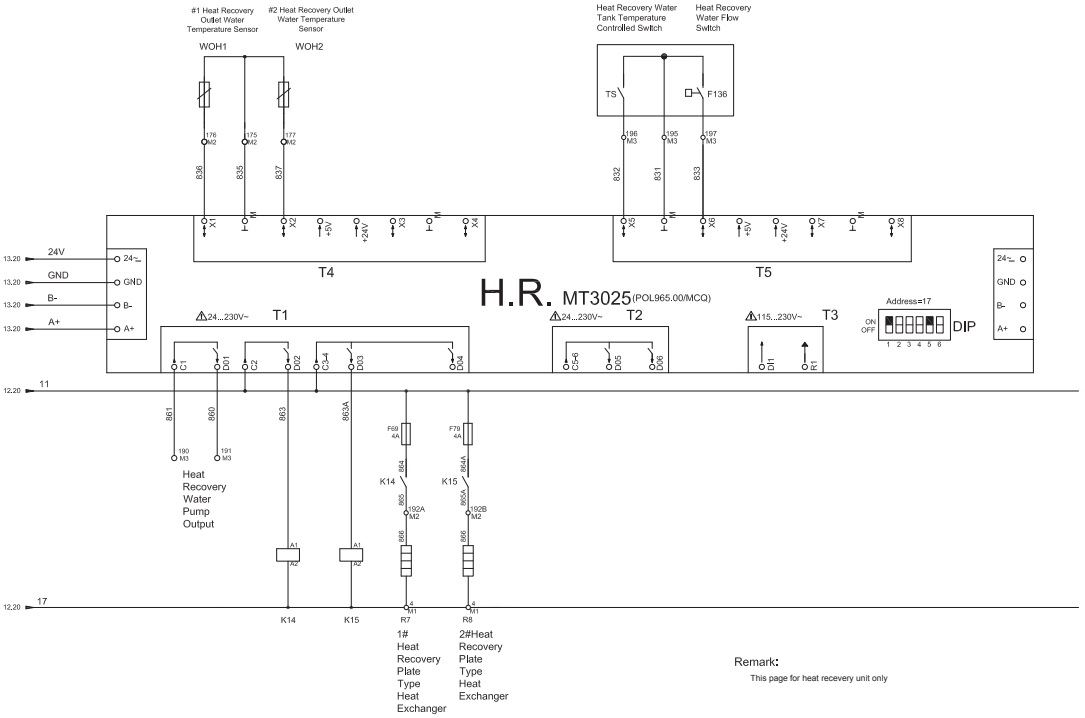
EXPANSION OUTPUTS, COMPRESSOR 2 CONTROL



COMPRESSOR 2 EEXV CONTROL



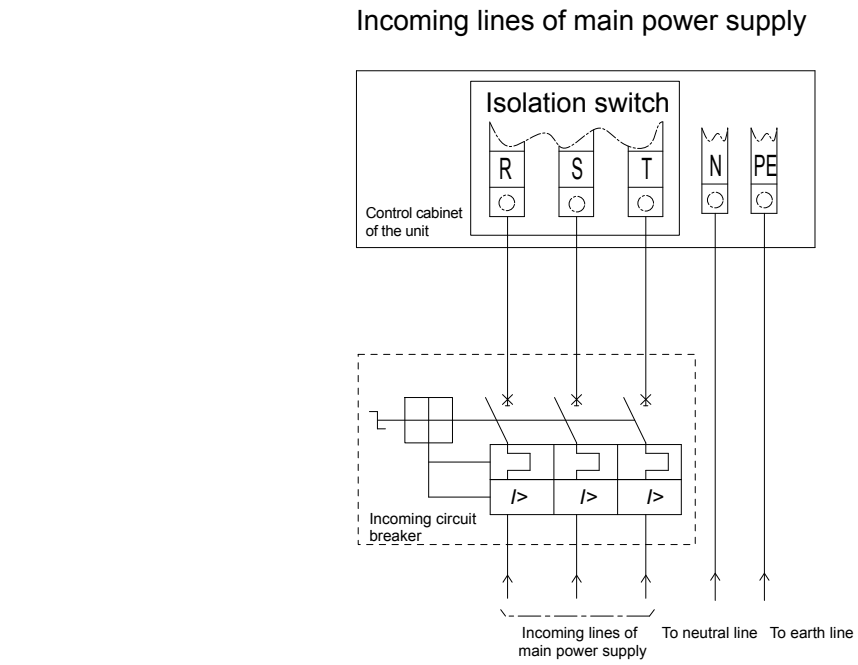
HEAT RECOVERY CONTROL PANEL

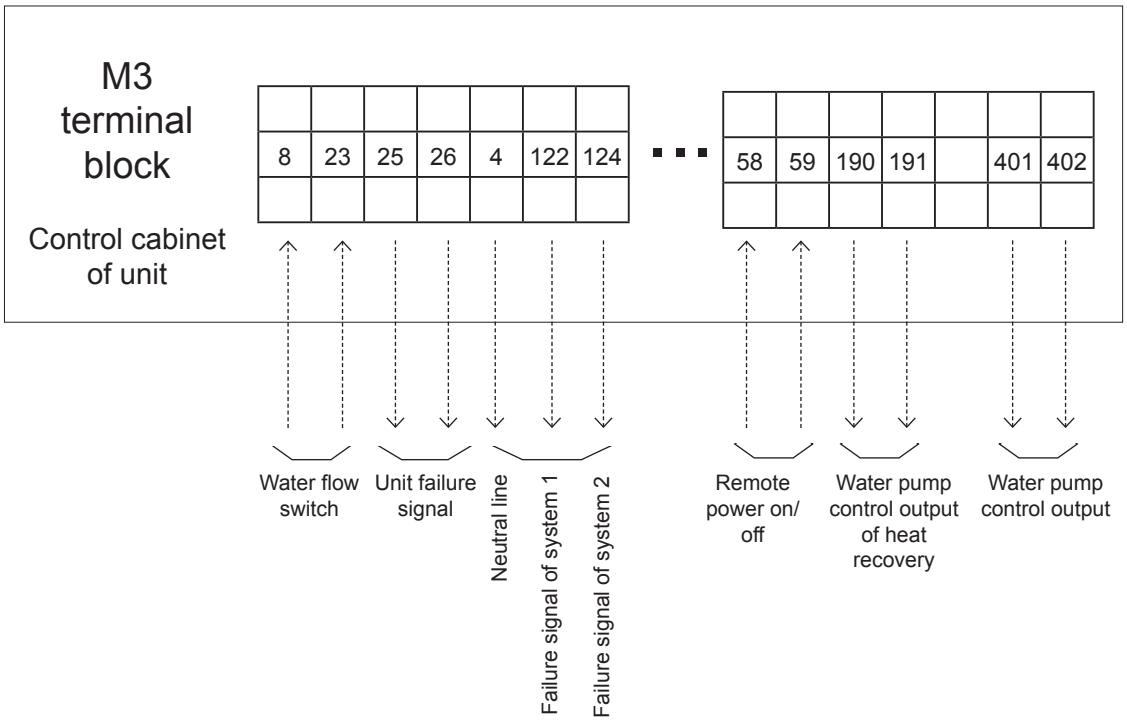


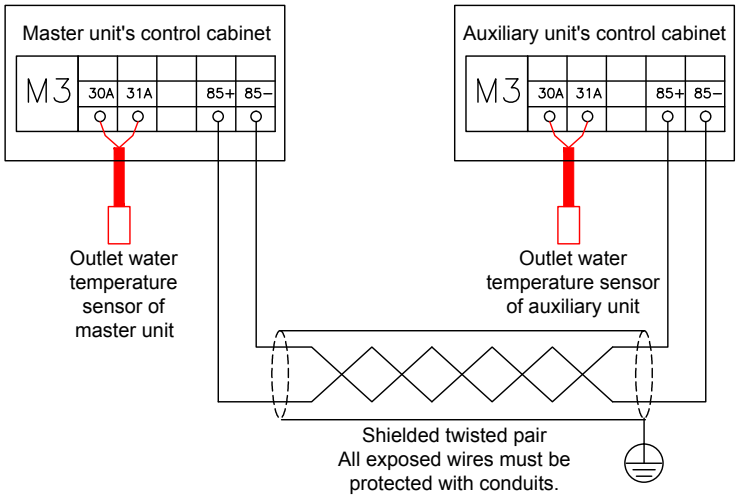
SYMBOL DESCRIPTION

ITEM	SYMBOL	DESCRIPTION	ITEM	SYMBOL	DESCRIPTION
1	Q10,Q20	COMPRESSOR BREAKER	33	HMI	HUMAN-MACHINE INTERFACE (OPTIONAL)
2	M1-2	COMPRESSOR	34	U.C.	UNIT CONTROL MODULE
3	PM1	PHASE SEQUENCE PROTECTION RELAY	35	C.C.1/2	#1-2 COMPRESSOR CONTROL MODULE
4	Q12,Q101-108·Q201-208	CONTROL CIRCUIT BREAKER & FAN CIRCUIT BREAKER	36	EEXV1/2	#1-2 CONTROL MODULE
5	KM101-108,KM201-208	FAN CONTACTOR	37		
6	M101-108,M201-208	FAN MOTOR	38	H.R.	HEAT RECOVERY CONTROL MODULE
7	F59,F62-64,F69, F79,F81,F130	FUSE	39	TC2	EXHAUST FAN TEMPERATURE CONTROLLER (>40°C, CLOSE)
8	T1	CONTROL CIRCUIT TRANSFORMER	40	FM1-2	EXHAUST FAN EXV
9	Q11	EMERGENCY STOP SWITCH	41	INV1,INV2	#1 AND #2 FAN INNERTER
10	R5	WATER-SIDE HEAT EXCHANGER HEATER	42	WOH1/2	#1-2 HEAT RECOVERY LVING WATER TEMPERATURE SENSOR
11	TC1	WATER-SIDE HEAT EXCHANGER TEMPERATURE CONTROLLER (<3°C, CLOSE; >8°C, OPEN)	43 44	TS F136	HEAT RECOVERY WATER TANK TEMPERATURE CO NT ROLL SWITCH HEAT RECOVERY FLOW SWITCH
12	K11,K12,KA,K1B-2/3,KW-1/2, K2B-2/3,K14,K15,K101,K201	RELAY	45	R7/8	#1-2 HEAT RECOVERY HEATER
13	F116	WATER FLOW SWITCH	46		
14	Q0	ON/OFF SWITCH	47		
15	Q1/2	COMPRESSOR 1/2 SWITCH	48		
16	ESV-1/2	#1-2 ECONOMIZER SOLENOID VALVE	49		
17	LLS-1/2	#1-2 LIQUID LEVEL SENSOR	50		
18	EWT	INLET WATER TEMPERATURE SENSOR	51		
19	LWT	OUTLET WATER TEMPERATURE SENSOR	52		
20	OAT	AMBIENT TEMPERATURE SENSOR	53		
21	DT-1/2	#1-2 DISCHARGE TEMPERATURE SENSOR	54		
22	EP-1/2	#1-2 SUCTION PRESSURE SENSOR	55		
23	CP-1/2	#1-2 DISCHARGE PRESSURE SENSOR	56		
24	ST-1/2	#1-2 SUCTION TEMPERATURE SENSOR	57		
25	EXV1/2	#1-2 ELECTRONIC EXPANSION VALVE	58		
26					
27					
28					
29					
30					
31					
32					

On-site Wiring Diagram







Notes:

1. Wirings for master and auxiliary unit control cabinets shown in the left figure are applicable only to the following unit models:
   UXEV220ST3-FAAE
   UXEV310ST3-FAAE
   UXEV350ST3-FAAE
   UXEV390ST3-FAAE
   UXEV440ST3-FAAE

2. The preceding models adopt twin power supply wiring.

Remarks:

- The dotted line part indicates lines must be prepared by the customer;
- The customer is advised to configure an outdoor incoming circuit breaker;
- The selected external wires and circuit breakers of all units should satisfy the maximum operating current value of unit, and would not cause to the condition of malfunction due to startup current;
- Since the wiring specifications of main power supply are affected by actual factors such as layout and length, the manufacturer will not provide specific specifications. Please refer to the related document.

No.	Signal	Signal type	Remarks
1	Unit failure	Passive dry contact output	When the customer needs to monitor whether the unit fails from a remote end, connect the wires as shown in Figure 1.
2	Water pump control output	Passive dry contact output	When the unit pump is controlled by the unit, connect the wires as shown in Figure 2 or Figure 3.
3	Water flow switch	Passive dry contact input	It is used to check the unit water flow. The wire must be connected as shown in Figure 4; otherwise the unit cannot operate normally.
4	Remote power on/off	Passive dry contact input	When the customer needs to power on/off the unit from a remote end, connect the wires as shown in Figure 5.
5	Failure signal of system 1	AC 220V output	When the customer needs to monitor whether system 1# fails from a remote end, connect the wires as shown in Figure 6;
6	Failure signal of system 2	AC 220V output	When the customer needs to monitor whether system 2# fails from a remote end, connect the wires as shown in Figure 7;

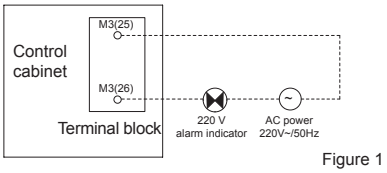


Figure 1

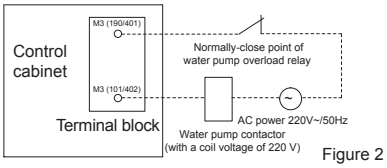


Figure 2

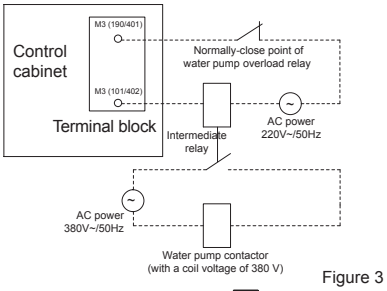


Figure 3

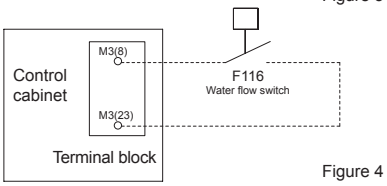


Figure 4

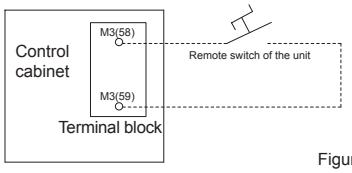


Figure 5

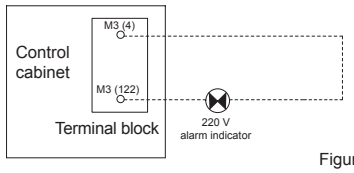


Figure 6

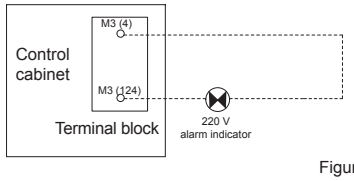
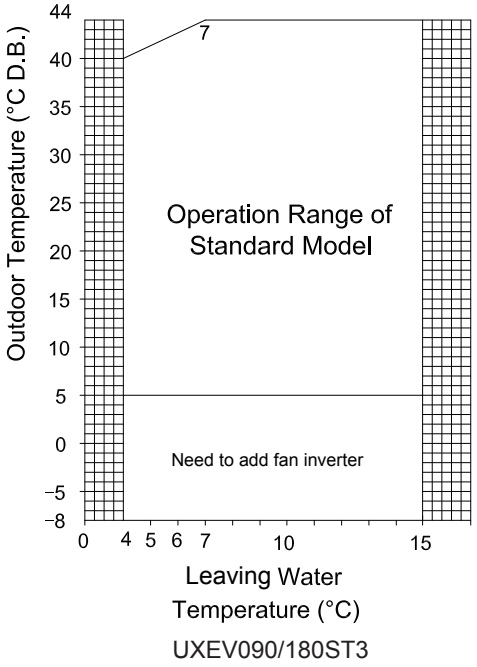


Figure 7

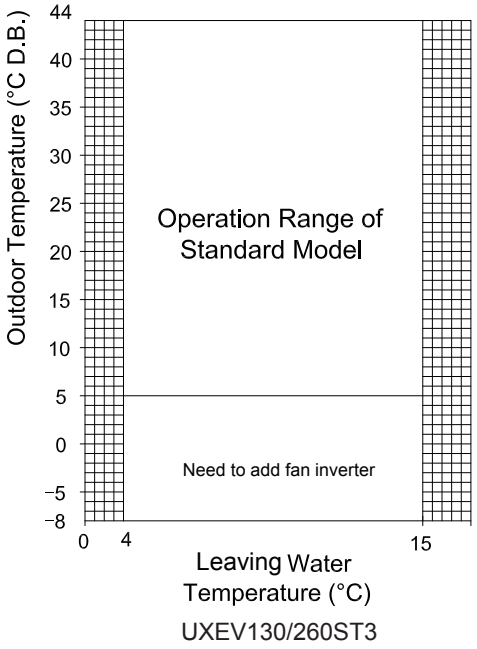
Remarks:

- The water pump control output signal can be used as the operating status signal output of unit. If M3(401) and M3(402) are connected to an external water pump contactor, the operating status signal of unit can be obtained from the auxiliary normally-open contact of water pump contactor.
- When the unit is under remote power-on/off control, the unit switch Q0 on the unit control cabinet must be at the closed position, the unit is controlled through the external remote switch on M3(58) and M3(59), and the short piece between M3(58) and M3(59) needs to be removed.
- The failure and water pump output contact can bear the maximum 230V/2A AC only. If the water pump contactor uses the 380V coil or coil of exceeding 2A capacity, conversion is needed. See Figure 3.
- The section area S range of all the signal wires is as follows: 0.5 $mm^2 \leq S \leq 1.5\ mm^2$.

9. Operation Limits



UXEV090/180ST3

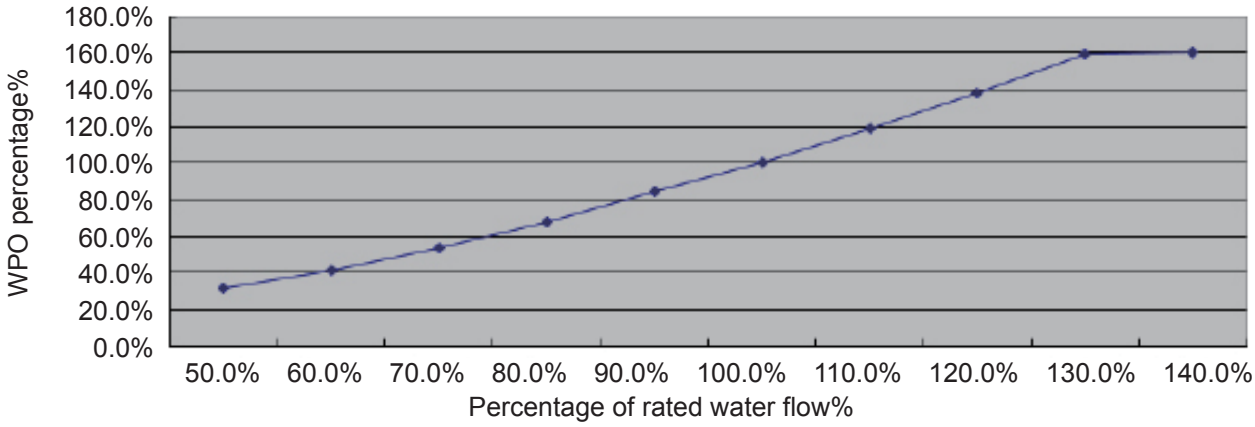


UXEV130/260ST3

Description of the application scope:

- The water flow is the rated water flow for the cooling mode;
- The relative humidity of the unit operating environment should be 90% or less.

10. Water Pressure Drop of the Unit



Note: Above water pressure drop is for evaporator,not including water filter.

11. Correction

Fouling factors (water side heat exchanger)

Fouling factor (m^2°C/kw)	Cooling capacity correction factor	Cooling power correction factor	Heating capacity correction factor	Heating power correction factor
<0.018	1	1	1	1
0.044	0.987	0.991	0.994	1.004
0.086	0.972	0.980	0.985	1.011
0.132	0.953	0.968	0.973	1.020

Altitude correction factors

Elevation above sea level (m)	0	300	600	900	1200	1500	1800
Cooling capacity correction factor	1	0.993	0.986	0.979	0.973	0.967	0.960
Power input correction factor	1	1.005	1.009	1.015	1.021	1.026	1.031
COP correction factor	1	0.988	0.977	0.965	0.953	0.942	0.931

Ethylene glycol correction factors

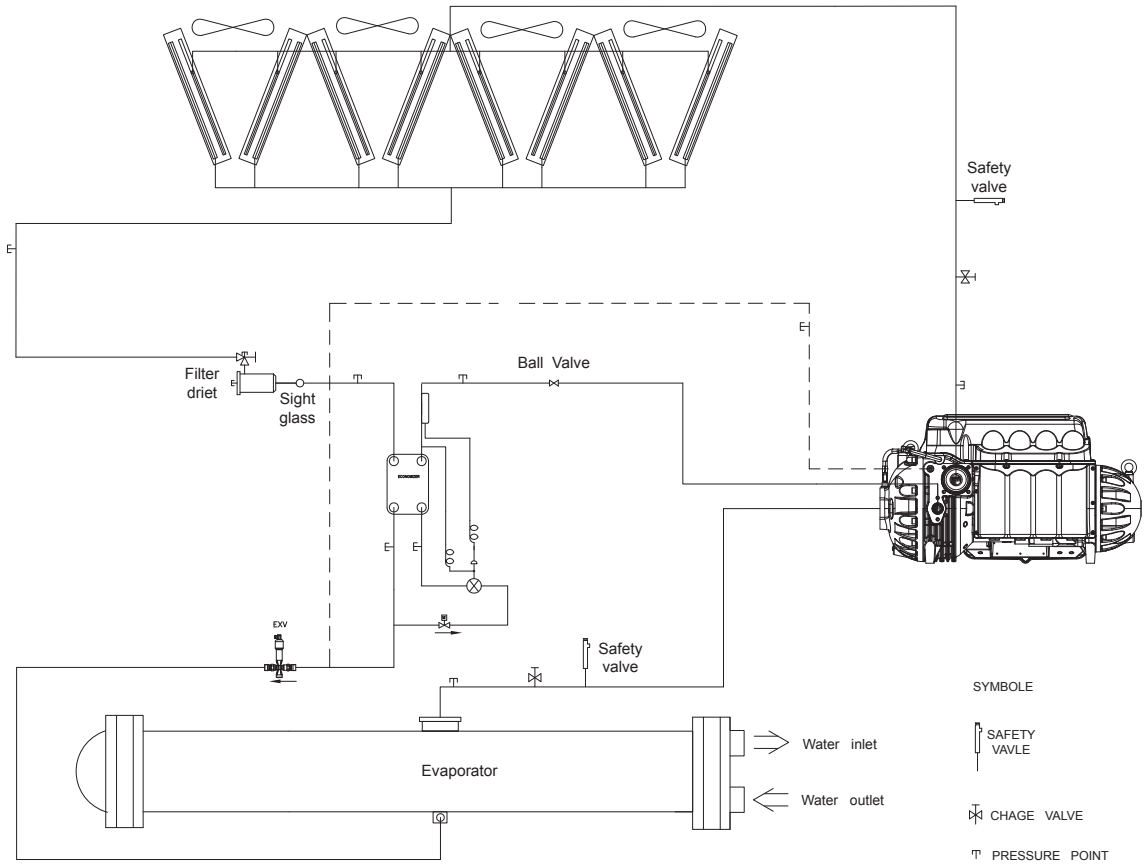
% Of ethylene glycol by weight	0	10	20	30	40	50
Cooling capacity correction factor	1	0.991	0.982	0.972	0.961	0.946
Cooling power input correction factor	1	0.996	0.992	0.986	0.976	0.966
Water flow rate correction factor	1	1.013	1.04	1.074	1.121	1.178
Water pressure drops correction factor	1	1.070	1.129	1.181	1.263	1.308
Heating capacity correction factor	1	0.996	0.991	0.985	0.980	0.974
Heating power correction factor	1	1.005	1.010	1.016	1.023	1.030

Low temperature operation performance factors

Ethylene glycol leaving water temperature of chilled water (°C)	2	0	-2	-4	-6	-8
Max. ambient temperature (°C)	40	39	38	37	36	35
Cooling capacity correction factor	0.842	0.785	0.725	0.67	0.613	0.562
Power input of compressor correction factor	0.95	0.94	0.92	0.89	0.87	0.84
Min. % of ethylene glycol	10	15	18	20	23	25
COP correction factor	0.886	0.835	0.788	0.753	0.705	0.669

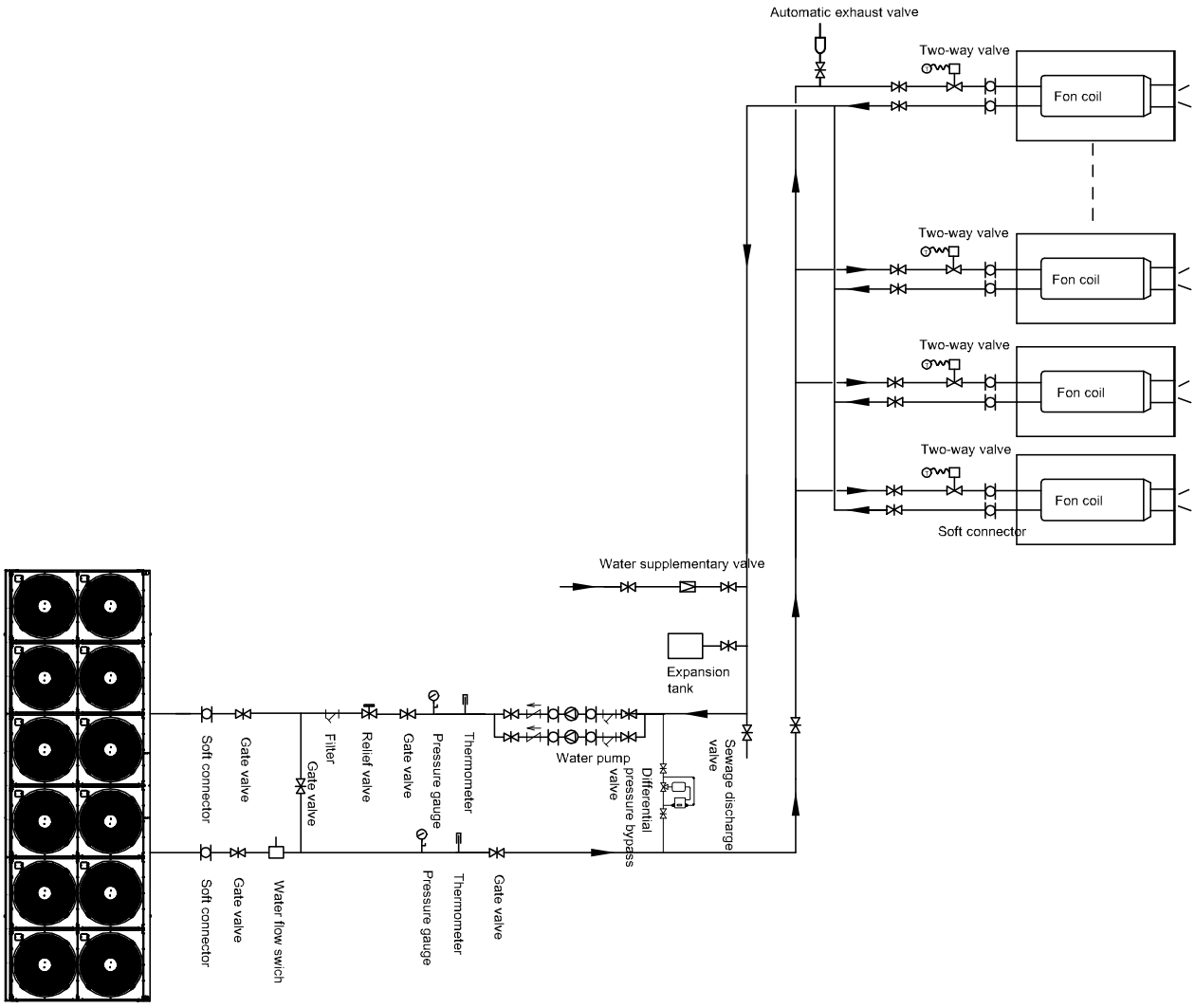
12. Refrigerant Piping Layout

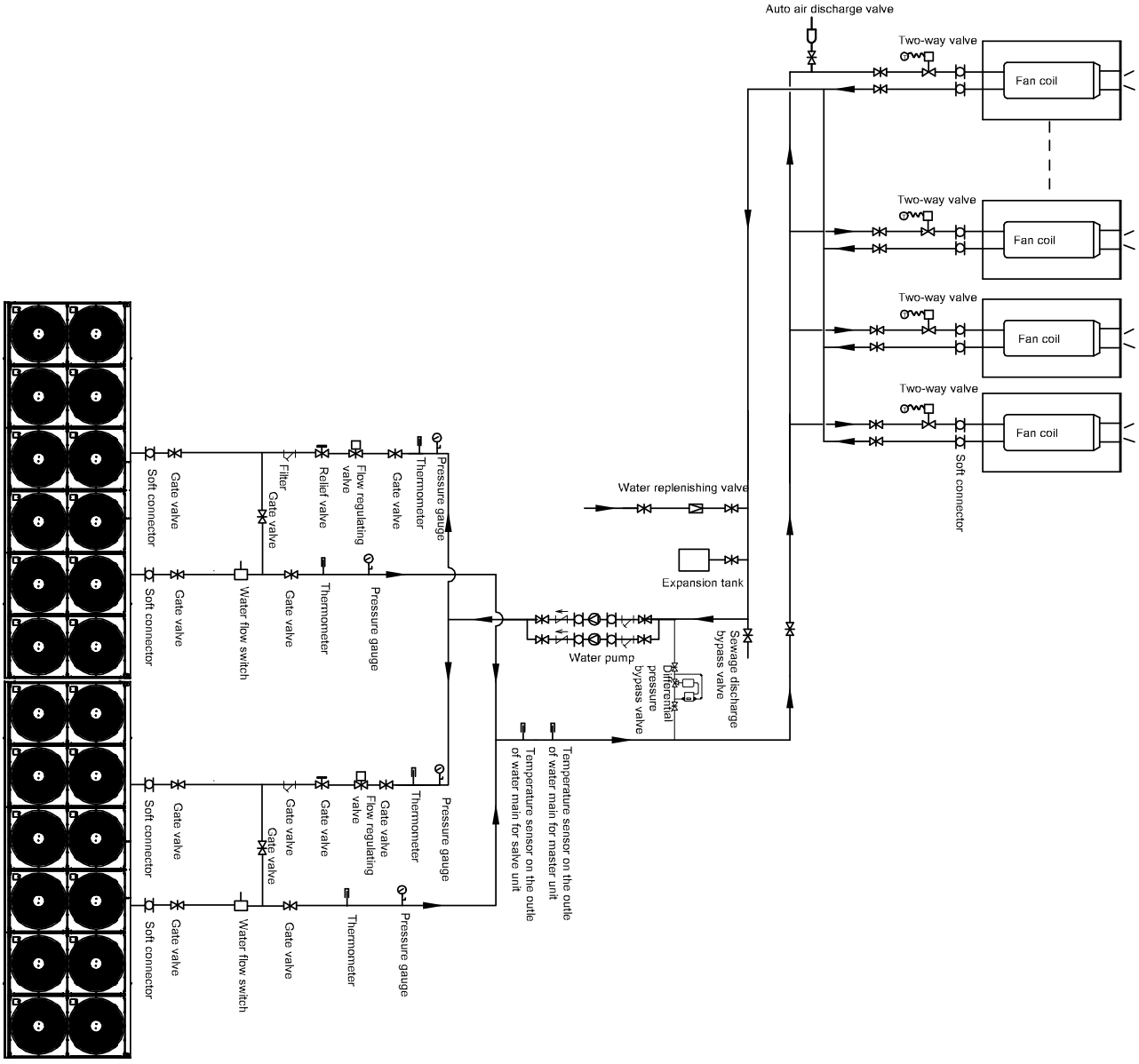
Cooling only (single unit single systerm)



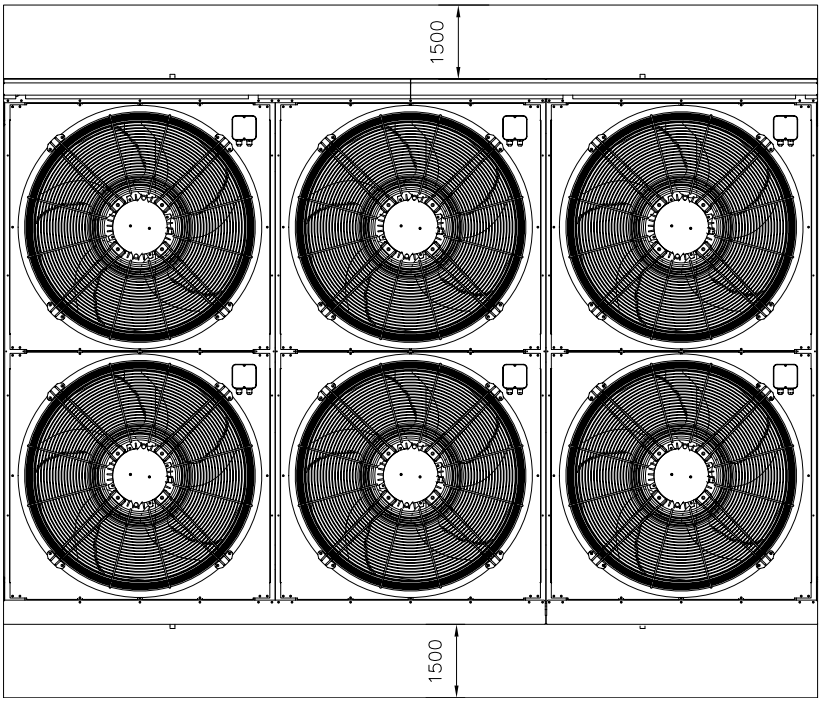
13. Installation

Requirements for Water System Installation



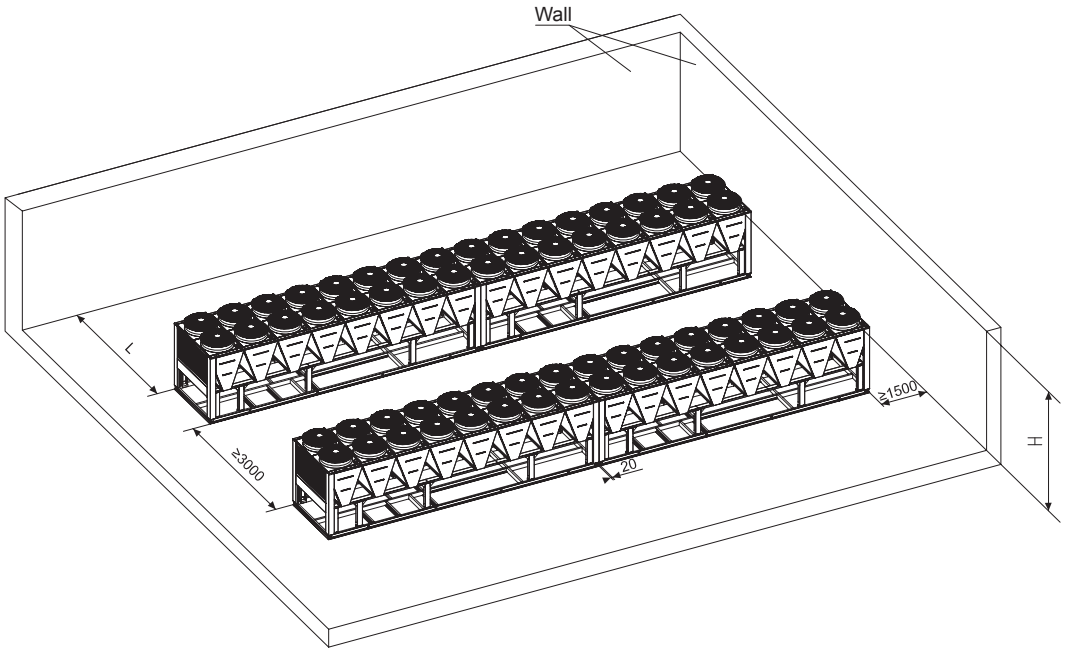

Auto air discharge valve
Two-way valve
Fan coil
Two-way valve
Fan coil
Two-way valve
Fan coil
Two-way valve
Fan coil
Soft connector
Water replenishing valve
Expansion tank
Water pump
Sewage discharge
bypass valve
Differential
pressure
bypass valve
Temperature sensor on the outle
of water main for master unit
Temperature sensor on the outle
of water main for salve unit
Pressure gauge
Thermometer
Gate valve
Flow regulating
valve
Relief valve
Filter
Gate valve
Soft connector
Gate valve
Soft connector
Water flow switch
Gate valve
Thermometer
Pressure gauge
Pressure gauge
Thermometer
Gate valve
Flow regulating
valve
Gate valve
Gate valve
Gate valve
Soft connector
Gate valve
Soft connector
Water flow switch
Gate valve
Thermometer
Pressure gauge

Requirement for Single Unit Maintenance Space



Unit: mm

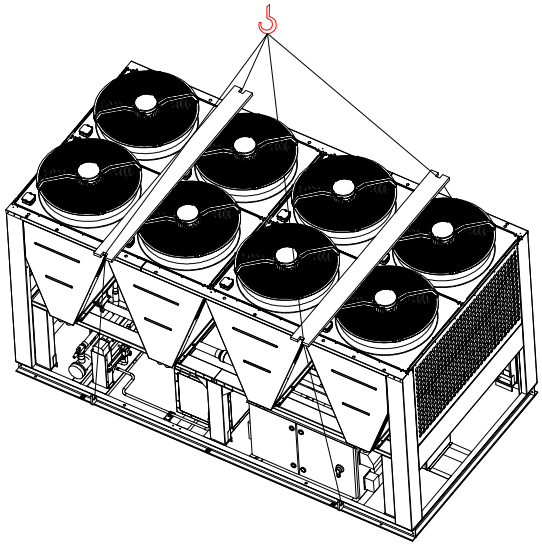
Requirement for Multiple Units Installation Space



Notes: ■ During the installation of the unit:
(1) If the wall height H > 2.5 m, the distance between the unit and the wall L ≥ 3.0 m;
(2) If 1.1 m ≤ wall height H ≤ 2.5 m, L ≥ 2.5 m;
(3) If wall height H < 1.1 m, L ≥ 1.5 m.
■ If multiple units are installed, each unit must have sufficient space for maintenance.

Lifting Method

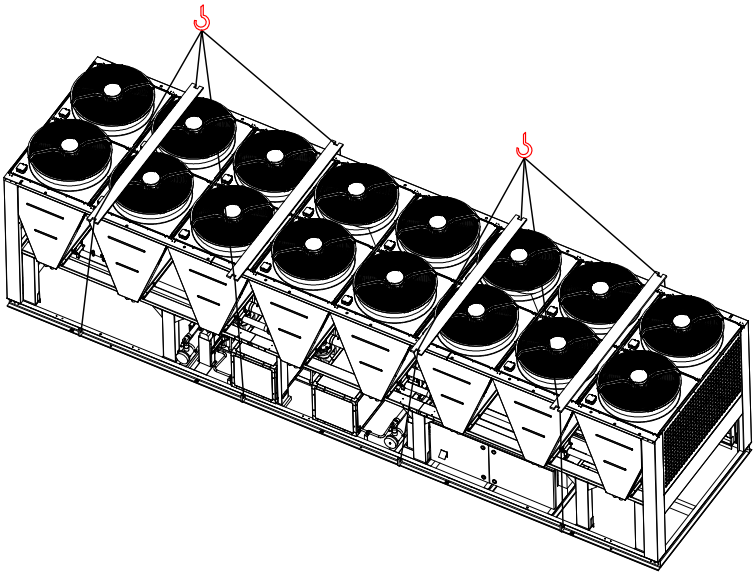
Use proper Lifting method:
Please use spreader bar and the lifting holes of the machine when lifting to avoid damage to the equipments. For UXEV090~180ST3, the hoisting belt (such as tight wire, nylon)should be two and not shorter than ten meters (Or four and not shorter than five meters),and both sides of pole should be extended over 100mm out of unit in order to prevent the hoisting belt from damaging unit. (Refer to the figure)



UXEV090-180/ST3-FAAE lifting figure

It is necessary that the unit maintain a level when being hoisted. Tilt angle should be less than 15 degrees; otherwise the unit may be overturned.

For UXEV260ST3, hoisting belt and lifting hole number should be twice of UXEV090~180ST3. (Refer to the figure)



UXEV260ST3-FAAE lifting figure

Warning

- Daikin Industries, Ltd.'s products are manufactured for export to numerous countries throughout the world. Daikin Industries, Ltd. does not have control over which products are exported to and used in a particular country. Prior to purchase, please therefore confirm with your local authorized importer, distributor and/or retailer whether this product conforms to the applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.
- Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorized parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Read the User's Manual carefully before using this product. The User's Manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

If you have any enquiries, please contact your local importer, distributor and/or retailer.

The air conditioners manufactured by Daikin Industries have received **ISO 9001 series** certification for quality assurance.

Certificate Number. FM 661837

The airconditioning factories of Daikin Industries have received environmental management system standard **ISO 14001** certification.

Certificate Number. EMS80362

Cautions on product corrosion

1. The units should not be installed in areas where corrosive gases, such as acid gas or alkaline gas, are produced.
2. If the unit is to be installed close to the sea shore, direct exposure to the sea breeze should be avoided. If you need to install the unit close to the sea shore, contact your local distributor.

Dealer

DAIKIN INDUSTRIES, LTD.

Head Office:
Umeda Center Bldg., 2-4-12, Nakazaki-Nishi,
Kita-ku, Osaka, 530-8323 Japan

Printed with soy ink.

Literature No.: ED-UXEV-ST3-201701