

Fan Coil Pared DC

Technical Service Manual

MUP-W9



Wall-mounted DC Fan Coil Unit

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1. External Appearance

MUP-09-W9

MUP-12-W9

MUP-16-W9

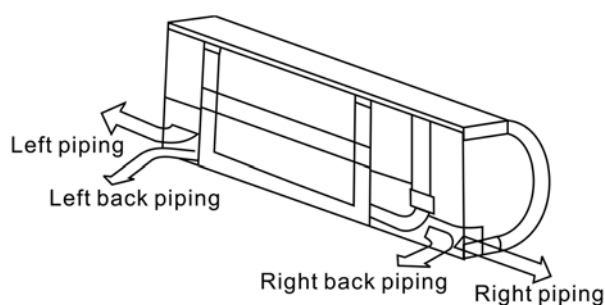
MUP-18-W9



A type panel

2. Features

- Multi-connection outlet pipe method: left\right\rear, satisfy the need of different rooms.

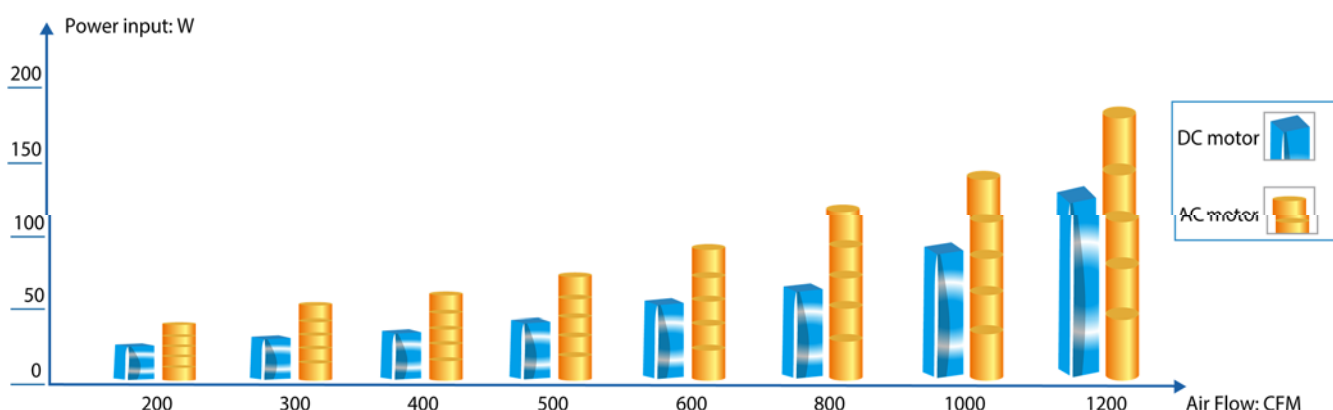


- Cross flow fan creates quiet and comfortable environment.
- Built-in the 3-way electromagnetic valve.
- Built-in network interface module.
- Easy maintenance has been realized as the front panel can be removed for easy access.
- Display shut off (for Type A and P panels though Wireless Remote Controllers RM12F/BGF-E)

✚ Excellent efficiency

Mundoclimate DC FCU adopt the brushless DC motor, the DC motor efficiency is up to 90%.

The power consumption of DC FCU can be reduced by more than 30% in contrast to the corresponding AC FCU.



✚ DC brushless motor

The motor adopts fully enclosed structure design; it is energy-saving, of high operating efficiency and durable motor. The motor bearing can operate 80,000 hours continuously, and easy for maintenance.

✚ Low noise

Advanced 3-D spiral fan design reduces air resistance and operating sound. The motor bearing with unique design makes less operation vibration.

3. Product lineup

Type	09	12	16	18
Wall Mounted A Type Panel (MUP-W9)	•	•	•	•

4. Accessories

4.1 Standard accessories

Accessory name	Qty.	Shape	Usage
Owner's & installation manual	1	/	Installation guide
Screw ST3.9x25 for installation board	8		Screw the installation board
Plastic expanded tube	8		
Wrapping tape	1		
Drain pipe	1		
Wall conduit cover	1		
Remote controller & Its Frame	1		Remote controller R05/BGE
	1		Frame
	2		Mounting screw(ST2.9x10-C-H)
	2		Alkaline dry batteries
Remote controller manual	1		
Seet gasket	4		For conner water pipe
Network matching wire	1		The indoor unit which at the terminal of communication system should connect a impedance between port X and port Y.
Insulation	1		Prevent the walls from getting damp

4.2 Optional accessories

Accessory name	Qty.	Shape	Usage
Central controller CCM30	1		Central control

5. Specifications

5.2 A type panel

MUP-09-W9 / MUP-12-W9

Model			MUP-09-W9	MUP-12-W9
Power supply		V/Ph/Hz	220-240/1/50	
Air flow (H/M/L)		m³/h	492/454/400	825/689/590
		CFM	289/267/235	485/405/347
Cooling ¹	Capacity (H/M/L)	kW	2.7/2.59/2.39	3.81/3.3/2.88
	Water flow rate(H/M/L)	m³/h	0.48/0.46/0.42	0.67/0.57/0.51
	Water pressure drop(H/M/L)	kPa	31.61/28.63/25.36	56.75/41.23/33.02
	Power input(H/M/L)	W	13/11/10	34/22/15
Heating ²	Capacity (H/M/L)	kW	2.94/2.8/2.58	4.3/3.65/3.09
	Water flow rate(H/M/L)	m³/h	0.51/0.49/0.46	0.73/0.64/0.56
	Water pressure drop(H/M/L)	kPa	32.66/34.89/30.24	51.86/47.53/35.69
	Power input(H/M/L)	W	11/11/9	31/20/14
Heating ³	Capacity (H/M/L)	kW	3.29/3.03/2.63	5.08/4.33/3.77
	Water flow rate(H/M/L)	m³/h	0.48/0.46/0.42	0.67/0.57/0.51
	Water pressure drop(H/M/L)	kPa	37.49/30.25/26.53	61.94/37.88/30.34
	Power input(H/M/L)	W	12/10/8	31/20/14
Sound pressure level (H/M/L)		dB(A)	32/30/27	45/39/35
Rated current		A	0.16	0.28
Fan motor	Type		DC Motor	DC Motor
	Quantity		1	1
Fan	Type		Tangential fan	Tangential fan
	Quantity		1	1
Coil	Row		2	
	Max. Working pressure	MPa	1.6	
	Coil length x height	mm	635x26.74	
	Fin spacing	mm	1.5	
	Fin type		Hydrophilic aluminium	
	Number of circuits		5	
	Diameter	mm	Φ7	
Body	Net dimensions (W×H×D)	mm	915×290×229	915×290×229
	Packing size (W×H×D)	mm	1020×390×315	1020×390×315
	Net weight	kg	12,7	12.7
	Gross weight	kg	17,3	16.3
Pipe connection	Water inlet/outlet pipe 18.6	inch	G3/4	
	Drain pipe	mm	ODΦ20	

MUP-16-W9 /MUP-18-W9

Model			MUP-16-W9	MUP-18-W9
Power supply		V/Ph/Hz	220-240/1/50	
Air flow (H/M/L)		m³/h	862/741/634	979/849/717
		CFM	507/435/372	575/499/421
Cooling ¹	Capacity (H/M/L)	kW	4.47/3.98/3.48	4.87/4.26/3.79
	Water flow rate(H/M/L)	m³/h	0.77/0.68/0.61	0.85/0.72/0.65
	Water pressure drop(H/M/L)	kPa	41.17/33.54/27.05	50.68/39.47/33.66
	Power input(H/M/L)	W	26/18/13	38/26/18
Heating ²	Capacity (H/M/L)	kW	4.84/4.23/3.62	5.26/4.68/3.96
	Water flow rate(H/M/L)	m³/h	0.84/0.73/0.64	0.89/0.80/0.68
	Water pressure drop(H/M/L)	kPa	36.82/33.83/26.26	47.12/42.75/32.95
	Power input(H/M/L)	W	22/16/12	33/23/16
Heating ³	Capacity (H/M/L)	kW	5.68/4.94/4.24	6.31/5.57/4.77
	Water flow rate(H/M/L)	m³/h	0.77/0.68/0.61	0.85/0.72/0.65
	Water pressure drop(H/M/L)	kPa	43.74/29.69/23.98	51.65/36.3/30.3
	Power input(H/M/L)	W	23/16/12	33/23/16
Sound pressure level (H/M/L)		dB(A)	38/34/30	44/40/35
Rated current		A	0.32	0.39
Fan motor	Type		DC Motor	DC Motor
	Quantity		1	1
Fan	Type		Tangential fan	Tangential fan
	Quantity		1	1
Coil	Row		2	
	Max. Working pressure	MPa	1.6	
	Coil length x height	mm	785x26.74	
	Fin spacing	mm	1.5	
	Fin type		Hydrophilic aluminium	
	Number of circuits		7	
	Diameter	mm	Φ7	
Body	Net dimensions (W×H×D)	mm	1072×315×237	1072×315×237
	Packing size (W×H×D)	mm	1180×415×315	1180×415×315
	Net weight	kg	15.1	14.9
	Gross weight	kg	19	18.6
Pipe connection	Water inlet/outlet pipe	inch	G3/4	
	Drain pipe	mm	ODΦ20	

Notes:

Based on Eurovent conditions:

H: High fan speed; M: Medium fan speed; L: Low fan speed.

1: Cooling mode (2 and 4-pipe coil): entering air temperature 27°C DB/19°C WB, entering/leaving water temperature 7°C /12°C.

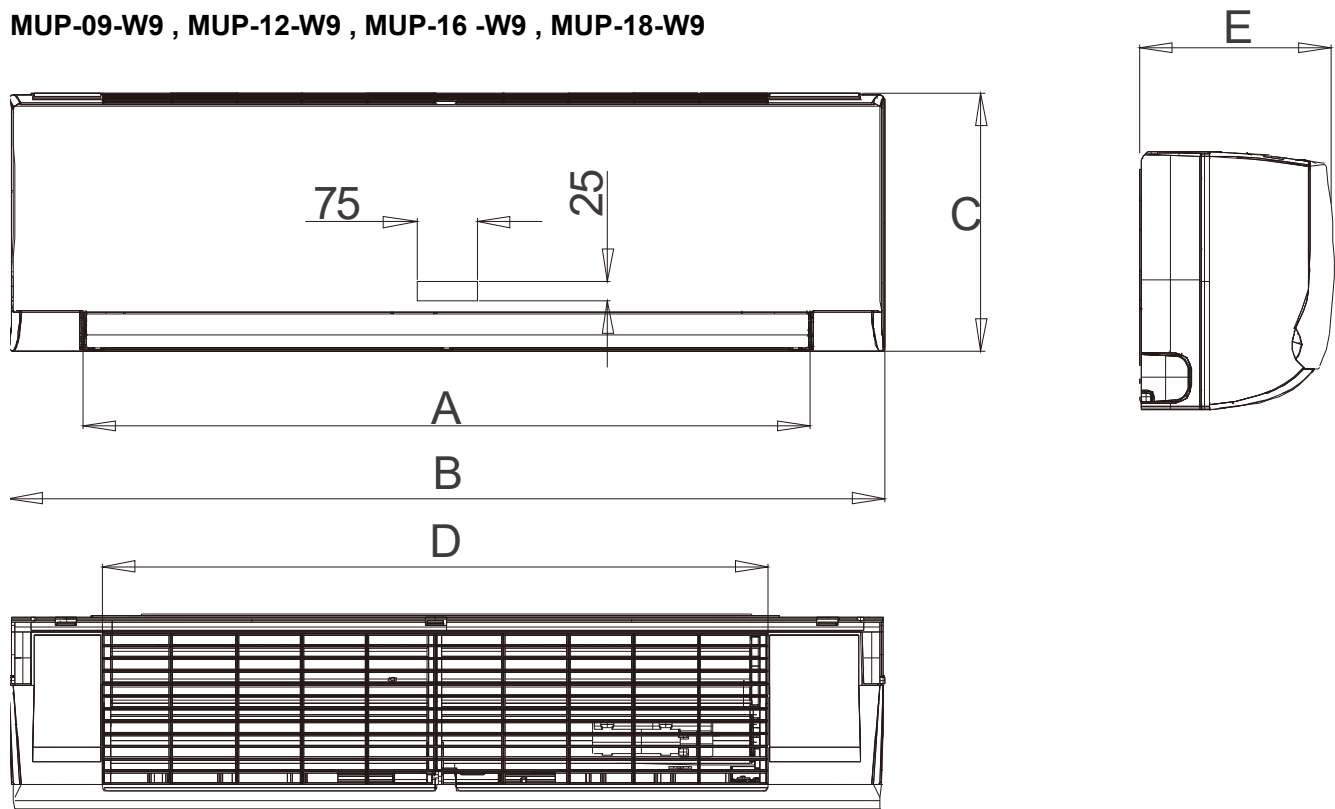
2: Heating mode (1): (2-pipe coil): entering air temperature 20°C DB, entering/leaving water temperature 45/40°C.

3: Heating mode (2): (2-pipe coil): entering air temperature 20°C DB, enter water teperaure/water flow 50°C.

(same water flow as in standard rating condition in cooling)

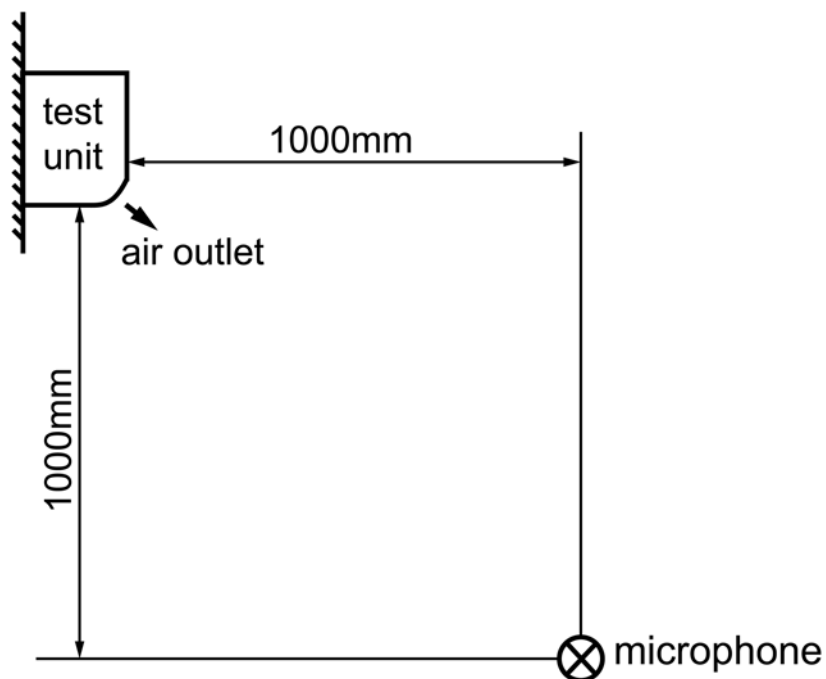
6.2 A type panel

MUP-09-W9 , MUP-12-W9 , MUP-16 -W9 , MUP-18-W9



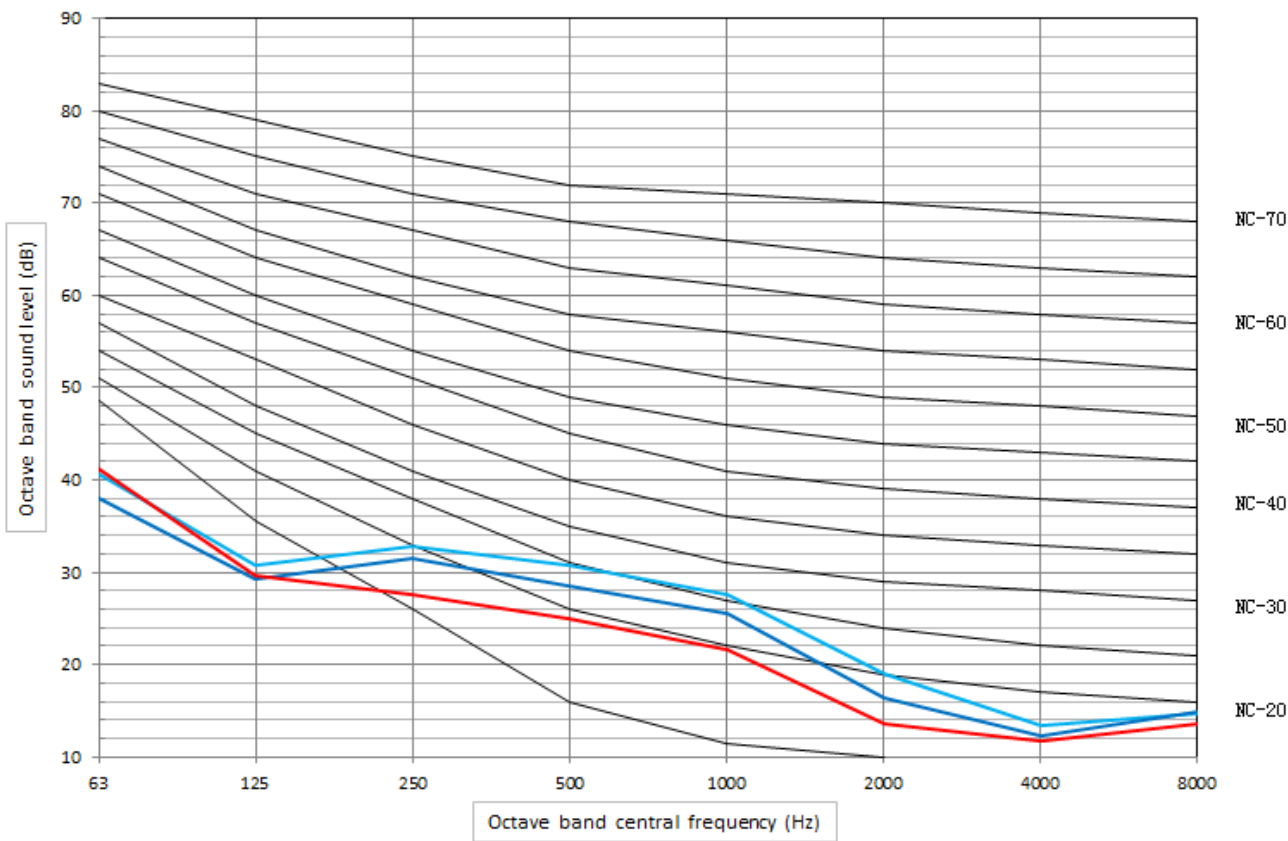
Model	A	B	C	D	E
MUP-09/12-W9	732	915	290	663	233
MUP-16/18-W9	892	1072	315	813	237

7. Sound Levels

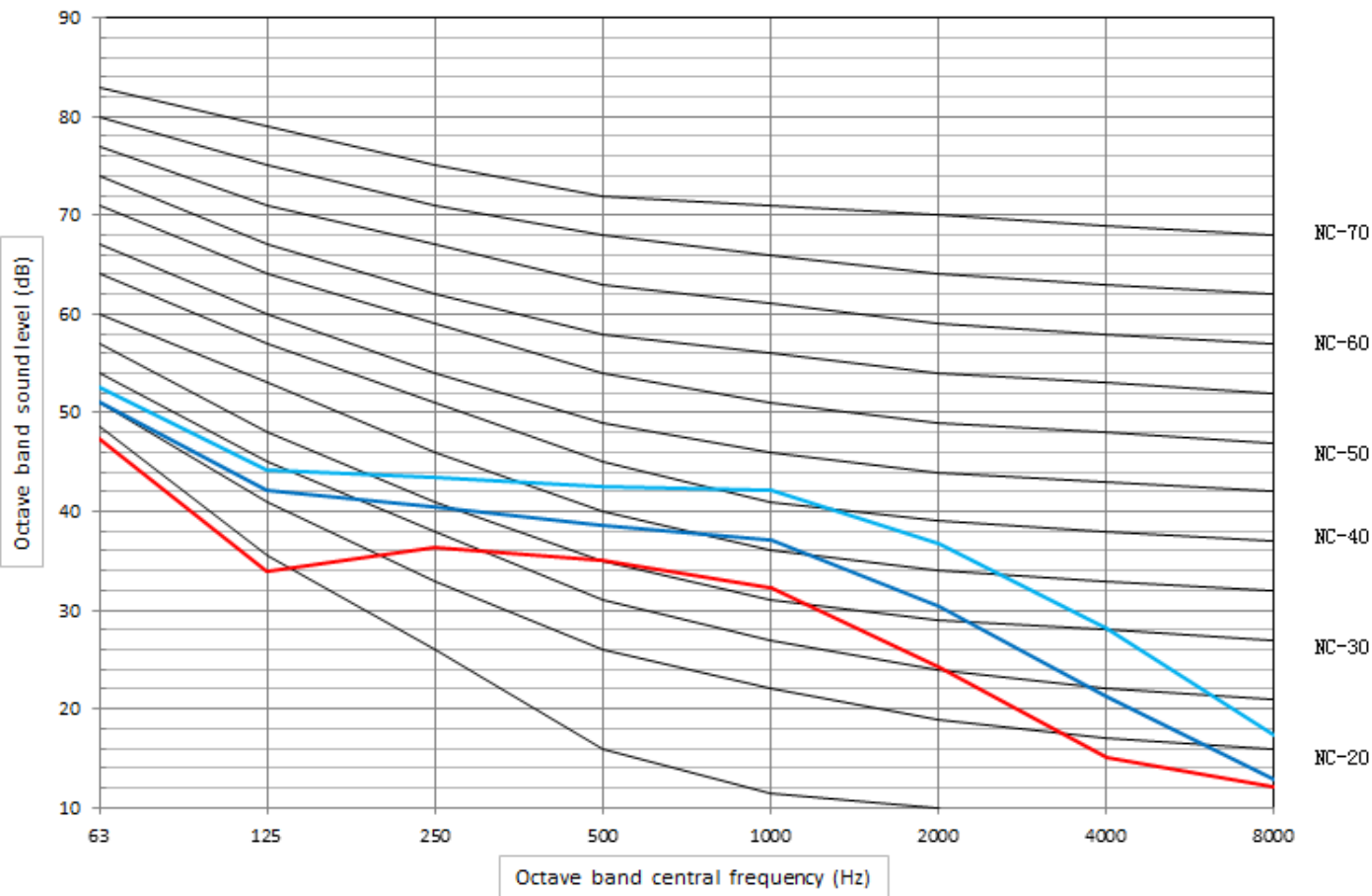


Unit Number	Model	Noise level under three speeds of fan [dB(A)]		
		H	M	L
1	MUP-09-W9	32	30	27
2	MUP-12-W9	45	39	35
3	MUP-16-W9	38	34	30
4	MUP-18-W9	44	40	35

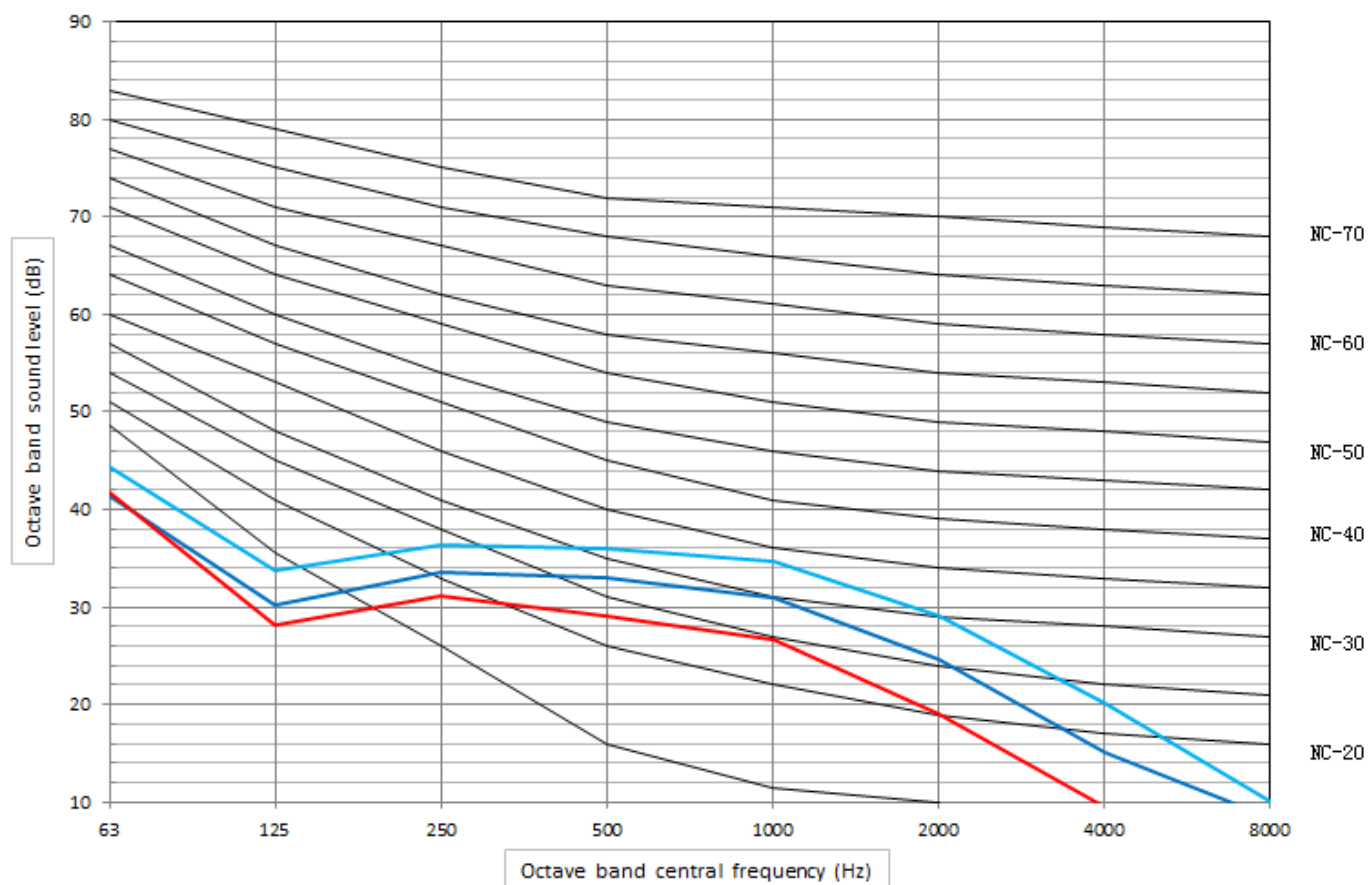
MUP-09-W9



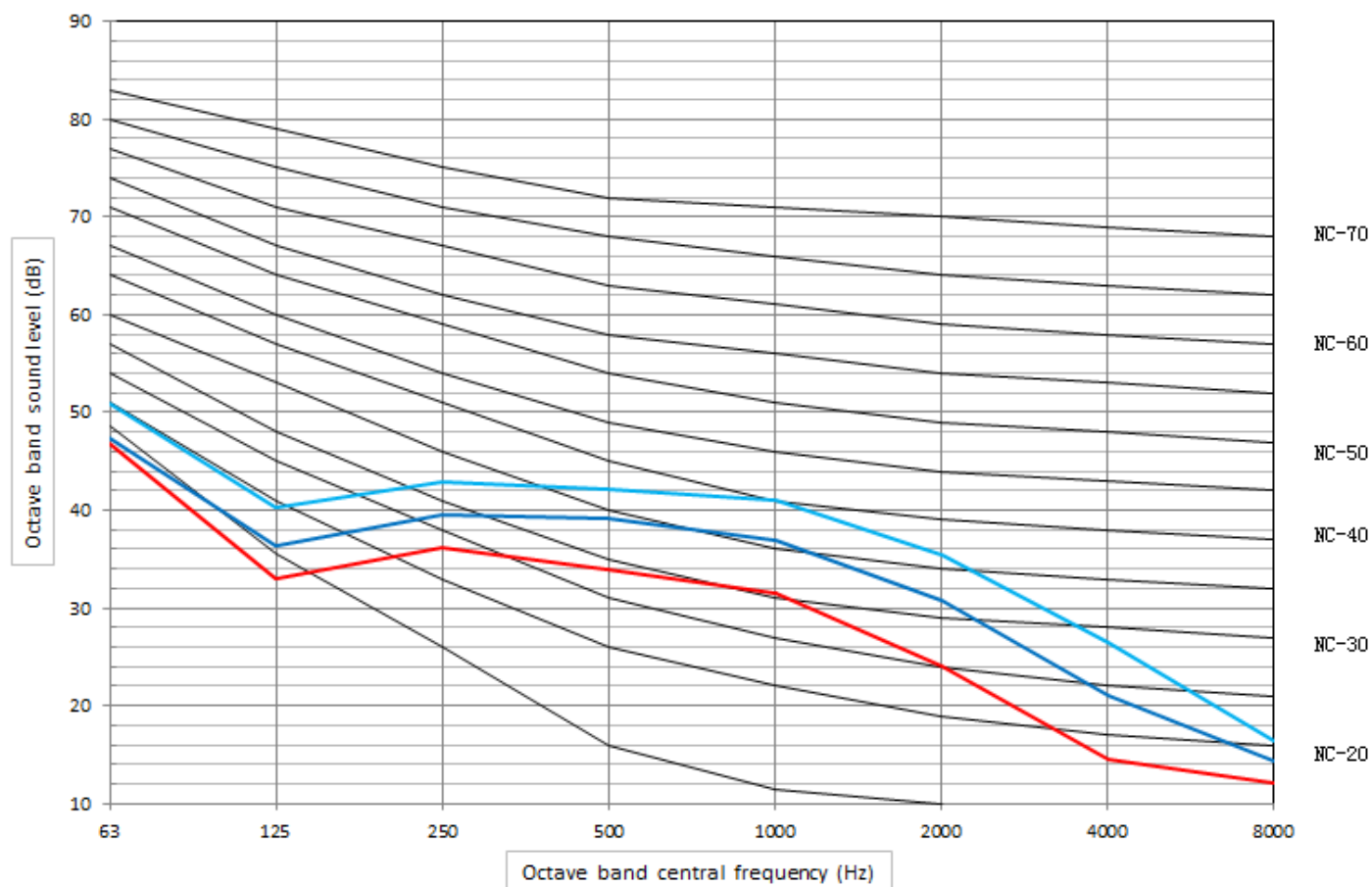
MUP-12-W9



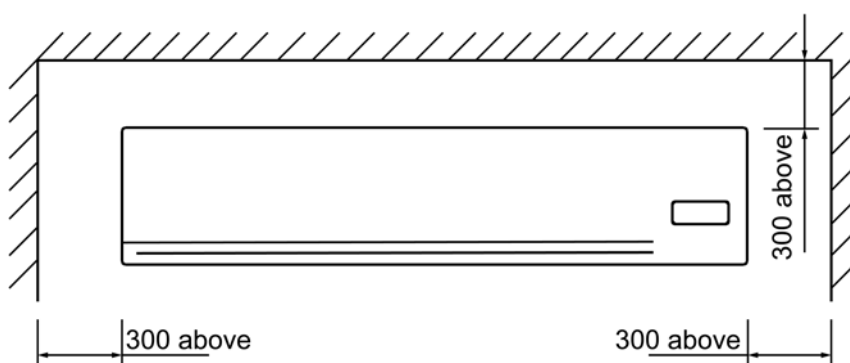
MUP-16-W9



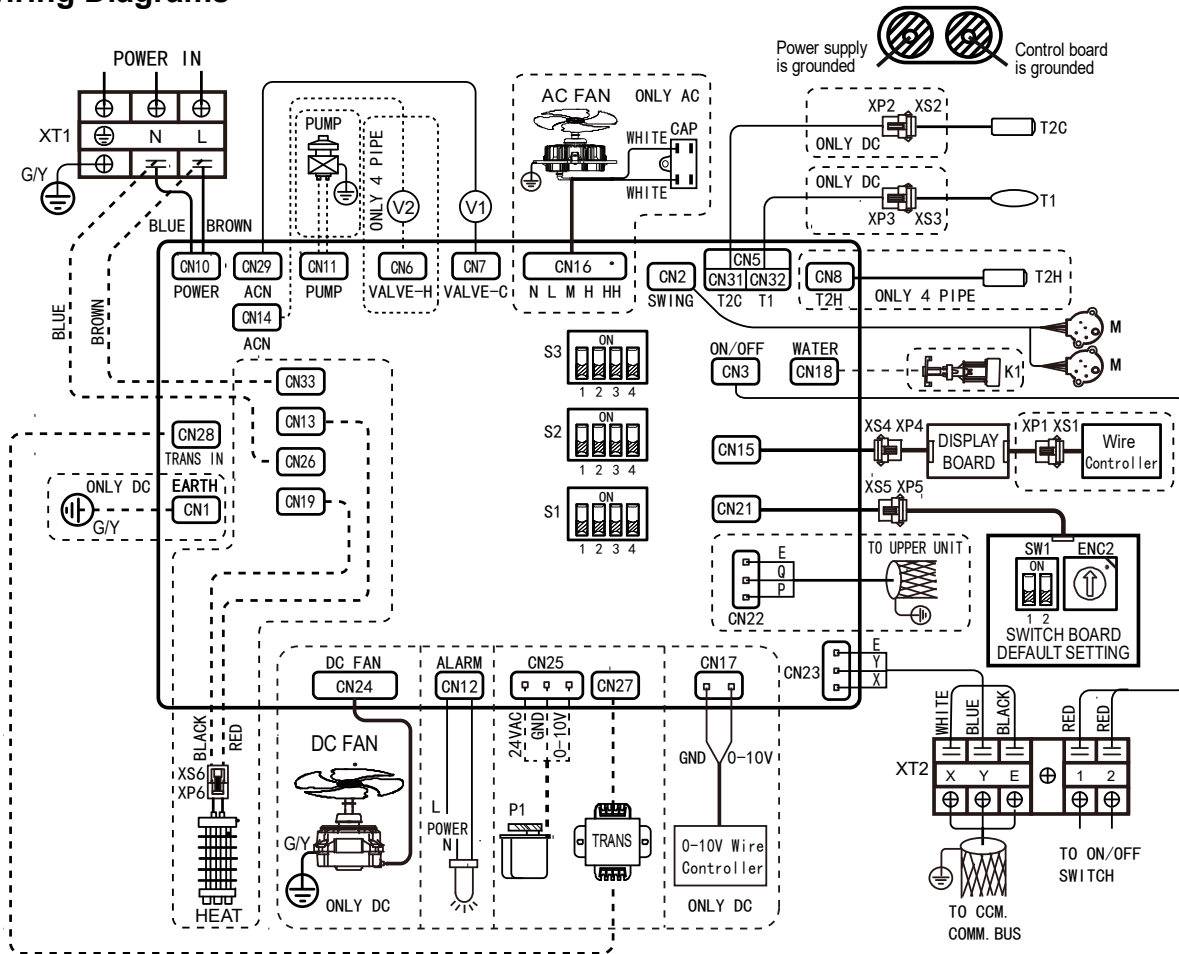
MUP-18-W9



8. Service Spaces



9. Wiring Diagrams



S1	S1-1		2 pipe
			4 pipe
	S1-2		Without enforcement to turn wind(default)
			With enforcement to turn wind
	S1-3		Normal anti-cold wind(default)
			High temperature anti-cold wind
	S1-4		Turn on E-heater and heating valve (default)
			Turn on E-heater, turn off heating valve

S2	S2-1/2		Temp.compensation value is 0 under cool mode(default)
			Temp.compensation value is 1 under cool mode
			Temp.compensation value is 2 under cool mode
			Temp.compensation value is 3 under cool mode
	S2-3/4		Temp.compensation value is 3 under heat mode(default)
			Temp.compensation value is 1 under heat mode
			Temp.compensation value is 6 under heat mode
			Temp.compensation value is 8 under heat mode

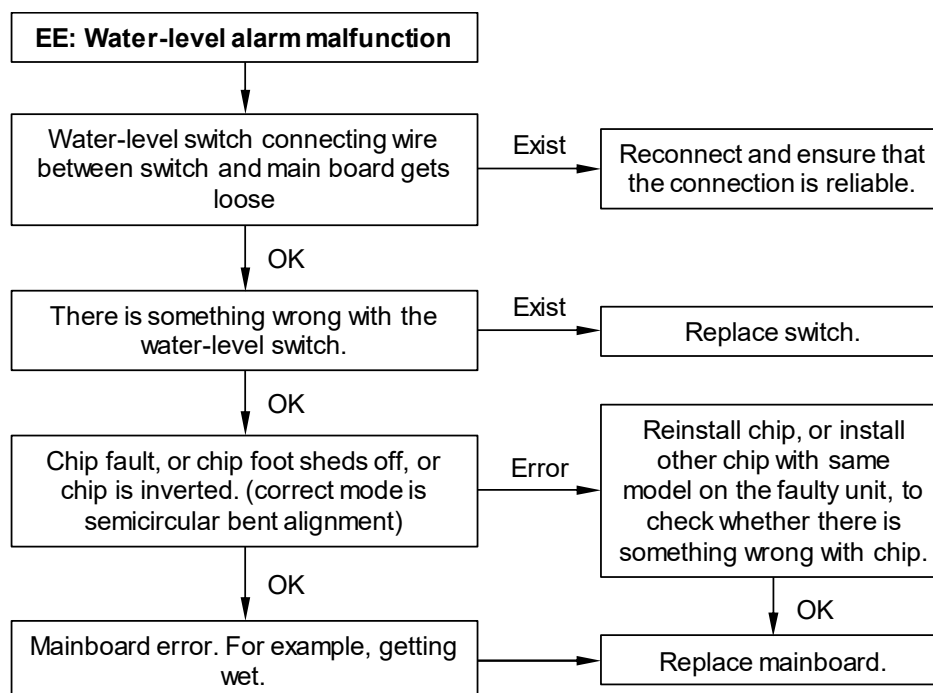
S3		MUP-09-W9
		Reserved
		MUP-12-W9
		MUP-16-W9
		MUP-18-W9

ENC2 & SW1	SWITCH FOR ADDRESS SETTING		Address 0-15
	'0-F' of the ENC2 and 'ON/OFF' of the SW1, the different position represents a different address. Is be combined 64 address(0-63)		Address 16-31
			Address 32-47
			Address 48-63

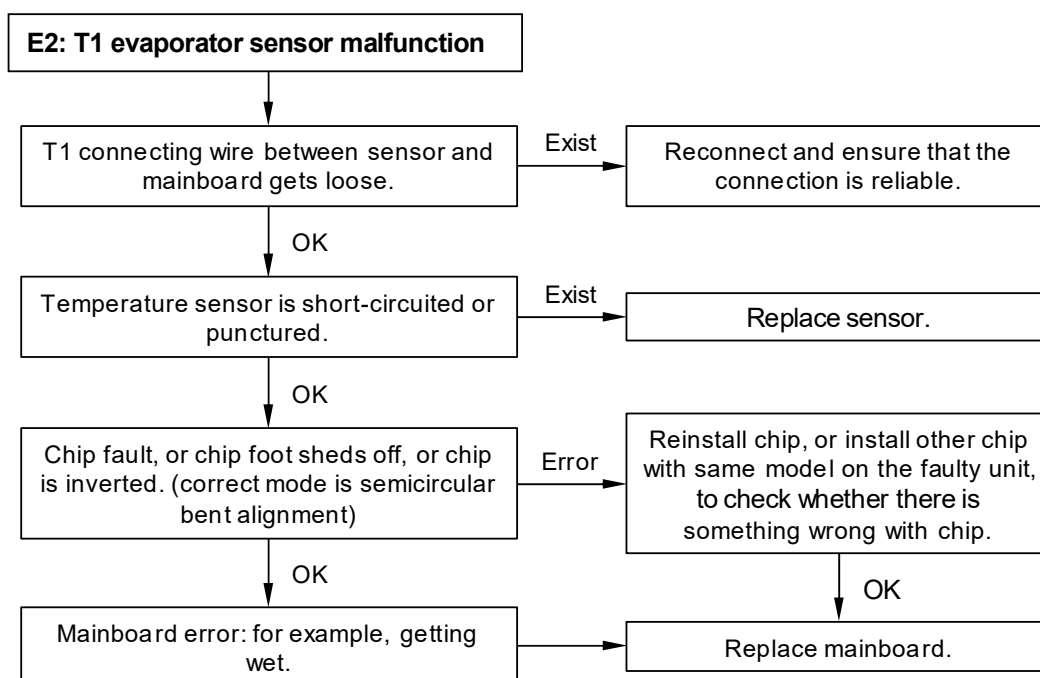
10. Trouble shooting

Malfunction code	Malfunction
EE	Water-level alarm malfunction
E2	T1 evaporator sensor malfunction
E3	T2 evaporator sensor malfunction
E7	EEPROM communication error
E8	DC motor malfunction

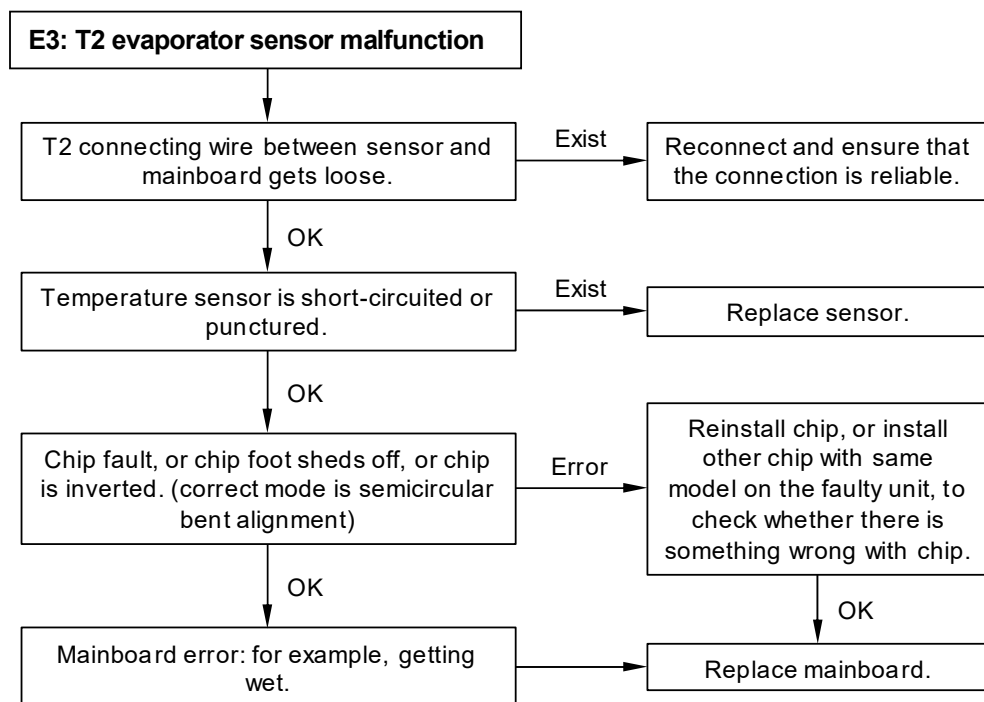
10.7.1 EE: Water-level alarm malfunction



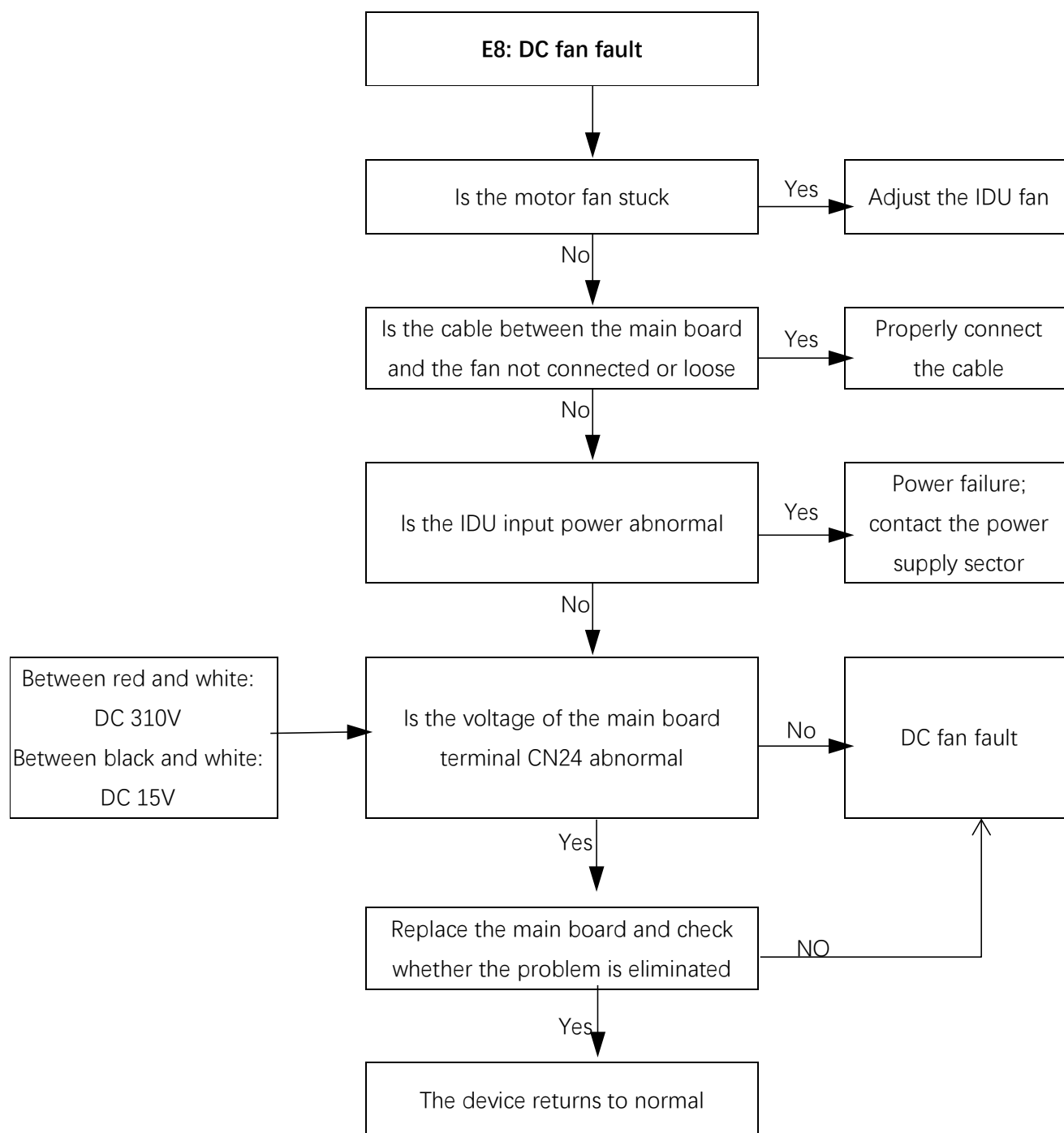
10.7.2 E2: T1 evaporator sensor malfunction



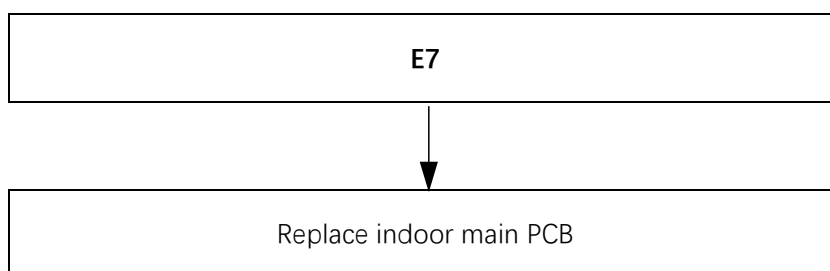
10.7.3 E3: T2 evaporator sensor malfunction



10.7.4 E8: Fan motor malfunction



10.7.5 EEPROM communication error



11. Installation

11.1 Installation Attention

1. Warning:

- **Be sure only trained and qualified service personnel to install, repair or service the equipment.**
Improper installation, repair, and maintenance may result in electric shocks, short-circuit, leaks, fire or other damage to the equipment.
- **Install according to this installation instructions strictly.**
- **If installation is defective, it will cause water leakage, electrical shock and fire.**
- **When installing the unit in a small room, take measures against to keep water concentration from exceeding allowable safety limits in the event of water leakage.**

Contact the place of purchase for more information.

- **Use the attached accessories parts and specified parts for installation.**
Otherwise, it will cause the set to fall, water leakage, electrical shock fire.
- **Install at a strong and firm location which is able to withstand the set's weight.**
If the strength is not enough or installation is not properly done, the set will drop to cause injury.
- **The appliance must be installed 2.3m above floor.**
- **The appliance shall not be installed in the laundry.**
- **Before obtaining access to terminals, all supply circuits must be disconnected.**
- **The appliance must be positioned so that the plug is accessible.**
- **The enclosure of the appliance shall be marked by word, or by symbols, with the direction of the fluid flow.**
- **For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used.**
If electrical circuit capacity is not enough or defect in electrical work, it will cause electrical shock fire.
- **Use the specified cable and connect tightly and clamp the cable so that no external force will be acted on the terminal.**
If connection or fixing is not perfect, it will cause heat-up or fire at the connection.
- **Wiring routing must be properly arranged so that control board cover is fixed properly.**
- **If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.**
If the supply cord is damaged, it must be replaced by the manufacture or its service agent or a similarly qualified person in order to avoid a hazard.
- **An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.**
- **Do not modify the length of the power supply cord or use of extension cord, and do not share the single outlet with other electrical appliances.**
Otherwise, it will cause fire or electrical shock.
- **Carry out the specified installation work after taking into account strong winds, typhoons or earthquakes.**
Improper installation work may result in the equipment falling and causing accidents.
- **If the water leaks during installation, ventilate the area immediately.**
- **After completing the installation work, check that water does not leak.**

2. Caution:

- **Ground the air conditioner.**

Do not connect the ground wire to gas or water pipes, lightning rod or a telephone ground wire. Incomplete grounding may result in electric shocks.

- **Be sure to install an earth leakage breaker.**

Failure to install an earth leakage breaker may result in electric shocks.

- **Connect the outdoor unit wires, then connect the indoor unit wires.**

You are not allowed to connect the air conditioner with the power source until wiring and piping the air conditioner is done.

- **While following the instructions in this installation manual, install drain piping in order to ensure proper drainage and insulate piping in order to prevent condensation.**

Improper drain piping may result in water leakage and property damage.

- **Install the indoor and outdoor units, power supply wiring and connecting wires at least 1 meter away from televisions or radios in order to prevent image interference or noise.**

Depending on the radio waves, a distance of 1 meter may not be sufficient enough to eliminate the noise.

- **The appliance is not intended for use by young children or infirm persons without supervision.**

- **Don't install the air conditioner in the following locations:**

- There is petrolatum existing.
- There is salty air surrounding (near the coast).
- There is caustic gas (the sulfide, for example) existing in the air (near a hot spring).
- The Volt vibrates violently (in the factories).
- In buses or cabinets.
- In kitchen where it is full of oil gas.
- There is strong electromagnetic wave existing.
- There are inflammable materials or gas.
- There is acid or alkaline liquid evaporating.
- Other special conditions.

3. Installation Order:

- Select the location;
- Install the indoor unit;
- Install the outdoor unit;
- Connect the drain pipe;
- Wiring;
- Test operation.

11.2 Inspecting and Handling the unit

At delivery, the package should be checked and any damage should be reported immediately to the carrier claims agent.

When handling the unit, take into account the following:

1.  Fragile, handle the unit with care.
2. Choose on before hand the path along which the unit is to be brought in.
3. Move this unit as originally package as possible.
4. When lifting the unit, always use protectors to prevent belt damage and pay attention to the position of the unit's centre of gravity.

11.3 Indoor Unit Installation

11.3.1 Installation place

Installation in the following places may cause trouble. If it is unavoidable, please consult with the local dealer.

- A place full of machine oil.
- A saline place such as coast.
- A place full of sulfide gas such as hot-spring resort.
- Places where there are high frequency machines such as wireless equipment, welding
- Machine and medical facility.
- A place there is no combustive gases and volatile matter.
- A place of special environmental conditions.

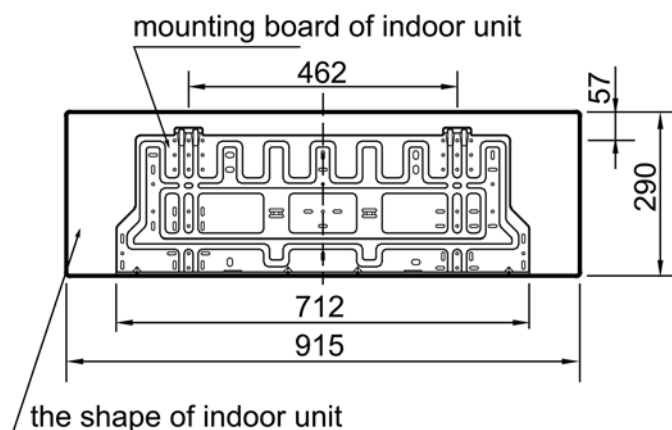
Installation in the following places:

- A place where is no obstacle near the inlet and outlet area.
- A place which can bear the indoor unit.
- A place which is convenient to maintenance.
- A place which provides the space around the indoor unit as required right in the diagram.
- There is strong electromagnetic wave existing.
- A place which is far from heat, steam and inflammable gas.

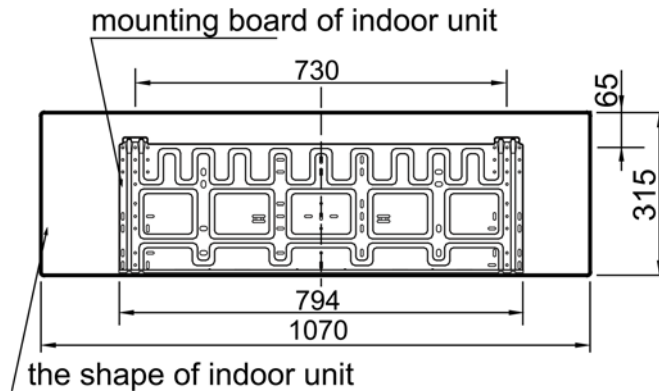
11.3.2 Drilling A Hole and Mounting Installation Board

Installation Board and Its Direction (unit: mm)

MUP-09/12-W9 Type:



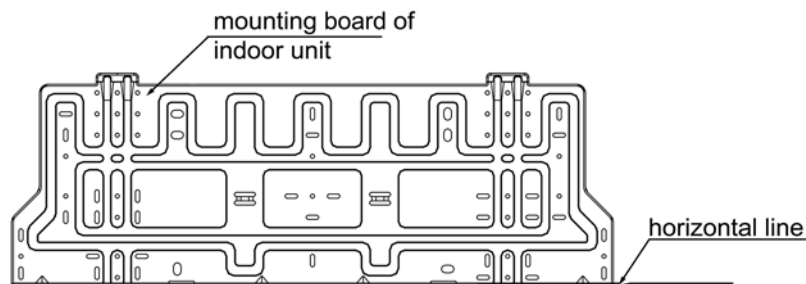
MUP-16/18-W9 type:



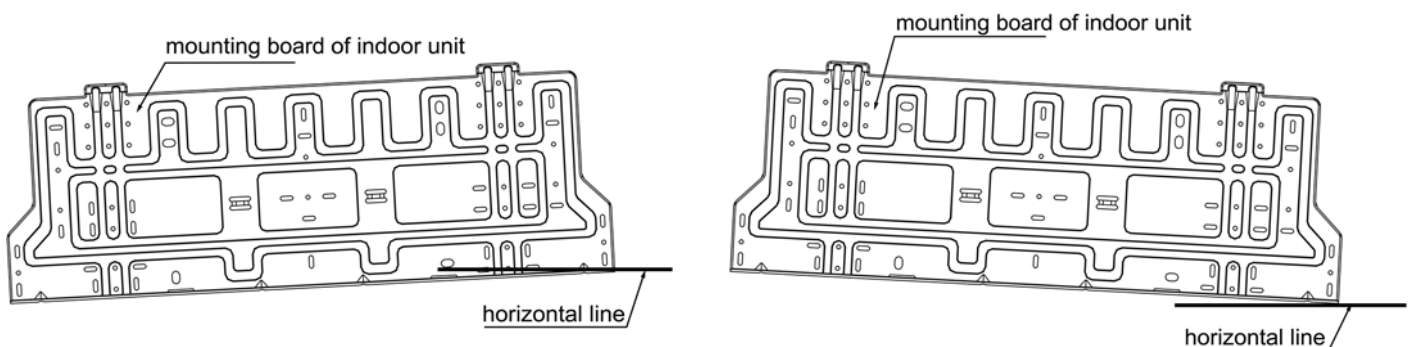
1. Fix the installation board.

- Install the installation board horizontally on structural parts in the wall with the spaces provided around the plate.
- In case of brick, concrete or similar type walls, make 5mm dia. holes in the wall. Insert clip anchors for appropriate mounting screws.
- Fix the installation board on the wall.

Right installation:



False installation:



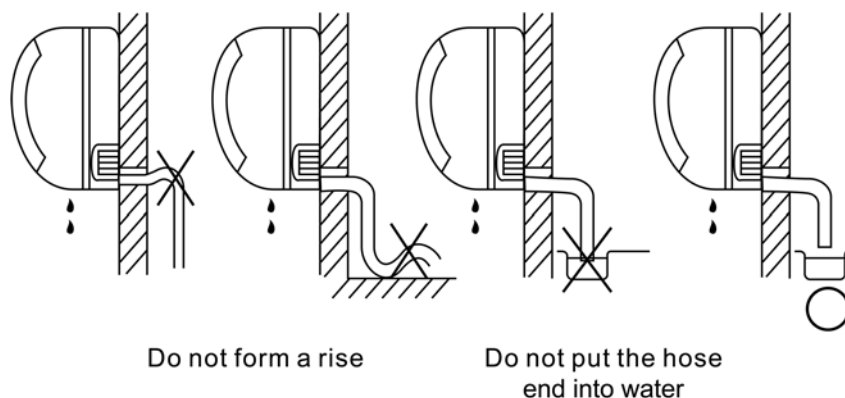
2. Drilling a hole.

- Determine the pipe hole position using the installation board, and drill the pipe hole (N95mm) so it slants slightly downward.
- Always use a wall hole conduit when piercing metal lath, ply wood or metal plate.

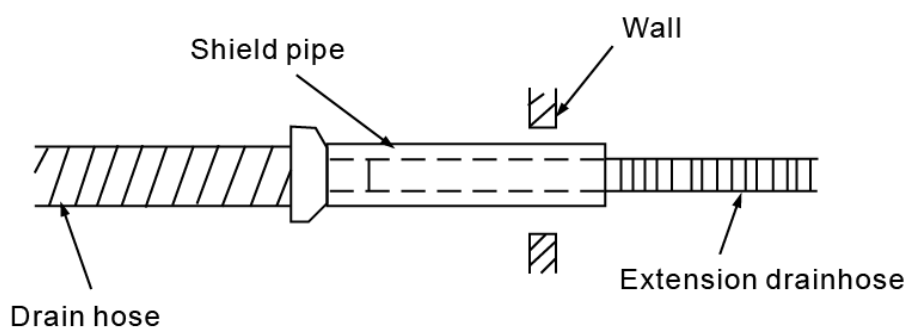
11.3.3 Connective Pipe and Drainage Installation

1. Drainage

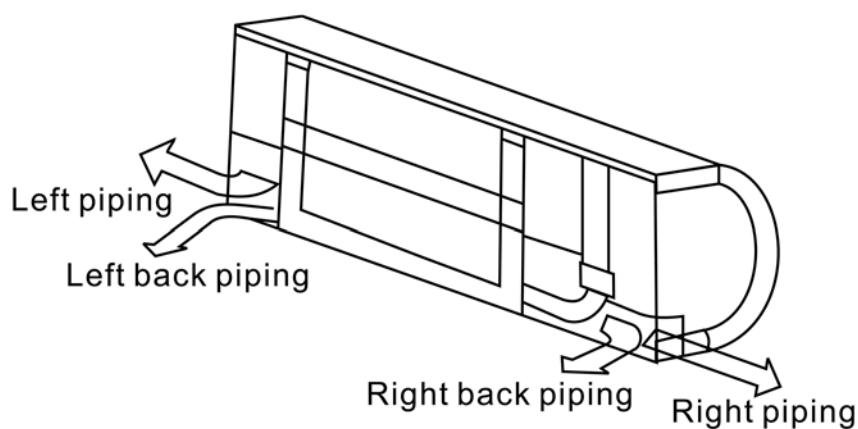
Run the drain hose sloping downward. Do not install the drain hose as illustrated below.



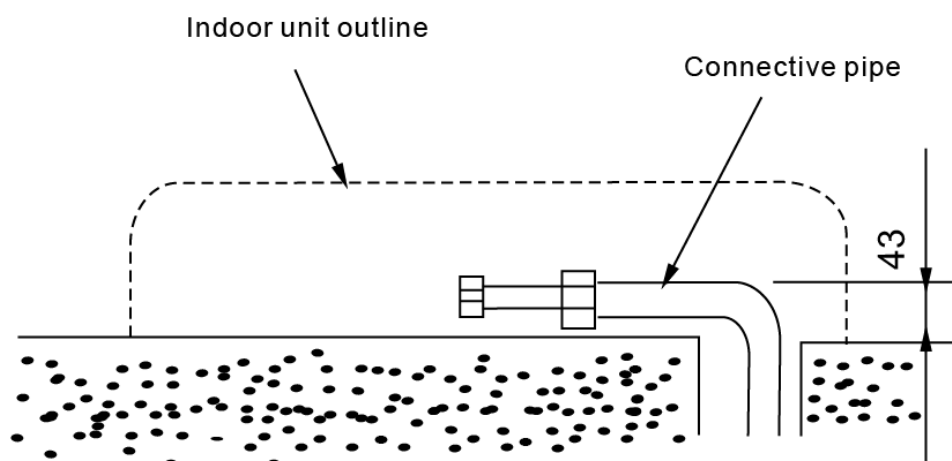
When connection extension drain hose, insulate the connecting part of extension drain hose with a shield pipe.



2. Connection pipe



1) For the left-hand and rear-left-hand piping, install the piping as shown. Bend the connective pipe to be laid at 43mm height or less from the wall.



2) Fix the end of the connective pipe.

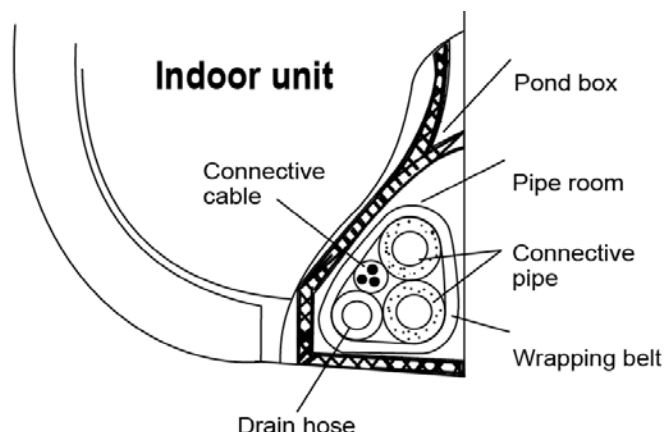
Caution:

- Connect the indoor unit first then the outdoor unit and bend and arrange the pipe carefully.
- Do not allow the piping to let out from the back of the indoor unit.
- Be careful not to let the drain hose slack.
- Insulate both of the auxiliary piping.
- Banding the drain hose under the auxiliary pipe.
- Do not allow the piping to let out from the back of the indoor unit.

3. Piping and bandaging

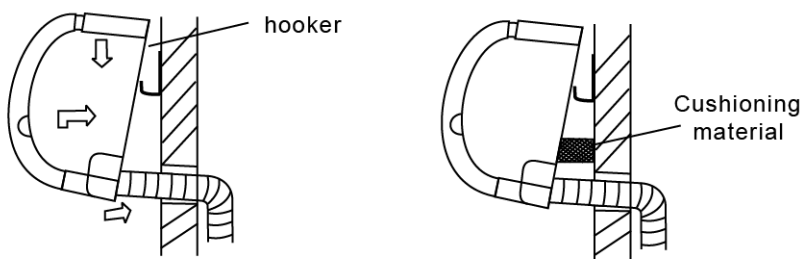
Wind the connective cable, drain hose and wiring with tape securely, evenly as shown below.

1) Because the condensed water from rear of the indoor unit is gathered in Pond Box and is piped out of room. Do not put anything else in the box.



11.4 Indoor Unit Installation

- Pass the piping through the hole in the wall.
- Put the claw at the back of the indoor unit on the hook of the installation board, move the Indoor Unit from side to side to see that it is securely hooked.
- Piping can easily be made by lifting the indoor unit with a cushioning material between the indoor unit and the wall. Get it out after finish piping.
- Push the lower part of the Indoor Unit up to the wall, then move the Indoor Unit from side to side, up and down to check if it is hooked securely.



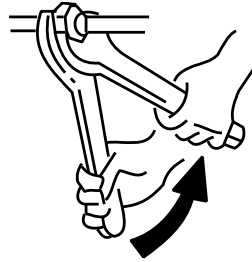
11.4.1 Material and Size of the Piping

Pipe material	Copper Pipe for Air Conditioner	
Model	MUP-09/12-W9	MUP-16/18-W9
Coil connections (flat plate)	3/4"	3/4"

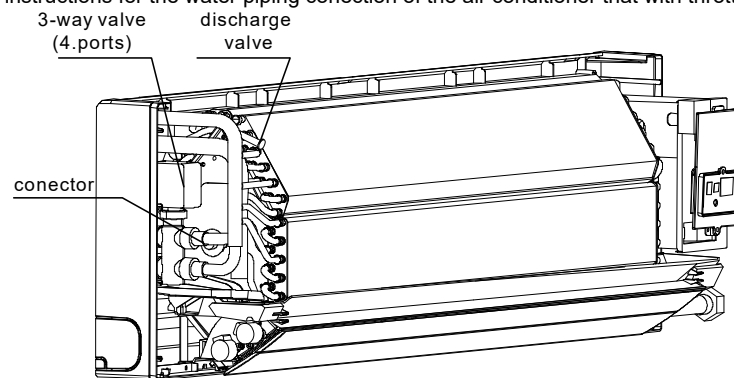
11.4.2 Connection of the Water Pipe

Connection of the water pipe should be done by professionals.

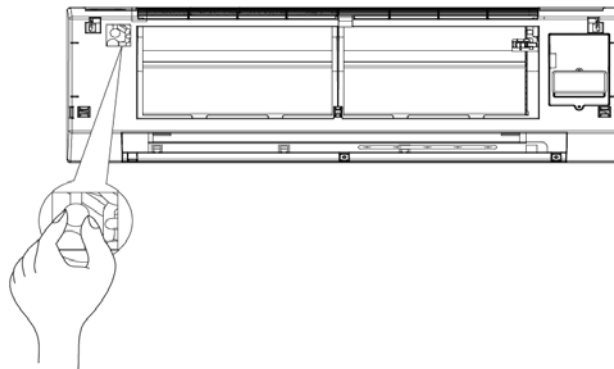
Double-span should be used when connecting pipes of Indoor Unit.



Note: Please refer to installation instructions for the water piping connection of the air conditioner that with throttle device inside.



- At the first debugging, completely expel air from coils via expelling valve.

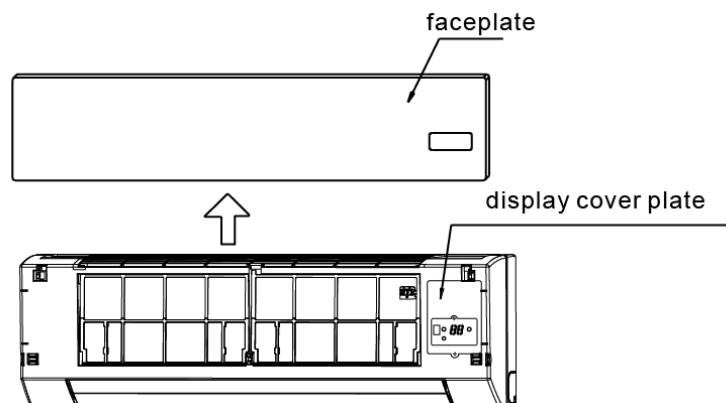


11.5 Wiring

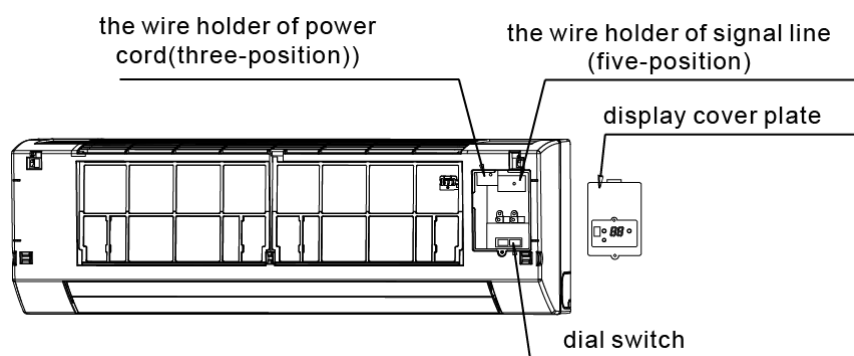
Caution:

The reserved function is indicated in broken line table, users can select it when necessary.

- Take out the faceplate, then dismantle the display cover plate.

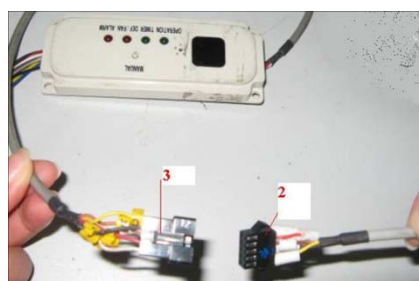
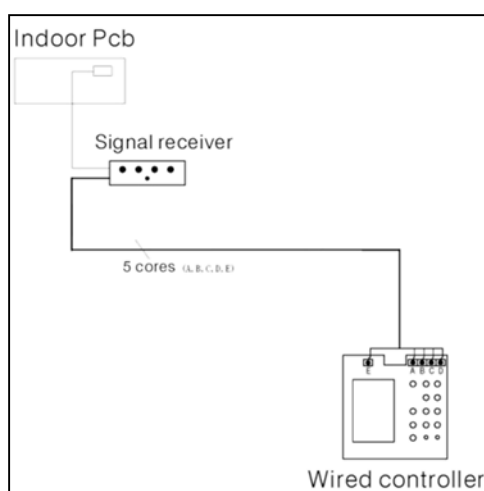
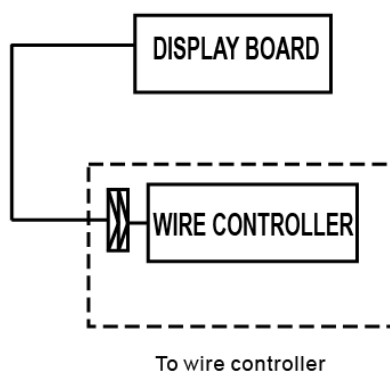


- Individual connects the power cord and signal line, adjusts the dial switch.



11.5.1 Terminal Board Diagram

Please adopt the shielded twisted-pair wire, and connect the shielded layer to E.



Insert 2 & 3 together is OK

The reserved wire control function is indicated in broken line table, users can purchase the wire controller when necessary.

12. Capacity Table

Cooling Capacity

MUP-09-W9																						
EWT	ΔT	Indoor temp (W.B.)	Indoor temperature (D.B.)																			
			21				23				25				27				29			
			TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD
°C	°C	°C	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa
5	4	15	1.96	1.64	0.42	12.86	1.98	1.91	0.42	13.13	2.19	2.19	0.47	15.53	2.46	2.46	0.53	19.19	2.73	2.73	0.58	22.70
		17	2.76	1.65	0.59	23.10	2.75	1.92	0.59	22.96	2.74	2.19	0.59	22.78	2.73	2.47	0.58	22.62	2.78	2.74	0.60	23.40
		19	-	-	-	-	3.61	1.94	0.78	36.73	3.60	2.21	0.77	36.54	3.59	2.48	0.77	36.34	3.58	2.75	0.77	36.14
	5	15	1.60	1.47	0.27	6.21	1.76	1.75	0.30	7.34	2.04	2.04	0.35	9.40	2.31	2.31	0.40	11.65	2.59	2.59	0.44	14.09
		17	2.43	1.50	0.42	12.67	2.42	1.77	0.41	12.57	2.41	2.05	0.41	12.45	2.43	2.32	0.42	12.66	2.59	2.59	0.44	14.13
		19	-	-	-	-	3.28	1.79	0.56	21.13	3.27	2.06	0.56	21.01	3.26	2.33	0.56	20.88	3.25	2.60	0.56	20.74
7	4	15	1.38	1.36	0.30	7.15	1.64	1.64	0.35	9.47	1.91	1.91	0.41	12.32	2.19	2.19	0.47	15.47	2.46	2.46	0.53	18.69
		17	2.13	1.37	0.46	14.83	2.12	1.64	0.46	14.67	2.11	1.92	0.46	14.62	2.21	2.19	0.48	15.78	2.46	2.46	0.53	18.75
		19	-	-	-	-	2.98	1.66	0.64	25.98	2.97	1.93	0.64	25.82	2.96	2.21	0.64	25.71	2.94	2.47	0.63	25.41
	5	15	1.13	1.13	0.19	2.90	1.48	1.48	0.25	5.35	1.76	1.76	0.30	7.32	2.04	2.04	0.35	9.36	2.31	2.31	0.40	11.48
		17	1.76	1.22	0.30	7.33	1.76	1.49	0.30	7.27	1.82	1.77	0.31	7.75	2.04	2.04	0.35	9.39	2.31	2.31	0.40	11.51
		19	-	-	-	-	2.63	1.51	0.45	14.27	2.62	1.78	0.45	14.16	2.70	2.15	0.48	31.60	2.60	2.32	0.45	13.99
9	4	15	1.06	1.06	0.23	4.26	1.36	1.36	0.29	6.73	1.63	1.63	0.35	9.22	1.91	1.91	0.41	11.91	2.18	2.18	0.47	15.04
		17	1.44	1.09	0.31	7.40	1.45	1.36	0.31	7.59	1.64	1.64	0.35	9.25	1.91	1.91	0.41	11.95	2.19	2.19	0.47	15.08
		19	-	-	-	-	2.30	1.38	0.49	16.49	2.29	1.65	0.49	16.32	2.28	1.92	0.49	16.17	2.30	2.19	0.50	16.52
	5	15	0.83	0.83	0.14	1.61	1.16	1.16	0.20	3.09	1.48	1.48	0.25	5.31	1.76	1.76	0.30	7.12	2.04	2.04	0.35	9.09
		17	0.82	0.80	0.14	1.58	1.16	1.16	0.20	3.11	1.49	1.49	0.25	5.33	1.76	1.76	0.30	7.14	2.04	2.04	0.35	9.11
		19	-	-	-	-	1.92	1.22	0.33	8.20	1.90	1.50	0.33	8.11	1.93	1.77	0.33	8.27	2.07	2.04	0.35	9.31
11	4	15	0.74	0.74	0.16	1.91	1.08	1.08	0.23	4.48	1.36	1.36	0.29	6.68	1.64	1.64	0.35	9.13	1.91	1.91	0.41	11.88
		17	0.74	0.74	0.16	1.92	1.08	1.08	0.23	4.50	1.36	1.36	0.29	6.71	1.64	1.64	0.35	9.16	1.91	1.91	0.41	11.92
		19	-	-	-	-	1.56	1.09	0.34	8.47	1.57	1.36	0.34	8.49	1.67	1.64	0.36	9.53	1.91	1.91	0.41	11.96
	5	15	0.60	0.60	0.10	1.03	0.84	0.84	0.15	1.63	1.19	1.19	0.20	3.39	1.48	1.48	0.26	5.32	1.76	1.76	0.30	7.08
		17	0.61	0.61	0.10	1.03	0.85	0.85	0.15	1.63	1.19	1.19	0.21	3.41	1.49	1.49	0.26	5.33	1.77	1.77	0.30	7.10
		19	-	-	-	-	0.92	0.86	0.16	1.92	1.19	1.19	0.21	3.44	1.49	1.49	0.26	5.35	1.77	1.77	0.31	7.13
13	4	15	0.48	0.48	0.10	0.99	0.75	0.75	0.16	1.97	1.08	1.08	0.23	4.44	1.35	1.35	0.29	6.45	1.63	1.63	0.35	8.80
		17	0.48	0.48	0.10	0.99	0.75	0.75	0.16	1.98	1.09	1.09	0.23	4.45	1.36	1.36	0.29	6.47	1.63	1.63	0.35	8.83
		19	-	-	-	-	0.75	0.73	0.16	1.96	1.08	1.08	0.23	4.47	1.36	1.36	0.29	6.49	1.63	1.63	0.35	8.86
	5	15	0.38	0.38	0.07	0.61	0.60	0.60	0.10	0.96	0.85	0.85	0.15	1.62	1.20	1.20	0.21	3.47	1.48	1.48	0.25	5.15
		17	0.38	0.38	0.07	0.61	0.60	0.60	0.10	0.97	0.85	0.85	0.15	1.63	1.20	1.20	0.21	3.48	1.49	1.49	0.25	5.17
		19	-	-	-	-	0.60	0.60	0.10	0.97	0.86	0.86	0.15	1.63	1.20	1.20	0.21	3.50	1.49	1.49	0.26	5.18
15	4	15	0.26	0.26	0.06	0.50	0.48	0.48	0.10	0.94	0.76	0.76	0.16	2.08	1.08	1.08	0.23	4.38	1.35	1.35	0.29	6.41
		17	0.26	0.26	0.06	0.51	0.48	0.48	0.10	0.94	0.77	0.77	0.16	2.09	1.08	1.08	0.23	4.39	1.36	1.36	0.29	6.43
		19	-	-	-	-	0.48	0.48	0.10	0.94	0.77	0.77	0.17	2.11	1.08	1.08	0.23	4.41	1.36	1.36	0.29	6.45
	5	15	0.15	0.15	0.03	0.23	0.38	0.38	0.07	0.58	0.60	0.60	0.10	0.93	0.88	0.88	0.15	1.74	1.21	1.21	0.21	3.62
		17	0.15	0.15	0.03	0.23	0.38	0.38	0.07	0.59	0.60	0.60	0.10	0.93	0.88	0.88	0.15	1.75	1.21	1.21	0.21	3.63
		19	-	-	-	-	0.38	0.38	0.07	0.59	0.60	0.60	0.10	0.93	0.88	0.88	0.15	1.76	1.19	1.19	0.21	3.66

Abbreviations:

EWT: Enter Water Temp. (°C) Δt: Temperature Difference. (°C) DB: Dry Bulb Temp. (°C) WF: Water Flow. (m³/h)
 WB: Wet Bulb Temp. (°C) TC: Total Cooling Capacity. (kW) SC: Sensible Cooling Capacity. (kW) WPD: Water Pressure Drop. (kPa)

Cooling Capacity

MUP-12-W9																						
EWT	ΔT	Indoor temp (W.B.)	Indoor temperature (D.B.)																			
			21				23				25				27				29			
			TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD
°C	°C	°C	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa
5	4	15	2.65	2.20	0.57	21.71	2.69	2.57	0.58	22.30	2.93	2.93	0.63	25.62	3.30	3.30	0.71	31.40	3.66	3.66	0.79	37.65
		17	3.71	2.21	0.80	38.46	3.70	2.57	0.79	38.25	3.69	2.94	0.79	38.04	3.67	3.30	0.79	37.71	3.75	3.67	0.80	39.18
		19	-	-	-	-	4.85	2.59	1.05	61.63	4.83	2.95	1.04	61.33	4.82	3.32	1.04	61.02	4.81	3.68	1.04	60.72
	5	15	2.20	1.99	0.38	10.75	2.39	2.37	0.41	12.38	2.74	2.74	0.47	15.71	3.11	3.11	0.54	19.45	3.47	3.47	0.60	23.30
		17	3.27	2.01	0.56	21.05	3.26	2.38	0.56	20.93	3.25	2.74	0.56	20.73	3.29	3.11	0.56	21.22	3.49	3.48	0.60	23.53
		19	-	-	-	-	4.42	2.40	0.76	35.49	4.41	2.76	0.76	35.29	4.39	3.13	0.76	35.10	4.38	3.49	0.75	34.91
7	4	15	1.90	1.83	0.41	12.23	2.20	2.20	0.48	15.70	2.57	2.57	0.55	20.20	2.93	2.93	0.63	25.37	3.30	3.30	0.71	31.37
		17	2.87	1.84	0.62	24.44	2.86	2.20	0.61	24.23	2.85	2.57	0.61	24.12	2.99	2.94	0.64	26.15	3.31	3.31	0.71	31.44
		19	-	-	-	-	4.01	2.22	0.87	43.90	4.00	2.58	0.86	43.61	3.98	2.95	0.86	43.36	3.97	3.31	0.86	43.03
	5	15	1.62	1.62	0.28	6.38	2.01	2.01	0.35	9.13	2.38	2.38	0.41	12.05	2.75	2.75	0.47	15.40	3.11	3.11	0.53	19.07
		17	2.40	1.64	0.41	12.21	2.38	2.00	0.41	12.09	2.49	2.38	0.43	13.06	2.75	2.75	0.47	15.47	3.12	3.12	0.54	19.11
		19	-	-	-	-	3.55	2.03	0.61	23.86	3.54	2.39	0.61	23.71	3.81	3.18	0.67	56.80	3.51	3.12	0.60	23.41
9	4	15	1.46	1.46	0.31	7.64	1.84	1.84	0.39	11.24	2.20	2.20	0.47	15.35	2.57	2.57	0.55	20.05	2.94	2.94	0.63	25.16
		17	1.95	1.46	0.42	12.44	1.99	1.83	0.43	12.87	2.22	2.21	0.48	15.53	2.58	2.58	0.56	20.10	2.94	2.94	0.63	25.21
		19	-	-	-	-	3.11	1.85	0.67	27.78	3.10	2.21	0.67	27.58	3.08	2.58	0.66	27.27	3.12	2.94	0.67	27.90
	5	15	1.19	1.19	0.20	3.25	1.64	1.64	0.28	6.29	2.01	2.01	0.35	8.93	2.38	2.38	0.41	11.88	2.75	2.75	0.47	15.16
		17	1.41	1.25	0.24	4.88	1.67	1.64	0.29	6.51	2.02	2.02	0.35	8.95	2.39	2.39	0.41	11.91	2.75	2.75	0.47	15.19
		19	-	-	-	-	2.62	1.65	0.45	13.89	2.59	2.02	0.45	13.70	2.64	2.39	0.45	14.08	2.82	2.76	0.48	15.81
11	4	15	1.08	1.08	0.23	4.53	1.47	1.47	0.32	7.64	1.84	1.84	0.40	11.22	2.21	2.21	0.47	15.12	2.57	2.57	0.55	19.64
		17	1.11	1.09	0.24	4.79	1.47	1.47	0.32	7.66	1.84	1.84	0.40	11.24	2.21	2.21	0.48	15.16	2.57	2.57	0.55	19.69
		19	-	-	-	-	2.13	1.47	0.46	14.23	2.13	1.84	0.46	14.26	2.29	2.21	0.49	16.07	2.58	2.58	0.55	19.73
	5	15	0.74	0.74	0.13	1.33	1.24	1.24	0.21	3.78	1.65	1.65	0.28	6.33	2.02	2.02	0.35	8.94	2.39	2.39	0.41	11.88
		17	0.75	0.75	0.13	1.33	1.24	1.24	0.21	3.79	1.65	1.65	0.28	6.34	2.02	2.02	0.35	8.96	2.39	2.39	0.41	11.91
		19	-	-	-	-	1.57	1.27	0.27	5.87	1.75	1.65	0.30	6.99	2.03	2.03	0.35	9.04	2.40	2.40	0.41	11.93
13	4	15	0.60	0.60	0.13	1.31	1.09	1.09	0.24	4.54	1.47	1.47	0.31	7.41	1.84	1.84	0.39	10.84	2.21	2.21	0.48	14.94
		17	0.60	0.60	0.13	1.31	1.09	1.09	0.24	4.55	1.47	1.47	0.32	7.43	1.84	1.84	0.39	10.87	2.21	2.21	0.48	14.98
		19	-	-	-	-	1.17	1.09	0.25	5.04	1.48	1.48	0.32	7.47	1.84	1.84	0.40	10.89	2.22	2.22	0.48	15.01
	5	15	0.48	0.48	0.08	0.76	0.75	0.75	0.13	1.29	1.26	1.26	0.22	3.88	1.65	1.65	0.28	6.17	2.02	2.02	0.35	8.69
		17	0.48	0.48	0.08	0.76	0.75	0.75	0.13	1.29	1.26	1.26	0.22	3.90	1.66	1.66	0.28	6.18	2.03	2.03	0.35	8.71
		19	-	-	-	-	0.75	0.75	0.13	1.30	1.27	1.27	0.22	3.91	1.66	1.66	0.28	6.20	2.03	2.03	0.35	8.73
15	4	15	0.33	0.33	0.07	0.64	0.61	0.61	0.13	1.32	1.10	1.10	0.24	4.51	1.48	1.48	0.32	7.41	1.85	1.85	0.40	10.94
		17	0.33	0.33	0.07	0.64	0.61	0.61	0.13	1.32	1.10	1.10	0.24	4.53	1.48	1.48	0.32	7.43	1.85	1.85	0.40	10.97
		19	-	-	-	-	0.61	0.61	0.13	1.32	1.10	1.10	0.24	4.54	1.48	1.48	0.32	7.45	1.85	1.85	0.40	11.00
	5	15	0.20	0.20	0.04	0.31	0.48	0.48	0.08	0.73	0.77	0.77	0.13	1.36	1.28	1.28	0.22	4.02	1.66	1.66	0.29	6.21
		17	0.20	0.20	0.04	0.31	0.48	0.48	0.08	0.73	0.77	0.77	0.13	1.36	1.28	1.28	0.22	4.03	1.66	1.66	0.29	6.23
		19	-	-	-	-	0.48	0.48	0.08	0.73	0.77	0.77	0.13	1.36	1.29	1.29	0.22	4.04	1.66	1.66	0.29	6.25

Abbreviations:

EWT: Enter Water Temp. (°C) Δt: Temperature Difference. (°C) DB: Dry Bulb Temp. (°C) WF: Water Flow. (m³/h)
 WB: Wet Bulb Temp. (°C) TC: Total Cooling Capacity. (kW) SC: Sensible Cooling Capacity. (kW) WPD: Water Pressure Drop. (kPa)

Cooling Capacity

MUP-16-W9																							
EWT	ΔT	Indoor	Indoor temperature (D.B.)																				
		temp (W.B.)	21				23				25				27				29				
			TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD	
°C	°C	°C	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	
5	4	15	3.19	2.61	0.68	41.18	3.24	3.04	0.69	42.20	3.48	3.47	0.75	47.72	3.90	3.90	0.84	58.47	4.32	4.32	0.93	69.33	
		17	4.44	2.63	0.96	73.55	4.43	3.06	0.96	73.11	4.41	3.48	0.95	72.66	4.39	3.90	0.95	72.11	4.48	4.33	0.97	74.49	
		19	-	-	-	-	5.75	3.07	1.24	114.46	5.73	3.49	1.24	114.15	5.72	3.92	1.24	114.22	5.71	4.34	1.24	114.11	
	5	15	2.73	2.39	0.47	21.39	2.91	2.83	0.50	23.90	3.26	3.26	0.56	29.24	3.69	3.69	0.64	36.07	4.11	4.11	0.70	43.09	
		17	3.96	2.41	0.68	40.48	3.95	2.84	0.68	40.45	3.93	3.26	0.68	40.22	3.97	3.69	0.68	40.68	4.17	4.11	0.72	44.27	
		19	-	-	-	-	5.29	2.86	0.91	66.89	5.27	3.28	0.91	66.52	5.26	3.71	0.91	66.14	5.24	4.13	0.90	65.73	
7	4	15	2.32	2.18	0.50	23.49	2.62	2.62	0.57	29.24	3.04	3.04	0.65	37.38	3.47	3.47	0.75	47.35	3.89	3.89	0.84	57.25	
		17	3.46	2.19	0.75	47.28	3.44	2.62	0.75	46.81	3.44	3.04	0.74	46.69	3.58	3.47	0.77	49.97	3.89	3.89	0.84	57.40	
		19	-	-	-	-	4.78	2.64	1.04	82.73	4.77	3.06	1.03	82.24	4.74	3.48	1.03	81.18	4.72	3.90	1.02	80.50	
	5	15	2.00	1.97	0.34	12.50	2.40	2.40	0.41	17.00	2.83	2.83	0.49	22.48	3.26	3.26	0.56	28.84	3.68	3.68	0.63	35.24	
		17	2.94	1.98	0.51	23.96	2.93	2.40	0.50	23.79	3.04	2.83	0.52	25.39	3.30	3.27	0.57	29.41	3.69	3.69	0.63	35.33	
		19	-	-	-	-	4.28	2.43	0.74	46.02	4.27	2.85	0.74	45.72	4.47	3.67	0.77	41.20	4.24	3.69	0.73	45.23	
9	4	15	1.75	1.75	0.38	14.33	2.18	2.18	0.47	20.93	2.61	2.61	0.56	28.20	3.03	3.03	0.65	36.57	3.46	3.46	0.75	46.31	
		17	2.40	1.75	0.52	24.65	2.44	2.18	0.53	25.44	2.66	2.61	0.57	29.17	3.04	3.04	0.65	36.67	3.47	3.47	0.75	46.43	
		19	-	-	-	-	3.73	2.20	0.81	52.79	3.72	2.62	0.80	52.34	3.69	3.04	0.80	51.79	3.75	3.47	0.81	53.14	
	5	15	1.53	1.53	0.26	7.81	1.97	1.97	0.34	11.95	2.40	2.40	0.41	16.70	2.83	2.83	0.49	22.05	3.25	3.25	0.56	28.12	
		17	1.85	1.53	0.32	10.77	2.08	1.97	0.36	13.04	2.41	2.41	0.41	16.79	2.83	2.83	0.49	22.11	3.26	3.26	0.56	28.19	
		19	-	-	-	-	3.18	1.98	0.55	26.96	3.16	2.40	0.54	26.62	3.21	2.83	0.55	27.42	3.40	3.26	0.59	30.28	
11	4	15	1.32	1.32	0.29	8.87	1.75	1.75	0.38	14.19	2.18	2.18	0.47	20.58	2.61	2.61	0.56	27.96	3.03	3.03	0.66	36.54	
		17	1.42	1.32	0.31	10.04	1.76	1.76	0.38	14.27	2.18	2.18	0.47	20.63	2.61	2.61	0.56	28.03	3.04	3.04	0.66	36.64	
		19	-	-	-	-	2.59	1.76	0.56	27.53	2.60	2.18	0.56	27.71	2.76	2.61	0.60	30.88	3.05	3.04	0.66	36.94	
	5	15	1.02	1.02	0.18	3.28	1.54	1.54	0.27	7.82	1.97	1.97	0.34	11.92	2.40	2.40	0.42	16.65	2.83	2.83	0.49	21.97	
		17	1.02	1.02	0.18	3.30	1.54	1.54	0.27	7.84	1.98	1.98	0.34	11.95	2.41	2.41	0.42	16.69	2.84	2.84	0.49	22.03	
		19	-	-	-	-	2.00	1.54	0.35	12.21	2.17	1.97	0.37	13.87	2.46	2.41	0.43	17.28	2.84	2.84	0.49	22.09	
13	4	15	0.83	0.83	0.18	3.47	1.32	1.32	0.28	8.56	1.75	1.75	0.38	13.84	2.18	2.18	0.47	20.28	2.60	2.60	0.56	27.13	
		17	0.84	0.84	0.18	3.49	1.32	1.32	0.28	8.59	1.75	1.75	0.38	13.87	2.18	2.18	0.47	20.33	2.60	2.60	0.56	27.20	
		19	-	-	-	-	1.48	1.32	0.32	10.43	1.79	1.76	0.39	14.53	2.19	2.19	0.47	20.39	2.61	2.61	0.56	27.28	
	5	15	0.58	0.58	0.10	1.29	1.05	1.05	0.18	3.48	1.54	1.54	0.26	7.60	1.97	1.97	0.34	11.55	2.40	2.40	0.41	16.26	
		17	0.58	0.58	0.10	1.29	1.05	1.05	0.18	3.50	1.54	1.54	0.26	7.62	1.98	1.98	0.34	11.59	2.41	2.41	0.41	16.31	
		19	-	-	-	-	1.05	1.04	0.18	3.50	1.54	1.54	0.26	7.64	1.98	1.98	0.34	11.62	2.41	2.41	0.42	16.35	
15	4	15	0.40	0.40	0.09	1.07	0.86	0.86	0.18	3.79	1.33	1.33	0.29	8.67	1.76	1.76	0.38	13.92	2.18	2.18	0.47	19.89	
		17	0.40	0.40	0.09	1.07	0.86	0.86	0.18	3.81	1.33	1.33	0.29	8.69	1.76	1.76	0.38	13.96	2.18	2.18	0.47	19.95	
		19	-	-	-	-	0.86	0.86	0.19	3.83	1.33	1.33	0.29	8.71	1.76	1.76	0.38	14.00	2.18	2.18	0.47	20.00	
	5	15	0.24	0.24	0.04	0.51	0.58	0.58	0.10	1.24	1.08	1.08	0.19	3.95	1.54	1.54	0.27	7.63	1.97	1.97	0.34	11.57	
		17	0.24	0.24	0.04	0.51	0.58	0.58	0.10	1.24	1.08	1.08	0.19	3.97	1.55	1.55	0.27	7.66	1.98	1.98	0.34	11.60	
		19	-	-	-	-	0.58	0.58	0.10	1.25	1.09	1.09	0.19	3.99	1.55	1.55	0.27	7.68	1.98	1.98	0.34	11.63	

Abbreviations:

EWT: Enter Water Temp. (°C) Δt: Temperature Difference. (°C) DB: Dry Bulb Temp. (°C) WF: Water Flow. (m³/h)
 WB: Wet Bulb Temp. (°C) TC: Total Cooling Capacity. (kW) SC: Sensible Cooling Capacity. (kW) WPD: Water Pressure Drop. (kPa)

Cooling Capacity

MUP-18-W9																							
EWT	ΔT	Indoor	Indoor temperature (D.B.)																				
		temp (W.B.)	21				23				25				27				29				
			TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD	TC	SC	WF	WPD	
°C	°C	°C	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	kW	kW	m³/h	kPa	
5	4	15	3.47	2.83	0.74	47.61	3.52	3.30	0.76	48.76	3.78	3.77	0.81	55.39	4.22	4.22	0.91	66.82	4.68	4.68	1.01	79.94	
		17	4.82	2.85	1.04	84.02	4.80	3.31	1.03	83.53	4.79	3.77	1.03	83.04	4.76	4.23	1.02	82.34	4.86	4.69	1.05	86.20	
		19	-	-	-	-	6.25	3.33	1.35	133.39	6.23	3.79	1.35	132.69	6.21	4.25	1.34	131.96	6.20	4.71	1.34	131.78	
	5	15	2.98	2.60	0.51	24.84	3.17	3.08	0.54	27.70	3.54	3.54	0.61	33.66	4.00	4.00	0.69	41.20	4.47	4.47	0.77	50.15	
		17	4.32	2.63	0.74	46.84	4.30	3.08	0.74	46.55	4.28	3.54	0.73	46.11	4.33	4.00	0.74	47.10	4.54	4.47	0.78	51.25	
		19	-	-	-	-	5.75	3.10	0.99	76.86	5.73	3.56	0.98	76.41	5.71	4.02	0.98	75.98	5.69	4.48	0.98	75.53	
7	4	15	2.53	2.37	0.54	27.26	2.85	2.84	0.62	33.77	3.30	3.30	0.71	43.61	3.76	3.76	0.81	54.00	4.22	4.22	0.91	65.98	
		17	3.76	2.38	0.81	53.96	3.74	2.84	0.80	53.45	3.73	3.30	0.80	53.31	3.89	3.77	0.84	57.25	4.23	4.22	0.91	66.13	
		19	-	-	-	-	5.20	2.86	1.13	95.71	5.18	3.32	1.12	95.16	5.16	3.78	1.12	94.58	5.14	4.24	1.12	93.87	
	5	15	2.19	2.14	0.38	14.57	2.61	2.61	0.45	19.64	3.08	3.08	0.53	25.95	3.54	3.54	0.61	32.96	4.00	4.00	0.69	41.05	
		17	3.22	2.15	0.56	28.24	3.21	2.61	0.55	28.01	3.32	3.08	0.57	29.79	3.59	3.55	0.62	33.70	4.01	4.01	0.69	41.15	
		19	-	-	-	-	4.66	2.64	0.81	53.28	4.64	3.09	0.80	52.92	4.87	4.11	0.85	50.70	4.61	4.01	0.80	52.31	
9	4	15	1.91	1.91	0.41	16.68	2.38	2.38	0.51	24.32	2.83	2.83	0.61	32.58	3.30	3.30	0.71	42.71	3.76	3.76	0.81	53.46	
		17	2.61	1.90	0.56	28.14	2.65	2.37	0.57	29.11	2.90	2.84	0.62	33.82	3.30	3.30	0.71	42.82	3.77	3.77	0.81	53.59	
		19	-	-	-	-	4.05	2.38	0.87	60.29	4.03	2.84	0.87	59.80	4.01	3.30	0.86	59.20	4.07	3.76	0.88	60.76	
	5	15	1.67	1.67	0.29	9.08	2.15	2.15	0.37	13.82	2.62	2.62	0.45	19.30	3.08	3.08	0.53	25.47	3.54	3.54	0.61	32.47	
		17	2.04	1.67	0.35	12.63	2.27	2.15	0.39	15.21	2.63	2.62	0.45	19.44	3.08	3.08	0.53	25.53	3.54	3.54	0.61	32.55	
		19	-	-	-	-	3.48	2.16	0.60	31.49	3.46	2.62	0.59	31.11	3.50	3.08	0.60	31.91	3.71	3.55	0.64	35.11	
11	4	15	1.44	1.44	0.31	10.30	1.91	1.91	0.41	16.42	2.37	2.37	0.51	23.78	2.84	2.84	0.61	32.42	3.29	3.29	0.71	41.71	
		17	1.57	1.45	0.34	11.82	1.92	1.91	0.41	16.55	2.38	2.38	0.51	23.84	2.84	2.84	0.61	32.50	3.30	3.30	0.71	41.81	
		19	-	-	-	-	2.83	1.91	0.61	32.27	2.84	2.37	0.61	32.40	3.01	2.84	0.65	36.07	3.32	3.30	0.71	42.21	
	5	15	1.16	1.16	0.20	4.45	1.68	1.68	0.29	9.09	2.15	2.15	0.37	13.66	2.62	2.62	0.45	19.26	3.08	3.08	0.53	25.39	
		17	1.16	1.15	0.20	4.45	1.69	1.69	0.29	9.11	2.15	2.15	0.37	13.70	2.62	2.62	0.45	19.30	3.08	3.08	0.53	25.46	
		19	-	-	-	-	2.19	1.67	0.38	14.08	2.39	2.16	0.41	16.43	2.69	2.63	0.46	20.09	3.09	3.09	0.53	25.52	
13	4	15	0.95	0.95	0.20	4.69	1.44	1.44	0.31	9.95	1.91	1.91	0.41	16.23	2.37	2.37	0.51	23.44	2.83	2.83	0.61	31.49	
		17	0.95	0.95	0.20	4.71	1.44	1.44	0.31	9.97	1.92	1.92	0.41	16.27	2.38	2.38	0.51	23.50	2.84	2.84	0.61	31.58	
		19	-	-	-	-	1.63	1.44	0.35	12.25	1.95	1.92	0.42	16.87	2.38	2.38	0.51	23.56	2.84	2.84	0.61	31.67	
	5	15	0.62	0.62	0.11	1.38	1.18	1.18	0.20	4.69	1.68	1.68	0.29	8.83	2.16	2.16	0.37	13.53	2.62	2.62	0.45	18.82	
		17	0.62	0.62	0.11	1.38	1.19	1.19	0.20	4.71	1.69	1.69	0.29	8.86	2.16	2.16	0.37	13.57	2.62	2.62	0.45	18.87	
		19	-	-	-	-	1.21	1.19	0.21	4.92	1.69	1.69	0.29	8.88	2.16	2.16	0.37	13.61	2.63	2.63	0.45	18.92	
15	4	15	0.43	0.43	0.09	1.15	0.96	0.96	0.21	4.93	1.45	1.45	0.31	10.06	1.91	1.91	0.41	15.99	2.37	2.37	0.51	23.03	
		17	0.43	0.43	0.09	1.15	0.96	0.96	0.21	4.95	1.45	1.45	0.31	10.09	1.91	1.91	0.41	16.02	2.37	2.37	0.51	23.09	
		19	-	-	-	-	0.96	0.96	0.21	4.97	1.45	1.45	0.31	10.12	1.91	1.91	0.41	16.00	2.38	2.38	0.51	23.15	
	5	15	0.26	0.26	0.05	0.55	0.62	0.62	0.11	1.35	1.21	1.21	0.21	5.01	1.69	1.69	0.29	8.88	2.15	2.15	0.37	13.27	
		17	0.26	0.26	0.05	0.55	0.62	0.62	0.11	1.35	1.21	1.21	0.21	5.03	1.69	1.69	0.29	8.90	2.15	2.15	0.37	13.30	
		19	-	-	-	-	0.62	0.62	0.11	1.35	1.21	1.21	0.21	5.04	1.70	1.70	0.29	8.93	2.16	2.16	0.37	13.34	

Abbreviations:

EWT: Enter Water Temp. (°C) ΔT: Temperature Difference. (°C) DB: Dry Bulb Temp. (°C) WF: Water Flow. (m³/h)
 WB: Wet Bulb Temp. (°C) TC: Total Cooling Capacity. (kW) SC: Sensible Cooling Capacity. (kW) WPD: Water Pressure Drop. (kPa)

Heating Capacity

MUP-09-W9													
EWT	ΔT	Indoor temperature (W.B.)											
		16			18			20			22		
		TH	WF	WPD	TH	WF	WPD	TH	WF	WPD	TH	WF	WPD
$^{\circ}\text{C}$	$^{\circ}\text{C}$	kW	m ³ /h	kPa	kW	m ³ /h	kPa	kW	m ³ /h	kPa	kW	m ³ /h	kPa
40	8	2.38	0.26	4.59	2.08	0.23	3.68	1.79	0.19	2.85	1.50	0.16	2.11
	10	2.09	0.18	2.58	1.79	0.16	1.99	1.48	0.13	1.28	1.14	0.10	0.74
	12	1.77	0.13	1.27	1.43	0.10	0.81	1.14	0.08	0.56	0.88	0.06	0.42
	14	1.42	0.09	0.63	1.16	0.07	0.49	0.90	0.06	0.38	0.62	0.04	0.27
	16	1.19	0.06	0.45	0.91	0.05	0.35	0.63	0.03	0.25	0.33	0.02	0.13
45	8	3.08	0.33	6.93	2.79	0.30	5.87	2.50	0.27	4.88	2.22	0.24	3.97
	10	2.81	0.24	4.10	2.52	0.22	3.41	2.23	0.19	2.77	1.93	0.17	2.19
	12	2.53	0.18	2.56	2.24	0.16	2.09	1.94	0.14	1.62	1.61	0.12	1.07
	14	2.23	0.14	1.56	1.90	0.12	1.08	1.58	0.10	0.72	1.29	0.08	0.51
	16	1.85	0.10	0.78	1.56	0.09	0.58	1.30	0.07	0.45	1.04	0.06	0.36
50	8	3.76	0.41	9.53	3.47	0.38	8.34	3.19	0.35	7.21	2.91	0.32	6.15
	10	3.50	0.30	5.83	3.22	0.28	5.04	2.93	0.25	4.31	2.65	0.23	3.62
	12	3.24	0.23	3.76	2.95	0.21	3.21	2.65	0.19	2.70	2.37	0.17	2.22
	14	2.97	0.18	2.52	2.67	0.17	2.12	2.38	0.15	1.75	2.08	0.13	1.36
	16	2.68	0.15	1.72	2.38	0.13	1.35	2.05	0.11	0.97	1.73	0.09	0.67
55	8	4.42	0.48	12.46	4.14	0.45	11.08	3.87	0.42	9.83	3.59	0.39	8.65
	10	4.17	0.36	7.71	3.89	0.34	6.85	3.61	0.31	6.03	3.33	0.29	5.25
	12	3.92	0.28	5.08	3.64	0.26	4.48	3.36	0.24	3.90	3.07	0.22	3.36
	14	3.66	0.23	3.52	3.37	0.21	3.07	3.09	0.19	2.64	2.80	0.17	2.24
	16	3.39	0.18	2.48	3.10	0.17	2.14	2.81	0.15	1.81	2.52	0.14	1.51
60	8	5.07	0.55	15.34	4.80	0.52	14.00	4.52	0.49	12.64	4.25	0.46	11.34
	10	4.83	0.42	9.64	4.55	0.40	8.71	4.28	0.37	7.82	4.00	0.35	6.97
	12	4.58	0.33	6.50	4.30	0.31	5.84	4.03	0.29	5.21	3.75	0.27	4.61
	14	4.33	0.27	4.55	4.05	0.25	4.06	3.77	0.23	3.59	3.49	0.22	3.15
	16	4.07	0.22	3.30	3.79	0.21	2.91	3.51	0.19	2.55	3.22	0.17	2.22

Abbreviations:

Δt : Temperature Difference. ($^{\circ}\text{C}$) **TH:** Total Heating Capacity. (kW) **WF:** Water Flow. (m³/h) **WPD:** Water Pressure Drop. (kPa)

Heating Capacity

MUP-12-W9													
EWT	ΔT	Indoor temperature (W.B.)											
		16			18			20			22		
		TH	WF	WPD	TH	WF	WPD	TH	WF	WPD	TH	WF	WPD
$^{\circ}\text{C}$	$^{\circ}\text{C}$	kW	m ³ /h	kPa	kW	m ³ /h	kPa	kW	m ³ /h	kPa	kW	m ³ /h	kPa
40	8	3.16	0.34	7.44	2.78	0.30	5.98	2.40	0.26	4.65	2.01	0.22	3.45
	10	2.80	0.24	4.19	2.41	0.21	3.25	2.01	0.17	2.41	1.58	0.14	1.51
	12	2.42	0.17	2.43	1.98	0.14	1.65	1.42	0.10	0.79	1.06	0.08	0.51
	14	1.79	0.11	0.93	1.38	0.09	0.60	1.09	0.07	0.45	0.79	0.05	0.33
	16	1.41	0.08	0.54	1.12	0.06	0.42	0.82	0.04	0.31	0.48	0.03	0.19
45	8	4.11	0.44	11.33	3.73	0.40	9.61	3.35	0.36	8.00	2.97	0.32	6.52
	10	3.77	0.33	6.75	3.38	0.29	5.63	3.00	0.26	4.57	2.62	0.23	3.62
	12	3.40	0.25	4.21	3.03	0.22	3.44	2.63	0.19	2.72	2.23	0.16	2.07
	14	3.03	0.19	2.68	2.63	0.16	2.11	2.20	0.14	1.50	1.64	0.10	0.78
	16	2.59	0.14	1.60	2.05	0.11	0.94	1.58	0.09	0.58	1.27	0.07	0.43
50	8	5.03	0.54	15.71	4.66	0.50	13.76	4.28	0.46	11.91	3.91	0.42	10.18
	10	4.70	0.41	9.63	4.33	0.38	8.35	3.95	0.34	7.14	3.57	0.31	6.01
	12	4.36	0.31	6.21	3.98	0.29	5.32	3.60	0.26	4.48	3.22	0.23	3.71
	14	4.01	0.25	4.18	3.63	0.22	3.52	3.24	0.20	2.91	2.85	0.18	2.34
	16	3.65	0.20	2.87	3.26	0.18	2.37	2.86	0.15	1.90	2.43	0.13	1.42
55	8	5.94	0.65	20.74	5.57	0.61	18.54	5.20	0.57	16.46	4.83	0.53	14.48
	10	5.62	0.49	12.80	5.24	0.46	11.37	4.88	0.42	10.01	4.50	0.39	8.77
	12	5.29	0.38	8.47	4.92	0.36	7.47	4.54	0.33	6.52	4.17	0.30	5.63
	14	4.96	0.31	5.87	4.58	0.28	5.13	4.20	0.26	4.43	3.82	0.24	3.77
	16	4.60	0.25	4.15	4.23	0.23	3.58	3.84	0.21	3.05	3.46	0.19	2.55
60	8	6.84	0.74	25.76	6.47	0.70	23.40	6.10	0.66	21.13	5.74	0.62	18.97
	10	6.53	0.57	16.25	6.16	0.54	14.69	5.78	0.50	13.14	5.42	0.47	11.73
	12	6.21	0.45	10.92	5.84	0.42	9.82	5.47	0.40	8.77	5.10	0.37	7.77
	14	5.88	0.36	7.65	5.51	0.34	6.84	5.13	0.32	6.06	4.76	0.30	5.33
	16	5.55	0.30	5.56	5.18	0.28	4.93	4.80	0.26	4.34	4.42	0.24	3.77

Abbreviations:

Δt : Temperature Difference. ($^{\circ}\text{C}$) **TH:** Total Heating Capacity. (kW) **WF:** Water Flow. (m³/h) **WPD:** Water Pressure Drop. (kPa)

Heating Capacity

MUP-16-W9													
EWT	ΔT	Indoor temperature (W.B.)											
		16			18			20			22		
		TH	WF	WPD	TH	WF	WPD	TH	WF	WPD	TH	WF	WPD
$^{\circ}\text{C}$	$^{\circ}\text{C}$	kW	m ³ /h	kPa	kW	m ³ /h	kPa	kW	m ³ /h	kPa	kW	m ³ /h	kPa
40	8	3.78	0.41	14.11	3.33	0.36	11.35	2.88	0.31	8.83	2.42	0.26	6.54
	10	3.37	0.29	7.95	2.91	0.25	6.20	2.44	0.21	4.62	1.97	0.17	3.22
	12	2.93	0.21	4.68	2.45	0.18	3.47	1.95	0.14	2.22	1.37	0.10	1.03
	14	2.44	0.15	2.60	1.85	0.11	1.38	1.36	0.08	0.82	0.97	0.06	0.57
	16	1.81	0.10	1.04	1.40	0.08	0.74	1.00	0.05	0.53	0.55	0.03	0.30
45	8	4.88	0.53	21.23	4.44	0.48	17.99	3.99	0.43	14.99	3.54	0.38	12.22
	10	4.48	0.39	12.61	4.04	0.35	10.52	3.58	0.31	8.59	3.13	0.27	6.84
	12	4.08	0.29	7.94	3.62	0.26	6.49	3.16	0.23	5.15	2.69	0.19	3.94
	14	3.64	0.23	5.10	3.18	0.20	4.05	2.71	0.17	3.09	2.21	0.14	2.11
	16	3.20	0.17	3.31	2.71	0.15	2.44	2.14	0.12	1.44	1.60	0.09	0.82
50	8	5.96	0.64	29.29	5.52	0.60	25.78	5.08	0.55	22.31	4.64	0.50	18.97
	10	5.58	0.48	17.96	5.13	0.45	15.56	4.69	0.41	13.31	4.24	0.37	11.21
	12	5.18	0.37	11.60	4.73	0.34	9.94	4.29	0.31	8.38	3.83	0.28	6.93
	14	4.78	0.30	7.82	4.33	0.27	6.60	3.87	0.24	5.47	3.41	0.21	4.41
	16	4.36	0.24	5.38	3.90	0.21	4.46	3.44	0.19	3.61	2.97	0.16	2.82
55	8	7.02	0.76	38.53	6.58	0.72	34.36	6.15	0.67	30.41	5.71	0.62	26.76
	10	6.64	0.58	23.77	6.20	0.54	21.11	5.77	0.50	18.59	5.33	0.46	16.22
	12	6.26	0.45	15.80	5.82	0.42	13.93	5.38	0.39	12.16	4.93	0.36	10.45
	14	5.87	0.36	10.89	5.43	0.34	9.51	4.98	0.31	8.21	4.53	0.28	7.01
	16	5.48	0.30	7.75	5.02	0.27	6.70	4.57	0.25	5.70	4.11	0.22	4.76
60	8	8.06	0.88	47.91	7.62	0.83	43.27	7.19	0.78	39.17	6.76	0.74	35.19
	10	7.69	0.67	29.94	7.26	0.63	27.18	6.83	0.59	24.41	6.40	0.56	21.78
	12	7.32	0.53	20.14	6.89	0.50	18.11	6.44	0.47	16.14	6.01	0.44	14.37
	14	6.94	0.43	14.16	6.50	0.40	12.65	6.06	0.38	11.21	5.62	0.35	9.85
	16	6.56	0.36	10.30	6.12	0.33	9.13	5.67	0.31	8.02	5.23	0.28	6.98

Abbreviations:

Δt : Temperature Difference. ($^{\circ}\text{C}$) **TH:** Total Heating Capacity. (kW) **WF:** Water Flow. (m³/h) **WPD:** Water Pressure Drop. (kPa)

Heating Capacity

MUP-18-W9													
EWT	ΔT	Indoor temperature (W.B.)											
		16			18			20			22		
		TH	WF	WPD	TH	WF	WPD	TH	WF	WPD	TH	WF	WPD
$^{\circ}\text{C}$	$^{\circ}\text{C}$	kW	m ³ /h	kPa	kW	m ³ /h	kPa	kW	m ³ /h	kPa	kW	m ³ /h	kPa
40	8	4.16	0.45	16.62	3.67	0.40	13.37	3.17	0.34	10.42	2.67	0.29	7.72
	10	3.71	0.32	9.37	3.21	0.28	7.32	2.70	0.23	5.46	2.18	0.19	3.82
	12	3.24	0.23	5.54	2.72	0.20	4.11	2.19	0.16	2.85	1.55	0.11	1.31
	14	2.73	0.17	3.24	2.11	0.13	1.84	1.49	0.09	0.93	1.06	0.07	0.62
	16	2.01	0.11	1.25	1.51	0.08	0.81	1.09	0.06	0.58	0.61	0.03	0.33
45	8	5.37	0.58	25.00	4.88	0.53	21.20	4.39	0.47	17.66	3.90	0.42	14.41
	10	4.94	0.43	14.86	4.44	0.38	12.40	3.95	0.34	10.13	3.45	0.30	8.06
	12	4.50	0.32	9.37	4.00	0.29	7.67	3.49	0.25	6.10	2.98	0.22	4.67
	14	4.03	0.25	6.03	3.52	0.22	4.80	3.01	0.19	3.67	2.47	0.15	2.65
	16	3.55	0.19	3.93	3.02	0.16	3.00	2.44	0.13	1.93	1.78	0.10	0.98
50	8	6.55	0.71	34.65	6.07	0.66	30.22	5.58	0.61	26.31	5.10	0.55	22.48
	10	6.14	0.53	21.19	5.65	0.49	18.36	5.16	0.45	15.71	4.68	0.41	13.24
	12	5.71	0.41	13.69	5.21	0.38	11.73	4.73	0.34	9.90	4.23	0.31	8.20
	14	5.27	0.33	9.25	4.77	0.30	7.81	4.27	0.26	6.47	3.77	0.23	5.23
	16	4.82	0.26	6.37	4.31	0.23	5.28	3.80	0.21	4.27	3.29	0.18	3.36
55	8	7.72	0.84	45.44	7.24	0.79	40.65	6.76	0.74	35.99	6.28	0.68	31.59
	10	7.32	0.64	28.19	6.83	0.59	24.93	6.35	0.55	21.96	5.87	0.51	19.16
	12	6.90	0.50	18.67	6.41	0.47	16.46	5.93	0.43	14.37	5.44	0.39	12.40
	14	6.47	0.40	12.87	5.98	0.37	11.24	5.50	0.34	9.71	5.01	0.31	8.27
	16	6.04	0.33	9.17	5.55	0.30	7.93	5.05	0.27	6.76	4.55	0.25	5.67
60	8	8.86	0.96	56.30	8.39	0.91	51.40	7.91	0.86	46.17	7.44	0.81	41.44
	10	8.47	0.74	35.48	7.99	0.69	32.00	7.52	0.65	28.79	7.04	0.61	25.75
	12	8.06	0.58	23.81	7.58	0.55	21.41	7.11	0.51	19.12	6.62	0.48	16.93
	14	7.65	0.47	16.75	7.17	0.44	14.97	6.69	0.41	13.27	6.20	0.38	11.66
	16	7.24	0.39	12.19	6.75	0.37	10.81	6.27	0.34	9.51	5.77	0.31	8.27

Abbreviations:

Δt : Temperature Difference. ($^{\circ}\text{C}$) **TH:** Total Heating Capacity. (kW) **WF:** Water Flow. (m³/h) **WPD:** Water Pressure Drop. (kPa)

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