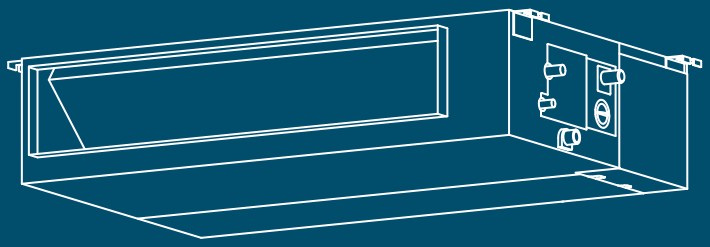
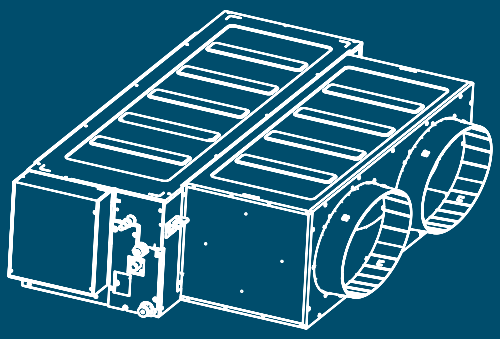
DUCTED AIR CONDITIONER

Installation Manual

KDI V2 Series

KDI-7.0 I KDI-10.5 I KDI-12.5 I KDI-14.0
KDI-14.0S I KDI-17.0





kaden°™
your perfect climate

Important note

This appliance must be installed in accordance with:

Manufacturer's Installation Instructions

Current AS/NZS 3000, AS/NZS 5149

Local Regulations and Municipal Building Codes including local OH&S requirements

This appliance must be installed, maintained, and removed only by an Authorised Person.

For continued safety of this appliance, it must be installed and maintained in accordance with the manufacturer's Instructions.





Important note

Read this manual carefully before installing or operating your new air conditioning unit.
Make sure to save this manual for future reference.

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1. Safety precautions

Read safety precautions before operation and installation

Incorrect installation due to ignoring instructions can cause serious damage or injury.
The seriousness of potential damage or injuries is classified as either a WARNING or CAUTION.



This symbol is a WARNING, and indicates that ignoring instructions may cause death or serious injury.



This symbol is a CAUTION, and indicates that ignoring instructions may cause moderate injury to your person, or damage to your unit or other property.



This symbol indicates that you must never perform the action indicated.

⚠ WARNING

- ⊘ **Do not** share the electrical outlet with other appliances. Improper or insufficient power supply can cause fire or electrical shock.
- ⊘ When connecting refrigerant piping, **do not** let substances or gases other than the specified refrigerant enter the unit. The presence of other gases or substances will lower the unit's capacity, and can cause abnormally high pressure in the refrigeration cycle. This can cause explosion and injury.
- ⊘ **Do not** allow children to play with the air conditioner. Children must be supervised around the unit at all times.

1. Installation must be performed by an authorised dealer or specialist. Defective installation can cause water leakage, electrical shock, or fire.
2. Installation must be performed according to the installation instructions. Improper installation can cause water leakage, electrical shock, or fire.
3. Contact an authorised service technician for repair or maintenance of this unit.
4. Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and can cause the unit to fail.
5. Install the unit in a firm location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly, the unit may drop and cause serious injury and damage.
6. Only fully qualified licensed personnel should install, service or carry out maintenance to this air conditioning unit. All electrical work is to follow local and national wiring standards and the Installation Manual.
7. You must use an independent circuit and single outlet to supply power. **Do not** connect other appliances to the same outlet. Insufficient electrical capacity or defects in electrical work can cause electrical shock or fire.
8. For all electrical work, use the specified cables. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat and cause fire, and may also cause shock.
9. All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.
10. In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
11. This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children must not play with the appliance. Cleaning and user maintenance must not be made by children without supervision.

CAUTION

⊘ **Do not** install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.

⊘ **Do not** operate your air conditioner in a wet room such as a bathroom or laundry room. Too much exposure to water can cause electrical components to short circuit.

1. The product must be properly grounded at the time of installation, or electrical shock may occur.
2. Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.

Note about fluorinated gases

1. This air-conditioning unit contains fluorinated gases. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself.
2. Installation, decommissioning, service, maintenance and repair of this unit must be performed by a licensed technician.
3. Product decommissioning and recycling must be performed by a licensed technician.
4. If the system has a leak-detection system installed, it must be checked for leaks at least every 12 months.
5. When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.
6. Only ARC (Australian Refrigeration Council) licence holders can install and commission this air conditioner. This air conditioner must be installed to meet the requirements of the current version of AS/NZS 5149.
7. It is illegal to vent some types of refrigerant to the atmosphere.

REFRIGERANT

This appliance uses R32 (difluoromethane) refrigerant, which is a flammable gas class 2.2 according to AS/NZS 5149 and must be handled by a refrigeration mechanic with appropriate Australian refrigerant handling licence.

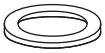
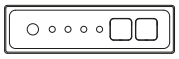
- WARNING risk of fire/flammable material. If the refrigerant is leaked, together with an external ignition source, there is possibility of ignition.
- Read all the OPERATING INSTRUCTIONS carefully before operation.
- Service personnel are required to carefully read the OPERATING INSTRUCTIONS and INSTALLATION MANUAL before operation.
- Further information is available in the OPERATING INSTRUCTIONS, INSTALLATION MANUAL and the like.

Certain levels of refrigerant require minimum room sizes. Please ensure that these minimum room sizes are adhered to for standard installations (up to 10m pipe length). If larger refrigerant charges than standard are used then please consult AS/NZS 60335.2.40 to determine the safe minimum floor area for the installation.

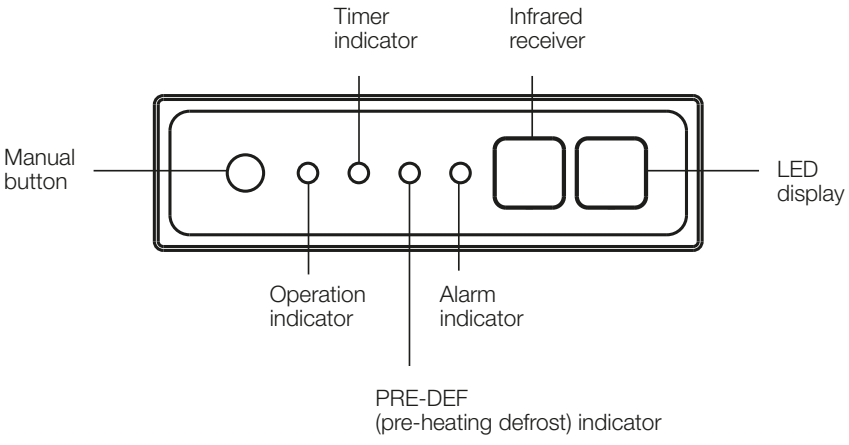
Make sure that the area has been made safe by having suitable ventilation and is free from ignition sources before charging or recovering the charge of R32.

2. Accessories

The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or cause the equipment to fail.

	Name	Shape	Quantity
Tubing and fittings	Soundproof/insulation sheath		2
Cooling and heating	Drain joint		1
	Seal ring		1
Others	Owner's manual		1
	Installation manual		1
	Display panel (for testing purposes only)		1
	Wired controller		1
	Copper nut		2
	Drain connection (some models)		1
	Drain worm drive clamp (some models)		1-2 (depending on models)
	Locating line (Only on dual fan units)		2

Display panel

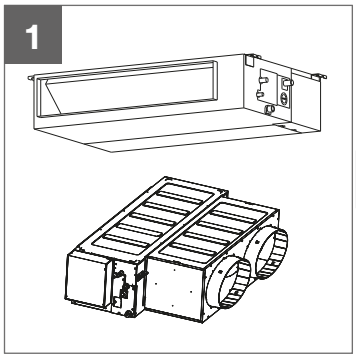


MANUAL button: This button selects the mode in the following order:AUTO,FORCED COOL,OFF.

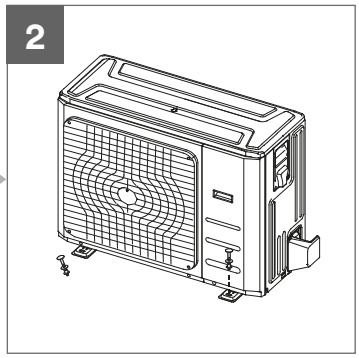
FORCED COOL mode: In FORCED COOL mode, the Operation light flashes. The system will then turn to AUTO after it has cooled with a high fan speed for 30 minutes. The remote control will be disabled during this operation.

OFF mode: When the display panel is turned OFF, the unit turns off and the remote control is re-enabled.

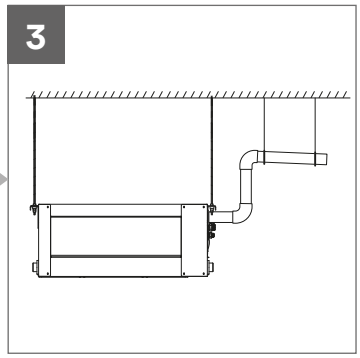
3. Installation summary



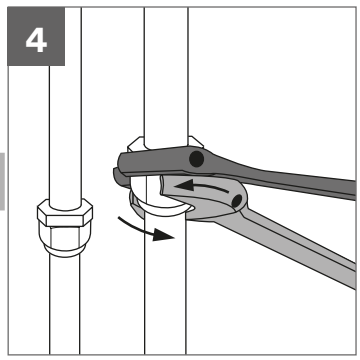
Install the indoor unit *(page 8)*



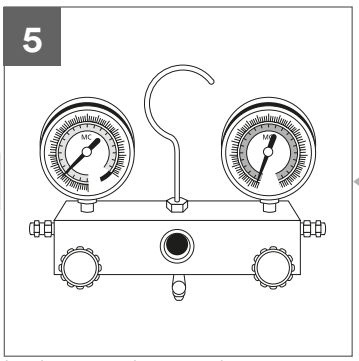
Install the outdoor unit *(page 15)*



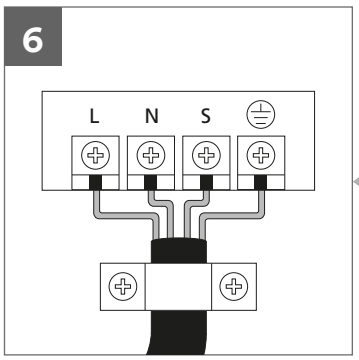
Install the drainpipe *(page 18)*



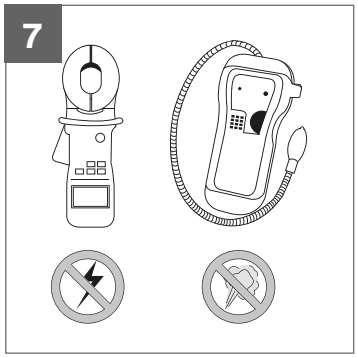
Connect the refrigerant pipes *(page 20)*



Leak test and evacuation *(page 24)*



Connect the wires *(page 26)*

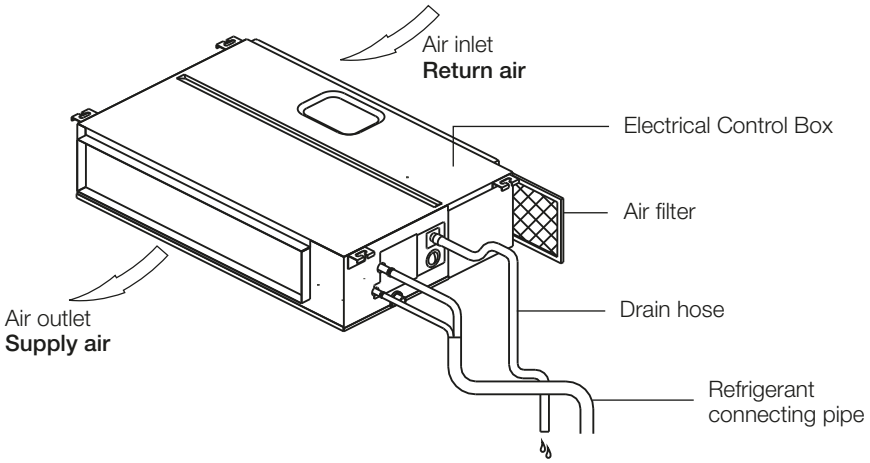


Perform a test run *(page 33)*

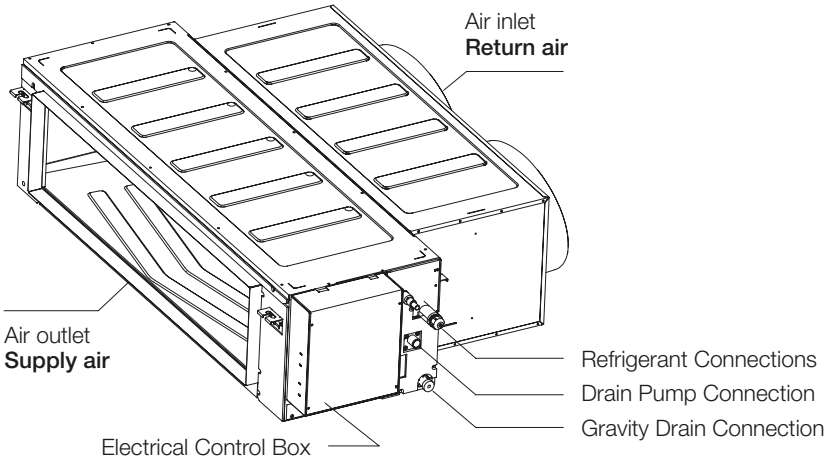
4. Indoor unit installation

Indoor unit parts

For KDI-7.0/KDI-10.5/KDI-12.5/KDI-14.0



For KDI-14.0S/KDI-17.0



Safety precautions

⚠ WARNING

Securely install the indoor unit on a structure that can sustain its weight. If the structure is too weak, the unit may fall, causing personal injury, unit and property damage, or even death.

❗ CAUTION

Install the indoor and outdoor units, cables and wires at least 1m from televisions or radios to prevent static or image distortion. Depending on the appliances, a 1m distance may not be sufficient.

Indoor unit installation instructions

Step 1: Select installation location

The indoor unit should be installed in a location that meets the following requirements:

- ✓ Enough room for installation and maintenance.
- ✓ Enough room for the connecting pipe and drainpipe.
- ✓ The ceiling is horizontal and its structure can sustain the weight of the indoor unit.
- ✓ The air inlet and outlet are not impeded.
- ✓ The airflow can fill the entire room.
- ✓ There is no direct radiation from heaters.
- ✓ It is embedded installation.

CAUTION

Do not install unit in the following locations:

- ⊘ Where oil drilling or fracking is taking place.
- ⊘ Coastal areas with high salt content in the air.
- ⊘ Near geothermal activity and corrosive gas.
- ⊘ Buildings that may experience power fluctuations.
- ⊘ Enclosed spaces.
- ⊘ Areas with strong electromagnetic waves.
- ⊘ Areas that store flammable materials or gas.
- ⊘ Rooms with high humidity, such as bathrooms or laundry rooms.

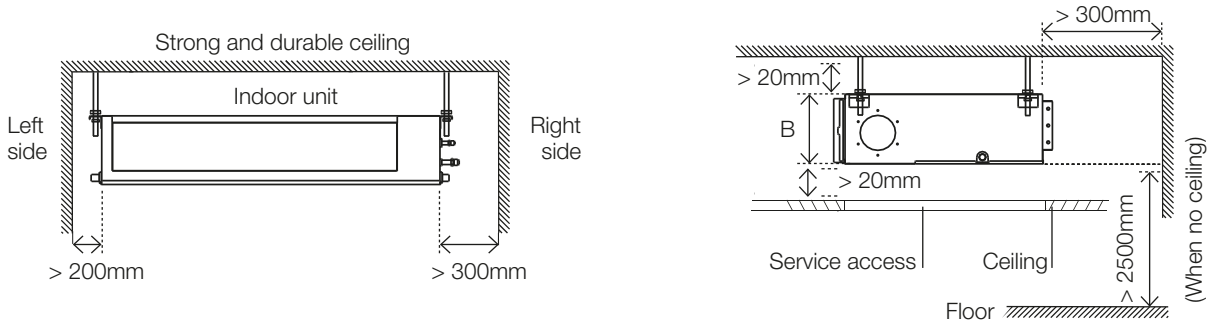


Figure 4.2

Maintenance space

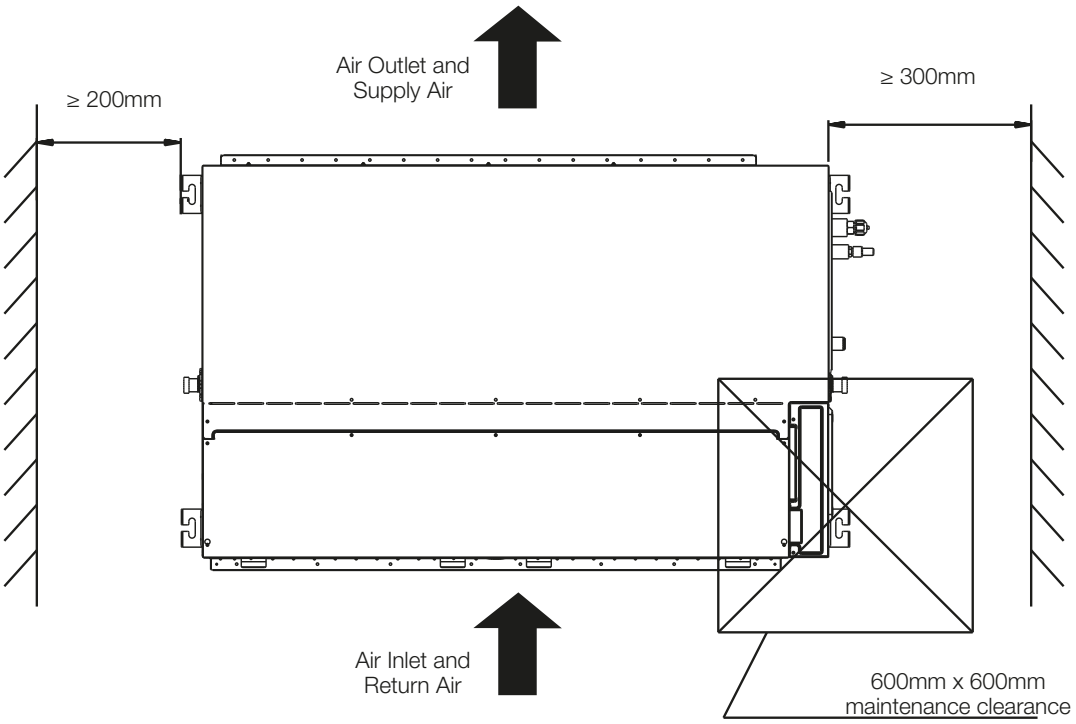


Figure 4.3

Step 2: Hang indoor unit

1. Please refer to the following diagrams to locate the four positioning screw bolt holes on the ceiling. Be sure to mark the places where you will drill ceiling hook holes.

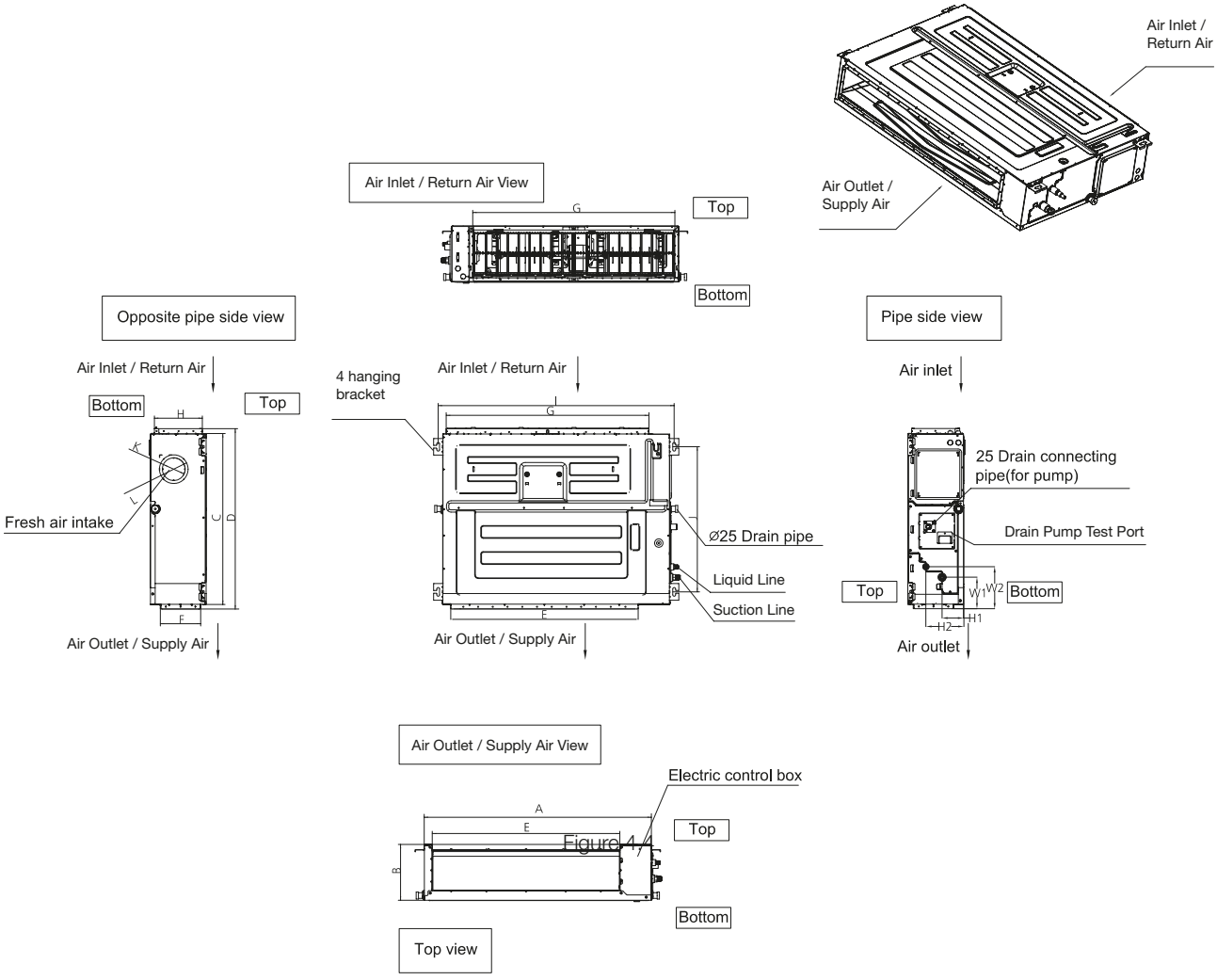


Figure 4.4

Table 4.1 (Unit: mm)

Model	Outline dimension				Air Outlet / Supply Air Size		Air Inlet / Return Air Size		Hanging Bracket Positions		Fresh Air Intake		Refrigerant Pipe Positions			
	A	B	C	D	E	F	G	H	I	J	K	L	H1	H2	W1	W2
KDI-7.0	1000	245	750	795	827	178	892	212	1040	640	100	126	80	151	120	165
KDI-10.5	1200	300	750	795	1027	233	1092	267	1240	640	125	160	102	163	101	160
KDI-12.5	1200	300	750	795	1027	233	1092	267	1240	640	125	160	102	163	101	160
KDI-14.0	1200	300	750	795	1027	233	1092	267	1240	640	125	160	102	163	101	160

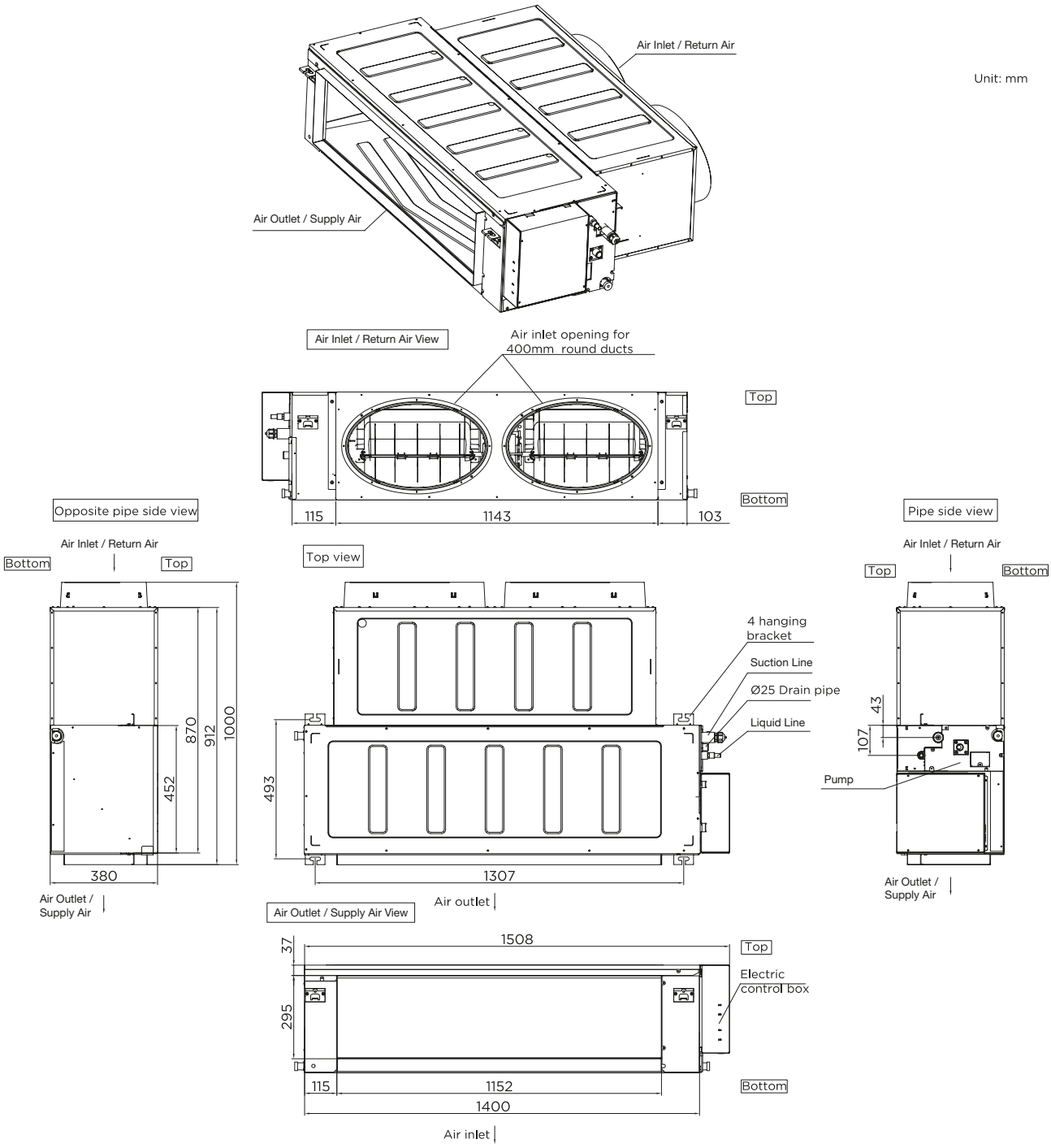
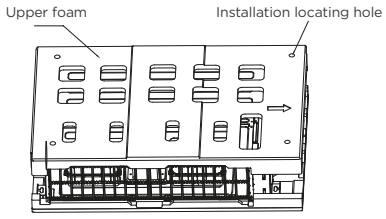


Table 4.2 (Unit: mm)

Model	Outline dimension				Air Outlet / Supply Air Size		Air Inlet / Return Air Size		Hanging Bracket Positions		Fresh Air Intake		Refrigerant Pipe Positions			
	A	B	C	D	E	F	G	H	I	J	K	L	H1	H2	W1	W2
KDI-14.0S	1508	380	870	1000	1152	295	400mm Oval	400mm Oval	1307	493	125	160	102	163	101	160
KDI-17.0	1508	380	870	1000	1152	295	400mm Oval	400mm Oval	1307	493	125	160	102	163	101	160

Wood

The mounting holes for upper foam are used for auxiliary positioning bolts (if the foam is damaged, the spacing between the actual lifting lugs shall be the standard).



Place the wood mounting across the roof beam, then install the hanging screw bolts. *(See Fig. 4.5)*

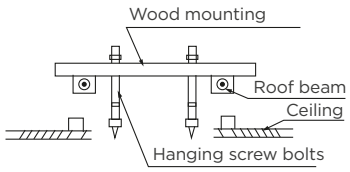


Figure 4.5

New concrete bricks

Inlay or embed the screw bolts. *(See Fig. 4.6)*



Figure 4.6

Original concrete bricks

Use an embedding screw bolt, crock and stick harness. *(See Fig. 4.7)*

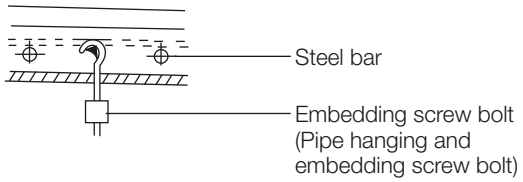


Figure 4.7

Steel roof beam structure

Install and use the supporting steel angle. *(See Fig. 4.8)*

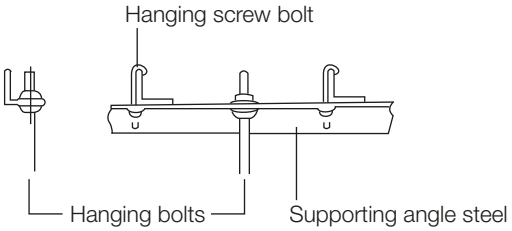


Figure 4.8

CAUTION

The unit body must be completely aligned with the hole. Ensure that the unit and the hole are the same size before moving on.

1. Install and fit pipes and wires after you have finished installing the main body. When choosing where to start, determine the direction of the pipes to be drawn out. Especially in cases where there is a ceiling involved, align the refrigerant pipes, drain pipes, and indoor and outdoor lines with their connection points before mounting the unit.
2. Install hanging screw bolts.
   • Cut off the roof beam.
   • Strengthen the point at which the cut was made.
   Consolidate the roof beam.
3. After you select an installation location, align the refrigerant pipes, drain pipes, as well as indoor and outdoor wires with their connection points before mounting the unit.
4. Drill 4 holes 10cm deep at the ceiling hook positions in the internal ceiling. Be sure to hold the drill at a 90° angle to the ceiling.
5. Secure the bolt using the washers and nuts provided.
6. Install the four suspension bolts.
7. Mount the indoor unit with at least two people to lift and secure it. Insert suspension bolts into the unit's hanging holes. Fasten them using the washers and nuts provided. *(See Fig. 4.9)*Mount the indoor unit onto the hanging screw bolts with a block. Position the indoor unit flat using a level indicator to prevent leaks. *(See Fig. 4.10)*

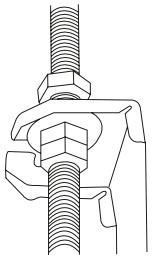


Figure 4.9

CAUTION

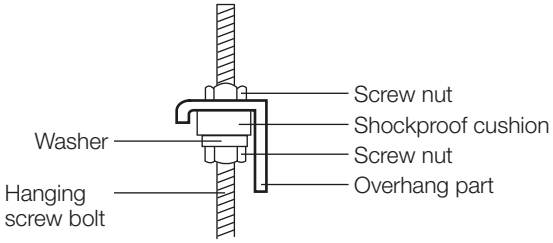


Figure 4.10

The unit body must be completely aligned with the hole. Ensure that the unit and the hole are the same size before moving on.

1. Install and fit pipes and wires after you have finished installing the main body. When choosing where to start, determine the direction of the pipes to be drawn out. Especially in cases where there is a ceiling involved, align the refrigerant pipes, drain pipes, and indoor and outdoor lines with their connection points before mounting the unit.
2. Install hanging screw bolts.
   • Cut off the roof beam.
   • Strengthen the point at which the cut was made. Consolidate the roof beam.
3. Drill 4 holes 10cm deep at the ceiling hook positions in the internal ceiling. Be sure to hold the drill at a 90° angle to the ceiling.
4. Install the four suspension bolts.
5. Mount the indoor unit with at least two people to lift and secure it. Insert suspension bolts into the unit's hanging holes. Fasten them using the washers and nuts provided. *(See Fig. 4.9)*Mount the indoor unit onto the hanging screw bolts with a block. Position the indoor unit flat using a level indicator to prevent leaks. *(See Fig. 4.10)*
6. Mount the indoor unit onto the hanging screw bolts with a block. Position the indoor unit flat using a level indicator to prevent leaks. *(See Fig. 4.10)*

NOTE: Confirm the minimum drain tilt is 1/100 or more.

Step 3: Duct and accessories installation

1. Install the filter (optional) according to the size of the air inlet.
2. Install the flexible tie-in between the body and the duct.
3. The air inlet and air outlet duct should be far enough apart to avoid air passage short-circuit.
4. Connect the duct according to the following diagram:

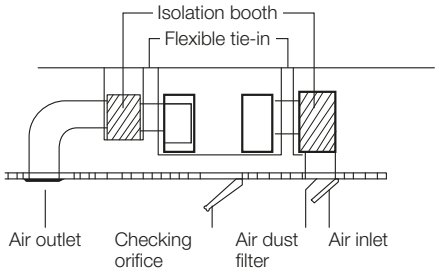


Figure 4.11

5. Refer to the following static pressure guidelines when installing the indoor unit.

Table 4.3

Model	Static pressure (Pa)
KDI-7.0	0~160
KDI-10.5, KDI-12.5, KDI-14.0, KDI-14.0S, KDI-17.0	0~200

Change the fan motor static pressure according to external duct static pressure.

Note

1. The min. length of the duct should be more than 1m, and fix on the air inlet by screws (applicable to the unit that the air inlet filter is not fasten by screws).
2. The inlet of the air duct needs to be installed with the grille, which needs to be fixed to the air duct with screws.
3. **Do not** place the connecting duct weight on the indoor unit.
4. When connecting the duct, use a non-flammable canvas tie-in to prevent vibrating.
5. Insulation foam must be wrapped outside the duct to avoid condensate. An internal duct under-layer can be added to reduce noise, if the end-user requires.
6. When the machine is wall-mounted, the machine should be concealed mounting, and the air inlet and outlet should be grille, and the grille should be fixed firmly with screws.

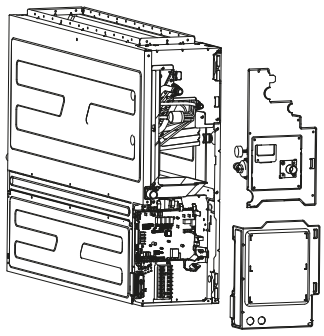
Step 4: Adjust Water Pump on KDI-7.0/KDI-10.5/KDI-12.5/KDI-14.0. Only Required for Wall Mount Installations.

The unit supports wall mounted, if the unit is purchased with a pump and requires vertical mounting, please follow the steps below:

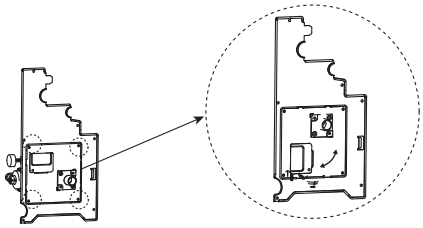
Note

Not suitable for models with box size A=1400, B=380,C=800,in the table on page 19.

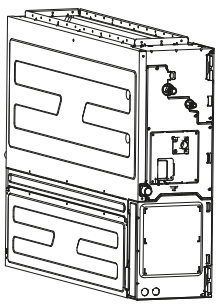
1. Remove the electrical control box cover, unplug the pump and water level switch terminals from the main control board.
2. Disassemble the pump components.



3. Remove the 4 screws, rotate the water pump components by 90° and fix them to the water pump mounting plate again.

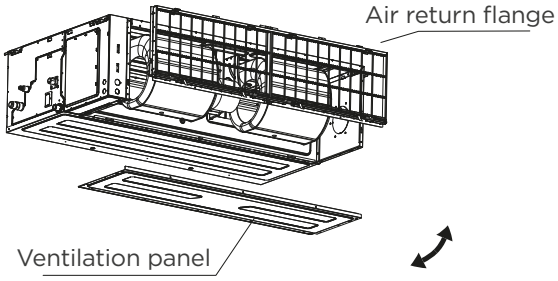


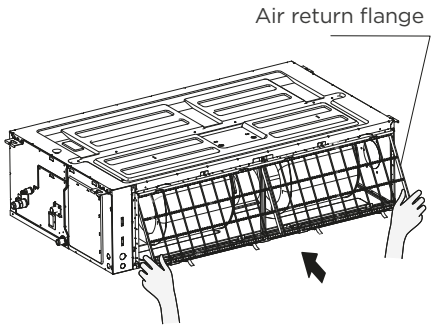
4. Install the pump parts to the machine and connect the wiring set.

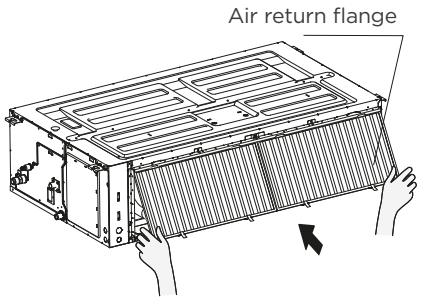


Step 5: (OPTIONAL) Adjust Air-Inlet Direction on KDI-7.0 / KDI-10.5 / KDI-12.5 / KDI-14.0 only (Rear entry to bottom entry).

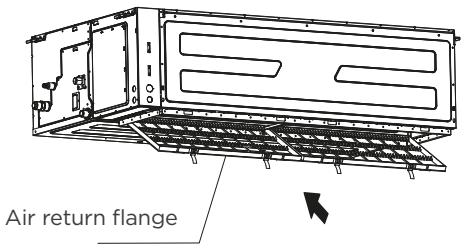
1. Take off the ventilation panel and flange.
2. Change the mounting positions of the ventilation panel and air return flange.
3. When installing the filter mesh, fit it into the flange as illustrated in the following figure.

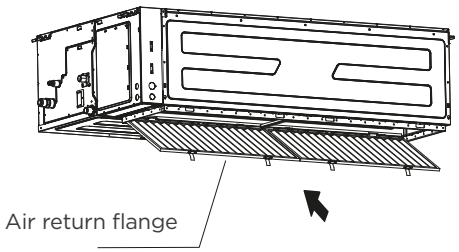






or



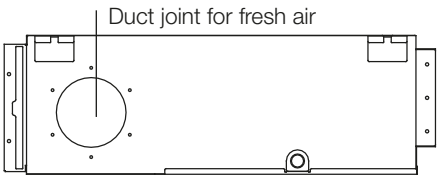


Note

All the figures in this manual are for demonstration purposes only. The air conditioner you have purchased may be slightly different in design, though similar in shape.

Fresh Air Intake Duct Sizing
Only Available on KDI-7.0/KDI-10.5/KDI-12.5/KDI-14.0

Dimension:



Duct joint for fresh air dimensions

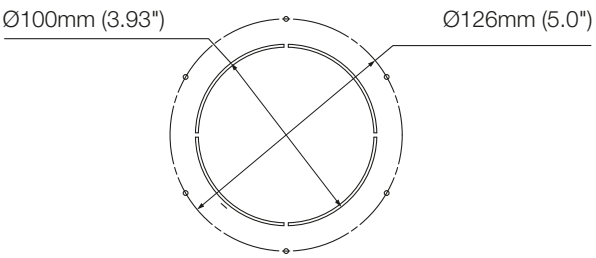


Figure 4.15

Motor and drain pump maintenance for KDI-7.0 / KDI-10.5 / KDI-12.5 / KDI-14.0

Motor maintenance:

1. Take off the ventilated panel.
2. Take off the blower housing.
3. Take off the motor.

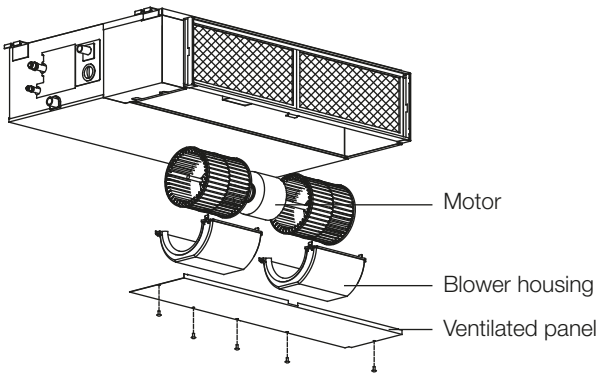


Figure 4.16

Pump maintenance:

1. Remove four screws from the drain pump.
2. Unplug the pump power supply and water level switch cable.
3. Detach the pump.
4. Replace all components to re-assemble and complete maintenance.

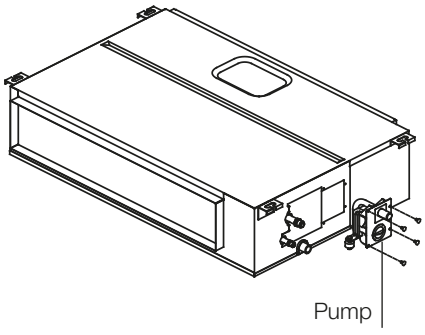
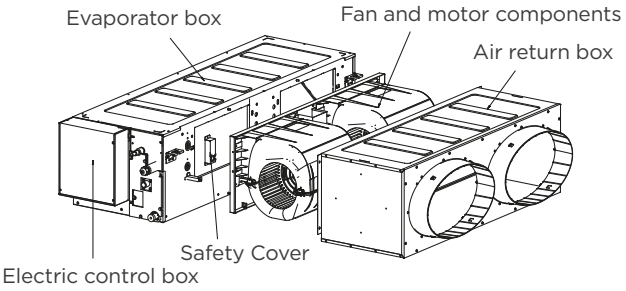


Figure 4.17

Motor and Drain Pump Maintenance for KDI-14.0S and KDI-17.0

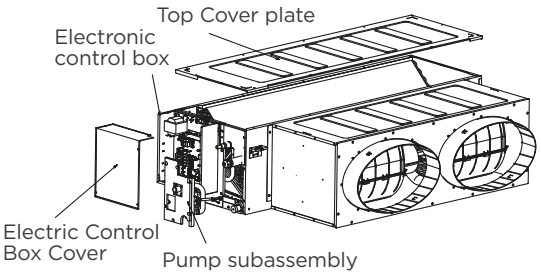
Motor maintenance:

1. Take off the Air Return Box fixed by 4 bolts.
2. Take off the Safety Cover.
3. Disconnect the fan motor wiring.
4. Take off the fan and motor components fixed by 6 bolts;



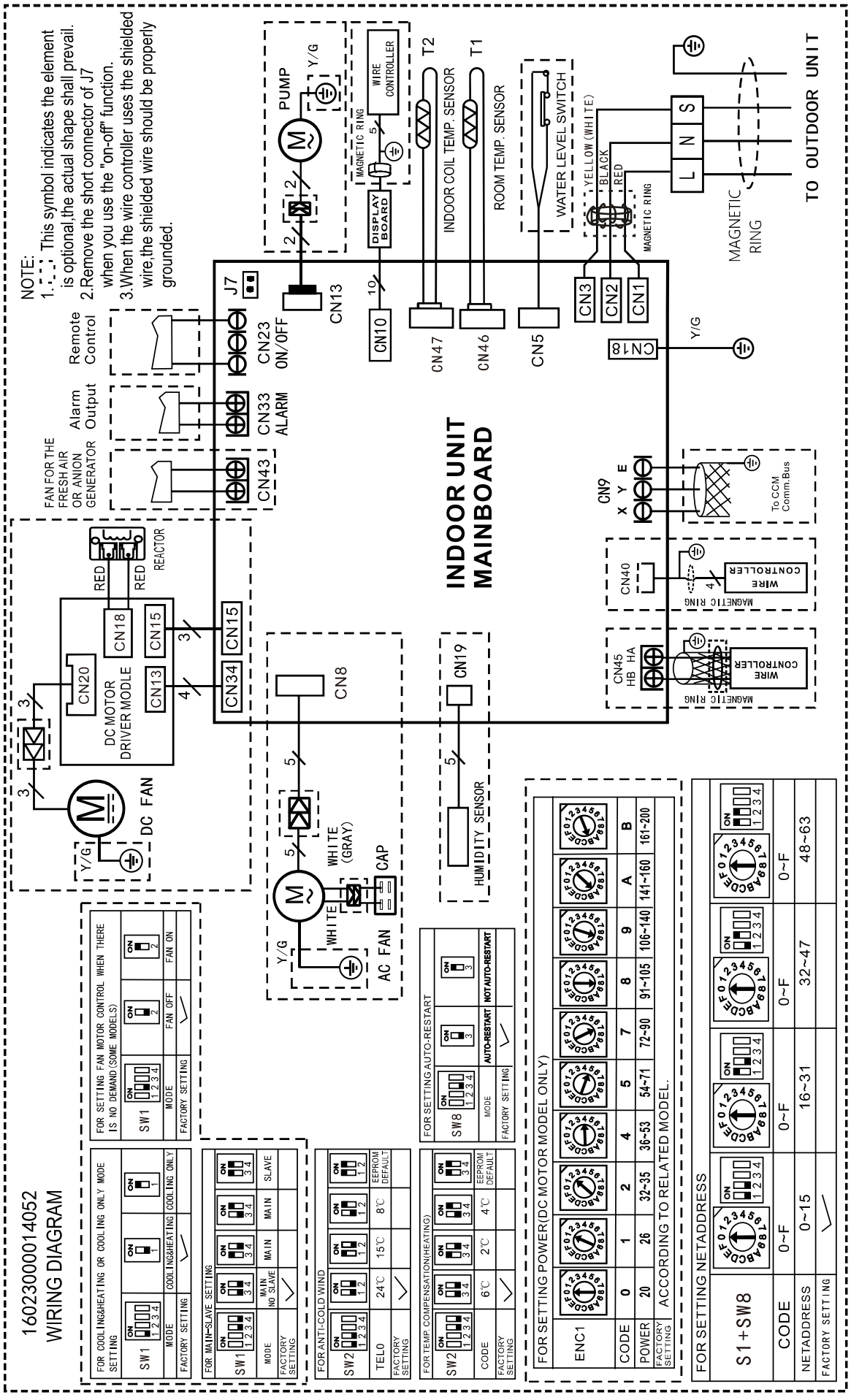
Plumb maintenance:

1. Take off the Electric Control Box Cover.
2. Disconnect the Pump and Water Level Switch.
3. Take off the Top Cover plate; Remove 6 screws that fix Pump Subassembly, then the Pump Subassembly can be taken off;



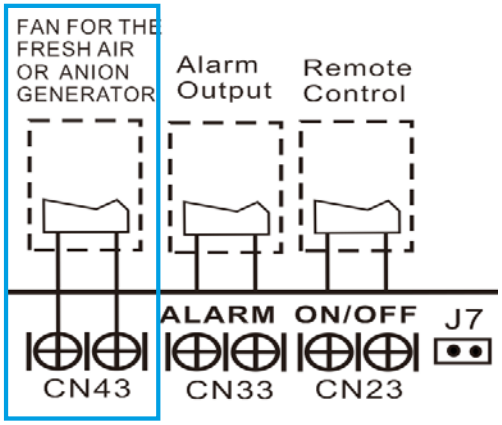
Indoor wiring diagram for all Kaden ducted units

IDU Capacity (kW)	IDU Wiring Diagram
7.0kW - 17.0kW	16023000014052
Abbreviation	**Paraphrase**
Y/G	Yellow Green Conductor
CAP1	Indoor Fan Capacitor
FAN1	Indoor Fan
PUMP	PUMP
L	LIVE
N	NEUTRAL
TO CCM Comm.Bus	Central Controller
T1	Indoor Room Temperature
T2	Coil Temperature of Indoor Heat Exchanger
P3	Super High Speed
P2	High Speed


16023000014052
WIRING DIAGRAM
NOTE:
1. This symbol indicates the element is optional,the actual shape shall prevail.
2.Remove the short connector of J7 when you use the "on-off" function.
3.When the wire controller uses the shielded wire,the shielded wire should be properly grounded.
INDOOR UNIT MAINBOARD
DC FAN
AC FAN
CAP
WHITE (GRAY)
HUMIDITY SENSOR
REACTOR
DC MOTOR DRIVER MODLE
FAN FOR THE FRESH AIR OR ANION GENERATOR
Remote Control
Alarm Output
PUMP
MAGNETIC RING
WIRE CONTROLLER
DISPLAY BOARD
INDOOR COIL TEMP. SENSOR
ROOM TEMP. SENSOR
WATER LEVEL SWITCH
YELLOW(WHITE)
BLACK
RED
MAGNETIC RING
TO OUTDOOR UNIT
To CCM Comm.Bus
FOR COOLING&HEATING OR COOLING ONLY MODE SETTING
FOR SETTING FAN MOTOR CONTROL WHEN THERE IS NO DEMAND(SOME MODELS)
FOR MAIN-SLAVE SETTING
FOR ANTI-COLD WIND
FOR TEMP. COMPENSATION(HEATING)
FOR SETTING AUTO-RESTART
FOR SETTING POWER(DC MOTOR MODEL ONLY)
ACCORDING TO RELATED MODEL.
FOR SETTING NETADDRESS

Additional indoor board connections

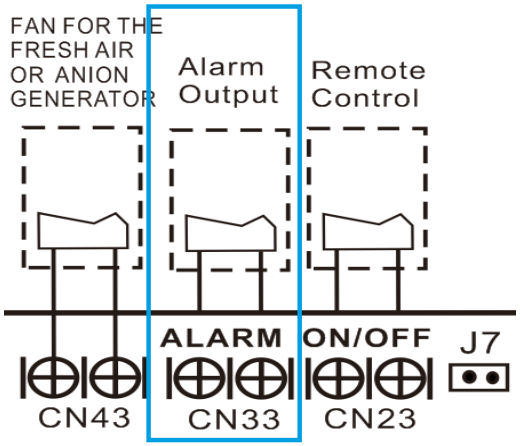
Fresh air motor connection for all Kaden ducted units.



A.CN43 is for the Fresh Air Fan Motor.

1. CN43 is a 12VAC input and 240VAC output relay.
2. The output voltage is the power supply;
3. The fresh motor can not exceed 200W or 1A
4. The fresh air fan motor will operate when the indoor fan motor operates
5. When the unit is put into forced cooling or capacity test mode the fresh air fan motor will not operate

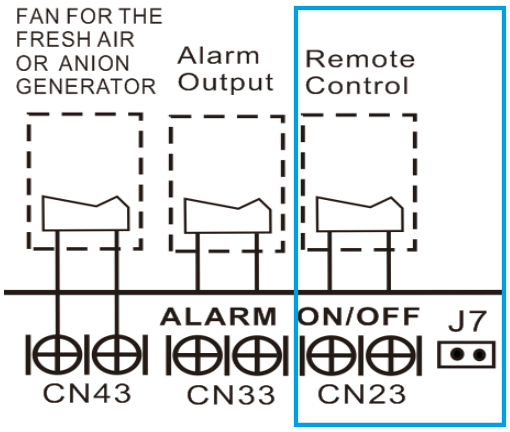
Alarm output



B For ALARM terminal port CN33

1. CN33 is a 12VAC-24VAC relay that allows an alarm to be connected to the unit.
2. We recommend only connecting 12V-24V with a current less than 0.5A to this relay.
3. When an error occurs the relay will close and activate the connected alarm.

Remote control



C. For remote control (ON-OFF) terminal port CN23 and short connector of J7

1. Remove the connector from the J7 port when using the ON-OFF Function.
2. When the remote switch is off (OPEN CIRCUIT) the unit will be off.
3. When the remote switch is on (CLOSE CIRCUIT) the unit will be on.
4. When the remote switch operates there is a demand response time of 2 seconds.
5. When the remote switch is on, you can use the wired controller to select the mode. When the remote switch is off you cannot change the mode using the wired controller. In addition, when the remote switch is off but the wired controller is on, the code CP will show on the wired controller.
6. 6. The relay is 12VDC with a max 5mA current.

Micro-switches on indoor board for all Kaden ducted units



FOR COOLING&HEATING OR COOLING ONLY MODE SETTING			
SW1	ON 1 2 3 4	ON 1	ON 1
MODE		COOLING&HEATING	COOLING ONLY
FACTORY SETTING		✓	

A. Micro-switch SW1 is for setting cooling & heating or cooling only.

Range: cooling & heating, cooling.



FOR SETTING FAN MOTOR CONTROL WHEN THERE IS NO DEMAND(SOME MODELS)			
SW1	ON 1 2 3 4	ON 2	ON 2
MODE		FAN OFF	FAN ON
FACTORY SETTING		✓	

B. Micro-switch SW1 is for selection of indoor FAN ACTION if room temperature reaches the set point and the compressor stops.

Range: OFF (anti-cold wind is available in heating mode), Keep running (No anti-cold wind function).



FOR MAIN-SLAVE SETTING					
SW1	ON 1 2 3 4	ON 3 4	ON 3 4	ON 3 4	ON 3 4
MODE		MAIN NO SLAVE	MAIN	MAIN	SLAVE
FACTORY SETTING		✓			

C. Micro-switch SW1 is for setting the master or slave unit when the unit is in twin connection.

Range: Master no slave (Normal 1 drive 1 connection), Master (2 positions without difference), Slave



FOR TEMP. COMPENSATION(HEATING)					
SW2	ON 1 2 3 4	ON 3 4	ON 3 4	ON 3 4	ON 3 4
CODE		6℃	2℃	4℃	EEPROM DEFAULT
FACTORY SETTING		✓			

D. Micro-switch SW2 is for selection of temperature compensation in heating mode. This helps to reduce the real temperature difference between ceiling and floor so that the unit could run properly. If the height of installation is lower, smaller value could be chosen.

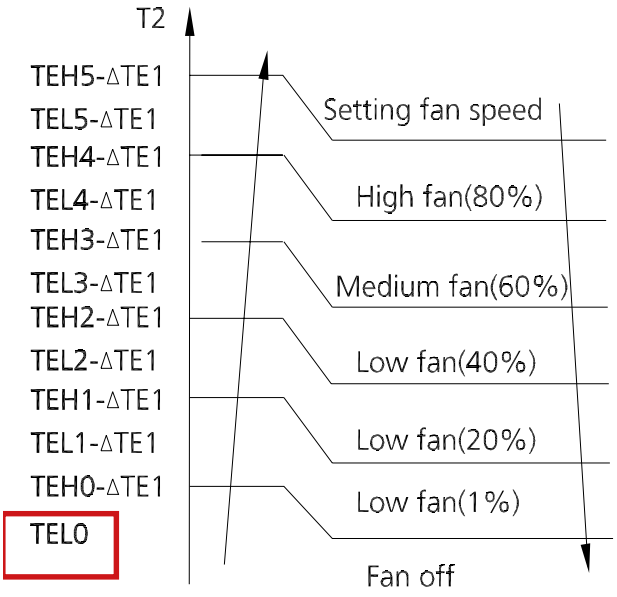
Range: 6°C, 4°C, 2°C, E function (reserved for special customizing)



FOR ANTI-COLD WIND					
SW2	ON 1 2 3 4	ON 1 2	ON 1 2	ON 1 2	ON 1 2
TEL0		24℃	15℃	8℃	EEPROM DEFAULT
FACTORY SETTING		✓			

E. Micro-switch SW2 is for selection of indoor fan stop temperature (TEL0) when it is in anti-cold wind action in heating mode.

Range: 24°C, 15°C, 8°C, according to EEROM setting (reserved for special customizing).

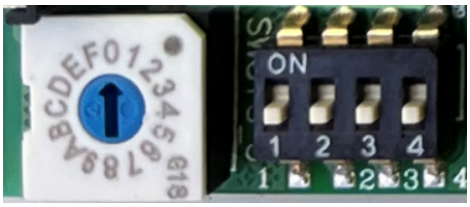




FOR SETTING AUTO-RESTART			
SW8	ON 1 2 3 4	ON 3	ON 3
MODE		AUTO-RESTART	NOT AUTO-RESTART
FACTORY SETTING		✓	

F. Micro-switch SW8 is for selection of auto-restart function.

Range: Active, inactive



FOR SETTING NETADDRESS				
S1+SW8				
CODE	0~F	0~F	0~F	0~F
NETADDRESS	0~15	16~31	32~47	48~63
FACTORY SETTING	✓			

G. Micro-switch SW8 and dial-switch S1 are for address setting when you want to control this unit by a central controller.

Range: 00-63



FOR SETTING POWER(DC MOTOR MODEL ONLY)										
ENC1										
CODE	0	1	2	4	5	7	8	9	A	B
POWER	20	26	32~35	36~53	54~71	72~90	91~105	106~140	141~160	161~200
FACTORY SETTING	ACCORDING TO RELATED MODEL.									

H. Dial-switch ENC1: The indoor PCB is universal designed for whole series units from 7K to 68K. This ENC1 setting will tell the main program what size the unit is.

Note

Usually there is glue on it because the switch position cannot be changed at random unless you want to use this PCB as a spare part to use in another unit. Then you have to select the right position to match the size of the unit.

“20” means 2kW (7K),“105” means 10.5kW(36K), and so on.

5. Outdoor unit installation

Outdoor unit installation instructions

Step 1: Select installation location

The unit should be installed in a location that meets the following requirements:

- ✓ Place the outdoor unit as close to the indoor unit as possible.
- ✓ Ensure that there is enough room for installation and maintenance.
- ✓ The air inlet and outlet must not be obstructed or exposed to strong wind.
- ✓ Ensure the location of the unit will not be subject to snowdrifts, accumulation of leaves or other seasonal debris. If possible, provide an awning for the unit. Ensure the awning does not obstruct airflow.
- ✓ The installation area must be dry and well ventilated.
- ✓ There must be enough room to install the connecting pipes and cables and to access them for maintenance.

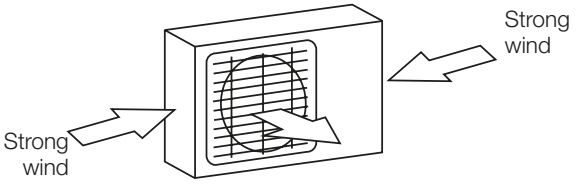


Figure 5.1

- ✓ The area must be free of combustible gases and chemicals.
- ✓ The pipe length between the outdoor and indoor unit may not exceed the maximum allowable pipe length.
- ✓ If possible, do not install the unit where it is exposed to direct sunlight.
- ✓ If possible, make sure the unit is located far away from your neighbours' property so that the noise from the unit will not disturb them.
- ✓ If the location is exposed to strong winds (for example: near a seaside), the unit must be placed against the wall to shelter it from the wind. If necessary, use an awning.
- ✓ Install the indoor and outdoor units, cables and wires at least 1 metre from televisions or radios to prevent static or image distortion. Depending on the radio waves, a 1 metre distance may not be enough to eliminate all interference.

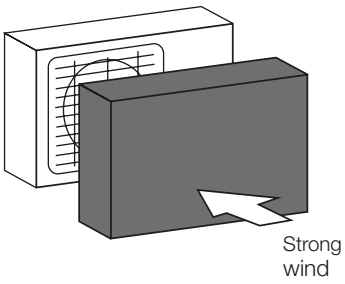


Figure 5.2

Step 2: Install outdoor unit

Fix the outdoor unit with anchor bolts (M10).

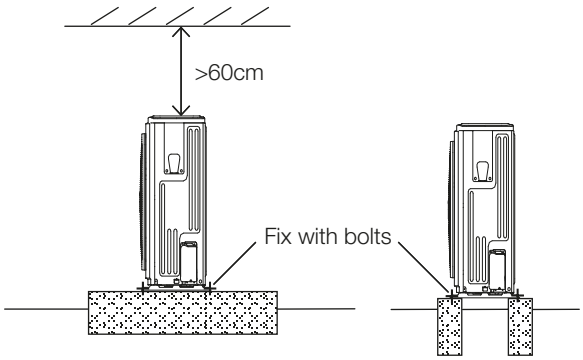


Figure 5.3

CAUTION

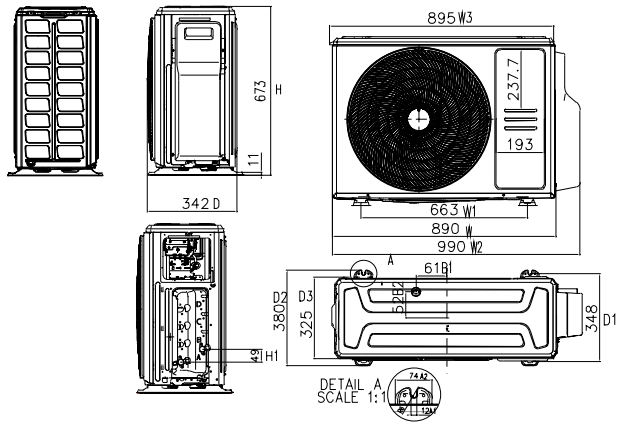
- Be sure to remove any obstacles that may block air circulation.
- Make sure you refer to Length specifications *(See Fig. 5.7)* to ensure there is enough room for installation and maintenance.

Outdoor unit specifications

Split type outdoor unit

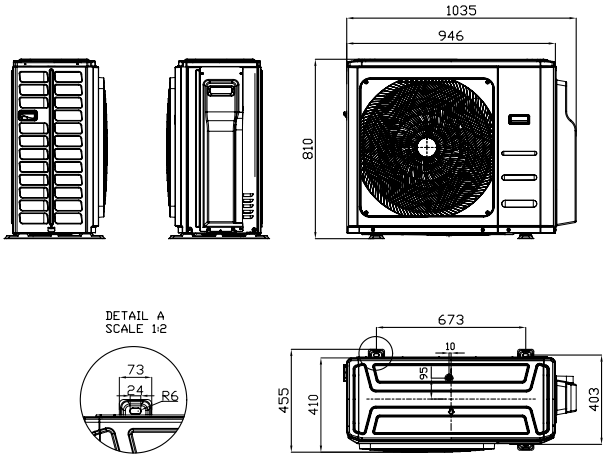
(Refer to Fig. 5.4, Fig. 5.5, Fig. 5.6, Fig. 5.7 and Table 5.1)

KDI-7.0



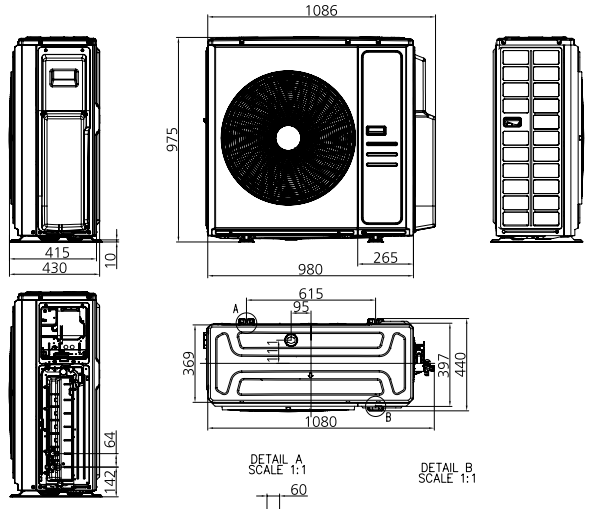
Outdoor unit dimensions	
H	673mm
H1	49mm
W	890mm
W1	663mm
W2	990mm
W3	895mm
D	342mm
D1	348mm
D2	380mm
D3	325mm
B1	61mm
B2	52mm

KDI-10.5



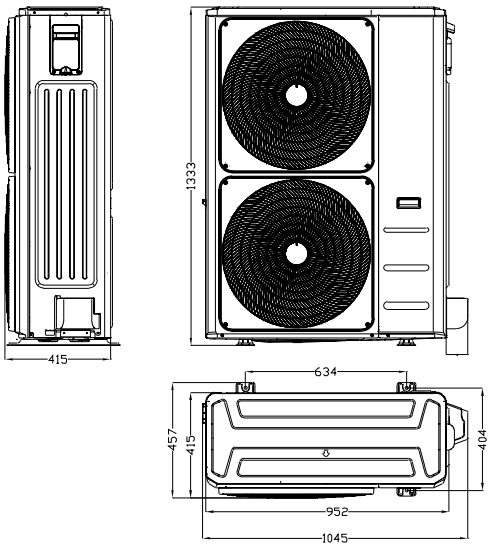
Outdoor unit dimensions	
H	810mm
W	946mm
W1	673mm
W2	1035mm
D	410mm
D1	455mm
D2	403mm

KDI-12.5



Outdoor unit dimensions	
H	975mm
W	980mm
W1	615mm
W2	1086mm
W3	1080mm
W4	265mm
D	430mm
D1	440mm
D2	397mm
D3	369mm
D4	415mm
B1	95mm
B2	111mm
C1	142mm
C2	64mm

KDI-14.0/KDI-14.0S/KDI-17.0



Outdoor unit dimensions	
H	1333mm
W	952mm
W1	634mm
W2	1045mm
D	415mm
D1	404mm
D2	457mm

NOTE: The minimum distance between the outdoor unit and walls described in the installation guide does not apply to airtight rooms. Be sure to keep the unit unobstructed in at least two of the three directions (M, N, P). *(See Fig. 5.7)*

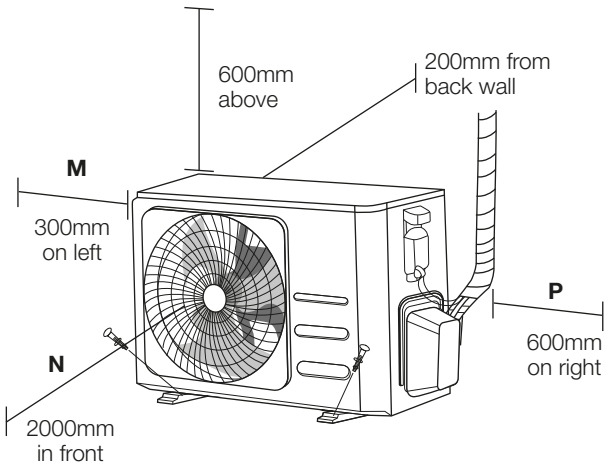


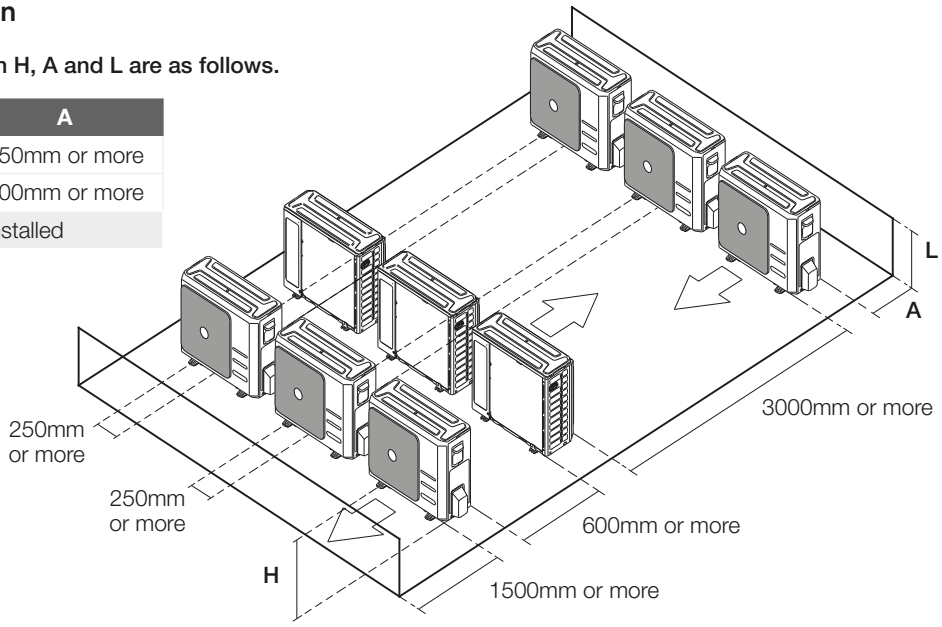
Figure 5.7

Rows of series installation

Table 5.1 The relations between H, A and L are as follows.

	L	A
L ≤ H	L ≤ 1/2H	250mm or more
	1/2H < L ≤ H	300mm or more
L > H	Can not be installed	

Figure 5.8

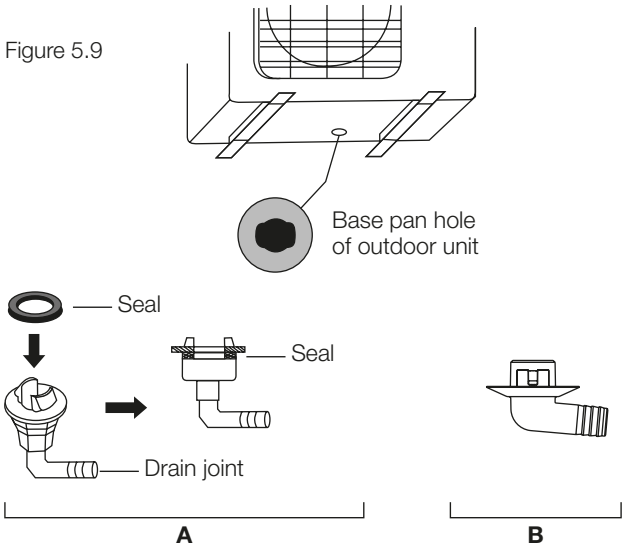


Drain joint installation

If the drain joint comes with a rubber seal *(See Fig. 5.9 A)*, do the following:

1. Fit the rubber seal on the end of the drain joint that will connect to the outdoor unit.
2. Insert the drain joint into the hole in the base pan of the unit.
3. Rotate the drain joint 90° until it clicks in place facing the front of the unit.
4. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

Figure 5.9



If the drain joint doesn't come with a rubber seal *(See Fig. 5.9 B)*, do the following:

1. Insert the drain joint into the hole in the base pan of the unit. The drain joint will click in place.
2. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

Notes on drilling hole in wall

You must drill a hole in the wall for the refrigerant piping, and the signal cable that will connect the indoor and outdoor units.

1. Determine the location of the wall hole based on the location of the outdoor unit.
2. Using a 65mm core drill, drill a hole in the wall.
3. Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it when you finish the installation process.

NOTE: When drilling the wall hole, make sure to avoid wires, plumbing, and other sensitive components.

6. Drainpipe installation

The drainpipe is used to drain water away from the unit. Improper installation may cause unit and property damage.

CAUTION

- Insulate all piping to prevent condensation, which could lead to water damage.
- If the drainpipe is bent or installed incorrectly, water may leak and cause a water-level switch malfunction.
- In HEAT mode, the outdoor unit will discharge water. Ensure that the drain hose is placed in an appropriate area to avoid water damage and slippage.
- **Do not** pull the drainpipe forcefully. This could disconnect it.

Indoor drainpipe installation

Install the drainpipe as illustrated in *Fig. 6.1*.

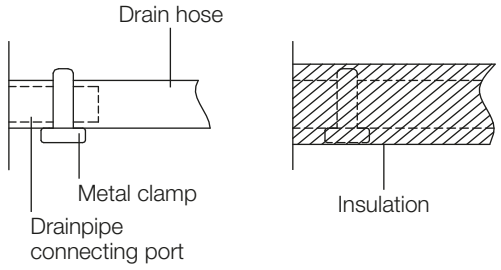
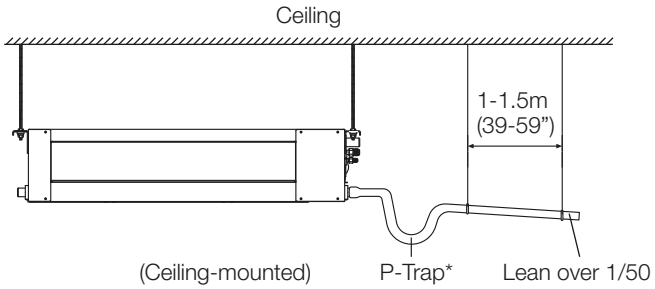


Figure 6.1

1. Cover the drainpipe with heat insulation to prevent condensation and leakage.
2. Attach the mouth of the drain hose to the unit's outlet pipe. Sheath the mouth of the hose and clip it firmly with a pipe clasp. *(See Fig. 6.2)*



*Only required if using gravity fed drain

Figure 6.2

Note on drainpipe installation

- When using an extended drainpipe, tighten the indoor connection with an additional protection tube. This prevents it from pulling loose.
- The drainpipe should slope downward at a gradient of at least 1/100 to prevent water from flowing back into the air conditioner.
- To prevent the pipe from sagging, space hanging wires every 1 – 1.5m.
- If the outlet of the drainpipe is higher than the body's pump joint, use a lift pipe for the indoor unit's exhaust outlet. The lift pipe must be installed no higher than 55cm from the ceiling board. The distance between the unit and the lift pipe must be less than 20cm. Incorrect installation could cause water to flow back into the unit and flood.
- To prevent air bubbles, keep the drain hose level or slightly tiled up (<75mm).

Drainpipe installation for units with a pump

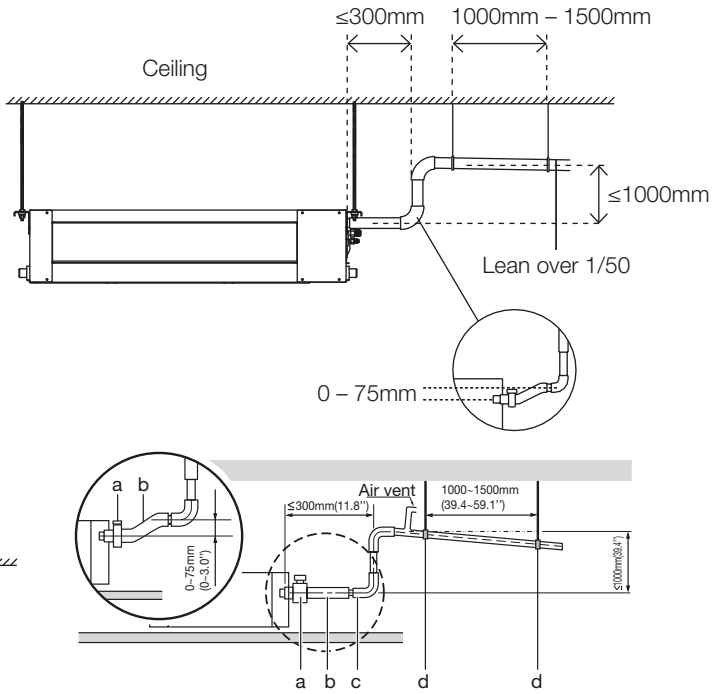


Figure 6.3

NOTE: If the drain pump spigot is not used, the drain pump will still engage if the drain tray fills and activates the water level sensor. This can lead to water leakage. Possible actions to avoid water leakage:

1. Disconnect power to drain pump.
2. Plumb drain pump spigot into gravity fed drain.

3. Using a 65mm core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 12mm. This will ensure proper water drainage *(See Fig. 6.4)*. Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it once you finish installation.

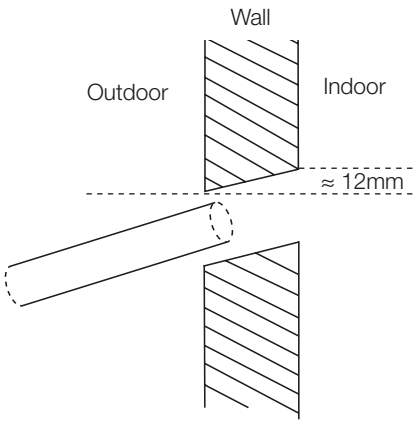


Figure 6.4

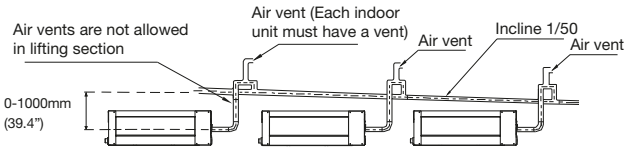
NOTE: When drilling the hole, make sure to avoid wires, plumbing, and other sensitive components.

4. Pass the drain hose through the wall hole. Make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

NOTE: The drainpipe outlet should be at least 5cm above the ground. If it touches the ground, the unit may become blocked and malfunction. If you discharge the water directly into a sewer, make sure that the drain has a U or S pipe to catch odours that might otherwise come back into the house.

NOTE: When connecting multiple drainpipes, install the pipes as shown in *Fig. 6.5.*

With drain pump



Without drain pump

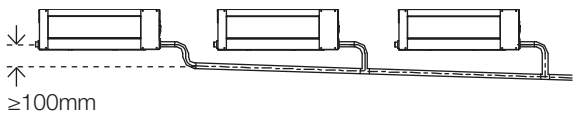


Figure 6.5

Drainage pump test procedure

Check that the drainpipe is unhindered. This test should be performed on newly built houses before the ceiling is painted.

1. Remove the test cover. Fill the water pan with 1 litre of water.

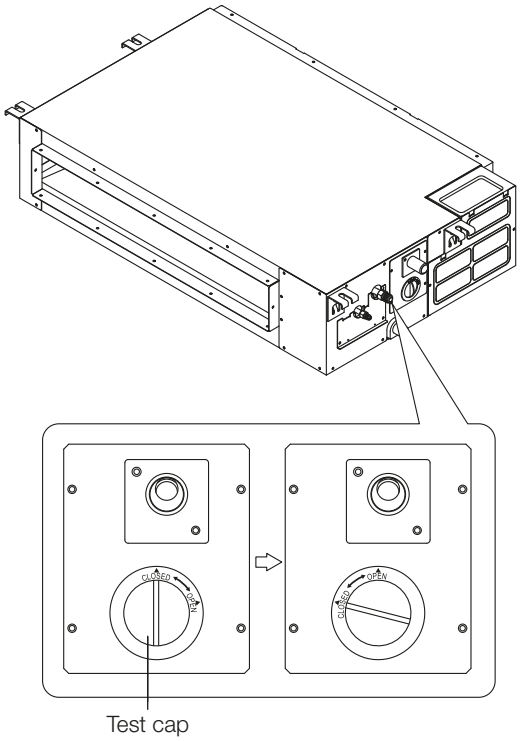


Figure 6.6

2. Turn on the unit in COOLING mode. You will hear the drain pump. Check whether the water is discharged properly (a 1 minute lag is possible, depending on the length of the drain pipe). Check whether water leaks from the joints.
3. Turn off the air conditioner and put the cap back on.

7. Refrigerant piping connection

Safety precautions

WARNING

- All filed piping must be completed by an ARC licensed technician and must comply with all local and national regulations including AS/NZS 5149 and Australian wiring regulations.
- When the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. If the refrigerant leaks and its concentration exceeds its proper limit, hazards due to lack of oxygen may result.
- When installing the refrigeration system, ensure that air, dust, moisture or foreign substances **do not** enter the refrigerant circuit. Contamination in the system may cause poor operating capacity, high pressure in the refrigeration cycle, explosion or injury.
- Ventilate the area immediately if there is refrigerant leakage during the installation. Leaked refrigerant gas is both toxic and flammable. Ensure there is no refrigerant leakage after completing the installation work.

Note on pipe length and elevation

Ensure that the length of the refrigerant pipe, the number of bends, and the drop height between the indoor and outdoor units meets the requirements shown in the following table :

Table 7.1 The maximum length and drop height based on models. (Unit: metres)

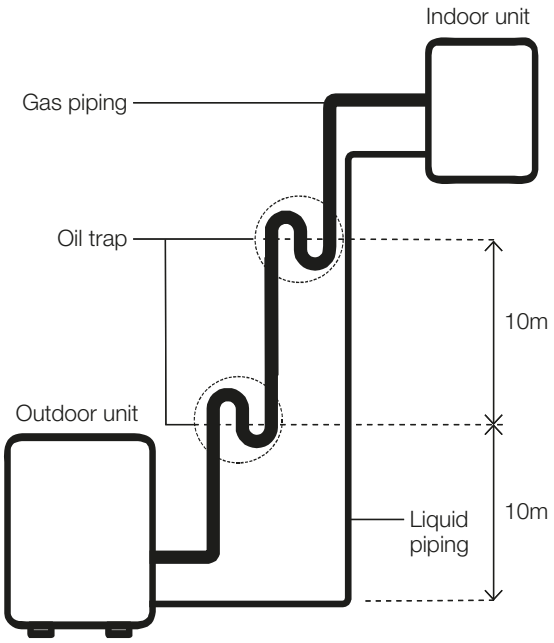
Type of model	Length of piping	Maximum drop height
KDI-7.0	50	25
KDI-10.5	75	30
KDI-12.5	75	30
KDI-14.0	75	30
KDI-14.0S	75	30
KDI-17.0	75	30

CAUTION

Oil traps

If oil flows back into the outdoor unit's compressor when the indoor unit is installed higher than the outdoor unit, this might cause liquid compression or deterioration of oil return.

Oil traps in the rising gas piping can prevent this. An oil trap should be installed every 10m of vertical gas piping. *(See Fig. 7.1)*



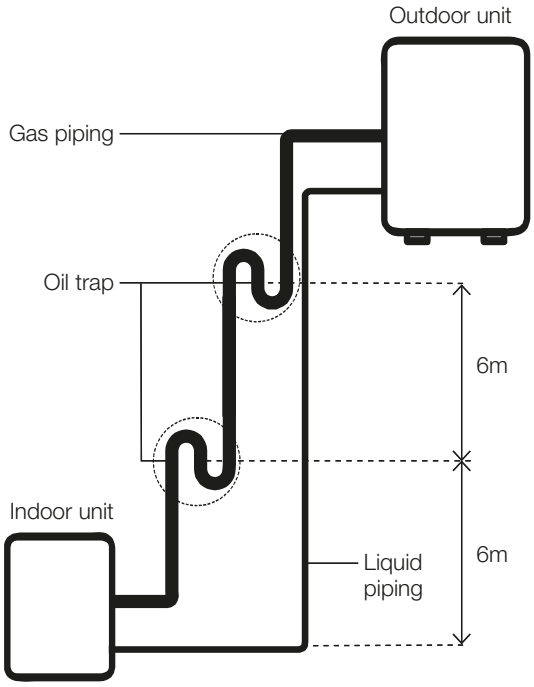
The indoor unit is installed higher than the outdoor unit

Figure 7.1

CAUTION

If the outdoor unit is installed higher than the indoor unit:

It is recommended that vertical suction risers not be up-sized. Proper oil return to the compressor should be maintained with suction gas velocity. If velocities drop below 7.62m/s, oil return will be decreased. An oil trap should be installed every 6m of vertical gas piping. *(See Fig. 7.2)*



The outdoor unit is installed higher than the indoor unit

Figure 7.2

Size of joint pipes for indoor unit

Table 7.2 Size of joint pipes for R32 indoor unit

Type of model	Size of main pipe (mm)	
	Gas side	Liquid side
KDI-7.0	15.9mm/5/8"	9.5mm/3/8"
KDI-10.5	15.9mm/5/8"	9.5mm/3/8"
KDI-12.5	15.9mm/5/8"	9.5mm/3/8"
KDI-14.0	15.9mm/5/8"	9.5mm/3/8"
KDI-14.0S	15.9mm/5/8"	9.5mm/3/8"
KDI-17.0	19.0mm/3/4"	9.5mm/3/8"

Refrigerant piping connection instructions

CAUTION

- **Do not** install the connecting pipe until both indoor and outdoor units have been installed. Insulate both the gas and liquid piping to prevent water leakage.

Step 1: Cut pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure efficient operation and minimise the need for future maintenance.

1. Measure the distance between the indoor and outdoor units.
2. Using a pipe cutter, cut the pipe a little longer than the measured distance.

CAUTION

Do not deform pipe while cutting. Be extra careful not to damage, dent, or deform the pipe while cutting. This will drastically reduce the heating efficiency of the unit.

3. Make sure that the pipe is cut at a perfect 90° angle. Refer to *Fig. 7.3* for examples of good and bad cuts.

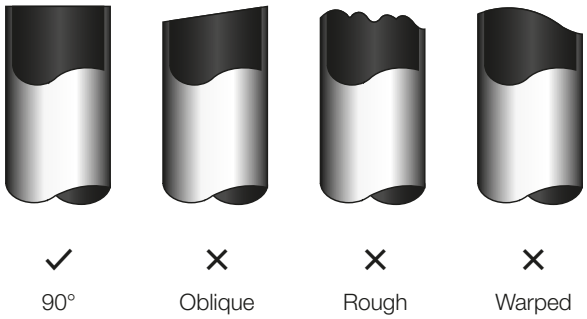


Figure 7.3

Step 2: Remove burrs

Burrs can affect the airtight seal of the refrigerant piping connection. They must be completely removed.

1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
2. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.

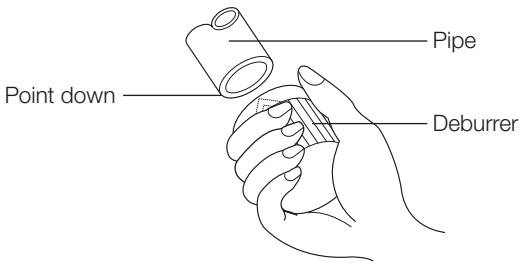


Figure 7.4

Step 3: Flare pipe ends

Proper flaring is essential to achieve an airtight seal.

1. After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
2. Sheath the pipe with insulating material.
3. Place flare nuts on both ends of pipe. Make sure they are facing in the right direction, because you can't put them on or change their direction after flaring. *(See Fig. 7.5)*

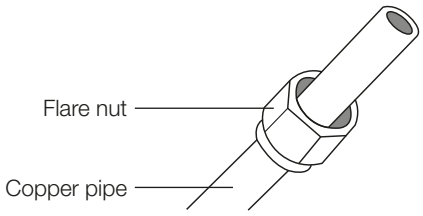


Figure 7.5

4. Remove PVC tape from ends of pipe when ready to perform flaring work.
5. Clamp flare form on the end of the pipe. The end of the pipe must extend beyond the flare form.

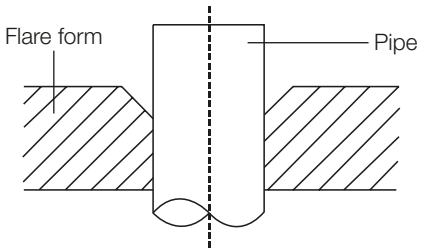


Figure 7.6

6. Place flaring tool onto the form.
7. Turn the handle of the flaring tool clockwise until the pipe is fully flared. Flare the pipe in accordance with the dimensions shown in *Table 7.3*.

Table 7.3 Piping extension beyond flare form

Pipe gauge	Tightening torque	Flare dimension (A) (Unit: mm)	
		Min.	Max.
ø 9.5 (3/8")	32 – 39 N.m (320 – 390 kgf.cm)	13.2	13.5
ø 15.9 (5/8")	57 – 71 N.m (570 – 710 kgf.cm)	19.2	19.7
ø 19.00 (3/4")	67 – 101 N.m (670 – 1010 kgf.cm)	23.2	23.7

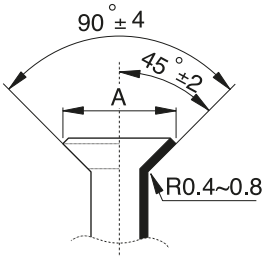


Figure 7.7

8. Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.

Step 4: Connect pipes

Connect the copper pipes to the indoor unit first, then connect it to the outdoor unit. You should first connect the low pressure pipe, then the high pressure pipe.

1. When connecting the flare nuts, apply a thin coat of refrigeration oil to the flared ends of the pipes.
2. Align the centre of the two pipes that you will connect.

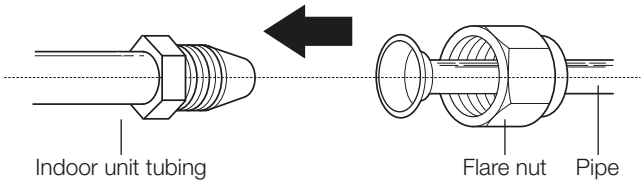


Figure 7.8

3. Tighten the flare nut as tightly as possible by hand.
4. Using a spanner, grip the nut on the unit tubing.
5. While firmly gripping the nut, use a torque wrench to tighten the flare nut according to the torque values in *Table 7.3*.

NOTE: Use both a spanner and a torque wrench when connecting or disconnecting pipes to/from the unit.

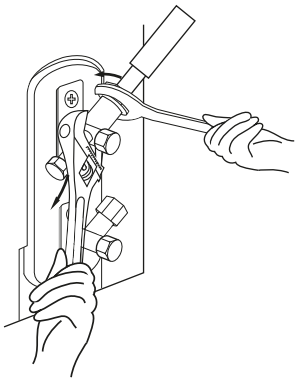


Figure 7.9

CAUTION

- Ensure that you wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite.
- Make sure the pipe is properly connected. Over-tightening may damage the bell mouth and under-tightening may lead to leakage.

Note on minimum bend radius

Carefully bend the tubing in the middle according to the diagram below. **Do not** bend the tubing more than 90° or more than 3 times.

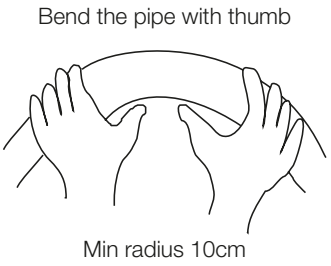


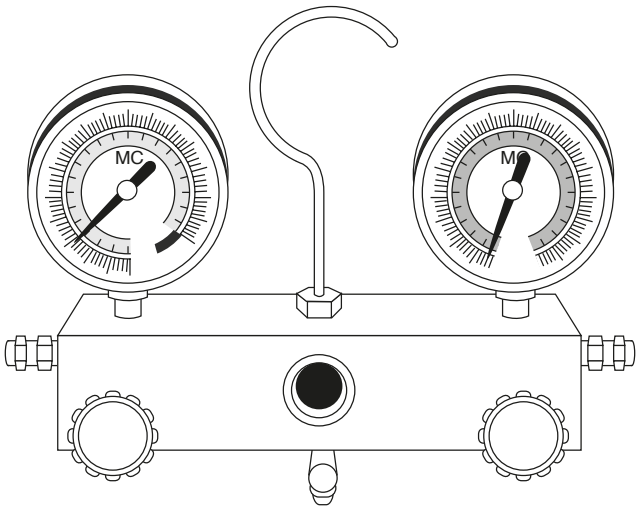
Figure 7.10

6. After connecting the copper pipes to the indoor unit, wrap the wiring and the piping together with binding tape.
7. Thread this pipeline through the wall and connect it to the outdoor unit.
8. Insulate all the piping, including the valves of the outdoor unit.

CAUTION

Check to make sure there is no refrigerant leak after completing the installation work. If there is a refrigerant leak, located and repair the leak before evacuating the system (refer to the Leak testing and evacuation section of this manual).

8. Leak testing and evacuation



Leak, pressure test and evacuation

The interconnecting pipe work and indoor unit must be pressure tested at 1000kpa and leak tested before being evacuated. Before using the manifold gauge and vacuum pump, read their operation manuals to familiarise yourself with how to use them properly.

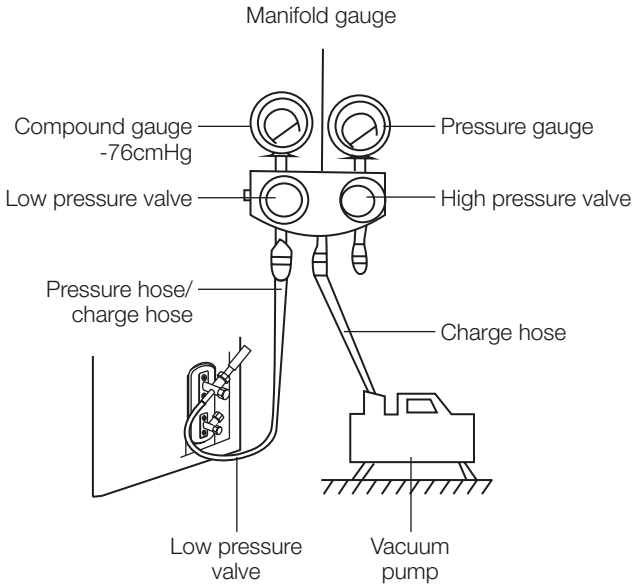


Figure 8.1

1. Connect the charge hose of the manifold gauge to the outdoor unit's low pressure valve.
2. Connect another charge hose from the manifold gauge to the vacuum pump.
3. Monitor test pressure and check with a leak detector and bubble solution. Safely release the test pressure.
4. Open the Low pressure side of the manifold gauge. Keep the High pressure side closed.
5. Turn on the vacuum pump to evacuate the system.
6. Evacuate the interconnecting pipes to <=500 microns.
7. Close the low pressure side of the manifold gauge, and turn off the vacuum pump.
8. Wait for 5 minutes, then check that there has been no change in system vacuum.
9. If the vacuum does not settle, repeat from Step 1 of Leak, pressure test and evacuations. If there is no change in system vacuum, unscrew the cap from the packed valve (high pressure valve).

Preparations and precautions

Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensible gas and moisture from the system.

Evacuation should be performed upon initial installation and when unit is relocated.

Before performing evacuation

- ✓ Check to make sure that both high pressure and low pressure pipes between the indoor and outdoor units are connected properly in accordance with the Refrigerant piping connection section of this manual.
- ✓ Pressure test the interconnecting pipes.
- ✓ Check to make sure all wiring is connected properly.

Opening outdoor unit valves

1. Insert hexagonal wrench into the packed valve (high pressure valve) and open the valve by turning the wrench in a 1/4 counterclockwise turn. Listen for gas to exit the system, then close the valve after 5 seconds.

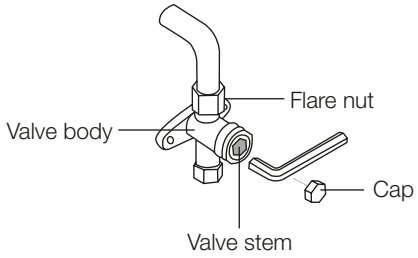


Figure 8.2

2. Watch the pressure gauge for one minute to make sure that there is no change in pressure. The pressure gauge should read slightly higher than atmospheric pressure.
3. Remove the charge hose from the service port.
4. Using hexagonal wrench, fully open both the high pressure and low pressure valves.
5. Tighten valve caps on all three valves (service port, high pressure, low pressure) by hand. You may tighten it further using a torque wrench if needed.

Note on adding refrigerant

Some systems require additional charging depending on pipe lengths. The additional refrigerant to be charged can be calculated using the below.

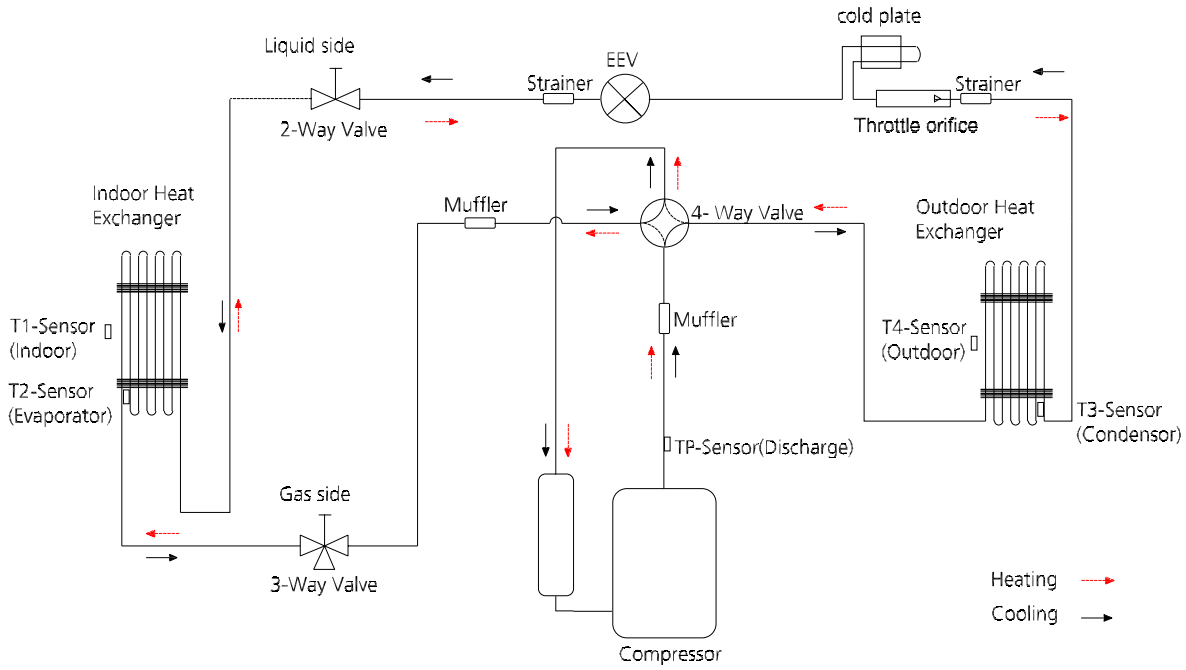
Liquid side diameter	
ø 9.52/3/8"	
Total pipe length - Standard pipe length x 24g/m	Refrigerant type R32

CAUTION

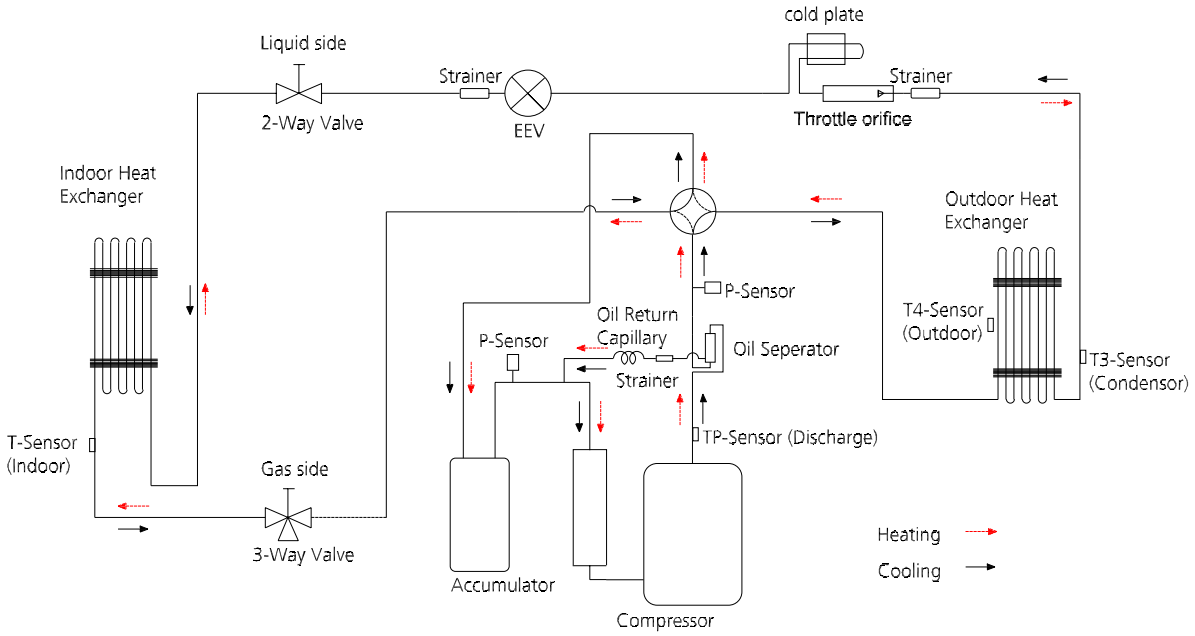
- Refrigerant charging must be performed after wiring, vacuuming, and the leak testing.
- **Do not** exceed the maximum allowable quantity of refrigerant or overcharge the system. Doing so can damage the unit or impact its functioning.
- Charging with unsuitable substances may cause explosions or accidents. Ensure that the appropriate refrigerant is used.
- Refrigerant containers must be opened slowly. Always use protective gear when charging the system.
- **Do not** mix refrigerant types.

Refrigerant diagrams

KDI-7.0



KDI-10.5 / KDI-12.5 / KDI-14.0 / KDI-14.0S / KDI-17.0



9. Wiring

Safety precautions

WARNING

- Disconnect the power supply before working on the unit.
- All wiring must be performed according to local and national regulations, and must be installed by a licensed electrician.
- Wiring must be done by a qualified technician. Improper connections may cause electrical malfunction, injury, or fire.
- All electrical connections must be made according to the electrical connection diagram located on the panels of the indoor and outdoor units.
- If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client and refuse to install the unit until the safety issue is properly resolved.
- Power voltage should be within 90-100% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
- If connecting power to fixed wiring, install a surge protector and main power switch with a capacity of 1.5 times the maximum current of the unit.
- If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 3mm must be incorporated in the fixed wiring. The qualified technician must use an approved circuit breaker or switch.
- **Do not** let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
- **Do not** connect another appliance into the same circuit. If the unit cannot handle the load or there is a defect in the wiring, it can lead to shock, fire, and property damage.
- Connect the power cable to the terminals and fasten it with a clamp. An insecure connection may cause fire.
- Make sure that all wiring is done correctly and the control board cover is properly installed. Failure to do so can cause overheating at the connection points, fire, and electrical shock.

CAUTION

- Connect the outdoor wires before connecting the indoor wires.
- Make sure you ground the unit. The grounding wire should be located away from gas pipes, water pipes, lightning rods, telephone wires or other grounding wires. Improper grounding may cause electrical shock.
- **Do not** connect the unit to the power source until all wiring and piping is completed.
- Make sure that you **do not** cross your electrical wiring with your signal wiring. This may cause distortion and interference.

Take note of fuse specifications

The air conditioner's printed circuit board (PCB) is designed with a fuse that provides overcurrent protection. The specifications of the fuse are printed on the circuit board; examples of such are T5A/250VAC and T10A/250VAC.

Choose the right cable size

The size of the power supply cable, signal cable, fuse, and switch needed is determined by the maximum current of the unit. The maximum current is indicated on the nameplate located on the side panel of the unit. Refer to this nameplate to choose the right cable, fuse, or switch.

Power specifications

Outdoor power supply specifications:

Power	Phase	1 phase
	Volt	220 – 240V

Model	Circuit breaker/ fuse (A)
KDI-7.0	25
KDI-10.5	25
KDI-12.5	32
KDI-14.0	40
KDI-14.0S	40
KDI-17.0	40

Outdoor unit wiring

⚠ WARNING

Before performing any electrical or wiring work, turn off the main power to the system.

Electrical requirement

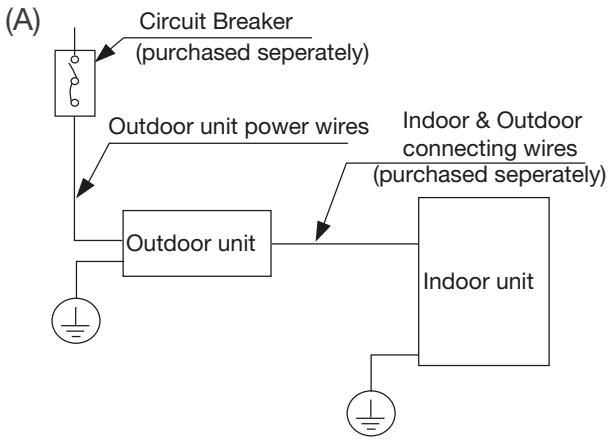
The indoor unit is powered by the outdoor unit. Do not power indoor unit from separate power source.

Cable	Conductor size (mm^2)	Type	Remarks
Power cable	KDI-7.0/ KDI-10.5 = 2.5mm KDI-12.5 = 4.0mm KDI-14.0/KDI-14.0S/ KDI-17.0 = 6.0mm	Type 60245 IEC 57	2 core + Earth (Ground) 1 Ø 230 V

Cable	Conductor size (mm^2)	Type	Remarks
Interconnect power cable	1.5	Type 60245 IEC 57	3 core + Earth (Ground) 1 Ø 230 V

Cable length: Limit voltage drop to less than 2%.
Increase cable gauge if voltage drop is 2% or more.

The cable specifications are based on the assumption that a metal or plastic conduit is used with no more than three cables contained in a conduit and a voltage drop of 2%.



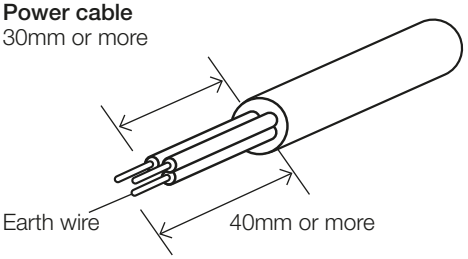
Preparing cable

1. **Selecting cable**
   Select the power source cable and connecting cable in accordance with the specifications mentioned below:

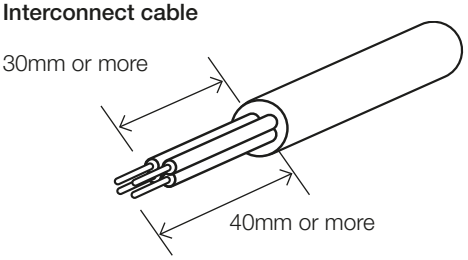
   a. Power source cable
   2 Core + Earth 2.5mm^2 or more, conformed with 60245 IEC57. When selecting the power source cable length, make sure that voltage drop is less than 2%. If the voltage drop is more than 2%, increase cable thickness.

   b. Connecting cable
   3-Core + Earth 1.5mm^2, conformed with 60245 IEC57. When selecting the connecting cable length, make sure that voltage drop is less than 2%. If the voltage drop is more than 2%, increase cable thickness.
2. Arrange each wire length as shown. Make sure that each wire is stripped 10mm from the end.
3. Attach round crimp-type terminal to each wire as shown. Select the size of round crimp-type terminal after considering the specifications of terminal block and wire diameter.

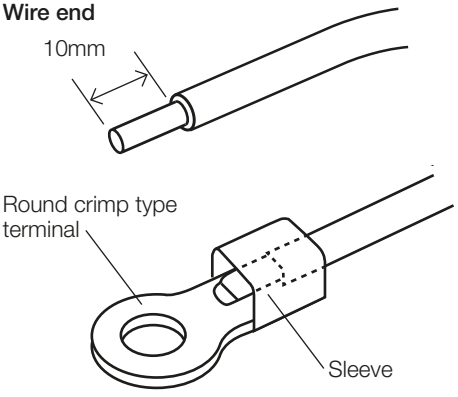
Power cable



Interconnect cable

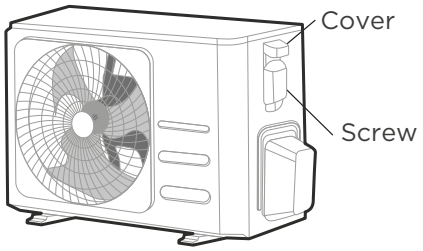


Wire end

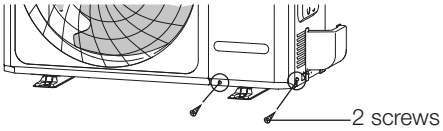


For KDI-7.0/KDI-10.5/KDI-12.5 models

Unscrew the electrical wiring cover and remove it

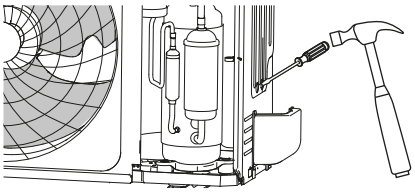


4. **For KDI-140./KDI-14.0S/KDI-17.0 models only:**
   Remove two fixing screws, then remove front panel.

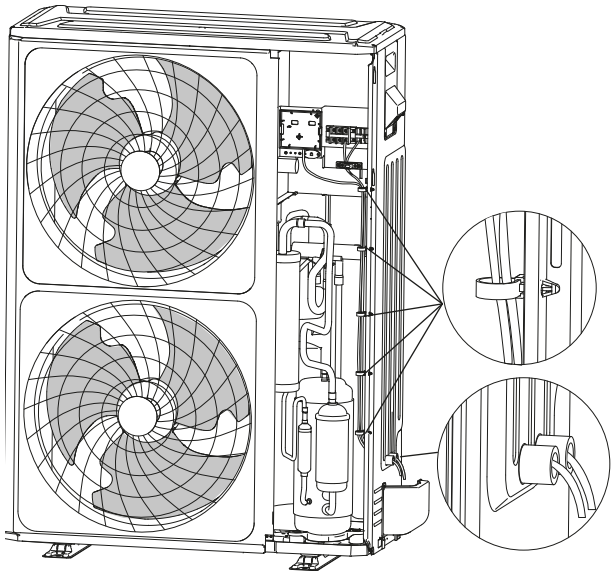


For KDI7.0/KDI10.5/KDI12.5 models

5. Use a hammer and a flat blade screwdriver to knock out the two metal electrical knock outs.



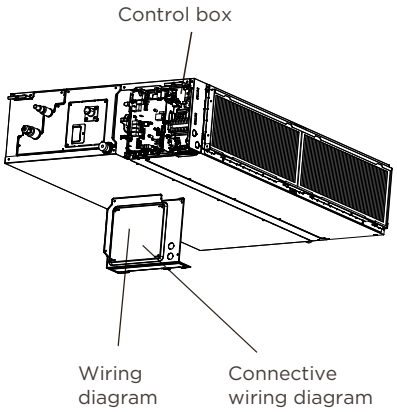
6. Connect the u-lugs to the terminals. Match the correct wire with the correct label on the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal.
7. Clamp down the cable with the wire clamp.
8. The power cables and interconnect power cables will enter the unit separately through the two knock out holes on the bottom right side panel and be fastened with a lock ring adaptor or rubber grommet. Wires should be bound with cable ties and fixed to the internal side of the right chassis panel as shown in the figure below.



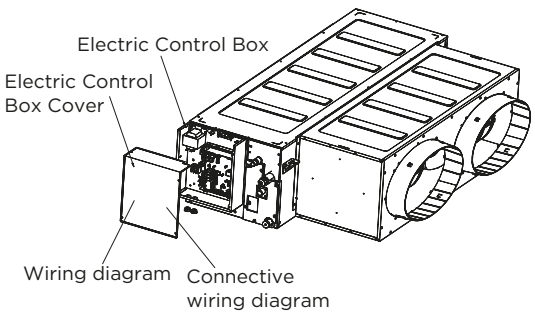
Indoor unit wiring

1. Prepare the cable for connection
   a. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal about 15cm of the wire.
   b. Strip the insulation from the ends of the wires.
   c. Using a wire crimper, crimp the u-lugs to the ends of the wires.
2. Remove the cover of the electric control box on your indoor unit.
3. Connect the u-lugs to the terminals. Match the wire colours/labels with the labels on the terminal block and firmly screw the u-lug of each wire to its corresponding terminal. Refer to the serial number and wiring diagram located on the cover of the electric control box.

For KDI-7.0 / KDI-10.5 / KDI-12.5 / KDI-14.0



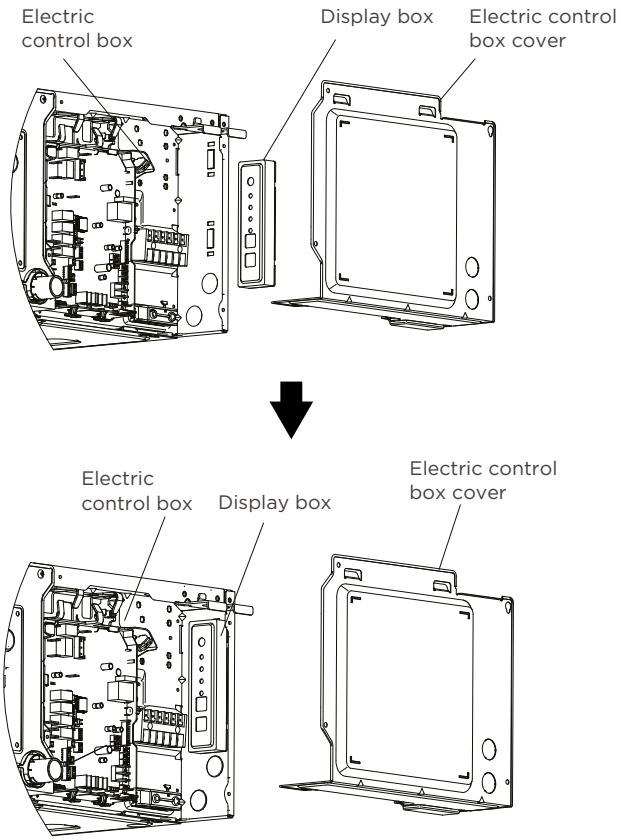
For KDI-14.0S / KDI-17.0



CAUTION

- While connecting the wires, please strictly follow the wiring diagram.
- The refrigerant circuit can become very hot. Keep the interconnection cable away from the copper tube.

4. Clamp down the cable with the cable clamp. The cable must not be loose or pull on the u-lugs.
5. Reattach the electric box cover.
6. Reattach the electric box cover. Before installing the electric control box cover,remove the rubber plug on it.
7. If the indoor unit is equipped with a display box, it can be installed in the electronic control box.

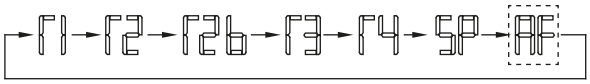


Using the wire controller to set external static pressure

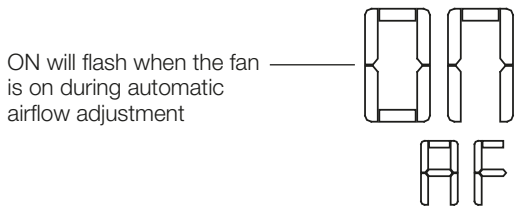
Automatic airflow static pressure setting

- You can use the unit's automatic airflow adjustment function to set external static pressure.
- Automatic airflow adjustment is the volume of blow-off air that has been automatically adjusted to the quantity rated.

1. Make sure the test run is done with a dry coil. If the coil is not dry, run the unit for 2 hours in FAN ONLY mode to dry the coil.
2. Check that both power supply wiring and duct installation have been completed. Check that any closing dampers are open. Check that the air filter is properly attached to the air suction side passage of the unit.
3. If there is more than one air inlet and outlet, adjust the dampers so that the airflow rate of each air inlet and outlet conforms with the designed airflow rate. Make sure the unit is in FAN ONLY mode. Press and set the airflow adjustment button on the remote control to change the airflow rate from H or L.
4. Set the parameters for automatic airflow adjustment. When the air conditioning unit is off, perform the following steps:
   - Press and hold Copy for approximately 3 seconds , The lower right corner shows P:00, Press " OK ".
   - Press "^" to scroll through the menu, The lower right corner shows AF, Press " OK ".
   - Press "Back" to exit test mode.



   - Press CONFIRM . The air conditioning unit will then start the fan for airflow automatic adjustment.



Model	KDI-7.0	KDI-10.5	KDI-12.5/ KDI-14.0/ KDI-14.0S/ KDI-17.0
Pressure	25Pa	37Pa	50Pa

CAUTION

- **Do not** adjust the dampers when automatic airflow adjustment is active.

After 3 to 6 minutes, the air conditioning unit stops operating once automatic airflow adjustment has finished.

CAUTION

- If there is no change after airflow adjustment in the ventilation paths, be sure to reset automatic airflow adjustment.
- If there is no change to ventilation paths after airflow adjustment, contact your dealer, especially if this occurs after testing the outdoor unit or if the unit has been moved to a different location.
- **Do not** use automatic airflow adjustment with remote control, if you are using booster fans, outdoor air processing unit, or a HRV via duct.
- If the ventilation paths have been changed, reset airflow automatic adjustment as described from step 3 onwards.

Manual static pressure setting

The system can be set manually based on eight static pressure settings. The factory default setting is SP1, the external static pressure can be manually changed using the steps below.

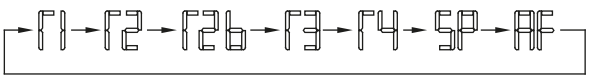
Each setting has a low, medium and high speed range.

See fan performance curves on p. 42-46.

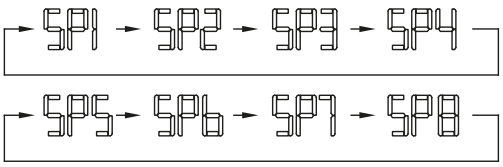
Model	SP No.	External static pressure parameters
KDI-7.0	1	0-25
	2	20-40
	3	40-60
	4	60-80
	5	80-100
	6	100-120
	7	120-140
	8	140-160
KDI-10.5	1	0-37
	2	37-50
	3	50-75
	4	75-100
	5	100-125
	6	125-150
	7	150-175
	8	175-200
KDI-12.5 KDI-14.0 KDI-14.0S KDI-17.0	1	0-50
	2	0-50
	3	50-75
	4	75-100
	5	100-125
	6	125-150
	7	150-175
	8	175-200

When the system is OFF, perform the following steps using the wired controller.

- Press and hold Copy for approximately 3 seconds, The lower right corner shows P:00, Press " OK ".
- Press "^" to scroll through the menu , The lower right corner shows SP, Press " OK ".
- Press "^" "v" to scroll through the menu and select "1~8", Press " OK ".
- Press "Back" to exit test mode.



- Press the **CONFIRM** button.



- Press the **CONFIRM** button.

The external static pressure settings are now complete.

NOTE: T1, T2, T2b, T3, T4 are sub-menus for thermistors. DO NOT select to set the external static pressure.

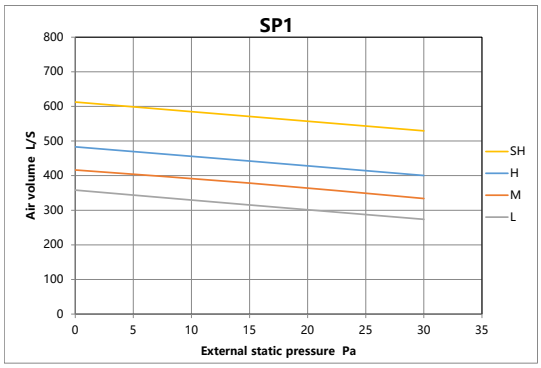
NOTE: Before commissioning, check the power connection of the machine, turn on the power, and keep the machine not working.

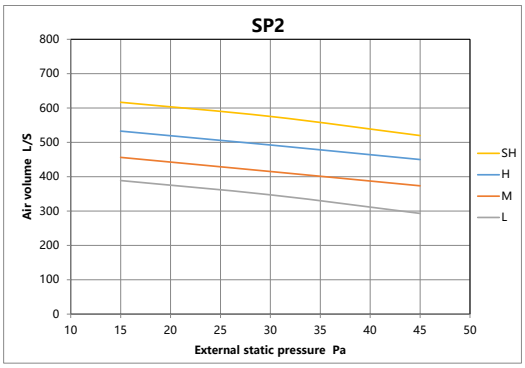
NOTE: If there is no change after airflow adjustment, perform the setting again.

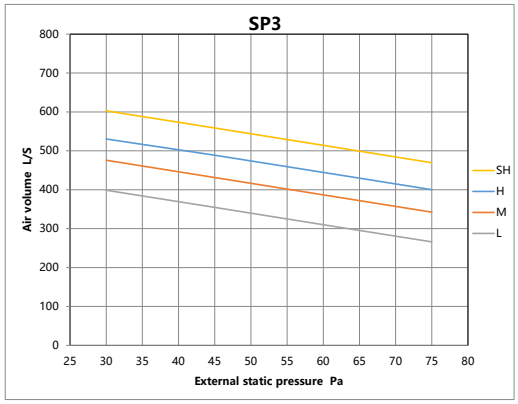
NOTE: Setting Static Pressure or Automatic Airflow need to use the Wired Remote Controller.

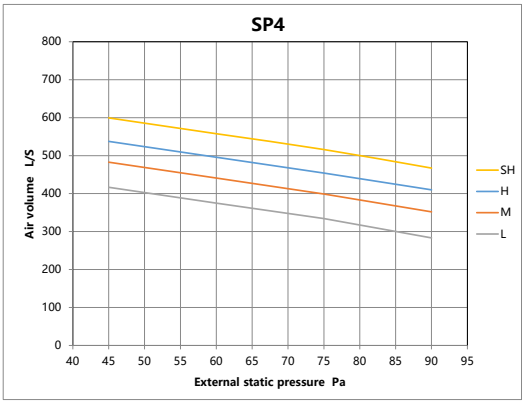
NOTE: On Low Static Pressure unit models. Only SP1-4 options are available.

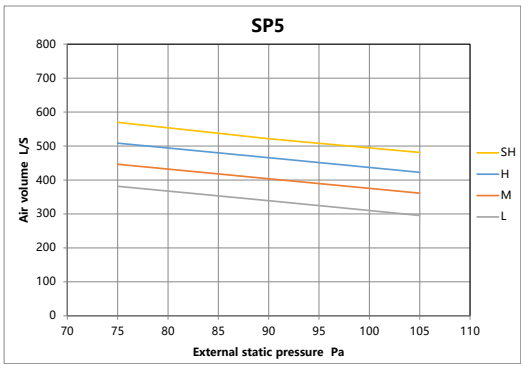
Fan performance: KDI-7.0

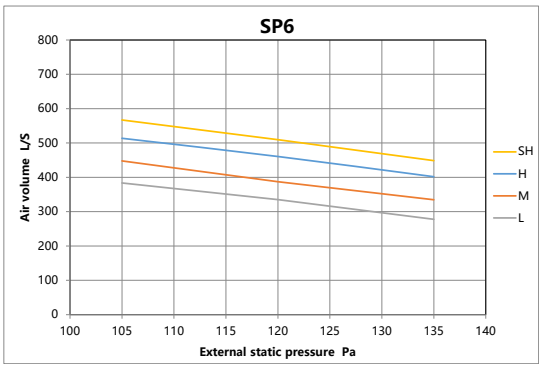


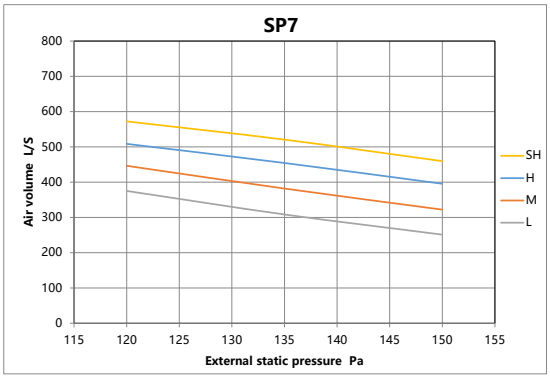


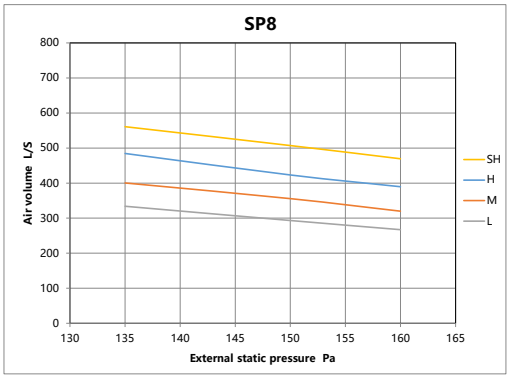




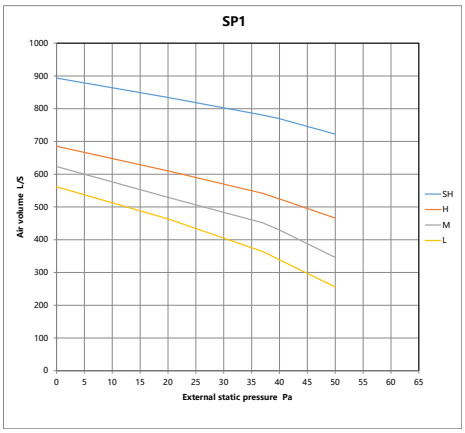


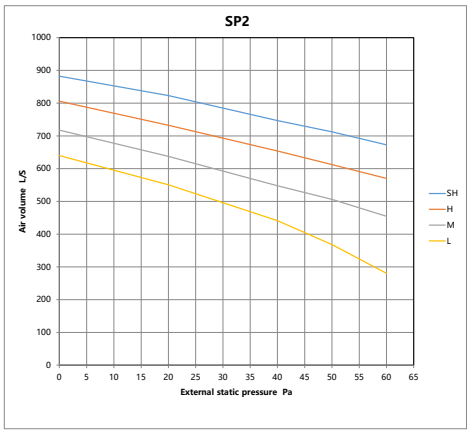


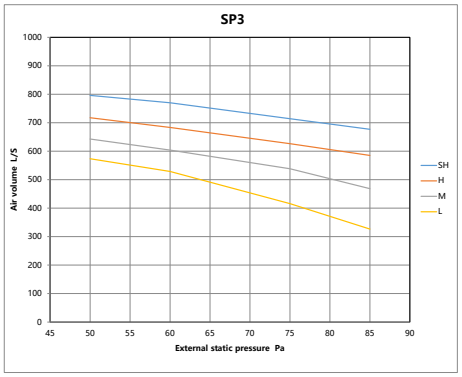


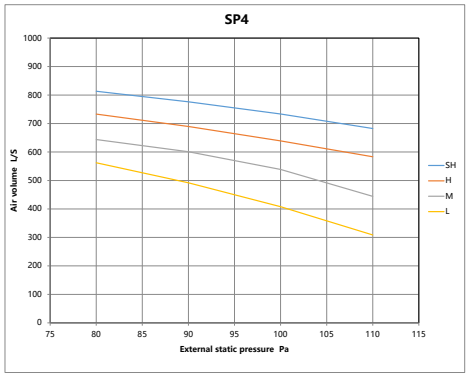


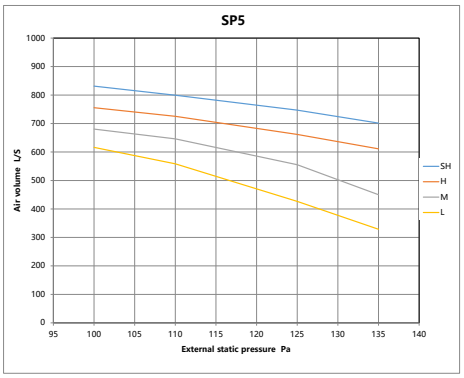
Fan performance: KDI-10.5

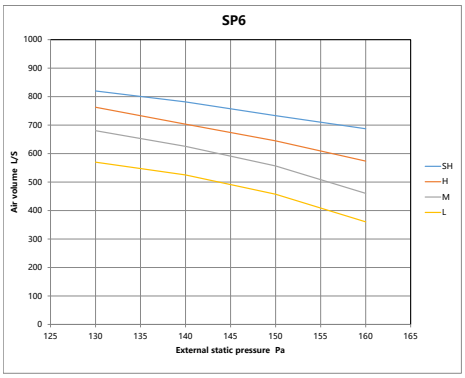


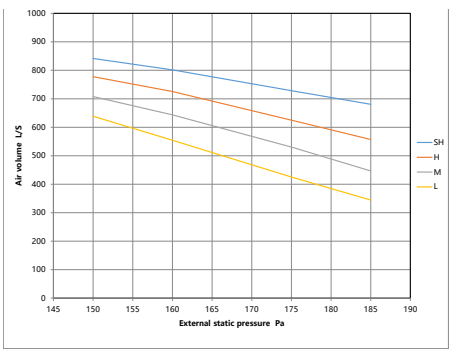


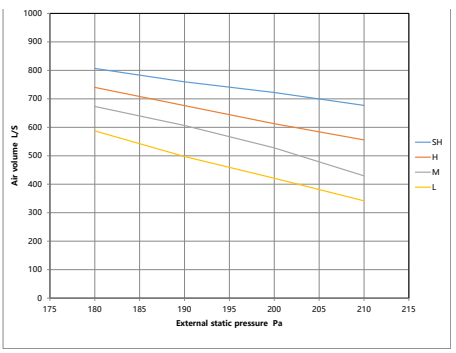




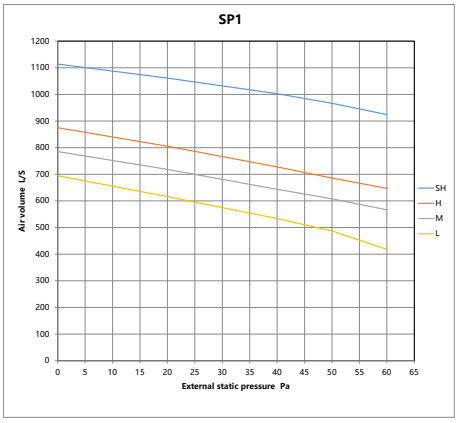


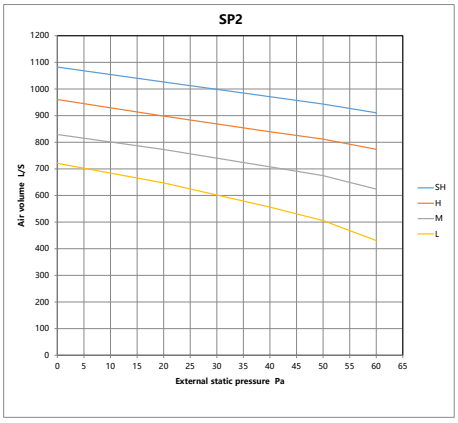


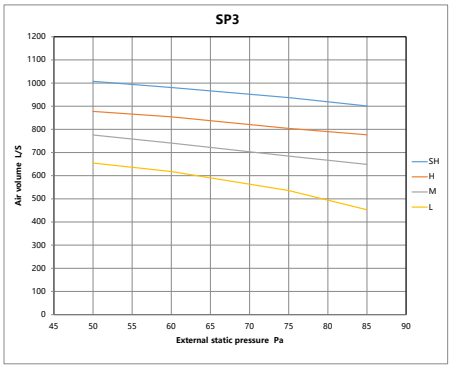


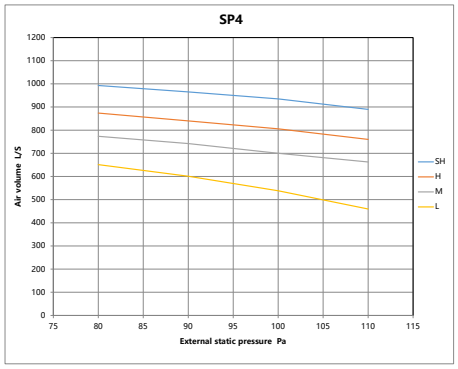


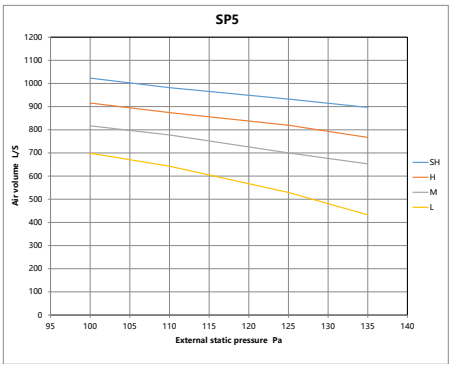
Fan performance: KDI-12.5/KDI-14.0

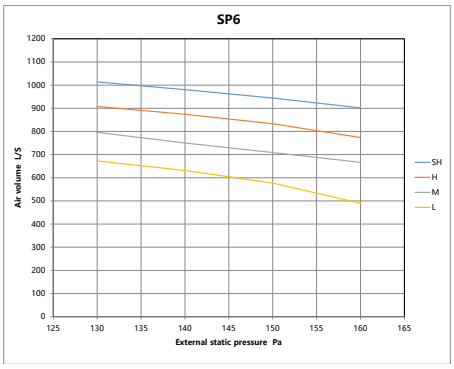


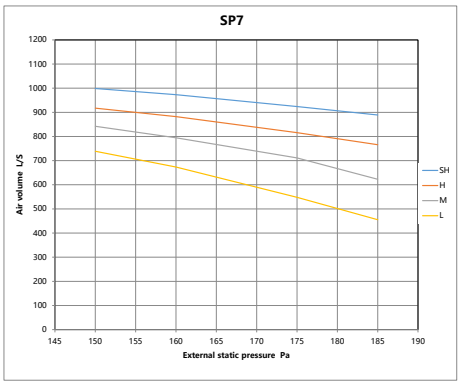


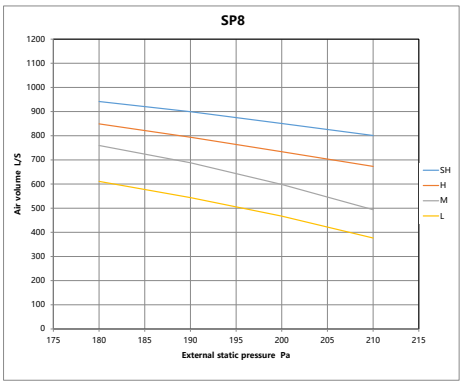




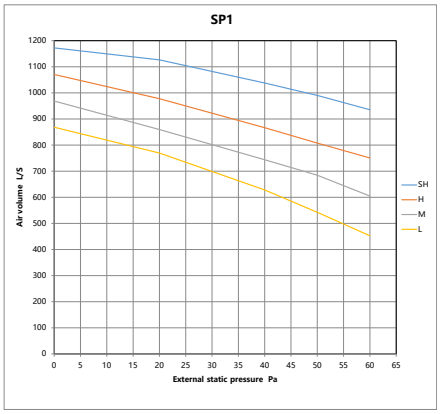


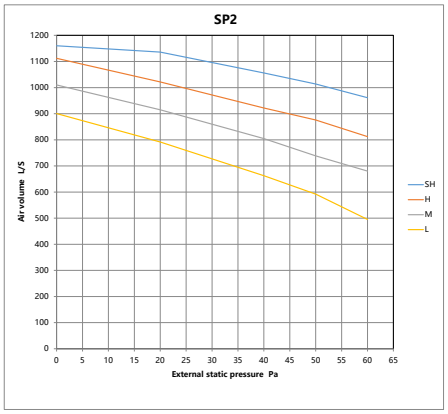


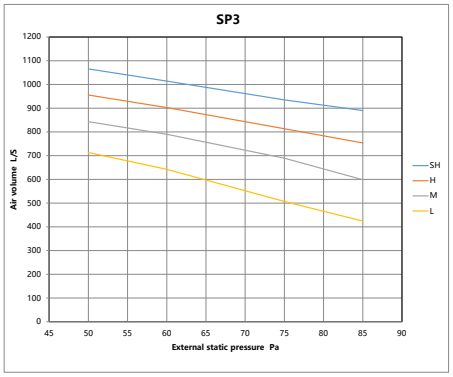


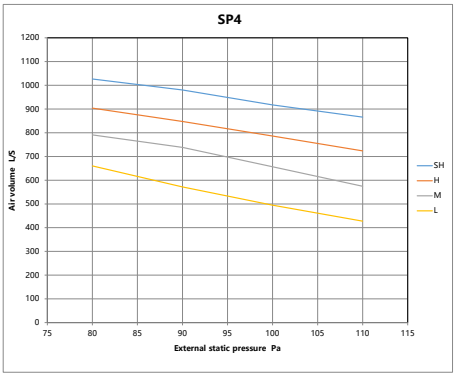


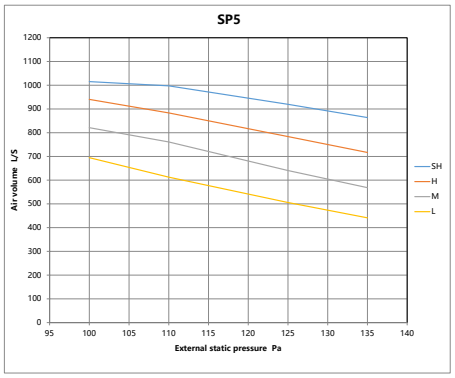
Fan performance: KDI-14.0S

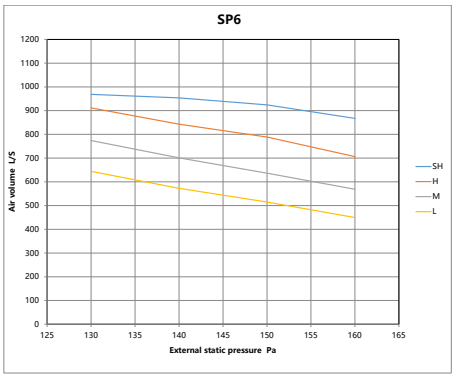


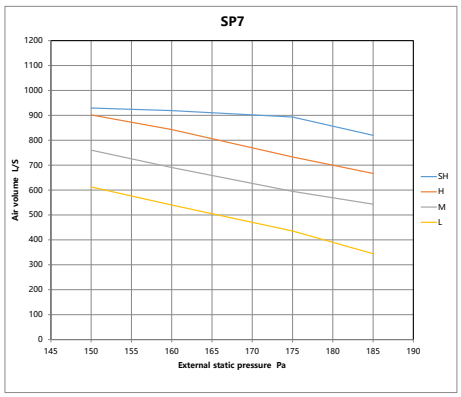


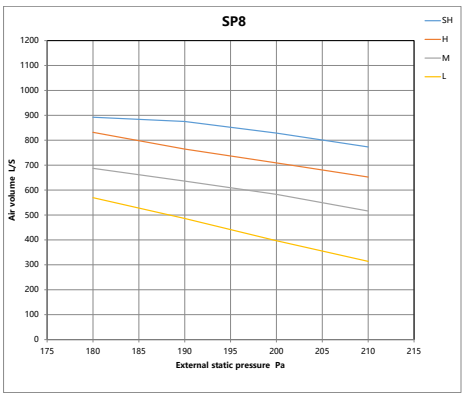




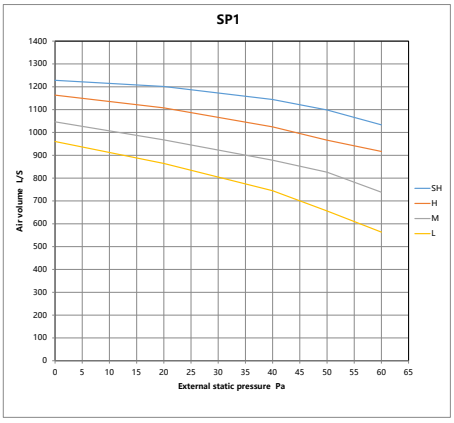


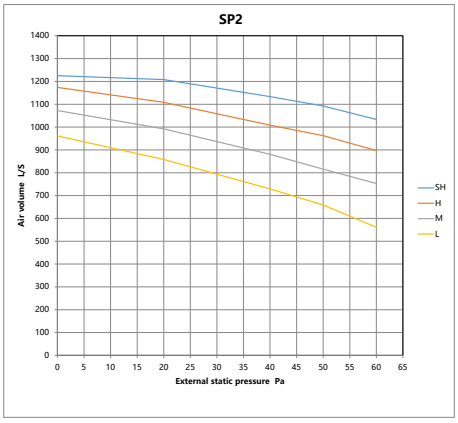


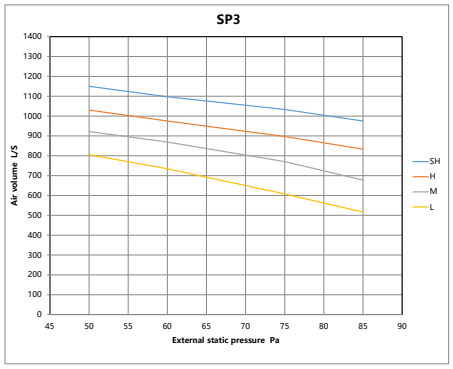


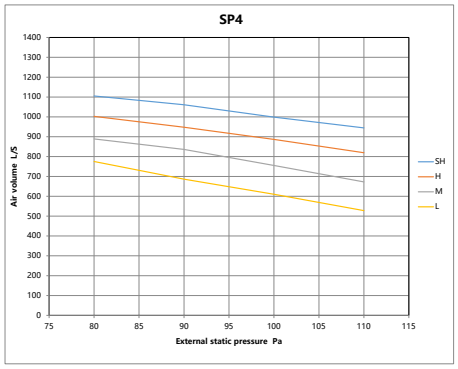


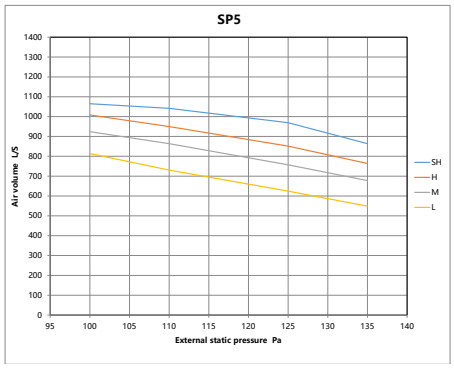
Fan performance: KDI-17.0

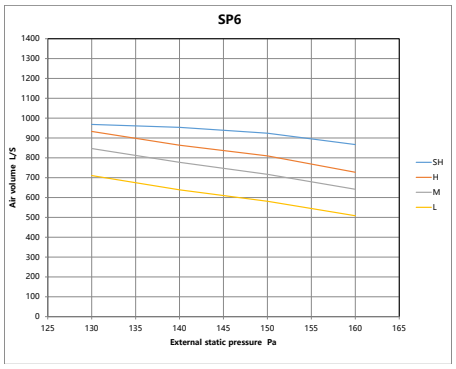


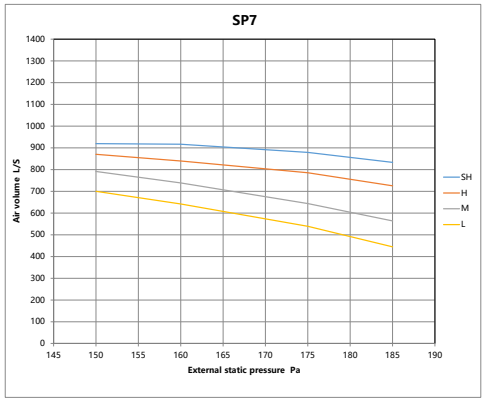


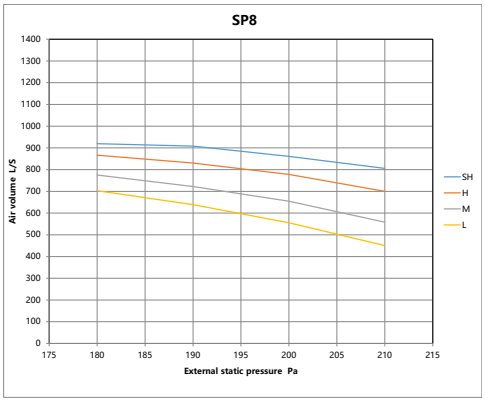






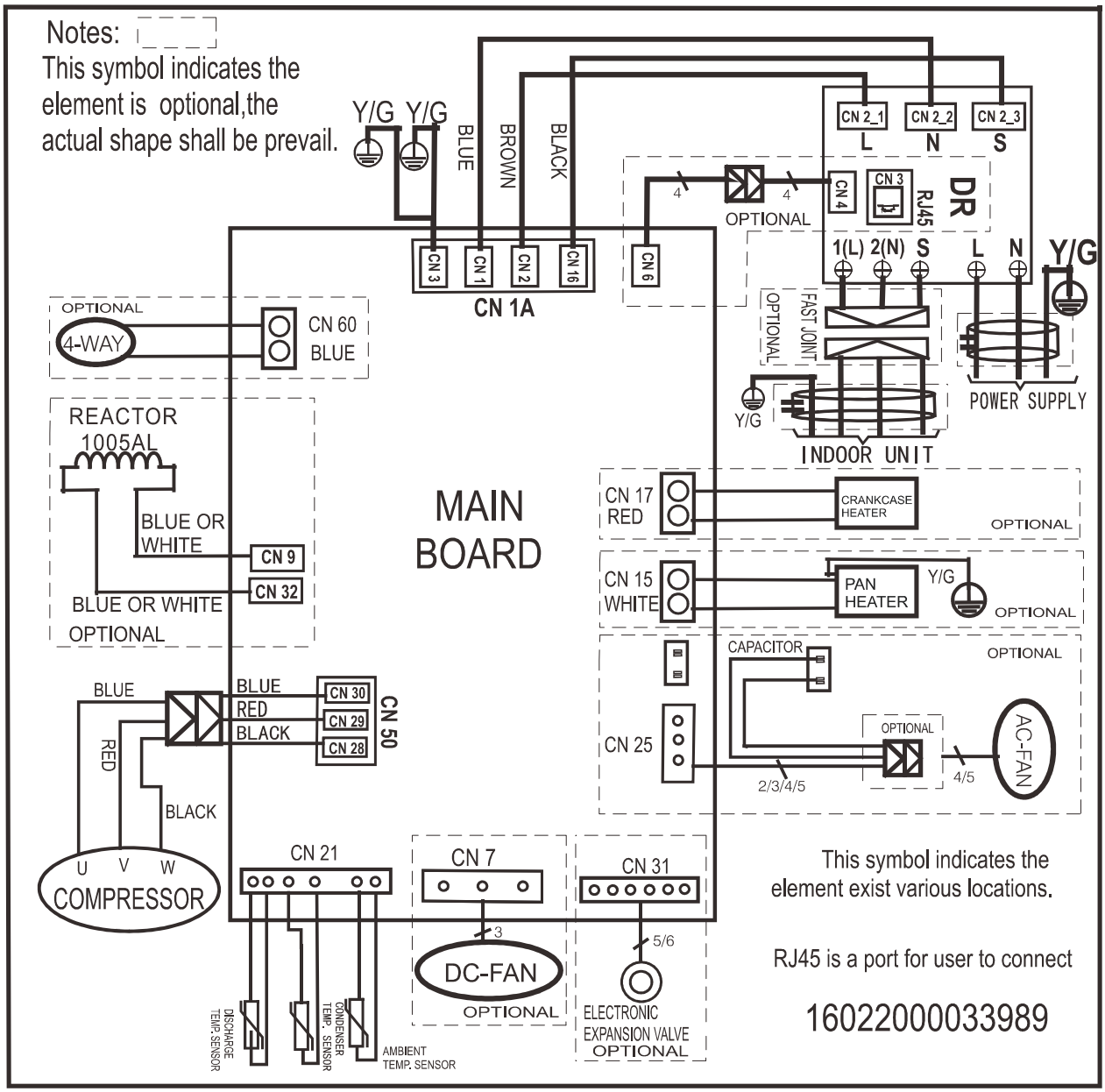




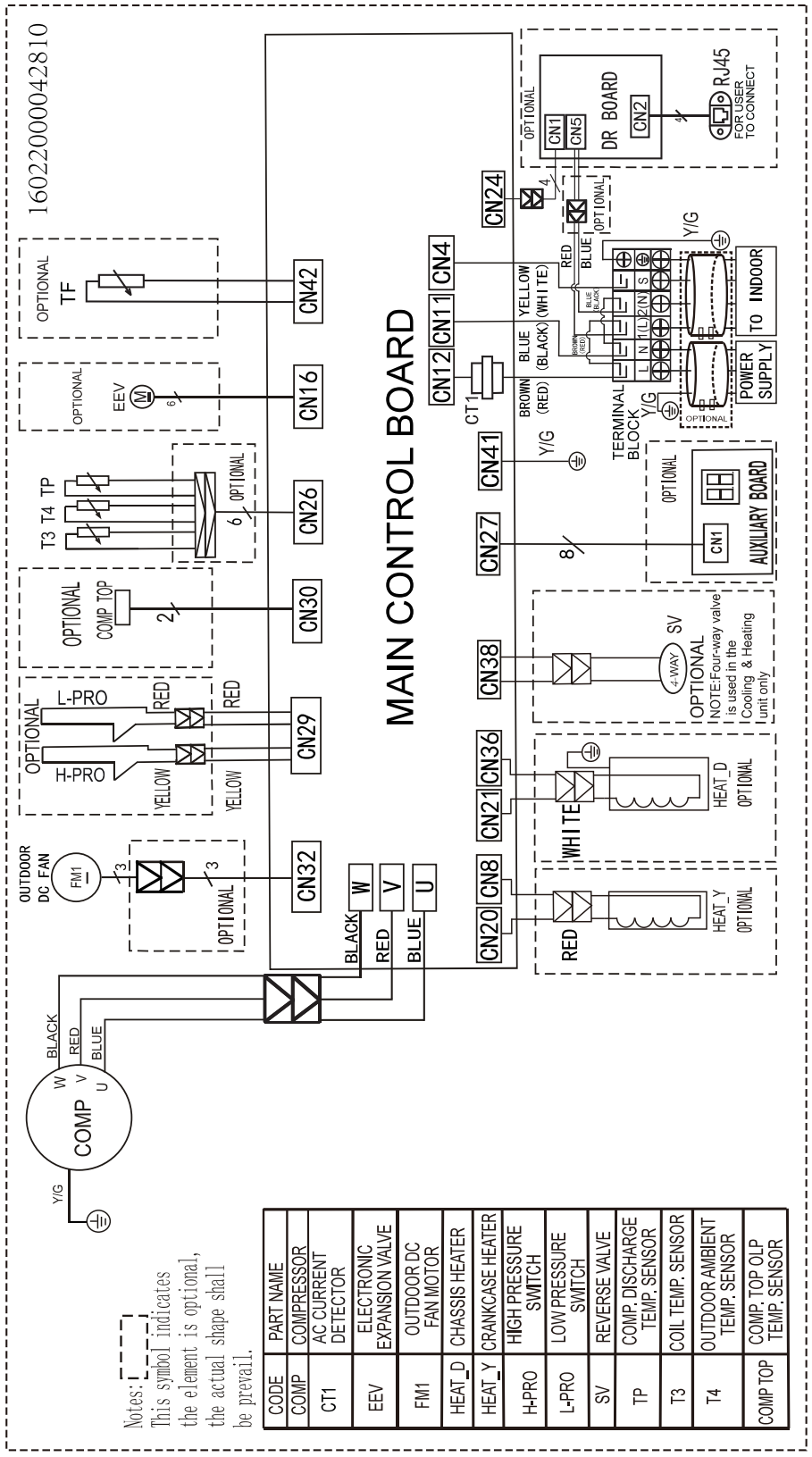


Outdoor wiring diagrams

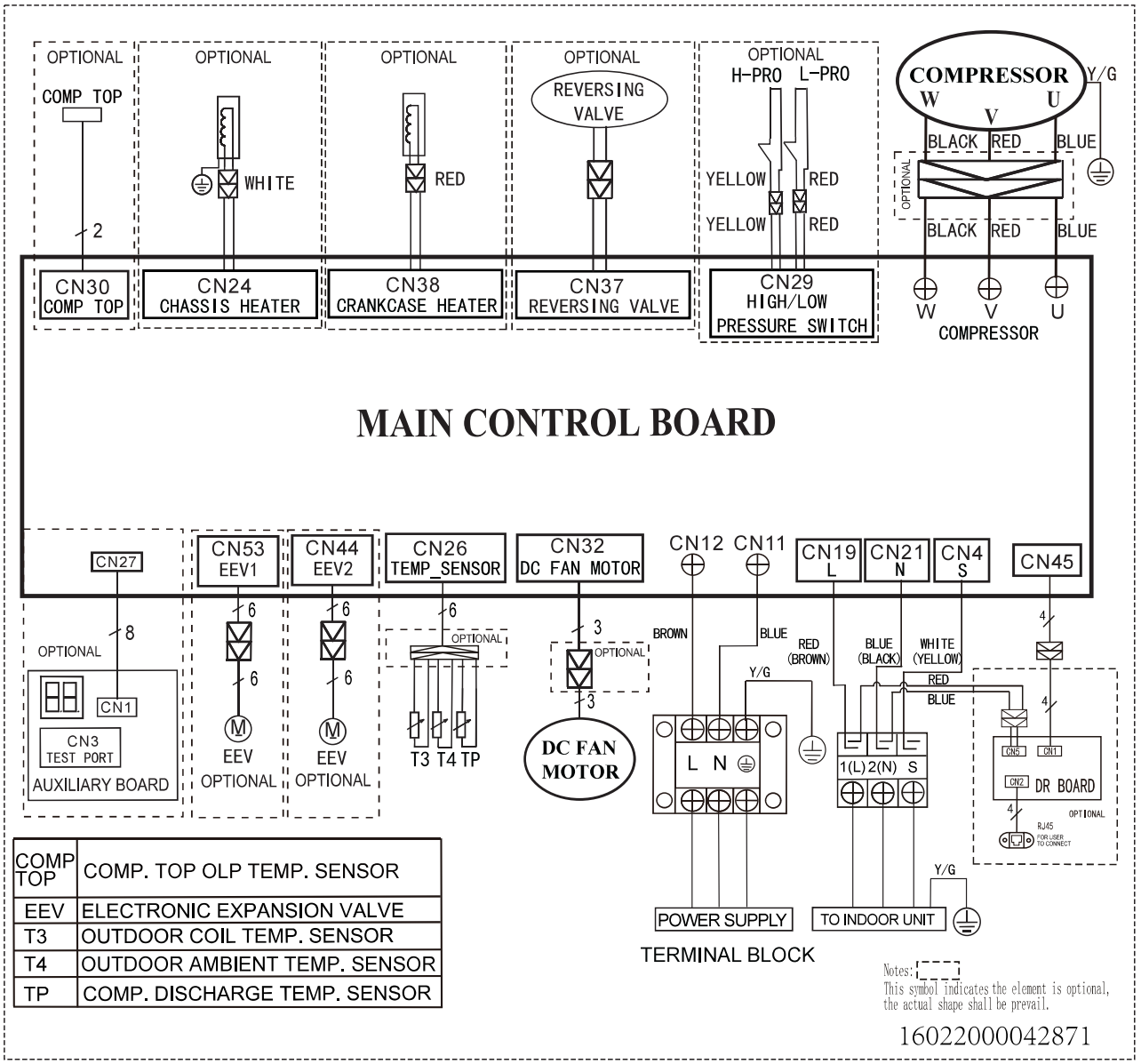
KDI-7.0



KDI-10.5

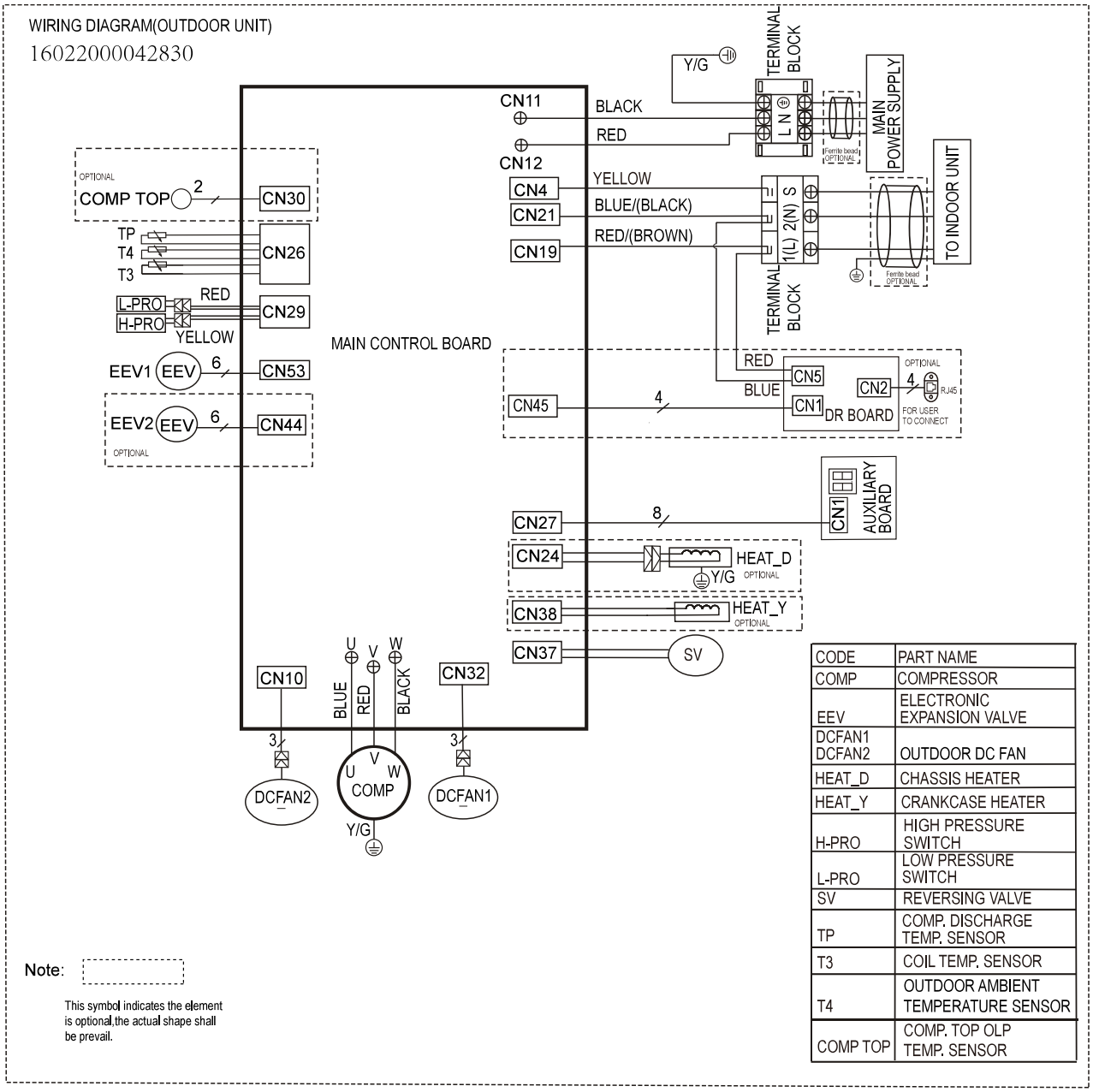

1602200042810
MAIN CONTROL BOARD
COMP
W
V
U
BLACK
RED
BLUE
Y/G
OUTDOOR DC FAN
FM1
OPTIONAL
L-PRO
H-PRO
RED
YELLOW
T3 T4 TP
COMP TOP
EEV
TF
CN42
CN16
CN26
CN30
CN29
CN32
CN38
CN21
CN36
CN8
CN20
CN27
CN41
CN12
CN11
CN4
CN24
CT1
BROWN (RED)
BLUE (BLACK)
YELLOW (WHITE)
TERMINAL BLOCK
POWER SUPPLY
TO INDOOR
4-WAY
SV
NOTE:Four-way valve is used in the Cooling & Heating unit only
WHITE
HEAT_D
HEAT_Y
AUXILIARY BOARD
DR BOARD
CN1
CN5
CN2
RJ45
FOR USER TO CONNECT
Notes:
This symbol indicates the element is optional, the actual shape shall be prevail.
CODE
PART NAME
COMP
COMPRESSOR
CT1
AC CURRENT DETECTOR
EEV
ELECTRONIC EXPANSION VALVE
FM1
OUTDOOR DC FAN MOTOR
HEAT_D
CHASSIS HEATER
HEAT_Y
CRANKCASE HEATER
H-PRO
HIGH PRESSURE SWITCH
L-PRO
LOW PRESSURE SWITCH
SV
REVERSE VALVE
TP
COMP. DISCHARGE TEMP. SENSOR
T3
COIL TEMP. SENSOR
T4
OUTDOOR AMBIENT TEMP. SENSOR
COMP TOP
COMP. TOP OLP TEMP. SENSOR

KDI-12.5



COMP TOP	COMP. TOP OLP TEMP. SENSOR
EEV	ELECTRONIC EXPANSION VALVE
T3	OUTDOOR COIL TEMP. SENSOR
T4	OUTDOOR AMBIENT TEMP. SENSOR
TP	COMP. DISCHARGE TEMP. SENSOR

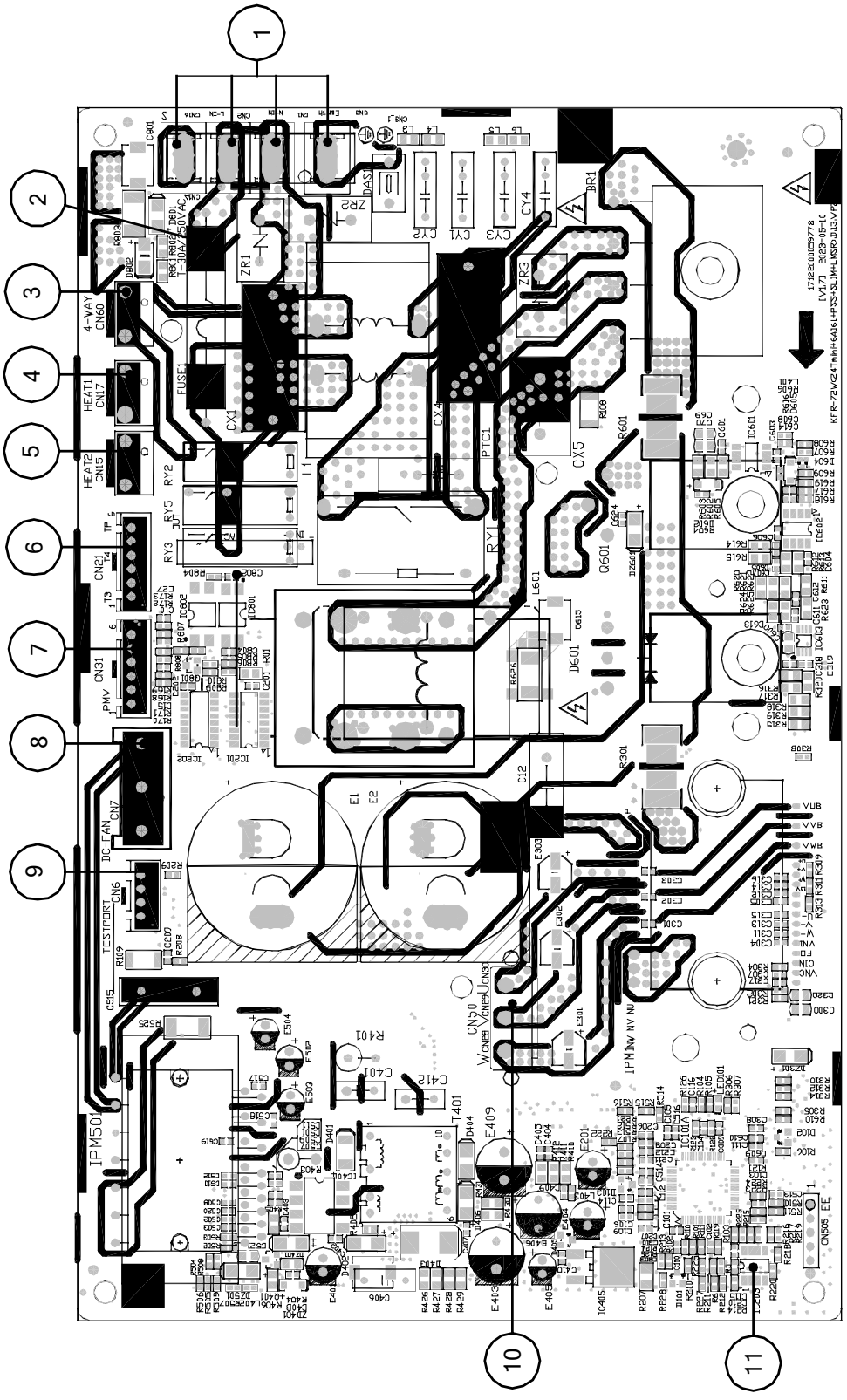
KDI-14.0
KDI-14.0S
KDI-17.0



CODE	PART NAME
COMP	COMPRESSOR
EEV	ELECTRONIC EXPANSION VALVE
DCFAN1 DCFAN2	OUTDOOR DC FAN
HEAT_D	CHASSIS HEATER
HEAT_Y	CRANKCASE HEATER
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
SV	REVERSING VALVE
TP	COMP. DISCHARGE TEMP. SENSOR
T3	COIL TEMP. SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
COMP TOP	COMP. TOP OLP TEMP. SENSOR

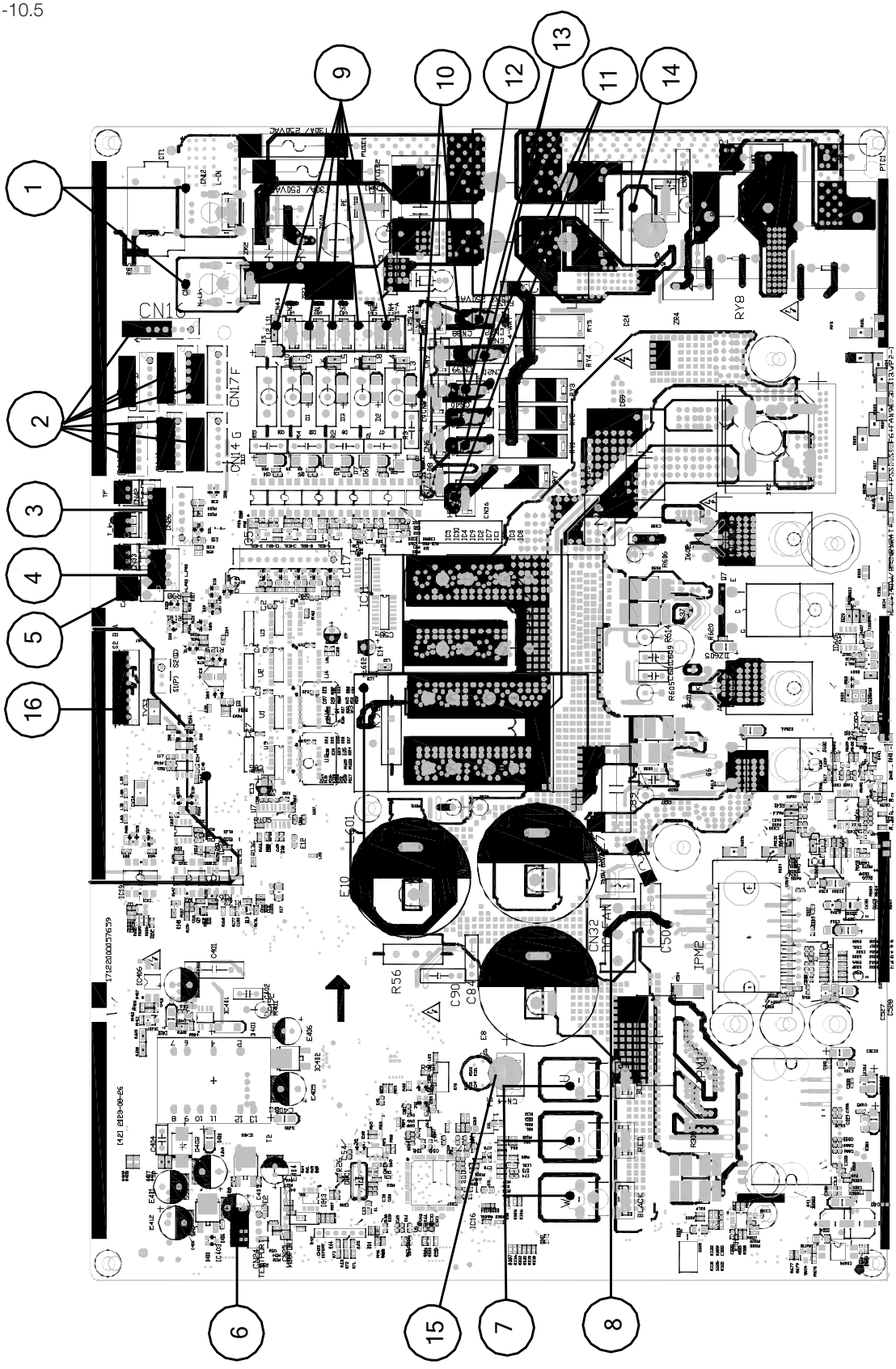
Outdoor printed circuit board diagrams

KDI-7.0



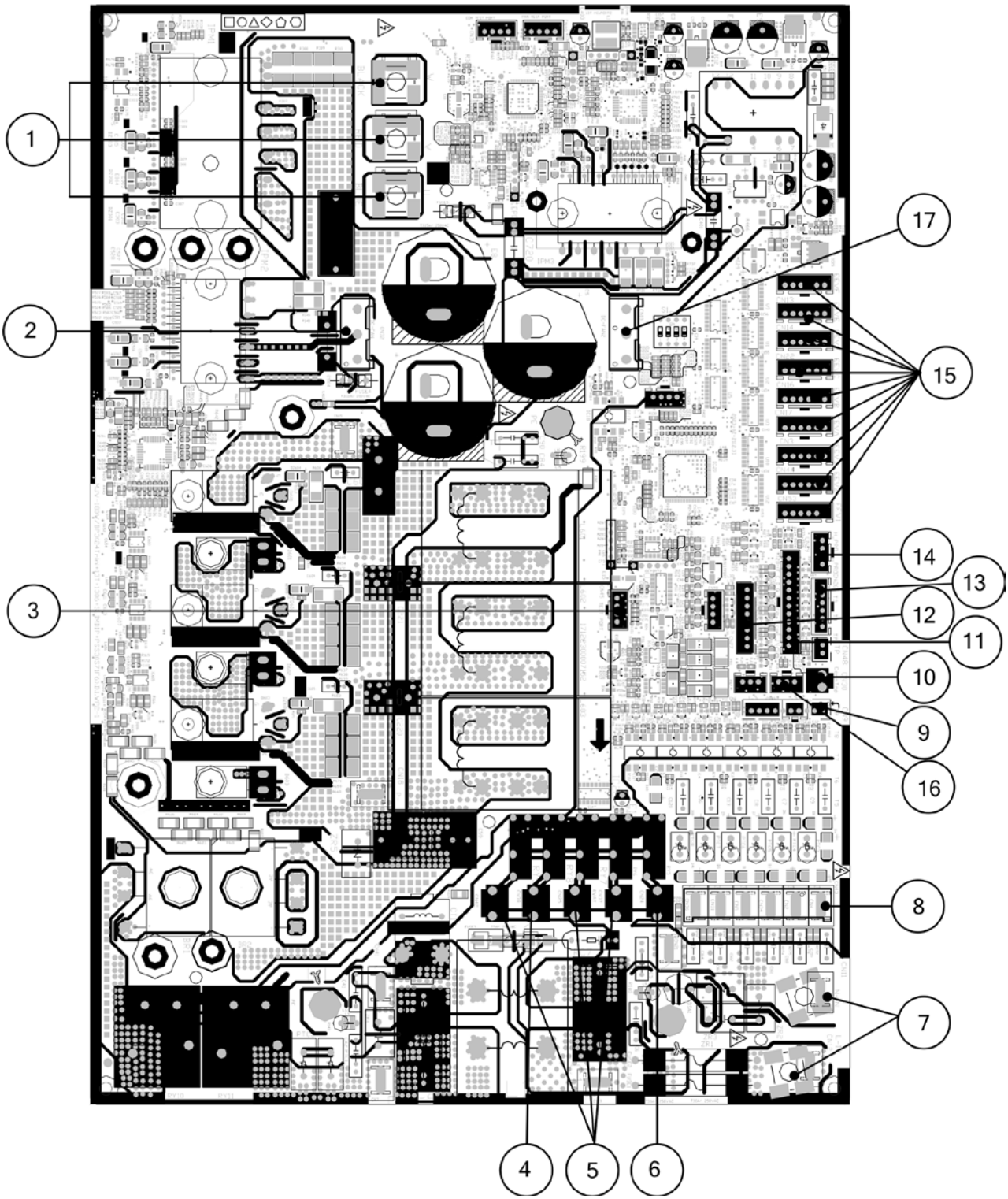
No.	Name	CN#	Meaning
1	Power supply	/	S: connect to indoor unit communication
		/	L_in: connect to L-line (208-240V AC input)
		/	N_in: connect to N-line (208-240V AC input)
		/	Earth: connect to Ground
2	FUSE	FUSE1	T-30A/250VAC
3	4-WAY	CN60	Connect to 4 way valve, 208-240V AC when is ON
4	HEAT1	CN17	Connect to compressor heater, 208-240V AC when is ON
5	HEAT2	CN15	Connect to chassis heater, 208-240V AC when is ON
6	TP T4 T3	CN21	Connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
7	PMV	CN31	Connect to Electric Expansion Valve
8	DC-FAN	CN7	Connect to DC fan
9	TESTPORT	CN6	Used for testing
10	U	CN50	CN50 connect to compressor,0V AC (standby),200-300V AC (running)
	V		
	W		
11	EE_PORT	IC203	EEPROM programmer port

KDI-10.5


1
2
3
4
5
16
9
10
12
13
11
14
6
15
7
8
CN1
CN17F
CN14 G
RY8
E10
L01
CN32
R56
C90
C8
C50
IPM2

No.	Name	CN#	Meaning
1	Power supply	CN11	N_in: connect to N-line (208-230V AC input)
		CN12	L_in: connect to L-line (208-230V AC input)
2	EEV-A	CN16	Connect to electric expansion valve
	EEV-B	CN13	
	EEV-C	CN3	
	EEV-D	CN15	
	EEV-E	CN1	
	EEV-F	CN17	
	EEV-G	CN14	
3	T3 T4 TP	CN26	Connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
4	H-PRO,L-RPO	CN29	Connect to high and low pressure switch (pin1-pin2&pin3-pin4:5VDC pulse wave)
5	OLP TEMP. SENSOR	CN30	Connect to compressor top temp. sensor (5VDC Pulse wave)
6	TESTPORT	CN24	Used for testing
7	COMPRESSOR	U	Connect to compressor, 0V AC (standby),10-200V AC (running)
		V	
		W	
8	DC-FAN	CN32	Connect to DC fan
9	S-E	CN31	S: connect to indoor unit communication(pin1-pin2: 24VDC Pulse wave; pin2-pin3: 208-230V AC input)
	S-D	CN5	
	S-C (mono)	CN34	
	S-B	CN2	
	S-A	CN4	
10	HEAT_D	CN8	Connect to the heater, 208-230V AC when is ON
		CN20	
11	HEAT_Y	CN21	
		CN36	
12	4-WAY	CN38	Connect to 4 way valve, 208-230V AC when is ON.
13	AC FAN	CN18 CN19	Connect to AC fan
14	/	CN7	Connect to earth
15	/	CN44	Connect to earth
16	/	CN27	Connect to key board CN1

KDI-12.5/KDI-14.0/KDI-14.0S/KDI-17.0



No.	Name	CN#	Meaning
1	COMPRESSOR	W	Connect to compressor(Output: 0~310V AC)
		V	
		U	
2	DC-FAN1	CN32	Connect to DC fan(Output: 0~310V AC)
3	TESTPORT	CN45	Used for testing
4	HEAT_Y	CN38	Connect to compressor heater(Output: 230V AC)
5	4-WAY	CN37	Connect to 4 way valve 1(Output: 230V AC)
		CN25	Connect to 4 way valve 2(Output: 230V AC)
		CN42	Connect to 4 way valve 3(Output: 230V AC)
6	HEAT_D	CN24	Connect to chassis heater(Output: 230V AC)
7	Power supply	CN11	N_in: connect to N-line (230V AC input)
		CN12	L_in: connect to L-line (230V AC input)
8	S-A	CN43	S: connect to indoor unit communication(230V AC input)
	S-B		
	S-C		
	S-D		
	S-E		
	S-F		
9	TBH-IN TBH-OUT T3B TF	CN9	Connect to cold plate inlet temp. sensor TBH-IN, cold plate outlet temp. Sensor TBH-OUT, condenser coil middle temp. sensor T3B, refrigerant tube inlet temp. sensor TF
10	10 OLP TEMP. SENSOR	CN30	Connect to compressor top temp. sensor (Output: 0~5V DC)
11	T2B	CN28	Connect to evaporator coil outlet temperature sensor T2B
12	/	CN27	Connect to key board CN1
13	T3 T4 TP	CN26	Connect to condenser coil temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP(Output: 0~5V DC)
14	H-PRO, L-RPO	CN29	Connect to high and low pressure switch(pin1-pin2&pin3-pin4:5VDC pulse wave)
15	EEVA	CN17	Connect to electric expansion valve(Output: 0~12V DC)
	EEVB	CN16	
	EEVC	CN22	
	EEVD	CN14	
	EEVE	CN13	
	EEVF	CN1	
	EEV1	CN53	
	EEV2	CN44	
	EEV3	CN3	
16	H_YL	CN49	Connect to high pressure sensor
17	DC-FAN2	CN10	Connect to DC fan(Output: 0~310V AC)

10. Electrical checks

Electrical safety checks

After installation, confirm that all electrical wiring is installed in accordance with local and national requirements, and according to the Installation Manual.

Before test run

Check grounding work

Measure grounding resistance by visual detection and with grounding resistance tester. Grounding resistance must be less than 4Ω.

During test run

Check for electrical leakage

During the **test run**, use an electroprobe and multimeter to perform a comprehensive electrical leakage test.

If electrical leakage is detected, turn off the unit immediately and call a licensed electrician to find and resolve the cause of the leakage.

⚠ WARNING
Risk of electric shock

All wiring must comply with local and national electrical codes, and must be installed by a licensed electrician.

11. Test run

Before test run

A test run must be performed after the entire system has been completely installed. Confirm the following points before performing the test:

1. Indoor and outdoor units are properly installed.
2. Piping and wiring are properly connected.
3. No obstacles near the inlet and outlet of the unit that might cause poor performance or product malfunction.
4. Refrigeration system does not leak.
5. Drainage system is unimpeded and draining to a safe location.
6. Heating insulation is properly installed.
7. Grounding wires are properly connected.
8. Length of the piping and additional refrigerant stow capacity have been recorded.
9. Power voltage is the correct voltage for the air conditioner.

CAUTION

Failure to perform the test run may result in unit damage, property damage, or personal injury.

Test run instructions

1. Open both the liquid and gas stop valves.
2. Turn on the main power switch and allow the unit to warm up.
3. Set the air conditioner to COOL mode.
4. For the indoor unit
    a. Ensure the wired control and its buttons work properly.
    b. Double check to see if the room temperature is being registered correctly.
    c. Ensure the indicators on the wired control and the display panel on the indoor unit work properly.
    d. Ensure the manual buttons on the indoor unit works properly.
    e. Check to see that the drainage system is unimpeded and draining smoothly.
    f. Ensure there is no vibration or abnormal noise during operation.
5. For the outdoor unit
    a. Check to see if the refrigeration system is leaking.
    b. Make sure there is no vibration or abnormal noise during operation.
    c. Ensure the wind, noise, and water generated by the unit do not disturb your neighbours or pose a safety hazard.
6. Drainage test
    a. Ensure the drainpipe flows smoothly. For installations in new buildings, you should perform this test before finishing the ceiling.
    b. Remove the test cover. Add 2,000ml of water to the tank through the attached tube.
    c. Turn on the main power switch and run the air conditioner in COOL mode.
    d. Listen to the sound of the drain pump to see if it makes any unusual noises.
    e. Check to see that the water is discharged. It may take up to one minute before the unit begins to drain, depending on the drainpipe.
    f. Make sure that there are no leaks in any of the piping.
    g. Stop the air conditioner. Turn off the main power switch and reinstall the test cover.

NOTE: If the unit malfunctions or does not operate according to your expectations, please refer to the Troubleshooting section of the Owner's manual before calling customer service.

12. Manual operations

Manual operations

This display panel on the indoor unit can be used to operate the unit in case the remote control has been misplaced or is out of batteries.

- **MANUAL button:** This button selects the mode in the following order: AUTO, FORCED COOL, OFF.
- **FORCED COOL mode:** In FORCED COOL mode, the Operation light flashes. The system will then turn to AUTO after it has cooled with a high wind speed for 30 minutes. The remote control will be disabled during this operation.
- **OFF mode:** When the panel is turned OFF, the unit turns off and the remote control is re-enabled.

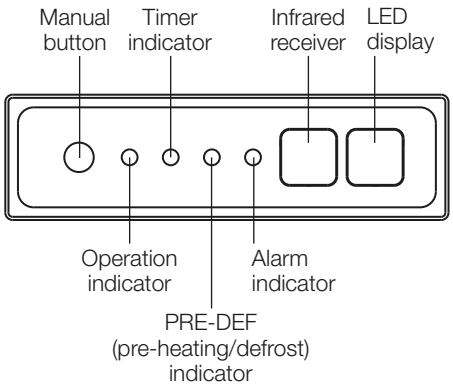
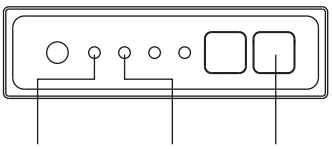


Figure 12.1

Error codes



Number	Cause	The number of flashes per second	Timer indicator	Error code
1	Indoor EEPROM (Electrically Erasable Programmable Read-Only Memory) error	1	Off	EH00/ EH0A
2	Indoor and outdoor unit communication malfunction	2	Off	EL01
3	Indoor fan speed malfunction	4	Off	EH03
4	Indoor room temperature sensor error	6	Off	EH60
5	Evaporator coil temperature sensor error	6	Off	EH61
6	Refrigerant leak malfunction	8	Off	EL0C
7	Water level alarm malfunction	13	Off	EH0E
8	Dual indoor unit (twins model only) communication malfunction	9	Off	EH12
9	Outdoor unit malfunction	14	Off	EC0d
10	Communication error between indoor main board chips	9	Off	EH0b
11	Outdoor ambient temperature sensor error	5	Off	EC53
12	Outdoor condenser pipe sensor error	5	Off	EC52
13	Compressor discharge temperature sensor error	5	Off	EC54
14	Outdoor IPM Module temperature sensor error	5	Off	EC55
15	Communication error between master and slave unit (twins system)	11	Off	EL11
16	Outdoor EEPROM (Electrically Erasable Programmable Read-Only Memory) error	5	On	EC51
17	Outdoor fan speed (DC fan motor only) malfunction	12	Off	EC07
18	Inverter module IPM protection	7	Flash	PC00
19	High/Low voltage protection	2	Flash	PC01
20	Compressor top overheating protection	3	Flash	PC02
21	Outdoor high/low pressure protection	4	Flash	PC03
22	Compressor drive error	5	Flash	PC04
23	Outdoor IGBT sensor error	8	Flash	PC07
24	Communication error between indoor unit and indoor external fan modul	N/A	N/A	EHbA
25	Low voltage protection of indoor external fan DC bus	N/A	N/A	EH3A
26	Indoor external fan DC bus voltage is too high fault	N/A	N/A	EH3b
27	Parameters error of indoor external fan	N/A	N/A	EH30
28	Phase failure of indoor external fan	N/A	N/A	EH35
29	Indoor external fan current sampling bias fault	N/A	N/A	EH36
30	Indoor external fan zero speed failure	N/A	N/A	EH37
31	Indoor external fan stall failure	N/A	N/A	EH38
32	Out of step failure of indoor external fan	N/A	N/A	EH39
33	Indoor external fan overcurrent fault	N/A	N/A	EH3E
34	Indoor external fan module protection/hardware overcurrent protection	N/A	N/A	EH3F

Number	Cause	The number of flashes per second	Timer indicator	Error code
35	Outdoor external fan overcurrent fault	N/A	N/A	EC71
36	Outdoor external fan module protection/hardware overcurrent protection	N/A	N/A	EC75
37	Outdoor external fan phase failure	N/A	N/A	EC72
38	Outdoor external fan current sampling bias fault	N/A	N/A	EC74
39	Zero speed failure of outdoor unit DC fan	N/A	N/A	EC73
40	Over low voltage protection	N/A	N/A	PC10
41	Over voltage protection	N/A	N/A	PC11
42	DC voltage protection	N/A	N/A	PC12
43	Communication error between outdoor main chip and compressor driven chip	N/A	N/A	PC40
44	Current Input detection protection	N/A	N/A	PC41
45	Compressor start error	N/A	N/A	PC42
46	Lack of phase (3 phase) protection	N/A	N/A	PC43
47	Outdoor unit zero speed protection	N/A	N/A	PC44
48	341PWM error	N/A	N/A	PC45
49	Compressor speed malfunction	N/A	N/A	PC46
50	Compressor over current protection	N/A	N/A	PC49
51	Compressor discharge temperature protection	N/A	N/A	PC06
52	Outdoor current protection	N/A	N/A	PC08
53	Anti-cold air in heating mode	N/A	N/A	PH09
54	PFC module malfunction	N/A	N/A	PC0F
55	System overpressure protection	N/A	N/A	PC30
56	System pressure is too low protection	N/A	N/A	PC31
57	Outdoor low ambient temperature protection	N/A	N/A	PC0L
58	Evaporator coil temperature over high protection	N/A	N/A	PH90
59	Evaporator coil temperature over low Protection	N/A	N/A	PH91
60	Condenser high temperature protection	N/A	N/A	PC0A
61	Indoor unit humidity sensor failure	N/A	N/A	PH0C
62	Frequency limit caused by T2	N/A	N/A	LH00
63	Indoor external fan current limit	N/A	N/A	LH30
64	Indoor external fan voltage limit	N/A	N/A	LH31
65	Frequency limit caused by T3	N/A	N/A	LC01
66	Frequency limit caused by TP	N/A	N/A	LC02
67	Frequency limit caused by voltage	N/A	N/A	LC05
68	Frequency limit caused by current	N/A	N/A	LC03
69	Frequency limit caused by PFC	N/A	N/A	LC06
70	Frequency limit caused by high pressure	N/A	N/A	LC30
71	Frequency limit caused by low pressure	N/A	N/A	LC31
72	Frequency limit caused by remote controller	N/A	N/A	LH07

Outdoor unit point check function

- A check switch is included on the auxiliary PCB.
- Push SW1 to check the unit's status while running. The digital display shows the following codes each time the SW1 is pushed.

No. of phases	Display	Remark
00	Normal display	Displays running frequency, running state, or malfunction code
01	Indoor unit capacity demand code	--
02	Amendatory capacity demand code	
03	The frequency after the capacity requirement transfer	
04	The frequency after the frequency limit	
05	The frequency of sending to 341 chip	
06	Indoor unit evaporator temperature (T2)	If the temp. is lower than -9 degree, the digital display tube will show "-9".If the temp. is higher than 70 degree, the digital display tube will show "70". (If the indoor unit capability requirement is 0, the value is 0.)
07	Condenser pipe temp.(T3)	If the temp. is lower than -9 degree, the digital display tube will show "-9".If the temp. is higher than 70 degree, the digital display tube will show "70".
08	Outdoor ambient temp.(T4)	
09	Compressor discharge temp. (TP)	The display value is between 0~199 degree. If the temp. is lower than 0 degree, the digital display tube will show "0". If the temp. is higher than 99 degree, the digital display tube will show single digit and tens digit. (For example, the digital display tube show "0.5",it means the compressor discharge temp. is 105 degree. the digital display tube show "1.6",it means the compressor discharge temp. is 116 degree)
10	AD value of current	The display value is a hex number. For example, the digital display tube shows "Cd", it means AD value is 205.
11	AD value of voltage	
12	Indoor unit running mode code	Standby:0, Cooling:1,Heating:2, Fan only:3, Drying:4, Forced 13 cooling:6, Defrosting:7
13	Outdoor unit running mode code	
14	EXV open angle	Actual data/4. If the value is higher than 99, the digital display tube will show single digit and tens digit. For example, the digital display tube show "2.0",it means the EXV open angle is 120×4=480p.)
15	Frequency limit symbol	Bit7 Frequency limit caused by IGBT radiator Bit6 Frequency limit caused by PFC Bit5 Frequency limit caused by high temperature of T2. Bit4 Frequency limit caused by low temperature of T2. Bit3 Frequency limit caused by T3. Bit2 Frequency limit caused by TP. Bit1 Frequency limit caused by current Bit0 Frequency limit caused by voltage The display value is a hexidecimal number. For example, the digital display show 2A, then Bit5=1, Bit3=1, and Bit1=1. This means that a frequency limit may be caused by T4, T3, or the current.
16	Outdoor unit fan motor state	Off: 0, Turbo:1 High speed:2, Medium speed: 3, Low speed: 4, Breeze:5, Super breeze: 6 other speed:7

No. of phases	Display	Remark
17	IGBT radiator temp.	The display value is between 0~130 degree. If the temp. is higher than 99 degree, the digital display tube will show single digit and tens digit. (For example, the digital display tube show “0.5”,it means the IGBT radiator temp. is 105 degree. the digital display tube show “1.6”,it means the IGBT radiator temp. is 116 degree)
18	Indoor unit number	The indoor unit can communicate with outdoor unit well. General:1, Twins:2
19	Evaporator pipe temp. T2 of 1# indoor unit	--
20	Evaporator pipe temp. T2 of 2# indoor unit	
21	Reserved	
22	1# Indoor unit capacity demand code	
23	2# Indoor unit capacity demand code	
24	Reserved	
25	Room temp. T1 of 1# indoor unit	
26	Room temp. T1 of 2# indoor unit	
27	Average room temp. T1	If the temp. is lower than 0 degree, the digital display tube will show “0”.If the temp. is higher than 70 degree, the digital display tube will show “70”.
28	Reason of stop	
29	Evaporator pipe temp. T2B of 1# indoor unit	--
30	Evaporator pipe temp. T2B of 2# indoor unit	

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