Heat Recovery Ventilator unit with local passive recovery for indoor installation

HRV: HEAT RECOVERY VENTILATOR UNIT

HRV-2B-Mi D200 ÷ D2000

TECHNICAL BULLETTIN

NOMINAL AIRFLOWS FROM 200m³/h TO 2000m³/h

Page

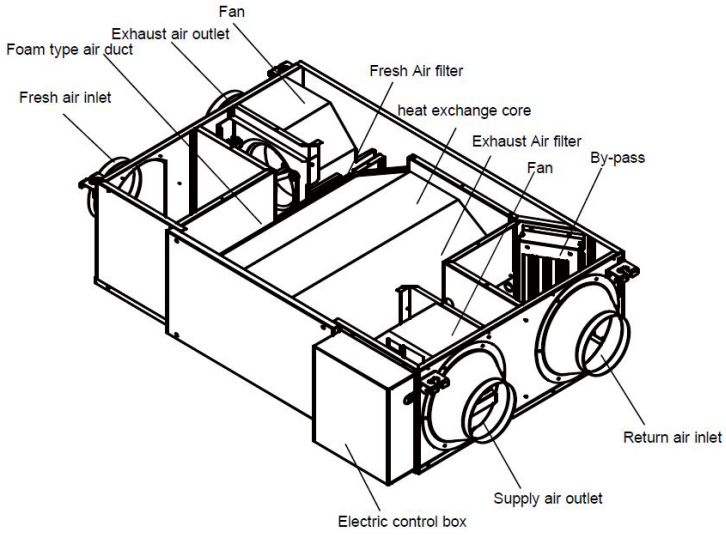
External Appearance

HRV-2B-Mi D200 ÷ HRV-2B-Mi D400

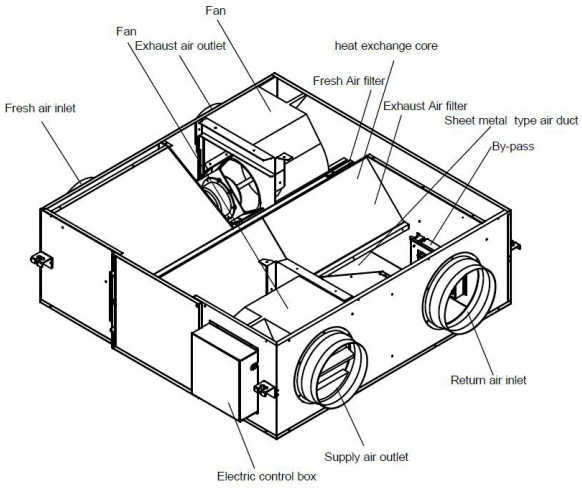
HRV-2B-Mi D500 ÷ HRV-2B-Mi D1000

HRV-2B-Mi D1500 ÷ HRV-2B-Mi D2000

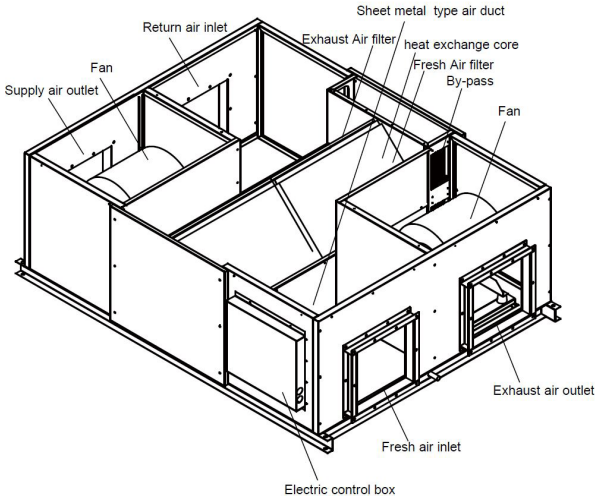
HRV-2B-Mi D200 ÷ HRV-2B-Mi D400



HRV-2B-Mi D500 ÷ HRV-2B-Mi D1000



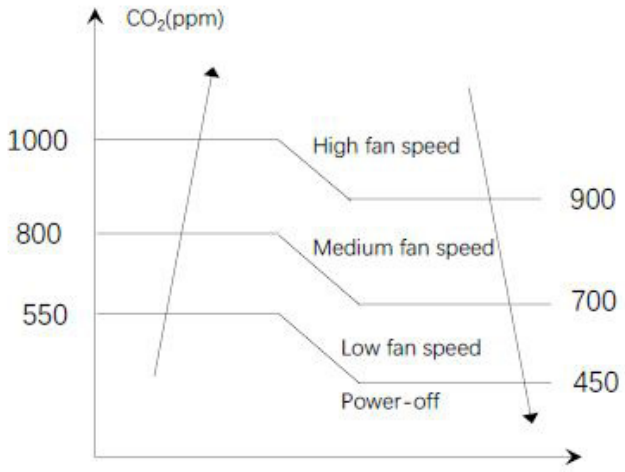
HRV-2B-Mi D1500 ÷ HRV-2B-Mi D2000



Features

HRV (Heat Recovery Ventilator) employs advanced technology; the heat exchange core is formed by special paper that is processed with chemical treatment and thus creates optimum results in temperature, humidity and cooling recovery.

- Wide capacity range up to 2000 m^3/h
- Wide indoor and outdoor ambient operation range from -7°C to +43°C
- High performance built-in DC fan motors ensure reliable performance complying with EU and ErP regulations
- Several operation modes; Auto, Bypass, Heat recovery, Free cooling mode
- Slim and compact design of units, making the installation more convenient
- Free cooling mode (Works when outdoor ambient temperature is below indoor ambient temperature)
- New heat exchange element with high efficiency paper
- Standard Built-in dust filter (G4); F7 filter for air supply available as accessory
- CO_2 sensor included, which automatically control fan speed according to different CO_2 concentration as reported in the below chart



- Drain piping needed only for sizes D1500 and D2000, thanks to sensible & latent heat transfer at heat exchanger

MODEL			HRV-2B-MI D200	HRV-2B-MI D300	HRV-2B-MI D400	HRV-2B-MI D500
Power supply		Ph-V-H	1-phase, 220-240V~50Hz			
Input power (standard G4) (H/M/L)		W	70/45/25	100/55/35	110/70/40	150/95/50
Input power (optional F7) (H/M/L)		W	80/40/25	100/55/35	110/70/40	150/95/50
Nominal Temperature Efficiency (standard G4) (H/M/L)		%	79.5/81.0/83.5	75.5/78.8/82.5	77.7/79.0/81.3	80.6/82.2/85.5
Nominal Enthalpy Efficiency (standard G4) (H/M/L)		%	75.0/77.5/79.6	72.1/75.0/79.3	73.5/75.3/78.0	74.0/76.6/80.5
Nominal Temperature Efficiency (optional F7) (H/M/L)		%	81.8/85.4/87.5	80.4/81.8/83.5	79.2/81.1/83.3	77.2/79.4/82.5
Nominal Enthalpy Efficiency (optional F7) (H/M/L)		%	81.2/83.1/85.0	79.4/81.2/84.0	79.6/81.8/84.2	72.3/75.6/78.6
Current		A	0.64	0.84	0.97	1.2
Indoor external static pressure (standard G4) (Hi speed)		Pa	100	90	100	90
Indoor external static pressure (optional F7) (Hi speed)		Pa	75	70	70	65
Nominal air flow		m^3/h	200	300	400	500
Sound Pressure (H/M/L)		dB(A)	33/29.5/25.5	36.5/33.5/30	36.5/32/28	36/30.5/24.5
Sound Power		dB	45	48	48	50
Net dimension (L×W×H)		mm	1195×801×272	1195×914×272	1276×1204×272	1311×1106×390
Packing size (L×W×H)		mm	1275×880×420	1275×994×420	1360×1284×420	1390×1244×540
Net/Gross weight		kg	53.6/63.5	59/75.5	71.5/91.5	74.4/98
Power supply wire	Wire qty.		3	3	3	3
	Code wire cross- section	mm^2	2,5	2,5	2,5	2,5
Controller			Wired controller, Centralized controller, BMS gateway			
Fresh air	Fresh Air Diameter	mm	Φ144	Φ144	Φ198	Φ244
	Air drop	Pa	52	179	218	357

MODEL			HRV-2B-MI D800	HRV-2B-MI D1000	HRV-2B-MI D1500	HRV-2B-MI D2000
Power supply		Ph-V-H	1-phase, 220-240V~50Hz			
Input power (standard G4) (H/M/L)		W	320/170/80	380/210/100	680/320/200	950/500/230
Input power (optional F7) (H/M/L)		W	320/170/80	420/230/100	680/320/200	950/500/230
Nominal Temperature Efficiency (standard G4) (H/M/L)		%	78.7/82.1/86.8	82.8/84.0/87.4	75.5/78.6/80.2	77.2/79.5/83.4
Nominal Enthalpy Efficiency (standard G4) (H/M/L)		%	72.3/75.4/79.0	76.0/76.0/80.1	69.4/71.2/74.8	74.7/77.0/80.6
Nominal Temperature Efficiency (optional F7) (H/M/L)		%	74.9/77.1/80.8	75.4/78.0/81.4	83.8/84.6/86.2	78.8/80.5/83.4
Nominal Enthalpy Efficiency (optional F7) (H/M/L)		%	71.1/74.4/78.0	67.3/71.1/75.0	74.6/76.2/78.8	71.1/75.0/79.6
Current		A	2.4	2.9	3.8	5.7
Indoor external static pressure (standard G4) (Hi speed)		Pa	140	160	180	200
Indoor external static pressure (optional F7) (Hi speed)		Pa	100	110	150	160
Nominal air flow		m^3/h	800	1000	1500	2000
Sound Pressure (H/M/L)		dB(A)	42/39/34	44/39/33.5	51.5/46.5/41.5	53/48.5/42.5
Sound Power		dB	55	54	69	70
Net dimension (L×W×H)		mm	1311×1286×390	1311×1526×390	1740×1375×615	1811×1575×685
Packing size (L×W×H)		mm	1390×1424×540	1390×1670×540	1830×1520×770	1900×1720×845
Net/Gross weight		kg	80/104	90/112	181.5/213	208.5/245
Power supply wire	Wire qty.		3	3	3	3
	Code wire cross- section	mm^2	2.5	2.5	2.5	2.5
Controller			Wired controller, Centralized controller, BMS gateway			
Fresh air	Fresh Air Diameter	mm	Φ244	Φ244	346×326	346×326
	Air drop	Pa	357	384	253	322

Note:
1. For the units model of HRV-2B-Mi D200~HRV-2B-Mi D2000, there are 3-speed adjustable air-volume (Hi, Med, Low).
2. The parameters in the above table are measured at high speed.
3. Sound levels are measured at 1.5m below the unit.

General technical data

Electrical data

Model name	Indoor unit				Power supply		
	Hz	Voltage	Min.	Max.	MCA	MFA	FLA
HRV-2B-Mi D200	50	220-240	220	240	1.3 A	10 A	10.4 A
HRV-2B-Mi D300	50	220-240	220	240	1.7 A	10 A	1.36 A
HRV-2B-Mi D400	50	220-240	220	240	2.0 A	10 A	1.6 A
HRV-2B-Mi D500	50	220-240	220	240	2.5 A	16 A	2 A
HRV-2B-Mi D800	50	220-240	220	240	5.0 A	16 A	4 A
HRV-2B-Mi D1000	50	220-240	220	240	6.0 A	16 A	4.8 A
HRV-2B-Mi D1500	50	220-240	220	240	8.0 A	30 A	6.4 A
HRV-2B-Mi D2000	50	220-240	220	240	10.0 A	30 A	8 A

MCA = Max. Current Amps. (A)
MFA = Max. Fuse Amps. (A)
FLA = Full Load Amps. (A)

Notes:
Voltage range: Units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.
Maximum allowable voltage variation between phases is 2%.
Selection wire size based on the value of MCA.
MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth circuit breaker).

Operating Condition Limits

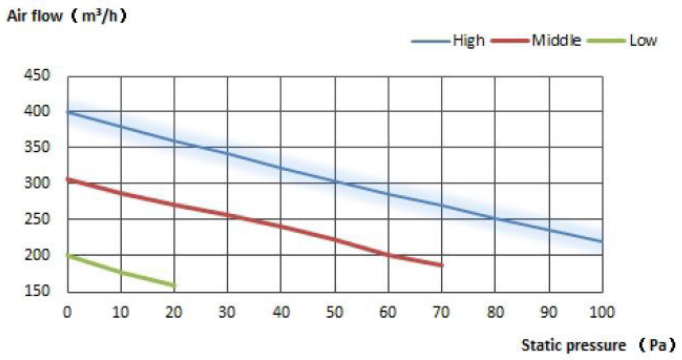
Model	Outdoor air temperature	Room Temperature	Room humidity
All models	-7°C ~ 43°C	-7°C ~ 43°C	Lower than 80% If higher than 80%, the surface of indoor unit may be condensed or the condensate will be blown from air outlet.

Note: Protection or error may occur if the unit is operated beyond the below written operation limits

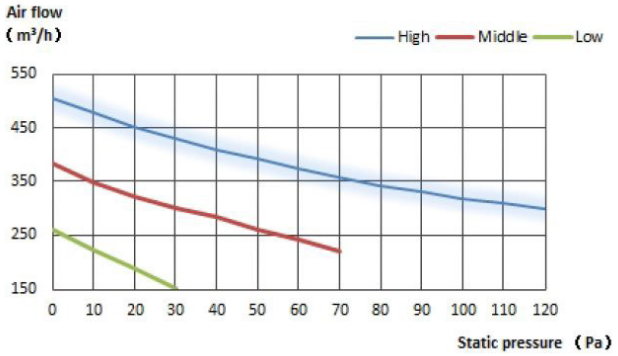
Fan Performance with standard G4 filter

The horizontal axis is the Static Pressure (Pa) while the vertical axis represents the Air Flow (m3/h). The characteristic curve for the “H” “M” and “L” fan speed control.

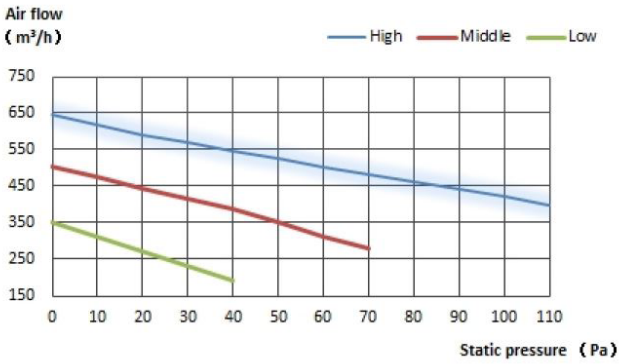
HRV-2B-MI D200



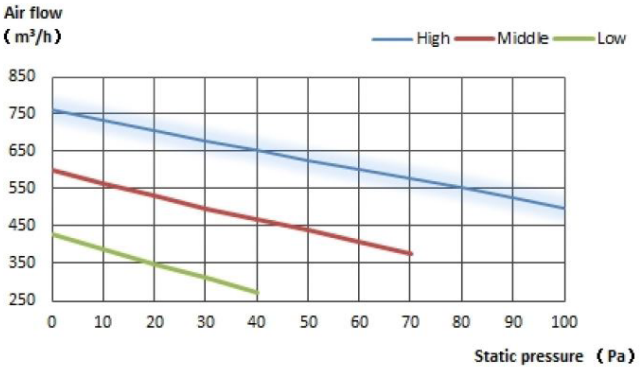
HRV-2B-MI D300



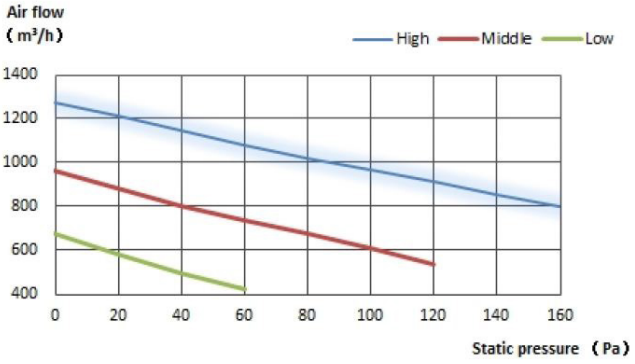
HRV-2B-MI D400



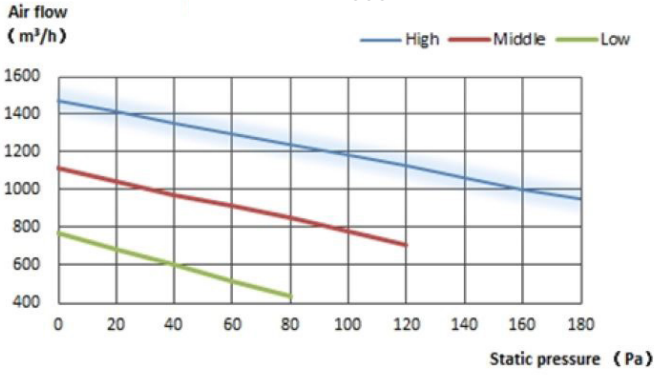
HRV-2B-MI D500



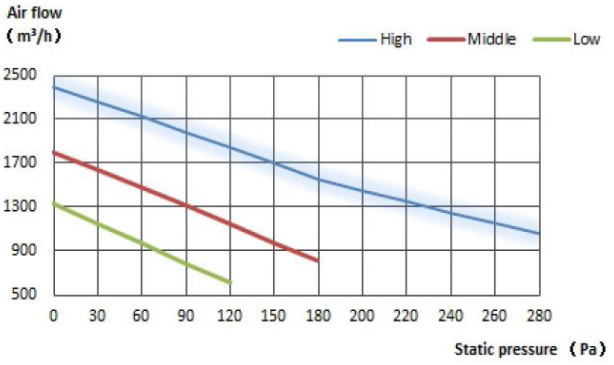
HRV-2B-MI D800



HRV-2B-MI D1000



HRV-2B-MI D1500



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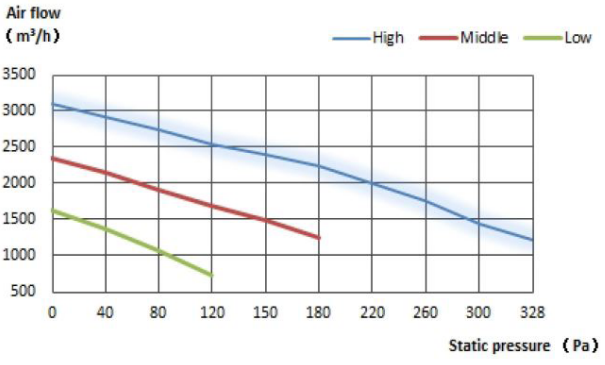
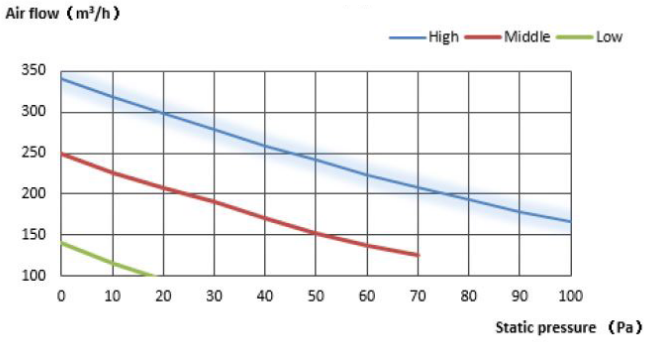


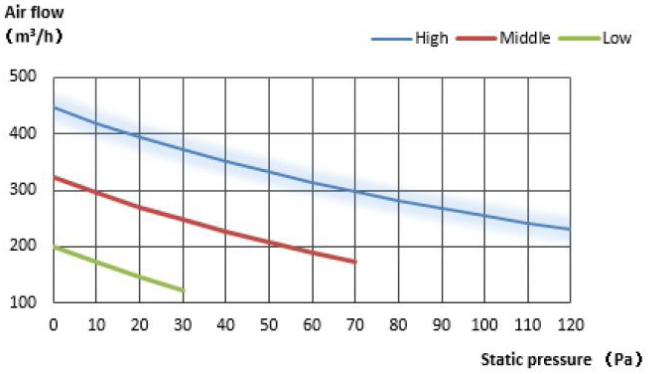
Fan Performance with optional F7 filter

The horizontal axis is the Static Pressure (Pa) while the vertical axis represents the Air Flow (m3/h). The characteristic curve for the “H” “M” and “L” fan speed control.

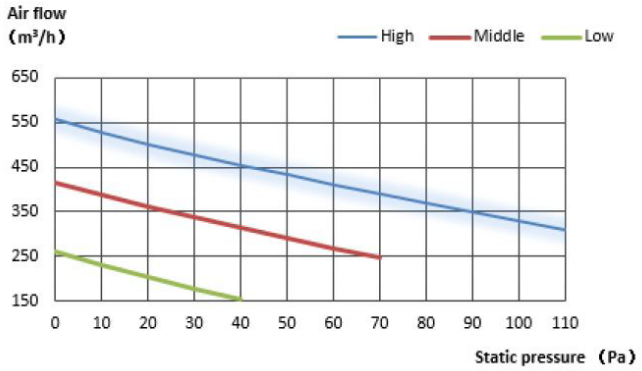
HRV-2B-MI D200



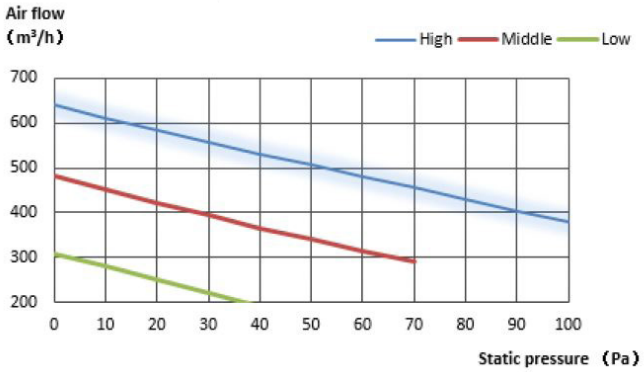
HRV-2B-MI D300



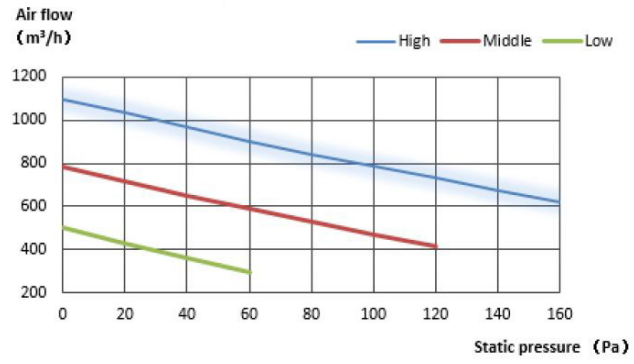
HRV-2B-MI D400



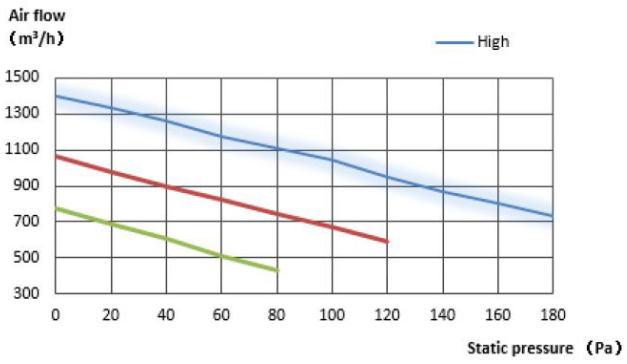
HRV-2B-MI D500



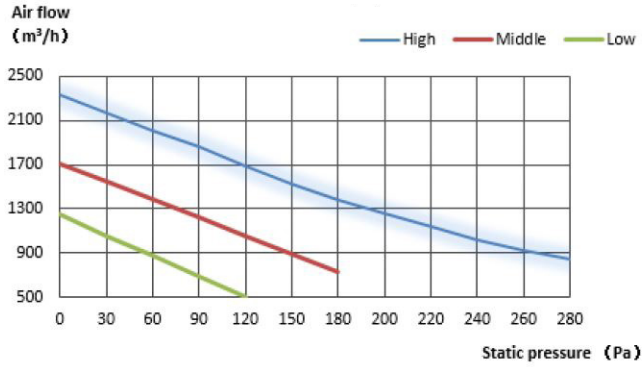
HRV-2B-MI D800



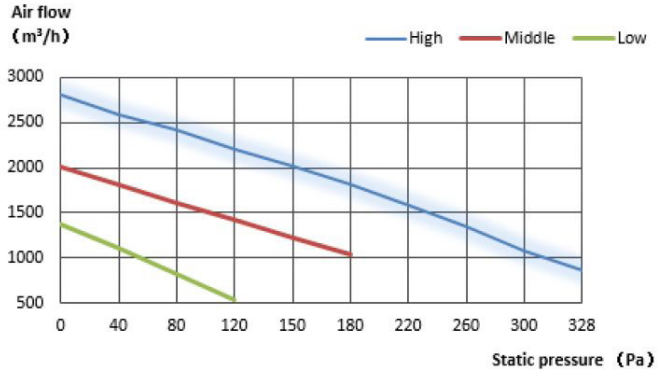
HRV-2B-MI D1000



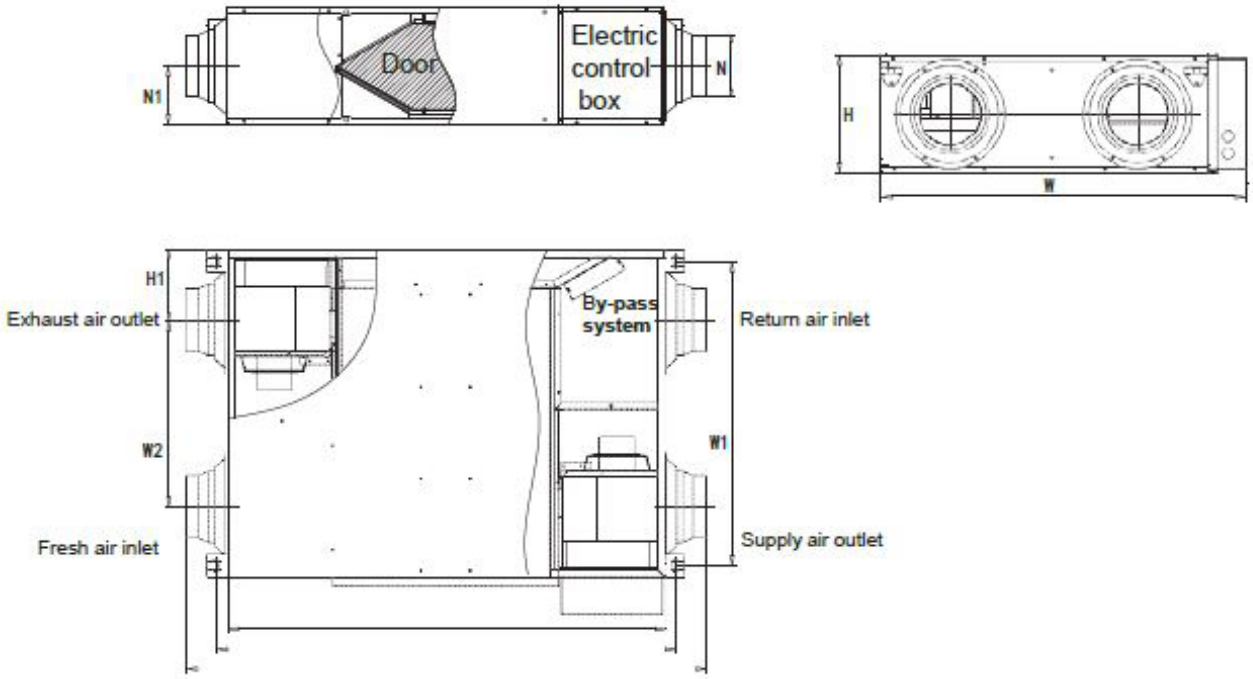
HRV-2B-MI D1500



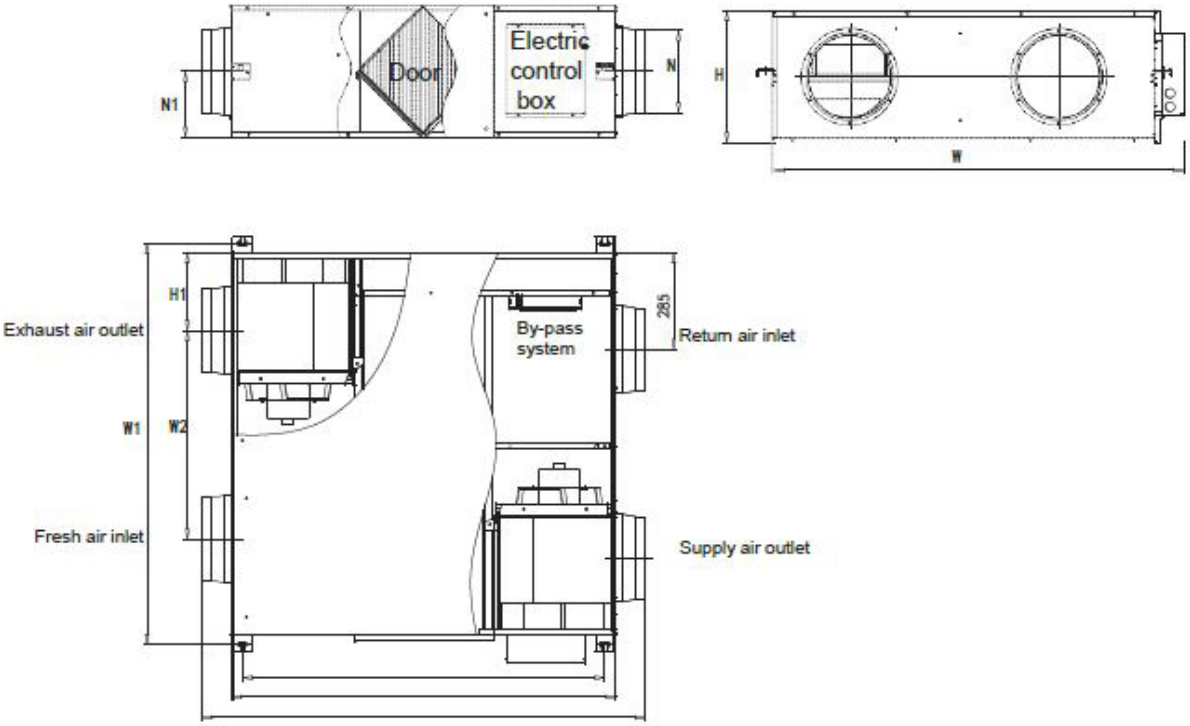
HRV-2B-MI D2000



HRV-2B-Mi D200~HRV-2B-Mi D400



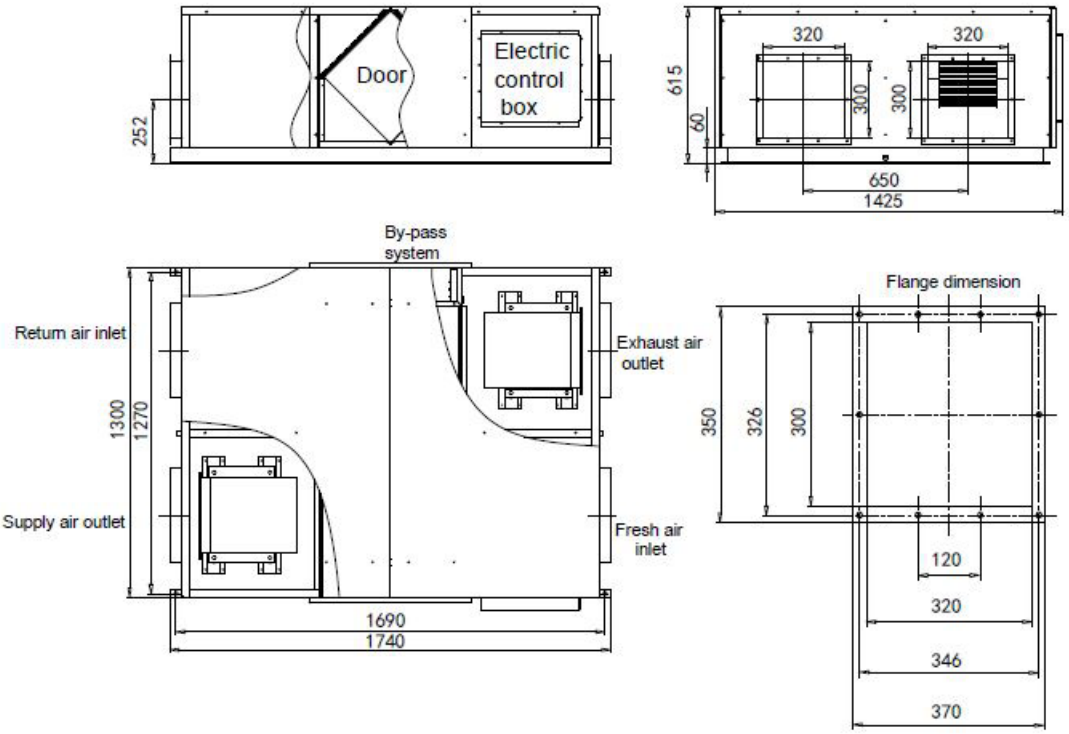
HRV-2B-Mi D500~HRV-2B-Mi D1000



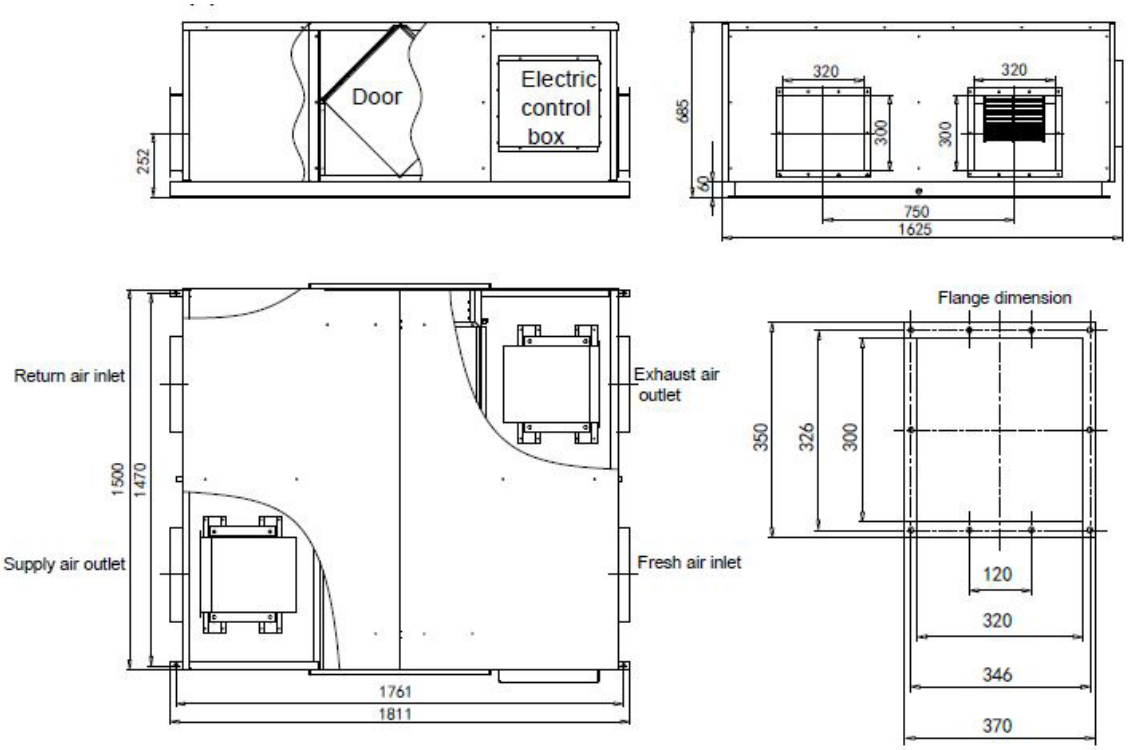
MODEL	L	L1	L2	W1	W2	W	H	H1	N	N1
HRV-2B-Mi D200	1007	1054	1195	588	356	801	272	142	Φ144	136
HRV-2B-Mi D300	1007	1054	1195	701	431	914	272	163	Φ144	136
HRV-2B-Mi D400	1081	1129	1276	991	595	1204	272	202	Φ198	136
HRV-2B-Mi D500	1071	1138	1311	1005	465	1106	390	227	Φ244	195
HRV-2B-Mi D800	1071	1138	1311	1185	616	1286	390	229	Φ244	195
HRV-2B-Mi D1000	1071	1138	1311	1431	764	1526	390	230	Φ244	195

Dimensions

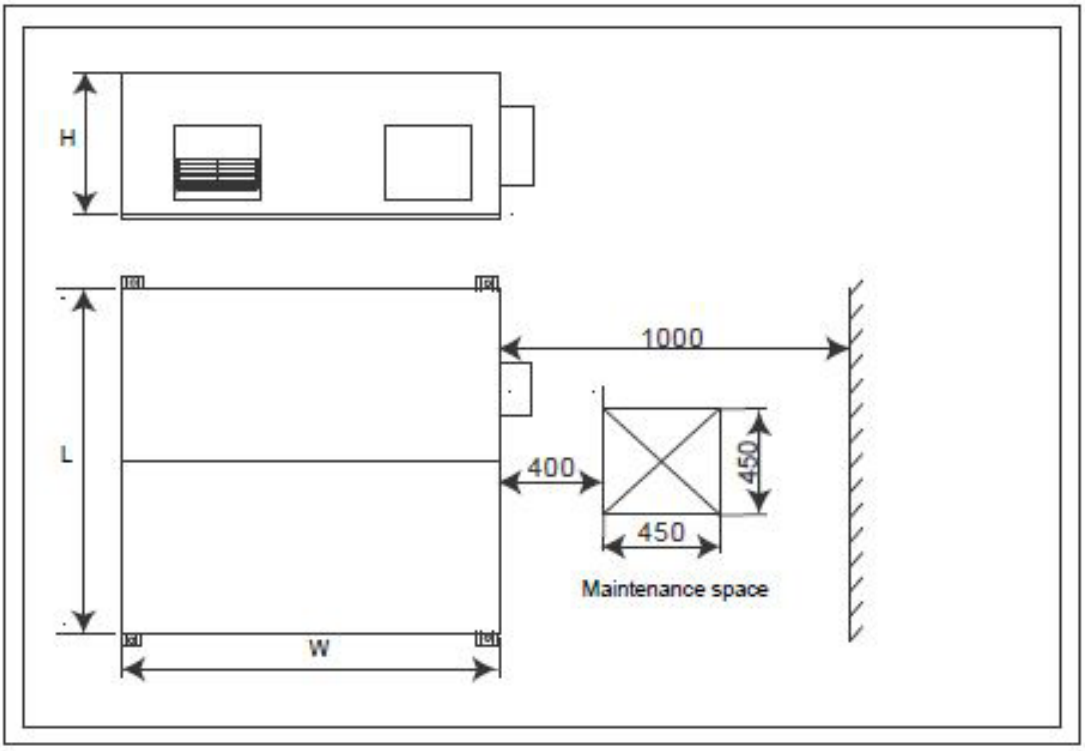
HRV-2B-Mi D1500



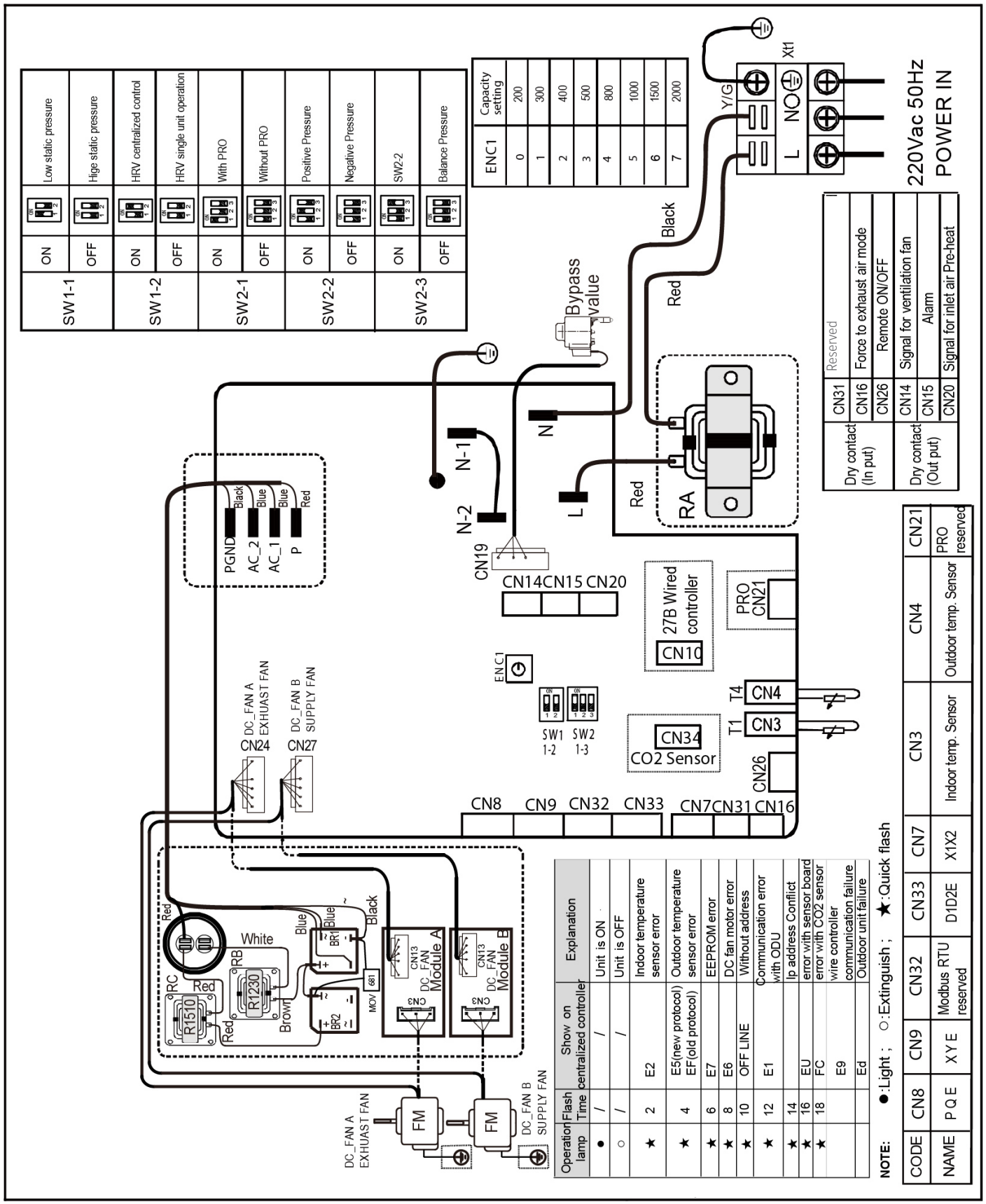
HRV-2B-Mi D2000



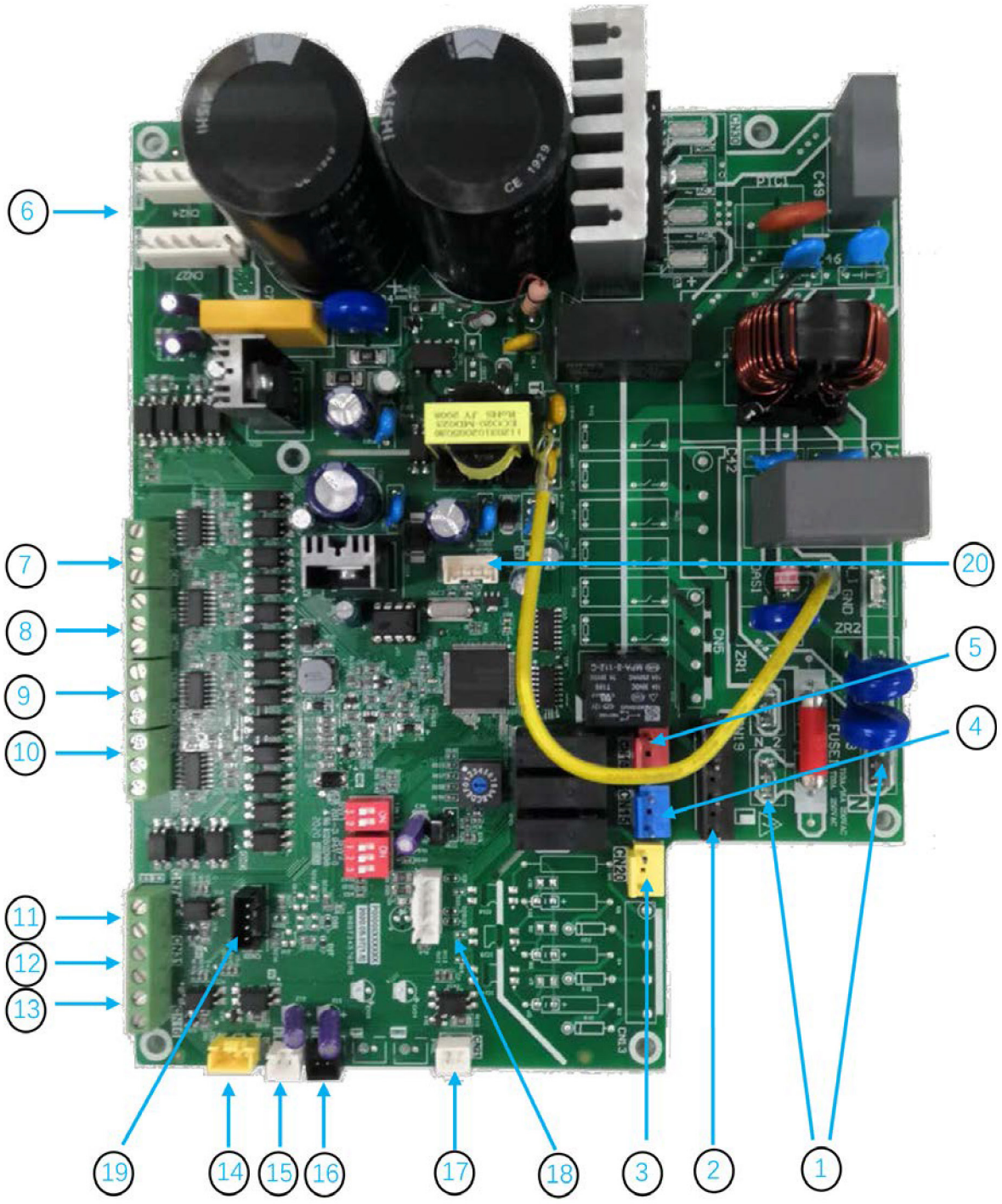
Maintenance Spaces



Wiring diagram



Main PCB Ports



Picture shows all the terminals. Some reserved terminal will not be existed when mass production. Reserved terminals are showing in following table.

Main PCB Description

Table HRV-2B-Mi D200 - D300 - D400 - D500 - D800 - D1000 - D1500 - D2000 Main PCB ports

Label in Figure 1.1	Code	Content	Port voltage
1	L,N	AC power input	220V AC
2	CN19	bypass port	220V AC
3	CN20	E-heat control	220V AC
4	CN15	Alarm	220V AC
5	CN14	Signal for ventilation fan	220V AC
6	CN24/CN27	DC fan	310 DC
7	CN8	P Q E communication port	2.5-2.7V DC
8	CN9	X Y E communication port (reserved)	2.5-2.7V DC
9	CN32	MODBUS communication port (reserved)	2.5-2.7V DC
10	CN33	D1 D2 E communication port	2.5-2.7V DC
11	CN7	X1 X2 communication port	18V DC
12	CN31	Reserved	/
13	CN16	Force to exhaust air	/
14	CN26	ON/OFF	/
15	CN3	T1	5V DC
16	CN4	T4	5V DC
17	CN21	Pressure differential switch (reserved)	/
18	CN10	27B Wired controller(reserved)	5V DC
19	CN28	CO_2 Sensor Box	5V DC
20	CN25	Program burning port	5V DC

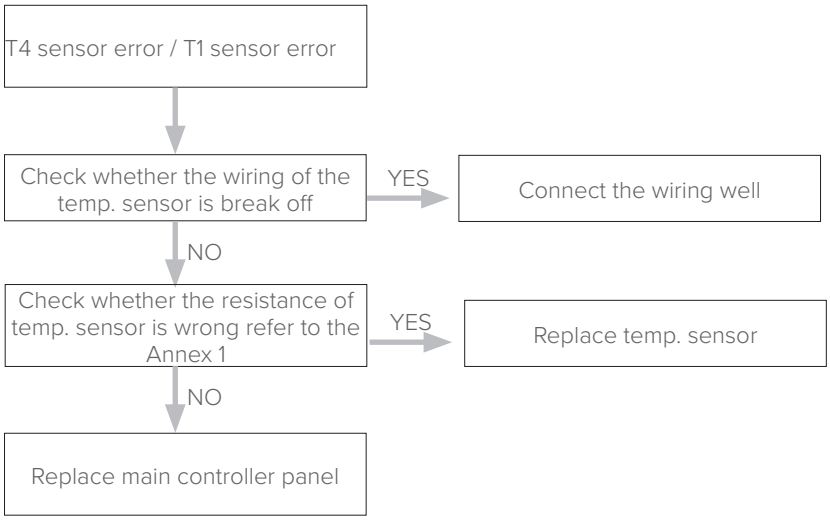
1. CN14: When the wire controller sets the ventilation fan ON, the port is closed, the external ventilation fan opens; When the wire controller sets the ventilation fan OFF, the port is open, the external ventilation fan close.
2. CN16: The dry contact port is open, HRV turn on negative pressure mode. When the dip switch mode is inconsistent with the dry contact mode, the dry contact mode will be on..
3. CN20, CN31: The dry contact port is open, HRV realize electrical auxiliary heat function. CN31 connects to third party signals.

LED2 Explanations:

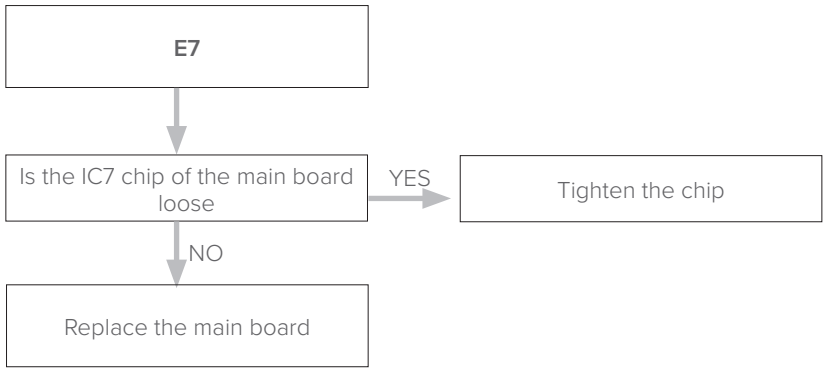
Number	LED2	Flashing Times	Explanation	Display Content	Description
1	●	/	ON	/	Unit is ON
2	O	/	OFF	/	Unit is OFF
3	★ 2	2	Indoor temperature Sensor(T1)	E2	
4	★ 4	4	Outdoor temperature Sensor(T4)	E5	Fault of outdoor temperature Sensor(T4) , the old protocol shows that EF is not E5, and the new protocol shows E5;
5	★ 6	6	EEPROM error	E7	
6	★ 8	8	DC Fan motor error	E6	
7	★ 10	10	Without address	OFF LINE	
8	★ 12	12	Communication error with ODU	E1	
9	★1 4	14	IP address Conflict		The same address is set when connecting to multiple IDU.
10	★ 16	16	Error with sensor board	EU	Only valid when CO_2 sensor is selected
11	★ 18	18	Error with CO_2 sensor	FC	Only valid when CO_2 sensor is selected, The wired controller displays CO_2 concentration and the area displays CO_2 --PPM
12			Wire controller communication failure		The wired controller displays E9 fault code
13			Outdoor unit failure		The wired controller displays Ed fault code

(Priority of failure: E1->E2->E5->E6->E7->Ed->EU->FC,Decrease from left to right)
●: Light
O: Extinguish
★: Quick Flash (2 times/s)
Each fault flashes at an interval of 3 seconds.

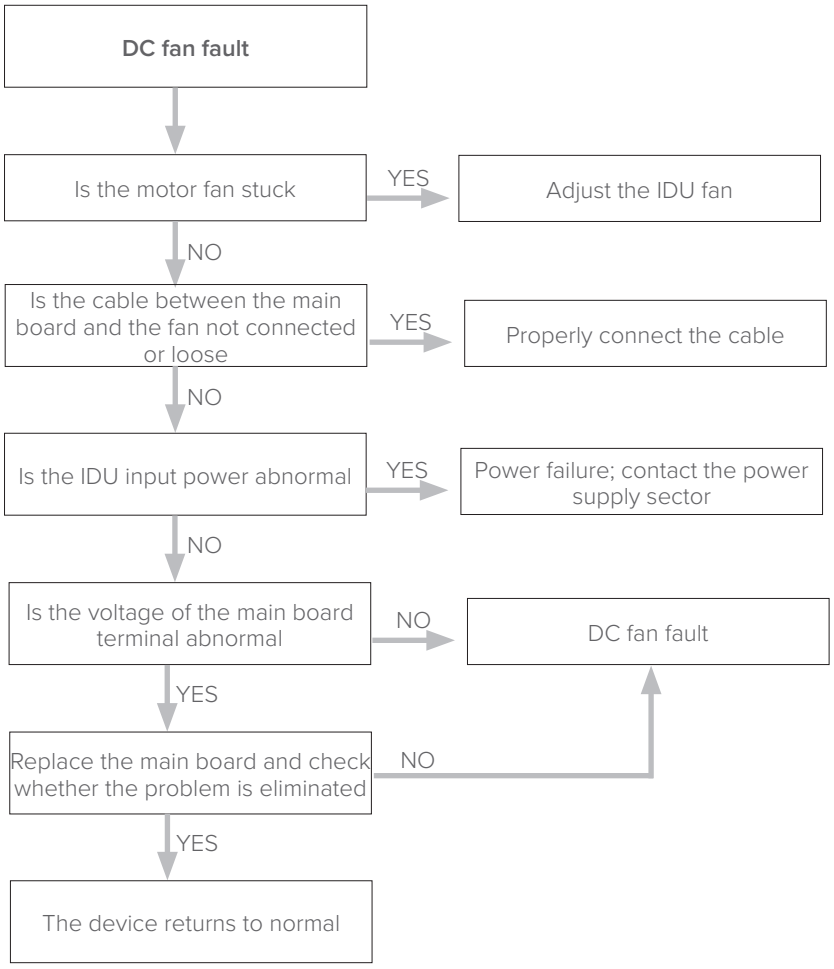
E2/E5/EF:T4/T1 Temperature Sensor Troubleshooting:



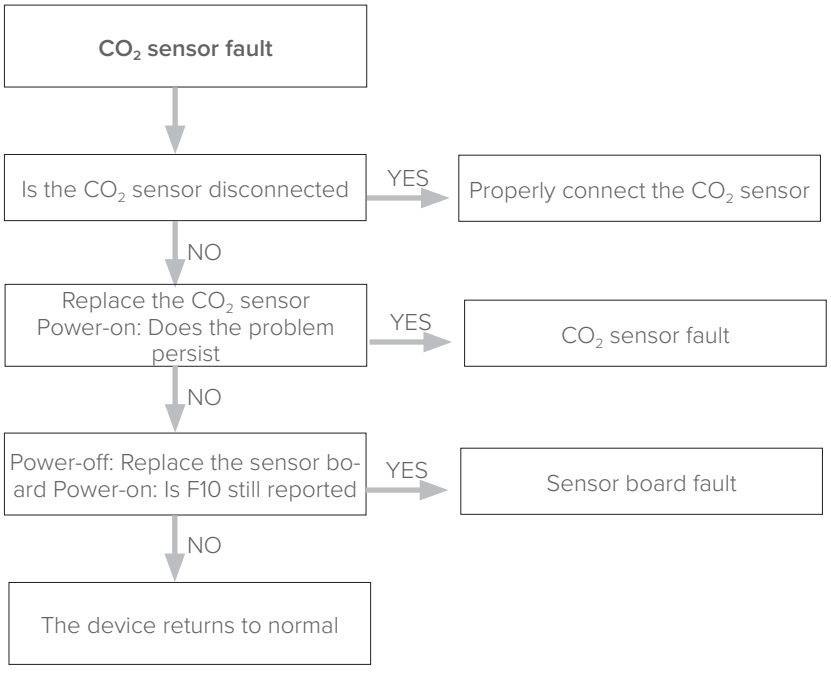
E7: EEPROM fault



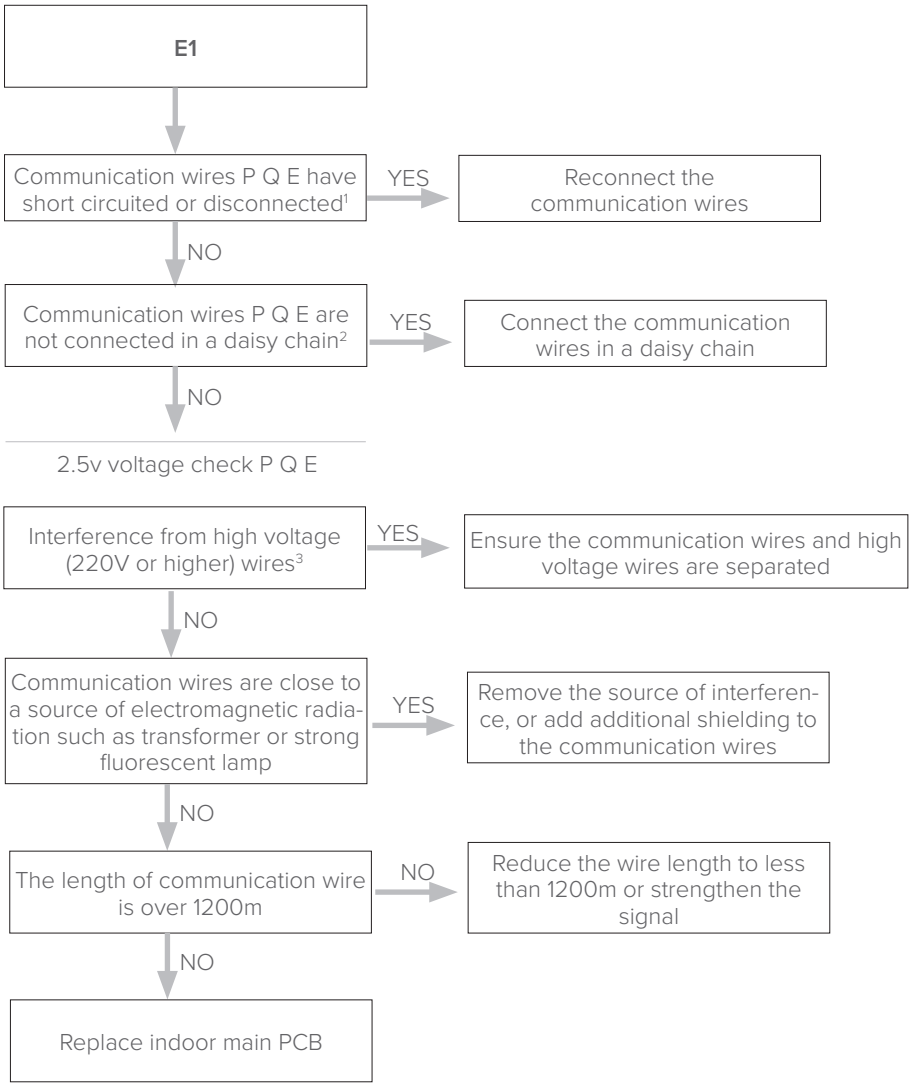
E6: DC fan fault



EU/FC: CO_2 sensor concentration display error



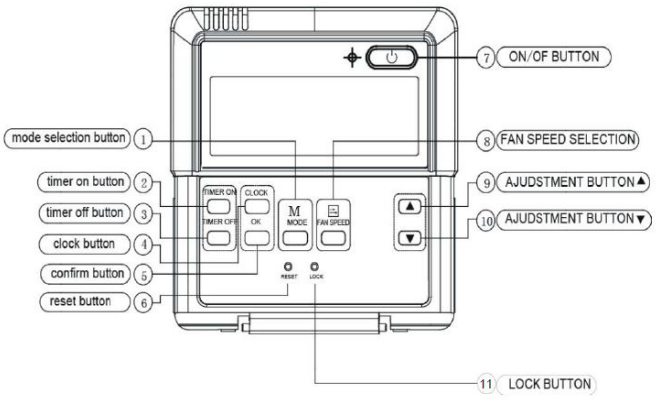
E1: ODU communication failure



Maintenance

1. During early use, the operation of the fan should be checked regularly.
2. The cleaning regulation for filter mesh depends on local environment. It can be cleaned by vacuum dirt exhauster or water; if heavy dust accumulates, neutral detergent should be used to clean it thereafter should be dried in shady and cool place for 20 to 30 minutes and replace it.
3. Clean the core at least 2 years a time by vacuum dirt exhauster to remove dust and foreign substances in the unit assemblies, do not touch the assemblies by exhauster and flush by water to avoid core damage.
4. Check the fan every half a year to maintain that it's in well shape and balance.

Controller
Wired controller KJR-27B (Optional 1)



The basic operation conditions of wired controller are as follows:
1. The range of power supply voltage: the voltage input is 5V DC.
2. Ambient temperature range: -15°C ~ +43°C.
3. Ambient humidity range: RH40%°C ~ RH90%.
4. The safety certification of electric control should conform to GB4706.32-2004, GB/T7725-2004.

Name and functions of buttons on wired controller

1. Mode selection button:

It is used to select mode, push the button one time, then the operation modes will change in turn as follows:
AUTO → HEAT RECOVERY → EXHAUST → BYPASS SUPPLY

Notes:
1. AUTO mode: The controller chooses heat exchange mode or bypass mode according to the temperature difference between outdoors and indoors. Both fans are set to run at low speed.
2. Heat exchange mode: The flows of incoming and outgoing air pass close to each other, allowing heat transfer between the two channels.During summer, incoming air is cooled by the indoor air being exhausted and in winter, incoming air is warmed.
3. Bypass mode: In mild climates or seasons, where temperature and humidity differences between indoors and outdoors are small, the HRV can work as a conventional ventilation fan. In standard bypass mode the supply and exhaust fans run at the same speed.

2. Timer on button:

Push the button to set TIMER ON, each time you push the button the time moves forward by 0.5 hours. When the set time is over 10 hours, each time you push the button the time moves forward by 1 hour. If want to cancel the TIMER ON, then adjust the time of TIMER ON as 0.0.

3. Timer on button:

Push the button to set TIMER OFF, each time you push the button the time moves forward by o.5 hours. When the set time is over 10 hours, each time you push the button the time moves forward by 1 hour. If want to cancel the TIMER OFF, then adjust the time of TIMER OFF as 0.0.

4 CLOCK button:

Normally display the clock set currently (display 12:00 for the first electrifying or resetting). When push the button for 4 seconds, the hour part on the clock display flashes every 0.5 seconds, then push button ▲ and ▼ to adjust hour; Push the button CLOCK again, the minute part flashes every 0.5 seconds, then push and button to adjust minute. When set clock or alter clock setting, must push the confirm button to complete the setting

5 Confirm button:

The button is used at the state of CLOCK adjustment. After select the time, push the button to confirm then exit, the current clock will display.

6 RESET button (hidden):

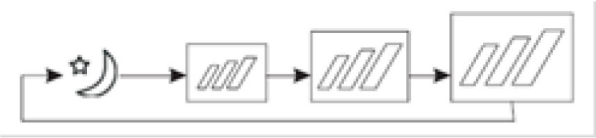
Use a small stick with a diameter of 1mm to push the RESET button to cancel the current settings and get into the condition of resetting.

7 ON/OFF button:

Push the button at the condition of OFF, the OPERATION lamp lights, and the wire controller enters into ON operation, simultaneously sends the information of operation mode set currently, temperature, fan speed, timer etc. Push the button at the condition of ON, the OPERATION lamp extinguishes simultaneously sends the OFF. If having set TIMER ON or TIMER OFF, the wire controller will cancel these settings before entering into OFF, close the concern indicator, and then send the OFF information.

8 Fan speed selection button (FAN SPEED)

Select any one fan speed from " ", "LOW"," MED", and "HIGH". Each time push the button, the fan speed will change in turn as follow.



9 Adjustment button:

The button is only for time adjustment. Push the ▲ button, time increases.

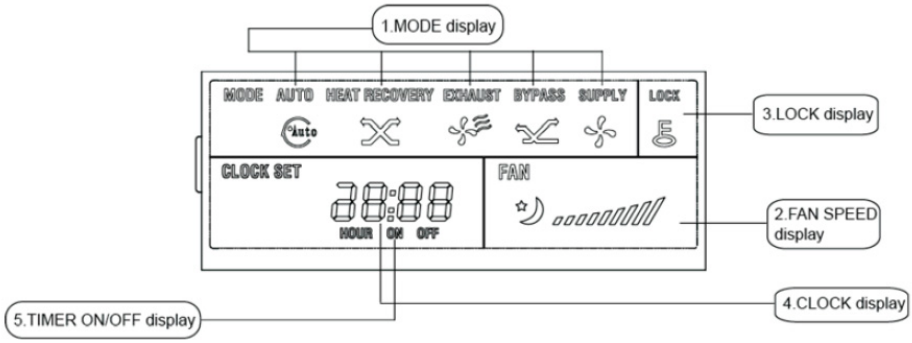
10 Adjustment button:

The button is only for time adjustment. Push the ▼ button, time decreases.

11 LOCK button (hidden):

Use a small stick with the diameter of 1mm to push the LOCK button to lock the current setting, push the button again then cancel the setting.

Name and functions of LCD on wired controller



1 Mode select display (MODE):

Press MODE button to select “AUTO”, “HEAT RECOVERY”, "EXHAUST","BYPASS", or "SUPPLY” mode.

2 Fan speed display (FAN SPEED)

Press FAN SPEED to select fan speed from " ", "LOW"," MED”, and "HIGH".

NOTE: " " stand for fan working speed in sleep mode.

3 Lock display

Press LOCK to display the icon of LOCK. Press the button again then the icon of LOCK disappears. In the mode of LOCK, all the buttons are invalid except for LOCK button.

4 CLOCK display

Usually display the clock set currently. Press the button CLOCK for 4 seconds, the HOUR part will flash, press button ▲and▼ to adjust HOUR. Press the button CLOCK again, the minute part flash, press button ▲or▼to adjust MINUTE. After clock set or clock operation, it must press CONFIRM to complete the set.

5 TIMER ON/OFF display:

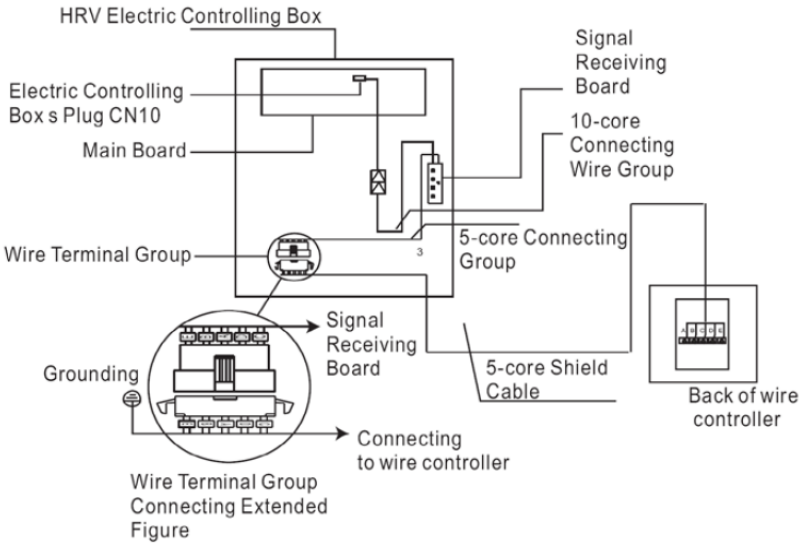
Display ON at the state of TIMER ON adjustment or after only set the TIMER ON; Display OFF at the state of TIMER OFF adjustment or after only set the TIMER OFF; Display ON/OFF if simultaneously set the mode of TIMER ON and TIMER OFF.

Address Query and Setting

1. Hold button LOCK for 5 seconds to enter the internal address setting interface; hold button LOCK again for 5 seconds to exit.
2. Query and set the address in the address setting interface.
3. Address query
Press MODE button to send inquiry code
Inquiry code form: L,H,H',O,O',P,P', S, L,H,H',O,O',P,P'
H—B5H
O—F5H
P—FFH
4. Address setting
Press FAN SPEED to send the setting code
Press Up or Down to adjust the address
Setting code form: L,H,H',O,O',P,P', S, L,H,H',O,O',P,P'
H—B5H
O—F5H
P—Address(00-63)

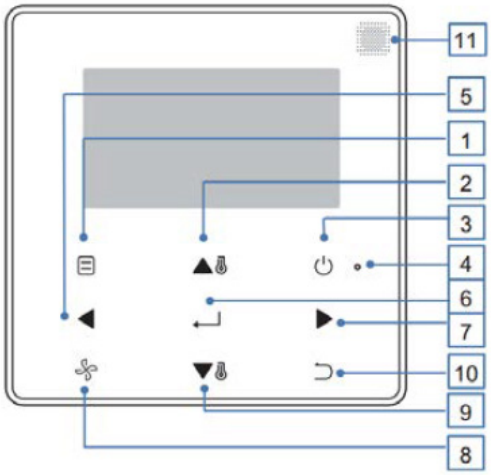
Installation

Connection method and the principle diagram show as follow:



Wired controller WDC-120G/WK (Optional 2)

Name and functions of buttons on wired controller



No	Button	Description
1	Mode	Selects the running mode
2	Temp UP button	Increases the set temperature
3	ON/OFF button	Turns ON/OFF the IDU
4	LED (Green)	Stays solid green when the unit is powered ON and blinks if there is a fault
5	Left button	Selects options to the left
6	MENU/OK button	Enters the menu/sub-menu ; Confirms selection
7	Right Button	Selects options to the right
8	Fan	Selects the Fan speed
9	TEMP DOWN button	Reduces the set temperature
10	BACK button	Returns to the previous level; press this button for 3 seconds to Lock/Unlock
11	Remote Controller Signal receiving window	Receives the remote controller control signal

1 Setting the MODE:
It is used to select mode, push the button one time, then the operation modes will change in turn as follows:
AUTO➔HEAT EXCHANGE➔BYPASS➔FREE COOL

2 Setting the Temperature:
Press TEMP UP or TEMP DOWN to adjust the temperature.

3 ON/OFF:
Press ON/OFF to turn the IDU ON/OFF. The LED is lit when the unit is turned ON as shown in the picture below:

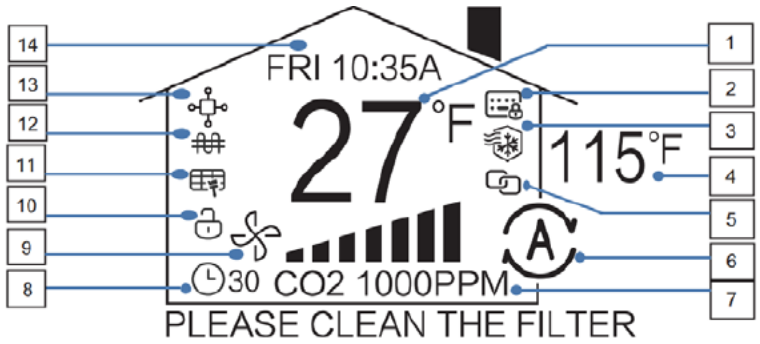
4 Fan speed selection button (FAN SPEED)
Press FAN to set the fan speed circulation as shown in the picture below:

5 Key lock:
Press the BACK button for 3 seconds while the backlight is illuminated. The icon is displayed. All the buttons are disabled. Use the button now and the icon will flicker 3 times to prompt.
To cancel the key lock mode, hold BACK for 3 seconds while the backlight is already illuminated

6 Reset Filter Indicator:
When it is to clean or replace the filter, the filter indicator will be displayed. Hold the fan speed button and Left at the same time for 1 second to clear the icon display.

7 Quick Reference Menu:
Press the Menu/OK button to enter the Quick reference menu. Press TEMP UP and TEMP DOWN to select and item. Press MENU/OK to enter. On the last level of the menu, press MENU/OK to confirm and return to the homepage. Press BACK to confirm and return to the previous level. If a button on the Menu interface is not pressed within 30 seconds, the system will return to the homepage. This menu provides the basic functions which can be operated by the end customer while operating the indoor unit.

19.2.2 Name and functions of LCD on wired controller



NO	Description	Implication
1	Set Temperature	Displays the set indoor temperature
2	Central Controller / IMMPRO Locking Icon	Turns ON when the central controller/IMMPRO locks the IDU functions and the wired controller cannot use the corresponding functions of the IDU
3	Cold Draft Prevention	In heating mode the fan does not run when the indoor unit heat exchanger temperature is equal to or lower than the setting temperature
4	Outdoor temperature	Displays the current outdoor temperature
5	Interlock Function	When the HRV is connected via PQE with AC system, HRV can be on/off automatically based on IDU running status
6	Mode display	Displays the running mode set by the wired controller
7	CO_2 concentration display	Displays the CO_2 CONCENTRATION
8	Extension or Timer Icon	Turns ON when the EXTENSION or Timer is enabled on the wired controller
9	Fan Speed display	Displays the fan speed set by the wired controller
10	Function and key locking icon	Turns on when the wired controller locks the on/off function, mode, schedule, temperature setting or engages the button lock
11	Filter Indicator	The following icon will light up if the pressure difference switch detects that the pressure is not proper
12	E- Heat Icon	Turns On when the E-heat is on
13	Secondary Wired Controller icon	This icon will be displayed when the wired controller is set as a secondary wired controller
14	Time Display	Displays the time

Notes:
1. The HRV unit is not equipped with controller as standard, please purchase controller separately.
2. The standard functions can be controlled by wired controller KJR-27B.
3. The CO_2 sensor function, the differential pressure sensor function, group control function, week timer function, interlock function, delayed power-off function and parameter setting and query function should be customized; these functions are possible in wired controller WDC-120G/WK.
4. The HRV can be centralized control with VRF system through centralized controller CCM-180A/WS and CCM-270A/WS.
5. The HRV can be achieved network control with VRF system through BMS gateway GW-MOD(A) and IMMP-BAC (IMMPRO Only).

Appendix

The following table shows the Temperature characteristics with resistance of temperature sensor used in the HRV

Temp.°C	Resistance KΩ
-10	62.2756
-9	58.7079
-8	56.3694
-7	52.2438
-6	49.3161
-5	46.5725
-4	44
-3	41.5878
-2	39.8239
-1	37.1988
0	35.2024
1	33.3269
2	31.5635
3	29.9058
4	28.3459
5	26.8778
6	25.4954
7	24.1932
8	22.5662
9	21.8094
10	20.7184
11	19.6891
12	18.7177
13	17.8005
14	16.9341
15	16.1156
16	15.3418

Temp.°C	Resistance KΩ
17	14.6181
18	13.918
19	13.2631
20	12.6431
21	12.0561
22	11.5
23	10.9731
24	10.4736
25	10
26	9.5507
27	9.1245
28	8.7198
29	8.3357
30	7.9708
31	7.6241
32	7.2946
33	6.9814
34	6.6835
35	6.4002
36	6.1306
37	5.8736
38	5.6296
39	5.3969
40	5.1752
41	4.9639
42	4.7625
43	4.5705

Temp.°C	Resistance KΩ
44	4.3874
45	4.2126
46	4.0459
47	3.8867
48	3.7348
49	3.5896
50	3.451
51	3.3185
52	3.1918
53	3.0707
54	2.959
55	2.8442
56	2.7382
57	2.6368
58	2.5397
59	2.4468
60	2.3577
61	2.2725
62	2.1907
63	2.1124
64	2.0373
65	1.9653
66	1.8963
67	1.830
68	1.7665
69	1.7055
70	1.6469

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