45MBAA

Verical Air Handler Sizes 18 to 60

Product Data

Fig. 1 – Sizes 18 to 60

NOTE: Images are for illustration purposes only and the actual models may differ slightly.

NOTE: See the Installation Manual for the Amin table.

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INDUSTRY LEADING FEATURES / BENEFITS

A PERFECT BALANCE BETWEEN BUDGET LIMITS, ENERGY SAVINGS AND COMFORT

The **45MBAA** series air handler unit ductless systems are a matched combination of an outdoor condensing unit and an indoor fan coil unit connected only by refrigerant tubing and wires.

This selection of fan coils permits creative solutions to design problems such as:

- Add-ons to current space (an office or family room addition)
- Special space requirements
- When changes in the load cannot be handled by the existing system
- Historical renovations or any application where preserving the look of the original structure is essential.

These compact indoor fan coil units take up very little space above the ceiling. Advanced system components incorporate innovative technology to provide reliable cooling performance at low sound levels.

LOW SOUND LEVELS

When noise is a concern, the ductless systems are the answer. The indoor units are whisper quiet. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through ductwork.

SECURE OPERATION

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through the ductwork. In addition, since outdoor units can be installed close to an outside wall, coils are protected from vandals and severe weather.

FAST INSTALLATION

This compact ductless system is simple to install. A mounting bracket and duct work is needed for the indoor units, and only wire and piping need run between the indoor and outdoor units. These units are fast and easy to install ensuring minimal disruption to customers in the home or workplace. This makes the air handler systems the equipment of choice, especially in retrofit situations.

On all indoor units, service and maintenance expense is reduced due to easy accessible service panels. In addition, these air handler systems have extensive self-diagnostics to assist in troubleshooting.

BUILT-IN RELIABILITY

The air handler ductless system indoor and outdoor units are designed to provide years of trouble-free operation.

The air handler indoor units include protection against freeze-up and high evaporator temperatures on heat pumps.

The condensing units on the heat pumps are protected by a three minute delay that provides over-current protection and high temperature protection prior to the start of the compressor.

ECONOMICAL OPERATION

The air handler ductless system design allows individual or multi-room heating or cooling when required. There is no need to run large supply-air fans or chilled water pumps to handle a few spaces with unique load patterns.

LEAK MITIGATION

The unit is equipped with a refrigerant leak detection sensor.

EASY-TO-USE CONTROLS

The air handler units have microprocessor-based controls to provide the ultimate in comfort and efficiency. The user-friendly control provides the interface between the user and the unit.

MULTI-POISE INSTALLATION

Designed for maximum installation flexibility. The secondary drain built-in allows the unit to be mounted in an upflow, downflow, left or right installation depending on existing conditions.

24V INTERFACE

The built-in 24V Interface allows users to control the ductless system with a third party heat pump thermostat.

AGENCY LISTINGS

All systems are listed with AHRI (Air Conditioning, Heating & Refrigeration Institute), UL/ETL and CSA.

FULL MULTI-POSITION INSTALLATION

This Air Handler is capable of upflow, downflow horizontal left, or horizontal right configurations.

INSTALLATION CONVENIENCE

It simplifies the airflow volume adjustment process and saves lots of installation efforts. The traditional adjustment method needs the installers to manually set the motor speed according to the installation instruction and ducting design.

EASY FAULT CODE CHECKING

- Thanks to advanced mutual data communication technology, the Air Handler system can intelligently self-detect the failure cause and generate a corresponding code.
- The installer or user can easily check the fault code displayed on the electric function board by opening the lid.
- It helps you proactively determine the failure cause, prepare for repairing parts ahead of field maintenance work, and greatly improve work efficiency.

AUTOMATIC AIR FLOW ADJUSTMENT

During the operation, when the dust filter or evaporator is clogged with dust, the load of the system and motor torque increases. The microprocessor on the unit can detect this change and adjust the fan speed to keep the CFM stable.

SAFETY FEATURES

Indoor fan delayed operation

- When the unit starts, the indoor fan will operate after a period of setting time.
- If the unit is in heating mode, the indoor fan is regulated by the anti-cold wind function.

Sensor redundancy and automatic shutoff

- If one temperature sensor malfunctions, the air conditioner continues operation and displays the corresponding error code, allowing for emergency use.
- When more than one temperature sensor is malfunctioning, the air conditioner ceases operation.

BASIC FUNCTIONS

Abbreviations

Table 1 – Unit Element Abbreviations

Abbreviation	Element
T1	Indoor room temperature
T2	Coil temperature of evaporator
T3	Coil temperature of condenser
T4	Outdoor ambient temperature
TP	Compressor discharge temperature
TS	Setting temperature
Tsc	Adjusted setting temperature

In this manual, abbreviations such as CDIFTEMP, HDIFTEMP2,TEH2, TCE1, and TCE2 are well-setting parameter of EEPROM.

Fan Mode

When fan mode is activated:

- Temperature control is disabled and no temperature setting is displayed.
- The indoor fan speed can be set to low, medium, high, turbo, and auto when operating with the wired controller or wireless remote.
- Auto fan: In fan-only mode, AC operates the same as auto fan in cooling mode with the temperature set at 75°F (24°C).
- Under 24V control, when only G signal is available, when switching from heating mode or emergency heating mode to fan mode, T4<50°F(10°C), the heating mode is sent to the outdoor; when T4>53.6°F(12°C), the normal outdoor control is resumed, the fan mode is sent to the outdoor.

Cooling Mode

Indoor Fan Control

1. In cooling mode, the indoor fan operates continuously. The fan speed can be set to low, medium, high, turbo and auto.
2. Auto fan action in cooling mode:
   - Descent curve
     - When T1-Tsc is lower than 6.3°F/3.5°C, fan speed reduces to high;
     - When T1-Tsc is lower than 1.8°F/1°C, fan speed reduces to medium;
     - When T1-Tsc is lower than 0.9°F/0.5°C, fan speed reduces to low;
   - Rise curve
     - When T1-Tsc is higher than or equal to 1.8°F/1°C, fan speed increases to medium;
     - When T1-Tsc is higher than or equal to 2.7°F/1.5°C, fan speed increases to high;
     - When T1-Tsc is higher than or equal to 7.2°F/4°C, fan speed increases to turbo.

Condenser Temperature Protection

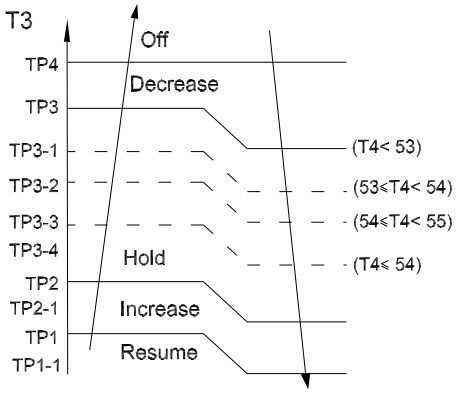


Fig. 2 —Condenser Temperature Protection

- Off: Compressor stops.
- Decrease: Decrease running frequency to the lower level at 0.04Hz/s.
- Hold: Keep the current frequency.
- Increase: Increase the running frequency to the higher level at 1Hz/s
- Resume: No limitation for frequency.

Evaporator Temperature Protection

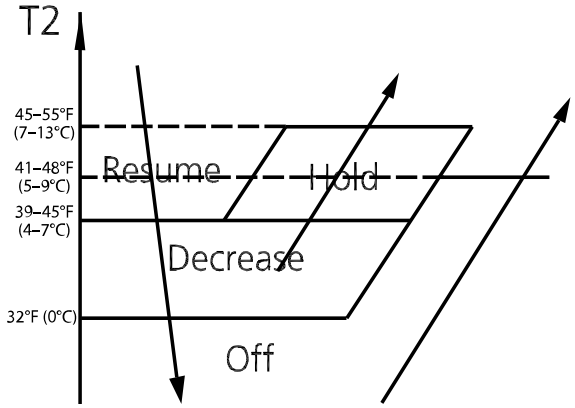


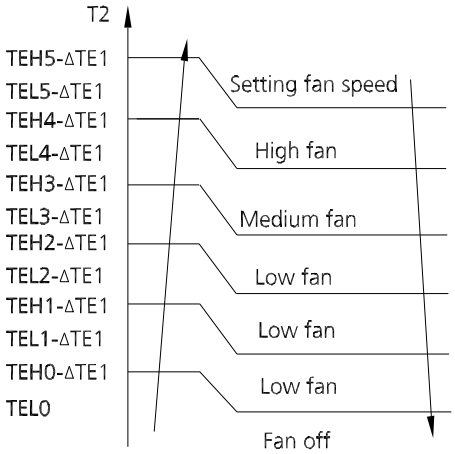
Fig. 3 – Evaporator Temperature Protection

- Off: Compressor stops
- Decrease: Decrease the running frequency to the lower level per 1 minute
- Hold: Keep the current frequency
- Resume: No limitation for frequency

Heating Mode (Heat Pump Units)

Indoor Fan Control

1. In heating mode, the indoor fan operates continuously. The fan speed can be set to low, medium, high, turbo, and auto.
   - Anti-cold air function
     - The indoor fan is controlled by the indoor temperature T1 and indoor unit coil temperature T2.



T1 ≥ 66°F(19°C)	ΔTE1=0
59°F(15°C) ≤ T1 < 66°F(19°C)	ΔTE1=66°F-T1(19°C-T1)
T1<59°F(15°C)	ΔTE1=7.2°F(4°C)

Fig. 4 – Indoor Fan Control

2. Auto fan action in heating mode:
   - Rise curve
     - When T1-Tsc is higher than -2.7°F/-1.5°C, fan speed reduces to high;
     - When T1-Tsc is higher than 0°F/0°C, fan speed reduces to medium;
     - When T1-Tsc is higher than 0.9°F/0.5°C, fan speed reduces to low;
   - Descent curve
     - When T1-Tsc is lower than or equal to 0°F/0°C, fan speed increases to medium;
     - When T1-Tsc is lower than or equal to -2.7°F/-1.5°C, fan speed increases to high;
     - When T1-Tsc is lower than or equal to -5.4°F/-3°C, fan speed increases to turbo.

NOTE: The unit is equipped with a refrigerant leak detection sensor.

Evaporator Coil Temperature Protection

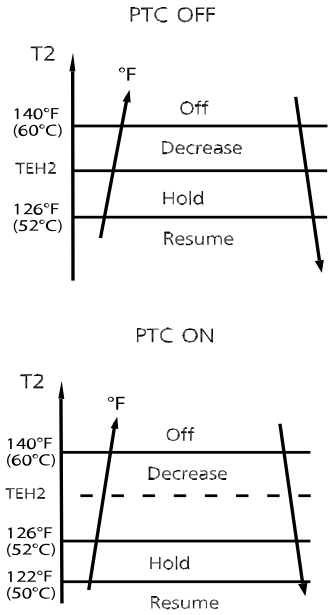


Fig. 5 – Evaporator Coil Temperature Protection

- Off: Compressor stops
- Decrease: Decrease the running frequency to the lower level per 20 seconds
- Hold: Keep the current frequency
- Resume: No limitation for frequency

Auto Mode

- This mode can be selected with the remote controller and the temperature setting can be adjusted between 61°F~86°F (16°C~30°C).
- In auto mode, the machine selects cooling, heating, or fan-only mode on the basis of ΔT (ΔT =T1-TS).

Table 2 — Auto Mode

ΔT	Running mode
ΔT>3.6°F(2°C)	Cooling
-5.4°F(-3°C)<ΔT≤2°C(3.6°F)	Fan-Only
ΔT≤--5.4°F(3°C)	Heating*

Heating*: In auto mode, cooling only models run the fan

- Indoor fan will run at auto fan speed.
- If the machine switches mode between heating and cooling, the compressor will keep stopping for certain time and then choose mode according to ΔT.

Drying Mode "(Available with wireless remote or wired controller)

- In drying mode, AC operates the same as auto fan in cooling mode.
- All protections are activated and operate the same as they do that in cooling mode.
- Low Room Temperature Protection

  If the room temperature is lower than 50°F/10°C, the compressor ceases operations and does not resume until room temperature exceeds 53.6°F/12°C.

Forced Operation Function

Press the AUTO/COOL button, the AC will run as below sequence:

Forced auto→Forced cooling→Off

Forced cooling mode:

The compressor and outdoor fan continue to run and the indoor fan runs at breeze speed. After running for 30 minutes, the AC will switch to auto mode with a preset temperature of 76°F(24°C).

Forced auto mode:

Forced auto mode operates the same as normal auto mode with a preset temperature of 76°F(24°C).

- The unit exits forced operation when it receives the following signals:
  - Switch off
  - Receive the remote signal to change the running mode:

Timer Function

- The timing range is 24 hours.
- Timer On. The machine turns on automatically at the preset time.
- Timer Off. The machine turns off automatically at the preset time.
- Timer On/Off. The machine turns on automatically at the preset On Time, and then turns off automatically at the preset Off Time.
- Timer Off/On. The machine turns off automatically at the preset Off Time and then turns on automatically at the preset On Time.
- The timer does not change the unit operation mode. If the unit is off now, it does not start up immediately after the “timer off” function is set. When the setting time is reached, the timer LED switches off and the unit running mode remains unchanged.
- The timer uses relative time, not clock time

Sleep Function

- The sleep function is available in cooling, heating, auto mode or Heat pump + Electric heater.
- The operational process for sleep mode is as follows:
  - When cooling, the set temperature rises by 1.8°F/1°C (to not higher than 86°F/30°C) every hour. After 2 hours, the temperature stops rising and the indoor fan is fixed at low speed.
- When heating, the set temperature decreases by 1.8°F/1°C (to not lower than 60.8°F/16°C) every hour. After 2 hours, the temperature stops decreasing and the indoor fan is fixed at low speed. Anti-cold wind function takes priority.
- When in auto mode, the fan speed is also fixed at low speed. After 1 hour, if the actual operation mode is cooling mode, the set temperature will rise by 1.8°F/1°C, if it is heating mode, the set temperature will decrease by 1.8°F/1°C, if it is fan mode, the set temperature will not change, and the set temperature will not change after two hours of operation.

Auto-Restart Function

The indoor unit has an auto-restart module that allows the unit to restart automatically. The module automatically stores the current settings and in the case of a sudden power failure, will restore those setting automatically within 3 minutes after power returns.

DISPLAY FUNCTION

Table 3 – Display Function

MODE	Priority	G	Y1	Y/Y2	B	W	W1	W2	E/AUX	DH	Fan Speed	Display
OFF	/	0	0	0	0	0	0	0	0	*	OFF	0
FAN	7	1	0	0	*	0	0	0	0	*	Low	1
Cooling stage 1	6	*	1	0	0	0	0	0	0	1	Mid	2
Cooling stage 2		*	*	1	0	0	0	0	0	1	High	3
Dehumidification		*	1	0	0	0	0	0	0	0	Low	4
Dehumidification		*	*	1	0	0	0	0	0	0	Low	5
Heat pump stage 1	5	*	1	0	1	0	0	0	0	1	Mid	6
Heat pump stage 2		*	*	1	1	0	0	0	0	1	High	7
Heat pump stage 2		*	*	*	*	1	0	0	0	1	High	
Electric heater kit 1	3	*	0	0	*	0	1	0	0	*	Turbo	8
Electric heater kit 2		*	0	0	*	0	0	1	0	*	Turbo	
Electric heater kit 1 and kit 2		*	0	0	*	0	1	1	0	*	Turbo	9
Heat pump stage 1 + Electric heater kit 1	4	*	1	0	1	0	1	0	0	1	Turbo	10
Heat pump stage 1 + Electric heater kit 2		*	1	0	1	0	0	1	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 1		*	*	1	1	0	1	0	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 1		*	*	*	*	1	1	0	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 2		*	*	1	1	0	0	1	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 2		*	*	*	*	1	0	1	0	1	Turbo	
Heat pump stage 1 + Electric heater kit 1 and kit 2		*	1	0	1	0	1	1	0	1	Turbo	11
Heat pump stage 2 + Electric heater kit 1 and kit 2		*	*	1	1	0	1	1	0	1	Turbo	
Heat pump stage 2 + Electric heater kit 1 and kit 2		*	*	*	*	1	1	1	0	1	Turbo	
Emergency heat	1	*	*	*	*	*	*	*	1	*	Turbo	12

NOTE:

The W terminal should only be used with a conventional thermostat.

1=24V signal ; 0=No 24V signal; *=1 or 0

Matching With Multi Zone Outdoor Unit

When matching with multi zone outdoor unit, the indoor unit cannot be started due to the mode conflict in the following cases.

Table 4 – Matching with Multi-Zone Outdoor Unit

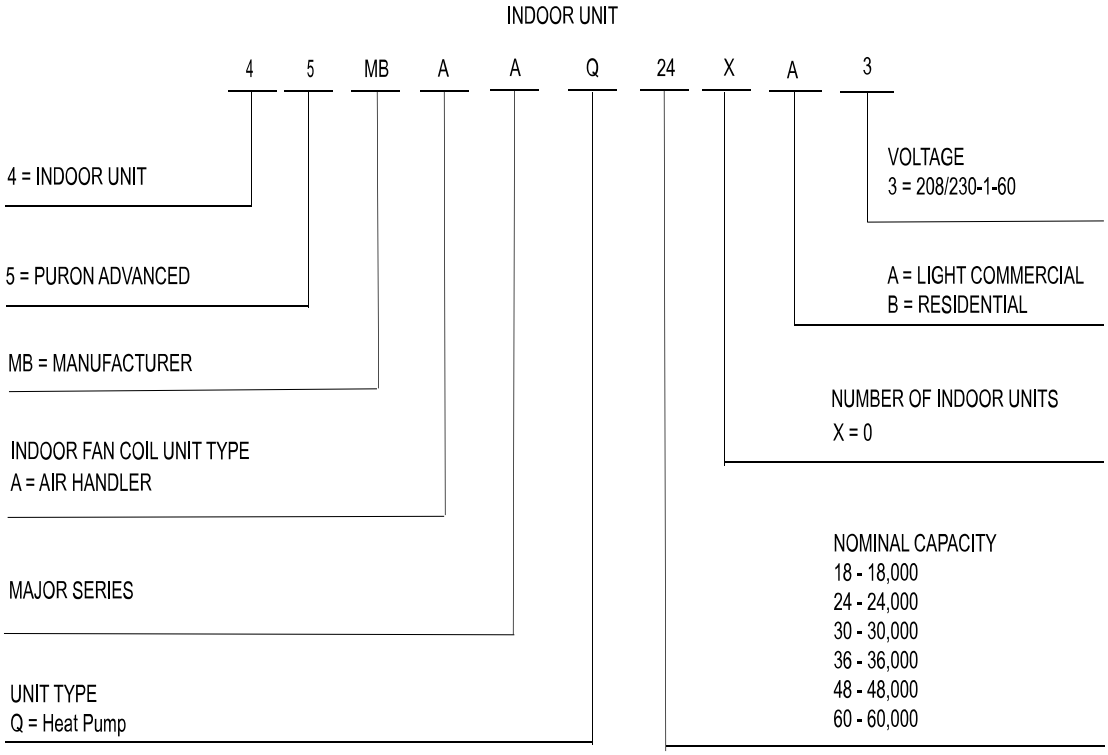
MODE OF AHU	MODE OF OTHER IDU ZONES	MODE CONFLICT UNIT
Fan	Heating/ Electric heat/ Emergency heat	45MBAA
Cooling		45MBAA
Dehumidification		45MBAA
Heating	Fan/Cooling/Dehumidification	Other IDU Zones
Electric Heat		Other IDU Zones
Emergency Heat		Other IDU Zones

NOTES:

- When Heating reaches the temperature and shuts down with other IDU zones heating normally, the 45MBAA fan will stop running, and the Fan-ON mode is invalid.
- For multi-zone connections, the heat pump will start synchronously when Emergency heat or Electric heat is started.
- When two AHU units are connected by multi zone outdoor unit, the above rules are applicable while one of the 45MBAA unit regarded as other IDU zones.

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

MODEL NUMBER NOMENCLATURE



A220909

Fig. 6 – Model Number Nomenclature

Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to www.ahridirectory.org.

A220910

ACCESSORIES

The unit comes equipped with the following accessories. Use all of the installation parts and accessories to install the unit. Improper installation may result in water leakage, electrical shock and fire, or equipment failure.

Table 5 — Accessories

NAME	SHAPE	QUANTITY
Manual		3
Remote Controller		1
Battery		2
Wired Remote Controller (Sold Separately)		1
Cable Ties		8
Insulation Sleeve		2
Flare Nut		2
Braze to Flare Adapter		2
Accessories (packed with outdoor unit)		
Packed with the Outdoor Unit — Drain Joint		1
Packed with the Outdoor Unit — Seal		1

NOTE: The remote control is only used to adjust the parameters.

Table 6 — Installation of Electric Auxiliary Heat Module (for some models) (not supplied)

NAME	QUANTITY
Manual	2
Foam Gasket	1
Screw	7
Silicone Breaker Cover	1
Electric Auxiliary Heating Wiring Diagram	1
Circuit Breaker Label	1

MULTI-POISE INSTALLATION

Designed for maximum installation flexibility. The secondary drain built-in allows the unit to be mounted in an upflow, downflow, left or right installation depending on existing conditions.

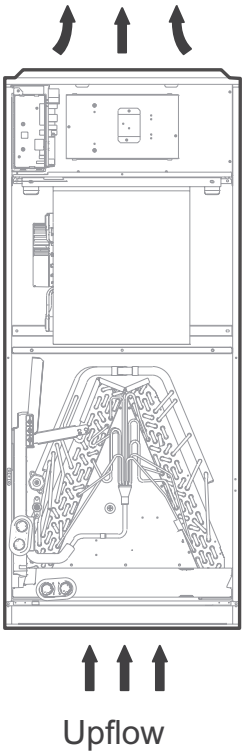


Fig. 7 – Vertical Upflow Installation

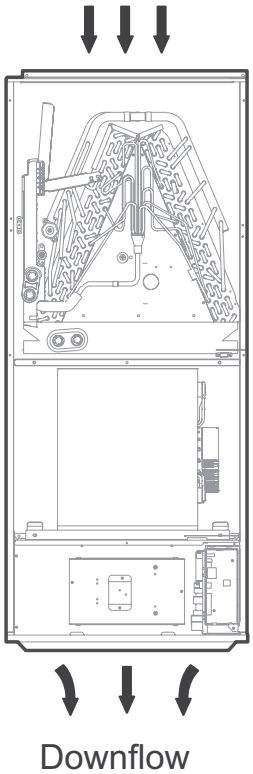


Fig. 8 – Vertical Downflow Installation

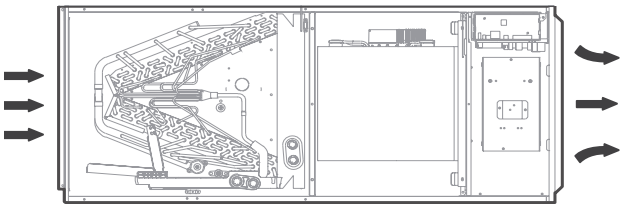


Fig. 9 – Horizontal Right Installation

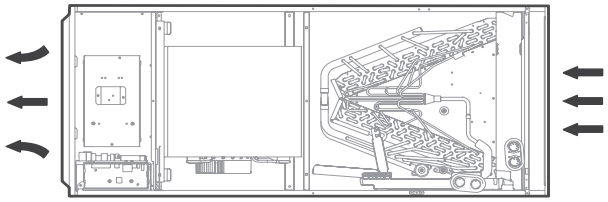


Fig. 10 – Horizontal Left installation

DIMENSIONS

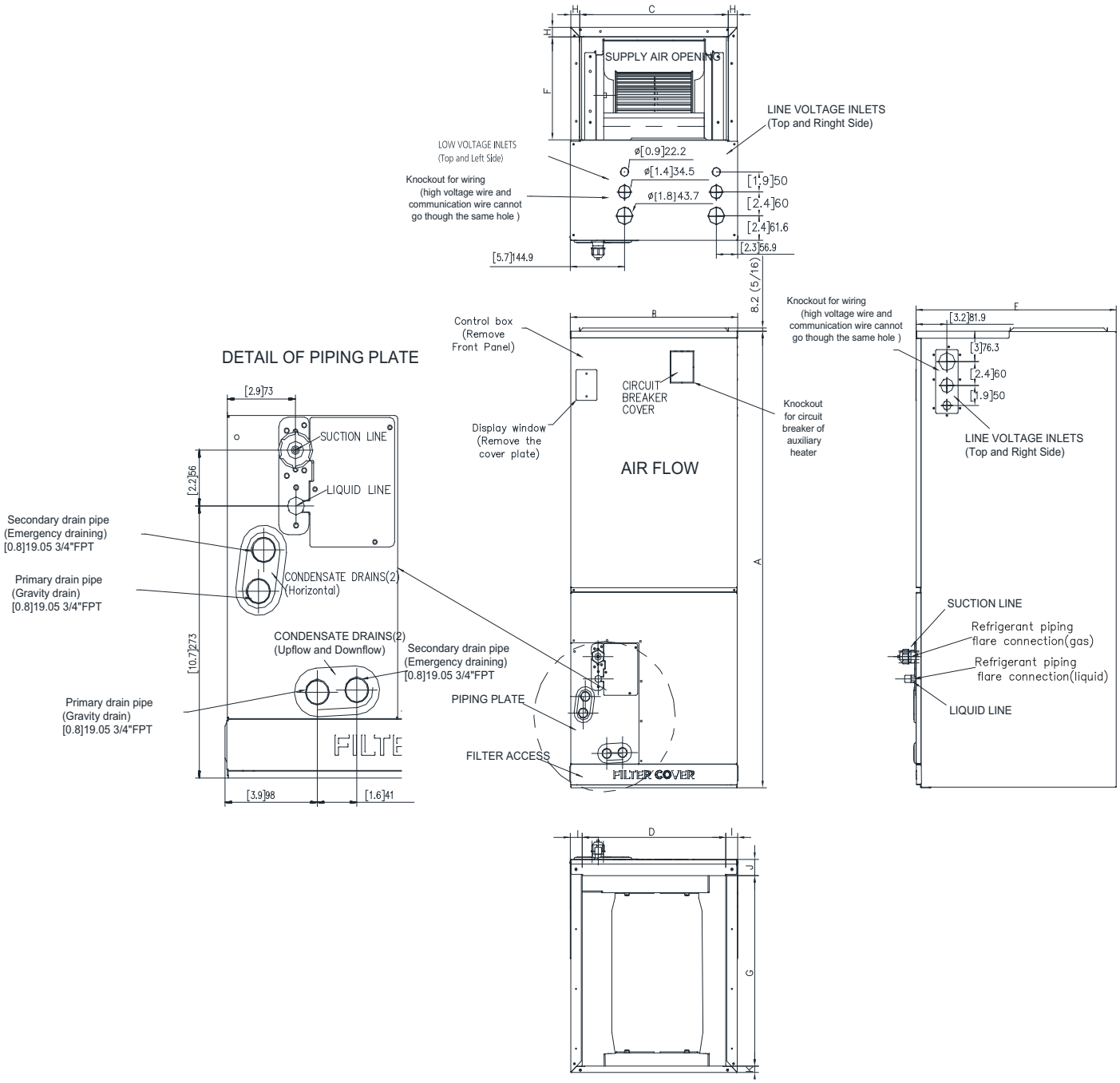


Fig. 11 – Dimensions 18K – 60K, (in.)mm

Table 7 — Dimensions (Legend for Fig. 11)

Dimensions	System Size		18K	24K	30K	36K(XB3)	36K(XA3)	48K	60K
	Voltage	V	208/230V						
A	Height (H)	in(mm)	45.00(1143)	45.00(1143)	49.02(1245)	49.02(1245)	49.02(1245)	52.99(1346)	52.99(1346)
B	Width (W)	in(mm)	17.52(445)	17.52(445)	21.02(534)	21.02(534)	21.02(534)	24.49(622)	24.49(622)
C	Supply Air Opening Width	in(mm)	15.6(397)	15.6(397)	19.1(486)	19.1(486)	19.1(486)	22.6(575)	22.6(575)
D	Return Air Opening Width	in(mm)	15.1(384)	15.1(384)	18.6(473)	18.6(473)	18.6(473)	22.1(562)	22.1(562)
E	Depth (D)	in(mm)	21(534)	21(534)	21(534)	21(534)	21(534)	21(534)	21(534)
F	Supply Air Opening Depth	in(mm)	10.3(260)	10.3(260)	10.3(260)	10.3(260)	10.3(260)	10.3(260)	10.3(260)
G	Return Air Opening Depth	in(mm)	18.8(476)	18.8(476)	18.8(476)	18.8(476)	18.8(476)	18.8(476)	18.8(476)
H	Supply Air Opening Clearance	in(mm)	0.9(24)	0.9(24)	0.9(24)	0.9(24)	0.9(24)	0.9(24)	0.9(24)
I	Return Air Opening Side Clearance	in(mm)	1.3(32)	1.3(32)	1.3(32)	1.3(32)	1.3(32)	1.1(28)	1.1(28)
J	Return Air Opening Front Clearance	in(mm)	1.5(38)	1.5(38)	1.6(41)	1.6(41)	1.6(41)	1.6(41)	1.6(41)
K	Return Air Opening Back Clearance	in(mm)	0.6(16)	0.6(16)	0.6(16)	0.6(16)	0.6(16)	0.8(19)	0.8(19)
J	Refrigerant Piping Flare Connection (Gas)	in(mm)	0.8(19)	0.8(19)	0.8(19)	0.8(19)	0.8(19)	0.9(22)	0.9(22)
K	Refrigerant Piping Flare Connection (Liquid)	in(mm)	0.4(9)	0.4(9)	0.4(9)	0.4(9)	0.4(9)	0.4(9)	0.4(9)
	Weight - Net	lbs(kg)	104.72(47.5	104.28(47.3)	127.43(57.8)	129.63(58.8)	127.87(58)	161.82(73.4)	164.02(74.4)

CLEARANCES

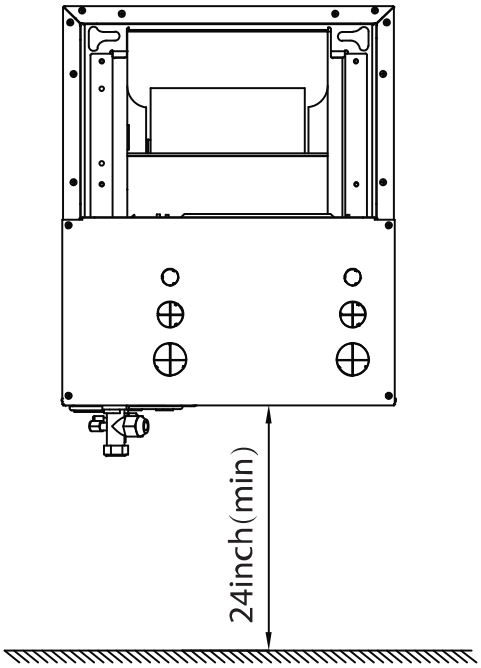


Fig. 12 – Vertical Installations

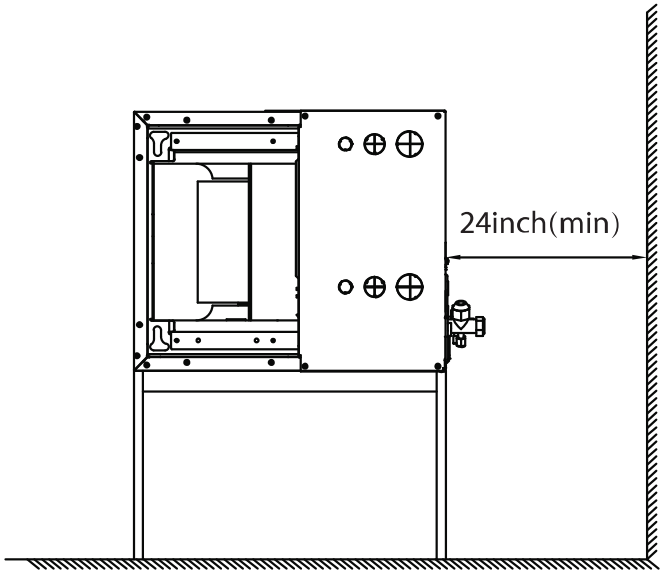


Fig. 13 – Horizontal Installations

SPECIFICATIONS

Table 8 — Specifications

Size			18K	24K	30K	36K	36K	48K	60K
Indoor Model Number			**45MBAAQ18XB3**	**45MBAAQ24XB3**	**45MBAAQ30XB3**	**45MBAAQ36XB3**	**45MBAAQ36XA3**	**45MBAAQ48XA3**	**45MBAAQ60XA3**
Power supply		V;Ph;Hz	208/230V;1Ph;60HZ						
INDOOR FAN SPECIFICATIONS	Material	-	Galvanized sheet						
	Type	-	LX-270*207*12.7-51J-A		LX-282*245*12.7-49J-B			LX-279*271*12.7-51J-C	
	Diameter	inch	10.6		11.1			11.0	
		mm	270		282			279	
	Height	inch	8.1		9.6			10.7	
		mm	207		245			271	
INDOOR MOTOR SPECIFICATIONS	Model	-	ZKFD-250-8-1		ZKFD-375-8-1-1			ZKFD-750-8-1-1	
	Type	-	DC						
	Input	W	67.8		168.0			286.6	
	Max. input	W	67.8		168.0			286.5	
	Output	W	250		375			750	
	FLA	A	2.3	3	3	4.5	4.5	6	6
	Rated HP	HP	0.34		0.50			1.01	
	Range of current	Amps	0.66±10%		1.4±10%			2.26±10%	
	Rated current	Amps	0.66		1.40			2.26	
	Speed	rev/min	550/510/450		685/620/560			820/720/615	
	Rated RPM	rev/min	550		685			820	
	Insulation class	-	B						
	Safe class	-	IPX0						
INDOOR REFRIGERANT COIL SPECIFICATIONS	Number of rows	Rows	3		4			5	
	Tube outside dia.	inch	0.276						
		mm	Φ7						
	Nominal Tube Wall	Inch (mm)	0.0094 (0.24)						
	Tube Enhancement	(Yes/No)	Yes						
	Tube Material		Aluminum						
	Tube pitch(a)x row pitch(b)	inch	0.83x0.53						
		mm	21x13.37						
	Fin Spacing	FPI	20						
		mm	1.3						
	Fin type		Louvered						
	Fin Material		Gold hydrophilic aluminum						
	Coil length x height x width	inch	16.34x13.23x1.58		16.34x18.19x2.11x2			16.34x21.50x2.63x2	
		mm	415*336*40.11*2		415*462*53.48*2			415*546*66.85*2	
	Face area	ft2	3.00		4.13			4.88	
	Number of circuits	#	6		10			14	

*Performance may vary based on the compatible outdoor units. See respective pages for performance data.

NOTE: See the current compatibility charts for a list of the indoor unit and outdoor unit match ups.

APPLICATION DATA

UNIT SELECTION

Select equipment to either match or that can handle slightly less than the anticipated peak load. This provides better humidity control, fewer unit cycles, and less part-load operation.

For units used in spaces with high sensible loads, base equipment selection on unit sensible load, not on a total anticipated load. Adjust for anticipated room wet bulb temperature to avoid undersizing equipment.

UNIT MOUNTING (INDOOR)

Refer to the unit's installation instructions for further details.

Unit leveling - For reliable operation, units should be level in all planes.

Clearance - Provide adequate clearance for airflow (see Fig. 12 – on page 9).

Unit location - Select a location that provides the best air circulation for the space.

Do not install the indoor or outdoor units in a location with special environmental conditions. For those applications, contact your ductless representative.

SUPPORT

Adequate support must be provided to support the weight of all fan coils. Refer to Table 7 for fan coil weights. Refer to "DIMENSIONS" on page 8 for the base unit dimensional drawings which contain the location of the mounting brackets.

Table 9 — System Operating Conditions

OPERATING RANGE MIN/MAX °F (°C)		
	Cooling	Heating
Indoor DB	63 / 90 (17 / 32)	32 / 86 (0 / 30)
Indoor WB	59 / 84 (15 / 29)	

NOTE: Reference the unit's installation instructions for more information.

DRAIN CONNECTIONS

Install the drains in compliance with the local sanitation codes.

WIRING

Size all wires per the NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. Use the electrical data from the outdoor unit (MCA - minimum circuit amps and MOCP - maximum over current protection), to correctly size the wires and the disconnect fuse or breakers respectively.

SIZE 18 - 36K (NON-LIGHT COMMERCIAL MODELS) RECOMMENDED CONNECTION METHOD FOR POWER AND COMMUNICATION WIRING

Power and Communication Wiring: The main power is supplied to the outdoor unit. The field supplied 14/3 power/communication wiring, from the outdoor unit to the indoor unit, consists of four (4) wires and provides the power for the indoor unit. Two wires are high voltage AC power, one is communication wiring and the other is a ground wire.

To minimize communication interference: If installed in a high Electromagnetic field (EMF) area and communication issues arise, a 14/2 stranded shielded cable can be used to replace L(2) and (S) between the outdoor and indoor units - landing the shield onto the ground in the outdoor unit only.

Table 10 — Wiring Size 18-36

CABLE	CABLE SIZE	REMARKS
Connection Cable	14AWG	3 wire + Ground 1Φ 208/230 V (Stranded wire is recommended)

SIZES 36-60K (LIGHT COMMERCIAL MODELS) RECOMMENDED CONNECTION METHOD FOR POWER AND COMMUNICATION WIRING

Power and Communication Wiring: The main power is supplied to the outdoor unit. The field supplied power wiring from the outdoor unit to the indoor unit consists of three (3) wires and provides the power for the indoor unit. Two wires are high voltage AC power and one is a ground wire. To minimize voltage drop, the factory recommended wire size is 14/2 power stranded with a ground.

Communication Wiring: A separate 2-wire cable (stranded, shielded, copper conductor), with a 600 volt rating and double insulated copper wire, must be used as the communication wire from the outdoor unit to the indoor unit. Use a separate shielded 16AWG stranded control wire.

Table 11 — Wiring Size 36-60

CABLE	CABLE SIZE	REMARKS
Power Connection Cable	14AWG	2 wire + Ground 1Φ 208/230 V
Communication Cable	16AWG	2 wire stranded shielded control wire

NOTE: The main power is supplied to the outdoor unit. When disconnecting the power to the outdoor unit, the indoor unit loses power. A disconnect switch may be required for the indoor unit (check local codes). A 3 pole disconnect may be used for extra protection between the indoor and outdoor unit. Separate power is required for an Auxiliary Electric Heater.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

Comply with local codes while running wire from the indoor unit to the outdoor unit. Every wire must be connected firmly. Loose wiring may cause the terminal to overheat or result in a unit malfunction. A fire hazard may also exist. Ensure all wiring is tightly connected.

No wire should touch the refrigerant tubing, compressor or any moving parts.

Disconnecting means must be provided and located within sight and readily accessible from the system. Route the connecting cable with conduit through the hole in the conduit panel.

CONTROL SYSTEM

The indoor unit is equipped with a microprocessor control to perform two functions:

1. Provide safety for the system
2. Control the system and provide optimum levels of comfort and efficiency.

The main microprocessor is located on the control board of the fan coil unit (outdoor units have a microprocessor also) with thermistors located in the fan coil air inlet and on the indoor coil. Heat pump units have a thermistor on the outdoor coil. These thermistors monitor the system's operation to keep the unit within acceptable parameters and control the operating mode.

WIRELESS REMOTE CONTROLLER

A wireless remote controller is supplied.

A220917

Fig. 14 – Wireless Remote Controller

WIRED REMOTE CONTROLLER

A220918

Fig. 15 – Wired Remote Controller

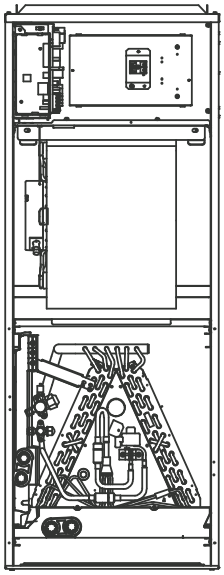
A wired remote controller is supplied. The wired controller will also control the auxiliary heat (if installed) as either a supplementary or an emergency heating source.

NOTE: The AAQ utilizes a constant air volume ECM motor that automatically adjusts to increases in static pressure to maintain 0.80" ESP. Therefore, there is no need to set airflow using either of the supplied remotes.

24 VOLT INTERFACE

The indoor unit comes equipped with a 24V interface that provides further flexibility, functionality and control allowing it to be controlled by any 3rd party single-stage heat pump thermostat (field supplied).

NOTE: If a third party thermostat is preferred, a heat pump thermostat must be utilized.

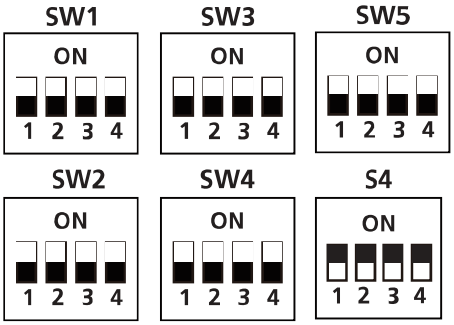


A220916

Fig. 16 – Air Handler

Function DIP Switch Settings

The 24V thermostat mode needs to refer to the following settings:



SW4-1	000 is the default 000/001/010/ 0ll/100/101/110/111 internal machines with different abilities, electric heating and PSC classification for use.
SW4-2	
SW4-3	

Table 12 – Function Combination Table of SW1-1 and SW1-4

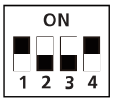
SW1	Control Type	IDU and ODU Connection	Note
	Wired Controller / 24V Thermostat	S1 + S2	Auto Discovery
	Wired Controller	S1 + S2	Scenario 2
	24V Thermostat	S1 + S2	Scenario 1
	24V Thermostat	24V Thermostat	This setting not applicable.

Table 13 – Indoor Unit Dial Code

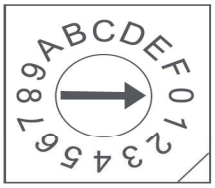
No.	Dial Code	Control Scen-ario	Function	ON	OFF	Note
1	SW1-2	1,2,3	Anti-cold blow protection option	NO	[Default] YES	
2	SW1-3	1,2,3	Single cooling / heating and cooling options	Cooling	[Default] Cooling & Heating	
3	SW2-1	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressor and W1
4	SW2-1	2	Temperature differential to activate first stage auxiliary heat (the GAP of TI and Ts), wire controller demand with heat pump + electric heat working together	2°F (1°C)	[Default] 4°F (2°C)	
5	SW2-2	2	Electric heat on delay	YES	[Default] NO	
6	SW2-3	2	Electric auxiliary heating delay to start time	30 minutes	[Default] 15 minutes	Based on SW2-2 is ON
7	SW2-4	1	Compressor	The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited.The system makes judgments according to the following rules: 1) The compressor can be operated when the outdoor temperature is >S3 DIP switch temperature +2 °C. 2) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch temperature.	[Default] The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited. The system makes judgments based on the following rules: 1) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch. 2) The compressor can be operated when the outdoor temperature is >S3 DIP switch temperature +2 °C.	SW2-4 and S3 need to work together
8	SW2-4	2	Compressor/ Auxiliary heat outdoor ambient lockout	The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited.The system makes judgments according to the following rules: 1) The compressor can be operated when the outdoor temperature is >53 DIP switch temperature +2 °C. 2) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch temperature.	[Default] Only one heat pump or auxiliary heat can be operated. The system makes judgments according to the following rules: 1) When the outdoor temperature is lower than the S3 DIP switch temperature, the compressor is not allowed to operated, but auxiliary heat is allowed to operate. 2) When the outdoor temperature is >S3 DIP switch temperature +2°C, the compressor can be operated, but auxiliary heat cannot be operated.	
9	Rotary Sw S3	1,2	Set outdoor temperature Limitation (for auxiliary heating or compressor)	Table A		
10	SW3-1	1	Maximum continuous runtime allowed before system automatically stages up capacity to satisfy set point. This adds 1 to 5°F to the user set point in the calculated control point to increase capacity and satisfy user set point	30 minutes	[Default] 90 minutes	
11	SW3-2	1	Cooling and heating Y/Y2 temperature differential adjustment.	Compressor slower speed	[Default] Faster compressor	Only affects compressor.
12	SW3-3	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster compressor	Only affects compressor and W2.
13	SW3-3	2	Temperature differential to activate second stage auxiliary heating (the GAP of TI and Ts) Wire controller demand with heat pump + Electric heat working together	4°F (2°C)	[Default] 6°F (3°C)	
14	SW3-4	1,3	Fan speed of cooling mode when 24V thermostat is applied for.	Turbo	High	
15	SW4-1 SW4-2 SW4-3	1,2,3	Electric heat nominal CFM adjustment	Available settings are 000/001/010/011. Each digit corresponds an individual switch position. For example [SW4-1 OFF, SW4-2 ON, SW4 -3 OFF] = 010		
16	SW4-4	2	Temperature differential to activate third stage auxiliary heating (the GAP of TI and Ts) Wire controller demand with heat pump + Electric heat working together.	6°F (3°C)	[Default] 8°F (4°C)	Only valid for product which has three stage auxiliary heating.
17	SW4-4	1,3	Default ON	[Default] For single stage supplemental heat, W1 and W2 are connected.	For dual stage supplemental heat, WI and W2 are controlled independently.	

Table 13 – (Continued)Indoor Unit Dial Code

No.	Dial Code	Control Scen-ario	Function	ON	OFF	Note
18	SW4-2	1,3	DH function selection	[Default] Dehumidification control not available.	Dehumidification feature is enabled through thermostat.	
19	SW5-3	1,2,3	L or alarm relay selection	L output 24 V or alarm relay close only when refrigerant sensor fault or R-4548 refrigerant leakage is detected.	[Default] L output 24V or alarm relay close when any fault is detected.	
20	SW5-4	1,2,3	R output selection	R stop output 24V when refrigerant sensor fault or R-454B refrigerant leakage is detected.	[Default] R keep output 24V even when refrigerant sensor fault or R-454B refrigerant leakage is detected.	

Control Scenario	24V Tstat, S1 + S2	1
	Wired controller S1 + S2	2
	Full 24V	3

NOTE: Control scenario 3 is not applicable for this unit.



Address DIP Switch:

Address dialing Sl+SW8: When the user uses the centralized controller, the address dialing is required.

Network address: The address silkscreen is NET address, which is composed of a 16-bit address rotary code S1 plus a two-digit DIP switch SW8 [Set during engineering installation, no network function does not need to be set].

- When SW8 is 00 (the dialing code is not connected), the network address value is the value of S1;
- When SW8 is 10 (corresponding to the switch of the hardware connected to the l0K resistor), the network address value is S1 plus 16;
- Determined by dial code SW8 1-l0K 2-5.lK
- When SW8 is 01 (corresponding to the dial code of the 5.lK resistor connected to the hardware is turned on), the network address value is the value of S1 plus 32;
- When SW8 is 11 (all dialing codes are on), the network address value is the value of S1 plus 48.

Table 14 – Table A

S3	S3 (°F)	S3 (°C)
0	OFF	OFF
1	-22	-30
2	-18	-28
3	-15	-26
4	-11	-24
5	-8	-22
6	-4	-20
7	3	-16
8	10	-12
9	18	-8
A	25	-4
B	32	0

Table 14 – Table A

S3	S3 (°F)	S3 (°C)
C	36	2
D	39	4
E	43	6
F	46	8

Table 15 – Determined by Dial Code SW8 1–10K 2–5.1K

Dial Code Selection	Website Address
	S1 + 48
	S1 + 32
	S1 + 16
	S1

NOTE: For the table below, the constant airflow volume motor is applied, so the airflow volume is constant at all ESP within the stated range.

Table 16 – Air Volume Table

Capacity	External Static Pressure Range	Fan Speed	Electric Auxiliary Heat Mode	24V Thermostat		Wired Controller		Airflow Volume (CFM)
				DIP Switch	24V Terminal Engaged	DIP Switch	Mode	
18K (1.5 Ton)	0–0.80 in.wc.	Cooling Turbo	–	SW3-4=ON	Y2/Y	–	Cool	618
		Cooling High	–	SW3-4=OFF	Y2/Y	–	Cool	576
		Cooling Medium	–	–	Y1	–	Cool	529
		Cooling Low	–	–	–	–	Cool	488
		Heat Pump Turbo	–	–	–	–	Heat	565
		Heat Pump High	–	–	B+Y2/Y, W	–	Heat	541
		Heat Pump Medium	–	–	Y1	–	Heat	435
		Heat Pump Low	–	–	–	–	Heat	400
		Electric Auxiliary Heat Module 0 (Default)	10kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	653
		Electric Auxiliary Heat Module 1 (Default)	10kW, 8kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	624
		Electric Auxiliary Heat Module 2 (Default)	8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	594
		Electric Auxiliary Heat Module 3 (Default)	5kW, 3kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	565
24K (2 Ton)	0–0.80 in.wc.	Cooling Turbo	–	SW3-4=ON	Y2/Y	–	Cool	824
		Cooling High	–	SW3-4=OFF	Y2/Y	–	Cool	759
		Cooling Medium	–	–	Y1	–	Cool	694
		Cooling Low	–	–	–	–	Cool	629
		Heat Pump Turbo	–	–	–	–	Heat	788
		Heat Pump High	–	–	B+Y2/Y, W	–	Heat	753
		Heat Pump Medium	–	–	Y1	–	Heat	641
		Heat Pump Low	–	–	–	–	Heat	524
		Electric Auxiliary Heat Module 0 (Default)	15kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	871
		Electric Auxiliary Heat Module 1 (Default)	15kW, 10kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	841
		Electric Auxiliary Heat Module 2 (Default)	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	818
		Electric Auxiliary Heat Module 3 (Default)	5kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	788
30K (2.5 Ton)	0–0.80 in.wc.	Cooling Turbo	–	SW3-4=ON	Y2/Y	–	Cool	988
		Cooling High	–	SW3-4=OFF	Y2/Y	–	Cool	984
		Cooling Medium	–	–	Y1	–	Cool	806
		Cooling Low	–	–	–	–	Cool	712
		Heat Pump Turbo	–	–	–	–	Heat	918
		Heat Pump High	–	–	B+Y2/Y, W	–	Heat	876
		Heat Pump Medium	–	–	Y1	–	Heat	665
		Heat Pump Low	–	–	–	–	Heat	453
		Electric Auxiliary Heat Module 0 (Default)	15kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	1088
		Electric Auxiliary Heat Module 1 (Default)	15kW, 10kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	1029
		Electric Auxiliary Heat Module 2 (Default)	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	976
		Electric Auxiliary Heat Module 3 (Default)	5kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	918

Table 16 – Air Volume Table (Continued)

Capacity	External Static Pressure Range	Fan Speed	Electric Auxiliary Heat Mode	24V Thermostat		Wired Controller		Airflow Volume (CFM)
				DIP Switch	24V Terminal Engaged	DIP Switch	Mode	
36K (3 Ton)	0–0.80 in.wc.	Cooling Turbo	–	SW3-4=ON	Y2/Y	–	Cool	1188
		Cooling High	–	SW3-4=OFF	Y2/Y	–	Cool	1082
		Cooling Medium	–	–	Y1	–	Cool	971
		Cooling Low	–	–	–	–	Cool	865
		Heat Pump Turbo	–	–	–	–	Heat	1112
		Heat Pump High	–	–	B+Y2/Y, W	–	Heat	1059
		Heat Pump Medium	–	–	Y1	–	Heat	794
		Heat Pump Low	–	–	–	–	Heat	582
		Electric Auxiliary Heat Module 0 (Default)	20kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	1306
		Electric Auxiliary Heat Module 1 (Default)	15kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	1241
		Electric Auxiliary Heat Module 2 (Default)	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1176
		Electric Auxiliary Heat Module 3 (Default)	5kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1112
48K (4 Ton)	0–0.80 in.wc.	Cooling Turbo	–	SW3-4=ON	Y2/Y	–	Cool	1600
		Cooling High	–	SW3-4=OFF	Y2/Y	–	Cool	1471
		Cooling Medium	–	–	Y1	–	Cool	1282
		Cooling Low	–	–	–	–	Cool	1094
		Heat Pump Turbo	–	–	–	–	Heat	1471
		Heat Pump High	–	–	B+Y2/Y, W	–	Heat	1324
		Heat Pump Medium	–	–	Y1	–	Heat	1141
		Heat Pump Low	–	–	–	–	Heat	976
		Electric Auxiliary Heat Module 0 (Default)	20kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	1741
		Electric Auxiliary Heat Module 1 (Default)	15kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	1653
		Electric Auxiliary Heat Module 2 (Default)	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1559
		Electric Auxiliary Heat Module 3 (Default)	5kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1471
60K (5 Ton)	0–0.80 in.wc.	Cooling Turbo	–	SW3-4=ON	Y2/Y	–	Cool	1806
		Cooling High	–	SW3-4=OFF	Y2/Y	–	Cool	1582
		Cooling Medium	–	–	Y1	–	Cool	1359
		Cooling Low	–	–	–	–	Cool	1135
		Heat Pump Turbo	–	–	–	–	Heat	1659
		Heat Pump High	–	–	B+Y2/Y, W	–	Heat	1582
		Heat Pump Medium	–	–	Y1	–	Heat	1247
		Heat Pump Low	–	–	–	–	Heat	976
		Electric Auxiliary Heat Module 0 (Default)	52kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	2171
		Electric Auxiliary Heat Module 1 (Default)	15kW, 20kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	2029
		Electric Auxiliary Heat Module 2 (Default)	10kW, 15kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1894
		Electric Auxiliary Heat Module 3 (Default)	10kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1753

AIR FLOW DATA

Table 17 — Indoor Air Flow Data

AIR HANDLER		18K	24K	30K	36K	36K	48K	60K
		45MBAAQ18XB3	45MBAAQ24XB3	45MBAAQ30XB3	45MBAAQ36XB3	45MBAAQ36XA3	45MBAAQ48XA3	45MBAAQ60XA3
Turbo/Hi/Med/Lo	CFM	618.0 / 576.8 / 529.7 / 488.5	824.0 / 759.3 / 694.5 / 629.8	988.8 / 894.7 / 806.4 / 712.2	1189.0 / 1083.0 / 971.2 / 865.2	1189.0 / 1083.0 / 971.2 / 865.2	1601.0 / 1471.5 / 1283.1 / 1094.8	1807.0 / 1553.9 / 1353.8 / 724.0

Airflow values obtained at AHRI 210/240 rating conditions.
**Measured at rates static pressure:

24K: 0.1 in. WG (25pa)
36K: 0.15 in. WG (37pa)
48K: 0.2 in. WG (50pa)

SOUND DATA

Table 18 — Indoor Sound Pressure Level

AIR HANDLER		18K	24K	30K	36K	36K	48K	60K
		45MBAAQ18XB3	45MBAAQ24XB3	45MBAAQ30XB3	45MBAAQ36XB3	45MBAAQ36XA3	45MBAAQ48XA3	45MBAAQ60XA3
Hi/Med/Lo	db(A)	42.5/37.5/30.0	43.5/40/25.5	44/41/26	48/44/35	47/42/30.5	54.5/51/48	53.0/48.0/33.5

SOUND PRESSURE TESTING METHOD

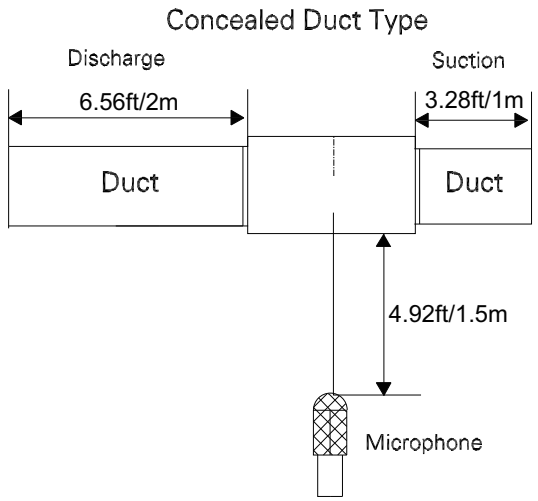


Fig. 17 —Horizontal Installation

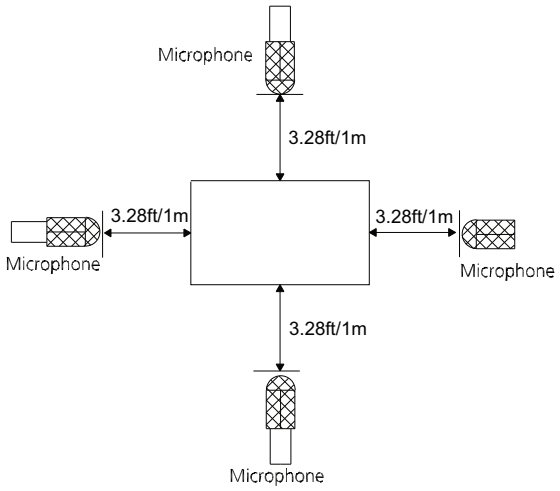


Fig. 18 —Vertical Installation

NOTES:

- **Sound measured at 4.92ft/1.5m (horizontal installation) / 3.28ft(1m) (vertical installation) away from the center of the unit.**
- **Data is valid at free field condition**
- **Data is valid at nominal operation condition**
- **Reference acoustic pressure 0db = 20 micropascals**
- **Sound level will vary depending on a range of factors such as the construction (acoustic absorption coefficient) of a particular room in which the equipment is installed**
- **The operating conditions are assumed to be standard**

FAN CURVES

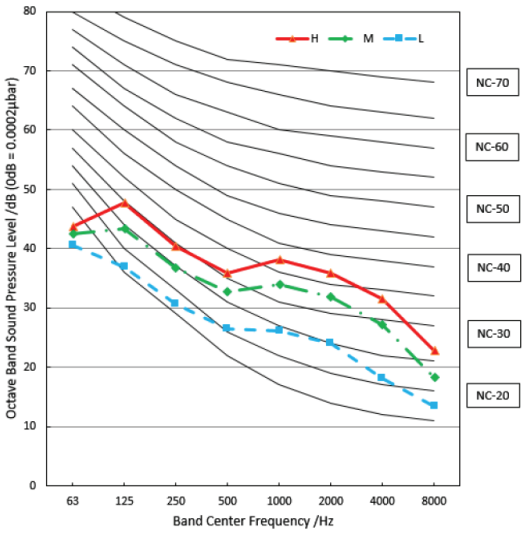


Fig. 19 – Size 18

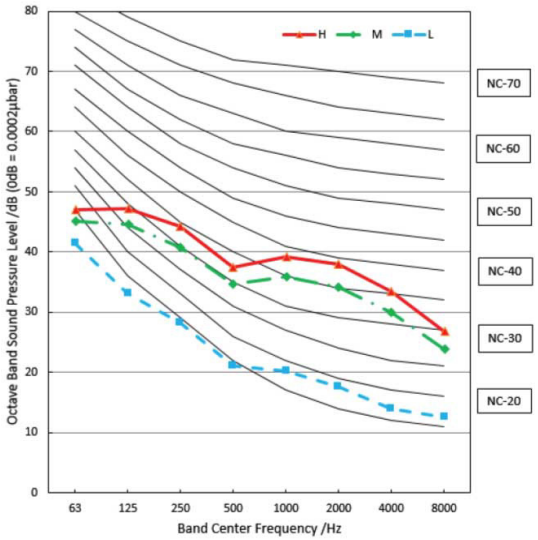


Fig. 20 – Size 24

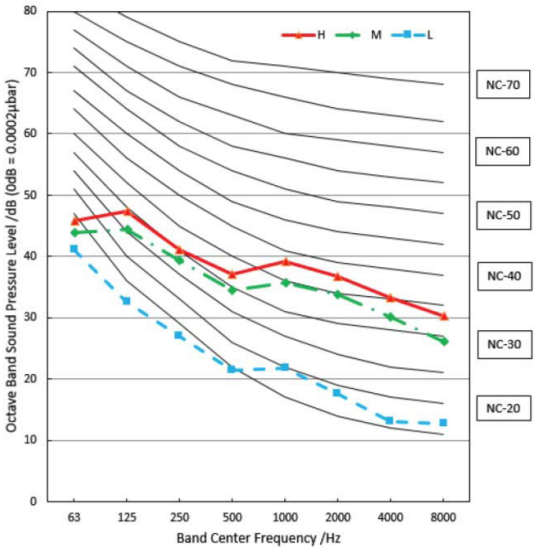


Fig. 21 – Size 30

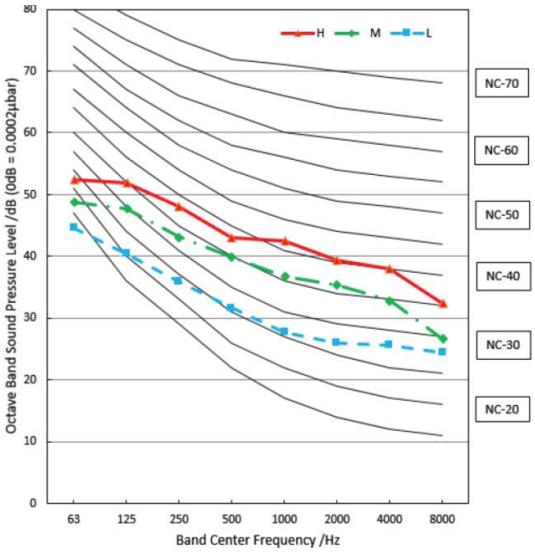


Fig. 22 – Size 36 (115V)

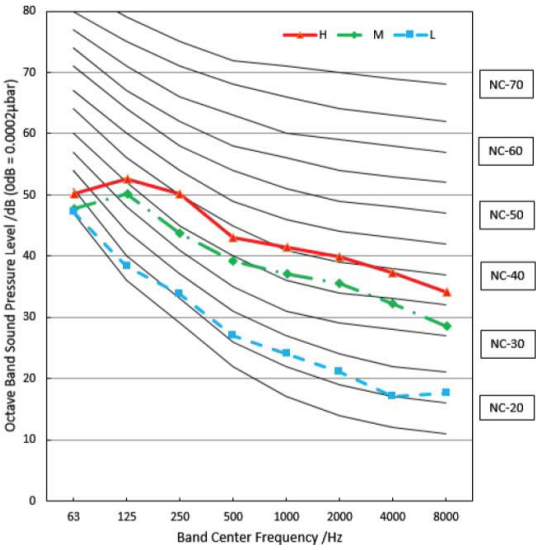


Fig. 23 – Size 36 (208/230V)

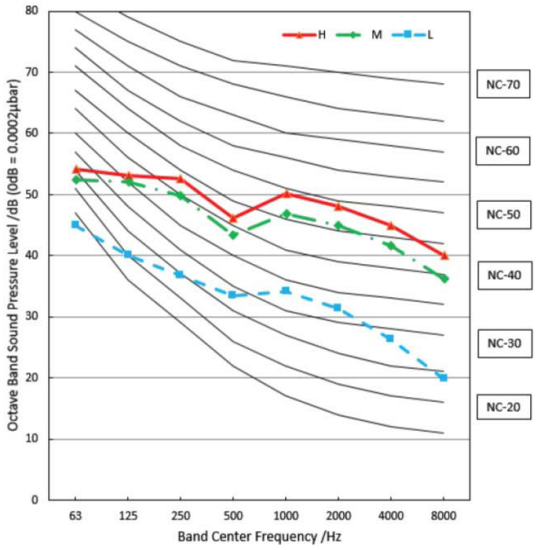


Fig. 24 – Size 48

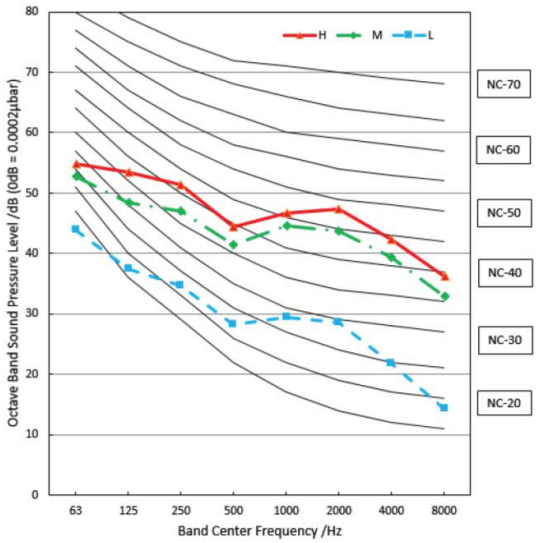


Fig. 25 – Size 60

PERFORMANCE DATA

For performance data tables, see the Outdoor Unit Product Databook (37MAHA-01PD).

REFRIGERANT SYSTEMS DIAGRAMS

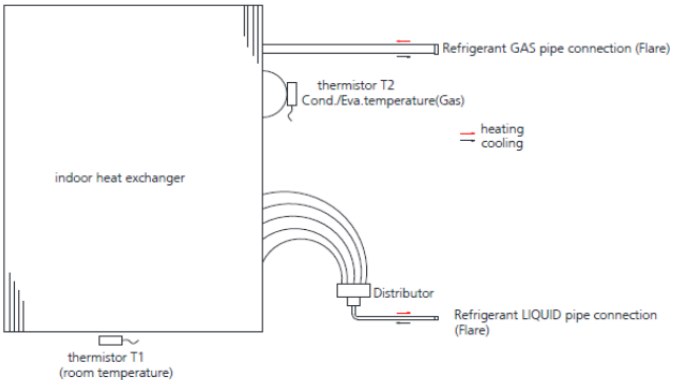


Fig. 26 – Refrigerant Systems Diagram

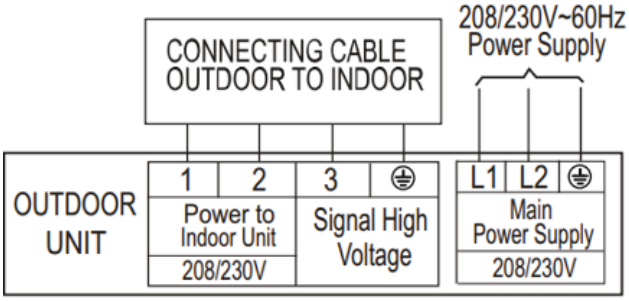


Fig. 27 – Connection Diagram (208/230V) Sizes 18K-36K (XB3)

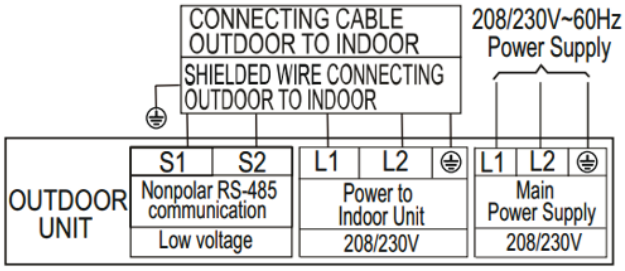


Fig. 28 – Connection Diagram (208/230V) Sizes 36K(XA3) -60K

FAN PERFORMANCE

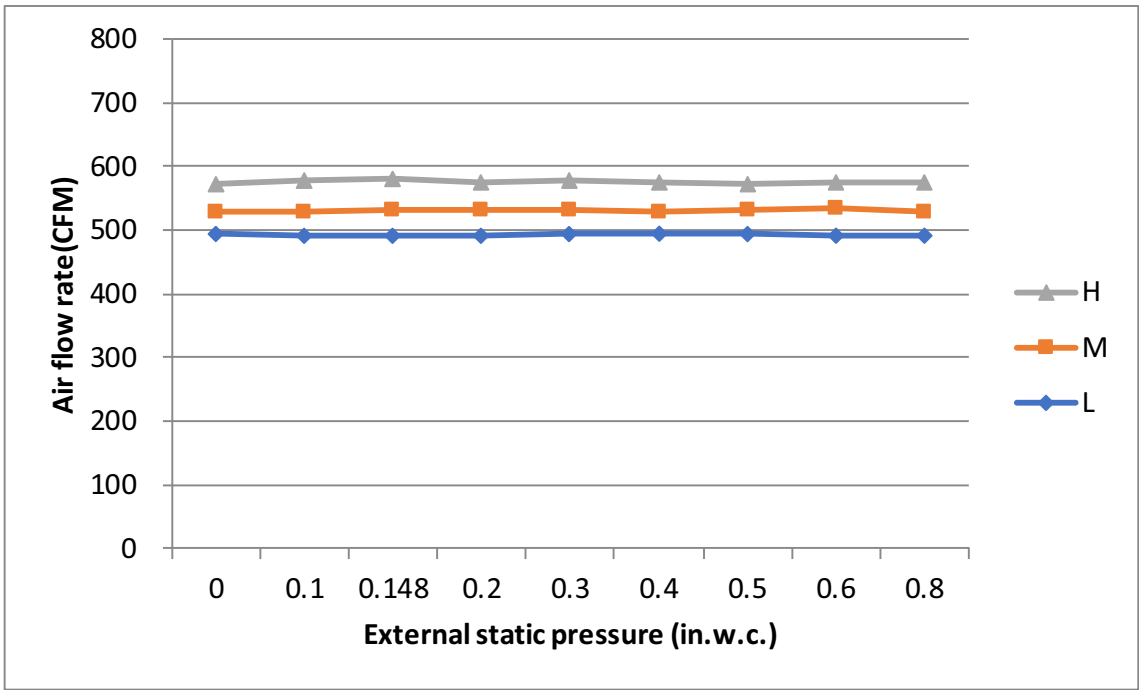


Fig. 29 – 18k (Vertical, Horizontal Right, Horizontal Left)

Setting of air volume through engineering mode:

- To enter engineering mode, in power-on or standby mode, and in non-locked state, press the key combination "ON/OFF+ Air Speed" for 7s.
- Set the air volume of cooling mode at Channel 23, and set the air volume of heating mode at Channel 25. Refer to following air volume table:

Table 19 — 18K - Cooling

Cooling	Default	-1	-2	-3	-4	-5	-6	-7
Turbo	618	598	578	558	538	518	498	478
High	576	556	536	516	496	476	456	436
Middle	529	509	489	469	449	429	418	418
Low	488	468	448	428	408	400	400	400
Cooling	**Default**	**-8**	**-9 ~ -40**	**+1**	**+2**	**+3**	**+4**	**+5 ~ +20**
Turbo	618	458	453	635	635	635	635	635
High	576	435	435	596	616	618	618	618
Middle	529	418	418	549	569	589	600	600
Low	488	400	400	508	528	548	568	582

Table 20 — 18K - Heating

Heating	Default	-1	-2	-3	-4	-5	-6 ~ -40	+1	+2
Turbo	565	545	525	505	485	465	453	585	605
High	541	521	501	481	461	441	435	561	581
Middle	435	418	418	418	418	418	418	455	475
Low	400	400	400	400	400	400	400	420	440
Heating	**Default**	**+3**	**+4**	**+5**	**+6**	**+7**	**+8**	**+9**	**+10 ~ +20**
Turbo	565	625	635	635	635	635	635	635	635
High	541	601	618	618	618	618	618	618	618
Middle	435	495	515	535	555	575	595	600	600
Low	400	460	480	500	520	540	560	580	582

FAN PERFORMANCE (CONT.)

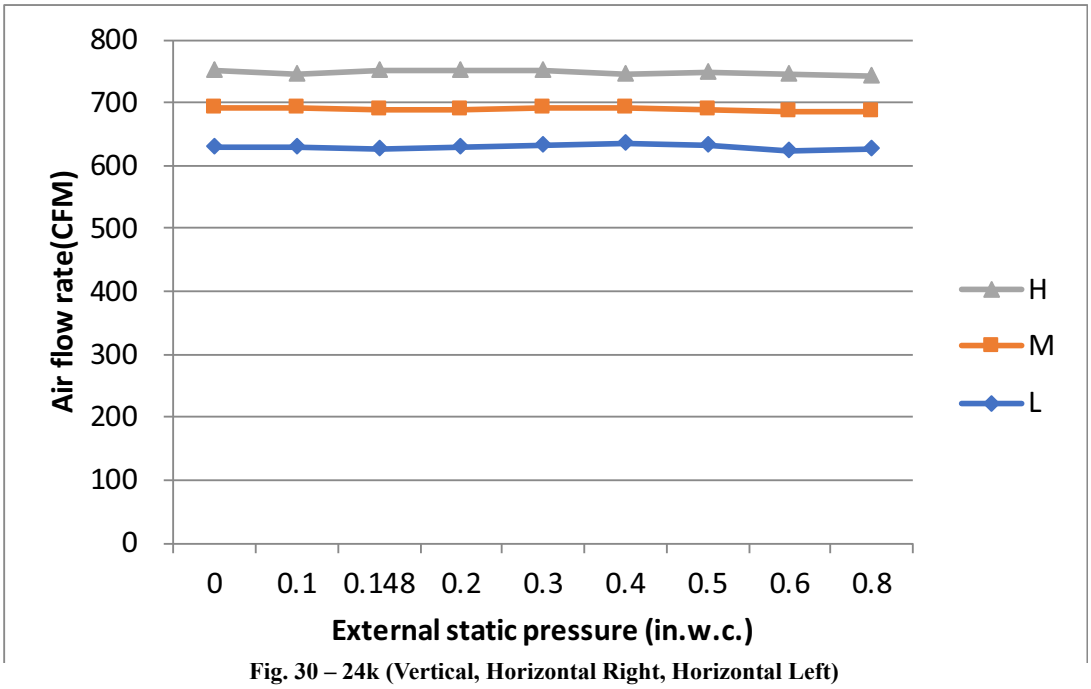


Fig. 30 – 24k (Vertical, Horizontal Right, Horizontal Left)

Setting of air volume through engineering mode:

- To enter engineering mode, in power-on or standby mode, and in non-locked state, press the key combination “ON/OFF+ Air Speed” for 7s.
- Set the air volume of cooling mode at Channel 23, and set the air volume of heating mode at Channel 25. Refer to following air volume table:

Table 21 — 24K - Cooling

Cooling	**Default**	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7**	**-8**	**-9**	**-10**
Turbo	988	804	784	764	744	724	704	684	664	644	624
High	894	739	719	699	679	659	739	619	559	579	559
Middle	806	674	654	634	614	594	574	554	534	514	494
Low	712	609	589	569	549	529	509	489	469	449	429
Cooling	**Default**	**-11**	**-12**	**-13**	**-14**	**-15**	**-16**	**-17**	**-18**	**-19 ~ -40**	**+1**
Turbo	988	604	584	564	544	524	504	484	464	453	844
High	894	539	519	499	479	459	539	435	435	435	779
Middle	806	474	454	434	418	418	418	418	418	418	714
Low	712	409	400	400	400	400	400	400	400	400	649
Cooling	**Default**	**+2**	**+3**	**+4**	**+5**	**+6**	**+7**	**+8**	**+9 ~ +20**		
Turbo	988	853	853	853	853	853	853	853	853		
High	894	799	819	835	835	835	835	835	835		
Middle	806	734	754	774	794	814	818	818	818		
Low	712	669	689	709	729	749	769	789	800		

Table 22 — 24K - Heating

Heating	**Default**	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7**	**-8**	**-9**	**-10**	**-11**
Turbo	788	768	748	728	708	688	668	648	628	608	588	568
High	753	733	713	693	673	653	633	613	593	573	553	533
Middle	641	621	601	581	561	541	521	501	481	461	441	421
Low	524	504	484	464	444	424	404	400	400	400	400	400
Heating	**Default**	**-12**	**-13**	**-14**	**-15**	**-16**	**-17 ~ -40**	**+1**	**+2**	**+3**	**+4**	**+5**
Turbo	788	548	528	508	488	468	453	808	828	848	853	853
High	753	513	493	473	453	435	435	773	793	813	833	835
Middle	641	418	418	418	418	418	418	661	681	701	721	741
Low	524	400	400	400	400	400	400	544	564	584	604	624
Heating	**Default**	**+6**	**+7**	**+8**	**+9**	**+10**	**+11**	**+12**	**+13**	**+14 ~ +20**		
Turbo	788	853	853	853	853	853	853	853	853	853		
High	753	835	835	835	835	835	835	835	835	835		
Middle	641	761	781	801	818	818	818	818	818	818		
Low	524	644	664	684	704	724	744	764	784	800		

FAN PERFORMANCE (CONT.)

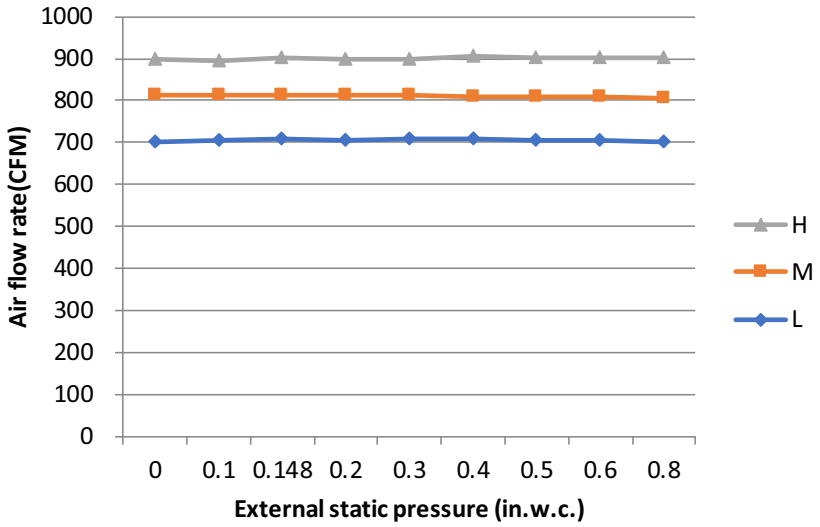


Fig. 31 – 30k (Vertical, Horizontal Right, Horizontal Left)

Setting of air volume through engineering mode:

- To enter engineering mode, in power-on or standby mode, and in non-locked state, press the key combination "ON/OFF+ Air Speed" for 7s.
- Set the air volume of cooling mode at Channel 23, and set the air volume of heating mode at Channel 25. Refer to following air volume table:

Table 23 — 30K - Cooling

Cooling	**Default**	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7**	**-8**	**-9**	**-10**	**-11**
Turbo	988	968	948	928	908	888	868	848	828	808	788	768
High	894	874	854	834	814	794	774	754	734	714	694	674
Middle	806	786	766	746	726	706	686	666	646	626	606	586
Low	712	692	672	652	632	612	592	572	552	532	512	492
Cooling	**Default**	**-12**	**-13**	**-14**	**-15**	**-16**	**-17**	**-18**	**-19**	**-20**	**-21**	**-22**
Turbo	988	748	728	708	688	668	648	628	608	588	568	548
High	894	654	634	614	594	574	554	534	514	494	474	454
Middle	806	566	546	526	506	486	466	446	426	418	418	418
Low	712	472	452	432	412	400	400	400	400	400	400	400
Cooling	**Default**	**-23**	**-24**	**-25**	**-26**	**+1**	**+2**	**+3**	**+4**	**+5**	**+6**	**+7**
Turbo	988	528	508	488	468	988	1008	1028	1048	1068	1071	1071
High	894	435	435	435	435	894	914	934	954	974	994	1014
Middle	806	418	418	418	418	806	826	846	866	886	906	926
Low	712	400	400	400	400	712	732	752	792	792	812	832
Cooling	**Default**	**+8**	**+9**	**+10**	**+11**	**+12**	**+13**	**+14**	**+15**	**+16**	**+17 ~ +20**	
Turbo	988	1071	1071	1071	1071	1071	1071	1071	1071	1071	1071	
High	894	1034	1053	1053	1053	1053	1053	1053	1053	1053	1053	
Middle	806	946	966	986	1006	1026	1035	1035	1035	1035	1035	
Low	712	852	872	892	912	932	952	972	992	1012	1018	

Table 24 — 30K - Heating

Heating	**Default**	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7**	**-8**	**-9**	**-10**
Turbo	918	898	878	858	838	818	798	778	758	738	718
High	876	856	836	816	796	776	756	736	716	696	676
Middle	665	645	625	605	585	565	545	525	505	485	465
Low	453	433	413	400	400	400	400	400	400	400	400
Heating	**Default**	**-11**	**-12**	**-13**	**-14**	**-15**	**-16**	**-17**	**-18**	**-19**	**-20**
Turbo	918	698	678	658	638	618	598	578	558	538	518
High	876	656	636	616	596	576	556	536	516	496	476
Middle	665	445	425	418	418	418	418	418	418	418	418
Low	453	400	400	400	400	400	400	400	400	400	400
Heating	**Default**	**-21**	**-22**	**-23**	**-24 ~ -40**	**+1**	**+2**	**+3**	**+4**	**+5**	**+6**
Turbo	918	498	478	458	453	938	958	978	998	1018	1038
High	876	456	436	435	435	896	916	936	956	976	996
Middle	665	418	418	418	418	685	705	725	745	765	785
Low	453	400	400	400	400	473	493	513	533	553	573
Heating	**Default**	**+7**	**+8**	**+9**	**+10**	**+11**	**+12**	**+13**	**+14 ~ +20**		
Turbo	918	1058	1071	1071	1071	1071	1071	1071	1071		
High	876	1016	1036	1053	1053	1053	1053	1053	1053		
Middle	665	805	825	845	865	885	905	925	945		
Low	453	593	613	633	653	673	693	713	733		

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

FAN PERFORMANCE (CONT.)

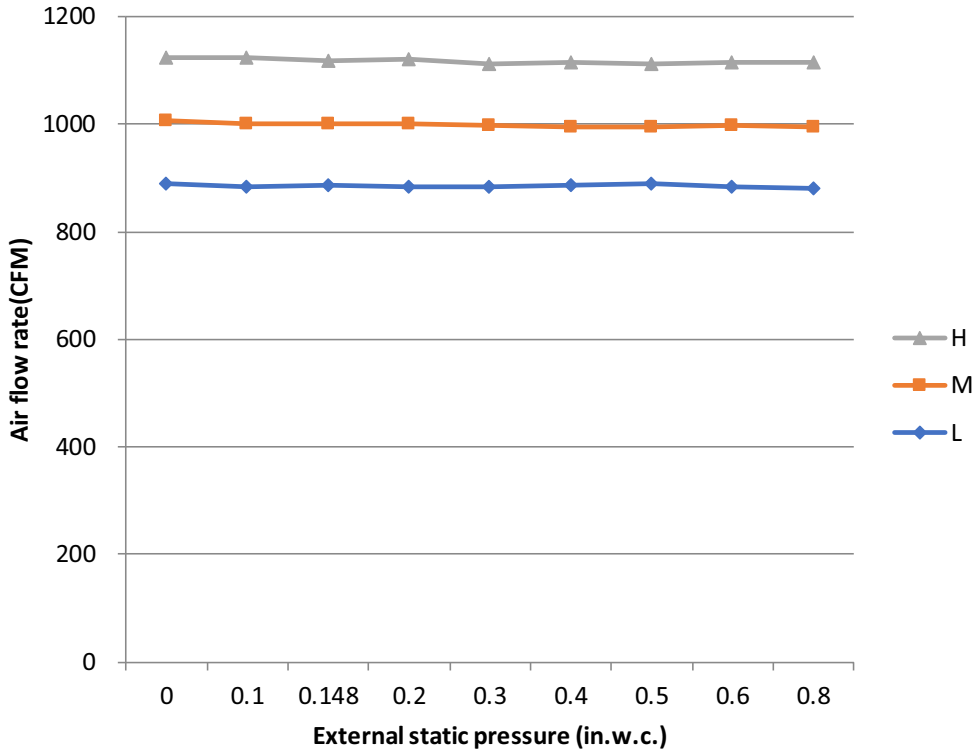


Fig. 32 – 36k (Vertical, Horizontal Right, Horizontal Left)

Setting of air volume through engineering mode:

- To enter engineering mode, in power-on or standby mode, and in non-locked state, press the key combination “ON/OFF+ Air Speed” for 7s.
- Set the air volume of cooling mode at Channel 23, and set the air volume of heating mode at Channel 25. Refer to following air volume table:

Table 25 — 36K - Cooling

Cooling	**Default**	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7**	**-8**	**-9**	**-10**	**-11**	**-12**
Turbo	1188	1168	1148	1128	1108	1088	1068	1048	1028	1008	988	968	948
High	1082	1062	1042	1022	1002	982	962	922	922	902	882	862	842
Middle	971	951	931	911	891	871	851	811	811	791	771	751	731
Low	865	845	825	805	785	765	745	705	705	685	665	645	625
Cooling	**Default**	**-13**	**-14**	**-15**	**-16**	**-17**	**-18**	**-19**	**-20**	**-21**	**-22**	**-23**	**-24**
Turbo	1188	928	908	888	868	848	828	808	788	768	748	728	707
High	1082	822	802	782	762	742	722	702	682	662	642	622	602
Middle	971	711	691	671	651	631	611	591	571	551	531	511	491
Low	865	605	585	565	545	525	505	484	464	445	424	405	400
Cooling	**Default**	**-25**	**-26**	**-27**	**-28**	**-29**	**-30**	**-31**	**-32**	**-33**	**-34**	**-35**	**-36**
Turbo	1188	688	668	648	628	608	588	568	548	528	508	488	468
High	1082	582	562	542	522	502	482	462	442	435	435	435	435
Middle	971	471	451	431	418	418	418	418	418	418	418	418	418
Low	865	400	400	400	400	400	400	400	400	400	400	400	400
Cooling	**Default**	**-37~-40**	**+1**	**+2**	**+3**	**+4**	**+5**	**+6**	**+7**	**+8**	**+9**	**+10**	**+11**
Turbo	1188	453	1208	1228	1248	1268	1288	1288	1288	1288	1288	1288	1288
High	1082	435	1102	1122	1142	1162	1182	1202	1222	1242	1262	1271	1271
Middle	971	418	991	1011	1031	1051	1071	1091	1111	1131	1151	1171	1191
Low	865	400	885	905	925	945	965	985	1005	1025	1045	1065	1085
Cooling	**Default**	**+12**	**+13**	**+14**	**+15**	**+16**	**+17**	**+18**	**+19 ~ +20**				
Turbo	1188	1288	1288	1288	1288	1288	1288	1288	1288				
High	1082	1271	1271	1271	1271	1271	1271	1271	1271				
Middle	971	1211	1231	1251	1253	1253	1253	1253	1253				
Low	865	1105	1125	1145	1165	1185	1205	1225	1235				

FAN PERFORMANCE (CONT.)

Table 26 — 36K - Heating

Heating	Default	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11
Turbo	1112	1092	1072	1052	1032	1012	993	972	952	932	912	892
High	1059	1039	1019	999	979	959	939	912	899	879	859	839
Middle	794	774	754	734	714	694	674	654	634	614	594	572
Low	582	562	542	522	502	482	462	442	422	402	400	400
Heating	**Default**	**-12**	**-13**	**-14**	**-15**	**-16**	**-17**	**-18**	**-19**	**-20**	**-21**	**-22**
Turbo	1112	872	852	832	812	792	772	752	732	712	692	672
High	1059	819	799	779	759	739	719	699	679	659	639	619
Middle	794	554	534	514	494	474	454	434	418	418	418	418
Low	582	400	400	400	400	400	400	400	400	400	400	400
Heating	**Default**	**-23**	**-24**	**-25**	**-26**	**-27**	**-28**	**-29**	**-30**	**-31**	**-32**	**-33 ~ -40**
Turbo	1112	652	632	612	592	572	552	532	512	492	472	453
High	1059	599	579	559	539	519	499	479	459	439	435	435
Middle	794	418	418	418	418	418	418	418	418	418	418	418
Low	582	400	400	400	400	400	400	400	400	400	400	400
Heating	**Default**	**+1**	**+2**	**+3**	**+4**	**+5**	**+6**	**+7**	**+8**	**+9**	**+10**	**+11**
Turbo	1112	1132	1152	1172	1192	1212	1232	1252	1272	1288	1288	1288
High	1059	1079	1099	1119	1139	1159	1179	1199	1219	1239	1259	1271
Middle	794	814	834	854	874	894	914	934	954	974	994	1014
Low	582	602	622	642	662	682	702	722	742	962	782	802
Heating	**Default**	**+12**	**+13**	**+14**	**+15**	**+16**	**+17**	**+18**	**+19**	**+20**		
Turbo	1112	1288	1288	1288	1288	1288	1288	1288	1288	1288		
High	1059	1271	1271	1271	1271	1271	1271	1271	1271	1271		
Middle	794	1034	1054	1074	1094	1114	1134	1154	1174	1194		
Low	582	822	842	862	882	902	922	942	962	982		

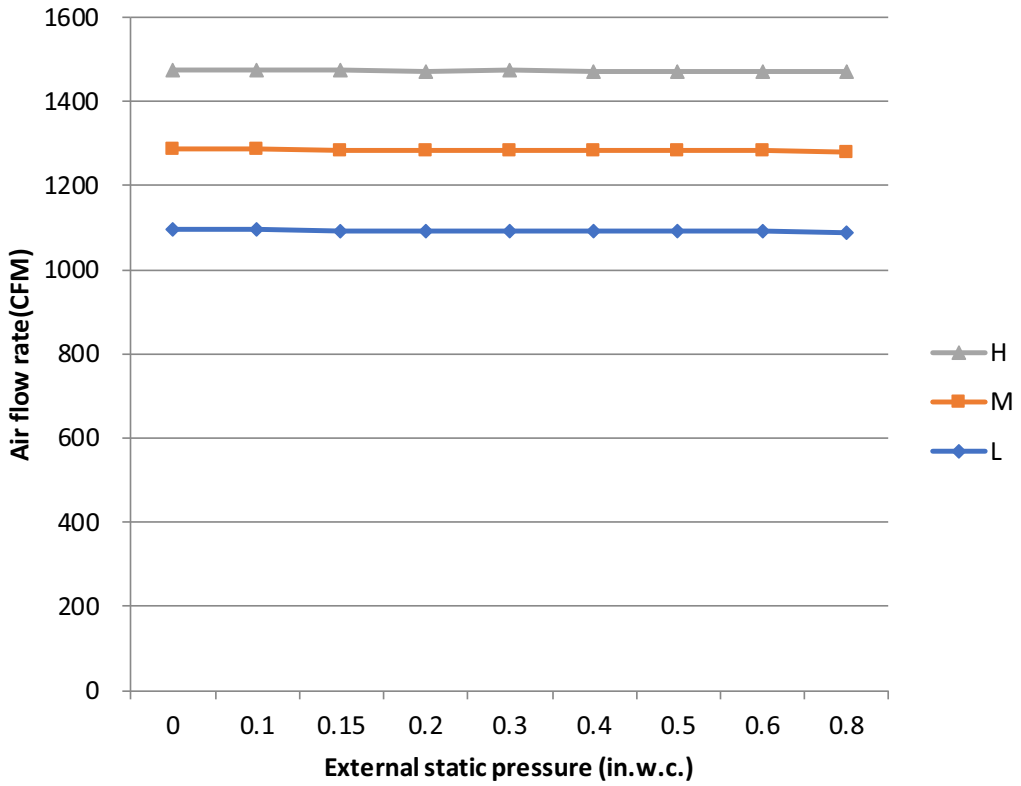


Fig. 33 – 48k (Vertical, Horizontal Right, Horizontal Left)

Setting of air volume through engineering mode:

- To enter engineering mode, in power-on or standby mode, and in non-locked state, press the key combination “ON/OFF+ Air Speed” for 7s.
- Set the air volume of cooling mode at Channel 23, and set the air volume of heating mode at Channel 25. Refer to following air volume table:

Table 27 — 48K - Cooling

Cooling	Default	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
Turbo	1600	1566	1532	1498	1464	1430	1396	1362	1328	1294	1260
High	1471	1437	1403	1369	1335	1301	1267	1233	1199	1165	1131
Middle	1282	1248	1214	1180	1146	1112	1078	1044	1010	976	942
Low	1094	1060	1026	992	958	924	890	856	822	790	790
Cooling	**Default**	**-11**	**-12**	**-13**	**-14**	**-15**	**-16**	**-17**	**-18**	**-19**	**-20**
Turbo	1600	1226	1192	1158	1124	1090	1056	1022	988	954	920
High	1471	1097	1063	1029	995	961	927	893	859	850	850
Middle	1282	908	874	840	820	820	820	820	820	820	820
Low	1094	790	790	790	790	790	790	790	790	790	790
Cooling	**Default**	**-21**	**-22**	**-23**	**-24**	**-25**	**-26**	**-27**	**-28**	**-29**	**-30**
Turbo	1600	880	880	880	880	880	880	880	880	880	880
High	1471	850	850	850	850	850	850	850	850	850	850
Middle	1282	820	820	820	820	820	820	820	820	820	820
Low	1094	790	790	790	790	790	790	790	790	790	790
Cooling	**Default**	**-31**	**-32**	**-33**	**-34**	**-35**	**-36**	**-37**	**-38**	**-39**	**-40**
Turbo	1600	880	880	880	880	880	880	880	880	880	886
High	1471	850	850	850	850	850	850	850	850	850	850
Middle	1282	820	820	820	820	820	820	820	820	820	820
Low	1094	790	790	790	790	790	790	790	790	790	790
Cooling	**Default**	**+1**	**_2**	**+3**	**+4**	**+5**	**+6**	**+7**	**+8**	**+9**	**+10**
Turbo	1600	1634	1668	1702	1736	1770	1804	1838	1872	1906	1940
High	1471	1505	1539	1573	1607	1641	1675	1709	1743	1777	1811
Middle	1282	1316	1350	1384	1418	1452	1486	1520	1554	1588	1622
Low	1094	1128	1162	1196	1230	1264	1298	1332	1366	1400	1434
Cooling	**Default**	**+11**	**+12**	**+13**	**+14**	**+15**	**+16**	**+17**	**+18**	**+19**	**+20**
Turbo	1600	1974	2008	2042	2076	2110	2144	2178	2212	2246	2280
High	1471	1845	1879	1913	1947	1981	2015	2049	2083	2117	2151
Middle	1282	1656	1690	1724	1758	1792	1826	1860	1894	1928	1962
Low	1094	1468	1502	1536	1570	1604	1638	1672	1706	1740	1774

Table 28 — 48K - Heating

Heating	Default	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
Turbo	1600	1566	1532	1498	1464	1430	1396	1362	1328	1294	1260
High	1382	1382	1314	1280	1246	1212	1178	1144	1110	1076	1042
Middle	1141	1107	1073	1039	1005	971	937	903	869	835	820
Low	977	943	909	875	841	807	790	790	790	790	790
Heating	**Default**	**-11**	**-12**	**-13**	**-14**	**-15**	**-16**	**-17**	**-18**	**-19**	**-20**
Turbo	1600	1226	1192	1158	1124	1090	1056	1022	988	954	920
High	1382	1008	974	940	906	872	850	850	850	850	850
Middle	1141	820	820	820	820	820	820	820	820	820	820
Low	977	790	790	790	790	790	790	790	790	790	790
Heating	**Default**	**-21**	**-22**	**-23**	**-24**	**-25**	**-26**	**-27**	**-28**	**-29**	**-30**
Turbo	1600	886	880	880	880	880	880	880	880	880	880
High	1382	850	850	850	850	850	850	850	850	850	850
Middle	1141	820	820	820	820	820	820	820	820	820	820
Low	977	790	790	790	790	790	790	790	790	790	790
Heating	**Default**	**-31**	**-32**	**-33**	**-34**	**-35**	**-36**	**-37**	**-38**	**-39**	**-40**
Turbo	1600	880	880	880	880	880	880	880	880	880	886
High	1382	850	850	850	850	850	850	850	850	850	850
Middle	1141	820	820	820	820	820	820	820	820	820	820
Low	977	790	790	790	790	790	790	790	790	790	790
Heating	**Default**	**+1**	**_2**	**+3**	**+4**	**+5**	**+6**	**+7**	**+8**	**+9**	**+10**
Turbo	1600	1634	1668	1702	1736	1770	1804	1838	1872	1906	1940
High	1382	14216	1450	1484	1518	1552	1586	1620	1654	1688	1722
Middle	1141	1175	1209	1243	1277	1311	1345	1379	1413	1447	1481
Low	977	1011	1045	1079	1113	1147	1181	1215	1249	1283	1317
Heating	**Default**	**+11**	**+12**	**+13**	**+14**	**+15**	**+16**	**+17**	**+18**	**+19**	**+20**
Turbo	1600	1974	2008	2042	2076	2110	2144	2178	2212	2246	2280
High	1382	1756	1790	1824	1858	1892	1926	1960	1994	2028	2062
Middle	1141	1515	1549	1583	1617	1651	1685	1719	1753	1787	1821
Low	977	1351	1385	1419	1453	1487	1521	1555	1589	1623	1657

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

FAN PERFORMANCE (CONT.)

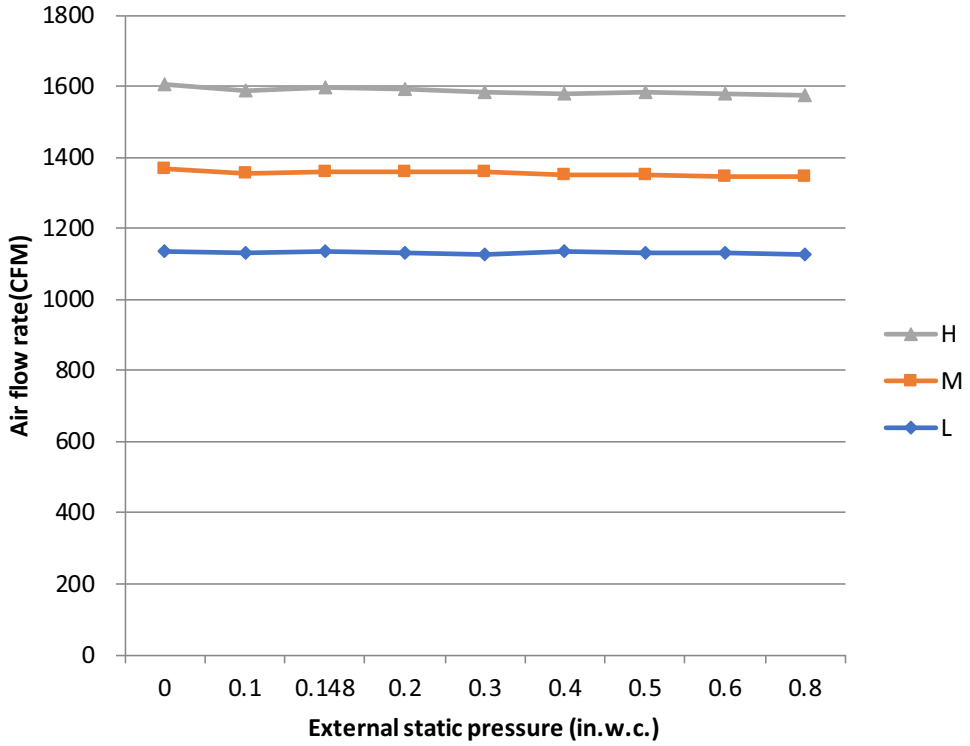


Fig. 34 —60k (Vertical, Horizontal Right, Horizontal Left)

Setting of air volume through engineering mode:

- To enter engineering mode, in power-on or standby mode, and in non-locked state, press the key combination “ON/OFF+ Air Speed” for 7s.
- Set the air volume of cooling mode at Channel 23, and set the air volume of heating mode at Channel 25. Refer to following air volume table:

Table 29 — 60K - Cooling

Cooling	**Default**	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7**	**-8**	**-9**	**-10**
Turbo	1806	1786	1766	1746	1726	1706	1686	1666	1646	1626	1606
High	1582	1562	1542	1522	1502	1482	1462	1442	1422	1402	1382
Middle	1359	1339	1319	1299	1279	1259	1239	1219	1199	1179	1159
Low	1135	1115	1095	1075	1055	1035	1015	995	975	955	935
Cooling	**Default**	**-11**	**-12**	**-13**	**-14**	**-15**	**-16**	**-17**	**-18**	**-19**	**-20**
Turbo	1806	1586	1566	1546	1526	1506	1486	1466	1466	1426	1406
High	1582	1362	1342	1322	1302	1282	1262	1242	1222	1202	1182
Middle	1359	1139	1119	1099	1079	1059	1039	1019	999	979	959
Low	1135	915	895	875	855	835	815	795	775	755	735
Cooling	**Default**	**-21**	**-22**	**-23**	**-24**	**-25**	**-26**	**-27**	**-28**	**-29**	**-30**
Turbo	1806	1386	1366	1346	1326	1306	1286	1266	1246	1226	1206
High	1582	1162	1142	1122	1102	1082	1062	1042	1022	1002	982
Middle	1359	939	919	899	879	859	839	819	799	779	759
Low	1135	715	695	694	694	694	694	694	694	694	694
Cooling	**Default**	**-31**	**-32**	**-33**	**-34**	**-35**	**-36**	**-37**	**-38**	**-39**	**-40**
Turbo	1806	1186	1166	1146	1126	1106	1086	1066	1046	1026	1006
High	1582	962	942	922	902	882	862	842	822	802	782
Middle	1359	739	719	712	712	712	712	712	712	712	712
Low	1135	694	694	694	694	694	694	694	694	694	694
Cooling	**Default**	**+1**	**_2**	**+3**	**+4**	**+5**	**+6**	**+7**	**+8**	**+9**	**+10**
Turbo	1806	1826	1846	1866	1886	1906	1926	1946	1966	1986	2006
High	1582	1602	1622	1642	1662	1682	1702	1722	1742	1762	1782
Middle	1359	1379	1399	1419	1439	1459	1479	1499	1519	1539	1559
Low	1135	1155	1175	1195	1215	1235	1255	1275	1295	1315	1335
Cooling	**Default**	**+11**	**+12**	**+13**	**+14**	**+15**	**+16**	**+17**	**+18**	**+19**	**+20**
Turbo	1806	2026	2046	2066	2086	2106	2126	2146	2153	2153	2153
High	1582	1802	1822	1842	1862	1882	1902	1922	1942	1962	1982
Middle	1359	1579	1599	1619	1639	1659	1679	1699	1719	1739	1759
Low	1135	1355	1375	1395	1415	1435	1455	1475	1495	1515	1535

Table 30 — 60K - Heating

Heating	Default	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
Turbo	1659	1639	1619	1599	1579	1559	1539	1519	1499	1479	1459
High	1582	1562	1542	1522	1502	1482	1462	1442	1422	1402	1382
Middle	1247	1227	1207	1187	1167	1147	1127	1107	1087	1067	1047
Low	976	956	936	916	896	876	856	836	816	796	776
Heating	**Default**	**-11**	**-12**	**-13**	**-14**	**-15**	**-16**	**-17**	**-18**	**-19**	**-20**
Turbo	1659	1439	1419	1399	1379	1359	1339	1319	1299	1279	1259
High	1582	1362	1342	1322	1302	1282	1262	1242	1222	1202	1182
Middle	1247	1027	1007	987	967	947	927	907	887	867	847
Low	976	756	736	716	696	694	694	694	694	694	694
Heating	**Default**	**-21**	**-22**	**-23**	**-24**	**-25**	**-26**	**-27**	**-28**	**-29**	**-30**
Turbo	1659	1239	1219	1199	1179	1159	1139	1119	1099	1079	1059
High	1582	1162	1142	1122	1102	1082	1062	1042	1022	1002	982
Middle	1247	827	807	787	767	747	727	712	712	712	712
Low	976	694	694	694	694	694	694	694	694	694	694
Heating	**Default**	**-31**	**-32**	**-33**	**-34**	**-35**	**-36**	**-37**	**-38**	**-39**	**-40**
Turbo	1659	1039	1019	999	979	959	939	919	899	879	859
High	1582	962	942	922	902	882	862	842	822	802	782
Middle	1247	712	712	712	712	712	712	712	712	712	712
Low	976	694	694	694	694	694	694	694	694	694	694
Heating	**Default**	**+1**	**_2**	**+3**	**+4**	**+5**	**+6**	**+7**	**+8**	**+9**	**+10**
Turbo	1659	1679	1699	1719	1739	1759	1779	1799	1819	1839	1859
High	1582	1602	1622	1642	1662	1682	1702	1722	1742	1762	1782
Middle	1247	1267	1287	1307	1327	1347	1367	1387	1407	1427	1447
Low	976	996	1016	1036	1056	1076	1096	1116	1136	1156	1176
Heating	**Default**	**+11**	**+12**	**+13**	**+14**	**+15**	**+16**	**+17**	**+18**	**+19**	**+20**
Turbo	1659	1879	1899	1919	1939	1959	1979	1999	2019	2039	2059
High	1582	1802	1822	1842	1862	1882	1902	1922	1942	1962	1982
Middle	1247	1467	1487	1507	1527	1547	1567	1587	1607	1627	1647
Low	976	1196	1216	1236	1256	1276	1296	1316	1336	1356	1376

Table 31 — Wiring Connections

System Size	18K	24K	30K	36K (XB3)	36K (XA3)	48K	60K
Power Supply (V-Ph-Hz)	3 Wires: includes ground wire (Outdoor) (208/230-1-60)						
Interconnection to Indoor Unit	Yes						
Shielded Wiring (Y/N)	Yes						

Table 32 — Electrical Data

Indoor Unit		18K	24K	30K	36K (XB3)	36K (XA3)	48K	60K
Voltage-Phase-Frequency	V-Ph-Hz	208/230-1-60						
Minimum Circuit Ampacity (MCA)	A	3.5	4	6	6	6	9.75	11
Maximum Overcurrent Protection Ampacity (MOCP)	A	15						
Max – Min Voltage Range	V	253-187						
Cooling (with high heat ODU, except that 30K with regular heat ODU) – Indoor + Outdoor values								
Running current	A	9.1	8.7	12.5	12.5	13.4	22	24
Power consumption	W	1500	1916	2730	2820	3080	4752	5400
Heating (with high heat ODU, except that 30K with regular heat ODU) – Indoor + Outdoor values								
Running current	A	9.5	9.7	11.2	12.3	14.3	19	21.8
Power consumption	W	1570	2180	2440	2800	3289	4186	5146

WIRING DIAGRAMS

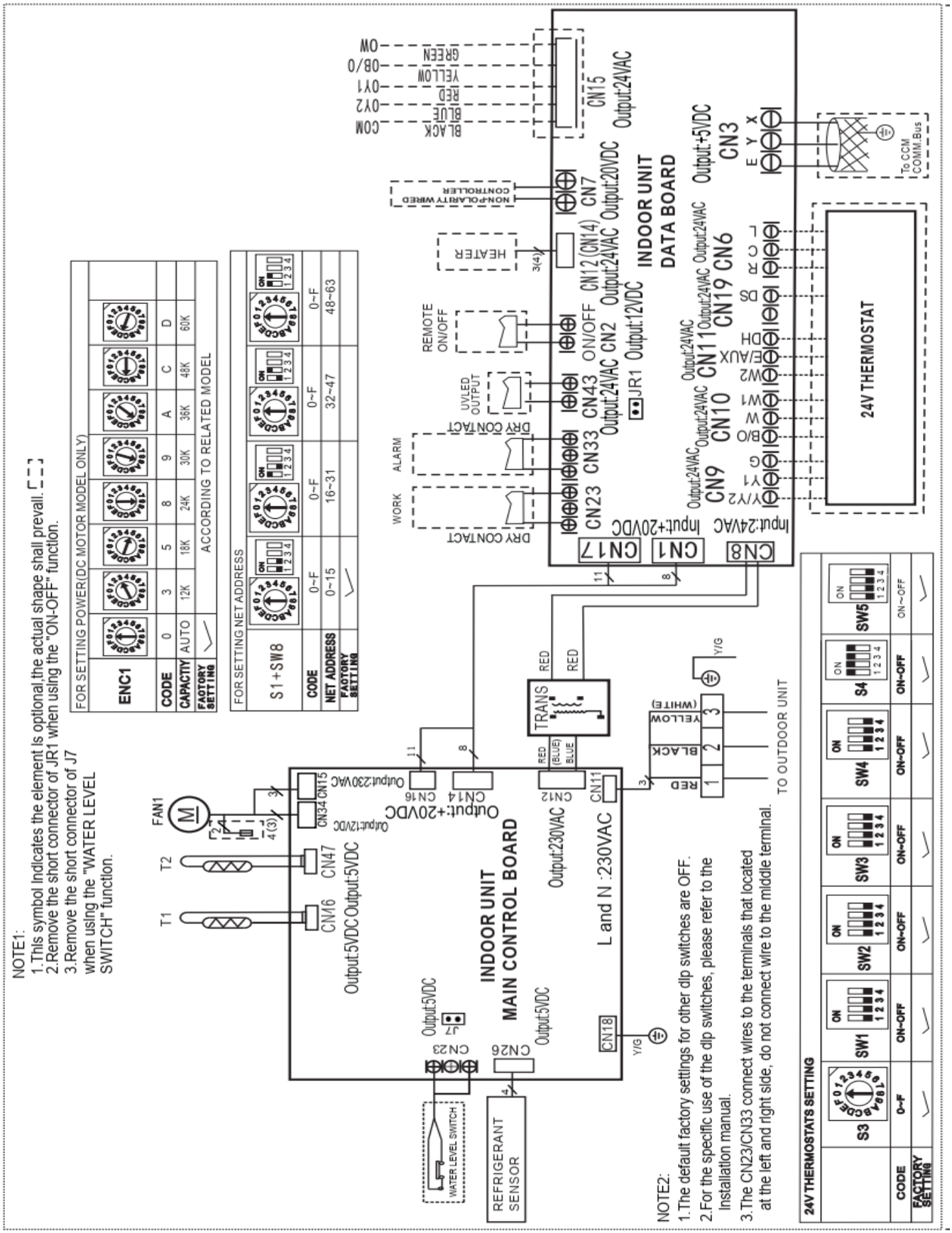


Fig. 35 — Wiring Diagram Sizes 18K/24K/30K/36K(XB3)

WIRING DIAGRAMS (CONT)

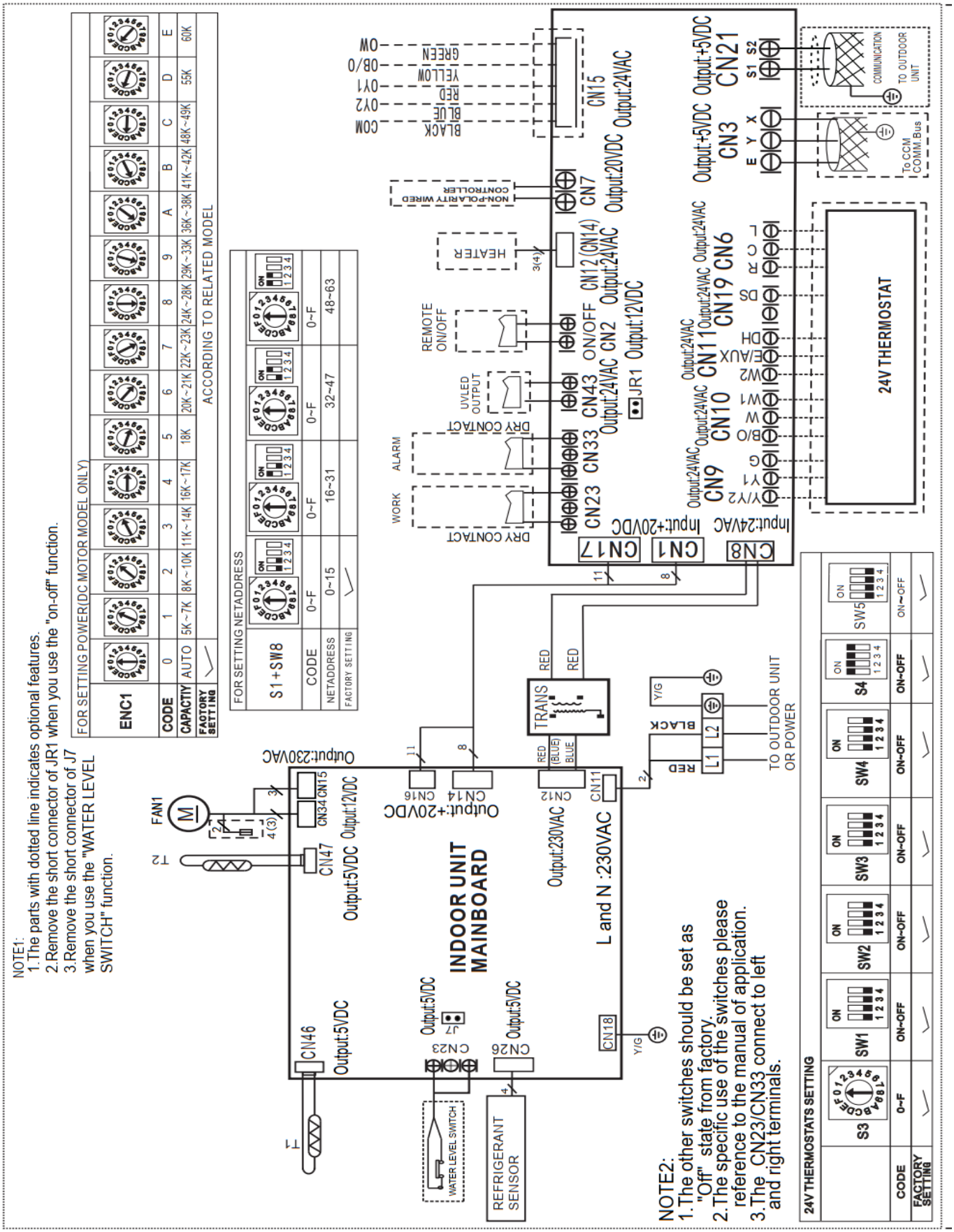


Fig. 36 — Wiring Diagram Sizes 36K(XA3)/48K/60K

GUIDE SPECIFICATIONS
VERTICAL AIR HANDLER

Size Range: 1.5 to 5 Ton Nominal Cooling and Heating Capacity Model Number: **45MBAA**

Part 1 - GENERAL

1.01 System Description

Indoor, air handler, direct-expansion fan coils are matched with a heat pump outdoor unit.

1.02 Agency Listings

Unit is rated per AHRI Standards 210/240 and listed in the AHRI directory as a matched system.

1.03 Delivery, Storage, And Handling

Units are stored and handled per the unit manufacturer's recommendations.

1.04 Warranty (For Inclusion By Specifying Engineer)

Part 2 - PRODUCTS

2.01 Equipment

A. General:

Indoor, direct-expansion fan coil. The unit is complete with cooling/heating coil, fan, fan motor, piping connectors, electrical controls, microprocessor control system, and integral temperature sensing.

B. Unit Cabinet:

Unit cabinet is constructed of galvanized steel. The cabinet is fully insulated for improved thermal and acoustic performance.

C. Fans:

The fan is the tangential direct-drive blower type with air intake at the rear or bottom of the unit and discharge at the front.

D. Coil:

The coil is a copper tube with aluminum fins and galvanized steel tube sheets. The fins are bonded to the tubes by mechanical expansion and specially hydrophilic pre-coated for enhanced wet-ability. A drip pan under the coil has a drain connection for piping attachment to remove condensate.

E. Motors:

The motors have an open drip-proof, permanently lubricated ball bearing with inherent overload protection. Fan motors are 4-speed.

F. Controls:

The controls consist of a microprocessor-based control system which controls the space temperature, determines optimum fan speed, and runs self diagnostics.

The unit has the following functions (at a minimum):

1. An automatic restart, after a power failure, which sets the unit back to the same operating conditions it operated under at time of failure.
2. A timer function to provide a minimum 24-hour timer cycle for system Auto Start/Stop.
3. Automatic airflow technology - fan maintains set CFM range at up to 0.80" W.C. ESP
4. Temperature-sensing controls sense return air temperature.
5. Indoor coil freeze protection.
6. Wired remote controller to enter set points and operating conditions.
7. **DEHUMIDIFICATION** mode provides increased latent removal capability by modulating system operation and set point temperature. Applicable **only** with third party thermostats that have the dehumidification option.
8. **FAN−ONLY** operation to provide room air circulation when cooling is not required.
9. Diagnostics provide continuous checks of unit operation and warns of possible malfunctions. Error messages appear on the unit.
10. The fan speed control is user-selectable: high, medium, low, or microprocessor controlled automatic operation during all operating modes.
11. Automatic heating-to-cooling changeover in the **HEAT** pump mode. The control includes deadband to prevent rapid mode cycling between heating and cooling.
12. Indoor coil high temperature protection is provided to detect an excessive indoor discharge temperature when the unit is in the **HEAT** pump mode.

G. Electrical Requirements:

The indoor fan motor operates on 208-230V. Power is supplied for residential units.

H. Operating Characteristics:

The air handler system has a minimum SEER2 (Seasonal Energy Efficiency Ratio) and HSPF at AHRI conditions, as listed on the specifications table.

I. Refrigerant Lines:

All units have refrigerant lines that can be oriented to connect from the side of the unit. Both refrigerant lines must be insulated.

J. Leak Mitigation

The unit is equipped with a refrigerant leak detection sensor.

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