Arcoaire®
Air Conditioning & Heating

D5FSOA

One-Way Cassette Ductless System
Sizes 6K to 18K

Product Data

Fig. 1 – Sizes 6K to 18K

NOTE: Images are for illustration purposes only. Actual models may differ slightly.

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INDUSTRY LEADING FEATURES / BENEFITS

A PERFECT BALANCE BETWEEN BUDGET LIMITS, ENERGY SAVINGS AND COMFORT

The **D5FSOA** series ductless system are a matched combination of an outdoor condensing unit and an indoor unit connected only by refrigerant tubing and wires.

The unit is for ceiling application only. This selection 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
- When adding air conditioning to spaces that are heated by hydronic or electric heat and have no ductwork
- Historical renovations or any application where preserving the look of the original structure is essential.

The ideal compliment to your ducted system when it is impractical or prohibitively expensive to use ductwork.

The compact indoor units take up very little space in the room and do not obstruct windows. The units are attractively styled to blend with most room decors. 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 ductwork. In addition, since outdoor units can be installed close to an outside wall, coils are protected from vandals and severe weather.

SIMPLE SERVICING AND MAINTENANCE

Removing the top panel on the outdoor units provides immediate access to the control compartment, providing a service technician access to check the unit's operation. In addition, the draw-thru design of the outdoor section means that dirt accumulates on the outside surface of the coil. Coils can be cleaned quickly from the inside using a pressure hose and detergent.

On all indoor units, service and maintenance expense is reduced due to easy-to-use cleanable filters. In addition, these console systems have extensive self-diagnostics to assist in troubleshooting.

BUILT-IN RELIABILITY

Ductless system indoor and outdoor units are designed to provide years of trouble-free operation.
The console indoor units include protection against freeze-up and high evaporator temperatures on heat pumps.
The condensing units on heat pumps are protected by a three minute time delay before the compressor starts the over-current protection and the high temperature protection.

INDIVIDUAL ROOM COMFORT

Maximum comfort is provided because each space can be controlled individually based on usage pattern. The air sweep feature provided permits optimal room air mixing to eliminate hot and cold spots for occupant comfort. In addition, year-round comfort can be provided with heat pumps.

ECONOMICAL OPERATION

The ductless system design allows individual 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. In addition, because air is moved only in the space required, no energy is wasted moving air through ducts.

EASY-TO-USE CONTROLS

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

PUSHIN INSTALLATION

- When it comes to choosing the position to hang up the hooks and the unit, there are strict requirements for the ceiling condition, and not always the desired position you want to install the unit is the ideal position.
- An unique and exclusive PushIn Case is designed for easy installation options.
- This method enables installation no longer subjecting to the ceiling conditions, and free the installers from manual measurement and adjustment of the hooks distance, guaranteeing the unit is precisely placed in the position you desired.

Fig. 2 —2-Way Installation

HANGUP INSTALLATION

- Installers can go with a more common approach to attach the unit with hooks.
- Our hangers with optimized anti-cutting design are easy to grab and lift up, preventing hands from scratching by the sharp edge.

BUILT-IN DRAIN PUMP

- The built-in water pump can discharge the condensate water.
- No need to add an extra water pump to the side of the unit.

EASY–TO-ACCESS CORE COMPONENTS

Adopting the design of the high wall split, installers only have to open the front panel to gain access to PCB box and water pump sections.

Fig. 3 —Easy–to-Access Core Components

ACCESSORIES

Customizing these ductless systems to your application is easily accomplished.

OPTIONAL WIRED CONTROLLER

AGENCY LISTINGS

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

R-454B

Refrigerant Safety Group **A2L**

R-454B

WARNING - Risk of Fire due to Flammable Refrigerant Used. Follow Handling Instructions Carefully in Compliance with National Regulations

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FOR CLASS B DIGITAL DEVICE

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try t o correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the distance between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for assistance.

MODIFICATION

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate this device.

SAFETY FEATURES

Compressor three-minute delay at restart

Compressor functions are delayed for up to ten seconds upon the first startup of the unit, and are delayed for up to three minutes upon subsequent unit restarts.

Automatic shutoff based on discharge temperature

If the compressor discharge temperature exceeds a certain level for nine seconds, the compressor ceases operation.

Inverter module protection

The inverter module has an automatic shutoff mechanism based on the unit's current, voltage, and temperature. If automatic shutoff is initiated, the corresponding error code is displayed on the indoor unit and the unit ceases operation.

Indoor fan delayed operation

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

Compressor preheating

Preheating is automatically activated when T4 outdoor sensor is lower than setting temperature.

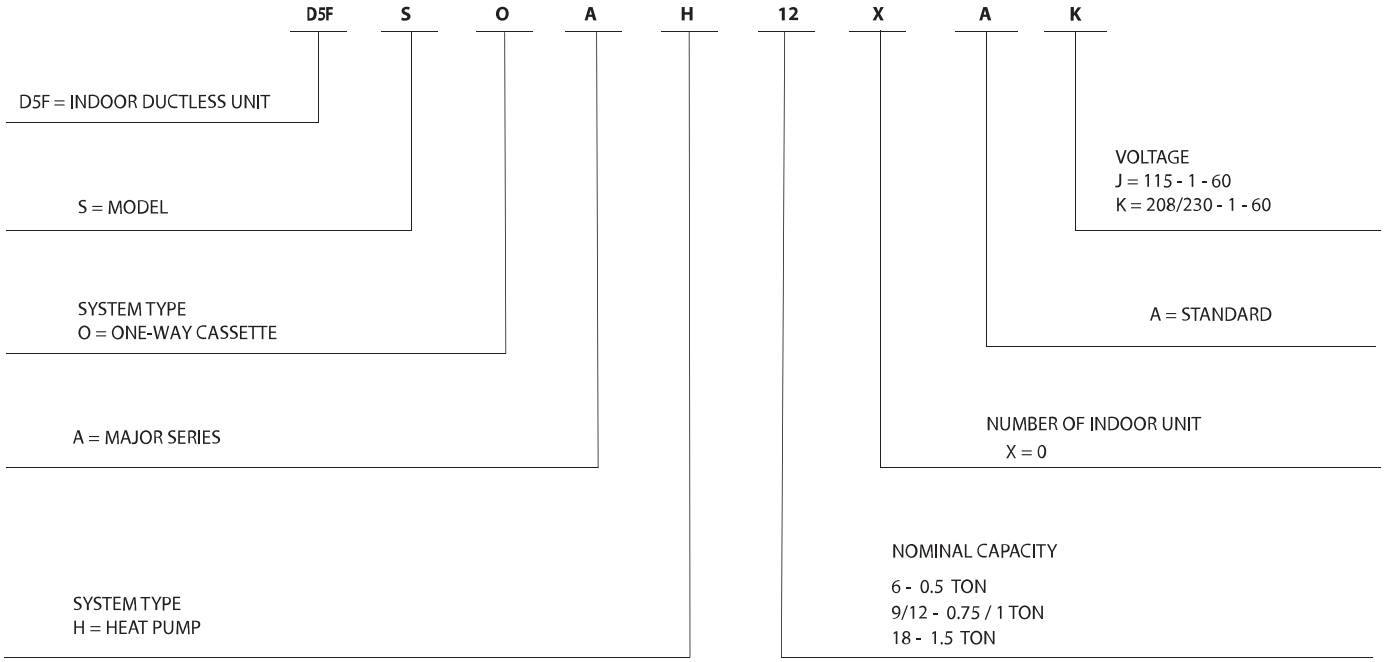
Sensor redundancy and automatic shutoff

- 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.

Refrigerant leak

The unit is equipped with a refrigerant leak detection sensor

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.

A230164

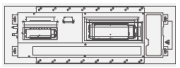
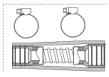
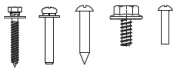
STANDARD FEATURES AND ACCESSORIES

Table 1 — Standard Features

EASE OF INSTALLATION	
Mounting Brackets	S
Low Voltage Controls	S
Floor Mounting Installation	S
Ceiling Installation	S
COMFORT FEATURES	
Microprocessor Controls	S
Wired Remote Control	A
Wireless Remote Control	S
Smart Kit Remote Control (Dongle Only with Built-In USB)	A
Automatic Up-Down Air Sweep	S
Air Direction Control	S
Auto Restart Function	S
Cold Blow Protection On Heat Pumps	S
Freeze Protection Mode On Heat Pumps	S
Turbo Mode	S
Silence Mode	S
Auto Changeover On Heat Pumps	S
Follow Me	S
ENERGY SAVING FEATURES	
Sleep Mode	S
Stop/Start Timer	S
46° F Heating Mode (Heating Setback)	S
SAFETY AND RELIABILITY	
Indoor Coil Freeze Protection	S
Aluminum Golden Hydrophilic pre-coated fins	S
Indoor Coil High Temp Protection in Heating Mode	S
The unit is equipped with a refrigerant leak detection sensor	S
EASE OF SERVICE AND MAINTENANCE	
Cleanable Filters	S
Diagnostics	S
APPLICATION FLEXIBILITY	
Condensate Pumps	S

Legend
S - Standard
A - Accessory

Table 2 — Accessories

Name of Accessory	Quantity	Image
Manual	1	
Installation Cardboard Template	1	
Remote Controller	1	
Cable Tie	6	
Drain Adapter	1	
Panel	1	
Condensate Tray	1	
Rubber Ring	1	
AAA Battery	2	
Brass Nut	2	
Screw kits (RC Part 12011600007498)	1 (8,8,2,2,4)	
Wired Controller (Purchased Separately)	1	
Remote Controller Holder	1	

FAN MODE

When fan mode is activated:

- **The outdoor fan and compressor are stopped.**
- **Temperature control is disabled and no temperature setting is displayed.**
- **The indoor fan speed can be set to 1%~100% and auto.**
- **The louver operations are identical to those in COOLING mode.**
- **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).**

COOLING MODE

Indoor Fan Control

1. In the **COOLING** mode, the indoor fan operates continuously. The fan speed can be set to 1%-100%, or low, medium, high and auto.
2. Auto fan action in cooling mode:

- **Descent curve**
  - When T1-Tsc is lower than to 6.3°F/3.5°C, fan speed reduces to 80%;
  - When T1-Tsc is lower than to 1.8°F/1°C,, fan speed reduces to 60%;
  - When T1-Tsc is lower than to 0.9°F/0.5°C, fan speed reduces to 40%;
  - When T1-Tsc is lower than to 0°F/0°C, fan speed reduces to 20%;;
  - When T1-Tsc is lower than to -0.9°F/-0.5°C, fan speed reduces to 1%;.
- **Rise curve**
  - When T1-Tsc is higher than or equal 0°F/0°C, fan speed increases to 20%;;
  - When T1-Tsc is higher than or equal 0.9°F/0.5°C, fan speed increases to 40%;
  - When T1-Tsc is higher than or equal 1.8°F/1°C,, fan speed increases to 60%;
  - When T1-Tsc is higher than or equal 2.7°F/1.5°C, fan speed increases to 80%;
  - When T1-Tsc is higher than or equal 7.2°F/4°C, fan speed increases to 100%.

CONDENSER TEMPERATURE PROTECTION

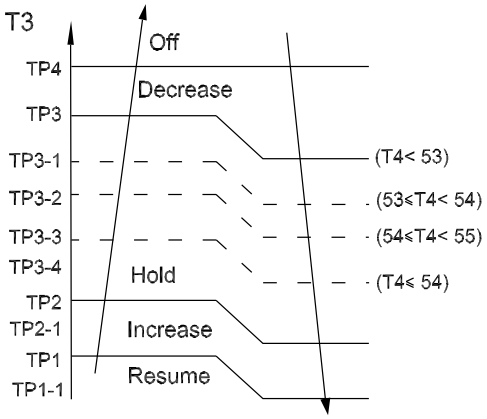


Fig. 4 – Condenser Temperature Protection

When the condenser temperature exceeds a configured value, the compressor ceases operation.

EVAPORATOR TEMPERATURE PROTECTION

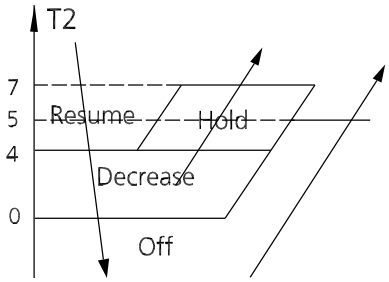


Fig. 5 – Evaporator Temperature Protection

- Off:
- 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 the **HEATING** mode, the indoor fan operates continuously. The fan speed can be set to 1%-100% and auto.

• Anti-cold air function

• If the temperature difference of T2 changes during auto fan and causes the fan speed to change, run the current fan speed for 30 seconds first, the default interval is the interval before the fan speed changes, and then judge T2 according to the current interval after 30 seconds to get the final anti-cold air interval.

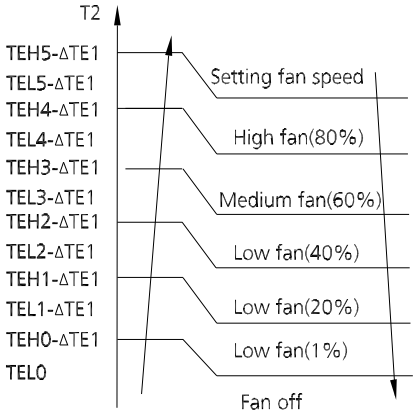


Fig. 6 – Indoor Fan Control

ΔTE1=0

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 80%;
  • When T1-Tsc is higher than 0°F/0°C, fan speed reduces to 60%;
  • When T1-Tsc is higher than /0.9°F/0.5°C, fan speed reduces to 40%;
  • When T1-Tsc is higher than 1.8°F/1°C, fan speed reduces to 20%.

- Descent curve

  • When T1-Tsc is lower than or equal to 0.9°F/0.5°C, fan speed increases to 40%;
  • When T1-Tsc is lower than or equal to 0°F/0°C, fan speed increases to 60%;
  • When T1-Tsc is lower than or equal to -2.7°F/-1.5°C,, fan speed increases to 80%;
  • When T1-Tsc is lower than or equal to -5.4°F/-3°C, fan speed increases to 100%.

EVAPORATOR COIL TEMPERATURE PROTECTION

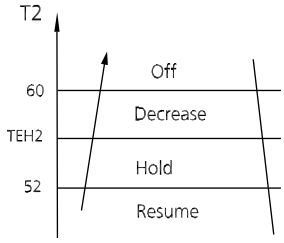


Fig. 7 – Evaporator Coil Temperature Protection

- 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

NOTE: Not recommended when connected to Multi-Zone unit.

- This mode can be selected with the remote controller and the temperature setting can be adjusted between 60°F(16°C)~86°F(30°C).

In **AUTO-Mode**, the machine selects cooling, heating or fan-only mode on the basis of T1,Ts, Outdoor ambient temperature(T4) and relative humidity (φ).

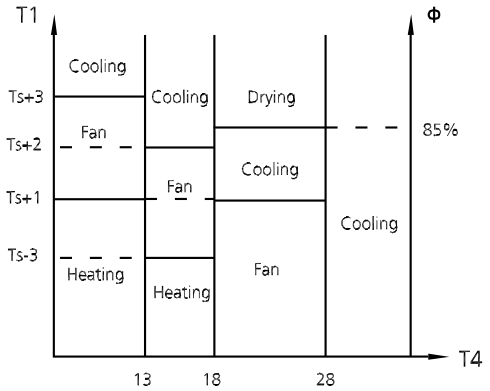


Fig. 8 – Auto Mode

DRYING MODE

- In the **DRYING** mode, the unit operates the same as auto fan in the **COOLING** mode.
- All protections are activated and operate the same as they do that in the **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 **AUTO/COOL,** the unit will run in the following sequence:

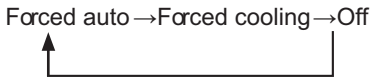


Fig. 9 – Forced Operation Sequence

- 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 unit switches to **AUTO-Mode** 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
- Changes in:
  - mode
  - fan speed
  - sleep mode
  - Follow Me

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

The **SLEEP** function is available in **COOLING**, **HEATING**, or **AUTO-Mode**.The operational process for sleep mode is as follows:

- When COOLING, the temperature rises 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 temperature decreases 1.8°F/1°C (to not lower than 60°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.
- The operating time for sleep mode is 8 hours, after which, the unit exits this mode.
- The timer setting is available in this mode.

AUTO-RESTART

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.

46°F (8°C) HEATING (Heat pump units)

In the **HEATING** mode, the temperature can be set to as low as 46°F(8°C), preventing the indoor area from freezing if unoccupied during severe cold weather.

FOLLOW ME

- Once FOLLOW ME is active, the remote control will send a signal every 3 minutes, with no beeps. The unit automatically sets the temperature according to the measurements from the remote control.
- The unit will only change modes if the information from the remote control makes it necessary, not from the unit's temperature setting.
- If the unit does not receive a signal for 7 minutes or you press "Follow Me," the function turns off. The unit regulates temperature based on its own sensor and settings.

OPTIONAL FUNCTIONS

SILENCE

NOTE: Multi-Zone systems do not have this function.

- To activate press "Silence" or keep pressing FAN for more than 2 seconds on the remote control to enable the SILENCE function. While this SILENCE is active, the compressor frequency is maintained at a lower level than F3. The indoor unit run at faint breeze (1%), which reduces noise to the lowest possible level.
- When matched with multi outdoor unit, this function is disabled.

ECO FUNCTION

NOTE: Multi-Zone systems do not have this function.

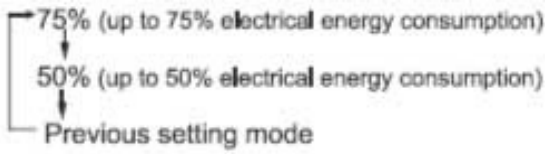
- Used to enter the energy efficient mode.
- Under the COOLING mode, press ECO, the remote controller will adjust the temperature automatically to 75°F/24°C, fan speed of AUTO to save energy (however only if the set temperature is less than 75°F/24°C). If the set temperature is more than 75°F/24°C and 86°F/30°C, press ECO, the fan speed will change to AUTO, the set temperature will remain unchanged.
- When pressing ECO button, or modifying the mode or adjusting the set temperature to less than 75°F/24°C, the unit will quit the ECO operation.
- Operation time in the ECO mode is 8 hours. After 8 hours the unit exits this mode.

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

ELECTRICAL ENERGY CONSUMPTION CONTROL FUNCTION

NOTE: Multi-Zone systems do not have this function.

1. Press the "Gear" button on remote controller to enter the energy efficient mode in a sequence of following:



2. Turn off the unit or activate ECO, sleep, Super cool, 8°C Heating, Silence or self clean function will quit this function.

BREEZE AWAY FUNCTION

NOTE: Multi-Zone systems do not have this function.

This feature avoids direct airflow by lowering the fan speed to reduce draft.

NOTE: This feature is available under cooling mode, fan-only mode and drying mode.

ACTIVE CLEAN FUNCTION

NOTE: Multi-Zone systems do not have this function.

- The Active Clean Technology washes away dust, mold, and grease that may cause odors when it adheres to the heat exchanger by automatically freezing and then rapidly thawing the frost. The internal wind wheel then keeps operating to blow-dry the evaporator, thus preventing the growth of mold and keeping the inside clean.
- When this function is turned on, the indoor unit display window appears "CL", after 20 to 45 minutes, the unit will turn off automatically and cancel Active Clean function.

DIMENSIONS

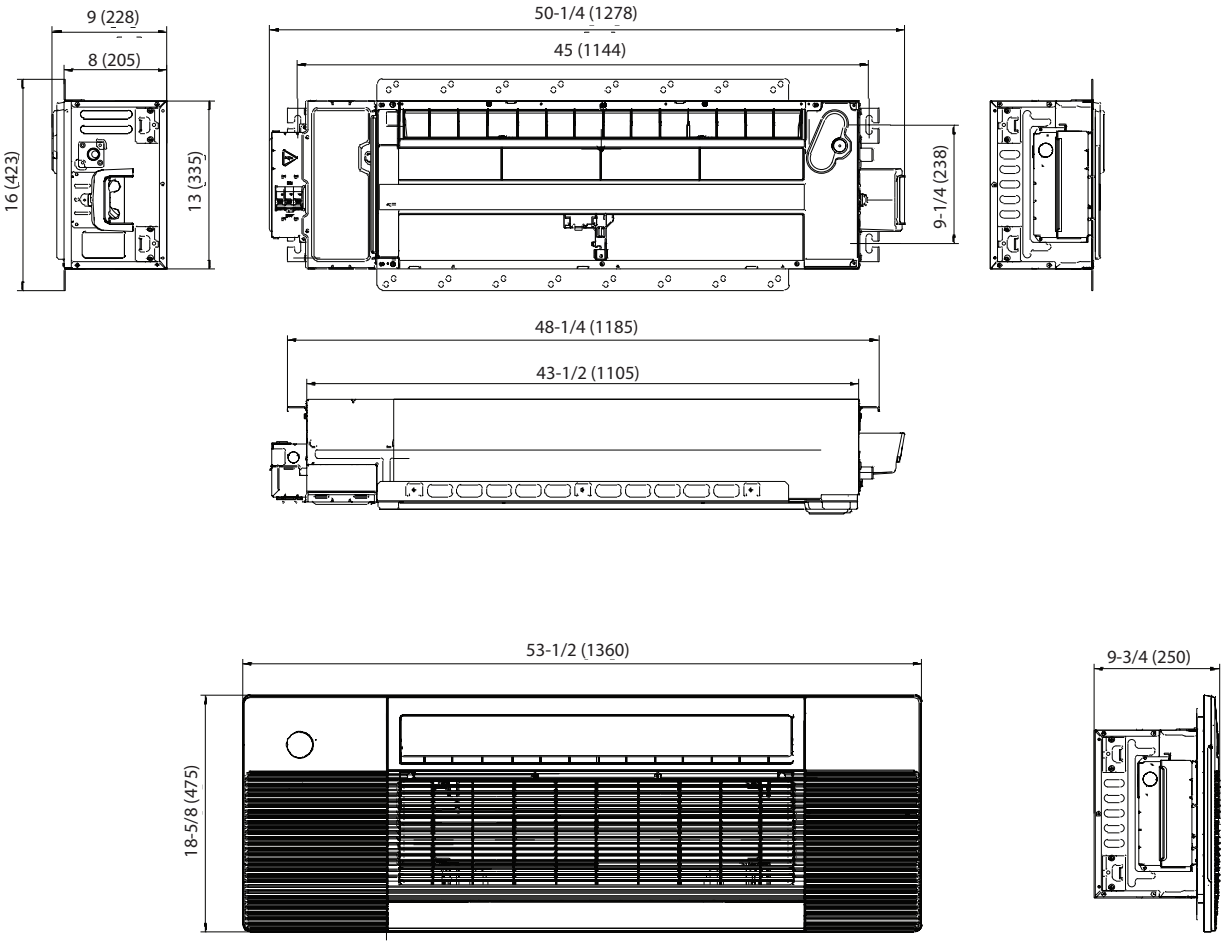


Fig. 10 – Dimensions for All Sizes

CLEARANCE

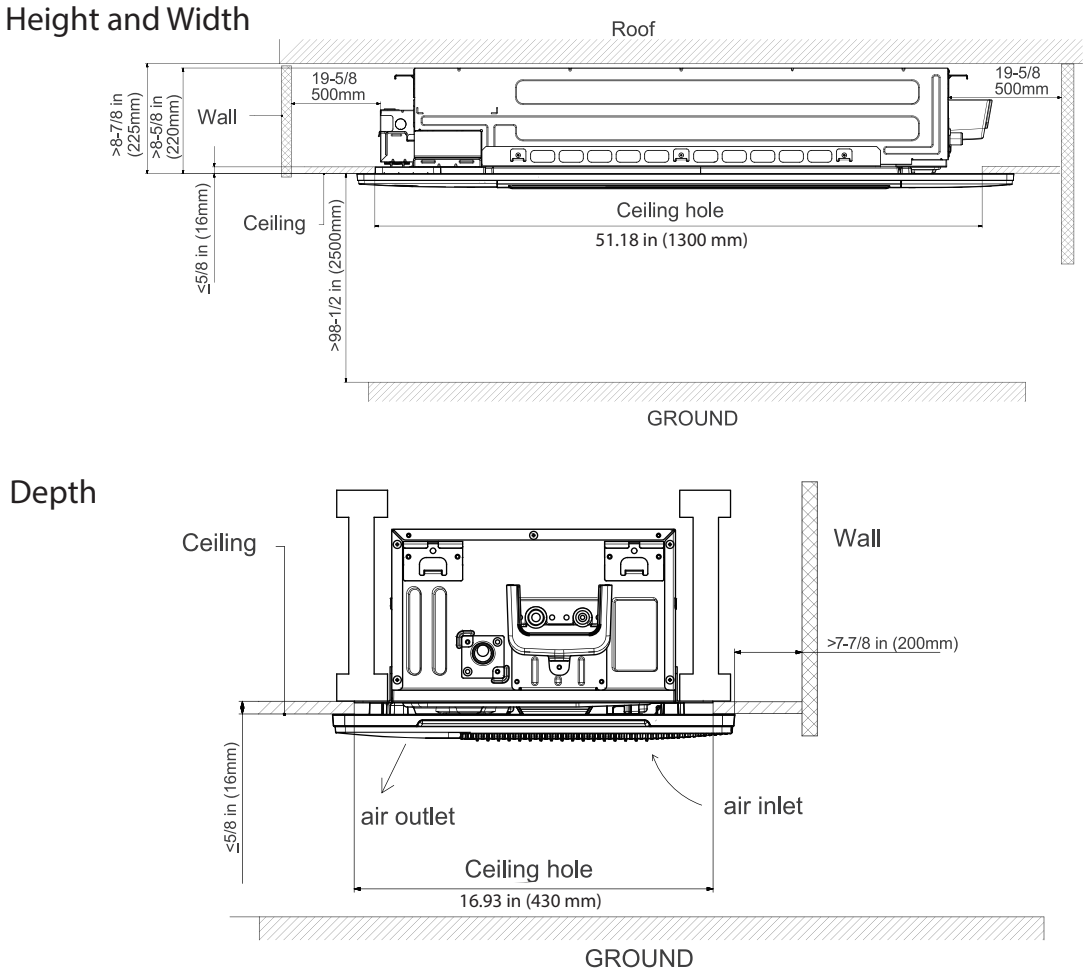


Fig. 11 – Clearance

PART NAMES

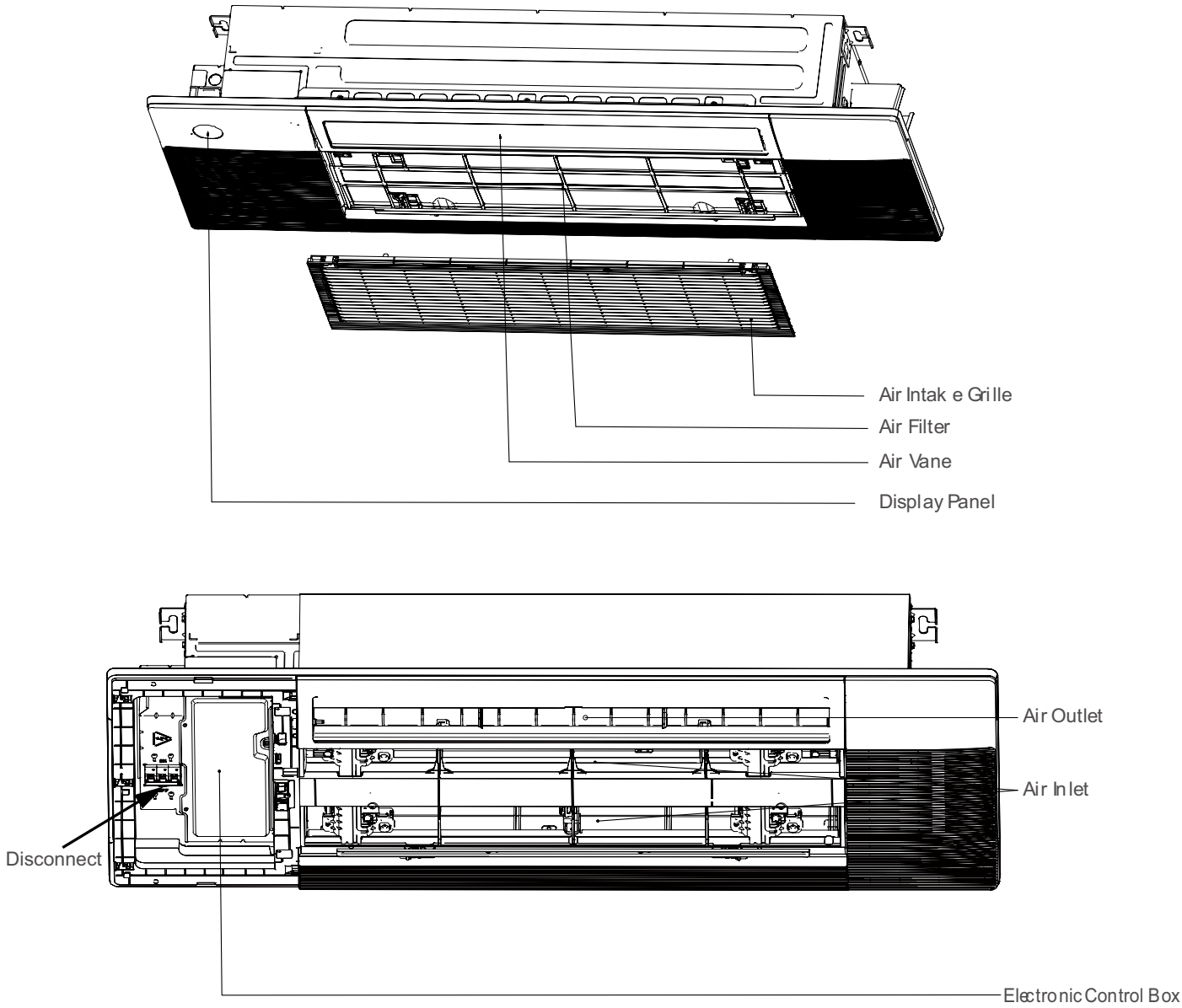


Fig. 12 – Part Names

SPECIFICATIONS

Table 3 – Specifications

SIZE			6K	9K/12K	18K
INDOOR MODEL NUMBER			D5FSOAH06XAK	D5FSOAH12XAK	D5FSOAH18XAK
Power Supply		V;Ph;Hz	208/230V;1Ph;60HZ		
Unit Dimensions	Height (H)	in (mm)	8.98 (228)	8.98 (228)	8.98 (228)
	Width (W)	in (mm)	50.31 (1278)	50.31 (1278)	50.31 (1278)
	Depth (D)	in (mm)	13.19 (335)	13.19 (335)	13.19 (335)
Weight - Net		lbs. (kg)	45.19 (20.5)	45.19 (20.5)	45.19 (20.5)
INDOOR FAN SPECIFICATIONS	Material	-	Acrylontrile Styrene +30%G		
	Type	-	GL-94*820-IN		
	Diameter	inch	3.7	3.7	3.7
		mm	94	94	94
	Height	inch	32.3	32.3	32.3
		mm	820	820	820
INDOOR MOTOR SPECIFICATIONS	Model	-	ZKFN-30-8-43		
	Type	-	DC		
	Input	W	34.9	34.9	34.9
	Max. Input	W	78.6	78.6	78.6
	Output	W	30	30	30
	FLA	A	0.8	1.0	1.2
	Rated HP	HP	0.04	0.04	0.04
	Range of Current	Amps	0.35±10%	0.35±10%	0.35±10%
	Rated Current	Amps	0.35	0.35	0.35
	Speed	rev/min	1024/944/784	1075/982/797	1344/1184/1024
	Rated RPM	rev/min	1024	1075	1344
	Insulation Class	-	B	B	B
	Safe Class	-	IP20	IP20	IP20
INDOOR REFRIGERANT COIL SPECIFICATIONS	Number of Rows	Rows	2	2	2
	Tube Outside Diameter	inch	0.276	0.276	0.276
		mm	Φ7	Φ7	Φ7
	Nominal Tube Wall	Inch (mm)	0.00945 (0.24)	0.00945 (0.24)	0.00945 (0.24)
	Tube Enhancement	(Yes/No)	Yes	Yes	Yes
	Tube Material		Copper		
	Tube Pitch (a) x Row Pitch (b)	inch	0.83 x 0.53	0.83 x 0.53	0.83 x 0.53
		mm	21x13.37	21x13.37	21x13.37
	Fin Spacing	FPI	20	20	20
		mm	1.3	1.3	1.3
	Fin Type		Louvered		
	Fin Material		Gold hydrophilic aluminum		
	Coil Length x Height x Width	inch	32.68x7.44x1.05+32.68x4.96x 1.05	32.68x7.44x1.05+32.68x4.96x 1.05	32.68x7.44x1.05+32.68x4.96x 1.05
		mm	830*189*26.74+830*126*26.74	830*189*26.74+830*126*26.74	830*189*26.74+830*126*26.74
	Face Area	ft2/CM2	2.81/2610	2.81/2610	2.81/2610
	Number of Circuits	#	3	3	3
PIPING	Liquid	in	Ø1/4	Ø1/4	Ø1/4
		mm	Ø6.35	Ø6.35	Ø6.35
	Suction	in	Ø3/8	Ø3/8	Ø1/2
		mm	9.52	9.52	12.7

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

Table 3 – Specifications (Continued)

SIZE				6K	9K/12K	18K
INDOOR MODEL NUMBER				D5FSOAH06XAK	D5FSOAH12XAK	D5FSOAH18XAK
ENVIRONMENTAL SPECIFICATIONS	Cooling Operating Range	Indoor Min - Max DB	°F	63~90	63~90	63~90
			(°C)	(16~32)	(16~32)	(16~32)
		Indoor Min - Max WB	°F	59-84	59-84	59-84
			(°C)	(15-29)	(15-29)	(15-29)
		Outdoor Min - Max DB	°F	-22~122	-22~122	-22~122
			(°C)	(-30~50)	(-30~50)	(-30~50)
	Heating Operating Range	Indoor Min - Max DB	°F	32~86	32~86	32~86
			(°C)	(0~30)	(0~30)	(0~30)
		Outdoor Min - Max DB	°F	-22~75	-22~75	-22~75
			(°C)	(-30~24)	(-30~24)	(-30~24)
	Non-operating environment Storage	Temperature Range (DB)	°F	-49-140	-49-140	-49-140
			(°C)	(-45-60)	(-45-60)	(-45-60)
	Operation Humidity	%		0-80	0-80	0-80
	Ambient Humidity	%		0-80	0-80	0-80

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

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

APPLICATION DATA

Unit Selection

Select equipment to either match or is 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 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. 11 – on page 8).

Unit location - Select a location which provides the best air circulation for the room.

Mounting Template

Refer to the unit's installation instructions for further details.
The units are furnished with mounting to mark the location of the wiring, and refrigeration line hole locations.

Support

Adequate support must be provided to support the weight of the unit. Refer to Table for the unit weight and the base unit dimensional drawings for the mounting brackets location.

Table 4 – System Operating Conditions

OPERATING RANGE MIN/MAX °F (°C)		
	COOLING	HEATING
INDOOR DB	63 / 90 (17 / 32)	32 / 86 (0 / 30)

NOTE: Reference the product installation instructions for more information.

Refrigerant Lines

General Refrigerant Line Sizing:

1. The outdoor units are shipped with a full charge of r454b refrigerant.
2. Refrigerant lines should not be buried in the ground. If it is necessary to bury the lines, not more than 36-in (914 mm) should be buried. Provide a minimum 6-in (152 mm) vertical rise to the service valves to prevent refrigerant migration.
3. Both lines must be insulated. Use a minimum of 1/2-in. (12.7 mm) thick insulation. Closed-cell insulation is recommended in all long-line applications.
4. Special consideration should be given to isolating the interconnecting tubing from the building structure. Isolate the tubing so that vibration or noise is not transmitted into the structure.

WIRING

All wires must be sized per NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. Use Electrical Data table MCA (minimum circuit amps) and MOCP (maximum over current protection) to correctly size the wires and the disconnect fuse or breakers respectively.

Recommended Connection Method for Power and Communication Wiring:

The main power is supplied to the outdoor unit. The field supplied 14/3 stranded wire with ground with a 600 volt insulation rating, power/communication wiring from the outdoor unit to indoor unit consists of four (4) wires and provides the power for the indoor unit. Two wires are line voltage AC power, one is communication wiring (S) and the other is a ground wire. Wiring between indoor and outdoor unit is polarity sensitive. The use of BX wire is **NOT** recommended.

If installed in a high Electromagnetic field (EMF) area and communication issues exists, a 14/2 stranded shielded wire can be used to replace L2 and (S) between outdoor unit and indoor unit landing the shield onto ground in the outdoor unit only.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Wires should be sized based on NEC and local codes.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Be sure to 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 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 shall be located within sight and readily accessible from the air conditioner.

CONTROL SYSTEM

The 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 unit (outdoor units have a microprocessor too) with thermistors located in the air inlet and on the indoor coil.
Heat pump units have a thermistor on the outdoor coil. These thermistors monitor the system operation to maintain the unit within acceptable parameters and control the operating mode.

Wireless Remote Control

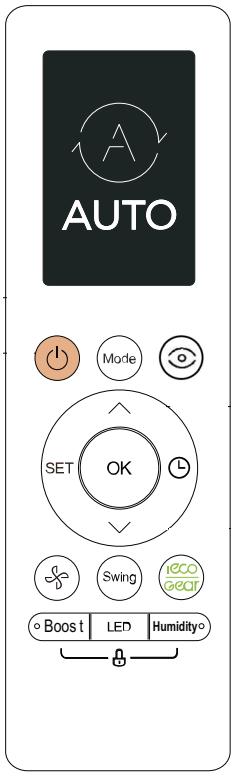


Fig. 13 – Wireless Remote Controller (RG10L5(2HS)

1. A wireless remote control is supplied for system operation of the console units.
2. Each battery operated wireless (infrared) remote control may be used to control more than one unit.

Wired Remote Control (OPTIONAL)

Fig. 14 – Wired Controller (KSACN1401AAA)

1. Optional wired remote controller used for system operation of all console units.
2. Kit includes a wired remote controller and a connecting cable.
3. Connect the wire terminal between the remote controller and the indoor unit.
4. Display in °F or °C and temperature increments every 1°F or every 1°C.

24V INTERFACE (Optional) (KSAIC0601230)

Allows Ductless System to be controlled using a Third Party Thermostat

SOUND PRESSURE

Table 5 – Sound Pressure

SYSTEM SIZE		6K	9K/12K	18K
INDOOR SOUND PRESSURE LEVEL	HIGH/MEDIUM/LOW/SILENT	37.5/35.5/32.5/23.5	41/37/33/24	44/41.5/31/26

SOUND PRESSURE TESTING METHOD

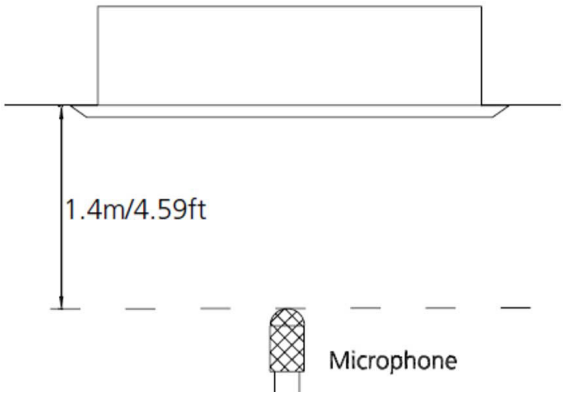


Fig. 15 – Sound Pressure Testing Method

NOTES:

- Sound measured at 4.59ft/1.4m away from the noisiest location of the unit.
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- Reference acoustic pressure OdB = 20µPa.
- Sound level will vary depending on a range of factors such as the construction -(acoustic absorption coefficient) of particular room where the equipment is installed.
- The operating conditions are assumed to be standard.

AIR FLOW DATA

Table 6 – Air Flow Data

SYSTEM SIZE		6K	9K/12K	18K
INDOOR (CFM) DATA	HIGH/MEDIUM/LOW	294.12/258.82/235.29	311.76/282.35/247.06	351.76/300.00/207.06

MOISTURE REMOVAL

Table 7 – Moisture Removal

SYSTEM SIZE		6K	9K/12K	18K
DEHUMIDIFYING VOLUME	L/h	0.34	1.69	2.05

AIR THROW DATA

Table 8 – Air Throw Data

SYSTEM SIZE		6K	9K/12K	18K
MAXIMUM APPROXIMATE AIR THROW DATA	FT (M)	22.97 (7)	22.97 (7)	24.61 (17.5)

ELECTRICAL DATA

Table 9 – Electrical Data

Indoor Unit		6K	9K/12K	18K
V-Ph-Hz		(208/230V)	(208/230V)	(208/230V)
Minimum Circuit Ampacity (MCA)	A	3	3	3
Maximum Overcurrent Protection Ampacity (MOP)	A	15	15	15
Voltage-Phase-Frequency		208/230-1-60		
Max – Min Voltage Range		253-187		

LEGEND
FLA - Full Load Amps
MCA - Minimum Circuit Amps
MOP- Maximum Overcurrent Protection

PERFORMANCE

NOTE: See the Outdoor Unit Product Databook (37MAHA-01PD).

NC CURVES

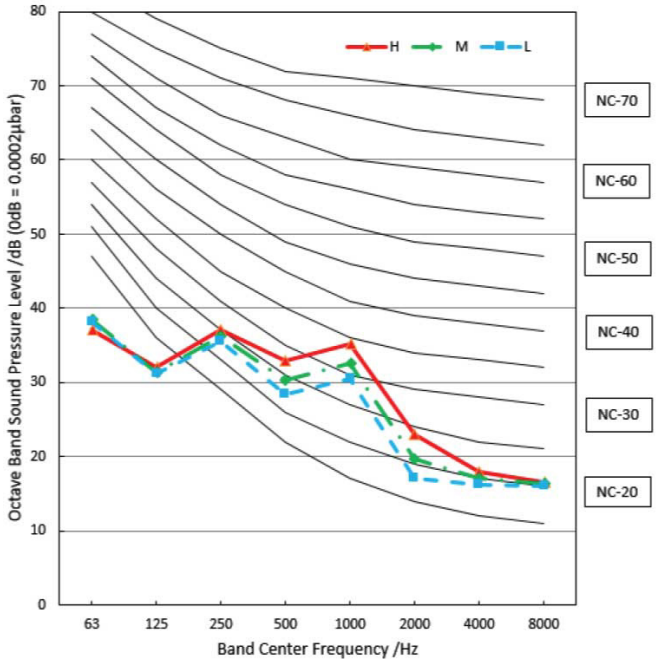


Fig. 16 – Size 6K

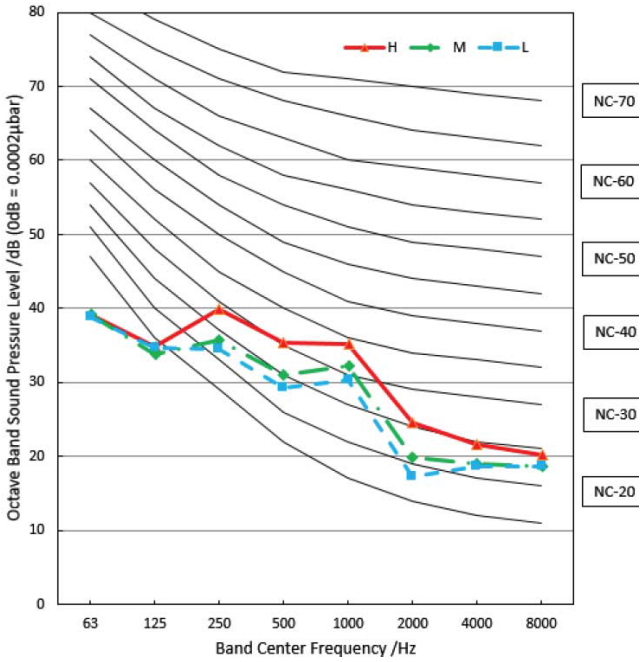


Fig. 17 – Size 12K [Capacity 9K]

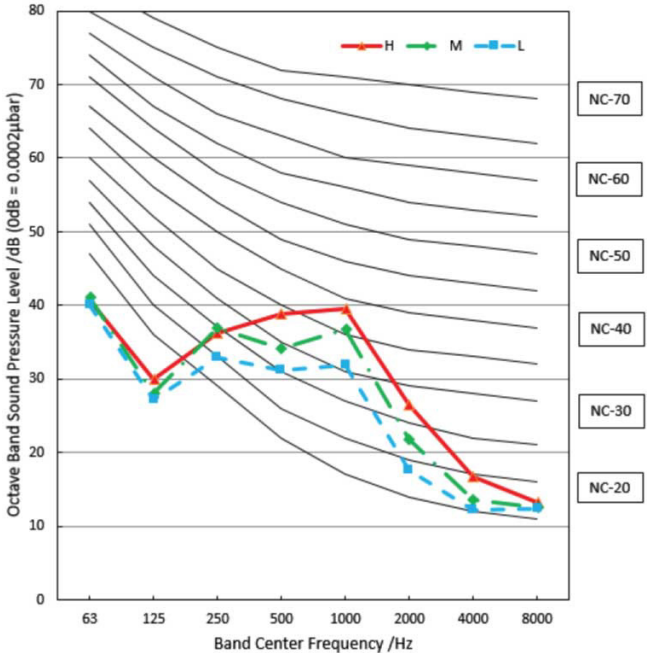


Fig. 18 – Size 12K [Capacity 12K]

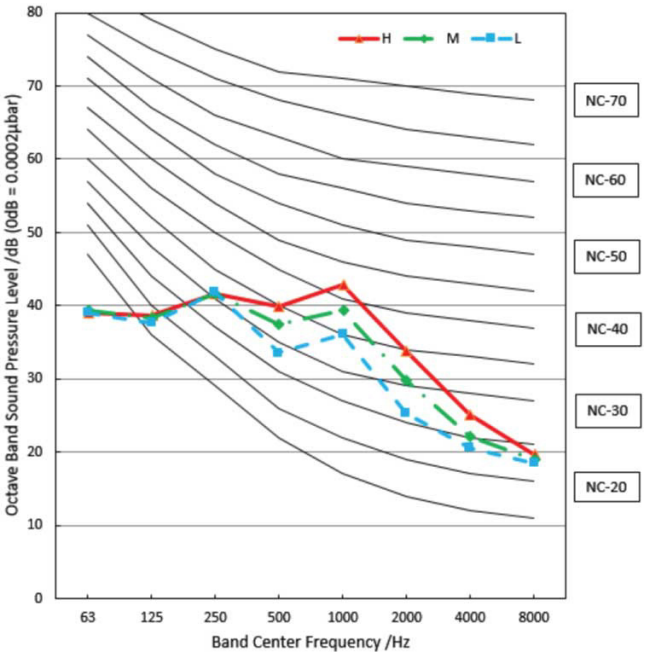


Fig. 19 – Size 18K

WIRING DIAGRAM

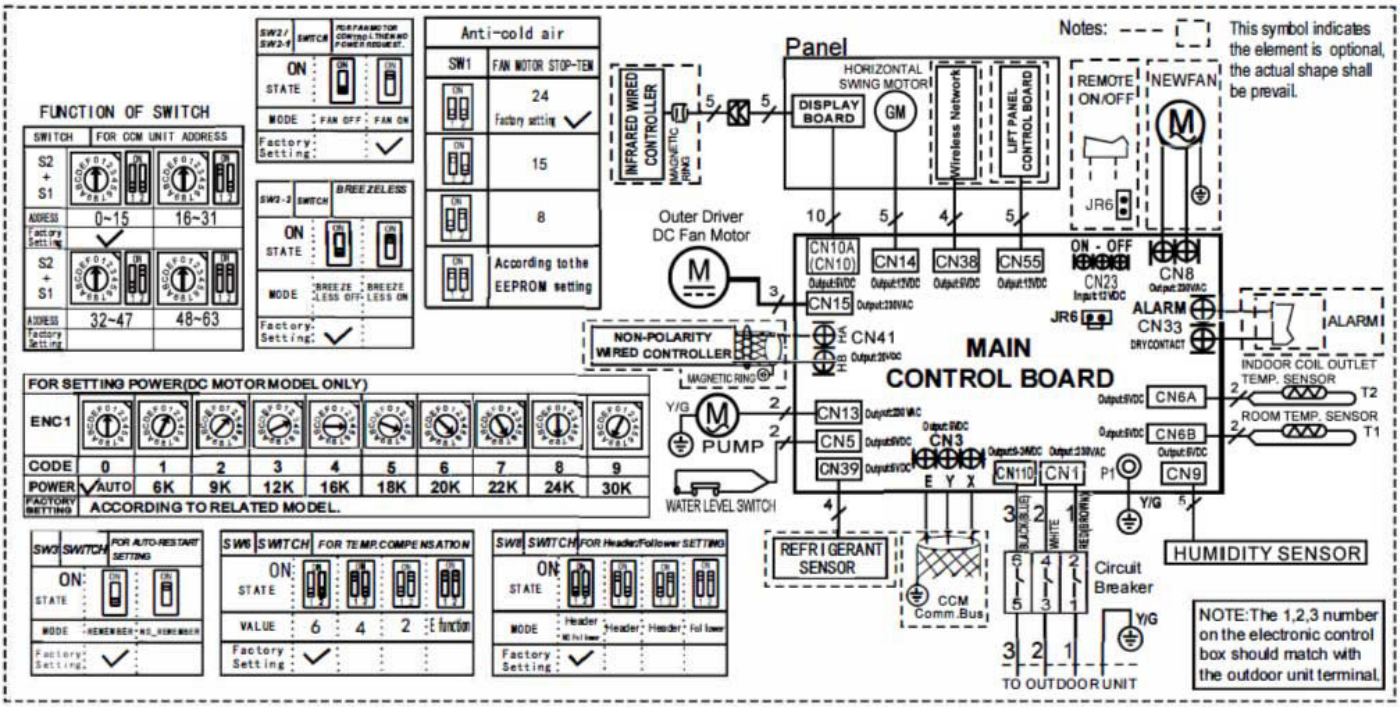


Fig. 20 – Wiring Diagram Sizes 6K-18K

CONNECTION DIAGRAMS

For remote control (ON-OFF) terminal port CN23 and jumper JR6:

1. Remove the JR6 jumper when using the ON-OFF function;
2. When the remote switch is off (OPEN); the system is off and displays “CP”;
3. When the remote switch is on (CLOSE); the system is on;
4. When the remote switch is closed or opened, the system responds to the command within 2 seconds.

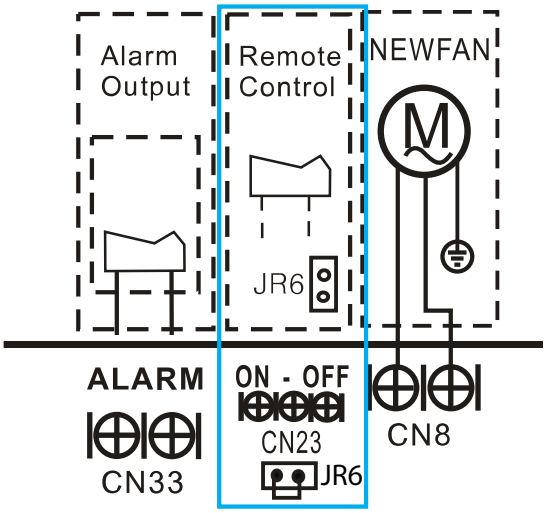


Fig. 21 – Remote control (ON-OFF) terminal port CN23, and Jumper JR6

For ALARM terminal port CN33

When there is an alarm on the unit, the CN33 dry contacts close. May be used to control a pilot relay for an external alarm device.

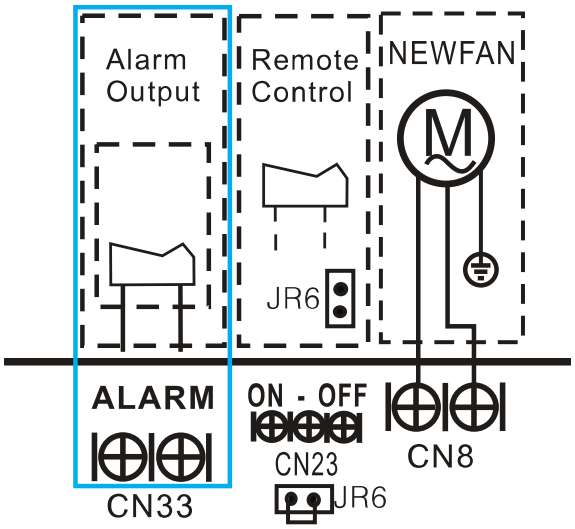


Fig. 22 – For ALARM terminal port CN33

For new fresh motor terminal port CN8

1. When the indoor blower is running, CN 8 will be powered on with line voltage (208 or 230). Use this connection to power a relay for controlling a separate circuit for outdoor air fan or other peripheral.
2. When the unit enters force cooling mode or capacity testing mode, CN8 powers off.

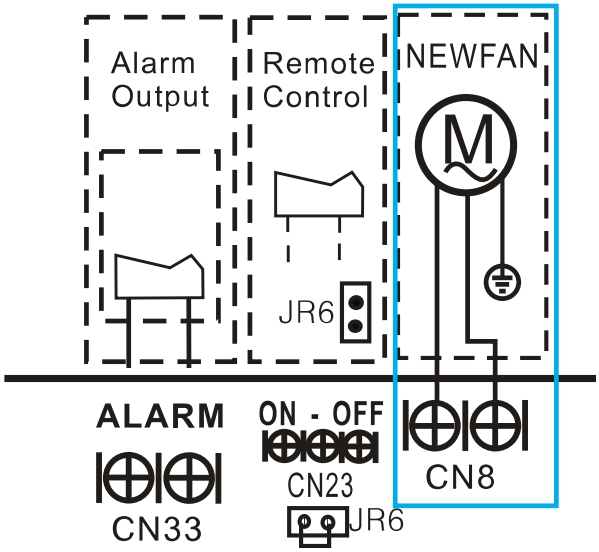
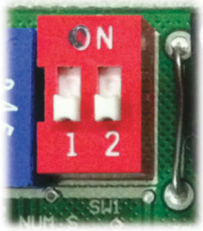


Fig. 23 – For new fresh motor terminal port CN8

Micro-Switch SW1

Micro-switch SW1 is for selection of indoor fan stop temperature (TEL0) when it is in anti-cold wind action in heating mode.

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



Anti-cold air	
SW1	FAN MOTOR STOP-TEM
ON 1 2	24 Factory setting ✓
ON 1 2	15
ON 1 2	8
ON 1 2	According to the EEPROM setting

Fig. 24 – Micro-Switch SW1

Micro-Switch SW2/SW2-1

Micro-switch SW2/SW2-1 is for selection of indoor FAN ACTION if room temperature reaches the setponit and the compressor stops.
Range: OFF (anti-cold wind is available in heating mode), Keep running (No anti-cold wind function).

NOTE: SW2 dial switch is only reserved physical part but without mode modification function, if want to make change on the factory setting, should use remote controller or wire controller to reset (depending on model).

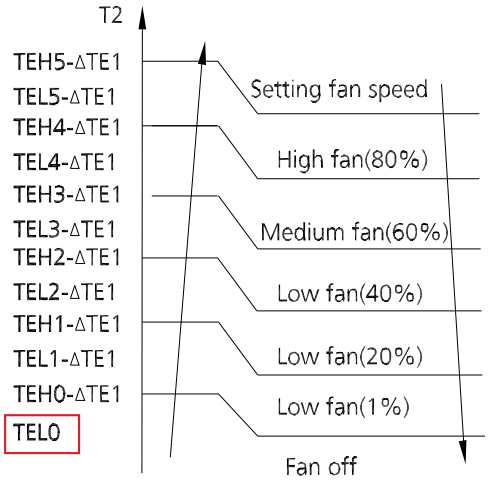


Fig. 25 – Micro-Switch SW2/SW2-1

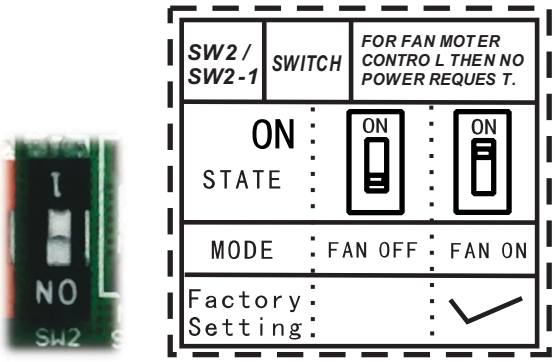


Fig. 26 – Micro-Switch SW2/SW2-1

Micro-Switch SW2-2

Micro-switch SW2-2 is for selection of Breezeless function. Range: OFF, ON.

NOTE: This feature is not available.

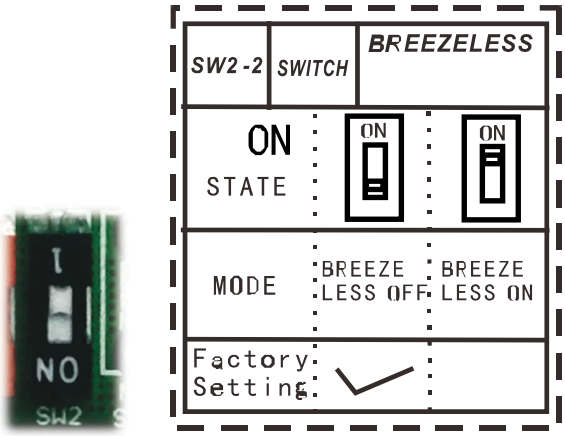


Fig. 27 – Micro-switch SW2-2

Micro-Switch SW3

Micro-switch SW3 is for selection of auto-restart function. Range: Active, inactive

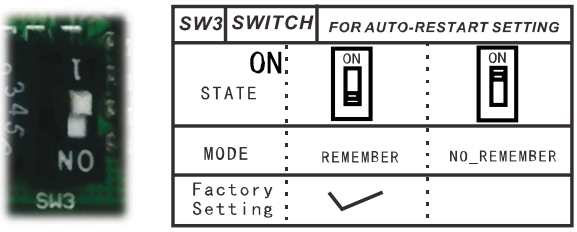


Fig. 28 – Micro-switch SW3

Micro-Switch SW6

Micro-switch SW6 is for selection of temperature compensation in heating mode. This helps to reduce the real temperature difference between ceiling and floor so that the unit could run properly.
If the height of installation is lower, smaller value could be chosen.
Range: 6°C, 4°C, 2°C, E function (reserved for special customizing).

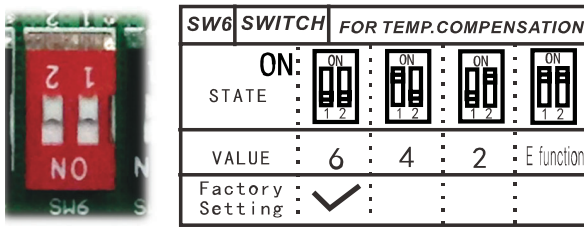


Fig. 29 – Micro-switch SW6

Micro-Switch SW8

Micro-switch SW8 is for setting main or follower.(For some models)
Range: No follower, main and follower.

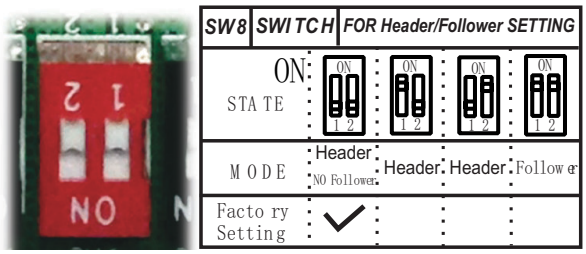


Fig. 30 – Micro-switch SW8

Micro-Switch S1 and Dial-Switch S2

Micro-switch S1 and dial-switch S2 are for address setting when you want to control this unit by a central controller.
Range: 00-63

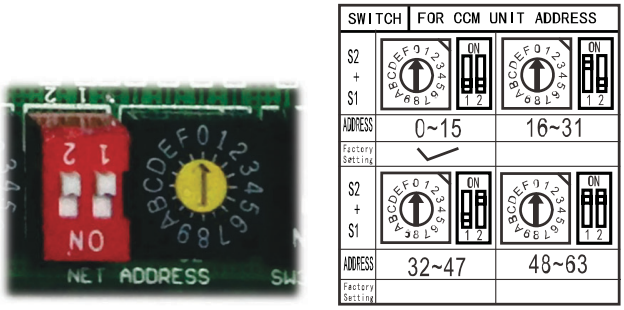


Fig. 31 – Micro-Switch S1 and Dial-Switch S2

ENC1 DIAL SWITCH INSTRUCTION FOR CAPACITY CHANGE

ENC1 dial switch is used for capacity change.
When matching with single zone condensers, indoor unit will automatically adjust to 9,000 BTU/H or 12,000 BTU according to condenser's capacity.
When matching with multi-zone condensers, the ENC1 setting needs to be changed. Change capacity of the indoor unit to 9,000 BTU/H by adjusting the dial switch ENC1 from "0" to "2". Change the capacity of indoor unit to 12,000 BTU/H by adjusting the dial switch ENC1 from "0" to "3".
Power needs to be turned OFF BEFORE DIAL SWITCH adjustment.

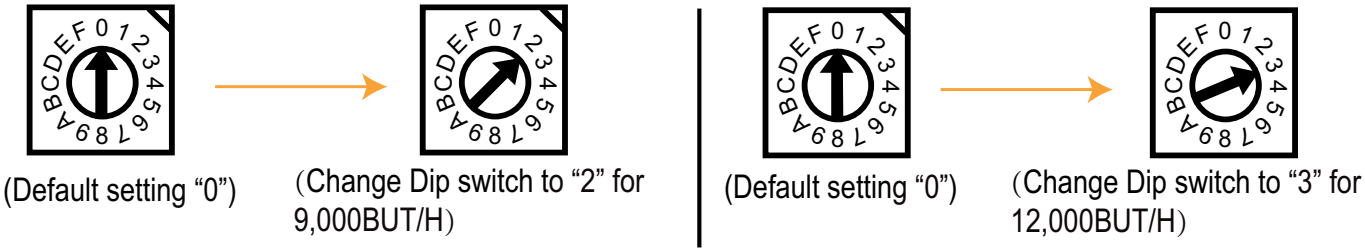


Fig. 32 – ENC1 Dial Switch Settings to Change Capacity

REFRIGERANT SYSTEMS DIAGRAM

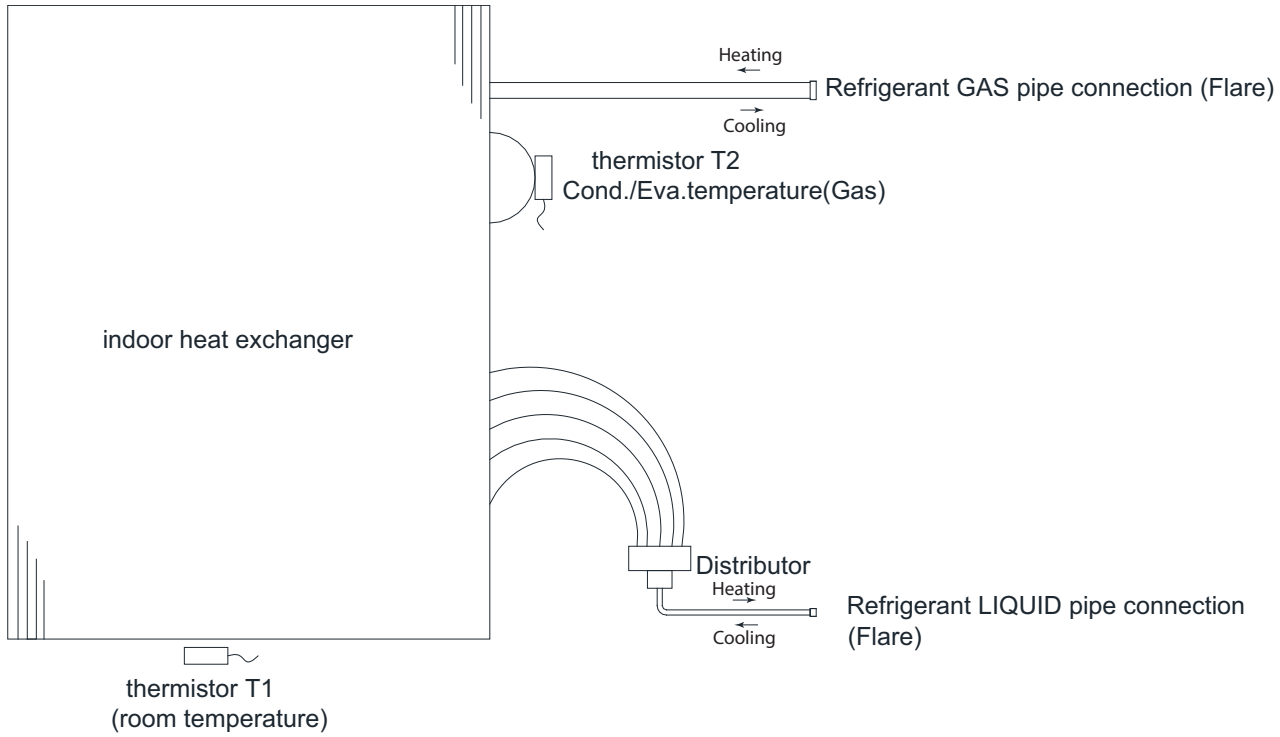


Fig. 33 – Refrigerant Systems Diagram

GUIDE SPECIFICATIONS
ONE-WAY CASSETTE DUCTLESS UNITS

Size Range: 0.5 to 1.5 Ton Nominal Cooling and Heating Capacity

Model Number: **D5FSOA**

Part 1 - GENERAL

1.01 System Description

Indoor console, direct-expansion units are matched with a cooling only or 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, floor-mounted unit. Unit is complete with a cooling/heating coil, fan, fan motor, piping connectors, electrical controls, microprocessor control system, and integral temperature sensing. Unit is furnished with an integral mounting bracket and mounting hardware.

B. Unit Cabinet:

Cabinet discharge and inlet grilles are attractively styled, high-impact polystyrene. Cabinet is fully insulated for improved thermal and acoustic performance.

C. Fans:

1. Fan is the tangential direct-drive blower type with an air intake in the center of the unit and discharge at the top and bottom front. An automatic, motor-driven vertical air sweep is provided standard.
2. Air sweep operation is user selectable. The vertical sweep may be adjusted (using the remote control) and the horizontal air direction may be set manually.

D. Coil:

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

E. Motor:

The motor has an open drip-proof, permanently lubricated ball bearing with inherent overload protection. The fan motor has 4-speeds.

F. Controls:

Controls consist of a microprocessor-based control system which controls the space temperature, determines the optimum fan speed, and runs self diagnostics. The temperature control ranges from 62°F to 86°F (17°C to 30°C) in increments of 1°F or 1°C, and have 46°F Heating Mode (Heating Setback). The wireless remote controller has the ability to act as the temperature sensing location for room comfort.

The unit has the following functions as a minimum:

1. An automatic restart after power failure at the same operating conditions as at failure.
2. A timer function to provide a minimum 24-hour timer cycle for system Auto Start/Stop.
3. Temperature-sensing controls to sense the return air temperature.
4. Indoor coil freeze protection.
5. Wireless infrared remote control to enter set points and operating conditions.
6. Automatic air sweep control to provide on or off activation of air sweep louvers.
7. Dehumidification mode to provide increased latent removal capability by modulating system operation and set point temperature.
8. Fan-only operation to provide room air circulation when no cooling is required.
9. Diagnostics to conduct continuous checks of unit operation and warn of possible malfunctions. Error messages appear on the unit.
10. 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 heat pump mode. Control includes a deadband to prevent rapid mode cycling between heating and cooling.
12. Indoor coil high temperature protection is provided to detect excessive indoor discharge temperature when the unit is in heat pump mode.

G. Filters:

Unit has a filter track with factory-supplied cleanable filters.

H. Electrical Requirements:

Indoor fan motor to operate on 208-230V as specified. Power is supplied from the outdoor unit.

I. Operating Characteristics:

The **D5FSOA** system has a minimum SEER2 (Seasonal Energy Efficiency Ratio) and HSPF2 at AHRI conditions, as listed on the specifications table of the outdoor unit.

J. Refrigerant Lines:

Both refrigerant lines need to be insulated.

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