**D5FSFA**

**Floor Console Unit Ductless System**
**Sizes 9K to 16K**

# Product Data

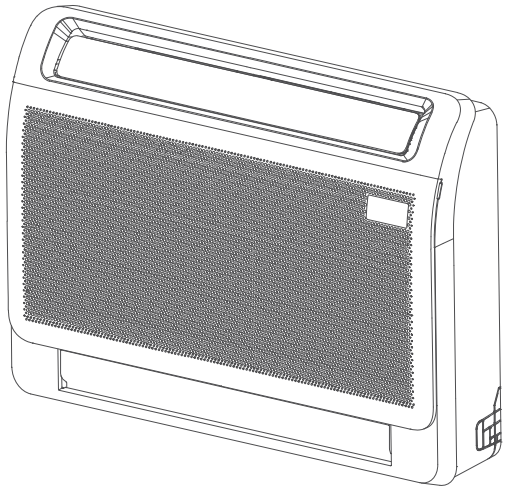

**Fig. 1 – Sizes 09K to 16K**

**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 D5FSFA series ductless system are a matched combination of an outdoor condensing unit and an indoor fan coil unit connected only by refrigerant tubing and wires.

The fan coil can be mounted on the floor or against the wall. 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**
- **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 fan coil units take up very little space in the room and do not obstruct windows. The fan coils 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 and a refrigerant leak detection and mitigation system to assist in troubleshooting.

## AN ELEGANT AND COMPACT DESIGN

- The look of newly-upgraded console unit features flowing lines that is aesthetic enough.
- Its unobtrusive design can easily fit into most interiors with different decorating-schemes.
- The width of the machine has been reduced by 10mm, taking less space.

## A PERFECT CHOICE FOR NEW BUILDINGS AND RENOVATION PROJECTS

- Console unit can be installed standing on the floor, or wall-mounted
- It is a great option for radiator replacement in order to save your space while provide more functions.

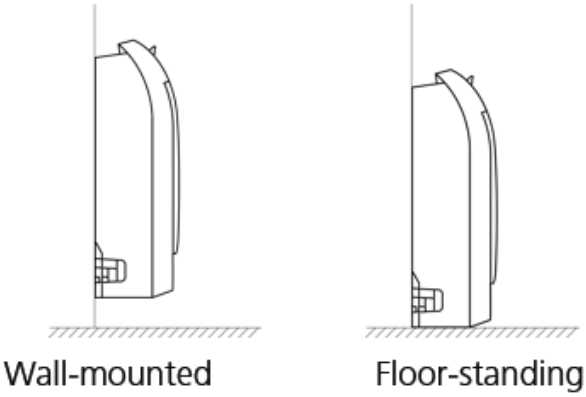
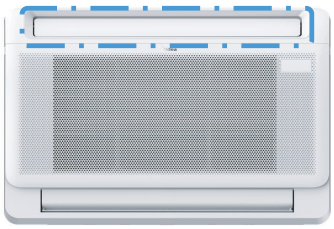



**Fig. 2 – Wall-mounted vs Floor Standing**

### Dual Air Outlets With Larger Dimension

Efficiently improve air volume, providing constant, quick cooling and heating throughout whole year.



65.3% LARGER upper air outlet*

Dimension changes from 20.3in(516mm)*1.69in(43mm) to 25.8in(655mm)*2.2in(56mm)

**Fig. 3 – Dual Air Outlets With Larger Dimension**

## 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 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.

## ACCESSORIES

Customizing these ductless systems to your application is easily accomplished. Adding a condensate pump accessory to the console fan coil provides installation flexibility.

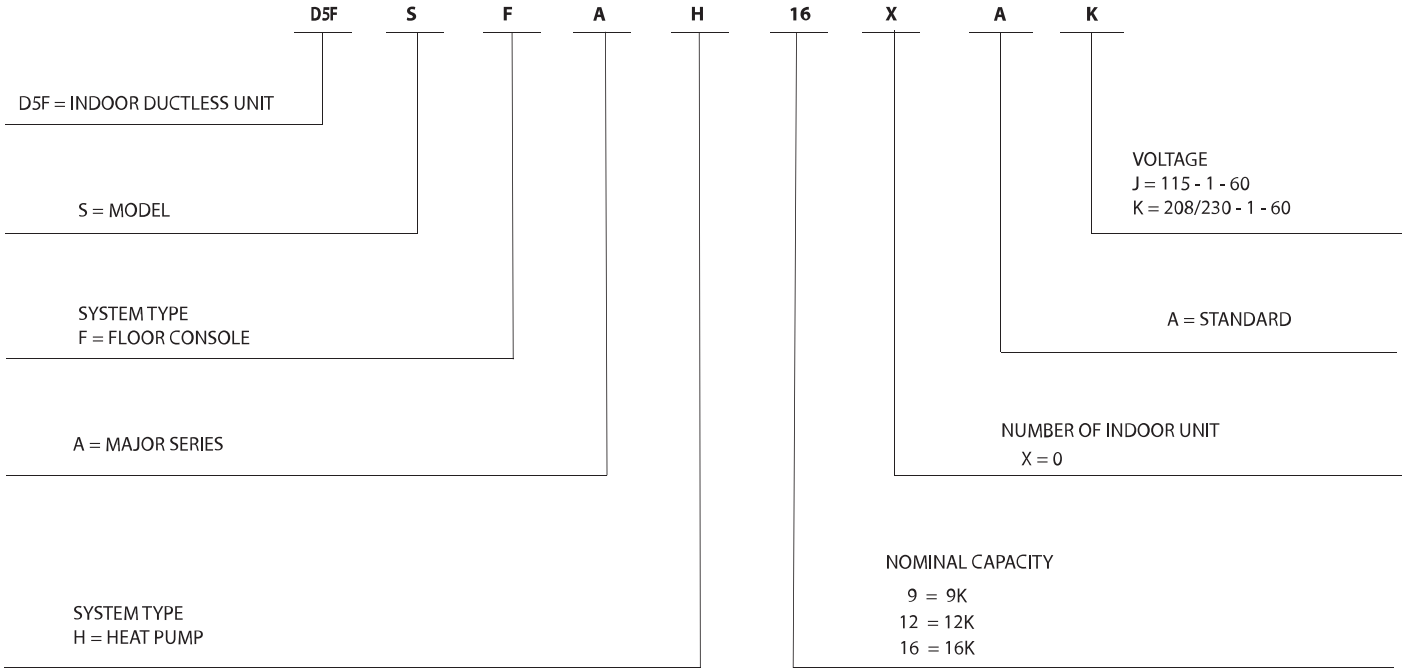
## OPTIONAL WIRED CONTROLLER

## AGENCY LISTINGS

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

**Humidity Control: Efficiently dehumidifies the air to keep your indoors at comfortable humidity level.**

# 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.

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# STANDARD FEATURES AND ACCESSORIES

**Table 1 – 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 |
| Humidity Sensor | S |
| Wi-Fi 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 |
| **EASE OF SERVICE AND MAINTENANCE** | |
| Cleanable Filters | S |
| Diagnostics | S |
| Liquid Line Pressure Taps | S |
| **APPLICATION FLEXIBILITY** | |
| Condensate Pumps | A |

**Legend**

S - Standard

A - Accessory

**Table 2 – Accessories**

| MODEL NO. | DESCRIPTION | FOR MODELS |
|---|---|---|
| KSACN1201AAA | Wired Non-Programmable Controller | All Sizes |
| KSACN1401AAA | Wired Programmable Controller | All Sizes |
| KSAIF0701AAA | Smart Kit, USB Dongle (Only with Built-In USB) | All Sizes |

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

# DIMENSIONS AND CLEARANCES

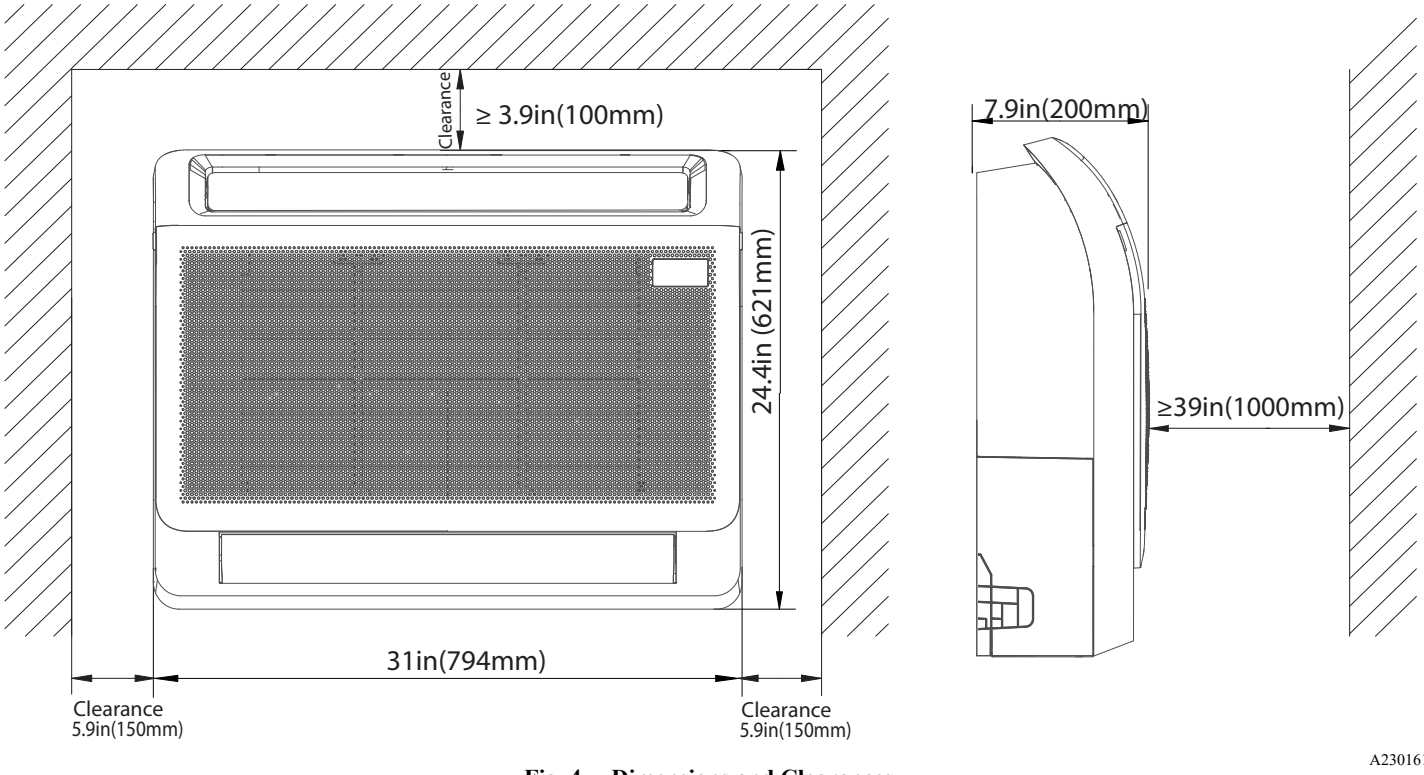


**Fig. 4 – Dimensions and Clearances**

**Table 3 – Dimensions and Weights**

| SYSTEM SIZE | | 09K | 12K | 16K |
|---|---|---|---|---|
| | | (208/230 V) | (208/230 V) | (208/230 V) |
| Height (H) | in (mm) | 24.45 (621) | 24.45 (621) | 24.45 (621) |
| Width (W) | in (mm) | 31.26 (794) | 31.26 (794) | 31.26 (794) |
| Depth (D) | in (mm) | 7.87 (200) | 7.87 (200) | 7.87 (200) |
| Weight - Net | lbs. (kg) | 32.85 (14.9) | 32.85 (14.9) | 32.85 (14.9) |
| **PACKAGING** | | | | |
| Height | in (mm) | 28.31 (719) | 28.31 (719) | 28.31 (719) |
| Width | in (mm) | 34.06 (865) | 34.06 (865) | 34.06 (865) |
| Depth | in (mm) | 11.02 (280) | 11.02 (280) | 11.02 (280) |
| Weight - Gross | lbs. (kg) | 41.89 (19) | 41.89 (19) | 41.89 (19) |

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

# SPECIFICATIONS

**Table 4 – Specifications**

| Size | | | 9K | 12K | 16K |
|---|---|---|---|---|---|
| **Indoor Model Number** | | | **D5FSFAH09XAK** | **D5FSFAH12XAK** | **D5FSFAH16XAK** |
| **Power supply** | | V;Ph;Hz | 208/230V;1Ph;60HZ | | |
| **INDOOR FAN SPECIFICATIONS** | Material | - | Fiberglass+AS | | |
| | Type | - | GL-98*538-I | | |
| | Diameter | inch | 3.9 | 3.9 | 3.9 |
| | | mm | 98 | 98 | 98 |
| | Height | inch | 21.2 | 21.2 | 21.2 |
| | | mm | 538 | 538 | 538 |
| **INDOOR MOTOR SPECIFICATIONS-LOWER** | Model | - | ZKFP-13-8-104 | | |
| | Type | - | DC | | |
| | Input | W | 25.0 | 25.0 | 25.0 |
| | Max. input | W | 50.0 | 50.0 | 50.0 |
| | Output | W | 18.8 | 18.8 | 18.8 |
| | FLA | A | 0.5 | 0.5 | 0.5 |
| | Rated HP | HP | 0.025 | 0.025 | 0.025 |
| | Range of current | Amps | 0.1~0.42 | 0.1~0.42 | 0.1~0.42 |
| | Rated current | Amps | 0.22 | 0.22 | 0.22 |
| | Speed | rev/min | 980/860/620 | 980/860/620 | 1100/1000/900 |
| | Rated RPM | rev/min | 980 | 980 | 1100 |
| | Insulation class | - | E | | |
| | Safe class | - | IPX0 | | |
| **INDOOR MOTOR SPECIFICATIONS-UPPER** | Model | - | ZKFP-13-8-136 | | |
| | Type | - | DC | | |
| | Input | W | 20.5 | 20.5 | 20.5 |
| | Max. input | W | 39.6 | 39.6 | 39.6 |
| | Output | W | 15.4 | 15.4 | 15.4 |
| | FLA | A | 0.5 | 0.5 | 0.5 |
| | Rated HP | HP | 0.021 | 0.021 | 0.021 |
| | Range of current | Amps | 0.2~0.38 | 0.2~0.38 | 0.2~0.38 |
| | Rated current | Amps | 0.20 | 0.20 | 0.20 |
| | Speed | rev/min | 980/860/620 | 980/860/620 | 1100/1000/900 |
| | Rated RPM | rev/min | 980 | 980 | 1100 |
| | Insulation class | - | B | | |
| | Safe class | - | IP20 | | |

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

**Table 4 – Specifications (Continued)**

| Size | | | 9K | 12K | 16K |
|---|---|---|---|---|---|
| Indoor Model Number | | | D5FSFAH09XAK | D5FSFAH12XAK | D5FSFAH16XAK |
| INDOOR REFRIGERANT COIL SPECIFICATIONS | Number of rows | Rows | 2 | 2 | 2 |
| | Tube outside dia. | inch | 0.276 | 0.276 | 0.276 |
| | | mm | 7 | 7 | 7 |
| | Nominal Tube Wall | Inch (mm) | 0.00905 (0.23) | 0.00905 (0.23) | 0.00905 (0.23) |
| | Tube Enhancement | (Yes/No) | Yes | | |
| | Tube Material | | Copper | | |
| | Tube pitch (a) x row pitch (b) | inch | 0.83x0.53 | 0.83x0.53 | 0.83x0.53 |
| | | 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 | 21.65x14.88x1.05 | 21.65x14.88x1.05 | 21.65x14.88x1.05 |
| | | mm | 550x378x26.74 | 550x378x26.74 | 550x378x26.74 |
| | Face area | ft2 | 2.24 | 2.24 | 2.24 |
| | Number of circuits | # | 2 | 2 | 2 |
| MOISTURE REMOVAL | Dehumidifying Volume | L/h | 0.81 | 1.48 | 2.18 |

## COMPATIBILITY TABLE

**Table 5 – Compatibility**

| UNIT | MODEL |
|---|---|
| Single Zone Compatible | D5CSRA |
| | D5CSHA |
| Multi Zone Compatible | D5CMHA |
| | D5CRMA |

# 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 (Fig. 4).

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

These units should be positioned on the floor, against the wall for the best air circulation. The unit return and discharge should not be obstructed by furniture, curtains, or anything which may cause unit short cycling or air recirculation. Place the unit in the middle of the selected wall (if possible). Use an outside wall, if available, to make piping easier, and place the unit so it faces the normal location of room occupants.

Mounting Template

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

The fan coil 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 fan coil. Refer to "DIMENSIONS AND CLEARANCES" on page 5 and "SPECIFICATIONS" on page 6 for the fan coil weight, and the base unit dimensional drawings (in the installation instructions) for the mounting brackets location.

**Table 6 – System Operating Conditions**

| OPERATING RANGE MIN/MAX °F (°C) | | |
|---|---|---|
| | COOLING | HEATING |
| INDOOR DB | 60 / 90 (17 / 32) | 32 / 86 (0 / 30) |

**NOTE: Reference the product installation instructions for more information.**

### Drain Connections

Install drains to meet the local plumbing codes. If adequate gravity drainage cannot be provided, the unit should be equipped with an accessory condensate pump. Drain size is 5/8 in (16mm).

### 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.

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.

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.

Connecting cable with conduit shall be routed through the hole

## 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 fan coil unit (outdoor units have a microprocessor too) 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 operation to maintain the unit within acceptable parameters and control the operating mode.

### Wireless Remote Control

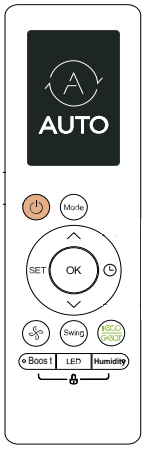


**Fig. 5 – Wireless Remote Controller (RG10L5)**

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. 6 – Wired Controller**

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. Displays in °F or °C and temperature increments every 1°F increment/0.5°C increment.

NOTE: Extension wire available through RCD

Part Number: 17401204000769

# SOUND PRESSURE

**Table 7 – Sound Pressure**

| SYSTEM SIZE | | 09K | 12K | 16K |
|---|---|---|---|---|
| Indoor Sound Pressure Level | Turbo/High/Medium/Low/Silent | 45/41.0/37.5/25.5/22.00 | 44/40.5/37.0/26.5/24.00 | 47/43.5/40.5/30.5/25.5 |

## SOUND PRESSURE TESTING METHOD

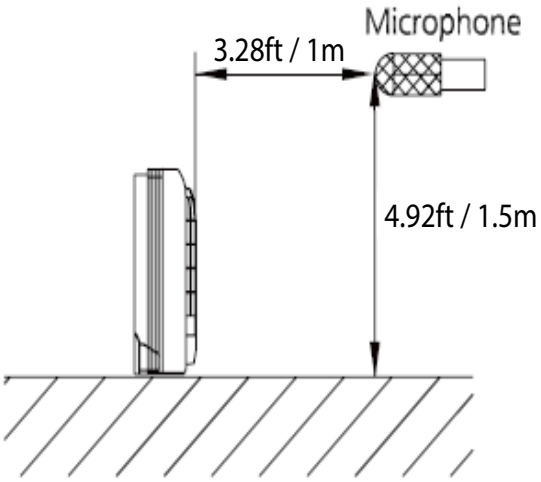


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**Fig. 7 – Sound Pressure Testing Method**

# AIR FLOW DATA

**Table 8 – Air Flow Data**

| SYSTEM SIZE | | 09K | 12K | 16K |
|---|---|---|---|---|
| Indoor (CFM) | Turbo/High/Medium/Low/Silent | 441.45 / 376.70 / 323.73 / 188.35 / 129.49 | 441.45 / 376.70 / 323.73 / 188.35 / 129.49 | 500.31 / 441.45 / 382.59 / 323.73 / 206.01 |

## NC Curves

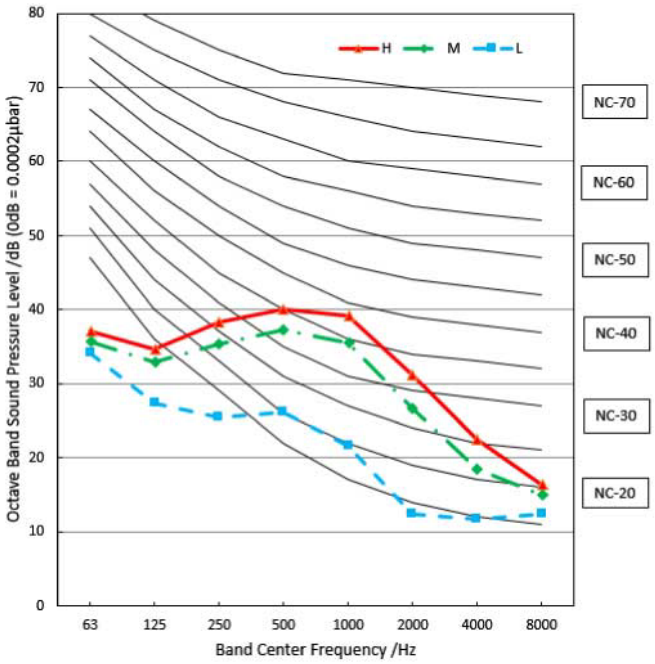


**Fig. 8 – Size 9**

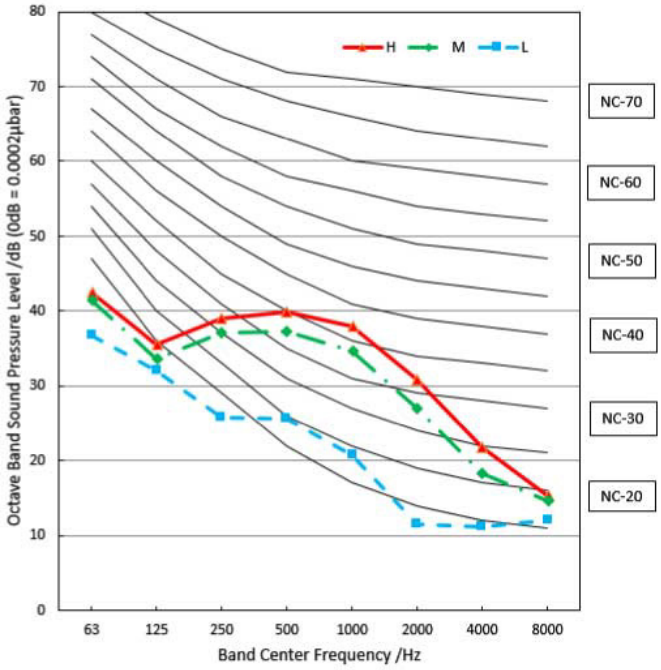


**Fig. 9 – Size 12**

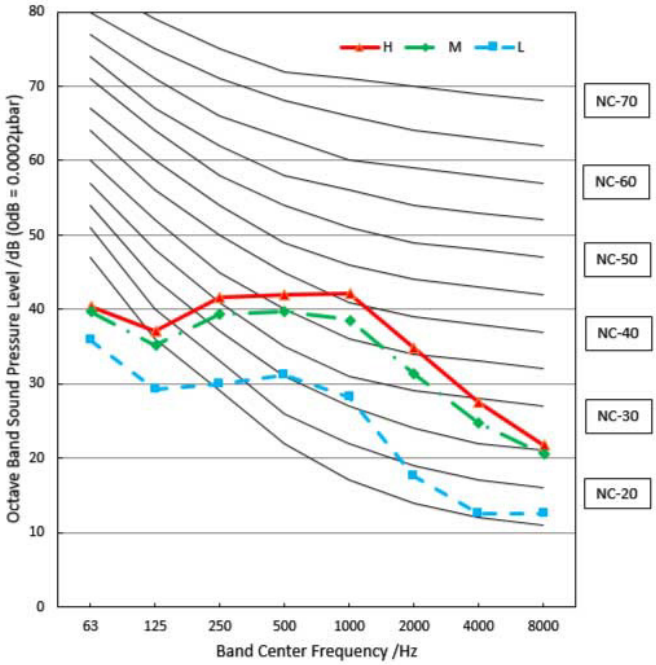


**Fig. 10 – Size 16**

# AIR VELOCITY AND TEMPERATURE DISTRIBUTIONS

## Discharge Angle 70°(Upper)/ 0°(Lower)

**NOTE: Air Velocity and Temperature Plots will be updated in Imperial Units in next revision of this document.**

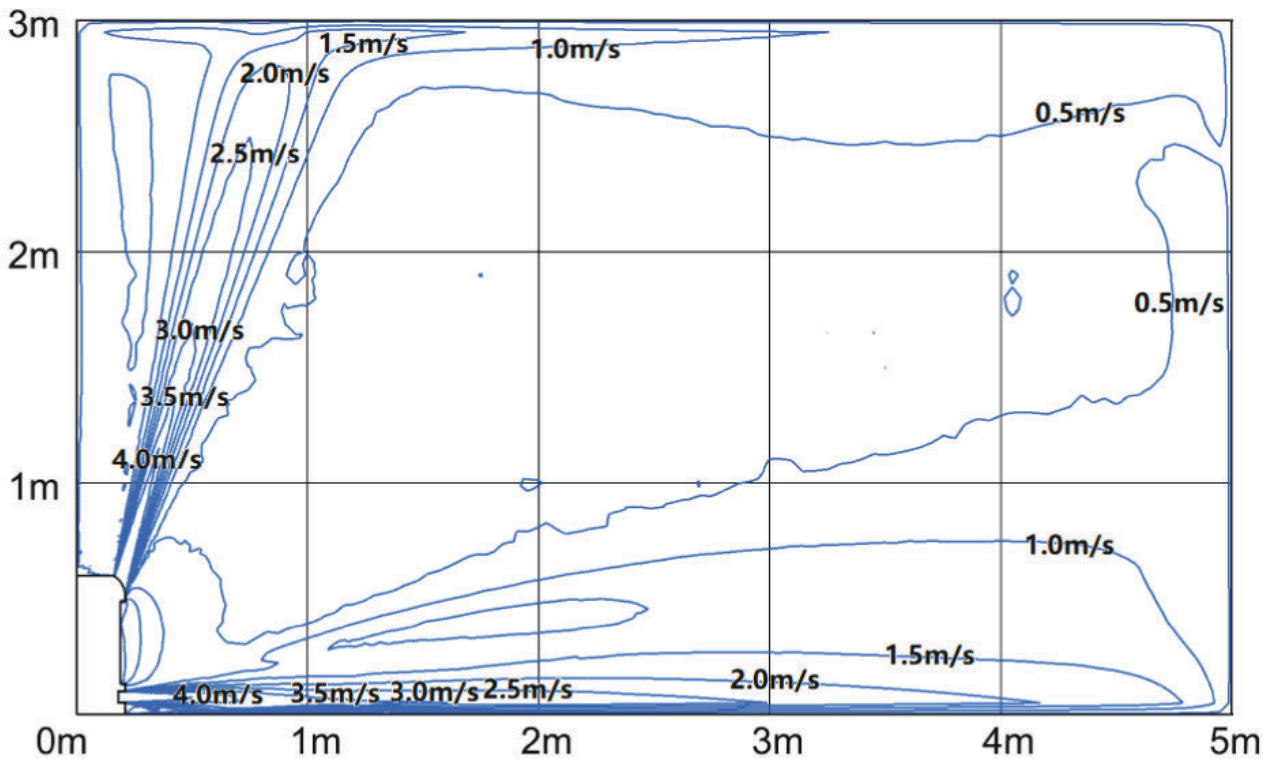


**Fig. 11 – Cooling airflow velocity distributions**

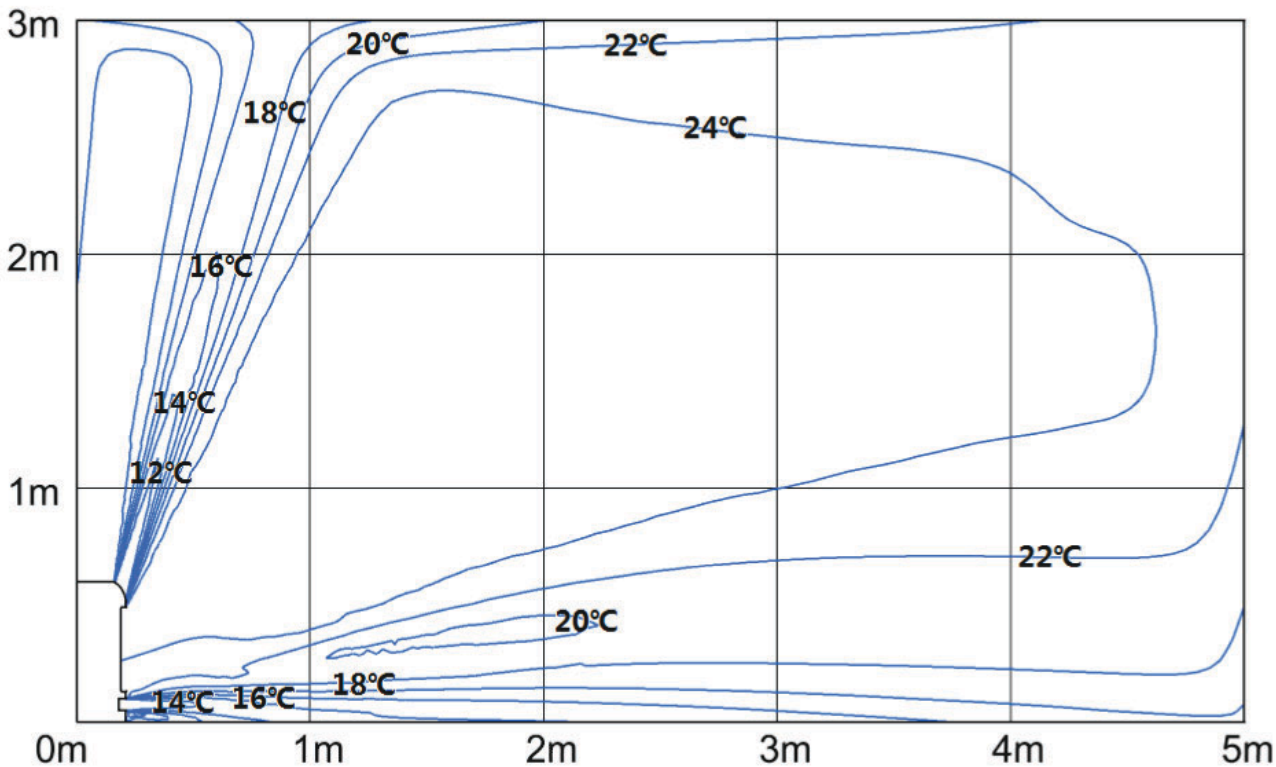


**Fig. 12 – Cooling temperature distributions**

## Discharge Angle 20°(Upper)/ 0°(Lower)

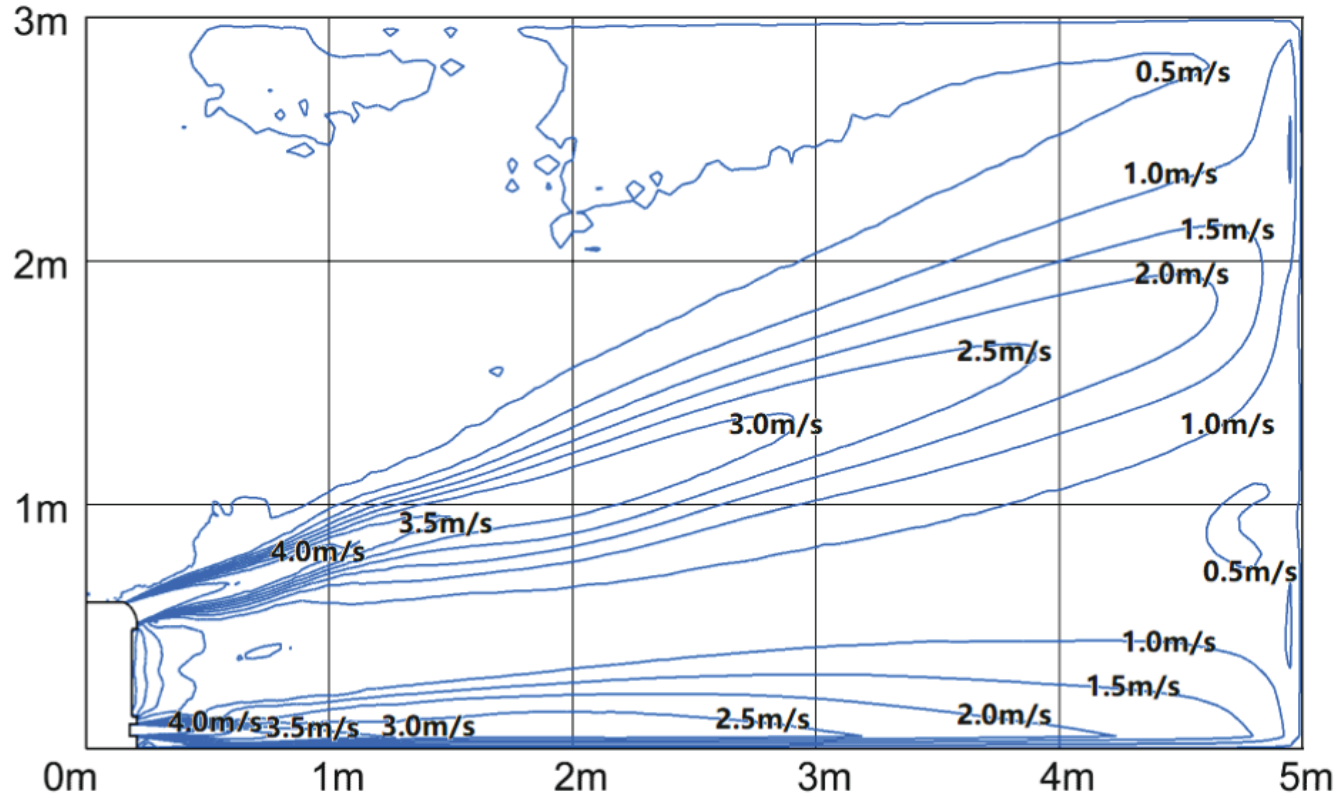


**Fig. 13 – Heating airflow velocity distributions**

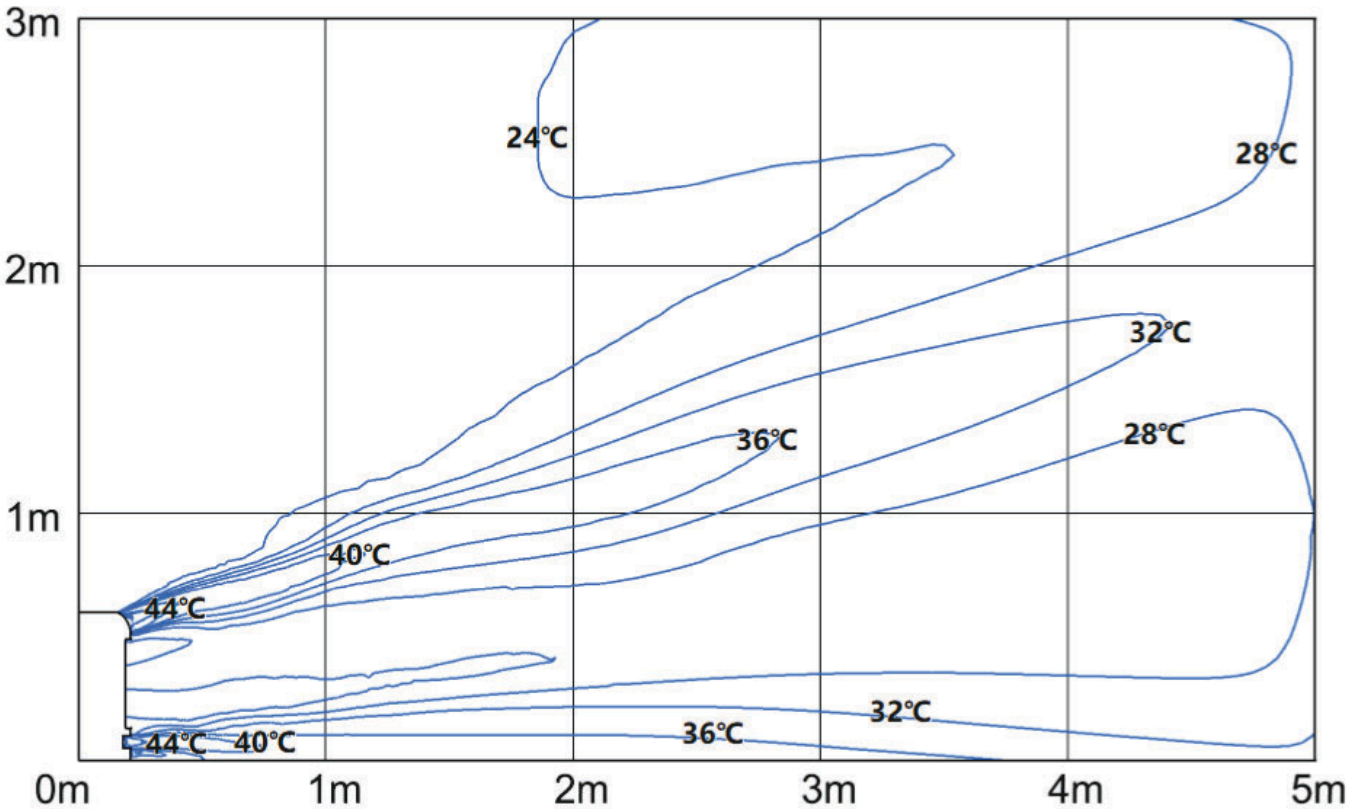


**Fig. 14 – Heating temperature distributions**

# WIRING DIAGRAM

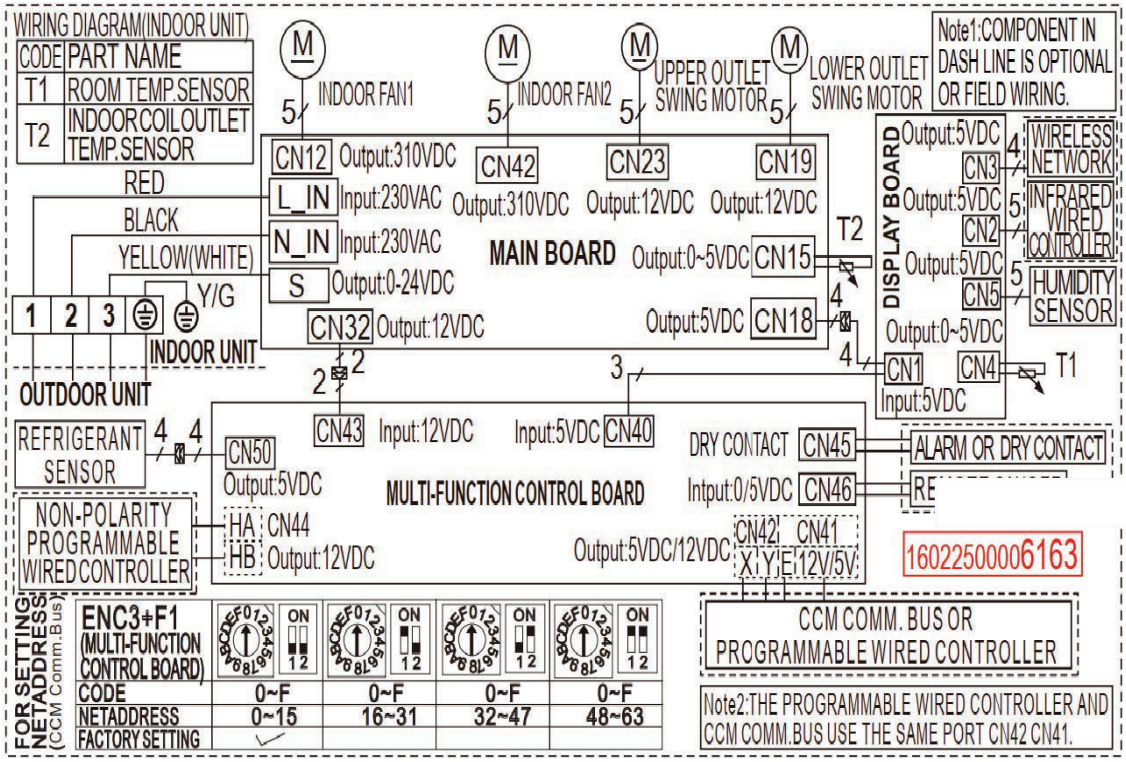


**Fig. 15 – Wiring Diagram Sizes 09K, 12K, 16**

**Table 9 – Wiring Connections**

| System Size | 9K | 12K | 16K |
|---|---|---|---|
| V-Ph-Hz | 208/230-1-60 | | |
| Power Supply | 4-Wire: includes ground wire (Outdoor); 208/230V-1Ph-60Hz | | |
| Interconnection to Indoor Unit | Yes | | |
| Shielded Wire (Yes/No) | Yes | | |

# REFRIGERANT SYSTEM DIAGRAM

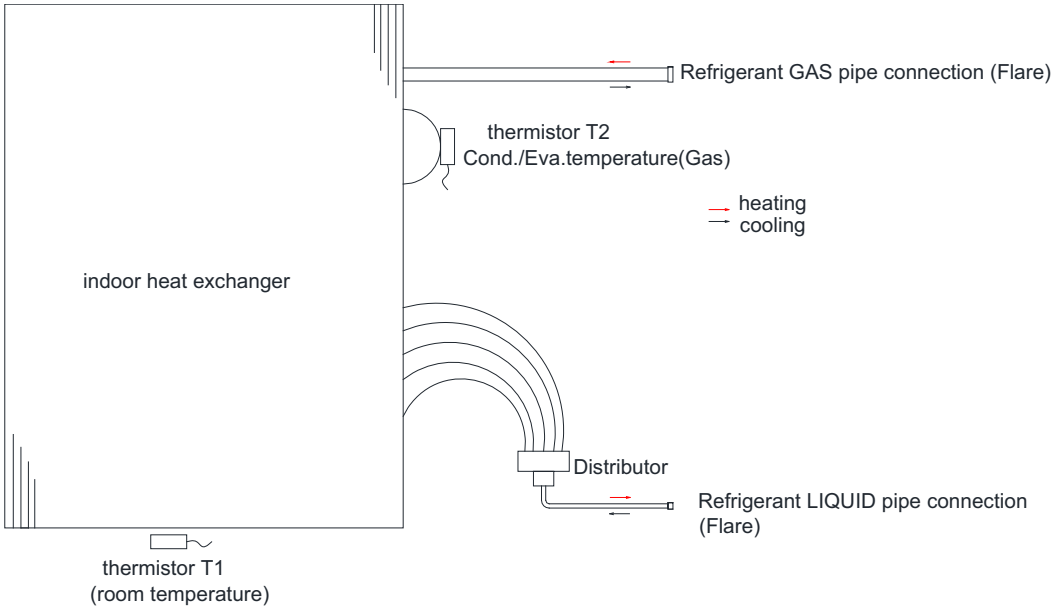


**Fig. 16 – Refrigerant System Diagram**

# DISPLAY FUNCTION

## NEW CONSOLE TYPE

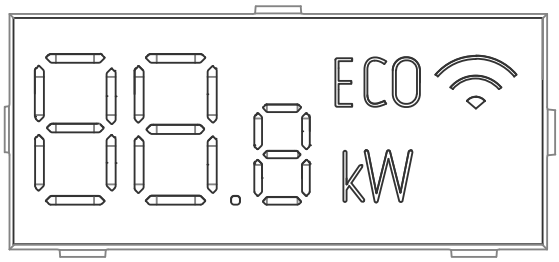


**Fig. 17 – Console**

**Table 10 – Console Indicators**

| DISPLAY | | FUNCTION |
|---|---|---|
| ECO | | ECO function (available on select units only) |
| | | When Wireless Control feature is activated (some units) |
| 88.8 | Temperature Value | Temperature |
| | ON (3s) | Timer ON is set.<br>Activation of Swing, Boost, Silence or UV-C lamp |
| | OF (3s) | Timer OFF is set.<br>Cancellation of Swing, Boost, Silence or UV-C lamp |
| | dF | Defrost |
| | CL | Active Clean |
| | FP | Heating in room temperature under 46°F(8°C) |

## 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 appears 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 operates 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 sensor is lower than setting temperature of outdoor air (35°F / 2°C).

### 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

**Table 11 – Cases**

| Functions | | AUTO MODE |
|---|---|---|
| Cases | | Case 3 |
| Models | 09K-16K | Ö |
| | | |

**Table 12 – 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 |
| Tsc | Adjusted setting temperature |
| CDIFTEMP | Cooling shutdown temperature |
| HDIFTEMP2 | Heating shutdown temperature |

**NOTE: Within this manual, CDIFTEMP, HDIFTEMP2...etc., are EEPROM parameters.**

## FAN MODE

When fan mode is activated:

- The outdoor fan and compressor stop.
- 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 the **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).

## COOL 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 the **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

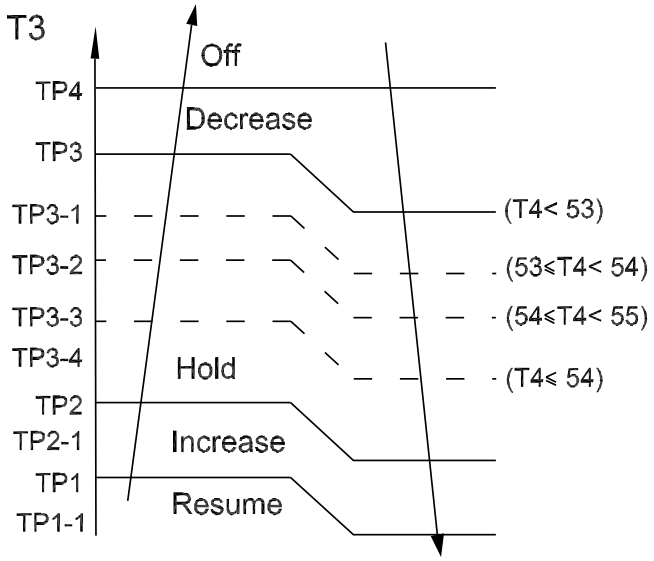


**Fig. 18 – Condenser Temperature Protection**

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

## EVAPORATOR TEMPERATURE PROTECTION

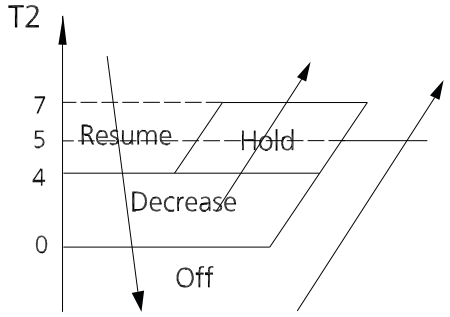


**Fig. 19 – Evaporator Temperature Protection**

- **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 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.**

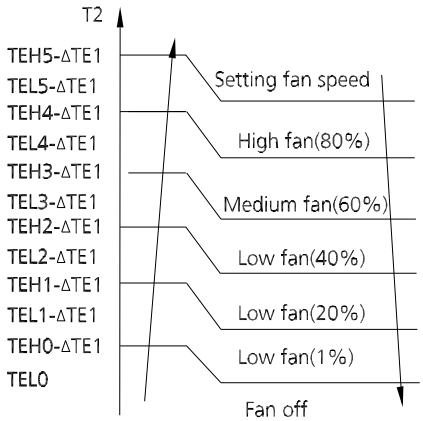


**Fig. 20 – Anti-cold air function**

ΔTE1=0

2. Auto fan action in the **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

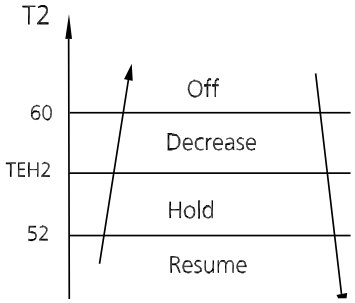


**Fig. 21 – Evaporator Coil Temperature Protection**

- **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

- **AUTO-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 unit selects **COOLING**, **HEATING** or **FAN-ONLY** mode on the basis of T1,Ts, outdoor ambient temperature(T4) and relative humidity (φ).

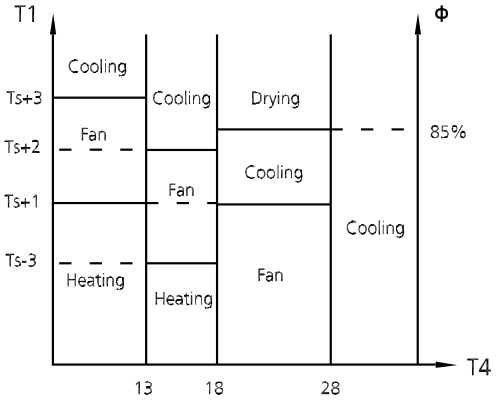


**Fig. 22 – Auto-Mode**

# GUIDE SPECIFICATIONS

## FLOOR CONSOLE UNIT DUCTLESS SYSTEM

**Size Range: 0.75 to 1.33 Ton Nominal Cooling and Heating Capacity**

Model Number:**D5FSFA**

## Part 1 - GENERAL

### 1.01 System Description

Indoor console, direct-expansion fan coils 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 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 fan coil. 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 D5FSFA system has a minimum SEER (Seasonal Energy Efficiency Ratio) and HSPF at AHRI conditions, as listed on the specifications table of the outdoor unit.

**J. Refrigerant Lines:**

All units should have refrigerant lines that can be oriented to connect from the left, right or back of unit. Both refrigerant lines need to be insulated.

**K. Refrigerant Leak Detection and Mitigation**

System comes with a Refrigerant Leak Protection System.

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