Subject to change without notice

Product Data Catalog

Manufacturer's Name: Saudi Airconditioning Manufacturing Co. Ltd.
Country of origin : Jeddah, Saudi Arabia
Nearest port of embarkation: Jeddah Islamic port
Product classification: Commercial and Residential

42TPM – 60Hz

Nominal Cooling Capacity 1.5 – 5.0 Tons

HFC R-410A Refrigerant

42TPM Direct Expansion fan coil units are available in 6 sizes with nominal cooling capacity range from 1.5 to 5.0 Tons. Each unit is designed to occupy a minimum space. Piping, drain, and wiring connections are readily accessible, integral mounting brackets are included to save installation time. Unit controls are conveniently mounted on the exterior panel.

Contact your local Carrier representative for additional support.

Table of Contents

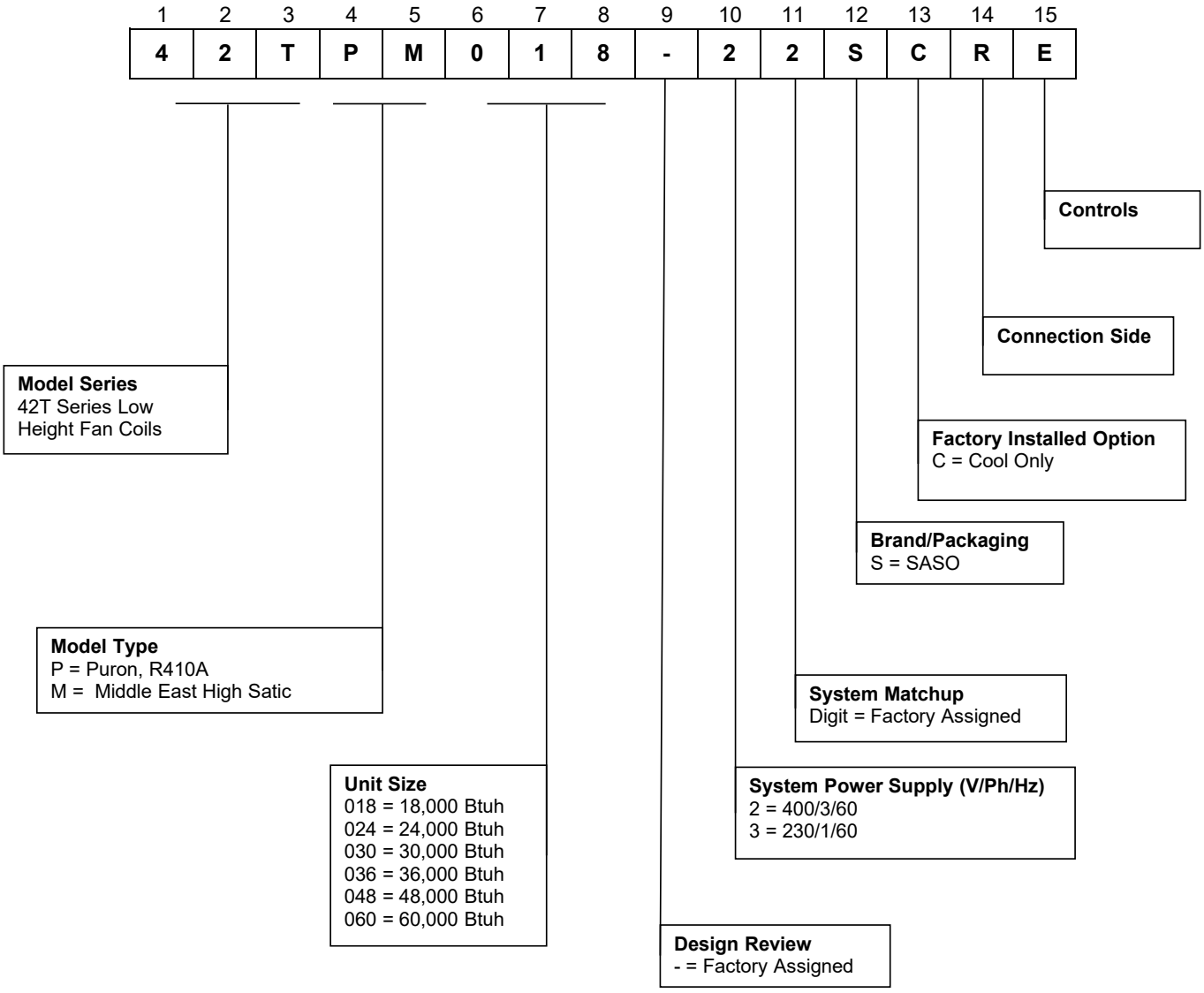
Features / Benefits

- SASO - 2663, IEC - 60335-2-40 and RoHS compliant
- Every compact fan coil unit arrives fully assembled, tested, and ready to run
- System designed especially for high ambient environment
- Standard 5 speed wired control kit to control the unit functions, standard with remote control
- Optional electric heater
- The drain pan is polyester powder coated for extra protection
- Piping connection is field exchangeable, standard factory setup right hand side
- Double inlet blower, forward curved blades
- 5 speed high efficiency fan motor offer extended airflow range
- Standard galvanized sheet metal casing
- Low unit height suitable for low false ceiling application
- Washable aluminum filter
- Easy installation and maintenance
- ½ inch thickness internal insulation with 24 kg/m^3 density
- Low noise level suitable for all applications
- Flare connections for easy installation and maintenance

Carrier’s 42TPM direct expansion fan coils are designed to cover low to medium range of air handling requirements. They are compact and ready to fit in the under-ceiling application. All units come with solid-state fan controls, 1/2-in. insulation, quiet multi-speed motors, and fully wet coils. 42TPM are designed for ease of service in under ceiling applications. A carton template for easy location of mounting hardware simplifies installation. Coils are made of double wavy aluminum fins mechanically bonded to copper tubes for superior heat transfer.

Blower double inlet, forward curved blades attached to 5-speed high efficiency motors. Galvanized sheet metal casing protects against rust and drain pan is polyester powder coated for extra protection. While the control board with the integrated thermostat, remote control and washable Aluminum filters are standard feature. Piping connection position factory standard is right hand with left hand connection a field interchangeable option for various applications.

Model Number Nomenclature - 42TPM - R410A Series



Physical Data

42TPM Unit Size	**018**	**024**	**030**	**036**	**048**	**060**
Unit Size (Tons)	1.5	2.0	2.5	3.0	4.0	5.0
Motor Rated Power - Watt	125		250		373	
Number of Motors / Speeds	1 / 5 Speed					
Evaporator Coil						
Coil Material (HP Tube)	Grooved Copper Tubes					
Coil Material (Finplate)	Aluminium Fins With Double Wavy Fins					
Coil Face Area, m^2	0.21	0.26	0.31	0.44		0.51
Tube O.D - mm	7.00		9.525			
Number of Rows	4			3	4	
Fin Denisty / Inch	16		15	14	15	
Refrigerant Metering Device	AccuRater					
Piston Size	52	55	61	65	76	84
Coil Connection Type	Flare Nut Type					
Suction Connection Size - Inch	5/8				7/8	
Liquid Connection Size - Inch	3/8					
Drain Diameter - Inch	5/8					
Blower	Double Inlet, Forward Curved Blades					
Blower Type	Plastic			Galvanized Steel		
Blower Diameter / Width - mm	152.5 / 178		178 / 203	200 / 190	200 / 240	
Filter Type	Washable Aluminum Filter					
Filter Qty.	1	2				
Filter Size (mm)	847 x 262	525 x 262	630 x 262	630 x 365		735 x 365
Electric Heater Kw x Qty	2.0 x 1	2.5 x 1	2.0 x 2			
Unit Dimensions						
Width - mm	1061	1271	1481			1691
Depth - mm	600			675		
Height - mm	275			375		
(Cool Only) Net Weight - kg	38.0	40.0	49.0	56.0	62.0	75.0
(Cool Only) Gross Weight - kg	42.0	43.0	53.0	61.0	67.0	80.0
(Cool with Electric Heater) Net Weight - kg	38.5	40.5	50.0	57.0	63.0	76.0
(Cool with Electric Heater) Gross Weight - kg	42.5	43.5	54.0	62.0	68.0	81.0

Base Unit Dimensions

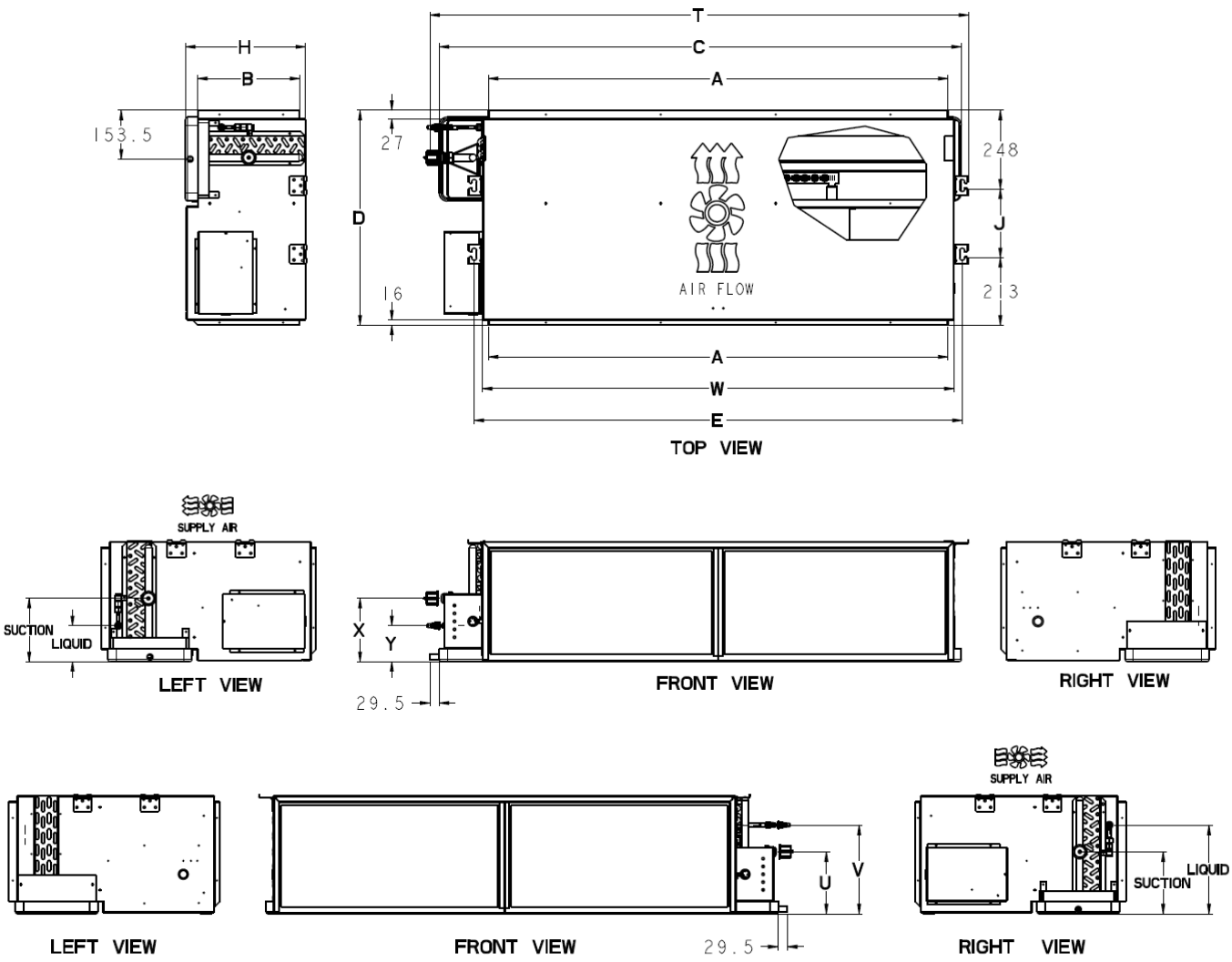


Fig 1. 42TPM Unit Dimensions Size 18 to 60

Unit Size	W	H	D	A	B	C	E	J	T	X	Y	U	V
18	854	275	600	816	219	1013	906	160	1061	152	136	137	154
24	1064	275	600	1026	219	1223	1116	160	1271	152	136	137	154
30	1274	275	600	1236	219	1443	1326	160	1481	152	136	137	154
36	1274	375	675	1236	321	1443	1326	216	1481	198	115	198	284
48	1274	375	675	1236	321	1443	1326	216	1481	198	115	198	284
60	1484	375	675	1446	321	1643	1536	216	1691	198	115	198	284

Notes:

- All dimensions are in mm.
- The piping connections drain pan outlet and control box are located on the right-hand side facing the airflow as factory standard. They however can be relocated to the left-hand side facing air flow in the field when needed.
- Unit should be installed for horizontal discharge only. Suspend horizontally using the factory-provided holes located at the topside flanges of the unit.
- W - width of the casing, H - height of the casing, D - depth of the casing, A - duct opening/ width
- B - duct opening/ height, C - drain pan length, T - total unit width, E - mounting bracket
- J - mounting bracket, X / U - pipe connection (suction), Y / V- pipe connection (liquid)

Electrical Data

42TPM Model Number	Unit Power Supply	Condenser Control Input	Voltage		Electic Heater			Fan Motor	MCA	MOCP
	V - Ph - Hz		Min	Max	Qty	kW (Total)	FLA (Total)	FLA		
42TPM018-32SCRE	230V - 1Ph - 60Hz	24V	207	253	-	-	-	1.2	1.5	15
42TPM018-32SHRE					1	2.0	9.5	1.2	13.8	15
42TPM024-32SCRE					-	-	-	1.2	1.5	15
42TPM024-32SHRE					1	2.5	12.1	1.2	16.6	20
42TPM030-32SCRE					-	-	-	2.6	3.3	15
42TPM030-32SHRE					2	4.0	19.3	2.6	27.3	30
42TPM036-32SCRE					-	-	-	2.6	3.3	15
42TPM036-32SHRE					2	4.0	19.3	2.6	27.3	30
42TPM048-22SCRE					-	-	-	3.8	4.8	15
42TPM048-22SHRE					2	4.0	19.3	3.8	28.8	30
42TPM048-32SCRE					-	-	-	3.8	4.8	15
42TPM048-32SHRE					2	4.0	19.3	3.8	28.8	30
42TPM060-22SCRE					-	-	-	3.8	4.8	15
42TPM060-22SHRE					2	4.0	19.3	3.8	28.8	30
42TPM060-32SCRE					-	-	-	3.8	4.8	15
42TPM060-32SHRE					2	4.0	19.3	3.8	28.8	30

Combination Matrix & System Power Supply

Indoor Model	Outdoor Model	System Power Supply
Fan Coil	Side Discharge	V - Ph - Hz
Cool Only		
42TPM018-32SCRE	38PKS18DS32-11	230 - 1 - 60
42TPM024-32SCRE	38PKS24DS32-11	230 - 1 - 60
42TPM030-32SCRE	38PKS30DS32-11	230 - 1 - 60
42TPM036-32SCRE	38PKS36DS32-11	230 - 1 - 60
42TPM048-22SCRE	38PKS48DS22-11	400 - 3 - 60
42TPM048-32SCRE	38PKS48DS32-11	230 - 1 - 60
42TPM060-22SCRE	38PKS60DS22-11	400 - 3 - 60
42TPM060-32SCRE	38PKS60DS32-11	230 - 1 - 60
Cool and Electric Heat		
42TPM018-32SHRE	38PKS18DS32-21	230 - 1 - 60
42TPM024-32SHRE	38PKS24DS32-21	230 - 1 - 60
42TPM030-32SHRE	38PKS30DS32-21	230 - 1 - 60
42TPM036-32SHRE	38PKS36DS32-21	230 - 1 - 60
42TPM048-22SHRE	38PKS48DS22-21	400 - 3 - 60
42TPM048-32SHRE	38PKS48DS32-21	230 - 1 - 60
42TPM060-22SHRE	38PKS60DS22-21	400 - 3 - 60
42TPM060-32SHRE	38PKS60DS32-21	230 - 1 - 60

For detailed performance and matchup ratings please refer to corresponding outdoor product catalog

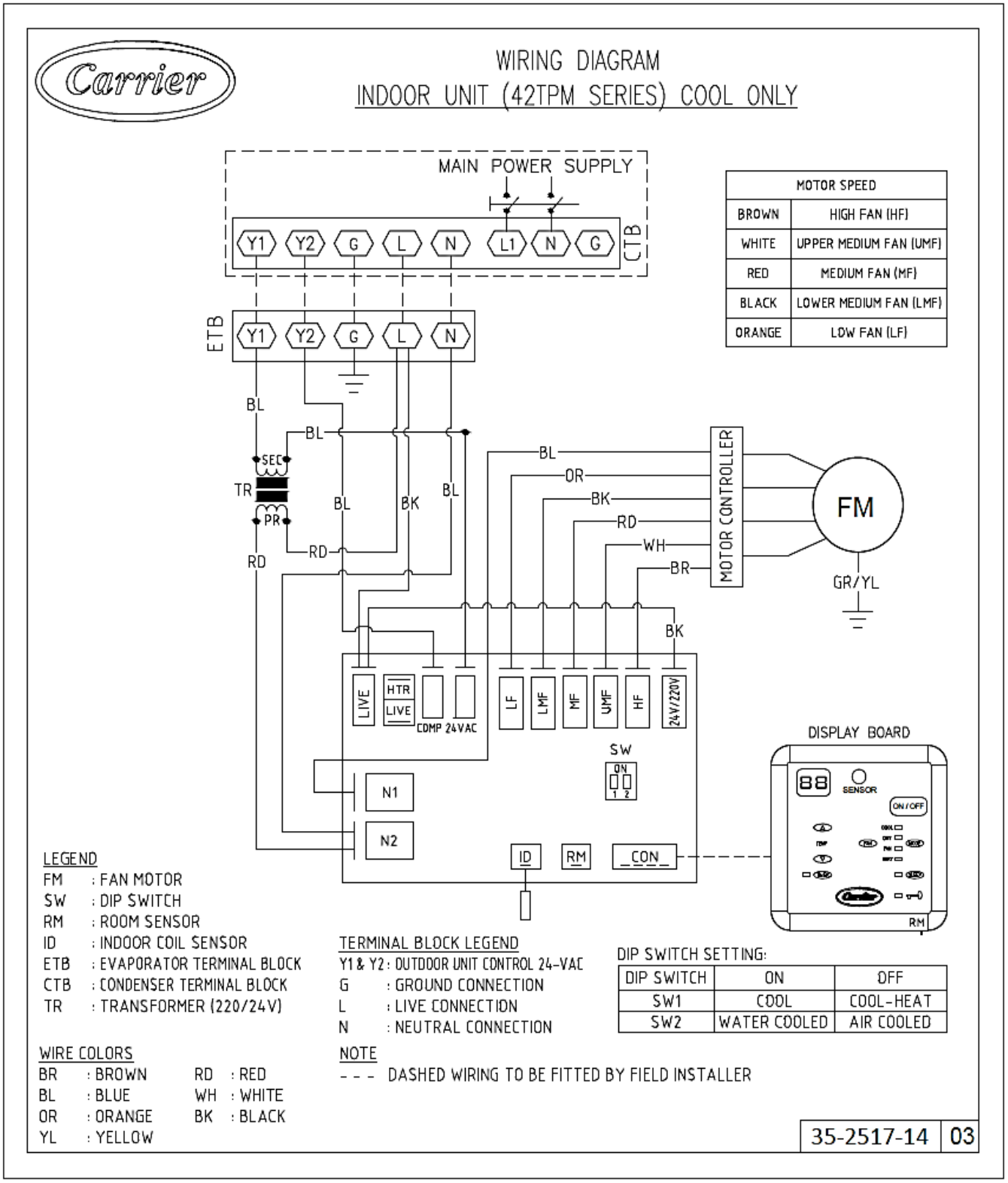
Legend

FLA — Full Load Amps

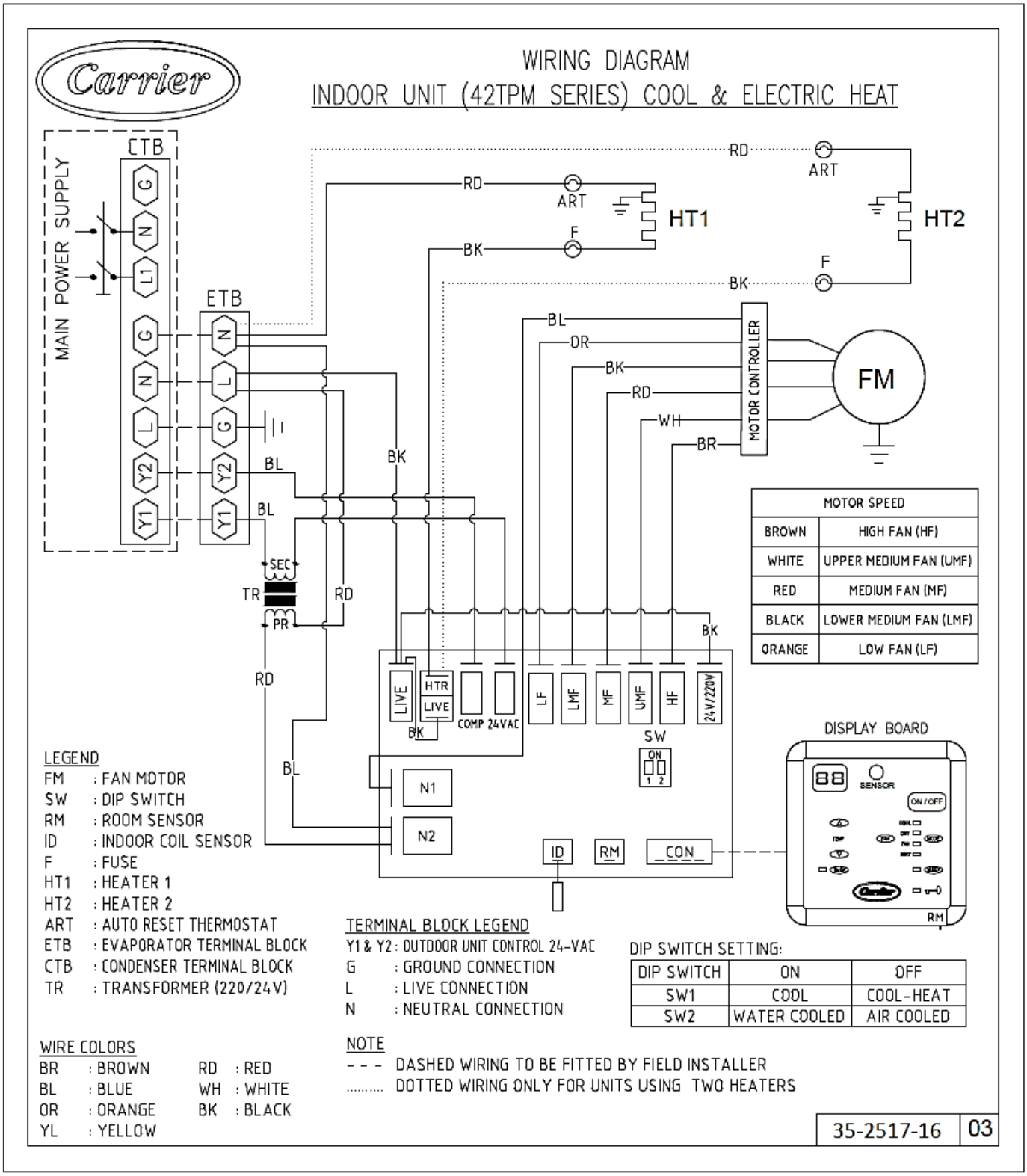
MCA — Minimum Circuit Amps

MOCP — Maximum Overcurrent Protection

Typical Wiring Schematic 18K to 60K – Cool Only



Typical Wiring Schematic 18K to 60K – Cool & Electric Heat

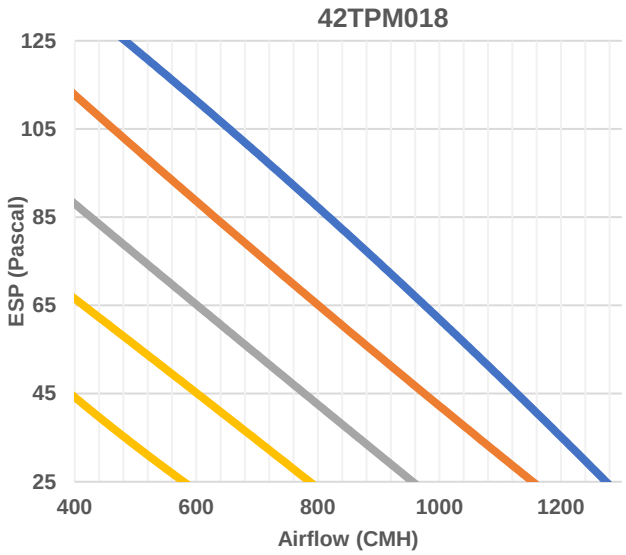


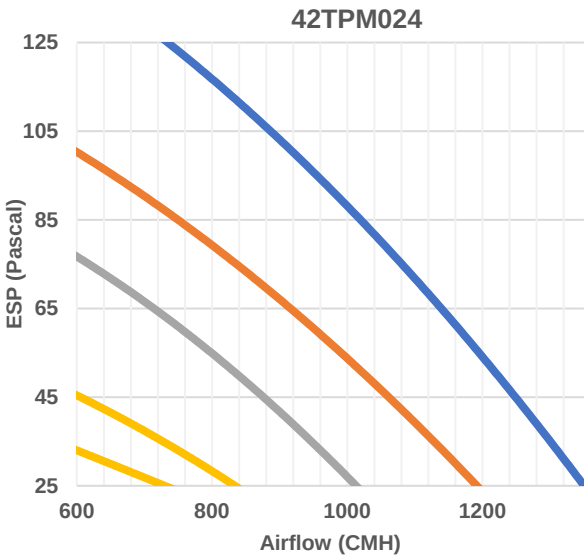
MOTOR SPEED	
BROWN	HIGH FAN (HF)
WHITE	UPPER MEDIUM FAN (UMF)
RED	MEDIUM FAN (MF)
BLACK	LOWER MEDIUM FAN (LMF)
ORANGE	LOW FAN (LF)

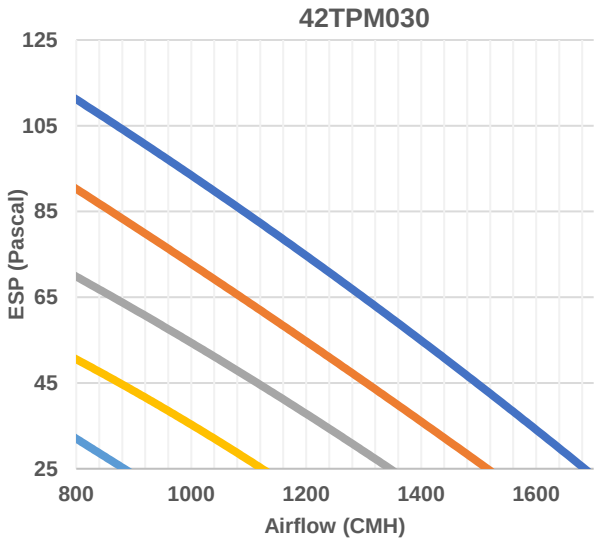
DIP SWITCH SETTING:

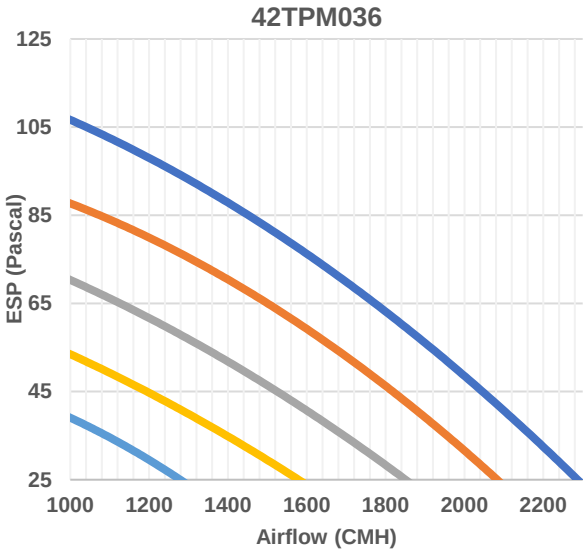
DIP SWITCH	ON	OFF
SW1	COOL	COOL-HEAT
SW2	WATER COOLED	AIR COOLED

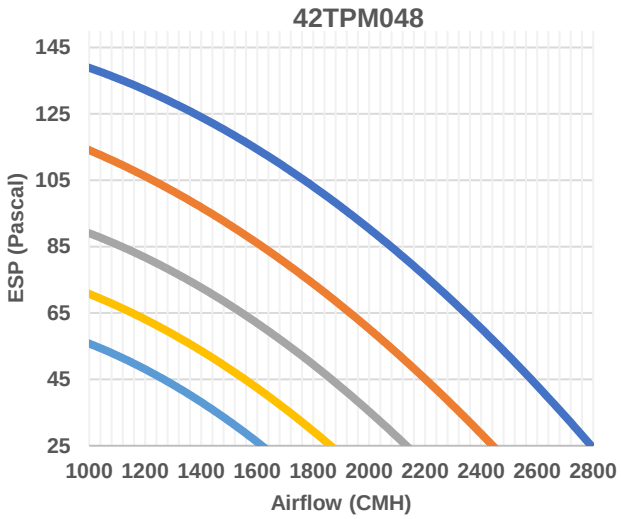
Fan Performance – Airflow Curves (SI)

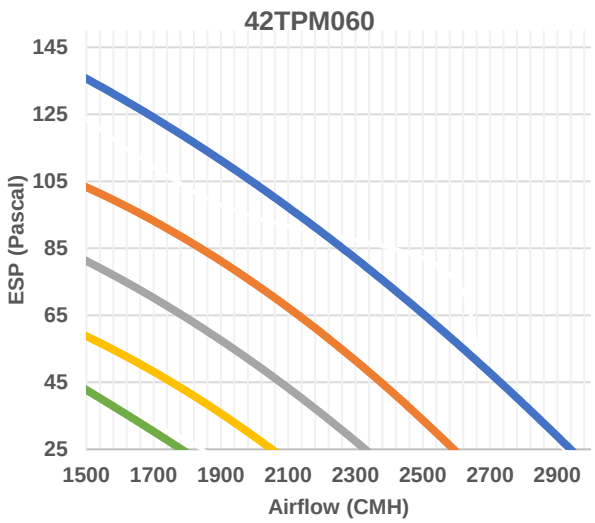






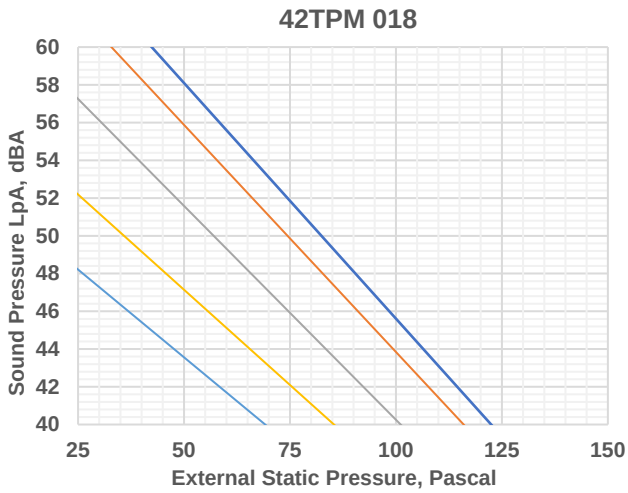


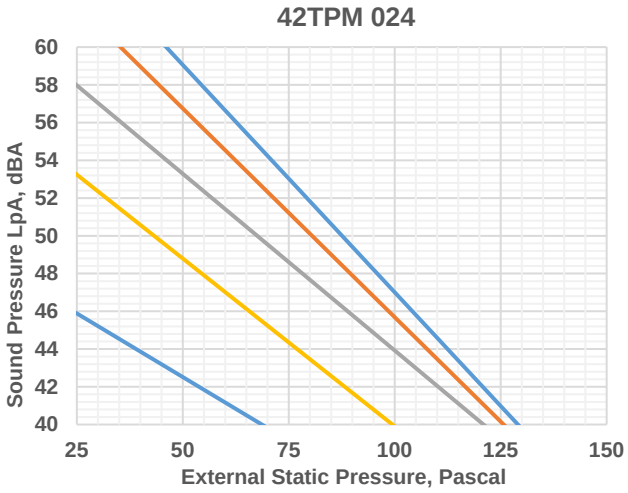


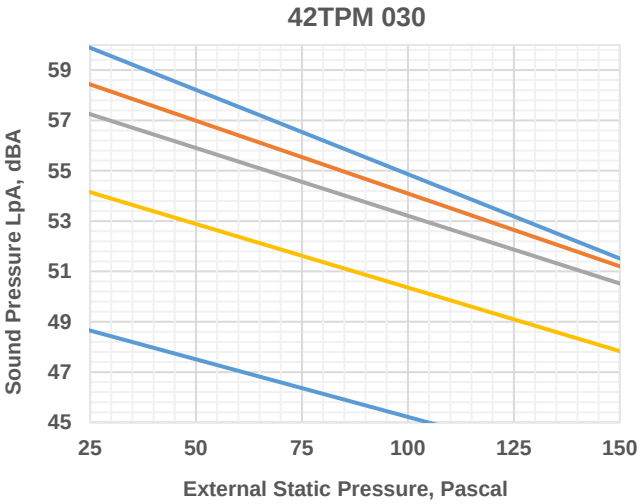


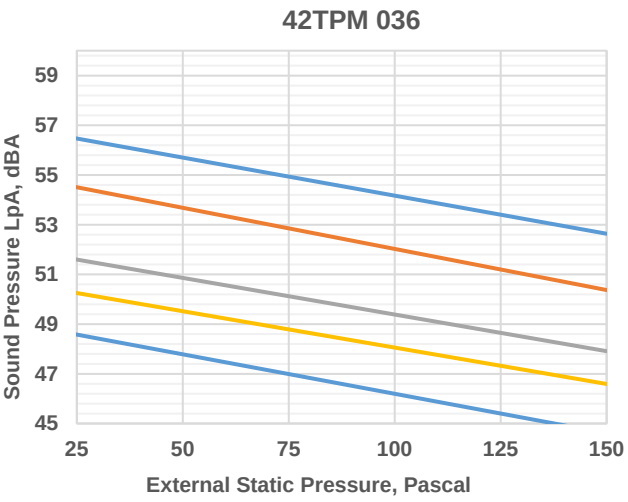
Sound Data

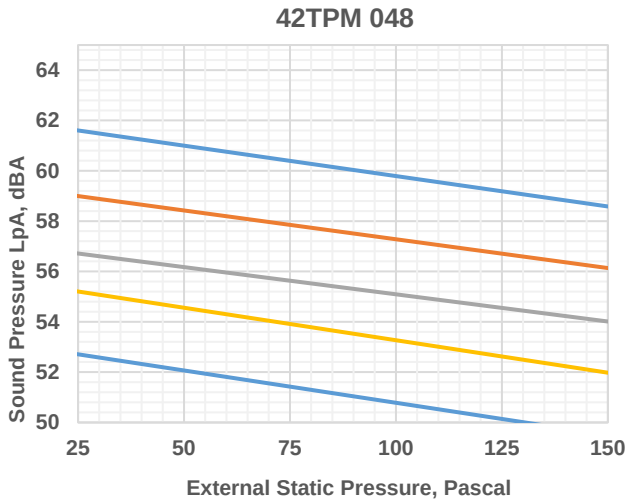
42TPM 5-speed, Sound Pressure (Lp) simulation inside semi-anechoic room
- Free discharge and free intake, without duct
- Microphones positioned 1.5 meters distance from discharge
- Background noise 30 dBA
- Operating at dry airflow

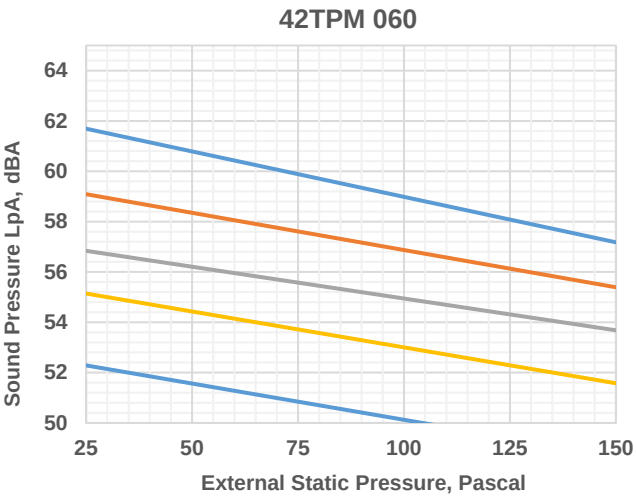












Controller For Ducted Fan Coil Units (5 Speeds)

Features: The controller is used to control (DX/CW) cooled ducted split unit, supports the following functions:
- Modes: Cool, Dry, Fan, Heat | Indoor fan speed: Auto, High, Upper Medium, Medium, Lower Medium, Low
- Sleep mode, Programmable On/Off timer
- Compressor protections: Compressor 3 minutes restart protection, indoor coil anti-freeze, room sensor and indoor coil sensor failure monitoring
- Random restart to minimize voltage dip during compressor first cut in cycle upon power up.

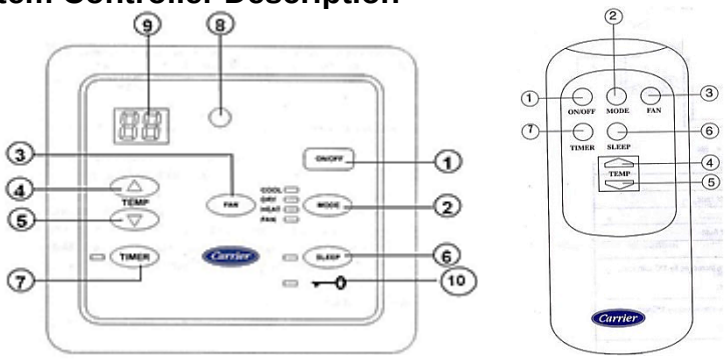
Hardware Setting: A 2-way DIP switch is used to configure:

DIP Switch	On	Off
SW1	Cool	Cool-Heat
SW2	Water System	DX System

Error Code: The corresponding error code will be shown one after another, in-case if multiple faults.

Error code	E1	E2	E4
Fault	Room sensor	Indoor coil sensor	Compressor

System Controller Description



System Room Controllers

Note: The wired room controller is mounted on the wall and can control all system functions without wireless remote control.

1) On/Off Key: If you press this key, the system will begin operation, Press the key again, and operation stops. (You can hear a receiving beep). If you press this key immediately after turning off the system, the compressor will not operate for 3 minutes to prevent overloading.

2) Operation Mode Selection Key: Toggles the operation mode: Cool, Dry, Heat, or Fan only

"COOL" Led	Lights on when selecting COOL mode.	**"HEAT" Led**	Lights on when selecting Heat mode.
"DRY" Led	Lights on when selecting DRY mode.	**"FAN" Led**	Lights on when selecting FAN mode.

3) Fan Speed Selection Key: Toggles the fan speed: Auto, High, Upper Medium, Medium, Lower Medium or Low.
Note: Fan key is invalid in Dry mode.

FA	Displayed when selecting Auto fan speed.	**F3**	Displayed when selecting Medium fan speed.
F1	Displayed when selecting Low fan speed.	**F4**	Displayed when selecting Upper Medium fan speed.
F2	Displayed when selecting Lower Medium fan speed.	**F5**	Displayed when selecting High fan speed.

Fan setting and temperature display will be shown alternately every 5 seconds.

4) Temperature Up Key: By pressing Temp Up  the setting temperature increases by 1ºC with each press.

5) Temperature Down Key: By pressing Temp Down  the setting temperature decreases by 1ºC with each press. If you set the desired room temperature, then system will maintain the room temperature as set. Upon setting the desired room temperature the system will maintain the room temperature.

Cool Mode: If the room temperature is higher than the setting, the compressor will automatically turn on provide a cooling effect. On the hand, if the room temperature is lower than the setting, the compressor will automatically turn off to stop cooling operation. If indoor fan is programed to be turned off with compressor signal, it will turn off once compressor is cut off.

Heat Mode: If the room temperature is lower than the setting, the electric heater will automatically turn on to provide a heating effect. If the room temperature is higher than the setting, the heater will automatically turn off to top heating operation. If indoor fan is programed to be turned off with heater signal, it will turn off once heater is cut off but subject to 30 sec dispersing remaining heat timing.

Dry Mode: The fan speed runs automatically at low speed and compressor stopping and running is controlled by the difference between room and setting temperatures and by continuous running time. If indoor fan is programed to be turned off with comp signal, it will turn off once comp is cut off, In Dry mode, the humidity is reduced in the space to be air-conditioned.

Fan Mode: There will be no cooling or heating effects; only the fans of indoor unit will run for ventilation at the selected speed.

- Only High, Upper Medium, Medium, Lower Medium and Low speed selection is allowed. Compressor and heater and will be turned off.
- In COOL or HEAT mode and if AUTO fan speed is selected; Fan speed is automatically selected by controller according to the difference between setting temperature and room temperature, fan will be continuously running at low speed after setting temperature is achieved.

Notes:

a) Temperature setting range is 16ºC to 30ºC (60ºF to 85ºF). **For optimum operation set the temperature between 21°C to 24°C (70 to 75°F)**

b) Hold TEMP Down ▼ and fan FAN keys at the same time for about 5 seconds, to toggle the temperature setting from degree C to degree F and vice versa, temperature keys are invalid in Fan mode.

c) Press any temperature key will flash the current setting temperature for 4 seconds, with no further key press; it will revert to room temperature display. Temperature display range is 0°C to 50°C (32°F to 99°F).

6) Sleep Key: Press SLEEP key to set the timer turning the sleep led will light on, to cancel the timer press again, sleep function stop automatically the operation of the air conditioner after certain set off time.

- Sleep mode is valid in cool or heat mode and invalid in Fan mode.

7) Timer Key: Upon count down of the set hours, the system will switch from OFF to ON or vice-versa.

- OFF Timer Function to stop automatically, the air conditioner after certain set OFF time.
- ON Timer Function to start automatically, the air conditioner after certain set ON time.

* Timer setting is 1 Hour to 24 Hour. The timer led will light on when operating the Timer Function First key press will flash the digital display and Timer Led for 3 seconds.

Notes:

a) The digital displays show the number of hours previously set, only the Timer Led flashes.
b) Subsequent 3 seconds will show the number of hours previously set; only the timer led flashes.
c) Should there be no further key press, it will revert to normal mode.
d) Should Timer key is not released timer setting will increase automatically every 0.5-second.

8) Sensor: Receives the remote controller's signal

9) Display Screen: Displays the set temperature and displays also the TIMER settings when adjusting it.

10) Key Lock Mode: Hold down TEMP Down ▼ and MODE keys together for 3 seconds to activate key lock mode – in that mode the light will come on for the KEY display, similarly, to unlock.

In key lock mode, all keys are not valid except the below functions:

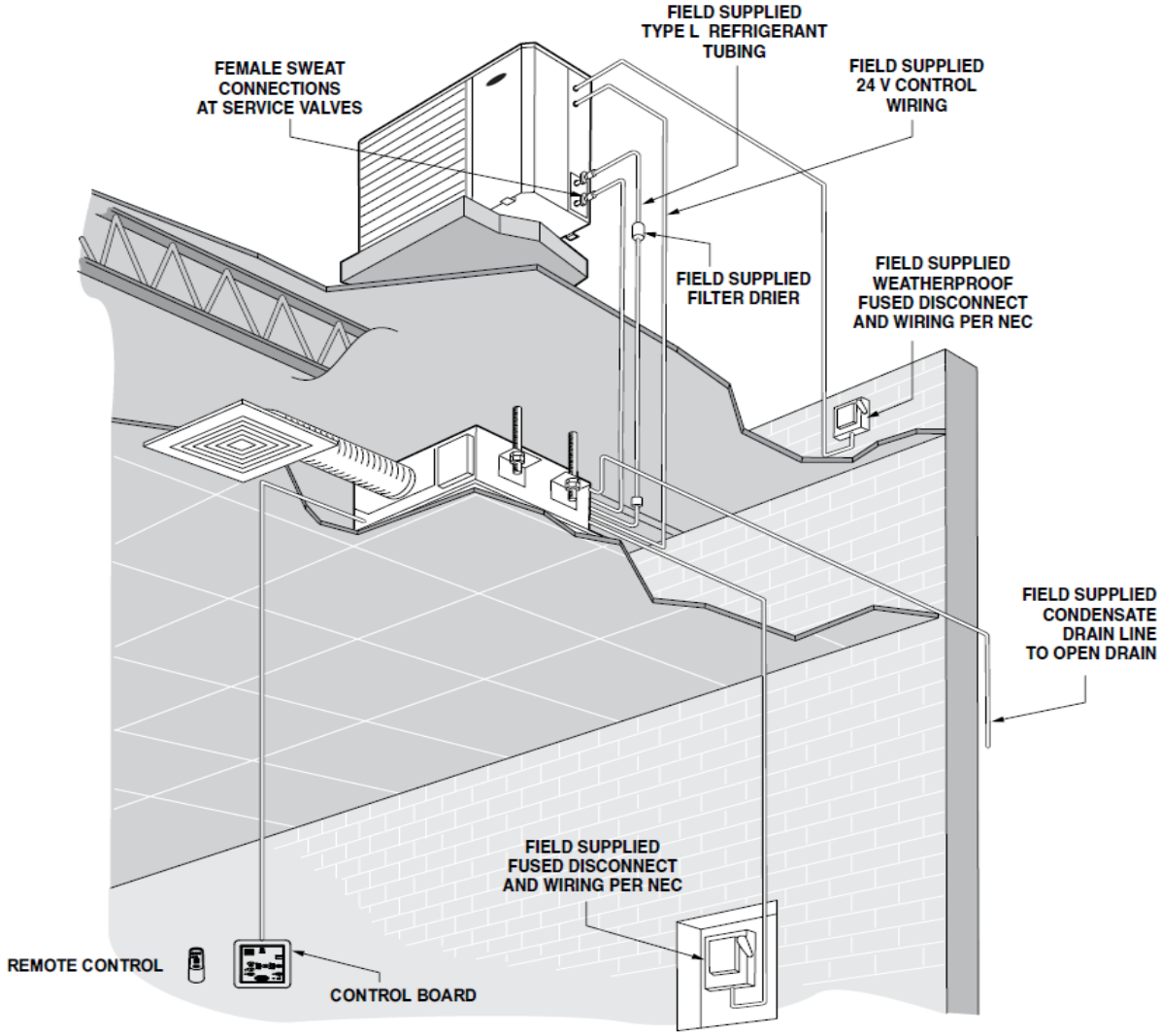
a) ON/OFF Key to turn ON/OFF the system**.**

b) Hold down TEMP Down ▼ and SLEEP button for 1 second to enter into coil temp display mode. Press Temp Up ▲ key to display indoor coil temp, High Fan LED flashes; with the same sequence to exit coil temp display mode. Temperature display range is –9C to 78C.

c) Hold down TEMP Down ▼ and Fan FAN buttons together for 1 second to activate the system control parameter setting, Press MODE button to select the desire menu as following table. Press TEMP key Up ▲ or Down ▼ to change the setting to 1 or 2 for following functions:

Menu	Parameter	Set range	Default value	Remarks
1	Temp display, Sleep LED flashing	1~2	1	1: Disable room temp display 2: Enable room temp display
2	Cool mode fan control function, Sleep and Cool LED flashing	1~2	1	1: Comp off, fan on 2: Comp off, fan off
3	Heat mode fan control function, Sleep and Dry LED flashing	1~2	1	1: Heater off, fan on 2: Heater off, fan off

Application Data



Notes:

1. All piping must follow standard refrigerant piping techniques.
2. All wiring must comply with the applicable local and national electric codes.
3. Wiring and piping shown are general points-of-connection guides only and are not intended for a special installation.
4. Insulate condensate line if run above a conditioned space.

Options and Accessories

Electric Heater Option

The electric heater is open type with thermal protection and fuse for more safety. Heater capacities are available as shown in the physical data table. Electric heater option is factory supplied and factory installed option.

Connection Side Option

Standard coil connection and electric box position is Right Hand facing air flow direction while the optional position is Left Hand facing the air flow for both coil connection and electric box. The also units are designed to be field exchangeable if needed in the field.

Control Board Wire Extension

Standard wire length for control board is 15m optional extensions are available to enlarge the wire up to 30 m. if extension are required, please contact your local Carrier dealer.

Guide Specifications
DX Fan Coil Unit Electric Cooling, Electric Heat
42TPM – Ducted Slim Type
Size Range: 1.5 to 5.0 Nominal Tons

General

System Description
The fan coil unit is designed for under ceiling installation, electrically controlled cooling. Unit shall be horizontal installation.

Quality Assurance
A. Unit shall be designed and manufactured in accordance with ISO 9001:2015 facility, International Standard for Quality Systems.
B. Unit will be designed to conform to ASHRAE safety standard.
C. Unit shall be rated in accordance with applicable SASO standard.
D. Insulation and adhesive shall conform to NFPA 90A requirements for flame spread and smoke generation.
E. Unit will be run tested before packing.

Delivery, Storage, and Handling
A. Unit shall be stored and handled per manufacturer's recommendations.
B. Lifted by crane requires either shipping top panel or spreader bars.
C. Unit shall only be stored or positioned in the upright position.
D. For long term storage please refer to the long term storage guideline.

Products
A. The unit shall be factory assembled single piece cooling unit.

B. Unit cabinet shall be constructed of galvanized steel. The unit shall be insulated with polyester urethane insulation that is 1/2 inch thickness & 24 kg/m^3 density, Unit cabinet panels shall be single skin

C. Unit shall have a permanent washable aluminum filter. Filter shall be flame retardant and easy accessible through an access panel.

D. Units shall have external drain pan with ½ inch insulation, the drain pan shall be galvanized steel coated with polyester powder for extra protection.

E. The unit fan wheel shall be directly connected to the motor. The fan wheel shall be dynamically balanced with double inlet forward curved type blower wheel.

F. Unit coil shall have aluminum fins mechanically bonded to seamless smooth copper tubes 3/8 inch with all joints brazed. Unit coil shall be accessible for cleaning.

G. The coil connection shall be flare nut type; it shall be RH/LH exchangeable.

H. The unit fan motor is BLDC type and shall have permanently lubricated sleeve bearing and 5 speeds, the motor shall have internal overload protection.

I. Unit shall have a wired control board with a built-in thermostat to be installed in the air-conditioned area and it shall have the following Features:
   i. Control Modes – Cool, Dry, Fan, Auto Cool and Sleep mode.
   ii. Compressor protections – 3 minutes restart protection.
   iii. Indoor coil anti-freeze protection.
   iv. Failure monitoring for room sensor and indoor coil sensor and compressor failure.
   v. Nonvolatile memory – keep system settings.
   vi. Programmable On/Off timer.
   vii. Random Restart Time Delay – to minimize voltage dip during compressor first cut in cycle upon power up for multiple units operation.
   viii. 5 speeds indoor fan for wide range of airflow.

J. Unit shall have a wireless remote to control all the functions of the control board at a distance.

K. All electric parts shall be easy accessible for service.

Notes


Carrier