



United Technologies

turn to the experts 



## New 42CN EC motor Fan Coil Unit

Air Volume: 340~1950m<sup>3</sup>/h



## Turn To The Experts

Founded by the inventor of modern air conditioning, Carrier is a world leader in high-technology heating, air-conditioning and refrigeration solutions. Carrier experts provide sustainable solutions, integrating energy-efficient products, building controls and energy services for residential, commercial, retail, transport and food service customers. Carrier is a part of UTC Climate, Controls & Security, a unit of United Technologies Corp., a leading provider to the aerospace and building systems industries worldwide.

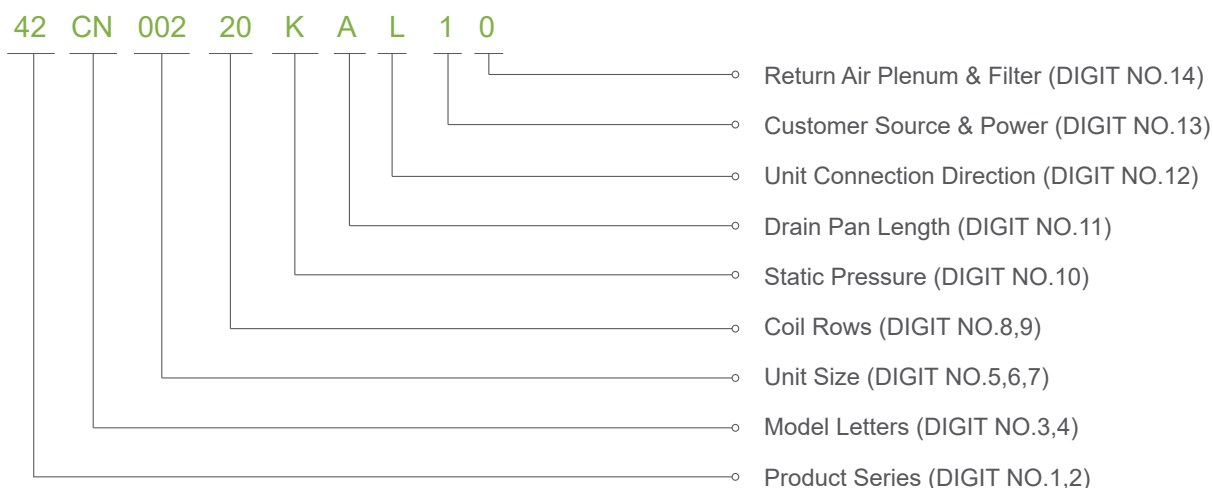
We constantly build upon our history of proven innovation with new products and services that improve global comfort and efficiency.



In 1998, Time magazine named Dr. Carrier one of its 20 most influential builders and titans of the 20<sup>th</sup> century.



## Model Number Nomenclature



🍃 DIGIT NO. 1, 2  
product series  
42: fan coil unit

🍃 DIGIT NO. 3, 4  
model letters  
CN: Horizontal ceiling FCU

🍃 DIGIT NO. 5, 6, 7  
unit size  
002: 340m<sup>3</sup>/h  
003: 510m<sup>3</sup>/h  
.....

🍃 DIGIT NO. 8, 9  
coil rows  
20: 2 row cooling (model 002~008)  
30: 3 row cooling (model 002~012)  
31: 3 row cooling+1 rows heating (model 002~012)

🍃 DIGIT NO. 10  
external static pressure  
K: EC motor (0~10V)  
U : EC motor @12Pa (0~10V)  
V: EC motor @30Pa (0~10V)  
W: EC motor @50Pa (0~10V)

🍃 DIGIT NO. 11  
drain pan  
A: Standard drain pan  
B: Lengthen drain pan  
C: Stainless drain pan  
D: Lengthen stainless drain pan

🍃 DIGIT NO. 12  
unit connection direction (face to discharge air)  
L: Left  
R: Right

🍃 DIGIT NO. 13  
customer source & power  
1: Export to Hong Kong  
220V~240V - 1Ph - 50Hz/60Hz IP54

🍃 DIGIT NO. 14  
return air plenum & filter  
0: Without both (omissible)  
A: Unit with rear return air plenum  
B: Unit with bottom return air plenum  
C: Unit with rear return air plenum & nylon filter  
D: Unit with bottom return air plenum & nylon filter

Note: EC motor unit doesn't include room controller. Please select room controller separately according to control requirements.

# Features

## Ultra High Efficiency Heat Exchanger

The unit coil adopts the newly developed double-flanging structure of lanced blue hydrophilic fin and advanced mechanical tube-expanding technique to ensure that the copper tube optimally contacts with the aluminum foil.

## Low noise centrifugal fan

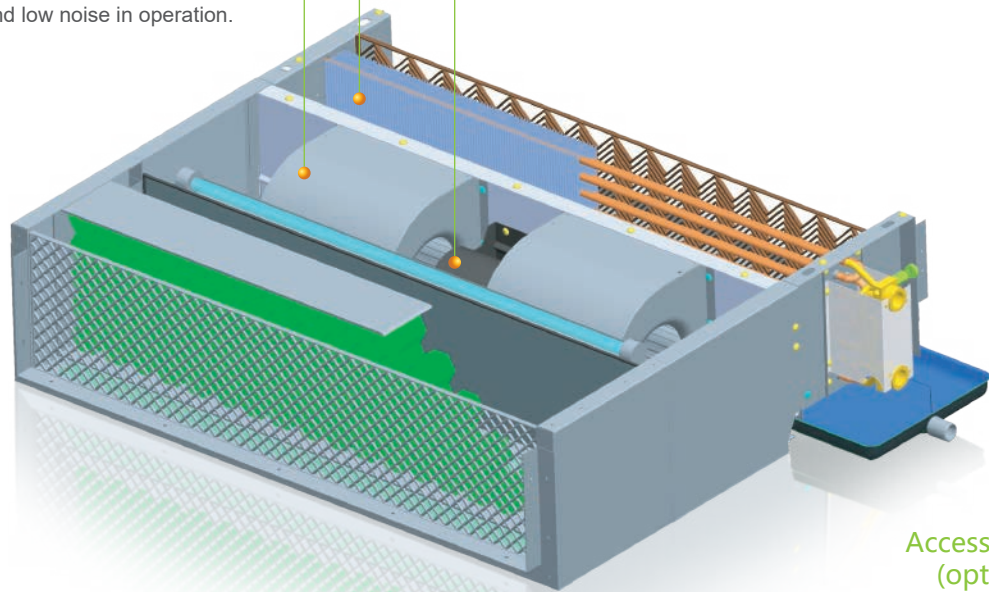
Adopts the newly designed wide impeller with large diameter and slow speed forward multi-blade impeller. The fan casing is strengthened with reinforcing ribs for additional strength. With NSK bearings, ensuring small vibration and low noise in operation.



Fan Impeller



NSK Bearing



## EC motor

EC motor is a standard option for Carrier 42CN FCU. Compared to AC motor, EC motor have great advantages in efficiency, noise and comfort.



EC motor

## Accessories (optional)

- The diversified drain pans are provided to meet application demands at various situations with good thermal insulation and watertightness.
- Carrier THT420 series LCD thermostat is exquisite in appearance and convenient in operation. Set precision is up to 0.5°C, which meets supreme temperature control demand for comfort application.
- The motorized 2-way & 3-way valves ensure more reasonable energy saving in system usage.

## Insulating Material

The units adopts PEF heat insulating material and one-step forming process of drain pan for thermal insulation, making it durable and good in heat preservation.

## Ultra thin

The unit height is only 230mm, so that they can save installation space and meet the requirement of all kinds of situations.

Motorized 3-way valve (Optional)



Motorized 2-way valve (Optional)



Thermostat(Optional)

## Features of 42CN brushless EC motor FCU

Compared to traditional fan coils, Carrier 42CN brushless EC motor fan coils are featured by energy-saving, supreme comfort, intelligent control and reliability with up-to-date EC stepless motor and advanced control technology. Carrier 42CN EC fan coil is ideal choice for buildings seeking for both green and comfort.

### Significant energy saving

- Energy consumption of 42CN EC FCU is only about 41%~63% compared to conventional AC FCU.
- EC motor can adjust to only 300rpm with high efficiency, but AC motor can not regulate speed flexibly to meet requirements, and energy consumption is high when running at low speed.

### Supreme comfort

- FCU regulates room temperature by water flow and fan speed control. Normally, conventional AC FCU only have three speed function to regulate air flow which is very limited, and considerable fluctuation of actual room temperature is inevitable. EC motor FCU have stepless speed function to regulate smoothly in large air flow range, and can make the room temperature constantly by working together with water valve.
- Set precision of Carrier THT420 series LCD thermostat for 42CN EC FCU is up to 0.5 °C, which meets supreme temperature control demand for comfort application.

### Super-quiet operation

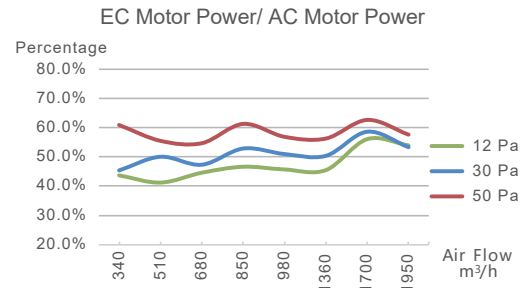
- EC FCU have wide regulating range and can reduce motor speed when room temperature reach the setting point.
- Most of the time, the unit is operating at medium or low speed, where the noise level is much lower.
- Carbon brush noise, unavoidable in conventional AC FCU, is eliminated in 42CN EC motor FCU. EC motor use ultra high frequency driving beyond normal induction range of human ears to further reduce the noise of the unit during operation.

### Flexible control

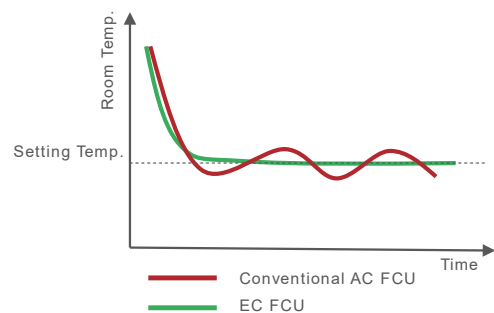
- Carrier 42CN EC FCU can not only match Carrier THT420 series thermostat, but also be compatible with normal 0~10V thermostat on the market, so that users can choose their own thermostat to meet diverse needs of practical applications.
- The unit can provide stand alone or group control and can be connected to room control unit (RCU) to reduce energy consumption.
- The MODBUS type FCU controller is equipped with RS485 communication interface, supports standard Modbus communication protocol, and facilitates access to building automation (BA) system.

### Convenient application

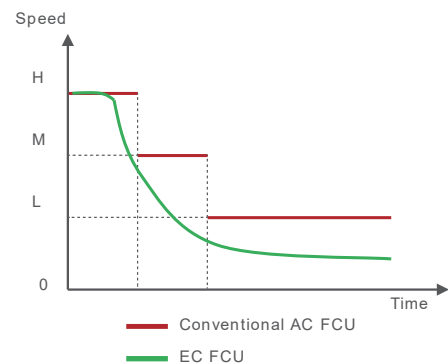
- Modifying external static pressure is easily done in the field by changing the dip switch settings between 12Pa, 30Pa and 50Pa, as required.
- THT420 series thermostat have timing function and convenient to set start and turn off time.
- Using IPM drive module, it has protections of overcurrent, overvoltage, undervoltage, rotor locking, overspeed, etc.



### Room Temperature Changes Comparison



### Motor Speed During Temp. Regulating Process



## Technical Parameter

### Technical Data (2R Coil)

Performance	Model	002	003	004	005	006	008
Air Volume m³/h	HIGH	340	510	680	850	980	1360
Total Cooling Capacity W		2000	2820	3740	4500	5400	7350
Heating Capacity W		3100	4400	5820	6900	8400	11160
Power Input W	12 Pa	14	19	25	35	43	61
	30 Pa	19	26	34	46	54	78
	50 Pa	28	35	46	60	66	98
Sound Level dB(A)	12 Pa	34	35.5	38.5	42	43	42
	30 Pa	37.5	38.5	41.5	43.5	44.5	44
	50 Pa	41	43	44.5	45.5	46	47
Water Flow l/min		5.7	8.1	10.7	12.9	15.5	21
Water Pressure Drop kPa		20	28	30	30	38	38
Fan	Type	Centrifugal, forward multi-blade					
Motor	Type	EC					
Coil	Rows	2					
	Working Pressure	1.6 MPa					
Connecting	In-Out	ZG 3/4" FPT					
	Drain Connection	ZG 3/4" MPT					
Net Weight kg	EC	12.8	13.8	16.3	17.5	20.8	26.5
Options		Thermostat, 2Way / 3Way Valve, Plenum box					

Note : 1. The data is the performance in high speed with relevant static pressure

2. Cooling conditions: inlet water 7 °C, temperature rise 5 °C, entry air temperature DB 27 °C, WB 19.5 °C

Heating conditions: inlet water 60 °C, same water flow as the cooling conditions, entry air temperature DB 21 °C

3. Sound level is tested in the anechoic test room, measured with a fine audiometer located 1 meter away from the unit front panel and the unit bottom panel

4. All above data is for standard unit. For other optional EC motor data, please contact local agencies.

## Technical Parameter

### Technical Data (3R Coil)

Performance	Model	002	003	004	005	006	008	010	012
Air Volume m <sup>3</sup> /h	HIGH	340	510	680	850	980	1360	1700	1950
Total Cooling Capacity W		2400	3200	4250	5000	6000	8100	9800	11000
Heating Capacity W		3600	5100	6450	7870	9000	12500	15200	16500
Power Input W	12 Pa	14	19	25	35	43	61	84	97
	30 Pa	19	26	34	46	54	78	101	112
	50 Pa	28	35	46	60	66	98	122	136
Sound Level dB(A)	12 Pa	34	35.5	38.5	42	43	42	46	47
	30 Pa	37.5	38.5	41.5	43.5	44.5	44	47.5	48
	50 Pa	41	43	44.5	45.5	46	47	49	50
Water Flow l/min		6.9	9.2	12.2	14.3	17.2	23.2	28.1	31.5
Water Pressure Drop kPa		25	21	30	30	32	28	40	40
Fan	Type	Centrifugal, forward multi-blade							
Motor	Type	EC							
Coil	Rows	3							
	Working Pressure	1.6 MPa							
Connecting	In-Out	ZG 3/4" FPT							
	Drain Connection	ZG 3/4" MPT							
Net Weight kg	EC	13.2	14.3	16.8	18.1	21.5	27.4	30.7	34.8
Options		Thermostat, 2Way / 3Way Valve, Plenum box							

Note : 1. The data is the performance in high speed with relevant static pressure

2. Cooling conditions: inlet water 7 °C, temperature rise 5 °C, entry air temperature DB 27 °C, WB 19.5 °C

Heating conditions: inlet water 60 °C, same water flow as the cooling conditions, entry air temperature DB 21 °C

3. Sound level is tested in the anechoic test room, measured with a fine audiometer located 1 meter away from the unit front panel and the unit bottom panel

4. All above data is for standard unit. For other optional EC motor data, please contact local agencies.

## Technical Parameter

### Technical Data (3+1R Coil)

Performance	Model	002	003	004	005	006	008	010	012
Air Volume m <sup>3</sup> /h	HIGH	340	510	680	850	980	1360	1700	1950
Total Cooling Capacity W		2200	2900	3850	4750	5650	7900	9000	10300
Heating Capacity W		1900	2740	3300	4150	4750	6400	7200	8200
Power Input W	12 Pa	14	19	25	35	43	61	84	97
	30 Pa	19	26	34	46	54	78	101	112
	50 Pa	28	35	46	60	66	98	122	136
Sound Level dB(A)	12 Pa	34	36	38.5	42	43	42	46	47
	30 Pa	37.5	39.5	41.5	43.5	44.5	44	47.5	48
	50 Pa	41	43	44.5	45.5	46	47	49	50
Water Flow l/min	Cooling	6.3	8.3	11.0	13.6	16.1	22.6	25.7	30
	Heating	2.8	4.0	4.8	6.0	6.8	9.3	10.6	12.1
Water Pressure Drop kPa	Cooling	22	20	30	30	30	32	40	40
	Heating	9	11	14	17	20	23	40	40
Fan	Type	Centrifugal, forward multi-blade							
Motor	Type	EC							
Coil	Rows	3+1							
	Working Pressure	1.6 MPa							
Connecting	In-Out	ZG 3/4" FPT							
	Drain Connection	ZG 3/4" MPT							
Net Weight kg	EC	14.1	15.3	17.9	19.4	23.1	29.2	32.7	36.9
Options	Thermostat, 2Way / 3Way Valve, Plenum box								

Note : 1. The data is the performance in high speed with relevant static pressure

2. Cooling conditions: inlet water 7 °C, temperature rise 5 °C, entry air temperature DB 27 °C, WB 19.5 °C

Heating conditions: inlet water 60 °C, same water flow as the cooling conditions, entry air temperature DB 21 °C

3. Sound level is tested in the anechoic test room, measured with a fine audiometer located 1 meter away from the unit front panel and the unit bottom panel

4. All above data is for standard unit. For other optional EC motor data, please contact local agencies.



## Dimensions

### Unit Dimension

Type	Dimension										
	A	B	C	D	E	F	H	J	K	M	N
42CN002	690	770	550	520	35	480	550	75	400	10	6
42CN003	770	890	630	600	75	480	630	115	400	12	6
42CN004	890	970	750	720	75	600	750	75	600	14	6
42CN005	970	1090	830	800	55	720	830	115	600	16	8
42CN006	1170	1410	1030	1000	95	840	1030	115	800	18	8
42CN008	1410	1530	1270	1240	95	1080	1270	35	1200	26	10
42CN010	1530	1770	1390	1360	95	1200	1390	95	1200	28	10
42CN012	1770	2010	1630	1600	95	1440	1630	115	1400	32	12

Note: B is the dimension of lengthening drain pan.

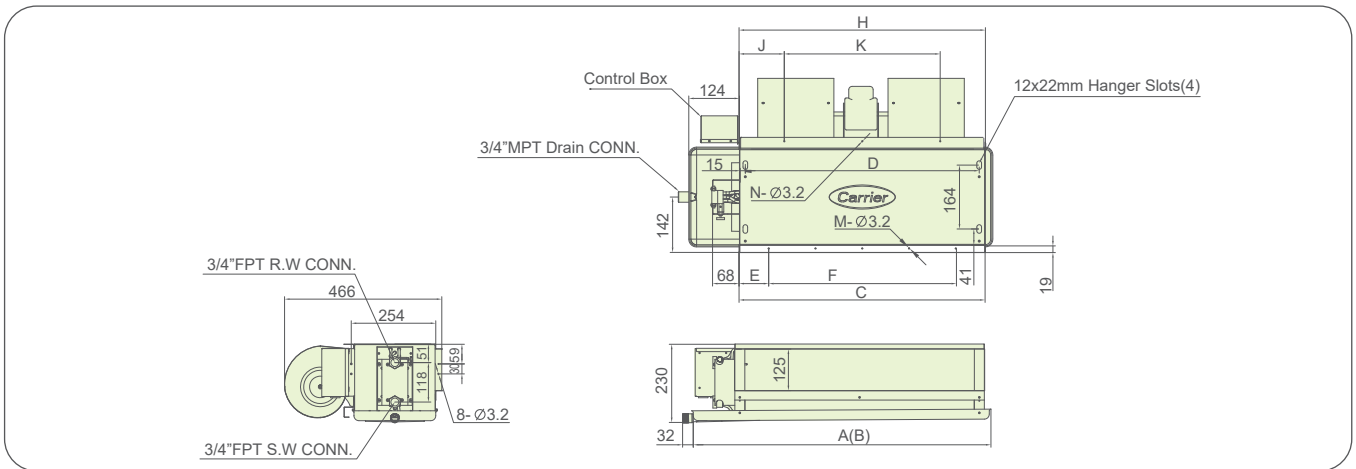
### 42CN Return Air Plenum

Part Number	Dimension							Used In
	A	B	C	D	E	F		
42CE402900	554	47	2	400	494	520	42CN002	
42CE403900	634	87	2	400	574	600	42CN003	
42CE404900	754	47	3	600	694	720	42CN004	
42CE405900	834	87	3	600	774	800	42CN005	
42CE406900A	1034	87	4	800	974	1000	42CN006	
42CE408900	1274	107	5	1000	1214	1240	42CN008	
42CE410900	1394	67	6	1200	1334	1360	42CN010	
42CE412900	1634	87	7	1400	1574	1600	42CN012	
42CE414900	1874	107	8	1600	1814	1840	42CN014	

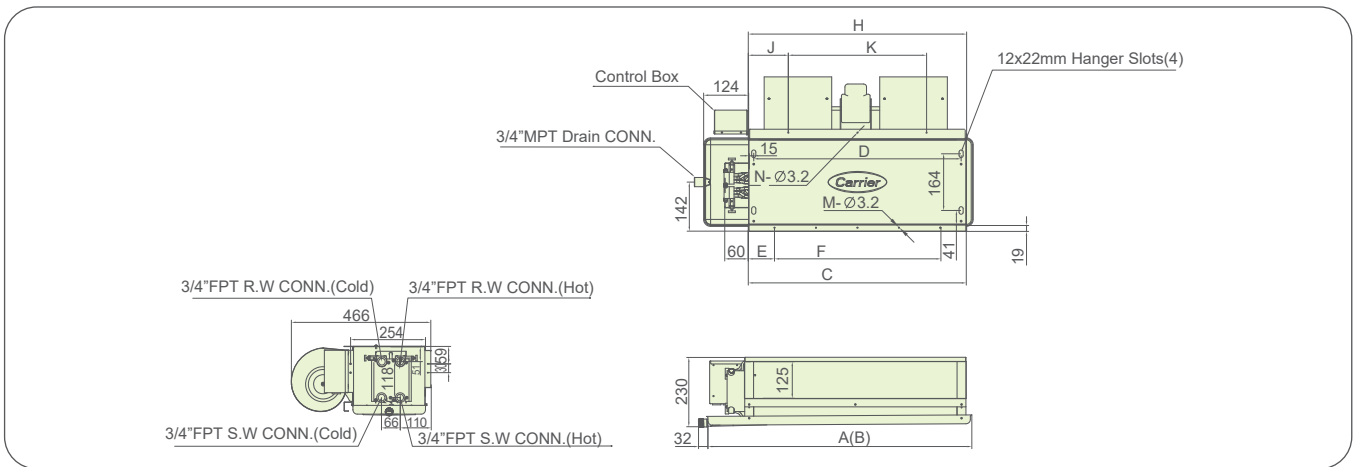
Note: 1. With Rear/Bottom air return plenum  
 2. Easily connect with Rear/Bottom air return plenum in the jobsite.  
 3. For use of an additional purifying module, please consult separately.

# Dimension

## 2R/3R Coil

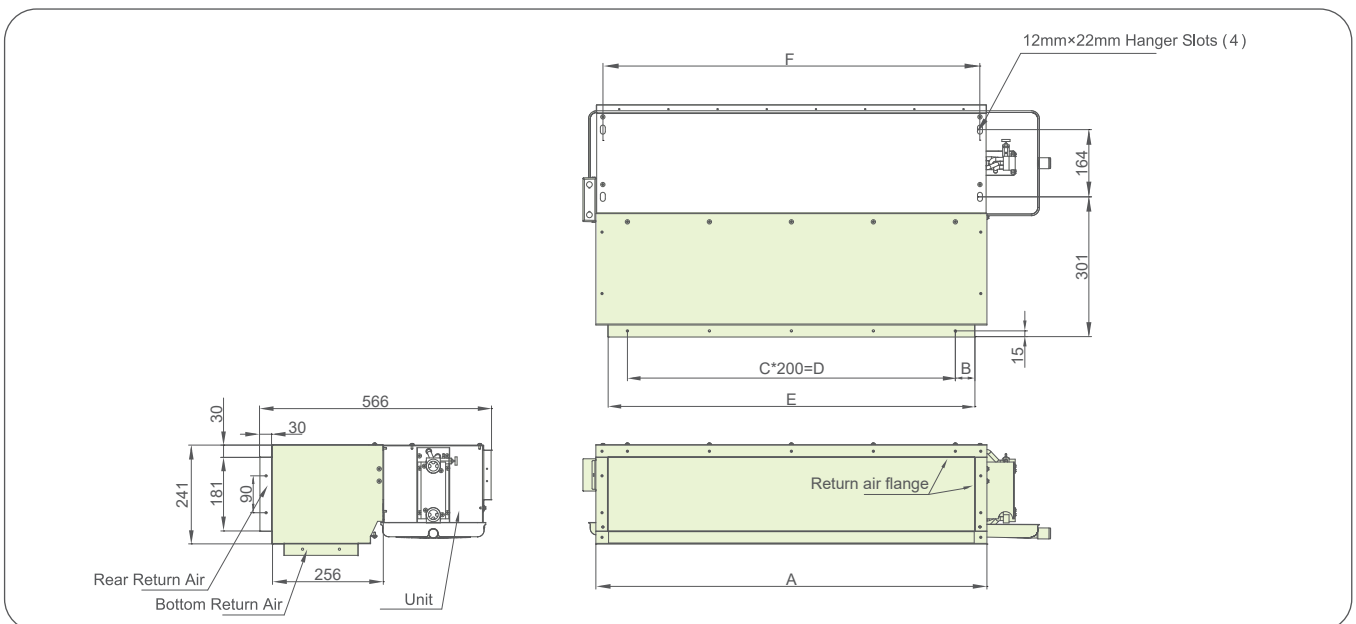


## 3+1R Coil



Note: All above data is for standard unit. For other optional EC motor data, please contact local agencies.

## 42CN Return Air Plenum

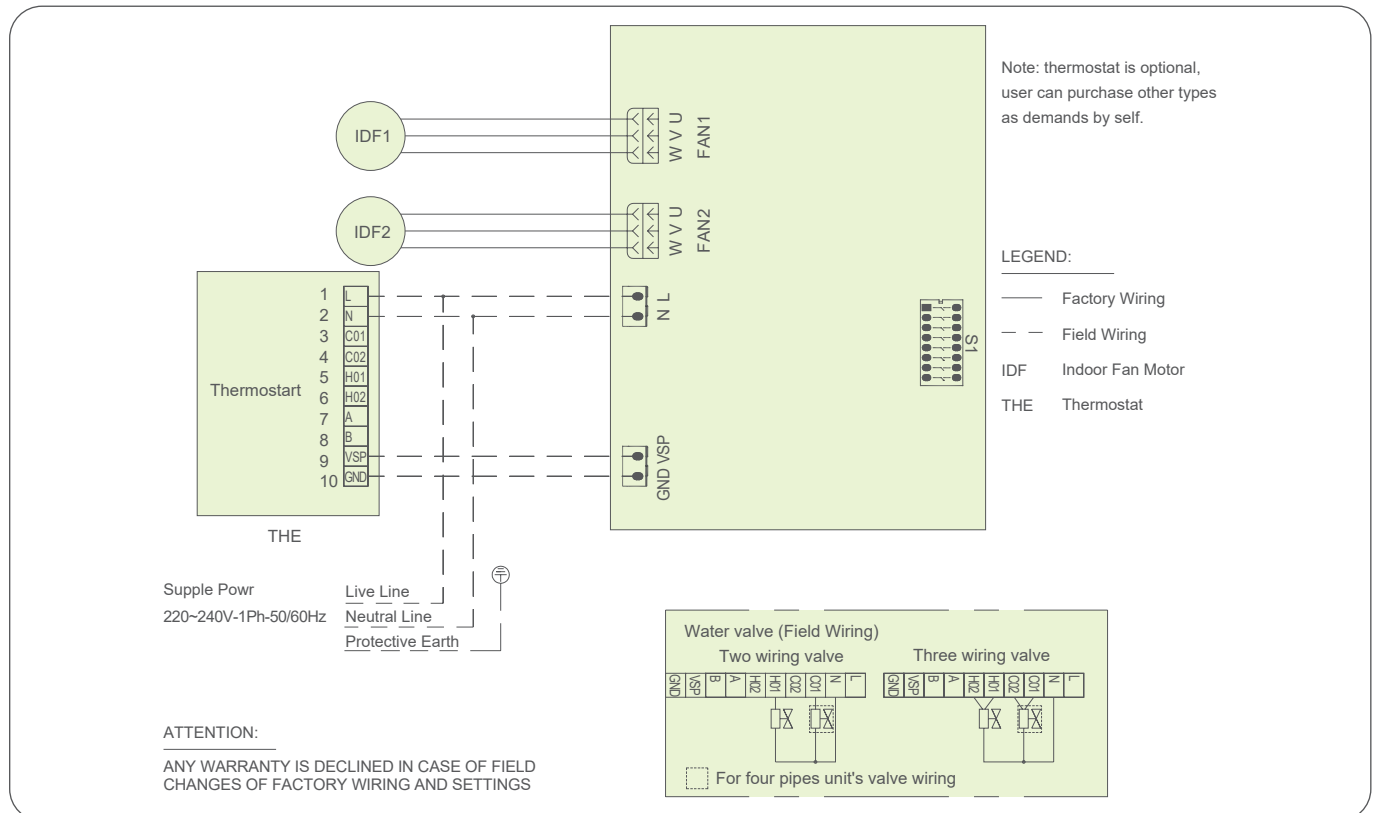


# Wiring

## Electrical Data

Model 42CN		002	003	004	005	006	008	010	012
Power Input (W)	DC-12 Pa	14	19	25	35	43	61	84	97
	DC-30 Pa	19	26	34	46	54	78	101	112
	DC-50 Pa	28	35	46	60	66	98	122	136
Current	DC-12 Pa	0.07	0.10	0.13	0.18	0.20	0.28	0.38	0.44
	DC-30 Pa	0.10	0.13	0.17	0.23	0.25	0.35	0.46	0.51
	DC-50 Pa	0.14	0.18	0.23	0.30	0.30	0.45	0.55	0.62

## EC motor unit



Note: All above data is for standard unit. For other optional EC motor data, please contact local agencies.



Carrier improves the world around us; Carrier improves people's lives; our products and services improve building performance; our culture of improvement will not allow us to rest when it comes to the environment.



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