Fan Coil Units

FC-NFCI (Horizontal) Ceiling Type

340~2380m^3/h

CLIMAVENETA

Fan Coil Units

General Specification

The Climaveneta FC-NFCI Fan Coil Units are designed with Italia technology and manufactured in China. They are designed to deliver airflow with different temperature continuously or intermittently to maintain the heat and moisture balance that makes them well suitable for the central air conditional application in hotels, apartments, villas, office buildings, hospitals and other applications. And these Units are the most attractive commercial fan coil units by providing high efficiency, low sound level, easy installation and servicing. At the same time, FC-NFCI fan coil units shall be very suitable for tight space with compact design considering comfort and quality.

Feature and Benefit

Durable construction

Casing of Breeze fan coil units shall be galvanized steel panel. And the condensate pan is treated by extruded seamless technology to prevent the leakage. Thermal insulation that meets fire rated standard is attached to the condensate pan integrally. Construction of the units is sturdy and permanent.

High efficiency Performance

Coils shall be fabricated by Φ9.52mm copper tubes and hydrophilic coated aluminum fins. Tubes are expanded into the fins accurately to confirm the heat transfer efficiency. Fans shall be high airflow rate and low noise design. And brass headers of copper tubes well distribute the water flow configuration to assure optimum heat transfer efficiency.

Low noise level and cost saving

Fans shall be specially designed with over-sized galvanized multiblade centrifugal wheel, operating with low noise, high static pressure and airflow rate. And hi-static, permanent split capacitor motors shall be factory balance tested for proof the high efficiency and quite operation.

Easy of maintenance

Motors shall be fabricated with scroll bearing with quenched and tempered steel by antirust treated. Three-speed or LCD thermostat is convenient to control the airflow and room temperature.

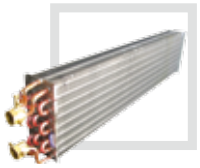
Versatile design and minimum installation cost

Units shall be low-weighted design. Drain pipes and wires are easy of installation. The water connection direction and air return are changeable according to the site requirements.

Accessories (optional)

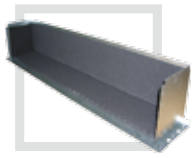
- Electric heater;
- High static pressure fan, suitable for duct installation;
- Air return plenum (below return or back return)
- Removable filter;
- Extended condensation pan;
- Stainless steel condensation pan;

Mechanical Specification



Coil: high efficiency heat transfer performance

Coils shall be manufactured by Φ9.52 mm copper tubes and sine-wave aluminum fins hydrophilic coated. And tubes are mechanically expanded to bond with aluminum fins. Considering water flow configuration and the performance of heat transfer, headers shall be fabricated of brass material.

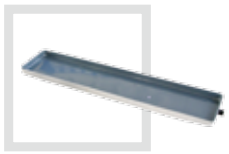


Casing: reliable structure and elegant design

Casing shall be constructed by extruded galvanize steel panel (Class 1), fitting for sturdy command.

Drain pan: special design preventing leakage

Condensate drain pans shall be fabricated by high quality steel panel with punch forming and hot-dip bake treated. 7 mm PE insulation material is designed to tightly bond with drain pan with the benefit of easy manufacturing, anti-leakage and elegant feature, eventually extending the drain pan life.



Motor: high efficiency and low power consumption

Motors shall consist of low noise permanent split capacitor motors and total enclosed scroll bearing with permanent lubricated. The base of motor shall be isolated by rubber in-shear mount while minimizing the vibration transmission and operation noise.

Fans: low acoustic level

Fans shall be equipped with efficient, low noise, multiblade centrifugal fan with oversized fan wheel, and shall be manufactured with galvanized steel panel for well dynamic balance performance. The connection of the basic chassis and side chassis is designed as Pittsburgh type.

Model Nomenclature

FC- □ NFCI □□□□□ GN

- Design No. GN
- Coil connection: L-left hand; R-right hand
- Drain pan material: default-galvanized steel; B-stainless steel
- Default-none; EX-electric heating power (1kW: FC-200~400; 2kW: FC-500~600; 3kW: FC-800~1400)
- Coil rows: default-3 rows 2 pipes; 2-2 rows 2pipes; 4-(3+1) rows 4 pipes
- ESP: default-12 Pa; H30-30 Pa; H50-50 Pa
- Unit configuration: NFCI-horizontal concealed
- Nominal air flow (CFM)
- Fan Coil Unit

e. g.

FC-800NFCIH504EXBLGN means horizontal concealed FCU with 4(3+1)rows 4 pipes, electric heater which power is 3kW, stainless steel drain pan,nominal air flow rate 800 CFM, external static pressure 50 Pa, left hand connection and design No.GN.

Fan Coil Units

Performance Data

3 rows fan coil unit (2 pipes)

Item		200	300	400	500	600	800	1000	1200	1400
Nominal Airflow (m^3/h)	High Speed (H)	340	510	680	850	1020	1360	1700	2040	2380
	Medium Speed (M)	260	390	530	660	780	1040	1300	1530	1790
	Low Speed (L)	180	270	360	440	520	690	870	1020	1190
Working Capacity (3 rows)	Cooling Capacity (W)	2230	3290	3880	4900	5950	7980	9120	11390	13000
	Heating Capacity (W)	3490	5240	6270	7710	9385	12070	14380	17550	20500
	Water Flow Rate (LPM)	6.4	9.4	11.1	14	17	22.8	26	32.5	37.1
	Water Pressure Drop (kPa)	15	28	15	26	36	39	42	42	52
Noise Level dB(A)	Standard ESP(12 Pa)	36.5	38	41	43	45	46	48	50	52
	High ESP(30 Pa)	38	41	44	45	47	48	50	52	54
	High ESP(50 Pa)	41	43	46	47	49	50	52	54	56
Power (W)	Standard ESP(12 Pa)	32	45	55	76	96	134	156	184	232
	High ESP(30 Pa)	39	56	72	86	105	152	180	211	255
	High ESP(50 Pa)	48	62	80	98	115	173	198	242	288
Coil	Coil Type	Φ9.52 mm copper tubes and hydrophilic aluminum fins								
	Inlet/outlet Connection size	DN20 Female thread (RC 3/4")								
	Drain Connection Size	DN20 Male thread (RC 3/4")								
	Nominal Water Pressure	1.6 MPa								
Fan	Fan Type	Double inlet, forward curved centrifugal fan								
	No. of Fan	1	2				3	4		
Motor	Motor Type	3-speed capacitor motors								
	Bearing Type	Permanently lubricated bearing								
	Power Supply	Single-phase 220V 50Hz								
	No. of Motor	1					2			
Net Weight (kg)	Without Air Return Box	12.5	15.5	16.5	18.5	19.5	27	30	33	35
	With Air Return Box	15.5	19	21	23.5	25	33.5	37	40.5	43

All information inside this table is based on the following condition:

Rated Test Condition	Air Temperature DB (℃)	Air Temperature WB (℃)	Water inlet Temperature (℃)	Water Temperature Difference (℃)
Nominal cooling condition	27	19.5	7	5
Nominal heating condition	21		60	determined by cold water flow
Noise Level	The measurement have been taken on surfaces positioned at d=1m distance from the unit in a standard anechoic chamber.			
Note	LPM: Liter per minute			

Performance Data

2 rows fan coil unit (2 pipes)

Item		200	300	400	500	600	800
Nominal Airflow (m^3/h)	High Speed (H)	390	540	740	890	1060	1420
	Medium Speed (M)	310	420	560	710	840	1120
	Low Speed (L)	220	300	380	500	590	790
Working Capacity (2 rows)	Cooling Capacity (W)	1910	2800	3580	4300	5200	7250
	Heating Capacity (W)	3160	4630	6200	7290	8880	12400
	Water Flow Rate (LPM)	5.5	8	10.2	12.3	14.9	20.7
	Water Pressure Drop (kPa)	9	16	24	29	39	38
Noise Level dB(A)	Standard ESP(12 Pa)	36.5	38	41	43	45	46
	High ESP(30 Pa)	38	41	44	45	47	48
	High ESP(50 Pa)	41	43	46	47	49	50
Power (W)	Standard ESP(12 Pa)	32	45	55	76	96	134
	High ESP(30 Pa)	39	56	72	86	105	152
	High ESP(50 Pa)	48	62	80	98	115	173
Coil	Coil Type	Φ9.52 mm copper tubes and hydrophilic aluminum fins					
	Inlet/outlet Connection size	DN20 Female thread (RC 3/4")					
	Drain Connection Size	DN20 Male thread (RC 3/4")					
	Nominal Water Pressure	1.6 MPa					
Fan	Fan Type	Double inlet, forward curved centrifugal fan					
	No. of Fan	1	2				3
Motor	Motor Type	3-speed capacitor motors					
	Bearing Type	Permanently lubricated bearing					
	Power Supply	Single-phase 220V 50Hz					
	No. of Motor	1					2
Net Weight (kg)	Without Air Return Box	12	15	16	18	19	26
	With Air Return Box	15	18.5	20.5	23	24.5	32.5

All information inside this table is based on the following condition:

Rated Test Condition	Air Temperature DB (℃)	Air Temperature WB (℃)	Water inlet Temperature (℃)	Water Temperature Difference (℃)
Nominal cooling condition	27	19.5	7	5
Nominal heating condition	21		60	determined by cold water flow
Noise Level	The measurement have been taken on surfaces positioned at d=1m distance from the unit in a standard anechoic chamber.			
Note	LPM: Liter per minute			

Fan Coil Units

Performance Data

3+1 rows fan coil unit (4 pipes)

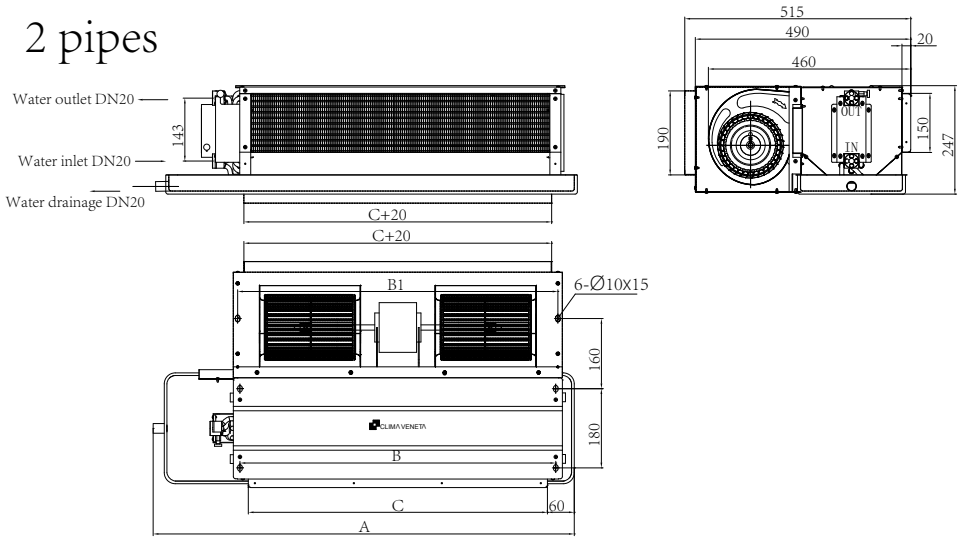
Item			200	300	400	500	600	800	1000	1200	1400
Nominal Airflow (m^3/h)	High Speed (H)		340	510	680	850	1020	1360	1700	2040	2380
	Medium Speed (M)		260	390	530	660	780	1040	1300	1530	1790
	Low Speed (L)		180	270	360	440	520	690	870	1020	1190
Working Capacity (3+1 rows)	Cooling Capacity (W)		2150	3040	3800	4705	5710	7660	8755	10020	12480
	Heating Capacity (W)		1920	2730	3360	3940	4945	6410	7165	8050	9970
	Water Flow Rate (LPM)	Cooling	6.1	8.7	10.9	13.4	16.3	21.9	25	28.6	35.6
		Heating	2.8	3.9	4.8	5.6	7.1	9.1	10.3	11.5	14.2
	Water Pressure Drop (kPa)	Cooling	15	28	15	26	36	39	30	42	45
		Heating	9	11	14	17	20	24	27	31	34
Noise Level dB(A)	Standard ESP(12 Pa)		36.5	38	41	43	45	46	48	50	52
	High ESP(30 Pa)		38	41	44	45	47	48	50	52	54
	High ESP(50 Pa)		41	43	46	47	49	50	52	54	56
Power (W)	Standard ESP(12 Pa)		32	45	55	76	96	134	156	184	232
	High ESP(30 Pa)		39	56	72	86	105	152	180	211	255
	High ESP(50 Pa)		48	62	80	98	115	173	198	242	288
Coil	Coil Type		Φ9.52 mm copper tubes and hydrophilic aluminum fins								
	Inlet/outlet Connection size		DN20 Female thread (RC 3/4")								
	Drain Connection Size		DN20 Male thread (RC 3/4")								
	Nominal Water Pressure		1.6 MPa								
Fan	Fan Type		Double inlet, forward curved centrifugal fan								
	No. of Fan		1	2				3	4		
Motor	Motor Type		3-speed capacitor motors								
	Bearing Type		Permanently lubricated bearing								
	Power Supply		Single-phase 220V 50Hz								
	No. of Motor		1					2			
Net Weight (kg)	Without Air Return Box		13.5	16.5	17.5	19.5	20.5	28.5	32	35	37.5
	With Air Return Box		16.5	20	22	24.5	26	35	39	42.5	45.5

All information inside this table is based on the following condition:

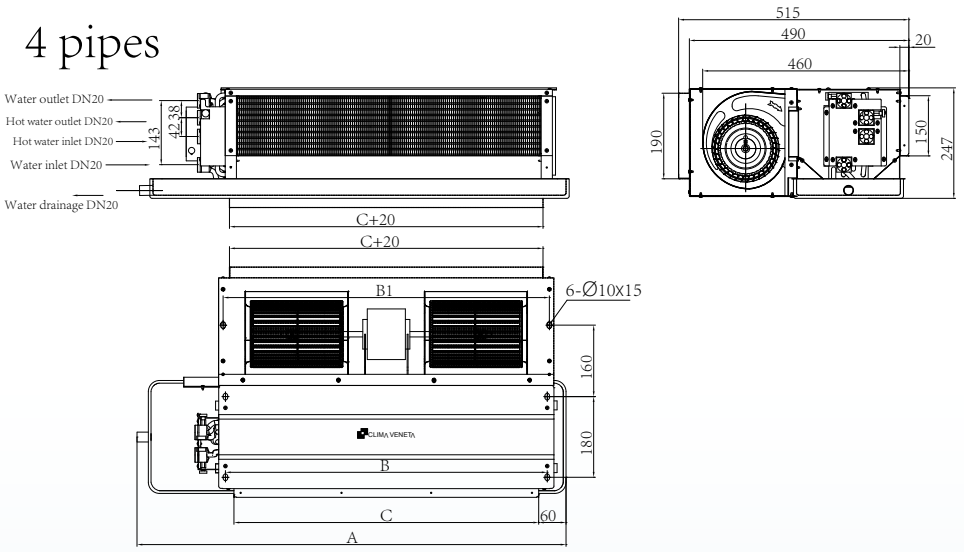
Rated Test Condition	Air Temperature DB (℃)	Air Temperature WB (℃)	Water inlet Temperature (℃)	Water Temperature Difference (℃)
Nominal cooling condition	27	19.5	7	5
Nominal heating condition	21		60	10
Noise Level	The measurement have been taken on surfaces positioned at d=1m distance from the unit in a standard anechoic chamber.			
Note	LPM: Liter per minute			

Dimension Drawing

2 pipes

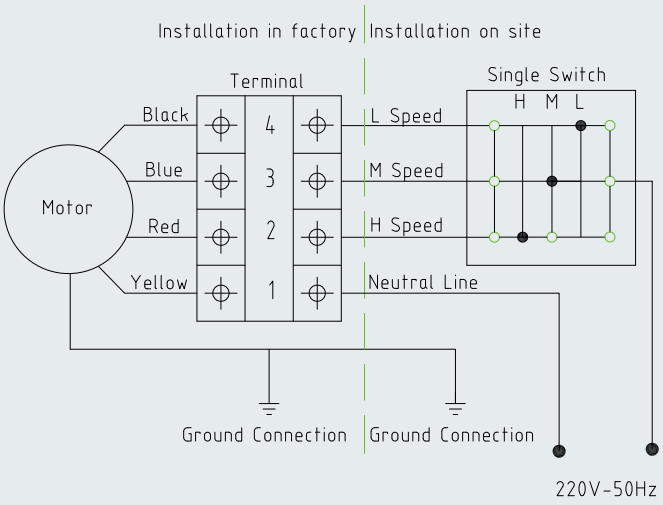


4 pipes



Model	200	300	400	500	600	800	1000	1200	1400
A	760	860	960	1060	1160	1460	1660	1860	1960
B	518	618	718	818	918	1218	1418	1558	1678
B1	528	628	728	828	928	1228	1428	1568	1668
C	480	580	680	780	880	1180	1380	1520	1640

Wiring Diagram



Installation, operation and maintenance

Installation

On arrival, inspect the surface of the unit, ensuring it without any abrasion. And avoid any damage from the crash between the rotary components. It's very important to prevent any varies entering the fan wheels, motors and coils during installation. Drain pipe should be mounted 3-5 mm lower than the opposite side assuring the condensate removal.

Airflow inlet connection

The coil fins should be protected by filter installed at the airflow inlet that will achieve better heat transfer performance.

Ductwork

The supply and return ducts should be connected with flexible duct connectors to reduce vibration transmission and the torque should be smaller than 2.5 kg · m during instillation. The direction of the water flow should be arranged to come in from below side and out to up side. And all pipes should be well insulated. Thread connection insulation material is PTFE belt.

Wiring Diagram

Units should be grounding treated. All electrical wires exposing to the air should be well bonded to connectors before attach to unit. Also, it's necessary to inspect the mark of the connector matching for the electric wire color before installing the 3-speed switch.

Start-up procedure

For proper installation, the following items must be checked. It is recommended to clean all varies inside the drain panel, fan casing and other equipments, and inspect all field connection of pipes and wires. The 3-speed switch should operate with the high speed start, and then could change the speed.

Operation

The minimal water temperatures came from the unit in cooling and heating condition are 5℃ and 7℃ separately. And it's required to open the manual ventage valve regularly to release the air in the pipe.

Maintenance

Fan coils and filters should be cleaned regularly by blowing with compressed air in opposite direction of airflow. Clean water should be charged in the coils to reduce the rust while the unit stops working. And in winter, coils should be protected from the damage of freeze.

Job Reference

National Assembly House, Vietnam
Hydronic system- total capacity 4,715 kW

Guiyang Dragon Cave Airport, China
Hydronic system- total capacity 2, 356kW

BMW Factory of Shenyang, China
Hydronic system- total capacity 1, 821kW

International Hi-Tech Healthcare Park, Vietnam
Hydronic system- total capacity 8,761kW

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