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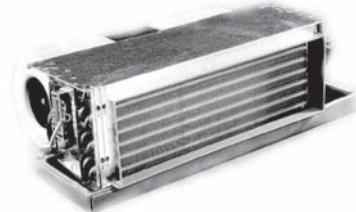
**ENERCOV™**  
**FDH Series**  
DC Motor

# Intelligent chilled water fan coil unit, for humidity controls room without electric heaters.



Humidity is a nature treatment.

Temperature & Humidity Controls Air Conditioner



Chilled water fan coil unit

Patent Pending



Wall mount intelligent temp & humidity controller with °C & %rh display.

●●●  
New generation of FCU with ENERCOV's process algorithm controls. Design for special conditioned space that requires very precise of temperature and humidity to maintain very comfortably, moreover air fresher and healthy breathing.

# FDH Series

## ENERCOV air conditioner for humidity control

FDH series, Air conditioner system for special function room application to maintain environment such as temperature and humidity at desirable range. Chilled water fan coil unit (FCU) is ceiling concealed installation and connected with proportional type control valve (0-10Vdc). Chilled water supply temperature shall be provided 7.2 deg C or below which is suitable within comfortable range of human being.

## Micro-processor controls

Intelligent temperture & humidity controller with ENERCOV's process FUZZY algorithm provides very precise of room parameters. It consists of display unit, temperature & relative humidity sensors, controller and fan motor speed control. LCD display on the display unit shows real time actual temperature and relative humidity.

## Display unit functions

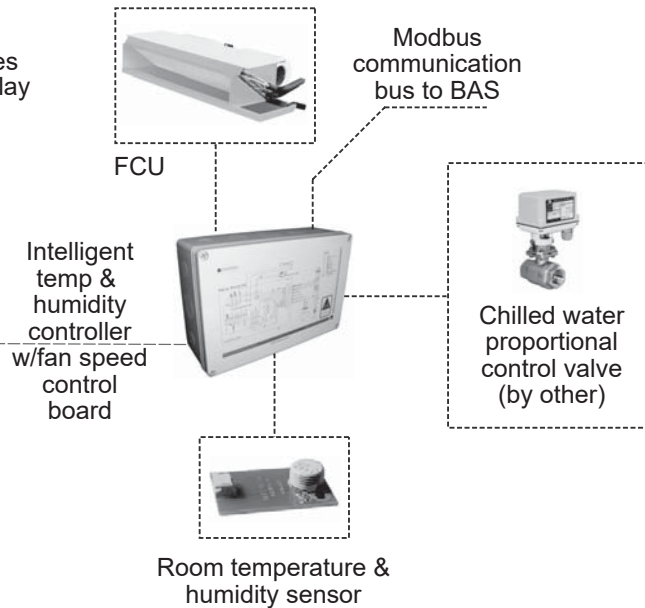


Dim : 87Wx87Hx20D mm.  
Wall mount

- Heating Element On/Off
- Temperature and Humidity Control Mode
- Cooling Control Mode
- FILTER** Filter Clog Indicator (if applied)
- ALARM** Unit Alarm Indicator
- FAN AUTO** Fan Automatic Control Status Indicator
- PROGM** Programmable Mode
- 25.0°C** Actual Room Temperature or Setpoint Indicator
- 50 %RH** Actual Room Humidity or Setpoint Indicator
- Fan Speed Running Indicator
- Function Keypads



Wireless Remote Control

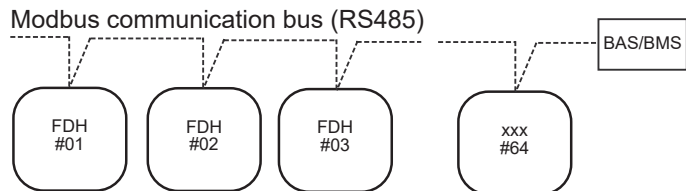


## Control Functions

1. Room temp. & humidity are controlled by ENERCOV's process FUZZY/PID adaptive algorithm.
2. Cooling mode and temperature/humidity control mode selectable.
3. Aux HEATER lights up means heater energized.
4. Room temperature and relative humidity real time display
5. Supply air fan can config to vary speed to maintain room condition by automatically.
6. Room sensors faulty alarm codes.
7. Room temperature & humidity sensors calibration is also available.
8. Proportional, integral gain and calculation time are configurable.
9. FCU fan minimum speed is configurable.
10. Alarm display codes.
11. Provide with infrared wireless remote control.
12. Pre-configuration programmable software.
13. Modbus interface port for BAS communication (option).

## Network Management by BAS (max 64 IFCs/loop)

FDH's controller can communicate with BAS or BMS by modbus protocol, max 64 nodes per loop and 300 meters length.



## Operating Mode

- > Cooling Only is a normal room thermostat function. This mode will control room temperature only.
- > Temp & humidity control mode is an ENERCOV's process algorithm to maintain room temperature and humidity automatically.

## Temperature and humidity setting

- > Temperature setting  
By pressing UP or DOWN key to decrease or increase temperature setpoint by 1.0°C
- > Humidity setting  
By pressing 2 configured keypads for 7 seconds and press UP or DOWN key to decrease or increase humidity setpoint by 5%RH (30 - 80%RH adjustable).

## Temperature & Humidity displaying

- > Bigger 7 segments LCD will display real time space temperature (deg C)
- > Lower 7 segments LCD will display real time space relative humidity (%rh)

## Configuration Mode

Intelligent controller can apply to various application. Each application can access to set up internal programme to config each decision by pressing configuration access keys. This configuration mode includes temperature/humidity sensor calibration, response time setting, minimum/maximum fan speed set up, remote on/off setting, aux. heater setting, etc.

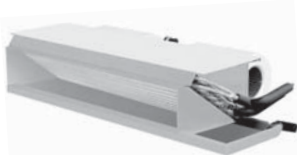
## Other Functions

- > Self Diagnostic
- > Watchdog
- > Humidity sensor ERROR code
- > Temperature sensor ERROR code
- > Non-volatile memory
- > Modbus communication to link to other network such as BAS/BMS.

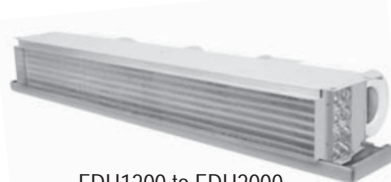
## Technical Product Data (BLDC Motor)

Fan Coil Model		Unit	FHD400	FHD600	FHD800	FHD1000	FHD1200	FHD1600	FHD2000	
Air Flow Rate	Max Speed	CMH	680	1019	1359	1699	2039	2718	3398	
		CFM	400	600	800	1000	1200	1600	2000	
Cooling	Max Speed	Nominal Cooling Capacity	BTU/H	13300	18900	26900	32200	37100	49200	61100
			kW	3.90	5.54	7.88	9.43	10.87	14.42	17.90
		Water Flow Rate	l/s	0.17	0.24	0.34	0.41	0.47	0.62	0.77
			GPM	2.7	3.8	5.4	6.4	7.4	9.8	12.2
Noise	Noise Level	High Speed	dB(A)	52	52	52	52	52	52	58
				34	38	38	43	43	43	54
		Low Speed	dB(A)	34	38	38	43	43	43	54
Fan Motor	Power Input	Total Rated Power	W	110	120	150	160	220	240	422
		Qty	-	1	1	1	2	2	2	
	Motor	Type	-	BLDC Motor						
	Power	Supply	-	220-240 V / 1 Ph / 50 Hz						
Aux. Electric Heater (Option)	Total Heating Capacity	W	300	300	500	750	750	1000	1500	
	Power Supply	-	220-240 V / 1 Ph / 50 Hz							
	Current	A	1.36	1.36	2.27	3.41	3.41	4.55	6.82	
Water Pipe Connection	Diameter	In.	1/2"	3/4"			1"			
Drain Pipe	Diameter (OD)	In.	7/8"							
Dimension	Width	mm.	750	980	1320	1320	1660	1660	1965	
	Height	mm.	240	240	240	240	240	240	240	
	Depth	mm.	435	435	435	435	435	435	435	
Weight	Approx. Net	Kg.	14	18	23	25	36	38	45	
Remote/Controller	Main	-	Microprocessor based with modbus communication + Temp & Hum Sensors							
	Display	-	LCD Temperature + Relative Humidity Display							
	Wireless Remote Control	-	Yes							

Note : Cooling cap. based on 27°CDB, 19°CWB of room condition and CHW supply temperature 7.0°C, temperature rising 5.0°C.



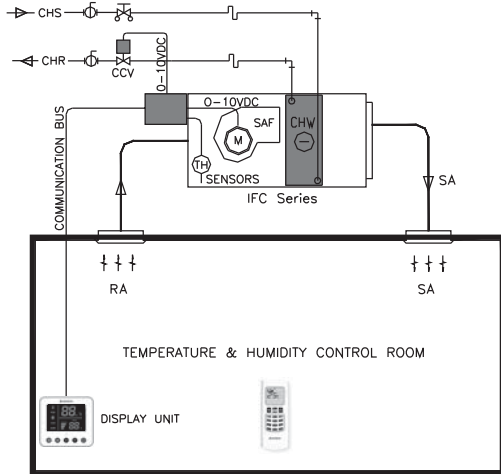
FDH400 to FDH1000  
Low static pressure



FDH1200 to FDH2000  
Low static pressure

# Applications

## Application T1 : Proportional control valves (0-10Vdc)



### Operating Features & Functions

FUZZY controller adjusts SAF speed automatically

FUZZY controller adjusts CCV opening automatically

CCV operation only can get cooling capacity 0-100%

SAF & CCV operation together to maintain temp. & humidity

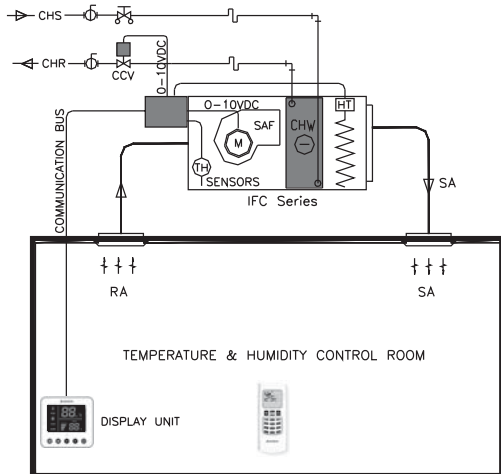
SAF minimum speed 10% (configurable)

SAF & CCV are operated on temp. & humidity sensors and setpoint

Temperature control deviation  $\pm 1.0/-1.0$  deg C

Humidity control deviation  $\pm 10/-10\%$ rh

## Application T2 : Proportional control valves (0-10Vdc) W/aux heater



### Operating Features & Functions

FUZZY controller adjusts SAF speed automatically

FUZZY controller adjusts CCV opening automatically

CCV operation only can get cooling capacity 0-100%

SAF & CCV operation together to maintain temp. & humidity

SAF minimum speed 10% (configurable)

SAF & CCV are operated on temp. & humidity sensors and setpoint

Temperature control deviation  $\pm 1.0/-1.0$  deg C

Humidity control deviation  $\pm 5\%$ rh

HT activates during too low temperature at minimum fan speed

### Abbreviation

MV	Motorized Valve
SAF	Supply Air Fan
CHS	Chilled Water Supply
CHR	Chilled Water Return
RA	Return Air
SA	Supply Air
PWM	Pulse Width Modulation
HT	Heater
VFC	Voltage Free Contact
CCV	Cooling Coil Control Valve

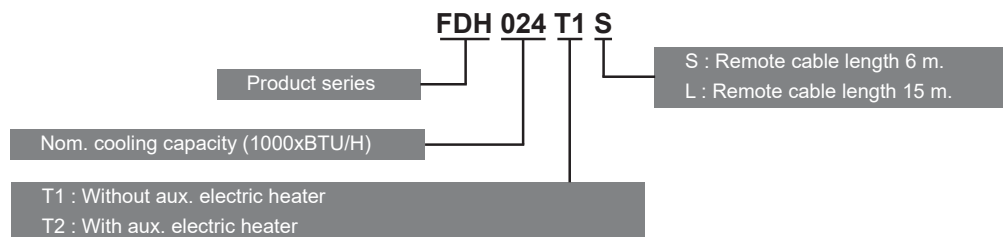
## Scope of supply table

Item	Enercov	Contractor
Fan coil unit	Standard	
Enercov's process controller & display unit	Standard	
Room temp. & humidity sensors W/cable 6 m.	Standard	
Room temp. & humidity sensors W/cable 15 m.	Option	
Aux. electric heater	Option	
Chilled water control valve (Prop. 0-10Vdc)		Standard
Chilled water motorized valve (On/Off) 2 sets		n/a
Transformer 220/24 Vac for control valve		Standard

## FCU Specification

Description	Specification
FCU Housing material	Galvanized steel
Cooling coil tube diameter	3/8"
Cooling coil material	Aluminium fin copper tube
Reference standard	ARI 441
Face velocity	<2.50 m/s
Coil operating pressure/Test pressure	250 PSIG/350 PSIG
Drain pan	Galvanized steel w/closecell self-distinguishing insulation
Fan	centrifugal forward curved blade
Motor type	DC motor
Motor speed adjustable (linearity)	0-10Vdc by controller
Drain pan	Galvanized steel w/closecell insulation

## Product nomenclature



[www.enercov.com](http://www.enercov.com)



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