

Intelligent chilled water
fan coil unit,
for humidity controls room.
by ENERCOV method's
cooling coil characteristic controls.



Temperature + humidity = Cooling, comfort & healthy.

Temperature & Humidity
Controls Air Conditioner



Chilled water
fan coil unit

Patented



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

●●●
New generation of small FCU
with FUZZY algorithm controls.
Design for special conditioned
space that requires very precise
of temperature and humidity
to maintain very comfort,
more air fresher and healthy
breathing.

IFC Series

ENERCOV's method humidity control FCUs.

New innovation of humidity controls air conditioner. IFC series, air conditioning system for special function room application to maintain environment such as temperature and humidity at desirably range very precisely. Fan coil unit is stand alone chilled water type which is designed to reduce room moisture at certain comfort condition. No need electric heater, less energy require for operation.

Micro-processor controls

Intelligent temperature & humidity controller with completed FUZZY algorithm provides very precise of room parameters. It consist of display unit, temperature & relative humidity sensors, controller and fan motor speed control. LED display on the display unit shows actual temperature. It also can switch displaying to room humidity by pressing DISP/SET HUM button.

Display unit functions

2 digits 7 segment display (height 9.5 mm)



When press DISP/SET HUM button or °C LED light is on, means room temperature displaying.



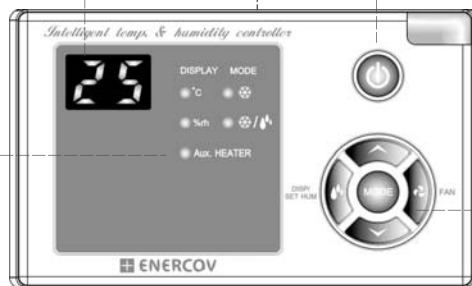
When press DISP/SET HUM button or %rh LED light is on, means room humidity displaying (5-10 sec).

DISPLAY

- °C
Room temperature displaying lamp
- %rh
Room humidity displaying lamp
- Aux HEATER
Auxilliary heater operating lamp

MODE

- Mode cooling only
- Mode temperature & humidity control

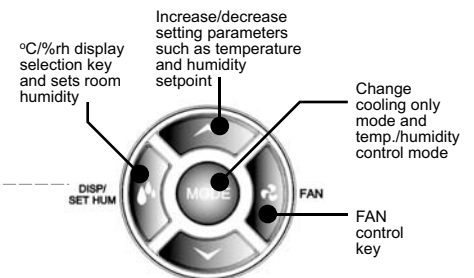


Room temperature & humidity sensor



When press up + down arrow keys together for 5 seconds, 7 segments LED switches displaying temperature and %rh every 5 seconds until press another key.

Displaying Configuration keys



Function keys

FUZZY algorithm to control cooling characteristic curve

Intelligent system controller is designed to control space temperature and relative humidity for air conditioner with internal FUZZY algorithm. The controller & algorithm maintain room space conditions very accurate, energy saving, no need electric heater. FUZZY algorithm will regulate supply air fan speed and chilled water flow according to room sensible and latent load by automatically.

Controls Feature

User's Features.

- > Power On/Off button.
- > Supply air fan control routine.
 - Cooling mode
 - There are four modes; High, Medium, Low, Auto.
 - Temp. & Humidity control mode
 - Fan speed will be adjusted by automatically upon room temperature and relative humidity. This mode, FUZZY algorithm will activate.

IFC Series

Operating Mode

- > Cooling Only is a normal room thermostat function. This mode will control room temperature only.
- > Temp. & Hum. Control mode is a FUZZY control to maintain room temperature and humidity by regulate fan speed and cooling coil control valve.

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 "DISP/SET HUM." for 7 seconds and press UP or DOWN key to decrease or increase humidity setpoint by 5%RH

Temperature & Humidity displaying

- > 7 segments LED will display temperature all the time in normal display mode
- > 7 segments LED will display humidity for 10 seconds in %rh when press "DISP/SET HUM." Key
- > 7 segments LED will switch display between temperature and humidity every 5 second when press UP and DOWN keys continuously 5 seconds.

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 such as 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

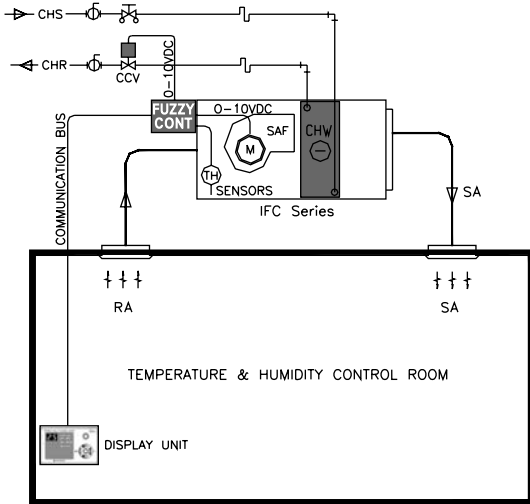
Technical Product Data

Description	Unit	IFC012	IFC018	IFC024	IFC030	IFC036
Nominal capacity	kW	3.52	5.27	7.03	8.79	10.55
	BTU/H	12,000	18,000	24,000	30,000	36,000
Power source	V/Ph/Hz	220-240/1/50				
Fan motor type		AC motor W/fan speed control module				
Fan motor	HP	1/15	1/15	1/10	1/10	1/4
Max air flow	CFM	400	600	800	1,000	1,200
Water flow rate	GMP	2.4	3.6	4.8	6.0	7.2
Water pressure drop	m H2O	8	8	16	14	24
Water piping conn.	Inches	5/8	5/8	5/8	3/4	7/8
Water drain conn.	Inches	3/4				
Aux. electric heater (option)	watts	500	500	800	800	800
Controller	Type	Microprocessor-wired control W/LED temp & humidity display				
	Algorithm	FUZZY algorithm to control room Temp. & Humidity				
	Sensor	Room temperature & relative humidity sensors				
	Display	2 digit LED display height 9.5 mm				
	LED light	°C/%rh display/Cooling mode/Temp & Hum mode/Aux.Heater				
Output for control valve	Option-T1	Proportional 0-10Vdc output				
	Option-T2	2 VFCs On/Off type for 2 valves				
Dimension	W (mm.)	980			1,265	
	H (mm.)	460				501
	D (mm.)	254		305		
Weight	kgs	19.5	20.5	24.0	27.5	31.8

Note : Cooling cap. based on 26.7°CDB, humidity 50%rh of room condition and CHW supply temperature 7.2°C, temperature rising 5.5°C.

Applications

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



Operating Features & Functions

FUZZY controller adjust SAF speed by automatically

FUZZY controller adjust CCV opening by automatically

CCV operation only can get cooling capacity 0-100%

SAF & CCV operation together to maintain temp. & humidity

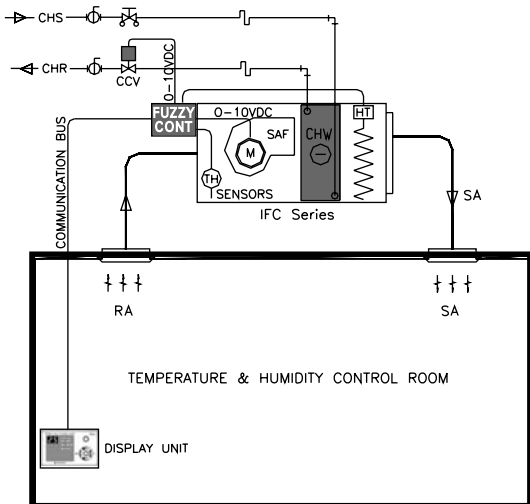
SAF minimum speed 25% (configurable)

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 adjust SAF speed by automatically

FUZZY controller adjust CCV opening by automatically

CCV operation only can get cooling capacity 0-100%

SAF & CCV operation together to maintain temp. & humidity

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

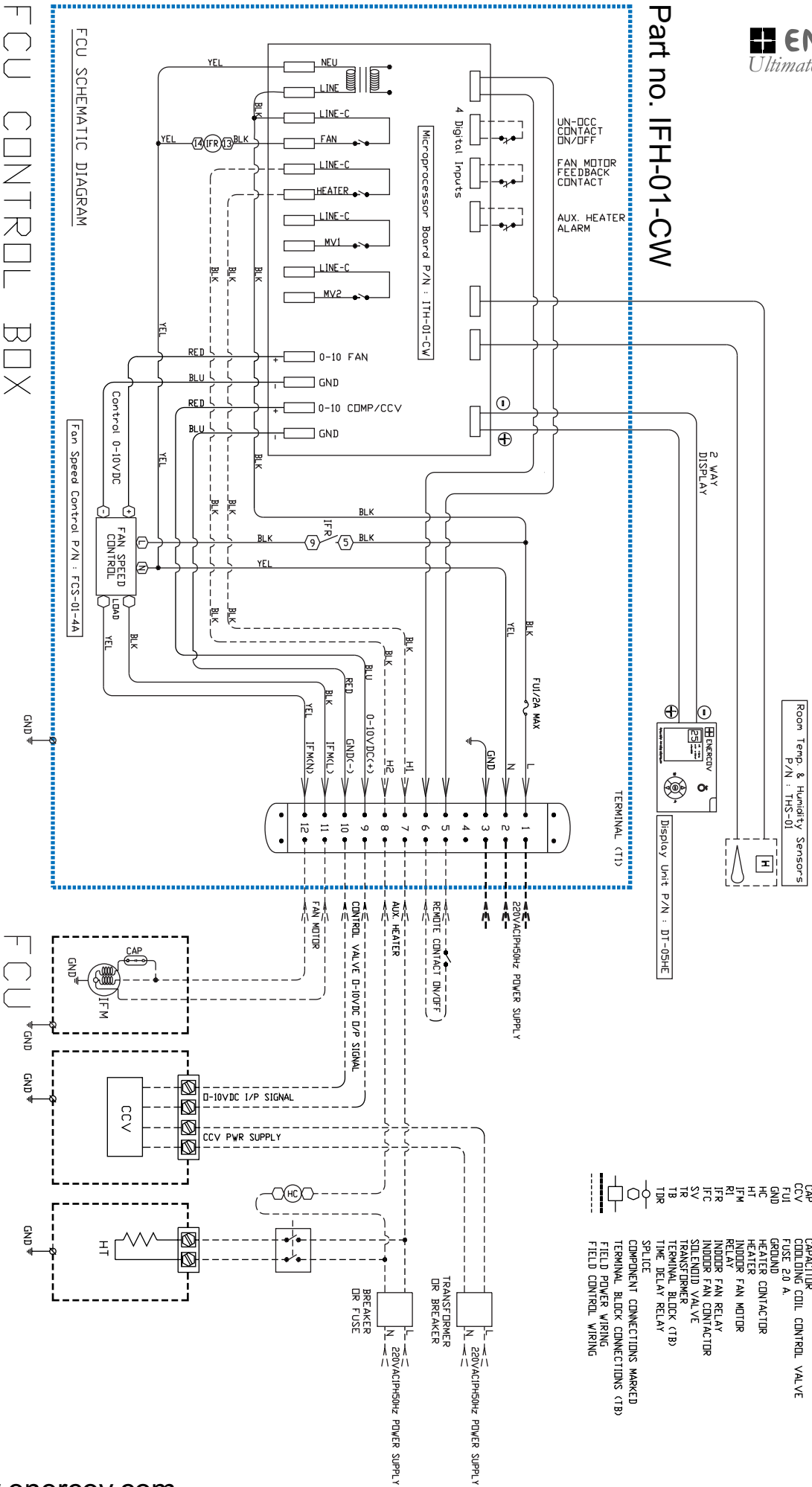
Humidity control deviation $\pm 5\%$ rh

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

Part no. IFH-01-CW



Symbols

- CAP: CAPACITOR
 - CCV: COOLING COIL CONTROL VALVE
 - FUI: FUSE 20 A
 - GND: GROUND
 - HC: HEATER CONTACTOR
 - HT: HEATER
 - IFM: INDOOR FAN MOTOR
 - IRF: INDOOR FAN RELAY
 - IFC: INDOOR FAN CONTACTOR
 - SV: SILENT VALVE
 - TR: TRANSFORMER
 - TDR: TIME DELAY RELAY
 - SP: SPLICE
- COMPONENT CONNECTIONS MARKED
TERMINAL BLOCK CONNECTIONS (TB)
FIELD POWER WIRING
FIELD CONTROL WIRING

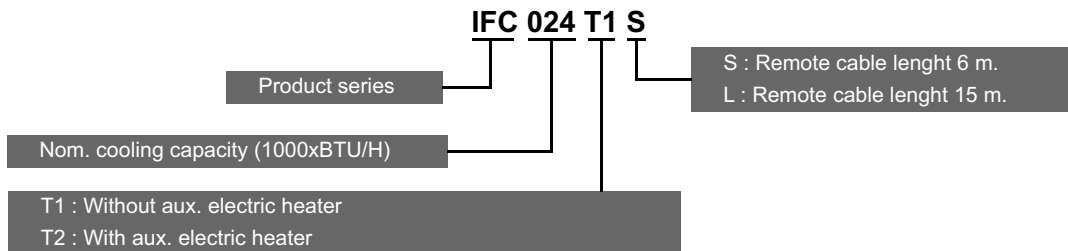
FCU CONTROL BOX

IFC series schematic wiring diagram (1 Phase)

Scope of supply table

Item	Enercov	Contractor
Fan coil unit	Standard	
FUZZY 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		Option
Transformer 220/24 Vac for control valve		Standard

Product nomenclature



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