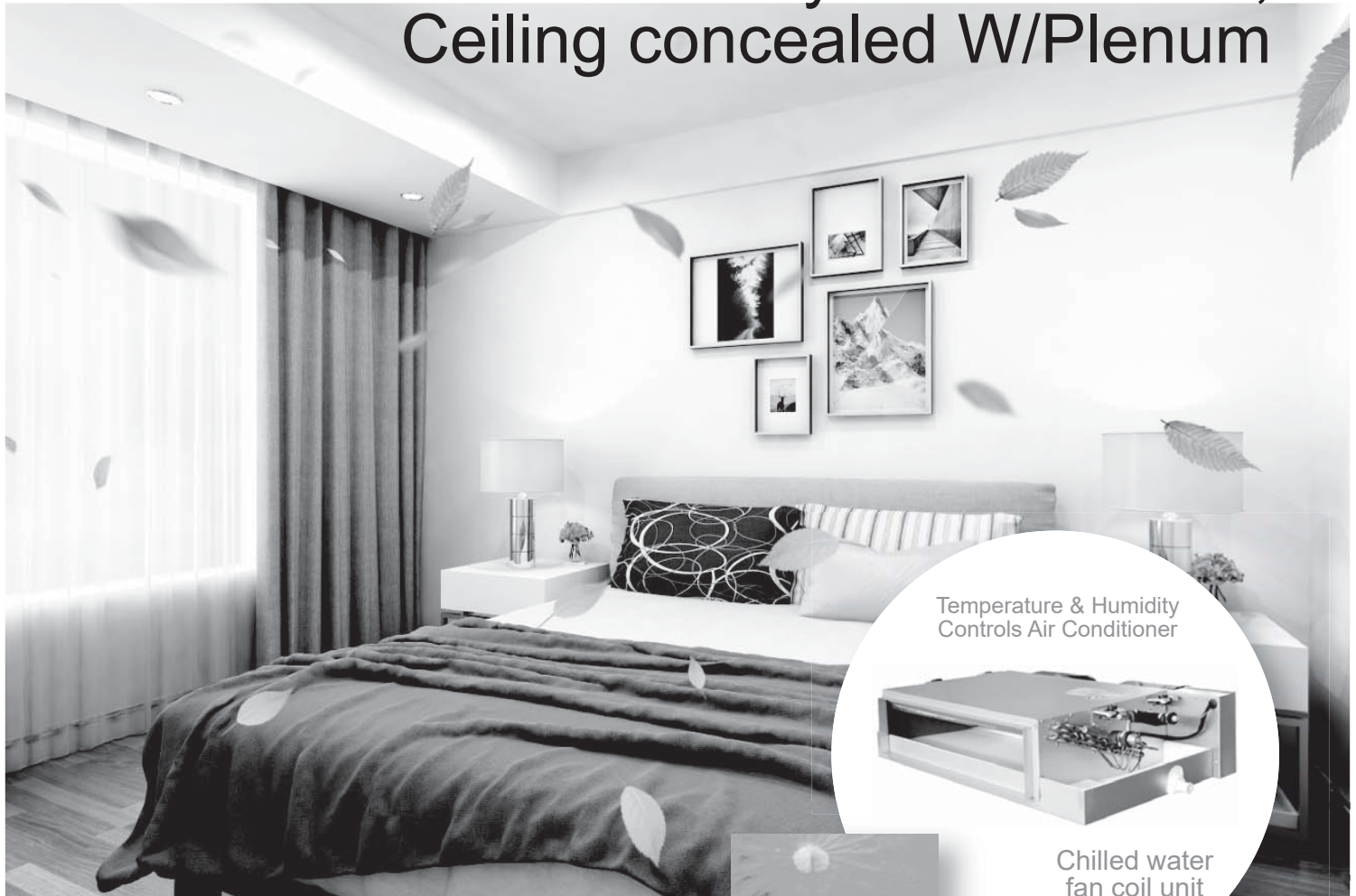


Low noise design

ENERCOV™
IFA Series
DC Motor

Humidity controls FCU, Ceiling concealed W/Plenum



Temperature & Humidity
Controls Air Conditioner

Chilled water
fan coil unit

Patent
Pending

The first hydronic FCU ever provides
very accurate humidity level of
your room without additional
heating elements.



Wall mount
thermo/hygro stat
(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.



ISO-9001:2015 certified

IFA Series

ENERCOV air conditioner for humidity control

IFA 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 type with return plenum (option) 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 air conditioning comfort range of human being.

Micro-processor controls

Intelligent temperture & humidity controller with completed adaptive PID algorithm or FUZZY algorithm provide very precise room parameters. It consists of display unit, temperature & relative humidity sensor, controller and fan motor speed control. LCD display on the display unit shows real time actual temperature and relative humidity.

Display unit functions

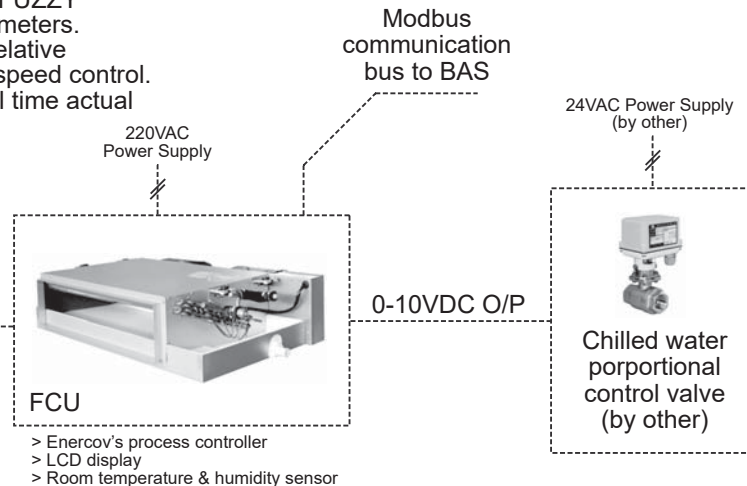


Dim : 87Wx87Hx20D mm.
Wall mount

- Temperature Too Low Indicating
 - 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
 - Actual Room Temperature or Setpoint Indicator
 - Actual Room Humidity or Setpoint Indicator
 - Fan Speed Running Indicator
 -
- Function Keypads



Wireless Remote Control

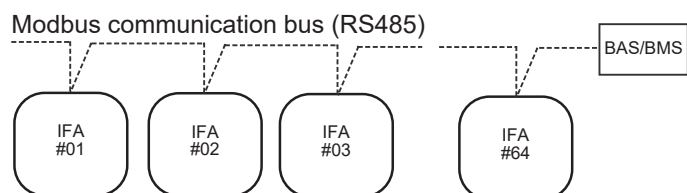


Control Functions

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

Network Management (option, max 64 IFAs/loop)

IFA'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.

Low noise configuration

If client needs to operate FCU low noise area, for example below 40dB(A). Engineer shall select the right maximum fan speed and cooling capacity according to room heat load. This condition must be selected at low noise in technical data table. Furthermore, we also need to configure software to limit maximum fan running speed inside configuration mode during initial start up.

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.

General Data



Return air plenum is an option, filter shall provide by other.



External static pressure

- > Maximum 50 Pa.

Drain pan

- > Drain pan is high quality white plastic with polystyrene foam to prevent condensation
- > Drain pipe connection is 26 mm outside diameter.

Frame & Housing

- > Frame is constructed by galvanized sheet thickness 1.6 mm.
- > Housing made by electro galvanized (EG) sheet thickness 1.2 mm.
- > Whole housing is vibration free.

Cooling coil

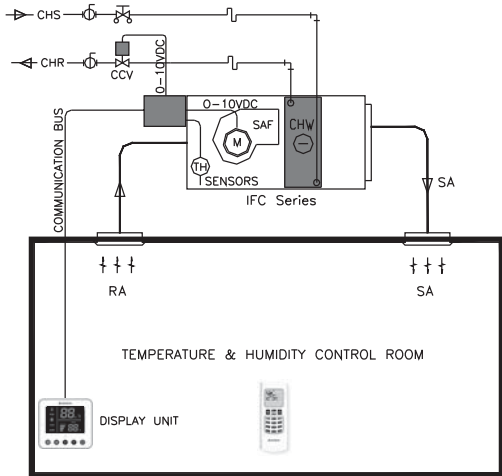
- > Cooling coil made by smooth copper aluminium fins

Fan Blower

- > Blower is double width double inlet forward curve centrifugal type.
- > Fan blower is mounted on a rigid shaft in self aligning bearing.
- > Fan blower is statically and dynamically balanced from factory.
- > Motor is whether proof type, brush less direct current (BLDC). Winding insulation is IP54. Maximum speed is not more than 1450 rpm.

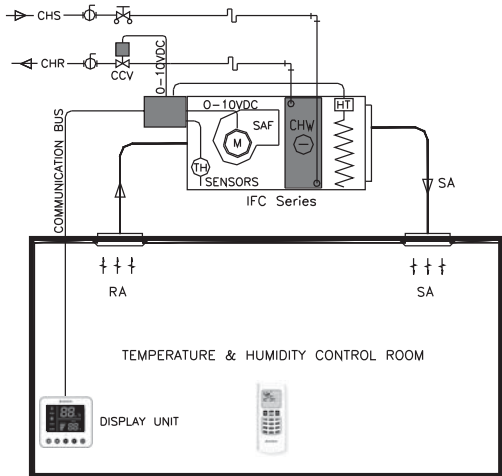
Applications

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
Temperautre control deviation +1.0/-1.0 deg C
Humidity control deviation +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
Temperautre control deviation +1.0/-1.0 deg C
Humidity control deviation +/-5%rh
HT activates during too low temperature at minimum fan speed

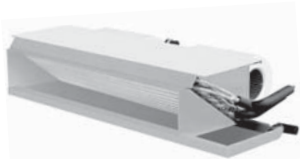
Abbreviation

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

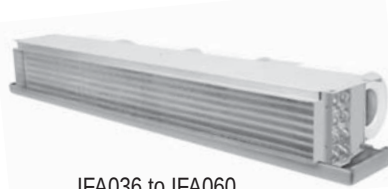
Technical Product Data (BLDC Motor)

Fan Coil Unit Model			Unit	IFA012	IFA018	IFA024	IFA030	IFA036	IFA040	IFA048	IFA060	
Cooling capacity		Maximum	BTU/H	12800	18700	25200	31500	36000	40000	48000	60000	
			kW	3.75	5.48	7.38	9.23	10.55	11.72	14.06	17.58	
Cooling Coil Data	Air Side	Rated Air Flow Rate	CMH	680	1019	1359	1699	2039	2379	2718	3398	
			CFM	400	600	800	1000	1200	1400	1600	2000	
		Air Face Velocity (Max)	m/s	1.29	1.90	2.50	2.17	1.73	2.01	2.15	2.38	
			FPM	254	374	492	428	340	396	422	469	
		Water Side	Water Conn. Pipe	Type	Male connection thread							
	Dia.			1/2"	3/4"			1"				
	Water Flow		L/h	590	757	878	1015	1426	1705	2232	2772	
			cms	0.0002	0.0002	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	
	Water Velocity (Max.)		m/s	0.58	0.74	0.86	0.66	1.40	1.11	1.46	1.36	
	Pressure Drop		kPa	8.0	12.0	19.0	8.0	44.0	25.0	23.0	25.0	
	Physical Data	No of Row(s)		3	3	4	3	2	3	3	4	
		Aluminium Fin Density	FPI	16	16	14	16	14	14	14	12	
		Tube Diameter	mm.	9.5 Smooth								
Blower	Type		Double inlet centrifugal fan									
	Size	Dia. x Length	mm.	217x216	217x216	142x199	142x299	142x199	142x199	142x199	142x199	
	Qty	No(s).	-	2					4			
Fan Motor	Type		BLDC Motor									
	Qty	No(s).	-	1			2					
	Power Supply		V/Ph/Hz	220/1/50								
	Power Input (Max)		W	110	120	150	160	220	220	240	422	
	Fan Speed (RPM)	Max	1240	1270	1300	1300	1170	1230	1200	1300		
		Low	1040	1110	1150	1150	980	1040	1000	1090		
		Noise Control	1040	1040	1050	1050	780	900	880	940		
Airflow	Air Flow rate (CMH)	Max	590	820	790	1070	1980	1720	2718	3398		
		Low	460	670	630	865	1570	1450	2340	2850		
		Noise Control	460	580	550	750	1400	1300	2100	2700		
Noise	Noise Level dB(A)	Max	45	49	49	49	54	52	52	59		
		Low	38	42	42	42	46	45	45	53		
		Noise Control	38	40	40	40	40	40	40	40		
Capacity	Cooling Capacity Profile (kW)	Max	3.75	5.48	7.38	9.23	10.55	11.72	14.06	17.58		
		Low	3.08	4.49	6.05	7.57	8.65	9.61	11.53	14.42		
		Noise Control	3.08	4.27	5.91	7.38	8.44	9.38	11.25	14.06		
Aux. Electric Heater (Option)		Total Heating Capacity	W	300	300	500	750	750	1000	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	4.55	6.82	
Drain Pipe		Diameter (OD)	mm.	26.6 OD								
Dimension		Height	mm.	225	225	225	225	225	225	240	240	
		Width	mm.	990	990	990	1340	1835	1835	1660	1965	
		Depth	mm.	451	466	466	466	466	466	435	435	
Weight		Approx. Net	Kg.	17	18	19	24	32	34	38	45	
Digital Thermo/Hygro Stat		Main	-	Microprocessor based with modbus communication + Temp & Hum Sensors								
		Display	-	LCD Temperature + Relative Humidity Display								
		Wireless Remote Control	-	Yes								

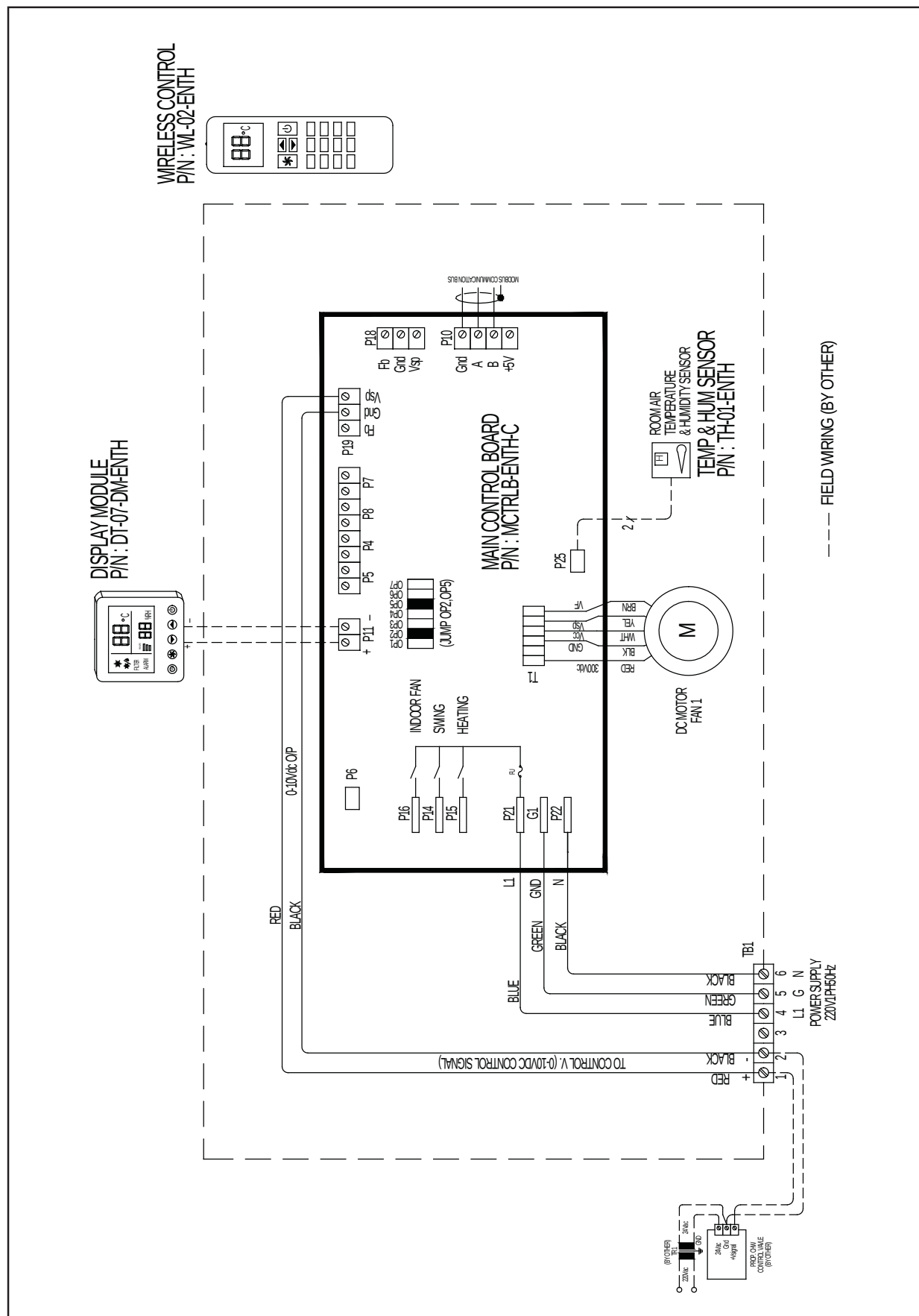
Note : Cooling cap. based on 27°CDB, 19°CWB of room condition and CHW supply temperature 7.0°C, temperature rising 5.0°C.

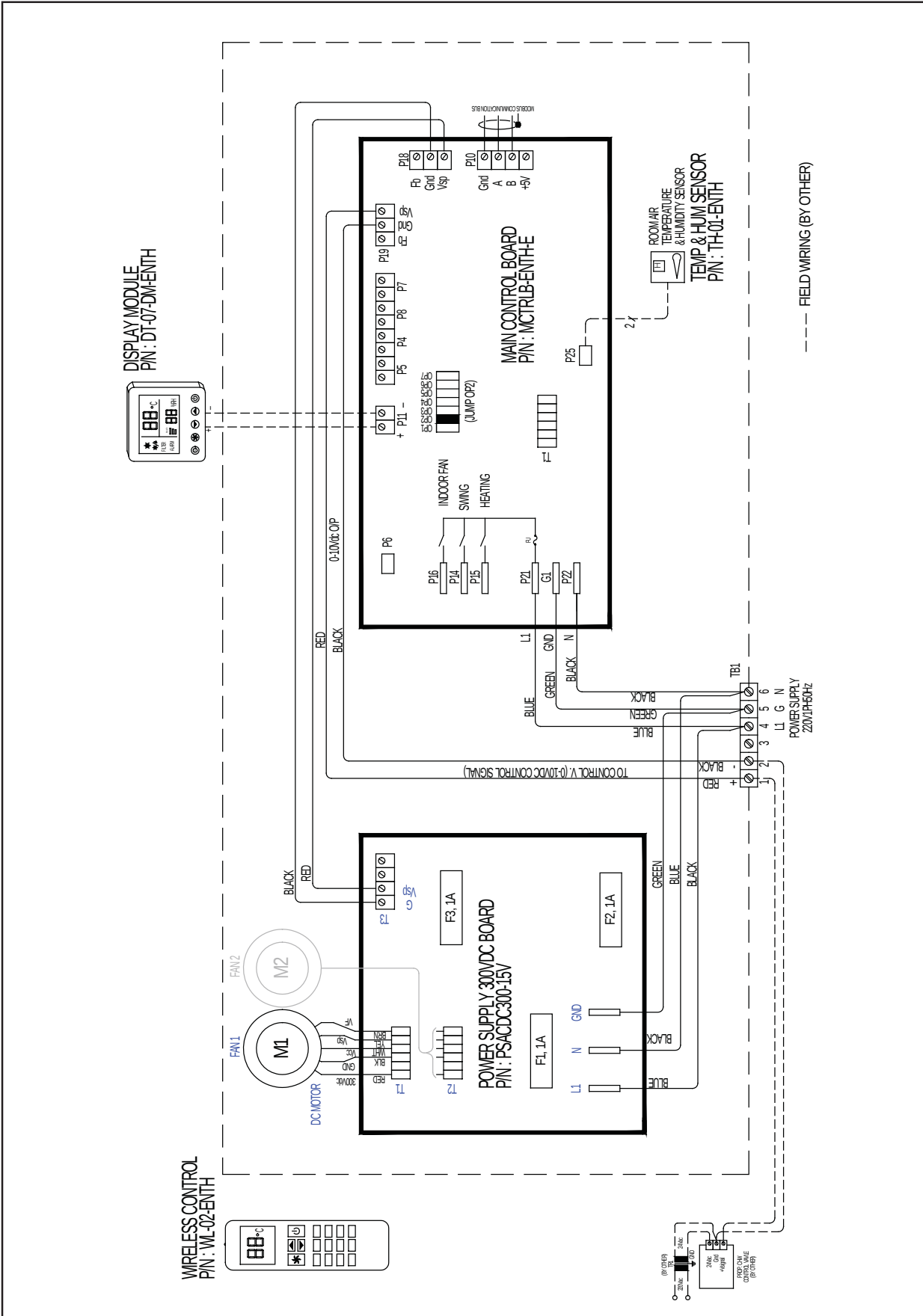


IFA012 to IFA030
Low static pressure



IFA036 to IFA060
Low static pressure





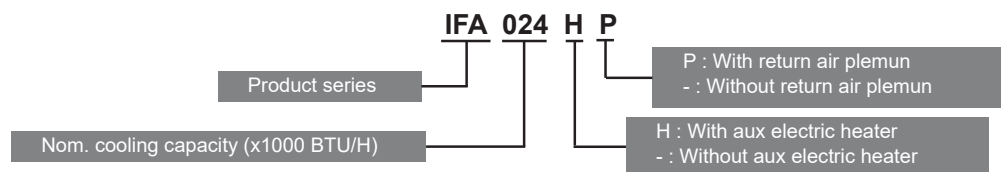
Scope of supply table

Item	Enercov	Contractor
Fan coil unit	Standard	
Enercov's process controller & display unit	Standard	
Room temp. & humidity sensors W/cable 10 m.	Standard	
Aux. electric heater	Option	
Return air plenum	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	Plastic with inside polystyrene insulation
Fan	Centrifugal forward curved blade
Motor type	DC motor
Motor speed adjustable (linearity)	0-10Vdc by controller

Product nomenclature



www.enercov.com



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