

## *Ceiling Concealed Type Air Conditioner For Precision Temperature & Humidity Controls*



With intelligent temp. & humidity controller  
adjustable temperature control range 20 - 26°C  
humidity 40 - 65%RH

### R22

°C +  
%RH



**CUH Series**

Cooling capacity range 5.4 - 18.0 kW

*New innnovation of HVAC system, cost effective and accuracy.*

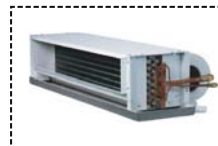
# CUH Series

## ENERCOV air conditioner for humidity control

CUH series, Air conditioner system for special function room application to maintain environment such as temperature and humidity at desirably range. The indoor unit is ceiling concealed type installation. Matching to high performance and heavy duty condensing unit SPA and PV series for widely applications.

## 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.



FCU

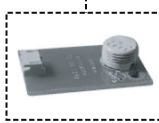


Compressor & system devices

Intelligent temp & humidity controller w/fan speed control board



Room temperature & humidity sensor



## Display unit functions

7 segment display



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



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

On/Off button

## Control Functions

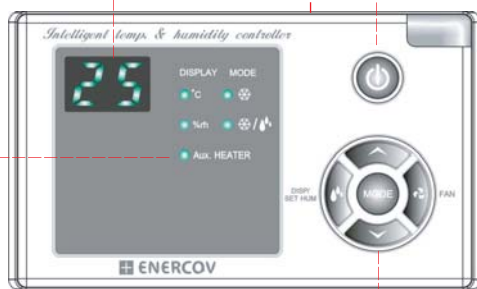
1. Room temp. & humidity are controlled by FUZZY adaptive algorithm.
2. Cooling mode and temperature/humidity control mode selectable
3. Aux HEATER LED lights up means hot gas reheat coil energized.
4. Room temperature and humidity display selectable. These 2 parameters can swap display by automatically.
5. Supply air fan can config to vary speed to maintain room condition by automatically.
6. HGPB solenoid valve is operated in term of PWM (pulse width modulating) function.
7. Room sensors faulty alarm codes.
8. Condensing fan is adjust speed to control refrigerant discharge pressure.
9. Room temperature & humidity sensors calibration is also available.
10. Proportional, integral gain and calculation time are configurable.
11. FCU fan minimum speed is configurable.

## DISPLAY

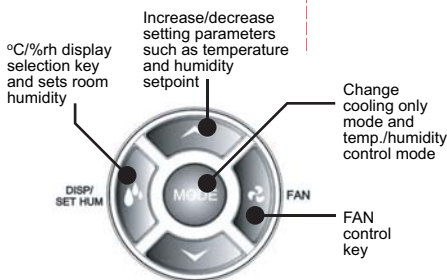
- °C  
Room temperature displaying lamp
- %rh  
Room humidity displaying lamp
- Aux HEATER  
Auxilliary heater operating lamp

## MODE

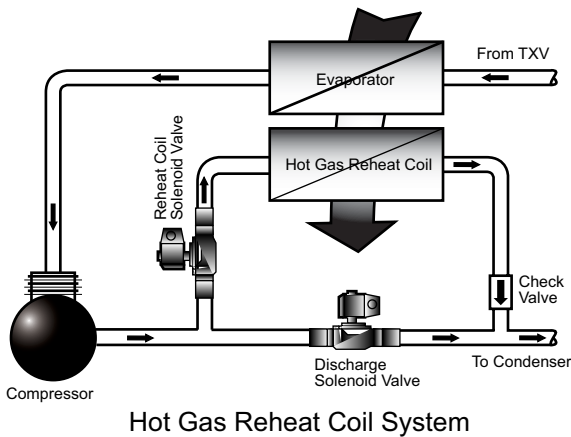
- Mode cooling only
- Mode temperature & humidity control



Dim : 110Wx65Hx20D mm.

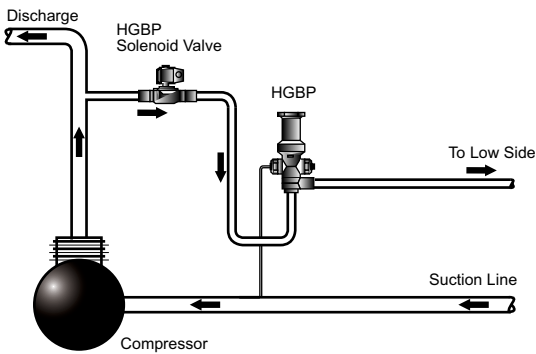


Function keys



## Hot gas reheat coil

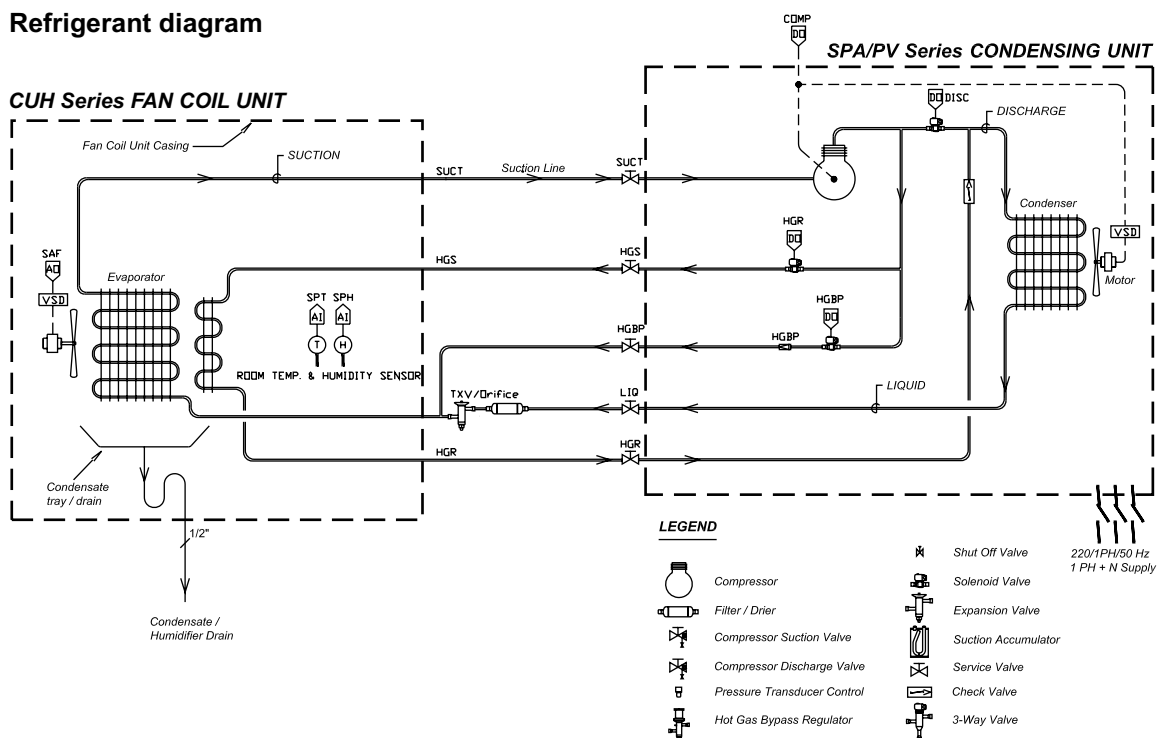
When compressor is running to reduce room sensible and latent heat in term of temperature and humidity respectively. In case of high latent heat and low sensible heat, the compressor still run although room temperature is reduced below setpoint to keep dehumidifying process. The system requires reheat function to compensate too high cooling supplied. Generally, electric heaters are applied to this function which is very high power consumption for re-heating. ENERCOV provides hot gas reheat coil instead of electric heater position. By using the waste heat energy from discharge superheat gas approximately 80-90°C and controls hot gas flows through reheat coil by solenoid valve. The refrigerant sub-cool also increases whilst hot gas reheat is operated. Energy saving over 40% is guaranteed.



## Compressor capacity control system

Generally, the compressor will be controlled to start and stop to maintain room temperature and humidity. During stopping, room humidity fluctuates due to the latent heat of room condition. Compressor can be re-started after 1-3 minutes to prevent short cycling. ENERCOV develops a new improved technology to unload compressor during low load condition down to 40% of compressor capacity by Hot Gas Bypass (HGBP) system. The HGBP system bypasses discharge gas of refrigerant back to suction line at appropriated amount and related to actual room heat load. So, the system is regulated refrigerant quantity flows to evaporator based on room heat load requirement. We can maintain room temperature error within +/-1.0°C and humidity +/-10%RH controlled range possibility.

## Refrigerant diagram



# CUH Series

## General Specification



Outdoor Unit  
SPA Series



Outdoor Unit  
PV Series



Indoor Unit  
CUH Series

General Specification							
Model : Indoor Unit (FCU)		CUH018	CUH024	CUH036	CUH048	CUH060	
Model : Outdoor Unit (CDU)		SPA018	SPA024	SPA036	PV048	PV060	
Nominal cooling capacity*	kW	5.4	7.0	10.5	14.3	18.1	
	Btu/h	18,430	23,993	36,007	49,181	62,116	
Sensible Heat Factor	SHF	0.75	0.74	0.78	0.73	0.73	
Air cooled condensing unit	Refrigerant	R-22					
	Compressor type	Rotary/Scroll					
	Compressor power supply	220/1/50		380/3/50			
	Compressor RLA	A	14.8	17.3	10.8	8.2	10.0
	Fan motor power supply	220/1/50					
	No of fan(s)	-	1	1	1	1	1
	Flow direction	-	Horizontal		Horizontal/Vertical		
	Fan motor RLA	A	0.72	0.72	1.44	2.00	2.00
	Unit dimension (mm)	Width	650		940	660	
		Depth	400		370	730	
		Height	915		1,170	660	
	Net weight	KGS	67	75	112	110	123
		Suction	5/8	5/8	3/4	3/4	3/4
	Connection - ODF (in)	Liquid	3/8	3/8	3/8	1/2	1/2
Hot Gas		1/2	1/2	5/8	5/8	5/8	
FCU type		-	Ceiling Concealed, Furred In Horizontal				
Nominal air flow	m <sup>3</sup> /s	0.283	0.378	0.567	0.756	0.945	
	CFM	600	800	1,200	1,600	2,000	
Evaporator coil type	-	Aluminum fins, copper tube					
Evaporator conn. - ODF (in)	Suction	5/8	5/8	3/4	7/8	7/8	
	Liquid	3/8	3/8	3/8	5/8	5/8	
	Drain - MPT	3/4	3/4	3/4	3/4	3/4	
Hot gas reheat coil type	-	Aluminum fins, copper tube					
Hot gas conn. - ODF (in)	-	5/8	5/8	5/8	7/8	7/8	
Hot gas reheat coil capacity	kW	6.2	8.4	13.2	17.8	23.0	
Fan motor power supply	220/1/50						
No of fan motor(s)	-	1	1	2	1	1	
Fan motor RLA	A	0.43	0.65	0.43	3.20	3.20	
Unit dimension (mm)	Width	1,020	1,190	1,730	1,236	1,465	
	Depth	470	470	470	760	760	
	Height	250	250	250	415	415	
Net weight (App.)	KGS	27	30	50	60	73	
	Type	Centrifugal forward curve blade					
Blower Wheel	Q'ty	2	2	4	2	2	

Note : Total heat removal based on 26.7 deg C, 50%RH air on cooling coil and 35 deg C outdoor temperature.  
All specifications are subject to change without prior notice.

# Performance data

## CUH / SPA, PV Series

Model/Desc./Unit			Cooling capacity @entering room air humidity 45%RH							
			Entering air temperature ( °C DB)							
			20	21	22	23	24	25	26	27
CUH018 + SPA018	Total cap.	kW	4.31	4.45	4.58	4.72	4.86	4.98	5.12	5.25
	Sensible cap.	kW	3.79	3.92	3.94	4.06	4.13	4.18	4.20	4.25
	SHF	%	88	88	86	86	85	84	82	81
CUH024 + SPA024	Total cap.	kW	5.72	5.90	6.07	6.23	6.38	6.57	6.75	6.91
	Sensible cap.	kW	4.98	5.07	5.10	5.17	5.30	5.39	5.47	5.53
	SHF	%	87	86	84	83	83	82	81	80
CUH036 + SPA038	Total cap.	kW	8.48	8.73	9.00	9.25	9.48	9.65	10.02	10.27
	Sensible cap.	kW	7.72	7.86	8.01	8.14	8.25	8.30	8.52	8.63
	SHF	%	91	90	89	88	87	86	85	84
CUH048 + PV048	Total cap.	kW	11.50	11.85	12.32	12.56	12.93	13.30	13.69	14.03
	Sensible cap.	kW	10.01	10.19	10.60	10.68	10.73	10.91	11.09	11.22
	SHF	%	87	86	86	85	83	82	81	80
CUH060 + PV060	Total cap.	kW	14.78	15.21	15.63	16.08	16.47	16.90	17.38	17.80
	Sensible cap.	kW	12.86	13.08	13.29	13.51	13.67	13.86	14.08	14.24
	SHF	%	87	86	85	84	83	82	81	80

Note : 1 kW = 3413 Btu/h

Model/Desc./Unit			Cooling capacity @entering room air humidity 50%RH							
			Entering air temperature ( °C DB)							
			20	21	22	23	24	25	26	27
CUH018 + SPA018	Total cap.	kW	4.40	4.55	4.70	4.84	4.97	5.12	5.26	5.40
	Sensible cap.	kW	3.65	3.73	3.81	3.87	3.88	3.94	4.00	4.05
	SHF	%	83	82	81	80	78	77	76	75
CUH024 + SPA024	Total cap.	kW	5.77	5.96	6.12	6.30	6.47	6.67	6.85	7.03
	Sensible cap.	kW	4.73	4.83	4.90	4.98	4.98	5.07	5.14	5.20
	SHF	%	82	81	80	79	77	76	75	74
CUH036 + SPA036	Total cap.	kW	8.60	8.88	9.13	9.40	9.66	9.97	10.25	10.55
	Sensible cap.	kW	7.40	7.55	7.67	7.80	7.92	8.08	8.10	8.23
	SHF	%	86	85	84	83	82	81	79	78
CUH048 + PV048	Total cap.	kW	11.72	12.11	12.50	12.87	13.25	13.65	14.04	14.41
	Sensible cap.	kW	9.49	9.69	9.88	10.04	10.20	10.24	10.39	10.52
	SHF	%	81	80	79	78	77	75	74	73
CUH060 + PV060	Total cap.	kW	15.03	15.49	15.95	16.40	16.82	17.30	17.75	18.20
	Sensible cap.	kW	12.17	12.39	12.60	12.79	12.95	13.15	13.31	13.29
	SHF	%	81	80	79	78	77	76	75	73

Note : 1 kW = 3413 Btu/h

Model/Desc./Unit			Cooling capacity @entering room air humidity 55%RH							
			Entering air temperature ( °C DB)							
			20	21	22	23	24	25	26	27
CUH018 + SPA018	Total cap.	kW	4.51	4.65	4.80	4.95	5.09	5.25	5.40	5.55
	Sensible cap.	kW	3.47	3.53	3.60	3.66	3.72	3.73	3.78	3.83
	SHF	%	77	76	75	74	73	71	70	69
CUH024 + SPA024	Total cap.	kW	5.89	6.10	6.29	6.45	6.64	6.85	7.04	7.21
	Sensible cap.	kW	4.54	4.64	4.65	4.71	4.71	4.80	4.86	4.90
	SHF	%	77	76	74	73	71	70	69	68
CUH036 + SPA036	Total cap.	kW	8.75	9.04	9.32	9.60	9.88	10.19	10.48	10.76
	Sensible cap.	kW	7.09	7.23	7.27	7.39	7.51	7.54	7.65	7.75
	SHF	%	81	80	78	77	76	74	73	72
CUH048 + PV048	Total cap.	kW	12.00	12.50	12.90	13.25	13.60	14.08	14.42	14.82
	Sensible cap.	kW	9.12	9.38	9.55	9.54	9.52	9.72	9.81	9.93
	SHF	%	76	75	74	72	70	69	68	67
CUH060 + PV060	Total cap.	kW	15.33	15.87	16.33	16.77	17.21	17.75	18.20	18.66
	Sensible cap.	kW	11.65	11.90	11.92	12.07	12.22	12.43	12.38	12.50
	SHF	%	76	75	73	72	71	70	68	67

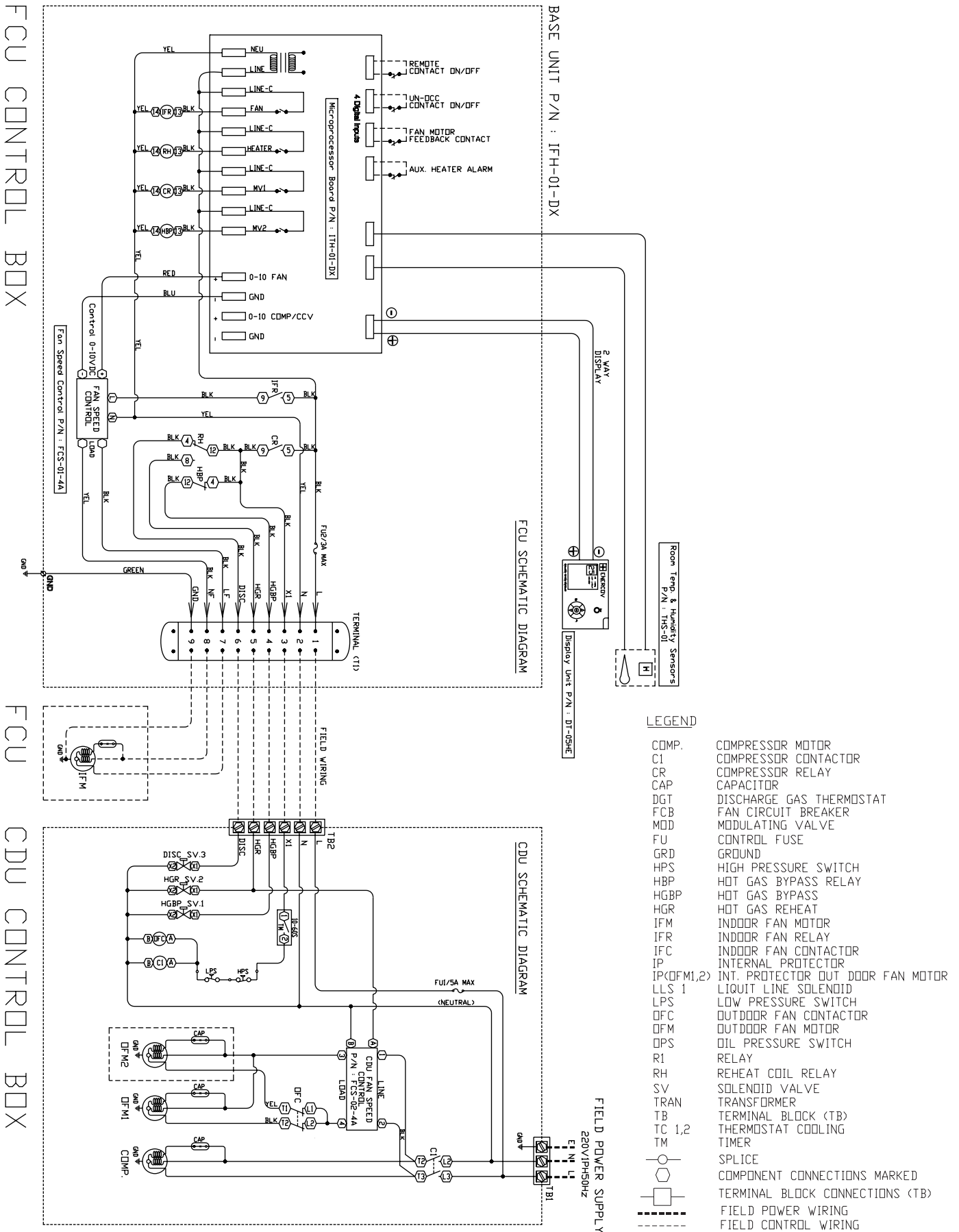
Note : 1 kW = 3413 Btu/h

Note : SHF = Sensible Heat Factor

All specifications reserve the right to change without prior notice.

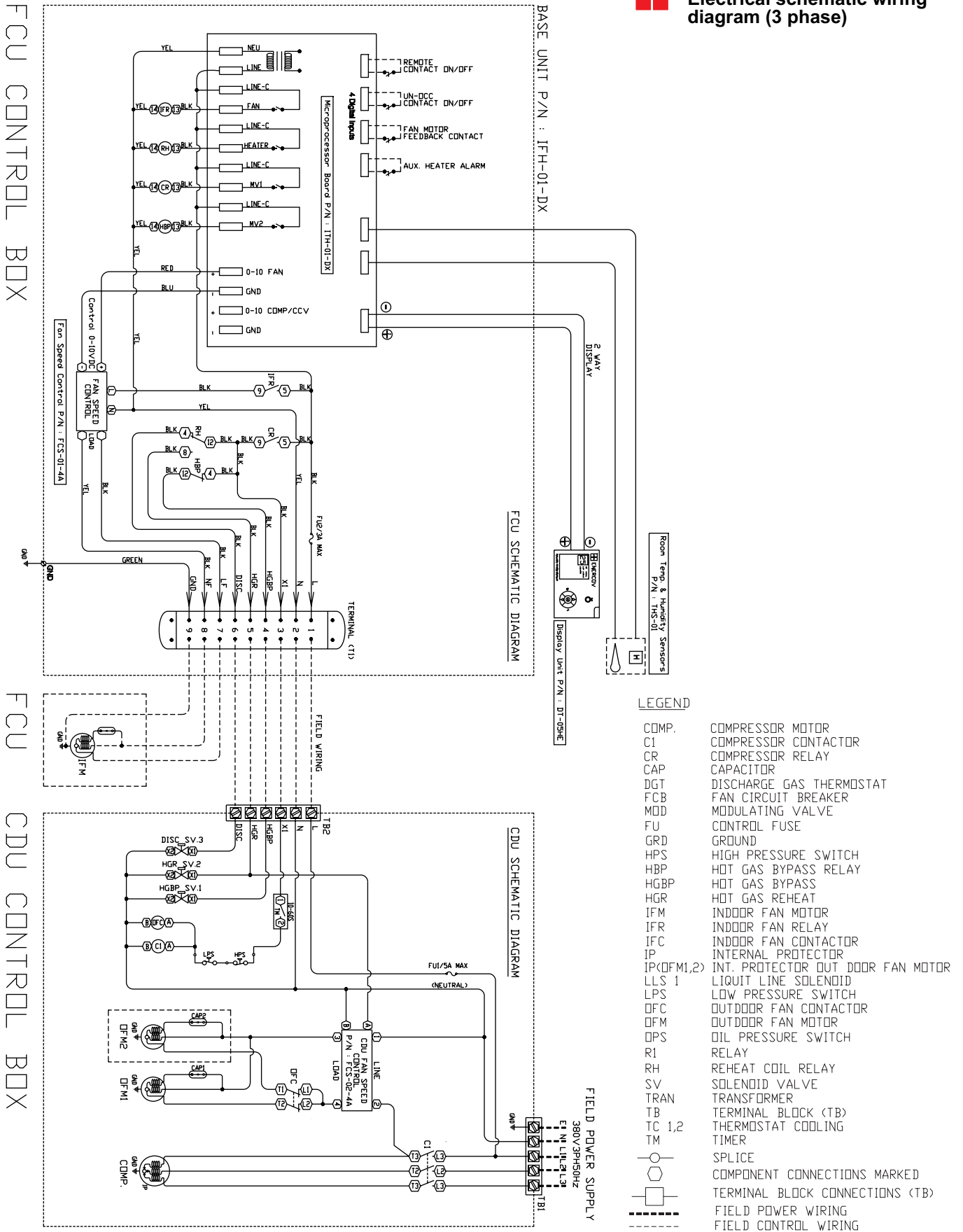
# CUH Series

## Electrical schematic wiring diagram (1 phase)



# Electrical Diagram

## Electrical schematic wiring diagram (3 phase)



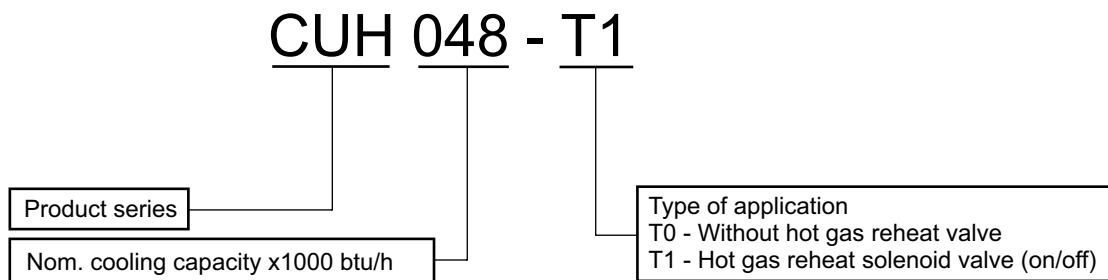
# Refrigerant Pipe Sizing

## Copper Pipe Type-L Installation Table

Heat Recovery Unit Model		Unit	CUH018/SPA018	CUH024/SPA024	CUH036/SPA036	CUH048/PV048	CUH060/PV060
Nominal cooling capacity		kW	5.42	7.03	10.55	14.36	18.17
		Btu/hr	18,500	24,000	36,000	49,000	62,000
Equivalent length	Refrig Line	-	Pipe sizing upon equivalent length				
<10 m.	LIQ	Inches	3/8	3/8	3/8	1/2	1/2
	HGBP	Inches	3/8	3/8	1/2	1/2	5/8
	SUCT	Inches	5/8	5/8	3/4	7/8	7/8
	HGS/HGR/DISC	Inches	1/2	1/2	5/8	5/8	3/4
10-20 m.	LIQ	Inches	3/8	3/8	1/2	1/2	1/2
	HGBP	Inches	1/2	1/2	5/8	5/8	3/4
	SUCT	Inches	3/4	3/4	7/8	1-1/8	1-1/8
	HGS/HGR/DISC	Inches	5/8	5/8	3/4	3/4	7/8
20-30 m.	LIQ	Inches	3/8	1/2	1/2	1/2	5/8
	HGBP	Inches	1/2	1/2	5/8	3/4	3/4
	SUCT	Inches	3/4	7/8	1-1/8	1-1/8	1-1/8
	HGS/HGR/DISC	Inches	5/8	5/8	3/4	7/8	7/8
30-40 m.	LIQ	Inches	3/8	1/2	1/2	5/8	5/8
	HGBP	Inches	1/2	5/8	5/8	3/4	7/8
	SUCT	Inches	3/4	7/8	1-1/8	1-1/8	1-1/8
	HGS/HGR/DISC	Inches	5/8	3/4	3/4	7/8	1-1/8
40-50 m.	LIQ	Inches	1/2	1/2	1/2	5/8	5/8
	HGBP	Inches	1/2	5/8	3/4	3/4	7/8
	SUCT	Inches	7/8	7/8	1-1/8	1-1/8	1-3/8
	HGS/HGR/DISC	Inches	5/8	3/4	7/8	7/8	1-1/8

Note : Recommended refrigerant pipe sizing based on SST 7.0 deg C, SCT 54 deg C, superheat 5 deg C, subcool 5 deg C.

## Product Nomenclature



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