

Integrated Air Cooled Condenser Heat Recovery Unit With Microprocessor Base Controller for Precision Temperature & Humidity Controls



*Preprogrammed
Microprocessor Controller*



*Touch Screen Display 4" or 7"
Selectable (Option)*



PV Series

Air cooled condensing unit with HGBP
& hot gas control valve
provides free reheat from compressor discharge gas
cooling capacity range 15 - 30 kW



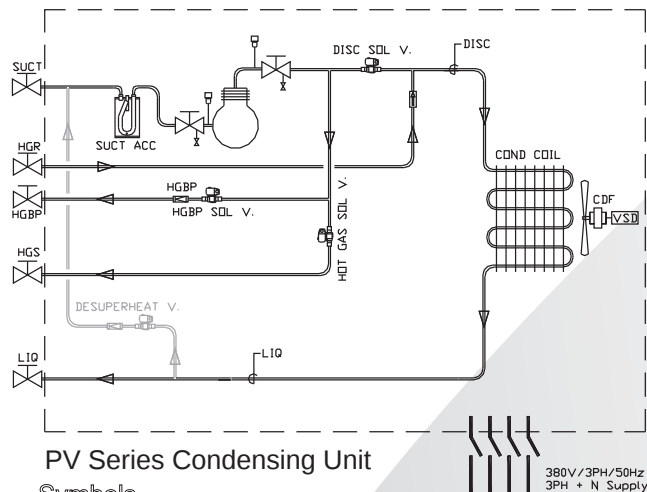
Scroll compressor

Total solution to create the perfect climate controls for HVAC application

www.enercov.com

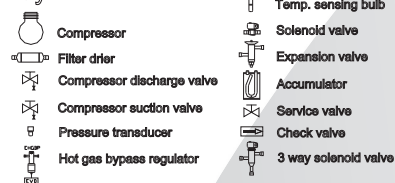
Direct Expansion for Heat Recovery Application

Refrigerant Diagram



PV Series Condensing Unit

Symbols



A Temp. sensing bulb

 Solenoid valve Expansion valve

 Accumulator

Service valve

 Check valve

 3 way solenoid valve

380V/3PH/50Hz
3PH + N Supply

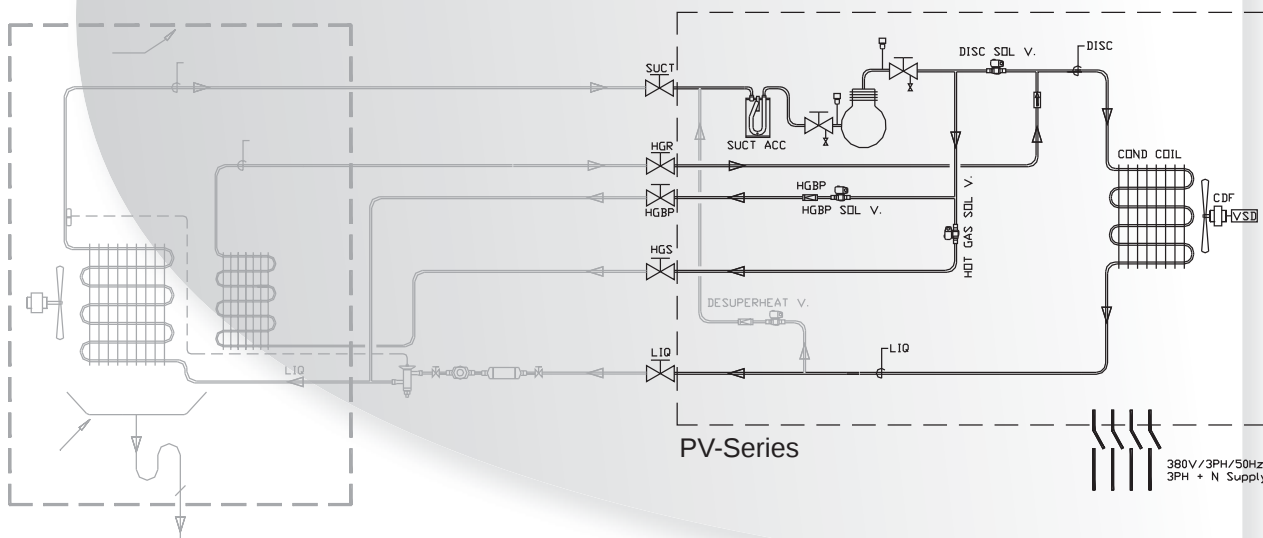
PV-Series Refrigeration Devices/Application

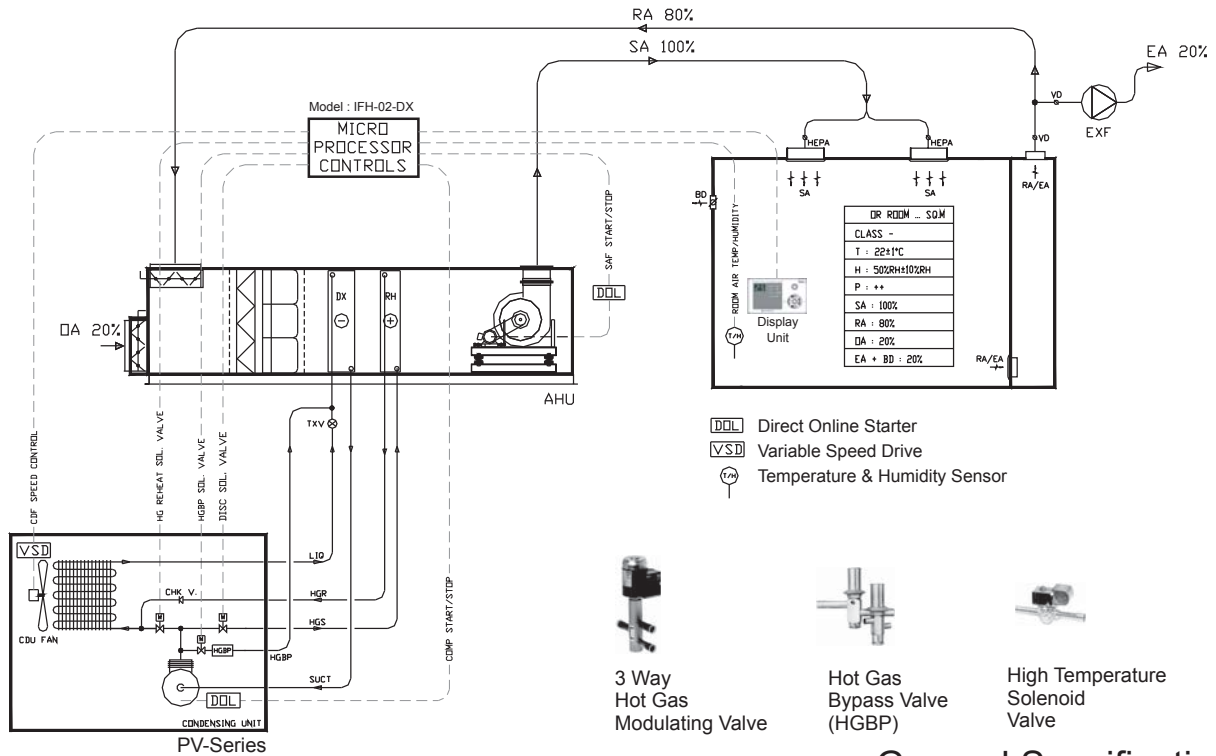
Hot gas bypass valve is installed within condensing unit to bypass refrigerant to evaporator after TXV. HGBP is applied for normal application to reduce compressor capacity during partial load.

On/off function of 2 solenoid valves are applied to energize hot gas reheat coil during REHEAT function of humidity controls. Solenoid valves are operated as heating and dehumidifying function. The heating coil of this type can operate either on/off nor pulse width modulating (PWM) feature.

Suction gas cool (SGC) injection valve will maintain refrigerant suction temperature not higher than 18 deg C to prevent compressor overheat problem.

Condenser fan speed control is varied to control high side pressure of discharge refrigerant. This feature can apply to very low ambient temperature at minimum -10°C.





General Specification

Outdoor Unit Model		Unit	PV048	PV060	PV080	PV100
Cooling capacity		kW	14.47	18.22	23.67	30.47
		Btu/hr	49,400	62,200	80,800	104,000
Reheat capacity (Max.)		kW	16.00	20.00	25.00	33.00
Hot gas reheat valve	T0	-	Without HGR controls valve			
	T1		HGBP only			
	T2		With on/off HGR solenoid valve			
	T3		With 3 way modulating valve			
Capacity control device		-	Hot gas bypass valve (HGBP)			
Capacity control range		%	50% - 100%			
Suction gas cool TXV		-	Option			
Power source		V/Ph/Hz	380-420/3/50			
Compressor Rated Load Amps		Amps	8.2	10.0	16.4	19.2
Compressor Locked Rotor Amps		Amps	61.8	74.0	95.0	125.0
Refrigerant		-	R-22 (R407c Option)			
No. of compressor		-	1			
Compressor type		-	Hermetic Scroll W/VSD (Option)			
Suction accumulator		-	Yes (Option)			
Oil separator		-	Yes (Option)			
No. of refrigerant circuit(s)		-	1			
Controls system		-				
- Standard	Model	-	Enercov's "IFH-02-DX"			
	Type	-	Microprocessor based with FUZZY algorithm			
	Sensor	-	Space temp. & humidity sensor			
	Display	-	2 digits 7 segments LED with function key & on/off button (wall mount)			
- Option controls system		-	Programmable DDC w/LCD display & BAS interfacing			
CDU Fan	Type	-	Propeller Fan Direct Drive			
	Fan VSD	-	Fan control speed (FCS) module p/n "FCS-02-4A"			
	Power source	V/Ph/Hz	220/1/50			
	Fan motor FLA	Amps(each)	1.97			
	No. of fan(s)	-	1			
	Fan diameter	mm	610			
	Air flow	CMH	6,000		8,500	
Condenser Coil		-	Aluminium fins/Copper tube			
Dimension in mm.	Height		660		830	
	Width		660		830	
	Dept		730		846	
Approx. net weight	kg		110	123	155	172
Pipe conn.		-	See refrigerant pipe table			

Note :
 - CU pipe connections are recommended for <50 m distance between HRU and AHU (see refrigerant piping table).
 - Cooling capacity based on saturated condensing temperature (SCT) 54.4°C and saturated suction temperature (SST) 7.2°C.

PV Series

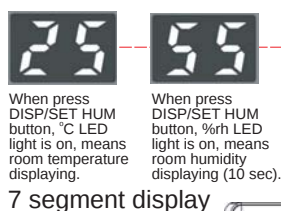
ENERCOV's "IFH-02-DX" intelligent T&H controller

ENERCOV's IFH series, new innovation of humidity controls system. It is applied to DX air cooled condensing unit to control room temperature and humidity at desirably range without electric heater elements. IFH series provide fully equipments such as micro-processor controller (p/n : IFH-02-DX), display unit (p/n : DT-05HE), room temperature & humidity sensor (p/n : THS-01). ENERCOV's temperature and humidity control model "IFH-02-DX" also provide voltage free contact to start/stop supply air fan of air handling unit including remote start/stop control routine as well.

FUZZY algorithm

Intelligent temperture & humidity controller with completed FUZZY algorithm provides very precise of room temperature & humidity. FUZZY algorithm adjusts compressor capacity control (HGBP) and hot gas reheat valve to maintain sensible & latent capacity follows room load condition by automatically. That mean we can control room temperature & humidity without additional high power consumption device such as electric heater. Display unit can display room temperature & relative humidity as per configure by user. The user also can adjust room condition very easily.

Display unit functions



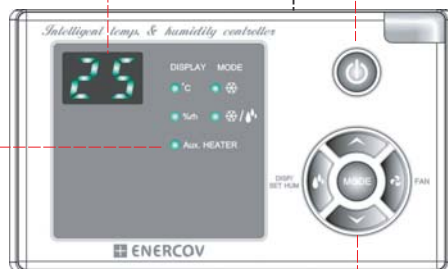
7 segment display

DISPLAY

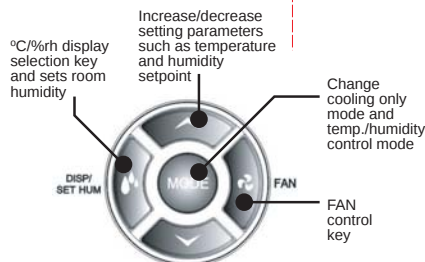
-  °C
Room temperature displaying lamp
-  %rh
Room humidity displaying lamp
-  Aux HEATER
Auxillary heater operating lamp

MODE

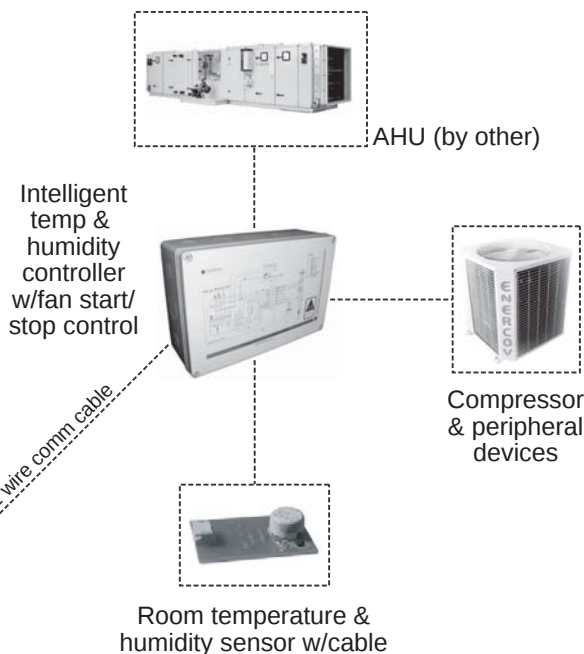
-  Mode cooling only
-  Mode temperature & humidity control



On/Off button



Function keys



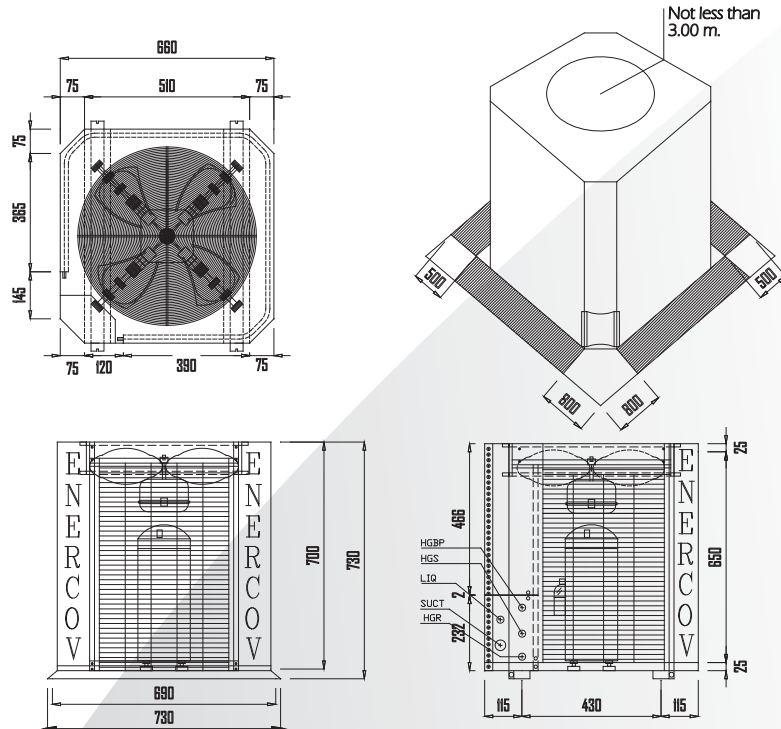
Configuration & Functions

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 when heating function is enabled. This function is applied to control hot gas reheat coil solenoid valve.
4. Room temperature and humidity display selectable. These 2 parameters can configurable to swap display by automatically.
5. Voltage free contact provides for supply air fan start/stop function.
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. Remote contact On/Off configurable.
10. Un-occupied T&H setpoint configurable from free contact input.

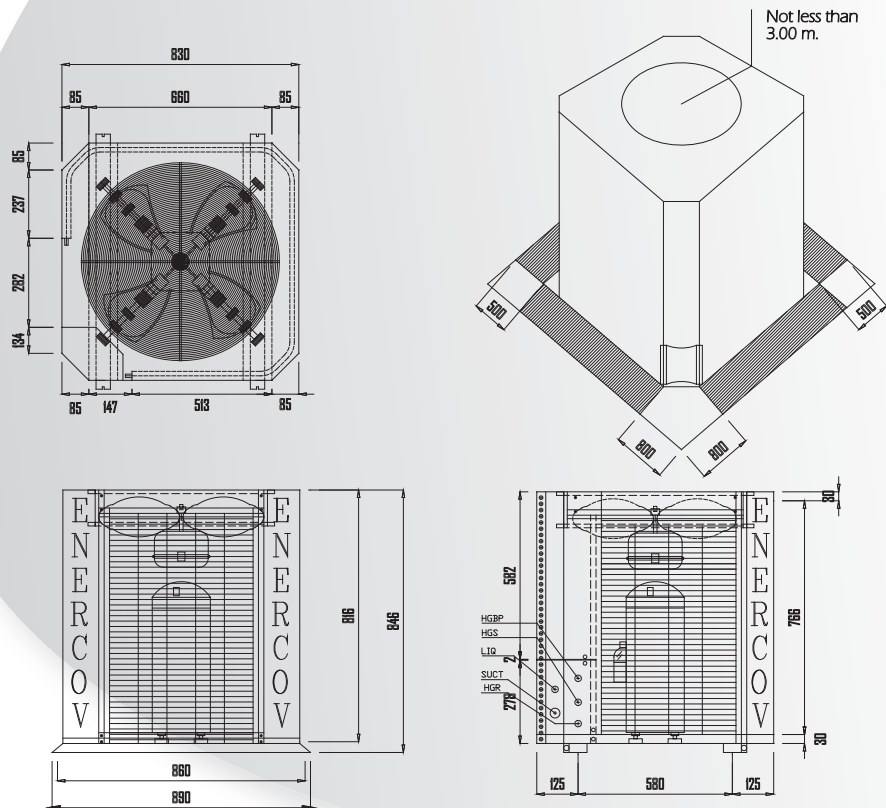


PV Series

Dimension and Installation Guide



PV048 - PV060

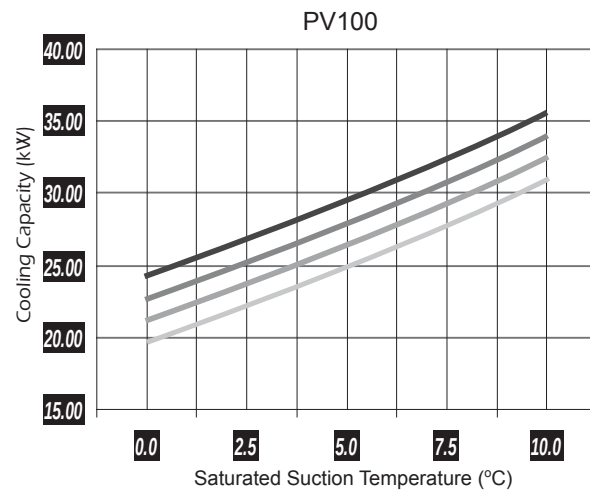
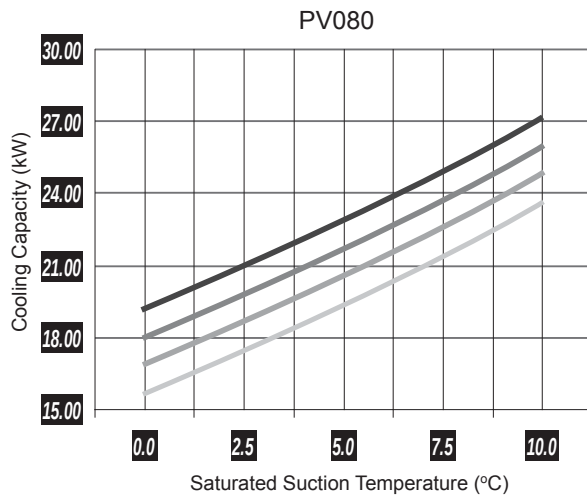
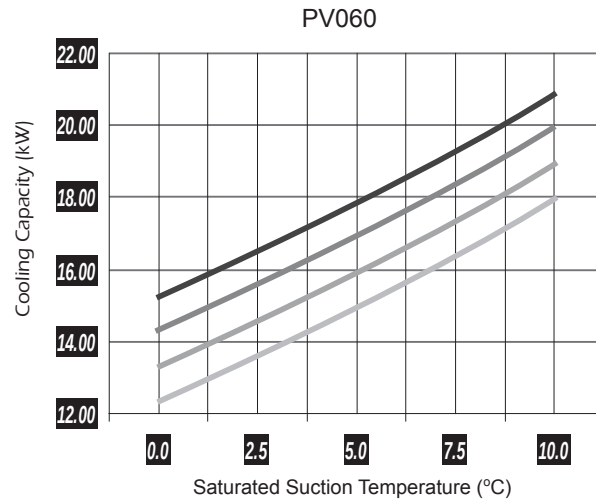
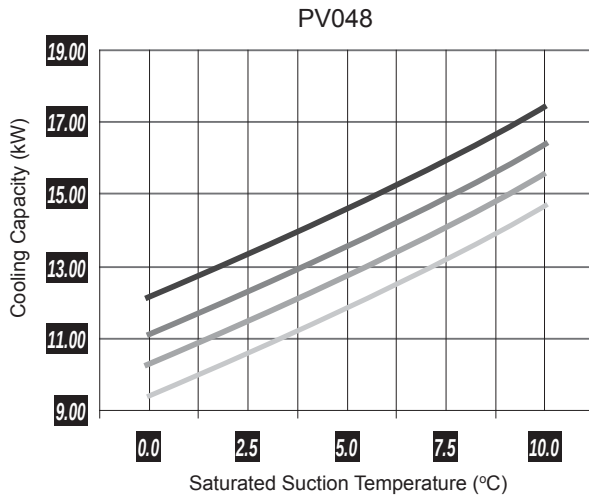


PV080 - PV100

Refrigerant pipe sizing installation (Type-L)

Heat Recovery Unit Model		Unit	PV048	PV060	PV080	PV100
Nominal cooling capacity		kW	14.47	18.22	23.67	30.47
		Btu/hr	49,400	62,200	80,800	104,000
Equivalent length	Refrig Line	-				
<10 m.	LIQ	Inches	3/8	1/2	1/2	1/2
	HGBP	Inches	5/8	5/8	5/8	5/8
	SUCT	Inches	5/8	7/8	1-1/8	1-1/8
	HGS/HGR/DISC	Inches	1/2	7/8	7/8	7/8
10-20 m.	LIQ	Inches	3/8	1/2	5/8	5/8
	HGBP	Inches	3/8	1/2	5/8	7/8
	SUCT	Inches	5/8	7/8	1-1/8	1-3/8
	HGS/HGR/DISC	Inches	1/2	5/8	7/8	1-1/8
20-30 m.	LIQ	Inches	1/2	5/8	5/8	5/8
	HGBP	Inches	1/2	5/8	7/8	7/8
	SUCT	Inches	7/8	1-1/8	1-3/8	1-3/8
	HGS/HGR/DISC	Inches	5/8	7/8	1-1/8	1-1/8
30-40 m.	LIQ	Inches	1/2	5/8	5/8	5/8
	HGBP	Inches	1/2	5/8	7/8	7/8
	SUCT	Inches	1-1/8	1-1/8	1-3/8	1-3/8
	HGS/HGR/DISC	Inches	7/8	7/8	1-1/8	1-1/8
40-50 m.	LIQ	Inches	1/2	5/8	5/8	3/4
	HGBP	Inches	5/8	5/8	7/8	1-1/8
	SUCT	Inches	1-1/8	1-1/8	1-3/8	1-3/8
	HGS/HGR/DISC	Inches	7/8	7/8	1-1/8	1-3/8

Performance Characteristics



— OAT 29.4°C — OAT 35.0°C — OAT 40.6°C — OAT 46.1°C

Note : - OAT : Outdoor Air Temperature.

- Not recommend to select the operation matching point at OAT 46.1°C.

Product Nomenclature

PV 060 - E - T0 - R22

