HITACHI SPLIT-SYSTEM HEAT PUMP AIR-CONDITIONERS

HITACHI

HITACHI proudly presents to our customers this Split-system Heat pump air Conditioner, form 13 HP, 15 HP and 20 HP, which is designed for medium and low outdoor temperatures, and comply with almost any types of installation requirements.

These split-system heat pump air conditioners are composed of outdoor units and Indoor units. The outdoor units are composed of compressors, air-cooled heat exchangers, outdoor fans, electronic expansion valves, and auxiliary and control equipment compactly packed in a weather-proof cabinet.

The indoor units are direct expansion fan coil units for indoor installations, and are designed for duct air distribution systems in domestic and commercial applications. These units are composed of heat exchanger, indoor fan, a fan motor, the remote controller and auxiliary equipment in a cabinet.

Nominal Capacity Range					
Cooling	31,000	Kcal/h	to	48,000	Kcal/h
	36,000	W	to	41,600	W
	123,000	Btu/h	to	190,500	Btu/h
Heating	31,000	Kcal/h	to	48,000	Kcal/h
	36,000	W	to	41,600	W
	123,000	Btu/h	to	190,500	Btu/h

Models:	
Indoor Units	Outdoor units
RAS-P13HU	+ RAS-P13HC
RAS-P15HU	+ RAS-P15HC
RAS-P20HU	+ RAS-P20HC

FEATURES

Indoor Units

High Performance Indoor Fan
The powerful and efficient multi-blade centrifugal fan creates high static pressure with minimum power consumption and smooth air flow. Indoor fan bearings can be replaced without removing fans. An adjustable motor pulley is mounted in all models, in order to cover wider ranges of fan speed.

Well-Designed Indoor Heat Exchanger
Highly-Efficient cross fin coils have been applied to provide a larger cooling capacity with low air speed on the coil.

Convertible Air Discharge
In order to a multitude of ducting arrangements, models RAS-P13HU, RAS-P15HU and RAS-P20HU are composed of a convertible fan compartment. The standard type is Horizontal air discharge and vertical air discharge is applicable for special order.

Outdoor Units

Wide Working Range
Outstanding working ranges and performance are the hallmarks of these HITACHI units. A Model is available which perfectly matches any air conditioning requirements. These units are designed for medium/low outdoor temperatures for cooling and for low outdoor temperatures for heating.

High Efficiency, Low Vibration
Hitachi′s scroll compressors have become renowned for their high levels of efficiency, low noise and low vibration.
The Scroll compressors incorporate a number of unique features. These include compressor motors cooled by the discharge gases and the placement of the oil reservoir on the high-pressure side, for improved efficiency and oil supply. This, combined with Hitachi′s expertise in precision manufacturing, creates a compressor design with fewer moving parts, superior efficiencies, lower noise and minimal vibration.

Compressor Protection
This durable, dependable and efficient system is comprised of the following components: overcurrent protector, a reverse phase protection, pressure switch, a delay timer, a discharge gas thermostat and crankcase heaters. The compressor will be protected under all predictable conditions: low voltage, voltage fluctuation, phase imbalance, and failure of related equipment.

Defrosting System
A compact heat exchanger minimizes frost and shortens defrosting time. This efficient heat exchanger lowers the required defrosting temperature, and shortens the defrosting cycle. The defrosting cycle is initiated by the coil temperature: unnecessary defrosting operations are immediately eliminated by the action of the electronic control system.

Refrigerant Flow Control
Exclusive electronic expansion valve for cooling and heating ensure a wide heating and cooling operating range, and efficient operation is maintained.

Four-Way Valve
A factory-installed 4-way valve permits automatic cooling and heating operations.

Suction Line Accumulator
The suction line accumulator prevents liquid refrigerant from flooding into the compressor.

Capacity control
Each unit is equipped with two compressor and two independent refrigeration cycle so that one compressor operation can reduce the operation cost against a partial load of one large compressor.

GENERAL DATA

Heating/Cooling Capacity According to Unit Combination

Model Indoor Unit Outdoor Unit		RAS-P13HU RAS-P13HC	RAS-P15HU RAS-P15HC	RAS-P20HU RAS-P20HC
Nominal Heating Capacity	Kcal/h W Btu/h	31,000 36,000 123,000	35,800 41,600 142,000	48,000 55,800 190,500
Nominal Cooling Capacity	Kcal/h W Btu/h	31,000 36,000 123,000	35,800 41,600 142,000	48,000 55,800 190,500

General Data for Outdoor Unit

Model			RAS-P13HC	RAS-P15HC	RAS-P20HC
Capacity Control		%	100,70,0	100,60,0	100,50,0
Cabinet Color (MUNSELL Code)			Synthetic Resin Painted on Galvanized Steel Plates Beige (2.5Y 8/2)		
Outer Dimensions	Height	mm (in.)	968 (38-1/8)	968 (38-1/8)	968 (38-1/8)
	Width	mm (in.)	1,986 (78-3/16)	1,986 (78-3/16)	1,986 (78-3/16)
	Depth	mm (in.)	1,000 (39-3/8)	1,000 (39-3/8)	1,000 (39-3/8)
Net Weight		kg (lbs.)	405 (893)	405 (893)	445 (981)
Refrigerant Flow Control Device Number of Circuits			R407C Electronic Expansion Valve 2	2	2
Compressor Type Model Quantity			Hermetic Scroll G1000EL / G403DH 1 / 1	Hermetic Scroll G1000EL / G603DH 1 / 1	Hermetic Scroll G1100EL 2
Heat Exchanger			Multi-Pass Cross-Finned Tube		
Outdoor Fan			Direct Driven Propeller Fan		
Motor	50Hz	kW (hp)	0.45 / 0.2 (3/5) / (1/4)	0.45 / 0.2 (3/5) / (1/4)	0.45 (3/5)
Quantity			1 / 1	1 / 1	2
Connections			With Flare Nut or Companion Flange for Field Piping		
Liquid Outlet Size		mm (in.)	Ø15.88 / Ø12.7 (5/8) / (1/2)	Ø15.88 (5/8)	Ø15.88 (5/8)
Type			Flare	Flare	Flare
Quantity			1 / 1	2	2
Gas Inlet Size		mm (in.)	Ø28.57 / Ø19.05 (1-1/8) / (3/4)	Ø28.57 / Ø22.2 (1-1/8) / (7/8)	Ø28.57 (1-1/8)
Type			Flange / Flare	Flange / Flare	Flange
Quantity			1 / 1	1 / 1	2
Wiring Hole Main Power		mm (in.)	Ø52* (2-1/16)	Ø52* (2-1/16)	Ø52* (2-1/16)
Control		mm (in.)	Ø26.1* (1-1/32)	Ø26.1* (1-1/32)	Ø26.1* (1-1/32)
Shipping Weight		kg (lbs.)	440 (970)	440 (970)	480 (1,058)
Approximate Packing List Height		mm (in.)	1,058 (41-21/32)	1,058 (41-21/32)	1,058 (41-21/32)
Width		mm (in.)	2,030 (79-29/32)	2,030 (79-29/32)	2,030 (79-29/32)
Depth		mm (in.)	1,060 (41-23/32)	1,060 (41-23/32)	1,060 (41-23/32)
Measurements		m^3	2.28	2.28	2.28

* : Knockout Hole

General Data for Indoor Unit

Model			RAS-P13HU	RAS-P15HU	RAS-P20HU
Cabinet			Galvanized Steel Plate		
Color			—		
(MUNSELL Code)			—		
Outer Dimensions	Height	mm	805	805	1055
		(in.)	(31-11/16)	(31-11/16)	(41-17/32)
	Width	mm	1,550	1,550	1,600
		(in.)	(61-1/32)	(61-1/32)	(63)
	Depth	mm	860	860	860
		(in.)	(33-27/32)	(33-27/32)	(33-27/32)
Net Weight		kg	185	185	235
		(lbs.)	(408)	(408)	(518)
Refrigerant			R407C		
Number of Circuits			2	2	2
Indoor Fan			Multi-Blade Centrifugal Fan(Double Suction)		
Nominal Air Flow		m^3/min	110	130	180
		m^3/s	1.83	2.17	3.05
		L/s	1,830	2,170	3,050
		(cfm)	(3,880)	(4,590)	(6,360)
Motor		kW	2.2	2.2	3.7
		(hp)	(3)	(3)	(5)
Quantity			1	1	1
Indoor Heat Exchanger			Multi-Pass Cross-Finned Tube		
Connections			Brazing Connection		
Refrigerant Piping					
Liquid Inlet					
Size(O.D)		mm	Ø15.88 / Ø12.7	Ø15.88	Ø15.88
		(in.)	(5/8) / (1/2)	(5/8)	(5/8)
Quantity			1 / 1	2	2
Gas Outlet					
Size(O.D)		mm	Ø28.57 / Ø19.05	Ø28.57 / Ø22.2	Ø28.57
		(in.)	(1-1/8) / (3/4)	(1-1/8) / (7/8)	(1-1/8)
Quantity			1 / 1	1 / 1	2
Condensate Drain			Female Piping Thread Screw		
Size		FPT	3/4	3/4	3/4
Quantity			1	1	1
Wiring Hole					
Size		mm	Ø27	Ø27	Ø27
		(in.)	(1-1/16)	(1-1/16)	(1-1/16)
Quantity			2	2	2
Shipping Weight		kg	205	205	255
		(lbs.)	(452)	(452)	(562)
Approximate Packing List					
Height		mm	925	925	1,175
		(in.)	(36-13/32)	(36-13/32)	(46-1/4)
Width		mm	1,670	1,670	1,720
		(in.)	(65-3/4)	(65-3/4)	(67-23/32)
Depth		mm	910	910	910
		(in.)	(35-13/16)	(35-13/16)	(35-13/16)
Measurements		m^3	1.41	1.41	1.84

NOTES :

1. The nominal capacities are the combined capacities of the HITACHI standard split system and are based on the JIS standard B8616.
   Cooling Operation Conditions:
   Air Inlet Temperature:
   Indoor 27℃DB/19℃WB (80℉DB/66.2℉WB)
   Outdoor 35℃DB(95℉DB)
   Heating Operation Conditions:
   Air Inlet Temperature:
   Indoor 20℃DB(68℉DB)
   Outdoor 7℃DB/6℃WB (45℉DB/43℉WB)
   Piping Length: 7.5Meters. Piping Lift: 0 Meter.

2. Working Range:
   Cooling Operation Conditions:
   Air Inlet Temperature:
   Indoor Maximum of 32℃DB / 22.5℃WB and Minimum of 19.5℃DB / 14℃WB.
   Outdoor Maximum of 46℃DB and Minimum of 0℃DB.
   Heating Operation Conditions:
   Air Inlet Temperature:
   Indoor Maximum of 27℃DB and Minimum of 15℃DB.
   Outdoor Maximum of 21℃DB/15.5℃WB and Minimum of -10℃DB / -11℃WB.

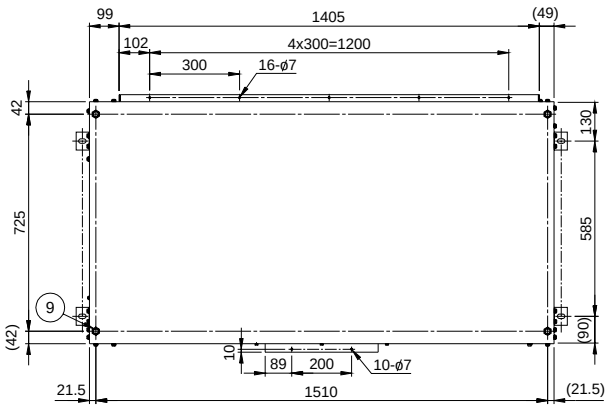
3. Standard Power Supply
   Main (AC 3Ø) Control (AC 1Ø)
   415V 50Hz 240V 50Hz

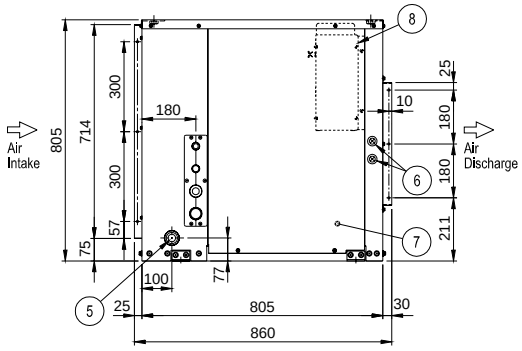
DIMENSIONAL DATA

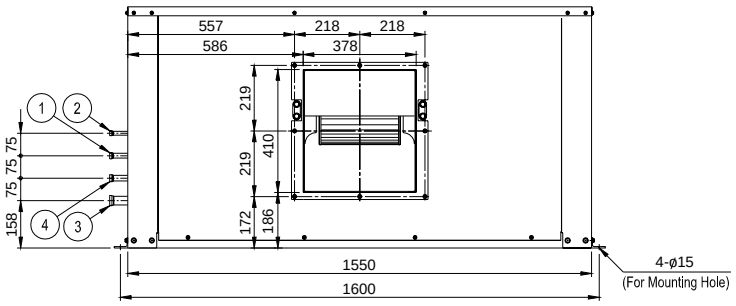
Indoor Unit

RAS-P13HU and RAS-P15HU

Mark	Name	Summary
1	Refrigerant Liquid Line for NO.1 Cycle	ø15.88 Brazing
2	Refrigerant Liquid Line for NO.2 Cycle	ø12.7 Brazing for RAS-P13HU ø15.88 Brazing for RAS-P15HU
3	Refrigerant Gas Line for NO.1 Cycle	ø28.57 Brazing
4	Refrigerant Gas Line for NO.2 Cycle	ø19.05 Brazing for RAS-P13HU ø22.2 Brazing for RAS-P15HU
5	Condensate Drain	FPT 1
6	Holes for Power Supply and Circuit Wiring	2-ø27
7	Service Panel	
8	Magnetic Switch Box	
9	Screw Holes for Suspension Bolt	4-M16

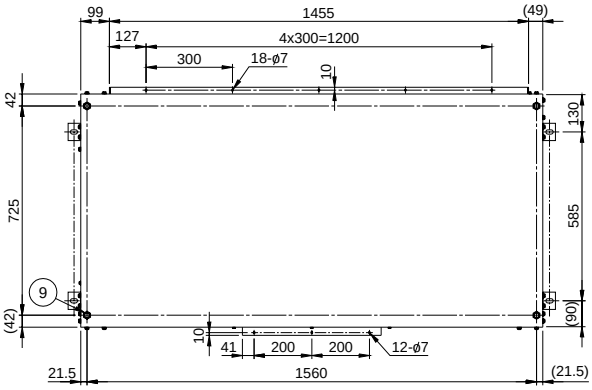


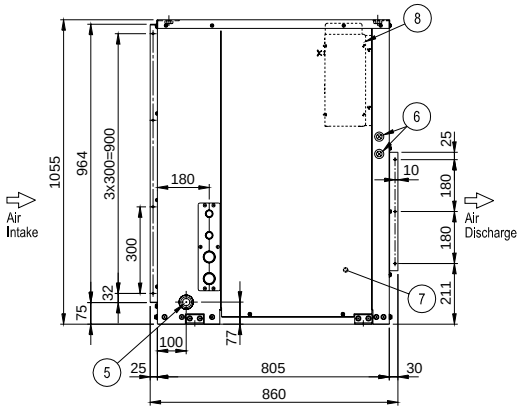


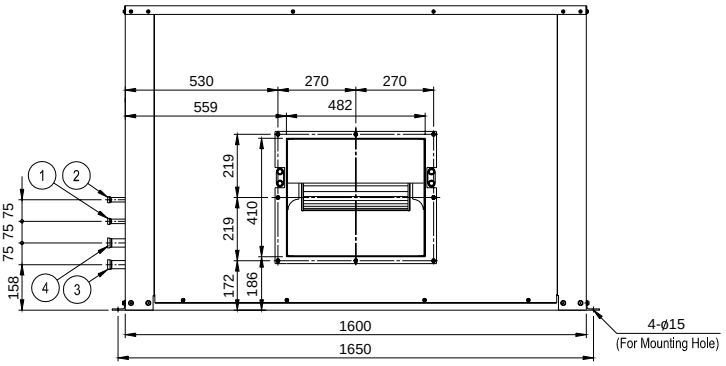


RAS-P20HU

Mark	Name	Summary
1	Refrigerant Liquid Line for NO.1 Cycle	ø15.88 Brazing
2	Refrigerant Liquid Line for NO.2 Cycle	ø15.88 Brazing
3	Refrigerant Gas Line for NO.1 Cycle	ø28.57 Brazing
4	Refrigerant Gas Line for NO.2 Cycle	ø28.57 Brazing
5	Condensate Drain	FPT 1
6	Holes for Power Supply and Circuit Wiring	2-ø27
7	Service Panel	
8	Magnetic Switch Box	
9	Screw Holes for Suspension Bolt	4-M16

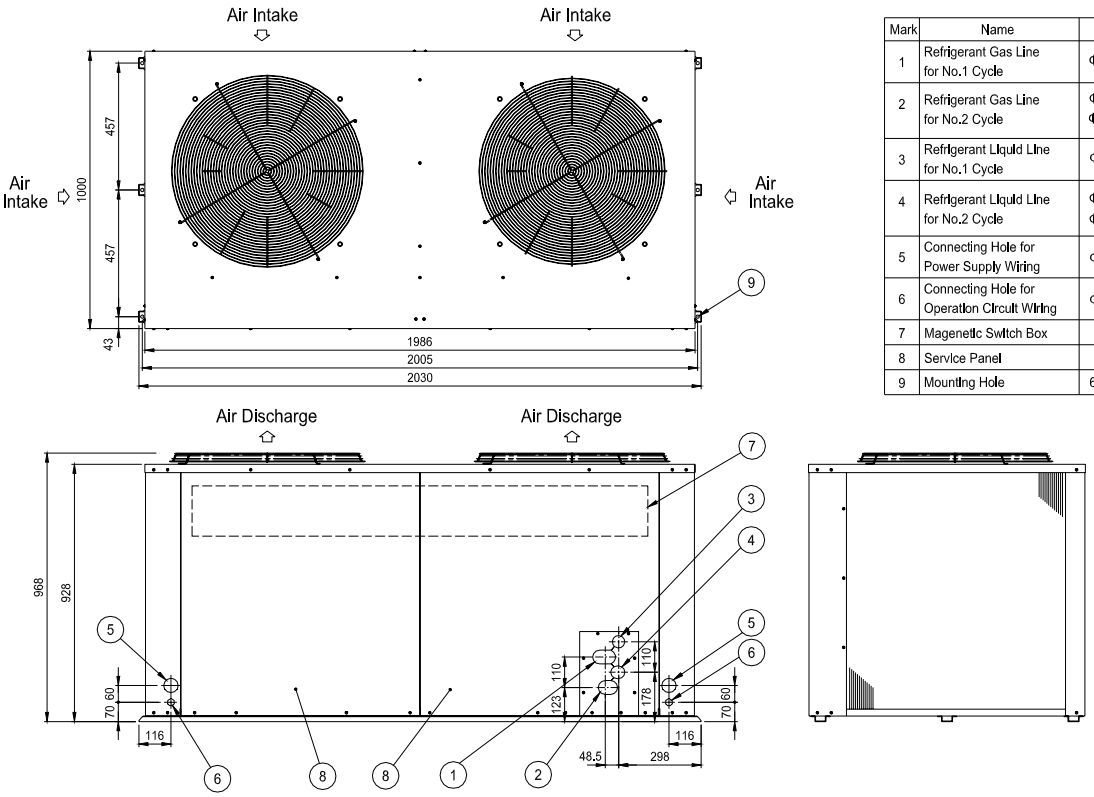






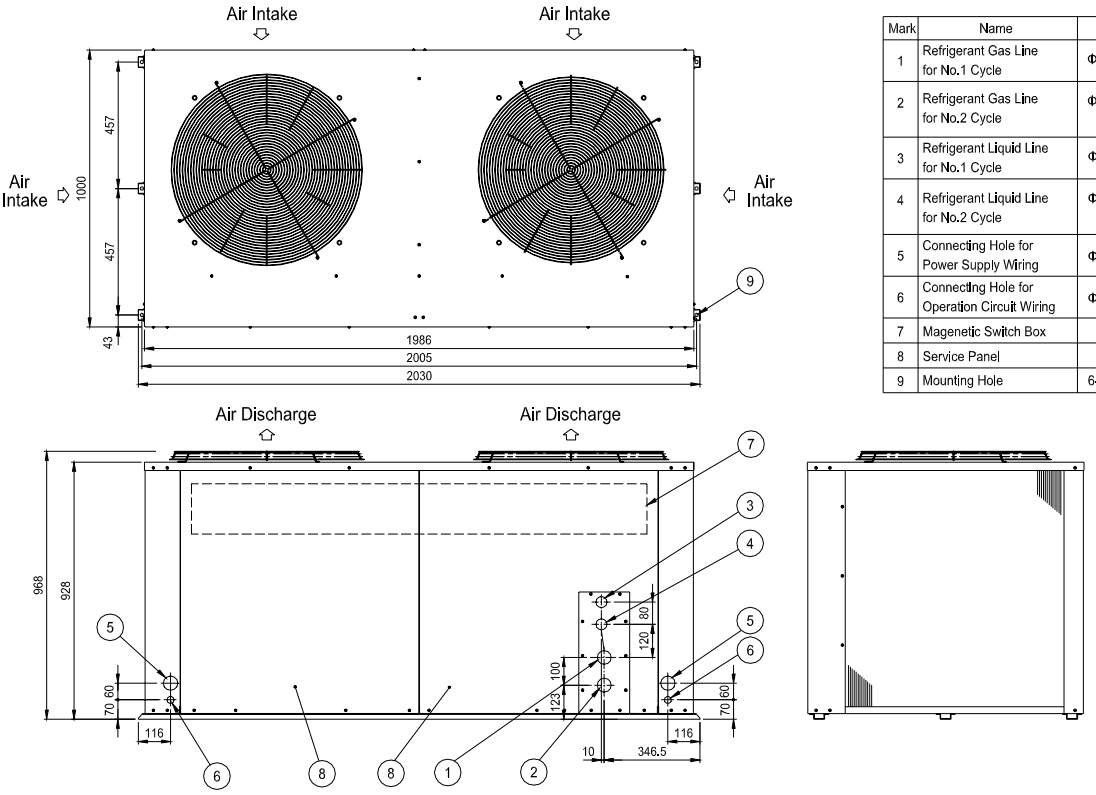
Outdoor Unit

RAS-P13HC and RAS-P15HC



Mark	Name	Summary
1	Refrigerant Gas Line for No.1 Cycle	Φ28.57 Brazing Connection
2	Refrigerant Gas Line for No.2 Cycle	Φ19.05 Flare for RAS-P13HC Φ22.2 Brazing for RAS-P15HC
3	Refrigerant Liquid Line for No.1 Cycle	Φ15.88 Flare Connection
4	Refrigerant Liquid Line for No.2 Cycle	Φ12.7 Flare for RAS-P13HC Φ15.88 Flare for RAS-P15HC
5	Connecting Hole for Power Supply Wiring	Φ52(Knockout Hole)
6	Connecting Hole for Operation Circuit Wiring	Φ26.1(Knockout Hole)
7	Magenetic Switch Box	
8	Service Panel	
9	Mounting Hole	6-Φ12.5

RAS-P20HC



Mark	Name	Summary
1	Refrigerant Gas Line for No.1 Cycle	Φ28.57 Brazing Connection
2	Refrigerant Gas Line for No.2 Cycle	Φ28.57 Brazing Connection
3	Refrigerant Liquid Line for No.1 Cycle	Φ15.88 Flare Connection
4	Refrigerant Liquid Line for No.2 Cycle	Φ15.88 Flare Connection
5	Connecting Hole for Power Supply Wiring	Φ52(Knockout Hole)
6	Connecting Hole for Operation Circuit Wiring	Φ26.1(Knockout Hole)
7	Magenetic Switch Box	
8	Service Panel	
9	Mounting Hole	6-Φ12.5

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