

Ruud Achiever Plus® Series Three-Stage Heat Pump



UP17 Series

Efficiencies: up to 18.5 SEER/13 EER/8.5 HSPF

Nominal Sizes 2, 3, 4 & 5 Ton

[70.3, 10.6, 12.7 & 17.6 kW]

Cooling Capacities 17.3 to 60.5 kBTU

[5.7 to 17.7 kW]



"Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet Energy Star. Ask your Contractor for details or visit www.energystar.gov."



- EcoNet® Enabled product. The EcoNet Smart Home System provides advanced air & water control for maximum energy savings and ideal comfort.
- Copeland Scroll™ Variable Speed compressor. This inverter driven compressor provides three stages of heating and cooling operation for maximum comfort and energy savings. The over-drive feature in heating provides heating down to 7°F.
- Equipped with electronic expansion valve to precisely control variable refrigerant flow.
- New composite base pan – dampens sound, captures louver panels, eliminates corrosion and reduces number of fasteners needed
- Improved tubing design – reduces vibration and stress, making unit quieter and reducing opportunity for leaks
- Optimized defrost characteristics - decrease defrosting and provide better home comfort
- Powder coat paint system – for a long lasting professional finish
- Optimized reversing valve sizing – improves shifting performance for quieter unit operation and increased life of the system
- Enhanced mufflers – help to dissipate vibration energy for quieter unit operation
- Modern cabinet aesthetics – increased curb appeal with visually appealing design
- Curved louver panels – provide ultimate coil protection, enhance cabinet strength, and increased cabinet rigidity
- Optimized fan orifice – optimizes airflow and reduces unit sound
- Rust resistant screws – confirmed through 1500-hour salt spray testing
- PlusOne® **Expanded Valve Space** – 3"-4"-5" service valve space – provides a minimum working area of 27-square inches for easier access
- Integrated heat pump lift receptacle – allows standard CPVC stands to be inserted into the base
- PlusOne® **Triple Service Access** – 15" wide, industry leading corner service access – makes repairs easier and faster. The two fastener removable corner allows optimal access to internal unit components. Individual louver panels come out once fastener is removed, for faster coil cleaning and easier cabinet reassembly
- Diagnostic service window with two-fastener opening – provides access to the TXV valves and the heat pump reversing valve before opening the unit.
- External gauge port access – allows easy connection of "low-loss" gauge ports
- Single-row condenser coil – makes unit lighter and allows thorough coil cleaning to maintain "out of the box" performance
- 35% fewer cabinet fasteners and fastener-free base – allow for faster access to internal components and hassle-free panel removal
- Service trays – hold fasteners or caps during service calls
- QR code – provides technical information on demand for faster service calls
- Fan motor harness with extra-long wires – allows unit top to be removed without disconnecting fan wire

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Standard Feature Table

Feature	24	36	48	60
R-410a Refrigerant	√	√	√	√
Maximum SEER	18.5	17.5	17.0	17.0
Maximum EER	13.0	11.5	10.5	9.5
Maximum HSPF	8.2	8.5	8.5	8.5
EcoNet™ Enabled	√	√	√	√
Electronic Expansion Valve	√	√	√	√
Copeland Scroll™ Variable Speed compressor	√	√	√	√
Field Installed Filter Drier	√	√	√	√
Front Seating Service Valves	√	√	√	√
High Pressure Switch	√	√	√	√
Low Pressure Transducer	√	√	√	√
Internal Pressure Relief Valve	√	√	√	√
Low Ambient capability	√	√	√	√
3-4-5 Service Valve Access	√	√	√	√
Composite Basepan	√	√	√	√
1 Screw Control Box Access	√	√	√	√
15" Access to Internal Components	√	√	√	√
Quick release louver panel design	√	√	√	√
No fasteners to remove along bottom	√	√	√	√
Optimized Venturi Airflow	√	√	√	√
Single row condenser coil	√	√	√	√
Powder coated paint	√	√	√	√
Rust resistant screws	√	√	√	√
QR code	√	√	√	√
External gauge ports	√	√	√	√
Service trays	√	√	√	√

√ = Standard

Available SKU

Available Models	Description
UP1724AJVCA	EcoNet® Enabled inverter driven Ruud® <i>Achiever Plus</i> ® Series Three-Stage Heat Pump 208/230/1/60
UP1736AJVCA	EcoNet® Enabled inverter driven Ruud® <i>Achiever Plus</i> ® Series Three-Stage Heat Pump 208/230/1/60
UP1748AJVCA	EcoNet® Enabled inverter driven Ruud® <i>Achiever Plus</i> ® Series Three-Stage Heat Pump 208/230/1/60
UP1760AJVCA	EcoNet® Enabled inverter driven Ruud® <i>Achiever Plus</i> ® Series Three-Stage Heat Pump 208/230/1/60

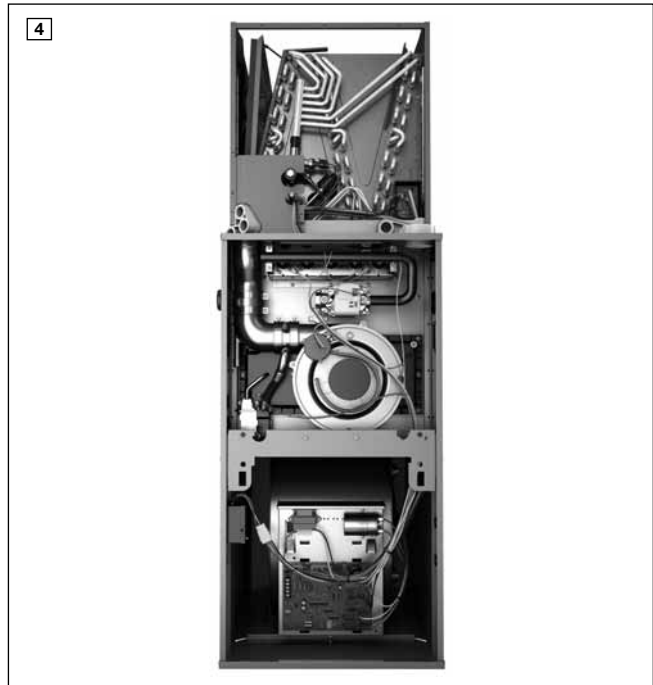
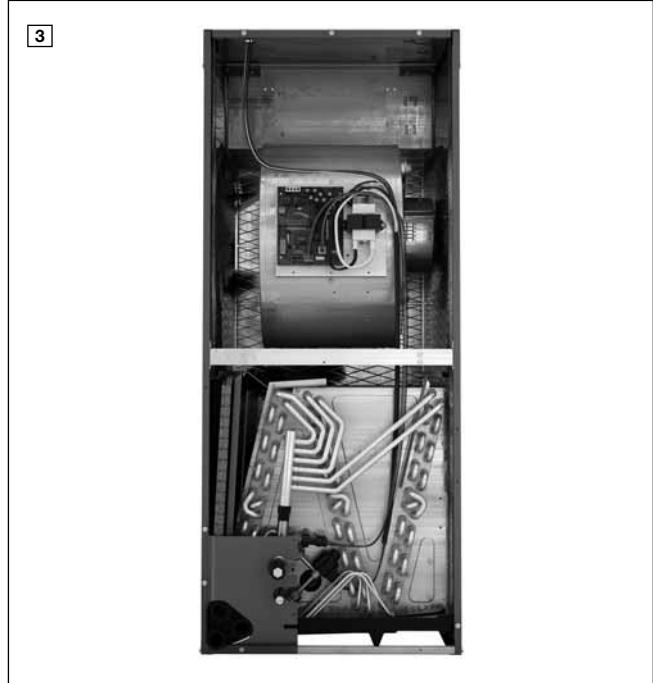
Introduction to UP17 Heat Pump

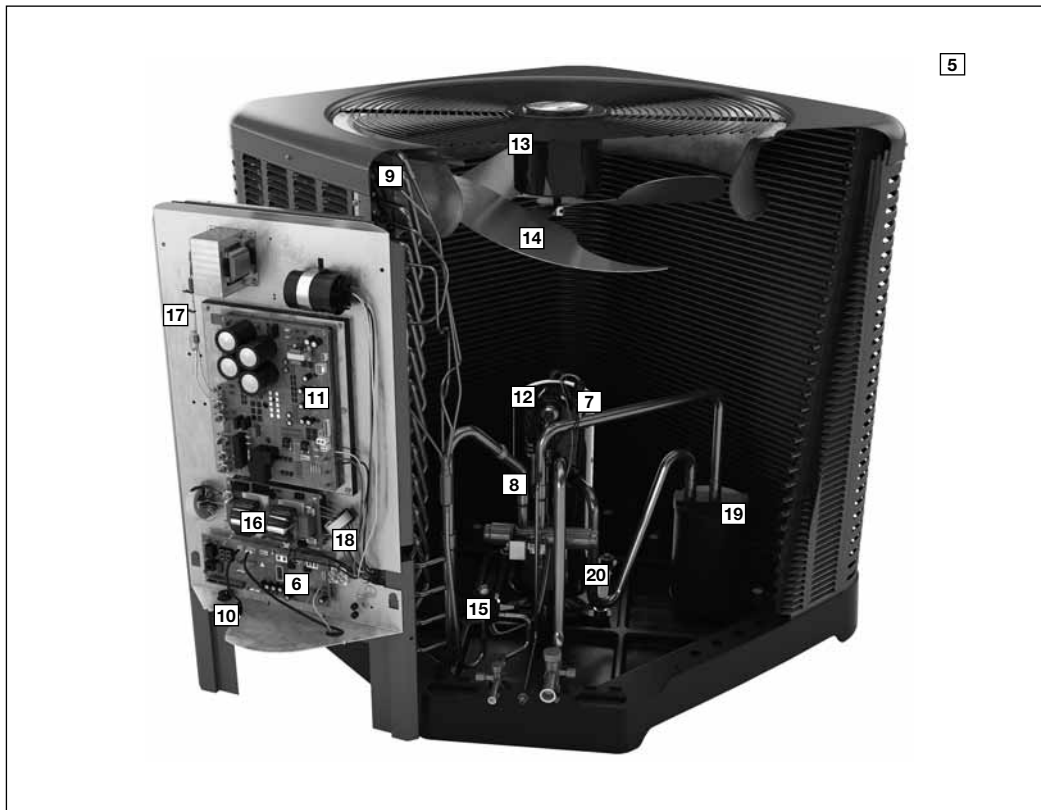
The UP17 is our EcoNet® Enabled, inverter driven *Achiever Plus*® Series Three-Stage Heat Pump and is part of the Ruud Heat Pump product line that extends from 13 to 20 SEER. This highly featured and reliable heat pump is designed for years of reliable, efficient operation when matched with Ruud indoor aluminum evaporator coils and furnaces or air handler units with aluminum evaporators.

The EcoNet Smart Home System is the first integrated system for a home's Heating, Cooling and Water Heating equipment – allowing homeowners to manage the products that consume up to 65% of the their home's energy. EcoNet sets Ruud, and our distributor and contractor customers, apart in the industry with a unique, advanced and efficient technology solution.

The UP17 *Achiever Plus*® Series inverter-driven Three-Stage Heat Pump is exclusively designed to operate with the EcoNet® Smart Home System. Developed by Ruud, The EcoNet Smart Home System allows homeowners to manage select high-efficiency, EcoNet Enabled air conditioners, heat pumps, gas furnaces, air handlers and water heaters from anywhere. EcoNet Enabled products in a home are connected through standard HVAC wiring; then contractors have the option of adding an EcoNet WiFi Kit (1) so the homeowner can access everything remotely through a free mobile app or mobile-friendly website. The Control Center (2) acts as both a thermostat for the heating and cooling system, and a remote control for connected water heaters.

Along with the EcoNet Smart Home System the UP17 is matched with the RH2T Constant Torque Two-Stage EcoNet Enabled Air Handler (3) or can be applied in a Dual Fuel application with the EcoNet Enabled Two-Stage Variable Speed U802V or U96V, or the modulating U97V Gas Furnaces and RCF Aluminum Cased Furnace Coils with EEV (4). See individual specification documents for more details of the indoor products.

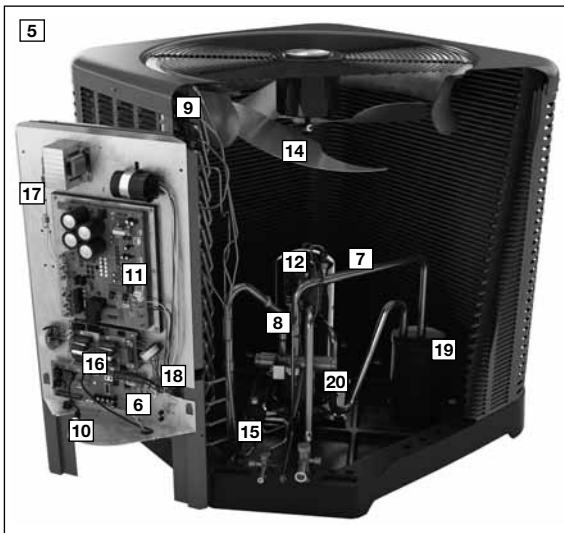




How It Works

The UP17 *Achiever Plus*® Series Inverter Driven Three-Stage Heat Pump's (5) variable speed outdoor unit control (VSODU) (6) continuously monitors the EcoNet control temperature and humidity set point, suction pressure (7), suction temperature (8), outdoor coil temperature (9) and outdoor temperature (10) and feeds this information to the Copeland Inverter Control Motor Drive (11). The Copeland Inverter Control Motor Drive converts AC to DC power, sends it to the Copeland Scroll™ variable speed compressor (12) Brushless Permanent Magnet motor (BPM), dynamically adjusting its speed. Simultaneously the VSODU provides output to the outdoor fan motor (13) which

is equipped with the latest swept wing fan technology (14) and the Electronic Expansion Valve (EEV) (15) which syncs up with the compressor speed to deliver the exact capacity the home needs to meet its comfort requirements. The result of this advanced technology is significantly improved energy efficiency and comfort. Energy efficiency is improved by precise load matching, less cycling on and off and low amp gradual compressor, outdoor and indoor motor operation. Comfort is improved by precise temperature control, precise humidity control and extra capacity during extreme cold weather conditions.



System Component Descriptions

EcoNet Control Center – (1): The EcoNet Control Center serves as the hub of communication for a home’s Heating, Cooling and Water Heating systems and is required to operate an EcoNet Enabled Heating and Cooling system in a fully communicating mode. The EcoNet Control center displays detail diagnostic from outdoor and indoor connected units. See individual specification documents for more details of the EcoNet Control Center.

EcoNet Cooling and Heating WiFi Module – (2) is required to remotely operate an EcoNet Enabled Heating and Cooling system from the EcoNet web portal and mobile apps. See individual specification documents for more details of the EcoNet Control Center.

Variable Speed Outdoor Unit Control (VSODU) – (6) is where control wiring is hooked to the UP17. The VSODU control takes input from the EcoNet Control Center, outdoor suction temperature and pressure sensors, outdoor air and coil temperatures and communicates to the Copeland Inverter Control Motor Drive, EEV, reversing valve, outdoor fan and indoor blower to precisely control system capacity output of the heat pump in heating and cooling modes. It also is equipped with Dual Seven-Segment Display for technician interface, operation status and fault code communication. Two momentary buttons allow technician to initiate various operating modes. Various LED’s communicate active EcoNet communication, microprocessor activity and EEV operation. See I&O for more details.

The Copeland Inverter Control Motor Drive – (11) converts incoming single-phase AC power to 3 phase DC simulated sine wave power. Once power is converted the Copeland Inverter Control Motor Drive varies frequency of the power to the compressor varying the compressor speed. The Copeland Inverter Control Motor Drive has active protection algorithms that keep the compressor safely inside its operating envelope.

The Copeland Scroll™ Variable Speed compressor – (12) utilizes a Brushless Permanent Magnet Motor (BPM) that varies the Scroll speed, thus, varying the refrigerant flow. The robust scroll design has proven reliability over competing compressor technologies.

Swept Wing Fan Blade – (14) is the latest technology in outdoor fans that increase efficiency and reduces air noise.

The Electronic Expansion Valve (EEV) – (15) is an electronically driven refrigerant control valve. A small stepper motor is used to open and close valve to precisely control refrigerant flow. It is controlled by the VSODU, which receives input from the pressure transducer and suction line temperature sensor to control the UP17 in the heating mode. The VSODU drives it fully open in the cooling mode. The EEV is superior to a TXV (thermostatic expansion valve) because the EEV controls superheat at the evaporator coil under varying load and refrigerant flow conditions, more precisely than traditional TXV’s.

The Filter – (16) is an electrical device that “cleans” the AC power component. This low pass filter only permits the passage of 60-Hertz signal to the inverter drive.

The Pressure Transducer – (7) is used to measure suction pressure in the outdoor heat pump. The VSODU takes this input to operate the EEV and make decisions on system operation such as low ambient cooling.

Various temperature sensors – are located on the Heat Pump. There is an outdoor air sensor (10), an outdoor coil sensor (9), a discharge line temperature sensor (not shown, located on discharge line), a suction line temperature sensor (8) and a compressor sump temperature sensor (not shown, located bottom of compressor). The VSODU uses these temperature measurements to operate the system.

The Choke – (17) is provided to absorb power spikes that might occur on the DC line.

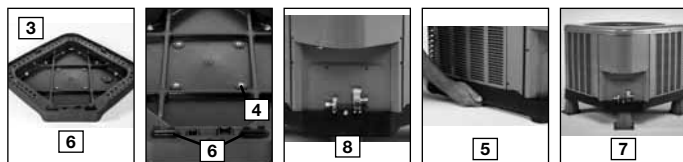
Ferrite Rings – (18) are iron cores through which AC power is looped keeping any electrical noise contained. They also reduce the induction of electrical transient into the DC drive.

The Suction Accumulator – (19) prevents liquid refrigerant from entering the compressor.

The Reversing Valve – (20) reverses the flow of refrigerant in cooling versus heating.

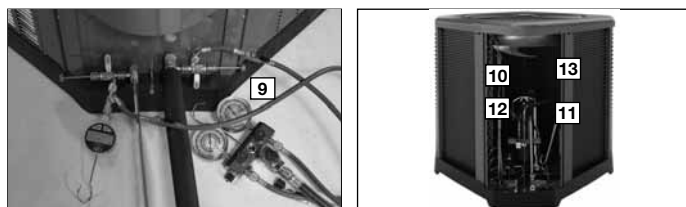
Features

In addition all UP17 Achiever Plus Series Inverter Driven Three-Stage Heat Pumps have the following features:



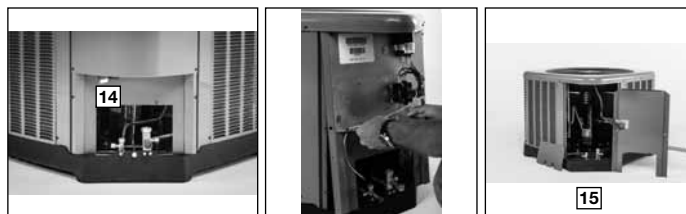
Our unique composite base (3) reduces sound emission, eliminates rattles, significantly reduces fasteners, eliminates corrosion and has integrated brass compressor attachment inserts (4). Furthermore it has incorporated into the design, water management features, means for hand placement (5) for unit maneuvering, screw trays (6) and inserts for lifting off unit pad. (7)

Service Valves (8) are rigidly mounted in the composite base with 3" between suction and discharge valves, 4" clearance below service valves and a minimum of 5" above the service valves, creating industry leading ease of installation. The minimum

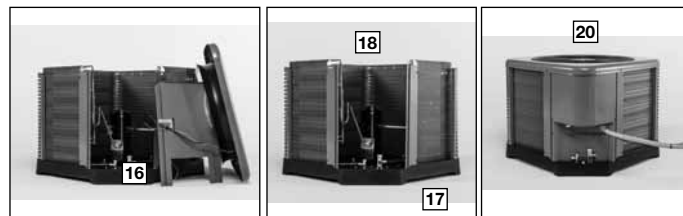


27 square-inches around the service valves allows ample room to remove service valve schrader prior to brazing, plenty of clearance for easy brazing of the suction and discharge lines to service valve outlets, easy access and hookup of low loss refrigerant gauges (9), and access to the service valve caps for opening.

Controls are accessed from the corner of the unit by removing only one fastener from the control access cover, revealing the industry's largest 15" wide and 22" tall control area (10). With all this room in the control area the high voltage electrical whip (11) can easily be inserted through the right size opening in the bottom of the control area. Routing it leads directly to lugs for connection. The low voltage control wires (12) are easily connected to the units VSODU terminal strip. The service window (14) can be removed by removing two screws, to access the EEV and view interior of unit. (15) (High and low pressure is standard on UP17 models).

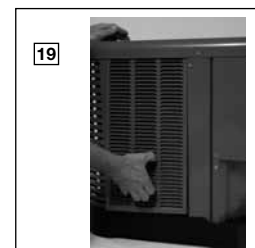


If in the rare event, greater access is needed to internal components, such as the compressor, the entire corner of the unit can be removed along with the top cover assembly to have unprecedented access to interior of the unit (16). Extra wire length is incorporated into each outdoor fan and compressor so top cover and control panel can be positioned next to the unit. Or with minimal effort the plug can be removed from the compressor and the outdoor fan wires can be removed from the VSODU to allow even more uncluttered access to the interior of the unit



(17). Outdoor coil heights range from as short as 35" to 45". Disassembly to this degree and complete reassembly only takes a first time service technician less than 10 minutes. (17)

All units utilize formed louver panels which provide industry leading coil protection. Louver removal for coil cleaning is accomplished by removing one screw and lifting the panel out of the composite base pan. (19) All UP17 units utilize single row coils (18) making cleaning easy and complete, restoring the performance of the air conditioner back to out of the box performance levels year after year.

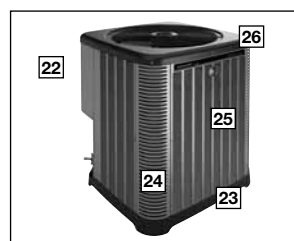


The outdoor fan motor has ball bearings and is inherently protected. The motor is totally enclosed for maximum protection from weather, dust and corrosion. (20) Access to the outdoor fan is made by removing four fasteners from the fan grille. The outdoor fan can be removed from the fan grille by removing 4 fasteners in the rare case outdoor fan motor fails.

Each cabinet has optimized composite (21) fan orifice assuring efficient and quiet airflow.



The entire cabinet has post powder paint (22) achieving 1000 hour salt spray rating, allowing the cabinet to retain its aesthetics throughout its life.



The Copeland Scroll™ Variable Speed compressors with standard internal pressure relief and internal thermal overload are used on all capacities assuring longevity of high efficient and quiet operation for the life of the product. All UP17 Heat Pump come standard with high and low pressure controls reinforced vinyl compressor sound covers containing a 1 1/2 inch thick batt of fiberglass insulation and open edges are sealed with a 1 inch wide hook and loop fastening tape for superior sound quality.

Features (con't.)

Each unit is shipped with filter drier for field installation and will trap any moisture or dirt that could contaminate the refrigerant system.



All cabinets have industry leading structural strength due to the composite base pan (23), interlocking corner post (24), formed curved louver panels (25) and drawn top cover (26) making it the most durable cabinet on the market today.

Each UP17 capacity has undergone rigorous psychometric testing to assure performance ratings of capacity, SEER, EER and HSPF per AHRI Standard 210/240 rating conditions. Also each unit bears the UL mark and each unit is certified to UL 1995 safety standards.



Each unit has undergone specific strain and modal testing to assure tubing (27) is outside the units natural frequency and that the suction and discharge lines connected to the compressor withstand any starting, steady state operation, or shut down forces imposed by the compressor.

All units have been sound tested in sound chamber to AHRI 270 rating conditions, and A-weighted Sound Power Level tables produced, assuring units have acceptable noise qualities (see page 12). Each unit has been ran in cooling operation at 95°F and 47°F and sound ratings for the UP17 range from as low as 67 dBA to 74.3 dBA.

All units have been ship tested to assure units meet stringent "over the road" shipping conditions.

As manufactured, all units in the UP17 family have cooling capability to 40°F. Addition of low ambient control will allow the unit to operate down to 0°F. Factory testing is performed on each unit. All component parts meet well defined specification and continually go through receiving inspections. Each component installed on a unit is scanned, assuring correct component utilization for a given unit capacity and voltage. All condenser coils are leak tested with pressurization test to 550#s and once installed and assembled, each units' complete refrigerant system is helium leak tested. All units are fully charged from the factory for up to 15 feet of piping. All units are factory run tested. The UP17 has a 10-year conditional unit replacement warranty (registration required) and a 10 year limited parts warranty.

Optional Accessories

(Refer to accessory chart for model #)

3"/6"/12"

- Gray high density polyethylene feet are available to raise unit off of mounting surface away from moisture

Accessories

EcoNet Control Center



UETST601SYS

The EcoNet Control Center serves as the hub of communication for a home's Heating, Cooling and Water Heating systems, and is required to operate an EcoNet Enabled Heating & Cooling system in a fully communicating mode.

WiFi Kit for Heating and Cooling Systems



REWRA630SYS

The WiFi kit is required to remotely operate EcoNet Enabled Heating and Cooling Systems from the EcoNet Web portal and mobile apps.

Heat Pumps

U	P	17	24	A	J	V	C	A	*
Brand	Product Category	SEER	Capacity BTU/HR	Major Series*	Voltage	Type	Controls	Minor Series**	Option Code
Ruud	P - Heat Pump	13 - 13 SEER	18 - 18,000 [5.28 kW]	A - 1st Design	J - 1ph, 208-230/60	1 - Single-stage	C - Communicating	A - 1st Design	N/A
		14 - 14 SEER	24 - 24,000 [7.03 kW]	B - 2nd Design	C - 3ph, 208-230/60	V - Inverter	N - Non-communicating		
		15 - 15 SEER	30 - 30,000 [8.79 kW]		D - 3ph, 460/60	P - Piston			
		17 - 17 SEER	36 - 36,000 [10.55 kW]						
		20 - 20 SEER	42 - 42,000 [12.31 kW]						
			48 - 48,000 [14.07 kW]						
			60 - 60,000 [17.58 kW]						

Air Conditioners (For Reference)

U	A	17	24	A	J	2	C	B	*
Brand	Product Category	SEER	Capacity BTU/HR [kW]	Major Series*	Voltage	Type	Controls	Minor Series**	Option Code
Ruud	A - Air Conditioners	13 - 13 SEER	18 - 18,000 [5.28 kW]	A - 1st Design	J - 1ph, 208-230/60	1 - Single-stage	C - Communicating	A - 1st Design	N/A
		14 - 14 SEER	24 - 24,000 [7.03 kW]		C - 3ph, 208-230/60	2 - Two-stage	N - Non-communicating		
		16 - 16 SEER	30 - 30,000 [8.79 kW]		D - 3ph, 460/60	V - Inverter			
		17 - 17 SEER	36 - 36,000 [10.55 kW]						
		20 - 20 SEER	42 - 42,000 [12.31 kW]						
			48 - 48,000 [14.07 kW]						
			60 - 60,000 [17.58 kW]						

Furnace Coils (For Reference)

R	C	E	24	17	S	E	A	M	C	A	*
Brand	Product Category	Type	Capacity BTU/HR	Width	Efficiency	Metering Device	Major Series*	Orientation	Casing	Minor Series**	Option Code
Ruud	C - Evap Coil	F - Furn Coil	24 - 24,000 [7.03 kW]	14 - 14"	S - Standard Eff.	T-TXV	A - 1st Design	M - Multi-poise	C - Cased	A - 1st Design	N/A
	H - Air-Handler Coil	H - Air-Handler Coil	36 - 36,000 [10.55 kW]	17 - 17.5"	M- Mid Eff.	E-EEV		U - Uncased			
			48 - 48,000 [14.07 kW]	21 - 21"	H- High Eff.	P-Piston					
			60 - 60,000 [17.58 kW]	24 - 24.5"							

[] Designates Metric Conversions