



# RZ series



## PACKAGED ROOFTOP UNITS AND OUTDOOR AIR HANDLING UNITS



45-240 tons



7,500-80,000 cfm

### Features:

- Air-cooled condenser or water-cooled condenser packaged rooftop units from 45-240 tons
- Evaporative condenser packaged rooftop units from 51-261 tons
- Water-source, geothermal and air-source heat pump options
- Chilled water or non-compressorized DX air handling units, from 7,500 - 80,000 cfm
- R-410A variable speed scroll compressors
- Double wall rigid polyurethane foam insulated cabinet construction
- Walk-in compressor and control service vestibule
- Unit access doors with full length hinges and lockable handles
- Direct drive welded air-foil plenum supply fans
- Blow-through and draw-through supply fan configurations
- Electric, steam, hot water, indirect fired gas, and direct fired gas heating
- Power exhaust and power return plenum fan options
- Factory installed AAONAIR sensible and total energy recovery wheels
- Humidity control features including return air bypass and modulating hot gas reheat
- Option boxes available with optional drain pan for field installed components
- **High Efficiency Final Filters including units with gas heat.**

Application Flexibility  
Minimizes Installation Time and Reduces Labor Cost

○ Up to 100% Outside Air

○ Dehumidification and Filtration Capabilities

○ Easy to Install and Service

○ Custom Quality Construction

# RZ series

## Rooftop/Air Handlers

AAON continuously strives to satisfy the dynamic industry requirement for large energy efficient packaged rooftop equipment. The RZ Series design incorporates the AAON long term commitment and dedication to excel as the premier manufacturer of rooftop equipment. RZ Series units are available in multiple configurations and include many standard features that make AAON synonymous with quality products for any application.



## Premium Efficiency

### Compressors

The RZ Series Packaged Rooftop Unit includes variable speed compressors as standard. Each interlaced evaporator coil includes one circuit with VFD variable speed compressor for consistent air temperature across the face of the coil at all operating conditions. During part load operation, reducing compressor capacity saves system operating costs. The variable speed compressors use inverter driven permanent magnet motors for down to 11% unit turndown on some models. IEER part load efficiencies for the RZ Series can be as high as 18.7.



#### Variable Speed Compressors

Provide consistent supply air temperature control, load matching cooling, and high part load efficiency.

### Supply Fans

The RZ Series offers supply fan arrays with up to 12 fans using high efficiency direct drive airfoil plenum fans with optional permanent magnet motors. In the past when greater airflows were required, the diameter of the single plenum fan was simply increased to meet the requirement. This resulted in higher tip speeds, which also meant higher sound levels. With the AAON RZ Series, greater airflow rates can be accomplished with multiple fans of smaller diameter, which inherently will be quieter than a single larger diameter fan. All the fans are also directly driven by the motor, which eliminates the drive belt assembly and associated maintenance.

#### Supply Fan Array

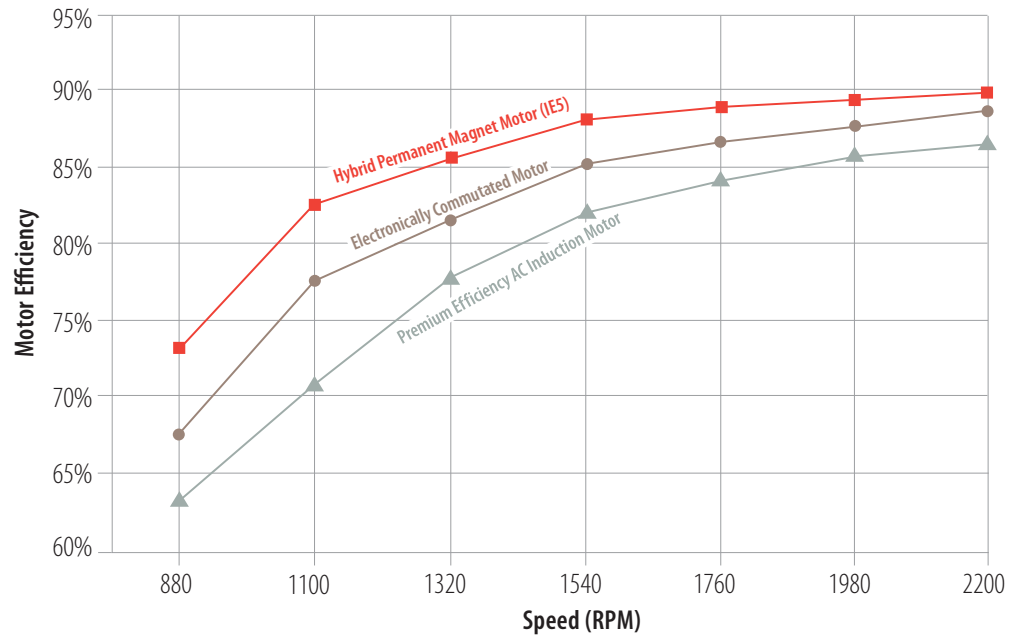
Provides quiet high efficiency operation with low maintenance and built-in redundancy. Backdraft dampers are available.



# The Benefits of Permanent Magnet Motor Technology versus AC Induction Motors

The RZ Series supply fan array is designed around new permanent magnet motor technology. These hybrid motors incorporate a synchronous reluctance rotor with permanent magnets to achieve an International Efficiency rating above IE5, which is the highest level of efficiency today. The example chart below shows that this Hybrid Permanent Magnet Motor has the highest efficiencies at all load conditions compared with the Electronically Commutated Motor (ECM)

and the Premium Efficiency Induction Motor. The advantages of the Hybrid Permanent Magnet Motor are even more significant at the lower fan speeds. Notice how much more efficient the Hybrid Permanent Magnet Motor is at reduced load (rpm) where variable air flow fans will operate during a majority of the time. Another advantage of this motor technology is it uses standard NEMA frames, which gives more flexibility for replacement than proprietary designs.



## Application Flexibility

AAON has always offered a large number of features on our products to allow for application flexibility. A pool application might require interior corrosion protection for the unit, e-coated coils, power exhaust, TEFC motors, phase and brown out protection, and modulating hot gas reheat for dehumidification control. A school application might require

additional fresh outside air so an energy recovery wheel can be added to temper the outside air and save energy. AAON RZ Series also includes an option box feature with different lengths and locations to allow even more flexibility. See the following for some other options available:

- Multiple methods of humidity control including: High Capacity Cooling Coils, Return Air Bypass, and Modulating Hot Gas Reheat Humidity Control, which provides precise dehumidification, even with low sensible heat loads, without the temperature swings common with on/off reheat systems.
- Multiple high efficiency filtration options, including pleated, cartridge, or bag type, with up to MERV 14 efficiency rating. HEPA filters available for applications that require it.
- Factory installed total and sensible AAONAIRE energy recovery wheels save cooling and heating dollars.
- Return fans are available for high return static applications.
- Factory installed, sensible or enthalpy controlled, AMCA Certified Class 2 low leakage gear driven economizer dampers allow for free cooling.
- LED Marine service lights for quick and convenient maintenance.
- Double pane viewing windows can be installed in all doors where viewing of operating equipment or interior cabinet is needed.
- Polymer e-coated coils are available to extend the life of the coils and protect them in corrosive environments.
- Interior corrosion protection option protects interior components of the unit in corrosive environments.
- Option boxes are segments of the unit that can be left empty from the factory so that components may be installed in the field without the trouble of installation and service in a crowded cabinet. The option box can be selected with or without drain pan.
- And many more selectable factory installed options to meet nearly any application's needs.



# RZ Series Features



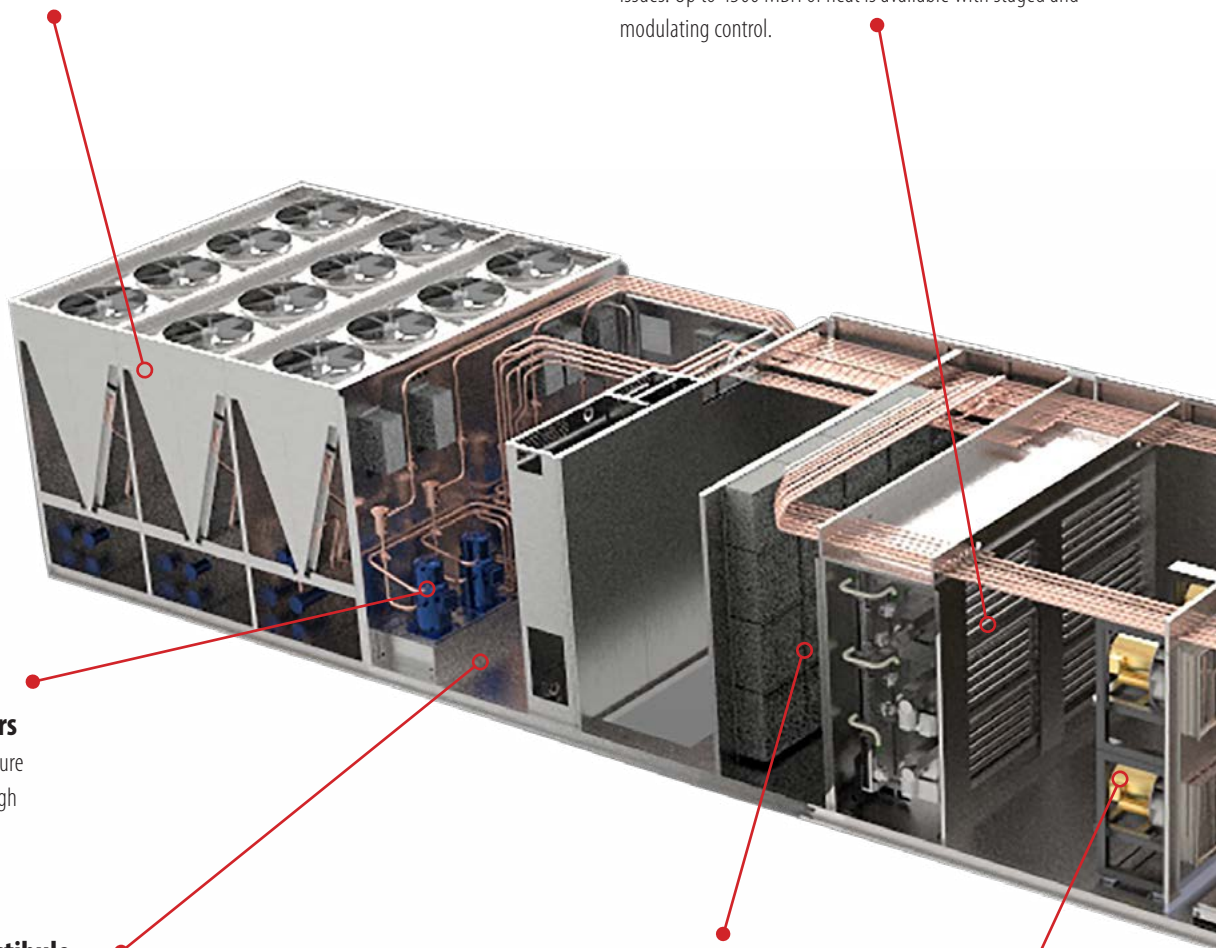
## Microchannel Air-Cooled Condenser Coils

Microchannel condenser coils are more efficient, lighter, and use less refrigerant than traditional fin and tube condenser coils.



## Gas Heat

Heat exchangers are constructed from 304 stainless steel with a dimpled heat exchanger design that eliminates the need for internal turbulators, maximizing efficiency and reducing service issues. Up to 4500 MBH of heat is available with staged and modulating control.



## Variable Speed Compressors

Provide consistent supply air temperature control, load matching cooling, and high part load efficiency.

## Walk-In Service Vestibule

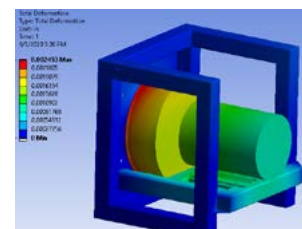
The walk-in service vestibule provides shelter for the maintenance and service personnel while startup and periodic maintenance is performed on the unit. Lighting is furnished in the compartment, controlled by a light switch at the door, convenience outlet can be provided, and the vestibule can be heated for comfort.

## Final Filters with Gas Heat

Final filters are available with up to MERV 14 media, including units with gas heat.

## Supply Fan Array Design

State-of-the-art computer simulations and laboratory testing were utilized to design motor mount frames with minimal vibration and sound. Each fan module is built on a dedicated assembly line with auto laser cutting and robot welding for a consistent, high quality product. Fan modules are powder coated for corrosion protection.



## Superior Features

- Variable speed scroll compressors are standard for load matching cooling and high part load efficiency. Variable speed circuits cover the full-face area of the evaporator coil for consistent control.
- Aluminum tread plate floor covering within the vestibule for improved durability and safety.
- Selectable number of draw-through or blow-through direct drive backward airfoil curved plenum fans allows design flexibility for quieter applications and redundancy for applications where unit up time is critical.
- Corrosion resistant polyurethane paint exceeds a 2,500-hour salt spray test.
- Refrigerant circuits are provided with removable core filter driers with isolation valves for ease of service; no need to cut the refrigerant line as is done with brazed in filters.
- Unit specific color-coded wiring diagrams are laminated and permanently affixed inside the control compartment for ease of service.
- Compressor isolation valves are standard for improved service efficiency.
- 5 year non-prorated compressor warranty.



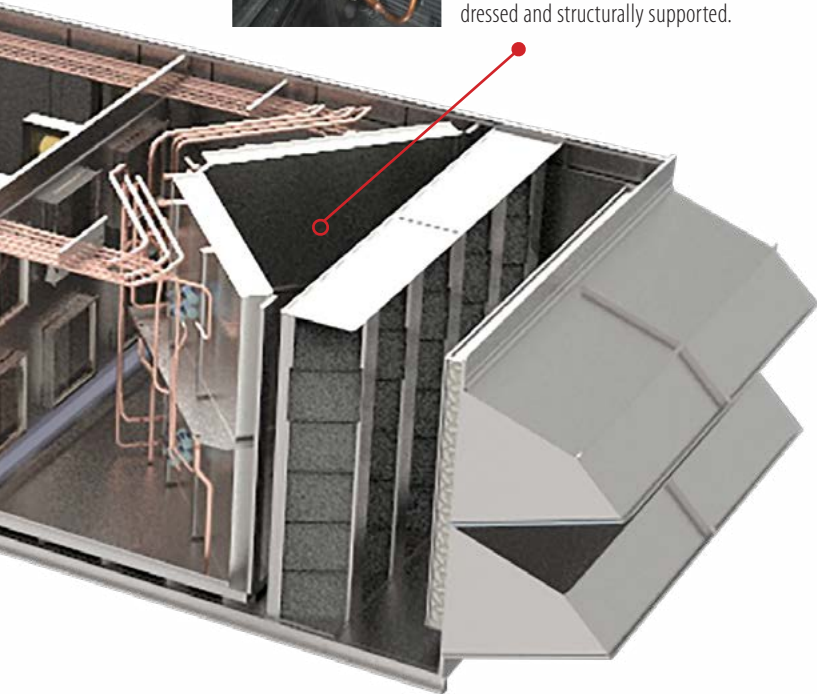
### Optional Exhaust and Return Fans

Plenum power exhaust and return fans are directly driven by the motor.



### Evaporator Coils

Each evaporator coil circuit has an electronic expansion valve. Variable speed circuits cover the full-face area of the evaporator coil for consistent air temperatures. Double sloped stainless steel drain pan is provided for positive drainage. Intermediate drain pans are provided on units with upper and lower coils. Tubing is dressed and structurally supported.



### AAONAIR® Energy Recovery Wheel

This energy recovery ventilation option can be provided in all model sizes allowing reduced equipment size and operating cost savings while pre-conditioning the outside air being introduced into the conditioned space.



### Service Access Doors

Walk-in hinged access doors with lockable handles for easy servicing of all sections of the unit with optional view port windows.



### Double Wall Rigid Polyurethane Foam Panel Construction

AAON two-inch wall panel has a thermal resistance of R-13 and includes thermal breaks to reduce heat transfer through the cabinet. The double-wall panel construction dampens radiated compressor and fan sound and inhibits microbial growth, supporting indoor air quality.



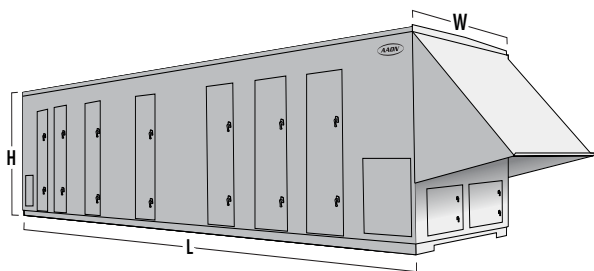
### Economizer

Factory installed, sensible or enthalpy controlled AMCA certified Class 2 low leakage gear driven dampers allow for free cooling and indoor air quality control.

# Air-Cooled, Water-Cooled, or Evaporative Condensers

RZ Model (Nominal Capacity, tons)		Compressor Type	Compressors / Circuits	Width	Height	Length
Air-Cooled Condenser	Evaporative Condenser					
045	051	(2) R-410A Variable Speed Scroll	4/3	100	104	Length varies depending on options selected.
055	066					
065	073					
075	079					
090	101					
105	109					
120	124					
130	136					
140	148	(1) Tandem R-410A Scroll	8/6	142		
145	161					
160	172					
180	197					
200	221					
220	241					
240	261					
					(4) R-410A Variable Speed Scroll	
		(2) Tandem R-410A Scroll				

All dimensions are in inches.



## Air-Cooled Condensing

Microchannel condenser coils are more efficient due to their enhanced heat transfer. They are also up to 60 percent lighter and use less refrigerant than traditional fin and tube coils. All condenser coils are designed for at least 10°F of refrigerant sub-cooling. VFD is factory installed on the condenser fans for head pressure control and greater operating temperature range, as well as to provide reduced sound levels at off design ambient temperatures. All condenser fans are direct drive, axial flow propeller type, and discharge vertically.

## Air-Handling Units

The RZ Series also fits the job when units are required without compressors. The unit will be built without a condensing section and walk-in compressor and control vestibule. All other features and options are readily available. Air handling units may include the following options:

- Supplied with a DX coil and expansion valves.
- Supplied with a chilled water coil in 4, 6, or 8 rows.
- The unit may be specified with any of the heating options to provide a year-round rooftop heating and cooling package.

## Evaporative Condenser

These units deliver both outstanding energy efficiency and significant operational cost savings when compared to air-cooled designs. Energy cost reduction can be 20% to 40% annually depend on application and geographic location. Locations that commonly require a central chiller and cooling tower are primary locations for application of the evaporative condenser RZ Series rooftop unit.

Factory installed AAON evaporative condenser, with air-cooled desuperheater and low sound ECM driven variable speed condenser fans, can use 22-100% less water than a conventional evaporative condenser, and require 22-100% less chemical usage than a conventional evaporative condenser. Interior of evaporative condenser is constructed of 304 stainless steel and other non-corrosive materials. Desuperheater coils include polymer e-coating for corrosion protection.

## Water-Cooled Condensing

Highly energy efficient water-cooled units are of particular application value when cooling tower water is available. The standard water-cooled RZ Series units include these features:

- Shell and tube refrigerant-to-water heat exchangers.
- Each heat exchanger is provided with a removable and cleanable type basket filter.
- Heat exchanger piping connections are made within the condensing section of the roof top unit.

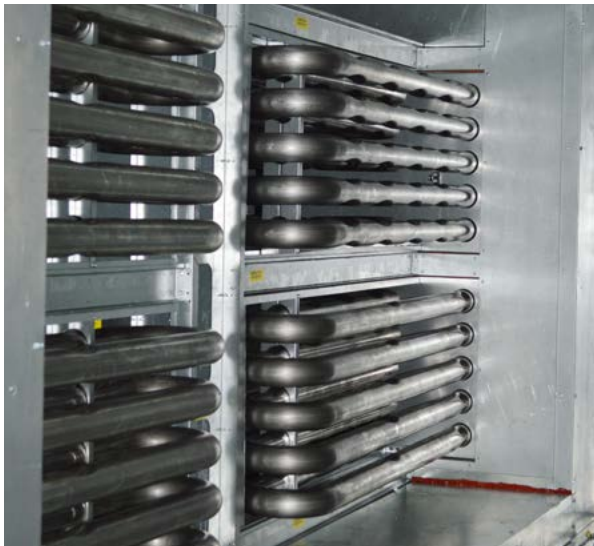
## Fan Selection

The RZ Series can be configured as either a draw-through or blow-through arrangement with supply or return fans. The supply blower assemblies are direct drive, unhooded, single inlet, single width, fans. AAON ECat selection software easily allows selection for constant or variable air flow applications. The software determines the most efficient alternatives for the application as a function of fan quantity, fan diameter, fan blade width, and rpm.

Inlet and outlet sound ratings are provided for each combination of fans and unit inlet and outlet sound ratings are determined for the overall unit configuration. Multiple fans can provide improved reliability, greater efficiency, lower sound levels, and greater service options.

## Gas Heat

All 304 stainless steel design construction assures dependable, long term functionality. Through elimination of the need for internal turbulators, this unique design reduces service issues, and increases capacity and efficiency. Individual RZ Series gas heat exchanger modules are designed for 350 MBH and 400 MBH input rates and can be configured for up to a 4500 MBH total gas input rating on the largest cabinet size. High turn-down modulating gas heat provides greater fuel efficiency and improved occupancy comfort. Final filters are allowable on the RZ Series gas heat units.



## Hot Water or Steam Preheat Coils

When jobsite conditions require, coils are available to precondition the outside air. 1 or 2 row hot water or steam coils may be supplied to match the system requirements.

## Electric Heat

Electric resistance heating elements are open type with low watt density nickel chromium. The heating modules are 40 kW with individual circuit fusing and a manually reset high temperature limit switch. SCR (Silicon Controlled Rectifier) electric heat control for supply air temperature control reduced power consumption, longer heater life and improved occupant comfort.



## Hot Water and Steam Heat Coils

Hot water and steam coils are available in 1 or 2 row configurations with multiple different face areas to meet job requirements.



# AAON Environmentally Friendly HVAC Product Family

<p><b>Outdoor Air Handling Units</b> (800 - 80,000 + cfm)</p>  <p>RQ Series    RN Series    RZ Series</p>	<p><b>Self-Contained Units</b> (3-70 tons)</p>  <p>SB Series    SA Series    M2 Series</p>	<p><b>Chiller and Packaged Outdoor Mechanical Rooms</b> (4-478 tons)</p>  <p>LF Series    LN Series    LZ Series</p>
<p><b>Water-Source Heat Pumps</b> (½ - 230 tons)</p>  <p>WH Series &amp; WV Series    RQ Series    RN Series SB Series    SA Series    RZ Series    M2 Series</p>	<p><b>Indoor Air Handling Units</b> (800 - 50,000 + cfm)</p>  <p>F1 Series    H3 Series    V3 Series SA Series    M2 Series</p>	<p><b>Condensing Units</b> (2-70 tons)</p>  <p>CB Series    CF Series</p> <p><b>Packaged Rooftop Units</b> (2-240 tons)</p>  <p>RQ Series    RN Series    RZ Series</p>
<p><b>Coils</b> BOOSTER, HYDRONIC, and DX</p> 	<p><b>Controls</b> (WSHP, RTU, SELF-CONTAINED, SPLIT SYSTEM, &amp; CHILLER)</p> 	

## HEATING AND COOLING FOR...

- Auditoriums
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- Schools
- Supermarkets



2425 S. Yukon Ave.  
Tulsa, OK 74107-2728  
[www.AAON.com](http://www.AAON.com)

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