

RN Series

Packaged Rooftop Units
6-140 Tons



Air-Source Heat Pumps

Water-Source/Geothermal Heat Pumps

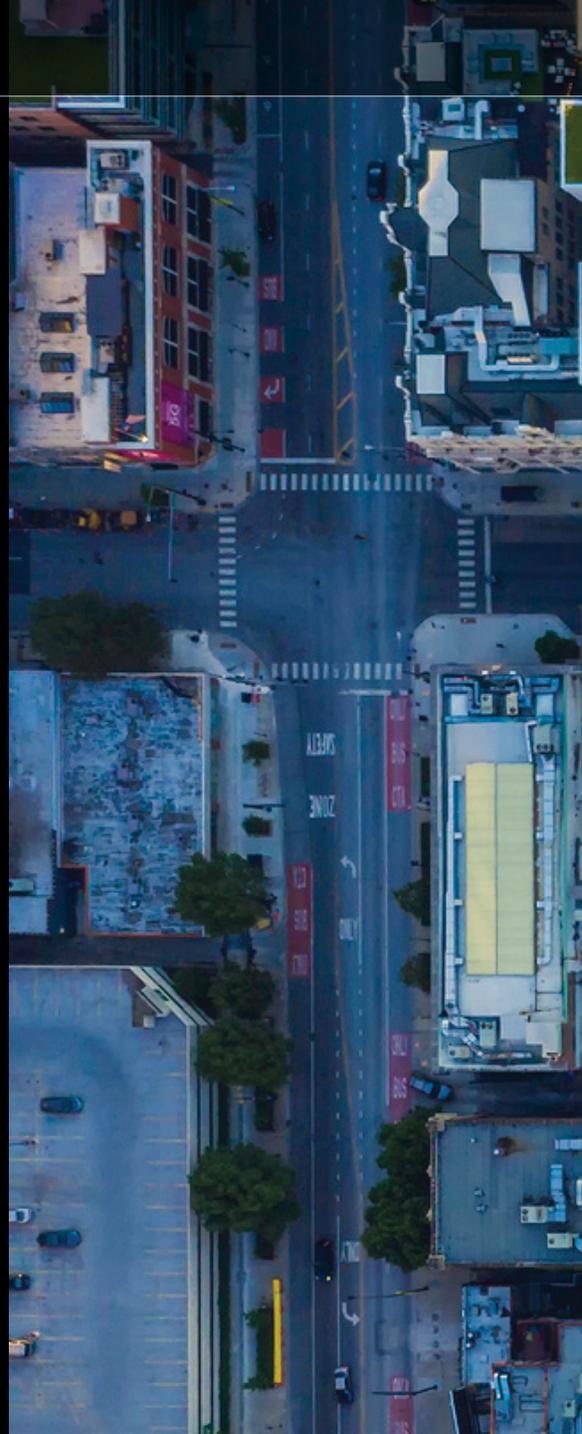
Outdoor Air Handling Units

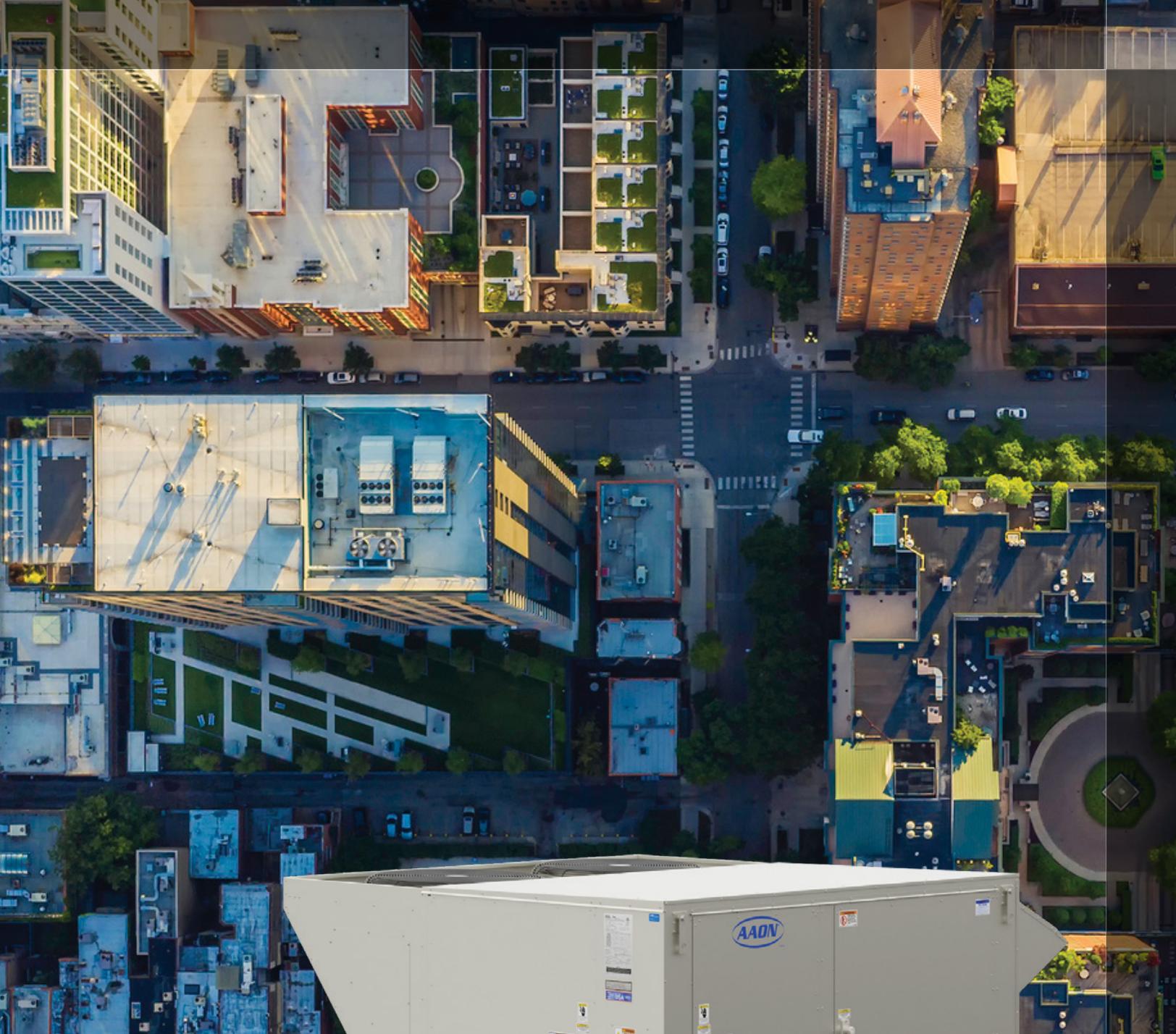




RN Series

AAON RN Series rooftop units continue to lead the packaged rooftop equipment industry in performance and serviceability. Double wall rigid polyurethane foam-injected cabinet panel construction and Direct Drive Backward Curved Plenum Fans allow RN Series units to have quiet, energy-efficient airflow with high static pressure capabilities.





6-140 Tons

AAOV sets the standard for commercial packaged rooftop units in performance, serviceability, and long-term value.



Standard Features

- Air-cooled or water-cooled condenser with unit capacities from 6–140 tons
- Available as a chilled water, or non-compressorized DX air handling unit from 900–42,000 cfm
- Air-source, water-source, and geothermal heat pump options
- Scroll compressor technology: two, four, five, or six cooling stages for enhanced energy efficiency and precise temperature control
- Variable capacity and variable speed scroll compressors for load matching cooling and improved part load efficiency
- Electric, gas, steam, or hot water heating design for application flexibility
- AMCA certified and labeled low leakage economizer dampers utilize outdoor air for cooling under certain conditions
- Direct drive backward curved plenum fans
- Power exhaust and power return options with economizer
- Double wall rigid polyurethane foam-injected panel construction with a minimum of R-13 value
- Access doors with full-length stainless steel piano hinges and quarter-turn, lockable handles
- Double sloped stainless steel drain pans for effective drainage and prevention of standing water that can lead to corrosion and bacterial growth
- Corrosion resistant polyurethane paint exceeds a 2,500 hour salt spray test
- Compressors and unit controls are contained within a compartment isolated from the airstream for ease of service and reduced radiated sound
- Microchannel condenser coils and reheat coils provide durability and efficiency and are standard on all air-cooled condenser rooftop units
- Run test report, wiring diagram, and Installation, Operation, and Maintenance manual with startup provided with every unit
- Standard five year non-prorated compressor warranty, 15 year non-prorated, aluminized steel gas heat exchanger warranty, and 25 year non-prorated stainless steel gas heat exchanger warranty



Direct Drive Backward Curved Plenum Fans are more energy efficient, quieter, and require less maintenance than belt driven fans. VFD controlled and ECM driven supply, exhaust, and return fans are available for precise airflow control, building pressure control, and reduced power consumption.

Construction and Serviceability

DURABLE, ENERGY-EFFICIENT DESIGN

Double wall construction using closed cell polyurethane foam insulation with G90 galvanized steel walls instead of fiberglass insulation, which can be harmful to indoor air quality. With an insulation R-Value of 13, it creates a more rigid and durable assembly with less unwanted heat transfer.

ACCESSIBLE CABINET DOORS

Access doors with full-length stainless steel piano hinges and quarter-turn, lockable handles provide improved reliability over single point hinges and make the unit easily serviceable.

STREAMLINED SERVICEABILITY

AAON equipment prioritizes efficient serviceability, reducing downtime and costs. Easily accessible compressors, control components, color-coded wiring diagrams, and labeled components minimize delays in evaluating service issues. This AAON standard feature ensures low service costs and maximizes unit run time.

INCREASED THERMAL RESISTANCE

Double wall rigid polyurethane foam-injected cabinet panel increases thermal resistance, reduces air leakage, and attenuates radiated sound. Thermal break reduces heat transfer between interior and exterior metal cabinet walls.

Thermal break



AAON equipment is service friendly with color coded wiring diagrams, heavy duty access doors and handles, and easy access to components.



Configurability

PRECISE HUMIDITY CONTROL

Optional six row high capacity coils allow for maximum dehumidification instead of standard cooling coils. With options such as return air bypass, and modulating hot gas reheat, space humidity levels can be accurately controlled.

CONFIGURABLE AIR HANDLING UNIT

AAON RN Series rooftop units can be set up as an air handling unit with chilled water or hot water coils. Gas, electric, and steam are also options for heating control. These units can be paired with a remote condensing unit set up in a different location.

VARIABLE CAPACITY TECHNOLOGY

A single zone VAV system utilizes variable capacity or variable speed compressor technology as well as modulating VFD controlled supply fans to accurately control the cooling and humidity levels within the space. This is a great option for applications with varying sensible and latent loads.

ENHANCED AIRFLOW AND AIR QUALITY

Improve airflow and air quality by selecting a unit with makeup air capabilities and low leakage AAON economizers, allowing up to 100% outside air. This can be achieved with the use of AAON low leakage economizers. Add modulating reheat to make the unit DOAS certified, providing accurate humidity control for the space.

HIGH AND LOW AMBIENT OPERATION

With premium design, construction, and testing, AAON RN Series can be rated to operate up to 125°F (52°C) ambient and down to 0°F (-18°C).



75–140 tons



9–15 tons

RN Series meets capacities from 6–140 tons.

Options

- Variable speed air-source heat pump for efficiency non-fossil fuel heating down to 0°F ambient and omni-climate performance
- Factory installed AAONAIRE® total and sensible energy recovery wheels for pre-conditioning air, reducing the heating and cooling loads
- Humidity control options include: High Capacity Coils, Modulating Hot Gas Reheat, and Return Air Bypass
- Multiple high efficiency air filtration options for improved indoor air quality by reducing airborne allergens and pollutants
- Low sound air-cooled condenser fans engineered for peak performance and a quiet operation
- Chilled water cooling coils allow unit to tie into new or existing chilled water system
- Hot water or steam heating coils allow unit to tie into new or existing boiler system
- Polymer e-coated coils for corrosion protection
- Modulating gas heat with stainless steel heat exchanger for improved energy efficiency and enhanced durability
- SCR (Silicon Controlled Rectifier) electric heat control for reduced power consumption, longer heater life, and improved occupant comfort
- VFD controlled or ECM driven condenser fans for energy savings and refrigerant head pressure control
- Power exhaust and power return fans with economizer for application flexibility
- Horizontal configuration is available for a solution for applications that require horizontal ductwork
- 115V convenience outlet option available
- Metal mesh pre-filters to prevent moisture carry over
- Phase and Brownout for protection against voltage imbalance
- Controls section service lights for easier maintenance
- Shrink wrap and export crating available for protective shipping
- Different paint color options available for unit customization
- Return and supply side firestat and smoke detector options for additional safety
- Additional customization is available by request for further flexibility in design



26-70 tons



6-10 tons

Low GWP Refrigerant

AAON selected R-454B, a sub 500 GWP refrigerant, to drive the industry towards a cleaner and more sustainable future.

AIM ACT COMPLIANT

The AIM Act of 2020 empowered the U.S. Environmental Protection Agency to manage Hydrofluorocarbons (HFCs) and regulate refrigerants based on global warming potential (GWP). GWP was developed to compare refrigerants' impact on global warming. The final ruling mandating all new air conditioners to use refrigerants with a GWP below 700 is anticipated to begin January 1, 2025.

AAON thoroughly researched and tested low GWP refrigerants and selected R-454B for its similarity to R-410A in capacity and properties, requiring less product redesign. With a GWP of 466, R-454B is well below the upcoming regulation limits.



Heat Pumps

The RN Series units offer efficient cooling and heating capabilities with the heat pump option. By reversing the refrigeration circuits, the heat pump provides heating without the need for gas or electric heat, eliminating fossil fuel usage. With potential cost savings compared to gas heating systems the RN is available as an air-source, water-source, or geothermal heat pump.

AIR-SOURCE HEAT PUMP

Air-source heat pumps use the combination outdoor air ambient conditions and indoor space conditions to remove or supply the load desired for comfortable indoor conditions while operating efficiently at all temperatures without the need for a water loop.

WATER-SOURCE HEAT PUMP

Water-source heat pumps work in a similar way as geothermal heat pumps except this type of unit utilizes a cooling tower and boiler system. A typical WSHHP application is a multistory building or large campus.

GEOHERMAL HEAT PUMP

Geothermal heat pumps use underground pipes and water flow to transfer heat between the building and the earth, leveraging the stable ground temperature ranging from 45°F to 75°F. This method provides efficient heating in the winter and cooling in the summer. Ground water heat pumps utilize bodies of water for heat transfer with the refrigerant.







Factory installed AAONNAIRE® energy recovery wheel saves heating and cooling energy. Slide-out wheel allows for quick and easy maintenance.



Indoor Air Quality

The quality of air inside a building impacts the health and cognition of those inside. AAON standard design and rooftop equipment options improve indoor air quality.

OUTSIDE AIR BYPASS

Allowing outside entering air provides better ventilation airflow and full economizer operation. Bypass dampers can also be used for defrosting the heat exchanger.

UV LIGHTS

UV light options are available factory installed and can be used to inactivate pathogens in the airstream of an air handling unit.

AAONNAIRE® ENERGY RECOVERY WHEEL

Sensible only or enthalpy energy recovery wheels can be used to pre-condition the outside air which can greatly improve energy savings and reduce unit operation cost, especially on makeup air units. Energy recovery wheels are offered as polymer or aluminum construction with removable segments for quick cleaning.

OUTDOOR AIR VENTILATION

Bringing fresh outside air into a building helps flush out infectious aerosols and reduces CO₂ levels in the space. High capacity cooling coils are available to handle the higher latent load of outside air. Research has shown that some viruses are rendered inactive on surfaces when the ambient relative humidity was between 40%–60%.

FILTRATION

ASHRAE recommends using a minimum of MERV 13 filter to trap viruses more effectively. This option is available on all sizes of rooftop equipment and the standard backward curved supply fans are capable of handling the additional static pressure associated with the higher quality filtration. AAON offers up to MERV 14 pleated air filters.



Precision Cooling and Heating Control

RN Series units have the options of using staged, variable capacity, or variable speed compressors, depending on the cabinet size and application. Modulating compressors allow precise and efficient cooling control. Gas and electric heat can be staged or modulating to provide precise heating control.

TWO-STEP COMPRESSORS

Two-step compressors allow for improved part load efficiency with simple staged control and are available on select RN units. Unit IEER can be optimized without requiring complex refrigeration and DDC controls, reducing operating costs and maintenance costs.

VARIABLE CAPACITY (DIGITAL) COMPRESSORS

Variable capacity compressors allow for a wide range of capacity control (10%–100%) for improved part load efficiency with simple controls.

VARIABLE SPEED COMPRESSORS

Variable speed compressors are quiet in operation and provide load matching cooling and the highest efficiency ratings when operating at part load conditions. Refrigeration controls are built-in to the AAON equipment to protect the compressors and optimize the efficiency for single or multi-zone VAV and Makeup Air applications.

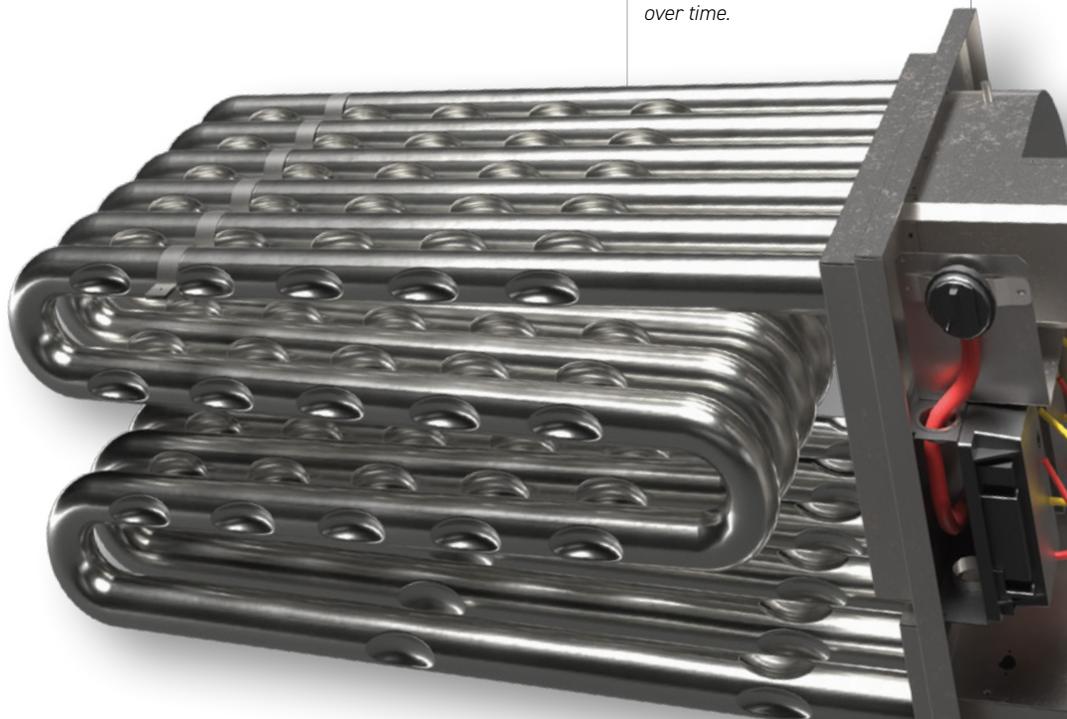
INTERLACED COIL CONFIGURATION

A two circuit system allows for excellent turndown and better part load efficiencies than four circuits. In variable speed and variable capacity compressor units, the first circuit is variable capacity and feeds the entire face of the evaporator coil for even cooling distribution of the supply air. The second circuit compressors are also interlaced and provide additional capacity when needed. First and second circuit may include individual or tandem compressors, depending on the unit size.

PRECISION HEATING CONTROL

AAON uses patented dimpled stainless steel or aluminized heat exchangers. Staging can be set up for on/off, two stage, four stage, modulating, or high turndown. Modulating gas heat provides greater fuel efficiency, longer heater life, and improved occupancy comfort. SCR controlled electric heat strips can be used for precise heating control without the need for gas piping.

Dimpled heat exchanger provides energy efficient heat transfer and has no internal turbulator, which can corrode over time.





Provides a single circuit system with two-step, variable capacity, or variable speed compressor configurations. Can produce up to 210,000 Btu of heating capacity with modulating or staged control.

**Dimensions vary depending on options selected. All dimensions are in inches. Design cfm may be 30-50% greater or less than nominal cfm.*

A-Cabinet

Capacity	6-10 tons	
Configuration	Vertical	
Air-Cooled IEER	Up to 22.5	
Air-Cooled EER	Up to 13.2	
Nominal cfm	RN-006	2,000
	RN-007	2,500
	RN-008	2,650
	RN-010	3,000
Dimensions*	W: 79, H: 44, L: 82	



Allows for up to a two circuit system with compressor options of a single two-step, a variable capacity + two step compressor, or a variable speed compressor. Can provide up to 390,000 Btu of heating capacity with modulating or staged control.

**Dimensions vary depending on options selected. All dimensions are in inches. Design cfm may be 30-50% greater or less than nominal cfm.*

B-Cabinet

Capacity	9-15 tons	
Configuration	Vertical	
Air-Cooled IEER	Up to 19.9	
Air-Cooled EER	Up to 13.9	
Nominal cfm	RN-009	3,400
	RN-011	3,600
	RN-013	3,800
	RN-015	4,200
Dimensions*	W: 96, H: 50, L: 88	



Can be configured as a vertical or horizontal intake and discharge configuration. A unique option is the ability to utilize a power return fan. Additional options include power return fan and final filtration for specific applications.

**Dimensions vary depending on options selected. All dimensions are in inches. Design cfm may be 30-50% greater or less than nominal cfm.*

C-Cabinet

Capacity	14-30 tons	
Configuration	Vertical	
Air-Cooled IEER	Up to 22.5	
Air-Cooled EER	Up to 12.5	
Nominal cfm	RN-014	5,200
	RN-016	6,400
	RN-018	6,800
	RN-020	7,000
	RN-025	9,000
	RN-030	10,500
Dimensions*	W: 101, H: 60, L: 110	

C-Cabinet Horizontal

Capacity	11–30 tons	
Configuration	Horizontal	
Air-Cooled IEER	Up to 22.5	
Air-Cooled EER	Up to 12.5	
Nominal cfm	RN-011	3,600
	RN-013	3,800
	RN-016	6,400
	RN-018	6,800
	RN-020	7,000
	RN-025	9,000
RN-030	10,500	
Dimensions*	W: 101, H: 60, L: 138	



The horizontal configuration provides a solution for applications that require horizontal ductwork and eliminates the need for special supply and return curbs. Horizontal units can be placed on the ground and ducted up into a building, such as a warehouse.

**Dimensions vary depending on options selected. All dimensions are in inches. Design cfm may be 30–50% greater or less than nominal cfm.*

D-Cabinet

Capacity	26–70 tons	
Configuration	Vertical	
Air-Cooled IEER	Up to 19.6	
Air-Cooled EER	Up to 11.7	
Nominal cfm	RN-026	10,000
	RN-031	12,400
	RN-040	16,000
	RN-050	20,000
	RN-060	23,000
	RN-070	25,000
Dimensions*	W: 100, H: 102, L: 161	



Stands out with its four refrigeration circuits and interlaced evaporator coil design. Precise cooling control is offered with variable speed, on/off, or two-step compressors.

**Dimensions vary depending on options selected. All dimensions are in inches. Design cfm may be 30–50% greater or less than nominal cfm.*

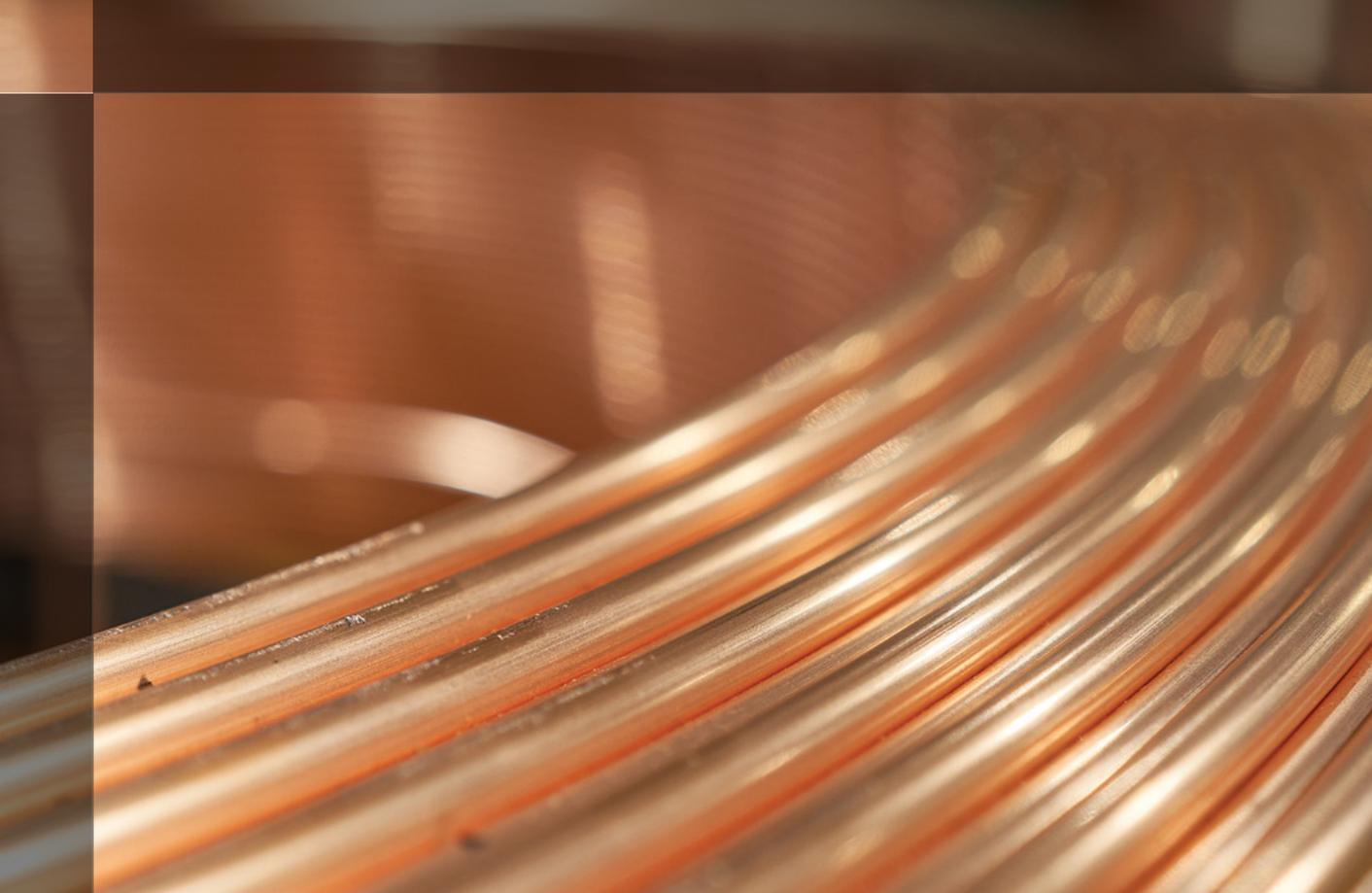
E-Cabinet

Capacity	75–140 tons	
Configuration	Vertical	
Air-Cooled IEER	Up to 18.4	
Air-Cooled EER	Up to 11.0	
Nominal cfm	RN-075	18,000
	RN-090	22,000
	RN-105	24,000
	RN-120	29,500
	RN-130	32,000
	RN-140	33,000
Dimensions*	W: 142, H: 105, L: 292	



Designed for larger applications that utilize variable speed and tandem on/off compressors for precise control. The utilization of microchannel condenser coils ensures peak efficiency, resulting in optimal performance.

**Dimensions vary depending on options selected. All dimensions are in inches. Design cfm may be 30–50% greater or less than nominal cfm.*



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