

# High Efficiency Packaged Rooftop Units

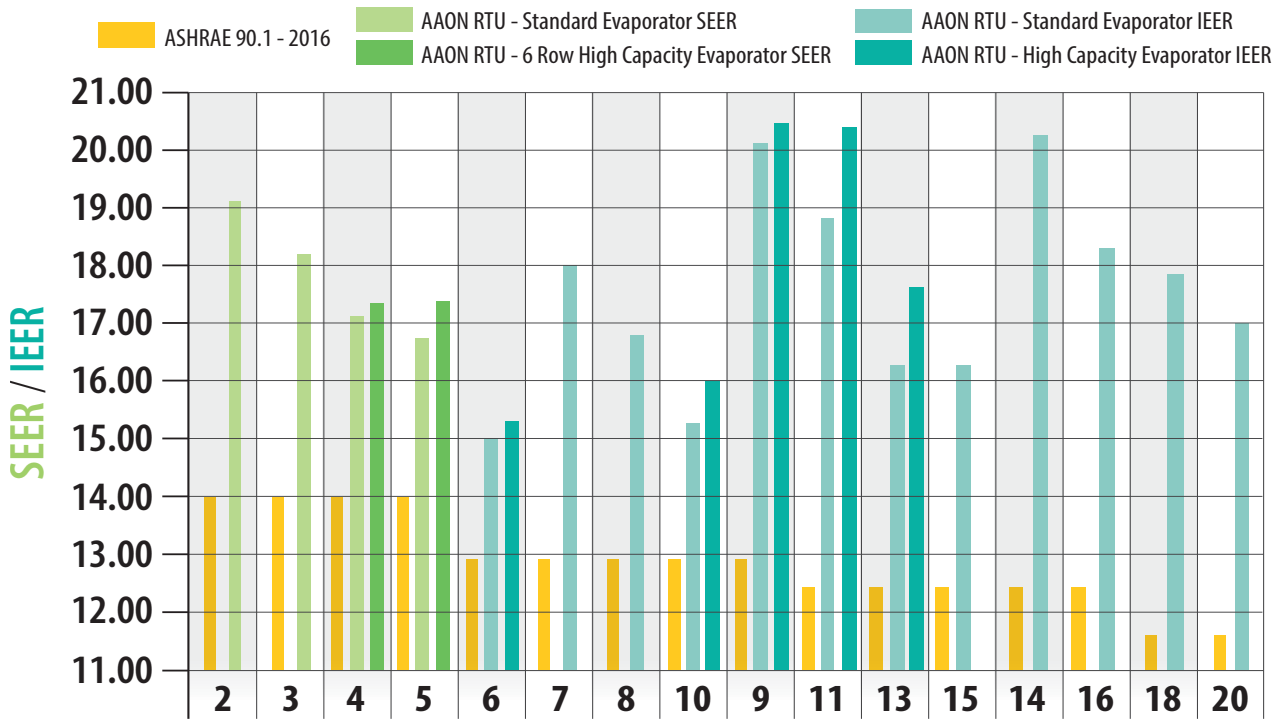
---

Up to 20.5 IEER

AHRI Certified Performance



# High Efficiency Two-Stage Compressor Packaged Rooftop Unit Efficiency



Packaged Rooftop Unit Performance  
High-Efficiency Two-Stage Compressor

Unit ID	Unit Size (tons)	Compressors	Unit Capacity Stages	ASHRAE 90.1 - 2016	AAON Two-Stage Compressor RTU	AAON RTU - 6-Row High Capacity Evaporator
RQ-002	2	1	2	14.00 SEER	19.15 SEER	
RQ-003	3	1	2	14.00 SEER	18.20 SEER	
RQ-004	4	1	2	14.00 SEER	17.10 SEER	17.40 SEER
RQ-005	5	1	2	14.00 SEER	16.75 SEER	17.45 SEER
RQ-006	6	1	2	12.90 IEER	15.00 IEER	15.30 IEER
RN-007	7	1	2	12.90 IEER	18.00 IEER	TBD
RN-008	8	1	2	12.90 IEER	16.60 IEER	TBD
RN-010	10	1	2	12.90 IEER	15.30 IEER	16.00 IEER
RN-009	9	2	2	12.90 IEER	20.10 IEER	20.50 IEER
RN-011	9	2	5	12.90 IEER	18.80 IEER	20.40 IEER
RN-013	13	2	5	12.40 IEER	16.30 IEER	17.60 IEER
RN-015	15	2	5	12.40 IEER	16.30 IEER	TBD
RN-014	14	2	5	12.40 IEER	20.20 IEER	TBD
RN-016	16	2	5	12.40 IEER	18.30 IEER	TBD
RN-018	18	2	5	11.60 IEER	17.90 IEER	TBD
RN-020	20	2	5	11.60 IEER	17.00 IEER	TBD

460V/3ph Two-Stage Compressor units without heat.  
Preliminary estimates subject to change. Not released to commerce.

AHRI Certified Preliminary Estimates

Unit Capacity Stages with a Single Two-Stage Compressor		
	1	2
Compressor 1/ Total Unit	67%	100%

Unit Capacity Stages with Dual Two-stage Compressors					
	1	2	3	4	5
Compressor 1	67%	100%	67%	100%	100%
Compressor 2	0%	0%	67%	67%	100%
Total Unit	33.5%	50%	67%	83.5%	100%

## Packaged Rooftop Unit Compressor Technologies On/Off Scroll - Low Cost

Standard on/off scroll compressors provide high full load efficiencies (EER), but cannot provide high part load efficiencies (SEER/IEER) or precise control because of limited capacity staging.

## Variable Capacity Scroll - Simple Precise Control, Efficiency (Improved IEER), Economical Solution

Digital Scroll, or 10-100% variable capacity scroll compressors, provide a wide range of precise modulation capabilities allowing for energy saving Variable Air Volume (VAV) and Single Zone VAV operation. However, variable capacity compressors require a control system to optimize energy efficient operation of the unit.

## Variable Speed Scroll - Precise Control, High Efficiency (Highest IEER), Premium Cost

Variable speed scroll compressors also provide precise modulation capabilities. However, they require very sophisticated controls and the additional costs of an inverter and electronic expansion valve.

## Two-Stage Scroll - Best Value with High Efficiency (High IEER), Simple Control, Economical Solution

Two-stage scroll compressors provide the simplicity of the staged capacity control with the high part load efficiencies of variable capacity compressor systems. The use of dual two-stage compressors includes up to five simple stages of capacity control, which is satisfactory capacity control for most applications.

# High Efficiency Two-Stage Compressor Packaged Rooftop Unit

## Features and Benefits

### High Efficiency Packaged Rooftop Unit Requirements

- High Efficiency Cooling (SEER/IEER)
- Simple System Control
- Easy to Service and Maintain
- Cabinet with High R-Value Insulation
- Low Air Leakage Rigid Cabinet
- Superior Cabinet Door Gasket
- AMCA Certified Low Leakage Dampers

### Operational and Energy Savings

- Two-stage scroll compressors allow for multi-stage unit capacity control and high SEER/IEER.
  - Two stage capacity control for a single two-stage compressor unit.
  - Five stage capacity control for a dual two-stage compressor unit.
- Variable speed condenser fans in conjunction with two-stage scroll compressors reduce energy use during reduced capacity or ambient conditions, which will result in reduced radiated sound.
- Two-stage compressors allow the use of standard thermal expansion valves.
- Four stages of heating control to match the application requirements.
- AAON high efficiency two-stage scroll compressor systems do not require a complicated control system.
- AAON Touchscreen Controller is capable of controlling the features and options of the job application.

### Energy Saving Construction

- Cabinet construction consists of two inch rigid polyurethane foam panels with G90 galvanized steel on both sides and a closed cell polyurethane foam interior core. The inner wall protects the insulation from moisture damage, prevents microbial growth, and is easy to clean.
- Two inch polyurethane foam insulated panels have a thermal resistance of R-value of 13 or greater, which exceeds the R-value of a cabinet with four inch thick fiberglass construction. They also make the cabinet more rigid and resistant to damage and provide increased sound damping.
- AMCA certified and labeled AAON low leakage economizer dampers meet the California Title 24 damper air leakage requirement. Gear driven economizer eliminates the excess play and bind that occurs with linkage type economizers.

### Cost Saving Serviceability

- Direct drive backward curved plenum fans are energy efficient with no belt loses and no belt maintenance.
- The same serviceability features available on all AAON equipment is available on the two-stage compressor high efficiency packaged rooftop units, including lockable service access doors, color-coded wiring and wiring diagram, and labeled electrical and refrigeration components.

#### Touchscreen Controller

Mounted in the Space or Office/ Mechanical Room  
(Space Temp and RH Sensor)

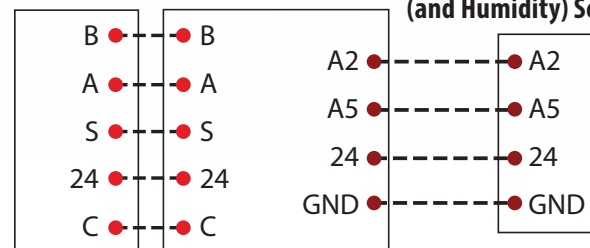


**Unit Control Board**  
Within the AAON Rooftop Unit

#### Touchscreen Controller

#### Unit Control Board

#### Optional Remote Space Temperature (and Humidity) Sensor



**B** = Communication  
**A** = Communication  
**S** = Shield for Communication  
**24** = 24 VDC  
**C** = Common

**A2** = Remote Space Temp.  
**A5** = Remote Space RH  
(Only Systems with Dehumidification)  
**24** = 24 VDC  
**GND** = Ground

18 GA/5 Stranded Wire,  
Max 2,500 ft



#### Remote Sensor

Mounted in the Space (Optional Space Temp)  
(Optional Space Temp and RH)

# AAON Two-Stage Compressors Rooftop Unit

	AHRI Cooling Capacity at 95 ° F		Heating Capacity	Weight (lbs.)	Width	Height	Length
	Standard	6 Row High Capacity					
RQ-002	26.2 MBH		60-160 MBH Gas, 10-40 kW Electric	763	44	51	82
RQ-003	37.4 MBH			757			
RQ-004	49.0 MBH	50.0 MBH		813			
RQ-005	57.0 MBH	59.0 MBH		831			
RQ-006	66.0 MBH	69.0 MBH		832			
RN-007	78.0 MBH	TBD	90-210 MBH Gas, 10-60 kW Electric	1,012	79	44	82
RN-008	89.0 MBH	TBD		1,052			
RN-010	115.0 MBH	120.0 MBH		1,210			
RN-009	99.0 MBH	99.5 MBH	195-390 MBH Gas, 20-80 kW Electric	1,166	96	50	88
RN-011	118.0 MBH	123.0 MBH		1,226			
RN-013	149.0 MBH	154.0 MBH		1,667			
RN-015	182.0 MBH	TBD		1,709			
RN-014	150.0 MBH	TBD		2,245			
RN-016	TBD	TBD	270-540 MBH Gas, 20-120 kW Electric	2,262	101	60	110
RN-018	TBD	TBD		2,248			
RN-020	TBD	TBD		2,525			

\* Weight and dimensions vary depending on options selected. All dimensions are in inches.  
Preliminary estimates subject to change. Not released to commerce.

**AHRI CERTIFIED**  
www.aahri.org

**Certificate of Product Ratings**

AHRI Certified Reference Number: 10034187    Date: 10/3/2017    Status: Active

Product: Single-Package Air-Conditioner, Air-Cooled  
Model Number: RN-014-2.3-A-S™-GA™-000  
Manufacturer: AAON, INC.  
Trade/Brand Name: AAON  
Series Name:

Rated as follows in accordance with the latest edition of AHRI 340/360 Performance Rating of Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment or AHRI 355 Performance Rating of Commercial and Industrial Unitary Air-Conditioning Condensing Units and subject to rating accuracy by AHRI-sponsored, independent, third party testing:

Refrigerant Used: R-410A  
Hertz: 60  
Cooling Capacity (Btu/h): 150000/150000  
EER Rating (Cooling): 13.70/13.70  
IEER: 20.2/20.2  
Heating Capacity at 47F (Btu/h):  
COP at 47F:  
Heating Capacity at 17F (Btu/h):  
COP at 17F:  
Non-Certified Data:  
Full Load Indoor Coil Air Quantity: 5300

The AHRI 340/360 certified EER rating in Btu/h are calculated under the same methodology as the EER ratings at T1 conditions of ISO 5167-2010 and ISO 13803-2011.

\* Ratings followed by an asterisk (\*) indicate a voluntary rating of preliminary published data, unless accompanied with a logo, which indicates an industry mark.

**DISCLAIMER**  
AAON does not endorse the product, based on this Certificate and makes no representation, warranty or guarantee as to, and assumes no responsibility for, the product's fitness for the intended use, its safety or performance of any kind, or the accuracy of the data or performance of the product, or the accuracy of any AHRI or other rating.

**TRADE AND COPYRIGHTS**  
This Certificate and its contents are proprietary products of AHRI. This Certificate shall only be used for individual, personal and confidential information purposes. The contents of this Certificate may not, in whole or in part, be reproduced, copied, disseminated, or otherwise used for any other purpose, in any form or manner, except for the user's individual, personal and confidential information.

**CERTIFICATE VERIFICATION**  
The information for the model listed on this certificate can be verified at [www.aahri.org](http://www.aahri.org). Click on "Verify Certificate" link and enter the AHRI Certified Reference Number and the model number on which the certificate was issued.

©2024 Air-Conditioning, Heating, and Refrigeration Institute    **CERTIFICATE NO.:** 13151104078977203

AHRI Certified Performance • [www.aahri.org](http://www.aahri.org)



2425 S. Yukon Ave. • Tulsa, OK 74107

[www.AAON.com](http://www.AAON.com)

Manufactured, Engineered, Headquartered, and Owned in the U.S.A.

• 2-6 ton RQ Series Air-Cooled Condenser Rooftop Unit



• All AAON rooftop units include access doors with stainless steel hinges and quarter turn lockable handles.

## Configuration Options

- On/Off, Two-Stage, 10-100% Variable Capacity, or Variable Speed Compressors for load matching cooling and improved part load efficiency.
- Electric, gas, and air or water-source heat pump heating allow the unit to meet the application heating requirements.
- VFD controlled and ECM driven variable speed condenser fans allow reduced ambient temperature operation. Saving energy and reducing radiated sound.
- VFD controlled or ECM driven backward curved plenum supply fans for precise airflow control, building pressure control, reduced power consumption, and reduced sound.
- Premium options are available including modulation hot gas reheat humidity control, up to 100% outside air configuration, and energy recovery.

It is the intent of AAON to provide accurate and current product information. However, in the interest of product improvement, AAON reserves the right to change pricing, specifications, and/or design of its product without notice, obligation, or liability. Copyright © AAON, all rights reserved throughout the world. AAON™ and AAONAIRE™ are registered trademarks of AAON, Inc., Tulsa, OK.

High Efficiency Rooftop Units • V94290 • 190108