

:: THE DAWN OF A NEW ERA IN  
COMMERCIAL HVAC TECHNOLOGY

The Russell™ By Rheem Commercial  
Renaissance™ Line featuring:

- VFD Technology
- Russell By Rheem HumidiDry™
- Russell By Rheem ClearControl™

.....  
**3–12.5 Ton Package Air Conditioners**

(RACCZR, RACCZT, RACDZT, RACDZS, RACDZR)

**3–12.5 Ton Package Gas Electric Units**

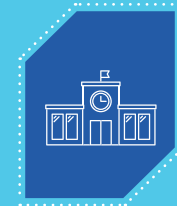
(RGECZR, RGECZT, RGEDZT, RGEDZS, RGEDZR)

**3–10 Ton Package Heat Pumps**

(RHPCZR, RHPCZT, RHPDZT, RHPDZS)  
.....



Engineered for All Commercial Applications



SCHOOLS



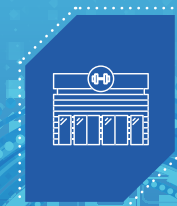
RETAIL



RESTAURANTS



OFFICES



HEALTH CLUBS



HOTELS

## :: VFD TECHNOLOGY— ENHANCED EFFICIENCY. GREAT SAVINGS.

**The Renaissance™ Line Incorporates Variable Frequency Drive (VFD) Technology,** which operates the supply fan at two speeds instead of only one—providing maximum energy efficiency, dramatically reduced costs and improved comfort.

### REDUCED VENTILATION COSTS

Up to 60–80% reduction of indoor fan power consumption during ventilation and first-stage cooling

### ENHANCED EFFICIENCY

Improves part load efficiency (IEER) up to 20%

### IMPROVED COMFORT

Removes twice as much moisture than standard package units for better humidity control

### GREATER COMPLIANCE

Meets ASHRAE 90.1-2007<sup>1</sup>, ASHRAE 90.1-2013, ASHRAE 62.1, ASHRAE 90.1-2016<sup>2</sup> and California Title 24 regulations<sup>3</sup>

<sup>1</sup>Applies to RGEDZR, RGEDZS, RGEZCR, RACDZR, RACDZS and RHPDZS models. <sup>2</sup>Applies to 3–6 Ton models only. <sup>3</sup>Applies to RGEDZT, RGEDZS, RACDZT, RHPDZT and RHPDZS models.

VFD IS AVAILABLE ON 7.5–12.5 TON RENAISSANCE ZT MODELS (STANDARD FEATURE) AND ZS MODELS (OPTION) PACKAGE UNITS.



## VFD Technology Helps Reduce Building Ventilation Costs by up to 60–80% Over Standard Rooftop Units

For different types of commercial buildings and occupancy, ASHRAE 62 and other building codes require ventilation rates that vary from 10–40% of the package unit airflow. Supply fans in standard package units use a constant, single high speed airflow, resulting in maximum energy usage.

This graph illustrates the following:  $404 = 1416 \times \left(\frac{2244}{3729}\right)^3$   
 $low\ speed\ watts = high\ speed\ watts \times \left(\frac{low\ speed\ cfm}{high\ speed\ cfm}\right)^3$

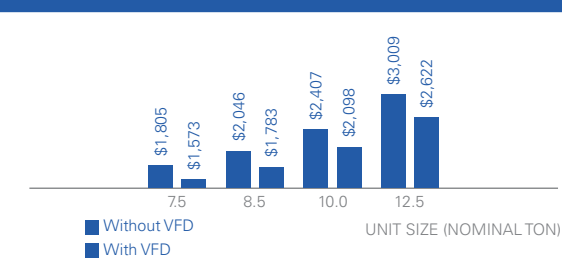
### Ventilation Energy Savings

The Renaissance™ Line with VFD Technology reduces the supply fan speed to 62%, while still meeting fresh air requirements and saving up to 60–80% of overall supply fan operating cost. Modulating outside air dampers or modulating economizers are available along with field-installed CO<sub>2</sub> sensors (occupancy sensors) to maintain outside air ventilation requirements.

### Part Load Energy Savings

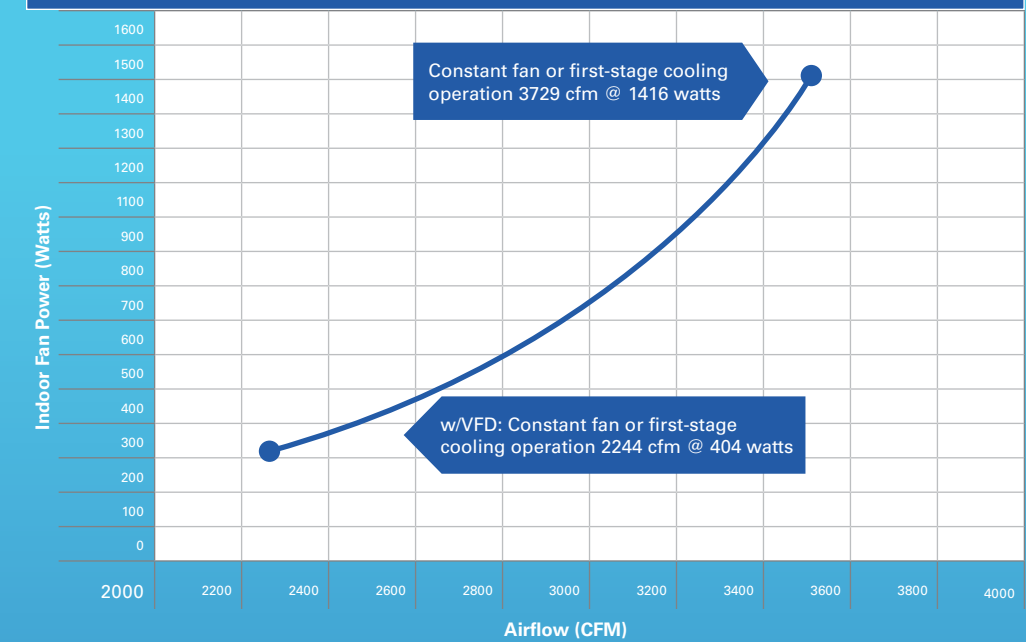
Commercial equipment is sized for full load operation at maximum outdoor design conditions and indoor load, occurring only 10–30% of the time. VFD Technology can increase part load efficiency IEER up to 39% due to the reduction in indoor fan power during first-stage cooling.

### ANNUAL UNIT OPERATING COST COMPARISON<sup>1</sup>



<sup>1</sup>Calculated at published IEER and based on 8 a.m. to 5 p.m. operation, Monday–Friday, 250 days per year. Electric rate 11.5¢ per kWh.

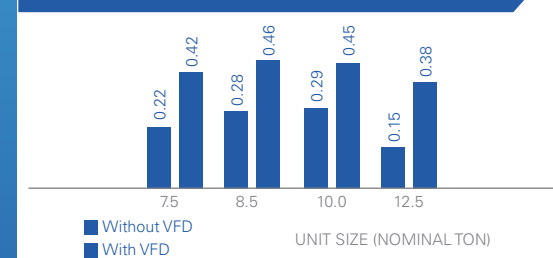
### EXAMPLE 10 TON INDOOR FAN POWER VS. AIRFLOW



### Better Comfort

A standard package unit in first-stage cooling operates the supply fan at 100% airflow. Operating in first-stage cooling at 62% airflow can remove more than twice as much moisture than a standard package unit. VFD Technology improves the comfort level by reducing the relative humidity in the conditioned space.

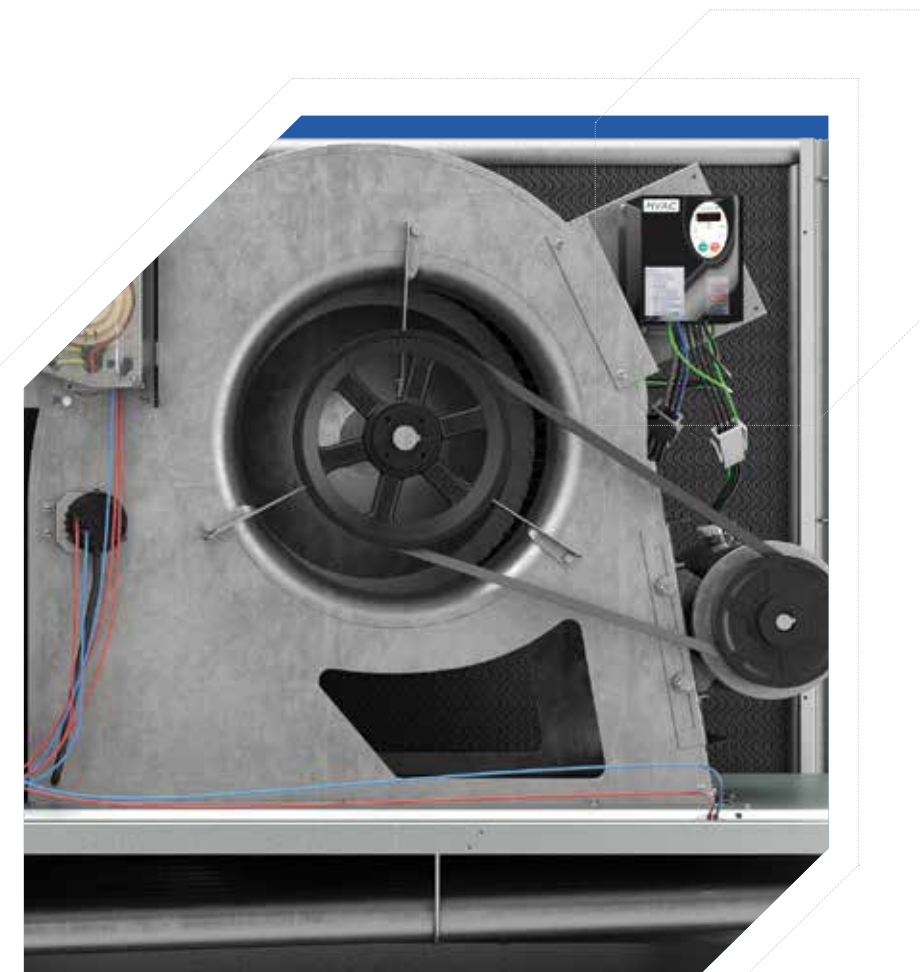
### LATENT / SENSIBLE RATIO<sup>2</sup>



<sup>2</sup>82°F outdoor DB; 80 DB/69.6°F WB indoor

# :: RUSSELL™ BY RHEEM HUMIDIDRY™ — EXPERT CONTROL. RUSSELL BY RHEEM.

The Renaissance™ Line Features HumidiDry, providing maximum humidity control without compromising the desired temperature set point. As a signature work of technology, it keeps humidity levels constant even when there's little or no demand for air conditioning. HumidiDry<sup>1</sup> gives business owners independent control of temperature and humidity, delivering a high degree of energy savings, performance and comfort.



### ADVANCED COMFORT

Removes moisture from the air while unit is running, even when not in cooling mode

### NEUTRAL AIR

Outdoor fan motor controller modulates condenser fan speed in relation to line temperature to maintain neutral air delivery over a wide range of indoor and outdoor conditions

### VFD TECHNOLOGY

The first system in the dehumidification market to incorporate a VFD that operates at a lower speed on first-stage cooling when in the reheat mode and when operating in occupied fan mode<sup>2</sup>

### CLEARCONTROL™ SYSTEM DIAGNOSTICS

The keypad-driven menu and a two-line, 16-character display for convenient system communication and BAS-compatible control help identify problems quickly

### SERVICE ACCESS

Designed for easy maintenance with 1/2-turn service access, slide-out drain pan, blowers and filters, plus external gauge ports

### ASHRAE GUIDELINES

Helps achieve ASHRAE 90.1-2013, ASHRAE 62.1, ASHRAE 90.1-2016<sup>3</sup> and California Title 24

### RUSSELL BY RHEEM QUALITY

Advanced engineering based on established technologies offers a hassle-free comfort solution

### WARRANTY

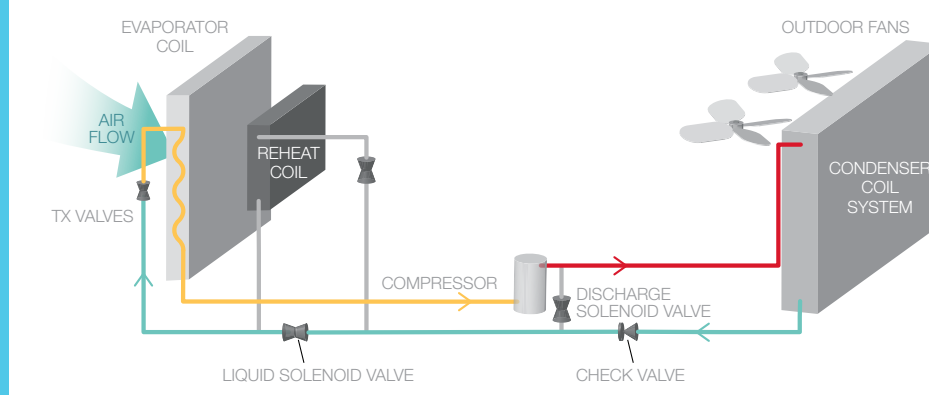
Equipped with standard warranties of one year on parts, five years on the compressor and 10 years on the heat exchanger

FEATURES: HUMIDIDRY VS. STANDARD ROOFTOP UNIT		
FEATURE	HUMIDIDRY SERIES	STANDARD ROOFTOP UNIT
Dehumidification without a call for cooling	<b>Yes</b>	<b>No</b>
Better dehumidification than temperature-based systems	<b>Yes</b>	<b>No</b>
Full-load dehumidification with part-load cooling <sup>4</sup>	<b>Yes</b>	<b>No</b>
Improved latent capacity over cooling operation	<b>Yes</b>	<b>No</b>

<sup>1</sup>HumidiDry is available on ZS/ZT models and 3-6 Ton models. <sup>2</sup>VFD technology is not available on ZR models. <sup>3</sup>Applies to 3-6 Ton models only. <sup>4</sup>Applies to 7.5-12.5 Ton models only.

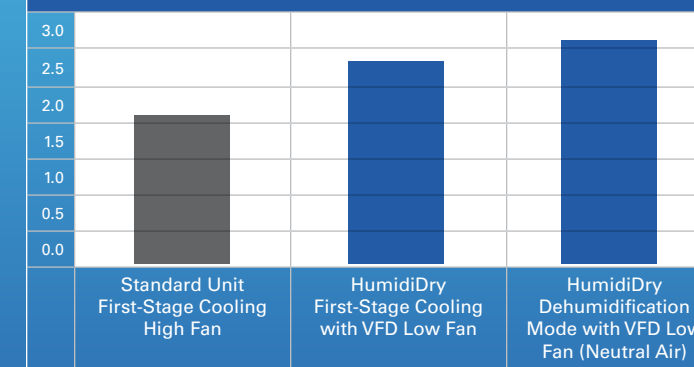
## HumidiDry™: The Science of Dehumidification

### COOLING MODE



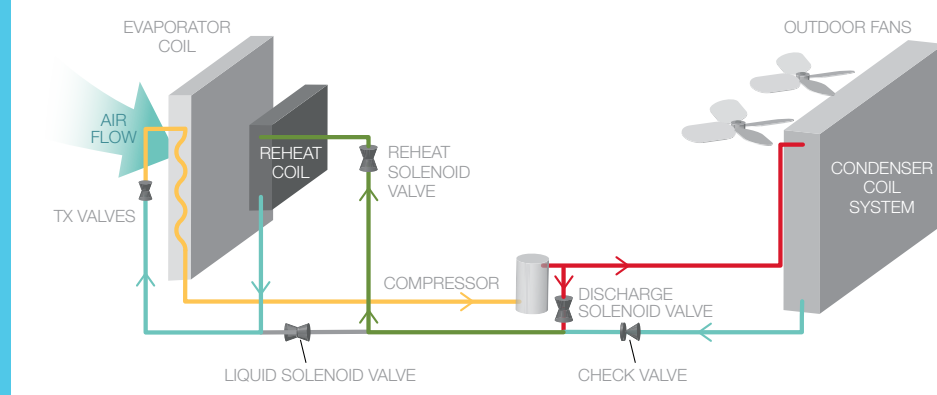
- The Renaissance™ Line unit with HumidiDry is controlled by a thermostat and a humidistat. The thermostat takes priority on single-stage systems.
- When the thermostat is activated by temperatures that exceed its set point, HumidiDry operates like a standard rooftop unit. It can operate on first-stage cooling when demand is low or at full capacity when air conditioning load is high. Unlike other rooftop or reheat units, HumidiDry is uniquely designed so the VFD will operate at a low speed, increasing moisture removal during first-stage cooling operation. This provides an initial defense for controlling humidity.

### COMPARISON: MOISTURE REMOVAL GALLONS PER HOUR



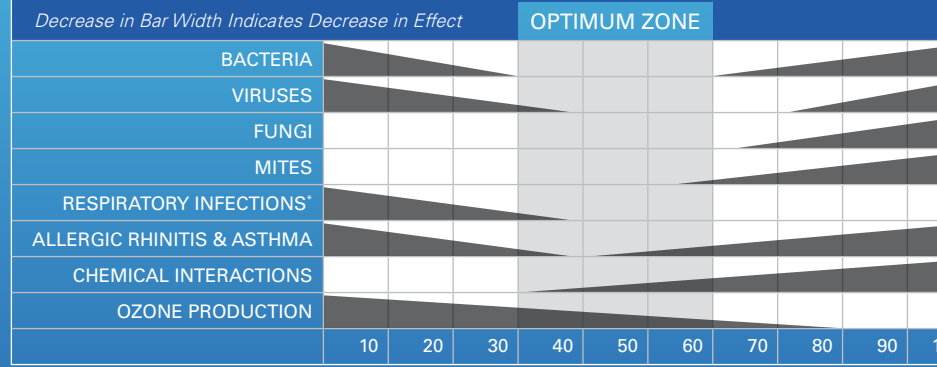
(7.5 Ton unit operating at 80 RA.DB; 67.6 RA.WB; 82 OA.DB)

### DEHUMIDIFYING MODE



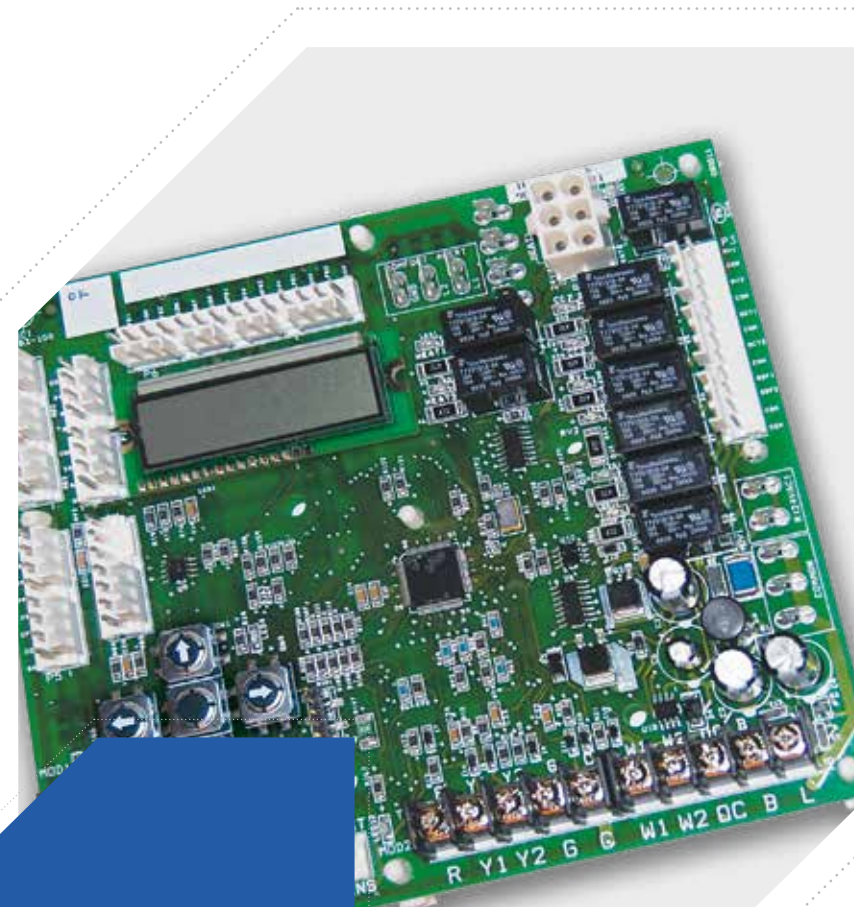
- When the temperature is desirable, but humidity exceeds the humidistat set point, HumidiDry initiates a dehumidification cycle using a combination of hot gas and subcooling reheat. During this cycle, HumidiDry delivers dry, neutral air.
- On the two-stage system, it is possible for both the thermostat and humidistat to register readings above set point. Under this condition, the first-stage system runs in the dehumidification cycle, the second-stage system runs in a cooling cycle and VFD operates on high speed. This provides dry, conditioned air.

### IDEAL HUMIDITY



Source: Environmental Health Perspectives  
\*Insufficient data above 50% relative humidity

:: RUSSELL™ BY RHEEM CLEARCONTROL™ —  
SMART COMMUNICATION. SURE CONTROL.



THE RENAISSANCE LINE  
IS COMPATIBLE WITH  
STANDARD 24-VOLT  
PROGRAMMABLE  
THERMOSTATS

**The Renaissance™ Line Provides ClearControl** as an option, allowing real-time system access, monitoring and communication between commercial units worldwide. Factory-installed Direct Digital Control (DDC) and sensors, which can connect to LonWorks™ or BACnet® BAS systems, offer flexible remote control and extensive diagnostics for all unit functions—helping to keep your customer’s business up and running with added peace-of-mind.

**SYSTEM FAILURE PROTECTION**

Ensures proper performance by analyzing key parameters such as: High & Low Pressure Control; Air Proving; Filter Indicator; Freeze-Stat Sensor; Return Air Sensor; Discharge Air Sensor; and Outdoor Air Sensor. Any issue is clearly communicated to the contractor on the Alarm Menu.

**FASTER & SIMPLER SERVICE CALLS**

No more wasted time interpreting codes or counting flashing lights. The system condition or current function is immediately spelled out on a two-line, 16-character LCD screen—eliminating the need for complicated code charts.

**SMART TROUBLESHOOTING**

Industry-leading diagnostics manage and report on over 100 different system conditions and functions, enabling contractors to identify and address system maintenance more efficiently.

**APPLICATION OPTIMIZATION**

Keypad menu allows for swift navigation with “left & right arrows,” “up & down arrows” and a “center ‘enter’ button” for simple, maximized information retrieval.

**ENERGY COST SAVINGS**

Smart equipment performs brilliantly and more efficiently to satisfy the comfort requirements of the customer and ensures eco-friendly operation year round.

**BUILDING CONTROL PANEL**

Normally located in the building’s mechanical room, it maintains the operational schedule of the HVAC system and other building systems.

**ZONE SENSORS**

Positioned in each zone, sensors enable the occupant to override current system operation.

ClearControl™ Model Specifications

POWER:	18–30VAC, 50–60Hz, 15VA power consumption		
ENVIRONMENTAL OPERATING RANGE:	-40° to 158°F (-40° to 70°C), 10–95% RH non-condensing		
OUTPUTS:	Economizer Fan Cooling Stage 1	Cooling Stage Heat Stage 1 Heat Stage 2	Heat Stage 3 / Exhaust / Reversing Valve “L” Terminal for Thermostat
INPUTS:	Space Temperature Return Air Temperature Supply Air Temperature Outdoor Air Temperature Evaporator Temperature Condenser Temperature	Indoor Air Quality Fire Shutdown Enthalpy Status Fan Status Filter Status	Remote OCC Setpoint Adjustment Comfort Alert™ Field Configurable Voltage or Resistance Input
COMMUNICATION PORTS:	Modbus RTU with Baud rate of 19,200 bits/sec		
OPTIONAL PLUG-INS:	LonWorks communication card BACnet communication card with RS-485 BACnet MS/TP and RJ-45 BACnet IP/Ethernet Network Connector Baud rate software adjustable		
STATUS INDICATION:	Visual (LED) status of serial communication, running, errors, power, all digital outputs		
BATTERY:	None		
PROTECTION:	Built-in high or low voltage protection circuitry, external circuit breaker or fuse on secondary voltage required		
LISTED BY:	FCC Part 15 - Subpart B - Class A. UL, UL Canada, and European Community (CE) standards for industrial applications		
OVERALL DIMENSIONS:	7" (width) x 6 1/4" (height) x 1 1/4" (depth), 180mm (width) x 160mm (height) x 50mm (recommended panel depth)		

The LEED® (Leadership in Energy and Environment Design) Green Building Rating System is the nationally accepted benchmark for the design, construction and operation of high performance green buildings.



## :: WHY RUSSELL™ BY RHEEM COMMERCIAL?

**Comfort takes pride in putting real people and results first.** In addition to the all-new Renaissance™ Line, the brand offers durable residential and commercial HVAC products to meet a wide range of market needs and standards. From easy-service features and a variety of capacities to exclusive training and marketing tools—you can easily provide a dependable comfort system for your customers.

### **RUSSELL BY RHEEM-OWNED SELECTION TOOL SOFTWARE**

A free software portfolio developed with easy-to-use, smart selection tools lets you specify, select and document all Russell By Rheem equipment—including factory-installed options and field-installed accessories for all commercial applications.

### **DEDICATED TECHNICAL SUPPORT**

Russell By Rheem offers a dedicated Support Team, plus resources such as the partner portal RussellByRheem.com, Innovation Learning Centers across the country, live product assistance and much more to support you and your customers at every step.

### **FLEXIBLE PRODUCT OPTIONS**

The Renaissance Line is full of smart options and must-have accessories, which can be factory- or field-installed—ensuring your customers get a customized solution to suit their business needs.

### **RUSSELL BY RHEEM COMMERCIAL KWIKCOMFORT® FINANCING**

The Russell By Rheem brand has partnered with Fernwood Capital to offer customized financing plans that meet the specific needs of the customer, allowing them to obtain commercial equipment, with costs of \$5,000–\$3 million, that will build their continued business growth.

### **WIDE PRODUCT AVAILABILITY**

Russell By Rheem offers an ever-expanding range of heating and cooling solutions, plus a vast distribution network across the US and Canada—making it easier than ever to get the right product at the right time and in the right place, driving uptime for your customers.

renaissance™  
COMMERCIAL HVAC LINE



7.5–12.5 Ton  
Cabinet is Shown

Help your customers build their next commercial masterpiece.

**RussellByRheem.com**