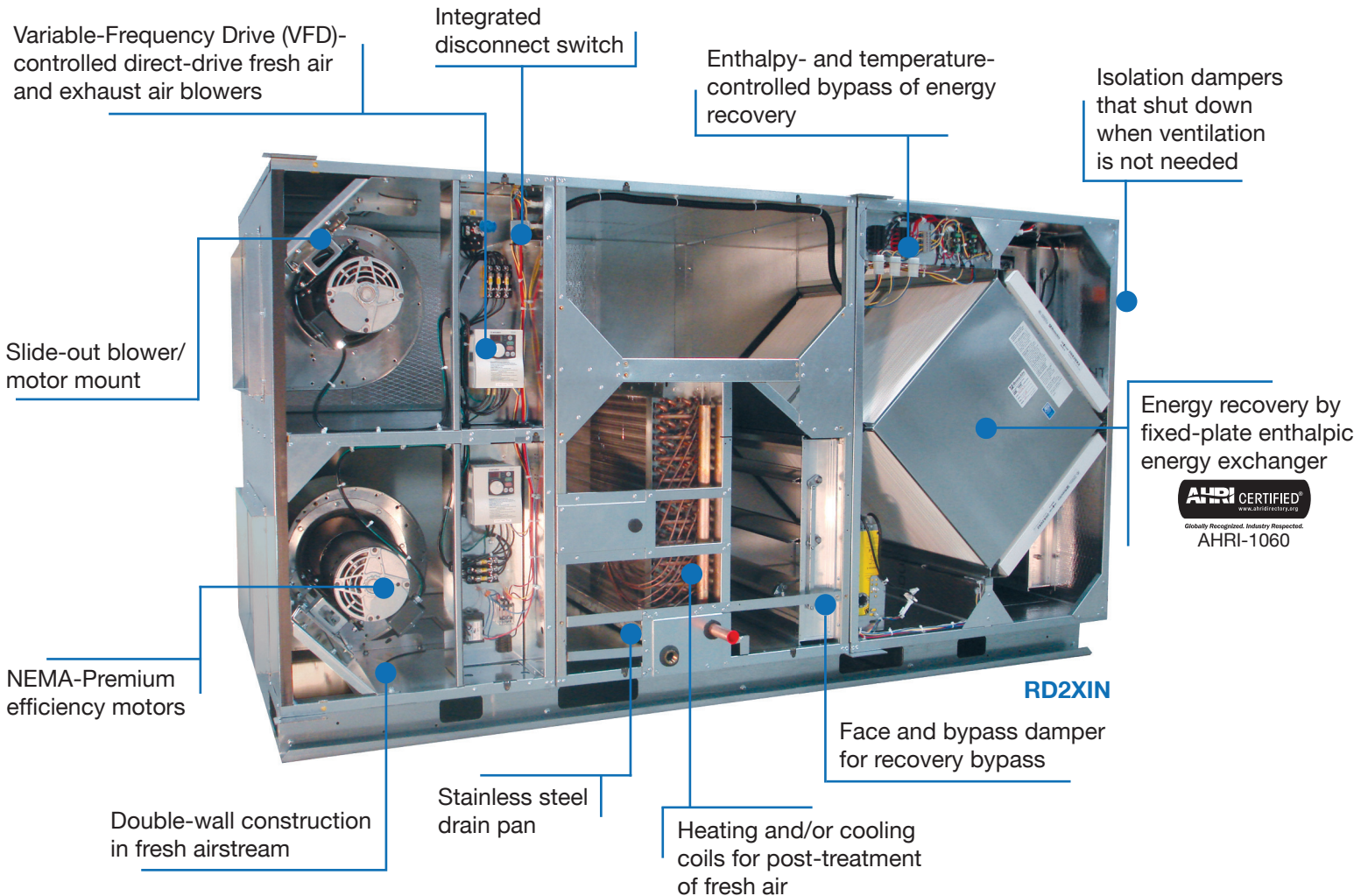


Energy Efficient DOAS

(Dedicated Outdoor Air System)

RenewAire RD-Series



Visit the Downloads section at www.RenewAire.com for complete RD-Series support documentation.

Product Overview



RD4XRT

RenewAire Dedicated Outdoor Air System (DOAS)

- provides 100% outside air
- DX, chilled water or hot water coil options
- integrated VFD for each air stream
- enthalpy controlled recovery bypass (economizer) dampers
- Trouble-free ERV® — remarkable static plate technology from RenewAire

Sized to Meet the Needs of Most Projects

- two sizes exhaust and supply air:
 - RD2X — 500 - 2200 CFM
 - RD4X — 1000 - 4400 CFM
- efficiently supply 52°F enhanced dehumidification
- generous coil sizing — many options including DX, chilled water, hot water and combinations
- compatible with major manufacturer's condensing units

DOAS doesn't have to be complicated and expensive to operate.

RenewAire successfully proves it. Now prove it to yourself.

START with our highly efficient ERV (*heat & humidity transfer*) core

COMBINE that with enthalpy controlled recovery bypass (*economizer*) dampers

MOVE the air with VFD controlled premium efficiency, direct-drive motors

CHOOSE a coil from a range of high efficiency heating or cooling options

DELIVER air reliably at the set temperature needed for most applications without rotating wheels, re-regenerative cycles or troublesome reheat

Dedicated Outdoor Air Systems (DOAS) are a refinement of the De-coupled System concept. DOAS systems use two separate pieces of equipment:

- 1) Outside ventilation air is provided and pretreated by one piece of equipment that uses energy recovery to greatly reduce the sensible and latent loads of the outside air, then additionally cools air to address the remaining internal latent loads.
- 2) Sensible loads are addressed by a parallel piece of equipment, sometimes with separate ductwork, that provides the remaining circulation air needs. VAV, fan-coil and radiant systems all have been used successfully.

Many DOAS units available on the market today are designed to provide very tight control of humidity, and some are capable of delivering air at very low wet bulbs, while reheating the supply air to room temperature. But the tighter the control, the more complex and expensive.

The RD-Series brings the DOAS concept to smaller, less demanding applications where the benefits of decoupled systems and energy recovery are still important and valuable.

Internal logic for the RD-Series is provided by simple, easy to understand temperature and enthalpy controls, and the unit can be controlled by a variety of stand-alone controls or a Building Management System.

Its direct-drive blowers with NEMA-Premium motors are controlled by Variable Frequency Drives for maximum delivered efficiency at the required system airflow.

Finally, a range of factory-installed heating and cooling coils are available for integration of the RD-Series units with the DX, heat pump, chilled or hot water systems which are designing to best meet the overall HVAC needs of the project. Since the heating and cooling components other than the coil are specified by you, those components can be the ones you are most comfortable with and can be sourced most efficiently for the lowest delivered cost to the customer.

EFFICIENCY

- static-plate enthalpic core reduces OA load by 50% or more
- direct-drive, VFD-controlled, motor/blower packages
- premium efficiency motors
- insulated, low-leakage OA, EA and bypass dampers
- fully insulated, low air-leakage cabinet construction

RELIABILITY

- positive airstream separation accepts controlled exhaust
- door integrated disconnect with single point electrical connection
- removable, sloped stainless steel drain pan
- fused VFD protection
- circuit breaker low voltage protection
- two inch, MERV-8 filters

FLEXIBILITY

- enthalpy bypass control with adjustable limits
- discharge air temperature control with adjustable limits
- field configurable blower and inlet openings
- pressure taps for airflow measurement
- fork holes in integral base rail

Available Features

DIRECT EXPANSION (DX) DEHUMIDIFICATION COIL

The RD-Series can be ordered with a direct expansion (DX) coil for dehumidification. The coil is ARI-certified for R22 and UL-listed. The coil comes uncharged; R-22 or R-410A refrigerant can be used.

5-row and 3-row single circuit coils and 4-row and 3-row dual circuit coils are available.

These coils can be ordered in combination with our hot water heating coil.

DIRECT EXPANSION (DX) COIL FOR HEAT PUMP

The RD-Series can be ordered with a direct expansion (DX) coil for dehumidification and/or heating by a heat pump. These high-pressure coils are UL-listed. The coil comes uncharged; R-22 or R-410A refrigerant can be used.

4-row and 3-row single-circuit and dual-circuit coils are available.

CHILLED WATER DEHUMIDIFICATION COIL

The RD-Series can be ordered with a 5-row, 4-row or 3-row water coil for dehumidification. The coil is ARI certified and UL listed.

These coils can be ordered in combination with our hot water heating coil.

HOT WATER HEATING OR REHEAT COIL

The RD-Series can be ordered with a 1-row water coil for heating. The coil is ARI certified and UL listed.

NO COIL WITH DRAIN PANS

The RD-Series can also be ordered without any coil but with stainless steel drain pans installed. This might be the case if a coil is to be installed in the field.

The RD-Series can also be ordered without any coil AND without drain pans.

DRY BULB CONTROL

The RD-Series offers a temperature controller that senses dry bulb temperature of the air. The temperature controller set point is field adjustable for your specific application.

DEW POINT CONTROL

The RD-Series offers a temperature controller that senses dew point temperature of the air. The temperature controller set point is field adjustable for your specific application.

BYPASS INDICATION

The RD-Series allows connection for remote indication when the unit goes into bypass mode.

FILTER ALARM

RenewAire can provide a filter alarm in one or more of the air streams. The purpose is to provide a remote indication that the filters have become fully loaded and need replacement. The filter alarm is an adjustable differential pressure switch that measures static pressure upstream and downstream of the filter.

EXTERNAL CONTROLS

RenewAire offers separately for stand alone control of the RD-Series:

- Digital Time Clocks TC7D-W and TC7D-E
- Occupancy Sensors MC-C and MC-W
- Carbon Dioxide Sensor/Controllers CO2-W and CO2-D

BMS INTERFACE

The RD-Series can interface with a Building Management System (BMS) for control of the unit. The BMS needs to supply the RD-Series with a Call for Ventilation signal, in the form of a dry contact relay. The BMS may also supply at least one Frequency signal, either in the form of dry contact relays calling on preset speeds in the VFD(s), or in the form of an analog signal (0-10vdc or 4-20mA).

Modes of Operation

SHUTDOWN MODE

The RD-Series enters Shutdown Mode when:

- there is no call for ventilation

In Shutdown Mode both blowers are turned off and the isolation dampers are closed.

ENERGY RECOVERY MODE

The RD-Series enters Energy Recovery Mode when:

- there is a call for ventilation
- AND outside air enthalpy is greater than return air enthalpy
- OR outside air temperature is below set point (53°F factory setting)

In Energy Recovery Mode the isolation dampers are open and both blowers are turned on. The bypass dampers allow air flow through the energy exchange core only. When in Energy Recovery Mode the unit can also be in Dehumidification Mode or Heating Mode.

ENERGY RECOVERY BYPASS MODE

The RD-Series enters Full Bypass Mode when:

- there is a call for ventilation
- AND outside air enthalpy is less than return air enthalpy
- AND outside air temperature is above set point (53°F factory setting)

In Full Bypass Mode the isolation dampers are open and both blowers are turned on. The bypass dampers divert all outside air flow entirely through the bypass and not through the energy exchange core. Return Air continues to pass through the core. When in Full Bypass Mode the unit can also be in Dehumidification Mode.

DEHUMIDIFICATION MODE (OPTIONAL FEATURE)

The RD-Series enters Dehumidification Mode when:

- there is an external call for ventilation
- AND Energy Recovery Mode or Full Bypass Mode
- AND fresh air temperature is above set point (53°F factory setting)

In Dehumidification Mode the unit operates either in Energy Recovery Mode or Full Bypass Mode. A dry contact connection is provided to signal external equipment (provided by others) to deliver chilled water or refrigerant to the coil.

HEATING MODE (OPTIONAL FEATURE)

The RD-Series enters Heating Mode when:

- there is an external call for ventilation
- AND Energy Recovery Mode
- AND fresh air temperature is below set point (50°F factory setting)

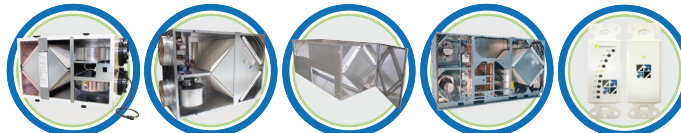
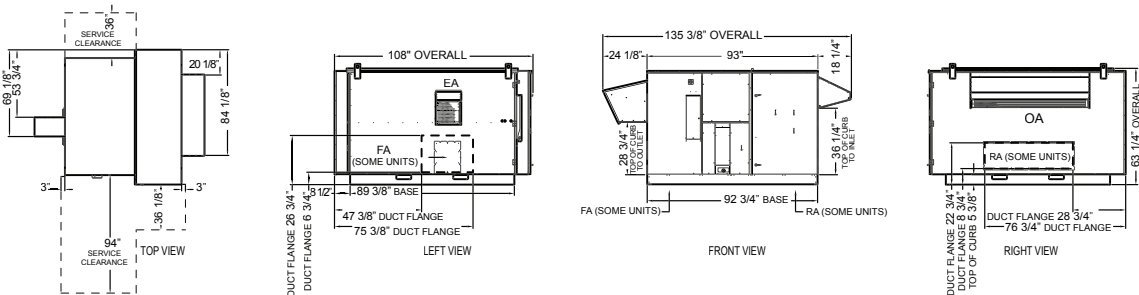
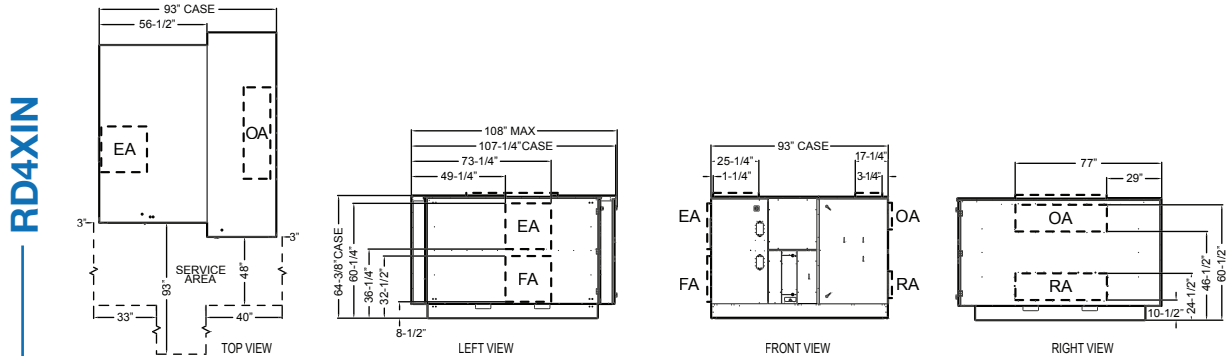
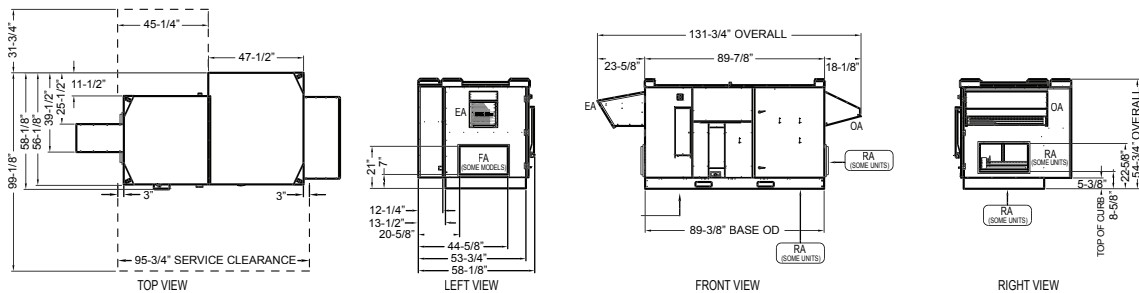
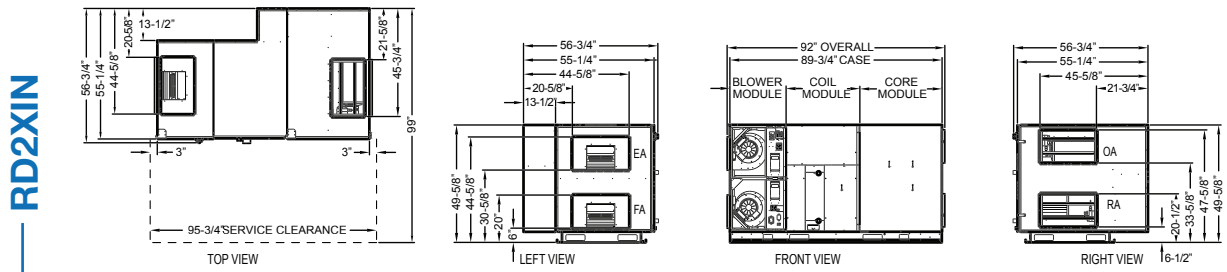
In Heating Mode the unit operates as in Energy Recovery Mode. A dry contact connection is provided to signal external equipment (provided by others) to deliver hot water or refrigerant to the coil.



RD4XRT

RD-Series Unit Drawings

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Be sure to check out our full line of ventilation products:
Residential, Commercial & Applied ERVs, DOAS and Controls



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