

# OmegaAir™

- 100% Dedicated Outside Air Systems (DOAS)
- Vertical or Horizontal Indoor Configuration
- 150 to 3,000 CFM
- Water-Cooled Self-Contained
- Air-Cooled with Remote Condenser
- Available with Environmentally Friendly Refrigerant



Helps to Satisfy  
ASHRAE 62.1 - 2004  
Requirements

**United**  
**CoolAir** Corp™

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

## Simple and Effective Operational Design

OmegaAir provides room neutral air (70°F to 72°F with 50% RH) or conditioned air to 55°F. Air dew point design temperatures are lower than standard air conditioners to remove the maximum amount of moisture before delivery to the space.

The draw-through air flow provides the most effective use of the coil surfaces. The unit is self contained for water-cooled applications minimizing space requirements. A remote air-cooled condenser configuration is also available.

It can be coupled to feed treated ventilation air directly to the primary mechanical air conditioner or ducted directly into the space.

High-density 2" insulation and low air flow greatly reduces noise, making the unit ideal for applications in or near an occupied space. Access to internal components is through the front (vertical configuration), and there are no damper mechanisms requiring adjustment or maintenance. Mounting can be directly on the floor or on a full perimeter rack. Horizontal units can be ceiling-mounted in a plenum or mounted at floor level. Units are charged with R-410a "green" refrigerant for long term environmental protection.

## OmegaAir—The Final Word in Low CFM Outside Air Systems

Recent years have seen many changes regarding indoor air quality, and standards have changed to reflect the need for more ventilation. ASHRAE 62.1 - 2004 Ventilation for Acceptable Indoor Air Quality impacts new and existing structures by increasing ventilation standards from 5 CFM per person up to 20 CFM, depending on the application.

To address this major issue of indoor air quality, United CoolAir Corporation has developed the OmegaAir System, a 100% Dedicated Outside Air System (DOAS) designed specifically for light commercial applications. OmegaAir provides greater flexibility and control for smaller zoned applications.

The system provides air flow capabilities from 150 CFM up to 3000 CFM, and maintains excellent moisture removal capability. Units can be used for a wide variety of applications from individual rooms to a series of spaces to be conditioned.

### Typical Applications

- Schools/Dormitories
- Offices
- Hospitals/Clinics
- Hotels/Casinos
- Retail Stores
- Bars/Taverns
- Restaurants
- Theaters
- Night Clubs
- Fitness Centers
- Churches
- Convention Halls
- Manufacturing Facilities
- Animal Shelters



Many options are available to tailor the units to your specific application including microprocessor controls developed specifically for outside air applications. Supplementary heating using hot water or steam can be added as well. Air-cooled units are also available and require a remote condenser for heat removal.

## Providing Flexible Installation Choices

OmegaAir is designed for indoor installation. From an architectural perspective, building aesthetics are preserved by keeping the roof and perimeter free of obstructions.

Renovation and additions are made easier by locating the units indoors, reducing the overall cost to modify existing mechanical systems. There are no additional roof loads imposed on the structure, and the unit is not exposed to harsh outside conditions. Security of the units is enhanced because they are located indoors.



Floor space can often be at a premium, so United CoolAir designed the horizontal version with the ability to be ceiling-mounted. Three air path choices provide additional flexibility. So no matter what the situation, new construction or renovation, the OmegaAir System can provide a solution.

## Decreasing the Load on Primary HVAC Equipment

As outside air is introduced to meet ventilation standards, the moisture level within the space escalates as well. Primary HVAC systems are not designed to handle the excess load, especially existing older systems.

Mechanical air conditioning units control only temperature through the dry bulb condition of the space. The resulting humidity level from the mechanical air conditioning is a “coincidental” result of dehumidification and not a controlled factor. When the space is adjusted by temperature, humidity levels can remain high, and if adjusted by humidity, the space may be too cold. In either scenario, occupant comfort will generally be unsatisfactory.

## Superior Engineering and Construction Features

### Choice of Air Discharge

Standard top with optional front discharge available

### Air Proving Switch

### Expansion Valves

MOP type

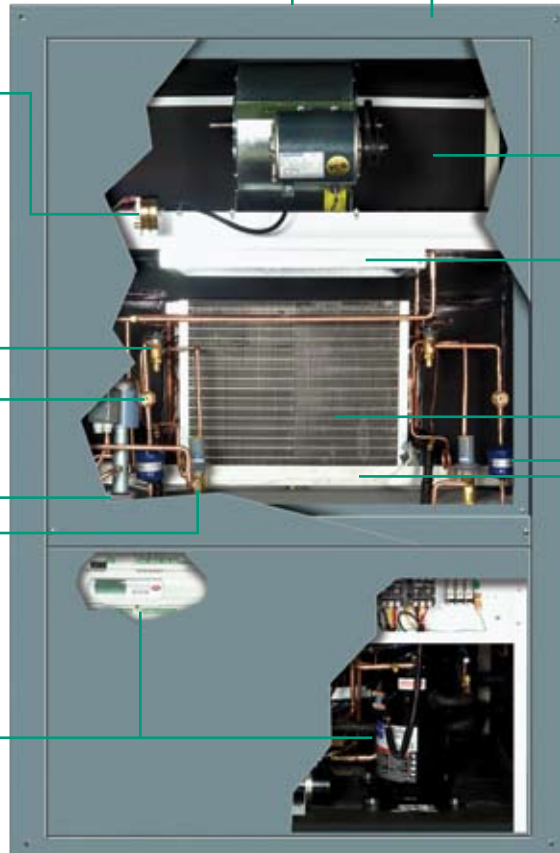
### Sight Glass with Moisture Indicator

### Modulating Hot Gas Reheat Valve

### Hot Gas Bypass Valves

### Isolated Components

Compressor compartment and control box out of the air stream for unit entry without interrupting operation



### Rugged Cabinet Construction and Finish

Galvanized metal with powder coated finish for durability and long life (powder coat optional on horizontal)

### Thermal/Acoustic Insulation

2" Thermal/Acoustic insulation

### Hot Gas Reheat Coil

Coil spacing prevents re-hydration of moisture. Coil is sloped to assure no oil logging

### Evaporator Coil

Draw-through air flow optimizes coil surface performance

### Filter Drier

### IAQ Sloped Stainless Steel Drain Pan

Assures no standing water

### Fast, Easy Connection

Easy access for high/low voltage, water and condensate removal connections

### No Thermal Bridging

Eliminates condensation collection on exterior of evaporator section

### Internally Mounted Condensate Trap

Keeps condensate flowing and helps reduce installation cost (not shown) (vertical only)

### Easy Access Design

Access to all components is from the front (vertical only). Cleaning the coils is easily accomplished

### Comprehensive Refrigerant Circuit

- Include thermal expansion valve (MOP type), sight glass with moisture indication, filter drier and refrigerant access fittings
- Single circuit units and the lead circuit on dual circuited units include modulating hot gas reheat
- Hot gas bypass is included in each circuit
- Factory charged with R-410a "green" refrigerant

### Highly Effective Moisture Removal

- Direct expansion, draw-through evaporator coils utilize 3/8 inch diameter tubes
- Coil configuration includes 10 fins per inch with 6 rows deep
- Dual circuited units utilize an interlaced coil for excellent part load performance
- Face velocity is less than 375 FPM for optimal condensate drainage and lower sound level

## Built Tough with Quality Components



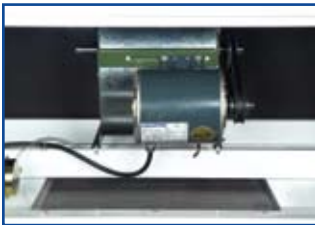
### Modulating Hot Gas Reheat

- Horizontally-positioned, draw-through coil optimizes coil performance
- Easy access coil surface for cleaning
- Robust, high quality valve is maintenance free with quiet operation



### High-Efficiency Scroll Compressor and Heat Exchanger

- Units 2-ton and larger utilize scroll compressors
- Factory charged with R-410a "green" refrigerant
- 2-way, 150 psig water regulating valves used with water-cooled co-axial heat exchangers
- Optional valves are available for 3-way and/or 350 psig applications



### Smooth-Operating Belt-Drive Blowers

- Double width, double inlet belt-drive centrifugal blowers
- Statically and dynamically balanced for smooth operation
- Sealed, permanently lubricated bearings support the solid shaft of the blower
- Optional motor/drive sets are available for higher external static pressures



### Isolated Electrical Panel

- Electrical components located out of air stream for electrical integrity
- Electrical access while the unit is operating
- 24 volt control circuits utilizing readily available components
- High- and low-pressure switches help protect each refrigerant circuit
- Single-point power supply



### Quick Access Filters

- Easily accessed filters from either side
- Optional dirty filter switch ensures peak operation
- Optional filters can be 2" or 4", MERV 8 or MERV 11



### Quiet and Safe Operation

- Optional closed cell elastomeric foam insulation
- R-8 value provides protection under severe design conditions
- Microban® antimicrobial protection helps ensure a safe air path

## The Smart Controller Designed to Maximize Your Outside Air System



The OA3 microprocessor control was developed specifically for outside air applications. It monitors critical air functions for dehumidification and temperature control (cooling & heating). The OA3 can be added to your Building Management System (BMS) with optional interfaces available for LonWorks™, BACnet™, ModBus™ or Johnson Metasys™.

Menu-driven pages provide easy navigation through setup and operation. Set points are programmed easily on-site using the wall-mounted interface panel with scrollable LCD display. The OA3 includes 6 megabytes of flash memory for excellent performance and flexibility. Controllers have real-time clock mode for setting up schedules and recording alarm history.



### Features

- 1- or 2-Compressor Control
- Set Point Password Protection
- Modulating or ON/OFF Hot Gas Reheat
- User Selectable for Room Neutral Conditions or Space Conditioning
- Operating Time Log for Blower, Compressor(s) and Heating
- Flush Cycle for Hot Gas Reheat (Prevents Oil Logging)
- Monitoring of Temperature and Humidity Limits
- Reheat Assist Using Primary Heating
- Alarm History (Stores 36 Alarms)
- Space Dew Point Set Point Reset

### Modes of Operation

- Ventilation
- Dehumidification
- Cooling
  - “Smart” Cool
  - Cooling Assist (Optional)
- Heating
  - “Smart” Heat
- Reheat (Modulating or ON/OFF)
- Reheat Assist
- Occupied or Unoccupied
- Unoccupied Override

### Alarms

- Compressor High Pressure
- Compressor Low Pressure
- Air Flow Proving Switch
- Firestat (Optional)
- Smoke Detector (Optional)
- Damper End Switch (Optional)
- Drain Pan Overflow Switch (Optional)
- Dirty Filter Switch (Optional)
- Freezestat (Optional)

## OmegaAir Water-Cooled Performance Data (Vertical and Horizontal)

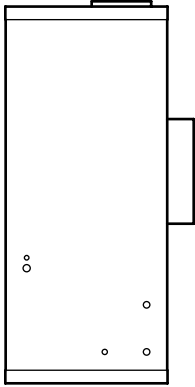
Nominal Tons	Compressor Quantity	CFM	Outdoor Air Wet Bulb Temperature (Degree F)		
			70	74	78
			Dew Point Temperature (Degree F)		
1	1	150	42.5*	46.4	50.8
		200	48.1	52.2	58.6
1.5	1	225	44.3*	48.6	53.1
		300	50.0	54.1	58.5
2	1	300	43.5*	47.6	52.2
		400	49.2	53.4	57.8
3	1	450	43.7*	47.9	52.5
		600	49.5	53.5	57.9
4	2	600	43.3*	47.3	51.7
		800	48.8	52.9	57.4
5	2	750	43.0*	47.2	51.7
		1000	48.6	52.8	57.3
6	2	900	43.3*	47.5	51.9
		1200	48.9	53.2	57.6
7	2	1050	43.6*	47.7	52.1
		1400	49.1	53.2	57.5
8	2	1200	43.6*	48.1	52.4
		1600	49.3	53.6	58.1
9	2	1350	43.7*	48.1	52.4
		1800	49.5	53.6	58.0
10	2	1500	43.3*	47.7	52.2
		2000	49.1	53.3	57.7
11	2	1650	42.3*	46.5	50.9
		2200	48.0	52.2	56.6
12	2	1800	43.2*	47.4	51.9
		2400	48.8	53.1	57.5
13.5	2	2000	43.2*	47.3	51.7
		2700	49.0	53.1	57.5
15	2	2250	42.2*	46.4	50.8
		3000	47.9	52.1	56.6

1. Water-cooled performance based on 85°F entering water temperature and a flow rate of 3 GPM / Ton.
2. Dew point values not adjusted for motor heat.

\* Contact factory

Manufacturer reserves the right to make changes without notice.

## Unit Configurations: Vertical

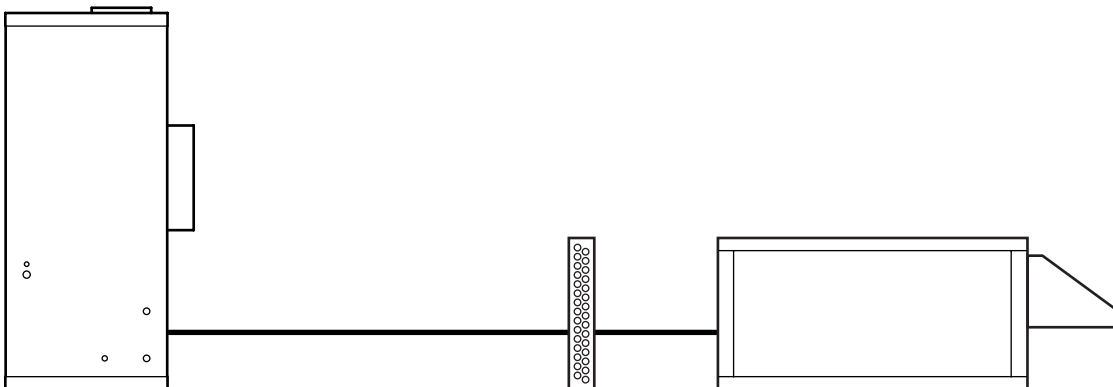


Vertical Self-Contained - Water Cooled



Vertical with Remote Air-Cooled Condenser

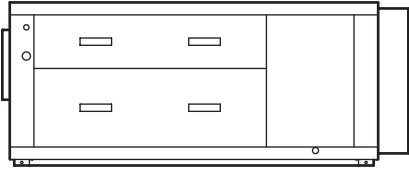
Remote Air-Cooled - Indoor Condenser Section



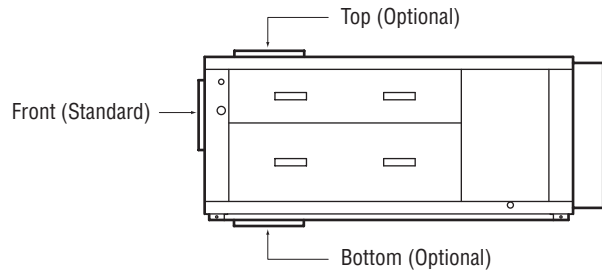
Vertical with Remote Air-Cooled Condenser

Remote Air-Cooled - Outdoor Condenser Section

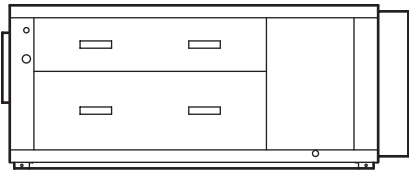
## Unit Configurations: Horizontal



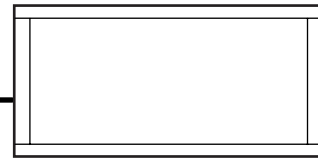
Horizontal Self-Contained Water-Cooled



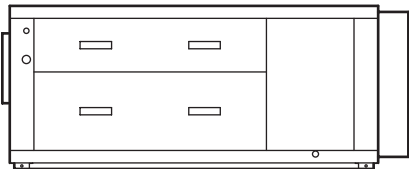
Horizontal Air Path Configurations



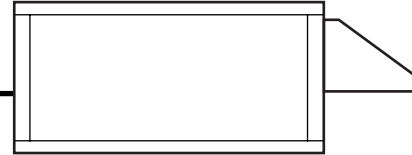
Horizontal with Remote Air-Cooled Condenser



Remote Air-Cooled - Indoor Condenser Section

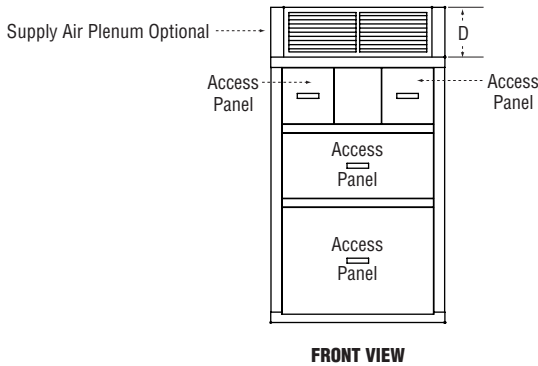
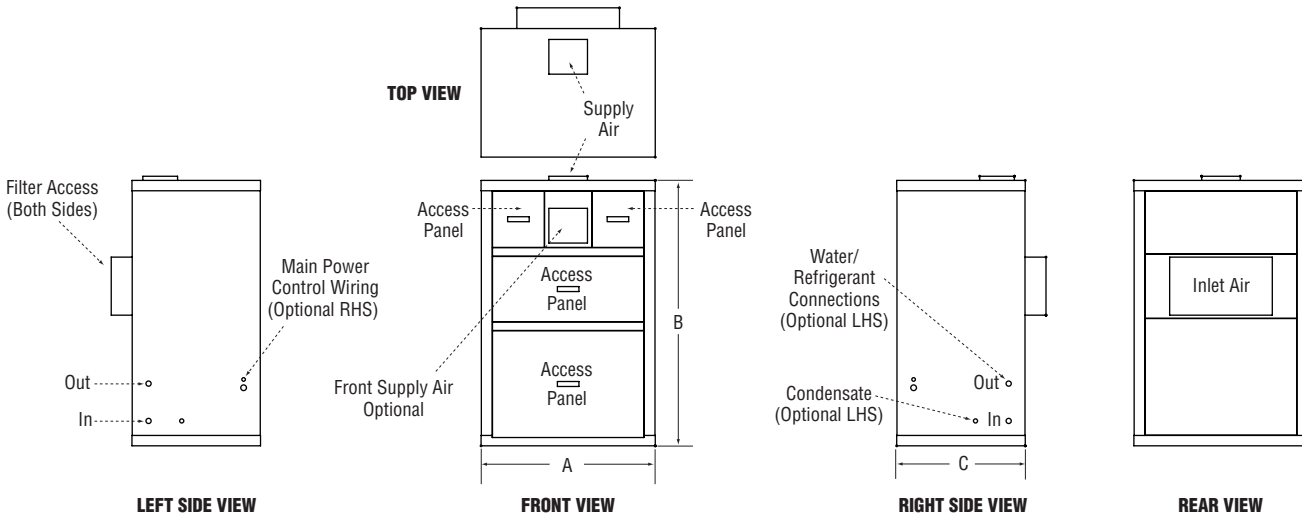


Horizontal with Remote Air-Cooled Condenser



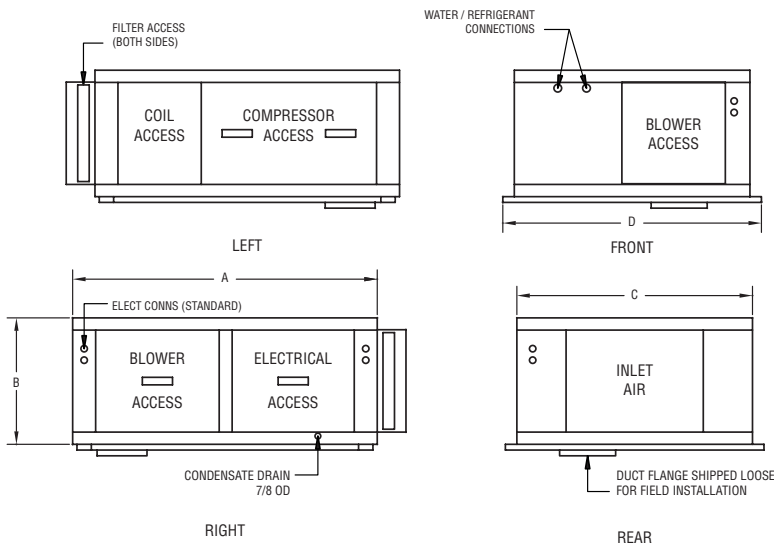
Remote Air-Cooled - Outdoor Condenser Section

## Dimensional Data: Vertical Units



Nominal Tons	CFM Range	A	B	C	D
1 to 3	150 to 600	42"	64"	31"	12"
4 to 8	600 to 1,600	48"	72"	31"	12"
9 to 15	1,350 to 3,000	72"	78"	31"	12"

## Dimensional Data: Horizontal Units

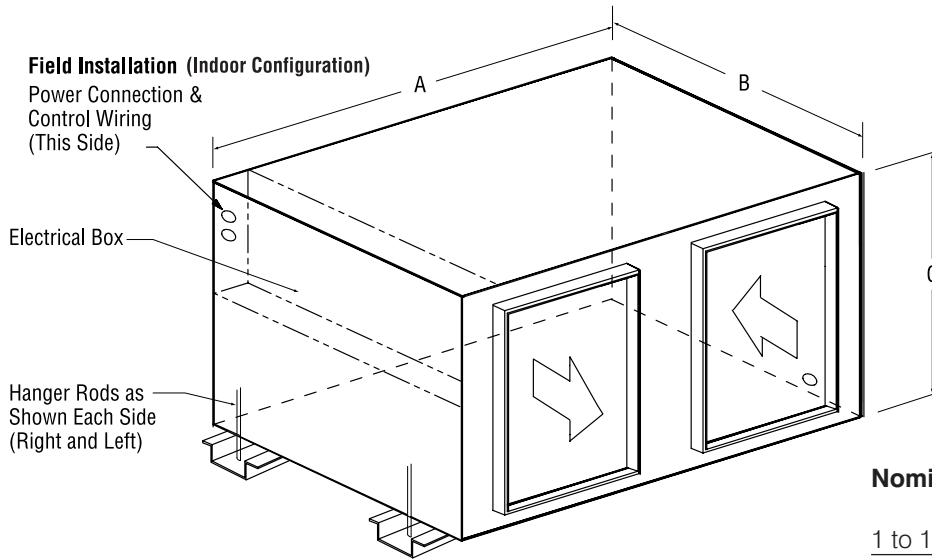


Nominal Tons	CFM Range	A	B	C	D
1 to 3	150 to 600	53"	72"	41"	45"
4 to 8	600 to 1,600	61"	26"	50"	54"
9 to 15*	1,350 to 3,000	71"	30"	66"	70"

\* Cabinet is split-able.

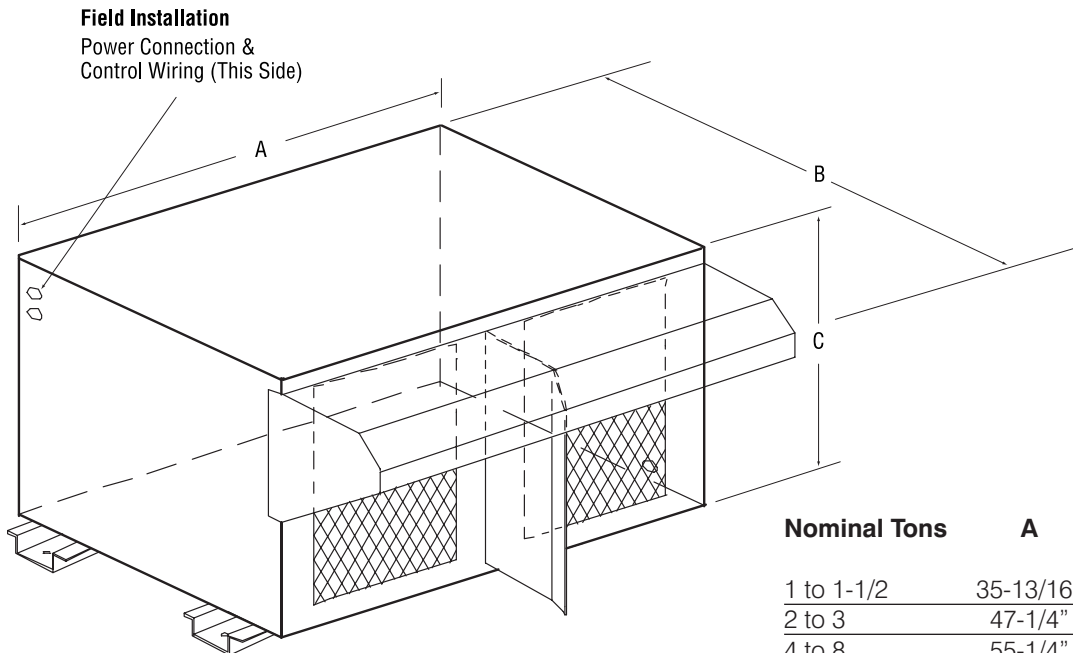
Manufacturer reserves the right to make changes without notice.

## Dimensional Data: Remote Air-Cooled Condenser Section Indoor Configuration



Nominal Tons	A	B	C
1 to 1-1/2	35-13/16"	29-3/8"	16"
2 to 3	47-1/4"	34-3/4"	22"
4 to 8	55-1/4"	40-1/4"	27"
10 to 15	70-3/8"	45-1/8"	29"

## Outdoor Configuration with Outdoor Modification Kit



Nominal Tons	A	B	C
1 to 1-1/2	35-13/16"	40-11/16"	16"
2 to 3	47-1/4"	46-1/16"	22"
4 to 8	55-1/4"	51-9/16"	27"
10 to 15	70-3/8"	56-7/16"	29"

## OmegaAir Options

All units can be tailored to specific applications with use of these options:

- Microprocessor Control (OA3)
- Higher Efficiency Filters
- Blower Motor/Drive Set Upgrade for Higher ESP
- 3-Way and/or 350 psig Water Regulating Valves
- Hot Water Coil
- Steam Coil
- Protective Coil Coating
- Charcoal Filters
- Freezestat
- Condensate Pump (Externally Mounted)
- Drain Pan Overflow Switch
- Dirty Filter Switch
- Non-Fused Disconnect (shipped loose)
- Phase/Voltage Monitor
- Front Discharge Air Path
- Electronic Air Cleaner

## OmegaAir Select

Choosing the right OmegaAir System for your application is easy with the new OmegaAir Select software tool. Simply choose the equipment type (air-cooled or water-cooled), enter the design conditions for the specific installation location, add equipment options and OmegaAir Select lists up to 3 models that fulfill the design criteria. Select one of these models to print a detailed schedule report and equipment drawings to create a complete submittal package.

Default ASHRAE Latent Design Conditions for multiple US cities and ASHRAE 62.1 "Ventilation for Indoor Air Quality" methods aid the user in determining the appropriate outside air conditions and calculating the ventilation amount required for the installation.

Contact your local rep or go to [www.unitedcoolair.com](http://www.unitedcoolair.com) to download your copy today and start selecting a new OmegaAir System for your unique application!

Description		Unit	
ASHRAE	Harrisburg, PA	87.0 DB / 77.0 WB / 84.2 RH	Latent Capacity
Latent Capacity	126.3	Bluh	33.5
Moisture Removal Capacity	14.600	Bluh	14.600
Moisture Removal Efficiency	7.7	Lb/KWH	7.7
ASHRAE	Harrisburg, PA	53.4 DB / 52.6 WB / 94.8 RH	Latent Capacity
Latent Capacity	59.3	Bluh	8.000



Proudly Made in the USA

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