



# COMPU-AIRE INC.

*Specialized Environmental Air Conditioning Systems*

## Cellu-Kool

Exterior Wall Mount Systems

2–5 tons (7–17.5 Kw)



All computers are highly sensitive to their environment. To function efficiently, they require specific temperature, humidity, and filtration conditions. Failure to meet these specified conditions can result in distorted or lost data and even complete shutdown of computer services.

Compu-Aire understands the special environmental control needs of both main-frame and mini-computer rooms.

Today, Compu-Aire has successfully installed units at defense, government, industrial, and commercial facilities. Compu-Aire's modern manufacturing facilities and experienced technicians are capable of original design and production to fit the needs of the customer, however technically complex.

Compu-Aire's unique air conditioners not only keep pace with rapidly changing computer technology, but offer the highest degree of reliability in component and system operation, for continued service 24 hours a day, 7 days a week.

*Compu-Aire offers total environmental air protection for any sizeable computer investment.*

# CELAC - 212

Cellu-Kool

## **Type**

Air Conditioner - AC  
Heat Pump - HP  
Chilled Water - CW

## **Voltage**

2 - 208  
3 - 380  
4 - 460  
7 - 277

## **Nominal Tonnage**

2 - 2 Ton  
3 - 3 Ton  
4 - 4 Ton  
5 - 5 Ton

## **Phase**

1 - 1 phase  
3 - 3 phase

## ADVANCED AIR CONDITIONING SYSTEMS FOR ALL TELECOMMUNICATION NEEDS.

The Compu-Aire **Cellu-Kool** units are technologically advanced systems that monitor and maintain sensitive and critical environments for cellular sites, pop sites, mobile or remote vehicular ground test facilities, space satellites, medical or auto industries, and any other remote site that requires redundancy and reliability of operation. The Compu-Aire Cellu-Kool units are self contained and highly rugged air conditioners that are constructed for exterior wall mounting to withstand outdoor weather conditions. This design feature enables the user the maximize utilization of the available space indoors.

Many of our customers find other commercial uses for the Compu-Aire Cellu-Kool because it is so flexible in design. The Compu-Aire **Cellu-Kool** system can be adapted to suit anyone's budget. For economical value in basic installation, with little or no critical requirement, we recommend the "**Exterior Wall Mount System**" unit. These systems, when modified with optional features and advanced controls, can perform very sensitive and sophisticated tasks with or without remote capabilities.

The Compu-Aire **Cellu-Kool** units are pre piped, pre wired, charged, and tested before leaving the factory; when delivered, they are ready to be installed on site.

Standard Features Include:

The Compu-Aire **Cellu-Kool** is a wall mounted, process cooling unit that is factory assembled, piped, internally wired, factory tested, and fully charged with R-407C. The units are ETL listed for outdoor installation. The unit capacity is rated in accordance with ARI standard 210.

### **Cabinet**

The cabinet is constructed of 18 gauge, furniture grade steel and is finished on all exterior surfaces with weather resistant enamel paint. The unit is complete with full length mounting brackets on the top and sides, condenser air inlet/outlet grilles, and fresh air inlet with manually adjustable sample. The cabinet is insulated with 1 ½ lb. per cubic feet, 1" thick neoprene coated fiberglass insulation.

### **Refrigeration System**

The refrigeration system consists of high efficiency scroll compressor, externally equalized expansion valve, filter drier, sight glass with moisture indicator, high and low pressure switches.

### **Evaporator And Condenser Coils**

The coils are constructed of a non-ferrous construction with aluminum plate fins that are mechanically bonded to copper tubes. The return bends are made of seamless copper tube. The evaporator coil is provided with a stainless steel condensate drain pan. The condenser coil is rated for 95°F ambient.

### **Compressor**

The unit contains a hermetically sealed high efficiency scroll compressor. The compressor is complete with access valves and high and low pressure switches. The compressor is protected by thermal and electrical overloads and built in circuit breakers.

### **Fans And Motors**

The evaporator fan is a forward curve centrifugal type, tested, and rated in accordance with AMCA requirements. The fan is direct driven with a PSC motor. The condenser fan is a direct drive propeller type. Air from the condenser is discharged horizontally.



### **Filters**

The filters are 1" 30% MERV 8 pleated media type, installed in the filter section as part of the unit. The filters are accessible from the front of the unit.

### **Control Panel**

The control panel is accessible to authorized personnel through a hinged access door on the right side of the unit. It contains a 24 Vac control circuit transformer and all necessary contactors, fuses, fuse blocks, power block, low voltage terminal block, and relays.

### **Fan Cycling Control**

An adjustable pressure switch is provided for low ambient fan cycling control. The pressure switch cycles the condenser fan to maintain the discharge pressure to allow the system to function during low ambient condition.

### **Supply And Return Grilles**

An anodized aluminum supply and return air grilles are provided for field installation. The supply grille has a double deflection type and is adjustable. The sleeve has to be field supplied.



## OPTIONAL FEATURES FOR ALL SYSTEMS

### **. Electric Heat (optional)**

The electric heat is located at the downstream side of the evaporator coil. The electric heating coil is a low watt density, stainless steel fin tubular construction. The heating operation has a dual temperature limit protection.

### **. Hot Gas Bypass**

For precise capacity control in the cooling mode and to protect against coil freeze up during low load conditions, the hot gas bypass is factory installed.

### **. Auto Changeover**

A wall mounted panel with microprocessor interfacing device provides any 2 or 3 units to:

1. Stage-in as one system for added capacity
2. Switch over in the event of unit failure
3. Sequence units for equal usage and wear

### **. Additional Dry Contacts**

A Set of Dry Contacts can be provided for remote alarm (common), or connection to ECMS system (By others).

### **. System 2200 Time-Clock**

Microprocessor System 2200 with Time Clock gives capability of Set Back Control for all the units, summary of alarms and indicates real time and date.

- Remote dial up and communications
- RS-422/485 network capabilities
- Auto changeover and/or auto rotation for operational redundancy or allow switching of units to maximize component life
- 7 day time clock
- pLAN network capability
- Effective zone control
- Full graphic display
- EMS/BMS capabilities

### **. Room Thermostat**

A remote non programmable wall thermostat with an On/Off switch and one stage for cooling and one stage for heating is provided for field mounting. The thermostat has the following features:

- Heat/cool automatic changeover and off mode
- No batteries required
- retains programmed set points upon loss of power
- Lockable access cover and keypad lock out



### **Advance System 2200 3 S**

System 2200 Plus Advance Microprocessor is the latest Compu-Aire state of art user interfaces, featuring an internal 132x64 pixels display with 8 rows x 22 columns, and a 32-bit microprocessor that allows the management of complex HVAC functions.

#### **Standard Features**

- Standalone panel
- Internal display
- Smooth keypad
- 5 analog inputs & 8 Digital outputs
- 4 modulating analog outputs
- N.C & N.O relay for common or selectable alarm output
- Adjustable alarm delay
- 7-day time clock with night setback schedule
- Nonvolatile storage memory for setup information
- DIN rail compatible for easy installation
- Auto restart on power lost
- Customized for application specific
- Anti-compressor short cycling logic
- Alarm and trend logs with time stamp
- Audible and visual alarm



**ADVANCED MICROPROCESSOR (optional)**

Unit mounted Programmable, Solid State System 2200 Control shall be microprocessor based with 4 Row, 40 Character, Back-lit, Super-twist Liquid Crystal Display (LCD). Information shall be displayed and presented in a format that is easily viewed and understood.

Programming Compu-Aire's System 2200 system has been designed to be user-friendly.

A touch sensitive control panel with "state of the art" micro processing technology allows the Compu-Aire System 2200 to be programmed to fit the needs of the customer. It assures precise control of temperature, humidity, air cleanliness, and air flow in the data center, as well as communication between multiple equipment located on-site.

The control system allows local monitoring and programming of:

- Temperature and humidity set points
- Temperature and humidity sensitivity
- Current temperature and humidity
- Temperature and humidity alarms

The Compu-Aire System 2200 offers both modern reliability and flexibility to adapt to changing computer room conditions.

The microprocessor control panel is a DUAL display, digitally operated controller that has the capability of precisely controlling the computer room conditions so that both temperature and humidity are maintained within the selectable dead band and set points.

The primary display is an alpha-numeric LCD which indicates the unit operating mode at all times. For example, cooling, heating, humidity, etc. The return air temperature and humidity are displayed at all times. The secondary display consists of a matrix of LED indicators which display both operating modes and malfunctions.

Malfunctions and/or out of tolerance conditions are signaled in three ways. An audible alarm is sounded. The specific alarm condition is displayed alpha-numerically, as well as by LED indicators. An alarm silence switch is provided to silence the alarm signal. All alarm conditions REMAIN on both displays until the condition is corrected and the reset button is pressed.

- Automatic control functions
- Compressor Short Cycle Control
- System Auto or Manual Restart
- Sequential Load Activation
- Common Alarm Relay
- Manual Diagnostics

**Programmable Functions**

- Temperature Set Point (65°-85°F/18.9°-29.4° C)
- Temperature Sensitivity (1°-5°F, C in 0.1" Increments)
- Temperature Alarm Points
- Unit Stage Time Delay
- Inter-stage Time Delay
- Audio Alarm
- Restart Mode
- Fire-stat Tripped

**Monitored and displayed Functions**

- Current Temperature (deg. F/C)
- Current Humidity (% RH)
- Cooling 1
- Run Times for Blower, Compressor,
- 2 Analog Inputs for Customer Supplied Sensors

**Switch Functions**

- System On/Off Switch
- Menu Select Button
- Alarm Silence/Program Button

**Standard Alarms**

- Room Over Temperature
- Room Under Temperature
- No Air Flow
- Change Filters
- Fire-stat Tripped
- Low Voltage Alarm
- Temperature Sensor Failure
- Power Failure Restart
- Compressor Short Cycle
- Compressor High Pressure 1
- Selectable Alarm Outputs
- Compressor Low Pressure 1

*Automatic restart of unit after power loss is a standard feature of the microprocessor System 2200.*

**. Reheat Options**

The reheat coils are copper tube and aluminum fins of sufficient capacity to maintain dry bulb conditions during the de-humidification cycle.



**. Electric Reheat**

The electric heat is located at the downstream side of the evaporator coil. The electric heating coil is a low watt density, stainless steel fin tubular construction. The heating operation has a dual temperature limit protection.

**. Filters**

Optional upgraded filters for various requirements are available in lieu of the standard 2" 30% efficient filters. These optional filters are 2" to 4" thick deep pleated filters, 30% to 60% efficient ASHRAE standard 52-76.

**. Fuse Disconnect Switch**

Mounted on the high voltage section of the electrical panel, access to the high voltage panel is permitted after the switch is in the OFF position.

**. Smoke Detector**

The smoke detector activates an alarm upon sensing smoke in the room and shuts down the system. It is located in the return air stream.

**. Water Sensors/Condensate Probes**

The probes sense moisture under the floor. Upon sensing moisture, an alarm is activated and will de-energize the system.

**. Specially Treated Cooling Coils**

The coils are available where air cooled condensers and the dry fluid coolers are subject to contaminating or corrosive air stream. Special coatings can be applied to reduce corrosion. Copper fin/copper tube coils are also available.

**. Temperature And Humidity Recorder**

The recorder is battery powered 24 hours a day, 7 days a week. It comes complete with 100 recording charts and two bottles of ink.

**. Extended 3 and 5 Year Warranty**

This provides an addition of 2 or 4 years to the standard 1 year warranty.

**. Special Voltage**

Special voltage and phases available upon request. (Consult factory)  
380V/3Ph/50Hz  
575V/3Ph/50Hz  
277V/1Ph/60Hz

**Note: Units are designed for 95°F temperatures at sea level. For other temperature and altitude options please consult factory.**



# BMS INTERFACE

Interact and monitor remotely with the pCO web card.

Compu-Aire Inc. advanced microprocessing control system provides access to our equipment through building management system (BMS) supporting industrial standard protocols including Modbus, BACnet, and LonWorks. This ensures easy access to the remote management of the unit via modem and internet.

Available Communications Options

Interfacing with the emerging protocols in the HVAC sector and based on industry standards supporting the following networks:

**BACnet Over Ethernet**

**BACnet Over TCP/IP**

**BACnet MSTP**

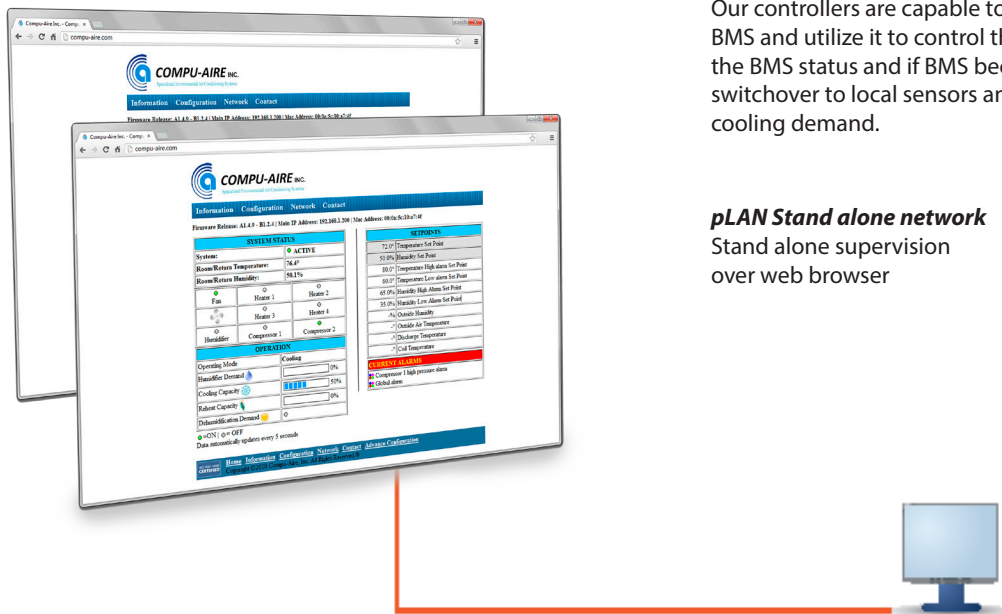
**SNMP v1, v2, v3 networks with trap**

**Modbus**

**RS-485**

**LonWorks**

## STAND ALONE SUPERVISION OVER PCO WEB



## BMS COMMUNICATION PROTOCOLS

### BMS Interface:

Our controllers are capable to receive necessary sensor inputs from BMS and utilize it to control the equipment. The controls can monitor the BMS status and if BMS became offline, controller can seamlessly switchover to local sensors and set points to maintain your data center cooling demand.

### pLAN Stand alone network

Stand alone supervision over web browser

### pCO Web card interface provides:

- Unit status with virtual information
- Room temperature/humidity
- Current set points for temp/humidity
- Mode of operation
- Current status for vital components such as compressors humidifiers, fan and reheat
- current active alarms
- Setpoint control for alarms

The pCO web card configuration interface provides limited access to control room temp/humidity a log with the ability to reset alarms

NOTE: Critical alarms will require manual reset at the unit level.

### Graphical status update with a touch of a button



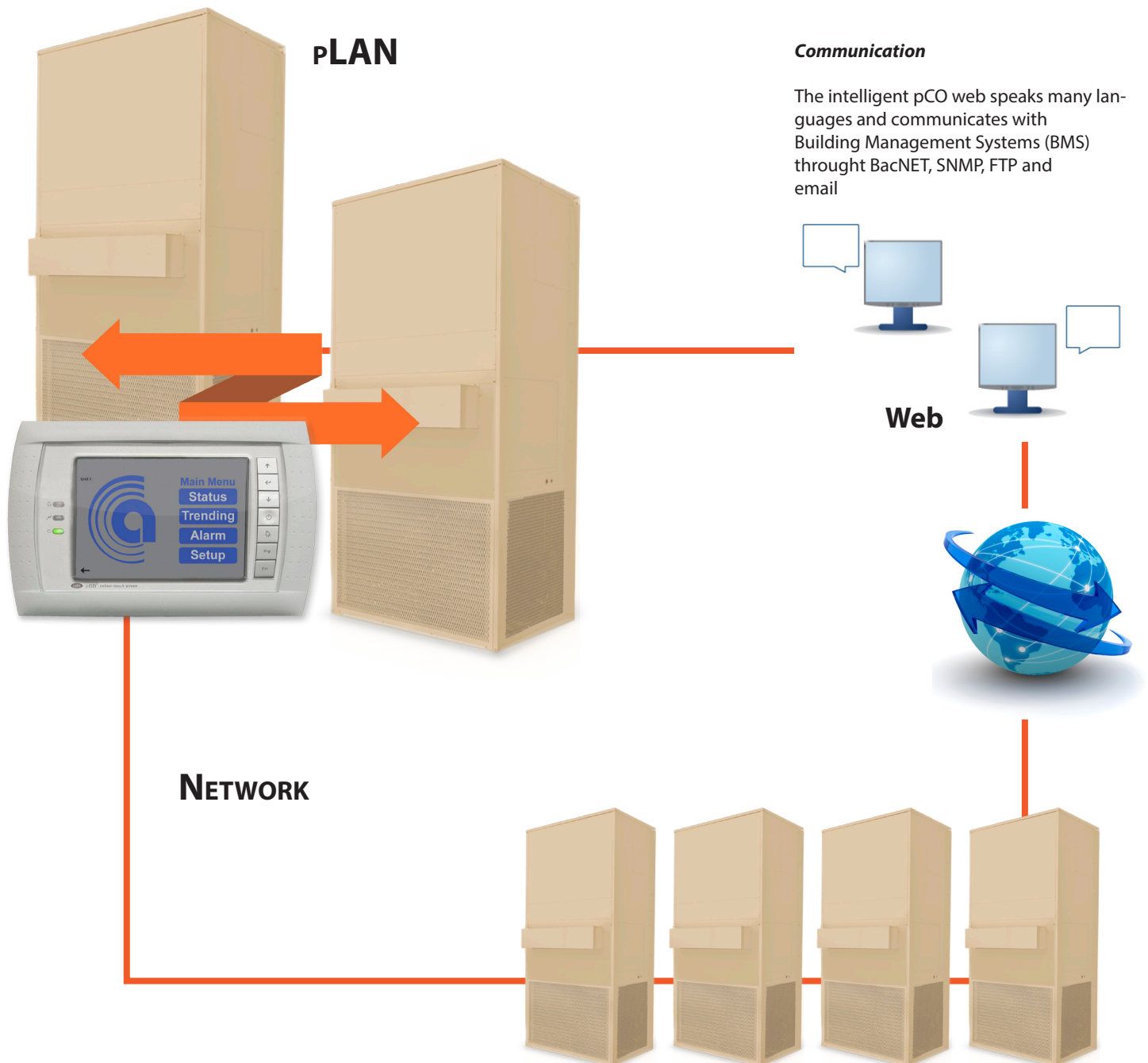


## PROGRAMMABLE LOCAL AREA NETWORK

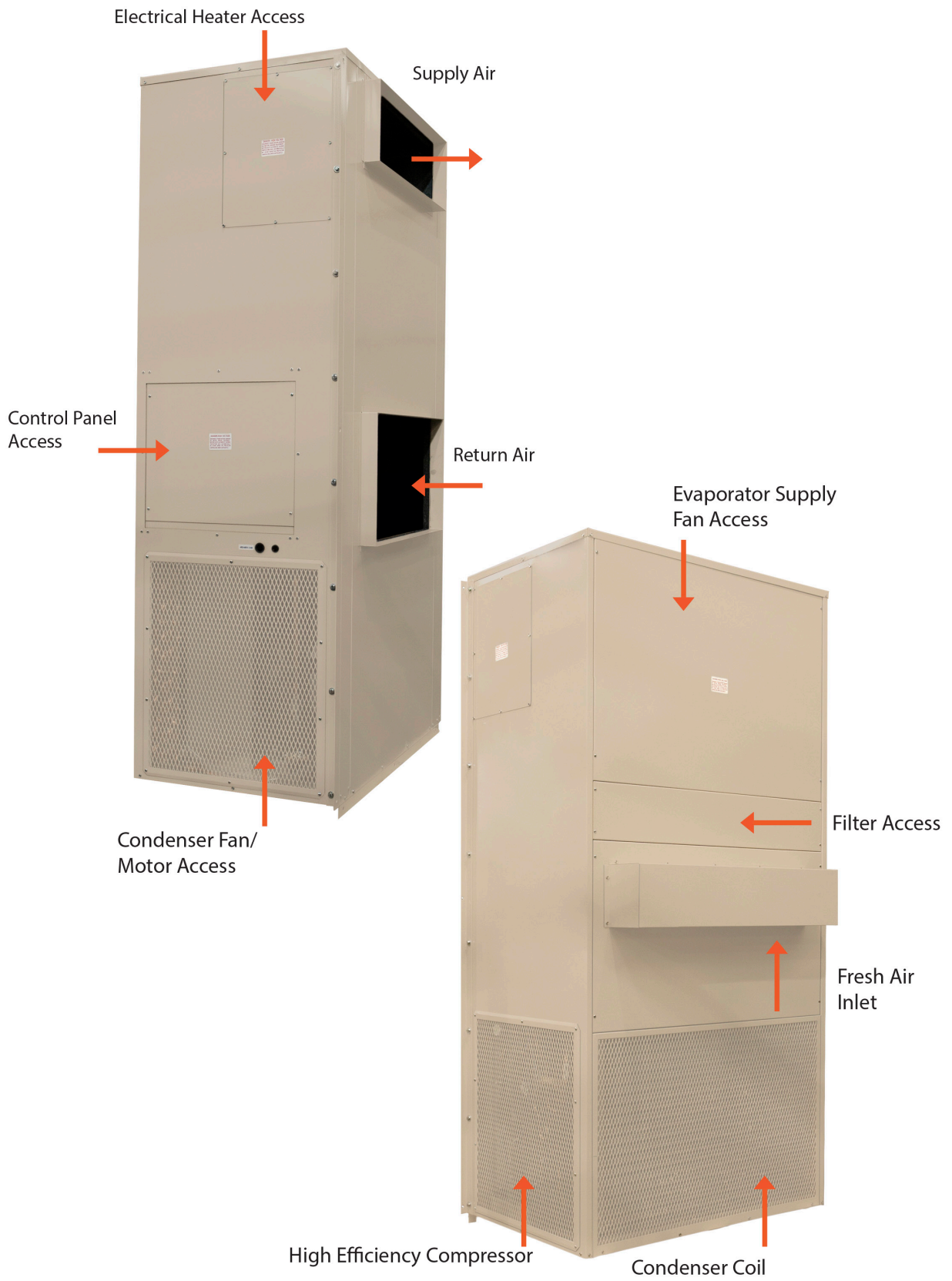
Local and remote monitoring can be achieved with our advanced microcontroller. Based systems are used to provide standalone supervision and control over a pLAN network giving the flexibility of a BMS system at the fraction of the cost.

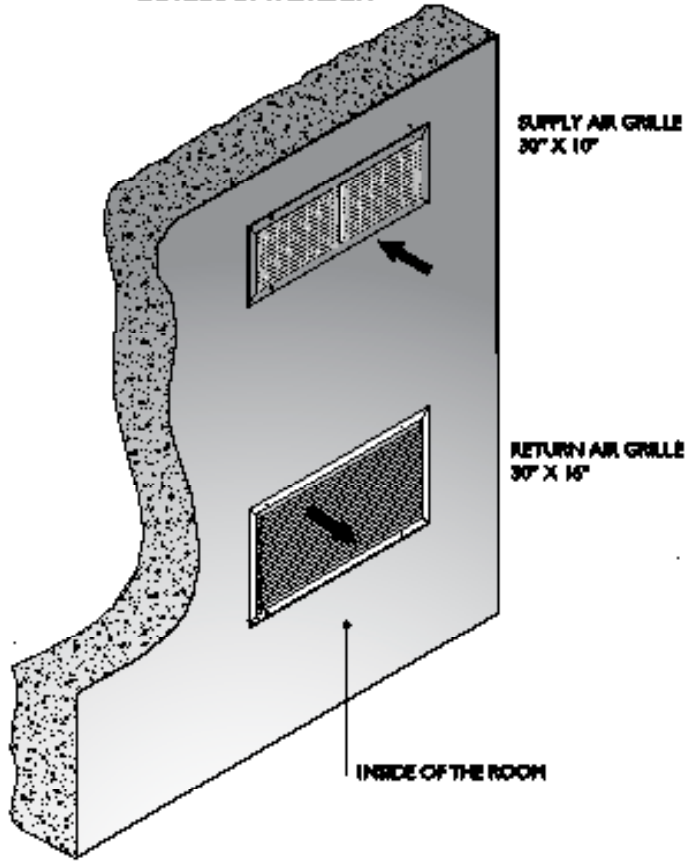
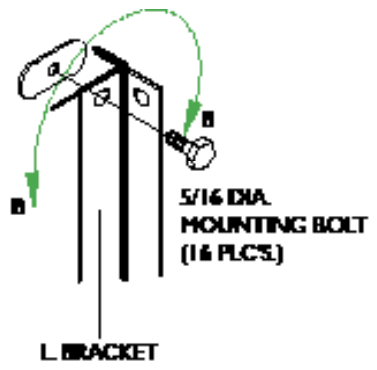
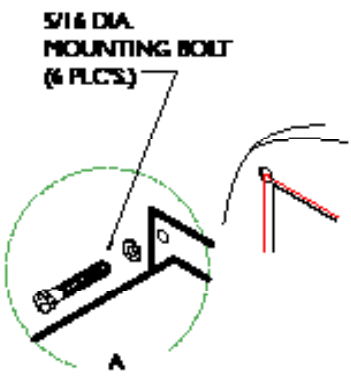
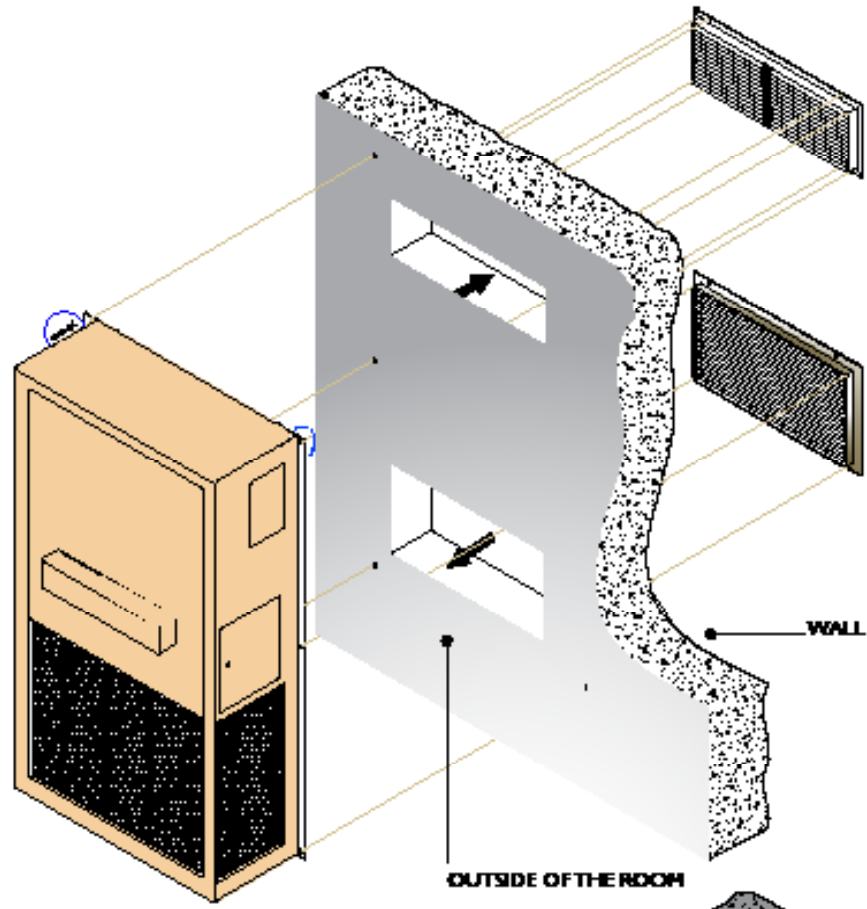
The p-LAN communication option allows two or more systems to talk to each other, p-LAN can be programmed for system rotation and for system failure over redundancy.

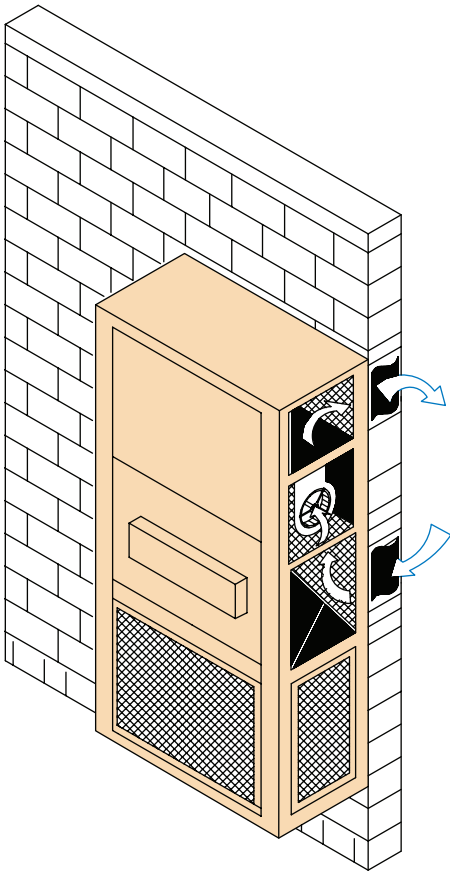
- Supports up to 16 units
- Lead/lag with multiple active & standby
- Unit rotation and auto changeover
- Alarm switchover to standby
- Assisted cooling
- Assisted heating
- Assisted humidification
- Dehumidification



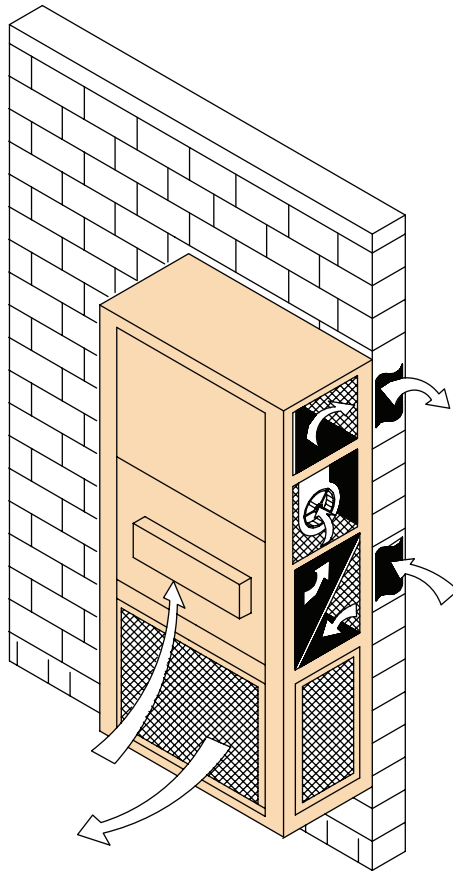
<b>Model &amp; Nominal Tonnage</b>	<b>CELAC-2</b>	<b>CELAC-3</b>	<b>CELAC-4</b>	<b>CELAC-5</b>
<b>Designed Ambient Temperature 95°F 80°F WB 67°F DB 50% RH Entering Air</b>				
Total BTU/HR (kw)	28,400	37,700	56,400	68,300
Sensible BTU/HR	20,000	27,600	41,600	48,400
<b>Designed Ambient Temperature 95°F 75°F WB 62°F DB 50% RH Entering Air</b>				
Total BTU/HR (kw)	21,302	30,265	46,283	51,622
Sensible BTU/HR	17,469	25,065	38,142	42,238
<b>Designed Ambient Temperature 95°F 72°F WB 60°F DB 50% RH Entering Air</b>				
Total BTU/HR (kw)	18,581	26,517	40,231	44,873
Sensible BTU/HR	16,255	23,380	35,440	39,236
<b>Fan Data</b>				
Motor HP	1/4	1/2	3/4	3/4
CFM	850	1300	1800	2000
ESP inch WC	0.25"	0.25"	0.25"	0.25"
<b>Evaporator Coil Data- high efficiency "Slab" configuration, copper tube- aluminum fin</b>				
Face Area Ft.	3.0	3.0	4.0	4.0
Rows/FPI	3/12	3/12	4/12	4/12
<b>Electric Reheat (optional)</b>				
kw	7.5	7.5	7.5	7.5
Stages	1	1	1	1
Heating -Includes motor heat gain	21,090	21,720	27,460	27,460
<b>High Efficiency Scroll Compressor</b>				
Refrigerant	R-407C	R-407C	R-407C	R-407C
Size	2	3	4	5
Quantity	1	1	1	1
<b>Filter Data 30% (MERV 8)</b>				
16 x 20 x 2 (qty.)	1	1	1	1
20 x 20 x 2 (qty.)	1	1	1	1
<b>Condenser Coil Data</b>				
Face Area Ft.	6.0	6.0	6.0	6.0
Rows/FPI	3/12	3/12	4/12	5/12
Motor HP	1/4	3/4	3/4	3/4
CFM	1,600	2,500	3,000	4,000
Fan Size	20"	24"	24"	24"
<b>Electrical Data @ 460V/3Ph/60Hz -Cooling Only</b>				
Full Load Amps (FLA)	11.1	20.0	23.6	25.5
Min Circuit Ampacity (MCA)	13.9	25.0	29.5	31.9
Max. Recommended Fuse Size (MFS)	25A	40A	45A	50A
<b>Electrical Data @ 208V/1Ph/60Hz -with Electric Heat</b>				
Full Load Amps (FLA)	30.6	40.8	44.4	46.3
Min Circuit Ampacity (MCA)	38.3	51.0	55.5	57.9
Max. Recommended Fuse Size (MFS)	45A	70A	80A	80A
<b>Physical Data</b>				
Length	42.50"	42.50"	42.50"	42.50"
Width	27.00"	27.00"	27.00"	27.00"
Height	87.25"	87.25"	87.25"	87.25"
<b>Unit Weight (Lbs.)</b>	320	400	490	510



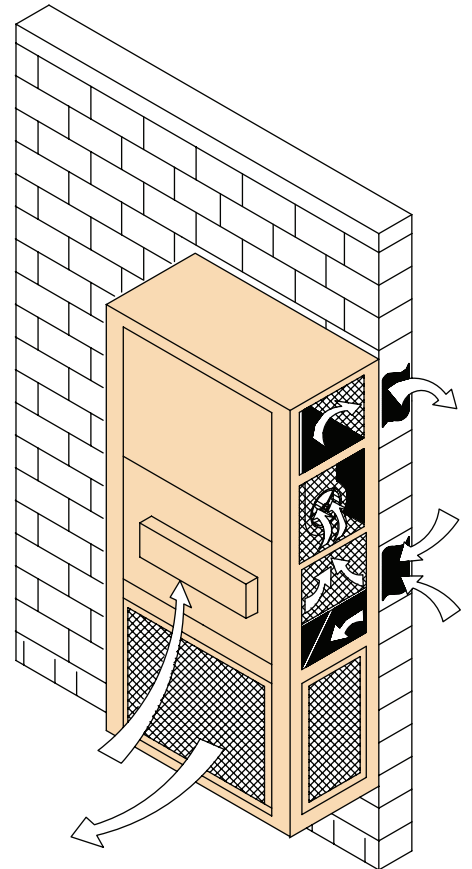




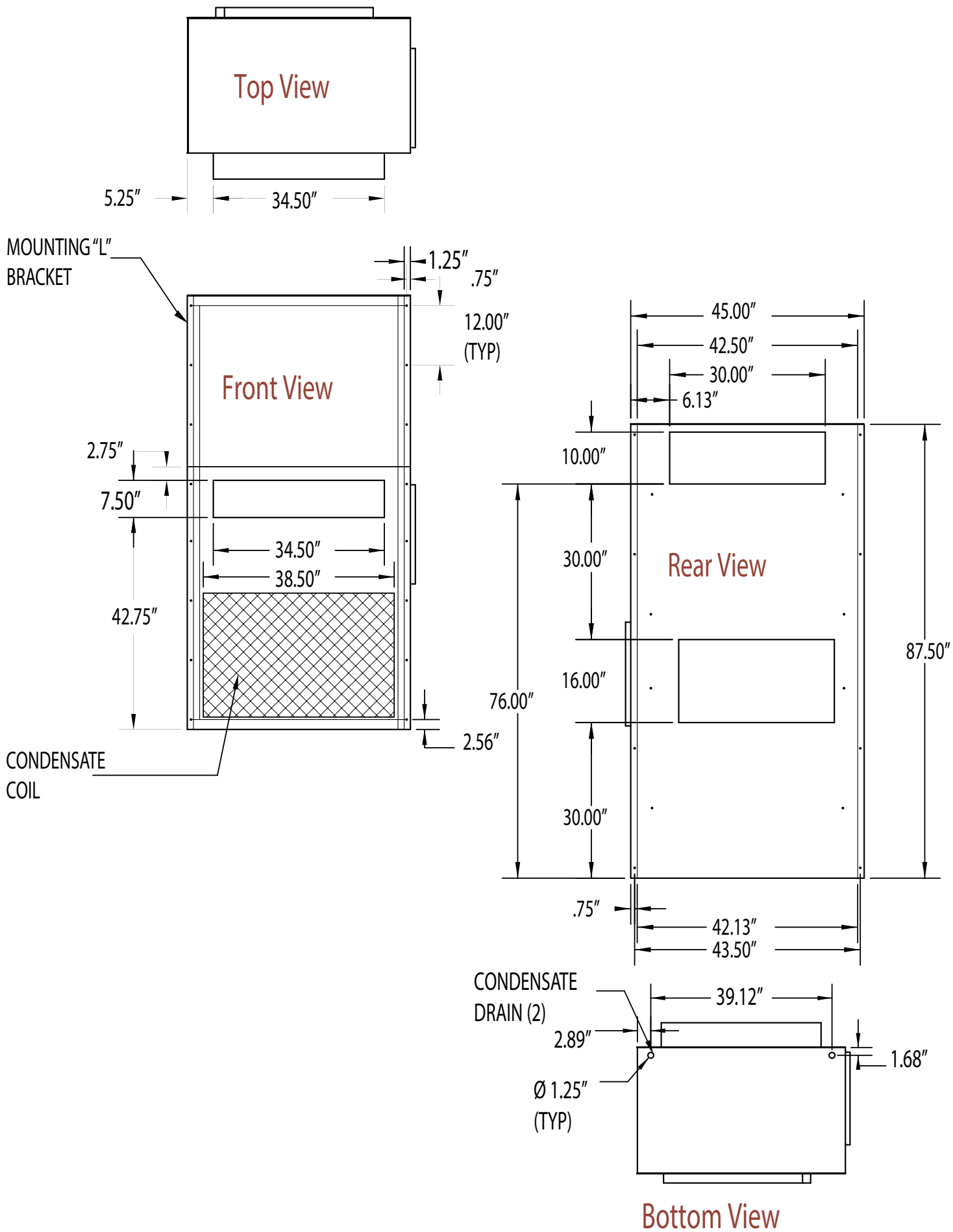
No Economizer



100% Economizer



Fixed Blade Damper



SUPPLY AIR INLET

2.00"

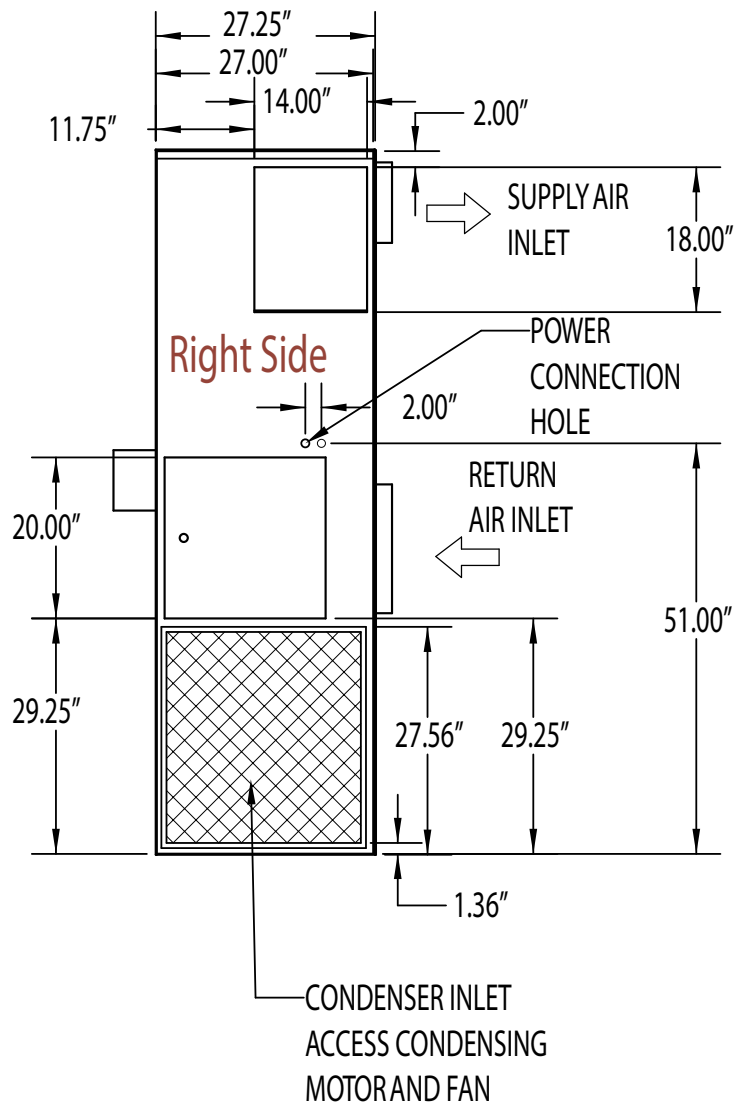
Left Side

FRESH AIR INLET

5.25"

RETURN AIR INLET

CONDENSER







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