



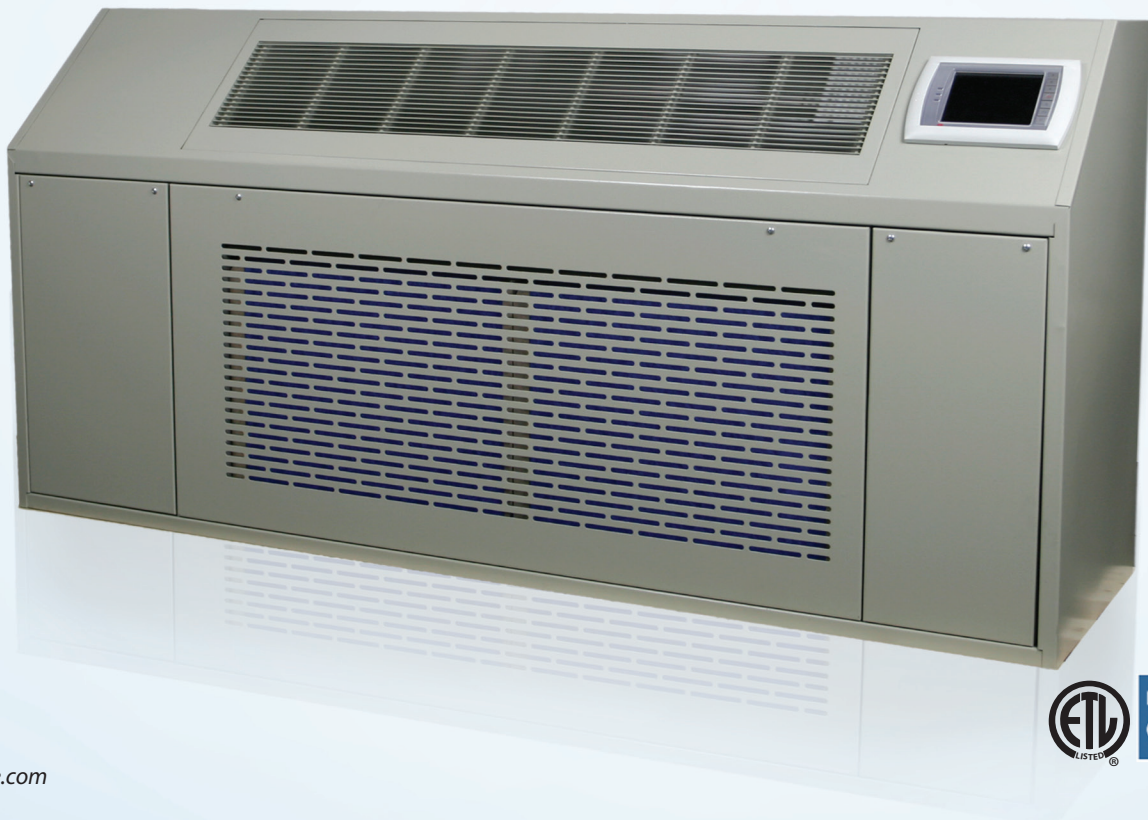
# COMPU-AIRE INC.

*Specialized Environmental Air Conditioning Systems*

## Compu-Mate

Console System

1.5-5 tons



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.*

# CME 212

Compu-Mate

## **Type**

Evaporator - DX  
Water Cooled - W

## **Voltage**

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

## **Nominal Tonnage**

1.5 - 1.5 Ton  
2 - 2 Ton  
3 - 3 Ton  
4 - 4 Ton  
5 - 5 Ton

## **Phase**

1- 1 phase  
3 - 3 phase

**T**he Compu-Mate units DX systems are suitable for non-ducted application designed for indoor wall and floor mount evaporator section with a matching outdoor condensing unit.

Available condensing units:

**CFCU** Air Cooled Centrifugal Fan Condenser Unit

**PFCU** Propeller Fan Condensing Unit

**WCCU** Water Cooled Condensing Unit

The Compu-Mate indoor module can be installed against the wall or can be wall mounted with the available optional wall brackets inside any room. Its low and compact system allows for easy access, installation and service.

### **The Compu-Mate**

Floor mount console type Air Cooled DX Split System, Nominal 1.5 through 5 Ton, 208V/1Ph/60Hz with Advanced Microprocessor System 2200 Panel, and Return Air Temp/Hum Sensor. The Unit shall consist of a DX cooling Coil, 1"30% Efficient Air filter(s), Blower-motor assembly. The System shall be complete with remote outdoor air cooled propeller fan condensing unit; PFCU (1 through 5 tons available), 208V/1Ph/60Hz consisting of a Condenser Coil, high efficiency Scroll Compressor, and Direct Drive Fan-motor assembly complete with low ambient control.

The computer room environmental control system shall be wired, piped, factory run tested, and fully charged with R-407C. Unit shall have Horizontal Supply and Front

The unit shall be factory furnished with Microprocessor Control Panel. The System shall have a total and sensible cooling capacity as shown in the technical data sheet. Units shall be ETL listed.

Electrical input to the unit shall be 208 Volts, 1 Phase, 60 Hz.

**Compu-Mate**-Air Cooled unit shall have the following components:

DX Coil  
Blower and Motor  
Electrical Control Panel  
Microprocessor Control Panel

Condensing Unit shall have following components:

Condenser Coil  
Propeller Fan and Motor  
Scroll Compressor(s)  
Low Ambient Control  
Electrical Control Panel

The Compu-Mate Model features:

### **CABINET**

Cabinet shall be constructed of heavy gage paint-lock steel. Access panels shall be provided for ease of service.

### **Fully Insulated Cabinet**

The Compu-Mate cabinet is insulated with 1", 1-1/2 lb density insulation 1.5lb density insulation is utilized.

### **FAN(S)**

The multiple fans shall be direct drive DWDI centrifugal type. Fan assembly shall be dynamically and statically balanced and shall utilize a heavy duty stainless steel shaft with permanently lubricated bearings and rated in accordance with AMCA Standard #210. The fan motor shall be PSC direct drive internally protected and shall be 1075rpm and shall be NEMA rated. Fan shall be located on the downstream side (DRAW THRU) of the coil.

### **BLOWER MOTOR**

The motor shall be PSC, Internally Protected and shall be 1075RPM and NEMA rated. Motor shall be two (2) speed.

### **FILTRATION**

The air conditioners shall have Filter Rack with 20% efficient filters as measured by ASHRAE standard 52-76. The filters shall be 1 inch deep with full depth filter pleats. Filters shall be UL Class II. Filter access shall be from the front of unit behind front panel.

### **EVAPORATOR COIL**

The evaporator coil shall be slab design and have face area as listed in the technical data sheet.

The Refrigerant flow shall be controlled by Thermostatic Expansion Valve. The prime surface shall be seamless copper tubes with aluminum fins. Return bends shall be made of seamless copper tube. Coils shall be tested at 350 psig. Coils are rated in accordance with ARI Standard #410.

FINS: Shall be aluminum plate type, die formed fin design to provide optimum strength and turbulence for maximum peak performance without objectionable high pressure drop.

### **CONDENSATE DRAIN PAN**

The Condensate Drain Pan shall be of stainless steel construction with nonferrous connections.

### **REFRIGERANT SYSTEM**

Each refrigerant circuit shall be provided with:

- \* Externally Equalized Expansion Valve
- \* Solenoid Valve

### **CONTROLS**

**POWER PANEL:** All high voltage electrical control components shall be located in an easily accessible control box mounted on the side of the unit. Terminal points shall be provided for Remote Microprocessor Panel Connections.

Each electrical component such as fan motor, compressor, reheat, and humidifier shall be individually protected with branch circuit fuses. The Control Panel shall contain:

- \* Fuse-block with Fuses
- \* Transformers
- \* Circuit breakers for transformers
- \* Contactors
- \* Ground connection
- \* Low voltage terminal block.

## **ADVANCED MICROPROCESSOR**

### **(Optional)**

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

SYSTEM 2200 PANEL: 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.

### **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.*

### **Optional**

#### **AUXILIARY CONTACTS FOR REMOTE ALARM**

A Set of Dry Contacts shall be provided in the remote control panel 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.

### **Support System**

The Compu-Aire System 2200 is equipped with a battery back-up to maintain programmed set points and sensitivities, in case of a power interruption.



## PFCU (PROPELLER FAN CONDENSING UNIT CABINET)

### CABINET

Propeller Fan Condensing Unit Cabinet shall be constructed of heavy gage galvanized steel. Access panels shall be provided for ease of service. The cabinet shall be designed for outdoor installation with a weatherized enamel finish. The Air Cooled Condenser shall be arranged for Horizontal Air Flow.



### FAN

The condensing sections shall be configured for DRAW-THRU air pattern to provide uniform Air Flow over the entire face area of the coil. The fan shall be Propeller Type, Direct drive. The fan blades shall be aluminum, and shall be protected by a heavy gauge, steel wire, zinc plated, epoxy coated fan guard.

### BLOWER MOTOR

The motor shall be PSC, Internally Protected and shall be 1070 RPM and NEMA rated. The condenser motor(s) shall have permanently lubricated sealed ball bearings, with inherent overload protection. Motor shall be mounted inside the condensing unit casing for weather protection.

### CONDENSER COIL

The Condenser Coil shall be slab design and have face area as listed in the technical data sheet.

The prime surface shall be seamless copper tubes with aluminum fins. Return bends shall be made of seamless copper tube. The Coil shall be counter flow design for maximum heat transfer efficiency.

FINS: Shall be aluminum plate type, die formed fin design to provide optimum strength and turbulence for maximum peak performance without objectionable high pressure drop.

### SCROLL COMPRESSOR

The unit shall utilize hermetically sealed high efficiency compressor. It shall employ an internal device to prevent reverse rotation upon shut down. In addition, the compressor shall be able to restart after a 5 second time delay without the aid of start assist device. The compressor internally shall have pressure relief valve, current overload and thermal protection complete with factory mount and wired crankcase heater.



### REFRIGERANT SYSTEM

The refrigerant circuit shall be provided with:

- \* Filter Dryer
- \* Sight glass
- \* Manually Reset High Pressure Switch
- \* Auto Reset Low Pressure Switch,
- \* Schrader fittings for charging.
- \* Liquid Receiver
- \* Solenoid Valve

### HOT GAS BYPASS (optional)

Each refrigerant circuit shall be provided with factory piped Hot Gas Solenoid Valve and Externally Equalized Regulating (Discharge Bypass) Valve to provide capacity control under partial load conditions.

### LOW AMBIENT CONTROL

#### LOW AMBIENT-FAN SPEED CONTROL:

The Propeller Fan Condensing Unit shall be provided with a VARI-SPEED PACKAGE FOR LOW AMBIENT DOWN TO -20°F: Consisting of factory installed solid state pressure control. The capillary sensor senses the head pressure of operating compressor and control the variable speed fan to properly maintain the head pressure.

A single phase variable speed motor shall be factory installed on the condenser fan. The speed controller modulates air delivery in direct response to head pressure and maintain minimum head pressure required.

### CONTROLS

#### POWER PANEL

All high voltage electrical control components shall be located in an easily accessible control box mounted on the side of the unit. Terminal points shall be provided for Remote Microprocessor Panel Connections.

- \* Fuse-block with Fuses
- \* Contactors
- \* Ground connection
- \* Low voltage terminal block.
- \* Power Block

### WARRANTY

Standard limited one(1) year warranty is in effect to insure unit to be free from defects in material and workmanship, limited to parts replacement only and guarantees extended from our original components parts manufacturer or vendor.

## OPTIONAL FEATURES FOR ALL SYSTEMS

### 1. Humidifier

#### **Steam Generating Modulating Humidifier**

The steam humidifier is a dry steam, double jacketed type. It is piped with a solenoid valve. The steam trap and Y-strainer are to be provided by the factory and field installed outside the unit.

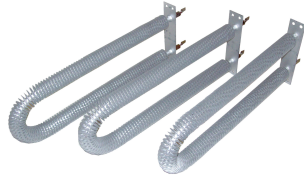


#### **Electric Immersion Humidifier**

The electric immersion humidifier is provided with low watt density heating elements in a stainless steel pan. It is equipped with a float valve assembly and auto flush system.

### 2. Reheat

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



### 3. Steam Reheat

The coil is factory piped with a 2-way on/off control valve. The strainer and trap are provided for field installation outside of the unit.

### 4. Hot Water Reheat

It is factory piped with a 2-way on/off control valve.

### 5. Hot Gas Reheat

Factory piped, the hot gas reheat has a 3-way solenoid valve and refrigerant check valve. The hot gas reheat coils are sized to provide reheat capacity equal to the standard electric reheat capacity.

### 6. Extra Electric Reheat

Additional electric reheat can be added to units provided with any other optional reheat source.

### 7. 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.

### 8. 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.

### 6. Condensate Pump

The condensate pump is provided for field installations. A separate power source is required.

### 7. 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.

### 8. Water Sensors/Condensate Probes

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

### 9. Single Phase Unit

Where three phase power is not available, a single phase unit can be provided.

### 10. 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.

### 11. 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.

### 12. Extended 3 and 5 Year Warranty

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

### 13. Low Voltage Dropout

When the system senses that the incoming voltage falls below 10%, the system is automatically shut off. The system then requires a manual reset. The voltage drop is field adjustable.

### 14. Water Flow Switch (Applicable To Water Cooled and Chilled Water Systems)

For installations requiring indication of flow interruption, the flow switch is provided for field installations.

### 15. 3-Way Water Regulating Valve For Water Cooled (150 PSI)

Each condenser circuit is provided with a factory piped 3-way water regulating valve which allows for a constant pump operation.

### 16. 3-Way Water Regulating Valve For Water Cooled (300)

Each condenser circuit is provided with a factory piped 3-way water regulating valve which allows for a constant pump operation.

### 16. High Pressure Condenser Flow Valve

This is available where a waterside pressure exceeds 150psig. It is good for waterside pressure up to 300psig.

### 17. External Condensate Pump

The Condensate pump shall be Unit Mounted/Field Installed. It shall have capacity of 208 GPH at 20ft., head. Pump is complete with integral float switch, pump, motor assembly and reservoir. Check valve is to be field provided and installed. Voltage shall be 115Volt, 60 Hertz, Single Phase.

### 18. Special Voltage

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

## OPTIONAL CONTROL FEATURES

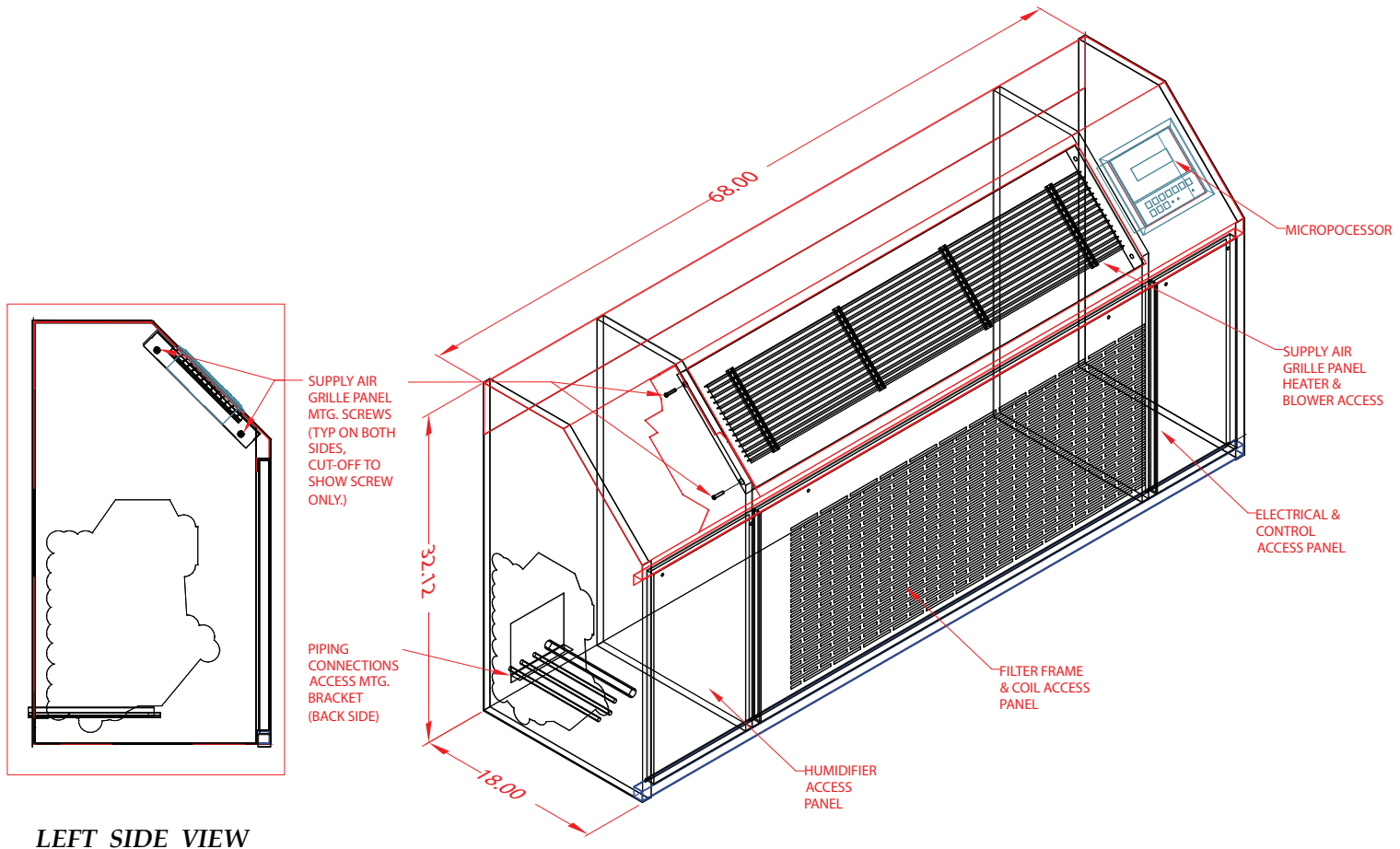
### 1. Auto Changeover

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

### 2. Additional Dry Contacts

A set of dry contacts can be provided for remote monitoring and control.



LEFT SIDE VIEW

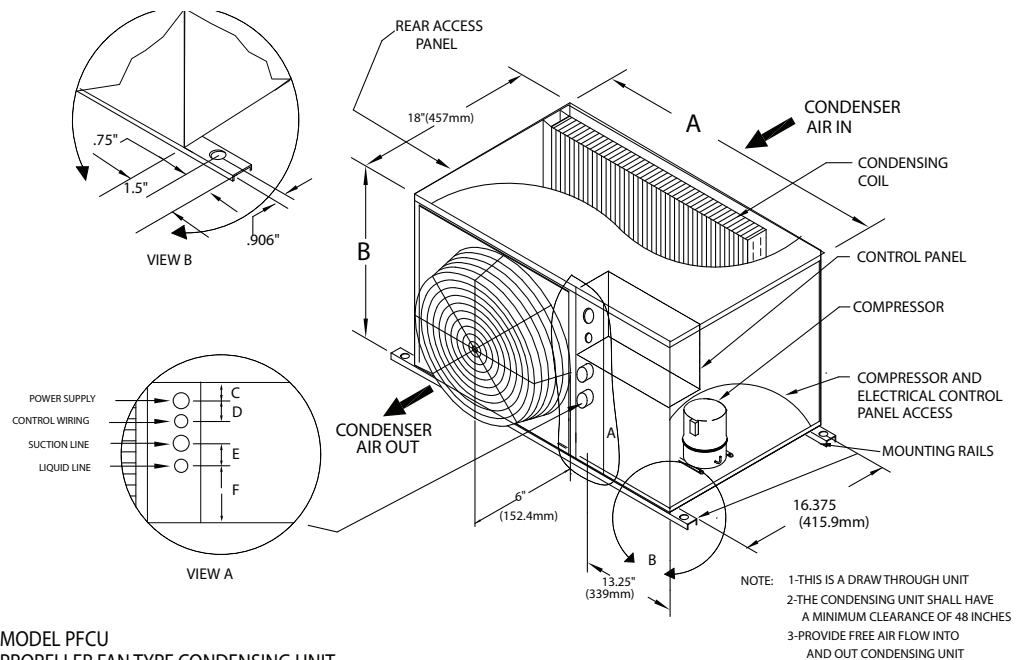
COMPU-MATE AIR COOL  
AIR COOLED 1.5, 2, 3, 4 & 5 TON



<b>Model &amp; Nominal Tonnage</b>	<b>CME-1.5</b>	<b>CME-2</b>	<b>CME-3</b>	<b>CME-5</b>
<b>80°F DB 67°F WB 50% RH Entering Air</b>				
Total BTU/HR (kw)	18,200	26,500	36,300	68,301
Total Sensible BTU/HR (kw)	15,800	23,800	31,000	48,783
<b>75°F DB 62.5°F WB 50% RH Entering Air</b>				
Total BTU/HR (kw)	16,700	24,200	34,100	47,736
Total Sensible (kw)	15,200	22,800	29,800	41,736
<b>72°F 60°F WB 50% RH Entering Air</b>				
Total BTU/HR (kw)	16,200	23,400	32,200	44,665
Total Sensible (kw)	14,300	22,800	29,700	40,432
<b>Fan Data</b>				
Motor HP	1	1	1	1
CFM	660	1320	1550	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.	4.06	4.06	4.06	3.96
Rows/FPI	3/12	3/12	3/12	4/12
<b>Electric Reheat (optional)</b>				
kw	5	5	5	10
BTU/HR (includes motor heat)	8,225	17,500	20,460	40,650
Stages	1	1	1	1
<b>Humidifier- Electronic self generating modulating steam type with disposable cylinder (optional)</b>				
kw	1.7	1.7	1.7	3.4
Lbs./HR	5	5	5	10
<b>Filter Data 30%</b>				
Filter size	1"	1"	1"	1"
<b>Piping-all connections are copper O.D.</b>				
Liquid Line Size	3/8"	3/8"	1/2"	1/2"
Suction Line Size	5/8"	3/4"	7/8"	1 1/8"
Humidifier Water Supply	1/4"	1/4"	1/4"	1/4"
Condensate Drain	3/4"	3/4"	3/4"	3/4"
<b>Unit Weight (Lbs.)</b>	235	235	375	675

Model & Nominal Tonnage	PFCU-1.5	PFCU-2	PFCU-3	PFCU-4	PFCU-5
<b>Design Ambient Temperature 95°F</b>					
<b>Fan Data</b>					
CFM	1420	1600	2400	3200	4000
Fan Size	16"	20"	24"	24"	24"
Motor HP	1/5	1/3	1/3	3/4	3/4
<b>Condenser Coil Data</b>					
Face Area Ft.	3.8	5.0	7.7	10.5	10.5
Rows	2	2	2	3	3
<b>High Efficiency Scroll Compressor</b>					
Refrigerant	R-407C	R-407C	R-407C	R-407C	R-407C
Size	1.5	2	3	4	5
Quantity	1	1	1	1	1
EER	11.0	13.8	13.7	13.8	14.0
<b>Electrical Data @ 208V/1Ph/60Hz</b>					
Full Load Amps (FLA)	15.3	13.2	16.6	21.0	23.9
Min Circuit Ampacity (MCA)	19.1	15.4	20.0	25.1	28.7
Max. Recommended Fuse Size (MFS)	30A	25A	30A	45A	50A
<b>Piping Connection Data</b>					
Liquid Line	1/2"	1/2"	1/2"	5/8"	5/8"
Suction Line	3/4"	3/4"	3/4"	7/8"	7/8"
<b>Physical Data</b>					
Length	38"	43"	50"	54"	54"
Width	18"	18"	18"	18"	18"
Height	24"	24"	31"	37"	37"
<b>Unit Weight (Lbs.)</b>	275	310	325	335	340

### Propeller Fan Condensing Unit

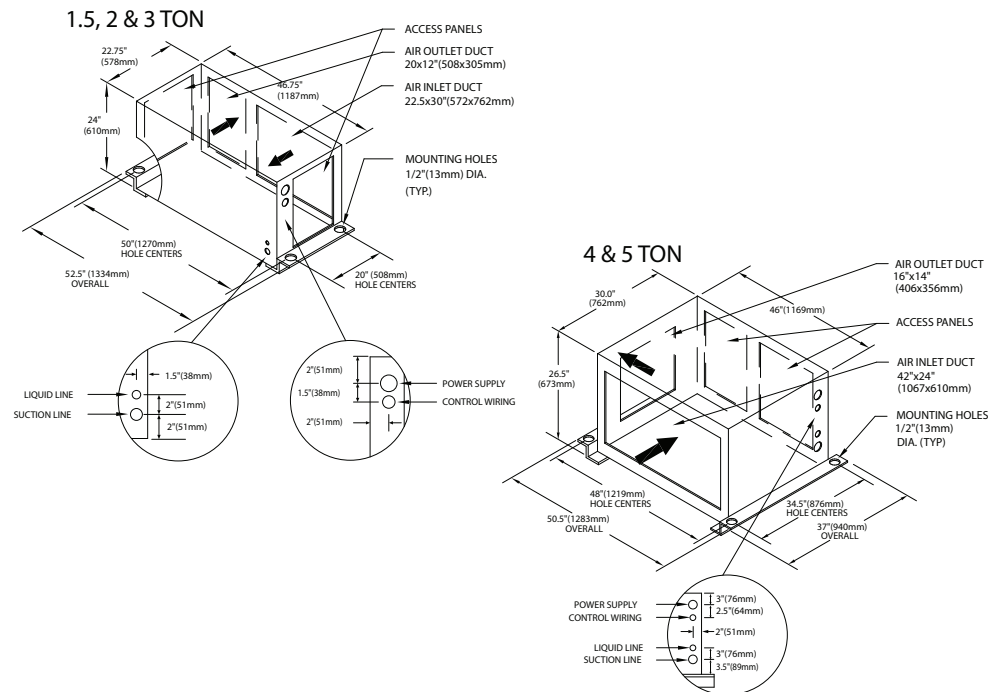


MODEL PFCU  
PROPELLER FAN TYPE CONDENSING UNIT

PFCU MODEL	NOMINAL TONNAGE	A In. (mm)	B In. (mm)	C In. (mm)	D In. (mm)	E In. (mm)	F In. (mm)	WEIGHT LBS. (Kg.)
01.5	1 & 1.5	38"(965)	24"(610)	1.75"(44.4)	2.00"(50.8)	3.00"(76.2)	13.00"(330.2)	240 (108)
02	2	43"(1092)	24"(610)	1.75"(44.4)	2.00"(50.8)	3.00"(76.2)	13.00"(330.2)	300 (135)
03	3	50"(1270)	31"(787)	2.00"(50.8)	2.00"(50.8)	3.00"(76.2)	21"(533.4)	325 (146)
05	4 & 5	54"(1372)	37"(940)	3.00"(76.2)	2.00"(50.8)	3.00"(76.2)	21"(533.4)	340 (153)

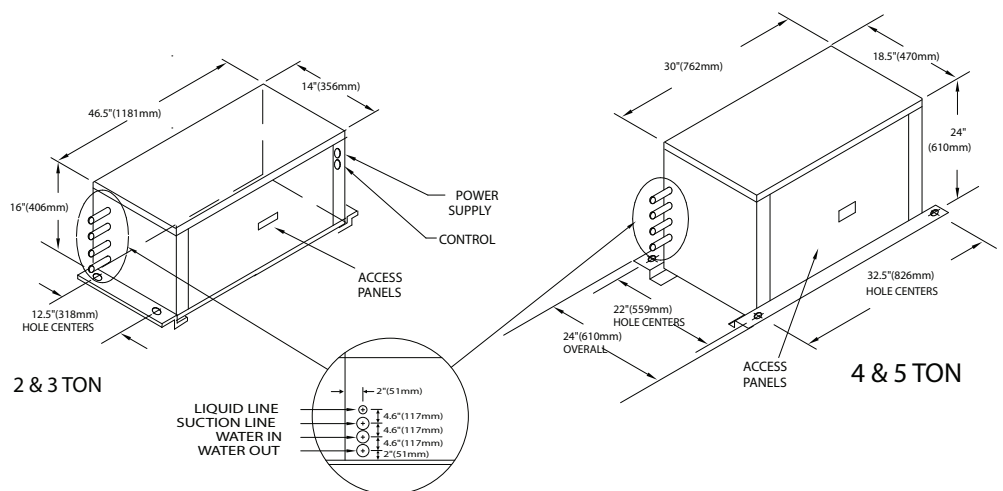
Model & Nominal Tonnage	CFCU-1.5	CFCU-2	CFCU-3	CFCU-4	CFCU-5
<b>Design Ambient Temperature 95°F</b>					
<b>Fan Data</b>					
CFM	1020	1020	1670	2320	3580
Fan Size	16"	20"	24"	24"	24"
Motor HP	3/4	3/4	3/4	1 1/2	1 1/2
<b>Condenser Coil Data</b>					
Face Area Ft.	1.75	1.75	4.6	7.6	7.6
Rows	4	4	3	4	4
<b>High Efficiency Scroll Compressor</b>					
Refrigerant	R-407C	R-407C	R-407C	R-407C	R-407C
Size	1.5	2	3	4	5
Quantity	1	1	1	1	1
EER	11.0	13.8	13.7	13.8	14.0
<b>Electrical Data @ 208V/1Ph/60Hz</b>					
Full Load Amps (FLA)					
Min Circuit Ampacity (MCA)					
Max. Recommended Fuse Size (MFS)					
<b>Piping Connection Data</b>					
Liquid Line	3/8"	3/8"	3/8"	1/2"	1/2"
Suction Line	5/8"	7/8"	7/8"	1 1/8"	1 1/8"
<b>Physical Data</b>					
Length	38"	43"	50"	54"	54"
Width	18"	18"	18"	18"	18"
Height	24"	24"	31"	37"	37"
<b>Unit Weight (Lbs.)</b>	285	310	340	370	390

### Centrifugal Fan Condensing Unit



Model & Nominal Tonnage	WCCU-1.5	WCCU-2	WCCU-3	WCCU-4	WCCU-5
<b>Design Ambient Temperature 95°F</b>					
<b>Fan Data</b>					
CFM	1020	1020	1670		3580
Fan Size	16"	20"	24"		24"
Motor HP	3/4	3/4	3/4		1 1/2
<b>Water Cooled Condenser Data</b>					
Face Area Ft.	1.75	1.75	4.6		7.6
Rows	4	4	3		4
<b>High Efficiency Scroll Compressor</b>					
Refrigerant	R-407C	R-407C	R-407C		R-407C
Size	1.5	2	3		5
Quantity	1	1	1		1
EER	9.9	10.2	10.3		10.0
<b>Electrical Data @ 208V/1Ph/60Hz</b>					
Full Load Amps (FLA)					
Min Circuit Ampacity (MCA)					
Max. Recommended Fuse Size (MFS)					
<b>Piping Connection Data</b>					
Liquid Line	3/8"	3/8"	3/8"		1/2"
Suction Line	5/8"	7/8"	7/8"		1 1/8"
<b>Physical Data</b>					
Length	46.5"	46.5"	46.5"		30"
Width	14"	14"	14"		18.50"
Height	16"	16"	16"		37"
<b>Unit Weight (Lbs.)</b>	275	275	290		390

**Water Cooled Condensing Unit**





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While every precaution has been taken to ensure accuracy and completeness in this brochure Compu-Aire Inc. assumes no responsibility for damages resulting from use of this information or for any error or omissions. Subject to change without notice.