HEPAir

24S Series

Product Data

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CSI 15730 Unitary Air Conditioning Equipment

Guide Specifications
HEPAir ½, 1 Ton and 2 Ton Air Cooled Units
Models 24S050-XXXXX, 24S088-XXXXX and 24S200-XXXXX

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1.0 General

1.1 Summary
These specifications describe the requirements for an environmental control system. The system shall be designed to control temperature, humidity and pressurization conditions within a room. The unit shall be completely self contained with no piping, brazing, system evacuation or refrigerant charging required. Unit shall have integral condensate removal system and not require a condensate drain.

The manufacturer shall design and furnish all equipment in the quantities and configurations shown on the project drawings. The system shall be supplied with ETL listing according to UL/CSA 1995.

1.2 Design Requirements
The environmental control system shall be a HEPAir factory assembled unit. It shall be completely self-contained in a package less than 2 feet wide by 4 feet long by 18 inches high.

Each system shall be capable of delivering up to 800 cfm of conditioned air. The system shall have a total cooling capacity of _____ BTU/H, and a sensible cooling capacity of _____ _____BTU/H, based on evaporator entering air conditions of _____ °F dry bulb, and _____ °F wet bulb.

The unit shall be supplied with (115/1/60, 208/230/1/60) volts/phase/hertz electrical power.

1.3 Submittals
Submittals shall be provided with the proposal and include single line diagrams, dimensional, electrical and capacity data, electrical and utility connection drawings.

1.4 Quality Assurance
The specified system shall be manufactured according to accepted ARI, ASHRAE and accepted industry standards and practices. It shall be factory tested before shipment. Factory tests shall include electrical and pressure integrity testing according to UL guidelines. and performance tests to ensure proper operation of the packaged system.

2.0 Product

2.1 Standard Features

2.1.1 Construction

The cabinet shall be of multipanel construction to allow access from any side or the top. The unit shall be constructed of aluminum, with a powder coated finish for corrosion resistance. All internal sheet metal components shall be constructed of galvanized steel.

All panels shall be removable when the unit is installed without affecting the structural integrity of the unit. The internal cabinet and panels shall be completely insulated with closed cell gasket material.

The unit shall measure 23½ inches by 47½ inches by 14¼ inches, 18 ¼ inches for the 24S200 model. The unit shall have the capability to be mounted directly to a HEPA fan filter unit or optionally suspended from above. Threaded connections for mounting or suspension shall be factory installed. It shall fit in a ceiling grid system without affecting adjacent units, lights or filters.

2.1.2 Refrigeration System

The refrigeration system shall consist of a hermetically sealed, thermal overload protected compressor with mounted using isolation grommets, a high pressure safety switch, filter drier, sight glass, thermal expansion valve.

An evaporator pressure regulating valve shall be installed to allow the system to maintain stable coil conditions under fluctuating loads as low as 50% of unit capacity.

The system shall be charged with R134a refrigerant and use polyol ester oil.

2.1.3 Evaporator Section

The evaporator section shall contain the evaporator fan, motor and the evaporator coil. The evaporator coil shall have copper tubes and aluminum fins. The evaporator fan shall be direct drive propeller type, variable from 150 to 800 cfm. The evaporator fan shall have an external static pressure capacity of 0.1 inches water gauge. The fan shall be wired for continuous operation.

Condensate generated from the evaporator coil shall be internally piped to the condenser section for evaporation. Optionally an external condensate drain can be installed.

Air shall enter the evaporator from any of three sides or the top of the unit.

2.1.4 Mixing Section

Air shall enter the mixing section from either the two sides or the top of the unit. Air shall leave the unit via a 12 ½” opening in the center of the bottom of the unit, or optionally from any of the side or top panels.

2.1.5 Condenser Section

The condenser section shall contain the condenser coil and fan. The condenser coil shall have copper tubes and aluminum fins. The condenser fan shall be direct drive

propeller type, rated at 500 cfm. The condenser fan shall have an external static pressure capacity of 0.1 inches water gauge. Air shall enter and leave from any of three sides as required.

Any condensate generated by the evaporator coil shall be collected in a collection pan beneath the compressor. The condensate shall be heated with a hot gas serpentine line made of corrosion resistant monel tubing and evaporated by the condenser airflow.

All main power, low voltage and control voltage terminal boards and components are located in a single electrical panel located in this section.

2.2 Accessories

2.2.1 Prefilter (Optional)
A prefilter box shall be provided for all air inlets. Prefilter elements shall be 30% efficient by weight according to ASHRAE standards.

2.2.2 Duct Collars (Optional)
Provide a 10” duct collar for all return air and discharge openings.

2.2.3 Electric Reheat
Supply integral electric reheat coils for applications requiring tighter temperature control or heating. The electric reheat system shall use finned tubular coils, and shall be rated for (0.6, 1.0, 2.0) kW. The unit shall include an integral high limit safety switch.

Coil control shall use an SCR controller to proportionally control the heater elements. The SCR control shall get its input from a microprocessor PID control with room sensor. The cooling system shall be locked on.

2.2.4 Humidification (Optional)
Unit shall have an integral steam humidifier capable of 5 pounds per hour operation. Humidifier shall be controlled by a separate microprocessor PID control system, with a room mounted humidity sensor.

Humidifier shall have the ability to operate either with city or DI water as required.

2.3 Controls

2.3.1 Thermostat Control (Optional)
The system shall be controlled using an on – off cooling method that cycles the compressor and condenser fan. This system shall use an electronic thermostat. The thermostat shall have the ability to control 6 units. The evaporator fan shall run continuously.

2.3.2 PID Control (Optional)
Control of the system using electric reheat shall be using a microprocessor PID controller. The unit shall operate in a continuous cooling mode, with the reheaters controlling temperature. The input to the PID control is from a room mounted temperature sensor.

2.3.3 Smoke Detector (Optional)
Unit shall contain a integral smoke detector as an option. This sensor shall be capable of shutting down the operation and alerting operators via alarm.

2.3.4 Moisture Detector (Optional)
An optional moisture detector shall shut down unit operation if water is detected.

3.0 Execution

3.1 Installation of the Unit

3.1.1 General
Install the air conditioning unit in accordance with manufacturer's installation instructions. Install the unit plumb and level, firmly anchored in the location indicated on the project drawings.

3.1.2 Electrical Wiring
Install and connect electrical wiring as called for in the installation instructions.

3.1.3 Piping Connections
Install and connect water and drain as called for in the manufacturer's installation instructions if required.

3.2 Field Quality Control
Start up the system in accordance with the manufacturer's start up instructions. Test controls and demonstrate compliance with requirements.

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Unit Performance and Specifications

Model 24S200-XXXXX

Model Suffix		-221XX	-224XX	-225XX
Performance				
Cooling Capacity - (BTU/H) See Note 1		21000 / 23400		
Power Requirements (Volts/Phase/Hertz)		208-230/1/60		
Current Draw (Amps)		19		
Circuit Size (Amps)		30		
Sound Characteristic dB(A) See Note 2		0 - 4		
Controls				
Type		Thermostat	PID	
Accuracy		± 2°F	± 0.5°F	
Optional Remote Sensor		Yes	Standard	
Evaporator Section				
Fan Motor Size (HP)		1/4		
Air Flow (CFM)		300 - 800		
External Static Pressure (inches WG)		0.1"		
Drain (Optional)		1/2" O.D.		
Condenser Section				
Fan Size (HP)		1/4		
Air Flow (CFM)		800		
External Static Pressure (inches WG)		0.1"		
Electric Reheat				
Capacity		N/A	1kW	2kW
Power Requirements (Volts/Phase/Hertz)		N/A	208-230/1/60	208-230/1/60
Current Draw (Amps) See Note 3		N/A	5.1	9.6
Humidifier				
Accuracy		± 5%		
Capacity		5 pounds/hour		
Power Requirements (Volts/Phase/Hertz)		208-230/1/60		
Current Draw (Amps) See Note 3		10		
Cabinet				
Construction		.063 Aluminum		
Finish		Blue, Powder Coat, Corrosion Inhibiting		
Weight (pounds)		250-275		
Dimensions (Inches)	Length	47 1/2		
	Width	23 1/2		
	Height	18 1/4		
Suspension		Upper corners, 3/8" x #16 Threaded Rod		
Agency Approval(s)		ETL IAW UL/CSA 1995		

1. Cooling capacity rating conditions: 75F/50% RH evaporator, 75F condenser / 95F/30% RH evaporator, 95F condenser
2. Sound data shows increase over fan filter unit noise. Readings taken 30" from face of fan filter unit.
3. Requires additional power circuit
4. HEPAir reserves the right to make changes to this document without prior notice at our sole discretion.

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Unit Performance and Specifications

Model 24S088-XXXXX

Model Suffix		-221XX	-224XX	-225XX
Performance				
Cooling Capacity - (BTU/H) See Note 1		9050 / 10200		
Power Requirements (Volts/Phase/Hertz)		208-230/1/60		
Current Draw (Amps)		10.3		
Circuit Size (Amps)		20		
Sound Characteristic dB(A) See Note 2		0 - 4		
Controls				
Type		Thermostat	PID	
Accuracy		± 2°F	± 0.5°F	
Optional Remote Sensor		Yes	Standard	
Evaporator Section				
Fan Motor Size (HP)		1/4		
Air Flow (CFM)		150 - 800		
External Static Pressure (inches WG)		0.1"		
Drain (Optional)		1/2" O.D.		
Condenser Section				
Fan Size (HP)		1/4		
Air Flow (CFM)		500		
External Static Pressure (inches WG)		0.1"		
Electric Reheat				
Capacity		N/A	1kW	2kW
Power Requirements (Volts/Phase/Hertz)		N/A	208-230/1/60	208-230/1/60
Current Draw (Amps) See Note 3		N/A	5.1	9.6
Humidifier				
Accuracy		± 5%		
Capacity		5 pounds/hour		
Power Requirements (Volts/Phase/Hertz)		208-230/1/60		
Current Draw (Amps) See Note 3		10		
Cabinet				
Construction		.063 Aluminum		
Finish		Blue, Powder Coat, Corrosion Inhibiting		
Weight (pounds)		175-200		
Dimensions (Inches)	Length	47 1/2		
	Width	23 1/2		
	Height	14 1/4		
Suspension		Upper corners, 3/8" x #16 Threaded Rod		
Agency Approval(s)		ETL IAW UL/CSA 1995		

1. Cooling capacity rating conditions: 75F/50% RH evaporator, 95F condenser / 85F/35% evaporator, 95F condenser
2. Sound data shows increase over fan filter unit noise. Readings taken 30" from face of fan filter unit.
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Unit Performance and Specifications

Model 24S050-XXXXX

Model Suffix		-121XX	-125XX
Performance			
Cooling Capacity - (BTU/H) See Note 1		7400 / 8700	
Power Requirements (Volts/Phase/Hertz)		115/1/60	
Current Draw (Amps)		15.9	
Circuit Size (Amps)		20	
Sound Characteristic dB(A) See Note 2		0 - 4	
Controls			
Type		Thermostat	PID
Accuracy		± 2°F	± 0.5°F
Optional Remote Sensor		Yes	Standard
Evaporator Section			
Fan Motor Size (HP)		1/4	
Air Flow (CFM)		150 - 800	
External Static Pressure (inches WG)		0.1"	
Drain (Optional)		1/2" O.D.	
Condenser Section			
Fan Size (HP)		1/4	
Air Flow (CFM)		500	
External Static Pressure (inches WG)		0.1"	
Electric Reheat			
Capacity		N/A	0.6kW
Power Requirements (Volts/Phase/Hertz)		N/A	115/1/60
Current Draw (Amps) See Note 3		N/A	5.2
Humidifier			
Accuracy		± 5%	
Capacity		5 pounds/hour	
Power Requirements (Volts/Phase/Hertz)		208-230/1/60	
Current Draw (Amps) See Note 3		10	
Cabinet			
Construction		.063 Aluminum	
Finish		Blue, Powder Coat, Corrosion Inhibiting	
Weight (pounds)		175 -200	
Dimensions (Inches)	Length	47 1/2	
	Width	23 1/2	
	Height	14 1/4	
Suspension		Upper corners, 3/8" x #16 Threaded Rod	
Agency Approval(s)		ETL IAW UL/CSA 1995	

1. Cooling capacity rating conditions: 75F/50% RH evaporator, 95F condenser / 85F/35% RH evaporator, 95F condenser
2. Sound data shows increase over fan filter unit noise. Readings taken 30" from face of fan filter unit.
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Cooling Capacity

Base Model 24S200-XXXXX

		Evaporator Entering Air Dry Bulb Temperature, ºF					
Evaporator Air Flow	**Evaporator Entering RH%**	**65ºF**		**75ºF**		**85ºF**	
		Sensible BTUH	**Latent BTUH**	**Sensible BTUH**	**Latent BTUH**	**Sensible BTUH**	**Latent BTUH**
300 cfm	35%	7800	0	11300	2100	13500	2700
	40%	7500	0	11300	4000	12500	5500
	45%	7300	600	10700	4300	11800	6600
	50%	7000	1200	10500	5100	11300	7700
	55%	6800	3000	9300	5500	10900	9100
550 cfm	35%	14900	0	17500	900	19900	1200
	40%	14900	0	16300	2100	18100	3900
	45%	14500	1000	15500	3400	16900	6800
	50%	13300	2500	15100	5100	16000	7500
	55%	12500	4300	13000	5700	14300	8300
800 cfm	35%	17700	0	21600	600	22500	1600
	40%	17700	0	20000	1300	20700	1800
	45%	17300	0	19000	2700	19000	3500
	50%	16700	2500	17900	3000	17300	5500
	55%	15900	5500	15500	3300	15500	7700

Note: Condenser air inlet: 1,150 cfm @ 95ºF

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Cooling Capacity

Base Model 24S088-XXXXX

		Evaporator Entering Air Dry Bulb Temperature, ºF					
Evaporator	Evaporator	65ºF		75ºF		85ºF	
Air Flow	Entering RH%	Sensible BTUH	Latent BTUH	Sensible BTUH	Latent BTUH	Sensible BTUH	Latent BTUH
150 cfm	35%	5400	750	6000	1300	6450	2050
	40%	5250	1100	5750	1750	6100	2600
	45%	5100	1400	5500	2200	5800	3200
	50%	4900	1800	5250	2750	5550	3750
	55%	4750	2100	5000	330	5250	4300
300 cfm	35%	6700	0	7700	0	8700	0
	40%	6550	300	7500	400	8300	800
	45%	6400	550	7300	900	7900	1600
	50%	6200	1000	6900	1550	7400	2500
	55%	6000	1400	6450	2250	6850	3250
550 cfm	35%	7900	0	9050	0	10200	0
	40%	7900	0	9050	0	10200	0
	45%	7900	0	9050	0	10200	0
	50%	7900	0	8950	300	9950	600
	55%	7900	0	8900	600	9600	1200
800 cfm	35%	7900	0	9050	0	10200	0
	40%	7900	0	9050	0	10200	0
	45%	7900	0	9050	0	10200	0
	50%	7900	0	9050	0	10200	0
	55%	7900	0	9050	0	10200	0

Note: Condenser air inlet: 500cfm @ 95ºF

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Cooling Capacity

Base Model 24S050-XXXXX

		Evaporator Entering Air Dry Bulb Temperature, ºF					
Evaporator Air Flow	**Evaporator Entering RH%**	**65ºF**		**75ºF**		**85ºF**	
		Sensible BTUH	**Latent BTUH**	**Sensible BTUH**	**Latent BTUH**	**Sensible BTUH**	**Latent BTUH**
300 cfm	35%	5050	0	6300	0	7200	0
	40%	5050	0	6300	0	7200	0
	45%	5050	0	6300	0	7200	0
	50%	5050	0	6200	250	6800	600
	55%	5050	0	6050	500	6550	1200
550 cfm	35%	6100	0	7200	0	8200	0
	40%	6100	0	7200	0	8200	0
	45%	6100	0	7200	0	8200	0
	50%	6100	0	7200	0	8200	0
	55%	6100	0	7200	0	8200	0
800 cfm	35%	6400	0	7400	0	8700	0
	40%	6400	0	7400	0	8700	0
	45%	6400	0	7400	0	8700	0
	50%	6400	0	7400	0	8700	0
	55%	6400	0	7400	0	8700	0

Note: Condenser air inlet: 500cfm @ 95ºF

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24S Series
Electrical Requirements

Model	Voltage	Unit Amps	Heater Amps	Total Amps	Minimum Circuit	20 Amp Circuits	30 Amp Circuits
24S050-121XX	115/1/60	15.9		15.9	18.5	1	
24S050-125XX	115/1/60	15.9	5.2	21.1	24.3	2	1
24S088-221XX	208/1/60	10.3		10.3	12.1	1	
24S088-224XX	208/1/60	10.3	5.1	15.4	18.5	1	
24S088-225XX	208/1/60	10.3	9.6	19.9	22.9	2	1
24S200-221XX	208/1/60	19.0		19.0	21.9	1	
24S200-224XX	208/1/60	19.0	5.1	24.1	27.7	2	
24S200-225XX	208/1/60	19.0	9.6	28.6	32.9	2	2

Notes: Minimum circuit load calculated IAW ETL guidelines, but local codes may apply
Humidifier voltage is 208/1/60, 10 amps

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