

  
**HARMONY**



**5PZA**  
**Direct Expansion**



Registration No.: SC 4696-1

Registration No.: CO-SC 4696-1



Air-Cooling and Air-Heating Coils  
AHRI Standard 410

AHU Coils AHRI Standard 410

**Air Conditioning Equipment Manufacturer**

## PRESENTATION

TECAM S.A. has developed the Precision Units 5PZA of the Harmony series, which are included in the Direct Expansion Split Systems family, intended for applications using refrigerant R-410A and high energy efficiency requirements. The 5PZA precision unit with coils Certified under Standard AHRI 410 offers a wide variety of options and solutions that satisfy the most stringent quality requirements.

Multiple options of blower wheels, filters and configurations may be selected for any application or user requirement. Its robust construction and compact casing, ensures an easy installation and extended durability. 5PZA Precision Units are completely assembled by trained personnel in Factory, using certified materials and components. Tecam Engineering Department designed these units to facilitate transportation, installation and maintenance.

## EASY INSTALLATION

No matter what is the application, Tecam has a solution with the Harmony series Units. A wide range of models and capacities are available with single or double refrigerant circuits and accessories such as filters, sensors and electronic controllers.

## VERSATILITY

Its vertical configuration allows it to supply air, both from the top and bottom, making its application very versatile, extending its use to the telecommunications industry, computer rooms, laboratories and oil companies, among others. It has a Carel pCO1 controller, which controls the variables of temperature, humidity and air filtration, can operate multiple (up to 6) machines at the same time.

## QUALITY

Coils used in these Precision Units, are certified under the Standard 410 of "The AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program". These coils have been designed and produced in our plant, and can be selected using the TECAM COIL selection software also AHRI certified.

The Blower wheels that are used in the Precision Units are manufactured and tested in the engineering laboratory of LAU Industries, Inc\*. The air flow performance tests are carried out in large air chambers. A reverberation room is available to measure the sound power levels in accordance with Standard AMCA 300. The Engineering Laboratory of LAU is accredited by AMCA for testing under Standards 210 and 300.

The manufacturing processes of the Precision Units are certified under the ISO 9001:2008 Standard, assuring confidence for investing in a TECAM product, which guarantees the maximum profitability in performance and efficiency, as well as a low operation cost and minimum maintenance.

## SERVICE

TECAM S.A. through its distributors/ Dealers network and directly from the factory extends its warranty for the supply of original spare parts and accessories for our equipment.

\*LAU Industries, Inc.: Leader in Fan Manufacturing since 1931. Headquarter in Ohio, U.S.A.

## INTEGRATED ELECTRONIC CONTROL



pCO1 Controller



pGD Terminal

The pCO1 controller of the Precision Unit has all the necessary characteristics for Precision systems, in addition it has the ability to connect with other communication protocols such as: Modbus, Bacnet and many others, can be remotely monitored by PlantWatchPRO and PlantVisorPRO devices.

## COMPONENTS



## PROTECTION DEVICES

The control system has safety devices to protect the most important load elements and provide safety to the people involved in the operation and service of the unit.

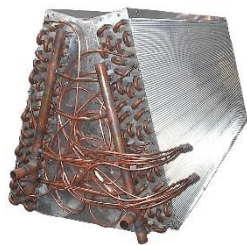
The Phase Monitor protects the 5PZA Unit from faults in the power supply, it is a programmable device that displays the operating information, setpoints and alarms stored in memory, and protects the unit from atypical voltages, phase unbalance, phase changes and dropping of any of them. The air pressure differential switches strategically placed ensure the permanent airflow through the unit. Overload and short circuit devices electrically protect the compressor and the ventilation motor; in addition, the compressor refrigerant lines have a high-pressure switch and a low-pressure switch. The air heating resistance and humidifier are electrically protected with breakers selected for their capacity.

## CONTROL AND ELECTRIC POWER



## COMPRESSOR

The models from size 02 to size 05, are equipped with 1 compressor. The compressors are type Scroll type, they are three-phase and have service valves. For units with other compressors types it is necessary to consult the factory. They have three electrical protection systems: the power monitor, the internal protection of the compressor and the external protection by means of Overload relay and circuit breaker.



## EVAPORATOR COIL

Coils have been designed for an efficient operation using R 410A refrigerant, with a wide range of capacities offered in our TECAM COILS software. All cooling coils are AHRI certified under the 410 Standard, and tested in a certified laboratory in the United States of America. Coils are manufactured using wave type aluminum fins and flexible copper tubing, for long life duration. Copper tubes are mechanically expanded to firmly adjust with the fins and assure an efficient heat transfer. The refrigerant entry to the evaporator is regulated by the Thermostatic Expansion Valve (TXV) in standard applications, or by an Electronic Expansion Valve (optional).



## HUMIDIFIER

The air ambient relative humidity is read inside the machine in the air return, by the humidity probe and controlled by the pCO1 Carel processor, which communicates with the pCOUMID electronic board of the humidifier, allowing rapid responses to the requirements of air ambient relative humidity. The humidifier is equipped with two solenoid valves that allow the water inlet to the tank and the outlet to the drain, automatically maintaining a level suitable for its optimal operation of the submerged electrodes. In addition, by means of a sensor of conductivity of the water, it allows to inform us on the water state.



## AIR HEATER

The air heaters are made of stainless steel finned and are managed by the pCO1 controller to ensure that air reheating is accurate, thus avoiding the excessive consumption of electrical energy. The reheat has ample capacity to maintain room dry-bulb conditions during a system call for dehumidification.



## MOTOR

The motors used in the 5PZA Unit are drip proof and totally enclosed. Each motor has been carefully selected to deliver the specified air volume (CFMs) required for each unit capacity. Other motors may be selected for special applications, as an option consulting with the factory.



## FAN

The 5PZA Unit are equipped with Forward Curved Class 1 blower wheels, allowing them to be connected to ducts for an optimal air distribution, or to discharge directly to the conditioned area. Each unit may be operated at a range of different speeds by changing the pulleys, obtaining different air flows (CFMs). The Fan Section is equipped with the blower wheel, power transmission (pulleys and bands), and a motor. This system was carefully designed to operate quietly, and free of vibrations. Blower wheels are LAU, manufactured under AMCA standards.



## POWER TRANSMISSION

Power transmission between the motor and the shaft (blower wheel), is done using pulleys and bands. All the system is statically and dynamically balanced. Certified suppliers of bearings, pulleys, shafts and motors ensure a reliable operation. Power for movement is generated by excellent quality motors (Siemens, Weg, Emerson or Baldor), totally enclosed, optionally supplied with high service factor and different voltages. The heavy-duty and long life bearings and shaft provide a smooth and quiet turn.



## EXPANSION VALVE

Standard Thermostatic Expansion Valves and Electronic Expansion Valves (opcional) are installed to the cooling coil in factory. The distributor, orifice and capillary tubes have been designed and selected to work in harmony with the selected valve in order to assure a high performance, complying with the required cooling conditions.



## FILTERS

The 5PZA Units include 2" **WORKCLEAN** Quality Air Filter washable filters, with frames in galvanized sheet metal, synthetic filter media and a metallic mesh to support the media, allowing it to work with air velocities up to 500 fpm. Access to the filters (for service) is located in the front of the Unit.



## CABINET (CASING)

Entirely constructed using galvanized steel sheet G-90 in different thickness, ranging from 20 to 12, bolted together with galvanized bolts, coated with electrostatic powder painting. Highly qualified people and Machinery with CNC technology is used for manufacturing. Removable doors and panels allow full access to the interior of the Unit and its components. The panels and doors of the Unit have thermal insulation with polyethylene foam (optionally fiberglass).

## OTHER COMPONENTS

Other components supplied with the Unit:

- Liquid line Dryer filter.
- Refrigerant Sight Glass with moisture indicator.
- Liquid Line Solenoid Valve.
- Service Valve on suction, discharge and liquid lines.
- Suction Acumulator.

**PHYSICAL DATA**

MODEL 5PZA		02	03	04	05	06
NOMINAL CAPACITY (TONS)		2	3	4	5	6
REFRIGERANT		R410A				
FAN	Quantity	1				
	CFM (Nom.)	800	1200	1600	2000	2400
	Flow Output	VERTICAL – TOP OR DOWN SIDE				
	Ext. pressure drop	0.5"				
MOTOR	Power (HP)	0.33	0.5	0.75	1.0	1.5
	Speed (nominal)	1750				
PULLEYS	Motor (inches)	3.9				4.2
	FAN (inches)	8.2				
COIL	Type	FIN – TUBE / "A" or "V"				
	Material	ALUMINUM - COPPER				
	Area (ft <sup>2</sup> )	3.00	4.37	5.44	6.50	
COMPRESSOR	Type	SCROLL				
	Quantity	1				
AIR HEATERS	Type	ELECTRICAL				
	Quantity	2	3	4	5	6
	Power each (Kw)	1.3	1.3	1.3	1.3	1.3
STEAM HUMIDIFIER	Type	IMMERSED-ELECTRODE				
	Capacity (Lbs/hr)	6.6				
FILTERS	Quantity	1				
	Size (inches)	26 x 26 x 2				

\* Technical specifications may be changed without notice.

**PERFORMANCE DATA**

(X 1000 BTU/hr)

MODEL		02	03	04	05	06
80 Db / 67 Wb 50% RH	TOTAL	26.52	42.78	50.00	63.39	79.05
	SENSIBLE	21.89	35.87	41.18	51.60	64.35
75 Db / 62.5 Wb 50% RH	TOTAL	24.49	39.75	46.08	58.28	72.99
	SENSIBLE	21.05	34.72	39.60	49.30	61.75
75 Db / 61 Wb 45% RH	TOTAL	23.79	38.73	44.69	56.54	70.91
	SENSIBLE	22.28	36.79	41.86	52.18	65.44
72 Db / 60 Wb 50% RH	TOTAL	23.30	37.98	43.76	55.34	69.45
	SENSIBLE	20.52	32.94	39.12	48.74	61.17
72 Db / 58.6 Wb 45% RH	TOTAL	22.71	37.11	42.59	53.83	67.68
	SENSIBLE	21.71	35.89	40.66	50.99	64.11

**ELECTRICAL DATA (208V-230V / 3Ph / 60Hz)**

UNIT		5PZA				
MODEL		02	03	04	05	06
COMPRESSOR	TYPE – QUANTITY	SCROLL - 1				
	AMPERAGE RLA	7.8	10.4	13.7	16.0	19.6
	AMPERAGE LRA	55.0	73.0	83.1	110.0	136.0
	VOLTAGE MAX.	253				
	VOLTAGE MIN.	187				
	POWER Nom. HP (Kw)	2.2 (1.66)	3.1 (2.29)	4.1 (3.1)	4.9 (3.66)	5.8 (4.37)
MOTOR	POWER Nom. HP (Kw)	0.33 (0.25)	0.5 (0.37)	0.75 (0.55)	1.0 (0.75)	1.5 (1.13)
	SPEED (RPM)	1710	1720	1705	1720	1720
	AMPERAGE	1.44	2.07	2.9	3.02	4.43
HUMIDIFIER	POWER (Kw)	2.25				
	CAPACITY(Lbs/hr)	6.6				
	AMPERAGE	6.2				
AIR HEATER	TYPE – QUANTITY	FINNED - 2	FINNED - 3	FINNED - 4	FINNED - 5	FINNED - 6
	POWER (Kw)	1.3				

\* Electrical data for a single device

\* Technical specifications may be changed without notice.

**ELECTRICAL DATA (460V / 3Ph / 60Hz)**

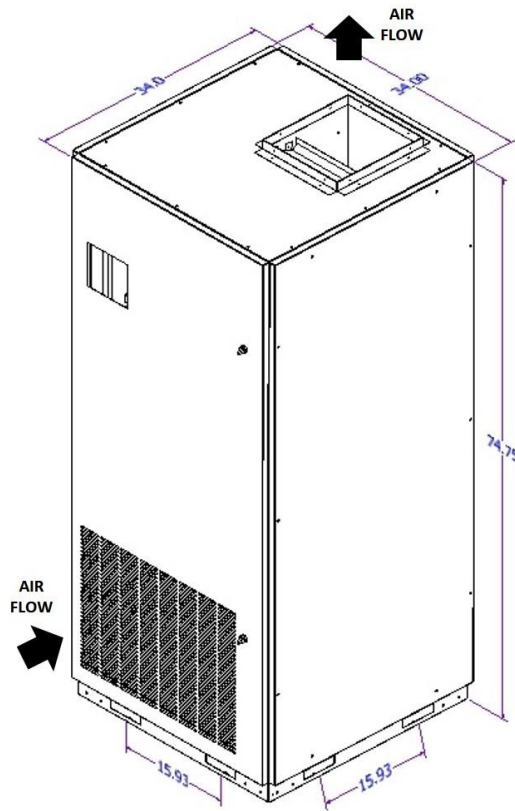
UNIT		5PZA				
MODEL		02	03	04	05	06
COMPRESSOR	TYPE – QUANTITY	SCROLL - 1				
	AMPERAGE RLA	4.0	5.8	6.2	7.8	8.2
	AMPERAGE LRA	22.4	38.0	41.0	52.0	66.1
	VOLTAGE MAX.	506				
	VOLTAGE MIN.	414				
	POWER Nom. HP (Kw)	2.2 (1.66)	3.1 (2.29)	4.1 (3.1)	4.9 (3.66)	5.8 (4.37)
MOTOR	POWER Nom. HP (Kw)	0.33 (0.25)	0.5 (0.37)	0.75 (0.55)	1.0 (0.75)	1.5 (1.13)
	SPEED (RPM)	1710	1720	1705	1720	1720
	AMPERAGE	0.72	1.04	1.45	1.51	2.22
HUMIDIFIER	POWER (Kw)	2.25				
	CAPACITY(Lbs/hr)	6.6				
	AMPERAGE	2.8				
AIR HEATER	TYPE – QUANTITY	FINNED - 2	FINNED - 3	FINNED - 4	FINNED - 5	FINNED - 6
	POWER (Kw)	1.3				

\* Electrical data for a single device

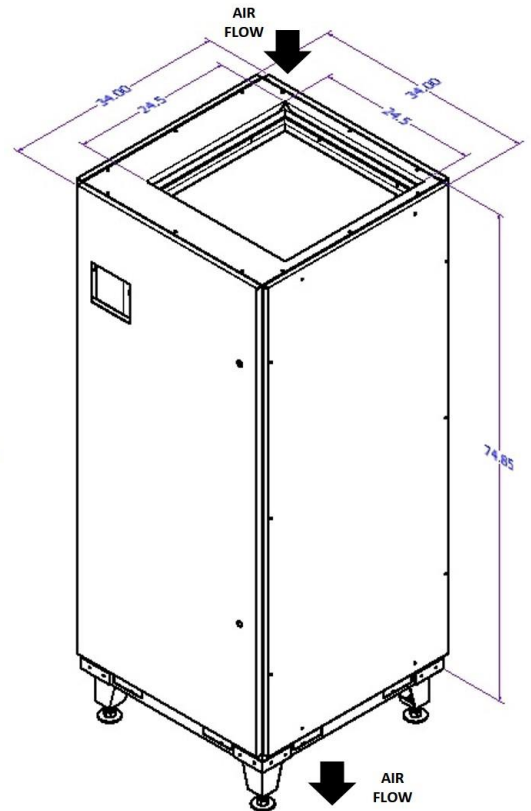
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**DIMENSIONAL DATA**



Upflow Discharge with Front Return



Downflow Discharge

(Dimensions in Inches)

MODEL		02	03	04	05	06
LIQUID CONN. (Inch)	φ		3/8			1/2
HOT GAS CONN. (Inch)	φ			1/2		
DRAIN (Inch)	φ			3/4 Copper - Weld		
HUMIDIFIER (Inch)	φ			1/2 PVC		



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**Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.**

Catalog No.: p24306 Ver.: 0

Edition Date: 10-Jan-2017

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