



Environmental **Chamber**

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Models:

- ACM-42103 L



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Introduction:

We are manufacturers of environmental chambers in India since last two decades. Our environmental chambers are conceptualized and designed to create test chambers to study and contemplate the effects of different environmental parameters such as humidity, temperature and light in various applications tests involving micro-organisms, plants, tissues, electronic components etc apart from various customized industrial and research applications.

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Our environmental chambers have a variety of usage in R & D laboratories, research studies and product testing facilities across the globe.

Apart from that, these environmental chambers have a variety of usages in tissue culture applications, enzyme reaction studies, growth observation studies, fermentation analysis and various other general and specialized applications in various laboratories.

We specialize in both standard and customized models, specifically designed to meet the challenging demands of



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various scientists for individual and specialized research applications. Over a short period of time Weiber brand have been established as reliable exporters of environmental chambers in India, catering to the vast markets in South East Asia, Middle East, Africa and Europe.

Apart from that we are supplying our environmental chambers in India, catering to a variety of customers ranging from Defence Installations, Research Laboratories, Educational Institutes and various R& D laboratories of leading national and multinational companies.

Salient Features

1. Reliable
2. Precise Control Of Environmental Parameters
3. Micro-processor based Controllers
4. Aesthetically designed.
5. Corrosion Resistant interior and exteriors
6. Energy Efficient
7. CFC free cooling
8. Sturdy Construction
9. Low Maintenance
10. Light Weight

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Construction Details

Weiber environmental chambers are double walled convection heated and cooled units. Outer body of our environmental chambers are constructed out of thick PCRC sheet duly pre-treated with primers and rust proofing and painted with long lasting stove enamel or elegantly powder coated.. The inner chamber is made of heavy gauge stainless steel sheet of SS-304 grade). The gap between the walls is filled high grade mineral glass wool, which ensures maximum thermal efficiency in our chambers.

The unit is provided with two doors , the inner door is made of thick plexi glass/float glass, to view the specimens/culture media/stocks, without disturbing the temperature of the chamber. This door is provided with magnetic door closer. The outer door is made of mild steel sheet lined with stainless steel from inside.. This door is provided with lock and key arrangement. The unit is mounted on a sturdy steel frame The unit is provided with various customized shelves in various permutations and combinations to suit individual requirements.. The triple walled back of our environmental chambers are provided with two/Four/Six/Eight (size specific) air

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circulation fans for uniform maintenance of the temperature throughout the chamber.

Heating

Indirect heating system is provided in our units, comprising of air heaters made of high grade Kanthal A-1 wires of suitable wattage.. The warm air is evenly distributed throughout the chamber through efficient motor fans ensuring a very good temperature sensitivity.

Cooling

An energy efficient cooling unit is installed in our environmental chambers to enable bio chemical demand

, cyclic and growth studies at lower room temperatures. We use ISI marked high end CFC free compressors of Kirloskar/Tecumseh make, conforming to latest international standards and guidelines.

Humidity Range

20% to 80% (Humidity Applicable as per the Temperature Humidity Graph Attached)

Humidification

A low-pressure droplet free vapor boiler using direct vaporization system is used. Water Reservoir is provided at the side of the chamber with an 10x8mm PU tube quick

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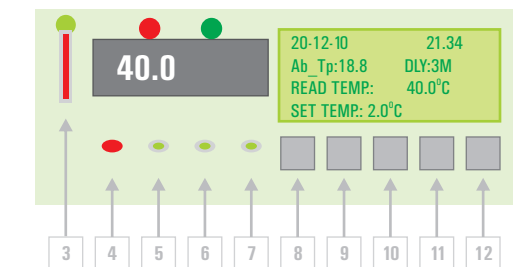
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connector and water level is automatically controlled through a water-in solenoid valve. The wick tank water level is automatically maintained through a water solenoid valve and an electrical float switch. The de-mineralized water or single distilled water supply to the humidity inlet having a resistance measurement of approximately 50,000 - 200,000 Ohm/cm is provided with the unit.

Dehumidification

Refrigeration based de-humidification system is used . The desired level of lower humidity will be achieved by maintaining the precise dew point temperature. The

Interactive ergonomic Control Unit based on Microcontroller



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output will automatically be activated based on the set point as well as in ramp up mode after a low temperature cycle.

Humidity Sensitivity

Humidity is controlled by mean of an electronic humidity controller cum indicator with an accuracy of + 5%

Temperature Control

The temperature inside our environmental chambers is controlled through programmable micro-processor based temperature controller cum indicator.

Temperature Range. Temperature range of our standard Chamber is 0o c to 90o c. However we have the capacity

to modify the same to suit the individual specialized requirements of our customers.

Temperature Sensitivity

Temperature inside our environmental chambers are controlled with a sensitivity of + 0.5o c or better.

Illumination

Our environmental chambers are provided with door operated illumination system comprising of fluorescent lights, beside two panels of diffused fluorescent light panel located at the either side of the chamber to enable the user to conduct the photo periodic tests and experiments.

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Illumination Control

The illumination is controlled through solid state cyclic timer to control the photoperiodic cycle of the chamber.

Front Panel

Front panel of our units comprises of on/off switches heating, cooling and mains indicator lamps, temperature controllers and voltmeters.

- 1) **Heater Mode** : This LED indicates the heating system on condition and it light up when the set temperature is higher than the ambient temperature.

- 2) **Cooling Mode:** This LED indicates the cooling system on condition and it light

up when the set temperature is lower than the ambient temperature.

- 3) **Temperature Alarm:** This LED indicated the extreme Ambient condition and the temperature failure condition.

- 4) **Audio Alarm** : This Alarm indicates the visual alarm and indiactes any failure and Temperature overshoot conditions.

- 5) **Door Open** : Visual indication with door open conditions.

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- 6) **A.C Power failure** : This visual indicator light up when the mains power fail and the system working in the battery mode.
- 7) **Low battery indicator** : This LED indicates the battery backup status, This LED indicates when the battery charge capacity available at 25% of the total charge.
- 8) **UP** : Count up key.
- 9) **SET** : This is a set button to set any parameter on the screen, by pressing of this key a cursor blink on the

corresponding parameter, So you can select any desired parameter and use UP and Down key to set specific value/setting.

- 10) **Down** : Down count key.
- 11) **ESC** : This key is used to exit from any menu, you are working right now.
- 12) **Print/Data download** : This key is used to transfer the stored data into the printer or Data download

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facility in the computer MS Excel/Word and Hyperterminal software.

- 13) **Display Unit** : This unit is a user interactive interface system for easy operation and it displays the parameter like DATE, TIME, Ambient Temperature, Compressor ON Delay Time, Read and Set Temperature.
- 14) **Temperature Display** : This seven segment display indicates the read temperature value inside the chamber.

SYSTEM SETTING

- 1) **DATE and TIME** : From normal operational mode, press SET key ones,

20-12-07	21.34
	DLY:3M

The cursor blinks at

SET TEMP. : 2.0°C

DATE (20), and for second press of KEY SET the cursor blinks at MONTH (12), and similarly on Third press of key SET cursor blinks at YEAR and repeat the steps to move to any parameter.

Similarly you move cursor on any parameter and set desired value for system operation.,

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To increase any parameter use UP key and to decrease any parameter use DOWN key.

After completion of all correct setting press ESC key to return back to the main menu.

Optional Features : (Can Be incorporated At Extra Cost If Desired)

- I. Temperature set point controls relays for refrigeration compressor and evaporator fan
- II. Relays rated min. 200VAC:
 - a. Compressor: min. 8 A, min. 60 LRA
 - b. Fan: min. 4 A
 - c. B) High/low temp alarm

- III. Audio and Visual Alarm. Programmable
- IV. Alarm mute w/ ring back in 5 minutes
- V. Touch Button Control for Alarm Mute/Ring Back.
- VI. Keyed alarm silence switch
- VII. External Keyed Alarm Mute. Alternate: Supervisor programmable code
- VIII. Door Buzzer alarm
- IX. IR Sensor/ Micro Switch Based Door open Alarm. Adjustable or fixed 30s delay before alarm
- X. Power failure alarm: Automatic Power detection and Audio Visual Alarm. Adjustable or fixed 15 min delay before alarm
- XI. Programmable temp range: Touch Button Control to Program Temperature. User Settable.

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- XII. Battery backup: Automatic Battery Charging Facility inbuilt in circuit. Provides up to 24 hr of display power
- XIII. Mounted temp probe
- XIV. Dual PT-100 sensor With Ambient Sensing by Semi-conductor Temperature Sensor. Set point display (program mode) LCD and Segment
- XV. Dry contacts(Remote Control) for central alarming.
- XVI. R.F based Remote Alarm System
- XVII. Built-in chart recorder/Thermal Printer standard for blood bank units or data acquisition in the controller memory which can be down loaded on a computer through a suitable world standard interface like RS232 and/or RS485.

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- XVIII. RS-232 I/O Port Provided,
 - XIX. Serial Thermal Printing facility.
 - XX. 24 hr non-volatile temperature Record Storage Capacity, and Record Download facility in MS-WORD/Hyper terminal / MS-Excel.
 - XXI. Up to 1 MB data storage Facility.
 - XXII. Seven Day Profile Timer with Real Time Clock.
- Insulation :

The gap of 75 mm between the outer and the inner wall is filled with special grade glass wool to prevent thermal losses.

Mineral Glass Wool Insulation : Glass mineral wool is one of the most environmentally friendly, stable and

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sustainable insulants available. Glass wool is incombustible by nature. Euro class classification is A. It does not propagate flames and toxic smokes. Thanks to a dense entanglement of materials with a low conduction and trapping a great amount of air, glass wool is an excellent thermal insulant. The thicker it is, the better thermal resistance it has, thus reducing heat losses in our equipments for better sensitivity and economical operations. And its impact on the environment in manufacture, use and disposal is minimal.

Air circulation:

Triple walled back of unit is fitted with two air circulation fans for maintaining temperature uniformly throughout the chamber

Features of Coaxial Circulation Fan:

- Vacuum impregnated stator winding with dr. back varnish under red baktol
- non-hygroscopic.
- Best IR value
- Bright bar (EN - 8 class) shaft.
- Bush bearing of branded companies.
- Surge comparison testing in fans and pumps eliminates into turn short circulating of the stator.
- Pressure die-casted-rotor manufactured with zero error.
- Boats of high accuracy

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Doors

Full view inner glass/perspex door permits inspection of specimens, without disturbing the chamber temperature. Lock and Key arrangement is provided in the double walled outer door.

Shelves:

The unit is supplied with three shelves of stainless steel sheet.

Voltage:

To work on 220/230V A.C. supply.

Refrigeration Unit

Refrigeration unit is formed by ISI marked compressor/cooling kit. Of Kioloskar Copeland or Tecumseh.

Features :

- High Energy Efficiency
- Compact
- Ozone-friendly refrigerants
- Proven Technology
- Wide Voltage Range

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APPLICATION	
Evaporating Temp Range	0-60 Degree C
Refrigerant	R- 134a
Refrigerant Control	CAPILLARY
Compressor Cooling	STATIC
General Applications	REFRIGERATOR/ DEEP FREEZER

RATED PERFORMANCE

Cooling Capacity -Rated	282 - 650 Btu/hr (Model specific)
Power input -Rated	80-110 Watts (Model Specific)
Energy Efficiency Ratio	3.53 Btu/Whr
Current - Rated	0.70 Amps
LRA -Rated	N/A
Evaporating Temperature	-23.30C
Condensing Temperature	540C
Liquid Sub Cooling Temp	320C
Return Gas Temperature	320C
Ambient Temperature	320C
Pressure - Suction	0.32 Kg/Cm2
Pressure - Discharge	12.9 Kg/Cm2
Liquid Sub Cooling Temp	320C
Return Gas Temperature	320C
Ambient Temperature	320C
Pressure - Suction	0.32 Kg/Cm2
Pressure - Discharge	12.9 Kg/Cm2



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MECHANICAL DATA	
Design	RECIPROCATING
Displacement/Revolution	3.14 CC
No. of Cylinders	One
Speed (Nominal)	N/A
Oil Charge	230 CC
Weight	7.3 Kgs
Internal Pressure	PROVIDED
Relief Valve	

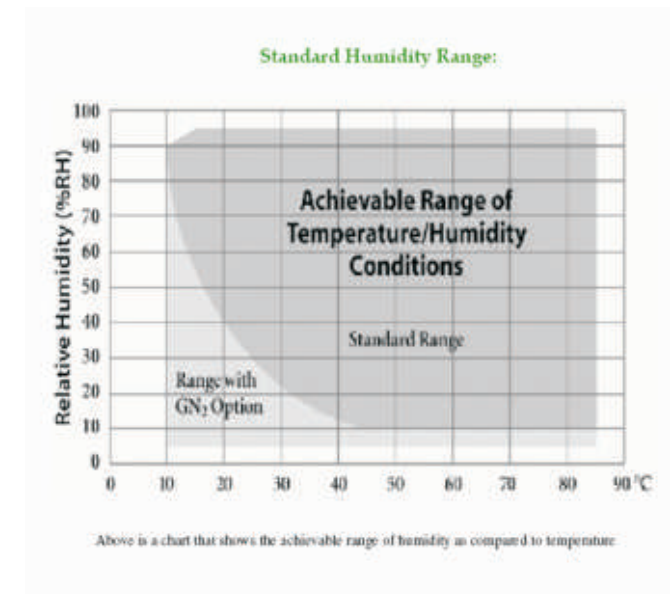
MOTOR DATA

Motor Type	PTCSIR
Frequency	50 Hz
Phase	SINGLE
Voltage -Rated	230 Volts
Voltage -Range	N/A
High Potential Test	N/A

OVER LOAD PROTECTOR

Type	EXTERNAL
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Technical Matrix For Environmental Chamber

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	W x H x D	CAPACITY
(a)	505X830X415 mm	6 Cu.ft
(b)	570x875x550 mm	10 Cu.ft
(c)	650x900x550 mm	12 Cu.ft
(d)	700x900x650 mm	15 Cu.ft
(e)	775x900x775 mm	20 Cu.ft
(f)	825x1200x825 mm	30 Cu.ft
(g)	900x1720x800 mm	45 Cu.ft

Temperature Control		
Temperature Sensitivity	± °C	0.5 or better
Spatial Deviation In Temperature	± °C	0.5 or better
Readability	°C	0..1
Temperature range	°C	0°C to 90°C
Temperature Sensor		PT-100
Temperature Controller		Solid State digital Controller/PID optional
Display		LED/LCD
Adjustable alarm limits		Optional With PID controller only.
Water quality		Distilled/Ionized
Safety thermostats		
Temperature variation Adjustments		3 (With PID Controllers only)
Temperature Sensors		PT-100
Automatic temperature setting		Yes (With PID Controllers only)
Adjustable limits		Yes (With PID Controllers only)
Light control		
Readability or Set ability	%	10% (optional feature)
Light intensity (Middle chamber)	Lux	As Desired (optional feature)
Light intensity (Both Sides)	Lux	As Desired (optional feature)



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Accessories		
de-icing module		optional
Timer (999 mins)		optional
Program (Real Time)		optional
Data Acquisition Program		optional
Serial Port (Printer)	RS232C	optional
Inspection window in door		optional
Water reservoir	litres	18 ltr
Shelves		
Standard		3
Internal Dimensions	mm	Model Specific
Maximum Permitted load per shelf	kg	25 Kg
Maximum Permitted total load	kg	75 kg
Accessories		
Printer Report Program		optional
2 x 24 characters LCD Display		optional
Access Port 30 mm		optional
Castors, lockable		Yes
Power consumption		
Nominal power	W	1950 -3750 (Model Specific)
Nominal voltage	V	220-230 Volts, 50 Hz Single Phase
Frequency	Hz	50



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- Optional Upgrades For Environmental chamber (If Desired)
- Universal Digital Data Recorder with Computer



Data Acquisition And Control System For Environmental

Chamber

This is unique module which can be incorporated with our environmental chamber to log in temperature and environment related data with a help of a data logger unit which has a pc connectivity by means of RS 232 C interface. This data is then analyzed and formatted with the help of our unique user friendly analysis software to enable the user to get a formatted and analyzed reports of various inputs during the full operation cycle of the equipment. This is an ideal module for pharmaceutical laboratories, process control applications and high research projects where maintaining a viable record of the performance of the equipment is very essential.

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Features:

- Our system incorporates multiple Devices such as in line process Indicators, environment scanners and temperature or humidity controllers.
- Provides Astech cable for direct interface to any dot matrix or laser printer for online or offline data records printing
- It has Bulk data storage capacity with high data retention life.
- Facility to obtain nicely formatted print out of the logged data or records with proper headers.
- Our system provided facility to program recording interval with various options to suit individual requirements.
- It is provided with the feature to adjust or select baud rate for any serial communication port.

Our system is provided with user friendly custom developed software which obtains and analyze the data and facilitates the user to generate reports and graphs etc.

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