



# **WEIBER**

## **Plant Growth Chamber**



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**Models:**

- ACM-42103 L



### Introduction

We are manufacturers of plant growth chambers in India since last two decades. Our plant growth chambers are conceptualized and designed to create test chambers to study and contemplate the effects of different plant growth 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.

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



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

Apart from that we are supplying our plant growth 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

- Reliable
- Aesthetically designed.
- Corrosion Resistant
- Energy Efficient
- CFC free cooling
- Long life
- Low Maintenance
- Light Weight

### Construction Details

Weiber plant growth chamber are double walled convection heated and cooled units. Outer body of our Incubator 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/ puf insulated, which ensures maximum thermal efficiency in our plant growth chamber .



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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 Walk in plant growth chamber are provided with air circulation fans for uniform maintenance of the temperature throughout the chamber. The exterior surface is high wear resistance. The outer walls comprises of very sturdy thick cold rolled panels.

### .Heating

Indirect heating system is provided in our units, comprising of Stainless steel sheathed air heaters of suitable wattage.. The warm air is evenly distributed throughout the chamber through efficient motor fans ensuring a very good temperature

sensitivity..The heaters will be placed in the conditioning plenum such that there is no direct radiation from the heaters onto the test specimen.Heater outputs are controlled through a SSR for superior stability and control in temperature

### Cooling

We use ISI marked high end High Capacity ultra-low temperature Semi - Hermetic . The compressors are mounted on anti vibration pads for better physical stability and Eco friendly Non-CFC refrigerant R-404a are used. An air-cooled condenser specially designed for tropical climates is driven by a co-axial fan. The heat exchanger coils are Inner grooved copper tubes and are finned for maximum heat transfer. For special purposes hot gas bypass systems are used for protection against No-Load condition.



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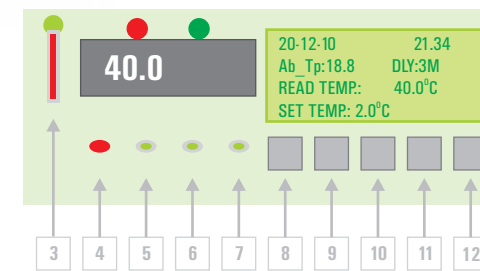


APPLICATION	
Evaporating Temp Range	0-60 Degree C
Refrigerant	R- 134a
Refrigerant Control	CAPILLARY
Compressor Cooling	STATIC
General Applications	REFRIGERATOR/ DEEP FREEZER

### 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

### Interactive ergonomic Control Unit based on Microcontroller



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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**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 indicates any failure and Temperature overshoot conditions.

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

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

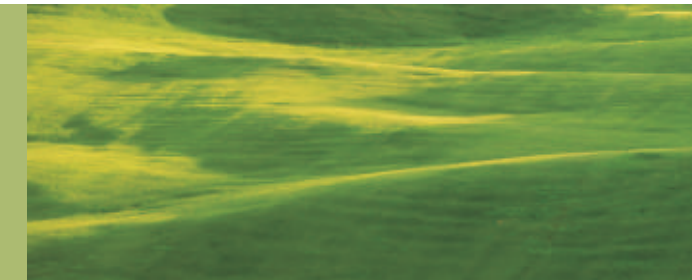
**13) Display Unit :** This unit is a user interactive interface system for easy operation and it displays the parameter like DATE, TIME, Ambient Temperature, Compressor ON Delay Time, Read and Set Temperature.

**14) Temperature Display :** This seven segment display indicates the read temperature value inside the chamber.



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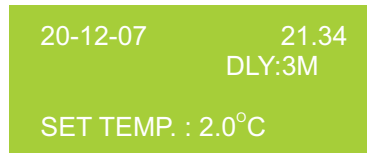
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### SYSTEM SETTING

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

#### The cursor blinks at



DATE (20), and for second press of KEY SET the cursor blinks at

MONTH ( 12 ), and similiary on Third press of key SET cursor blinks at YEAR and repeat the steps to move to any parameter.

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

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)

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



- XXV. Audio and Visual Alarm. Programmable
- XXVI. Alarm mute w/ ring back in 5 minutes
- XXVII. Touch Button Control for Alarm Mute/Ring Back.
- XXVIII. Keyed alarm silence switch
- XXIX. External Keyed Alarm Mute. Alternate: Supervisor programmable code
- XXX. Door Buzzer alarm
- XXXI. IR Sensor/ Micro Switch Based Door open Alarm. Adjustable or fixed 30s delay before alarm
- XXXII. Power failure alarm: Automatic Power detection and Audio Visual Alarm. Adjustable or fixed 15 min delay before alarm
- XXXIII. Programmable temp range: Touch Button Control to Program Temperature. User Settable.
- XXXIV. Battery backup: Automatic Battery Charging Facility inbuilt in circuit. Provides up to 24 hr of display power
- XXXV. Mounted temp probe
- XXXVI. Dual PT-100 sensor With Ambient Sensing by Semiconductor Temperature Sensor. Set point display (program mode) LCD and Segment
- XXXVII. Dry contacts( Remote Control ) for central alarming.
- XXXVIII. R.F based Remote Alarm System
- XXXIX. 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.
- XL. RS-232 I/O Port Provided,
- XLI. Serial Thermal Printing facility.



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- XLII. 24 hr non-volatile temperature Record Storage Capacity, and Record Download facility in MS WORD/Hyper terminal / MS-Excel.
- XLIII. Up to 1 MB data storage Facility.
- XLIV. Seven Day Profile Timer with Real Time Clock.

### Temperature Range.

Temperature range of our standard plant growth chamber models are 5o C to 70o C. However we have the capacity to modify the same to suit the individual specialized requirements of our customers.

### Temperature Sensitivity:

Temperature inside our walk-in incubator are controlled with a sensitivity of + 1 o c or better.

### Illumination

Our units are provided with door operated illumination system comprising of fluorescent lights. The unit is designed to provide 100-150 micro mol light intensity

### Humidity Range

20% to 80% (as per the 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 10 x 8mm PU tube quick 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 output will automatically be activated based on the set point as well as in ramp up mode after a low temperature cycle.

### Front Panel

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



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### Air Circulation

- 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

### Data Acquisition Plant growth 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.

### Features

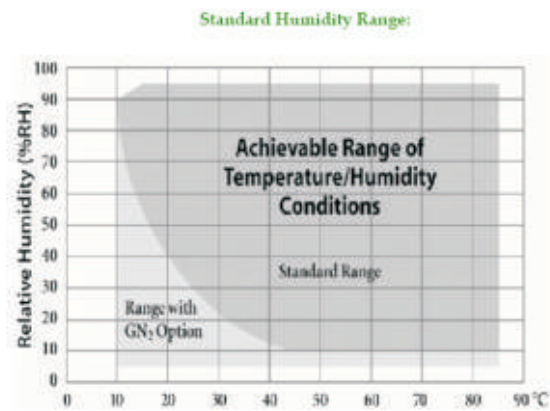
- Our system incorporates multiple Devices such as in line process Indicators, environment scanners and temperature or humidity controllers.
- Provides Astech cable for direct interface to any dot matrix or laser printer for online or offline data records printing
- It has Bulk data storage capacity 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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### Technical Matrix For



Above is a chart that shows the achievable range of humidity as compared to temperature

	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

<b>Temperature Control</b>		
Temperature Sensitivity	± °C	0.5 or better
Spatial Deviation In Temperature	± °C	0.5 or better
Readability	°C	0.5
Temperature range	°C	5 - 70 degree C
Temperature Sensor		PT-100
Temperature Controller		Microprocessor based PLC
Display		LCD
RH		20% -80% (Subject to Temperature Graph)
Water quality		Distilled/Ionized
<b>Safety thermostats</b>		
Temperature variation Adjustments		3
Temperature Sensors		PT-100
Automatic temperature setting		Yes
Adjustable limits		Yes
<b>Light control</b>		
Readability or Set ability	%	10%
Light intensity (Middle chamber)	Micro mol	180 micro mol
Light intensity (Both Sides)	Lux	100-150 micro mol



<b>Accessories</b>		
Timer (999 mins)		Incorporated
Program (Real Time)		Incorporated
Data Acquisition Program		Incorporated
Serial Port (Printer)	RS232C	Incorporated
Inspection window in door		Incorporated
Water reservoir	litres	22 ltr
<b>Shelves</b>		
Standard		Not applicable
Internal Dimensions	mm	Model Specific
<b>Accessories</b>		
Printer Report Program		Incorporated
2 x 24 characters LCD Display		Incorporated
Access Port 30 mm		Incorporated
locks		Incorporated
<b>Power consumption</b>		
Nominal power	W	970-2300
Nominal voltage	V	440 Volts Three Phase



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