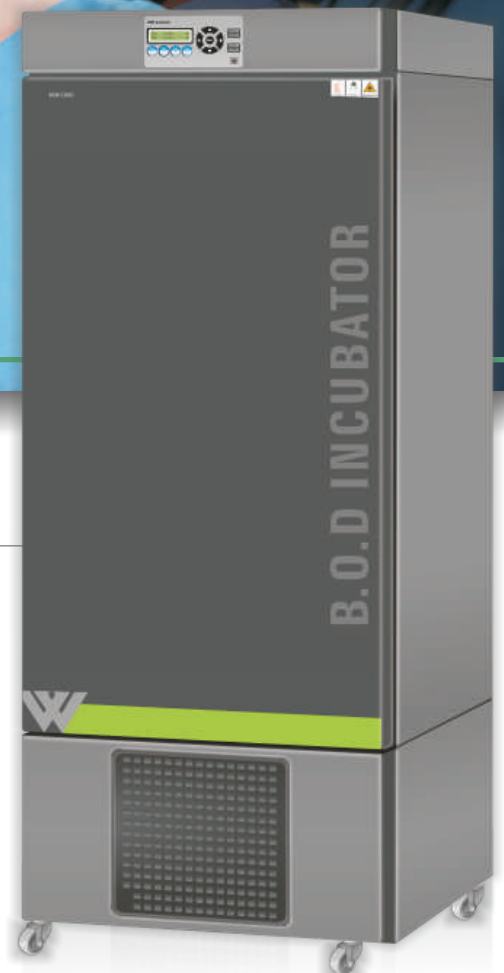


B.O.D Incubator

“*Varied usages in
various Research &
R&D LABORATORIES*”

Models:

- ACM-22061





B.O.D Incubator

B.O.D Incubator

Applications

Low Temperature Incubator Applications

- BOD Determinations of Wastewater & Sewage
- APHA Method at 20°C
- Plant Cell Growth
- Fermentation Studies
- Bacterial Culturing
- Mycology Studies

B.O.D. Applications

Biochemical Oxygen Demand (BOD) incubators enable end users to determine levels of organic matter and nitrogen in wastewater samples. This wastewater must be effectively measured for contaminants, treated and then released back into the environment without posing a threat to the water supply system. Recently, stricter enforcement by government regulatory agencies charged with monitoring air and water quality has forced a greater number of organizations to actively test and treat their wastewater. BOD incubators facilitate the storage of wastewater samples, and the Weiber Low Temperature Incubators accommodate from 62 - 565 BOD bottles.

CONSTRUCTION DETAILS

Material Of Construction:

Most versatile for Biochemical Oxygen Demand determinations. Castor wheel mounted cabinet is double walled with inner chamber of Stainless steel sheet of grade SS 304 and outer wall of heavy gauge PCRC steel. sheet duly degreased and pre treated with primers for rust proofing duly painted with attractive stove enamel or powder coated .

Temperature Range :

2 Degree C to 60 degree C

Temperature Control & Range

The temperature inside the BOD incubator is controlled by intelligent programmable temperature controller and indicator. This controller is based on the microcontroller nano watt technology and its ergonomic design suits for any specific requirement of the BOD incubator like Datalogger facility, Thermal and DOT Matrix interface, direct data load

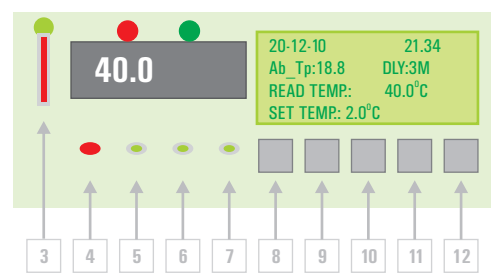


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Interactive ergonomic Control Unit based on Microcontroller

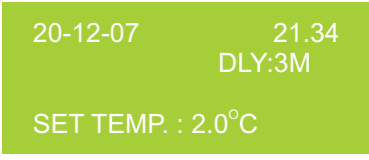


- 1) **Heater Mode** : This LED indicates the heating system on condition and it light up when the set temperature is higher than the ambient temperature.
- 2) **Cooling Mode**: This LED indicates the cooling system on condition and it light up when the set temperature is lower than the ambient temperature.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

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 similary on Third press of key SET cursor blinks at YEAR and repeat the steps to move to any parameter.



Similary 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.

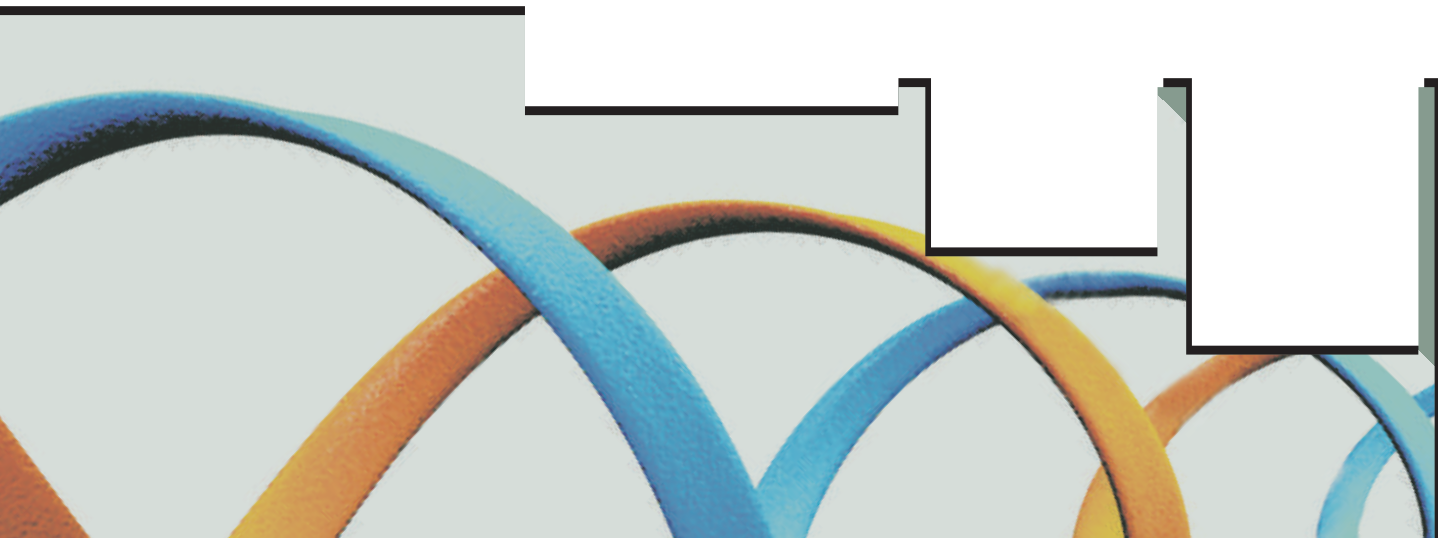
After completion of all correct setting press ESC key to return back to the main menu.

Optional Features

(Can Be incorporated At Extra Cost If Desired)

- 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.
- 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 Semiconductor 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.
- 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.



B.O.D Incubator

Application & Mechanical Data

Insulationa

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 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 a an excellent thermal insulant. The thickest it is, the best 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.

Voltage

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

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.

illumination

Unit is fitted with door operated illumination lamp inside the chamber.

40 watt/120 volt replacement light bulb fits inside the illumination cavity of the chamber.

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

Insulation

Application

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

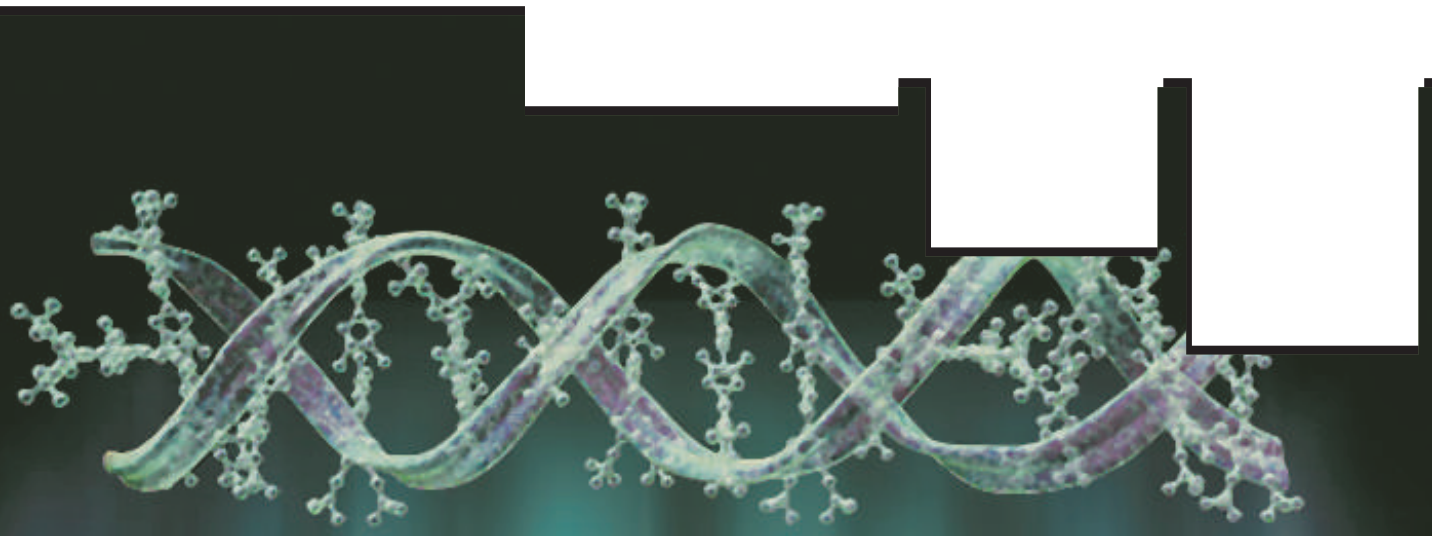
RATED PERFORMANCE

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

Features of Coaxial Circulation Fan

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 Relief Valve	PROVIDED
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



Technical Matrix



B.O.D Incubator

Technical Matrix

Temperature variation (time)	± °C	0.5
Temperature deviation (spatial)	± °C	0.5
Readability/Set ability	°C	0.5
Temperature range ***	°C	2°C to 60°C
Sensor thermocouple		Type K
Controller		Solid State digital Controller/PID optional
Display		LED/LCD
Adjustable alarm limits (visual and acoustic)		Optional
Safety thermostats		
Temperature variation (time)	± °C	3(With PID Controllers only)
Sensor thermocouple		Type K
Automatic setting		Yes (With PID Controllers only)
Adjustable limits		Yes (With PID Controllers only)
Light control		
Readability/Setability	%	7% (optional feature)
Light intensity in the middle	Lux	As Desired (optional feature)
Light intensity in both sides	Lux	As Desired (optional feature)

Accessories		
Automatic de-icing system		optional
Timer (1-999 minutes or hours)		optional
Real Time Program		optional
Printer Report Program		optional
Serial Data Port	RS232	optional
Inspection window in door		optional
Shelves		
Standard/ max		2-6 (depending on the internal size)
Dimensions w,d	mm	As per the individual model
Max load per shelf	kg	20
Permitted total load	kg	80 kg (Max Internal Size)
Accessories		
Printer Report Program		optional
2 x 24 characters LCD Display		optional
Access Port 30 mm		optional
Inspection window in door with cover		optional
Castors, lockable		Yes
Power consumption		
Nominal power	W	950 - 1650
Nominal voltage	V	230, 1~
Frequency	Hz	50/60

Front Panel

The front panel is provided with separate indicator lamps for main heating and incoming voltage. Digital Temperature controller cum Indicator and voltmeter.

Shelves

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

Voltage

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

Optional Accessories

(a) Humidity system can also be provided in all model and size.

- (b) Light system by interior illumination with three fluorescent tubes 60 cm long (20 watts) placed vertically along with back wall. Temp. can be obtained 10 C to 60
- (c) Timer 0-24 hours for regulating cycle's illumination condition.
- (d) Arrangement for incubation of CO2 Air Mixture
- (e) Electronic Digital Temperature and humidity controller combined
- (f) Automatic Voltage Stabilizer of 3 KVA

Sizes & Capacity

(Acm-22061-I)-	CAPACITY
455 x 610 x 410 mm	4.0 Cu.ft (112 ltrs)
505 x 830 x 415 mm	6.1 Cu.ft (171 ltrs)
570 x 875 x 550 mm	10 Cu.ft (280 ltrs)
650 x 900 x 550 mm	12 Cu.ft (336 ltrs)
700 x 900 x 650 mm	15 Cu.ft (420 ltrs)



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