Thermo Scientific Environmental Chamber

Model 3962 821 liter (29 cu ft), 230V, 50/60Hz
Operating and Maintenance Manual 7003962 Rev. 0
Warning If the chamber is not used in the manner specified in this operating manual, the protection provided by the equipment design may be impaired. ▲
**Important** Read this instruction manual. Failure to read, understand and follow the instructions in this manual may result in damage to the unit, injury to operating personnel, and poor equipment performance. ▲

**Caution** All internal adjustments and maintenance must be performed by qualified service personnel. ▲

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Equipment being maintained or serviced must be turned off and locked off to prevent possible injury.

Hot surface(s) present which may cause burns to unprotected skin, or to materials which may be damaged by elevated temperatures.

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Section 1  Installation and Start-Up

Figure 1-1. Front View

Figure 1-2. Top View

Figure 1-3. Back View

Figure 1-4. Side View
Control Panel Keys, Displays & Indicators

Figure 1-5. Control Panel

Silence - Silences the audible alarm.

Alarm Indicator - Light pulses on/off during an alarm condition in the unit.

Mode Select Switch - Used to select Run, Setpoints, Calibration and System Configuration Modes.

Message Center - Displays system status.

Mode Select Indicators -
- Run: Run Menu
- Set: Set Points Menu
- Cal: Calibrate Menu
- Config:: Configuration Menu

Up and Down Arrows - Increases or decreases the number values, toggles between choices.

Enter - Stores the value into computer memory.

Heat Indicator - Lights when power is applied to the heaters.

Temp Display – Displays temperature continuously

Scroll for Parameters Arrows - Moves the operator through the choices of the selected mode.
Keypad Operation

The Model 3962 Reach-In Incubator has four basic modes that allow incubator setup: Run, Setpoints, Calibration and System Configuration.

- Run is the default mode during normal operation.
- Set is used to enter system setpoints.
- Calibration is used to calibrate various system parameters.
- Configuration allows for custom setup of various options.

The chart below shows the selections under each of the modes.

<table>
<thead>
<tr>
<th>RUN</th>
<th>SETPOINT</th>
<th>CALIBRATION</th>
<th>CONFIGURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default Mode</td>
<td>Temperature</td>
<td>Temp Offset</td>
<td>Audible</td>
</tr>
<tr>
<td></td>
<td>Overtemp</td>
<td></td>
<td>Access Code</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Temp Lo Alarm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Temp Relay</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RS485 Address</td>
</tr>
</tbody>
</table>

Scroll for Parameters Arrows: Steps the operator through the parameters of SET, CAL and CONFIG Modes. The right arrow goes to the next parameter, the left arrow returns to the previous parameter.

Up Arrow: Increases or toggles the parameter values that have been selected in the SET, CAL, and CONFIG Modes.

Enter: Must press Enter key to save to memory all changed values.

Down Arrow: Decreases or toggles the parameter values that have been selected in the SET, CAL and CONFIG Modes.

Silence Key: Press to silence the audible alarm. See Section 4 for alarm ringback times.

Install the Unit

Units must be installed against a wall or similar structure. Maintain a three inch clearance behind the incubator for electrical connections.

Locate the unit on a firm level surface capable of supporting the unit’s weight of approximately 227kg (500 lbs). Position it away from doors and windows and heating and air conditioning ducts.

Warning This incubator weighs approximately 227kg (500 lbs). Have sufficient personnel available when moving. ▲
Preliminary Cleaning and Disinfecting

Disinfect all interior surfaces with a general-use laboratory disinfectant. Rinse thoroughly with sterile distilled water, then 70% ethanol. Dry with a sterile cloth as needed.

Disinfect the shelf channels and shelves, then rinse with distilled water before installing.

**Caution** Before using any cleaning or decontamination method except those recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment.

**Caution** Accidental spills of hazardous materials on or inside this unit are the responsibility of the user.

Install the Shelves

The shelves may be installed at any level in the incubator. Install a shelf channel on each side. With the tabs pointing up, attach the channel by locating the rivet into a slotted hole, far end first. Pull the channel toward the front and slide the front rivet on the channel into the slotted hole and press down. Make sure that the channels are opposite each other so that the installed shelf will be level.

Place a bubble-type level on a shelf inside the incubator. Adjust the feet as needed; counterclockwise to lengthen or clockwise to shorten. Level the unit front-to-back and left-to-right.

![Figure 1-5. Shelf Channel on Side Duct](image-url)
**Connect to Electrical Power**

See the serial tag on the side of the unit for electrical specifications or refer to the electrical schematics at the end of this manual.

**Warning** Connect the incubator to a grounded, dedicated circuit. The power cord connector is the mains disconnect device for the incubator. Position the incubator so the unit can be easily disconnected.

Plug the provided power cord into the power inlet connector on the back of the cabinet, then into the grounded, dedicated electrical circuit.

The Model 3962 also has an internal outlet located on the right side of the interior back wall. The outlet is to provide power (1A maximum) to accessory equipment. Do not use this outlet when the temperature is above 40°C.

**Incubator Start-Up**

With the incubator properly installed and connected to power, system setpoints can be entered. The following setpoints can be entered in Set Mode: Temperature and Overtemperature. To enter Set Mode, press the Mode key until the Set indicator lights. Press the right and/or left arrow keys until the proper parameter appears in the message display center. See Chart 1-1 for more detail.

**Set the Operating Temperature**

This incubator has an operating temperature setpoint range of 5.0°C above ambient to 60.0°C. It is shipped from the factory with a temperature setpoint of 10.0°C. At this setting, all heaters are turned off. To change the operating temperature setpoint:

1. Press the Mode key until the Set indicator lights.
2. Press the right arrow until “Temp XX.X” is displayed in the message center.
3. Press up/down until the desired temperature setpoint is displayed.
4. Press Enter to save the setpoint.
5. Press the Mode key until the Run indicator lights for Run mode or press the right/left arrow keys to go to next/previous parameter.

**Caution** Any equipment placed inside chamber must be rated for unit operating temperature.
Set the Overtemp Setpoint

**Caution** The independent overtemp system is designed as a safety to protect the incubator only. It is not intended to protect or limit the maximum temperature of the cell cultures or customer’s equipment inside the incubator if an overtemp condition occurs.

The incubator is equipped with an independent circuit that monitors the air temperature in the cabinet. The independent overtemp circuit is designed as a safety for the incubator only. Should the system’s temperature control fail, this circuit would cut out all heaters when the cabinet’s temperature reaches the Overtemp setpoint. When an incubator is operating in an overtemp condition, the temperature control in the incubator will be ±1°C around the overtemp setpoint.

The overtemp setpoint is set by the factory (default) at 40°C. However, the overtemp can be reset over a range from 0.5°C above the operating temperature setpoint to 65°C.

If the incubator’s operating temperature setpoint is set above the overtemp setpoint, the overtemp setpoint will automatically update to 1°C above the temperature setpoint. It is recommended that the overtemp setpoint be maintained at 1°C over the operating temperature setpoint.

To set the Overtemp setpoint:

1. Press the Mode key until the Set indicator lights.
2. Press the right arrow until Otemp XX.X is displayed in the message center.
3. Press the up or down arrow until the desired Otemp setpoint is displayed.
4. Press Enter to save the setting.
5. Press the Mode key until the Run indicator lights, or press the right or left arrow to go to the next or previous parameter.
Section 1
Installation and Start-Up

Press MODE to light SET

To Set:

Operating Temperature

Press MODE to move to CALIBRATE mode

Over Temperature

Press MODE to return to previous parameter

Chart 1-1

Set Mode

Press Enter to save setting

Numbers increase

Press Enter to save setting

Numbers decrease

Press to return to previous parameter

Press to return to previous parameter

Over Temperature

Operating Temperature
Section 2 Calibration

After the unit has stabilized, several different systems can be calibrated. In the calibration mode, the air temperature level can be calibrated to reference instruments. To access the calibration mode, press the Mode key until the Cal indicator lights. Press the right and/or left arrow until the proper parameter appears in the message center. See Chart 2-1 at the end of this section for more detail.

Calibration frequency is dependent on use, ambient conditions and accuracy required. A good laboratory practice would require at least an annual calibration check. On new installations, all parameters should be checked after the stabilization period.

Prior to calibration, the user should be aware of the following system functions. While the unit is in Calibration mode, all system control functions are stopped so the unit remains stable. Readout of the system being calibrated will appear on the message center. If no keys are pressed for approximately five minutes while in Calibration mode, the system will reset to Run mode so control functions are reactivated.

Caution Before making any calibration or adjustments to the unit, it is imperative that all reference instruments be properly calibrated. ▲

Calibrate the Temperature

Before calibration, allow the cabinet temperature to stabilize. Place the calibrated instrument in the center of the chamber. The instrument should be in the airflow, not against the shelf.
Section 2
Calibration

Temperature Stabilization Periods

Start-Up - Allow 12 hours for the temperature in the cabinet to stabilize before proceeding.

Presently Operating - Allow at least 2 hours after the display reaches set-point for temperature to stabilize before proceeding.

1. Press the Mode key until Cal indicator lights.

2. Press the right arrow until “TEMPCAL XX.X” appears in the message center.

3. Press the up/down arrow to match the display to the calibrated instrument.

4. Press Enter to store calibration.

5. Press the Mode key to return to Run or the right/left arrow to go to next/previous parameter.
To Calibrate:

Press MODE to move to SYS CONFIG mode

- Press ← to return to previous parameter
- Numbers increase
- Press ENTER to save the setting
- Numbers decrease
Section 3 Configuration

Several features available in the Configuration Mode allow custom setup of the incubator. These features are listed and described below. All features may not be necessary in all applications, but are available if needed. To enter Configuration mode, press the Mode key until the Config indicator lights. Press the right and/or left arrow until the appropriate parameter appears in the message center. See Chart 3-1 at the end of this section for more detail.

Turn All Audible Alarms On/Off

The audible alarms can be turned on or off. The factory setting is ON.

1. Press the Mode key until the Config indicator lights.

2. Press the right arrow until Audible XXX is displayed in the message center.

3. Press up/down arrow to toggle Audible ON/OFF.

4. Press Enter to save the setting.

5. Press the Mode key to return to run mode or right/left to go to next/previous parameter.

Set an Access Code

A 3-digit Access Code can be entered to avoid unauthorized personnel from changing the setpoints, calibration, or configuration. A setting of 000 will bypass the access code. The factory setting is 000.

1. Press the Mode key until the Config indicator lights.

2. Press the right arrow until Acc Code XXX is displayed in the message center.

3. Press up or down arrow to change the access code.

4. Press Enter to save the access code.

5. Press the Mode key to return to the Run mode or right/left to go to next/previous parameter.
Section 3
Configuration

Set Low Temp Alarm Limit (Tracking Alarm)

The low temp alarm limit is the deviation from the temperature setpoint, which will cause a low temp alarm. The low temp alarm is variable from 0.5° below setpoint to 5.0° below setpoint. The factory setting is 1.0° below setpoint. A minus sign in the display indicates that the alarm setting is below the setpoint.

1. Press the Mode key until the Config indicator lights.
2. Press the right arrow until Temp Lo -X.X is displayed in the message center.
3. Press up/down arrow to change the low temp alarm limit.
4. Press Enter to save the low temp alarm limit.
5. Press the Mode key to return to Run mode or right/left to go to next/previous parameter.

Enable Temp Alarms to Trip Relay Contacts

The temperature alarms can be programmed to trip the remote alarm contacts. A setting of ON will cause this, a setting of OFF will not allow temperature alarms to trip the contacts. The factory setting is ON.

1. Press the Mode key until the Config indicator lights.
2. Press the right arrow until TMP RLY XXX is displayed.
3. Press the up/down arrow to toggle the setting ON/OFF.
4. Press Enter to save the setting.
5. Press the Mode key to return to Run or the right/left arrow key to go to next/previous parameter.
Configure Mode

Press MODE to light CONFIG

To Configure:

Audible ON/OFF
- Press MODE to return to RUN mode
- Press arrow to return to previous parameter
- Turn ON audible alarm
  - Press Enter to save the setting
- Turn OFF audible alarm
  - Press Enter to save the setting

Access Code
- Press arrow to return to previous parameter
- Numbers increase
  - Press Enter to save the setting
- Numbers decrease
  - Press Enter to save the setting

Low Temp Alarm Limit
- Press arrow to return to previous parameter
- Numbers increase
  - Press Enter to save the setting
- Numbers decrease
  - Press Enter to save the setting

Temp Relay ON/OFF
- Press arrow to return to previous parameter
- Enable relay contacts (ON) during temp alarms
  - Press Enter to save the setting
- Disable relay contacts (OFF) during temp alarms
  - Press Enter to save the setting

RS-485
- Press arrow to return to previous parameter
- Numbers increase
  - Press Enter to save the setting
- Numbers decrease
  - Press Enter to save the setting
Section 4 Alarms

The Model 3962 environmental chamber is equipped with a system which notifies the user of an alarm condition inside the incubator. All alarms are displayed in the control panel message center. The following table contains information on all possible systems alarms.

To avoid alarms going off in day-to-day use, some alarms are equipped with a time-delay feature. For this to function correctly, the alarm condition must exist for the specified length of time before the message center will display the alarm. This allows for interruptions, such as door openings, to occur without the incubator going into a continuous state of alarm.

When an alarm condition exists, the Silence key can be pressed to temporarily mute the audible alarm. The message center will continue to show the alarm condition. If the alarm condition is not corrected within a specified length of time, the alarm will sound again or “ringback” to remind the user.

When multiple alarm conditions occur, active messages are displayed in the display center one at a time, updating at 5-second intervals. Pressing Silence during multiple alarms causes all active alarms to be muted and to ringback in 15 minutes.

The temperature alarms are disabled when the Temp set point is 10°C.

<table>
<thead>
<tr>
<th>Description</th>
<th>Message Code</th>
<th>Delay</th>
<th>Ringback</th>
<th>Relay</th>
</tr>
</thead>
<tbody>
<tr>
<td>No alarm condition exists</td>
<td>SYSTEM OK</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Temp &gt; Otemp Set point</td>
<td>SYS IN OTEMP</td>
<td>0 min.</td>
<td>15 min.</td>
<td>Yes</td>
</tr>
<tr>
<td>Air Temp Sensor Fault</td>
<td>AIR SNSR ERR</td>
<td>0 min.</td>
<td>15 min.</td>
<td>No</td>
</tr>
<tr>
<td>Temperature Controller Failure</td>
<td>TMP CTRL ERR</td>
<td>0 min.</td>
<td>15 min.</td>
<td>Yes</td>
</tr>
<tr>
<td>Door is Open</td>
<td>DOOR IS OPEN</td>
<td>15 min.</td>
<td>15 min.</td>
<td>Yes</td>
</tr>
<tr>
<td>Temp &lt; Temp Low Tracking Alarm</td>
<td>TEMP IS LOW</td>
<td>15 min.</td>
<td>15 min.</td>
<td>Programmable</td>
</tr>
</tbody>
</table>
Sensor Fault Alarms

The microprocessor in Model 3962 environmental chambers continually scans all available sensors to ensure that they are operating properly. Should an error be detected, the incubator will sound an alarm and display the appropriate message. If such an alarm occurs, contact your local distributor or the Technical Services department.
Section 5 Maintenance

Caution If the unit has been in service, turn it off and disconnect the power cord connector before proceeding with any maintenance. ▲

Caution Before using any cleaning or decontamination method except those recommended by the manufacturer, users should check with the manufacturer that the proposed method would not damage equipment. ▲

Cleaning The chamber interior may be cleaned with a general-use laboratory disinfectant or alcohol.

The cabinet exterior may be cleaned with soap and water or any non-abrasive commercial glass cleaner. The Thermopane glass door may be cleaned with commercial glass cleaner or with a solution of ammonia and water.

Warning Alcohol, even a 70% solution, is volatile and flammable. Use it only in a well ventilated area that is free from open flame. If any component is cleaned with alcohol, do not expose the component to open flame or other possible hazards. ▲

Caution Do not use strong alkaline or caustic agents. Stainless steel is corrosion resistant, not corrosion proof. Do not use solutions of sodium hypochlorite (bleach) as they may cause pitting and rust. ▲

Clean the Glass Doors The chamber glass door and the optional independent inner doors may be cleaned using the same disinfectant as used on the incubator interior. It is imperative that they be rinsed with sterile distilled water to remove the disinfectant residue. The doors should then be dried with a sterile soft cloth.
Clean the Glass Doors (continued)

Some precautions in the cleaning and care of the incubator glass doors:
Moisture leaches alkaline materials (sodium, Na) from the surface of the glass. Evaporation of the moisture concentrates the alkaline and may produce a white staining or clouding of the glass surface. Cleaning chemicals with a pH above 9 accelerate the corrosion process. Therefore, it is very important to rinse and dry the glass doors after cleaning.

Caution There is no simple method for repairing corroded glass. In most cases, the glass must be replaced. ▲

Replace the Power Fuses

Warning De-energize all potential sources of energy to this unit and lockout/tagout the controls. (O.S.H.A. Regulation, Section 1910-147.) ▲

Warning High voltage is present behind control panel. The remote overtemp alarm system should be installed only by qualified electrical service personnel. ▲

There are only two replaceable fuses in the incubator. See Table 5-1 for fuse specifications.

1. Turn off the incubator’s power switch and unplug the power cord.

2. Remove the top of the unit to access the fuses.

3. Refer to Figure 5-1 for the location of the two fuses.

4. Install the top cover and return the unit to service. If the fuse(s) blow after restoring power to the incubator, contact the Technical Services Department.

Figure 5-1. Fuse Locations
Warning Federal regulations require that doors be removed from incubators before units are removed from service or discarded. ▲

Table 5-1. Fuse Replacement

<table>
<thead>
<tr>
<th>Fuse Voltage and Application</th>
<th>Manufacturers Part #</th>
<th>Amp Rating</th>
<th>Rupture Speed</th>
<th>IEC Letter Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>230 VAC Accessory Outlet</td>
<td>GMC-500mA</td>
<td>0.5 Amp</td>
<td>Time-Lag</td>
<td>T</td>
</tr>
<tr>
<td>230 VAC Interior Outlet</td>
<td>GMC-1.5A</td>
<td>1.5 Amp</td>
<td>Time-Lag</td>
<td>T</td>
</tr>
</tbody>
</table>

Discarding/ Removing Incubator from Service
Section 6 Factory Installed Options

Connect the Remote Alarm Contacts

A set of relay contacts is provided to monitor alarms through a RJ-11 telephone style connector on the back of the unit. Refer to Figure 6-3 for the location of the alarm connector. The 12-foot telephone cord (P/N 190388) and RJ11-to-screw terminal conversion box (190392) are available through the Technical Services department.

The remote alarm provides a NO (normally open) output, an NC (normally closed) output and COM (common). Refer to Figure 6-1.

The contacts will trip on a power outage or an overtemperature condition. The contacts may also be programmed to trip or not trip on temperature alarms and CO₂ alarms. See Section 3, Configuration.

Figure 6-1. Remote Alarm Outputs

![Diagram of Remote Alarm Contacts]

**CAUTION**

Contains Parts and Assemblies Susceptible to Damage by Electrostatic Discharge (ESD)
The Model 3962 can be purchased with the RS485 communications option (190523). Figure 6-2 shows the location of the RS485 connector on the back of the cabinet.

**Connect the RS485 Interface**

**Connect the Analog Output Boards**

**Warning** The electronics section contains hazardous voltages. Only qualified electrical service personnel should access this area. ▲

The analog output board is an option (190512, 190543, 190544) that allows the incubator to output analog signals representing the air temperature of the incubator interior. There are three different analog output board options available: 0-1V, 0-5V or 4-20mA signals. Refer to Table 6-1 for output specifications of the three boards.

**Table 6-1. Analog Output Board Specifications**

<table>
<thead>
<tr>
<th>Temperature</th>
<th>190512 4-20 mA Output Scaling 4-20mA Equals</th>
<th>190544 0-1V Output Scaling 0-1 V Equals</th>
<th>190543 0-5V Output Scaling 0-5V Equals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.0-100.0 °C</td>
<td>0.0-100.0 °C</td>
<td>0.0-100.0 °C</td>
</tr>
</tbody>
</table>

Negative display readings will output 0V. The outputs do not have isolated grounds.

To wire in the analog output board, a shielded 22 gauge, 3-conductor wire, Part # 73041, is recommended. This wire is also readily available from other vendors including Alpha, Part #2403, and Deerborn, Part # 972203.

**Caution** Accuracy of the output at the board terminal strip to the incubator display is ±1 unit. There is no calibration from the incubator. Calibration to the incubator display must be at the instrument connected to the output board. ▲

To access the analog board:

1. Turn off the incubator and unplug it from the power outlet.
2. Remove the top of the incubator.
3. Locate the Analog Output board.
4. Strip the ends of the conductor and wire it to the appropriate terminals of connectors J2 on the analog board. Refer to Figure 6-3.
5. Route the wires through the auxiliary hole located on the back of the unit. See Figure 6-2 for the location of this hole and Figure 6-4 for routing details.

6. When wiring is completed, replace the unit top and return the unit to service.

Figure 6-2. Location on Back

Figure 6-3. Connectors on Board

Figure 6-4. Board Location in Drawer
**Inner Doors**
Align the shelves and shelf channels with each of the inner doors to facilitate introduction and removal of trays. Clean these doors with the same care as the single door (Section 5).

**Shaker Support Shelves**
Shaker support shelves are reinforced and secured to the walls of the incubator. They have a load limit of (1) shaker or 90.7kg (200 pounds) per shelf, one shelf being the floor of the unit. The shaker platform limit is 22.7kg (50 pounds). Shakers must not exceed 250 rpm when used inside this incubator. For shaker power connection, an internal outlet in the upper right corner of the back wall is installed. Casters are installed at the factory for moving the cabinet to the desired location. After the unit is in place and prior to operation, the casters must be removed. The large rubber vibration feet, factory installed, are positioned correctly for operation. Do not adjust.

**Caution** Any equipment placed inside the chamber must be rated for unit operating temperature. ▲
Section 7 Specifications

* Below listed performance figures are based on the following operating conditions:

- Ambient temperatures of 22°C, ±3°C
- Line voltage 230V, ±5%
- Temperature uniformity according to ASTM E1292 (9 point measurement test)

Temperature
Control ...............+0.1°C Microprocessor PID
Setpoint ...............Digital - Touch Pad, 0.1°C
Range ...............+5°C above ambient to 60°C
Uniformity ...............±0.3°C @ +37°C
Tracking Alarm . User programmable (low) indicator
Overtemp . Tracking, user programmable, action and indicator
Display ...............Digital, LED, 0.1°C increments

Temperature Safety
Type . Extreme temperature safety, action and indicator
Sensor . Thermostat, independent of temperature control system
Indicator . Message center, audible and visual alarms

Shelves
Dimensions (W x D). . . 778mm x 656mm F-B (30.62” W x 25.81”)
Construction ..........Solid stainless steel, 2B finish
Surface Area ..............0.5 m² (5.4 ft²) per shelf
Max per Chamber ..............13.55 m² (145.8 ft²)
Standard .........................5
Maximum ............................27
Clearance ...............Adjustable on 50mm (2”) centers
Section 7
Specifications

Construction
Interior volume: ............... 823 liters (29 cu ft)
Interior: ............. 1.4301 (304) 2B stainless steel
Exterior: ................. 18-gauge cold rolled steel
Exterior Door: . . Heated, triple pane tempered glass
Outer Door Gasket: .......... Molded vinyl
Insulation: ................. 50mm (2”) fiberglass

Fittings
Access Port: . . . . . .61mm (2.4”) ID, one port per side

Electrical
Model 3962
230VAC, 50/60Hz, 1 PH, 5.0 FLA
Operating Range, including fluctuations . . 230V, ±10%, 50-60Hz
8A Breaker power switch
Power Switch: ............... 2-pole circuit breaker
Accessory Outlet (for Thermo Scientific accessories) . . . Voltage equal to the cabinet input, 75W max., 0.5mA leakage current
Interior Outlet . . Voltage equal to cabinet input, 1A max, 0.5mA leakage current (standard EU CEE 7/7 plugs - other plugs on request)
Remote Alarm Contacts . . Deviation of temperature & power, N/O & N/C

Unit BTU Output
230V: ............... 150W (510 BTU/hours)

Dimensions
Exterior (W x H x D): . . . . 965mm x 2032mm x 838mm
.......................... (38.0” x 80.0” x 33.0”)
Interior (W x H x D): . . . . 787mm x 1524mm x 686mm
.......................... (31.0” x 60.0.0” x 27.0”)
Weight: ..................... 226,8kg (500 lbs.)

Certification ......................... CSA, CE
Safety Specifications

Altitude .......................... 2,000 meters
Temperature ....................... 5°C to 40°C
Humidity
   80% RH at or below 31°C, decreasing linearly to 50% RH at 40°C
Mains Supply Fluctuations
   Operating Voltage Range
   Installation Category II
   Pollution Degree ²
   Class of Equipment ¹

1 Installation category (overvoltage category) defines the level of transient overvoltage which the instrument is designed to withstand safely. It depends on the nature of the electricity supply and its overvoltage protection means. For example, in CAT II which is the category used for instruments in installations supplied from a supply comparable to public mains such as hospital and research laboratories and most industrial laboratories, expected transient overvoltage is 2500V for a 230V supply.

2 Pollution degree describes the amount of conductive pollution present in operating environment. Pollution degree 2 assumes that normally only non-conductive pollution such as dust occurs with the exception of occasional conductivity caused by condensation.
## Section 8 Parts

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>230120</td>
<td>0.5 amp fuse (accessory outlet)</td>
</tr>
<tr>
<td>230106</td>
<td>1.5 amp fuse (interior outlet)</td>
</tr>
<tr>
<td>156112</td>
<td>Blower motor, 25W (1/30th HP)</td>
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<tr>
<td>170164</td>
<td>Motor capacitor 3 MFD, 370VAC</td>
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<tr>
<td>600210</td>
<td>300 watt wire-wound heater</td>
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<tr>
<td>360157</td>
<td>Door switch</td>
</tr>
<tr>
<td>290138</td>
<td>Temperature control sensor</td>
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<tr>
<td>400201</td>
<td>40W Switcher kit</td>
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<tr>
<td>515080</td>
<td>Leveler, 50mm (2”) diameter</td>
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<tr>
<td>227083</td>
<td>Door latch assembly</td>
</tr>
<tr>
<td>505071</td>
<td>Stainless steel shelf</td>
</tr>
<tr>
<td>190012</td>
<td>Stainless steel shelf channel</td>
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<tr>
<td>180006</td>
<td>0 - 60°C chart paper, single pen recorder</td>
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<td>ITEM NO.</td>
<td>PART NO.</td>
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### Section 8

#### Parts

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<tr>
<th>PART NO.</th>
<th>PART DESCRIPTION</th>
<th>M/C QTY</th>
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<tr>
<td>1</td>
<td>LAMINAR HEX MWT</td>
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<td>2</td>
<td>LAMINAR HEX MWT</td>
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<tr>
<td>3</td>
<td>CAPACITOR W/BD</td>
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<tr>
<td>4</td>
<td>WIND SPACER</td>
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<tr>
<td>5</td>
<td>MOTOR W/BD</td>
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<td>6</td>
<td>SILENCE W/BD</td>
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<td>7</td>
<td>1/2 HP MOTOR</td>
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<td>8</td>
<td>THERMAL FLAT W/BD</td>
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<tr>
<td>9</td>
<td>1/2 HP MOTOR</td>
<td>N/A</td>
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<tr>
<td>10</td>
<td>BLOWER MOTOR</td>
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<tr>
<td>11</td>
<td>BLOWER MOTOR</td>
<td>N/A</td>
</tr>
<tr>
<td>12</td>
<td>MOTOR SPACER</td>
<td>N/A</td>
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</tbody>
</table>

**Notes:**
- DO NOT QL RT on Motor Part Numbers.
- Use Only pictures as a reference for scaling parts.
Section 9
Electrical Schematics

Electrical Schematic
Model: 3961 and 3962
Environmental Chamber

3961-70-0-D Rev. 3
Page 1 of 2
THERMO FISHER SCIENTIFIC STANDARD PRODUCT WARRANTY

The Warranty Period starts two weeks from the date your equipment is shipped from our facility. This allows for shipping time so the warranty will go into effect at approximately the same time your equipment is delivered. The warranty protection extends to any subsequent owner during the first year warranty period.

During the first year, component parts proven to be non-conforming in materials or workmanship will be repaired or replaced at Thermo’s expense, labor included. The Watlow EZ-ZONE PM controller is covered for one additional year for repair or replacement (parts only), provided the unit has not been misapplied. Installation and calibration are not covered by this warranty agreement. The Technical Services Department must be contacted for warranty determination and direction prior to performance of any repairs. Expendable items, glass, filters and gaskets are excluded from this warranty.

Replacement or repair of components parts or equipment under this warranty shall not extend the warranty to either the equipment or to the component part beyond the original warranty period. The Technical Services Department must give prior approval for return of any components or equipment. At Thermo’s option, all non-conforming parts must be returned to Thermo Fisher Scientific postage paid and replacement parts are shipped FOB destination.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL OR IMPLIED. NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY. Thermo shall not be liable for any indirect or consequential damages including, without limitation, damages relating to lost profits or loss of products.

Your local Thermo Sales Office is ready to help with comprehensive site preparation information before your equipment arrives. Printed instruction manuals carefully detail equipment installation, operation and preventive maintenance.

If equipment service is required, please call your Technical Services Department at 1-800-438-4851 (USA and Canada) or 1-740-373-4763. We’re ready to answer your questions on equipment warranty, operation, maintenance, service and special application. Outside the USA, contact your local distributor for warranty information.
THERMO FISHER SCIENTIFIC INTERNATIONAL DEALER WARRANTY

The Warranty Period starts two months from the date your equipment is shipped from our facility. This allows for shipping time so the warranty will go into effect at approximately the same time your equipment is delivered. The warranty protection extends to any subsequent owner during the first year warranty period. Dealers who stock our equipment are allowed an additional six months for delivery and installation, provided the warranty card is completed and returned to the Technical Services Department.

During the first year, component parts proven to be non-conforming in materials or workmanship will be repaired or replaced at Thermo's expense, labor excluded. The Watlow EZ-ZONE PM controller is covered for one additional year for repair or replacement (parts only), provided the unit has not been misapplied. Installation and calibration are not covered by this warranty agreement. The Technical Services Department must be contacted for warranty determination and direction prior to performance of any repairs. Expendable items, glass, filters, reagents, tubing, and gaskets are excluded from this warranty.

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Your local Thermo Sales Office is ready to help with comprehensive site preparation information before your equipment arrives. Printed instruction manuals carefully detail equipment installation, operation and preventive maintenance.

Contact your local distributor for warranty information. We’re ready to answer your questions on equipment warranty, operation, maintenance, service and special application.