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NESLAB Cryotrol Temperature Controller

Thermo Manual P/N U00737
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Instruction and Operation Manual

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Thermo
ELECTRON CORPORATION

NESLAB Cryotrol Temperature Controller

Instruction and Operation Manual

Table of Contents

Preface

Compliance 1

After-sale Support 1

Unpacking 1

Warranty 1

SECTION I
Safety

Warnings 2

SECTION II
General Information

Description 3

Specifications 3

SECTION III
Installation and Operation

Site 4

Electrical Requirements 4

Sensor 4

Start Up 4

Temperature Adjustment 4

SECTION IV
Maintenance

Service Contracts 5

Cleaning 5

Calibration 5

SECTION V
Troubleshooting

Checklist 6

Service Assistance 6

Technical Support 6

SECTION VI
Warranty 7

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Preface

Compliance

Products tested and found to be in compliance with the requirements defined in the EMC standards defined by 89/336/EEC as well as Low Voltage Directive (LVD) 73/23/EEC can be identified by the CE label on the rear of the unit. This label indicates testing has demonstrated compliance with the following directives:

LVD, 73/23/EEC	Complies with UL 3101-1:93
EMC, 89/336/EEC	EN 55011, Class A Verification
	EN 50082-1:1992
	IEC 1000-4-2:1995
	IEC 1000-4-3:1994
	IEC 1000- 4-4:1995

For any additional information refer to the Letter of Compliance that shipped with the unit (Declaration of Conformity).

After-sale Support

Thermo Electron Corporation is committed to customer service both during and after the sale. If you have questions concerning the operation of your unit, contact our Sales Department. If your unit fails to operate properly, or if you have questions concerning spare parts or Service Contracts, contact our Customer Service Department. Before calling, please obtain the following information from the unit's serial number label:

BOM Number _____

*Serial Number*_____

Unpacking

Retain all cartons and packing material until the unit is operated and found to be in good condition. If the unit shows external or internal damage contact the transportation company and file a damage claim. Under ICC regulations, this is your responsibility.

Warranty

Units are warranted against defective parts and workmanship for one full year from date of shipment. See back page for more details.

Section I Safety

Warnings

Make sure you read and understand all instructions and safety precautions listed in this manual before installing or operating your unit. If you have any questions concerning the operation of your unit or the information in this manual, contact our Sales Department (see After-sale Support).

Performance of installation, operation, or maintenance procedures other than those described in this manual may result in a hazardous situation and may void the manufacturers warranty.

Observe all warning labels.

Never remove warning labels.

Never operate damaged equipment.

Refer service and repairs to a qualified technician.

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Section II General Information

Description

The NESLAB Cryotrol Temperature Controller is an analog temperature controller designed to control the temperature of a NESLAB CC Series Immersion Cooler or a NESLAB CB Series Cold Bath.

The unit consists of solid state, zero crossover relay and a temperature sensor.

Specifications

Temperature Range*	-100°C to +20°C
Stability	±0.5°C
Sensor Lead	Stainless Steel 6' (1.8M) lead
Sensor Dimensions (Diameter x Length) In.	3/16 x 6
Cm.	0.5 x 15.2
Dimensions H x W x D	
Inches	3½ x 6 x 6½
Centimeters	8.9 x 15.2 x 16.5
Power Requirements	115 V, 60 Hz, 0.6 Amps
50 Hz Models	220-240 V, 50 Hz, 0.3 Amps
Shipping Weight	
Pounds	6
Kilograms	2.7

* Temperature range is dependent upon the capabilities of the immersion cooler or cold bath being controlled.



Section III Installation and Operation

Site

The unit should be located on a sturdy table or bench top. The unit can also be wall mounted using the included bracket.

Never place the unit in a location where excessive heat, moisture, or corrosive materials are present.

Electrical Requirements

The Cryotrol receives its power from the host unit. Plug the 6 pin connector from the Cryotrol into the 6 pin receptacle on the host unit. When properly connected, the Power lamp on the front of the Cryotrol will light when the host unit is turned on.

Older CryoCool, Cryobath, and PBC units are equipped with a round 8 pin receptacle. If you wish to connect your Cryotrol to one of these older host units, an adapter cable is available from Thermo NESLAB. Contact our Customer Service Department for more information (see Preface, After-sale Support).

Sensor

Insert the Cryotrol temperature sensor into the fluid work area.

Start Up

Before starting the unit, double check the electrical connections, make sure the temperature sensor is inserted in the work area, and make sure the calibrated temperature dial is adjusted for a temperature lower than the fluid in the bath.

When the host unit is shut off, wait approximately five minutes before restarting. This allows time for the refrigeration pressures to equalize. If the pressures are not allowed to equalize, the compressor will short-cycle (clicking sound) and no cooling will occur.

Temperature Adjustment

To adjust the temperature of the fluid in the work area, turn the calibrated dial and position the reference line as close as possible to the desired temperature. The Cool lamp on the front of the controller indicates the status of the refrigeration system in the host unit.

Do not operate CryoCool or Cryobath units above -25°C.

For best results, stirring or agitation in the work area is recommended. No stirring causes temperature layering, and the coldest, most dense fluid will be at the bottom.

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Section IV Maintenance

Service Contracts

Thermo offers on-site Service Contracts that are designed to provide extended life and minimal down-time for your unit. For more information, contact our Customer Service Department (see Preface, After-sale Support).

Cleaning

Periodically clean the unit using a soft, non-abrasive cloth.

Calibration

The NESLAB Cryotrol must be periodically calibrated. The frequency of calibration depends on the amount and type of use. Thermo recommends checking the Cryotrol against a calibrated reference thermometer once a month after initial installation. After several months, the frequency of calibration will be established.

Equipment required:

The Cryotrol's host unit.

Calibrated reference thermometer, accurate to ±1°C.

If calibrating the Cryotrol with a CryoCool immersion cooler or PBC portable bath cooler, an insulated container, filled with non-freezing fluid is required.

Calibration:

Calibrating the Cryotrol with a Cryobath: insert the Cryotrol sensor and the reference thermometer sensor in the host unit's bath.

Calibrating the Cryotrol with a CryoCool or PBC: insert the Cryotrol sensor, the reference thermometer sensor and the host unit's probe in the insulated container.

Adjust the Cryotrol's temperature dial for -40°C (-20°C on PBC units). Align the dial's reference line as close as possible with -40°C (-20°C).

Remove the temperature dial.

Turn the Cryotrol on. Allow time for the fluid temperature in the bath or insulated container to stabilize.

Replace the temperature dial, aligning the reference line as close as possible to the temperature indicated on the reference thermometer.

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Section V Troubleshooting

Checklist

Power lamp is not lit.

Check electrical connection between Cryotrol and host unit (see Section III, Electrical Requirements).

Host unit is not on.

Power lamp may have failed.

No temperature control.

Check electrical connection between Cryotrol and host unit (see Section III, Electrical Requirements).

Make sure the temperature sensor is in the fluid work area.

Stirring or agitation in the work area is necessary (see Section IV, Temperature Adjustment).

Service Assistance

If, after following these troubleshooting steps, your unit fails to operate properly, contact our Customer Service Department for assistance (see Preface, After-sale Support). Before calling, please obtain the following information:

BOM number

Serial number

Voltage of unit

Voltage of power source

Technical Support

Our Customer Service Department can provide you with a wiring diagram and a complete list of spare parts for your unit (see Preface, After-sale Support). Before calling, please obtain the following information:

BOM number

Serial number

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WARRANTY

Thermo Electron Corporation warrants for 12 months from date of shipment any Thermo unit according to the following terms.

Any part of the unit manufactured or supplied by Thermo and found in the reasonable judgment of Thermo to be defective in material or workmanship will be repaired at an authorized Thermo Repair Depot without charge for parts or labor. The unit, including any defective part must be returned to an authorized Thermo Repair Depot within the warranty period. The expense of returning the unit to the authorized Thermo Repair Depot for warranty service will be paid for by the buyer. Thermo's responsibility in respect to warranty claims is limited to performing the required repairs or replacements, and no claim of breach of warranty shall be cause for cancellation or recision of the contract of sales of any unit. With respect to units that qualify for field service repairs, Thermo's responsibility is limited to the component parts necessary for the repair and the labor that is required on site to perform the repair. Any travel labor or mileage charges are the financial responsibility of the buyer.

The buyer shall be responsible for any evaluation or warranty service call (including labor charges) if no defects are found with the Thermo product.

This warranty does not cover any unit that has been subject to misuse, neglect, or accident. This warranty does not apply to any damage to the unit that is the result of improper installation or maintenance, or to any unit that has been operated or maintained in any way contrary to the operating or maintenance instructions specified in Thermo's Instruction and Operation Manual. This warranty does not cover any unit that has been altered or modified so as to change its intended use.

In addition, this warranty does not extend to repairs made by the use of parts, accessories, or fluids which are either incompatible with the unit or adversely affect its operation, performance, or durability.

Thermo reserves the right to change or improve the design of any unit without assuming any obligation to modify any unit previously manufactured.

THE FOREGOING EXPRESS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Thermo's OBLIGATION UNDER THIS WARRANTY IS STRICTLY AND EXCLUSIVELY LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE COMPONENT PARTS AND Thermo DOES NOT ASSUME OR AUTHORIZE ANYONE TO ASSUME FOR IT ANY OTHER OBLIGATION.

Thermo ASSUMES NO RESPONSIBILITY FOR INCIDENTAL, CONSEQUENTIAL, OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO LOSS OR DAMAGE TO PROPERTY, LOSS OF PROFITS OR REVENUE, LOSS OF THE UNIT, LOSS OF TIME, OR INCONVENIENCE.

This warranty applies to units sold in the United States. Any units sold elsewhere are warranted by the affiliated marketing company of Thermo. This warranty and all matters arising pursuant to it shall be governed by the law of the State of New Hampshire, United States. All legal actions brought in relation hereto shall be filed in the appropriate state or federal courts in New Hampshire, unless waived by Thermo.

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