



Precision Compact Ovens with Mechanical Convection

Operating and Parts List LTM1881X1 Rev. 8

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Models covered in this manual		
Models	Size	Voltage
PR305220M (665)	1.7 cu ft	240 V
PR305225M (666)	1.7 cu ft	120 V

MANUAL NUMBER LTM1881X1 (7000665)

8	ECNM-002467	03/20/23	Added part number and description on page 6-1.	TFI
7	ECNM-002443	02/20/23	Updated Wiring schematic in page 7-1 and 7-2.	TFI
6	ECNM-001892	05/04/22	Updated Temperature range paragraph in page 1-1 and Performance characteristics in page 2-1.	TFI
5	ECNM-001722	11/16/21	Updated new Light Indicator part number in Replacement parts section in page 6-1.	TFI
4	ECNM-001160	11/04/2020	Obsoleted Model PR305220MCN (670). Added Intended and Non-Intended use statements, Safety Precautions, Fuse Rating, Shelf loading, Warnings, Symbols, Replacement parts, Wiring Diagram, Warranty and Regulatory Compliance.	TFI
3	41289	4/24/17	Added lift warning, fuse ratings, open container and humidity cautions	bpg
2	40434	8/10/15	Added installation ventilation distances needed - pg 3-2	ccs
1	31325	2/16/15	Added explosion and fire warning	ccs
0	--	4/30/10	Transfer to Marietta (was LTM1881X1 8/4/09)	ccs
REV	ECR/ECN	DATE	DESCRIPTION	By



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. ▲

Material in this manual is for information purposes only. The contents and the product it describes are subject to change without notice. Thermo Fisher Scientific makes no representations or warranties with respect to this manual. In no event shall Thermo be held liable for any damages, direct or incidental, arising out of or related to the use of this manual.

Intended Use: These ovens are designed for general purpose drying, baking and evaporation or similar type work for non-flammable, non out-gassing materials and crucibles. For indoor use only.

Non-Intended Use: To avoid the risk of explosion do not load the oven with tissue, material or liquids that:

- are easily flammable or explosive,
- release vapor or dust that forms combustible or explosive mixtures when exposed to air;
- release poisons,
- create a humid atmosphere,
- release dust,
- exhibit exothermic reactions;
- are pyrotechnical substances;
- exceed the maximum specified load.

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Safety precautions



This symbol when used alone indicates important operating instructions which reduce the risk of injury or poor performance of the unit.



WARNING: This symbol indicates potentially hazardous situations which, if not avoided, could result in serious injury or death. ▲



WARNING: This symbol indicates situations where dangerous voltages exist and potential for electrical shock is present. ▲



WARNING: This symbol indicates potentially hazardous situations, which if not avoided could result in fire. ▲



CAUTION: This symbol, in the context of a CAUTION, indicates a potentially hazardous situation which if not avoided could result in minor to moderate injury or damage to the equipment. ▲



CAUTION: This indicates a situation which may result in property damage. ▲



This symbol indicates surfaces which may become hot during use and may cause a burn if touched with unprotected body parts.



Before installing, using or maintaining this product, please be sure to read the manual and product warning labels carefully. Failure to follow these instructions may cause the product to malfunction, which could result in injury or damage.



This symbol indicates a need to use gloves during indicated procedures. If performing decontamination procedures, use chemically resistant gloves. Use insulated gloves for handling samples.



Use this product only in the way described in the product literature and in this manual. Before using it, verify that this product is suitable for its intended use. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Below are important safety precautions that apply to this product:



Do not modify system components, especially the controller. Use OEM exact replacement equipment or parts. Before use, confirm that the product has not been altered in any way.



WARNING: Your unit must be properly grounded in conformity with national and local electrical codes. Do not connect the unit to overloaded power sources. ▲



WARNING: Disconnect the unit from all power sources before cleaning, troubleshooting, or performing other maintenance on the product or its controls. ▲



WARNING: This unit is not explosion-proof and not intended for heating of flammable materials or materials that could outgas nocuous/toxic fumes when heated. ▲



WARNING: Unauthorized repair of your oven will invalidate your warranty. Contact Technical Service at 1-800-438-4851 for additional information. ▲



WARNING: No equipment that uses an open flame should be placed inside the oven. This will harm the unit, hamper functionality and compromise your safety. ▲



CAUTION: Do not use any battery powered or externally-powered equipment in the oven. ▲



CAUTION: When lifting, the oven should be empty, disconnected from power and not hot to the touch. This product exceeds 18 kg (39 lbs.) It is recommended that it be lifted from the bottom by two persons. ▲



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



Alternating Current, Single Phase



ON



OFF



Protective Conductor Ground Terminal



Earth Ground Terminal

Do You Need Information or Assistance on Thermo Scientific Products?

If you do, please contact us 8:00 a.m. to 6:00 p.m. (Eastern Time) at:

1-740-373-4763

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Our **Sales Support** staff can provide information on pricing and give you quotations. We can take your order and provide delivery information on major equipment items or make arrangements to have your local sales representative contact you. Our products are listed on the Internet and we can be contacted through our Internet home page.

Our **Service Support** staff can supply technical information about proper setup, operation or troubleshooting of your equipment. We can fill your needs for spare or replacement parts or provide you with on-site service. We can also provide you with a quotation on our Extended Warranty for your Thermo Scientific products.

Whatever Thermo Scientific products you need or use, we will be happy to discuss your applications. If you are experiencing technical problems, working together, we will help you locate the problem and, chances are, correct it yourself...over the telephone without a service call.

When more extensive service is necessary, we will assist you with direct factory trained technicians or a qualified service organization for on-the-spot repair. If your service need is covered by the warranty, we will arrange for the unit to be repaired at our expense and to your satisfaction.

Regardless of your needs, our professional telephone technicians are available to assist you Monday through Friday from 8:00 a.m. to 6:00 p.m. Eastern Time. Please contact us by telephone or fax. If you wish to write, our mailing address is:

Thermo Fisher Scientific (Asheville) LLC
401 Millcreek Road, Box 649
Marietta, OH 45750

International customers, please contact your local Thermo Scientific distributor.

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Section 1 Introduction

Thank you for selecting Thermo Scientific products for your equipment needs.

Thermo Scientific Precision Compact Ovens with mechanical convection are designed for use in industry, laboratories and schools; wherever there is a need for economical and reliable ovens for drying, baking, evaporating and similar type work.

The temperature range is 5°C above ambient up to 250°C as controlled by a reliable hydraulic thermostat. A sheathed heater is positioned in the bottom of the chamber along with a constant-speed fan that circulates heated air rapidly throughout the chamber. The metal cover shields the fan and protects against splattering in the event that any material is accidentally spilled in the area of the fan.

Chamber temperature is conveniently monitored via an LED display on the control panel. To guard against over-temperature conditions, a factory-set hi-limit thermostat is an integral part of the electrical system.

One-inch thick silica-based insulation in the double-walls of the chamber helps retain chamber heat. The interior walls of the chamber are stainless steel and the shelves are chrome-plated steel for ease of maintenance and clean up.

Precision Compact Ovens have a steel exterior finished in baked enamel and are rigidly constructed for long, troublefree service.

These instructions contain important operating and safety information. The user must carefully read and understand these instructions before using the oven. Your unit has been designed to optimize function, reliability, safety and ease of use. It is the user's responsibility to install the oven in conformance with local electrical codes.

Section 1
Introduction

Section 2 Specifications

Power Requirement

Model PR305225M:120 Volts, 50/60 Hz, 10 Amps, 1200 Watts;

Fuse Rating: 15 A, 5 mm x 20 mm, Time lag, 250 V

Model PR305220M:240 Volts, 50/60 Hz, 5 Amps, 1200 Watts;

Fuse Rating: 8 A, 5 mm x 20 mm, Time lag, 250 V

Overall Dimensions

18-7/16" W x 13-9/16" D x 25" H (47 x 40 x 64 cm)

Chamber Dimensions

16" W x 11½" D x 16-1/8" H (41 x 29 x 41 cm)

Volume

1.7 cu. ft. (48.1 liters)

Shelf loading:

Max per shelf - 20 lbs.

Max cabinet - 40 lbs.

Shipping Weight

65 lbs. (30 kg)

Performance Characteristics

Measured as per DIN 12880:2007-05

Temperature Range Ambient up to 250°C

Thermostat Stability at 100°C . . . All models ±13.0°C at 100°C

Uniformity at 100°C . . . All models ±5.0°C at 100°C

Thermometer, Digital ±2°C over entire range

Environmental Operating Conditions

- Pollution Degree:2
- Installation Category:II
- Altitude:2000 Meters MSL (Mean Sea Level)
- Humidity:80% maximum, non-condensing
- Electrical Supply:120 VAC or 240 VAC
- Voltage Tolerance:±10% of normal rated line
- Temperature:15°C to 40°C
- Product Usage: This product is intended for use indoors only.

Section 3 Unpacking and Installation

The shipping carton should be inspected upon delivery. When received, carefully examine for any shipping damage before unpacking. If damage is discovered, the delivering carrier should both specify and sign for the damage on your copy of the delivery receipt.

Open the carton carefully, making certain that all parts are accounted for before packaging materials are discarded. After unpacking, if damage is found, promptly report it to the carrier and request a damage inspection promptly. Have sufficient personnel available to lift the unit into place, using proper lifting techniques according to local EHS policies.

Important Failure to request an inspection of damage within a few days after receipt of shipment absolves the carrier from any liability for damage. Call for a damage inspection promptly.



Warning Do not place oven on or near any combustible surface to avoid the possibility of fire and resulting property loss and injury or death to personnel. ▲



Caution Do not remove the rubber space feet. Removal of the feet will prevent proper air venting (air used to cool the electronics is discharged out the bottom) of oven chamber that may cause excessive heat buildup on electrical components and erratic control of temperature. ▲



Caution Bottom shelf is fixed in place to guard against access to heater area and possibility of injury. Do not remove bottom shelf unless performing maintenance or repair. ▲



Note Disconnect unit from the power source when not in use. ▲



Do not replace detachable line cord with a cord having a lesser rating than the cord supplied by the manufacturer.

Location



The oven should be located in an area free from drafts and sources of heat, as well as allowing for natural air movement to dissipate heat from the oven. To ensure needed ventilation around the oven, allow 1.5 inches on each side and 3 inches at the back. Allow enough distance above the unit to be able to install and retrieve the thermometer.

Leveling

The oven should be on a level surface, in order to facilitate movement of materials into and out from the chamber.

Shelving

Slide shelves into place inside the oven and position according to the height required for the items or materials to be heated.

Electrical Connection

The unit is supplied with a 3-wire line cord with molded plug. It should be connected to a outlet designed for 3-prong plugs. For an outlet designed to accept 2-prong plugs (ungrounded), the best advice is to have a qualified electrician replace it with a new, grounded outlet.

If a plug must be installed, use only the 3-prong grounded type, rated for the unit load requirements and matching the power outlet. Make sure the green ground wire is secured to the plug ground terminal.



The unit must be connected to a power source that meets the electrical requirements as specified on the unit's nameplate.

Be Advised

Where it becomes necessary to make changes in electrical outlets, wiring and other characteristics, it is recommended that these be done by a qualified or journeyman electrician. This includes replacing 2-prong plugs (ungrounded), for example with a 3-prong plug (grounded).

All changes need to be made to match the load requirements shown on the nameplate of the unit.



Warning This unit is not explosion-proof. Do not use in the presence of flammable or combustible materials; fire or explosion may result. Unit contains components that may ignite such materials. Before operating oven, always observe the following safety precautions:

- Fumes and spillage from acidic solutions cause corrosion of the stainless steel chamber. Maintain a neutral pH at all times.
- The oven heater is in the bottom of the unit. Surface temperatures at the bottom cover of the unit may be higher than set point temperature. For example: A plastic container on the heater cover may become hot enough to melt/burn the container at settings below the melting point of plastic. Do not place items on the heater cover.

Section 4 Operation

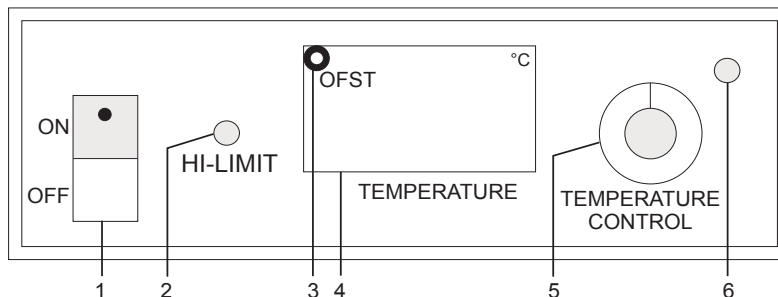


Figure 4-1. Control Panel

1. **POWER SWITCH:** Turns unit on (green status lamp lights) and off.
2. **HI-LIMIT STATUS LAMP:** Lights when the hi-limit thermostat is activated. It goes out when oven reverts to a safe operating range.
3. **CALIBRATION POTENTIOMETER:** Utilizing a jeweler's screwdriver, the temperature readout can be adjusted.
4. **LED DISPLAY:** Displays current chamber temperatures.
5. **TEMPERATURE CONTROL (THERMOSTAT):** Raises and lowers temperatures.
6. **HEATERS STATUS LAMP:** Lights when heaters are energized.



Warning Do not use in the presence of flammable or combustible materials or explosive gases. Do not use in the presence of pressurized or sealed containers - fire or explosion may result, causing death or severe injury. ▲



Caution It is the user's responsibility to monitor oven action when setting and maintaining operating temperature; oven failure may occur with possible property damage and/or injury to personnel. ▲



Caution Do not place open containers of liquid in the oven. ▲

Temp Control (Thermostat)

Refer to Figure 4-1 for the procedure below.

1. With the temperature control thermostat (5) in the extreme counterclockwise position, turn the power (rocker) (1) to its On position. (Switch's green status lamp will light.)
2. Turn the temperature control thermostat (5) in clockwise direction to increase the temperature and counterclockwise to lower it. The amber status lamp (6) above the thermostat goes on when the heaters are energized. Wait for the chamber temperature to stabilize before advancing thermostat too rapidly to reach target temperature. Note that dial setting to obtain a specific temperature will need to be approximated and can be affected by such factors as changes in line voltage, ambient conditions and types of materials being heated.
3. Read the LED display (4) for the chamber temperature produced by each setting of the temperature control thermostat (5). As experience is gained with the temperature control thermostat, improved results will be obtained in setting it to achieve specific target temperatures.
4. Always allow time for the oven to reach target temperature and to stabilize before making further adjustments of the temperature control thermostat.



Caution At the higher temperatures, the exterior of the oven and particularly the vent ring on the top of the oven become warm to the touch. To avoid burns, do not touch these surfaces. ▲

- A factory-set hi-limit thermostat cuts off power to the heater in the event that the maximum operating range is exceeded. The red status lamp (2) on the control panel indicates when the hi-limit thermostat is controlling. It goes out when oven reverts to a safe operating range.



Caution When exposed to high humidity ambient above 80%, dry out the oven for 20 minutes at a temperature above 100°C before loading with samples. The oven may not meet all 61010-1 safety standards during this drying procedure. ▲

Section 5 Maintenance

The bottom shelf that covers the heater can be removed for easy access to the heater area.

Clean up any spills as soon as possible to prevent materials being baked on surfaces. When the oven is cool, use a mild soap and water to clean surfaces. Rinse thoroughly and dry. It is best to avoid highly abrasive cleaners which can damage the finish of the interior surfaces and shelves.



Warning Disconnect plug from electrical outlet before attempting any maintenance or repair of this unit. ▲



Note Make no attempt to service or repair a Thermo Scientific product under warranty before consulting your Thermo dealer. After the warranty period, such consultation is still advised, especially when the repair may be technically sophisticated or difficult. If assistance is needed beyond what the distributor can provide, please call Technical Services. No merchandise should be returned directly to the factory without obtaining a Return Materials Authorization (RMA) number from Technical Services. ▲



Warning The qualified electrical technician is required to verify the safe state of the oven after any repair. ▲

Care and Cleaning of Stainless Steel

Stainless steel is an alloy of steel with chromium and nickel that increase the metal's resistance to rust and corrosion. Yet, if not properly cared for, stainless steel can rust and corrode.

Exposure to air provides the passivation, or oxide layer coating, for clean stainless by producing a thin, durable chromium-oxide that forms rapidly on the alloy surface to give stainless its characteristic "stainless" quality. Also exposure of the surface to other oxidizing environments can produce a passivating film or coating.

However, if free oxygen is not available due to scale or contamination buildup, the metal surface may become vulnerable to rusting and corrosion as well as pitting. But by maintaining neutral pH and conducting frequent cleanings with detergent and water, years of trouble-free service from stainless steel products can be obtained.

Care and Cleaning of Stainless Steel (cont.)

Warning Electrolysis can damage stainless steel. This occurs when an object is allowed to rest directly on the surface of stainless steel, trapping moisture that becomes oxygen-starved, but is surrounded by water-containing oxygen. ▲

Some Stainless Guidelines to Consider

Distilled water is recommended. Please note, if this water is very pure, it may be corrosive to stainless. When filling a bath or incubator, always add 2 to 40 PPM (20 to 40 mg/liter) disodium phosphate or sodium bicarbonate, adjusting dosage to provide a pH value of 7 to 9. If not available, use clean, aerated soft tap water provided the total solids concentration is < 500 PPM. We do not recommend using 18 M Ohm deionized water. If this is the only source of treated water available, mix with regular tap water at a 50/50 ratio.

The pH Factor



Check pH regularly. If pH is <6.0, add disodium phosphate to increase pH to a 7 to 9 value. Sodium carbonate or sodium bicarbonate may be used but they tend to form scale that must be rinsed out regularly. If pH is >10.0, add sodium bisulfate to decrease pH to a 7 to 9 value. Avoid adding harsh alkalines or acids since these may cause localized corrosion and result in unstable pH.

Special Considerations

Chemicals which should be limited to a 3 hour maximum exposure time to stainless steel are:

Aluminum chloride	E.D.T.A.	Potassium permanganate
Barium chloride	Ferrous chloride	Potassium thiocyanate
Calcium chloride	Lysol	Sodium hypochlorite
Chlorinated Lime	Mercury salts	Stannous chloride
Citric acid (boiling)	Phenol	Tartaric acid
Dakin's solution		



Warning If it is necessary to use these chemicals, limit exposure time to a maximum of 3 hours - always clean surfaces immediately after use. ▲

Be advised: **Never** use the following on stainless steel:

Aqua regia	Ferric chloride	Iodine
Sodium acid	Sodium azide	

Chemical spills, especially those agents listed here, should be removed as soon as possible and the stainless steel surface cleaned with mild soapy water followed by a clean water rinse.

Cleansing Agents

Anti-fungal and anti-bacterial additives are permissible to use as long as the pH of the aqueous solution is kept within the range of 7 to 9. These are available through laboratory distributors. Be sure to confirm that they are not harmful to stainless steel.

Cleaning Methods

Do not use any metallic pads. Instead, for stubborn stains, use a plastic light-duty cleansing pad and rub gently in the direction of the metal grain. If stains continue to persist, use one of the following chemicals and methods.

- Any of a variety of "scale removers" available at local supermarkets or hardware stores used for the cleaning of coffee marks, humidifiers or vaporizers.
- A 15% to 35% phosphoric acid solution available from laboratory supply distributors for scale and rust removal. Allow solution to soak the surface affected until rust and scale is loosened. Immediately follow with a clean water rinse.
- Citric acid based cleaners.
- Bathroom tub and tile cleaners.

Regardless of the approach utilized, always follow the manufacturer's directions and allow the chemicals to do the cleaning with minimal scrubbing.

Always follow cleanings with a clean water rinse. Air dry.



Caution Extreme care must be taken when handling these materials. Always work in an area with adequate ventilation. Use the precautions as outlined in the Material Safety Data Sheet (MSDS) and the manufacturer's instructions for the product being utilized. Also, follow the personal protection index found in the Hazardous Materials Information System (HMIS) section of the MSDS. ▲



Note The use and disposal of these chemicals may be regulated by your local city codes; consult those regulations before of disposing of those materials. ▲

Materials Effective in Disinfecting

- Glutaraldehyde
- Alcohol



Be Advised: This information is intended as guidelines only and we make no claim as to the suitability to any particular situation. Consult your staff chemist to determine what would be best for your stainless steel product and laboratory. ▲

Failure to Heat

If the oven fails to heat, there are several possible causes:

- The oven is not receiving electrical power.
- The heater is burned out.
- The thermostat is malfunctioning.

Have a qualified electrical technician determine the cause of the problem and make the necessary repairs.

Part Replacement Procedures



The following should be performed only by authorized personnel.

Unplug unit from power source. If oven has been used recently, be certain that surfaces are safe to touch before attempting to carry out any of the following procedures. Remove contents of oven and thermometer from top of unit.

Replacing Thermostat

1. Place unit on its side with door latch facing down.
2. Remove back by unscrewing Phillips screws. Save.
3. Carefully remove insulation. Note how it is positioned, so that it can be easily reinstalled.
4. Remove bottom panel by unscrewing Phillips screws. Save.
5. Remove control knob by unscrewing 2 Allen screws. Save.
6. Disconnect wires from thermostat. Note position of wires for subsequent reattachment in same sequence.

Replacing Thermostat (continued)

7. Knob removal allows access to 2 screws that mount thermostat to panel. Remove the screws and save.
8. Remove bottom shelf inside chamber. Loosen screw on clamp that holds thermostat-sensing bulb to heater. Note position of temperature sensing bulb, so that new one can be clamped in same location.
9. Slide bulb toward exit hole at the back of unit.
10. Move to back of unit and pull temperature sensing bulb and tube through hole.
11. Next, pull bulb and tube through bottom hole.
12. Thermostat, sensing bulb and tube assembly can now be removed.
13. Reverse above procedure to install new thermostat.
14. Avoid making sharp bends in temperature sensing tube; otherwise, flow of temperature sensing fluid will be impeded.

Replacing Power Switch

1. With unit on its side as in the preceding, remove bottom plate and save screws.
2. Disconnect wires from switch. Note sequence of pin numbers on the side of the switch and attachment of wires. The replacement switch must be oriented in the same manner and wires attached in same sequence.
3. Compress holding tabs on switch and push out.
4. Insert new switch from the front. When inserting, follow same orientation of pin numbers as on the switch just removed.
5. Attach wires in SAME SEQUENCE as originally attached. To verify that correct sequence has been followed, refer to wiring schematic.
6. Reverse remainder of procedure.

Replacing Status Lamp Bulb Assembly

1. With unit on its side as in the preceding, remove bottom plate and save screws.
2. Note plastic lamp unit that houses bulb. Be alert that lens will pop out in next step.
3. Grasp lamp unit and pull a fraction of an inch toward the attached wires. Lens will pop out the front. Save.
4. Cut wires and remove lamp unit. Discard.
5. To install new pilot lamp unit, splice the two wires of the assembly to previously cut wires using insulated crimp connectors.
6. Re-install lens.
7. Re-install bottom plate.

Replacing Hi-Limit Thermostat

1. Remove back panel and carefully remove insulation for subsequent reinstallation. Save.
2. Hi-limit thermostat is mounted on back of inner chamber wall.
3. Unscrew 2 screws and nuts holding wires. Save.
4. Remove screw securing thermostat to back of inside wall.
5. Reverse preceding procedure to install a new hi-limit thermostat.

Replacing Heater

1. Heater is located in bottom of chamber. Be sure that unit has been turned off for a period of time, so that there is no residual heat on any of the surfaces.
2. Remove back panel by unscrewing Phillips screws and save.
3. Carefully remove insulation and save. Note how it is positioned, so that it can be easily reinstalled.
4. Remove two retaining clips that mount heater to back of inside wall. Save.
5. Remove wires to heater by uncoupling the quick-disconnects.
6. Remove bottom shelf inside chamber. Loosen screw on clamp which holds thermostat sensing bulb to heater. Note position of temperature sensing bulb, so that new one can be clamped in same location.
7. Install new heater and reverse the preceding steps.

Replacing Blower Wheel: Servicing

1. Disconnect power cord.
2. Remove shelves. Note that bottom shelf is retained by a clip at the back of the oven. Lift shelf at the front edge until the back edge can be withdrawn from the clip.
3. Remove Phillips screws holding shield that covers blower wheel.
4. Inspect blower wheel assembly for tightness and any off-center operation. Inspect blower wheel itself for damage to vanes or other deterioration. If assembly is loose, tighten setscrew-holding wheel to motor shaft until wheel turns true. If wheel is damaged, replace.
5. Replace the shield and shelves.

Replacing the Blower Motor

1. Disconnect unit from power source. If previously in use, let unit cool down.
2. Lay unit on side. Remove shelves, including the bottom one.
3. Remove bottom cover, fan shield and blower fan.
4. Accessing the unit from the bottom, remove motor and bracket assembly. Disconnect wires.
5. Remove shaft extension, bottom fan and motor bracket from old motor and reinstall on new, replacement motor.
6. Re-install motor assembly into unit in reverse order of removal.
7. Reconnect wires.
8. Re-install shelves. Make sure that bottom shelf is securely in place to prevent access to the heater area.

Temperature Readout Calibration

A temperature readout calibration potentiometer (3) is located in the upper left hand corner of the LED display and is indicated by the word, "OFST." Use a jeweler's screwdriver to make adjustments.

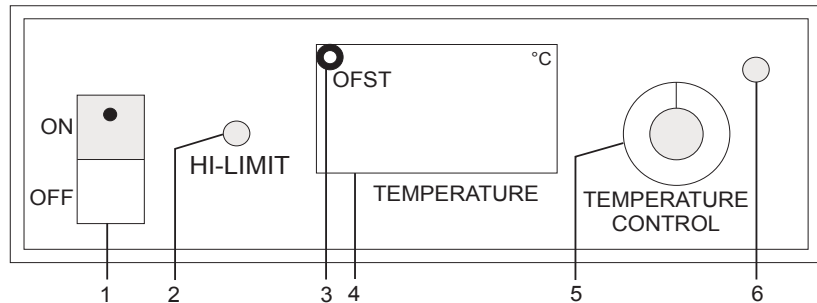


Figure 5-1. Control Panel

1. Have a digital thermometer, known reliable thermocouple (Type-K or -T) and the jeweler's screwdriver on hand.
2. Insert the thermocouple sensor through the outside top vent hole and position it in the center of the oven chamber.
3. Set oven temperature to a desired setpoint and turn on the power.
4. Allow temperature to stabilize for at least 2 hours before making any adjustments.
5. Compare the chamber temperature on the digital thermometer to the temperature on the oven readout.
6. Insert jeweler's screwdriver in calibration hole and adjust the oven readout to match the thermometer reading. Turn potentiometer clockwise to increase reading and counterclockwise to decrease it.
7. Take two additional readings within an approximate 30-minute time span and make any necessary adjustments to the potentiometer. This takes into account any temperature variations that might exist within the oven and the time delay in responding to such factors by the temperature sensors.

Section 6 Replacement Parts

DESCRIPTION	PART NUMBER
Fuse TL 5X20 8 A	264306 (317565)
Fuse TL 5X20 15 A	266058 (317798)
Door Catch	600-124-00
Door Handle	560-248-00
Fan, Axial (2)	160-136-00
Fan Shield	805-398-00
Feet, Rubber (4)	790-225-00
Gasket	530-196-00
Grommet (2)	790-247-00
Heaters:	
PR305225M, 120 V	340-283-00
PR305220M, 240 V	340-296-00
Knob, Thermostat	560-223-00
Motor, PR305225M 120 V	MTX123 (327578)
240 V Motor, PR305220M	370-279-00 (327559)
Shelves Kit	3515M-8Q
240 VAC Lamp Assembly Amber Lens	3155943
240 VAC Lamp Assembly Red Lens	3155942
Switch, Power, 120 V	SWX143
Switch, Power, 240 V	440-292-00
Temperature Sensor, RTD	410-667-00
Thermometer, Digital	910-126-00
Thermostat, Control	CNX175 (317500)
Thermostat, Hi-Limit	920-413-00
European Cord Set, 250 V 10 A	430109*
US Cord Set, 250 V 10 A	430601*
US Cord Set, 125 V 13 A	430326**

* These parts are included with 240 V models starting at release level 21.

** This part is included with 120 V models starting at release level 21.

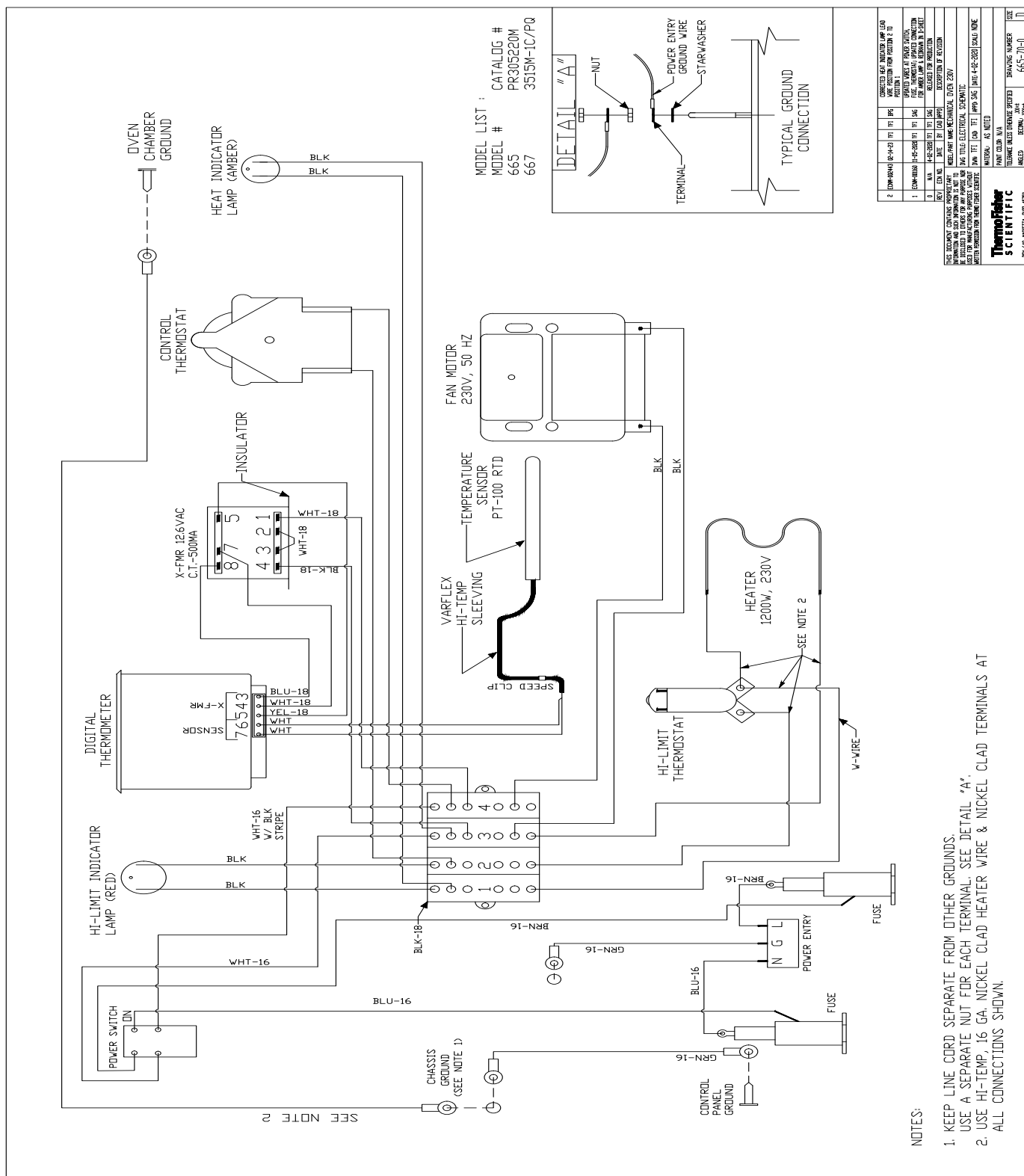
Ordering Procedures

Refer to the Specification Plate for the complete model number, serial number, and series number when requesting service, replacement parts or in any correspondence concerning this unit.

All parts listed herein may be ordered from the Thermo Scientific dealer from whom you purchased this unit, or can be obtained promptly from the factory. When service or replacement parts are needed, check first with your dealer. If the dealer cannot process your request, then contact our Technical Services Department.

Prior to returning any materials, contact our Technical Services Department for a “Return Materials Authorization” number (RMA). Material returned without an RMA number will be refused.

Section 7 Wiring Diagram



REV	EDA	REV	DATE	DESCRIPTION
1	1	1	11/18	ISSUE FOR PRODUCTION
2	2	1	07/20	REVISION

TERMINAL #	WIRE #	DESCRIPTION
1	BLK	CONTROL THERMOSTAT
2	WHT-16	HI-LIMIT THERMOSTAT
3	GRN-16	CONTROL PANEL GROUND
4	BLU-16	CHASSIS GROUND
5	WHT-18	DIGITAL THERMOMETER
6	YELT	DIGITAL THERMOMETER
7	WHT	DIGITAL THERMOMETER
8	WHT-18	DIGITAL THERMOMETER
9	WHT-18	DIGITAL THERMOMETER
10	YELT	DIGITAL THERMOMETER
11	WHT	DIGITAL THERMOMETER
12	GRN-16	FAN MOTOR GROUND
13	BLK	FAN MOTOR
14	BLK	FAN MOTOR
15	BLK	FAN MOTOR
16	BLK	FAN MOTOR

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DATE: 11/18
 DRAWN BY: JDA
 CHECKED BY: JDA
 APPROVED BY: JDA

DESIGNED BY: JDA

PROPERTY	VALUE
COMPANY	THERMO SCIENTIFIC
ADDRESS	10000 W. SHILOH ROAD, SHELTON, CT 06484
PHONE	(860) 396-8000
FAX	(860) 396-8001
WEBSITE	WWW.THERMO-SCIENTIFIC.COM

REVISIONS: 1.0 - ORIGINAL DESIGN
 2.0 - REVISED FOR PRODUCTION

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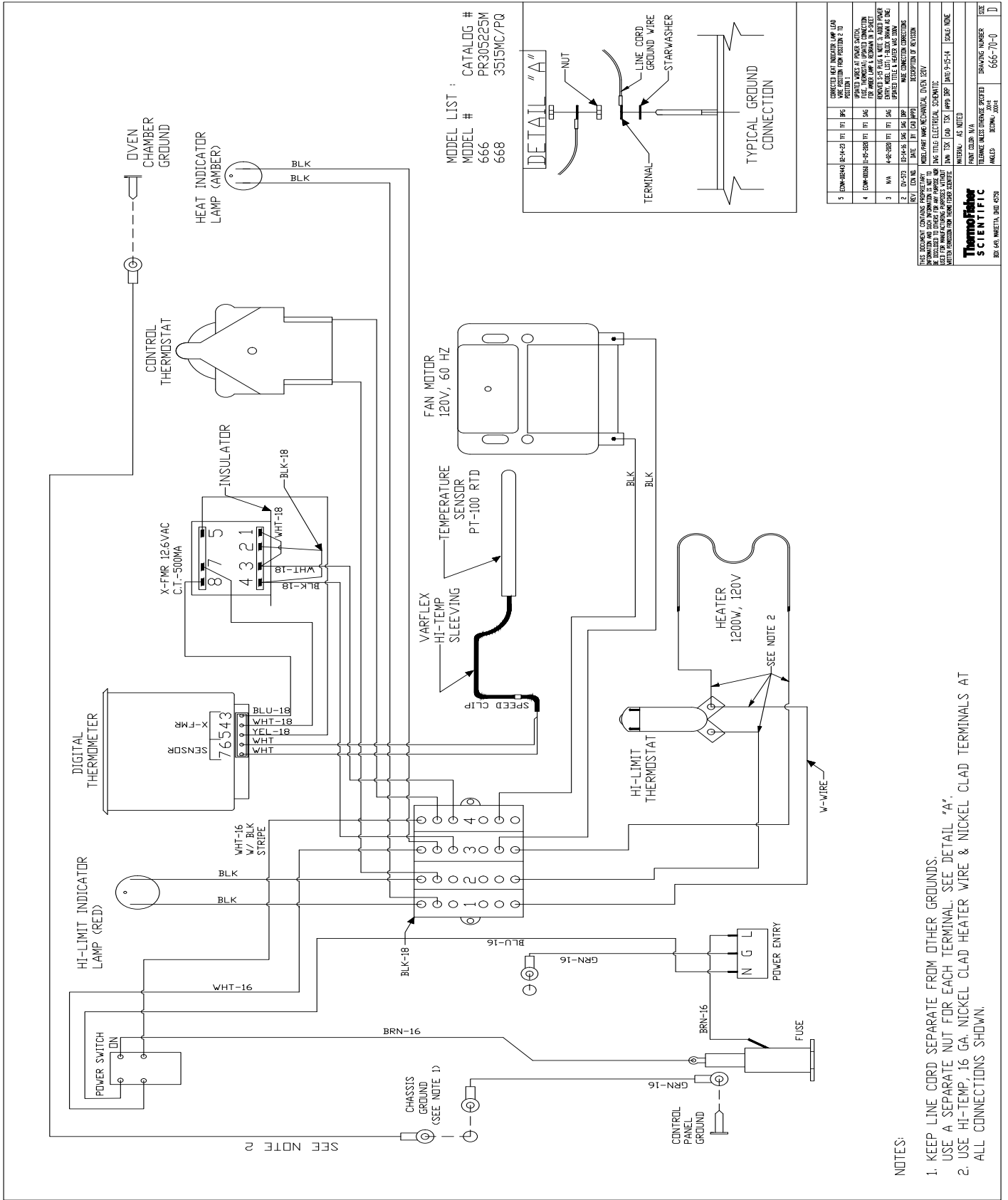
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Section 7
Wiring Diagram



Section 8 Warranty

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. 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.



Rev. 4 4/09

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. 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.

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 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.

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



Rev. 4 2/09

Section 9 Regulatory Compliance

Product Safety

This product family has been tested to applicable product standards by UL, a Nationally Recognized Test Laboratories (NRTL).



Electromagnetic Compatibility

FCC Statement (USA)



Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. ▲

Canadian ICES IC Notice

This class B digital apparatus complies with Canadian ICES-001. Cet appareil numérique de la classe B est conforme à la norme NMB-001 du Canada.

Evaluation of Chemicals - Regulations and Directives

REACH - Europe

We are committed to meeting all compliance obligations to evaluate, communicate, and register any Substances of Very High Concern (SVHC), and finding alternates where appropriate.

RoHS - Europe

- We are determined to reduce the impact we have on the environment, and so can declare that this product fully complies with the European Parliament's RoHS2 (Restriction of Hazardous Substances) Directive 2011/65/EU, with respect to all the following substances:
 - Lead (0,1 %)
 - Mercury (0,1 %)
 - Cadmium (0,01 %)
 - Hexavalent chromium (0,1 %)
 - Polybrominated biphenyls (PBB) (0,1 %)
 - Polybrominated diphenyl ethers (PBDE) (0,1 %)

Evaluation of Chemicals - Regulations and Directives (Cont.)

Our compliance is witnessed by written declaration from our suppliers and/or component testing. This confirms that any potential trace contamination levels of the substances listed above are below the maximum level set by the latest regulations or are exempt due to their application.

Additional Regulations & Markings

European Union



The European voltages of this product meets all the applicable requirements of the European Directives, and display the CE Marking. An EC declaration of conformity may be obtained from the manufacturer.

End of Life Care

Be sure to follow local regulations when disposing of an old unit. Some suggestions are listed below:

- Remove items from the unit. Be sure to clean up any biological safety hazards.
- Remove the cabinet door to help prevent entrapment inside of a unit.
- Dispose of components following local regulations.

WEEE Compliance

WEEE Compliance. This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2012/19/EU. It is marked with the following symbol. Thermo Fisher Scientific has contracted with one or more recycling/disposal companies in each EU Member State, and this product should be disposed of or recycled through them. Further information on our compliance with these Directives, the recyclers in your country, and information on Thermo Scientific products which may assist the detection of substances subject to the RoHS Directive are available at www.thermofisher.com/

Great Britain



WEEE Konformität. Dieses Produkt muss die EU Waste Electrical & Electronic Equipment (WEEE) Richtlinie 2012/19/EU erfüllen. Das Produkt ist durch folgendes Symbol gekennzeichnet. Thermo Fisher Scientific hat Vereinbarungen getroffen mit Verwertungs-/Entsorgungsanlagen in allen EU-Mitgliederstaaten und dieses Produkt muss durch diese Firmen wiederverwertet oder entsorgt werden. Mehr Informationen über die Einhaltung dieser Anweisungen durch Thermo Scientific, die Verwerter und Hinweise die Ihnen nützlich sein können, die Thermo Fisher Scientific Produkte zu identifizieren, die unter diese RoHS-Anweisung fallen, finden Sie unter www.thermofisher.com/

Deutschland



Conformità WEEE. Questo prodotto deve rispondere alla direttiva dell'Unione Europea 2012/19/EU in merito ai Rifiuti degli Apparecchi Elettrici ed Elettronici (WEEE), marcato col seguente simbolo. Thermo Fisher Scientific ha stipulato contratti con una o diverse società di riciclaggio/smaltimento in ognuno degli Stati Membri Europei. Questo prodotto verrà smaltito o riciclato tramite queste medesime. Ulteriori informazioni sulla conformità di Thermo Fisher Scientific con queste Direttive, l'elenco delle ditte di riciclaggio nel Vostro paese e informazioni sui prodotti Thermo Scientific che possono essere utili alla rilevazione di sostanze soggette alla Direttiva RoHS sono disponibili sul sito <http://www.thermofisher.com/>

Italia



WEEE Compliance (cont.)

Conformité WEEE. Ce produit doit être conforme à la directive euro-péenne 2012/19/EU des Déchets d'Equipements Electriques et Electroniques (DEEE). Il est marqué par le symbole suivant. Thermo Fisher Scientific s'est associé avec une ou plusieurs compagnies de recyclage dans chaque état membre de l'union européenne et ce produit devrait être collecté ou recyclé par celles-ci. Davantage d'informations sur la conformité de Thermo Fisher Scientific à ces directives, les recycleurs dans votre pays et les informations sur les produits Thermo Fisher Scientific qui peuvent aider la détection des substances sujettes à la directive RoHS sont disponibles sur <http://www.thermofisher.com/>

France



Cumplimiento de WEEE. Se requiere que este producto cumpla con la Directiva 2012/19/EU de Desechos de Equipos Eléctricos y Electrónicos (WEEE) de la Unión Europea. Está marcado con el siguiente símbolo. Thermo Fisher Scientific ha contratado a una o más empresas de reciclaje / eliminación en cada Estado miembro de la UE, y este producto debe desecharse o reciclarse a través de ellos. Para obtener más información sobre el cumplimiento de estas Directivas, los recicladores de su país e información sobre los productos Thermo Scientific que pueden ayudar a detectar sustancias sujetas a la Directiva RoHS, visite www.thermofisher.com/

Spanish



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