Wide Input Range Heater / Circulator

Operator's Manual

Agilent Technologies

Notices

Manual Part Number

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Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Contents

Figures

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1 Safety

The Agilent Wide Input Range Heater / Circulator has been carefully designed so that when used properly you have an accurate and safe accessory.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Operation of a Agilent Wide Input Range Heater / Circulator involves the use of aqueous liquids. Unskilled, improper, or careless use of this instrument can create shock hazards, fire hazards, or other hazards which can cause death, serious injury to personnel, or severe damage to equipment and property.

Information on safety practices is provided with your instrument and operation manuals. Before using your instrument or accessories, you must thoroughly read these safety practices.

Observe all relevant safety practices at all times.

Electrical Hazards

The heater / circulator contains electrical circuits, devices, and components operating at dangerous voltages. Contact with these circuits, devices, and components can cause death, serious injury, or painful electric shock.

Panels or covers that are retained by fasteners which require the use of a tool for removal may be opened only by Agilent-trained, Agilent-qualified, or Agilent-authorized service engineers. Consult the manuals or product labels supplied with the heater / circulator to determine which parts are operator-accessible.

Application of the wrong supply voltage, connection of the instrument to an incorrectly wired supply outlet, or lack of proper electrical grounding can create a fire hazard or a potentially serious shock hazard and could seriously damage the instrument and any attached ancillary equipment.

Always use a three-wire outlet with ground connection which is adequately rated for the load. The installation must comply with local, state, and federal safety regulations.

Do not connect the instrument to the main power supply until you have made sure that the operating voltage is correctly set for the main power supply in the specific outlet in your laboratory to which the equipment will be connected.

Warning

WARNING

A ‘Warning’ message appears in the manual when failure to observe instructions or precautions could result in death or injury.

Read all warnings and cautions carefully and observe them at all times.

Caution

CAUTION

A ‘Caution’ message appears in the manual when failure to observe instructions could result in damage to equipment (Agilent supplied and / or other associated equipment).

Note

NOTE

A ‘Note’ appears in the manual to give advice or information.

Information Symbols

I	Switches main power on
0	Switches main power off
	Indicates single-phase alternating current
	Indicates the product complies with the requirements of one or more European Union (EU) directives
	Indicates specific equipment meets consensus-based standards of safety to provide assurance, required by OSHA, that these products are safe for use in the workplace for North America
	Indicates that this product must not be disposed of as unsorted municipal waste

General

CE Compliant Products

The heater / circulator has been designed to comply with the requirements of the Electro-magnetic Compatibility (EMC) Directive and the Low Voltage Directive (LVD) of the EU.

Agilent, Inc. has confirmed that each product complies with the relevant directives by testing a prototype against the prescribed European Norm (EN) standards.

Proof that a product complies with the directives is indicated by:

- the CE marking appearing on the rear of the product.
- the documentation package that accompanies the product containing a copy of the declaration of conformity. This declaration is the legal declaration by Agilent, Inc. that the product complies with the directives and also shows the EN standards to which the product was tested to demonstrate compliance. The declaration of conformity is signed by the representative of the manufacturing plant.

cTUVus - U.S. and Canadian Product Approvals

The heater / circulator has been designed to comply with North American safety requirements.

This product has been tested and certified for the North American market by TUV Rheinland of North America, Inc. The TUVus mark signifies that this product has been tested to U.S. standards and certified for the U.S. market. The cTUV mark signifies that this product has been tested to Canadian standards and certified for the Canadian market. When the two marks are coupled, the cTUVus mark signifies that this product has been tested to standards and certified for both markets.

WEEE Directive

All Agilent products that are subject to the WEEE directive shipped after August 13, 2005 are compliant with the WEEE marking requirements. Such products are marked with the “crossed out wheelie bin” WEEE symbol shown on page 10 in accordance with European Standard EN 50419.

This symbol on the product or on its packaging indicates that this product must not be disposed of as unsorted municipal waste. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

For more information on collection, reuse, and recycling systems, please contact your local/regional waste administration, your local distributor, or Agilent, Inc.

2
Introduction

WARNING **The heater / circulator contains electrical circuits, devices, and components operating at dangerous voltages. Contact with these circuits, devices and components can cause death, serious injury, or painful electric shock.**

CAUTION Panels or covers that are retained by fasteners which require the use of a tool for removal may be opened only by Agilent-trained, Agilent-qualified, or Agilent-authorized service engineers.

Conventions Used in this Manual

- Items you are asked to press are in bold. For example, “press **H** on the keypad”.

3
Setting Up and Operating the Heater / Circulator

Initial Setup

Complete the following sections to initially set up the Agilent heater / circulator.

Unpacking Your Heater / Circulator

Complete the following steps to unpack your heater / circulator:

1. Carefully remove all items from the shipping carton.
2. Check all items for damage during shipping. If any damage to the instrument is evident, contact both the carrier who delivered the instruments to you and Agilent. Though claims for damage should be filed with the carrier, we will be glad to help you in filing a claim and in getting your system up and running as quickly as possible.
3. Check the shipping carton for any items which may have come loose during shipping before discarding or storing the packaging.
4. Place the unit on a clear, dry, and level section of the bench top as close to the dissolution apparatus as possible. At least eight inches (20 cm) of unobstructed space should be available behind the unit for easy access to the power and liquid connections. As with any electronic apparatus, the area around the instrument must be kept clean and dry.

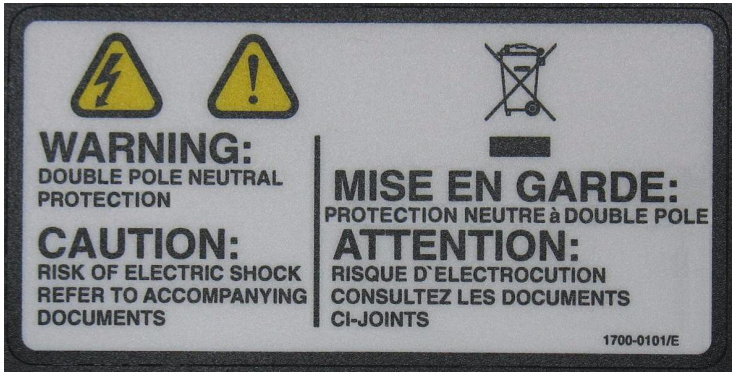

Figure 1 Warning Labels

WARNING **The electrical connection at the back of the equipment is the primary disconnect for the instrument. The heater / circulator should be positioned to allow accessibility to the power cords for easy disconnection.**

A properly grounded, GFC recommended AC power receptacle rated at 15 amps or higher should be available within six feet (two meters) of the unit.

Heater / Circulator Setup

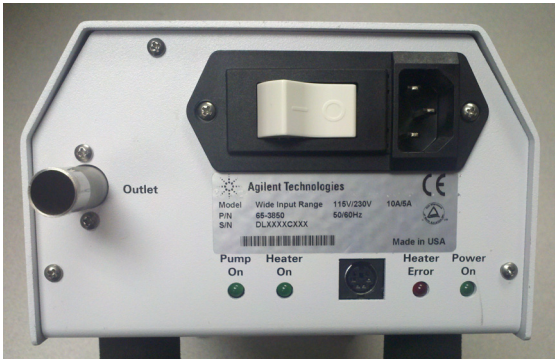

Figure 2 Outlet, Power Switch, LEDs, and Connectors

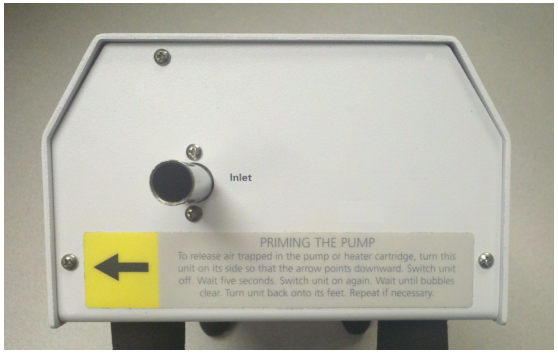

Figure 3 Inlet

1. Place the heater / circulator under the rear of the vessel plate with the power outlet.
2. Ensure the isolators on the legs of the heater / circulator are properly positioned to eliminate vibration from the heater / circulator
3. Locate the two pieces of plastic tubing and the two stainless steel clamps included in the heater / circulator kit.

4 Slide a clamp over the free end of the tubing and attach it to the supply inlet located on the left side of the heater / circulator. Tighten the clamp by turning the screw in the clamp.

5 Slide the other clamp over the free end of the tubing and attach the free end to the outlet located on the right side of the heater / circulator. Tighten the clamp by turning the screw in the clamp. Do not over-tighten as damage may occur.

6 Recheck all connections.

7 Connect the six-pin cable to the heater / circulator and the other end into the position marked BATH HEATER on the dissolution apparatus rear panel.

8 Connect the power cord to the heater / circulator.

CAUTION Fill the water bath before turning on the heater / circulator to avoid damaging the heating elements.

Priming and Initial Power-up

NOTE

Use ultrapure water when possible to minimize scale and mineral buildup. Use algaecide to inhibit mold and bacteria growth. Check the label to ensure the formulation is compatible with the plastic materials used in the water bath construction. The flow paths of the heater / circulator are primarily stainless steel and should tolerate most clear water bath formulations.

1. Turn on the power to the heater / circulator using the switch located on the unit.
2. Ensure the water flow through the heater / circulator begins. To release air trapped in the pump or heater cartridge, turn the heater / circulator on its side so that the arrow points downward.
3. Turn off the heater / circulator for 5 seconds.
4. Turn on the heater / circulator.
5. When the bubbles clear, turn the unit back on its feet.
6. Repeat the procedure, if necessary.
7. Ensure no leaks are present at any of the tubing connections.

Indicator LEDs

Figure 4 LEDs

- **Pump ON**: Illuminates when the pump (circulator is on).
- **Heater ON**: Illuminates when the heater is on.
- **Heater Error**: Illuminates whenever a heater fault has been detected. Possible conditions are when an over temperature has occurred and the internal thermostat is open or if the heater connections to the PCB have been compromised.
- **Power ON**: Illuminates when AC power is connected and the main power switch is in the ON position.

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4
Troubleshooting and Maintenance

Periodic Maintenance

WARNING **The instrument contains electrical circuits, devices and components operating at dangerous voltages. Contact with these circuits, devices, and components can cause death, serious injury, or painful electric shock.**

Periodic maintenance intervals may vary depending on frequency of instrument usage.

Monthly

- Clean and dry all surfaces.
- Apply an algaecide, bactericide, or any other additive that will not corrode plastic or stainless steel to the water bath or system.
- If the water is high in calcium, a 10% solution of white vinegar and water can be used to remove deposits. *Do not use this solution more than once a month.*
- Flush external tubing and check clamps for corrosion.
- Clean the external bath temperature probe with alcohol to remove deposits. Deposits can reduce the measurement accuracy.
- Inspect control / communication cable for damage or corrosion. Inspect the power entry module for corrosion and clean it if necessary.

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Service and Warranty

The warranty is provided by Agilent Technologies, Inc. or one of its authorized representatives.

Service and Warranty Information

Agilent dissolution products carry a one-year warranty on parts and labor. During the first year of warranty coverage, there is no charge for the labor to repair your unit.

Exclusions and Limitations

Excluded from this warranty are expendable or consumable items such as, but not limited to, paddles, baskets, vessels, and acrylic water baths. Also excluded are defects from improper or inadequate maintenance by the customer, user-induced chemical action or contamination, unauthorized modification or misuse, and improper site preparation and maintenance.

Operation of software is not warranted to be uninterrupted or error-free.

Obtaining Warranty and Other Services

To place a service order (warranty or other services), please contact your local Customer Care Center. Contact information can be found at www.agilent.com under your country using the Contact Us link. Place your service request using the displayed phone number or E-mail address.

Warranty Limitations

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