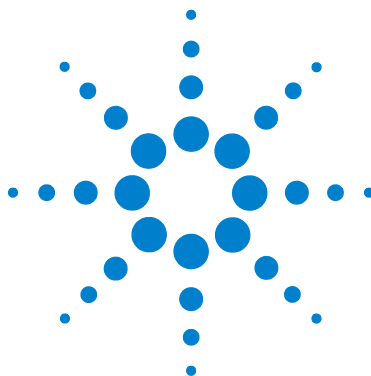




Wide Input Range Heater / Circulator

Operator's Manual



Agilent Technologies

Notices

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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.

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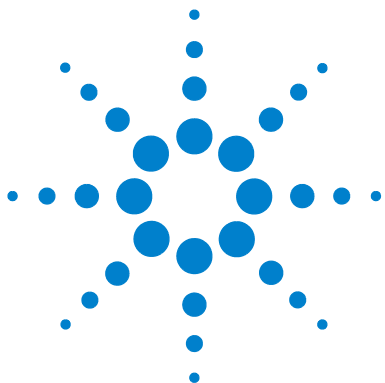
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1 Safety

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The Agilent Wide Input Range Heater / Circulator has been designed and tested 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



Switches main power on



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 standards of safety. 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.

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 in accordance with European Standard EN 50419.

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



Indicates the product complies with regulatory compliance requirements of New Zealand and Australia.



2 Introduction

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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”.

Serial Number Format

The serial number contains 10 characters and follows this syntax:

CC1234XXXX

Syntax Code	Meaning	Description
CC	Country of origin	2 alpha characters matching the required trade designation for the country of origin
12	Year of manufacture	‘09’ for 2009, ‘10’ for 2010, etc.
34	Week of manufacture	‘01’ for week 1 to ‘52’ for week 52



3

Setting Up and Operating the Heater / Circulator

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Initial Setup

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

Environmental Requirements for Installation

- Humidity: max relative humidity 80% for temperatures up to 31 °C decreasing linearly to 50% relative humidity at 40°C
- Indoor use only
- Pollution Degree: 2
- Installation Category: II
- Altitude: 2000m
- Temperature: 5 °C to 40 °C
- Power: 115/230 V, 50/60 Hz, 10/5 A

Main supply voltage fluctuations are not to exceed $\pm 10\%$ of the nominal supply voltage

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

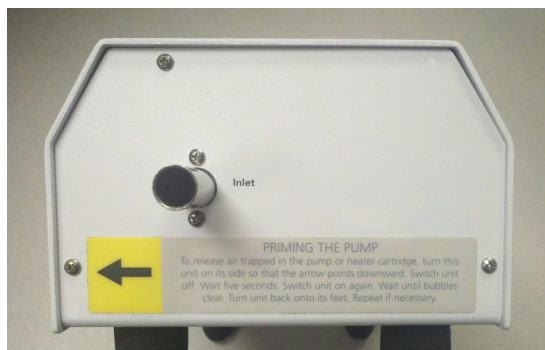


Figure 3 Inlet

- 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

CAUTION

Do not use bleach. 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

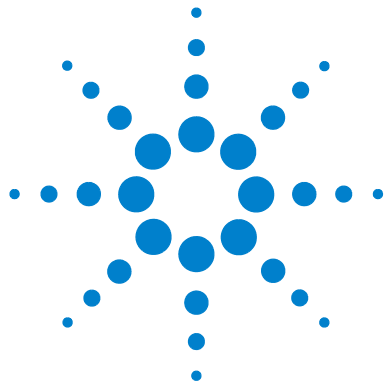


Figure 4 LEDs

- **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.

3 Setting Up and Operating the Heater / Circulator

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Troubleshooting and Maintenance

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Preventive 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.

Preventive 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.

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.

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