

**FLUKE**®

**Hart Scientific**®

***2023/2024***

*Immersion Heater  
User's Guide*

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# 1 Before You Start

## 1.1 Symbols Used

Table 1 lists the International Electrical Symbols. Some or all of these symbols may be used on the instrument or in this manual.

**Table 1** International Electrical Symbols

Symbol	Description
	AC (Alternating Current)
	AC-DC
	Battery
	CE Complies with European Union Directives
	DC
	Double Insulated
	Electric Shock
	Fuse
	PE Ground
	Hot Surface (Burn Hazard)
	Read the User's Manual (Important Information)
	Off
	On

Symbol	Description
	Canadian Standards Association
<b>CAT II</b>	OVERVOLTAGE (Installation) CATEGORY II, Pollution Degree 2 per IEC1010-1 refers to the level of Impulse Withstand Voltage protection provided. Equipment of OVERVOLTAGE CATEGORY II is energy-consuming equipment to be supplied from the fixed installation. Examples include household, office, and laboratory appliances.
	C-TIC Australian EMC Mark
	The European Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) mark.

## 1.2 Safety Information

Use this instrument only as specified in this manual. Otherwise, the protection provided by the instrument may be impaired.

The following definitions apply to the terms “Warning” and “Caution”.

- “WARNING” identifies conditions and actions that may pose hazards to the user.
- “CAUTION” identifies conditions and actions that may damage the instrument being used.

### 1.2.1 WARNINGS

To avoid personal injury, follow these guidelines.

#### GENERAL

- **DO NOT** leave instrument unattended while in use. This instrument was not designed to be left unattended during operation. There are no over-temperature cutout devices in this unit. Fluids may be heated beyond their intended range, which will cause extreme danger of fire or explosion.
- Appropriate personal safety protection should be worn by the operator at all times while using the bath.
- **DO NOT** use the instrument for any application other than calibration work. The instrument was designed for use with a Hart Scientific bath for temperature calibration. Any other use of the unit may cause unknown hazards to the user.
- **DO NOT** use the instrument in equipment other than Hart Scientific calibration baths.
- **DO NOT** use the instrument in environments other than those listed in the user's guide.

- **DO NOT** overfill the bath. Allow for thermal expansion. As some fluids heat up, they expand, which can cause overflowing of extremely hot fluid which may be harmful to the operator. See calibration bath manual for specific instructions.
- Follow all safety guidelines listed in the user's manual.
- Calibration Equipment should only be used by Trained Personnel.
- If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Before initial use, or after transport, or after storage in humid or semi-humid environments, or anytime the instrument has not been energized for more than 10 days, the instrument needs to be energized for a "dry-out" period of 2 hours before it can be assumed to meet all of the safety requirements of the IEC 1010-1. If the product is wet or has been in a wet environment, take necessary measures to remove moisture prior to applying power such as storage in a low humidity temperature chamber operating at 50°C for 4 hours or more.
- **DO NOT** operate high temperature baths (500°C) near flammable materials. Extreme temperatures could ignite the flammable material.
- Overhead clearance is required. Do not place the instrument under a cabinet or other structure. Always leave enough clearance to allow for safe and easy insertion and removal of probes.
- The instrument is intended for indoor use only.

### **BURN HAZARD**

- High temperatures may be present in this equipment. Fires and severe burns may result if personnel fail to observe safety precautions.
- Extremely cold temperatures may be present in this equipment. Freezer burns and frostbite may result if personnel fail to observe safety precautions.
- Before installing this unit in a bath, ensure the bath **DOES NOT** contain any water and has been completely dried prior to filling with fluid. Any trapped water can cause a steam explosion resulting in personal injury. If the bath has recently been filled with water, ensure the inside of the drain tube is dry prior to filling the bath with fluid.
- When immersing any object in the bath, ensure that you are not introducing anything into the bath that will react with the bath fluid. Ensure that probes are **DRY** and free of contaminants. Read the MSDS (Material Safety Data Sheet) for the bath fluid used.
- The bath in which this instrument is used may generate extreme temperatures. Precautions must be taken to prevent personal injury or damage to objects. Probes may be extremely hot when removed from the bath. Cautiously handle probes to prevent personal injury. Carefully place probes on a heat resistant surface or rack until they are at room temperature.

### **ELECTRICAL HAZARD**

- These guidelines must be followed to ensure that the instrument will operate properly. This instrument must be plugged into a 115 VAC, 50/60 Hz (230 VAC 50/60 Hz optional) AC outlet only. The power cord of the instrument is equipped with a three-pronged grounding plug for your protection against electrical shock hazards. It must be plugged directly into a properly grounded three-prong receptacle. The receptacle must be installed in accordance with local codes and ordinances. Consult a qualified electrician. **DO NOT** use an extension cord or adapter plug.
- Always replace the power cord with an approved cord of the correct rating and type. If you have questions, contact a Hart Scientific Authorized Service Center (see Section ???).
- High voltage is used in the operation of this equipment. Severe injury or death may result if personnel fail to observe the safety precautions. Before working inside the equipment, turn off the power and disconnect the power cord.

### **BATH FLUIDS**

- Fluids used in this unit may produce noxious or toxic fumes under certain circumstances. Consult the fluid manufacturer's MSDS (Material Safety Data Sheet). Proper ventilation and safety precautions must be observed.

## **1.2.2**

### **CAUTIONS**

To avoid possible damage to the instrument, follow these guidelines.

- Always operate this instrument at room temperature between 41°F and 104°F (5°C to 40°C). Allow sufficient air circulation by leaving at least 6 inches (15 cm) of clearance around the instrument.
- **DO NOT** allow fluid to enter the electrical components of the instrument.
- **DO NOT** overfill the bath in which this instrument is used. Overflowing liquid may damage the electrical system. Be sure to allow for thermal expansion of the fluid as the bath temperature increases. See the calibration bath user's guide for specific instructions.
- **DO NOT** operate this instrument in an excessively wet, oily, dusty, or dirty environment.
- This instrument is a precision instrument. Although it has been designed for optimum durability and trouble free operation, it must be handled with care. Position the bath before the tank is filled with fluid.
- Most probes have handle temperature limits. Be sure that the probe handle temperature limit is not exceeded in the air above the instrument.
- The instrument and any thermometer probes used with it are sensitive instruments that can be easily damaged. Always handle these devices with care. Do not allow them to be dropped, struck, stressed, or overheated.
- **DO** ensure the fluid is cleaned from the probes prior to immersing the probe in the next bath. Clean your probe between each bath to avoid contamination between bath fluids.

- Under filling the bath in which this instrument is used may reduce the bath performance and may possibly damage the bath.
- When calibrating PRTs always follow correct calibration procedure and calibrate from high temperatures to low temperatures with the appropriate triple point of water checks. Never immerse a wet or cold PRT into a bath filled with hot fluid. Severe damage to the PRT may result as well as personal injury to the calibration technician.

## **1.3 Hart Scientific Authorized Service Centers**

Please contact one of the following authorized Service Centers to coordinate service on your Hart product:

### **Hart Scientific, Inc.**

799 E. Utah Valley Drive  
American Fork, UT 84003-9775  
USA

Phone: +1.801.763.1600  
Telefax: +1.801.763.1010  
E-mail: [support@hartscientific.com](mailto:support@hartscientific.com)

### **Fluke Nederland B.V.**

Customer Support Services  
Science Park Eindhoven 5108  
5692 EC Son  
NETHERLANDS

Phone: +31-402-675300  
Telefax: +31-402-675321  
E-mail: [ServiceDesk@fluke.nl](mailto:ServiceDesk@fluke.nl)

### **Fluke Int'l Corporation**

Service Center - Instrimpex  
Room 2301 Sciteck Tower  
22 Jianguomenwai Dajie  
Chao Yang District  
Beijing 100004, PRC  
CHINA

Phone: +86-10-6-512-3436  
Telefax: +86-10-6-512-3437  
E-mail: xingye.han@fluke.com.cn

**Fluke South East Asia Pte Ltd.**

Fluke ASEAN Regional Office  
Service Center  
60 Alexandra Terrace #03-16  
The Comtech (Lobby D)  
118502  
SINGAPORE

Phone: +65 6799-5588  
Telefax: +65 6799-5588  
E-mail: antng@singa.fluke.com

When contacting these Service Centers for support, please have the following information available:

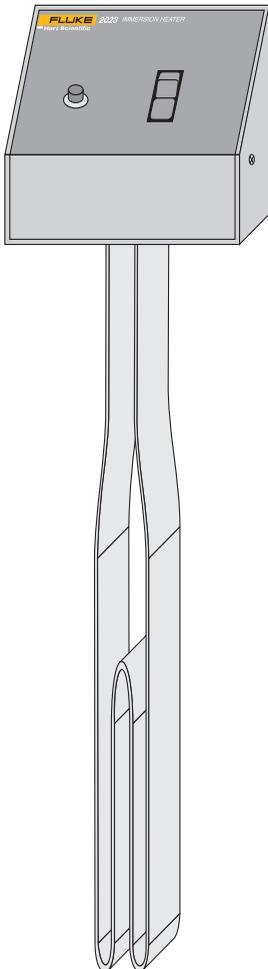
- Model Number
- Serial Number
- Voltage
- Complete description of the problem

## 2 2023/2024 Immersion Heater



**WARNING: DO NOT** leave instrument unattended while in use. This instrument was not designed to be left unattended during operation. There are no over-temperature cutout devices in this unit. Fluids may be heated beyond their intended range, which will cause extreme danger of fire or explosion. Care must be taken when removing the heater from the bath. Serious burns could result from contact with the heating element even when the heater is off. The heating element will be at the same temperature as the bath fluid.

### Introduction



The Hart Fast Start Immersion Heater is a low watt density type immersion heater suitable for use in oils and salts in your Hart calibration baths.

### Installation/Operation

Simply insert the dedicated heater into the bath fill hole in your Hart bath. Plug the power cord into an appropriate outlet. Place the power switch in the ON position. The indicator light will come on. When the bath is approaching your setpoint turn the power switch to off and allow the bath to stabilize.

### Specifications

	2023	2024
Power	110 VAC, 1000 Watts (230 VAC, 1000 Watts)	
Heater Length	16.38 inches	13.5 inches