Warner Instruments
SWS Series Syringe Heater

Warner Instruments
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CE

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The **SWS Syringe Warmer** System from Warner Instruments is comprised of a SWS syringe warmer and a TC-124 temperature controller. This capable system is designed to conveniently warm solutions in a syringe for use in a variety of applications. The compact design of the warmer allows it to be used either with a syringe pump or mounted on a support stand. The model number of the specific syringe warmer (SW-10, SW-60) indicates the size syringe to which it fits.

In general, reservoir heating is an important technique used to deliver warmed solution of a bath or to eliminate outgassing in heated solutions. Since solution gas loading has a dependence on pressure and temperature, preheating a solution at atmospheric pressure prior to delivery to a warmed environment can minimize the occurrence of bubbles in the bath, even if the solution is allowed to cool enroute.

THIS EQUIPMENT IS NOT DESIGNED NOR INTENDED FOR USE ON HUMAN SUBJECTS

NOMENCLATURE

Text conventions

This manual refers to instrument controls at two functional levels; specific controls and settings of these controls. To minimize the potential for confusion, we have employed the following text conventions. Since our goal is to provide clarity rather than complexity, we welcome any feedback you may wish to provide.

- Warner Instrument product numbers are presented using **bold type**.
- References to controls are specified using SMALL CAPS.
- References to control settings are specified using *italic type*.
- Special comments and warnings are presented in highlighted text.

Any other formatting should be apparent from context.

SYSTEM DESCRIPTION

A syringe heating system is comprised of one or more syringe heaters and a temperature controller. These devices work in concert to provide temperature control of bulk solutions prior to delivery to a warmed environment. The **SWS Syringe Heater** is one component of such a syringe heating system.

The **SWS Syringe Heater** is designed to be mounted directly onto a syringe body. The heater-mounted syringe can the be mounted onto a syringe pump, support stand, or hand manipulated.

Temperature regulation is maintained via Warner's **TC-124** mini temperature controller. Instructions for the function and use of the **TC-124** is provided in a separate user's manual.

The **SWS Syringe Heater** have two o-rings mounted into grooves in the top of the unit which serve to provide a gripping mechanism for inserted syringes. As a result, a syringe can be partly or completely inserted into the heater body.

SETUP

1. Place the **TC-124** temperature controller in a convenient location. Do not plug the device in yet.
2. Place an appropriately sized syringe into the syringe heater. Mount the syringe to a support stand or perfusion pump.

   NOTE: If placing the syringe/syringe heater assembly into a syringe pump, be sure to remove the two o-rings from the heater body as they may interfere with proper alignment of the syringe with pump.
3. Attach a stopcock to the Luer fitting on the syringe and run perfusion lines from the syringe to your setup.
4. Connect the power cord from the syringe heater to the input channel on the temperature controller.
5. Plug the **TC-124** in and adjust the unit to the solution temperature. (*See* the **TC-124** User's Manual.)

OPERATION

The main use of a heater control device such as the **TC-124** is to maintain a constant solution temperature with a minimum deviation from the set temperature.

Settling Times

A feedback sensor for the temperature controller resides within the aluminum block of the **SWS Series** heater. Consequently, the *Read Temperature* reported by the device is actually that of the heater block. Therefore, it is important to allow enough time for the system to reach equilibrium so that the reported temperature is also that of the solution being warmed.

APPENDIX

Specifications

SWS Series Syringe Warmers			
Syringe sizes	10, 60 and 140 cc		
Heater resistance	10 Ω		
Temperature range	25-50 °C		
Input voltage	12V nominal, 16V max		
Model	SWS-10	SWS-60	SWS-140
Weight (gm)	32.7	76.0	192.0
Length (mm)	38.25	83.75	109.50
O.D. (mm)	22.25	35.00	51.00
I.D. (mm)	16.20	29.15	41.40
Syringe Type	Becton Dickinson	Becton Dickinson	Monoject
Operating conditions	Equipment is intended to be operated in a controlled laboratory environment. Temperature: 0-40 °C Altitude: sea level to 2000 m Relative humidity: 0-95%		

Accessories and replacement parts

Description	Model No.	Order No.
Syringe Warmer for 10 cc syringes	SWS-10	64-1584
Syringe Warmer for 60 cc syringes	SWS-60	64-1560
Syringe Warmer for 140 cc syringes	SWS-140	64-1585
Temperature Controller (US)	TC-124	64-1545
Temperature Controller (EU)	TC-124E	64-1545E

Warranty and service

Warranty

The **SWS Series Syringe Warmer** is covered by our Warranty to be free from defects in materials and workmanship from the date of shipment for a period of one year. If a failure occurs within this period, we will either repair or replace the faulty component(s). This warranty does not cover instrument failure or damage caused by physical abuse or electrical stress (inputs exceeding specified limits).

In the event that instrument repairs are necessary, shipping charges to the factory are the customer's responsibility. Return charges will be paid by Warner Instruments. Our offices are located at 1125 Dixwell Avenue, Hamden, CT 06514.

Normal business hours are 8:30 AM to 5:00 PM (EST), Monday through Friday and we can be reached by phone at (800) 599-4203 or (203) 776-0664. Our fax number is (203) 776-1278.

We can also be reached by e-mail at **support@warneronline.com** or through our Web site at **http://www.warneronline.com**.

Service notes

Please refer all questions regarding service to our Engineering Department.

A) Should service be required, **please contact the factory**. The problem may often be corrected by us shipping a replacement part. Factory service, if required, will be expedited to minimize the customer's inconvenience. Instruments are inspected immediately upon receipt and the customer is notified if the repair is not covered by our warranty. Repairs can often be completed in 1-2 days from our receipt of the instrument.

B) If factory service is required, please observe the following instructions:

1) Obtain an RMA from Warner Instruments.
2) Package the instrument with at least 3 inches of cushioning on all sides. Use the original shipping carton if it is available.
3) Insure the shipment for its full value.
4) Include an explanation of the problem with the shipment.

IMPORTANT: CUSTOMERS OUTSIDE THE U.S.

Please contact us before return shipping any goods. We will provide instructions so that the shipment will not be delayed or subject to unnecessary expense in clearing U.S. Customs.

Certifications

Declaration of Conformity

CE MARKING (EMC)

Application of Council Directive: 89/336/EEC

Standards To Which Conformity Is Declared:	EN55022 Class A EN61000-3-2 EN61000-3-3 EN50082-1:1992 EN61000-4-2 EN61000-4-3 ENV50204 EN610000-4-4 EN610000-4-8 EN610000-4-11
Manufacturer's Name:	Warner Instruments, LLC
Manufacturer's Address:	1125 Dixwell Avenue Hamden, CT 06514 Tel: (203) 776-0664
Equipment Description:	Power Controller
Equipment Class:	ITE-Class A
Model Numbers:	TC-124

I the undersigned, hereby declare that the equipment specified above, conforms to the above Directive(s) and Standard(s).

Place: Hamden, Connecticut USA

Signature:

Full Name: Burton J. Warner

Position: President

Declaration of Conformity

CE MARKING (LVD)

Application of Council Directive: 73/23/EEC

Standards To Which Conformity Is Declared:	EN61010-1:1993
Manufacturer's Name:	Warner Instruments, LLC
Manufacturer's Address:	1125 Dixwell Avenue Hamden, CT 06514 Tel: (203) 776-0664
Equipment Description:	Power Controller Safety requirements for electrical equipment for measurement and laboratory use
Equipment Class:	Class I
Model Numbers:	TC-124

I the undersigned, hereby declare that the equipment specified above, conforms to the above Directive(s) and Standard(s).

Place: Hamden, Connecticut USA

Signature:

Full Name: Burton J. Warner

Position: President

WEEE/RoHS Compliance Statement

EU Directives WEEE and RoHS

To Our Valued Customers:

Harvard Apparatus is committed to being a good corporate citizen. As part of that commitment, we strive to maintain an environmentally conscious manufacturing operation. The European Union (EU) has enacted two Directives, the first on product recycling (Waste Electrical and Electronic Equipment, WEEE) and the second limiting the use of certain substances (Restriction on the use of Hazardous Substances, RoHS). Over time, these Directives will be implemented in the national laws of each EU Member State.

Once the final national regulations have been put into place, recycling will be offered for those Harvard Apparatus products which are within the scope of the WEEE Directive. Products falling under the scope of the WEEE Directive available for sale after August 13, 2005 will be identified with a "wheelie bin" symbol.

Two Categories of products covered by the WEEE Directive are currently exempt from the RoHS Directive – Category 8, medical devices (with the exception of implanted or infected products) and Category 9, monitoring and control instruments. Most of Harvard Apparatus' products fall into either Category 8 or 9 and are currently exempt from the RoHS Directive. Harvard Apparatus will continue to monitor the application of the RoHS Directive to its products and will comply with any changes as they apply.

- **Do Not Dispose Product with Municipal Waste.**
- **Special Collection/Disposal Required.**