

Hybex[®]

Microarray Incubation System

USER MANUAL

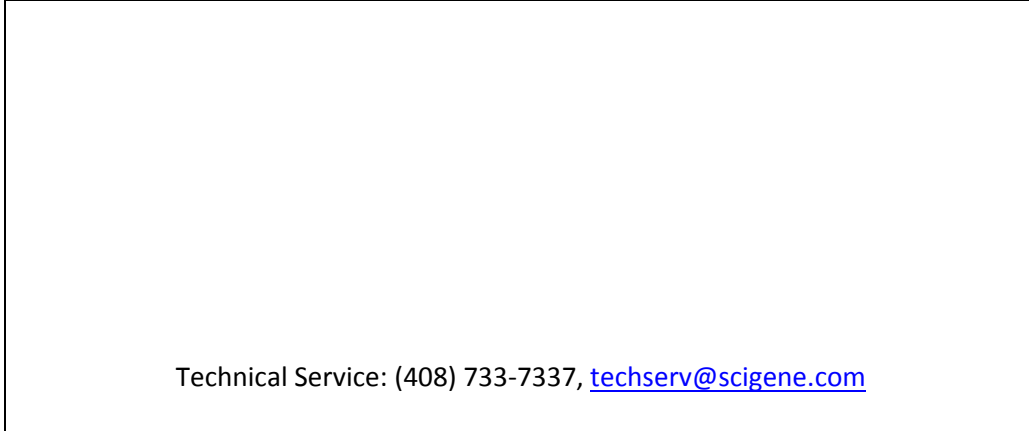
Cat. #1057-36-1, 1057-36-2



FOR RESEARCH USE ONLY

Serial Number

The following serial number identifies the specific instrument you have purchased and must be referenced when requesting service. A copy is affixed to the instrument.



Warranty

SciGene warrants that the heating unit described in this manual shall be free of defects in materials and workmanship for a period of 12 months from date of delivery. This warranty does not cover removable blocks or accessories. In the event of a defect during the warranty period, SciGene's limit of liability will be to provide replacement parts at no charge or, at its sole discretion, replace the product. The foregoing warranty is void in the event the unit was abused or modified or used in a manner inconsistent with its intended purpose. SciGene makes no other warranty, expressed or implied including warranties of merchantability and fitness for a particular purpose. In no event shall SciGene be liable for any direct, indirect, special, incidental or consequential damages or for any damages resulting from loss arising out of or in connection with the sale, use or performance of the product.

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Table of Contents

I. SAFETY NOTICES	3
A. Intended Use.....	3
B. Instrument Safety	3
C. Symbols and Conventions.....	3
D. Warnings	4
E. Cautions	4
F. Compliance	4
II. UNPACKING AND SET UP	5
A. Unpacking the System	5
B. Parts Provided.....	5
C. Installation	5
III. USING YOUR HYBEX® MICROARRAY INCUBATION SYSTEM	6
A. Components, Controls and Accessories.....	6
B. Handling the Incubation Chambers	7
C. Optional Tube Blocks and Waterbath Insert	7
D. Using the Temperature Controller.....	7
E. Calibrating the EZ-Zone Temperature Controller	8
IV. MAINTAINING YOUR HYBEX® SYSTEM	9
A. Checking and Replacing Fuses	9
B. Cleaning	10
V. TROUBLESHOOTING.....	11
VI. SPECIFICATIONS.....	11
VII. ORDERING INFORMATION	11
VIII. APPENDIX A – Using and Calibrating a Watlow SD31 Controller	12
A. Using the Watlow SD31 Temperature Controller.....	12
B. Calibrating the Watlow SD31 Temperature Controller	12
IX. DECLARATION OF CONFORMITY	13

I. SAFETY NOTICES

A. Intended Use

The **Hybex® Microarray Incubation System** is intended for the heating and incubation of laboratory samples. The instrument should only be used according to the instructions provided in this manual. If the equipment is used in a manner not specified by the manufacturer (SciGene), the protection provided by the equipment may be impaired.

B. Instrument Safety

Before operating the system, read the information in this section concerning hazards and potential hazards. Ensure that anyone involved with the instrument's operation is instructed in both general safety practices for laboratories and specific safety practices for the instrument.

C. Symbols and Conventions

The following chart is an illustrated glossary of the electrical symbols that are used on the **Hybex® Microsample Incubator** (heating base). Whenever such symbols appear on instruments, please observe appropriate safety measures.

1. Electrical Symbols



This symbol indicates that this is a protected ground terminal that must be connected to earth ground before any other electrical connections are made to the instrument.



CAUTION: This symbol alerts you to consult this Operator's Manual for further information and to proceed with caution.



This symbol indicates the OFF position of the main POWER switch.



This symbol indicates the ON position of the main POWER switch.

2. Non-Electrical Symbols



CAUTION: This symbol illustrates a heat hazard. Proceed with caution when working around these areas to avoid being burned by hot components.



CAUTION: This symbol alerts you to consult this Operator's Manual for further information and to proceed with caution.

D. Warnings

Failure to comply with the following warnings that are affixed to the product can lead to possible personal injury or death.



This symbol on the rear of the instrument indicates the presence of the fuse box. Warning: For Continued Protection Against Fire, Replace Only with Same Type Rating of Fuse. Always disconnect the power cord before attempting to replace the fuse.

E. Cautions

Failure to comply with the following cautionary statement affixed to the product may lead to possible personal injury.



This symbol indicates the potential presence of a Hot Surface. Use care when working in this area to avoid being burned.

F. Compliance



1. European Community

All instruments shipped to the European Union (EU; formerly known as the European Community) have the “CE” label on the back of the instrument, signifying that these instruments comply with the Electromagnetic Compatibility and Low Voltage Directives.



2. US and Canadian Listings

All instruments meet Laboratory Equipment standards UL 61010-1:2004 R7.05 and CAN/CSA-C22.2 61010-1:2004

II. UNPACKING AND SET UP

A. Unpacking the System

The **Hybex® Microsample Incubator** heating base is shipped on its side within the interior carton. Remove any packing material around the unit and lift the unit out; taking care not to damage the hinged cover. Microarray chambers, tools and accessories are packaged separately from the heating base.

Carefully inspect the heating unit for damage. If there is evidence of damage, *do not discard the shipping materials* since they may be needed to return the unit. Contact techserv@scigene.com for assistance.

B. Parts Provided

The following items are included with the **Hybex® Microarray Incubation System**:

- Hybex Microsample Incubator
- Power cord
- 2x Microarray incubation chambers
- 2x Screw handle for chambers (black)
- T-handle Allen wrench for assembling chambers
- Absorbent pads for inside chamber cover (25/pk)
- 2x Microarray slide racks* (*shipped inside chamber*)
- Handle for 4-position slide racks
- *Hybex® Microarray Incubation System User Manual*
- *Hybex® Microarray Incubation Chamber User Guide*

C. Installation

Place the heating base on a level surface within a few feet of the power source. The unit should be positioned to have clearance along the top so that the lid can be opened completely without interference. Leave at least 3 inches of clearance from the back panel for air circulation.

Assemble and insert both incubation chambers into the heating base. See Section III-B for how to handle chambers.



Both incubation chambers, a tube block or a waterbath insert must be placed inside the heating unit before turning on power.

Plug the provided power cord into the back of the unit and then to a properly grounded outlet. Use only the power cord provided. Turn on power to the system using the switch on the front of the unit.

III. USING YOUR HYBEX® MICROARRAY INCUBATION SYSTEM

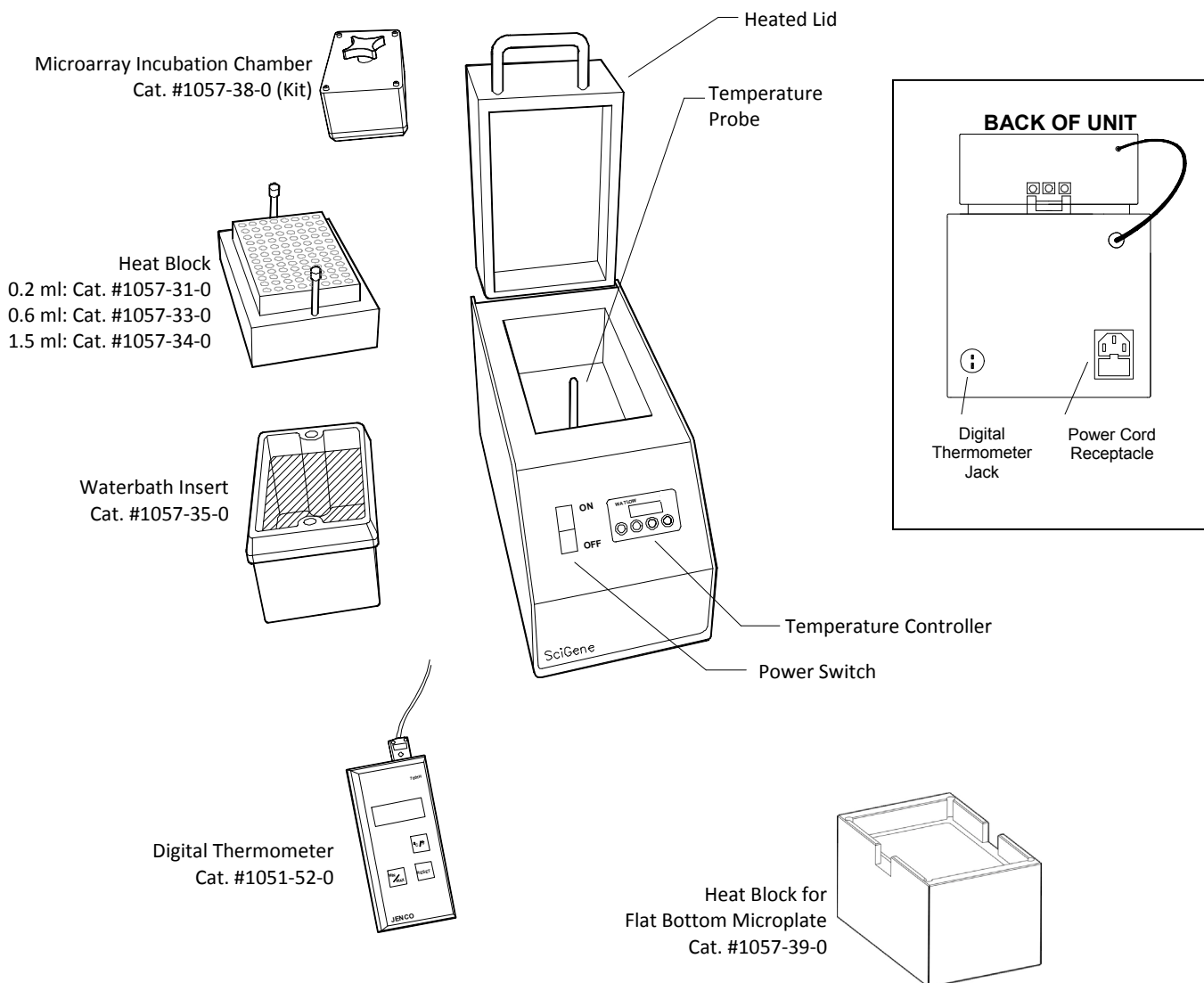
A. Components, Controls and Accessories

Note: A heat block, waterbath insert or microarray chambers are required for operation.

For a list of available accessories, see section VII. **Ordering Information.**

Name	Function
Power Switch	Turns on main power to unit
Temperature Controller	Used to set and observe block temperature
Heated Lid	Heats the sealed air around the block
Temperature Probe	Senses the temperature of the block
Digital Thermometer Jack	For calibrating system temperature
2x Microarray Incubation Chamber	For array hybridization
Heat Block* (0.2, 0.6, 1.5 ml tubes or microplate)	Heats tubes or plates without cap condensation
Waterbath Insert*	For heating buffers or water
Digital Thermometer*	For calibrating system temperature

*Optional accessories



B. Handling the Incubation Chambers

See the *Hybex® Microarray Incubation User Guide* included with each chamber set for details on how to use the slide racks and assemble the chamber. The following information is limited to how to insert and remove the chambers from the heating unit.

Chambers are inserted and removed with the aid of a single, four-pronged black plastic handle provided, as follows:

1. Thread handle several turns into the chamber cover.
2. Lower the assembled chamber into the unit aligning the cutout on the side of the chamber with the temperature probe in the base.
3. Repeat with second chamber.
4. Remove the handles from the chamber, turn on power and set desired temperature.

C. Optional Tube Blocks and Waterbath Insert

Tube heating blocks and the waterbath insert are placed and removed from the heating unit with the aid of two bolts (provided) that act as handles. To properly install a block or insert:

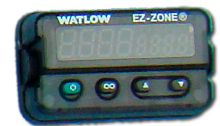
1. Thread the two bolts several turns into the block.
2. Grasp the ends of the bolts, lift the block, and then carefully lower it into the unit; guiding it over the temperature probe. The opening in the bottom of the block should fit over the probe.
3. Remove the threaded bolts before using the system.



Do not operate the instrument without a block properly inserted into the heating unit!!

D. Using the Temperature Controller

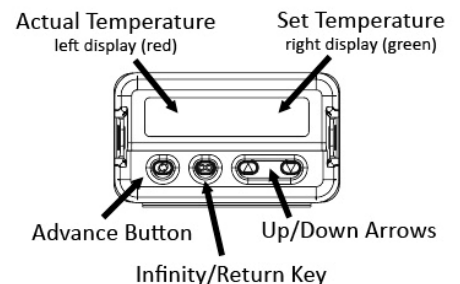
*Note: For instruments manufactured prior to July 2012, instructions for using the SD-31 controller can be found in the **Appendix** of this document.*



The **Hybex® Microarray Incubation System** is equipped with an EZ-Zone temperature controller. The controller has two LED displays and four push buttons. The left display shows ACTUAL block temperature in red. The right display shows the SET or programmed temperature in green.

To enter the SET temperature, simply push the up and down arrows until the desired temperature is shown in the green display on the right. The unit will adjust the heat of the block until the SET temperature is attained.

The controller is calibrated at the factory to provide accurate block temperatures from 35 to 99°C. See section D. Calibrating the Temperature Controller for details.



E. Calibrating the EZ-Zone Temperature Controller

*Note: For instruments manufactured prior to July 2012, instructions for calibrating the SD-31 controller can be found in the **Appendix** of this document.*

The temperature controller comes calibrated from the factory to provide accurate block temperatures from 35 to 99°C.

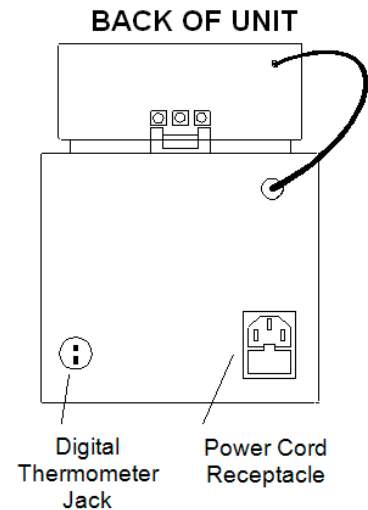
The temperature controller will require calibration only if:

- When checking the block temperature with a calibrated digital thermometer, the thermometer temperature differs by more than one degree (1°C) from the temperature shown on the controller display.

A NIST calibrated digital thermometer (sold separately, SciGene Cat. #1051-52-0) is required to calibrate the unit.

Follow these steps to adjust the controller to achieve accurate temperatures.

1. Insert a block into the **Hybex®** incubator, turn ON the instrument and set the controller to 65°C. Allow 15 minutes for temperature to stabilize.
2. Using the cable provided with the digital thermometer, plug one end into the blue receptacle found on the back panel of the **Hybex®** incubator and the other end into the digital thermometer.
3. Turn on the thermometer. Allow 1 minute for thermometer to stabilize. The actual temperature of the block will be displayed.
4. Calculate the difference between the temperature shown on the EZ-Zone controller and on the digital thermometer. For example, if the controller displays 65.0°C and the thermometer displays 66.5°C, the difference (offset) is 1.5°C.
5. On the controller, press the up and down arrows simultaneously for 3 seconds. The left display shows “**A1**” and the right display shows “**oPEr**”.
6. Press the Advance Button (green circle) 3 times until the right display shows “**i.CA**”. The left display will show the offset value between the controller and thermometer when the unit was last calibrated.
7. Use the up or down arrow to adjust the offset value to the temperature difference calculated in Step 4. For example, if the controller shows a temperature 1.5°C lower than the thermometer, adjust the offset by adding 1.5 to the value shown.
8. Press the Infinity Key (∞) twice to exit calibration and return to the operation display. Verify that the temperature on the thermometer matches the display. Your incubator is now calibrated to provide accurate temperatures between 35 and 99°C.



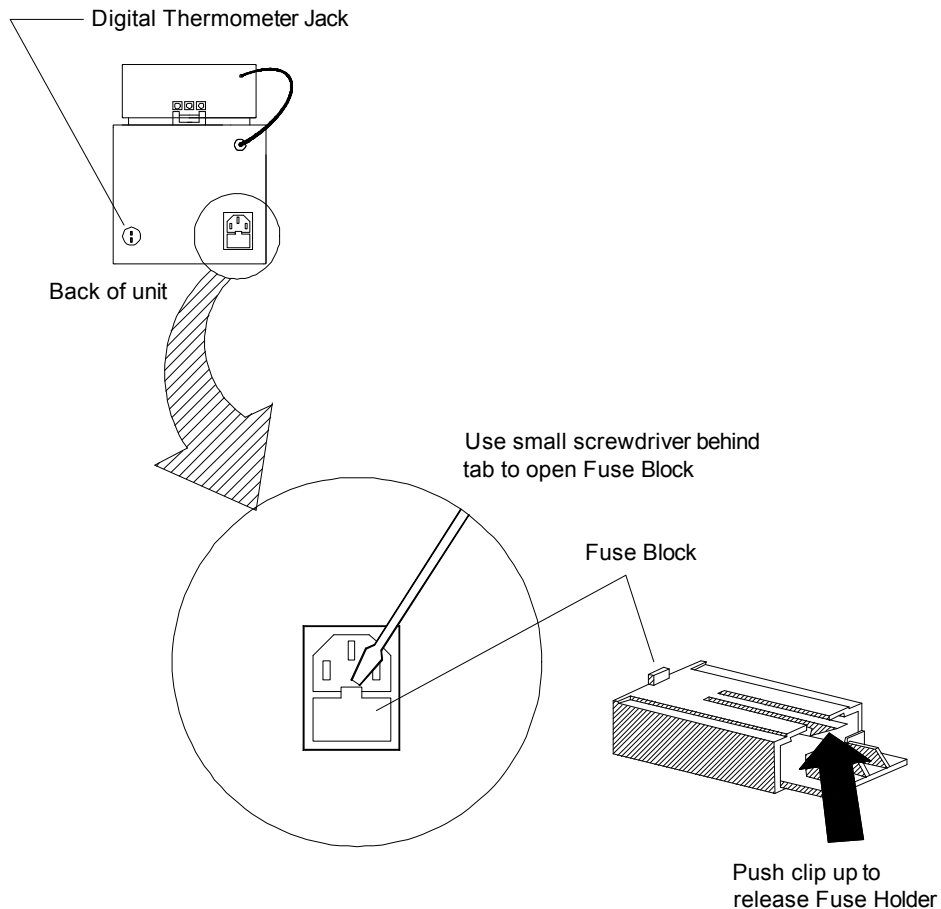
IV. MAINTAINING YOUR HYBEX® SYSTEM

F. Checking and Replacing Fuses



Turn the power switch to the OFF position and unplug the power cord before performing any service procedure.

There are two fuses located in a removable fuse block below the power cord receptacle on the back of the unit.



To remove fuses:

1. Insert a small, flat blade screwdriver into the tab recess just below the plug receptacle.
2. Push down to release the fuse block.
3. Slide out the fuse holder from the fuse block while holding the retaining tab out of the way.
4. Gently pry out the fuses.

A blown fuse appears dark. Always replace fuses with those of the same amperage and voltage as shown on the label below the fuse block.

G. Cleaning



Any liquid or condensation in the block cavity of the instrument should be removed as soon as possible.

Clean the block cavity and temperature probe frequently to avoid build up of residue that can interfere with the heat control system. The bottom of the cavity is sealed to provide temporary protection from spills and condensation.

Clean the metal surfaces and heated lid using a mild, detergent-based cleaner and wipe with a soft cloth. Avoid abrasive cleaners that can scratch surfaces.

V. TROUBLESHOOTING

Symptom	Cause	Solution
Power switch light does not turn on.	Blown fuse(s)	Replace fuse(s) on back of unit, beneath power cord receptacle.

VI. SPECIFICATIONS

Electrical	
Cat. #1057-36-1	115V AC; 50/60 Hz; 3A
Cat. #1057-36-2	230V AC; 50/60 Hz; 1.6A
Dimensions	
Outside (cover closed) H x W x D	10x6x12 inches (21x15x30 cm)
Weight	
Instrument (without block)	6 lbs (3 kg)
Performance and Controls	
Temperature Range	Ambient +5°C to 99°C
Temperature Regulation	± 0.2°C
Temperature Controller	Digital PID, single loop
Temperature Display	Actual or Set single LED
Digital Thermometer Output	Thermocouple

VII. ORDERING INFORMATION

Cat. #	Description	UoM
1057-36-1	Hybex® Microarray Incubation System, 115V.	Each
1057-36-2	Hybex® Microarray Incubation System, 230V.	Each
1057-30-0	Hybex® Microsample Incubator, heating base, 115V.	Each
1057-30-2	Hybex® Microsample Incubator, heating base, 230V.	Each
1057-38-0	Microarray Chamber Set. Includes 2x chambers, tools and accessories.	Each
1057-31-0	0.2 ml tube block. Holds 96x0.2ml PCR tubes or 96 well PCR plate.	Each
1057-33-0	0.6mL tube heat block, holds 60x0.6mL tubes.	Each
1057-34-0	1.5 ml tube block. Holds 32x1.5ml microcentrifuge tubes.	Each
1057-39-0	Block for flat-bottom microplate.	Each
RP1057-32-1	Absorbent Pads for Chamber Cover, 25/pack.	Pack
1057-32-3	Hybex® Microarray Rack, holds 4 slides.	Each
1057-32-5	Handle for Duplexed Hybex® racks.	Each
1057-35-0	Waterbath Insert for Hybex® Incubator.	Each
1051-52-0	Digital thermometer. Includes cable and NIST certificate.	Each

VIII. APPENDIX A – Using and Calibrating a Watlow SD31 Controller

For selected **Hybex®** incubators manufactured between 2005 and 2012.

A. Using the Watlow SD31 Temperature Controller

The SD31 controller has a single LED panel with four buttons. The set temperature is displayed if the **SET** key is pressed and held otherwise the **ACTUAL** block temperature is displayed.



To set the block temperature:

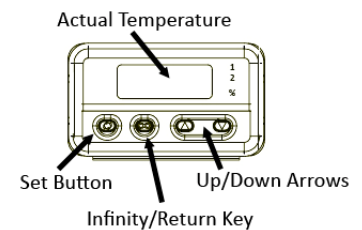
1. Insert a block into the instrument and power on.
2. Hold in the **SET** button to view the previous set temperature.
3. While holding down the **SET** button, press the up or down arrow button until the desired set temperature is shown.
4. Release the **SET** button to display the actual temperature. The instrument will adjust block heating until the **SET** temperature is attained.

B. Calibrating the Watlow SD31 Temperature Controller

Re-calibrating the SD31 controller is recommended *only if* the display varies by more than one degree (1°C) to a connected NIST-certified digital thermometer (SciGene cat. #1051-52-0).

To adjust the controller to achieve accurate temperatures:

1. Insert a block into the **Hybex®** incubator, turn ON the instrument and set the controller to 65°C. Allow 15 minutes to stabilize.
2. Using the cable provided with the digital thermometer, plug one end into the blue receptacle found on the back panel of the **Hybex®** incubator and the other end into the digital thermometer.
3. Turn on the thermometer. Allow 1 minute for thermometer to stabilize. The actual temperature of the block will be displayed.
4. Calculate the difference in the temperature shown on the controller and the digital thermometer. For example, if the controller displays 65.0°C and the digital thermometer displays 66.5°C, the difference (offset) is 1.5°C.
5. On the temperature controller, press the Infinity Key (∞) for three seconds until “**OPeR**” appears.
6. Press the down arrow four times until “**Cal**” appears.
7. Press and hold the SET key. The existing offset value between the controller and digital thermometer is displayed.
8. Press and hold the SET key and use the up/down arrows to adjust the offset value to the temperature difference calculated in Step 4. For example, if the controller shows a temperature 1.5°C lower than the thermometer, adjust the offset by adding 1.5 to the value shown.
9. Press the Infinity Key (∞) to exit calibration and return to the operation display. Verify that the temperature on the thermometer matches the display. Your incubator is now calibrated to provide accurate temperatures between 35 and 99°C.



IX. DECLARATION OF CONFORMITY

Hybex® Microarray and Microsample Incubation System

SciGene
470 Lakeside Drive, Suite F
Sunnyvale, CA 94085-4720 USA



Declares that the above referenced product(s) meets the essential requirements of the following European Union Directives by using the relevant standards shown below to indicate compliance.

EMC Directive 89/336/EEC Standards:

EN 61326-1	1997	Electrical equipment for measurement, control and laboratory use to include:
EN 61000-4-2	2001	+A1: 1998 +A2: 2001 +A3: 2003
EN 61000-4-3	2001	
EN 61000-4-4	2001	
EN 61000-4-6	2003	

LVD Directive 2006/95/EC

EN 61010-1	2004 2 nd Edition	Safety requirements for measurement, control and laboratory use Part 1: General requirements
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Terry Gill
Name of Authorized Representative

Sunnyvale, California, USA
Place of Issue

Director of Product Manufacturing
Title of Authorized Representative

January 01, 2012
Date of Issue


Signature of Authorized Representative

