

User Manual

Labnet AccuTherm Microtube Shaking Incubator, 120V

Part Number I-4001-HCS

Labnet AccuTherm Microtube Shaking Incubator, 230V

Part Number I-4002-HCS



Please read this manual carefully before the operating the AccuTherm Microtube Shaking Incubator!

Labnet
Labnet International, Inc.

File Version: No.1.0

July 2013

Glossary:

<u>Section</u>	<u>Page</u>
1 Symbols and Conventions	III
2 Safety	III
a) Grounding	
b) Electric circuits	
c) AC Power Considerations	
d) Connecting AC Power Line	
e) Design Environments	
3 Labels	V
a) Product ID Label	
b) Warning Labels	
4 Installing Block and Instrument Maintenance	VI
5 Warranty	VII

Important Note

1 SYMBOLS AND CONVENTIONS



CAUTION: This symbol refers you to important operating and maintenance (servicing) instructions within the product Instruction Manual. Failure to heed this information may present a risk of damage or injury to persons or equipment



WARNING: To avoid accidental burning be very careful touching the heater block of the unit. It can be very hot after it is used at high temperatures. Allow the heater block to cool down before handling.

2 SAFETY

During the operation, maintenance, or repair of the AccuTherm Microtube Shaking Incubator, the following safety measures should be taken. Otherwise, the safeguards provided by the AccuTherm Microtube Shaking Incubator are likely to be damaged, the rated safety level to be reduced, and the rated operation conditions to be affected.

Labnet International, Inc. shall not be in any way responsible for the consequences resulting from operator's not observing the following requirements.



This instrument is intended for indoor use only.

a) Grounding

A.C. power's grounding should be reliable to safeguard against an electric shock. The 3-pin plug supplied with the AccuTherm Microtube Shaking Incubator's power cable is a safety device that should be matched with a suitable grounded socket. Never allow the third ground pin to be floating. If the 3-pin plug cannot be inserted, it is recommended to ask an electrician to install an appropriate power socket

b) Keep Away from Electric Circuits

The operator should not open the AccuTherm Microtube Shaking Incubator without first consulting Labnet's Service Department. Changing components or adjusting certain parameters inside the device must be performed by certificated professional maintenance personnel only. Do not change elements while the power is still on.

c) A.C. Power Considerations

Before turning on the power, always make sure that the mains voltage is within the range of required power supply ($\pm 10\%$ difference is allowed) and the rating current of the power socket meets the required specification as shown in below contents.

d) A.C. Power Line Considerations

As an accessory of the AccuTherm Microtube Shaking Incubator, the A.C. power supply should be the default device. Once it is damaged, the A.C. power line may not be repaired, but must be replaced by a new one. The power supply should be free of heavy objects during the AccuTherm Microtube Shaking Incubator's operation. Keep the power supply away from high traffic areas.

e) Connect the A.C. Power Line

While connecting or disconnecting the power line, user should insert the plug firmly to ensure good contact between the plug and socket. Pull the plug, but not the cable, when the plug needs to be disconnected from the mains.

f) Design Environments

The AccuTherm Microtube Shaking Incubator should be placed in a low-humidity, dust-free, well-ventilated room without caustic gas or powerful magnetic interference. The AccuTherm Microtube Shaking Incubator should not be operated in close proximity to water sources, such as pools and water pipes. Never cover or obstruct the openings of the AccuTherm Microtube Shaking Incubator, which are designed for ventilation and to prevent the device's interior from becoming too hot. When a single device is running, the shortest distance between its openings and the nearest object should be at least 50cm (20 inches); when two devices or more are running simultaneously, the shortest distance is 100 cm (40 inches) among these machines. Do not place the device on a soft surface. Doing so will result in adverse ventilation near the device's bottom openings. Operating conditions that cause a high temperature environment will result in degraded performance or failure of the The AccuTherm Microtube Shaking Incubator. Additionally, the device should be protected against any kind of heat sources such as sunlight, ovens, or central heating equipment. If the The AccuTherm Microtube Shaking Incubator will sit idle for extended periods of time, it is recommended to disconnect the power line from the mains and cover the device with a piece of soft cloth or plastic to prevent against dust.



Once one of the following events occurs, the Operator is advised to disconnect the power cable from the mains, and contact the distributor or ask a certified maintenance engineer for assistance.

- Liquid enters into the device;
- The device malfunctions, giving off an abnormal sound or odor;
- The device falls onto the floor or the housing is damaged;
- Significant changes in the device's performance

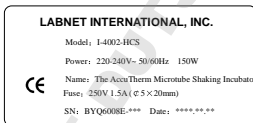
3 LABELS

a) Product ID Labels

For Model I-4001-HCS



For Model I-4002-HCS



b) Warning Sign



Note the 'HOT SURFACE!' warning sticker on the instrument. While unit is running and shortly after a program run ends, the metal parts near this warning symbol must not be touched. Doing so may cause bodily harm or burn.

4 INSTALLING THE BLOCK AND INSTRUMENT MAINTENANCE

The following accessories are included in the box:

- Inner-Hexagon round head screws (4)
- Spring Washer (4)
- Allen wrench (1)

Use Allen wrench to tighten the four screws and Spring Washer when fixing or changing blocks. Verify that each screw is fastened, without over tightening.

The conical holes over the block should be cleaned regularly with a damp cotton swab in order to ensure sufficient contact and thus good heat conduction between each conical hole and the tube inside it.

The housing can be cleaned with a damp cloth (using water).



When cleaning or changing blocks, the instrument should be powered off.
Do not start up shaking before installing block.
Corrosive scour is not allowed to clean the surface of the instrument.

5 WARRANTY AND SERVICE INFORMATION

Labnet International, Inc. warrants that this product will be free from defects in material and workmanship for a period of one (1) year from date of purchase. This warranty is valid only if the product is used for its intended purpose and within the guidelines specified in the supplied instruction manual.

Should this product require service, contact Labnet International, Inc.'s Service department at 732-417-0700 to receive a return authorization number and shipping instructions. Products received without proper authorization will be returned. All items returned for service should be sent postage prepaid in the original packaging or other suitable carton, padded to avoid damage. Labnet International, Inc. will not be responsible for damage incurred by improper packaging. Labnet International, Inc. may elect for onsite service for larger equipment.

This warranty does not cover damage caused by accident, neglect, misuse, improper service, natural forces or other causes not arising from defects in original material or workmanship. This warranty does not cover motor brushes, fuses, light bulbs, batteries or damage to paint or finish. Claims for transit damage should be filed with the transportation carrier.

ALL WARRANTIES INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION OF 12 MONTHS FROM THE ORIGINAL DATE OF PURCHASE.

LABNET INTERNATIONAL, INC.'S SOLE OBLIGATION UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT, AT LABNET INTERNATIONAL, INC. DISCRETION, OF A DEFECTIVE PRODUCT. LABNET INTERNATIONAL, INC. IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGE, COMMERCIAL LOSS OR ANY OTHER DAMAGES RESULTING FROM THE USE OF THIS PRODUCT.

Some states do not allow limitation on the length of implied warranties or the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights. You may have other rights which vary from state to state.

no individual may accept for, or on behalf of Labnet International, Inc., any other obligation or liability, or extend the period of this warranty.

<p>Mail Warranty Registration to :</p> <p>Labnet International, Inc. 31 Mayfield Ave. Edison, NJ 08837</p>	<p>or</p>	<p>Register online at</p> <p>www.labnetinternational.com</p>
--	------------------	---

>< cut along the dotted line

To validate the warranty, complete and return this card within 10 days.

Model _____

Serial No. _____ Date Tested _____

Date Rec'd _____ PC# _____

Name/Title _____

Phone _____

Institution _____

Address _____

City _____ State _____ Zip/Postal Code _____ Country _____

Purchased from (distributor) _____

How would you rate the quality of this product? Excellent Good Fair Poor

What feature(s) on this product made you purchase it? _____

What feature(s) would you change to improve the performance of this product? _____

Labnet
 Labnet International, Inc.

31 Mayfield Avenue, Edison, NJ 08837
 (p) 732.417.0700 (f) 732.417.1750

CONTENTS

CHAPTER 1 INTRODUCTION	1
CHAPTER 2 SPECIFICATIONS	2
CHAPTER 3 EQUIPMENT OVERVIEW	4
1 DESCRIPTION	4
2 DISPLAY PANEL	5
3 BUTTON EXPLANATION	5
CHAPTER 4 OPERATION GUIDE	6
1 PRE-CHECK BEFORE POWER ON	6
2 SET UP OF TEMPERATURE, VIBRATION TIME AND VIBRATION SPEED.	6
3 PULSE VIBRATION	7
4 CORRECT TEMPERATURE DISCREPANCY	8
5 BUZZER SET UP	10
CHAPTER 5 TROUBLESHOOTING AND REPAIR	13
APPENDIX 3: SPARE PARTS	15
SERVICE NOTES	16

CHAPTER 1 Introduction

The Labnet AccuTherm Microtube Shaking Incubator has a microprocessor controlled cooling & heating capabilities. The incubator can be equipped with various block sizes to accommodate several tube sizes and microplates. It can perform a wide range of applications including, sample storage, storage and reaction of various kinds of enzyme, DNA amplification, pre-denaturation of electrophoresis, and serum solidification. The AccuTherm Microtube Shaking Incubator includes the following features:

- ◆ VFD display with high-luminosity;
- ◆ Temperature setting value and practical value displayed simultaneously ;
- ◆ Display setting time and practical time simultaneously;
- ◆ Aluminum block protecting the sample from contamination;
- ◆ Aluminum block that is easy to replace, clean, sterilize and suitable for different type of tubes;
- ◆ Internal over-temperature protection improving reliability;
- ◆ Warning function after running time ends;
- ◆ Temperature calibration

CHAPTER 2 SPECIFICATIONS

This chapter addresses the AccuTherm Microtube Shaking Incubator's operation, transportation & storage conditions, basic parameters and performance.

1 NORMAL OPERATING CONDITIONS

Ambient temperature: 10°C ~ 30°C

Relative humidity: ≤70%

Power supply: AC100-120V 50/60Hz 150W (I-4001-HCS)

AC220-240V 50/60Hz 150W (I-4002-HCS)

Placement table-board: stable and horizontal



Before power-on, please check whether the above operating conditions are satisfied. Pay special attention to the power cable's grounding and make sure whether unit is placed on stable and horizontal surface.

2 TRANSPORTATION AND STORAGE CONDITIONS

Ambient temperature: -20°C ~ +55°C

Relative humidity: ≤80%

3 Basic Parameters

Model	I-4001-HCS/I-4002-HCS
Parameters	
Blocks	Block I-4000-A, 40 x 1.5mL Block I-4000-B, 54 x 0.5mL Block I-4000-C, 96 x 0.2mL Block I-4000-D, 24 x 15mm Block I-4000-E, Water bath (ID: 115X73X38mm) (not suggested to use when mixing function is on) Block I-4000-H, 40 x 2.0mL Block I-4000-J, 96 Well ELISA Plate Block I-4000-G, 26 x 0.5mL and 24 x 1.5mL
Dimension Inches/mm	12.9" x 6.5" x 9.8"/ 328×166×249mm(L×W×H)
Weight Lbs. (kg)	18.75 lbs (8.5Kg)

4 Performance

Temperature control range:	0~105°C
Temperature range	room temperature -14°C ~ 100°C
Timing Range	1 min ~99h59min
Cooling Time	from room temperature to room temperature - 10°C: ≤ 8min from 100°C to room temperature+10°C: ≤15min
Heating time	≤ 12min (from 20°C to 100°C)
Temperature accuracy	≤ ± 0.5 °C
Temperature Uncertainty	≤ ± 0.5 °C
Heating Rate	about 6°C /min (from 20°C to 100°C)
Block temperature uniformity	≤ ± 0.5 °C
Mixing Rate	300~1500rpm
Amplitude	3mm

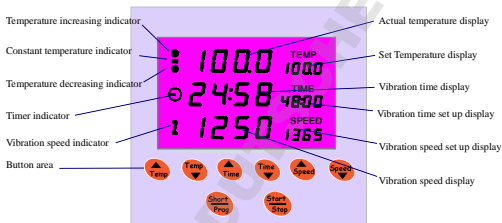
Chapter 3 Equipment Overview

This chapter describes the AccuTherm Microtube Shaking Incubator's mechanical structure, keyboard and key functions, and overview before powering-on. It should be read carefully before the AccuTherm Microtube Shaking Incubator is first operated.

1 Structure Description



2 Diagram of display panel



3 Button explanation



Temperature set up button. Press “▲” or “▼” to adjust the value and set the requested temperature. Keep pressing “▲” or “▼” may help to speed up the setting time.



Vibration time set up button. Press “▲” or “▼” to adjust the value and set the requested vibration time. Keep pressing “▲” or “▼” may help to speed up the setting time.



Vibration speed set up button. Press “▲” or “▼” to adjust the value and set the requested vibration speed.



Instant spot vibration button. Press it to start spot vibration. The running speed is the highest vibration speed. It is also a function button for temperature calibration



Start button or stop button. Press this button to start or stop the mixing of the device.(valid for only mixing)

Chapter 4 Operation Guide

This chapter gives a through instruction to the temperature set up, vibration time set up, vibration speed set up of this instrument. It also explains how to correct the discrepancy between the actual temperature and displayed temperature, and how to set up the buzzer.

1 Pre-check before turn on power

Before turning on power, check and confirm the following items first:

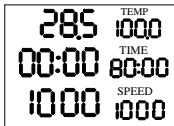
1. Unit is on stable and level surface;
2. The voltage should comply with the spec; (Refer to Chapter 2 for the power supply spec);
3. The power plug should be tightly plugged into the outlet;
4. The ground connection should be reliable;
5. The module connection should be reliable.



If the display is abnormal when the power is turned on, please shut down immediately and contact the supplier.

2 Set up of temperature, vibration time and vibration speed.

a) Approximately 5 seconds after the power is turned on, the monitor will display a temperature of 28.5, which is the instant temperature of the module. The display of “TEMP 100.0” is the set up temperature of last run, the display of “TIME 80:00” is the set up vibration time of last run, and the display of “SPEED 1000” is the vibration speed of last run.



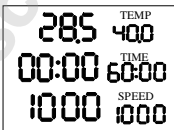
At same time, the device will automatically heat or cool, to achieve the setting temp. point.

b) The digits of the TEMP display may be reduced or increased by pressing “Temp” or “Temp” respectively.

The digits of the TIME display may be reduced or increased by pressing “Time” or “Time” respectively.

Press the above mentioned buttons for more than 3 seconds to set up the exact value.

If the temperature should be set at 40° and the time should be set up at 60:00, then press the “Temp” and not release to see the number reducing; When the number shows 40, release the button, and it will be automatically saved in 3 seconds. Next press the “Time” and not release to see the number reducing; when the number shows 60:00, release the button, and it will be automatically saved in 3 seconds.



c) Press “Speed” or “Speed” to set up for the speed. The number will increase or reduce at a rate of 50rpm, release the button when the number reaches exact value, and it will be automatically saved in 3 seconds.

When set up is done, press “Start/Stop” to start mixing.



After the setting value of temperature is saved successfully, the device will automatically heat or cool, to achieve the setting temp. point.

3 PULSE vibration

Press “Start/Prog” to start instant vibration or short term vibration. Press the button to start it and release the button to stop it. The running speed of pulse vibration is the highest vibration speed.

4 Correct temperature discrepancy

The temperature of the instrument has been calibrated before shipment. However, due to various conditions, there might be discrepancy between the actual temperature and displayed temperature. On such case, you may use the calibration button to correct the discrepancy.



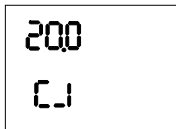
1. To ensure the accuracy of the temperature, please wait for at least 30 minutes after the instrument is set at a constant temperature, and then perform the calibration.
2. Please use certified standard class two mercury thermometer to calibrate this instrument.
3. Calibration point: Center hole of the module. Please fill the hole with paraffin oil and immerge the thermometer bulb in it.

The method of the temperature calibration of this instrument is two-point linear calibration. The calibration point may be set freely, and by setting the second calibration point the same as the first calibration point, you can adjust the calibration point to one temperature point.

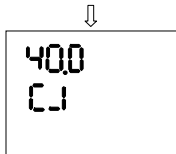
For two-point calibration, if set the two points at 40°C and 100°C, then other temperature points will be automatically adjusted per the linear relationship of the two calibration points.

Please read the following operation instruction:

a) Press both “Temp” and “Temp” at the same time, and the display will show the set up value of last time (for example 20°C) and the cursor of the first calibration point; C-1:



b) Press the temperature set up button “Temp” or “Temp” to set up the first calibration temperature such as 40°C:

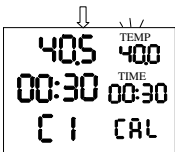
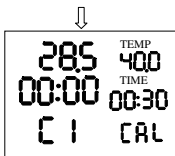


c) Perform the same operation again to set up the second calibration temperature such as 100°C;


Note: when setting up the temperature points, an order of low temperature point first and high temperature after is recommended. If on the case high temperature point is set first and low temperature is set after, then when performing the following actual calibration, please follow the order of low temperature first and high temperature after.



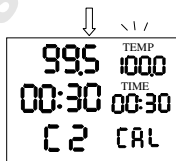
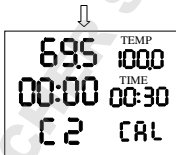
d) Press both “Temp” and “Temp” at the same time to start the calibration. The display will show 40.0 and the temperature of the instrument will automatically increase to 40°C. Once the temperature is kept constant, timing will start. 30 minutes later, press “Start/Prog” for one time, and the display will show the blink of “TEMP.” At this time, the display will show the actual temperature reading of the thermometer. For example, if the thermometer reads 40.5°C, you can adjust the temperature display to 40.5°C by pressing the temperature set up button. Next press “Start/Prog” for one time, and the display will show 100.0°C. Following the same instruction, when the temperature of the instrument increases to 100°C, wait for 30 minutes,



input the calibrated value and press “Short/Prog” to save it.

When the calibration of 40°C is done, press “

When the calibration is done for once at both 40°C and 100°C, check for the discrepancy between the two calibration points and the actual temperature points. It should be within 0.5°C. If it's more than 0.5°C, please follow the above instruction and recalibrate until the request is met.



5 Buzzer set up

A Upon failure's occurrence or ending, the instrument will buzz “DI, DI...” You may disable it if you do not need this function. However, the default setting is to have it on.



B This instrument has keyboard beep; once the button is pressed, it will beep “DI.” You may disable it if you do not need this function. However, the default setting is to have it on.

Please read the following operation instructions:

a) Press both “ Speed” and “ Speed” at the same time, and the display will show On, Beep;



b) Press “ Start Step” for once and change On to OFF;

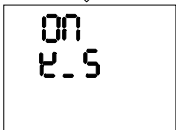
c) Press “ Speed” and “ Speed” at the same time to save the setting, and buzz will be disabled upon failure's occurrence or ending.

The display will then show the keyboard beep status.

If the display will show On K_S. Press “ Start Step” once and change On to OFF;

d) Then press both “ Speed” and “ Speed” at the same time to save the setting, and keyboard beep will be disabled.

If you want to exit during set up, you may press “ Start Step”, and the setting will be ineffective.



DOMINIQUE DUTSCHER SAS

Chapter 5 Troubleshooting and Repair

This chapter describes possible faults of this instrument along with instructions to the cause analysis and teaches you how to resolve the fault.

Troubleshooting and Repair

No.	Problem	Probable Cause	Remedy
1	No display shown in the monitor when the power is on.	Power is not connected.	Check the power and connect it.
		Fuse has burned out.	Change the fuse BYQ15412A000020: 125V2.5A Φ5x20 BYQ15411A500170: 250V1.5A Φ5x20)
		Switch is broken.	Change the switch.
		Others.	Contact the supplier of manufacturer.
2	During run, the housing shakes abnormally and makes abnormal noise.	Use improper block	Change the block. (Contact supplier or manufacturer to make sure whether the block is suitable.)
		Unit is placed on uneven surface	Place unit on even, stable surface
		Round feet badly worn	Change round feet.
		Others	Contact supplier or manufacturer.
3	Bad temperature uniformity of block.	Improper installation of block.	Re-install the block.
		Bad cooling components.	Contact supplier or manufacturer.
4	The system no longer operates after changing block.	Bad grounding of machine.	Check power cable to insure reliable grounding; Do remember to turn off the power when changing block.
5	Serious discrepancy between the actual temperature and displayed temperature.	Broken sensor or bad contact.	Contact the supplier or manufacturer.

No.	Problem	Probable Cause	Remedy
6	The cooling of the module drastically slows down or the temperature cannot reach below room temperature.	Thermoelectric cooling module is broken.	Contact the supplier or manufacturer.
		Fan is broken or does not work.	
7	The module is neither able to heat nor cool.	Temperature sensor is broken.	Contact the supplier or manufacturer.
		Thermoelectric cooling module is broken.	
8	Vibration stops.	Drive is broken.	Contact the supplier or manufacturer.
		Motor is broken.	
		Fuse has burned out.	Change the fuse. BYQ15412A000020: 125V2.5A Φ5x20 BYQ15411A500170: 250V1.5A Φ5x20)



User shall not open the cover of this instrument when under warranty; If housing does need to be opened to perform certain repair per the above instruction, please contact the supplier or manufacturer.

Spare Parts

BYQ121L00000020	L socket head wrench	
BYQ900800000070	Cushioning balls for foot	
BYQ15411A500170	Fuse	used for 230V model (250V1.5A Φ 5*20mm)
BYQ15412A000020	Fuse	used for 120V model (125V2.5A Φ 5*20mm)

Service Notes

Labnet International, Inc.,
31 Mayfield Ave., Edison, NJ 08837
(P) +732-417-0700 (F) +732-417-1750
Email: labnetinfo@orning.com
www.labnetinternational.com