

**Labnet Incubator Shaker
I5311-DS and I-5311-DS-230V**

Instruction Manual



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GRAPHIC SYMBOLS

Your Labnet I-5311-DS incubator shaker uses internationally accepted graphic symbols to help convey information to the user and to call the users attention to important safety precautions and guides for using this equipment.



Indicates that user should consult manual further description or discussion.



Indicates AC "Power On"



Indicates "Heating"



Indicates "Degrees Centigrade"



Indicates "Temperature"



Indicates Potential "Shock Hazard"



Indicates Protective "Earthground"



SAFETY PRECAUTIONS

Use of this product in any manner not specified by the manufacturer may impair the safety protection provided by the equipment and may result in physical damage and/or personal injury. Please read all operating instructions in this manual prior to use of this equipment.

1. Do not operate this unit in an explosive or flammable environment.
2. Do not incubate or shake flammable or explosive materials or highly reactive chemicals.
3. **Lifting / Handling:** These units are heavy and care should be taken to use appropriate lifting devices. Units should only be lifted from their bottom surfaces and not by doors, handles or knobs.
4. **Leveling:** The unit must sit level and solidly on the four leveling feet.
5. **Load testing:** Test all loads to be shaken under observation to insure load and unit stability.
6. **Units are not stackable.** Do not stack one unit on top of another unit.

INTRODUCTION

This manual covers the specifications, operation and use of the Labnet I-5311-DS shaking incubator and its accessories. Please pay special attention to the **Safety Precautions** section in this manual.

The I-5311-DS shaking incubator from Labnet International provides an extremely stable temperature environment, and an aggressive shaking motion for the mixing of materials for cell culture growth at ambient and above ambient temperatures.

The I-5311-DS shaking incubator uses microprocessor controls and mechanical convection to maintain a stable temperature environment and to achieve fast chamber temperature recovery after a door opening. The incubator interior is constructed from stainless steel for corrosion resistance and easy clean-up of accidental spills. All incubator doors have an integral glass window and the incubator has a light to allow observation of samples without opening the door. Each door is fully thermal gasketed.

The I-5311-DS shaking incubator comes with one removable full shelf and four large, rubber padded adjustable feet for leveling the unit. Additional half and full shelves may be purchased. The I-5311-DS shaking mechanism supports a wide range of optional rack and flask platforms which are user changeable.

SPECIFICATIONS

Chamber temperature range	Ambient +5C to 70C (Ambient +10°C with shaker on)
Accuracy / Uniformity @37°C	+/-0.3C / +/-0.5C
Temperature accuracy	+/-0.2C
Temperature Controller	Microprocessor - User Calibratable
Over temperature safety	Independently settable
Shaker speed	20 to 300 rpm
Shaker orbit	19mm
Shaker max load	7.4kg*
Shaker timer	Continuous (Hld) or 30 seconds to 99 minutes 50 seconds
Timer increments	30 seconds to 9 min 59 seconds in 1 second steps 10.0 minutes to 99 min 50 seconds in 10 second increments
Interior electrical outlet	1 amp
Chamber volume	2.5 cu ft / 70 liters
Exterior dimensions w x d x h	574 x 544 x 644mm
Chamber dimensions w x d x h	442 x 396 x 406mm

Electrical Ratings and Unit Size

I-5311-DS	120V, 50/60Hz, 6 amps
I-5311-DS-230V	230V, 50/60Hz, 4 amps

* Max load is 4 x 2 liter flasks with 400ml liquid in each flask

UNPACKING

Upon receipt of your I-5311-DS shaking incubator, examine the carton and unit for damages. If shipping damage has occurred, a claim must be filed with the carrier. The carrier is responsible for correcting shipping damages. Save all packaging until the unit has been shown to operate properly to your satisfaction. Carefully remove the unit from the carton and shipping pallet.

The package should include:

I-5311-DS Shaking Incubator	Instruction manual
1 full shelf	Power cord (both EU and UK cords in 230V models)
2 shelf brackets	Warranty Card
4 adjustable feet	

Complete and return the warranty card to register your new I-5311-DS Shaking Incubator

INSTALLATION

Install the four adjustable feet and locate Shaking Incubator on a stable, flat, very solid surface near a grounded electrical outlet. The location selected should be out of direct sunlight and away from heat producing sources or hot or cold air drafts. At least 5cm ventilation clearance is required around all sides of the incubator. Level the incubator using the four adjustable feet. Clockwise rotation of a foot raises the incubator. Plug in the unit to a properly rated and grounded electrical outlet and the unit will be ready for use. Install the optional platform you have selected by plugging in the four bottom protrusions. Larger flask platforms may require being screw clamped to the shaking mechanism.

The shelf may be installed when shaking flasks 1 liter or smaller. However, the shelf severely limits the illumination from the chamber light and the shelf may possibly rattle under aggressive shaking conditions.

CONTROLS & CALIBRATION

The controls for the I5311-DS Shaker Incubator include power to the oven, temperature setting, safety temperature overshoot setting and shaker speed and shaking time. In addition there is a door-open shaker shut-off switch and a chamber light switch.

- Main Power Switch - This switch (illuminated GREEN when on) turns the power to the unit On and Off.

-Temperature Controller and Temperature Set – The controller has a 3-digit display for displaying chamber temperature or set point information. UP and Down arrow pads are used to change the set point and controller mode of operation. To enter the set point mode of operation, press either the UP or DOWN arrow pad one time. The display will start to blink, going from bright to dim. While blinking, the display is showing the set point. To change the set point, use the UP and DOWN arrow pads. If the arrow pads are not pressed for five (5) seconds, the display will stop blinking and will read the chamber temperature. After setting temperature, allow at least one hour for the chamber temperature to stabilize and 24 hours for optimum stabilization.

-Calibration- The Shaking Incubator is calibrated at 37C at the factory. The unit can be recalibrated after the chamber temperature has stabilized at the set point for several hours. Suspend a certified reference thermometer in the chamber. Compare the units display to the reference thermometer. If there is an unacceptable difference, put the controller into calibration mode by pressing both the UP and DOWN arrow pads at the same time until the two outside decimal points begin to flash. While the decimal points are flashing, the display can be calibrated to match the reference thermometer by pressing the UP or DOWN arrow pads until the display reads the correct value. Allow the shaker incubator to stabilize again, and recalibrate if necessary.

-Heating Indicator-This indicator will illuminate GREEN when the controller is calling for heat from the heater. This indicator will be on continuously while the oven heats up to the set temperature and will then cycle on and off at the set temperature.

-Safety Thermostat-The safety thermostat located on the back of the unit is manually set and completely independent of the Main Temperature Controller. The safety guards against any failure of the Main Controller that would allow temperature to rise past the safety set point. If the temperature rises to the safety set point, the Safety takes control of the heating element and allows continued use of the incubator until the problem can be resolved or service can be arranged.

-Safety Indicator-This indicator will illuminate RED when the Safety Thermostat is activated. Under normal operating conditions this indicator should never be on.

-Chamber Light Switch-This switch turns the chamber light on and off when power is on.

-SHAKER CONTROLS-The shaker controls are also microprocessor based.

-RUN lamp-This lamp illuminates when the shaker is started and stays illuminated when the shaker is running.

-Timer lamp-This lamp is illuminated when the shaker display is in the time display mode counting down the remaining run time or showing the set run time.

-RPM lamp-This lamp illuminates when the shaker display is speed display mode showing the current shaking speed or showing the set shaking speed.

-Stop / Start-This pad starts and stops the shaking mechanism and causes the RUN lamp to be illuminated.

-Push to Shift / Turn Set Knob- This encoder provides the following multiple functions:

- It increases and decreases the shaker speed setting in 1 rpm increments from 20 rpm to 300 rpm.
- It increases and decreases the run time setting from 30 seconds to 99 minutes and 50 seconds and HOLD (Hld) for continuous operation. Time is changed in 1 second increments to 10 minutes and then 10 second increments thereafter.
- It shifts the shaker display from time display to speed display and back

-Shaker Display- This three digit display shows the shaker speed setting or shaker time setting or remaining shaker run time while counting down. It also shows:

- **Hld** - When the shaker is set for continuous un-timed running
- **Open** - When the incubator door has been opened, automatically stopping the shaking motion (note the timer continues to count down but is not displayed)
- **End** - When a timed shaking run has ended
- **F60 / F50** - When the shaking incubator is first powered up indicating the line frequency of the power line.

-Door Open Switch - This switch senses when the incubator shaker door is open and sends a signal to the microprocessor which causes the shaker to stop running as a safety measure. However, in a timed run, the timer will continue to count down when the door is open. Closing the door restarts the shaking motion.

OPERATING THE LABNET I-5311-DS INCUBATOR SHAKER

As advised in the installation section, it is very important that the unit be level and placed on a very solid surface. When loading the platforms, it is also important to load these in a balanced manner or the unit can vibrate and possibly walk. Shaking unbalanced loads for extensive periods may also damage the shaker.

Before powering up the unit, you should first set the mechanical Safety Thermostat on the back of the unit to a temperature just above your intended operating temperature or at max (setting of 10) this safety is not needed.

After you first power up the unit you should notice the shaker display first showing dashes then the power input line frequency (F60 or F50 for 60 Hz or 50Hz) and the temperature controller display showing some random numbers and dots blinking.

The shaker display and temperature display should then settle down with the shaker display showing the last time that was set (or HLD) for continuous operation, and the temperature display showing the chamber temperature.

You may now set the desired operating temperature, the desired shaking speed and the desired shaking time (see Controls section of this manual). It is recommended that you test all loads to be shaken a slow speed under observation and then gradually raise the speed to insure the load and unit are stable. The unit should also be allowed to equilibrate to the set temperature before using.

Once the temperature, shaking speed and shaking time are set, use the Stop / Start pad to initiate shaking. When shaking in the timed mode, the word End will be displayed on the shaker display when the shaking is done. In timed mode the word Hld (hold) will be displayed on the shaker display. The user may switch the shaker display to show the shaking speed by pressing the "Push to Shift" knob.

The user can observe the load being shaken through the glass window and can also turn on the chamber light for additional visibility. **The chamber light should not be left on for an extended period as it adds heat to the chamber and may cause the chamber temperature to rise above the set point.**

The user may open the chamber door at any time to gain access the chamber. If the shaker is running when the door is open, the shaker power will be immediately cut causing the shaker to slow and stop. The shaker display will show Opn for open. Shaking will automatically resume when the door is closed if there is still time remaining on the shaker run. **Note:** The clock continues to count down when the door is open even though the shaker has stopped.

CARE & MAINTENANCE

No routine maintenance is required for the electrical or mechanical components of the unit. The incubator exterior, interior and shaking platform should be wiped down periodically with a soft damp cloth with mild soap. Do not use chlorine-based bleach or abrasives. Any spills in the incubator and/or on the shaking platforms should be cleaned up immediately. **Be sure to disconnect the power cord before cleaning or decontaminating the oven.**

TROUBLESHOOTING GUIDE

PROBLEM

Oven will not power up or not heat

Shaking platform will not operate

Temperature too high

Chamber temperature goes above set point and settles back to set point

Temperature will not remain stable or display shows "LO"

Indicated temperature is unstable

Temperature is too low

Unit will not heat above temperature that is below set point

Temperature display and reference thermometer do not match

Cannot adjust set point or calibration or display persists call service

Unit calibrated at one temperature and not at another

POSSIBLE SOLUTION

Check power cord, outlet and unit circuit breaker

Check timer set to Hld or a time setting
Check that nothing is blocking shaker platform
Press shaker STOP/START button

Check set point and readjust if necessary
Check calibration

Normal operation in initial heat up or if door opened for a long period

Check that set point is at least 5C above ambient (or 10°C above ambient when shaker is on) which is minimum operating point

A slight variation of +/-0.1C is normal. Larger fluctuations may be ambient variations from drafts, door opening and closing, a fan obstruction or failure or electrical noise from RFI (motors, etc.)

If door has opened, unit may not have recovered yet.
Confirm temperature set point.
Safety thermostat set too low.

Confirm set point. Check temperature of chamber with a thermometer and recalibrate if needed.

Be sure that unit has been allowed to stabilize for 1 hour. Thermometer should be suspended in the chamber and not touching any surface. Only certified reference thermometers should be used.

Turn unit off for 5 seconds to reset. If problem persists, call for service.

This can be a normal condition if temperatures or load vary widely. For best accuracy, calibrate at set point

TECHNICAL SUPPORT / SERVICE

Should your I-5311-DS shaking incubator require service, call Labnet International's Service Department at 732-417-0700 between the hours of 9:00am and 5:00pm EST. If service necessitates the return of the unit to Labnet's Service Department, a return authorization (RA) number must first be obtained and a decontamination certificate completed. The unit must be thoroughly decontaminated before shipping. The unit must then be sufficiently packed for shipment. Any shipping damage on returned units will be the customer's responsibility.

ACCESSORIES

I-5322	Full shelf w / brackets
I-5323	Half shelf w / brackets
I-5330	Universal flask clamp platform
I-5331	Flat mat platform
I-5330-50	30 x 50ml flasks platform
I-5330-125	20 x 125ml flasks platform
I-5330-250	12 x 250ml flasks platform
I-5330-500	8 x 500ml flasks platform
I-5330-1000	6 x 1000ml flasks platform
I-5330-2000	4 x 2000ml flasks platform

Flask clamps are available in 50ml, 125ml, 150ml, 500ml, 1000ml, and 2000ml.

Test tube rack clamps are also available.

Labnet is continuously adding accessories. Check with your representative or call Labnet directly at 732-417-0700 or check our website: www.labnetlink.com for a complete listing of accessories and flask clamps.