

# Labnet 311DS Digital Shaking Incubator

## Instruction Manual

**Catalog Numbers:**

I-5311-DS

I-5311-DS-230V



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## 1.0 Introduction

This manual covers the specifications, operation, and use of the Labnet 311DS Shaking Incubator and its accessories. Please pay special attention to the Safety Information section in this manual.

The Labnet 311DS Shaking Incubator 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. It 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 Labnet 311DS 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 311DS shaking mechanism supports a wide range of optional rack and flask platforms which are user changeable.

## 2.0 Safety Information

The Labnet 311DS Shaking Incubator 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 a potential risk and alerts you to proceed with caution.



Indicates AC "Power On".



Indicates the presence of a potential hazard which could result in electrical shock.



**CAUTION:** To avoid accidental bodily harming or burning be very careful touching the metal parts of the unit. It can be very hot after it is used at high temperatures. Allow the metal parts to cool down before handling.



Indicates "Temperature".



Identifies a Protective Earth (PE) terminal, which is provided for connection of the supply system's protective earth (green or green/yellow) conductor.

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.



- Do not operate this unit in an explosive or flammable environment.
- Do not incubate or shake flammable or explosive materials or highly reactive chemicals.
- 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 the doors, handles, or knobs.
- Leveling: The unit must sit level and solidly on the four leveling feet.
- Load testing: Test all loads to be shaken under observation to insure load and unit stability.
- Units are not stackable.** Do not stack one unit on top of another unit.

### 3.0 Specifications

Chamber temperature range	Ambient, +5°C to 80°C (shaker off) Ambient, +10°C to 80°C (shaker on)
Accuracy/uniformity	±0.3°C to ±0.5°C at 37°C
Temperature accuracy	±0.2°C
Temperature controller	Microprocessor, user calibratable
Over temperature safety	Independently settable
Shaker speed	20 to 300 rpm
Shaker orbit	0.75 in. (19 mm)
Shaker maximum load	16.3 lbs. (7.4 kg)*
Shaker timer	Continuous (Hld) or 30 seconds to 99 min. 50 seconds
Timer increments	30 seconds to 9 min. 59 seconds in 1-second steps 10.0 min. to 99 min. 50 seconds in 10-second increments
Interior electrical outlet	1 amp (115V units only)
Chamber volume	2.5 cu. ft. (70.8L)
Exterior dimensions (W x D x H)	22.6 x 21.4 x 25 in. (57.4 x 54.4 x 63.5 cm)
Chamber dimensions (W x D x H)	17.4 x 15.6 x 16 in. (44.2 x 39.6 x 40.6 cm)
Overvoltage category	Category II
Electrical ratings and unit size	
I-5311-DS	120V ±10%, 50/60 Hz, 5x20 T8A 250V (1 fuse)
I-5311-DS-230V	230V ±10%, 50/60 Hz, 5x20 T6.3A 250V (2 fuses)
Environmental conditions	15°C to 30°C, ≤80% RH (at 25°C)

\*Maximum load is 4 x 2L flasks with 400 mL liquid in each flask.

The Labnet 311DS Shaking Incubator is designed to be safe at least when operated under the following conditions:

- ▶ Indoor use
- ▶ Altitude up to 2,000 meters
- ▶ Pollution Degree 2

### 4.0 Unpacking

Upon receipt of your Labnet 311DS 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 Labnet 311DS Shaking Incubator includes the following components:

- ▶ 311-DS Digital Shaking Incubator
- ▶ 1 full shelf
- ▶ 2 shelf brackets
- ▶ 4 adjustable feet
- ▶ Power cord (both EU and UK cords in 230V models)
- ▶ Instruction manual

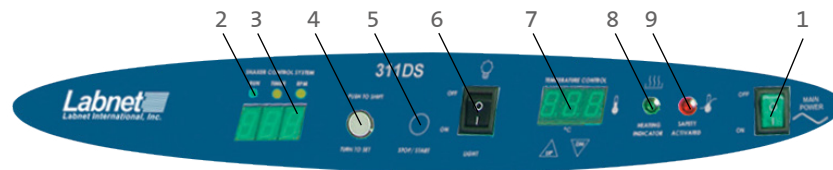
### 5.0 Installation

Install the four adjustable feet and place the 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 2 in. (5 cm) 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 using shaker flasks 1L or smaller. However, the shelf severely limits the illumination from the chamber light and the shelf may possibly rattle under aggressive shaking conditions.

## 6.0 Controls

The controls for the Labnet 311DS Shaking Incubator include power to the oven, temperature setting, safety temperature overshoot setting, shaker speed, and shaking time. In addition there is a door-open shaker shut-off switch and a chamber light switch.



- 1. Main power switch:** Turns the power to the unit On/Off. Illuminates green when On.
- 2. Shaker controls:** The shaker controls are also microprocessor based:
  - ▶ Run lamp – Illuminates when the shaker is started and stays illuminated when the shaker is running.
  - ▶ Timer lamp – Illuminates when the shaker display is in the Time display mode counting down the remaining run time or showing the set run time.
  - ▶ RPM lamp – Illuminates when the shaker display is in Speed display mode showing the current shaking speed or showing the set shaking speed.
- 3. 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 untimed running.
  - ▶ Opn – 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.
- 4. Push to shift/turn set button:** This encoder provides the following multiple functions:
  - ▶ Increases and decreases the shaker speed setting in 1 rpm increments from 20 to 300 rpm.
  - ▶ 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.
  - ▶ Shifts the shaker display from Time display to Speed display and back.
- 5. Stop/Start:** Stops and starts the shaking mechanism and causes the RUN lamp to be illuminated.
- 6. Chamber light switch:** Turns the chamber light On/Off when the power is On.
- 7. Temperature Controller and Temperature Set:** The controller has a 3-digit display for displaying chamber temperature or setpoint information. Up and Down arrows are used to change the setpoint and controller mode of operation. To enter the setpoint mode of operation, press either the Up or Down arrows one time. The display will start to blink, going from bright to dim. While blinking, the display is showing the setpoint. To change the setpoint, use the Up and Down arrows. If the arrows are not pressed for five (5) seconds, the display will stop blinking and will read the chamber temperature. After setting the temperature, allow at least one hour for the chamber temperature to stabilize and 24 hours for optimum stabilization.
- 8. Heating Indicator:** Illuminates 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.
- 9. Safety Indicator:** Illuminates red when the Safety thermostat is activated. Under normal operating conditions this indicator should never be on.
  - ▶ **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 setpoint. If the temperature rises to the safety setpoint, 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.
  - ▶ **Door Open 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.

## 7.0 Calibration

The Labnet 311DS Shaking Incubator is calibrated at 37°C at the factory. The unit can be recalibrated after the chamber temperature has stabilized at the setpoint 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 arrows 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 arrows until the display reads the correct value. Allow the shaker incubator to stabilize again, and recalibrate if necessary.

## 8.0 Operation

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 on 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 the maximum (setting of 10).

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

The shaker display and temperature display should show 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, shaking speed, and shaking time (see Controls section). It is recommended that you test all loads to be shaken at a slow speed under observation and then gradually raise the speed to ensure 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, End will be displayed on the shaker display when the shaking is done. In timed mode 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 button.

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 setpoint.

The user may open the chamber door at any time to gain access to 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 (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.

## 9.0 Cleaning and Maintenance

**NOTE:** Be sure to disconnect the power cord before cleaning or decontaminating the oven.

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. **NOTE:** Do not use chlorine-based bleach or abrasives. Any spills in the incubator and/or on the shaking platforms should be cleaned up immediately.

## 10.0 Troubleshooting and Service

Problem	Solution
Oven will not power on or not heat	Check power cord, outlet, and unit circuit breaker.
Shaking platform will not operate	<ul style="list-style-type: none"> <li>▶ Check timer set to Hld or a time setting.</li> <li>▶ Check that nothing is blocking the shaker platform.</li> <li>▶ Press shaker Stop/Start button.</li> </ul>
Temperature too high	<ul style="list-style-type: none"> <li>▶ Check setpoint and readjust, if necessary.</li> <li>▶ Check calibration.</li> </ul>
Chamber temperature goes above setpoint and settles back to setpoint	This is normal operation in initial heat up or if the door is opened for a long period.
Temperature will not remain stable or display shows “LO”	Check that setpoint is at least 5°C above ambient (or 10°C above ambient when shaker is on) which is minimum operating point.
Indicated temperature is unstable	A slight variation of $\pm 0.1^{\circ}\text{C}$ 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.).
Temperature is too low	<ul style="list-style-type: none"> <li>▶ If the door has been opened, the unit may not have recovered yet.</li> <li>▶ Confirm temperature setpoint.</li> <li>▶ Safety thermostat is set too low.</li> </ul>
Unit will not heat above temperature that is below setpoint	<ul style="list-style-type: none"> <li>▶ Confirm temperature setpoint.</li> <li>▶ Check the temperature of the chamber with a thermometer, and recalibrate if needed.</li> </ul>
Temperature display and reference thermometer do not match	Be sure the 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.
Cannot adjust setpoint, calibration, or display	Turn the unit Off for 5 seconds to reset. If problem persists, call for service.
Unit calibrated at one temperature and not at another	This can be a normal condition if temperatures or load vary widely. For best accuracy, calibrate at setpoint.

Should you have a question about the Labnet 311DS Shaking Incubator or require service for the unit, contact Corning Customer service at 800.492.1110 or 978.442.2200. Do not send a unit for service without first calling to obtain a repair authorization (RA) number. The unit should be properly packed to avoid damage. Any damage resulting from improper packaging shall be the responsibility of the user.

## 11.0 Accessories

Cat. No.	Description
I-5322	Full-sized shelf for digital shaking incubator
I-5330	Shaking platform for flask clamps
I-5331	Flat platform with rubber mat
I-5330-50	Platform with 30 x 50 mL flask clamps
I-5330-125	Platform with 20 x 125 mL flask clamps
I-5330-250	Platform with 12 x 250 mL flask clamps
I-5330-500	Platform with 8 x 500 mL flask clamps
I-5330-1000	Platform with 6 x 1,000 mL flask clamps
I-5330-2000	Platform with 4 x 2,000 mL flask clamps

Check with your representative or check [www.labnetlink.com](http://www.labnetlink.com) for a complete listing of accessories and flask clamps.

## 12.0 Limited Warranty

Corning Incorporated (Corning) warrants that this product will be free from defects in material and workmanship for a period of one (1) year from date of purchase. CORNING DISCLAIMS ALL OTHER WARRANTIES WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. Corning's sole obligation shall be to repair or replace, at its option, any product or part thereof that proves defective in material or workmanship within the warranty period, provided the purchaser notifies Corning of any such defect. Corning is not liable for any incidental or consequential damages, commercial loss or any other damages from the use of this product.

This warranty is valid only if the product is used for its intended purpose and within the guidelines specified in the supplied instruction manual. 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.

In the event this product fails within the specified period of time because of a defect in material or workmanship, contact Corning Customer Service at: USA/Canada 1.800.492.1110, outside the U.S. +1.978.442.2200, visit [www.corning.com/lifesciences](http://www.corning.com/lifesciences), or contact your local support office.

Corning's Customer Service team will help arrange local service where available or coordinate 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. Corning will not be responsible for damage incurred by improper packaging. Corning may elect for onsite service for larger equipment.

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 Corning, any other obligation of liability, or extend the period of this warranty.

For your reference, make a note of the serial and model number, date of purchase, and supplier here.

Serial No. \_\_\_\_\_ Date Purchased \_\_\_\_\_

Model No. \_\_\_\_\_ Supplier \_\_\_\_\_

## 13.0 Equipment Disposal



According to Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), this product is marked with the crossed-out wheeled bin and must not be disposed of with domestic waste.

Consequently, the buyer shall follow the instructions for reuse and recycling of waste electronic and electrical equipment (WEEE) provided with the products and available at [www.corning.com/weee](http://www.corning.com/weee).

To request certificates, please contact us at [www.labnetlink.com](http://www.labnetlink.com).

**Warranty/Disclaimer:** Unless otherwise specified, all products are for research use or general laboratory use only.\* Not intended for use in diagnostic or therapeutic procedures. Not for use in humans. These products are not intended to mitigate the presence of microorganisms on surfaces or in the environment, where such organisms can be deleterious to humans or the environment. Corning Life Sciences makes no claims regarding the performance of these products for clinical or diagnostic applications. \*For a listing of US medical devices, regulatory classifications or specific information on claims, visit [www.corning.com/resources](http://www.corning.com/resources).

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