# Цифровые инкубаторы I-5110A, I-5311-D и I-5611-D

## Технические характеристики

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# Mini Incubator


Labnet's Mini Incubator is designed for personal use, small laboratories, and classrooms. This compact unit features a broad temperature range to meet a variety of small sample applications.

Multiple heating elements provide even heating and uniformity, and the hydraulic thermostat ensures temperature stability within the chamber. A thermometer port in the top of the unit allows the user to monitor temperatures. The large window in the door gives a clear view of the contents which can include up to 48 Petri dishes or 28 standard microplates. Shelves can be placed at two points within the corrosion resistant chamber. A cord port allows small mixers to be placed in the incubator.

- Ideal for personal use, small laboratories, and classrooms
- Broad temperature range
- Rear cord port allows for use of small mixers inside
- Includes one shelf, which can be placed at two points within the corrosion-resistant chamber

### Specifications

| | |
|---|---|
| Capacity | 0.375 cu. ft. (9.2 liters) |
| Temperature range | Ambient, +5°C to 70°C |
| Controls | Analog, hydraulic |
| Exterior dimensions (W x D x H) | 11.2 x 11 x 13.2 in. (28.5 x 28 x 33.5 cm) |
| Chamber dimensions (W x D x H) | 19 x 7.9 x 7.9 in. (23 x 20 x 20 cm) |
| Weight | 18.4 lbs. (8.3 kg) |

## Ordering Information

| Cat. No. | Description |
|---|---|
| I5110A | Mini Incubator, 120V |
| I5110A-230V | Mini Incubator, 230V |
| I5110A-MLR | Mini Incubator with Mini Lab Roller and rotisseries for 1.5, 15, and 50 mL tubes, 120V |
| I5110A-MLR-230E | Mini Incubator with Mini Lab Roller and rotisseries for 1.5, 15, and 50 mL tubes, 230V, EU plug |

Mini Incubator with Mini Lab Roller

### Accessories

| Cat. No. | Description |
|---|---|
| I5110-SHELF | Additional shelf, 8.66 x 7 in. (22 x 18 cm) |
| W0020-110C | Non-toxic safety thermometer for -20°C to 110°C, with 1 resolution, 305 mm long, 76 mm immersion |

# Labnet 311D and 611D Digital Incubators

## Instruction Manual

**Catalog Numbers:**

I-5311-D

I-5611-D

## 1.0 Introduction

The Labnet Digital Incubators have been designed for general purpose incubations (<65°C), as well as those applications requiring higher temperatures (up to 65°C).

Temperature within the incubator is controlled and regulated by a microprocessor. Temperature is set and displayed digitally. An independent, user settable safety thermostat protects samples and the incubator from overheating in the unlikely event of a primary controller failure.

A fan, located in the chamber, assists in providing an exceptionally uniform environment. The fan also speeds temperature recovery after the door of the incubator has been opened. For applications where the flow of air in the chamber is undesirable, the fan may be switched off.

The interiors of the 311D and 611D incubators are constructed of stainless steel. The exteriors are made of cold rolled steel to resist corrosion and provide strength. The door of the incubator consists of two parts. The inner door is glass to allow for viewing the chamber contents without disrupting the temperature environment. The outer door is solid and insulated. It is also heated to help in maintaining the chamber temperature. The heated door prevents condensation from forming on the inner glass viewing door.

## 2.0 Safety Information

These units are high performance incubators for professional, industrial, or educational use where the preparation or testing of materials is done at approximately atmospheric pressure and no flammable, volatile, or combustible materials are being heated. These units are not intended for hazardous or household locations or use.

Your satisfaction and safety require a complete understanding of this unit. Read this instruction manual thoroughly before attempting to operate the incubator. All operators should be given adequate training before using this incubator.

**NOTE:** This equipment must be used only for its intended application. Any alterations or modifications of the incubator may void the warranty and may result in injury.

The electrical warning symbol indicates the presence of a potential hazard which could result in electrical shock.

This symbol indicates a potential risk and alerts you to proceed with caution.

**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.

## 3.0 Specifications

| | |
|---|---|
| **Temperature range** | Ambient, +5°C to 95°C |
| **Temperature uniformity** | |
| **I-5311-D** | ±0.2°C at 37°C |
| **I-5611-D** | ±0.25°C at 37°C |
| **Temperature accuracy** | ±0.2°C |
| **Temperature set/display** | Digital |
| **Temperature control** | Microprocessor |
| **Overtemperature safety** | Independent, settable |
| **Interior outlet** | 1 AMP |
| **Door** | Inner: glass<br>Outer: solid, heated |
| **Temperature uniformity** | |
| **I-5311-D** | 2.75 cu ft (77.9L) |
| **I-5611-D** | 6.0 cu ft (169.9L) |
| **Exterior construction** | Cold rolled steel |
| **Interior construction** | Stainless steel |
| **Exterior dimensions (D x W x H)** | |
| **I-5311-D** | 27 x 20 x 29 in. (68.6 x 51 x 73.7 cm) |
| **I-5611-D** | 31 x 26 x 34 in. (78.5 x 66 x 86.4 cm) |

| | |
|---|---|
| **Interior dimensions (D x W x H)** | |
| **I-5311-D** | 17 x 14 x 20 in. (43.2 x 35.6 x 51 cm) |
| **I-5611-D** | 21 x 20 x 25 in. (53.3 x 51 x 63.5 cm) |
| **Standard accessories** | Adjustable leveling feet, 2 steel shelves, shelving points |
| **Overvoltage category** | Category II |
| **Voltage requirements** | 120V ±10%, 60 Hz, 5x20 T8A 250V (1 fuse) |
| **Power/Current** | |
| **I-5311-D** | 800W |
| **I-5611-D** | 850W |
| **Environmental conditions** | 5°C to 40°C, ≤80% RH (at 25°C) |

The Labnet 311D and 611D Digital Incubators are 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

### 4.1 Inspection

Upon receipt of your Labnet 311D or 611D Digital 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:

- Labnet 311D or 611D Digital Incubator
- 2 large shelves
- 8 shelf clips
- 4 leveling feet
- Power cord (both EU and UK cords in 230V models)
- Instruction manual

## 5.0 Installation

Local city, county, or other ordinances may govern the use of this equipment. If you have any questions about local requirements, please contact the appropriate local agency. Installation can be performed by the end user.

### 5.1 Power Source

Check the data plate for voltage, cycle, phase, and ampere requirements. If matched to your power source, plug the power cord into a grounded outlet. **NOTE:** Voltage should not vary more than 10% from the data plate rating. These units are intended for 50/60 Hz applications. A separate circuit is recommended to preclude loss of product due to overloading or circuit failure. **NOTE:** Electrical supply to the unit must conform to all national and local electrical codes.

### 5.2 Location

In selecting a location, consider all conditions that might affect performance, such as heat from radiators, ovens, autoclaves, etc. Avoid direct sun, fast-moving air currents, heating/cooling ducts, and high-traffic areas. Allow a minimum of 5 cm between the unit and walls or partitions that might obstruct free airflow.

### 5.3 Lifting/Handling

These units are heavy and care should be taken to use appropriate lifting devices that are sufficiently rated for these loads. Units should only be lifted from their bottom surfaces. Doors, handles, and knobs are not adequate for lifting or stabilization. The unit should be completely restrained from tipping during lifting or transport. All moving parts, such as shelves and trays should be removed, and doors need to be positively locked in the closed position during transfer to prevent shifting and damage.

### 5.4 Leveling

The unit must sit level and solidly. Leveling feet are supplied and must be installed in the four holes in the bottom corners of the unit. With the feet installed and the unit standing upright, each foot can be raised by turning it in a counterclockwise direction. Adjust the foot at each corner until the unit stands level and solid without rocking. If the unit must be moved, turn the leveling feet all the way clockwise to prevent damage while moving.

### 5.5 Cleaning

The unit chamber should be cleaned and disinfected before use. Remove all of the interior parts, and clean thoroughly with a disinfectant that is appropriate to your application. **NOTE:** Do not use chlorine-based bleaches or abrasives as this will damage the chamber interior. Regular periodic cleaning is required.

## 6.0 Controls

1. **Power switch:** The main power ON/OFF switch controls all power to the unit. The power must be On before any systems are operational. The green switch will be lighted when ON.
2. **Main temperature control:** This control consists of the digital display and Up/Down buttons for inputting set point temperatures and calibration.
3. **Safety thermostat:** The Safety is completely independent of the Main Controller. The Safety guards against any failure of the Main Controller that would allow temperature to rise past set point. If 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.
4. **Fan switch:** This operates the turbo fan inside the chamber for fast heat up times and recovery. The switch is lighted when activated.
5. **Safety light:** This pilot light comes on when the Safety thermostat is activated. Under normal operating conditions this pilot light should never be on.

## 7.0 Operation

Check power supply against unit serial plate. They must match. Plug the power cord into the electrical outlet.

Push power switch ON, and turn the Safety thermostat to its maximum position, clockwise.

### 7.1 Set Main Temperature Control

Enter desired set point temperature. To enter set point mode on the control, press either the Up or Down button one time. The digital display will start to blink, going from bright to dim. While blinking, the digital display is showing the set point. To change the set point, use the Up and Down buttons. If the buttons are not pressed for five (5) seconds, the display will stop blinking and will read the temperature of the unit. **NOTE:** The Safety thermostat should be turned to its maximum position, until the unit has stabilized at desired set point temperature. Allow the incubator at least 24 hours to stabilize.

### 7.2 Calibration

The Main Temperature Controller was calibrated at the factory at 37°C; however, it is recommended that calibration is done once the unit is installed in its working environment and has been stable at set point for several hours. Place a certified reference thermometer in the chamber. Be certain the thermometer is not touching any shelving. Allow the temperature to stabilize again until the thermometer reads a constant value for one hour. Compare the digital display with the reference thermometer. If there is an unacceptable difference, put the display into calibration mode by pressing both the Up and Down arrow buttons at the same time until the two outside decimal points begin to flash. While the decimal points are flashing the display can be calibrated by pressing the Up or Down arrow buttons until the display reads the correct value. Allow the incubator temperature to stabilize again, and recalibrate if necessary.

### 7.3 Set Safety Thermostat

As mentioned above, the Safety thermostat should be initially set to its maximum position, to allow the unit to stabilize. Once the incubator is stabile at the desired set point, turn the Safety thermostat counterclockwise until the Safety light turns on. Next, turn the thermostat clockwise just until the Safety light turns off. Then turn the thermostat clockwise two (2) of its smallest divisions on its scale past the point where the Safety light went out. This will set the Safety thermostat at approximately 1°C above the main temperature set point.

### 7.4 Fan Switch

Turn the fan switch on during the warm up cycle for faster heat up time. Also, this switch may be used for rapid recovery. Once the unit has reached a stable temperature the fan may be turned off.

## 8.0 Cleaning and Maintenance

Both the interior and exterior of the incubator should be wiped down with a soft cloth periodically to prevent any build-up of dust and grime.

Any spills in the incubator should be cleaned immediately. Cleaning may be performed with a soft, damp cloth. If required, the chamber may be disinfected. The unit was cleaned at the factory, but not sterilized. Clean the inside of the chamber thoroughly with a disinfectant that is appropriate to your application. Make sure to rinse the cleaned surface with a damp cloth, using water only, and dry the surface with a clean cloth. **NOTE:** Do not use chlorine-based bleaches or abrasives, as this will damage the stainless steel surfaces. A similar periodic cleaning is recommended.

## 9.0 Troubleshooting and Service

### 9.1 Temperature

| Code | Description | Solution |
|---|---|---|
| Temp-1 | Temperature too high, display and reference thermometer don't match | ◗ Controller failed – call Customer Service.<br>◗ Wiring error – call Customer Service. |
| Temp-2 | Display reads "HI" or "400+" | Probe is unplugged or broken – call Customer Service. |
| Temp-3 | Chamber temperature spikes over set point and then settles to set point | Recalibrate – see Section 7.2. |
| Temp-4 | Temperature too low-display and reference thermometer don't match | ◗ Safety set too low – see Section 7.3.<br>◗ Controller set too low – see Section 7.1.<br>◗ Unit not recovered from door opening – wait for display to stop changing.<br>◗ Unit not recovered from power failure or being turned off – incubators will need 24 hours to warm up and stabilize.<br>◗ Element failure – call Customer Service.<br>◗ Controller failure – confirm with front panel lights that controller is calling for heat.<br>◗ Safety failure – confirm with front panel lights that Safety is operating correctly.<br>◗ Wiring problem – call Customer Service.<br>◗ Loose connection – call Customer Service. |
| Temp-5 | Display reads "LO" | ◗ Ambient temperature is lower than range of unit – compare set points and ambient temperature to rated specifications.<br>◗ Sensor is plugged in backwards – call Customer Service. |
| Temp-6 | Unit will not heat over a temperature that is below set point | ◗ Confirm that fan is moving.<br>◗ Confirm that set point is set high enough. |
| Temp-7 | Unit will not heat up at all | ◗ Check if all controller functions work.<br>◗ Check if the Safety is set high enough – for diagnostics, should be fully clockwise with the pilot light never on.<br>◗ Check if the fuse/circuit breaker has blown. |
| Temp-8 | Indicated chamber temperature unstable | ◗ Stabilize ambient conditions – either door opening or room airflow from heaters or air conditioning. If not the ambient conditions, call Customer Service.<br>◗ Calibration sensitivity – call Customer Service.<br>◗ Safety set too low – be sure that its setting is more than 5°C over desired set point; check if pilot light is on continuously; turn controller knob completely clockwise to see if problem solved, then follow instructions in Section 7.3 for correct setting.<br>◗ Electrical noise – remove nearby sources of RFI including motors, arcing relays, or radio transmitters. |

| Code | Description | Solution |
|---|---|---|
| Temp-9 | Will not maintain set point | ◗ Assure that set point is at least 5°C over ambient.<br>◗ See if ambient is fluctuating – check for adjacent open doors or HVAC duct openings, stabilize ambient conditions. |
| Temp-10 | Display and reference thermometer don't match | ◗ Calibration error – see Section 7.2.<br>◗ Temperature sensor failure – evaluate if pilot light is operating correctly.<br>◗ Controller failure – evaluate if pilot light is operating correctly.<br>◗ Allow at least 24 hours to stabilize at set point temperature.<br>◗ Verify that reference thermometer is certified. |
| Temp-11 | Can't adjust set points or calibration | ◗ Turn entire unit off and on to reset.<br>◗ If repeatedly happens, call Customer Service. |
| Temp-12 | Calibrated at one temperature, but not at another | This can be a normal condition when operating temperature varies widely. For maximum accuracy, calibration should be done at or as close to the set point temperature as possible. |

## 9.2 Mechanical

| Code | Description | Solution |
|---|---|---|
| Mech-1 | Door not sealing | ◗ Check physical condition of gasket.<br>◗ Tighten door latch till it pulls glass in.<br>◗ Adjust hinge blocks or twist the door.<br>◗ Confirm the unit has not been damaged and body is square. |
| Mech-2 | Motor doesn't move | Call Customer Service. |
| Mech-3 | Motor makes noise | Call Customer Service. |

## 9.3 Other

| Code | Description | Solution |
|---|---|---|
| Other-1 | Controller on at all times – "locked-up" | ◗ Turn unit off and on to reset.<br>◗ If cannot change any condition on the front panel, call Customer Service. |
| Other-2 | Front panel displays are all off | ◗ Check the power cord for damage.<br>◗ If there is no damage, call Customer Service. |
| Other-3 | Unit or wall fuse/circuit breaker is blown | ◗ Check wall power source.<br>◗ Compare current draw and compare to specs on data plate.<br>◗ See what other loads are on the wall circuit. |
| Other-4 | Unit will not turn on | ◗ Check wall power source.<br>◗ Check fuse/circuit breaker on unit or in wall.<br>◗ See if unit is on (e.g., fan or heater) and just controller is off. |
| Other-5 | Unit is smoking – out of box | This is not an uncommon occurrence when first operating new units. Put the unit under the vent and run at full power for one hour. Smoking is normal during first cycle to temperature. |
| Other–6 | Contamination in chamber | ◗ See cleaning procedure in see Section 8.0.<br>◗ Develop and follow standard operating procedure for specific application; include definition of cleaning technique and maintenance schedule. |

Should you have a question about the Labnet 311D and 611D Digital Incubators 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.

## 10.0 Spare Parts

| Cat. No. | Description |
|---|---|
| 4880527 | Blower motor |
| 6100544 | Convenience outlet |
| 3300546 | Fuse 8A |
| 2350544 | Door element |
| 7850571 | Door switch |
| 2350561 | Heating element |
| 7500507 | Light socket |
| 1751179 | MP control |
| 7850567 | On/Off switch |
| 1800510 | Power cord |
| H9200-37 | Safety control |
| 4650551 | Safety on pilot (green) |
| I-4880508 | Turbo fan motor |

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