

U.S. Solid 120g/0.1mg Analytical Balance

U.S. Solid 120g/0.1mg Analytical Balance Instruction Manual

Model: 120g/0.1mg Analytical Balance

1. INTRODUCTION

This manual provides comprehensive instructions for the proper setup, operation, and maintenance of your U.S. Solid 120g/0.1mg Analytical Balance. Please read this manual thoroughly before using the device to ensure accurate measurements and safe operation.

Key Features:

- **Precision and Accuracy:** Readable in increments of 0.1 mg with repeatability of 0.2 mg. Linearity of 0.3mg.
- **Laboratory Ready:** Built-in draft shield with four-sided glass and three sliding doors to minimize environmental interference.
- **User Interface:** Backlit LCD display, 6-button control panel for multiple tares, overload protection, piece counting, percentage weighing, and unit conversions (g, mg, ct, oz).
- **Connectivity:** RS-232 port for printer and computer compatibility.
- **Magnetic Force Restoration:** Highly accurate measurement method with easy calibration.
- **Underhook Weighing:** Capability for weighing hard-to-handle substances or for density calculations.

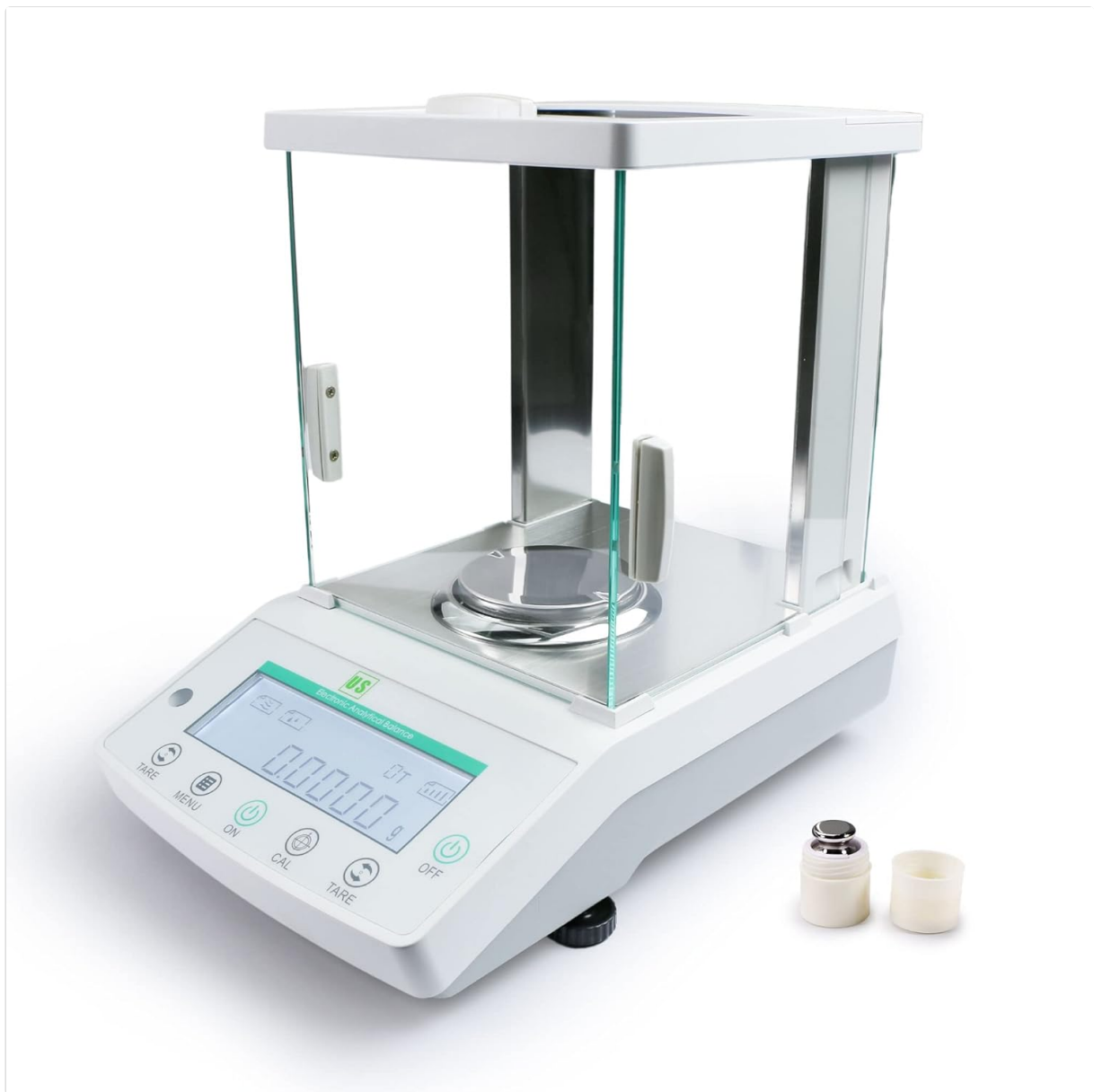


Figure 1: U.S. Solid 120g/0.1mg Analytical Balance with draft shield and accessories.

2. SETUP

2.1 Unboxing and Components

Carefully open the package and remove all components. Verify that all items are present:

- Analytical Balance unit
- Instruction Manual
- Power Cable (AC Adapter)
- Calibration Weight
- Weighing Pan
- Draft Ring

Video 1: Unboxing and initial component overview of the U.S. Solid 0.1 mg Analytical Balance.



Figure 2: Contents of the U.S. Solid Analytical Balance package, including the balance, manual, power adapter, calibration weight, pan, and draft ring.

2.2 Placement and Assembly

1. Place the balance on a stable, vibration-free surface, away from direct sunlight, drafts, and significant temperature changes.
2. Connect the balance to the power supply using the provided AC adapter.
3. Install the weighing pan. Ensure the draft ring does not touch the weighing pan.

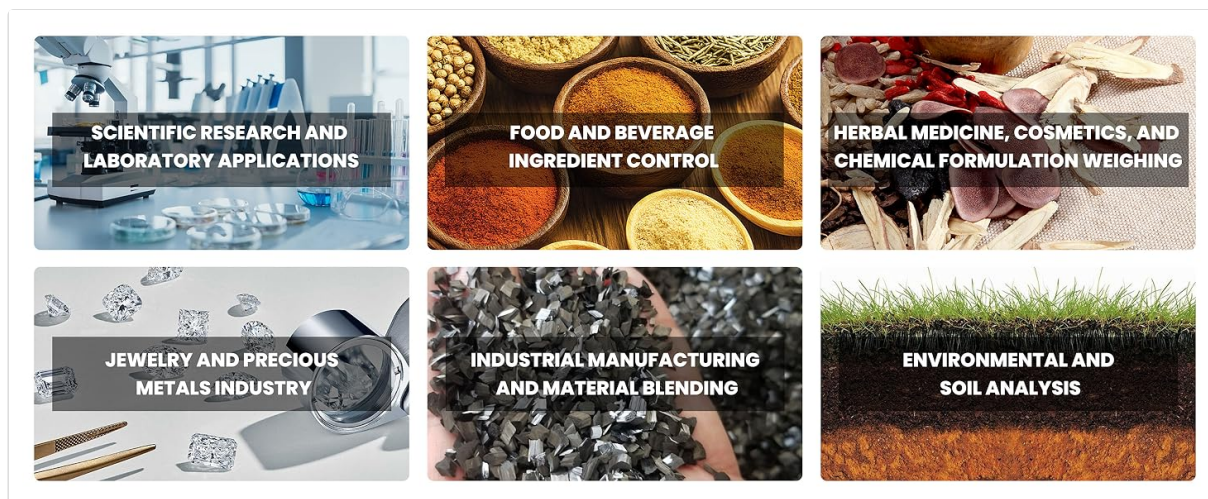


Figure 3: Proper environmental conditions and horizontal adjustment are crucial for accurate balance operation.

2.3 Leveling the Balance

Use the adjustable feet at the base of the balance to level the unit. Turn the feet until the bubble in the level indicator is perfectly centered. Proper leveling is essential for accurate measurements.

2.4 Warm-up Time

After connecting to power, allow the balance to warm up for at least 30 minutes before use. This ensures optimal performance and stability.

2.5 Calibration

Recalibrate the balance after moving it or before critical measurements. To calibrate:

1. Ensure the weighing pan is empty and the draft shield doors are closed.
2. Press and hold the "CAL" button until the display shows "CAL" followed by the required calibration weight.
3. Place the specified calibration weight (e.g., 100g or 200g, depending on your model) onto the center of the weighing pan.
4. The balance will automatically detect the weight and complete the calibration process. Once complete, the display will return to 0.0000g.
5. Remove the calibration weight.

Video 2: Demonstration of the calibration process for the analytical balance.

3. OPERATING INSTRUCTIONS

3.1 Basic Weighing

1. Turn on the balance by pressing the "ON" button.
2. Wait for the display to stabilize at 0.0000g.
3. Place the item to be weighed onto the center of the weighing pan.
4. Close the draft shield doors.
5. Read the stable weight displayed on the LCD.
6. To tare (zero out the weight of a container), place the empty container on the pan and press the "TARE" button. Then add the substance to be weighed.



Figure 4: The backlit LCD display shows the precise weight measurement.

3.2 Unit Conversion

The balance supports multiple weighing units. Press the "UNIT" button to cycle through available units (g, mg, ct, oz).



Figure 5: The balance supports various measuring units including grams, milligrams, carats, and ounces.

3.3 Piece Counting and Percentage Weighing

Refer to the detailed instructions in the full manual for specific procedures on piece counting and percentage weighing functions. These modes allow for efficient counting of multiple small items of uniform weight and calculating the percentage of a sample's weight relative to a reference.



Figure 6: The balance includes features for overload protection, piece counting, and percentage weighing.

3.4 Connecting to a Computer (RS-232)

The balance can be connected to a computer via its RS-232 interface for data transfer. You will need a DB9 serial cable (female to female, 2-3 cross line) and a USB to 9-pin (male) cable if your computer lacks a serial port.

1. Connect the balance to the computer using the appropriate cables.
 2. Download and open a serial port debugging assistant software (e.g., UartAssist) on your computer.
 3. In the software, select the correct PortNum (usually Default) and set the Baud rate to 1200.
 4. Click "Open" to establish the connection.
 5. The computer will synchronize weighing results. The factory default output mode is continuous.
 6. To change the output mode, press and hold the "ON" button on the balance until "SET-P" appears. Then press and hold the "MENU" button to cycle through output options (PRT-0 to PRT-4). Select the desired mode and press "TARE" to confirm.
- PRT-0: Must press button to output data
 - PRT-1: Output every 30 seconds
 - PRT-2: Output every 60 seconds
 - PRT-3: Output every 120 seconds
 - PRT-4: Continuous output

Video 3: Instructions on how to connect the analytical balance to a computer and configure data output settings.

3.5 Connecting to a Printer

The balance can also be connected to a compatible printer via the RS-232 interface to print weighing results.

1. Connect the balance to the printer using a suitable serial cable.
2. On the balance, press and hold the "ON" button until "SET-F" appears.
3. Press the "MENU" button to select the desired print output mode (similar to computer connection settings).
4. Press "TARE" to confirm the setting.

Video 4: Guide on connecting the analytical balance to a printer for direct result output.

4. MAINTENANCE

To ensure the longevity and accuracy of your analytical balance, follow these maintenance guidelines:

- **Cleaning:** Regularly clean the weighing pan and draft shield with a soft, damp cloth. Avoid abrasive cleaners or solvents. Ensure no liquids enter the balance housing.
- **Storage:** When not in use, keep the balance covered to protect it from dust and debris. Store in a stable environment, away from extreme temperatures and humidity.
- **Calibration:** Perform regular calibration checks, especially after moving the balance or if environmental conditions change significantly.
- **Inspection:** Periodically inspect the power cable and connections for any signs of damage.

5. TROUBLESHOOTING

If you encounter issues with your analytical balance, consider the following common problems and solutions:

- **Inaccurate Readings:**
 - Ensure the balance is level.
 - Check for drafts or vibrations in the environment.
 - Allow sufficient warm-up time.
 - Perform calibration.
 - Ensure the weighing pan and draft shield are clean and properly installed.
- **Display Not Turning On:**
 - Verify the power cable is securely connected to both the balance and a working power outlet.
 - Check the power adapter for damage.
- **No Data Output (RS-232):**
 - Confirm correct cable connections between the balance and the computer/printer.
 - Verify serial port settings (PortNum, Baud rate) in the software.
 - Check the output mode setting on the balance (PRT-0 to PRT-4).

For persistent issues or problems not covered here, please contact U.S. Solid customer support.

6. SPECIFICATIONS

Feature	Specification
Brand	U.S. Solid
Model	120g/0.1mg Analytical Balance
Weight Limit	120 Grams
Readability	0.1 mg (0.0001g)
Repeatability	0.2 mg

Feature	Specification
Linearity	0.3 mg
Display Type	Backlit LCD
Interface	RS232
Product Dimensions	13.39 x 8.46 x 13.78 inches
Product Weight	16 Pounds

7. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please refer to the warranty card included with your product or visit the official U.S. Solid website. Keep your purchase receipt as proof of purchase for warranty claims.