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## U.S. Solid 81g/200g

# U.S. Solid Semi Micro Analytical Balance

Model: 81g/200g

Brand: U.S. Solid

## 1. INTRODUCTION

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This user manual provides detailed instructions for the safe and efficient operation of your U.S. Solid Semi Micro Analytical Balance. Designed for high precision, this balance is ideal for laboratory environments requiring accurate measurement of small substance masses and quantities. Please read this manual thoroughly before operating the device to ensure proper usage and longevity.

## 2. SAFETY INFORMATION

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Always observe the following safety precautions to prevent injury and damage to the balance:

- Place the balance on a stable, level, and vibration-free surface away from direct sunlight, drafts, and heat sources.
- Ensure the power supply matches the specifications indicated on the balance.
- Do not overload the balance beyond its maximum capacity.
- Avoid spilling liquids or corrosive substances on the balance. In case of spillage, immediately disconnect power and clean thoroughly.
- Only qualified personnel should perform maintenance or repairs.
- Keep the balance clean and free from dust and debris.

## 3. PRODUCT OVERVIEW

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### 3.1 Components

The U.S. Solid Semi Micro Analytical Balance consists of the main weighing unit with a draft shield and a separate control panel. Key components include:

- **Weighing Chamber:** Enclosed area with a draft shield to minimize air currents affecting measurements.
- **Weighing Pan:** Stainless steel pan (90mm diameter) for placing samples.
- **Control Panel:** Separate unit with a high-definition VA LCD display and touch-sensitive buttons for operation.
- **Level Bubble:** Integrated bubble level for ensuring proper balance setup.

- **Adjustable Feet:** For leveling the balance on uneven surfaces.
- **Connectivity Ports:** RS232 and USB interfaces for data transfer.



Figure 3.1: Overall view of the U.S. Solid Semi Micro Analytical Balance, showing the weighing chamber and the detached control panel.



Figure 3.2: All components included in the package, such as the main unit, control panel, power adapter, cables, and calibration weights.



Figure 3.3: Close-up view of the integrated level bubble, essential for accurate balance setup.



Figure 3.4: Rear view of the balance unit, highlighting the RS232 and USB interfaces for data connectivity.

### 3.2 Key Features

- **Stability:** Full aluminum alloy material ensures a stable structure, providing a reliable base for accurate measurements. The split stretchable design further enhances accuracy by eliminating thermal influence during operation, ensuring measurement stability.
- **Easy Display and Operation:** Equipped with a high-definition VA LCD display and touch-sensitive buttons, users can easily read measurement results and perform various operations. This user-friendly design ensures a seamless and intuitive experience.
- **Six Weighing Modes:** Simple weighing, counting weighing, percentage weighing, animal/dynamic weighing, density determination, and summation. These various options ensure that users can achieve accurate and precise measurements for their specific needs.
- **Interface Compatibility:** The lab scale is equipped with RS232 and USB interfaces, enabling convenient connection to a computer or printer for data transfer and printing. This compatibility ensures a smooth integration with existing systems and facilitates easy data management.

- **High Accuracy:** The Semi Micro Balance features a wide measurement range and high accuracy, meeting the requirements for quick measurement of small substance mass and quantity in laboratories. Users can trust the precision of this instrument for their precise measurement needs.

### 3.3 Specifications

Specification	Value
Product Dimensions	12.2 x 8.27 x 15.35 inches
Item Weight	13.84 Pounds
Material	Aluminum
Display Type	LCD
Weight Limit	0.2 Kilograms (200g)
Readability	0.01 mg / 0.1 mg (for 81g/200g models)

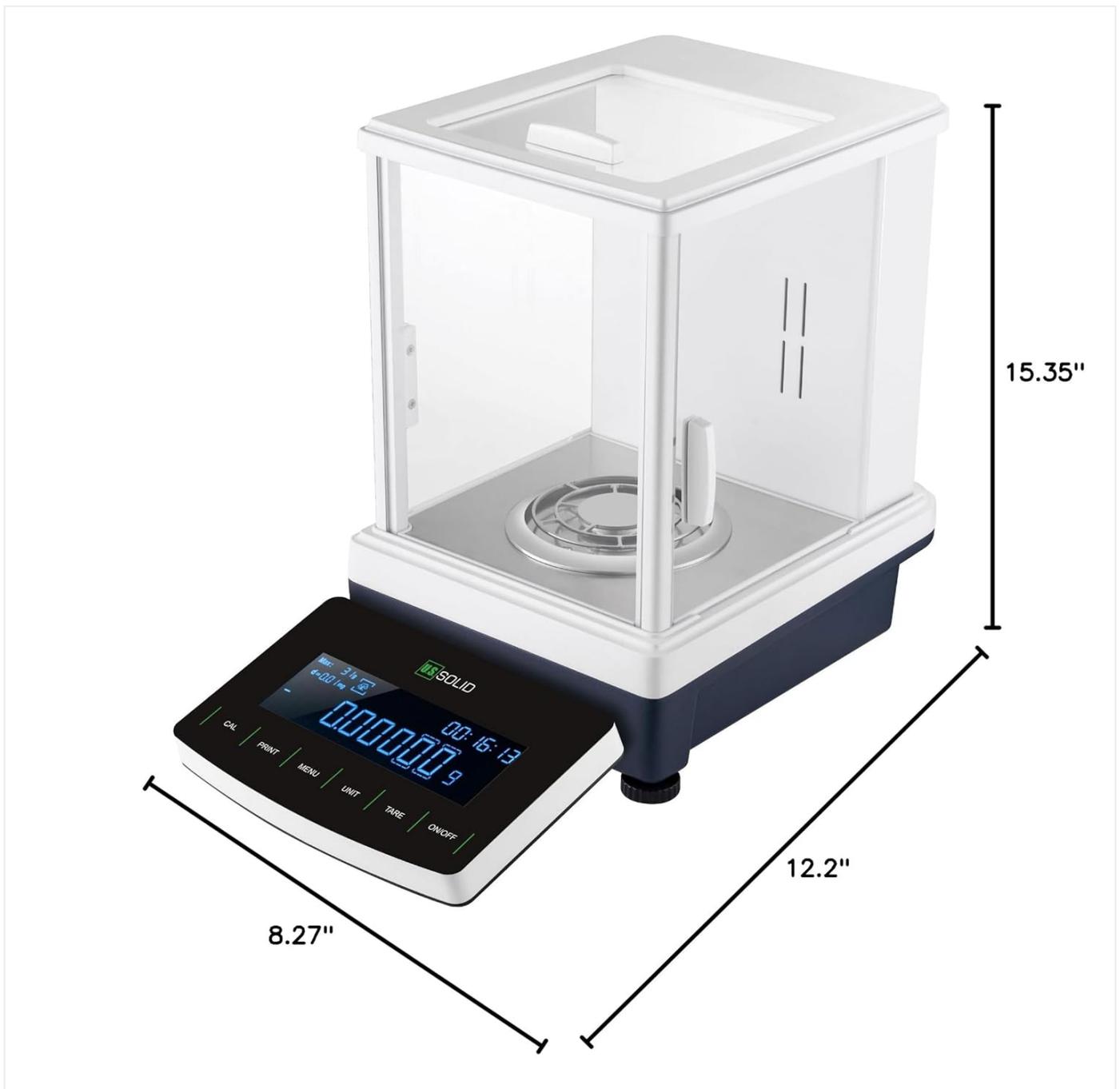


Figure 3.5: Product dimensions for proper placement and space planning.

## 4. SETUP

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### 4.1 Unpacking

Carefully remove all components from the packaging. Retain the original packaging for future transport or storage. Verify that all listed components are present.

### 4.2 Placement

Select a location that is:

- Stable and free from vibrations.
- Away from direct sunlight, heat sources, and air currents (e.g., air conditioning vents, open windows).
- On a level surface. Use the adjustable feet and the integrated level bubble (Figure 3.3) to ensure the balance is perfectly level before operation.

### 4.3 Assembly and Power Connection

Assemble the draft shield around the weighing pan if it's not pre-assembled. Connect the control panel to the main weighing unit using the provided cable. Plug the power adapter into the balance and then into a suitable power outlet.

## 5. OPERATING INSTRUCTIONS

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### 5.1 Power On/Off

Press the **ON/OFF** button on the control panel to power the balance on or off. Allow a brief warm-up period for stable readings.



Figure 5.1: The control panel features a high-definition VA LCD display and touch-sensitive buttons for intuitive operation.

### 5.2 Calibration

Regular calibration is crucial for maintaining accuracy. Refer to the video below for a demonstration of pipette calibration.



Video 5.1: This video demonstrates various functions of the U.S. Solid Semi Micro Analytical Balance, including pipette calibration, dual accuracy/capacity switching, percent weighing, piece counting, density determination, summation, and data transmission via RS232 and USB interfaces. The video highlights the balance's precision and versatility in laboratory settings.

### 5.3 Weighing Modes

The balance offers six distinct weighing modes to suit various applications. Use the **MODE** or **MENU** button to cycle through or select modes.

- **Simple Weighing:** Standard mass measurement.
- **Counting Weighing:** Determines the number of pieces based on a sample weight.
- **Percentage Weighing:** Measures the weight of a sample as a percentage of a reference weight.
- **Animal/Dynamic Weighing:** Stabilizes readings for unstable samples (e.g., live animals).
- **Density Determination:** Calculates the density of a substance.
- **Summation:** Accumulates multiple weight measurements.



Figure 5.2: Visual representation of the six available weighing modes.

### 5.4 Unit Conversion

The balance supports multiple measuring units. Press the **UNIT** button to switch between available units such as grams (g), ounces (oz), carats (ct), milligrams (mg), pounds (lb), grains (gn), ounces troy (ozt), and pennyweights (dwt).



Figure 5.3: Supported measuring units for versatile applications.

## 5.5 Data Transmission

The balance is equipped with RS232 and USB interfaces for seamless data transfer to a computer or printer. Connect the appropriate cable to the balance's rear ports (Figure 3.4) and your external device. Refer to your computer or printer's manual for specific connection and software requirements.

## 6. MAINTENANCE

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### 6.1 Cleaning

To ensure accurate and reliable operation, keep the balance clean. Use a soft, damp cloth with a mild detergent to wipe down the exterior. Do not use abrasive cleaners or solvents. The stainless steel weighing pan can be removed for thorough cleaning.

### 6.2 Storage

When not in use for extended periods, store the balance in a dry, dust-free environment, preferably in its original packaging. Ensure the draft shield is closed to protect the weighing mechanism.

## 7. TROUBLESHOOTING

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If you encounter issues with your balance, please refer to the following common troubleshooting steps:

- **Unstable Readings:** Check if the balance is level. Ensure it is placed on a stable surface away from drafts, vibrations, or electromagnetic interference.
- **No Display/Power:** Verify that the power adapter is securely connected to both the balance and a working power outlet.
- **Inaccurate Readings:** Perform a calibration. Ensure the weighing pan is clean and correctly seated. Check for any obstructions in the weighing chamber.
- **Connectivity Issues:** Ensure cables are properly connected. Check device drivers on your computer if applicable.

For persistent issues not resolved by these steps, please contact U.S. Solid customer support.

## 8. WARRANTY AND SUPPORT

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U.S. Solid products are designed for reliability and performance. For information regarding warranty coverage, technical support, or service, please refer to the warranty card included with your product or visit the official U.S. Solid website. Protection plans may also be available for extended coverage.

