U.S. Solid USS-DBS64-500

U.S. Solid 500g x 0.001g Lab Analytical Balance Instruction Manual

Model: USS-DBS64-500

1. Introduction

This manual provides essential instructions for the proper setup, operation, maintenance, and troubleshooting of your U.S. Solid 500g x 0.001g Lab Analytical Balance. Designed for high-precision weighing, this balance offers reliable results with 0.001g (1mg) accuracy and a maximum capacity of 500g. It features multiple unit conversions, parts counting, percentage weighing, and manual calibration capabilities.

Please read this manual thoroughly before using the balance to ensure accurate measurements and safe operation.

2. Safety Precautions

- Always operate the balance on a stable, level, and vibration-free surface.
- Avoid placing the balance near strong electromagnetic fields, direct sunlight, or rapid temperature changes.
- Do not overload the balance beyond its maximum capacity of 500g.
- Keep the balance and its components clean and free from dust and corrosive substances.
- Use only the provided power adapter or a compatible 9V battery.
- Do not attempt to disassemble or repair the balance yourself. Contact qualified service personnel if needed.

3. What's in the Box

Carefully unpack all components and check against the following list:

- Scale Body x1
- Scale Pan x1
- Power Cord x1
- Calibration Weight x1
- Instruction Manual x1

4. Product Overview

Familiarize yourself with the main components of your analytical balance.

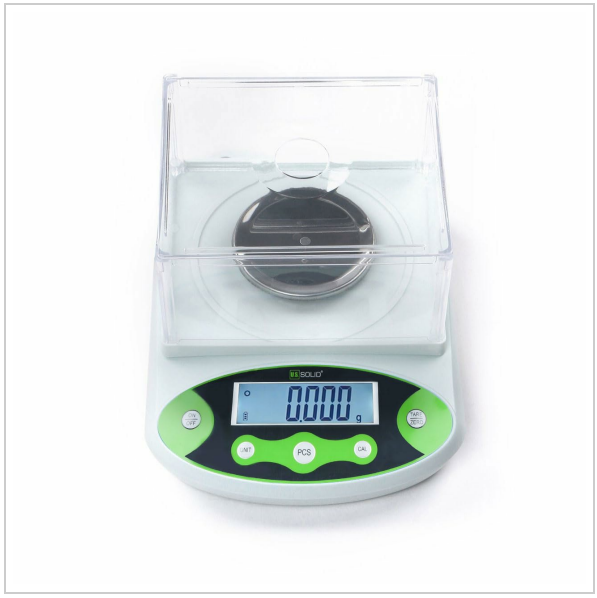

Figure 4.1: Front view of the balance. Shows the main display, control buttons, weighing pan, and windshield.

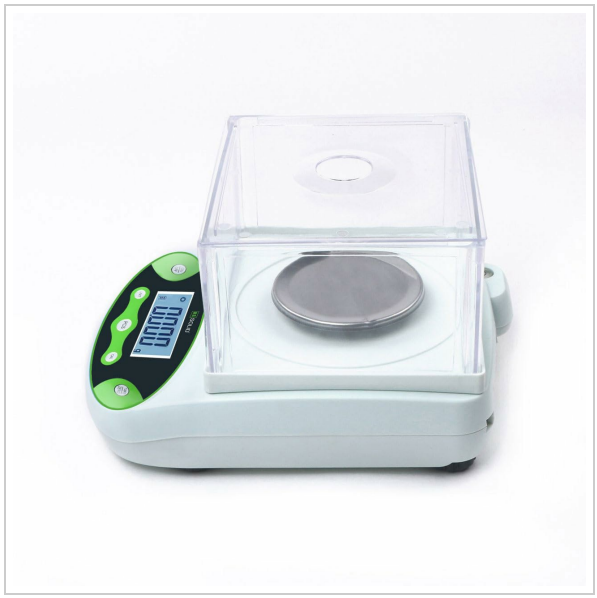

Figure 4.2: Side view of the balance, illustrating its compact form factor.

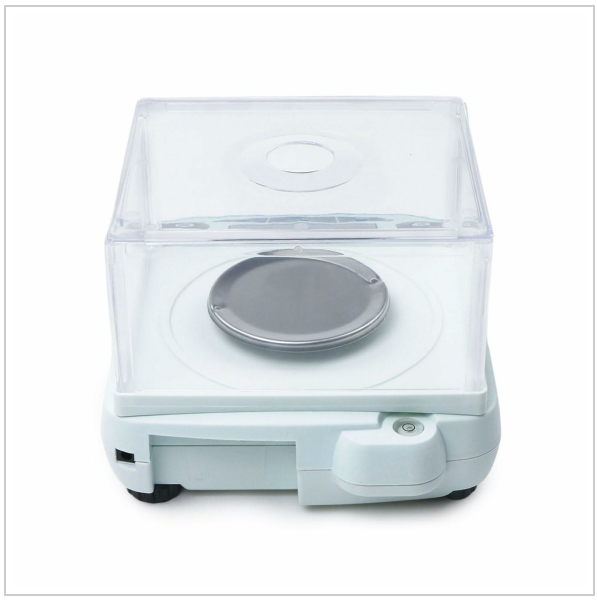

Figure 4.3: Rear view of the balance, including the power input port.

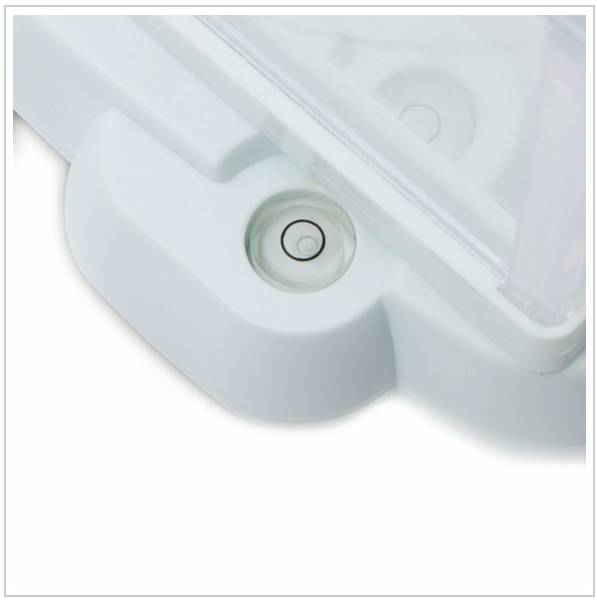

Figure 4.4: Detail of the integrated bubble level for precise horizontal adjustment.

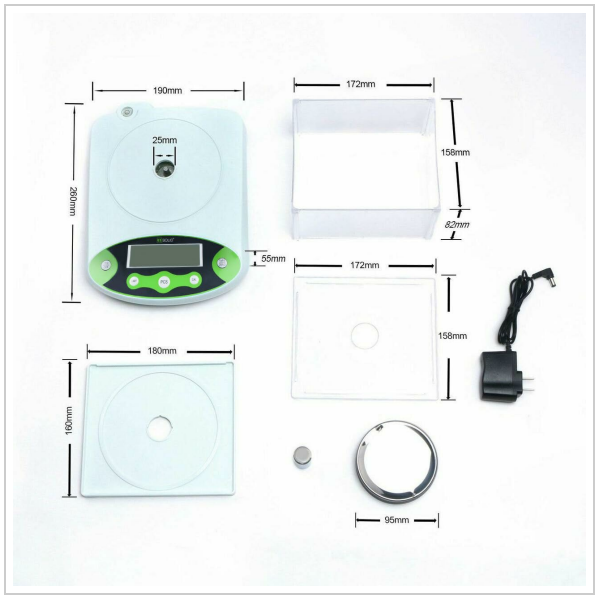

Figure 4.5: Exploded view showing all components and their dimensions.

5. Setup

5.1 Unpacking and Initial Inspection

Carefully remove the balance from its packaging. Inspect all components for any signs of damage. If any damage is found, do not use the balance and contact customer support immediately.

5.2 Placement

Place the balance on a firm, level, and stable surface. Ensure the location is free from vibrations, drafts, direct sunlight, and rapid temperature fluctuations, which can affect measurement accuracy.

5.3 Leveling the Balance

The balance must be perfectly level for accurate readings. Use the adjustable feet at the bottom of the balance to center the bubble in the integrated level indicator (refer to Figure 4.4).

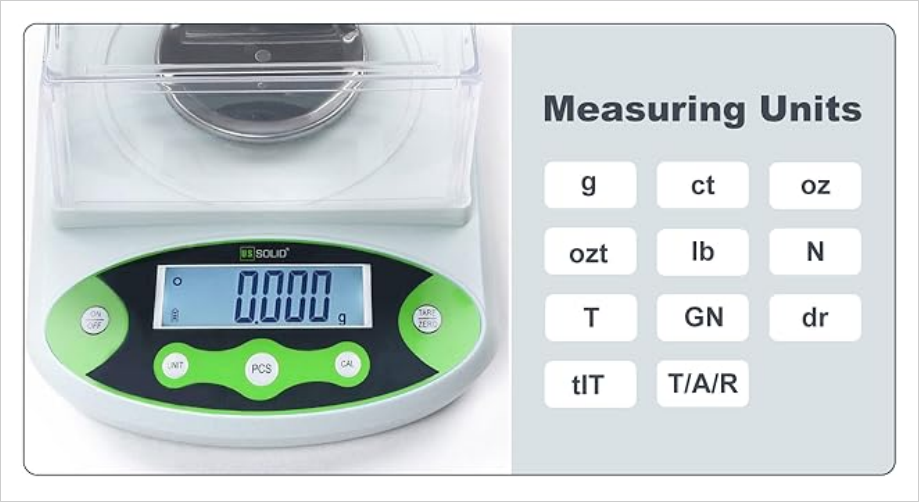

Figure 5.1: Horizontal Adjustment. Adjust leveling feet until the bubble is centered. Proper leveling is essential for accuracy.

5.4 Power Connection

Connect the provided power cord to the balance and a suitable power outlet (100-240V). Alternatively, the balance can be powered by a 9V battery for portable use.

5.5 Warm-up Time

After connecting power, allow the balance to warm up for at least 30 minutes before taking measurements. This stabilizes the internal components and ensures optimal accuracy.

6. Operating Instructions

6.1 Power On/Off

- Press the **ON/OFF** button to turn the balance on.
- Press and hold the **ON/OFF** button to turn the balance off.

6.2 Basic Weighing

To perform a basic weight measurement:

1. Ensure the balance is level and has completed its warm-up.
2. Press the **TARE/ZERO** button to set the display to 0.000g.
3. Carefully place the item to be weighed on the center of the weighing pan.

4. Wait for the reading to stabilize. The stable weight will be displayed.

Your browser does not support the video tag.

Video 6.1: Demonstration of basic weighing, unit conversion, and percentage function on the U.S. Solid Lab Analytical Balance.

6.3 Tare Function

The tare function allows you to subtract the weight of a container, so only the net weight of the contents is measured.

1. Place an empty container on the weighing pan.
2. Press the **TARE/ZERO** button. The display will reset to 0.000g.
3. Add the material to be weighed into the container. The display will show the net weight of the material.

6.4 Unit Conversion

The balance supports multiple weighing units. To change the unit:

- Press the **UNIT** button repeatedly to cycle through available units: g (grams), ct (carats), oz (ounces), ozt (troy ounces), lb (pounds), gn (grains), t (metric tons), dwt (pennyweights), kg (kilograms), dr (drams), tlT (Taiwan Tael), N (Newtons), and % (percentage).
- The selected unit will be displayed on the screen.

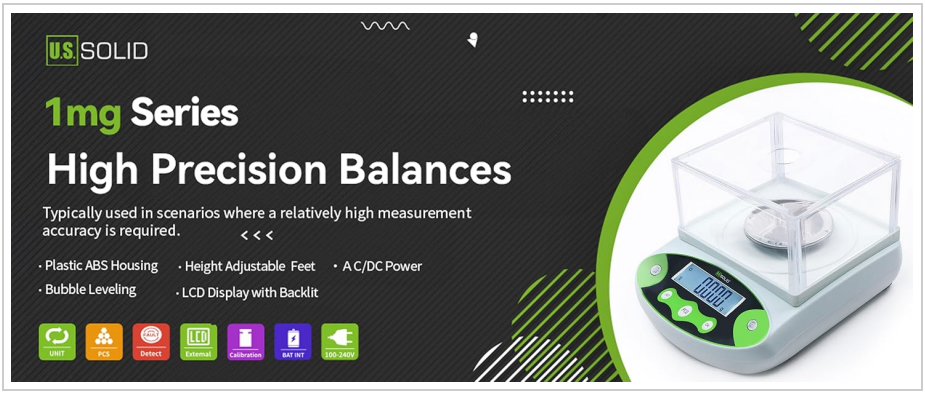

Figure 6.1: Available Measuring Units and Piece Counting options.

6.5 Parts Counting (PCS)

This function allows you to count a large number of identical items by weight.

1. Place a known quantity of items (e.g., 10, 20, 50, 100, 150, 200, 250, 500) on the pan.
2. Press the **PCS** button.
3. Select the corresponding sample quantity using the **UNIT** button.
4. Press **PCS** again to confirm. The balance is now in counting mode.
5. Add more items, and the display will show the total count.

6.6 Percentage Weighing

The percentage function is useful for formulation and quality control, allowing you to measure a sample's weight as a percentage of a reference weight.

1. Place the reference sample on the weighing pan.
2. Press the **UNIT** button until '%' is displayed. The reference weight will be set as 100%.
3. Remove the reference sample.
4. Place subsequent samples on the pan. Their weight will be displayed as a percentage of the reference weight.

6.7 Calibration

Regular calibration ensures the accuracy of your balance. It is recommended to calibrate the balance upon initial setup, after relocation, or if you suspect inaccurate readings.

1. Ensure the weighing pan is empty and the balance is stable.
2. Press and hold the **CAL** button until 'CAL' appears on the display.
3. The display will then show the required calibration weight (e.g., 500.000g).
4. Carefully place the specified calibration weight (provided) onto the center of the weighing pan.
5. Wait for the balance to automatically calibrate. Once complete, the display will show 'PASS' or return to normal weighing mode.
6. Remove the calibration weight.

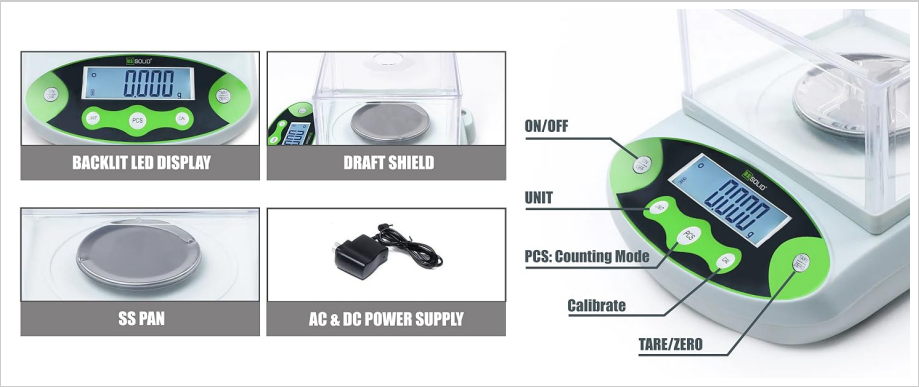

Figure 6.2: Control Panel Buttons. Key functions include ON/OFF, UNIT, PCS (Parts Counting), CAL (Calibration), and TARE/ZERO.

7. Maintenance

7.1 Cleaning

To maintain accuracy and prolong the life of your balance:

- Always disconnect the power before cleaning.
- Wipe the exterior of the balance with a soft, damp cloth. Use a mild detergent if necessary.
- Do not use abrasive cleaners, solvents, or immerse the balance in water.
- Clean the stainless steel weighing pan and the windshield regularly to prevent accumulation of dust or residues.

7.2 Storage

When not in use, store the balance in a clean, dry environment, away from extreme temperatures and humidity. Keep the windshield in place to protect the weighing mechanism.

8. Troubleshooting

This section addresses common issues you might encounter with your analytical balance.

Problem	Possible Cause	Solution
Inaccurate or fluctuating readings	• Balance not level • Vibrations or drafts • Temperature changes • Needs calibration • Overload	• Adjust leveling feet (Figure 5.1) • Relocate balance to a stable environment • Allow balance to acclimate to room temperature • Perform calibration (Section 6.7) • Ensure weight is within 500g capacity
Display shows 'Err' or other error codes	Internal fault or overload condition.	• Remove all items from the pan. • Turn off the balance, wait 30 seconds, then turn it back on. • If the error persists, contact customer support.
Balance does not power on	• No power supply • Faulty power adapter/battery	• Check power cord connection and outlet. • Replace 9V battery if using battery power. • Test power adapter with another device if possible.
Cannot detect small weight changes (e.g., 10-15mg)	• Environmental interference (drafts, vibrations) • Balance not properly calibrated • Warm-up time insufficient	• Ensure stable environment, use windshield. • Perform calibration (Section 6.7). • Allow sufficient warm-up time (Section 5.5).

9. Specifications

Technical specifications for the U.S. Solid 500g x 0.001g Lab Analytical Balance.

Feature	Detail
Brand	U.S. Solid
Model Number	USS-DBS64-500
Weight Limit	500 Grams
Readout Accuracy	0.001 Grams (1mg)
Display Type	LCD (Backlit)
Weigh Scale Type	Balance Scale
Measurement Units	g, ct, oz, ozt, lb, gn, t, dwt, kg, dr, tlT, N, %
Power Supply	AC (100-240V) / DC (9V Battery)
Material Type	Acrylonitrile Butadiene Styrene (ABS), Stainless Steel
Item Weight	3.64 Pounds
Included Components	Scale Body, Scale Pan, Power Cord, Calibration Weight, Manual

10. Warranty and Support

U.S. Solid products are manufactured to high-quality standards. For information regarding product warranty, please refer to the warranty card included with your purchase or visit the official U.S. Solid website.

For technical support, troubleshooting assistance, or to inquire about replacement parts, please contact U.S. Solid customer service. Contact details can typically be found on the product packaging or the official brand website.