Instruction Manual

U.S. Solid Smart GSM Balance

Manual No. 8282

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Introduction

Thank you for choosing the U.S. Solid USS-GSM01 Smart GSM Balance.

The U.S. Solid USS-GSM01 Smart GSM Balance is precise and reliable. It provides a high level of operating convenience and response sensitivity to facilitate determination of the grammage of your samples. U.S. Solid's dedicated customer service staff are available to answer any inquiries regarding applications and accessories.

Please read the manual completely and follow the usage instructions before installation and operation as this will help you to make full use of the functions and performance of the USS-GSM01 Smart GSM Balance.

1.1 Safety Precautions

The U.S. Solid USS-GSM01 Smart GSM Balance qualifies as state-of-the-art technology and complies with all recognized safety rules. Improper use or handling, however, can result in damage and/or injury. Please follow the precautions below to ensure safe and trouble-free operation of your balance.

- Avoid getting the balance wet as it is not water resistant. Any leakage of liquid into the balance may damage the balance or cause an electric shock to the user.

- Use a power source (voltage, frequency, outlet type) adapted to the balance. If excessive voltage is used, the balance may overheat and be damaged or cause a fire.

- Operate the balance on a stable, rigid and flat table.
- Handle the balance carefully. It is a precision device, subjecting it to impact may result in a malfunction.
- If the device is not be used for a long period of time, the power should be turned off and disconnect the power cable.
- Do not disassemble, remodel or repair this product or accessories.

1.2 Precautions in Use

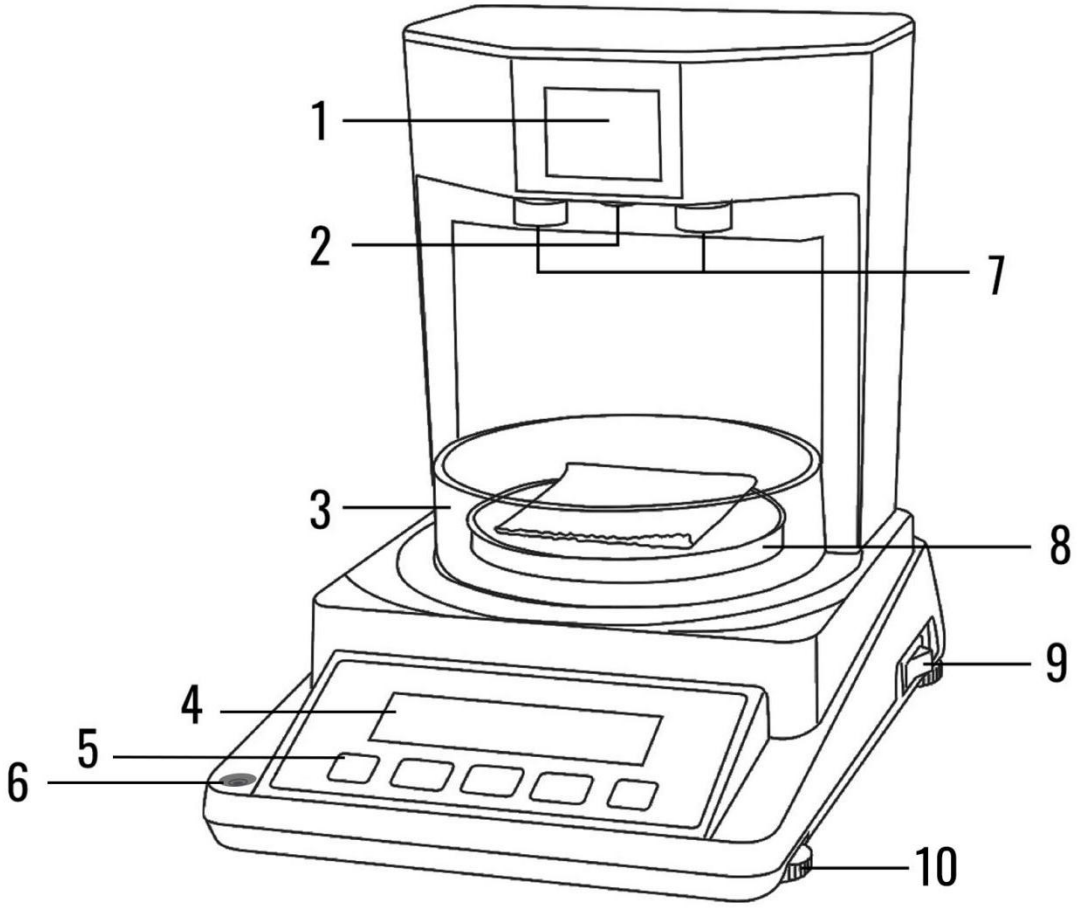
Ambient air fluctuations will cause weight changes and affect accuracy. It should be placed in a place without obvious air fluctuations, and the windshield should be placed well when in use.

This smart GSM balance uses a high-precision sensor, and changes in ambient light will have an impact on the device. If the ambient light changes, the device needs to be recalibrated.

If the display screen 2 keeps switching between green and red during measurement, it means that the environment has changed, and it is necessary to change the position of the instrument and re-measure.

Design and Function

2.1 Components



1: Imaging Screen

2: Camera

3: Draft Shield

4: Display panel

5: Keyboard

6: Level Bubble

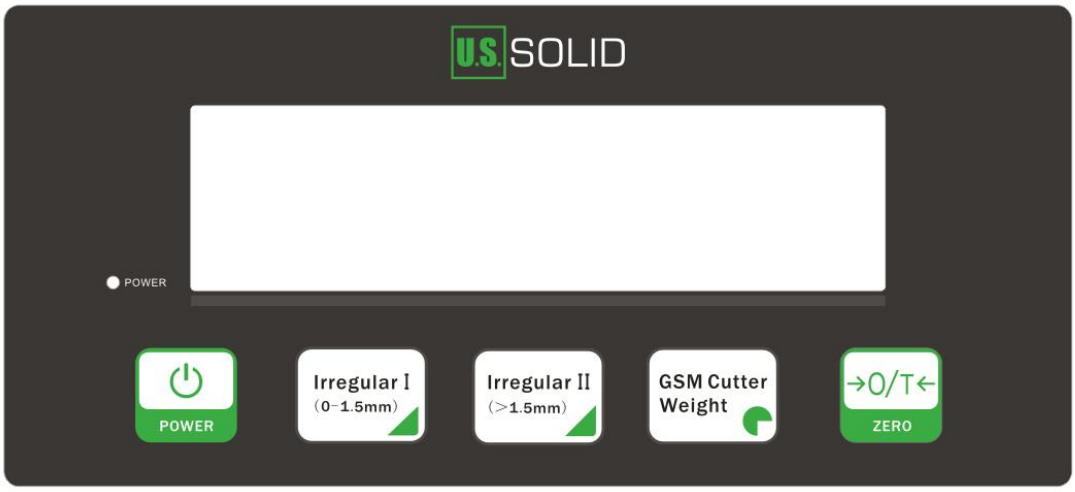
7: Lights

8: Sample Pan

9: Switch

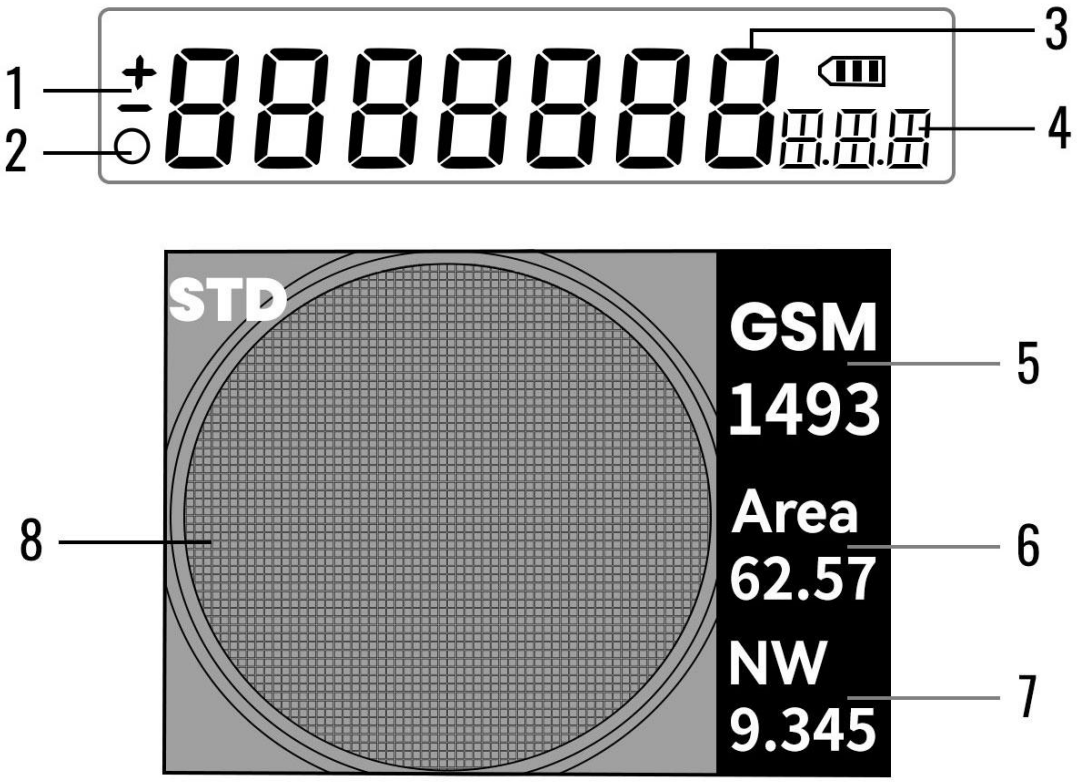
10: Leveling Feet

2.2 Keyboard



Key	Description
	Turn the power on or off
	GSM measurement for irregular sample with a thickness less than of equal to 1.5 millimeter
	GSM measurement for irregular sample with a thickness greater than 1.5 millimeter
	GSM measurement for regular sample of 100 square centimeter
	Tare/Zero the scale
	Perform the calibration procedure

2.3 Display Panel



No.	Description
1	Indicates positive/negative values
2	Stabilization indicator
3	Grammage values
4	Grammage units
5	Grammage values of sample
6	Area of sample
7	Net Weight of sample
8	Image of sample

Installation

3.1 Unpacking and Delivery Inspection

The USS-GSM01 Smart GSM Balance is a precision instrument. Unpack the balance carefully and check the delivered items for completeness.

The following accessories are part of the standard equipment for your new USS-GSM01 Smart GSM Balance:

- 1 GSM Balance Main Body
- 1 Weighing Pan
- 1 Glass Pad
- 1 Draft Shield
- 1 Power Adapter
- 1 Calibration Weight
- 1 Instruction Manual
- 1 Quality Certification

Check the instrument for damage in transit. Immediately inform the U.S. Solid customer service if you have any complaints or parts are missing.

3.2 Selecting the Location

Measurement performance of your balance depends largely on the surrounding environments. Please follow these guidelines to make sure the proper environmental conditions are met:

- Select a firm, horizontal location that is free from vibrations.
- Make sure that the ambient temperature is between 0°C and 40°C.
- Avoid direct sunlight and ensure that there are not any excessive temperature fluctuations.
- Ensure the balance is places a sufficient distance from heat-sensitive materials in the vicinity of the instrument.
- Avoid the effects of air currents from air conditioners, ventilators, open doors, or windows.
- Keep away from objects or equipment that are magnetic or capable of generating magnetic fields.
- Surroundings should be as free from dust as possible.

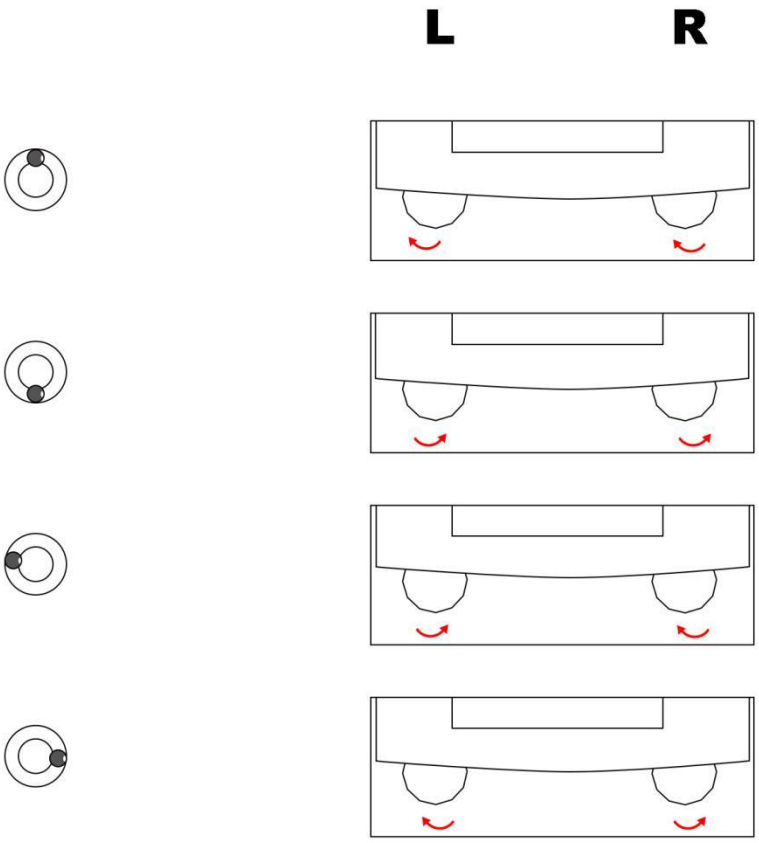
3.3 Installing Components

1. Place the sample pan onto the protruding triangle on the platform and slightly press the center of the sample pan.
2. Place the glass pad on the sample pan to make them overlap.
3. Put the draft shield on the outer ring of the sample pan.

3.4 Leveling the Balance

Accurate horizontal positioning necessary for repeatable measurements and exact results. To compensate for small irregularities or tilts at this location, the instrument needs to be leveled.

Adjust the leveling feet of the analytical balance until the air bubble in the indicator is centered. The level indicator is located under the cover towards the rear of the analytical balance.



Position of air bubble	Adjustment method
up	Turn both feet clockwise
down	Turn both feet counterclockwise
Left	Turn left foot counterclockwise, right foot clockwise
Right	Turn left foot clockwise, right foot counterclockwise

Calibration

Calibration is a necessary step to assure the GSM balance will accurately measure the sample.

Perform calibration operations in the following situations:

- Changes in the location of use (including moving in the same room).
- Changes in ambient conditions.
- Prior to each use.

The balance must be fully warmed up for half an hour to stabilize the weighing before calibration.

Steps:

1. Press the switch on the right side of the GSM balance body after connecting the scale to the power;
2. Press and hold “O/T” and the --CAL-- will be displayed;
3. Place the 100 g calibration weight when “100.00” displays, then “-------” will be displayed;
4. When “100.00” again displays, remove the calibration weight;
5. Then “-------” will be displayed again;
6. Then “0” displays, the calibration is completed.

Measuring

6.1 Smart Mode

1. Press “TARE” to zero the scale in the no-load state.

2. For samples with a thickness between 0 to 1.5 mm, press “Irregular I” to perform measurement; for samples with a thickness greater than 1.5 mm, press “Irregular II”;

3. Place the irregular (or regular) sample in the circular area on the sample pan;

4. The camera will illuminate the sample pan to smartly identify the sample area and the imaging screen will be red;

5. When the imaging screen turns green, read the measurement result on the right side of the imaging screen.

* Note: Smart mode is recommended

6.2 Traditional Mode

1. Press “TARE” to zero the scale in the no-load state.

2. Cut the sample into 100 cm^2;

3. Place the sample in the circular area on the sample pan;

4. The camera will illuminate the sample area and the imaging screen will be red;

5. Read the measurement result when the imaging screen turns green.

Maintenance

7.1 Precautions

The U.S. Solid USS-GSM01 Smart GSM Balance is a precision mechatronics intelligent measuring instrument, which must be carefully maintained and treated.

1. Do not use sharp objects (such as pens) to click the button, use only your fingers.
2. To avoid damage to the weighing system, do not let the object fall from the height onto the weighing pan.
3. Do not expose the balance to high humidity or dusty conditions for an extended period of time.
4. When the balance is not to be used for a long time, cover it with to prevent dust from entering.
5. When weighing powder and fine particles should be done with a suitable container to prevent dust and particles from falling into the load cell below the weighing pan.
6. Wear a glove when calibrating with the calibration weight. Do not touch the calibration weight directly with your hand.
7. Keep the balance clean and dry.

7.2 Cleaning

- Turn off the power switch and remove power cord during maintenance.
- Make sure that no dust or liquid enters the balance housing.
- Do not use any aggressive cleaning agents (solvents, abrasive cleaning agents, etc.) or organic solvents to clean the balance.

Clean the balance using a piece of lint-free cloth which has been wet with a mild detergent (soap) only.

7.3 Disposal

Disposal of equipment and packaging must be carried out by the operator in accordance with relevant laws of the country or region in which the equipment is to be used.

Frequently Asked Questions

Q: Does the shape of the sample have to be regular square or round?

A: Not necessary. Regardless of the shape, the smart GSM balance can recognize its outer contour and accurately calculate the area. The raw edges and thread ends need to be trimmed clean, and placed flat within the sample area.

Q: Why are there differences in the results measured by the automatic mode and the traditional mode?

A: The traditional mode requires the operator to take a sample of 100 cm^2, and there will be an error of 3% to 5% when cutting. The smart mode uses the camera to automatically identify the area, and the error is less than ±1%.

Q: Is the measurement result related to the size of the sample cloth?

A: Yes. Generally speaking, the larger the fabric area (within the sample range), the higher the measurement accuracy. When the sample area is less than 10cm^2, its actual weight is generally only 0.03 to 0.05g, so the error will increase accordingly.

Troubleshooting

Problem: Display remains off after switching on.

Possible Causes:

- Power cord is not connected
- Power line fuse blown
- Power transformer damaged
- Instrument faulty

Problem: Display is constantly changing or unstable.

Possible Causes:

- Test bench vibration
- Electromagnetic field interference
- Power supply instability

Problem: Displayed value and actual weight are not consistent.

Possible Causes:

- Not calibrated before weighing
- Not returned to zero before weighing
- Balance not leveled well

Technical Data

Model	USS-GSM01
Capacity	200 g
Readability	0.01g
Repeatability	±0.002 g
Linearity Deviation	±0.003 g
Camera Accuracy	0.06 mm/pixel
Stabilization Time	Within 3 seconds
Calibration Weight	100 g
Pan Size	Φ110 mm (4.33 inches)
Power	110V 60Hz AC
Dimensions	14.2×10.5×13.8 inches
Net Weight	3.53 lbs
Shipping Weight	7.15 lbs

Contact

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