PRECIZIO

Operation Instruction

PR Series Electronic Balance

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Factory Testing

Each balance undergoes rigorous quality control (QC) testing in the laboratory before shipment. The following QC tests are conducted to ensure high precision and reliability:

MARGIN OF ERROR TESTING

- **Purpose:** To confirm that the margin of error is within acceptable limits, specifically less than 0.03g for a 0.01g accuracy balance.

LINEARITY TESTING

- **Procedure:** Conducted using four different weights, each measured four times. For instance, a 1000g maximum-capacity balance undergoes linearity testing with weights of 200g, 500g, 800g, and 1000g.
- **Larger Capacity Scales:** Scales with greater capacities are tested with additional weights and more repetitions, until readings are consistent and accurate.

REPEATABILITY TESTING

- **Method:** A weight corresponding to the maximum capacity of the balance is weighed 10 times.
- **Criteria:** The margin of error for each weighing must be within the specified limit, e.g., less than 0.03g for a 0.01g accuracy balance. For example, a 2000g balance must show each reading within 1999.97g to 2000.03g to pass.

FOUR POINTS TESTING

- **Approach:** A weight is placed on each corner of the weighing pan consecutively (not simultaneously), with a reading taken each time.
- **Standard:** Each reading must fall within the accepted margin of error to pass this test.

Cleaning

- **Preparation:** Always power off and unplug the balance before cleaning or storing.
- **Wiping Down:** Use a damp cloth for cleaning. For tougher stains, a mild detergent on a damp cloth can be used. Ensure the balance is dried after cleaning.
- **Avoid Certain Cleaners:** Do not use solvents or cleaners that could damage or corrode the balance.
- **Water Exposure:** Never immerse the balance in water or other liquids, and avoid cleaning with a direct stream of water.

Troubleshooting

The balance does not power up / display does not illuminate.	Damage or defects in the power cord	Replace the power cord.
	One or both ends of the power cord not properly connected	Ensure both ends of the power cord are securely connected.
The weight display does not settle / decimal point flashes continuously	External sources of vibration	Remove vibrating equipment or improve the working condition to dampen vibrations.
	Something possibly touching and/or under the weighing pan	Remove the weighing pan and ensure that nothing is touching it and there is nothing under the pan.
	Wind currents	Close any open doors and windows, check for vents that may be impacting the balance.
	Large swings in the temperature or humidity levels around the balance	Adjust environmental controls to stabilize the temperature and humidity.
	Unstable power supply voltage	Use a voltage stabilizer on the power supply.
	Equipment in the vicinity producing high levels of electromagnetic interference or other forms of radiation	Locate the balance away from such equipment or use shielding devices.
OVER is displayed	Balance is overloaded	Remove objects from the weighing pan.
	No signal from the sensor	Ensure the weighing pan is in contact with the limit screw or support block. If this fails, contact customer support.
The scale measurement error is large.	Balance is out of calibration	Place the standard weight on the weighing pan to compare the values. Do Linear calibration the scale. (See pp. 5-6 for details.)
There is no activity on the display during weighing	Sensor is locked/frozen up	Tap the sensor and check to see if it responds. If not, contact customer support.
	Microchip damage	Contact customer support.

If these troubleshooting measures do not solve the problem, contact customer support. The balance should be serviced by authorized technicians only.

Important Note

PRODUCT OVERVIEW

Thank you for choosing the Precision Balance. For safe and reliable operation, we strongly recommend reading the user manual thoroughly before use. Please adhere to all operating and safety guidelines detailed within.

Safety Information

1. **Power Supply:** Use only a 100-240V power supply for operation.
2. **Power Disconnect:** Always disconnect the balance from the power supply before installing or moving it.
3. **Operating Environment:** Avoid operating the balance in areas where flammable gases or vapours are present.
4. **Personal Protective Equipment:** Ensure appropriate personal protective equipment (PPE) is worn when using the balance.
5. **Avoid Liquid Exposure:** Do not operate the balance in the presence of standing liquid.
6. **Material Handling:** Avoid placing incompatible materials on the weighing pan to prevent contamination or damage.

Operating Guidelines

1. **Handling Weighing Pan:** Avoid dropping objects onto the weighing pan to prevent damage.
2. **Warm-Up Procedure:** For optimal accuracy, allow the balance to warm up for over 30 minutes if time permits. If immediate use is necessary, skip the warm-up but ensure to calibrate the balance beforehand.
3. **Capacity Limits:** Do not exceed the balance's maximum capacity. Should "OL" appear on the display, indicating an overload, promptly remove objects until the weight is within the balance's capacity.

Installation and Use Location

1. **Temperature Range:** Ensure the balance operates in an environment with temperatures between 40°F and 105°F.
2. **Surface Requirements:** Install the balance on a flat, stable surface to ensure accuracy.
3. **Avoid Air Currents and Vibrations:** Do not place the balance in areas with strong air currents or vibrations, as these can affect measurement accuracy.
4. **Sunlight Exposure:** Avoid using or installing the balance in direct sunlight to prevent temperature-related inaccuracies.
5. **Temperature and Humidity Stability:** Choose a location without wide fluctuations in temperature or humidity to maintain balance reliability.
6. **Button Care: Use fingers to press the balance's buttons.** Avoid using sharp objects like pens or pencils which could damage the buttons.
7. **Electromagnetic Interference:** Keep the balance away from equipment that generates electromagnetic interference (EMI) or radiation to avoid measurement disruptions.

Product Specifications

Model	PR Series
Calibration Method	External
Power Supply	100-240V AC
Display Type	LCD
Units of Measurement	Gram (g), Carat (ct), Ounce (oz), Pound (lb)
Stabilization Time	Approximately 5 seconds
Key Functions	1. **Weighing** 2. **Tare Function** 3. **Counting**
Sensor Type	Strain Gauge
Construction Materials	4. **Body: ABS Plastic** 5. **Weighing Pan: Stainless Steel**

RS232 Printout Setting

Note: Applicable Only for Scales with RS232 Feature

1) RS232 PRINTOUT PARAMETER SETTING STEPS:

1. **Initialization:** Power on the scale. Before it zeroes out, quickly press the TAR/CAL button twice and the PCS button once.
2. **Accessing Output Mode:** The display will show "01-diu." Press the Unit button until "09-odE" is displayed.
3. **Entering Output Mode:** Press **TAR/CAL** to enter the output mode setting.
4. **Selecting Output Mode:**
   - **1: For connecting with a PC via command sending. The command is "R(r)."**
   - **Button print**

Note: The scale does not have a print button, so this mode is not functional.

   - **2: Send data after value stabilization (one-time transmission when weight stabilizes).**
   - **3: Continuous data transmission.**

Note: The "R(r)" command can be used in modes 0, 1, and 2.

5. **Confirming Selection:** Select your preferred mode and press **TAR/CAL** to confirm. Then, turn off and on the scale to finalize the setting.

2) BAUD RATE ADJUSTMENT SETTING:

1. **Initialization:** Power on the scale. Before it zeroes out, quickly press the TAR/CAL button twice and the PCS button once.
2. **Accessing Baud Rate Setting:** The display will show "01-diu." Press the Unit button until "08-" is displayed.
3. **Entering Baud Rate Setting:** Press the **TAR/CAL** button to enter the baud rate setting.
4. **Selecting Baud Rate:** Press the **Unit** button to choose the required baud rate (2400, 4800, 9600, or 19200).
5. **Confirming Baud Rate:** Select the desired baud rate and press **TAR/CAL** to confirm. Then, turn off and on the scale to finalize the setting.

Default Baud Rate: The scale's default baud rate is set to 9600.

Tare Function

1. **Container Placement:** Place an empty container on the pan to display its weight.
2. **Initiate Tare Function:** Press **TARE/CAL** until “0” is displayed. This sets the balance to disregard the weight of the container.
3. **Net Weight Measurement:** Add objects into the container. The balance will now display the net weight of these objects.
4. **Negative Display:** Removing the container will show a negative number, indicating the weight of the empty container.
5. **Reset to Zero:** Press **TARE/CAL** again to reset the weight display back to “0.”
6. **Consistent Accuracy:** Always press **TARE/CAL** before new weighing to ensure accurate readings from zero.

Unit Conversion

To switch between different units of measurement (e.g., grams [g], carats [ct], ounces [oz], pounds [lb]), simply press the UNIT button.

Counting Function

This function helps in counting parts by extrapolating from a sample. Ensure that the parts are standardized, with minimal weight variation between individual units.

Note: The counting function may be inaccurate for samples that are too small, too few in number, or too light.

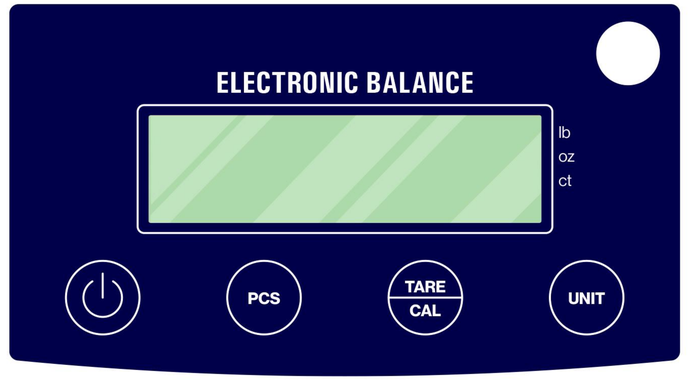
STEPS FOR COUNTING:

1. **Initiate Counting:** Press the **PCS** key. The balance will display options like 10, 20, 50, or 100.
2. **Sample Placement:** Place the corresponding number of units on the scale. Press the PCS key again when the displayed number matches the number of units on the pan. For example, select 10 if you have placed 10 units.
3. **Counting Objects:** Add or remove items from the pan. The scale will update to display the new count.
4. **Exiting Counting Mode:** Press the **UNIT** button to exit the counting function.

OVERLOAD WARNING

Avoid overloading the balance to prevent damage. If “OL” appears on the display, this indicates overload; remove some weight to return to a normal reading. “OL” may also signal a calibration error, necessitating recalibration.

Display



Controls		
Button	Short Press vs.Long Press	Action
POWER	Short press	Turns balance on or off
TARE/CAL	Short press/Long Press	Long press: Used to calibrate scale (CAL) Short press: Used to convert gross weight to tare weight (TARE)
UNIT	Short press	Changes the unit between g, ct, oz, and lb
PCS	Short press	Counting function

The system offers multiple weighing modes. Simply touch the upper left “weighing mode” area to select and operate in your desired mode.

Packing List

1. **Precision Balance**
2. **Weighing pan**
3. **Weighing pan holder (for square weighing pans)**
4. **ABS windshield (for round weighing pans)**
5. **Power cord**
6. **User manual**
7. **500g calibration weight (not included with 0.1g accuracy balances)**

Unpacking

Upon unpacking, please inspect the contents to verify that all components are included and undamaged. Should you find any parts missing or damaged, contact our customer support immediately for assistance.

Note: Batteries and a data cable are not included with the product.

Installation

1. **Assembling the Balance:** Carefully snap the weighing tray onto the base to assemble the balance.
2. **Voltage Confirmation:** Ensure to verify the correct voltage setting for your region before using the scale.
3. **Power Connection:** Connect the power cord to the balance and then plug it into a 100-240V power socket.

Getting Started

1. **Leveling the Balance:** Check to ensure the balance is perfectly level. Adjust the supports at the bottom of the balance by screwing them in or out as necessary to achieve a level position.
2. **Powering On:** Press the **ON/OFF** button to turn on the balance. It is recommended to allow a warm-up period of 15-30 minutes for optimal performance. Note: Consistently allowing sufficient warm-up time ensures the best results.
3. **Initial Display Sequence:** Upon turning on, the display will light up fully for about 1.5 seconds as part of the start-up sequence.
4. **Calibration Countdown:** The balance will sequentially display numbers from 1 through 9. Once it shows 0, the balance is ready to be calibrated.

Calibration

The calibration function of this balance can auto-detect calibration weights in multiples of 100g (e.g., 200g, 500g, 1000g), provided they do not exceed the balance's maximum capacity. For balances with a maximum capacity of 2000g or more, use a calibration weight of at least 500g. The closer the calibration weight is to the balance's maximum capacity, the more accurate the weighing results will be. For instance, a 2000g capacity balance achieves better accuracy with a 1000g calibration weight compared to a 500g weight.

CALIBRATION STEPS:

1. **Power On:** Turn the scale on.
2. **Initiate Calibration:** Long-press the **TARE/CAL** key until "CAL" appears on the display.

3. **Weight Detection:** The display will indicate a specific weight (e.g., 500g). Place a calibration weight (in multiples of 100g) on the weighing pan. The balance will auto-detect this weight.
4. **Finalize Calibration:** Once the display stabilizes and shows an accurate reading, remove the standard mass.

Note:

> If this is your first time using the balance, it's recommended to repeat the calibration process 2-3 times for optimal accuracy.

> Ensure that the scale is completely level and stable during calibration.

> If, after multiple calibration attempts, the weighing results are still inaccurate, please contact customer service for assistance before considering a return.

5. **Linear Calibration:** Regular and frequent calibration is crucial for maintaining the accuracy of the balance. While routine calibration typically involves a single point, linear calibration is necessary when irregularities in weighing are observed over time. Linear calibration uses three calibration points: zero, half-range, and maximum range.

STEPS FOR LINEAR CALIBRATION:

1. **Power On:** Turn the scale on.
2. **Access Calibration Mode:** Before it zeroes out, press the **TARE/CAL** key twice, followed by the PCS key once.
3. **Initial Display:** After a few seconds, the display will show "01-diu."
4. **Select Calibration Option:** Press the **UNIT** key to change the display to "04-CAL."
5. **Confirm Selection:** Press the **TARE/CAL** key to confirm the selection.
6. **Choose Calibration Points:** Press the **UNIT** key to cycle through CAL1 to CAL5. Select CAL3 for a 3-point calibration. Note: More calibration points can be selected if necessary.
7. **Confirm Calibration Points:** Press the **TARE/CAL** key to confirm CAL 3 (or other selected points).
8. **Weight Placement:** Place the corresponding standard weight on the pan.
9. **Weight Change:** Once the display stabilizes, remove the weight and place the next indicated standard weight on the pan.
10. **Finalize Calibration:** Repeat the process until the display shows "0." This indicates that calibration is complete.

Zero Function

To ensure an accurate reading starting from 0, briefly press the TARE/CAL button before weighing.