User Manual
HTP Series Precision Balance

fristadenlab

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Important

Thank you for purchasing the FRISTADEN LAB Precision Balance. To ensure safe and reliable operation, please read the user manual carefully before use and follow all operating and safety instructions.

Safety Information

- Use only 110V power supply.
- Disconnect the balance from the power supply when installing or moving the balance.
- Do not operate the balance in environments where flammable gasses or vapors may be present.
- Wear appropriate personal protective equipment (PPE) when operating the balance.
- Do not operate the balance if it is in any type of standing liquid.
- Do not mix incompatible materials on the weighing pan.

Operating Guidelines

- Do not drop objects onto the weighing pan.
- Allow the balance to warm up for 15-20 minutes before using.
- Do not exceed the maximum capacity of the balance. If OVER appears on the display, the balance is overloaded. Remove objects until the amount to be weighed is less than the maximum capacity of the balance.

Installation and Use Location

- The balance's working environment should be between 40°F and 105°F.
- Install the balance on a flat, stable surface
- Do not install or use the balance in locations subject to strong air currents or vibration.
- Do not install or use the balance in direct sunlight.
- Do not install or use the balance in location subject to wide swings in temperature or humidity.
- Do not press the balance's button with items having a sharp point such as a pen or pencil.
- Do not install or use the balance in the vicinity of equipment that produces electromagnetic interference (EMI) or radiation.

Product Specifications

Model	HTP Series
Power supply	110V
Display	LCD
Units of measurement	g, ct, oz, lb
Stabilization time	5 seconds
Functions	Weighing/Tare/Counting
Sensor	Strain gauge
Materials	ABS body, stainless steel weighing pan
Calibration	External

Display
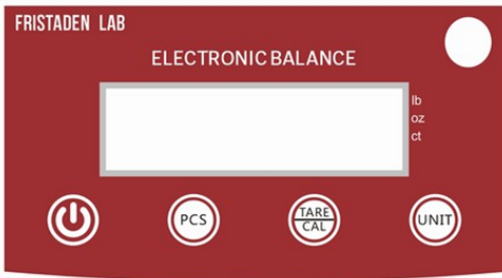
Controls

Button	Short Press vs. Long Press	Action
POWER	Short press	Turns balance on or off

Button	Short Press vs. Long Press	Action
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

Packing List
- Fristaden Lab Precision Balance
- Weighing pan
- Weighing pan holder (for square weighing pans)
- ABS windshield (for round weighing pans)
- Power cord
- User manual
- 500g calibration weight

Unpacking
After unpacking, please check the contents to ensure all of the components are present and there is no damage. If parts are missing or damaged, please contact customer support.

NOTE: Batteries and Data Cable Are Not Included

Installation
1. Assemble the balance by snapping the weighing tray into the base.
2. Please confirm the correct voltage before using the scale.
3. Attach the power cord and plug the balance into a 110V socket.

Getting Started

1. Ensure the balance is level. The supports on the bottom of the balance can be screwed in or out as needed to level the instrument.
2. Press the ON/OFF button to turn the balance on. Allow it to warm up for 15-30 minutes before using. Note: For best results, always allow sufficient time for the device to warm up.
3. When turning on, the display will fully illuminate for approximately 1.5 seconds.
4. The balance will display numbers 1 through 9. When it reaches 0, the balance is ready for calibration.

Calibration

The calibration function can auto-detect any calibration weight in multiples of 100g, i.e., 200g, 500g, 1000g, etc., as long as the weight does not exceed the maximum capacity of the balance. For scales with a maximum capacity of 2000g or greater, use a calibration weight of at least 500g. The closer the calibration weight is to the maximum capacity of the balance, the greater the accuracy of the weighing. For example, with a 2000g maximum weighing capacity, greater accuracy can be achieved by calibrating with a 1000g weight versus a 500g weight.

1. Turn the scale on.
2. .Long press the TARE/CAL key until the display shows "CAL."
3. The display will show a weight (e.g., 500g). Place any calibration weight in multiples of 100g (a 500g weight include on the packing) on the weighing pan, it can auto-detect the calibration weight.
4. Remove the standard mass once the display is stable and accurate.

NOTE: If this is the first time using the balance, repeat the calibration steps 2-3 times. Please ensure that the scale is completely level and stable during calibration. If, after repeating the calibration steps 2-3 times, the weighing is still inaccurate, contact customer service for assistance before making a return.

Linear Calibration

In order to ensure the accuracy of the balance, it should be calibrated regularly and frequently. For routine calibration, the balance is normally calibrated to a single point. However, after the balance has been in use for some time, you may notice irregularities in weighing. If this is the case, the balance requires linear calibration.

Linear calibration is performed using three (3) calibration points: zero, half-range, and maximum range[GS1] . To perform linear calibration:

1. Turn the scale on.
2. Press the TARE/CAL key twice and the PCS key once.
3. The display will show "01-diu" after a few seconds.
4. Press the UNIT key to change the display to "04-CAL".
5. Press the TARE/CAL key to confirm.
6. Press the UNIT key and it will cycle through CAL 1 through CAL 5. Select CAL 3 for a 3-point calibration. Note: You can select more calibration points if necessary.
7. Press the TARE/CAL key to confirm CAL 3 (or other points as selected).
8. Place the corresponding standard weight on the pan.
9. Once the display is stable, remove the weight and place the next standard weight indicated on the display, on the pan.
10. Repeat until the display shows "0." The calibration is finished.

Zero

Short press the TARE/CAL button before weighing to ensure an adequate reading (starting from 0).

Tare

1. Place an empty container on the pan. Its weight will be displayed.
2. Press TARE/CAL until "0" is displayed.
3. Place additional objects in the container to find the net weight.
4. When you remove the empty container, the scale will display a negative number.
5. Press TARE/CAL again and the weight display will return to "0."
6. Press TARE/CAL before weighing to ensure accurate reading (starting from 0).

Unit Conversion

Press the UNIT button to switch between the available units of measurement, e.g., g, ct, oz, lb, etc.

Counting Function

The counting function is used to count the number of parts by extrapolating values from the original sample. The items used for counting must be standard parts, individual unit weight difference should not big.
Note: The counting function will not be accurate if the sample is too small, too few, or too light.

1. Press the PCS key. The balance will start cycling through the numbers 10, 20, 50, or 100.
2. Place the corresponding number of units on the scale. Press the PCS key again when the number corresponds to the number of objects you placed in the pan. For example, if you put 10 units on the scale, then choose 10.
3. Add or remove pieces from the pan and the scale will display the number of pieces weighed. For example, if you add 3 pieces, the balance will display "13."
4. Press Unit to exit the counting function.

Overload Warning

To avoid potential damage to the unit, do not overload the balance. If the display shows "OL", remove weight from the scale until a weight reading replaces the OL. If there is a calibration error, "OL" will also be displayed. You should recalibrate the balance.

Cleaning

- Always power off and unplug the balance before cleaning or storing it.
- Use a damp cloth to wipe down the balance and weighing pan. For stubborn stains, use a mild detergent on a damp cloth. Dry the balance after cleaning.
- Do not clean the balance with solvents or cleaners that may cause damage or corrosion.
- Do not immerse the balance in water or other liquids.
- Do not use a stream of water to clean the balance.

Troubleshooting

Problem	Cause	Solution
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. Calibrate 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.

Factory Testing

Your balance has undergone extensive quality control (QC) testing at the laboratory prior to shipment. The following QC tests have been conducted:

Margin of Error
Testing is performed to verify that the margin of error is less than .03g for a .01g balance.

Linearity
This testing is conducted with 4 different weights measured 4 times. For example, for a 1000g maximum-capacity balance, linearity testing will be conducted with weights of 200g, 500g, 800g, and 1000g. Larger capacity scales are tested with more weights and more repetitions of testing. Testing is conducted until the readings are consistent and accurate.

Repeatability
A weight representing the maximum capacity of the balance is weighed 10 times until the margin of error for each weighing is less than the acceptable specified margin of error, i.e., less than .03g for a .01g accuracy balance. As an example, for a 2000g maximum capacity balance, a 2000g weight is used. In order to pass the repeatability test, each reading must fall within 1999.97g and 2000.03g.

Four Points Testing
Four points testing is conducted by placing a weight on each of corner of the pan consecutively (not at the same time) and taking a reading each time. Each reading should fall within the accepted margin of error to pass the test.

Company Information

Warranty
The Fristaden Lab Precision Balance has a 1-year manufacturer's warranty. Please contact Fristaden Lab's customer service department at support@fristadenllc.com for assistance.

About Us
Fristaden Lab is a lab and scientific equipment retailer established in Chicago, IL in 2013.

We sell an array of popular products, including analytical balances, centrifuges, glassware, hematology counters, hot plates, magnetic stirrers, pH meters, pipettes, and pressure pumps.

We stand behind all of our products, offering 1- and 2- year warranties, 30-day returns, and a responsive customer service team committed to solving any questions or issues you may have.

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