MCT Plus SERIES

Mid Counting Scale with large Keypad

TREE®
by LW MEASUREMENTS LLC

MCT Plus 3 / MCT Plus 7 / MCT plus 16 / MCT Plus 33 / MCT plus 66

Operating Manual

Professional Weighing Equipment

NOTE: THIS PRODUCT HAS BEEN FACTORY CALIBRATED. PLEASE REFER TO THE MANUAL BEFORE RE-CALIBRATING PRODUCT!

Table of Contents

Declaration of Conformity

Declaration of conformity for apparatus with CE mark

We hereby declare that the product to which this declaration refers conforms to the following standards.

Electronic scale: MCT Mid Counting Scales

Available Models

MCT Plus 3
MCT Plus 7
MCT Plus 16
MCT Plus 33
MCT Plus 66

Mark Applied	EU Directive	Standards
CE	2004/108/EC	EN 61326-1: 2006

Signature:

Boon Lim, R & D Manager

Date: 06. 28. 2016

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Customer Service

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Scan to Contact Us

Introduction

What you should know about this Operation Manual:

Tree® Professional Weighing Equipment products are simple to operate. Nevertheless, you should read through these operating instructions in their entirety, so that you can make optimum use of the full potential of the weighing scale in your daily work activities.

These operating instructions contain guidance in the form of pictograms and keyboard diagrams, which should help in finding the required information:

For the labeling of potential hazards, please refer to the safety proportion of this operation manual.

Safety

Representations & Symbols

Note: Important instructions which involve safety are highlighted with the appropriate mark:

⚠ DANGER

Safety Recommendations

When using the weighing equipment in surroundings with increased safety requirements, the corresponding regulations must be observed.

The weighing scale may only be used with the power adapter supplied.

Before connecting the power adapter to the scale, the user must ensure that the operating voltage stated on the power adapter is compliant with the mains voltage. If not, please contact Customer Service at the address above.

If the power adapter or its cable is damaged, the weighing scale must immediately be disconnected from the electricity supply (unplug the power adapter).

If there should be any reason to believe that it is no longer safe to operate the scale, it should be immediately unplugged from the electricity supply (unplug power adapter) and secured against inadvertent operation.

During maintenance work, it is essential to follow the recommendations set out in maintenance and servicing.

The weighing scale must not be operated in an area subject to explosion risks.

Care must be taken when weighing liquids to ensure that no liquid is spilled inside the scale, into connections on the rear of the equipment, or the power adapter. If liquid is spilled on the scale, it must immediately be unplugged from the main electricity supply (unplug power adapter).

The weighing scale may be operated after it has first been inspected by a service technician.

These operating instructions must be read by each user and should always be easily accessible at the workplace.

Weight Scale

Construction & Functions

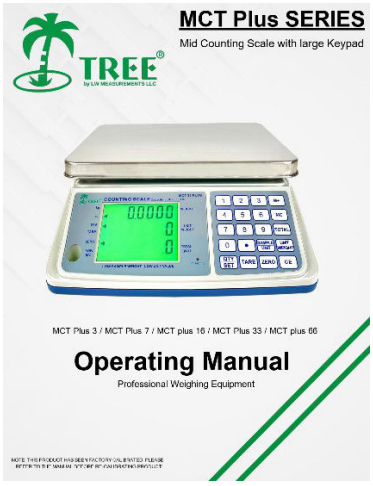
The weighing scale consists of certain parts.

1. **Weighing Scale Body**
2. **The Scale-Pan**
3. **The Adapter**
4. **Operation Manual**

2

1

4



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Functions

The MCT Plus Series are high-quality electronic precision weighing scales designed to function as counting scales and check-weights with the following specifications.

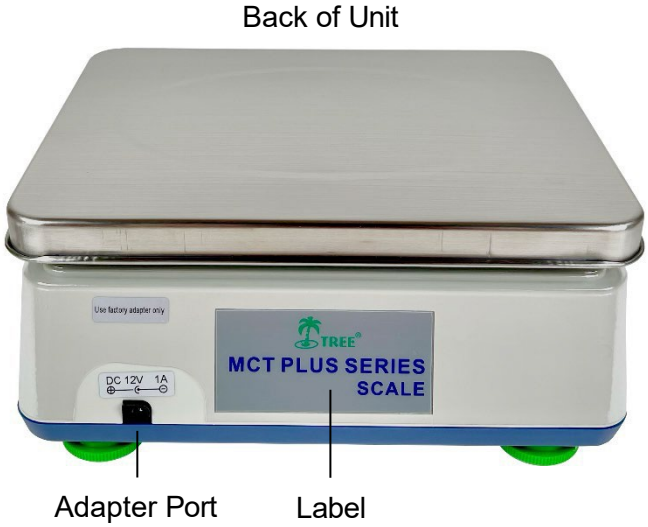
Specifications:

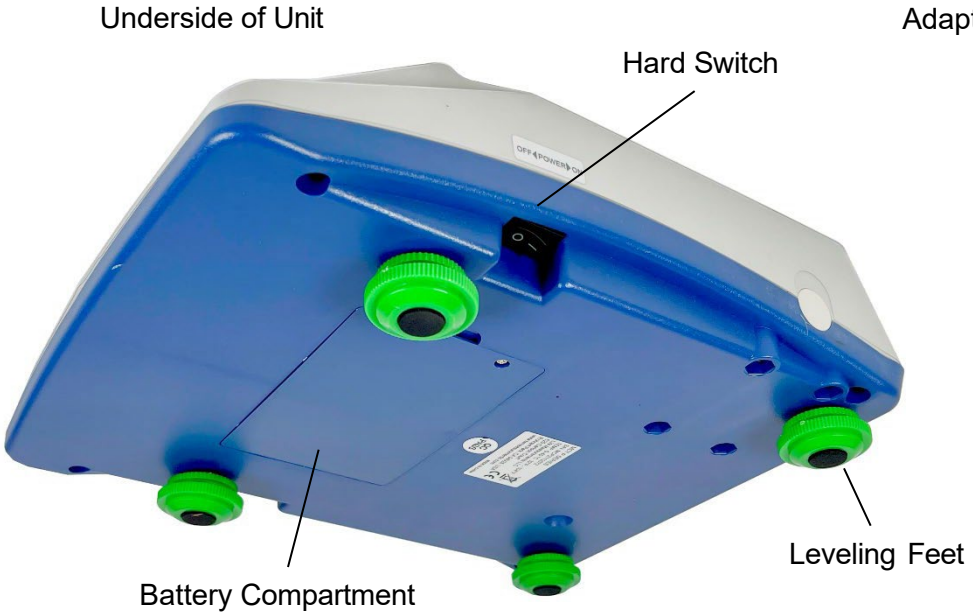
Model Number	Capacity	Division	Weighing Pan Size
MCT-P-3	3 lb	0.0001 lb	7.5 x 10 in
MCT-P-7	7 lb	0.0002 lb	7.5 x 10 in
MCT-P-16	16 lb	0.0005 lb	7.5 x 10 in
MCT-P-33	33 lb	0.001 lb	7.5 x 10 in
MCT-P-66	66 lb	0.002 lb	7.5 x 10 in
Package (Standard Carton)	14 x 13 x 7 inches		
Package (Master Carton)	4 units in one box: 26 x 15 x 15 inches		
Operating Temperature	0-40 C (32-104 F)		
Power Source	Rechargeable batteries or AC/DC Adapter 12V/1000mA		

Features

1. Auto zero tracking
2. Intelligent applications: weight unit conversion, parts counting
3. Low battery indication
4. Large bright backlit LCD
5. Large heavy gauge stainless steel square pan
6. Stability indication
7. Auto calibration
8. Selectable auto back light
9. Selectable auto shut off
10. Unit switching kg, lb.
11. Variable kg or lb. reference weight calibration software
12. Pieces counting
13. 1.3 million internal resolutions
14. 30,000 display resolution
15. 24-bit A/D processor
16. Highest quality sensor use
17. Die-cast aluminum sub support, bottom sensor support and steel thread footing

Details of Your Weighing Scale





Application & Conformity

The following are instructions on how to correctly use the weight scale:

The weighing scale may only be used for the weighing of solid materials and of liquids contained in secure containers.

The maximum capacity load of the weighing scale must never be exceeded, otherwise the weighing scale may be damaged.

In using the weighing scale in combination with other devices including those produced by other manufacturers, the appropriate regulations for the safe use of the relevant attachments and their application in accordance with instructions must be observed.

The weighing scale has been manufactured and tested in accordance with the standards and recommendations set out in the declaration of conformity.

The power adapter supplied for the weighing scale complies with the appropriate electrical protection class.

The following applies to all MCT Plus series weighing scales.

Power supply:

Input: 110V or 230V AC (+/-15-20%); 50Hz to 60Hz

Output : 12v DC 1000mA

All Tree scales use AC Adapters that have a negative polarity.

Allowable ambient conditions

Temperature: 32 - 104ºF / 0°C - 40°C

Relative humidity:

25% - 85%, non-condensing

****NOTE: If you have any questions on the technical data or require detailed technical information on your balance, please contact your technical representative.* ***

Getting Started

The scale is packaged in an environmentally friendly carton, which provides optimum protection for the balance during transportation.

We suggest that you keep the original packaging to avoid damage if you are shipping or transporting the scale to a different location. It is also the best way to keep it in the best condition if it will not be used for an extended period.

To avoid damage, please follow the instructions provided below, when unpacking the scale:

1. Unpack the scale carefully.

2. When outside temperatures are very low, the scale should be stored for a couple hours in its box in a dry room at normal temperature. This prevents condensation from settling on the unit when opening the box.

3. Check the scale immediately after unpacking for any external visual damage. If there is any damage on the scale, contact customer service immediately.

4. If the scale is not to be used immediately after purchase, it should be stored in a dry place where fluctuations in temperature are low. (reference pg. 20).

5. Read through these operating instructions before you work with the unit and pay attention to the safety recommendations (reference Safety pg. 5).

Delivery

Inspect delivery for completeness immediately on unpacking all components.

Checklist for complete delivery

Component	Present (Yes / No)
Weighing unit body	
Weighing pan	
Power adapter	
Operating manual	

Assembly & Installation

The weighing scale is delivered in a partly dismantled condition. Assemble the individual components in the following sequence:

- Place your machine on a level, clean, and dry surface to obtain accurate readings.
- Place the stainless-steel platter flat side facing up.

Connecting the AC Adapter

The following safety recommendations must be observed when connecting the balance:

⚠ DANGER

The scale should only be connected to the mains voltage socket with the power adapter supplied. Before connecting the power adapter to the mains socket, check to see that the operating voltage stated on the power adapter complies with the local mains voltage.

If the operating voltage is not the same as the mains voltage, the power adapter must not be connected to the mains socket and contact customer service.

Placement of Scale

The location in which the scale is placed is very important for the scale to work to its full potential. Certain conditions can affect the capabilities of the scale, such as presence of air flow, variations in temperature, and direct sunlight. Please follow the recommendations given below in choosing a location to place your scale.

- Place the scale on a solid, firm, and preferably vibration-proof horizontal base.
- Make sure that the weighing machine cannot be shaken or knocked over.
- Protect from direct solar radiation.
- Avoid drafts and excessive temperature fluctuations.
- Avoid placing the scale near or on any magnetic surfaces.

The scale is fitted with one bubble level, and adjustable feet for level-control that allow for small height differences or any unevenness in the surface on which the balance is placed.

The screw feet must be adjusted so that the air bubble is precisely in the center of the sight glass of the bubble level. (see Fig. 1)

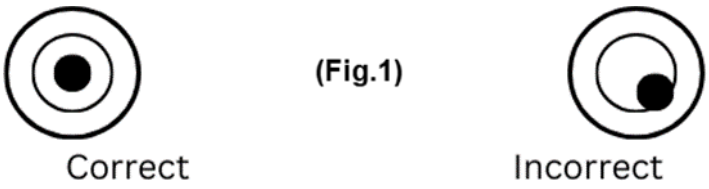


Fig. 1 Correct leveling with the aid of the bubble level and adjusting feet.

Place the scale horizontally and keep the bubble inside the bubble level aligned with the circle (Fig.1). To get exact measurements, the balance must be carefully leveled after each re-location.

Display Messages

- **Weight Display -** indicates the gross or net weight on the weighing pan.
- **Unit Weight Display -** indicates the average or set unit piece weight.
- **Total Display -** is the accumulated total pieces on the weighing scale.
- **kg -** Kilograms (1000 grams) is a unit of measure.
- **lb. -** Pounds (16 ounces) is Unit of measure.
- **stb -** Stable indication
- **ZERO Indicator-** zero Indicator turns on when the scale is in the zero position.
- **TARE Indicator -** turns on when this function is used
- **LoB -** low battery voltage, please charge battery.
- **Low Unit Value-** is activated when the sample number is not significant enough to allow an accurate counting.
- **Low Sample Weight-** is activated when the sample unit weight is not significant enough for an accurate count.

Key Functions

1. The [ZERO] key function allows the subtraction of multiple container values through the weight range and is used to set or re-adjust to zero.

2. The [TARE] key function allows the user to subtract the container value and will also set the scale at zero.

3. The [1 2 3 / 4 5 6 / 7 8 9 / 0 • SAMPLE UNIT] ***NUMERIC KEYS*** **(0-9)** are used for setting numeric data for sample number, sample weight or to set HI/LO settings.

4. The [•] key function is used to set the decimal position of the sample weight.

5. The [SAMPLE UNIT] key function is used when setting the counted sample numbers on the weighing pan into weighing scale memory.

6. The [UNIT WEIGHT] key function is used when setting the known unit weight data into the weighing scale in normal operation.

7. The [CE] key function is used for canceling the numeric setting data or cancelling the previous unit weight data.

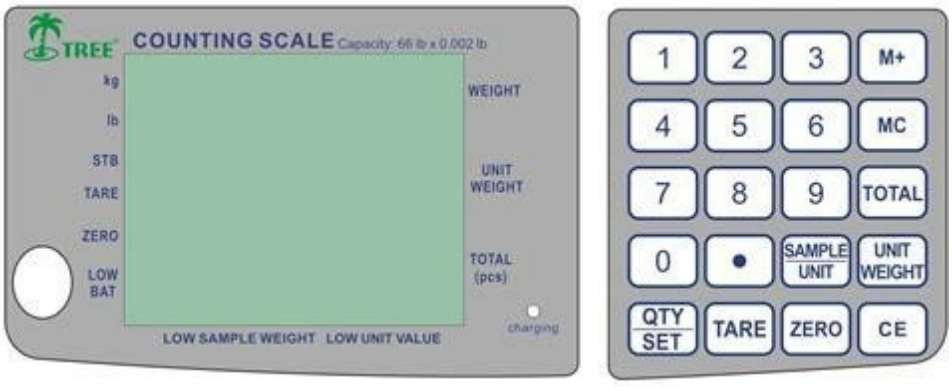
8. The [QTY SET] key function is used for alternating the normal count and quantity check operation.

9. The [M+] memory key function is used to store the accumulated count data and has a storage limit of 99 items.

10. The [MC] key is the memory clear key.

11. The [TOTAL] key displays the accumulated total pieces on the scale.

Full Keypad & Display



Function Settings

1. Beeper, Auto Shut Off, and Optional Auto Backlight

When the scale is turned **OFF**.

- Press and hold UNIT WEIGHT key and then turn on the weighing machine. The display will show "**-------**" and then "**b = XX**" (beeper) on the first line, **A-XX** (auto off) on the second line and "**L = XX** (backlight) on the third line.
- Press the QTY SET key to toggle between activating the beeper on or off.
- Press the TARE key to select auto off time.
- Press the ZERO key to **toggle** between **activating** the **backlight On**, **Off**, or **Auto (Au)**.
- To save your settings and begin weighing, turn the machine **OFF** and then back **ON** again.

2. Clearing the Total Weight:

- Press the TOTAL key to show the **total pieces** on the third line of the display.
- Press the MC key to show the unit that will be **cleared**.
- Press the CE key to **confirm** clear.

3. Clearing the Tare Weight:

- Place the **empty container** on the platter.
- Press the TARE key.
- The display will show **0.00000**.
- When the container is **removed** from the platter, the **weight display** will show a **minus (-)** value which is the **weight of the container**.

4. Clearing the Previous Tare Weight:

- **Remove** weight from the platter.
- Press the TARE key.
- The **tare indicator** will turn **off** and the **weight display** will **return** to **"0".**

5. Number Setting:

- Place the **pre-counted "X"** number of sample pieces on the platter. The total weight will be displayed.
- Set the **"X"** number of pieces using the ***NUMERIC KEYS***.
- Press the UNIT WEIGHT key.
- **UNIT/WEIGHT** on the display shows the average piece weight of the samples. **TOTAL** (pcs) on the display shows the number of sample pieces on the scale. (Add in more units and it will show the total number of pieces.)

6. Unit Weight Setting (when unit weight is known):

- **Place** samples on the scale.
- Use the ***NUMERIC KEYS*** to key in the **average piece** weight.
- Press UNIT WEIGHT key to save the specified piece weight. The **total number** of pieces will be shown on **TOTAL**. Add in more units to be counted.
- Press the CE key to clear the **previous** setting.
- Press the CE key again to **cancel** the **previous unit weight** and **sample setting**.

7. Alarm Function:

To avoid counting errors, this scale has a useful alarm function to inform the operator of a counting error in the event of low sample size or low sample weight.

The low sample weight curser on the display will turn on if the total weight of the sample is below the limit value. The scale will start counting but the error may be high.

- Press the CE key.
- Then use a larger sized sample (add more weight and key in the new sample size using the ***NUMERIC KEYS***).
- Press SAMPLE UNIT key.

8. Unit Weight Enhancement:

The weighing machine will automatically adjust and calculate a new average unit weight when more samples are slowly placed on the scale. This ensures higher accuracy as samples are now based on a larger population size.

9. Lack of Piece Weight:

LOW UNIT VALUE indicator will turn on if the average unit weight of set unit weight is not enough for accurate counting operation. Operator may still use the weighing machine if this indicator is on, but counting error might occur.

10. Hi / LO Check-Weighing with Counting:

The **MCT Plus** series has a useful check function to inform the operator if the total pieces counted has reached the desired lower limit and the upper limit. This function is designed for packaging applications.

EXAMPLE: If the operator wishes to count **1,000** pieces for every package, he/she can set the lower limit and the upper limit as **1,000** pieces by:

- Press the QTY/SET key to enter the quantity alarm menu.
- Press the ZERO key to turn on the check weighing. Display will show **CH=ON**.
- Press the ZERO key again and the display will show **CH-OFF** which means the quantity alarm function has been turned off.

To set the lower and upper count limit.

- Press the TARE key to select the hi/lo limits.

  → For example, **"L=990"**

- Press **990** on the ***NUMERIC KEYS***, then TARE to switch over to**: H = 1010**,
- Press **1010** on the ***NUMERIC KEYS.***
- Press the QTY/SET key to confirm and return to counting mode.
- Put **10** pieces of the sample on the platter and press "**10**" on the numeric keypad.
- Press the SAMPLE UNIT key to store and confirm the sample weight.
- Keep adding pieces until it reaches the lowest quantity of "**990**". The alarm will sound when you reach **990**.
- Keep adding pieces until it reaches the highest quantity of "**1010**" or above. The alarm will sound with a different tone.

Calibration

Calibration is done in the factory. Don't re-calibrate the machine unless it is not accurate. Calibration may be required when the weighing scale is initially installed or if the scale is moved a substantial distance from the original location. The weighing machine should be allowed to warm up for 10 minutes before calibration.

What you need:

1. Using a calibration or test weight that is **2/3** of the max capacity is strongly recommended for recalibration.

2. If you do not have a test weight or calibration weight. You can use any object of "known weight" to calibrate with our scales **AnyCal** Calibration software.

****NOTE: When calibrating even if you use a "known weight" the more exact the weight is the more precise the calibration will be. ****

Single Segment Calibration (recommended):

- When the scale is **OFF** press and **hold** the ZERO key and turn the scale back **ON**. The scale will enter the **calibration** menu. (*Older units will countdown before entering the calibration menu.*)

- The display will show **SCALE** on the first line, **CAL-0** (flashing) on the second line and the **A/D value** on the third line.

- Then select the **calibration unit** (**kg**. or **lb**.). To **change** the **calibration unit**, press the SAMPLE UNIT key.

- Check to make sure that the scale is stabilized then press the ZERO key once it starts flashing "**0**".

- Use the ***NUMERIC KEYS*** to enter in how much weight you will use to calibrate the scale.

- Wait for the scale to **stabilize**.

- Place the **weights** you will use to **calibrate** on the platform. Once the scale is **stabilized** press the ZERO key. Wait for a line of "ooooo" to show on the scale.

- **Calibration** is **complete**.

- Turn **OFF** the scale and the settings will be saved.

- **Remove** the weights and turn **ON** the scale for normal operations.

****NOTE: Turn off the power, then turn it back on again. Place a weight on the platter to ensure weighing is correct. If not, repeat the above steps. ****

Linearity Calibration

***This calibration is to be completed by a trained scale technician. ***

- **Press** and **hold** the TARE key and then turn **ON** the scale.
- The display will show **Line** on the first line, **CAL-0** (flashing) on the second line and **AD value** on the third line.
- When the **AD value** is **stable**, press ZERO key to calibrate **Zero**. After **3** seconds, the second line will show **1, 0000. (Ex. LCT-7)**
- Place a **1 kg**. weight on the platter and press ZERO key when the stable **A/D value** is displayed. After **3** seconds, the display will show **2.0000**.
- Place a **2 kg**. weight on the platter and press ZERO key when the stable **A/D value** is displayed. After **3** seconds, the display will show **3.0000**.
- Place a **3 kg**. weight on the platter and press ZERO key when the stable **A/D value** is displayed. After **3** seconds, the display will show **0.0000**.
- **Calibration** is now **complete**.
- To **return** to **normal operation** turn the scale **OFF** then back **ON.**
- **Place a weight** on the platter to **verify** weighing is **correct**. If not, repeat the above steps.

*****NOTE: The above linearity calibration is only for MCT-P-7, for other MCT-P capacity, add test-weight according to display value. *****

Maintenance & Service

⚠ DANGER

- For maintenance work, the balance must be disconnected from the power supply (remove power adapter plug from socket). Also, ensure that the balance cannot be connected to the power supply during the work by a third party.

- Make sure that no liquid spills into the scale while performing maintenance work. If liquid is spilled on the scale, it must be inspected by a service technician.

- **Regularly** maintain the weighing pan and the weighing pan holder by removing any dirt or dust from under the weighing pan and on the weighing scale housing. Use a soft brush or a soft, lint-free cloth moistened with a mild soap solution.

- **Never** use solvents, acids, alkalis, paint thinners, scouring powders, or other aggressive or corrosive chemicals for cleaning; these substances can cause damage to the surfaces of the scale housing.

Transportation & Storage

Your weighing machine is a precision instrument, treat it carefully. Avoid shaking, severe impacts, and vibration during transportation. Make sure that there are no marked temperature fluctuations during transportation and that the weighing machine does not become damp (condensation).

If you would like to take the weighing machine out of service for an extended period, disconnect it from the electricity supply, clean it thoroughly (refer to Maintenance & Service) and store it in a place that meets the following conditions:

- No violent shaking or vibrations
- Minimum temperature fluctuations
- No direct solar radiation
- Minimum moisture

The weighing machine should preferably be dispatched and transported in the original packaging to avoid transportation damage.

CAUTIONS

Overcharging will cause permanent damage.

- When the recharging sign "  " indicates, please charge the battery for 8 to 10 hours. When the charging is done, the orange light will turn green.
- Only use the charger (adapter) supplied with the indicator.
- After recharging, if the battery does not last long, replace it with a new battery.

Troubleshooting

Error Code	*Issue*	*Troubleshoot*	*Solution*
ERR-O/0	Overload error	Turn scale off, then back on, and try weighing using weight under the max capacity to verify the loadcell still functions.	If scale still registers accurate weight refrain from continued over loading. If error continues loadcell may be damaged.
ERR-Z/2	Exceeded zero tracing range when powered on.	Turn scale off and clear weighing platform. Turn scale back on and attempt recalibration.	If the scale was recalibrated successfully then the error is resolved. If error persists, scale may need a linearity calibration or has a damaged loadcell.
ERR-S/5	Scale not stable when powered on.	Make sure scale is stable when powered on. Do not touch, shift, or place anything on the weighing platform until after the countdown.	If error persists, scale may need recalibration. If error continues after recalibration, then loadcell may be damaged.
ERR-C	Calibration weight was not entered during calibration	Enter calibration weight during calibration process.	If error persists, call support.
ERR-P	Counting set error	Place sample before entering counting settings.	If error persists, call support.
ERR-L	Calibration weight was not placed during calibration.	Be sure to place weight when recalibrating.	If error persists, call support.
ERR-E	Software issue	If error persists, call support.	If error persists, call support.
ERR-B/6	Low battery error	Attempt to charge battery.	If error persists, battery will need to be replaced. Make sure to not leave scale with rechargeable battery plugged in constantly.
For any error that is not shown on this list or that persists after troubleshooting you will need to contact support.			

We are genuinely grateful for your recent purchase. Your decision to choose TREE by LW Measurements means a lot to us.

Your support enables us to continue creating and providing high-quality products and services. We hope you enjoy your new scale and that it brings you as much satisfaction as it brings us to serve customers like you.

We would love to know what you think of our TREE products and your experience with us. If you have a chance, please visit www.lwmeasurements.com and leave a review.

Thank you for being a part of the LW Measurements family. We look forward to serving you again in the future.

All TREE products are designed in the U.S.

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