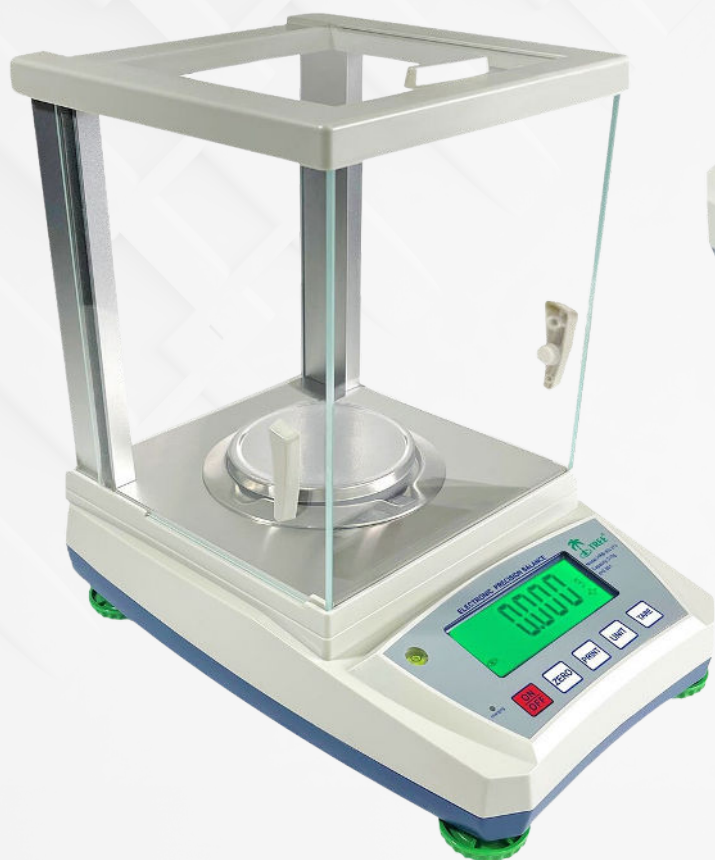




HRB-XG SERIES

High Resolution Balance
Dual Screen Models
Intelligent Weighing Scale



HRB-XG 123 / 313 / 1002



HRB-XG 3102 / 3101 / 10001

Operating Manual

Professional Weighing Equipment

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

Table of Contents

Section	Page
Declaration of Conformity	2
Customer Service	3
Introduction	3
Safety	4
Weight Scale	5
Functions	6
Features	7-8
Application & Conformity	9-11
Getting Started	12
Delivery	12
Assembly & Installation	13-14
Display Messages	15
Key Functions	16
Program Options	17-18
Calibration	18-19
Maintenance, Transport, & Storage	20
Troubleshooting	21

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: **HRB-XG** - High Resolution Balances

Available Models:

HRB-XG 123
HRB-XG 313
HRB-XG 1202
HRB-XG 3101
HRB-XG 3102
HRB-XG 10001

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

Signature:



Boon Lim, R & D Manager

Date: 14. 11. 2018

LW Measurements LLC, 620 Carlson Court, Rohnert Park, CA 94928

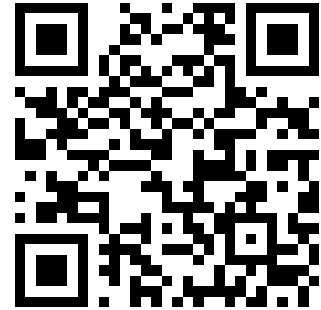
Customer Service

USA

LW Measurements LLC,
620 Carlson Court
Rohnert Park, CA 94928

USA
Tel: (707) 542-2185

<http://www.lwmeasurements.com>



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 portion of this operation manual.

Safety

Representations & Symbols

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



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 complies 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.

When performing maintenance work, it is essential to follow the recommendations set out in the 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 of 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



4

Functions

The HRB-XG Series are high quality electronic precision weighing machines with the following.

Specifications:

Model Number	Capacity	Graduation	Weighing Pan Size
HRB-XG 123	120g	0.001g	3.85"Φ
HRB-XG 313	310g	0.001g	3.85"Φ
HRB-XG 1202	1200g	0.01g	4.52"Φ
HRB-XG 3102	3100g	0.01g	7"x8.2"
HRB-XG 3101	3100g	0.1g	7"x8.2"
HRB-XG 10001	10000g	0.1g	7"x8.2"
Net/gross weight	HRB-XG 123 / 313 / 1202/ 3.8.kg / 5.2kg HRB-XG 3102 / 3101 / 10001: 2.2kg / 2.8kg		
Package (Standard carton)	HRB-XG 123 / 313 / 1202: 18" x 18" x 17" HRB-XG 3102 / 3101 / 10001: 16" x 12" x 7"		
Package (Master carton)	HRB-XG 123 /313/1202: 1 unit in one box: 18" x 18" x 17" HRB-XG 3102 / 3101 / 10001: 4 units in one box: 24" x 17" x 15"		
Operating temp.	0-40℃ (32-104°F)		
Power source	Rechargeable batteries or AC/DC Adapter 12V/1000mA		

Features

- 1.** Auto zero tracking
- 2.** Auto shut off mode “ON” or “OFF”
- 3.** Low battery indication
- 4.** Selectable beeper
- 5.** Large bright backlit LCD
- 6.** Unit switching g, oz, lb., dwt.
- 7.** Large stainless-steel pan
- 8.** 1.3 million internal resolutions
- 9.** Stability indication
- 10.** 100,000 – 310,000 display resolution
- 11.** USB connection
- 12.** 24-bit A/D processor
- 13.** Selectable auto back light
- 14.** Highest quality sensor used
- 15.** Less than 1s display setting time
- 16.** RS232 connection
- 17.** Under hook (for HRB-XG 10001 only)

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 weighing solid materials and liquids contained in secure containers.

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

When 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 HRB-XG series weighing scales.

Power supply:

Input: 110V AC 50Hz to 60Hz

Output: 12v DC 1000mAh

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



Allowable ambient conditions:

Temperature: 32°F - 104°F / 5°C. 40°C

Relative humidity:

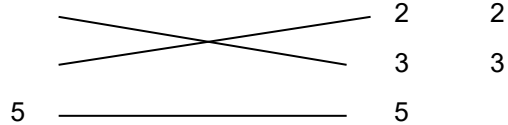
25% - 85%, non-condensing

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

RS232 Data interface

1. Connector: DB9

BALANCE PC



- ## 2. Transmissions Settings

Mode: Simplex Asynchronous Serial

Baud Rate: 9600

Data Bit: 8

Parity Bit: None

Stop Bit: 1

Data Format: ASCII

3. Transmission Information Format : 20 Byte , blank=20H

1~2	3	4~13	14~18	19	20
'W: '	P	DATA	UNIT	CR	LF

W: Start of Data Transmission=57H+3AH

P: Polarity '+' = 2BH = Positive '-' = 2DH = Negative

DATA: '12.345'= 20H+20H+20H+20H+31H+32H+2EH+33H+34H+35H UNIT: 'g'

$$=67H+20H+20H+20H+20H$$

'oz' = 6FH+7AH+20H+20H+20H

$$\text{'lb'} = 6\text{CH} + 62\text{H} + 20\text{H} + 20\text{H} + 20\text{H}$$

'dwt' = 64H + 77H + 74H + 20H + 20H

'ozi' = 6FH+7AH+74H+20H+20H

$$\text{'ct'} = 63H + 74H + 20H + 20H + 20H$$
$$\text{'tl.T'} = 74H + 6CH + 2EH + 54H + 20H$$
$$\text{'tl.H'} = 74\text{H} + 6\text{CH} + 2\text{EH} + 48\text{H} + 20\text{H}$$
$$\text{'tl.J' } = 74\text{H} + 6\text{CH} + 2\text{EH} + 4\text{AH} + 20\text{H}$$

'GN' = 47H+4EH+20H+20H+20H

$$\text{'dr'} = 64H + 72H + 20H + 20H + 20H$$
$$\text{'MM'} = 4DH + 4DH + 20H + 20H + 20H$$

'tola' = 74H + 6FH + 6CH + 61H + 20H

'gsm' = 67H+73H+6DH+20H+20H

'T/A/R' = 54H + 2FH + 41H + 2FH + 52H

'T/M/R' = 54H+2FH+4DH+2FH+52H

'pcs' = 50H + 43H + 53H + 20H + 20H

CR: = 0DH

LF: = 0AH

HRB-XG Series Conversions of Various International Weight Units

Model UNIT Resoluti on	123	313	1202	3102	3101	10001
g	0.001	0.001	0.01	0.01	0.1	0.1
oz	0.00005	0.0001	0.0005	0.0005	0.005	0.005
lb	0.00001	0.00001	0.00002	0.00002	0.0002	0.0002
dwt	0.001	0.001	0.01	0.01	0.1	0.1
ozt	0.00005	0.00005	0.0005	0.0005	0.005	0.005
ct	0.005	0.001	0.05	0.05	0.5	0.5
tlT	0.00005	0.00005	0.0005	0.0005	0.005	0.005
tlH	0.00005	0.00005	0.0005	0.0005	0.005	0.005
tlJ	0.00005	0.00005	0.0005	0.0005	0.005	0.005
gn	0.02	0.02	0.2	0.2	2	2
dr	0.001	0.001	0.01	0.01	0.1	0.1
MM	0.0005	0.0005	0.005	0.005	0.05	0.05
tola	0.0001	0.0001	0.001	0.001	0.01	0.01
gsm	0.1	0.1	1	1	10	10
T/A/R	0.1	0.1	1	1	1	1
T/M/R	0.1	0.1	1	1	1	1

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 the scale in excellent 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. If outside temperatures are very low, the scale should be stored in its box in a dry room at normal temperature for a couple hours. This will prevent 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 will not be used immediately after purchase, it should be stored in a dry place where fluctuations in temperature are low. (reference pg.21).
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 upon 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 with the flat side facing up.

Connecting the AC Adapter

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



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 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 immediately.

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 air flow, variations in temperature, and direct sunlight. Please follow the recommendations given below when 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.

Leveling the weighing machine

To function properly, the balance must be precisely horizontal. The balance 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)

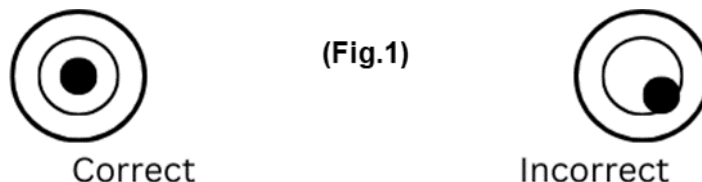


Fig. 1 Correct leveling with the aid of the bubble level and adjusting feet.

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

Display Messages

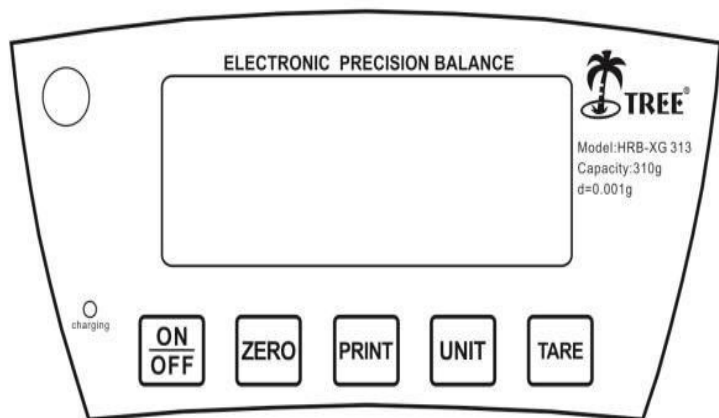
- **Weight Display** - indicates the gross or net weight on the weighing pan.
- **Weighing Units** - indicates the units of measure that have been selected.
- **Stable Indicator** - stable indication.
- **Zero Indicator** - turns on when the scale is zeroed.
- **Tare Indicator** - turns on when this function is used.
- **Low Battery Indicator** - low battery voltage, please charge battery.



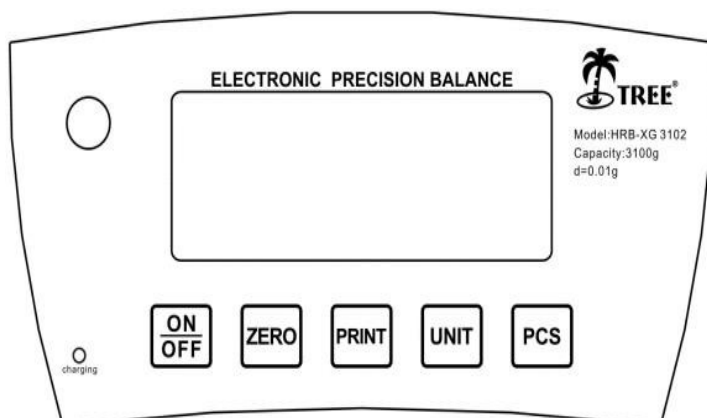
Key Functions

(Note: All HRB-XG Models have a ON / OFF hard switch on the back)

- The  key is to turn the balance **ON** or **OFF**.
- The  key allows the subtraction of multiple container values through the weighing range and is used to set or re-adjust the weighing machine in correct zero position.
- The  key is to send data to external device.
- The  key is to toggle between different weighing units.
- The  allows the user to **subtract the container value** and returns the display to zero. (Only on **HRB-XG 123**, **HRB-XG 313**, **HRB-XG 1202**)
- The  key is for piece counting. (Only on **HRB-XG 3101**, **HRB-XG 3102**, **HRB-XG 10001**)



HRB-XG 123 / HRB-XG 313 / HRB-XG 1202



HRB-XG 3102 / HRB-XG 3101 / HRB-XG 10001

Program options

Interface Settings

- Press to turn **ON** the scale when instrument displays “-----”
- Press the display will show “**b xxx**” BAU value.
- Press to select among **1200,2400,4800**, or **9600**. (**Default** setting is **9600**)
- Press to enter **Parity mode**, the display will show “**P xxx. PAR**”
- Press to select **odd, even**, or **none**. (**Factory default** setting is **NONE**)
 1. **odd** stands for **7 data bits with odd parity**.
 2. **even** stands for **7 data bits with even parity**.
 3. **none** stands for **8 data bits without parity**.
- Press to enter **Print mode**, the display will show “**n xxx.**”
- Press to select **CON, OFF, KEY**, or **STB**. (**Factory default** setting is **KEY**)
 1. **OFF** stands for serial **data output disabled**.
 2. **KEY** stands for **manual mode** by pressing key.
 3. **STB** stands for **automatic print** when scale is **stable**.
 4. **CON** stands for **continuous print**.
- Press again to return to **weighing mode**.

Parameter Settings:

Setting Beeper

- Press key, and when “-----” shows, press (or) key,
- Then press key multiple times until display shows “**bz ON**” or “**bz OFF**”,
- Press key to switch it **ON** or **OFF**.

Setting ZERO and TARE function merge function

- Press  key, and when “-----” shows, press  (or ) key,
- Press  key multiple times until display shows “Zt ON” or “Zt OFF”,
- Press  key to switch it **ON** or **OFF**.

Setting Auto Shut off

- Press  key, and when “-----” shows, press  (or ) key,
- Press  key multiple times until display shows **A 3**, **A 5**, **A 10**, or **A OFF**,
- Press  key to select auto shut off mode **3**, **5**, **10**, or **OFF**.

Setting Backlight

- Press  key, and when “-----” shows, press  (or ) key,
- Press  key multiple times until display shows **L ON**, **L OFF**, or **L AU**,
- Press  key to select backlight to be **On**, **Off**, or **Auto**.
- Press  again to return to **Weighing Mode**.

Calibration of the weighing machine

Since the effect of the Earth's gravity is not the same everywhere, every balance must be adjusted to compensate for the gravity differences at each location, in accordance with the underlying physical weighing principles that apply to accurate weighing machines. This adjustment process is known as calibration and must be carried out during initial installation, regularly in accordance with internal quality systems, and after each subsequent relocation.

To ensure the best measurement results, it is recommended that the balance be calibrated regularly and frequently using a known external calibration weight (reference pg.18 below).

Calibration

Calibration is done in the factory. Don't recalibrate 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 30 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):

- Turn the balance **ON** and when display shows "-----", press ZERO key, the display will show **CAL**.
- Press ZERO key again, the display will show "**X000.00**", "**X**" is the flashing digit.
- Press UNIT key, the flashing digit will **move to right**.
- Press the TARE (or Pcs) key to **increase** the **value** of the flashing digit.
- Press the ZERO key, the display will show the **A/D value** once the display shows the **stable indicator**.
- Press the UNIT key, the display will show "**X00.00**" or "**X000.00**" depending on the model and capacity.
- Place the corresponding test weight on the center of the pan.
- The display backlight lights up and returns to weighing mode.
- **Calibration is complete.**
- Turn off the power, then turn on the power again, place a known weight on the platform to verify if it is accurate.
- If the weight displayed does not correspond with the value of the calibration weight, please repeat the above steps.

Maintenance & Service



- 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** perform maintenance to 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 the 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 ideally be shipped and transported in its original packaging to prevent any damage during transit.

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.
- If the battery does not last long after charging, 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 max capacity to verify the loadcell still functions.	If scale still registers accurate weight refrain from continued over loading. If errors continue, 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.
<u>For any error that is not shown on this list or that persists after troubleshooting you will need to contact support.</u>			



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 to 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.**

**Scan to Contact Us
OR
Call:707-542-2185**

