LW MEASUREMENTS, LLC

Professional Weighing Equipment

HRB Series intelligent weighing scale

HIGH RESOLUTION BALANCE
WITH COUNTING FUNCTION

HRB 103 HRB 203 HRB 303 HRB 1002 HRB 602

Operation Manual

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: HRB - High Resolution Balances

USA model	UK (Europe) model
HRB 103	
HRB 203	
HRB 303	
HRB 1002	
HRB 602	

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

Signature:

Boon Lim, R & D Manager

Date: 14. 11. 2012

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Introduction

What you should know about these Operating Instructions:

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 and the diverse possibilities of the weighing scale in your daily work.

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

For the labeling of potential hazards and advice, please see Safety below.

Safety

Representations and symbols

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 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 (pull out 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 (pull out power adapter) and secured against inadvertent operation.

In carrying out 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 into the inside of the scale or 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 (pull out power adapter).

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

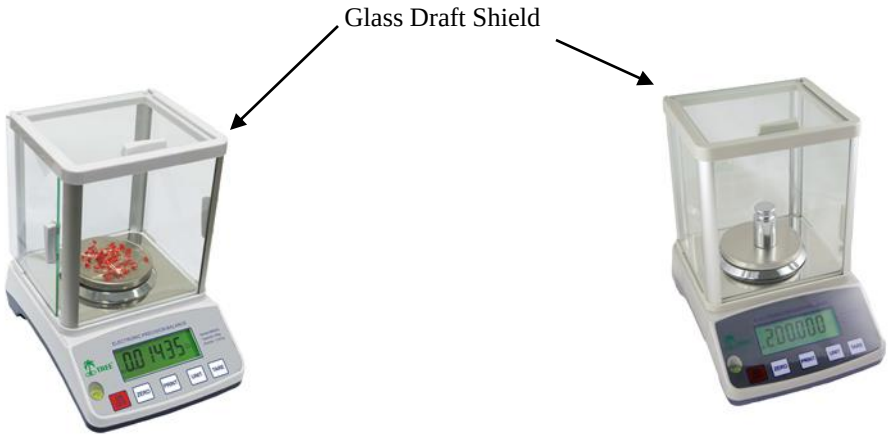
These operating instructions must be read by each user and should be easily accessible at the workplace at all times.

Weight Scale

Construction & Functions

The weighing scale consists of the following parts;

- Weight scale body
- The scale-pan
- Glass Draft Shield
- The adapters
- Operating manual



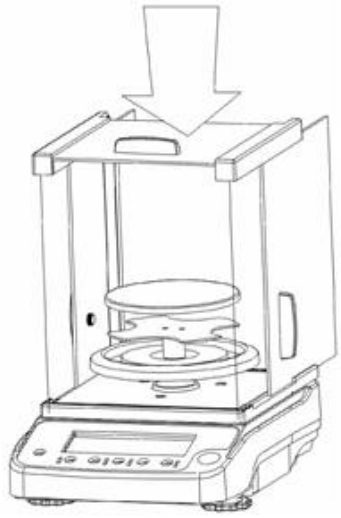
Functions

The HRB Series are high-quality electronic precision weighing scales with counting function and the following specifications

Model number	Capacity	Graduation	Weighing pan Size
HRB 103	100g	0.1g	98mm x 98mm
HRB 203	200g	0.1g	98mm x 98mm
HRB 303	300g	0.1g	98mm x 98mm
HRB 1002	1000g	0.1g	135mm x 120mm
HRB 602	600g	0.1g	135mm x 120 mm
Net/gross weight	2.2kg / 3.1 kg		
Package (Standard carton)	36 x 23 x 14 (cm^3) 37 × 27 ×16 (cm^3)		
Package (Master carton)	2 units in one box 54 x 35 x 40 (cm^3) 6 units in one box 56 × 39 × 34 (cm^3)		
Operating Temp.	0-40℃ (32-104℉)		
Power source	6 x AA dry cells(not included) or AC/DC Rechargeable battery or AC/DC		
	Adapter: 10-12V DC/150mA		

Features

- Auto zero tracking
- Low battery indication
- Large bright backlit LCD
- Large stainless steel pan
- Stability indication
- Auto calibration
- Selectable auto back light
- Selectable beeper
- Selectable auto shut off
- Unit switching: g, ct, oz, tola
- 1.3 million internal resolution
- 24 bit A/D processor
- Less than 1s display setting time
- Highest quality sensor used
- Counting function
- Below weighing - model HRB(-E) 10001 only



Application & Conformity

The Following are instructions of how to correctly use the weight scale:

The weighing scale may only be used for the weighing of solid-materials and of liquids filled into 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 as well as with devices 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 HRB series

Power supply:

HRB 103, 203, 303, 1002, 602:
Input: 110V or 230V AC (+/-15-20%); 50 to 60Hz
Output: 10-12v DC 150mA

HRB 103, 203, 303, 1002, 602:
Input: 110 or 230V AC (+/-15-20%); 50 to 60Hz
Output: 10-12v DC 500mA

Allowable ambient conditions

Temperature: 5°C - 40°C
Relative humidity: 25% - 85%, non-condensing

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

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
'lb' =6CH+62H+20H+20H+20H
'dwt' =64H+77H+74H+20H+20H
'ozt ' =6FH+7AH+74H+20H+20H
'ct ' =63H+74H+20H+20H+20H
'tl.T' =74H+6CH+2EH+54H+20H
'tl.H' =74H+6CH+2EH+48H+20H
'tl.J ' =74H+6CH+2EH+4AH+20H
'GN' =47H+4EH+20H+20H+20H
'dr' =64H+72H+20H+20H+20H
'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

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 in order 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 conditions if it will not be used for an extended period of time.

In order to avoid damage, please follow the instructions provided below, when unpacking the scale:

- Unpack the scale carefully.
- When outside temperatures are very low, the scale should be stored for a couple hours and kept in its box in a dry room at normal temperature, so that no condensation settles on the unit when opening the box.
- Check the scale immediately after unpacking for any external visual damage. If there is any damage on scale, contact customer service immediately.
- 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.18).
- Read through these operating instruction, before you work with the unit and pay attention to the Safety recommendations (reference Safety pg. 6).

Delivery

Inspect delivery for completeness immediately on unpacking all components.

Checklist for complete delivery

	Component delivered present yes / no
Weighing unit body	
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 plastic platter on top of the scale, flat side facing up so the platter sits firmly on the machine with the four “legs” inserted into the corresponding four receptacles.
- Place the stainless steel platter on top of the plastic platter with the flat side facing up.

Connecting the AC Adapter

The following Safety recommendations must be observed when connecting the scale:

⚠ DANGER

The Scale should only be connected to the mains voltage socket with the power adapter supplied. Check before connecting the power adapter to the mains socket, 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 in order for the scale to work to its full potential. Certain conditions can affect the capabilities of the scale, conditions like: the 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 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. 3.2)

Place the scale horizontally and keep the bubble inside the bubble level aligned with the circle (Fig.3.2). In order to get exact measurements, the balance must be carefully leveled after each re-location.

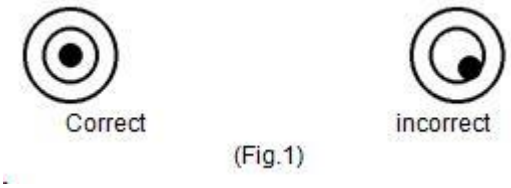
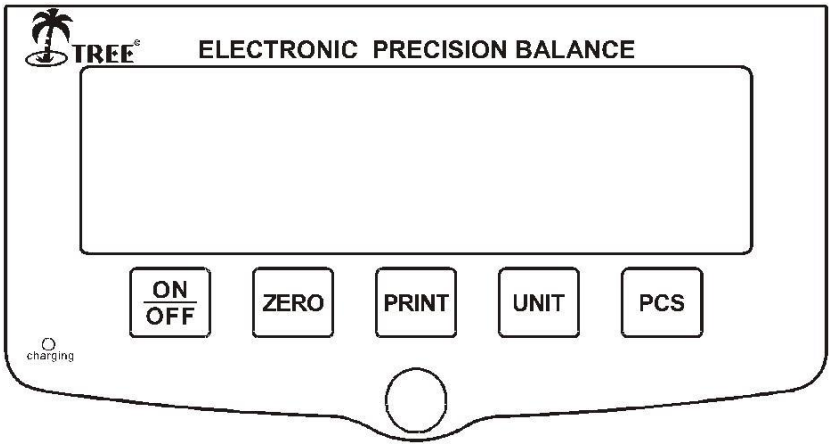


Fig. 1 correct leveling with the aid of the bubble level

Application Menu



Display messages and key functions

Display messages:

Key Functions:

- The On/Off key is to turn the Balance On or Off (Note: it has an On/Off hard switch at the bottom).
- The Zero key allows the user to subtract the container value multiple times within the capacity weight, and is used to set or re-adjust the weighing scale in correct zero position.
- The Print key is to send data to external device through RS232 connector.
- The Unit key is to toggle between different units of measurement.
- The PCS key is for piece counting

Program options

Please see our web-site at http://lwmeasurements.com for practical demonstrations of application usage.

Interface Settings

- Press “On/Off” to turn on the scale, when instrument displays --------
- Press “Print”, the display will show b xxx BAU value
- Press “Unit” to select among (1200,2400,4800,9600), default setting is 9600
- Press “Zero” to enter Parity mode, the display will show P xxx PAR
- Press “Unit” to select odd, even or none (odd stands for 7 data bits with odd parity, even stands for 7 data bits with even parity, none stands for 8 data bit without parity), default setting is none
- Press the “Zero” key to enter print mode, the display will show n xxx mod
- Press “Unit” to select CON, OFF, KEY, STB (Default setting is KEY)

    - OFF stands for serial data output disabled
    - KEY stands for manual mode by pressing “PRINT”
    - STB stands for automatic print when scale is stable
    - CON stands for continuous print

- Press [Zero] again to return to weighing mode

Parameter settings

Setting Zero range when power on

Press the “On/Off” key, and when “ - - - - - - “ shows, press “PCS” key, display will show “ Pzr xxx”, press the “Unit” key to select, factory default setting is 20.

Setting zero range of ZERO key

Press “On/Off” key, and when“ - - - - - - “ shows, press “PCS” key, and then press “Zero” key, display shows “ Kzr xx ”, press UNIT key to select, factory default setting is 4.

Setting Zero range of TARE key

Press the “On/Off” key, and when“ - - - - - - “ shows, press “PCS “ key, and then press “Zero” key multiple times till display shows “ Ktr xxx”, press the “Unit” key to select, factory default setting is 100.

Setting overload range

Press the “On/Off” key, and when “ - - - - - - “ shows , press “PCS” key, and then press “Zero” key multiple times till display shows “ Ovr xx ”, press the “Unit” key to select, factory default setting is 9d

Setting Beeper

Press ON/OFF key, and when“- - - - - - “shows, press PCS key, and then press ZERO key multiple times till display shows “b2 ON” or “b2 OFF”, press the “Unit” key to switch it on or off.

Setting ZERO and TARE function merge function

Press the “On/Off” key, and when“- - - - - - “shows, press “PCS” key, and then press the “Zero” key multiple times till display shows “Zt ON” or “Zt OFF”, press “Unit” key to switch it on or Off, in these models, it has to be set off.

Setting Auto Shut off

Press the “On/Off” key, and when“- - - - - - “shows, press “PCS” key, and then press “Zero” key multiple times till display shows “A ON” or “A OFF”, Press “Unit” key to select Auto shut off mode “ON” or “OFF”

Setting Backlight

Press the “On/Off” key, and when“- - - - - - “shows, press “PCS” key, and then press the “Zero” key multiple times until the display shows “L ON”, “L OFF” or “ L AU”, Press the “Unit” key to select backlight to be “On”, “Off” or “Auto”.

Pieces counting

- Press the “On/Off” to turn on the Balance, wait for “0” to appear on the display, If necessary, press [ZERO] key to set the display to “0”.
- Press “PCS” key to enter “PCS” mode, display will show P = XX
- Press “Unit” key to select XX value (10, 20, 50 or 100).
- Place a given number of samples of one item on the pan, the sample size should be 10, 20, 50 or 100 pieces.
- Press the “PCS” key to confirm sample quantity, start counting by adding weight on the platform.
- Press the “Unit” key to return to the weighing mode.

Calibration

Using an External Calibration Weight

Calibration is required when the weighing scale is initially installed or if the balance is moved to a substantial distance from the original location.

- Turn the Balance on and let it warm up for about 10 minutes, then press the power key twice, when the display shows “--------”, press the “Zero” key. The display will show “CAL”.
- Press the “Zero” key again, the display will show “X0000 ”, “X” is the flashing digit
- Press “Unit” key, the flashing digit will move to the right.
- Press the “PCS” key to increase the value of the flashing digit (“X” is the calibration weight it can be set according to users’ requirements, we recommend a minimum weight of at least 50% of the balance capacity).
- Press the “Zero” key, display will show a series of the digits, wait for stable indication shows, and press the “Unit” key, the display will show " X000.00". The x is the set calibration weight.
- Place the corresponding test weight on the center of the pan until the scale beeps and returns to weighing mode.
- Now the calibration is completed, remove the test weight.
- Turn off the power, then turn on the power again, place test weight on the platform to verify if it is accurate.
- If not, repeat above steps.

Maintenance & Service

The weighing scale is a precision instrument, it must be treated carefully and cleaned regularly

⚠ 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 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

⚠ CAUTION

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.

Transport & Storage

Your weighing machine is a precision instrument, treat it carefully. Avoid shaking, severe impacts and vibration during the 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 which meets the following conditions:

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

Warranty

The products are under warranty against factory defects for a period of two (2) years from the date of shipment.

For Customers within the lower 48 states of the continental United States. LW Measurements will pay for fright both ways for the first 30 days after purchase. After 30 days expire the customer is responsible for shipping the product back to us. After the product is received we will inspect it and as necessary we will repair or replace and will ship the product back to the customer at our expense.

Any new scales returned for warranty must be properly packaged in the original box. If they are not properly packed an in the original box, the customer pays for shipping cost. If we determine there is a factory defect, we will pay for the shipping back. If we determine that it is not a factory defect, the customer will pay shipping.

For Customers outside the lower 48 States, including Mexico, Canada, Puerto Rico, Hawaii, Alaska and all other countries, customers must pay for shipping.

Our warranty does not cover misuse or neglect including but not limited to battery or water damage, overloading, and chewed or cut wires. If the product is found to have been misused or damaged by the customer, LW measurements is not responsible for the cost of return.

For warranty claims please go online to lwmeasurements.com and fill out the warranty submission form or call your customer service representative.