T-Scale

Technical Manual

IHB++ Series

Precision Balance

REV:M1, JUne 2014

CONTENTS

1. PRECAUTIONS

WARNING

DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, CLEANING, OR SERVICING. FAILURE TO DO SO COULD RESULT IN BODILY HARM OR DAMAGE THE UNIT.

CAUTION

- **Permit only qualified persons to service the instrument**
- **Before connecting or disconnecting any components, remove the power.**
- **Failure to observe these precautions bodily harm or damage to or destruction of the equipment.**

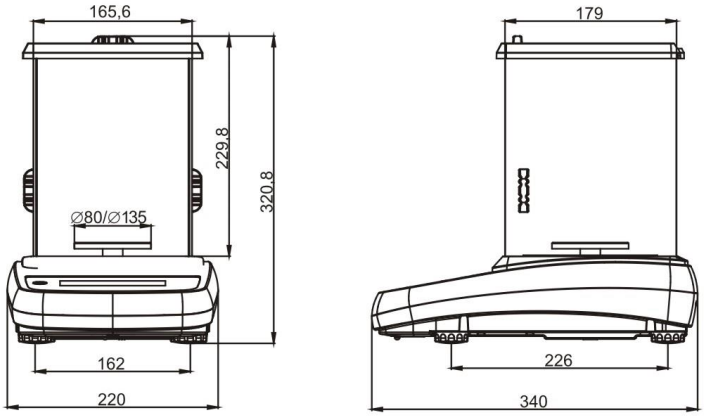
- The weighing scale is a precision electronic instrument, handle it carefully.
- Do not install the scale in direct sunlight.
- Verify the local voltage and receptacle type are correct for the scale.
- Only use original adaptor, other could cause damage to the scale.
- Pluggable equipment must be installed near an easily accessible socket outlet.
- Avoid unstable power sources. Do not use near large users of electricity such as welding equipment or large motors.
- Avoid sudden temperature changes, vibration, wind and water.
- Avoid heavy RF noise.
- Keep the scale clean

2. INTRODUCTION

- The IHB++ series balance, that amplifies signals from a load cell, converts it to digital data and displays it as a mass value.
- It is accurate, fast and versatile series of general purpose balances with counting, % weighing functions and accumulation
- 16.5 mm LCD with white LED back light display
- Battery provide up to 40 hours of continues use (with out backlight)
- Capacity 300g and 3000g.
- All units include automatic zero tracking, tare, and an accumulation facility that allows the count to be stored and recalled as an accumulated total

3. SPECIFICATION

3.1 Dimension



3.2 Specifications

IHB++ SERIES		
Model #	**IHB++ -300**	**IHB++ -3000**
Maximum Capacity	300g	3000g
Readability	0.001g	0.01g
Resolution	1/300,000	1/300,000
Tare range	-299.999g	-2999.99g
Minimum Capacity	0.02g	0.2g
Linearity ±	0.003g	0.01g
Platter	Φ80mm	Φ120mm
Wind shield	Yes	Yes
Units of Measure	g. /ct / lb / oz / d / gn / ozt / dwt / mom / tlT / tlh / tlj / t / bt / n	

Common Specifications	
Interface	RS-232 Output Optional
Stabilisation Time	2 Seconds typical
Operating Temperature	5°C - 40°C / 41°F - 104°F
Power supply (external)	12V/500mA or built-in rechargeable battery 6V/1.2Ah
Calibration	Automatic External
ADC	Σ-Δ
Display	16.5 mm high 6 digits LCD with auto backlight and loading bar graph
Balance Housing	ABS Plastic, Stainless Steel platform
Pan Size	Φ80mm / Φ120mm
Overall Dimensions (wxdxh)	220mm x 340mm x 321mm
Other Features and Specs	accuracy enhancement for parts counting and percentage weight function

4. INSTALLATION

Unpacking

Carefully take the balance out of its package, make it sure its not damaged and all accessories are included.

- Remove the weighing scale from the carton.
- Remove the protective covering. Store the packaging and to use if you need to transport the scale later.
- Inspect the scale and terminal for damage.
- Make sure all components are included

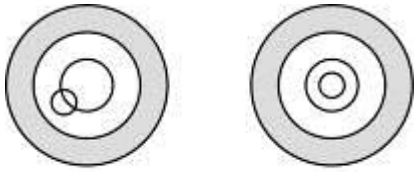
Accessories,

1. Balance
2. Adaptor
3. Pan
4. Product manual

Level Adjusting

Place the scale on a table.

Check the water mark. If, bubble is not centre adjust the leveling feet until reach centre. Check the level when you change the location.

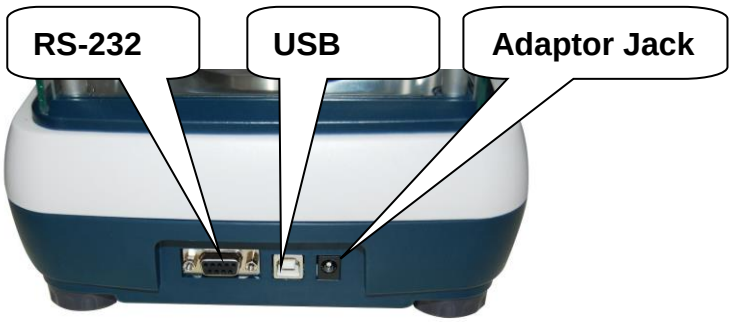


Charging Battery

- To charge the battery insert the adaptor pin to jack, jack is locating rear side of the scale. Adaptor simply plug into the mains power. The scale no needs to be turned on.
- The battery should be charged for 12 hours for full capacity.
- Left side of the display there is an LED to indicate the status of battery charging. When the scale is plugged into the mains power the internal battery will be recharged. If the LED is green, the battery has a full charge. If it is red, the battery is nearly discharged and if yellow, the battery is being charged.
- Do not use any other type of power adaptor than the one supplied with the scale.
- Verify that the AC power socket outlet is properly protected.

Note: Please charge the battery before using the scale for the first time

Installation

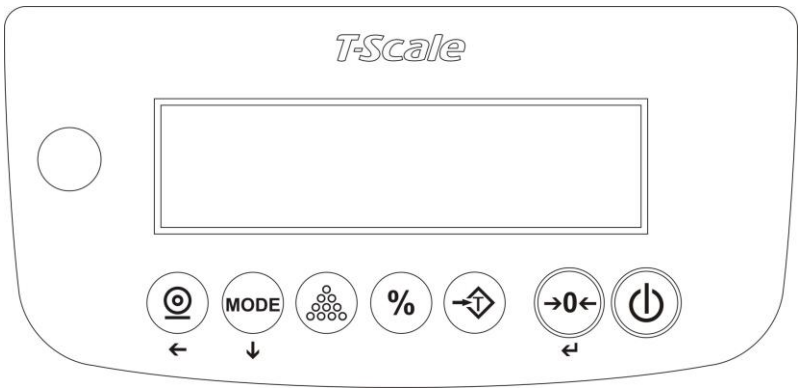


- Place the scale on a table..
- Connect the adaptor pin in to the scale adaptor jack. Adaptor jack is locating, rear side of the scale.
- Adaptor connects into your AC power socket. Pluggable equipment must be installed near an easily accessible socket outlet with a protective ground/ earth contact.
- Turn on the On/Off key. If you want to turn off, press the key again.
- Display will be show the version number and will be starting self checking.
- After self checking, display will be come to normal weighing mode.
- **Warm-up time of 15 minutes stabilizes the measured values after switching on.**
- Calibrate with exact calibration weights, minimum 1/3 of the scale capacity want to use for calibration. For calibration, see details in parameter.

Then you can start your operation

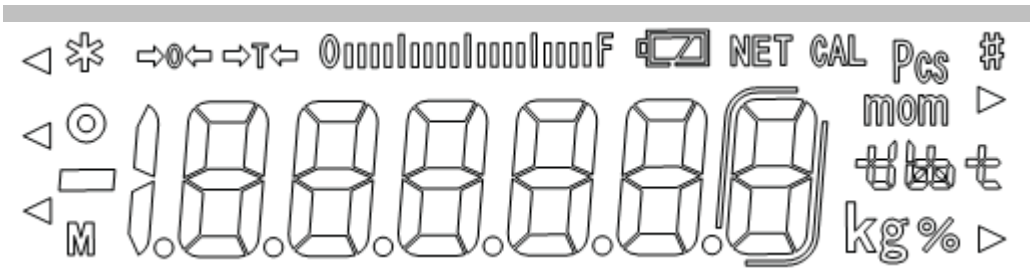
5. DESCRIPTION

Key Board



	Turns the scale power On / Off
→0←	Sets display to Zero
	Subtracts weight of container
%	Set percentage weighing function
	Set to counting mode
MODE	Set to weighing units
	Set to print the results

Display



DISPLAY	FUNCTION
⇨0⇦	Indicator for Zero display
⇨T⇦	Indicator for Tare display
0▯▯▯▯▯▯▯▯▯▯▯▯▯▯F	Indicator for weighing capacity graph
NET	Indicator for Net weight
◎	Indicator for Display stability
Pcs	Indicator for piece counting
mom kg t	Indicator for units
%	Indicator for Percent weighing
	Indicator for Charging status of battery Voltage has dropped
	Low Voltage
	Fully Charged

6. OPERATION

Initial Start-up

Warm-up time of 15 minutes stabilizes the measured values after switching on.

6.1 Power ON/OFF

Switch on the scale by pressing  . The display is switched on and the self test is started.
If you want to switch off press the key again.

6.2 Zero

Environmental conditions can lead to the balance exactly zero in spite of the pan not taking any strain. However, you can set the display of your balance to zero any time by pressing 

key and therefore ensure that the weighing starts at zero.

6.3 Tare

The weight of any container can be tared by pressing  button so that with subsequent weighing the net weight of the object being weighed is always displayed.

- Load weight on the pan.
- Press  key. Zero is displayed, and tare is subtracted.
- Remove weight from the platform. Tared weight is displayed. It can set only one tare value. It can display with a minus value.
- Press  key. Zero is displayed, tare weight is cleared.

6.4 Weighing Unit

Press 

key in the weighing mode to change the
Weighing unit: g / ct / lb / oz / d / ozt / dwt / mom / tl.T / tlj / t / bt / n

6.5 Percent Weighing

The scale can set a sample weight to be shown as 100%. Then any other weights place on the scale, it will be displayed as a percentage of the original sample.

For example:

- 350g weight place on the scale and follow by press the 

key is pressed the display will show 100.00%.
- Remove the weight, and ensure display is zero
- Place 300g weight on the platform, display will be show 85.71 % as per the percentage of 350g (100%)
- The weighing may be amended on the basis of greater numbers of samples, improves the accuracy of percentage large quantities.

6.6 Parts Counting

Parts Counting

Press  key enter the parts counting mode and select the counting options by pressing 

.

Display will be shown

sp 10	For 10 pieces
sP 20	For 20 pieces
sP 50	For 50 pieces
sP 100	For 100 pieces
sP 200	For 200 pieces

Select the counting option and press 

to confirm.

Then can add more weight display will be show the number of parts.

<u>Parts Counting Operation</u>

If necessary place a container on the platform and press  to make zero.

- Select the parts quantity as per the option
- Place the load on the platform

- Press  key to confirm, display will be shown ---- then will show the quantity
- Then can add goods on the platform, display will update the parts quantity automatically

Press  key to change normal mode, when in counting mode.

6.7 Accumulation

The scale can be set to accumulate manually by pressing  key.
Before operation scale should be stable and return to zero, accumulation available only when weight more than 20d
To enable accumulation function, select parameter **F4 ACC > ACC on**

Accumulation Operation

- Place the load on the platform.
- Press  key, when displayed STABLE indication.
- Display will be show **Acc 1**
  then will be show the total saved value. These displays will be shown only three seconds. If the optional RS-232 interface is installed the weight data will be send to printer.
- Remove the weight from the pan.
- When display get zero and stable then place the second weight.
- It can continue until the memory gets fully.

6.7.1 Memory Recall

To recall the memory press  key.
Display will be show **Acc X**
(X: Total number of accumulation) then will be show the total saved value. These displays will be shown only three seconds.

6.7.2. Memory Clear

To clear the memory, press  key to view and press  **key** during the accumulation displayed. Display will be show normal display , all accumulation memory cleared from the memory

7. PARAMETERS

Enter the Menu

- Turn on the scale. Press MODE during that start up until display will be shown `F1 unt`

Choose the Menu

- Press MODE, it can choose menu block or options one by one.

Enter the Selected Menu

- Press →0←, it can confirm which will be shown displayed.

Enter in to TECH

- When display showed `Pi n`, press and keys to enter the function

Escape from the Menu

- Press key, it can escape from the menu to weighing mode.

Menu	Sub Menu		Description
F1 unt	ct / lb / oz / d /gn/ ozt / dwt / mom / tl.T / tlj /tlh/ t / bt / n		To select weighing unit on / off
F 2 bl	El au		To set back light automatic on
	El on		To set back light always on
	El off		To set back light always off
F3 com	S 23 2 S usb	Select first RS 232 or USB	
		P prt	By pressing Print key , weighing value will be added to the memory and print the print out
		P cont	Send data continuous
		P auto	Automatic accumulation. Individual weighing values are automatically added
		P ask	ASK mode Command R: read data Command T: Tare Command Z: Zero

	Set BAUD rate After setting the RS 232 mode, display will be shown current baud rate b XXX. Baud rate Options: b600, b1200, b2400, b4800 and b9600	
	Set Printer type After setting BAUD rate display will be show the printer type	
	Lp 50	Label Printer
	Tp	Ticket Printer
	Set Language After setting Printer type display will be show the Language When selevt the TP printer, don't show language	
	Eng	English
	chi	Chinese
F4 acc	Acc on	Accumulation function enable
	Acc of	Accumulation function disable
tech	pin	Enter the password
P 1 lin		Linear Calibration
P 2 Cal		Normal Calibration
P 3 cnt	xxxx	This display will show XXXXX for indicating the internal counts
P 4 a 2n	A2 off	To set to disable auto zero function
	A2 0.5d	To select the auto zero ranges
	A2 1d	
	A2 2d	
	As 4d	
P 5 gra	XXXXX	To set local gravity
P6 cap	120g / 10000 g	To set Capacity (Optional)
P7 SPD	SPD 1	To set AD speed
	SPD 2	
	SPD 3	
	SPD 4	
P8 ical	ICAL OF	To set automatic calibration by built-in weight
	ICAL ON	
P9 hour	Off	To set timing calibration time
	1 hour	
	2 hour	
	3 hour	
	4 hour	
	5 hour	
	6 hour	
	7 hour	
	8 hour	

8. CALIBRATION

- Turn on the scale.
- Press MODE key during self checking, display will be show `f 1 unt`
- Press MODE key until display will be show `tech`
- **Note: Before enter the tech menu, press calibration switch, which is locating below the scale**
- Press  and  keys, display will be show `p 1 lin`

8.1 Linear Calibration `li near`

- Press →0← key to enter calibration, display will be shown `pi n`
- Press  and % keys, display will be show kg or lb, press MODE key to select the calibration unit kilograms or pounds, press →0← key ,display will be show `Load0`.
- ***Note: Ensure the pan is empty**
- After stable and zero indicator on, display will be show `Load1`
- Place the first calibration mass weight on the pan.
- After stable and zero indicator on, display will be show `Load 2`
- Add again the second calibration mass weight on the pan.
- After stable and zero indicator on, display will be show `Load 3`
- Add again the third calibration mass weight on the pan.
- After stable and zero indicator on, display will be show `Load 4`
- Add again the fourth calibration mass weight on the pan, (***Note: Calibration mass weight should be full capacity of the scale**)
- After stable and zero indicator on, display will be show `load 0` Remove the calibration mass weight from the pan
- ***Note: Ensure the pan is empty**
- After stable and zero indicator on, display will be show `Load 4`
- Place the calibration mass weight on the pan, (***Note: Calibration mass weight should be full capacity of the scale**)
- After stable and zero indicator on, display will be show `Load 3`
- Remove the fourth calibration mass weight from the pan

- After stable and zero indicator on, display will be show `Load 2`
- Remove the third calibration mass weight from the pan
- After stable and zero indicator on, display will be show `Load1`
- Remove the second calibration mass weight from the pan
- After stable and zero indicator on, display will be show `load 0` Remove the first calibration mass weight from the pan (***Note: Ensure the pan is empty)**
- After stable and zero indicator on, display will be will be start self checking. After self checking display will come to normal weighing mode

***Note:**

During the linear calibration steps LOAD 1 to LOAD 4, mass weights want to add on the pan. Don't remove all mass weights for the next step.

During the linear calibration steps LOAD 4 to LOAD 1, mass weights want to reduce from the pan. Don't remove all mass weights for the next step.

8.2 Normal calibration `p2 cal`

- Press →0← key to enter calibration, display will be show kg or lb, press MODE key to select the calibration unit kilograms or pounds, press →0← key ,display will be show un`Load`.
- Remove all the weight from the platform.
- When scale get stable,display will be show `load`
- Place the calibration weight (1/3 of the capacity) on the platform
- After stable, scale will be calibrate automatically and will start self-test.

Note: Incase display will show any error message or incorrect measurement, repeat the calibration again.

8.3 Manual calibration by built-in weight

In the weighing mode, press and hold % key 3 seconds. The display will be show `XCALX` , after 20 seconds, the display will be show `PASS` and come back to the weighing mode.

8.4 Check internal counts `F3 CNT`

Press →0← key to enter internal counts, the display will be show “ XXXXX ”. Press key to escape from the menu.

9. RS232 OUTPUT

9.1 Specifications:

RS-232 output of weighing data
ASCII code
600~9600 Baud
8 data bits
No Parity

9.2 Continuously output protocol

HEADER1: ST=STABLE， US=UNSTABLE
HEADER2: NT=NET， GS=GROSS

9.3 Print Format

Printer / Mode	LP-50（OS-2130D）	TP
Weighing	2013/07/05 12:00 S/NO： 1 WEIGHT： 200.000g	NO： 1 WEIGHT： 200.000g
Counting	2013/07/05 12:00 COUNT： 250 pcs UNIT WT： 0.99998 g WEIGHT： 249.998 g	COUNT： 250 pcs UNIT WT： 0.99998 g WEIGHT： 249.998 g
Percent	2013/07/05 12:00 PERCENT： 100.00%	PERCENT： 100.00%