

HARDY

PROCESS SOLUTIONS



HIBSD

Washdown Bench Scales
Weighing Indicator Technical Manual

CONTENTS

1. PRECAUTIONS.....	3
2. SPECIFICATIONS.....	4
3. INTRODUCTION.....	5
4. INSTALLATION.....	6
Unpacking.....	6
Installation.....	6
Load cell Connections.....	7
Adaptor and Charging.....	7
5. KEYS DESCRIPTION.....	8
Keyboard.....	8
Secondary functions of the keys.....	9
Display.....	9
6. OPERATION.....	10
6.1. Basic Operation.....	10
1. Power On/Off.....	10
2. Zero.....	10
3. Tare.....	10
4. Unit.....	10
6.2. Checkweighing.....	11
6.2.1. Limits.....	11
6.2.2. Use.....	11
6.3. Accumulation.....	12
6.3.1. Memory Recall.....	12
6.3.2. Memory Clear.....	12
6.3.3. Automatic Accumulation.....	12
6.4. Parts Counting.....	13
6.5. Animal Weighing.....	13
6.6. Keyboard Lock.....	13
6.7. Auto Power Off.....	14
6.8. Back Light.....	15
6.9. Bluetooth.....	15
7. PARAMETERS.....	16
8. CALIBRATION.....	21
9. RS-232 OUTPUT.....	24
9.1. Specifications.....	24
9.2. Connector.....	24
RS-232 Output.....	24
Check weighing Output.....	24
9.3. Continuous Output protocol.....	24
10. DRAWINGS.....	26
11. ERROR CODES.....	28

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
<ul style="list-style-type: none">• Permit only qualified persons to service the instrument• Remove power before connecting or disconnecting any components.• Failure to observe these precautions may cause bodily harm or damage to or destruction of the equipment.



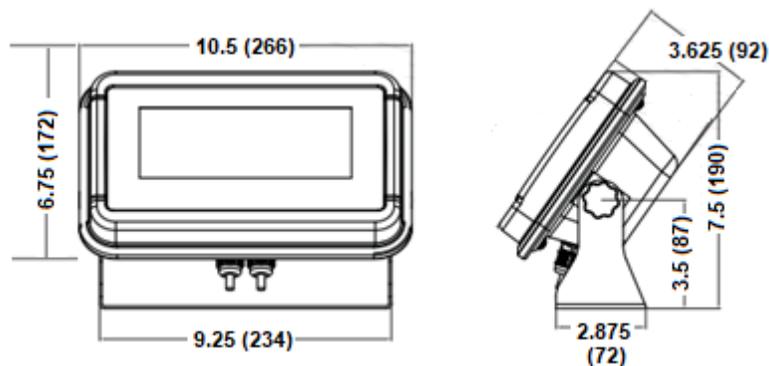
- The weighing Indicator is a precision electronic instrument, handle it carefully.
- Do not install the scale in direct sunlight.
- Verify the local voltage and receptacle type are correct for the scale.
- Only use original adaptor, use of other adaptors cause damage to the scale.
- Pluggable equipment 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 Indicator clean

2. SPECIFICATION

Overall Display View:



Dimensions Inches (mm)



Specifications

Model	HIBSD
Display	7" Diagonal LCD
Housing	Stainless Steel
Operating Temperature	0°C - 40°C / 32°F - 104°F
Resolution	3,000 divisions of Full Scale
Key Pad	7 Keys
Power	AC Adaptor (12V/500mA)/ Battery (6V/4Ah)
Calibration	Automatic External
Interface	RS-232 Output Optional
Load cell drive Voltage	Max: 5V/150mA
ADC Update	100ms
Stabilization Time	1s Typical

3. INTRODUCTION

- The Hardy HIBSD series weight Indicator is a general-purpose weighing instrument that amplifies and converts signals from a strain-gauge based load cell(s) to display or transmit the weight values.
- The Indicator is suitable for use with load cells, bench scales or floor scales and is capable of more specialized applications such as static check weighing, weight accumulation (totalizer) and animal weighing (management of unstable mass).
- The Indicator's large seven-inch diagonal LCD includes a back light for low-light viewing.
- When properly installed, the Indicator is designed for IP65 environments.
- An optional RS-232 port allows the Indicator to be connected to a printer, PC or PLC.

4. INSTALLATION

Unpacking

Inspect the Indicator to make sure that it is not damaged and that all are parts are included:

- Remove the Indicator from the carton.
- Remove the protective covering.
- Inspect the Indicator for damage.
- Make sure all components are included:
 1. Indicator
 2. Adaptor
 3. Manual
 4. Load cell Output connector (Optional)
 5. RS-232 Output Connector (Optional)

Installation

- Place the Indicator on a table or use the universal bracket to mount to a wall or column.
- If purchased with a bench scale, connect bench scale cable to the Indicator's load cell connector. If using the Indicator with a load cell, an array of load cells, or a floor scale; open the Indicator, remove the load cell connector cable and wire the home-run cable directly to the instrument following the pin-out table below.
- Connect the power adaptor to Indicator's power connector.
 - ✓ The power adaptor should be used with an outlet that has protective ground/earth contact.
- Turn on by pressing the POWER key. Turn off by pressing the key again.
 - ✓ Display will show the scale capacity and start a self-test cycle.
 - ✓ After the self-test, the display will revert to a normal weighing mode.
- A 15-minute warm-up is recommended before use of the Indicator to allow stabilization of the scale system. Using the Indicator immediately after power-up may result in incorrect weigh readings.
- Calibrate with certified test weights, a minimum 1/3 of the scale capacity is recommended for calibration. Calibration details are located sections 7&8.

Load cell connections

- Connect load cell, floor scale or home-run cables to the Indicator as shown below:

Pin	Connection
Pin 1	Signal +
Pin 2	Signal -
Pin 3	Shield
Pin 4	Exc -
Pin 5	Exc +

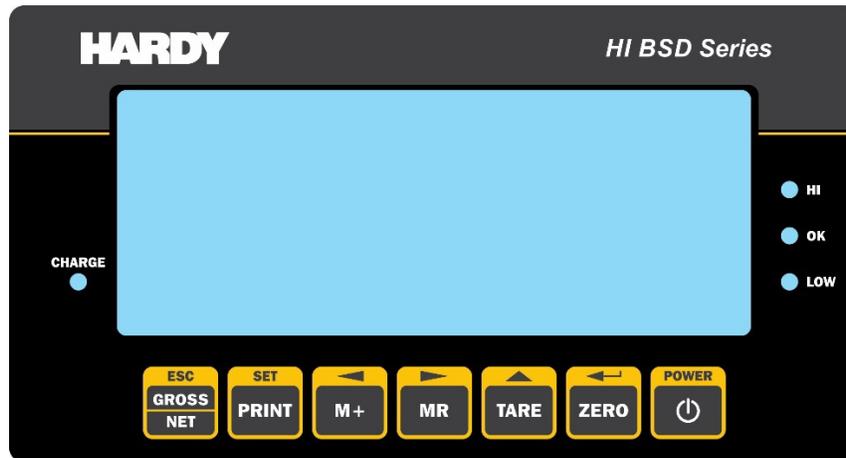
- The Indicator can power up to four 350 ohm load cells.
- The Excitation voltage is 5V DC \pm 5%.

Power Adaptor and Charging

- When the scale is plugged into AC power, the internal battery will be automatically be charged. 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.

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

5. KEYS



Keys	Description
	ON/OFF
	Zero Display
	To perform a tare function.
	Memory recall key, shows the stored values from the memory
	Accumulator key, current values will store to the memory
	To send the data to printer, PC or PLC.
	Pressing the button shifts between Gross / Net Weight. To change measurement Units from lbs to kgs, hold button down for three seconds.

Secondary functions of the keys

Each key in the Indicator has secondary functions, which are defined below.

Function	Keys
To confirm the selected menu (enter)	
To change the menu and active digit	
To move the active digit to right	
To move the active digit to left	
To enter into a menu and to clear the active digit.	
Escape from the menu to normal operation.	

6. Operation

Initial Start-up

Recommended warm-up time is 15 minutes from initial power-up.

6.1. Basic Operation

1. Power On/Off:

- Switch on the Indicator by pressing  .

2. Zero

- Zero the scale any time by pressing  .

3. Tare

- Tare the weight of a container by pressing  . The weight displayed will be the Net Weight (the weight of the product excluding the weight of the container).
- Place an empty container on the platform.
- Press  . ZERO will displayed, and tare is subtracted.
- Remove the container from the platform. Tare weight is displayed and will be shown as a minus value (weight of the container).
- Press G/N to change between gross weight and net weight.
- To clear the tare value, remove the container and press  . Zero is displayed, tare weight is cleared.

4. Select Unit

Press and hold the  key to change the units of measure: Kg, Lb, etc.

6.2. Checkweighing

Use the checkweighing function to determine if the weight of an object is too heavy, too light or is acceptable; indicated by HI, OK or LOW LEDs as well as an audible beep when selected.

See section 7. **PARAMETERS** for steps to enter the mode.



6.2.1. Set Limits

- Press  and  keys at the same time, the display will show **set h**.
- Press  key to select either **set h** (set high) or **set l** (set low).
- Press  key to confirm the selection, the display will show **00000** and the last digit will blink.
- Press  key to increment the value of the blinking digit.
- Press the  and  keys to change the active digit.
- Press  key to confirm the value,
- Repeat the above to set the other limit (either high or low).
- To escape from the settings press  key.

6.2.2. Set the audible alarm

- Press  and  keys together, display will be show **set h**.
- Press  key to select display **beep**.

- Press  key to confirm, display will be shown **no** or **ok** or **ng**
- **Check mode no** : No beep.
- **Check mode ok** : When the weight is between the limits. OK will be shown and beeper will sound.
- **Check mode ng** : When the weight is outside of the limits, the beeper will sound.

Note: Weight must be greater than 20 divisions for Checkweighing to function.

6.3. Accumulation

The Indicator can be set to accumulate manually by pressing the  key. See section 7. **PARAMETERS** for steps to enter the mode.

Accumulation Operation

- Place an object on the scale.
- Press  key when STABLE is shown.
- The display will show **acc 1**, then will show the total saved value. Values are shown for three seconds.
- Remove the object being weighed from the scale.
- After the display stabilizes at zero, place the second object on the scale.
- Press  key when STABLE is shown.
- Repeat for additional objects to be accumulated.

Note: A total of 99 objects may be accumulated or until the memory of the Indicator is exceeded.

Note: Weight must be greater than 20 divisions for Accumulation to function.

6.3.1 Memory Recall

To recall the memory press  .

Display will show **acc X** (X = Total number of objects accumulated), then show the total saved value. Values are shown three seconds.

6.3.2. Memory Clear

To clear the memory, press  and  keys together.

Display will show **Acc 0**, indicating accumulation has been cleared from memory.

6.3.3. Automatic accumulation.

The Indicator can be set to accumulate automatically.

See section **7. PARAMETERS** for steps to enter the Automatic Accumulation mode. Once set, the AUTO Indicator will be displayed.

Automatic Accumulation Operation

- Place an object on the scale.
- When the display shows STABLE indication, it will beep twice then show **acc 1**, followed by the total saved value. Values will be shown three seconds.
- Remove the object from the scale.
- After display stabilizes at zero, place the second object on the scale.
- Repeat for additional objects to be accumulated.

Note: A total of 99 objects may be accumulated or until the memory of the Indicator is exceeded.

6.4. Parts Counting

To enter the parts counting mode, press and hold  until **p 10** is shown.

Press  to change the initial quantity to be counted.
Options: **p10 / p 20 / p 50 / p100 / p 200**

Parts Counting Operation

- Select the quantity of parts to be used for part calibration.
- Place the selected quantity of parts on the scale.
- Press  key to confirm the parts are on the scale, display will then show ---- then followed by the quantity.
- Place additional parts on the scale, the display will automatically update to show the total parts.
- Press  to switch back to normal weighing mode.

6.5. Animal Weighing

The Indicator features a mode designed to weigh vibrating or unstable loads. This function is useful for animal weighing.

See section **7. PARAMETERS** for steps to enter the mode.

- Place a load on the scale, after a few seconds the Indicator will display a stabilized weight value.
- Add or remove loads to update the locked weight values.
- To enter or exit animal weighing mode, press  and  key together.
- When in animal weighing mode, the **HOLD** Indicator will be displayed.

6.6. Keyboard Lock

The Indicator features the ability to lock the keyboard to prevent unintentional changes while not in use. See section 7. **PARAMETERS** for steps to enter the mode.

- The keyboard lock initiates 10 minutes after the last key press
- When lock function is active, the display will show **k-lok** when keys are pressed.

- To unlock the keyboard press and hold  ,  and  keys for three seconds, the display will show **u lck**.

6.7. Automatic power-off

The Indicator will automatically shut off when mode is enabled.

- Hold  for three seconds until **setbl** is displayed
- Press  until **Set of** , is displayed then press  to confirm.
- Press  to change the selection, than press  to confirm
- Press  to escape from the settings and return to normal use.

Set of	Of 0	To turn auto off function to off, or keep scale always on
	Of 3	Set to turn off three minutes later
	Of 5	Set to turn off five minutes later
	Of 15	Set to turn off 15 minutes later
	Of 30	Set to turn off 30 minutes later

6.8. Back Light

- Hold the  key three seconds until the display shows **setbl**
- Press  once to confirm, then press the  key to select.
- Press  to confirm selection, then press  to escape from the settings.

setbl	Bl au	Back light will be on while in use.
	Bl on	Back Light will always be on.
	Bl off	Back Light will always be off.

6.9 Bluetooth Operation

Certain models of indicators feature an optional Bluetooth function. See section 7. **PARAMETERS** for steps to enter the mode.

- Turn on the Indicator and other Bluetooth device.
- Scale should be within Bluetooth range of the Bluetooth device.
- Search for the new Bluetooth device in the PC or mobile device.
- Select the device. If asked for a password, enter 1234
- Set the current COM port and settings as per scale device.

7. PARAMETERS

To select modes or set parameters, follow the below steps:

- Turn on the Indicator and press  during the self-check countdown. The display will show **pn** to indicate parameter mode is enabled.
- Next press , then  then  (passcode) to allow parameter modification.
- Use the table below, press the  key to scroll through the different **Menus**. The display will first show **P0 chk**, followed by **P1 ref**, **P2 com**, **P3 cal**, etc. as the key is pressed.
- Press  to confirm **Menu** selection and move into the **Sub Menus**.
- Press the  key to scroll though different Sub Menus and  to confirm selection(s). Repeat when **options** need to be selected.
- Once a selection has been completed, press  to go back one level; pressing several times to escape from parameter setting.

Menu	Sub Menu	Description	
P0 chk	Set H	Set high limits for checkweighing	
	Set l	Set low limits for checkweighing	
	beep	No	No beep for checkweighing
		Ok	Beep, when checkweighing between the limits
	ng	Beep, when checkweighing is out of limit	
P1 ref	A 2n 0	Automatic zero tracking Options: off, 0.5d, 1d, 2d, 4d	
	Oauto	Zero setting range, after switching on the scale to zero. Options: 0, 2, 5, 10, 20, 50, 100	
	Orange	Manual zero setting range. Options: 0, 2, 4, 10, 20, 50, 100	
	Otare	Auto zero tracking for NET mode.	

		(After pressing tare, NET weight will be zero) Option: on /off
	Speed	Set the ADC speed Option: 7.5 / 15 / 30
	Zero	Sets a new zero point.
P2com		
	Lang	To set language. Options: Eng for English; Chn for Chinese
	ACC	ON accumulation function on OFF accumulation function off
P3cal	Deci	To set to use decimal Options; 0 / 0.0 / 0.00 / 0.000/0.0000 MUST BE SET BEFORE CALIBRATING.
	Dual (Unused)	
	Cal	Nolin
		To set nonlinear calibration
		Liner
		To set linear calibration using 1/3 capacity at a time.
	Count	Show scale internal counts
	gra	To set local gravity offset. San Diego Default: 9.
P4oth	Lock	To set keypad lock Options: on / off
	anm	To set animal mode. Options: on / off Animal mode pauses between outputs of weight.
P5unit	Kg /g/ lb/ lb-oz	To set unit. Options: On / Off . When the unit option is on, that unit will be active. HJ and TJ are unused.
P6xcl	Unused	
P7rst		To reset the parameters back to the factory settings.

Note: Dual – This function is used for dual interval and must be on to set Capacity and Division. **On:** Dual interval enabled / **Off:** Dual interval disabled.

8. CALIBRATION

- Turn on the Indicator and press  during the self-check countdown. The display will show **pn** to indicate parameter mode is enabled.
- Press , then , then  to allow parameter modification, the display will show **po chk**.
- Press  until the display shows **p 3 cal**.
- Press  key to confirm then press  to select **cal**
- Press  key to confirm the selection.

8.1. Standard calibration

- Press the  key once again to select to **Nolin** and begin the calibration process. The display will show **unld** (unload). Remove all the weight from the scale.
- When the Indicator stabilizes, press  to confirm there is no weight on the scale. Display will then show the last calibration weight used.
- Press the  and  keys to change the active digit; press  to increment the value. Options are to 1s, 10s, 100s, etc. Press up to change
- When the new calibration value is set, press the  key to confirm. The display will show **load**. Place weight matching the calibration value onto the scale.
- When the Indicator stabilizes, press  key to confirm. The scale is now calibrated and the Indicator will return to normal weighing mode.

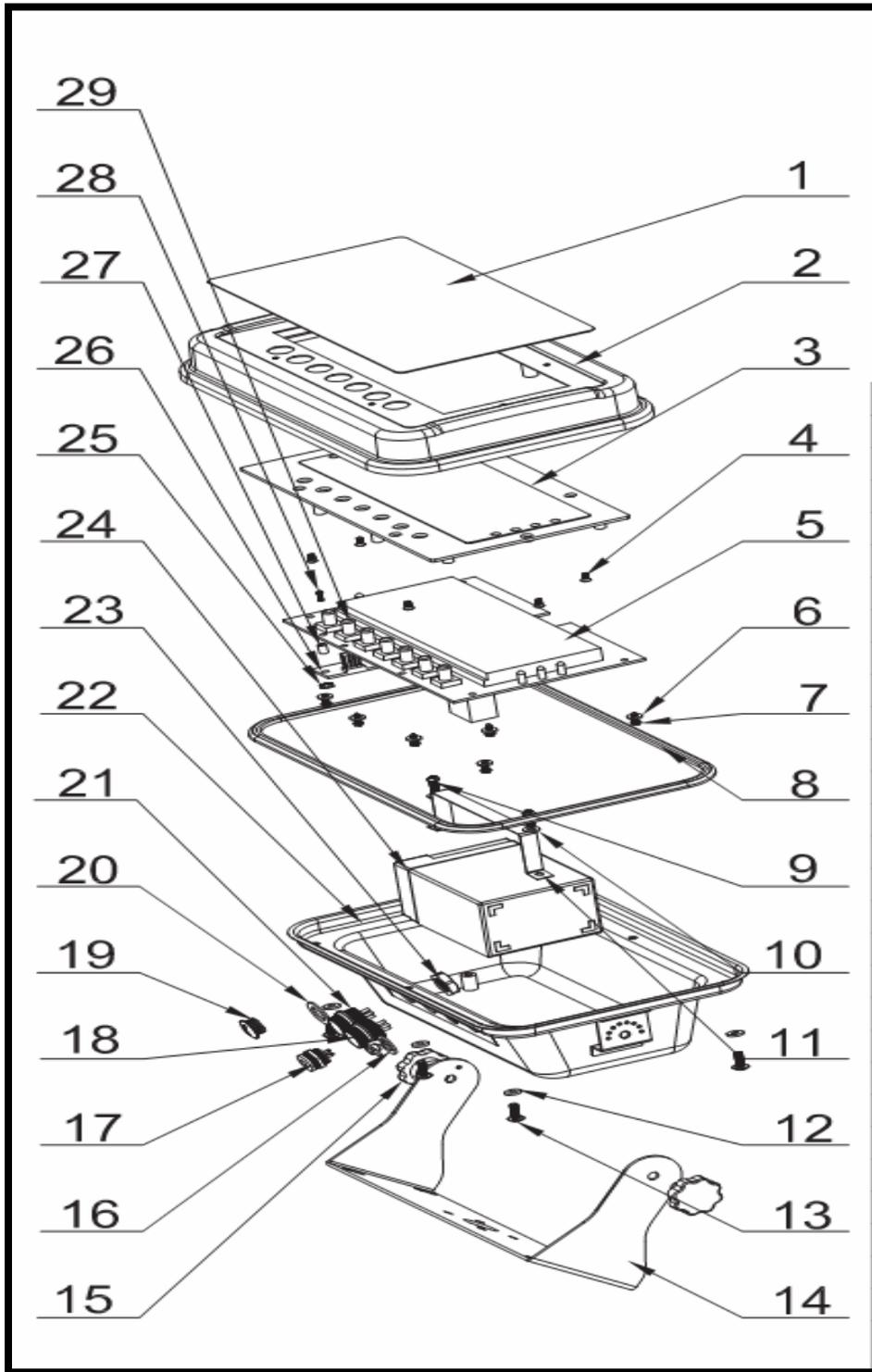
8.2. Linear Calibration

Linear calibration (multi-point calibration) can help to improve the accuracy of a scale over its full range of weighing or to correct for binding issues.

NOTE: To use linear calibration, the scale capacity must first be set by navigating to **R1 Cap** using the method outlined in the PARAMETERS section.

- After the scale capacity is set, navigate to **cal** and press  to confirm selection.
- Press  once to select **linear** and  to confirm selection
- Enter the password by pressing , then , then  to begin the calibration process. The display will show **load 0** (no load on the scale).
- Remove all the weight from the scale.
- After the scale stabilizes and the zero Indicator comes on, press the  key to confirm. Display will show **Load1**.
- Place the calibration weight (**1/3 of the capacity**) on the scale.
- After the scale stabilizes and the zero Indicator comes on, press the  key to confirm. Display will show **Load 2**
- Place the calibration weight (**2/3 of the capacity**) on the scale.
- After the scale stabilizes and the zero Indicator comes on, press the  key to confirm. Display will be shown **Load3**
- Place the calibration weight (full capacity) on the scale.
- After the scale stabilizes and the zero Indicator comes on, press the  key to confirm. Display will show **Pass** indicating the calibration process is complete. After self-check, the Indicator will return to normal weighing mode.

10. DRAWING



BSD Parts List

No	Parts	Qty	Spec
1	Key Panel	1	
2	Front Cover	1	
3	Display Protection Plate	1	
4	Nut	6	M3*6
5	Main PCBA	1	
6	Washer	6	8x3.1x1.5
7	Star (+) Self Thread screw	6	M3x8
8	Water Proof Rubber Bar	1	
9	Star (+) Screw	2	M4x10
10	Washer	2	M4
11	Battery Clamp	1	
12	Washer	6	M4
13	Star (+) Big head Screw	6	M4x12
14	Bracket	1	
15	Bracket Screw	2	
16	Water Proof Adaptor jack	1	
17	Interface Module	1	
18	Air connector	1	5-Pin
19	Plug	1	
20	Rubber Spacer	3	
21	Air Connector	1	7-Pin
22	Back Cover	1	
23	Air Connector Water Proof Nut	1	
24	Battery	1	6V/4Ah
25	Nut	1	M3x6
26	Main Serial board	1	
27	Spacer	1	
28	Star (+) Screw	1	3Mx20
29	Micro Switch Cap	7	

11. ERROR CODES

--	--	--

Error Message	Description	Solution
-----	Maximum load exceeded	Unload or reduce weight
Err 1	Incorrect date	Enter the date by using format "yy;mm:dd"
Err 2	Incorrect time	Enter the time by using format "hh:mm:ss"
Err 4	Zero setting error	Zero setting range exceeded due to switching on with something on the platform. (4% max) Make sure platform is empty.
Err 5	Key board error	Check the keys and the connector.
Err 6	A/D value out of range	Make sure platform is empty and check that the pan is installed properly. Check the load cell connectors.
Err 7	Percentage Error	Please check input data, must be > 0.5d
Err 8	Calibration weight error	Check the test weights for calibration or linear calibration
Err 9	Unstable Reading	Check for any air variation, vibration, RF noise. Check the load cell and connectors.
Err 10	Wireless communication failure	Check wireless settings or change Com settings from the wireless setting
Err 11	Communication protocol error	Check communication settings
Err 12	Accumulation error	Max accumulation times 99 / 999 / weight 999999
Err 13	Lack of unit weight	Check unit weight entry data, must be >0.5d
Err 14	Lack of sample	Check counting samples entry, must be >20d
Err 15	Gravity error	Check the gravity settings. Gravity range must be 0.9xx ~ 1.0xx
Err 16	Paper error	Check the printer paper
Err 17	Tare out of range	Minus weight or overload. Remove the load and restart the scale.
Err 18	Pre-tare error	Check the pre-tare value.
Err19	Initialize zero error	Calibrate the scale.
Err P	Printer error	Check the printer settings or connections.
Err I	Approval setting error	Check the PCB jumper settings. Must be connect jumper pin to K1 (BW series).

--ol--	Over range	Remove the load. Recalibrate
--lo--	Underload	Minus weight, check the platform and restart or calibrate.
Fail h / fail l / fail	Calibration Error	Check the test weights & Recalibrate
Ba lo / lo ba	Battery low	Charge the battery, check the voltage.