

## WEIGHING SCALE *user manual*

# Model: SWB7



Please read this manual carefully before operation  
----Important safety info  
----Warranty

# GRAVITY MEASUREMENT, INC.

## Important Safety Information

**READ ALL INSTRUCTIONS BEFORE USING SCALES TO ENSURE MAXIMUM SAFETY, BEST PERFORMANCE, AND TO GAIN KNOWLEDGE OF OUR SCALE, IT IS ESSENTIAL THAT YOU OR ANY OTHER OPERATOR OF THE SCALE READ AND UNDERSTAND THE CONTENTS OF THIS MANUAL BEFORE OPERATING THE DEVICE.**

When using an electrical device, basic precautions should always be followed, including the following:

1. Please use only the original power cord or DC adapter supplied with the scale. Other cords or adapters may damage the scale.
2. DC adaptor is used to charge the battery, and scale can operate without DC adaptor.
3. Avoid using long power extension cords – this may cause interference
4. Do not use on surfaces or in areas where vibration, air movement or temperature change. Do not place in direct sunlight or near air conditioning vents.
5. Avoid high humidity (greater than 80%) that might cause condensation, and keep away from direct contact with water and other corrosive chemicals.
6. Static may influence the weighing result. To reduce the static, wipe the pan and scale with anti-static wipes.
7. Don't impact or drop heavy objects on the scale – this may affect accuracy, or cause damage. Do not stack material on the scale when it is not in use.
8. Battery should be removed if the scale is not used for a long period of time. Battery should be recharged every 3 months.
9. Place items to be weighed as close to center of the pan as possible
10. Only use fingers to operate the keypad. Do not press with hard or sharp objects.



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## Warranty

Gravity Measurement, Inc. (Schenectady, New York) offers one-year limited warranty (parts and labor) for the components failed due to defects in materials or workmanship. Warranty starts from the date of delivery.

During the warranty period, should any repairs be necessary, the purchaser must inform its supplier or Gravity Measurement. The company or its authorized technician reserves the right to repair or replace the components at any of its workshops depending on the severity of the problems. However, any freight involved in sending the faulty units or parts to the service center should be borne by the purchaser.

The warranty will cease to operate if the equipment is not returned in the original packaging and with correct documentation for a claim to be processed. All claims are at the sole discretion of Gravity Measurement.

This warranty does not cover equipment where defects or poor performance is due to misuse, accidental damage, exposure to radioactive or corrosive materials, negligence, faulty installation, unauthorized modifications or attempted repair or failure to observe the requirements and recommendations as given in this User Manual. Additionally, rechargeable batteries (where supplied) are not covered under warranty.

Repairs carried out under the warranty does not extend the warranty period. Components removed during the warranty repairs become the company property.

## **What is inside Box**

AC/DC adaptor (110V)

SWB7 indicator

Two wire seals. The wire seal is used usually by the inspector of Department of Weight and Measure or authorized dealer. The wire seal is threaded through a metal rode that protrudes through the bottom of the device and also through a hole in the scale base adjacent to the metal rode.

## **Set up**

- 1) Place this product on a firm and smooth place, don't place it in vibration or shaking, use bench for use on four only adjust foot, adjust the balance using the bubble level.
- 2) Use independent source, avoid other electrical disturbance.
- 3) Don't put any object on the platter when turn on the balance.
- 4) Please, turn on 2-3 minutes before using.
- 5) Avoid temperature change too large and air flow strenuous sites.
- 6) Don't overload the balance, don't exceed the maximal capacity.

## **SYSTEM POWER CONSUMPTION**

Main system power consumption: about 12mA

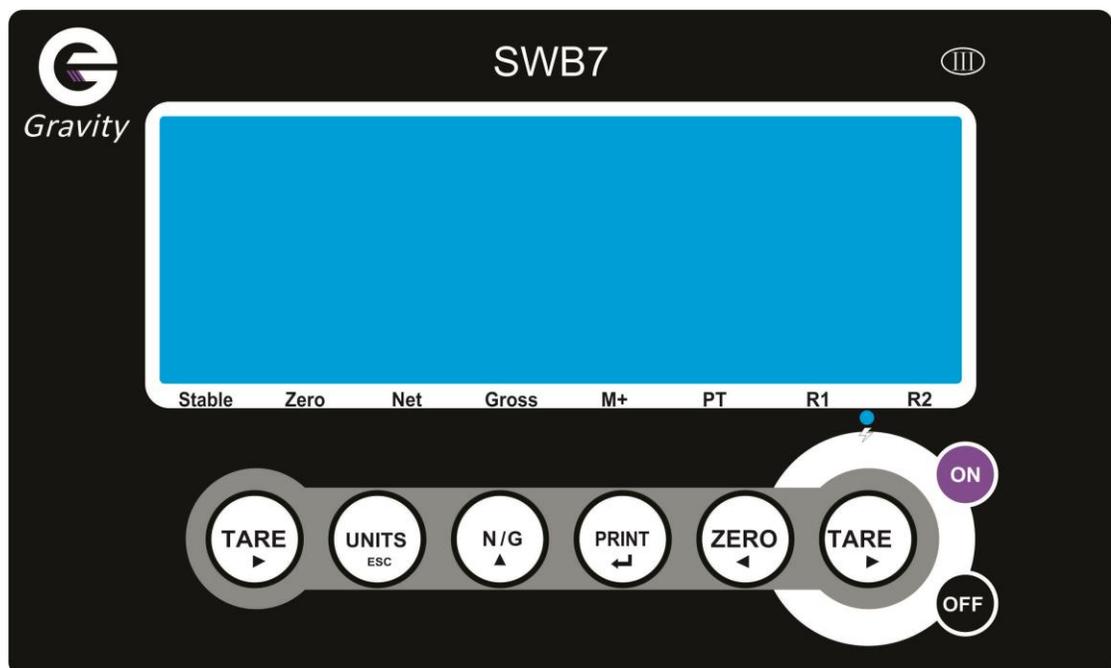
Main system power consumption (with backlight): about 36mA

Main system power consumption (with backlight and RS-232): about 48mA

Battery life: none backlight, about 320 hours.

## **DISPLAY DESCRIPTION**

SWB7 Model:



## BASIC FUNCTION OPERATION



Press and hold this key for 2 seconds to turn off the balance.



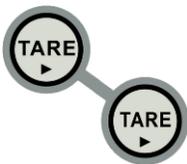
Press this key to turn on the balance



1. To select the desired weight unit.
2. To exit from setup mode.



1. To reset the weight to zero "0", but the display value has to be lesser than  $\pm 2\%$  of maximum capacity.
2. To move one space to the left or downward in setup mode.



1. To subtract the container's weight.
2. To move one space to the right or upward in setup mode.



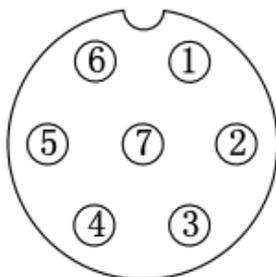
1. To view gross or net weight when the balance is on tare status. All other keys will be disabled when gross weight is activated.
2. To increase values upward in setup mode.



1. Key of confirmation in setup mode.
2. Manually transmitting data through RS232 to computer or printer.

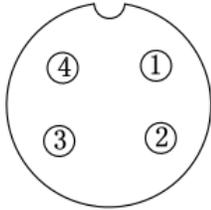
## CONNECTION OF LOAD CELL AND RS232

1) Connection of the load cell to indicator



INDICATOR	LOAD CELL
1	+Excitation
2	+Sense
3	-Excitation
4	-Sense
5	+Signal
6	(GND) shield
7	-Signal

## 2) Connection of RS232 to PC or Printer



INDICATOR		PC/PRINTER
1	-----	RXD
2	-----	TXD
3	-----	GND
4	-----	NC

## BASIC PARAMETER SETTING

To access to functions setting, press the  and  key at the same time while in the weighing mode.

Press the  to select the parameter ( ~ )

“\*” This flag indicates that the function is locked when “Approval Version”.

### **UF-1 A/D count**

1. Press the  key to view the A/D count.
2. Press the  key to view the the battery voltage or press the  key to exit back to menu *UF-1*
3. To move to next parameter press the  key.
4. To exit and return to normal weighing press the  key.

### **UF-2 High / Low limits setting**

1. Press the  key to enter.
2. The display will show  (set low limit).
3. Use the keys  and  to move cursor and press the  to select number.
4. Press the  key to confirm.

5. The display will show **00000H** (set high limit).
6. Use the keys **TARE** and **ZERO** to move cursor and press the **N/G** to select number.
7. Press the **PRINT** key to confirm.
8. The display will show **0.000**, look at the remarks below.
9. Use the keys **TARE** and **ZERO** to move cursor and press the **N/G** to select number.
10. Press the **PRINT** key to confirm.

Remarks:    0    0    0  
                   A    B    C

A -- Buzzer on: 0= Stable not required    1= Stable required

B – LCD indicator and RELAY on: 0= Stable not required    1= Stable required

C -- Buzzer beeps when: 0= Buzzer off    1= OK    2= LO and HI

- Low limit set as 0 will clear all check weigh values.
- This function is locked when **UF-5** is set as "Hold 1"

### **UF-3 Auto-power off**

Modes: **00FF00**: Auto-turn off disable.

**00FF01**: The balance will automatically turn off after 1 minute of non use.

This time can be set up to 99 minutes.

1. Press the **PRINT** key to access to auto-power configuration.
2. Use the keys **TARE** and **ZERO** to move cursor and press the **N/G** to select number.
3. Press the **PRINT** key to confirm.

### **UF-4 Backlight setting**

Modes: **11EA**: Automatic

**11EON**: Backlight on

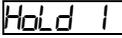
**11EOFF**: Backlight off

1. Press the **PRINT** key to access to backlight configuration.
- N/G**

2. Use the  key to select the desired mode.
3. Press the  key to confirm.

### UF-5 HOLD function (\*)

Modes:  : Disable

 : Animal (motion) hold function

 : Peak value hold (when held can press any key to cancel)

 : Stable hold (when held can press any key to cancel)

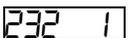
 : Stable hold (when held can auto cancel at zero)

1. Press the  key to access to hold function configuration.
2. Use the  key to select the desired mode.
3. Press the  key to confirm.

Remarks:  :

1. Press the  key will show  which means 2% of tolerance.
2. Use the keys  and  to move cursor and press the  to select number, this can set the range from 001 ~ 100 units of the animal hold.
3. Press the  key will show .
4. Use the  key to select 1,2,4,8,16,32 or 64 times within the hold range.
5. Press the  key to confirm.

### UF-6 RS-232 Output

1. Press the  key to enter.
2. The display will show .
3. Press the  key to select the modes.
4. Press the  key to confirm, and will show .
5. Use the  key to select the baud rate.

6. Press the



key to confirm.

- Modes: 

232	0
-----	---

 : RS-232 disable  

232	1
-----	---

 : Stable output – Format 1  

232	2
-----	---

 : Stream output – Format 1  

232	3
-----	---

 : Manual output – Format 1  

232	4
-----	---

 : Stable output – Format 2  

232	5
-----	---

 : Stream output – Format 2  

232	6
-----	---

 : Manual output – Format 2  

232	7
-----	---

 : Manual accumulate output – Format 3  

232	8
-----	---

 : Auto accumulate output – Format 3  

232	9
-----	---

 : Manual accumulate output – Format 4  

232	10
-----	----

 : Auto accumulate output – Format 4  

232	11
-----	----

 ~ 

232	13
-----	----

 : LP50 printer is used

- Baud rate: 

b	1200
---	------

 : Baud rate 1200  

b	2400
---	------

 : Baud rate 2400  

b	4800
---	------

 : Baud rate 4800  

b	9600
---	------

 : Baud rate 9600  

b	19200
---	-------

 : Baud rate 19200  

b	38400
---	-------

 : Baud rate 38400

Remarks:

Format 1 output examples : 

ST, GS, + 1.0001b
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Format 2 output examples : 

+ 1.0001b
-----------

Format 3 output examples : 

S/N	WT/1b
-----	
0001	2.205
0002	2.205
-----	
0002	4.410

Format 4 output examples : 

TICKET NO.0001	
G	3.0001b
T	1.0001b
N	2.0001b
TOTAL NUMBER	
OF TICKETS 0001	
TOTAL	
NET	2.000

- Format 3 and format 4 if you want to print the total weight, press the  key twice, and the accumulative weight will be removed.

Communication Protocol:

UART signal of EIA-RS232 C

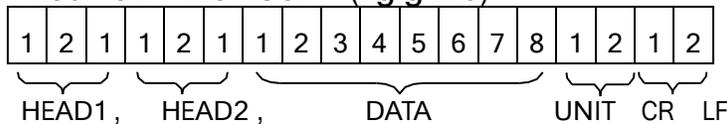
Format:

1. Baud rate: 9600
2. Data bits : 8 bits
3. Parity bits: None
4. Stop bits : 1 bit

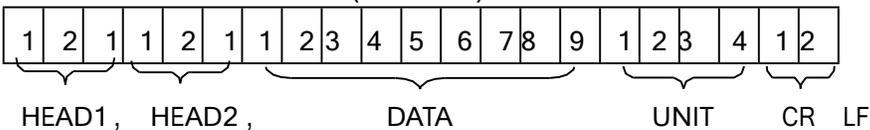
Format 1 (232 1 – 3):

HEAD1 (2 BYTES)	HEAD2 (2 BYTES)
OL – Overload	
ST – Stable	NT – Net weight
US – Unstable	GS – Gross weight

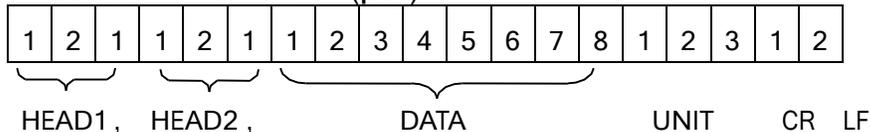
Fixed 18 BYTES ASCII (kg g t lb)



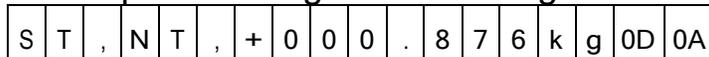
Fixed 21 BYTES ASCII (tl.T lboz)



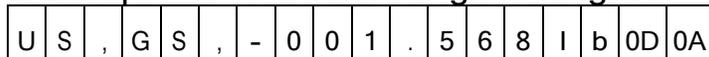
Fixed 19 BYTES ASCII (pcs)



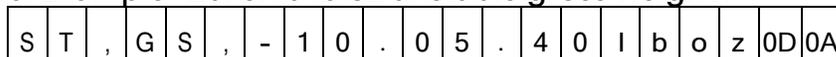
1. Example +0.876 kg Stable net weight :



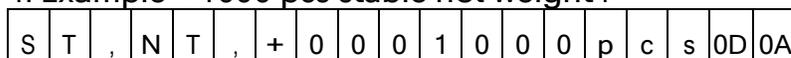
2. Example -1.568 lb unstable gross weight :



3. Example -20. 540 lb oz unstable gross weight :

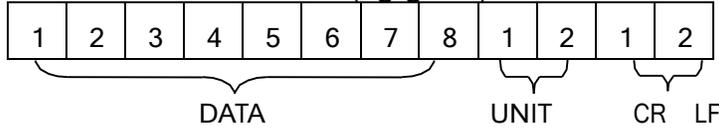


4. Example +1000 pcs stable net weight :

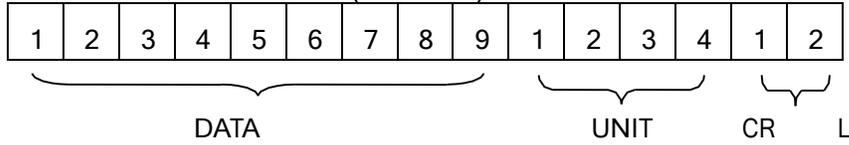


Format 2 (232 4 ~ 6):

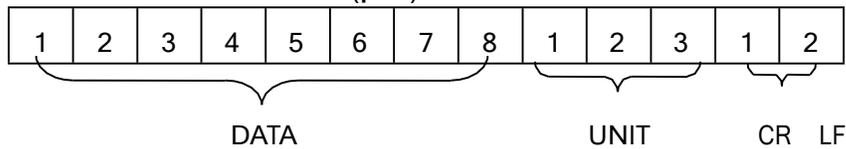
Fixed 12 BYTES ASCII (kg g t lb)



Fixed 15 BYTES ASCII (tl.T lboz)



Fixed 13 BYTES ASCII (pcs)

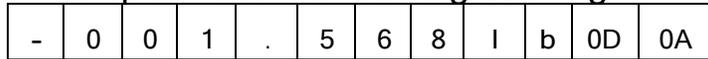


Output examples :

1. Example +0.876 kg stable net weight :



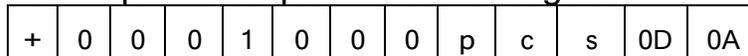
2. Example -1.568 lb unstable gross weight :



3. Example -20.540 lb oz unstable gross weight :



4. Example +1000 pcs stable net weight :



### UF-7 Speed setting (\*)

Modes: SPEED1 : Standard speed

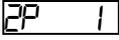
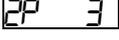
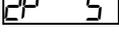
SPEED2 : High speed

SPEED3 : Low speed



1. Press the  key to enter.
2. Press the  key to select the desired mode.
3. Press the  key to confirm.

### **UF-8 Zero tracking(\*)**

- Modes:  : OFF  
 : One division tracking at zero  
 : Two division tracking at zero  
 : Three division tracking at zero  
 : Four division tracking at zero  
 : Five division tracking at zero

1. Press the  key to enter.
2. Press the  key to select the desired mode.
3. Press the  key to confirm.

### **UF-9 G Value setting**

1. Press the  key to display the G value of manufacture place.
2. If set the G value of local press the  key and then press the  or  key and  key to input the new G value.
3. Press the  key to confirm.

### **Weight Calibrations (\*)**

1. In weight mode, press the  and  keys, the display will show .
2. Press the  or  keys to select ,  or .

### **ECF-1 Zero and Span Calibration**

1. Press the  key to enter, display will show .
2. Press the  key to calibrate zero point.

3. The display will show the calibration weight **006.000**.
4. Use the keys **ZERO** and **TARE** to select the digit, press **N/G** key to input the weight value.
5. Put the calibration weight on the platter and press the **PRINT** key to calibrate.  
The scale will return to weighing mode automatically.

### **ECF-2 Zero Calibration**

1. Press the **PRINT** key to enter, display will show **CAL2**.
2. Press the **PRINT** key to calibrate zero point.
3. The scale will return to weighing mode automatically.

### **ECF-3 Span Calibration**

1. Press the **PRINT** key to enter, display will show the calibration weight **002.000**.
2. Use the keys **ZERO** and **TARE** to select the digit, and press **N/G** key to input the weight value.
3. Put the calibration weight on the platter and press the **PRINT** key to calibrate.  
The scale will return to weighing mode automatically.

## Advanced Function (Service Manual)

Warning: The following functions are only for trained scale dealers and distributors, not for the end users.

For end users, do not modify it by yourself. Please consult our distributors or your local authorized metrology workers. Wrong operation may cause the compliance issue or wrong performance of the scale.

### Display the version number

Keep pressing the **【M+】** key (not release) and turn on the indicator, after the finish of self-checking it will display the version number - **100911** , Release the **【M+】** key and the indicator will turn off automatically.

### Configuration

Keep pressing  key (not release) while turning on the indicator. After self-checking finishes, it displays **P 0000**. Input the password **P 0020**, and then press  to enter the parameter setting mode

\*Press  key to shift between functions LF-1 ~ LF-8.

\*Press    to move and change the digits

\*Press  to quit and the indicator will restart for normal weighing mode

### Approval Calibrations and Functions Setup (Lock section):

<b>LF1</b>	Weight Calibration
<b>LF2</b>	Parameter Setting
<b>LF3</b>	Linearity Calibration
<b>LF4</b>	A/D Converting Speed
<b>LF5</b>	Zero Tracking
<b>LF6</b>	Approval Version
<b>LF7</b>	Gravity Adjustment
<b>LF8</b>	Zero

CAL switch has to be ON

Password required when CAL switch is OFF

**LF1** Weight Calibration

Press  key to enter zero calibration **CAL2**.

Make sure nothing on the platform of the scale and press  to finish zero calibration

Display the full capacity **2000.00**

*\*Full capacity weights recommended for calibration of the scale, or at least 60% F.C. to assure the accurate weighing, it's not allowed to do with 1% F.C weight or more than 100% F.C..weight.*

Change the display value to be the same as the test weight.

Press , the digits will twinkle

Place the test weights on the platform (for example, 2000 lb, or 1000 lb if you change display capacity to 1000.00)

Press  until the indicator recognizes the weight correctly.

Finish of calibration.

**LF2** Parameter Setting

Press  key to enter parameter setting mode and it will display the internal A/D value (your value is likely different from the value shown here)

**262 144**

Press  key to set the weight units **110002** (both kg and lb units are enabled with calibration using unit lb)

**110002**

**ABCDEF**

A ..... 0= disabled ... 1=Kg 2=Ton            3=g

B ..... 0= disabled ... 1=lb 2=lb/oz

C ..... 0= disabled ... 1=TW Kg 2=HK kg 3=VISS

D ..... 0= disabled ... 1=PCS off ... 2=PCS ON  
 E ..... 0= disabled ... 1=Multi interval ... 2=Multi range  
 F ..... 1=Calibration In Kg 2=Calibration in lb

Press  key to set the capacity of the scale **020000 lb** (the capacity of the scale is jointly determined by the decimal point)

Press  key to set the decimal point **dP 0.0**

Use  key to shift it from 0.0 until 0.00000 if needed

Press  key to set the division **d 05**

Use  key to shift it between 01/02/05/10/20/50

The above setting is for 2000 lb capacity and minimum division is 0.5 lb. The effective division is thus set at 4000.

### **LF3** Linearity Calibration

Press  key to set the linearity calibration **11 0**

Press  key to enter next step **11 1**

Put 1/3 full capacity test weight and press  to enter next step **11 2**

Put 2/3 full capacity test weight and press  to enter next step **11 3**

Put 100% full capacity test weight and press  to enter next step **11 4**

Press  key to exit and back to **LF-3**

### **LF4** A/D Converting Speed

The same operation as Weighing Speed

\*It was blocked when UF-5 set of HOLD 1

\*1=15Hz 2=30Hz 3=7.5Hz

**LF5** Zero Tracking

The same operation as **UF 8** Zero Track

\*It was blocked when **UF-5** set of HOLD 1(animal weighing)

**LF6** Certification Status

**nonE** is for non-certified scales, and **o nL** is for NTEP (United States) or OMIL (Europe)

**LF7** Gravity Adjustment

The same operation as **UF 9** Gravity Adjusting

**LF8** Initial Zero

Press  key to set the initial zero function **SEt2 9** and use  to change

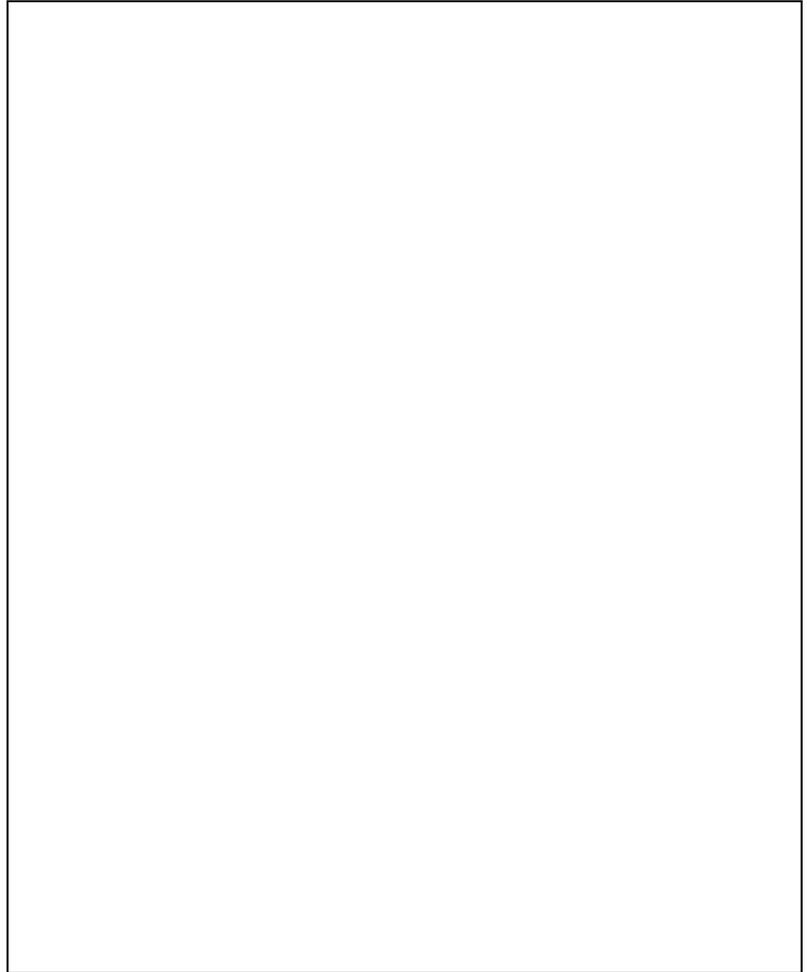
**9**.....Reset of the zero point each time when the scale switches on

**n**.....Disable resetting zero when switching on the scale

## Error Messages and Troubleshooting

Error Display	Meaning	
hhhhhh	Overload	Weight on pan exceeds maximum capacity
LLLLLL	Weight is too low	Weight is too low at the negative
-----	Price is out of range	Total price exceeds 999999
Err n	Weight unstable	Vibration or varying load on the pan during switch-on
Err H	Initial zero too high	Scale turned on with weight > 10% of maximum capacity already on the pan
Err L	Initial zero too low	Scale turned on with upward force > 10% of maximum capacity acting on the pan
 Battery symbol visible	Battery voltage is lower than 5.6 V	Battery needs charging. Connect to main adaptor. Press <b>【 T 】</b> and <b>【 6 】</b> together to view battery voltage. Press <b>【 CE 】</b> to return to weighing mode
 Battery symbol flashing	Battery voltage is lower than 5.5 V	Battery needs charging. Connect to main adaptor
Scale automatically shuts off	Battery voltage is lower than 5.4 V	Battery needs charging. Connect main adaptor

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