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# User Manual

# Weighing Indicator

# BTW





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
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Thank for your purchasing of our Weighing Scale. To guide you to use our product correctly, please read this User Manual carefully to extend the life of machine and to avoid error.

## Instructions for Use

1. Please keep scale in a cool and dry place. Do not store under high temperatures.
2. Please keep the scale clean and free from insect infestation.
3. Avoid impacting with other items or overloaded with excessively heavy weights.  
(The load must not exceed the maximum capacity of the scale).
4. If the scale is not going to be used for some time, please clean it and store it in a plastic bag in dry condition. A desiccant sachet may be included to prevent moisture from building up.
5. Any suggestion is warmly welcome.

## Preparing to Use the Scale

1. Locate the scale on a firm level surface free from vibrations for accurate weight readings.  
Adjust the four leveling feet to centre the leveling bubble on the scale.
2. Avoid hot sunshine directly on the scale or near the exhaust port of ventilating system.
3. Please use a separate power source plug, to avoid the disturbance of other electric appliance.
4. There should be no weight on the scale when power is turned on.
5. Commodity should be placed at the centre of platter when being weighed, and its size should not exceed the dimension of the platter.
6. We suggest to warm the scale for 15 ~ 20 minutes before using.。
7. Please note that when  symbol shows up on the display, which means the indicator needs to be recharged. The indicator could only operate for another 6~8 hours. Then “- L -” shown on the display and the indicator must be fully charged before operating again.
8. Introduction of Storage Battery

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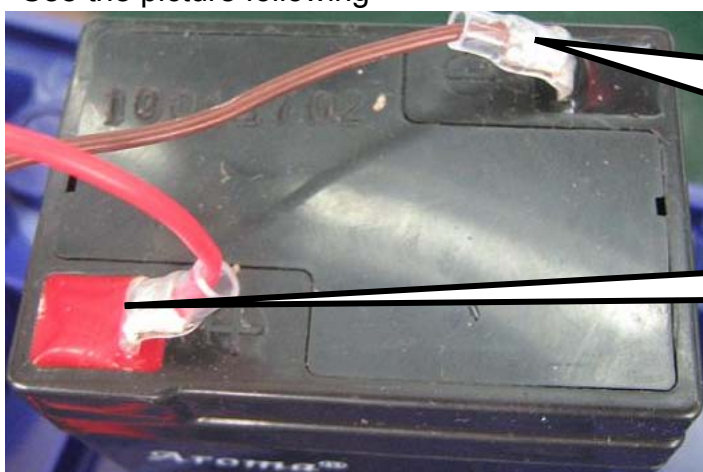
Due to the storage battery adopt the advanced free-maintaining technique, customers need not to replenish electrolyte.

The scale should be recharged every 3 months to prevent failure of the internal rechargeable battery.

1. The battery should be charged for 8~10 hours.
2. The temperature of battery should below 45°C.

## **Maintaining**

1. Please do not discharge with over-current when using the battery. Please charge the battery after discharging current.
2. Please take down the battery when the scale is not used for a long time or break the connection of cathode.
3. Do not short the battery terminals to check whether there is current. Please check whether the connection point is firm to guarantee good connection.
4. The battery should be replaced by specialized person. **No reverse-battery or the product will be damaged.**
  - a) Anode of battery should be connected with Anode of product battery ( usually red cable )
  - b) Cathode of battery should be connected with Cathode of product battery (usually brown cable or black cable)
  - c) See the picture following



Brown cable(or black cable)  
connected with Anode of  
battery

Red cable connected with  
Cathode of battery

## **Safety warnings**

1. The electrolyte of battery is caustic which causes metal, cotton, etc to corrode.
2. The hydrogen will be resolved when using or charging the battery and it will cause explosion when approaches fire.



No burning



Caution Corrosion



Warning explosion



Children faraway

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# Chapter 1 Introduction

## 1-1 Features

- The interface is simple and easy to operate
- Up to 1/15,000 display resolution
- High Speed 24bits AD
- AC / DC switching function (Built-in rechargeable battery)
- Low power indication
- LCD display (Weight-6 digits); Full range tare; Auto zero tracking
- Simple counting; Gross/Net indication; Hold function
- Check mode Lo / Hi / OK with 3 selectable beeping sounds
- Lo / Hi / OK indication shows on LED lights
- Selectable unit: Kilogram (kg) and pound (lb)
- Easily viewing single weight / total weight within 1 button press

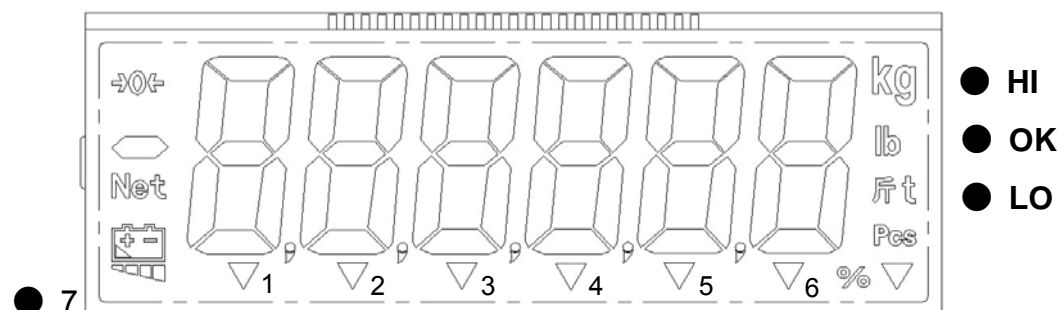
### Option:

- RS232: Bi-direction transmission, easy data reading or printing
- Sleeve connecting stand

## 1-2 Specifications

- Display LCD 6 digits, Height 25mm, LED Backlight
- Indicator Dimensions: 235 x 163 x 133 mm (W x H x D)

## 1-3 Display



### Icon Introduction

- 0← : “Zero” indication
- : When the weight is negative, this icon appears.
- Net : Put container on the platter, after stable and press tare key and the “Net” appears.
- 🔋 : “Low battery power” indication
- kg : “kg” unit
- lb : “lb” unit
- 斤 : “Taiwan Tael” unit
- Pcs : Counting mode
- % : Percent indication
- HI : The weight is higher than setting value, “HI “LED on
- OK : When the weight is between HI limit values and LO limits value, “OK “LED on
- LO : The weight is lower than setting value, “LO “LED on

- 
- ▼ 1 : “STABLE” indication
  - ▼ 2 : “GROSS” indication. When the object is in net mode and press F key, this icon appears
  - ▼ 3 : “M+” indication
  - ▼ 4 : “PT” indication
  - ▼ 5 : Range 2
  - ▼ 6 : Range 1
  - 7 : When this LED is on, the indicator is charging.

## 1-4 Keypad Functions Description

key	Function	Hold the key for 1 sec.
	Zero key	Check Voltage
	Tare/Pre-tare key	Backlight setting
	Unit key	external weight calibration
	Function key	
	Print / transmit key	
		RS-232 transmission setting

## 1-5 Power Supply

### Power Selection

6V 4Ah / 4V 4Ah rechargeable battery

110V/230V AC/DC Adaptor

### Power Consumption

4V models: about DC 12.95mA (System + Load cell+ LED backlight) about 120 hours

6V models: about DC 14.67mA (System + Load cell + LED backlight) about 160 hours

### LED charging icon

When “- -” shown on the display, the indicator must be charged. When the charging icon becomes red, it means the indicator is charging; when the charging icon becomes green, it means the indicator is fully charged.

The indicator needs to be charged for about 8~9 hours when “- -” shown on the display.

## 1-6 Error Massage

⇒ The EEPROM is not working correctly.

(The EEPROM is not set yet, or the circuit on PCB is broken.)

⇒ Zero is higher than the zero range when switching the indicator on.

⇒ Zero is lower than the zero range when switching the indicator on.

⇒ A/D value is unstable

⇒ ADIC value is over the maximum range. (2097151 ~ -2097152)

⇒ The weight of the object is over 9 divisions of the maximum capacity.

⇒ The weight of the object is under -1/6 maximum capacity.

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# Chapter 2 Operating Introduction

## 2-1 Keypad Operating



: Zero key








If the weighing value is within the range of zero balance, it can be re-zeroed and tare cancelled.





: Tare key

It can be tare except when the weight is negative and the maximum capacity.

### Tare Function

- 1 Place the container onto the scale, until the weight value is stable, press  key for zero return and the NET indication is shown on the display.
  - 2 Place the object into the container and the display shows the net weight value of the object.
  - 3 Remove both object and container, and negative value of the container will show on the display. Press  again to clear "tare value". The scale returns to zero and NET indication goes off.
-  Tare can be continuously done until tare value=maximum capacity
  -  Continuous Tare  $\Rightarrow$  Press  key for continuous weight increase/decrease on platter.
  -  If there is Tare, the pre-tare cannot be done. If there is pre-tare first, and the tare weight is more than pre-tare weight, Tare can be done.
  -  No Tare can be done under gross weight display mode.

### Pre-Tare Function

When there is nothing on the platter, press  key and use keypad to input pre-tare weight. When the cursor flashes on the last digit of display, press  key again to complete. Method of clearing Pre-tare value: the same as the method of clearing tare value. Pre-tare mode, keypad function as followed:



$\Rightarrow$  upward key



$\Rightarrow$  move cursor leftward



$\Rightarrow$  downward key






$\Rightarrow$  move cursor rightward




: Function key

- 1 In weighing mode, use this key to shift among simple counting function, check weighing function, accumulation function and Animal scale hold function.
- 2 In tare mode, use this key to shift between the "Net value" and the "Gross value".

### Shift between Net value and Gross value

-  In the Tare mode, the "Net" icon shows up. Press  key, the screen displays the "gross weight" and when the "GROSS" icon  $\blacktriangledown$  shows up, "Net" icon goes off. Press  key again the screen displays the "net weight" and when the "Net" icon shows up, the "GROSS" icon  $\blacktriangledown$  goes off.

When the screen displays the "gross weight" (the "GROSS" icon  $\blacktriangledown$  shows up), keys except the  key, have no response.





: Unit key

Use **UNIT** key to select a unit as the display indicated.

The selected unit will be memorized when you turn the indicator off. And the memorized unit will appear after you turn on the indicator next time.



: Print key

In accumulation mode, if the parameter set as  $\tau \cdot \tau \cdot P \cdot 3$  or  $\tau \cdot \tau \cdot P \cdot 4$  transmission, it transmits the format of simple mode or complete mode.

This key is the combination key. while total counts is shown and weight returns to net zero, press **Print** key to clear data and RS-232 transmits the MC printing format.

If there is new weight added on platter, a new data will be added to accumulation data. If this weight is not taken off, nothing can be added to accumulation data. Display will show the total counts for one second, then show net weight for one second, then the display returns to the current weight.

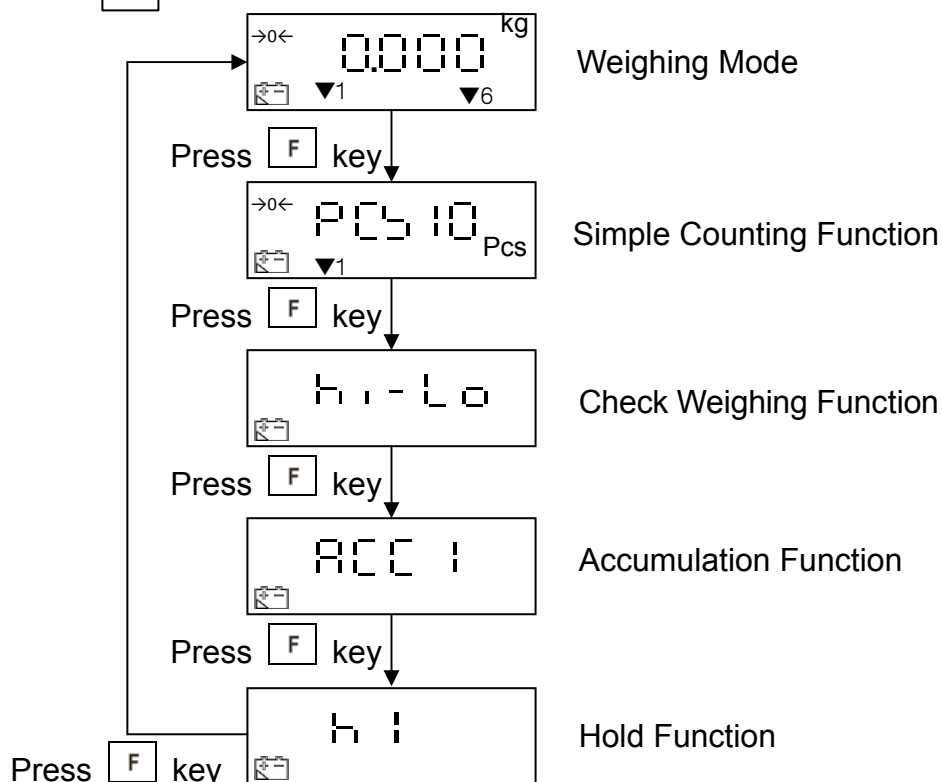
Clear Accumulation data: Press **Print** key and the total counts shows on the display. Press **Print** key again to clear accumulation data.

Weight must return to net zero if to perform clear function

## 2-2 General Function Operating

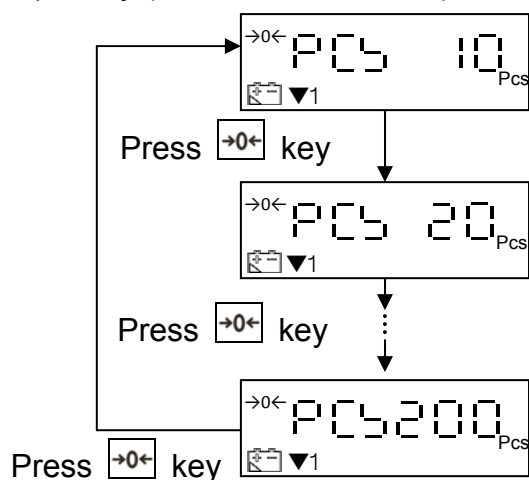
Power on the indicator and enter into the setting that you set before or weighing mode.

Then press **F** to shift functions

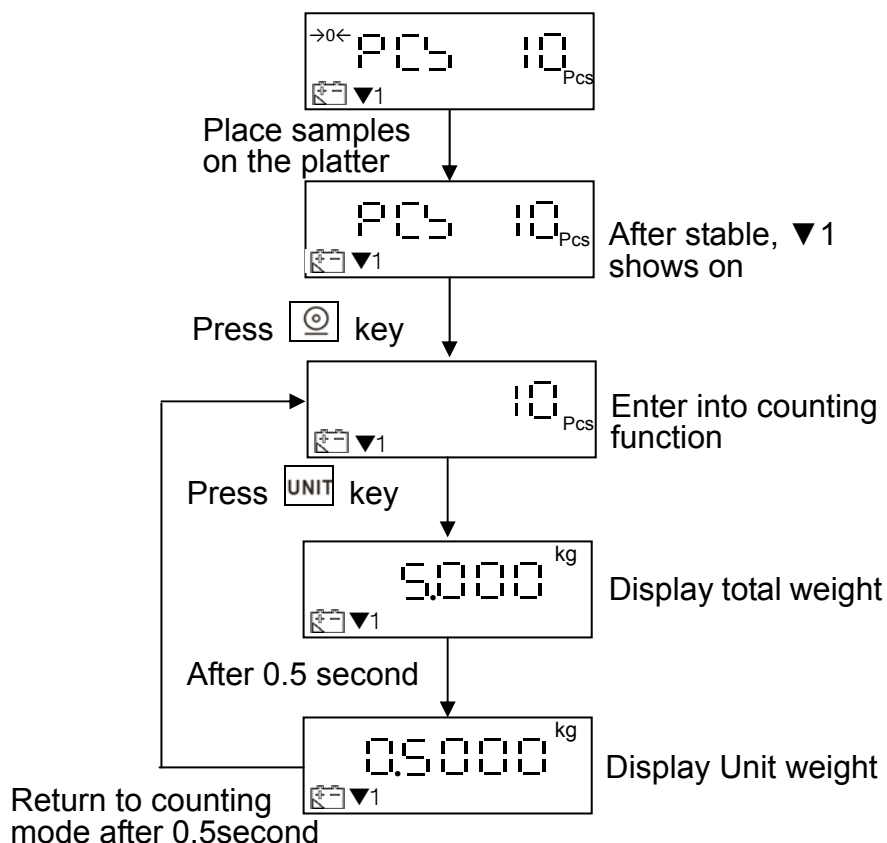


## 2-2-1 Simple Counting Function

1. In weighing mode, press **[F]** key to enter into simple counting function.
2. Press **[→0←]** key to select sample quantity (10, 20, 50, 100, 200)  
LCD shows as right picture:



3. Select sample quantity and then place samples on the platter. After stable, press **[⊙]** key and display shows -----. After stable, the scale enters into counting mode and the display shows sample.



4. Press **[F]** key to enter into next function.

## 2-2-2 Check Weighing Function

1. In weighing mode, press **[F]** key twice to enter into check weighing function.

2. Press **[UNIT]** key to enter into beeper setting.

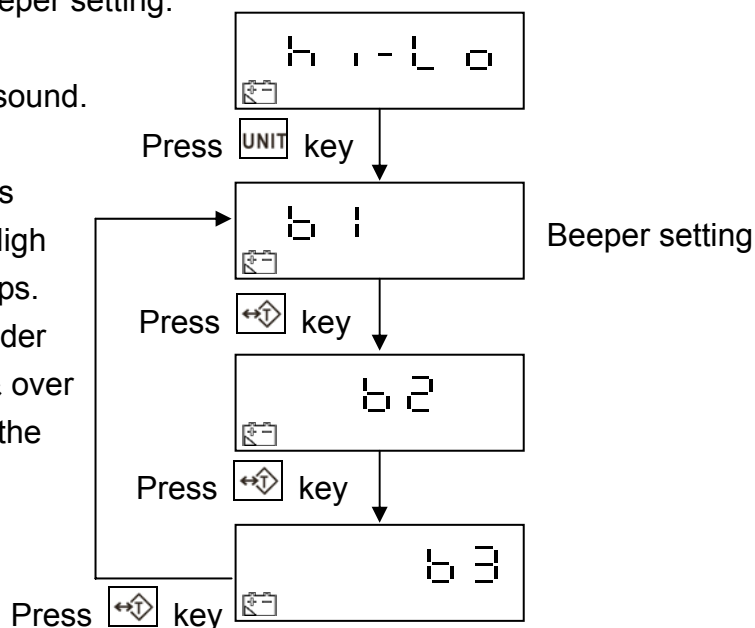
LCD shows as right picture:

3. Press **[↔]** key to select beep sound.

**b 1** ⇒ No beep

**b 2** ⇒ OK (when the weight is between Low limit & High limit.), the beeper beeps.

**b 3** ⇒ When the weight is under or equal to Low limit & over or equal to High limit, the beeper beeps.



4. Press **[UNIT]** key to enter into Hi limit value setting

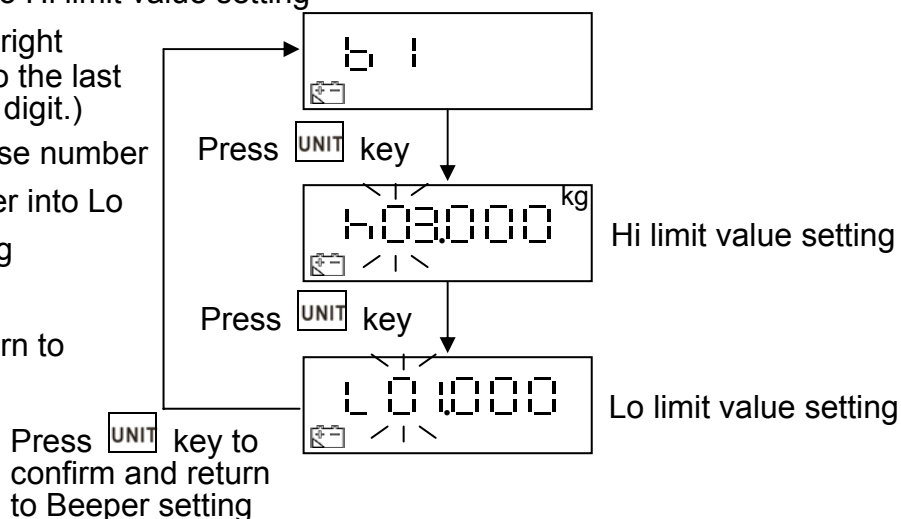
5. **[↔]** key ⇒ move cursor to right  
(When the cursor arrive to the last Digit, it returns to the first digit.)

**[→0<]** key ⇒ increase/decrease number

**[UNIT]** key ⇒ confirm and enter into Lo limit value setting

6. In Lo limit value setting

**[UNIT]** key ⇒ confirm and return to Beeper setting

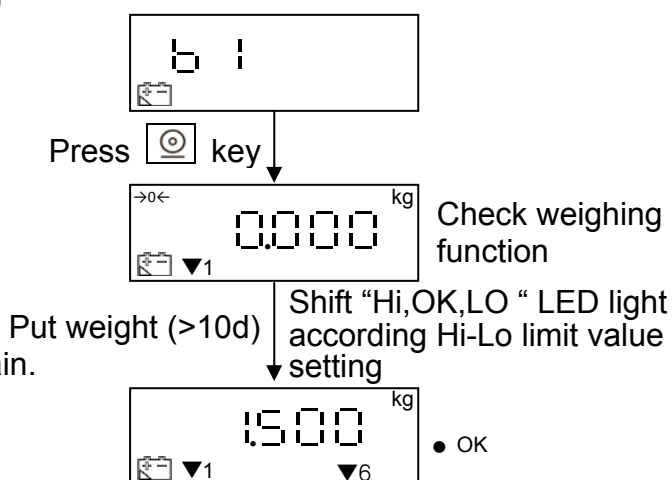


7. In beeper setting, press **[⊙]** key to enter into checking weighing function. When the weight is more than 10d, check weighing function open.

8. Press **[F]** key to exit the setting and enter into next function.

Repeat above steps to set this function again.

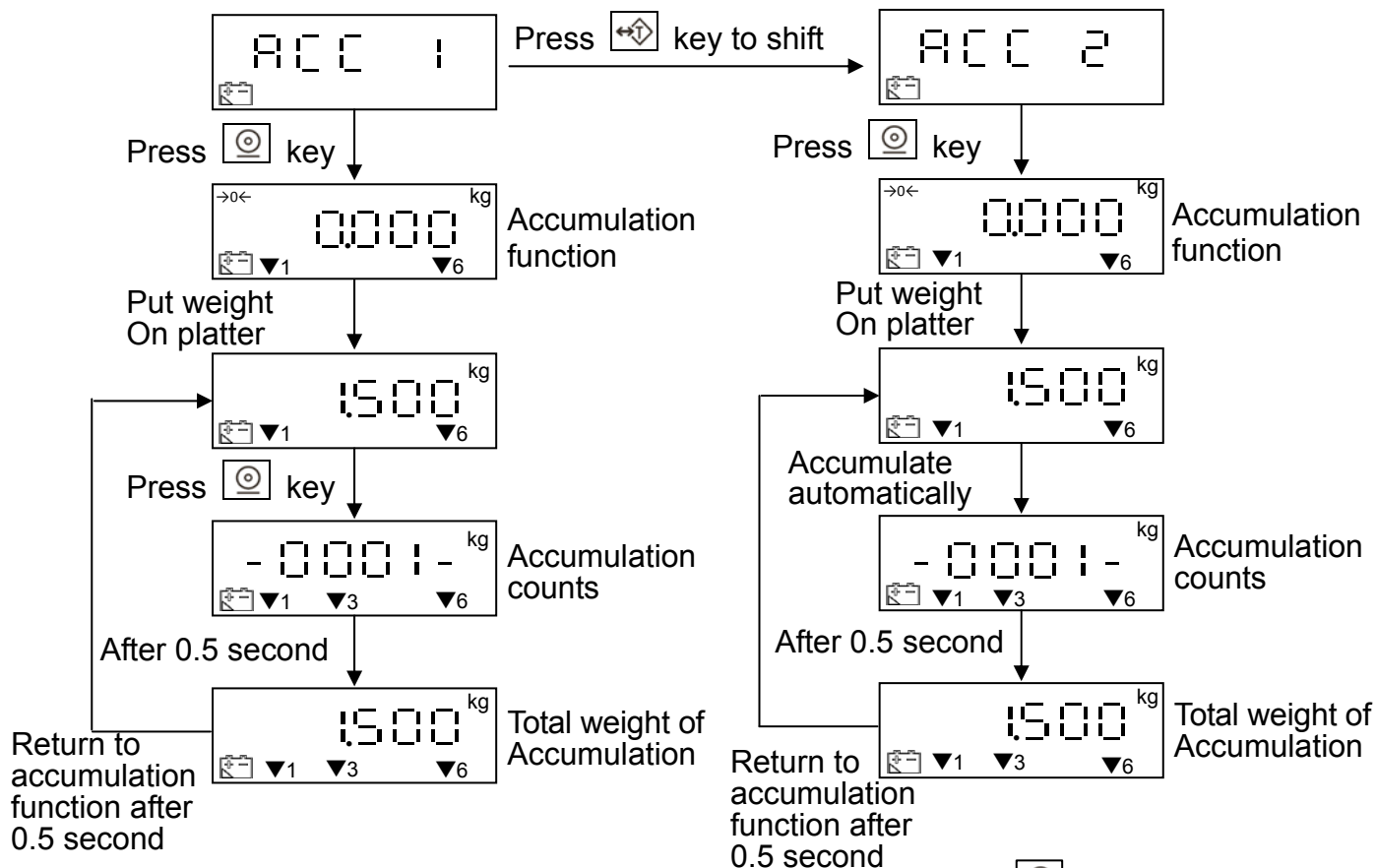
**[☰]** Units can not be shift in Check Weighing Function. Please enter into weighing mode to shift units



## 2-2-3 Accumulation Function

1. In weighing mode, press **F** key three times to enter into accumulation function.

LCD shows as following picture:



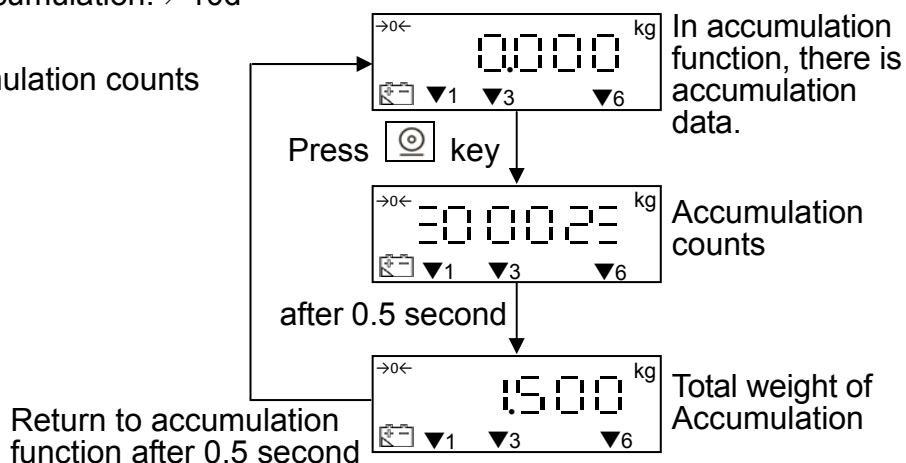
**ACC 1** ⇒ Manual accumulation: After the weight is stable, press **key** to accumulate and “M+” icon ▼ shows up. It does the second accumulation, after the weight returns to zero.

**ACC 2** ⇒ Automatic accumulation: After the weight is stable, it accumulates automatically, and “M+” icon ▼ shows up. It does the second accumulation, after the weight returns to zero.


☐ If it set as **PP 3**, **PP 4** or **PP 5** transmission mode, RS-232 outputs printing format while accumulating.


☐ The Minimum weight of accumulation: > 10d

2. Press **key** to see accumulation counts and total weight.









### 3. Clear accumulation data:

When there is no weight on the platter in accumulation function, press  key and the display shows accumulation counts.

Then press  key again to clear the data.

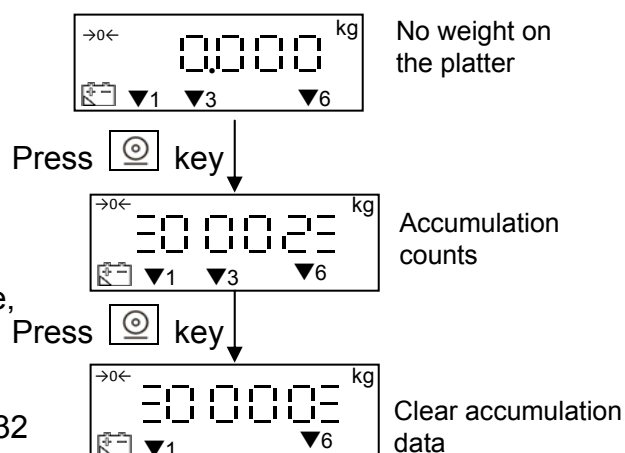
“M+” icon  goes off.

 If it set as  or  transmission mode, Rs-232 outputs MC printing format after data clear.


 Press  key for 2 seconds and the beeper beeps 3 times. The accumulation data is cleared and Rs-232 does not output MC printing format. “M+” icon  goes off.

### 4. Press key to exit the setting and enter into next function.


The original accumulation data still exist.




## 2-2-4 Hold Function


1. In weighing mode, press  key four times to enter into hold function.

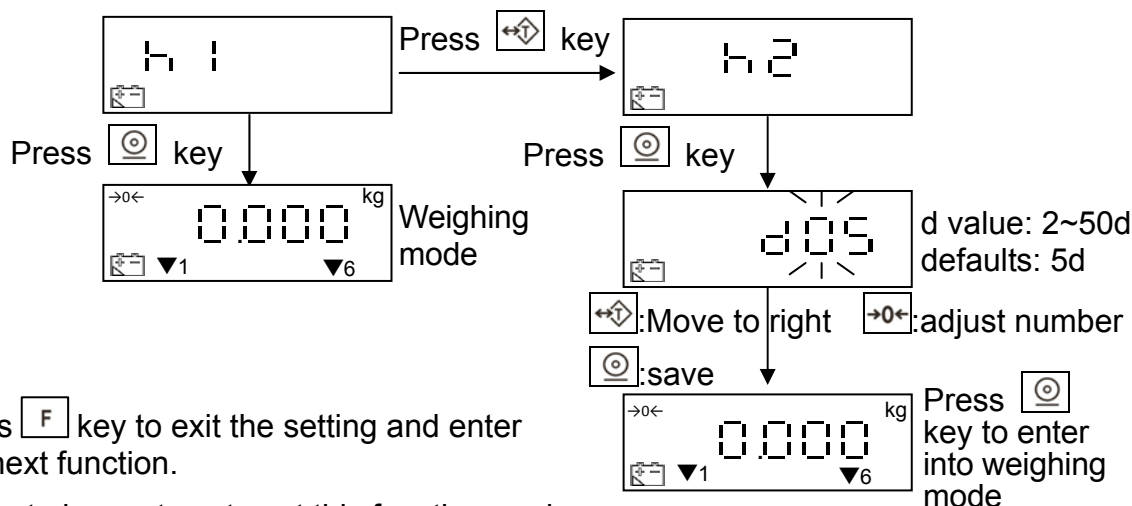
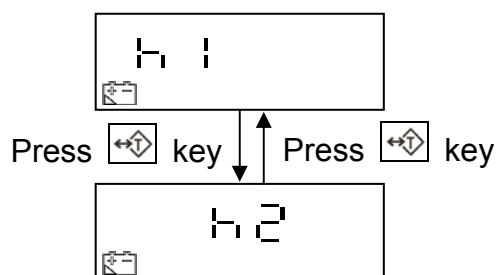
2. Use  key to select  or 


Then press  key to enter into hold function.

When the weight is fixed, the beeper beeps.

  $\Rightarrow$  The weight is unlocked only after taking off the weight and the weight returns to zero.

  $\Rightarrow$  The weight is unlocked, when increase or decrease the weight that is beyond the tolerance d.




3. Press  key to exit the setting and enter into next function.

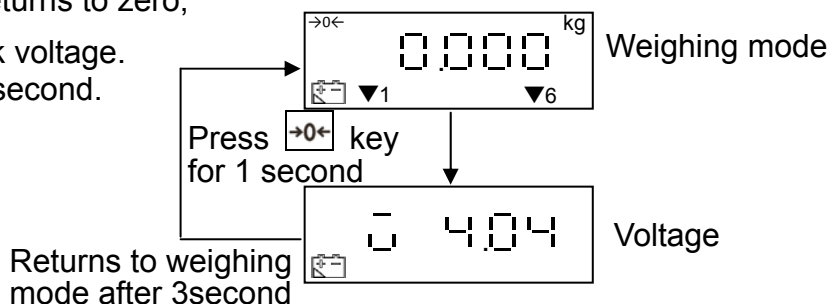
 Repeat above steps to set this function again.

## 2-3 Further Function Operating

### 2-3-1 Check Voltage


In weighing mode and the weight returns to zero,


Press  key for 1 second to check voltage.  
It returns to weighing mode after 3 second.



### 2-3-2 Backlight Setting

1. In weighing mode and the weight returns to zero,

Press  key for 1 second to enter into backlight setting.


2. Use  key to select backlight.

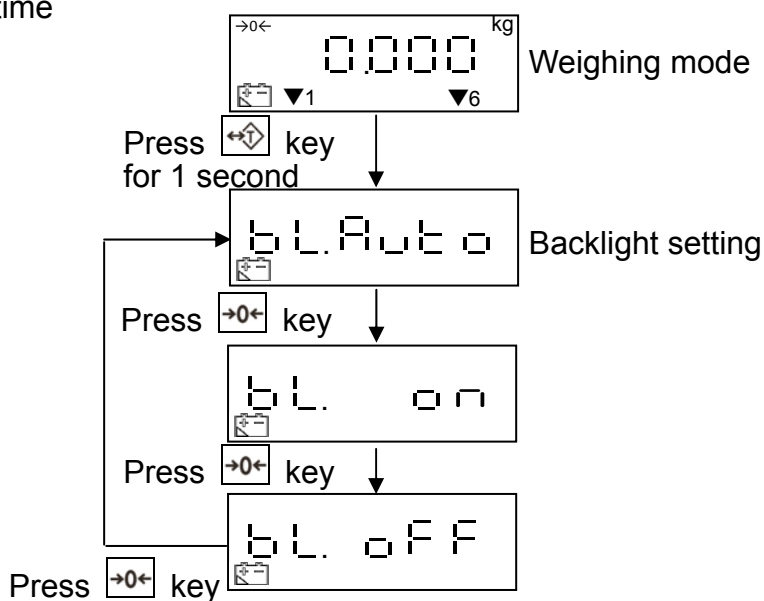
bl. on ⇒ Backlight on all the time

bl. off ⇒ Backlight off

blAuto ⇒ Auto Backlight

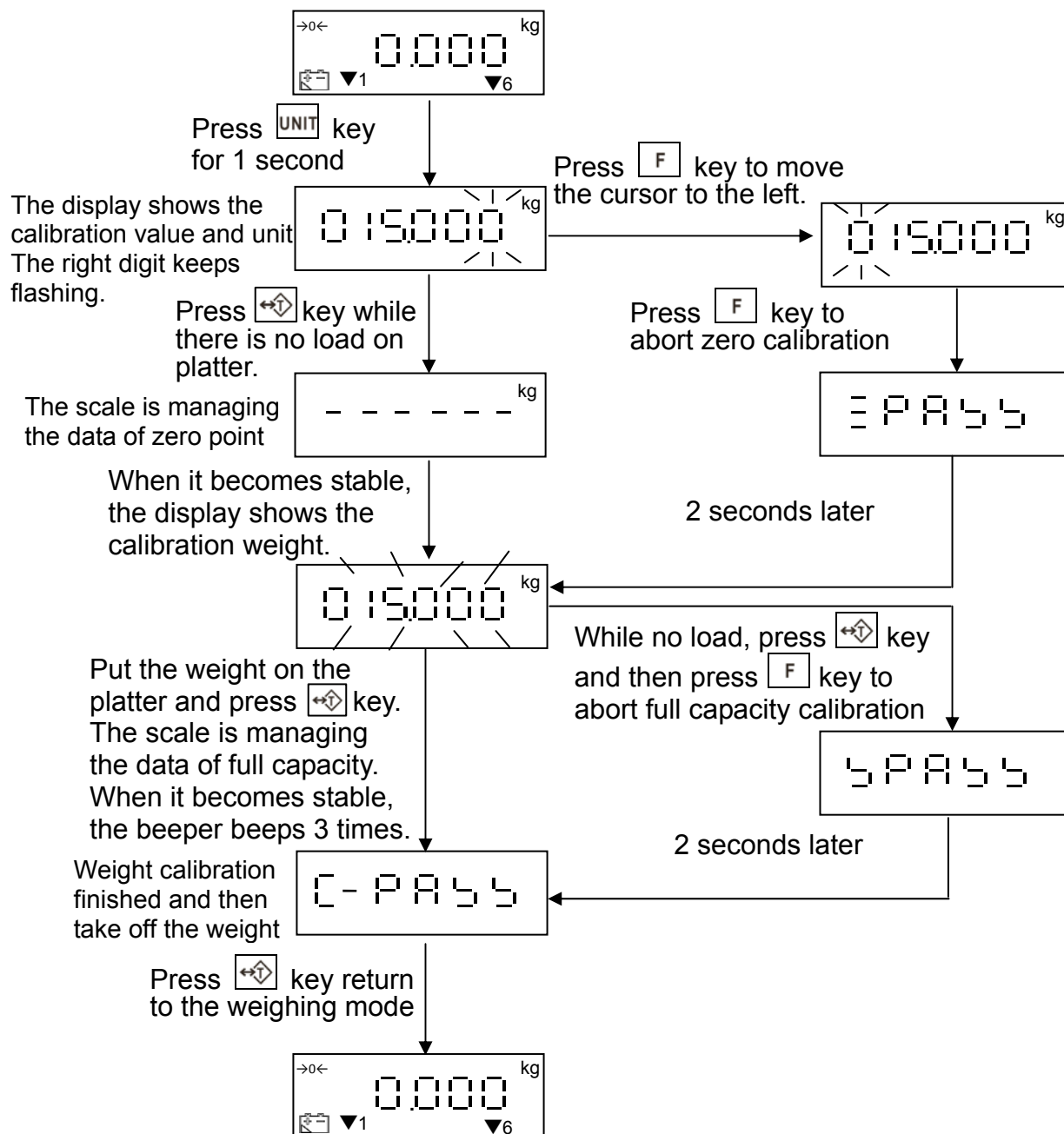
(When the weight is over 10d or any key is pressed, the backlight will be switched on. When the weight returns to zero (the weight on platter is less than 10d), the backlight will switch off after 10 seconds.)

3. Press  to save the setting and return to weighing mode.



## 2-3-3 External Weight Calibration

1. In weighing mode and the weight returns to zero, Press **UNIT** key for 1 second to enter into External Weight Calibration




### Weight calibration conditions:

The calibration weight value placed on the platter must be over 100e, and the standard deviation of the weight must be within  $\pm 10\%$ .

## 2-3-4 Transmission Setting

1. In weighing mode, press  key for 1 second to enter into transmission setting.

2. Press  key to select transmission

$\overline{r} \overline{n} \overline{P} \overline{0} \Rightarrow$  No transmission


$\overline{r} \overline{n} \overline{P} \overline{1} \Rightarrow$  Stable transmission

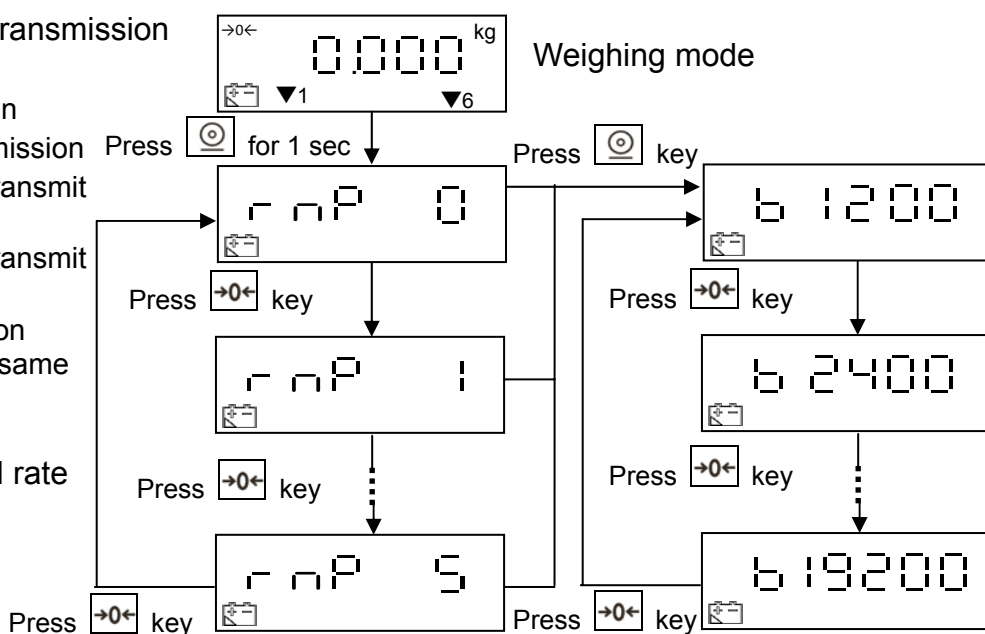
$\overline{r} \overline{n} \overline{P} \overline{2} \Rightarrow$  Continuous transmission


$\overline{r} \overline{n} \overline{P} \overline{3} \Rightarrow$  Press  key to transmit (Simple mode)

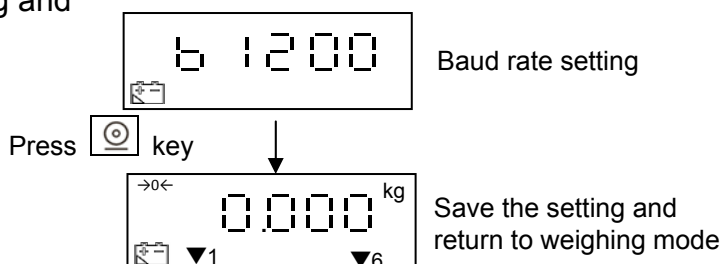
$\overline{r} \overline{n} \overline{P} \overline{4} \Rightarrow$  Press  key to transmit (Complete mode)

$\overline{r} \overline{n} \overline{P} \overline{5} \Rightarrow$  Stable transmission  
The format is as same as  $\overline{r} \overline{n} \overline{P} \overline{3}$

3. Press  key to set baud rate (1200,2400,4800,9600 or 19200.)



4. Press  key to save the setting and return to weighing mode



### RS-232 Output Format

The output format of  $\overline{r} \overline{n} \overline{P} \overline{1}$  and  $\overline{r} \overline{n} \overline{P} \overline{2}$

GROSS	S	T	,	G	S	,	+	1	2	3	4	5	6	7	SP	SP	o	z	CR	LF
Net	S	T	,	N	T	,	+	.	2	3	.	4	5	6	t	l	.	g		
Plus OL	O	L	,	G	S	,	+	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Minus OL	O	L	,	G	S	,	-	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Unstable	U	S	,	G	S	,	+	1	2	3	4	.	5	6	SP	SP	l	b		

$\overline{r} \overline{n} \overline{P} \overline{1} \Rightarrow$  Stable transmission: when the weight is more than 10d and the weight is stable, it transmit above format. It transmits next data format only when take off the weight on the platter and put it on again.








$\overline{r} \overline{n} \overline{P} \overline{2} \Rightarrow$  Continuous transmission: It always transmit above format.  
Output rate: 4counts / second







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⇐⇐ P 3 ⇒ Press  key to transmit (simple mode): use in accumulation mode.

- Steps:
1. Press  key and select   . Press  key to enter into weighing mode.
  2. Select ⇐⇐ P 3 and necessary baud rate.
  3. Put the objects on the platter. After the weight stable, press  key to accumulate the data and print out the order and the net value of the data as following example.
  4. Repeat above step to accumulate and print continuously.
  5. Press  key twice to print TOTAL as following example and clear the data.







S/N	WT	
0001	2.500	⇐ Press  key
0002	2.500	⇐ Press  key
0003	2.500	⇐ Press  key
-----		
0003	7.500	⇐ Press  key twice to print TOTAL

⇐⇐ P 4 ⇒ Press  key to transmit (complete mode): use in accumulation mode.





































- Steps:
1. Press  key and select   . Press  key to enter into weighing mode.
  2. Select ⇐⇐ P 4 and necessary baud rate.
  3. Put the objects on the platter. After the weight stable, press  key to accumulate the data and print out the data as following example.
  4. Repeat above step to accumulate and record.
  5. Press  key twice to print TOTAL as following example and clear the data.

TICKET NO. 0001		
GS	2.500kg	
TR	0.000kg	
NT	2.500kg	⇐ Press  key
TOTAL NUMBER OF TICKETS 0003		
TOTAL WEIGHT		
	2.500kg	⇐ Press  key twice to print TOTAL

⇐⇐ P 5 ⇒ Stable transmission (the format is as same as ⇐⇐ P 3) in accumulation mode.

- Steps:
1. Press  key and select   . Press  key to enter into weighing mode.
  2. Select ⇐⇐ P 5 and necessary baud rate.
  3. Put the objects on the platter. After the weight stable, it automatically accumulates the data and print out the order and the net value of the data as following example.
  4. Repeat above step to record and print continuously.
  5. Press  key twice to print TOTAL as following example and clear the data.

# Appendix 1 7-Segment Display Characters

Number	Display	Letter	Display	Letter	Display
0		A		N	
1		B		O	
2		C		P	
3		D		Q	
4		E		R	
5		F		S	
6		G		T	
7		H		U	
8		I		V	
9		J		W	
		K		X	
		L		Y	
		M		Z	

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## Appendix 2 Installation

1. Please connect the Load Cell and Indicator as following

5PIN Connector

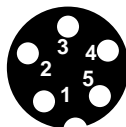
PIN 1 E+

PIN 2 E-

PIN 3 S+

PIN 4 S-

PIN 5 GND

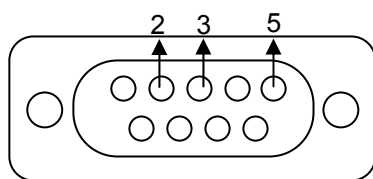


2. Connecting way of a 9 pin RS-232 connector as following.

PIN 2 : Data inputting (TXD), position 2 in following picture

PIN 3 : Data outputting (TXD), position 3 in following picture

PIN 5 : Internal grounded (GND), position 5 in following picture



### Relay Output

#### 1. Principle of operation

Use checking weighing function to set the ranges of High, OK, LOW.

If the weight is between the ranges of LOW, the data will output in LOW port;

If the weight is between the ranges of OK, the data will output in OK port;

If the weight is between the ranges of High, the data will output in High port;

 Please refer to checking weighing function to set the ranges of High, OK, LOW.

#### 2. Connecting ways and function

Terminal Block	Connector's PIN	Function
A1	PIN 1	High Output
B1	PIN 2	OK Output
C1	PIN 3	Low Output
COM	PIN 4	COMMON