

WEIGHING INDICATOR

OPERATION MANUAL

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1.0 Introduction

The Weighing Indicator is used with strain gauge load cells.

The indicator offers:

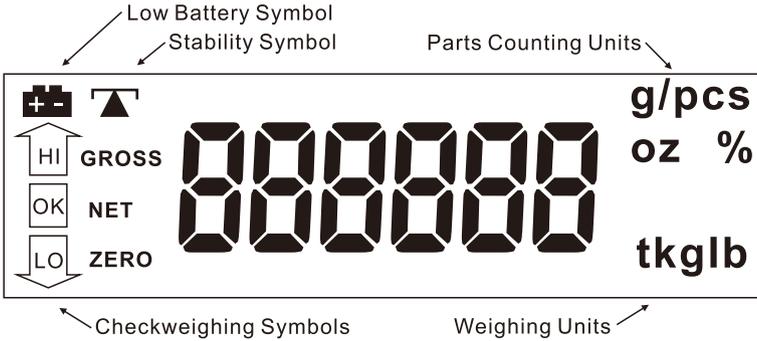
- Preset weight, percent weighing and quantity Hi-Lo limit checking
- 10 unit weight memory cells available
- Big LCD display with backlight
- Both weight & quantity accumulation
- User programming functions
- Standard RS-232 output & USB (option) output
- Unit of weight can be switched between kg and lb
- Operation from internal rechargeable battery or main power
- Keyboard calibration
- Weighing up to 1:75000 divisions
- Simple operation
- Up to 4 load cells of 350 ± 3.5 ohm

2.0 Specifications

2.1 Technical Parameter

INPUT SECTION	
Load Cells	Up to 4 load cells
Sensitivity	2.0 ± 0.1 mv/v
Excitation Voltage	5 V
Zero Input Range	2.0 %FS
Input Range	350ohm ± 3.5
POWER SUPPLY	
External Power supply	DC12V 800mA
Battery	6V/4Ah
CONNECTOR	
Load Cell	5 Pin Round Socket
RS-232	9 Pin d-sub-miniature Socket
USB	A type
WEIGHING	
Display Digits	<999999
Readability (kg)	0.00001,0.00002,0.00005.....10,20,50
Readability (lb)	0.00002,0.00005,0.0001.....20,50,100
Capacity	Any value

2.2 Keyboard and Display



2.3 Functions of the keys:

ZERO/ENTER	To set zero for the scale. To confirm the current setting in parameters or other setting mode.
TARE/▲	To tare the scale. (Subtract a container's weight or preset a known container's weight) Secondary function "▲", to change the value of active digit when in parameters or other setting mode.
Check-W/▶	To set the limit values for check weighing/counting. Secondary function "▶", to move the active digit to the right when in parameters or other setting mode.

<p>%/◀</p>	<p>To enter into the percent weighing mode. To check the unit weight, total sample weight in parts counting mode.</p> <p>Secondary function “◀”, to move the active digit to the left when in parameters or other setting mode.</p>
<p>FUNC./C</p>	<p>To enter into parts counting mode when in normal weighing mode. To return to weighing mode if not in weighing mode.</p> <p>Secondary function “Clear”, to clear the value you have entered when in parameters or other setting mode.</p>
<p>PRINT/ESC</p>	<p>To transmit or print the data when connected with PC or printer. To add the value to the accumulation memory.</p> <p>To exit from setting mode.</p>
<p>UNITS</p>	<p>To select the weighing units (kg, lb) .</p> <p>If there is no accumulate value in memory, a short key press is effective.</p> <p>If there is a accumulate value in memory, a long key press is effective, but the accumulate value will be canceled.</p>

3.0 Operations

3.1 Switch on & off

Push the **ON/OFF** switch to “**I**” position to turn on the scale & to “**O**” position to turn off the scale.

3.2 Zero operation

Press the **ZERO/ENTER** key to return the display to zero in case there is any zero drifting ($\leq 2\%$ F.S) while unloaded.

3.3 Tare function

Subtract container's weight

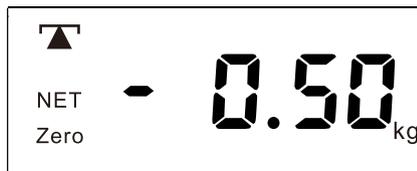
- 1) Place an empty container on the scale



- 2) When the display reading is stable, press the **TARE/▲** key; the display reading will become zero and the scale is in “TARE” mode.



- 3) Remove the container, the display will show a minus “-” value of the container.



▶ Eliminate TARE

Remove all the weight on the pan & the display will show a negative (-) container's weight. Pressing **TARE/▲** key at this moment will bring the weight display to zero and the "NET" indicator will disappear.

Preset a tare value

Give a long press of **TARE/▲** key in normal weighing mode, and the display shows as below:



Press **TARE/▲** key to change the value of the flashing digit; press **%/◀** and **Check-W/▶** key to move the flashing digit to left or right.



When you have obtained a desired value, press **ZERO/ENTER** key to confirm the value. Then the display shows a minus value which you have confirmed.



Press **TARE/▲** key to eliminate the preset tare value when the display shows as above.

- ★ During the operation, press **PRINT/ESC** key to exit at any time.

3.4 Parts counting

Press the **FUNC./C** key to enter into the parts counting mode when the scale is in normal weighing mode.

Note: If a container will be used, put the container on and tare the weight of the container before the sampling operation.

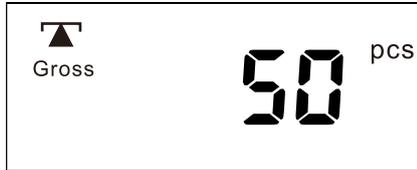


Change the sample size by pressing the **TARE/▲** key. It can be chosen from 10, 20, 50, 100, 200, 500, and 1000.



After you have chosen the sample size, put on the sample with a quantity the same as the sample size you have chosen. Then press **ZERO/ENTER** key & the display shows "-----"; several seconds

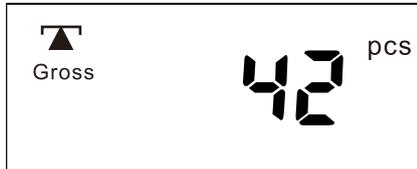
later, the display will show the sample number.



Take off the sample and the sampling operation is finished.

Note: "E4" will appear when the sample weight is too low.

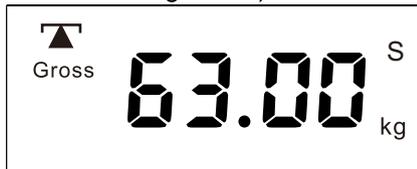
Then put on the objects to be counted, the display will show a corresponding number.



Press %/◀ key and the display will show the unit weight of the sample.



Press %/◀ key again to check the total weight of the sample. ("s" indicates that the scale is in counting mode)



Press the **FUNC./C** key will return the scale to normal weighing mode.

3.5 Percent weighing

The scale will allow a sample weight to be shown as 100%. Then any other weight placed on the scale will be displayed as a percentage of the original sample.

In normal weighing mode, put some sample on the pan, and the display shows the sample weight:



Press %/◀ key to sample, and the display shows as below:



Take off the sample, and put on the objects to be measured, then the display will show a percentage (the current weight to the sample weight)



Press the **FUNC./C** key will return the scale to normal weighing mode.

Note:

- 1) If the sample weight is too low, the display will show "E4"

- 2) The scale may jump by large numbers unexpectedly if small weights are used to be the 100% sample. For example: if only 23.5g is on a scale with 0.5g increments and the scale is set to 100%, the display will show 100%, however a small change of weight will cause the display to jump to 100.13%.

3.6 Check-weighing

Limit values setting

Press the **Check-W/▶** key, the scale will enter into High limit value setting. The “” indicator will appear on the left side of the display, and the display shows as below with the first digit flashing.



Press **TARE/▲** key to change the value of the flashing digit; press **Check-W/▶** and **%/◀** key to move the flashing digit to right or left.



Press **ZERO/ENTER** key to confirm the value you have set.

Then the scale enters into Low limit value setting. The “” indicator will appear, and the display shows as below with the first digit flashing.



Press **TARE/▲** key to change the value of the flashing digit; press **Check-W/▶** and **%/◀** key to move the flashing digit to right or left.



Press **ZERO/ENTER** key to confirm the value you have set. Then the scale returns to normal weighing mode.

(To eliminate the limit values, follow the above procedure and use **FUNC./C** key to clear all the values.)

Note:

- 1) The scale can set both two limits, and it also can set one limit value only.

Set High limit value only

Low limit value is set to be zero, and the High limit value is set to be the desired value.

The display will show “**OK**” when the weight is below the High limit, and greater than the High limit the display will show “**▲**”; and the alarm will sound beeps according to the alarm type set in parameter setting mode..

- 2) To reset the values, use the **FUNC./C** key to clear the value and enter a new value, then press **ZERO/ENTER** key to

confirm.

- 3) The weight must be greater than 20 scale divisions for the check-weighing to operate.
- 4) When the High Limit value is set lower than the Low Limit value, the display will show “E5”. You have to reset the values.
- 5) It can be connected to a control box to output three section control signals.
- 6) In parts counting and percent weighing mode, after sampling operation has been done, limit values preset are also available (Follow the setting procedure in normal weighing mode).

Check alarm type

Two alarm types (Inside or Outside) are available. (To set the alarm type, please refer to P18 “Check alarm type” in Parameter Setting Mode)

Inside type

The display will show “OK” symbol and the scale sounds beeps when the weight is between the preset limit values. When the weight is out of both limit values, the display will show “” symbol or “” symbol.

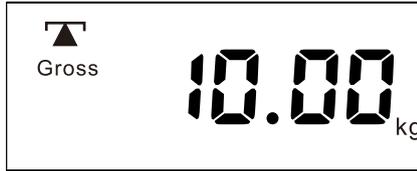
Outside type

When the weight is out of both preset limit values, the display will show “” symbol or “” symbol and the scale sounds beeps. The display will show “OK” symbol when the weight is between the limits.

3.7 Weight/Quantity accumulation

Press **TARE/▲** key to subtract container's weight if needed.

Place on some objects to be measured.



When the scale is in stable mode, press **PRINT/ESC** key to add the current data to memory. The display shows the accumulation times:

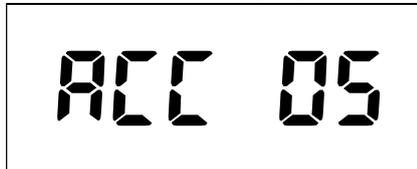


2 seconds later, the display shows the accumulated sample weight.



- ★ This can continue for up to 99 entries, or until the total weight exceed the full capacity.

Take off the objects on the pan, and then press **PRINT/ESC** key to check the total accumulation times. The display will show as below:



2 seconds later, the display will show the total accumulated weight.



2 seconds later, the scale will return to normal weighing mode.

To erase the accumulation memory, press **PRINT/ESC** key to check the total accumulation times and weight and then press the **FUNC./C** key to clear the memory.

Note:

1. Accumulation in counting mode is also available.
2. A weight less than 10 scale division is unavailable to be added.
3. If a PC or printer is connected with the scale, press **PRINT/ESC** key to transmit or print the current displayed data.

3.8 Extended display function

This is available only when the precision value is set to be less than 10000 and the extended display function is set to be on in calibration mode..

In normal weighing mode, give a long press of **FUNC./C** key to switch between the Normal display mode and Extended display mode.

For example:

The normal display shows as below:



Then switch to extended display, and it will show as below:

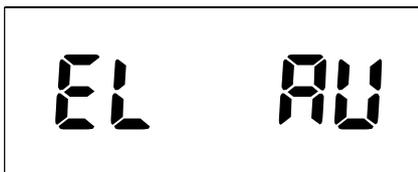


4.0 Parameters Setting

The scale has 8 parameters that can be set by the user. Press the **FUNC./C** and **PRINT/ESC** key at the same time to enter into Parameters Setting mode.

4.1 Backlight type

The display shows as below:



Press **TARE/▲** key to choose the backlight type from “AU”, “ON” and “OFF”. (The default one: “ON”)

EL AU: Backlight will be going on automatically whenever the scale is loaded by objects weighing greater than **9 display resolution** or any of keys is pressed. And it will be going off also automatically approx. 8 seconds after the scale returns to zero.

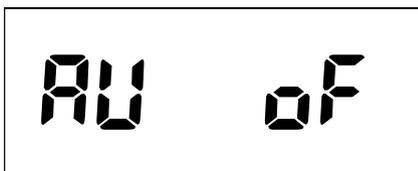
EL ON: The backlight is always on.

EL OFF: The backlight is always off.

Press the **ZERO/ENTER** key to confirm your choice and move to next step.

4.2 Transmitting mode setting

The display shows as below:



Press **TARE/▲** key to choose the transmitting mode from “**RU oF**”, “**RU oF**”, “**RUL oF**”, “**P Cont**”, “**OFF**”, “**RU on**”, “**RU on**” and “**RUL on**”.

“**OFF**”: Transmitting is disabled.

“**P Cont**”: The scale will transmit or print the data continuously.

“**RU on**”: The scale transmits or prints all the data automatically when the scale is in stable mode.

“**RUL on**”: The scale prints all the data automatically when the scale is in stable mode. (For a label printer, such as: model LP-50)

“**RU oF**”: Press the **PRINT/ESC** key to transmit or print the current data when the scale is in stable mode.

“**RUL oF**”: Press the **PRINT/ESC** key to print the current data when the scale is in stable mode. (For a label printer, such as: model LP-50)

“**RU on**”: The scale transmits the qualified data in check weighing/ counting mode automatically when the scale is in stable mode.

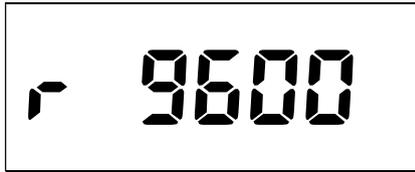
“**RUL oF**”: Press the **PRINT/ESC** key to transmit the qualified data in check weighing/ counting mode automatically when the scale is in stable mode.

Press the **ZERO/ENTER** key to confirm your choice and move to next step.

Note: “**RU on**” and “**RUL oF**” are not available in accumulation mode.

4.3 Baud rate setting

The display shows as below:



Press **TARE/▲** key to choose the baud rate from 1200, 2400, 4800 and 9600.

Press the **ZERO/ENTER** key to confirm your choice and move to next step.

4.4 Accumulation mode

The display shows as below:



Press **TARE/▲** key to choose it from on or off.

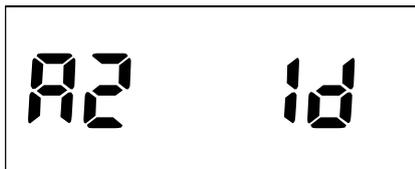
"ACC on": Press the **PRINT/ESC** key to transmit data and accumulate them.

"ACC off": Press the **PRINT/ESC** key to transmit data only.

Press the **ZERO/ENTER** key to confirm your choice and move to next step.

4.5 Zero tracking range

The display shows as below:



Press **TARE/▲** key to choose it from 0.5d, 1d, 2d and 4d.

(The larger number selected, the wider range)

Press the **ZERO/ENTER** key to confirm your choice and move to next step.

4.6 Stable class range

The display shows as below:



Press **TARE/▲** key to choose it from 0, 1, 2 and 3.

(The larger number selected, the longer time for display stability)

Press the **ZERO/ENTER** key to confirm your choice and move to next step.

4.7 Check alarm mode

The display shows as below:



Press **TARE/▲** key to choose it from “5A” and “4A”.

“5A”: The alarm sounds beeps and the RS232 outputs control signal only when the scale is in stable mode.

“4A”: The alarm sounds beeps and the RS232 outputs control signal once an object is put on the pan.

Press the **ZERO/ENTER** key to confirm your choice and move to next step.

Note:

Of course the weight being put on the pan has to be qualified for alarm.

4.8 Check alarm type

The display shows as below:



Press **TARE/▲** key to choose the alarm type from in or out.

Press the **ZERO/ENTER** key to confirm your choice and the scale returns to normal weighing mode.

5.0 Simple Calibration

Give a long press of the **ZERO/ENTER** key in normal weighing mode, and the display will show a flashing calibration weight value. Put on the mass with a weight the same as the displayed value, the scale will sound beeps and return to normal weighing mode.

Note:

1. Press the **PRINT/ESC** key to exit the calibration mode at any time.
2. The displayed calibration weight value normally should be the last calibration weight.
3. The calibration weight value can be changed by using the **Check-W/▶** , **%/◀** and **TARE/▲** key.
4. This function will be unavailable if the precision value has been set lower than 10000 in calibration mode.

6.0 Battery Operation

The scale can be operated from the battery if desired. The battery life is approximately 80 hours.

When the battery needs charging a symbol “  ” on the weight display will turn on. The battery should be charged when the symbol is on. The scale will still operate for about 10 hours after which it will automatically switch off to protect the battery.

To charge the battery, simply attach the power supply module to the scale and plug in. The scale does not need to be turned on.

The battery should be charged for 12 hours for full capacity.

There is an LED to indicate the status of battery charging on the right of display. When the scale is plugged into the mains power, the internal battery will be charged. If the LED is **Green** the battery has been charged. If it is **Red** the battery is nearly discharged and **Yellow** indicates the battery is increasing the charge level.

As the battery is used it may fail to hold a full charge. If the battery life becomes unacceptable then contact your distributor.

Note: The battery should be recharged every 3 months if the scale is not used for long time.

7.0 Specification of Output Interface

7.1 Mode: Bidirectional EIA-RS-232 C's UART signal

7.2 Format:

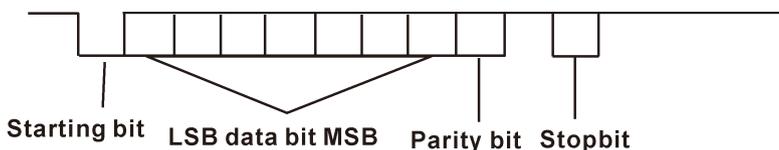
Baud rate: 1200,2400,4800,9600

Data bits: 8 BITS

Parity bit: NO

Stop bit: 1 BIT

Code ASCII



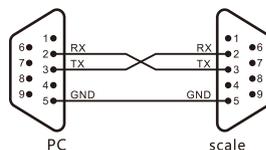
7.3 Connection: RS-232 connector is a 9 pin D-subminiature socket.

Input Pin 2

Output Pin 3

Signal Ground Pin 5

Connect to PC



7.4 Transmit format

7.4.1 Transmitting without accumulation data

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
H1	,	H2	,	DATA										UNIT			CR	LF	

HEAD1 (2bytes)

HEAD2 (2bytes)

OL-Overload, Under load

NT-Net weight

ST-Display is stable

GS-Gross weight

US-Display is unstable

Example:

EX + 0.85kg, when it is stable and net value as:

ST, NT, +0.85 kg 0D 0A

7.4.2 When it is in Accumulation mode and transmit by pressing

PRINT/ESC key:

Press the **PRINT-ESC** key

TICKET	No. 01
G	1.0000kg
T	0.0000kg
N	1.0000kg

Press the **PRINT/ESC** key again:

TICKET	No. 02
G	3.0000kg
T	1.0000kg
N	2.0000kg

Press the **PRINT/ESC** key again, when there is nothing on the pan:

TOTAL NUMBER OF TICKETS 02

TOTAL NET 3.0000kg

G=GROSS

T=TARE

N=NET

W=WEIGHT

U=UNIT WEIGHT

Q=QUANTITY

7.5 Command (PC -> Scale)

- 4 Tare
- 5 Zero
- 6 Print/Accumulate
- 7 Clear (accumulation data)

7.6 Variables (The prompt character) used in scale also in label printer

Variable Name	Specifications	Application	Size
SER	Accumulated times	W/C	2 byte
NWA	Net weight	W/C/%	7 byte
NWB	Net weight(no dot)	W/C/%	6 byte
TWA	Tare weight	W/C/%	7 byte
TWB	Tare weight (no dot)	W/C/%	6 byte
GWA	Gross weight	W/C/%	7 byte
GWB	Gross weight (no dot)	W/C/%	6 byte
TNA	Total net weight	W	7 byte
TNB	Total net weight(no dot)	W	6 byte
TNP	Right shifting decimal digit of TNB	W	1 byte
TTA	Total Tare weight	W	7 byte
TTB	Total Tare weight (no dot)	W	6 byte
TTP	Right shifting decimal digit of TTB	W	1 byte
TGA	Total Gross weight	W	7 byte
TGB	Total Gross weight(no dot)	W	6 byte
TGP	Right shifting decimal digit of TGB	W	1byte
UWA	Unit weight	C	7 byte
UWB	Unit weight (no dot)	C	6 byte
QUA	Quantity	C/%	7 byte
QUB	Quantity (no dot)	C/%	6 byte
TQA	Total Quantity	C	7 byte
TQB	Total Quantity (no dot)	C	6 byte
CHA	High Limit Value	W/C/%	7 byte
CHB	High Limit Value (no dot)	W/C/%	6 byte
CLA	Low Limit Value	W/C/%	7 byte
CLB	Low Limit Value(no dot)	W/C/%	6 byte
UNT	Weighing Unit	W/C/%	2 byte
UWU	Unit of U.W in counting mode	C	2 byte

Note:

1. The variable can only be in capital letters, and the value can't be less than 0, otherwise the value will not be transmitted.
2. ****P** variable: In weight accumulation, the total value may exceed 6 digits, but it can achieve 6-digit display through right shifting the decimal point. (The value behind the decimal point won't display)

8.0 Technical Description

8.1 Purpose

When the indicator is first connected to a load cell it is necessary to set up the indicator to display the correct information. To do this, first connect the load cell and calibrate it.

8.2 Load cell connection

The load cells are connected using the 5 pin round plug provided.

Pin 1	+ Excitation
Pin 2	Shield
Pin 3	+ Signal
Pin 4	- Signal
Pin 5	- Excitation

8.3 Calibration procedure

Switch on the scale & press “**TARE/▲**”, “**FUNC./C**” and “**ZERO/ENTER**” keys at the same time during self-checking.

- a. If the display shows “**┌HHHHH**” (a precision value), it means that the scale has not been calibrated before; Press the “**% /◀**”, “**Check-W/▶**” and “**TARE/▲**” key to enter a precision value

(0~99999), then press “ZERO/ENTER” key to confirm and set other parameters.

Note: A precision value “┌00000” indicates 100000.

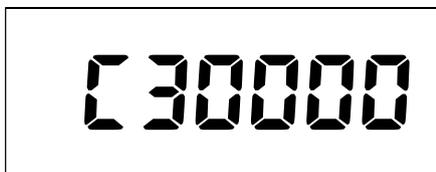
- b. If the display shows “0.00” or “0.0000”, it means the scale has been calibrated yet.



- If the precision, division, extended display function, capacity and weight loading times need to be changed, give a long press of “ZERO/ENTER” key to enter into setting change mode.
- If there is no need to change them, touch the pan lightly by hand and do the calibration directly (Refer to “In calibration mode”).

1) Choose a precision value

The display shows a precision value “┌NNNNN”:



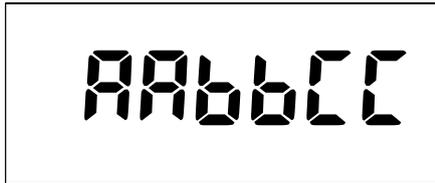
Press the “% /◀”, “Check-W/▶” and “TARE/▲” key to change

the precision value, and it can be chosen from 3000, 6000, 12000, 15000, 30000, 60000 and 75000.

Press the “**ZERO/ENTER**” key to confirm and enter into next step.

2) Division value setting and extended display

The display shows a value “AABBCC”:



AA: The reading division of high capacity

BB: Extended display (--: with extended display function; no value: without extended display)

CC: The reading division of lower capacity

- Press the **TARE/▲** key to change the reading division, and press the **ZERO/ENTER** to confirm.
- Press the **FUNC./C** key to confirm or cancel the dual divisions function (AA>CC of AA=CC), and press the **ZERO/ENTER** to confirm.
- Press “% /◀” key to confirm or cancel the extended display function, and press the **ZERO/ENTER** to confirm.

3) Capacity

The display shows a capacity “HHHHHH”:

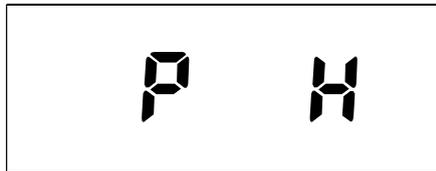


Press the **TARE/▲** key to change the capacity.

Press the **ZERO/ENTER** to confirm and enter into next step.

4) **Weight loading times setting**

Then the display shows “P H”:



There are three values (**P1**, **P2** and **P3**) which can be selected by pressing the **TARE/▲** key.

P1: Calibrate the scale by putting on the weights only one time.

P2: Calibrate the scale by putting on the weights twice.

P3: Calibrate the scale by putting on the weights for three times.

Press the “**ZERO/ENTER**” key to confirm and enter into calibration mode.

In calibration mode (For P1 mode)

The display shows “0.00” or “0.000” again:



- Touch the pan lightly by hand, several seconds later, the display shows the weight value (The value can be changed by pressing the “% /◀”, “**Check-W/▶**” and “**TARE/▲**” key) which should be put on. Put on the weights refer to the displayed weight value, and press the **ZERO/ENTER** key to confirm.



A few seconds later, the buzzer sounds, and the scale counts backwards to zero. The calibration procedure is finished. Then switch off and take away all the weights.

Note:

- When the display shows “0.00” or “0.000”, press the “**FUNC./C**” key to check the resolution; press the “**FUNC./C**” key again to return.
- If P2 or P3 is selected, the display will show the second and third weight value (the second and third value must be bigger than the last one).

9.0 Error Codes

During the initial power-on testing or during operation it is possible the scale may show an error message. The meaning of the error messages is described below.

Error codes	Possible causes	Remedy
E1	EPROM data lose.	Recalibrate the scale.
E2	The initial zero is outside the range of the factory setting for zero.	Recalibrate the scale.
E3	The value exceeds the display range.	1. Set the extended display function to be on. 2. Cancel some operation item.
E4	The sample weight is too small.	Increase the sample weight.
E5	The low limit value is set larger than the high limit value	Reset the limit values
---OL---	Overload	Reduce the load on the pan immediately.

