# Anti-moisture Weighing Scale

# Service Manual

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Thank you for purchasing EXCELL Anti-moisture Weighing Scale. In order to operate smoothly, to last the durability, and to reduce the chance of breakdown for this product, please read this Manual carefully.

# Instructions for Use

1. Please keep the scale clean and free from insect infestation.
2. To avoid impact and it is to be used under designated pressure (the weight put on the platter can not exceed the maximum capacity of the scale).
3. 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 build up. The scale should be recharged every 3 months to prevent failure of the internal rechargeable battery.
4. The commodity should be placed at the centre of platter for accurate weighing. The dimension of the weighted commodity should not exceed the dimension of platter.
5. Any suggestion is warmly welcome.

# Preparations before Using

1. Put the scale on a firm level surface free for accurate weight readings. Adjust the four leveling feet to get the leveling bubble at the centre of circle.
2. Scale must be used under a stable temperature and stable air flow. Avoid direct sunlight onto the scale or near the exhaust port of ventilating system.
3. Scale must be used under individual socket to avoid the interference of other electric appliances.
4. Remove any weight that might be on the platter before the scale is switched on.
5. Please note that when ⊟ ⊟ or ⊟ symbol appears on the screen, the scale needs to be recharged.

# Display Descriptions
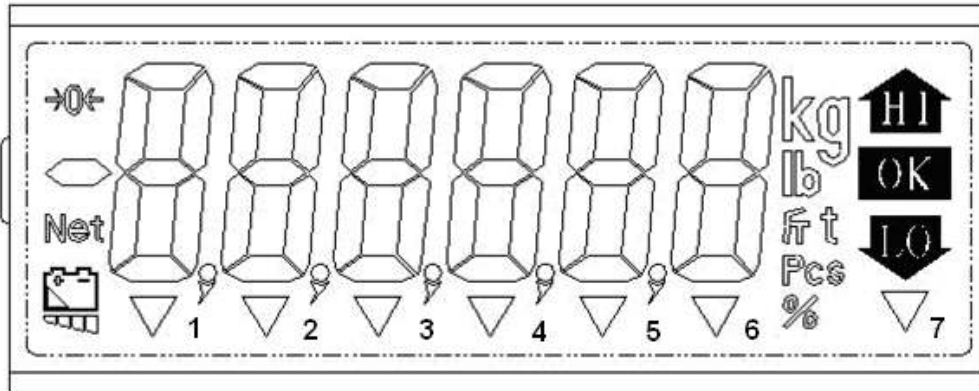


## Symbol Indication

→0← ： Zero Indication.

**NET** ： Net Indication.

**kg** ： "kg" unit.

**lb** ： "lb" unit.

斤 ： "Taiwan Catty" unit.

**Pcs** ： Press this key to enter into counting mode.

🔋 ： When the power indication 🔋 turns to be low battery 🔋or even less, it means that battery should be recharged immediately.

▼1 ： （STABLE）

▼2 ： （GROSS）

▼3 ： （ 🔲 ） Insufficient unit weight indication.

▼4 ： （ ⁞ ） Insufficient sampling indication.

| △5△6▼7 | weight unit "OZ" | △5▼6▼7 | weight unit "dwt" |
|---|---|---|---|
| △5▼6△7 | weight unit "GN" | ▼5△6▼7 | weight unit "viss" |
| ▼5△6△7 | weight unit "ct" | | |

## Available Units

| kg | 1g = 0.001 kg | GN | 1g = 15.432358 GN |
|---|---|---|---|
| g | 1g = 1g | ct | 1g = 5ct |
| TW Catty | 1g = 0.02666667 TW Tael | dwt | 1g = 0.6430149 dwt |
| lb | 1g = 0.002204623 lb | pcs | |
| oz | 1g = 0.03527396 oz | viss | 1kg = 0.612245 viss |

# Keypad Descriptions
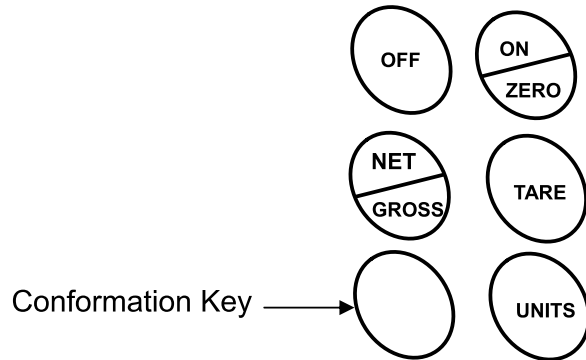
**Remark: The blank key only works under the calibration mode.**

1. **OFF** : Press this key to turn off the scale.

2. **ON/ZERO** :

    When the scale is off, press this key to power it on.

    When the scale is on, press this key to back to zero.

    When calibration, press this key to increase the parameter value.

    - When there are not any commodity on the platter, the display is not showing, press this key to zero the scale. At zero, the "→0←" indication is on.
    - Zero range: ± 2% of full scale

3. **TARE** : ( Move the cursor rightward)

    Put a container on the platter and after the weight is stable, press this key to zero the weight of the container. The screen displays the "Net" icon.

    Put the commodity on the container, the display shows the net weight value of the goods.

    Remove the full container, the display shows the negative weight value of the container. Then press TARE again to cancel the tare operation and the scale reverts back to zero. The "Net" icon is switched off.

    - Continuous tare operation is adding tare objects on platter and pressing the Tare key each time
    - Continuous tare range = full weighing capacity of the scale

4. **UNITS** : Press **UNITS** key to select weighing units or counting units. It displays the symbol of weighing unit or the counting unit "Pcs". After power off, the scale will memorize the active unit. When calibration, press the key to decrease the parameter value.

5.  **NET/GROSS :** ( Move the cursor leftward)

In Tare mode, press **NET/GROSS** key once to display gross value. Net symbol disappears, and the gross value "▼" appears. Press **NET/GROSS** key again, it displays net value, the indication **NET** appears and the gross value indication disappears. Press **NET/GROSS** key continually to display net value or gross value. The **NET/GROSS** key is only used in Tare mode. When "▼" gross icon is on, only **NET/GROSS** key is functional.

## Counting Function

♦   Press **UNITS** key to enter into counting mode. Press **NET/GROSS** key to switch counting sampling size 10, 20, 50, 100 and 200. The LCD shows C10, C20, C50, C100, and C200 in sequence.

♦   Put enough sample on the platter as need.

♦   After the sampling process is stable, press the UNITS key to enter into the counting mode and the screen shows the quantity of items.

Insufficient Sampling size（ ⊹ ） : Total weight of samples is less than 20d. (d=division)
Insufficient Unit Weight（ ⊡ ） : The shown quantity is less than 1 PCS.
If ⊹ displays, the scale would be out of sampling mode and enter into the "unit" mode.

# External Functions

Press and hold on **ON/ZERO** while turning on with countdown to enter into the External Function setting mode.



00 FnC  : Function Setting
01 Fn1  : Filter setting and automatic power-off timer setting
02 EC   : External Weight Calibration
04 H8   : High Limit Value Setting
05 LoY  : Low Limit Value Setting
06 UEn  : Units Selection
11 SEr  : Product Series Number
12 UEr  : Program Version
13 AdC  : Internal Value Display

# 00 FNC: Function Setting



A B
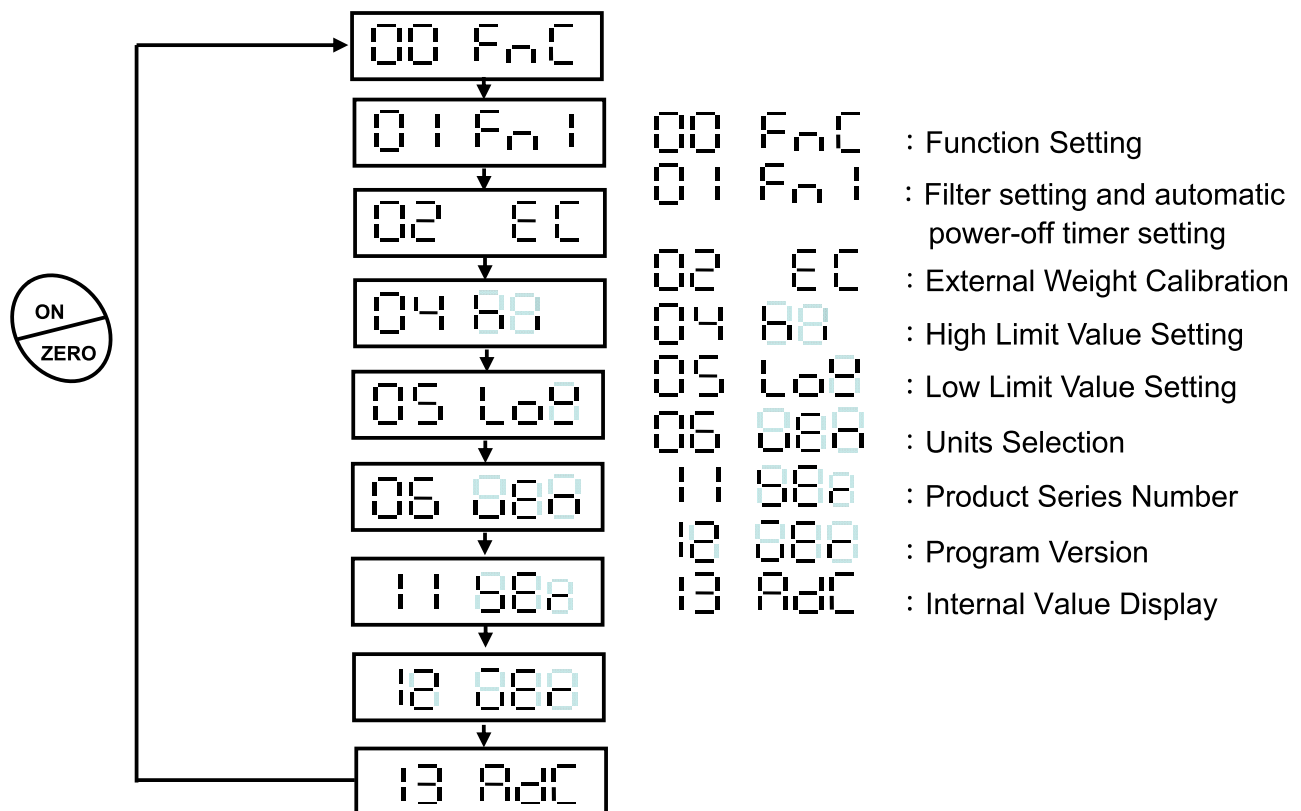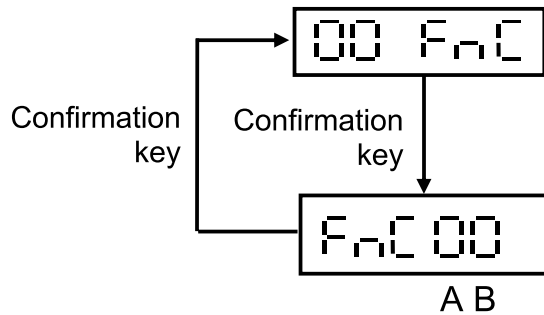
**\* The scale will not work normally with meaningless input value.**

Column

A：Backlight Control

0=Backlight Off        1=Backlight On
2=Auto-Backlight

When the weight is over 10d or keys are pressed, the display backlight will be on. After the weight is stable for 10 seconds (the weight is less than 10d or it's negative value) or when the scale returns to zero, the display backlight switches off.

B：Resolution shift
0=Low resolution 1 / 3 000 (Default setting)
1=High resolution 1 / 6 000 (High resolution 1/7 500 for 1.5 kg and 15 kg model)

**Press confirmation key after finishing setting.**

# 01 FN1: Filter setting and automatic power-off timer setting



A B
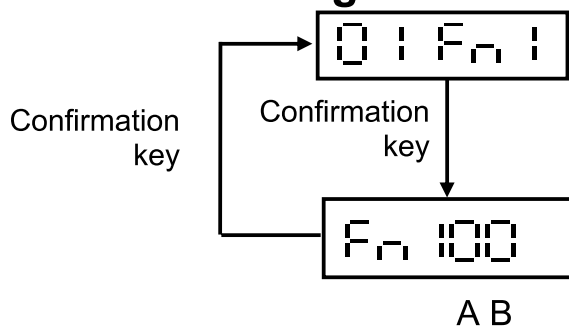
Column

A: Environment Parameter Filter Adjustment

Set different stable parameter for different environment. The order of parameters is 0, 1, 2, 3.

**Suggestion:**

The smaller number of parameter is better for worse environment.

B: Automatic power-off timer setting

The function of automatic power-off timer setting is selectable to switch on when the weight is empty on the platter and no key is operated.
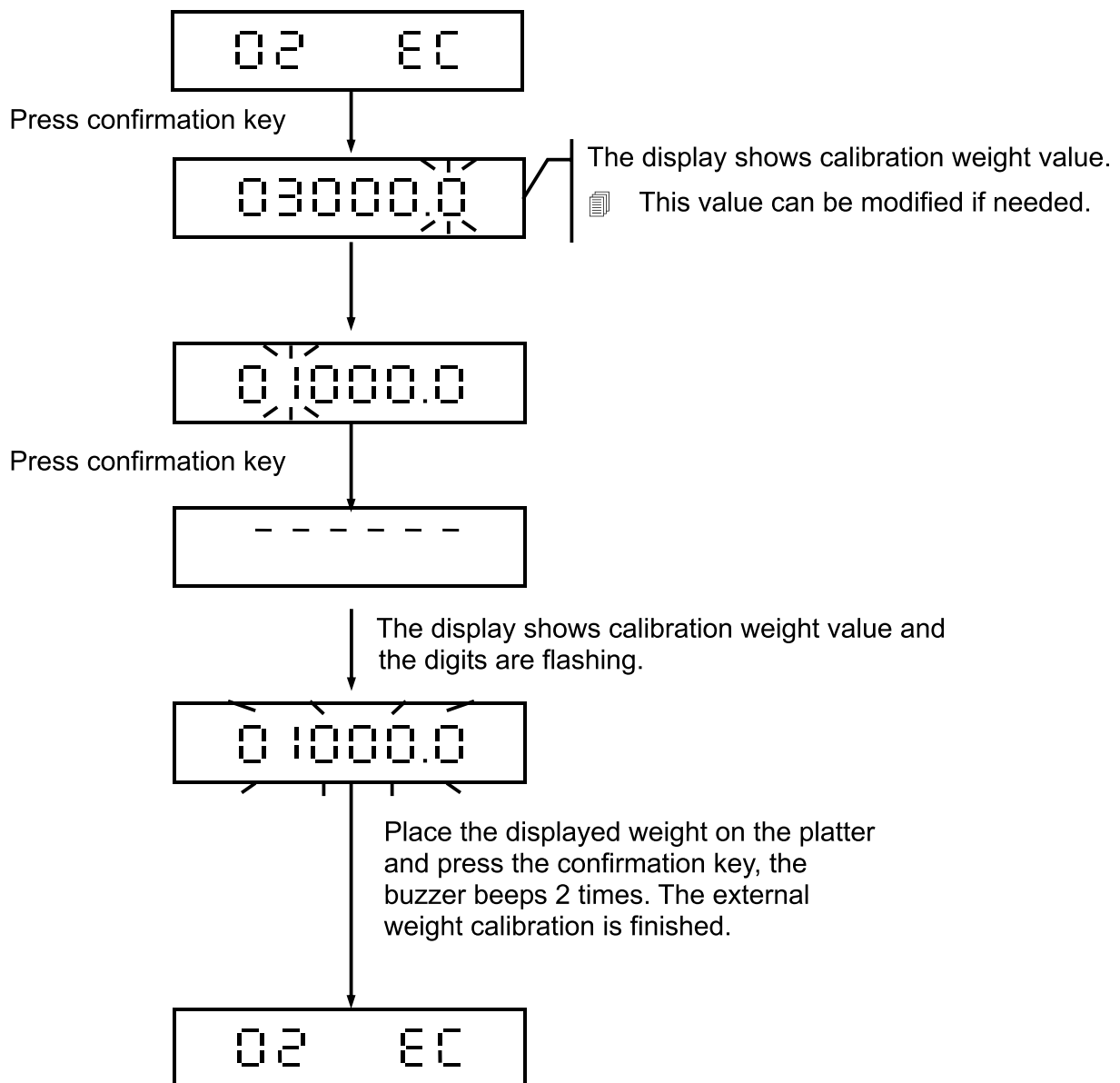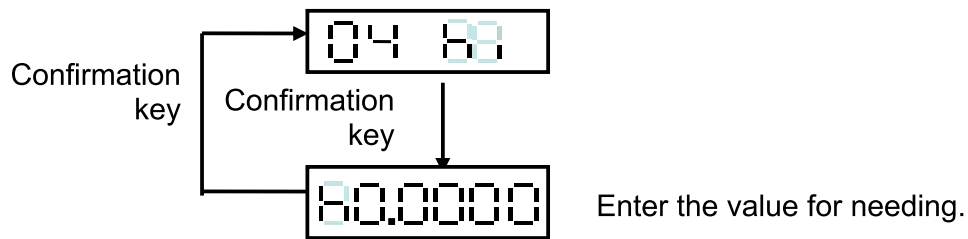
Setting range: 1~9 Min.

0: No auto power-off

1: When the scale is idle for 1 minute, the scale automatically switches off

2: When the scale is idle for 2 minute, the scale automatically switches off

# 02 EC: External Weight Calibration

```
        ┌─────────────────┐
        │   02      EC    │
        └─────────────────┘
```

Press confirmation key

```
        ┌─────────────────┐
        │   03000.0       │
        └─────────────────┘
```

The display shows calibration weight value.

▤   This value can be modified if needed.

```
        ┌─────────────────┐
        │   01000.0       │
        └─────────────────┘
```

Press confirmation key

```
        ┌─────────────────┐
        │   - - - - - -   │
        └─────────────────┘
```

The display shows calibration weight value and the digits are flashing.

```
        ┌─────────────────┐
        │   01000.0       │
        └─────────────────┘
```

Place the displayed weight on the platter and press the confirmation key, the buzzer beeps 2 times. The external weight calibration is finished.

```
        ┌─────────────────┐
        │   02      EC    │
        └─────────────────┘
```

# 04 hi: High Limit Value Setting

Confirmation key — Confirmation key

```
04 HI
```

```
H0.0000
```
Enter the value for needing.

**Press confirmation key after finishing setting.**

# 05 Low: Low Limit Value Setting

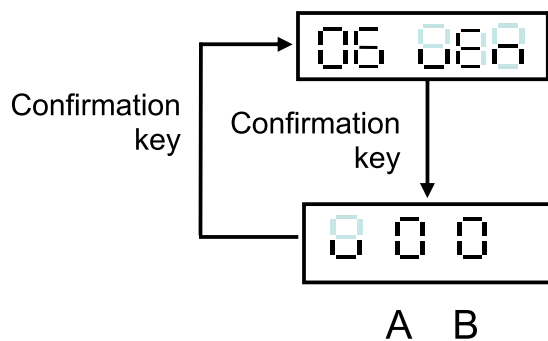Confirmation key — Confirmation key

```
05 Lo
```

```
L0.0000
```
Enter the value for needing.
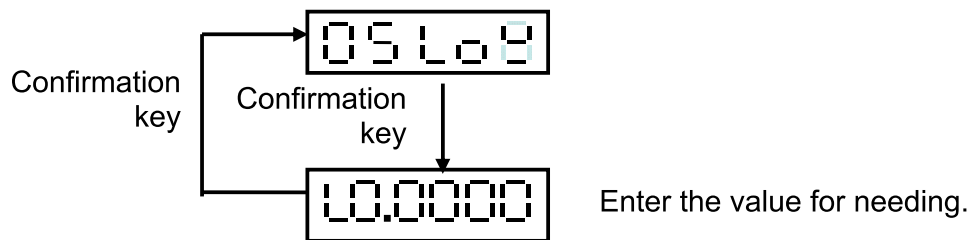
**Press confirmation key after finishing setting.**

**Display "OK" when the weight value is between "HI" and "LO" of setting values.**

# 06 uEn: Units Selection

Confirmation key — Confirmation key

```
06 uEn
```

```
8 0 0
```

A   B

Column

A： Select units as follows:

0=kg　1=g　2=twg　3=lb　4=ounce　5=grain　6=carat　7=dwt

8=Pcs counting mode　　9=viss (in Myanmar)

Press **ON/ZERO** key to increase the number of the flashing digit. Press **UNITS** key to decrease the number of the flashing digit.

B： Weight unit is active or inactive.

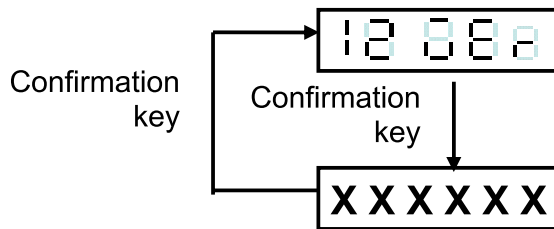(0= the weight unit is active. 1= the weight unit is inactive)

Press **NET/GROSS** key and then show "0", the unit is inactive. Press **TARE** key and then show "1", the unit is active.
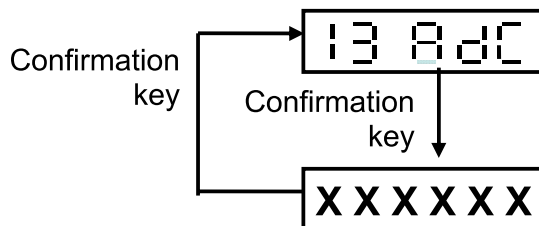
## 11 SEr: Product Series Number

Confirmation key

Confirmation key

`11 SEr`

`X X X X X X`
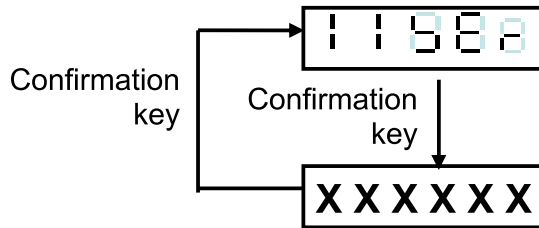
Show the product series number of the scale.

## 12 VEr: Program Version

Confirmation key

Confirmation key

`12 VEr`

`X X X X X X`

Show the program version number of the scale.

## 13 AdC: Internal Value Display

Confirmation key

Confirmation key

`13 AdC`

`X X X X X X`

Show the internal value of the scale.

# Power Supply

## Power Supply Selection

1. 6V/5Ah rechargeable battery
2. Adaptor:    Output    DC 10V 1A

## Power Consumption

Power consumption is less than 3 mA when the scale is powered-off.

Power consumption after the scale is powered-on:

|  | Backlight on | Backlight off |
|---|---|---|
| One-sided display | About 42 mA | About 29 mA |
| Double-sided display | About 56 mA | About 30 mA |

## Low Battery Warning

When the power indication [icon] turns to low battery [icon] or even less, it means the battery should be recharged immediately.

The scale will power off automatically after several hours and enter into self-protection mode of battery. The scale can be only used again with full recharged battery.

**Note:** When the battery voltage is less than 5.4 V, the scale would power off automatically.

[icon]  Battery voltage is more than 5.8 V.        [icon]  Battery voltage is about 5.7 V.

[icon]  Battery voltage is about 5.5 V.        [icon]  Battery voltage is less than 5.44 V.

# Error Messages

E0  : EEPROM is unable to be read.

E1  : Zero value is higher than Calibration Zero value +10%.

E2  : Zero value is lower than Calibration Zero value -10%.

E3  : Calibration data is error.

E4  : Internal value is unstable.

E5  : The AD value is 0.

E6  : Calibration Zero is excessively low.

E7  : Calibration Zero is excessively high.

E8  : Calibration Resolution is excessively high.

OL  : The weight value is over the capacity + 9e.

# Internal Function

Switch mini jump to ADJ location before the operation of internal calibration setting and switch it back to LOCK after setting finished. The setting operation can be stopped during process by shutting the scale off.

Internal calibration operation and parameter description

```
01C_SP
   ↓
02CAL
   ↓
03CLn
   ↓
06C_G
   ↓
07AAA
```

01 = Specification Setting

02 = Weight Calibration

03 = Linearity Calibration

06 = Acceleration of Gravity Calibration

07 = Performance of all load cells trends to consistently

## Internal Calibration Order:

07 RMP (After the first storage of program, this calibration must be done when the

scale is powered on)

⇩

01 CSP (Set full capacity of scale)

⇩

03 CLN ( Linearity calibration setting)

⇩

02 CAL(Weight Calibration)

⇩

06 CGR (Acceleration of Gravity Calibration)

# 01 CSP: Specifications Setting

Press confirmation key to enter into as follows.

WEIGHT



A

Column：

| A | Capacity | Division |
|---|---|---|
| 0 | 1.5000 kg | 0.2 g / 0.5 g |
| 1 | 3.0000 kg | 0.5 g / 1.0 g |
| 2 | 6.000 kg | 1 g / 2 g |
| 3 | 15.000 kg | 2 g / 5 g |
| 4 | 30.000 kg | 5 g / 10 g |

Resolution:3 000 / 6 000 can be changed by external FNC.

# 02 CAL: Weight Calibration

Press confirmation key to enter into as follows.

WEIGHT

```
 ---
```

When there are no commodities on the platter, press confirmation key to read and record no weight.

```
01.5000
```

Put weights on the platter to reach full capacity of scale, and then press confirmation key to read and record the Full capacity.

⌗ According to the specifications selected, the screen displays the weights needed.

"1.5 kg" shows 01500.0

"3 kg" shows 03000.0

"6 kg" shows 006.000

"15 kg" shows 015.000

"30 kg" shows 030.000

# 03 CLN: Linearity Calibration

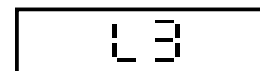Press confirmation key to enter into as follows.

WEIGHT

```
L0
```

When there are no commodities on the platter, press confirmation key to read and record no weight.

```
L1
```

Put weights on the platter to reach 1/3 full capacity of scale, and then press confirmation key to read and record the 1/3 full capacity.

```
L2
```

Put weights on the platter to reach 2/3 full capacity of scale, and then press confirmation key to read and record the 2/3 full capacity.

```
L3
```

Put weights on the platter to reach full capacity of scale, and then press confirmation key to read and record the Full capacity value.

**Please redo weight calibration after doing the linearity calibration.**

# 06 CGR: Acceleration of Gravity Calibration

Press confirmation key to enter into as follows.

WEIGHT

```
9.79425
```

Default acceleration of gravity is 9.79425.

The digits of WEIGHT : Acceleration of gravity in using place.

The acceleration of gravity value should be between the gravity values of equator standard and polar standard.

Equator standard gravity $G_E$ = 9.7803184558 m/sec$^2$

Polar region standard gravity $G_P$ = 9.8321772792 m/sec$^2$

Taipei $\fallingdotseq$ 9.78914 m/sec$^2$

Shanghai $\fallingdotseq$ 9.79423 m/sec$^2$

# 07 RMP: Performance of all load cells trends to consistently

Press confirmation key to enter into as follows.

WEIGHT

```
Ad-CAP
```

Press confirmation key when the platter is empty, then the value will be run from 0000 until it would be shown.

```
AdSAL
```

Put weights on the platter to reach full capacity of scale, then press confirmation key. The value will be run from 0000 until it would be shown.

```
rEAdGE
```

Remove weights from the platter and press confirmation key to back to functional option.

# Appendix   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 |  |