

**H4 Series and X Series
Counting Scale
User Manual**

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Check Firmware Version

Turn on scale and hold **ZERO** key during countdown. Display "SELF tEST" and then display **0 1 2 E r**. Press **MC** key to show firmware version 03005 (H4 series) or 03006 (X series). Press **MC** key again to show maintenance number XXX ranged from 000~999. Turn off and turn on scale to return to weighing mode.


Thank you for purchasing counting scale.

In order to operate smoothly, to last the durability
and to reduce chance of breakdown for this product,
Please read this manual carefully.

Precautions for Use

1. The scale should not be drenched by rain or water. (If it gets wet carelessly, please wipe it dry with a cloth. If its operation is abnormal, please send it to our distributor for service)
 2. Please keep the scale clean. Please keep the scale in a cool and dry place. Do not store at high temperature or damp places.
 3. Use within the maximum capacity. Avoid sudden drop of heavy object on the platter.
 4. The rechargeable battery is consumables and is not included in the warranty. If scale is not used for some time, please clean and store it in a plastic bag with desiccative. The rechargeable battery should be recharged every three months. (If using dry batteries, take the dry batteries out before storing)
-  The numbers of recharges for battery vary with the conditions of use. It can be maximized by re-charging the battery frequently and by avoiding conditions of total discharge.
5. The commodity should be placed in the center of platter for accurate weighing. The dimension of the weighted commodity should not exceed the dimension of platter.
 6. Please operate or charge the scale in an open area. Avoid squeezing the power cable, which might cause short circuit within cable and result in fire. When charging, the charging indicator will light up within 4-6 seconds. Green -> The battery is fully charged. Red -> charging is in progress.
 7. Operating temperature: -10°C ~ +40°C
 8. Recommendation: Use this product in an indoor environment with altitude up to 2000m.
 9. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
 10. Any suggestion for the product is warmly welcome.

Preparations before Using

1. Put the scale on a firm and flat surface for accurate weighing reading. Adjust the four leveling feet to get the leveling bubble at the center of the circle.
2. Scale must be used under a stable temperature and stable air flow. Avoid direct sunlight onto the scale or use near air vent.
3. Scale must be used under individual socket to avoid the interference of other electric appliances.
4. Clear the platter before turning on the scale. It requires 15 ~ 20 minutes to warm up.
5. When the low power warning symbol  flashes, If not charge immediately, auto shut-down within 5~10 hours or 1~2 hours with backlight for H4 series. For X series, it auto shut-down within 8~12 hours or 3~6 hours with backlight. Once it auto shut-down and enter the battery protection mode, it must be charged before it can be used.

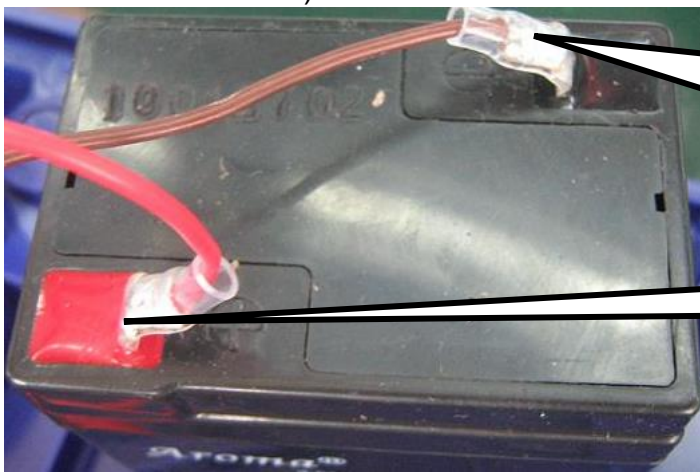
6. Lead-Acid Battery Notice

Lead-acid battery adopts the advanced free-maintaining technique, customers need not to replenish electrolyte. The scale should be recharged every 3 months to battery over-discharged and shorten the life of the battery.

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

Maintaining

1. To ensure the service life of the battery, please do not over-discharge the battery and charge the battery whenever low power warning symbol flashes.
2. Please remove the battery when the scale is not used for a long time or disconnect the cable at cathode from the battery. Checked voltage of battery frequently and if voltage is low, charge the battery in time.
3. Do not short the battery terminals to check if there is still current. Please check if 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 power cable (usually red cable)
 - b) Cathode of battery should be connected with Cathode of power cable (usually brown cable or black cable)



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

Red cable connected with Anode 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

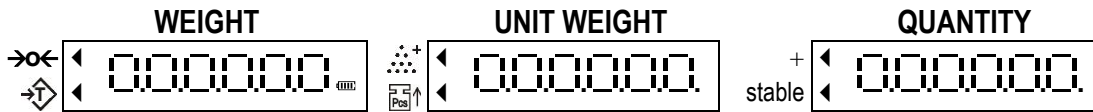


Children faraway

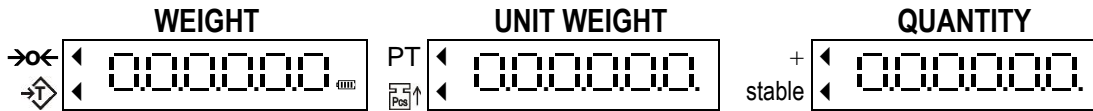
Chapter 1 Display and Keypad Descriptions

1-1 Display Descriptions

Non-approval models: CFn 0 1 = 00 ~ 0 1 or resolution equal to 1 / 3,000



Approval models: CFn 0 1 = 02 ~ 04 and resolution equal to 1 / 3,000



Display Column

1. WEIGHT

Total 6 digits. To display the weight or the total accumulation weight; 1st left digit can display “-”.

2. UNIT WEIGHT

Total 6 digits. To display the unit weight of objects on the platter or total accumulation counts.

3. QUANTITY



Total 6 digits. To display the quantity of the objects on platter or the accumulated quantity.

Symbol Icons “ ◀ ”

1. ↔ or Net or Tare : “Tare” indication
2. →0← or Zero : “Zero” indication
3. + or M+ : “Accumulation” indication
4. Stable : “Stable” indication
5. PT : “Pretare” indication (for approval models)
6. ⋯+ : (For non-approval models) If sample weight < minimum required weight, this symbol will display. Please add more samples and then sample again. Minimum required weight is defined:
10d for resolution in 1/3000 and 20d for resolution range from 1/6000 to 1/30000
If symbol ⋯+ displays, scale can still be used but may affect the counting accuracy.
7. Pos↑ : If the unit weight of the object < “Minimum Unit Weight”, this symbol will display. Please use scale with smaller division. “Minimum Unit Weight” is defined:
0.1d for resolution in 1/3000 and 0.2d for resolution range from 1/6000 to 1/30000
If symbol Pos↑ displays, scale can still be used but may affect the counting accuracy.

1-2 Power Supply and Power Consumption

100~240Vac, 50/60Hz

		H4 series	X series
Software version		03005XXX	03006XXX
Battery		6V / 4Ah lead acid battery	3.7V / 6100mAh Li battery
Consumption (without backlight)		33mA / 0.20W Operation time: 108 hours	27mA / 0.11W Operation time: 120 hours
Charging time		8~12 hours	5~6 hours
Battery status		>= 6.2V	>= 3.8V
		< 5.7V	< 3.52V
	Auto shut-down	< 5.6V	<3.42V

1-3 Keypad Descriptions

[Standard keypad]

7 ┌	8 ABC	9 DEF	SAMPL	Q'TY PST
4 GHI	5 JKL	6 MNO	UNIT W.T	PST CE
1 PQRS	2 TUV	3 WXYZ	Z	M+
0	.	CE	T	MC













[Double weighing units keypad]

7 ┌	8 ABC	9 DEF	SAMPL	Q'TY PST
4 GHI	5 JKL	6 MNO	UNIT W.T	kg/lb
1 PQRS	2 TUV	3 WXYZ	Z	M+
0	.	CE	T	MC





[10 sets of preset unit weight keypad]

7 ┌	8 ABC	9 DEF	SAMPL	Q'TY PST
4 GHI	5 JKL	6 MNO	UNIT W.T	U.W PST
1 PQRS	2 TUV	3 WXYZ	Z	M+
0	.	CE	T	MC

Key Function

-   ~  : Number key for setting the unit weight, quantity and etc.
-  : Clear key to clear the digits on the display.
-  : Unit weight key for setting the unit weight of sample.
-  or  : Press this key, the display returns to 0.
-  or  : Press this key to deduct the weight of container. Or shift the digit pointer to left.
-  : Pre-setting the upper limit of count. If the calculated count is larger than the limit, the scale sends a warning sound. Or use this key to confirm the setting.
-  : Totalizing the quantity or weight.
-  : Clear the stored totalizing memory. Or shift the digit pointer to right.

Different keys for different models:

-  : Press this key to clear preset.
-  : Press this key to switch the unit : kg or lb
-  : Press this key to preset the unit weight of sample. Or use this key to enter the setting mode.
-  : Press this key and release it within 3 seconds, then user can increase or decrease the number of decimal places. Or press this key over 3 seconds, the display resolution will change from 1/3,000 to 1/30,000 temporarily. The display resolution will return back to 1/3,000 after 5 seconds.

1-4 Error Messages



E1 ⇒ zero value is too high (OMIL or NTEP > 10% full scale)

E2 ⇒ zero value is too low (OMIL or NTEP < 10% full scale)

E6 ⇒ Internal value > 700,000 (use in factory calibration)

E7 ⇒ Internal value < 100,000 (use in factory calibration)

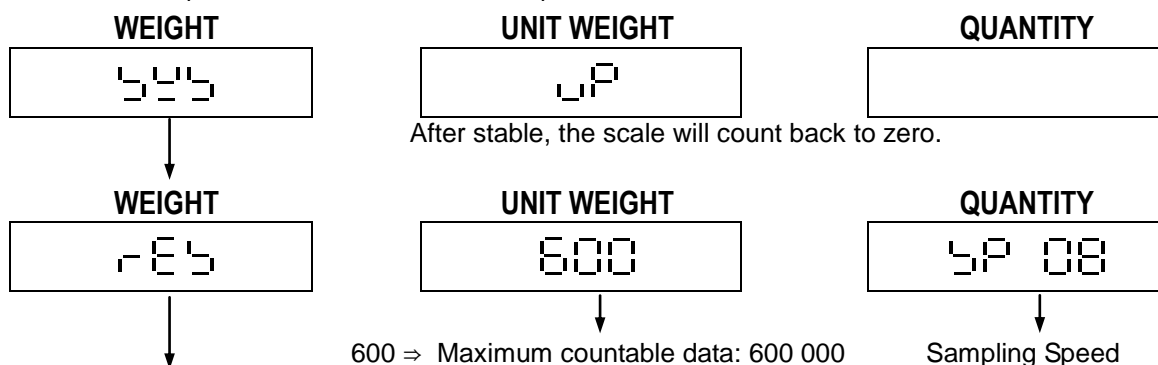
oL ⇒ The weight value is over 9d of the maximum capacity. (d = division)

unStAbLE ⇒ Internal value is unstable (Unstable over 10 seconds after pressing  or  key)

Chapter 2 Operation

2-1 Power On

SW switch on (Press SW to location “|”)




After stable, the scale will count back to zero.


After return to zero and being stable, scale will enter into counting mode.

2-2 High and Low Resolution Shift Setting

☞ Only for 1/3,000 resolution models

☞ The function is subject to OIML and Brazil Approval models.

☞ Press  key and then release this key in 2.5 seconds until 3 seconds, this key has decimal function.

☞ Press  key and then not to release in 3 seconds, the resolution in weight column will convert to 1/30,000 and return back to 1/3,000 in 5 seconds.

☞ When resolution converts to 1/30,000,  key and Printer are not available.

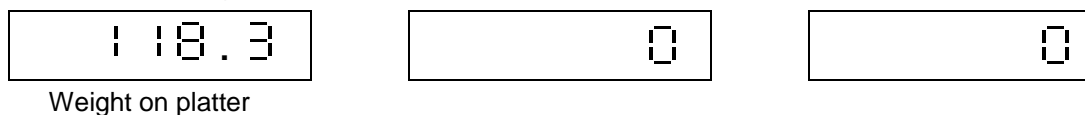
2-3 Zero Function

While operating the scale, zero may sometimes fluctuate. (Slight weight changes happen in weight column.) Press **ZERO** key to return to zero.

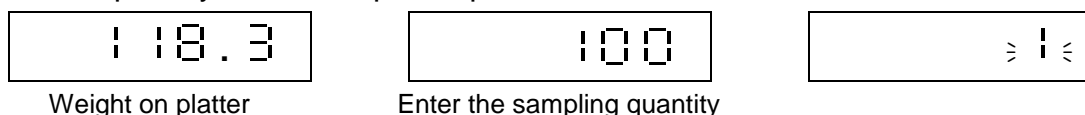
2-4 Obtain Unit Weight

2-4-1 Through Sampling

1. Place the sampling object on platter



2. Enter the quantity of the sample on platter



☞ The number of quantity column will flash 6 seconds. If the user doesn't press the **SAMPLE** key before flashing is over, the scale will complete the unit weight setting procedure automatically after flashing. The scale will also take the number that inputted in unit weight column as the unit weight of object to calculate the quantity of object shown in quantity column.

3. Press **SAMPLE** key while total column number is flashing

118.3

Weight on platter

SAMPLE

4. After stable, the scale finishes sampling and enters into counting mode

118.3

Weight on platter

1.1833

Unit weight of object

stable ← 100

Enter sampling quantity

2-4-2 Enter Known Unit Weight

1. Enter known unit weight of object intended to weigh

→← ← 0.0

1.833

Unit weight of object intended to weigh

stable ← ≥ 0 ≤

2. Press **UNIT WEIGHT** key to complete setting and enter into counting mode

→← ← 0.0

1.833

Unit weight of object intended to weigh

stable ← 0

2-4-3 Through Sampling Under Tare

1. Take the sample off the platter

-59.8

The weight of object on platter

0

0

2. Input the quantity of sample on the platter

-59.8

The weight of object on platter

0

Enter the quantity of sample

≥ 6 ≤

☞ The number of quantity column will flash 6 seconds. If the user doesn't press the **SAMPLE** key before flashing is over, the scale will complete the unit weight setting procedure automatically after flashing. The scale will also take the number that inputted in unit weight column as the unit weight of object to calculate the quantity of object shown in quantity column.

3. Press **SAMPLE** key while the number of quantity is flashing

-59.8

Weight of the object on platter

SAMPLE

4. After stable, the scale finishes sampling and enters into counting mode

-59.8

Weight of the object on platter

5.98500

Unit weight of object

stable ← 10

quantity of sample entered

☞ The larger quantity of sampling, the more precise unit weight counted out.

☞ When unit weight column and total quantity column both indicate 0, please press **1UNIT WEIGHT** key, and the previous unit weight value will come out.

☞ Use **ZERO** and **7** keys to turn on/off quantity display with negative weight.

2-5 Tare Function Operation

1. Place the packaging container on platter

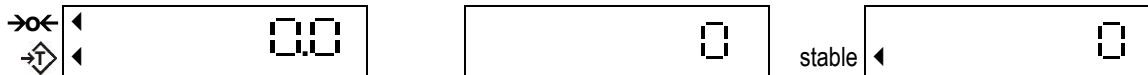


Weight of packaging container

2. Press **TARE** key



3. The scale will enter into counting mode after stable



Clear off the tare value

Mode 1: After removing the object together with packaging container, weight column will display the negative value of packaging container. Press **TARE** key again to cancel the tare, and return to zero. The tare symbol “◀” will disappear.

Mode 2: After removing the object together with packaging container, weight column will display the negative value of packaging container. Press **ZERO** key again to cancel the tare, and return to zero. The tare symbol “◀” will disappear.

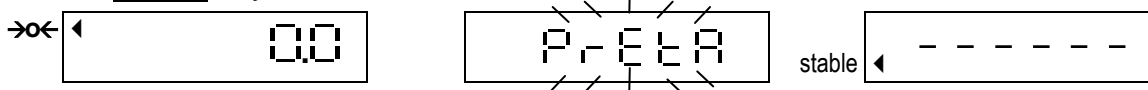
2-6 Pre-tare Function Operation

F_nC 09 (Pre-tare setting) is set up as 00. (No weight on platter)

1. No weight on platter



2. Press **TARE** key

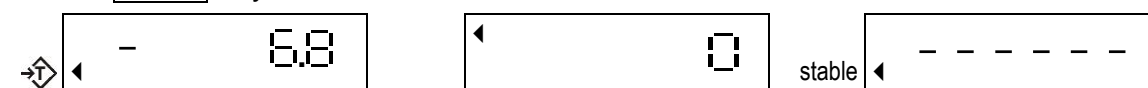


3. Enter the known weight of packaging container



weight of packaging container entered

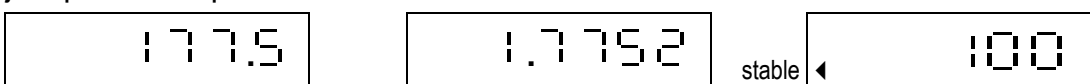
4. Press **TARE** key



F_nC 09 (Pre-tare setting) is set up as 0 !. (Weight on platter)

For Non-approval models

1. Object placed on platter

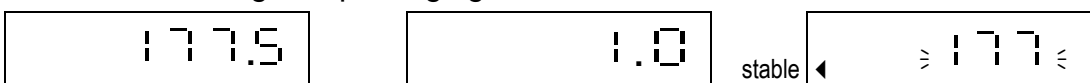


Weight of the object on platter

Unit weight of the object


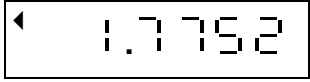

Quantity of the object

2. Enter the known weight of packaging container



Weight of packaging container entered

3. Press **TARE** key

 Weight of the object without container	 Unit weight of the object	stable  Quantity without packaging container
---	--	---


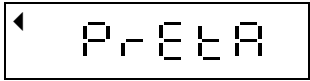
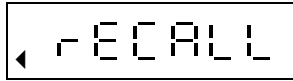
- ☞ Pre-Tare function is also available even if tare is in operation.
- ☞ If the net weight on platter is more than zero weight, the tare function is available. Otherwise, it's not capable of tare function.

Clear off Pre-tare value

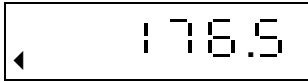
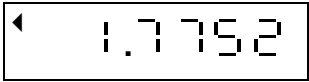

After removing the object together with packaging container, weight column will display the negative weight value of the packaging container. Press **TARE** key once again to cancel the pre-tare value and return to zero. Then the tare and pre-tare symbol “◀” will disappear.

Recall Pre-tare value

1. Press **Q'TY PRSET** key, and then press **TARE** key

 Pre-tare value	 Pre-tare value	stable  Recall pre-tare value
---	---	--

2. After displays pre-tare value about 5 seconds, it automatically returns to the weighing mode

 Weight of the object without container	 Unit weight of the object	stable  Quantity without packaging container
--	---	--


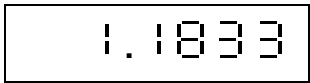

- ☞ Recall pre-tare value function and clear function are not available for **Standard keypad models**.

2-7 Accumulation

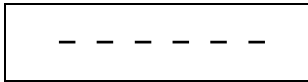
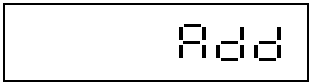
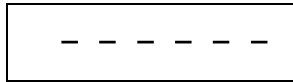
- ☞ The accumulation counts are up to 99 counts, but the total quantity column is at most 6 digits.
- ☞ Users cannot do positive accumulation and negative accumulation at the same time.

2-7-1 Quantity Accumulation

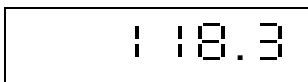
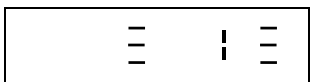
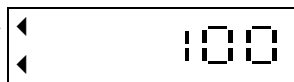
1. Place an object on platter

 Weight of the object on platter	 Unit weight of the object	stable  Quantity of the object on platter
--	--	--

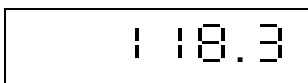
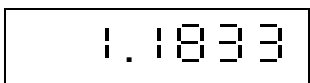

2. Press **M+** key

 Accumulated total weight	 Accumulated total counts	 Accumulated total quantity
---	---	--

3. After scale is stable

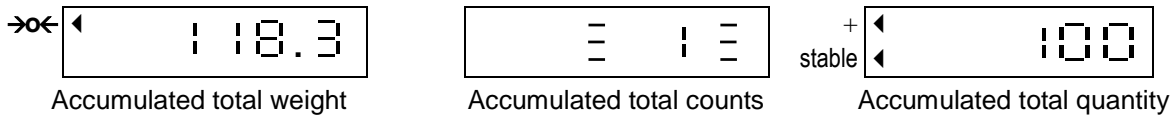
 Accumulated total weight	 Accumulated total counts	+  stable Accumulated total quantity
---	---	--

4. After about 3 seconds, scale returns to counting mode

 Weight of the object on platter	 Unit weight of the object	+  stable Quantity of the object on platter
--	--	---

Recall quantity accumulation

While weight column displays 0, press **M+** key to recall the accumulated data

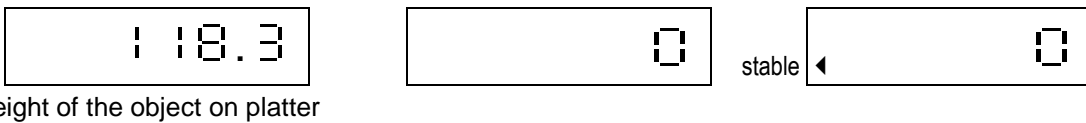


Clear off the accumulated quantity value

Press **MC** key to clear off the accumulated value in the memory, and then accumulation symbol “◀” will disappear.

2-7-2 Weight Accumulation

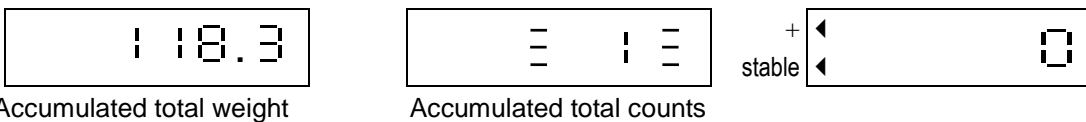
1. Place an object on platter when unit weight displays 0



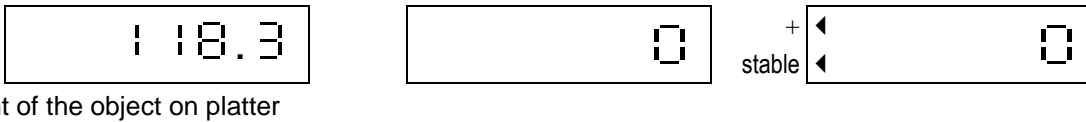
2. Press **M+** key



3. After scale is stable

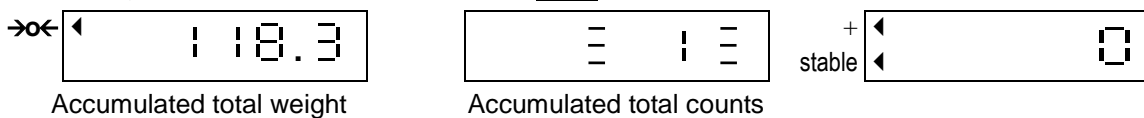


4. After about 3 seconds, scale returns to weighing mode



Recall weight accumulation value

While weight column displays 0, press **M+** key to recall the accumulated data



Clear off the accumulated weight value

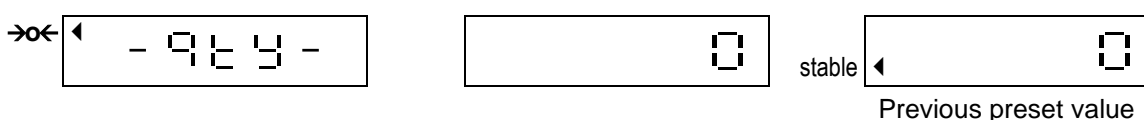
Press **MC** key to clear off the accumulated weight in the memory, and then the accumulation symbol “◀” will disappear.

2-8 Quantity Preset

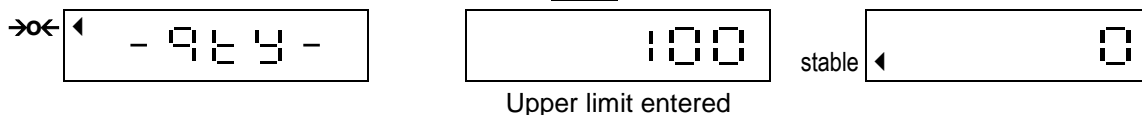
It's available to pre-set the upper limit of quantity in counting mode. If the counts are over the limit, the beeper makes warning sounds, and the weight column displays flashing “- 9E3 -”

Upper limit of preset quantity (Non-standard keypad)

1. Whether there is an object on platter or not, press **Q'TY PRESET** key. Press **SAMPLE** key, select “Quantity Preset” mode (Press **UNIT WEIGHT** key to select “Weight Preset” mode)



2. Enter the upper limit intended (Press **CE** key to modify the value entered)



3. Press **SAMPLE** key (Press **CE** key to modify the value entered)



4. press **Q'TY PRESET** key, the scale return to the counting mode



Clear off the pre-set upper limit

To clear the pre-set upper limit of quantity or weight, please follow the above-mentioned operation steps. When entering the pre-set value, please enter “0” instead.

📄 When switching to “weight preset” mode or “quantity preset” mode, previous preset value will be deleted automatically.

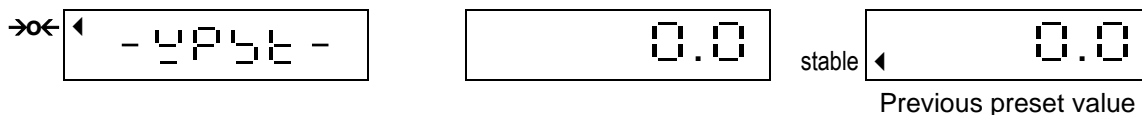
📄 If it is standard keypad, use number keys to enter number and then press **Q'TY PRESET** key to finish the setting; If to clear off the pre-set upper limit, press **PRESET CE** key.

2-9 Weight Preset

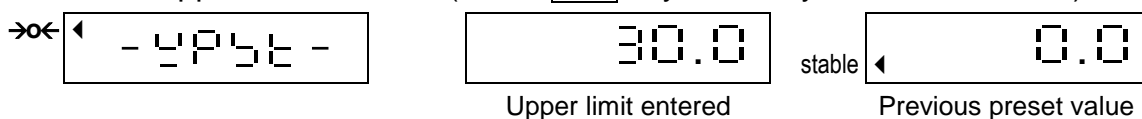
It's available to pre-set the upper limit of weight. If the weights are over the limit, the beeper makes warning sounds, and the weight column displays flashing “-UP5E-”

Upper limit of preset weight

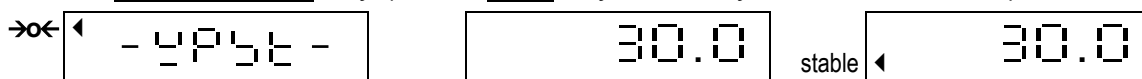
1. Whether there is an object on platter or not, press **Q'TY PRESET** key. Press **UNIT WEIGHT** key to select “Weight Preset” mode (Press **SAMPLE** key to select “Quantity Preset” mode)



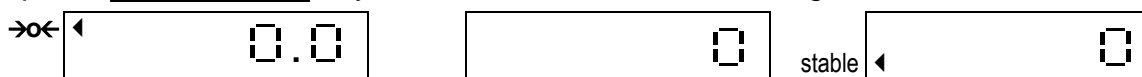
2. Enter the upper limit intended (Press **CE** key to modify the value entered)



3. Press **UNIT WEIGHT** key (Press **CE** key to modify the value entered)



4. press **Q'TY PRESET** key, the scale return to the counting mode



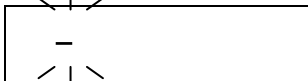
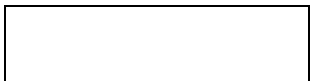
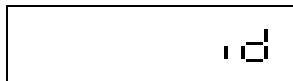
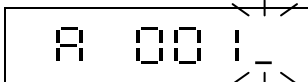





Clear off the pre-set upper limit

To clear the pre-set upper limit of quantity or weight, please follow the above-mentioned operation steps. When entering the pre-set value, please enter “0” instead.

📄 When switching to “weight preset” mode or “quantity preset” mode, previous preset value will be deleted automatically.



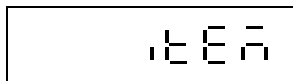
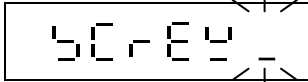

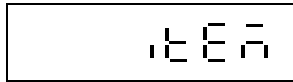



2-10 ID Input

Press **ZERO** key, and the screen displays “- - - - -”. Press **0** key before it disappears.

		
<p>Enter ID with number keys</p> 	<p>ID could be set up to 12 digits. They can be numbers (0~9), English letters (A~Z), or _</p> 	
<p>Press MC key to confirm</p> 	<p>Press . key to quit setting</p> 	<p>stable</p> 

2-11 Item Input

Press **ZERO** key, and the screen displays “- - - - -”. Press **2** key before it disappears.

		
<p>Enter Item with number keys</p> 	<p>Item could be set up to 12 digits. They can be numbers (0~9), English letters (A~Z), or _</p> 	
<p>Press MC key to confirm</p> 	<p>Press . key to quit setting</p> 	<p>stable</p> 

- ☞ ID & ITEM are applied in FIX FORMAT or FREE FORMAT.
- ☞ ID & ITEM could be set up to 12 digits. They can be numbers (0~9), English letters (A~Z), or _.
- ☞ Entering numbers/English letters: Press number key and the digit flashes. Press the same key, and the display shows the number/English letter in cycle. When the entered number/English letter flashes for 2 seconds, the setting will be confirmed and moved to the right place by 1 digit. For example: Press **1** key continuously, and the screen displays 1,P,Q,R,S flashing in cycle.(If to enter too many numbers, please enter _ to clear superfluous numbers.)
- ☞ If ID & ITEM are not saved in unit weight preset, the data will be cleared after power off.

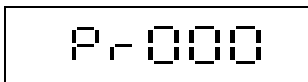


2-12 Unit Weight Preset

- ☞ The preset data could be saved in up to 50 addresses
- ☞ Each address contains: ① unit weight ② pre-tare ③ ID and ④ ITEM

2-12-1 Pre-set Unit Weight Operation (Read-in)

☞ Use number keys to enter the unit weight. (The value is 0 or blank without setting)

Press **U.W. PST** key

		
---	---	--

Press **U.W. PST** key again

P5t000

Press number keys to select 1 of 50 addresses for saving the data. If it is over 50, Please re-enter.

P5t050

Press **U.W. PST** key

2-12-2 Pre-set Unit Weight Saving Operation (Read-out)

Press **U.W. PST** key again

P r 000

Use number keys to enter preset group that you want. If it is over 50, Please re-enter.

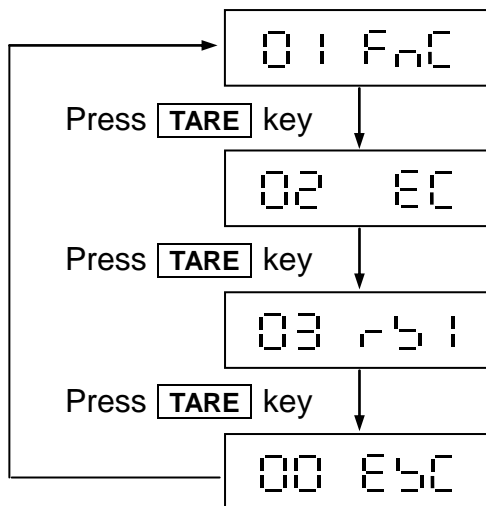
P r 050

Press **U.W. PST** key again to read-out the data you saved. If the data is blank, it shows NULL.

While read-in or read-out, if the waiting time is over 10 seconds, the scale returns to weighing mode automatically. Press **CE** key to cancel the read-in and read-out.

Chapter 3 External Calibration Setting

After starting the machine and it returns to zero, press **ZERO** key and the screen displays "- - - - -". Then press **.** key to enter external calibration function setting mode. The weight column displays 01 Fnc.

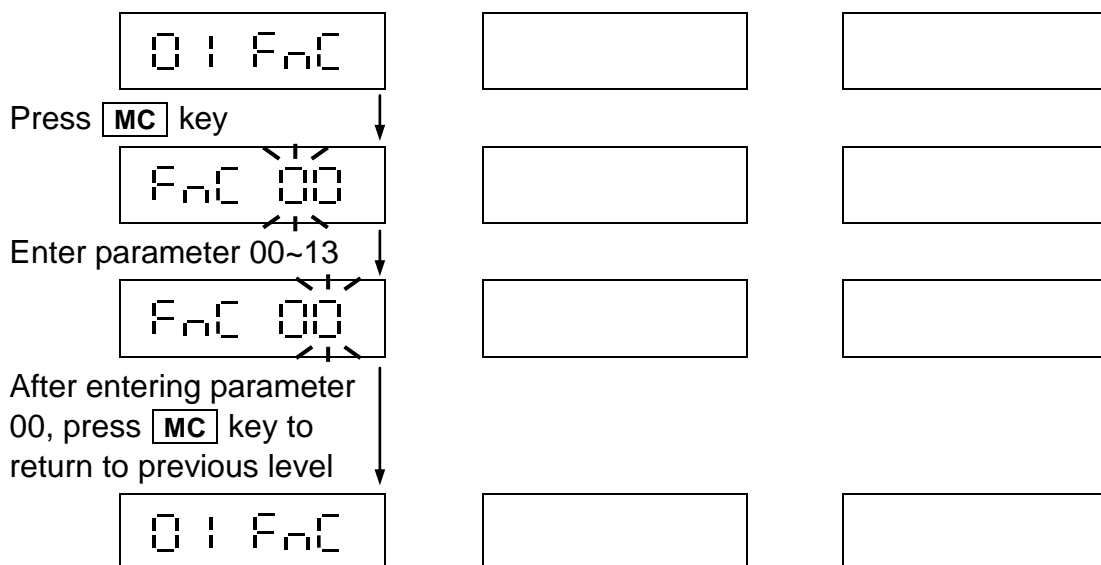


01 Fnc	⇒ External Function Setting
02 EC	⇒ External Weight Calibration and G Value Calibration
03 r51	⇒ RS-232 and Serial Printer Setting
00 E5C	⇒ Exit the Setting

.	⇒ Exit
CE	⇒ Move cursor leftward
TARE	⇒ Move cursor rightward
MC	⇒ Enter

Press **TARE** key

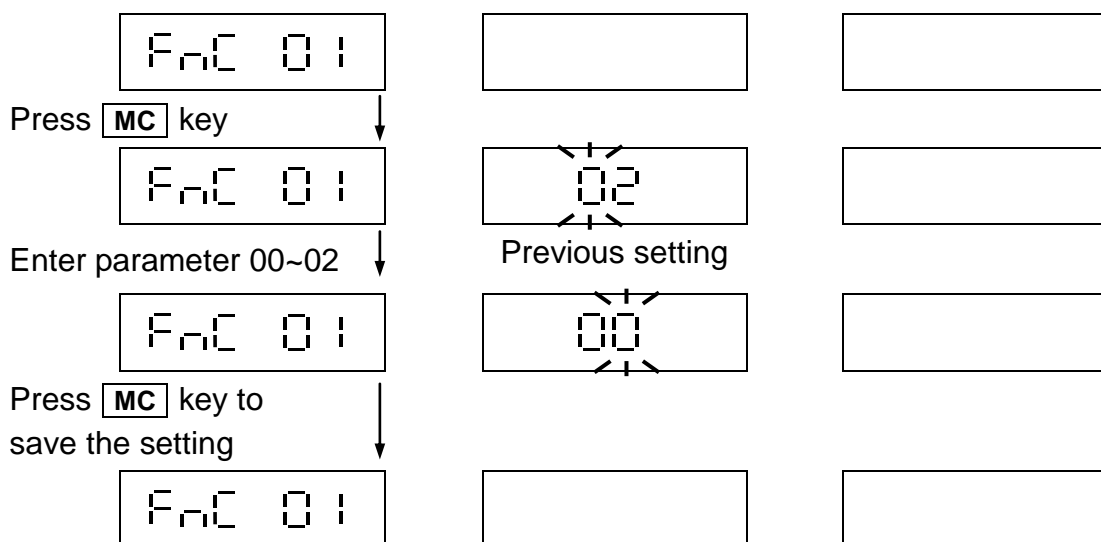
3-1 External Function Setting 01 Fnc



- | | |
|---|--|
| Fnc 00 ⇒ Return to previous level | Fnc 07 ⇒ "Zero" track range |
| Fnc 01 ⇒ Backlight mode setting | Fnc 08 ⇒ Accumulation ending mode |
| Fnc 02 ⇒ Auto. power off setting | Fnc 09 ⇒ Pre-tare mode |
| Fnc 03 ⇒ Stable range setting for quantity sampling | Fnc 10 ⇒ "Beeper" output setting for quantity limit |
| Fnc 04 ⇒ Auto. unit weight average | Fnc 11 ⇒ Accumulation acceptable condition setting 1 |
| Fnc 05 ⇒ A/D sampling speed | Fnc 12 ⇒ Accumulation acceptable condition setting 2 |
| Fnc 06 ⇒ "Zero" display range | Fnc 13 ⇒ Combination key Setting |

☞ If [Fnc 01] is set as 02 (OIML & NTEP approval), the parameter of Fnc 06 ~ 13 cannot be modified.

3-1-1 Backlight Mode Setting Fnc 01



Default Setting: 02 (No backlight)

00 ⇒ Backlight is always on.

01 ⇒ While weighing (weight is higher than 10d) or pressing any key, backlight be turned on automatically. The backlight is turned off automatically when the scale is idle for 10 minutes. (d=division)

02 ⇒ No backlight.

☞ When turning on, the backlight mode is the same as previous setting.

3-1-2 Auto. Power-off Setting F_nC 02

Press **[MC]** key and enter parameter 00~10. Then press **[MC]** key to save the setting.

Default Setting: 00; up to 10 minutes at most.

00 ⇒ Auto Power-off function is off.

01~10 ⇒ Scale is automatically powered off after not in use for 1~10 minutes.

Restart the scale to use again.

3-1-3 Stable Range Setting for Quantity Sampling F_nC 03

Press **[MC]** key and enter parameter 00~15. Then press **[MC]** key to save the setting.

Default Setting: 08; that means if deviation is within ± 8 counts of internal value, it is considered as stable while in sampling

00~15: The higher value makes the sampling faster, but less accurate.

The smaller value makes the sampling slower, but more accurate.

☞ It can't be shifted after sampling, only when the unit weight is cleared in Brazil version.

3-1-4 Auto Average Unit Weight Setting F_nC 04

Press **[MC]** key and enter parameter 00~01. Then press **[MC]** key to save the setting.

Default Setting: 01

00 ⇒ Off (Press **[SAMPLE]** key for manually update unit weight)

01 ⇒ On; auto update average unit weight.

☞ Auto updates unit weight when the measured sampling number increase greater than 10% but less than 100% of previous sampling number.

3-1-5 A/D Sampling Speed Setting F_nC 05

Press **[MC]** key and enter parameter 00~01. Then press **[MC]** key to save the setting.

Default Setting: 00

00 ⇒ Low speed is about 7.5 Hz. (Weighing reflection is slow but relatively stable)

01 ⇒ Fast speed is about 15 Hz. (Weighing reflection is fast but relatively unstable)

3-1-6 Zero Display Range Setting F_nC 06

Press **[MC]** key and enter parameter 00~03. Then press **[MC]** key to save the setting.

Default Setting: 00 for approval (CFn = 02~04) or 01 for non-approval (CFn = 00~01)

00 ⇒ Display as it is

01 ⇒ Display 0, if within ± 1 division

02 ⇒ Display 0, if within ± 2 divisions

03 ⇒ Display 0, if within ± 3 divisions

☞ It is activated only when the weight is over 1/3 full capacity. The pre-tare value must be greater than setting. For example: If F_nC 06 = 03, pre-tare > ± 3 divisions.

3-1-7 Zero Tracking Range Setting F_nC 07

Press **[MC]** key and enter parameter 00~03. Then press **[MC]** key to save the setting.

Default Setting: 00 for approval (CFn = 02~04) or 01 for non-approval (CFn = 00~01)

00 ⇒ When gross weight is stable at 0 over 1 second, it could track $\pm 1/4$ d. (d=division)

01 ⇒ When gross weight is stable at 0 over 1 second, it could track $\pm 1/2$ d.

02 ⇒ When gross weight is stable at 0 over 1 second, it could track ± 1 d.

03 ⇒ When gross weight is stable at 0 over 1 second, it could track ± 2 d.

3-1-8 Accumulation Ending Mode Setting F_nC 08

Press **[MC]** key and enter parameter 00~02. Then press **[MC]** key to save the setting.

Default Setting: 00

- 00 ⇒ Press **[M+]** key. Displays accumulation for 3 seconds, and return to weighing mode.
- 01 ⇒ Press **[M+]** key. Displays accumulation until press **[CE]** key to return to weighing mode.
- 02 ⇒ Press **[M+]** key. Beeper beeps once and does not display accumulation.

3-1-9 Pre-tare mode setting F_nC 09

Press **[MC]** key and enter parameter 00~01. Then press **[MC]** key to save the setting.

Default Setting: 00

- 00 ⇒ Pre-tare only when weight display is 0
- 01 ⇒ Pre-tare at any weight value on the display
- ☐ Pre-tare value ≤ max weight of 1st interval or range; pre-tare value > external value set in F_nC 06.

3-1-10 “Beeper” Output Setting for Quantity Limit F_nC 10

Press **[MC]** key and enter parameter 00~01. Then press **[MC]** key to save the setting.

Default Setting: 00 for approval (CF_n = 02~04) or 01 for non-approval (CF_n = 00~01)

- 00 ⇒ Beeper beeps when stable and quantity exceeds quantity setting (or weight exceeds weight setting)
- 01 ⇒ Beeper beeps when quantity exceeds quantity setting (or weight exceeds weight setting), regardless if it is stable

3-1-11 Accumulation Acceptable Condition Setting 1 F_nC 11

Press **[MC]** key and enter parameter 00~01. Then press **[MC]** key to save the setting.

Default Setting: 00

- 00 ⇒ Accumulate only when stable.
- 01 ⇒ Accumulate regardless if it stable.

3-1-12 Accumulation Acceptable Condition Setting 2 F_nC 12

Press **[MC]** key and enter parameter 00~04. Then press **[MC]** key to save the setting.

Default Setting: 00

- 00 ⇒ Accumulate only when weight is within zero band (close to 0) first. Refer rS1 07 for zero band setting (00~99)
- 01 ⇒ Accumulate with no need to return to zero. That means when no weight on platter, the weight can be accumulated continuously.
- 02 ⇒ Accumulate only when weight is within zero band of gross weight (close to gross = 0) first. Refer rS1 07 for zero band setting (00~99)
- 03 ⇒ Press **[M+]** key not to accumulate the value, but RS-232 transmits the data.
- 04 ⇒ Accumulate only when weight return to within ±1/4d of gross weight first.

3-1-13 Combination Key Setting F_nC 13

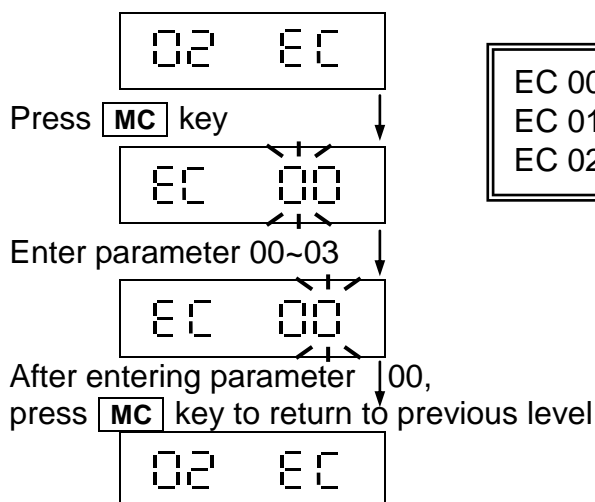
Combination key represents **[kg/lb]** key or **[UNIT WEIGHT PRESET]** key. This key contains 2 functions: ① Unit switching ② 50 sets for unit weight preset

Press **[MC]** key and enter parameter 00~01. Then press **[MC]** key to save the setting.

Default Setting: 00

- 00 ⇒ Press the combination key once to select unit (priority function).
Press the combination key for 3 seconds to preset unit weight (minority function).
- 01 ⇒ Press the combination key once to preset unit weight (priority function).
Press the combination key for 3 seconds to select unit (minority function).

3-2 External Weight and G Value Calibration 02 EC

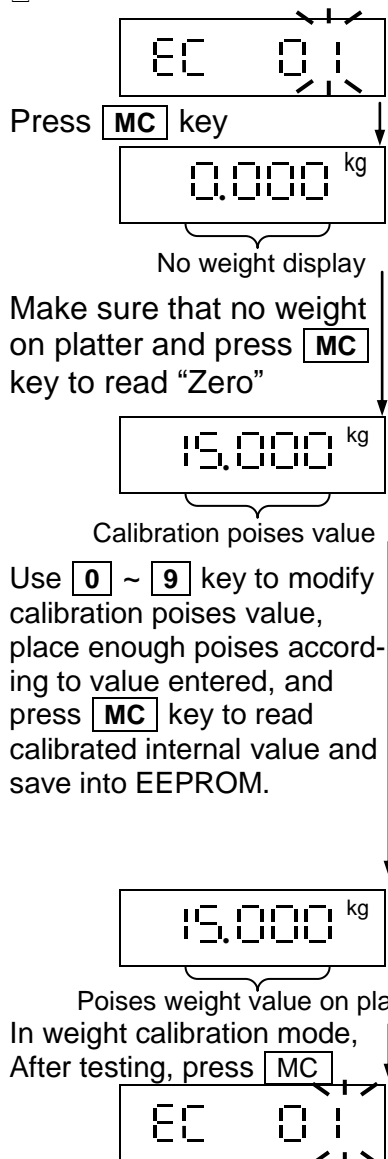


EC 00 ⇒ Return to previous level
 EC 01 ⇒ External weight calibration
 EC 02 ⇒ Calibrate G value used in local or in verification

Approval model (CFn 01 = 02~04) do not have 02 EC. Only non-approval (CFn 01= 00~01) have 02 EC and can use EC 01. To use EC 02, CFn 01 needs to set as 00 or CFn14 set as 01 to activate G value adjustment.

3-2-1 External Weight Calibration EC 01

Zero value can be calibrated separately from the weight calibration value.



If no temperature IC, **XXXX** is displayed in **UNIT WEIGHT**.

XXXX A/D value of temperature
XXXXXX Internal value

Press **kg/lb** to switch calibration unit
 Press **•** key to quit "zero" calibration

XXXX
XXXXXX Internal value

- Calibration poises value entered cannot be higher than maximum weighing capacity.
- Poises weight entered will be compared with internal calibration poises weight. If the actual weight is more than the entered poises weight in 0.9~1.1 times, "Error" displays for 1 second in **WEIGHT**. Re-enter the calibration poises value, or place the correct weight to operate once again.
- If not to calibrate weight, press **•** key to exit without saving A/D value into EEPROM.

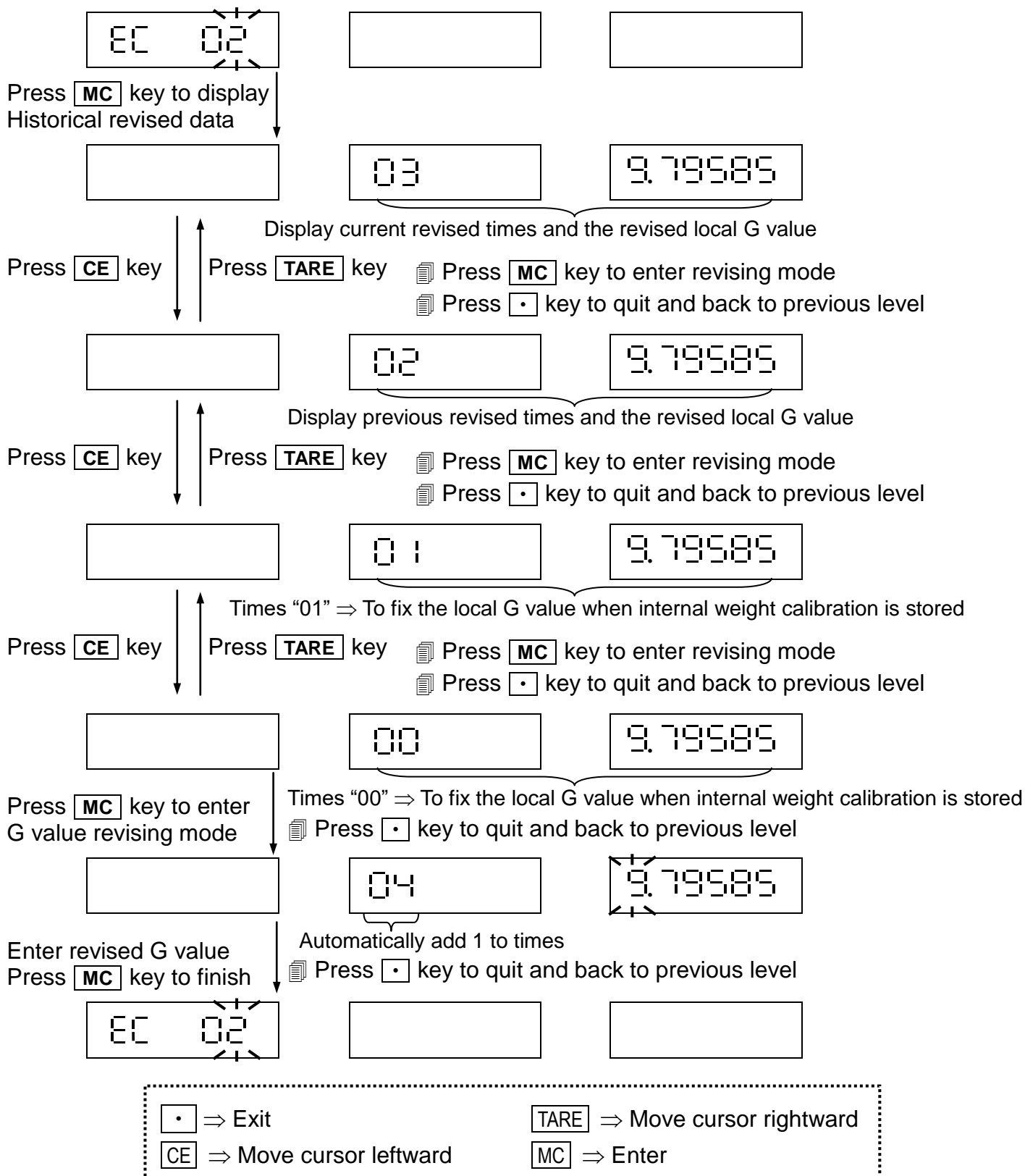
XXXX
XXXXXX Internal value

Put on or remove weight to test.
 key to complete external weight calibration.

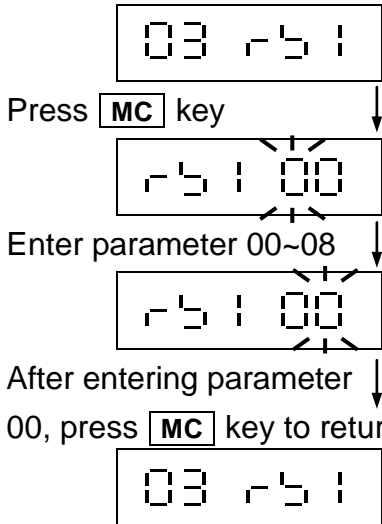
XXXX
XXXXXX

3-2-2 Calibrate G Value Used in Local or in Verification EC 02

- It is capable for users to set or modify G value for 9 times. If it is the 10th revised G value, please enter "06 CGr" to calibrate local G value, and the calibration time will be re-set as "1".
- Local G value calibration must be done after external weight calibration.
- If the external weight calibration is done after G value calibration, the previous G value will be set as the value used in verification.
- G value must between 9.78032 m/sec² to 9.83218 m/sec².

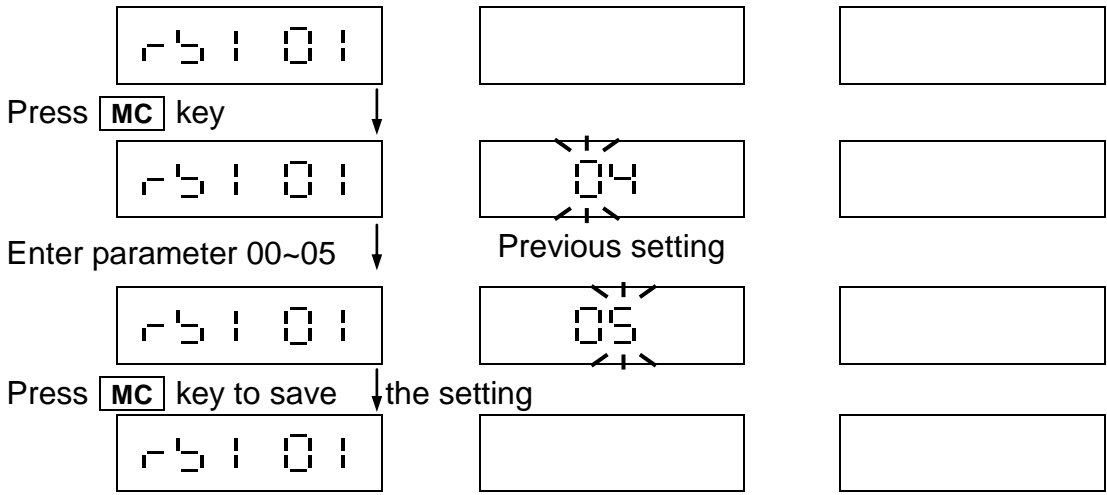


3-3 RS-232 and Serial Printer Setting 03 r51



- r S 1 00 ⇒ Return to previous level
- r S 1 01 ⇒ Baud rate setting
- r S 1 02 ⇒ Communication protocol setting
- r S 1 03 ⇒ Output data format setting
- r S 1 04 ⇒ Output count setting per second in continuous transmission
- r S 1 05 ⇒ Operation mode setting
- r S 1 06 ⇒ Continuous transmission output condition setting
- r S 1 07 ⇒ Zero band setting for auto. transmission
- r S 1 08 ⇒ Weight band setting for auto. transmission setting

3-3-1 Baud Rate Setting r51 01



Default Setting: 04 (9,600 bit/sec)

- 00 ⇒ 600 bits/sec 01 ⇒ 1 200 bits/sec 02 ⇒ 2 400 bits/sec
- 03 ⇒ 4 800 bits/sec 04 ⇒ 9 600 bits/sec 05 ⇒ 19 200 bits/sec

☐ If there is free form device, it is 9600 bits/sec transmit.

3-3-2 Communication Protocol Setting r51 02

Press **MC** key and enter parameter 00~02. Then press **MC** key to save the setting.

Default Setting: 00 (N, 8, 1); If there is free form device, it transmits in n81.

- 00 ⇒ N, 8, 1 01 ⇒ E, 7, 1 02 ⇒ O, 7, 1

☐ If there is free form device, it is 00 (N, 8, 1) transmit.

3-3-3 Output Data Format Setting r51 03

Press **MC** key and enter parameter 00~09. Then press **MC** key to save the setting.

Default Setting: 00 (Fixed format 1);

☐ If there is free form device, the setting will be fixed as 02 ⇒ Reserved.

- 00 ⇒ Fixed format 1
- 01 ⇒ Fixed format 2
- 02 ⇒ Reserved
- 03 ⇒ Same as display (general format)
- 04 ⇒ Same as display (simple format)
- 05 ⇒ Gross weight (general format)
- 06 ⇒ Net weight (general format)
- 07 ⇒ Tare (general format)
- 08 ⇒ Fixed format 3
- 09 ⇒ Fixed format 4

☰ Please see “Appendix 1” for output format.

Fixed format is described as following:

Fixed format 1 “Press **M+** key to print”

Fixed format 2 “Press **M+** key to print”

NO.	3	
G	2.480	kg
N	2.000	kg
T	0.080	kg
PT	0.400	kg
U/W	1.6003	g
Q	1250	pcs

ID:	xxxxxxx	xxxxx
ITEM:	xxxxxxx	xxxxx
NO.	3	
G	2.480	kg
N	2.000	kg
T	0.080	kg
PT	0.400	kg
U/W	1.6003	g
Q	1250	pcs

☰ If the format in rS1 03 is set that press **M+** or **MC** key to print and the transmission format in rS1 05 is set as continuous or automatic transmission, some content printed out is meaningless.

Fixed format 3 “Press **M+** key to print”

Fixed format 4 “continuous or auto. transmission”

NO.	1
N/W	0.500
U/W	1.00013
PCS	500

N/W	0.500
U/W	1.00013
PCS	500

Fixed format 1,2 “Press **MC** key to print”

(Print out total accumulation data and clear data in memory)

```
=====
T/N      3
T/W     1500 kg
T/Q      300 pcs
```

Fixed format 3 “Press **MC** key to print”

(Print out total accumulation data and clear data in memory)

```
=====
T/N      3
T/W     1500
T/A      300
```

NO. ⇒ Number of Counts Q ⇒ Quantity T ⇒ Tare PT ⇒ Pre-Tare G ⇒ Gross Weight
 N ⇒ Net weight U/W ⇒ Unit weight T/N ⇒ Total Number of Counts T/W ⇒ Total weight
 T/Q ⇒ Total quantity ID: 12 digits (max.) ITEM: 12 digits (max.)

3-3-4 Continuous Output Count Setting Per-second   

Press **MC** key and enter parameter 00~04. Then press **MC** key to save the setting.

Default Setting: 00 (1 count/sec)

00 ⇒ 1 count/sec	01 ⇒ 2 counts/sec	02 ⇒ 4 counts/sec
03 ⇒ 8 counts/sec	04 ⇒ More than 8 counts/sec	

☰ If parameter in rS1 03 is set as 00 or 01, it may not reach transmit counts due to large size of data for transmission.

2. Press **MC** key to print

F	R	"	5	2	0	T	"	<LF>													
?	<LF>																				
TN	TN	TN	TN	TN	TN	<LF>															
TW	TW	,	TW	TW	TW	<LF>															
TA	TA	TA	TA	TA	TA	<LF>															
tn	tn	tn	tn	tn	tn	tw	tw	tw	tw	tw	tw	tw	ta	ta	ta	ta	ta	ta	ta	ta	<LF>
P	1	,	1	<LF>																	

TN: Total number TW: Total weights TA: Total quantities

tn: Total number tw: Total weights ta: Total quantities

NOTE: Fill in zero "0" for the blanks on the left.

For example:

TN = 3
 TW = 2,395 kg
 TA = 23937

F	R	"	5	2	0	T	"	<LF>													
?	<LF>																				
SP	SP	SP	SP	SP	3	<LF>															
SP	2	,	3	9	5	<LF>															
SP	2	3	9	3	7	<LF>															
0	0	0	0	0	3	0	0	2	3	9	5	0	2	3	9	3	7	<LF>			
P	1	,	1	<LF>																	

<LF> = 0x0A (line feed) SP = 0x20 (Blank)

3-3-6 Continuous Transmission Output Condition Setting

Press **MC** key and enter parameter 00~01. Then press **MC** key to save the setting.

Default Setting: 00 (Output all)

00 ⇒ Output all

01 ⇒ No output under OL or unstable condition

rS1 06 is effective only when rS1 05 set to 01 (Continuous transmission)

3-3-7 Zero Band Setting for Auto. Transmission

Press **MC** key and enter parameter 00~99. Then press **MC** key to save the setting.

Default Setting: 05 (External value "5d")

00 ⇒ External value "0d"

01 ⇒ External value "1d"

⋮

99 ⇒ External value "99d"

Weight must return within zero band first (weight < r S1 07 setting), and then put the weight >= r S1 07 setting before data will be sent once

rS1 07 is effective only when rS1 05 set to 02 (Auto. transmission)

rS1 07 zero band setting is related to FnC 12 (accumulation acceptable condition)

3-3-8 Weight Band Setting for Auto. Transmission r 5 1 08

Press **[MC]** key and enter parameter 00~99. Then press **[MC]** key to save the setting.

Default Setting: 05 (External value "5d")

00 ⇒ External value "0d"

01 ⇒ External value "1d"

⋮

99 ⇒ External value "99d"

rs1 08 must be used with rs1 07. After data has been sent once and the weight is not removed, to send data again, please keep adding weight until "rs1 07 zero band setting" + "rs1 08 weight band setting".

rS1 08 is effective only when rS1 05 set to 02 (Auto. transmission)

Appendix 1 RS-232 Full Duplex Format

Table 1 Command Format

Command Format A

Host	Command		
Slave	Command		
MZ	Return to zero	CP	Clear off pre-tare value
MT	Tare	CT	Clear off tare value
AT	Current net weight accumulation & count plus 1	DT	Clear off accumulated data and counts
SC	Set continuous transmission mode	SA	Set automatic transmission mode.
SM	Set manual transmission mode	SO	Set command mode
UA	Shift to first unit	UB	Shift to second unit
%	Cease continuous transmission mode and enter into command mode		

Command Format B

Host	Command		
Slave	Data		
RW	Read current displaying weight	RB	Read current displaying weight(simple)
RG	Read gross weight	RT	Read tare
RN	Read net weight	RI	Read net weight (simple)
RH	Read gross weight (simple)	RE	Read pre-tare (simple)
RU	Read unit weight (simple)	RD	Read accumulated quantity (simple)
RC	Read accumulated counts (simple)	RI	Read tare (simple)
Rf	Read pre-set name (ITEM)	Rk	Read accumulated weight (simple accumulation format)
Rg	Read ID#	Rh	Read weighing unit
RQ	Read quantity (simple)	Ri	Read unit weight unit
Re	Read PLU#		

☞ Add % before italic and magnified letter to read continuously.
Add # before italic and magnified letter to read stable value only.

☞ Two formats (AB) mentioned above are all RS-232 full duplex. If the slave terminal receives the below-listed messages, it represents Error condition.

E1: Wrong command E2: Wrong format (wrong parameter) E3: Mismatch proceeding condition

☞ If read PLU command, PUL of N group is NULL or unit weight is re-entered, otherwise read PUL command

and return value is 255.

Command Format C

According to the command format to modify ID,ITEM ,PT, UW :

ID:

S	I	A	A	A	A	A	A	A	A	A	A	A	A	A	CR	LF
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	----	----

ITEM:

S	C	A	A	A	A	A	A	A	A	A	A	A	A	A	CR	LF
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	----	----

PT:

S	T	0	0	1	.	0	0	0	CR	LF
---	---	---	---	---	---	---	---	---	----	----

UW:

S	T	0	0	1	.	0	0	0	CR	LF
---	---	---	---	---	---	---	---	---	----	----

Description:

1. 2 previous code is command code (must be capital letter),A is 0-9 or A-Z. Other symbol is unacceptable (because it can't be showed on LCD).
2. Decimal point of PT or UW can be moved.

Table 2 Output Format

General Format

Gross weight	S	T	,	G	S	,	+	1	.	2	3	.	4	5	6	I	b	o	z	CR	LF
Net weight	S	T	,	N	T	,	+	1	2	.	3	4	.	5	6	T	I	.	g		
Tare	S	T	,	T	R	,	+	0	1	2	.	3	4	5	6	SP	SP	k	g		
+ overload	O	L	,	G	S	,	+	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
- overload	O	L	,	G	S	,	-	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Unstable	U	S	,	G	S	,	+	0	1	2	3	.	4	5	6	SP	SP	I	b		

Totally 21 bytes (including CR LF)

Simple Format (Price Computing, Counting)

ID#	0	0	0	0	0	0	0	0	0	0	0	0	2	CR	LF
Read preset name	SP	SP	SP	SP	SP	SP	SP	A	P	P	L	E			

Totally 14 bytes (including CR LF)

Simple Format

Read current weighing unit	0	CR	LF
Read current price computing unit	1		
Read current unit weight unit	2		

Totally 3 bytes (Including CR LF)

Simple Format (Price Computing, Counting, Weighing)

Gross weight	+	1	.	2	3	.	4	5	6	CR	LF
Net weight	+	1	2	.	3	4	.	5	6		
Tare	+	0	1	2	.	3	4	5	6		
Pre-tare	+	0	1	2	.	3	4	5	6		
+ overload	+	SP	SP	SP	SP	SP	SP	SP	SP		
- overload	-	SP	SP	SP	SP	SP	SP	SP	SP		
Unstable	+	0	1	2	3	.	4	5	6		
Quantity	SP	1	2	3	4	5	6	7	8		
Unit weight	SP	1	2	3	.	4	5	6	7		
Accumulated counts	SP	0	0	0	0	0	0	0	1		
PLU#	SP	0	0	0	0	0	0	1	2		

Totally 11 bytes (including CR LF)

Simple Accumulation Format

Accumulated weight	SP	0	1	2	3	4	.	5	6	.	7	CR	LF
Accumulated quantity	SP	0	1	2	3	4	5	6	7	8	9		
Accumulated weight + overflow	+	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Accumulated weight - overflow	+	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		

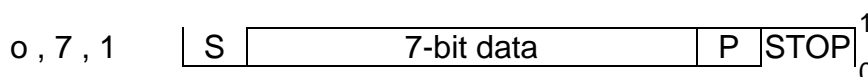
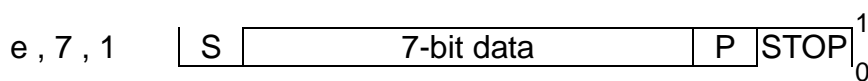
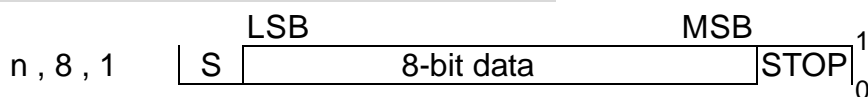
Totally 13 bytes (including CR LF)

Appendix 2 Fixed Format RS-232 Transmission Line Description

SCALE	→	RS-232 PRINTER
DB 9	→	DB 9
2TX	→	3TX
3RX	→	2RX
5GND	→	5GND

SCALE	→	PC
DB 9	→	DB 9
2TX	→	2TX
3RX	→	3RX
5GND	→	5GND

Serial Data Transfer / Receive Format



S : Start bit STOP: Stop bit P : Parity bit

Appendix 3 ASCII Code Table

	0	1	2	3	4	5	6	7	8	9	
ASCII	30H	31H	32H	33H	34H	35H	36H	37H	38H	39H	
	A	B	C	D	E	F	G	H	I	J	K
ASCII	41H	42H	43H	44H	45H	46H	47H	48H	49H	4AH	4BH
	L	M	N	O	P	Q	R	S	T	U	V
ASCII	4CH	4DH	4EH	4FH	50H	51H	52H	53H	54H	55H	56H
	W	X	Y	Z	a	b	c	d	e	f	g
ASCII	57H	58H	59H	5AH	61H	62H	63H	64H	65H	66H	67H
	h	i	j	k	l	m	n	o	p	q	r
ASCII	68H	69H	6AH	6BH	6CH	6DH	6EH	6FH	70H	71H	72H
	s	t	u	v	w	x	y	z			↵
ASCII	73H	74H	75H	76H	77H	78H	79H	7AH			0DH

Appendix 4 7-Segment Display Characters

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

