PH3 IP 68 Waterproof Check-weighing Indicator User Manual

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BEFORE USING THE SCALE

Thank you for purchasing an EXCELL Electronic Digital Indicator. In order to use the indicator properly, please read this User Manual carefully before use. If you have a problem concerning the indicator, please contact your supplier.

PRECAUTIONS FOR USE

1. Please keep the indicator in a cool place. Do not store it at a high temperature.
2. Please keep it clean and avoid hosting of cockroach and any other possible live creatures.
3. Avoid objects impacting with the indicator. Do not drop loads onto the scale or subject the platter to any physically strong shock.
4. The load placed on the platter must not exceed the maximum weighing capacity of the scale.
5. The indicator is IP68 waterproof design. Only the cables with Φ3 to 5.5mm caliber can be used, or the indicator's waterproofness will be affected.
6. Clean and wrap the scale into a clean bag for long time no use. A desiccant sachet may be included to prevent any moisture built up.
7. To avoid current leakage, please do not subject the batteries to excessive heat or attempt to open the batteries.
8. In order to maintain the re-chargeable battery in good condition it should be kept fully charged whenever possible. If the scale is to be stored, the battery should be fully charged before storage, and then re-charged at 3 month intervals.
9. The number of times that the battery can be recharged will vary according to the conditions of use. However it can be maximized by re-charging the battery frequently and by avoiding conditions of total discharge. The battery cannot be overcharged.
10. Please operate or charge the scale in an open area. Do not squeeze the power cord to avoid wire on fire.
11. If the scale is not working properly, please send it to our distributor for service.
12. Any suggestion for the product is warmly welcome.

PREPARING TO USE THE SCALE

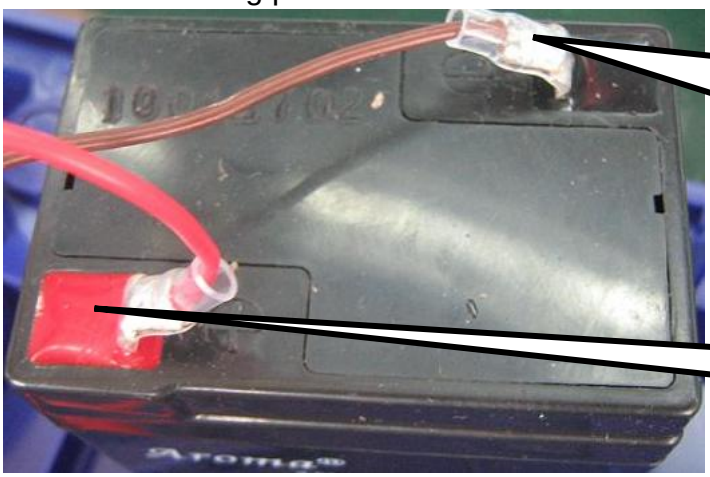
1. Locate the scale on a firm level surface free from vibrations for accurate weight readings.
2. Avoid operating the scale in direct sunlight or drafts of any kind.
3. If possible, avoid connecting the scale to AC power outlet sockets which are adjacent to other appliances to minimise the possibility of interference affecting the performance of the scale.
4. Remove any weight that might be on the platter before the scale is switched on and avoid leaving weight on the platter for long periods of time.
5. All goods weighed should be placed in the centre of the platter for accurate weighing. The overall dimensions of the goods being weighed should not exceed the dimension of the platter.
6. Once the scale has been powered on, it will go through a LCD display test and it is ready for use when the display shows zero.
7. The scale requires 15 to 20 minutes warm up before operation to ensure best accuracy.
8. When the power bar indication  turns to be low battery  , it means the battery should be recharged immediately.
9. Introduction of Storage Battery

Due to the storage battery adopt the advanced free-maintaining technique, customers need not to replenish electrolyte.
The scale should be recharged every 3 months to prevent failure of the internal rechargeable battery.

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

Maintaining

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



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.

SPECIAL NOTICE

In some certain conditions, the stainless case of indicator will be opened to set up the load cell, connect the power cable, or replace the new rechargeable battery, please contact your local service people to avoid any damage of waterproof.

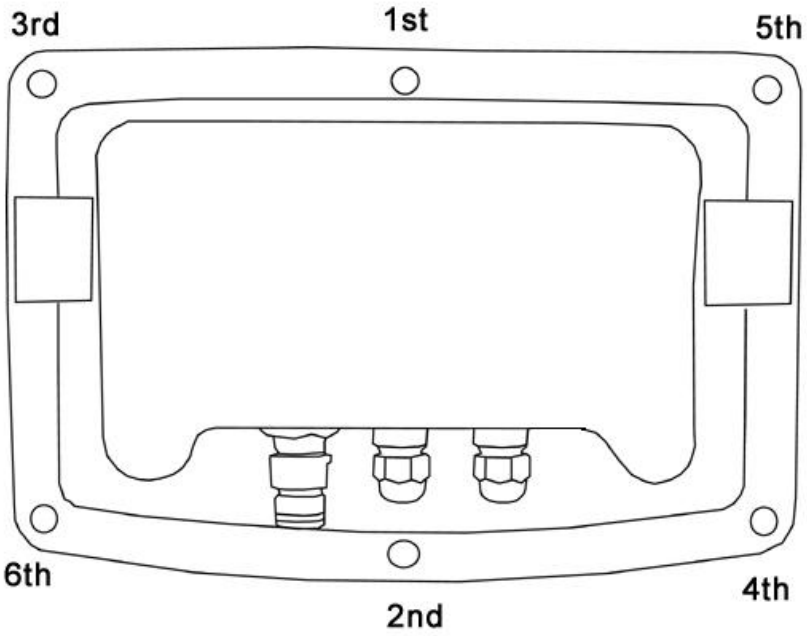
Before opening the stainless case, please ensure the indicator is free of moisture, if necessary, any liquid should be wiped off.

The assembling notice as below should be strictly followed to assure the waterproof performance. We strongly suggest that these procedures should be operated by the technical staff of your supplier.

ASSEMBLING NOTICE

Screw the case with a torque screwdriver of 12 kgf-cm in the following orders. Do not screw tightly before all screws are in the positions.

Screwing orders:



CHAPTER 1 INTRODUCTION

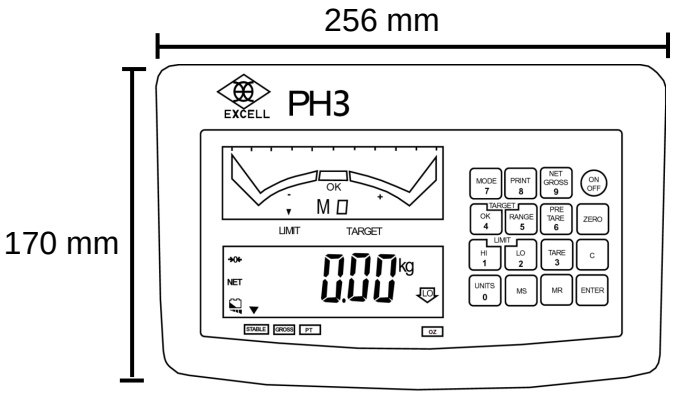
1-1 Features

- **IP68 waterproof:** moisture-proof, mist-proof, with IP68 waterproof and dustproof
- **Adjustable weighing speed:** three weighing speed modes (fast, moderate, and slow) supported.
- **Selectable units:** kilogram (kg), gram (g), pound (lb), and ounce (oz) weighing units
- **HI, OK, LO indication:** Large LCD display with HI, OK, LO indication and the signals for relay output with max. current 8 A at 120VAC or 30VDC, 5A at 230VAC
- **High resolution:** the maximum external resolution is 1 / 30 000, and the internal is 1 / 300 000. (Input voltage should be over 6 mV)
- **Practical functions:** 10 preset settings, Percentage display, Simple / Limit / Target operation modes, Pre-Tare function, Net / Gross switch function, Auto backlight, RTC settings and Auto power-off timer etc.
- **Others:** Auto calibration, Auto zero tracking, Low battery indication, Adjustable gravity value, and Linearity adjustment.
- Built-in Bi-directional RS-232 interface

1-2 Specifications

- Analog Input and A/D Conversion : Input Sensitivity 0.18 μV/d or more
- Input Signal Range : -2 ~ +16 mV
- Input Zero Range : -1 ~ +5 mV
- Load Cell Excitation : 5 V DC
- Load Cell Drive Capacity : up to 4 load cells at 350 Ω / load cell
- Non-linearity : 0.01% of full scale
- A/D Resolution : 1 000 000 counts (Max.)

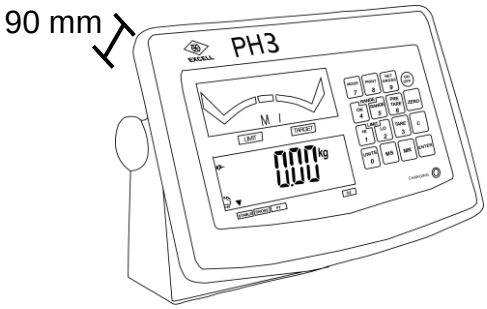
1-3 Scale Appearance

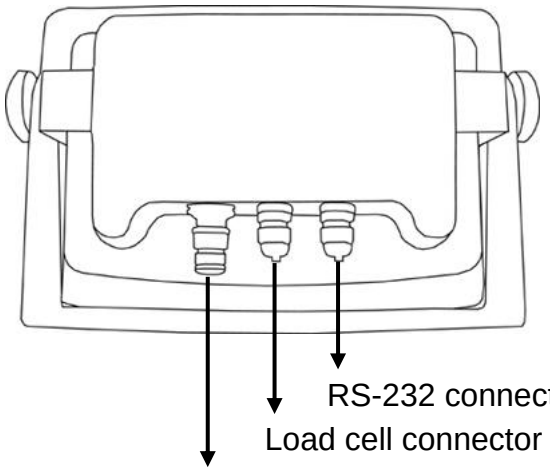


The package includes:

1. Indicator x 1
2. Power Cable x 1
3. User Manual x 1

When you unpack the indicator and find any of the above items are missing, please contact your supplier.





(For RS-232 and load cell, only the cables with Φ 3 ~ 5.5mm caliber can be used, or the indicator's waterproofness will be affected.)

1-4 Power Supply

Power Supply Selection

1. 6 V / 4.0 Ah Rechargeable battery
2. AC adaptor DC 12 V / 1A

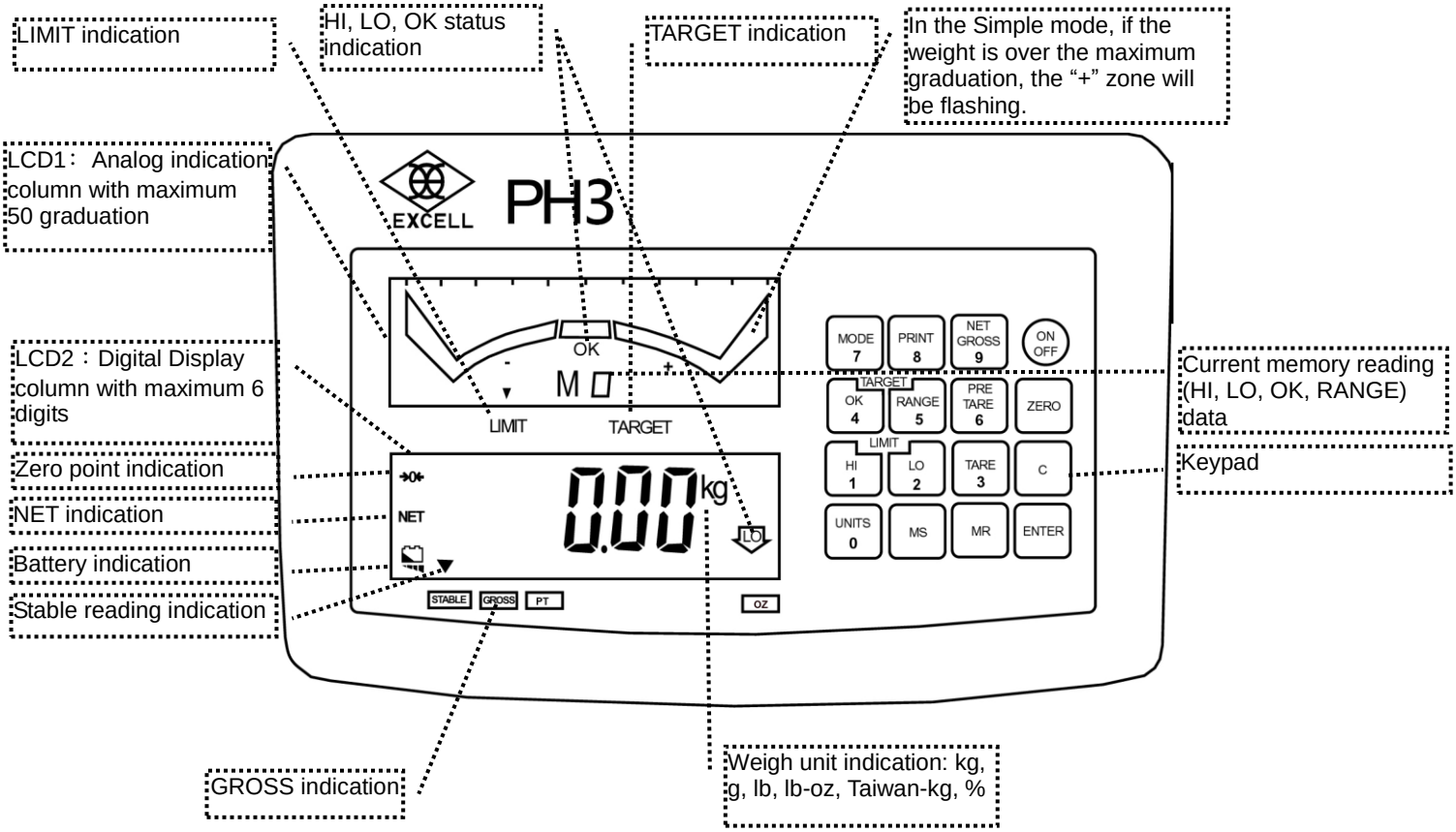
Power Consumption

Approximately DC 19 mA (Indicator)
Approximately DC 38 mA (Indicator + Display backlight)
Approximately DC 70 ~ 80 mA (Indicator + Display backlight + Relay)

Low Battery Warning

When the power bar indication turns to be low battery , it means the battery should be recharged immediately.

1-5 Explanation of Display

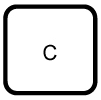


1-6 Explanation of Keypad

Press this key to switch the display on/off.

Press this key to obtain a zero reading, when the platter is empty (free of load) and the display is not showing zero.

ⓘ When the weight value is within the zero range, the zero function operates to zero the scale or cancel the tare function.



Press this key to clear memory and delete data.

Press this key to perform action.

Digit: 9

Press this key to switch between the “Net value” and the “Gross value”. (This key is functional only in Tare mode.)

Digit: 6

Press this key to deduct the weight of container via entering the known value, so that the scale readout shows the net weight of samples.

Digit: 3

Press this key to deduct the weight of container, so that the scale readout shows the net weight of samples.

Press this key to recall memory.

Digit 8
Press this key to output the displayed values via the built-in interface to a printer or a computer.

Digit 5
In Target weight mode, press this key to preset the allowable “Range” value.

Digit 2
In Limit weight mode, press this key to input “Low” value, so that the weighing result cannot be smaller than this value.

Press this key to store HI, LO, OK and Range settings or exit the settings mode.

Digit 7
Press this key to switch among Simple weight mode, Limit weight mode and Target weight mode.

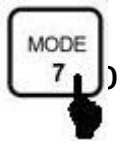
Digit 4
In Target weight mode, press this key to input value which meets the OK requirement.

Digit 1
In Limit weight mode, press this key to input “HI” value, so that the weighing result cannot be greater than this value.

Digit 0
Press this key to switch the weight unit, the icons or arrows will indicate the enable units as appropriate. The units available are dependent on the exact scale model.

ⓘ After power off, the scale will memorize the enable units. When the scale is powered on again, it displays the previous enable units.

CHAPTER 2 BASIC OPERATING FUNCTIONS

PH3 has three weight modes: Simple, Limit and Target, pres 

switch.

Simple weight mode

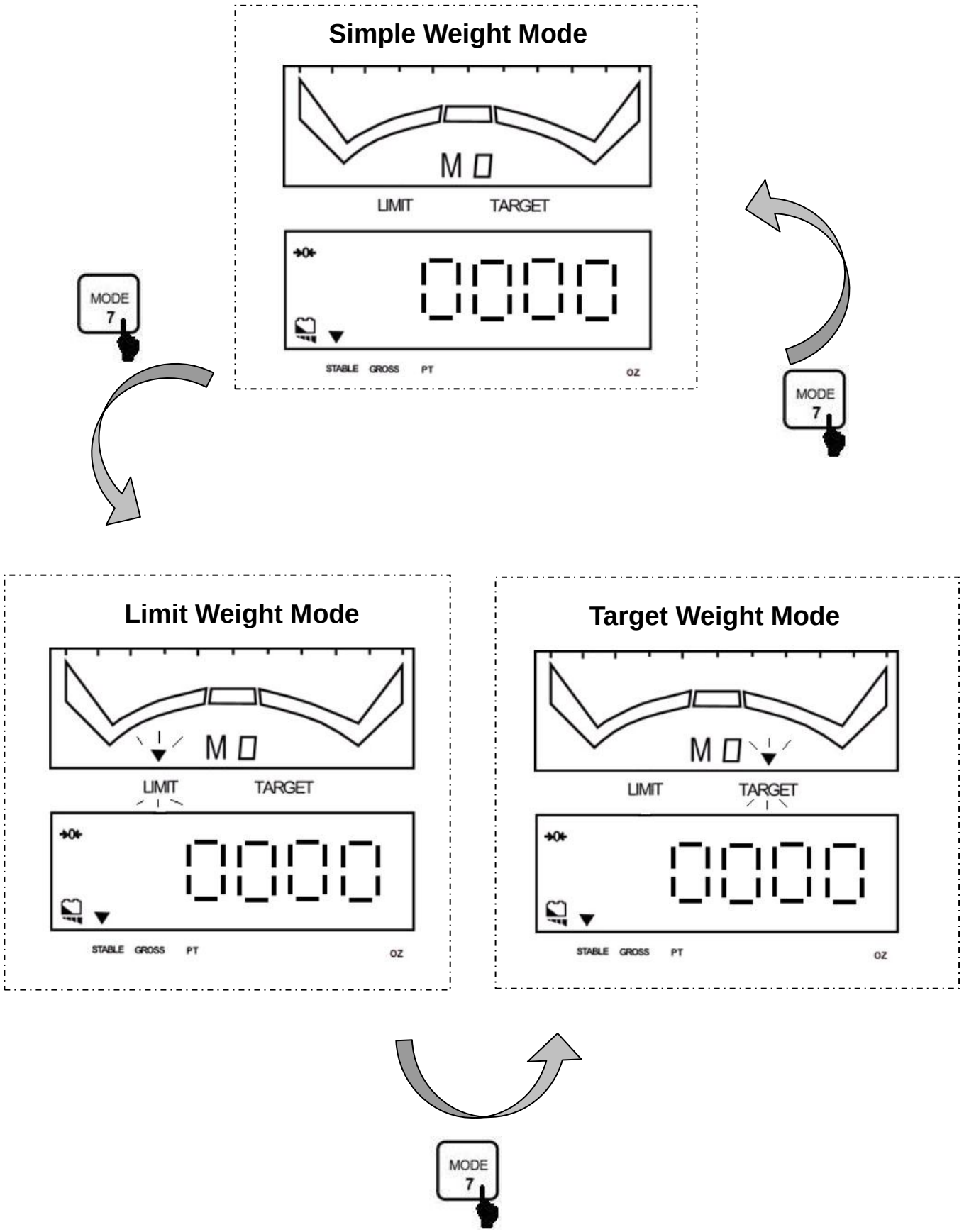
In this mode, the weight value can be displayed by means of analog and digital. For example, when an object weighs 20 kg, the LCD2 shows the digits 20 and LCD1 has slight changes on its graduation.

Limit weight mode

This is a weight check mode, press “HI” and “LO” keys to input high and low limit values, LCD1 displays if the weight on platter is greater than the high limit, lower than the check value or equal to the OK range. When it meets the OK range, the OK zone will blink. For example, High limit = 20, Low limit = 18, then OK range is between 18 and 20.

Target weight mode

Use this mode to set a “Target” weight and an allowable range. When the weight is within the range, it means the weight meets the target requirement. For example, pour liquid into a container, press “OK” key to set target as 30 and press “Range” key to set an allowable range as ±2, when the weight reaches the range between 28 and 32，the OK zone on LCD1 will blink.


Simple Weight Mode
M 0
LIMIT
TARGET
STABLE GROSS PT
OZ
MODE
7
Limit Weight Mode
M 0
LIMIT
TARGET
STABLE GROSS PT
OZ
Target Weight Mode
M 0
LIMIT
TARGET
STABLE GROSS PT
OZ
MODE
7

2-1 Simple Weight Mode

Steps：

1. 

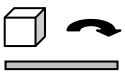
Turn on the scale

   ⇨ Scale starts to count down, LCD2 displays ”------“
   ⇨ After reaching to Zero, LCD2 displays ”000000”.

2. If needed, 

select the weight unit.

Zero the scale, if the Zero point value is floating.

3. 
Put object on the platter

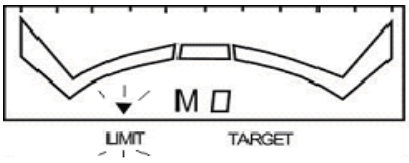
   ⇨ LCD1 (analog) and LCD2 (Digit) display the object’s weight

   ⇨ After the weight is stable, the STABLE icon ▼ appears at the left bottom of LCD2.

2-2 Limit Weight Mode

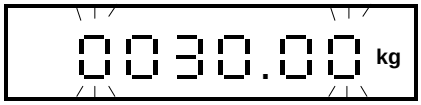
Steps:

1. Press “MODE” key, select Limit Mode, the Limit ▼ icon is switched on.

⇨


ⓘ If the weight is floating, press “ZERO” key to obtain a zero reading.

2. Press “HI” key, the screen displays the previous setting of High value.

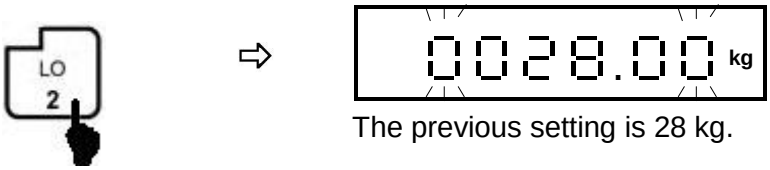
⇨


The previous setting is 30 kg.

3. Use “0” ~ “9” keys to input the High value. After inputting one digit, the cursor will move to right. Press “ENTER” key when finishing. (For example 30 kg, press 0030 ↵)

ⓘ When input incorrectly, press “**C**” key to clear.

4. Press “LO” key, the screen displays the previous setting of Low value.

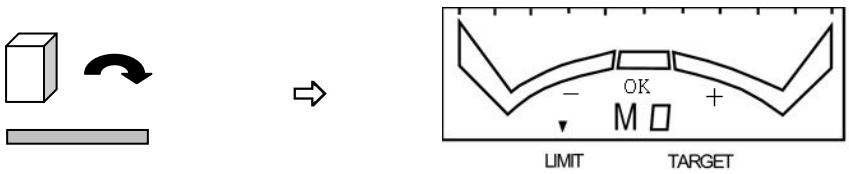


The previous setting is 28 kg.

5. Use “0”~“9” keys to input the Low value, see step 3.

ⓘ “High value” must be set before “Low value”.

6. Put object on the platter, the screen reflects HI / LO / OK status.

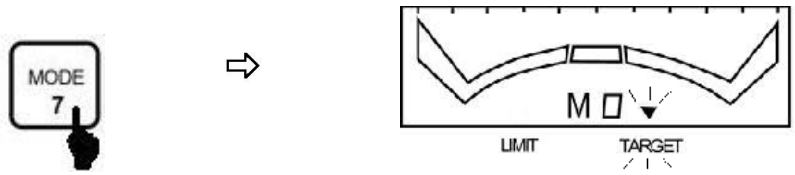


ⓘ If the weight is between the high and low limit, the “OK” zone will blink.
If the weight is over the high limit, the “+” zone will blink.
If the weight is under the low limit, the “-” zone will blink.

2-3 Target Weight Mode

Steps:

1. Press “MODE” key, select Target Weight Mode, the Target icon ▼ is switched on.

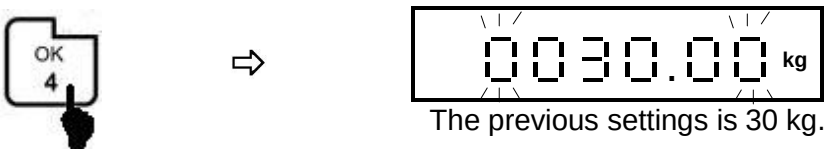


ⓘ Press ZERO key to zero the scale, if the weight is floating.

2. Set the target weight (There are two methods)

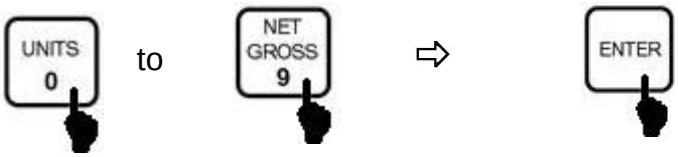
Method 1: input value via keypad

(1) Press “OK” key, the screen displays the previous setting.



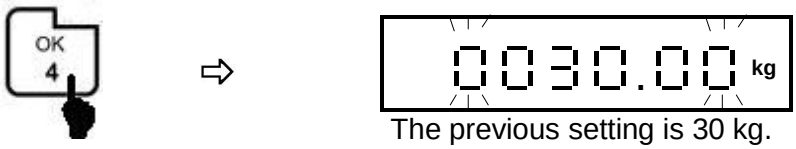
The previous settings is 30 kg.

(2) Use 0 ~ 9 keys to input the target value. After keying one digit, the cursor will move to right. Press “ENTER” key when finishing.



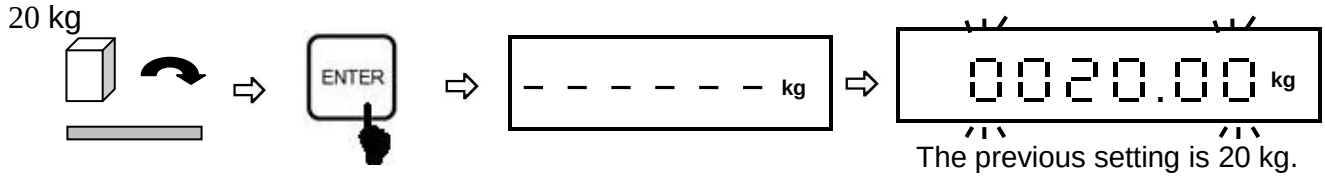
Method 2: Input value via sampling weight

(1) Press “OK” key, the screen displays the previous setting.



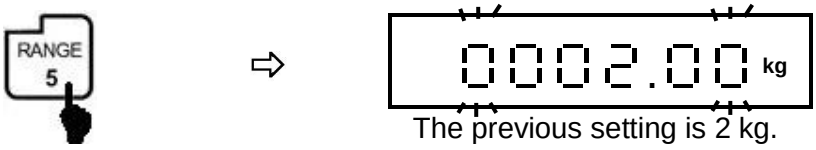
The previous setting is 30 kg.

(2) Put the sample on the platter, press “ENTER” key. The screen displays “------”. After the weight is stable, the sampling is finished.



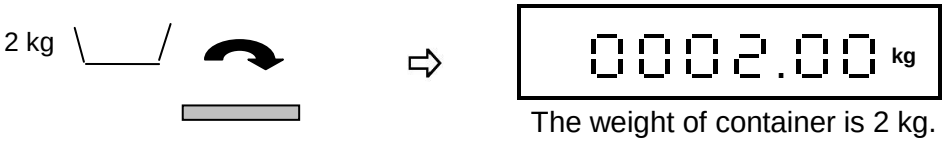
3. Set the Range Value

(1) Press “RANGE” key，the screen displays the previous setting.

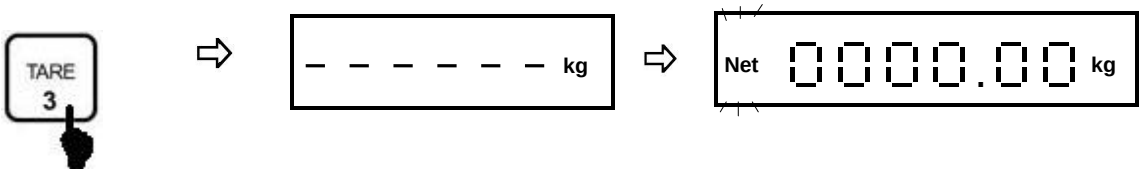


(2) Use “0” ~ “9” keys to input the target value. After keying one digit, the cursor will move to right. Press “ENTER” key when finishing.

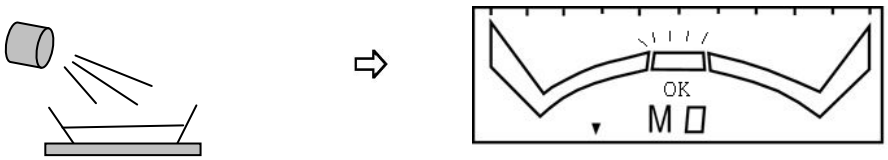
4. Put a container on the platter, the screen displays the container’s weight.



5. Press TARE key, the screen displays “------”. The “Net” icon is on, after the weight returns to zero.



6. Put objects into the container and observe the changes of graduation on LCD1. When the weight reaches the OK section, stop adding the objects and LCD2 displays the weight at OK status.



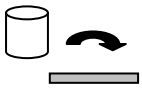
ⓘ The Range value can be shown as *percentage*.
Refer to "**3-1-8 Weight and Percentage Mode Settings**" for details.

2-4 Tare Function

Steps：

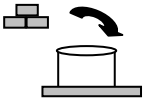
1. When the platter is free of load and the display is not showing zero, 

to zero the scale.

2.  Put a container on the platter
   ⇨ LCD2 displays the weight of container
   ⇨ After the weight is stable, the STABLE icon ▼ will blink.

3. 

To zero the weight of container, the screen displays the "Net" icon.

4.  Put the goods in the container, the screen displays the net weight value of the goods.

ⓘ The tare function can be operated continually to the full weighing capacity of the scale.

ⓘ To continue tare operation, please press key each time when you finishing adding tare objects on or removing tare objects from the platter.

For OIML and NTEP approval models, the tare function is automatically cancelled when instantaneous weight returns near zero point.

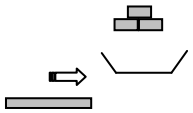
For Sri Lanka approval models, the zero key 

is disabled when using tare function.

Tare and Pre-tare functions cannot be used simultaneously.

2-5 Cancel Tare Function

Steps:

1.  Move the full container from the platter.

2.  Zero the scale and Tare ⇨ The “Net” icon is switched off.

   or  Clear Tare ⇨ The “Net” icon is switched off.

2-6 Pre-Tare Function

Steps:

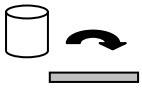
1.  Zero the scale, if needed.

2.  The screen displays the previous Pre-Tare value for two seconds

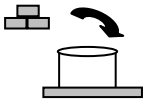
   ⇨ Enter Pre-Tare mode ≻ 00000P ≺ .

3. Use “0” ~ “9” keys to input the known weight of container, after that  .

4. The PT ▼ icon on LCD2 will blink, which means the settings is finished.

5.  Put the container on platter

   ⇨ The screen displays the weight is zero

    Put the goods into the container

   ⇨ The screen displays the weight of goods

   ⇨ PT icon ▼ is on

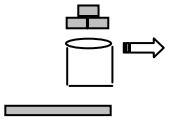
   ⇨ LCD2 displays the Net value of goods.

Tare and Pre-tare functions cannot be used simultaneously.

2-7 Cancel Pre-Tare Function

Method 1

Steps:

1.  Remove the full container from the platter

2. 

Zero the scale and Tare

⇨ The “PT” icon is switched off

⇨ Cancel the Pre-Tare.

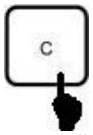
Method 2

Steps:

1. 

The screen displays the previous Pre-Tare value for two seconds

⇨ Enter Pre-Tare mode ≷ 00000P ≶

⇨ 

The screen displays ≷ 00000P ≶

2. 

The “PT” icon is switched off ⇨ Cancel the Pre-Tare.

2-8 Gross/Net Function

In GROSS or NET mode, the screen displays “Net”:

Steps:

1. 

Gross icon ▼ is switched on and “Net” icon is off, which means the weight value on the display is the *total amount* of the tare value and net value.

2. 

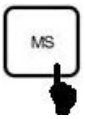
The screen displays Net value again. The “Net” icon is on, while the “Gross” icon is off. Use this key to switch between “Net value” and “Gross value”.

ⓘ This function is only used in TARE and Pre-Tare modes.

ⓘ All keys except for “On/Off” and “Net/Gross” do not work, while the Gross icon ▼ is on.

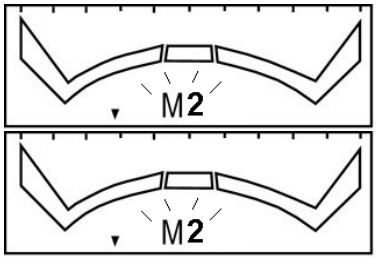
2-9 Memory Store and Recall Functions

Store

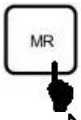
When the settings of HI, LO, OK and Range are finished, 

⇨ LCD2 displays “MEM S”, input any digits from “0” ~ “9”, such as “2”

⇨ When finishing, “M2” appears at the center of LCD1.

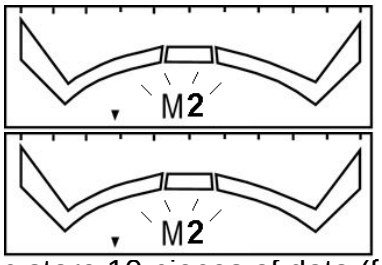


Recall



LCD2 displays “MEM R”, input any digits from “0” ~ “9”, such as “2”

⇨ When finishing, “M2” appears at the center of LCD1.

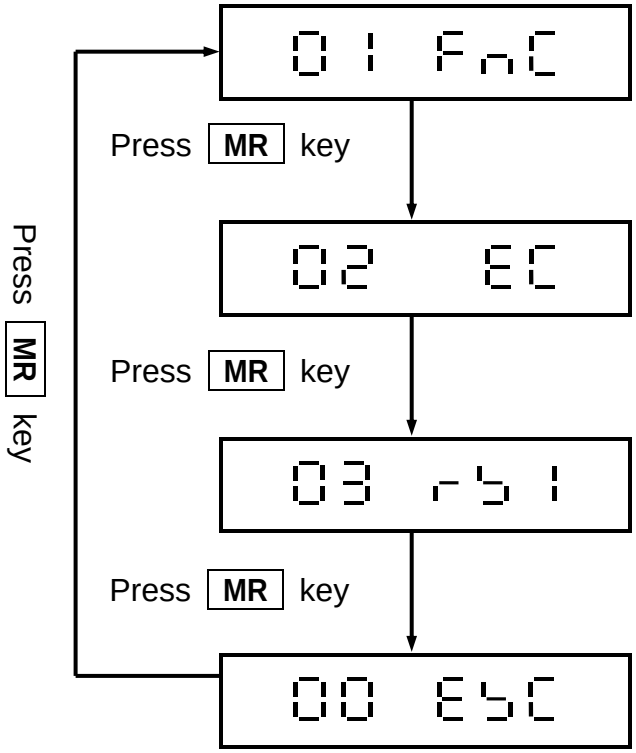


ⓘ This indicator can store 10 pieces of data (from 0 to 9).

CHAPTER 3 EXTERAL CALIBRATION

In the weighing mode, press the **TARE** and **ZERO** keys at the same time to enter the **Advanced Function** settings mode. The LCD2 shows 01 FnC and use **MR** to select the desired mode.

Overall workflow of the Advanced Function settings mode is as follows:

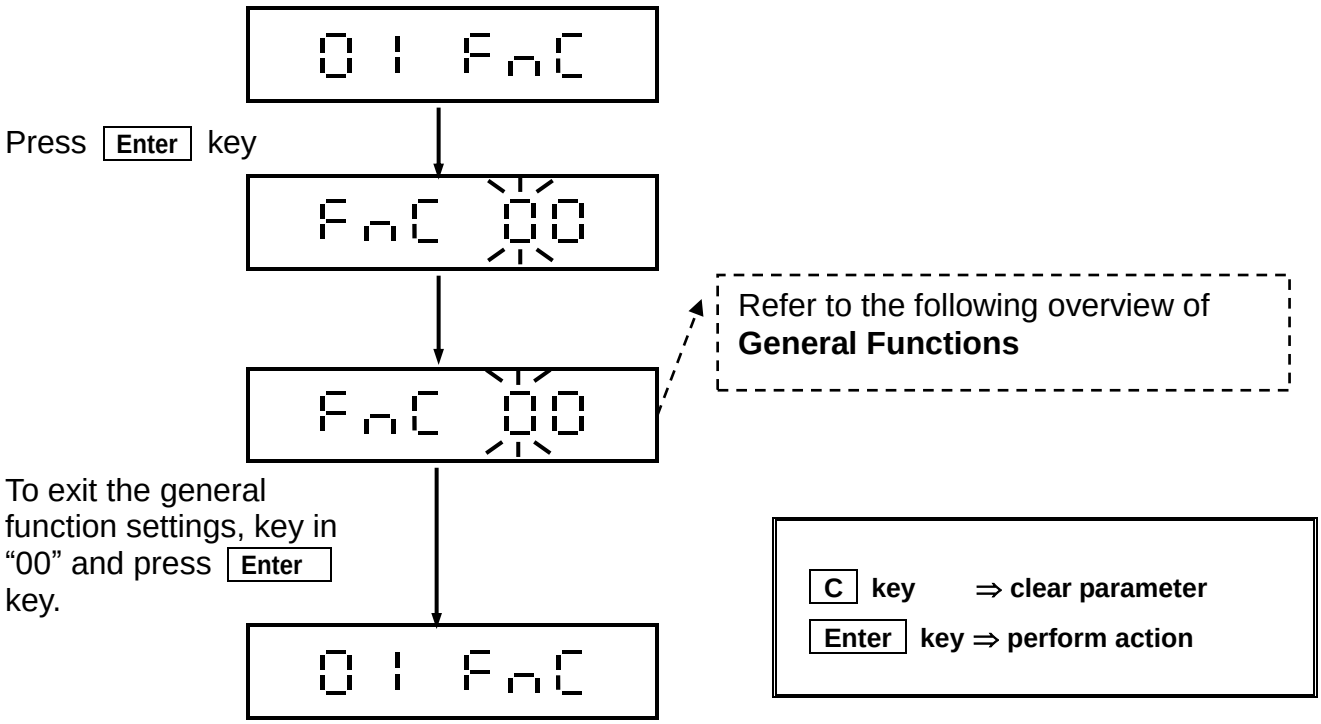


01	FnC	⇨ General Function Settings Mode
02	EC	⇨ Weight Calibration
03	rS1	⇨ RS-232 Bi-directional Function Settings
00	EsC	⇨ Exit the Advanced Function Settings Mode

Refer to the following sections for the detailed operating procedures of each function settings.

3-1 01 FnC General Function Settings

There are 16 functions in the General Function settings mode from FnC 01 to FnC 16.

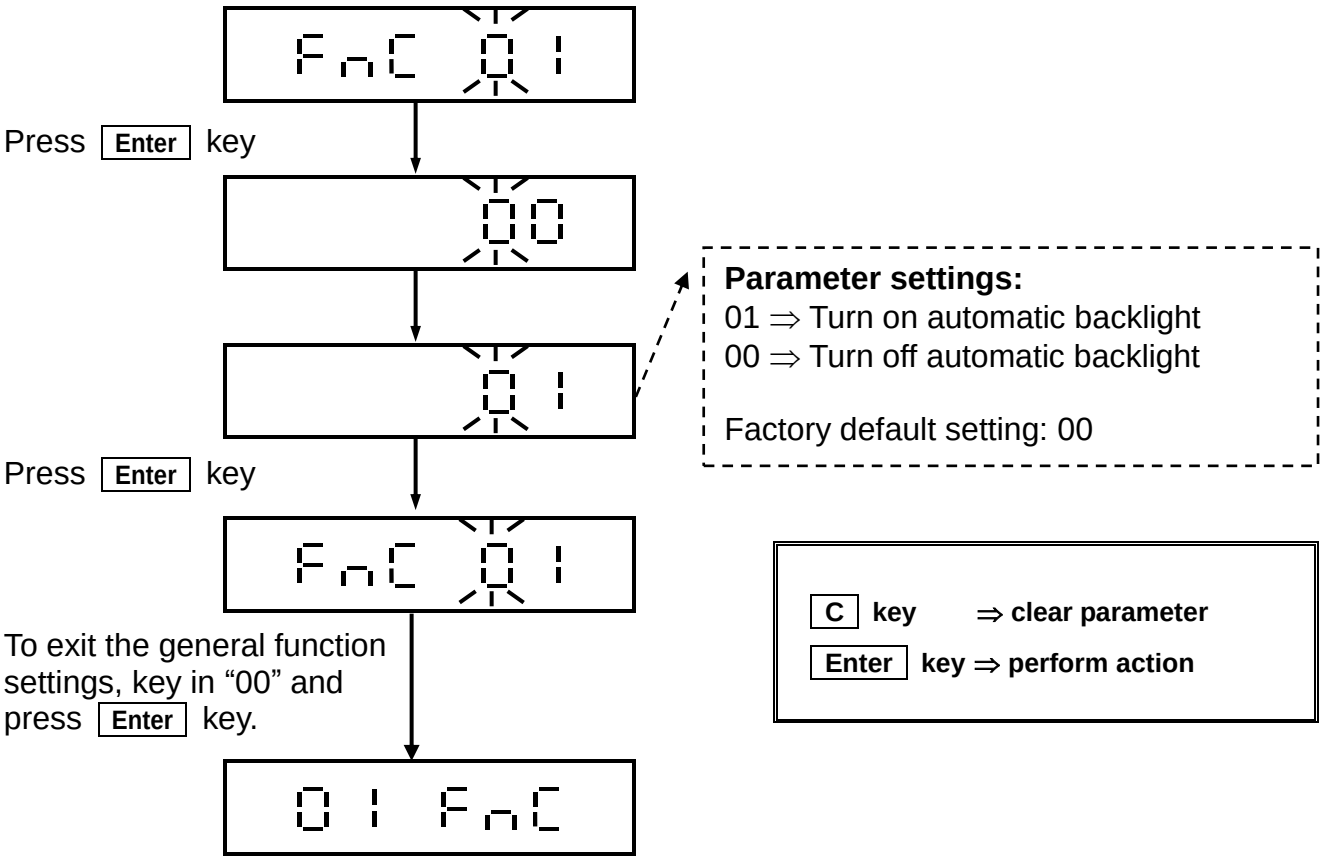


Overview of the General Functions

FnC 00 ⇒	Return to the Advanced Function Settings Mode
FnC 01 ⇒	Automatic Backlight Function Settings
FnC 02 ⇒	Automatic Power-off Timer Settings
FnC 03 ⇒	HI / LO Weight Check Settings
FnC 04 ⇒	HI / LO Alarm Settings Function
FnC 05 ⇒	Analog and Digital Display Settings
FnC 06 ⇒	Weighing Speed Settings
FnC 07 ⇒	Operation Mode Settings
FnC 08 ⇒	Weight and Percentage Mode Settings
FnC 09 ⇒	Lock Function Settings
FnC 10 ⇒	Relay Function Settings
FnC 11 ⇒	Auto Zero Tracking Settings
FnC 12 ⇒	Printer Key Accumulations Function
FnC 13 ⇒	Tare Cancellation Settings
FnC 14 ⇒	Previous Zero Record Settings
FnC 15 ⇒	HI / LO / OK Positive / Negative Weight Settings
FnC 16 ⇒	HI / LO / OK Tare Time Choose Settings

3-1-1 FnC 01 Automatic Backlight Function Settings

Select FnC 01 in the General Function settings mode 01 FnC to change the backlight function settings.

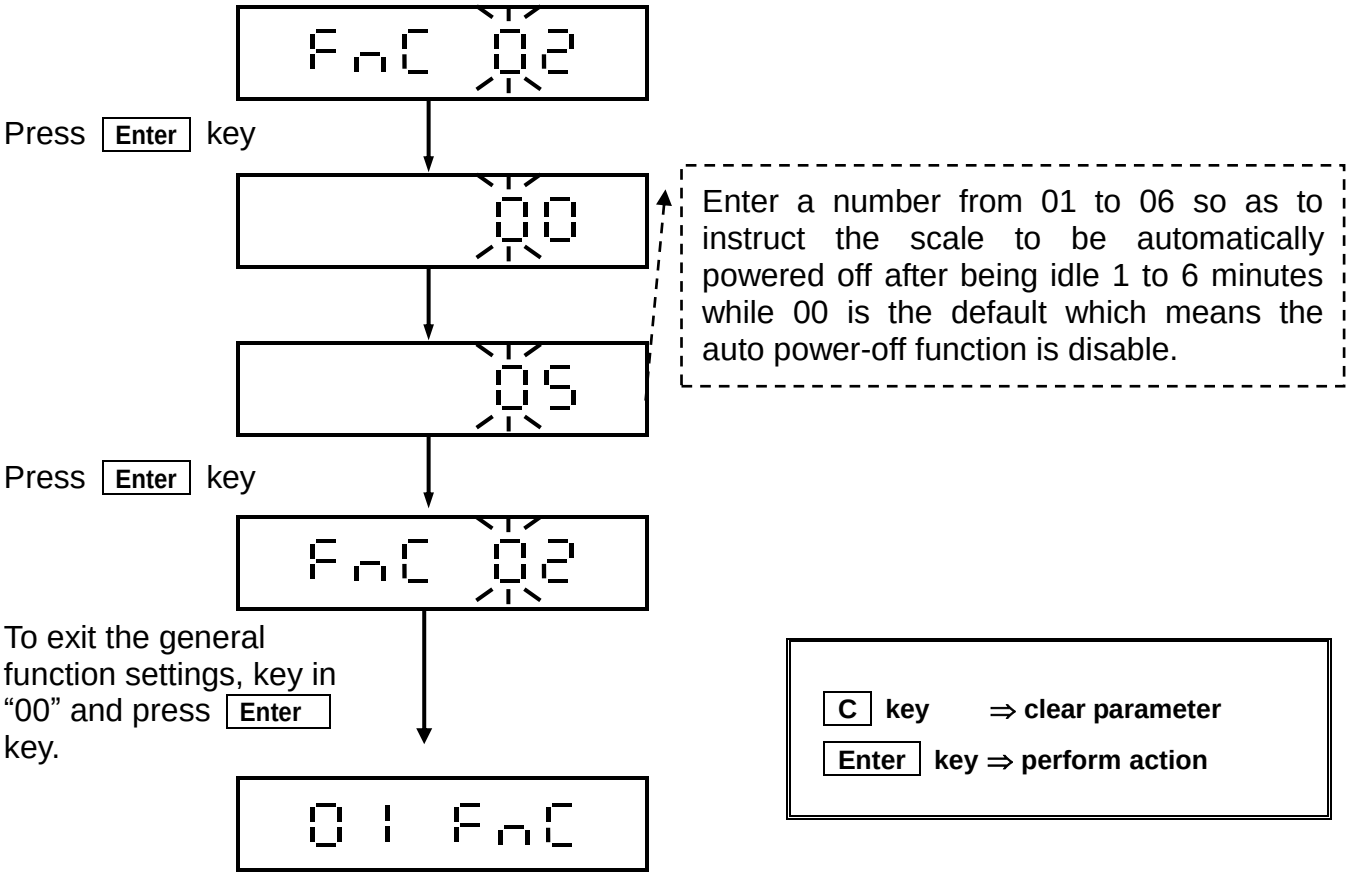


Automatic backlight function

When the weight is over 10d, the display backlight will be on. After the weight is stable for 10 seconds or when the scale returns to zero, the display backlight switches off.

3-1-2 FnC 02 Automatic Power-off Timer Settings

Select FnC 02 in the General Function settings mode 01 FnC to change the automatic Power-off timer function settings.

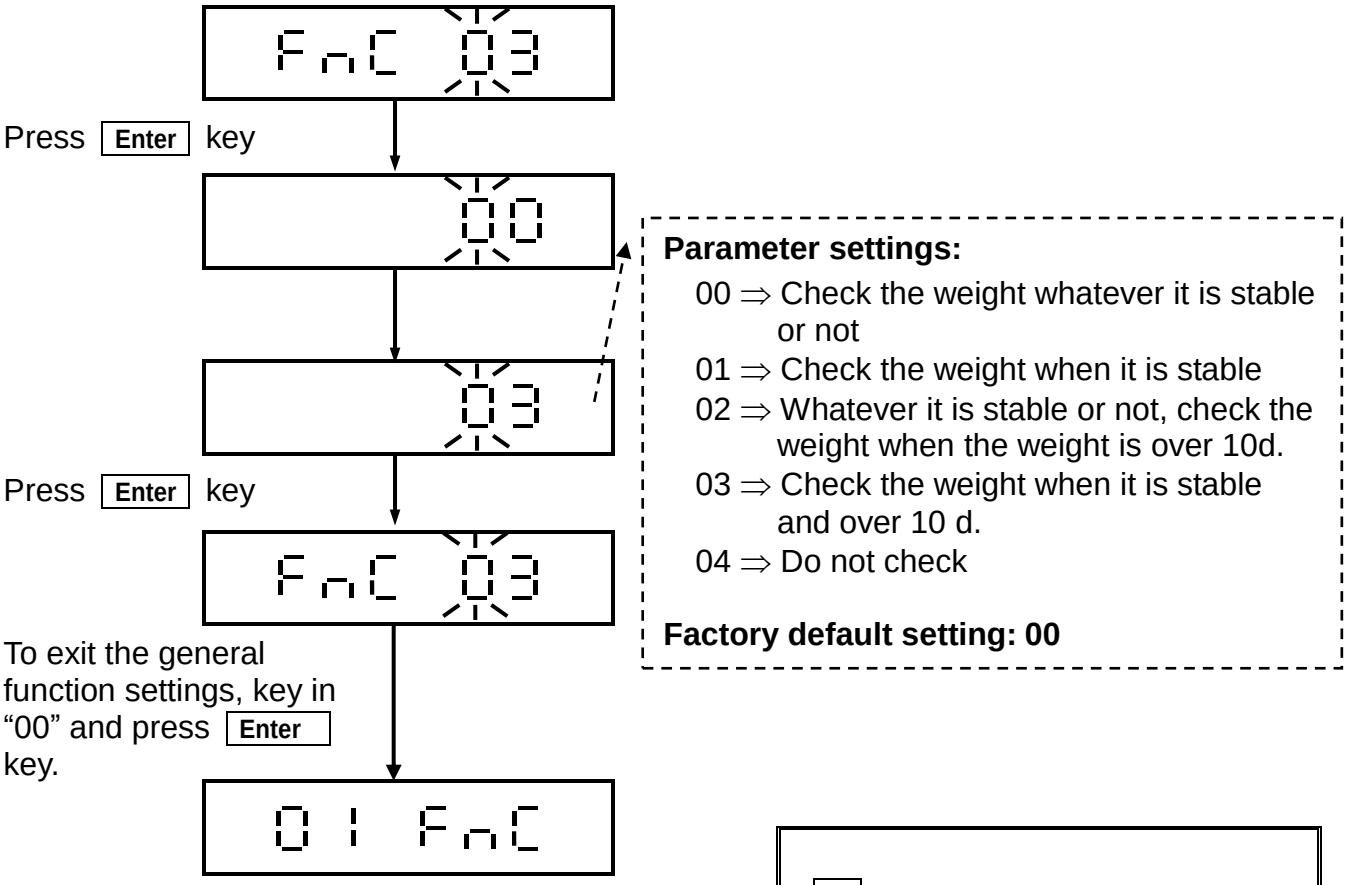


Automatic power-off function

When the weight on platter is less than 10d or keeps idle for the set time, the scale will automatically power off.

3-1-3 FnC 03 HI / LO Weight Check Settings

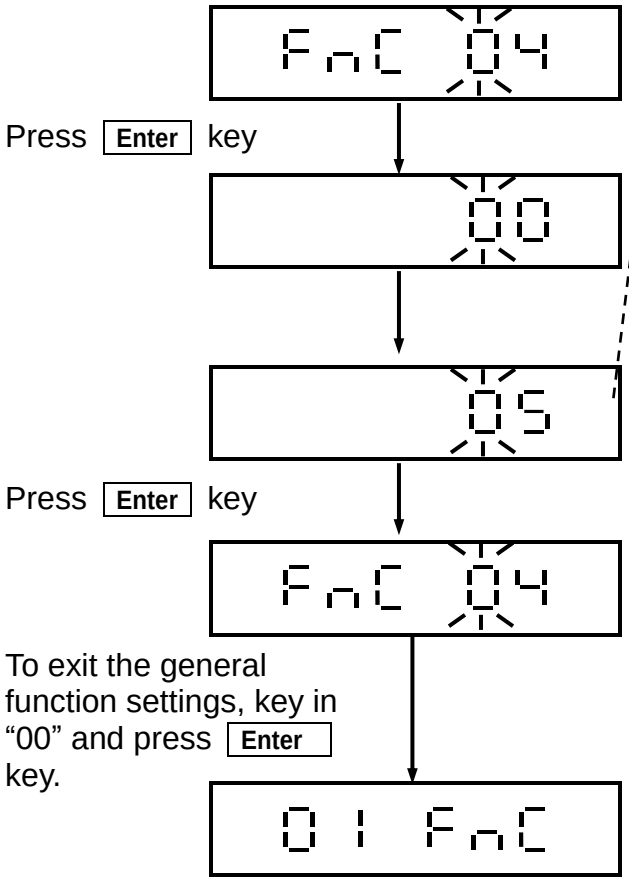
Select FnC 03 in the General Function settings mode 01 FnC to set the HI / LO weight check function.



FNC 03 settings are available only when the scale is in **Limit Weight Mode** or **Target Weight Mode**.

3-1-4 FnC 04 HI / LO Alarm Settings Function

Select FnC 04 in the General Function settings mode 01 FnC to set the HI / LO Alarm function.



C key ⇒ clear parameter
Enter key ⇒ perform action

Parameter settings:

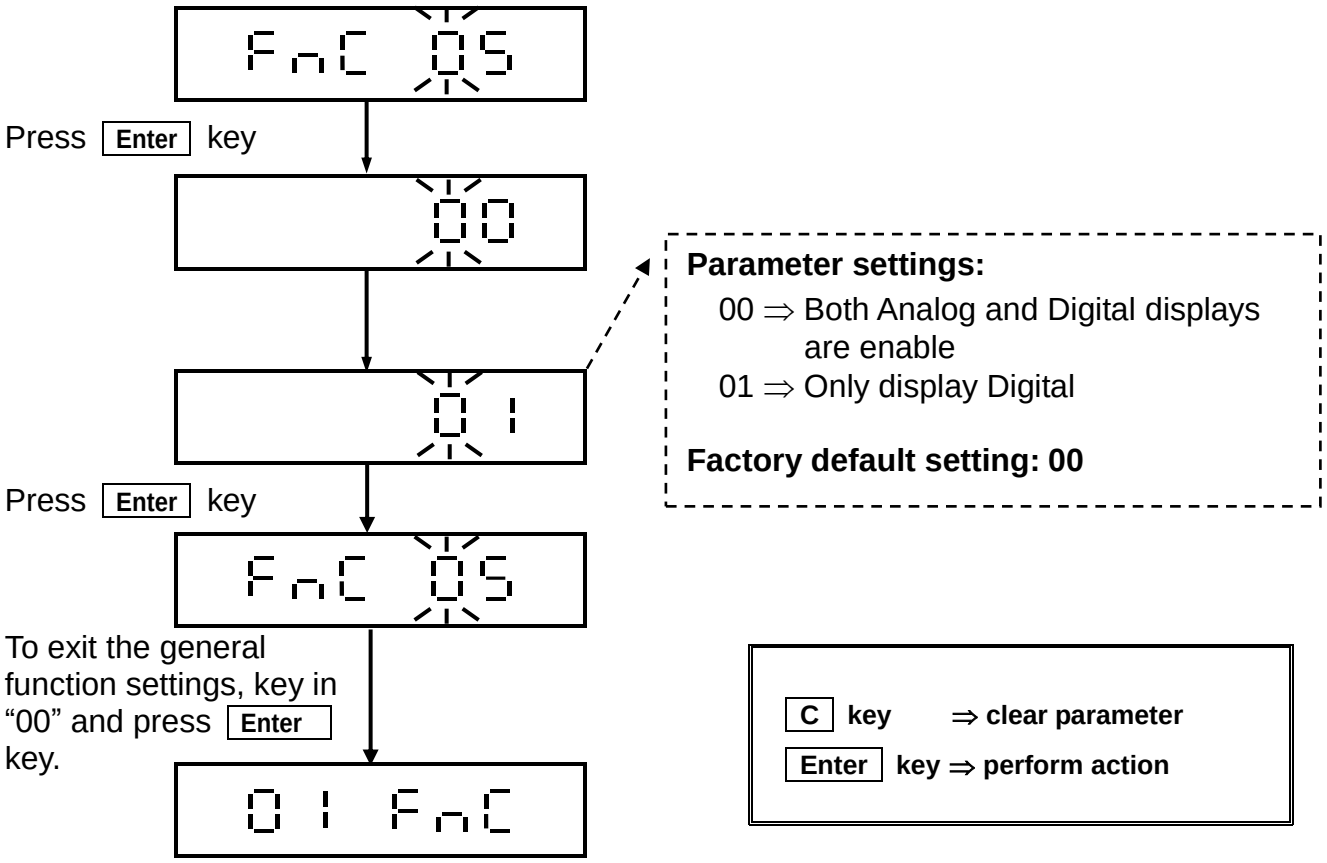
00 ⇒ No Alarm
01 ⇒ The Beeper sounds intermittently at LO status
02 ⇒ The Beeper sounds intermittently at OK status
03 ⇒ The Beeper sounds intermittently at LO and OK status
04 ⇒ The Beeper sounds intermittently at HI status
05 ⇒ The Beeper sounds intermittently at HI and Low status
06 ⇒ The Beeper sounds intermittently at HI and OK status
07 ⇒ The Beeper sounds intermittently at High, Low and OK status
08 ⇒ No Alarm
09 ⇒ The Beeper sounds continually at LO status
10 ⇒ The Beeper sounds continually at OK status
11 ⇒ The Beeper sounds continually at LO and OK status
12 ⇒ The Beeper sounds continually at HI status
13 ⇒ The Beeper sounds continually at HI and Low status
14 ⇒ The Beeper sounds continually at HI and OK status
15 ⇒ The Beeper sounds continually at HI, Low and OK status

Often used settings are "02" and "05".
Factory default setting: 00

FNC 04 settings are available only when the scale is in **Limit Weight Mode** or **Target Weight Mode**.

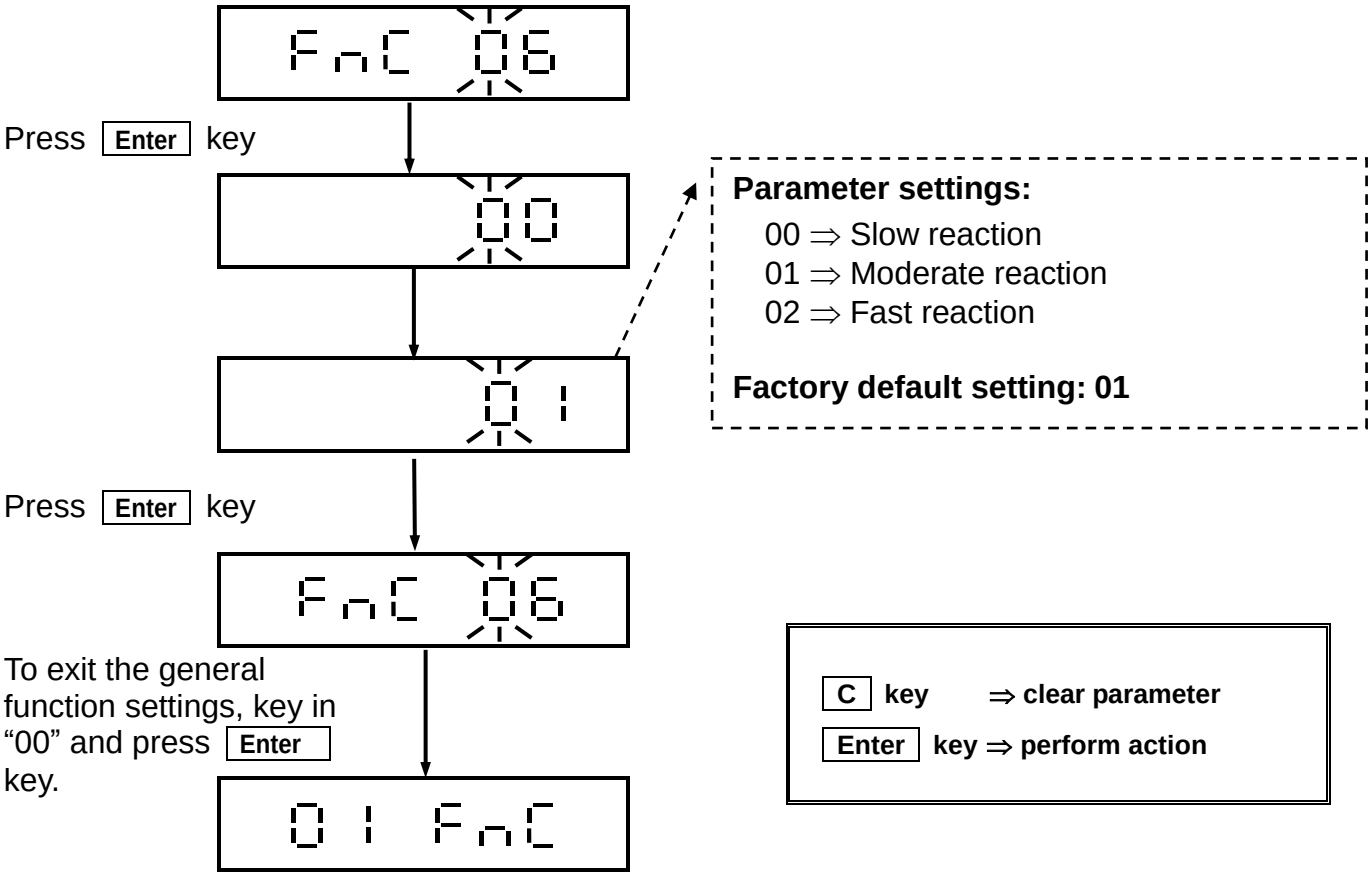
3-1-5 FnC 05 Analog and Digital Display Settings

Select FnC 05 in the General Function settings mode 01 FnC to change the Analog and Digital display function settings.



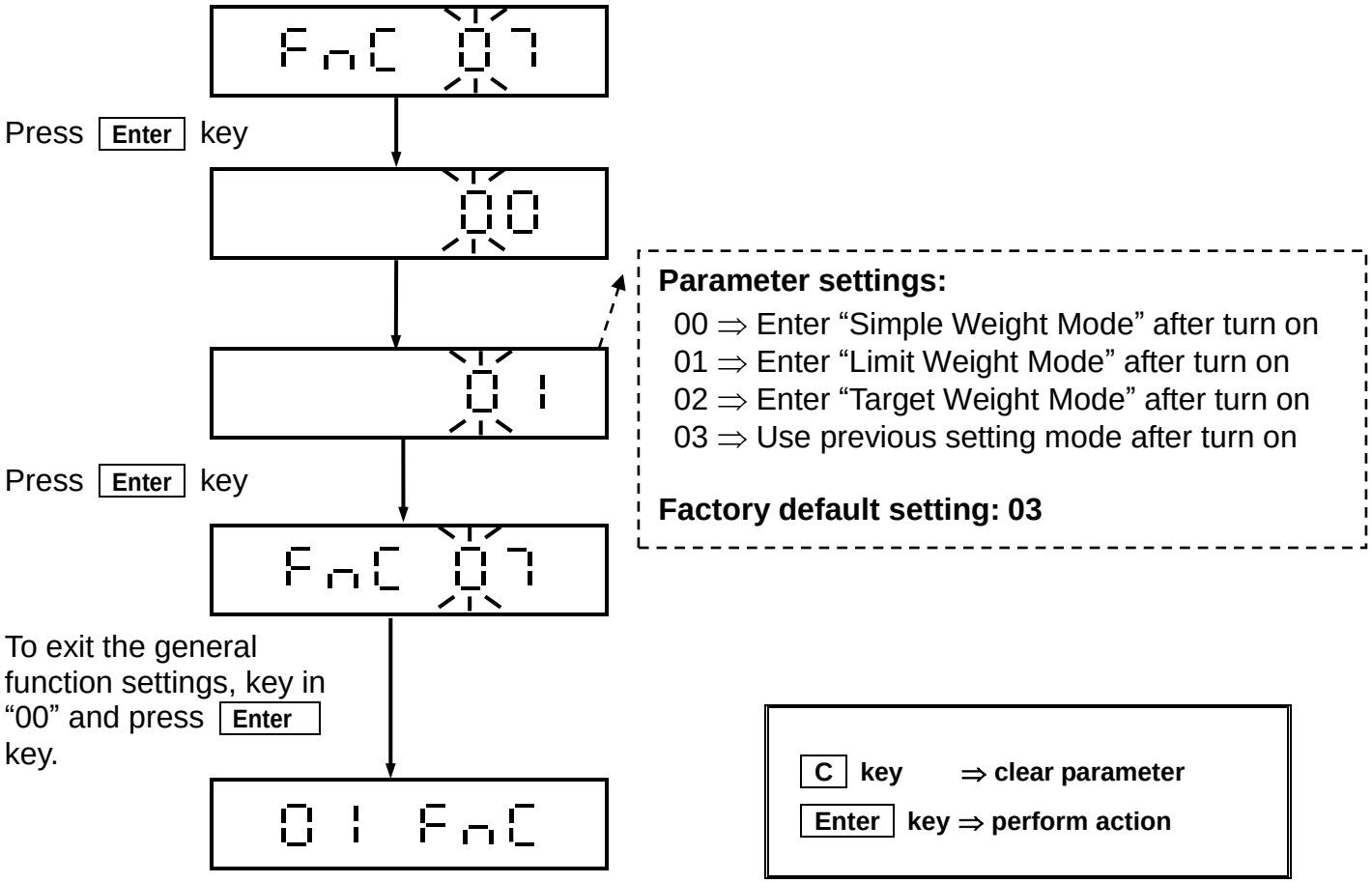
3-1-6 FnC 06 Weighing Speed Settings

Select FnC 06 in the General Function settings mode 01 FnC to set the weighing speed function.



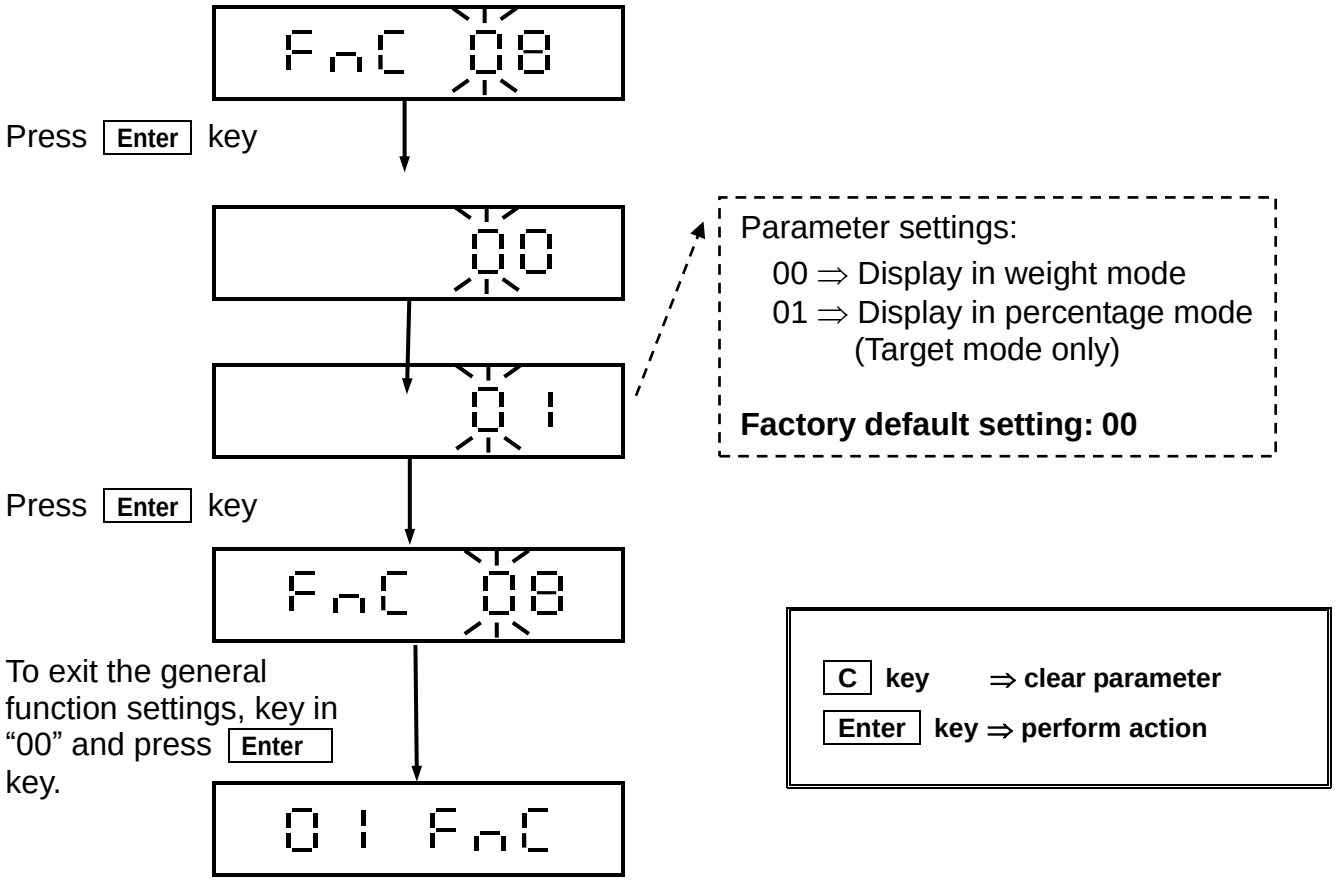
3-1-7 FnC 07 Operation Mode Settings

Select FnC 07 in the General Function settings mode 01 FnC to change the operation mode function settings.



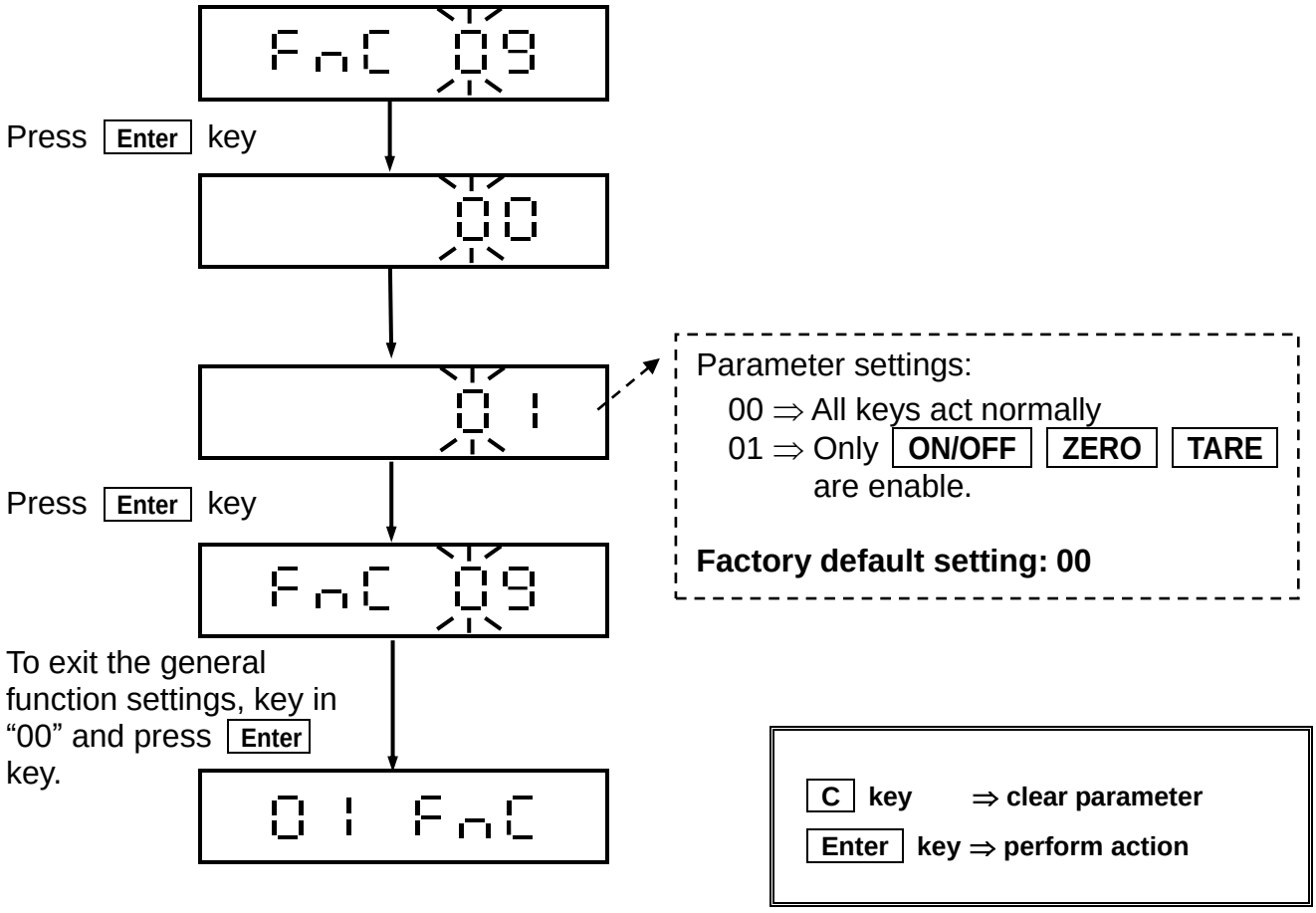
3-1-8 FnC 08 Weight and Percentage Mode Settings

Select FnC 08 in the General Function settings mode 01 FnC to change the weight and percentage mode settings.



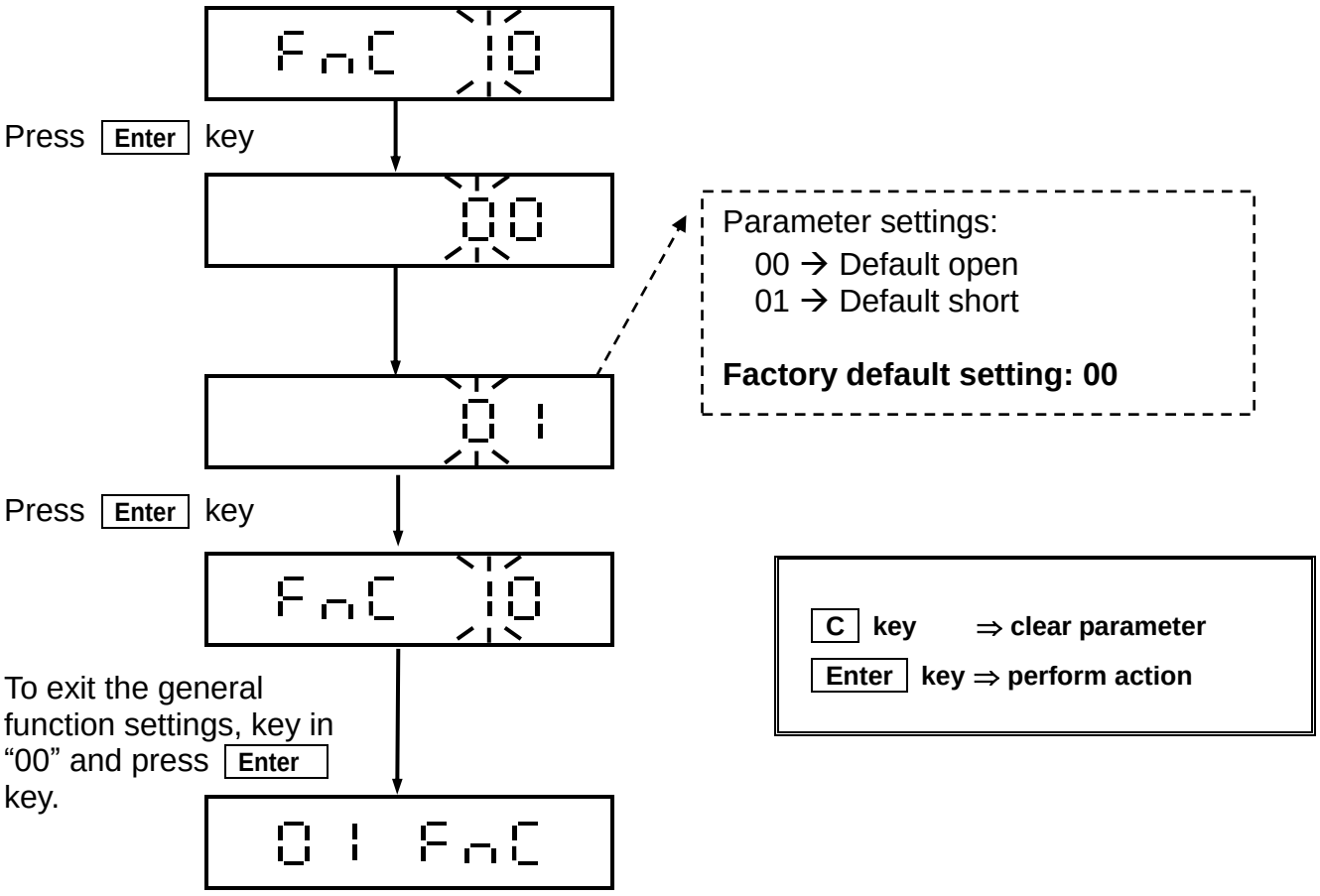
3-1-9 FnC 09 Lock Function Settings

Select FnC 09 in the General Function settings mode 01 FnC to change the Lock function settings.



3-1-10 FnC 10 Relay Settings

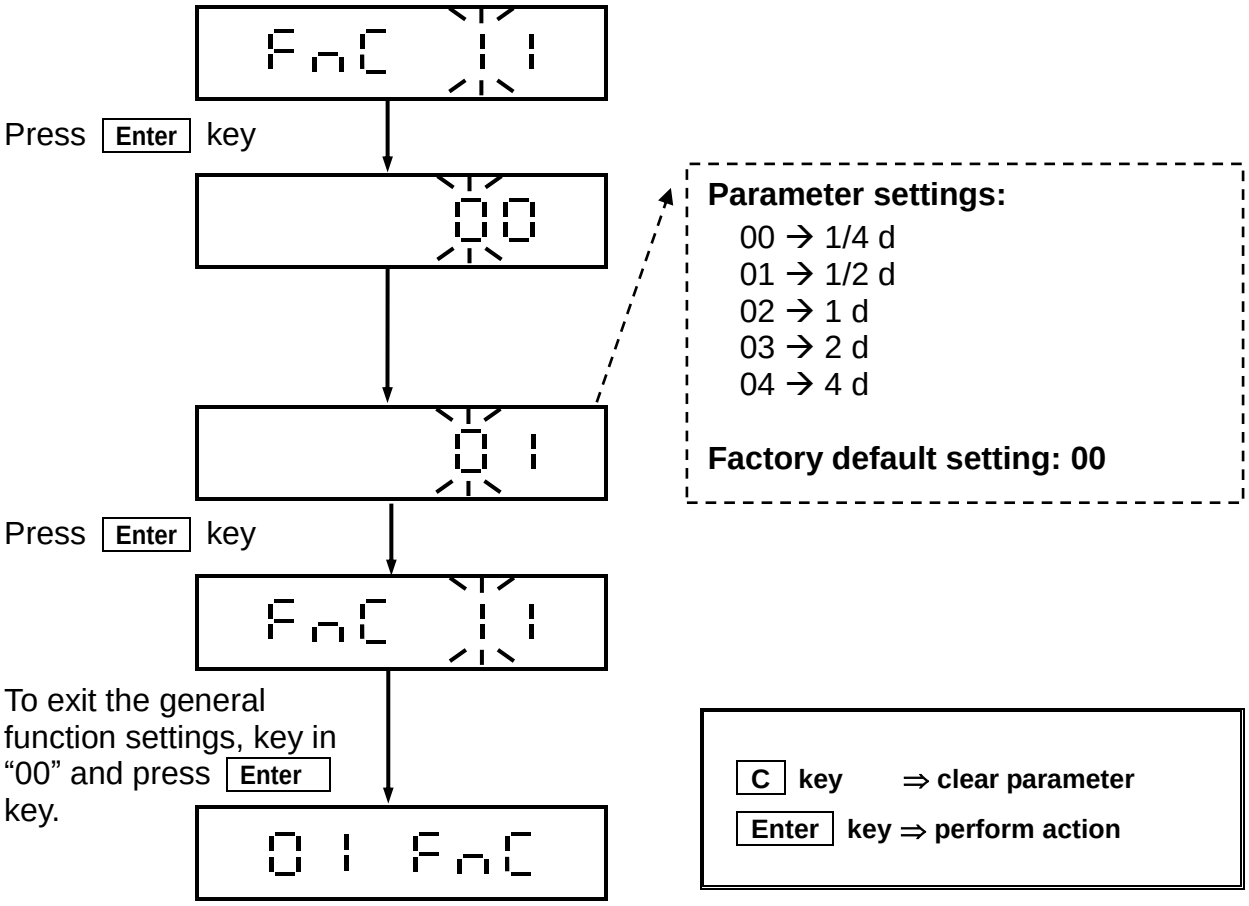
Select FnC 10 in the General Function settings mode 01 FnC to change the relay function settings.



3-1-11 FnC 11 Auto Zero Tracking

Select FnC 11 in the General Function settings mode 01 FnC to set auto zero tracking.

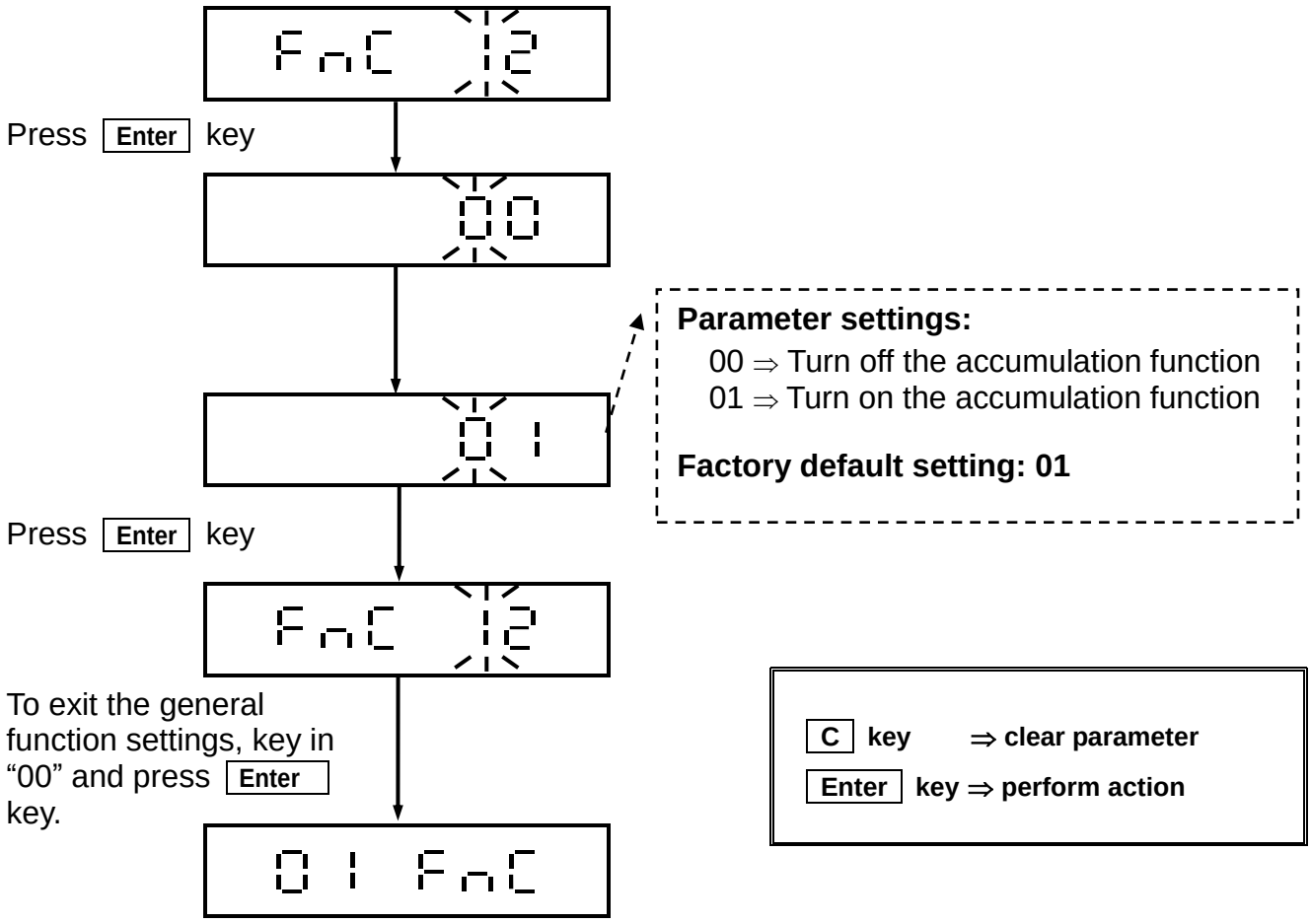
ⓘ Only for none-approved model



3-1-12 FnC 12 Printer Key Accumulation Function

Select FnC 12 in the General Function settings mode 01 FnC to set printer key accumulation function.

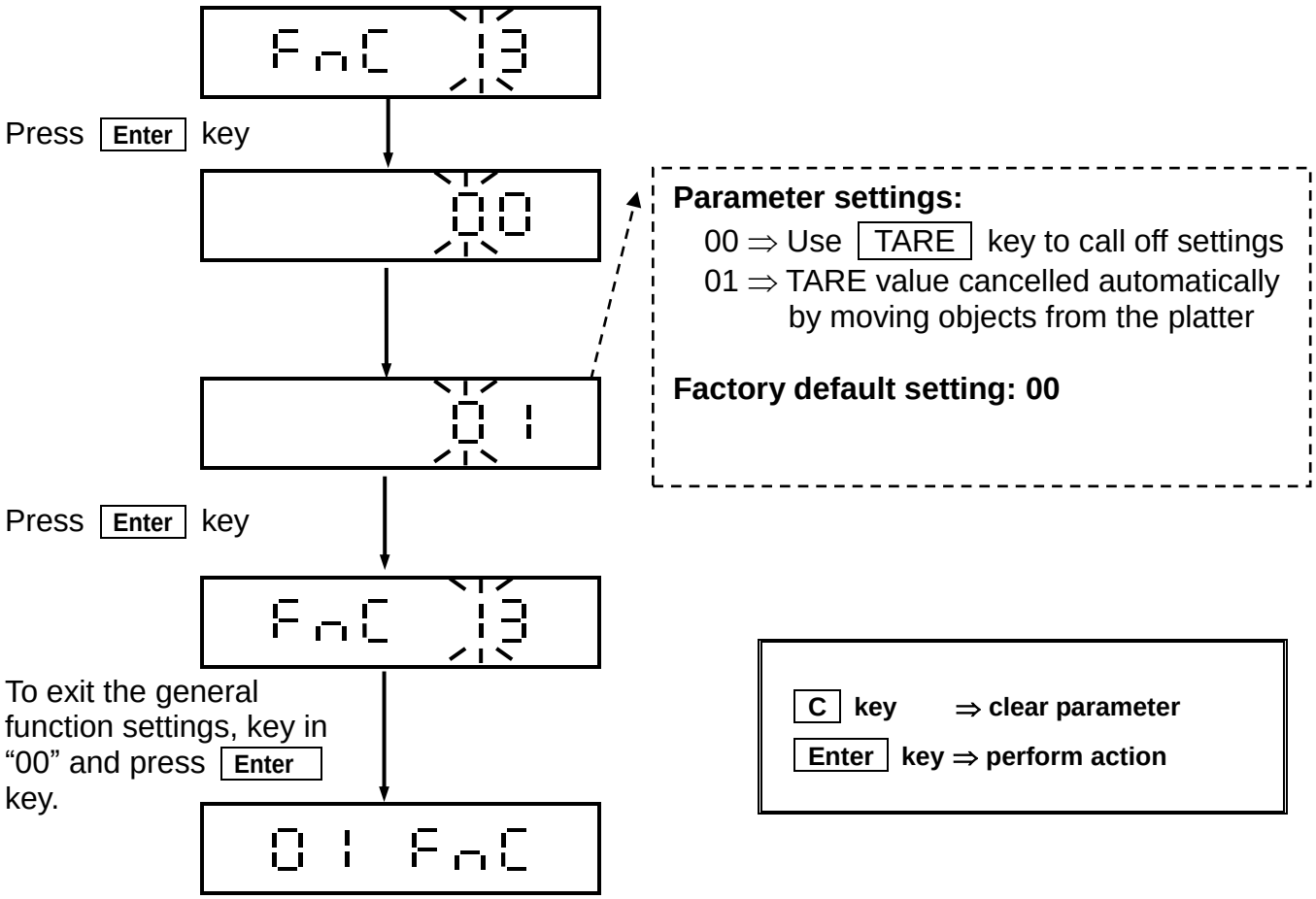
ⓘ This function is enabled only when the parameter in rb 1 03 is set as “11”.



When this function is enable, the Enter key functions as C key and has up to 99 accumulations.

3-1-13 FnC 13 Tare Cancellation Settings

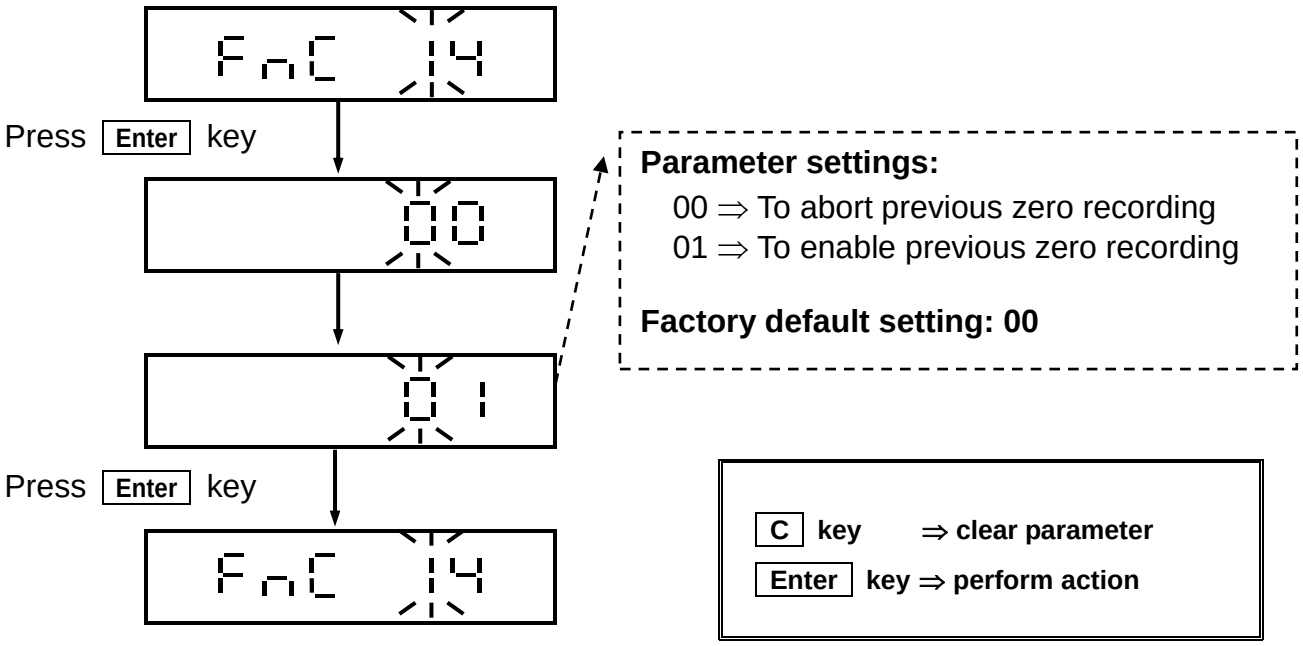
Select FnC 13 in the General Function settings mode 01 FnC to change the tare cancellation settings.



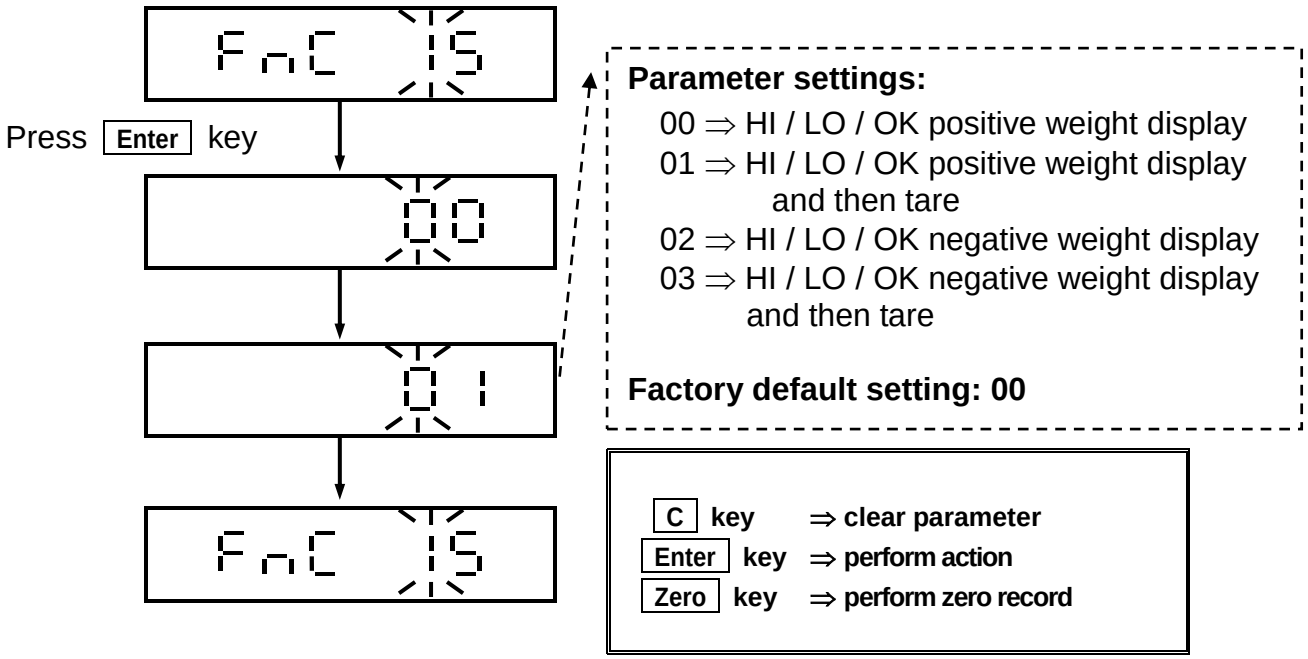
FNC 13 settings are not available for OIML and NTEP approval models.

3-1-14 FnC 14 Previous Zero Record Settings

Available in non-approved model only

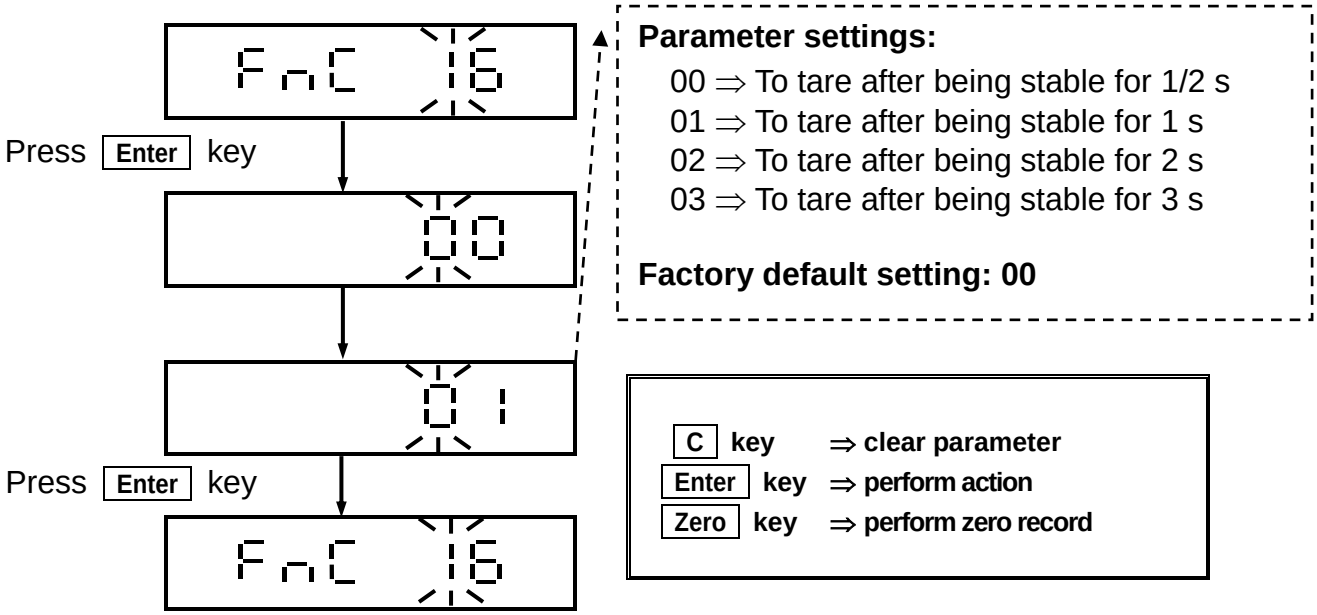


3-1-15 FnC 15 HI / LO / OK Positive / Negative Weight Settings



- **FNC 15** settings can only be available under “Limit Weight Mode” and “Target Weight Mode.”
- **FNC 15** settings can be arranged in groups to work with **FNC 03** and **FNC 04.**
- If **FNC 03** setting is “00” and **FNC 15** setting is “01” or “03”,immediate tare function is available.

3-1-16 FnC 16 HI / LO / OK Tare Time Settings

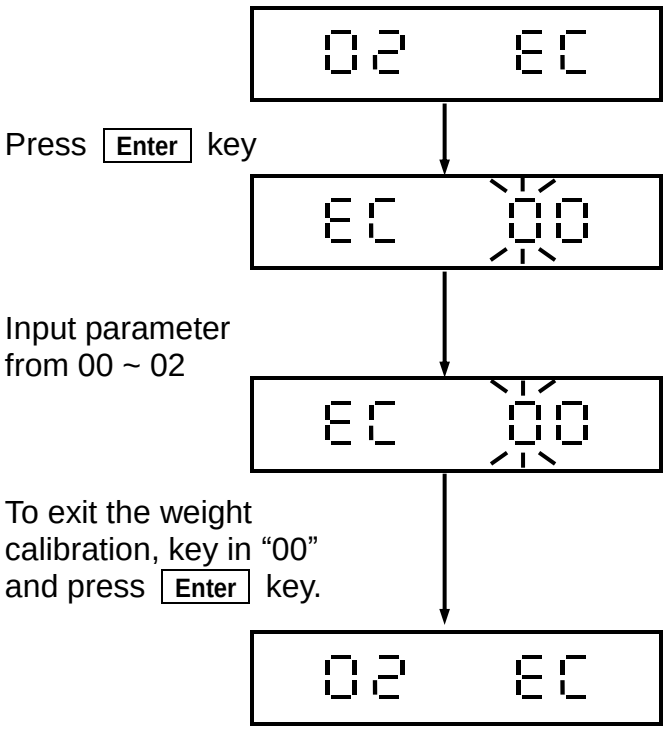


- **FNC 16** settings can be available only when **FNC 15** has been set to “01”.
- If **FNC 03** is set to “00”, immediate tare function is available whatever setting of **FNC 16** is.

3-2 02 EC Weight Calibration

There are 2 functions in the Weight Calibration settings mode from EC 01 to EC 02.

The function is disable when the parameter in CFn 01 is set as “01” or “03” (for approval model).

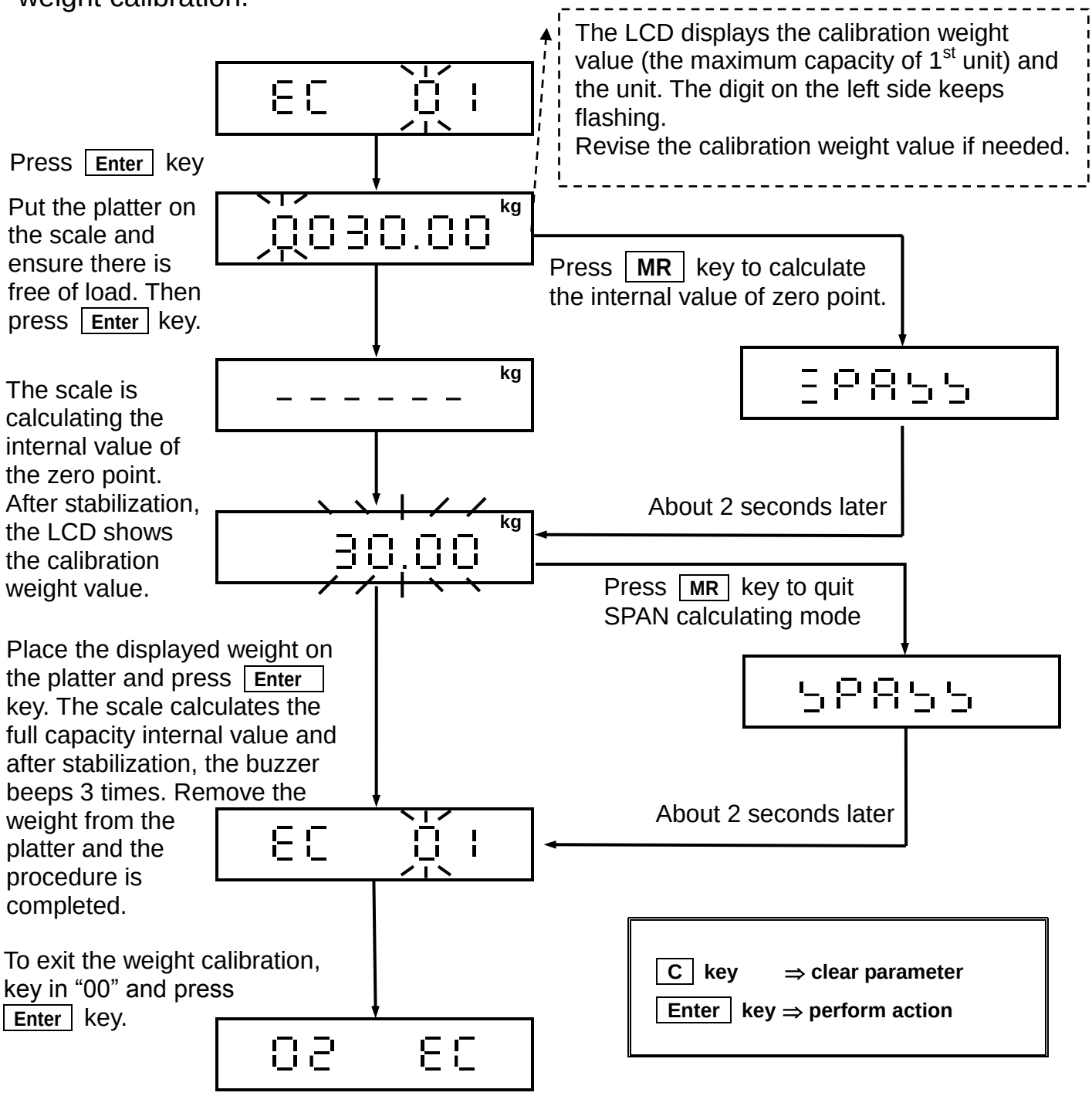


C key ⇒ clear parameter
Enter key ⇒ perform action

EC 00 ⇒ Exit the Weight Calibration Mode
EC 01 ⇒ Calibration
EC 02 ⇒ Restore to the Default setting

3-2-1 EC 01 Weight Calibration

Select EC 01 in the General Function settings mode 02 EC to set weight calibration.



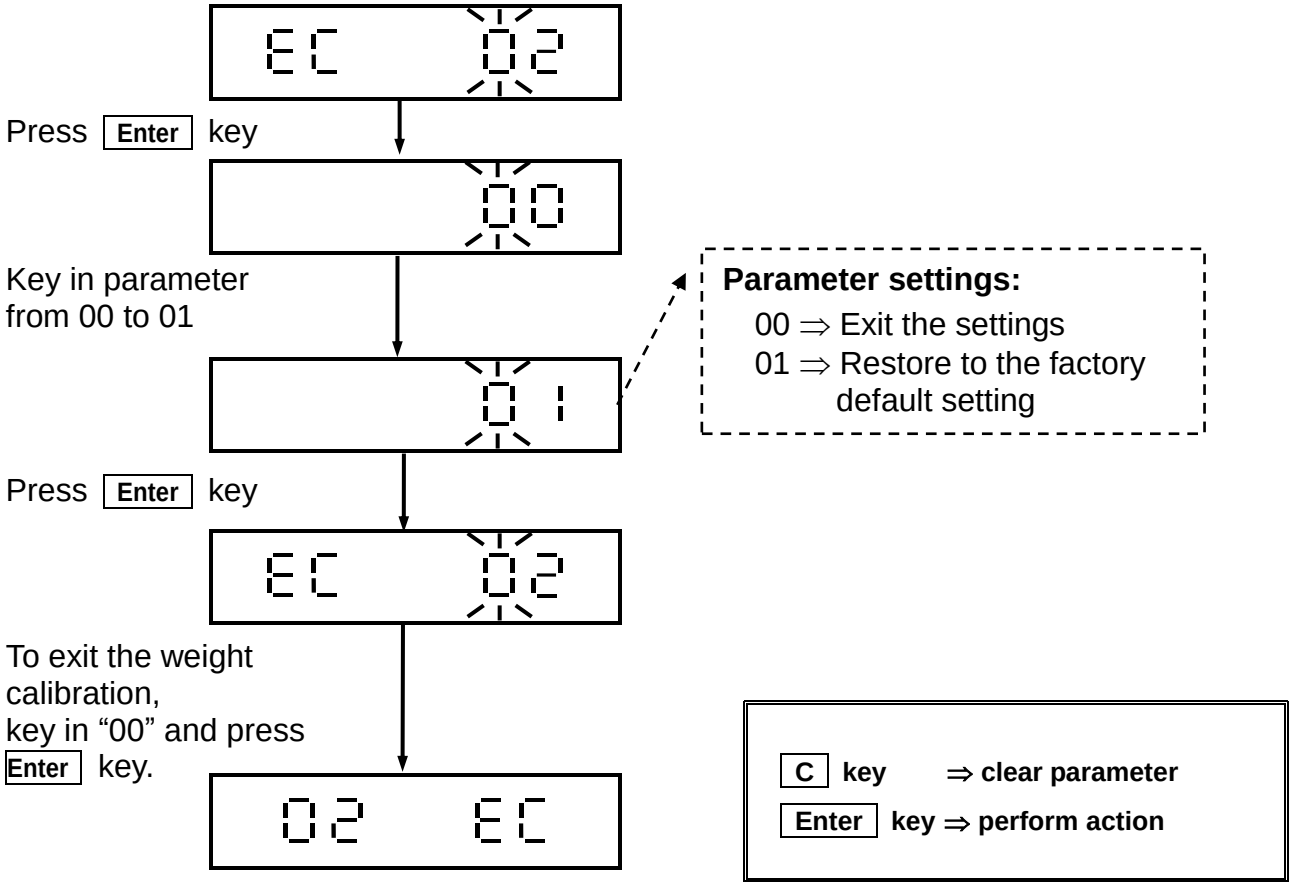
Weight calibration conditions:

The calibration procedure will not be carried out if the difference between the internal and external ratio of external calibration weight is > ±3 of that of initial factory calibration.

➔ The internal and external ratio of the initial factory calibration -3 < The internal and external ratio of external weight calibration < The internal and external ratio of the initial factory calibration +3

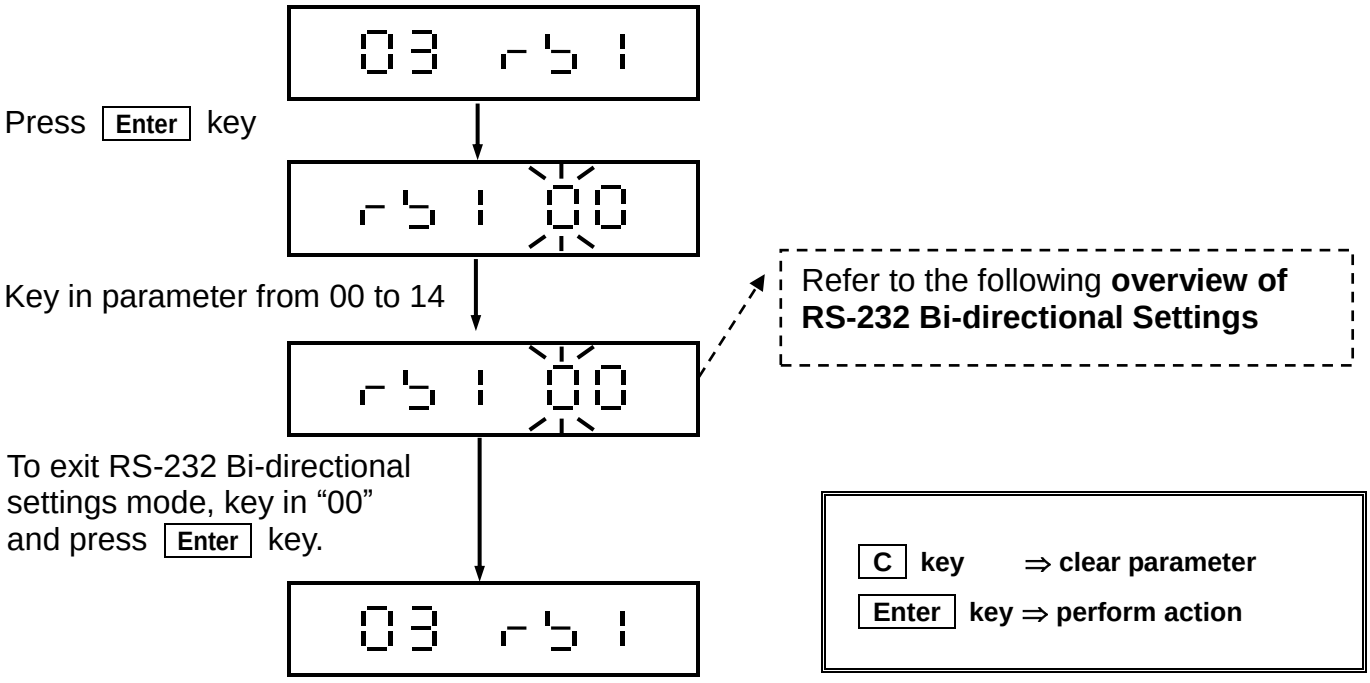
3-2-2 EC 02 Restore to the Default setting

Select EC 02 in the General Function settings mode 02 EC to restore the default setting.

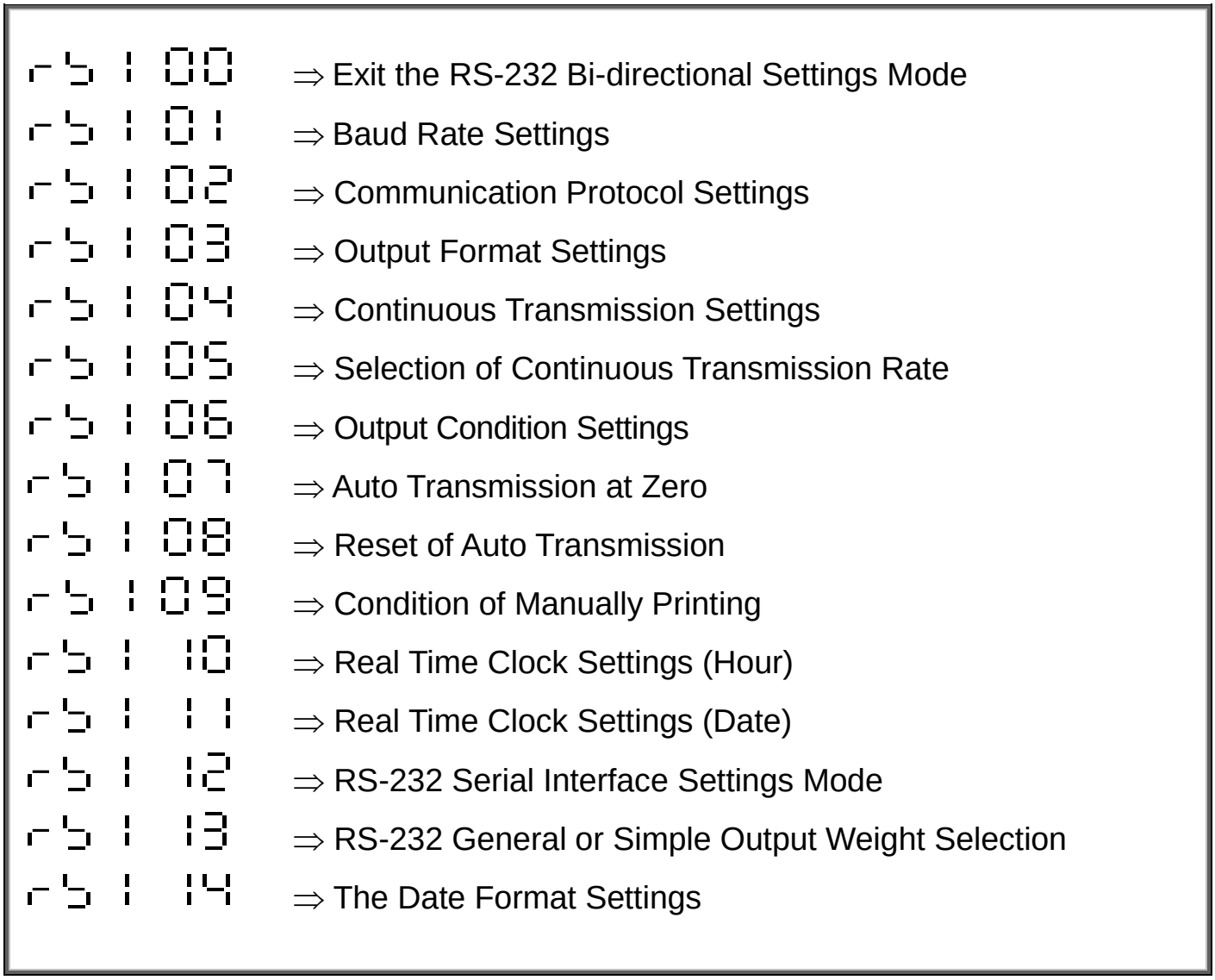


3-3 03 rs1 RS-232 Bi-directional Function Settings

There are 14 functions in the Bi-directional function settings mode from rs1 01 to rs1 14.



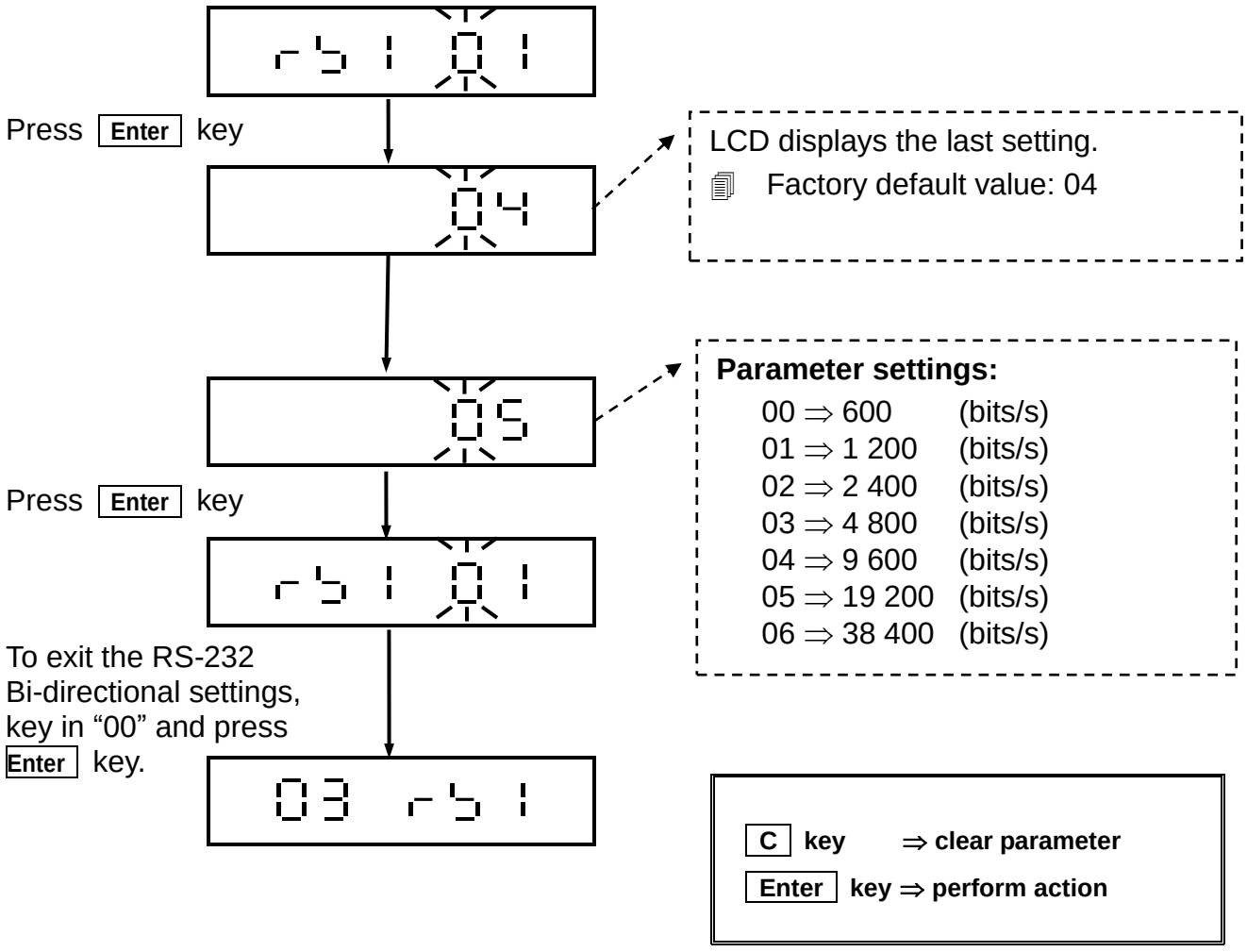
Overview of RS-232 Bi-directional



3-3-1 r51 01 Baud Rate Settings

Select r51 01 in the RS-232 Bi-directional settings mode

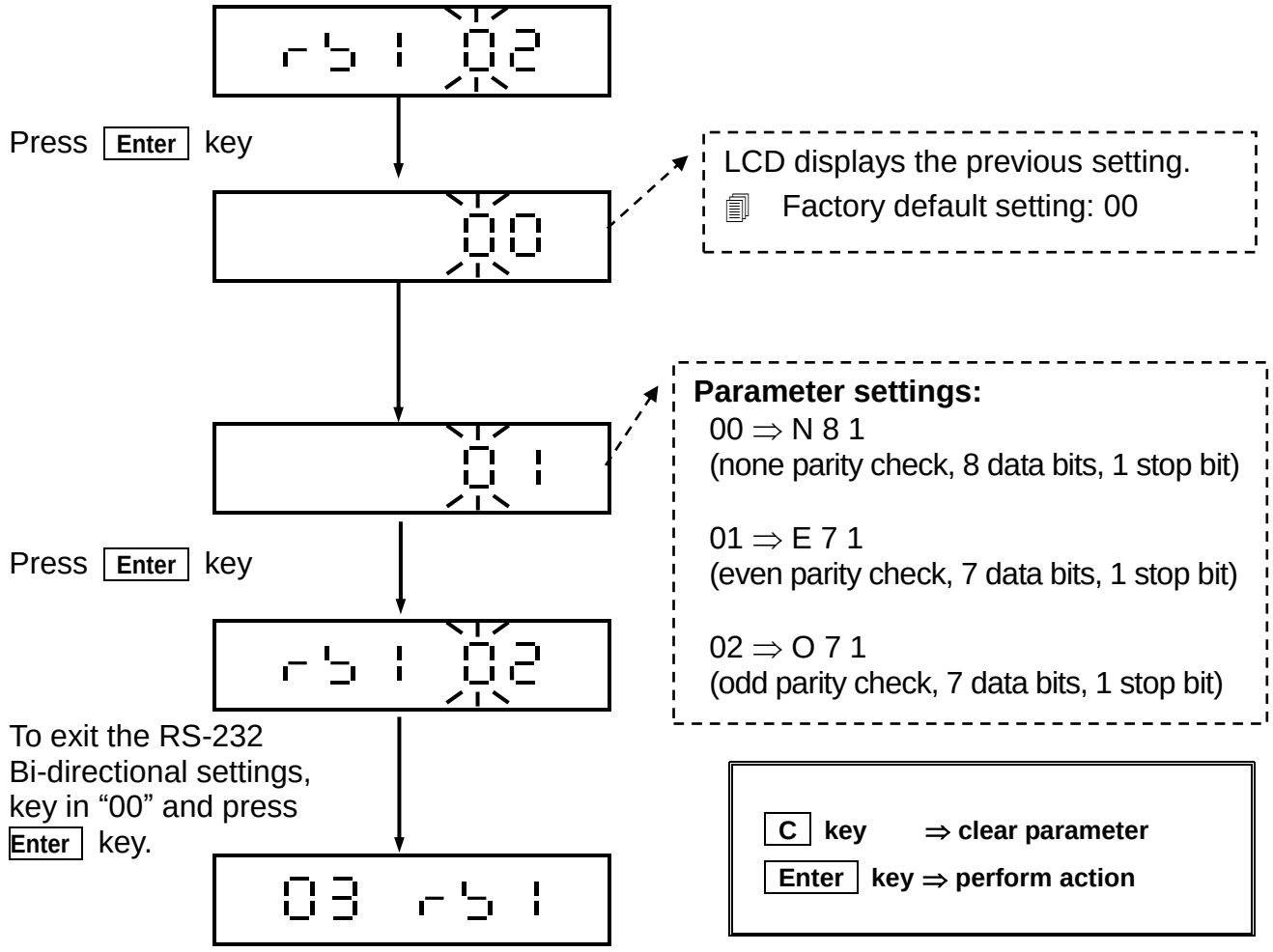
03 r51 to set the Baud Rate.



3-3-2 r51 02 Communication Protocol Settings

Select r51 02 in the RS-232 Bi-directional settings mode

03 r51 to set the communication protocol.

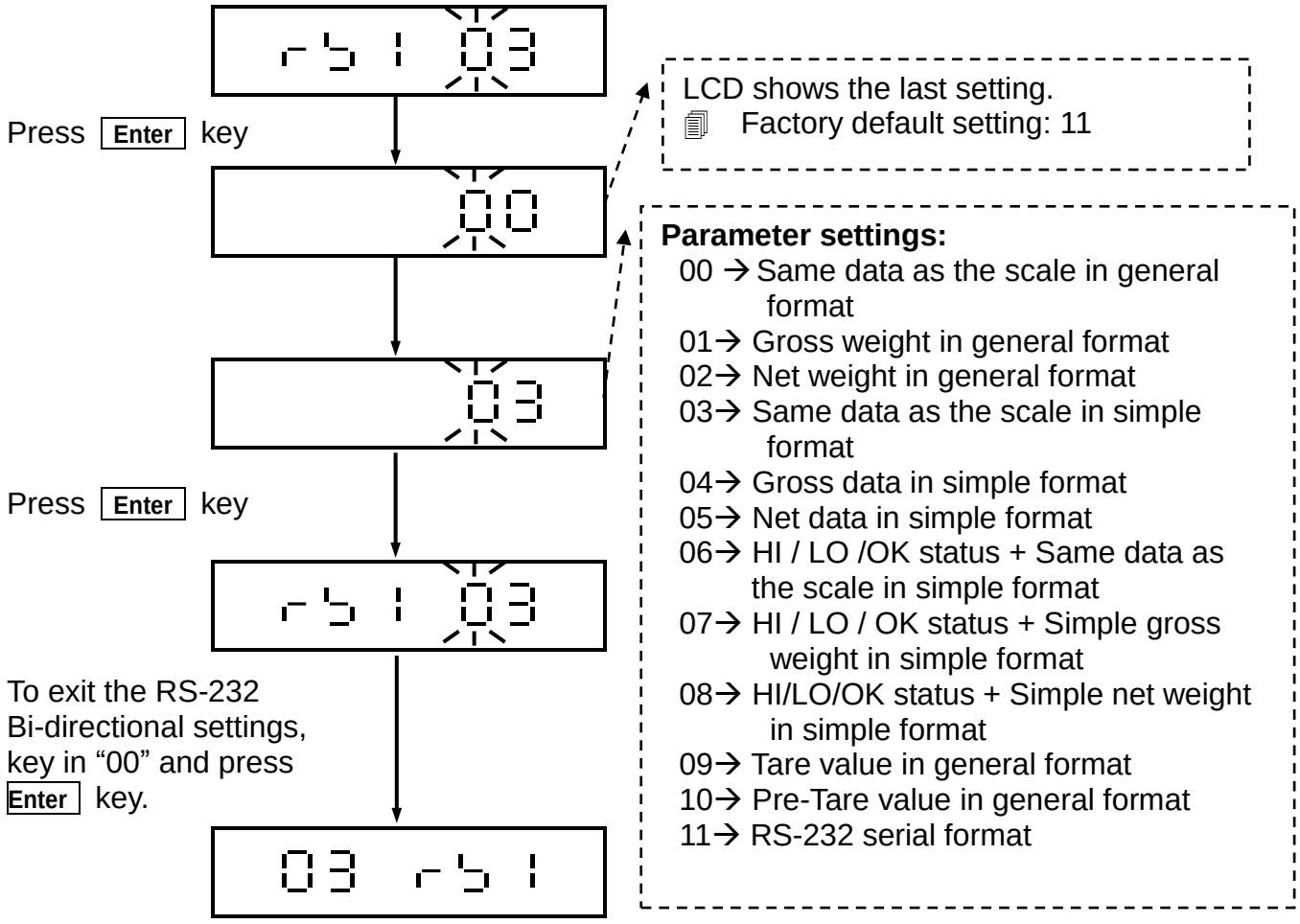


Relevant information please refer to **Appendix 1**

3-3-3 r51 03 Output Format Settings

Select r51 03 in the RS-232 Bi-directional settings mode

03 r51 to set the output format.



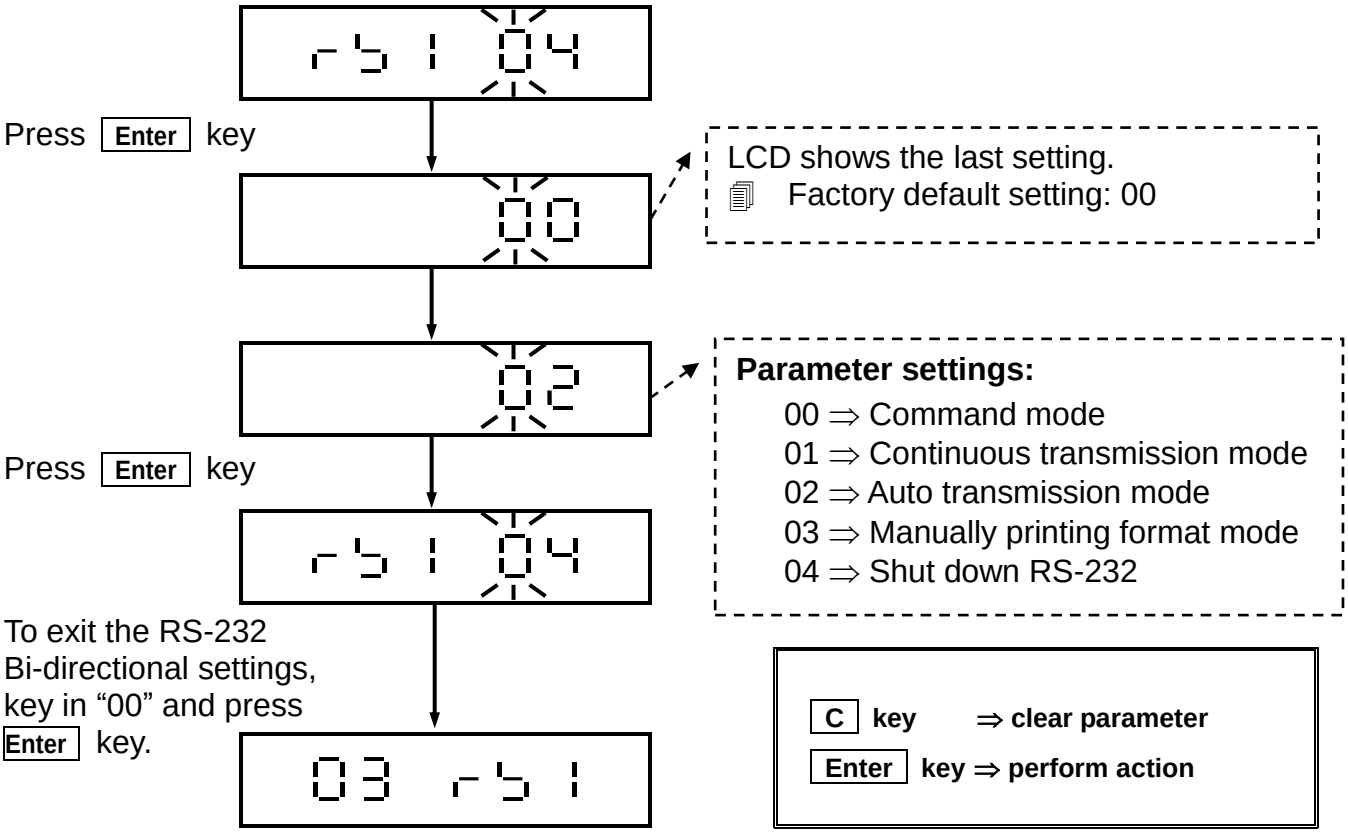
- When r106 and r109 are both set to 01 all options of r103 are allowed.
- When settings r106 or r109 is set to 00, only the options 00, 01, 02, 09, 10 of r103 are allowed.
- With parameter setting of "11", please then enter r112 to set the RS-232 serial interface.
- Relevant information please refer to **Appendix 1.**

C key ⇒ clear parameter
Enter key ⇒ perform action

3-3-4 r51 04 Continuous Transmission Settings

Select r51 04 in the RS-232 Bi-directional settings mode

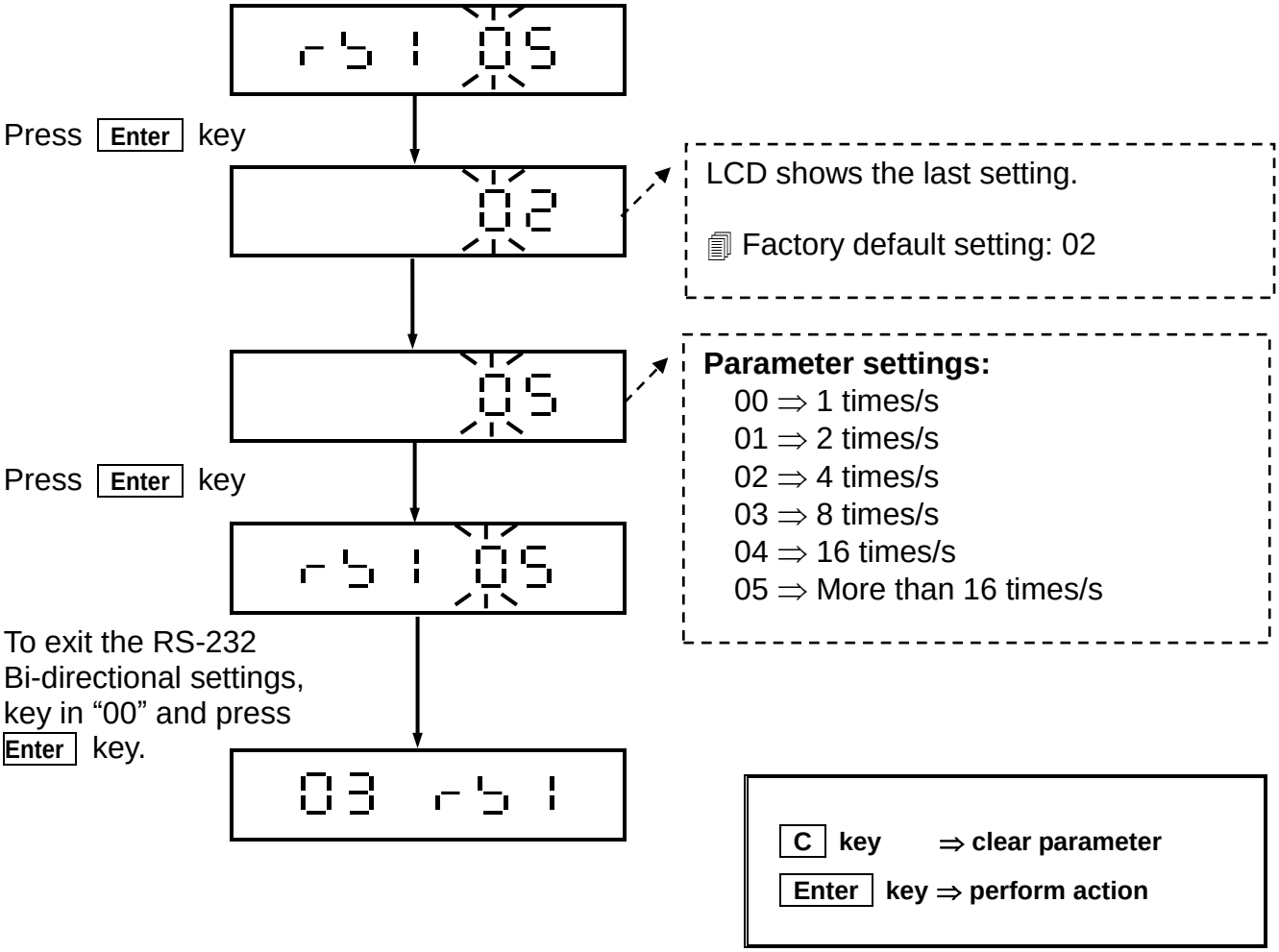
03 r51 to set the continuous transmission.



Relevant information please refer to **Appendix 1.**

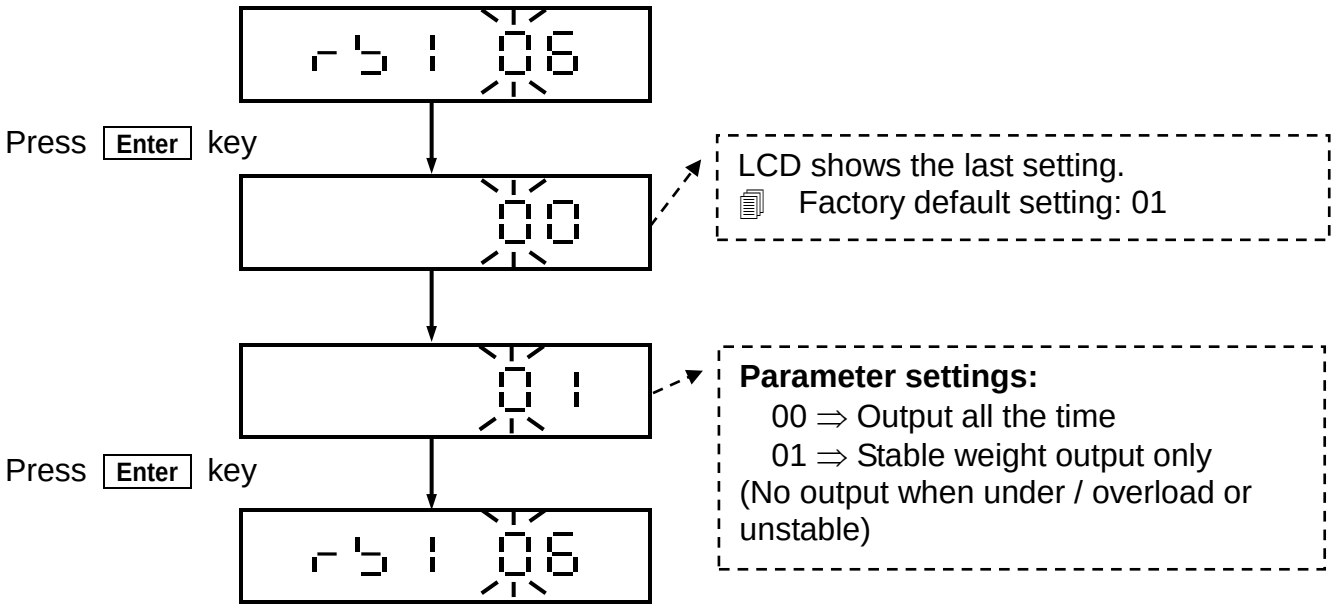
3-3-5 r51 05 Selection of the Continuous Transmission Rate

Select r51 05 in the RS-232 Bi-directional settings mode 03 r51 to set the continuous transmission rate.



3-3-6 r51 06 Output Condition Settings

Select r51 06 in the RS-232 Bi-directional settings mode 03 r51 to set the output condition.



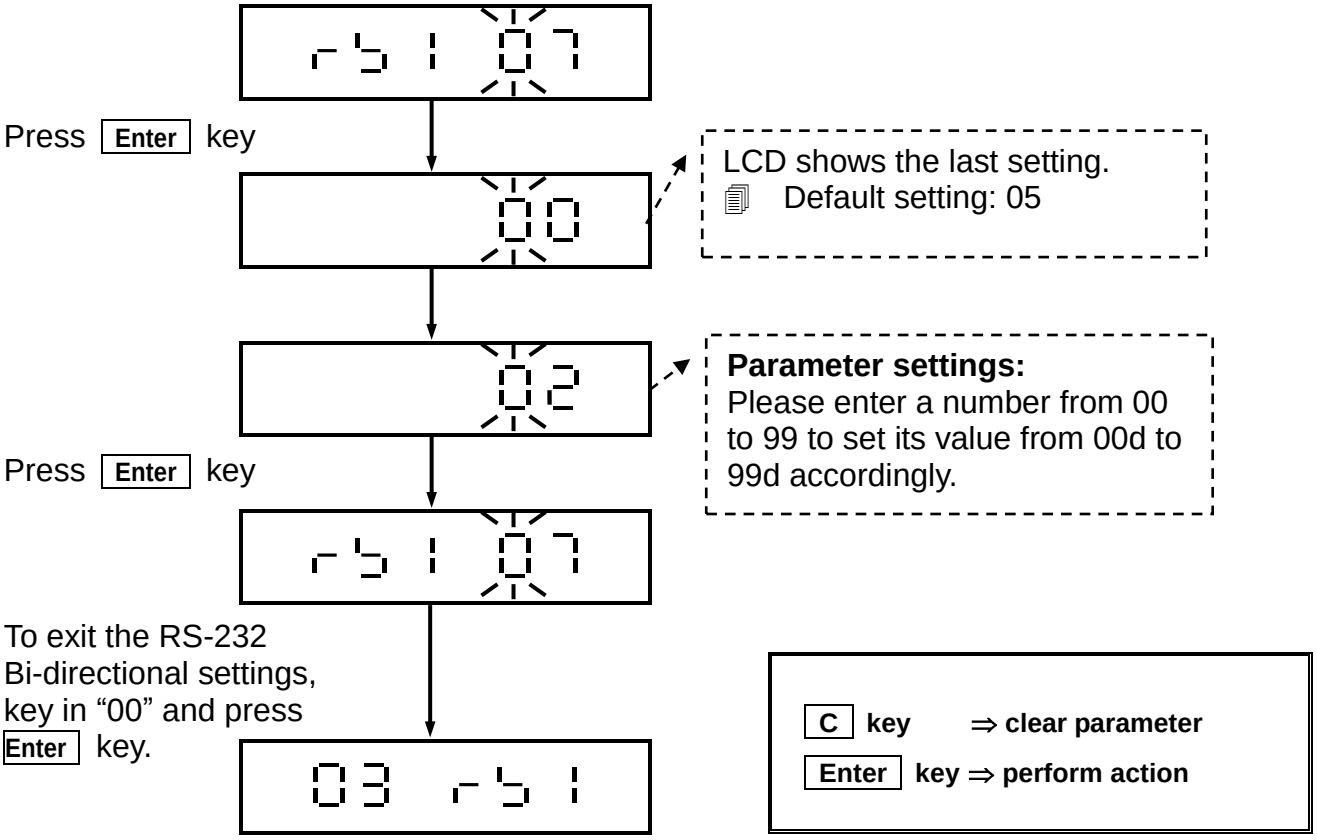
For approval models, r51 06 settings are available only when setting r51 03 is set to 00, 01, 02, 09, or 10.

C key ⇒ clear parameter
Enter key ⇒ perform action

3-3-7 r5 1 07 Auto Transmission at Zero

Select r5 1 07 in the RS-232 Bi-directional settings mode

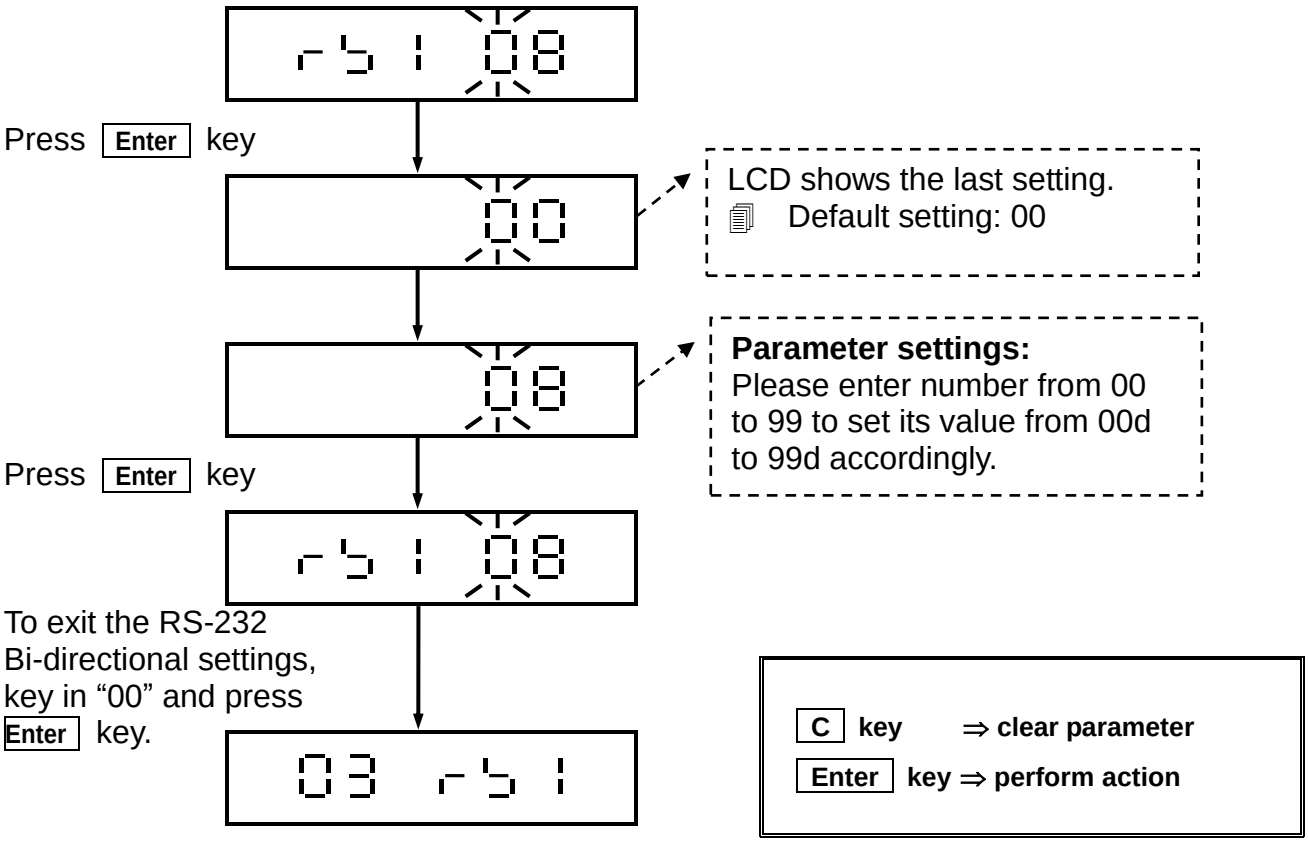
03 r5 1 to set the auto transmission at zero.



3-3-8 r51 08 Reset of Auto Transmission

Select r51 08 in the RS-232 Bi-directional settings mode

03 r51 to reset the auto transmission.



RS1 07 & RS1 08 Settings Instruction

1. Under auto transmission mode, if RS1 07 and RS1 08 are all set at “00”, no matter what weight it is, no any data of the weight will be transmitted out.

2. Under auto transmission mode, if RS1 07 is set between “00 ~ 99”, and RS1 08 is set at “00”, when the weight is over or under the zero range that set in RS1 07, after being stable, the data of weight will be transmitted out; if the weight is back to the zero range (RS1 07,) and then becomes higher or lower than the range again, after being stable, the data of weight will be transmitted out (the format is set in RS1 03.)

e.g.: When RS1 07 is set at “05”, RS1 08 is set at “00”, and RS1 04 is set at “02”, if the weight is less than 5g, no data of weight will be transmitted out.

Put on a weight of 6g, after being stable ⇒ ST, NT, +00000006g

If take off the weight of 6g, weight column displays “0g”

⇒ No transmission (because it’s in the zero range)

Put on a weight of 50g, after being stable ⇒ ST, NT, +0000050g

If take off the weight “48g,” weight column displays “2g”

⇒ No transmission (because it’s in the zero range)

Add the weight to 30g, after being stable ⇒ ST, NT, +0000030g

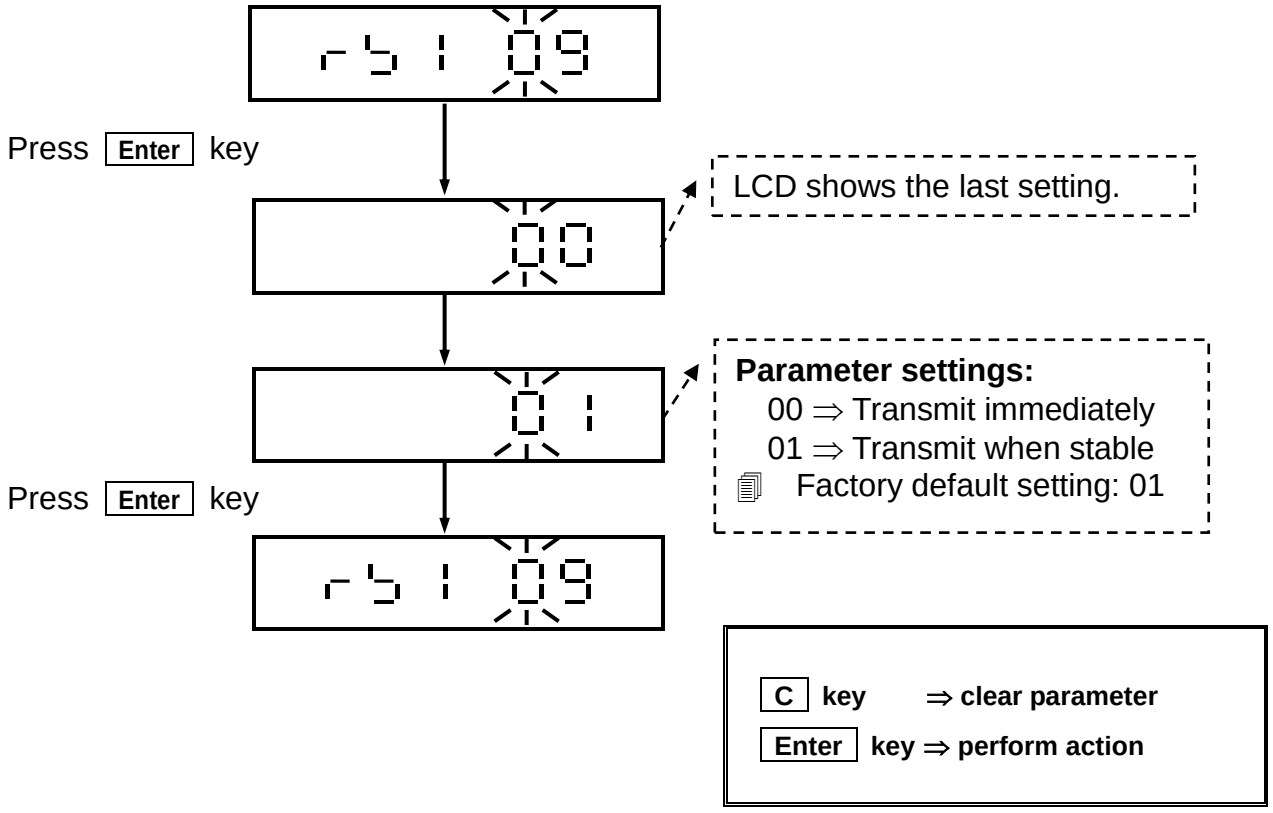
And so on…

3. Under auto transmission mode, if RS1 07 is set at “00” and RS1 08 is set between “00 ~ 99”, as long as the weight is higher than “0”, after being stable, the data of weight will be transmitted out. And then, the weight becomes the benchmark, as long as the weight changes higher or lower than the range of RS1 08, after being stable, the data of weight will be transmitted out. To sum up, on condition that the weight changes and after being stable, the data of weight will be transmitted out (the format is set in RS1 03.)

4. Under auto transmission mode, if RS1 07 is set between “00 ~ 99” and RS1 08 is set between “00 ~ 99”, as long as the weight is higher or lower than the zero range set in RS1 07, after being stable, the data of weight will be transmitted out. To sum up, on condition that the weight changes, not including “0”, after being stable, the data of weight will be transmitted out (the format is set in RS1 03.

3-3-9 r51 09 Condition of Manually Printing

Select r51 09 in the RS-232 Bi-directional settings mode 03 r51 to set the condition of manually printing.

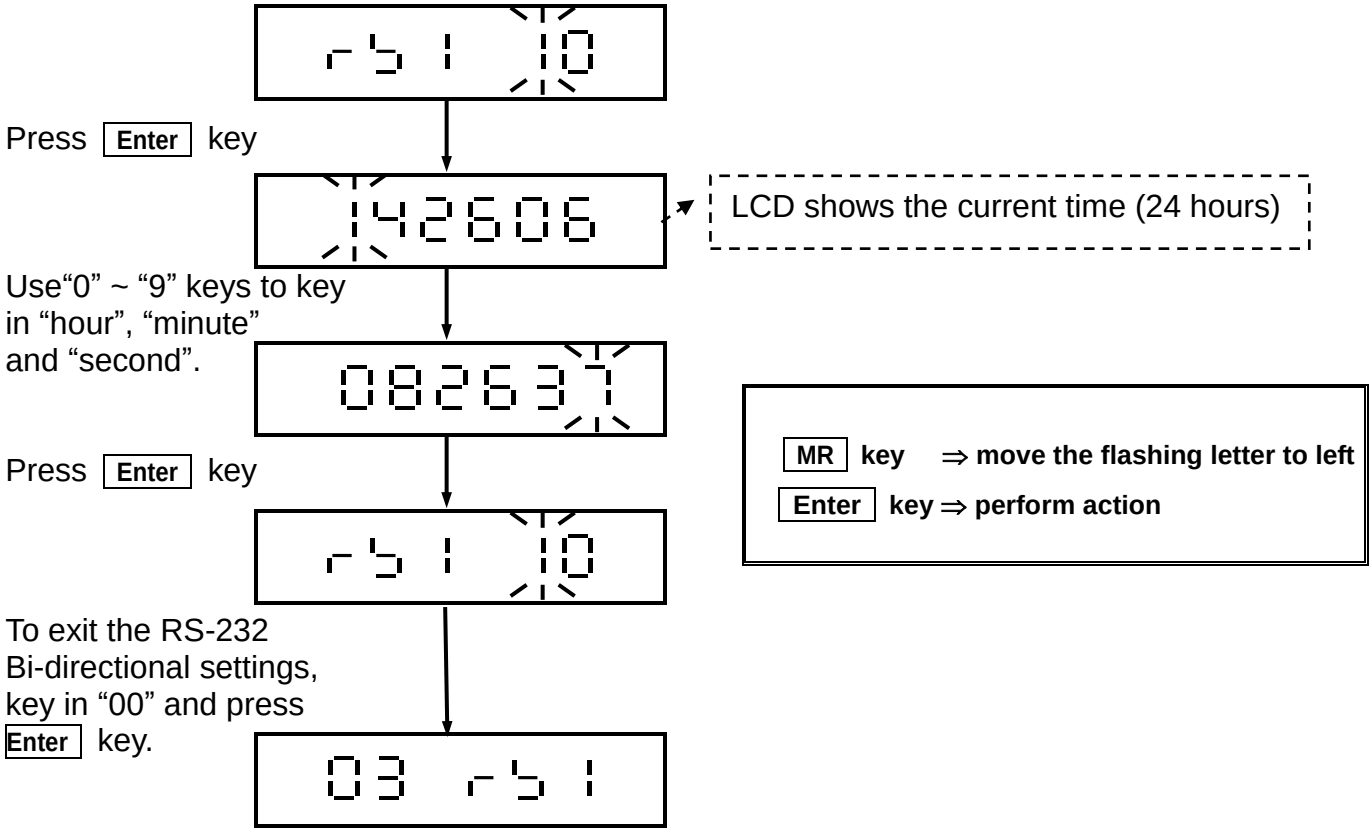


- For approval models, r51 09 settings are available only when settings r51 03 is set to 00, 01, 02, 09, or 10.
- Before r51 09 settings, ensure that you set r51 04 to 03, then press the PRINT key.

3-3-10 r51 10 Real Time Clock (Hour)

Select r51 10 in the RS-232 Bi-directional settings mode

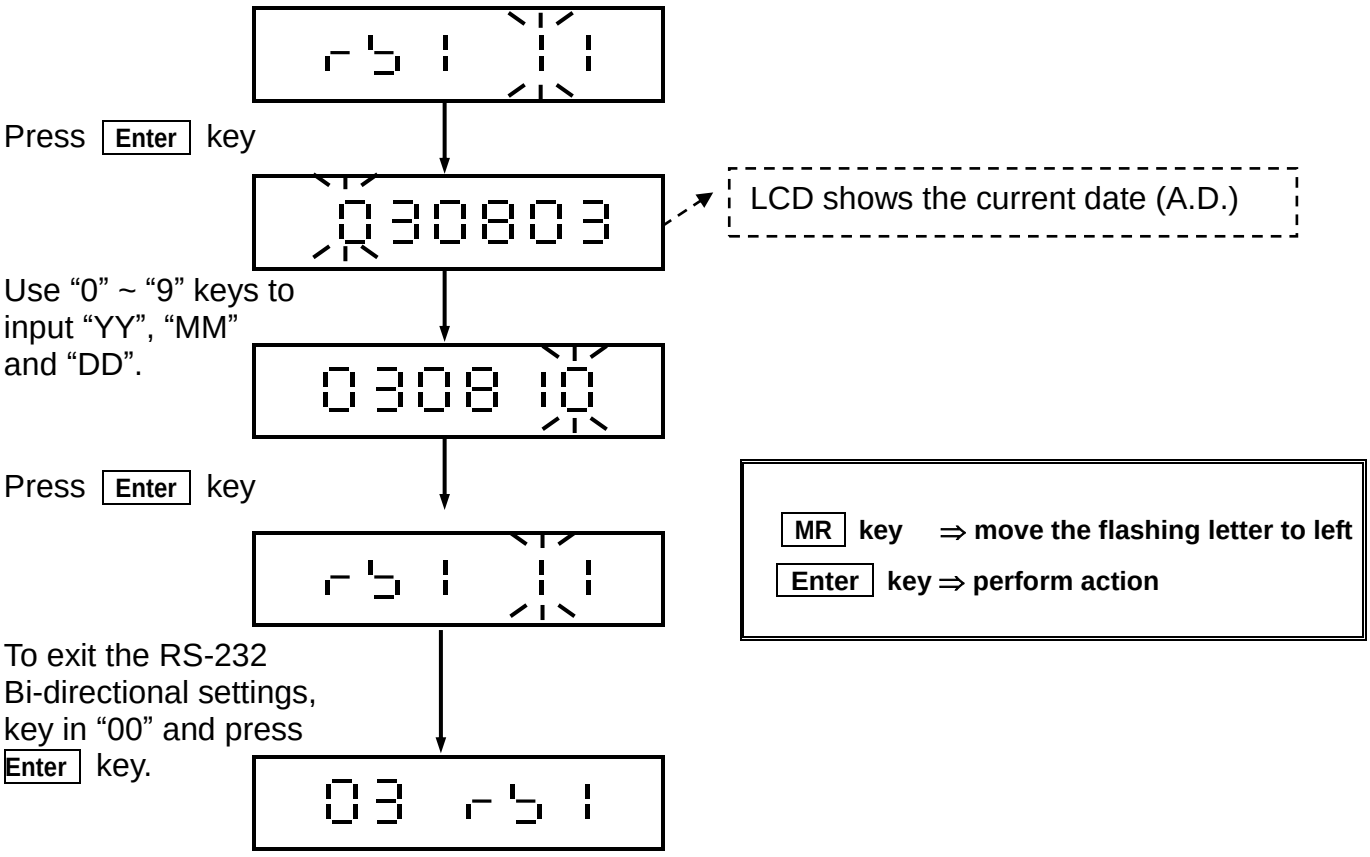
03 r51 to set the real time clock for time.



3-3-11 r5 1 11 Real Time Clock (Date)

Select r5 1 11 in the RS-232 Bi-directional settings mode

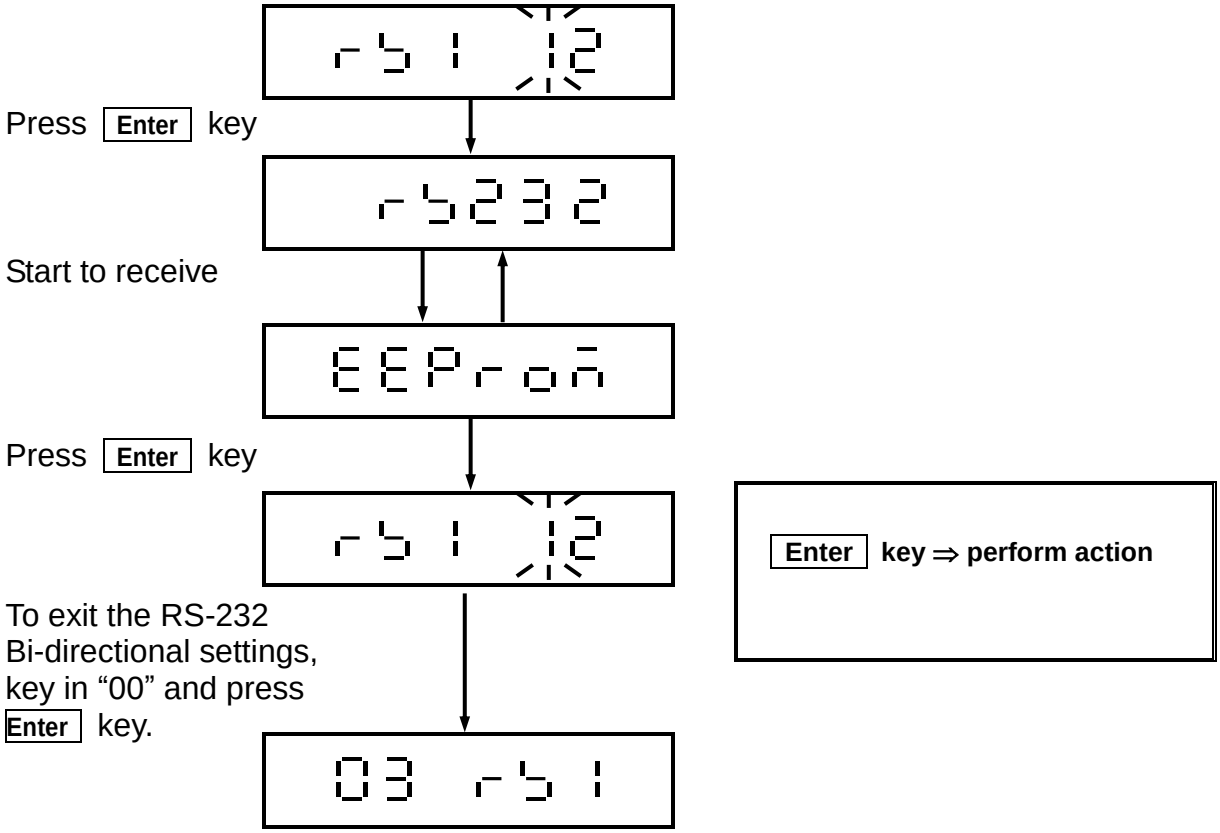
03 r5 1 to set the real time clock for date.



3-3-12 r5 1 12 RS-232 Serial Interface Settings Mode

ⓘ This function is enabled only when the parameter in r5 1 03 is set as “11”.

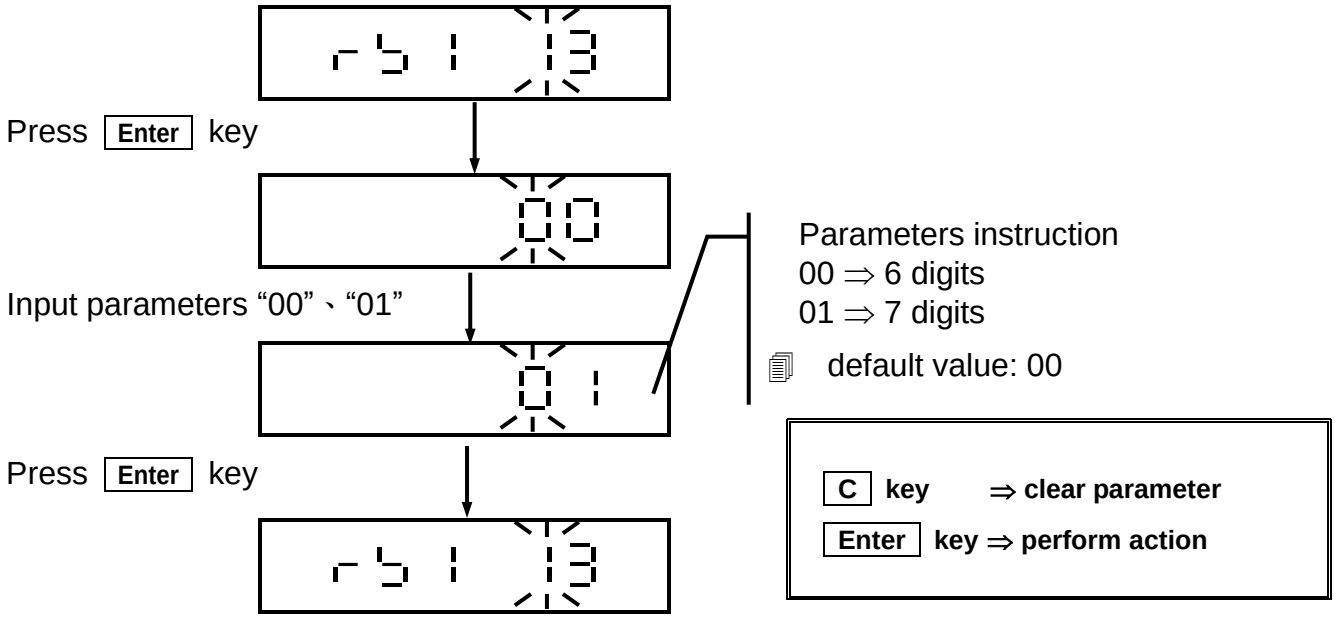
Select r5 1 12 in the RS-232 Bi-directional settings mode 03 r5 1 to set the RS-232 serial interface.



This r5 1 12 settings are available for most models. These settings may be unavailable for some specific models without bi-directional RS-232 serial interface component.

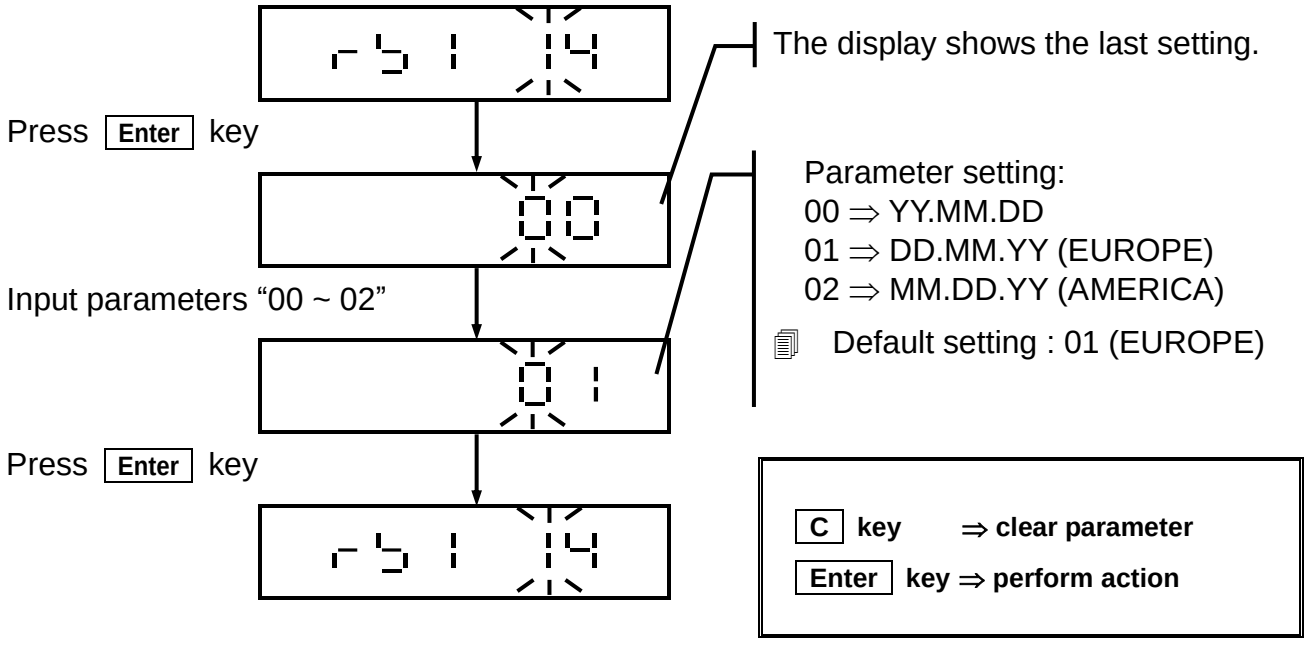
More information please refer to Appendix 1.

3-3-13 r S 1 13 RS-232 General or Simple Output Weight Selection



Please refer to RS-232 output data format at pages 64 ~ 65.

3-3-14 r S 1 14 The Date Format Settings



The date order printed will be in accordance with RS1 14.

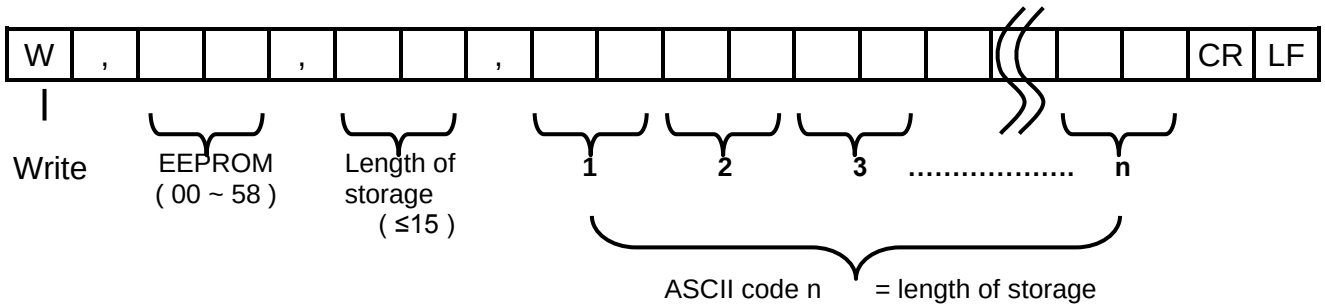
Appendix 1 RS-232 Serial Interface

🗁RS-232 Command format:

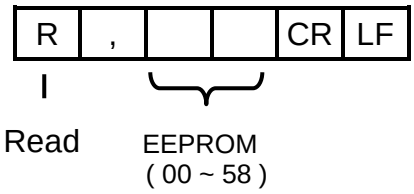
(1) The Host (PC) writes the data to the EEPROM of Slave (Scale).
(2) The Host (PC) reads the data in the EEPROM of Slave (Scale), and the Slave (Scale) has the data feedback to the host (PC).

Content planning

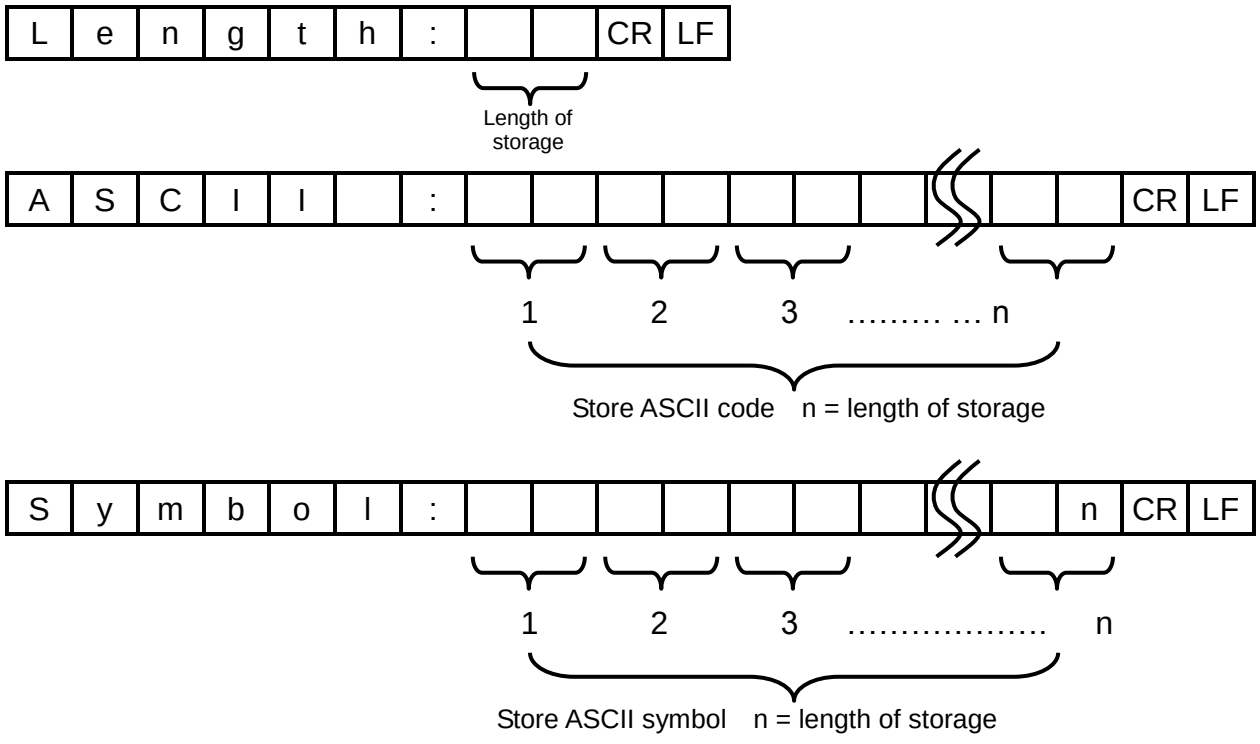
1.



2.



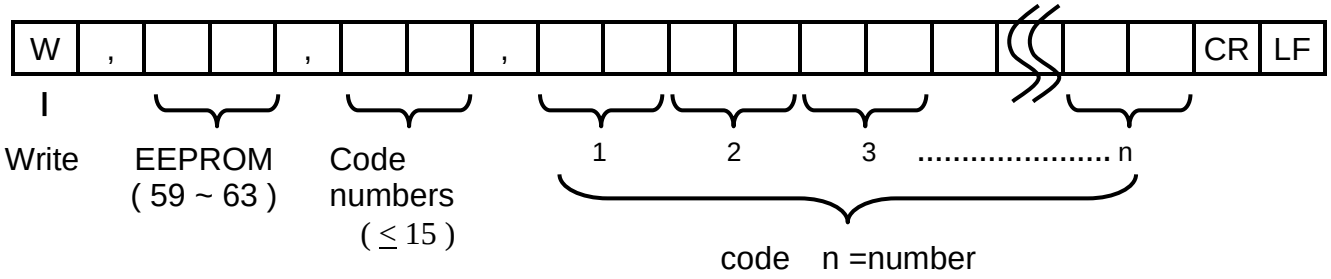
Write above two commands to the Host (PC), the Slave (Scale) has the following format feedback to the Host (PC).



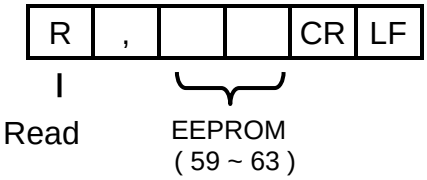
Code	First EEPROM address	Item		Final EEPROM address
00	00	Gross		01
01	02	Net		03
02	04	Tare		05
03	06	Pre-Tare		07
04	08	Target Weight		09
05	10	Range		11
06	12	High Limit		13
07	14	Low Limit		15
08	16	Percent (%)		17
09	18	**EEPROM address**	Weight units	24
		19	First unit EEPROM address	
		20	Second unit EEPROM address	
		21	Third unit EEPROM address	
		22	Forth unit EEPROM address	
		23	Fifth unit EEROM address	
10	25	Time		26
11	27	Date		28
12	29	**EEPROM address**	HI、LO、OK status	33
		30	LO EEPROM address	
		31	OK EEPROM address	
		32	HI EEPROM address	
13	34	**EEPROM address**	Stable (Unstable) sign	37
		35	Stable sigh EEPROM address	
		36	Unstable sign EEPROM address	
14	38	Accumulations quantity		39
15	40	Accumulations total weight		41
16	42	Check the x weight		43
17	44	User’s definition 1		
18	45	User’s definition 2		
19	46	User’s definition 3		
20	47	User’s definition 4		
21	48	User’s definition 5		
22	49	User’s definition 6		
23	50	User’s definition 7		
24	51	User’s definition 8		
25	52	User’s definition 9		
26	53	User’s definition 10		
27	54	User’s definition 11		
28	55	User’s definition 12		
29	56	User’s definition 13		
30	57	User’s definition 14		
31	58	User’s definition 15		

Format

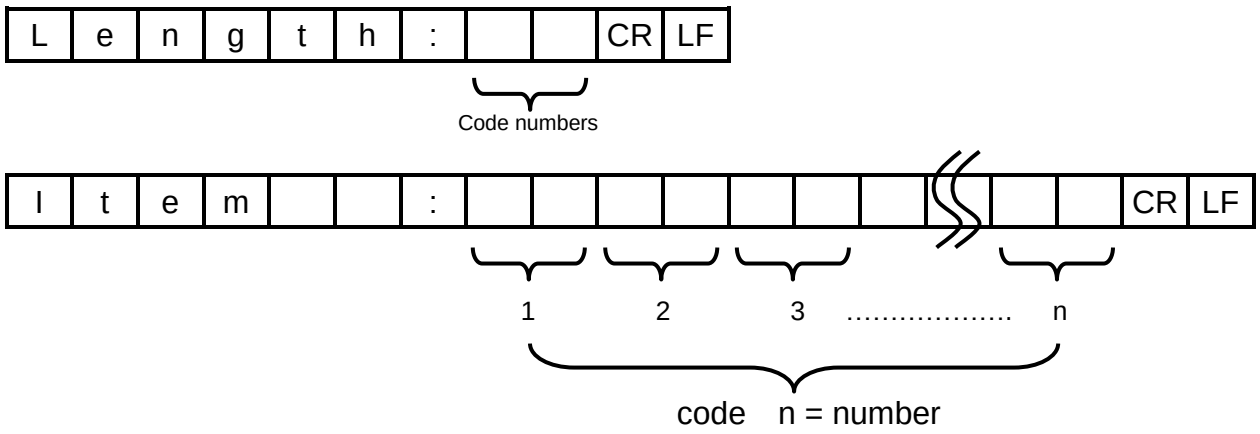
1.



2.



Write above two commands to the Host (PC), the Slave (Scale) has the following format feedback to the Host (PC).



EEPROM address	Format	Transmission
59	Simple Format	Press “Print” key in Simple Weight mode
60	Limit Format	Press “Print” key in Limit Weight mode
61	Target Format	Press “Print” key in Target Weight mode
62	Transmission of accumulation clear	Press “Enter” key
63	Control code	Transmit one time when turn on the scale

Code function

Code+80 ⇒ Do not print the first and final letters

Code+40 ⇒ Display zero by blank

Code+B0 ⇒ Do not print the first and final letters and display zero by blank

Example:

Tare Code ⇒ 03

03+80 = 83 ⇒ Do not print the first and final letters of Tare

03+40 = 43 ⇒ Display zero by blank, such as 000.00kg

03+B0 = B3 ⇒ Do not print the first and final letters, and display zero when the content of Tare value is blank.

Command Mode

Command Format A

Host | Command

Slave | Command

MZ	Zero	SM	Manually transmit
MT	Tare	SO	Command mode
MG	Gross weight	UA	Switch to the first unit
MN	Net weight	UB	Switch to the second unit
MM	Switch operation mode	UC	Switch to the third unit
CT	Clear Tare value	UD	Switch to the forth unit
CP	Clear Pre-Tare value	UE	Switch to the fifth unit
SA	Auto transmit	%	Stop continuous transmission and enter the command mode
SC	Continuous transmission		

Note : UA ~ UE settings are dependent on the model of the scale

Command Format B

Host | Command

Slave | Data

RW	Read current weight	RH	Read Gross (simple)
RG	Read Gross weight	RI	Read Net (simple)
RN	Read Net weight	RJ	Read comparison situation + current display of weight (simple)
RT	Read Tare	RK	Read comparison situation + Gross (simple)
RB	Read current display of weight (simple)	RL	Read comparison situation + Net (simple)
RE	Read Pre-Tare		

Note : ① add % before the command to read continuously
② add # before the command to transmit a stable value

Read Weight Comparison Settings Value

RS○○□□ **○○: group (00 ~ 09)** **□□: settings item**

LO	Read LO settings value	**RG**	Read Range settings value
HI	Read HI settings value	**PT**	Read Pre-Tare settings value
OK	Read Target settings value		

Note: No group number for PT.

EX:	RSPT＜CR＞＜LF＞	Read Pre-Tare settings value
ANS:	RSPTXXXXXX＜CR＞＜LF＞	
EX:	RS03RG<CR><LF>	Read the 3rd group of Range settings value
ANS:	RS03RGXXXXXX<CR><LF>	

Command Format C

Host	Command+ Data	
Slave		Command+ Data

Write Weight Comparison Settings Value **WS○○□□XXXXXX**

○○: group (00 ~ 09) **□□:** settings item **XXXXXX:** Settings value

LO	Write LO settings value
HI	Write HI settings value
OK	Write Target settings value
RG	Write Range settings value
PT	Write Pre-Tare settings value

EX: WSPTXXXXXX＜CR＞＜LF＞ Write Pre-Tare settings value
ANS: WSPTXXXXXX＜CR＞＜LF＞
EX: WS03RG XXXXXX＜CR＞＜LF＞ Write Range settings value
ANS: WS03RG XXXXXX＜CR＞＜LF＞

The above 3 command formats are all Bi-directional RS-232 commands.

- Error messages on Slave (Scale):

  E1: Wrong command
  E2: Command format error (Wrong parameters)
  E3: Command not recognized

Output Data Format

1. Seven digits (without including one decimal point)

Weight format

Gross	S	T	,	G	S	,	+	0	1	2	3	4	5	6	7	SP	SP	o	z	CR	LF
Net	S	T	,	N	T	,	+	1	.	2	3	.	4	5	6	t	l	.	g		
Tare	S	T	,	T	R	,	+	0	1	2	.	3	4	5	6	SP	SP	k	g		
Plus OL	O	L	,	G	S	,	+	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Minus OL	O	L	,	G	S	,	-	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Unstable	U	S	,	G	S	,	+	0	1	2	3	4	.	5	6	SP	SP	l	b		
Pre-Tare	S	T	,	P	T	,	+	0	1	2	3	4	5	6	7	SP	SP	SP	g		

Simple format

Gross	+	0	1	2	3	4	5	6	7	CR	LF
Net	+	1	.	2	3	.	4	5	6		
Tare	+	0	1	2	.	3	4	5	6		
Plus OL	+	SP	SP	SP	SP	SP	SP	SP	SP		
Minus OL	-	SP	SP	SP	SP	SP	SP	SP	SP		

Comparison status + Simple format

Byte0	Byte1	Byte2	+/-	1	.	2	3	.	4	5	6	CR	LF

Byte0 : HI 30H / 31H
Byte1 : OK 30H / 31H
Byte2 : LO 30H / 31H

2. Six digits (without including one decimal point)

General weight format

Gross weight	S	T	,	G	S	,	+	1	2	3	4	5	6	7	SP	SP	o	z	
Net weight	S	T	,	N	T	,	+	.	2	3	.	4	5	6	t	l	.	g	
Tare	S	T	,	T	R	,	+	1	2	.	3	4	5	6	SP	SP	k	g	
Positive overload	O	L	,	G	S	,	+	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	CR	LF
Negative overload	O	L	,	G	S	,	-	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Unstable	U	S	,	G	S	,	+	1	2	3	4	.	5	6	SP	SP	l	b		
Pre-tare	S	T	,	P	T	,	+	1	2	3	4	5	6	7	SP	SP	SP	g		

Simple format

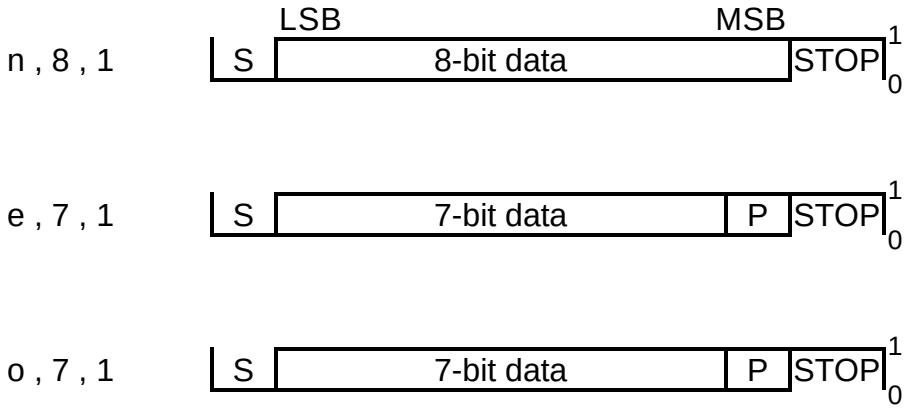
Gross weight	+	1	2	3	4	5	6	7		
Net weight	+	.	2	3	.	4	5	6		
Tare	+	1	2	.	3	4	5	6	CR	LF
Positive overload	+	SP	SP	SP	SP	SP	SP	SP		
Negative overload	-	SP	SP	SP	SP	SP	SP	SP		

Comparative condition + Simple format

Byte0	Byte1	Byte2	+/-	.	2	3	.	4	5	6	CR	LF

Byte0 : HI 30H / 31H
Byte1 : OK 30H / 31H
Byte2 : LO 30H / 31H

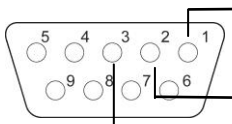
Serial Data Transfer / Receive Format

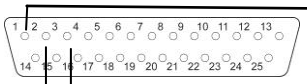


Notes:
S : Start bit
STOP: Stop bit
P : Parity bit

RS-232 Cable Connection Illustrations

Open the housing to connect RS-232 cable with RS-232 connector locating at the right-bottom of the main board, take the most normal connection way of 9PIN and 25PIN as an example, please refer to below illustration:

PC	PIN	Function	Female 9 PINS	PIN	Function	PH3
	2	T x D		1	SG	
	3	R x D		2	T x D	
	5	SG		3	R x D	

Printer	PIN	Function	Male 25 PINS	PIN	Function	PH3
	2	R x D		1	SG	
	3	T x D		2	T x D	
	7	SG		3	R x D	

If take the other ways, please recognize the signals and follow the above rules. After finishing, please lock the housing tightly according to the tighten or loosen orders and screwing method which attached described in the Special Notice at the beginning of this manual.

Appendix 2 Error Messages

E0 ⇒ EEPROM does not function.

E 1 ⇒ Zero value* after power on is too high.

E2 ⇒ Zero value* after power on is too low.

E4 ⇒ The internal value is unstable.

E 10 ⇒ The platter is slanted (i.e. not level).

oF ⇒ A/D IC is over the resolution.

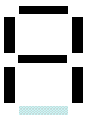
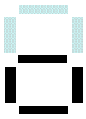
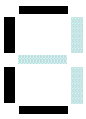
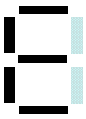
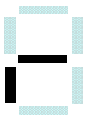
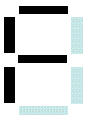
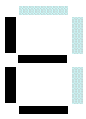
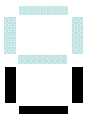
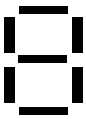
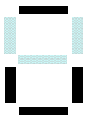
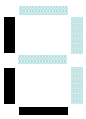
When the above error messages occur, please contact your supplier for professional help immediately.

oL ⇒ The weight on the platter is over the capacity + 9 division.

When the above error message occurs, please take away some of your objects on the platter.

*For Sri Lanka approval and non-approval models, zero value inspection range and return-to-zero range is less than or equal to 3%.

Appendix 3 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	
°C		M		Z