PH IP67 Waterproof Checkweighing 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.

SAFETY AND GENERAL INFORMATION

1. Please keep the indicator in a cool place. Do not store it at 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 weigh pan to any physically strong shock.

4. The load placed on the weigh pan must not exceed the maximum weighing capacity of the scale.

3. The indicator is IP67 waterproof design. Only the cables with Φ3~Φ5.5mm caliber could be used or will affect the waterproof design.

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.

SPECIAL NOTICE

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

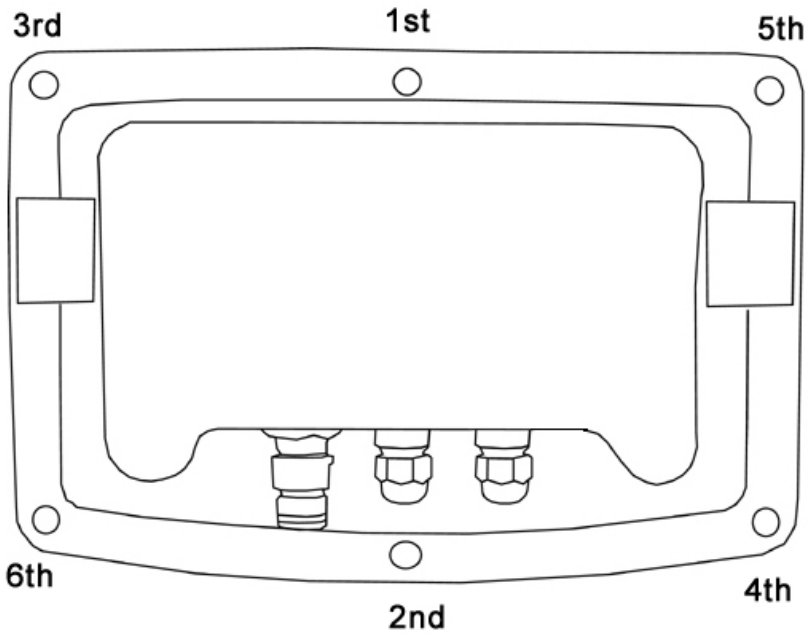
Before opening the stainless case, please ensure the indicator is free of moisture, if necessary, the liquid should be wiped off.

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:

After the desired steps are completed, screw the case with 12 kgf-cm in the following orders. Do not screw tightly before all screws are in the positions.

Screwing orders:



PREPARING TO USE THE SCALE

1. Locate the scale on a firm level surface free from vibration 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 weigh pan before the scale is switched on and avoid leaving weight on the pan for long periods of time.
5. All goods weighed should be placed in the centre of the weigh pan for accurate weighing. The overall dimensions of the goods being weighed should not exceed the dimension of the weigh pan.
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 15~20 minutes warm up before operation to ensure best accuracy.
8. Please note when the  symbol keeps flashing on the screen, the batteries need to be recharged.

CHAPTER 1 INTRODUCTION

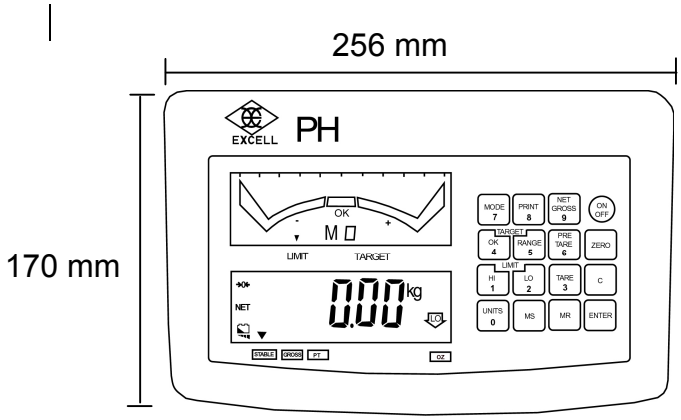
1-1 Features

- **IP 67 waterproof:** moisture-proof, mist-proof, with IP67 waterproof and dustproof
- **Adjustable weighing speed:** three weighing speed modes (fast, moderate, and slow) provided
- **Selectable units modes:** Kilogram (kg), gram (g), pound (lb), and ounce (oz) weighing modes
- **HI, OK, LO indication:** Large LCD display with HI, OK, LO indication and the signals for Relay output with max. current 7A, max. voltage 265Vac, 30Vdc
- **High resolution:** the maximum external resolution is 1/30000, and the internal is 1/300000. (Input voltage should be over 6mV)
- **Practical functions:** 10 preset setting, Percentage display, Simple/Limit/Target operation modes, Pre-tare function, Net/Gross switch function, Auto backlight, RTC setting 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

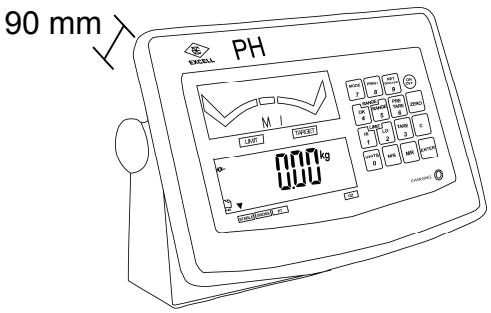
- Analog Input and A/D Conversion: Input Sensitivity 0.18μ V/d or more
- Input Signal Range: -2mV~+16mV
- Input Zero Range: -1mV~+5mV
- Load Cell Excitation: 5V DC
- Load Cell Drive Capacity: up to 4 load cells at 350Ω/load cell
- Non-linearity: 0.01% of full scale
- A/D Resolution: 1,000,000 counts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

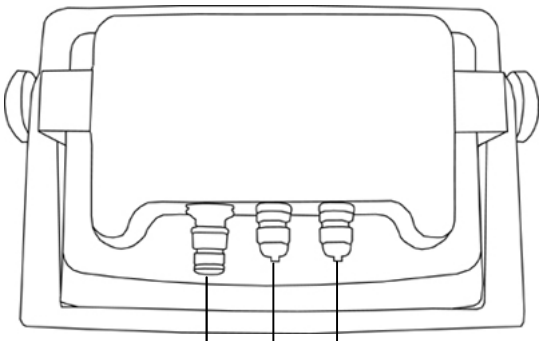
1-3 Scale Appearance



The package includes:
1. Indicator 1 off
2. Power Cable 1 off
3. User Manual 1 off

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





RS-232 connector
Load cell connector
Power cable connector

(For RS-232 and load cell, only the cables with ϕ 3~ϕ 5.5mm caliber could be used or will affect the waterproof design)

1-4 Power Supply

Power Supply Selection

1. 6V / 4.5Ah Rechargeable battery
2. AC adaptor DC 9V

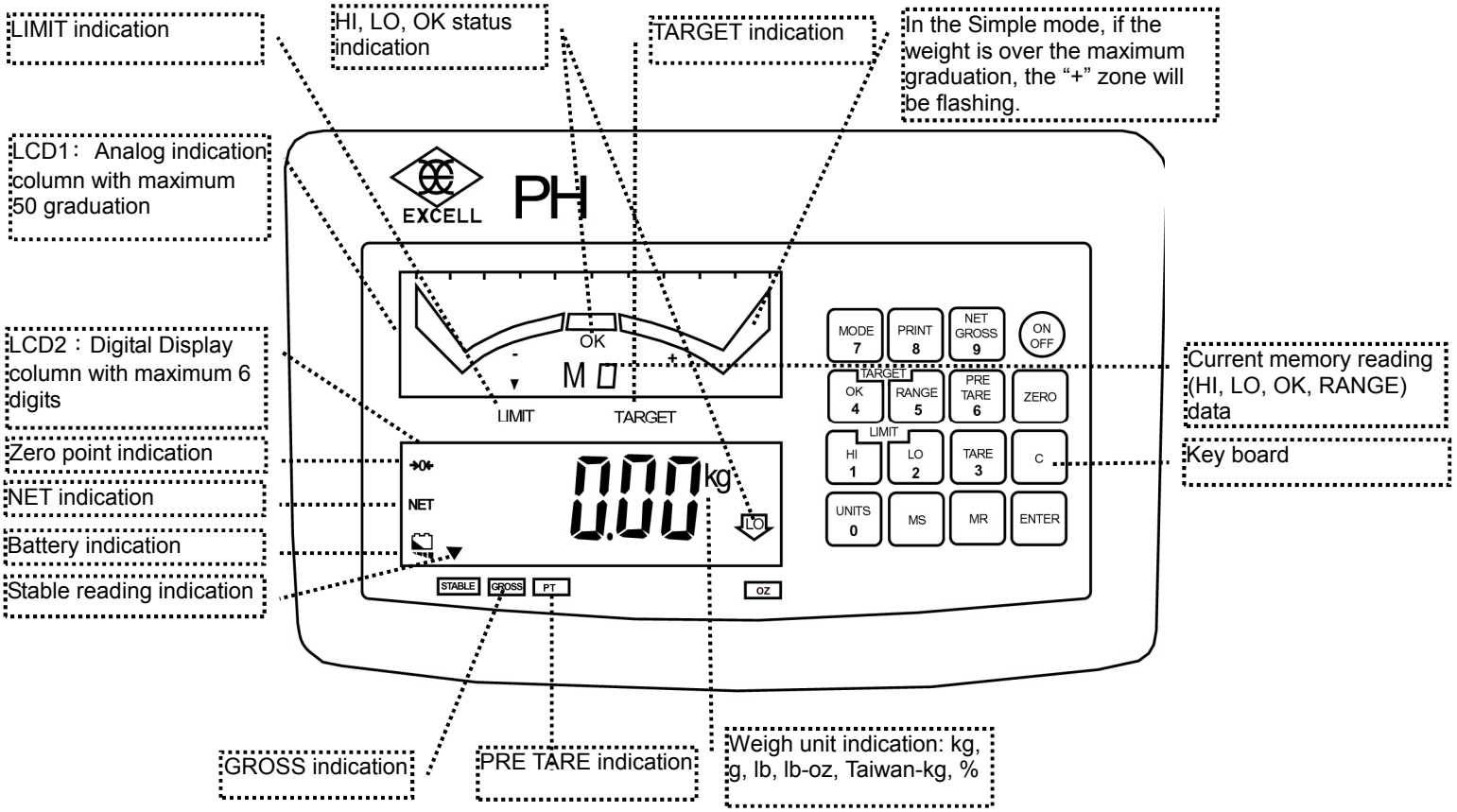
Power Consumption

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

Low Battery Warning

Please note when the  symbol keeps flashing on the display, the batteries should be recharged.

1-5 Explanation of Display



1-6 Explanation of Keyboard

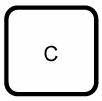


Press this button to switch the display on/off.



Press this button to obtain a zero reading, when the weigh pan 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 button to clear memory and delete application data.



Press this button to perform action.



Digit: 9

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



Digit: 6

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



Press this button to recall memory.



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



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



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



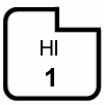
Press this button to store HI, LO, OK and Range settings or exit the setting mode.



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



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



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



Digit 0

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

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

CHAPTER 2 BASIC OPERATION FUNCTIONS

PH has three weight modes: Simple, Limit and Target, press 

to switch.

Simple weight mode

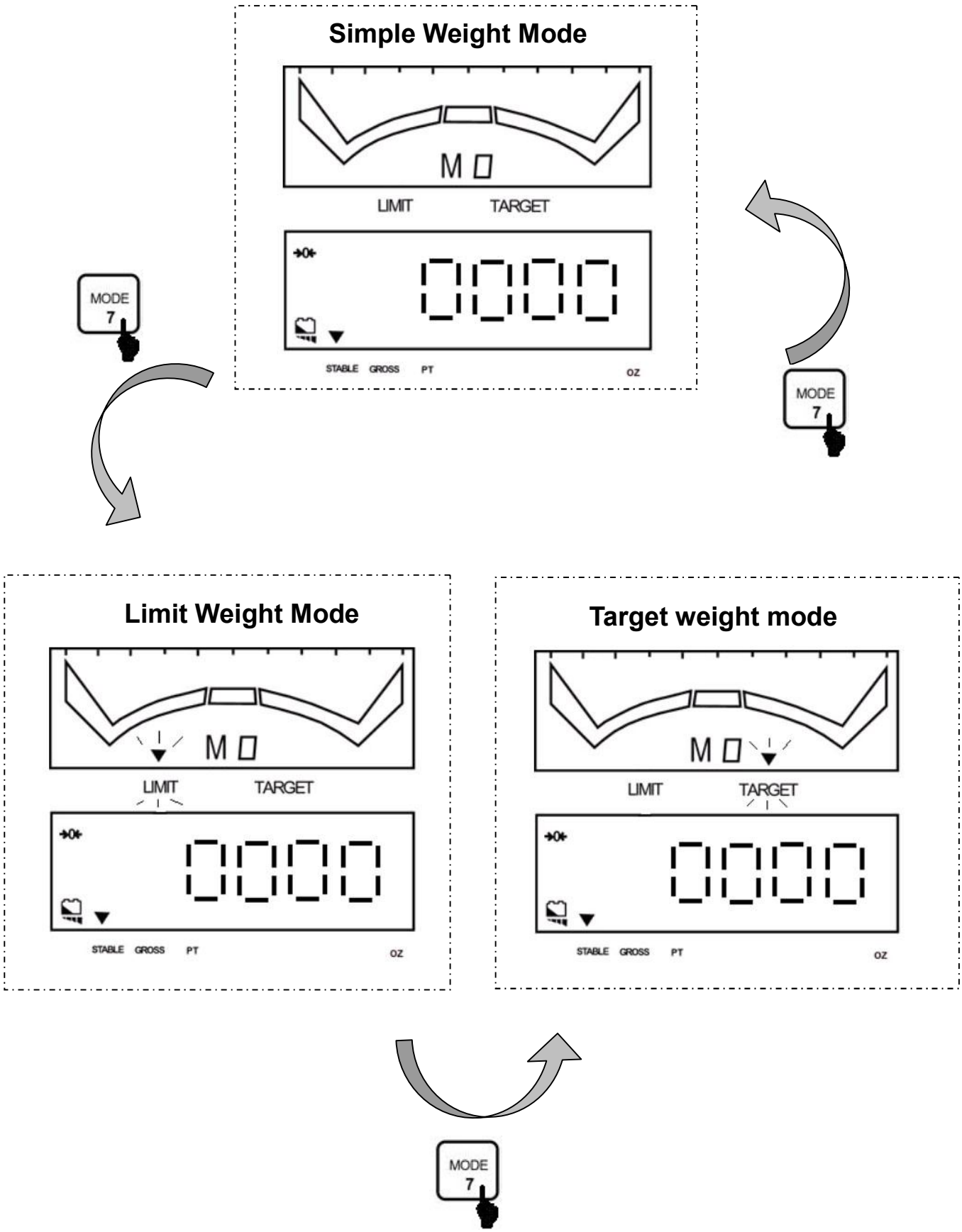
In this mode, the weight value can be displayed by means of analog and digit. For example, when a object weights 20 Kg, the LCD2 shows the digits 20 and LCD1 has slight changes on its graduation.

Limit weight mode

This is a weight check mode, press “HI” and “LO” buttons to input high and low limit value, LCD1 displays if the weight on weight pan 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” button to set target as 30 and press “Range” button to set an allowable range as ±2, when the weight reaches the range between 28~32，the OK zone on LCD1 will blink.


Simple Weight Mode
M 0
LIMIT
TARGET
→0←
STABLE GROSS PT
OZ
MODE
7
Limit Weight Mode
M 0
LIMIT
TARGET
→0←
STABLE GROSS PT
OZ
Target weight mode
M 0
LIMIT
TARGET
→0←
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 reverting to Zero, LCD2 displays “000000”.

2. If needed, 

select the weight unit.

3. 

Zero the scale, if the Zero point is floating.

4. Put object on the weight pan ⇨ LCD1 (analog) and LCD2 (Digit) display the object’s weight ⇨ After the weight is steady, the STABLE icon ▼ appears at the left bottom of LCD2.

2-2 Limit Weight Mode

Steps:

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



⇨


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

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



⇨

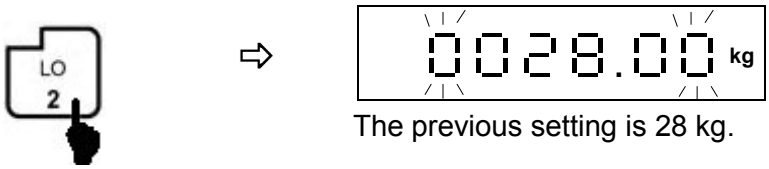

The previous setting is 30 kg.

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



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

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

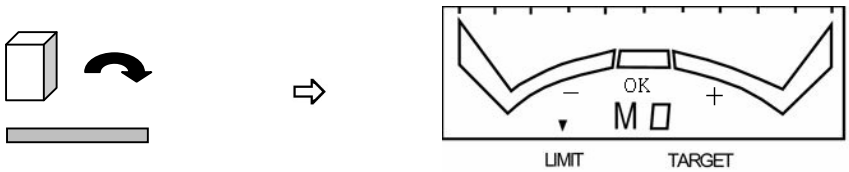


The previous setting is 28 kg.

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

ⓘ Remember to set “High value” earlier than “Low value”.

6. Put object on the weight pan, the screen displays HI/OK/LO status.

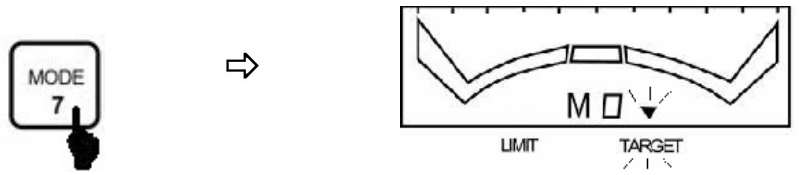


ⓘ If the weight is between the high and low limit, the “OK” zone will blink.
If the weight is over the high limit, the “+” zone will blink.
If the weight is under the low limit, the “-” zone will blink.

2-3 Target Weight Mode

Steps:

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

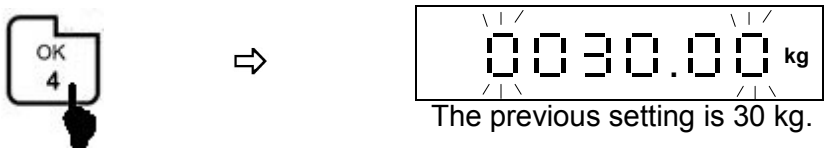


ⓘ Press ZERO button to zero the scale, if the weight is floating.

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

Method 1: input value via keyboard

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



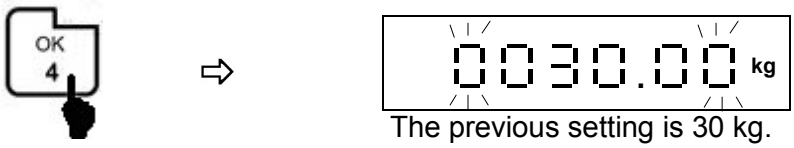
The previous setting is 30 kg.

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



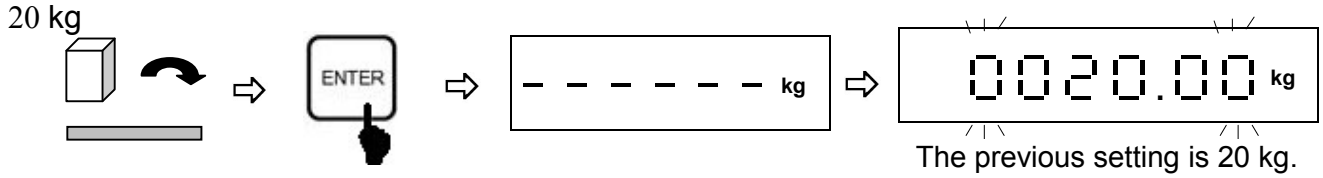
Method 2: input value via Sampling weight

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



The previous setting is 30 kg.

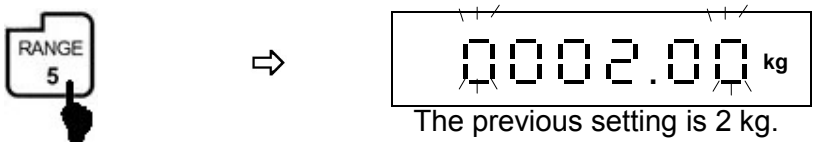
(2) Put the sample on the weight pan, press “ENTER” button. The screen displays ”------“. After the weight is steady, the sampling is finished.



The previous setting is 20 kg.

3. Set the Range Value

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

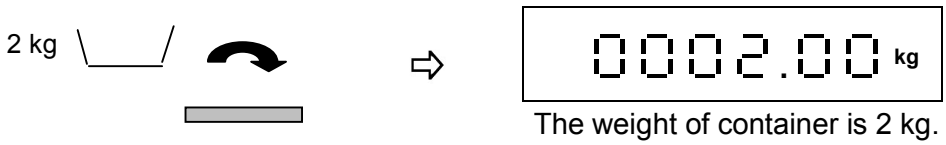


The previous setting is 2 kg.

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

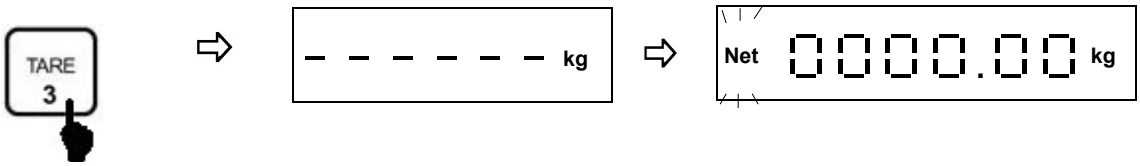


4. Put a container on the weight pan, the screen displays the container’s weight.

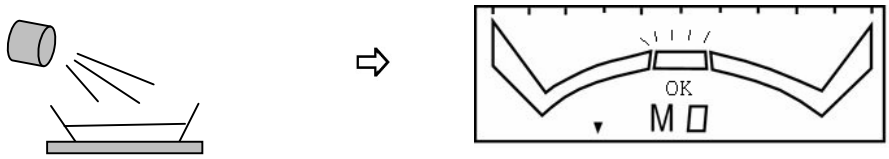


The weight of container is 2 kg.

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



6. Put objects into the container, 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.



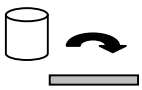
ⓘ The Range value can be shown as *percentage*. See "**3-1-8 Weight and Percentage Mode Setting**" for details.

2-4 Tare Function

Steps：

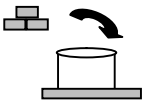
1. When the weight pan is free of load and the display is not showing zero, to zero the scale.



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

3. 

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

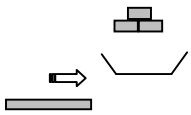
4.  Put the goods in the container, the screen displays the net weight value of the goods.

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

ⓘ Continual tare operation is adding or removing tare objects on weigh pan and press "TARE" button each time.

2-5 Cancel Tare Function

Steps:

1.  Move the full container from the weight pan.

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

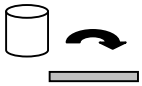
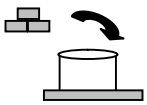
Steps:

1.  Zero the scale, if needed.

2.  The screen displays the previous Pre Tare value for two seconds ⇨ Enter PRE TARE mode ï 00000P ð .

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

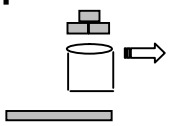
4. The PT ▼ icon on LCD2 will blink, which means the setting is finished.

5.  Put the container on weight pan ⇨ 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.

2-7 Cancel Pretare Function

Method 1

Steps:

1.  Remove the full container from the weight pan

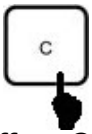
2. 

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 ï 00000P ð ⇨ 

The screen displays ï 00000P ð

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. 

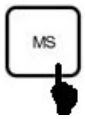
The screen displays Net value again. The “Net” icon is on, while the “Gross” icon is off. Use this button to switch between “Net value” and “Gross value”.

ⓘ This function is only used in TARE and PRE TARE modes.

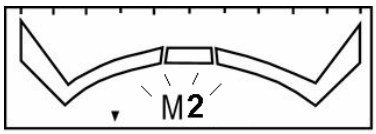
ⓘ All buttons except for “On/Off” and “Net/Gross” do not work, while the Gross icon ▼ is on.

2-9 Memory Store and Recall Functions

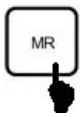
Store

When the settings of High, Low, OK and Range are finished, 

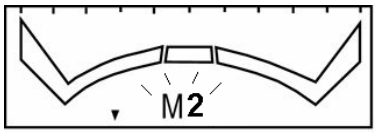
⇨ LCD2 displays “MEM S”, input any digit from “0”~”9”, such as “2” ⇨ When finishing, “M2” appears at the center of LCD1.



Recall



⇨ LCD2 displays “MEM R”, input any digit from “0”~”9”, such as “2” ⇨ When finishing, “M2” appears at the center of LCD1.

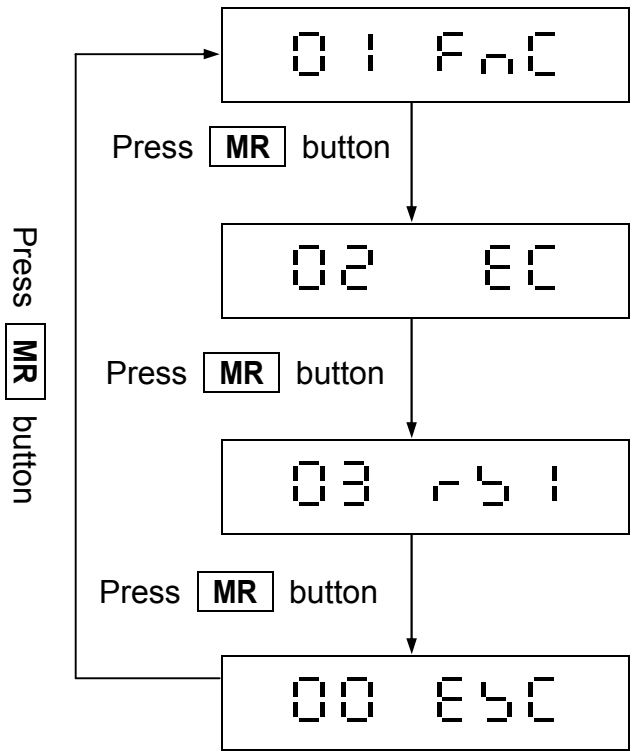


ⓘ This indicator can store 10 data (from 0 to 9).

CHAPTER 3 ADVANCED FUNCTIONS

In the weighing mode, press the **TARE** and **ZERO** buttons at the same time to enter the **Advanced Function** setting mode. The LCD shows 01 FnC and use **MR** to select the setting mode.

Overall workflow of the Advanced Function setting mode:

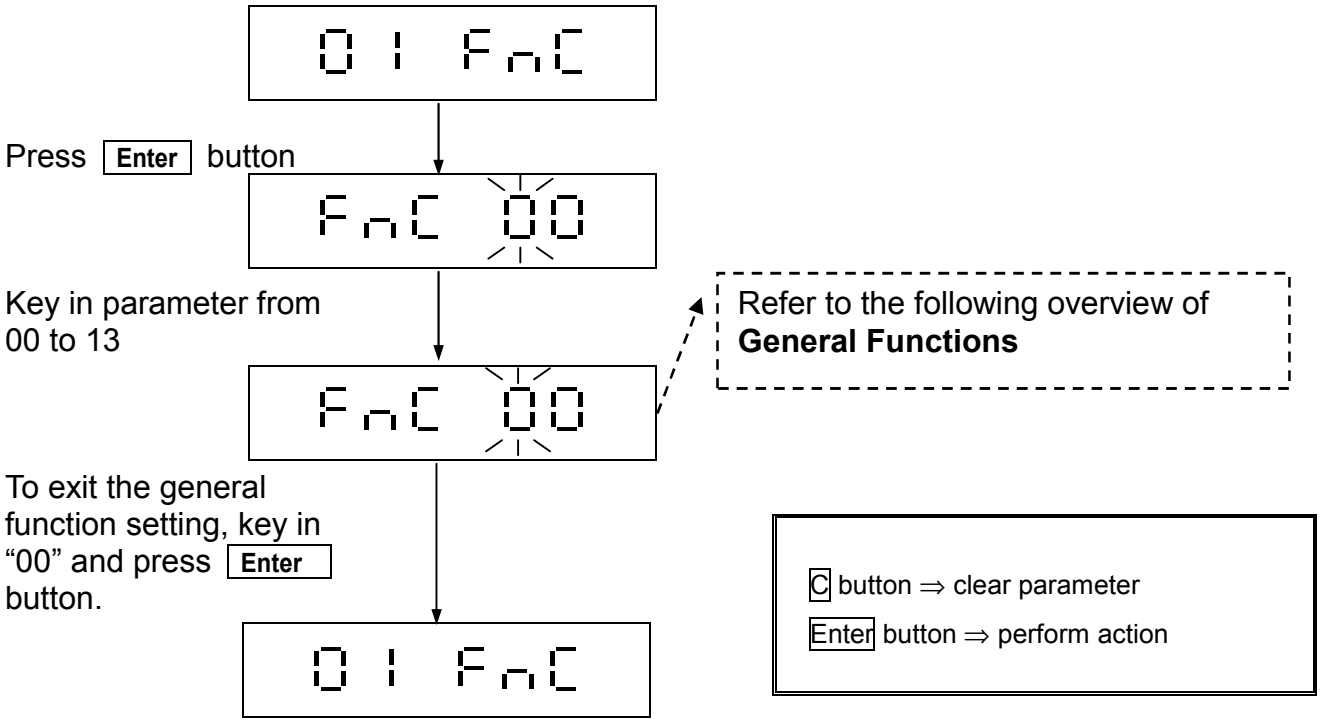


01	FnC	⇒ General Function Setting Mode
02	EC	⇒ External Weight Calibration
03	rS1	⇒ RS232 Bi-direction Function Setting
00	EsC	⇒ Exit the Advanced Function Setting Mode

Refer to the following sections for the detailed operation procedures of each function setting.

3-1 General Function Setting 01 FnC

There are 13 functions in the General Function setting mode from FnC 01 to FnC 13.



Overview of the General Functions

FnC 00 ⇒ Return to the **Advanced Function** Setting Mode

FnC 01 ⇒ Automatic Backlight Function Setting

FnC 02 ⇒ Automatic Power-off Timer Setting

FnC 03 ⇒ HI,LO Weight Check Setting

FnC 04 ⇒ HI,LO Alarm Setting Function

FnC 05 ⇒ Analog and Digital Display Setting

FnC 06 ⇒ Weighing Speed Setting

FnC 07 ⇒ Operation Mode Setting

FnC 08 ⇒ Weight and Percentage Mode Setting

FnC 09 ⇒ Lock Function Setting

FnC 10 ⇒ Relay Function Setting

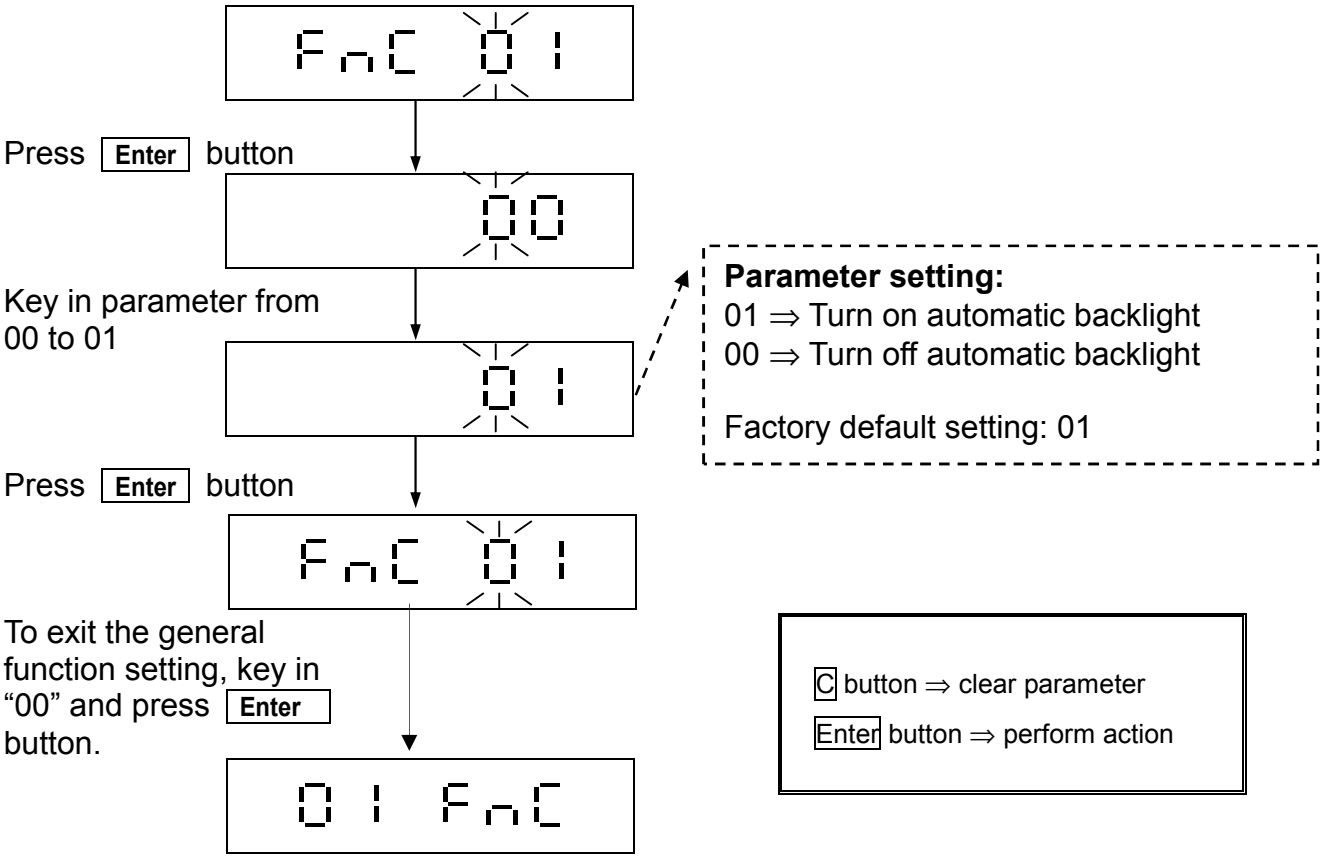
FnC 11 ⇒ Auto Zero Tracking Setting

FnC 12 ⇒ Printer Key Accumulations Function

FnC 13 ⇒ Tare Cancellation Setting

3-1-1 Automatic Backlight Function Setting FnC 01

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

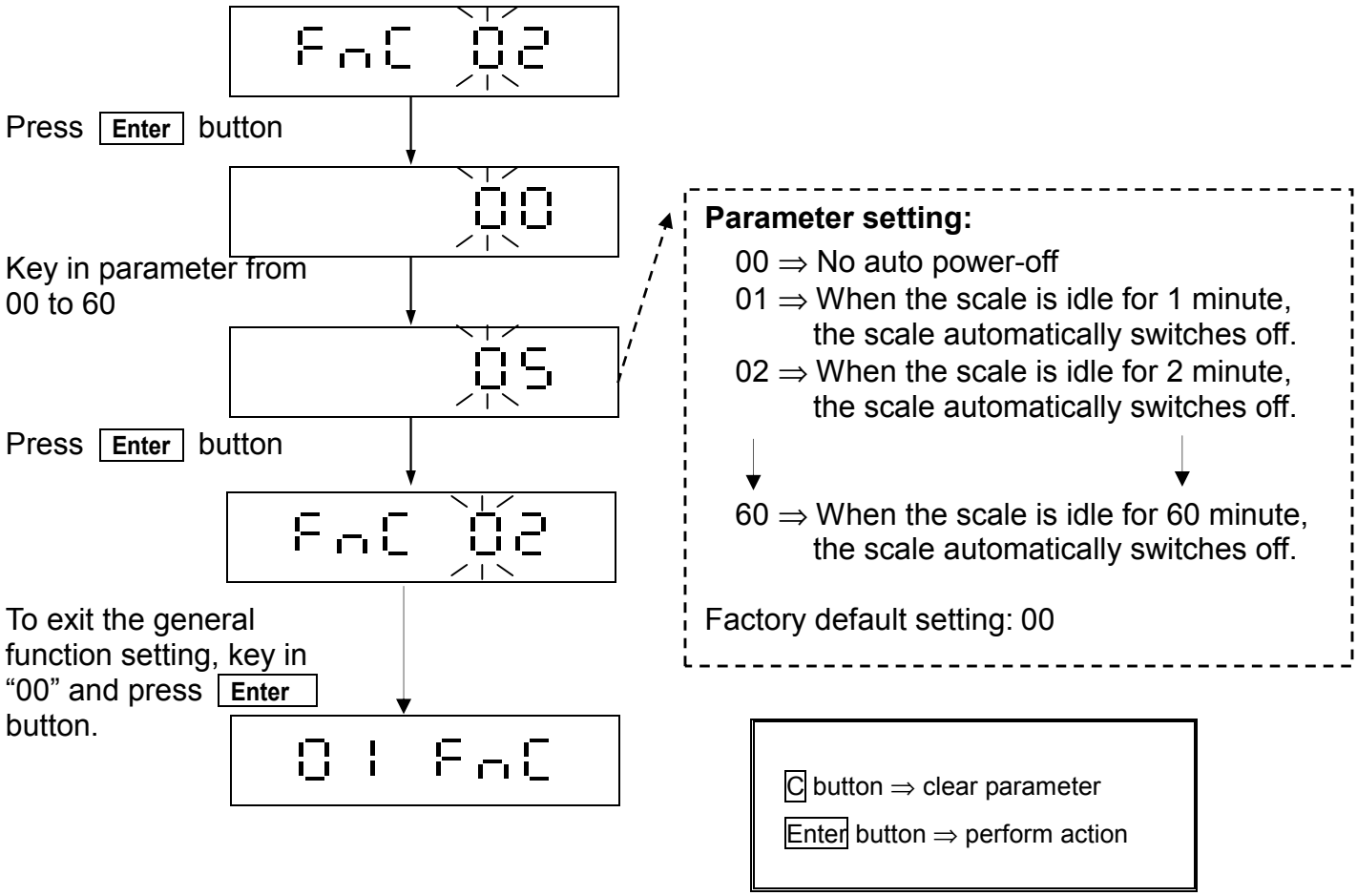


Automatic backlight function

When the weight is over 10e, 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 Automatic Power-off Timer Setting FnC 02

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

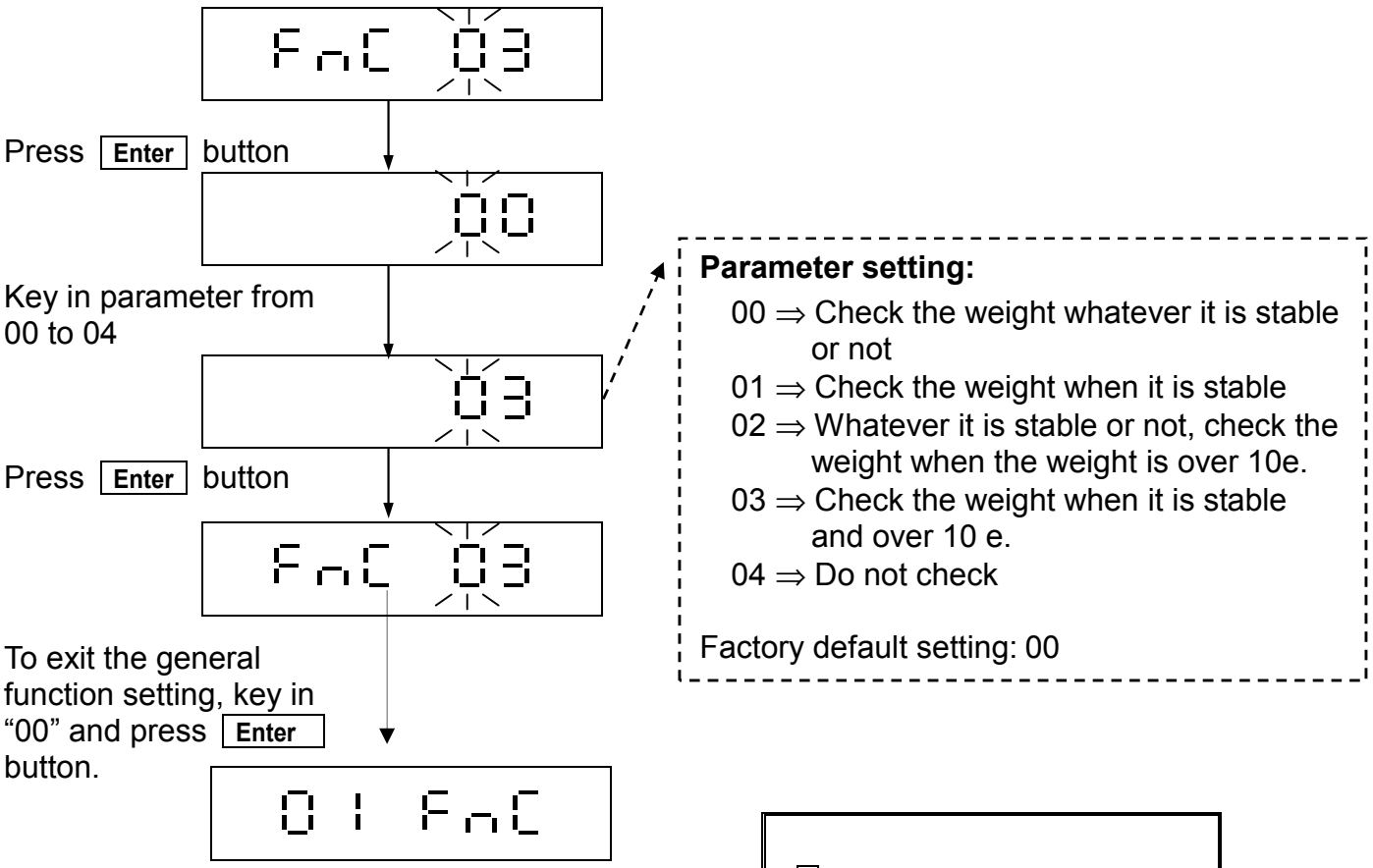


Automatic power-off function

When the weight on weigh pan is less than 10e or keeps idle for the set time, the scale will automatically switch off.

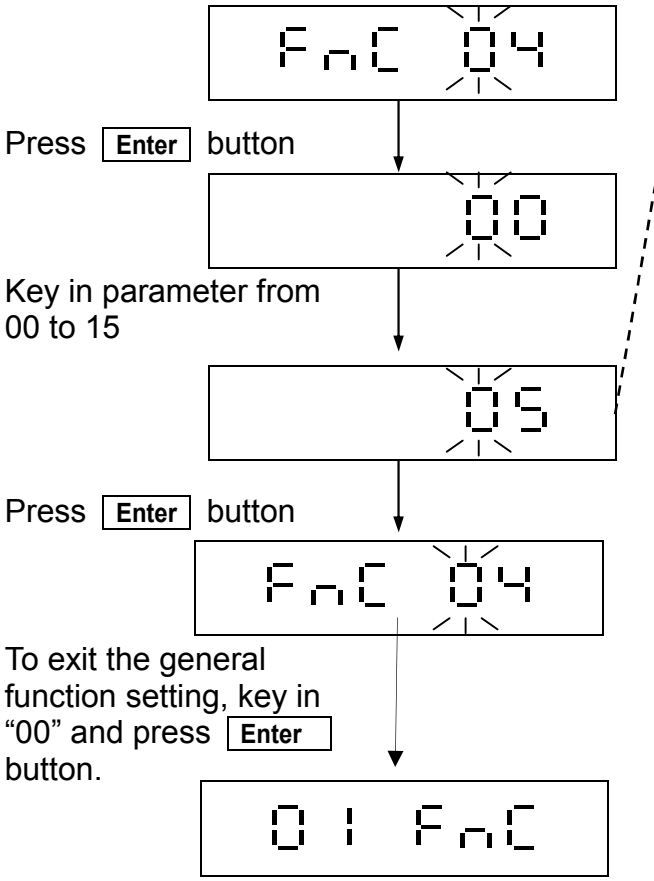
3-1-3 HI / LO Weight Check Setting FnC 03

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



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

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



Parameter setting:

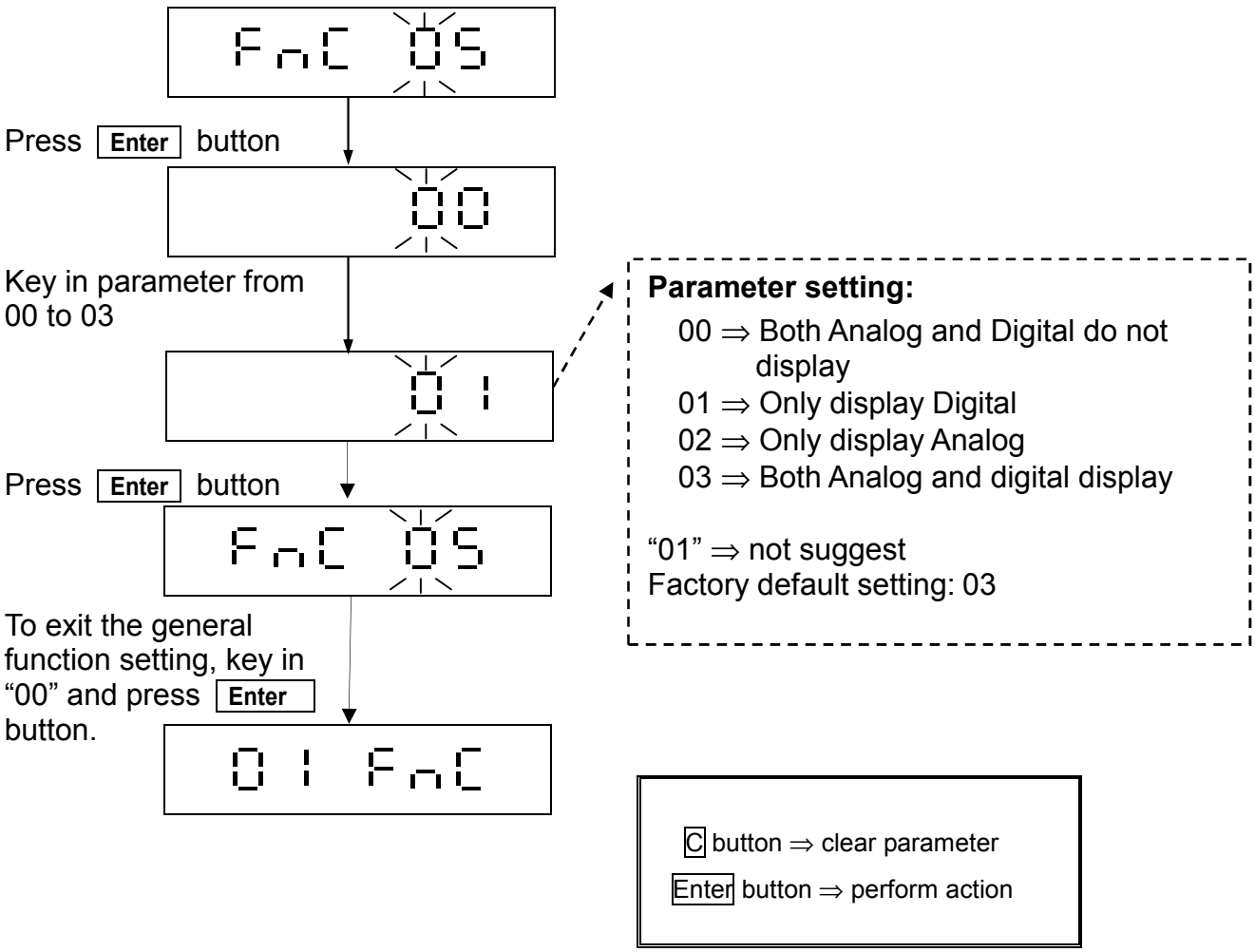
- 00 ⇒ No Alarm
- 01 ⇒ The Beeper sounds intermittently at Low status
- 02 ⇒ The Beeper sounds intermittently at OK status
- 03 ⇒ The Beeper sounds intermittently at Low and OK status
- 04 ⇒ The Beeper sounds intermittently at High status
- 05 ⇒ The Beeper sounds intermittently at High and Low status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

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

C button ⇒ clear parameter
Enter button ⇒ perform action

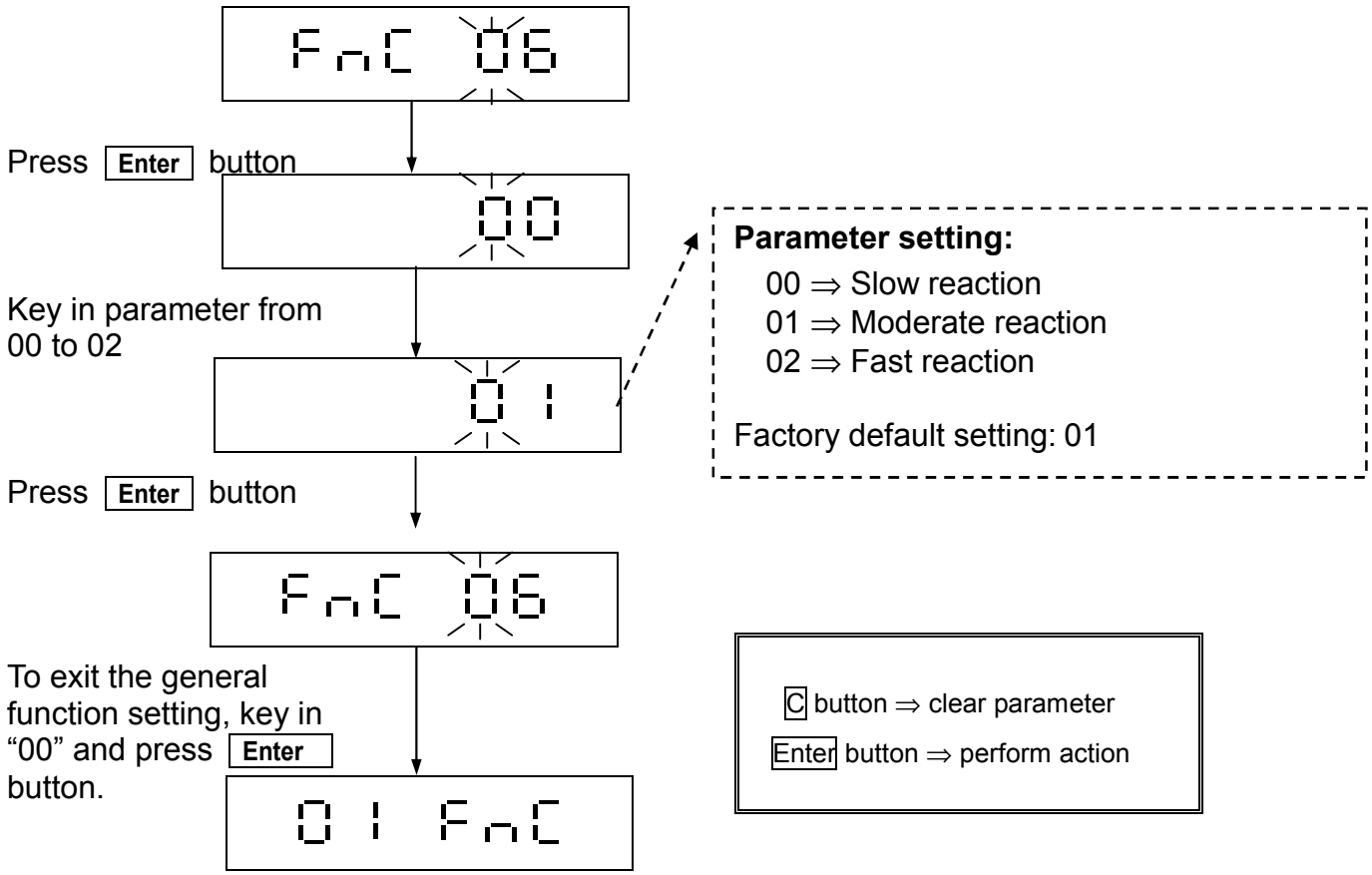
3-1-5 Analog and Digital Display Setting FnC 05

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



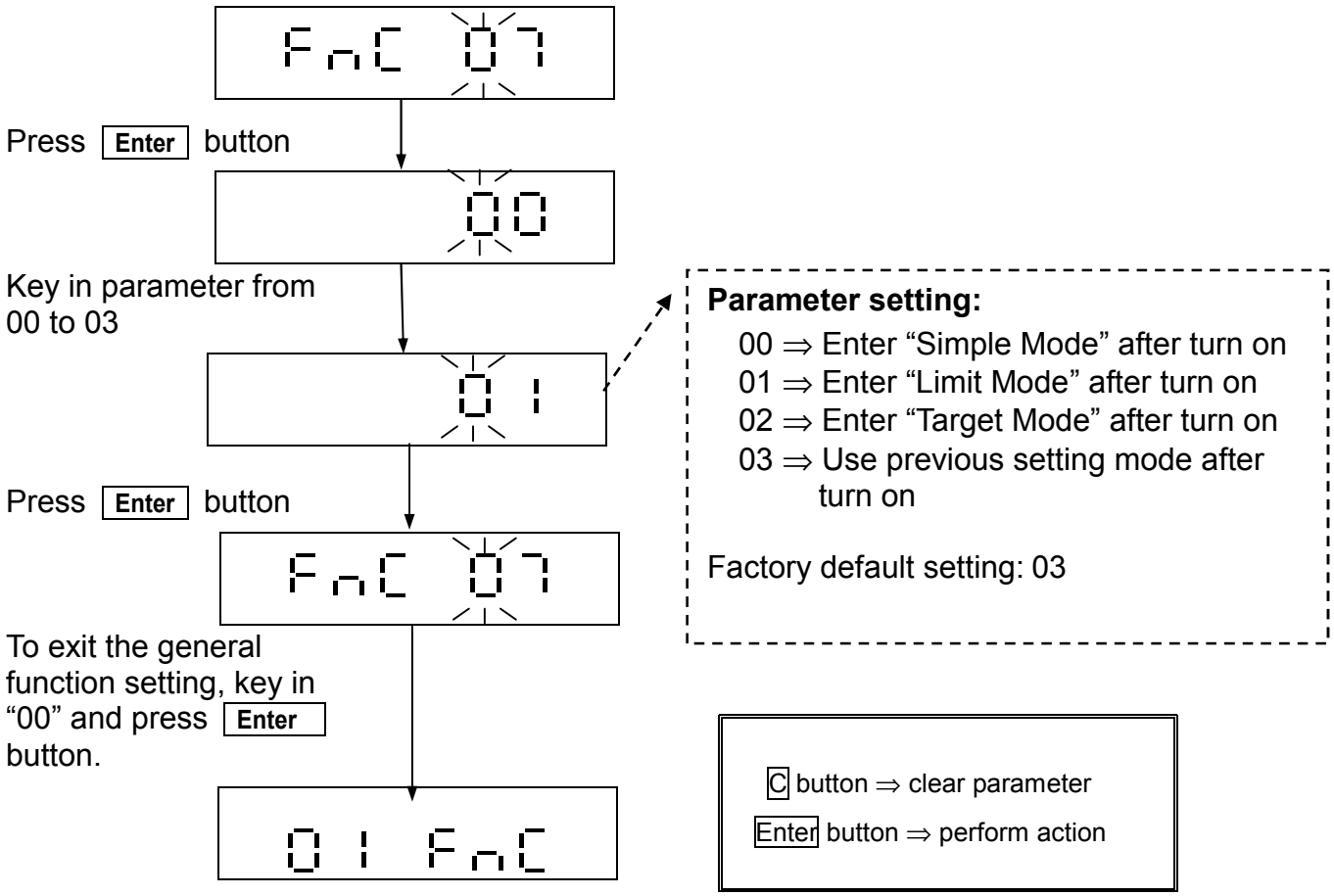
3-1-6 Weighing Speed Setting FnC 06

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



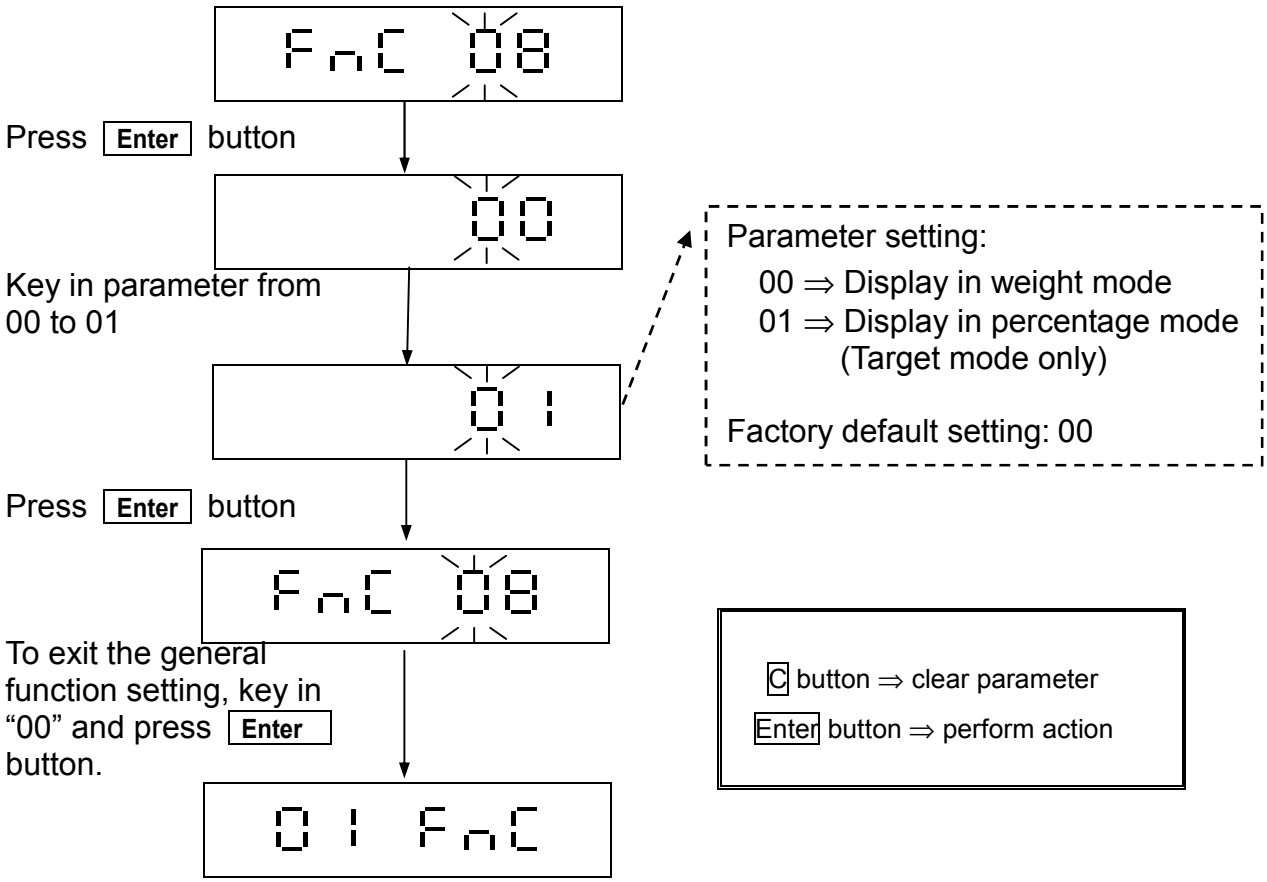
3-1-7 Operation Mode Setting FnC 07

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



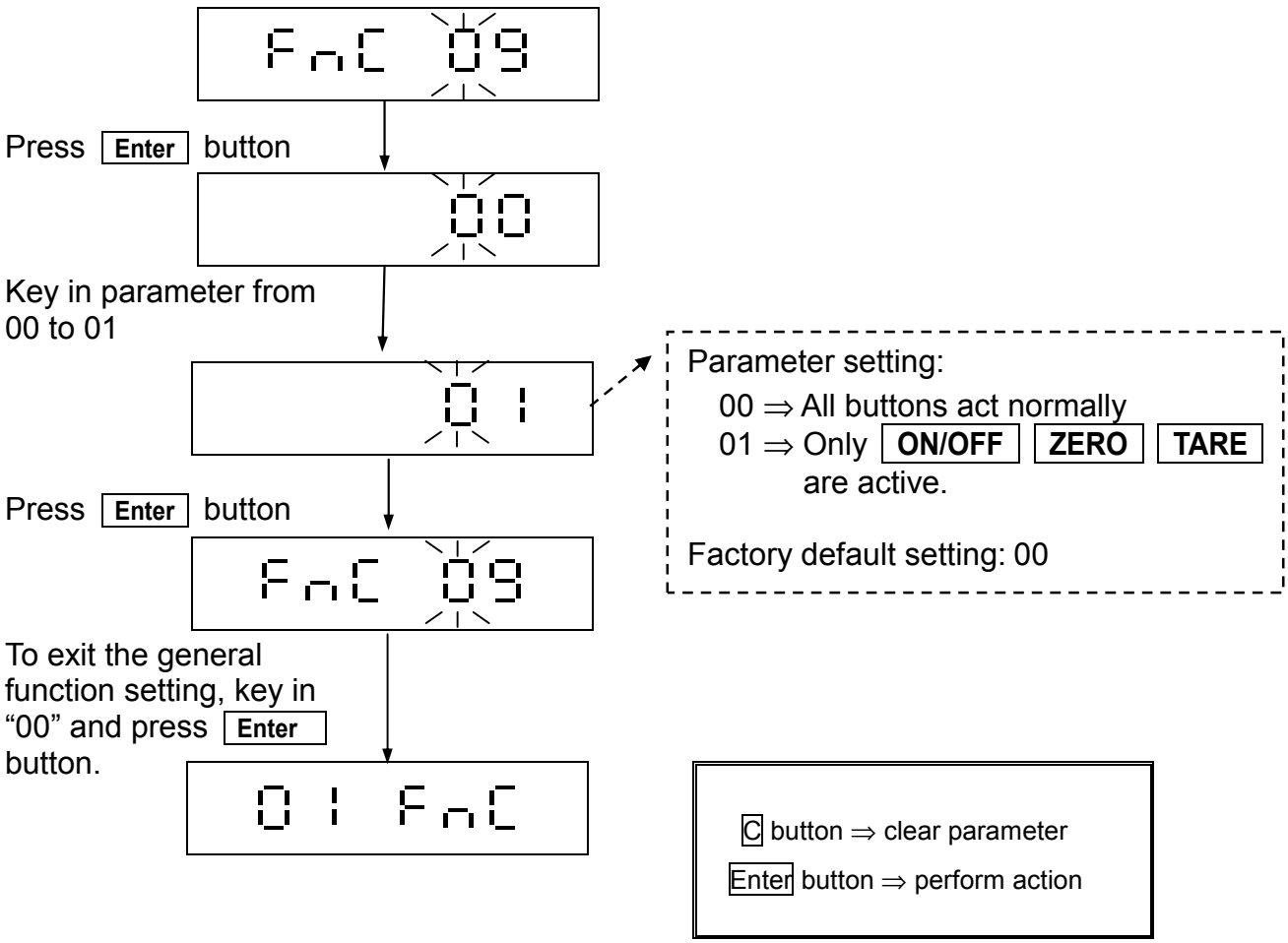
3-1-8 Weight and Percentage Mode Setting FnC 08

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



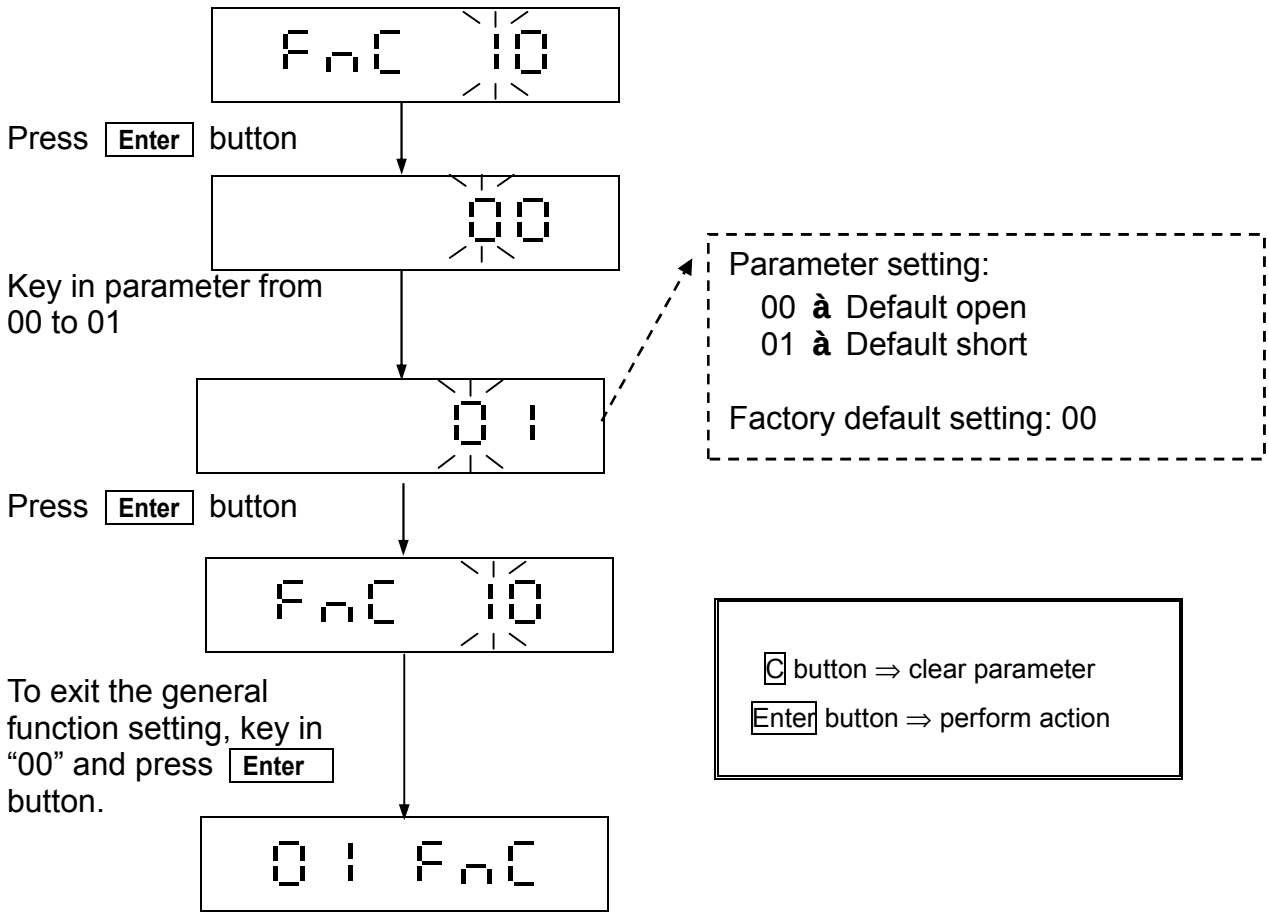
3-1-9 Lock Function Setting FnC 09

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



3-1-10 Relay Setting FnC 10

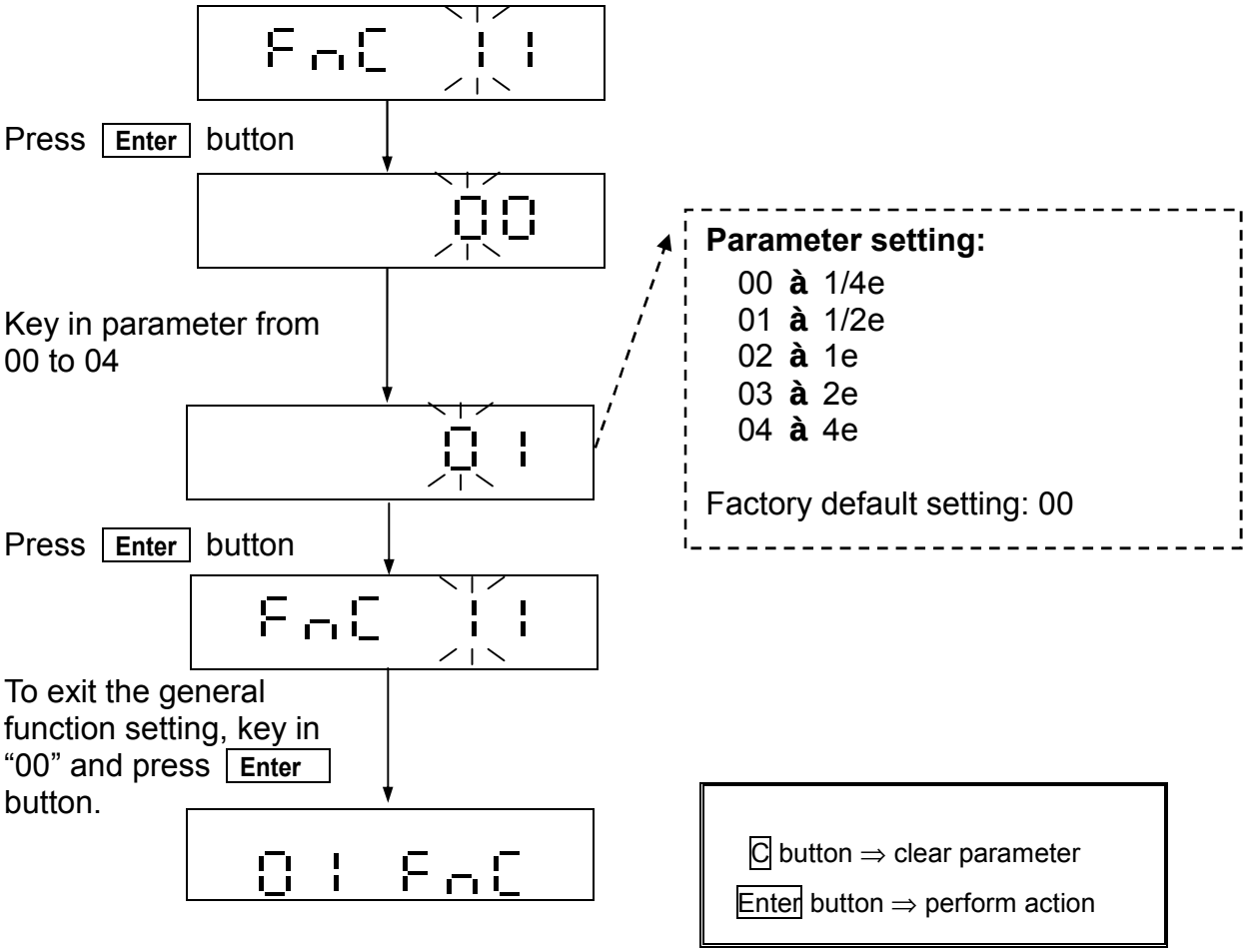
Select FnC 10 in the General Function setting mode 01 FnC to change the relay function setting.



3-1-11 Auto Zero Tracking FnC 11

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

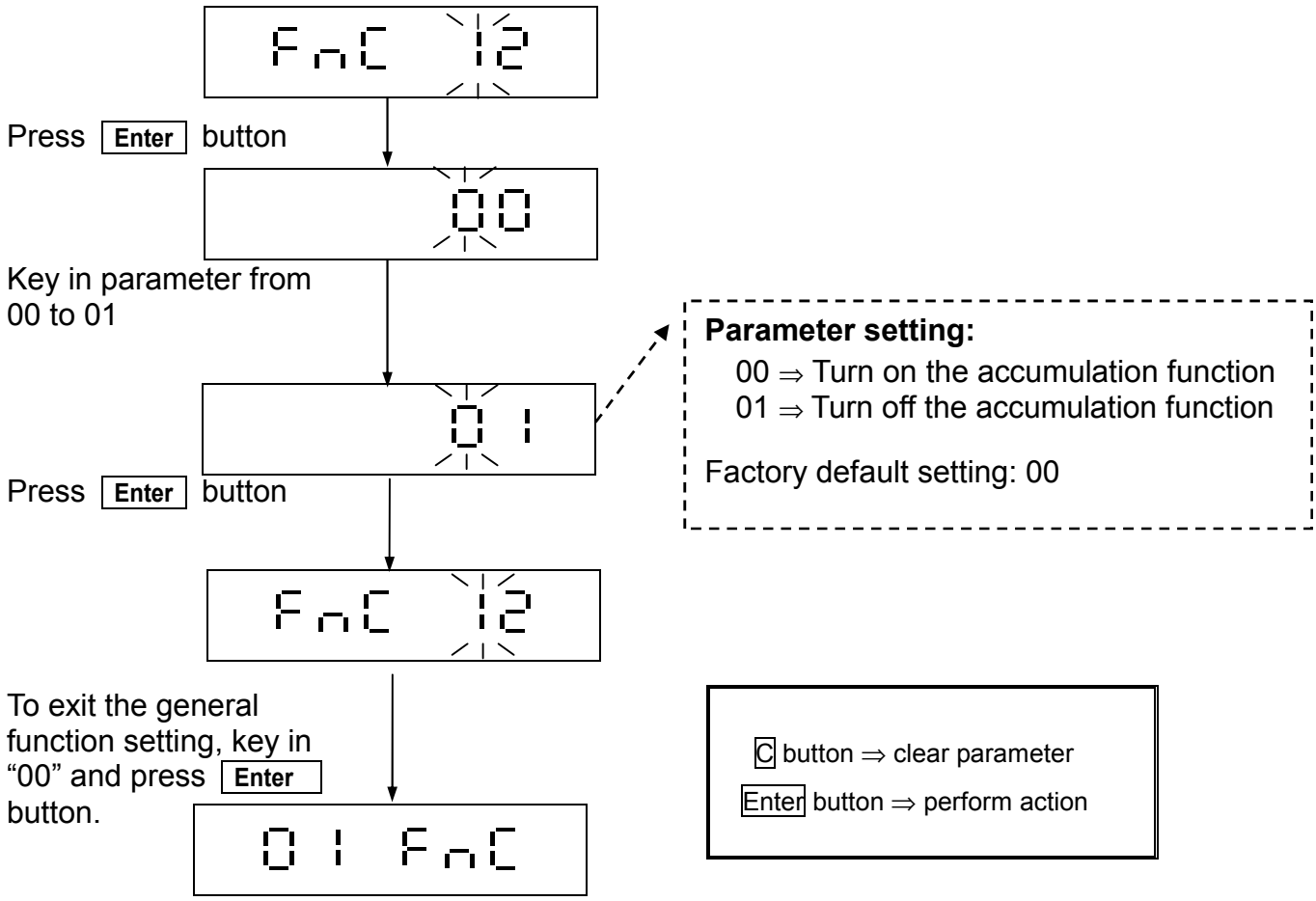
ⓘ Only for none-approved model



3-1-12 Printer Key Accumulation Function FnC 12

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

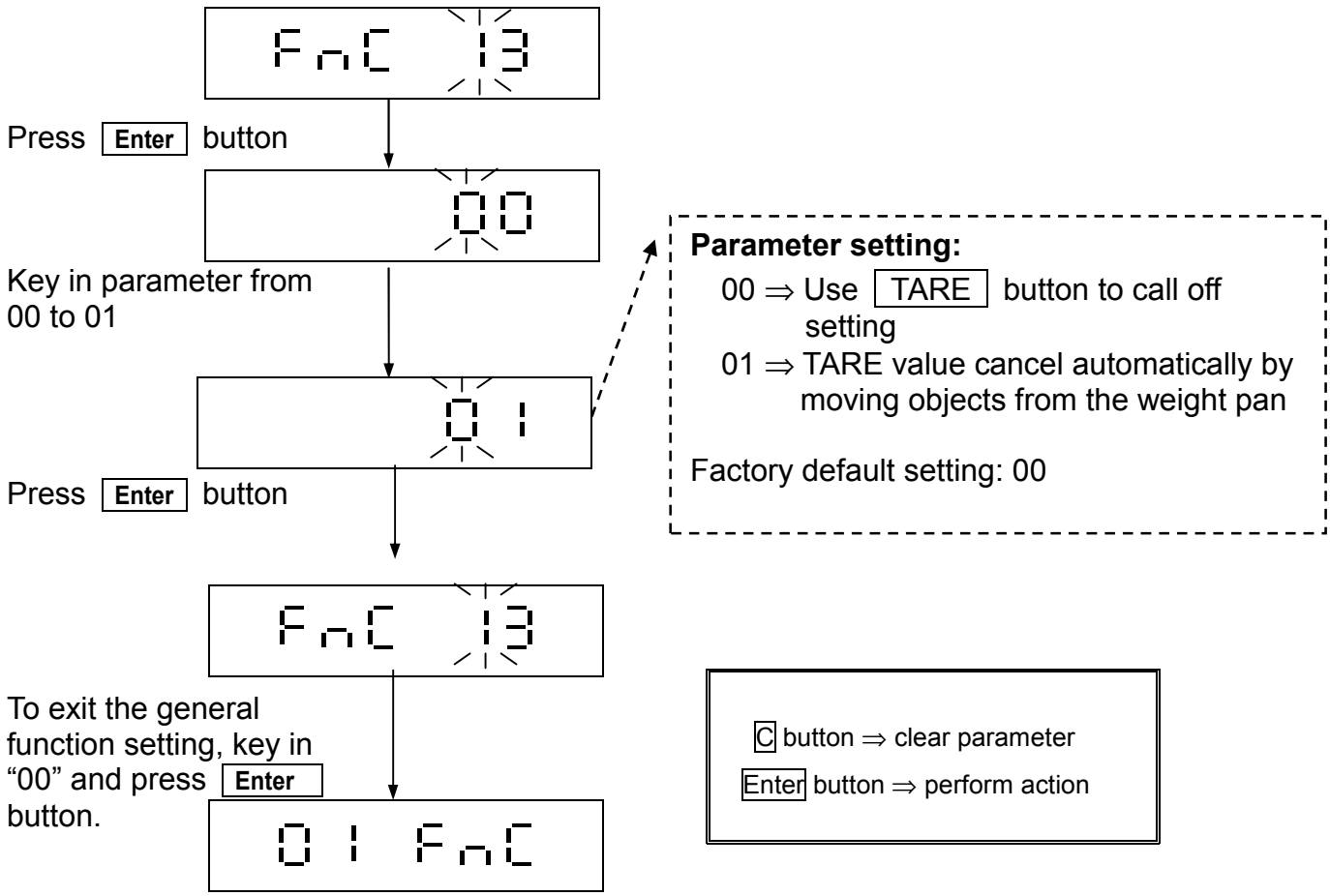
ⓘ This function can be active only when the parameter in r51 03 is set as “11”.



4 When this function is active, the Enter button becomes C button and has up to 99 accumulations.

3-1-13 Tare Cancellation Setting FnC 13

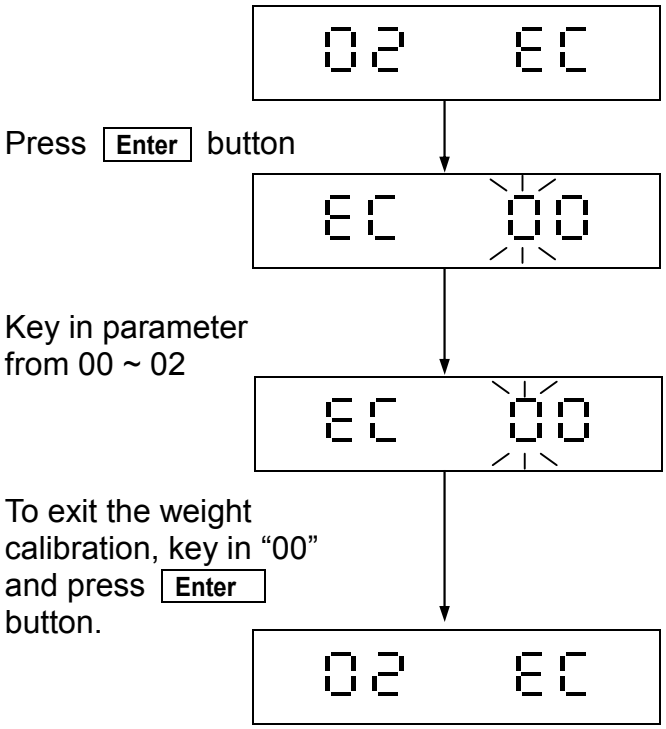
Select FnC 13 in the General Function setting mode 01 FnC to set printer key accumulation function.



3-2 Weight Calibration 02 EC

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

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



C button ⇒ clear parameter

Enter button ⇒ perform action

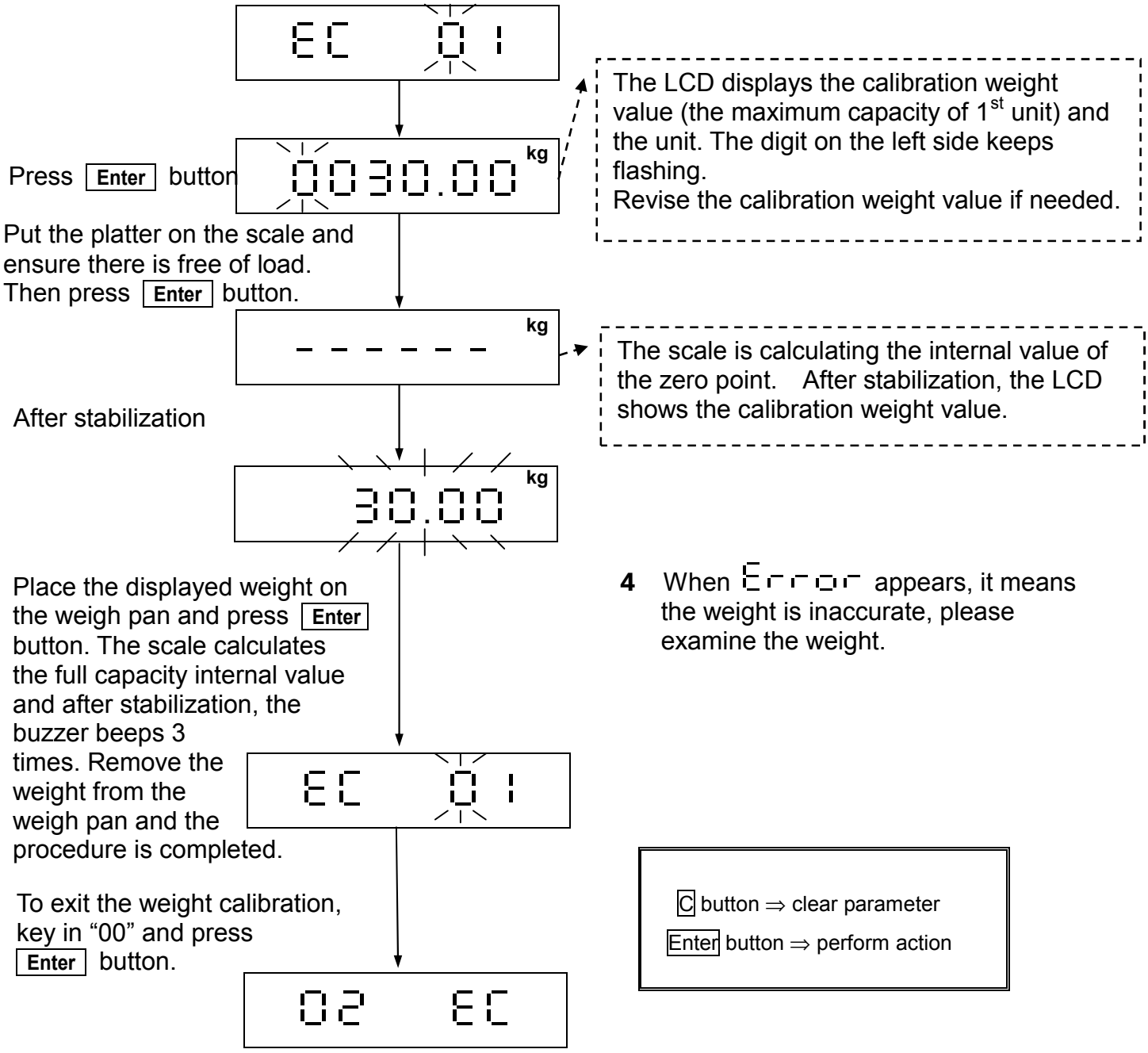
EC 00 ⇒ Exit the Weight Calibration Mode

EC 01 ⇒ Weight Calibration

EC 02 ⇒ Restore to the Default Setting

3-2-1 Weight Calibration EC 01

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



4 When Error appears, it means the weight is inaccurate, please examine the weight.

C button ⇒ clear parameter

Enter button ⇒ perform action

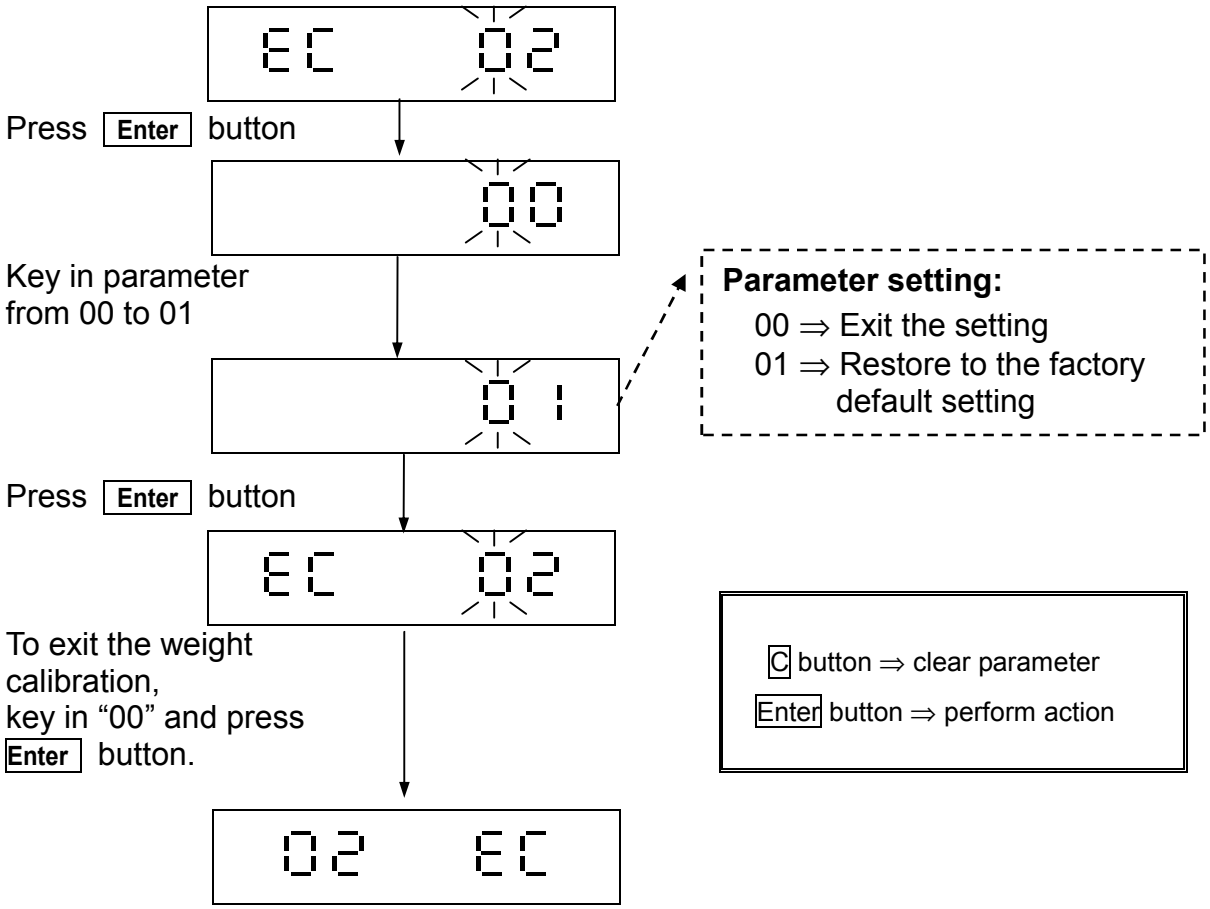
4 Weight calibration conditions:

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.

è 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

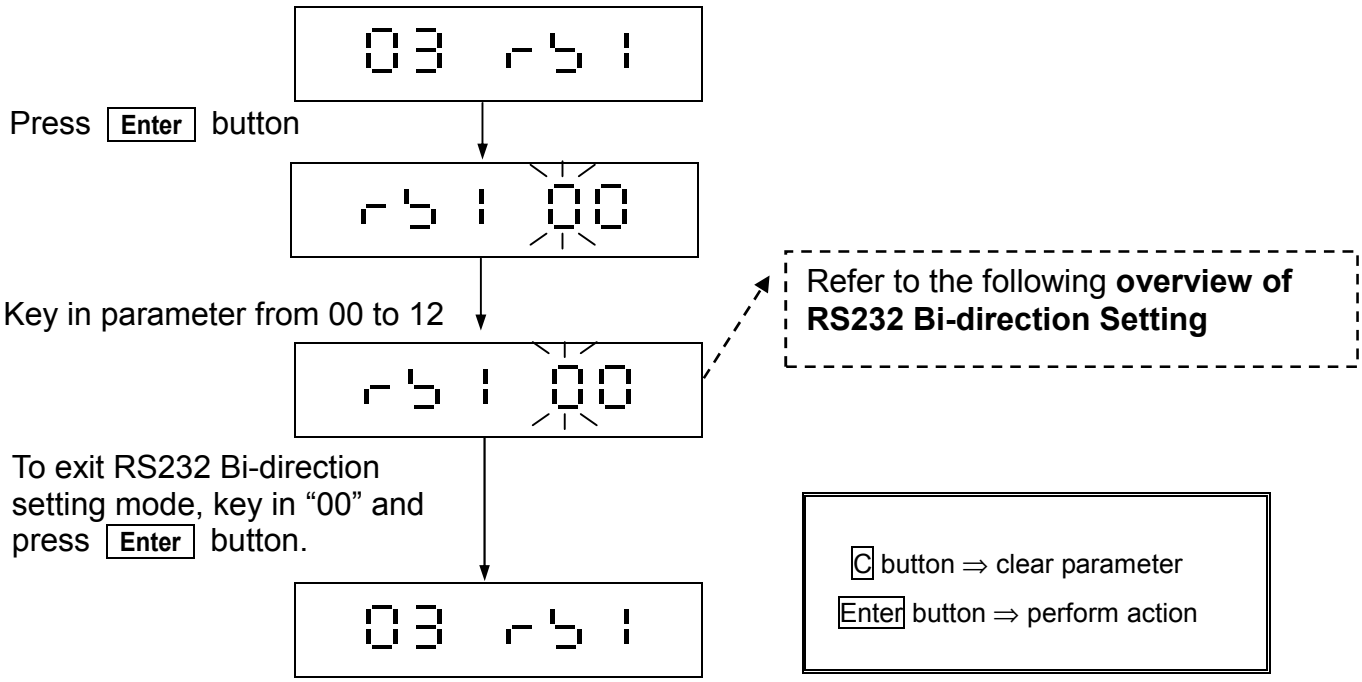
3-2-2 Restore to the Default Setting EC 02

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



3-3 RS232 Bi-direction Function Setting 03 rS1

There are 12 functions in the Bi-direction function setting mode from rS1 01 to rS1 12.



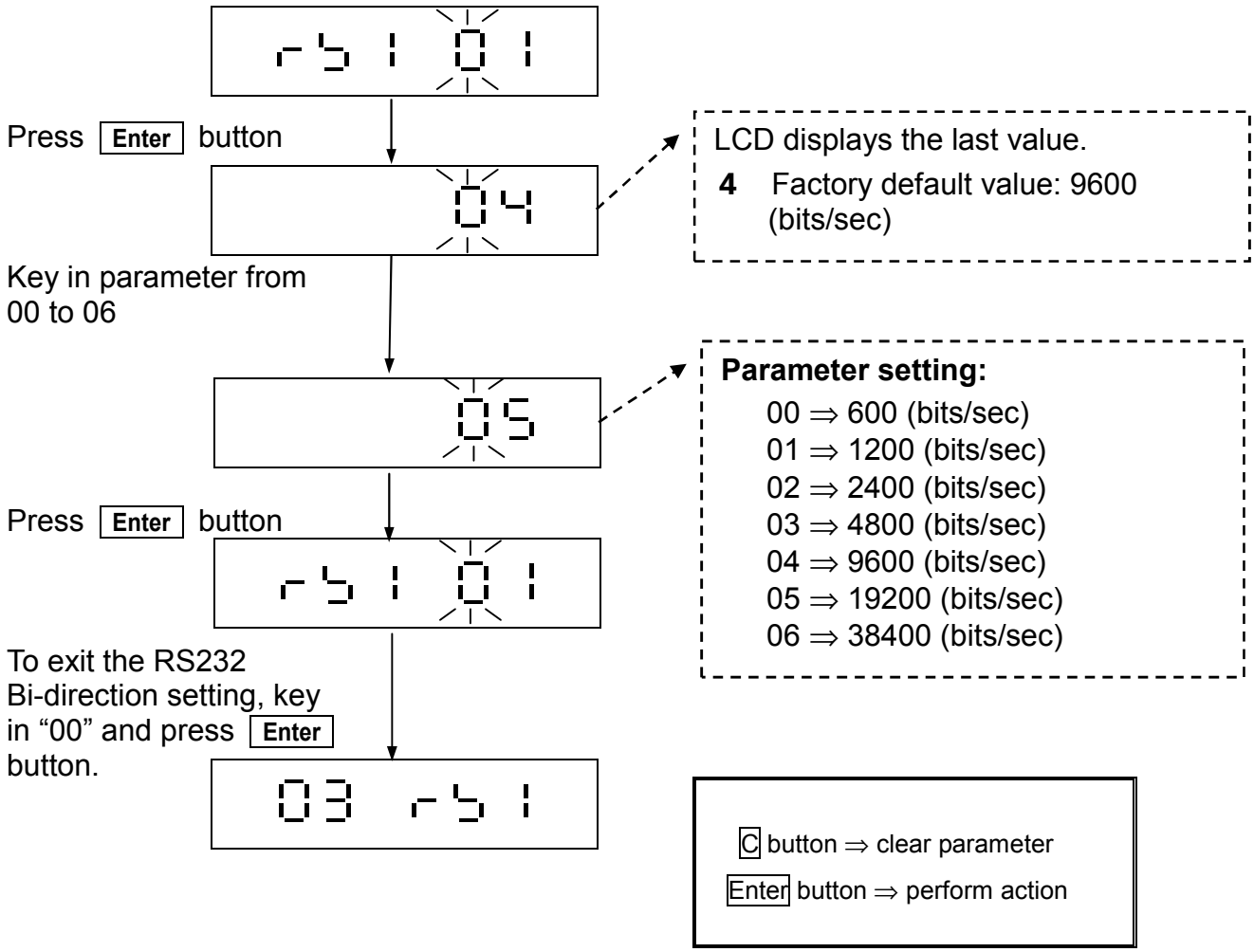
Overview of RS232 Bi-direction Setting

r5 1 00 ⇒ Exit the RS232 Bi-direction Setting Mode
r5 1 01 ⇒ Baud Rate Setting
r5 1 02 ⇒ Communication Protocol Setting
r5 1 03 ⇒ Output Format Setting
r5 1 04 ⇒ Continuous Transmission Setting
r5 1 05 ⇒ Selection of Continuous Transmission Rate
r5 1 06 ⇒ Output Condition Setting
r5 1 07 ⇒ Auto Transmission at Zero
r5 1 08 ⇒ Reset of Auto Transmission
r5 1 09 ⇒ Condition of Manually Printing
r5 1 10 ⇒ Real Time Clock Setting (Hour)
r5 1 11 ⇒ Real Time Clock Setting (Date)
r5 1 12 ⇒ RS232 Serial Interface Setting Mode

3-3-1 Baud Rate Setting r51 01

Select r51 01 in the RS232 Bi-direction setting mode

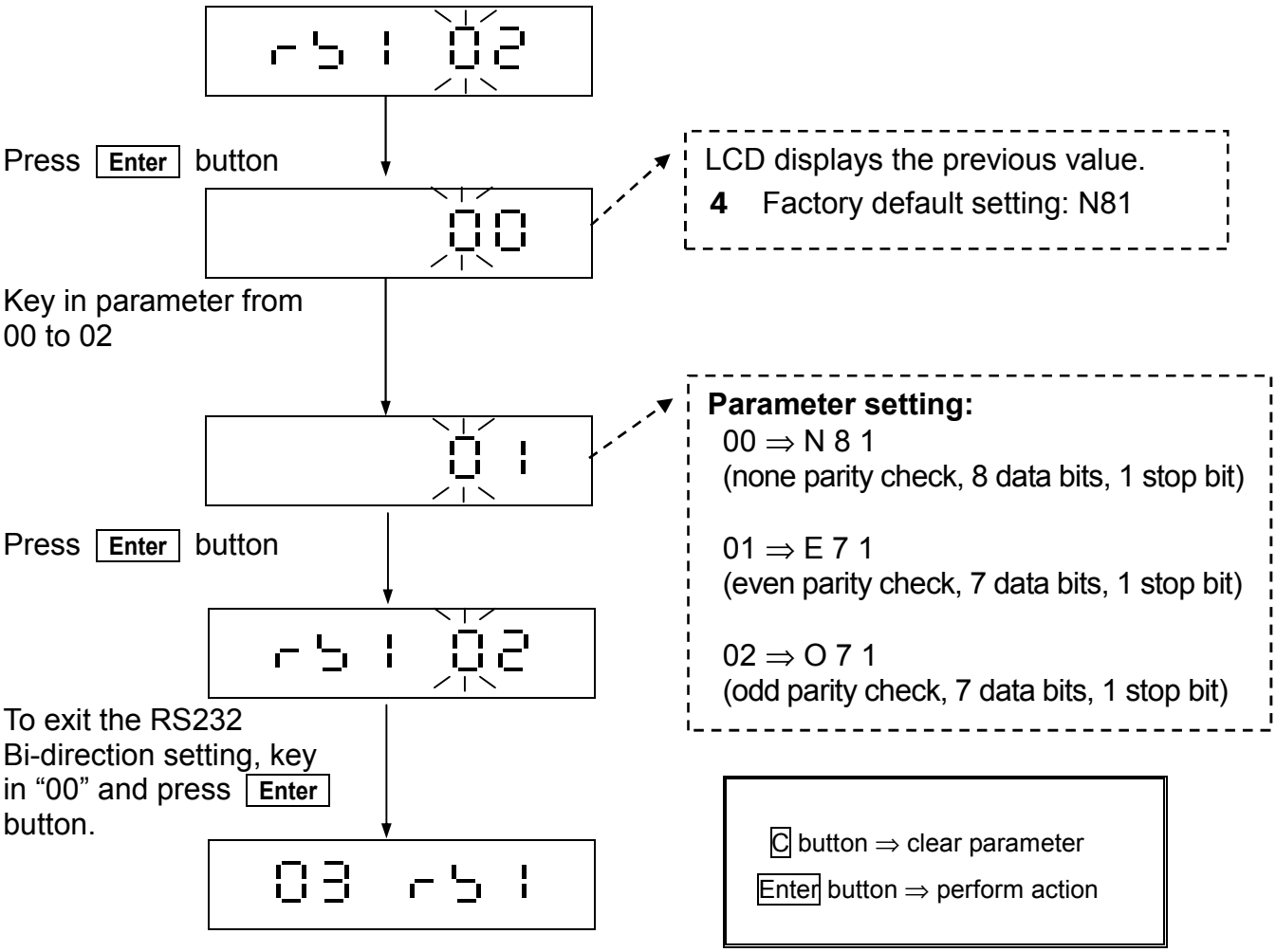
03 r51 to set the Baud Rate.



3-3-2 Communication Protocol Setting r51 02

Select r51 02 in the RS232 Bi-direction setting mode

03 r51 to set the communication protocol.

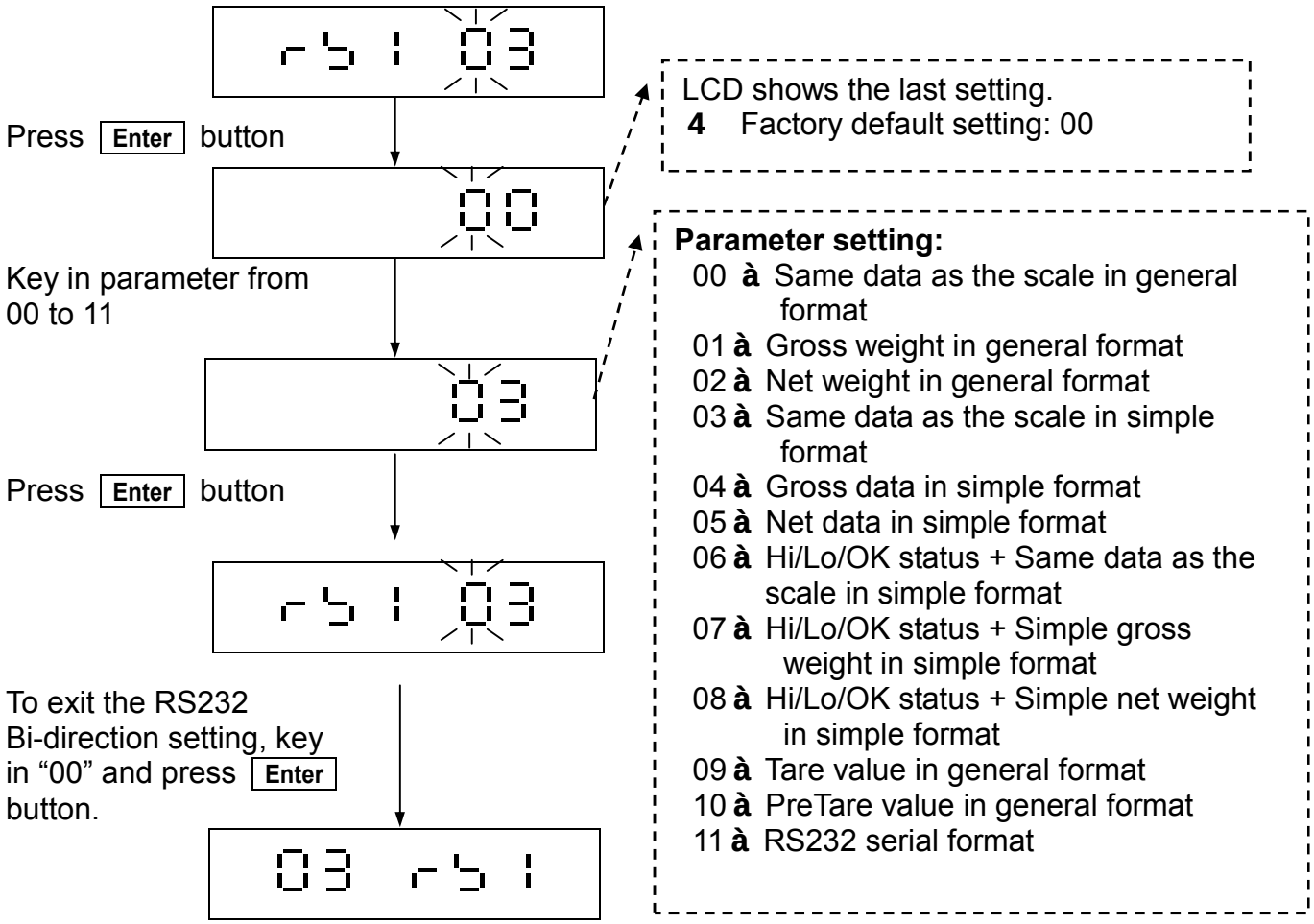


4 Relevant information please see **Appendix 1**

3-3-3 Output Format Setting r51 03

Select r51 03 in the RS232 Bi-direction setting mode

03 r51 to set the output format.



4 Enter r51 12 to connect RS232 serial format by key in "11".

4 Relevant information please see **Appendix 1**

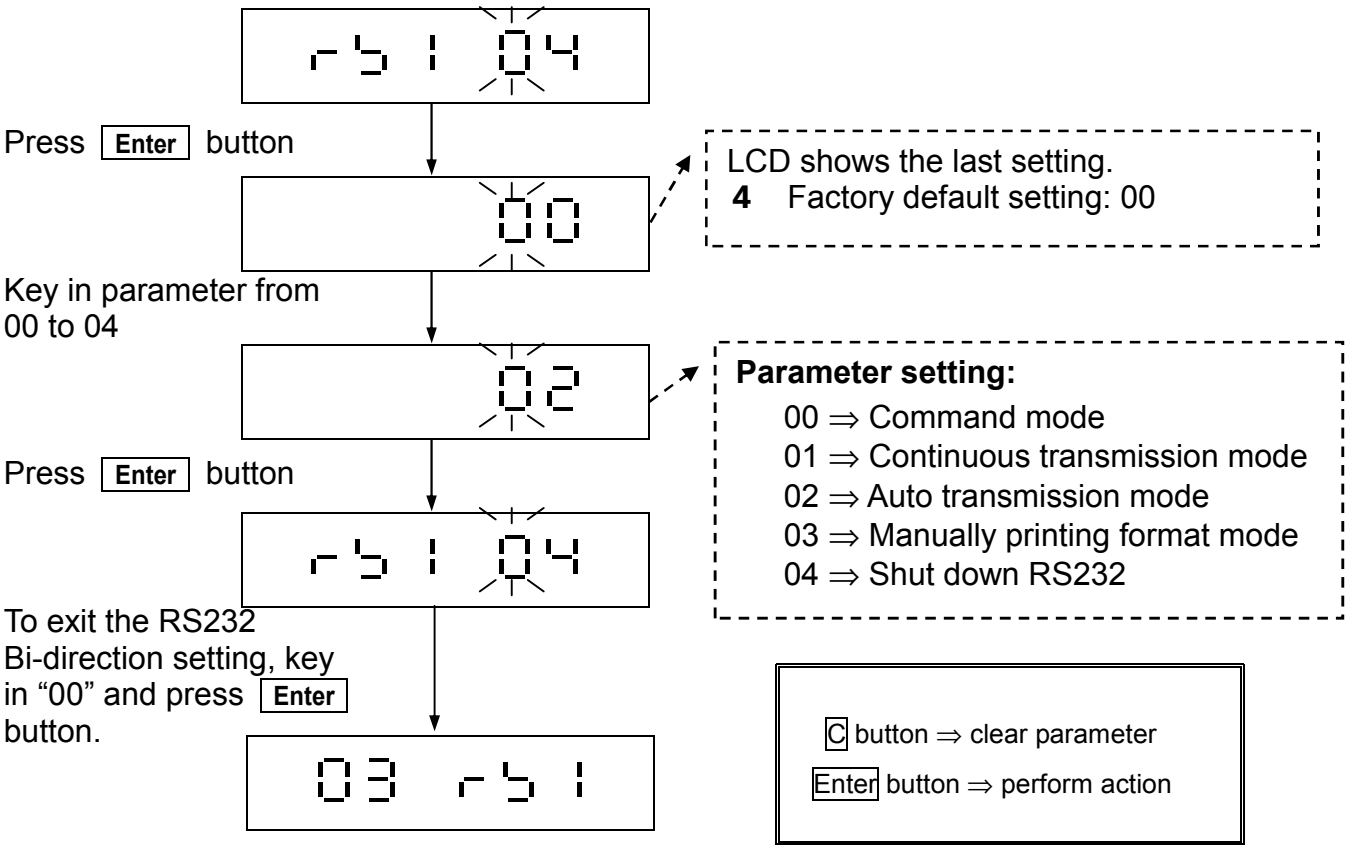
C button ⇒ clear parameter

Enter button ⇒ perform action

3-3-4 Continuous Transmission Setting r51 04

Select r51 04 in the RS232 Bi-direction setting mode

03 r51 to set the continuous transmission.

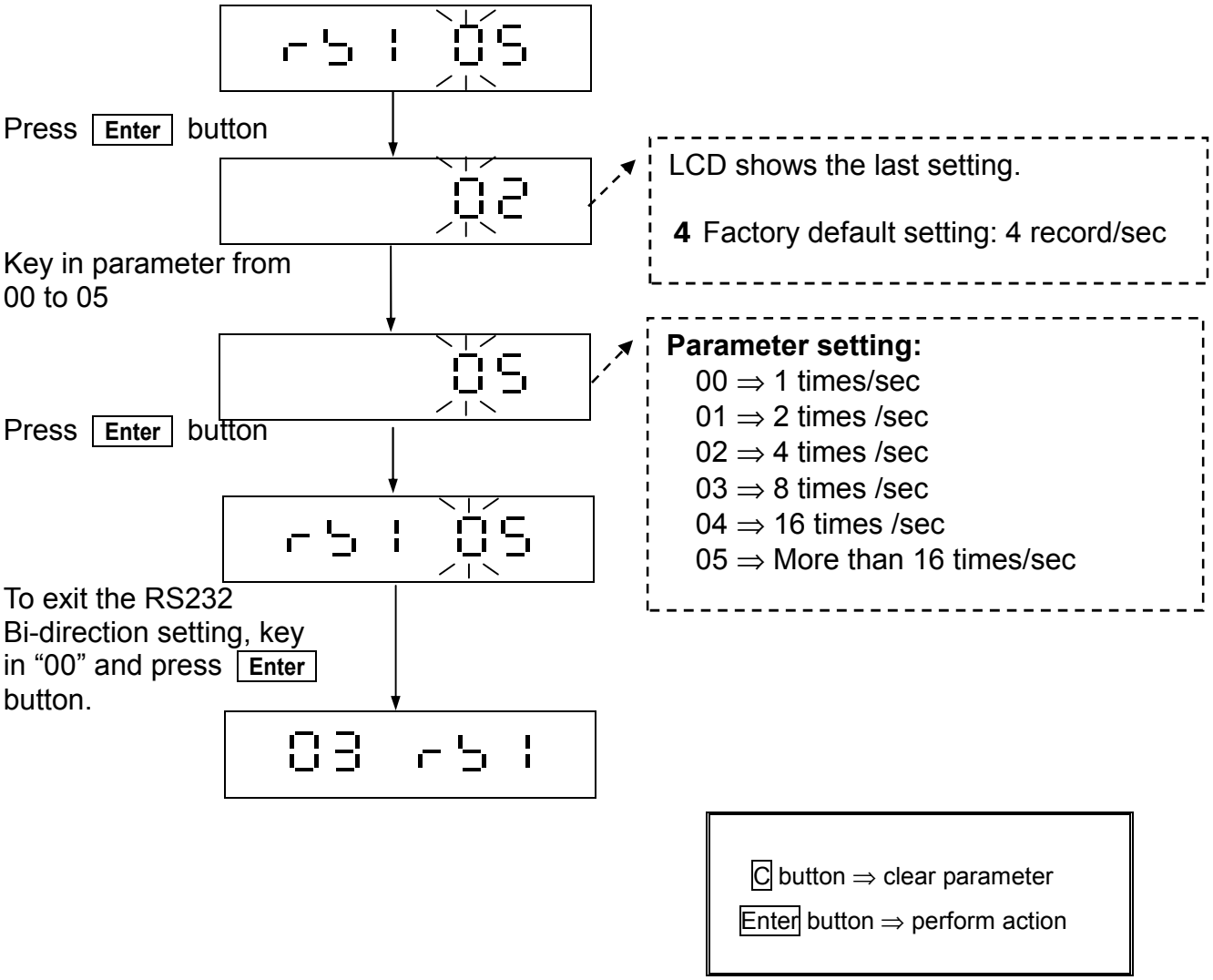


4 Relevant information please see **Appendix 1**

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

Select r51 05 in the RS232 Bi-direction setting mode

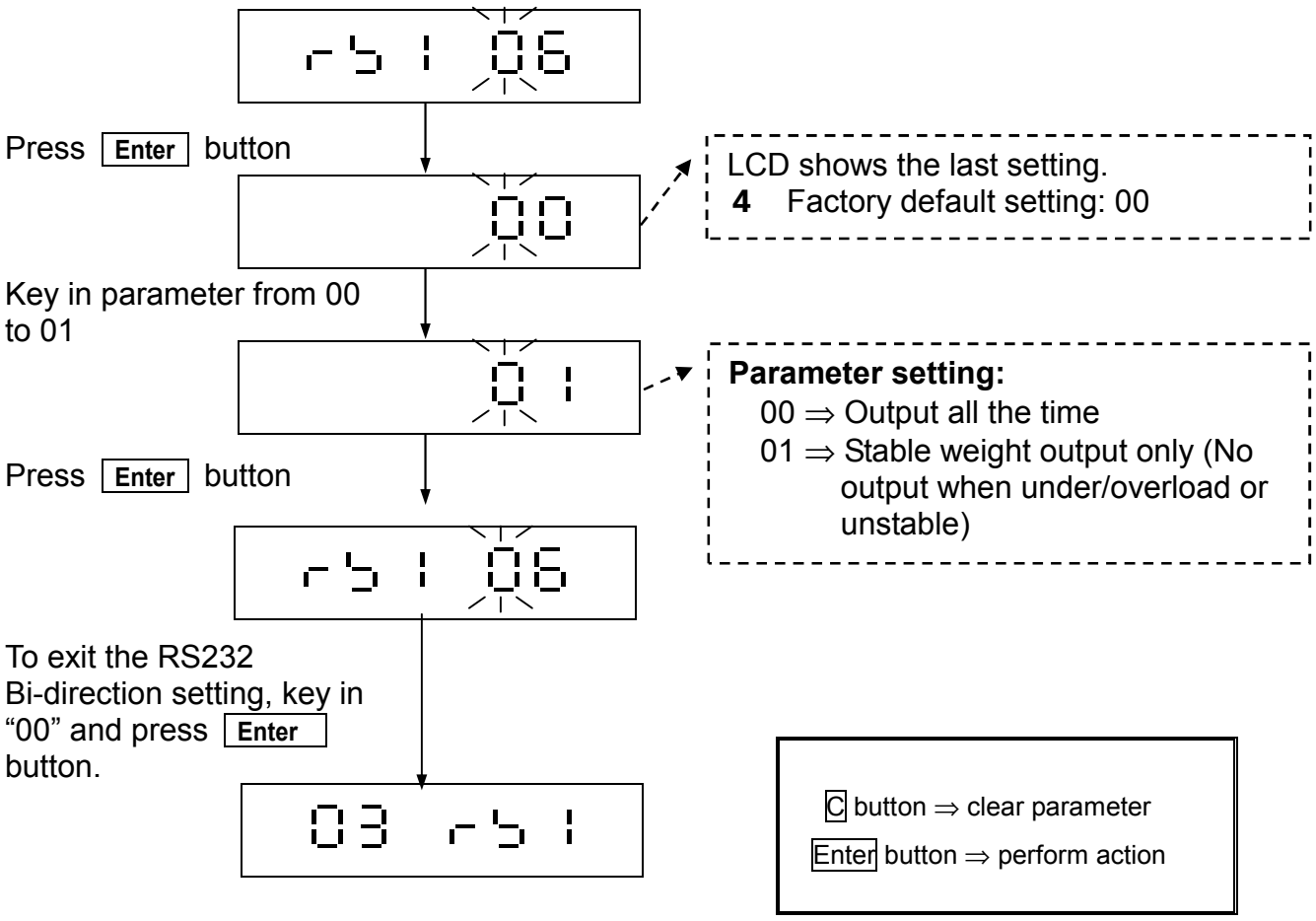
03 r51 to set the continuous transmission rate.



3-3-6 Output Condition Setting r51 06

Select r51 06 in the RS232 Bi-direction setting mode

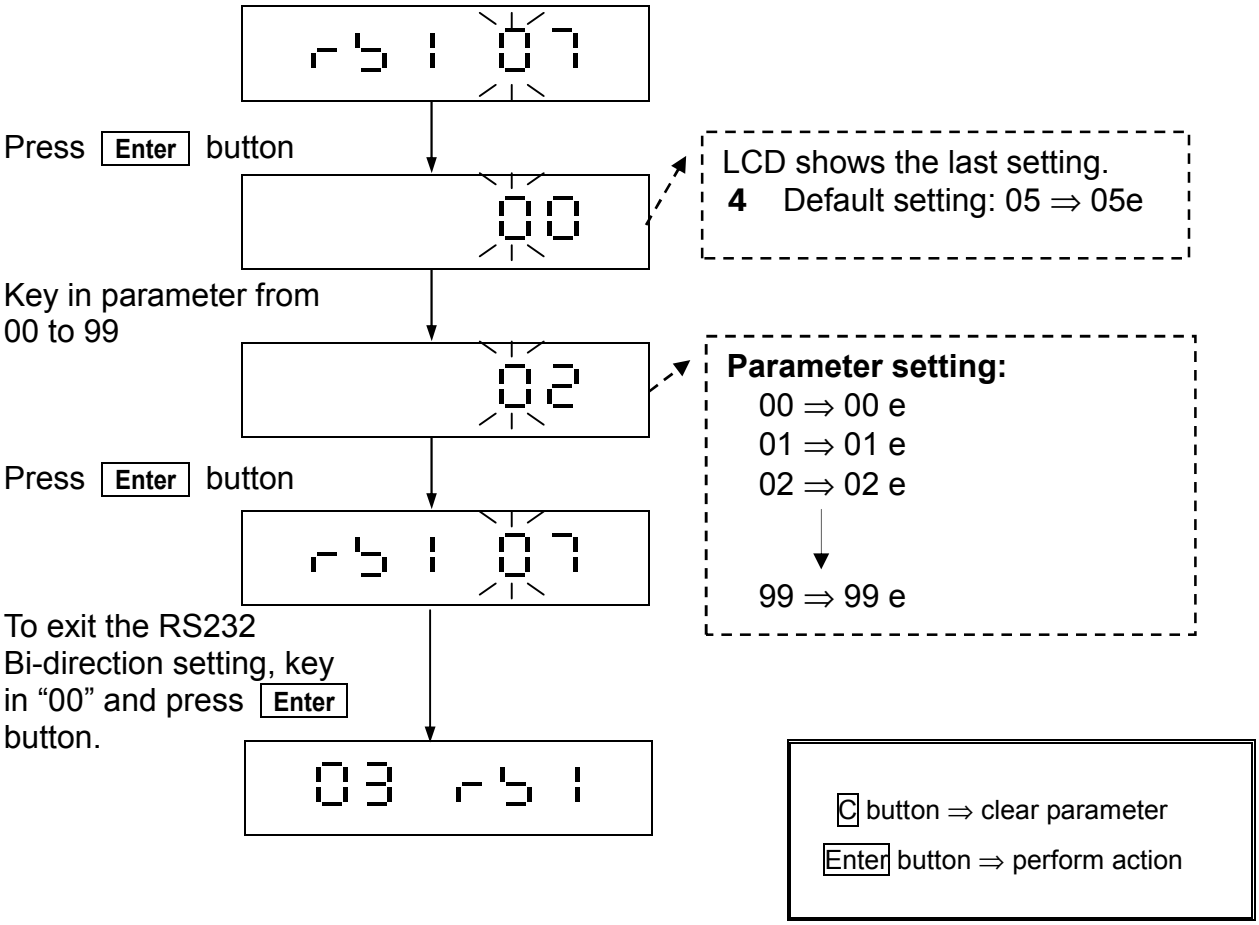
03 r51 to set the output condition.



3-3-7 Auto Transmission at Zero r 5 1 07

Select r 5 1 07 in the RS232 Bi-direction setting mode

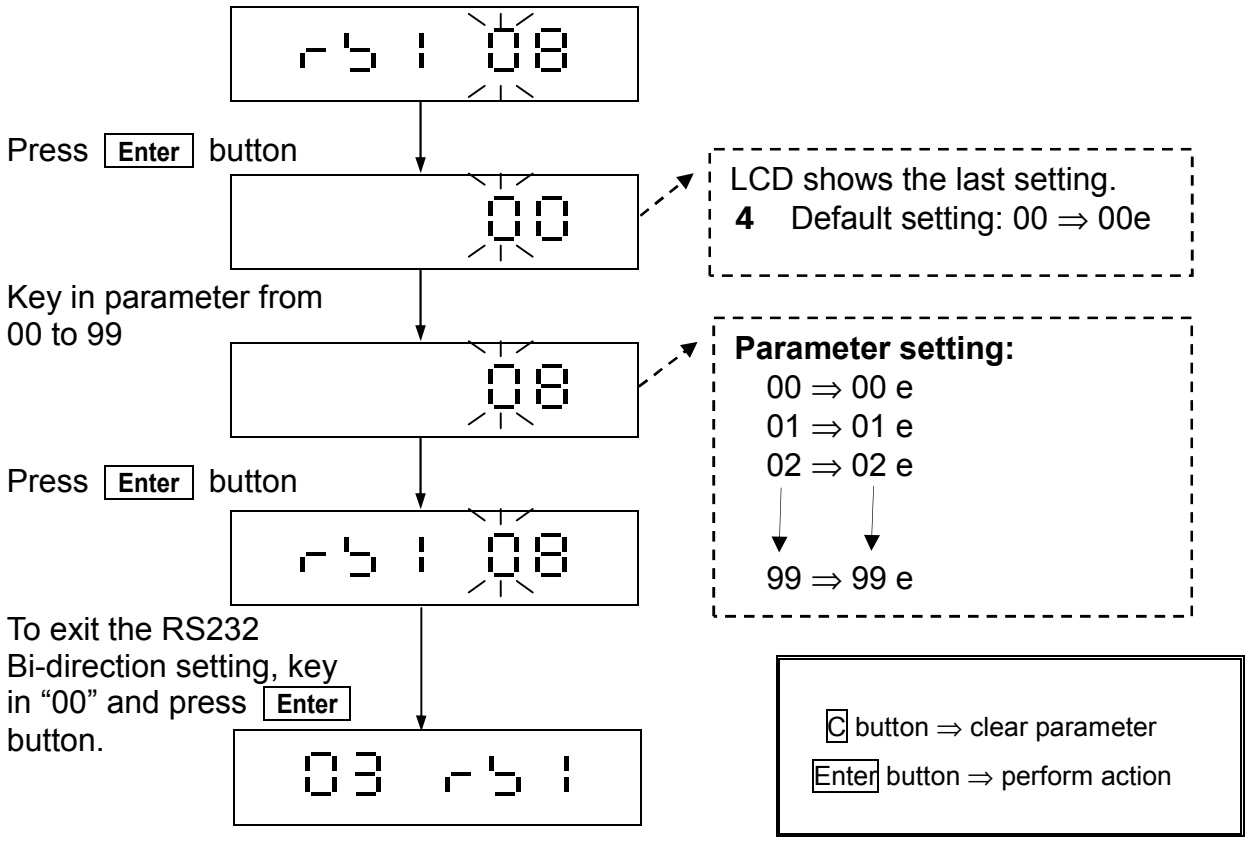
03 r 5 1 to set the auto transmission at zero.



3-3-8 Reset of Auto Transmission r5 1 08

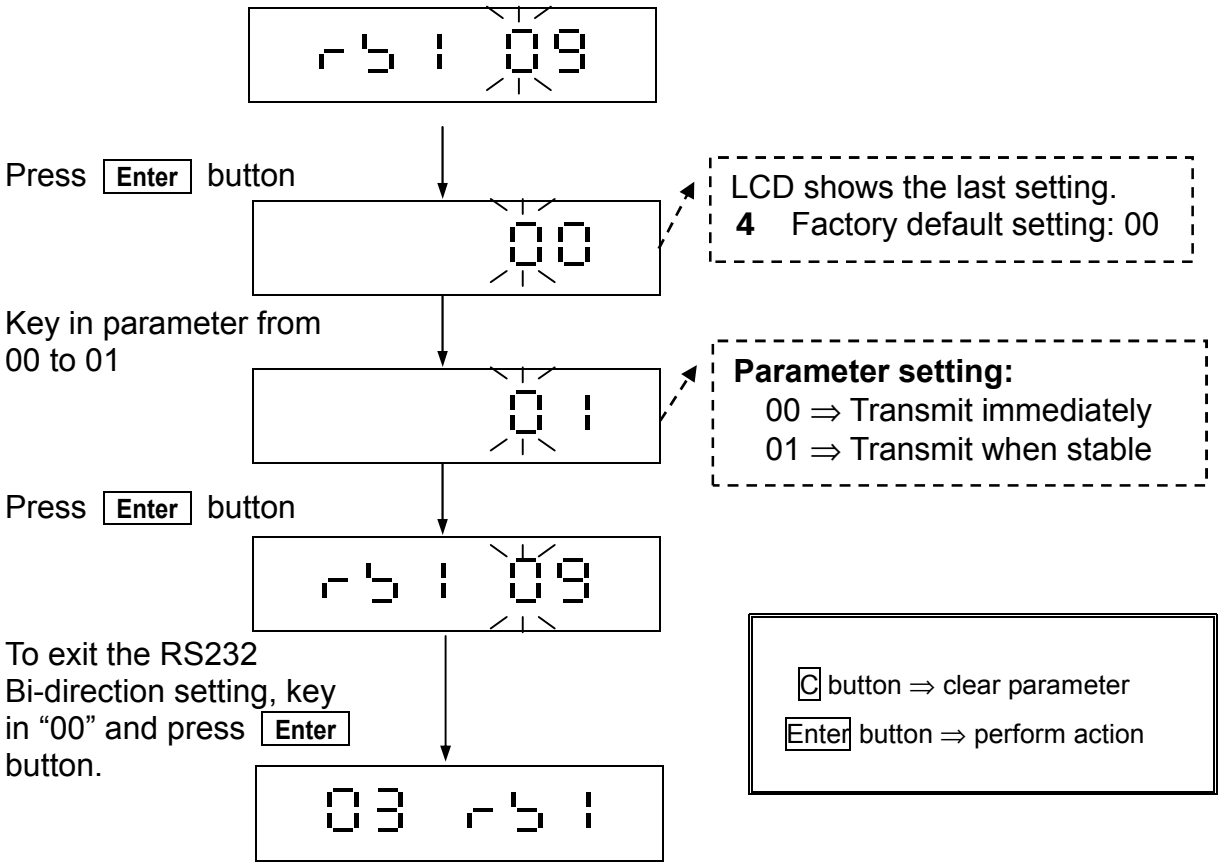
Select r5 1 08 in the RS232 Bi-direction setting mode

03 r5 1 to reset the auto transmission.



3-3-9 Condition of Manually Printing r51 09

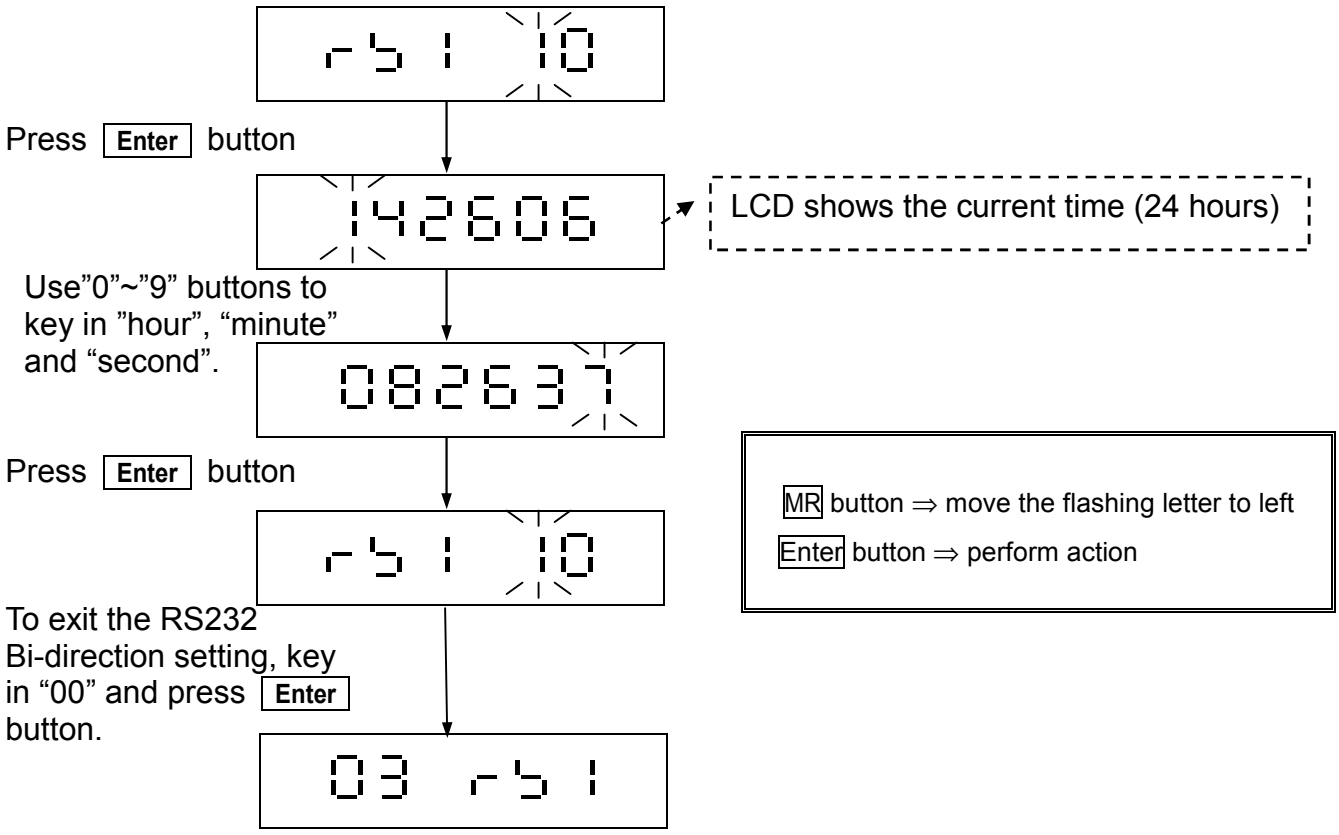
Select r51 09 in the RS232 Bi-direction setting mode 03 r51 to set the condition of manually printing.



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

Select r51 10 in the RS232 Bi-direction setting mode

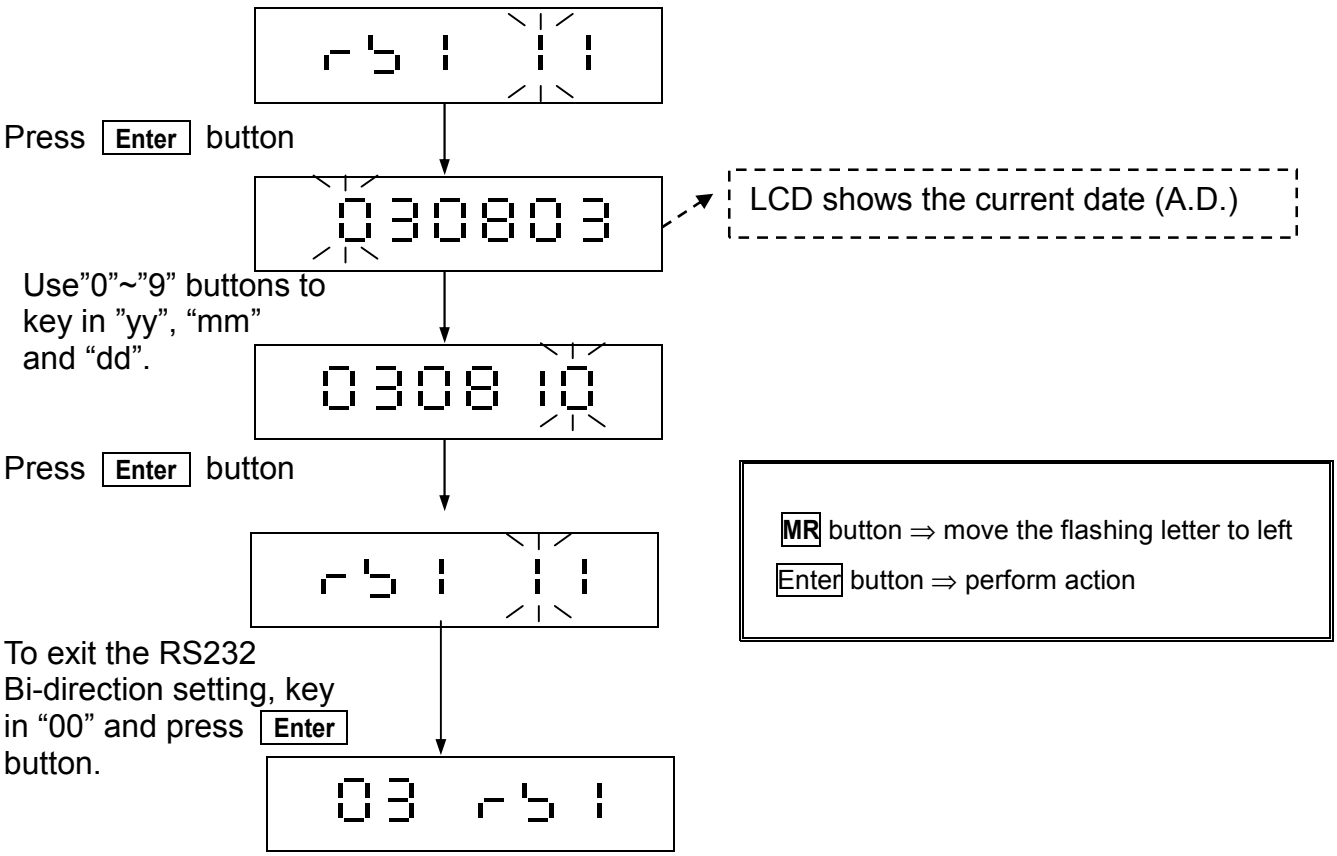
03 r51 to set the real time clock for time.



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

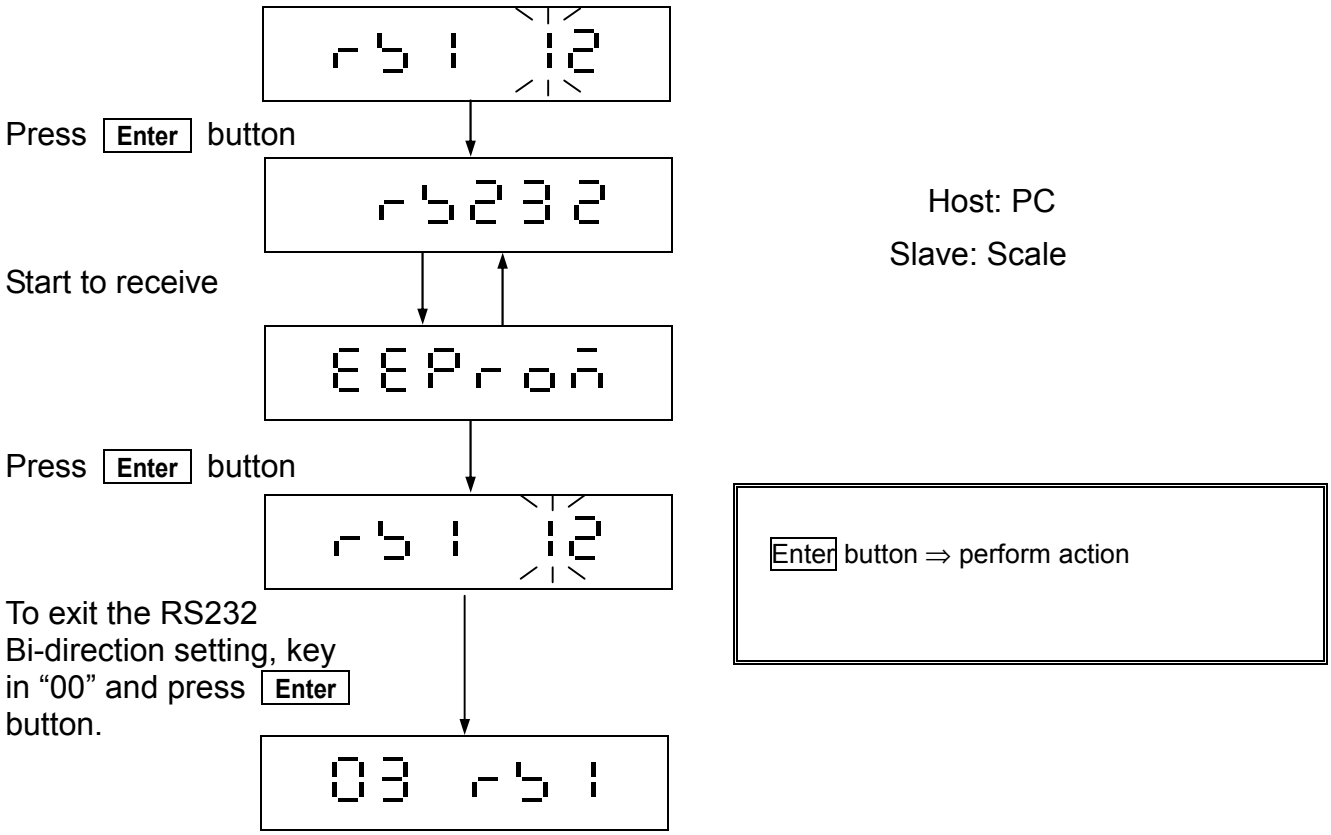
Select r5 1 1 1 in the RS232 Bi-direction setting mode

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



3-3-12 RS232 Serial Interface Setting Mode rS1 12

Select rS1 12 in the RS232 Bi-direction setting mode 03 rS1 to set the RS232 serial interface.



4 More information please see **Appendix 1**

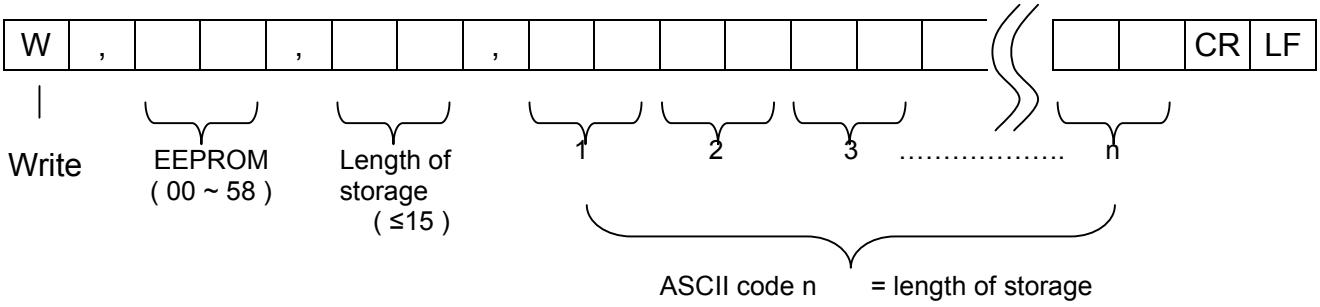
Appendix 1 RS232 Serial Interface

1 RS232 Command format:

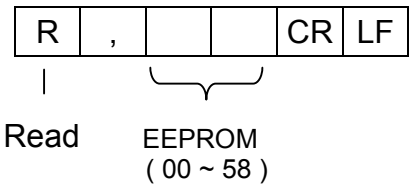
(1) The Host (PC) writes the data to the EEPROM of Slave (Scale).
(2) The Host (PC) reads the data in the EEPROM of Slave (Scale), and the Slave (Scale) has the data feedback to the host (PC).

Content planning

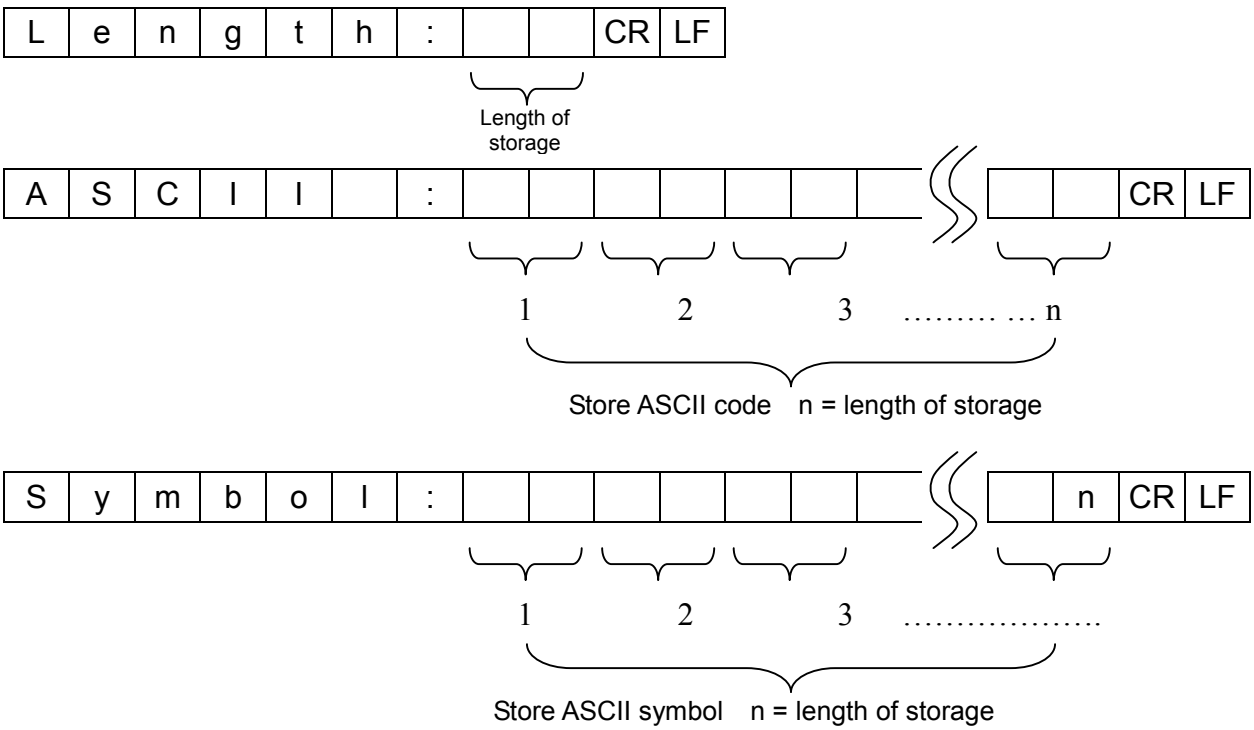
1.



2.



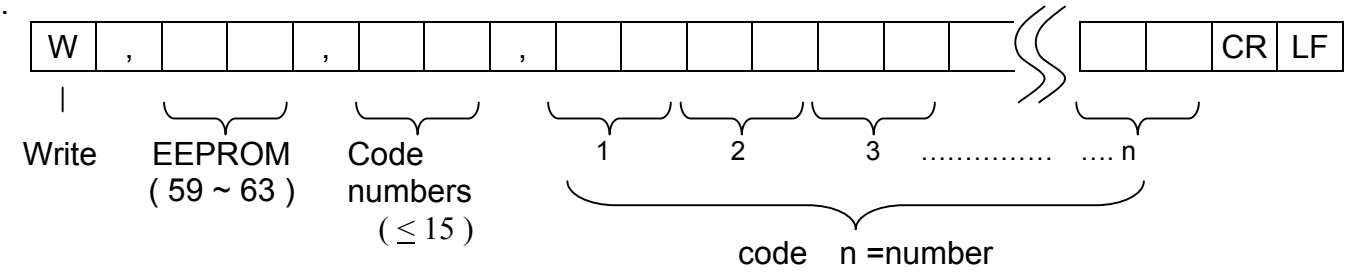
Write above two commands to the Host (PC), the Slave (Scale) has the following format feedback to the Host (PC).



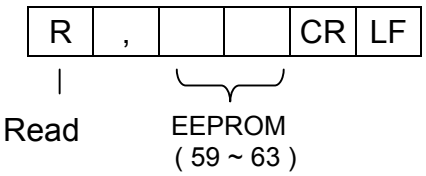
Code	First EEPROM address	Item		Final EEPROM address
00	00	Gross		01
01	02	Net		03
02	04	Tare		05
03	06	Pre Tare		07
04	08	Target Weight		09
05	10	Range		11
06	12	High Limit		13
07	14	Low Limit		15
08	16	Percent (%)		17
09	18	**EEPROM address**	Weight units	24
		19	First unit EEPROM address	
		20	Second 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**	Lo、Ok、Hi 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

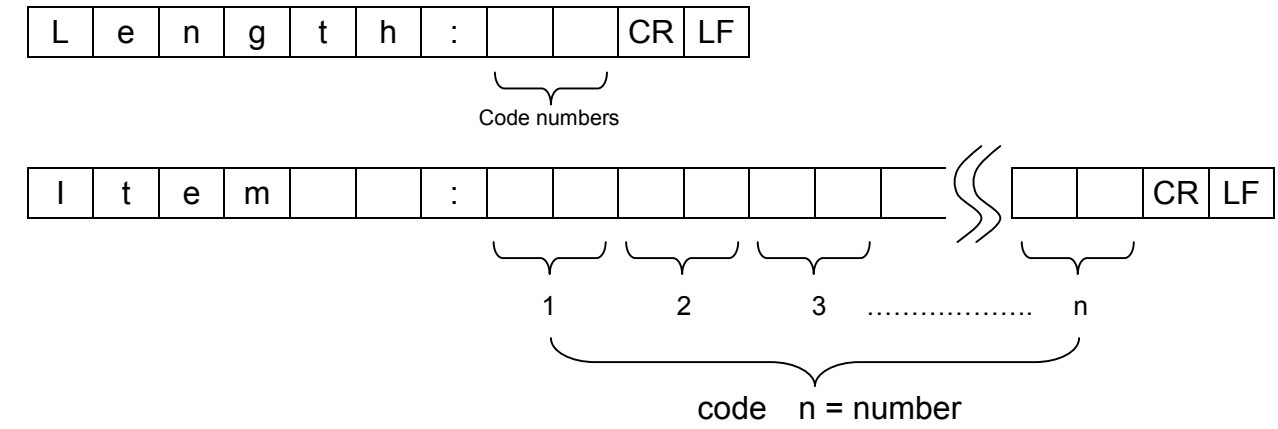
1.



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

4 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 Setting Value

RS i i ¨ ¨ i i : group (00~09) ¨ ¨ : setting item

LO	Read LO setting value	**RG**	Read Range setting value
HI	Read HI setting value	**PT**	Read PreTare setting value
OK	Read Target setting value		

Note: No group number for PT.

EX: RSPT＜CR＞＜LF＞ Read PreTare setting value
ANS: RSPTXXXXXX＜CR＞＜LF＞
EX: RS03RG<CR><LF> Read the 3rd group of Range setting value
ANS: RS03RGXXXXXX<CR><LF>

Command Format C

Host	Command+ Data	
Slave		Command+ Data

Write Weight Comparison Setting Value **WS ¡ ¡ ¨ ¨ XXXXXX**

¡ ¡ : group (00 ~ 09) **¨ ¨ :** setting item **XXXXXX:** Setting value

LO	Write LO setting value
HI	Write HI setting value
OK	Write Target setting value
RG	Write Range setting value
PT	Write PreTare setting value

EX: WSPTXXXXXX＜CR＞＜LF＞ Write PreTare setting value
ANS: WSPTXXXXXX＜CR＞＜LF＞
EX: WS03RG XXXXXX＜CR＞＜LF＞ Write Range setting value
ANS: WS03RG XXXXXX＜CR＞＜LF＞

The above 3 command formats are all bi-directional RS232 commands.

4 Error messages on Slave (Scale):

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

Output Data Format

Weight format

Gross	S	T	,	G	S	,	+	0	1	2	3	4	5	6	7	SP	SP	o	z		
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	CR	LF
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

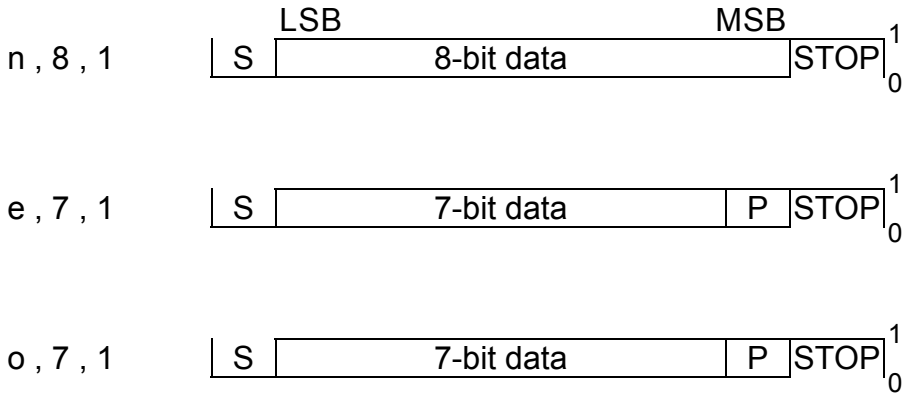
Gross	+	0	1	2	3	4	5	6	7		
Net	+	1	.	2	3	.	4	5	6		
Tare	+	0	1	2	.	3	4	5	6	CR	LF
Plus OL	+	SP	SP	SP	SP	SP	SP	SP	SP		
Minus OL	-	SP	SP	SP	SP	SP	SP	SP	SP		

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

Serial Data Transfer/Receive Format



Notes:

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

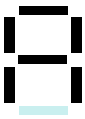
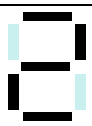
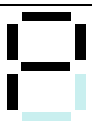
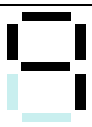
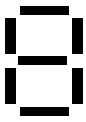
Appendix 2 Button Code

MODE	PRINT	NET / GROSS	ON / OFF
OK	RANGE	PRE-TARE	ZERO
HI	LO	TARE	C
UNITS	MS	MR	ENTER

⇒

08	07	06	**ON/OFF**
18	17	16	15
38	37	36	35
28	**Exit the mode**	26	25

Appendix 3 7 Segment Display Characters

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