

User Manual

Indicator

PWH3



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Special Notice

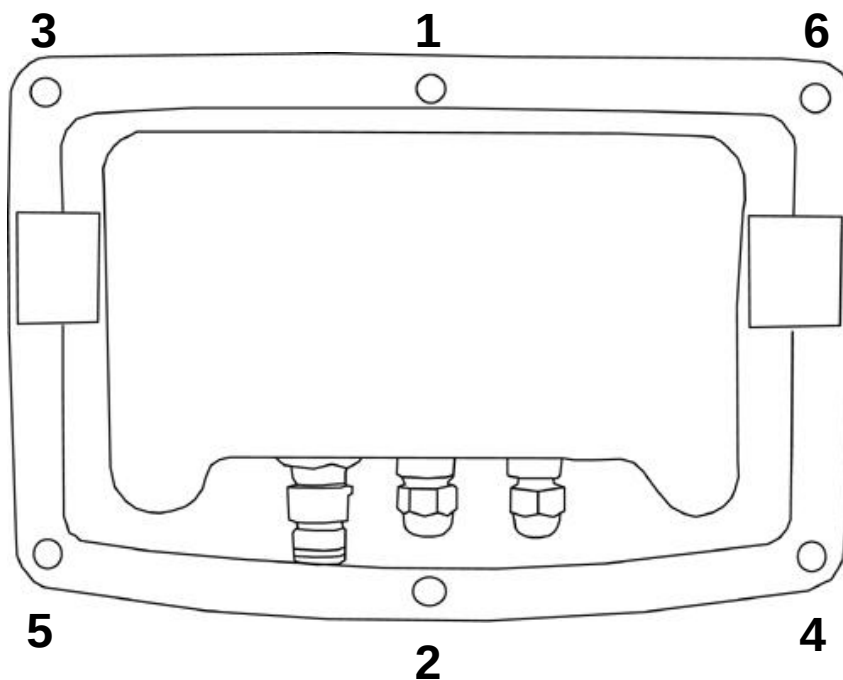
While installing the load cell, power cord hookup or replacing a new rechargeable battery, the indicator housing must be opened. It must be done by a technician assigned by your electronic indicator provider to avoid affecting the waterproof ability of this indicator. Before opening the housing, make sure the indicator is dry, if there is any liquid on it, please wipe it with a clean cloth.

HOW TO INSTALL THE HOUSING

After installing the load cell, power cord hookup or replacing a new rechargeable battery, the housing must be screwed by the assigned order as shown below. Screw lightly first, then screw them tight using a 12 kgf-cm torsion.

P.s. Please use a torsion-adjustable screw driver.

Screwing order:





Thank you for purchasing EXCELL WEIGHING INDICATOR, to help use the product properly, operate smoothly, and extend its life cycle, please read this manual carefully.

Before Using the Scale

In order to use this scale correctly, we suggest that you read this manual carefully.

Instructions for Use

1. The load placed on the weigh pan must NOT exceed the maximum weighing capacity of the scale.
2. Protect the scale from high temperatures.
3. Avoid objects impacting with the scale. Do not drop loads onto the scale or subject the weigh pan to any strong shock loads.
4. Please operate or charge the scale in an open area. Do not squeeze the power cord to avoid wire on fire.

Preparing to Use the Scale

1. Locate the scale on a firm level surface free from vibrations for accurate weight readings.
2. Adjust the four levelling feet (if fitted) to set the scale pan level.
3. Avoid operating the scale in direct sunlight or drafts of any kind.
4. 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.
5. 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.
6. 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.
7. Once the scale has been powered on, it will go through an LCD display test and it is ready for use when the display shows zero.
8. The scale requires 15~20 minutes warm up before operation to ensure best accuracy.
9. Please note when the  symbol keeps flashing on the screen, the batteries need to be charged.
10. Introduction of Storage Battery



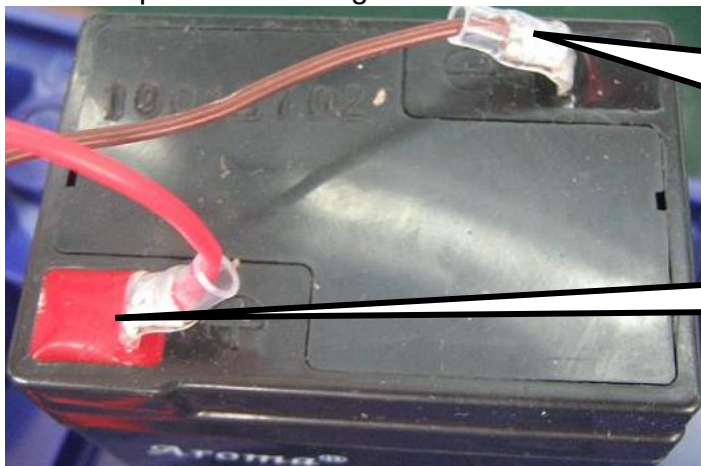
Due to the storage battery adopt the advanced free-maintaining technique, customers need not to replenish electrolyte.

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 picture following



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

Red cable connected with
Cathode of battery

Safety warnings

1. The electrolyte of battery is caustic which causes metal, cotton, etc to corrode.
2. The hydrogen will be resolved when using or charging the battery and it will cause explosion when approaches fire.



No burning



Caution Corrosion



Warning explosion



Children faraway



Chapter 1 Introduction

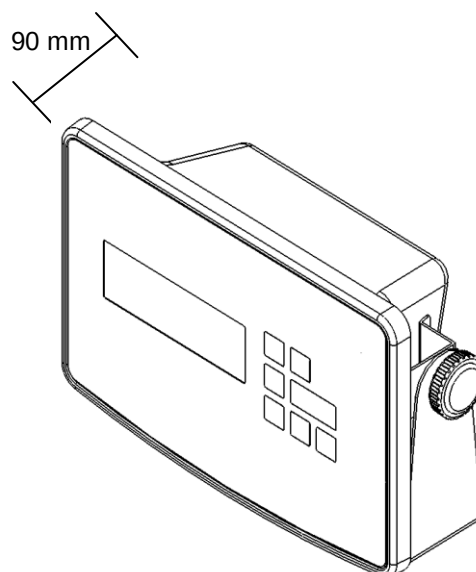
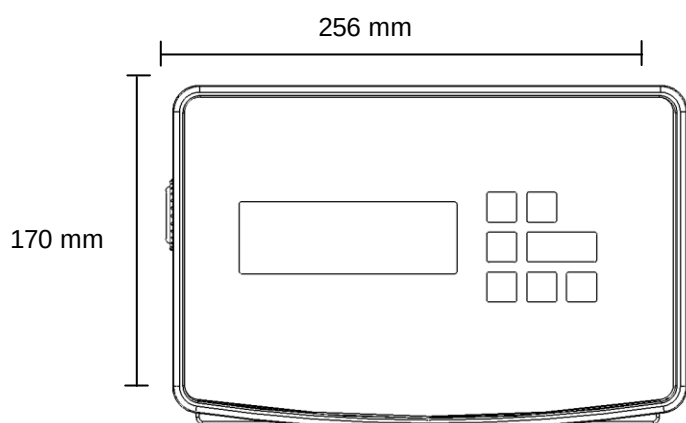
1-1 Product Features

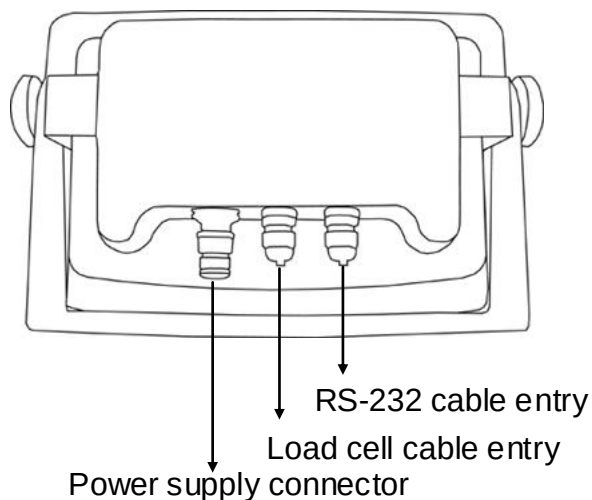
- Sealed to IP68, (Only use cables of 3mm~5mm diameter to ensure correct sealing of the cable glands)
- Kilogram (kg) and pound (lb) weighing modes
- Full range tare; Pre-tare; Auto zero tracking; Sampling counting; Gross/Net indication
- Adjustable gravity value
- Low power indication and auto power off
- AC/DC power in and rechargeable battery.
- Built-in RS-232
- Options: pressure release valve, foot switch

1-2 Specifications

- Analogue Input: Input Sensitivity $0.3\mu\text{V/d}$ (Min.)
- Input Signal Range: $-1\text{mV}\sim+14\text{mV}$
- Input Zero Range: $-1\text{mV}\sim+5\text{mV}$
- Load Cell Excitation: 5V DC
- Load Cell Drive Capacity: Up to $8 \times 350\Omega$ load cells
- Non-linearity: 0.01% of full scale
- A/D Resolution: 500,000 counts (Maximum)
- Operating temperature: $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$

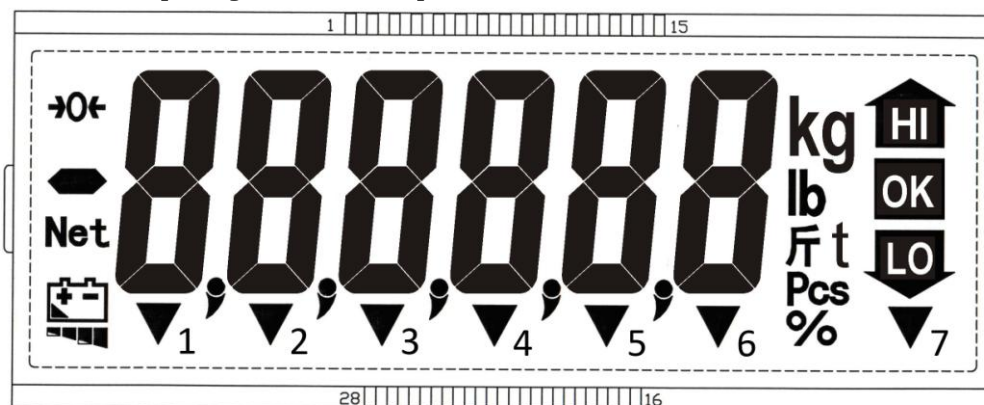
1-3 Product Appearance





(RS-232 and load cell cables size 3mm~5.5mm diameter to ensure correct sealing of the cable glands)

1-4 Display Description



HI :	Upper limit	“▼” indications description
OK :	Value between HI and LO	▼ 1 : (STABLE) stable indication
LO :	Lower limit	▼ 2 : (GROSS) gross weight indication
kg :	Unit “kilogram”	▼ 3 : () unit weight insufficient indication
lb :	Unit “pound”	▼ 4 : (PT) pre-tare indication
t :	hk tael	▼ 5 : (Hold) weight hold indication
Pcs :	Counting mode indication	▼ 6 : “GN”、 “dwt”、 “carat”、 “M+” unit indication
→0← :	Zero point indication	▼ 7 : “oz” or “viss” unit indication (set as needed), or no unit indication
Net :	Net weight indication	
	Low Power indication	

1-5 Power Supply

Power Supply Selection

- ① 6V / 4.5Ah rechargeable battery
- ② Input 110VAC or 230VAC $\pm 15\%$; Output 10VDC/1A adaptor

Power Consumption

Approximately DC 14 mA (Indicator)

Approximately DC 24 mA (Indicator + Display backlight)

Charging Voltage

DC 10V/1A output adaptor



Low Battery Warning

Please note when the () symbol keeps flashing on the display, the internal battery should be recharged.

- ☐ The scale will turn off automatically after a few hours when the low battery warning symbol shows up. The scale must be fully charged, before operating again.
- ☐ When the battery status indication is full, the power is about 6.1V; Each block is about 0.2V; When the battery warning symbol shows up, the power is about 5.4V.

1-6 Keypad Function

OFF KEY

Press the **OFF** key to switch the indicator off.

ON|ZERO KEY

- ❶ When the power is off, press **ON|ZERO** key to switch the indicator on.
- ❷ When the power is on, press **ON|ZERO** key to return to zero.
- ☐ Zero Range : OIML&NTEP is $\pm 2\%$ F.S., and Sri Lanka is $\pm 3\%$ F.S.

TARE|PT KEY: Tare / Pre-tare key

To TARE:

Place the container onto the scale, until the weight value is stable, press **TARE|PT** key for zero return and the NET indication is shown on the display. Place the object onto the container and the display shows the net weight value of the object. Remove both object and container, and negative value of the container will show on the display. Press **TARE|PT** key again to clear "tare value". The scale returns to zero and NET indication goes off.

- ☐ Tare can be continuously done until tare value=full load capacity
- ☐ Continuous Tare → Press **TARE|PT** key for continuous weight increase/decrease on platter.
- ☐ If there is Tare, the pre-tare cannot be done. If there is pre-tare first, and the tare weight more than pre-tare weight, Tare can be done.
- ☐ No Tare can be done under gross weight display mode.

To PRE-TARE:

Press **TARE|PT** key, use keypad to input pre-tare weight. When the cursor flashes on the rightmost digit, press **TARE|PT** key again to complete.

Pre-tare mode, keypad function as followed:

ON ZERO ⇒ upward key (0~9 digit entry)	NET GROSS ⇒ move cursor leftward
UNIT ⇒ downward key (0~9 digit entry)	TARE PT ⇒ move cursor rightward

UNIT KEY

Press the **UNIT** key to switch weight units; the display icons will indicate the active units.

NET|GROSS KEY

In the Tare mode, the screen displays the "TARE" icon; press the **NET|GROSS** key to switch between the "Net value" and the "Gross value". When the "GROSS" arrow ▼ shows up, the Gross Weight in the screen = Tare weight + Net weight, meanwhile, keys except the **NET|GROSS** key, have no response.

M+|PRINT KEY

Totalization function. M+/Print function is available when RS232 is on keypad transmission mode. (r   output).



This key is a composite key, while totalization is shown and weight returns to net zero, press M+ key to erase memory. RS232 will output MC print format (r 1 1 1 1 output).

☞ If there is new weight added on platter (it is less than 20 divisions in Brazil version, no accumulation), a new item will be added to totalization. If this weight is not taken off, nothing can be added to totalization. Display will show the totalization numbers for one second, then show net weight for one second, then the scale returns to the current weight, and prints out the last item for totalization.

☞ To clear totalization data, press M+ key to let display shows up totalization numbers, then press the [M+|PRINT] key again, to clear totalization data. RS232 will print out totalization numbers, total weight, etc.

P.s. Weight must return to net zero if to perform clear function.

[F] KEY

Function key (In F 1 1 1 1, select [F] key as “MC” or “HR”)

Foot Switch Mode

This function is optional. Use F 1 1 1 1 to select [TARE|PT] key as “ZERO” or “PRINT” key

☞ If “PRINT” key is set (r 1 1 1 1 = 10/11), all totalization data will be printed out, and totalization will be cleared.

☞ If it is Brazil version and foot switch is set as Print function, it has totalization function and print function.

Simple Counting Mode

Use [UNIT] key to switch unit to Pcs, to go into simple counting mode.

1. Use [NET|GROSS] key to select a sample number from “10, 20, 50, 100, or 200”. Display will show 10, 20, 50, 100, 200 in an sequential order by pressing [NET|GROSS] key.

2. Select a sampling number, and put appropriate weight on platter, and press [UNIT] key. Display will show “- - - - -”. The scale will go into counting mode after weight is stable, and display will show the sample number.

☞ Unit weight insufficient (Pcs): Sample unit weight is **less** than 0.2d or total sample weight is **less** than 20d (d=division)

☞ While sampling, if there is insufficient sample or unit weight insufficient indication “▼”, the scale is still usable, but there may be slight inaccuracy.

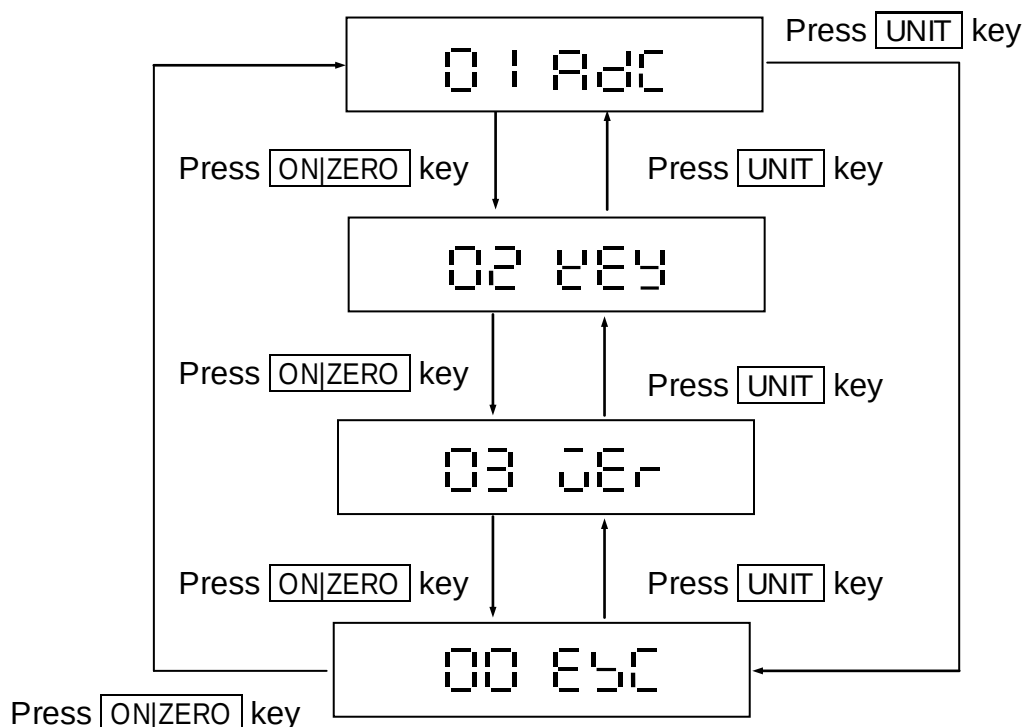
☞ After Power-off, the scale automatically memorizes the sampling number, and it is available when “Pcs” unit is selected next time.

☞ If the setting is “automatic average unit weight”, if the object on platter > the previous sampling number more than 5 pcs, and also < less than 100% the previous sampling number, the scale will execute unit weight calibration automatically.



1-7 Self-Test Mode

When power is off, hold **[NET|GROSS]** key and press **[ON|ZERO]** key, Wait till display shows **01 AdC** to enter "Self-Test Mode".



01 AdC INTERNAL VALUE MODE (must hook up full-bridge Load Cell to test)

- ① Press **[TARE|PT]** key to enter, and the display shows internal value
- ② Please check the internal value is within normal range is 0 ~ 400000 (no load)
- ③ Check whether the backlight is on
- ④ Press **[ON|ZERO]** key to back to the last screen, the display shows **01 AdC**

02 KEY KEYPAD TEST MODE

- ① Press **[TARE|PT]** key to enter, display shows **KEY 06**
Keypad's internal code: **[TARE|PT]** key = 06, **[UNIT]** key= 05, **[F]** key = 02
[NET|GROSS] key=04
- ② Press **[ON|ZERO]** key to back to the last screen , the display shows **02 KEY**

03 Ver FIRMWARE VERSION DISPLAY MODE

- ① Press **[TARE|PT]** key to enter , display shows the firmware version **02005** ,
- ② Press **[TARE|PT]** key again, the display shows maintenance number **159** for 2 seconds
- ③ Press **[ON|ZERO]** key to back to the last screen, display shows **03 Ver**

00 E5C BACK TO THE LAST SCREEN

Press **[TARE|PT]** key to exit self-test mode, the scale will re-power on automatically.



1-8 Error Messages

E0 ⇒ The EEPROM is not working correctly.

The EEPROM is not set yet, or the circuit on PCB is broken.

E1 ⇒ Zero is higher than the zero range when switching the indicator on.

E2 ⇒ Zero is lower than the zero range when switching the indicator on.

E4 ⇒ A/D value is unstable.

OL ⇒ The weight of the object is over 9 divisions of the maximum capacity .

- OL ⇒ The weight of the object is under -1/6 maximum capacity.

OF ⇒ ADIC value is over the maximum range.

E10 ⇒ The scale is not in level status.

(Only available with level detector equipped)

1-9 Weight Units

kg	1 g = 0.001 kg
g	1 g = 1 g
lb	1 g = 0.002204623 lb
lb/oz	1 g = 0.03527396 oz
oz	1 g = 0.03527396 oz
GN	1 g = 15.432358 GN
dwt	1 g = 0.6430149 dwt
ct	1 g = 5 ct
hk.tael	1 g = 0.02645546 Hk.catty
viss	1kg = 0.612245 viss



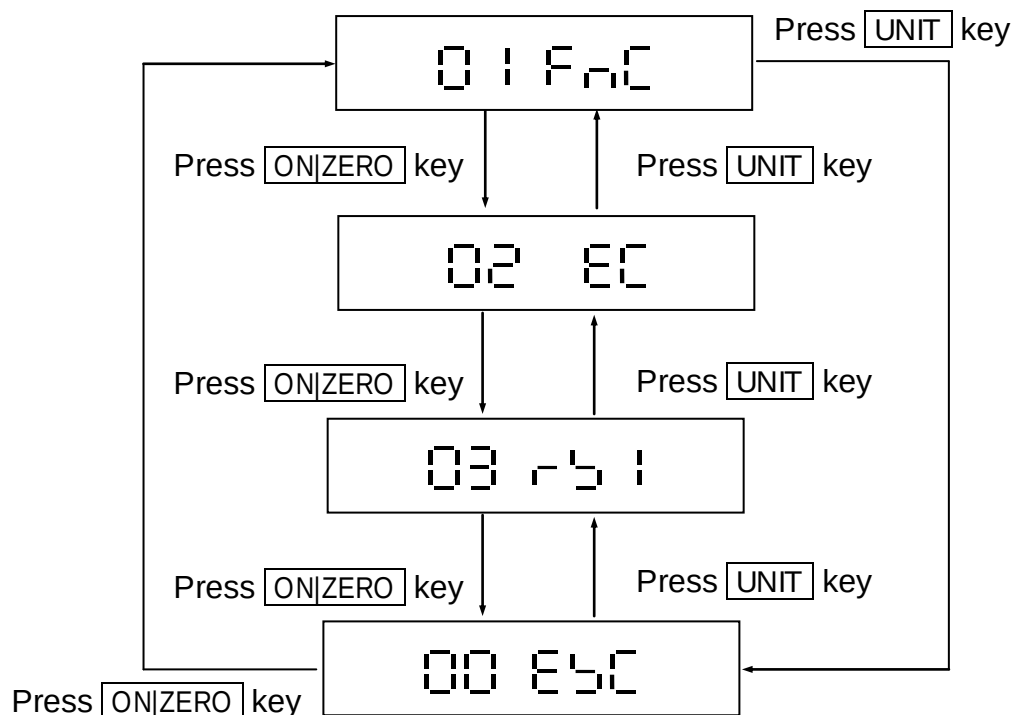
Chapter 2 Configurations

Configuration Workflow

In the weighing mode, press **NET|GROSS** key and **ON|ZERO** key s at the same time to enter the configuration mode.

The LCD shows **01 Fnc**.

Overall workflow of the Advanced Function setting mode:



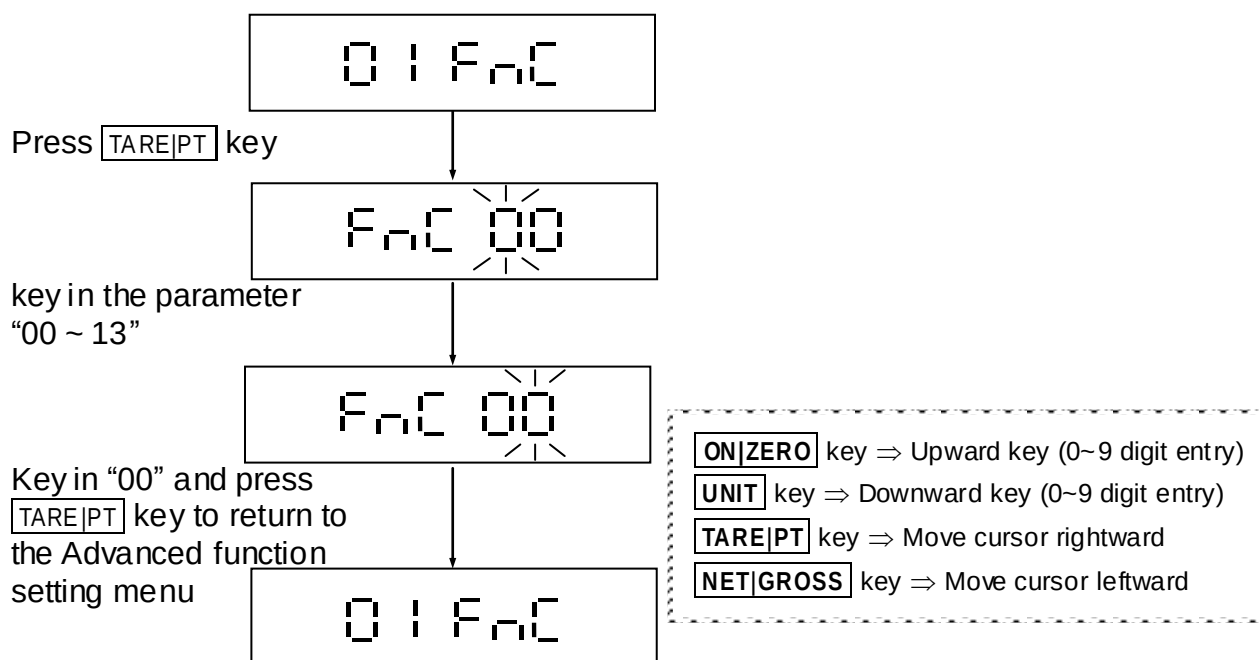
01 Fnc	⇒ General Function Setting Mode
02 EC	⇒ External Weight Calibration
03 r51	⇒ RS232 Bi-direction Function Setting
00 E5C	⇒ Exit the Advanced Function Setting Mode

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



2-1 General Function Setting 0 | Fnc

Workflow of the General Function setting:

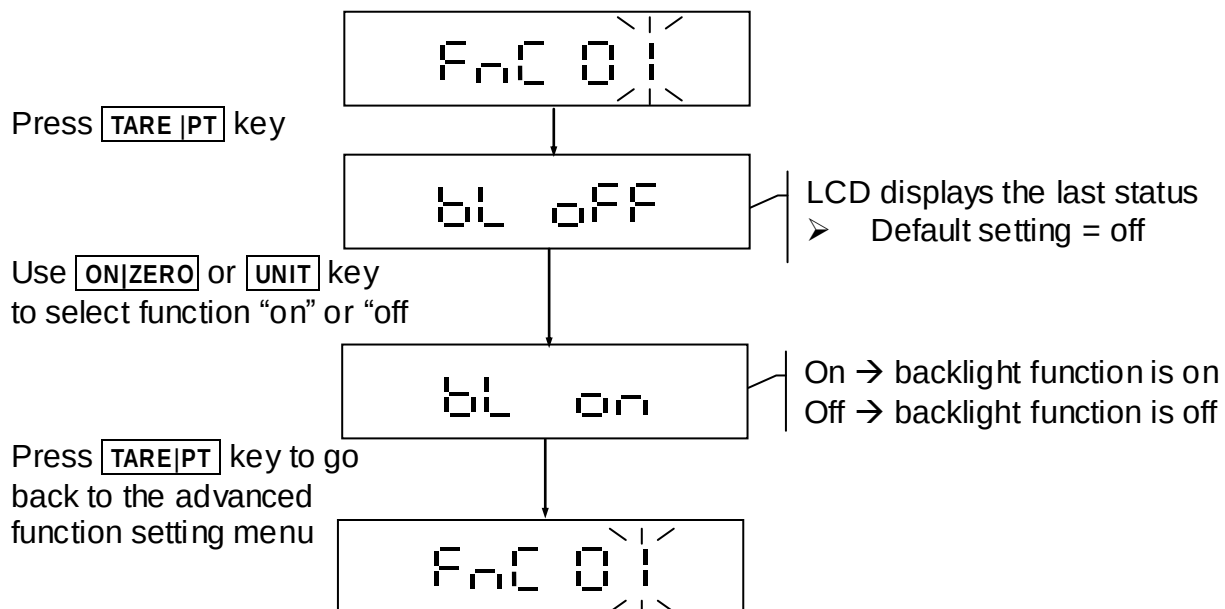


Fnc 00	⇒ Return to the Advanced Function Setting Mode Menu
Fnc 01	⇒ Automatic Backlight Function Settings
Fnc 02	⇒ Automatic Power-off Timer Settings
Fnc 03	⇒ Hi/Lo/OK Settings
Fnc 04	⇒ Restore the Default Settings
Fnc 05	⇒ Noise Filter Settings
Fnc 06	⇒ Hold Function Settings
Fnc 07	⇒ Auto Unit Weight Averaging Setting
Fnc 08	⇒ Reserved
Fnc 09	⇒ Reserved
Fnc 10	⇒ Record Last Zero
Fnc 11	⇒ Foot switch on/off settings (Option)
Fnc 12	⇒ [F] key function settings
Fnc 13	⇒ Zero Setting



2-1-1 Auto Backlight Function Setting F_nC 01

Select F_nC 01 in the general function setting mode 01 F_nC to change the backlight function setting.



ON|ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward

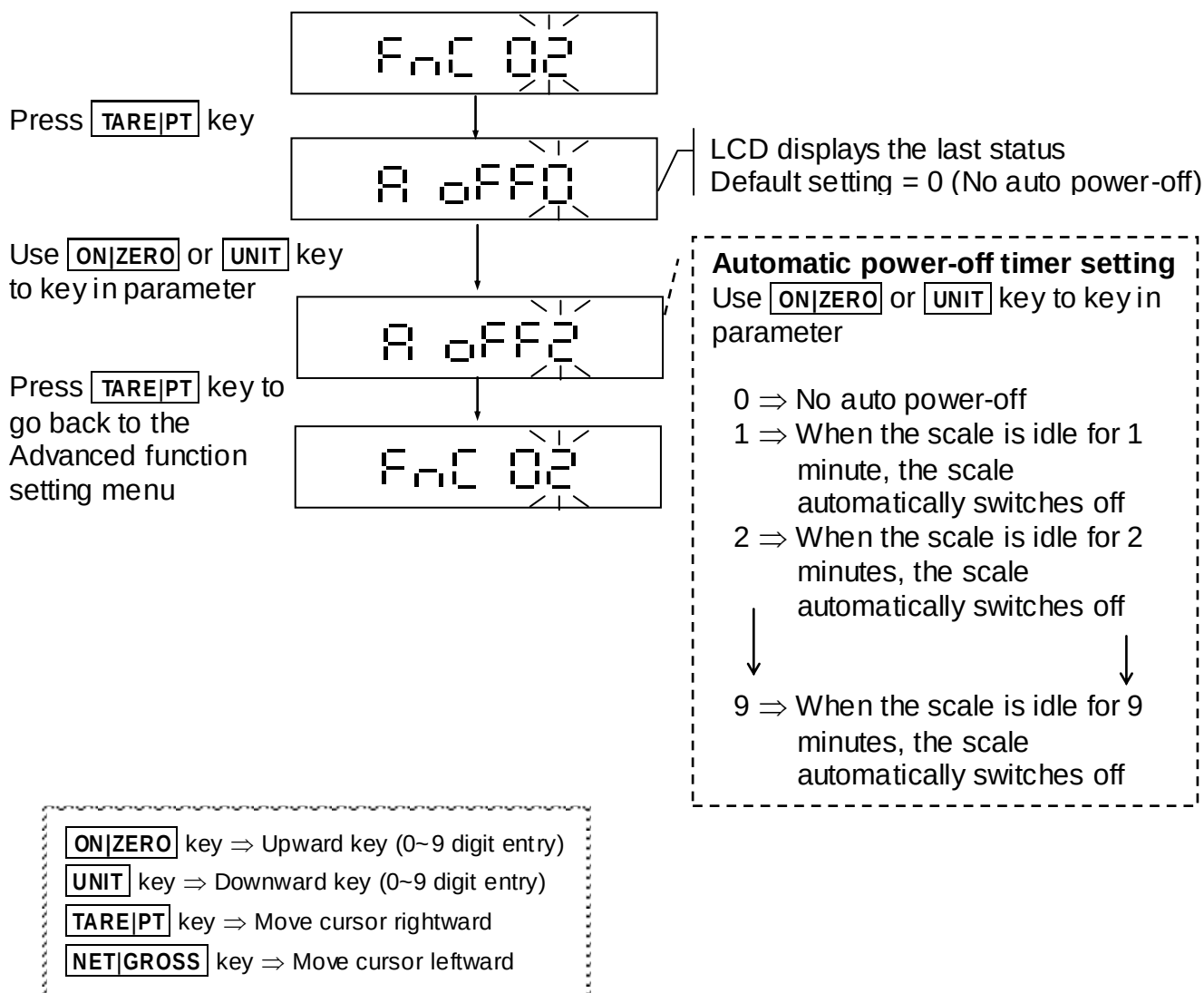
Auto backlight function

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.



2-1-2 Auto Power-off Timer Setting F_{nc} 02

Select F_{nc} 02 in the general function setting mode 0 : F_{nc} to change the automatic power-off timer setting.



Auto power-off function

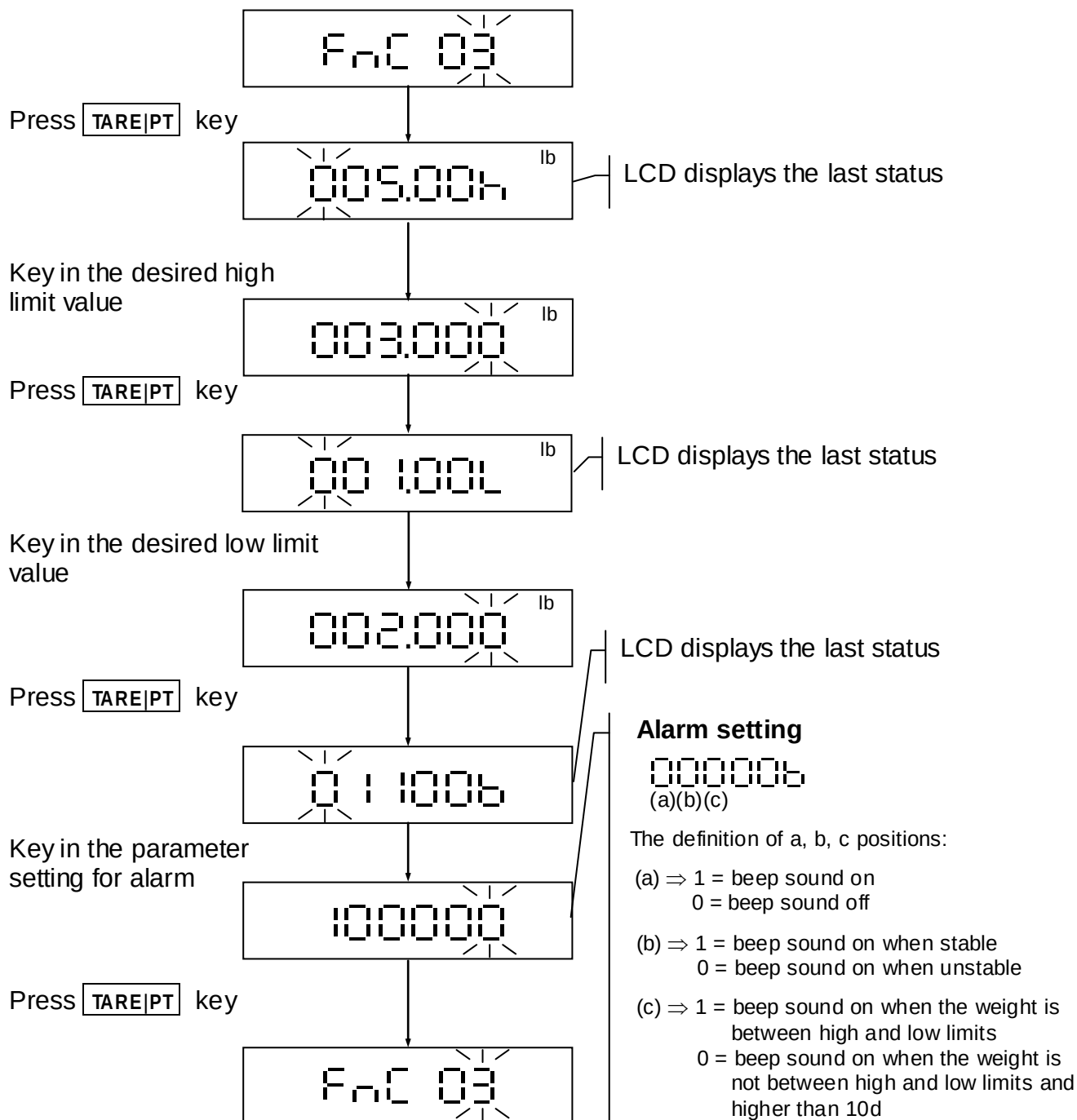
When the weight on weigh pan is less than 10d or keeps idle for the set time, the scale will automatically switch off.



2-1-3 HI/LO/OK Settings F_hC 03

Select F_hC 03 in the general function setting mode 0 : F_hC to set the HI/LO/OK function.

When the high limit and low limit are both set as "0", the Hi/Lo/OK function is disabled.

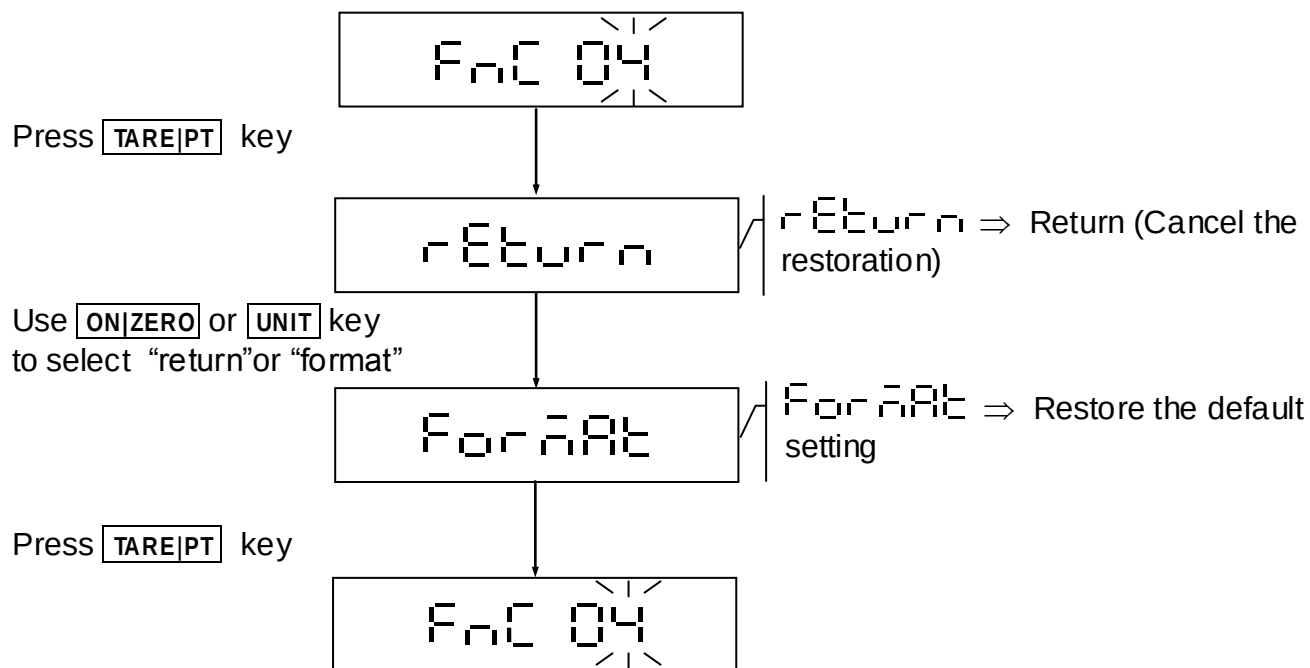


ON|ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward



2-1-4 Restore to the Default Settings F_{nc} 04

Select F_{nc} 04 in the general function setting mode 0 : F_{nc} to restore to the default settings.



[ON ZERO]	key ⇒ Upward key (0~9 digit entry)
[UNIT]	key ⇒ Downward key (0~9 digit entry)
[TARE PT]	key ⇒ Move cursor rightward
[NET GROSS]	key ⇒ Move cursor leftward

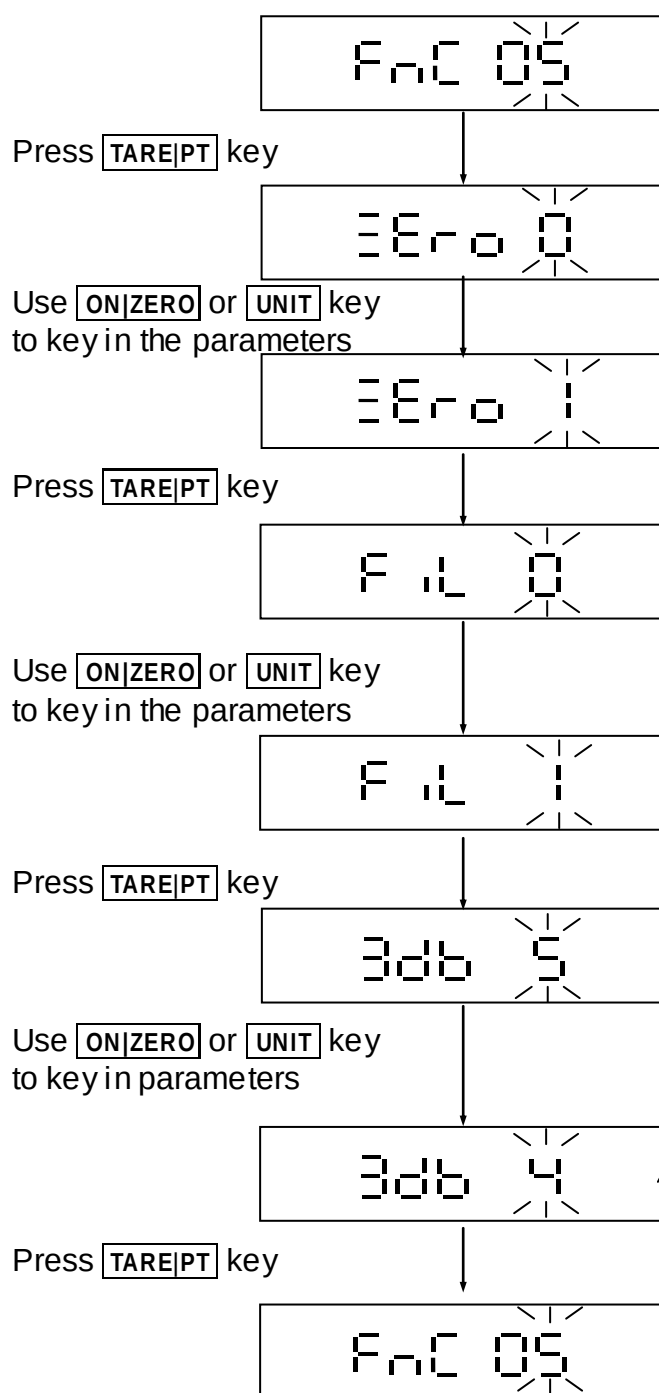
☰ The defaults are included the following:

- 1) External weight calibration
- 2) HI/LO/OK setting values
- 3) Noise filter setting (External)
- 4) Sampling settings for the counting function



2-1-5 Noise Filter Settings F_{NC} 05

Select F_{NC} 05 in the general function setting mode 0 : F_{NC} to set the noise filter settings.



Returning to zero point setting

LCD displays the last status

Returning to the zero point setting

Use **ON|ZERO** or **UNIT** key to key in the parameters or zero point

➤ Default setting = 0

- | | |
|-------------|-------------|
| 0 ⇒ No skip | 5 ⇒ skip 5d |
| 1 ⇒ skip 1d | 6 ⇒ skip 6d |
| 2 ⇒ skip 2d | 7 ⇒ skip 7d |
| 3 ⇒ skip 3d | 8 ⇒ skip 8d |
| 4 ⇒ skip 4d | 9 ⇒ skip 9d |

When the weight on the scale is over 1/3 full capacity, the function is on.

Digital switch & Stabilization range setting

LCD displays the last parameter setting

Digital switch & Stabilization range setting

Use **ON|ZERO** or **UNIT** key to key in the parameters.

➤ Default setting = 0

Parameter 0 ~ 9, the larger the number the more stable the weight.

Filter parameter setting

LCD displays the last parameter setting.

Filter parameter setting

Use **ON|ZERO** or **UNIT** key to key in the parameters.

➤ Default setting = 5

Parameter 0 ~ 9.

The larger the number is, the faster the filter responds. Fast response can lead to weighing instability.

Parameter 9 → the AD value is not filtered.
Input AD value = Output AD value

ON|ZERO key ⇒ Upward key (0~9 digit entry)

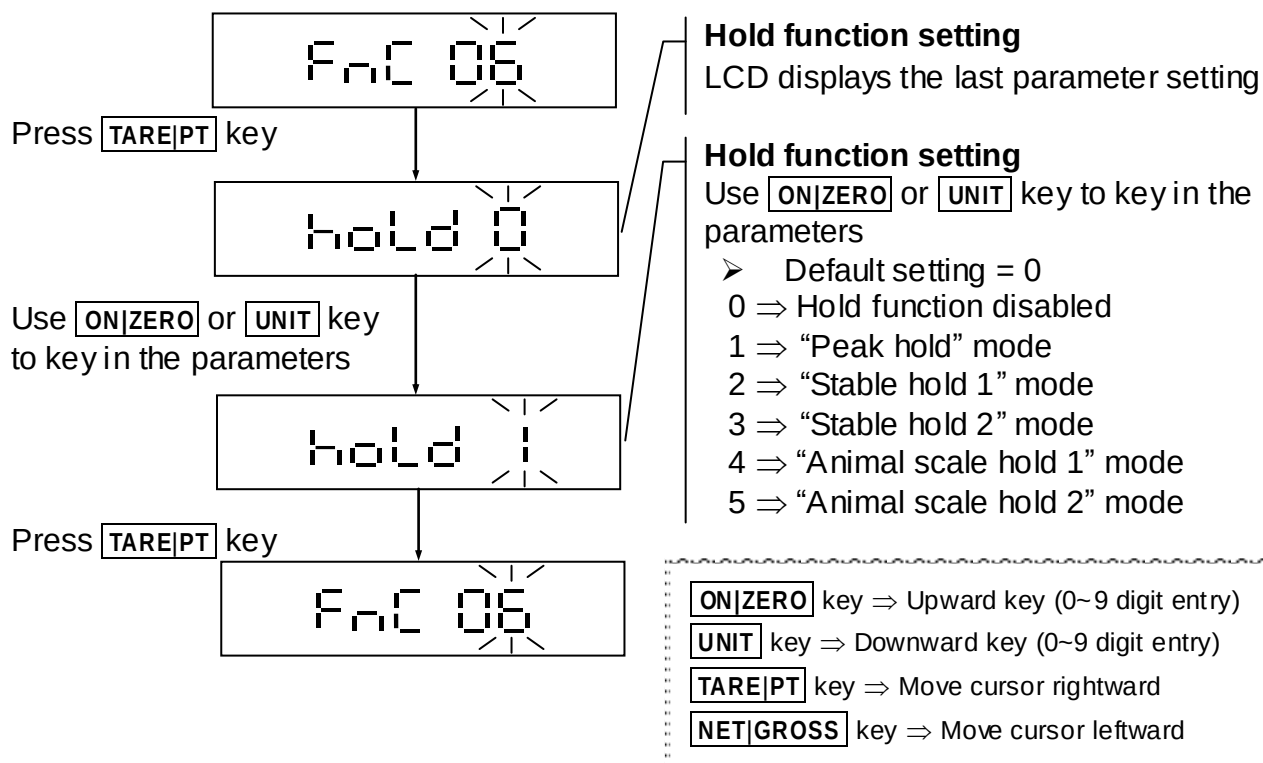
UNIT key ⇒ Downward key (0~9 digit entry)

TARE|PT key ⇒ Move cursor rightward

NET|GROSS key ⇒ Move cursor leftward



2-1-6 Hold Function Settings **F_hC 05**



hold 0 = Hold function disabled

hold 1 = "Peak hold" mode

The scale keeps displaying the maximum weight when the weight is continually changing. Press any key to exit this mode.

hold 2 = "Stable hold 1" mode

When the weight is stable, the LCD shows the current weight value. Press any key to exit this mode.

hold 3 = "Stable hold 2" mode

When the weight is stable, the LCD shows the current weight value. When the weight returns to zero (<10d), the hold mode is cancelled automatically.

hold 4 = "Animal scale hold 1" mode

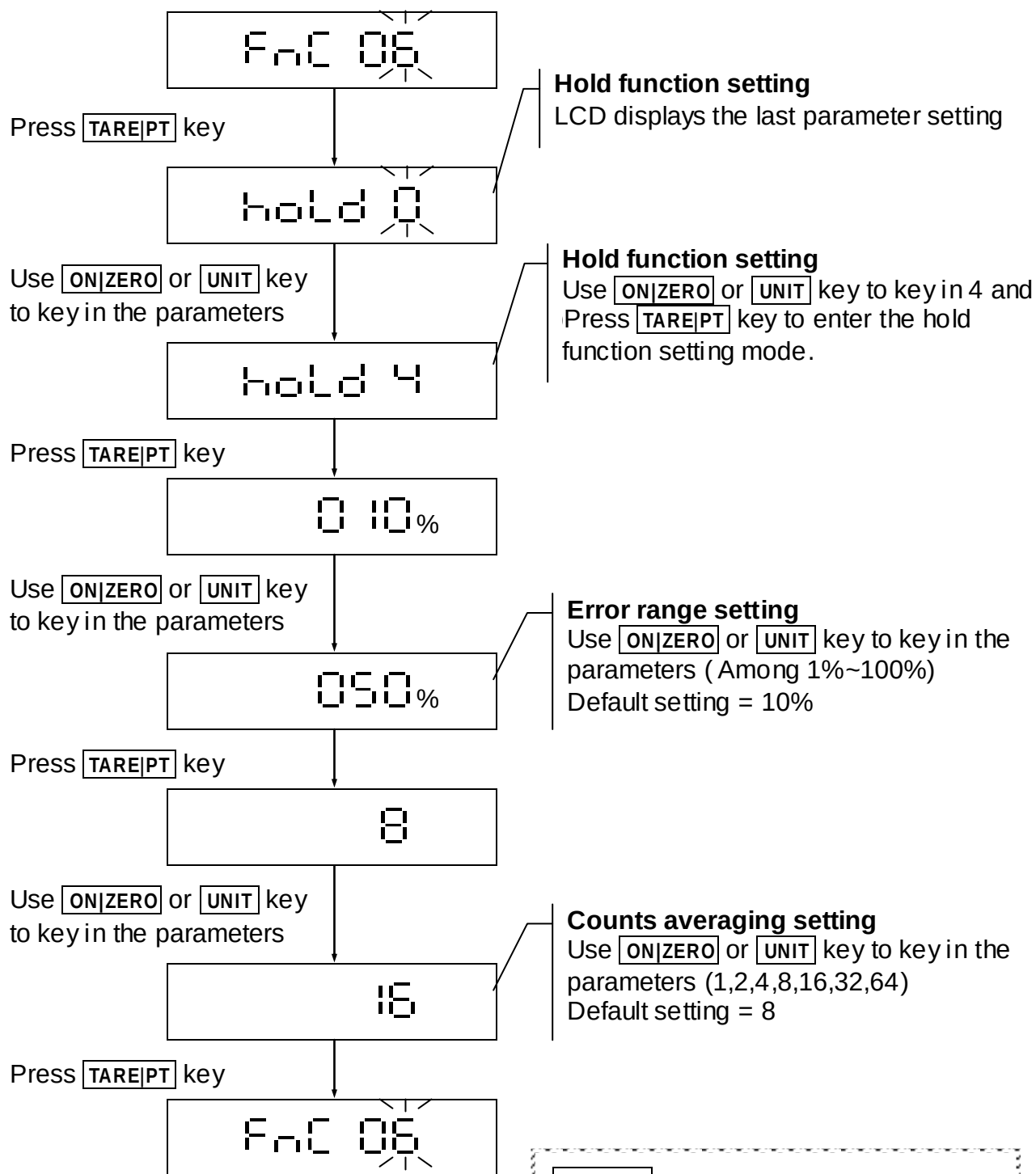
When no load, the display shows "- - - - -". After the animal or object is on the platter and the weight is stable, the display shows the weight value and hold. When the animal or object is off the platter, the display shows "- - - - -" and the hold function is off. If the weight is hardly stable, display shows the average weight in 10 seconds and holds the status, until the weight is less than 10e and display shows "- - - - -" or press any key to calculate a new weight.

hold 5 = "Animal scale hold 2" mode

When no load, the display shows "0.000". After the animal or object is on the platter and the weight is stable, the display shows the weight value and hold. When the weight added or removed on the platter is larger than the weight set in hold 5, the hold function release and to calculate a new weight. If the weight is hardly stable, the display shows the average weight in 10 seconds and holds the status. In this mode, **ON|ZERO** and **TARE|PT** keys are useless.



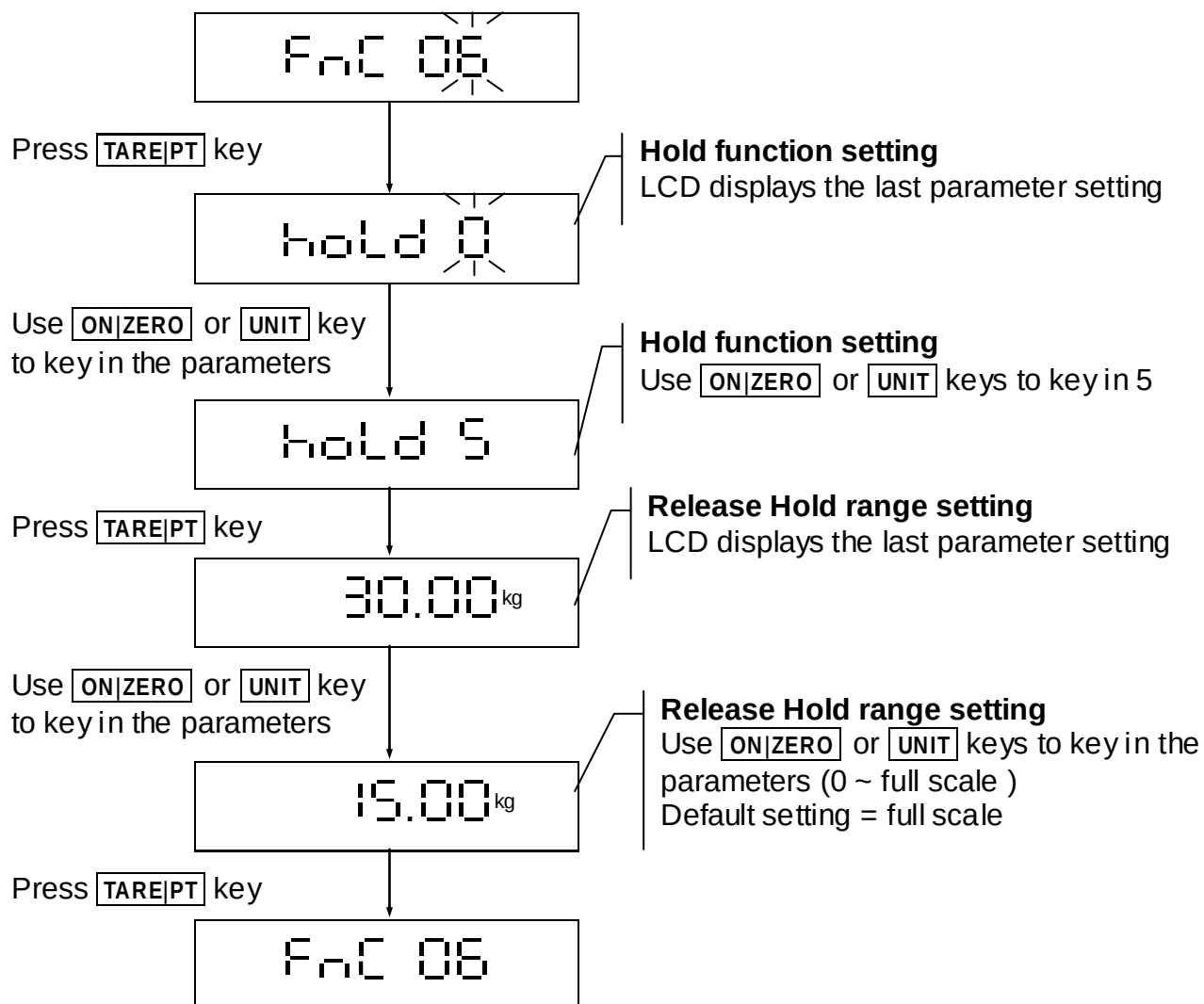
Hold Function Setting (Animal scale) hold 4



[ON|ZERO] key ⇒ Upward key (0~9 digit entry)
[UNIT] key ⇒ Downward key (0~9 digit entry)
[TARE|PT] key ⇒ Move cursor rightward
[NET|GROSS] key ⇒ Move cursor leftward



Hold Function Setting (Animal scale) hold 5



[ON|ZERO] key ⇒ Upward key (0~9 digit entry)

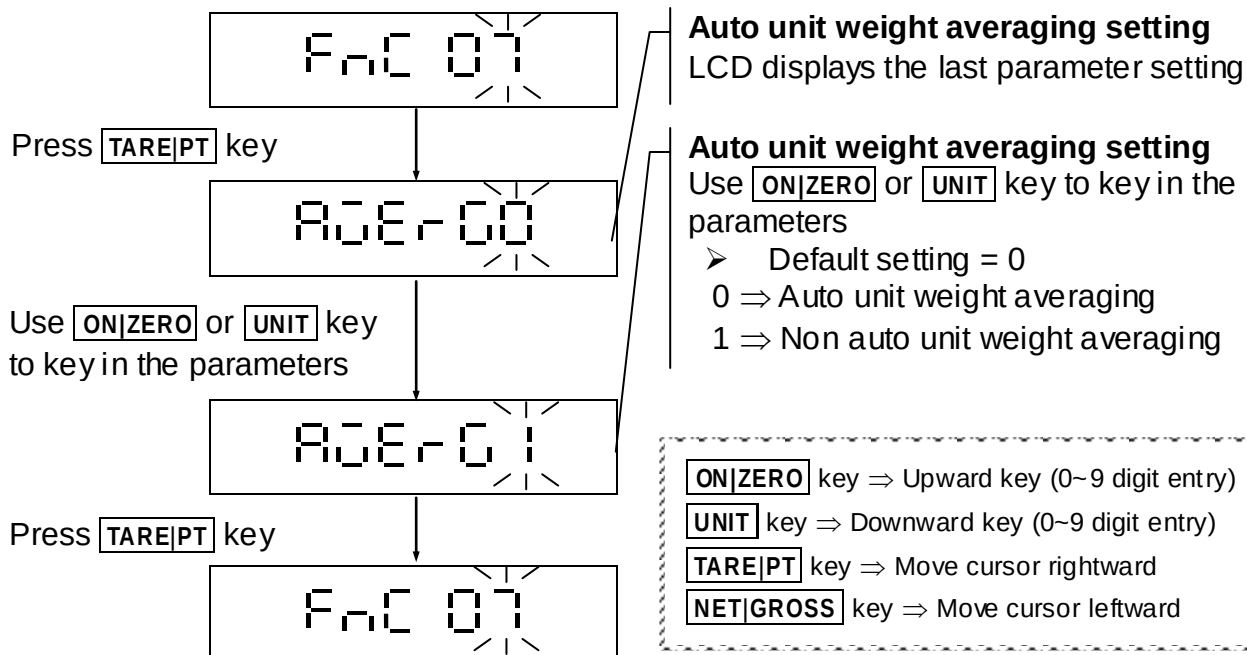
[UNIT] key ⇒ Downward key (0~9 digit entry)

[TARE|PT] key ⇒ Move cursor rightward

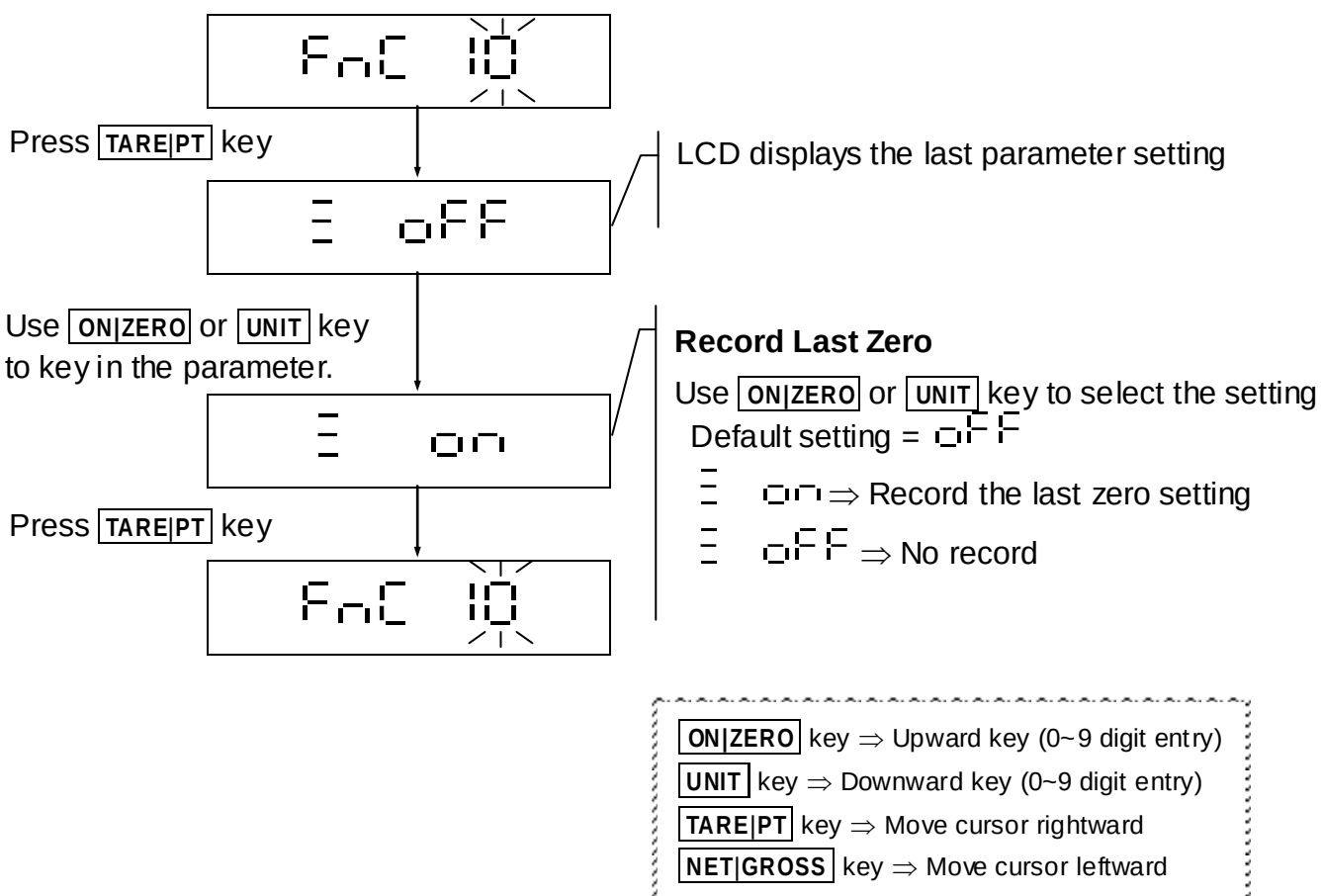
[NET|GROSS] key ⇒ Move cursor leftward



2-1-7 Auto Unit Weight Averaging Setting F_{nc} 07

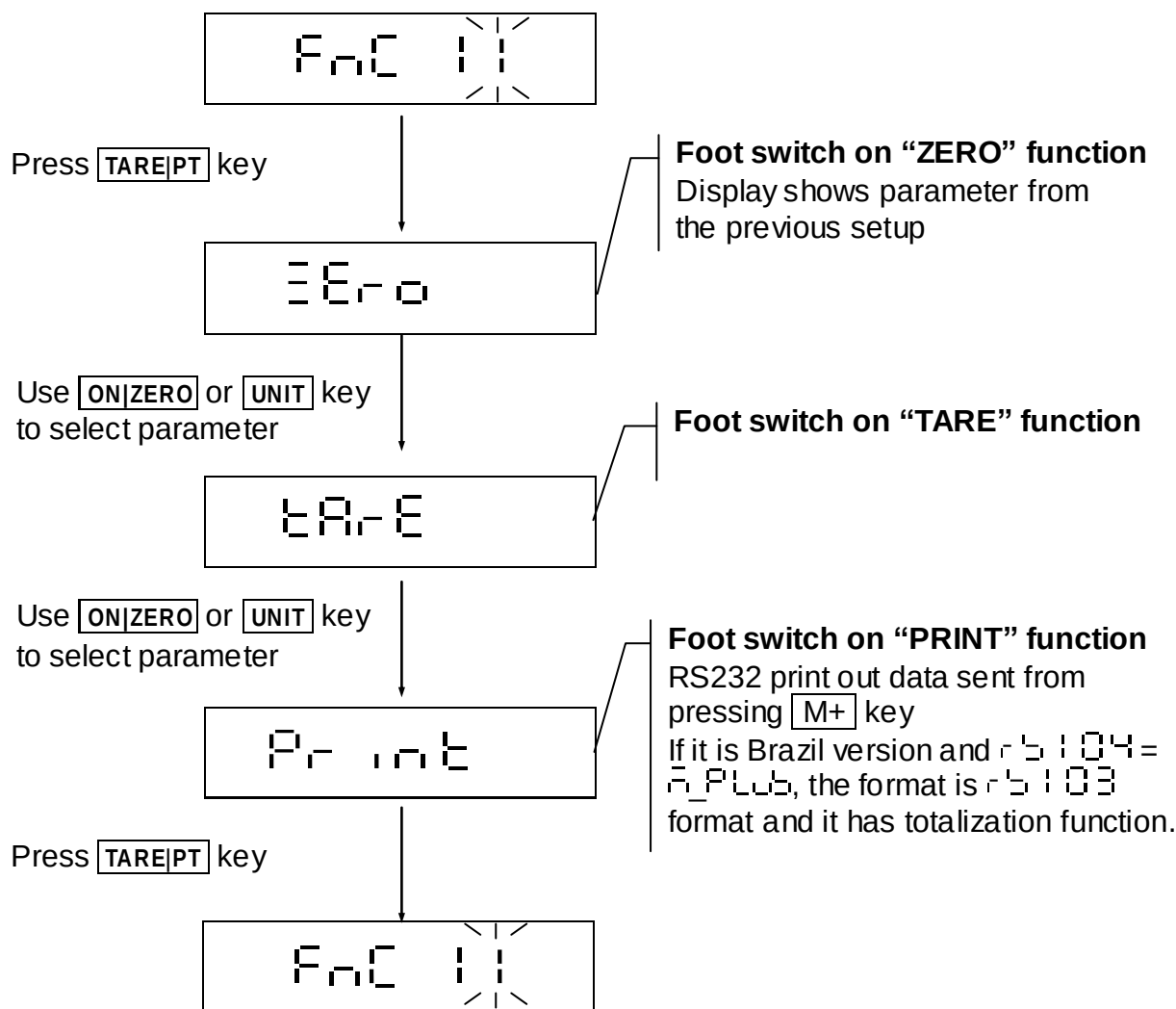


2-1-8 Record Last Zero F_{nc} 10





2-1-9 Foot Switch Settings F_{nc} 1 1 (Option)



ON|ZERO key ⇒ Upward key (0~9 digit entry)

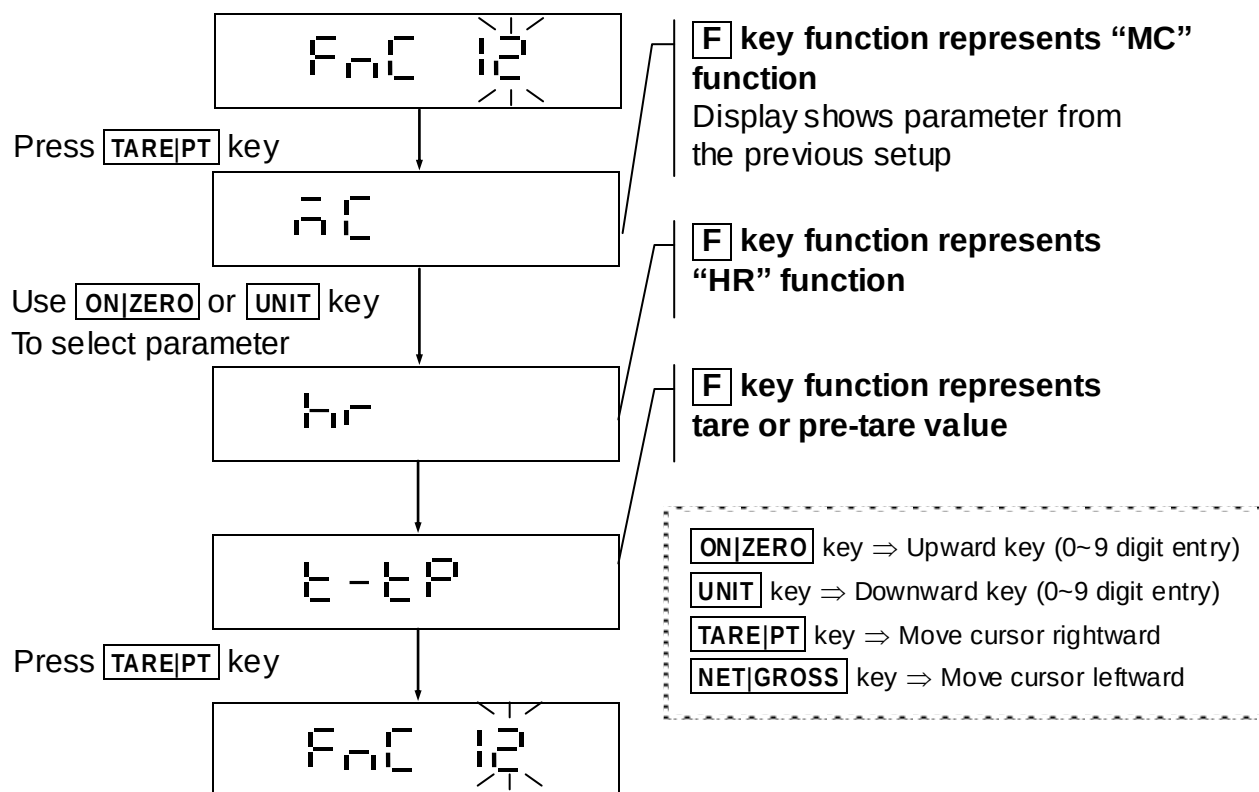
UNIT key ⇒ Downward key (0~9 digit entry)

TARE|PT key ⇒ Move cursor rightward

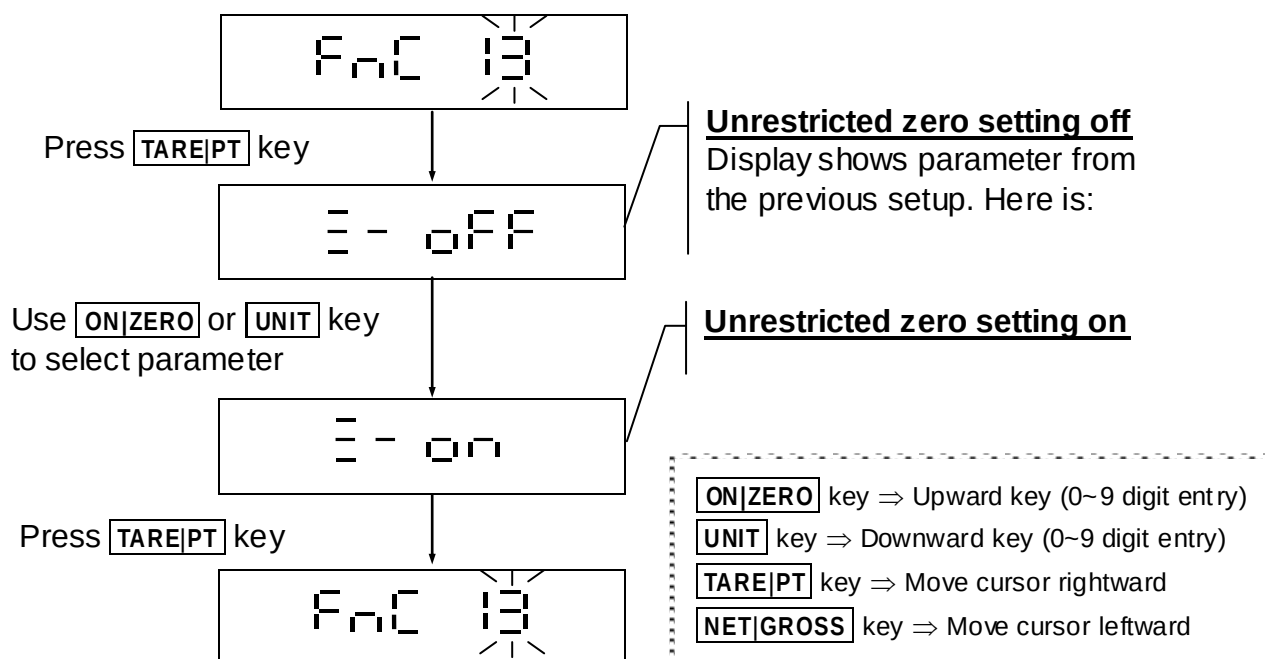
NET|GROSS key ⇒ Move cursor leftward



2-1-10 **F** Key Function Settings F_nC 12

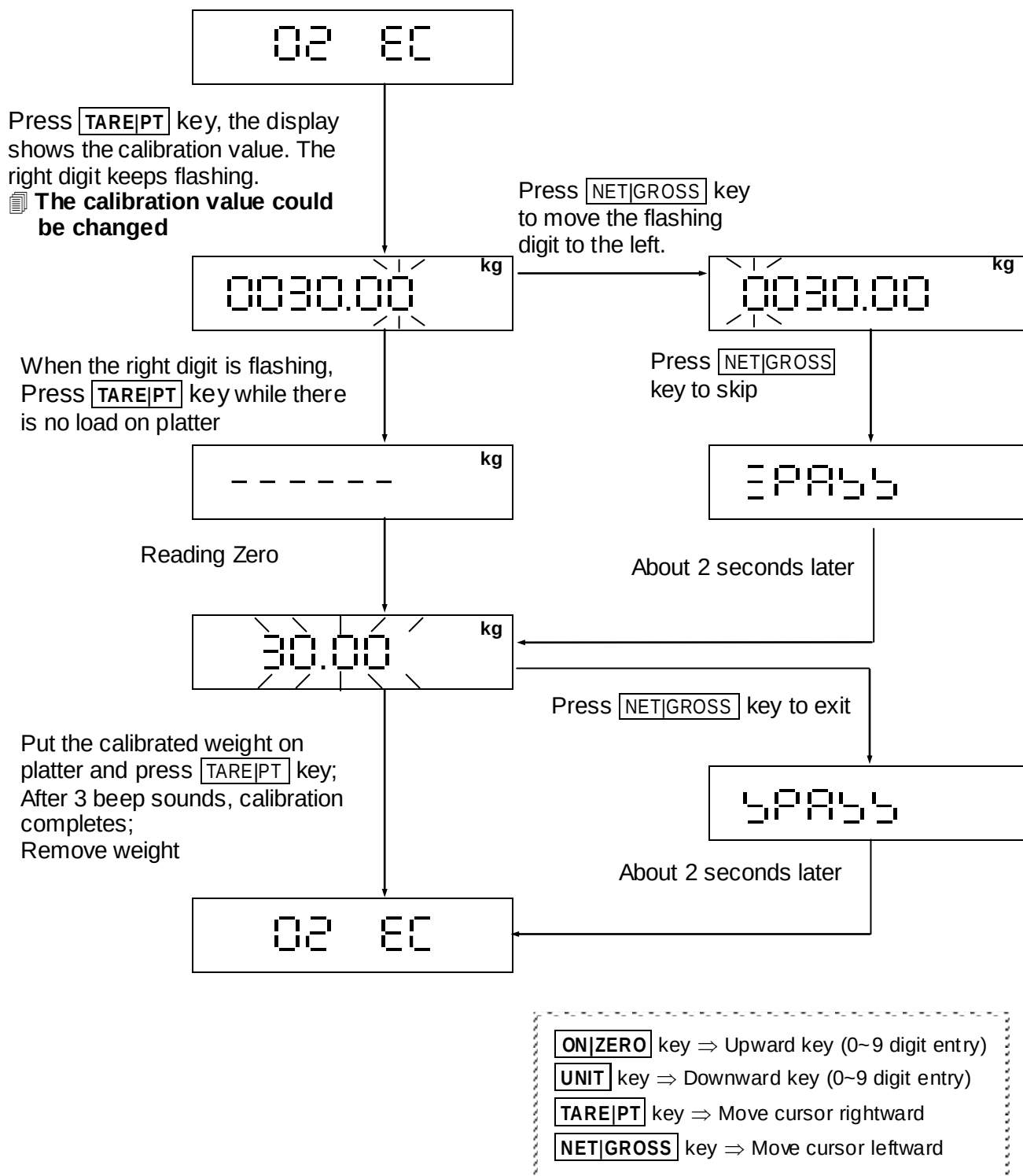


2-1-11 Zero Setting F_nC 13





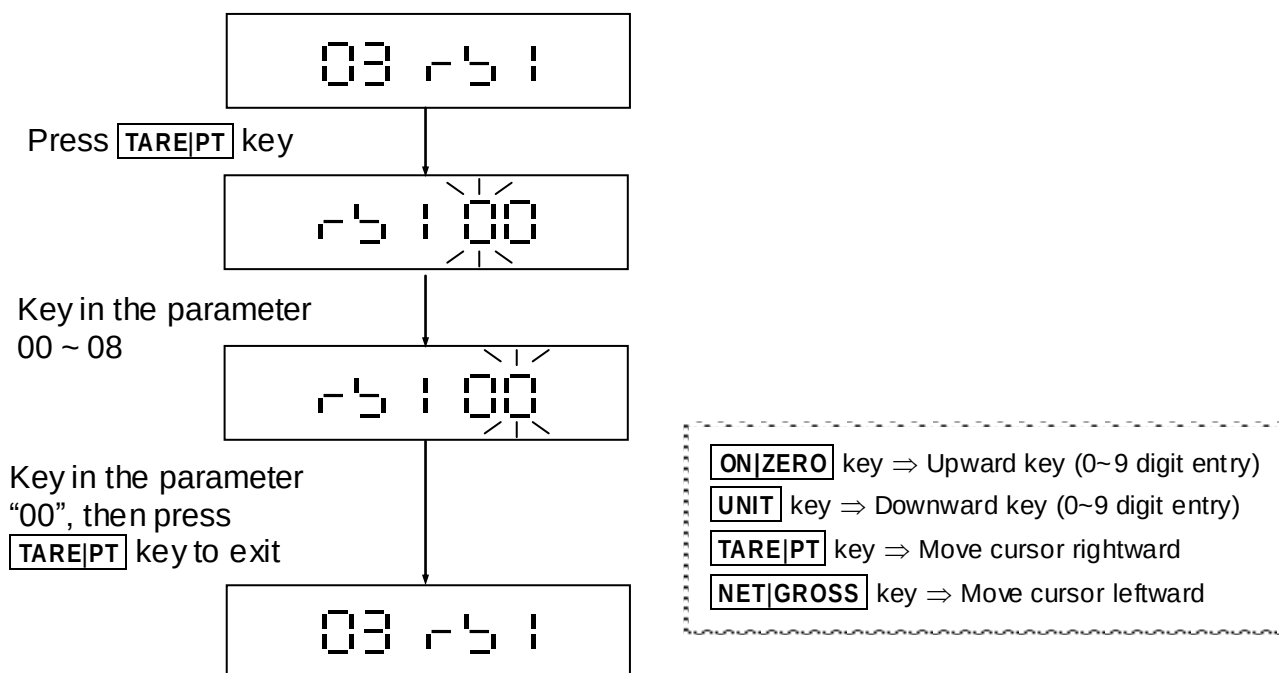
2-2 External Weight Calibration 02 EC



- ☞ The conditions for external weight calibration:
The calibration weight value placed on the platter must be over 100e, and the standard deviation of the weight must be within 10%.



2-3 RS232 Serial Interface Settings 03 r5 1

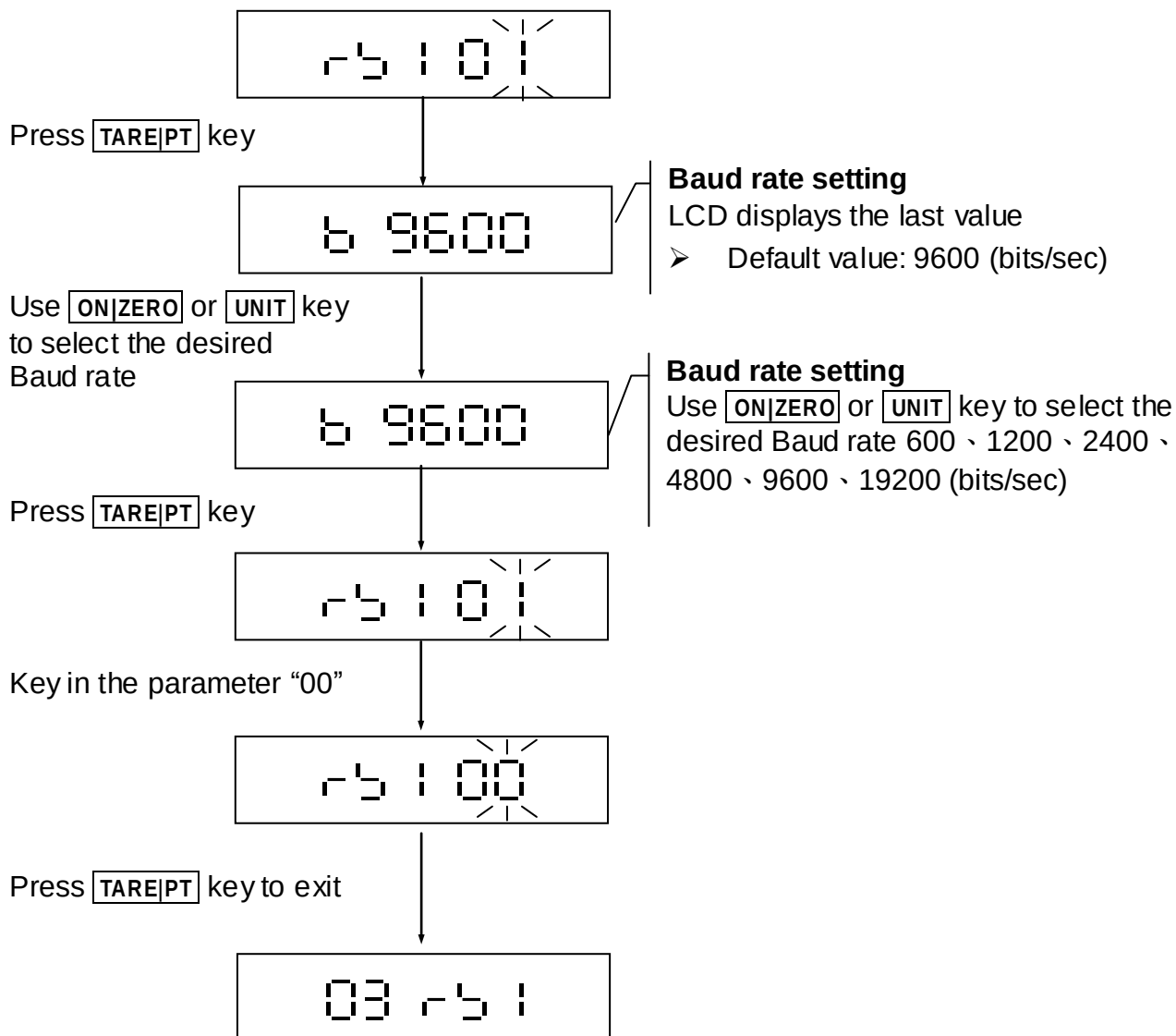


- r5 1 00 ⇒ Exit the RS232 Serial Interface Setting Mode
- r5 1 0 1 ⇒ Baud Rate Settings
- r5 1 0 2 ⇒ Communication Protocol Settings
- r5 1 0 3 ⇒ Output Format Settings
- r5 1 0 4 ⇒ Transmission method setup
- r5 1 0 5 ⇒ The Selection of Continuous Transmission Rate
- r5 1 0 6 ⇒ Auto Transmission at Zero
- r5 1 0 7 ⇒ Reset of Auto Transmission
- r5 1 0 8 ⇒ Output Condition Settings
- r5 1 0 9 ⇒ RS232 6/7 digits setting
- r5 1 1 0 ⇒ RTC adjustment
- r5 1 1 1 ⇒ Y/M/D Print Format Selection
- r5 1 1 2 ⇒ RS485 ID Input (Option)
- r5 1 1 3 ⇒ Line Feed Input



2-3-1 Baud Rate Settings

Select   in the RS232 serial interface setting mode   to set the Baud Rate.

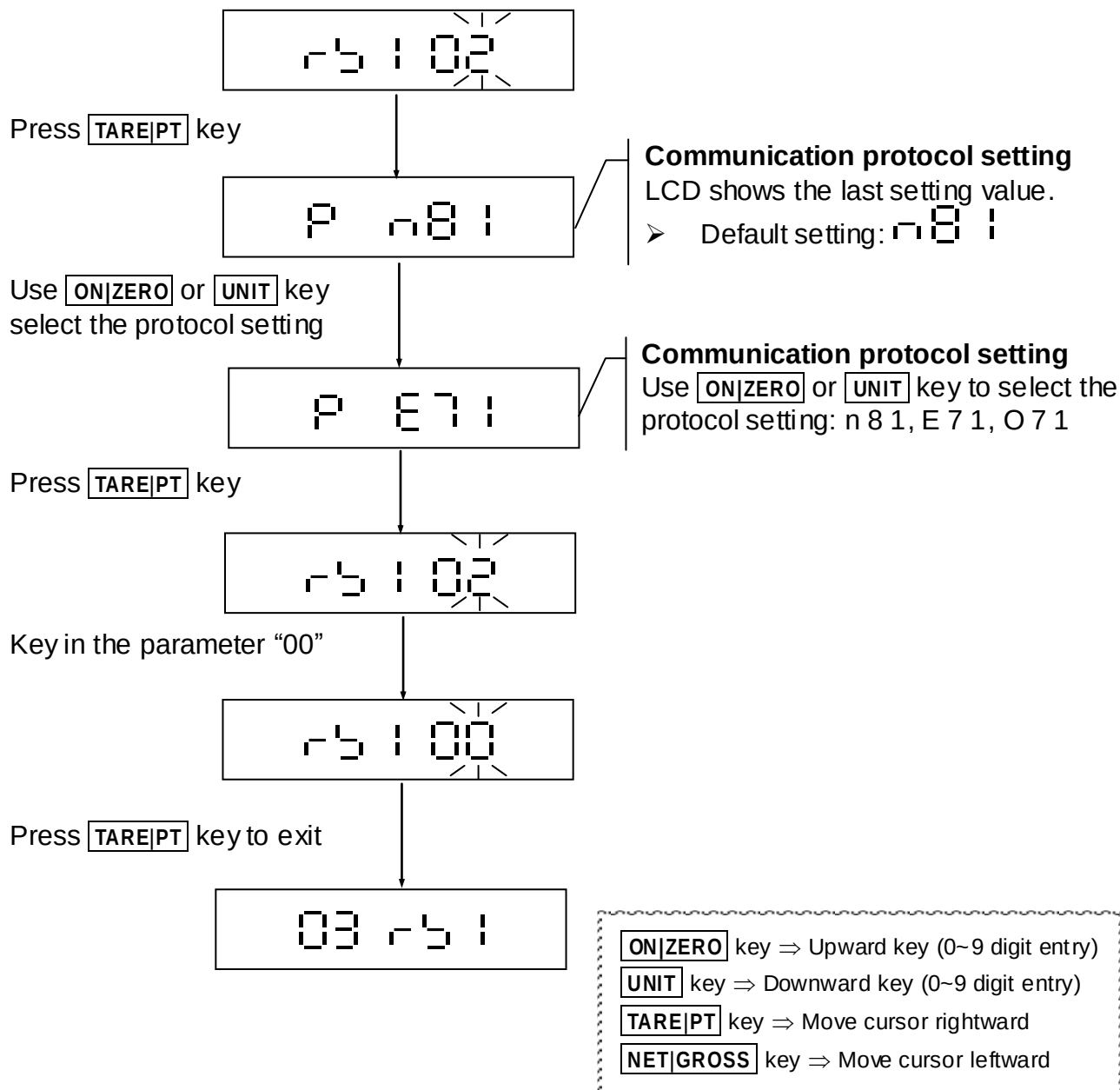


 key ⇒ Upward key (0~9 digit entry)
 key ⇒ Downward key (0~9 digit entry)
 key ⇒ Move cursor rightward
 key ⇒ Move cursor leftward



2-3-2 Communication Protocol Settings r 5 1 0 2

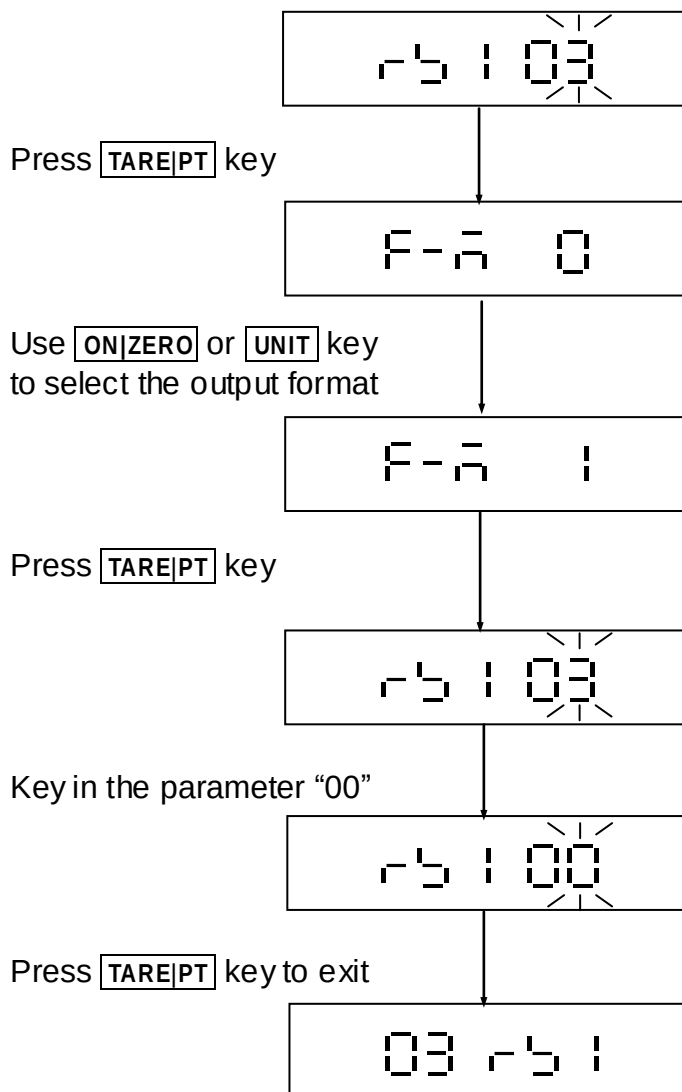
Select r 5 1 0 2 in the RS232 serial interface setting mode 0 3 r 5 1 to set the Communication Protocol.





2-3-3 Output Format Settings

Select   in the RS232 serial interface setting mode   to set the Output Format.



RS232 output format setting

LCD shows the last setting.

➤ Default setting: F-0

RS232 output format setting

Use  or  key to select the output format:

- F-0 = Same data as the scale
- F-1 = Gross weight
- F-2 = Net weight
- F-3 = Same data as the scale in simple format
- F-4 = Same gross data as the scale in simple format
- F-5 = Same net data as the scale in simple format
- F-6 = Hi/Lo/OK status + Same data as the scale in simple format
- F-7 = Hi/Lo/OK status + Simple gross weight
- F-8 = Hi/Lo/OK status + Simple net weight
- F-9 = Tare value
- F-10 =  Transmission 1 note 1
- F-11 =  Transmission 2 note 2
- F-12 = Brazil printing format note 3

 Format 12 are only for Brazil
Format 10.11 are not available on counting mode

 key ⇒ Upward key (0~9 digit entry)

 key ⇒ Downward key (0~9 digit entry)

 key ⇒ Move cursor rightward

 key ⇒ Move cursor leftward



Note1:

Ticket No.

Date year/month/day & day/month/year (choose 1 out of 2 date formats)

Time

G

T

N

Total Net (This line will only print when data is erased, showing net weight total of every count)

Note2:

Ticket No.

Date year/month/day & day/month/year (choose 1 out of 2 date formats)

Time

G

T

N

Total Weight (This line will only print when data is erased, showing gross weight total of every count)

Note3:

If it is not Brazil version, it can only print under continuous transmittion.

If it is Brazil version, under decimal units mode, $\overline{P}r\overline{e}t = \overline{P}r\overline{e}t$ and

$\overline{P}r\overline{e}t \overline{U}n\overline{i}t = \overline{P}r\overline{e}t \overline{U}n\overline{i}t$, it can print out. It is not available on counting mode.

For example:

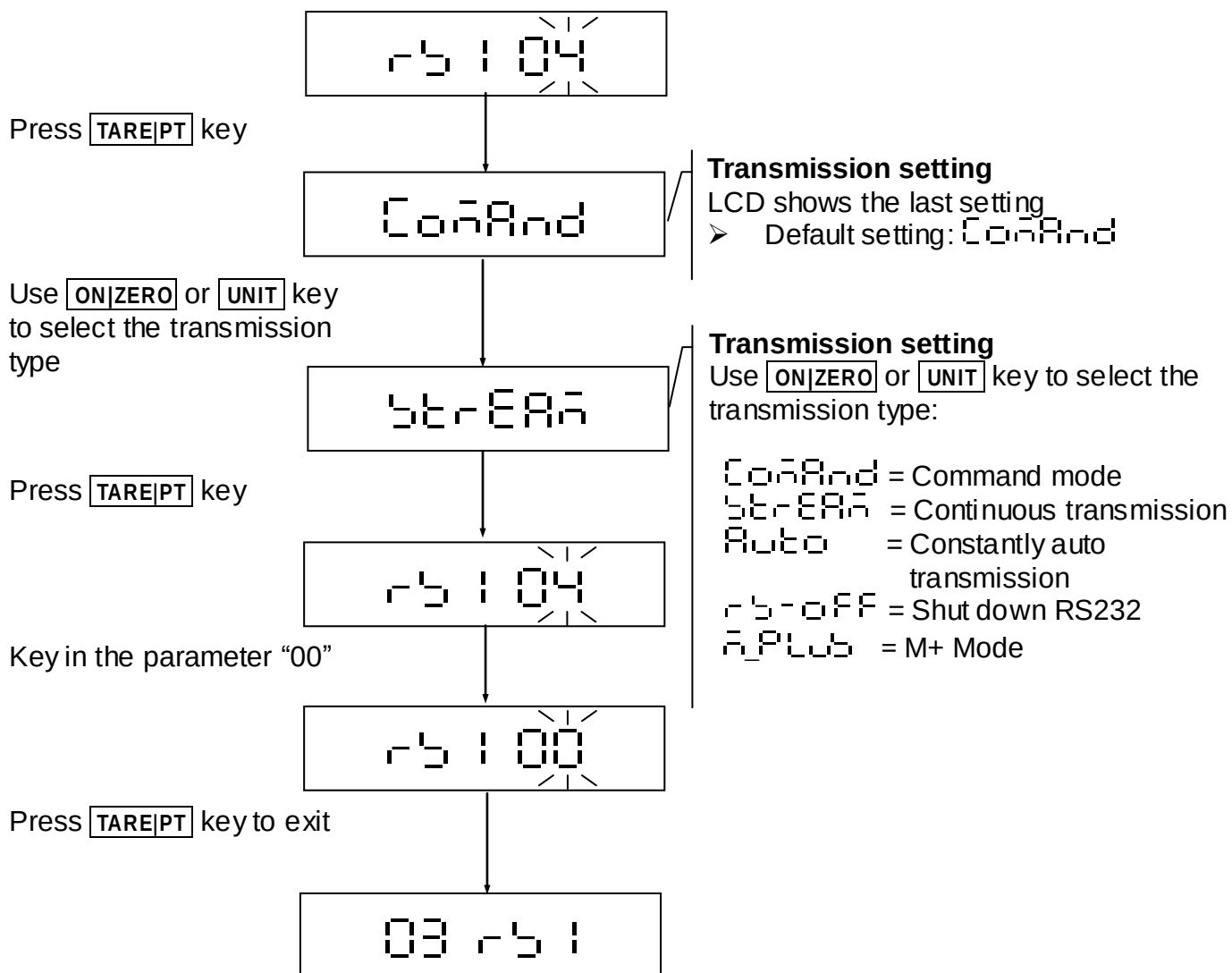
70.15Kg print as: =51.07000=51.07000=51.07000=51.07000=51.07000

negative 70.15Kg print as: =51.0700-=51.0700-=51.0700-=51.0700-=51.0700-



2-3-4 Continuous Transmission Settings r5 1 04

Select r5 1 04 in the RS232 serial interface setting mode 03 r5 1 to set the Continuous Transmission status.

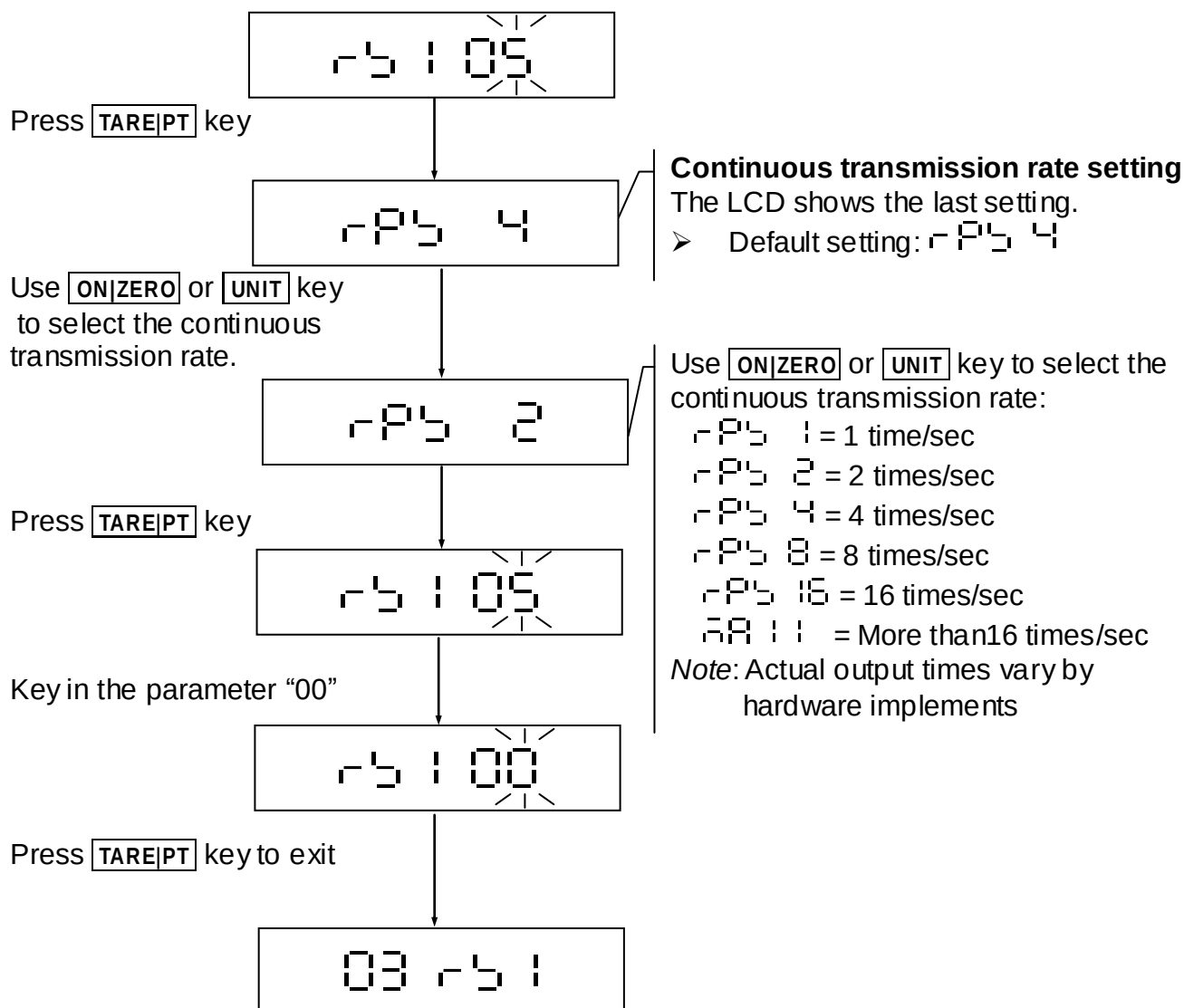


ON|ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward



2-3-5 Selection of the Continuous Transmission Rate $r_{PS} 105$

Select $r_{PS} 105$ in the RS232 serial interface setting mode $03 r_{PS} 1$ to set the Continuous Transmission Rate.

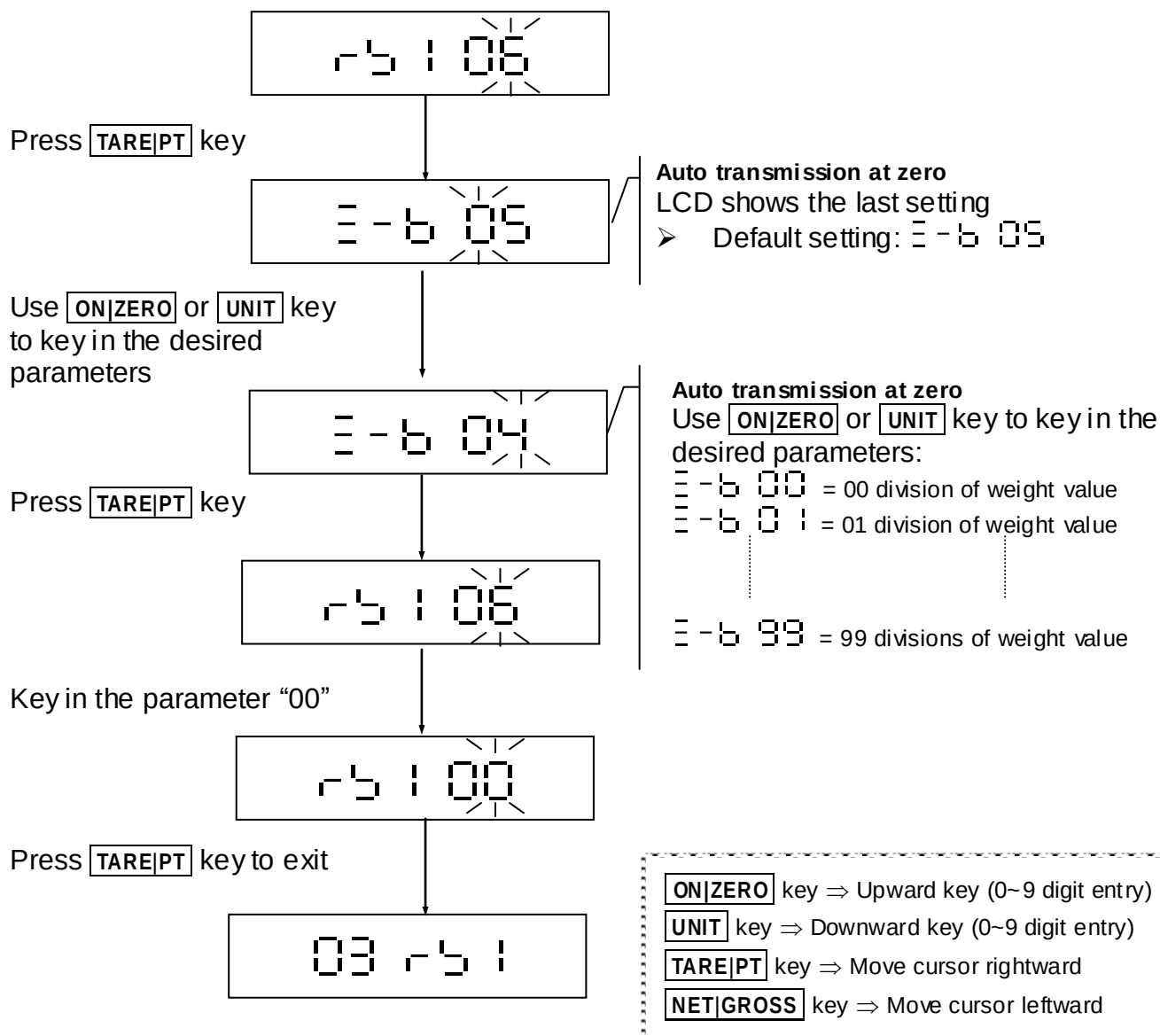


ON|ZERO key $\Rightarrow$ Upward key (0~9 digit entry)
UNIT key $\Rightarrow$ Downward key (0~9 digit entry)
TARE|PT key $\Rightarrow$ Move cursor rightward
NET|GROSS key $\Rightarrow$ Move cursor leftward



2-3-6 Auto Transmission at Zero 05

Select  05 in the RS232 serial interface setting mode   to set the Auto Transmission at Zero.

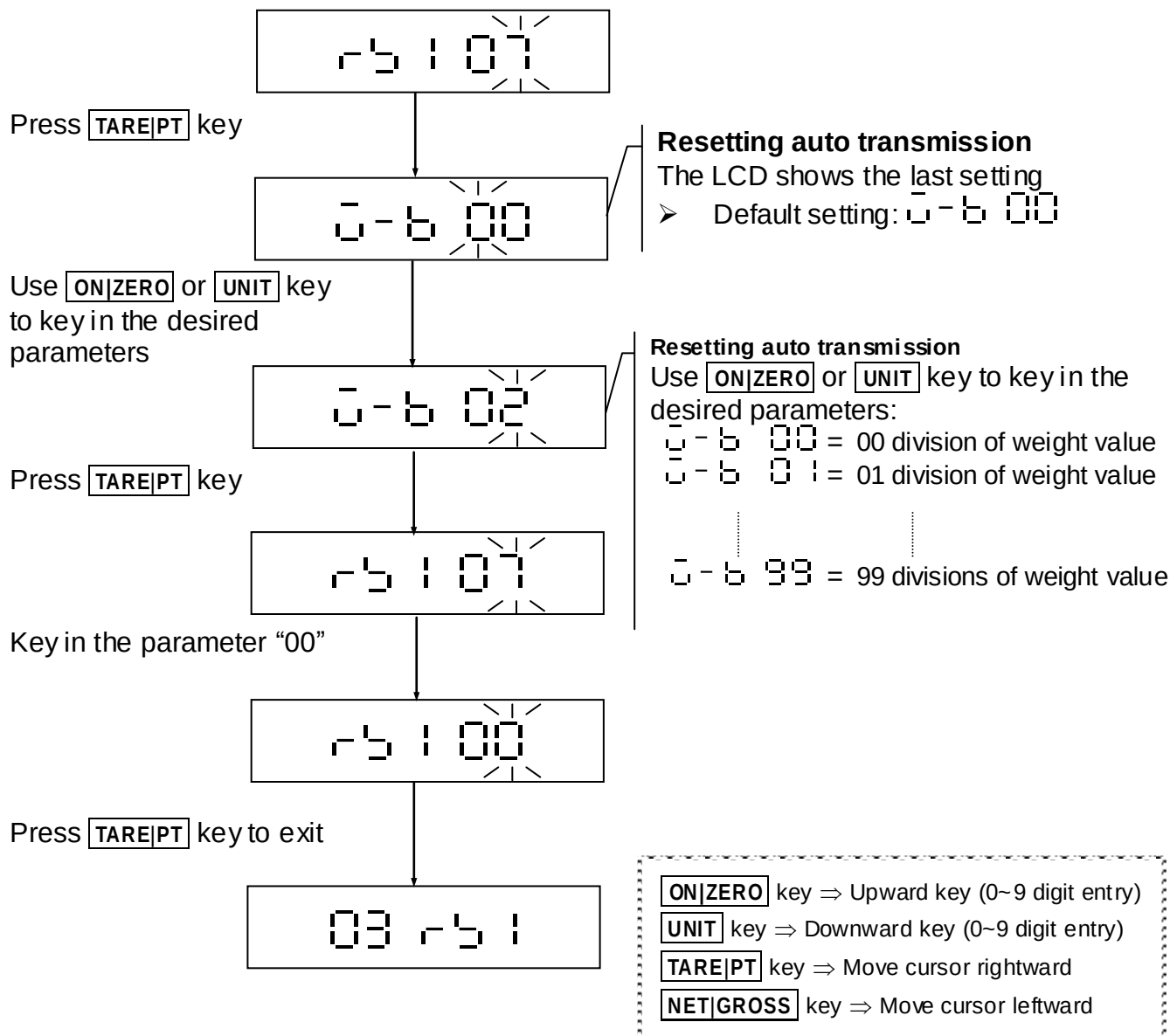


☞ When the value of "Auto transmission at zero" set as  00, the "Auto transmission at zero" function is not available. Because when the scale is at zero and keeping stable, the data are keeping transmitted, and that would be the same as "Continuous Transmission".



2-3-7 Reset Auto Transmission $\overline{r} \overline{b} \overline{1} \overline{0} \overline{7}$

Select $\overline{r} \overline{b} \overline{1} \overline{0} \overline{7}$ in the RS232 serial interface setting mode $\overline{0} \overline{3} \overline{r} \overline{b} \overline{1}$ to Reset Auto Transmission.

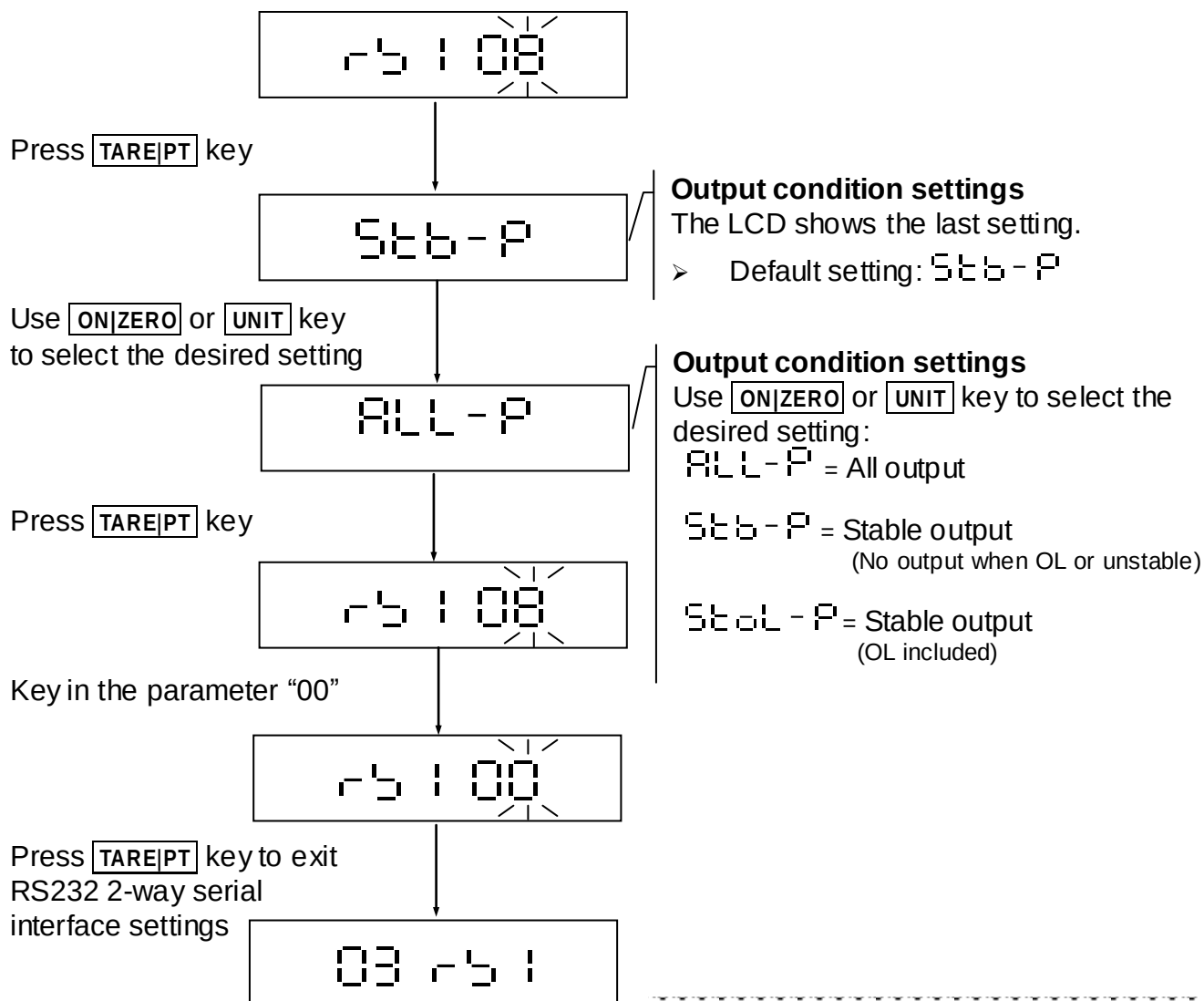


When the value of "Auto transmission at zero" set as $\overline{0} - \overline{b} \overline{0} \overline{0}$, the "Auto transmission at zero" function is not available. Because when the scale is at zero and keeping stable, the data are keeping transmitted, and that would be the same as "Continuous Transmission".



2-3-8 Output Condition Settings

Select in the RS232 serial interface setting mode to Reset of Auto Transmission.

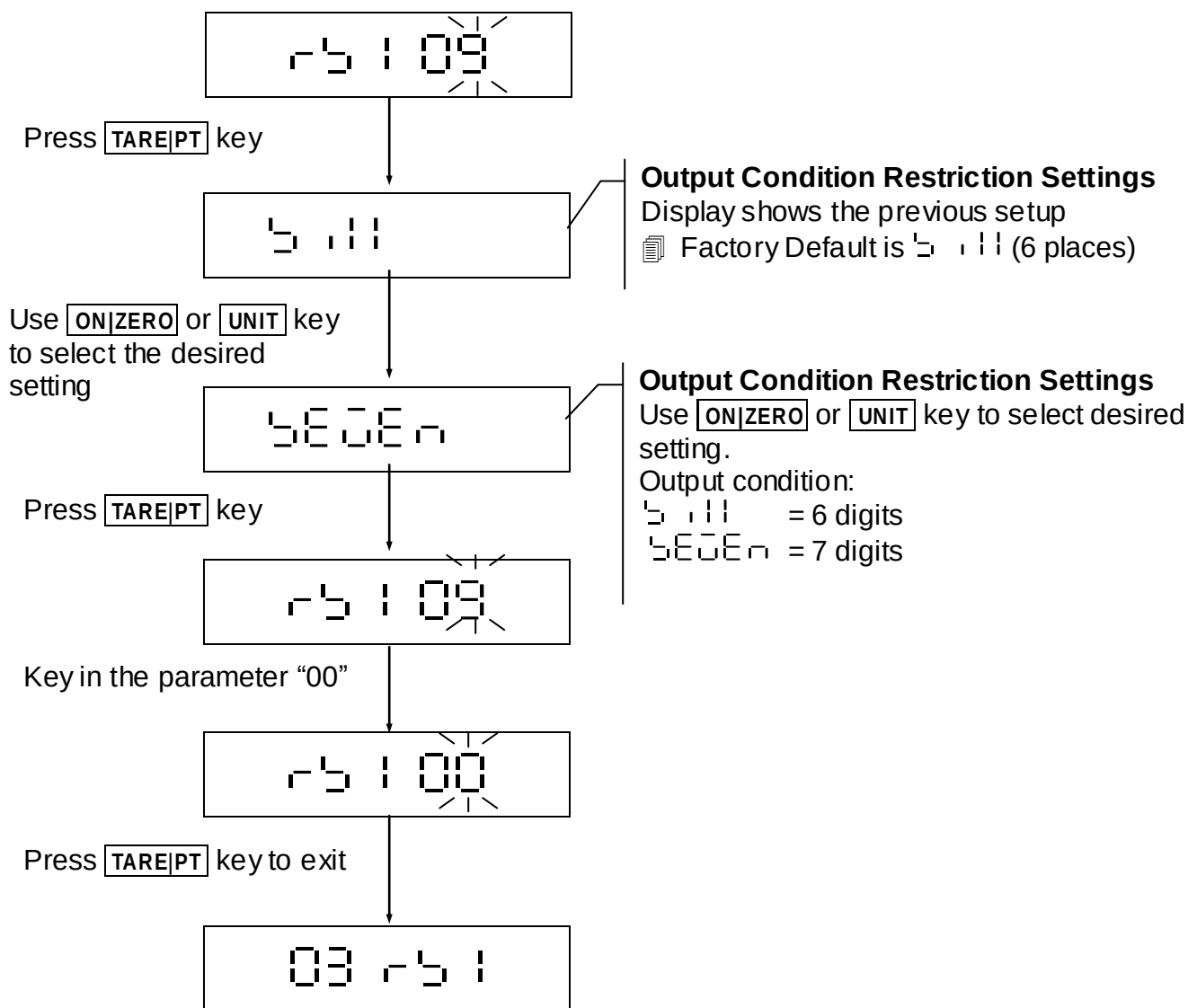


ON|ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward



2-3-9 RS232 6/7 Digits Setting 1 09

Select  1 09 in the RS232 serial interface setting mode  1 to Reset of Auto Transmission.

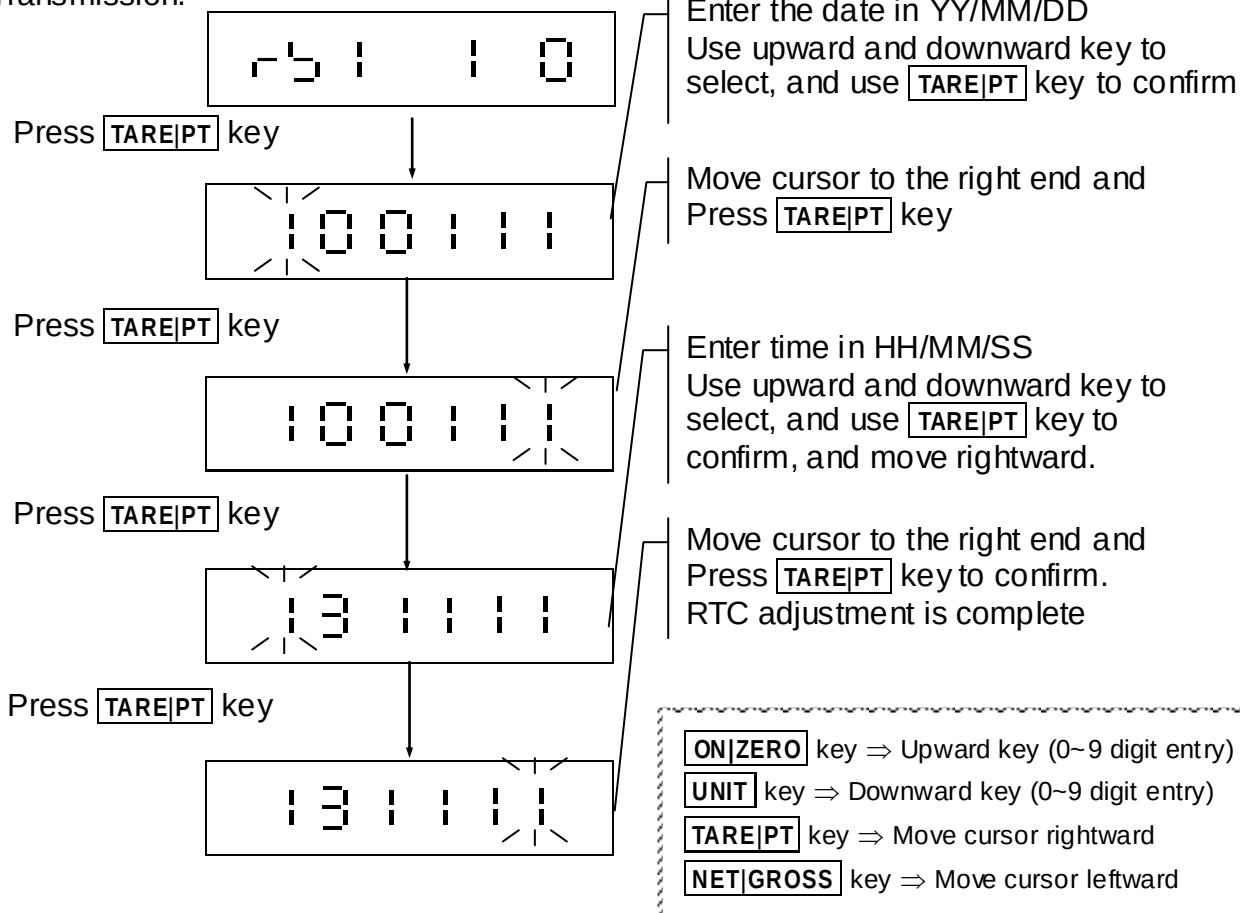


 [ON|ZERO] key ⇒ Upward key (0~9 digit entry)
 [UNIT] key ⇒ Downward key (0~9 digit entry)
 [TARE|PT] key ⇒ Move cursor rightward
 [NET|GROSS] key ⇒ Move cursor leftward



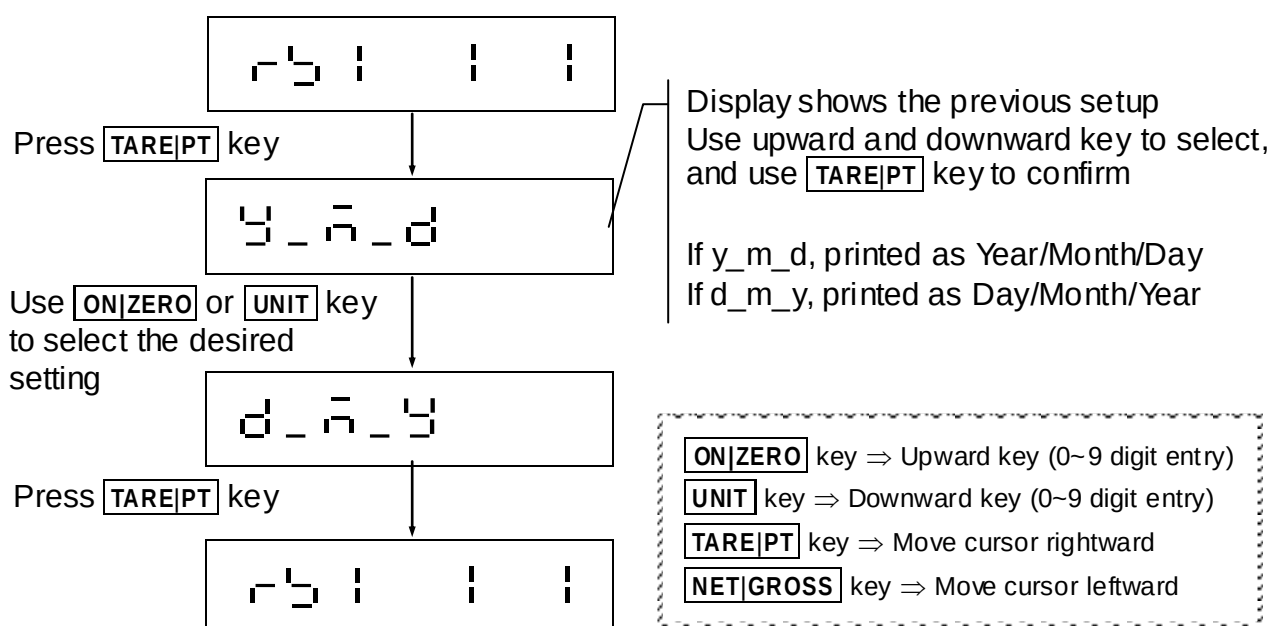
2-3-10 RTC Adjustment

Select     in the RS232 serial interface setting mode    to reset of Auto Transmission.



2-3-11 Y/M/D Print Layout Selection

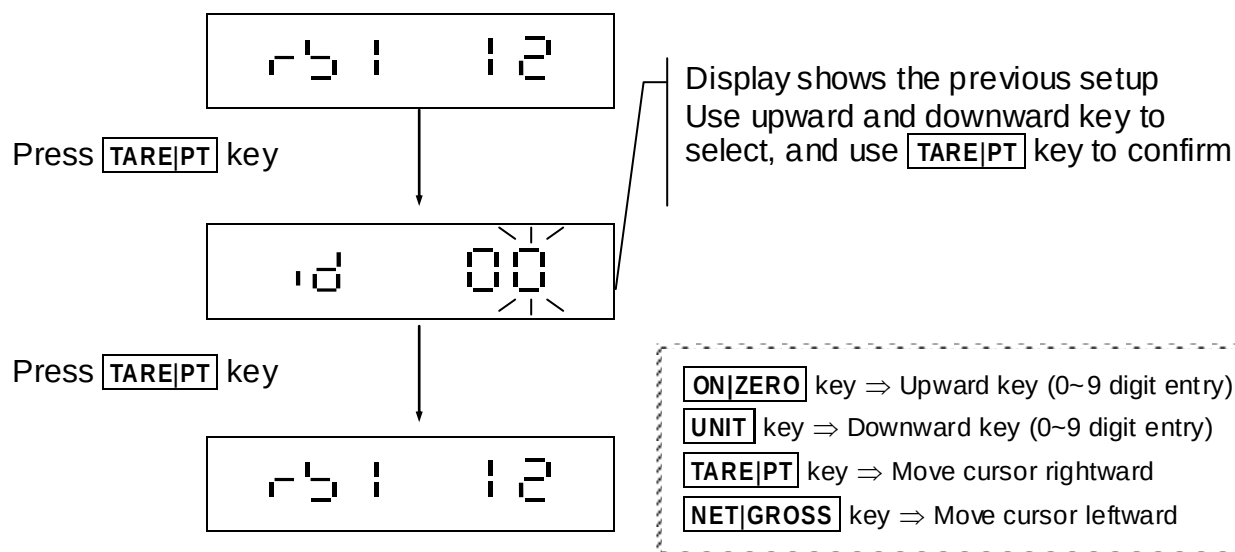
Select     in the RS232 serial interface setting mode    to reset of Auto Transmission.





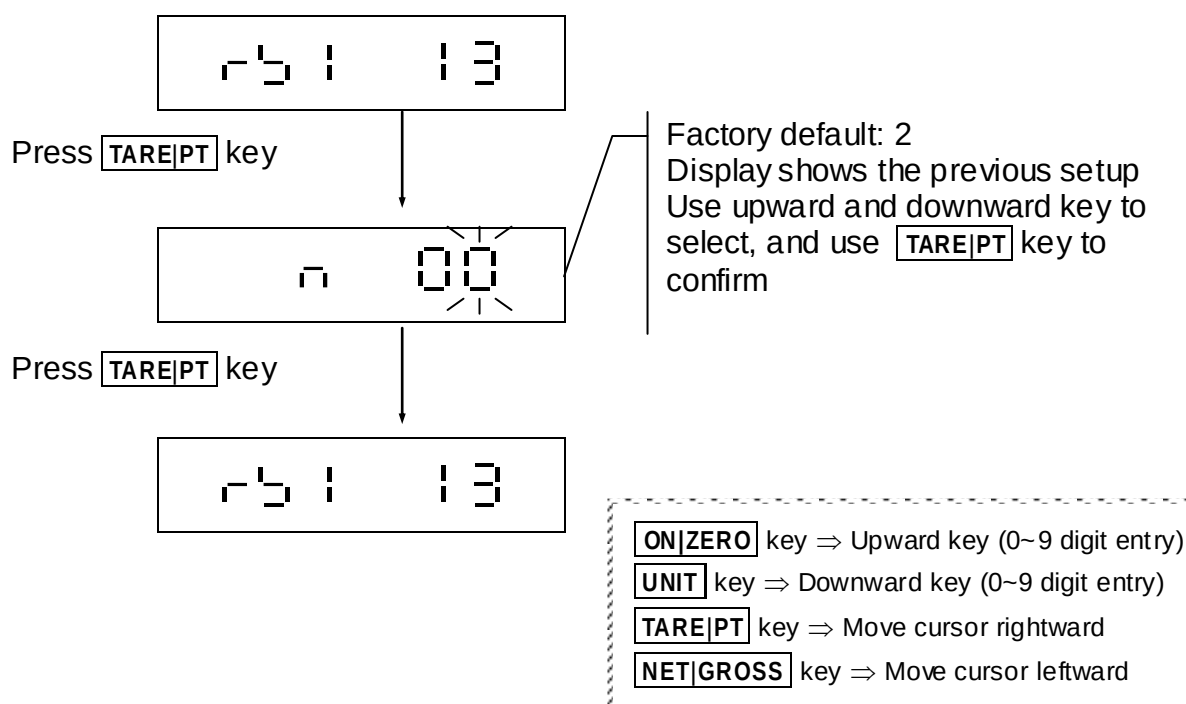
2-3-12 RS485 ID Input (Option)

Select in the RS232 serial interface setting mode to reset of Auto Transmission.



2-3-13 Line Feed Input

Line feed would be available only when was set as or .





☞ Command Mode

Command Format A

Host	Command
Slave	Command

MZ	Zero	SO	Command mode
MT	Tare	UA	Switch to the first unit
MG	Gross weight	UB	Switch to the second unit
MN	Net weight	UC	Switch to the third unit
CT	Clear TARE value	UD	Switch to the forth unit
SC	Continuous transmission	UE	Switch to the fifth unit
SA	Auto transmission	UF	Switch to the sixth unit
%	Stop continuous transmission and enter the command mode		

Note: UA ~ UF settings are depended 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)

Note: a. add % before the command to read continuously
b. add # before the command to transmit a stable value

RJ,RK,RL Command Description

If RL command entered, and

if weight is higher than HI (FNC 03 setting), and if the current weight is 10 kg, the following will be displayed: "100+ 10.000"

If weight is higher than HI (FNC 03 setting), and if the current weight is 0.5 kg, the following will be displayed: "001+ 0.500"

If weight is between HI and LOW, and if the current weight is 1 kg, the following will be displayed: 010+ 1.000



Read weight comparison setting value RS○○□□

○○: Groups(00 ~ 09) □□: Setting Items

HI	Show "HI" presetting value
LO	Show "LO" presetting value

Note : ○○(Group) is various depended on different models

00 ⇒ The first group

01 ⇒ The second group

02 ⇒ The third group

EX: RS02LO<CR> <LF>

Show "LO" presetting value

ANS: RS02LOXXXXXX<CR> <LF>

Command Format C

Host	Command+ Data
Slave	Command+ Data

Write weight comparison setting value WS○○□□XXXXXX

○○: Groups(00 ~ 09) □□: Setting Items XXXXXX: Setting Value

HI	Write "HI" setting value
LO	Write "LO" setting value

Note : ○○ (Group) is various depended on different models

00 ⇒ The first group

01 ⇒ The second group

02 ⇒ The third group

EX: WS00HI001000<CR> <LF>

Write "HI" setting value

ANS: WS00HI001000<CR> <LF>

Command Format D

Host	Data
Slave	

Value (e.g. Price)						Position of decimal point	CR	LF
1	2	3	4	5	6	1		

When the Slave receives this data format, it will transfer the data and display it on its LCD.



12345.6

☞ The function is effective when the weight value is over 0.

☞ The above 4 (ABCD) command formats are RS232 bi-directional. There are the following error messages received by Slave terminal (scale).

Error messages:

E1: Wrong command

E2: Command format error (Wrong parameters)

E3: Command not recognised



☐ Output data format

1. 7 places (first decimal place not included)

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		

Simple format

G/N	+	1	.	2	3	.	4	5	6	CR	LF
G/N	+	0	1	2	3	4	5	.	6		
G/N	+	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. 6 places (first decimal place not included)

Weight format

Gross	S	T	,	G	S	,	+	1	2	3	4	5	6	7	SP	SP	o	z	CR	LF
Net	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		
Plus OL	O	L	,	G	S	,	+	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		
Unstable	U	S	,	G	S	,	+	1	2	3	4	.	5	6	SP	SP	l	b		

Simple format

G/N	+	.	2	3	.	4	5	6	CR	LF
G/N	+	1	2	3	4	5	.	6		
G/N	+	1	2	.	3	4	5	6		
Plus OL	+	SP	SP	SP	SP	SP	SP	SP		
Minus OL	-	SP	SP	SP	SP	SP	SP	SP		

Comparison status + simple format

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

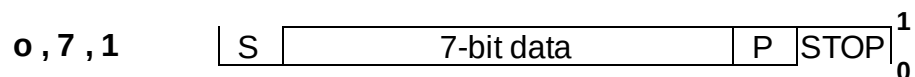
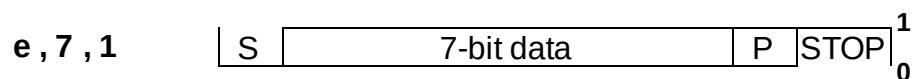
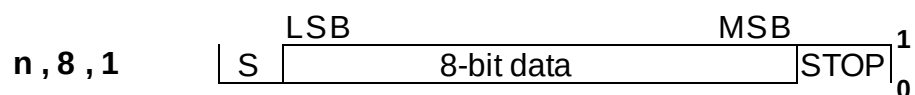
Byte0 : HI 30H/31H

Byte1 : OK 30H/31H

Byte2 : LO 30H/31H



Serial Data Transfer/Receive Format



Note:

S : Start bit

STOP: Stop bit

P : Parity bit



Appendix 1 ASCII Code Table

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



Appendix 2 7-Segment Display Characters

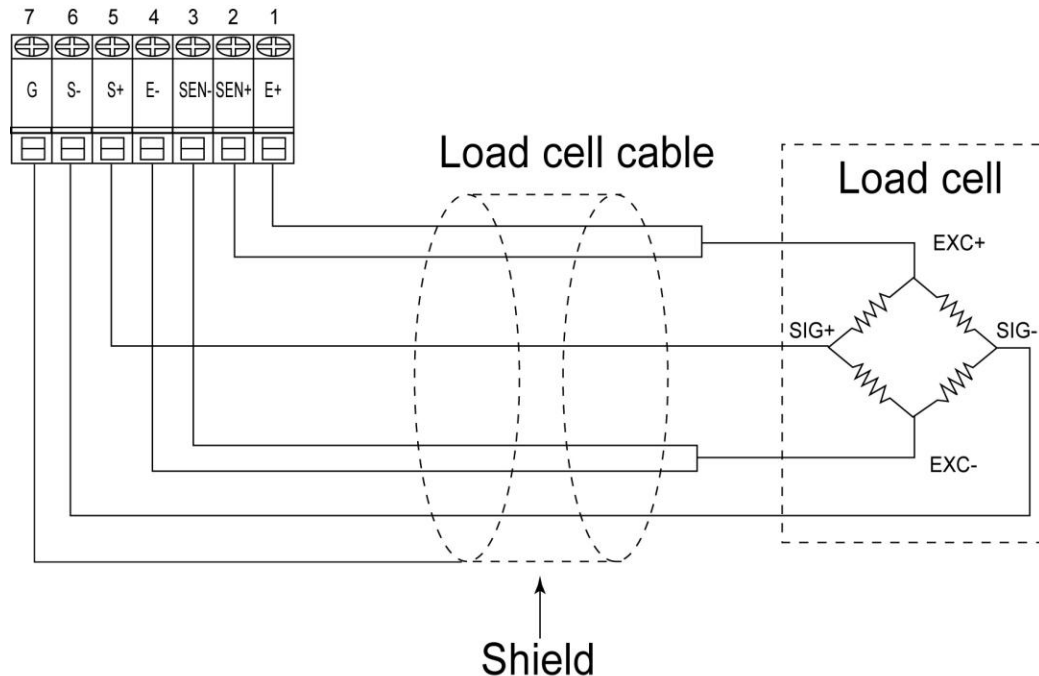
Digit	7 segment letter	Alphabet	7 segment letter	Alphabet	7 segment letter
0		A		N	
1		B		O	
2		C		P	
3		D		Q	
4		E		R	
5		F		S	
6		G		T	
7		H		U	
8		I		V	
9		J		W	
		K		X	
		L		Y	
		M		Z	



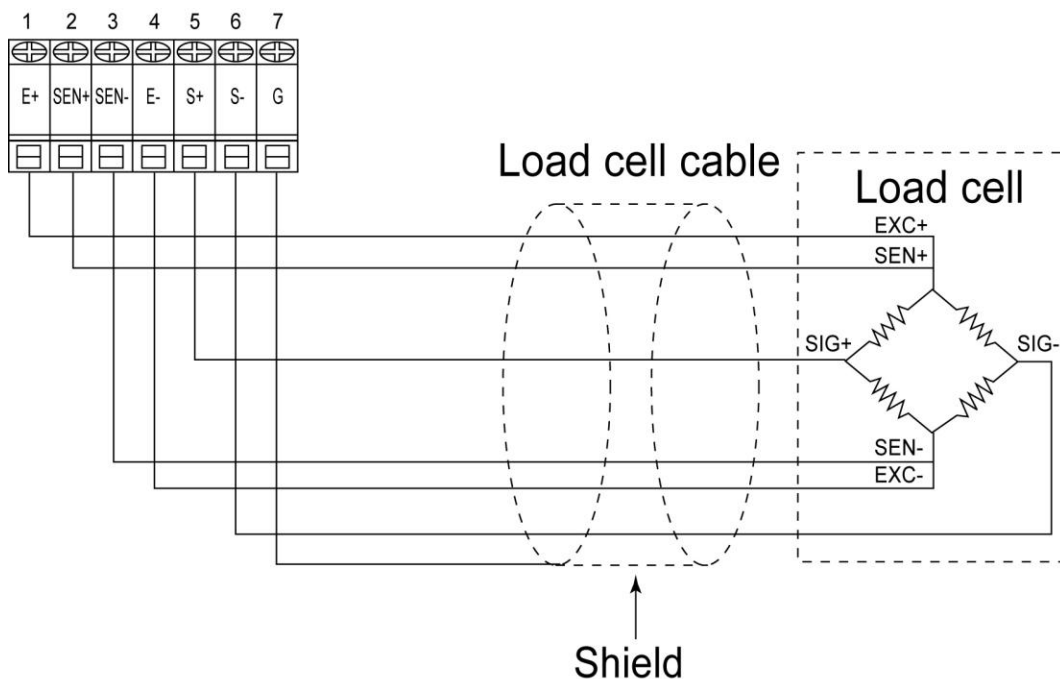
Appendix 3 Wiring Instructions

Load cell wiring method

- (1) As shown below, when a load cell is connected with a 4PIN cable, SEN+ and SEN- can be unconnected. J11 and J12 on PCB must be tin-soldered in short circuit.



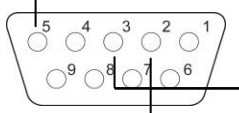
- (2) If Load Cell is 6PIN, please wire as the following diagram:

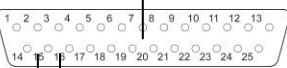




RS232 wiring instruction

To connect RS232, please open the housing, RS232's PIN connectors locate on the bottom-right corner of the main board. The most common connection method is using 9PIN and 25PIN, as shown below:

PC	PIN	Function	Female 9 PINS		Function	PWH3
	2	Transmit Data	←		SG	
	3	Receive Data	→		RxD	
	5	Signal Ground	↔		TxD	

Printer	PIN	Function	Male 25 PINS		Function	PWH3
	2	Receive Data	←		SG	
	3	Transmit Data	→		RxD	
	7	Signal Ground	↔		TxD	

To use other connection methods, please identify the signal and following the above principles. After it is finished, please install the housing by the instruction in the *SPECIAL NOTICE*.