

User Manual

Waterproof Indicator

QW/GW

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Special Notice

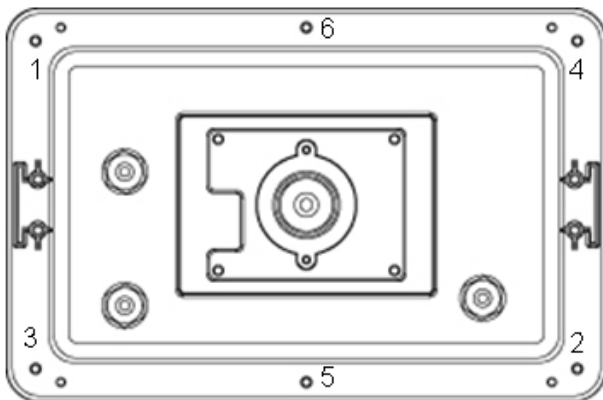
While installing the load cell, power cord hookup or replacing a new rechargeable battery, the indicator housing must be opened. It must be done by a technician assigned by your electronic indicator provider to avoid affecting the waterproof ability of this indicator. Before opening the housing, make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

How to Install the Housing

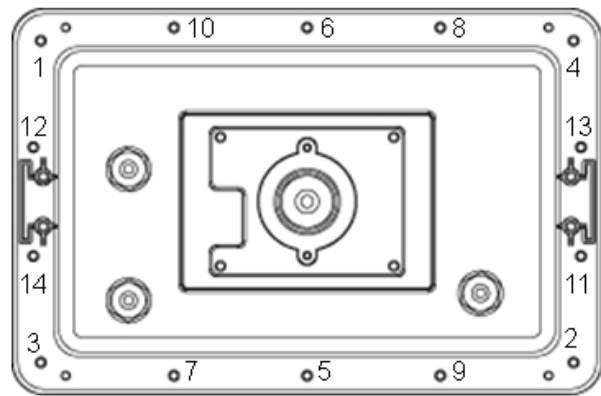
After installing the load cell, power cord hookup or replacing a new rechargeable battery, the housing must be screwed by the assigned order as shown below. Screw lightly first, then screw them tight using a 6 kgf-cm (GW) or 12 kgf-cm (QW) torsion.

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

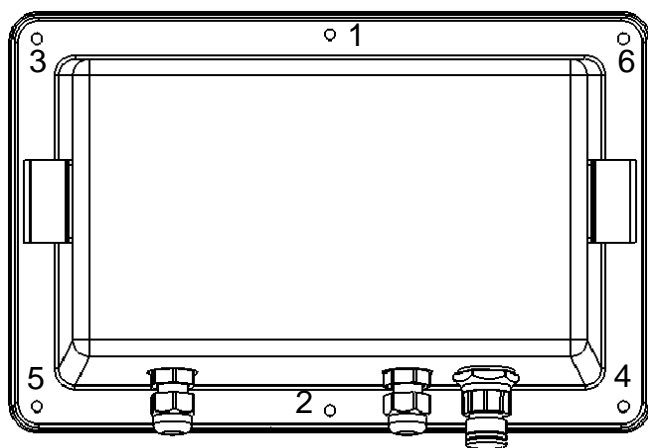
Screwing order:



▲ GW

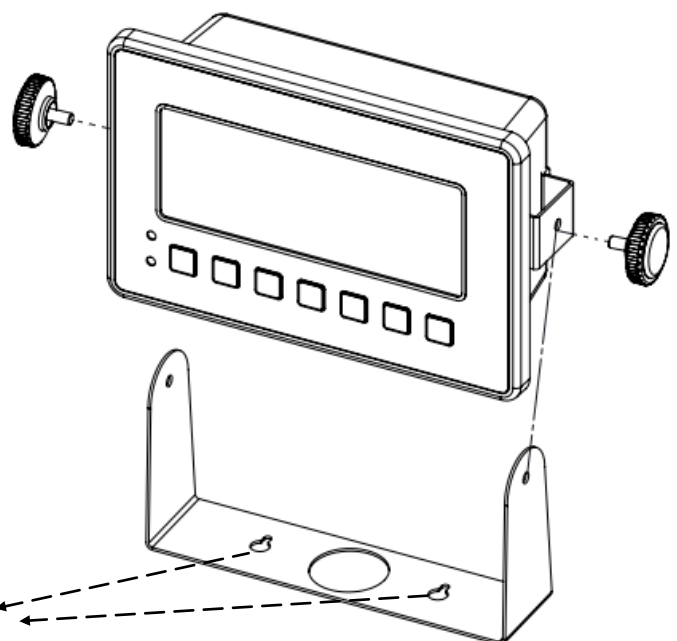


▲ GW



▲ QW

▼ How to Install U-Bracket



M8 Recommended
Screws are **NOT** included



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



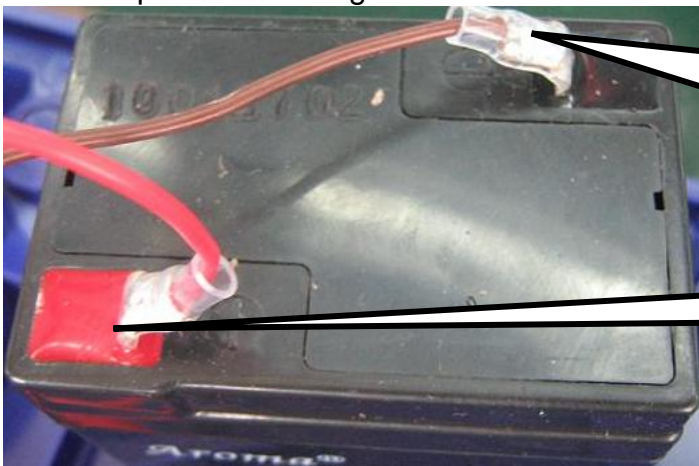
Due to the storage battery adopt the advanced free-maintaining technique, customers need not to replenish electrolyte.

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

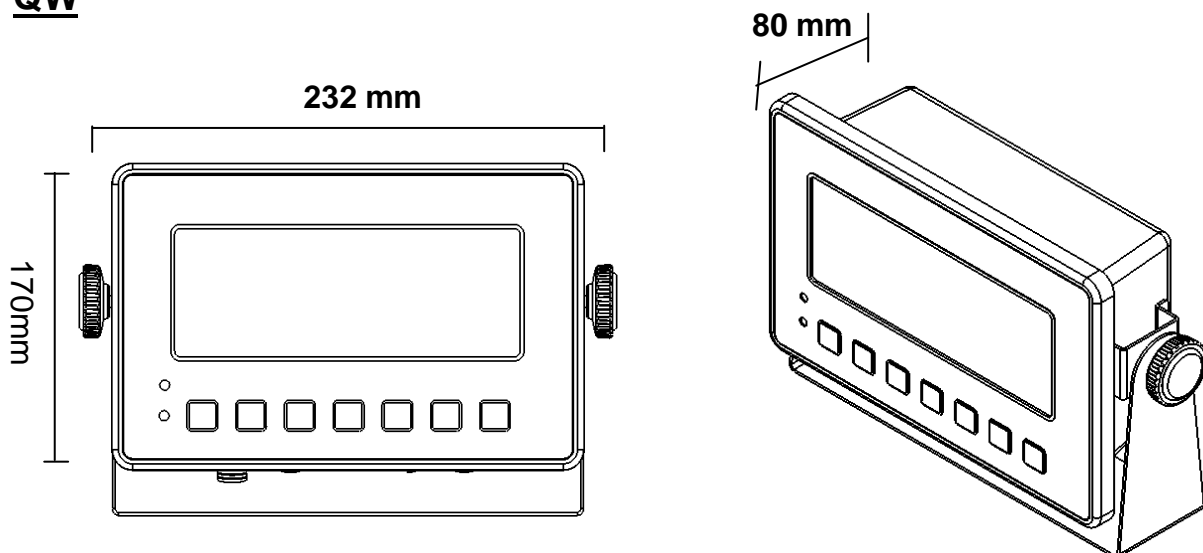
- Extra-large and wide LCD display (175 x 70mm) 6 digits with 55mm height
- COOL WHITE LED backlight
- QW with 304 stainless steel housing while GW with plastic ABS housing.
- Sealed to IP68, Waterproof, mist-proof and dustproof (Only use cables of 3mm~5mm diameter to ensure correct sealing of the cable glands)
- Kilogram (kg) and pound (lb) weighing modes
- Full range tare; Pre-tare; Auto zero tracking; Sampling counting
- Gross/Net indication
- Hold function; Check mode Lo/Hi/OK; Auto average unit weight
- Adjustable gravity value
- Low power indication and auto power off
- AC/DC power in and rechargeable battery
- Built-in RS-232
- Options: wireless transmitter, foot switch, pressure release valve, and RS-485

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 x 350Ω load cells
- Non-linearity: 0.01% of full scale
- A/D Resolution: 500,000 counts (Maximum)
- Operating temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$

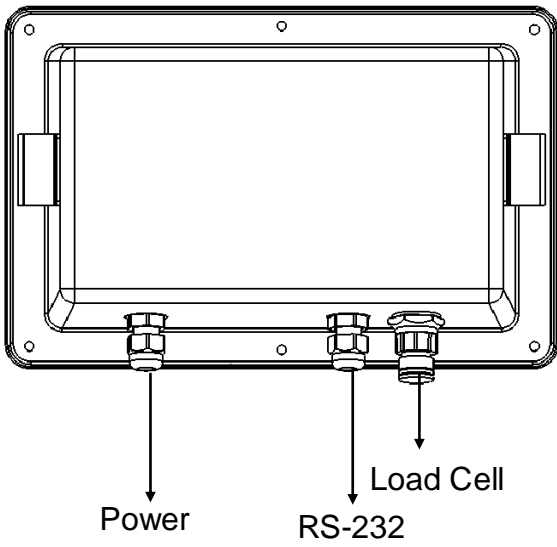
1-3 Product Appearance

QW

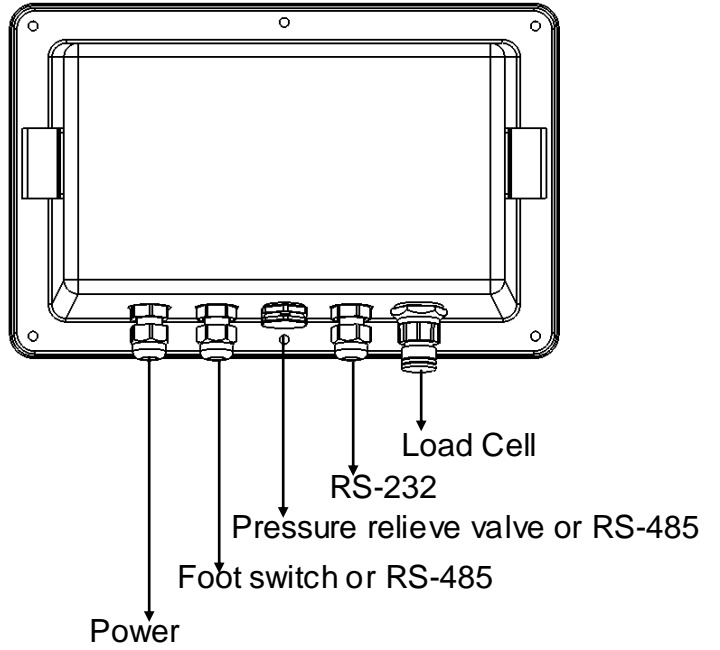




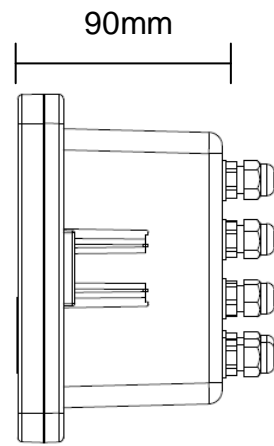
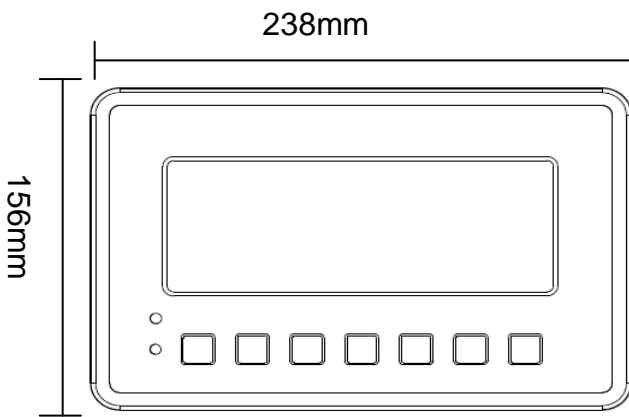
[Standard]



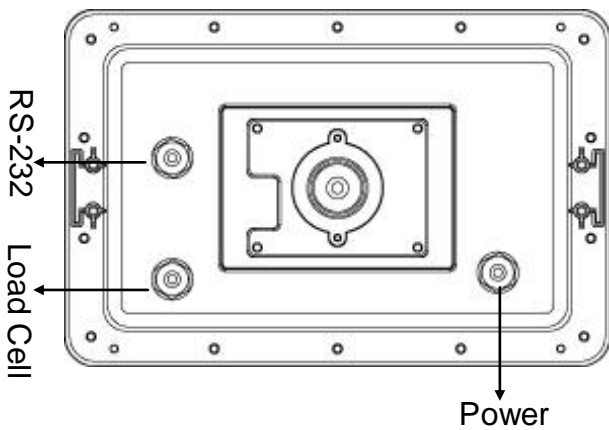
[Option]



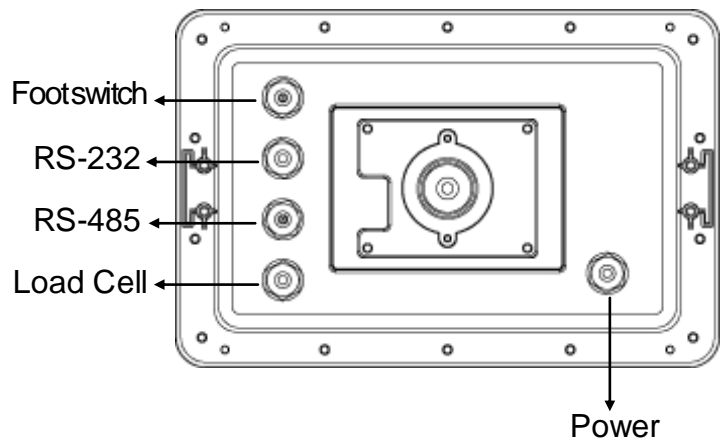
GW



[Standard]

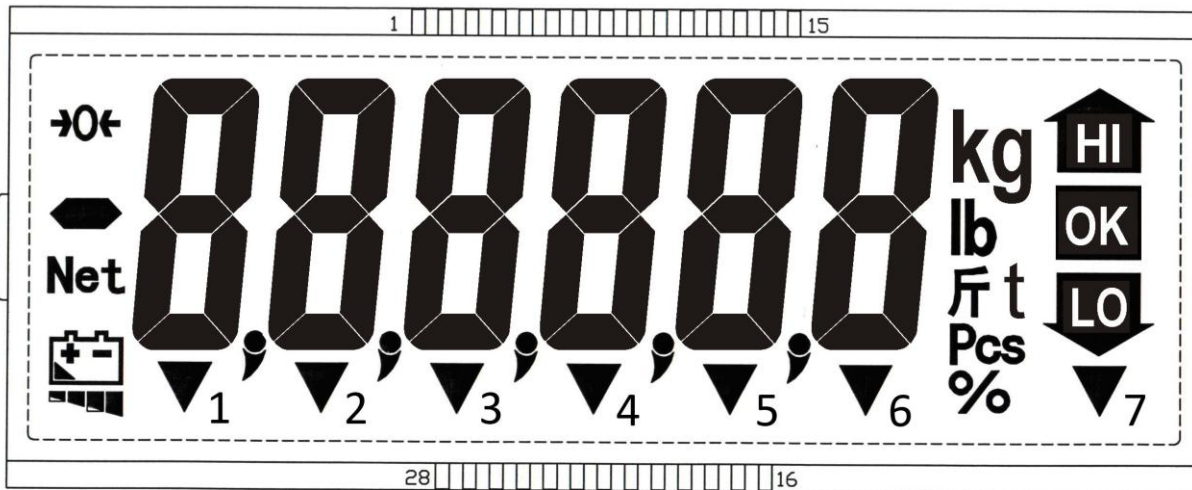


[Option]





1-4 Display Description



- | | |
|---------------------------------------|--|
| HI : Upper limit | : Low Power indication |
| 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 | |

1-5 Power Supply

Power Supply Selection

- ① 230Vac ±15%, 50/60Hz, 10W (plugged-in)
- ② 6V / 4Ah rechargeable battery

Power Consumption

- Approximately DC 31 mA (Indicator + Load Cell)
- Approximately DC 65 mA (Indicator + Load Cell + Display backlight)
- Approximately DC 80 mA (Indicator + Load Cell + Wireless 100M)
- Approximately DC 65 mA (Indicator + Load Cell + Wireless 10M)

Charging Voltage

DC 10V/1A

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

ON|OFF KEY

Press the **ON|OFF** key to switch the indicator on or off.

ZERO KEY

The **ZERO** key acts as the zero balance function. If the weighing value is within the range of zero balance, it can be re-zeroed and tare cancelled.

☞ 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:

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 1 1 1 4 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 3 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 (Non approval models.

Function key (In **F** r **1** **1** **1**, select **F** key as “MC”, “HR” or “T-TP”)

Foot Switch Mode

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

☞ If “PRINT” key is set (r **1** **1** **0** **3** = 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 ($\frac{5}{Pcs}$): 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.

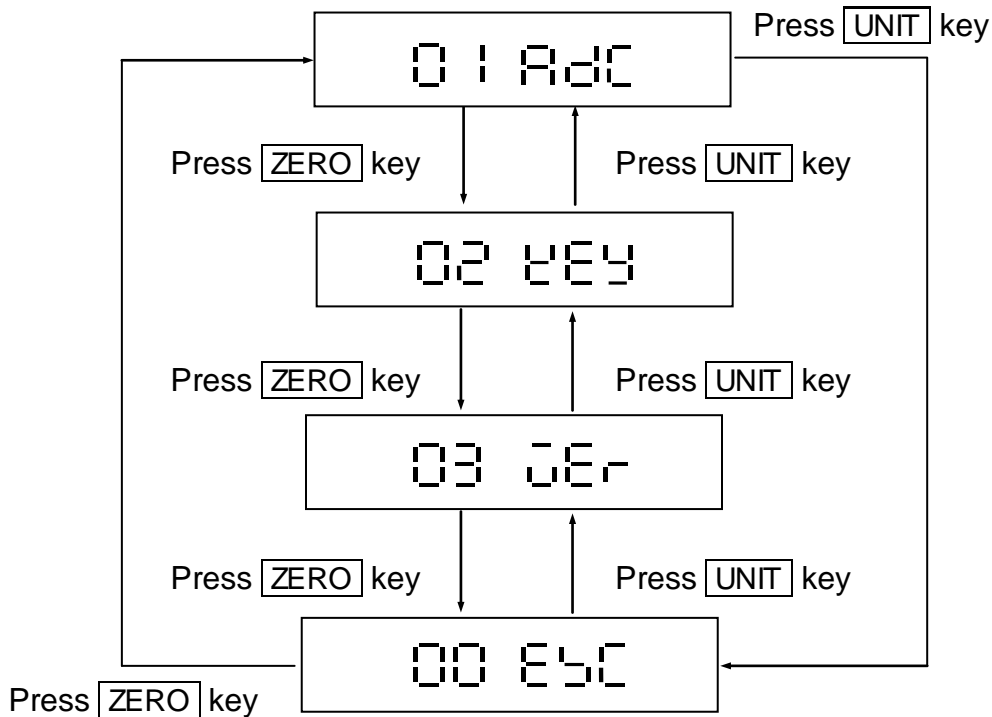
☞ After Power-off, the scale automatically memorizes the sampling number, and it is available when “Pcs” unit is selected next time.

☞ 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|OFF] 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 [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, [NET|GROSS] key=04
[M+|PRINT] key = 03, [F] key = 02
- ② Press [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 [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 |

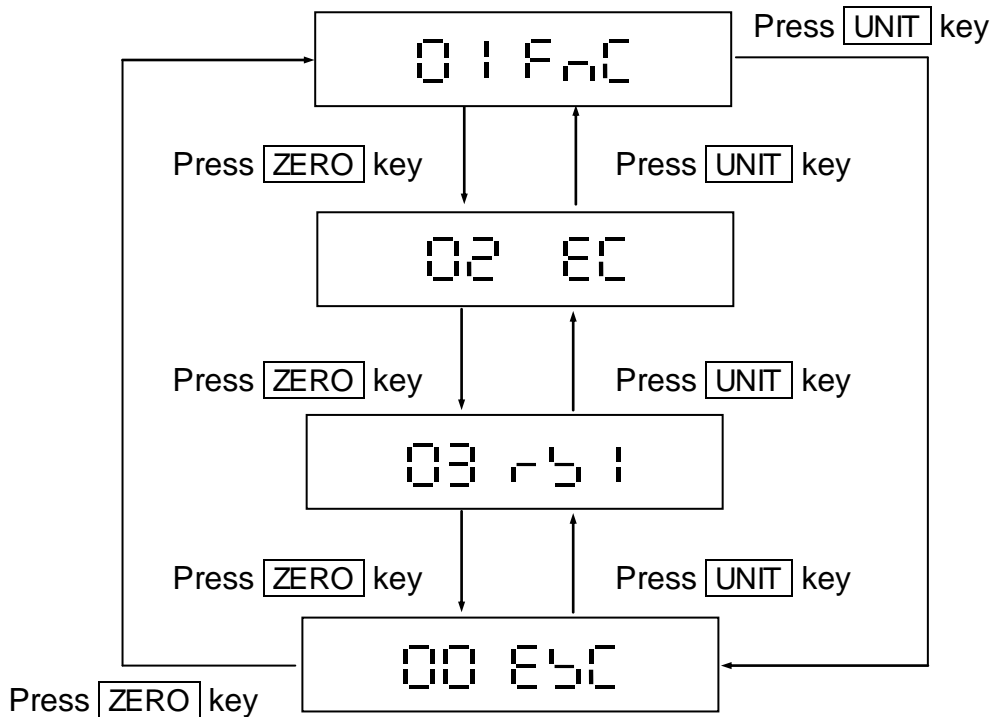


Chapter 2 Configurations

Configuration Workflow

In the weighing mode, press **[NET|GROSS]** key and **[ZERO]** keys at the same time to enter the configuration mode. The LCD shows **01 Fnc**.

Overall workflow of the Advanced Function setting mode:



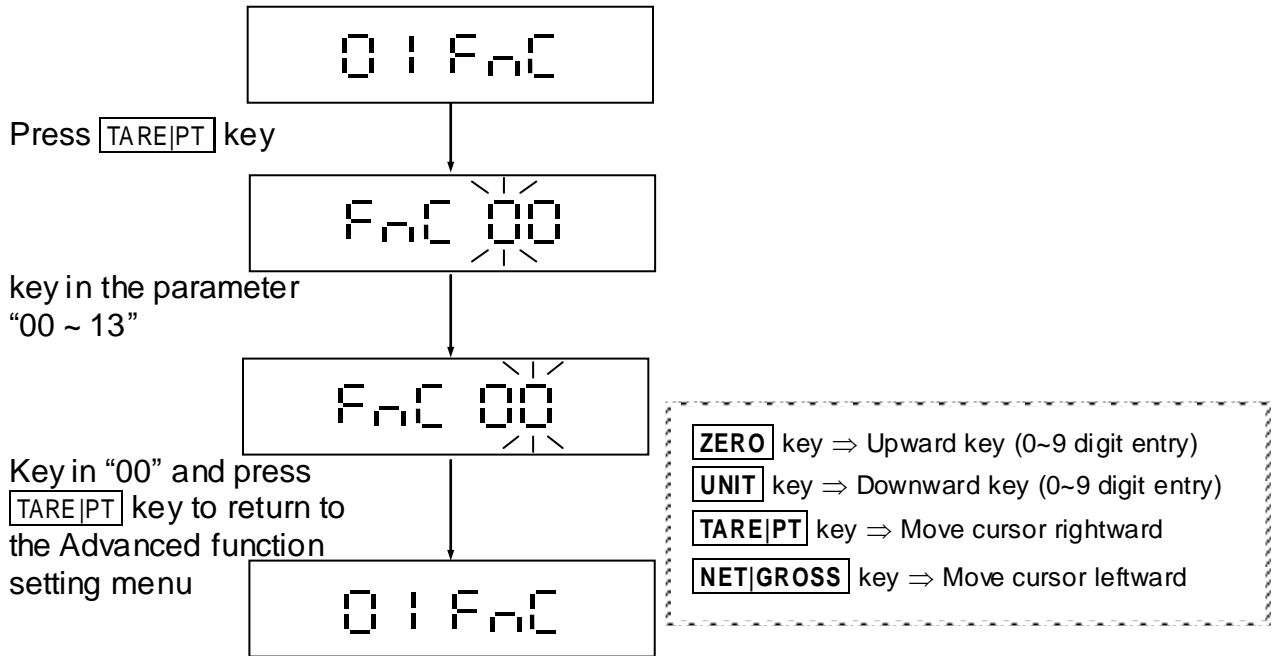
| | | |
|--------|---|---|
| 01 Fnc | ⇒ | General Function Setting Mode |
| 02 EC | ⇒ | External Weight Calibration |
| 03 r51 | ⇒ | RS232 Bi-direction Function Setting |
| 00 ESC | ⇒ | Exit the Advanced Function Setting Mode |

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:

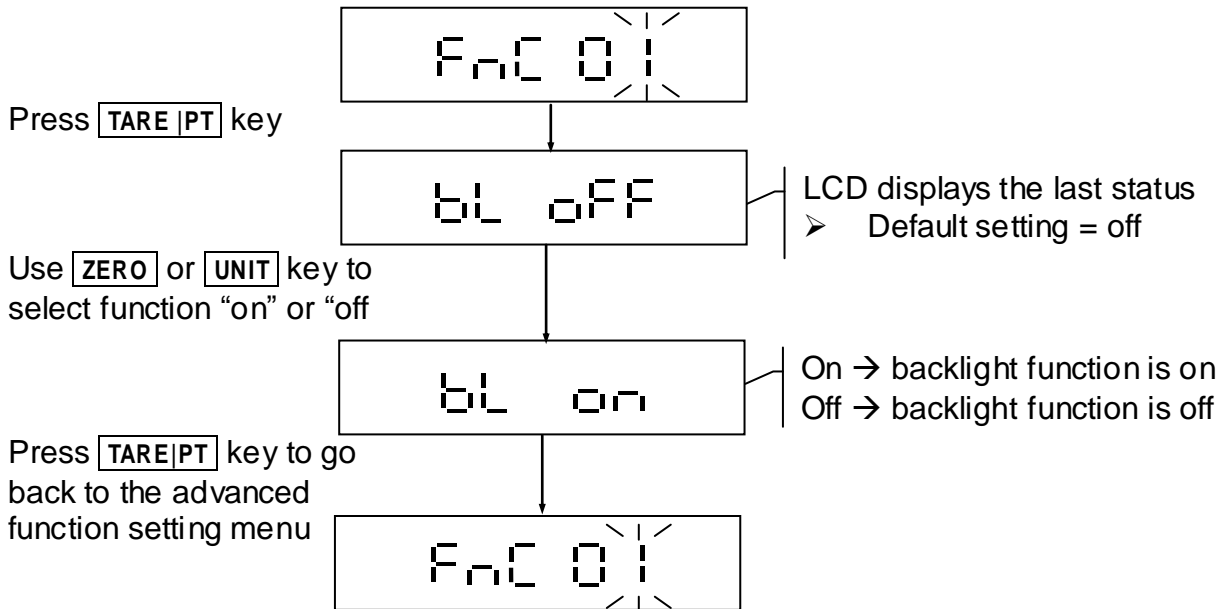


| | |
|--------|---|
| Fnc 00 | ⇒ Return to the Advanced Function Setting Mode Menu |
| Fnc 01 | ⇒ Automatic Backlight Function Settings |
| Fnc 02 | ⇒ Automatic Power-off Timer Settings |
| Fnc 03 | ⇒ Hi/Lo/OK Settings |
| Fnc 04 | ⇒ Restore the Default Settings |
| Fnc 05 | ⇒ Noise Filter Settings |
| 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 n C 0 1

Select F n C 0 1 in the general function setting mode 0 1 F n C to change the backlight function setting.



- 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

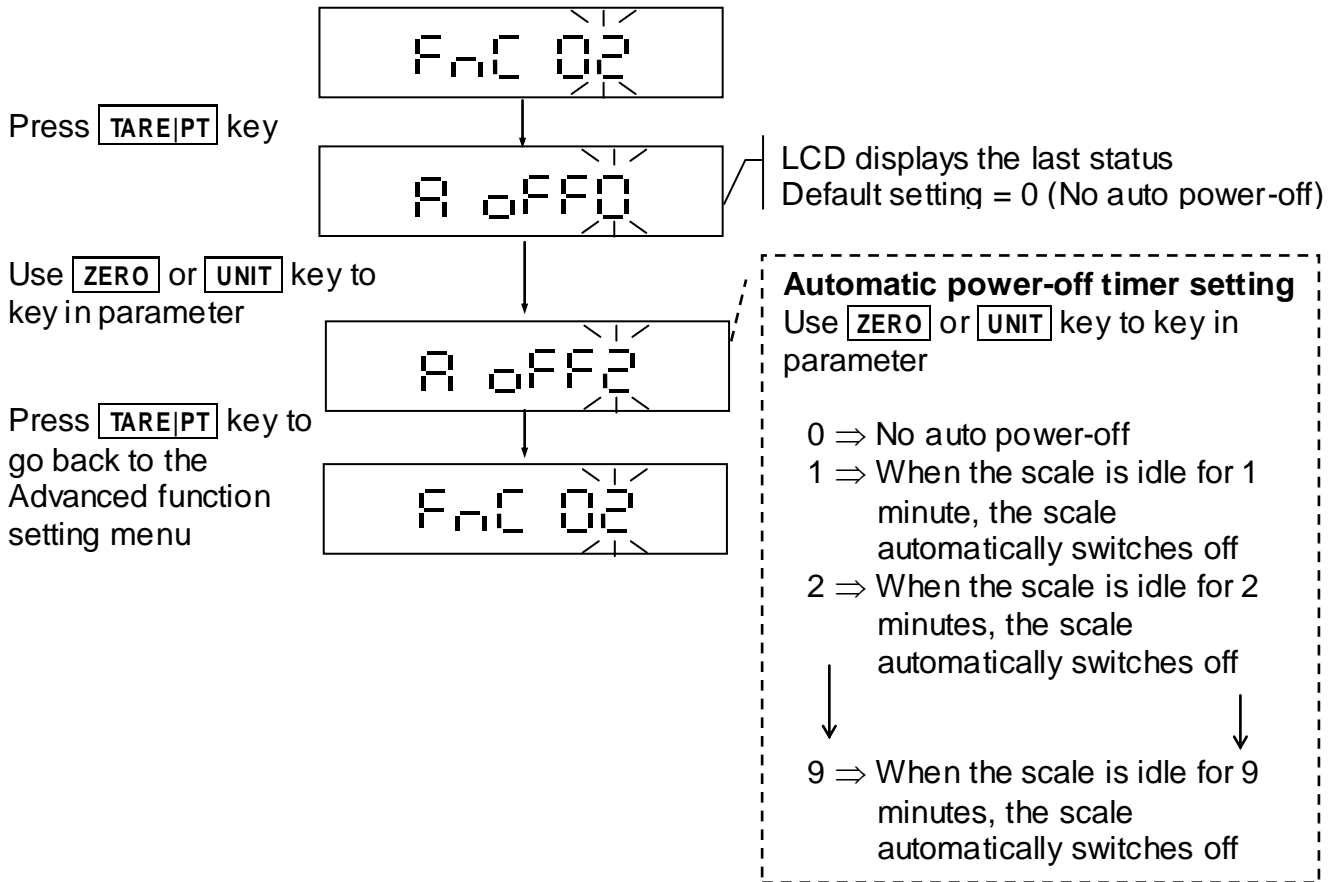
Auto backlight function

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.



- 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 power-off function

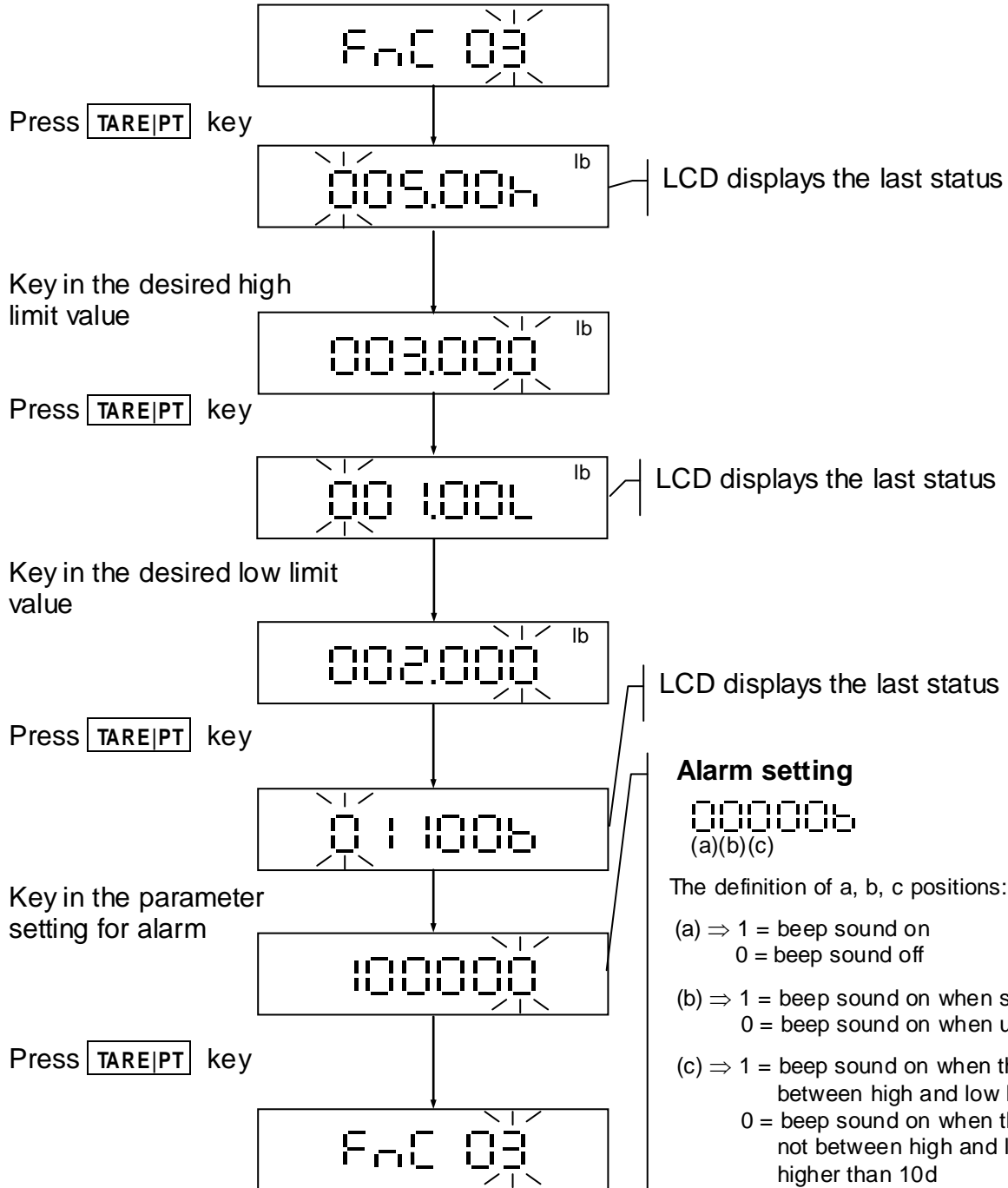
When the weight on weigh pan is less than 10d or keeps idle for the set time, the scale will automatically switch off.



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

Select F_nC 03 in the general function setting mode 0 : F_nC 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.

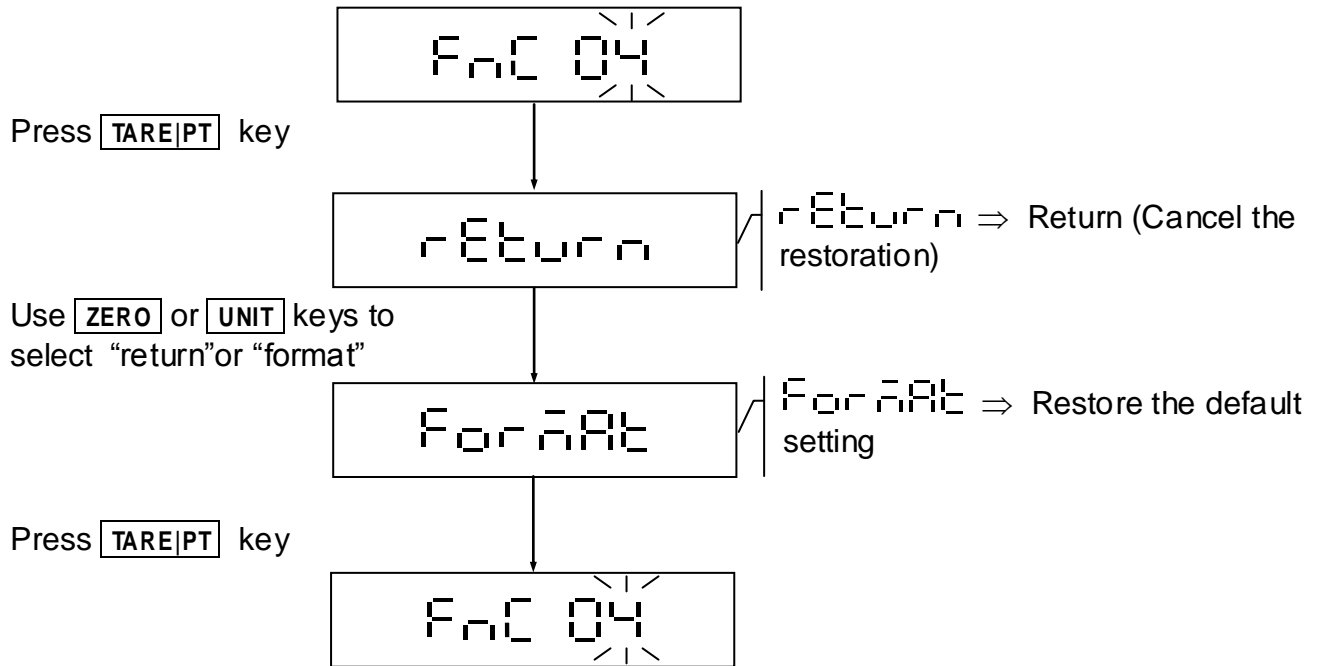


- ZERO** key ⇒ Upward key (0~9 digit entry)
- UNIT** key ⇒ Downward key (0~9 digit entry)
- TARE|PT** key ⇒ Move cursor rightward
- NET|GROSS** key ⇒ Move cursor leftward



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.



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

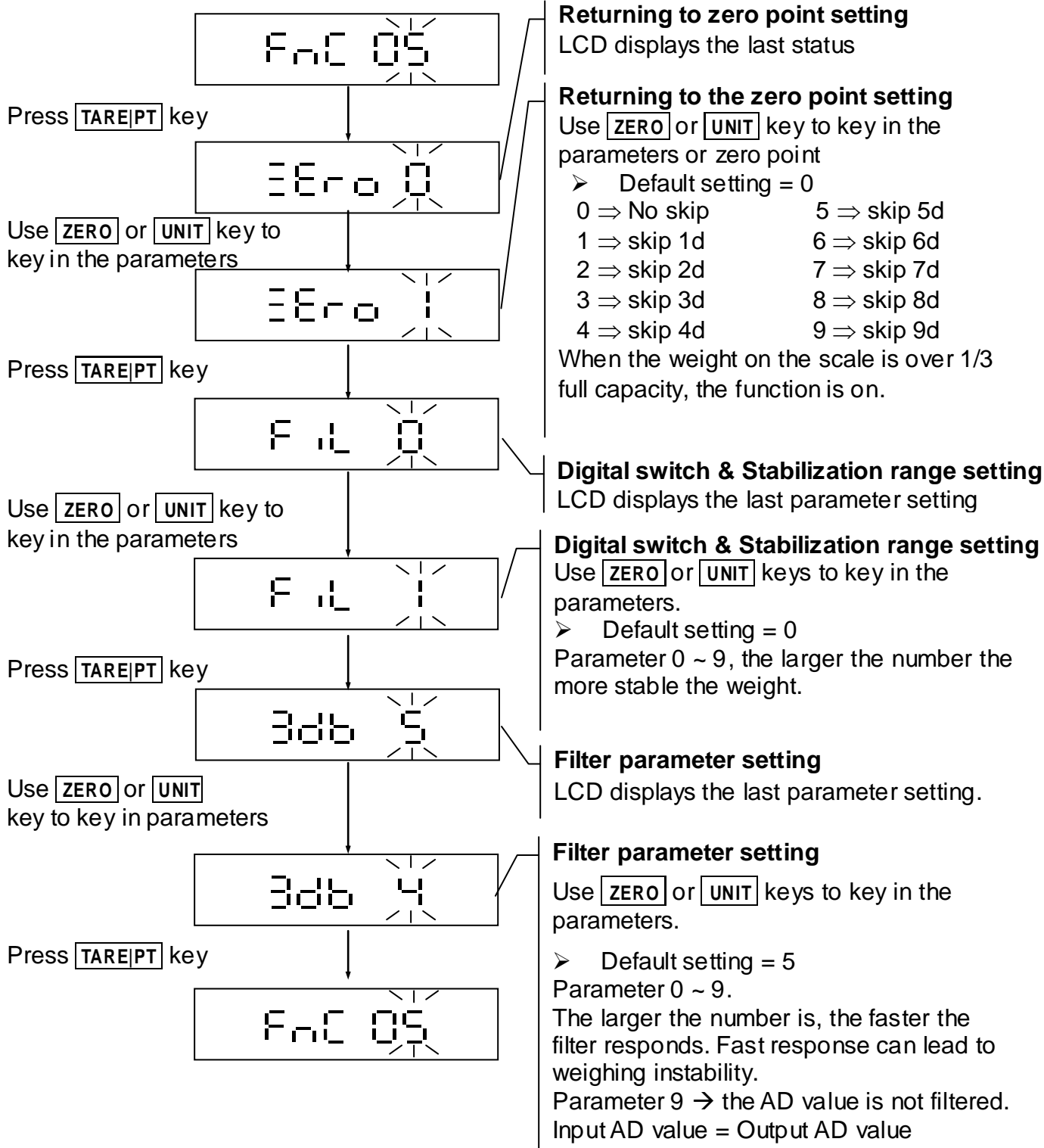
☰ The defaults are included the following:

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



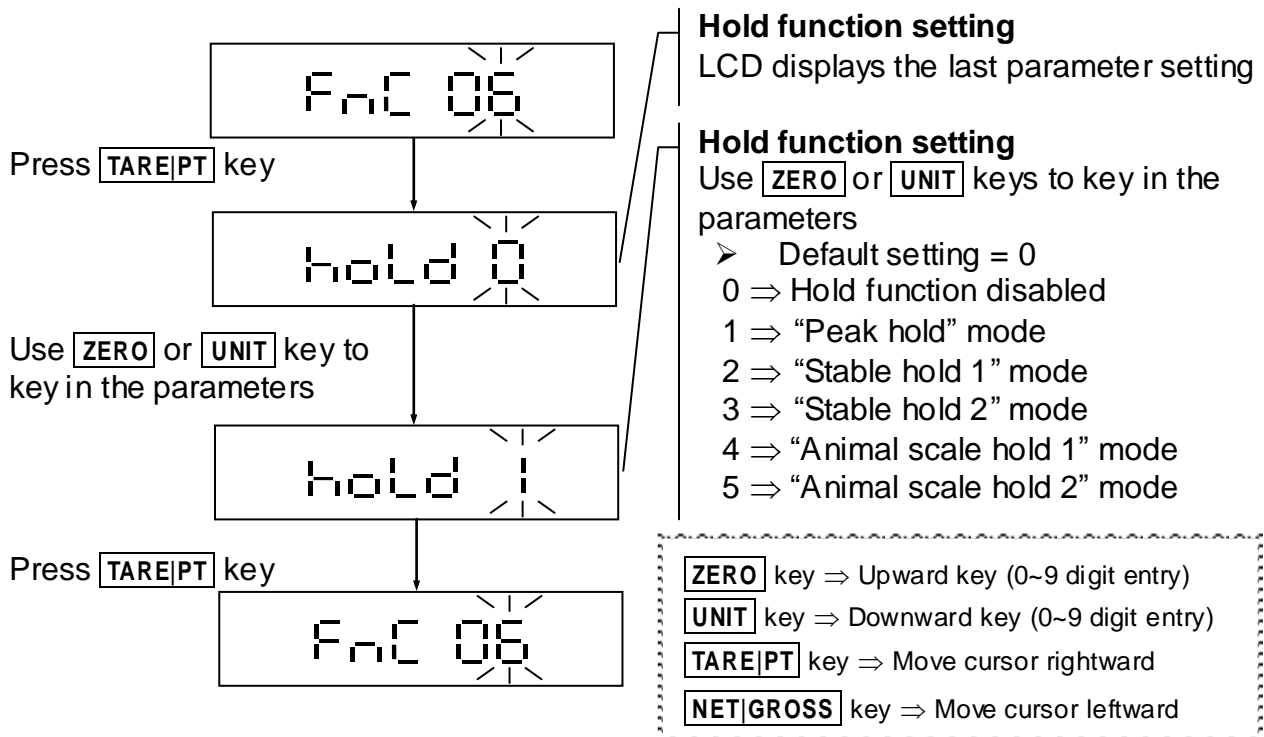
2-1-5 Noise Filter Settings F_{nC} 05

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





2-1-6 Hold Function Settings F_nC 06



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

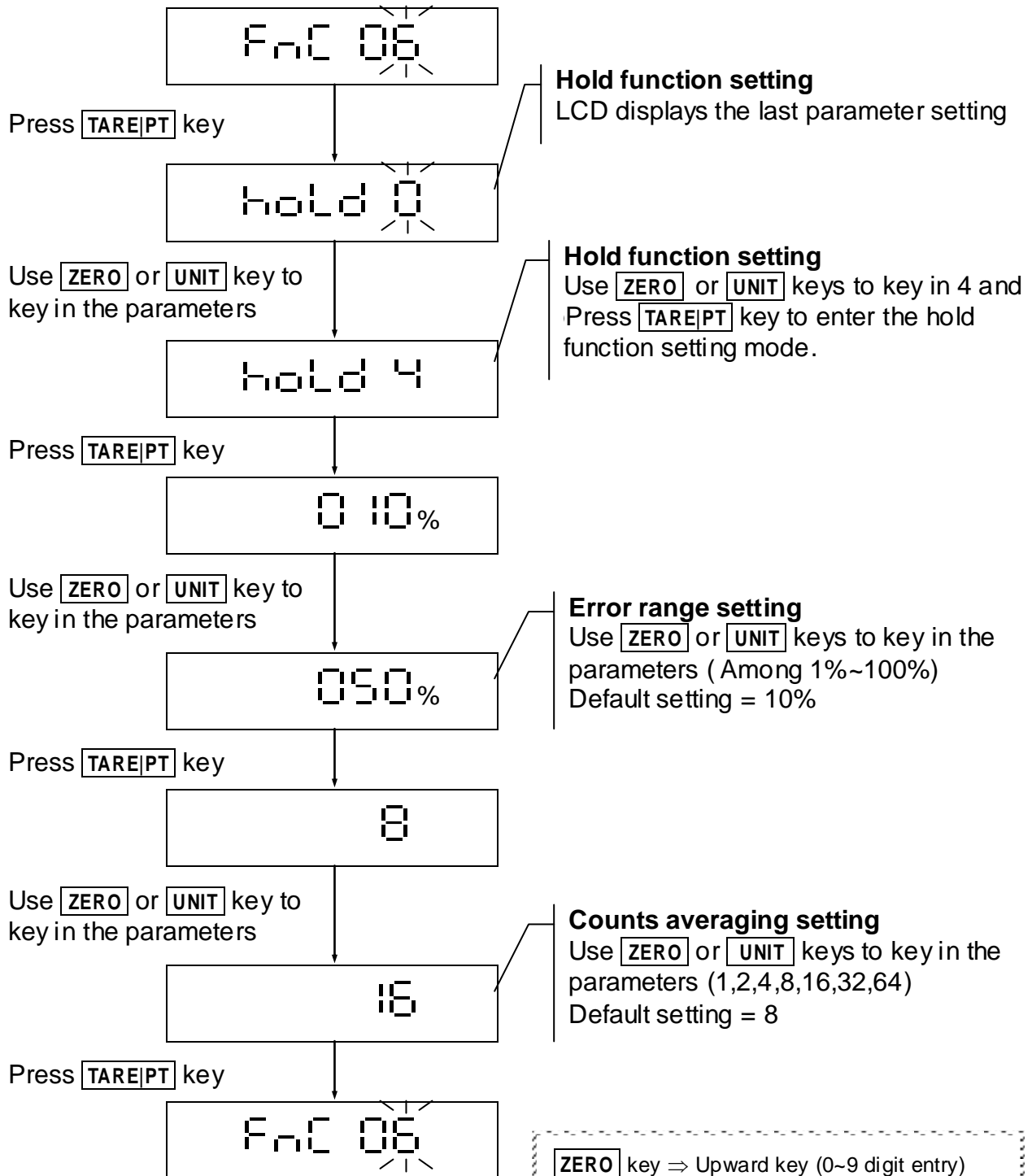
When no load, the display shows “- - - - -”. After the animal or object is on the platter and the weight is stable, the display shows the weight value and hold. When the animal or object is off the platter, the display shows “- - - - -” and the hold function is off. If the weight is hardly stable, display 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, **ZERO** and **TARE|PT** keys are useless.



Hold Function Setting (Animal scale) hold 4



Hold function setting
LCD displays the last parameter setting

Hold function setting
Use [ZERO] or [UNIT] keys to key in 4 and Press [TARE|PT] key to enter the hold function setting mode.

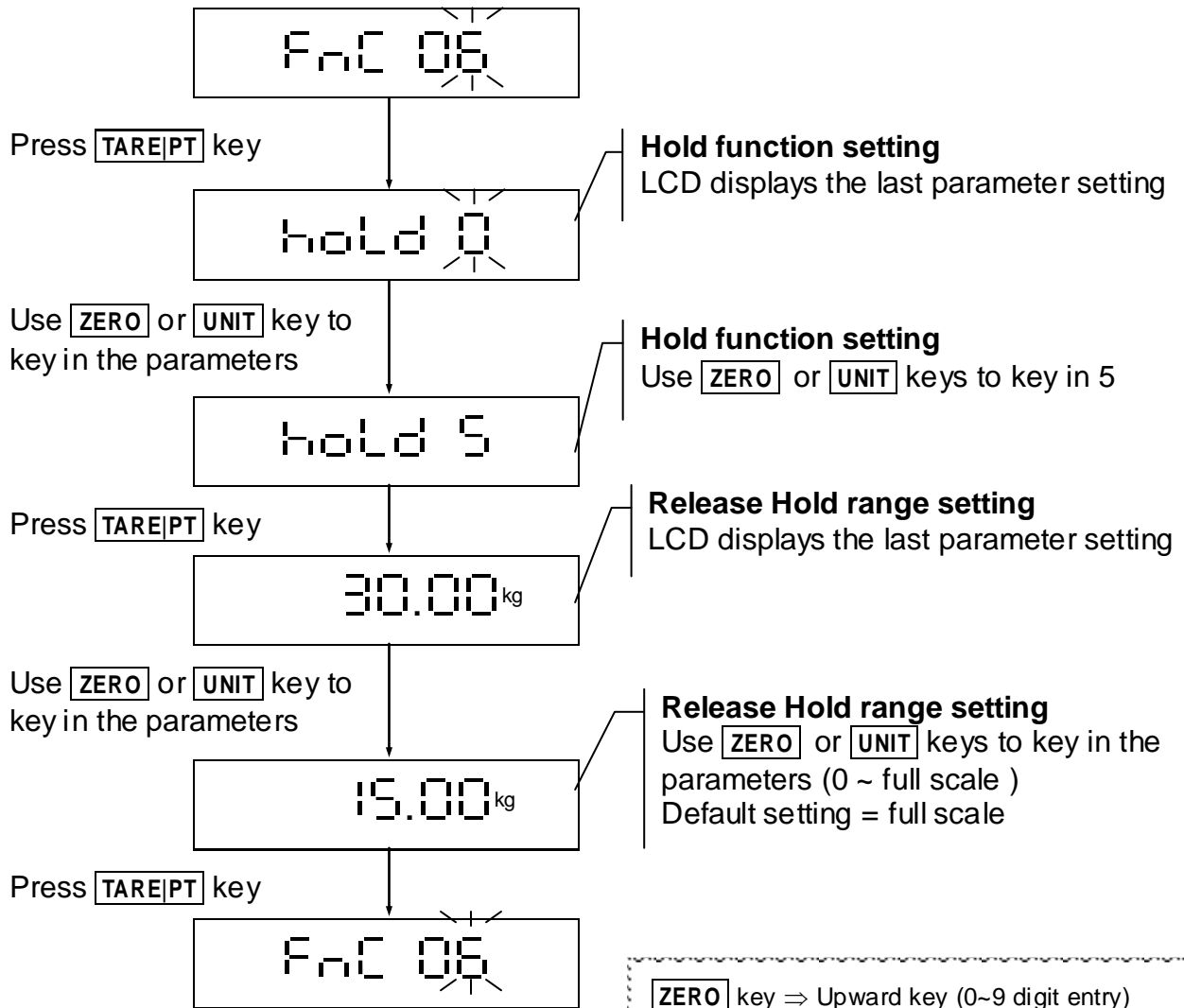
Error range setting
Use [ZERO] or [UNIT] keys to key in the parameters (Among 1%~100%)
Default setting = 10%

Counts averaging setting
Use [ZERO] or [UNIT] keys to key in the parameters (1,2,4,8,16,32,64)
Default setting = 8

- [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



Hold function setting
LCD displays the last parameter setting

Hold function setting
Use ZERO or UNIT keys to key in 5

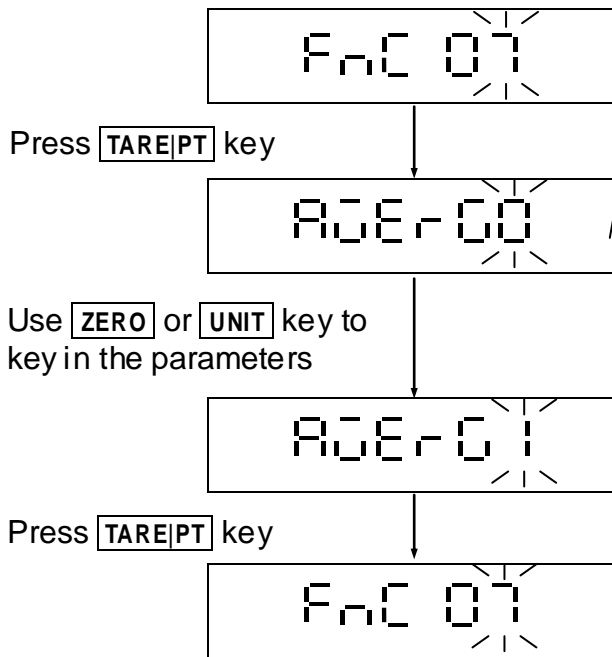
Release Hold range setting
LCD displays the last parameter setting

Release Hold range setting
Use ZERO or UNIT keys to key in the parameters (0 ~ full scale)
Default setting = full scale

- 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



Auto unit weight averaging setting
LCD displays the last parameter setting

Auto unit weight averaging setting
Use **ZERO** or **UNIT** keys to key in the parameters

- Default setting = 0
- 0 ⇒ Auto unit weight averaging
- 1 ⇒ Non auto unit weight averaging

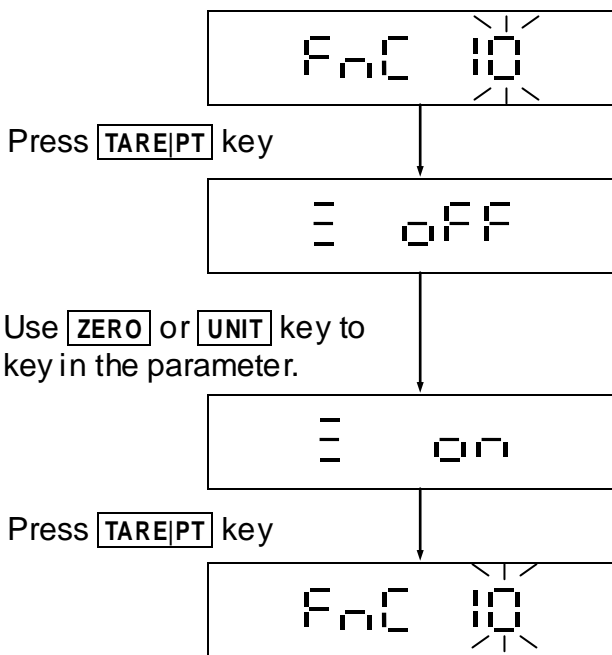
ZERO key ⇒ Upward key (0~9 digit entry)

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

TARE|PT key ⇒ Move cursor rightward

NET|GROSS key ⇒ Move cursor leftward

2-1-8 Record Last Zero F_nC 10



LCD displays the last parameter setting

Record Last Zero

Use **ZERO** or **UNIT** Key to select the setting.

Default setting = **off**

- ≡ **on** ⇒ Record the last zero setting
- ≡ **off** ⇒ No record

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

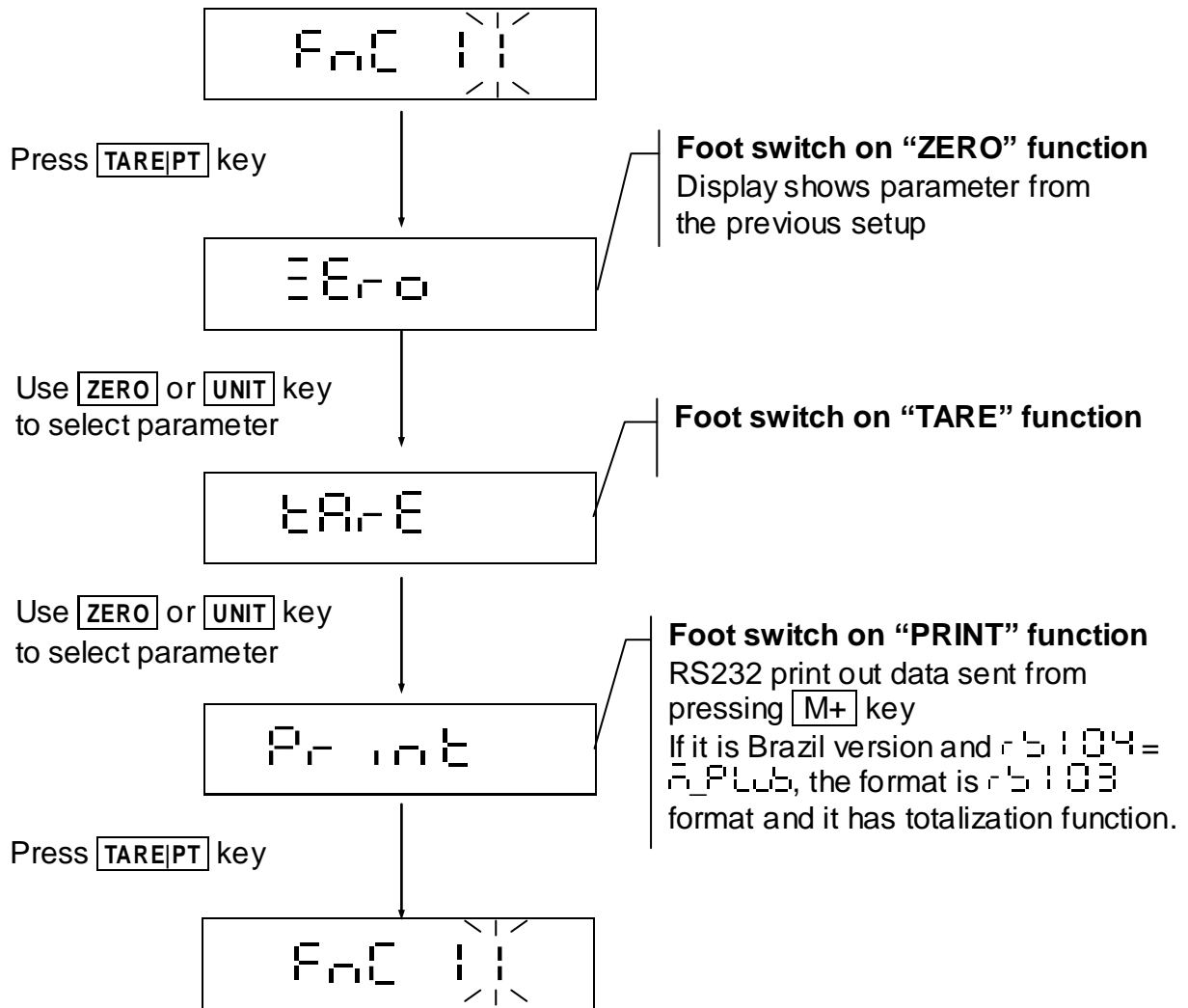
UNIT key ⇒ Downward key (0~9 digit entry)

TARE|PT key ⇒ Move cursor rightward

NET|GROSS key ⇒ Move cursor leftward



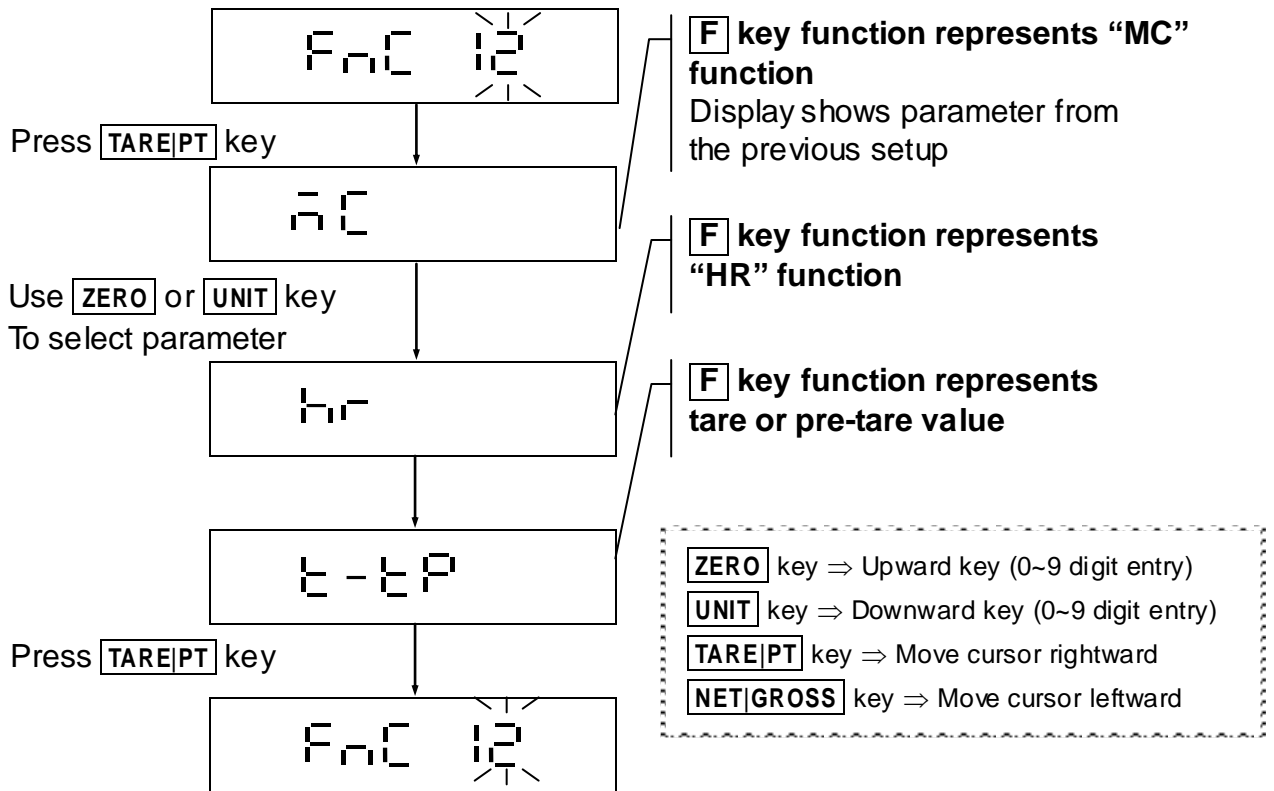
2-1-9 Foot Switch Settings F n C | | (Option)



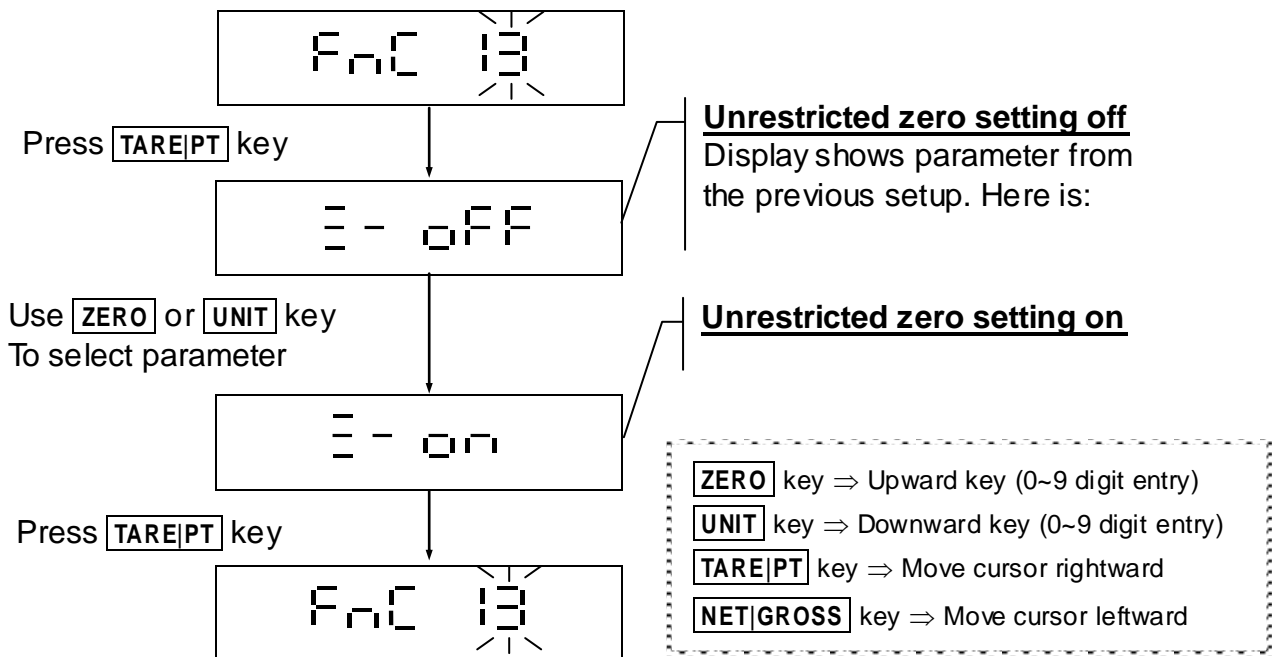
- ZERO** key ⇒ Upward key (0~9 digit entry)
- UNIT** key ⇒ Downward key (0~9 digit entry)
- TARE|PT** key ⇒ Move cursor rightward
- NET|GROSS** key ⇒ Move cursor leftward



2-1-10 [F] Key Function Settings F_nC 12

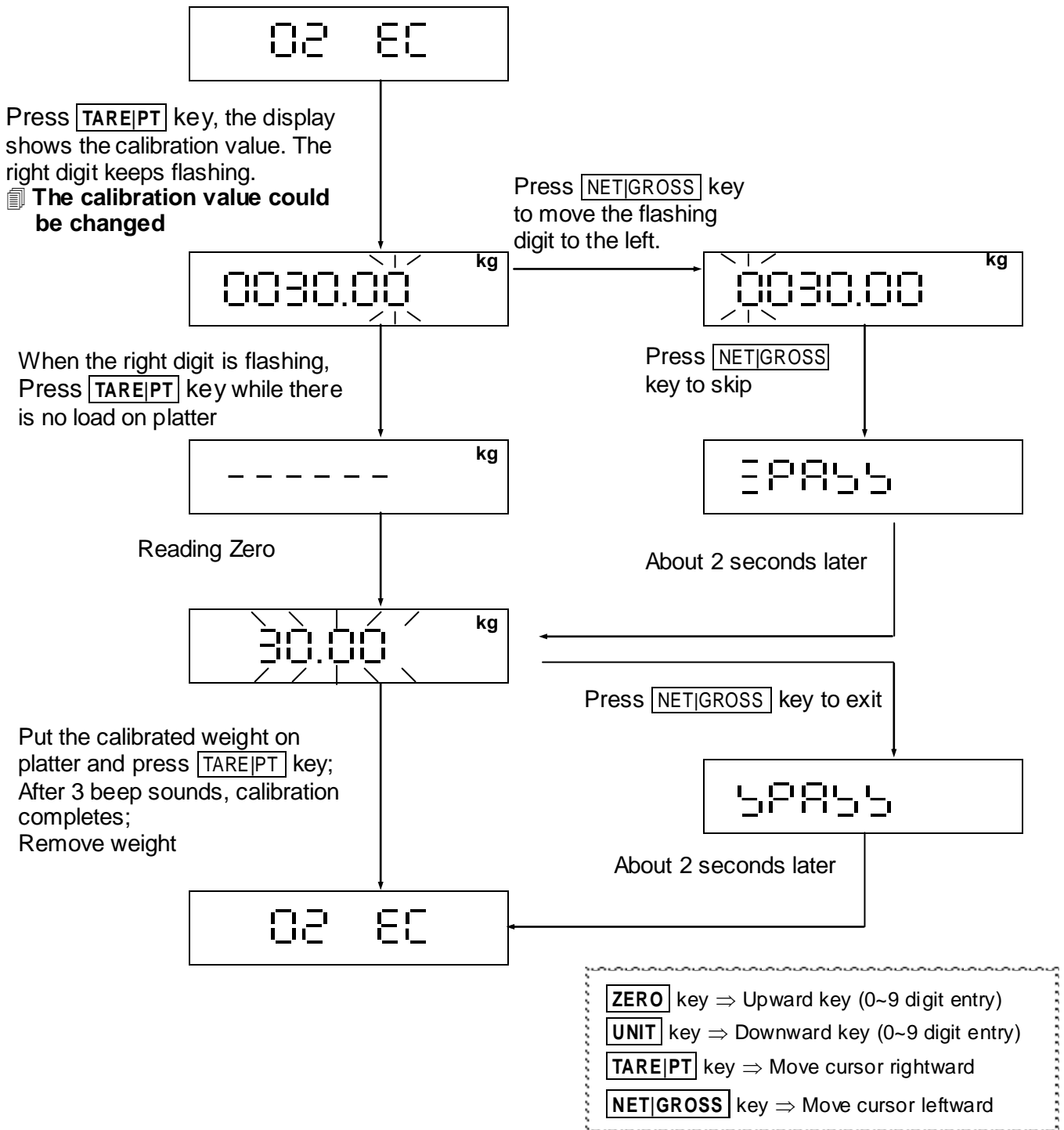


2-1-11 Zero Setting F_nC 13





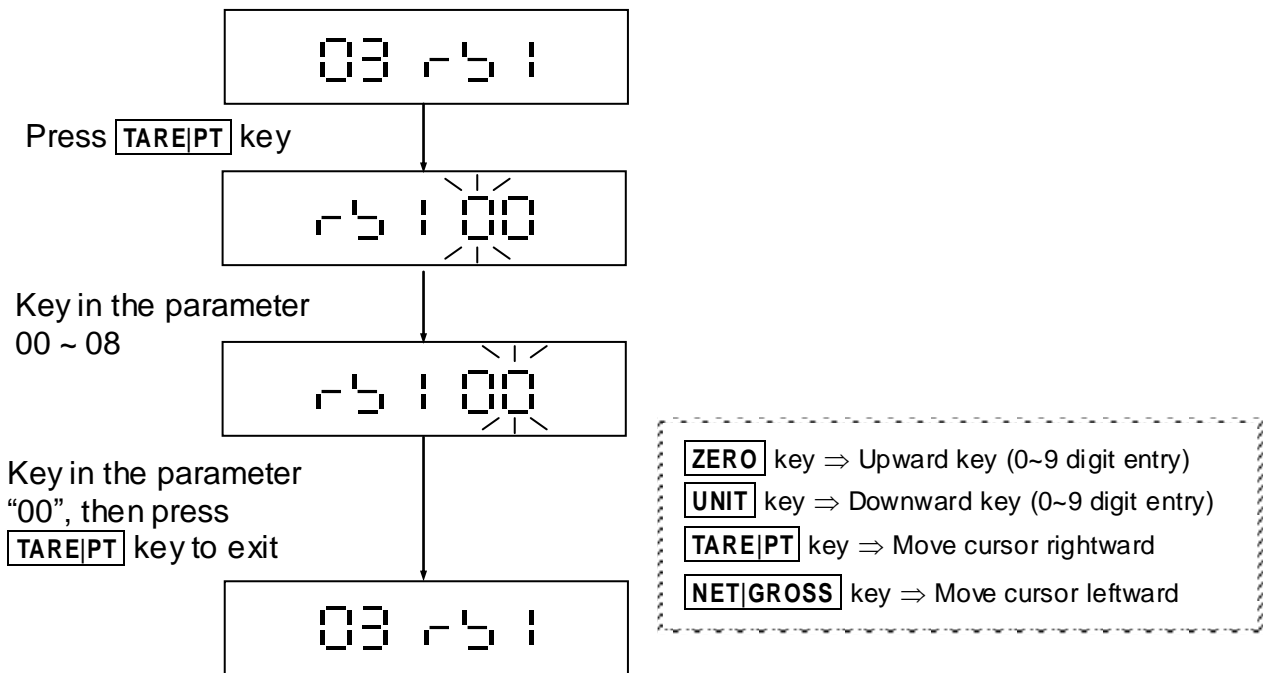
2-2 External Weight Calibration 02 EC



📄 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

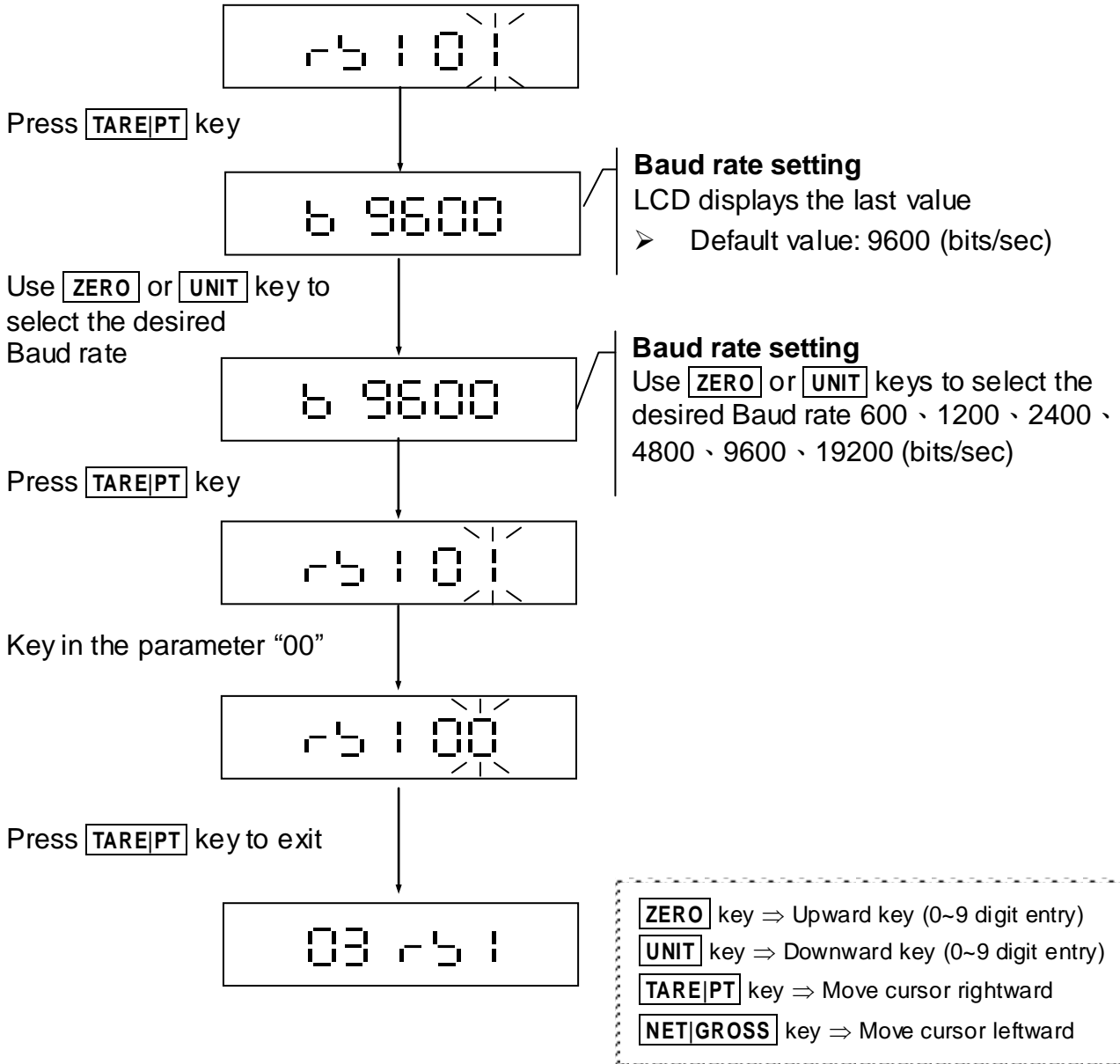


- r5 1 00 ⇒ Exit the RS232 Serial Interface Setting Mode
- r5 1 01 ⇒ Baud Rate Settings
- r5 1 02 ⇒ Communication Protocol Settings
- r5 1 03 ⇒ Output Format Settings
- r5 1 04 ⇒ Transmission method setup
- r5 1 05 ⇒ The Selection of Continuous Transmission Rate
- r5 1 06 ⇒ Auto Transmission at Zero
- r5 1 07 ⇒ Reset of Auto Transmission
- r5 1 08 ⇒ Output Condition Settings
- r5 1 09 ⇒ RS232 6/7 digits setting
- r5 1 10 ⇒ RTC adjustment
- r5 1 11 ⇒ Y/M/D Print Format Selection
- r5 1 12 ⇒ RS485 ID Input (Option)
- r5 1 13 ⇒ Line Feed Input



2-3-1 Baud Rate Settings r 5 | 0 |

Select r 5 | 0 | in the RS232 serial interface setting mode 03 r 5 | to set the Baud Rate.

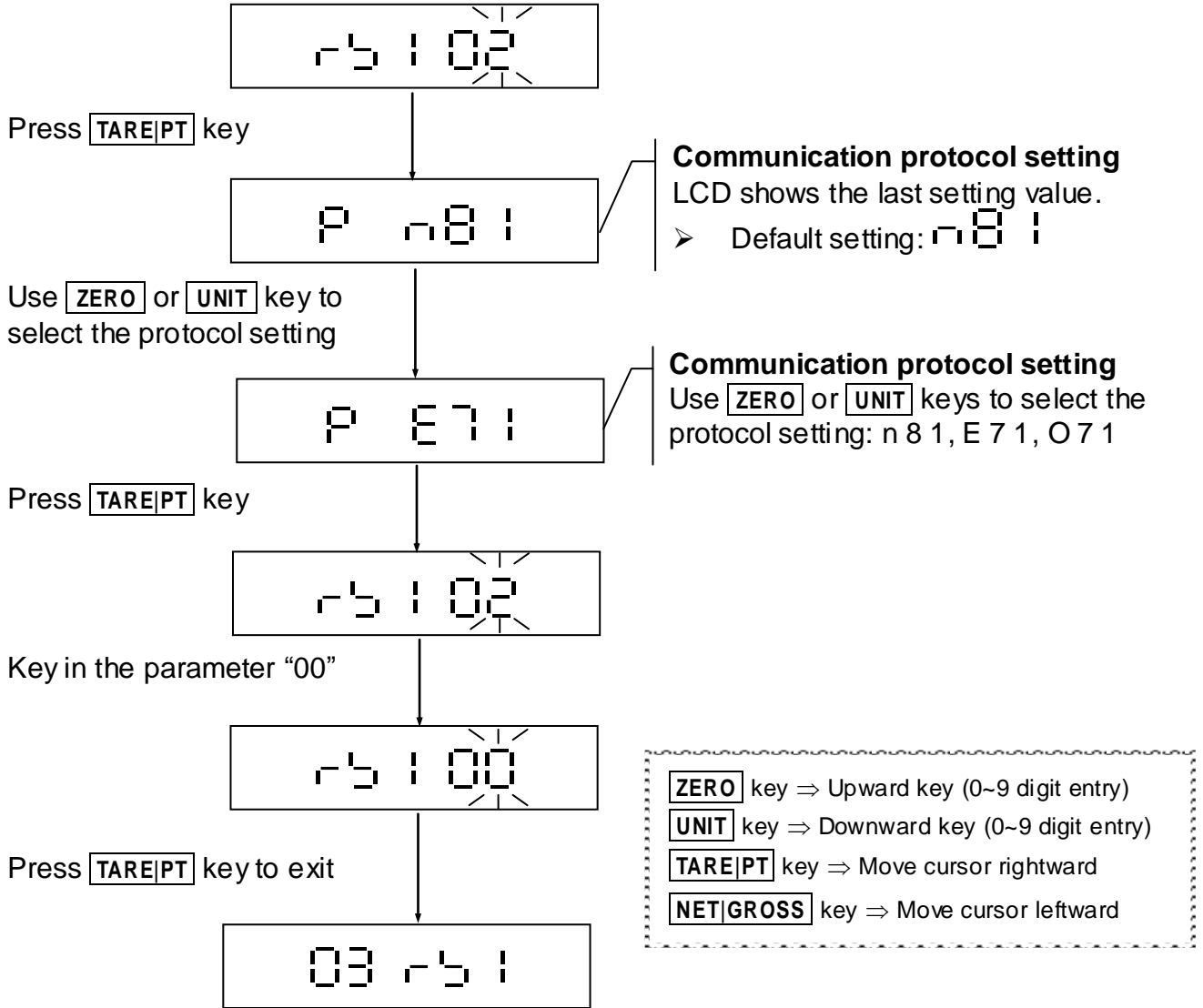


☰ For Wireless models, please set Baud rate as 9600 (bits/sec) and Communication protocol as n 8 1.



2-3-2 Communication Protocol Settings r5 | 02

Select r5 | 02 in the RS232 serial interface setting mode 03 r5 | to set the Communication Protocol.

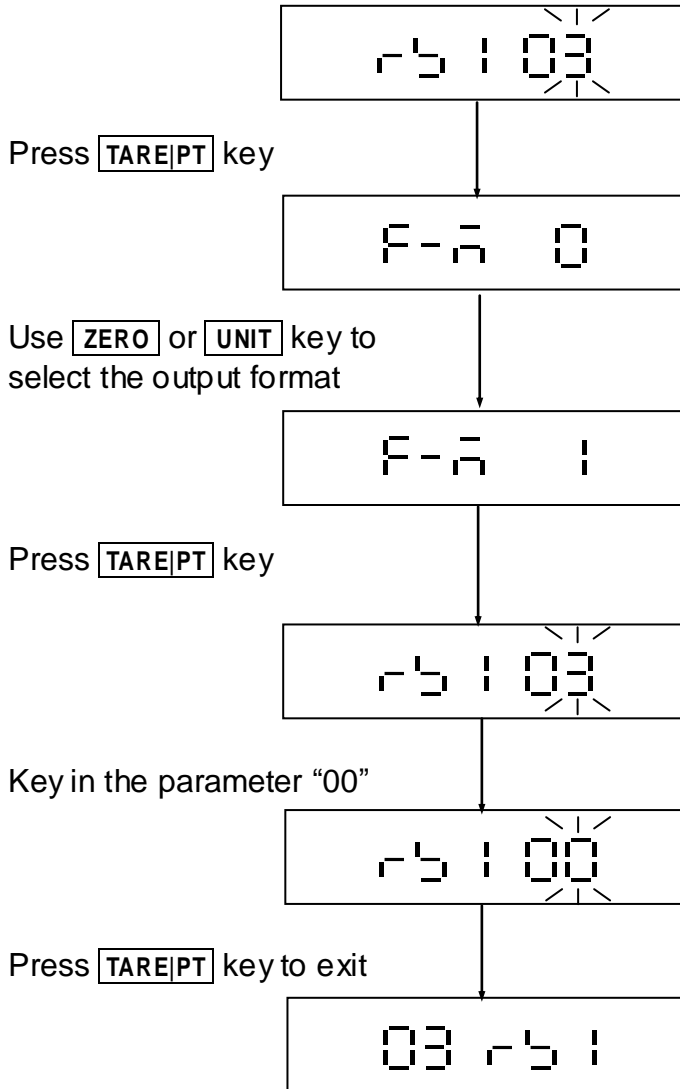


☰ For Wireless models, please set Baud rate as 9600 (bits/sec) and Communication protocol as n 8 |.



2-3-3 Output Format Settings r 5 | 03

Select r 5 | 03 in the RS232 serial interface setting mode 03 r 5 | to set the Output Format.



RS232 output format setting

LCD shows the last setting.

➤ Default setting: F - r 0

RS232 output format setting

Use **ZERO** or **UNIT** keys to select the output format:

- F - r 0 = Same data as the scale
- F - r 1 = Gross weight
- F - r 2 = Net weight
- F - r 3 = Same data as the scale in simple format
- F - r 4 = Same gross data as the scale in simple format
- F - r 5 = Same net data as the scale in simple format
- F - r 6 = Hi/Lo/OK status + Same data as the scale in simple format
- F - r 7 = Hi/Lo/OK status + Simple gross weight
- F - r 8 = Hi/Lo/OK status + Simple net weight
- F - r 9 = Tare value
- F - r 10 = **M+** Transmission 1 note 1
- F - r 11 = **M+** Transmission 2 note 2
- F - r 12 = Brazil printing format note 3
- F - r 13 = Brazil printing format note 4
- F - r 14 = Brazil printing format note 5

📄 Format 12.13.14 are only for Brazil
Format 10.11 are not available on counting mode

- 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



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 transmission.
If it is Brazil version, under decimal units mode, Fnc 11=Print and r b i 04= net, 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-

Note4:

If it is not Brazil version, it can print under key transmission, auto transmission and order mode.

If it is Brazil version, when the scale is stable and under under decimal units mode, Fnc 11=Print and r b i 04= net, it can print out.. It is not available on counting mode.

Transformat as followed:

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------|---|---|------|---|------|------|------|---|---|---|------|---|---|---|---|---|---|---|---|---|---|---|---|---|------|
| F | R | " | I | R | W | T | 3 | 0 | 0 | 0 | " | <LF> | | | | | | | | | | | | | | |
| ? | <LF> | | | | | | | | | | | | | | | | | | | | | | | | | |
| G | G | G | , | G | G | G | <LF> | | | | | | | | | | | | | | | | | | | |
| T | T | T | , | T | T | T | <LF> | | | | | | | | | | | | | | | | | | | |
| N | N | N | , | N | N | N | <LF> | | | | | | | | | | | | | | | | | | | |
| A | A | A | , | A | A | A | <LF> | | | | | | | | | | | | | | | | | | | |
| C | C | C | C | C | C | <LF> | | | | | | | | | | | | | | | | | | | | |
| D | D | / | M | M | / | Y | Y | <LF> | | | | | | | | | | | | | | | | | | |
| H | H | : | m | m | : | S | S | <LF> | | | | | | | | | | | | | | | | | | |
| n | n | n | , | n | n | n | t | t | t | , | t | t | a | a | a | , | a | a | a | c | c | c | c | c | c | <LF> |
| P | 1 | , | 1 | <LF> | | | | | | | | | | | | | | | | | | | | | | |

G = gross weight
T,t = tare
N,n = net weight
A,a = accumulating weight
C,c =accumulating times
D = date (DD/MM/YY) DD: day MM: month YY: year
H = time(HH:mm:ss) HH: hour mm: minute SS: second



For example:

tare 0.2kg, net weight 1key, press M+

FR"IRWT3000"

?

1,200

0,200

1,000

1,000

1

30/05/00

00:54:12

001,000000,200001,000000001

P1,1

Note5:

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

If it is Brazil version, under decimal units mode, $F_{net} = P_{tare}$ and $P_{tare} = F_{net}$, it can print out. It is not available on counting mode.

Transformat as followed:

S,GGG .GGG ,TTT .TTT,NNN.NNN

S = 0:stable 1: unstable

G = gross weight

T = tare + pre-tare

N = net weight

For example:

tare 1 kg, net weight 0.2key, gross weight 1.2 kg , stable, then show as followed:

0,001.200,001.000,000.200

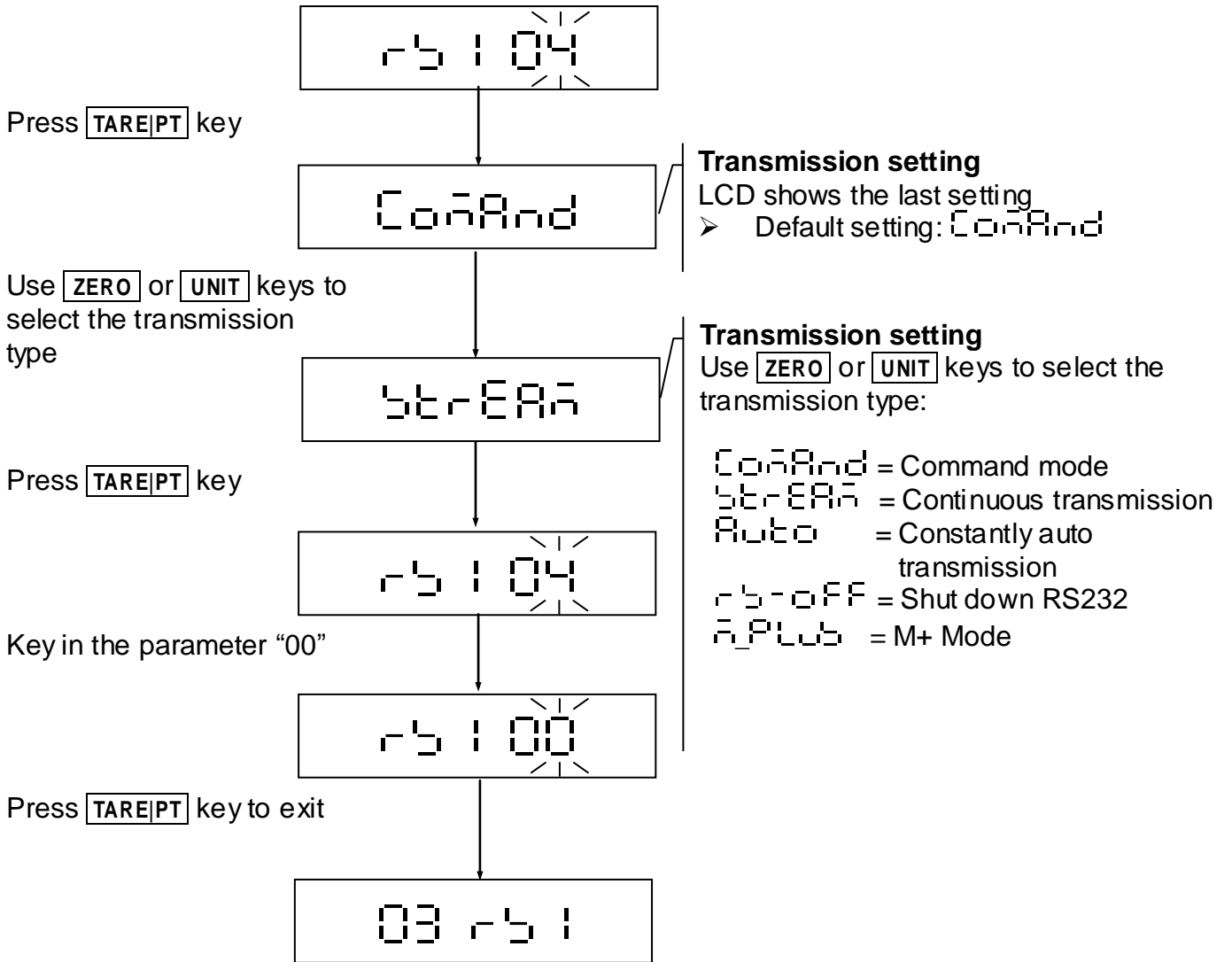
Take off the weight then show as followed:

0,000.000,001.000,-01.000



2-3-4 Continuous Transmission Settings r5 | 04

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

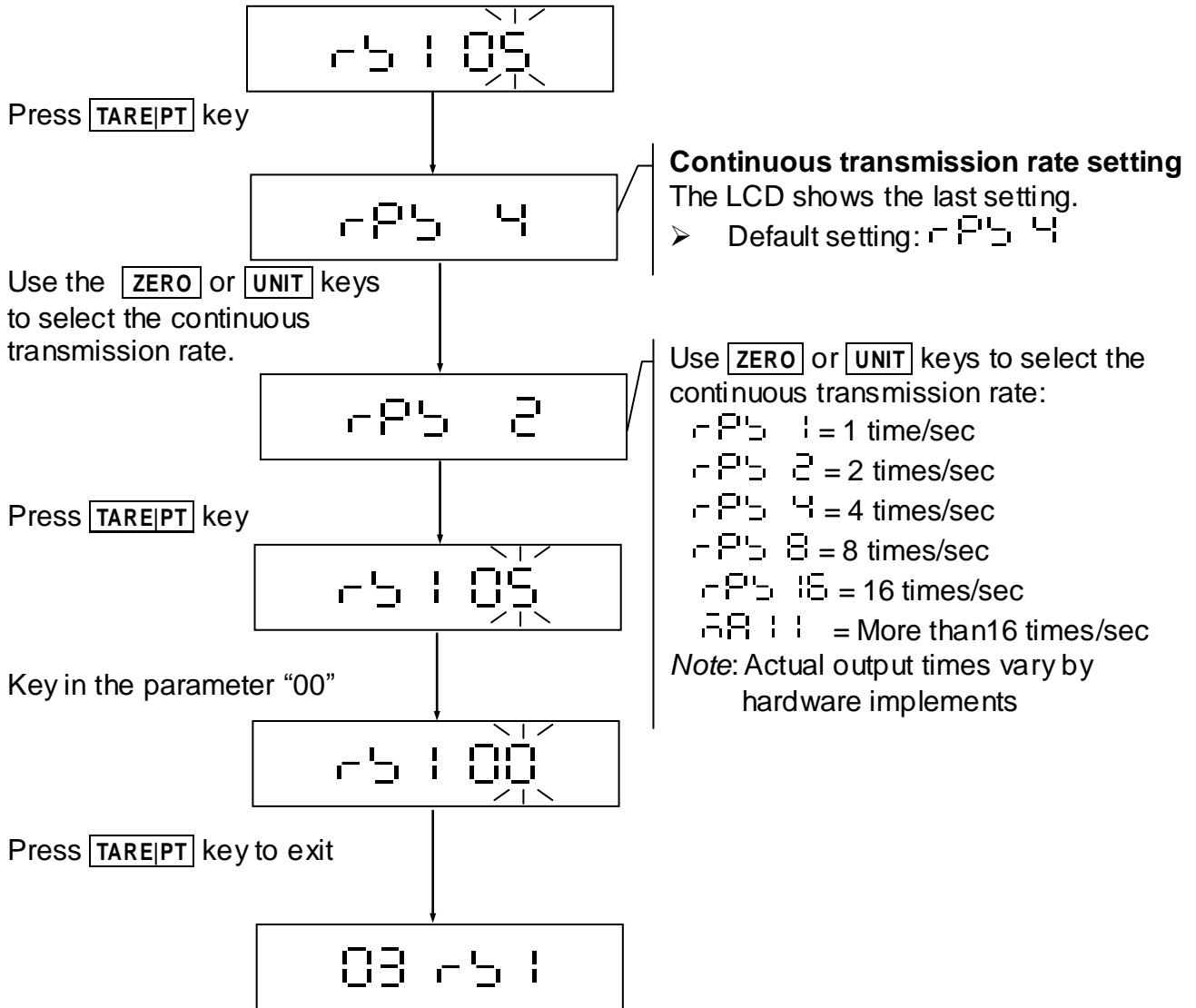


- ZERO** key ⇒ Upward key (0~9 digit entry)
- UNIT** key ⇒ Downward key (0~9 digit entry)
- TARE|PT** key ⇒ Move cursor rightward
- NET|GROSS** key ⇒ Move cursor leftward



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.

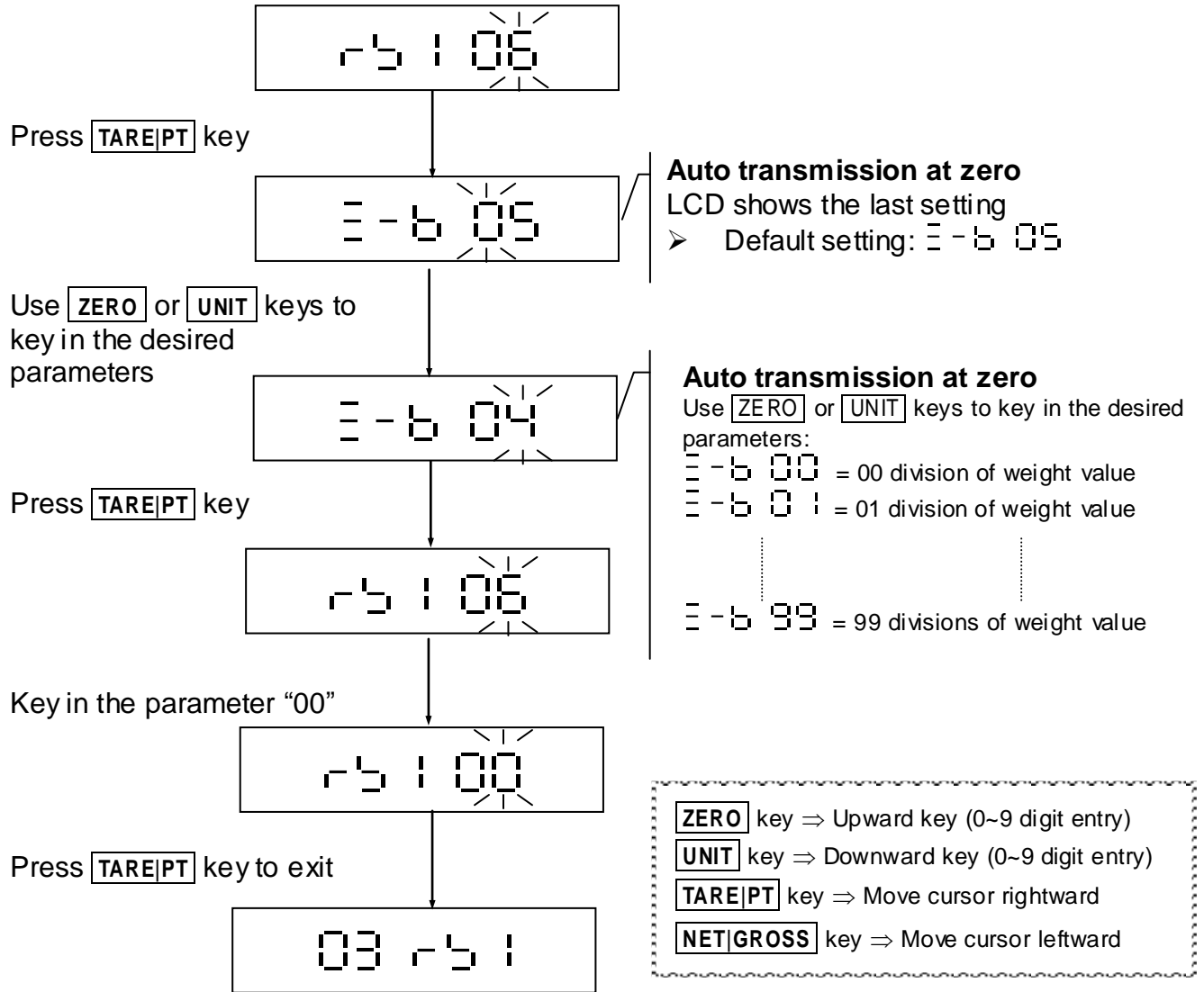


- ZERO** key ⇒ Upward key (0~9 digit entry)
- UNIT** key ⇒ Downward key (0~9 digit entry)
- TARE|PT** key ⇒ Move cursor rightward
- NET|GROSS** key ⇒ Move cursor leftward



2-3-6 Auto Transmission at Zero r 5 | 06

Select r 5 | 06 in the RS232 serial interface setting mode 03 r 5 | to set the Auto Transmission at Zero.

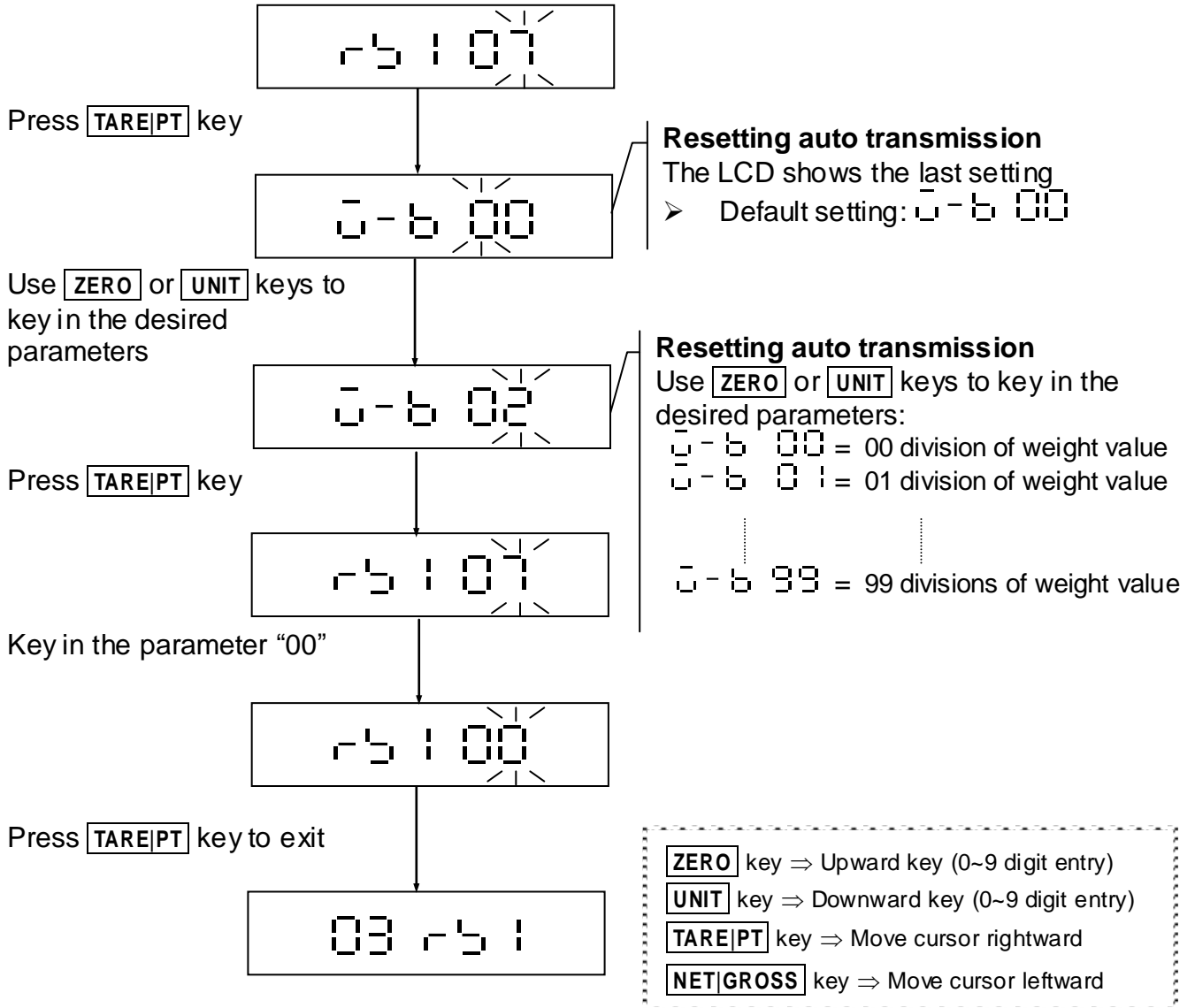


☞ When the value of "Auto transmission at zero" set as ≡ - b 00, the "Auto transmission at zero" function is not available. Because when the scale is at zero and keeping stable, the data are keeping transmitted, and that would be the same as "Continuous Transmission".



2-3-7 Reset Auto Transmission $r5107$

Select $r5107$ in the RS232 serial interface setting mode $03 r51$ to Reset Auto Transmission.



☰ When the value of "Auto transmission at zero" set as $0-b 00$, 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".



2-3-8 Output Condition Settings r 5 | 08

Select r 5 | 08 in the RS232 serial interface setting mode 03 r 5 | to Reset of Auto Transmission.

r 5 | 08

Press TARE|PT key

Stb-P

Output condition settings
The LCD shows the last setting.
➤ Default setting: Stb-P

Use ZERO or UNIT keys to select the desired setting

ALL-P

Output condition settings
Use ZERO or UNIT keys to select the desired setting:
ALL-P = All output

Press TARE|PT key

r 5 | 08

Stb-P = Stable output
(No output when OL or unstable)
StOL-P = Stable output
(OL included)

Key in the parameter "00"

r 5 | 00

Press TARE|PT key to exit RS232 2-way serial interface settings

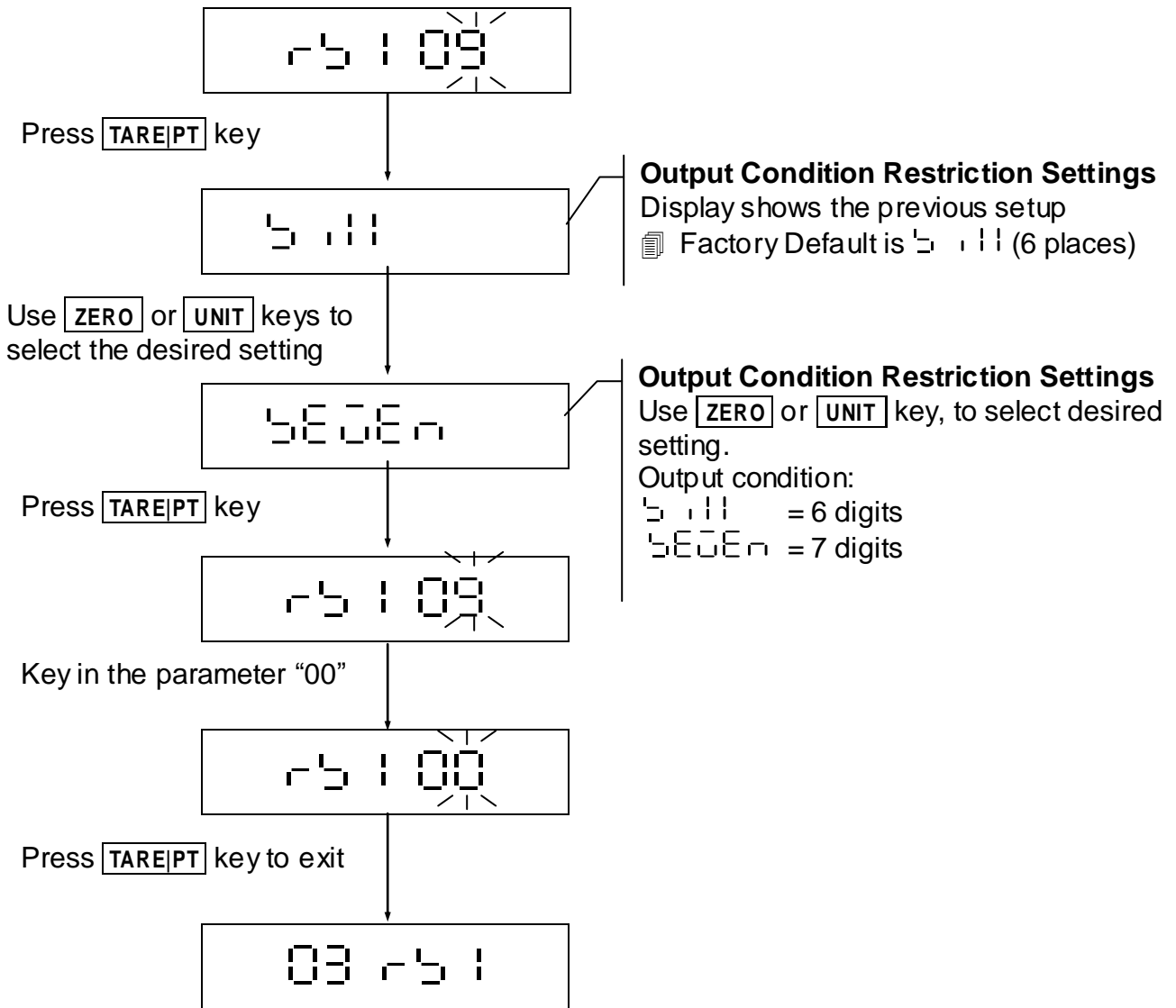
03 r 5 |

- 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 r5 1 09





Select r5 1 09 in the RS232 serial interface setting mode 03 r5 1 to Reset of Auto Transmission.

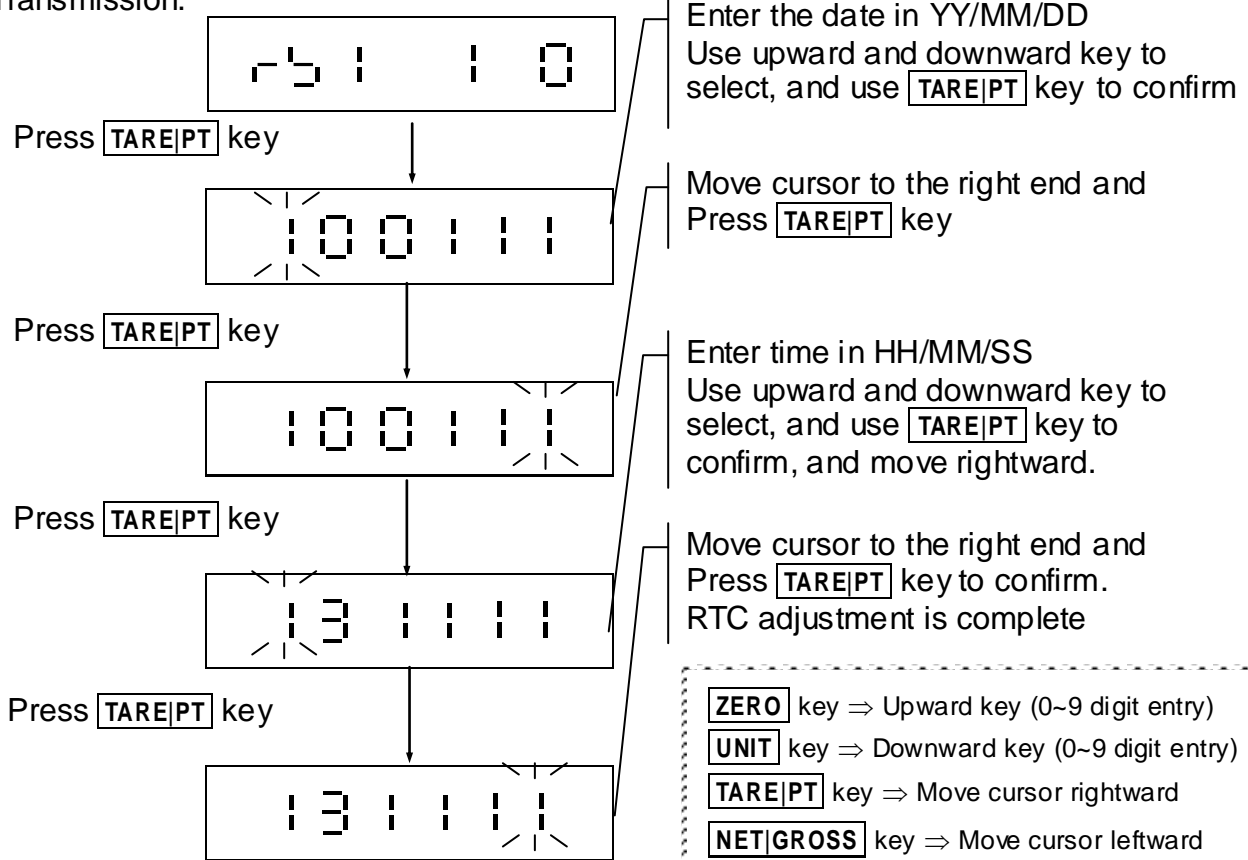


- ZERO** key ⇒ Upward key (0~9 digit entry)
- UNIT** key ⇒ Downward key (0~9 digit entry)
- TARE|PT** key ⇒ Move cursor rightward
- NET|GROSS** key ⇒ Move cursor leftward







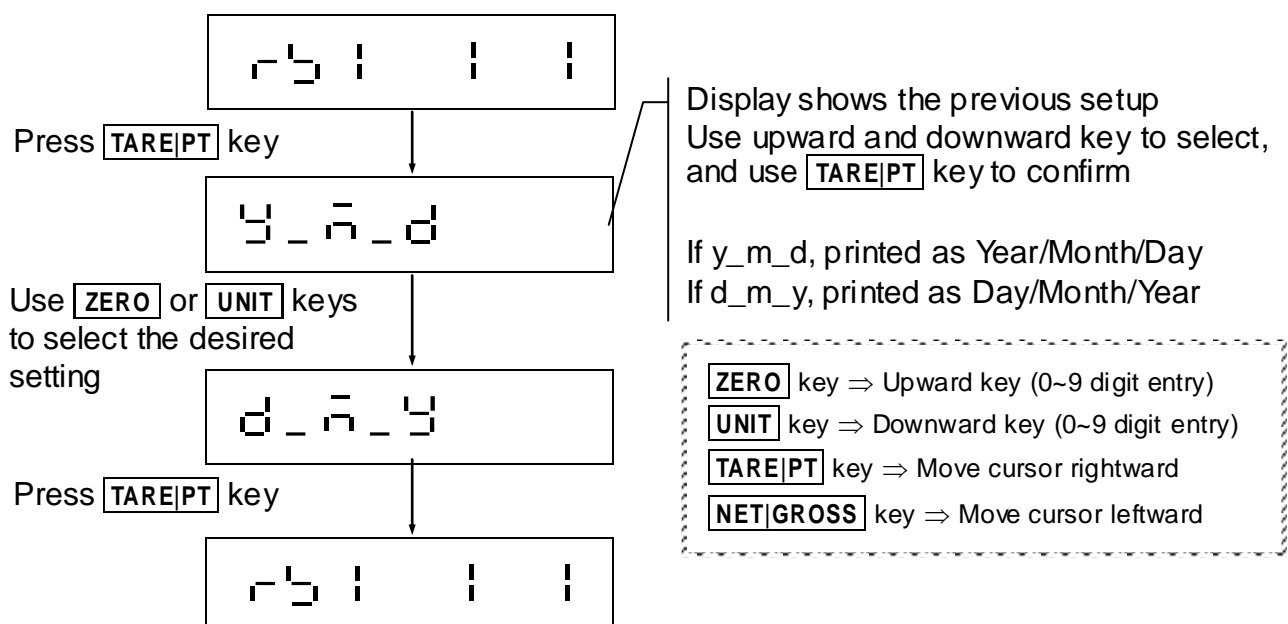
2-3-10 RTC Adjustment

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



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

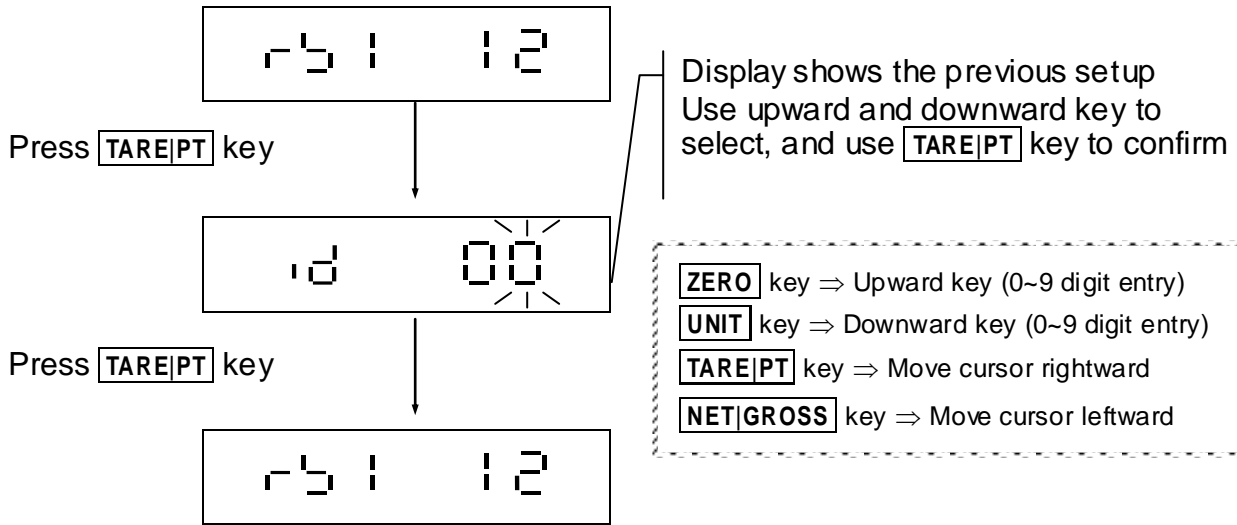
Select   in the RS232 serial interface setting mode   to reset of Auto Transmission.





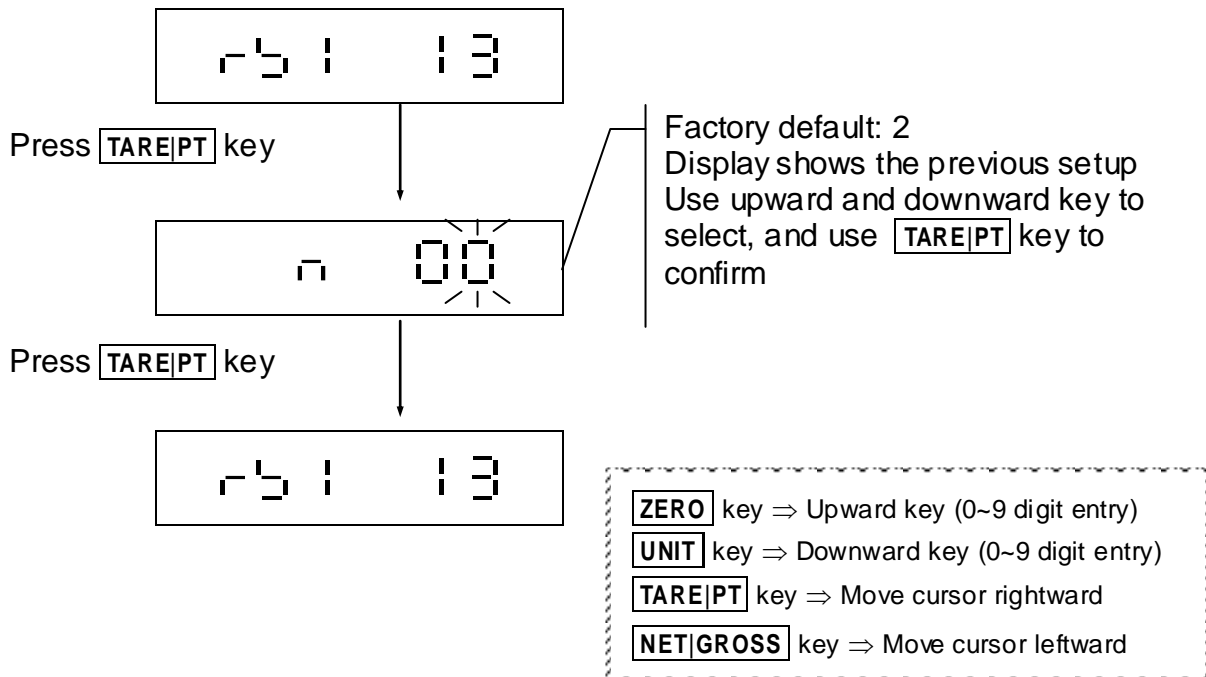
2-3-12 RS485 ID Input (Option) $r5 | 12$

Select $r5 | 12$ in the RS232 serial interface setting mode $03 r5 |$ to reset of Auto Transmission.



2-3-13 Line Feed Input $r5 | 13$

Line feed would be available only when $r5 | 03$ was set as 10 or 11 .




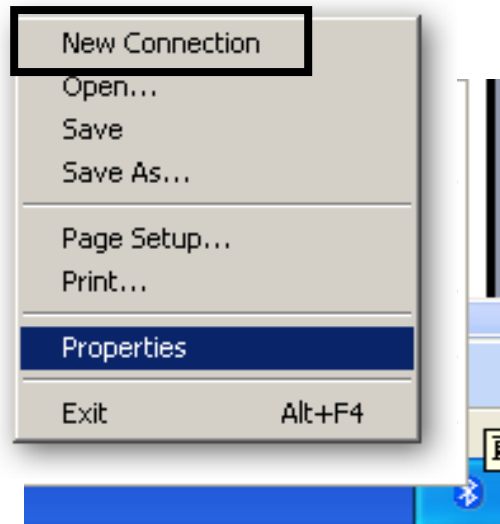


Chapter 3 Wireless Connection Instruction (Option)

For Wireless models, please set Baud rate as 9600 (bits/sec) and Communication protocol as n 8 1.

Step 1: Connect to your device

1. Enable Wireless on your computer. Right-click on the  icon of the bottom-right corner on taskbar, highlight **"New Connection"** and left click.



Due to the different bluetooth supplier software could be installed, the setting dialogs shown below are just for reference.

2. Check **"My device is set up and ready to be found"** in the dialogue box.

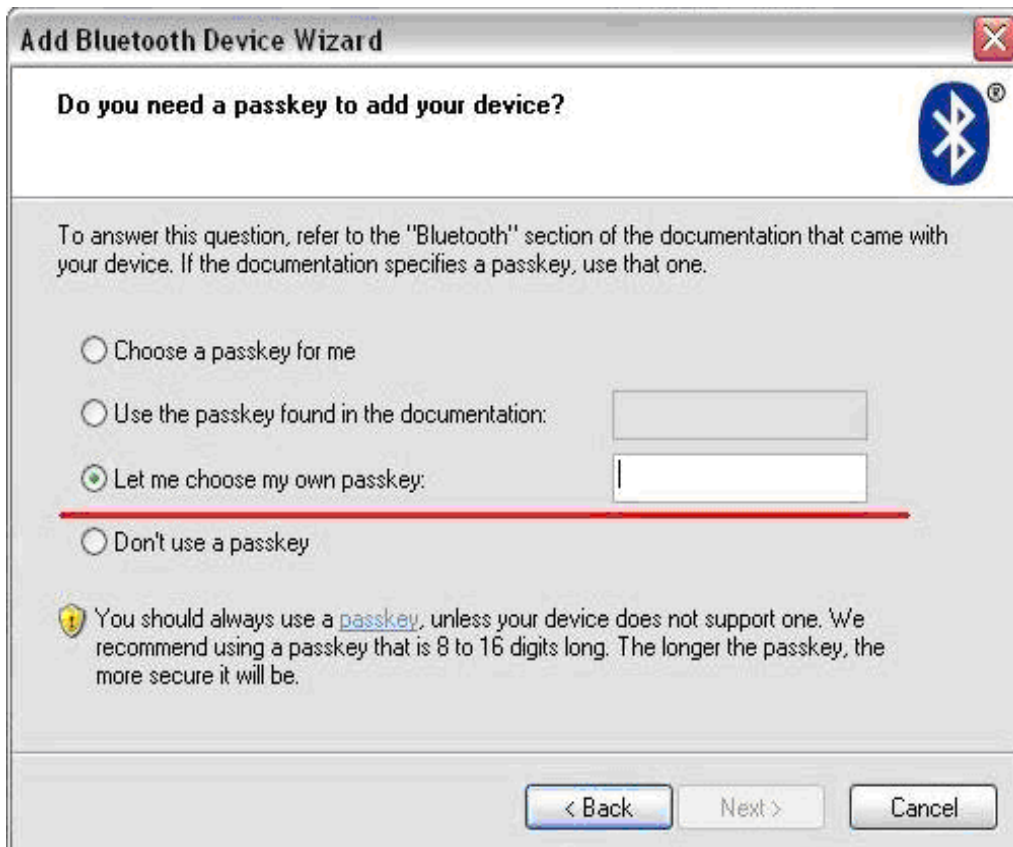




3. If the device is ready, the device names **Device-C1** or **C2** will be found. Double-click on Device-C1 or Device-C2.



4. Circle **“Let me choose my own passkey”**, input the passkey **“111111”** and click **“Next > ”** button





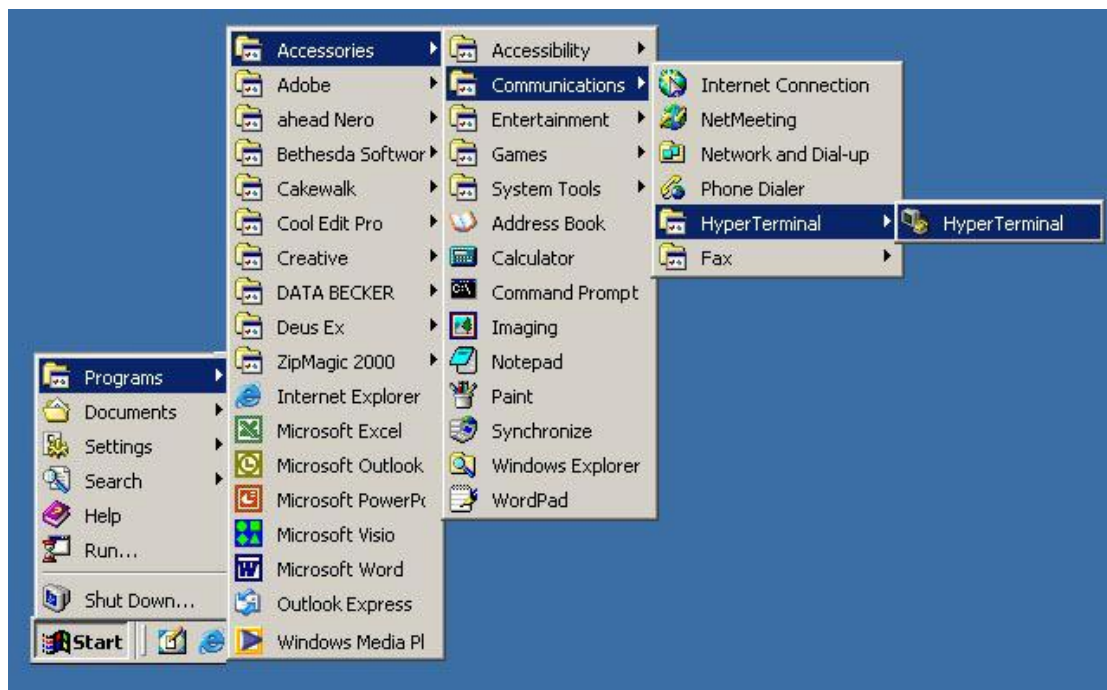
5. Device is added so far. Please disconnect COM port and click “**Finish.**”



Step 2: Connection test

To test the connection, use **HyperTerminal** recommended in Windows XP

1. go “**START**” → “**All programs**” → “**Accessories**” → “**Communications**” → “**HyperTerminal**”





2. Key in a name and select icon, then press “OK.”

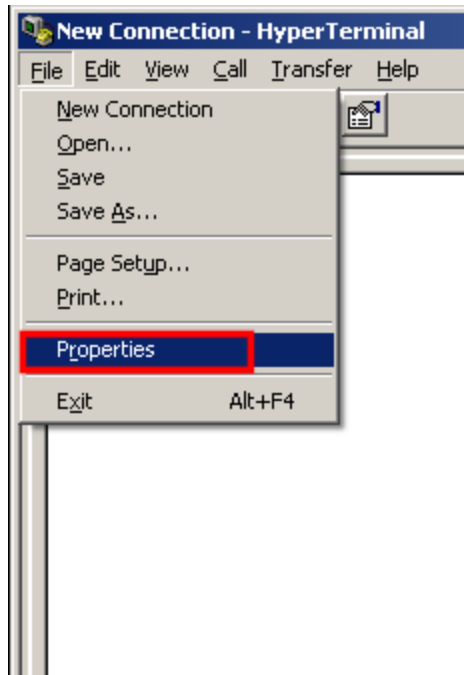


3. After select the COM port referred by step 1 point 5 and click “OK.”

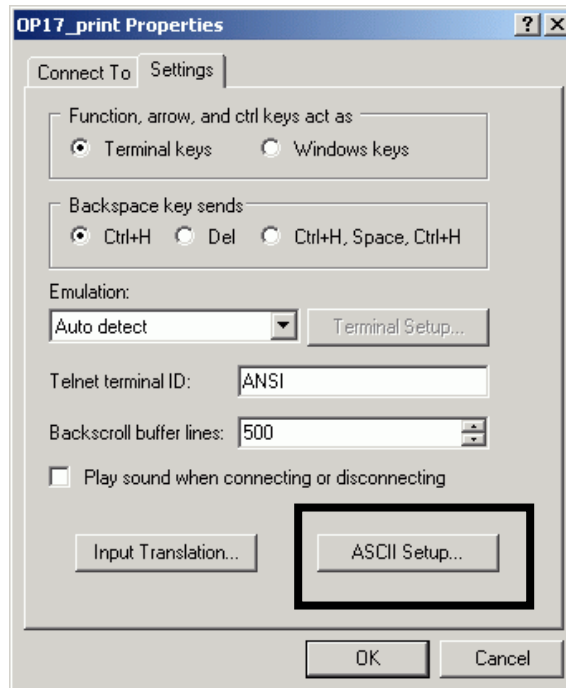




4. Click “File” → “Properties”

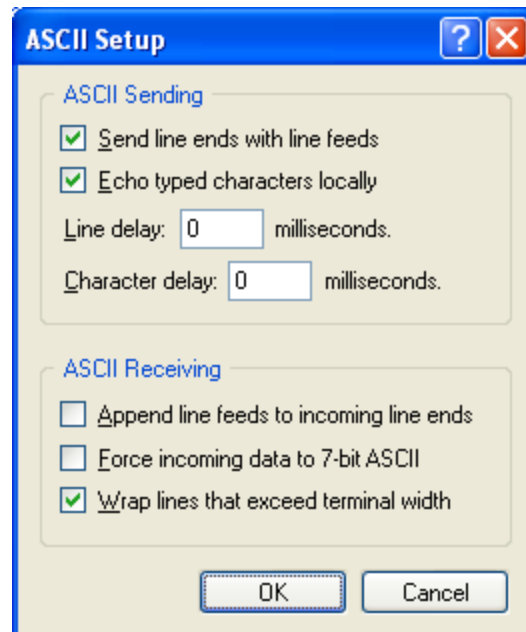


5. Select “settings” from the menu, and click “ASCII setup” on the bottom of the box.





6. Check “**S**end line ends with line feeds” and “**E**cho typed characters locally” and click “**OK**”.



7. Key in commands such **RW**, **MZ**, and **RG** in the main screen to test...



☐ Command Mode

On RS485 command mode, the format is as following,

1. If RS485's ID setting is 0(RS1 12), and the command is the same as regular RS232.
2. A. If RS485's ID setting is not 0(assume 99), "@ID" has to be added in front of every command. If you wish to command a zero-return, the complete command is @99MZY, then press "ENTER" key
 B. If there is an error on entered command, letter "E" will show up + "Unidentified Command"

e.g. @99MZZ

The response message is => 99E1MZZ

3. RS485 responses only to machines of identified ID code

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

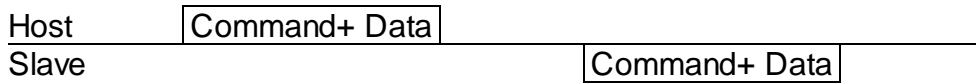
| | |
|----|----------------------------|
| HI | Show "HI" presetting value |
| LO | Show "LO" presetting value |

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



Write weight comparison setting value WS○○□□XXXXXX

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

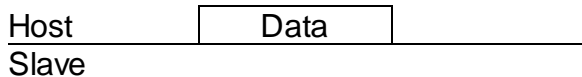
| | |
|----|--------------------------|
| HI | Write "HI" setting value |
| LO | Write "LO" setting value |

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

- 00 ⇒ The first group
- 01 ⇒ The second group
- 02 ⇒ The third group
- ⋮

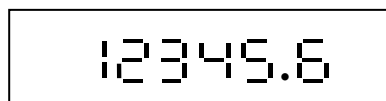
EX: WS00HI001000<CR> <LF> Write "HI" setting value
ANS: WS00HI001000<CR> <LF>

Command Format D



| 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.



- ☞ 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 | | | CR | LF | | | | | | |
| Tare | S | T | , | T | R | , | + | 0 | 1 | 2 | . | 3 | 4 | 5 | 6 | SP | SP | k | g | | | | | CR | LF | | | | |
| 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 | | | | | | | | | CR | LF |
| 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 | | | CR | LF | | | | | | |
| Tare | S | T | , | T | R | , | + | 1 | 2 | . | 3 | 4 | 5 | 6 | SP | SP | k | g | | | | | CR | LF | | | | |
| Plus OL | O | L | , | G | S | , | + | 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 | | | | | | | | | CR | LF |
| 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 |
|-------|-------|-------|-----|---|---|---|---|---|---|---|----|----|

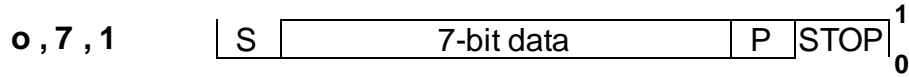
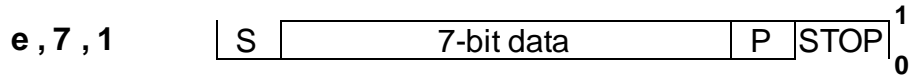
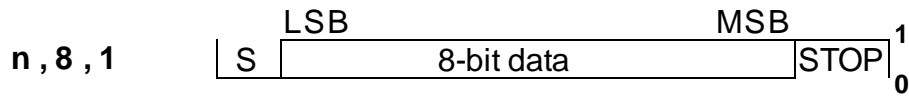
Byte0 : HI 30H/31H

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

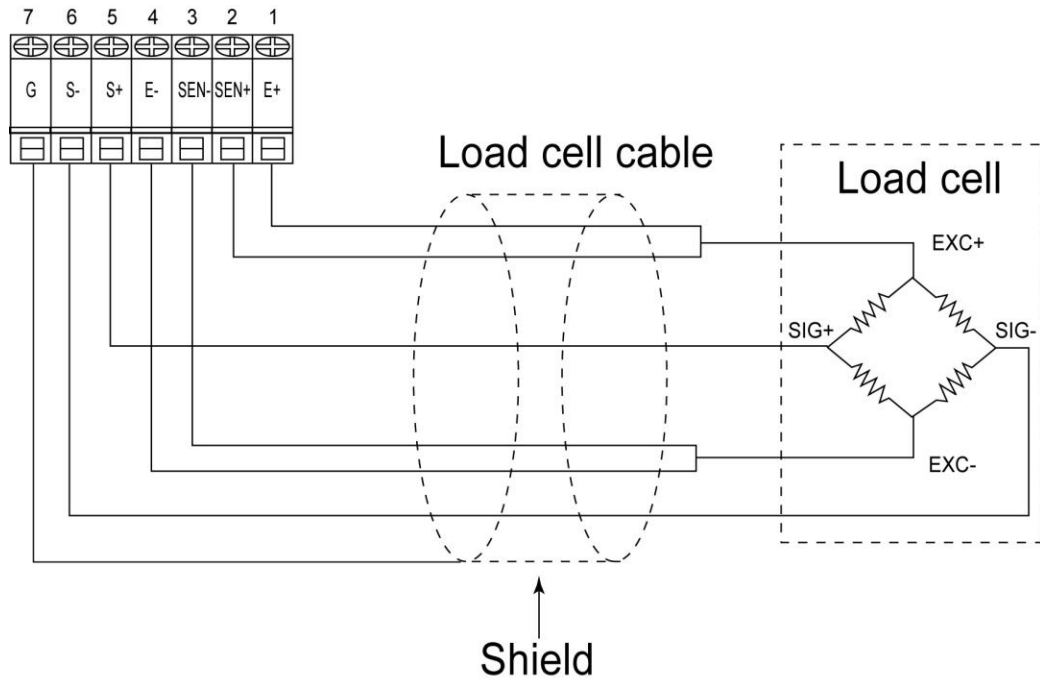
| Digit | 7 segment letter | Alphabet | 7 segment letter | Alphabet | 7 segment letter |
|-------|------------------|----------|------------------|----------|------------------|
| 0 | | A | | N | |
| 1 | | B | | O | |
| 2 | | C | | P | |
| 3 | | D | | Q | |
| 4 | | E | | R | |
| 5 | | F | | S | |
| 6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



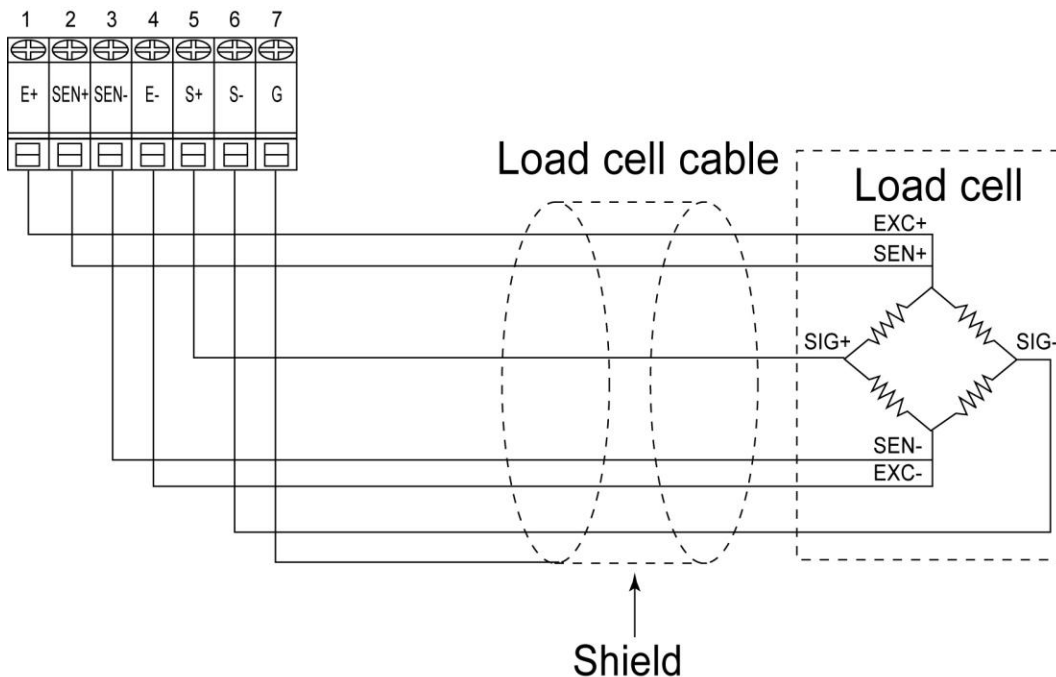
Appendix 3 Wiring Instructions

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.




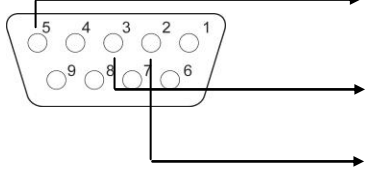

- (2) If Load Cell is 6PIN, please wire as the following diagram:


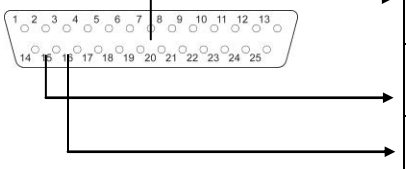





RS232 wiring instruction


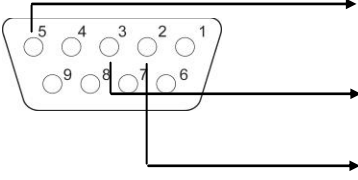

To connect RS232, please open the housing, RS232's PIN connectors locate on the bottom-right corner of the main board. The most common connection method is using 9PIN and 25PIN, as shown below:


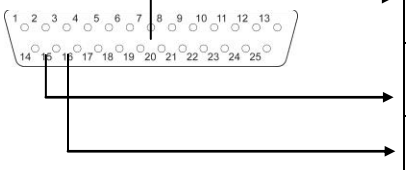

| PC | PIN | Function | Female 9 PINS | Function | QW/GW |
|---|-----|---------------|--|----------|---|
|  | 2 | Transmit Data |  | SG |  |
| | 3 | Receive Data | | RxD | |
| | 5 | Signal Ground | | TxD | |

| Printer | PIN | Function | Male 25 PINS | Function | QW/GW |
|---|-----|---------------|--|----------|---|
|  | 2 | Receive Data |  | SG |  |
| | 3 | Transmit Data | | RxD | |
| | 7 | Signal Ground | | TxD | |

RS485 wiring instruction

To connect RS485, please make J17, J18 short and J15, J16 open on main board.

| PC | PIN | Function | Female 9 PINS | Function | QW/GW |
|---|-----|---------------|--|----------|---|
|  | 2 | Transmit Data |  | SG |  |
| | 3 | Receive Data | | DA | |
| | 5 | Signal Ground | | DB | |

| Printer | PIN | Function | Male 25 PINS | Function | QW/GW |
|---|-----|---------------|--|----------|---|
|  | 2 | Receive Data |  | SG |  |
| | 3 | Transmit Data | | DA | |
| | 7 | Signal Ground | | DB | |

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*.