User Manual
Waterproof Indicator
QoW/GoW

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Special Notice

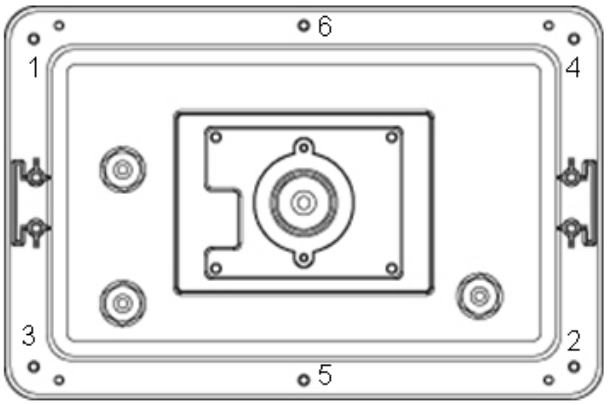
While installing the load cell, power cord hookup or replacing a new rechargeable battery, the indicator housing must be opened. It must be done by a technician assigned by your electronic indicator provider to avoid affecting the waterproof ability of this indicator. Before opening the housing, make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

How to Install the Housing

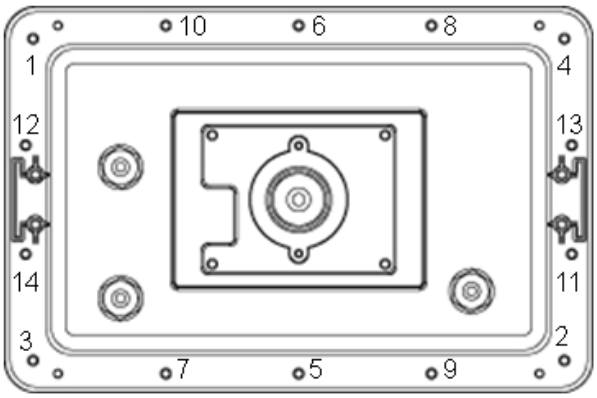
After installing the load cell, power cord hookup or replacing a new rechargeable battery, the housing must be screwed by the assigned order as shown below. Screw lightly first, then screw them tight using a 6 kgf-cm (GoW) or 12 kgf-cm (QoW) torsion.

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

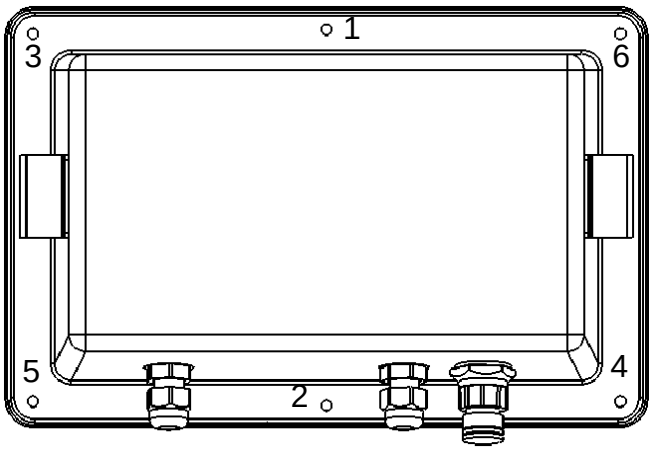
Screwing order:



▲ GoW

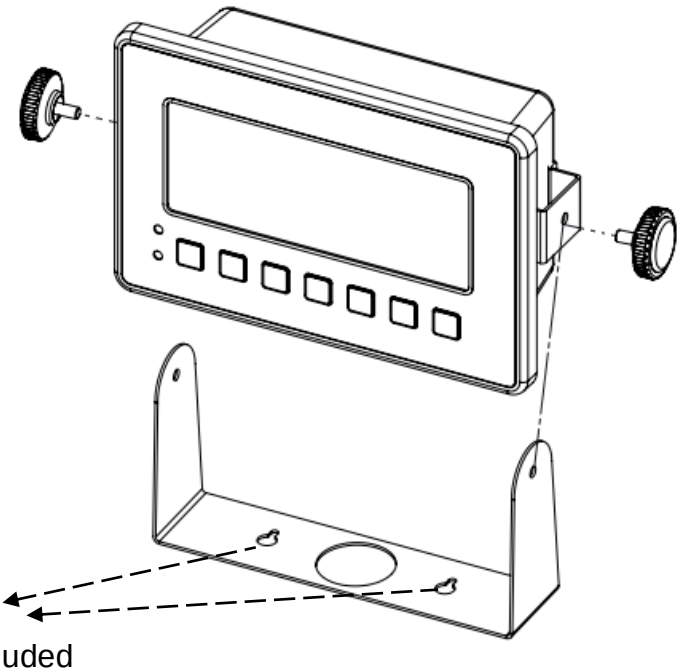


▲ GoW



▲ QoW

▼ 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

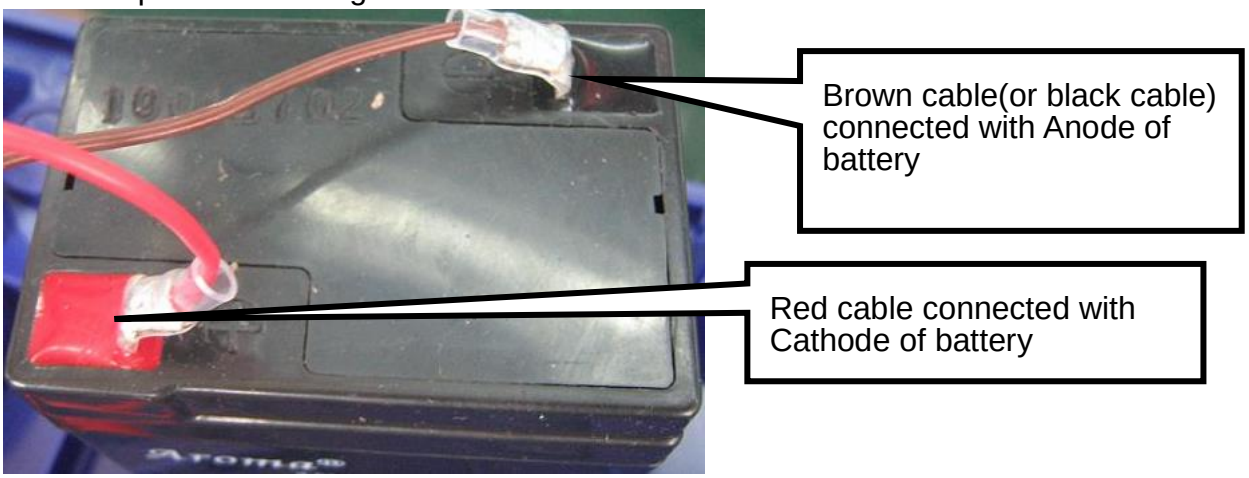
1. Locate the scale on a firm level surface free from vibrations for accurate weight readings.
2. Adjust the four levelling feet (if fitted) to set the scale pan level.
3. Avoid operating the scale in direct sunlight or drafts of any kind.
4. If possible avoid connecting the scale to ac power outlet 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℃.

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



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

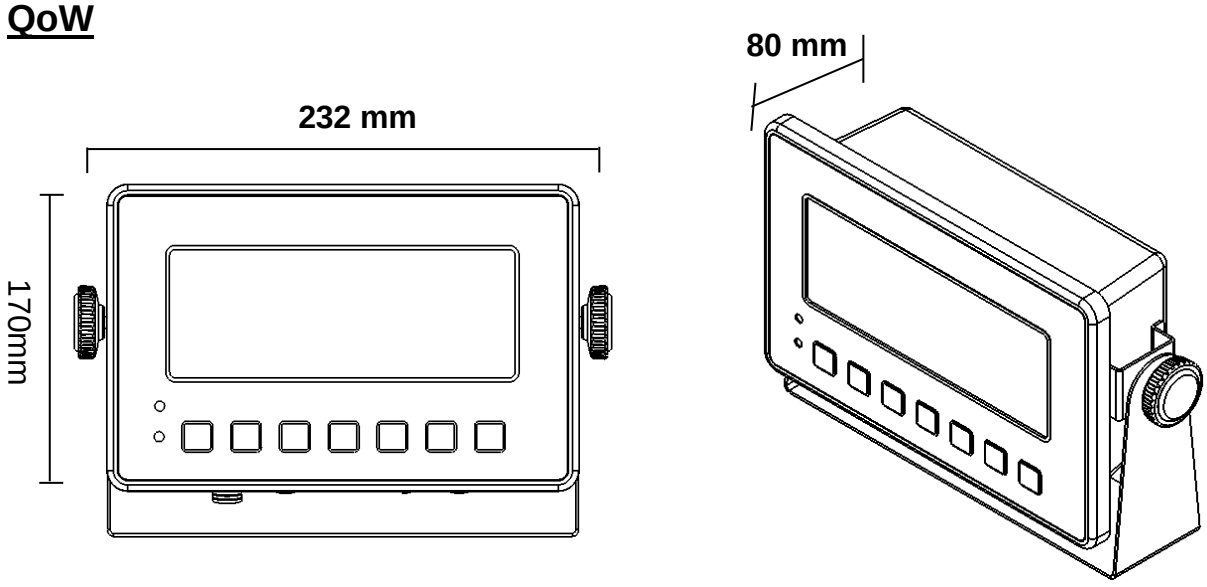
- Extra-large and wide LCD display (175 x 70mm) 6 digits with 55mm height
- COOL WHITE LED backlight
- QoW with 304 stainless steel housing while GoW with plastic ABS housing.
- Sealed to IP68, Waterproof, mist-proof and dustproof (Only use cables of 3mm~5mm diameter to ensure correct sealing of the 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 AD, foot switch, pressure release valve

1-2 Specifications

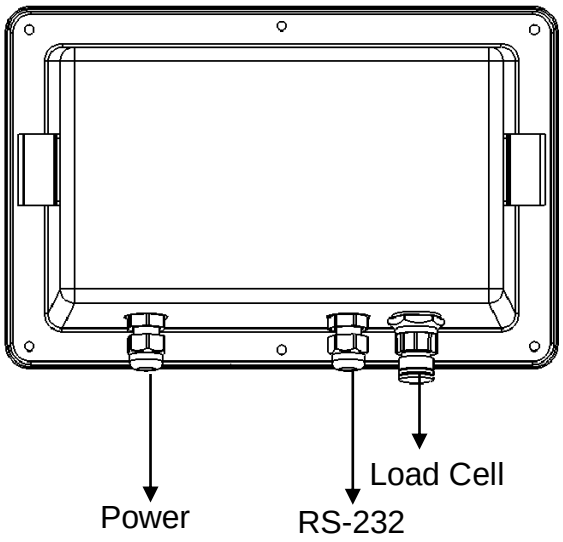
- Analogue Input: Input Sensitivity 0.3μ V/d (Min.)
- Input Signal Range: -1mV~+14Mv
- Input Zero Range: -1mV~+5mV
- Load Cell Excitation: 5V DC
- Load Cell Drive Capacity: Up to 4 x 350Ω load cells
- Non-linearity: 0.01% of full scale
- A/D Resolution: 500,000 counts (Maximum)
- Operating temperature: -10℃ ~ +40℃

1-3 Product Appearance

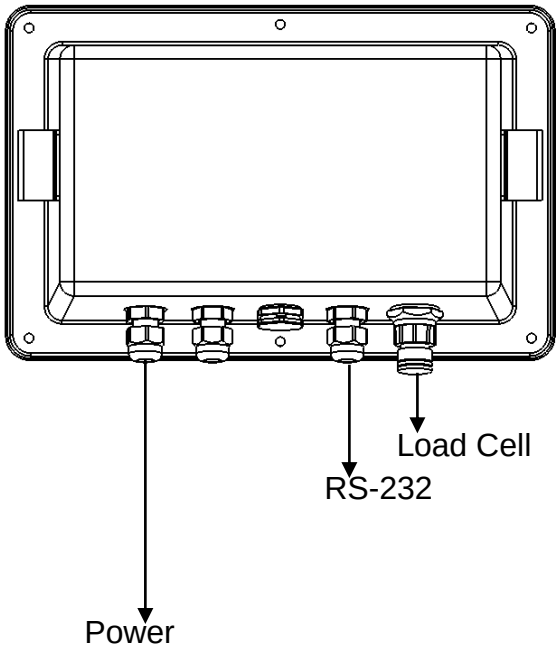
QoW



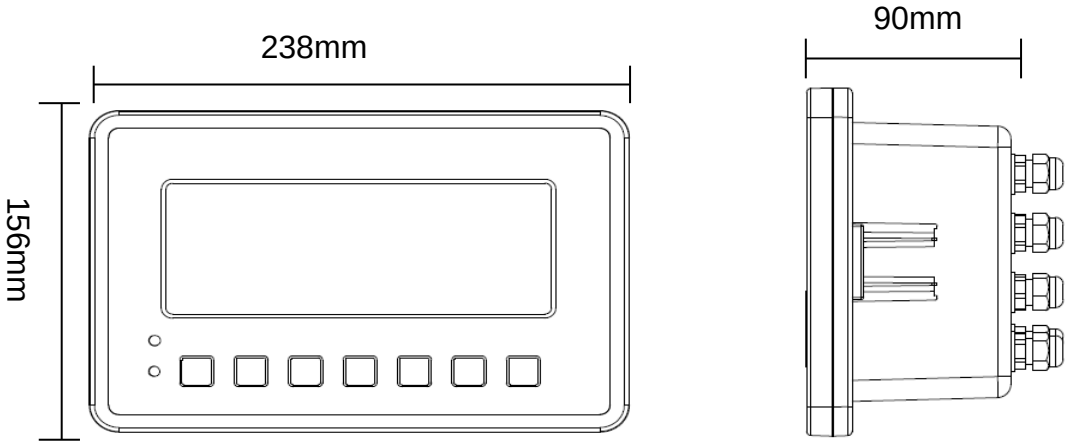
[Standard]



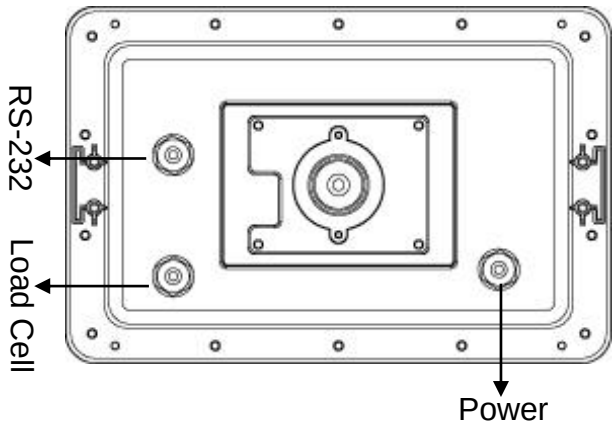
[Option]



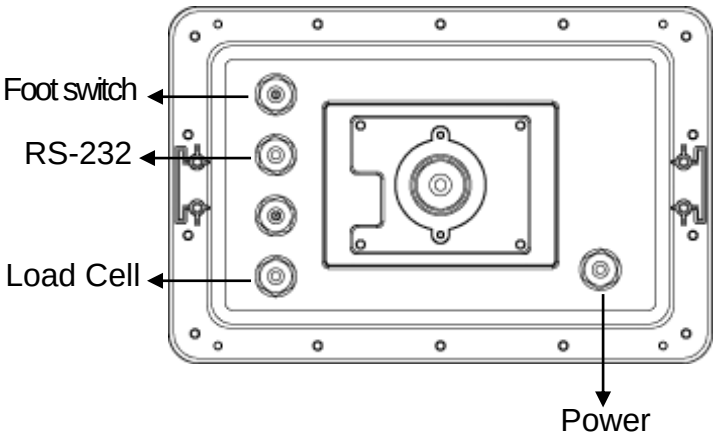
GoW



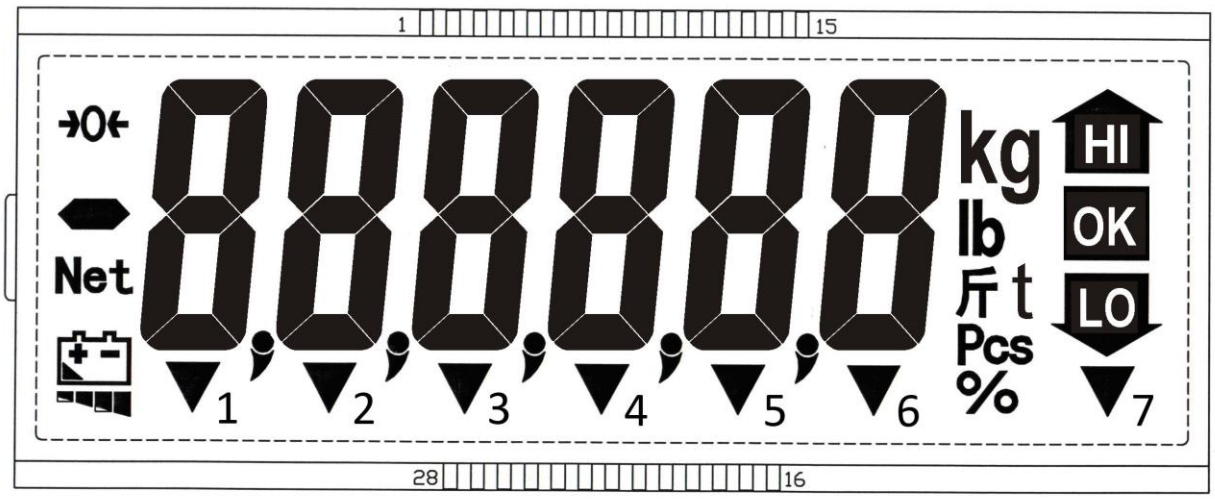
[Standard]



[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**	:	(Pcs) 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)

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 ±2% F.S., and Sri Lanka is ±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. (Cb 104 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 (Cb 103 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 FnC 12, select [F] key as “MC”, “HR” or “T-TP”)

Foot Switch Mode

This function is optional. Use FnC 11 to select [TARE|PT] key as “ZERO” or “PRINT” key

- If “PRINT” key is set (r51 03 = 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

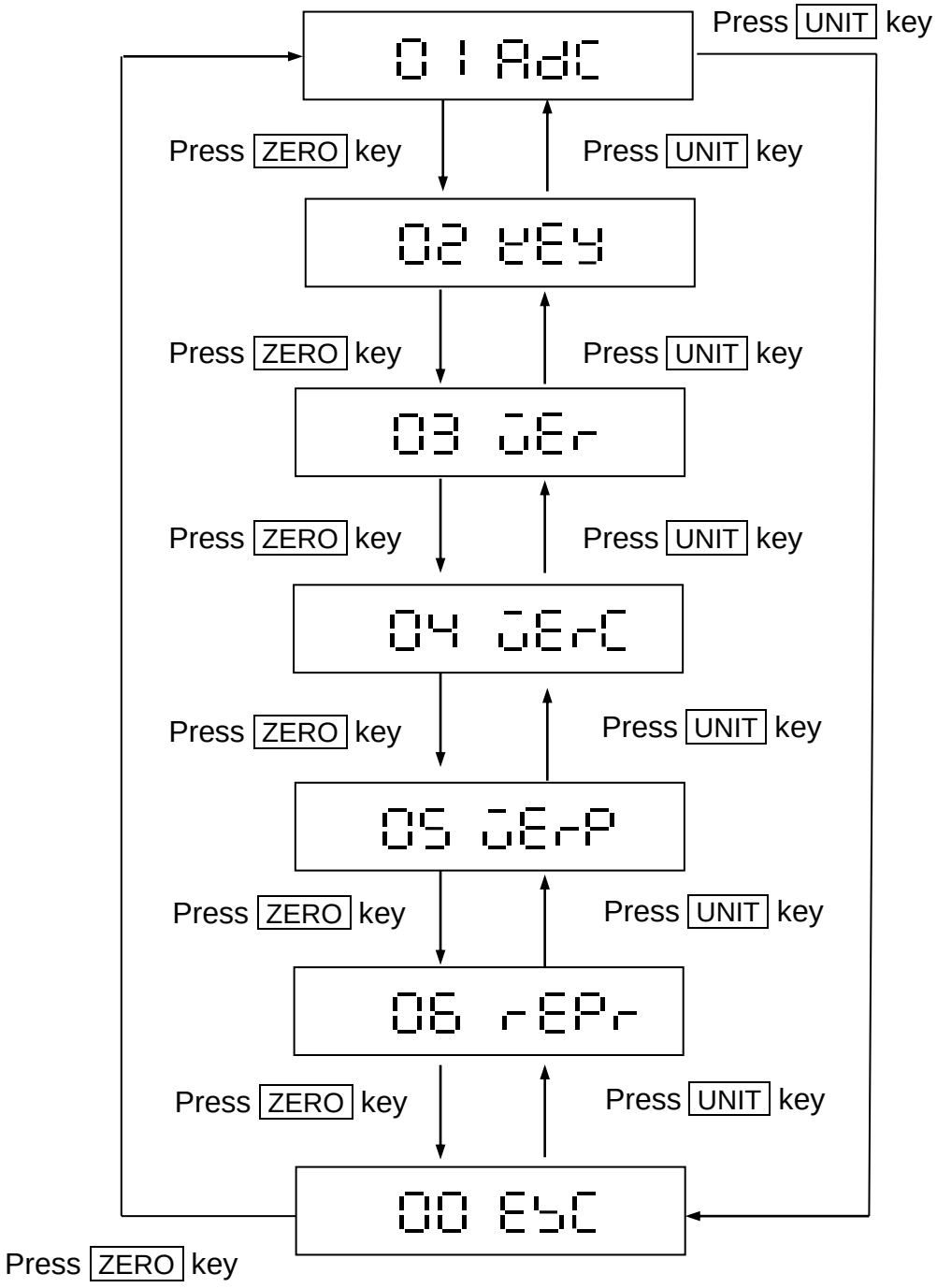
Use [UNIT] key to switch unit to Pcs, to go into simple counting mode.

1. Use [NET|GROSS] key, to select a sample number from “10, 20, 50, 100, or 200”. Display will show C 10, C 20, C 50, C 100, C 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|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 SEr 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 2 1 1 for 2 seconds
③ Press ZERO key to back to the last screen, display shows 03 SEr

04 SErC BLE FIRMWARE VERSION CHECK MODE

① Press TARE|PT key to enter , display shows the BLE firmware version AEC1□
or router
② Press ZERO key to back to the last screen, display shows 04SErC

05 SErP TM FIRMWARE VERSION CHECK MODE

① Press TARE|PT key to enter , display shows the TM firmware version AdP1□
or router
② Press ZERO key to back to the last screen, display shows 05SErP

06 rEPr PAIRING OR CLEAR PAIRING WITH TM (AUTOMATIC PAIRING)

① Press TARE|PT key to enter , display shows the TM firmware version PAr bt
② Press ZERO key to back to the last screen, display shows 06rEPr

00 EsC 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

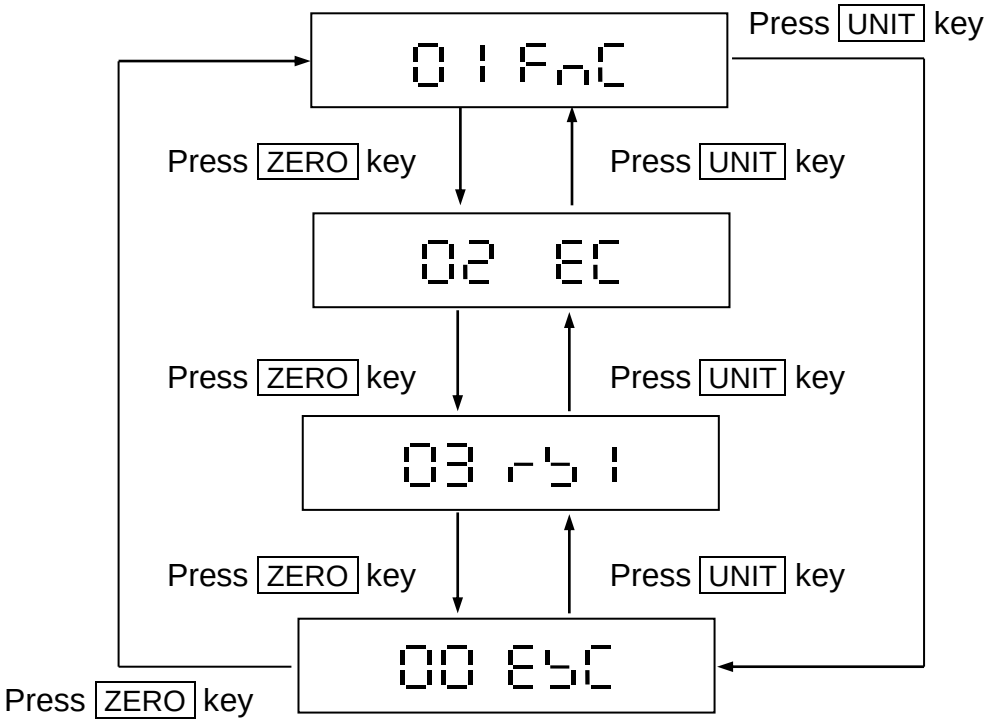
kg	1 g = 0.001 kg
g	1 g = 1 g
lb	1 g = 0.002204623 lb
lb/oz	1 g = 0.03527396 oz
oz	1 g = 0.03527396 oz
GN	1 g = 15.432358 GN
dwt	1 g = 0.6430149 dwt
ct	1 g = 5 ct
hk.tael	1 g = 0.02645546 Hk.catty
viss	1kg = 0.612245 viss

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:

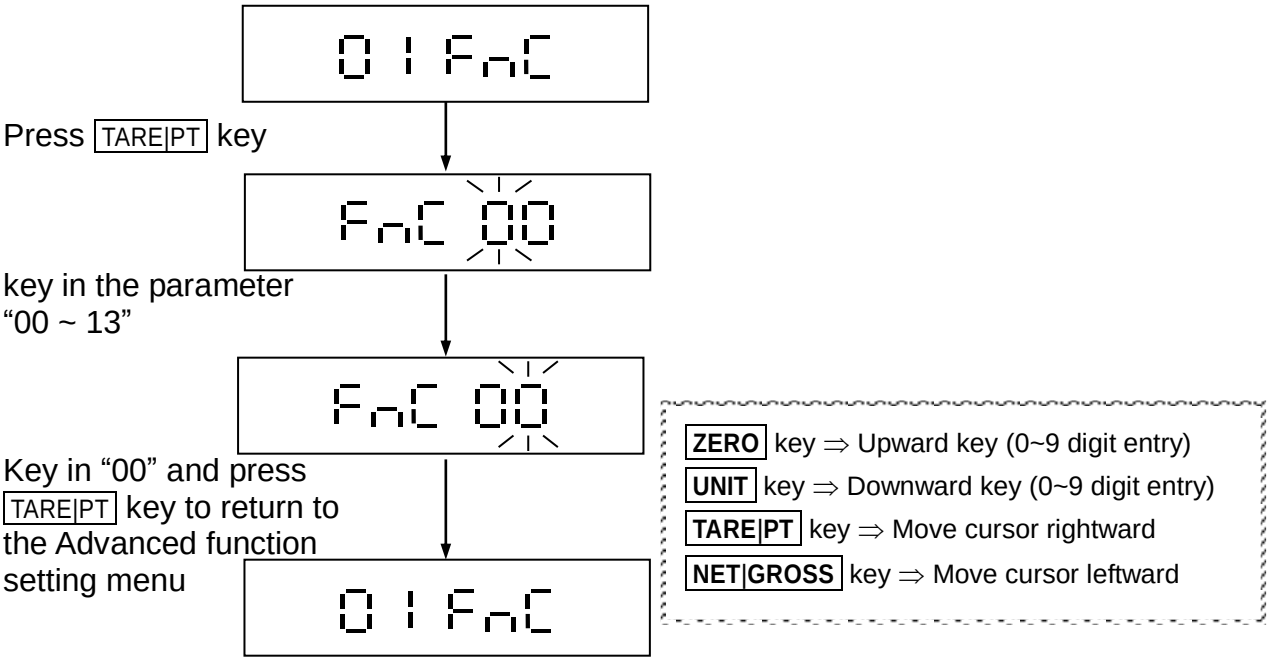


01 FnC	⇒ General Function Setting Mode
02 EC	⇒ External Weight Calibration
03 rS1	⇒ RS232 Bi-direction Function Setting
00 EsC	⇒ Exit the Advanced Function Setting Mode

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

2-1 General Function Setting 01 FnC

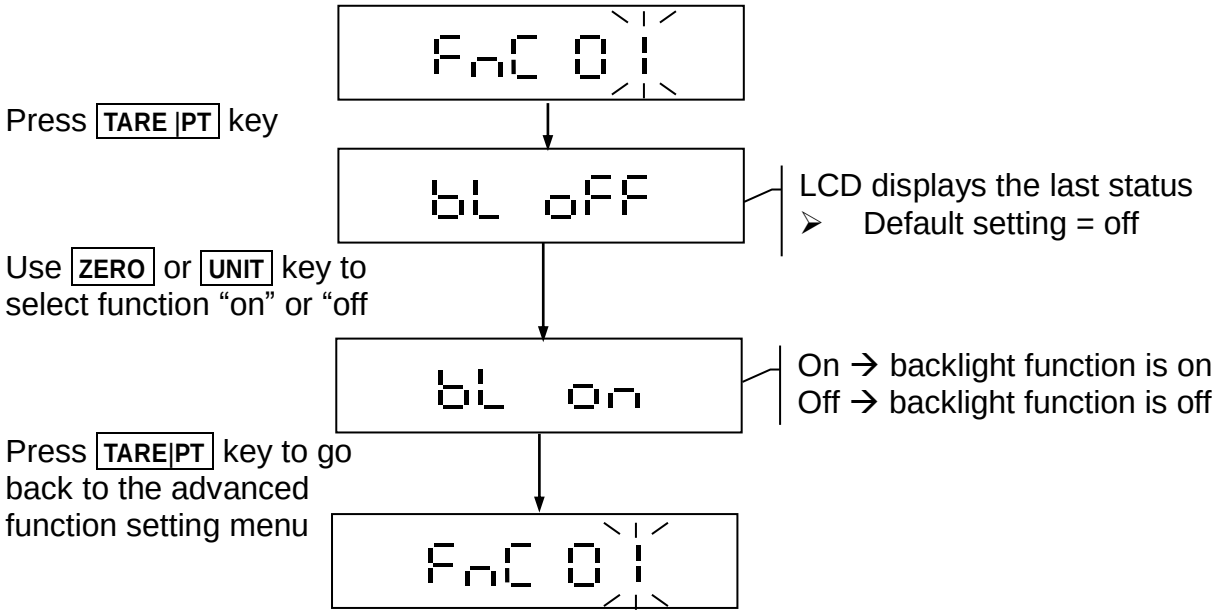
Workflow of the General Function setting:



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 FnC 01

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



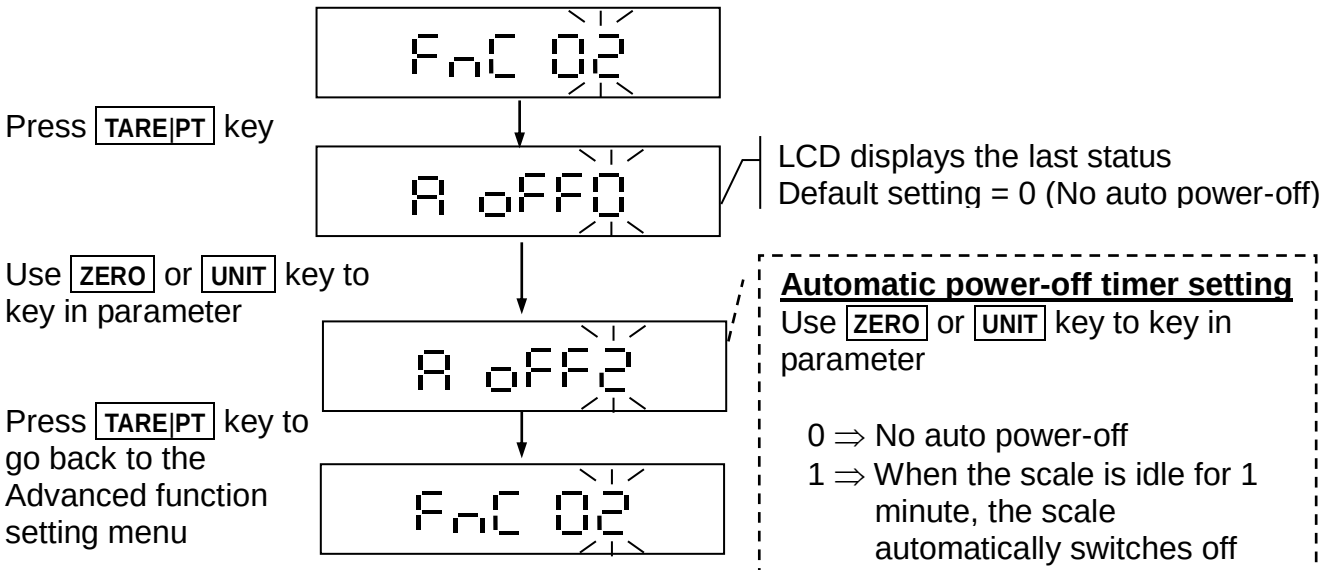
ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward

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 FnC 02

Select FnC 02 in the general function setting mode 01 FnC 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

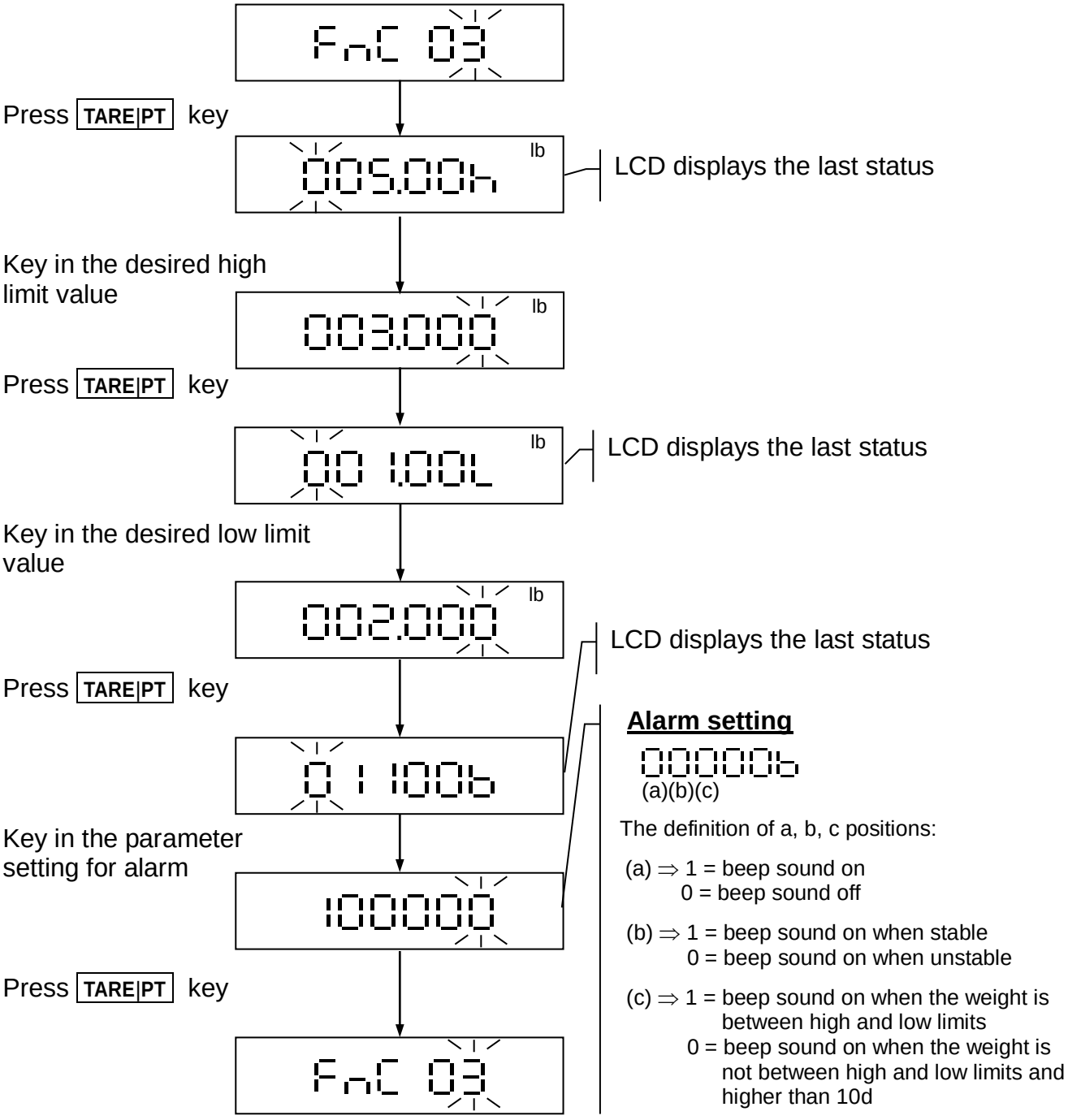
Auto power-off function

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 FnC 03

Select FnC 03 in the general function setting mode 01 FnC to set the HI/LO/OK function.

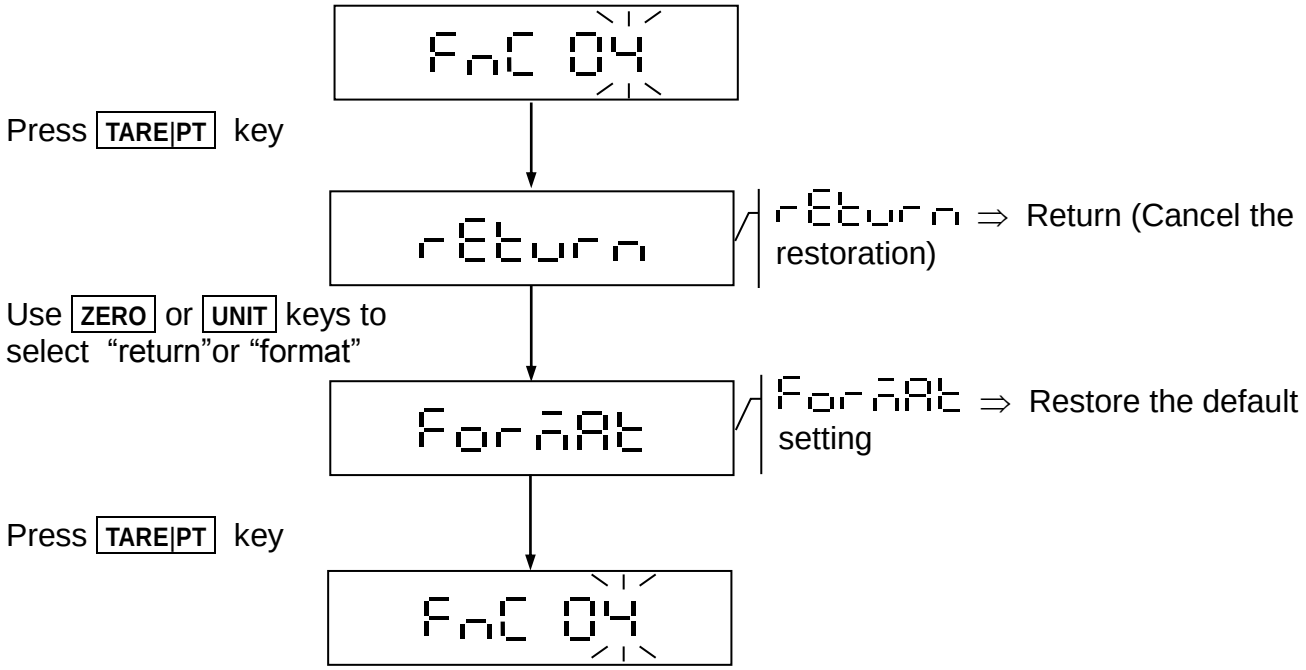
When the high limit and low limit are both set as “0”, the Hi/Lo/OK function is disabled.



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 FnC 04

Select FnC 04 in the general function setting mode 01 FnC to restore to the default settings.



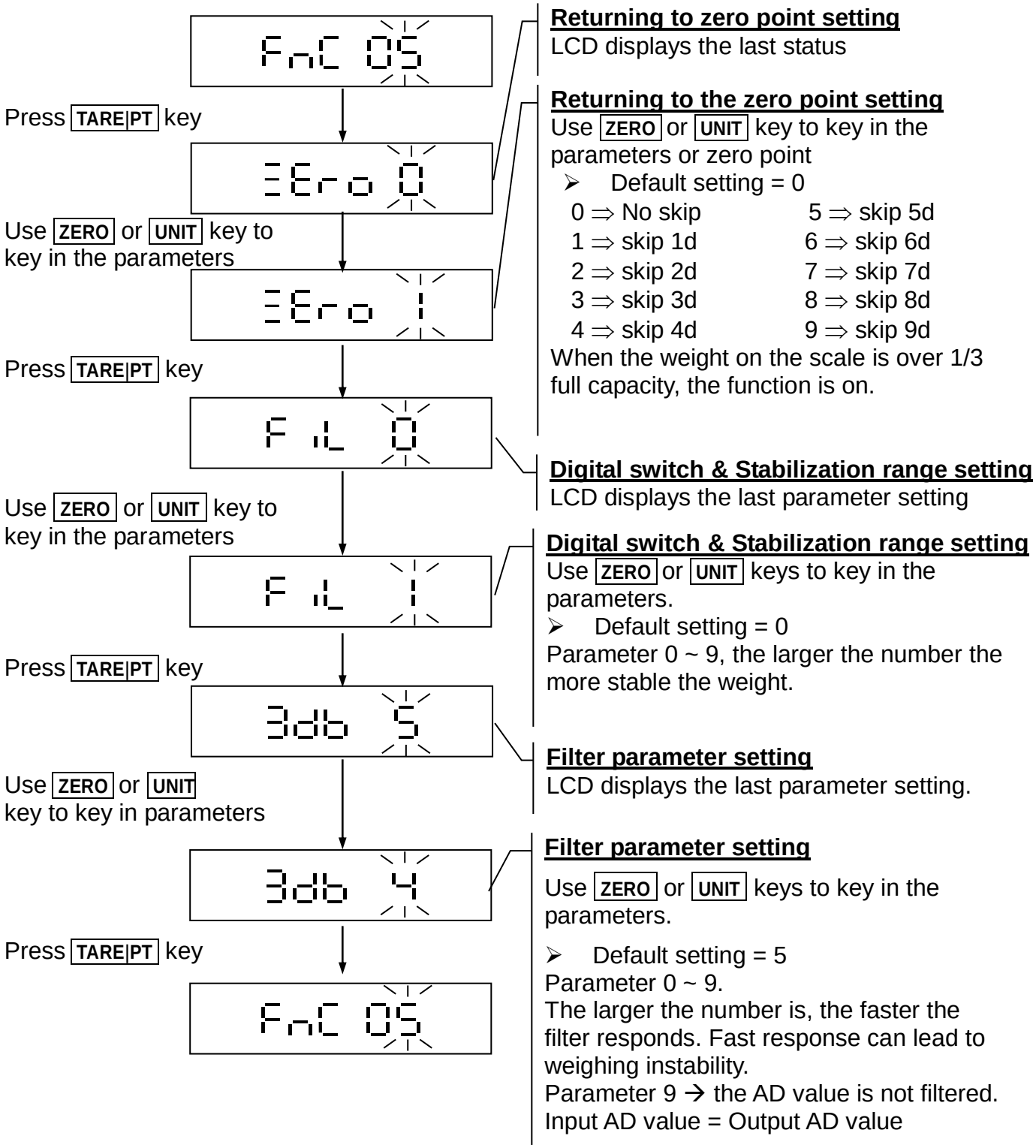
ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward

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 FnC 05

Select FnC 05 in the general function setting mode 01 FnC to set the noise filter settings.



Returning to zero point setting
LCD displays the last status

Returning to the zero point setting
Use ZERO or UNIT key to key in the parameters or zero point

- Default setting = 0

0 ⇒ No skip
1 ⇒ skip 1d
2 ⇒ skip 2d
3 ⇒ skip 3d
4 ⇒ skip 4d
5 ⇒ skip 5d
6 ⇒ skip 6d
7 ⇒ skip 7d
8 ⇒ skip 8d
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 ZERO or UNIT keys to key in the parameters.

- Default setting = 0

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

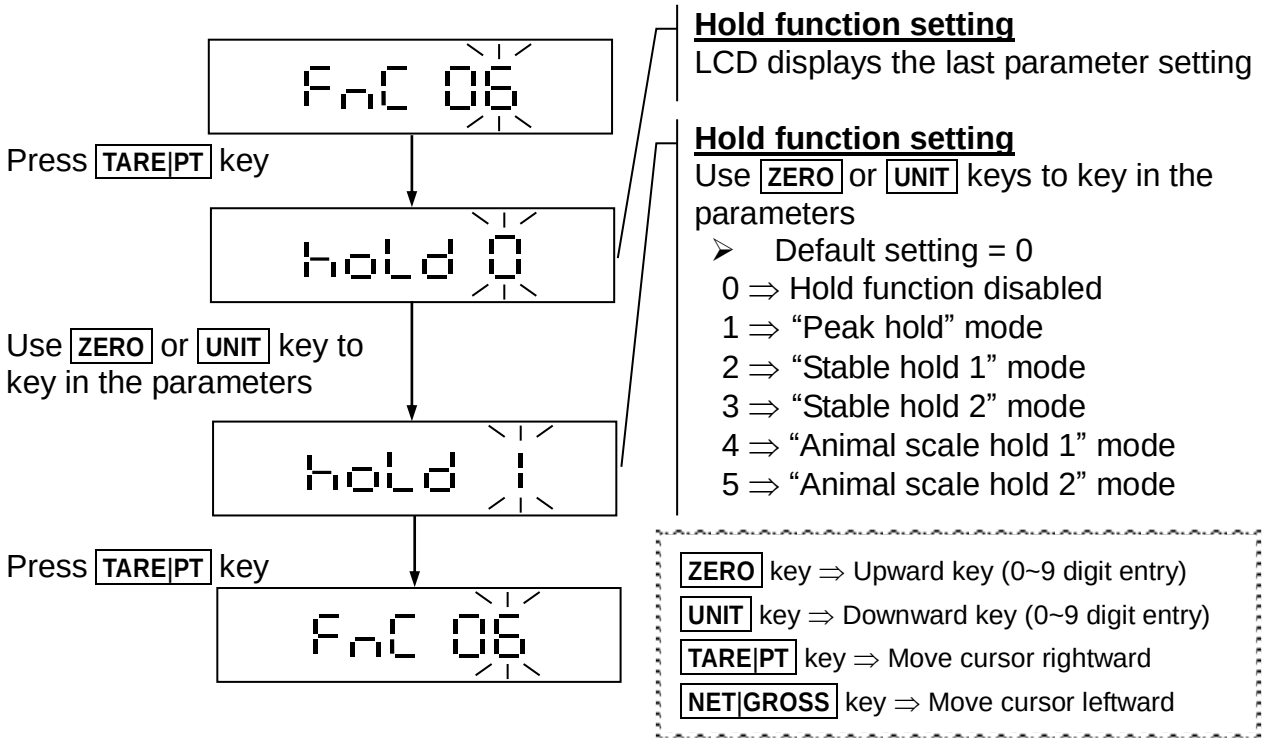
Filter parameter setting
LCD displays the last parameter setting.

Filter parameter setting
Use ZERO or UNIT keys 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

2-1-6 Hold Function Settings FnC 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.

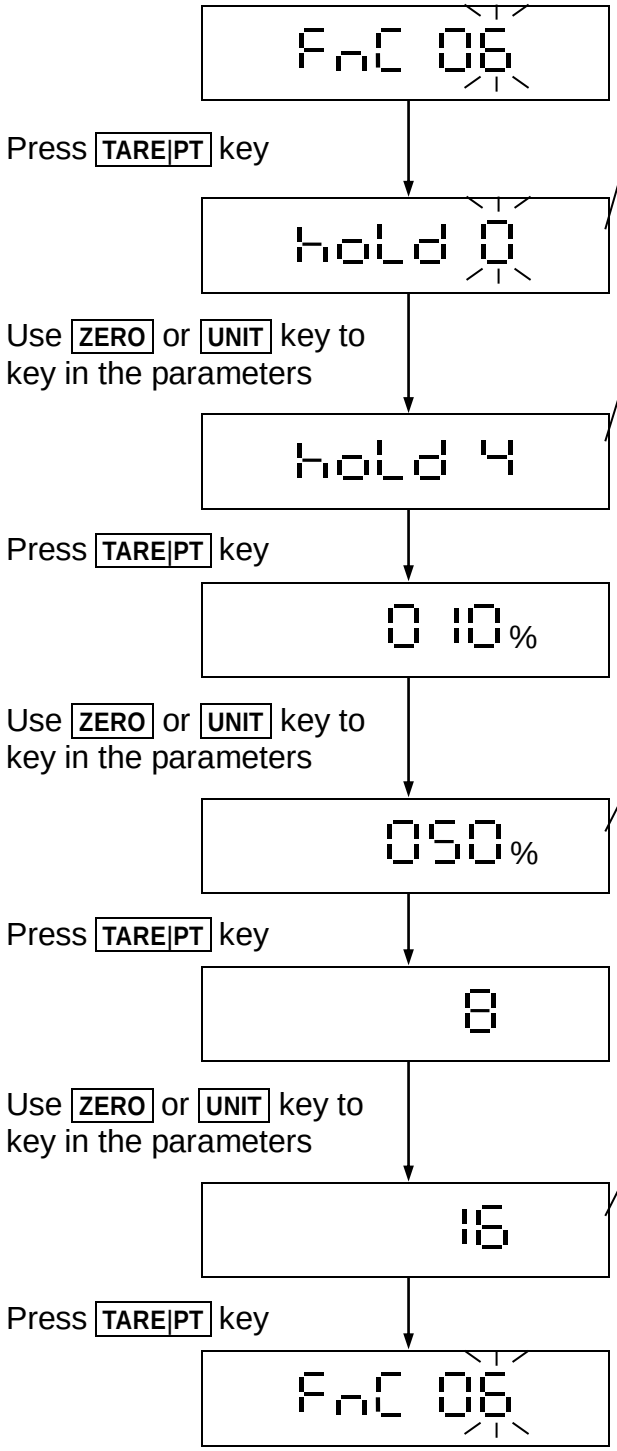
hold 2 = "Stable hold 1" mode
When the weight is stable, the LCD shows the current weight value. Press any key to exit this mode.

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

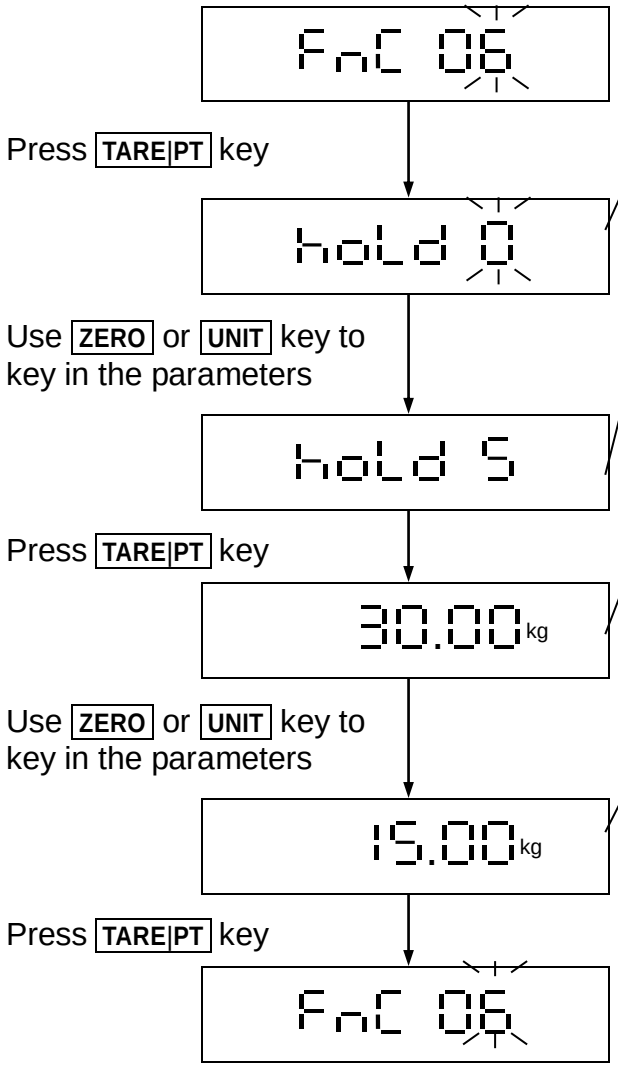
Hold function setting
Use ZERO or UNIT keys to key in 4 and Press TARE|PT key to enter the hold function setting mode.

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

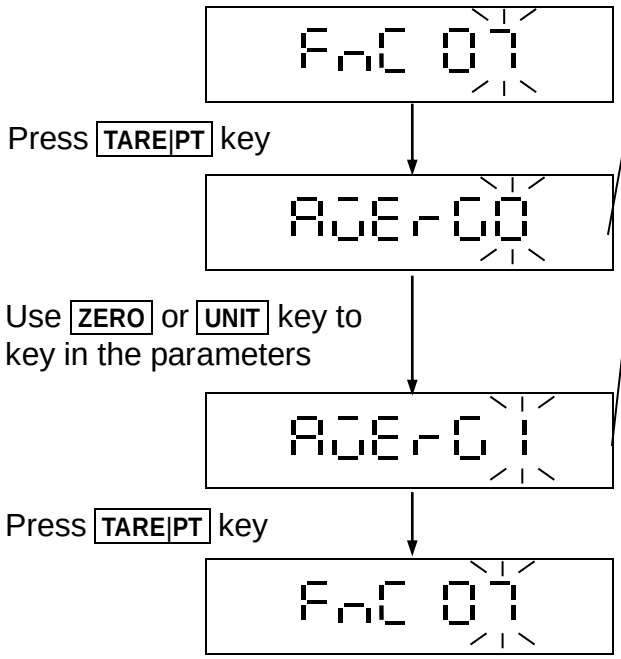
Hold function setting
Use ZERO or UNIT keys to key in 5

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 FnC 07



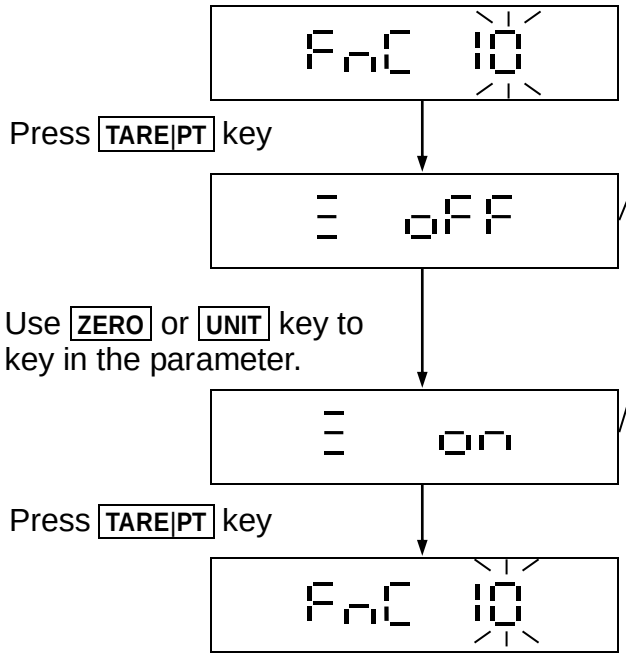
Auto unit weight averaging setting
LCD displays the last parameter setting

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 FnC 10



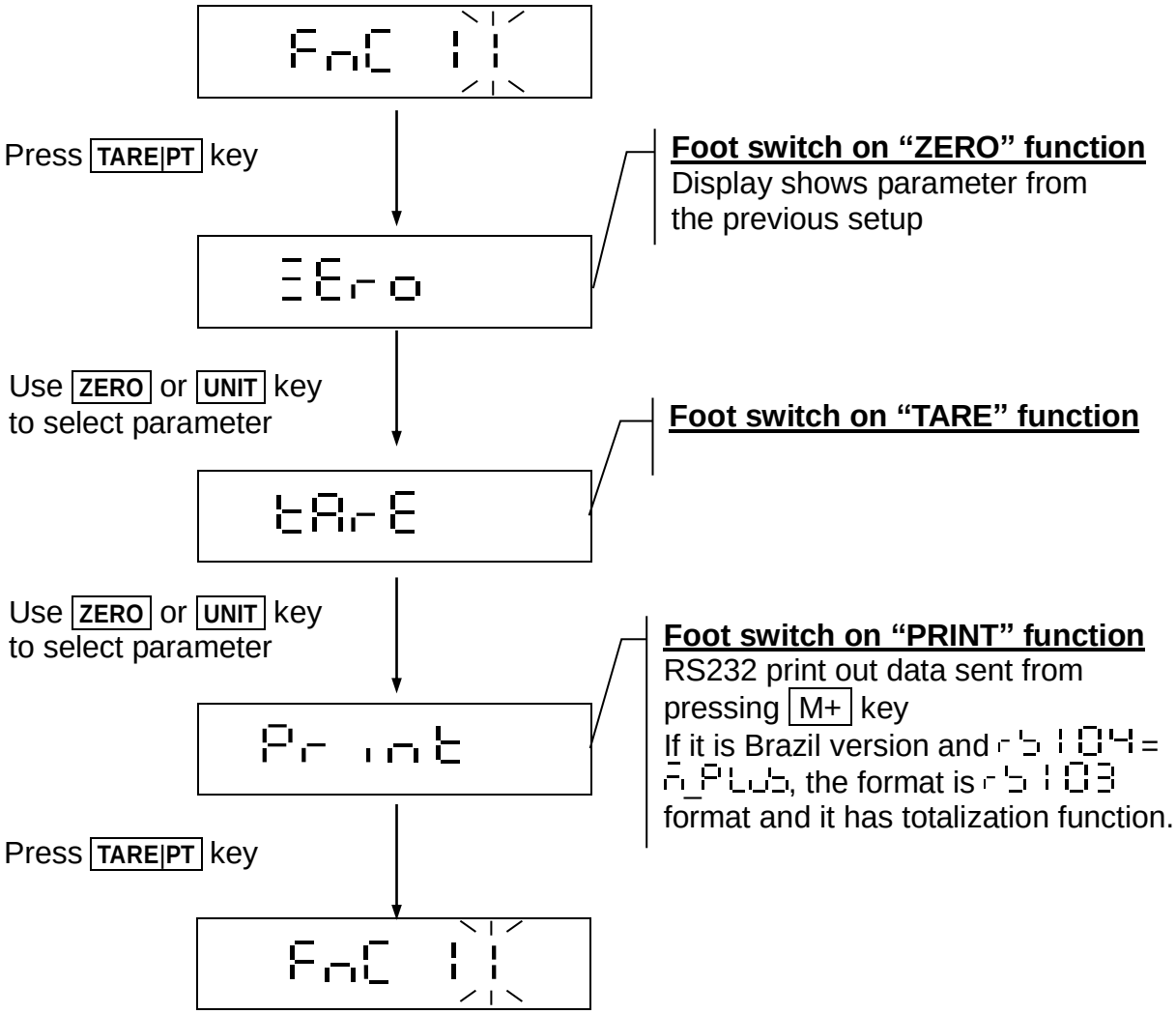
LCD displays the last parameter setting

Record Last Zero
Use ZERO or UNIT Key to select the setting.
Default setting = oFF

on ⇒ Record the last zero setting
oFF ⇒ No record

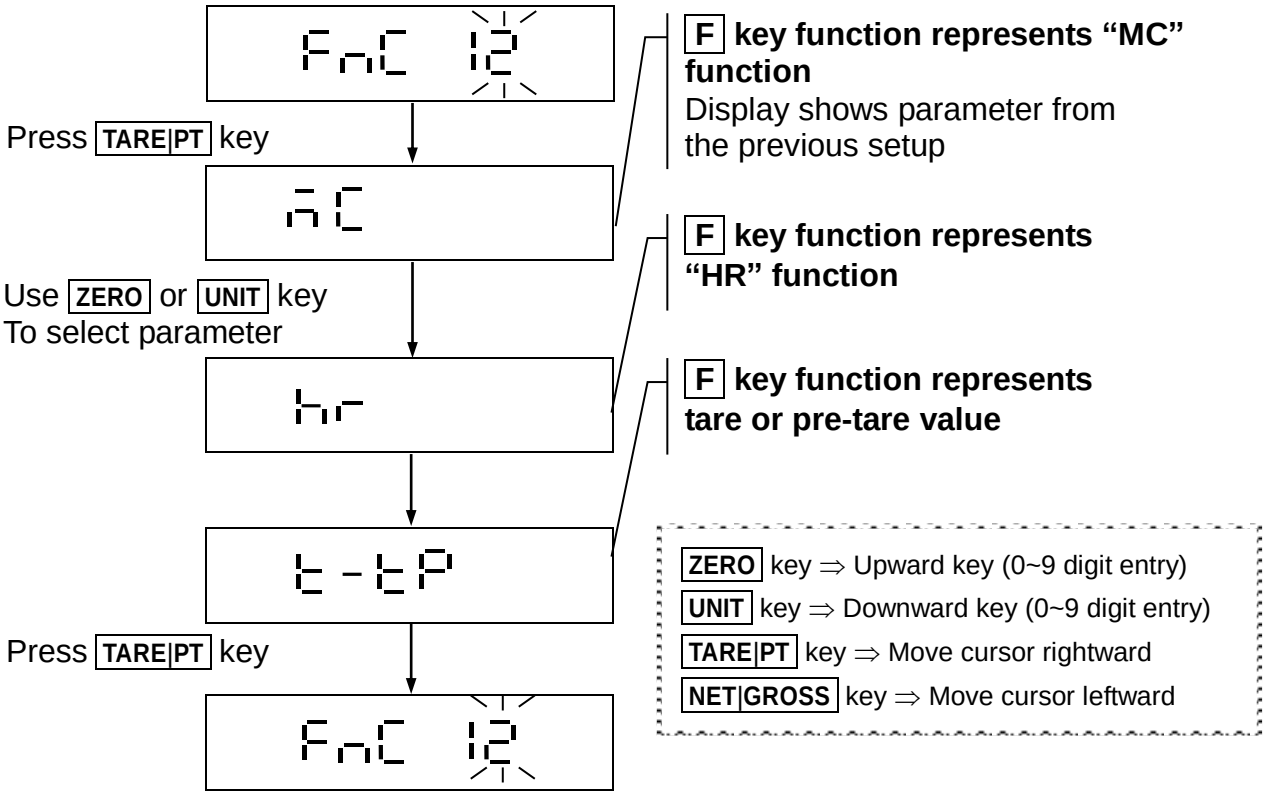
ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward

2-1-9 Foot Switch Settings FnC 11 (Option)

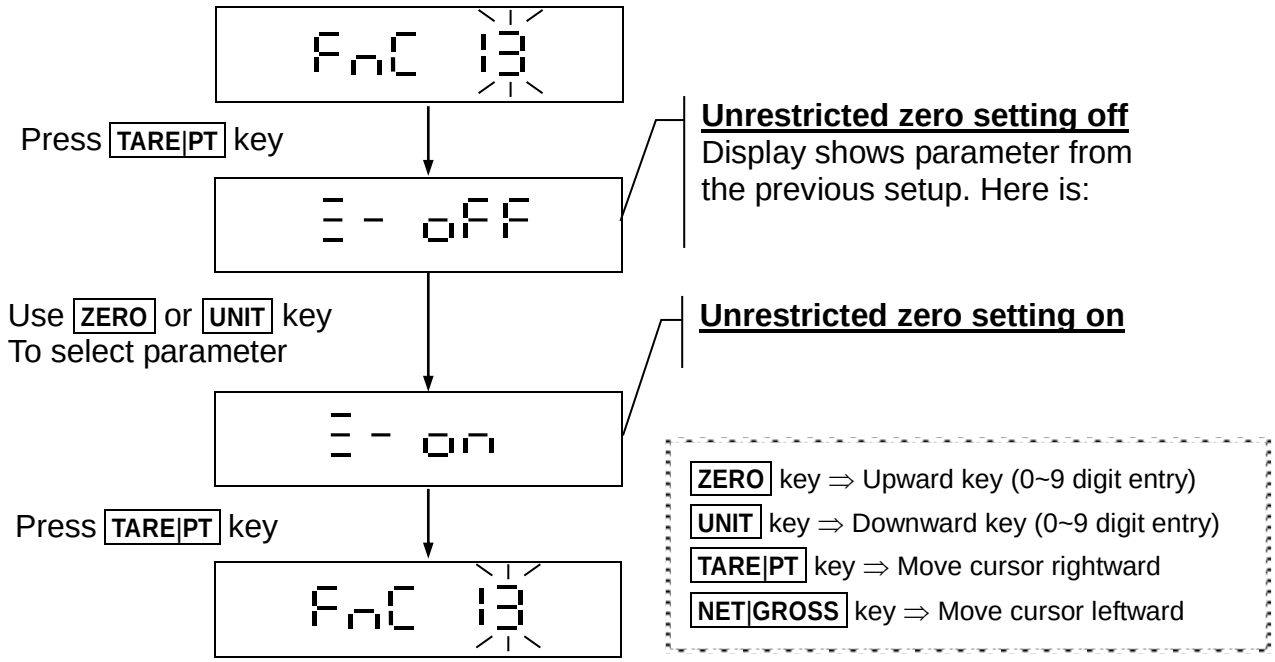


ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward

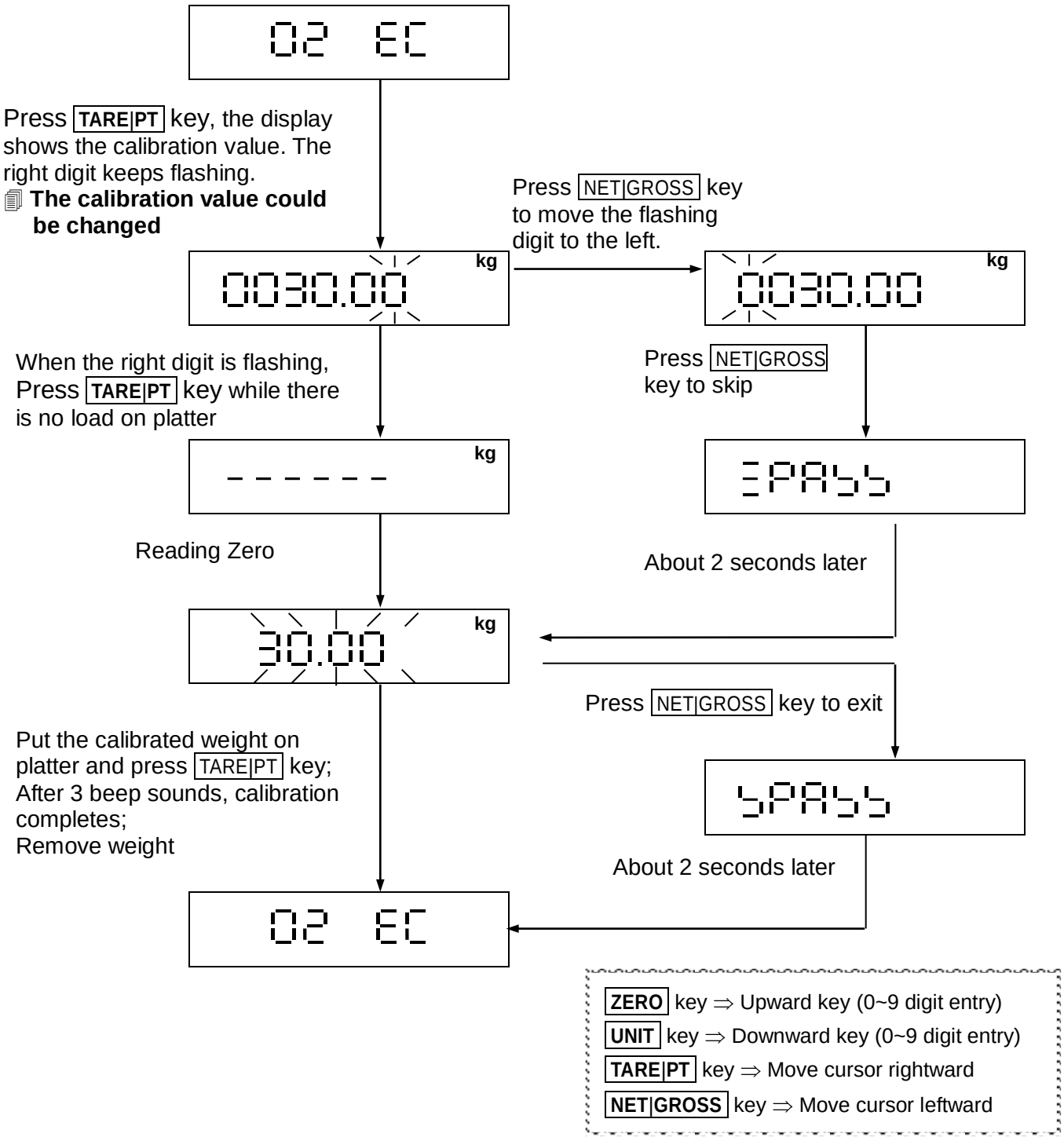
2-1-10 F Key Function Settings FnC 12



2-1-11 Zero Setting FnC 13

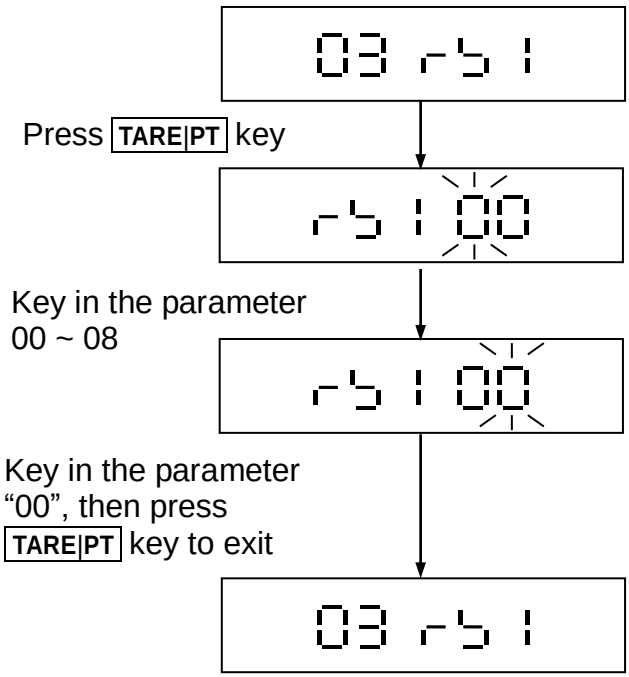


2-2 External Weight Calibration 02 EC



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 rS1

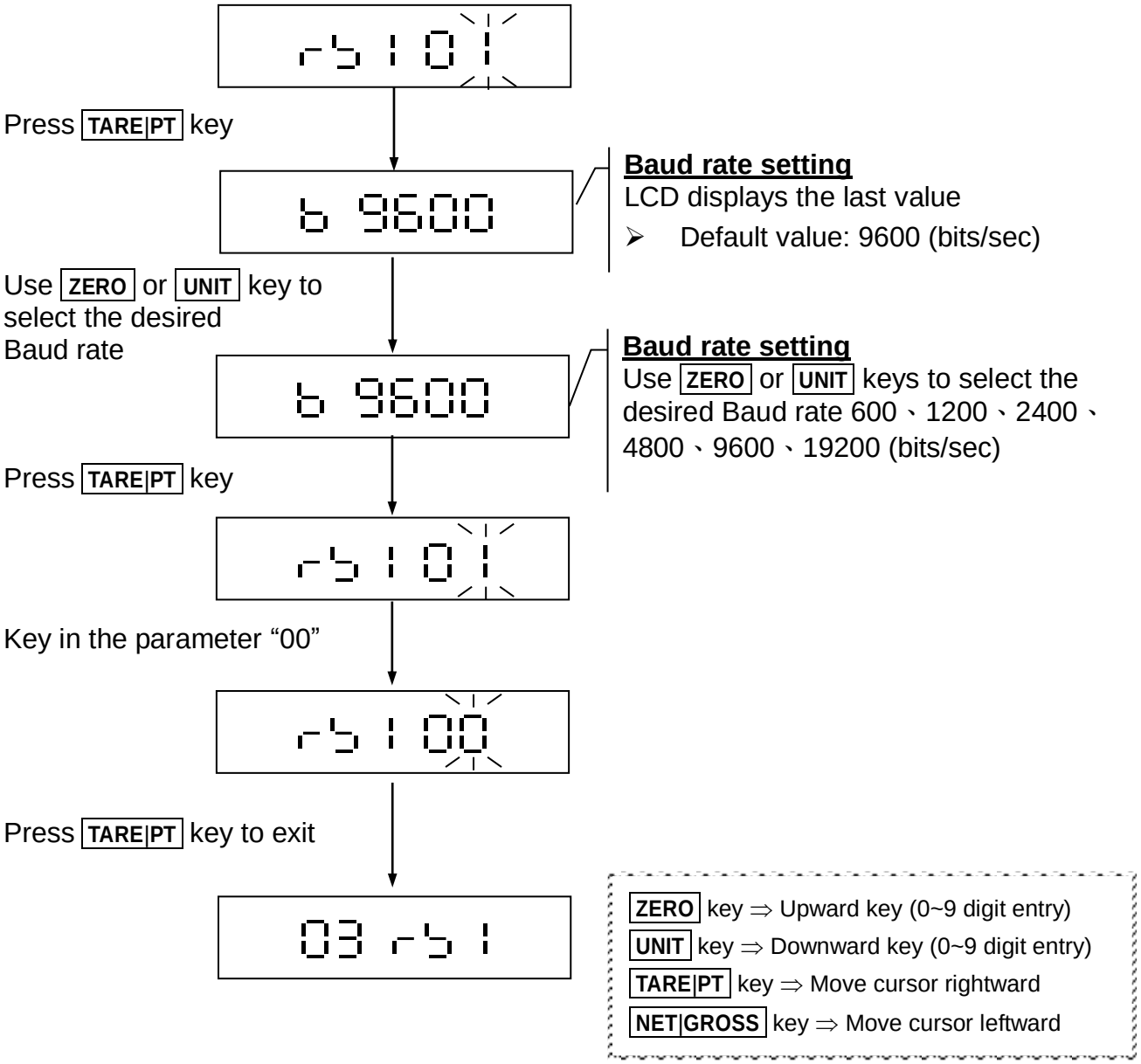


ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward

rS1 00 ⇒ Exit the RS232 Serial Interface Setting Mode
rS1 01 ⇒ Baud Rate Settings
rS1 02 ⇒ Communication Protocol Settings
rS1 03 ⇒ Output Format Settings
rS1 04 ⇒ Transmission method setup
rS1 05 ⇒ The Selection of Continuous Transmission Rate
rS1 06 ⇒ Auto Transmission at Zero
rS1 07 ⇒ Reset of Auto Transmission
rS1 08 ⇒ Output Condition Settings
rS1 09 ⇒ RS232 6/7 digits setting
rS1 10 ⇒ RTC adjustment
rS1 11 ⇒ Y/M/D Print Format Selection
rS1 13 ⇒ Line Feed Input
rS1 14 ⇒ AD Input

2-3-1 Baud Rate Settings r5 1 01

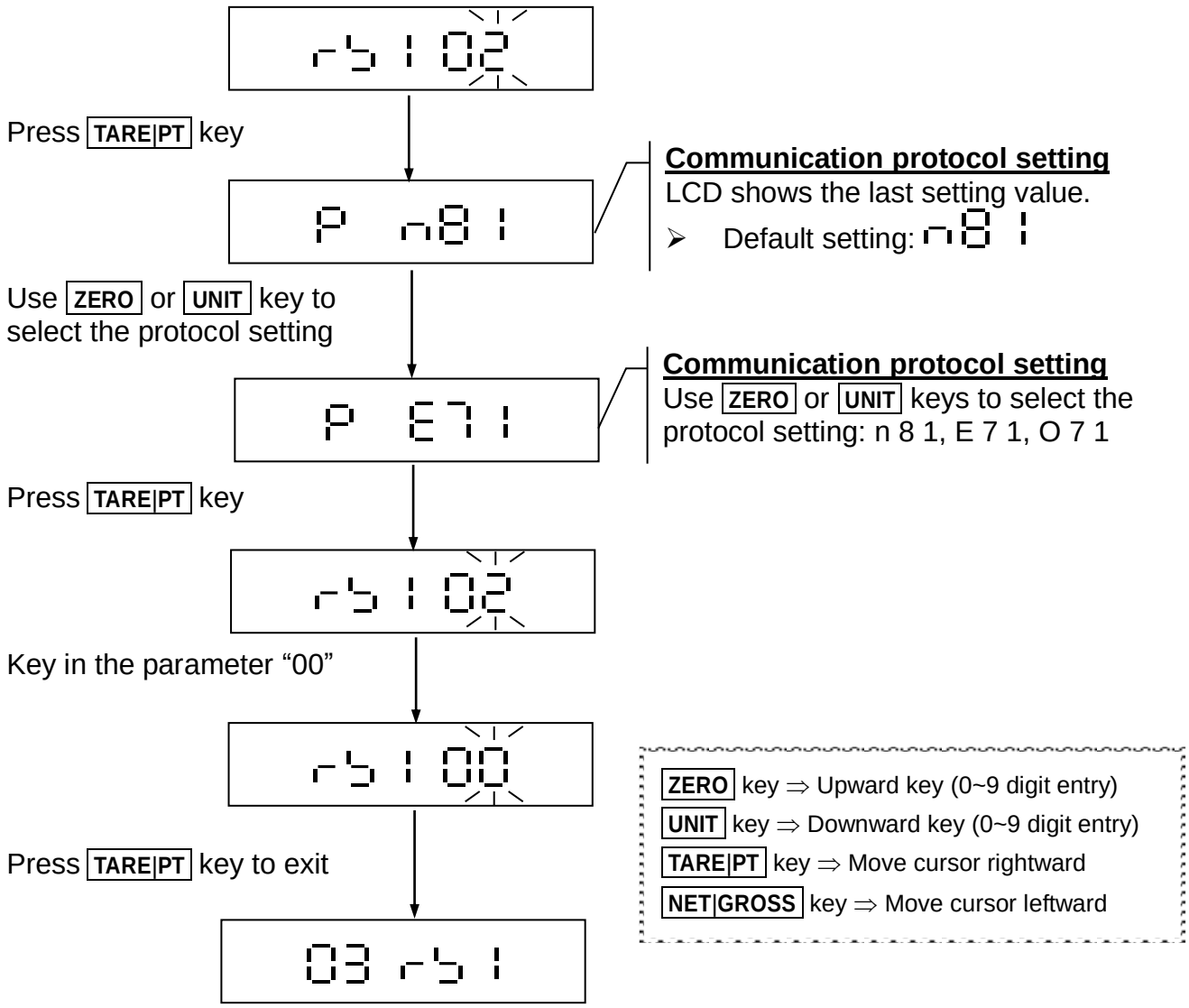
Select r5 1 01 in the RS232 serial interface setting mode 03 r5 1 to set the Baud Rate.



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 1 02

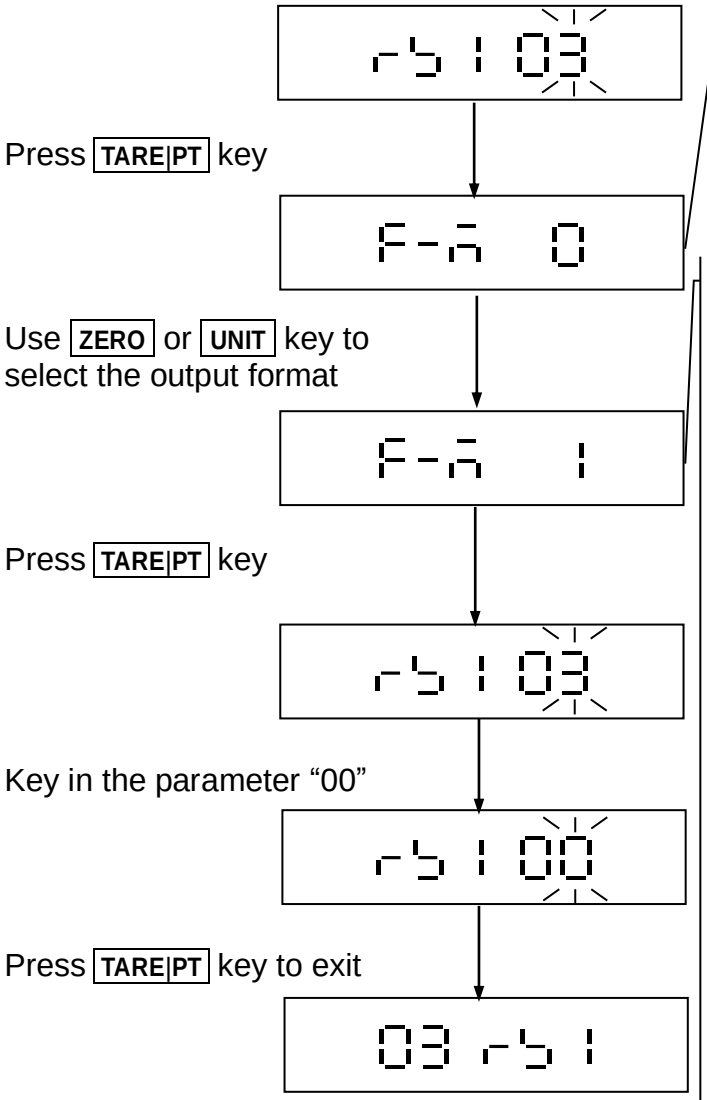
Select r5 1 02 in the RS232 serial interface setting mode 03 r5 1 to set the Communication Protocol.



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

2-3-3 Output Format Settings r5 i 03

Select r5 i 03 in the RS232 serial interface setting mode 03 r5 i to set the Output Format.



RS232 output format setting
LCD shows the last setting.
- Default setting: F-n 0

RS232 output format setting
Use ZERO or UNIT keys to select the output format:

- F-n 0 = Same data as the scale
- F-n 1 = Gross weight
- F-n 2 = Net weight
- F-n 3 = Same data as the scale in simple format
- F-n 4 = Same gross data as the scale in simple format
- F-n 5 = Same net data as the scale in simple format
- F-n 6 = Hi/Lo/OK status + Same data as the scale in simple format
- F-n 7 = Hi/Lo/OK status + Simple gross weight
- F-n 8 = Hi/Lo/OK status + Simple net weight
- F-n 9 = Tare value
- F-n 10 = M+ Transmission 1 **note 1**
- F-n 11 = M+ Transmission 2 **note 2**
- F-n 12 = Brazil printing format **note 3**
- F-n 13 = Brazil printing format **note 4**
- F-n 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 transmition.
If it is Brazil version, under decimal units mode, FnC 11=Pr nt and rS104=A_PLUS, 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 transmition, auto transmition and order mode.
If it is Brazil version, when the scale is stable and under under decimal units mode, FnC 11=Pr nt and rS104=A_PLUS, 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	**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 transmition.
If it is Brazil version, under decimal units mode, FnC 11=Pr int and rS 104=A_PLUS, 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:

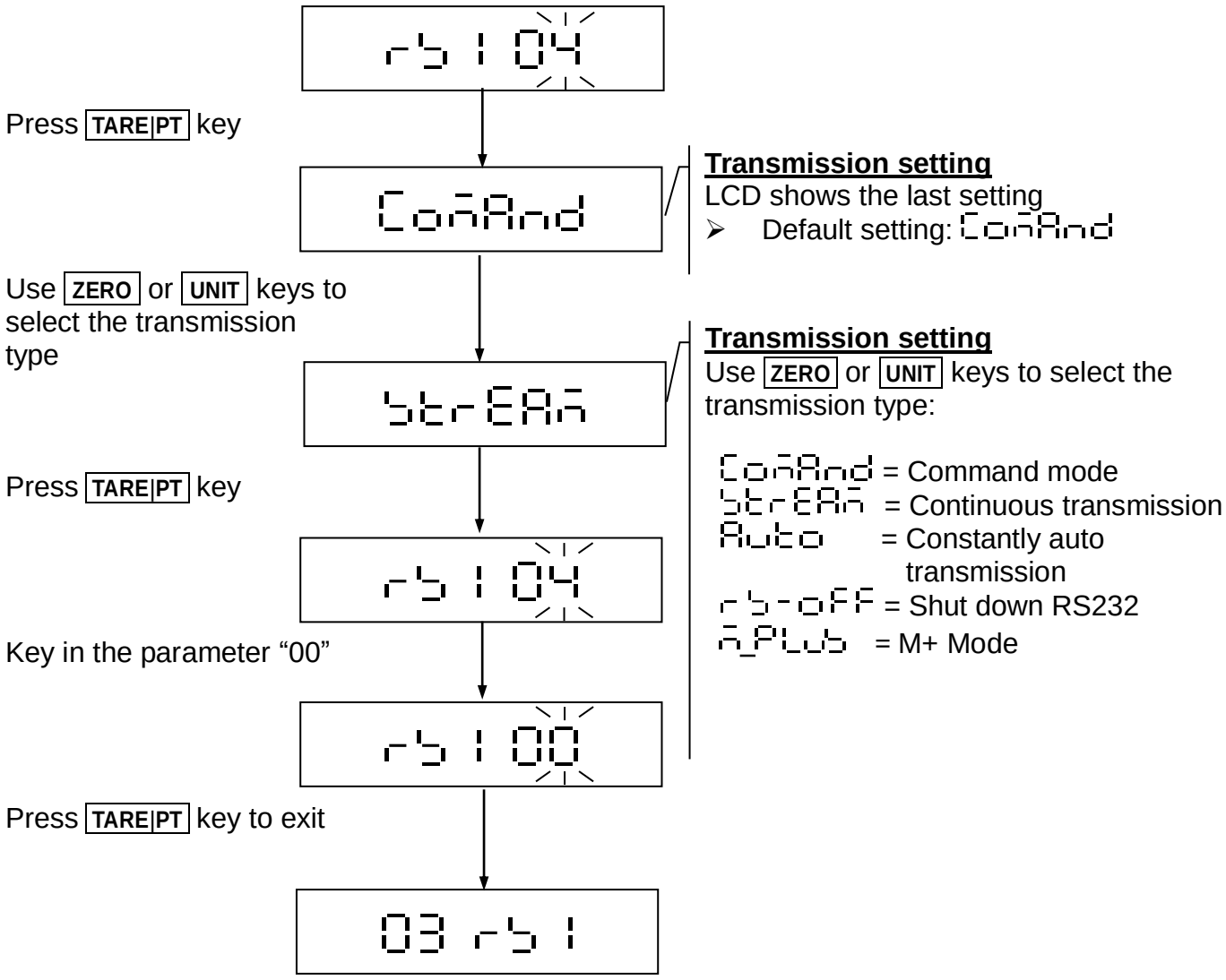
0,001.200,001.000,000.200

Take off the weight then show as followed:

0,000.000,001.000,-01.000

2-3-4 Continuous Transmission Settings rS i 04

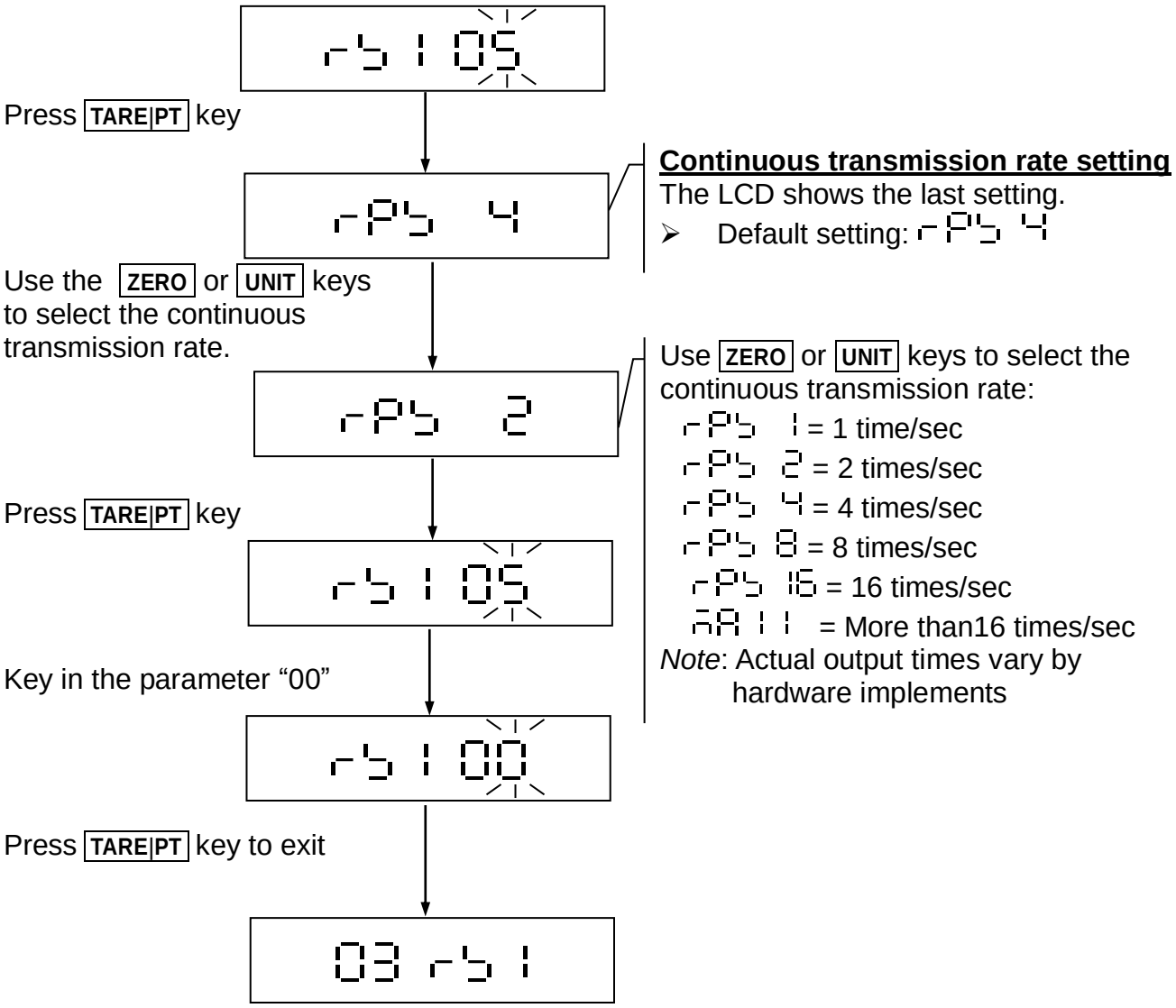
Select rS i 04 in the RS232 serial interface setting mode 03 rS i to set the Continuous Transmission status.



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 r5 105

Select r5 105 in the RS232 serial interface setting mode 03 r5 1 to set the Continuous Transmission Rate.



Continuous transmission rate setting

The LCD shows the last setting.

- Default setting: rPS 4

Use ZERO or UNIT keys to select the continuous transmission rate:

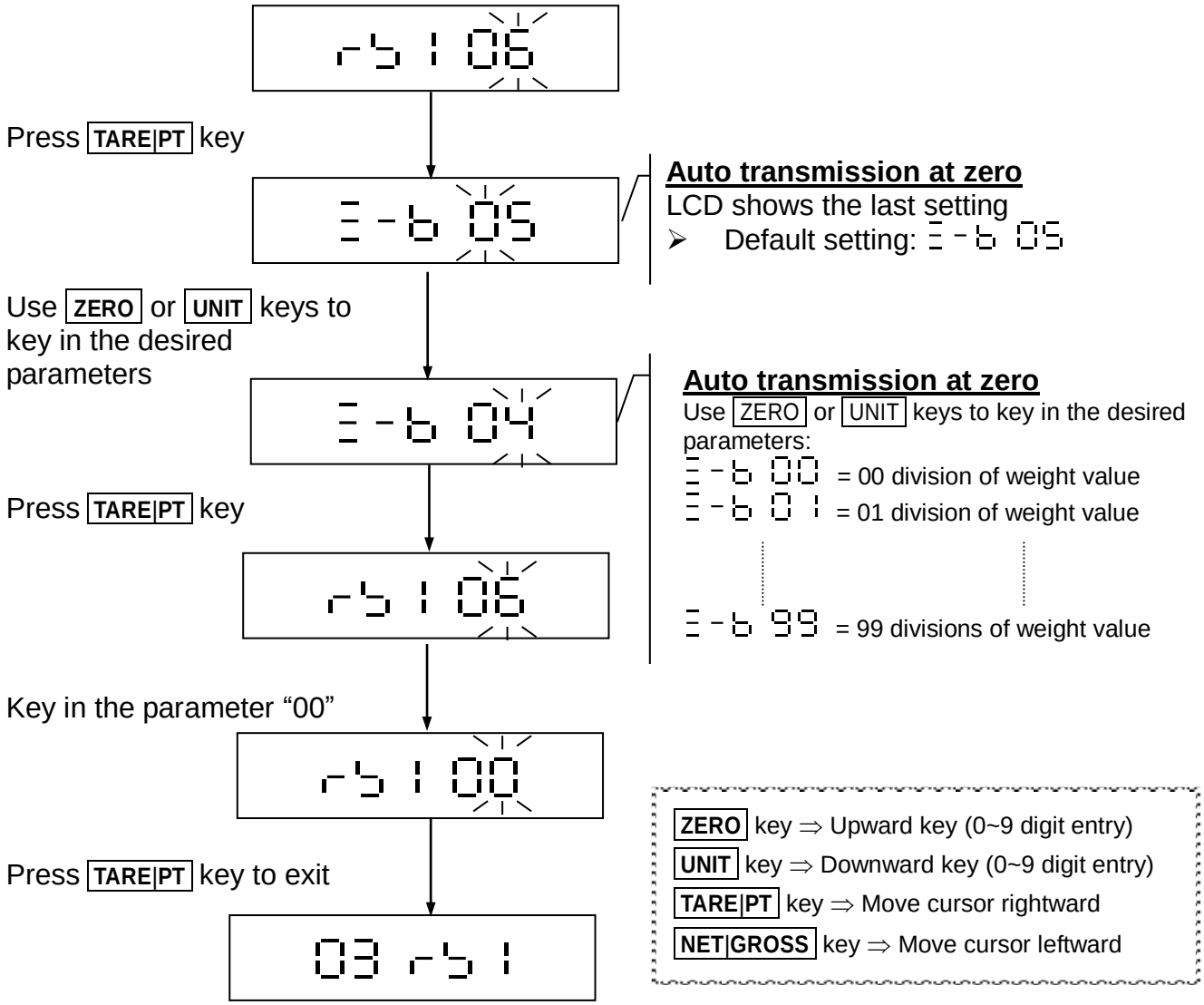
- rPS 1 = 1 time/sec
- rPS 2 = 2 times/sec
- rPS 4 = 4 times/sec
- rPS 8 = 8 times/sec
- rPS 16 = 16 times/sec
- nA11 = More than16 times/sec

Note: Actual output times vary by hardware implements

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 r5 1 06

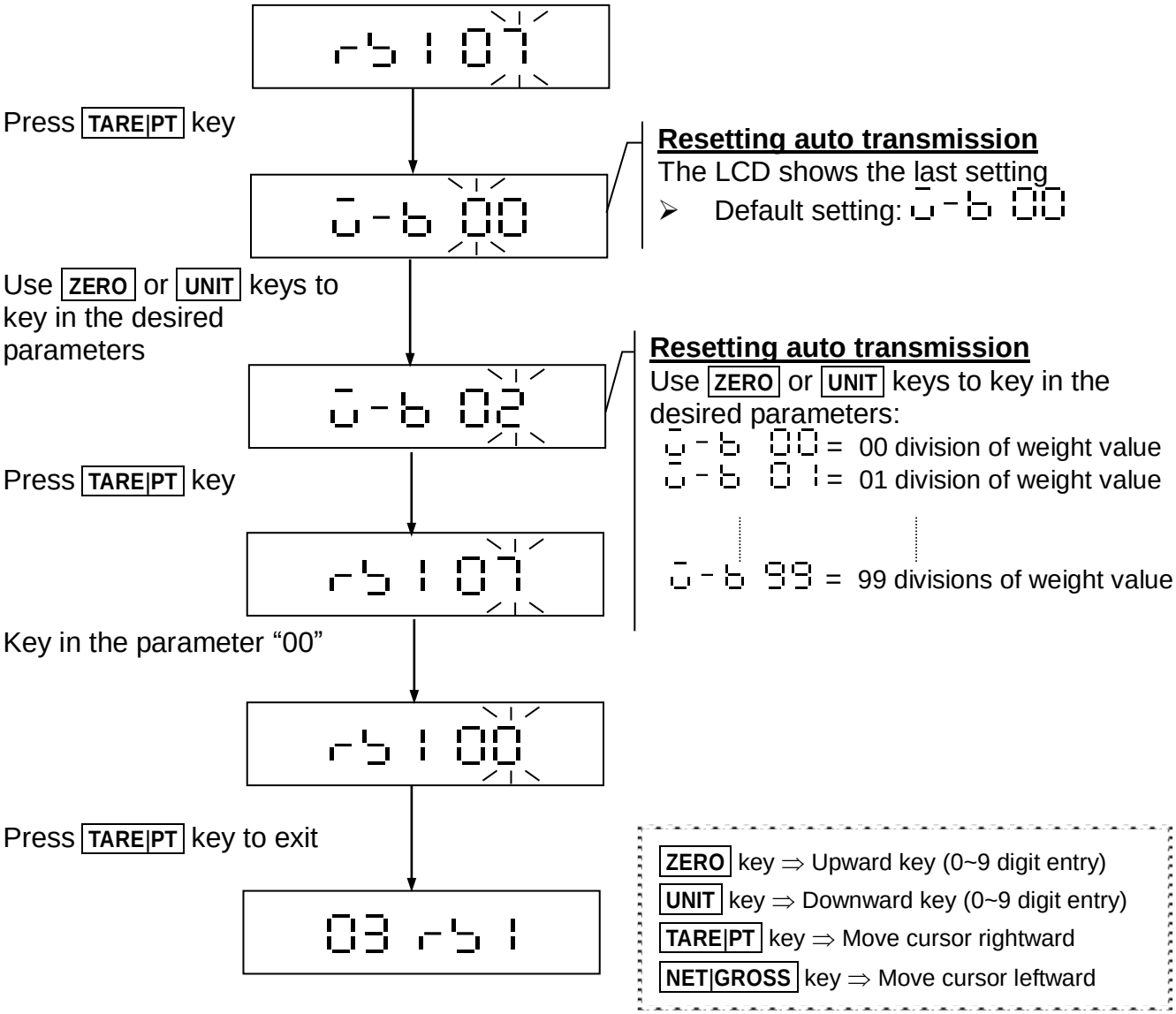
Select r5 1 06 in the RS232 serial interface setting mode 03 r5 1 to set the Auto Transmission at Zero.



When the value of "Auto transmission at zero" set as b-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 r5 1 07

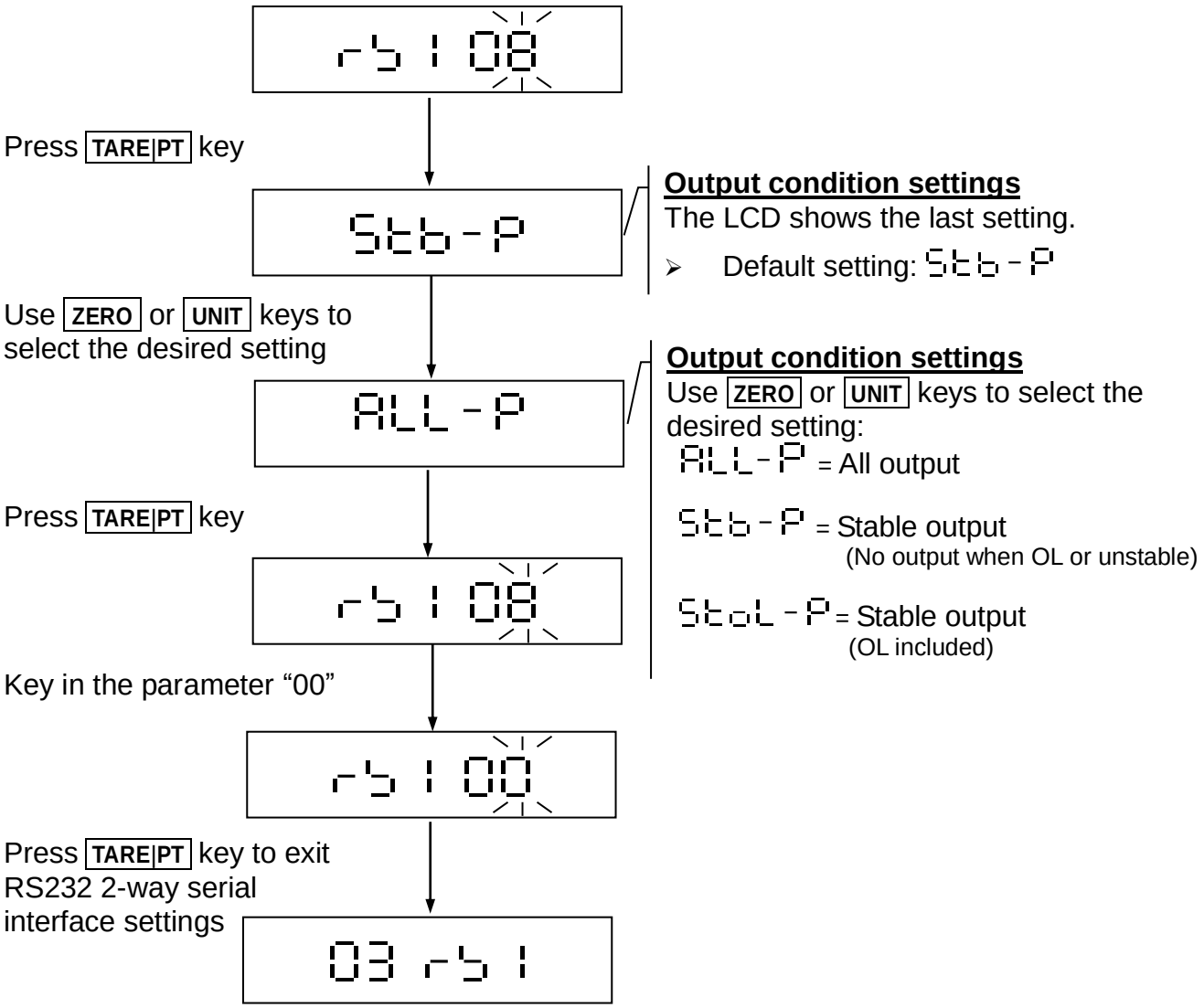
Select r5 1 07 in the RS232 serial interface setting mode 03 r5 1 to Reset Auto Transmission.



When the value of "Auto transmission at zero" set as U-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 r5 1 08

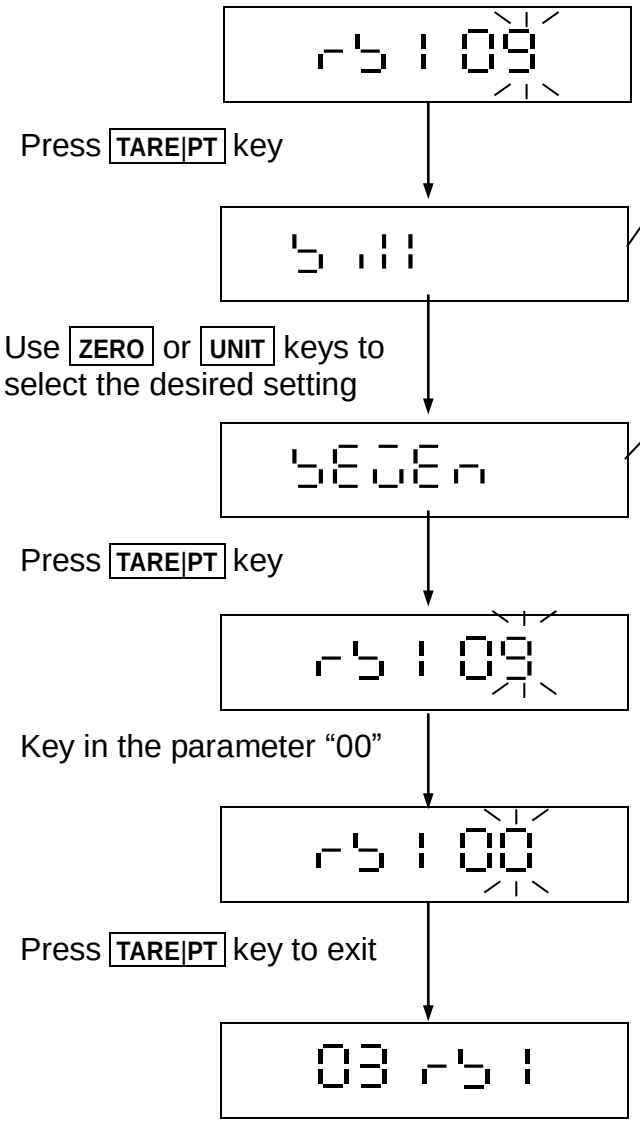
Select r5 1 08 in the RS232 serial interface setting mode 03 r5 1 to Reset of Auto Transmission.



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

2-3-9 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.



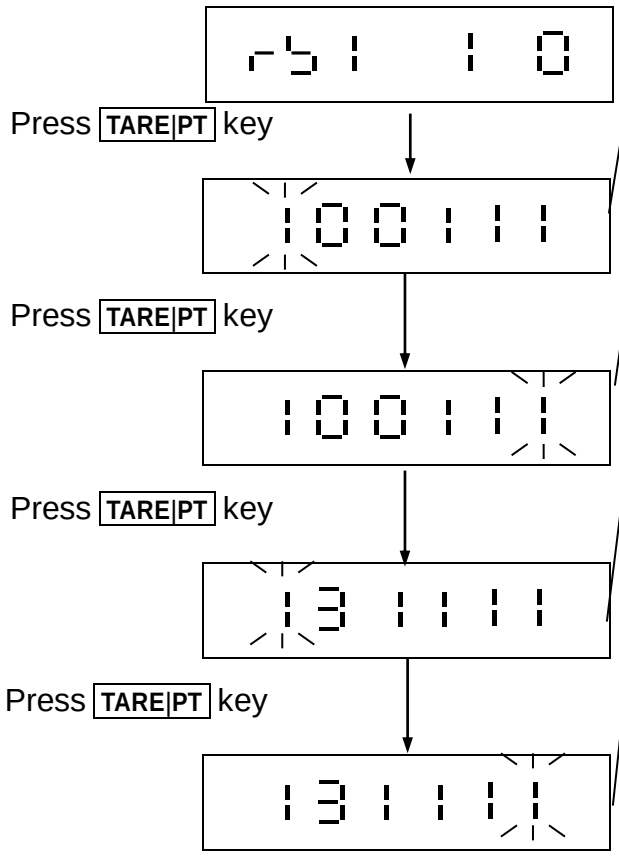
Output Condition Restriction Settings
Display shows the previous setup
Factory Default is 5 .11 (6 places)

Output Condition Restriction Settings
Use ZERO or UNIT key, to select desired setting.
Output condition:
5 .11 = 6 digits
5E0En = 7 digits

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 r51 10

Select r51 10 in the RS232 serial interface setting mode 03 r51 to reset of Auto Transmission.



Enter the date in YY/MM/DD
Use upward and downward key to select, and use **TARE|PT** key to confirm

Move cursor to the right end and Press **TARE|PT** key

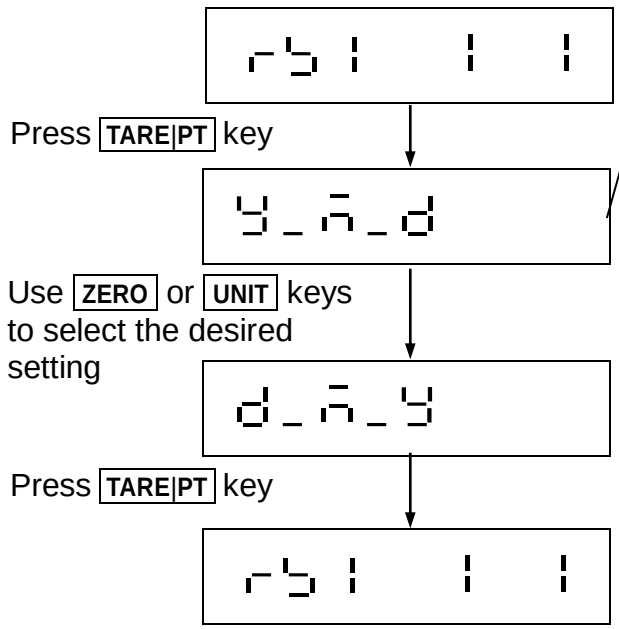
Enter time in HH/MM/SS
Use upward and downward key to select, and use **TARE|PT** key to confirm, and move rightward.

Move cursor to the right end and Press **TARE|PT** key to confirm.
RTC adjustment is complete

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

2-3-11 Y/M/D Print Layout Selection r51 11

Select r51 11 in the RS232 serial interface setting mode 03 r51 to reset of Auto Transmission.



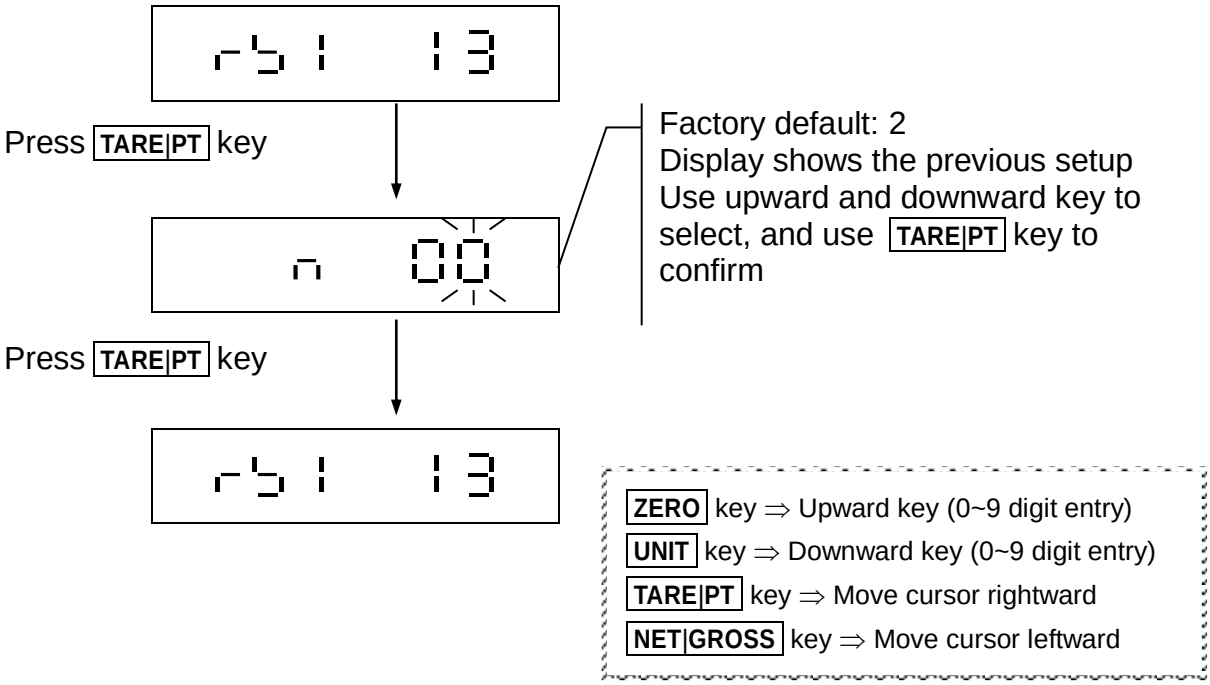
Display shows the previous setup
Use upward and downward key to select, and use **TARE|PT** key to confirm

If y_m_d, printed as Year/Month/Day
If d_m_y, printed as Day/Month/Year

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

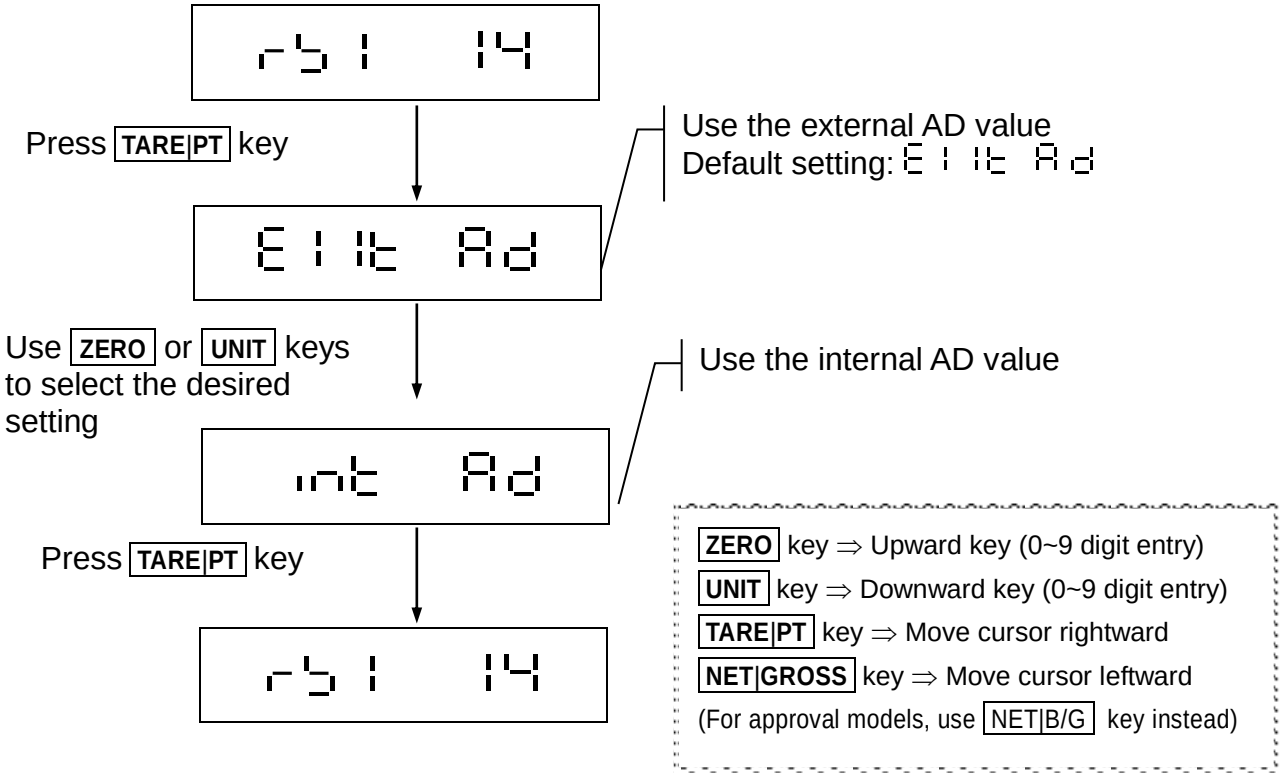
2-3-12 Line Feed Input r5 1 13

Line feed would be available only when r5 1 03 was set as 10 or 11.



2-3-13 AD Input r5 1 14

Choose to use the external (wireless TM) or internal (electronic L/C) AD value



Chapter 3 Pairing and Connect with TM

❶ Make J15 and J16 disconnected from the circuit, J17 and J18 short circuit.

❷ Hold [Re-pairing/Clear] key until Link/Pair LED flashing.

❸ Press [Net] and [ON/OFF] keys together to enter self test mode. Press [Zero] or [Unit] key to select”06RePr” and then press [Tare/PT] key to pair. Link/Pair LED always on meas pair succeed, otherwise repeat❷.

❹ Setting external AD value: Press [Zero] or [Unit] key to select ”00 ESC” and then press [Tare/PT] key to exit. Press [Net] and [Zero] keys together to enter external function setting. Select [03 RS1] → [RS1 14]→[ExtAD]. Power off and press [Net] and [ON/OFF] key together to enter self test mode. Select [01 ADC] and press [Tare/PT] key to see whether TM and GoW/Qow connected. AD value changes follow the weight change which means they are connected.

❺ Specification Setting (See Specification Setting in GoW/QoW manual) After performing specification setting, it will default to use internal AD. Please repeat 3 to set to use external AD.

❻ Weight calibration (See Weight calibration in GoW/QoW manual).

❼ To end calibration mode, press [Calibration] key for 3 secs until calibration LED off.

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＞

Set pre-tare weight value:

PT,○○○○○○＜CR＞＜LF＞ (○○○○○○means weight)

To set pre-tare weight of 1kg while zero display as 0.000kg, give the following commands: PT,001000

To cancel pre-tare, give the following commands: PT,000000

Error messages:

ND means the weight value is not in valid divisions

If the Scale's division is 5,the last digit of weight input must be 5 or 0.

NG means the weight value is over max capacity

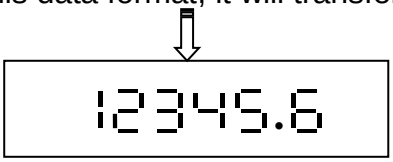
NN means the weight value is non-numeric

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.



- 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

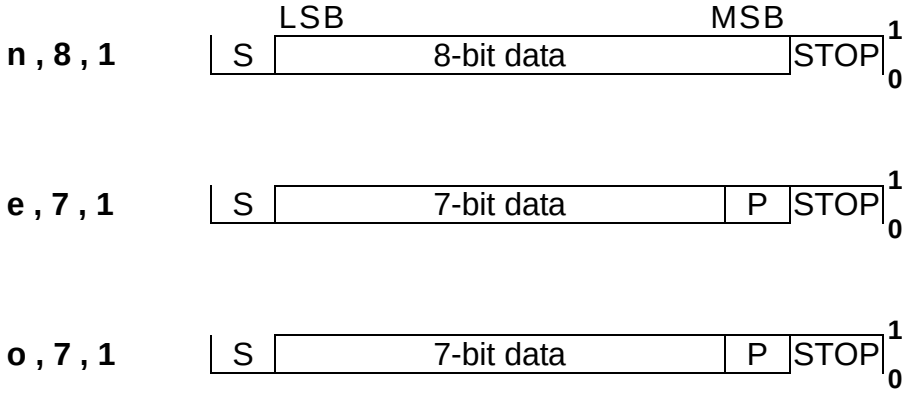
G/N	+	.	2	3	.	4	5	6	CR	LF
G/N	+	1	2	3	4	5	.	6		
G/N	+	1	2	.	3	4	5	6		
Plus OL	+	SP	SP	SP	SP	SP	SP	SP		
Minus OL	-	SP	SP	SP	SP	SP	SP	SP		

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

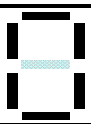
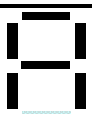
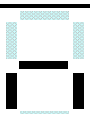
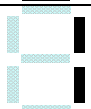
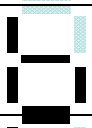
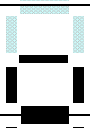
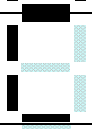
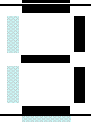
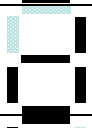
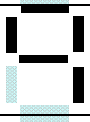
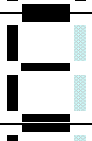
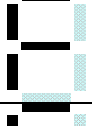
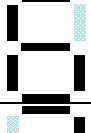
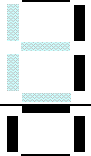
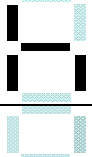
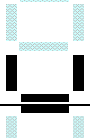
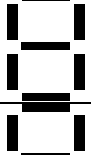
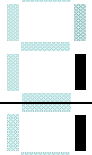
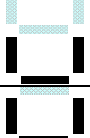
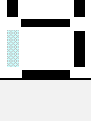
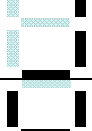
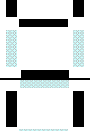
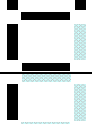
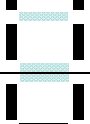
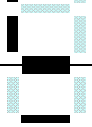
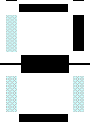
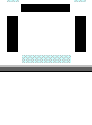


Note:
S : Start bit
STOP: Stop bit
P : Parity bit

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		

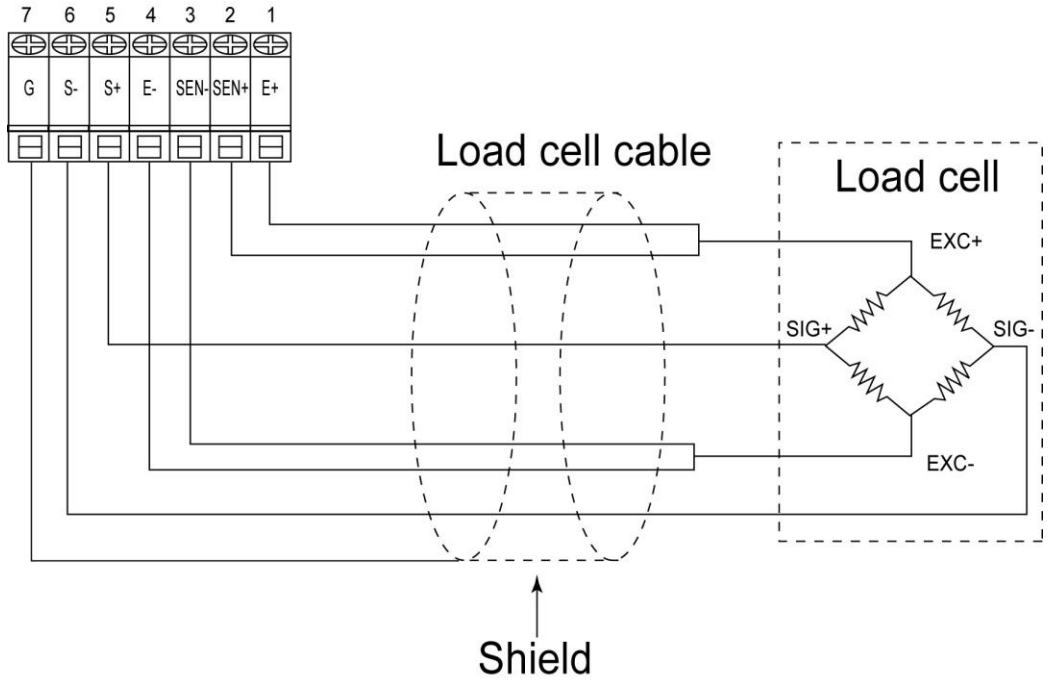
Appendix 2 7-Segment Display Characters

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	

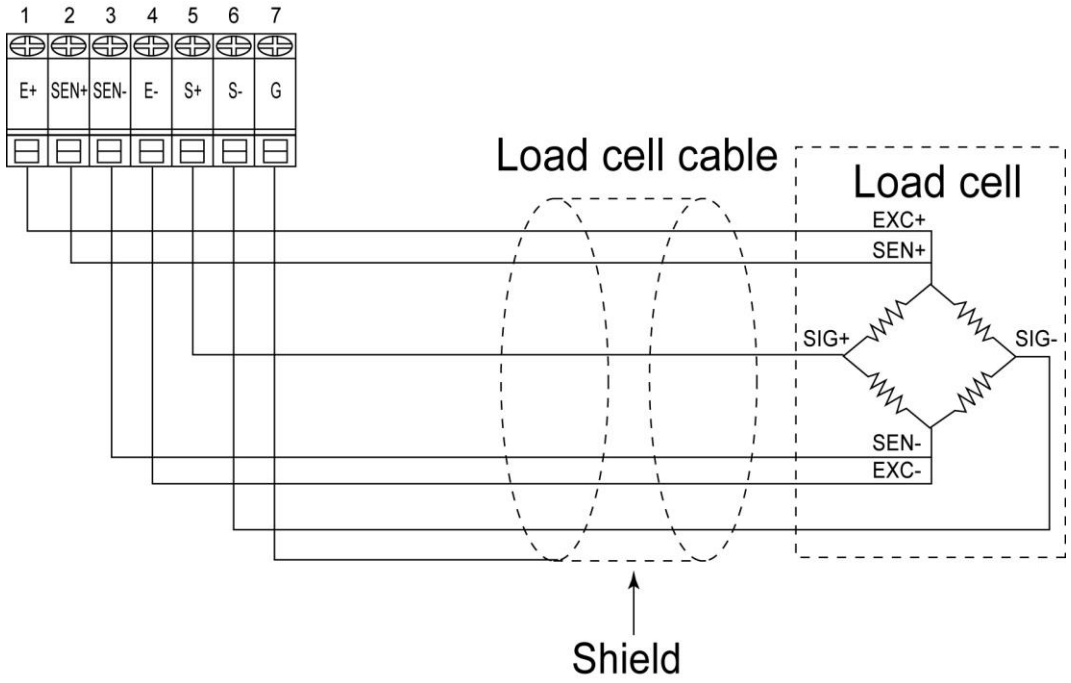
Appendix 3 Wiring Instructions

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.

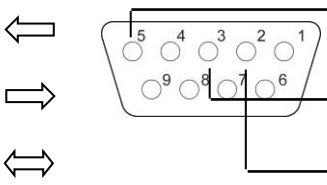


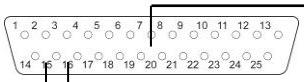
(2) If Load Cell is 6PIN, please wire as the following diagram:



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	QoW/GoW
	2	Transmit Data		SG	
	3	Receive Data		RxD	
	5	Signal Ground		TxD	

Printer	PIN	Function	Male 25 PINS	Function	QoW/GoW
	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.*