EXCELL PRECISION CO.,LTD.

Service Manual Waterproof Indicator QW/GW with Multicolor Backlight

V24. 0814

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Check Firmware Version

Turn off scale first. Hold NET|GROSS key and press ON|OFF key to turn on scale. Wait till display shows 01 AdC. Press ZERO key twice and display 03 VEr. Press TARE|PT key to display firmware version 02005. Press TARE|PT key again to display maintenance number 60X (X is ranged from 0~9) for 2 seconds. Turn off and turn on scale to return to weighing mode.

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.

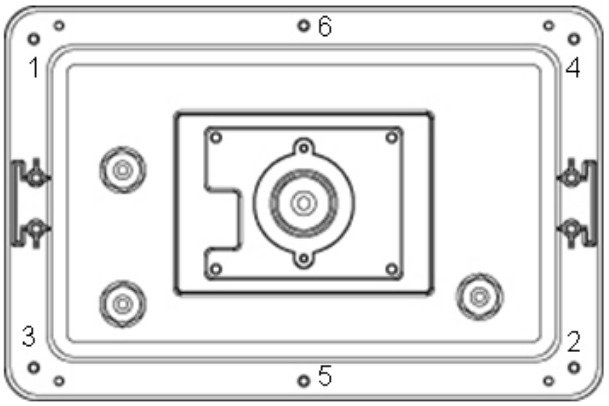
Before opening the housing, make sure the indicator is dry, if there is any liquid on it, please wipe it with a clean cloth.

How to INSTALL THE HOUSING:

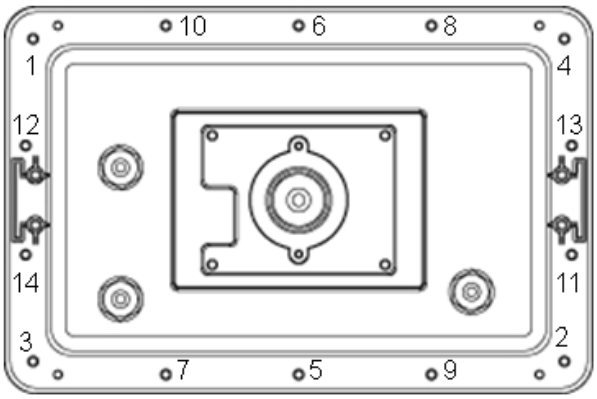
After installing the load cell, power cord hookup or replacing a new rechargeable battery, the housing must be screwed by the assigned order as shown below. Screw lightly first, then screw them tight using a 6 kgf-cm (GW) or 12 kgf-cm (QW) torsion.

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

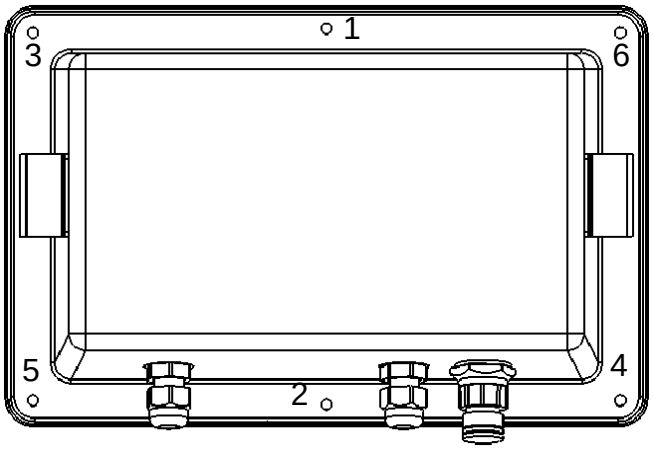
Screwing order:



▲ GW

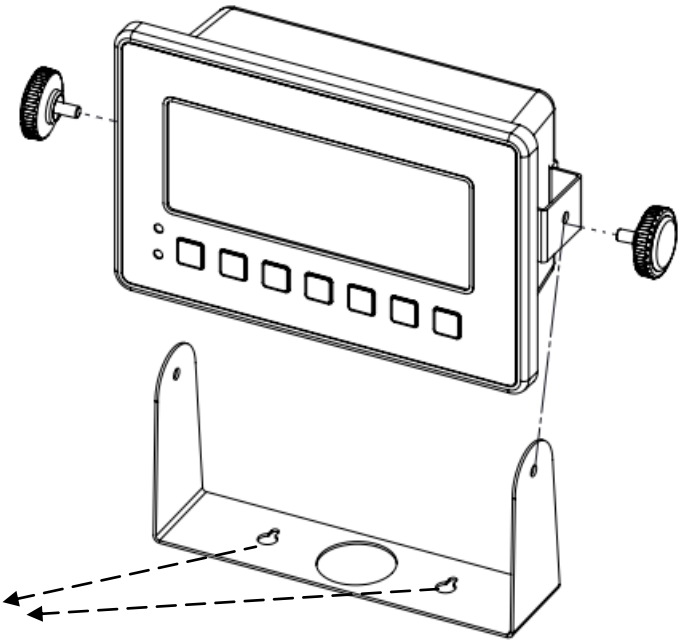


▲ GW



▲ 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.

Instruction 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.

Preparing to use the Scale

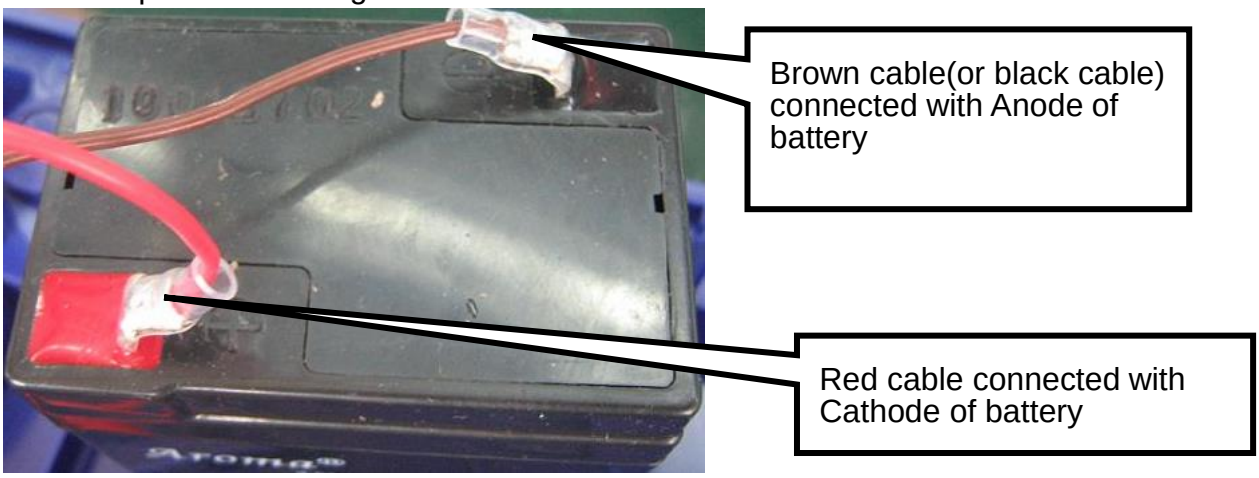
1. Locate the scale on a firm level surface free from vibrations for accurate weight readings.
2. Adjust the four levelling feet (if fitted) to set the scale pan level.
3. Avoid operating the scale in direct sunlight or drafts of any kind.
4. If possible avoid connecting the scale to ac power outlet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

Quick Setup Calibration

This page is to quickly initiate the scale, for the other functions configuration, you can refer the chapters below.

Instructions:

Step 1 :

- Power off the scale and open the case, find the mini-jumper SWA1 on the main board.
- Switch SWA1 to the ADJ position (EEPROM UNLOCKED) and then turn the power on.

  The display will show  .

Step 2 :

- Refer to the chapter 3-1 to complete Capacity Setup.

Step 3 :

- Refer to the chapter 3-2 to complete Linearity Calibration.

Step 4 :

- Refer to the chapter 3-3 to complete Weight Calibration.

Step 5 :

- When done the initiation, switch the jumper SWA1 back to the LOCK position.

If the jumper SWA1 is switched to the LOCK position during calibration, the machine will exit the service mode automatically.

Chapter 1 Introduction

1-1 Product Features

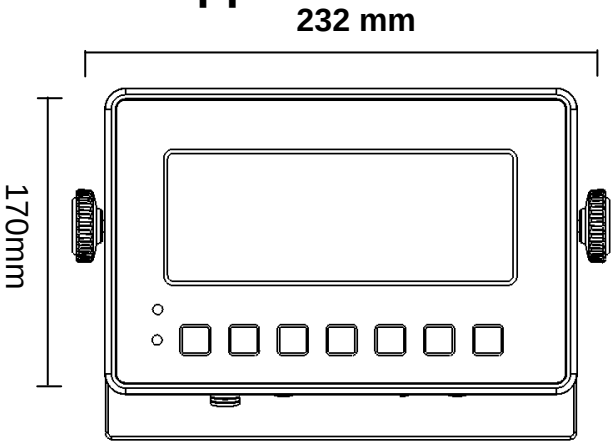
- Extra-large and wide LCD display (175 x 70mm) 6 digits with 55mm height for easy weight reading
- Multi-color backlight
- QW with 304 stainless steel housing while GW with plastic ABS housing.
- Sealed to IP68, Waterproof, mist-proof and dustproof (Only use cables of 3mm~5mm diameter to ensure correct sealing of the cable glands)
- Large buttons easy to access and control.
- 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 with multi-color backlight; 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:
  - One of RS-485, WIFI, Bluetooth,
  - Pressure release valve,
  - Foot switch

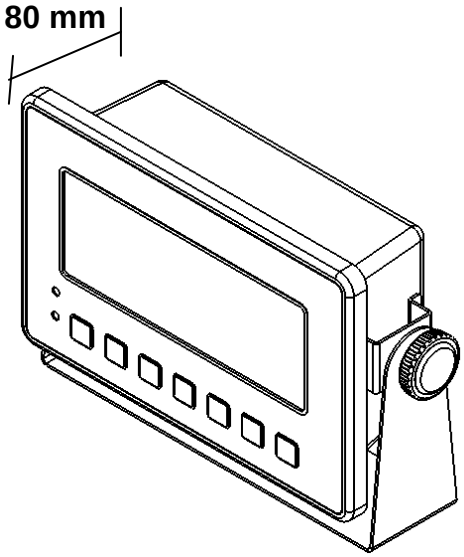
1-2 Specifications

- Analogue Input: Input Sensitivity 0.2μ V/d (Min.)
- Input Signal Range: -1mV~+14Mv
- Input Zero Range: -1mV~+5mV
- 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℃ ~ +40℃

1-3 Product Appearance

QW





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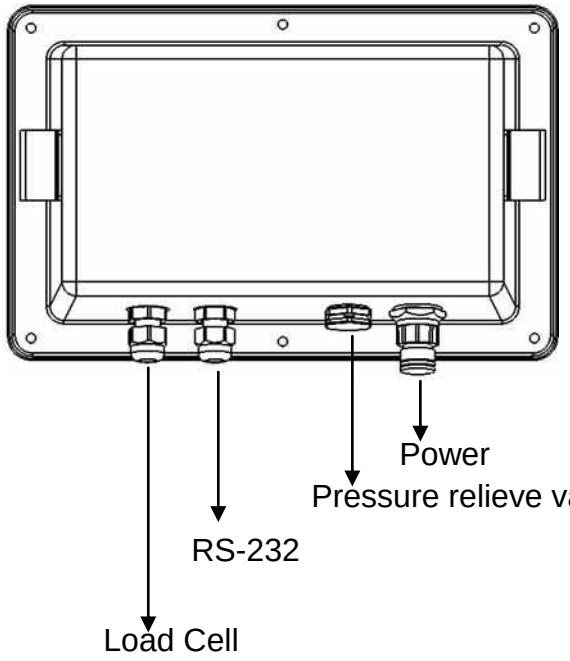
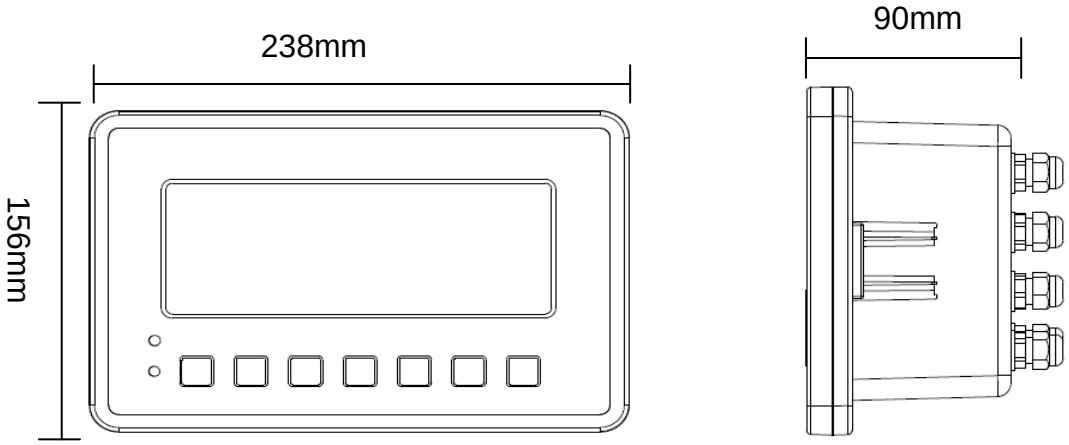
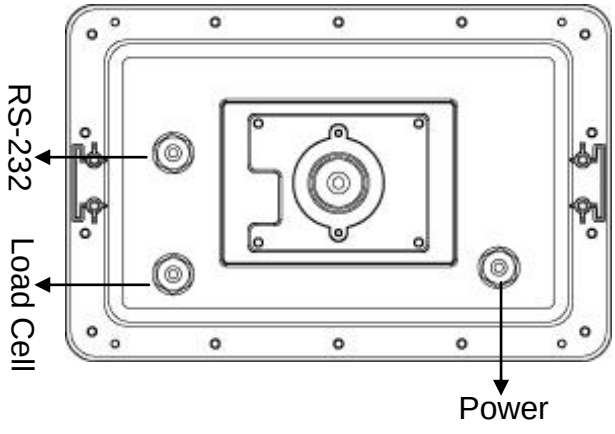


RS-485 is an option

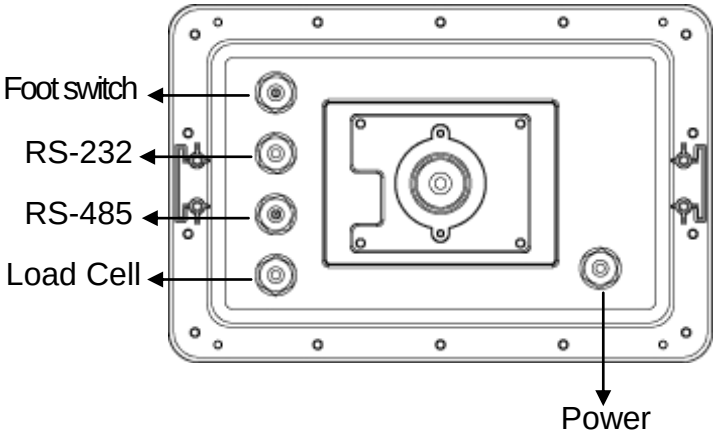
GW



[Standard]

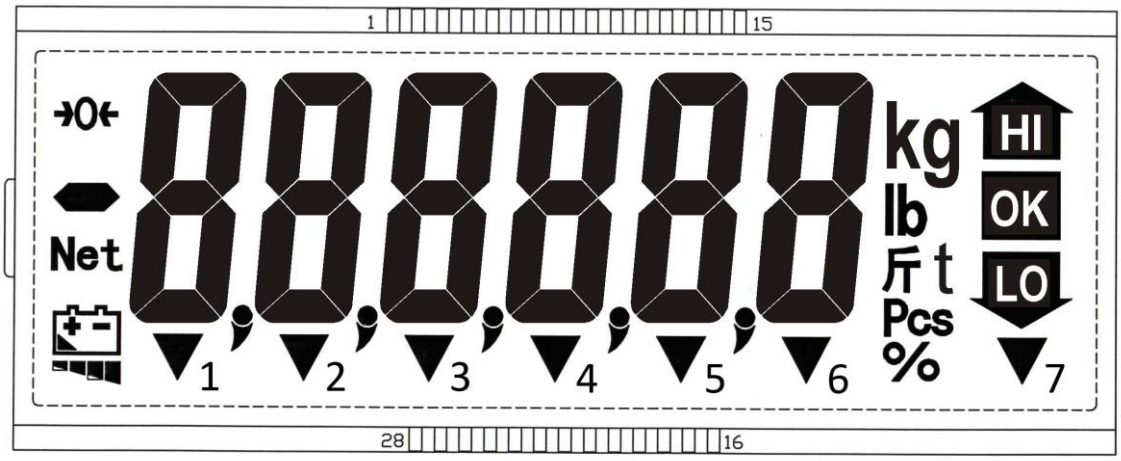


[Option]



RS-485 and foot switch are options

1-4 Display Description



HI : Upper limit
OK : Value between HI and LO
LO : Lower limit
kg : Unit “kilogram”
lb : Unit “pound”
斤 : HK tael or Taiwan Tael
Pcs : Counting mode indication
→0← : Zero point indication
Net : Net weight indication
: Low Power indication

Non-approval model:		
▼**1**	:	(STABLE) stable indication
▼**2**	:	(GROSS) gross weight indication
▼**3**	:	(Pcs) insufficient unit weight
▼**4**	:	(PT) pre-tare indication
▼**5**	:	(Hold) weight hold indication
▼**6**	:	“M+” indication or “GN”, “dwt”, “carat” unit indication
▼**7**	:	Blank or “oz” or “viss” unit indication (set as needed)

Approval model:		
▼**1**	:	(STABLE) stable indication
▼**2**	:	(GROSS) gross weight indication
▼**3**	:	(Pcs) insufficient unit weight
▼**4**	:	(PT) pre-tare indication
▼**5**	:	Range 2
▼**6**	:	Range 1
▼**7**	:	M+

1-5 Power Supply

Power	Battery	6V 4Ah Rechargeable battery			
	Plugged in	100V~230V AC			
Power consumption (mA) with 1X350Ω load cell	No backlight	30~35			
	White backlight	100%	75%	50%	25%
		140	105	80	55
	Yellow backlight	96			
	Green backlight	62			
	Red backlight	66			

Charging Voltage
DC 12V/1A adaptor

Battery Status and Low Battery Warning

Normal battery status: The () symbol is displayed steadily, indicating current battery status from 1 block (▪) to 4 blocks (▪▪▪▪).

- When the battery status indication is full, the power is about 6.4V; Each block is about 0.2V increment/decrement.

Low battery warning: When the () symbol keeps flashing on the display (the remaining power is about 5.6V), the internal battery should be recharged.

- The scale will turn off automatically after a period of nonuse when the low battery warning symbol shows up. The scale must be fully charged, before operating again.

Safety Reminder:

- Please make sure “+” , “- “ poles are placed in the correct direction
- Please don’t’ place the battery in hot areas, or try to dissemble the battery, to avoid electricity leakage.
- The battery inside the indicator was used for testing the fullness of the product. Therefore, the life of the battery cannot be count from the day you purchase.

1-6 Keypad Function

ON|OFF KEY

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

UNIT KEY

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

- After scale is powered on, scale uses the last used weighing unit.

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.

M+|PRINT KEY

Totalization function. M+/Print function is available when RS232 is on keypad transmission mode. (rS1 04 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 (rS1 03 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.

TARE|PT KEY: Tare / Pre-tare key

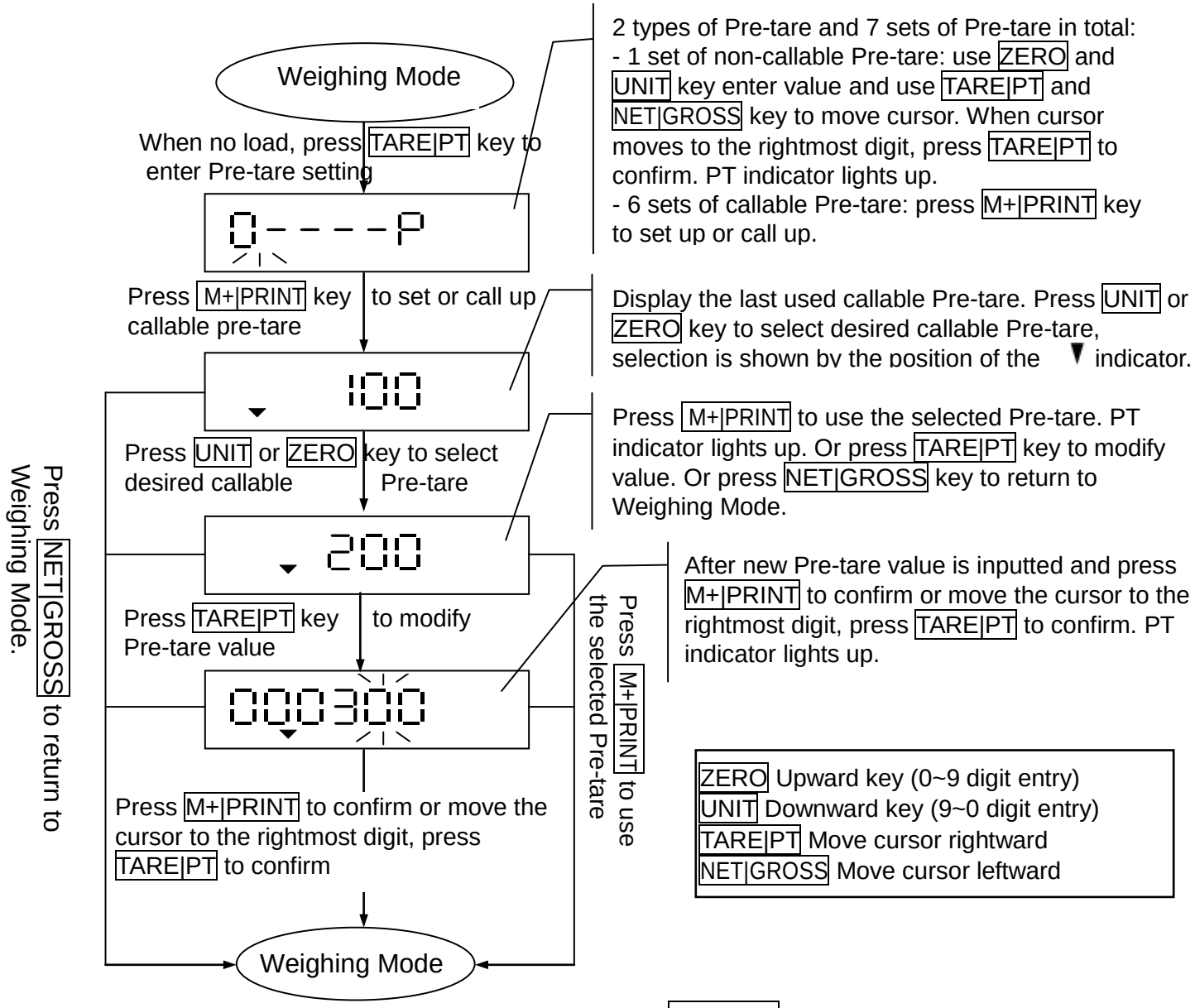
To TARE:

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.

NET|GROSS KEY: In the Tare mode, "Net weight" shows on the display and "NET" icon is on; press the NET|GROSS key to switch to display "Gross weight". "GROSS" arrow ▼ shows up and only NET|GROSS key works here. All other keys become inactive. Gross Weight = Tare weight + Net weight.

To PRE-TARE:



Both types of Pre-tares can be cancelled by press TARE|PT key when no load.

F KEY (Non approval models. For approval models, use F/HR key instead)
Before using this key, need to go to FnC 12 to set F key as the following function.

"MC" (Memory Clear) key: press it to erase memory directly without display the tantalization data. RS232 will output MC print format (rS1 03 output). Note: Weight must return to net zero if to perform clear function.

"HR" (High Resolution) key: press it to display 10 times resolution for 10 seconds and then return to normal resolution. If the original resolution is > 6000, "High Resolution" is not recommended since the reading might be unstable or the number of digits exceed display range.

"T-TP" key: press it to display Tare or Pre-tare value for 2 seconds if they exist and then return to current weight resolution. If both exit, it will display Pre-tare value and then display Tare value.

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 (rS1 03 = 10 or 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 (For approval models, use NET|B/G key instead), 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 (For approval models, use NET|B/G key instead).
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 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.

E 10 ⇒ The scale is not in level status. (Only if level detector equipped)

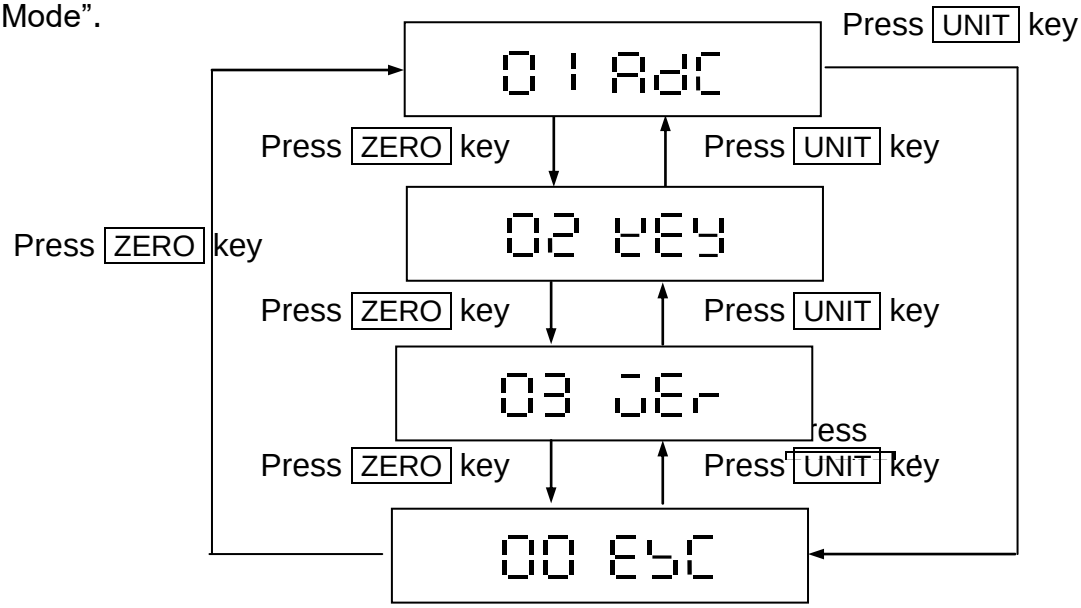
Level Switch and E10 (option)
To use level switch, make J14 on PCB open circuited, display shows E10 and all keys stop working in the meantime. If J14 on PCB is short circuited, all functions work normally. When level switch is used, and if is in level, a short circuited signal sends to CN6 and all functions work normally. If platform is tilted and not in level, an open circuited signal sends to CN6, and display shows E10 and all keys stop working.

1-8 Weight Units

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

1-9 Self-Test Mode

Turn off scale first. Hold NET|GROSS key (For approval models, use NET|B/G key instead), and press ON|OFF key to turn on scale. 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|B/G or ↓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 display firmware version 02005

② Press TARE|PT key again to display maintenance number 60X (X is ranged from 0~9) for 2 seconds

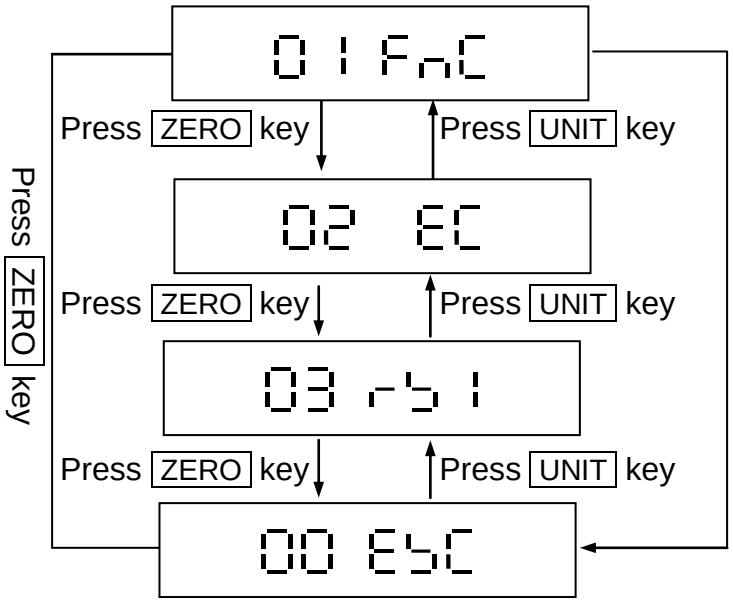
③ Press ZERO key to back to the last screen, display shows 03 VEr

00 ESC BACK TO THE LAST SCREEN

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

Chapter 2 Configurations

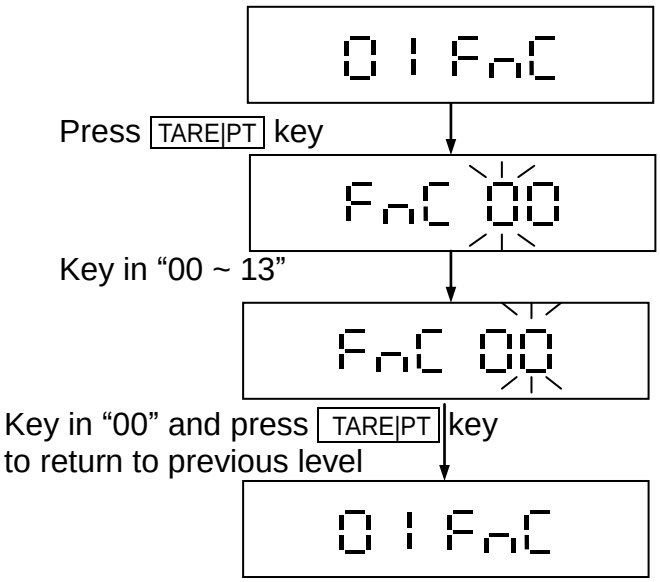
In the weighing mode, press NET|GROSS key (For approval models, use NET|B/G key instead) and ZERO keys at the same time to enter the configuration mode.
The LCD shows 01 FnC.



01 FnC ⇒ General Function Setting
02 EC ⇒ External Weight Calibration
03 rS1 ⇒ RS232 Bi-direction Function Setting
00 ESC ⇒ Exit

Refer to the following sections for the detailed of each setting.

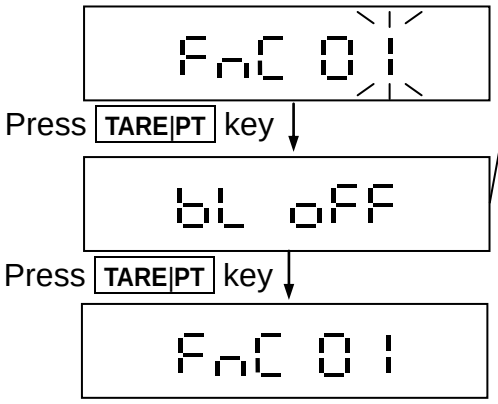
2-1 01 FnC General Function Setting



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
(For approval models, use NET|B/G key instead)

FnC 00 ⇒ Return to to previous level
FnC 01 ⇒ Automatic Backlight
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
FnC 14 ⇒ Backlight Color Setting
FnC 15 ⇒ Backlight Brightness Setting

2-1-1 FnC 01 Auto Backlight

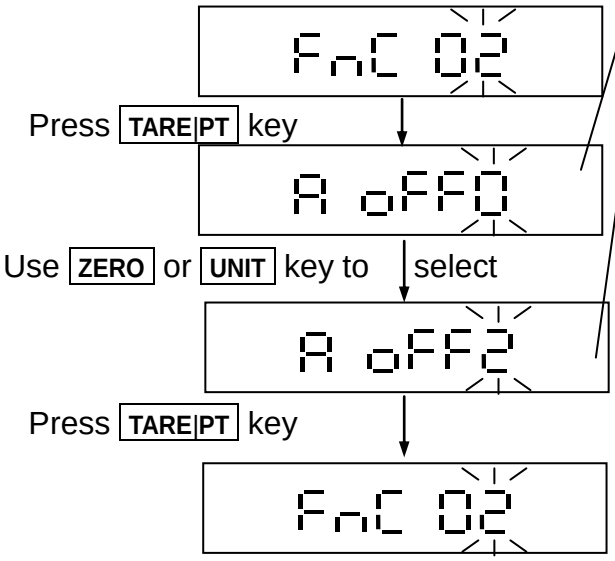


Display the last used value
- Default setting = oFF

Use ZERO or UNIT key to select
- on → backlight on
- Auto → automatic backlight
- oFF → backlight off

Auto backlight function
When weight > 10d or any key is pressed, backlight is turned on. When weight < 10d or no key is pressed for 10 seconds, backlight is switched off.

2-1-2 FnC 02 Auto Power-off Timer Setting



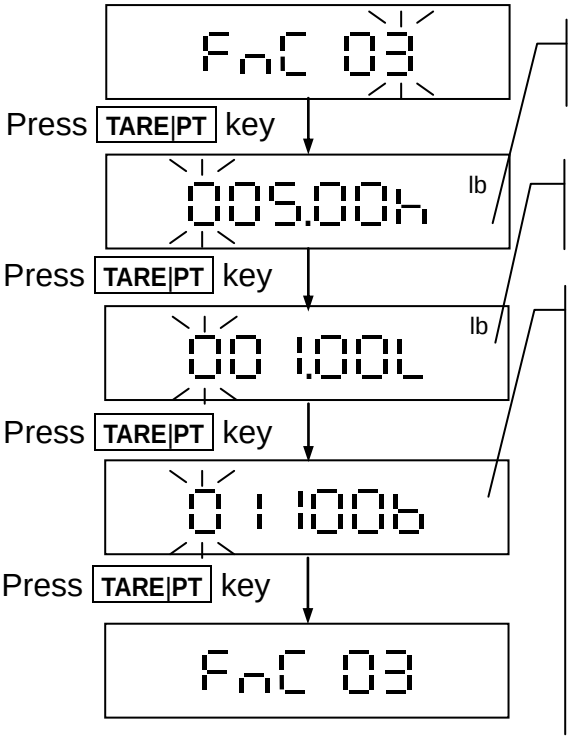
Display the last used value
Default setting = 0 (No auto power-off)

Automatic power-off timer setting
Use ZERO or UNIT key to select
- 0 ⇒ No auto power-off
- 1 ⇒ Switch scale off if idle for 1 minute
- 2 ⇒ Switch scale off if idle for 2 minute
- ⋮ ⋮
- 9 ⇒ Switch scale off if idle for 9 minute

Auto power-off
When weight < 10d, and scale is idle longer than selected duration, the scale automatically switches off.

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

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



Display the last used value
Enter the high limit value and Press TARE|PT key

Display the last used value
Enter the low limit value and Press TARE|PT key

Display the last used value

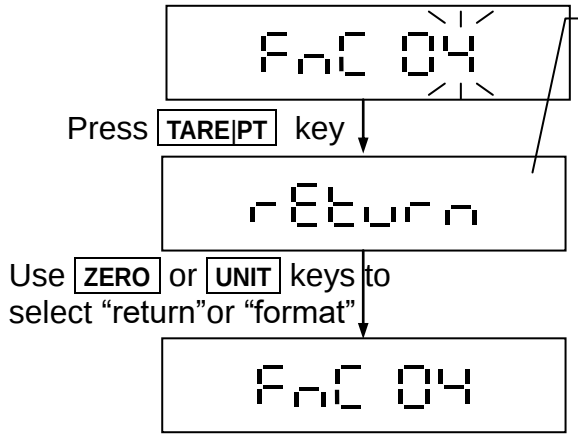
Alarm setting

000010b
(a)(b)(c)

The definition of a, b, c positions:
- (a) ⇒ 1 = alarm on
  0 = alarm off
- (b) ⇒ 1 = alarm when stable
  0 = alarm even when unstable
- (c) ⇒ 1 = alarm when weight is between high and low limits
  0 = alarm when weight > high limit or when 10d < weight < low limit

If backlight is on, yellow backlight is for Low value, green backlight for OK value, and red backlight for High value.

2-1-4 FnC 04 Restore to the Default Settings



Use **ZERO** or **UNIT** keys to select "rEturn"or "ForMat"
rEturn ⇒ Return (Cancel the restoration)
ForMAt ⇒ Restore to default setting

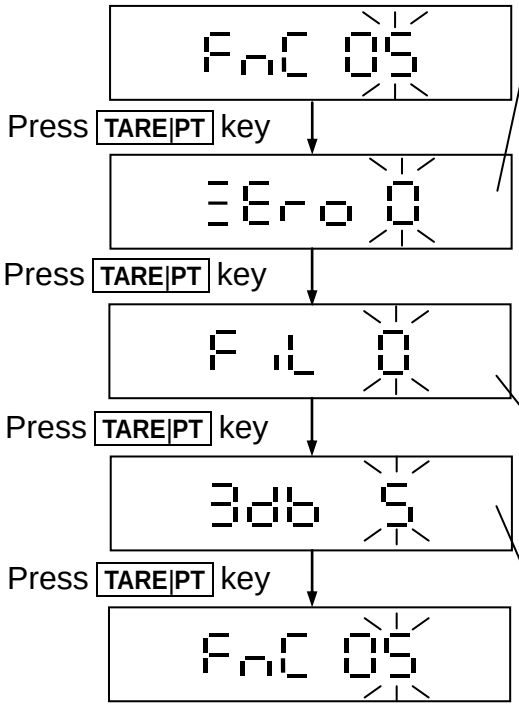
The following settings will be restored to their default values:

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

Approval model has no access to FnC 04

2-1-5 FnC 05 Noise Filter Settings

When modifying FnC 05, the parameters of CFn 01 remain un-altered.



Zero display setting
Display the last used value.
Use **ZERO** or **UNIT** key to select 0~9. Default = 0.
Activate when weight is over 1/3 max and when object is removed and display is approaching 0. When approaching within 0 ± selected value, weight display 0.

0 ⇒ 0	4 ⇒ ± 4d	7 ⇒ ± 7d
1 ⇒ ± 1d	5 ⇒ ± 5d	8 ⇒ ± 8d
2 ⇒ ± 2d	6 ⇒ ± 6d	9 ⇒ ± 9d
3 ⇒ ± 3d		

Digital switch & Stabilization range setting
Display the last used value.
Use **ZERO** or **UNIT** keys to select 0~9. Default = 0
The larger value: become stable more quickly.

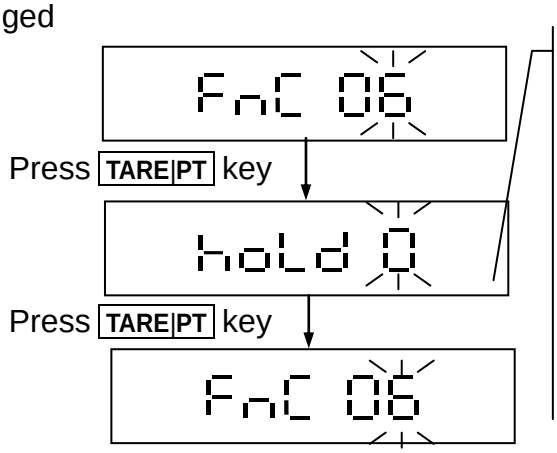
Filter parameter setting
Display the last used value.
Use **ZERO** or **UNIT** keys to select 0 ~ 9. Default = 5.
The larger value: faster response; therefore, more unstable.
If set to 9, AD value is not filtered.
Input AD value = Output AD value

Approval model has no access to FnC 05

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
(For approval models, use NET|B/G key instead)

2-1-6 FnC 06 Hold Function Settings

When CFn 02 =1 (OIML or NTEP approval), FnC 06 is fixed to hold=0 and cannot be changed



Hold function setting

Display the last used value

Use ZERO or UNIT keys to select 0~5

- Default setting = 0

0 ⇒ Hold function disabled
1 ⇒ "Peak hold" mode
2 ⇒ "Stable hold 1" mode
3 ⇒ "Stable hold 2" mode
4 ⇒ "Animal scale hold 1" mode
5 ⇒ "Animal scale hold 2" mode

hoLd 0 = Hold is disabled

hoLd 1 = "Peak hold" mode: Hold peak weight on the display until a key is pressed to release hold and get a new peak weight.

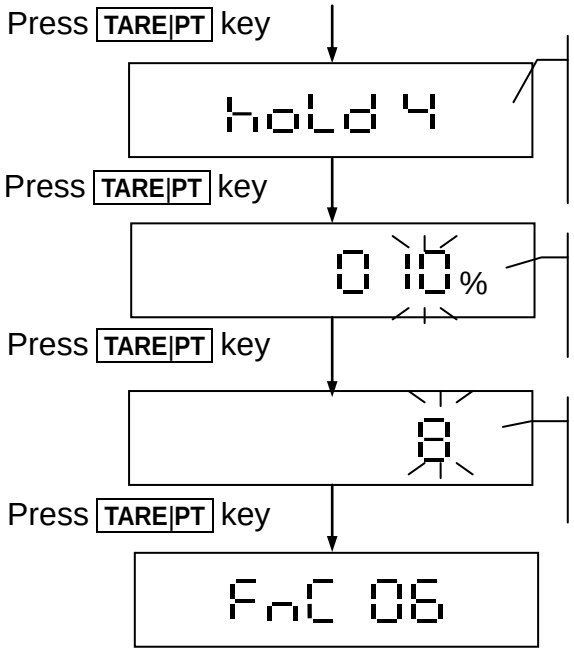
hoLd 2 = "Stable hold 1" mode: When the weight is stable, Hold the current stable weight until a key is pressed to release hold and get a new stable weight.

hoLd 3 = "Stable hold 2" mode: When the weight is stable, Hold the current stable weight until weight returns to zero (<10d), the hold is cancelled automatically.

hoLd 4 = "Animal scale hold 1" mode
When no load, display "- - - - - -". After the animal is on the platter and the weight is stable, the display Hold the current stable weight value. When the animal is off the platter, the display " - - - - - - " and the hold is released. If the weight is hardly stable, display Hold the average weight in 10 seconds until the weight < 10e and display shows "- - - - - -" or press any key to calculate a new weight.

hoLd 5 = "Animal scale hold 2" mode
When no load, display "0.000". After the animal is on the platter and the weight is stable, display Hold the current stable weight value. When the weight added or removed on the platter is > the hold range set in hold 5, hold is released and calculate a new hold weight. If the weight is hardly stable, display Hold the average weight in 10 seconds. ZERO and TARE|PT keys are inactive here. Hold lock speed can be set through SPEEd setting. "1" is the fastest and "5" is the slowest.

Animal scale hold 1 hoLd 4

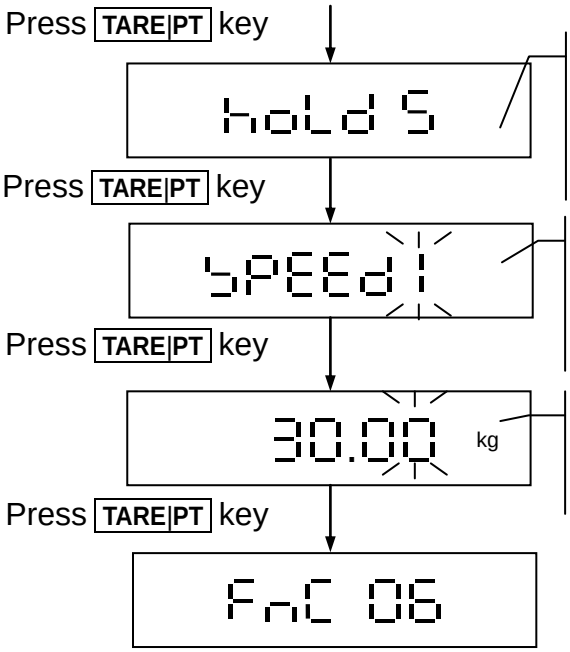


Hold function setting
Display the last used value
Use ZERO or UNIT key to select 4.
Press TARE|PT key to enter the hold setting

Allowed tolerance range
Use ZERO or UNIT keys to enter value (1%~100%)
Default setting = 10%

Number of counts for averaging
Use ZERO or UNIT keys enter value (1,2,4,8,16,32,64)
Default setting = 8

Animal scale hold 2 hoLd 5



Hold function setting
Display the last used value
Use ZERO or UNIT key to select 5.
Press TARE|PT key to enter the hold setting

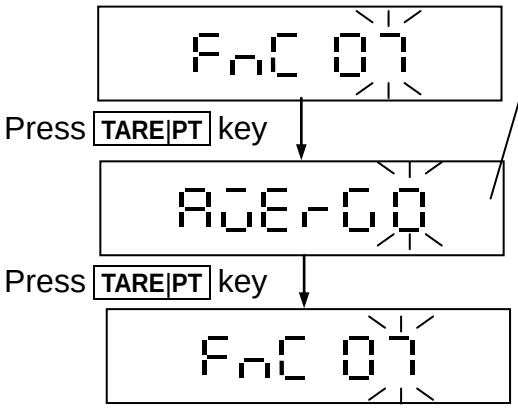
Hold speed setting
Display the last used value
Use ZERO or UNIT keys to enter value (1~5)
1: fastest; 5: slowest

Hold range setting
Display the last used value
Use ZERO or UNIT keys to enter value (0 ~ max capacity)

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
(For approval models, use NET|B/G key instead)

- When weight returns to zero, Hold is released
- After weight is HOLD, Hold is released only when weight change is more than ± Hold range. For example: if Hold range = 1 kg. Weight is held at 8.5kg after buzzer sounds. When weight changes outside the range of 8.5±1kg, for example, when weight is > 9.5kg or < 7.5kg, HOLD is released and until new HOLD weight is re-captured (displays weight changes until it enters HOLD).
- Repeat to test the same animal for more than 10 times to compare the errors. Then finalize the Hold speed and Hold range setting.

2-1-7 FnC 07 Auto Unit Weight Averaging Setting



Auto unit weight averaging setting

Display the last used value

Use ZERO or UNIT key to select 0~1.

- Default setting = 0

0 ⇒ Enable Auto unit weight averaging

1 ⇒ Disable auto unit weight averaging

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

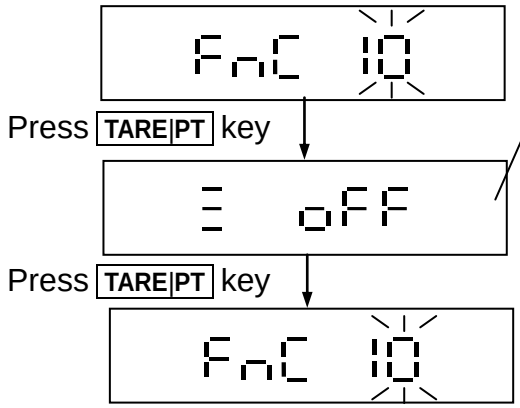
UNIT key ⇒ Downward key (0~9 digit entry)

TARE|PT key ⇒ Move cursor rightward

NET|GROSS key ⇒ Move cursor leftward

(For approval models, use NET|B/G key instead)

2-1-8 FnC 10 Record Last Zero



Record Last Zero

Display the last used value

Use ZERO or UNIT key to select on or oFF.

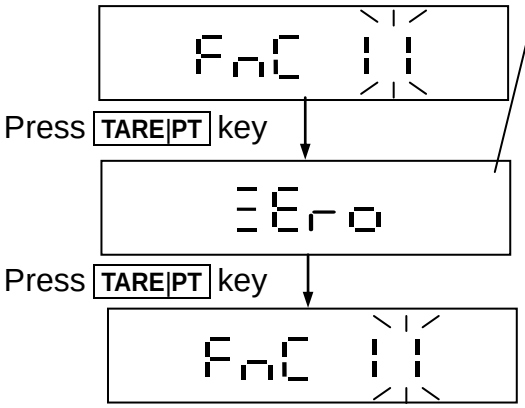
- Default setting = oFF

on ⇒ Enable Record the last zero

oFF ⇒ Disable Record the last zero

FnC 10 is only for non-approval where CFn 02 = 0

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



Foot switch function

Display the last used value

Use ZERO or UNIT key to select Foot switch as ZEro, tArE, or Print key.

ZEro ⇒ as 1ZERO key

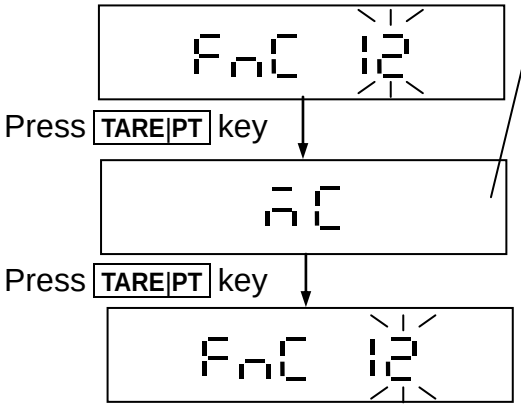
tArE ⇒ as 1TARE key

Print ⇒ as PRINT key, use to send data through RS232

1) When rS1 03 = 10 or 11, after printing final total summary, it will clear totalization data.
2) When set to Brazil (CFn02=4) and rS1 04 = n_PLUS, print rS1 03 format with totalization function.

2-1-10 FnC 12 F Key Function Settings

(For approval models, use F/HR key instead)



Foot switch function

Display the last used value

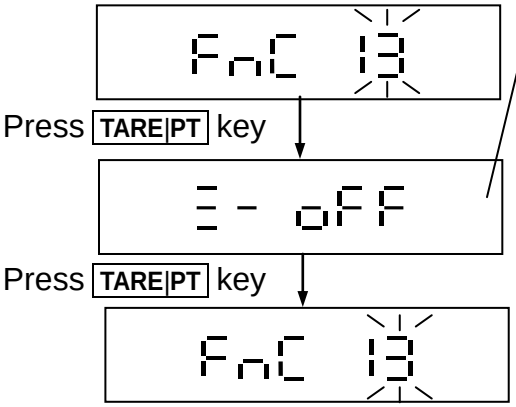
Use ZERO or UNIT key to select F key as MC, hr or t-tP.

MC ⇒ as MC key: Press MC when weight returns to 0 to clear all totalization data

hr ⇒ as HR key: Press HR to switch to high resolution display for 5 seconds.

t-tP ⇒ select "t-tP" to display tare weight or Pre-tare weight for 2 seconds, and then returns to net weight. If both tare and Pre-tare weight exist, display tare weight first and then Pre-tare weight.

2-1-11 FnC 13 Zero Key Setting



Unrestricted zero key range setting

Display the last used value

Use ZERO or UNIT key to select on or oFF.

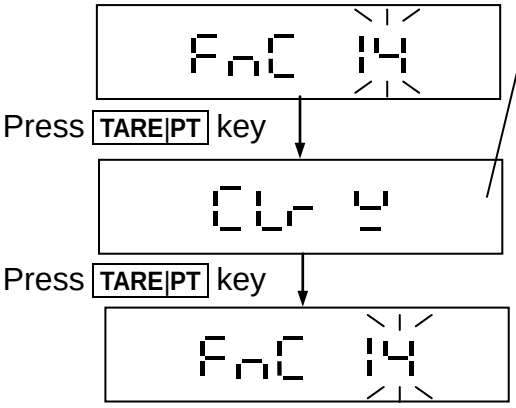
- Default setting = oFF

on ⇒ Enable, zero for any weight

oFF ⇒ Disable

FnC 13 is only for non-approval where CFn 02 = 0

2-1-12 FnC 14 Backlight Color Setting



Backlight color setting

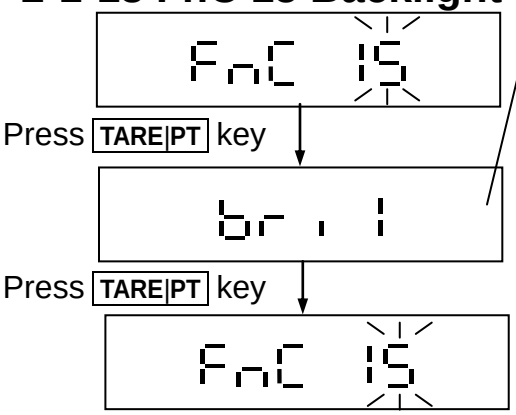
Display the last used value

Use ZERO or UNIT key to select W, r G, y for backlight.

W ⇒ W for white r ⇒ r for red

G ⇒ G for green y ⇒ y for yellow

2-1-13 FnC 15 Backlight Brightness Setting



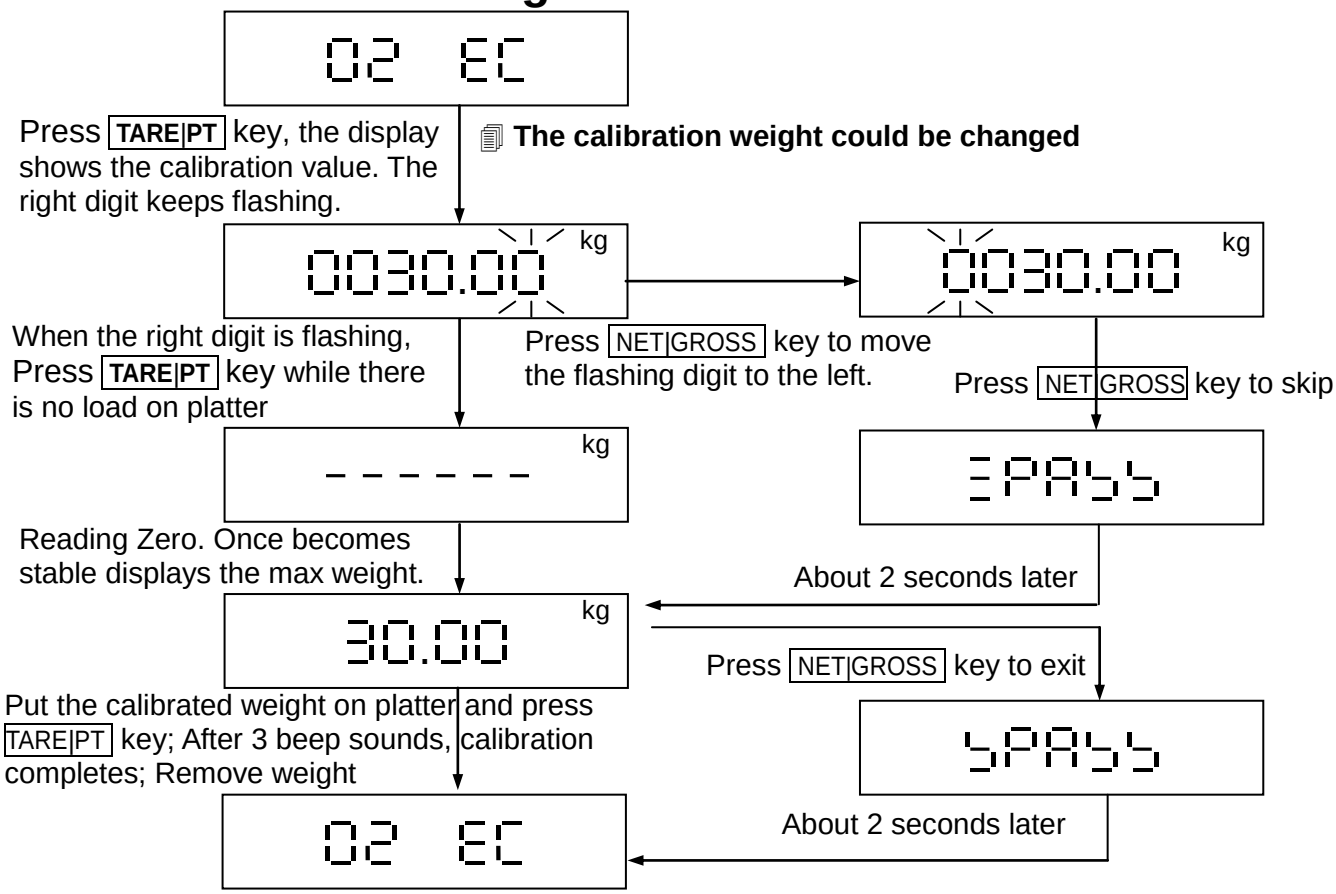
Backlight brightness setting

Display the last used value

Use ZERO or UNIT key to select 1~4.

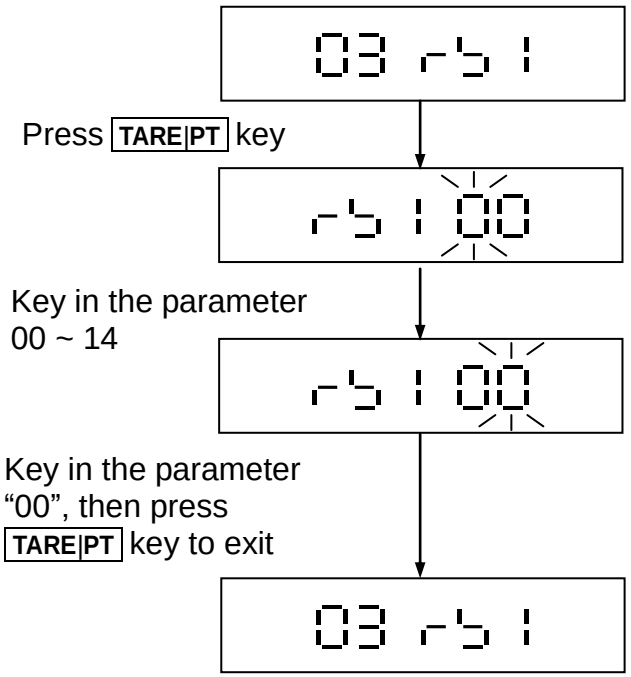
1: dimmest 4:brightness

2-2 02 EC External Weight Calibration



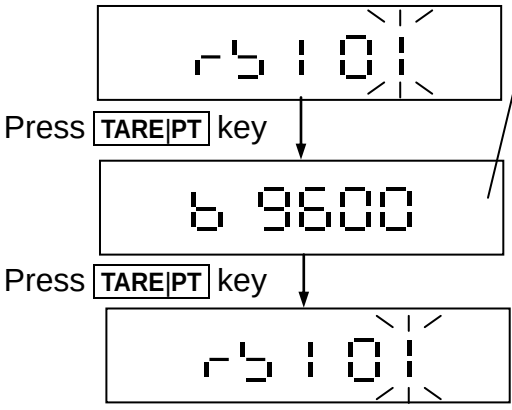
- 02 EC is only for non-approval models
- The conditions for external weight calibration**:**
  The calibrated weight > 100e, and the must be within ± 10% of factory's calibrated weight.

2-3 03 rS1 RS232 Serial Interface Settings



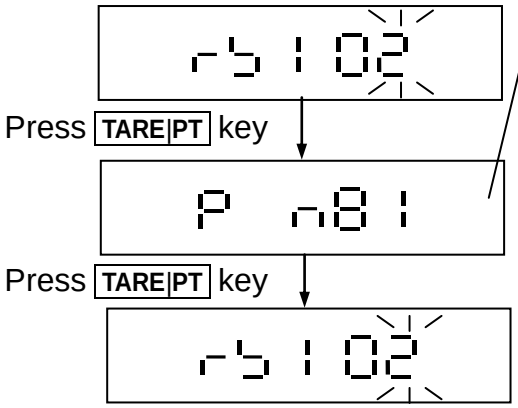
rS1 00 ⇒ Return to to previous level
rS1 01 ⇒ Baud Rate Settings
rS1 02 ⇒ Communication Protocol Settings
rS1 03 ⇒ Output Format Settings
rS1 04 ⇒ Transmission Method
rS1 05 ⇒ Continuous Transmission Rate
rS1 06 ⇒ Auto Transmission at Zero
rS1 07 ⇒ Reset of Auto Transmission
rS1 08 ⇒ Output Condition Settings
rS1 09 ⇒ RS232 6/7 Digits Setting
rS1 10 ⇒ RTC Adjustment
rS1 11 ⇒ Y/M/D Print Format Selection
rS1 12 ⇒ RS485 ID Input (Option)
rS1 13 ⇒ Line Feed Input

2-3-1 rS1 01 Baud Rate Settings



Baud rate setting
Display the last used value
Use ZERO or UNIT key to select the desired Baud rate
600、1200、2400、4800、9600、19200 (bits/sec)
Default setting = 9600 (bits/sec)
If Bluetooth is used, set to 9600 and "n 8 1" protocol

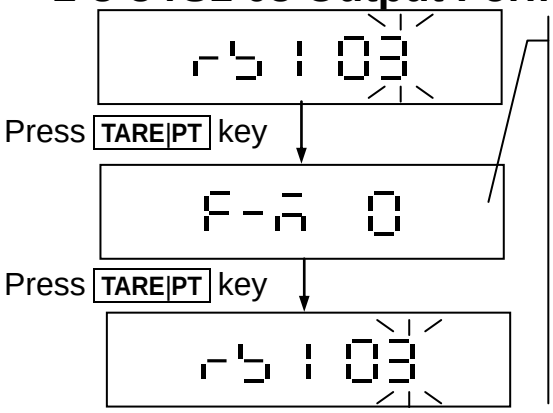
2-3-2 rS1 02 Communication Protocol Settings



Communication protocol setting
Display the last used value
Use ZERO or UNIT key to select n 8 1, E 7 1, O 7 1.
Default setting = n 8 1
If Bluetooth is used, set to 9600 and "n 8 1" protocol

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
(For approval models, use NET|B/G key instead)

2-3-3 rS1 03 Output Format Settings



Communication protocol setting
Display the last used value
Use [ZERO] or [UNIT] key to select 0~20. Default = 0
0 ⇒ Synchronize with display
1 ⇒ Gross weight
2 ⇒ Net weight
3 ⇒ Synchronized in simple format
4 ⇒ Synchronized Gross weight in simple format
5 ⇒ Synchronized Net weight in simple format
6 ⇒ Hi/Lo/OK status + synchronized in simple format
7 ⇒ Hi/Lo/OK status + synchronized Gross weight in simple format
8 ⇒ Hi/Lo/OK status + synchronized Net weight in Simple format
9 ⇒ Tare weight
10 ⇒ [M+] Transmission 1 **note 1**
11 ⇒ [M+] Transmission 2 **note 2**
12 ⇒ Brazil printing format **note 3**
13 ⇒ Brazil printing format **note 4**
14 ⇒ Brazil printing format **note 5**
15 ⇒ Reserved
16 ⇒ Reserved
17 ⇒ KPZ printing format **note 6**

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

Note1: F-M 10 = M+ Transmission 1
Ticket No.
Date year/month/day & day/month/year (choose 1 out of 2 date formats)
Time
G
T (PT when only pre-tare, T when tare or both tare and pre-tare)
N
Total Net (This line will only print when data is erased, showing net weight total of every count)
- When rS1 13 = 2 (default), 3 blank lines are inserted between data. After memory is cleared, a summary report of total records and weights will be printed and then insert 4 blank lines afterward.
- To add company name, use F-M 18 format and set company name in rS1 14 (see note 7).

Note2: F-M 11 = [M+] Transmission 2
Ticket No.
Date year/month/day & day/month/year (choose 1 out of 2 date formats)
Time
G
T (PT when only pre-tare, T when tare or both tare and pre-tare)
N
Total Weight (This line will only print when data is erased, showing gross weight total of every count)
- When rS1 13 = 2 (default), 3 blank lines are inserted between data. After memory is cleared, a summary report of total records and weights will be printed and then insert 4 blank lines afterward.

Note3: F-n 12 = Brazil printing format
If it is not Brazil version, it can only print under continuous transmition.
If it is Brazil version, under decimal units mode, FnC 11 = Print and rS1 04 = n_PLub, 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: F-n 13 = Brazil printing format
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 = Print and rS1 04 = n_PLub, it can print out.. It is not available on counting mode.

Transmission format 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: F-n 14 = Brazil printing format
If it is not Brazil version, it only can print under continuous transmition.
If it is Brazil version, under decimal units mode, FnC 11 = Print and rS1 04 = n_PLub, it can print out. It is not available on counting mode.

Transmission format 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

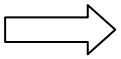
Note6: F-n 17= KPZ printing format
Press M+, show the following format

F	R	“	W	T	3	N	“	<LF>
?	<LF>							
G	G	,	G	G	G	<LF>		
T	T	,	T	T	T	<LF>		
PT	PT	,	PT	PT	PT	<LF>		
N	N	,	N	N	N	<LF>		
pcs	pcs	pcs	pcs	pcs	pcs	<LF>		
N	N	N	N	N	N	T	T	T
p	1	,	1	<LF>				

T	T	T	pcs	pcs	pcs	pcs	pcs	pcs	<LF>

G=gross weight, T=tare weight, PT=pre-tare weight, N=net weight, pcs=pieces (without decimal point)

Example:
PT 0.3 kg
T 0.7kg
G 1.2kg
N 0.2kg
Pcs 20



FR”WT3N”
?
1,200
0,700
0,300
0,200
20
000200000700000020
p1,1

Press MC, show the following format

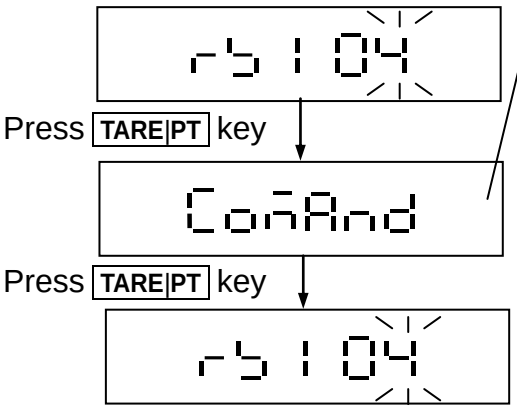
F	R	“	5	2	0	T	“	<LF>
?	<LF>							
R	R	,	R	R	R	<LF>		
N	N	,	N	N	N	<LF>		
pcs	pcs	,	pcs	pcs	pcs	<LF>		
R	R	R	R	R	R	N	N	N
p	1	,	1	<LF>				

N	N	N	pcs	pcs	pcs	pcs	pcs	pcs	<LF>

R=total number of totalized records, N=total net weight, pcs=total pieces (without decimal point)

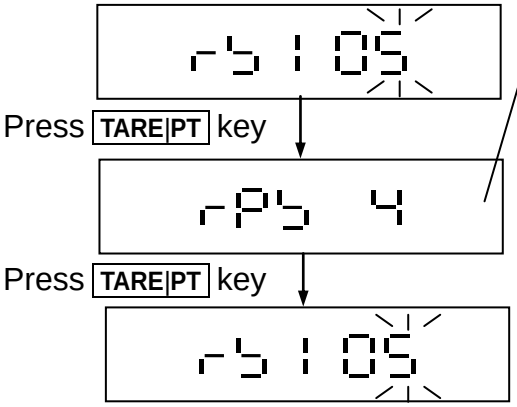
FR”WT3N”
?
1
0,200
20
000001000200000020
p1,1

2-3-4 rS1 04 Transmission Method



Transmission Method
Display the last used value
Use ZERO or UNIT key to select. Default = ConAnd
ConAnd = Command mode
StrEAn = Continuous transmission
Auto = Auto transmit when stable
rS-oFF = RS232 is off
A_PLUS = M+ Mode

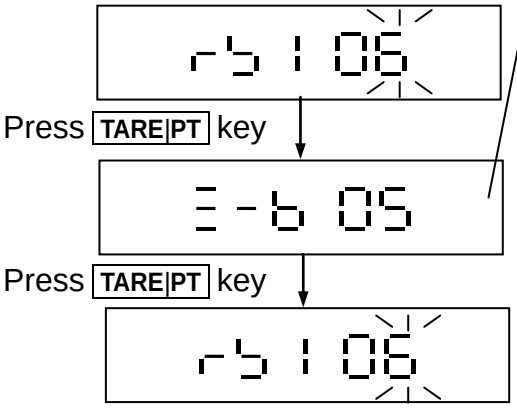
2-3-5 rS1 05 Continuous Transmission Rate



Continuous transmission rate setting
Display the last used value
Use ZERO or UNIT key to select 1, 2, 4, 8, 16 or Max (times/sec). Default = 4

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
(For approval models, use NET|B/G key instead)

2-3-6 rS1 06 Zero Band Setting for Auto Transmission

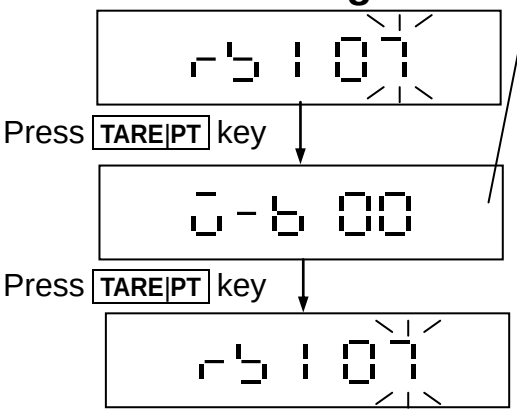


Zero Band Setting for Auto Transmission
Display the last used value
To auto transmit once, weight must return < zero band first, and then place weight >= zero band.

Use ZERO or UNIT key to select 00~99 d (d=increment) for zero band. Default = 05.
To auto transmit once, weight must return < zero band first, and then place weight >= zero band.

If rS1 06 set to 00, when the scale is at zero and keeping stable, the data are keeping transmitted as "Continuous Transmission".

2-3-7 rS1 07 Weight Band Setting for Auto Transmission



Weight Band Setting for Auto Transmission

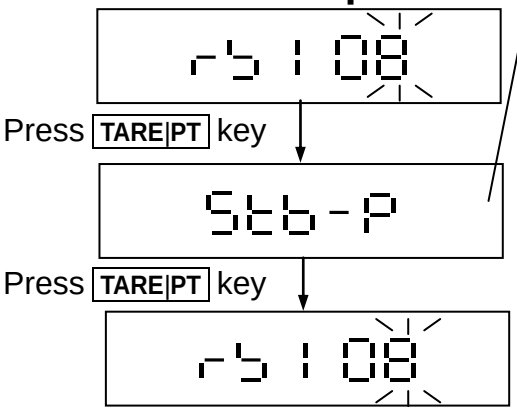
Display the last used value

rs1 07 must be used with rs1 06. After data has been sent once and weight is not removed, to send data again, please keep adding weight until:
weight is > zero band (rS1 06)+ weight band (rS1 07)

Use **ZERO** or **UNIT** key to select 00~99 d (d=increment) for weight band. Default = 00.

If rS1 07 set to 00, when the scale is at zero and keeping stable, the data are keeping transmitted as "Continuous Transmission".

2-3-8 rS1 08 Output Condition Settings



Output condition settings

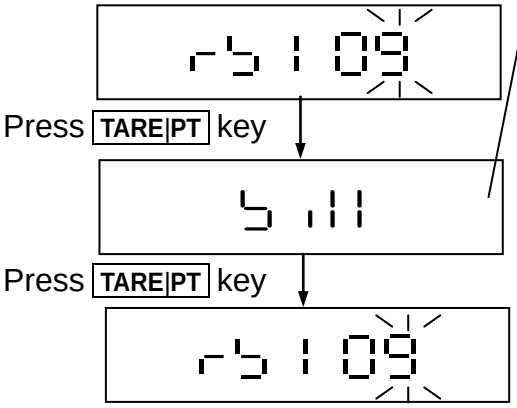
Display the last used value

Use **ZERO** or **UNIT** key to select. Default = Stb-P.

ALL-P = Output always
Stb-P = Output when stable (No output when OL or unstable)
StaL-P = Output when stable (OL included)

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
(For approval models, use NET|B/G key instead)

2-3-9 rS1 09 RS232 6/7 Digits Setting



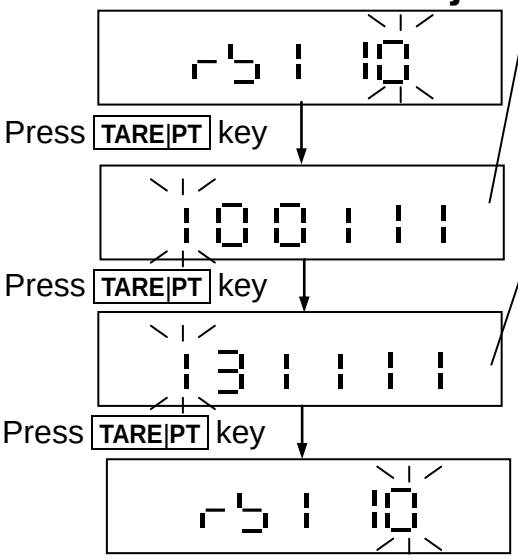
Output condition settings

Display the last used value

Use **ZERO** or **UNIT** key to select. Default = 6 dIG.

6 dIG = 6 digits
7 dIGn = 7 digits

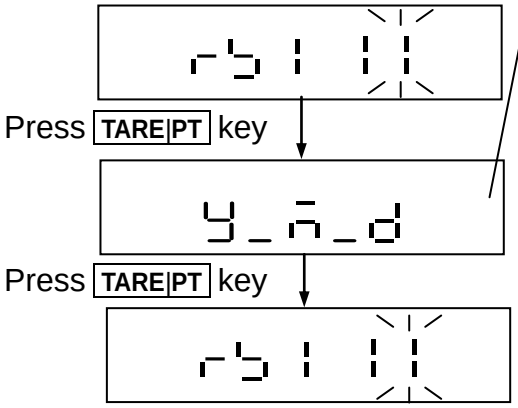
2-3-10 rS1 10 RTC Adjustment



Enter date in YY/MM/DD
Display the last used value
Use ZERO or UNIT key to select and use TARE|PT key to confirm and move cursor to the right. When cursor move to the rightmost end and press TARE|PT key to save.

Enter time in HH/MM/SS
Display the last used value
Use ZERO or UNIT key to select and use TARE|PT key to confirm and move cursor to the right. When cursor move to the rightmost end and press TARE|PT key to save.
RTC adjustment is complete

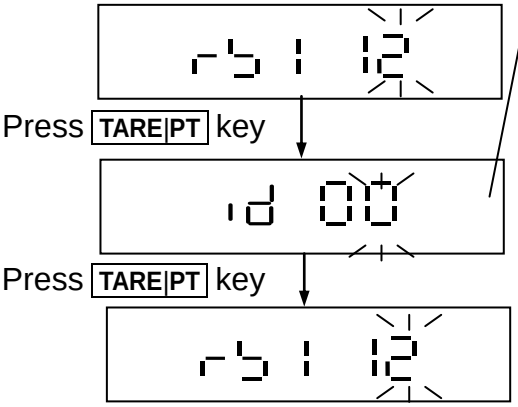
2-3-11 rS1 11 Y/M/D Print Format



Y/M/D Print Format
Display the last used value
Use ZERO or UNIT key to select.
Y_M_d: print as Year/Month/Day
d_M_Y: print as Day/Month/Year

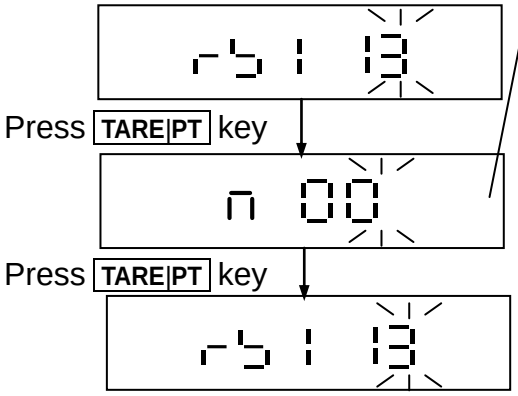
ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward
(For approval models, use NET|B/G key instead)

2-3-12 rS1 12 RS485 ID Input (Option)



RS485 ID Input
Display the last used value
Use ZERO or UNIT key to select

2-3-13 rS1 13 Numbers of Line Feed for rS1 03 = 10 or 11

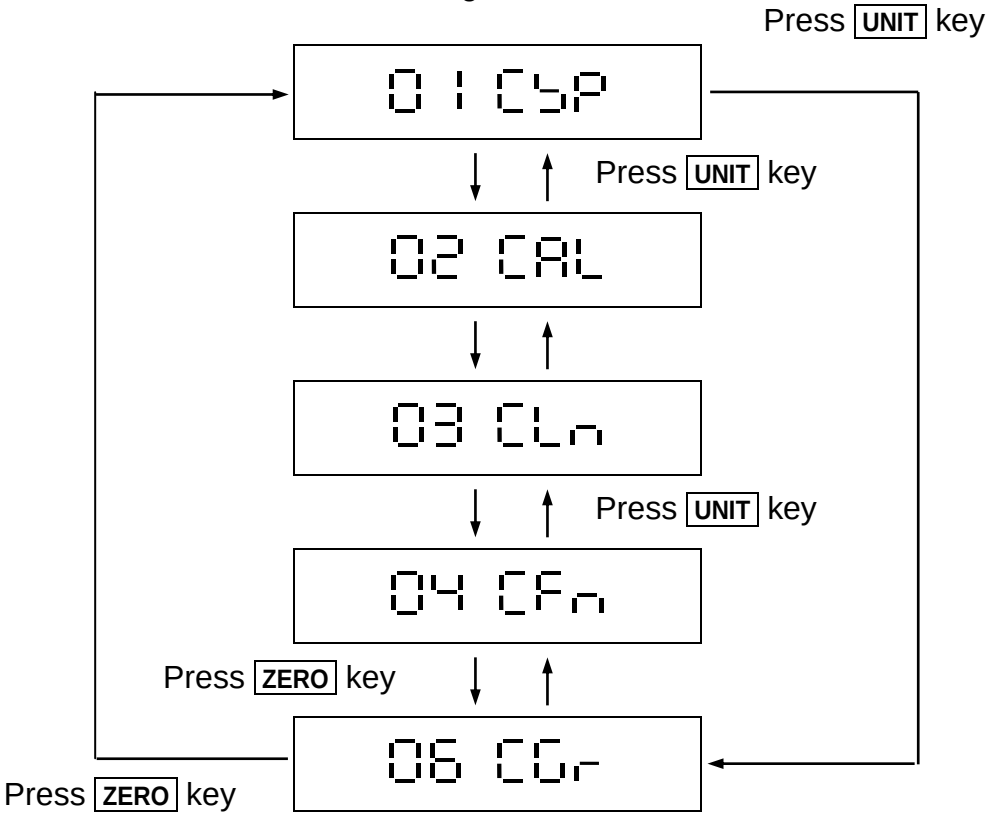


Numbers of Line Feed for rs1 03 = 10 or 11
Display the last used value
Use ZERO or UNIT key to select. Default = 2.
When rS1 03 = 2, 3 blank lines are inserted between data. After memory is cleared, a summary report of total records and weights will be printed and then insert 4 blank lines afterward.

Chapter 3 Service Mode Access

Open the case, then switch the mini-jumper SWA1 on the main board to the ADJ position (EEPROM UNLOCKED). Turn the power on. The display shows 01 CSP. When finished, set the jumper SWA1 back to the LOCK position. If the jumper SWA1 is returned to the LOCK position during calibration, the machine exits the service mode automatically.

The Service Mode Access contains 6 settings as below:



01 CSP ⇒ Capacity Setup

02 CAL ⇒ Weighing Calibration

03 CLn ⇒ Linearity Calibration

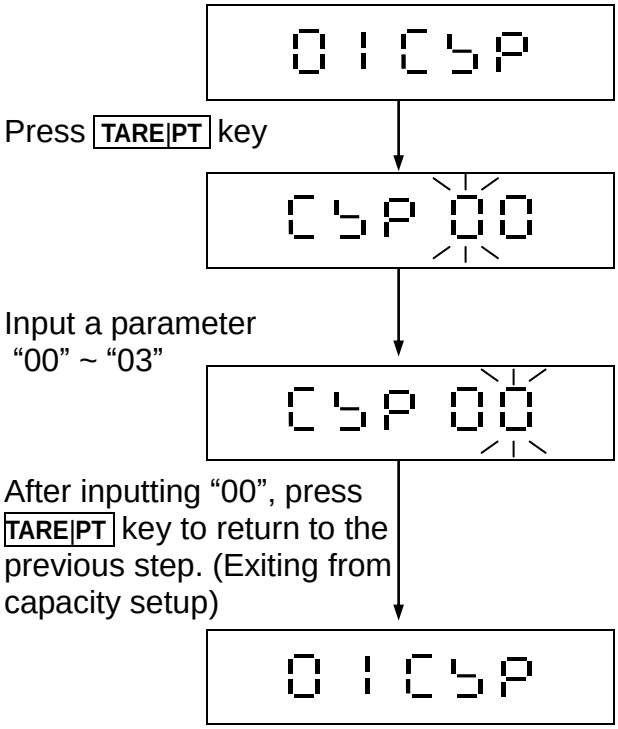
04 CFn ⇒ Function Setting

06 CGr ⇒ Local Gravity Setting

For non-approval model (CFn 02 = 0), following the steps below to enter service mode.

Hold UNIT key and press ON/OFF key to turn on the scale, until the screen shows PU. Press TARE/PT key to continue and input password 002011 and press TARE/PT key to enter service mode.

3-1 01 CSP Capacity Setup

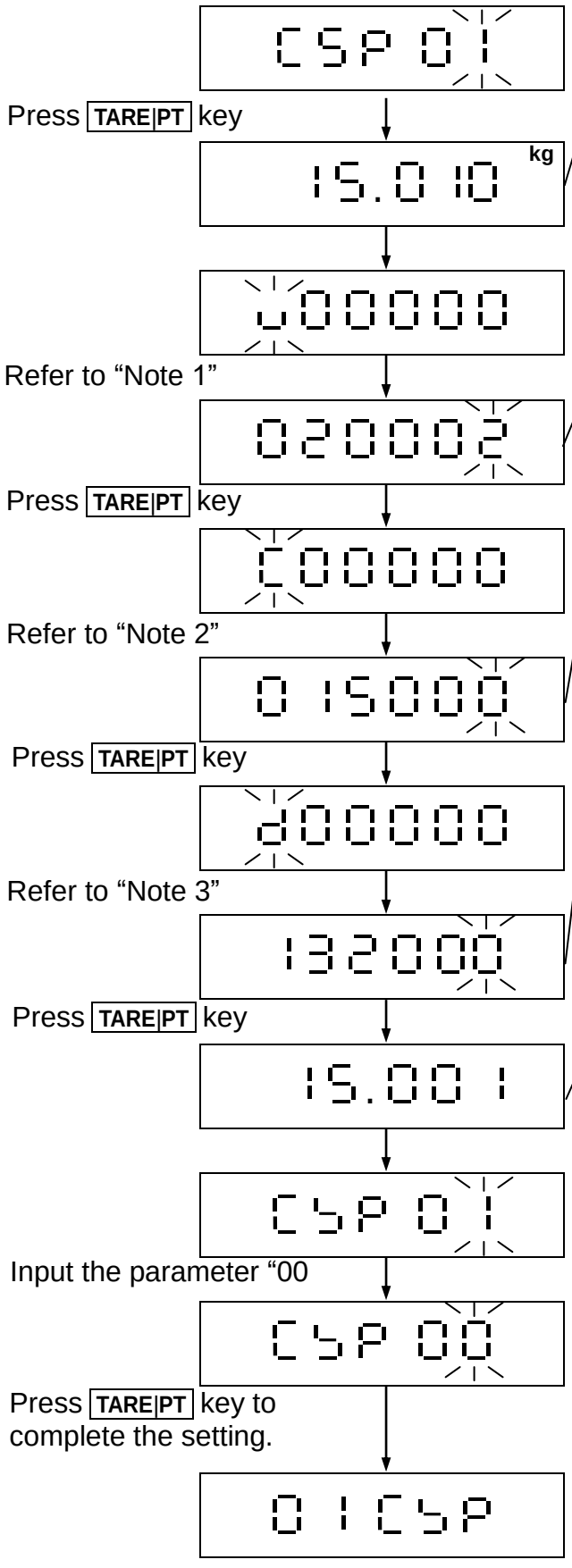


ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward
(For approval models, use NET|B/G key instead)

CSP 00 ⇒ Return to the Upper Level
CSP 01 ⇒ Weight Units Setting
CSP 02 ⇒ Customised Weight Units Setting
CSP 03 ⇒ Multi-segment Setting

3-1-1 CSP 01 Weight Unit Setting

There is no resolution limitation when the weight units “kg, g, lb, lb/oz” are selected. The weight units ”oz, GN, dwt, and ct” are only available on indicators with less 1/10,000 external resolution.



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
(For approval models, use NET|B/G key instead)

NOTE 1 The users can set up the different weight units in various orders according to their preference, and the amount of the chosen weight units can be up to 5


(a) (b) (c) (d) (e) (f)

(a) ⇒ The first weight unit (only "kg", "g", or "lb" are available to choose from. Please select one of the parameters 0, 1, or 2)
(b) ⇒ The second weight unit (select one of the parameters described below)
(c) ⇒ The third weight unit (select one of the parameters described below)
(d) ⇒ The fourth weight unit (select one of the parameters described below)
(e) ⇒ The fifth weight unit (select one of the parameters described below)
(f) ⇒ The amount of the weight units selected (select one of parameters 1 ~ 5)
The description of the parameters

0 ⇒ kg (Decimal system)	5 ⇒ oz (Decimal system)
1 ⇒ g (Decimal system)	6 ⇒ GN (Decimal system)
2 ⇒ lb (Decimal system)	7 ⇒ dwt (Decimal system)
4 ⇒ lb, oz (hexadecimal)	8 ⇒ ct (Decimal system)

For example:
Choose "kg" & "lb" (two weight units). NOTE the scale is calibrated using "kg" weights and key in 020002

NOTE 2 Enter the maximum capacity of the scale, total 6 digits (not including 9d)


(g) (h) (i) (j) (k) (l)

For example:
15.000 kg ⇒ key in 015000
1500.0 g ⇒ key in 015000
6.000 lb ⇒ key in 006000

NOTE 3 Set the minimum division and decimal point position to determine the display resolution


(m) (n) (o) (p) (q)

Division = m * 10^{-n*q}, m = base value, n = numbers of decimal point,
q = multiplication factor

(m) ⇒ Division base value, select 1, 2, or 5

(n) ⇒ The number of decimal places (0 ~ 5)
For example: 15.000 kg ⇒ enter 3, 1500.0 g ⇒ enter 1, 6.000 lb ⇒ enter 3

(o) ⇒ range setting (select one of parameters 0, 1, 2, or 3)
For example:
0, 1 ⇒ full segment range, 2 ⇒ 2 segment range (divided at 1/2 of the full scale),
3 ⇒ 3 segment range (divided at 1/6 of the full scale & 2/3 of the full scale)

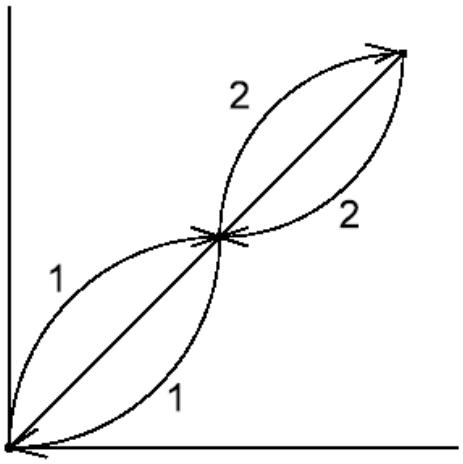
(p) ⇒ 0 : multi-interval 1 : multi-range

Multi interval: Multiple segment range and each segment with its own minimum and maximum capacity and scale interval. The selection of the appropriate weighing segment is determined automatically according to the load applied, both on increasing and decreasing loads.

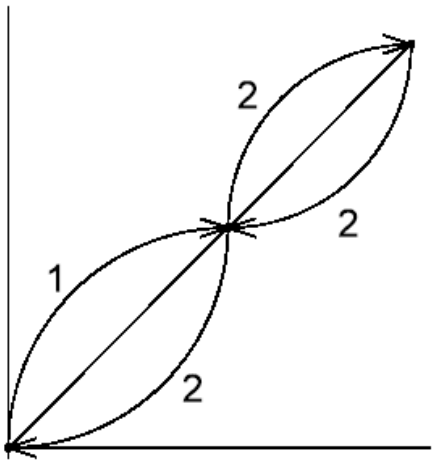
Multi range: Similar to Multi-interval, but the scale interval unchanged when unloading until weight return to zero

2 Segment range:

Multi interval

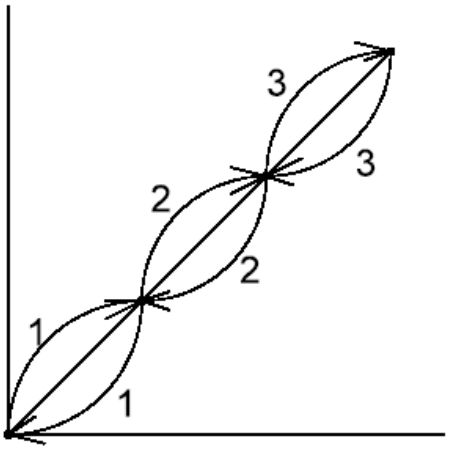


Multi range

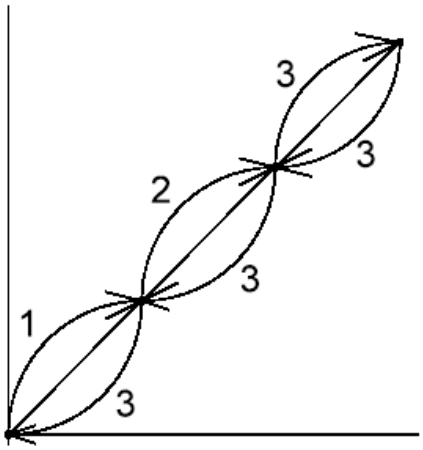


3 Segment range:

Multi interval



Multi range



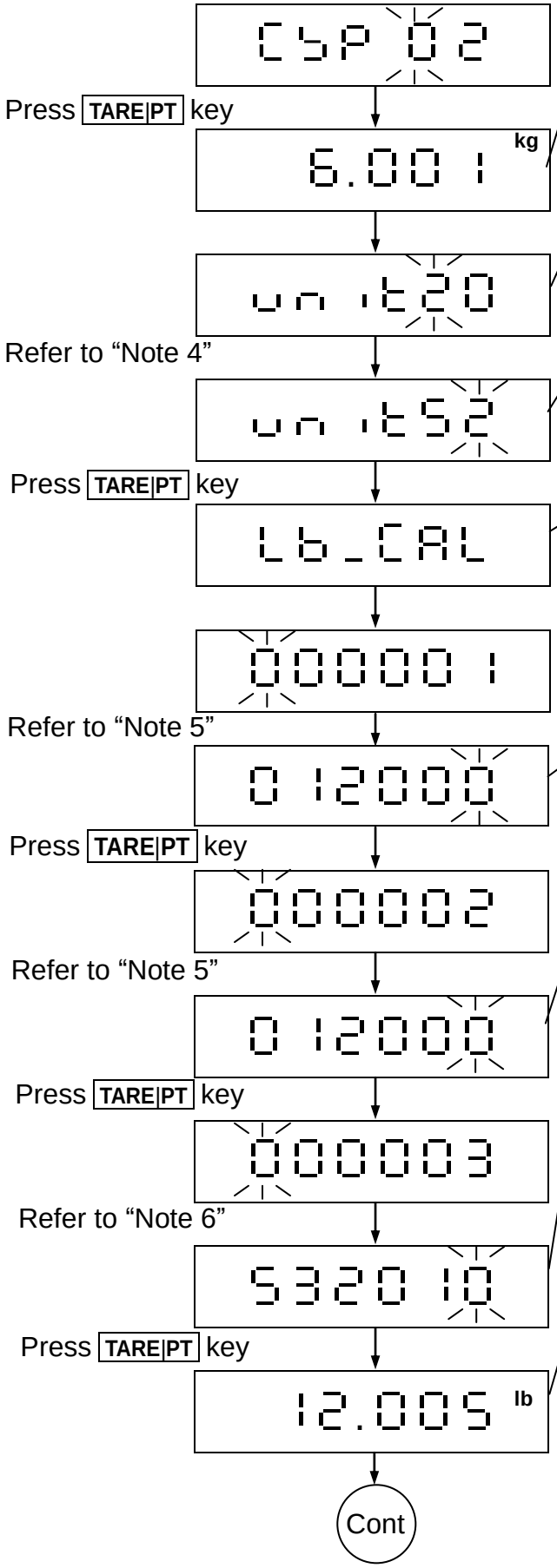
(q) ⇒ Division multiplication factor: (Only one Weight UNITS Model is available)
0 ⇒ no factor 1 ⇒ base value X 10

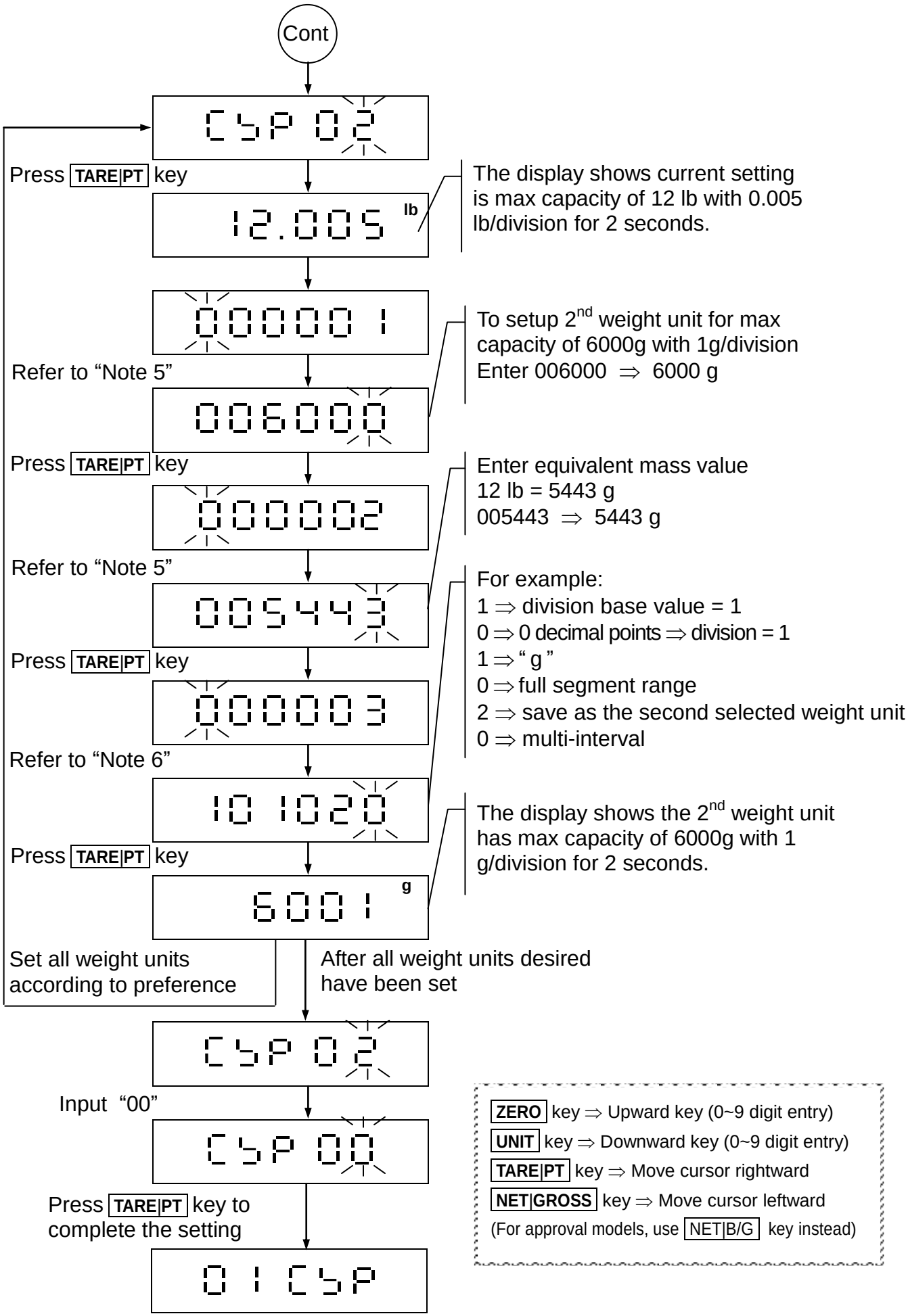
Division Table for various m and q values:

(m) = 1	(m) = 2	(m) = 5	(m) = 1	(m) = 2	(m) = 5
(q) = 0			(q) = 1		
1	2	5	10	20	50

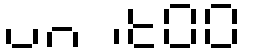
If 2 segment range and multi-range is set, tare automatically cancels out after weight is cleared.

3-1-2 CSP 02 Customised Capacity Setting




Cont
CAP 02
Press TARE|PT key
12.005 lb
The display shows current setting is max capacity of 12 lb with 0.005 lb/division for 2 seconds.
000001
Refer to "Note 5"
To setup 2nd weight unit for max capacity of 6000g with 1g/division
Enter 006000 ⇒ 6000 g
006000
Press TARE|PT key
Enter equivalent mass value
12 lb = 5443 g
005443 ⇒ 5443 g
000002
Refer to "Note 5"
For example:
1 ⇒ division base value = 1
0 ⇒ 0 decimal points ⇒ division = 1
1 ⇒ " g "
0 ⇒ full segment range
2 ⇒ save as the second selected weight unit
0 ⇒ multi-interval
005443
Press TARE|PT key
000003
Refer to "Note 6"
10 1020
Press TARE|PT key
The display shows the 2nd weight unit has max capacity of 6000g with 1 g/division for 2 seconds.
6001 g
Set all weight units according to preference
After all weight units desired have been set
CAP 02
Input "00"
CAP 00
Press TARE|PT key to complete the setting
01 CAP
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
(For approval models, use NET|B/G key instead)

NOTE 4



(a) ⇒ The number of the weight units (Max: 5, key in 1 ~ 5)
(b) ⇒ The weight unit for weight calibration (choose from “kg”, “g”, “lb”, key in 0, 1, or 2)

Parameter description:
0 ⇒ kg , 1 ⇒ g , 2 ⇒ lb

NOTE 5

c ~ h set the maximum capacity (6 digits)

i ~ n set the mass value for weight calibration (6 digits)

The maximum capacity needs to be presented based on the decimal system, and the first unit must be the calibration unit.

For example: *How to calculate the maximum capacity and the mass value based on the different types of weight unit.*

A. Choose “kg” as the weight unit for the weight calibration

① The first weight unit setting: 6.000 kg / 0.002 kg
⇒ Enter the maximum capacity 006000 at (c) ~ (h)
⇒ Enter the mass value 006000 at (i) ~ (n)

② Unit “lb” (hexadecimal notation system)
Calibration weight is 6kg. 0.001 kg = 0.002204623 lb
6 kg = 6×2.204623 (lb) = 13.227738 lb. Take 12 lb as the max capacity
12._0.00 lb / 0.08 oz (minimum division=8, decimal point position=2)
12 lb ×16 (oz) = 192.00 oz ⇒ Enter the maximum capacity 019200 at (c) ~ (h)
13.227738 lb ×16 (oz) = 211.64 oz ⇒ Enter the mass value 021164 at (i) ~ (n)

③ Unit “GN”
Calibration weight is 6kg. 0.001 kg = 15.432358GN
6kg=92594GN ⇒ Enter the calibration weight 092594 at (i) ~ (n)
The maximum capacity 100000GN ⇒ Enter the maximum capacity 100000 at (c) ~ (h)

B. Choose “lb” (decimal notation system) as the weight unit for the weight calibration

① The first weight unit setting: 12.000 lb / 0.005 lb (the maximum Capacity / division)
⇒ Enter the maximum capacity 012000 at (c) ~ (h)
⇒ Enter the mass value 012000 at (i) ~ (n)

② The second weight unit setting “g”
0.002204623 lb = 1 g
12 lb = 5443 g. Take 6000 g as the maximum capacity
6000 g / 2 g (the maximum Capacity / division),
⇒ Enter the maximum capacity 006000 at (c) ~ (h)
⇒ Enter the mass value 005443 at (i) ~ (n)

③”lb/oz” (hexadecimal notation system):
12._0.00 lb / 0.05 oz (the maximum Capacity / division)
12 lb = 12×16 (oz) = 192.00 oz

⇒ Enter the maximum capacity 019200 at (c) ~ (h)
⇒ Enter the mass value 019200 at (i) ~ (n)

④"oz" :
Calibration weigh 12 lb = 192.00 oz ,
Take 200.00 oz as the maximum capacity
200.00 oz / 0.05 oz (the maximum Capacity / division)
⇒ Enter the maximum capacity 020000 at (c) ~ (h)
⇒ Enter the mass value 019200 at (i) ~ (n)

⑤"GN" :
Calibration weight 12 lb, 0.002204623 lb = 15.432358 GN
12 lb = 84000 GN, (1 GN = 0.06479891 g)
84000 GN / 10 GN,
⇒ Enter the maximum capacity 084000 at (c) ~ (h)
⇒ Enter the mass value 084000 at (i) ~ (n)

NOTE 6


(o) (p) (q) (r) (s) (t)

(o) ⇒ Minimum division setting
Parameter description:

Decimal system:
Input 1, 2, or 5 as the minimum division for the weight value

Hexadecimal notation system:
Input 1, 2, 4, or 8 as the minimum division for the weight value

(p) ⇒ Decimal point position
Parameter description:

Decimal system:
0 ⇒ 0
1 ⇒ 0.0
2 ⇒ 0.00
3 ⇒ 0.000
4 ⇒ 0.0000
5 ⇒ 0.00000

Hexadecimal notation system:
0 ⇒ 0._0
1 ⇒ 0._0.0
2 ⇒ 0._0.00
3 ⇒ 0._0.000

(q) ⇒ Weight unit displayed

Parameter	0	1	2	4	5	6	7	8
Unit	kg	g	lb	lb,oz	oz	GN	dwt	ct
Notation system	10	10	10	16	10	10	10	10
symbol	kg	g	lb	lb	Icon 7 ▼ indication	Icon 6 ▼ Indication	Icon 6 ▼ indication	Icon 6 ▼ indication

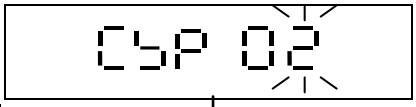
(r) ⇒ Scale change point (Input the parameter 0, 1, 2, or 3)
Parameter description:
0 ⇒ full range
1 ⇒ full range
2 ⇒ dual range (changes at 1/2 of full scale)
3 ⇒ triple range (changes at 1/6 of full scale and 2/3 of full scale)

(s) ⇒ Save the weight units at preferred slots (no more than the number of set weight units)
Parameter description:
1 ⇒ the first slot (the weight calibration unit)
2 ⇒ the second slot
3 ⇒ the third slot
4 ⇒ the fourth slot
5 ⇒ the fifth slot

(t) ⇒ 0: multi-interval 1: multi-range

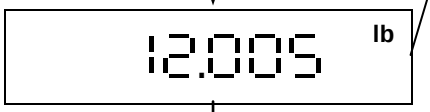
Customized Capacity Setting- How to Revise

To revise customized setting, please follow the steps below



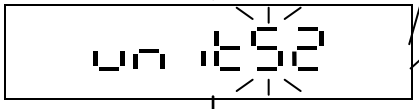
The display shows current setting is max capacity of 12 lb with 0.005 lb/division for 2 seconds.

Press **TARE|PT** key



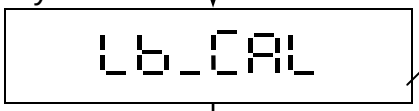
Display shows parameter settings from last time.

According to NOTE 4, re-key in the parameters, or do nothing

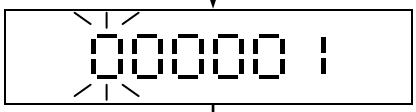


For example:
5 ⇒ 5 weight UNITS are used
2 ⇒ "lb" as weight calibration unit

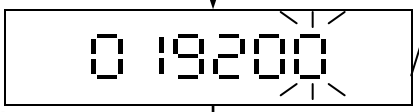
Press **TARE|PT** key



Display shows weight calibration UNITS for 2 seconds:
Lb_CAL ⇒ " lb " calibration
G_CAL ⇒ " g " calibration
KG_CAL ⇒ " kg " calibration

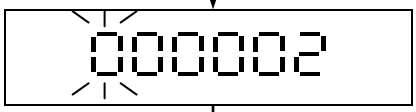


According to NOTE 5, Key in calibration Weight value



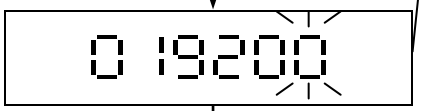
For example:
019200 ⇒ 192.00 oz

Press **TARE|PT** key

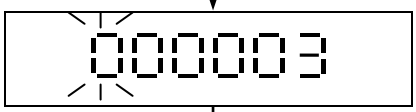


Please enter weight calibration value in proper UNITS value. For example:
12 lb = 192 oz
019200 ⇒ 192.00 oz

According to NOTE5, Key in parameter

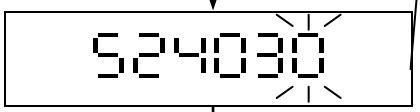


Press **TARE|PT** key

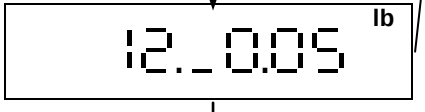


For example:
5 ⇒ division base value = 5
2 ⇒ 2 decimal points ⇒ division = 0.05 and display as 0._0.05
4 ⇒ "lb-oz "
0 ⇒ full segment range
3 ⇒ save into third UNITS slot
0 ⇒ multi-interval

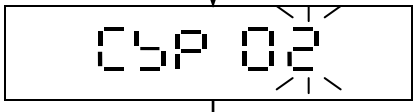
According to NOTE6, Key in parameter



Press **TARE|PT** key



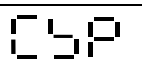
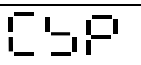
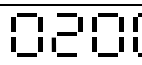
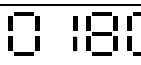
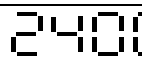
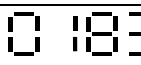
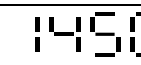
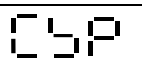
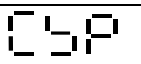
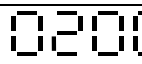
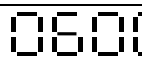
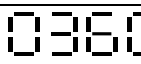
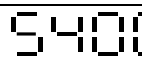
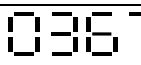
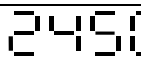
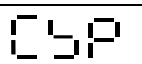
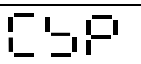
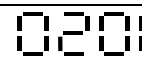
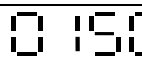
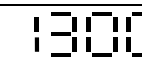
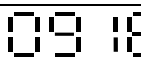
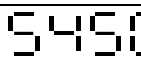
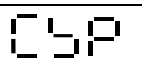
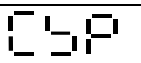
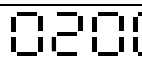
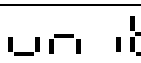
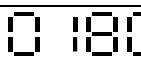
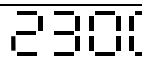
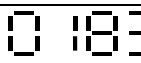
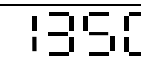
The display shows the 3rd weight unit has max capacity of 12 lb with 0.05 oz/division for 2 seconds, and it returns to last screen



Continue to do another weight unit revision, or exit customized capacity setting mode.

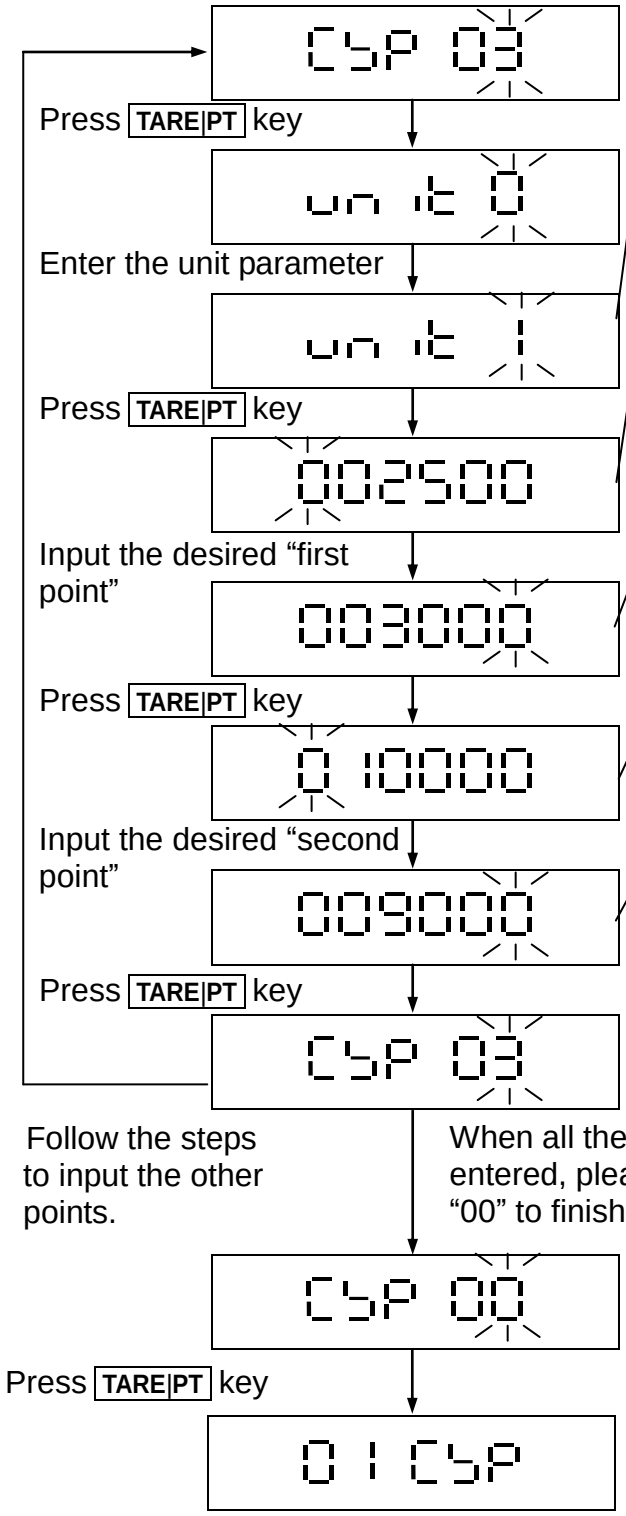
ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward
(For approval models, use NET|B/G key instead)

3-1-3 Myanmar (viss) specification parameter table

3.0000kg/0.0002kg 6.0000lb/0.0005lb 1.8000viss/0.0001viss	3.0000kg/0.0002kg 6.0000lb/0.0005lb	1.8000viss/0.0001viss
		
		
		 **Max capacity 1.8000viss**
		 **3kg= 1.8367viss**
		
6.0000kg/0.0005kg 12.000lb/0.001lb 3.6000viss/0.0002viss	6.0000kg/0.0005kg 12.000lb/0.001lb	3.6000viss/0.0002viss
		
		
		 **Max capacity 3.6000viss**
		 **6kg= 3.6734viss**
		
15.000kg/0.001kg 30.000lb/0.002lb 9.0000viss/0.0005viss	15.000kg/0.001kg 30.000lb/0.002lb	9.0000viss/0.0005viss
		
		
		 **Max capacity 9.0000viss**
		 **15kg= 9.1836viss**
		
30.000kg/0.002kg 60.000lb/0.005lb 18.000viss/0.001viss	30.000kg/0.002kg 60.000lb/0.005lb	18.000viss/0.001viss
		
		
		 **Max capacity 18.000viss**
		 **30kg= 18.367viss**
		

60.000kg/0.005kg 120.00lb/0.01lb 36.000viss/0.002viss	60.000kg/0.005kg 120.00lb/0.01lb	36.000viss/0.002viss
	CAP 01	CAP 02
	020002	un it30
	060000	036000⇒ **Max capacity 36.000viss**
	530000	036734⇒ **3kg= 36.734viss**
		235030
150.00kg/0.01kg 300.00lb/0.02lb 90.000viss/0.005viss	150.00kg/0.01kg 300.00lb/0.02lb	90.000viss/0.005viss
	CAP 01	CAP 02
	020002	un it30
	0 15000	090000⇒ **Max capacity 90.000viss**
	120000	09 1836⇒ **150kg= 91.836viss**
		535030
300.00kg/0.02kg 600.00lb/0.05lb 180.00viss/0.01viss	300.00kg/0.02kg 600.00lb/0.05lb	180.00viss/0.01viss
	CAP 01	CAP 02
	020002	un it30
	030000	0 18000⇒ **Max capacity 180.00viss**
	220000	0 18367⇒
		125030
600.00kg/0.05kg 1200.0lb/0.1lb 360.00viss/0.02viss	600.00kg/0.05kg 1200.0lb/0.1lb	360.00viss/0.02viss
	CAP 01	CAP 02
	020002	un it30
	060000	036000⇒ **Max capacity 360.00viss**
	520000	036734⇒ **600kg= 367.34viss**
		225030

3-1-4 CSP 03 Multi-segment Setting



Select the desired unit for setting.

All the units which set at CSP 02, CSP 01 could be selected to set the interval point.

Refer to Note 1 on page 13 for unit setting.

The display shows the first point setting value.

2 segments model ⇒ the point is at 1/2 full scale
3 segments model ⇒ 1st point is at 1/6 full scale
2nd point is at 2/3 full scale

Input the desired "first point".

The first point could be set for the 2 or 3 segments model.

The display shows the second point setting value.

3 segments model ⇒ 1st point is at 1/6 full scale
2nd point is at 2/3 full scale

Input the desired "second point".

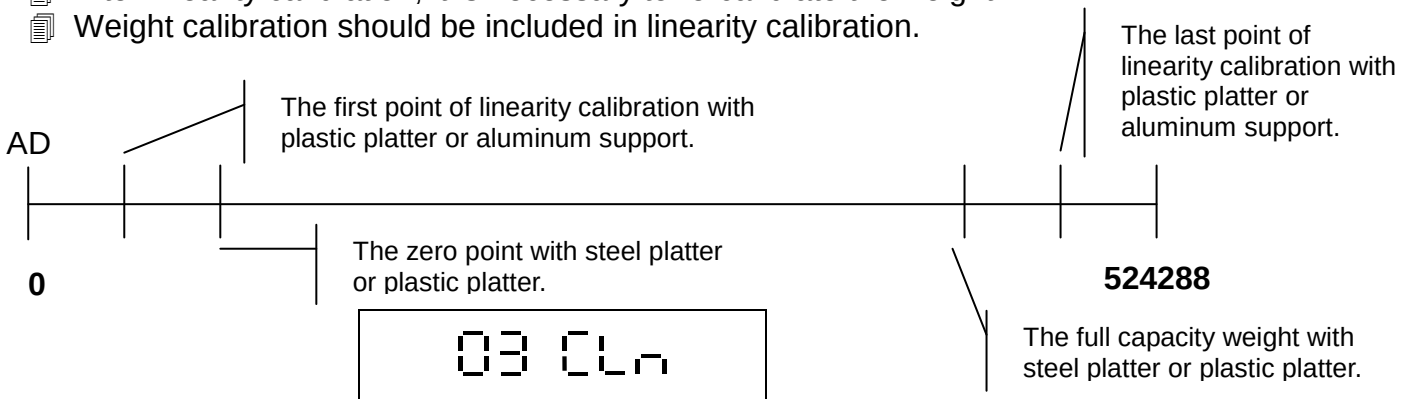
The second point only could be set for the 3 segments model.

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
(For approval models, use NET|B/G key instead)

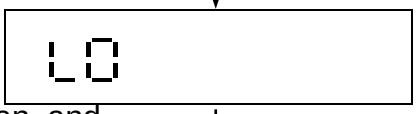
- By the specification setting of CSP 02, CSP 01 the default separation points for the 2 segments model is 1/2 full scale, and 1/6 full scale and 2/3 full scale for the 3 segments model. To change the interval point setting, please use the CSP 03 function.
- After CSP 03 is set, if the specification settings of CSP 02 and CSP 01 have been changed, the separation points would be reset to the default setting.

3-2 03 CLn Linearity Calibration

- After linearity calibration, it is necessary to re-calibrate the weight.
- Weight calibration should be included in linearity calibration.

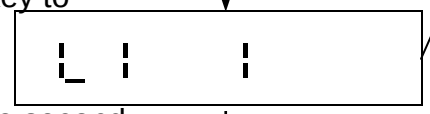


Remove all weight from the pan, Press **TARE|PT** key to enter linearity calibration mode.

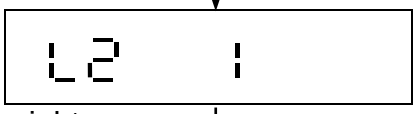


Remove the steel weigh pan, and leave the plastic one, ensure the pan is empty, Press **TARE|PT** key to record the “first point”.

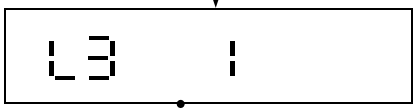
***Weight factor**
Refer to note below



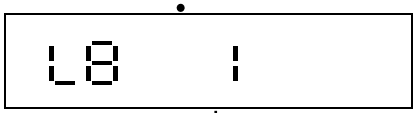
Apply the 1st weight for the second point, enter the weight factor, Press **TARE|PT** key to record the “second point”



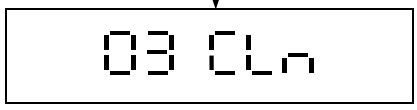
Add 2nd weight, enter the weight factor, Press **TARE|PT** key to record the ”third point”



Add 3rd weight, enter the factor, Press **TARE|PT** key to record the ”forth point”



Add 8th weight, enter weight factor, Press **TARE|PT** key to record the ”ninth point”



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
(For approval models, use NET|B/G key instead)

Weight factor

The weight factor is a single hexadecimal number which represents the value of the next weight compared to the size of the first weight applied to the scale.
The weight factor is arranged as follows:-
1 = The weights are equal.
2 = The next weight is twice as big as the first weight
3 = 3 times as big as the first weight
4 = 4 times…
5 = 5 times …
6 = 6 times..
7 = 7 times…
8 = 8 times…
9 = 9 times….
A = 10 times…
B = 11 times…
C = 12 times…
D = 13 times…
E = 14 times…
F = 15 times as big as the first weight

Exampes: 30kg scale to be linearitied with the weight values shown in brackets:

Ex1: 30kg (10kg ,10kg ,10kg)

Display	Key Press	Note
03 CLn	TARE	Into linearity calibration
L0	TARE	First point (zero), remove weigh pan and press the Tare key
L1 1	TARE	Put 10kg on and press the Tare key
L2 1	TARE	Put 10kg on and press the Tare key
L3 1	TARE	Put 10kg on and press the Tare key
L4 1	NET/GROSS	To finish linearity adjustment (4 points linearity calibration)
03 CLn		

Ex2: 30kg (5kg, 10kg ,10kg, 5kg)

Display	Key Press	Note
03 CLn	TARE	Into linearity calibration
L0	TARE	First point (zero), remove weigh pan and press the Tare key
L1 1	TARE	Put 5kg on and press the Tare key
L2 2	TARE	Put 10kg on and press the Tare key, 2 is the rate of L1 (10kg is 2 x 5kg, which was used in L1)
L3 2	TARE	Put 10kg on and press the Tare key
L4 1	TARE	Put 5kg on and press the Tare key
L5 1	NET/GROSS	To finish linearity adjustment (5 points linearity calibration)
03 CLn		

Ex3: 30kg (5kg, 5kg ,10kg, 10kg)

Display	Key Press	Note
03 CLn	TARE	Into linearity calibration
L0	TARE	First point (zero), remove weigh pan and press the Tare key
L1 1	TARE	Put 5kg on and press the Tare key
L2 1	TARE	Put 5kg on and press the Tare key
L3 2	TARE	Put 10kg on and press the Tare key
L4 2	TARE	Put 10kg on and press the Tare key
L5 1	NET/GROSS	To finish linearity adjustment (5 points linearity calibration)
03 CLn		

Ex4: 30kg (1kg, 2kg ,5kg, 10kg, 2kg, 10kg)

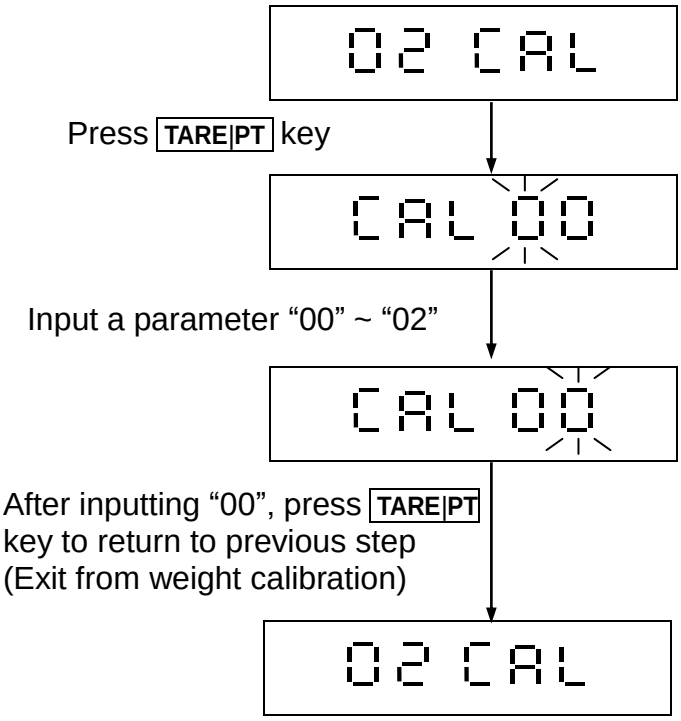
Display	Key Press	Note
03 CLn	TARE	Into linearity calibration
L0	TARE	First point (zero), remove weigh pan and press the Tare key
L1 1	TARE	Put 1kg on and press the Tare key
L2 2	TARE	Put 2kg on and press the Tare key
L3 5	TARE	Put 5kg on and press the Tare key
L4 A	TARE	Put 10kg on and press the Tare key
L5 2	TARE	Put 2kg on and press the Tare key
L6 A	TARE	Put 10kg on and press the Tare key
L7 1	NET/GROSS	To finish linearity calibration (7 points linearity calibration)
03 CLn		

- In the process of L0, L 1, press [NET|GROSS] key (For approval models, use [NET | B/G] key instead) to abort the linearity calibration.

- In the process of L2, L3, L4, L5, L6, L7, or L8 press [NET|GROSS] key (For approval models, use [NET|B/G] key instead) to finish and save the 2, 3, 4, 5, 6, 7, or 8 points calibration.

- In the process of L8, press [TARE|PT] key to finish and save the 9 points calibration.

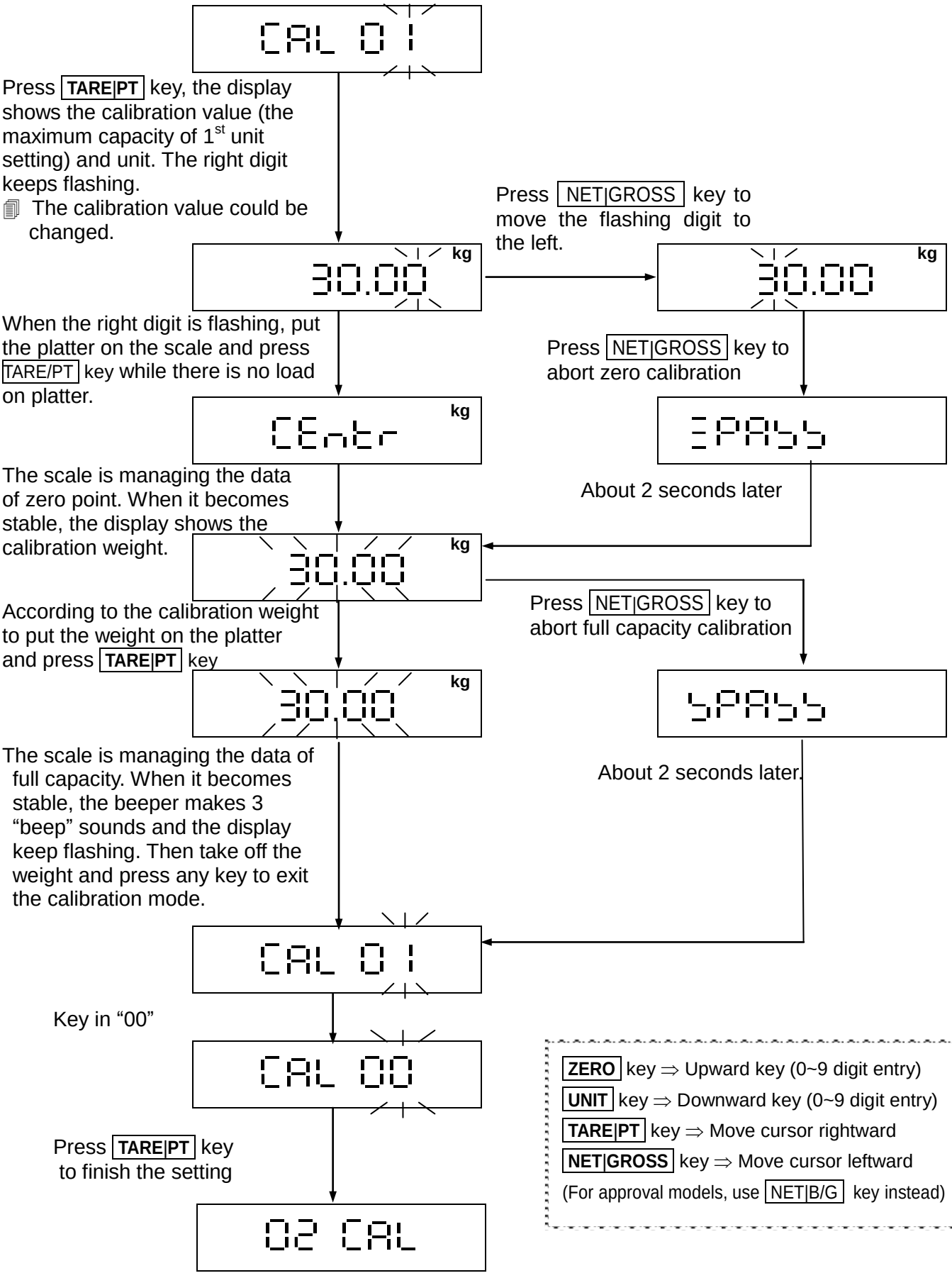
3-3 02 CAL Weight Calibration



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
(For approval models, use NET|B/G key instead)

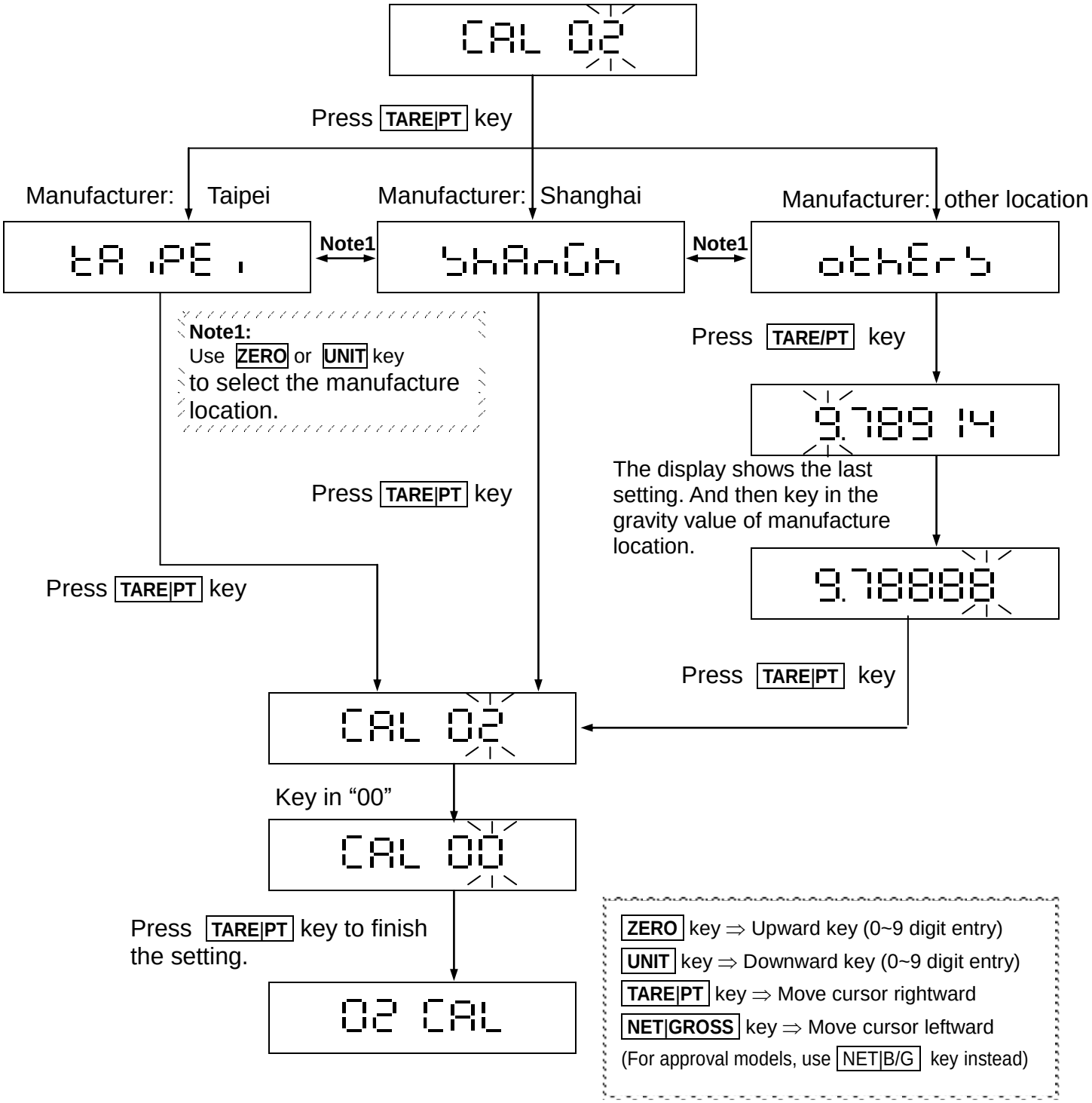
CAL 00 ⇒ Return to Previous Step
CAL 01 ⇒ Weight Calibration
CAL 02 ⇒ Manufacturing Location Gravity Setting

3-3-1 CAL 01 Weight Calibration Setting

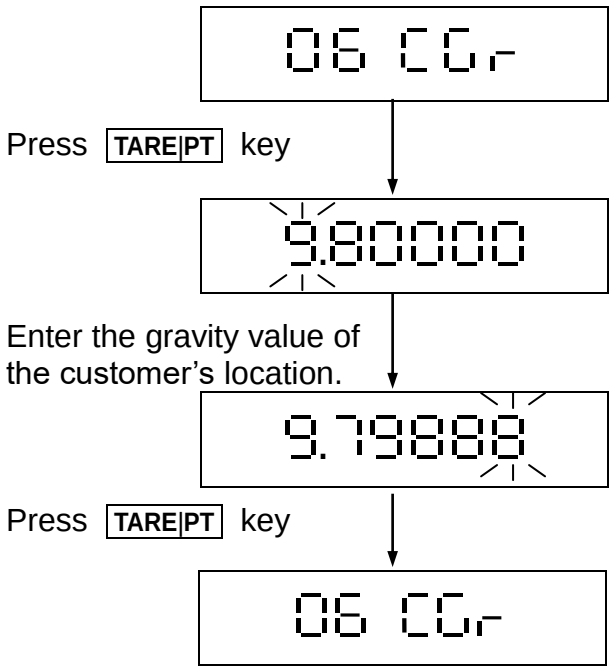


3-3-2 CAL 02 Manufacturing Location Gravity Setting

The gravity value should be among the value of Equator and Polar.
Equator gravity G_E = 9.7803184558 m/sec^2 Polar gravity G_P = 9.8321772792 m/sec^2
Taipei ≒ 9.78914 m/sec^2 Shanghai ≒ 9.79423 m/sec^2



3-4 06 CGr Local Gravity 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
(For approval models, use NET|B/G key instead)

The gravity value should be among the value of Equator and Polar.

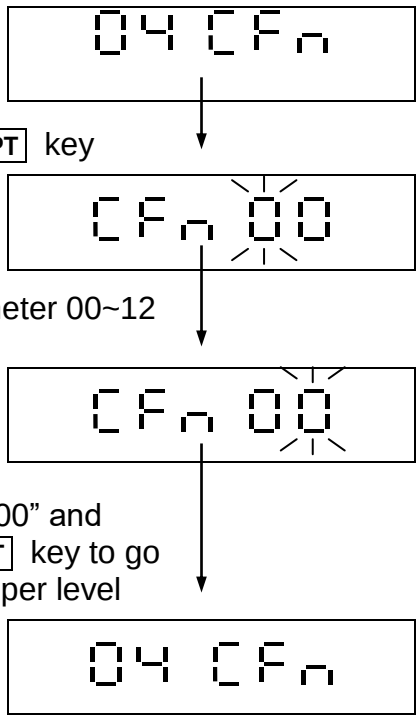
Acceleration of gravity at the Equator:
$G_E = 9.7803184558$ m/sec^2

Acceleration of gravity at the Poles:
$G_P = 9.8321772792$ m/sec^2

Taipei ≒ 9.78914 m/sec^2

Shanghai ≒ 9.79423 m/sec^2

3-5 04 CFn Function Setting

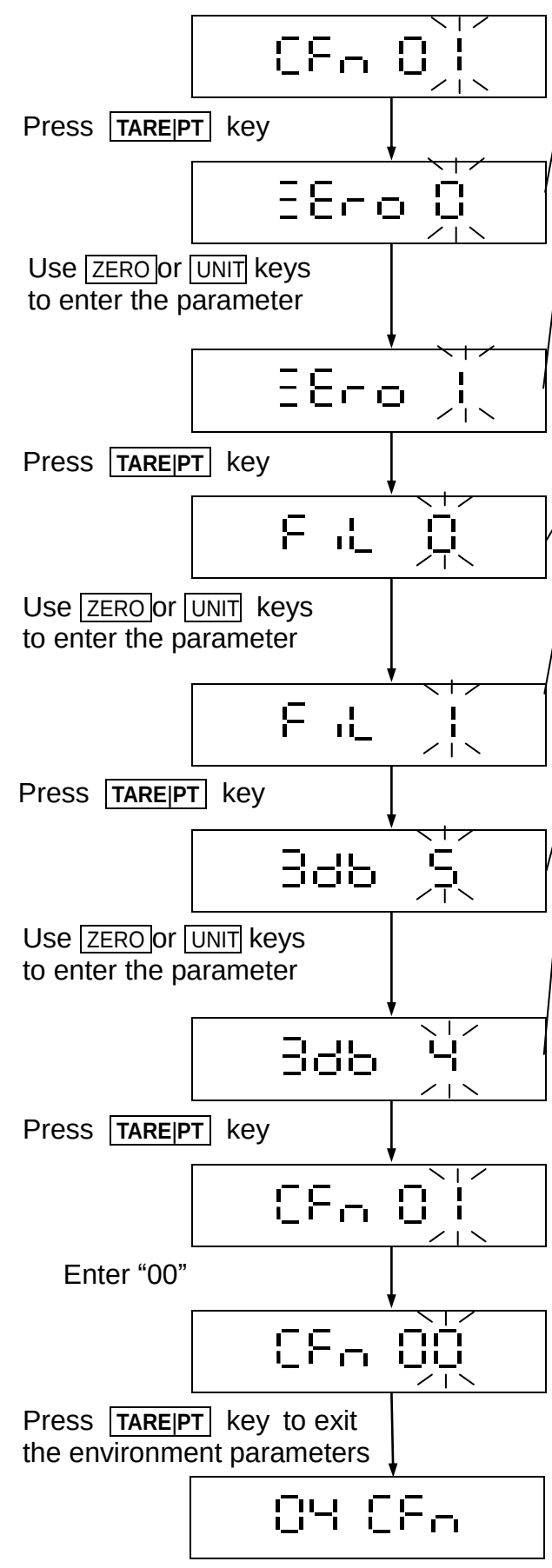


CFn 00 ⇒ Back to the upper level
CFn 01 ⇒ Environment parameters
CFn 02 ⇒ Approval configuration
CFn 04 ⇒ Initial Zero Setting
CFn 05 ⇒ Hold Function Setting
CFn 06 ⇒ Zero Tracing Setting
CFn 07 ⇒ Counting Function Setting
CFn 08 ⇒ Tare Setting

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
(For approval models, use NET|B/G key instead)

3-5-1 CFn 01 Environment Parameters

If parameters are changed in CFn 01, then FnC 05 will be revised automatically



Return to zero
The display shows the last setting

Return to zero point
Using ZERO or UNIT to enter
- Default setting = 0

0 ⇒ show all 5 ⇒ within 5 d
1 ⇒ within 1 d 6 ⇒ within 6 d
2 ⇒ within 2 d 7 ⇒ within 7 d
3 ⇒ within 3 d 8 ⇒ within 8 d
4 ⇒ within 4 d 9 ⇒ within 9 d

Weight value must over **1/3 full scale**

Stabilization range
Display shows the last setting

Stabilization range
Use ZERO or UNIT keys to input the parameters.
- Default setting = 0

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

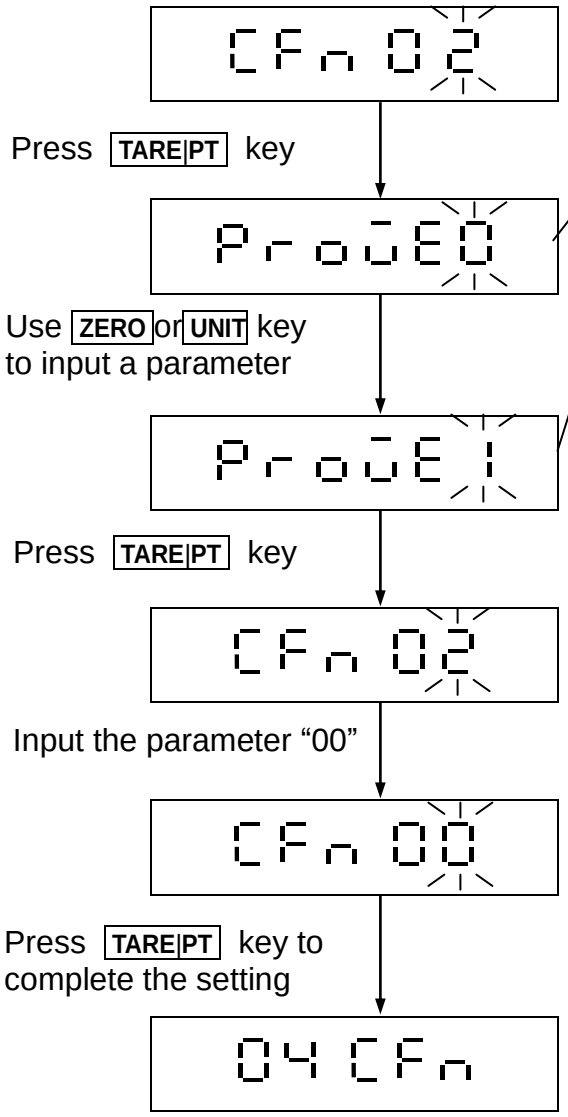
Filter setting
Display shows the last setting.

Weighing Filter setting
Use ZERO or UNIT keys to input the parameters.
- Default setting = 5

Range 0 ~ 9, the larger the number, the faster the filter response. Fast response could lead to display weight instability.
Parameter 9 → the AD value is not filtered.
Input AD value = Output AD value

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
(For approval models, use NET|B/G key instead)

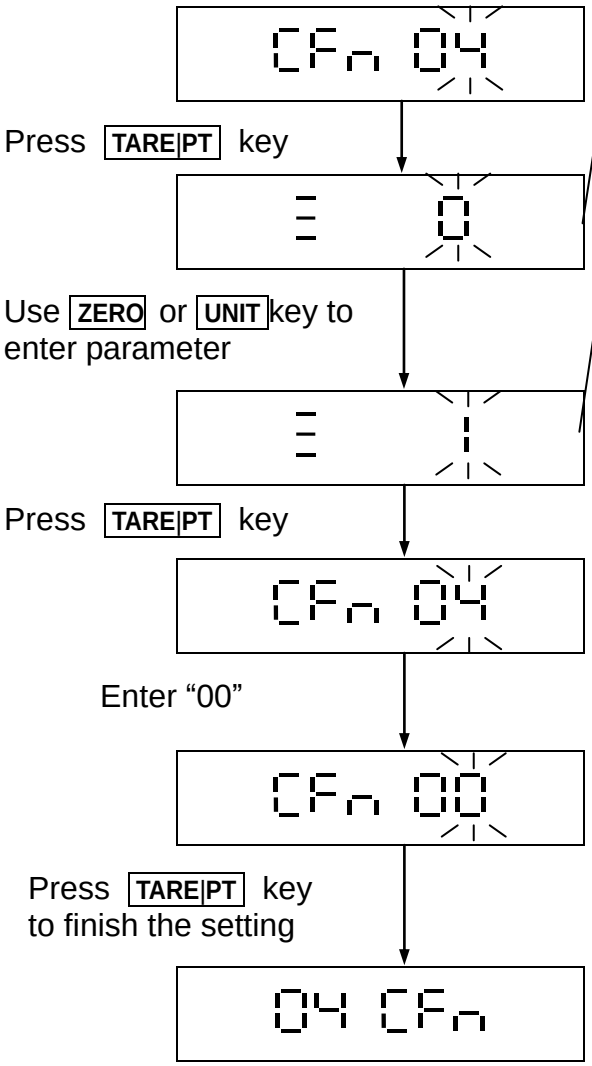
3-5-2 CFn 02 Approval Configuration



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
(For approval models, use NET|B/G key instead)

- Brazil approved model: In the counting mode, the indicator is not able to calculate the count value if the unit weight is less than 0.1e. It will be showing “------“.

3-5-3 CFn 04 Initial Zero Setting



Zero range setting at switch on
LCD displays the last setting

Initial Zero Setting

Use ZERO or UNIT key to enter the setting
Default setting = 0 **(OIML or NTEP approval model)**
Default setting = 9 **(Non-approval model)**

0 ⇒ ± 10% full scale
1 ⇒ ± 20% full scale
2 ⇒ ± 30% full scale
3 ⇒ ± 40% full scale
4 ⇒ ± 50% full scale
5 ⇒ ± 60% full scale
6 ⇒ ± 70% full scale
7 ⇒ ± 80% full scale
8 ⇒ ± 90% full scale
9 ⇒ ± 100% full scale

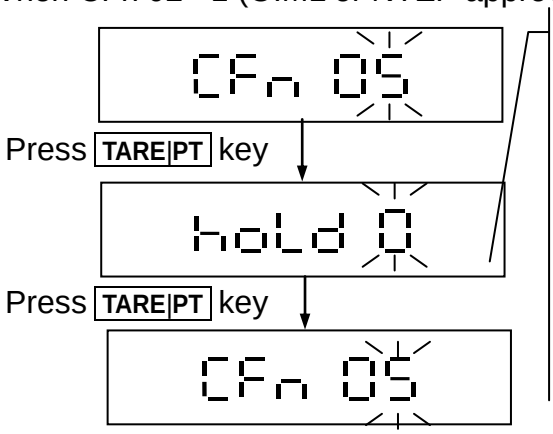
ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward
(For approval models, use NET|B/G key instead)

OIML or NTEP approval model (CFn 02 setting is "1"), and the initial zero setting is: ± 10% of full scale

Non-approval model (CFn 02 setting is "0"), and the initial zero setting is: ± 100% full scale

3-5-4 CFn 05 Hold Function Setting

When CFn 02 =1 (OIML or NTEP approval), CFn 05 must set to hoLd=0.



Hold function setting

Display the last used value

Use **ZERO** or **UNIT** keys to select 0~5

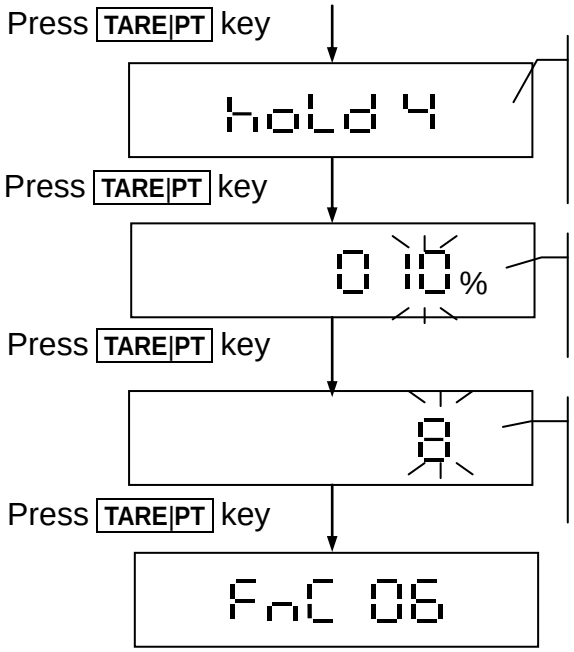
- Default setting = 0

0 ⇒ Hold function disabled
1 ⇒ "Peak hold" mode
2 ⇒ "Stable hold 1" mode
3 ⇒ "Stable hold 2" mode
4 ⇒ "Animal scale hold 1" mode
5 ⇒ "Animal scale hold 2" 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
(For approval models, use NET|B/G key instead)

hoLd 0 = Hold is disabled
hoLd 1 = "Peak hold" mode: Hold peak weight on the display until a key is pressed to release hold and get a new peak weight.
hoLd 2 = "Stable hold 1" mode: When the weight is stable, Hold the current stable weight until a key is pressed to release hold and get a new stable weight.
hoLd 3 = "Stable hold 2" mode: When the weight is stable, Hold the current stable weight until weight returns to zero (<10d), the hold is cancelled automatically.
hoLd 4 = "Animal scale hold 1" mode
When no load, display "- - - - - -". After the animal is on the platter and the weight is stable, the display Hold the current stable weight value. When the animal is off the platter, the display " - - - - - - " and the hold is released. If the weight is hardly stable, display Hold the average weight in 10 seconds until the weight < 10e and display shows "- - - - - -" or press any key to calculate a new weight.
hoLd 5 = "Animal scale hold 2" mode
When no load, display "0.000". After the animal is on the platter and the weight is stable, display Hold the current stable weight value. When the weight added or removed on the platter is > the hold range set in hold 5, hold is released and calculate a new hold weight. If the weight is hardly stable, display Hold the average weight in 10 seconds. **ZERO** and **TARE|PT** keys are inactive here. The locking speed can be set through the SPEEd setting in hold 5. "1" is the fastest and "5" is the slowest

Animal scale hold 1 hoLd 4

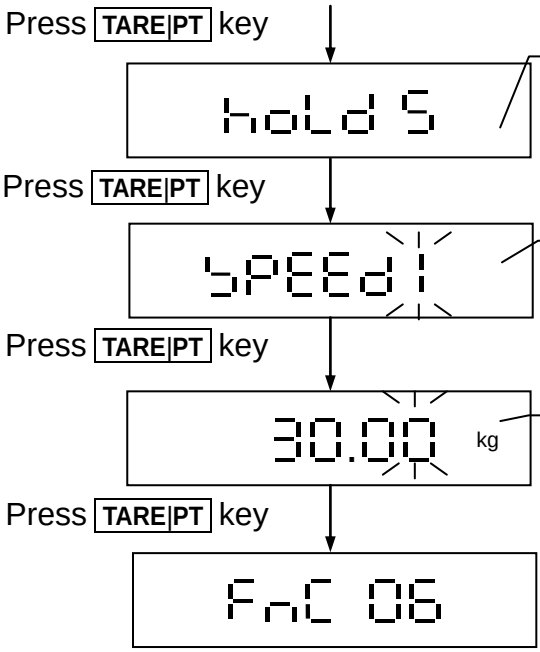


Hold function setting
Display the last used value
Use ZERO or UNIT key to select 4.
Press TARE|PT key to enter the hold setting

Allowed tolerance range
Use ZERO or UNIT keys to enter value (1%~100%)
Default setting = 10%

Number of counts for averaging
Use ZERO or UNIT keys enter value (1,2,4,8,16,32,64)
Default setting = 8

Animal scale hold 2 hoLd 5



Hold function setting
Display the last used value
Use ZERO or UNIT key to select 5.
Press TARE|PT key to enter the hold setting

Hold speed setting
Display the last used value
Use ZERO or UNIT keys to enter value (1~5)
1: fastest; 5: slowest

Hold range setting
Display the last used value
Use ZERO or UNIT keys to enter value (0 ~ max capacity)

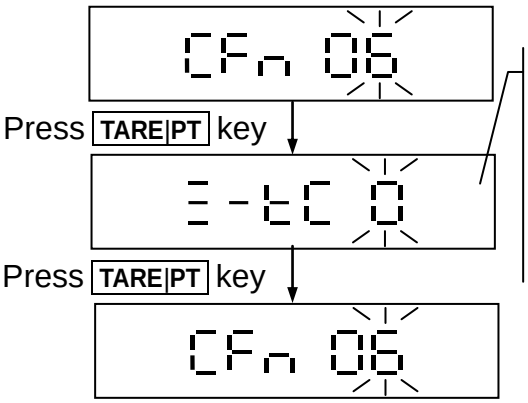
ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward
(For approval models, use NET|B/G key instead)

- When weight returns to zero, Hold is released
- After weight is HOLD, Hold is released only when weight change is more than ± Hold range.

For example: if Hold range = 1 kg. Weight is held at 8.5kg after buzzer sounds.
When weight changes outside the range of 8.5±1kg, for example, when weight is > 9.5kg or < 7.5kg, HOLD is released and until new HOLD weight is re-captured (displays weight changes until it enters HOLD).

- Repeat to test the same animal for more than 10 times to compare the errors. Then finalize the Hold speed and Hold range setting.

3-5-5 CFn 06 Zero Tracking



Zero tracking setting

Display the last used value

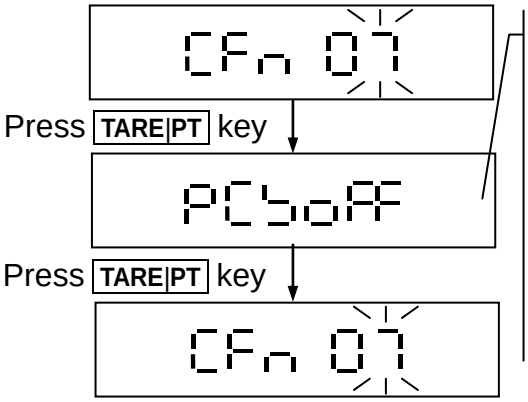
Use ZERO or UNIT keys to key in the parameters

- Default setting = 0

0 ⇒ Enable zero tracking

1 ⇒ Disable zero tracking

3-5-6 CFn 07 Counting Function Setting



Counting Function Setting

Display the last used value

Use ZERO or UNIT keys to select

- Default setting = On

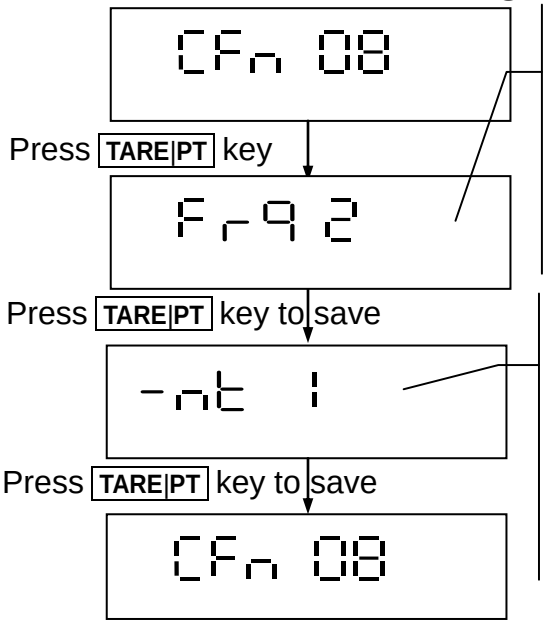
on ⇒ Enable Counting Function

oFF ⇒ Disable Counting Function

After setting is complete, the initial turn on unit will return to the first unit.

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
(For approval models, use NET|B/G key instead)

3-5-7 CFn 08 Tare Setting



Tare Setting

Display the last used value

Use ZERO or UNIT keys to select 0~2。

- Default setting = 2

0 ⇒ Disable tare

1 ⇒ Tare only once

2 ⇒ Continuous tare

Negative Tare

Display the last used value

Use ZERO or UNIT keys to select 0~1。

- Default setting = depending on which CFn 02 approval parameter selected.

0 ⇒ Prohibited

1 ⇒ Allowed

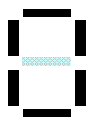
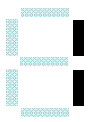
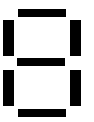
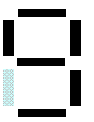
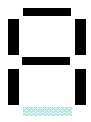
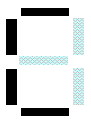
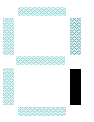
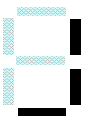
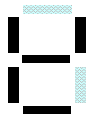
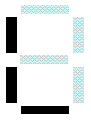
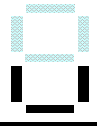
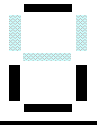
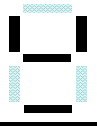
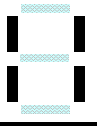
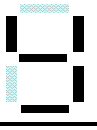
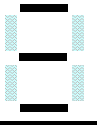
Defaults for non-approval: continuous tare (Frq=2) and negative tare is allowed (-nt=1)

Defaults Approval: tare only once (Frq=1) and negative tare is prohibited (-nt=0)

Appendix 1 ASCII Code Table

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

Appendix 2 7-Segment Display Characters

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

Appendix 3 RS-232 Data Format

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

If continuous "SC" or automatic "SA" transmission is used, to change back command mode, please input "%" and press the enter key before sending the next data.
Note: rs1 05 can modify the number data per second.

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)
RZ	Print F-M 13 Brazil format		

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.

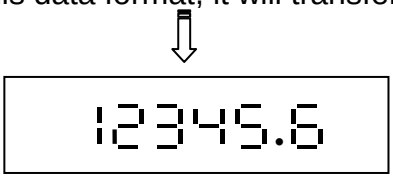
NG means the weight value is over max capacity
NN means the weight value is non-numeric

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		

Weight format (OIML)

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

Weight format (OIML)

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

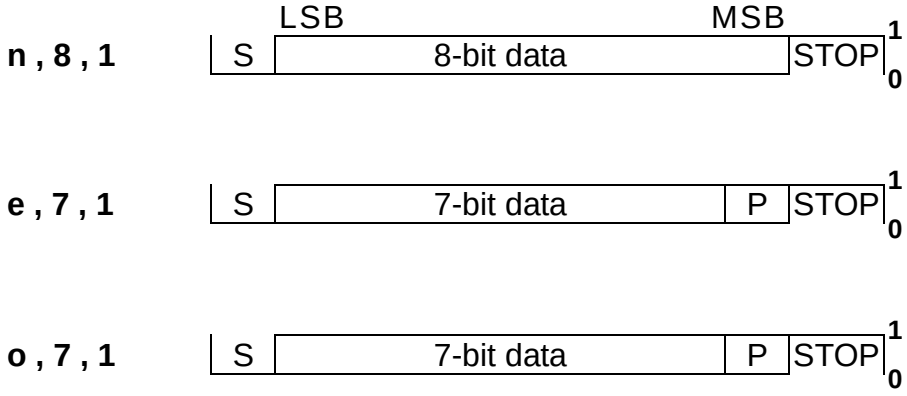
Switch between old and new (OIML) formats: Press and hold M+/PRINT key to turn on the scale, and when the display oLd/nEW appear for 2 seconds, release it to restart the scale
nEW (OIML):

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

oLd:

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

Serial Data Transfer/Receive Format

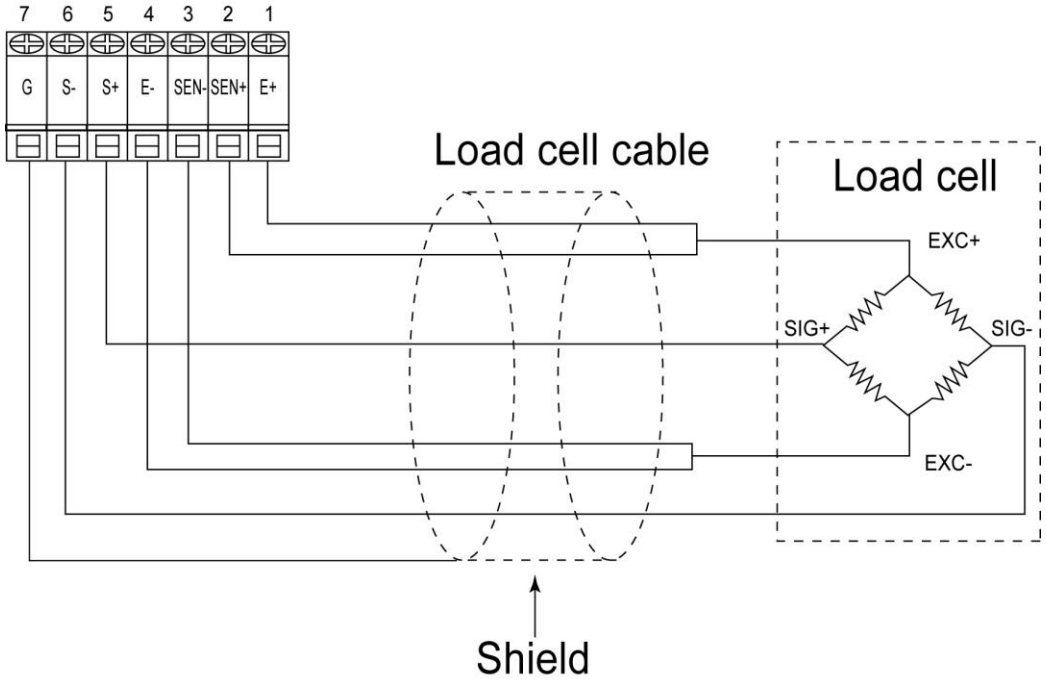


Note:
S : Start bit
STOP: Stop bit
P : Parity bit

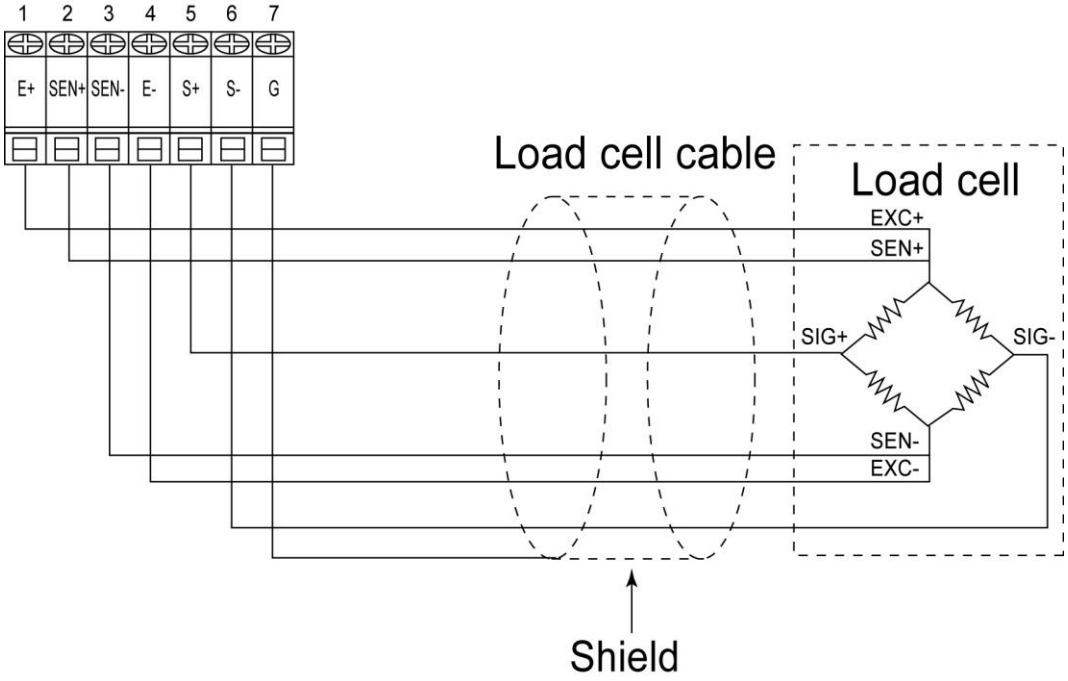
Appendix 4 Wiring Instructions

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.

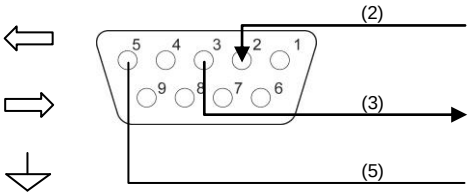


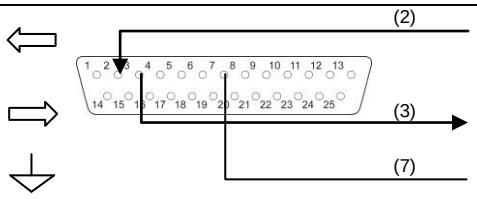
(2) If Load Cell is 6PIN, please wire as the following diagram:



RS232 wiring instruction

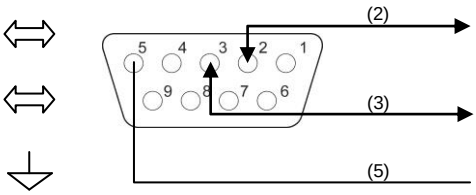
To connect RS232, please open the housing, RS232's PIN connectors locate on the bottom-right corner of the main board. The most common connection method is using 9PIN and 25PIN, as shown below:

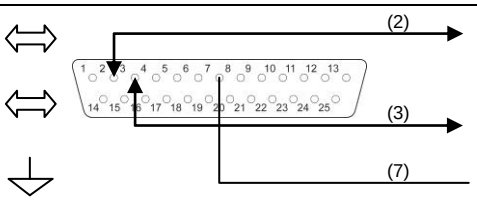
PC	PIN	PC PIN Function	Female 9 PINS (PC PIN)	QW/GW PIN	QW/GW
	2	Receive Data (from QW/GW)		TxD	
	3	Transmit Data (to QW/GW)		RxD	
	5	Signal Ground		SG	

Printer	PIN	Printer PIN Function	Male 25 PINS (Printer PIN)	QW/GW PIN	QW/GW
	2	Receive Data (from QW/GW)		TxD	
	3	Transmit Data (to QW/GW)		RxD	
	7	Signal Ground		SG	

RS485 wiring instruction

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

PC	PIN	PC PIN Function	Female 9 PINS (PC PIN)	QW/GW PIN	QW/GW
	2	Data I/O (half-duplex)		DB	
	3	Data I/O (half-duplex)		DA	
	5	Signal Ground		SG	

Printer	PIN	Printer PIN Function	Male 25 PINS (Printer PIN)	QW/GW PIN	QW/GW
	2	Data I/O (half-duplex)		DA	
	3	Data I/O (half-duplex)		DB	
	7	Signal Ground		SG	

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