EXCELL PRECISION CO.,LTD.

User Manual
Waterproof Indicator
Queen 2.0 / Galaxy 2.0

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6F, No. 127, Lane 235, Baoqiao Rd., Xindian District,
New Taipei City 23145, Taiwan
pm-all@excell.com.tw
https://www.excell-scale.com
+886-2-8919-1000
+886-2-8919-2209

V24. 1125

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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 02052 or 02152. Press TARE|PT key again to display maintenance number 1XX (XX is ranged from 00~99) 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.

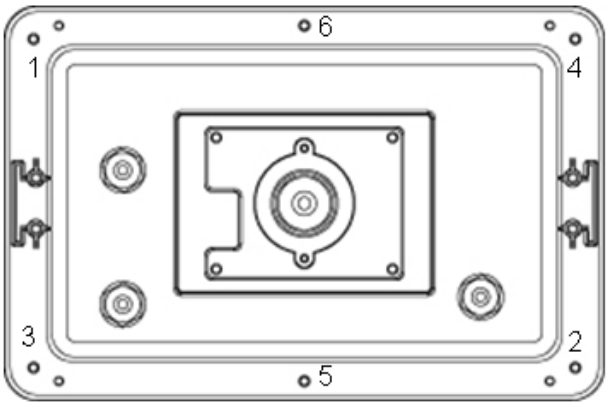
Before opening the housing, make sure the indicator is dry, if there is any liquid on it, please wipe it with a clean cloth.

How to INSTALL THE HOUSING:

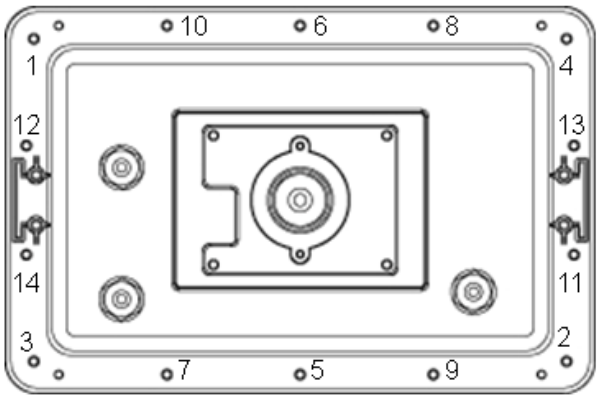
After installing the load cell, power cord hookup or replacing a new rechargeable battery, the housing must be screwed by the assigned order as shown below. Screw lightly first, then screw them tight using a 6 kgf-cm (Galaxy 2.0) or 12 kgf-cm (Queen 2.0) torsion.

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

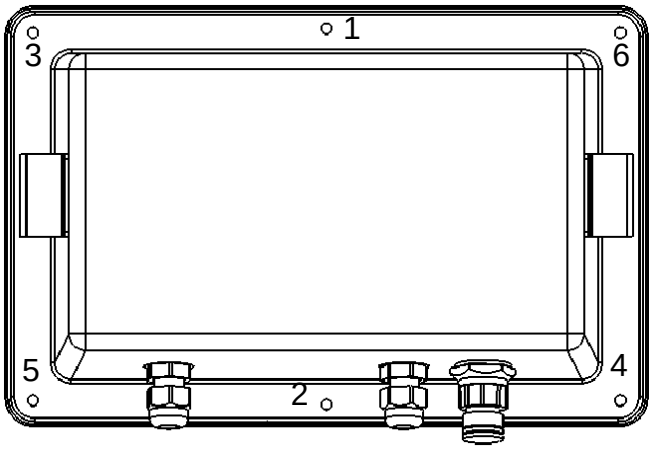
Screwing order:



▲ **Galaxy 2.0**

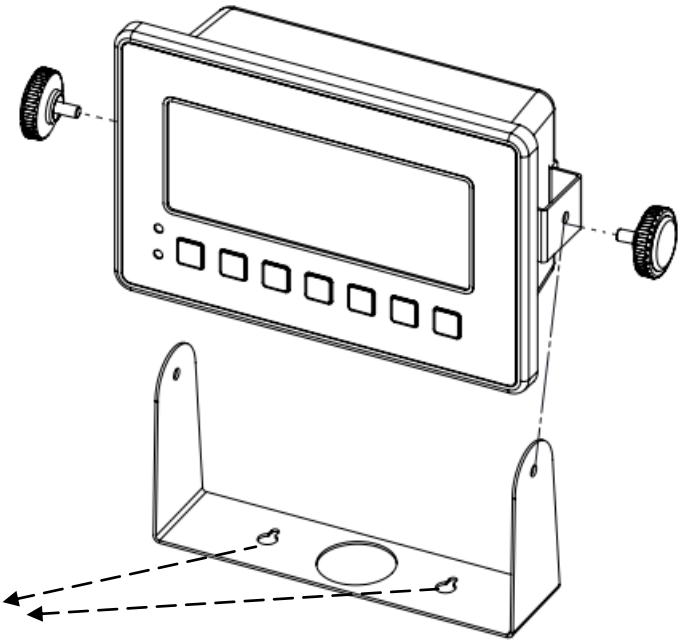


▲ **Galaxy 2.0**



▲ **Queen 2.0**

▼ **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

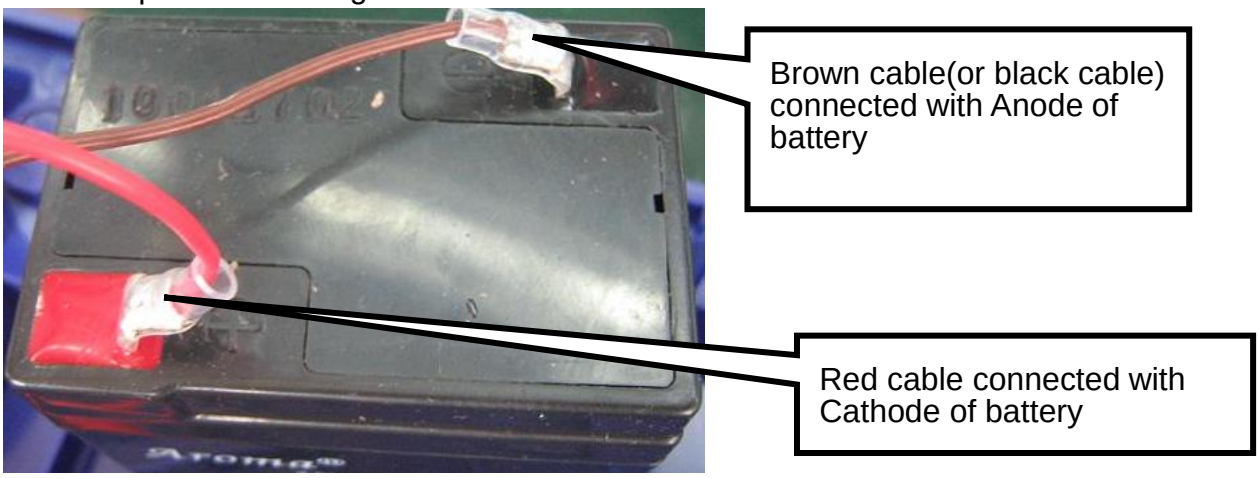
1. Locate the scale on a firm level surface free from vibrations for accurate weight readings.
2. Adjust the four levelling feet (if fitted) to set the scale pan level.
3. Avoid operating the scale in direct sunlight or drafts of any kind.
4. If possible avoid connecting the scale to ac power outlet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

Chapter 1 Introduction

1-1 Product Features

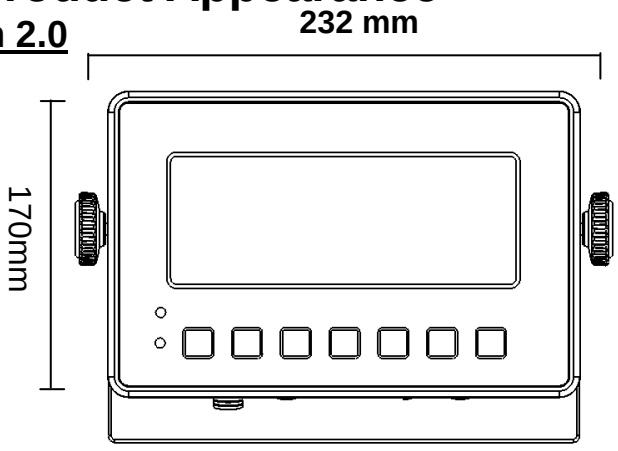
- Extra-large and wide LCD display (175 x 70mm) 6 digits with 55mm height for easy weight reading
- Multi-color backlight
- Queen 2.0 with 304 stainless steel housing while Galaxy 2.0 with plastic ABS housing.
- Sealed to IP68 and IP69, Waterproof, mist-proof and dustproof (Only use cables of 3mm~5mm
  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 Pressure release valve and built-in RS-232
- Options:
  - One of RS-485 card, WIFI card, Bluetooth card, Relay card, RJ45 card and USB card
  - Foot switch

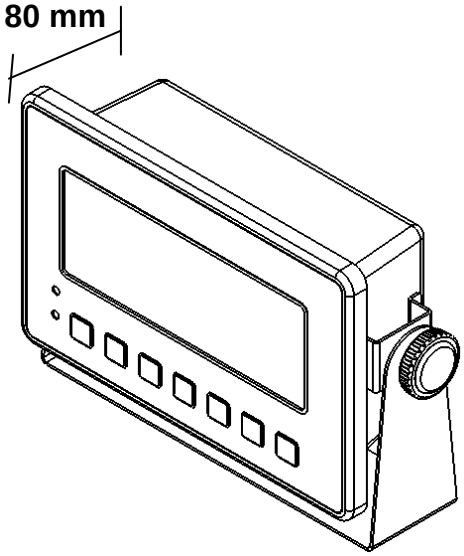
1-2 Specifications

- 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℃

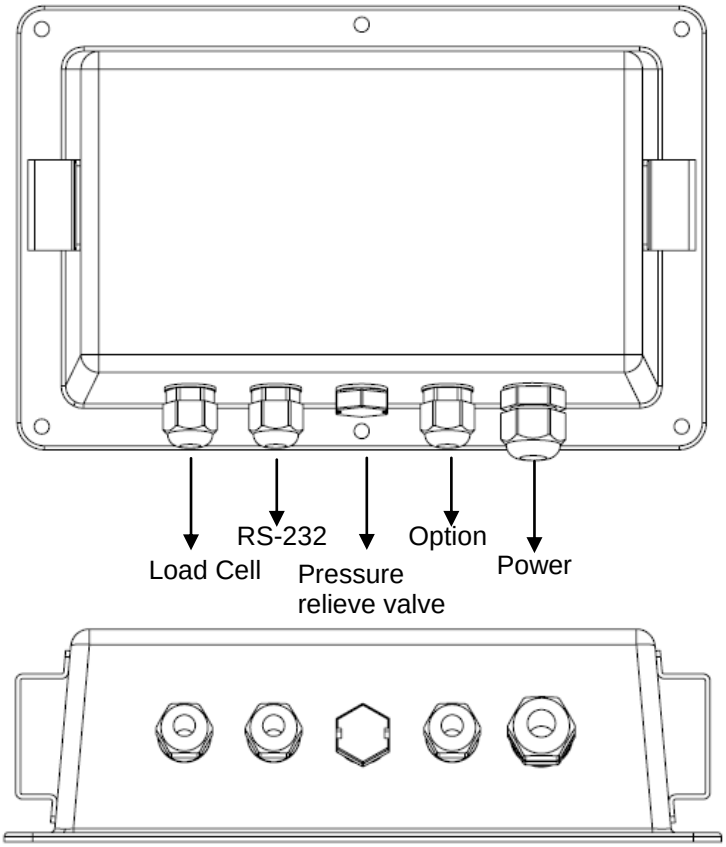
1-3 Product Appearance

Queen 2.0



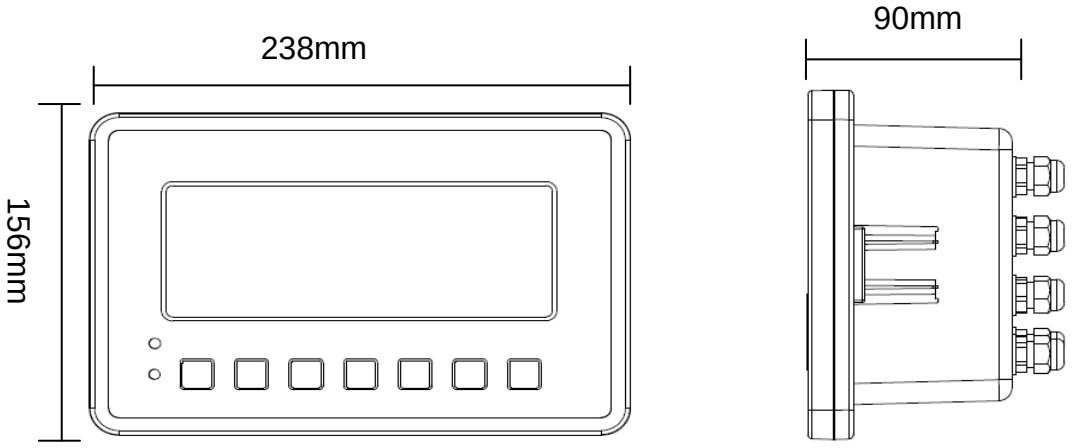


[Standard]

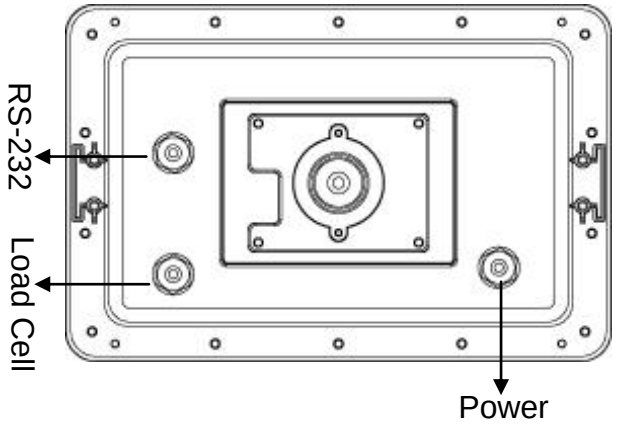


- The optional card can be installed with one of the following RS-485/RS-232 card, Bluetooth card, WIFI card, Relay card, RJ45 card or USB card
- Options required cable out: RS-485/RS-232 card, Relay card, foot switch, RJ45 card, USB card
- Options do not required cable out: Bluetooth card, WIFI card

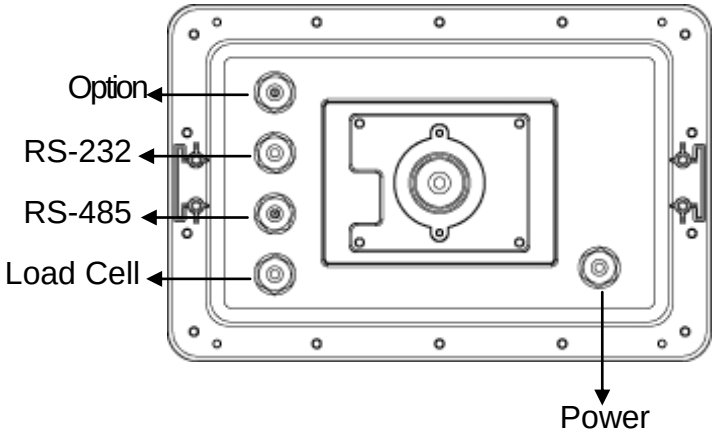
Galaxy 2.0



[Standard]



[Option]



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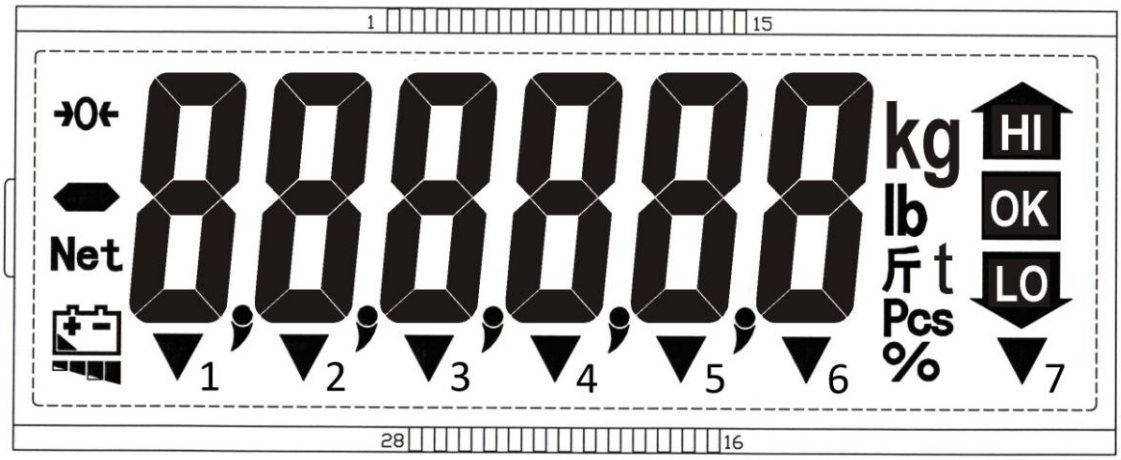
1-4 Display Description



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%
		130~140	100~110	70~80	55~60
	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 6.1V; Each block is about 0.2V increment/decrement.

Low battery warning: When the () symbol keeps flashing on the display (the remaining power is about 5.4V), 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

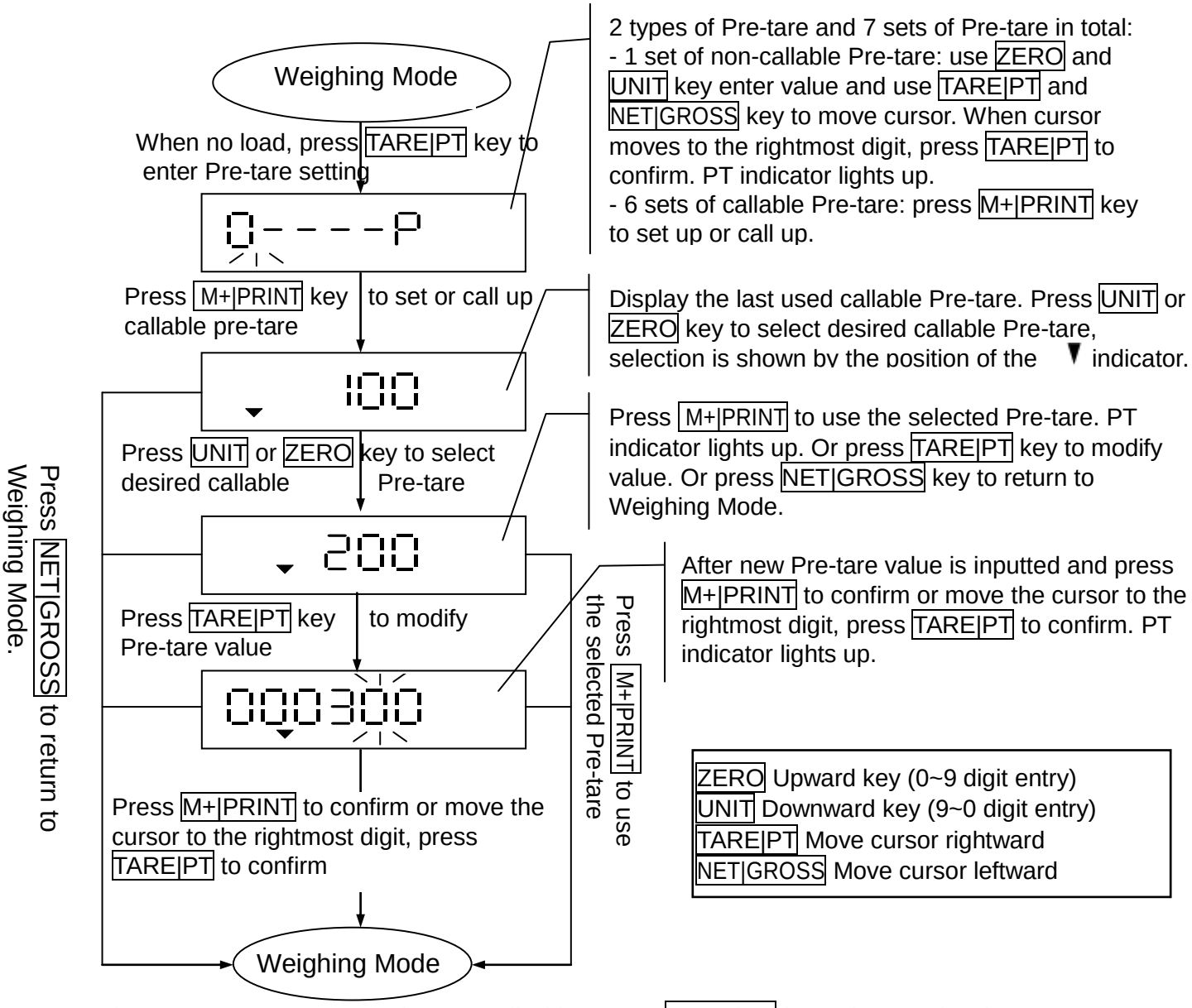
To TARE:

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.

E10 ⇒ The scale is not in level status. (Only if level detector equipped)

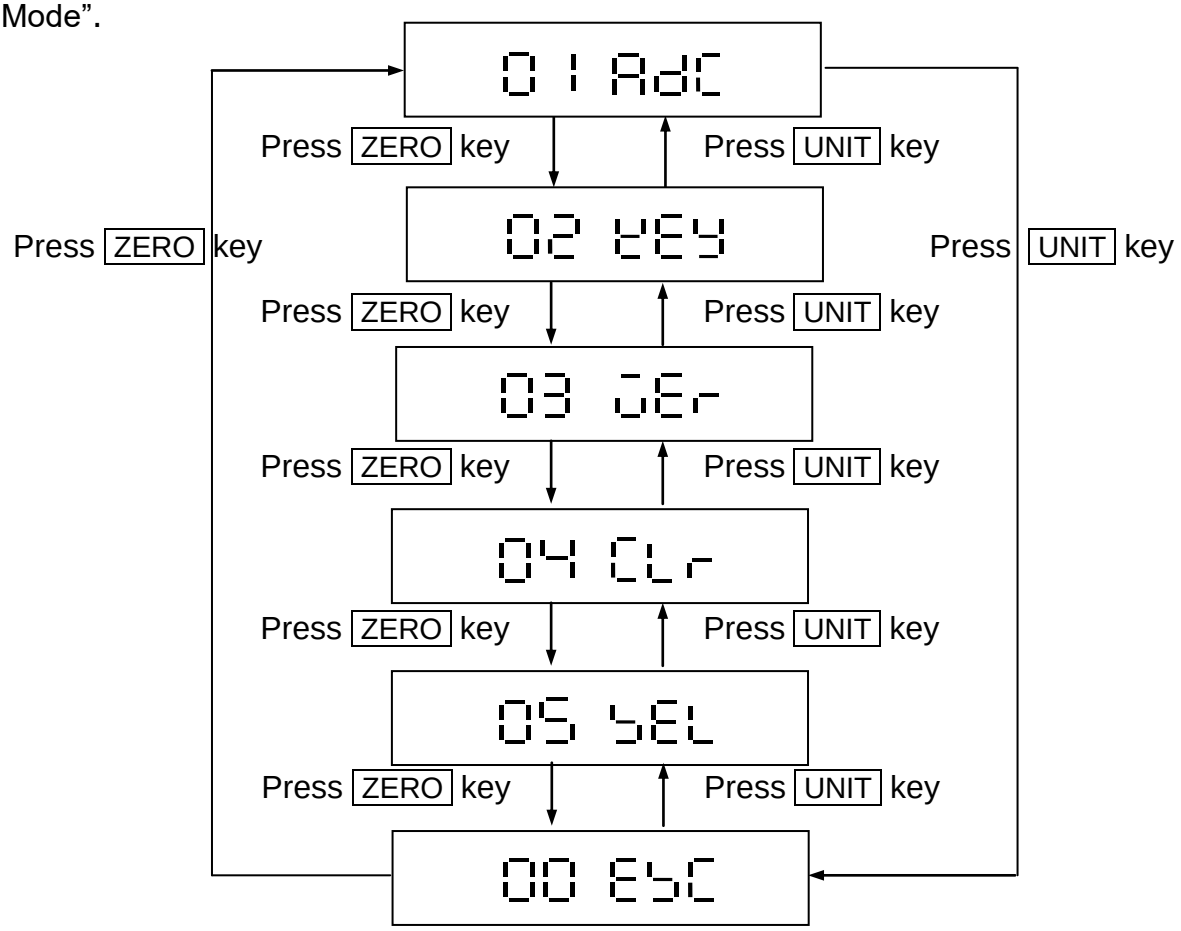
Level Switch and E10 (option)
To use level switch, make J1 on PCB open circuited, display shows E10 and all keys stop working in the meantime. If J1 on PCB is short circuited, all functions work normally. When level switch is used, and if is in level, a short circuited signal sends to CN2 and all functions work normally. If platform is tilted and not in level, an open circuited signal sends to CN2, 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,
[1NET|B/G] or [1NET|GROSS] key=04 [1M+|PRINT] key = 03, [F] key = 02

② Press [ZERO] key to back to the last screen , the display shows 02 KEY

03 SEr FIRMWARE VERSION DISPLAY MODE

① Press [TARE|PT] key to display firmware version 02052 if software seal is enabled or 02152 if software seal is disabled.

② Press [TARE|PT] key again to display maintenance number 1XX (XX is ranged from 00~99) for 2 seconds

③ Press [ZERO] key to back to the last screen, display shows 03 SEr

04 CLr CHECK BACKLIGHT COLOR MODE

For mono backlight model, it only displays mono.

① Press [TARE|PT] key to enter and display CLr Y for white backlight
② Press [ZERO] key to enter and display CLr o for orange backlight
③ Press [ZERO] key to enter and display CLr r for red backlight
④ Press [ZERO] key to enter and display CLr G for green backlight
⑤ Press [ZERO] key to enter and display CLr Y for yellow backlight
⑥ Press [TARE|PT] key to back to the last screen, display shows 04 CLr

05 SEL CHECK EVENT COUNTER MODE

Used if software seal is enabled. If software seal is disabled, 05 SEL will not show.

① Press [TARE|PT] key to display event counter number "C XXX"
② Press [ZERO] key to back to the last screen, display shows 05 SEL

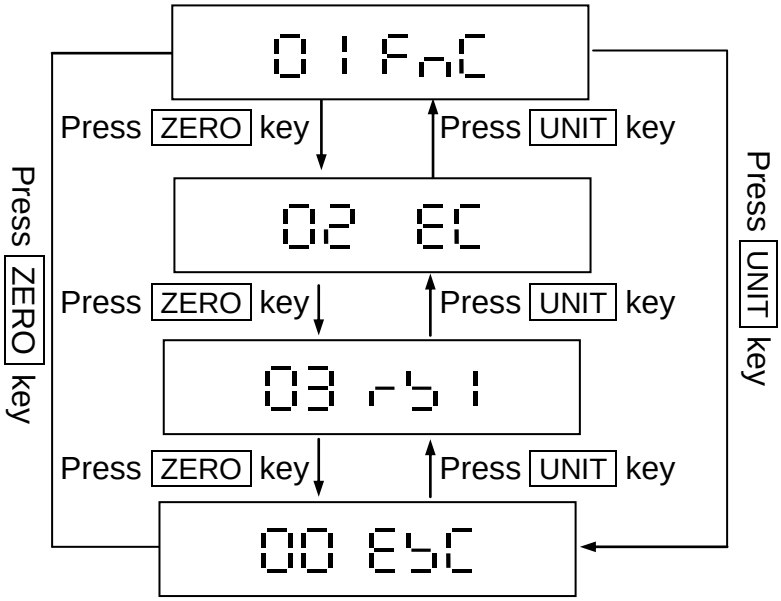
00 ESC BACK TO THE LAST SCREEN

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

Test LCD display: set the MINI JUMPER of SWA1 to the LOCK position and press the [ON/OFF] key to turn on scale to test LCD display to check if any LCD segment ghosting or missing. (After correction, this phenomenon will not occur.)

Chapter 2 Configurations

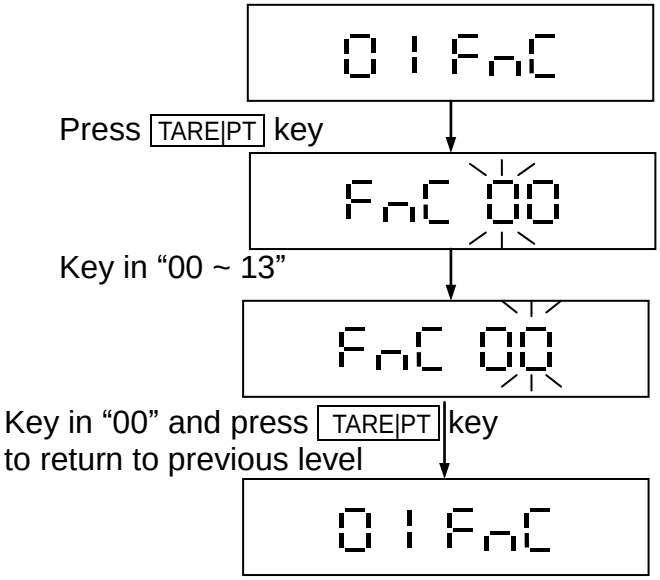
In the weighing mode, press NET|GROSS key (For approval models, use NET|B/G key instead) and ZERO keys at the same time to enter the configuration mode.
The LCD shows 01 FnC.



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.

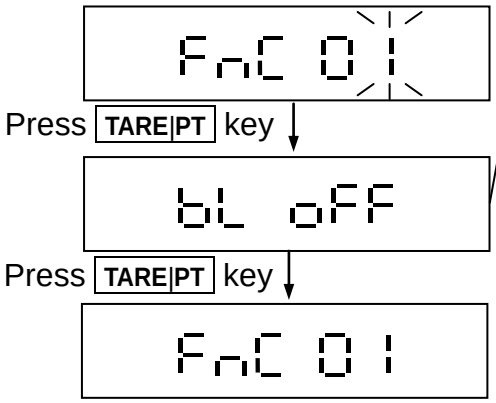
2-1 01 FnC General Function Setting



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

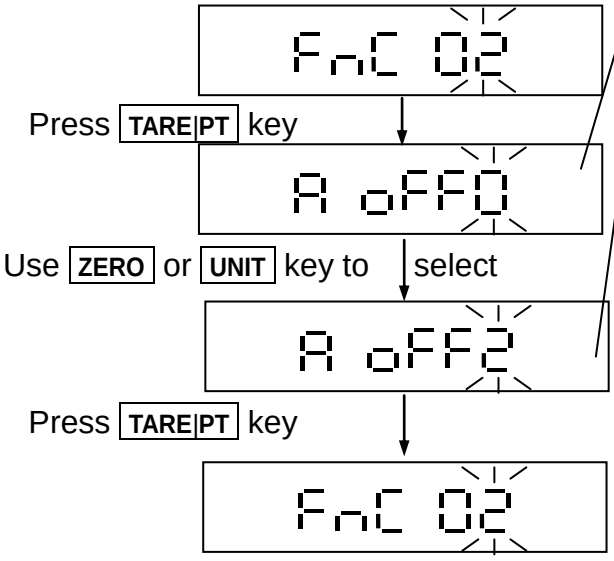


Display the last used value
- Default setting = oFF

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



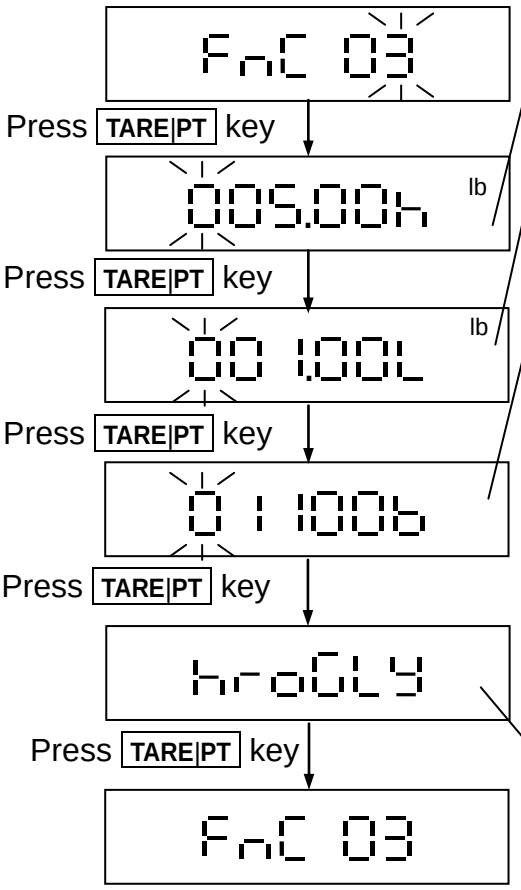
Display the last used value
Default setting = 0 (No auto power-off)

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

Display the last used value

HI/OK/LO backlight color setting

hr oGL y
(a) (b) (c)

Use **ZERO** or **UNIT** key to select r, G, Y, W, o to set HI/OK/LO backlight color

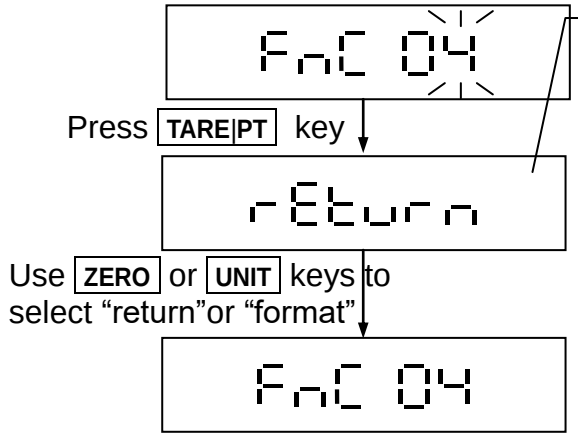
➢ Default setting:

(a) > high limit, backlight is red (r)
(b) Between high and low limits (OK range) is green (G)
(c) < low limit, backlight is yellow (Y)

r ⇒ red Y ⇒ yellow o ⇒ orange
G ⇒ green W ⇒ white

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

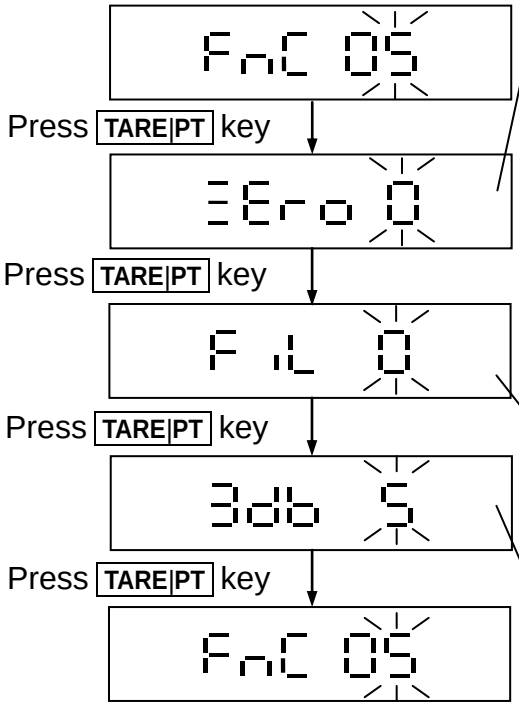


Use ZERO or UNIT keys to select "rEturn"or "ForMat"
rEturn ⇒ Return (Cancel the restoration)
ForMAt ⇒ Restore to default setting

- 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.

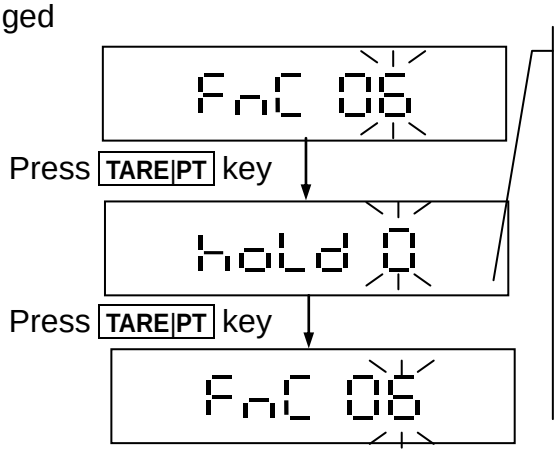
Filter parameter setting
Display the last used value.
Use ZERO or UNIT keys to select 0 ~ 9. Default = 5.
The larger value: faster response; therefore, more unstable.
If set to 9, AD value is not filtered.
Input AD value = Output AD value

- 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.

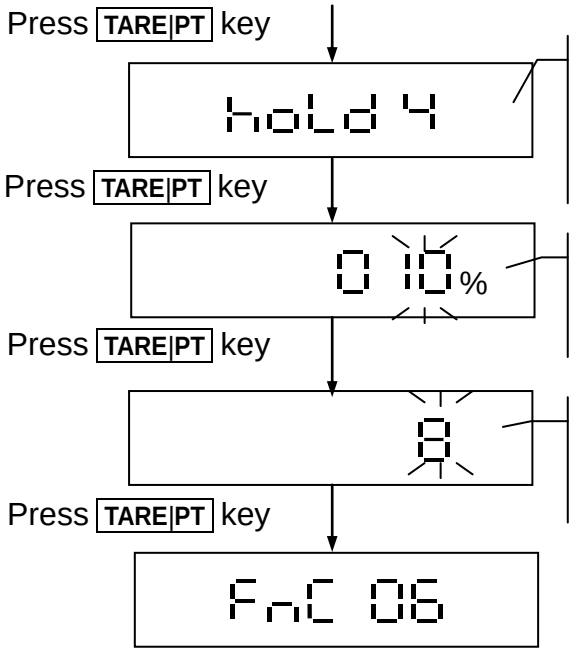
hoLd 2 = "Stable hold 1" mode: When the weight is stable, Hold the current stable weight until a key is pressed to release hold and get a new stable weight.

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

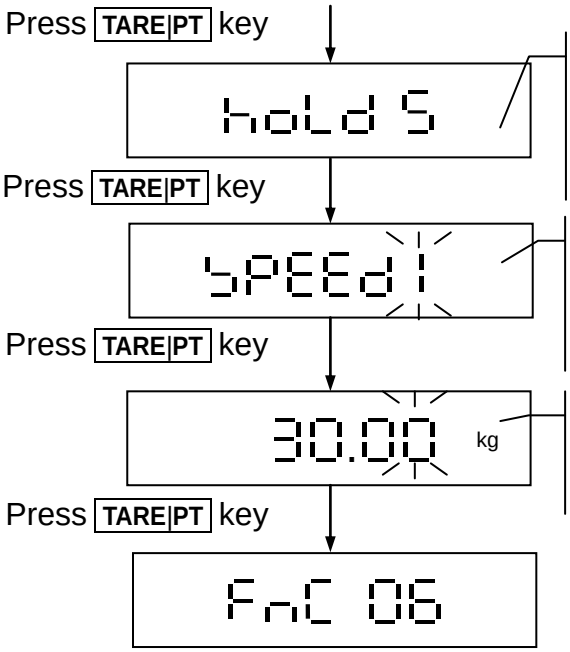


Hold function setting
Display the last used value
Use ZERO or UNIT key to select 4.
Press TARE|PT key to enter the hold setting

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

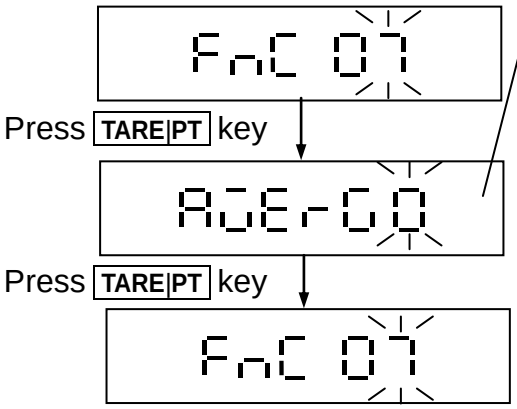
Hold speed setting
Display the last used value
Use ZERO or UNIT keys to enter value (1~5)
1: fastest; 5: slowest

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

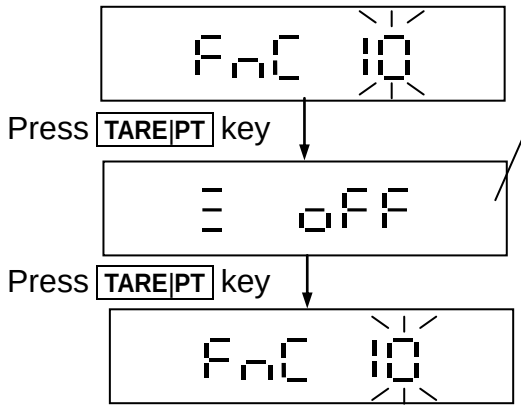
1 ⇒ Disable auto unit weight averaging

Activate when sample size + 5 ≤ new sample size ≤ 2 x sample size.

For example: sample size = 20

If new sample size = 25, auto unit weight average activate and sample size is then set to 25. Next time, you need to put 30 pcs to activate the function.

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

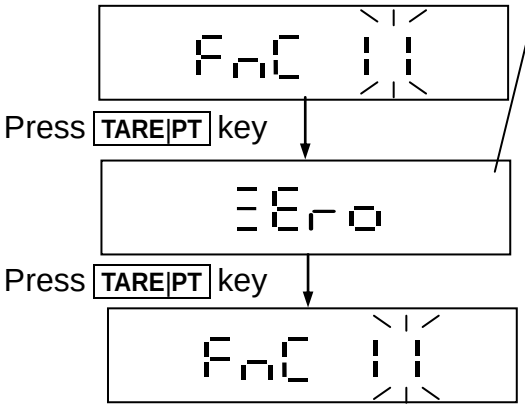
on ⇒ Enable Record the last zero

oFF ⇒ Disable Record the last zero

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

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)

2-1-9 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

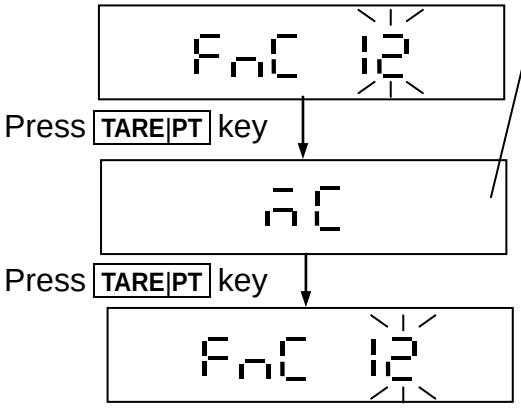
tArE ⇒ as 1TARE key

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

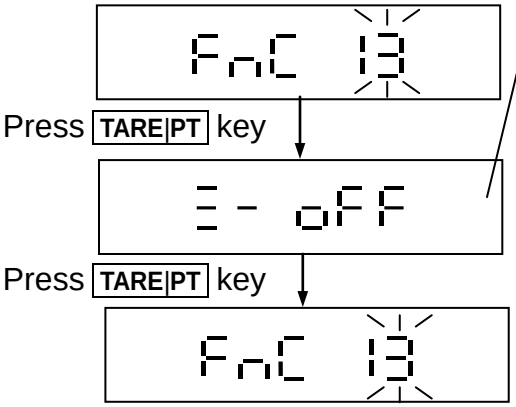
Use ZERO or UNIT key to select F key as MC, hr or t-tP.

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.

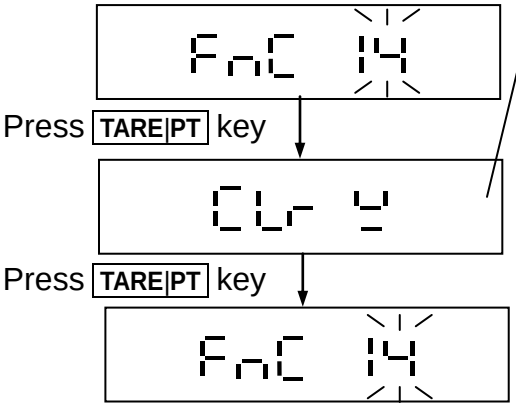
- Default setting = oFF

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

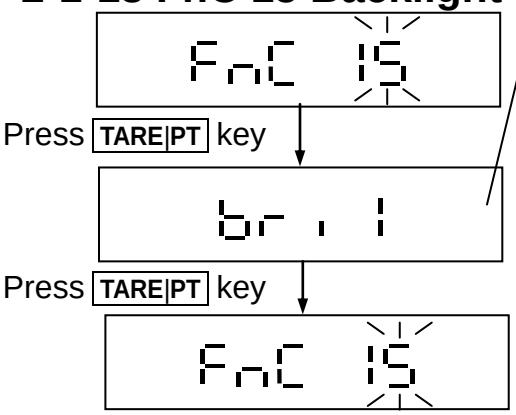
Display the last used value

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

W ⇒ W for white r ⇒ r for red y ⇒ y for yellow

o ⇒ o for orange G ⇒ y for green

2-1-13 FnC 15 Backlight Brightness Setting



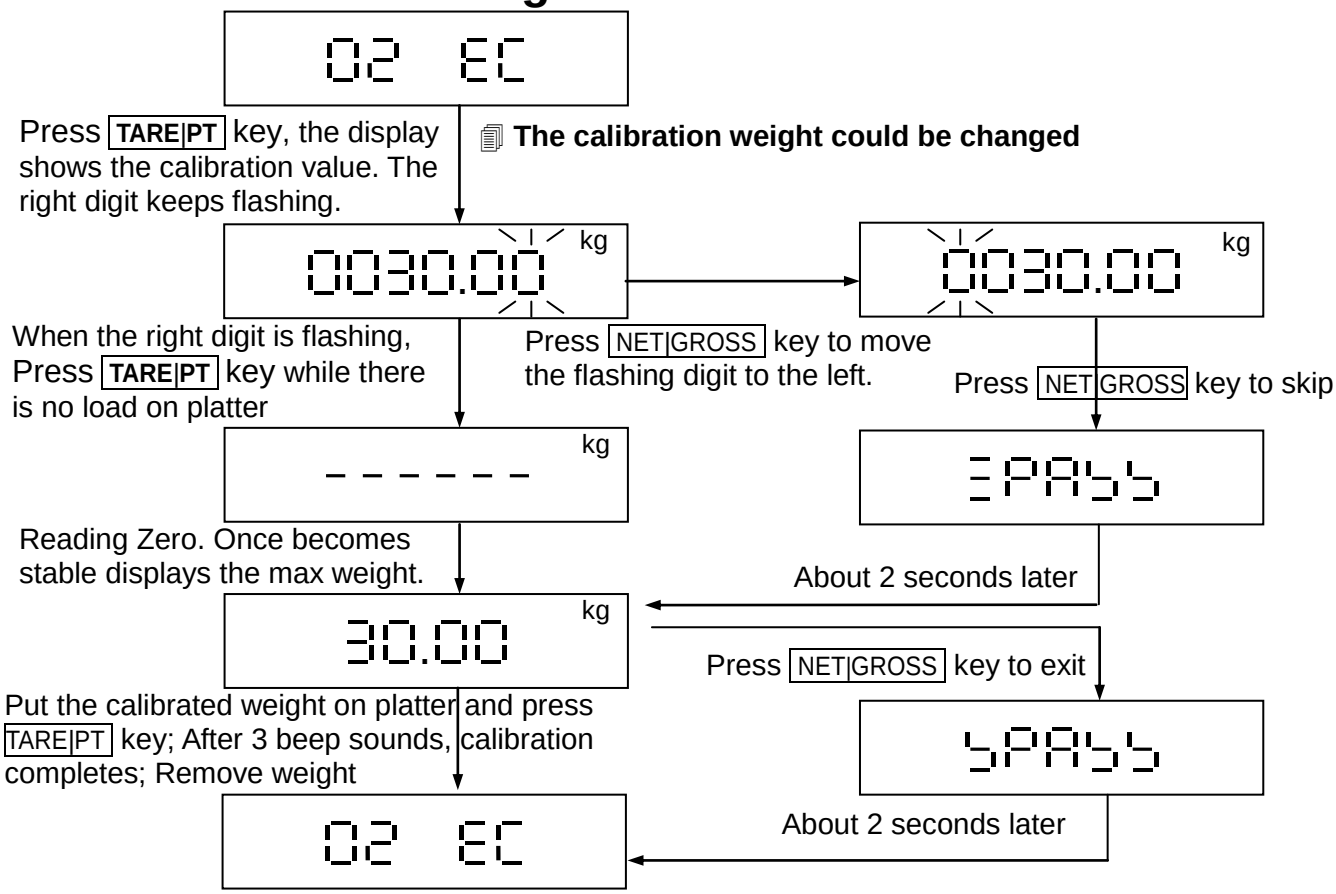
Backlight brightness setting

Display the last used value

Use ZERO or UNIT key to select 1~4.

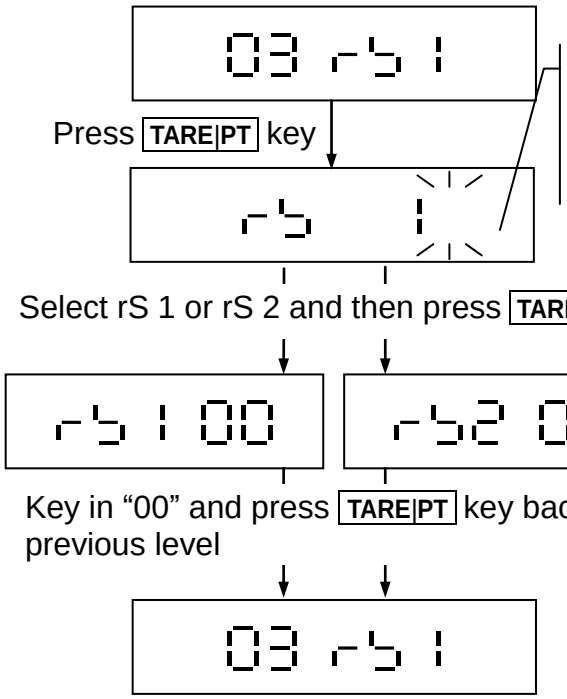
1: dimmest 4:brightness

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



Select "rS 1" or "rS 2"

UART 1 and UART 2 can operate independently and are set through rS 1 and rS 2

Use ZERO or UNIT key to loop select "rS 1" or "rS 2"

RS-232 settings

"rS 1" to set built-in RS-232

"rS 2" to set option card such as: RS-485/RS232 card, Bluetooth card, WIFI card, RJ45 card, USB card.

If Bluetooth card is used, please set "rS 2 01" = 9600 and "rS 2 01" = n81

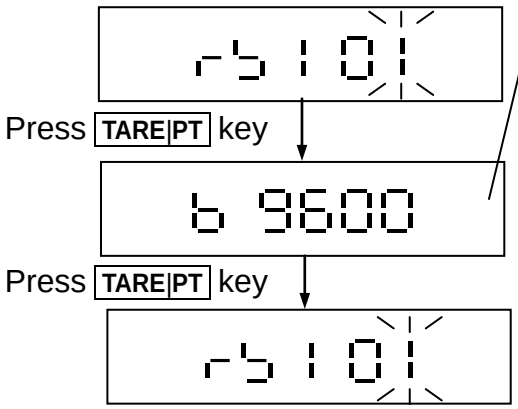
rS 1(Built-in RS-232)

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 ⇒ MODBUS ID Input
rS1 13 ⇒ Line Feed Input
rS1 14 ⇒ Input Company Name

rS 2 (Option Card)

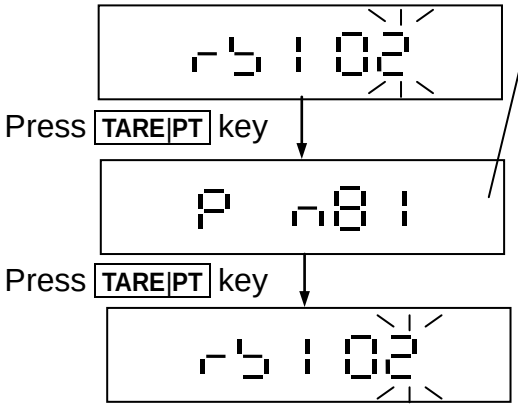
rS1 00 ⇒ Return to to previous level
rS1 01 ⇒ Baud Rate Settings
rS1 02 ⇒ Communication Protocol
rS1 03 ⇒ Output Format Settings
rS1 04 ⇒ Transmission Method
rS1 05 ⇒ Continuous Transmission Rate
rS1 08 ⇒ Output Condition Settings
rS1 09 ⇒ RS232 6/7 Digits Setting
rS1 12 ⇒ RS485 ID Input
rS2 06, 07, 10, 11 reserved

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)

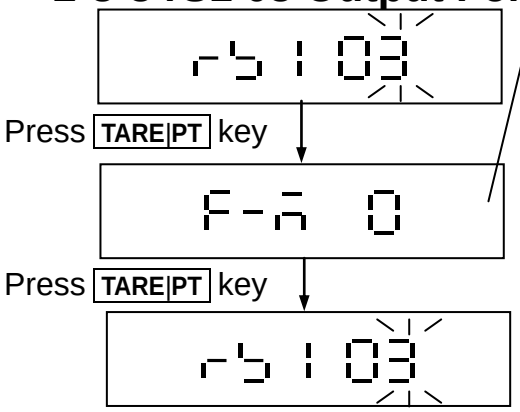
2-3-2 rS1 02 Communication Protocol Settings



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

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



Output format 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 ⇒ Indonesia stable format **note 8**
16 ⇒ Reserved
17 ⇒ KPZ printing format **note 6**
18 ⇒ Company name + F-M 10, see **note 7** and rS1 14
19 ⇒ Indonesia M+ format **note 9**
20 ⇒ Indonesia M+ format **note 10**
21 ⇒ Philippine format **note 11**

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

Note1: F-n 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-n 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_PLUS, it can print out. It is not available on counting mode.
For example:
70.15Kg print as: =51.07000=51.07000=51.07000=51.07000=51.07000
negative 70.15Kg print as: =51.0700-=51.0700-=51.0700-=51.0700-=51.0700-

Note4: 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_PLUS, 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_PLUS, 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	T	T	T	pcs	pcs	pcs	pcs	pcs	pcs	<LF>
p	1	,	1	<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	N	N	N	pcs	pcs	pcs	pcs	pcs	pcs	<LF>
p	1	,	1	<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

Note7: F-n 18 = Company name + F-M 10
Company name can be set in rS1 14.

[Company Name]
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.

Note8: F-n 15 = Indonesia stable format
NO.
0001. Gross+ 0.200kg,25-09-2023
0002. Gross+ 0.200kg,25-09-2023
0003. Gross+ 0.200kg,25-09-2023

When totalization data is clear, it will print:

Total Gross weight :+ 0.600kg25-09-2023

Note9: F-n 19 = Indonesia M+ format

Simple format: only gross weight

PT. Tempo Scan Pacific Indonesia, Tbk
DATE:2023/09/25 TIME: 15:16
Gross:+ 0.200 kg
(3 blank lines)
PT. Tempo Scan Pacific Indonesia, Tbk
DATE:2023/09/25 TIME: 15:20
Gross:+ 0.200 kg
(3 blank lines)

When totalization data is clear, it will print:

PT. Tempo Scan Pacific Indonesia, Tbk
DATE:2023/09/25 TIME: 15:17
Gross:+ 0.400 kg
(4 blank lines)

Note10: F-n 20 = Indonesia M+ format

Complete format

PT. Tempo Scan Pacific Indonesia, Tbk
TICKET NO.0001
DATE:2023/09/25
TIME: 15:14
Gross:+ 0.200 kg
Tare:+ 0.000 kg
Neto:+ 0.200 kg
(3 blank line)
PT. Tempo Scan Pacific Indonesia, Tbk
TICKET NO.0002
DATE:2023/09/25
TIME: 15:16
Gross:+ 0.200 kg
Tare:+ 0.000 kg
Neto:+ 0.200 kg
(3 blank line)

When totalization data is clear, it will print:

PT. Tempo Scan Pacific Indonesia, Tbk
DATE:2023/09/25 TIME: 15:17
Gross:+ 0.400 kg
TOTAL NUMBER
OF TICKETS 0002
DATE:2023/09/25
TIME: 15:15
Gross:+ 0.000 kg
Tare:+ 0.000 kg
Neto:+ 0.000 kg
TOTAL WEIGHT
+ 0.400 kg
(4 blank line)

Note11: F-n 21 = Philippine format, can work with Continuous transmission (rS1 04 = StrEAM)、Auto stable transmission (rS1 04 = Auto) or M+ mode (rS1 04 = M_PLuS)

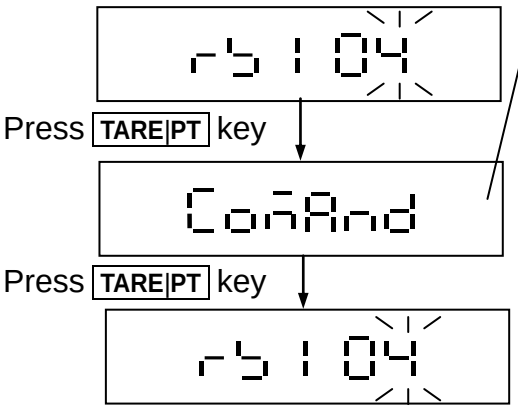
- rS1 09 must be set to 7 digits
- For positive values, the “+” sign is not displayed. For negative values, the “-” sign is placed in front of the number, and <CR><LF> is added at the end, a total of 11 bytes.

ASCII code of special characters: <SP> = space space = 0x20;
<CR> = carriage return = 0x0d; <LF> = line feed = 0x0a

For example: -1.00 as shown below

<SP>	<SP>	<SP>	<SP>	-	1	.	0	0	<CR>	<LF>

2-3-4 rS1 04 Transmission Method

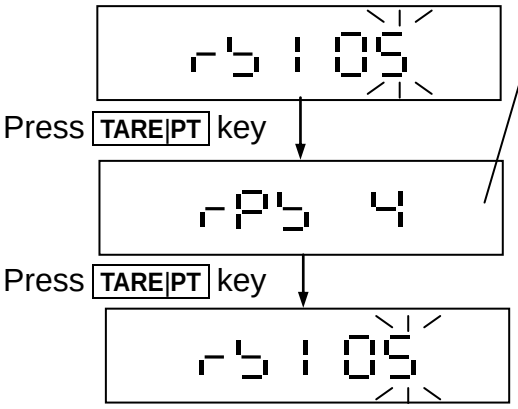


Transmission Method
Display the last used value
Use ZERO or UNIT key to select. Default = ConAnd
ConAnd = Command mode
StrEAn = Continuous transmission
Auto = Auto transmit when stable
APLUS = M+ Mode
rS-oFF = RS232 is off
Modbus = Modbus RTU

Only one of rS 1 04 and rS 2 04 can be set to Modbus. When rS 1 04 is set to Modbus mode, rS 2 04 cannot be set to Modbus or Mobus TCP.

To use remote indicator, the first indicator must be set to command mode to connect to the remote indicator via RS-485, and the remote indicator also must be set to remote display.

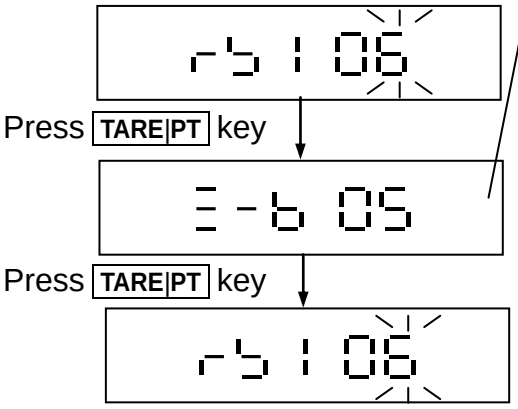
2-3-5 rS1 05 Continuous Transmission Rate



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

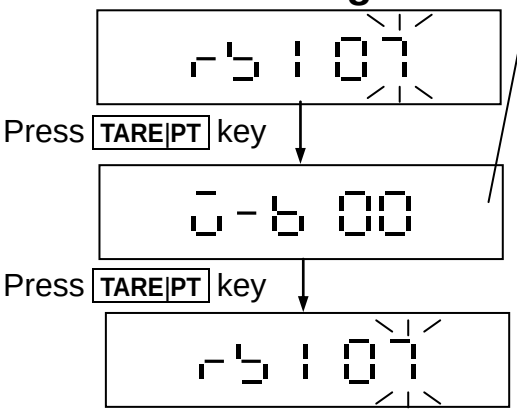


Zero Band Setting for Auto Transmission
Display the last used value
To auto transmit once, weight must return < zero band first, and then place weight >= zero band.

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

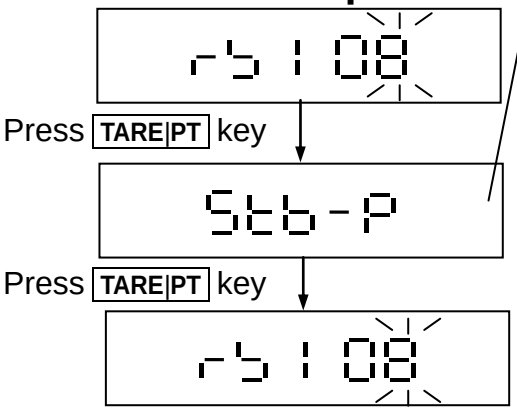


Weight Band Setting for Auto Transmission
Display the last used value
rs1 07 must be used with rs1 06. After data has been sent once and weight is not removed, to send data again, please keep adding weight until:
weight is > zero band (rS1 06)+ weight band (rS1 07)

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".

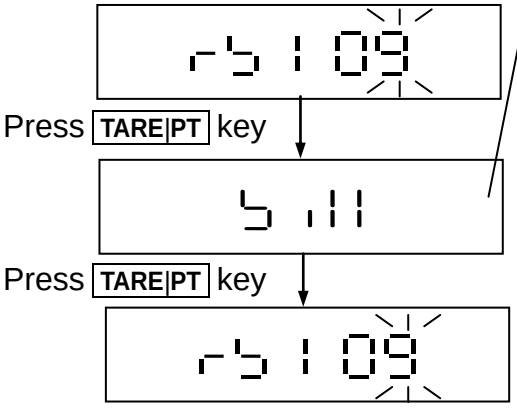
2-3-8 rS1 08 Output Condition Settings



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)

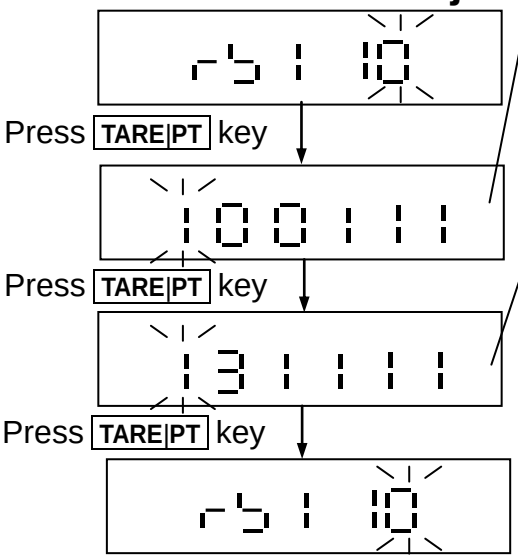
ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward
(For approval models, use NET|B/G key instead)

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 digit.
6 digit = 6 digits
7 digit = 7 digits

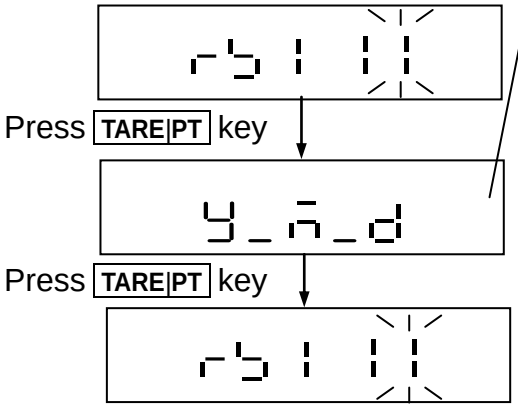
2-3-10 rS1 10 RTC Adjustment



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

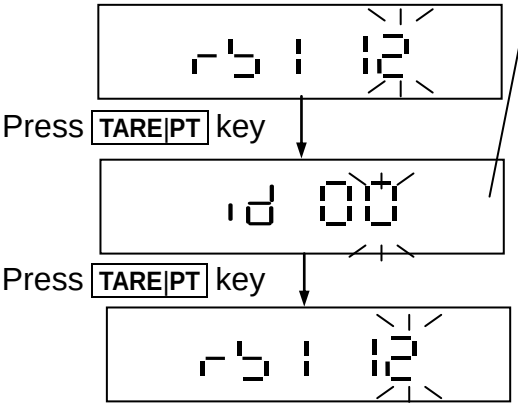
2-3-11 rS1 11 Y/M/D Print Format



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

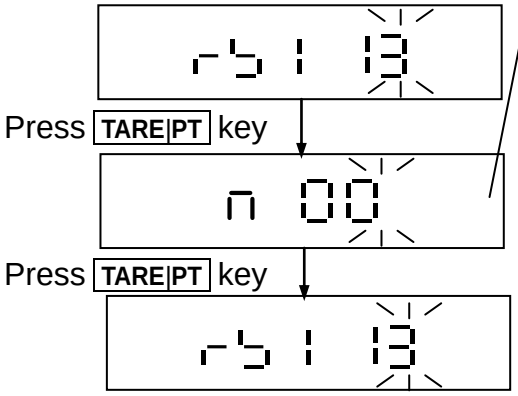
ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward
(For approval models, use NET|B/G key instead)

2-3-12 rS1 12 MODBUS ID Input



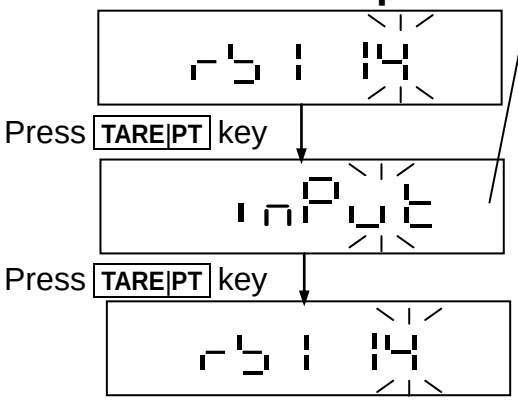
MODBUS ID Input
Display the last used value
Use ZERO or UNIT key to select and press TARE|PT key to move to the right.

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.

2-3-14 rS1 14 Input Company Name



Input Company Name

1. Set rS1 03 = 18 and set rS1 04 = M_PLuS (M+ Mode)
2. Connect the RS232 to PC, and open the com-port test software to prepare for input.
3. Enter rS1 14 and "input" will display and press NET|GROSS key to return), then you can input strings from the com-port test software. For example: Enter EXCELL corp.[CR][LF] and press send.

🗐 [CR][LF] must be used after company name to complete.

4. Once name is successfully set, indicator display "END" and return to rS1 14.

🗐 Now rS1 03 = 18 can be used and company name is added before F-M 10. If company name entered is greater than 30 characters, "Error" will display and return back to rS1 14.

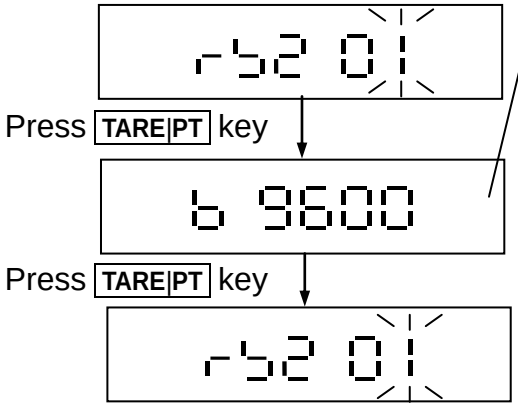
NET/GROSS key ⇒ return key

2-4 Option Card rS 2 Serial Interface Settings

🗐 UART 1 and UART 2 can operate independently and are set through rS 1 and rS 2 respectively. rS 2 is used to set the transmission settings of optional cards, for example: RS-485/RS-232 card, Bluetooth card, WIFI card RJ45 card and USB card.

rS1 00 ⇒ Return to to previous level	rS1 05 ⇒ Continuous Transmission Rate
rS1 01 ⇒ Baud Rate Settings	rS1 08 ⇒ Output Condition Settings
rS1 02 ⇒ Communication Protocol	rS1 09 ⇒ RS232 6/7 Digits Setting
rS1 03 ⇒ Output Format Settings	rS1 12 ⇒ RS485 ID Input
rS1 04 ⇒ Transmission Method	
🗐 rS2 06, 07, 10, 11 reserved	

2-4-1 rS2 01 Baud Rate Settings



Baud rate setting

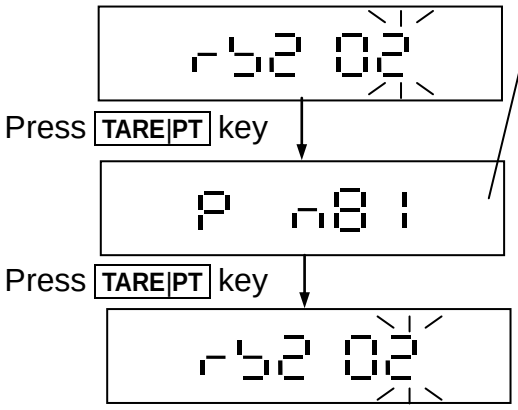
Display the last used value

Use **ZERO** or **UNIT** key to select the desired Baud rate

600、1200、2400、4800、9600、19200 (bits/sec)

Default setting = 9600 (bits/sec)

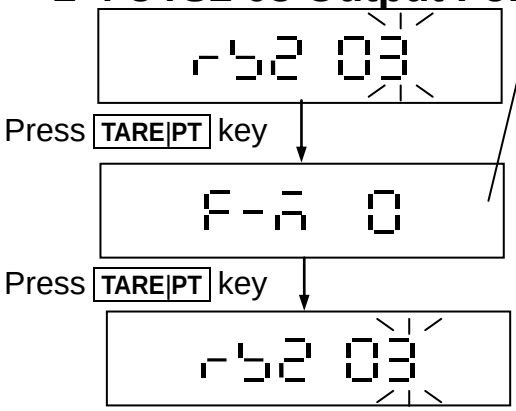
2-4-2 rS2 02 Communication Protocol Settings



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

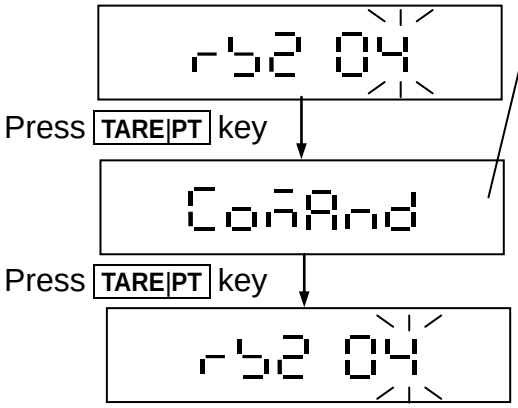
ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward
(For approval models, use NET|B/G key instead)

2-4-3 rS2 03 Output Format Settings



Output format 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
Output format please refer to rS1 03 for more details.

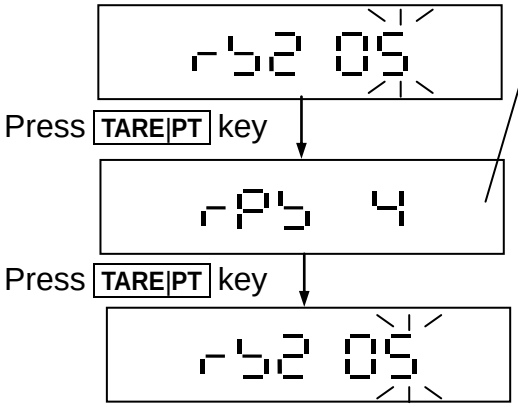
2-3-4 rS2 04 Transmission Method



Transmission Method
Display the last used value
Use ZERO or UNIT key to select. Default = CoMMd
CoMMd = Command mode
StrEAM = Continuous transmission
Auto = Auto transmit when stable
A_PLUS = M+ Mode
rS-oFF = RS232 is off
Modbus = Modbus RTU
Md tCP = Modbus TCP
rEMotE = Remote display

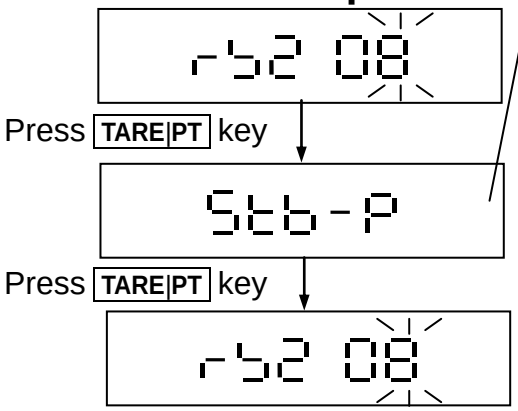
Only one of rS 1 04 and rS 2 04 can be set to Modbus. When rS 2 04 is set to Modbus or Modbus TCP mode, rS 1 04 cannot be set to Modbus.
To use remote indicator, the first indicator must be set to command mode to connect to the remote indicator via RS-485, and the remote indicator also must be set to remote display.

2-4-5 rS2 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

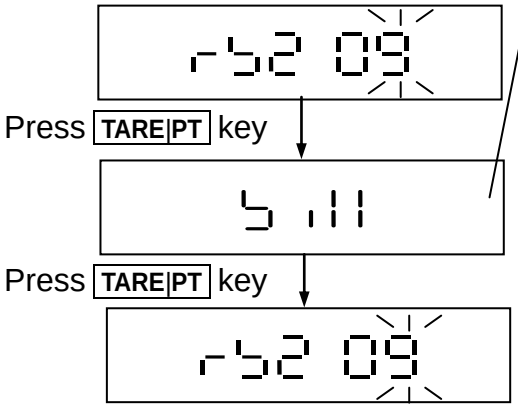
2-4-6 rS2 08 Output Condition Settings



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)

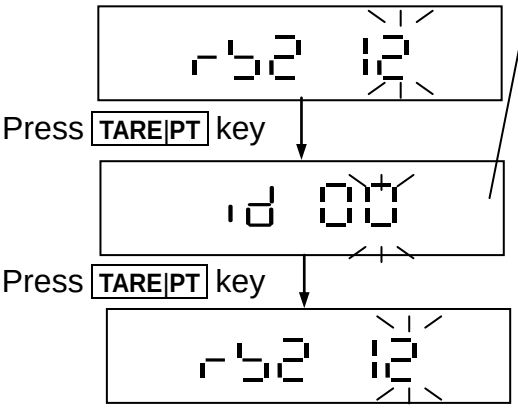
ZERO key ⇒ Upward key (0~9 digit entry)
UNIT key ⇒ Downward key (0~9 digit entry)
TARE|PT key ⇒ Move cursor rightward
NET|GROSS key ⇒ Move cursor leftward
(For approval models, use NET|B/G key instead)

2-4-7 rS2 09 RS232 6/7 Digits Setting



Output condition settings
Display the last used value
Use ZERO or UNIT key to select. Default = 5 .11.
5 .11 = 6 digits
5EGEn = 7 digits

2-4-8 rS1 12 RS-485 ID Input

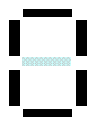
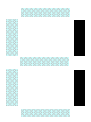
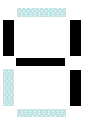
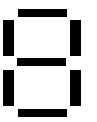
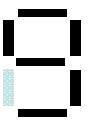
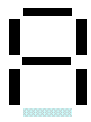
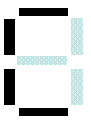
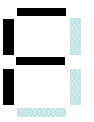
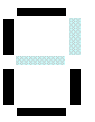
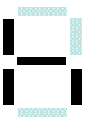
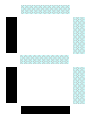
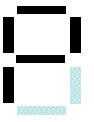
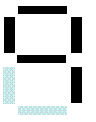
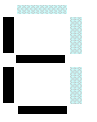
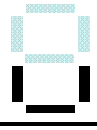
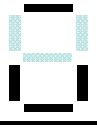
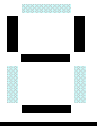
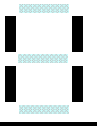
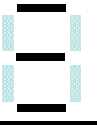


RS-485 ID Input
Display the last used value
Use ZERO or UNIT key to select and press TARE|PT key to move to the right.

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)

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.

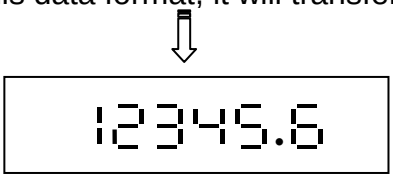
NG means the weight value is over max capacity
NN means the weight value is non-numeric

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

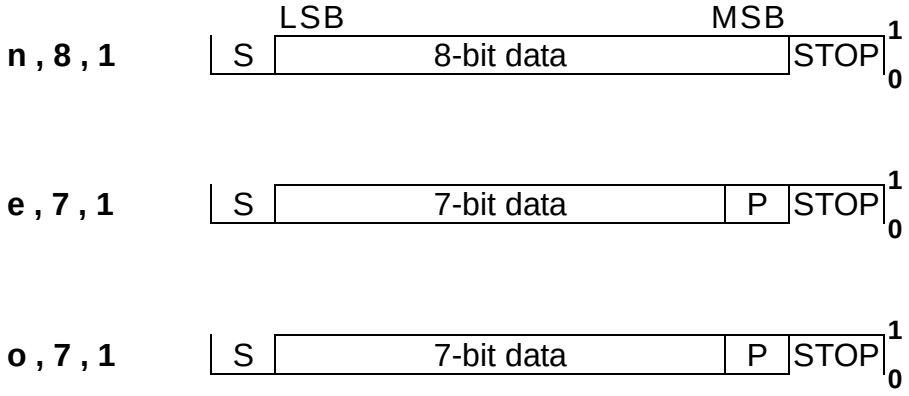
Switch between old and new (OIML) formats: Press and hold M+/PRINT key to turn on the scale, and when the display oLd/nEW appear for 2 seconds, release it to restart the scale
nEW (OIML):

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

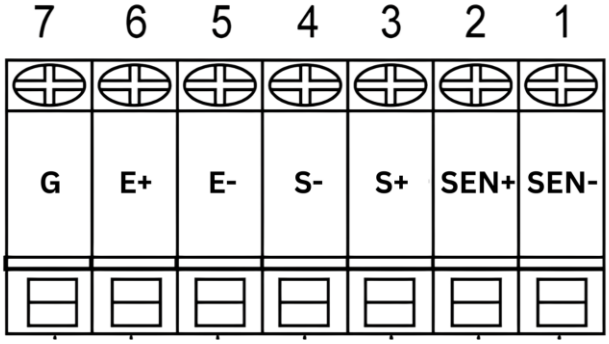
Appendix 4 MODBUS Data Address Table I

Data Register		*Bit I/O*		Bit I/O	
Function Code 03 (Read)		Function Code 01 (Read)		Function Code 05 and 15 (Write)	
Modbus	SCALE	Modbus	SCALE Output	Modbus	SCALE Input
40000 ~ 40001	As display value	00000	Stable status	01000	Zero
40002 ~ 40003		00001	Zero status	01001	
40004 ~ 40005		00002	Gross	01002	Tare
40006 ~ 40007		00003	Net	01003	Clear Tare
40008 ~ 40009				01004	
40010 ~ 40011		00050		01005	
40012 ~ 40013		00051		01006	
40014 ~ 40015		00052		01007	
40016 ~ 40017		00053		01008 ~ 01027	
40018 ~ 40019		00054			
40020 ~ 40021		00055		01049	
40022 ~ 40023		00056		01050	
40024 ~ 40025		00057		01051	
40026 ~ 40027		00058		01052	
		00059	Hi	01053	
Function Code 06 and 16 (Write)		00060	Ok	01054	
41000 ~ 41001	Pre-tare value	00061	Lo	01055	
41002 ~ 41003		00062		01056	
41004 ~ 41005		00063		01057	
41006 ~ 41007		00064		01058	
41008 ~ 41009		00065		01059	
41010 ~ 41011		00066		01060	
41012 ~ 41013		00067			
41014 ~ 41015	LO value	00068			
41016 ~ 41017		00069			
41018 ~ 41019	HI value				
41020 ~ 41021					
41022 ~ 41023					
41024 ~ 41025					
41026 ~ 41027					
41100 ~ 41101					

- The “As display value” of firmware version 02152101/02052101is at “40004 ~ 40005”
- The settings marked in grey are not available.

Appendix 5 Wiring Instructions

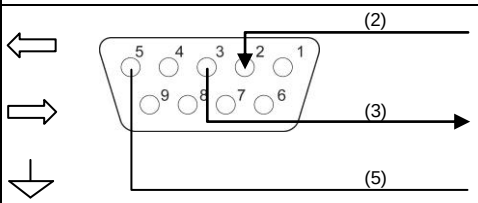
Load cell wiring method

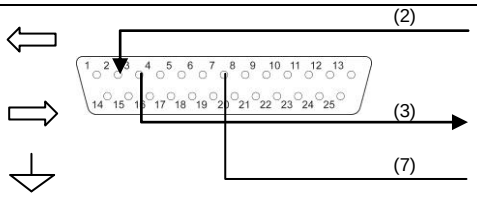


(1) To connect to a 4 wire load cell, please SHORT circuit J1 and J2, and there is no need to connect to SEN+ and SEN-.
(2) To connect to a 6 wire load cell, please OPEN circuit J1 and J2.

RS232 wiring instruction

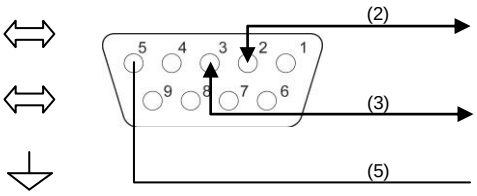
To connect RS232, please open the housing, RS232's PIN connectors locate on the bottom-right corner of the main board. The most common connection method is using 9PIN and 25PIN, as shown below:

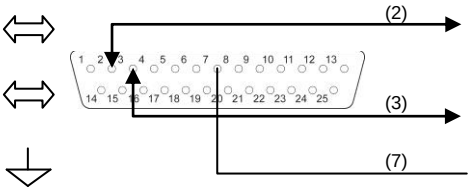
PC	PIN	PC PIN Function	Female 9 PINS (PC PIN)	Indicator PIN	Queen2.0/Galaxy2.0
	2	Receive Data (from Queen / Galaxy)		TxD	
	3	Transmit Data (from Queen / Galaxy)		RxD	
	5	Signal Ground		GND	

Printer	PIN	Printer PIN Function	Male 25 PINS (Printer PIN)	Indicator PIN	Queen2.0/Galaxy2.0
	2	Receive Data (from Queen / Galaxy)		TxD	
	3	Transmit Data (from Queen / Galaxy)		RxD	
	7	Signal Ground		GND	

RS485 wiring instruction (need RS-485/RS-232 card)

The PIN connector of RS485 is located on the lower right side of the motherboard. T The most common connection method is using 9PIN and 25PIN, as shown below:

PC	PIN	PC PIN Function	Female 9 PINS (PC PIN)	Indicator PIN	Queen2.0/Galaxy2.0
	2	Data I/O (half-duplex)		DB	
	3	Data I/O (half-duplex)		DA	
	5	Signal Ground		SG/ GND	

Printer	PIN	Printer PIN Function	Male 25 PINS (Printer PIN)	Indicator PIN	Queen2.0/Galaxy2.0
	2	Data I/O (half-duplex)		DA	
	3	Data I/O (half-duplex)		DB	
	7	Signal Ground		SG/ GND	

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.*