

Weighing Scale

4key & 5key





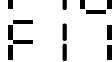





User manual

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Thank for your purchasing of our EXCELL Weighing Scale. To guide you to use our product correctly, please read this User Manual carefully to extend the life of machine and to avoid error.

Instructions for Use

1. Please keep scale in a cool and dry place. Do not store under high temperatures.
2. Please keep the scale clean and free from insect infestation.
3. Avoid impacting with other items or overloaded with excessively heavy weights (The load must not exceed the maximum capacity of the scale).
4. If the scale is not going to be used for some time, please clean it and store it in a plastic bag in dry condition. A desiccant sachet may be included to prevent moisture from building up.
5. Do not mix different types of dry battery or mix used dry batteries with new dry batteries.
6. Please operate or charge the scale in an open area. Do not squeeze the power cord to avoid wire on fire.
7. Operating temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
8. Any suggestion is warmly welcome.

Preparing to Use the Scale

1. Locate the scale on a firm level surface free from vibrations for accurate weight readings. Adjust the four leveling feet to centre the leveling bubble on the scale.
2. Avoid hot sunshine directly on the scale or near the exhaust port of ventilating system.
3. Please use a separate power source plug, to avoid the disturbance of other electric appliance.
4. There should be no weight on the scale when power is turned on.
5. Commodity should be placed at the centre of platter when being weighed, and its size should not exceed the dimension of the platter.
6. Please warm the scale 15 ~ 20 minutes before using.
7. Please note that when  symbol appears on the screen, the scale needs to be charged.
8. Introduction of Storage Battery:



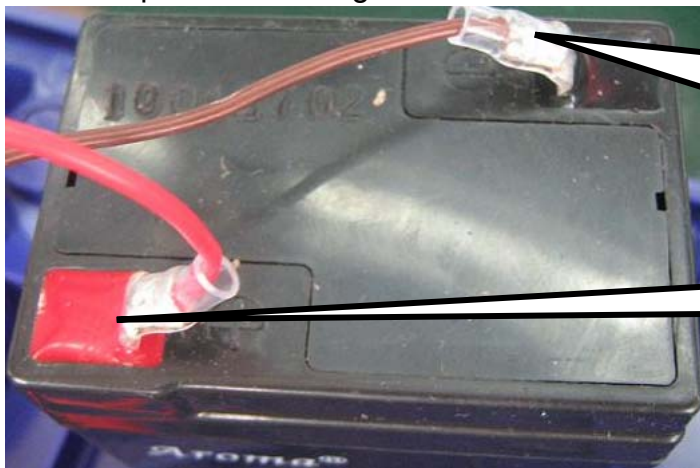
Due to the storage battery adopt the advanced free-maintaining technique, customers need not to replenish electrolyte.

The scale should be recharged every 3 months to prevent failure of the internal rechargeable battery.

1. The battery should be charged for 8~10 hours.
2. The temperature of battery should below 45°C.

Maintaining

1. Please do not discharge with over-current when using the battery. Please charge the battery after discharging current.
2. Please take down the battery when the scale is not used for a long time or break the connection of cathode.
3. Do not short the battery terminals to check whether there is current. Please check whether the connection point is firm to guarantee good connection.
4. The battery should be replaced by specialized person. **No reverse-battery or the product will be damaged.**
 - a) Anode of battery should be connected with Anode of product battery (usually red cable)
 - b) Cathode of battery should be connected with Cathode of product battery (usually brown cable or black cable)
 - c) See the picture following



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

Red cable connected with Cathode of battery

Safety warnings

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



No burning



Caution Corrosion



Warning explosion



Children faraway

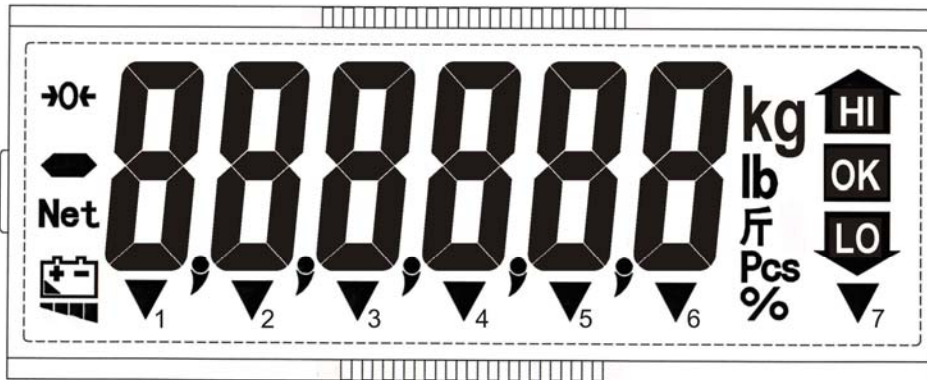


Chapter 1 Introduction

1-1 Production Introduction

1. High performance A/D converter
 - 0.3 uv/D high sensitivity
 - zero point adjustable range -2mV~ +5mV
 - Sampling speed 15 times/second
 - use range -4mV ~ +30mV
 - non-linear scale 0.01% full scale
 - load cell stimulate power source 5V DC ±2% 100mA
2. According to different resolution to do linearity calibration
 - Ordinary resolution models (below 10000)
Do specification calibration first then do weight calibration
 - High resolution models (10000~30000)
Do linearity calibration first→ specification calibration → weight calibration at last
3. One group of RS232 (option)
- 4.4 HOLD functions (contain animal scale HOLD function)
5. LCD display
6. Adapter and rechargeable battery
7. Blackout automatically in order to keep the system stable
(When battery voltage is lower than system voltage, the system will cut the power off automatically to ensure its stable and accuracy.)
8. LED BACKLIGHT

1-2 Display Description




HI	:	High limit value
OK	:	OK value
LO	:	Low limit value
→0←	:	“Zero” indication
Net	:	“Net weight” indication
kg	:	“kg” unit
lb	:	“lb” unit
斤	:	No function
Pcs	:	Counting mode
%	:	Percent indication

	:	“Low battery power” indication
▼1	:	“Stable” indication
▼2	:	“Pre-tare mode” indication
▼3	:	“Accumulation mode” indication
▼4	:	No function
▼5	:	“Samples insufficient” indication
▼6	:	“Unit weight insufficient” indication
▼7	:	“Viss” unit (Burma unit)



1-3 Keypad Functions Description

☰ 4-key model has no  key.



Press this key to zero the scale.



Press this key to tare (deduct the container weight)



Net/Gross key



Press this key to print



Press this key to select the required unit from the preset units

1-4 Power Description

Power Selection

1. 6 V / 4 Ah Rechargeable battery
2. 110 V / 220 V ±15 % AC

Recharge Voltage


1. AC 110 V +10% , -15%
2. AC 220 V +10% , -15%


Power Consumption

State	Consumption	Time
(indicator+ L/C + no backlight)	26 mA	180 hours
indicator+ L/C + front display backlight	32 mA	140 hours
indicator+ L/C + front display backlight +back display backlight	40 mA	110 hours
Single RS-232	20 mA	






Low Power Alarm

Please note when the () symbol keeps flashing on the left down corner of the display, the batteries should be recharged.

- ☞ The scale will turn off automatically after a few hours when the low battery warning symbol shows up. The scale must be fully recharged, before operating again.
- ☞ Please recharge at once when the symbol  shows in order to keep the weight accuracy.




1-5 Error Messages

⇒ Weight exceed 9d of maximum capacity. (d=division)

⇒ Zero value after power on is over +10% FS.

⇒ Zero value after power on is less than -10% FS.

⇒ Unstable zero return, unstable over 10 sec. Press  to leave E4.

⇒ Zero is too high when calibrating. (over internal value 350,000)


⇒ Zero is too low when calibrating. (under internal value 80,000)

⇒ If there is no Tare or Pre-tare, the weight is less than -20d.




Chapter 2 General Operation Description

2-1 Units Selection () (only for the model “5key”)



Press  key to select the units “kg” and “lb”.

- The selected unit will be memorized when you turn the scale off. And the memorized unit will appear after you turn on the scale next time.


2-2 Zero Function ()

Press  key to re-zero the display with no load on the platter. When zero is set, the “→0←” symbol will be displayed.






2-3 Tare Function ()

- Place the container on the platter, after stable and press  key, the weight value returns to zero and net indication “▼” is on.
- Place goods into the container, then the scale shows the net weight of goods.
- When removing the container and goods, the display shows the negative weight value of the container. Then press  key to clear tare value. The scale returns to zero and Net indication “▼” is on.

- Continuous tare rang =Full Scale.

- Multiple tare operation ⇒ Users can continuously increase or decrease the tare value by pressing the  key.



2-4 Net/Gross Function ()

In Tare mode, press  key once to display gross value. Net symbol “▼” disappears, and the gross value “▼” appears. Press  key again, it displays net value, net symbol “▼” appears and gross symbol “▼” disappears. Press  key continually to display net value or gross value. In tare mode,  key is able to work. When it displays “▼”, all keys are disable except  .



2-5 Backlight Function

< Method 1 >

Press  key, the display shows “CEnt”. At this time, press  key to select backlight mode. There are auto backlight mode(The display shows “BL.Auto”), backlight on mode(The display shows “BL. on”) and backlight off mode (The display shows “BL. oFF”).

< Method 2 >

Press the hide key in order to select auto backlight mode, backlight on mode and backlight off mode.

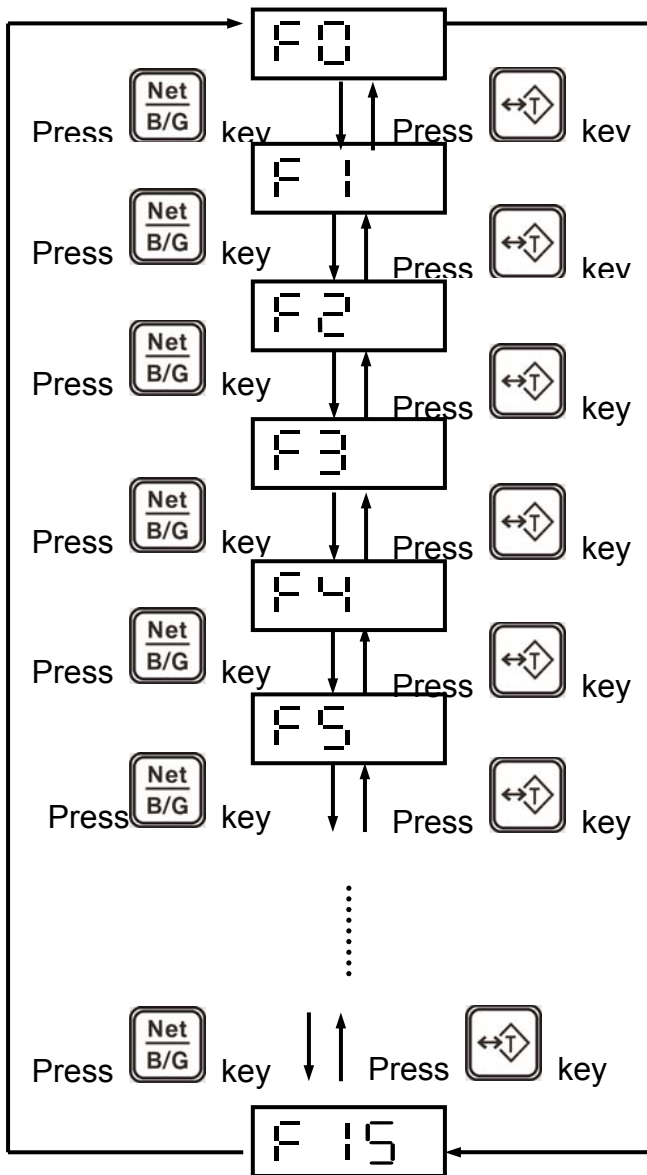
- Auto backlight mode (BL.Auto) : When the weight is over 10d or any key is pressed, the display backlight will be switched on. When the weight is less than 10d, the display backlight will be switched off after 8 seconds.
- Backlight on mode (BL. on) : Display backlight is on all the time.



Chapter 3 General Function Setting



- ◆ Switch on the scale. While the scale is counting down to zero, press and hold key until the display shows the software program version number **020 18**. Release the key, the scale enters into the configuration setting mode and **F0** is showed on the display.



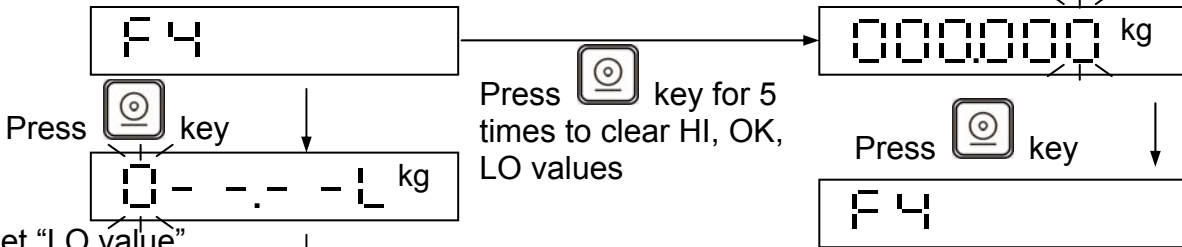
- F 0 ⇒ Reserved
- F 1 ⇒ Reserved
- F 2 ⇒ Reserved
- F 3 ⇒ Reserved
- F 4 ⇒ Check-weighing configurations
- F 5 ⇒ RS-232 Interface output Setting
- F 6 ⇒ Exit setting mode
- F 7 ⇒ Internal value display mode
- F 8 ⇒ Reserved
- F 9 ⇒ Reserved
- F 10 ⇒ G Value adjustment
- F 11 ⇒ ID code setting
- F 12 ⇒ Print key () function setting
- F 13 ⇒ Reserved
- F 14 ⇒ Printing orders when F 5 is set as **r n P 6** or **r n P 7**
- F 15 ⇒ Reserved



3-1 F4 ⇒ Check Weighing Configurations

◆ If hold mode is set, accessing to F4 is denied.

Use or key to select F4 function ⇒ the display shows **F4**



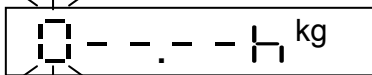
Preset "LO value"
(LO value > 10d)

Press and key to set "LO value"

E.g. LO value = 2 kg



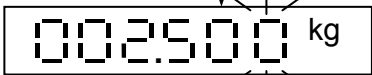
Press key



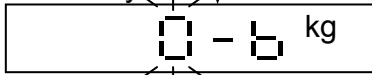
Preset "HI value"
(HI value ≥ LO value)

Press and key to set "HI value"

E.g. HI value = 2.5kg



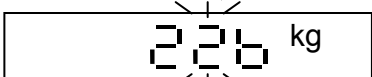
Press key



Preset "Beeper value"

Press and key to set "Beeper value"

E.g. Beeper value=22



Press key



key = Increase the flash value by one (0 ~ 9)
 key = Confirm key

- - - X X b
 A B

A ⇒ 0 = After stable, the beeper beeps and the indications are on
 1 = After stable, the beeper beeps; whether stable or not, the indications are on
 2 = whether stable or not, the beeper beeps and the indications are on.
 3= open warning device: when the weight is higher than HI value and the weight is stable, LCD is on and Relay Card open.

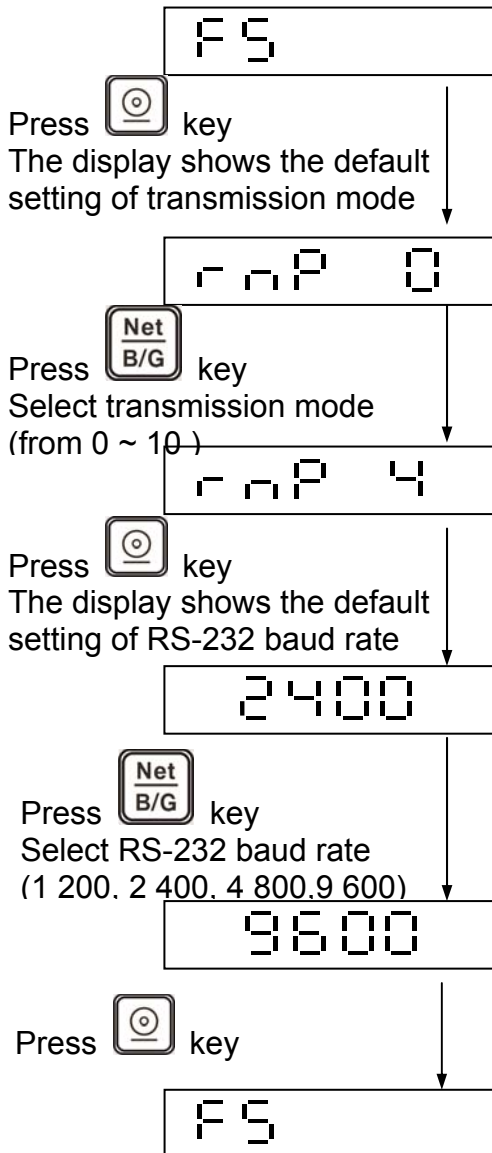
B ⇒ 0 = No beep
 1 = OK (when the weight is between Low limit & High limit.), the beeper beeps.
 2 = When the weight is under or equal to Low limit (must be over 10d) & over or equal to High limit, the beeper beeps.

◆ LCD indication description:
 ≧ ≦ ≧ ≦ ≧ ≦
 | ←←←← | ←←←←← | →→→→→ | →→→→
 10d Low limit value High limit value



3-2 F5 ⇒ RS-232 Interface Output Setting (option)

Use or key to select F5 function ⇒ the display shows **F5**



key = Increase the flash value by one (from 0 to 10) or selecting baud rate from 1 200, 2 400, 4 800 and 9 600(default setting)

key = Confirm key

- r n P 0 ⇒ No transmission
 - r n P 1 ⇒ Stable transmission *
 - r n P 2 ⇒ Continuous transmission *
 - r n P 3 ⇒ Press key to transmit in simple mode. *
 - r n P 4 ⇒ Press key to transmit in complete mode. *
 - r n P 5 ⇒ Stable transmission in totalizing mode.
The format is as same as r n P 3 *
 - r n P 6 ⇒ Refer to F14 *
 - r n P 7 ⇒ Refer to F14 *
 - r n P 8 ⇒ Press key to transmit *
 - The format is as same as r n P 1 and r n P 2 *
 - r n P 9 ⇒ Continuous transmission, specific format *
 - r n P 10 ⇒ transmit specific format *
- * : RS-232 is open
For Brazil models, if unit weight is less than 0.1d, RS232 closed.

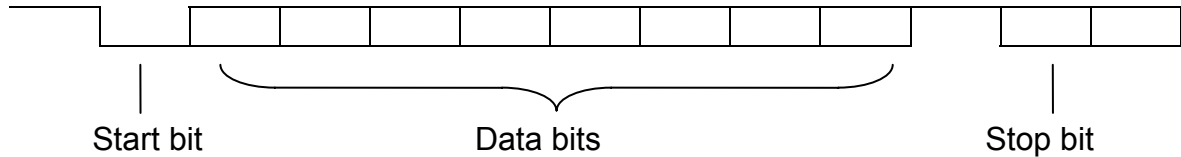


RS-232 Interface Format

I . Mode: UART Signal of EIA-RS0232 C

II . Format :

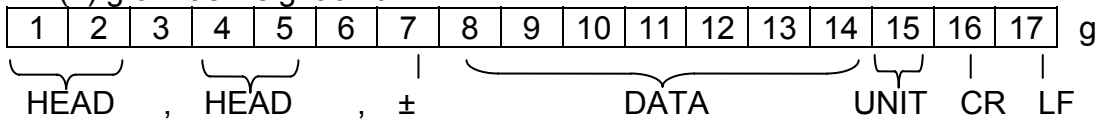
- 1. Baud rate : 1 200, 2 400, 4 800, 9 600 bits/second
- 2. Data bits : 8 bits
- 3. Parity bit : None
- 4. Stop bits : 1 bit
- 5. Code : ASCII (Exchange code of American standard)



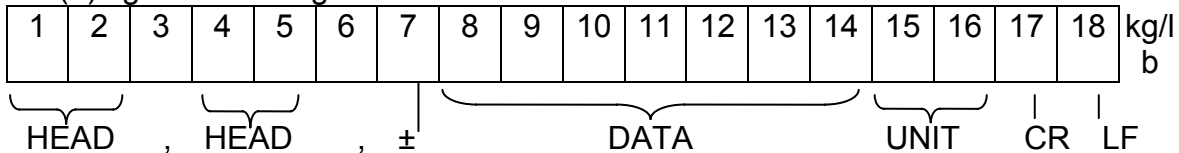
RS-232 Data Format

Stable transmission (), Continuous transmission (),
 Press key to transmit ()

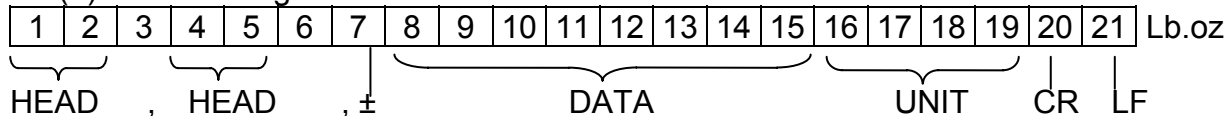
(1) gram as weight unit



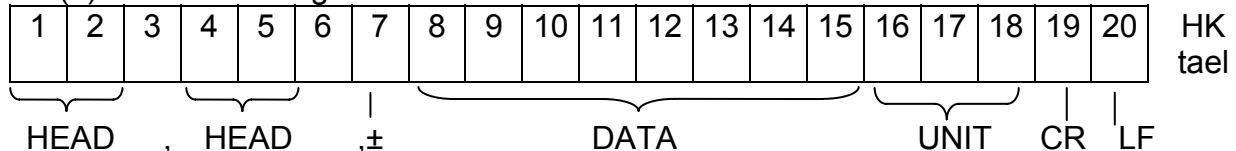
(2) kg or lb as weight unit



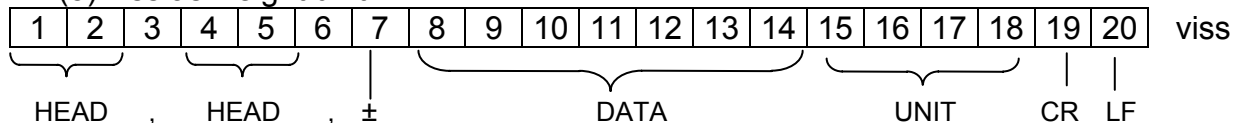
(3) lb.oz as weight unit



(4) HK tael as weight unit



(5) viss as weight unit





HEAD1 (2 BYTES)		HEAD2 (2 BYTES)	
OL	- Overload , Under load	TR	- TARE Mode
ST	- Display is Stable	NT	- NET Mode
US	- Display is Unstable	GS	- GROSS Mode

DATA (7 or 8 BYTE)

2B (HEX) = “ + ” (PLUS)

2D (HEX) = “ - ” (MINUS)

2E (HEX) = “ . ” (DECIMAL POINT)

UNIT (2 、 3 or 4 BYTE)

kg = 6B (HEX) ; 67 (HEX)

lb = 6C (HEX) ; 62 (HEX)

tl.T = 74 (HEX) ; 6C (HEX) ; 2E (HEX) ; 54 (HEX)

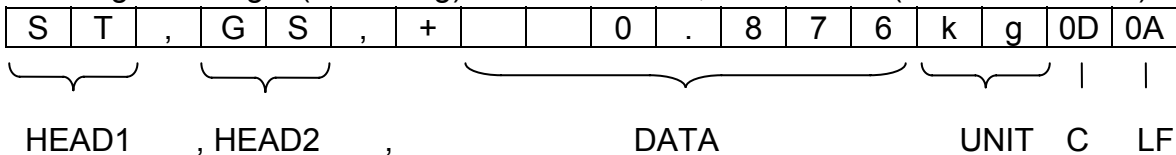
hkg = 68 (HEX) ; 67 (HEX)

viss = 76 (HEX) ; 69 (HEX) ; 73 (HEX) ; 73 (HEX)

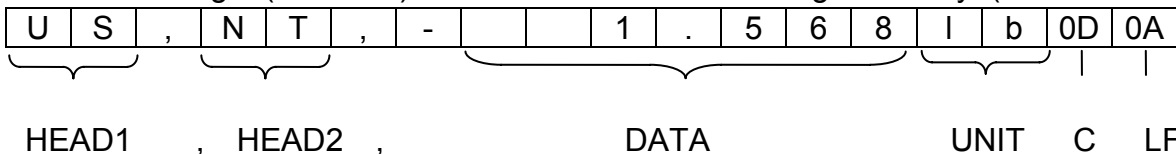
Transmission examples:

Data format for RS-232 continuous transmission are as below:

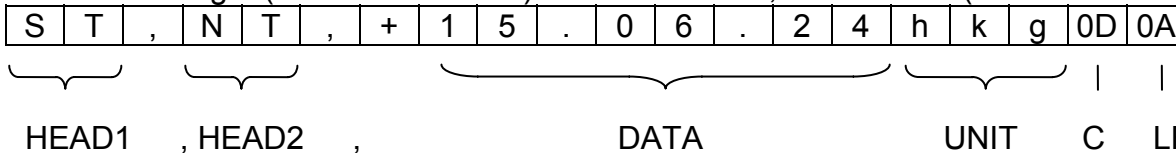
1. The gross weight (+0.876 kg) shows as below, after stable: (under tare mode)



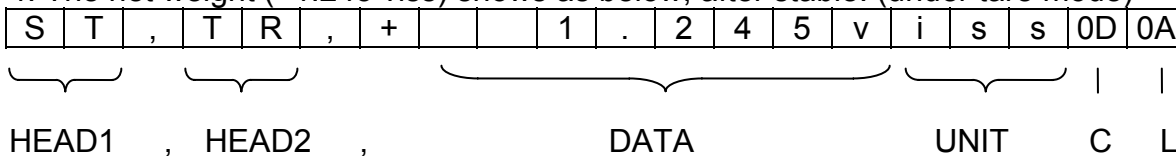
2. The net weight (-1.568 lb) shows as below without weight stability: (under no tare mode)



3. The net weight (+15.0624 HK tael) shows as below, after stable: (under no tare mode)



4. The net weight (+1.245 viss) shows as below, after stable: (under tare mode)





Press  key to transmit (simple mode) Γ Γ Γ Γ 3

S/N WT/UNIT (kg / lb)

0001 1.0000

→ Press 

0002 1.0000

→ Press 

0003 1.0000

→ Press 

0004 1.0000

→ Press 

0005 1.0000

→ Press 

0005 5.0000

→ Press  twice to print TOTAL

Press  key to transmit (complete mode) Γ Γ Γ Γ 4

4 key serial

TICKET NO .0001

G 1.000kg

T 0.000kg

N 1.000kg

(3 blank lines)

→ Press 

TICKET NO .0002

G 1.000kg

T 0.000kg

N 1.000kg

(3 blank lines)

→ Press 

TICKET NO .0003

G 1.000kg

T 0.000kg

N 1.000kg

(3 blank lines)

→ Press 

TOTAL NUMBER
OF TICKETS 0003

TOTAL

NET 3.000kg

(3 blank lines)

→ Press  twice to print TOTAL



Stable Transmission (totalizing mode) 5

S/N WT/UNIT (kg / lb)

0001	1.0000		The scale is stable
0002	1.0000		The scale is stable
0003	1.0000		The scale is stable
0004	1.0000		The scale is stable
0005	1.0000		The scale is stable

0005 5.0000 Press twice to print TOTAL

RS232 output format in HOLD MODE

Please set 8 in 5.

1. If there is only RS232, press key to print out the HOLD value on display in HOLD MODE.

Continuous Transmission (specific form) 9

The print out is as below:

If display shows 70.15kg, the number RS-232 export is 51.07000

If display shows -70.15kg, the number RS-232 export is 51.0700-

If it is ol, then it won't do anything.



key Transmission (specific form) 10

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>														

For example:

PT 0.3KG
T 0.7KG
G 1.2KG
N 0.2KG
PCS 20



Then the printing form is:

FR"WT3N "

?

1,200

0,700

0,300

0,200

20

000020001000000020

P1,1



Use key twice to clear the format

Then, form of clearing the printing

F	R	"	5				"	<LF>																	
?	<LF>																								
TN	TN	TN	TN	TN	TN	TN	<LF>																		
TW	TW	TW	TW	TW	TW	TW	<LF>																		
TA	TA	TA	TA	TA	TA	TA	<LF>																		
tn	tn	tn	tn	tn	tn	tn	<LF>																		
tn	tn	tn	tn	tn	tn	tn	tw	tw	tw	tw	tw	tw	tw	tw	tw	ta	ta	ta	ta	ta	ta	ta	ta	<LF>	
p	1	,	1	<LF>																					

FR"520T "

?

1

0,200



20

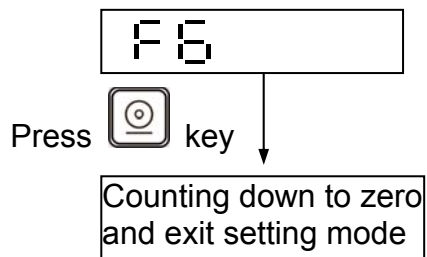
000001000200000020

P1,1



3-3 F6 ⇒ Exit Setting Mode

Use  or  key to select F6 function ⇒ the display shows F6

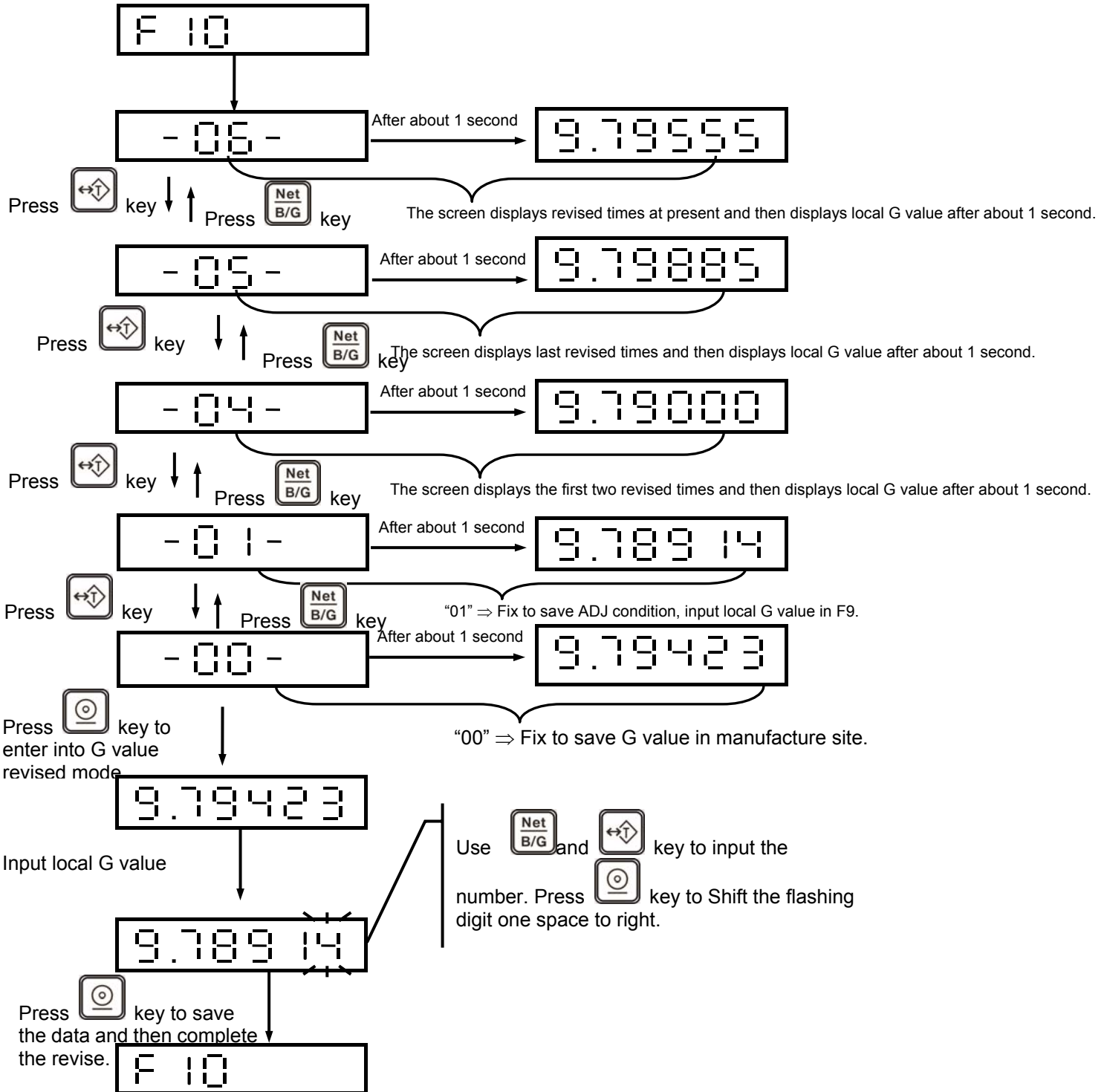




3-5 F10 ⇒ G value Calibration

Use key or key to select F10 function. ⇒ The display shows F10.

You can input at most 9 sets of G value's data. The historic data can be found out and not to be revised.

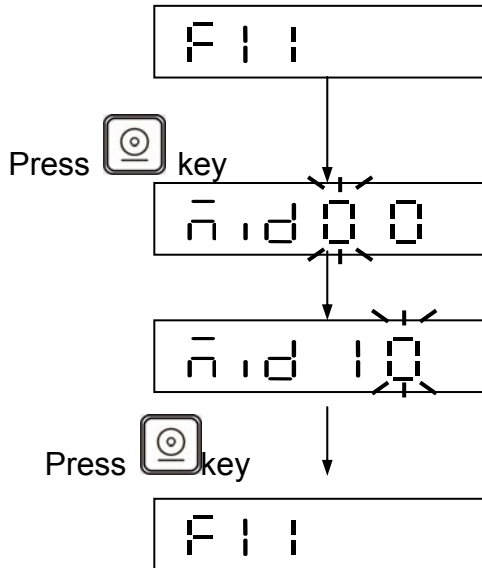




3-6 F11 ⇒ ID Code Setting

(Use must be in coordination with F5 r n P 1, 2, 8)

Use key or key to select F11 function ⇒ the display shows F 1 1



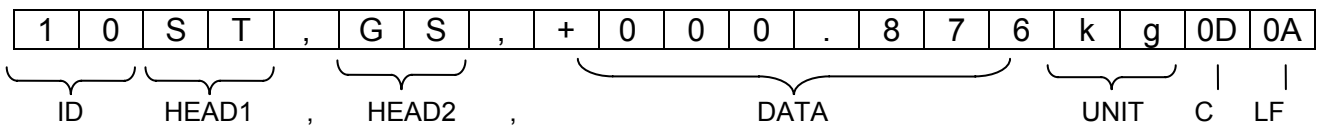
Machine ID code setting:
 Press and to set 01 ~ 99
 Default setting: 00
 (1) "00": RS-232 does not transmit Machine ID
 (2) "01~99": RS-232 transmits Machine ID

RS232 DATA FORMAT

Stable transmission (r n P 1), Continuous transmission (r n P 2),
Press key to transmit (r n P 8)

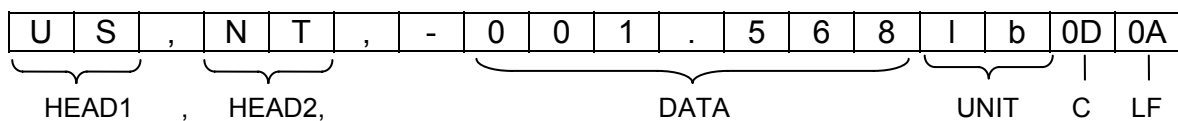
1. e.g. Machine ID code is 10.

The gross weight (+0.876 kg) shows as below, after stable: (no tare or under pre-tare mode)





2. e.g. Machine ID code is 00. (Not using Machine ID function.)

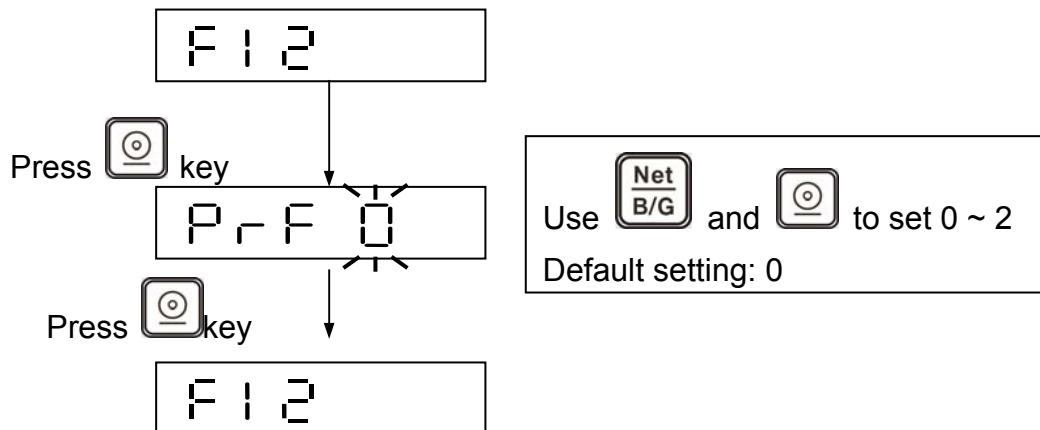
The net weight (-1.568 lb) shows as below without weight stability: (under tare or pre-tare mode)







3-7 F12 ⇒ Print Key () Function Setting

Use  key or  key to select F12 function ⇒ the display shows F 1 2



P r F 0 ⇒ Press  key to print current weight if weight variation is within $\pm 1d$ ~ $\pm 10d$, or to print accumulated weight if weight variation is over $\pm 10d$.
(d=division)

P r F 1 ⇒ Press  key to print the current weight at once. (no totalization)

P r F 2 ⇒ Press  key to print the current weight if it is within the lower and upper limits. (no totalization)



3-8 F 14 ⇒ Printing orders when F 5 is set as r n P 6 or r n P 7

No.0	No print.
No.1	TICKET NO.
No.2	G
No.3	T
No.4	PT
No.5	N
No.6	P/N
No.7	S/N
No.8	No print
No.9	No print

F 14 Contains a 9-digit code

If F 14 is set as 8900000000

❶ The format of r n P 6 is as following

S/N	WT/UNIT (kg / lb)

0001	1.0000
0002	1.0000
0003	1.0000
0004	1.0000
0005	1.0000

0005	5.0000


➔ Press  key

➔ Press  key

➔ Press  key

➔ Press  key

➔ Press  key

➔ Press  key twice to print the total






❷ The format of r n P 7 : RS-232 print nothing




If F14 is set as 896 123 450

① The format of r n P 6 is as following

P/N 012345678901
 TICKET NO. 0001
 G 75.01kg
 T 0.00kg
 PT 0.00kg
 N 75.01kg
 S/N WT/UNIT (kg / lb)

0001	1.0000	→ Press  key
0002	1.0000	→ Press  key
0003	1.0000	→ Press  key
0004	1.0000	→ Press  key
0005	1.0000	→ Press  key


0005	5.0000	→ Press  key twice to print the total.

② The format of r n P 7 is as following

P/N 012345678901
 TICKET NO. 0001
 G 75.01kg
 T 0.00kg
 PT 0.00kg
 N 75.01kg

→ Press  key

TOTAL NUMBER
 OF TICKETS 0001
 TOTAL
 NET 0.499kg

→ Press  key twice to print the total



Appendix 1 7-Segment Display Characters

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