HIGH PRECISION WEIGHING SCALE

Operation Manual

• *JS-B+/B-K-2012-04*

Contents

1. Precaution before Using the Scale

Environment

The scale should always be used in an environment, which is free from excessive air currents, corrosives, vibration, and temperature or humidity extremes. These factors will affect displayed weight reading.

DO NOT install the scale:

- Next to open windows or doors causing drafts or rapid temperature changes
- Near air conditioning or heating vents
- Near vibrating, rotating or reciprocating equipment
- Near magnetic fields or equipment that generates magnetic fields
- On an unstable work surface
- In a dusty environment
- In direct sunlight

Leveling the scale

The scale is equipped with a level indicator on the left bottom side of the front panel and four adjustable leveling feet. Adjust the leveling feet until the bubble appears in the center circle of the indicator.

Turn on the scale

Please remove shipping protection screw from the bottom of the scale before turning on!

Do not turn on scale with anything on the platform. The switch is located on the right side of the scale. The scale will start to count down from nine to zero. The scale is then ready for use.

Give a warm-up for 15~30 minutes before use.

2. *Introduction*

The precision electronic weighing scale offers a range of capacities from 1.5 kilograms to 30kg kilograms.

The scales are very easy to operate and applicable for general weighing. The user can also use the parts counting and percent weighing functions for special applications. Special functions are available for weighing in up to 5 different units of weight. And the scale use kilograms as the default unit.

The standard RS-232 interface allows the data to be transmitted to a computer or printer. (Only for the scale with RS-232 interface)

The scale is with a large and easy to read LCD display with backlight, and all the keypads are sealed membrane switches.

The scale include audible alarm for pre-set weights, tare, pre-set tare and an accumulation facility that allows the count to be stored and recalled as an accumulated total.

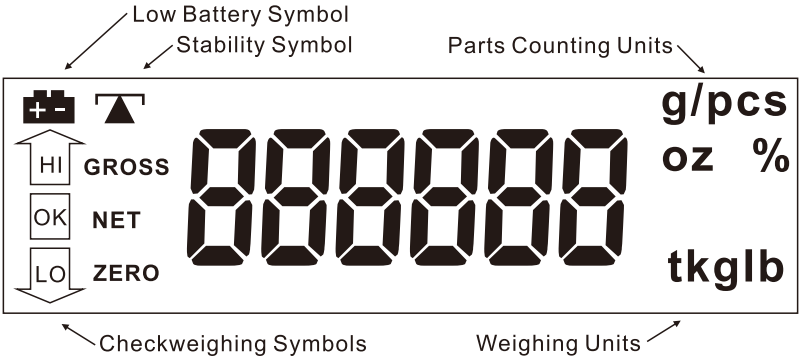
3. Specifications

Interface	RS-232 Output Optional
Operating Temperature	0℃~40℃
Power supply	12V DC, 800mA from external adapter
Calibration	Automatic External
Display	6 digits LCD digital display
Pan Size	300×230mm
Functions	Weighing, parts counting, % weight, check weighing
Other Features and Specs	Internal rechargeable battery

4. Display Symbols

The LCD display will show a value and a unit to the right of the digits.

Other labels are TARE, GROSS weight, ZERO, stable “ ” and for Low battery“ ”



5. Keys Descriptions

Button	Primary Function	Secondary Function
Zero/Enter	**Zero** Zero the scale.	**Enter** Accept and confirm the current setting on the display.
Tare/▲	**Tare** Perform a tare operation.	▲ Increase the active digit. Select the desired value in parameter setting.
Check-W/▶	**Check-W** Preset the limits for check weighing	▶ Move the active digit to the right
%/◀	**%** Enters the percent weighing function.	◀ Move the active digit to the left.
Func./C	**Func.** Select the measure mode for the scale. Return the scale to normal weighing mode.	**C** Clear the value keyed in.
Print/ESC	**Print** Transmit the data to a PC or a printer Add the current values to memory.	**ESC** Exit from parameter setting mode, return to normal mode.
Units	Change the weighing Unit.(kg, g, oz, lb, t)	

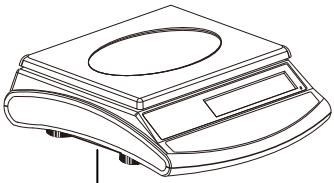
6. Description of the Output Ports

Output ports

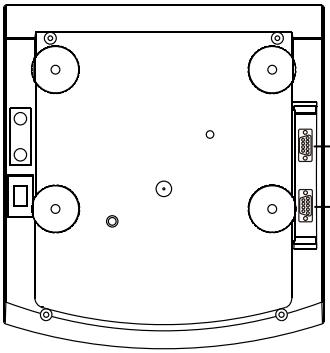
The scale can be ordered with one or two output ports:

1. Standard RS-232: which can be connected to PC, printer, etc.
2. Control box (optional): output 3 section control signal

Position of the ports



Location of the ports



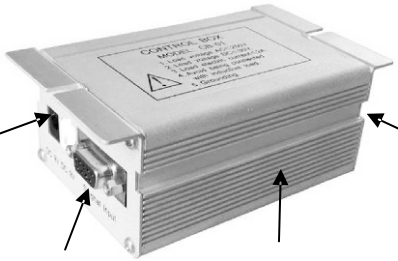
Standard RS232

Control box (CB-01) (optional)

Description of the control box

Overall View

1. Signal Input port and ports for power adaptor

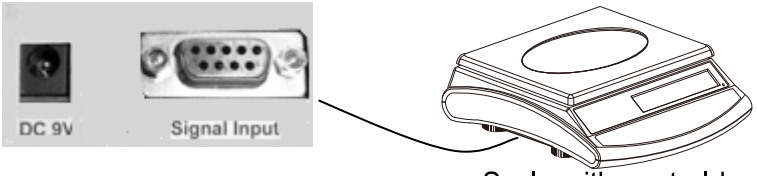


1 port for power adaptor

Signal Output

Signal Input

Control box body

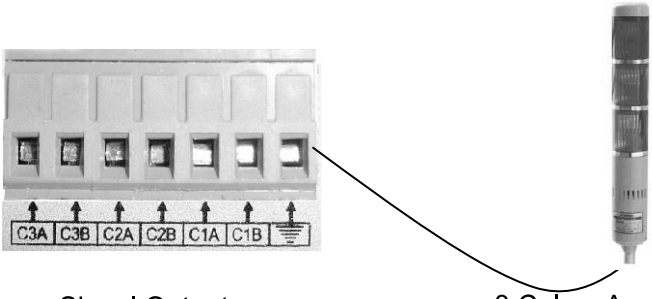


Scale with control box output port

Use our standard cable to connect the signal input port with the scale.

And these two ports for power adaptor must be connected to make sure the control box is workable.

2. Signal Output port



Signal Output

3 Colors Annunciator (optional)

There are three section controllers, (C1A、C1B) , (C2A、C2B) , (C3A、C3B), each of them has two wire connectors. They work respectively.

The signal output port can be connected to a lamp, beeper, annunciator, etc.

Note: (C1A, C1B) = LO, (C2A, C2B)=OK, (C3A, C3B)=HI

7. *Operation*

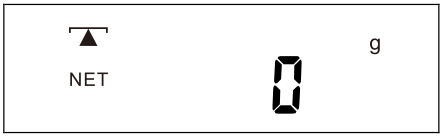
7.1 Zeroing the scale

Press **Zero/Enter** key to return the display to zero in case there is any zero drifting (within 10% max. capacity) while unloaded.

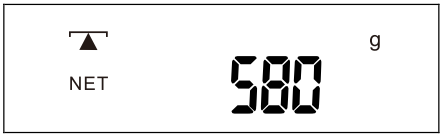
7.2 Subtract container's weight

In normal weighing mode, place a container on the platform, and the display shows:.

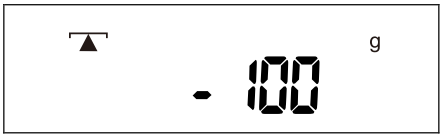
Press the **Tare** key to tare the scale. Then the container's weight is stored as the tare value and the display shows as below:



Put on the product, and the display only shows the product's weight (Net weight)

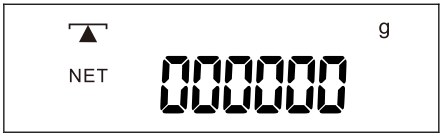


Take away both the container and product, and the display will show a negative value which is the same as the container's weight value.



Preset a tare value

In normal weighing mode, give a long press of **Tare** key to enter into tare value preset. The display shows as below:



Use the **Check-W** or **%** key to move the active digit, and use **Tare** key to increase the active digit value.。

Press **Zero/Enter** key to confirm the tare value

Eliminate Tare Value

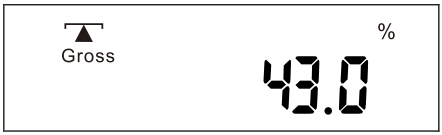
When the display shows the negative (-) tare value, press **Tare** key at this moment to bring the display to zero and (NET) indicator disappear.

7.3 Percent weighing

The scale will allow a sample weight to be shown as 100%. Then any other weight placed on the scale will be displayed as a percentage of the original sample.

In normal weighing mode, put on a sample (ex: 1000g) and press **%** key. The display will show 100%.

Then take away the sample and put other product (ex: 430g) on the platform. The display will show a percentage (the product's weight to the sample weigh).



Press **Func.** key to return to normal weighing mode.

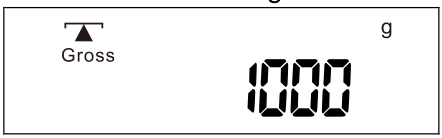
Note:

The scale may jump by large numbers unexpectedly if small sample weight is used to set the 100% level. For example if only 23.5g is on a scale with 0.5g increments and the scale is set to 100%, the display will show 100%, however a small change of weight will cause the display to jump to 100.13%.

7.4 Parts counting

Sampling

In normal weighing mode, put on samples with the numbers matched with 10, 20, 50, 100, 200, 500 or 1000 pieces.
(Subtract the container's weight first if a container will be used.)



Press the **FUNC.** key to enter into parts counting mode. The display will show "SP10" for a sample size of 10 pieces.

Press **Tare** key to cycle the sample size: 10, 20, 50, 100, 200, 500 and 1000.

After choose the one matched with the sample size on the platform, press **Zero/Enter** key to confirm and sampling operation is finished.

Take away the sample, then put the products to be counted on the platform, the display will show the corresponding number (pcs).

Press the **%** key to display unit weight, Total weight or the count (pcs).

Press the **Func.** key to return to normal weighing.

Note: When the sample weight is less than 10d, the display will show E4.

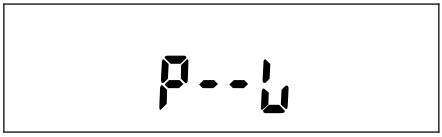
7.5 Density Calculation

In normal weighing mode, press **Func.** key to choose Weighing, Counting or Density Calculation mode. When the display shows a temperature value “25℃” (Default value), press **Print** key to enter into Density Calculation mode.

a. The display shows a temperature value “25℃”. Press **%** or **Check-W** key to adjust the value to the current temperature value; then press **Print** key and the display shows the density

of water in current temperature.

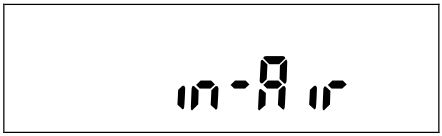
The display shows as below:



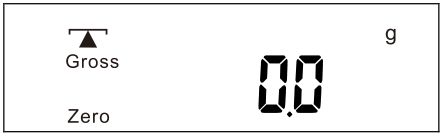
1 second later, the display shows the value as below:

b. Then press **Print** key and the display shows "in-Air" (the weight of the object to be measured in air)

The display shows as below:



1 second later, the display starts flickering and shows as below:



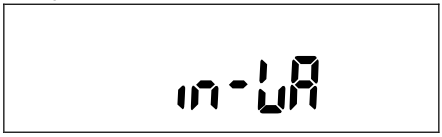
Then put on the object to be measured. (Tare, Zero and Eliminate tare operation enable during the process)

Ex: 100.0g

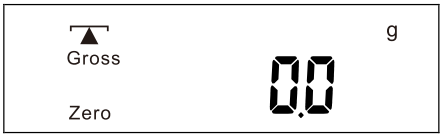
Press **Print** key to confirm when stable

c. Take away the object, the display shows “ in-WA” (the weight of the object to be measured in water)

The display shows as below:



1 second later, the display starts flickering and shows as below:



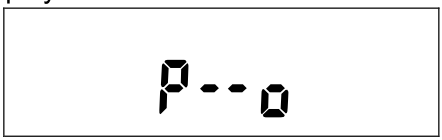
Then put on the object (in water). (Tare, Zero and Eliminate tare operation enable during the process)

Ex: 89.4g

Press **Print** key to confirm when stable.

d. Take away the object, the display shows “ρ—o” (density of the object to be measured)

The display shows as below:



1 second later, the display shows the density value of the object:

9.40613

(The unit of density is g/cm^3)

The density calculation is finished.

$$\rho\text{-}O = \frac{100.00}{100.0-89.4} \times 0.99705 = 9.40613$$

★ RS232 date output: (available only when transmitting mode set to be "AU-oFF")

Date format:

Press **Print** key to print

Den.W: 0.99705 g/cm3 Density of water

W in-A: 100.0 g Weight of object to be measured in air

W in_W: 89.4 g Weight of object to be measured in water

Den.O: 9.40613 g/cm3 Density of object

Remark:

1. For the scale, the density unit is g/cm^3, so if the weighing unit is not "g" when entering into this mode, it will automatically be changed to "g". And when exiting from this mode, the weighing unit will be back to the original one.
2. Press **Func.** key to exit from this mode at any time.
3. Zeroing, Tarring and cancelling tare functions are available in this mode.
4. Density calculation formula:

$$\rho\text{-}O = \frac{W_A}{(W_A - W_L)} \times \rho\text{-}L$$

ρ-O------Density of the sample ρ-L-------Density of the water

W_A-----Sample weight in air W_L-----Sample weight in water

5. Press **Print** key in step “d” to do the density calculation for next object, the water temperature will be the same as the last one. But if exiting from this mode, the water temperature will be the default one when entering into the mode for the next time.

6. Water’s density in different temperature

Tem. (℃)	Den. (g/cm3)	Tem. (℃)	Den. (g/cm3)	Tem. (℃)	Den. (g/cm3)	Tem. (℃)	Den. (g/cm3)
0	0.99984						
1	0.99990	11	0.99961	21	0.99799	31	0.99534
2	0.99994	12	0.99950	22	0.99777	32	0.99503
3	0.99996	13	0.99938	23	0.99754	33	0.99471
4	0.99997	14	0.99925	24	0.99730	34	0.99438
5	0.99996	15	0.99910	25	0.99705	35	0.99404
6	0.99994	16	0.99894	26	0.99679	36	0.99369
7	0.99990	17	0.99878	27	0.99652	37	0.99333
8	0.99985	18	0.99860	28	0.99624	38	0.99297
9	0.99978	19	0.99841	29	0.99595	39	0.99260
10	0.99970	20	0.99821	30	0.99565	40	0.99222

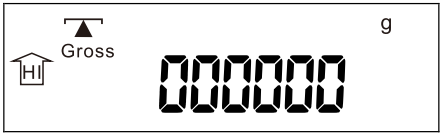
7.6 Check-Weighing

Press **Check-W** key in normal mode to enter into Check-weight limits setting.

High limit value setting

The display shows as below with the left most digit flashing and

the “HI” symbol on.



Press **%/◄** and **Check-W/ ►** key to move the flash digit to left or right; press **Tare/▲** key to change the flashing digit.

When the desired value is shown, press **Zero/Enter** key to confirm the value and enter into Low limit value setting.

(Press **Func.** key to clear the value and reset it)

Low limit value setting

Then the display shows as below with left most digit flashing and “Lo” symbol on.

Press **%/◄** and **Check-W/ ►** key to move the flash digit to left or right; press **Tare/▲** key to change the flashing digit.

Press **Zero/Enter** key to confirm the value and return to normal mode.

Check alarm type

Inside type

The display will show OK and the beeper will sound when the weight is between the limits. When the weight is out of both limit values, the beeper will be off and the display will show HI or LO.

★ The limits can be set for weighing mode, parts counting and percent weighing mode; and the limits are stored respectively.

★ When the High Limit value is set lower that the Low Limit value, the display will show “E5”. You have to reset both values.

★ The weight must be greater than 20 scale divisions for the check-weighing to operate.

★ For this model scale, only inside type is available.

To eliminate the preset Check-weighing limits

Press **Check-W/►** key to enter into check-weighing limits setting: key in zero for both limit values or press **Func.** key directly for the values.

Then press **Zero/Enter** key to confirm.

7.7 Accumulated total

The scale can accumulate weight manually by pressing the **Print** key when a weight is put on. Refer to the PARAMETERS Section for details.

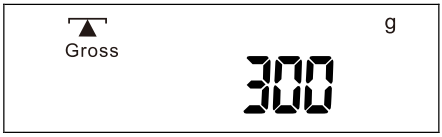
Put on the weight and when the display is stable, press **Print** key to accumulate the weight and store it in memory.

Put on the object.

When the display is stable, press **Print** key and the display shows as below:

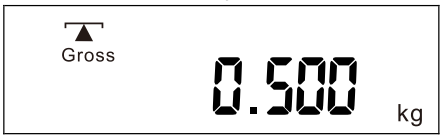
2 seconds later, the display shows the total accumulated weight.

And then the scale returns to normal mode. Remove the object and put another one on.



When the display is stable, press **Print** key and the display shows as below:

2 seconds later, the display shows the total accumulated weight.



And then the scale returns to normal mode.

This can continue up for 99 entries, or the total accumulated

weight exceeds the capacity.

★ If an optional RS232 interface is installed, the weight can be output to a PC or printer.

To view the totals in memory press the **Print** key when the scale is at zero. The display will show the total accumulation times "ACC ××" and the total accumulated weight in turn. The totals will also be printed via the RS-232 interface.

To erase the memory, press **Print** key to view the totals and then press the **Func./C** key to clear the memory.

8. Parameters

In normal weighing mode, press **Func.** key and **Print** key at the same time to enter into Parameters setting mode. 9 parameters are enabled to be set.

8.1 Backlight type

The display shows "EL XX":

EL on

Press **Tare** key to change it from "EL on", "EL AU" or "EL oFF".

"EL AU": Backlight will be going on automatically whenever the scale is loaded by objects weighing greater than **9 display resolution** or any of keys is pressed. And it will be going off also automatically approx. 8 seconds after the scale returns to zero.

"EL on": The backlight is always on.

"EL oFF": The backlight is always off.

Press **Zero/Enter** key to confirm and move to next setting.

8.2 Transmitting mode setting

The display shows as below:

oFF

Press **Tare** key to change it from "AUS on", "AUF on", "AUL on", "AUS oF", "AUF oF", "AUL oF", "P Cont" and "oFF".

"AUS on": Transmit automatically. (Only for weighing data)

"AUF on": Transmit automatically. (For all data)

"AUL on": Transmit automatically. (For label printer: Lp-50)

"AUS oF": Transmit by pressing **Print** key. (Only for weighing data)

"AUF oF": Transmit by pressing **Print** key. (For all data)

"AUL oF": Transmit by pressing **Print** key. (For Lp-50)

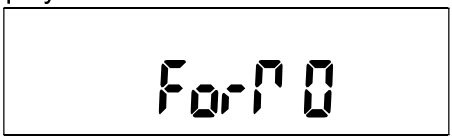
"P Cont": Transmit serially

"oFF": Transmission is disabled

Press **Zero/Enter** key to confirm and move to next setting.

8.3 Label format

The display shows as below:

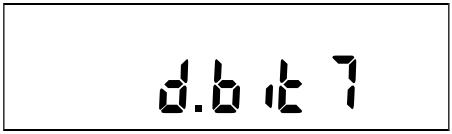


Press **Tare** to change it, which can be chosen from Form 0～9.

Press **Zero/Enter** key to confirm and move to next setting.

8.4 Data bits

The display shows as below:

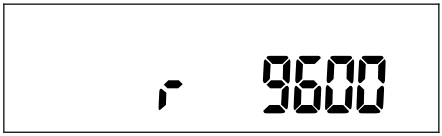


Press **Tare** to switch the data bits between 7 and 8.

Press **Zero/Enter** key to confirm and move to next setting.

8.5 Baud rate setting

The display show as below:



Press **Tare** key to choose it from 1200, 2400, 4800 and 9600.

Press **Zero/Enter** key to confirm and move to next setting.

8.6 Accumulation on or off

The display shows as below:

ACC on

Press **Tare** key to choose it from "ACC on" and "ACC oF"

Press **Zero/Enter** key to confirm and move to next setting.

8.7 Auto. shut off time span

The display shows as below:

A.oFF 0

Press **Tare** key to change it, which can be chosen from 0, 2, 5 and 8 (minutes).

Press **Zero/Enter** key to confirm and move to next setting.

8.8 Zero tracking range

The display shows as below:

AE 1d

Press **Tare** key to choose it from "AE 0.5d", "AE 1d", "AE 2d" and "AE 4d".

The larger number selected, wider range for zeroing.

Press **Zero/Enter** key to confirm and move to next setting.

8.9 Stable class range

The display shows as below:

Press **Tare** key to choose it from "FL 0", "FL 1", "FL 2" and "FL 3".

The larger number selected, more stable the display shows.

Press **Zero/Enter** key to confirm and move to next setting.

8.10 Buzzer

The display show as below:

Press **Tare** key to set it on or off.

Press **Zero/Enter** key to confirm and return to normal weighing mode.

Note: This function is only available in the Checking-alarm mode.

9. Battery Operation

The scale can be operated from the battery if desired. The battery life is approximately 80 hours.

When the battery needs charging a symbol “ + - ” on the weight display will turn on. The battery should be charged when the symbol is on. The scale will still operate for about 10 hours after which it will automatically switch off to protect the battery.

To charge the battery, simply attach the power supply module to the scale and plug in. The scale does not need to be turned on.

The battery should be charged for 12 hours for full capacity.

There is an LED to indicate the status of battery charging on the right of display. When the scale is plugged into the mains power the internal battery will be charged. If the LED is **Green** the battery has been charged. If it is **Red** the battery is nearly discharged and **Yellow** indicates the battery is increasing the charge level.

As the battery is used it may fail to hold a full charge. If the battery life becomes unacceptable then contact your distributor.

Note: The battery should be recharged every 3 months if the scale is not used for long time.

10. RS-232 Output

The scale can be ordered with a standard RS-232 output.

1. Mode EIA-RS 232 C's UART signal
2. Format: (For d.bit8)

   Baud rate: 1200--9600BPS

   Data bits: 8 BITS

   Stop bit: 1 BIT

   Code ASCII

   Format: (For d.bit7)

   Baud rate: 1200--9600BPS

   Data bits: 7 BITS

   Parity bit: EVEN BIT

   Stop bit: 1 BIT

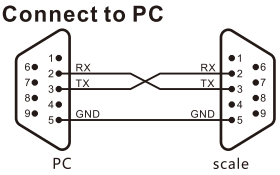
   Code ASCII

   Connector: 9 pin socket

   Pin2 Input

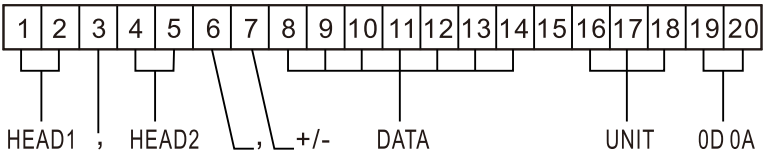
   Pin3 Output

   Pin5 Signal Ground

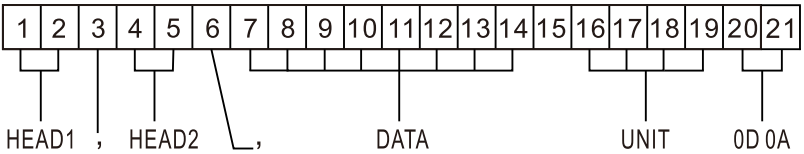


3. Data Format of Automatic transmitting, Series transmitting, and transmitting by pressing **Print** key without accumulation:

   (For d. bit 8)



(For d. bit 7)



HEAD1 (2bytes)

OL-Overload, Under load

ST-Display is stable US-Display is unstable

HEAD2 (2bytes)

NT-Net weight GS-Gross weight

Note: The positive sign is replaced by blank when transmitting.

4. Transmitting format. (Please refer to the “Transmitting mode” and “Accumulation type” setting in Parameters setting.

- Series transmitting:

  EX + 0.85kg, when it is stable and net value as:

  ST, NT, 0.85 kg 0D0A

  -1.3580 lb, when it is unstable and gross value as:

  US, GS, - 1.3580 lb 0D0A

- Automatic transmitting:

  When the transmitting mode is set to be “AUS on”, the transmitting format is as below:

  W 85.1 g

  W 100.6 g

  When the transmitting mode is set to be “AUF on”, the transmitting format is as below;

  G 85.0 g

  T 2.5 g

  N 82.5 g

- Transmitting by press **Print** key

  When the transmitting mode is set to be "AUS oF", and the accumulation mode is set to be "ACC on", the transmitting format is as below:

  ==========

  01 87.9 g Press **Print** key

  02 87.9 g Press **Print** key

  03 87.9 g Press **Print** key

  ---------- When nothing on the pan, press

  03 263.7 g **Print** key.

  When the transmitting mode is set to be "AUS oF", and the accumulation mode is set to be "ACC oF", the transmitting format is as below:

  When the scale is in unstable mode,

  w 87.9 g Press **Print** key

  w 87.9 g Press **Print** key

  w 87.9 g Press **Print** key

  When scale is in stable mode,

  W 87.9 g Press **Print** key

  W 87.9 g Press **Print** key

  W 87.9 g Press **Print** key

  When the transmitting mode is set to be "AUF oF", and the accumulation mode is set to be "ACC on", the transmitting format is as below:

  Press the **Print** key

  TICKET No. 01

  G 100 g

  T 0 g

  N 100 g

Press the **PRINT** key again:

TICKET No. 02

G 300 g

T 100 g

N 200 g

Press the **Print** key again, when there is nothing on the pan:

TOTAL NUMBER OF TICKETS 02

TOTAL

NET 300 g

When the transmitting mode is set to be "AUF oF", and the accumulation mode is set to be "ACC oF", the transmitting format is as below:

When scale is in stable mode

Press **PRINT** key

G 300 g

T 100 g

N 200 g

When scale is in unstable mode:

g 300 g

T 100 g

n 200 g

G=Stable Gross Weight	g=Unstable Gross Weight
N/NET=Stable Net Weight	n=Unstable Net Weight
W=Stable Weight	w=Unstable Weight
U=Stable Unit weight	u=Unstable Unit Weight
Q=Stable Quantity	q=Unstable Quantity
P=Stable Percentage	p=Unstable Percentage
T=Tare Weight	

5. **Variables** (The prompt character) used in scale also in label printer.

Variable Name	Specifications	Size
SER	Accumulated times	2 byte
NWA	Net weight	7 byte
NWB	Net weight(no dot)	6 byte
TWA	Tare weight	7 byte
TWB	Tare weight (no dot)	6 byte
GWA	Gross weight	7 byte
GWB	Gross weight (no dot)	6 byte
TNA	Total net weight	7 byte
TNB	Total net weight(no dot)	6 byte
TNP	Right shifting decimal digit of TNB(Please refer to Note2)	1 byte
TTA	Total Tare weight	7 byte
TTB	Total Tare weight (no dot)	6 byte
TTP	Right shifting decimal digit of TTB	1 byte
TGA	Total Gross weight	7 byte
TGB	Total Gross weight(no dot)	6 byte
TGP	Right shifting decimal digit of TGB	1 byte
UWA	Unit weight	7 byte
UWB	Unit weight (no dot)	6 byte
QUA	Quantity	7 byte
QUB	Quantity (no dot)	6 byte
TQA	Total Quantity	7 byte
TQB	Total Quantity (no dot)	6 byte
CHA	High Limit Value	7 byte
CHB	High Limit Value (no dot)	6 byte
CLA	Low Limit Value	7 byte
CLB	Low Limit Value(no dot)	6 byte
UNT	Weighing Unit	2 byte
UWU	Unit of unit weight in counting mode	2 byte

Note:

1. The variable value can't be less than 0; otherwise it will be wrong (The value will not be transmitted).
2. ****P** variable: In weight accumulation, the total value may exceed 6 digits, but it can achieve 6-digit display through right shifting the decimal point. (One or two digits behinds the decimal point won't be displayed after being rounded)

6. **Command (PC -> Scale)**

Command(1byte)		**Weighing Mode**
Char.	**HEX**	
L (l)	L—4C	Same as **%/◀** key
	l—6C	
T(t)	T---54	Same as **Tare/▲** key
	t---74	
R (r)	R—52	Same as **Check-W/ ▶** Key
	r—72	
U (u)	U—55	Same as **Unit** Key
	u—75	
M (m)	M—4D	Same as **Func./C** and **Print/Esc** keys
	m—6D	
P (p)	P—50	Same as **Print/Esc** Key
	p—70	
Z (z)	Z—5A	Same as **Zero/Enter** Key
	z—7A	
F(f)	F—46	Same as **Func./C** key
	f--66	

11. Auto Calibration

In normal weighing mode, press the **Zero/Enter** key and **Func./C** key at the same time. When the display is flashing and showing the weight value, put on the mass. While the scale is stable, the display will be back to zero automatically.

Please take away the mass while scale is counting backward. The calibration is finished.

By pressing the **Tare/▲** key the weight value can be selected (1/3 Full weight, 2/3 Full weight and 3/3 Full weight).

Recovery of the default calibration value from memory

Starting up the scale, hold down the **Tare, Func., Tare, Tare, Tare and Zero** keys during self-testing sequence. When the scale begins the self-testing sequence again, and finish self-testing, the scale will come back with a default calibration value.

When the calibration procedure is mistake or parameter is set incorrect, this function should be useful.

12. Error Codes

During the initial power-on testing or during operation it is possible the scale may show an error message. The meaning of the error messages is described below.

Error Codes	Possible causes	Remedy
E1	EPROM data lose.	Recalibrate the scale
E2	The initial zero is outside the range of the factory setting for zero.	1. Check if there is something on the pan or something touches the top body when switch on the scale, move the load and switch on again. 2. Recalibrate the scale.
E3	The display percent weighing cannot be shown completely.	Correct the operation.
E4	The sample weight is too small.	Put on more sample weight.
E5	In alarm setting, the LO value is set higher than HI value.	Correct the operation.

If an error message is shown repeat the procedure that caused the message, turning the scale on, calibration or other functions. If the error message still is shown then contact your dealer for further support.

2402139 J