I. Warning

□□□Strictly prohibit caught in the rain or washed with water. If you touch the water in careless, please clean it with dry cloth. If it's abnormity with the balance, please send it to the dealer, and we will try our best to satisfy our customer.

□□□Strictly prohibit park the balance in high temperature or wet place.

□□□Don't let the black beetle and inchling get into the balance to cause damage.

□□□Strictly prohibit hit and press badly.(Don't exceed the maximum capacity.

□□□Strictly prohibit wipe outer shell and part of the balance with any chemicals)

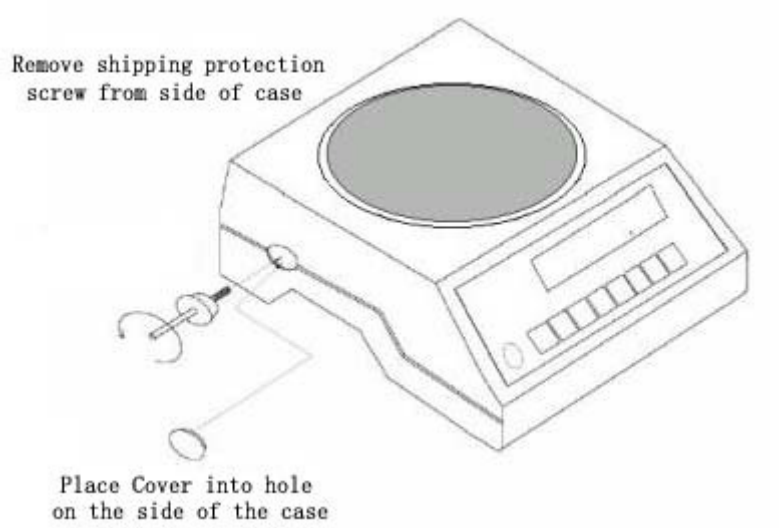
□□□Please take out the dry batteries if it's leave unused for a long time, wipe the balance, enclose it with dryer in a plastic pocket.

□□□Please feedback if you have any suggestion about our products.

II. Installation

(i) Installing of balance

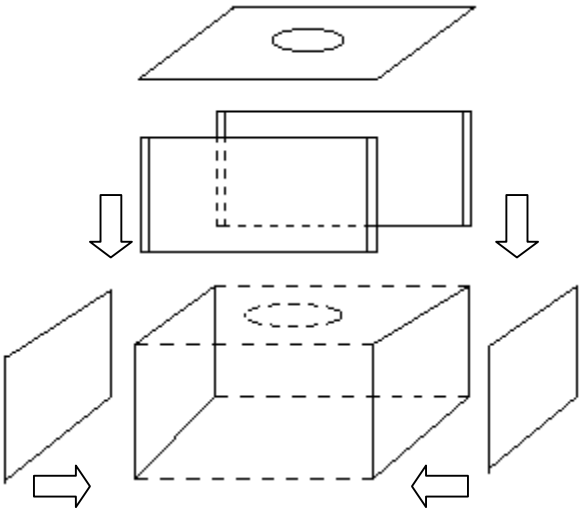
- Unpack the balance carefully.
- Place the scale on a stable surface. The weighing area should be kept clean and dry. Do not install the balance near extremes of heat and cold. Protect the balance from vibration, dust and air draughts.
- Place the pan onto the pan support gently, being careful not to press on the pan.
- Remove the shipping protection from the side of the balance. Retain this part so that if the balance is to be shipped again it can be inserted to protect the load cell. (See below).
- Turn the adjustable feet until the balance is level (check the bubble level on the front of the scale).
- Insert the power supply connector in the plug on the rear of balance. Plug the power supply into the mains supply.
- Turn on the switch to activate the balance.
- Wait until the balance Auto Test is finished and a stable zero is displayed.



(ii) Installing the breeze shield

The breeze shield is packed as 5 separate pieces. The 4 sides slide together to make a box, and then the top can be placed over the top for additional protection.

The breeze shield fits on top of the scale positioned by the ridges on the cover.



III. Preparation

- (□) The air bladder in the gradienter should be in the center of the circle.
- (□) Please use separate power socket to avoid the interference of other electrical appliance.
- (□) Please don't put any weight on the pan when the balance turn on.
- (□) Please place the weight at the center of the pan, and the weight should not exceed the maximum capacity of the balance.
- (□) In order to get a high precision result from the balance, It's better to turn on the balance for 15---20 minutes before use.
- (□) Please have a simple calibration before use.
- (□) Pay attention to the top right corner of the display, if there is a signal + -, please change dry batteries immediately.
- (□) It is 5~40□ for the operation temperature of the balance□

IV. Specifications

□ i □Divisions list:

BS-H Series: **Resolution**□1/60000□□e=10d,n=1/6000□

Model / Unit	BS150H	BS600H	BS1500H
G	150×0.002	600×0.01	1500×0.02
ct	750×0.01	3000×0.05	7500×0.1
lb	0.33×0.00001	1.3225×0.00005	3.3×0.00005
oz	5.29×0.0001	21.15×0.0005	52.9×0.001
dr	84.6×0.002	338.6×0.01	846×0.02
gn	2314.5×0.05	9258×0.2	23145×0.5
ozt	4.82×0.0001	19.29×0.0005	48.2×0.001
dwt	96.4×0.002	385.8×0.01	964×0.02
MM	40×0.001	160×0.05	400×0.01
tl. J	4×0.0001	16×0.0005	40×0.001
tl. T	4×0.0001	16×0.0005	40×0.001
tl.H	4×0.0001	16×0.0005	40×0.001
t	12.86×0.0002	51.4×0.001	128.6×0.002

BS-A Series: Resolution□1/30000□□e=10d,n=1/3000□

Model / Unit	BS150A	BS300A	BS600A	BS1500A	BS3000A
g	150×0.005	300×0.01	600×0.02	15000×0.05	3000×0.1
ct	750×0.05	1500×0.05	3000×0.1	7500×0.5	15000×0.5
lb	0.3304×0.00002	0.66×0.00005	1.32×0.0001	3.304×0.0002	6.6×0.0005
oz	5.29×0.0002	10.575×0.005	21.15×0.001	52.9×0.002	105.75×0.005
dr	84.6×0.005	169.2×0.01	338.4×0.02	846×0.05	1692×0.1
gn	2313×0.1	4626×0.2	9250×0.5	23130×1	46260×2
ozt	4.82×0.0002	9.64×0.005	19.28×0.001	48.2×0.002	96.4×0.005
dwt	96.4×0.005	192.8×0.01	385.6×0.02	964×0.05	1928×0.1
MM	40×0.002	80×0.005	160×0.01	400×0.02	800×0.05
tl.J	4×0.0002	8×0.0005	16×0.001	40×0.002	80×0.005
tl.T	4×0.0002	8×0.0005	16×0.001	40×0.002	80×0.005
tl.H	4×0.0002	8×0.0005	16×0.001	40×0.002	80×0.005
t	12.85×0.0005	25.7×0.001	51.4×0.002	128.5×0.005	257×0.01

BS-M Series:

Resolution：1/15000（e=5d,n=1/3000）

Model / Unit	BS150M	BS300M	BS600M	BS1500M	BS3000M
g	150×0.01	300×0.02	600×0.05	1500×0.1	3000×0.2
ct	750×0.05	1500×0.1	3000×0.5	7500×0.5	15000×1
lb	0.33×0.00005	0.66×0.00005	1.32×0.0002	3.3×0.0005	6.6×0.0005
oz	5.29×0.0005	10.58×0.001	21.16×0.002	52.9×0.005	105.8×0.01
dr	84.6×0.01	169.2×0.02	338.5×0.05	846×0.1	1692×0.2
gn	2314×0.2	4625×0.5	9250×1	23140×2	46250×5
ozt	4.82×0.0005	9.64×0.001	19.28×0.002	48.2×0.005	96.4×0.01
dwt	96.4×0.01	192.8×0.02	385.5×0.5	964×0.1	1928×0.2
MM	40×0.005	80×0.01	160×0.02	400×0.05	800×0.1
tl.J	4×0.0005	8×0.001	16×0.002	40×0.005	800×0.01
tl.T	4×0.0005	8×0.001	16×0.002	40×0.005	800×0.01
tl.H	4×0.0005	8×0.001	16×0.002	40×0.005	800×0.01
t	12.86×0.001	25.72×0.002	51.4×0.05	128.6×0.01	257.2×0.02

BS-L Series:

Resolution：1/6000（e=2d,n=1/3000)

Model / Unit	BS150L	BS300L	BS600L	BS1500L	BS3000L
g	150×0.02	300×0.05	600×0.1	1500×0.2	3000×0.5
ct	750×0.1	1500×0.2	3000×0.1	7500×1	15000×2
lb	0.33×0.0005	0.66×0.0001	1.3×0.0001	3.3×0.005	6.6×0.001
oz	5.29×0.001	10.58×0.002	21×0.001	52.9×0.01	105.8×0.02
dr	84.6×0.01	169×0.05	330×0.02	846×0.1	1690×0.5
gn	2310×0.5	4620×1	9200×0.5	23100×5	46200×10
ozt	4.82×0.001	9.64×0.002	19×0.001	48.2×0.01	96.4×0.02
dwt	96.4×0.02	192.5×0.05	380×0.02	964×0.2	1925×0.5
MM	40×0.05	80×0.02	160×0.01	400×0.5	800×0.2
tl.J	4×0.005	8×0.002	16×0.001	40×0.05	80×0.02
tl.T	4×0.005	8×0.002	16×0.001	40×0.05	80×0.02
tl.H	4×0.005	8×0.002	16×0.001	40×0.05	80×0.02
t	12.86×0.002	25.7×0.005	51×0.002	128.6×0.05	257×0.05

□ ii □Maximum Capacity List:

BS-H Series:

Model / Unit	**BS150H**	**BS600H**	**BS1500H**
g	150×0.002	600×0.01	1500×0.02

BS-A Series:

Model / Unit	**BS150A**	**BS300A**	**BS600A**	**BS1500A**	**BS3000A**
g	150×0.005	300×0.01	600×0.02	1500×0.05	3000×0.1

BS-M Series:

Mode / Unit	**BS150M**	**BS300M**	**BS600M**	**BS1500M**	**BS3000M**
g	150×0.01	300×0.02	600×0.05	1500×0.1	3000×0.2

BS-L Series:

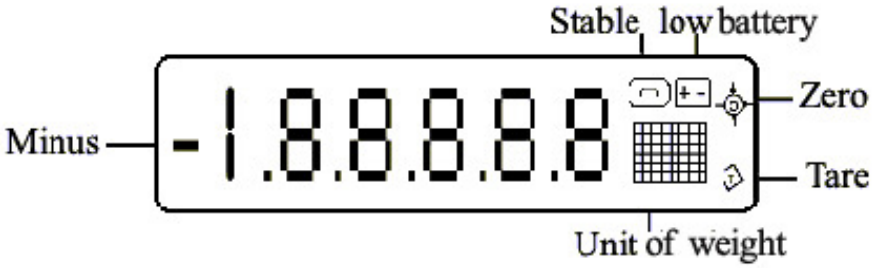
Mode / Unit	**BS150L**	**BS300L**	**BS600L**	**BS1500L**	**BS3000L**
g	150×0.02	300×0.05	600×0.1	1500×0.2	3000×0.5

Physical Dimensions:

Body Size	**172(W)×230(D)×60(H)mm**
Pan Size	**Thickness□7mm diameter□114mm**
Breeze shield Size	**150(W)×162(D)×82(H)mm**
Net weight	**About 1030 g**

V. Display Description

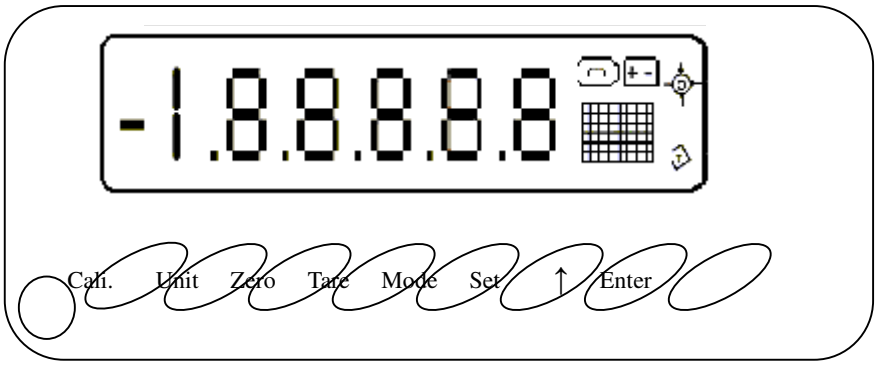
Size of display window□84mm×24mm



VI. Keyboard Function

Cal.	Calibration key.

Unit	Select weighing units. The key is also used to set the initial unit.
Zero	Set the initial zero on the display
Tare	Set display to zero to tare the weight of a container.
Mode	Select weighing, counting or percentage weighing mode. This key is also used in Parameter Set-up Mode.
Set	Confirmation key. Confirm setting during set-up.
↑	Selection key.
Enter	Enter key. Confirm setting during setup.



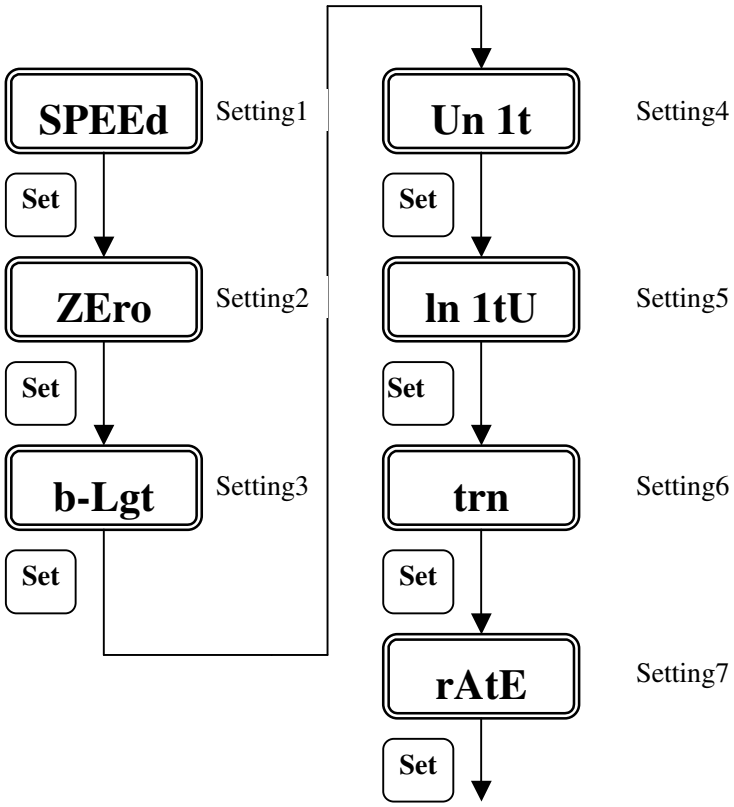
VII. Parameter Setting

The Parameter-Setting Modes allow the balance to be set as required by the user. It is possible to enable specific units of weight (up to 13 units), select the default unit of

weight, control display update rate, the RS-232 interface and set the zero tracing range. The parameters are selected using the function menu. The specific steps to set the functions are described below:

To start the function menu:

1. Press and hold the **Cal** key, meanwhile also press the **Enter** key. The display will show "**SPEEd**" and enter to the parameter setting mode.
2. Press the **Set** key to choose the function desired.
3. Press the **Zero** key to exit the parameter setting mode, and cancel all the changes you have made.

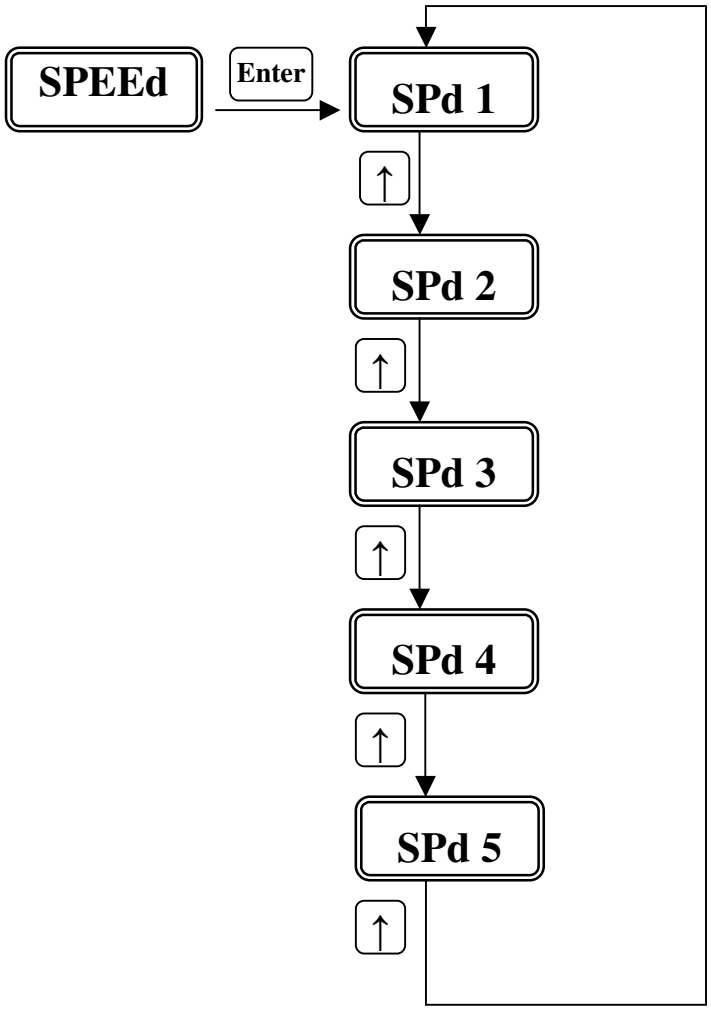


Setting 1: Display update rate

Press ↑ to choose the display update rate. There are totally five choices, "**SPd 1**"is the lowest update speed, "**SPd 5**"is the highest update speed.

Press **Ente** to confirm your selection, or press **Set** to continue the next parameter setting process.

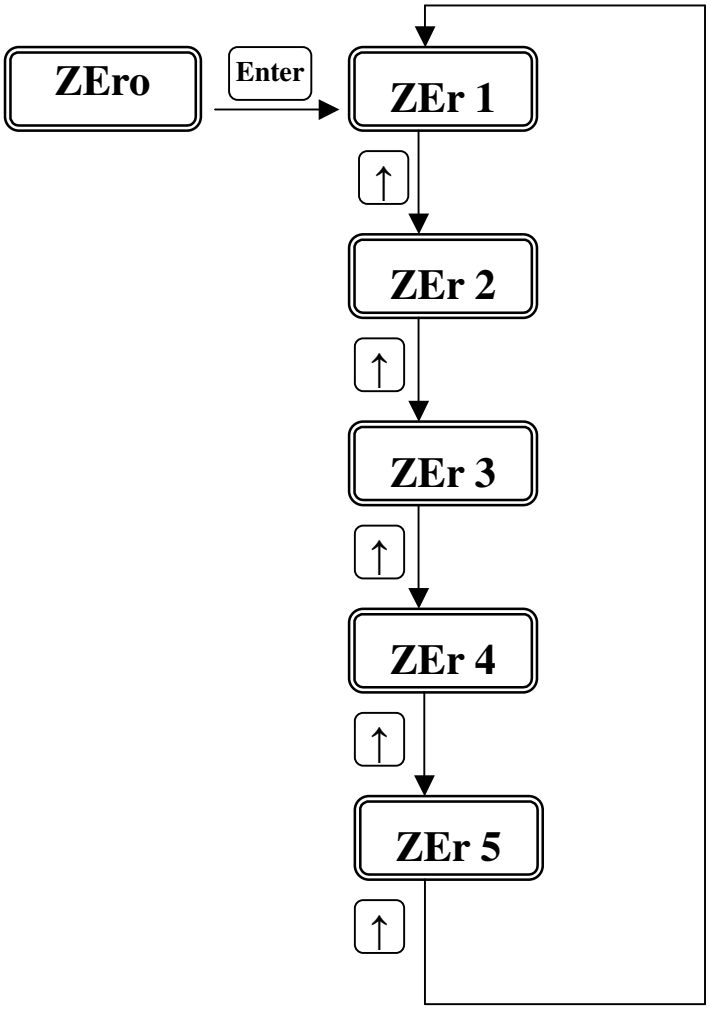
□The default display update rate is "**SPd 2**".□



Setting 2: Zero tracking range

Press ↑ to choose zero tracking range. There are also totally five choices.
"**ZEr 1**" is the smallest zero range,"**ZEr 5**"is the biggest zero range.

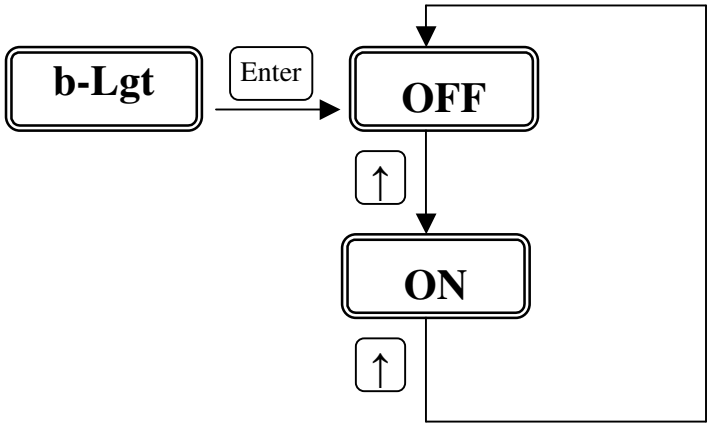
Press Ente to confirm it, or press Set to set the next parameter.
□The default zero range is"**ZEr 1**".□



Setting 3: Choose the backlight

Press ↑ to choose the backlight. Choose "OFF", no backlight.
Choose "ON ", backlight on all the time.
Press Enter to confirm it, or press set to continue the next function.

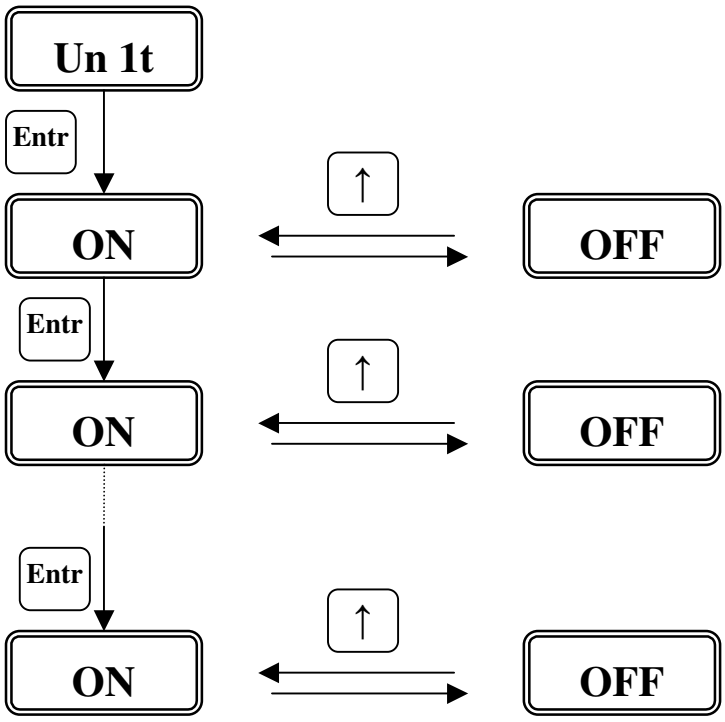
(The backlight set by factory is “OFF”)



Setting 4: Weighing Unit Selection

Press the ↑ key to choose the units. To enable a unit select “ON”, to disable the unit choose “OFF”.Press **Enter** to advance to the next unit. Press **Set** to set the next parameter.

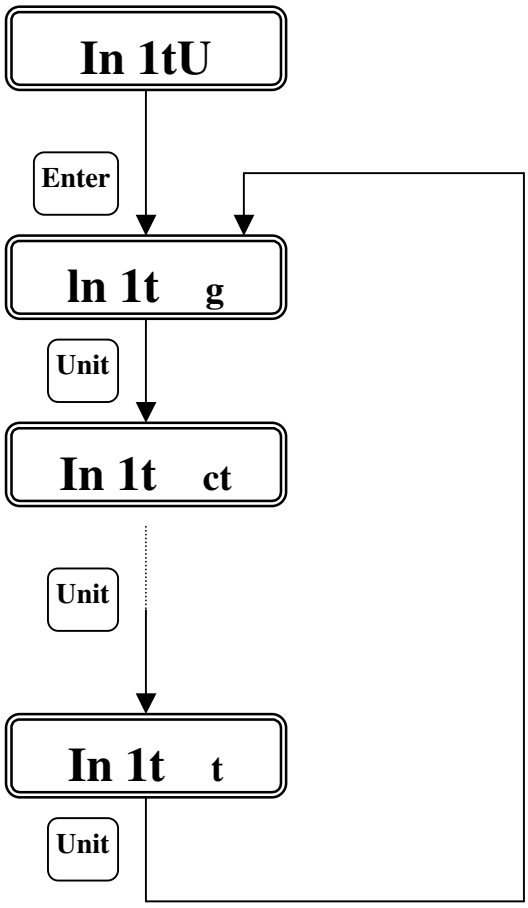
□The default mode is "**on**".□



Setting **5: The Initial Unit Selection**

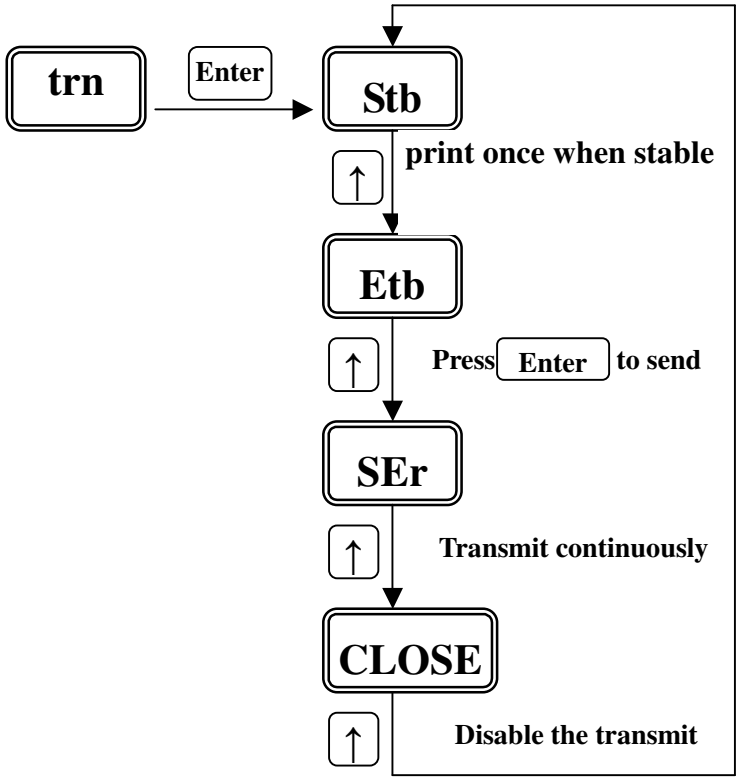
Press **Unit** to set the initial unit□and press **Enter** to confirm it or press **Set** to set the next parameter.

□The default initial unit is"**g**".□



Setting 6: RS-232 transmission method

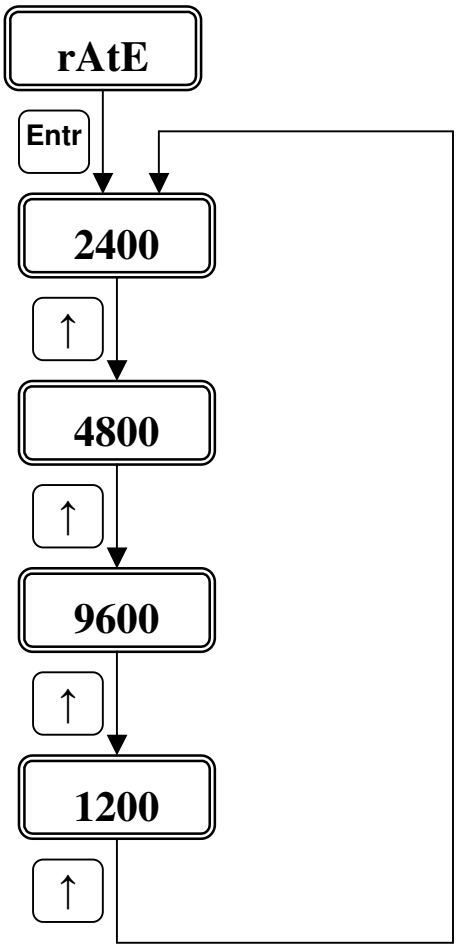
Press the ↑ key to choose the method of:"**Stb**" = output when stable, "**Etb**" = output once after **Enter** key is press when stable, "**SEr**" = series (continuous output), or "**CLOSE**" = output disabled. Then press **Enter** key to confirm or press **Set** to set the next parameter.
(The default mode is"**close**".□



Setting 7: RS232 Baud ratio setting

Press ↑ key to select the desired baud rate from“1200"2400"4800” “9600”, then press Enter to confirm the selection and exit setting.

□The default baud ratio is **2400.**□



VIII. Operation

Turn on the switch to activate the balance. the scale will be on the weighing mode using the initial units of weight selected. Press **Mode** key to choose the weighing, counting or percentage (%) functions.

1□ Weighing mode

1.1. Units selection

Press the **Unit** key to choose the weighing units and the display will be changed to the new value with the units shown. There are up to 13 units of weight that can be enabled.

1.2. Tare Function

Tare weight is the weight of a container and can be subtracted by placing an empty container on the scale. When the display is stable, press the **Tare** key. The display will become zero and the display will have a tare indication. Cancel the tare function by pressing the **Tare** key again with no weight on the scale. Tare range is the full capacity of the scale.

1.3. Zero Function

If the zero shifts during operation, press the **Zero** key to set it to zero. The Zero function is only active over a ±4% Range.

2. Counting mode

The scale will count parts by weighing a preset number of samples and setting the display to show the number. Then, as more samples are added, the display will increase. If necessary, place a container on the scale and press **Tare** before beginning.

Sampling

a. After selecting counting with the **Set** key, select the sample size (10, 20, 50, 100□200□500□1000 pcs) with **↑** and press **Enter** key to confirm it.

b. Put the sample number (same as s step a) on the scale and press **Enter** key. When the symbol "**-PCS-pcs**" appears the sampling procedure is finished and you can start to use the counting function.

c. If the unit weight is too small (less than 0.8 of a scale division), the display

will show: "**-CSL- PCS**". Press **Enter** back to weighing. Press **Set** resampling.

3. Percentum mode

3.1. Goods sampling

a. As enough samples are added on the pan, the display will show the single "stable". Selecting **%** weighing with the **Set** key. The display show "**-PRE-%**". Then, Press **Enter** key. The sampling procedure is finished and you can start to use the Percentum function.

b. If the unit weight is too small (less than 0.1%of full capacity), the display will show: "**-SLAC-%**". Press **Enter** back to weighing. Press **Set** resampling.

3.2. No goods sampling

Press **Set** key. The display shows "-**PRE-%**", then press **Unit** key, the symbol of unit will show "**%**" or "**g**". Input the sample weight number with **↑** and **Enter** key. You can start to use the Percentum function.

Note:

When you finish the procedures of selecting the sample size in the counting mode or percentage (%) mode, press the **Mode** key to change back to the weighing mode. Press the **Mode** key to return to counting or percentage mode. The scale will memorize the previous data automatically.

4. Simple calibration

Press the **CAL** for 3 seconds when the balance is in zero state□after the window display "**-000-**" then press **Entr** , it'll display"**-000-**"if it's not stable. The balance will wait to be stable and catch the Zero. After a while, the balance will show the weight your should place on the pan for calibration. The display number is fixed to1/6□1/3□1/2□2/3□5/6□1 of the full capacity. Please press **↑** select the calibration weight and put the weight on the pan according to the display number. Then press the **Enter** to confirm it. The balance will finish the calibration automatically afterwards□

Notice: If the difference between calibration F.S. inner code of this time and last time is more than 2%, the balance will not confirm the calibration result.

IX. Error Message

- **“0-Err”**: When you switch on the balance, if the Zero>20% F.S the balance will alarm you with this signal, and refuse to work. If this happen, please send the balance to our dealer immediately.
- **“-OL-”**: Overload, the system will alarm with beeper.
- **“-LO- ”**: Low voltage, if the voltage of the battery is low, the weight window will display this signal when the weight is zero.
- “**UNSTA**”: Unstable, when you switch on the balance, if the balance is not stable, the balance will show you with this signal.
- “**-Adc-**”: If the ADC overflows, the system will alarm you with this signal and beeper.
- “**-PSL-**”: This signal will show when sampling is not enough in percentum model and need to sampling again□
- Weighing lacking in counting model:

1. “**-SLAC-**”: When this signal appears, it means the weight of each sample is less than 50% of division.
2. “**-CSL-**”: With this alarm signal, it means the weight of each sample is less than 80% of division.

X. RS-232 Interface

The balance have a standard RS232 interface for data output□the output format is not adjustable. Each data frames has 10bits.The detail information of frames is as follows□

bit1	bit2	bit3	bit 4	bit 5	bit 6	bit 7	bit 8	bit 9	bit 10

bit1□start bit
bit2~bit9□data bit
bit10□stop bit
Baud rate□“1200”□ “2400”□ “4800”□ “9600” bps can be selected.

Data frames:

Transmission is made of a frame of 18 bytes:

meaning	length of bytes	content
current working mode ASCII code	2	"WT"-weigh mode "CT"-counting mode "PC"-percent mode
current working status ASCII code	2	"OL"-over load, “ST"-stable, "US"-unstable
signal	1	"+","-"
current data ASCII	7	include one data point
current unit ASCII	4	back in counting and percentum
end flag	2	0dh, 0ah

the transmit mode is one start bit, 8 data bits, one stop bit.

Data transmission sample:

1□ 38.25g when it is stable and net value as follows□

W	T	S	T	+			3	8	.	2	5				g	0D	0A

2□ 300ct when it is instable and net value as follows:

W	T	U	S	+					3	0	0			c	t	0D	0A

3□-60.0 tl. H when it is stable and net value as follows

W	T	S	T	-				6	0	.	0	t	l	.	H	0D	0A

4□ +60 when it is stable and net value in counting mode as follows:

C	T	S	T	+						6	0					0D	0A

5□ +25.4 when it is stable and net value in percentum mode as follows:

P	C	S	T	+				2	5	.	4					0D	0A

XI. Power Supply

The balance is delivered complete with a mains power supply. It can be operated from batteries if desired. The scale will not charge batteries and only alkaline dry cells should be used. If batteries are not used for an extended period of time they should be removed from the scale. Do not use the power supply at the same time as batteries are installed. Remove the batteries first.

Power supplies:

1. 9V/300mA AC/DC adapter.
2. 4 pcs “C” size dry cell batteries.

Batteries may not have a long life due to the power consumption required by the scale.

Typical power consumption is:

1. During operating (no backlight): about 40mA
2. During operating (with backlight): 90 – 100mA

Low Battery:

When the battery symbol + - appears in the right corner of the display, the dry cell batteries need changing.

Note: when the window display + - the balance will weigh not accurate or zero unstable as the low power supply please do be notice this to avoid some bad result.

XII. Weight Conversion and Full Capacity Comparison

Conversion Units Table for Weights

1 ct (Metric. Carat) = 0.1999694 g
1 lb (AVOIRDUPOIS POUND) = 453.59237 g
1 oz (AVOIRDUPOIS OUNCE) = 28.349523 g
1 dr (AVOIRDUPOIS DRAM) = 1.7718451 g
1 gn (GRAIN) (UK) = 0.0647989 g
1 ozt (TROY OUNCE) = 31.103476 g
1 dwt (PENNYWEIGHT) = 1.555174 g
1 MM (MOMME, Japan) = 3.749996 g
1 tl. J (JEWELRY TAEL, Hong Kong) = 37.42900 g
1 tl. T (TAEL, Taiwan) = 37.49995 g
1 tl. H (TAEL, Singapore) = 37.799375 g
1 t (TOLA, India) = 11.663804 g

Full capacity comparison:

BS-H Series:

	BS150H	**BS600H**	**BS1500H**
g	150.018	600.09	1500.18
ct	750.09	3000.45	7500.9
lb	0.33009	1.32295	3.30045
oz	5.2909	21.545	52.909
dr	84.618	338.69	846.18
gn	2314.95	9259.8	23149.5
ozt	4.8209	19.2945	48.209
dwt	96.418	385.89	960.418
MM	40.009	160.045	400.09
T1.J	4.0009	16.045	40.009
t1.T	4.0009	16.045	40.009
t1.H	4.0009	16.045	40.009
t	12.8618	51.409	128.618

BS-A Series:

	BS150A	BS300A	BS600A	BS1500A	BS3000A
g	150.045	300.09	600.18	1500.45	3000.9
ct	750.45	1500.45	3000.9	7504.5	15004.5
lb	0.33058	0.66045	1.3209	3.3058	6.6045
oz	5.2918	10.5795	21.159	52.918	105.795
dr	84.645	169.29	338.58	846.45	1692.9
gn	2313.9	4627.8	9254.5	23139	46278
ozt	4.8218	9.6445	19.289	48.218	96.445
dwt	96.445	192.89	385.78	964.45	1928.9
MM	40.018	80.045	160.09	400.18	800.45
T1.J	4.0018	8.0045	16.009	40.018	80.045
t1.T	4.0018	8.0045	16.009	40.018	80.045
t1.H	4.0018	8.0045	16.009	40.018	80.045
t	12.0045	25.709	51.418	120.045	257.09

BS-M Series:

	BS150M	BS300M	BS600M	BS1500M	BS3000M
g	150.09	300.18	600.45	1500.9	3001.8
ct	750.45	1500.9	3004.5	7504.5	15009
lb	0.33045	0.66045	1.3218	3.3045	6.6045
oz	5.2945	10.589	21.178	52.945	105.89
dr	84.69	169.38	338.95	846.9	1693.8
gn	2315.8	4629.5	9259.0	23158	46295
ozt	4.8245	9.649	19.298	48.245	96.49
dwt	96.49	192.98	385.95	964.9	1929.8
MM	40.045	80.09	160.18	400.45	800.9
T1.J	4.0045	8.009	16.018	40.045	80.09
t1.T	4.0045	8.009	16.018	40.045	80.09
t1.H	4.0045	8.009	16.018	40.045	80.09
t	12.869	25.738	51.445	128.69	257.38

BS-L Series:

	BS150L	BS300L	BS600L	BS1500L	BS3000L
g	150.18	300.45	600.9	1501.8	3004.5
ct	750.9	1500.18	3004.5	7509	15001.8
lb	0.33045	0.6609	1.3218	3.3045	6.609
oz	5.299	10.598	21.195	52.99	105.98
dr	84.69	169.45	338.95	846.9	1694.5
gn	2314.5	4629.0	9258.0	23145	46290
ozt	4.829	9.658	19.295	48.29	96.58
dwt	96.58	192.95	385.9	965.8	1929.5
MM	40.045	80.18	160.45	400.45	801.8
T1.J	4.0045	8.018	16.045	40.045	80.18
t1.T	4.0045	8.018	16.045	40.045	80.18
t1.H	4.0045	8.018	16.045	40.045	80.18
t	12.876	25.745	51.49	128.76	257.45

Catch Zero Range:

Mode / Zero Range	BS-L Series	BS-M Series	BS-A Series	BS-H Series
“Zer 1”	0.5d	0.7d	0.8d	1.6d
“Zer 2”	0.8d	1.5d	1.5d	2.5d
“Zer 3”	1.5d	2.5d	2.5d	3.5d
“Zer 4”	2d	3.5d	3.5d	4.5d
“Zer 5”	2.5d	4.5d	4.5d	5.5d

CONTENT