High Precision Balances

Operation Manual

KD- TB/UB/NB(H)-en, V5.0-2016

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1. LCD display with backlight or LED display with7 digits
2. Be able to count;
3. Options: RS-232 interface;
4. AC or DC power supply; outfit AC/DC adaptor;

II. Attentions

1. Prevent it from getting wet.
2. Do not place the balance in an environment with extreme temperature or humidity.
3. Do not shock the balance and do not exceed the capacity.

III. Preparations

1. Before using the Balance, please take out the protection screw from the left of the balance, then plug up with the circular plastic cap. Otherwise, the balance will not work.
2. The balance must be in an exactly horizontal position in order to achieve accurate measurement results. The windbreak cover is necessary for high precision balance. Re-calibration before each use is preferable.

Please don't turn the balance on to work before the above items are well prepared.

IV. Explanation of display parts

→0← : "Zero" indicator.

: "Tare" indicator.

: Indicate that the reading is Stable.

: "Power-Low" indicator.

pcs : Indicate that the balance is in counting mode.

Table of unit conversions

1	ct	=	0.2	g	1	oz	=	28.349523125	g
1	tola	=	11.6638038	g	1	ozt	=	31.1034768	g
1	lb	=	453.59237	g	1	Anna	=	0.7289877375	g
1	Ratti	=	0.12149795625	g	1	tl.T	=	37.49995	g
1	dr	=	1.7718451	g	1	mm	=	3.749996	g
1	gn	=	0.06478991	g	1	Tl.J	=	37.4290018	g
1	dwt	=	1.55517384	g	1	Tl.H	=	37.799375	g
1	t	=	11.6638038	g	1	1/8	=	3.543690391	g
1	1/4	=	7.08738078125	g					

Note:

t/M/r=tola/Masha/Ratti;

t/A/r=tola/Anna/Ratti;

1tola=12Masha=16Anna;

1Masha=8Ratti;

1Anna=6Ratti

V. Keypad functions

: ON/OFF power switch.

: For weight unit selection.

: Sample key, used for sampling (for calculating the unit weight) in counting mode.

: Tare key, used to subtract the weight of an item or container. Press tare key again to exit the tare mode (when empty).

: Zero key, press this key to return the display to zero if a small weight reading is left while unloaded.

VI. Operations

Press key to turn the balance on; the default mode is weighing mode.

Weighing mode

Weight units

Press key to choose the needed unit.

Tare function

Put a container on the pan and press when the display reading is stable. The tare weight will be stored into memory

and display will be brought to zero. Tare indicator in the display will appear. The weight added here afterwards will be displayed as net weight. Remove both the container and the objects, the display will show the weight of the container companied by a negative sign. To cancel the tare mode, Press the key again to cancel Tare mode.

Zero function

Press key to return the display to the center of zero if the zero Shifts during operation.

Counting mode

Sampling

1. Press key, the display will show "**10Cnr**". Press the key again and again, 10、20、50、100 (pcs) will appear in succession. Stop at the one you want to use.

2. Put the exact quantity of samples as desired on the pan and press , the determined sample size will be shown. After sampling, it's ready to count.

3. If the unit weight is too small (less than 0.25d) for the counting resolution, " Err " will be shown.

4. In counting mode, press key will turn to weighing mode.

VII. Error messages

When the display shows " ------ " and beep out a warning, it means that the balance is overloaded. Please remove the object from the pan immediately so as to avoid damage to the load sensor inside the balance.

VIII. Instructions of RS-232 communication(optional)

1. Model EIA-RS232 C's UART signal
2. Format
   (1) Baud rate : 1200bps, 2400 bps, 4800bps, 9600bps
   (2) Data bits : 8 bits
   (3) Parity bit : none
   (4) Stop bit : 1 bit
   (5) Code ASCII

DATA FORMAT:

HEAD1	,	HEAD2	,	DATA	UNIT	CR
1 2 3	4	5 6	7	8-18	19-24	25 26

HEAD1 (3BYTES)

US - unstable

ST – stable

OVE - overload

HEAD2 (2BYTES)

NT – net weight mode

GS – gross weight mode

DATA (11BYTES)

2D (HEX) =" - "(negative sign) 20 (HEX) =" "(blank)

2E (HEX) =". "(decimal point)

UNIT (6 BYTES)

g= 20(HEX); 20(HEX); 20(HEX); 20(HEX); 20(HEX); 67(HEX)

ct=20(HEX); 20(HEX); 20(HEX); 20(HEX); 63(HEX); 74(HEX)

t = 20(HEX); 20(HEX); 20(HEX); 20(HEX); 20(HEX); 74(HEX)

Transmission example

Ex. : stable net + 0.168 g

HEAD1,	HEAD2,	DATA	UNIT	CR
ST ,	NT ,	+ 0.168	g	0D 0A

IX. Power supply

Alternative Power Supplies

1. DC 6V/1.3Ah rechargeable sealed lead-acid battery.
2. 8V / 0.6A AC/DC power adaptor

Low voltage indication

When the voltage of the batteries is lower than 5.8V±0.15V the Power-LOW Indication will be lighted up. the lead-acid battery should be recharged. Or else, the displayed reading will be unstable and the balance will auto power-off when the voltage of the batteries lower than 5.1V±0.15V.

X. Calibration

1. Press and hold →0← key when power on, it will display "CAL".
2. After the stable indicator LED lighted, press →0← key, the screen will show "000000".
3. To key in the value of the weight to be placed on the pan,

press key to shift the twinkling number; Press to increase the value of twinkling number. (Decimal fraction is invalid.)

4. Place a weight which value equal to the value just entered and after the reading is stable, press →0← key to complete external calibration, and the screen shown the value of the weight.

Note 1: The weight placed on the pan is not correct if the display shows " Err 1 ".

XI. Setting filter parameters

1. Press and hold the key ↔T until display **"nb" X** , X is the smaller the speed slower.
2. Select the applicable parameter by pressing ↔T key, and confirm the setting by pressing →0← key.
3. After the setting of filter parameters, the balance will turn to the selection of divisions .First, the current divisions will be shown. You can use ↔T key to select and →0← key to confirm . Then it will turn to the normal weighing state. You can select the numeric only which is larger than the current division.

XII. Settings of Zero parameters and communication parameters

1. Press and hold the key to enter the setting of zero tracking range. The display will show "**0.0d**" or "**0.5d**" or "**1.0d**"or "**1.5d**" or "**2.0d**" or "**3.0d**" or "**4.0d**" or "**5.0d**" after

self-test.

Note: There may be only 0.0-3.0d option to select.

2. Press key to select and press key to confirm and go to the setting of zero display range. The display on the screen is "**Zer-S**" (invalid) or "**Zer-L**" (displays "0" while the weight within the range of ±3d).
3. Press key to select and press key to confirm and go to the setting of baud rate. The baud rate is1200bps or 2400bps or 4800bps or 9600bps.
4. Press key to select and press key to confirm and go to the setting of communication mode. The display on the screen is " **St** " (output when the reading is stable) or " **CO** " (continue output).
5. Same as above, Press key to select and press key to confirm.

XIII. Single-double range selection

Press and hold key when power on, it will display the current set, such as"**SIN**", press key to select the applicable parameter (**SIN** — single range, **dbl** —double range), then press key to confirm.