
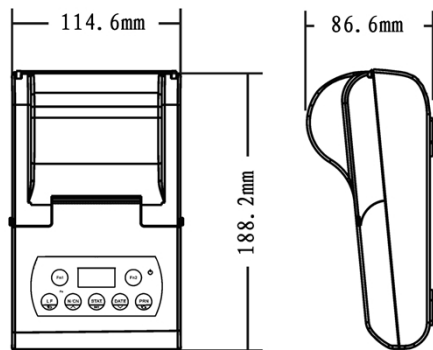


TX-100 Printer User Guide

6.1 Maintenance

1. While cleaning the printer, make sure any liquid does not inside the printer.
2. Keep the irritant liquid far away from printer.
3. Disconnect the power cable and the data cable before cleaning.
4. Please use soft dry cloth to wipe the printer after cleaning.
5. The power consumption is quite low so it can standby for a long time.
6. Keep it in a dry environment, if not used for a long time pack it into the factory packaging.
7. To avoid damage to the printer, we strongly suggest you to buy the ink ribbon cartridge from the original supplier.
8. If the paper is stuck, press the  key then cut the parts you don't need, DO NOT ever pull the paper.

6.2 Physical Dimensions



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1.1 Disclaimer

All trademarks mentioned in this manual belong to the holder of them.

We had collated this manual very carefully, but cannot guarantee that the contents of this manual is correct without any shortcomings, so we are not liable for losses which may be caused to users due to the manual. Meanwhile, there will be continuous upgrade of the products as well as the manual so we have the rights to modify the manual without any notice.

None of the electronic products can achieve absolute reliability so we do not suggest the customers to apply this in such a way which may harm their lives and properties.

Parameters setting of '3. Interface set'

Warning: wrong setting may lead to abnormality of printer. Please do not change the parameters listed below if it is unnecessary.

Item	Default setting	Setting options	Memo
Baud		300,600, 1200,2400, 4800, 9600, 14400,19200, 38400,57600, 115200	Must be set according to balance.
Data bits		7bits/8bits	Must be set according to balance.
Parity		None, Odd, Even	Must be set according to balance.
Stop bits		1Stop/2Stop	Must be set according to balance.
Handshake		None, DTR/DSR, XON/XOFF	Must be set according to balance.
Terminate char		CR+LF,CR,LF, WIN	Must be set according to balance.
Factory default			Recover all settings to factory default settings However, title header, Device model ,ID, S/N and password is not reset.

Password	888888		Prevent unauthorized modification of date and time. Set to "888888" will cancel the password protection.
Require login	x	√, x	√: Check password before use the printer
Time Synchronize	None	None Balance first Printer-Low Printer-High	
Manufacturer			
Device Model		Maximum 16 characters	The model can be customized in report header
Device SN		Maximum 16 characters	The SN can be customized in report header
Device ID		Maximum 10 characters	The Device ID can be customized in report header
Hold run mode	OFF	ON/OFF	OFF: return to Direct mode after ending current mode ON: keep current mode
Printout Font	24	24/40	Output character quantities per line, active after reset

2.1 Safety Warning



- The power-adaptor of the printer is incompatible with other equipment. Please don't connect it with other equipments to avoid any possible damage. Meanwhile, please don't use other power-adaptor to supply the printer.
- Please make sure that the voltage of power-adaptor is suitable for current circumstance before applying it.
- Connect the printer to balance when power is off.
- TX-100 printer is designed for in-door application, and is not allowed to be used in dangerous circumstance.
- The printer is unsuitable for occasion with water; appropriate protection should be taken in occasion with powder.

3.1 Product Introduction

The TX series balance printer, with a streamlined appearance and an outstanding cost-efficiency, completely meets the quality requirements of the chemical and pharmaceutical industries and GLP, GMP standard certifications.

From the most basic printing needs to the variety of applications, the TX series balance printer provides users with a flexible choice.

3.2 Features

- High-speed dot printing; printed pages are suitable for long-term preservation.
- 128x64 OLED display.
- Built in clock: the printer is able to print out time & date, even be connected to a balance without clock.
- Direct mode: print the original output of balance without any additional information, is suitable for printing balance calibration report.
- Weighing mode: print sample weight, with or without tare, gross and net weight (automatically calculated). This function is independent with balance, and is enabled on most of the balances.
- Statistical mode: statistical report can be built based on a maximum 500 samples, which outputs mean value, standard deviation, deviation coefficient, summation, maximum value, minimize value and difference, etc. The calculation is based on 64 bit double data, without visible error.
- Sum mode: give the sum result of multiple samples quickly.
- Mean mode: give the mean value of multiple samples quickly.
- Formulation mode: output the weight of each gradient in the formulation, and print the sum weight of all the gradients, with tare and gross weight.

3. Others

Gross weight in formulation	√	√, ×	Print gross weight in Formulation mode
Batch Auto INCR	×	√, ×	Batch number auto-increase
Printout Language	English	English/Chinese	Printing language
Chracters/Line	0(Auto)	0~40	Max allowed printing characters one line
Printout Invalid Data	×	√, ×	

Parameters setting of '2. Normal Set'

Item	Default setting	Setting options	Memo
Language	English	English/Chinese	Select interface language
Key press beep	ON	ON/OFF	ON: With beep OFF: Without beep
Screen save time	10 minutes	(1-120) minutes	Screen save time, when this time is surpassed without operation on printer, or without received data, the printer will turn off the display
Screen brightne.	100	0-255	Screen brightness, excessive brightness will reduce the display lifetime

Print number in STAT. report.	√	√, ×	Print number (N) in STAT. report
Print mean value in STAT. REP.	√	√, ×	Print mean (MEAN) in STAT. report
Print standard deviation	√	√, ×	Print standard deviation (SD) in STAT. report
Print variation coefficient	√	√, ×	Print variation coefficient (CV) in STAT. report
Print mean deviation in STAT.	×	√, ×	Print mean deviation(AD) in STAT. report
Print mean deviation coefficient	×	√, ×	Print mean deviation(RAD) coefficient in STAT. report
Print sum value in STAT. REP.	√	√, ×	Print sum value(T) in STAT. report
Print minimum in STAT. report	√	√, ×	Print minimum(MIN) in STAT. report
Print minimum deviations	×	√, ×	Print minimum deviations(MIN DR) in STAT. report
Print maximum in STAT. report	√	√, ×	Print maximum(MAX) in STAT. report
Print maximum deviations	×	√, ×	Print maximum deviations(MAX DR) in STAT. report
Print difference in STAT. REP.	√	√, ×	Print difference (RNG) in STAT. report
Maximum number of statistics	500	2-500	End statistical immediately if the number of weighings is larger than this number
Weighing data format	xxx: d u	xxx: d u hh:mm:ss d u xxx hh:mm:ss d u	xxx: increment count d: weight value u: weighing unit hh:mm:ss: time

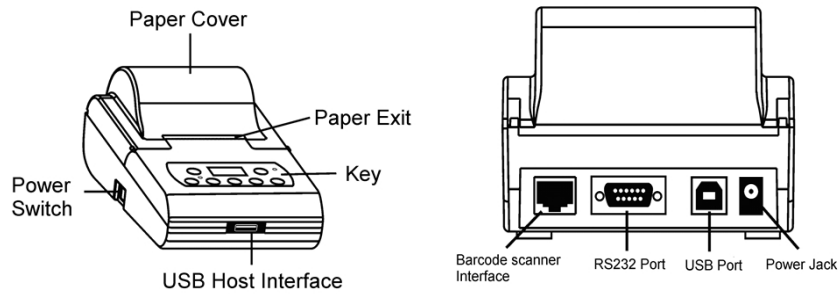
- Editable title and tail: except direct mode, title and tail can be added to weighing data under all the other modes. The title includes: manufacturer information, instrument type, series number, sample name/lot number, data/time, swift number; tail includes: ending time, data, signature, etc. Each item in title and tail can be opened separately.
- Sample name and lot number can be inputted and printed.
- Data export: all data from balance can be exported to U-Disk in excel or txt file.
- Print curve: the curve of multiple samples can be plotted and printed.

3.3 Main feature comparison of different printer series

Features	TX-100	TX-110
128x64 OLED	☑	☑
Date & time (built-in clock)	☑	☑
Direct mode	☑	☑
Weighing mode	☑	☑
Statistical mode		☑
Sum mode		☑
Mean mode		☑
Formulation mode		☑
Sample name & LOT. input		☑
Support Keyboard & Bar Scanner		
Data Export(use U-Disk)		
Data curve print		
Periodic printing		

Note: Function may be added, modified or deleted by manufacturer considering the update of products. Therefore, the function list is applied for reference only.

3.4 Appearance



Note: Only TX-120 printer has USB host interface and Barcode scanner interface.

3.5 Characteristic

- Printing method: 8 pins shuttle impact dot matrix.
- Copy ability: 1 (Original) + 1.
- Paper: maximum exradius 50mm, inradius 12.5mm, 53~64g/m², normal paper (non-heat sensitive), width 57mm.
- Ink ribbon: ERC-22 or ERC-09.
- Character: ASC II for English, First and second level of character for Chinese.
- Interface: RS232C.
- Power supply: DC 12-18V/1500mA.


Print model in report header	√	√, ×	Print model in report header
Print SN in REP. header	√	√, ×	Print S/N in report header
Print ID in REP. header	×	√, ×	Print ID in report header
Print date in report header	√	√, ×	Print date in report header
Print time in report header	√	√, ×	Print time in report header
Print number in report header	√	√, ×	Number add 1 automatically after printing weighing data
Print Delimiter in report	√	√, ×	Print delimiter line at the end of header

2. Trailer

Print date in report trailer	√	√, ×	Print date in report trailer
Print time in report trailer	√	√, ×	Print time in report trailer
Print signature in REP. trailer	√	√, ×	Print signature in report trailer
Enable electronic signature	×	√, ×	Print user name in report trailer
Prn user-defined in REP. trailer	×	√, ×	Print user-defined label in trailer, user-defined label can be import by special software
Line feed at trailer	3	0-15	Number of lines feed at report trail



3. Data Format



5.1 Parameter Settings

Press and hold the key  for more than 2 seconds, the setting menu will appear on the display as follows:

```

MAIN MENU
1.PrintOut
2.Normal set
3.Interface set
  
```

Press key  or  to switch between different menu items,

and press key  to confirm selection, press key  to return to the upper level menu. Many sub-items exist in one menu, and the function, selectable range and notes of these sub-items are listed in the table below:

Parameter settings of '1. Printout'

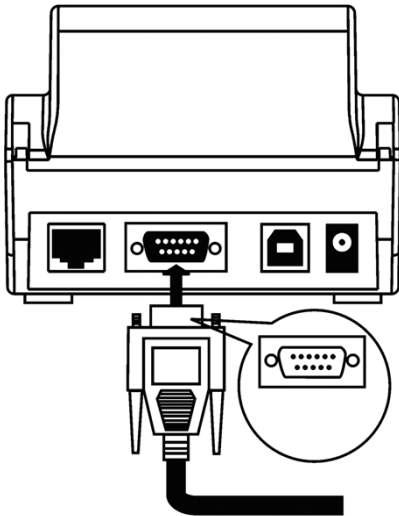
1. Header

Item	Default setting	Setting options	Memo
Print date & time at starts	×	√, ×	
Print label at starts	×	√, ×	
Print label in report header	×	√, ×	Print user-defined label in header, user-defined label can be import by special software
Print MFGR in report header	√	√, ×	Print manufacture name in report header

- Power dissipation: 8W while printing.
- Circumstance: temperature 0~50°C, humidity 10~80%.

4.1 Connecting Balance to Printer

1. Disconnect the power supply before connecting the printer to the balance with the data cable. The cable has a unique direction, please connect them correctly. Please refer to the figure below.






2. Plug in the AC adapter socket then connect the other end to the printer power jack.
3. Turn on the balance and the printer.
4. Please turn off the printer after use it, or move the power adaptor before a long-term absence. Frequent switch on/off is not necessary considering the low-power design of the printer.

- supplier.
- Weighing instruments model /SN /manufacturer: the printer can automatically recognize almost all of Sartorius /Mettler balances, for some other balances that can't be automatically recognized, which need the user to input the balance's model/SN /manufacturer at one time. When the user manually input the balance's model and SN, then can replace the results which is automatically recognized.
- Time/date format: the printer supports various time and date format.
- Weighing data format: the printer supports add number, date and time before each weighing data.
- Statistics input items selection: the printer can set which statistics items need to be outputted, and which items without outputted need.
- Automatically increase lot number: can choose whether add 1 automatically for the lot number.
- The number of outputted characters within one line: can set max allowed printing characters one line.
- Printing output language.

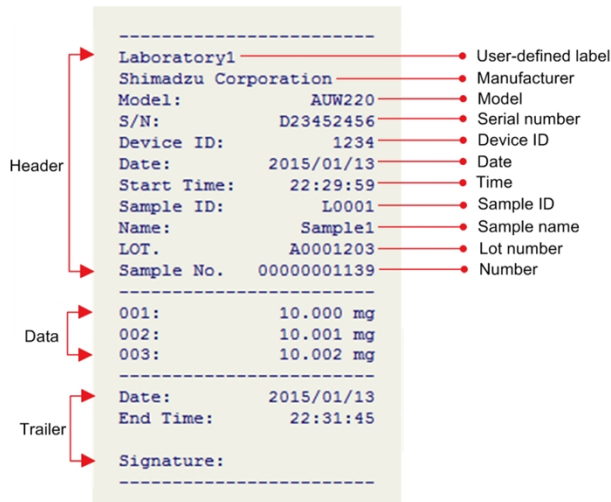

```

Set Date & Time
Set Time Format
Set Timing Print
Stop Timing PRN
    
```

11. Press key  or  to choose "Stop Timing PRN", press  key to confirm.

5.2 User-defined Report

Generally, a report is composed of header, data and trailer. The report may include many printout items, as shown in figure below:



Please refer to the "1. Printout" of "Parameter Settings" menu, the printer can set each item of header, data, trailer separately, and decides whether they need to be outputted and the output style, including the following:

User-defined label: can add user-defined string in the header or trailer,

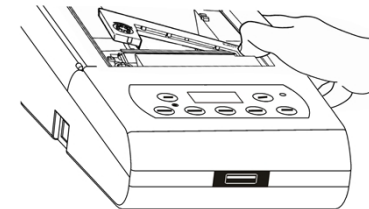
this feature need special software, please ask to your

4.2 Installing Ink Ribbon Cartridge

Place the printer facing towards you, first, put the Ink ribbon cartridge on the gear shaft on the left side of the mechanism, uplift the right side slightly, if the left side of the Ink ribbon cartridge does not reach the bottom, press the knob of the ink ribbon cartridge and rotate it slowly towards the direction shown by the arrow. Once the left side reaches the bottom then press the right side hard to reach the bottom too. Check if the Ink ribbon cartridge is installed correctly. Rotate the knob if the ribbon is bent or outside of the Ink ribbon cartridge, press the LF key to flatten and tighten the ribbon and to feed the paper into the ink ribbon cassette. Place the front cover back then the installation is completed.

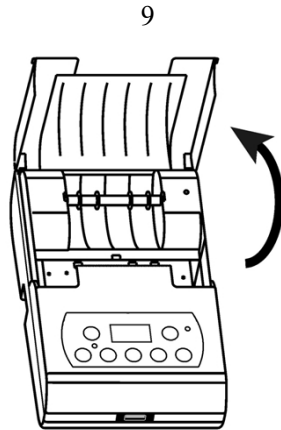
Note: the installed ribbon should be in the front of paper; otherwise the printer wouldn't be able to print. To avoid this problem, we suggest you to install the Ink ribbon cartridge first before installing the printing paper.

Replace ink ribbon cartridge when the print becomes unclear and faint. Open paper cover then take out the ink ribbon cartridge by pressing at the right end marked with "Push" as shown in the figure below. Then insert the new cartridge from straight above.

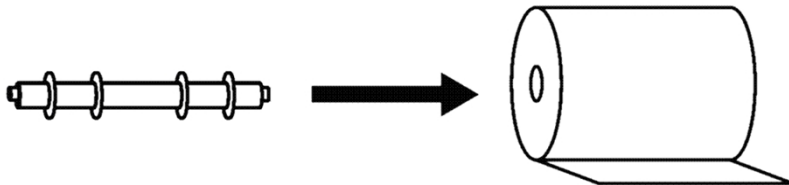


4.3 Installing Printer Paper

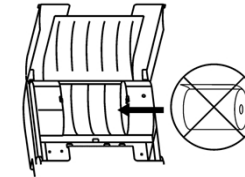
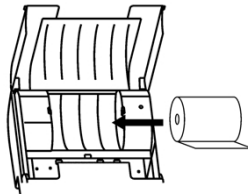
1. Lift the paper cover.



2. Insert the printer paper shaft into the center of the paper roll as shown in the figure below:



3. Put the paper shaft correctly into the paper slot. The front end of the paper must be at the bottom and facing towards you. Please refer to the figure below:



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4. Press key or to select "Timing Print interval"/"Timing print iteration" and press key to confirm ,then press key or to set the expected value. Press key to return to standby interface.
5. **Start timing print:** returned from the previous step, then the display will show as the figure below:

```
Set Date & Time
Set Time Format
Set Timing Print
Start Timing PRN
```

6. Press key or to choose "Start Timing PRN", press key to start.


```
Set Date & Time
Set Time Format
Set Timing Print
Start Timing PRN
```

7. Once timing print begins, then the display will show as the figure below:

```
SP.ON 000 AT. X
WEIGHINGS
N:00006 00:00:08
```

8. When iteration time is set to 0, the printer is set to continuous repetitive mode, as shown in the figure below:

```
SP.DN 003 AT. X
FUN:End FN2:STAT
N: Loop 00:00:07
```

- When the countdown time is 00:00:00, the printer will automatically perform data transmission at once. When the repeat counter countdown to zero, the printer will stop print automatically.
- Stop timing print manual: press the  key and hold for at least 2 seconds then the display will show as the figure below:

```
35
Input old code:
****
Input 999999 if
forgot
```

- If lost the password, please input "999999" when input the password, the printer will output some information, please send the information to supplier for help.


Note:

- When the password set as "888888" will cancel the password protection.



5.3 Automatic Timing print

Automatic data transfer in indicated interval and iteration time is realized in this automatic timing print. This function is especially useful when monitoring rate of weight change.


Set timing print parameter

- Press and hold the key  for at least 2 seconds then the display will show as the figure below:


```
Set Date & Time
Set Time Format
Set Timing Print
Start Timing PRN
```

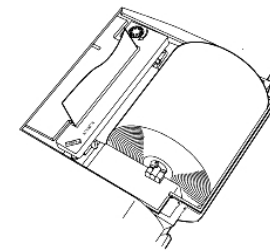
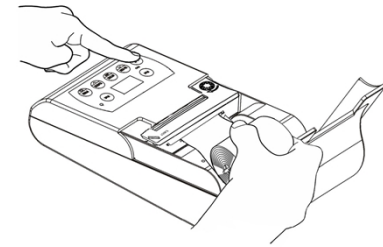
- Press key  or  to choose "Set Timing Print".

```
Set Date & Time
Set Time Format
Set Timing Print
Start Timing PRN
```


- Press key  to confirm, then the display will show as the figure below:

```
Timing Print in-
terval 10 Sec
1-60000 Sec
34
```

- Press the  key to feed the paper into the ink ribbon cassette as shown in the figure below.



The old paper roll should be removed before installing the new paper roll.

The paper left can be removed by pressing  key, if it is short enough or been cut to short enough.

Note: Damaged paper or ribbon is not allowed for use, nor is un-appointed paper, ribbon, power-supply, connecting cable, etc, to avoid possible

damage of the printer.

4.4 Auto-detect Communications

The communication parameters of printer and balance need to be completely compatible to allow normal operation. This function can automatically recognize the communication parameters and set the

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parameters in the printer to be compatible with a balance, thereby eliminating common issues caused by incorrect communication parameter settings.

Operation:

Make sure that the printer and balance is properly connected, and the balance is set to weighing mode.



With the power switch of the printer turned OFF, press & hold the key and turn on the power switch. Keep holding the key until the printer begins to print the following message:

```
-----Auto-Set-----  
Please send data to printer, the printer will output the results immediately, if the printer does not respond, it means that printer does not receive data.  
-----
```

Press transfer key (e.g. PRINT) on balance, once data transfer is detected, the printer will immediately analyze the data and print out correct communication parameters and received data. If there is no response in printer, please check if the connecting cable is correct and make sure that data is transferred after transfer key on balance is pressed.

Note: Make sure to press the print key of the balance.

MODE

OK

If the printed content is correct, press the key to accept the parameters analyzed by printer, then the printer can return to normal working status.

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- display shows as below:

- Press key or to change the value, press key or to switch the input position, press key to confirm. To confirm the password, the system will request to enter the password again, as shown in the figure below:

MODE

OK

- After inputting, press key to confirm and return.


Note:

- When the password set as "888888" will cancel the password protection.
- Please keep the password properly. If lost the password, please input "999999" when input the password, the printer will output some information, please send the information to supplier for help.

Changing the password:


- Please refer to "Parameter Settings", then enter into "Normal Set" menu, and choose "Password" item, as shown in the figure below:




- Press key  to enter. If a password has been set before, the system will request to input the password you set before, as shown in the figure below:

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Remarks:

- When input and print the sample name/lot number one time, you need to re-input the sample name/lot number, otherwise the sample name/lot number will not be printed, press and hold the key  for more than 2 seconds, and enable the **SP.ON**, then can maintain the input state of sample name/lot number, as shown in figure below:



Press again and hold the key  for more than 2 seconds, and change the state to **SP. X**, which can disable this feature.

- If hope to print empty sample name/lot number in the header, which is easy to handwrite the sample name/lot number, you can input empty sample name or lot number one time.

5.4 Administrator Password

The printer allows you to set a length of 6-digit password, which will prevent unauthorized changes on the time and other settings.

Set the password:

1. Please refer to “Parameter Settings”, then enter into “Normal set” menu, and choose “Password” item, as shown in the figure below:



Press key  to enter. If Password was not set before, the

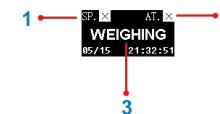
32

5

5.5 Introduction



Operation Interface



Display Interface

- ①: Sample name/lot number output

SP. X: Disable printing sample name/lot number.

SP.ON: Enable printing sample name/lot number.

②: Automatic tare

AT. X: Disable auto-tare, default state after printer is on.

AT.ON: Enable auto-tare: command 'tare' sent to balance

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automatically each time a weighing data is received.

③: Current mode

DIRECT: Direct mode
WEIGHING: Weighing mode
WEIGHINGS: Multi Weighing mode
STAT.MODE: Statistical mode
SUM MODE: Sum mode
MEAN MODE: Mean mode
FMLT MODE: Formulation mode
PipetteCAL: Pipette calibration mode

5.6 Keys

Fn: Usually it is for inserting the sample name/lot number. Hold this key for longer than 2 seconds, the printer would switch between **SP.X** and **SP.ON**. In inputting state, pressing this key would change the cursor position to the left side.

Fn2: Hold this key for longer than 2 seconds to tare switch between **AT.X** and **AT.ON**; In inputting state, pressing this key would change the cursor position to the right side.

Back: Press the key once to feed the printer by one line; press the key and hold to continuously feed until released. In parameter setting interface, press the key to go back to previous menu or cancel current parameter modification.

N/CN: Press the key and hold for about 2 seconds then can reset the sequence number; In parameter setting interface, press this key to go back to previous menu item or increase parameter settings (quick increase achieved by holding this key).

MODE
OK: Press this key can select the mode; In the setting mode,

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	A	B	C
1	1 My Sample1		
2	2 My Sample2		
3	3 My Sample3		
4	4 My Sample4		
5	5 My Sample5		
6	6 My Sample6		
7	7 My Sample7		
8	8 My Sample8		
9	9 My Sample9		
10	10 My Sample10		
11	11 My Sample11		
12			
13			
14			

Import this table into printer, when need to print sample name, you just to input the corresponding code. If need to output sample name "My Sample 10" in the header, you just need to input the code "10". If need to use this feature, please ask the supplier for the special software and operating instructions.

3. Sample LOT.

The inputted content will as the sample lot number that printed in the header.

4. Name in data

The inputted content will as the sample lot number that printed before the data.

5. Code in Data

Same as the "2.Sample Code", the only difference is : the sample name will be printed before the data.

6. LOT. in data

The inputted content will as the sample lot number that printed before

the data.

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```

-----
Model:      HR120
S/N:       D23452456
ID:
Date:      2016/07/01
Time:      11:33:53
Sample:    My sample
Lot No.    A123456
-----
                10.000 mg

Signature:
-----

```

Output sample name/lot number in the header

```

-----
Model:      HR120
S/N:       D23452456
ID:
Date:      2016/07/01
Start:     11:35:34
-----
001 A123456  10.003 mg
002 A123457  10.004 mg
003 A123458  10.005 mg
-----
End:       11:35:53

Signature:
-----

```

Output sample name/lot number before the data

Press "FN1" key, the display as follows:

1. Sample Name	5. Code in data
2. Sample Code	6. LOT. in data
3. Sample LOT.	
4. Name in data	

1. Sample Name

The inputted content will as the sample name that printed in the header.


2. Sample code


Use Excel, to make a table that contains the corresponding relationship

between the numeric code and sample name.

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press this key to confirm modification/selection, or enter setting interface of some item.

DATE
: Print current time & date. Press this key and hold for longer than 2 seconds to set the time & date. In the setting mode, press this key to go to next menu item or decrease parameter settings (quick decrease achieved by holding this key).

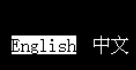
PRINT Menu
: Press this key to request weighing data from the balance, equal to key 'Print' on balance. There might be a little delay before actual printing since the balance usually sends weighing data after it is stable. Press this key and hold for about 2 seconds to enter the setting mode.

5.7 Select Interface Language

Turn on the printer, when the first figure appears on the display then

press the  key. Press  or  to choose language, then press 

to confirm, as shown in the figure below:



5.8 Select Printing Language

For setting language in printed report, please refer to "Parameter Settings".

5.9 Date and Time Setting

When the printer is used at first time or after about 2 weeks without

power supply, it is required to reset the time and date.

Note: while setting time & date, the password will be required if the administrator password is set.


1. Press the  key and hold for at least 2 seconds then the display will

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

show as in the figure below:


```
Set Date & Time
Set Time Format
Set Timing Print
Start Timing PRN
```


Press the  key, as shown in the figure below:

```
Date & Time
2018--07--06
00:06:40
Press LF return
```

2. Press the  key or the  key to decrease or increase the value,


press the  key or the  key to change the input position, press

the  key to confirm and set the next item.


3. After setting is completed, press the  key to return to the previous step.

5.10 Operation Mode

Select Operation Mode

Press the  key, the selection appears in the list:

```
DIRECT
WEIGHING
MULTI WEIGHING
T, G, N
```

Select the mode you expect. and then press the  key to confirm.

1. DIRECT Mode







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
● set value will not be modified.



2. Character input:


Here takes the sample name input as an example, and described the input method of input characters:

```
0123456789.-
/*+:()[]%~,"
```

● Press the key , , ,  to select the character you need to input, the printer supports all ASCII characters, including the numbers, letters and symbols, when the screen can't display all alternative characters, press the key  or  can switch to the next screen's alternative characters.

● Press the key  to input the selected alternative characters.


● Press the key  to delete one character, press and hold the key  to delete all inputting content.

● When input is complete, press the  to save and return.

5.11 Input of sample name/lot number

The printer can printout the sample name in the header, and also can add with sample name/lot number, as shown in figure below:

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- After weighing, press  key to end.

5.12 Input method of value/character


When you need to set parameters, or input symbols, such as sample name/lot number, etc., which need through the keypad of printer to input. Depends on different input items, the printer's input interface including the followings:

1. Value input



Here takes the screen brightness modification as an example, which describes the input/modify method of value:






In the above figure, the current screen brightness is 85, if need to modify it, please follow these steps:


- Press the key , then the value need to be modified is highlighted, as shown in figure below:



- Press the  or  key to change the value; press and hold the

 or  key can increase/decrease the value quickly.



- When input is complete, press the  to save and return.

If press the  key, can give up inputting and return, the

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Under this mode, the data from balance would be printed directly, without any information added. This mode is always used for printing balance calibration data.

Hints:

- **For printing balance calibration report, please use this mode.** Please refer to instruction manual of balance in detail.
- When date and time information needs to be added at tail of the report, please press key .
- Under this mode, the final printed content might be hidden thus need additional paper feed by pressing key .

2. WEIGHING Mode

The weighing report that accord with GLP can be printed under this mode. Head and tail information would be printed besides weighing data, the head includes: manufacturer information, instrument model, serial number, sample name/lot number, data/time, swift number; the tail includes: end time/date, signature. Each item in head and tail can be enable or disable separately. Examples of reports under WEIGHING mode are given below:

```

-----
Model:           HR120
S/N:            D23452456
ID:
Date:           2016/07/01
Time:           09:47:41
-----
                    10.013 mg

Signature:
-----

```

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Operation method:

- Put sample in weighing pan, and press key 'Print' on balance or the



key on printer, when the weighing data on balance screen is stable.

3. MULTI WEIGHING

This mode is similar to the weighing mode, and the difference is the multi weighing can print multiple data in one report. The output format is as follows:

```

-----
Model:           HR120
S/N:            D23452456
ID:
Date:           2016/07/01
Start:          09:47:57
-----
001              10.014 mg
002              10.015 mg
003              10.016 mg
-----
End:            09:47:59

Signature:
-----

```

Operation method:

- Select the MULTI WEIGHING.
- When you weigh each sample, then to print each data by pressing the print key, and the printer will add the sequence number before the each weighing data.

According to the display information, press the key  to

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- Select the "Loss Weight" mode.
- Put the container on the weighing pan, here takes the weighing paper as example. Press the tare key after the weight value is stable.
- Put the sample to the weighing paper, then press the print key, the printer printout the sample weight.
- Move the sample away from the weighing paper, then put the weighing paper on the weighing pan, press the print key, the printer outputs the sample weight which is remaining in the weighing paper, and calculate/printout the sample weight which actually have been moved.

12. Accumulate

Under this mode, the printer will accumulate each weighing data, as shown in the figure below:

```

-----
Model:      HR120
S/N:       D23452456
ID:
Date:      2016/07/01
Start:     11:21:25
-----
No.         Total:
001  10.026  10.026 mg
002  10.027  20.053 mg
003  10.028  30.081 mg
004  10.029  40.110 mg
005  10.030  50.140 mg
-----
End:       11:21:28

Signature:
-----

```

Operation method:

- Select the "Accumulate" mode.
- Press print key when weighing each sample.

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```

-----
Model:      HR120
S/N:       D23452456
ID:
Date:      2016/07/01
Time:     10:50:34
-----
No.  T (mg)  G (mg)  N (mg)
1   10.011  20.023  10.012
2   10.013  20.027  10.014
3   10.015  20.031  10.016
T   30.039  60.081  30.042
-----
End:       10:50:43

Signature:
-----

```

The operation method is similar to "Tare, Gross, Net" mode, the difference is

when need to end the printout, press the key .

11. Loss Weight

Under this mode, the printer will automatically use the first time weighing

data minus the second time weighing data, then calculate the final weighing data. When the sample is powder or liquid, this mode is particularly useful, the sample weight or the final sample weight which are sticking to the container can be calculated (such as weighing paper). The printout format is as follows:

```


-----
Model:      HR120
S/N:       D23452456
ID:
Date:      2016/07/01
Start:     11:01:49
-----<LOSS WEIGHT>-----
Sample:    100.00 mg
Lost:      90.00 mg
Final:     10.00 mg
-----
End:       11:01:56

Signature:
-----

```

Operation method:

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- end; or press the key  to print the statistical results, which is equal to statistical mode.

4. Statistical Mode (STAT. Mode)

The printer is able to give out statistical report based on up to 500 data samples, including: average value, standard deviation, deviation coefficient, summation, maximum value, minimum value and difference. User can decide which statistical outputs are needed and set corresponding parameters. The calculation is based on 64 bit double data, with no visual error. The output format is as follows,


```

-----
Model:      HR120
S/N:       D23452456
ID:
Date:      2016/07/01
Start:     09:48:15
-----<STAT>-----
001        10.017 mg
002        10.018 mg
003        10.019 mg
-----<RESULT>-----
n          3
total     30.054 mg
max       10.019 mg
min       10.017 mg
diff      0.002 mg
?         10.0180 mg
s         0.001000 mg
srel      0.009982 %
-----
End:      09:48:47
Signature:
-----

```



Operation method:

- Select the Statistic mode.
- Put the first sample on the weighing pan of the balance, press key

'Print' on balance or key  on printer when weighing data is stable. The printer will print sample weight, and add it into statistical queue.

Press key 'Print' each time weighing a sample the same as last

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- step.
- When all the samples are weighted, press key   to calculate statistical results.

5. SUM Mode

Quickly print the summation of several samples. Only summation value is printed under this mode, with the same format and operation as STAT. mode.

6. MEAN Mode

Quickly print the mean value of several samples. Only mean value is

printed under this mode, with the same format and operation as STAT. mode.

7. Formulation Mode (FMLT.)

Print the weight of every component in a formulation and the whole weight of formulation, with gross, tare weight. The print format is as follows:

```

-----
Model:      HR120
S/N:       D23452456
ID:
Date:      2016/07/01
Start:     10:10:13
-----<FORMULATION>-----
COMP001    10.000 mg
COMP002    10.001 mg
COMP003    10.002 mg
Net:       30.003 mg
-----
End:      10:10:16
Signature:
-----

```


Operation method:

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Operation method 2(Enable the Auto-Tare feature):

- Select the "Tare, Gross, Net" mode;
- Confirm the AT(Auto-Tare) is enabled, as shown in figure below:



If the AT(Auto-Tare) is disabled, please press and hold  key for more than 2 seconds.

- Put the sample on the weighing pan, press the print key to print the tare weight, the balance will zero automatically, the displays as follows:

```

SP. ✕ AT. ON
T>>N,G
2016/07/01 10:38

```

- Put the sample on the weighing pan, press the print key to print the net weight.
- The printer will automatically calculate the gross weight and then end, gross weight = tare weight + net weight.

10. Multi T, N, G

This mode is similar to the "Tare, Gross, Net" mode, the difference is this mode can print multiple lines of data, and calculate the accumulated value, as shown in figure below:

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- End calibration: press

MODE
OK

 to print calibration report.

9. Tare, Gross, Net

Can print the tare weight, gross weight and net weight, the printout format is as follows:

```

-----
Model:          HR120
S/N:           D23452456
ID:
Date:          2016/07/01
Time:          10:21:50
-----
Tare:           10.004 mg
Gross:          10.005 mg
Net:            0.001 mg
-----
End:            10:21:52

Signature:
-----

```

Operation method 1 (Disable the Auto-Tare feature):

- Select the "Tare, Gross, Net" mode;
- Confirm the AT(Auto-Tare) is disabled, as shown in figure below:

```

SP. ✕ AT. ✕
T>>G,N
2016/07/01 10:27

```

- Put tare on the weighing pan, press the print key to print the tare, the display as follows:

```

SP. ✕ AT. ✕
T>>G,N
2016/07/01 10:31

```

- Put the sample on the weighing pan, press the print key to print the gross weight.
- The printer will automatically calculate the net weight and then end, net weight = gross weight - tare weight.

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```

-----
Model:      HR120
S/N:       D23452456
ID:
Date:      2016/07/01
Time:      10:50:34
-----
No. T(mg)  G(mg)  N(mg)
1  10.011  20.023  10.012
2  10.013  20.027  10.014
3  10.015  20.031  10.016
T  30.039  60.081  30.042
-----
End:       10:50:43

Signature:
-----

```

The operation method is similar to "Tare, Gross, Net" mode, the difference is

when need to end the printout, press the key **MODE** **OK**.

11. Loss Weight

Under this mode, the printer will automatically use the first time weighing data minus the second time weighing data, then calculate the final weighing data. When the sample is powder or liquid, this mode is particularly useful, the sample weight or the final sample weight which are sticking to the container can be calculated (such as weighing paper). The printout format is as follows:

```

-----
Model:      HR120
S/N:       D23452456
ID:
Date:      2016/07/01
Start:     11:01:49
-----<LOSS WEIGHT>-----
Sample:    100.00 mg
Lost:      90.00 mg
Final:     10.00 mg
-----
End:       11:01:56

Signature:
-----

```

Operation method:

```

-----
MFG.:      SHIMADZU CORP.
Model:     AUN220D
S/N:       D450011907
Date:      2015/03/27
Start Time: 01:27:29
Sample No. 00000000010
-----
Temperature(°C): 15.0
K(t):      1.004213
-----
Calibrate Point: 10 ml
              11.99319 g
001:         12.04372 ml
E:           20.43720 g
-----
Conclusion:
-----
Date:      2015/03/27
End Time:  01:33:14
Inspector:
Auditor:
-----










```

Operation method:

- **Select mode:** Press key **MODE** **OK**, the selection list appears, press key **N/CN** **▲** or **DATE** **▼** to select "PipetteCAL" and press **MODE** **OK** to confirm, the upside of display shows the current calibration point and temperature.

- **Set temperature:** Press key **Fn2** **▶**, and press key **N/CN** **▲** or **DATE** **▼** to modify temperature, and press key **Fn1** **◀** or **Fn2** **▶** to move the input position, press **MODE** **OK** key to confirm after making the modifications. Note: once you begin the calibration (when the data is received), the temperature can't be changed, which can be changed by disabling the calibration mode.

Set/Select calibration point: Under the standby interface, press **Fn1** **◀** key to set/select calibration point, the calibration

- points saves up to 8 points, press key  or  to change calibration point, and press  to confirm or press  to cancel the selection and return, if no expected value exists in calibration points, press  to modify value of current point, same as set temperature; press  to switch between volume unit "ul" and "ml" , "ul" is usually proper for pipette and "ml" is more chosen for volumetric flask.
- **When calibration pipette:** put the measuring glass in balance, and press key 'Tare' on balance to zero after the weight value is stable. Use the pipette to transfer indicated volume of distilled water to measuring glass, and wait until the weight value is stable then press "PRINT" on balance or  on printer to print current weight and convert it to volume under standard temperature (20 degree). Repeat this step to decrease the calibration error.
- **When calibration volumetric flask:** put the volumetric flask in balance, and press key 'Tare' on balance to zero after the weight value is stable. Add distilled water to flask until calibration line is reached, and wait until the weight value is stable then press "PRINT" on balance or  on printer. The printer would print weight and volume under standard temperature (20 degree).
- To calibrate the next point, press  to change it. If the calibration point is modified or a new point is selected, the previous results will be printed out. For volumetric flask, this step can be ignored since there is only one calibration point.