

OPTIKA[®]

B A L A N C E S
I T A L Y

INSTRUCTION MANUAL

Model
CNS030

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INDEX

1	Preface.....	1
2	Disclaimer.....	2
3	Safety Warning.....	3
4	Introduction.....	5
	4.1 Features	5
	4.2 Product Information.....	6
	4.3 Appearance	8
	4.4 Characteristic	11
5	Installation.....	12
	5.1 Preparation	12
	5.2 Connect Printer to Scale.....	12
	5.3 Check/Install the Ink Ribbon Cartridge	14
	5.4 Install Printing Paper.....	17
6	Basic Operation.....	20
	6.1 User Interface.....	20
	6.2 Keys	22
	6.3 Input and Setting Operations.....	26
	6.3.1 Selection from a list	26

6.3.2	Value input	27
6.3.3	Character input.....	28
6.4	Set Operating Language.....	33
6.5	Set Printing Language.....	34
6.6	Set Time	34
6.7	Set Weighing Instrument information	37
6.8	Select Operation Mode.....	38
6.9	Print Report.....	39
7	Operating Modes.....	40
7.1	Direct Mode	40
7.2	Weighing Mode.....	44
7.3	Multi Weighing Mode	45
7.4	Tare, Gross, Net Weight Mode.....	47
7.5	Multi Tare, Gross, Net Mode	53
7.6	Statistic Mode	55
7.7	SUM Mode.....	60
7.8	Mean Mode	61
7.9	Formulation Mode.....	61
8	Advanced Features.....	63
8.1	About the TX Editor Software	63
8.2	Report Style Settings.....	66

8.3	Custom Header and Trailer	75
8.4	Code Input Method	77
8.5	Administrator Password Setting.....	81
8.6	Authority Management	84
8.7	User Login and Electronic Signature	85
8.8	Automatic Timing Print	90
8.9	Automatic Tare.....	93
8.10	Print Sample Name / Lot Number.....	94
9	Parameter Settings	99
9.1	Printout Settings.....	100
9.2	Normal Setting	100
9.3	Interface Setting	104
10	Using Rechargeable Battery.....	109
10.1	Install Rechargeable Battery	109
10.2	Battery Charging	111
10.3	Notes On Using The Battery	112
11	Communication Interface.....	113
11.1	Interface Definition	113
11.2	Automatic Detection	117
11.3	Custom Print Command.....	119
11.4	Custom Tare Command.....	121

11.5	Data Filtering	122
11.6	Data Matching.....	125
12	Trouble Shooting.....	128
13	Maintenance.....	132
14	Physical Dimensions	133
15	Order Information	134

1 Preface

Thank you for purchasing this product.

Read this instruction manual carefully and use the printer correctly in accordance with the directions in the manual. When you have finished reading the manual, keep it in a safe place together with the printer so that you can refer to it at any time.

IMPORTANT

If the user or usage location changes, ensure that this Instruction Manual is always kept together with the product.

If this manual is lost or damaged, immediately contact your supplier representative to request a replacement.

To ensure safe operation, read "Safety Warning" thoroughly before using the product.

2 Disclaimer

- This manual applies to products with version C3.00. If your product version is inconsistent, some content in this manual may not apply.
- The functions described in this manual are for the entire CNS030 series printers. The specific functions available depend on the model you purchased.
- 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.

3 Safety Warning



- The power-adaptor of the printer is incompatible with other equipment. Please don't connect it with other equipment to avoid any possible damage. Meanwhile, please don't use other power-adaptor to supply the printer.
- The printer in accordance with EC directives and other international requirements and standards, safety and regulatory requirements about electronic equipment, electromagnetic compatibility and electrical equipment. However, the improper operation may cause damage.
- If there is a visible damage to the equipment or cable, please unplug the power, and ensure safety before further use.
- Please remove the power-adaptor before connect or disconnect any peripheral device or cable.
- This equipment can only be repaired by trained professionals.
- Don't use the equipment in the places where with water splatter; The protection in dust environment is needed.

-
- Don't use the equipment in a chemical corrosive, high temperature, high humidity and vibration environment.
 - Don't use the equipment used in hazardous area, do not use non-rechargeable batteries.

4 Introduction

4.1 Features

- High-speed dot matrix printing; printed pages are suitable for long-term preservation.
- Report in conformity with the GLP/GMP requirement
- Built in clock: the printer is able to print out date & time, even be connected to a balance without clock.
- Administrator permission and user permission, refused to unauthorized modifications.
- Sample name/lot number printing.
- Statistical calculation: statistical report can be built based on a maximum 999 samples, which outputs mean, standard deviation, deviation coefficient, summation, maximum, minimize, difference, etc. The calculation is based on 64-bit data, without visible deviation.
- Tare, gross, net weight printing function.
- Editable header and trailer: including custom string, manufacturer, model, S/N, device ID, sample name/lot number, data/time, signature, etc. Each item can be enabled / disabled separately.

4.2 Product Information

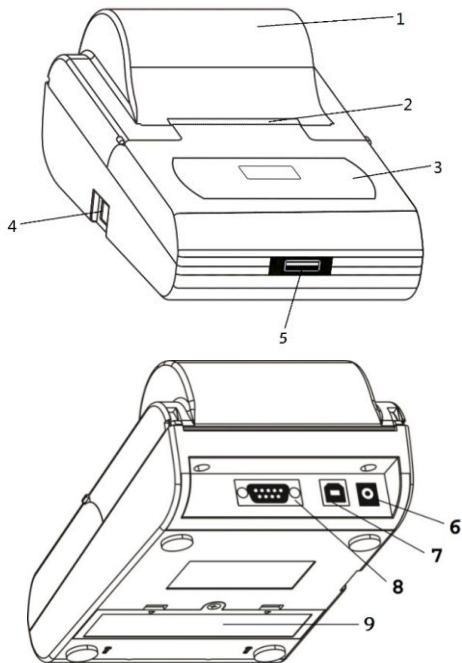
CNS030 series printers can be connected to almost all electronic balances in the world, as well as most electrochemical instruments, such as PH meters, potentiometric titrators, moisture meters, etc. For different applications, TX series printers include 100, 110, 120 three Models, the function differences of different models are shown in the table below:

Model		CNS030	
Features			
128 x 64 Display		✓	
Date & time (built-in clock)		✓	
Direct mode		✓	
Weighing mode		✓	
Statistical mode		✓	
Sum mode		✓	
Mean mode		✓	
Formulation mode		✓	

Sample name input		✓	✓
Sample batch number input		✓	✓
Batch number auto-increase		✓	✓
Data export (use U-Disk)			✓
Data curve print			✓
Barcode scanner / keyboard			✓

This manual will describe all the functions, but not all functions are applicable to your printer. Please read this manual according to the model of the product you purchased and compare the functions listed in the above table.

4.3 Appearance



1. Paper cover

Open the paper cover to replace the ribbon and printing paper.

2. Paper Cutter:

There are many small denticles in the front of the paper cutter, when the printing paper tear down from the cutter direction, the small denticles of paper cutter will pierce the paper in order to achieve tearing action.

3. Operation Interface

Including keys and display for the man-machine exchange operation.

4. Power Switch

Control the printer power on or off, when the switch is in a location with a "0", the power off; When the switch at "1" position, the power on.

5. Expansion interface

6. Power jack:

Connect the included 12V AC adapter, power for the printer, and can also charge for the batteries.

7. USB device interface :

Connect the interface to the computer, can run the software that is designed for this printer and can be used to import the sample name code, user-defined header/trailer, update the firmware, etc.


8. RS232 interface :

Connect to the RS232 interface to the scale, which is used to communicating with scale.

9. Battery compartment :

Open the battery compartment, can install four rechargeable batteries. Please note: Not all models support battery supply, please consult your supplier.

4.4 Characteristic

- Printing
Printing method: 8 print solenoids impact dot matrix.
Printing speed: 1.7 lines per second.
Character size (ASCII characters): 1.7mm (width) * 2.6mm (height).
Lifetime: 1 million lines.
- Paper
Size: 57mm (width) x 50mm (diameter).
Type: normal paper
- Ink ribbon cartridge: EPSON ERC-22 or ERC-09B.
- Interface: RS232 D-Sub9 male.
- Power supply:
AC adapter: Input AC100-240V~,50/60Hz;
Output DC 12V/1.5A or 2.0A, 
- Battery: Ni-MH rechargeable battery, AA-size x 4, 1500-2500mAh.
- Circumstance: temperature 5~45°C, humidity 10~80%

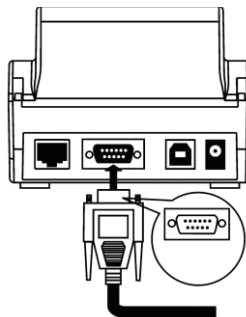
5 Installation

5.1 Preparation

Please choose and install the proper power adapter converter according to the located country/region.

5.2 Connect Printer to Scale

- Disconnect the power supply before connecting the printer to the scale with the data cable. The cable has a unique direction, please connect them correctly and tighten the screw. Please refer to the figure below.



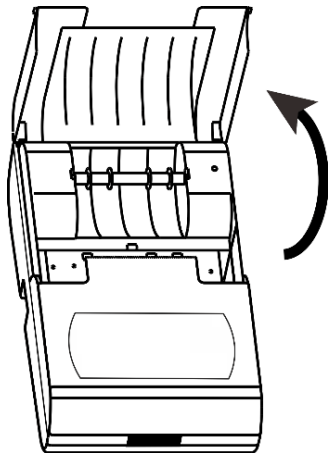
-
- If an AC adapter is used, plug it into the AC power supply, and connect the other end to the printer power jack.
 - Turn on the printer, and then turn on the scale.
 - After the completion of the use, turn off the power switch of printer, if does not use this machine for long time, please remove the printer AC adapter. The printer has low power design, without need to switch printer frequently.



Do NOT use unspecified cable or adapter, to avoid possible damage to equipment.

5.3 Check/Install the Ink Ribbon Cartridge

Ink ribbon has been installed in printer before they go out, but in the process of transportation, vibration may lead to the ribbon loose. Please before the first use of the printer, open the paper cover, check whether the ribbon is loose, if there is a loose, use finger to press the ribbon on both sides and make it flat.



If the ribbon was not installed, please according to the following method to

install the ribbon.

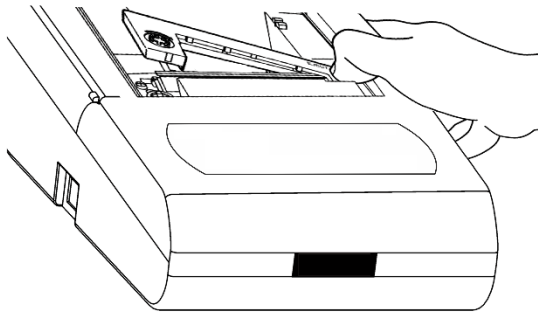
Place the printer facing towards you, first, put the Ink ribbon cartridge on the gear shaft on the left side of the mechanism, uplift the right side slightly, if the left side of the Ink ribbon cartridge does not reach the bottom, press the knob of the ink ribbon cartridge and rotate it slowly towards 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 *[Back]* 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.

If belt core of ribbon with wrinkles, please pull the ribbon out, and then rotate the pinion to tighten ribbon, ensure the belt core is flat.

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.



Note:

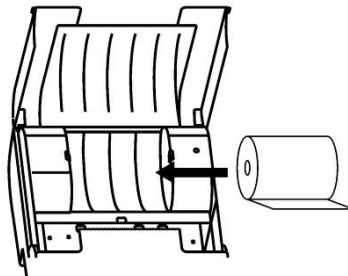
Absolutely not use a damaged ribbon or unspecified types of ribbon, otherwise, it will cause the mechanism to block, reduce the life and lose the right to warranty.

5.4 Install Printing Paper

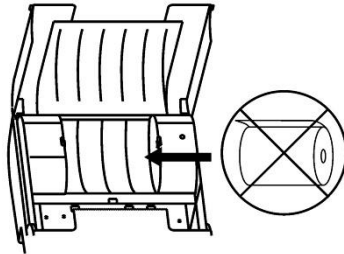
- Lift the paper cover.
- Insert the printing paper shaft into the center of the paper roll as shown in the figure below:



- Put the paper into the paper slot in correct position.

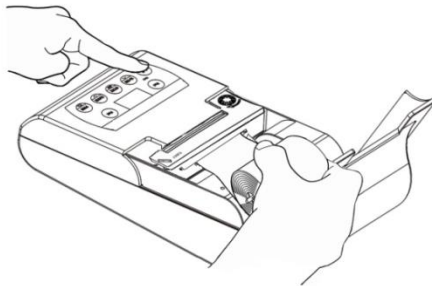


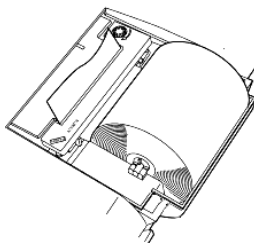
(a) Right direction



(b) Wrong direction

- Keep pressing [*Back*] key while inserting the printer paper end into the slot of the printer mechanism as shown bellow, feed the paper until its end comes out.





The old paper roll should be removed before installing the new paper roll. The paper left can be removed by pressing [*Back*] key , if it is short enough or been cut to short enough.



Thermal paper is not allowed for use, nor is unspecified paper, to avoid possible damage of the printer.

6 Basic Operation

6.1 User Interface







The figure below is picture that the printer switch on and start-up (hereinafter referred to as "standby interface") :



Here assumed that the operation mode is "Statistic", the printer with a lot of operation mode, different operation modes correspond to different uses and report styles, about the operation modes, please refer to the *Section 8*.

Status bar: shows the most commonly used status, in different mode, the content of the status bar displays may not be the same. The following is a common

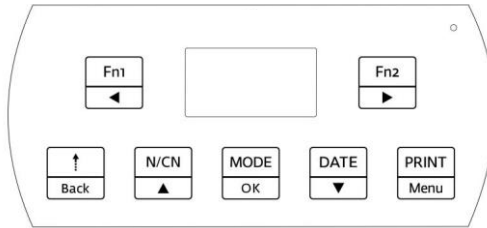
status icon:


	Currently using batteries, battery with the highest remaining capacity.
	Currently using batteries, battery remaining capacity lower than 10%.
	Currently using AC adapter, and installed the batteries.
	Currently using AC adapter, and uninstalled the batteries.
	Sample name / lot number printout.
	Enable Auto-tare.

Mode: Indicates the currently selected mode of operation

Time: Display the current date and time, in most of modes, the time location always shows the current time.

6.2 Keys



The printer with seven keys, because the printer with more functions, in different operation conditions, the functions of the keys may be different, please pay attention to the icon on the keys, which contains two meanings, the upper side means the function of standby interface, the lower side means the function under setting or inputting condition. Understand the meaning of the icon will help you to understand the current function of the keys, such as:  key, which contains the "DATE" and the down arrow symbol, it indicates under the standby interface, the operation of key associated with the time/date, in the condition of setting, which is used to switch to the next setting items or decreasing the setting value.

The operation methods of keys has two kinds: one kind is to press and release

immediately, if not specified in this manual, all for this operation; Another kind is to press and hold the key more than two seconds and then to release, the following called "long press".



: In the standby mode for most of operation modes, press this key can enter the sample name and lot number, about the sample name and lot number, please refer to *Section 8.10*; In settings / input state, this key can move the input position to the left. Marked as "[Fn1]" or "[LEFT]" in this manual.



: Press this key, can open the related functions of the current operation mode; In the standby mode for most of operation modes, long press this key, can enable or disable the automatic tare function, about the function of automatic tare, please refer to *Section 8.9*; In Settings/input state, the key can move the input position to the right. Marked as "[Fn2]" or "[RIGHT]" in this manual.



: Under standby status, press the key once to feed the printer by one

line; press the key and hold will continuously feed until released. In settings/input state, press the key to go back to previous menu or cancel current parameter modification. Marked as "[Back]" in this manual.



: In standby status, press the key once to enable or disable the numbering function; Long press the key, the number can be reset to "000"; press and hold the key more than 4 seconds, can modify the report's serial number; In Settings/input state, which is used to switch to the previous setting options or increasing parameter value, press and hold the key to quickly increase the value. Marked as "[N/CN]" or "[UP]" in this manual.



: In standby status, press the key can choose operation modes; Long press the key, can execute the user login / logout operation, about the user login function, please refer to *Section 8.7*; In Settings / input conditions, which is used to access to a setting item, or to confirm the modified parameters. Marked as "[MODE]" or "[OK]" in this manual.



: In standby status, press the key can print the current date and time.

Long press the key, enter the clock Settings menu; In Settings/input state, which is used to switch to the next setting item or decreasing the parameters setting value, press and hold this key to quickly decrease the value. Marked as "[DATE]" or "[DOWN]" in this manual.



: In standby status, press the key, the printer will send the “read weighing data” command to the scale, the scale will return the weighing data to the printer, which is equal to press the print key on the scale; Long press the key will enter the settings menu. Marked as “[Print]” or “[Menu]” in this manual.

6.3 Input and Setting Operations

The printer with abundant parameters setting options and input parameters, including the following:

- Selection from a list
- Value input
- Character input
- Password input

Please understand and familiar with the operation method, and this is very important to be familiar with printer operation, the subsequent operation content of instruction manual, will often use the described contents of this section.

6.3.1 Selection from a list

Below is a list of options:



```
DIRECT  
WEIGHING  
MULTI WEIGHING  
Tare, Gross, Net
```

The highlighted item of the list, which means the currently selected item, the following is the function of the keys:

[N/CN] Select the previous item.

[DATE] Select the next item.

[OK] Confirm the selected item and return.

[Back] Give up choosing and exit, the choices you made are invalid.

6.3.2 Value input

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



```
Screen brightne.  
85  
Press OK Enter
```

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

- Press the *[OK]* key, then the value is highlighted, as shown in figure below:

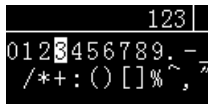
A screenshot of a terminal window with a black background and white text. The text reads: "Screen brightne." on the first line, "85" on the second line with the '5' highlighted by a white cursor, and "Press OK Enter" on the third line with "OK" highlighted by a white cursor.

```
Screen brightne.  
85  
Press OK Enter
```

- Press *[N/CN]* or *[DATE]* key to change the value; press and hold these keys can increase/decrease the value quickly.
- Press *[Fn1]* or *[Fn2]* key to change the input position, in this example, the input position can be switch between tens and ones, and then press *[N/CN]* or *[DATE]* to adjust values, this feature can speed up the input.
- After input, press *[OK]* key to save and return.
- Press the *[Back]* key to abandon the modification and return, the setting value will not be modified.

6.3.3 Character input

The printer supports standard ASCII (American Standard Code for Information Interchange) character input, including numbers, symbols, and upper and lower case characters. The following figure shows the character input dialog style:



The highlighted character of candidate area is the candidate character, the location is called candidate position, the following is the function of each key in the character input:

<i>[PRINT]</i>	Press this key, the candidate characters will be input to the cursor position in the input area.
<i>[Fn1]</i>	Press this key, the candidate position will move to the left, if it has reached the leftmost position, it will automatically jump to the rightmost position.
<i>[Fn2]</i>	Press this key, the candidate position will move to the right, if it has reached the rightmost position, it will automatically jump to the leftmost position.

[N/CN]

Press this key, the candidate position will move up, if it has reached the top position, it will automatically switch to the previous group of candidate characters.

[DATE]

Press this key, the candidate position will move down, if it has reached the bottom position, it will automatically switch to the next set of candidate characters.

[BACK]

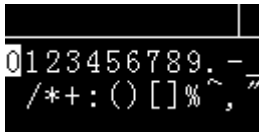
Press this key, the recently entered characters will be deleted, and long press this key will clear all the input content.

[OK]

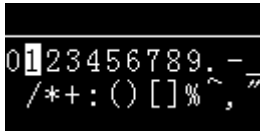
Press this key to confirm the entry and exit.

Here take the input "12-A" as an example to explain the operation method:

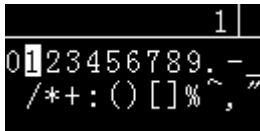
- First, the display shows as follows :



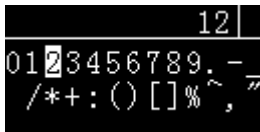
-
- Press *[Fn2]* key to move the candidate character to "1", as shown in the following figure:



- Press the *[PRINT]* key, the input area displays "1", as shown below:



- Continue to press the *[Fn2]* key, move the candidate character to "2", and press the *[PRINT]* key, the input area displays "12", as shown in the following figure:



-
- Press the *[Fn1]* key four times to move the candidate character to "-", and press the *[PRINT]* key, the input area displays "12-", as shown in the following figure:

```
12-|
0123456789. |
/*+:() [% ^ , " |
```

- Press the *[DATE]* key twice to turn the candidate characters to the letters, as shown in the figure below:

```
12-|
ABCDEFGHIJKLM |
NOPQRSTUVWXYZ |
```

- Press the *[PRINT]* key, the input area displays "12-A", as shown below:

```
12-A|
ABCDEFGHIJKLM |
NOPQRSTUVWXYZ |
```

-
- Press *[OK]* key to confirm the input and return, the operation ends.

6.4 Set Operating Language

The printer provides two methods for setting the operating language:

- Enter the setup menu.
- Quick setting when booting.

For the first method, please refer to *Section 9.2*. The second method can select the desired language simply and quickly even if the operator cannot understand the current printer display language.

The following is the operation method:

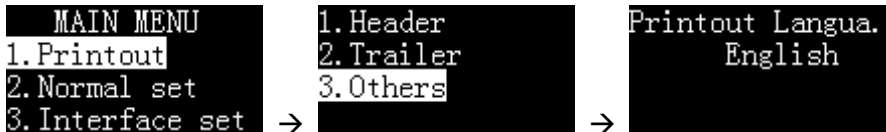
Turn on the printer power, when the display shows the first screen, immediately press the *[BACK]* key, the display shows the language selection list, as shown below:



Select the desired language and confirm.

6.5 Set Printing Language

Please refer to *Section 8.1*, set “Printout” → “Others” → “Printing Language”, as bellow:



Note: Password will be prompted if the administrator’s password has been set before.

6.6 Set Time

When the printer is used for the first time, or the power is turned off for a long

time, the time setting may be incorrect. Please set the time before use.

Note: If the printer is set with an administrator password, you need to enter the password before setting.

- In the standby interface, press and hold the *[DATE]* key to enter the time setting menu. As shown below:

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

Press the *[OK]* key. If the administrator password is set, the printer will ask for the password. After entering the correct password, the following figure will appear:

```
[ Minute ]
  22: 31: 52
  2020--04--12
PressBack return
```

- Press *[N/CN]* and *[DATE]* to adjust the value, press *[Fn1]* or *[Fn2]*

key to change the input position. After the adjustment is completed, press *[OK]* to confirm and skip to the next item.

- After setting, press *[BACK]* key to return.

Set the time format:

In the standby state, long press the *[DATE]* key to enter the time and date setting menu, as shown below:

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

Select "Set Time Format" and press *[OK]* key to enter, press the *[N/CN]* or *[DATE]* key to select the desired setting item, press *[OK]* to enter the setting, as shown below:

Date style
yyyy-mm-dd



dd-mm-yyyy
yyyy-mm-dd
mm-dd-yyyy
dd-mm-yyyy

Date Separator
/



Date Separator
- / .

Time style
hh:mm:ss



hh:mm:ss
hh:mm
hh:mm AM (PM)
hh:mm:ss AM (PM)

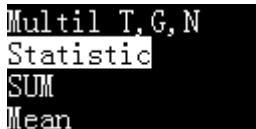
6.7 Set Weighing Instrument information

The GLP-compliant report contains information such as the manufacturer, model, and serial number of the weighing instrument, which will be printed in the header. For most weighing instruments, the printer automatically recognizes the information. For weighing instruments that cannot be automatically recognized, the user needs to set these for once. The information will be saved after the power is turned off.

The device ID is designated by the user and needs to be set by itself.
Please refer to *Section 9.1 "Printout" ->"Header"* for detail.

6.8 Select Operation Mode

In order to meet different application requirements, the printer is set with multiple operation modes, and the report styles of these modes are also different. For the usage and report style of different modes, please refer to *Chapter 7*. In the standby interface, press the *[MODE]* key, the display shows the available operating modes, as shown below:



```
Multil T, G, N
Statistic
SUM
Mean
```

Press *[N/CN]* or *[DATE]* key to select the desired mode, and press *[OK]* key to confirm.

6.9 Print Report

Press the [*PRINT*] key on the printer side or the print key on the scale to print the report. Depending on the output setting of the weighing instrument, it may be necessary to wait for the data to stabilize after pressing the print key, but not immediately.

7 Operating Modes

7.1 Direct Mode

Under this mode, the data from scale would be printed directly.

This mode is usually used in the following scenarios:

- Print the calibration report output by the scale. This is because the calibration report needs to be output as is, but in other modes, the printer will automatically add other information or filter out the data except the weighing data.
- When you want the scale to decide the output report format.
- When a problem occurs in other modes, switch to the Direct mode temporarily and observe the original data to facilitate analysis and solve the problem.

Operation:

1. Refer to *Section 6.8* and select the “Direct mode”.
2. Press the print key on the scale or the *[PRINT]* key on the printer.

-
3. If necessary, press the *[BACK]* key to feed the paper.

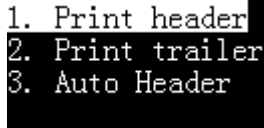
In the Direct mode, the header and trailer can be added manually or automatically. For information about the header and trailer, please refer to the *Section 8.2*.

The automatic header and trailer functions are usually used in the following scenarios:

- The information output by the scale lacks the necessary content, such as manufacturer information, model, S/N, signature, etc.
- Add sample name / lot number and other information to the report.
- Add controlled time / date and other information to the report output by the scale.

Manually print the header and trailer:

In the "Direct mode", press the *[Fn2]* key, the following list appears:

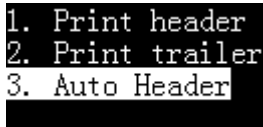
-
- 
- ```
1. Print header
2. Print trailer
3. Auto Header
```

1. **Print header:** Select once, print header once manually.
2. **Print trailer:** Select once, print trailer once manually.

### **Automatic print header and trailer:**

In the “Direct mode”, the printer can automatically add a header at the beginning of the data output by the scale, and automatically or manually add a trailer at the end. The operation method is as follows:

Press the *[Fn2]* key in the "Direct mode", then select “3. Auto header”, as shown in the figure below:

- 
- ```
1. Print header
2. Print trailer
3. Auto Header
```

Press *[OK]* key:

```
Disable  
Delay  
Header: Auto
```

- **Disable**
Disable the auto header & trailer function, the data output from the scale will be printed as is.
- **Delay**
Select this option and the printer will ask for a delay time. When the printer receives the first data of the scale, it will automatically add a header. When the scale stops outputting data beyond the delay time set by this item, the printer automatically adds a trailer; after outputting the trailer, the printer repeats the above process. This is suitable when the scale continuously outputs all data.
- **Header: Auto**
Select this option, the printer will automatically add a header before the first data output from the scale, user needs to manually press the *[OK]* key to output the trailer, This is suitable for the user to decide when to output

the trailer and end the report.

Memo: If you want to modify the format of the header or trailer, please refer to *Section 8.2*.

7.2 Weighing Mode

In this mode, you only need to press the print key once to output a weighing report that meets GLP requirements. The header is added before the weighing data, and the trailer is added after the weighing data, as shown in the following figure:

```
-----  
Startitec.  
Model:                CP221  
S/N:                  D23452456  
Date:                 2017/03/29  
Time:                 00:26:52  
-----  
N + 10.001 mg  
  
Signature:  
-----
```

Operation:

- Press the *[MODE]* key and select “Weighing Mode”.
- Put the sample into the scale, and after the data is stable, press the *[PRINT]* key, the printer automatically outputs a complete report.

Memo:

- If you want to modify the format of the header or trailer, please refer to *Section 8.2*.

7.3 Multi Weighing Mode

This mode differs from the "weighing mode" in that it can output multiple data in one report. The report style is as follows:

```
-----  
Start itec.  
Model:          CP221  
S/N:           D23452456  
Date:          2017/03/29  
Start:         00:32:43  
-----
```

```
001      N +   10.002 mg  
002      N +   10.003 mg  
003      N +   10.004 mg  
-----
```

```
End:         00:32:47
```

```
Signature:  
-----
```

Operation:

- Press *[MODE]* key and select "Multi Weighing".
- Put the sample into the scale, and after the data is stable, press the *[PRINT]* key.
- Repeat the previous step until all samples are weighed, press the *[MODE]* key to end and print the trailer.

Memo:

- If you want to modify the format of the header, trailer and weighing data,

please refer to *Section 8.2*.

- When the number of data reaches two or more, you can press *[Fn2]* to print the statistical report and end. This operation is equivalent to *Section 7.6 "Statistic Mode"*.

7.4 Tare, Gross, Net Weight Mode

In this mode, the printer can output tare, gross and net weight, as shown below:

```
-----  
Start itec.  
Model:          CP221  
S/N:           D23452456  
Date:          2017/03/29  
Time:          00:50:31  
-----  
Tare:           10.011 mg  
Gross:          10.012 mg  
Net:            0.001 mg  
-----  
End:            00:50:33  
  
Signature:  
-----
```

First, press the *[MODE]* key to select the "Tare,Gross,Net" mode then return

back, as shown below:

```
DIRECT
WEIGHING
MULTI WEIGHING
Tare, Gross, Net
```

```
NAME O/T
T>>G,N
2020/04/13 12:26
```

In this mode, the printer supports 5 working modes, press *[Fn2]* key, the following list appears:

```
Tare->Gross, Net
Tare->Net, Gross
Gross->Tare, Net
Keywords ↓
```

← *[N/CN]* or *[DATE]* →

```
Preset Tare ↑
```

The following is a description of each mode:

1. **Tare->Gross, Net:** In this mode, the first data output by the scale is treated as tare weight, the second data is gross weight, and the printer automatically calculates the net weight. It should be noted that in this mode,

after the tare weight is output, the tare operation must not be performed, otherwise the printout data will be incorrect.

2. **Tare->Net, Gross:** In this mode, the first data output by the scale is processed as a tare weight, after receiving this data, the printer will immediately send a tare command to the scale and the scale will automatically be tared; the second data output by the scale is processed as a net weight, gross weight is automatically calculated by the printer. Note: In this mode, the scale must be tared after outputting the tare weight. If not, the scale must tare by manual, otherwise the printout data will be incorrect. The reason why the tare cannot be automatically tared may be that the scale does not support the tare command, or the tare command set by the printer is incorrect. Please refer to *Section 11 "Communication Interface"*.

3. **Gross->Tare, Net:** In this mode, the first data output from the scale is processed by the printer as gross weight, the second data as tare weight, and the printer automatically calculates the net weight. This mode is usually used to weigh the gross weight first, then weigh the tare weight after pouring out the material, and then calculate the net weight.

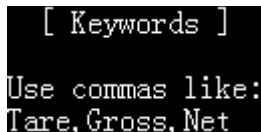
-
4. **Keywords:** In this mode, the data of tare, gross and net weights are all output by the scale. User sets the characteristic keywords of tare, gross and net weights. The printer determines the tare, gross and net weights according to the characteristic characters in the received data. For example, the scale outputs the following data:

Gross: 100.00 kg

Net: 60.00 kg

Tare: 40.00 kg

In this mode, press [OK] key to set the keywords required by the printer, as shown in the following figure:



```
[ Keywords ]
Use commas like:
Tare, Gross, Net
```

Keywords settings follow the following rules:

- In order of tare, gross and net weight, use commas as separators. The above

example can be set to "Tare,Gross, Net" (note that "" is not included), which means that the keyword for tare weight is "Tare", which contains the data of the "Tare" string will be regarded as tare weight, and so on, the gross weight keyword is "Gross", and the net weight keyword is "Net";

- The case must be consistent with the output data of the scale;
- Including the comma separator, the length of the keyword must not exceed 16 characters;
- It is necessary to ensure that the keywords of tare, gross, and net weight are unique in the data output by the scale, that is, they appear only once.

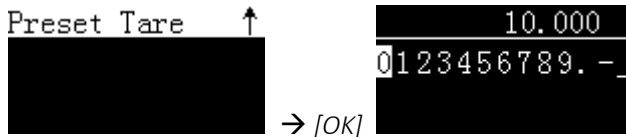
The printer does not limit the order of tare, gross, and net weight output from the scale. After all the data are matched, the report is output.

The printer will check the data output from the scale, which is in accordance with the formula: gross weight = tare weight + net weight, otherwise, the printer will not accept the data.

After receiving the first matching data, the printer requires that all matching is completed within 2 seconds, otherwise all matching results will be cleared and restart matching, this means that the tare, gross, and net weight data output by the scale must be completed within 2 seconds.

If a problem occurs, you can temporarily use the "direct mode" to determine the keywords of tare, gross, and net weight, and confirm that the data output by the scale meets the above requirements, and then set the keywords correctly.

5. **Preset Tare**: In this mode, operator enters the tare weight value by manual, the data output from the scale is processed by the printer as the gross weight, and the net weight is automatically calculated by the printer. After selecting this mode, the printer will ask for the tare weight, as shown below:



Preset Tare ↑
→ [OK] 10.000
0123456789. -

After the input is completed and returned, the interface displays the entered preset tare value, as shown below:



A black rectangular display area with white text. The top left corner shows 'NAME' in a box, and the top right corner shows 'O/T' in a box. The center displays 'T=10.000' in a large font. The bottom line displays '2020/02/23 12:59'.

Note: The preset tare value is cleared after the printer is powered on again.

7.5 Multi Tare, Gross, Net Mode

This mode is similar to Section 7.4 " Tare, Gross, Net Weight Mode ", except for:

- Multiple tare, gross, net weight can be printed in one report.
- The tare, gross and net weight can be summed, minimum and maximum calculated.

The output report style is as follows:

Model: HR120
S/N: D23452456
Date: 2020/02/23
Time: 20:38:16
Sample: JJJ345
Lot No. 20190107

No. T(mg) G(mg) N(mg)
1 10.000 10.001 0.001
2 10.002 10.003 0.001
3 10.004 10.005 0.001
Sum 30.006 30.009 0.003
Min 10.000 10.001 0.001
Max 10.004 10.005 0.001

End: 20:38:20

Signature:

Operation:

- Press the *[MODE]* key and select "Multil T,G,N" mode.
- Refer to *Section 7.4* for operation.

Memo: since the tare, gross and net weight are output on the same line, it may cause printing skipping. If this happens, it is recommended to set the printer "Printout Font" from "20 characters / line" to "40 characters / line", as below:

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

→ [OK] → [N/CN] or [DATE] →

```
Printout Font
40/Line
ActiveAfterReset
```

7.6 Statistic Mode

In this mode, up to 999 data can be statistically calculated, and the average, standard deviation, deviation coefficient, sum, minimum, maximum, and difference can be output. Users can decide which statistical items are needed by setting. The calculation process uses 64-bit double-precision floating-point numbers without visual errors. The report format is as follows:

```

-----
Startitec.
Model:          CP221
S/N:           D23452456
Date:          2017/03/29
Start:         01:36:18
-----<STAT>-----
001      N +  10.021 mg
002      N +  10.022 mg
003      N +  10.023 mg
-----<RESULT>-----
n                3
x̄              10.0220 mg
s                0.001000 mg
srel            0.009978 %
total           30.066 mg
min             10.021 mg
max             10.023 mg
Diff            0.002 mg
-----
End:            01:36:21

Signature:
-----

```

Operation:

- Press *[MODE]* key and select "Statistic mode".
- Put the sample into the scale, and after the data is stable, press the *[PRINT]* key, the printer will print sample weight, and add it into statistical queue.
- Repeat the previous step until all samples are weighed, press the *[MODE]* key to end and print the report.

The output items in the statistical report are listed below:

Statistical items	Symbol	Description
Measuring time	n	
Mean value	\bar{x}	= total / n
Standard deviation	s	= $\sqrt{\sum(Xi-\text{Mean})^2/(n-1)}$ Xi: every weight data
Coefficient of deviation	srel	= $(s / \bar{x}) * 100\%$
Sum	total	
Minimum value	min	
Maximum value	max	
Difference	Diff	= max - min
mean deviation	AD	= $(\sum xi- \bar{x}) / n$ Xi: every weight data
Coefficient of mean deviation	RAD	= $(AD / \bar{x}) * 100\%$
minimum deviation	Min DR	= $(\text{min} - \bar{x}) * 100\%$
maximum deviation	Max DR	= $(\text{max} - \bar{x}) * 100\%$

Press the $[Fn2]$ key to enter the statistical mode setting menu. The user can decide which statistical items need to be output. The following is a list of each setting item:

Item	Default	Options	Memo
Print mean variation in STAT.	×	√, ×	Output the difference between each weighing data and the average value, expressed as a percentage.
Print number in STAT. report	√	√, ×	Output the number of weight data, which is indicated by "n".
Print mean value in STAT.REP.	√	√, ×	Output the mean value, which is indicated by " \bar{x} ".
Print standard deviation.	√	√, ×	Output the standard deviation value, which is indicated by "s".
Print variation coefficient.	√	√, ×	Output deviation coefficient value, which is indicated by "srel".

Item	Default	Options	Memo
Print mean deviation in STAT.	×	√, ×	Output average deviation value, which is indicated by "AD".
Print mean DEV. Coefficient..	×	√, ×	Output coefficient of mean deviation value, which is indicated by "RAD".
Print sum value in STAT. REP.	√	√, ×	Output sum value, which is indicated by "total".
Print minimum in STAT.report	√	√, ×	Output minimum value, which is indicated by "min".
Print minimum deviations..	×	√, ×	Output minimum deviation value, which is indicated by "min DR".
Print maximum in STAT. report	√	√, ×	Output maximum value, which is indicated by "max".

Item	Default	Options	Memo
Print maximum deviations..	×	√, ×	Output maximum deviation value, which is indicated by “max DR”.
Print difference in STAT.REP.	√	√, ×	Output the difference value between the maximum and the minimum, which is indicated by “diff”.
Maximum number of statistics	999	2 ~ 999	When the weighing times reach this set value, the statistical report will be output automatically and end.

7.7 SUM Mode

Calculate the summation of several samples (up to 999). Only summation value is printed under this mode, with the same format and operation as in statistic

mode, please refer to Section 7.6.

7.8 Mean Mode

Calculate the mean value of several samples (up to 999). Only mean value is printed under this mode, with the same format and operation as in statistic mode, please refer to Section 7.6.

7.9 Formulation Mode

Print out a report containing multiple components, output the total net weight of each component. The printing example is shown in the figure below:

```
-----  
Model:           HR120  
S/N:             D23452456  
Date:            2020/04/06  
Start:           20:08:07  
-----<FORMULATION>-----  
COMP001          10.002 mg  
COMP002          10.003 mg  
COMP003          10.004 mg  
Net:              30.009 mg  
-----  
End:              20:08:10  
  
Signature:  
-----
```

Operation:

- Press [*MODE*] key and select "Formulation" mode.
- Weigh the first component, press the print key, the printer outputs the weight of a component.
- After weighing all components, press the [*MODE*] key, the printer outputs the total weight and ends.

8 Advanced Features

8.1 About the TX Editor Software

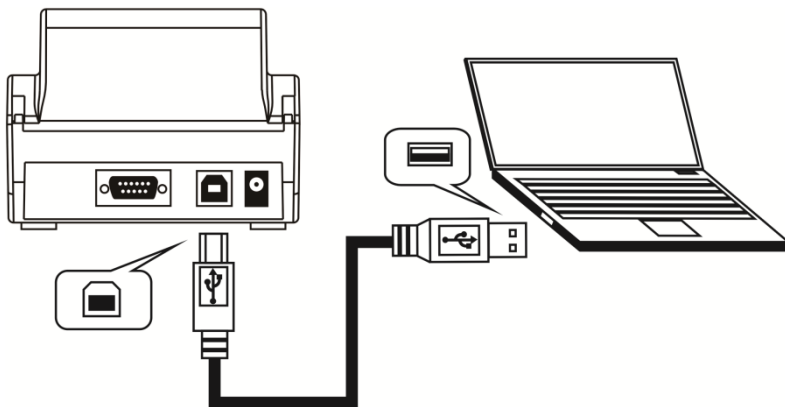
TX Editor is a software specially designed for this printer. It is easy to operate and compact, it does not need to install any driver, and can be used in almost all windows operating systems to achieve the following functions:

- Import custom header and trailer.
- Import the sample name code table, which only need to input the numeric code to printout the complex sample name.
- Import user list to realize user management.

If necessary, please contact your supplier to obtain the software.

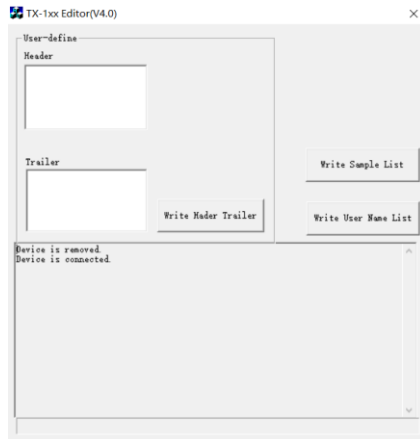
Connection:

Connect the USB port on the back of the printer to the USB port of the computer through the USB A/M- USB B/M data cable (a common USB printer or scanner data cable). Do not connect the power adapter to the printer, as shown in the following:



Note: The USB A/M - USB B/M cable is not included in printer's package, please prepare by yourself.

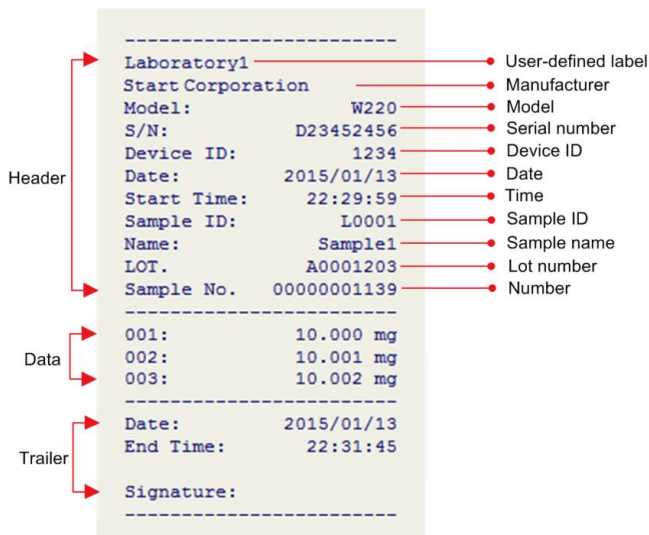
Execute the TX Editor software. If the connection is normal, the buttons on the software should be available, as shown below:



After the operation is completed, unplug the USB cable. About the various functions of TX Editor, we will explain them one by one in the following chapters.

8.2 Report Style Settings

The printer allows the user to set the style of the printer output report as required. The following is a report style that conforms to the GLP specification:



The printer allows the user to set the header, data, and trailer styles in the report,

allows each output item to be turned on and off, and can set the content of each output option.

Long press the *[MENU]* key to enter the setting menu, as shown below:

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

Note: If an administrator password is set, you need to enter the correct password before entering the menu.

Select "1. Printout" and press the *[OK]* key to confirm, as shown below:

```
1. Header
2. Trailer
3. Others
```

The user can set the header, trailer and other output options separately.

“1. Header” setting menu list:

Item	Default	Options	Memo
Print date & time at starts	✕	√,✕	Whether print time and date immediately after power on.
Print label at starts	✕	√,✕	Whether to print the user-defined label immediately after power on, the label needs to be imported using TX Editor software.
Print label in report header	✕	√,✕	Whether print user-defined label in header.
Print MFGR in report header	√	√,✕	Whether print manufacturer in report header.
Manufacturer:		Up to 16 characters	Enter the manufacturer information here.

Item	Default	Options	Memo
Print model in report header	√	√,×	Whether Print model in report header.
Device Model		Up to 16 characters	Enter the device model here.
Print SN in REP. header	√	√,×	Whether print S/N in report header.
Device SN		Up to 16 characters	Enter the device SN here.
Print ID in REP. header	×	√,×	Whether print ID in report header, the ID is user-defined.
Device ID		Up to 16 characters	Enter the device ID here.
Print date in report header	√	√,×	Whether print date in report header.
Print time in report header	√	√,×	Whether print time in report header.
Print number in report header	×	√,×	Whether print number in report header.

Item	Default	Options	Memo
Print Delimiter in report	√	√,×	Whether print separation line between header and data.

“2. Trailer” setting menu list:

Item	Default	Options	Memo
Print date in report trailer	×	√,×	Whether print date in report trailer
Print time in report trailer	√	√,×	Whether print time in report trailer
Print signature	At Trailer	No Printing At Header At Trailer Header&Trailer	Decide where to print signature.
Enable electronic signature	×	√,×	Please refer to <i>Section 8.7</i>
Prn user-defined in REP:trailer	×	√,×	Decide whether to print the user-defined label in the trailer. The label

Item	Default	Options	Memo
			needs to be imported using TX Editor software.
Print time at weighing Mode	×	√,×	Whether to print time in the trailer under weighing mode.
Line feed at trailer	3	0 ~ 40	Set the number of lines the printer feeds after printing the report.

“3. Others” setting menu list:

Item	Default	Options	Memo
Batch Auto INCR	×	√,×	Whether the lot number value is automatically increased by 1 after printing.

Item	Default	Options	Memo
Printout Language	English	English Chinese	Decide the language of the printout.
Characters/Line	0	0 ~ 40	Set the maximum number of characters output one line in the report. 0: Auto Other: Set by user
Printout Invalid Data	×	√,×	×: Except for Direct mode, the printer only processes valid weighing data and filters other data. For filtering behavior, please refer to <i>Section 11 "Communication Interface"</i>

Item	Default	Options	Memo
			<p>v: In all operating modes, the printer prints all received data, which means that other content output by the scale may appear in the report.</p>
Weight data time format	None	None hh:mm hh:mm:ss	Set the time format added before weighing data. This feature is only valid in multiple weighing, statistic, sum and mean mode.
Weighing Data Decimal digits	8	0-8	8: Decimal places are determined by the scale output.

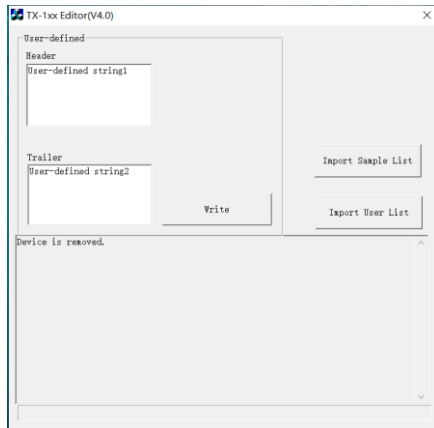
Item	Default	Options	Memo
			0-7: Set by this setting

8.3 Custom Header and Trailer

Using TX Editor software, users can customize two strings(labels) and output them at the beginning of the header and at the end of the trailer respectively.

```
-----  
User-defined string1  
AND  
Model:                HR120  
S/N:                  D23452456  
Date:                 2020/04/13  
Time:                 22:15:06  
-----  
N + 10.002 mg  
  
Signature:  
User-defined string2  
-----
```

Please refer to *Section 8.1* and use TX Editor software to write custom header and trailer strings to the printer, as shown below:



After completion, remove the printer from the computer, connect the power adapter to printer, enter the setup menu, refer to the following settings:
Enable header printing of user-defined string:

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

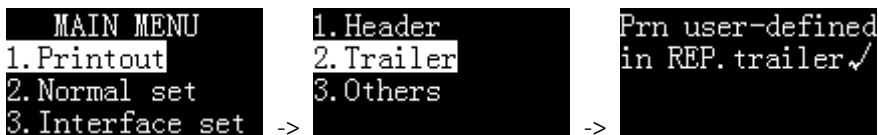
->

```
1. Header
2. Trailer
3. Others
```

->

```
Print label in
report header ✓
```

Enable trailer printing of user-defined string:



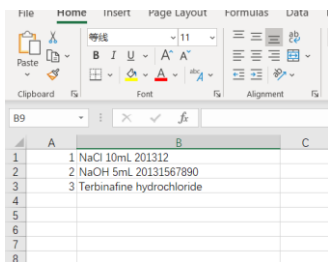
Note: The maximum length of the user-defined characters in the header and trailer is 500 respectively.

8.4 Code Input Method

When there is a lot of input information, using the code input method will greatly simplify the operation. With EXCEL, create a table containing the correspondence between the digital code and the name, and then import this table into the printer through TX Editor. When you need to print the name, just Enter the corresponding code. The operation method is as follows:

-
- Prepare the table:

First, use EXCEL to create a table containing codes and names, as shown in the following figure:



	A	B	C
1	1	NaCl 10mL 201312	
2	2	NaOH 5mL 20131567890	
3	3	Terbinafine hydrochloride	
4			
5			
6			
7			
8			

Memo: Use shorter codes to reduce input time.

If the most significant digit of the code contains "0", such as "001", the column where the code is located must use text format, not numeric format, otherwise, EXCEL will automatically remove the zero in front of the code, resulting in incorrect coding.

After making the table, save as "CSV" format.

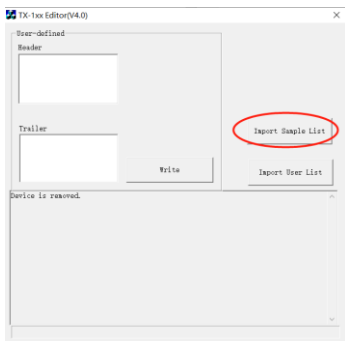
In order to check whether the table's format is correct, you can use Notepad to open it, the correct format should be similar to the following:

1, NaCl 10mL 201312
2, NaOH 5mL 20131567890
3, Terbinafine hydrochloride

The code and the name are separated by a comma. You can also use Notepad to edit this table and change the file extension to CSV.

- Import the table

Please refer to *Section 8.1* and use TX Editor software to import the prepared table into the printer, as shown in the figure below:



Note: When a new table is imported, the original table will be overwritten. After the table is imported, unplug the USB data cable and restore the connection to the scale.

- Use code input method:

When you need to use the code input method, press the *[Fn1]* key at the standby interface, the following list is displayed:

```
1. Sample Name
2. Sample Code
3. Sample LOT.
4. Name in data
```

→ *[N/CN]* or *[DATE]* →

```
5. Code in data
6. LOT. in data
```

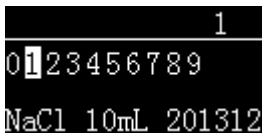
2. Sample Code:

Enter the code, and the header outputs the sample name corresponding to the code.

5. Code in data:

Enter the code and output the name corresponding to the code in front of the weighing data.

If necessary, select "2. Sample Code" or "5. Code in data" and press the *[OK]* key, as shown in the following figure:



Enter the code, the corresponding name is displayed at the bottom of the screen, and press the *[OK]* key to exit.

8.5 Administrator Password Setting

To prevent unauthorized changes to time and other important settings, a 6-digit password can be set. Long press the *[MENU]* key to enter the setup menu. If the password is currently set, the correct password must be entered first. Select "Normal set" and switch to "Password", as shown below:

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

[OK]->

```
Language (语言)
English
```

[N/CN] or [DATE]->

```
Password

Press OK Enter
```

Press [OK] key, if the password has been set before, the printer will ask for the current password, as shown below:

```
Input Old PSW
Press any key to
input old password.
```

After entering the correct password, the printer asks for a new password, as shown below:

```
Input New PSW
Press any key to
input new passw-
ord.
```

Press any key, and then enter the new password, the maximum length is 6 digits, in order to confirm the entered password, after the input is completed, the printer requests to enter it again, as shown in the following figure:

```
INPUT CONFIRM
Pls input again.
Any key continue
```

The password entered twice must be exactly the same, otherwise the information shown in the figure below is displayed:

```
Different inputs
Any key retry...
```

In this case, follow the prompts to restart the setup.

Note:

- If the entered password is empty, the password protection will be cancelled.
- Please save the password properly to avoid forgetting.

8.6 Authority Management

The printer supports two levels of user rights management: administrator rights and user rights. The administrator has the highest authority and can not only operate the printer, but also set the printer completely, including adjusting the time. The printer only allows one administrator. The user authority can only use the printer to perform printing operations, and cannot modify the parameters including time. One printer supports up to 150 users. If you do not set administrator rights, the printer will be used without restrictions, and all settings can be modified without restrictions; if you do not set user rights, the printer will be used without restrictions, but any settings are required enter the administrator password.

For the setting of administrator authority, please refer to *Section 8.5 "Administrator password setting"*; for the user authority, please refer to *Section 8.7 "User Login and Electronic Signature"*.

Note: If you need to set user permissions, you must first set the administrator password.

8.7 User Login and Electronic Signature

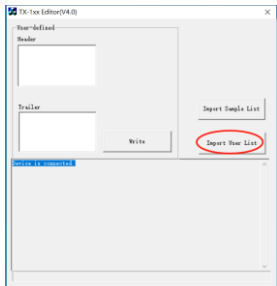
In order to prevent unauthorized operation of the printer, you can set a login password for each user. Before using the printer, you must enter the login password, otherwise you cannot use the printer. After the user enters the correct login password, the printer can output the user name in the signature position of the trailer.

➤ **Preparation:**

Please refer to *Section 8.5* to set the administrator password first.

Now, you need to prepare an EXCEL table that contains each user's login password and corresponding user name. This operation is the same as *Section 8.4 "Code Input Method"*, except that the code is replaced by a fixed 6-digit

login password and the name for the user name, after completion, run the TX Editor software, click "Import User List", select the prepared CSV file, as shown below:



If an administrator password is set, the software will ask for a password when importing.

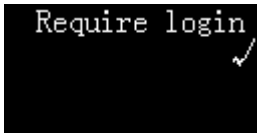
For the operation method of TX Editor software, please refer to *Section 8.1*. After importing the user list, make the following settings on the printer:

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

→[OK]→

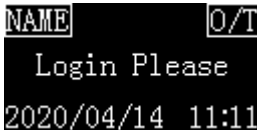
```
Language (语言)
English
```

→[N/CN] or [DATE]->



➤ Login operation:

After the above operations are completed, the printer displays the following in the standby interface:

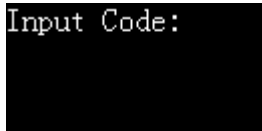


The login status of the display is "Login Please".

At this time, the printer's operations except the following will be prohibited:

- Press [*BACK*] key to feed paper.
- Press [*OK*] key to enter the login password.
- Press and hold the [*MENU*] key to enter setting menu (administrator password required).

Press *[OK]* key, the printer displays the following information, asking for the login password:



Input Code:

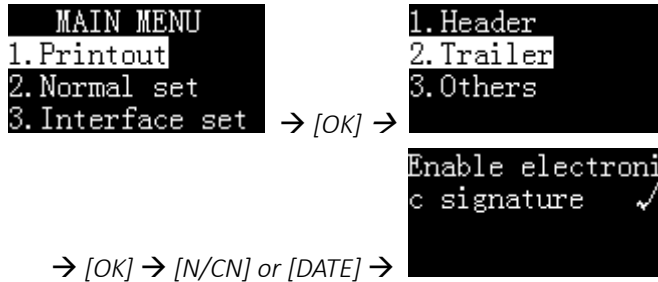
After entering the correct login password, the display shows the current working mode, at this time, the printer can perform normal printing operations.

- Log out

After completing the operation, you must log out in time to avoid the next user using the printer without logging in. Long press the *[OK]* key, when prompted to enter the code, without entering any information, directly press the *[OK]* key to log out, at this time the display screen login state returns to the "Login Please" state. When the printer enters the screen saver because it has not been operated for a long time, it will also automatically log out. For screen saver time, please refer to *Section 9.2*.

- **Electronic signature**

If you want to output the logged-in user name in the trailer signature column, please set up the printer as follows:



8.8 Automatic Timing Print

Using this function, the printer can automatically acquire data at specified intervals and repetitions. This function is especially useful when you want to continuously observe changes in the weighing value. This function can be used in any mode.

The operation process is as follows:

- Set the timing printing parameters

In standby status, long press *[DATE]* key then select “Set Timing Print”, as below:

```
Set Date & Time  
Set Time Format  
Set Timing Print  
Start Timing PRN → [OK] →
```

```
Auto print time
      10 SEC
Set zero to dis-
able
```

← [N/CN] or [DATE] →

```
Timing Print it-
eration      6
      0-60000
0: Loop
```

Set the desired printing interval time and iteration times.

Note: If you want to output continuously, please set the iteration times to 0.

➤ Start printing

After the parameter setting is completed, press the [BACK] key to return, as shown in the following figure:

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

Select "Start Timing PRN", then press [OK] to start interval printing:

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

The display of the printer is shown below:



A rectangular display with a black background and white text. The top left corner shows 'NAME' in a box, and the top right corner shows 'O/T' in a box. The center of the display shows the word 'WEIGHING' in large, bold, uppercase letters. Below that, it shows 'N:00006 00:00:08'.

The bottom of the display shows the remaining times and the countdown time for the next printing.

When the number of repetitions is set to 0, the remaining number of times will be set to infinity, as shown in the following figure:



A rectangular display with a black background and white text. The top left corner shows 'NAME' in a box, and the top right corner shows 'O/T' in a box. The center of the display shows the word 'WEIGHING' in large, bold, uppercase letters. Below that, it shows 'N: Loop 00:00:08'.

When the countdown becomes "00:00:00", the printer will automatically print once, and the remaining number "N" will automatically decrease by 1. When it decreases to 0, the interval printing will automatically stop.

➤ Manually stop timing printing

When the timing printing is working, long press the *[DATE]* key, the printer displays as shown below:

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

Select "Stop Timing Print", and then press *[OK]* to confirm.

8.9 Automatic Tare

Turn on this feature, the printer will automatically control the scale to perform the tare operation after receiving valid weighing data. In the standby interface, long press *[Fn2]* key to turn on / off the automatic tare. The corresponding status is displayed in the upper right corner of the screen, as shown below:

Automatic tare on



A black rectangular display showing the text: "NAME" in a box, "O/T" in a box, "WEIGHING" in large bold letters, and "2020/04/14 12:32" at the bottom.

Automatic tare off



A black rectangular display showing the text: "NAME" in a box, "WEIGHING" in large bold letters, and "2020/04/14 12:32" at the bottom.

The automatic tare operation requires that the scale must support two-way communication and accept the commands sent by the printer. At the same time, the printer must set the correct tare command. Please refer to *Section 11.4 "Custom Tare Command"* and refer to the instrument manual to set the correct tare command.

8.10 Print Sample Name / Lot Number

The sample name / lot number can be printed in the header or data, or both, as shown below:

```
Model:          HR120
S/N:            D23452456
Date:           2020/04/11
Start:          21:41:43
Sample:         NaCl
Lot No.         B201203456
-----
001 H2O         10.014 mg
002 Cl          10.015 mg
003 NaOH        10.016 mg
-----
End:            21:42:15

Signature:
-----
```

The sample name can be up to 40 characters and the sample batch number can be up to 24 characters. Press *[Fn1]* key, the display is as shown below:

```
1. Sample Name
2. Sample Code
3. Sample LOT.
4. Name in data ← [N/CN] or [DATE] →
5. Code in data
6. LOT. in data
```

1. Sample Name: Print the sample name in the header, select this item and press *[OK]* key to enter. If the input content is empty, the sample name will not be printed; if you want to output the sample name with empty content, you can enter a space.

2.Sample Code: Use the code input method to input the sample name and print it in the header. You only need to enter a simple numeric code to output the corresponding sample name. Please refer to *Section 8.4 “Code Input Method”*.

3.Sample LOT.: Print a lot number in the header. If the input content is empty, the lot number will not be printed; if you want to output the lot number with empty content, you can enter a space.

4.Name in data: Output the sample name in front of the weighing data, it will only be printed once, if necessary, please enter the sample name before each weighing.


5.Code in data: Use the code input method to input the sample name and print it in front of the weighing data. You only need to enter a simple numeric code to output the corresponding sample name. Please refer to *Section 8.4 “Code Input Method”*. It will only be printed once, if necessary, please enter the sample name before each weighing.

6.LOT. in data: Print a lot number before the weighing data, it will only be printed once, if necessary, please enter the lot number before each weighing.

After entering the sample name / lot number and pressing the *[BACK]* key to return, the following icon is displayed in the upper left corner of the display:



Memo:

- The sample name / lot number printout in the header will be automatically closed after printing once, if you want to keep the printout without input, long press *[Fn1]* key when the icon  disappears until the icon is displayed, the printer will remain in this state until long press *[Fn1]* key again, or clear the sample name and lot number.
- If the input content is empty, the sample name/lot number will not be printed, you can enter a space character and fill it out manually.

-
- The sample name / lot number output before the weighing data will only be printed once, if necessary, please enter it before each weighing.

9 Parameter Settings

Long press [Menu] key to enter the setting menu, as shown in the following figure:



Note:

If an administrator password is set, the printer will ask for the correct password.

Press [N/CN] key or [DATE] key to switch the menu items, then press [OK] key to confirm the selection, press [BACK] key to return to the previous menu. The function of each key in parameter setting and the detailed operation method of parameter setting, please refer to *Chapter "6. Basic Operation"*.

9.1 Printout Settings

Please refer to *Section 8.2 "Report Style Settings"* for details.

9.2 Normal Setting

Item	Default	Options	Memo
Language	English	English / Chinese	Select interface language.
Key press beep	√	X, √	Enable or disable the key beep.
Screen save time	10 minutes	0-120 minutes	When the printer is not operated for more than the set time, the screen automatically enters the power saving mode. Set to 0: turn off the screen saver.
Screen brighten.	85	0~250	Set screen brightness.

Item	Default	Options	Memo
Password		6 digits	Please refer to <i>Section "8.5 Administrator password setting"</i> .
Require login	X	X, √	Login required to use the printer, please refer to <i>Section 8.7</i> .
Time Synchroniz.	None	None Balance first Printer-low Printer-High	<p>Time synchronization function, only applicable to some brand balances.</p> <p>None: Disable</p> <p>Balance first: Use balance time instead of printer time.</p> <p>Printer-low: In weighing mode, the printer time will replace the balance output time.</p> <p>Printer-High: In any mode, the printer time will replace the balance time.</p>

Item	Default	Options	Memo
Hold run mode	√	X, √	<p>X: After one mode ends, the printer automatically returns to Direct mode.</p> <p>√: Keep current mode.</p>
Printout Font	24/Line	24/Line 40/Line	<p>24/Line: 24 characters are output in one line, and the font is large.</p> <p>40/Line: Output 40 characters per line, the font is small. The settings must be restarted after modification to take effect.</p>
Enable Fast Feed	X	X, √	<p>X: Turn off the fast paper-feeding mechanical of the mechanism, at this time the printing speed will drop by about 30%.</p>

Item	Default	Options	Memo
			v: Enable the fast paper-feeding mechanical of the mechanism, but the life of the mechanism will be slightly reduced.
RunMode Config	111111111111	Each bit can be individually set to 0 or 1	Each bit corresponds to a mode of enable or disable, 0: disable 1: enable DIRECT ...Highest bit (left) WEIGHING MULTI WEIGHING Tare,Gross,Net Multil T,G,N Statistic SUM Mean Formulation Pipette Calibrate Loss Weight

Item	Default	Options	Memo
			Accumulate Moisture...Lowest bit (right)

9.3 Interface Setting

This menu is used to set the communication parameters between the printer and the scale. Note: The communication parameters of the printer must be consistent with the scale. Incorrect settings will cause the printer to not work properly! The printer has the function of automatically detecting and setting communication parameters, please refer to *Section "11.2 Communication Automatic Detection"*.

Item	Default	Options	Memo
Baud		300,600,1200, 2400,4800, 14400,9600, 19200, 38400,57600,	The communication rate, which determines the communication speed, must be consistent with the scale setting.

Item	Default	Options	Memo
		115200	
Data bits	8Bits	7Bits / 8Bits	The number of data bits contained in a frame of data, must be consistent with the scale setting.
Parity	None	None/ODD/EVEN	The bit used for verification, must be consistent with the scale setting.
Stop bits	1Stop	1Stop, 2Stop	The length of the bit indicating the end of the data, must be consistent with the scale setting.
Handshake	None	None, DTR/CTS, Xon / Xoff, nDTR / CTS	Data handshake protocol, must be consistent with the scale setting.
Terminate char	CR+LF	CR+LF, CR, LF, WIN, ETX,None	Indicates the end of data, which must be consistent with the scale setting.

Item	Default	Options	Memo
Data output mode	Output once	Output once Continuous	<p>Output once: Applicable to scales that press the print key once and output data once.</p> <p>Continuous: Applicable to scales that continuous output.</p>
Disable Command	X	X, √	<p>X: Normal operating mode</p> <p>√: It is usually used to connect instruments other than the scale, such as a PH meter.</p>
PRN command char		Up to 16 hexadecimal characters	Define the command to read the weight data in hexadecimal format, for example: set to 500D0A, then press the print key will issue "P CR LF", please refer to <i>Section "11.3 Custom Print Command"</i> .

Item	Default	Options	Memo
TARE command		Up to 16 hexadecimal characters	Define scale tare command, hexadecimal format, for example: set to 540D0A, "T CR LF" command will be issued to scale during "automatic tare" operation, please refer to <i>Section "11.4 Custom Tare Command"</i> .
Character Set	ASCII	ASCII GB2312	Select character set
Data Filter			Please refer to <i>Section "11.5 Data Filtering"</i> .
Data Matching			Please refer to <i>Section "11.6 Data matching"</i> .
Enable Demo Mode	X	X, v	v: When the [PRINT] key is pressed, the printer simulates receiving balance data for function demonstration. For

Item	Default	Options	Memo
			normal use, please set to X.
Factory default			Restore factory default settings.

10 Using Rechargeable Battery

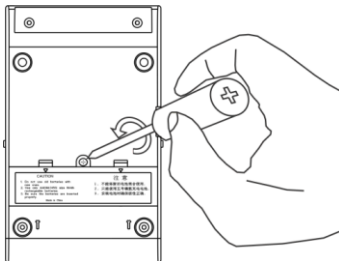
For battery-powered models, 4 rechargeable batteries of AA size can be used. Even without an external power supply, the printer can operate normally. The printer supports nickel-metal hydride or nickel-chromium batteries with a single cell capacity of 1500mAh ~ 2500mAh.

Note:

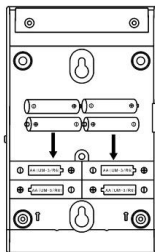
Not all models support battery power, please contact your supplier for details.

10.1 Install Rechargeable Battery

Please prepare 4 AA size rechargeable NIMH batteries, unscrew the battery cover screw on the back of the printer and remove the battery cover, as shown below:



Please insert the battery in the correct direction as shown below:



Replace the battery cover and tighten the screws. Connect the printer to the scale and turn on the printer power switch. At this time, the battery status is displayed in the upper left corner of the display.

10.2 Battery Charging

When the battery voltage is low, connect the power adapter to printer, the printer will automatically charge the battery, if you want to manually charge the battery, you can refer to the following operation methods:

Long press *[MENU]* key to enter the main menu and switch to "Power Management", as shown below:

```
1. Printout
2. Normal set
3. Interface set
4. Power Manage
```

Press *[OK]* key to enter, as shown below:

```
Battery in use
Capacity: 100%
Any key to exit
```

Long press the *[MENU]* key to manually start battery charging

When charging is completed, the printer automatically stops charging.

10.3 Notes On Using The Battery

- Only use batteries of the specified specifications. Do not use non-rechargeable batteries, otherwise it may be dangerous.
- Do not mix old and new batteries.
- Do not mix batteries of different types and capacities.
- Do not use damaged batteries.
- If it is not used for a long time, please take out the batteries.

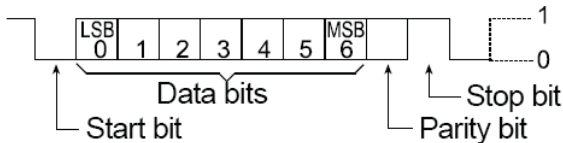
11 Communication Interface

11.1 Interface Definition

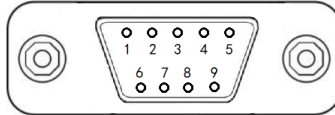
The printer interface is a standard RS232C communication interface with the following characteristics:

- D-Sub 9pin, male
- Asynchronous, bi-directional, half duplex
- Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
- Parity: None, Odd, Even
- Data bits: 7bit, 8bit
- Stop bits: 1stop, 2stop
- Handshake: None, DTR/CTS, nDTR/CTS, Xon/Xoff

The following is a data frame format of 7 data bits, 1 stop bit, and 1 parity bit:



D-Sub 9pin assignments:



Pin No.	Signal	Direction	Description
1	NC		No connection
2	RXD	Input	Receive data
3	TXD	Output	Transmit data
4	DTR	Output	Data terminal ready (Connect to pin7 internal)
5	SG		Signal ground
6	DSR	Input	Data set ready
7	RTS	Output	Request to send (Connect to pin4 internal)
8	CTS	Input	Clear to send
9	NC		No connection

For the printer's communication parameter settings, please refer to *Section 9.3*.

Handshake:

NONE: The printer and the balance can communicate at any time without flow control.

XON/XOFF*: When the device receives the <XOFF> control character, it stops sending data to another device until it receives the <XON> control character.

DTR/CTS: When the device is ready to receive data, the DTR pin outputs a logic low level (RS232 positive level) to notify another device; otherwise, when the device cannot receive data, the DTR pin outputs a logic high level (RS232 negative level).

nDTR/CTS: Similar to DTR / CTS, but the action level is reversed.

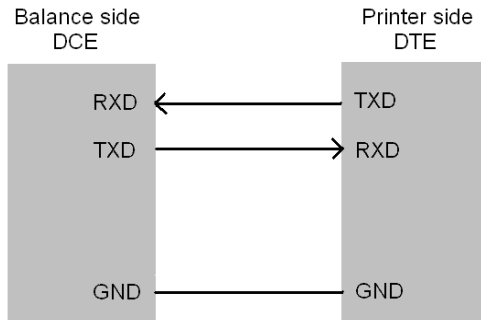
Remarks:

XON control character: 0x11 (hexadecimal format).

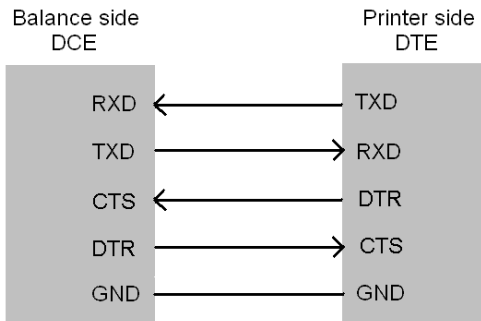
XOFF control character: 0x13 (hexadecimal format).

Connection method:

Handshake Protocol = None, XON/XOFF:



Handshake Protocol = DTR/CTS, nDTR/CTS:



11.2 Automatic Detection

The communication parameters of printer and scale need to be completely compatible to allow normal operation. This function can automatically recognize the communication parameters and set the parameters in the printer to be compatible with a scale, thereby eliminating common issues caused by incorrect communication parameter settings.

Operation:

- Make sure that the printer and scale is properly connected, and the balance is ready for work.
- Turn off the printer's power switch, press and hold the *[PRINT]* 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 the printer  
does not receive data.  
-----
```

- Press print key **on the scale (not on the printer)**, 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 print key on balance is pressed.
- If the printed content is correct, press *[OK]* to accept the parameters analyzed by printer, then the printer can return to normal working status.

Memo:

- If the automatic detection fails to recognize the data, please check whether the data cable is reliable, or replace the other data cable and try again. If the

printer is equipped with different data cable or cable adapter, try all combinations and use this " Automatic Detection " function in each combination until data is detected.

- Do not plug or unplug the data cable while it is powered on. The plug and unplug of the data cable must be performed when the power is turned off. Otherwise, incorrect results may occur. If this happens, perform this operation again.
- When multiple results are detected, press *[N/CN]* or *[DATE]* key to select different results, usually the first result is available.

11.3 Custom Print Command

When the printer *[PRINT]* key is pressed, the printer will issue a command to read data to the scale. This parameter is used to set the specific content of the command. The format of the parameter is hexadecimal (HEX), for example: assuming the data reading instruction of the scale as follows:

P	CR	LF
---	----	----

The corresponding hexadecimal code is as follows:

50	0D	0A
----	----	----

Then this parameter needs to be set to 500D0A, as shown below:

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

→[OK] -> [N/CN] or [DATE] →

```
PRN command char
                    500D0A
HEX Format
0-9, A-F
```

11.4 Custom Tare Command

When the “Auto Tare” feature is enabled, or in the “Tare, Gross, Net weight” mode, the printer needs to send a tare command to the scale. This parameter is used to set the specific content of the command. The format of the parameter is hexadecimal (HEX), for example: assuming the tare instruction of the scale as follows:

T	CR	LF
---	----	----

The corresponding hexadecimal code is as follows:

54	0D	0A
----	----	----

Then this parameter needs to be set to 540D0A, as shown below:

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

→ [OK] → [N/CN] or [DATE] →

```
TARE command
540D0A
HEX Format
0-9, A-F
```

11.5 Data Filtering

Except the Direct mode, the printer only processes weighing data. The printer recognizes the weighing data according to the following rules:

1. The right-most character string is recognized as a unit, and there is only one. For example, the following are valid weighing data:

N + 100.000 kg
100.000kg

The following are invalid weighing data, because the right side contains two strings: kg, S:

N +100.000 kg S

2. The unit length cannot exceed 6 characters.
3. The digits must be on the left side of the unit.
4. The leftmost part of the value cannot be directly connected with a string, at least one space, for example, the following is a invalid weighing data:

Tare100.000 kg

the following are valid weighing data:

Tare: 100.000 kg

Tare 100.000 kg

This parameter is used to filter specific content in the data transmitted by the scale. For example, suppose the scale outputs the following data:

+ 100.00 kg S

This data does not comply with the No.1 rule above, which will cause the printer not to recognize this data as weighing data, and it will not work in modes other than the Direct mode. In order for the printer to recognize it as weighing data, it is necessary to filter this string, at this time, you can set this parameter to “S”, as below:

<pre>MAIN MENU 1. Printout 2. Normal set 3. Interface set</pre>	→[OK] -> [N/CN] or [DATE] →	<pre>Data Filter S</pre>
---	-----------------------------	--------------------------

If you want to filter multiple strings in the data, you can enter it with a comma separator. For example, the following setting will filter "S" and "Net" in the data.

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

→[OK] -> [N/CN] or [DATE] →

```
Data Filter
S, Net
```

If you want to print out the filtered data, but do not process the data, such as adding statistical calculations, please set up the printer as follows:

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

->

```
1. Header
2. Trailer
3. Others
```

->

```
Printout Invalid
Data ✓
```

Note:

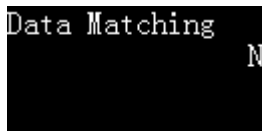
- Please use this function with caution. Improper setting will cause the printer to not work properly.
- Please pay attention to case sensitivity when setting this parameter.
- The data filtering function is invalid in the Direct mode.

11.6 Data Matching

In modes other than the Direct mode, if the scale outputs multiple weighing data at the same time, but only wants to print one or part of the data, you can use this parameter to match the specified weighing data. For example, the scale outputs the following:

```
+ 100.00 kg N
+  50.00 kg T
+ 150.00 kg G
```

If you want to process only the data containing "N" identifier, you can set this parameter to "N", as shown below:

A screenshot of a terminal window with a black background and white text. The text reads "Data Matching" on the first line and "N" on the second line.

Since the identifier "N" is behind the unit, it violates the first rule of weighing data identification in *Section "11.5 Data Filtering"*, the printer will not accept

this data as weighing data, therefore, in this example, the string "N" needs to be filtered, as shown below:

```
Data Filter
N
```

The printer always executes "Data Matching" before performing "Data Filtering".

If you want to match multiple strings, you can separate them with commas. For example, if you want to process the data containing "N" and "Gross" as weighing data, please follow the settings below:

```
Data Matching
N, Gross
```

Note:

- Please use this function with caution. Improper setting will cause the

printer to not work properly.

- Please pay attention to case sensitivity when setting this parameter.
- The data matching function is invalid in the Direct mode.

12 Trouble Shooting

When the printer encounters the following problems, please try to solve it according to the instructions in this manual, if it can not be solved, please contact the service representative.

1. The printer does not print after pressing the print key
 - The cable between the printer and the scale is not secure, please check and reconnect.
 - The communication parameters between the printer and the scale do not match, please refer to *Section "11.2 Automatic Detection"*. If the printer is equipped with different cable or cable adapter, please try all combinations and use "Automatic Detection" in each combination until data is detected.
 - Reset the scale to factory settings. If the scale data port is turned off or not assigned to the printer, please change the scale port settings according to the scale manual to make it available and assign it to the printer.

2. Print content looks light.

- The ribbon has expired, please replace with a new one.

3. Paper jam.

- Cut out the spare print paper, then press key *[BACK]* to take out the spare paper, if can't take out, please use tweezers to take out the paper.

4. When the *[BACK]* key is pressed, the printer makes a paper-feeding sound, but no paper feed.

- There may be foreign objects in the paper feed slot of the mechanism, use tweezers to carefully remove them.

5. The printed content presents a mirror.

- The ribbon is installed incorrectly, please remove the printing paper first, then reinstall the ribbon, and then install the printing

paper after installing the ribbon.

6. Uneven print content.

- The ribbon is not installed properly, please reinstall the ribbon.
- The ribbon is wrinkled. Please remove the ribbon, pull out the ribbon core, and then tighten it again to ensure that the ribbon is not wrinkled before installing it back into the printer.
- Replace the new ribbon, please pay attention to use the ribbon produced by EPSON.

7. The printing action looks normal, but nothing is printed.

- The ribbon is installed incorrectly, reinstall the ribbon.

8. The printed content overlaps.

- Paper jams, please refer to the above paper jam processing methods to solve.
- The installation direction of the printing paper is wrong, please refer to the manual to reinstall.
- Please use high-quality printing paper.
- No paper shaft installed, please install paper shaft.

-
- Please do not use thermal paper.
9. The printer does not power on.

- Unmatched power adapter is used, please use the power supply of the printer.

10. The printer prints continuously

This is because the scale output is set to continuous output.

- Change the scale output setting to single output.
- Set the printer as follows

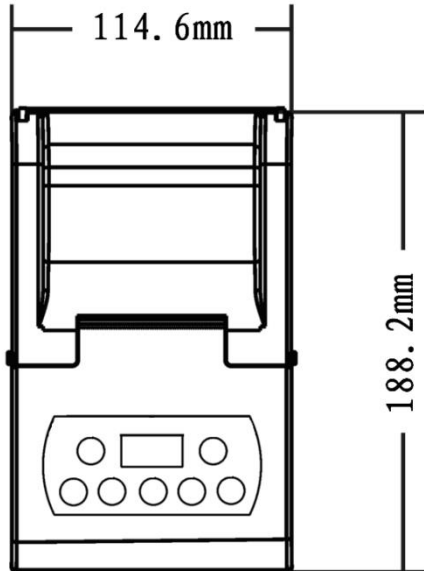
```
MAIN MENU
1.Printout
2.Normal set
3.Interface set | ->
```

```
Data output mode
Continuous
```

13 Maintenance

- When cleaning the printer, make sure no liquid flows into the printer.
- Keep the irritant liquid far away from printer.
- Remove the power cables and the data cables before cleaning.
- Please use soft dry cloth to wipe the printer after cleaning.
- Dry your hands before coming into contact with the AC adaptor.
- Keep it in a dry environment, if the printer will not be used for a long time pack it into the factory packaging.
- To avoid damage to the printer, it is strongly recommended to use ink ribbon and other consumables from the original supplier.
- Turn off the power supply of printer after usage. Please remove the adaptor/batteries if it is not going to be used for a long time.
- Always use original consumables. Unqualified consumables will damage the printer or shorten the life of the printer.

14 Physical Dimensions



15 Order Information

Item	Specifications	P/N
Printer paper	57(width)x50(diameter) mm, 10 rolls/package.	501420000117
Ink ribbon	ERC-09B, black, 5pcs	901430000014
AC Adapter	12V/1.5A or 12V/2.0A	901430000006

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