SOPTOP

Instruction Manual

Large scale AE electronic balance

NO. ××××××××

××××××××-××

The Enterprise Standard：Q31/0112000217C010-2016-01

Directory

1 Introduction

2 Process overview

3 Weighing

4 Settings

5 Specifications

6 Troubleshooting

A data communication

B Maintenance and cleaning

1 Introduction

Must be power-off before any installations

Disassemble

▶Unpack the package and take all the accessories out carefully

▶Damage check-out firstly, if there are any, after unpacking

▷Contact local distributor or after-sale service centers of Sunny Hengping

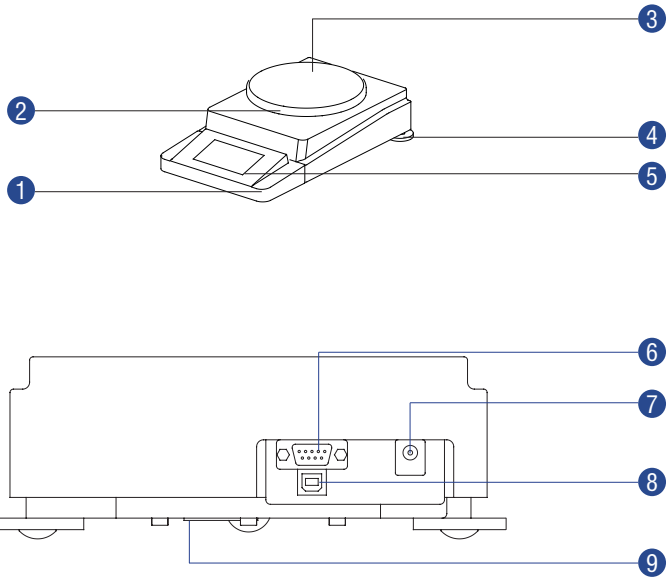
▷Properly preserve outer package and assembling attached for future transportation usage. Unplug power cable during transportation

Packing Lists:

- AE series balance
- Accessory box
- Tray rack
- Stainless-steel weighing pan
- Instruction manual
- AC power supply
- Quality demonstration
- Warranty card

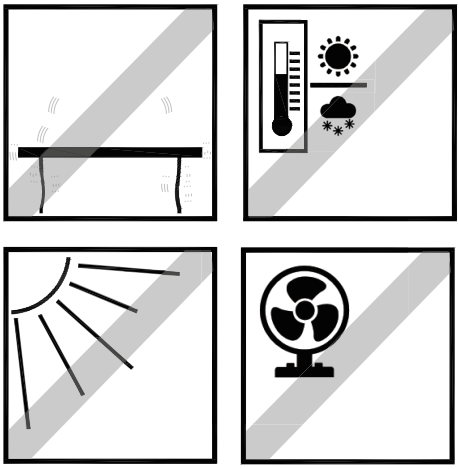
Identification of balance components

Make sure that you could identify each components before using the balance:



NO	Name	NO	Name
1	Display cover	6	RS232 interface
2	Tray rack	7	AC/DC power socket
3	Stainless steel weighing pan	8	USB interface (optional)
4	Horizontal adjustment / levering foot	9	Under-hook cover
5	Display		

Choose proper working conditions



Proper location and working conditions are the key point for high accuracy weighing, if you want to receive counterpart accurate results.
Make sure to process under:

- Horizontal, firm, stable and vibration-less working stand
- Avoid direct explosion to the sun
- Avoid severe temperature fluctuation
- Avoid cross-ventilation

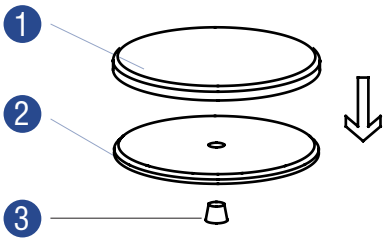
Optimal location: wind-free corner/ stable desk, keep far away from door, window,radiator and air-condition air outlet

Horizontal adjustment

Through adjusting levering feet behind, to place the levering bubble in the right Center (refer to Page 28 for detail processing)

Should adjust horizontal every time when the balance's placed in the different position

Weighing pan installation

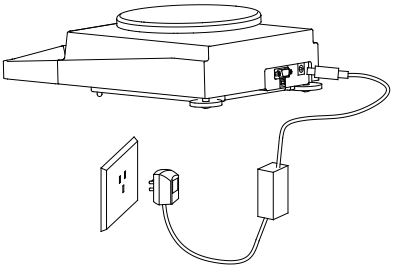


As the pics shows：

1. Stainless steel weighing pan
2. Tray rack
3. Bearing block

Power connection

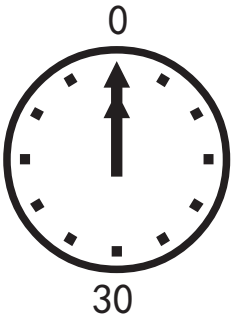
Situations like severe electric shock to people and damage to the balance might be happen if using wrong power adaptor
▶ Please use correct power adaptor



- Use AC/DC power adaptor provided by Sunny Hengping
- Make sure the rated voltage of the adaptor is the same with local power voltage (if the voltage or the socket does not conform to local standard, please contact Sunny Hengping after-sale service center)
- Must connect power source according to the country/ regional regulations

▶ 1）Connect AC adaptor to the balance

▶ 2）Connect AC adaptor to the power socket



Pre-heat time：

▷Before using this series balances, in order to achieve high accuracy, please at least pre-heat 60mins with balance power-on. Properly increase pre-heat time if there's big temperature fluctuation

2 Process overview

Function application menu

Function application menu consists of three function buttons and one power button

Menu (choose different applications)

Setup (include all the basic settings, any changes of the setting could be applicable once the setting's done)

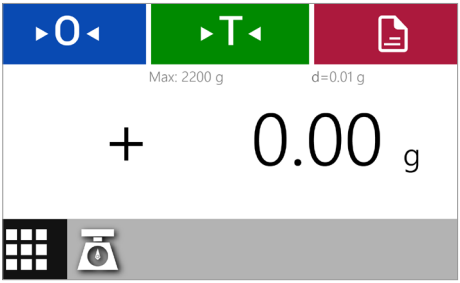
Calibration (re-calibrate the balance is necessary if the position of the balance changes, or when weighing deviation occurs)

Standby/ Power-on/ off button

Process balance

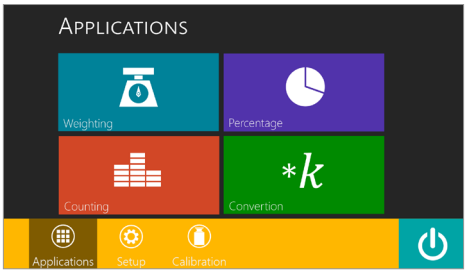
Power-on/off(standby)

▷Enter boot screen after connecting power
▷self-inspection



▶Enter weighing mode

▶Press menu button on the left bottom, and switch to standby mode



▷Enter application interface

▶Press standby button in application interface

▷Switch balance to standby mode

▷Enter standby mode

Press any button anywhere on the display to exit standby mode

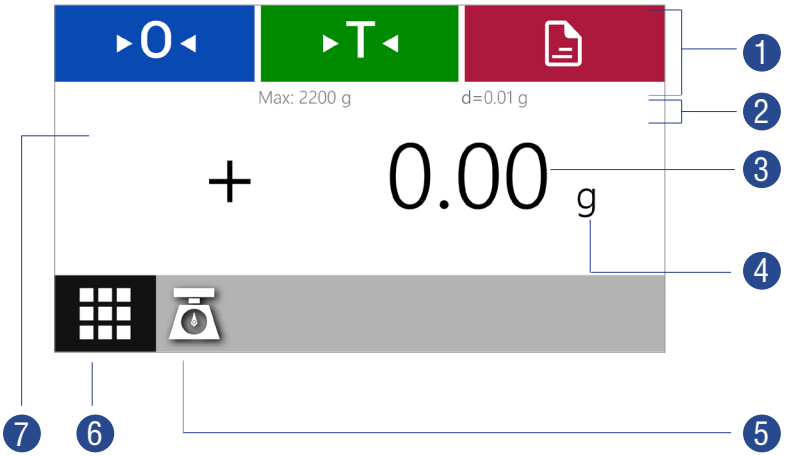
Process concept

Introduce balance's basic interface and process

Process on the touch screen display, and each elements shows on the display

Sharpe tools (like ball pen) might damage the balance

- Could process balance with gloves on



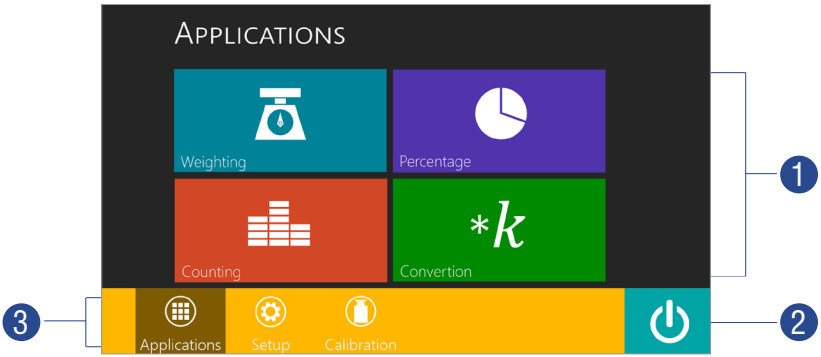
1. Toolbar, current buttons that are applicable include: zero ▸O◂、tare ▸T◂、print 。
2. Max: maximum weighing range; d: resolution
3. Current weighing result
4. Weighing unit (press to enter weighing units setting, only available during weighing mode
5. Shows current application
6. Main menu: switch to application menu
7. Malfunction warning: click to view details

Main menu

Press main menu to choose different weighing applications

▶Press menu button on the left bottom and enter application interface

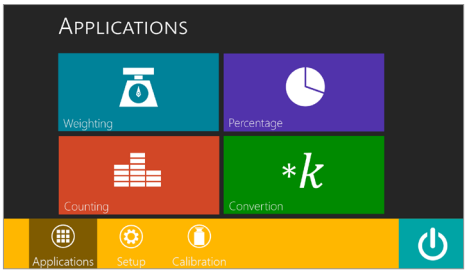
▷Application interface



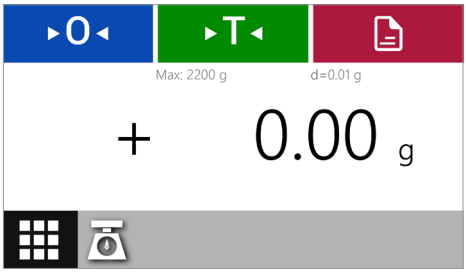
1. Application area, shows current available application including weighing, counting, percentage and conversion
2. standby/ power-on/off
3. Function area, application, setup and calibration

Choose applications

In this interface, it shows different applications that are available



▶Press required application to activate, like weighing



▷The application's activated, and enter weighing interface

3 Weighing

Application lists in the menu

This chapter introduces 5 weighing applications and each application's process

Weighing

This is the default application when start the balance. It measures sample's weight within weighing capacity

Counting

Used to determine quantity of samples with similar weight. Could measure reference sample's weight, then measure unknown subjects' weight. The result would show unit weight and quantity

Percentage

Used to determine percentage of to-be-measured sample and reference sample

Conversion

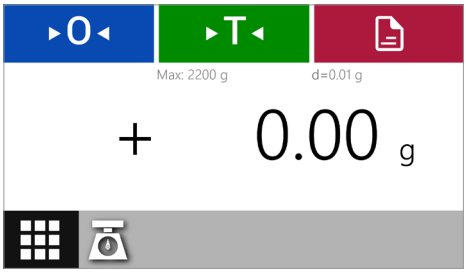
Multiply weight by customized ratio. If the ratio is less than 0, division is also available.
And the ratio would be saved in alibi memory

Weighing

Purpose: measure sample's weight within balance's max. weighing capacity (refer to parameters)

▶Press main menu in any applications

▶Choose weighing application

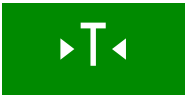


▷Shows weighing interface

Zero

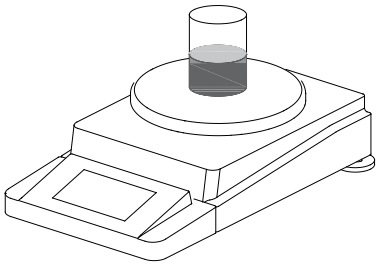
▶empty weighing pan

▶select▸O◂ to zero balance



Tare

▶If a container is used to weigh the sample,place the container on the weighing pan, then choose Tare(T) to remove the tare weight. Then balance will show zero.

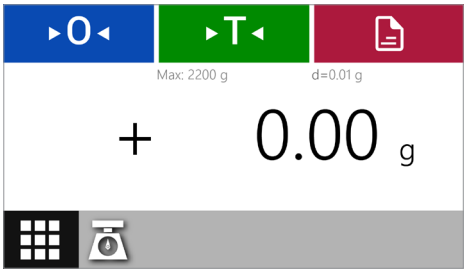


▶Put sample on the weighing pan

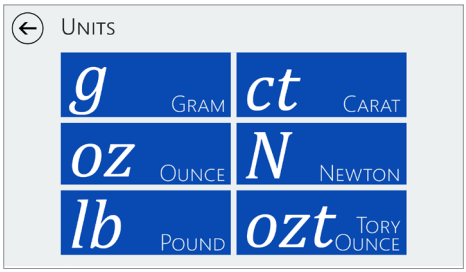
▷When the value does not change and the unit appears , the value can be read off the screen.

Weighing Unit Conversion

TO Configure weighing unit



▶Click on the unit symbol to enter into the Units interface.



▷In the Units interface

▶Choose the desired unit

Weighing unit conversion factor

Unit	Factor	Display
Gram	1.00000000000	g
Carat	5.00000000000	ct
Ounce	0.03527396200	oz
Newton	0.00980665000	N
Pound	0.00220462260	lb
Gold ounce	0.03215074700	ozt

Counting

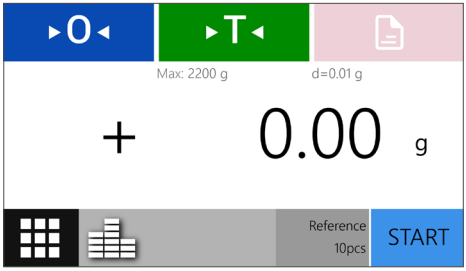
Objective: to determine the number of weight almost equal parts. It can calculate the weight of the reference sample, then to weigh the unknown number of objects. Balance will show the number of objects, and the weight of single piece.

Minimize counting error:

- ensure that the average distribution of the weight of each part.
- the more reference number, the higher the accuracy.

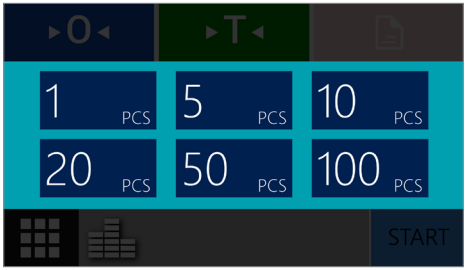
▶Select the Menu key

▶Select counting



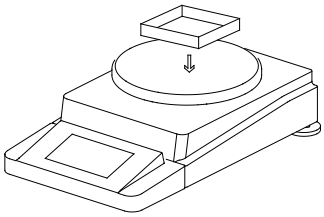
▷Shown counting interface
default reference number: 10 pc

▶If want to change number, please select gray bottom.



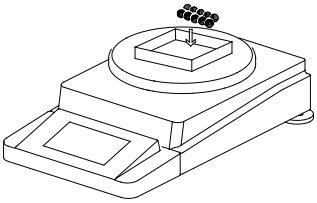
▷Choose the number needed

▶Choose ▸0◂ to zero reading.

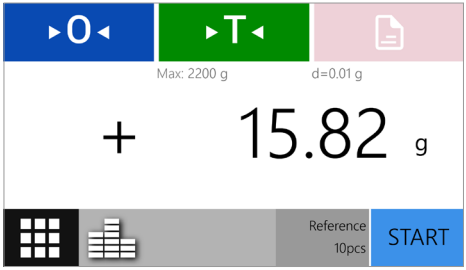


▶Put container on the pan bracket.

▶Press ▸T◂ to tare.

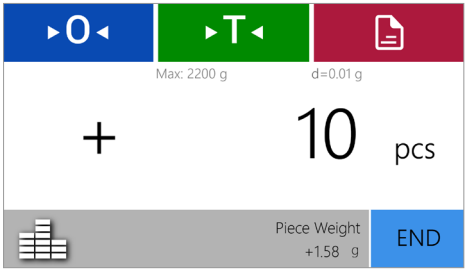


▶Put certain quantity sample in the container.

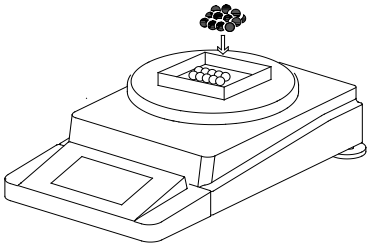


▷Read samples' weight.

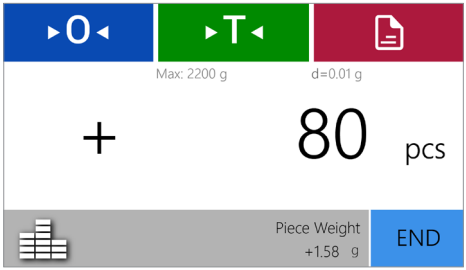
▶Choose "start".



▷Shows quantity that you already choose. Unit weight shows on the bottom of the display.



▶Put uncertain material in the container.



▷Count and read quantity.

STAR

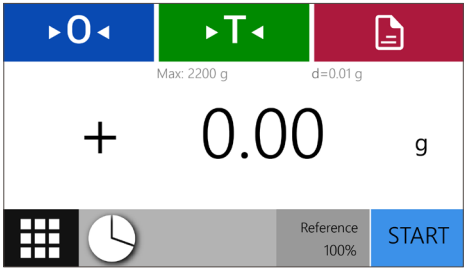
▶Select "Done".
▷Application to count the initial interface.

Percentage Weighing

Objective: to determine the percentage of the sample and the reference weight related or percentage difference.

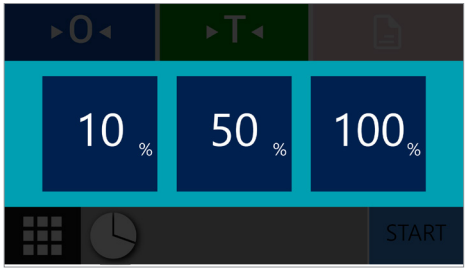
▶Menu Key

▶Select Percentage



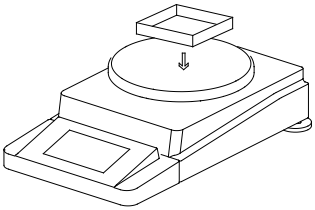
▷Enter percentage application interface.
Default percentage setting is 100%

▶Press percentage button if you want to change.



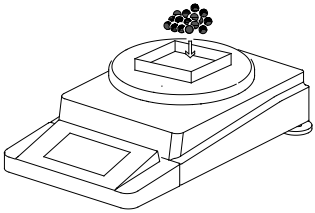
▷Several percentages setting for optional (10%, 50%, 100%).
▶Click percentage that you choose.

▶Press▸O◂ to zero reading.

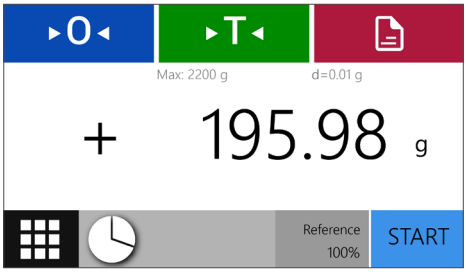


▶Put container on the pan bracket .

▶Press▸T◂ to tare.

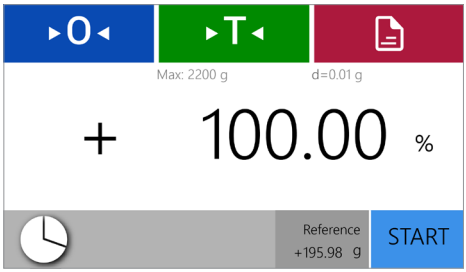


▶Put sample in the container.

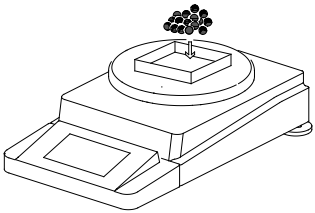


▷Read sample's weight.

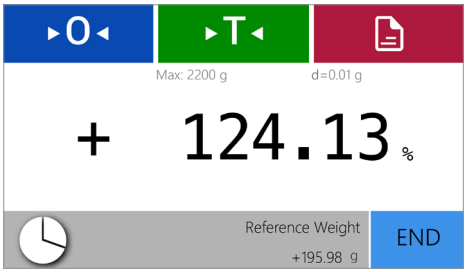
▶Press "start".



▷Reference percentage
Reference sample's weight shows on the bottom of the display.



▶Put to be measured sample in the container.



▷Display the percentage based on reference sample.

END

▶Press “End”
▷Revert back to initial percentage interface.

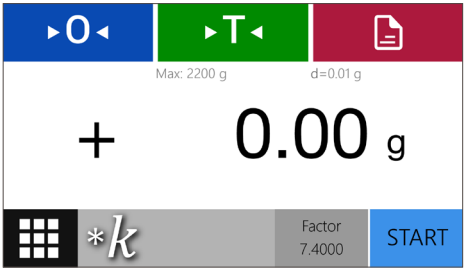
Conversion

Weight multiply custom conversion ratio, if the ratio is less than 1, division is also applicable. The ratio will be saved in the system memorizer.

e.g. if you want to calculate the unit weight for A4 format paper, process as follows
—unit weight = paper weight/ surface area (like 80g/M2 or 70g/m2)
—surface area of one DIN A4 = 0.210×0.297=0.06237m2
—divide 0.06237, comes to 16.03335.
—setup conversion ratio to 16.03335 in the application system.

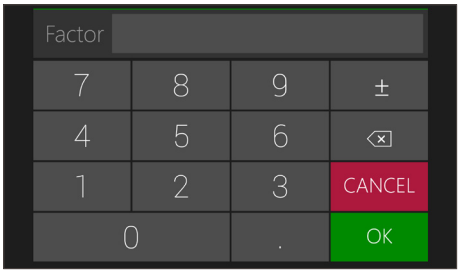
▶Press menu button in any status.

▶Choose conversion in the application interface.



▷Enter conversion interface.
Multiplier shows under conversion.

▷ Press conversion button if you want to change conversion ratio.

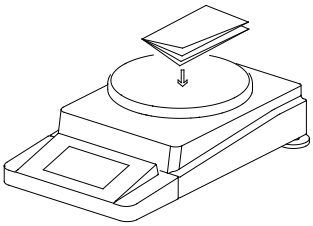


▷Use number key to enter conversion
▶Then press OK to enter

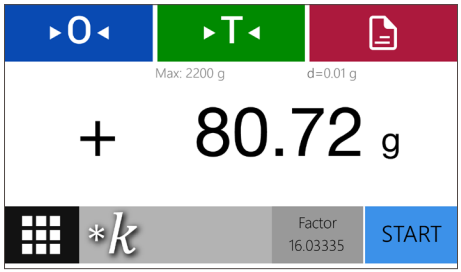
Press cancel to back to menu

▶Zero balance

▶Select Start



▶Put sample an the weighing pan



▷The number is shown that weight plus conversion

▶Press end to back to menu

Calibration

During calibration, a standard calibration weight would be used to measure the deviation between actual material weight and reading showed on the display

Before using balance，must calibrate in the place of placing balance. Calibration can choose external or internal calibration.

Time and frequency

- To achieve the highest accuracy, please regular calibrate balance
- Every day calibrate balance after start
- Every time, after balance level adjustment
- Environmental conditions (temperature, temperature or pressure) changes
- Location changes or move to a new place

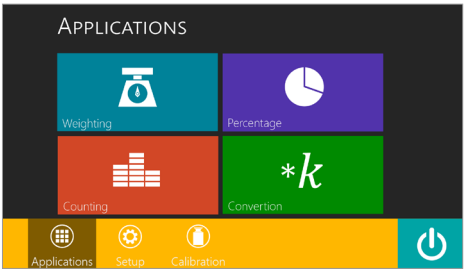
Balance with the following options:

- External calibration
- Internal calibration (only for AE C series)
- External Calibration

External Calibration

Perform this function, standard weight will be used

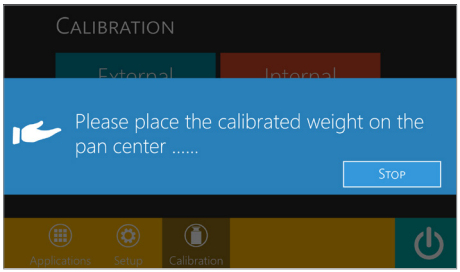
▶Clean weighing pan
▶Press menu button on left bottom in any application



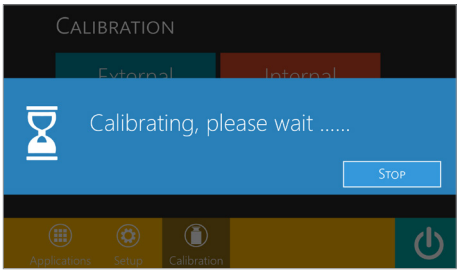
▷enter application interface.

▶Select calibration

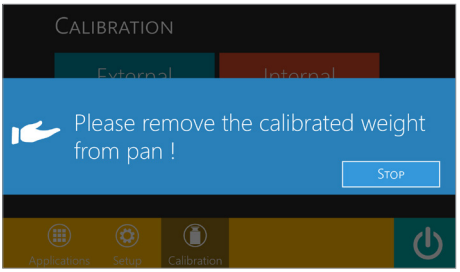
▷Select External
▶ Calibration



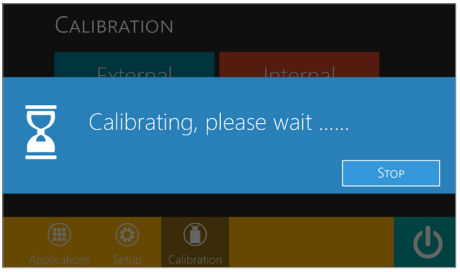
▷Place the calibrated weight on the pan center.



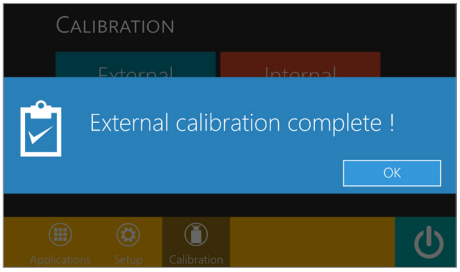
▶The balance starts calibrating



▶Remove the calibration weight from the pan according to the indication



▷start to calibrate automatically after removing the weight from the weighing pan

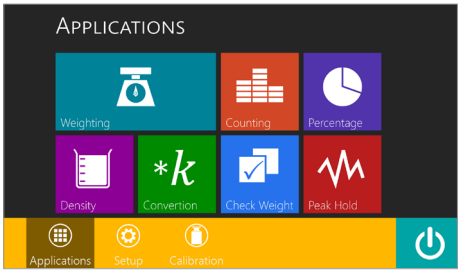


▷press "OK" and finish calibration

During calibration, press “stop” to terminate the calibration process

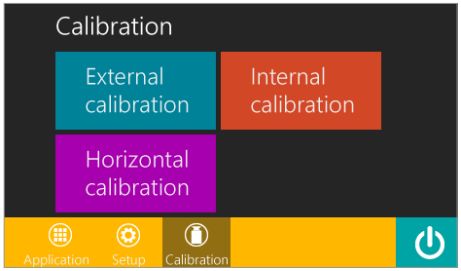
Internal Calibration (Only for AE C internal balance)

►Clean weighing pan
►Press menu button on the left bottom in any application



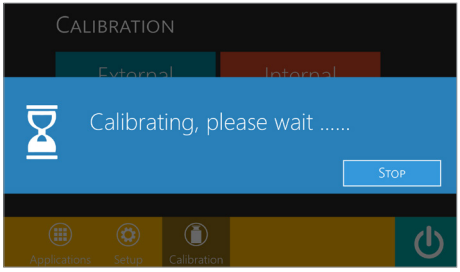
▷enter application interface

►Select calibration

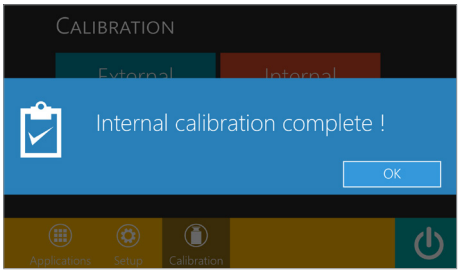


▷Enter calibration interface

►select internal calibration



▷At this time, moisture meter is under calibration, please wait

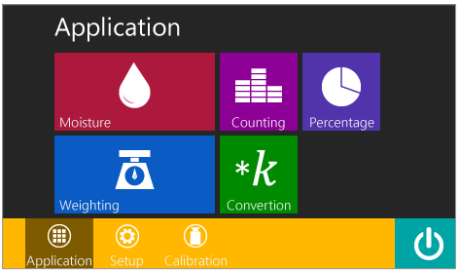


▷Press “OK” to finish calibration

Internal calibrating is only available with AE C series balance

Horizontal Calibration

▶Press menu button in any application.



▷Display application interface.

▶Choose calibration to enter calibration interface.

▷Display calibration function menu interface.
▶Choose horizontal calibration.

▷Display horizontal calibration interface.
▶Twirl the leveling feet left or right according to the placement of electronic bubble, until it stands on the right middle.

▶Press " back" icon, revert back to calibration interface.

Balance need to be re-adjusted when instrument is moved.

4 Setup

Set Application List of Menu

The function of settings cover all the basic settings, any changes based on these settings could be applied immediately

Weighing settings
It is used to do some basic settings of the weighing function

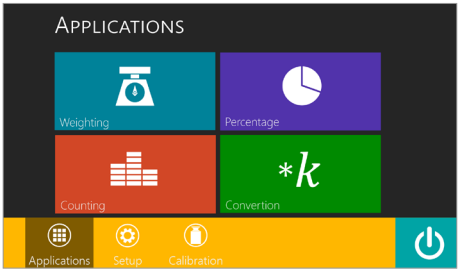
Print settings
It is used to set up the printing mode

System settings
It is used to set up system parameters and default settings

Information
It shows basic information about the factory, as well as the balance

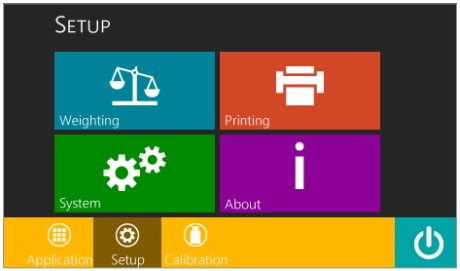
Enter setting menu and change settings

▶Select menu button in any applications.

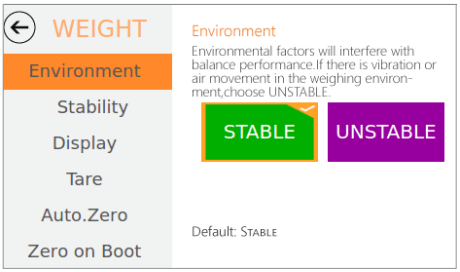


▷Display application interface.

▶Press setting button to enter setting interface.



▷setting interface .
▶Click required setting to enter setting menu (e.g.: weighing)

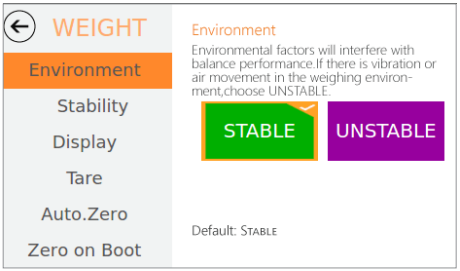


▶Select one of the settings and change if you want.

▶Status show chosen
▶ Select ⊖ Select to revert back. The changed settings will be launched at once, no need to restart the instrument.

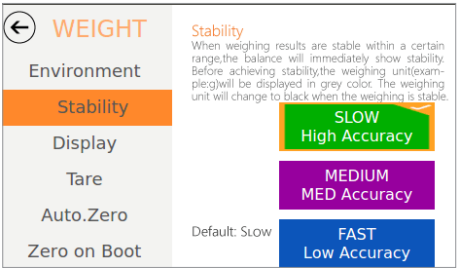
Weighing setup

It is used to set up some basic settings of weighing functions



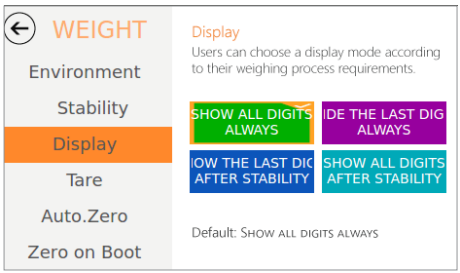
- Environment

Environmental factors will inevitably interfere and influence the weighing process/ If air or vibrations are affecting the weighing, select Unstable.



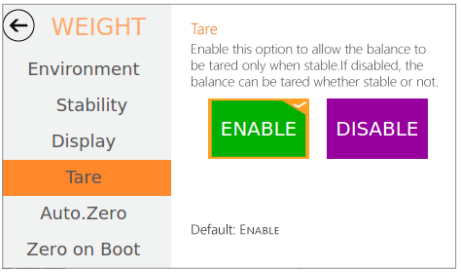
- Stability

When weighing is stable within a certain range, the weigh unit will change from gray to black. The tolerance can be set in the Stability menu.



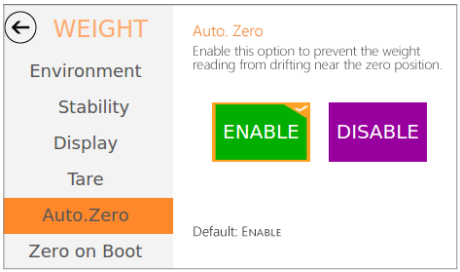
- Display

The weighing display can be changed to required reading accuracy.

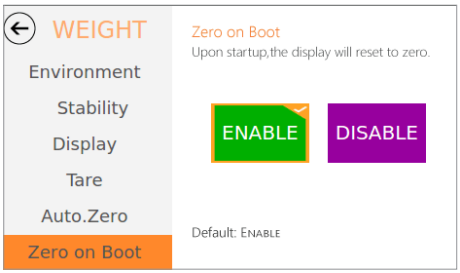


-Tare

Use this menu to enable the tare function only when moisture analyzer is under stable status.



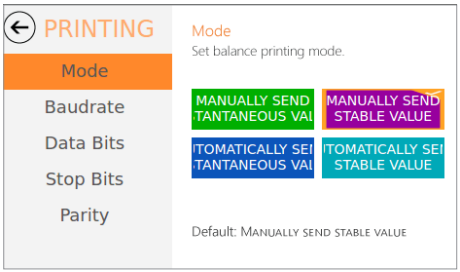
-Auto Zero
moisture analyzer will automatically eliminate the influences of drift near zero position, to achieve high accuracy.



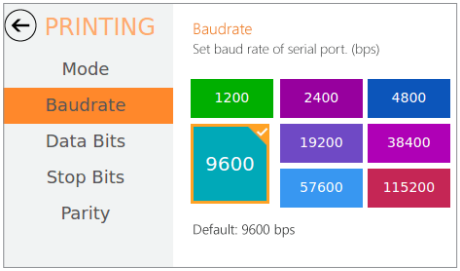
- Zero on Boot
auto zero when starting up.

Print setting

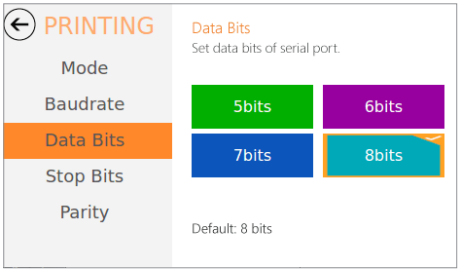
It is used to set up the moisture analyzer's printing mode.



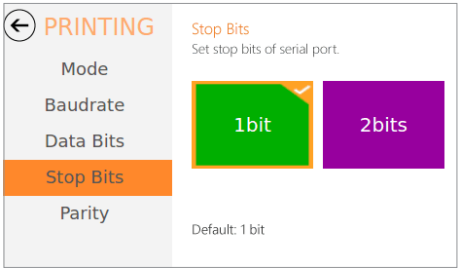
- Print mode.
output mode of print setting.



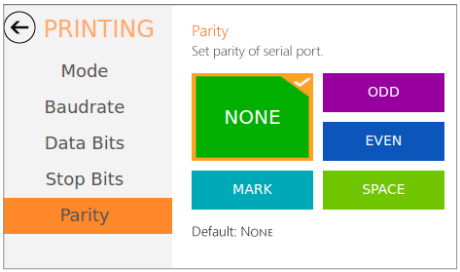
- Baud Rate
print baud rate setting.



- Date bits
data bits setting.



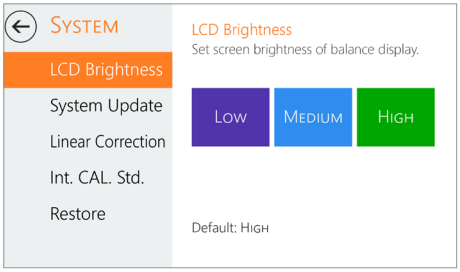
- Stop bits
stop bits setting.



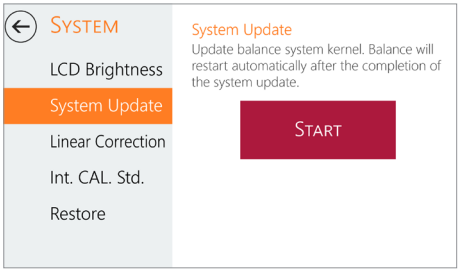
- Parity bit setting.

System set

It is used to set up system parameters and default setting

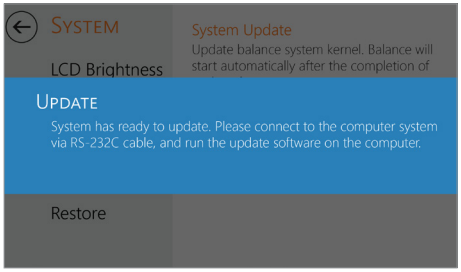


LCD display Brightness
- display Brightness setting

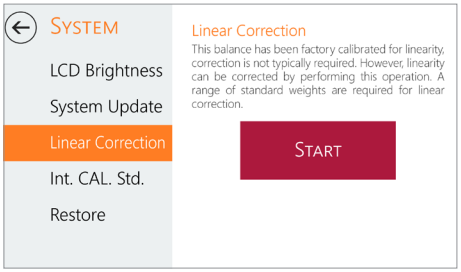


System update

- Update system internal core, can not stop the process once startedsystem restart after updating

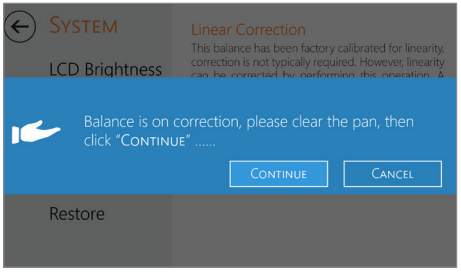


▶Click “start” and blue windows will appear.
Now the system in updating, use standard RS-232C cable to connect PC, with accessory system in PC to update the software



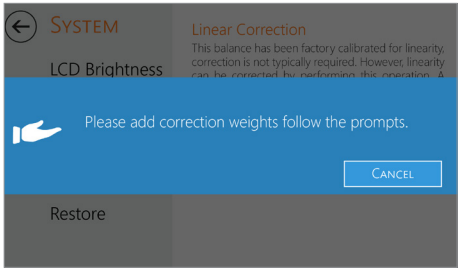
Linearity correction
- In order to achieve high accuracy measuring result, moisture analyzer should set up linearity

⚠ use standard weight to set up linearity

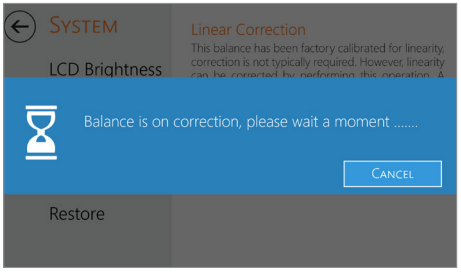


►After press "start" , a blue window will appear

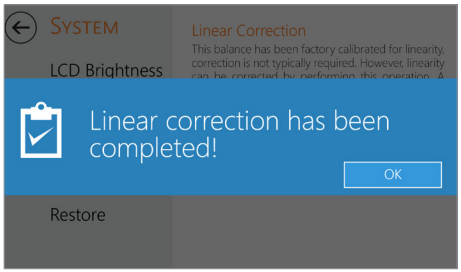
Balance starts to set up "linearity correction", please empty weighing pan, click "continue".....



►Put calibration weight according to indication, and click" continue"

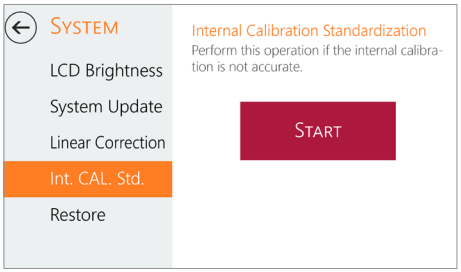


▷Balance is under "linearity correction", please wait



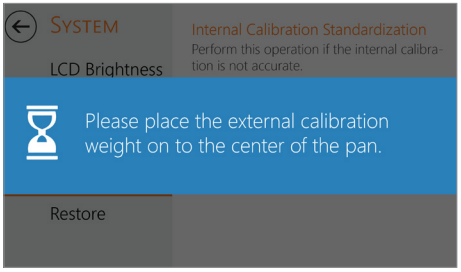
▷Currently, the linearity calibration is finished. Press " Enter" to exit.

Inter calibration standardization

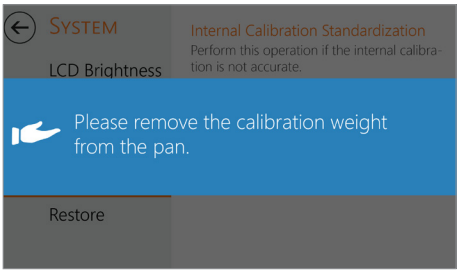


- To verify the weight which is in the internal calibration balanceWhen the internal calibration is not correct, please execute this operation

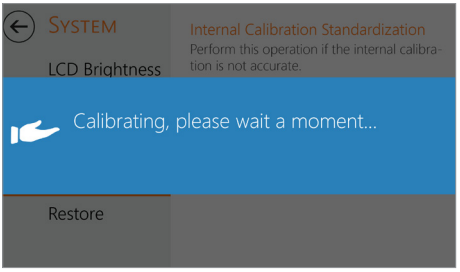
Please use professional weight to do the internal calibration weight verification.



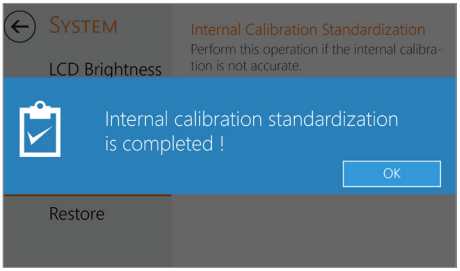
►According to hints, put external calibration weight in the middle of the weighing pan.



►Remove the calibration weight from the weighing pan according to the hints, empty pan.



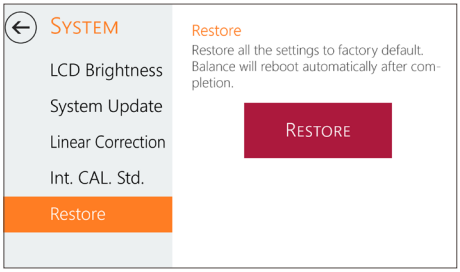
▷Now the internal calibration is under verification, please wait



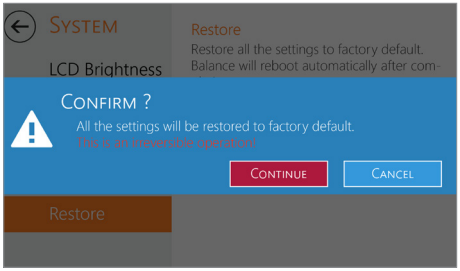
▷Internal calibration is done, press" OK" to exit.

Internal calibration verification is suitable for AE C series only

Default setting



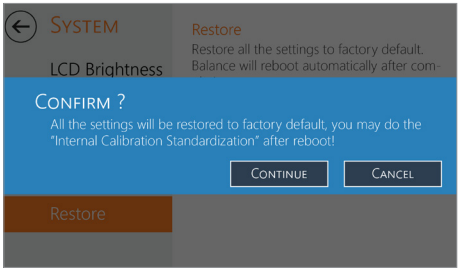
- Reset all settings to defaulted statussystem will automatically restart the instrument after completion



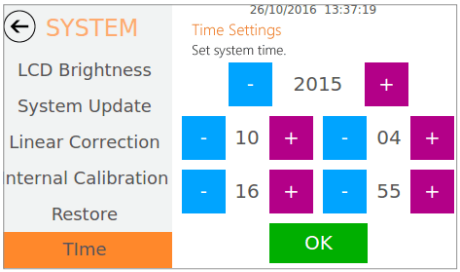
►after press " Recovery" , a blue window will appear

After adopting this function, all settings will be back to defaulted status. After restart, set up linearity in order to achieve high accuracy measuring result

►Press" continue" and confirm default setting



▷The system is under default setting process



Time settings

- set up the calendar according to the picture on left.

►Set up time, and press setting button to save current time setting.

Manufacturer information

- Shows this instrument's manufacturer information, product mode number, kernel version and interface version

5 Specification

Product Overview

Balance standard configuration
- Balance power output: 100-240VAC；50，60Hz
- Output: DC12V; 600mA

Raw material
- Base: die casting aluminum alloy; paint
- Cover: plastic (ABS/PC)
- Weighing pan: stainless steel

Protection level
- Dustproof and waterproof
- Level of pollution prevention: II
- Level of installation: II

Use of environment requirements
Balance of technology parameters in following conditions:

- Working environment temperature: (II) 20℃ ±2.5℃，the temperature
- Relative humidity: (II) 40%~80%
- Working voltage: (II) 12VDC

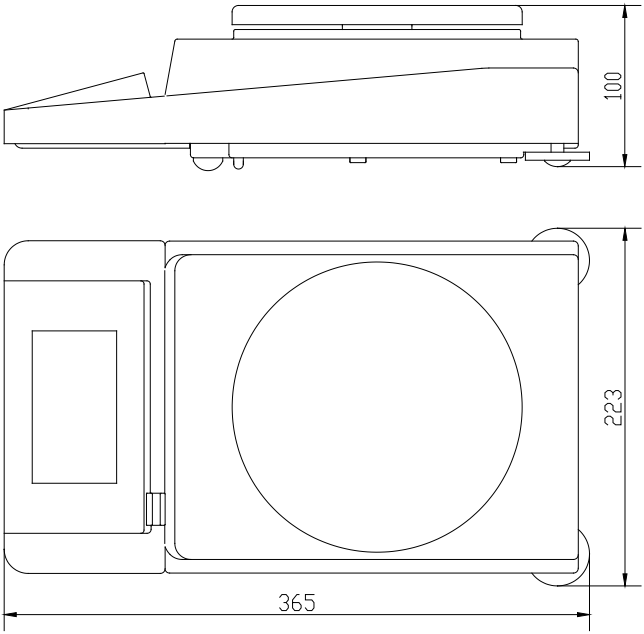
In a stable environment, the preheating time of at least 60 minutes of th
scale, the power supply shall be reliable grounding.

技术参数

AE Series

Model		AE1202	AE2202	AE3202	AE4202	AE5202
Capacity	g	1200	2200	3200	4200	5200
Readability	g	0.01	0.01	0.01	0.01	0.01
Repeatability	g	0.01	0.01	0.01	0.01	0.01
Linearity	g	±0.02	±0.02	±0.02	±0.02	±0.02
Typical stable time period		3S				
Accuracy level		Ⅱ				
Calibration		Automatically external calibration, weights optional				
Dimensions	mm	365 X 223 X 100				
Package dimension	mm	520 X 330 X 230				
Pan size	mm	Φ180				
Net Weight	Kg	3.6				
Gross Weight	Kg	5				

Prototype outline

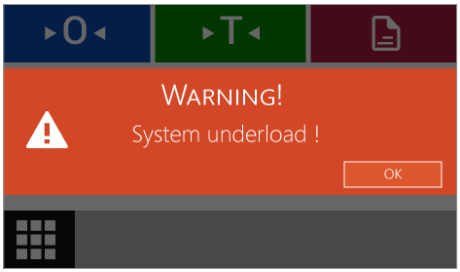


6 TROUBLESHOOTING

Solve common problems that occur during applicationThis chapter helps to solve some common problems that might come across during daily use. Please contact Sunny Hengping Instrument after-sale service center if you the problems you met cannot be solved.

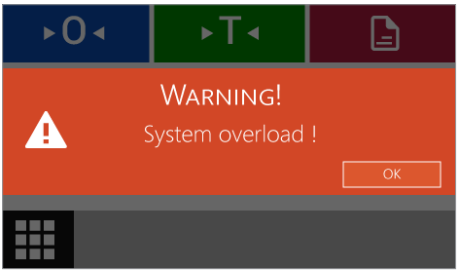
Malfunction warning and troubleshooting

Please contact local distributors or Sunny Hengping Instrument after sale service center if you the problems you met cannot be solved.Before sending the maintenance requests, you could also try solutions as follows:



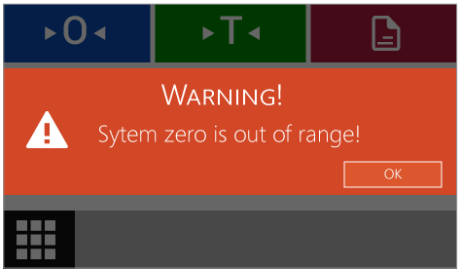
Under-load warning

•the pan is not placed on the bracket
•there might be some unknown subjects under the pan, check carefully



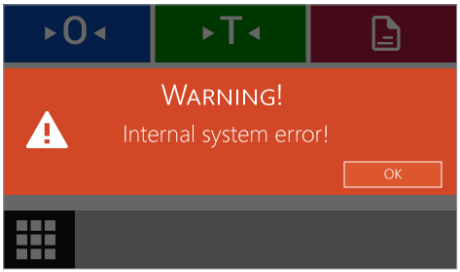
Over-load warning

•the weight excess max. capacity on the pan, reducing weight accordingly
•used to calibrate the instrument with weighing that is lighter than standard calibration weighing. In this situation, re-calibrate the instrument with standard weighing attached in the package.



Auto-zero malfunctions

•the weight is out of the range when you need zero setting
•the weight of initial zero setting is 20% larger than max. capacity, or regular zero setting, over 4%. Check if need to empty pan



Contact after sale service if there are internal errors coming up

Maintenance should only be handled by well trained technicians from Sunny Hengping Instrument. Do not repair the instrument with power on! Maintenance handled by green hand is invalid and customers should take the consequences or risks brought by, like false reading and system crash etc.

A Data communication

Data communication

This series of balance is equipped with standard RS232 serial port output, can be connected to the computer and printer. With the microcomputer serial port connections are as follows:

Microcomputer (9 core hole) ------- Balance (9 core hole)
2（RxD） —— 2（TxD）
3（TxD） —— 3（RxD）
5（GND） —— 5（GND）

Balance a serial port baud rate 9600 BPS.

•Data format for 10, one of the start bit (0), 8 bits of data (ASCII, low in the front), a stop bit (1).

•No odd-even check

•For continuous output data, don't need special reading command.

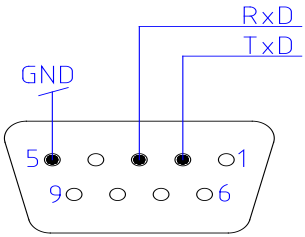
Output format of character string

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
symbol	blank	weighing value									blank	unit		CR	LF
±	␣	␣	1	9	9	.	9	9	9	9	␣	g		CR	LF

0：Expressed as a plus or minus sign；
2~10：According to quantity, for the right alignment, less than a complement by Spaces; Consistent with the balance display；
12~13 ： Unit may show is different with balance display

Balance display	Output	
	13	14
g	g	-
oz	o	z
ozt	g	z
ct	c	t
lb	l	b
N	N	-

Port



Every balance could connect peripheral equipments with RS-232C interface (like nine-pin serial printer and micro-computer). Once connect with printer, could press to output weighing result according to the print settings。

B Maintenance and Cleaning

Health risks might be cause by product pollution because of chemical sedimentation and microbiological residue. So daily maintenance and cleaning is key important, please abide by cleaning standards

► Disconnect power: if necessary, disconnect power cable from the instrument

•make sure that no liquid or dust enters into inner part of the instrument

•do not disassemble the instrument

• do not use detergent which include solvent and abrading component, they could cause damage to the instrument.

► Please use soft and napless materials to clean the shell and the weighing pan, or use mild detergent in necessary. (suggest that clean weighing pan and working plate each time after measuring chemical products, though the instrument possess high quality material, still there are chances it might corrode the instrument and pan if corrosive material are sedimentated on the stainless steel surface for a long time)

► Use dry and soft material to wipe the instrument after cleaning

Shanghai Sunny Hengping Scientific instrument Co., Ltd
NO.28 Yaduo Road, Jiuting Town, Songjiang District
Zip code: 201615
Email: info@hengping.com
Sales hotline:+86-21-64951010
Sales: sales@hengping.com
After sale service hotline:400-888-9873
Website: www.hengping.com

version：1.0
Date: September 1st, 2016
Shanghai Sunny Hengping Scientific instrument Co., Ltd

http://www.hengping.com