

BCS-150 Banknote Sorter



User manual

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1. Introduction

1.1 Preface

Thanks for buying our product. The user manual includes the operation steps and matters need attention.

In order to use the machine correctly, please read this manual carefully. If you meet any difficulty please contact your local distributor immediately. We keep the right to modify the content of the manual without notice.

1.2 Notice

This product is used to sort and count banknotes. If any loss caused due to incorrect use, or any modification to the machine not done by our company or our distributor, our company will not be responsible for it. Please contact your distributor if you want to install or transport this machine to avoid the wrong installation or damage during the transportation.

- This product is used for counting and sorting the mentioned banknotes in user manual. Please don't use this machine for other purpose.
- Due to different power supply standard and safety standard, please do not use this machine in countries with disaccorded power supply.
- Some content may be modified without notification, please kindly understand.
- We are working continuously for improving the quality of products, so the actual machine may be a little different with the manual.
- If people's use of this document lead to infringement of the third party's patent or other right, our company will not be responsible for it.
- Our company will not be responsible for the loss caused by damage of notes or stolen or any crime issue such as counterfeiting, adulteration and destroy.
- If the machine is changed or modified by user without our notice, it will lead to losing operation right.

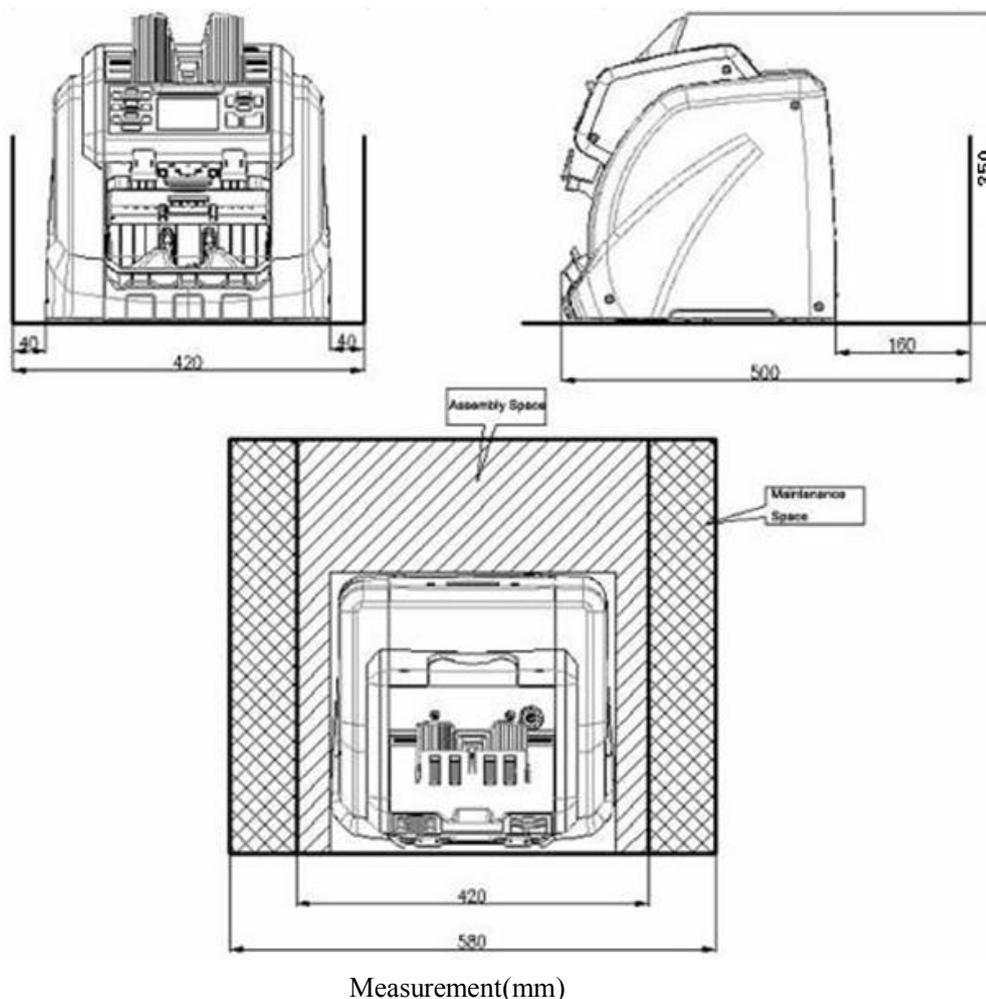
2. Installation notice

2.1 Installation notice

- 1) Before you disassemble or install a machine, please ask the nearest service office or distributor for help.
- 2) The machine is only suitable for indoor use, please do not install it and use it outdoor.
- 3) Please install the machine in an even place which can hold the weight of this machine.
- 4) Please do not use or put flammable or volatile items around the machine, such as diluents.

2.2 Installation place notice

Install the machine as below, there should be enough space for your operation, such as putting the notes, opening and closing the cover and doing maintenance.



3. Specification

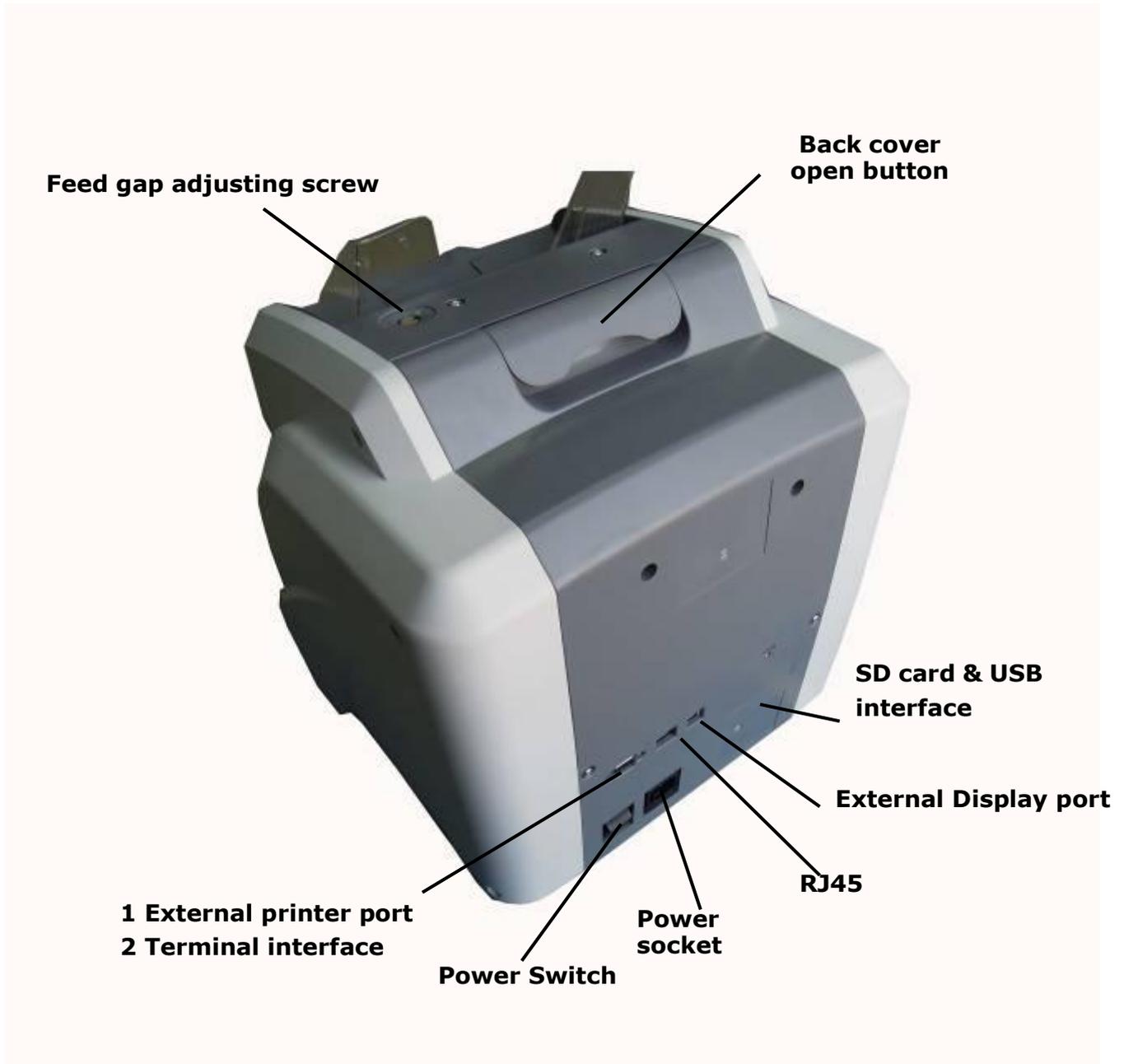
Dimension(W×L×H)	330(W)×315(L)×330(H)mm (without note guider) 330(W)×315(L)×350(H)mm(with note guider)
Weight	13KG
Hopper capacity	500notes
Stack capacity	MAX.200notes
Reject pocket capacity	30-100notes(adjustable)
LCD display	128dot×64dot LCD display
Interface	RJ12/LCD-OUT/USB/RS232 /SD card
Sortable banknotes	USD, Euro, Ruble, NTD etc.
Suitable notes size	[W]100mm~180mm
	[D]50mm~90mm
Suitable note thickness	0.05mm~0.12mm
Speed	800notes/min (MIX,SDC MODE)
	1200notes/min(CNT MODE)
Counting modes	single / mixed pieces counting
BATCH No.	5~199
Counterfeit detecting:	CIS/UV/MG/IR/MT/DB
Power supply	AC 220V 50Hz ±10%
	AC 110V 60Hz ±10%
Power consumption	Sleeping mode≤15W
	Operation mode≤70W
Working condition:	Temperature (0~40℃)/humidity (40~90%)
	Air pressure (70-106kpa)
Storage condition:	Temperature (-25~55℃)/humidity (10~95%)
	Air pressure (70-106kpa)

4. Diagram

4.1 Front Appearance



4.2 Back appearance



5. Key Function

5.1 Appearance



5.2 Key function explanation

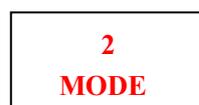


1) Choose currency

Press this key to come into currency choosing interface. Press direction button to choose the target currency and then press "START" to confirm and quit this interface. Showing as below picture:



2) Under data inputting mode and sum batch mode , this key stands for 1.



1) Choose operation mode

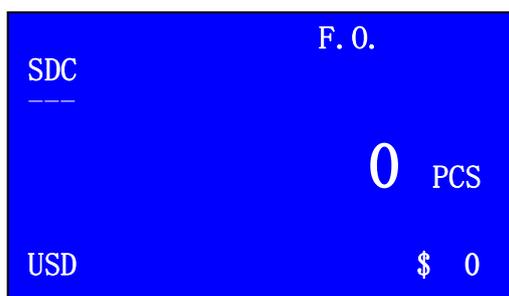
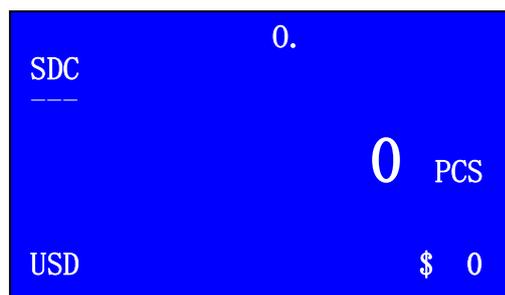
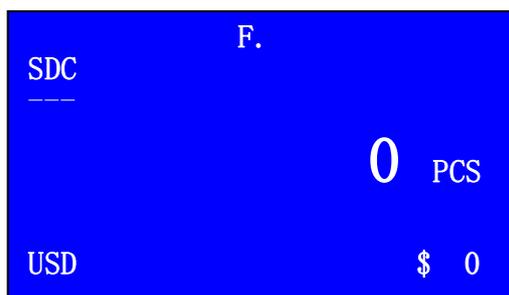
Press this key can choose three modes: MIX, SDC, CNT.

2) Under data inputting mode and sum batch mode , this key stands for 2.

3
FUNC

1) Choose face and orientation under SDC and MIX modes.

This key is used to do face sorting and orientation sorting under single denomination counting mode and mixed denomination counting mode. The machine will choose first note's face and orientation as standards, the notes with same direction will be sorted to stacker and the different ones will go to the rejected pocket .



2) Under data inputting mode and sum batch mode , this key stands for 3.

4
RECHECK

1) Check the details of stacker

This key can be used to check the value and quantity under MIX mode and SDC mode. Press this key after each counting you can check the detailed list of counted banknotes. If you need to clear the error code, please press CLEAR key or count another bundle of notes under non-accumulation mode.

2) If machine connects with external printer, you can press "START" key to print the list under this checking list interface.

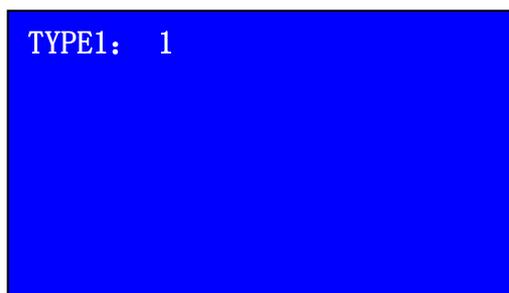
100X	0	
50X	00	
20X	00	
10X	00	
5X	00	
2X	00	
1X	0	
Total		0

3) Under data inputting mode and sum batch mode, this key stands for 4.

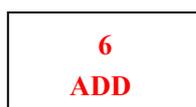


1) Check the details of reject pocket.

This key can be used to check all the detailed report of reject banknotes under different operation mode. If you need to clear the error code, please press CLEAR key or count another bundle of notes under non-accumulation mode.



2) Under data inputting mode and sum batch mode, this key stands for 5.

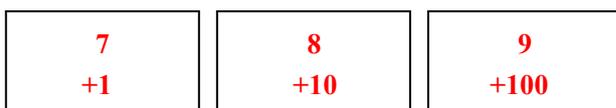


1) Accumulation function

If you turn on this function, the machine will accumulate the value and quantity of counted notes in different modes. If you turn off this function, the machine will clear the last counting data when machine counts each time. The machine will save the setting after you turn on the function.



2) Under data inputting mode and sum batch mode , this key stands for 6.

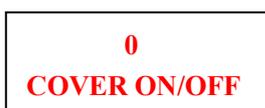


1) Batch function

Under batch mode, press these keys to set the batch quantity, the batch number will be increased by 1, 10 and 100 accordingly. Showing as below picture, the batch quantity is 199pcs notes.

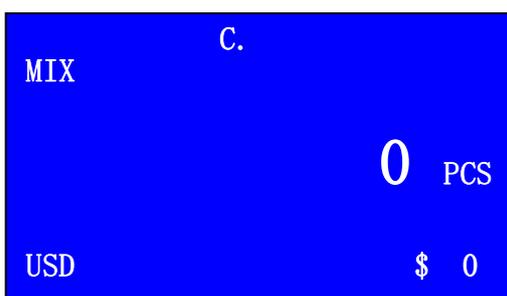


2) Under data inputting mode and sum batch mode , these keys stand for 7, 8 and 9.



1) Switch on/off the dust proof cover.

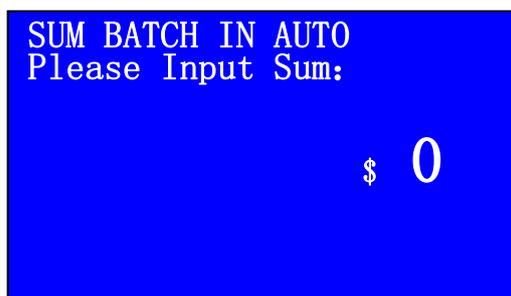
Press this key to switch on or off the dust proof cover under all the operation modes. The machine will save this setting after turn off, so if you turn on this function and do not turn it off, the dust proof cover function will be on under each counting mode. When the dust proof cover function is on, the display will show "C.".



2) Under data inputting mode and sum batch mode , this key stands for 0.



1) Under **MIX** mode, you can keep pressing this key to enter into sum batch interface.



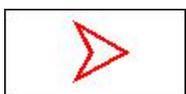
- 2) Move the cursor up.
- 3) Increase function level or increase data.



- 1) Move the cursor down.
- 2) Lower function level or decrease data.
- 3) Long pressing this button, you can enter into setting mode and adjusting mode.



- 1) When setting machine function, press this key to return to previous interface.
- 2) Under value batch mode, press this key to backspace



- 1) When setting function, press this key to come into next interface.
- 2) When setting function, press this key to save current setting.
- 3) When inputting data, press this key to move cursor.
- 4) Check S/N when the S/N reading function is on.



- 1) Clear the detailed information of counted notes in stacker. Clear the suspected notes information in reject pocket, value and quantity information. And clear the batch quantity.
- 2) When set the function, press this key to return the note counting interface.
- 3) Clear error code of machine, such as the error code showing on display when there is jamming.

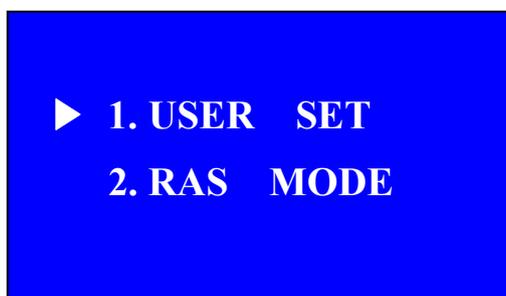


- 1) When counting notes, press this key to start the counting.
- 2) Press this key, then turn on the machine, you can come into the software upgrading interface.
- 3) Press this key to confirm.
- 4) Printing function. After finishing the counting, press RECHECK key to come into interface of detailed counting list, then press START key to print the list.

6. User setting

6.1 Enter setting interface

Turn on the machine, long press  key after machine finishes self-checking, you will come into setting interface as below with a beep sound:



Choose "1. USER SET" by pressing  or  key. Then press  key to come into setting interface.

6.2 User setting introduction

You could choose the options by pressing  or  key, and come into the target option setting by pressing  key. Press  key will quit from the previous menu. The explanations of setting function listed in the setting menu are as below:

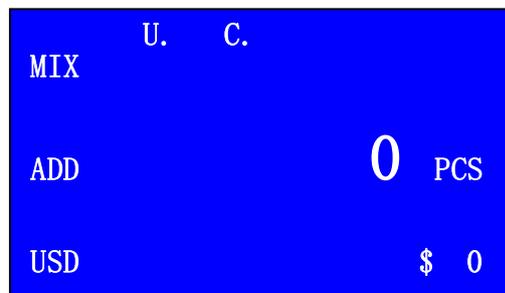
No	Setting function	Explanation	No	Setting function	Explanation
1	SAVE IMAGE	Image save setting	9	VERSION SORT	Version sorting or not
2	MG LEVEL	Level setting of side MG sensor	10	LCD ADJUST	LCD brightness adjustment
3	UV LEVEL	Level setting of UV	11	TIMER SET	Time setting
4	MT LEVEL	Level setting of metal thread detecting	12	BUZZER SET	Buzzer setting
5	DB LEVEL	Level setting of DB(double detecting)	13	SPEED SET	Speed level setting
6	OVD LEVEL	Level setting for optical variable strip	14	S/N READ	S/N reading
7	DMG LEVEL	Damage level setting	15	INFORMATION	Version No. checking
8	IR LEVEL	IR image detecting level	16	RESET	Coming back to default setting

The 1st item SAVE IMAGE refers to image saving set, this can help analyze the scanned image of counted note. Detailed operation steps are as follows:

- 1) Turn off the machine, then insert the USB to the port.
- 2) Turn on the machine, there will be a sign of "U." on the LCD screen.

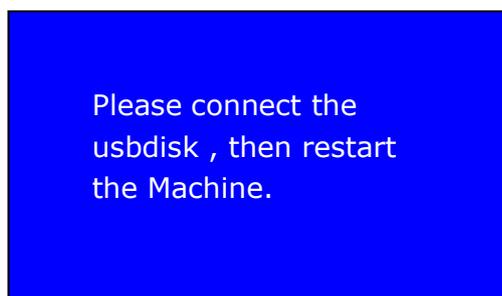


Insert the USB



After turning on the machine

- 3) Enter setting mode, press ,  key to choose "1. SAVE IMAGE", and then press  key to enter the following interface, If the USB is not inserted or well-connected, there will be following warning message on the display:



- a) **ERROR IMAGES:** These images are for rejected notes with the error code of **TYPE1, ORT-UNKNOWN, OVD and IRIMAGE.**
- b) **ALL IMAGES:** These images are for all counted notes.
- c) **OFF:** To turn off the image scanning save function. (Factory default set is off)

4) Press ,  key to choose your wanted image, and press  key for saving the image, the display will show "OK!" and then return to normal working interface.



Image saving is successful

5) Load the notes on the hopper for counting, the machine will save the previous image setting after counting. If you choose ERROR IMAGES or ALL IMAGES, the machine will enter the following interface for image saving:





Image saving interface

6) The saved images will be stored in the files with the name of ERROR and ALL. When you first time insert the USB, it will create automatically these two files.

7) Take out the USB, and connect it with the PC, you can check the saved images for analysis.

Notes: ①For each time image saving, the previous saved images will be replaced by new images. Therefore, after each time saving, you need to copy the files out first.

②Please do not save too many images one time as the space is limited.

③If you insert USB before turn on the machine, "SAVE IMAGE" will be replaced by "ERROR IMAGE".

Item 2~8 is to set the level of all detecting function. The higher the level is, the more sensitive it is. Usually these are default setting functions. If you need to adjust, please enter each interface by pressing  key. Then increase or decrease the level setting by pressing  or  key. After finishing the setting, press  key to save the setting, press  key to exist the previous interface. When the display shows "OK! ", it means the setting is saved successfully. Below is the IR level setting interface:



IR level setting interface

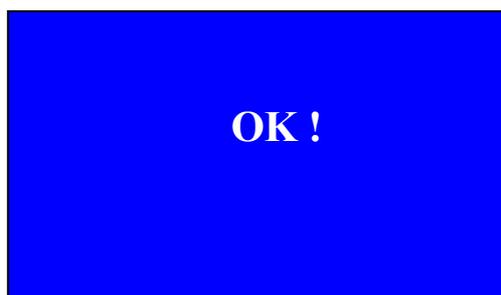


Saving successfully

Item 9 "VERSION SORT" is the note version setting function. There are old and new version notes in some countries. We can sort the different version notes by this function. Press  key to come into the interface. Choose "1. ON" or "2. OFF" by pressing  or  key. After finishing the setting, press  key to save the setting, and then press  key to exist the previous interface. When the display shows "OK!", it means the setting is saved successfully.

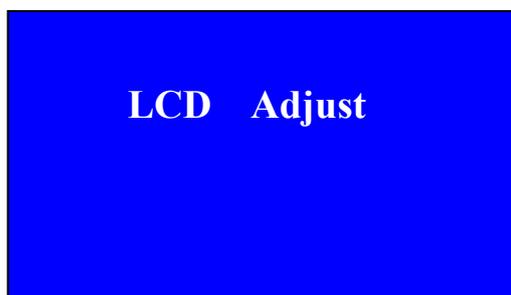


Version sorting setting interface



Saving successfully

Item 10 "LCD ADJUST" is to adjust LCD brightness. Press  key to come into the interface showing "LCD Adjust", and then press  or  key to adjust the LCD brightness, and it will change accordingly. Press  key to save the setting. Press  key to exist the previous interface. When the display shows "OK! ", it means the setting is saved successfully.



LCD brightness adjusting interface



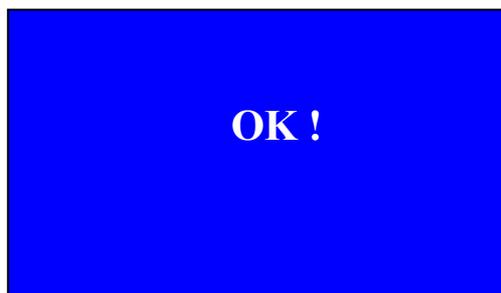
Saving successfully

Item 11 "TIMER SET" is time setting function. LCD showing the current time, you can press  or  key to choose "year, month, day, hour and

minute”, then press  or  key to set detailed data. After finishing setting, press START key to save and return.



Time setting interface



Saving successfully

Item 12 “BUZZER SET” is to set buzzer. When there is error, turn on or off the buzzer. Press  key to come into interface. And press  or  key to choose “1. ON” or “2. OFF”. Press  key to save the setting. Press  key to return to the previous menu. When the display shows “OK!”, it means the setting is saved successfully.

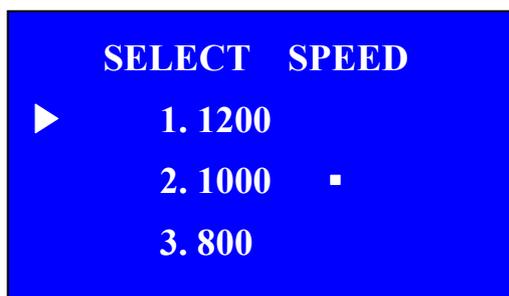


Buzzer setting interface



Saving successfully

Item 13 “SPEED SET” is to set the machine working speed. The data in below picture means the note quantity that machine can count per minute. Press  or  key to choose your target speed. Press  key to save setting. Press  key to return to the previous interface. When the display shows “OK!”, it means the setting is saved successfully.



Speed setting



Saving successfully

Item 14 "S/N READ" is for serial number reading. Press  key to enter and then press ,  key to choose "1. ON" or "2. OFF", press  key to save and press  key to exist. The LCD will display "OK!" when saving is successful.



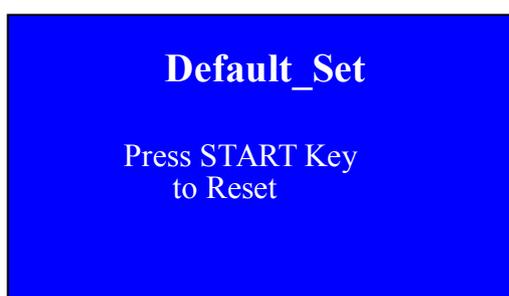
S/N read interface



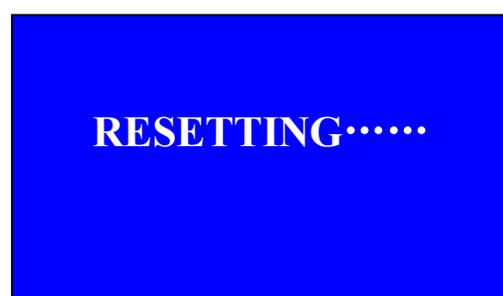
Saving successfully

Item 15 "INFORMATION" is to check the version. Press  key to enter and check the machine version information. Press START key to return to the previous menu.

Item 16 "RESET" is to return the machine to default setting. If need, please press START key, then display will show "RESETTING...". It will take several seconds to finish, then display will show "OK!" and return to previous menu. If don't need to reset, press  key to return to the previous interface.



Default setting



Resetting

6.3 Notice of placing the banknotes

- Please do not count wet or poorly damaged or broken or distortional notes, otherwise it will cause jamming.
- Before count, please check if the banknotes have stitching needle, rubber band or coins mixed, these stuff also lead to counting failure or jamming.
- Please loose the bundled banknotes before counting, otherwise it will cause jamming.
- Loose the banknotes and put them orderly to the hopper.



Wrong putting



Right putting

6.4 Left and right note guide adjustment

In order to make sure machine can sort notes more smoothly, when using machine, please adjust the distance between left note guide and right note guide according to the note length as below pictures:





6.5 Feed gap adjustment

The proper feed gap can make counting smooth, so before machine sent out from factory, we already set the feed gap for users. But after long time use, there will be wearing in feeding parts or the feed gap knob is loose then the feed gap is changed, so the counting will be effected too.

Generally speaking, when the feed gap is too big, it is possible that many double notes, chained notes will be detected so there will be a lot of mis-rejection. When you check the error message, there are many error codes like GAP and LONG, which means the feed gap is too big. At this moment you need to use proper tools(such as coin)to adjust the feed gap screw clockwise a little slowly, then count the notes again, until the rejected genuine notes quantity is very few.

When the feed gap is too small, also many genuine notes will be rejected to rejected pocket and the error code is mostly ORT and TYPE1, which means the feed gap is too small and needs to be adjusted. At this moment please use proper tools to adjust the feed gap screw anti-clockwise a little slowly, then count the notes again until the rejected genuine notes quantity is very few.



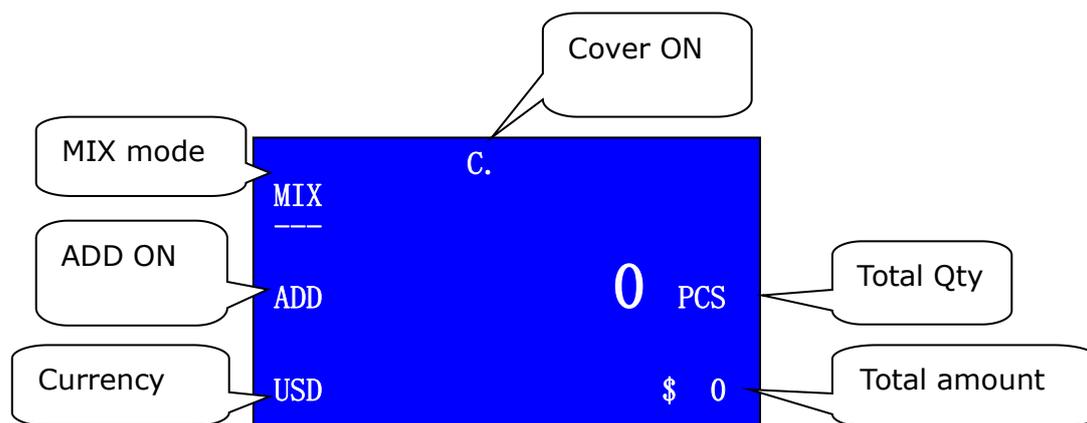
7. Operation Modes

Connect the machine with power supply and switch it on, the machine starts to initialize and self-check. After finishing the self-checking, the machine will enter working interface. Press MODE key can shift the operation modes into MIX, SDC & CNT counting mode.

7.1 MIX mode (mixed denomination counting)

Under this mode, the machine will count together different denominations of one currency and at the same time checking notes.

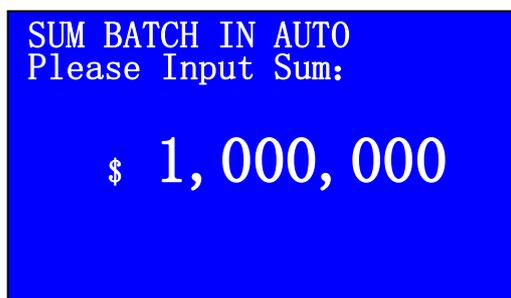
Under this mode, the machine has MG detection, UV detection, double detection, and image detection. Suspected notes will be sorted to reject pocket, you can put the suspected notes into hopper again. If the note is rejected 2 times, you should press REJECT to check the detailed information.



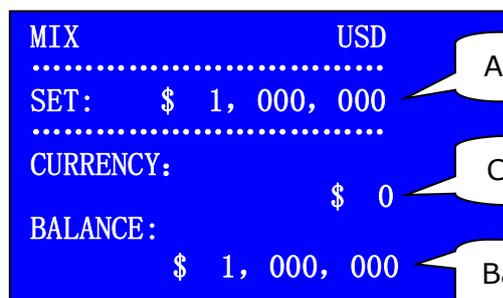
MIX mode

Under this mode you can press ADD key to accumulate the quantity and value.

Under this mode you can set value batch. Long press  key to enter the setting interface. By pressing  to enter amount batch setting interface and by pressing  key to exist the amount batch function. You can set the amount number by pressing +1,+10,+100.



Amount batch setting interface

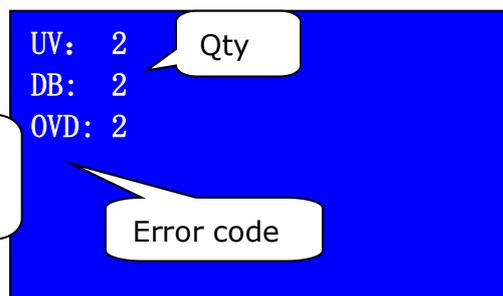


Amount batch counting interface

After counting, you can get the final counting result list by pressing RECHECK key.



Counting result list interface



Reject reason interface

Under this mode, press FUNC key could initiate face and orientation sorting function. According to different putting way, we definite total four directions as follows:



Face A



Face B

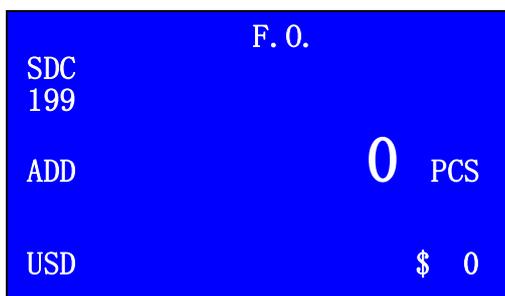


Face C

Face D

Press FUNC key one time, there will be a sign of "F." to show face sorting function is on. The machine will sort the same face notes into stacker and the different into reject pocket. The sorting rule is based on the 1st note. For the rejected notes, the machine will display error code of FACE-ERROR.

Press FUNC key again, there will be a sign of "O." to show orientation sorting function is on. The machine will sort the same orientation notes into stacker and the different into reject pocket. The sorting rule is based on the 1st note. For the rejected notes, the machine will display error code of ORT-ERROR.



Face & Orientation sorting functions are ON

Under this mode, if S/N reading function is on, after counting the notes, press  key could check the notes serial number. Each time will show 200 serial numbers at most. Press  &  key to check each S/N. The S/N record will be updated each time.



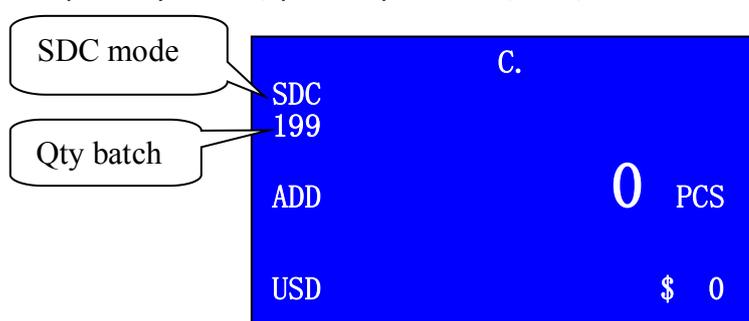
7.2 SDC mode(single denomination counting mode)

Under this mode, the machine will count only one denomination and at the same time checking notes. Different denomination notes will be rejected to the reject pocket, the sorting rule is based on the first note that goes to the stacker.

Under this mode, the machine has MG detection, UV detection, double detection, and image detection. Suspected notes will be sorted to reject pocket, you can put the suspected notes into hopper again. If the note is rejected for 2 times, you should press REJECT to check the detailed information.

Under this mode you can press ADD key to accumulate the quantity and value.

For quantity batch, please press +1,+10,+100.



SDC mode

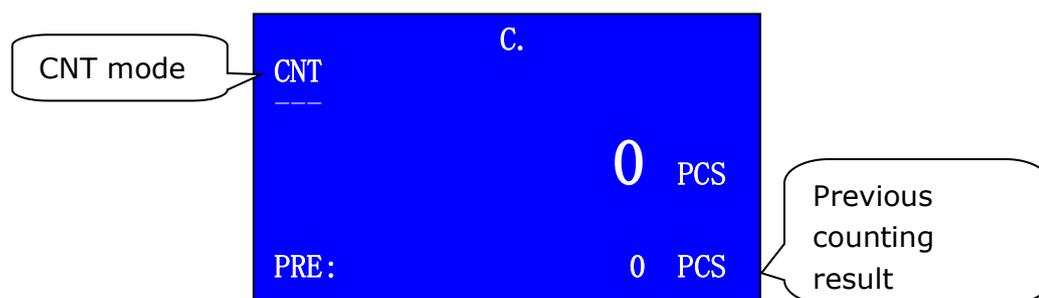
Press RECHECK key, you can check the detailed counting result list.

Under this mode, press FUNC key to sort the notes by face or orientation, same as MIX mode.

7.3 CNT mode(counting)

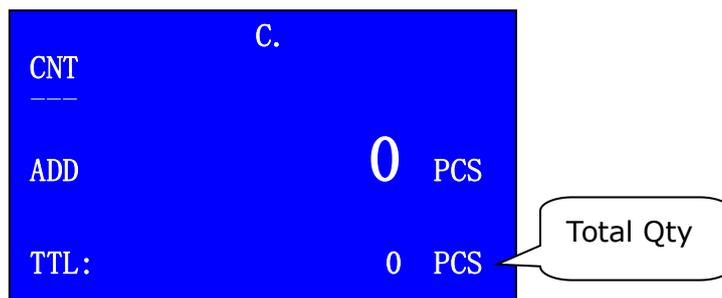
Under this mode, the machine will only count quantity of notes and detect the notes in simple way. Suspected notes will be sorted to reject pocket, you can put the suspected notes into hopper again. If the note is rejected for 2 times, you should press REJECT to check the detailed information. There will be a blinking RJ signal showing on the LCD display.

You can set quantity batch number under this mode by pressing +1 or +10 or +100. For example, if you set 10pcs, it will display 10 under CNT.



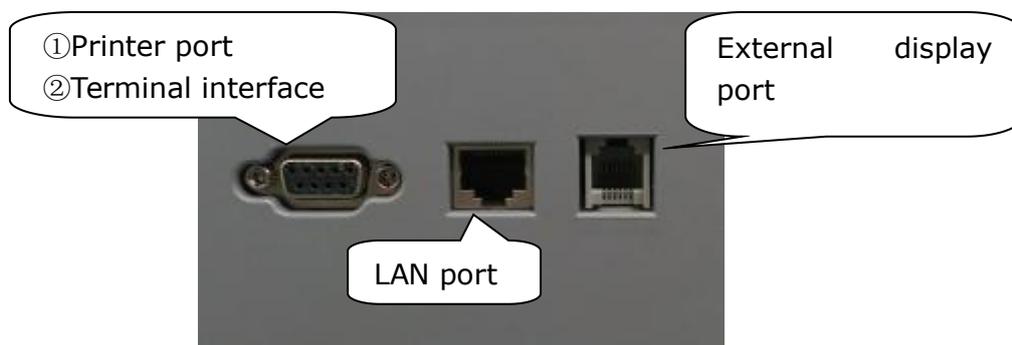
CNT mode

Under this mode, you can press ADD to accumulate the quantity.



ADD mode

7.4 Use of external port



Printer port: This is for connecting external printer. Under MIX or SDC mode, by pressing RECHECK key, you will enter the final counting result list interface. You can print the list by pressing START key.

Terminal interface: This is for connecting PC to manage data.

LAN port: This is not available at present.

External display port: This is for connecting external display. It can display the counting result synchronously with the main LCD display. To ensure normal working of the external display and machine, please turn off the machine before you disconnect or reconnect the external display.

8. Troubleshooting

During use of machine, sometimes you may meet some abnormal situation and the machine can not work normally, and the machine will display error messages. The following sheet shows the error message, possible reason and detailed solution. Please do trouble shooting according to the following solution. If you can not solve the problem with the provided solution, please contact your local distributor.

8.1 Error code

When there are suspected notes, please press REJECT key, it will display the detailed rejecting reason of the suspected notes. The definition of error code is as follows:

Error code	Description	Error code	Description
MT	Abnormal middle MG is detected	ORT-UNKNOWN	Image is not recognized or wrong denomination
MG Value	Abnormal MG intensity is detected	TYPE3	Image is recognized without counting
MG MP	Abnormal MG location is detected	TYPE2	Wrong note version is detected
HALF	Half note is detected	OVD	Abnormal OVD is detected
DB	Double note is detected	ANGLE	Abnormal image angle is detected
UV	Abnormal ultraviolet is detected	FULL	Stacker is full
IR	Abnormal IR is detected	IRMT	No security thread
GAP	Feed gap is too small	TYPE1	Image is not recognized or wrong currency
LONG	Wrong width or chained notes is detected	HOLE	Hole is detected
SHORT	Wrong length notes is detected	DIRT	Soiled note is detected
FACE-ERROR	Wrong face is detected	IRIMAGE	Wrong IR image is detected
ORT-ERROR	Wrong orientation is detected		

Sometimes, if the notes are stuck with foreign things, it will disturb the machine's judgment. Therefore, for accurate judgment, please count the suspected notes more than one time. If the notes are always rejected, then find the reason referring to the above information.

8.2 Error display

Error display	Solution
No display after the machine is switched on.	Check the power code connection
	Check the fuse
Display error codes(PS1L/PS1M/PS1R CNTL/CNTM/CNTR/RJCNT) after the machine is switched on.	1) Reconnect the machine's inner part. 2) Take out the jammed notes or foreign things. 3) Clean the sensors.
STACKER FULL	Take out the notes on stacker.
REJECT FULL	Take out the notes on rejected box.
Display NOTES IN STACKER	Take out the notes on stacker.
Display RJStacker	Take out the notes on rejected box.
Display PS3 JAM, PSCIS JAM	Take out the jammed notes or foreign things.

Notes: If the notes get jammed during counting progress, there will be a sign of "JAM" displayed on the LCD screen. You need to take out the jammed notes firstly and then press START key to check if there is still hidden jammed notes. Last, press CLEAR key to clear warning message. If the machine still displays "JAM", you will need to open the machine and take out the notes from interior passage.

Once jamming happens, please recount the notes to avoid counting mistake.

9. Software Upgrade

This model adopts flash drive (USB) upgrading method for software upgrade. Please copy the upgrading file into the flash drive, and insert the flash drive into the USB port at the back of machine. Hold on pressing the START key, and then turn on the power switch, you will find the choosing interface as follows:



Insert the USB



Choose the upgrading item

9.1 MAINBOARD upgrading

If you want to upgrade the main board on main control PCB, please press the key  or  to choose "**1.MAINBOARD**", then press the key  to confirm you choice. Five seconds later, press the key START enter into the upgrading status.



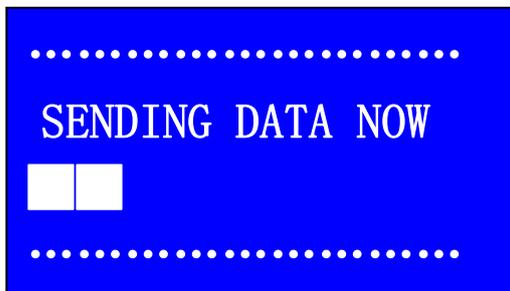
Upgrading interface

The above procedure usually can be finished within 60s and end up with a beep sound. If it does not finish after 60s, please turn the power off and repeat the previous operation steps. If still not succeed, please check if the flash drive (USB) inserted well or if the upgrading file in the flash drive is correct or not.

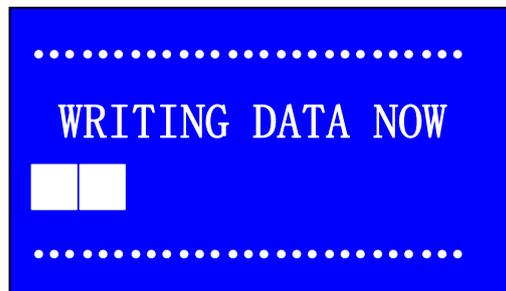
9.2 IMAGEBOARD upgrading

If you want to upgrade the image board software on main control PCB, please press the key  or  to choose "**2.IMAGEBOARD**", then press

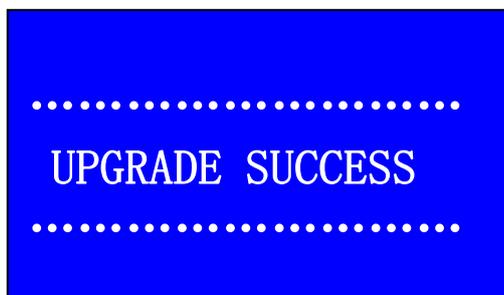
the key  to confirm. Five seconds later, press the key START to enter into the upgrading status. Usually the image board upgrading procedure can be finished within 4 minutes, and after upgrading, the machine will start self-checking.



Last about 2mins



Last about 1.5mins



Upgrading finishes

Notes: If the upgrading procedure does not finish after 4 minutes, please turn the power off and repeat the previous operation steps. If still not succeed, please check if the flash drive (USB) inserted well or if the upgrading file in the flash drive is correct or not.

10. Daily Maintenance

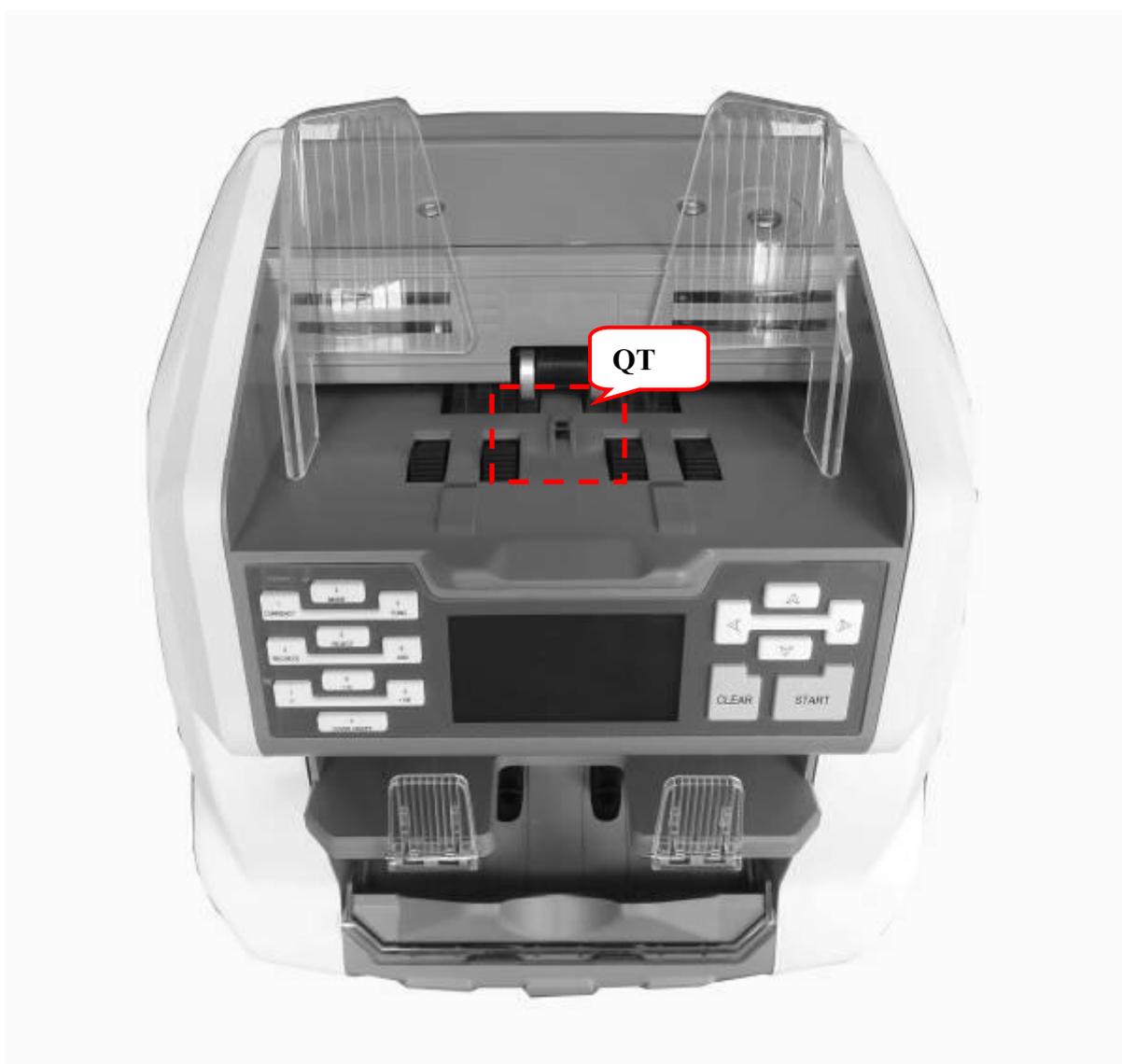
Any dust, dirty objects or other substances can stick to the sensors and

disturb the normal work of the sensors and then cause inaccurate counting result, so please clean the sensors and rollers everyday with the provided cleaning kit.

Please turn off the power switch before starting the cleaning in order to avoid any risk of electric shock or other injury.

Please do not use any chemical agent or water such as benzene, thinner which may cause the color fading or crack of the machine.

1. Please use a piece of cleaning cloth or nylon brush to clean the hopper sensor(QT).



2. Please use a brush or a piece of cleaning cloth or nylon brush to clean the drum roller and friction roller.



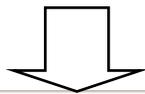
3. Please use a piece of cleaning cloth or nylon brush to clean the sensor (FL1).



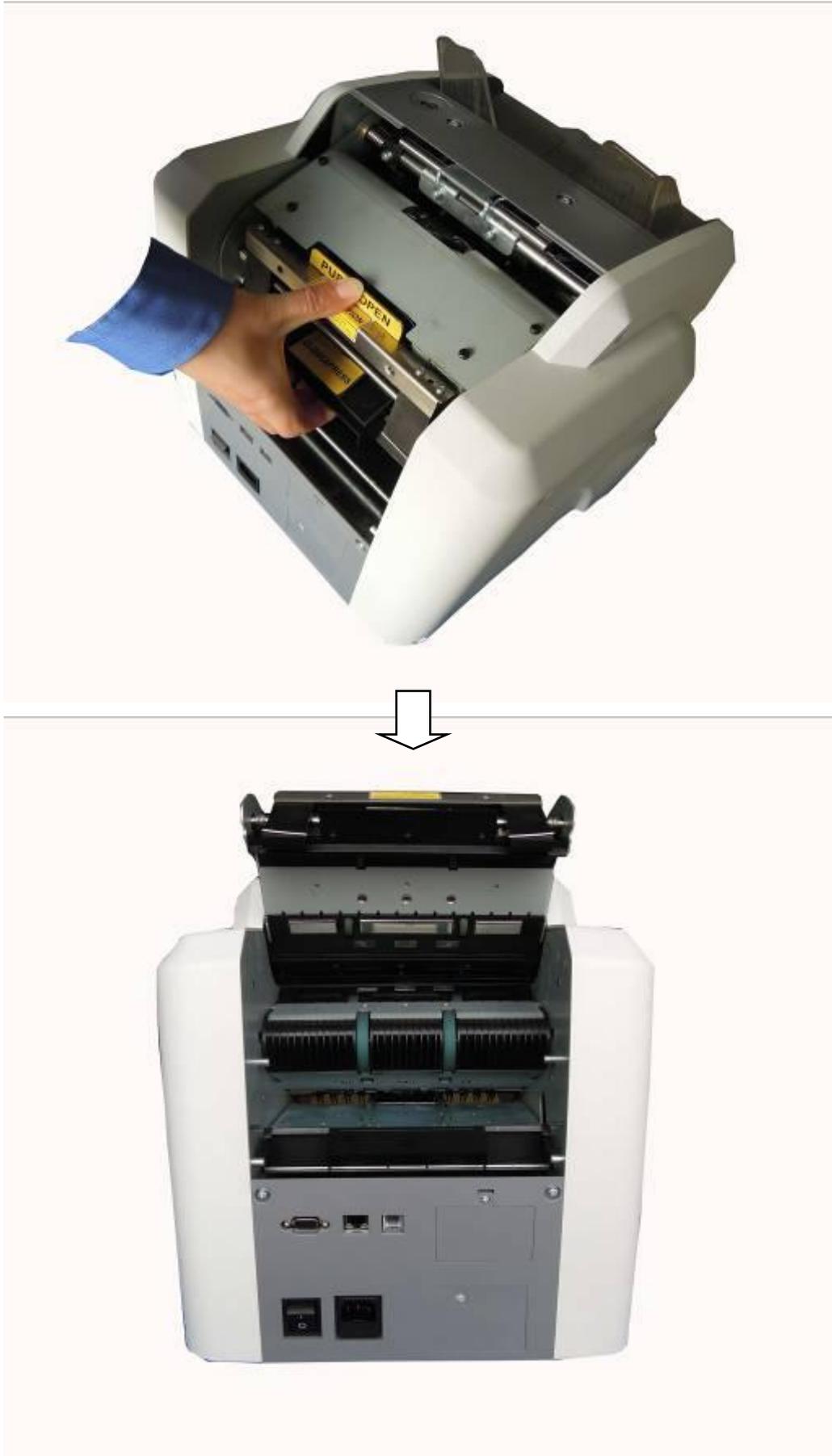
4. Clean the sensor inside the passage.

1) Pull the back cover key towards the direction of the following picture shows to

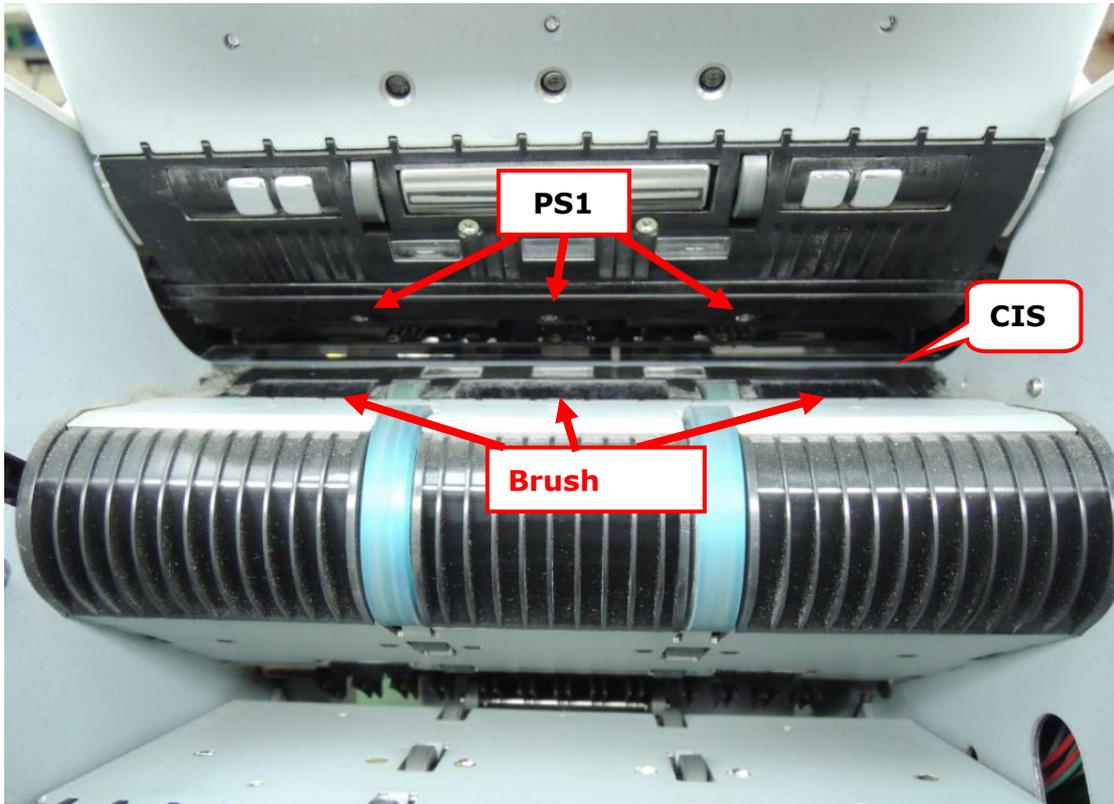
open the back cover.



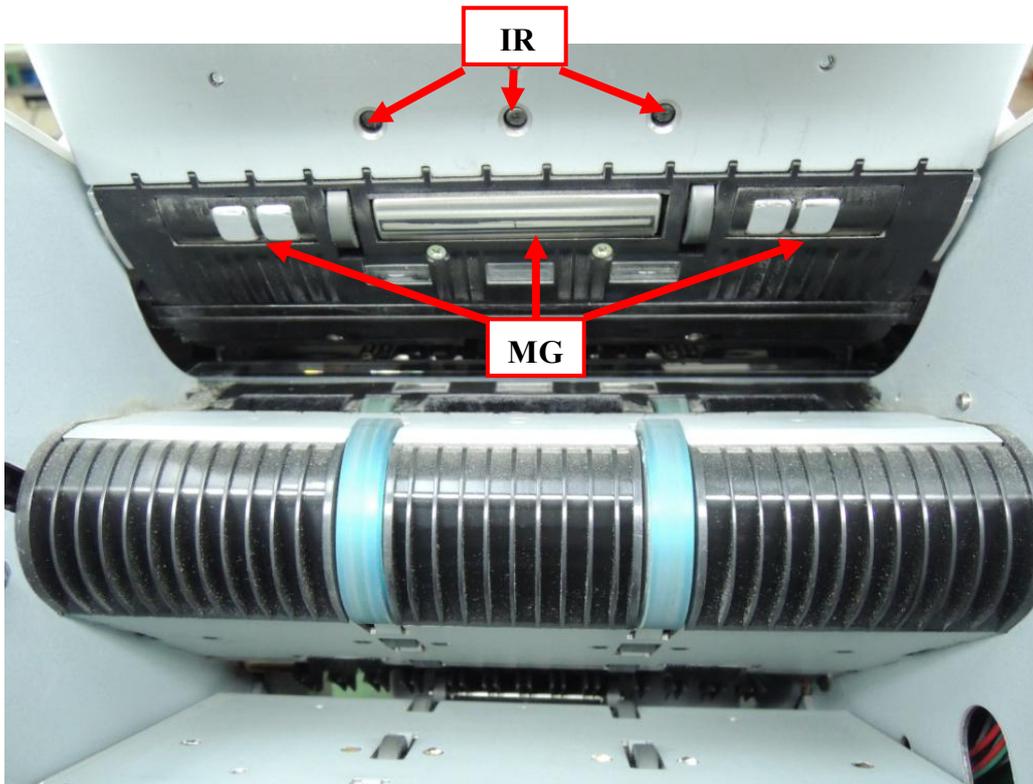
2) Press and push forward the metal bar to open the interior passage.



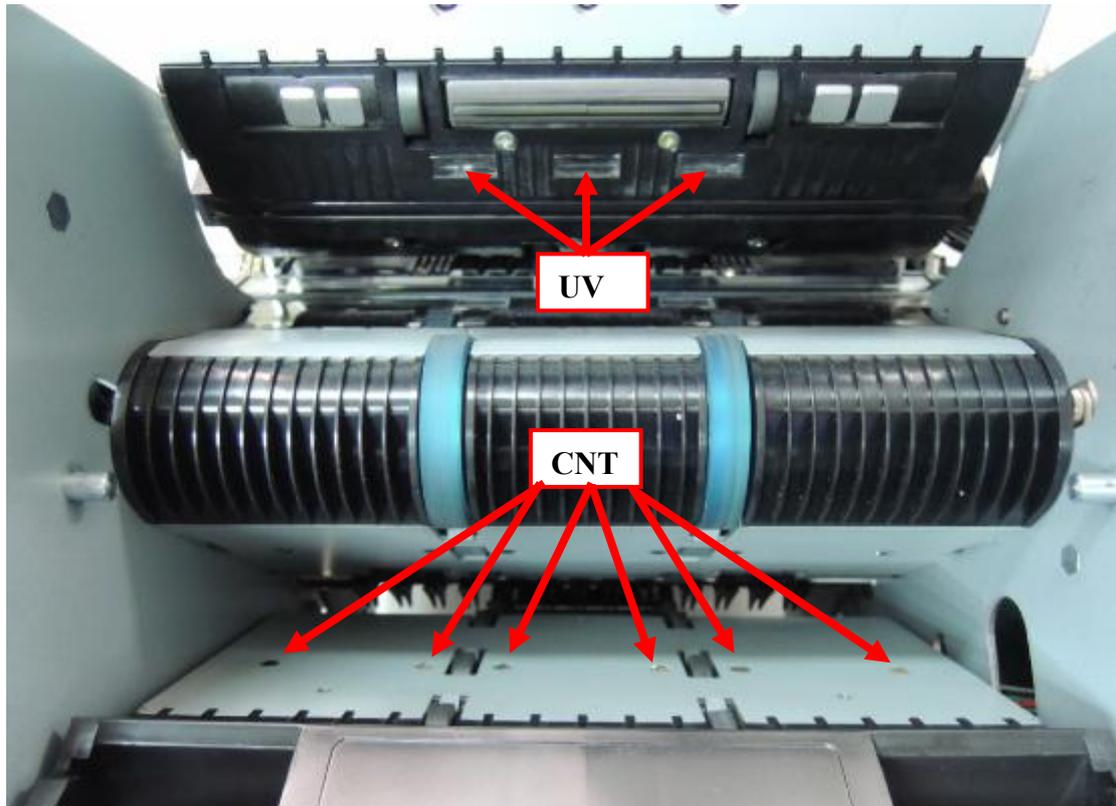
3) Please use a piece of cleaning cloth or nylon brush to clean the sensor as following picture shows, including the front alignment sensor(**PS1**), image sensor(**CIS**) and brush roller.



4) Please use a piece of cleaning cloth or nylon brush to clean the MG & IR sensor.



5) Please use a piece of cleaning cloth or nylon brush to clean the sensor as following picture shows, including **UV** sensor and back alignment sensor(**CNT**).



Accessories

1. Power Cord	1PCS
2. Nylon Brush	1PCS
3. Operation Manual	1PCS
4. External Display (Option)	1PCS
5. External Printer (Option)	1PCS

**** In the interests of our policy of continual product improvement, specifications are subject to change without notice ****