Magner S1500C
User Manual

Magner International Corporation

Preface

Dear users:

Welcome to use the Banknote sorter produced by Magner International. This series of product applies to the counting, sorting and counterfeit detection of different currencies, and it has the functions of Banknote serial number scanning, recording, enquire and data management.

Please read this operation manual carefully before use and operate according to the requirements to ensure the product work normally.

Notes

This product is used to sort and count the Banknotes.

In no events will MAGNER be liable for the damages caused by any other party without MAGNER's permission or any other purpose, including damages due to use the product for purposes not stated above, changes made by the person outside MAGNER or non-authorized dealer of MAGNER.

Please consult the authorized dealer or sales representative if you need to install or transport the product.

- **This product is used to sort and count the Banknotes stated in the specification list.**
  Please don't use this product for other purposes.

- **This product can only be used in corresponding countries or areas.**
  Due to the difference of power specification and safety standards, this product cannot be used in other countries or areas.

- **The item recorded in this manual may change without prior notice. Thanks for your understanding.**

- **Our company is improving the product quality with unremitting efforts.**

Therefore, the actual product may differ from the description in this manual.

- **MAGNER is not responsible for the infringements of the patent or other rights of the third party occur due to the use of materials in this manual.**

- **MAGNER is not responsible for the loss caused by the damages, deterioration and stealing of Banknotes, either for the compensation caused by the criminal acts like counterfeit, adulteration, destruction, etc.**

- **Forbid copying the contents in this manual for the purpose of making a profit.**

- **If the user changes or modifies the product arbitrarily without clear authorization of our company, then the user will lose the right to claim warranty of the product.**

- **This is A-level product. In our living environment, this product may cause radio interference, under which condition the user needs to adopt practical measures.**

Contents

1. Safety cautions 1
1.1. Warning symbols and explanation 1
1.2. Safety cautions before use 1
1.2.1. Installation 1
1.2.2. Power 2
1.2.3. Operation 3
1.2.4. Maintenance 3
2. Instruction before use 4
2.1. Installation 4
2.2. Name and function of each part 5
2.2.1. Front appearance 5
2.2.2. Back appearance 5
2.2.3. Banknote hopper 6
2.2.4. Banknote stacker 6
2.2.5. Explanation of operational key and LED display indicator light 7
3. Daily operation 8
3.1. Cautions 8
3.2. Methods to put in the Banknotes 8
3.3. Basic operating steps 9
3.4. Functions of home page 12
3.5. Menu function — basic 15
3.5.1. Switch user 15
3.5.2. User 15
3.5.3. Statistics 16
3.5.4. Version information 17
3.6. Menu function — advanced (administrator privileges) 17

3.6.1. Sort setting 18
3.6.2. Function settings 22
3.6.3. System setting 23
3.7. Mode selection 24
3.8. Method for opening/closing each part 25
3.8.1. Top cover 25
3.8.2. Back cover 26
3.8.3. Dust collecting box 27
4. Routine maintenance 28
4.1 Clean Banknote hopper and identification sensor 28
4.2 Clean the sensors in reject pocket / stacker 29
4.3 Clean the paper output path 29
4.4 Clean the back device path 30
5. Troubleshooting 31
5.1 Error code list 31
6. Others 32
6.1 Product specification list 32
6.2 External interface settings 35
6.2.1. USB Interface (Device) 36
6.2.2. USB interface (Host) 36
6.2.3. Ethernet Interface 37
6.2.4. Serial interface 38
6.2.5. Power interface 39

1. Safety cautions

This section introduces the relevant items that should be abided by during safely operation of this product, in order to avoid bringing damage to your body and property.

Please read this manual carefully before use and operate the product correctly.

1.1. Warning symbols and explanation

The meanings of each iconic symbol are as follows:

Forbid operating item.

Items should be pay attention to while operating the product.

1.2. Safety cautions before use

1.2.1. Installation

When installing and moving this product, please contact with our sales representative or authorized dealer. If the product isn't installed correctly, then there is risk of overturning, electric shock, fire or burning.

While installing and moving this product, please make sure that the bracket or the anti-overturning fixture used for fixing is installed correctly. Otherwise it will lead to accident.

While installing and operating the product, please reserve enough space to ensure that the cover can open and close freely.

Please avoid installing the Banknote sorter at the following places:

- Away from volatile combustible matter or curtain within 1 meter.
- Away from heating appliances like electric heater, electric radiator, etc. within 1 meter.
- Place exposed to direct wind like air-conditioner, ventilator scoop, etc.
- High-temperature, moisture, low-temperature.
- With long-time direct sunshine.
- With much dust.

Forbid pressing or impacting, for example, place heavy object or liquid on the equipment.

1.2.2. Power

Please don't remold, dispose or maintain the power cables and the power plug arbitrarily. Furthermore, please don't replace the three-pole power plug with double-pole power plug.

Please abide the following items in order to avoid the electric shock or fire caused by damage of power cables.

- Please don't drag the power cables while pulling out the power plug.
- Don't place any object on the power cable.
- Don't let the power cables pass across the heat source.
- Don't bend or squeeze the power cables.
- Don't trample or twist the power cables.
- Don't spill the chemical materials onto the power cables.
- Don't tie up the power cables while using.
- Don't fix it with stapler.

1.2.3. Operation

Please operate the Banknote sorter in the environment stipulated in this manual; otherwise, it may cause fire and electric shock.

During the process of operating the product, please don't turn off the power, pull out the power plug or open the cover plate of Banknote sorter.

Please don't miss the paper clip and the staple inside the Banknote sorter or in the gap in order to avoid their contacting with circuit and thus leading to fire.

Please remember to turn off the power when needing to contact the inside of machine for check with fingers.

Forbid contacting the LCD and button with sharp materials like ball pen, nail, etc.

1.2.4. Maintenance

Please contact with our sales representative or authorized dealer.
If the maintenance is not thorough, then it may cause fire, electric shock or hurt.

When smoke, peculiar smell and abnormal noise occur to the Banknote sorter, please stop using it immediately, turn off the power, pull out the power plug from the socket and then contact with our sales representative or authorized dealer.

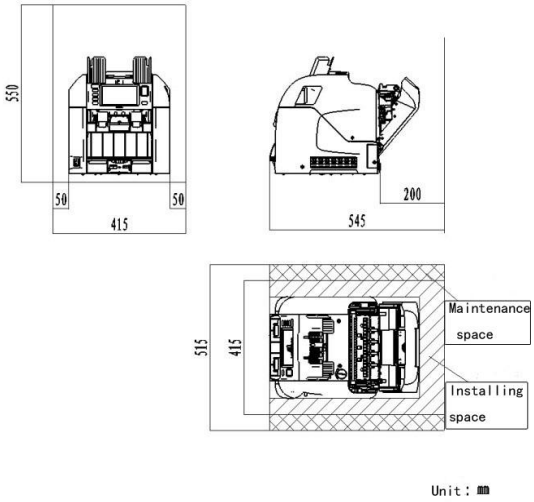
Please check and clean the power plug and the power cables regularly.
When power plug or power cable has been damaged, please stop using the Banknote sorter and contact with nearby dealer for change.

2. Instruction before use

2.1. Installation

If you need to install the Banknote sorter, please contact with nearby point of sale or our designated dealer.

- This product is designed for internal use; please don't install it outside the room.
- Please don't install the Banknote sorter at the place that cannot bear the weight of it and either install the Banknote sorter at a slanting or uneven place.
- Please install the Banknote sorter at a place that can do daily management sufficiently.
- Please reserve adequate operating space for filling of banknotes and opening or closing of cover plate, and also the space for maintenance.



2.2. Name and function of each part

2.2.1. Front appearance

2.2.2. Back appearance

2.2.3. Banknote hopper

2.2.4. Banknote stacker

2.2.5. Explanation of operational key and LED display indicator light

- **Operational key:**

The Banknote sorter has five operational keys,

, corresponding with the five function buttons in the home page, that are, “MENU”, “MODE”, “ADD”, “CLEAR”, “START/STOP”.

The physical buttons are effective when the machine is in the home page.

- **LED display indicator light:**

1) The LED display indicator light is green when powering on the Banknote sorter.
2) When counting the banknotes, the LED display indicator light will be red when banknotes are returned in the reject pocket.
3) After removing the banknotes at the reject pocket, the LED display indicator light will come back to green.

3. Daily operation

3.1. Cautions

- Please don’t handle wet or heavily polluted banknotes.
- Please don’t handle broken or severely wrinkled banknotes; otherwise banknote jamming will occur.
- Please confirm whether there are sundries, pin, stitching needle or rubber band attached on the banknotes; otherwise malfunction or banknote jamming will occur.
- Please scatter the new banknotes and then put in; otherwise banknote jamming will occur.

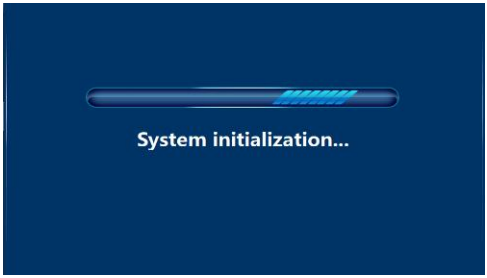
3.2. Methods to put in the Banknotes

- Please straighten the banknotes completely, align them and put them in vertically (place them at the inner side).
- Please put in the banknotes according to the direction shown in the following figure.

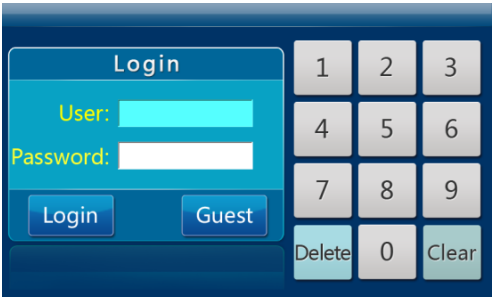
3.3. Basic operating steps

1. Turn on the power

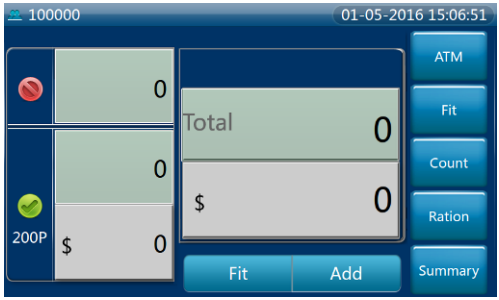
- Start initialization automatically. The system will enter initialization page, see the following figure:



- After the system finishes the initialization, the Banknote sorter will skip to login page automatically:

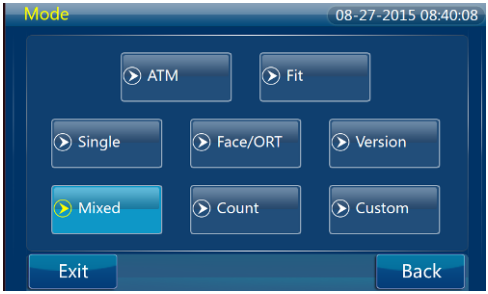


- Input the user account and the password, then click “Login” to skip to home page:

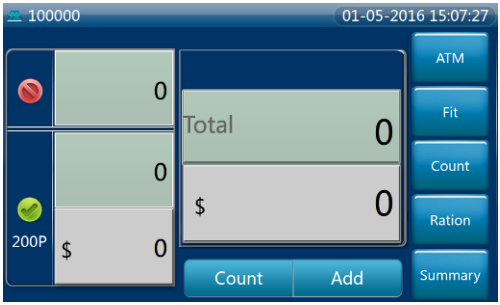


2. Select counting mode

- Click the “MODE” button on the right side to enter the page of mode selection as following:



- Select the needed mode. For example, click “Count” button and then click “Exit” or “Back” button, the page will skip to home page, and the mode at the home page will become to the count mode.



3. Start counting

Place the banknotes needing to be counted on the Banknote hopper, then the Banknote sorter will start counting automatically.

The page will update the number of banknotes synchronously.

During the process of counting banknotes, only the "START/STOP" button is effective.

Note: The Banknote hopper can maximum hold 500 pieces of banknotes. When the Banknote number is more than 500 pieces, please put them in separately.

4. Stop counting

The Banknote sorter will stop counting under the following conditions. Please operate according to the method of counting restart.

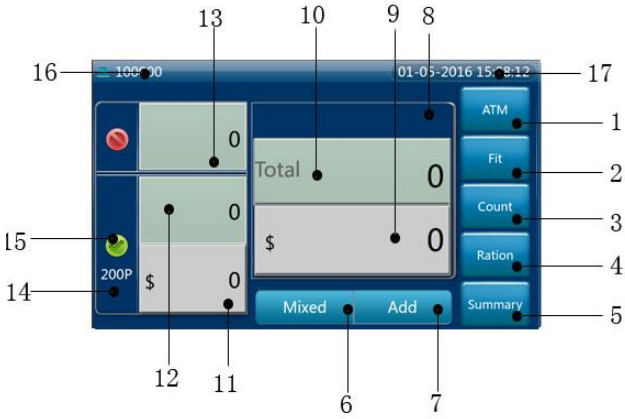
	Conditions for stopping counting	**Methods to restart counting**
1	The banknotes in the hopper have finished counting.	Place the banknotes inside the hopper.
2	When the banknotes in the stacker are full.	Take out the banknotes in the stacker/reject pocket
3	When the banknotes in the reject pocket are full.	
4	Errors occur.	Remove the errors, referring to the section of "Troubleshooting".
5	When the "PAUSE" button is pressed	Press the "START" button

	down.	again.

5. End (zero clearing)

Under the status of end counting, take out the banknotes from the stacker and press the “Clear” button to clear the data.

3.4. Functions of home page



Function explanation:

1. “ATM” button: click to enter ATM mode.
2. “Fit” button: click to enter Fit mode.
3. “Count” button: click to enter Count mode.
4. “Ration” button: click to enter Ration mode
5. “Summary” button: click to enter Summary mode
6. “Mixed” button: click to enter Mixed mode
7. “Add” button: Click to switch between the add/non-add mode.
8. Information prompting area: It is used to show the errors or the prompting information during the running of Banknote sorter.
9. Display area of total Banknote amount: It is used to display the

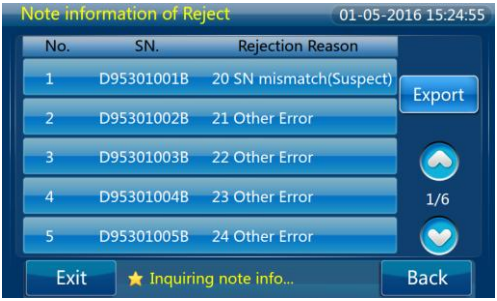
current amount of counted banknotes. Click this area to enter “Note statistics summary” page:

Note: It is not available under “Count” mode.

10. Display area of total Banknote number: It is used to display the current number of counted banknotes (excluding number of banknotes in the reject pocket). Click this area to enter “Note statistics summary” page. Note: It is not available under “Count” mode.
11. Display area of Banknote amount in stacker: display the current Banknote amount in stacker. Click this area to enter “STK1 note info” page:

Note: It is not available under “Count” mode.

12. Display area of Banknote number in Banknote stacker: display the current number of banknotes in stacker. Click this area to enter “STK note info” page. Note: It is not available under “Count” mode.
13. Display area of Banknote number in reject pocket: display the current number of banknotes in reject pocket. Click this area to enter “Note information of Reject” page:



14. Display area of batch in stacker: Display the batch value in stacker.
15. Display area of mark in stacker: green indicates Banknote stacker 1 is not full, red and flash indicates Banknote stacker is full. Click this area to enter “Mode” page:

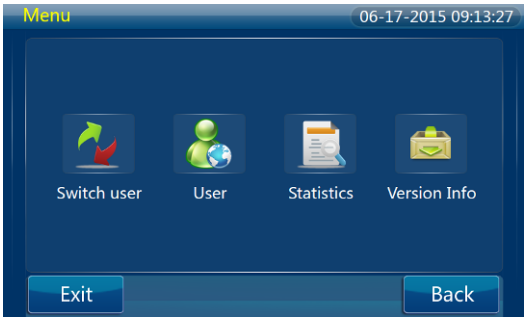
16. Display area of current logged user: It is void when a guest logs

in.

17. Display area of current system time: Display current system time.

3.5. Menu function — basic

Log in with the operator account or the guest account and click the "menu" button to enter the following page:



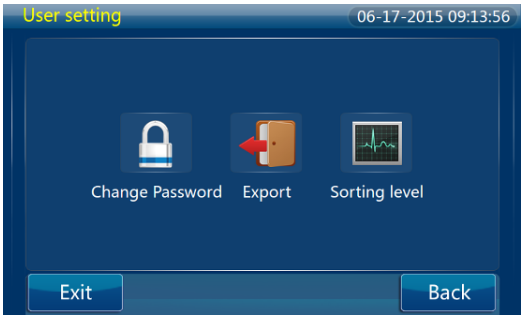
3.5.1. Switch user

Function: used to exit the current logged-in user and return to the login page.

3.5.2. User

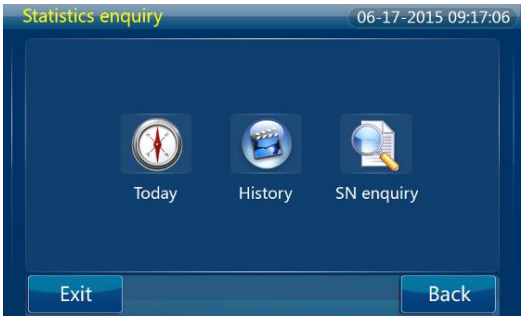
Function: function page for users like operator.

- Change password: change the current logged-in user's password.
- Export: export the FSN data.
- Banknote counting and sorting grade: After putting in one piece of banknote, the banknote sorter will display the upper and lower CS sorting grade information of the banknote.



3.5.3. Statistics

Function: enquire the statistical information according to different conditions.



- Today: enquire today's statistical summary information. Refer to the below figure:

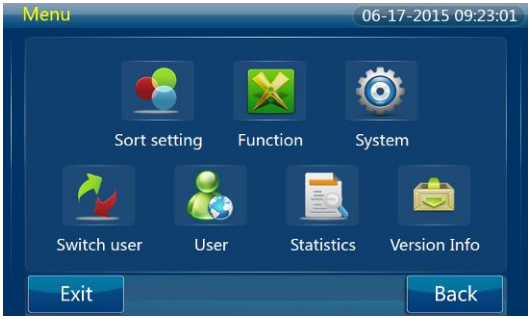
- History: enquire the statistical summary information according to the time. Same as above figure.
- SN enquiry: enquire the detailed Banknote information according to the serial number. Refer to the below figure: (SN function is optional.)

3.5.4. Version information

Function: enquire the machine model and version information of the inside programs.

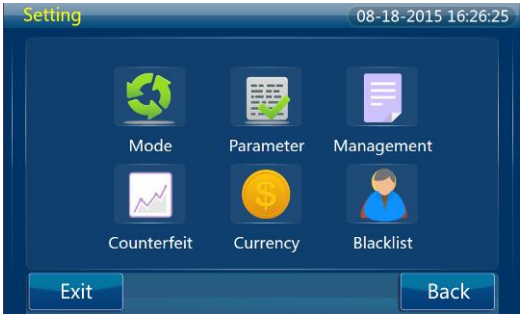
3.6. Menu function — advanced (administrator privileges)

Log in with the administrator account and click the "menu" button to enter the following page:



3.6.1. Sort setting

Function: Set the sorting mode, sorting parameters, parameter management, counterfeit grade, currency type setting and blacklist management.



- Mode: used to set the detailed parameters for the 8 sorting types, e.g. the user-defined mode is as following:

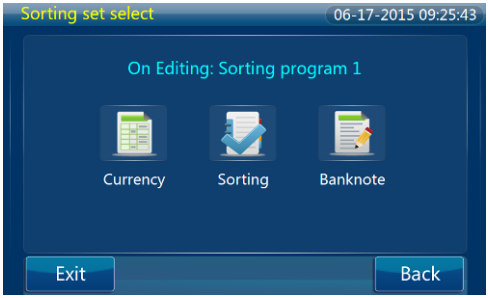
- Parameters: set the sorting parameters in different dimensions. Click the sorting parameters to enter the page of sorting programs, please see the following figure:

There are five sorting programs in total, and the default sorting program is among 1~5. The sorting parameter grades that correspond with each sorting program are from high to low, that is, the sorting program 1 is the strictest and the sorting program 5 is the loosest.

The currently effective sorting program number will be displayed on the top right corner of page. Select the sorting program and click the “Start” button, then the selected program will be effective.

Click “Restore” button and the five sorting programs will restore to the default setting.

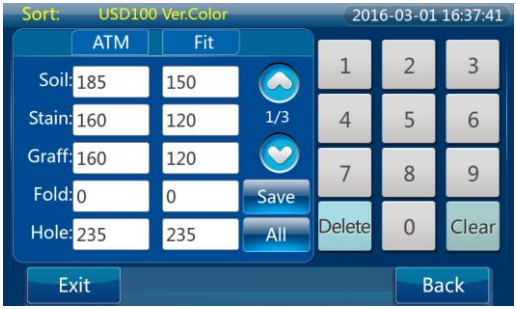
Select the sorting program and click “Edit” button, then the parameters of the selected program can be changed.



The sorting program can be set through three kinds of methods:

1) According to real banknote: Place one piece of standard banknote and the sorter will read out the sorting parameters of the banknote. Then set according to the sorting parameters.
2) According to sorting parameters: Take the thirteen sorting parameters (like soil) as dimension, set the sorting parameter of all types of banknotes corresponding with the currency at the same time.
3) According to banknote type: Take the year and denomination as dimension to set the sorting parameters of each banknote type.

Herein, the sorting parameters for currency of 100 US Dollar are as following:



Notes: The sorting parameters totally include following the 13 items: Soil, Stain, Graffiti, Tape, Fold, Hole, Missing Corner (M-C), Dog-ear, Missing Edge (M-E), Tear, Wrinkle, Watermark, Deinked, the parameter setting range is 0-255 and the corresponding parameters of the same Fit Banknotes should not be greater than the parameters ATM Banknote.

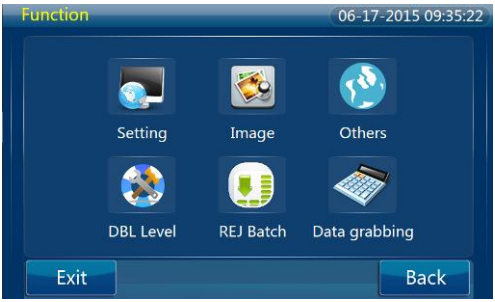
- Parameter management: Import and export the sorting parameters and sorting mode.
- Currency: set the Banknote types to be sorted for the current machine. (The maintenance account supports the function, some of currencies are available for different clients, please enquire with local distributor.)

- Counterfeit grade: can set the counterfeit grade of visible light, UV, infrared and magnetic to 0~15.

- Blacklist management: enquire, add, delete and clear the blacklist.

3.6.2. Function settings

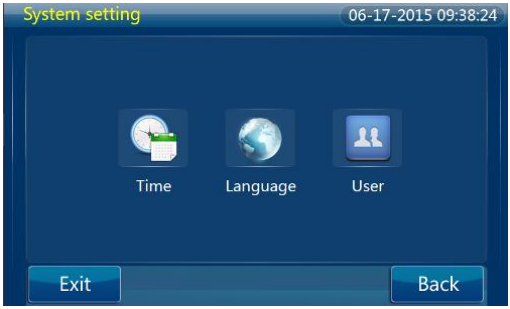
Function: configure the machine settings, image settings, data grabbing, etc.



- Setting: set the startup mode, dustproof cover mode, counting mode, and speed setting mode when the stacker is full.
- Image: set the serial number identification, serial number image saving function, and whole image saving function.
- Other: set whether to delete the data in the machine when export the FSN data, set the “Mode locked” and set the “After-sale service Tel No”.
- DBL Level: set the level of multiple Banknote detection, range is 0-7.
- REJ Batch: set the batch value for Banknote reject pocket, range is 0-100.
- Data grabbing: includes FSN configuration, local settings, network settings and bank settings that are relative to the data.

3.6.3. System setting

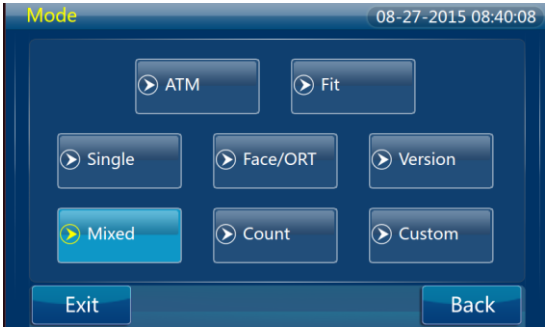
Function: set the system time, system language and user management.



- Time: set the system time of the machine and set the format of time.
- Language: set the system language of the machine, including Chinese and English.
- User: used to enquire, add, or delete the operator account.

3.7. Mode selection

Click the "mode" button on the main page, and the user can choose one from the 8 sorting modes.



- ATM: used to sort the ATM banknotes.
- Fit: used to sort the circulation banknotes.
- Single: sort the banknotes according to different denominations. The user can choose to sort the banknotes according to the first

and the second denominations, or according to designated denomination.

- Face/ORT: sort the banknotes according to different faces/orientations of banknotes.
- Version: sort the banknotes according to different versions of banknotes.
- Mixed: used to count the amount and the number of banknotes, only for counterfeit identification, not for sorting.
- Count: used to count the number of banknotes, under Count mode neither counterfeit detection nor sorting function is workable.
- Custom: you can customize sorting options for sorting banknotes according to your needs.

3.8. Method for opening/closing each part

Note: Make sure to open / close each part with specially made handle, or you may pinch your fingers if grip other parts.

3.8.1. Top cover

- **Open**

- **Close**

3.8.2. Back cover

- **Open**

- **Close**

3.8.3. Dust collecting box

4. Routine maintenance

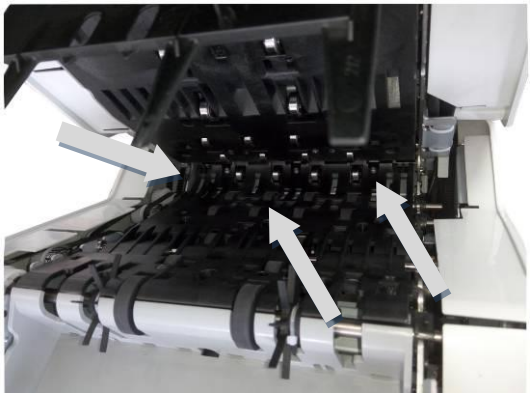
The sensor will be attached with dust and dirt after using for a long time, which will lead to malfunction and/or errors, please clean it according to the following steps to ensure the product durability.

Caution	**Make sure the power is off when cleaning the inside.** Otherwise may cause electric shock or body hurt.
	Do not use neutral detergent, alcohol, diluents, and/or compound wax to clean the product. Otherwise may cause product discoloration, breakage and poor running

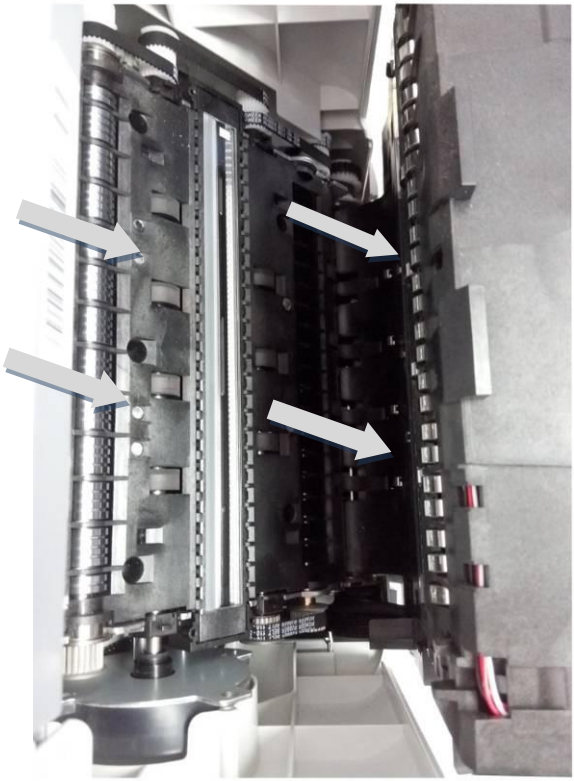
4.1 Clean Banknote hopper and identification sensor

4.2 Clean the sensors in reject pocket / stacker

4.3 Clean the paper output path



4.4 Clean the back device path



<u>Note</u>: It's forbidden to clean the inner channel of machine by any material with alcohol. Otherwise the damage caused by this is not covered by the warranty. Please use the brush or wipe to clean the inner channel.

5. Troubleshooting

5.1 Error code list

Error code	Meaning
00000001	Main motor error
00000002	Feeding motor error
00000004	Jamming error
00000008	Feeding jamming error
00000010	Data grab jamming error (channel)
00000020	Turning channel jamming error
00000040	Stacker channel error
00000080	Feeding failure error
00000100	Electromagnet 1 switchover error
00000400	Stacker 1 jamming error
00001000	Reject pocket jamming error
00002000	Upper cover lift error
00004000	CIS module error
00008000	Magnetic reading module error
00010000	Thickness measuring module error

6. Others

6.1 Product specification list

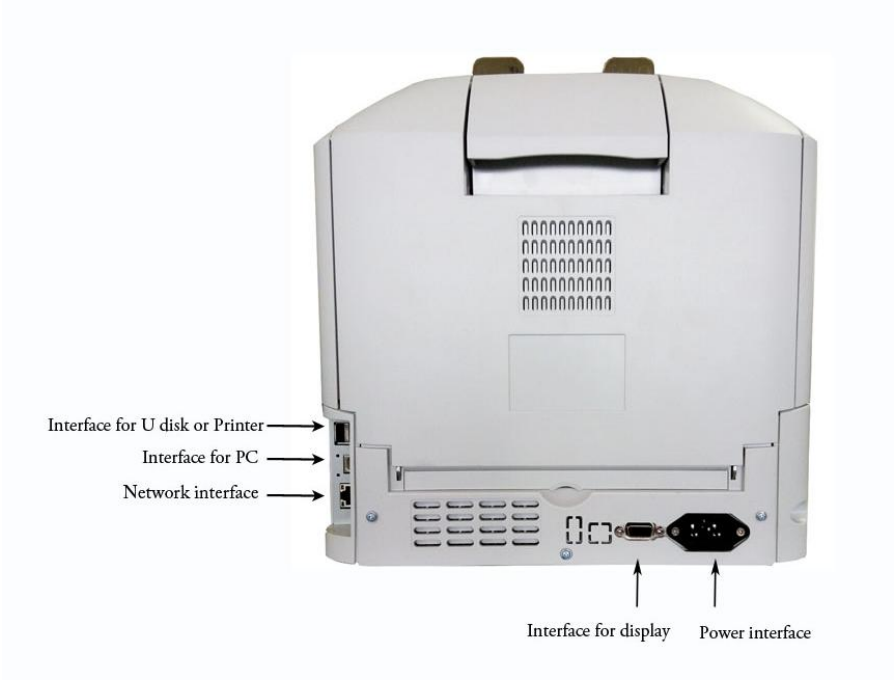
No.	Index category	Function	Parameters and related performance
1	Scope	Currency Support	USD, EURO and more (for details please enquire with local distributor)
2	Product structure	Banknote dimension	Length: 120-160mm Width: 62-82mm
		Structure form	Vertical type
		Hopper	1
		Stacker	Two Pockets (1 stacker + 1 reject pocket)
		Display	Colorful LCD Touch screen
3	Banknote capacity	Capacity of hopper	500 pieces x 1
		Capacity of stacker	200 pieces x1
		Capacity of reject pocket	100 pieces x 1
4	Speed requirements	Counting speed	900 pieces/minute
		Sorting speed	720 pieces/minute (Typical)
		Serial number recognition speed	720 pieces/minute (Typical)
5	Counterfeit	Detection methods	White image, infrared image, multispectral image, ultraviolet optical characteristic, infrared optical

			characteristic, fluorescent feature analyzing and identifying technique, safety line magnetic feature analyzing and identifying technique, thickness, magnetic image and light changing ink.
		Sorting items	Soil, hole, dog-ear, tape, graffiti, stain, tear, de-ink, missing corner, missing edge and wm.
6	Serial number identification (optional)	Serial number recognition &match	Dual counterfeit detecting, dual sorting, dual banknote serial number recognition & match, banknote serial number storage, face distinction is not needed for one time sorting, identify the counterfeit and sort the banknote while recognizing the serial number.
		Enquiry	Can enquire according to the serial number, time, operator number and batch number, and analyze the counting statistic data.
		Identification status	1) Can scan and recognize the banknote serial number when the sorting, counterfeit identification and other functions are turned on. 2) The machine itself can scan and identify the banknote (no need to connect with the computer, no

			need to upload pictures for computer to recognize).
		Data storage	You can use the three storage modes at the same time, or choose one or two storage modes. 1) The machine has its own storage function and it can store 5,000,000 numbers; 2) U disk storage; 3) Data upload, Ethernet interface, USB Interface.
		Number management	Upload data, print report, etc.
7	Conventional index	Continuous working time	4hr
		Power supply	100-240V±10%，50/60HZ
		Noise	No-load noise: ≤65db; Load noise: ≤70db.
		Data interface	USB interface: Host: 2, connect U disk and other devices; Device: 1, connect computer Serial interface: 1 Ethernet interface: 1
		Working temperature and humidity	0℃～40℃，20%～90% (40℃)

		Storage temperature and humidity	-40℃～60℃，10～95% (40℃)
		Upgrade mode	Upgrade on site (offline), online upgrade (optional)
		Preparation time for startup	≤30 seconds
		Overall size	315 (W)×340(D)×320(H)mm
		Weight	15.6KG

6.2 External interface settings



6.2.1. USB Interface (Device)

The banknote sorter is configured with one USB B-type socket which works under high-speed mode and complies with USB2.0 communication protocol, mainly used to connect the PC for equipment upgrading.

The USB connector adopts standard USB B-type socket, and the interface signal is defined as shown in Table 1.6-1:

Pin	Signal name
1	VBUS(+5V)
2	D-
3	D+
4	GND

Table 1.6-1 USB interface signal definition

USB connector (Device) is as shown in the following Fig.1.7:

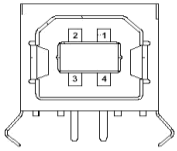


Fig.1.7 USB connector (Device)

6.2.2. USB interface (Host)

The banknote sorter is configured with one USB A-type double-layer socket which complies with USB2.0 communication protocol and is used for U disk connection, banknote data uploading, operation information recording and offline equipment upgrading;

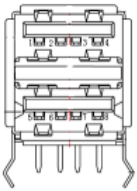
The USB connector adopts USB standard A-type double-layer socket,

and the interface signal is defined as following:

Pin	Signal name
1/5	VBUS(+5V)
2/6	D-
3/7	D+
4/8	GND

USB interface signal definition

USB connector (Host) is as shown in the following Figure:



USB connector（Host）

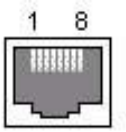
6.2.3. Ethernet Interface

The banknote sorter is configured with one gigabit Ethernet which meet 1000BASE-T standard in IEEE802.3, mainly used to connect with the banking system. Ethernet interface signal is defined as in Table 1.6-3:

Pin	Signal name	Explanation
1	TX_D1+	Transmit data +
2	TX_D1-	Transmit data -
3	RX_D2+	Receive Data +
4	BI_D3+	Bi-directional data +
5	BI_D3-	Bi-directional data -
6	RX_D2-	Receive Data -
7	BI_D4+	Bi-directional data +
8	BI_D4-	Bi-directional data -

Table 1.6-3 Ethernet interface signal definition

Ethernet connector is as shown in the following Figure:



Ethernet connector

6.2.4. Serial interface

The banknote sorter is configured with one serial interface, mainly used for connecting with the external display. And the interface parameters are as followings:

1) Data transmission: Serial asynchronous
2) Handshake mode: RTS/CTS, XON/XOFF
3) Level:

   MARK = -3 to -15 V Logic "1"/ OFF;

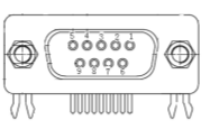
   SPACE = +3 to +15 V Logic "0"/ ON;
4) Baud rate (bps): 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
5) Data bit: 8 or 7 bits
6) Parity: None, odd, or even
7) Stop bit: 1 bit or 2 bits
8) Connector: D-SUB9F (9-hole connector)

Pin	Signal name	Signal direction	Function
1	Power (+5V)	Output	Supply power to the external device
2	RXD	Input	Data input terminal
3	TXD	Output	Data output terminal
4	DTR	Output	Data terminal ready
5	SG	—	Signal ground
6	DSR	Input	Data set ready

7	RTS	Output	Request to send
8	CTS	Input	Clear to send
9	Power (+5V)	Output	Supply power to the external device

Table 1.6-4 Serial interface signal definition

9-hole connector is as following figure:



9-hole connector

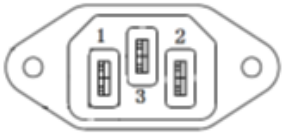
6.2.5. Power interface

Power Interface is used for connecting the banknote sorter with the AC power network, and the pin definition is as following table:

Pin	Signal name
1	L
2	N
3	GND

Power interface signal definition

Power connector is as following:



Power connector