LIGHTWAVE

Multi-Currency Value Counter

User Manual

LW-CCM-801

CONTENT

PREFACE

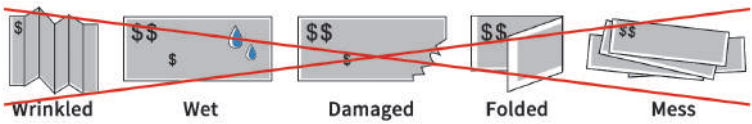
* Thank you for purchasing PONNOR bill counter.
* This user guide compiles all the relevant instructions about the use and operation of the machine.
* We recommend the new user to read the manual thoroughly, in order to get familiarized with the controls and operation of the unit.

GENERAL INTRODUCTION

The bill counter is the perfect solution for a fast, accurate and reliable banknote counting process. This machine is the vanguard of our evolution in currency counting technology. Its compact and stylish design is as remarkable as its integrated electronics and multi-function capabilities. But it is more than just looks and hi-tech electronics. It is ready to process the most demanding tasks, from counting large amounts of cash, to batching custom money quantities. The power to dramatically reduce labor and counting losses is now at the reach of your hands.

This machine makes an invaluable aid in banks, casinos, supermarkets, movie theaters, retail shops and many other environments where banknotes are used.

CHECKING BILLS,REMOVE THE UNUSUAL BILLS:



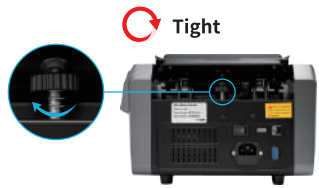
USE THE RIGHT WAY,LESS BILL JAMS

If you use the correct way to place bill, the money counter machine still often displays error codes, such as EE4/EE8/EE9/EEA/EED, please tighten/loose the screw on the back of the machine clockwise and adjust the width of the bill feed port according to the width of the currency.

RIGHT WAY TO TIGHT/LOOSE THE SCREW

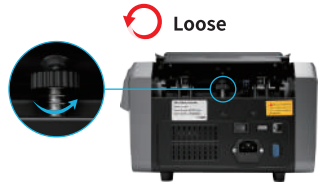
Situation ① The money counter machine is noisy or there may be flying bills and inaccurate counts, which means that the screw is loose.

Solution: The money counter machine is noisy or there may be flying bills and inaccurate counts, which means that the screw is loose.



Situation ② The money counter machine is jammed or the bills are not gone out smoothly, which means that the screw is tight.

Solution: Loosing the screw counter clockwise to increase the gap between the gear and the baffle, reducing the friction.

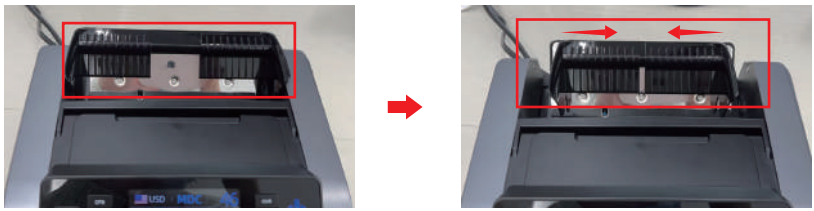


HOW TO JUDGE THE SCREW IS SCREWED PROPERLY?

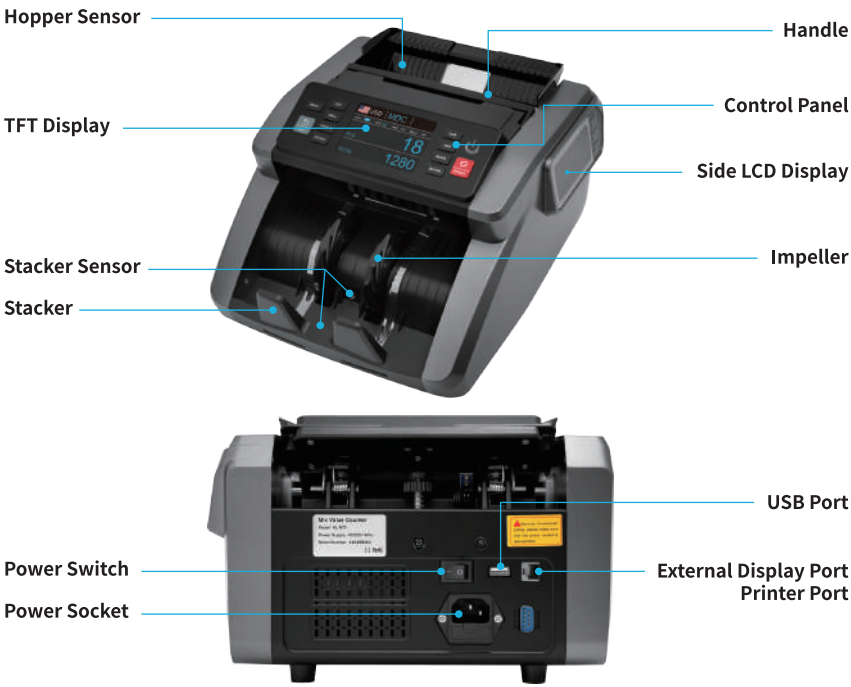
In BATCH mode,after completing a preset count, no bills are visible from the rollers under the meter. And the bills go down smoothly when counting. In this case the screw is screwed on correctly.

RIGHT WAY TO ADJUST THE BILL FEED PORT

The bill feeder can be manually stretched and adjusted. Push/pull the bill feeder's two end panels to adjust to just the right width for the bill.



1. MACHINE OVERVIEW



2. PACKING OPEN AND INSTALLATION

2.1 Packing List

When you receive the package,open and check the packing list in the package.

Item Name	Picture	Quantity (pcs)	Description
Banknote Counter		1	Mixed denomination Banknote counter
External Display		1	External LED display screen with RJ11 cable
Power Cable		1	Power supply cable
IR Calibration Paper		1	Used for the IR calibration
Nylon Brush		1	Clean the machine
Soft cleaning Cloth		1	Clean the IR or the other sensors
Fuse		1	The backup fuse for the power protection
User Manual		1	Instruction manual for cash counter

2.2 Installation Warning

(1)This machine is specially designed for indoor use. Please do not install or use it outdoors.
(2)Please do not install it in place that cannot bear the weight of this product or in places that are inclined or uneven.
(3)Do not use or please combustible materials,inflammable and volatile items such as thinners around/inside this product.

3. DISPLAY AND OPERATION INTERFACE

3.1 Display Appearance

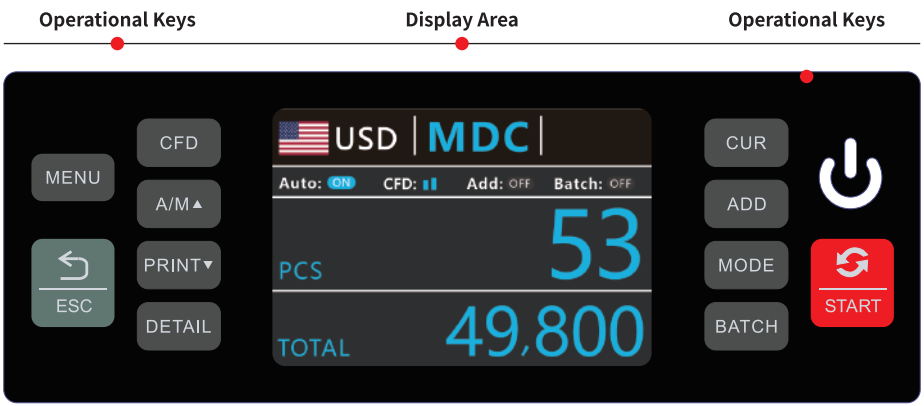


Figure 3-1 Display Appearance

3.2 Operational Instructions for Function Keys

A/M▲ PRINT▼ **DIRECTION KEYS**

A/M▲ **AUTO ON KEY:** to switch on/off the automatic operation.
AUTO: automatically counting as long as there is banknote on the hopper.
MANUAL: manually counting by press the restart key.

PRINT▼ **PRINT KEY:** to print the counted banknotes information.

CFD **CFD KEY:** Adjust the detection level.

DETAIL **DETAIL KEY:** to check the detail counted information.

ADD **ADD KEY:** to switch on/off the accumulation function.

MENU **MENU KEY:** to enter the menu interface by long pressing the key until a beep.

BATCH **BATCH KEY:** to select the batch number.

CUR **CURRENCY KEY:** to select the one of currency

MODE **MODE KEY:** to select CNT mode,SDC mode or MDC mode for counting.

ESC **RETURN KEY:** to return to the previous interface.

START **RESTART KEY:** to start counting,or to start other operations.

3.3 Display Interface

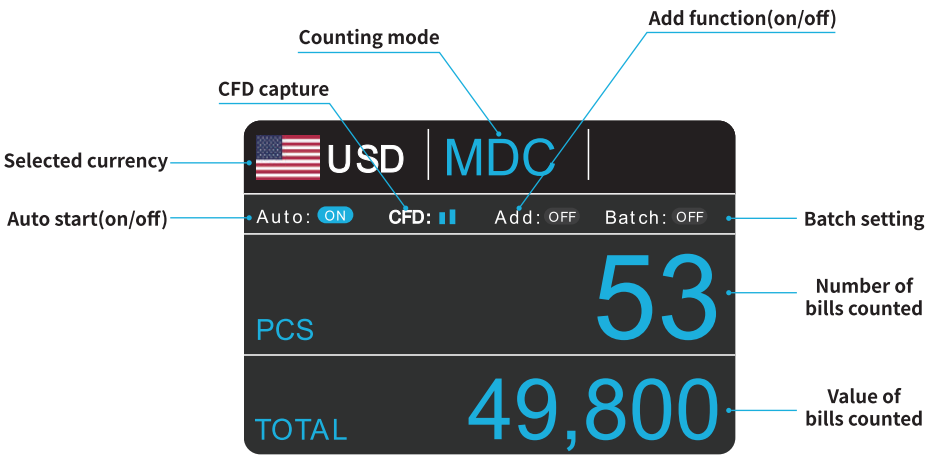


Figure 3-2 Main Display Interface

4. OPERATING INSTRUCTIONS

4.1 Start-up

Turn on the switch after connecting the machine to power supply. First, the machine enters the self-checking interface, as shown in Figure 4-1.

Figure 4-1Self-checking Interface

Please wait patiently for about 20 seconds, and the machine will spin the banknote processing wheel several times to conduct a self-check, and then enter the main interface as shown in Figure 4-2 .

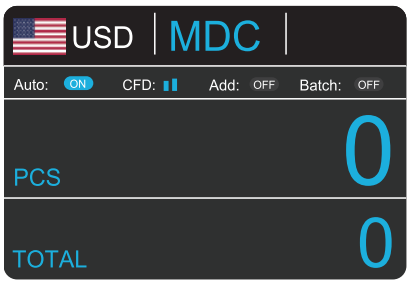


Figure 4-2 Counting Ready State Interface

4.2 Selection of Counting Mode

4.2.1 Single Currency Counting Mode

After the machine is turned on, the flag & currency graphic appears in the upper left corner, indicating that the machine is in the current currency counting mode.
The default mode is MDC mode. By pressing the key MODE of the control panel three counting modes can be cyclically switched, and the 3 counting modes will be cyclically switched according to MDC - CNT - SDC sequence.

4.2.1.1 MDC MODE

As shown in Figure 4-3, the counter is in MDC mode. In this mode,the counter will count the banknotes of all denominations of the selected currency, and save the detail information of the counted banknotes at the same time, including the total amount and the total number of the banknotes in stacker, so as to facilitate users to check.

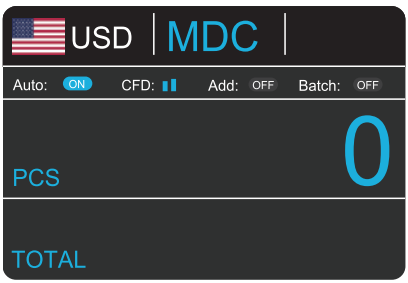


Figure 4-3 Initial Interface of MDC Mode

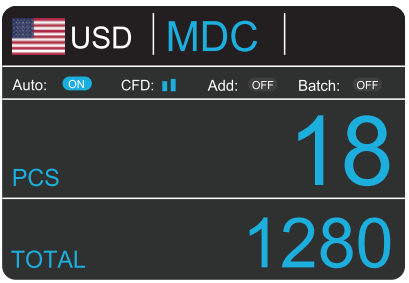


Figure 4-4 Initial Interface of MDC counting

4.2.1.2 SDC Mode

As shown in Figure 4-5, the counter is in SDC mode. In this mode,the counter will count the banknotes of the same denomination of the selected currency with the first banknote counted as a reference, and save the detail information of the counted banknotes at the same time, including the total amount and the total number of the banknotes in stacker, so as to facilitate users to check. You can use this function to sort the mixed bill manually.

Note: When a currency different from the first denomination is detected, the machine will stop and a warning sound will be sounded, the machine will continue to run after the currency is taken out.

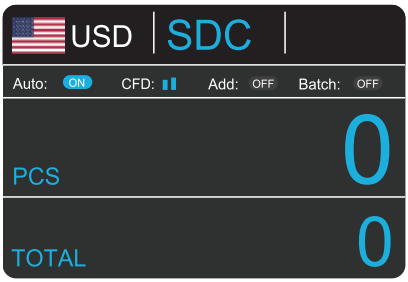


Figure 4-5 Initial Interface of SDC Mode

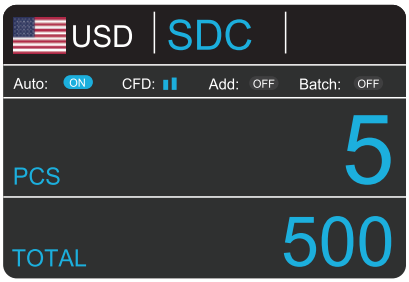


Figure 4-6 Interface after SDC Counting

4.2.1.3 CNT Mode

As shown in Figure 4-7, the counter is in CNT mode. This mode does not limit the currency, and only count the number of banknotes.

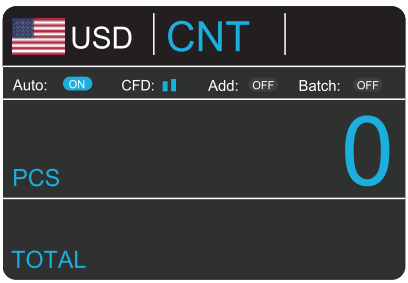


Figure 4-7 Initial Interface of CNT Mode

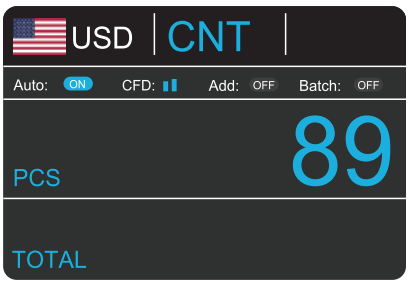


Figure 4-8 Interface after CNT Counting

Note: In the MDC and SDC mode, the counter has the functions of image acquisition, magnetic detection, ultraviolet detection and double note detection. While in the CNT mode, there is only a double note detection function.

4.2.2 Non-Volatile Memory for Currency Mode

The currency mode setting is non-volatile. For example, if you set multi-currency counting mode before power down the counter, next time the counter is in multi-currency counting mode after power on. It is very convenient that you don't need to reselect the currency every time you power on the counter.

4.3 Counting Function Options

4.3.1 Automatic Banknote Counting

Press the key A/M▲ to enable or disable the automatic banknote counting in the main interface.
The default setting of automatic counting is on. Every time the counter resets, the setting will be reset to be on state.

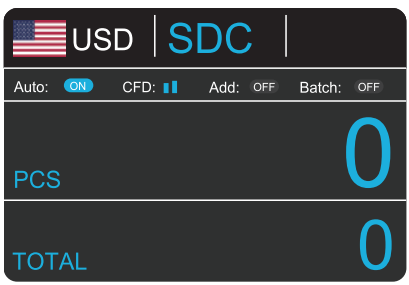


Figure 4-9 Auto Banknote Detecting Off

4.3.2 Batch Setting

Press the key BATCH to select the batch number in the banknote counting interface, the screen display is shown in Figure 4-10. By pressing the key BATCH of the control panel, the batch number will be cyclically switched according to 0-20-50-100-150 sequence.

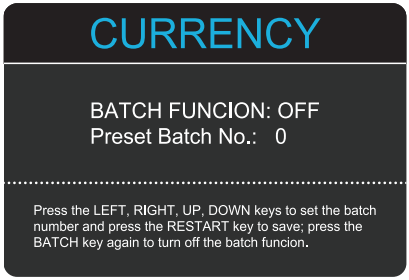


Figure 4-10 Batch Setting Interface

The batch number will be increased by 20,50,100,150 by pressing the key BATCH And it will be increased by 1 by pressing the key A/M▲ or decreased by pressing the key PRINT▼.

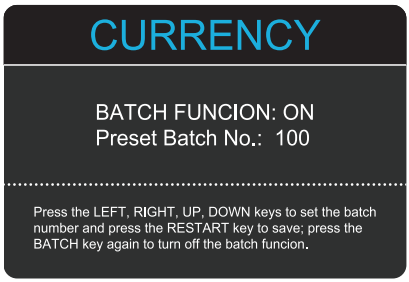


Figure 4-11 Batch Setting Interface

Press the key ESC to return to the main interface if you confirm the batch number.

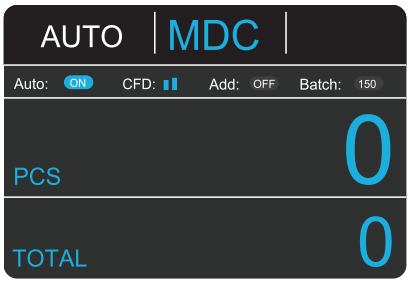


Figure 4-12 Batch Number Indicator

Note: the stacker maximum capacity is 150 bills, so the batch number should be less or equal to 150.

4.3.3 ADD Function

Press to enable the accumulation function.
In any counting mode, the accumulation function of the number of the banknotes can be enabled by pressing the key ADD

4.3.4 Currency Choose

Press CUR to enter the currency selection interface, select the desired currency through the A/M▲ PRINT▼ and click the START to confirm.

4.4 Check Detail of Counting

In the MDC or SDC mode, press the DETAIL key upon the completion of counting to enter the interface shown in the following figure to check the details of counting.

USD | SDC | Details

No.	Denom	PCS	Amount
1	100	5	500
2	50	1	50
3	20	5	100
4	10	4	40
5	5	4	20
6	2	0	0
7	1	5	5
No.		24	715

Figure 4-13 Detail Denomination Information

4.5 Print Information

When the external printer has been connected and can be printed, after counting, press the PRINT key to enter the print interface shown in Figure 4-14, and then press the key START, the printer starts print.

PRINT

Press START KEY to start print
Press ESC KEY to return

Figure 4-14 Printer Interface

PRINT

Press START KEY to start print
Press ESC KEY to return
Start Print...

Figure 4-15 Start Printing

4.6 CFD Level

There are 3 adjustable CFD levels. By pressing and holding the CFD key, the CFD level graphic appearing in the upper right corner will change.

CFD:

Note: CFD level 0, means no counterfeit detection, the most strictly detection is level 3.

5. MENU SETTING

***Please contact customer service before menu setting to provide you with the correct solution and try not to operate alone.**

To enter the menu interface by pressing the MENU key until a beep sound,as shown in the following figure.

MENU

→ ①. Service Menu
②. Version Information
③. Current Time Setting
④. Select the language

Figure 5-1 Menu Interface

5.1 Service Menu

Press the MENU key to enter service menu, you will be requested to input a password with the following interface. Select the corresponding number by pressing A/M▲ PRINT▼ and then press START to enter. The default password is 9999.

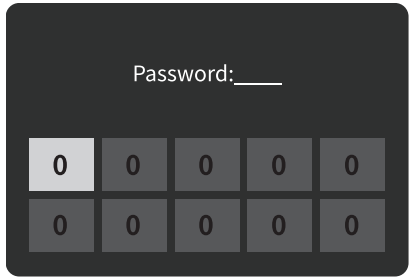


Figure 5-2 Password Interface

After input the password, the interface showed in Figure 5-3 will be displayed. Use the cursor to select with sub-menu you want to enter, and press MENU button to confirm, and press ESC button to quit.

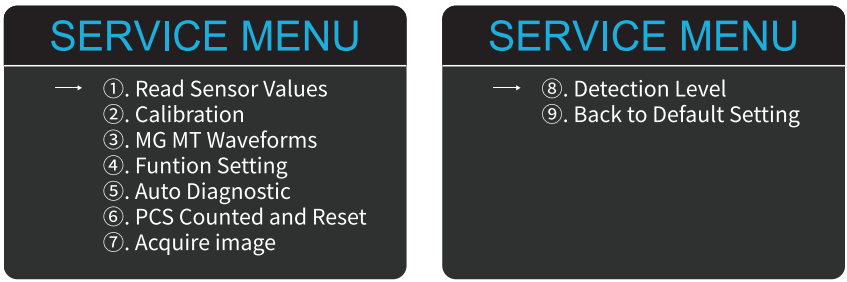


Figure 5-3 Service Menu

5.1.1 Read Sensor Values

Figure 5-4 Sensor Values

As shown in Figure 5-4, the sensors values are only for engineer to check whether any sensor has a malfunction. If you meet any problem about use, please take a photo of this page and contact us.

5.1.2 IR Calibration

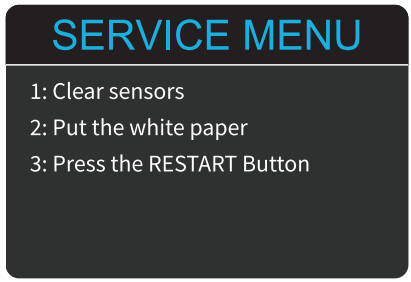


Figure 5-5 IR Calibration Steps

If you meet cases about banknote detection errors, please try to calibrate the IR. The IR calibration steps are shown in Figure 5-5. For more detail instruction, we recommend you to see the maintenance manual.

5.1.3 MG/MT Wave forms

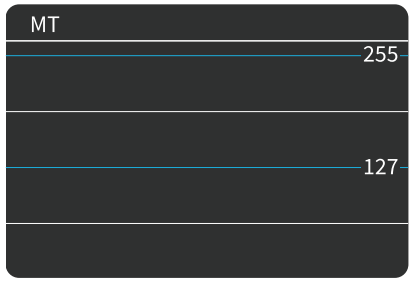


Figure 5-6 MG/MT Wave forms

5.1.4 Function Setting

Adjust the key sound and warning sound on/off with the START. You can choose to turn on Voice switch to voice the currency count and total value for you in MDC and SDC modes.

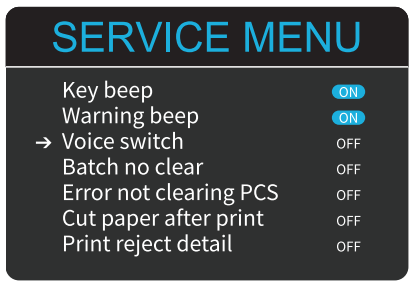


Figure 5-7 Function Setting

5.1.5 Auto Diagnostic

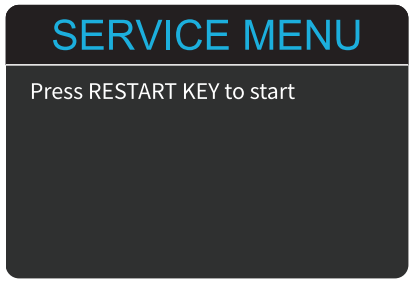


Figure 5-8 Auto Diagnostic

This is for production and professional servicing purpose.

5.1.6 PCS Counted and Reset

This is tol tell you the quantity of counted bills in the counter since last time clearing to zero.

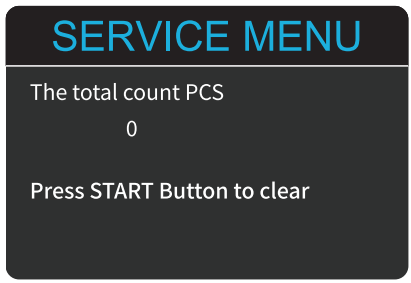


Figure 5-9 PCS Counted and Reset

5.1.7 Acquire IR image

Figure 5-10 Acquire IR Image

This is for servicing purpose.

5.1.8 Detection Level

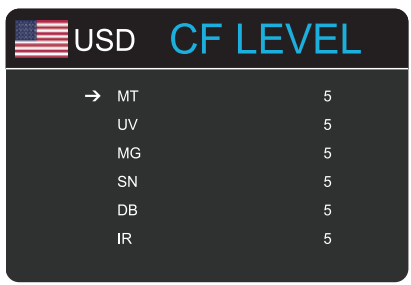


Figure 5-11 CF Level

As shown in Figure 5-11, you can use the up and down direction key to change the sensitivity levels. The currency code in the right part is indicating for which currency you are operating.

Note: Please do not change without communicating with us.

5.1.9 Back to Default setting

As shown in Figure 5-12, press the menu key to reset all of the settings you changed before.

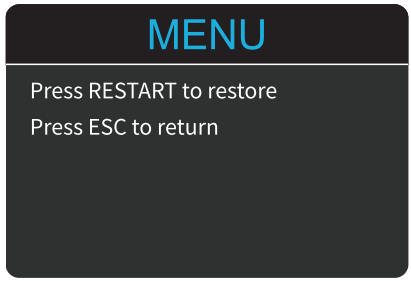


Figure 5-12 Back to the Default Setting

5.2 Time Setting

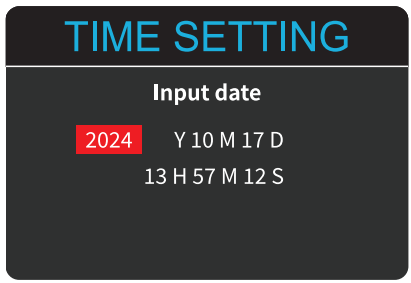


Figure 5-13 Time Setting

As shown in Figure 5-13, you can set the date or time according to your preference.

5.3 Language Selection

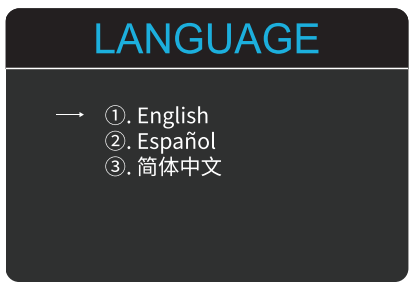


Figure 5-14 Language Selection

6. SOFTWARE UPGRADE

U-disk upgrade method is adopted for the software upgrade of this product. Please upgrade the software according to the following steps.

(1)The upgrade file needs to be moved to the root directory of the U-disk. (please do not change the file name or format of the upgrade file, and there cannot be two or more upgrade files in the root directory of the U-disk)
(2)Insert the USB disk into the USB interface at the rear of the machine.Make sure the power is off before insert the U-disk.

Figure 6-1 USB Upgrade Port

(3)Turn on the counter, and the machine will automatically recognize the upgrade file. Upon successful recognition, the machine will read the file first.

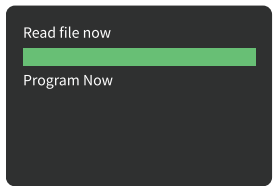


Figure 6-2 Upgrade File Reading

(4)And program the file to the counter.

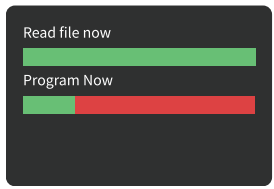


Figure 6-3 Program the Upgrade File

(5)After finish the programming, unplug the USB disk and turn off the machine.

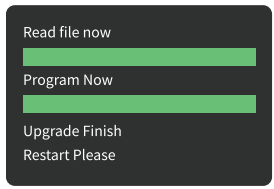


Figure 6-4 Program Finish

(6)Turn on the machine to enter the main interface. Software upgrade has been finished.

7. MAINTENANCE

After starting the machine, it will go on self-check automatically. If the preset window shows the error code or tell you to clean the sensors,generally speaking, it is because of dust on the surface or sensor blocked by notes.So please clear the dust on the surface with brush or soft cloth, or take the notes away. Then restart the machine.
This document describes the error handling guideline and the maintenance manual.

7.1 Cleaning the Machine

Any dust,dirt or other substances sticking to the sensor will interfere with the normal operation of the sensor and cause erroneous counting results.Therefore, the sensor and roller shaft shall be cleaned with the attached cleaning tools as necessary every day.
Please turn off the power switch before cleaning to prevent electric shock or other injury accidents.
Please do not use chemicals such as benzene, thinner or water.

7.1.1 Check the Serial Number

There are 3 parts need to be clean in the hopper:hopper sensor,banknote process- ing wheel and the banknote entrance.

(1)Hopper Sensor

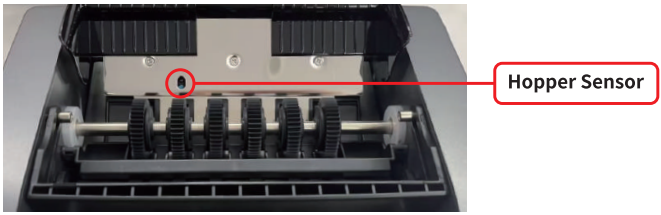


Figure 7-1 Hopper Sensor

As shown at the above figure, clean the hopper sensor with nylon brush or cleaning cloth.

(2)Banknote processing wheel

As shown in the following figure, clean the banknote processing wheel with nylon brush or cleaning cloth.

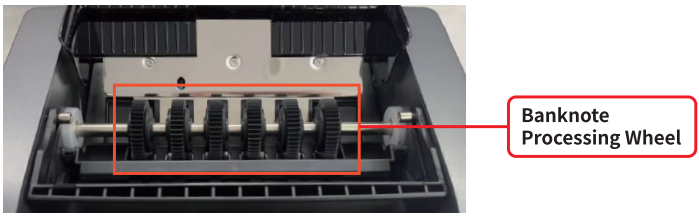


Figure 7-2 Hopper Sensor

(3)Banknote entrance

As shown in the following figure, clean the banknote entrance with nylon brush.

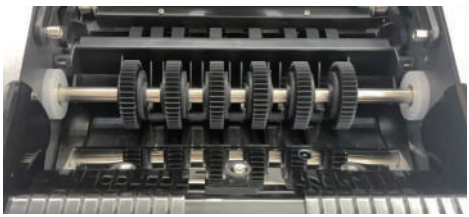


Figure 7-3 Banknote Entrance

7.1.2 Clean the Stacker Sensors

As shown in the following figure,clean the stacker sensors with nylon brush or cleaning cloth.

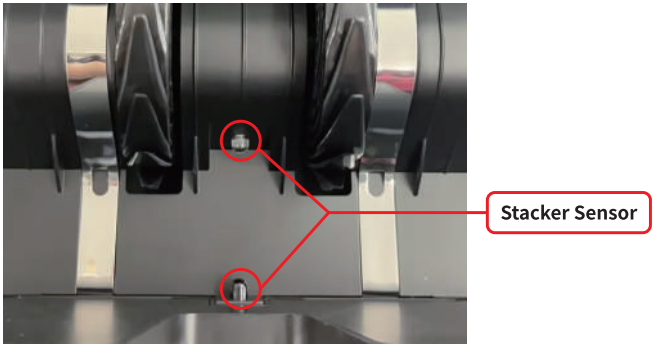


Figure 7-4 Stacker Sensors

7.1.3 Clean the Internal Sensors

(1)Open upper cover, you will see 2 bars of IR sensor

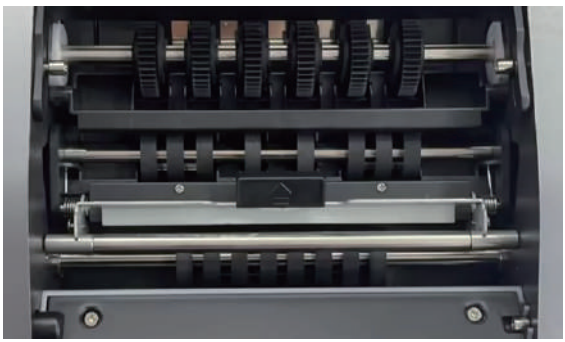


Figure 7-5

(2)Lift upper IR bar

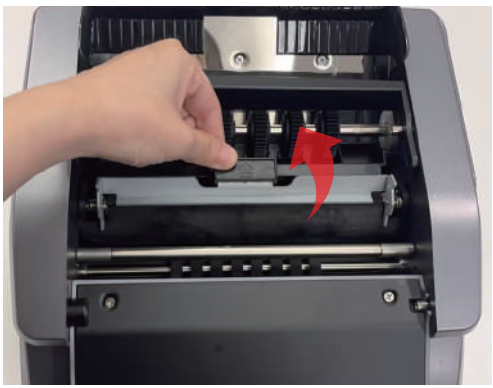
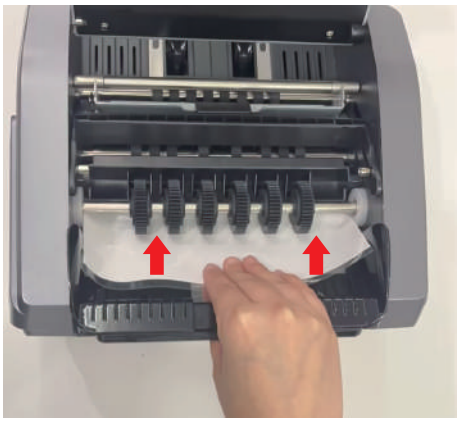


Figure 7-6

(3)Clean IR bars with cloth

Figure 7-7

(4)Put in the calibration paper from the bill entrance, turn the bill chute wheel and put the calibration paper into the position shown in the figure.



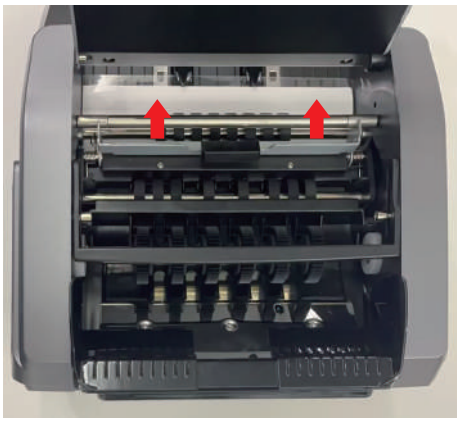


Figure 7-8

(5)Close upper IR bar back

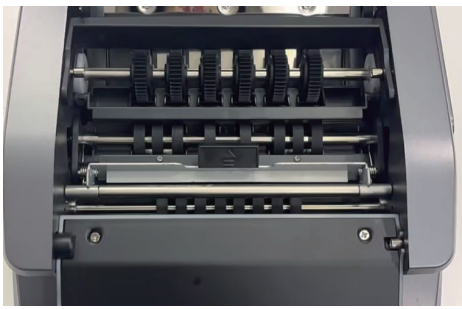


Figure 7-9

7.2 Error Code

Table 7-1 Error Codes

Code	Error Description	Handling Method(Recommendation)
EI	Bill UV Sensor Error	Remove the banknote,clean the UV sensor
E2	Bill Double Error	If the errors occur frequently, adjust the screw toward the anti-clockwise to decrease the feeding gap.
E3/E8	Chain Notes Error	
E4	Half Notes Error	Remove the banknote
EIO	Image Error	Clean the IR sensor, and calibrate the IR
EII/EI2	Denomination Error	Remove the banknote, clean the IR sensor; Perform the IR sensor calibration; Collect the data of the banknote.
EI3	Face Recognition Error	
EI4	Size Recognition Error	
EIS	Orientation Recognition Error	
E20	MT Error	Remove the banknote, clean or replace the MG sensors
E21	MGI Error	
E22	MG2 Error	
E23	MG3 Error	
E24	MG4 Error	
E30-E61	IR Error	Remove the banknote,clean the IR sensor; Perform the IR calibration Collect data of the banknote.

In the process of using the machine, the machine may show abnormal state and display the error codes on the screen.The description of the error codes and the related handling method is shown in table 7-1.

7.3 Bill Jam

If the bills are stuck inside the machine, please turn off the machine and rotate the banknote processing wheel by the direction of the following figure to take the jammed bills.

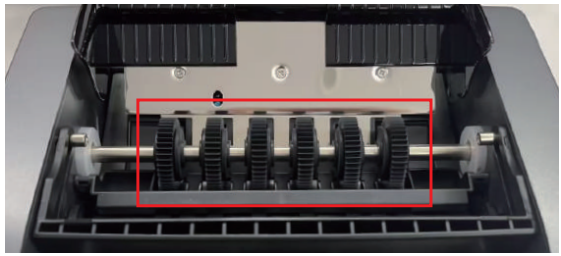


Figure 7-10 The Direction of Wheel Rotation to Take the Jammed Bill

There are several conditions to make the bill jam happened.
(1)The bill size is out of the range according to machine specification.
(2)The banknote is damaged with different ways such as lack of corner, tape, hole, tear and folded. As shown in Figure 7-11, it is not recommended to count this kind of bills.

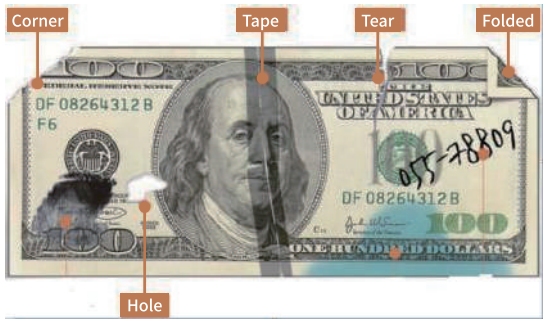


Figure 7-11 Bil Damaged Ways

(3)The banknote entrance is so small that the banknote cannot pass through it smoothly. In this case, you need to fine tune the screw by rotating it clockwise according to section 7.4.
(4)Other abnormal operation or there is unknown thing inside the machine. If something inside the machine, you need to open the back cove to check, and clean the internal sensors.

7.4 Feeding Cap Calibration

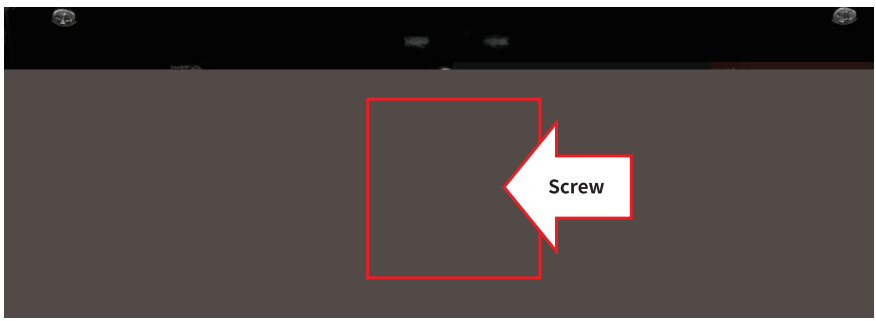
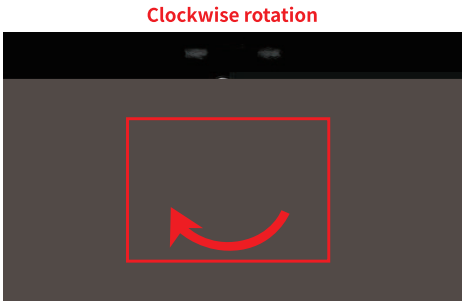


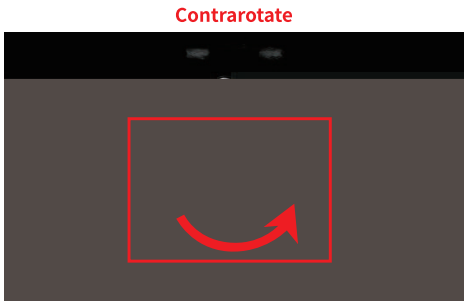
Figure7-12 The Adjustable Screw

The screw is used to control the width of the feeding gap. The width will become smaller by rotating the screw toward the smallest dot, otherwise, it will become bigger.



Clockwise rotation

Figure 7-13Rotatethe Screw to increase the Feeding Gap



Counterclockwise rotation

Figure 7-14Rotate the Screw to Decrease the Feeding Gap

Please fine tune the feeding gap by the following steps.
(1)Stop the auto counting first.
(2)Insert one banknote to the gap between the rollers to check if the banknote can be inserted smoothly, as shown in the following.

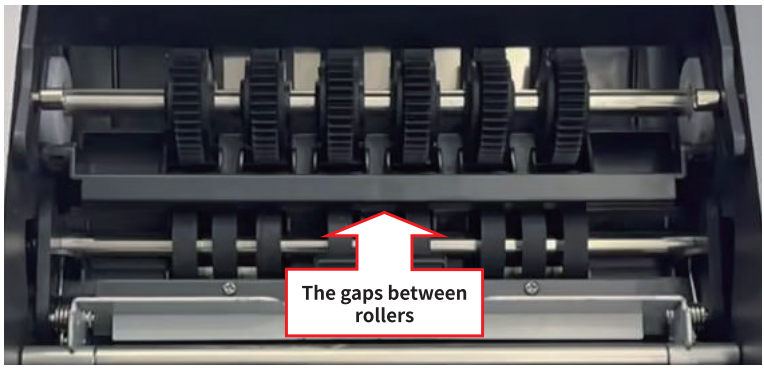


Figure 7-15 The Banknote Feeding Gap

Figure 7-16 One banknote to Check the Gap between the Rollers

(2)If the banknote is hard to inserted, that means the feeding gap is too small, please rotate the screw clockwise until the banknote can be inserted smoothly. If the feeding gap is so large that two or more banknotes can be inserted to the feeding gap, please rotate the screw counterclockwise until the gap can just allow one banknote inserted.
(3)Use the banknote to check the other sides of the gap between rollers, to make sure the banknote can be inserted into both sides of the feeding gap smoothly.

Figure 7-17 One Coin to Rotate the Screw

Tips: You can turn the screw by hand

Having the correct feeding gap adjusted will ensure a smooth counting as well as a trouble-free operation. Trial and error attempts are recommended before you make the final adjustment and start the count.
You may also perform this adjustment when the banknotes are not fed smoothly through the machine or several error messages are occurring too often like Bill Double Error, Chain Notes Error or Half Notes Error.
Other reasons that might require to readjust the feeding gap are:
-The counting of new or mint condition notes
-The counting of poor or bad fitness condition notes
-Polymer notes and Paper-made notes counted together

7.5 IR Calibration

IR calibration is needed when there are many errors during the banknote counting process.

(1)Please enter the menu interface. And go to the service menu with the password "9999", as shown in the following figures.

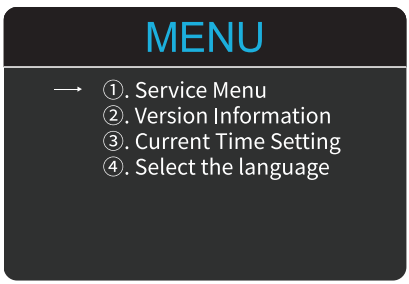


Figure 7-18 Main Menu

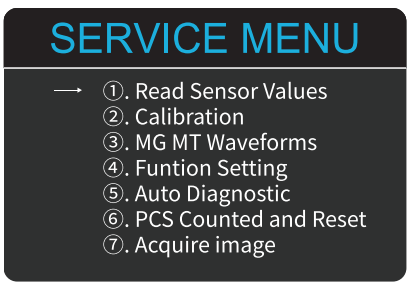


Figure 7-19 Service Menu

(2)Click the "IR Calibration"option,the screen will be shown in the following.

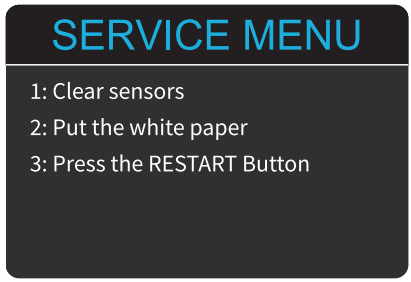


Figure 7-20 Service Menu

(3)Start IR calibration by pressing the "RESTART"butt on.

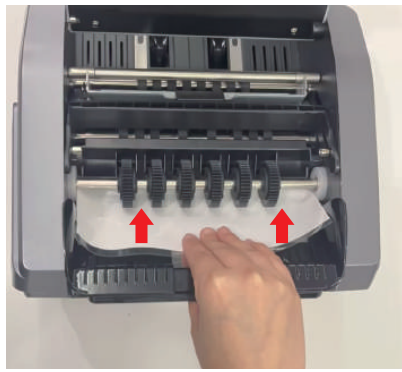


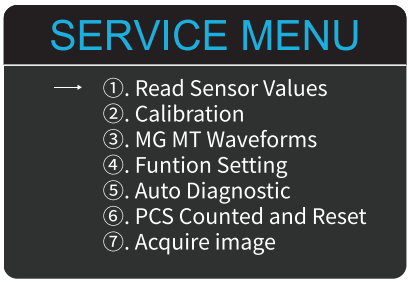
Figure 7-21 Start the IR Calibration

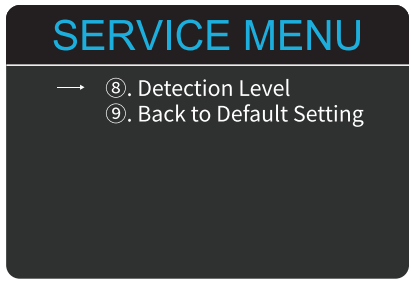
After finish, just take the calibration paper out and close the covers,and then turn off the machine. Turn on the machine to finish the IR calibration.

7.6 Back to Default Setting

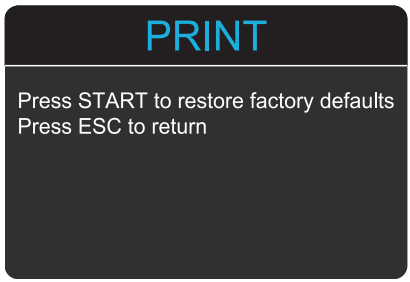
After fine tuning the screw and IR calibration,if there are still some errors or the counting is still not correct, returning to the factory default setting mode is required.

(1)Enter the menu interface, and go to the service menu with the password "9999", as shown in the following figures.





(2)As shown in above figure, choose Back to Default Setting"and enter the menu key. It will enter to the following display on the screen.



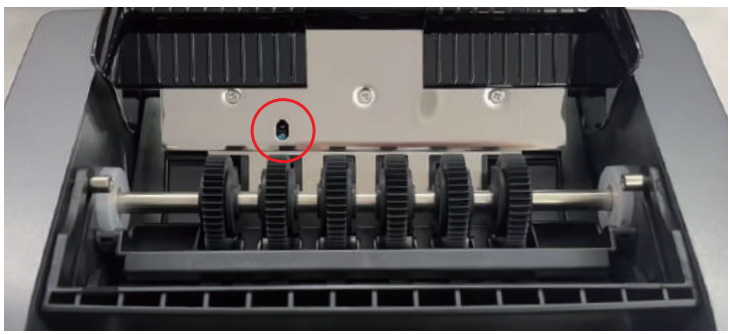
(3)Press the RESTART key, the counter will reset all the changed settings before.
(4)Go back the main screen, and then use your finger to touch the hopper sensor. The processing wheels and rollers in the counter will run for a while.

7.7 Sensor Errors

The banknote counter will take a few seconds to conduct a self-check with spinning the counting wheels after power on. The counter will check the sensors, the following errors may happen if the sensors have been blocked or damaged.

7.7.1 Hopper Sensor Error

If the wheels in the hopper is always spinning,and then stop with the "hopper sensor error" or "main motor error" indicated on the screen, that means the hopper sensor is too sensitive.



Please use the marker pen to paint a little on the hopper sensor as shown in the above figure.
If the wheels don't move when you place the bill on the hopper by enabling the auto counting, that means the hopper sensor doesn't work.

7.7.2 Stacker Sensor Error

If the impeller is always spinning, or the stacker sensor error "indicated on the screen, that means the stacker sensor doesn't work or too sensitive.

7.7.3 Counting Sensor Error

If the number of banknote counting is always not correct, or the "Main Motor Error" is shown on the screen, that means the counting sensor error doesn't work. Please clean the machine first.

8. TECHNICAL PARAMETERS

Table 8-1 Technical Parameters

Counterfeit Detection	Image,Magnetic,Infrared,Ultraviolet
Error Detection	Double note detection,half note detection, chain note detection
Options	Thermal printer connection
Interfaces	RS-232, 1xUSB, RJ11
LCD Display	3.5 inches TFT display,320X480
Keypad	Push-button keyboard
Hopper Capacity	200 bills
Stacker Capacity	200 bills
Size of Countable Notes	50x110-90x190 mm
Thickness of Countable Notes	0.075-0.15mm
Power Consumption	⩽80W
Power Supply	AC 100-240V 50/60Hz

CASH COUNTING MACHINE