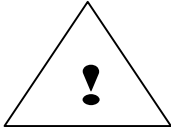## Preface

Thank you for purchasing the ZZap NC20 banknote counter. Establishing itself as one of the bestselling banknote counters, the NC20 offers unrivalled performance you can rely on. Excellent counterfeit detection, high speed counting and superior reliability make the NC20 a great all round banknote counter.

Contents

1. Safety instructions

Please read the safety instructions before operating the ZZap NC20 to avoid personal injury and damage to the machine.

⚠	• Before turning on the machine, make sure there are no objects obstructing the rollers or stacker impeller. • Before carrying out maintenance, switch off the machine and disconnect the power supply. • Do not put your fingers, clothes, hair etc., near the moving parts of the machine. • Do not drop objects or flammable materials inside the unit. • If the machine is exposed to low temperatures for prolonged periods of time then it must be kept at room temperature for approximately two hours before using the product. • The machine should be connected to a power supply via the power lead provided. • If one of the following events occur, disconnect the power supply and contact your local ZZap dealer. a) If the power lead/socket is damaged. c) If the machines casing is damaged. d) If the machines performance noticeably degrades. • Do not disassemble the machine. • Do not expose the machine to water or other liquids. • Do not operate or store the machine in high temperatures or humid/damp conditions. • Switch off the machine if the machine is not in use. • Disconnect the power supply if the machine is expected to be out of service for extended periods of time. • Do not place the machine near strong light sources. • Do not place the machine near magnetic material. • Ensure that the mains power supply is compatible with the machine. • Do not overload the power socket. • Do not pull on the power lead when disconnecting the power supply. Instead, grip the plug. • Disconnect the power supply before moving the machine. • Do not place heavy objects on the power lead.

2. Introduction

2.1 Package contents

The package includes the following:
• ZZap NC20 banknote counter
• User manual
• Maintenance kit
• Power lead
• External display

2.2 Exterior features

Carry handle — Hopper guide
Screen — Control panel
Stacker impeller — Side cover

Hopper
Hopper start/stop sensor — Input roller
— UV sensor holder
Top cover — Output roller
Stacker start/stop sensor
Stacker start/stop receiving sensor — Stacker

Banknote feed adjustment wheel
Power switch
Power socket
Fuse
External display interface
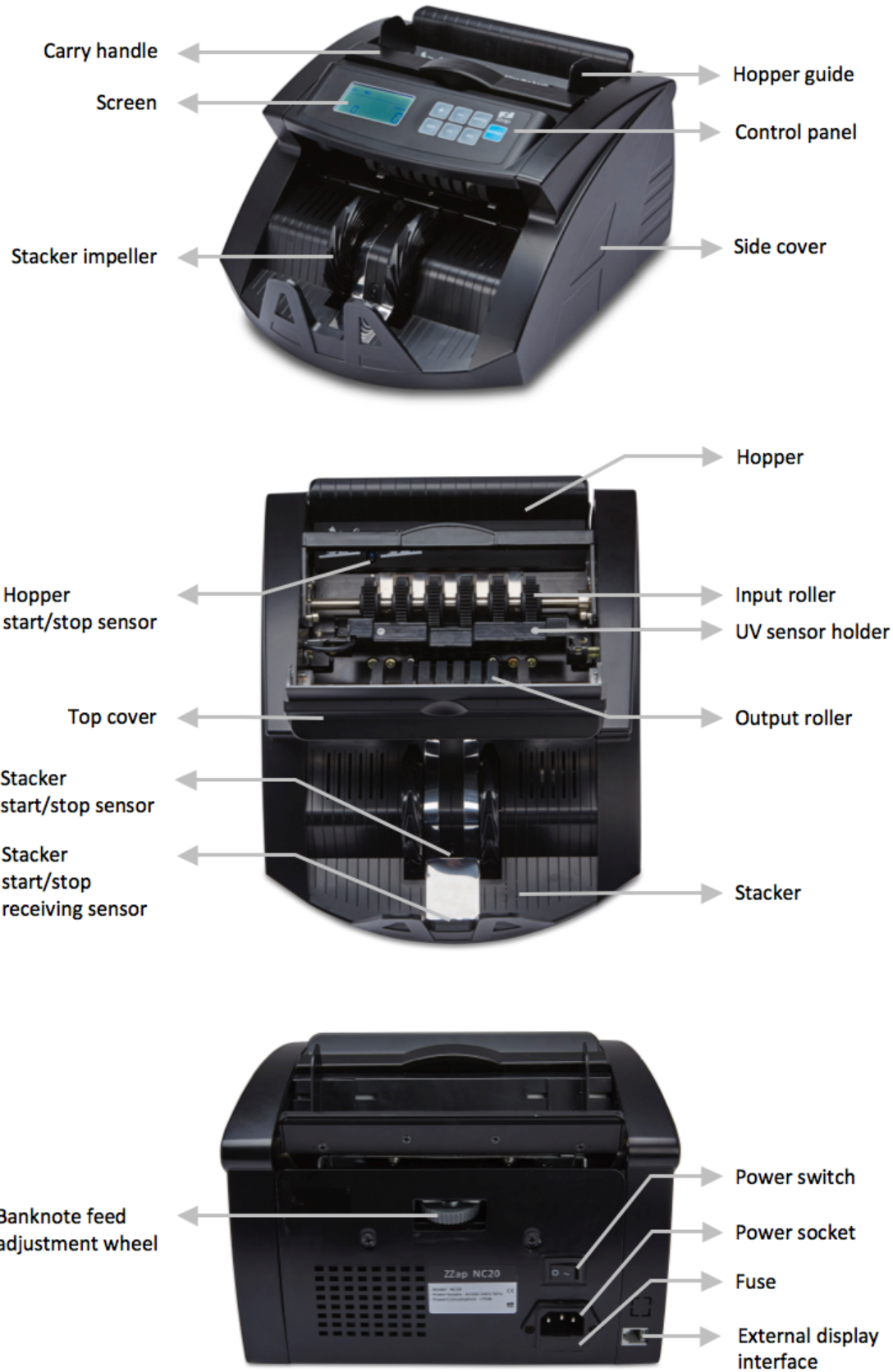
2.3 Control panel
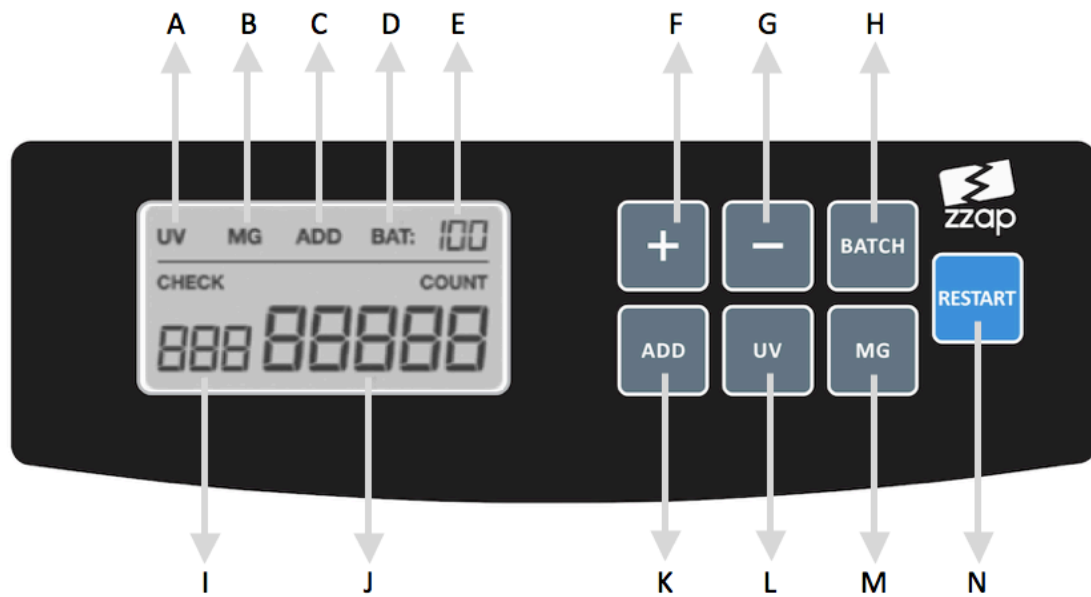
A. Ultraviolet light detection indicator

B. Magnetic detection indicator

C. Accumulative counting indicator

D. Batch counting indicator

E. Batch number display

F. Plus button

G. Minus button

H. Batch counting button

I. Check display (previous counting result)

J. Counting result display (current counting result)

K. Accumulative counting button

L. Ultraviolet light detection button

M. Magnetic detection button

N. Restart button

3. Operating instructions

3.1 Turning the machine on/off

Insert the power lead into the NC20 power socket located at the back of the machine. Insert the plug into the mains power supply. Switch on the NC20 using the power switch. The NC20 will run a self-test. If the test is successful, the counting result display will show '0' which means the NC20 is ready for use. If an error code is displayed refer to "5.1 Self-test error codes and solutions".

3.2 Counting

Before counting:
- Remove seriously contaminated banknotes.
- Remove damaged banknotes.
- Remove objects such as paper clips, pieces of paper etc., from the banknotes.
- Straighten out bended or folded banknotes.
- If you are counting new banknotes there is a risk the banknotes may stick together. Bend and flex the stack of banknotes before placing them in the hopper.
- If the banknotes need to be aligned: enable manual start, place the banknotes in the hopper as shown in figure 1 and use the hopper guides and your hands to align the banknotes.

Banknotes need to be placed correctly on the hopper to prevent counting errors. Firstly place the banknotes in the centre of the hopper, tilting them towards the control panel (Figure 1). Use the hopper guides to centre the banknotes. Then push the banknotes onto the hopper (Figure 2). The NC20 will start counting automatically or the "RESTART" button will need to be pressed, see "3.3 Automatic or manual start". The quantity counted will be displayed on the counting result display. To clear the counting result press the "RESTART" button. Once the banknotes are taken from the stacker the counting result will display on the check display.

Figure 1   Figure 2

3.3 Automatic or manual start

If automatic start is enabled the NC20 will start counting automatically. If manual start is enabled the "RESTART" button will need to be pressed to start counting. Automatic start is the default setting. To enable/disable automatic/manual start; press and hold the "RESTART" button until the screen changes. If "YES" is displayed, automatic start is enabled. If "NO" is displayed, manual start is enabled. Press the "+" or "-" button to alter the setting. Once selected, press the "RESTART" button to confirm your setting. Please note your setting will remain unchanged next time the NC20 is switched on.

3.4 Accumulative counting

The accumulative counting function allows you to add batches of banknotes together. The counting result will be added to the previous counting result. If "ADD" is displayed on the screen, accumulative counting is enabled. To enable/disable accumulative counting, press the 'ADD' button on the control panel. This function is useful if you need to count a large quantity of banknotes that cannot fit in the hopper all at once.

3.5 Batch counting

The batch counting function allows you to count a pre-set quantity of banknotes. To batch count press the 'BATCH' button; 100 will be displayed in the batch number display, this means the NC20 will count batches of 100. Repeatedly press the 'BATCH' button to scroll through the pre-set batch numbers: 100, 50, 20 and 10. To disable batch counting repeatedly press the "BATCH' button until "BAT:" is not displayed. Press or hold the '+' or '-' button to increase or decrease the batch number. When the desired batch number has been selected, simply place the banknotes on the hopper and start counting. The NC20 will automatically stop counting once it has reached the batch number. If there are not enough banknotes in the hopper to count the desired batch number, the counting result will flash. To count another batch, remove the banknotes from the stacker and the NC20 will automatically start counting another batch. Please note the batch function will be disabled when the NC20 is next turned on.

3.6 Include/exclude suspect banknote in counting result

When a detection identifies a suspect banknote it can be included or excluded in the counting result. To alter the setting, firstly disable batch counting (see "3.5 Batch counting") then press and hold the "-" button until the counting result display shows "J--0" or "J--1". Press the "-" or "+" button to switch between the settings. Press the "RESTART" button to confirm your setting.
J--0 = Exclude suspect banknote in counting result
J--1 = Include suspect banknote in counting result

4. Detections

Detections are used to identify counterfeit banknotes, damaged banknotes, different denominations etc. If a detection identifies a suspect banknote the NC20 will automatically stop counting, the alarm will sound and an error code will be displayed on the check display. For error code explanations and solutions see "5.2 Detection error codes and solutions".

The NC20 has 4 detections that can be altered, see below. The detection sensitivity allows you to fine tune the sensors in order to optimise the detection for different currencies and for different conditions of banknotes.

4.1 UV (ultraviolet light) detection

UV detection detects counterfeit banknotes that do not incorporate UV security features. Press the "UV" button to enable/disable UV detection. If "UV" is displayed on the screen, UV detection is enabled. To alter the sensitivity hold down the "UV" button until the screen changes. Then press the "+" or "-" button to increase/decrease the sensitivity. The higher the number, the higher the UV sensitivity. Press the "RESTART" button to confirm your setting.

4.2 MG (magnetic) detection

MG detection detects counterfeit banknotes that do not incorporate magnetic security features. Press the "MG" button to enable/disable MG detection. If "MG" is displayed on the screen, MG detection is enabled. To alter the sensitivity hold down the "MG" button until the screen changes. Then press the "+" or "-" button to increase/decrease the sensitivity. The higher the number, the higher the MG sensitivity. Press the "RESTART" button to confirm your setting.

4.3 Thickness detection

Thickness detection detects counterfeit, damaged, folded or attached banknotes. Thickness detection is enabled and cannot be switched off. To alter the sensitivity hold down the "ADD" button until the screen changes. Then press the "+" or "-" button to increase/decrease the sensitivity. The higher the number, the higher the thickness sensitivity. Press the "RESTART" button to confirm your setting.

4.4 Width detection

Width detection detects different denominations or 'rogue' denominations within your stack. Width detection is useful for when a different denomination is mistakenly put in the stack of banknotes. Width detection is enabled and cannot be switched off. To alter the sensitivity hold down the "BATCH" button until the screen changes. Then press the "+" or "-" button to increase/decrease the sensitivity. The higher the number, the higher the width sensitivity. Press the "RESTART" button to confirm your setting.

5. Error codes

If an error code is displayed it is usually because a sensor is impeded by either banknotes or dust. Use a dry brush or a soft cloth to clean the dust off the sensors and remove any jammed banknotes. Make sure the guidelines in "3.2 Counting" are followed.

5.1 Self-test error codes and solutions

When the NC20 is switched on it will run a self-diagnostic procedure. If EA0-EA5 is displayed on the counting result display follow the instructions below.

1. Switch the NC20 off at the power switch and disconnect the power supply.
2. Remove all banknotes/foreign objects from the machine. Check if anything is obstructing the moving parts of the machine.
3. Clean the machine using a dry brush or air duster to remove dust & dirt. See "7. Maintenance" for further details.

5.2 Detection error codes and solutions

Detection error codes will be displayed on the check display.

Error code	Cause	Solution
E1	Ultraviolet light detection has detected a counterfeit banknote	1) Check the last banknote on the stacker. Press the 'RESTART' button to continue counting. 2) Count the suspect banknote again. Ensure the machine is placed away from strong light sources. 3) If the alarm sounds again and the banknote is found to be genuine, lower the UV sensitivity (see section 4). **Note**: Banknotes that have been washed may lose their UV security features and may cause incorrect detection.
E2	Magnetic detection has detected a counterfeit banknote	1) Check the last banknote on the stacker. Press the 'RESTART' button to continue counting. 2) Count the suspect banknote again. 3) If the alarm sounds again and the banknote is found to be genuine, lower the MG sensitivity (see section 4).
E6	Width detection has detected a different denomination	1) Check the denomination of the last banknote on the stacker. If the banknote is not a different denomination, check if it is folded or damaged. 2) Press the 'RESTART' button to continue counting 3) If width detection detects when it should not, lower the width sensitivity (see section 4).

E7	Half-note detection has detected an incomplete/torn banknote	1) Check the last banknote on the stacker. Press the 'RESTART' button to continue counting. 2) Count the suspect banknote again making sure the banknotes are placed in the centre of the hopper.
E8	Thickness detection has detected a counterfeit, folded, damaged or attached banknote	1) Check the last banknote on the stacker. Check if the banknote is counterfeit, folded, damaged or if 2 banknotes are attached to each other. 2) Press the 'RESTART' button to continue counting. 3) Count the suspect banknote again. Ensure the machine is placed away from strong light sources. 4) If the alarm sounds again and the banknote is not counterfeit/folded/damaged/attached, lower the thickness sensitivity (see section 4). 5) If this error frequently occurs, adjust the banknote feed (see section 6).
E9	Two banknotes have been fed into the machine simultaneously	1) Check the last banknote on the stacker. Check if the banknote is damaged or attached to another banknote. 2) Press the 'RESTART' button to continue counting. 3) If this error frequently occurs, adjust the banknote feed (see section 6).

6. Adjusting the banknote feed

If error codes are been displayed frequently or if the counting result is inaccurate, the banknote feed adjustment wheel on the back of the machine may need to be adjusted in order to optimise the banknote feed. Please note the banknote feed adjustment wheel is very sensitive, make minor adjustments.

- If the machine frequently stops and displays the error code 'E8' or 'E9', turn the wheel counter clockwise to decrease the clearance between the hopper and input roller.
- If the banknotes are not being fed into the machine smoothly, turn the wheel clockwise to increase the clearance between the hopper and input roller.

7. Maintenance

It is recommended to clean the machine on a monthly basis. Before cleaning the machine, make sure the NC20 is switched OFF and the plug is disconnected from the power supply. Do not use chemicals to clean the machine.

- Clean the hopper and stacker using a dry brush or lint free soft cloth.
- Clean the hopper start/stop sensor using a dry brush or lint free soft cloth.
- Clean the stacker start/stop sensor and the stacker start/stop receiving sensor using a dry brush or lint free soft cloth.
- If necessary use a small amount of alcohol based cleaner with a lint free soft cloth to clean the surface of the sensors.
- Clean the sensors located directly below the output roller using a dry brush.
- Clean the interior of the machine with a dry brush or air duster to remove dust & dirt. To gain access to the interior of the machine lift the carry handle then lift and detach the side of the top cover nearest the hopper then flip open the top cover in a circular motion.
- Clean the exterior of the machine with a soft lint free cloth to remove dust & dirt.

8. Specifications

- Dimensions: 292 x 246 x 178 mm
- Banknote size range: min. 50 x 100 mm – max. 90 x 190 mm
- Net weight: 5 KG
- Counting speed: 1000 notes/min
- Batch counting range: 1-999
- Power supply: 220-240V-50Hz or 100-120V-60Hz
- Power consumption: ≤70W
- Display: LCD
- Fuse: 2Aslow, 250V

If the machine has a fault that you are unable to resolve, please contact your local ZZap dealer.

Products are subject to change without further notice.