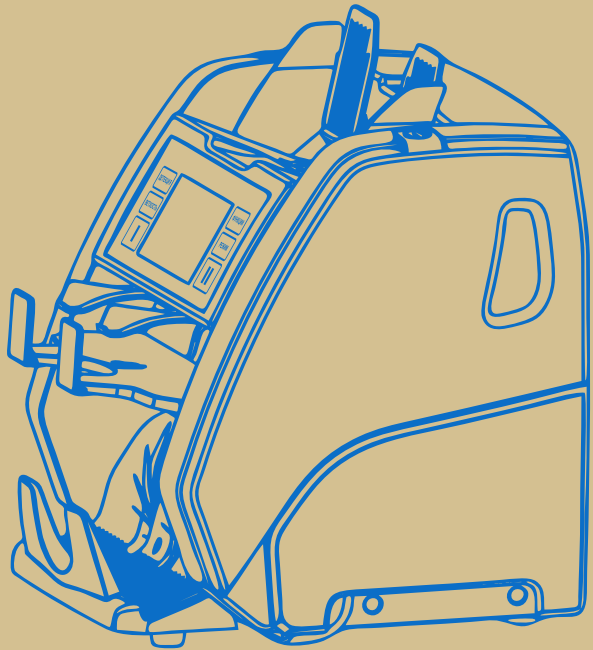


**DOORS<sup>®</sup> 820**

# BANKNOTE COUNTER



## USER MANUAL

**2024**  
User Manual  
Version 4.0

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## Introduction

### Dear Customer,

We would like to thank you for purchase of **DORS 820**, two pocket banknote counter that recognizes value and authenticity of banknotes of different currencies, and sort them by orientation, denomination, fitness.

**DORS 820** (hereafter «counter») is developed by **KB DORS**, Russia, and manufactured by **DORS Industries (China) Ltd.**

The machine is intended for counting and sorting of US dollars, Euros and other world and local currencies (depending on client's choice and availability of certain currency's software). Authenticity verification is based on numerous machine-readable security features of banknotes.

### Attention!

The counter contains the hazardous moving parts. Carefully read the Safety Precautions stated in this Manual before you use this machine.

### Specifications:

Hopper capacity <sup>1</sup> .....	800 banknotes
Stacker capacity.....	200 banknotes
Reject pocket capacity.....	100 banknotes
Banknotes count rate.....	600/900
	/1200/1500 npm ±10%
Banknotes size.....	width 100...190mm, length 58...90mm, thickness 0.05...0.2mm
Batch size.....	1—999 banknotes
Banknotes feeder.....	roller, friction type
Sensors.....	Two Contact Image Sensors 200dpi, powered by patented Banknote Validation System (BVS). UV 370nm sensors: transmitting - 2 pcs, reflecting - 2 pcs. Magnet sensor: multichannel; controlling the central and lateral areas of the banknote.
Display.....	TFT LCD, 480x272, High Color (64K), 4,3"

Touchscreen.....	resistive
Power.....	AC 100-240 V, ~50/60 Hz
Current consumption.....	2A (100V); 1A (240V)
Operation temperature range.....	10°C... 35°C
Relative humidity, 25°C.....	40%...80%
Atmospheric pressure.....	84...107kPa (630...800 mm Hg)
Overall dimensions:.....	Height 345mm Width 305mm Depth 295mm
Net weight.....	10 kg
Gross weight.....	13 kg

<sup>1</sup> Here and below, the capacity (hopper, stacker, rejection) is given for the new banknotes. The capacity depends on banknotes fitness, therefore it is not recommended to use the maximum values of the pockets' capacities for worn out banknotes.

## Safety Precautions

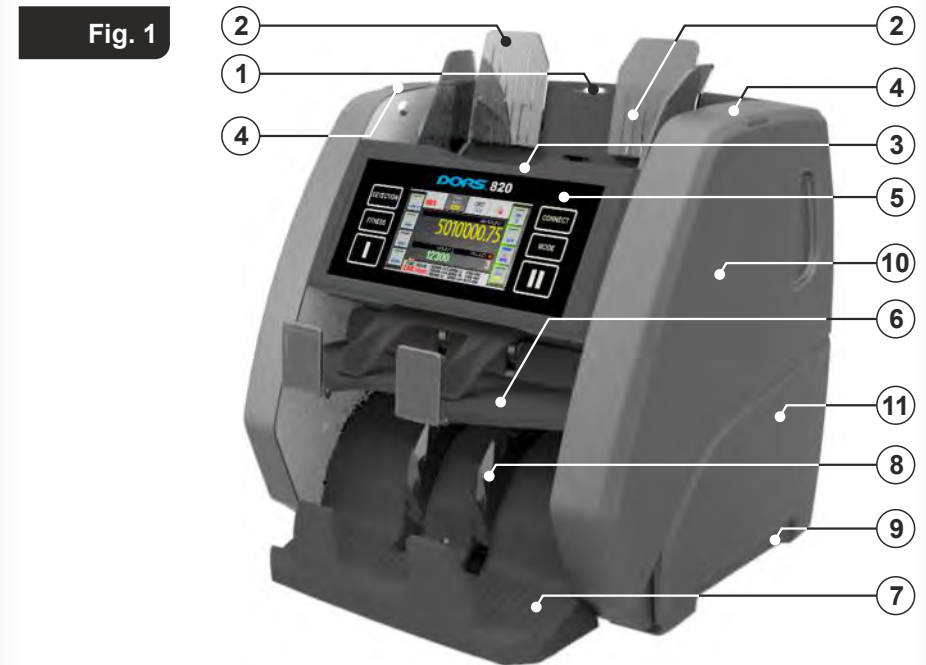
To avoid personal injuries and to ensure a reliable counter operation, please comply with the following operating and safety requirements:

- The counter's rotating parts are potentially hazardous for the user. Do not touch the rotating parts as it may cause an injury. We highly recommend that the user avoid wearing any jewelry and loose clothes, and cover long hair when operating the machine.
- Make sure the counter is stopped before removing the banknotes.
- Do not touch the counter, the power supply plug and the power cord with wet hands as it may cause an electric shock.
- When closing the top cover, mind your fingers as you may squeeze them.
- At operation with an open top cover, make sure about its steady state. A sudden closing of the cover may cause an injury.
- Avoid metal object or liquid entering the counter.
- Use AC mains outlet with a protective earth contact (PE) to connect the counter to the power supply. The outlet should be near the user's workplace.
- Confirm AC mains meets the counter power requirements; do not pull the power cord to disconnect it from the outlet, neither bend it nor twist.
- If you do not use the counter for a long time, put its power switch to «0» position. Having the work complete disconnect the machine from the power supply.
- Install the counter on an even horizontal surface.
- When the counter is counting, do not switch it off, do not pull the power plug out of mains outlet and do not open machine's top cover. This may cause a damage of the counter.
- Before cleaning the sensors of the path, make sure the counter is switched off and disconnected from mains outlet.
- When choosing the place for the installation avoid the areas with high level of dust content.
- At installation and use of the counter, keep some space sufficient for opening its upper part and getting access to the path.
- To avoid any inflammation or short circuit, do not install the counter in the places where it may be a risk of a soot or steam exposure.
- Avoid mechanical stress on the counter during operation, don't tilt the counter.

## Delivery Set:

BANKNOTES COUNTER DORS 820.....	1 pc.
Power cord.....	1 pc.
Stylus.....	2 pcs.
USB cable (A-B).....	1 pc.
Quick start guide.....	1 pc.
Calibration cards.....	1 set
Package.....	1 set
Banknote guide.....	2 pcs.
Cleaning brush.....	1 pc.
Tissue.....	1 pc.

## Appearance

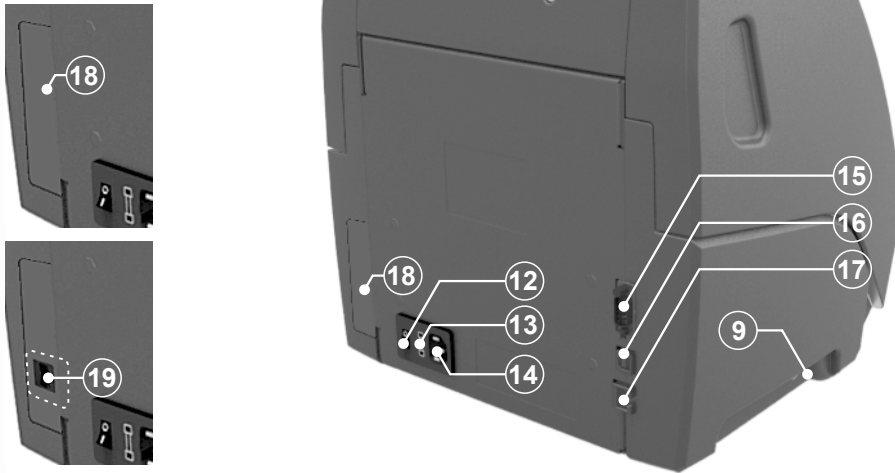


- 1 Gap adjustment screw
- 2 Banknote guide
- 3 Hopper
- 4 Top cover locks
- 5 Control panel
- 6 Reject pocket

- 7 Stacker
- 8 Stacker wheel
- 9 Carrying handles.
- 10 Top cover
- 11 Base

## Appearance

Fig. 2



- 9 Carrying handles
- 12 Power switch
- 13 Fuse
- 14 Power cable socket
- 15 External printer / CCTV connector
- 16 USB connector
- 17 External display connector
- 18 Cover
- 19 Ethernet connector (DORS 820 E)

⚠ **Do not connect** USB cable to the connector for external display (see pos. 17 Fig. 2) or to the Ethernet connector (see pos. 19 Fig. 2).

**Do not connect** Ethernet cable to the connector for an external display (see pos. 17 Fig. 2). This can lead to damage to the device.

## Control panel

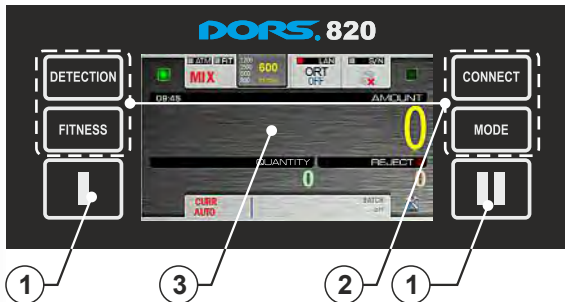


Fig. 3

- 1 Start / User select keys
- 2 Main operation modes keys
- 3 Colour touchscreen display

## Outer sensors, path sensors and redirector

To open the path, press simultaneously top cover locks (see Fig.1, pos.4), and pull up the top cover. To close the path, push the top cover down to a click.

Outer sensors, path sensors and the redirector are shown in figures 4, 5, 6, 7.

Fig. 4



- 1 Hopper sensor
- 2 Reject pocket sensor
- 3 Stacker receiving sensor
- 4 Stacker transmitting sensor

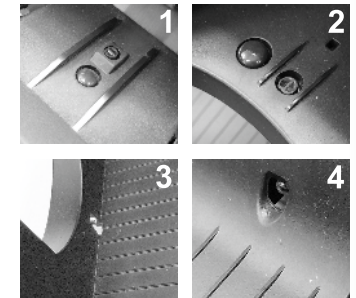


Fig. 5

- 5 UV transmitting sensors / path input sensors
- 6 IR and red backlight

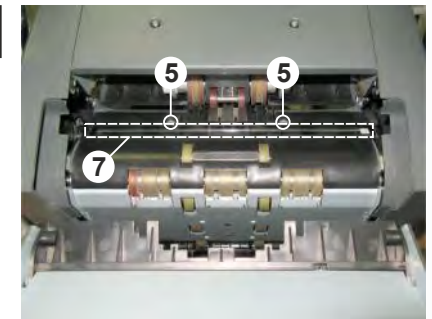
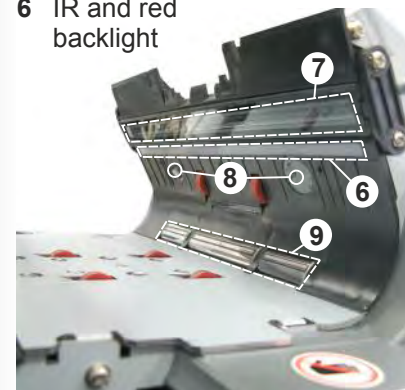
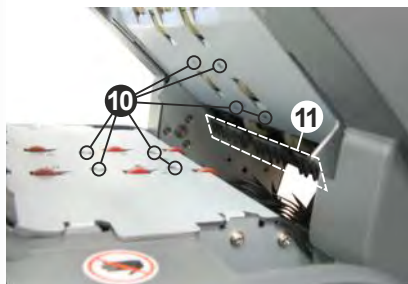


Fig. 6

- 7 Scanner CIS
- 8 UV reflection sensors
- 9 Magnet sensors



**Fig. 7**

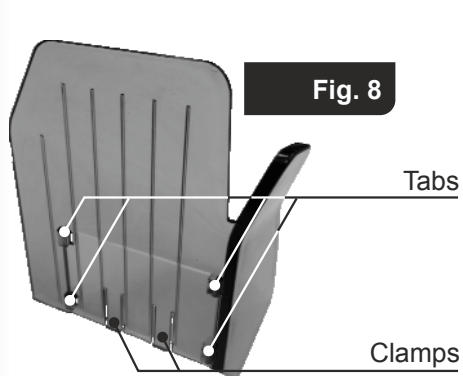
10 Path sensors  
11 Redirector

## GETTING STARTED

Make sure that the safety precautions mentioned in this manual are kept.

- 1 Install the banknote guides (Fig. 1, pos. 2) included in the delivery set.
- 2 Take one banknote guide and match the tabs of the guide (see Fig. 8) with the slots of the banknote guide holder (see Fig. 9).
- 3 Push the guide into the holder (see Fig. 10).
- 4 To fasten the guide on the holder, move it down up to the stop (see Fig. 11).
- 5 Repeat points 2-4 for the second banknote guide.
- 6 To check that the banknote guides are installed properly, move the guides manually aside, to the maximum and minimum; the movement should be synchronous and without jamming.

To remove the guide (for instance, for transportation), take the upper part of the guide, press it slightly and then pull it up.



**Fig. 8**

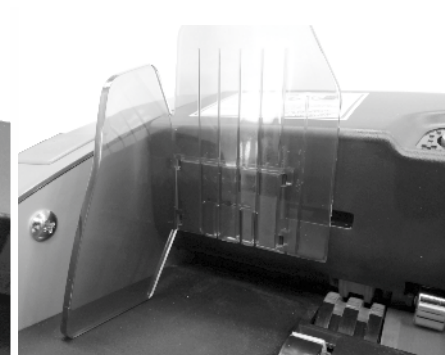


**Fig. 9**

**Fig. 10**



**Fig. 11**



7 Connect the counter to AC mains with the power cable.

## OPERATION

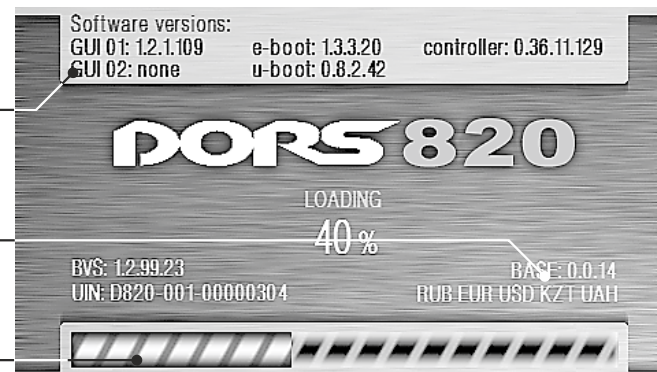
- 1 Make sure that the safety precautions mentioned in this manual are kept.
- 2 Switch the counter on by the power switch (Fig. 2, pos. 12). The counter will start up and run self-test. An image (see Fig. 12) will appear in the display. During self-test the loading progress bar will move, the stacker wheels (Fig. 1, pos. 8) and the hopper rollers (Fig. 1, pos 3) will rotate.

**Fig. 12**

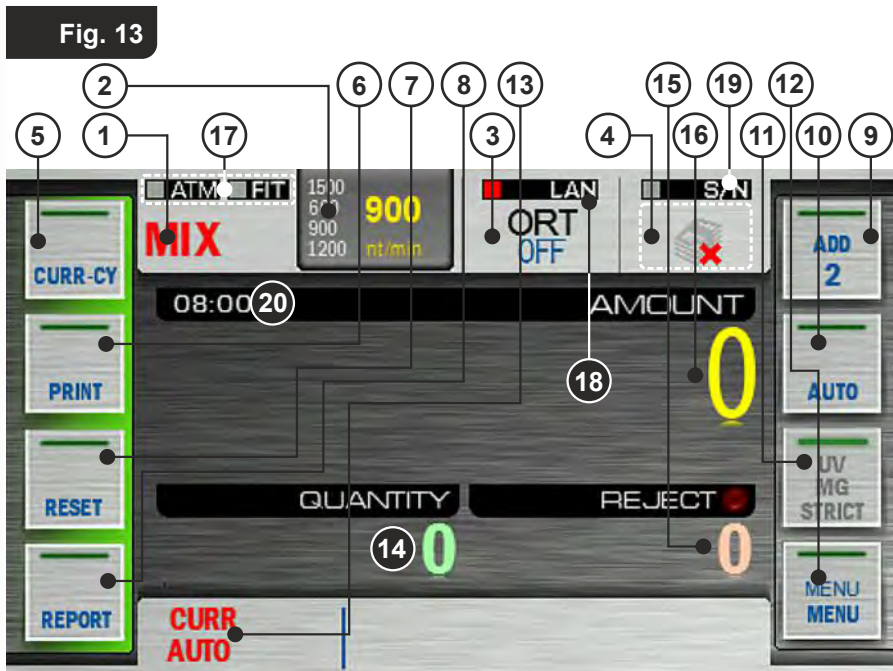
Firmware version

Currency base

Loading progress bar



After the self-test the counter returns beep signal and the display will show the main menu (Fig. 13):



- |  |   |
|--|---|
| 1 Count mode key;                                | 12 Settings menu key;                   |
| 2 Count speed key;                               | 13 Selected currency indicator /        |
| 3 Banknote orientation sorting key;              | Currency select key;                    |
| 4 Batch mode key                                 | 14 Counted banknotes quantity;          |
| (inactive in <b>MULTI</b> mode);                 | 15 Rejected banknotes quantity;         |
| 5 Currency select key;                           | 16 Counted sum;                         |
| 6 Send count results to the printer key;         | 17 System time;                         |
| 7 Count reset key;                               | 18 Ethernet connection indicator (red - |
| 8 Enter «REPORT» key;                            | off; green-blue or green-grey flashing  |
| 9 <b>ADD</b> mode on/off key;                    | - exchange data with the server);       |
| 10 <b>Auto / Manual</b> start key;               | 19 Banknote S/N detection indicator;    |
| 11 <b>UV</b> detection, <b>Magnet</b> detection, | 20 System time.                         |
| optical density and strict test on/off key;      |   |

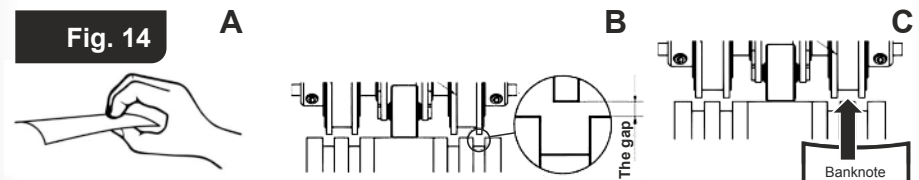
Now the counter is ready to count the banknotes in factory default mode<sup>2</sup>:

- Language: English;
- Currency: auto recognition by the first note in the batch;
- Count mode: MIX;
- Start mode: AUTO;
- ADD mode: off
- Batch mode: off
- Count rate: 900 notes per minute
- UV-T, UV-R detection: off

<sup>2</sup> Factory default settings may be revised to match customer requirements.

- MG (magnet) detection: off
- DEN (density) detection: on
- Orientation sorting (ORT): off
- Information output: printer (manual); 9600bps
- Advanced rendering mode: off
- Sound volume: 50%
- Screen brightness: 100%
- Display theme: grey
- Stacker limit: 200 banknotes
- Reject pocket limit: 50 banknotes
- User profile: "1"
- Serial numbers detection: off
- Fitness mode: off

3 Adjust the feeder gap. The manufacturer presets the gap in accordance with the currencies to be counted. However, if the counter often rejects the genuine banknotes and the report (see section «**Operation Keys**», **REPORT Key**, Fig. 49) returns «**Small Notes Gap**», «**Double Note**» or «**Dimensions**» as the reason of the banknotes rejection, then turn screw 1 slightly clockwise (toward «-») to reduce the gap (see Fig. 1). If the rejection report returns «**Skew Error**», «**Length**» or «**Dimensions**», then turn screw 1 slightly counterclockwise (toward «+») to increase the gap (see Fig. 1). The gap between separating rollers and feeding rollers should make one note to pass free between the rollers but prevent two notes put together from passing (see Figure 14). To check a gap, use a banknote of good quality, not worn out one. Rotate the feeding wheels to set the position of the rollers so that there are no ripples in a place where the note passes. Put the short side of the banknote between the separating rollers and feeding rollers. The banknote should pass through with a little tension. If one banknote passes very easily, then decrease the gap. If one banknote passes between the rollers with difficulty, then increase the gap. Continue gap setting until the banknote passes through rollers with a little tension.



4 Adjust banknote guides to the longest banknote in the counted batch, prepare the batch as shown in Fig.15: take out torn, wet, dirty and greasy notes. The banknotes should not protrude from the batch. Put the prepared banknotes in the centre of the hopper, avoiding the skew. The counter will start operation. Counting is stopped when the number of the notes equal to the stacker capacity has been counted. After the banknotes have been removed out of the stacker, the device resumes operation automatically.

5 If any error occurs, please follow the advices of the «**Error Messages**» section.

**Advice:** For customer's convenience we suggest to use a stylus designed to control the devices with a touchscreen. The stylus will facilitate your work with the counter. Two styluses for the resistive touch screens are the part of delivery set (see Fig.16).



Fig. 15



Fig. 16

### Counter settings menu

To enter User settings menu touch **MENU** icon (see Fig.13). The display will return User settings menu. In its left part, there are the submenu keys, in the right part there are the corresponding parameters.

To save the changes and exit the menu touch . After the exit the screen shows the selected settings.

To exit without saving touch .

### 1 «Common» Submenu (see Fig.17)

Contains the categories «**Detection**», «**Count rate**», «**Add**», and the keys «**Info**», «**Pocket limits**», «**Print**», «**Addit.**»

#### Detection

Each counting mode has own range of available detection.

In **COUNT** mode the transmissive **UV** control (**UV-T**) and the optical density control of banknotes (**DENSITY**) are available.

In **DEN** and **MIX** modes the available kinds of detection are: the reflective **UV** control (**UV-R**), magnetic marks control (**MG**), strict level of counterfeit detection (**STRICT**).

**UV-T** and **UV-R** are respectively translucent and reflective ultraviolet detection mode. When it's activated ( , ), and a banknote with an increased **UV** fluorescence has been found (for example, a counterfeit printed on plain paper), the banknote goes to the reject pocket (the reasons of rejection are available in the «**REPORT**» submenu).

**UV-T** is translucent **UV** control. When is on, the banknotes with increased **UV**-luminescence (for instance, counterfeit notes printed on regular paper) will be redirected to reject pocket (reject reason is available in **REPORT** menu).

**DENSITY** is banknote optical density control. When is on, the banknotes with increased density (for instance, two notes stuck together) as well as the banknotes with increased transparency will be redirected to reject pocket (reject reason is available in **REPORT** menu).

**MG** is magnet marks control. When is on, the banknotes without magnet marks will be redirected to reject pocket (reject reason is available in **REPORT** menu).

**UV-R** is reflective **UV** control. When is on, the banknotes with increased **UV**-luminescence (for instance, counterfeit notes printed on regular paper) will be redirected to reject pocket (reject reason is available in **REPORT** menu).

**STRICT** is strict verification level. When is off, the banknotes are checked for the main authentication features only. When is on, the banknotes are checked for both main and additional authentication features (if any additional features are available)

**IMPORTANT:** When is on, authenticity control degree of the banknotes increases, but the number of rejected banknotes may increase, (reject reason is «**suspicious note**»).

**Note:** Don't turn off **STRICT** if counted banknotes authenticity is uncertain.

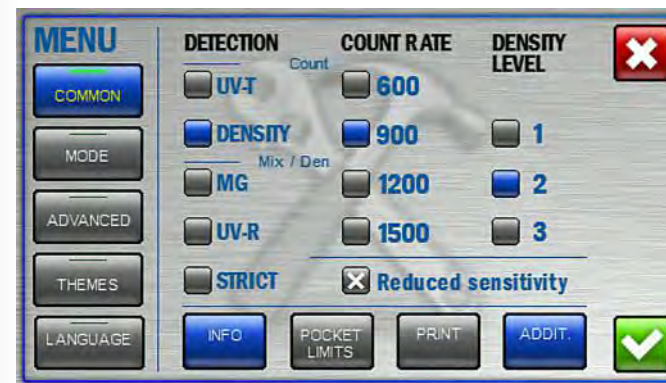


Fig. 17

### Count rate

The user can choose any of four counting rates (**600**, **900** (**1000**), **1200**, or **1500** banknotes per minute). The check-box against the selected speed is highlighted in blue. For counting of worn notes we suggest lower speed (**600** or **900** notes/min).

**Warning:** When **S/N** or **Fitness mode** is on, only two counting speeds (**600** and **1000** notes/min) are available.

### Reduced sensitivity

Reduced sensitivity is switched off by default  **Reduced sensitivity**

Switching on Reduced sensitivity  **Reduced sensitivity** increases banknote position detection but the banknotes with transparent inserts can't be counted.

### Density level

The setting allows adjusting the scanner to detect the banknotes with different optical density in **COUNT** mode.

Light and dark banknotes can be best detected when the right setting is selected:

- 1– For the new banknotes and the banknotes with the even optical density;
- 2– For moderate worn-out banknotes;
- 3– For the worn-out (dirty) banknotes and the banknotes with uneven optical density (e.g. USD).

### INFO

This screen contains the information about the device identifier (**UIN**), the firmware versions, the supported languages, the supported currencies, and the currency database version (see Fig. 18, Fig. 19). Touch the blue arrow to scroll the screen up/down.

Fig. 18

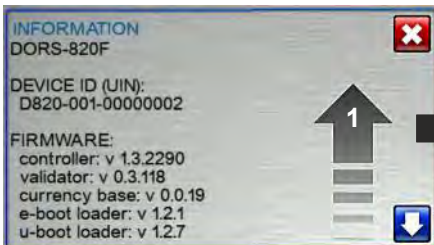
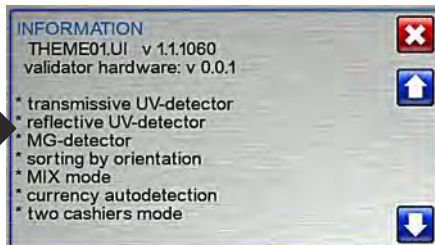


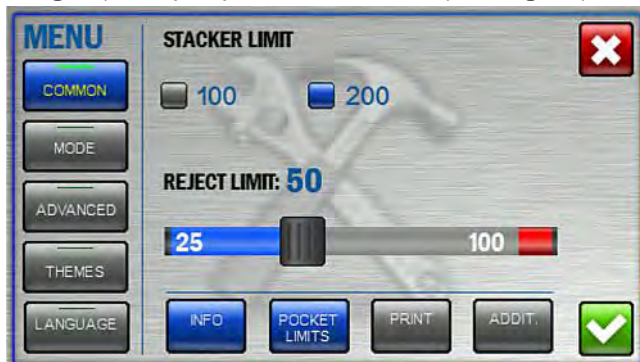
Fig. 19



### POCKET LIMITS

The icon  (see Fig.17) will open pockets limit menu (see Fig. 20).

Fig. 20



Stacker limit is maximum banknotes quantity that will be stacked. The limit has two values: **100** or **200** banknotes; having reached the selected value the counter will stop and resume operation after emptying the stacker (and touching «I» or «II» key in manual start mode).

Selected stacker limit is highlighted in blue. Touch the desired limit value to select it.


The reject pocket has an adjustable limit value. As soon as the specified limit is reached, the counter stops and resumes its operation after the banknotes have been removed from the reject pocket (and touching «I» or «II» key in manual start mode).

The default (optimal) value of the reject pocket limit is **50** banknotes. The user can change the limit within the range of **25** to **100** banknotes. To change the limit, move a slider to the required value. The slider moves by steps of 5 notes each.

**Warning:** For counting of worn notes we suggest the reject pocket limit would not exceed 50 notes; otherwise it may cause unsmooth stacking or notes jamming.

**Note:** Please mind that all the banknotes that do not match the counting / sorting criteria get into the reject pocket, including the notes with tears and other mechanical damages. To prevent further banknote damage please don't set reject pocket limit too high.

### PRINT

The icon  (see Fig.17) will open **INFO OUTPUT METHOD** submenu (see Fig. 21)

Select information output device in this menu:


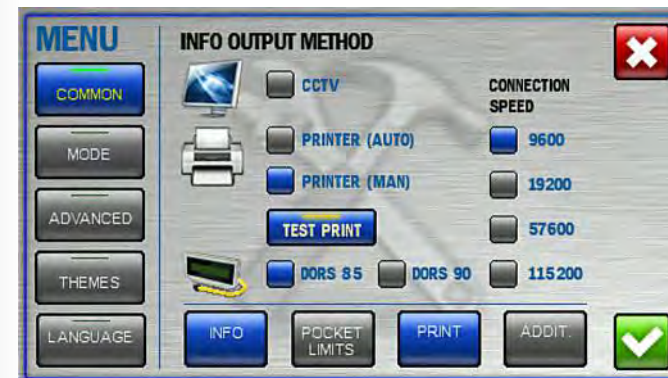
- **CCTV**.
- **PRINTER (AUTO)** – automatic output to the printer.
- **PRINTER (MAN)** – manually send info to the printer by touching  icon (see Fig.13 pos.6).
- **DORS 85 / DORS 90** – select external display.

Fig. 21



**CONNECTION SPEED** – select counter’s COM-port bit rate to establish connection with external device.

**TEST PRINT** icon will send test information to output device. If connection settings are correct, you will receive a report about successful connection (CCTV OSD message or printer receipt).

## 2 «MODE» Submenu

### Accumulation Mode (ADD):

**ADD** lets the user select an optimal summation mode. A checkbox against selected mode is highlighted with blue.

**Warning:** **ADD** mode selection is in the menu (see Fig.17). To turn **ADD** mode on/off please use **ADD** key (Fig. 13 pos.9).

#### ADD 1

When **ADD 1** is selected, the display will show the current batch amount.

Having the batch counted (the banknotes are in the stacker) the device will display the last batch amount for a while and then will show total amount.

When the notes are taken out from the pockets and the new notes are added to the hopper, the device will add the new count to total amount.

#### ADD2

When **ADD 2** is selected, the display will show the current batch amount.

Having the batch counted (the banknotes are in the stacker) the device will show total amount.

When the notes are taken out from the pockets and the new notes are added to the hopper, the device will add the new count to total amount.


#### ADD3

When **ADD 3** is selected, the display will show the current batch amount.

Having the batch counted (the banknotes are in the stacker) the device will display the last batch amount for a while and then will show total amount.

When the notes are taken out from the pockets and the new notes are added to the hopper, the device will reset total amount and start counting anew.

### Warning:

If during the counting process (when the accumulation mode is on or the stacker is not empty), the parameters affecting the count result (for example: **ADD** mode, batch mode, currency, etc.) have been changed, a flashing warning **AMOUNT DATA WILL BE LOST** will appear in the display. Touch  and take out the banknotes from all the pockets of the counter to confirm the changes.

Or select the previous mode to disable the changes.

### BATCH CONTINUE

Batch Continue is the counting mode which allows accumulating the counting results while there are banknotes in the hopper.

When the hopper is empty, the next count will start from zero, not from the previous amount.

Touch Batch Continue icon to activate/deactivate the mode (see Fig. 22).

### BATCH CLEAR

Batch Clear is the function that lets the user to choose whether to add the new batch amount to the previously counted banknotes or to reset the last batch if the following conditions are met:


- **ADD1** or **ADD2** mode is on.
- Some amount has been reached while counting, and then both the hopper and the stacker were emptied.
- An error occurred during further counting, requiring the user’s attention (note jam or the pockets are empty etc).

Having the error fixed the user will receive a message offering to add the last batch to previous amount or to reset the result to previous amount.

Touch Batch Clear icon to activate/deactivate the function (see Fig. 22).

**Batch Clear is unavailable in MULTI mode.**

### DENOMINATION CHECK

**DENOMINATION CHECK** is to verify that a counted batch of banknotes belongs to the same denomination, with the summation of the counted batches of different denominations. To activate the mode, select  **DENOMINATION CHECK**, set the mode to «**DEN**» when **ADD** is turned on.

Then counting a batch of another denomination, it is not rejected and the result is added to the existing one.

The denomination is determined by the first banknote in the bundle.

**Note:** The function is only available for automatic determination of the denomination.

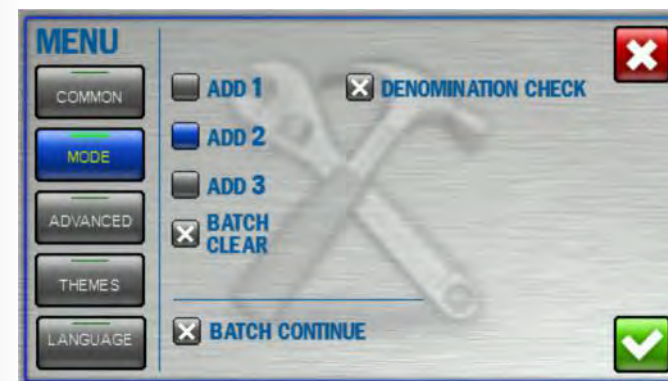
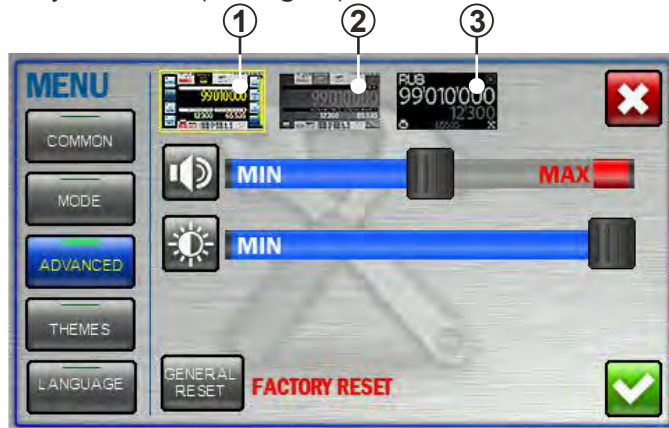


Fig. 22

### 3 «ADVANCED» Submenu

This menu contains screen brightness and sound volume settings, visual mode select and Factory reset icons (see Fig. 23).

Fig. 23



#### Visual mode select.

The counter has three visual modes:

- 1—Regular (default mode, see Fig. 13, Fig. 23.1).
- 2—Wide (see Fig. 23. 2). Quick access keys are removed from the screen, the font size is increased for **COUNT** and **AMOUNT** values (see Fig. 24). To get an access to the menu, press key. To recall the hot keys on the sides of the screen, touch the centre of the screen; touch it again to hide the keys.
- 3—Simple (see Fig. 23. 3). The font size is increased for **COUNT** and **AMOUNT** values (see Fig. 25). Only three keys are available on the screen:

- menu access.
- send data to printer.
- exit to Default visual mode.

Fig. 24



Fig. 25

#### SOUND VOLUME

Set the volume by moving the slider between **MIN** and **MAX** (Fig. 23). To turn the sound off move the slider to **MIN**.

#### LCD BRIGHTNESS

Set display brightness by moving the slider between **MIN** and **MAX** (Fig. 23).

#### FACTORY RESET

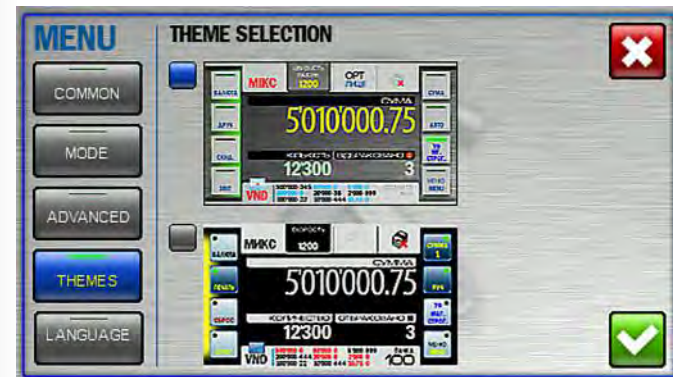
Touch the key to reset current user settings to factory defaults (refer to «OPERATION» s.2). To exclude an accidental reset of the settings, you will be asked to confirm it (see Fig. 44).

**Warning:** the settings are reset for the current user only, while the settings of another user remain as they were.

### 4 «THEMES» Submenu

Select one of the preset themes of graphic user interface (GUI). Selected theme is marked by blue check-box at the left (Fig. 26).

Fig. 26



## 5 «LANGUAGE» Submenu

Select one of the preset languages. Touch the language to select it.

Selected language is marked by blue check-box at the left (see Fig. 27). Available languages depend on the counter firmware version.



Fig. 27

## 1 Keys I and II (START / USER PROFILE / USER)

1.1 The counter can save two various profiles with their unique settings. You can switch between them by touching the keys «I» and «II» (see Fig. 3). The profiles may be used by one user or by two users («Two tellers» operation mode). According to the tasks to be solved and personal preferences, each user can choose any setting and any counting / sorting mode.

Selected profile indication depends on visual mode. In regular visual mode the operating keys next to the active user key are highlighted in green. The figures given below show the control panel appearance for various users: Fig. 28 is for 1st user (I); Fig. 29 is for 2nd user (II).

### Regular visual mode:

USER 1 keys are highlighted

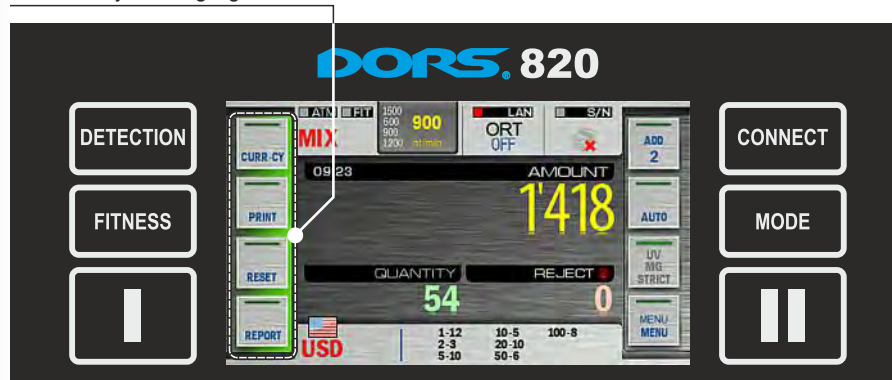
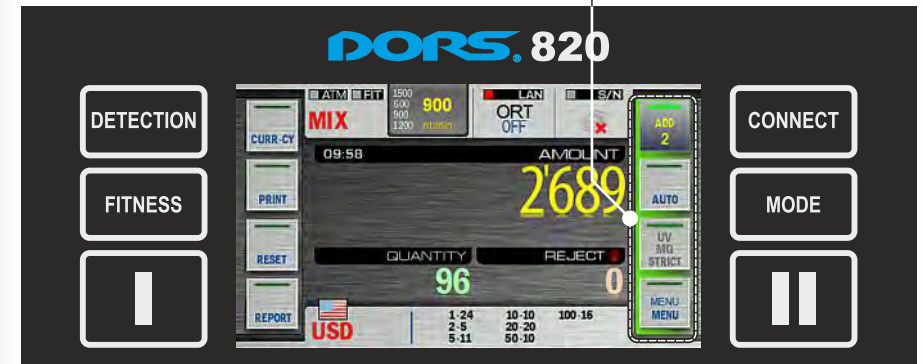


Fig. 28

USER 2 keys are highlighted

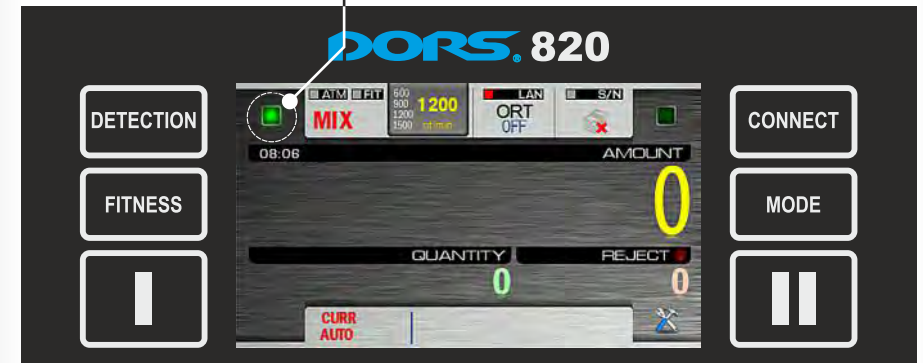
Fig. 29



### Wide visual mode:

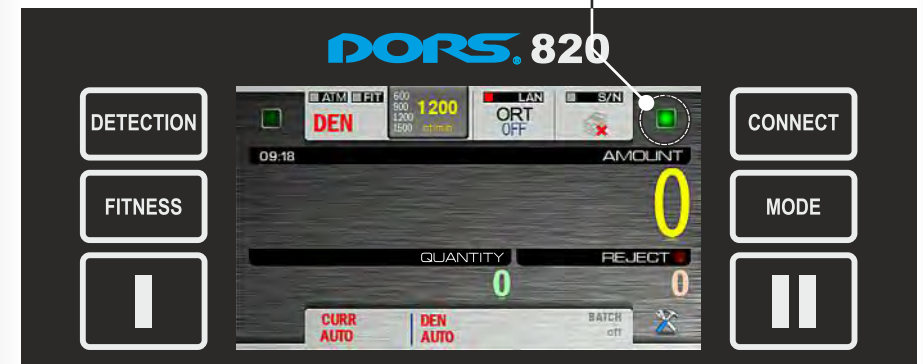
USER 1 indicator

Fig. 30



USER 2 indicator

Fig. 31



1.2 «I» or «II» key is used to start the counting in manual mode. Touch the key of the active user to start.

## 2 Counting mode key

There are four counting modes: «COUNT», «MIX», «MULTI» and «DEN». A mode is selected by a repetitive touching of the mode key. At the same time this key displays the selected operation mode.

2.1 «COUNT» is a piece counting mode. The notes are counted without detecting their denominations and counterfeit detection; the display shows the quantity of the counted and rejected<sup>3</sup> banknotes (Fig. 32).

Fig. 32

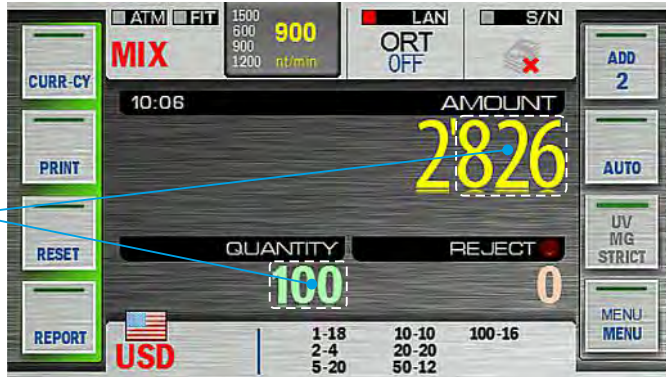


2.2 «MIX» is the counting mode for mixed denominations of certain currency with their authentication, calculation of the total amount, the quantity of the counted banknotes and amounts of each denomination. The counter will display total amount of the counted banknotes, the quantity of rejected and accepted banknotes (see Fig. 33).

The detailed report on each denomination's number and amount is available by touching the key «REPORT» (submenu «Batch Report», Fig. 34) or by touching the area shown in Fig. 33).

Fig. 33

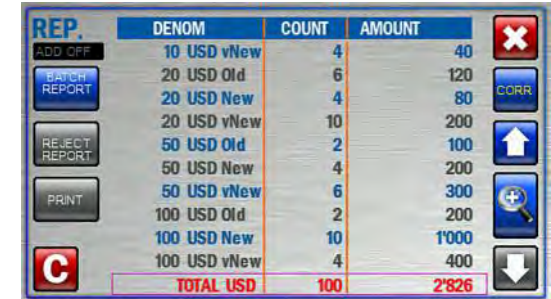
Touch here to open the detailed report



<sup>3</sup> Rejected banknotes displayed quantity is for reference and may differ from actual.

For more details on submenu «REPORT», see subsection Operation Keys (Key «REPORT»).

Fig. 34



To open denomination table touch the area shown in Fig. 34a. The main screen will display a table as in Fig. 34b.

Touch the heading of the «DENOM» column (see Fig. 34c) to change the sorting of denominations in ascending or descending order.

To close the table touch its upper right corner (see Fig. 34c).

**Note** – To have denomination table opened in Simple visual mode (see Fig. 25), you must first open the table in the Regular mode (see Fig. 34a) and then select Simple visual mode.

Fig. 34a



Touch to open denomination table

Fig. 34b

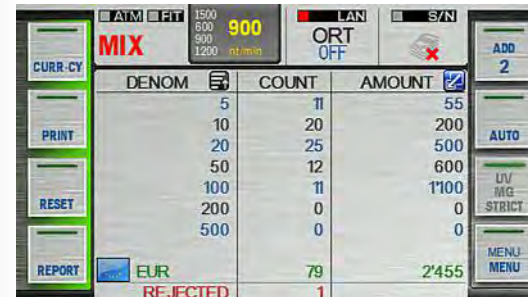
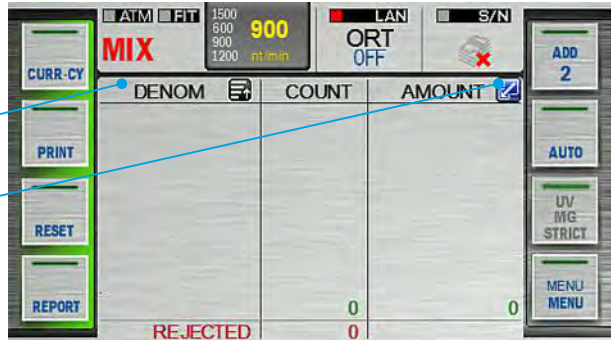


Fig. 34c

Sorting by denomination  
Touch to close denomination table



2.4 «DEN» – is the counting mode for the banknotes of certain denomination with their authentication, calculation of the total amount and the quantity of counted banknotes, and the detection of denomination and issue. The denomination and issue are set by the first banknote in the batch. It's also possible to select the denomination manually (see submenu «CURRENCY»). The display shows the total amount of counted banknotes, the quantity of rejected and accepted banknotes (see Fig. 36).

2.3 «MULTI» is a mode for counting a mixture of banknotes of several currencies and denominations, with authentication, determining the quantity and amount of counted banknotes for each denomination of each currency. For conversion, the currencies selected for auto-determination are available (1...5 currencies, see Currency key). If the «Full auto» mode is selected then the list of currencies on the main screen is empty by default and will be filled as more currencies are detected. After detecting more than 5 currencies the buttons will appear to scroll through the list. The display shows the quantity and amount of counted banknotes for each currency and the quantity of rejected banknotes (see Fig. 35).  
To go to the currency report, touch the flag zone or the name of the currency (see Fig. 35a). The denomination, quantity and amount of all counted banknotes are available by touching the «REPORT» key («BATCH REPORT» see Fig. 35b).

Fig. 35a

DENOM	COUNT	AMOUNT
5 EUR Old	2	10
5 EUR New	6	30
10 EUR Old	6	60
10 EUR New	8	80
20 EUR Old	4	80
20 EUR New	6	120
50 EUR Old	12	600
50 EUR New	8	400
100 EUR Old	6	600
<b>TOTAL EUR</b>	<b>58</b>	<b>1'980</b>

Fig. 35b

DENOM	COUNT	AMOUNT
5 EUR Old	2	10
5 EUR New	6	30
10 EUR Old	6	60
10 EUR New	8	80
20 EUR Old	4	80
20 EUR New	6	120
50 EUR Old	12	600
50 EUR New	8	400
100 EUR Old	6	600
<b>TOTAL EUR</b>	<b>58</b>	<b>1'980</b>
50 RUB	28	1'400

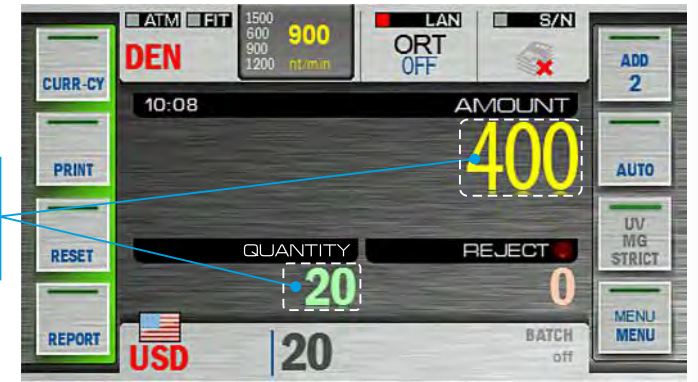



Fig. 35

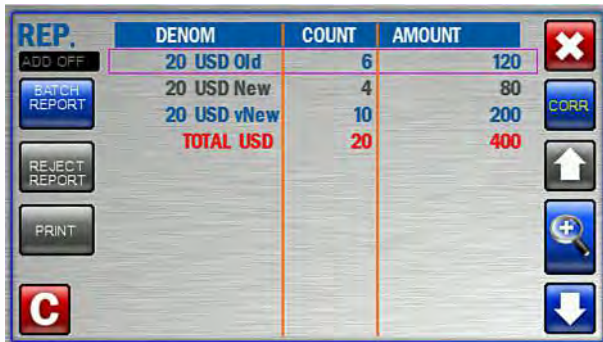
Touch here to open currency report  
Quantity  
Amount

Fig. 36

Touch here to open the report about counted banknotes




Touch **REPORT** key or the area shown in **Fig. 36** and open  to check the denomination, quantity and amount for each denomination (see **Fig. 37**).





REP.	DENOM	COUNT	AMOUNT
ADD OFF	20 USD Old	6	120
BATCH REPORT	20 USD New	4	80
REJECT REPORT	20 USD vNew	10	200
PRINT	<b>TOTAL USD</b>	<b>20</b>	<b>400</b>



**Fig. 37**

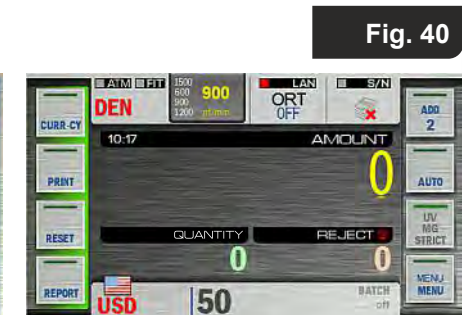
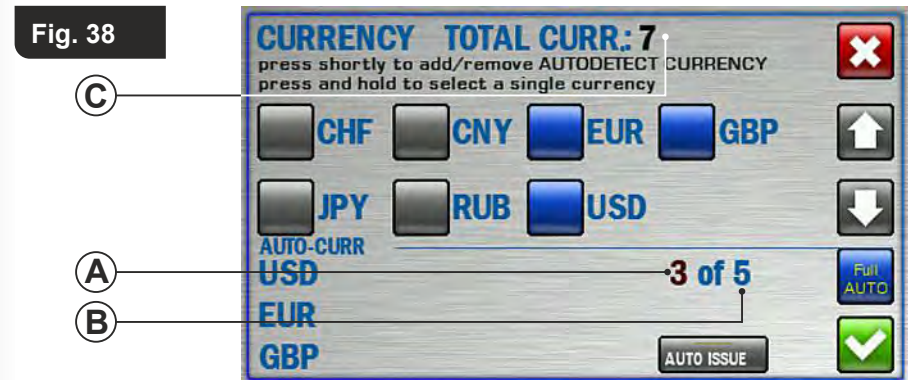
### 3 CURRENCY key

3.1 Touch  key to open **CURRENCY** submenu (see **Fig. 38**), and select the currency to be counted and denomination. The set of supported currencies depends on firmware version. Currency selection is available only for «MIX», «MULTI» and «DEN» modes; denomination selection is available only for «DEN» mode. Automatic mode of currency detection is on by default; the counted currency is set by the first banknote in the batch (see **Fig. 38**). In the bottom left corner of the screen there is a list of auto currencies (**AUTO-CURR**), i.e. those currencies that can be detected automatically (if more than one currency is selected).

**Fig.38 shows:**

- A – Currencies quantity available for auto detection by the first banknote in the batch (selected by user). Touch any currency to delete it from auto detection list.
- B – All available auto currencies quantity (depends on firmware version). If the user tries to exceed this amount, a message **CURRENCY not more 5 than** will appear in the upper part of the display.
- C – All available currencies' quantity (depends on firmware version). In the middle of the screen there is a list of currencies. If the quantity of currencies in this list (C) is more than 8, you can scroll through this list with   keys. Touch the currency to add any currency to auto currencies list (A). A colour of a box against is changed from grey to blue to confirm your choice. Touch the currency again to delete a currency from the Auto currencies list. Touch and hold the currency for one second to select it as a single one.

**Note:** if the only currency is selected, its name appears at the top of the screen (see **Fig. 39**); also at the main screen a sign  is replaced with a name of this currency (in **Fig. 40 - **).



3.2 In the «DEN» mode you may count the banknotes of the selected currency with a manually selected denomination value. Select a single currency, and the list of Auto Currencies at bottom left corner of the screen will be replaced with a list of all denominations of selected currency (see **Fig. 39**).

Auto denomination mode is on by default, i.e. the denomination is detected by the first note in the batch; in this case the check-boxes at the left of denominations are highlighted in blue<sup>4</sup>. Touch the required denomination for passing the banknotes of the certain denomination to the stacker; the checkbox at the left of selected value will stay blue while the other checkboxes become grey (see Fig. 41). For the user's convenience the selected value of denomination in «DEN» mode is shown in the main screen to the right of the selected currency (see Fig. 40). To return to automatic denomination mode, touch key **AUTO DEN** to the right of the denominations list (see Fig. 39).

**3.3** Touch **AUTO ISSUE** icon for sorting the banknotes by a year of their issue (a year when they were put in circulation). When you activate this option (it will be highlighted in blue) in **DEN** mode, the device will count only the banknotes of the same currency, denomination, and issue (the issue is detected as year of issue or **OLD**, **NEW** and **VERY NEW** attribute of the first note in a batch depending on the settings of selected currency). The other banknotes will be rejected. In **MIX** mode the device will count only the banknotes of the same currency and issue (the issue is detected as **OLD**, **NEW** and **VERY NEW** attribute of the first note in a batch).

The issue of the counted banknotes is displayed to the right of the currency (see Fig. 42).

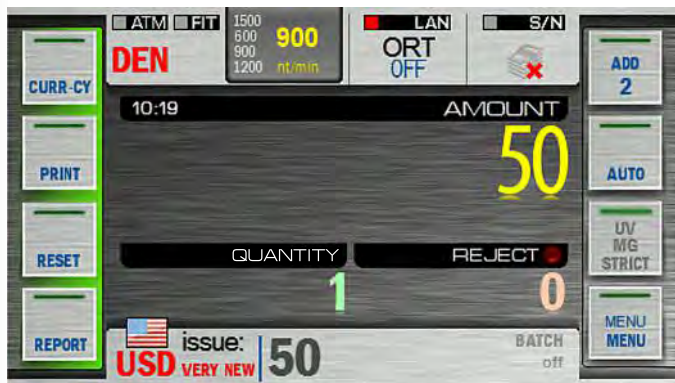


Fig. 42

**WARNING:** sorting the banknotes by their issue (**OLD**, **NEW** and **VERY NEW**) is available not for every currency.

<sup>4</sup> The colour may vary depending on selected theme.

**3.4 Singular currency.**

Depending on a currency set of your counter, it can detect so-called singular currencies. A singular currency is one which optical properties differing from other currencies so that detecting it automatically along with the other currencies is impossible.

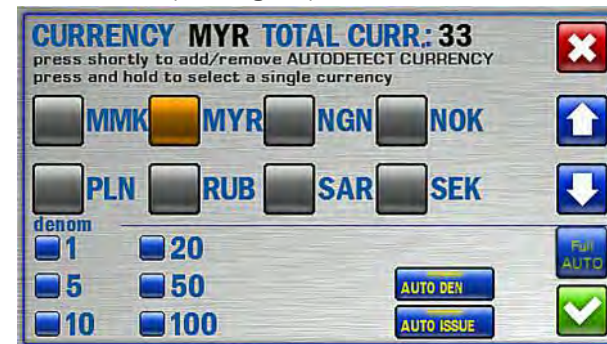
If a singular currency is selected, then the other currencies can't be added to the auto currency list. To cancel a choice of a singular currency, just choose any other currency.

In currencies list a singular currency is marked by different colour (see Fig. 43 where it is marked by yellow).

A symbol of selected currency (or AUTO mode symbol) is at the bottom left corner of a main screen (see Fig. 37 and Fig. 43). This symbol is also a hot key to get access to CURRENCY submenu (for instance when Wide visual mode is active).

In MIX mode to the right of a currency symbol there is a list of denominations of this currency with quantity of counted notes; counted denominations are in black font (see Fig. 33).

Fig. 43

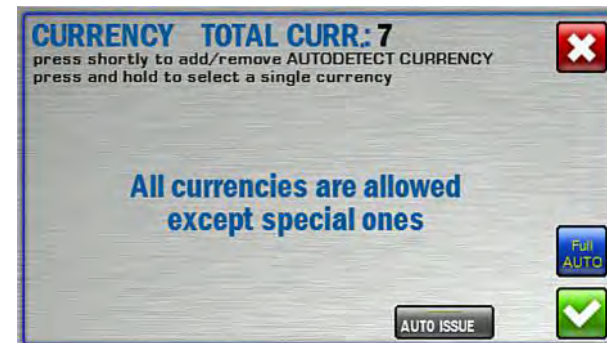


**3.5 Full AUTO**

Full automatic currency detection mode allows you to work with all currencies stored in the counter's memory(except for special ones). To activate the mode touch the button «Full AUTO» (see Fig. 38).

When this mode is activated, the list of all available currencies will be replaced by the inscription «All currencies are allowed except special ones» (see Fig. 44).



Fig. 44




The **Full AUTO** mode has the following restrictions:

- Three banknote conversion speeds are available for selection - 600, 900, 1200 n/min.
- This mode is incompatible with the «S/N», «FITNESS», «ATM» modes. If one of the above modes has been already selected, then the «Full AUTO» key will be inactive (grey). If the **Full AUTO** mode is enabled, then when you try to turn on any of the «Serial Number Recognition», «FITNESS», «ATM» modes, the message «UNAVAILABLE» appears on the screen.

#### 4 PRINT key

 key will send the results of counting to the printer connected to the counter if manual printing mode is selected  **PRINTER (MAN)** (see Fig. 21).

#### 5 RESET key

 key will clear the counting results after the stacker has been emptied (the reject pocket shall also be empty). To avoid an accidental data reset, an acknowledgement is required (see Fig. 45).


If  mode is on, then acknowledgement window will appear as in Fig. 45a.

**LAST key** will delete the result of the last count on the main screen and amount report.

**ALL key** will delete all the information about counted banknotes on the main screen and amount report.





#### 6 REPORT key

Touch  key to call **REPORT** submenu (Fig. 46) showing the information about counted and rejected banknotes.

REP.	DENOM	COUNT	AMOUNT
ADD OFF	5 EUR Old	4	20
BATCH REPORT	5 EUR New	12	60
REJECT REPORT	10 EUR Old	11	110
PRINT	10 EUR New	12	120
	20 EUR Old	6	120
	20 EUR New	12	240
	50 EUR Old	20	1'000
	50 EUR New	14	700
	100 EUR Old	9	900
	<b>TOTAL EUR</b>	<b>100</b>	<b>3'270</b>

Fig. 46

The report is available in two versions:

-  – Batch report;
-  – Session report.

Both versions have **DENOM**, **COUNT** and **AMOUNT** columns.

**DENOM** is the column where all denominations of counted banknotes are listed.

**COUNT** contains the quantity of counted banknotes of all listed denominations.

**AMOUNT** is the total amounts for all denominations.

**TOTAL** is the total quantity and the total amount of all counted banknotes.

Batch report (see Fig. 47) shows all the counted banknotes that got into the stacker during the last counting. If **ADD** mode is on, then the batch report will include the total amount of the banknotes counted in **ADD** mode.

Session report (see Fig. 48) displays the list of all the banknotes counted since the counter has been switched on (see article 2 of subsection **OPERATION**).

Fig. 47

REP.	DENOM	COUNT	AMOUNT
ADD OFF	1 USD vNew	18	18
BATCH REPORT	2 USD vNew	6	12
REJECT REPORT	5 USD Old	6	30
PRINT	5 USD New	10	50
	5 USD vNew	2	10
	10 USD New	6	60
	10 USD vNew	4	40
	20 USD Old	6	120
	20 USD New	4	80
	20 USD vNew	10	200
	50 USD Old	2	100

If **ADD** mode is on , then batch report will contain all the banknotes counted in **ADD** mode. **SESSION REPORT** (see Fig. 48) displays all the banknotes counted since switching on the counter. Session report is created separately for User I and User II

Touch  key to clear the reports.

An acknowledgement window may appear (see Fig. 45).


Touch  to exit the report screen.

Fig. 48

REP.	DENOM	COUNT	AMOUNT
ADD OFF	10 USD vNew	18	180
TOTAL REPORT	20 USD Old	33	660
REJECT REPORT	20 USD New	22	440
PRINT	20 USD vNew	55	1'100
	50 USD Old	11	550
	50 USD New	20	1'000
	50 USD vNew	28	1'400
	100 USD Old	9	900
	100 USD New	49	4'900
	100 USD vNew	18	1'800
	<b>TOTAL USD</b>	<b>499</b>	<b>13'825</b>

**Manual amount correction**

Pressing the **CORR** key (see Fig. 48) opens the menu for manual correction of the amount of counted banknotes (see Fig. 49).

This menu allows you to manually adjust the amount of counted banknotes including adding the required amount of coins, save to the report or print the corrected results.

In fig. 49:

- 1 – The currency selected for adjustment (highlighted in the list of currencies).
- 2 – The total amount of all denominations obtained as a result of the correction.
- 3 – Fields for entering: the number and amount of coins, the quantity for each denomination of the selected currency (the list can be scrolled).
- 4 – A list of all available currencies (depends on your counter's firmware). At the top of the list there are the currencies that have been counted before entering the correction menu. All the other currencies are arranged after in alphabetical order (the list can be scrolled).
- 5 – «Cancel» button to exit the menu without saving the entered changes.
- 6 – «Print» button to print a receipt with correction results.
- 7 – **OK** button - saves the changes and switches to the **REPORT** menu.

**Correction order:**

- 1 – Select the currency in the list of currencies.
- 2 – Touch the input field of the required denomination, in the window that opens (see Fig. 50), enter the required quantity (for coins the quantity and amount) and touch the checkmark to confirm.
- 3 – Repeat steps p. 1, 2 for all denominations and currencies that are required.
- 4 – Press **OK** button to save the entered changes and exit to the **REPORT** menu.

When manually adjusting the amount, please note that:

- When **ADD** mode is on, all available banknote counts are saved, and newly entered data will be added to them.
- When **ADD** mode is off and there are counted banknotes in the stacker, then the newly entered data will be added to them.
- When **ADD** mode is off and there are no counted banknotes in the stacker then only newly entered data is displayed.

Fig. 49

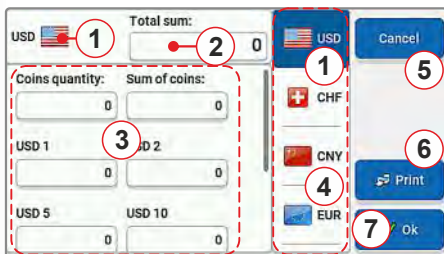
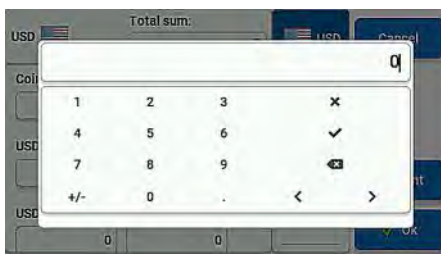


Fig. 50



Reject report is available in two versions:

- Reject pocket report;
- Extended reject pocket report.

Reject report (Fig. 51) contains possible reject reasons and rejected banknotes' quantity for each reason:

- «**Counting mode mismatch**» - rejected banknotes do not match selected counting mode (for instance the banknotes of various denomination are counted in **DEN** mode; currency or denomination mismatch).
- «**Mechanical errors**» - the banknotes were rejected due to skew in the path leading to detection error.
- «**Suspect**» - rejected banknotes do not match main criteria of selected currency.

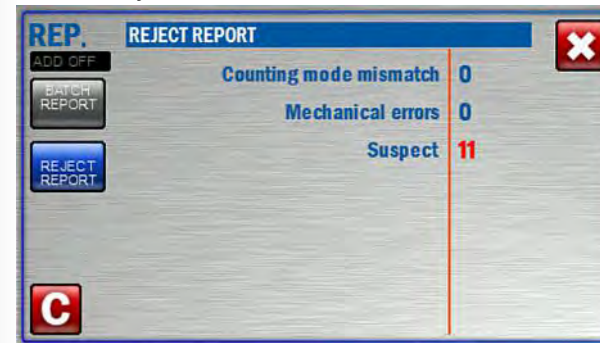


Fig. 51

Extended reject report (Fig. 52) contains the numbers of the banknotes and their reject reasons.

**NUM** – banknote position in reject pocket (the position may not match the actual one due to some errors: small notes gap, double etc).

**REJECT REASON** – an error which led to banknote reject (see Table 1).

The number of the banknote in the counted batch is displayed to the right of reject reason (for reference).

Touch **C** to reset the reports (acknowledgement is required, see Fig. 45).

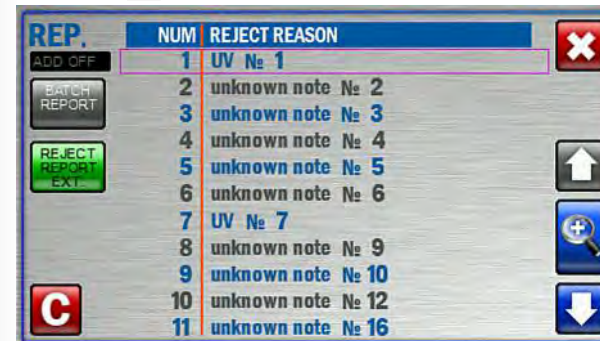


Fig. 52



**TABLE 1**

REJECT REASON	Description	Teller's actions
<b>SUSPECT NOTE</b>	Currency and denomination are detected, but authenticity is not confirmed	Remove the banknote and recount it. In case of repeated rejection, verify the authenticity of the banknote by other means.
<b>UNKNOWN NOTE</b>	Banknote currency and denomination can't be detected	Remove the banknote and recount it. In case of repeated rejection, verify the authenticity of the banknote by other means.
<b>CURRENCY (X Y), X for the currency and Y for the denomination</b>	Banknote currency doesn't match the selected one in <b>DEN</b> or <b>MIX</b> mode	Remove the banknote.
<b>DENOM (X Y), X for the currency and Y for the denomination</b>	Banknote denomination doesn't match the selected one in <b>DEN</b> mode	Remove the banknote.
<b>ORIENTATION</b>	Banknote orientation does not match the selected one.	Place the banknote into the hopper according to selected orientation
<b>SMALL GAP IN THE PATH</b>	Continuous notes chain in the path (short side of note is too long or the gap between two notes is too short).	Remove the banknotes that got stuck together. Adjust the feeder gap («-» for gap decrease) for operation with the thin banknotes.
<b>SMALL GAP IN THE FEEDER</b>	Continuous notes chain between separating and feeding rollers (short side of note is too long or the interval between two notes is too short).	To adjust the required gap, turn screw 1 (Fig. 1) slightly clockwise.
<b>DOUBLE NOTE: DARK</b>	Double or very dark banknote was detected.	Remove the rejected banknote(s). Adjust the feeder gap («-» for gap decrease) for operation with the thin banknotes. To adjust the required gap, turn screw 1 (Fig. 1) slightly clockwise.
<b>DOUBLE NOTE: TRANSPARENT</b>	A very transparent banknote has been detected.	Remove the banknote.
<b>DIMENSIONS</b>	A banknote differs from the average dimensions of the first five notes in a batch (the difference exceeds 20mm by the long side of note or 10% by its short side).	Remove the banknote. Adjust the feeder gap (if required) according to article 3 of section «Operation».
<b>ANGLE</b>	Banknote skew angle exceeds 14°.	Adjust the banknote guides to the length of the longest note in the batch. If required, adjust the banknote feeder gap («+» to increase the gap) for operation with thicker banknotes. To achieve the required gap, turn screw 1 (Fig.1) counterclockwise.

**TABLE 1**

REJECT REASON	Description	Teller's actions
<b>UV</b>	High <b>UV</b> level of the banknote is found with turned on <b>UV-T</b> or <b>UV-R</b> detection	Remove the banknote and recount it. If the high level of <b>UV</b> luminescence is a feature of this type of banknotes, then switch off <b>UV-T</b> or/and <b>UV-R</b> .
<b>MG</b>	A banknote with wrong magnet marks is detected	Remove the banknote.
<b>SCANNER ERROR</b>	Banknote scanning error	Place the banknote in the hopper and recount it.
<b>TOO LONG</b>	Short side of the banknote exceeded 120mm (a probable reason can be: a banknote has passed with a skew or the banknotes got stuck together).	Place the banknote in the hopper and recount it. Adjust feeder gap if required.
<b>FEED ERROR</b>	Banknote feeding error	Place the banknote in the hopper and recount it.
<b>EXCESS NOTE</b>	The quantity of fed banknotes exceeds the one required by selected mode (sorting or stacker limit).	Place the banknote in the hopper and recount it.
<b>ISSUE</b>	The banknote issue doesn't match the issue of the 1st note in the batch (for <b>DEN</b> and <b>MIX</b> modes)	Remove the banknote.
<b>Fitness: MUTILATION</b>	Banknote fitness doesn't meet the preset specifications	
<b>Fitness: TEAR</b>		
<b>Fitness: DOG EAR</b>		
<b>Fitness: STAIN</b>		
<b>Fitness: GRAFFITI</b>		
<b>Fitness: HOLE</b>		
<b>Fitness: SOIL</b>		
<b>Fitness: TAPE</b>		
<b>Fitness: FIT NOTE</b>		
<b>SN</b>		Banknote serial number doesn't match selected criteria.



### 7 ADD key

Touch **ADD** key to turn on  or turn off  **ADD** mode (Fig. 13). To switch between **ADD1**, **ADD2**, **ADD3** modes use **MENU** key.



**ADD** mode is for accumulation of counted banknotes by their denomination and total amount, the banknotes added to the hopper will be summed with the ones already counted. Touch **RESET** to reset counted total amount and notes quantity.

Please mind that in **DEN** and **MIX** modes **COUNT** and **AMOUNT** values are displayed according to selected **ADD** mode while counting and after the counting has been finished.

### 8 AUTO / MAN key

**AUTO / MAN** key (Fig. 13) sets the counter to automatic or manual start mode. The key has two states:  for automatic start and  for manual start.

In automatic start mode the counter will start counting as soon as the notes are placed into the hopper.

In manual start mode the counter will start counting as soon as the key  or  is touched, depending on selected user profile.

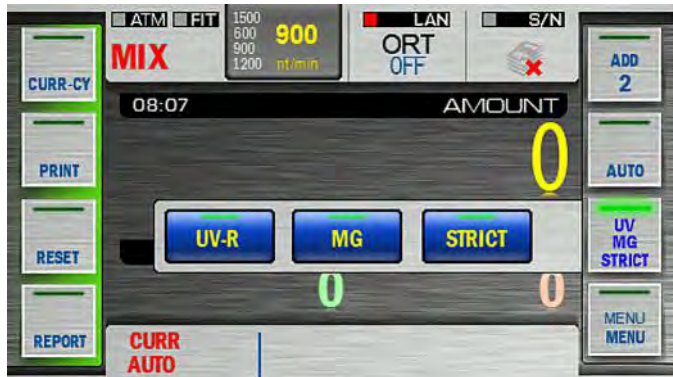
### 9 UV-MG-STRICT / UV-DENS key

**UV-MG-STRICT / UV-DENS** key provides quick access to detection options depending on selected count mode. In **MULTI**, **DEN** and **MIX** modes touching this key recalls pop-up menu where **UV-R**, **MG** or **STRICT** detection can be turned on / off. Turned on detection will be highlighted in blue if Default theme is used (Fig. 53).

Turned off detection will be highlighted in grey:



Fig. 53



Touching this key in **COUNT** mode recalls pop-up menu where **UV-T** or **DENS.** detection can be turned on / off. Turned on detection will be highlighted in blue if Default theme is used (Fig. 54). Turned off detection will be highlighted in grey:

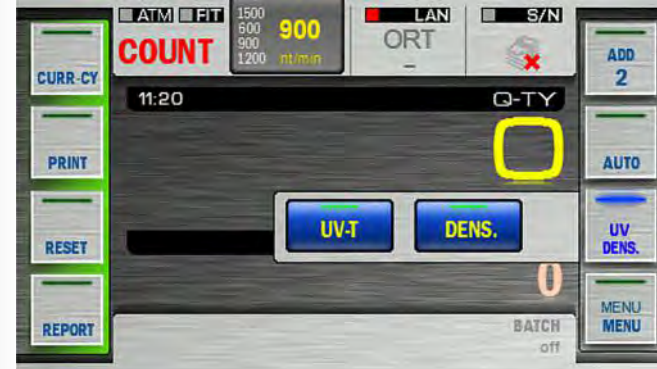


Fig. 54

**Note:** the inscriptions on the key are also highlighted depending on selected detection mode.

### 10 BATCH AMOUNT and BATCH QUANTITY

- **BATCH** function allows counting the preset quantity or amount of the banknotes.
- **BATCH AMOUNT** is available in **DEN** and **MIX** modes; **BATCH QUANTITY** is available in **DEN** and **COUNT** modes.
- To switch **BATCH** function on/off touch the batch icon in the top right part of the screen. To open Batch menu screen touch and hold the batch sign or touch the highlighted area in the bottom of the screen, see Fig. 55.

Fig. 55

Touch to switch **BATCH** function on/off.  
Touch and hold to open **BATCH** menu screen  
Touch to open **BATCH** menu screen



- You can switch **BATCH** function on/off independently for each mode.
- In the **BATCH** submenu you can change stacker capacity (100 or 200 notes). Touch the required value (new value will be highlighted in blue) to change stacker capacity.
- In **DEN** mode open Batch menu screen and select between **BATCH QUANTITY** or **BATCH AMOUNT** function by touching the button **Amount / Qty**, see Fig. 55a. In **COUNT** and **MIX** modes this button is not available.

Fig. 55a



- Maximum value in **BATCH AMOUNT** is 4'000'000'000, maximum value in **BATCH QUANTITY** is 999.
- Touch to save the selected settings and switch on BATCH mode (or discard the changes if the selected quantity/amount is 0). Touch to discard the changes. Touch to switch off BATCH function.
- When **BATCH AMOUNT** function is active the information about current amount and target amount appears in the bottom right area of the screen, see Fig. 56. In **MIX** mode small Denomination table is not displayed when **BATCH AMOUNT** function is active, but you can open large Denomination table if you need, see Fig. 56a.

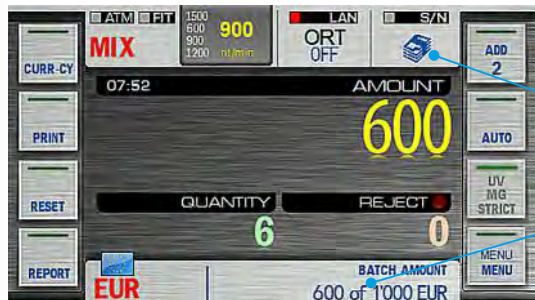


Fig. 56

BATCH AMOUNT is switched on

Current and target amount is displayed



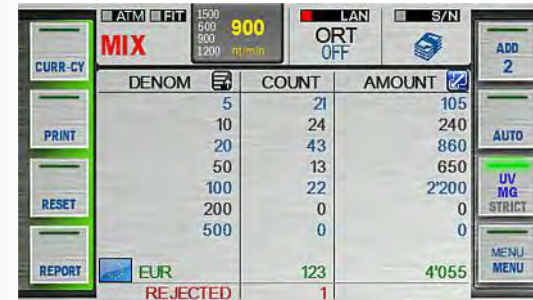
BATCH is off

Denomination table is shown



Fig. 56a

Touch here to open large Denomination table



- If the denomination of the banknote is bigger than required to complete the batch amount then this banknote will be rejected by the reason «**Excess note**».
- Current amount is displayed in the bottom area of the screen while the device is counting (see Fig. 56). If the hopper and the stacker are emptied then current amount is reset and «0 of XXX» will appear (see Fig. 56a) and the batch will be done anew from the next count.
- For **BATCH AMOUNT** the batch is considered done if the rest of the money becomes smaller than the smallest denomination for **MIX** mode or the counted denomination for **DEN** mode. If the batch was done incompletely then a message will notify you which amount to add manually.
- For **BATCH AMOUNT** when the count stops the following messages may appear:

The hopper is empty, the batch is not done, pockets limit is not reached






The batch is not done, but reject pocket limit is reached

The batch is not done, but stacker limit is reached

- If the counting wasn't continued after the device had stopped then a message will appear, see the table:

 <p><b>BATCH IS READY</b> 1'000 of 1'000 EUR LIMIT: 17 OF 100</p>	 <p><b>BATCH IS READY</b> 1'000 of 1'002 EUR Add 2 EUR LIMIT: 14 OF 100</p>
<p>The batch was done in one count; stacker limit wasn't reached</p>	<p>The batch was done in one count but exact amount can't be reached</p>
 <p><b>BATCH 50'000 EUR READY</b> where 15'650 EUR in the stacker and 34'350 EUR are removed</p>	 <p><b>BATCH 50'002 EUR READY</b> where 50 EUR in the stacker 49'950 EUR are removed Add 2 EUR</p>
<p>The batch was done in two or more counts</p>	<p>The batch was done in two or more counts but exact amount can't be reached</p>
 <p><b>REMOVE BANKNOTES FROM STACKER</b> Batch 6'340 of 10'000 EUR LIMIT: 100 OF 100</p>	 <p><b>ADD BANKNOTES</b> Batch 550 of 1'000 EUR LIMIT: 9 OF 100</p>
<p>Stacker limit is reached but the batch is not ready yet</p>	<p>The hopper is empty but the batch is not ready yet and stacker limit is not reached</p>

### 11 «ORIENTATION» key

Select the orientation of the banknotes by touching  key. A menu will appear to select the required orientation (see Fig. 57). You may also select the orientation by repetitive touching of **ORT** key; the mode will change as , , ,  showing selected orientation of the banknotes.

The menu will be closed in 7 seconds after the mode has been selected or when the counting begins.

You can select the following setting for the orientation of the banknotes: «OFF» (disregard the orientation) - see Fig. 57.

«FACE» - the banknotes will pass to the stacker if they were placed in the hopper face side up (face side is determined by issue bank), see Fig. 58. The other banknotes will be sent to reject pocket.

«ORIENT» - the banknotes will pass to the stacker if they were placed in the hopper in main orientation (face side up and the image in the right position), see Fig. 59. The other banknotes will be sent to reject pocket.

«AUTO» (by the first note in the stack) – the banknotes will pass to the stacker if they were oriented in the hopper same way as the first note in the batch, see Fig. 60. The other notes will be redirected to the reject pocket.

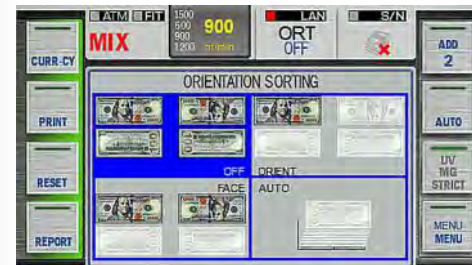


Fig. 57

Fig. 58



Fig. 59

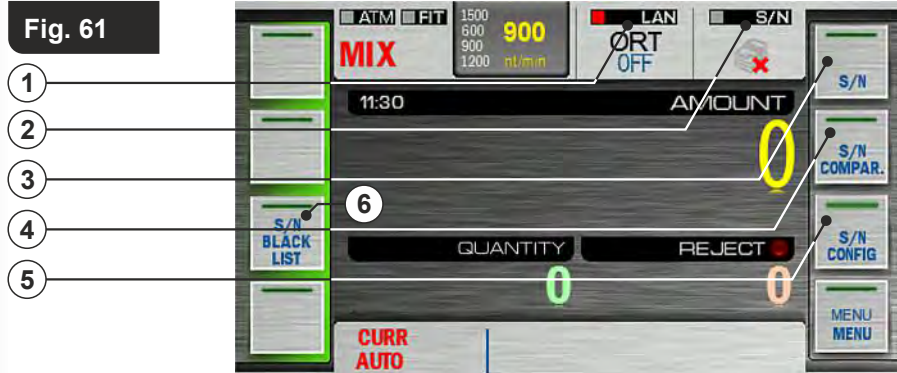
Fig. 60



## 12 «SERIAL NUMBERS» Submenu

Touch **MODE** key to open serial numbers submenu; the device will display as in **Fig. 61**. Then select required operation mode.

**Note:** When serial numbers mode is on, two counting speeds are available - 600 and 1000 n/m (**Fig. 62**).



- 1 – Ethernet connection status;
- 2 – S/N detection indicator;
- 3 – S/N detection mode key;
- 4 – S/N comparison mode key;
- 5 – S/N detection parameters select key;
- 6 – S/N black list key.



Two operation modes are available:  
**SN** detection and **SN** comparison.

### SN detection

Touch **key 3 (Fig. 61)** to turn on (S/N) or off (S/N) SN detection.

When the detection is on, the counter will detect serial numbers of the banknotes in the counted batch.

The banknotes will not be rejected in this mode regardless of SN detection result. This mode is for visual **SN** control or sending **SN** data to the computer.

Visual **SN** control is available in **REPORT** submenu or by touching **REJECT** area on the main screen.

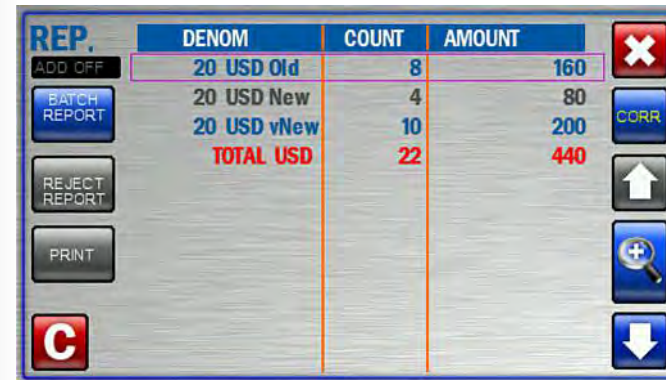


Fig. 63

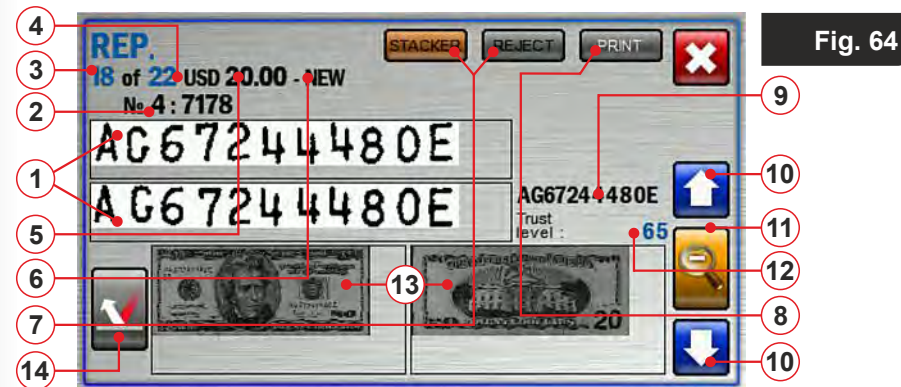


Fig. 64

Touch **REPORT** (Fig. 63) to open detailed SN detection report (see Fig. 64).

**Fig. 64 shows:**

- 1 Detected (scanned) image of banknote serial numbers. Please mind that the image is enhanced and may differ from actual.
- 2 Banknote position in the batch that has been placed in the hopper. Reject report will show reject reason (**Fig. 65**).

### SN reject reasons:

Trust Level	Reject reason
33..64	Too many recovered SN characters
1..32	SN is incomplete
0	No SN detection was done
-1	SN character mismatch
-2	SN formula violation
-3	Missing characters, SN is probably in the black list
-4	SN: No detection result received
-5	SN matches the data in the black list

- 3 Banknote number in the stacker.
- 4 Detected currency.
- 5 Detected denomination.
- 6 Banknote issue (if any).
- 7 Reject pocket report and stacker report keys. Highlighted key designates the selected pocket:

**STACKER** – for stacker report (see Fig. 64);  
**REJECT** – for reject report (see Fig. 65).

**Warning:** SN images (pos. 1 Fig. 64) and banknote images (pos. 13 Fig. 64) are displayed from the last single count only (the images from the previous counts are deleted). Single count starts when the banknotes are placed in the hopper and it stops when:

- Pocket limit or batch limit is reached, or
- Hopper is empty, or
- Note jam or another error requiring immediate counting interruption has happened.

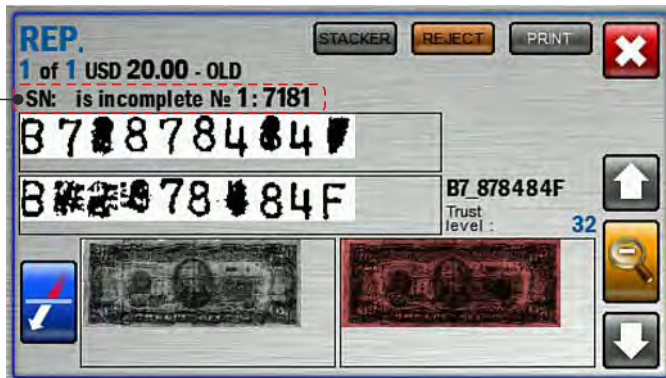
8 **PRINT** – key will output the count of the last batch results to the printer depending on selected pocket. Stacker output data contains banknote position, currency, denomination, issue and banknote SN. Reject pocket output data contains banknote position and reject reason.

9 **Detected SN** in text format. Besides the figures and letters it may contain: ( ) – not detected, (!) – found different symbols that should match in the same banknote.

- 10 Navigation keys to select a banknote in the report.
- 11 Switch between batch report and banknote report key.
- 12 Detected SN trust level.
- 13 Banknote scanned image (if available)
- 14 Select the colour of banknote scanned image.
- 15 Count number (unique identification of the counted batch).

Fig. 65

Reject reason →



### SN COMPARE mode

Touch **SN COMPAR.** to turn on (S/N COMPAR.) or off (S/N) serial number compare mode. In this mode the counter detects two serial numbers of the banknote in a batch and compares they match each other.

Banknote sorting is made according to preset **SN trust level** for the currency, denomination and issue, with displaying reject reason in the reject report.

This mode is to reject the notes which **SN** doesn't match selected trust level. **SN** review is available in **REPORT** submenu (touch **REPORT** key or **REJECT** area in the main screen).

Fig. 66



### S/N Black List

Touch **S/N Black List** button to switch on (S/N BLACK LIST) or off (S/N) S/N Black List mode. When the mode is on, the banknotes with their serial numbers included in the black list of the counter will be rejected.

Fig. 67



## SN Trust Level

**SN trust level** is the parameter that sets where to redirect the banknote according to the results of SN detection. **SN trust level** detected by the counter may be within -5 ... 65 (refer to Table 2).

TABLE 2

Trust Level	Description
65	All SN symbols detected. No SN symbol discrepancy found.
64	1 symbol is not detected. However full result line has been achieved based on all banknote SNs data. No SN symbol discrepancy found.
63	2 symbols are not detected. However full result line has been achieved based on all banknote SNs data. No SN symbol discrepancy found.
62	3 symbols are not detected. However full result line has been achieved based on all banknote SNs data. No SN symbol discrepancy found.
32	Some symbols are not detected. However result line has been achieved based on all banknote SNs data except 1 symbol. ( ) will be displayed in the result line instead of missing symbol. No SN symbol discrepancy found.
31	Some symbols are not detected. However result line has been achieved based on all banknote SNs data except 2 symbols. ( ) will be displayed in the result line instead of missing symbols. No SN symbol discrepancy found.
30	Some symbols are not detected. However result line has been achieved based on all banknote SNs data except 3 symbols. ( ) will be displayed in the result line instead of missing symbols. No SN symbol discrepancy found.
0	SN detection hasn't been done.
-1	Banknote SNs do not match each other. (!) will be displayed in the result line instead of mismatching symbols.
-2	SN doesn't match the formula preset for the detected currency.
-3	Missing characters, SN is probably in the black list
-4	SN processing is incomplete.
-5	SN matches the data in the black list

## SN parameters menu



Touch  (Fig. 61) to open SN parameters menu. **WARNING:** SN parameters menu is password<sup>5</sup> protected. Enter valid password to open the menu: touch grey rectangle (Fig. 68) to display the keyboard (Fig. 69), type the password and touch  to open SN parameters menu (Fig. 70).

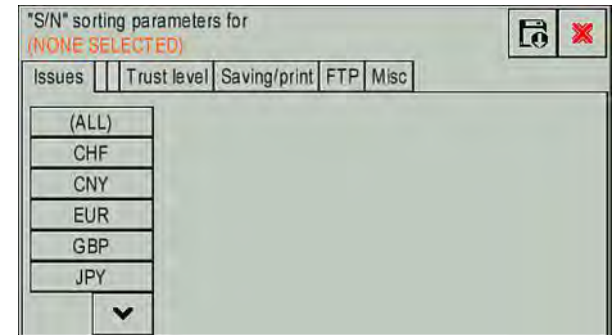
Fig. 68



Fig. 69



Fig. 70



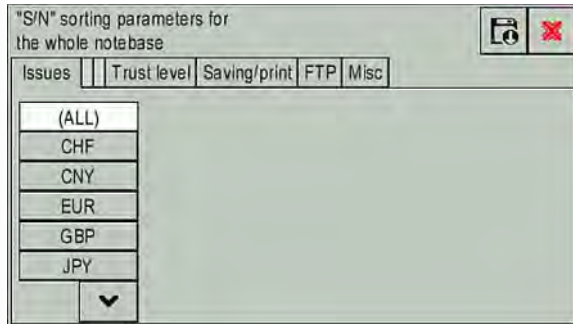
Selected currency, denomination and issue are displayed in the upper part of the screen. If any of the above is not selected (Fig. 70), then trust level setting is unavailable (Fig. 74).

<sup>5</sup> — Default password is DEMO (Fig. 69).

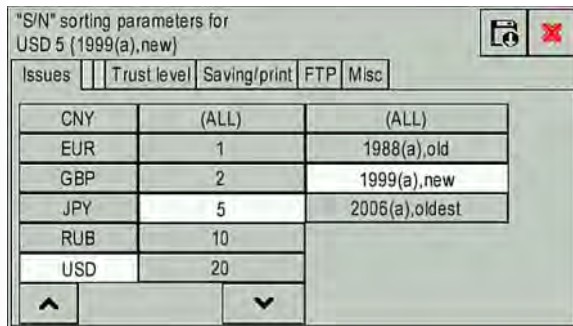
**ISSUES tab**

**ISSUES** tab contains the list of currencies, denominations and issues preset in the counter memory.

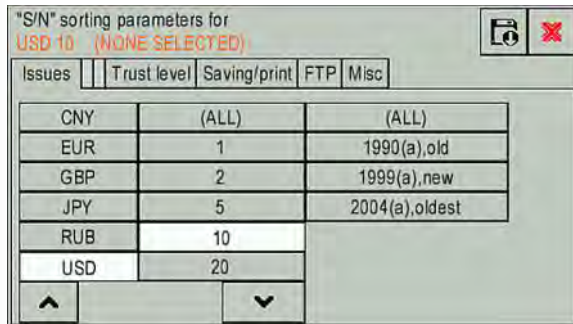
**ALL** will set trust level for all preset currencies (Fig. 71). You may also set trust level for a certain currency, denomination and issue; to do this please select required currency, then select required denomination (or all denominations) and then select required issue (or all issues); see Fig. 72. If any of the parameters hasn't been selected (for example, the currency and denomination are selected while the issue is not, see Fig. 73), then trust level setting is unavailable (Fig. 74).



**Fig. 71**



**Fig. 72**

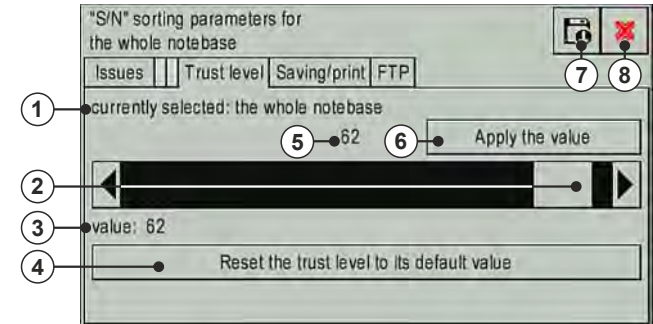


**Fig. 73**

**Fig. 74**



**Fig. 75**



**Fig. 75 shows:**

- 1 Selected currency, denomination and issue (here all available currencies are selected).  
**WARNING:** All the changes will be implemented for selected currency, denomination and issue only.
- 2 Trust level value scrollbar – will set the value from -5 to 65.
- 3 Actual trust level value (or value range, see Fig. 76): the last saved value or default value (factory setting). Value range will appear when the settings for selected currencies, denominations and issues are different.
- 4 The key will reset trust level for selected currencies, denominations and issues to its default value.
- 5 Current trust level value set by the scrollbar.
- 6 Apply the value key will apply trust level value set by the scrollbar selected currencies, denominations and issues. **WARNING:** Actual trust level value will be applied only when all changes are saved (key 7 in Fig. 75).
- 7 The key will open a window (Fig. 77) to save actual trust level values for all the made changes.
- 8 Exit key.

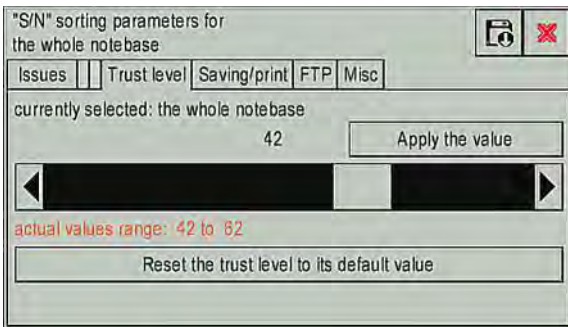


Fig. 76

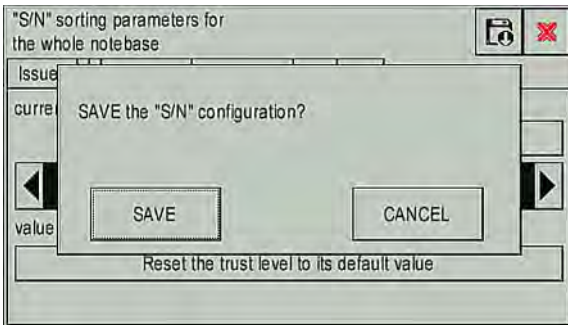


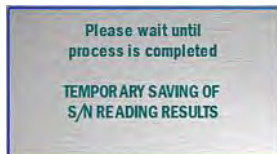
Fig. 77

**SAVING MODES tab (Fig. 78).**

The tab allows you to configure the storage of count data and access to it through the built-in WEB server via HTTP, and printing serial numbers on a printer receipt.

The checkbox  ACCESS S/N VIA INTERNAL WEB-SERVER ... activates the generation of files with the results of the recount of banknotes (including serial numbers) and allows access to them through the device's web server.

The data for 10 counts of banknotes can be stored (the data remains stored until it is cleared from memory or until the power is turned off). After each recount, an informational message appears



After the counter's memory is full, a message will appear indicating that the memory needs to be cleared (see Fig. 79). If the counter is connected to a computer<sup>6</sup>, the data will be transferred in automatic mode while the counter's memory will be cleared, and there will be no memory overflow.

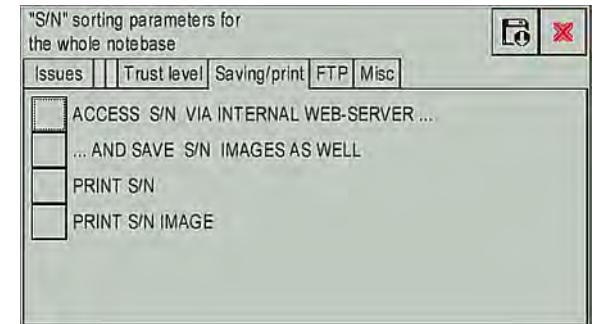
The checkbox  ... AND SAVE S/N IMAGES AS WELL activates saving the images of s/n together with the s/n text. If activated, it increases the size of the file and the time required to save the data.

The checkbox  PRINT S/N adds detected S/N text to the printer output data.

<sup>6</sup> — The computer must have SN receiving and saving software installed and launched.

The checkbox  PRINT S/N IMAGE adds detected S/N image to the printer output data.

Fig. 78



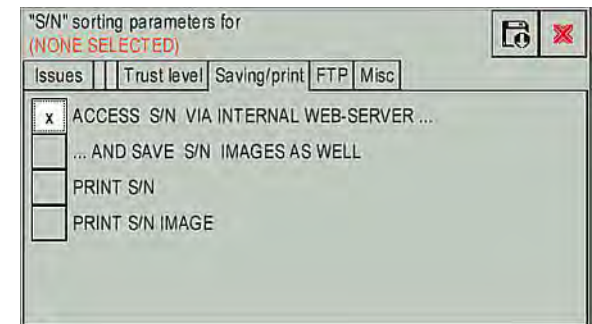
Saving the data about the counted banknotes to the computer. The counter can save the data and access to them through the built-in WEB-server using the HTTP protocol.



To enable saving the data touch the checkbox –  ACCESS S/N VIA INTERNAL WEB-SERVER ... (see Fig. 80).

Fig. 79



Fig. 80



Connect the Ethernet connector of the counter (item 18 Fig. 2) to LAN wall outlet or to the computer (see Fig. 81). LAN connection indicator (item 1 Fig. 61) will change its colour from red  LAN to green  LAN. Blinking indicator (green/blue or green/grey) means exchanging the data with the server.

**WARNING:** Do not connect Ethernet cable to the wrong connector, it may damage the device.

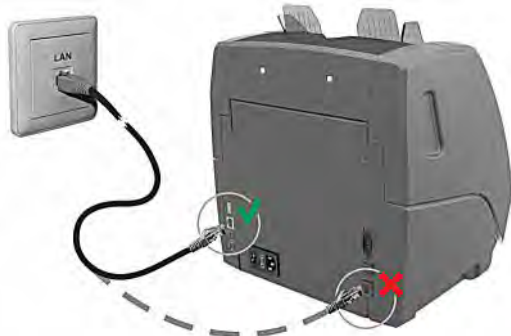


Fig. 81

### Configure the LAN settings in the counter

Touch **FUNCTION**, then touch **ETHERNET** (see Fig. 82). The network configuration window will open (see Fig. 83).

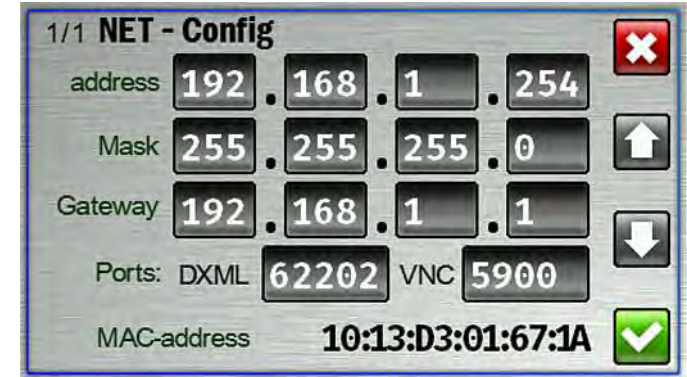
Enter the IP address of the counter, subnet mask and gateway. These settings are entered by the administrator of the local network. The administrator also configures the local network to allow the passage of HTTP packets from the built-in web server to the computer on which the counts' data will be stored.



Fig. 82

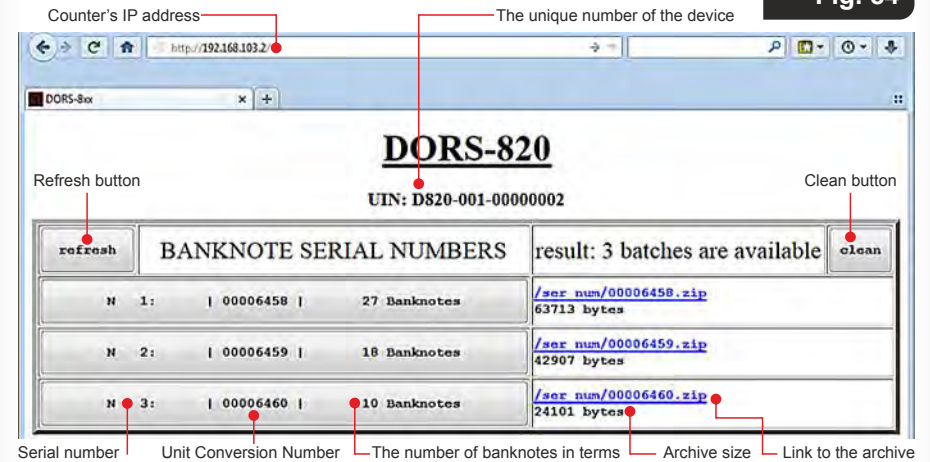
To enter the page of the embedded web server, enter the IP address specified in the counter settings (in this example 192.168.103.2) in the address bar of the browser and press Enter (the browser settings are carried out by the local network administrator). A page with the counts will open in the browser (see Fig. 84). It contains the information about the available single counts: their number, a unique number for each count, the number of

Fig. 83



banknotes in a count, a link to the archive with the results of the count, and the size of the archive. The name of the archive matches the unique number of single count. Archives are created only if saving the count data is included in the serial number parameters menu (see Fig. 80). If you turn off the counter, the archives are deleted.

Fig. 84



Each zip archive contains a \*.csv table with count results. If the serial number option (  ... AND SAVE S/N IMAGES AS WELL ) is enabled, then the archive will also contain a folder with the images of serial numbers.

Zip archives can be downloaded and deleted using standard HTTP protocol tools. To download the archive using a browser, click on the link of the archive.

To delete all archives from the device's memory, click the «clean» button (see Fig. 84). External software should provide saving and/or deleting of the archives as they become available.

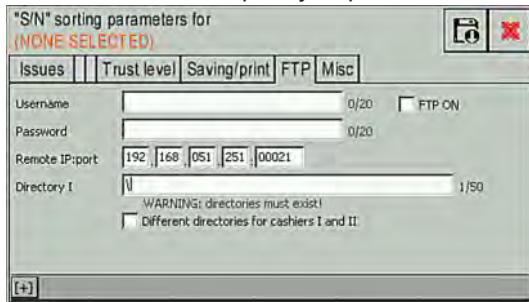
**FTP tab (see Fig. 85).**

The counter contains a built-in FTP client for automatically saving counts' data to FTP server. When the archive with the counts' data appears in the counter, the FTP client sends a request to the server to transfer the data in passive mode and, after obtaining permission, sends the archive.

Before using the FTP client, you must enable the mode of saving the counts' data, configure the local network parameters and connect the counter to the Ethernet connector (item 18 Fig. 2) with the Ethernet cable of the local network (see Fig. 81). Also, the local network must be configured to allow the passing of FTP packages from the in-built client to the server (this setting has to be done by the administrator of the local network). To save the data, please configure and enable the FTP client (see Fig. 85).

- Login – the username of the FTP server (maximum 20 characters);
- Password – password for this user (maximum 20 characters);
- Remote IP: port – IP address and port of the FTP server on which the data will be stored;
- Directory I – the path to the folder in which the data will be saved (maximum 50 characters). **Warning:** this folder must exist on the server.
- Different directories for cashiers I and II - to specify separate folder for each teller.

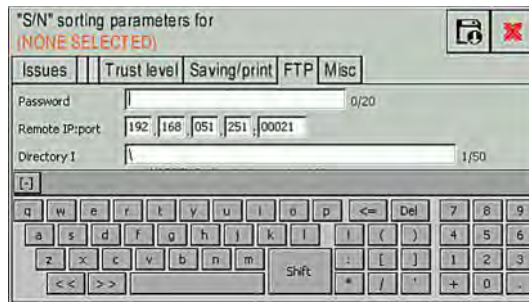
**Fig. 85**



These settings must be made by the administrator. A virtual keyboard is used to enter the settings (see Fig. 86). It opens when you touch any input field or the [+] button in the lower left corner of the screen (see Fig. 85). You can minimize the keyboard by touching the [-] button in the upper left corner of the keyboard (see Fig. 86). To enable the FTP client check  FTP ON, uncheck it to turn FTP client off  FTP ON.

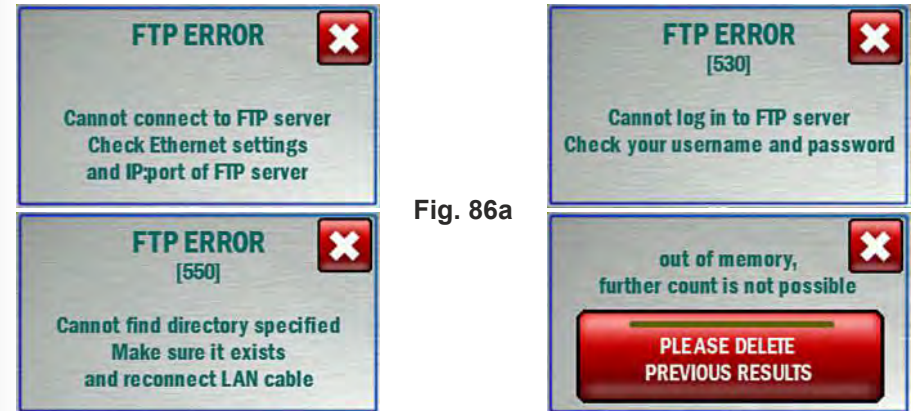
After entering all the settings, touch [Save] and save the settings, then touch [X] to exit. After that, the FTP client will start working.

**Fig. 86**



**Possible error messages**

At the beginning FTP client connects to the server using the IP address and the port specified in the settings, then enters the server under the specified name, and then searches for the specified directory and navigates to it. If it is unable to complete one of these steps, an error will occur and one of the following messages will be displayed:



**Fig. 86a**

If one of these messages appears, check the appropriate counter settings, server settings (whether such a user exists, is the password correct, does the directory for saving archives exist), as well as settings and network status.

After recounting, the error Fig. 86a may appear. This means that the archives were not sent from the counter. In this case, you should make sure that the FTP client is turned on (the  FTP ON checkbox is checked), the appropriate settings fields are filled in, the counter is physically connected to the network, the server is allowed to receive data in passive mode, and also make sure that the network is configured correctly.

After eliminating the cause of the error, the archives will begin to be sent to the server, the message will be closed, and the counting can be continued.

**Misc Tab**

The tab is to change the teller password (see Fig. 68, Fig. 69).

The new password must be typed twice in the «Enter Password» and «Repeat Password» fields (see Fig. 87, 88), and both passwords must match (a message about password matching will appear below the input fields). To save a new password press the key [Save] and confirm the changes (see Fig. 77).

The button [\*] allows you to show the entered characters (see Fig. 88).

The checkbox «Require password only on first login» allows you to enter the menu without a password if it has been entered once since the counter has been turned on. Each time the counter is turned on, the password must be re-entered for accessing the teller's menu.

This password also applies to the «UNFIT PARAM.» (see Fig. 94, 95) and the «ATM PARAM.».

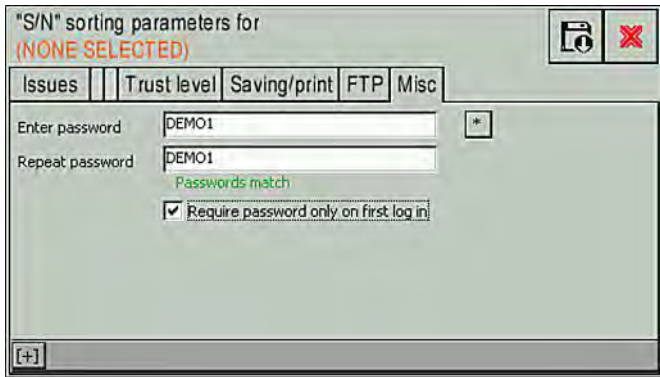


Fig. 87

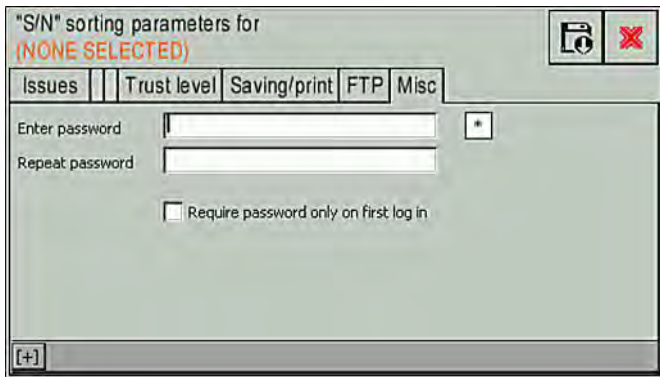


Fig. 88

### «FITNESS SORTING» Submenu

**FITNESS** – key opens fitness sorting submenu.

The parameters of the fitness of the banknotes are shown in **Fig. 101**. For every parameter a range of values is set with a threshold value that determines the validity of the banknote.

If the banknote is considered unfit by at least one of these parameters, then it will be rejected.

Push **FITNESS** and then select required operation mode Fitness screen is shown in **Fig. 89**.

**Note:** when the **FIT** or **ATM** sorting modes is turned on, two banknote counting speeds are available - **600** and **1000** nt/min (see **Fig. 90**).



- 1 – Fitness detection indicator;
- 2 – FIT mode key;
- 3 – ATM mode key;
- 4 – UNFIT parameters settings key;
- 5 – ATM parameters settings key;
- 6 – Pockets settings configure key.

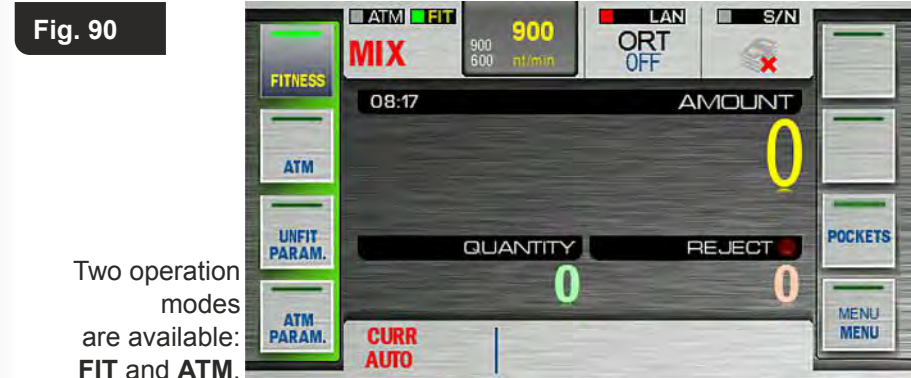


Fig. 90


Two operation modes are available: **FIT** and **ATM**.

### FIT mode

Touch «**FIT**» key (item 2 **Fig. 89**) to turn on/off **FIT mode**, the indicator **FIT** will become green (see **Fig. 90**).

The banknote that do not match fitness settings (**FIT: parameters**) will be rejected in this mode.

To open reject report touch **REPORT** key or **REJECT** on the main screen.

To open detailed reject report touch  (see Fig. 91), then the detailed report window will open (see Fig. 92).

For detailed report window description see Fig. 64, to check reject reason see Table 1 (REPORT key).

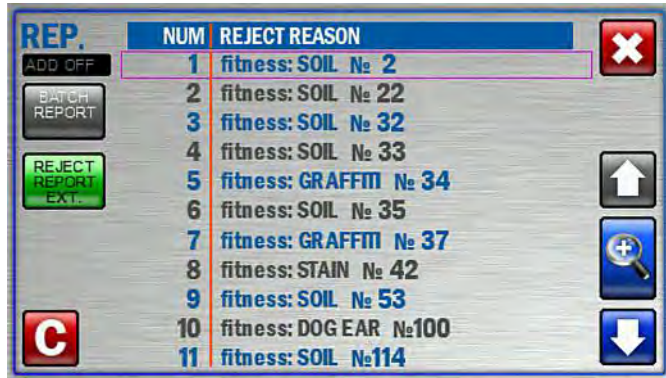


Fig. 91

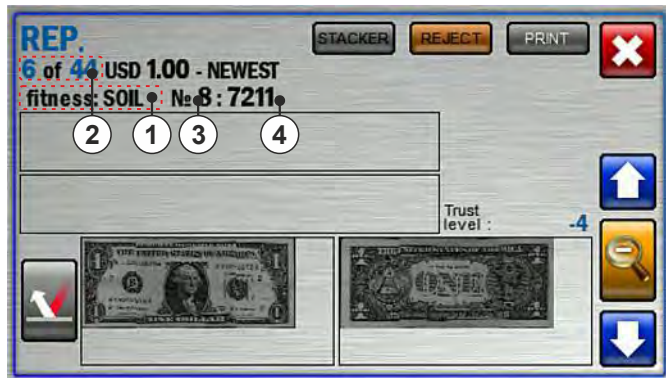



Fig. 92

- 1 – Reject reason;
- 2 – Banknote number in the reject pocket;
- 3 – Banknote number in the batch placed in the hopper;
- 4 – Single count number.

### ATM mode

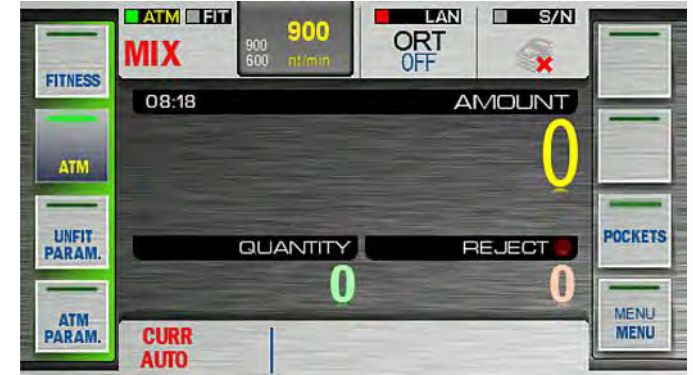
Touch «ATM» key (item 3 Fig. 89) to turn on/off ATM mode, the indicator  will become green (see Fig. 93).

When ATM mode is on the counter will select the banknotes to be used in ATM or other cash self-service machines.


The selected banknotes are forwarded to the pocket selected in the POCKETS menu (see Fig. 105).

ATM mode is a variation of the general FIT mode with more stringent parameter settings.

Fig. 93



### UNFIT parameters menu

Touch  (item 4 Fig. 89) to open FIT mode parameters settings.

**Warning:** parameters menu is password protected<sup>7</sup>.


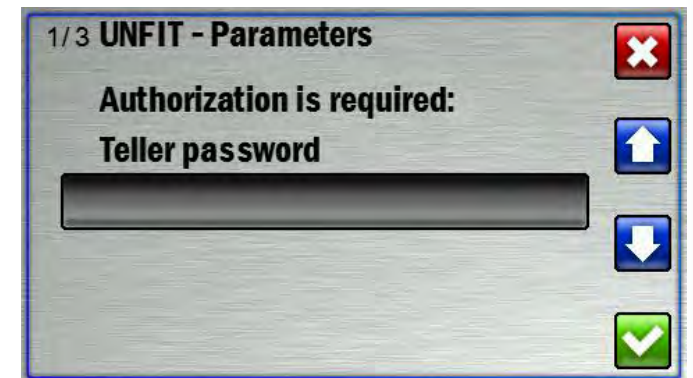
Touch the grey rectangle (see Fig. 94), the keyboard will appear. Type the password and touch  (see Fig. 95), then FIT parameters menu screen will open (see Fig. 96).

Fig. 94



<sup>7</sup> — Default password is «DEMO» (see Fig. 95)..



Fig. 95

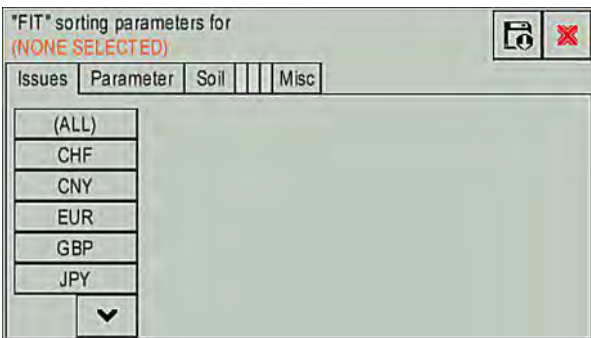


Fig. 96

The upper part of the screen indicates which currency, denomination and emission are selected for setting the **FIT** mode parameters. If nothing is selected (see Fig. 96), then the setting is not available (see Fig. 100).

### Issues Tab

In this tab you can select the currencies, denominations and issues for fitness sorting.

(ALL) will set the **FIT** mode parameters for all available currency bases (see Fig. 97).

You can also set the **FIT** mode parameters for any issue of any denomination of any currency separately, for this you need to select the currency, select the denomination (or all denominations) in the column that appears, and then select the issue (or all issues), see Fig. 98.

If some parameter is not selected (for example, the currency and denomination are selected, but the issue is not selected (see Fig. 99)), then setting the **FIT** mode parameters is not available (see Fig. 100).

Fig. 97

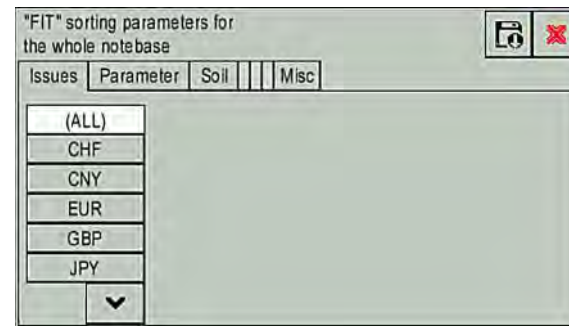


Fig. 98

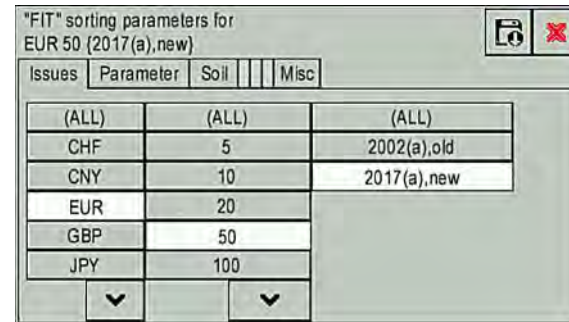


Fig. 99

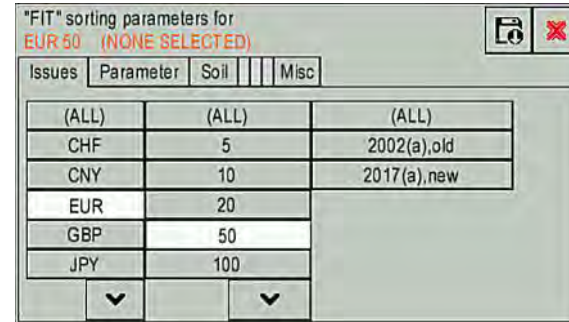
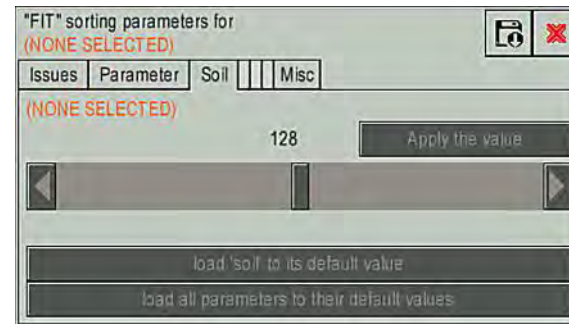


Fig. 100



### Parameter tab (see Fig. 101)

This tab is to set the parameters of **FIT** mode; available parameters may vary depending on the counter version (see Fig. 101).

When you select one of the parameters, to the right of the «**Parameter**» tab, a tab with the settings of the selected parameter will be displayed (see Fig. 101).

**Soil** – the banknotes having surface contamination of the front and (or) reverse sides, with decreased brightness of the image compared to the brightness of an ideal banknote are rejected.

**Stain** – the banknotes having one or more contrasting stains are rejected.

**Graffiti** – the banknotes having an inscription consisting of more than two signs; having one or more extraneous drawings (stamps) are rejected.

**Tear** – the banknotes having one or more breaks of the edge accompanied by the loss of part of the banknote's area are rejected.

**Hole** – the banknotes having one or more holes (punctures) are rejected.

**Mutilation** – the banknotes that have lost the edge (s) as a result of which the size of the banknote has decreased in length and (or) width are rejected.

**Folded corner** – the banknotes that have lost one or more corners are rejected.

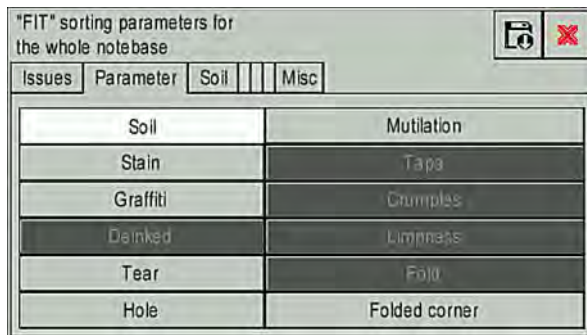


Fig. 101

### Parameter setting tab (see Fig. 102)

This tab is for adjusting the selected parameter value (for example «**Soil**»).

Fig. 102 shows:

1 Selected currency, denomination and issue (for example «**ALL**» – the whole notebase)

**Warning:** all the changes of the selected parameter will be applied for selected currency, denomination and issue only.

2 The slider to set the current value from 0 to 255. Default value (128) allows rejecting the banknotes with the defects beyond the standard allowed value

for the adjusted parameter. The more is the value the more negligible defects will be detected and rejected. The less is the value the more is the tolerance of the selected defect in the counted banknotes. If the value is 0 then the parameter is ignored during the detection. Standard values of the parameters are set by the manufacturer for each individual currency, based on generally accepted recommendations in force in the territory of its circulation.

3 The current value (or the range of actual values (see Fig. 103)) of the current fitness parameter is the last saved value (or 128; factory setting). The range of actual values appears when for the selected set of currencies, denominations, emissions, various values of the current parameter for specific emissions or denominations are set.

4 The key (load «**Soil**» to its default value) will set the parameter to factory settings for the selected set of currencies, denominations, emissions.

5 The key (load all parameters to their default values) will set all the parameters to factory settings for all the currencies, denominations, emissions.

6 Current parameter value set by the slider.

7 «**Apply the value**» key. Touch it to save the selected parameter value for the selected set of currencies, denominations, emissions.

**Warning:** the saved value will be implemented for the operation only after saving all the changes (key item 9 Fig. 102).

8 Exit key

9 Save key. Touch it to open the menu (see Fig. 104), for saving all the actual values of the fitness parameters for all the performed adjustments.

Fig. 102

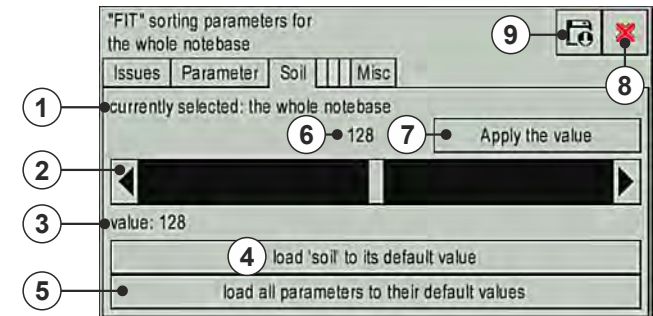
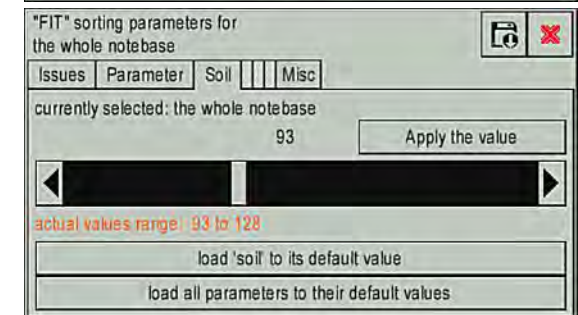
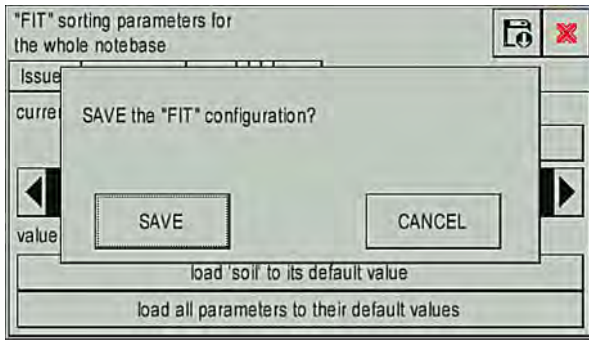



Fig. 103






**Fig. 104**

**ATM parameters menu**

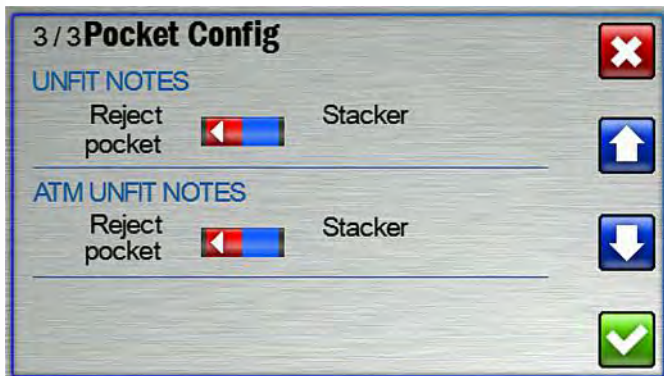
Touch  (item 5 Fig. 89) to open **ATM** parameters menu.

The configuration and functions of this menu are the same as UNFIT parameters menu except default settings from the factory.

**POCKETS menu (see Fig. 105)**

Touch  (item 6 Fig. 89) to open **POCKETS** menu (see Fig.105). Select with the switches «UNFIT NOTES» and «ATM UNFIT NOTES» the pocket for the banknotes that do not meet the criteria defined in the submenu «UNFIT PARAM.» or «ATM PARAM.». This function is useful, for example, if it is known that in a counted batch most of the banknotes can be rejected according to those criteria.

**Warning:** If selected the option that the banknotes that do not meet the fitness criteria are sent to the stacker, then the banknotes detected as suitable, as well as all other banknotes rejected for other reasons, will be sent to the reject pocket.



**Fig. 105**

**MESSAGES IN COURSE OF OPERATION**

**Error messages**

**TABLE 3**

Error message	Reason	Teller's action
<b>P.O.S.T. ERROR</b>	An error occurred during self-test of the counter (at its switching on), the sensors are covered by foreign object.	Switch off the machine. Remove the banknotes and/or foreign objects from the hopper, the stacker, the reject pocket and the path. Then switch on again. If the error happens again, call a technician.
<b>S.M.A.R.T. ERROR</b>	An error occurred during self-test of the counter (before the start of counting), the sensors are covered by foreign object.	Switch off the machine. Remove the banknotes and/or foreign objects from the path.
<b>Overcurrent</b>	Jammed banknotes or a foreign object in the path block the gear and cause the overcurrent.	Switch off the machine. Remove the banknotes and/or foreign objects from the path.
<b>Switch error</b>	Jammed banknotes or a foreign object in the path block the redirector	Switch off the machine. Remove the banknotes and/or foreign objects from the redirector.
<b>Calibration error</b>	Sensors calibration error occurred during self-test of the counter.	Switch off the machine. Remove the banknotes and/or foreign objects covering the scanner bar (pos. 7 Fig. 5 and Fig. 6). If the error happens again, call a technician.
<b>Periodical maintenance required. Please call your service support.</b>	The counter has counted the number of banknotes specified for the service interval.	Touch the screen to continue the operation. Call the technician for periodical maintenance.

# MESSAGES IN COURSE OF COUNT

TABLE 4






Error message	Reason	Teller's action
<b>Note is jammed, clear the path</b> 	A note was jammed while counting	Clean the hopper, open the path and remove jammed notes. Red circles in the picture show approximate jammed notes position. Touch Force Clean.
<b>Batch error</b>	More banknotes than required passed to the stacker in batch mode.	Take the notes out of the stacker and recount the batch.
<b>Count error Uncertain amount</b>	In a process of a count an uncertain amount of banknotes passed to the stacker.	Take the notes out of the stacker and recount the banknotes.
<b>Feed error</b>	Incorrect feeding of the banknotes.	Remove banknotes from the hopper, open the path and remove the banknotes from there. Adjust the banknote guides according to the width of the widest banknote in the batch, level the batch edges (separate banknotes shall not protrude from the batch), and place them in the hopper avoiding their skew.
<b>Banknote path is open</b> 	The path is opened, the upper part is opened.	Ensure there are no banknotes or foreign objects inside the counter and close the path.
<b>Banknote path is closed. Clearing the path...</b>	After the path has been closed, the self cleaning of the path is in progress.	Wait till cleaning of the path is over.
<b>Banknote path is closed Note is jammed in path</b> 	There are banknotes or foreign objects left in the closed path.	Open the path, remove banknotes or foreign objects. If you are sure that the jammed banknote will not get damaged, then you can use the «force clean» button to force self-cleaning tract. 
<b>Banknote path is closed. Remove banknotes from hopper</b>	There are banknotes in the hopper or hopper sensor is covered after closing the path.	Remove banknotes or foreign objects from hopper
<b>Banknote path is closed. Clean the pockets</b>	There are banknotes in the stacker or reject pocket after closing the path.	Clean the stacker and reject pocket

TABLE 4

Error message	Reason	Teller's action
<b>Remove banknotes from the stacker</b>	The number of notes in the stacker has reached the stacker capacity.	Take the banknotes out of the stacker. The counter will resume operation at once (in <b>AUTO</b> mode) or after key <b>I(II)</b> is touched (in <b>MAN</b> mode).
<b>Remove banknotes from reject pocket</b>	The number of notes in the reject pocket has reached reject pocket capacity.	Take the banknotes out of reject pocket.
<b>Add banknotes</b>	The hopper is empty while the number of notes in the stacker is less than the required batch size (in the <b>AUTOMATIC START</b> mode).	Add banknotes to the hopper, the machine will resume counting.
<b>Add banknotes and press start</b>	The hopper is empty while the number of notes in the stacker is less than the required batch size (in the <b>MANUAL START</b> mode).	Add banknotes to the hopper, touch key <b>I(II)</b> .
<b>Clean the pockets</b>	Counting settings/modes were changed after a count is finished.	Take the banknotes out of reject pocket and the stacker.
<b>Batch is ready</b>	A batch of required size is counted.	
<b>Batch of XXX notes is ready where YYY is in stacker and ZZZ are removed</b>	The message appears when selected batch size exceeds stacker limit.	Take the banknotes out of the stacker and continue counting.
<b>Unavailable</b>	You tried to choose the function unavailable for the current counting mode (for example, tried to choose a currency in the <b>COUNT</b> ).	Change counting mode to activate required option.
<b>Self-testing. Please wait until the process is completed</b>	The self-test is in progress.	Wait until the message is closed.
<b>Calibration. Please wait until the process is completed</b>	Auto sensors calibration is held on after the counter is turned on and every 30 minutes of operation	Wait until the message is closed.
<b>There are no banknotes. Feed error</b>	Can't feed the notes from the hopper.	Adjust the banknote guides to the width of the widest note in the batch. Adjust the feeder gap if required («+» means gap increase) for operation with thicker banknotes. To get the required gap, turn screw <b>1</b> (Fig. 1) counter-clockwise.

TABLE 4

Error message	Reason	Teller's action
<b>Reset confirmation</b>	Settings reset acknowledgement request	Confirm or cancel settings reset (Fig. 44).
<b>Please wait until the process is completed</b> <b>TEMPORARY SAVING OF S/N READING RESULTS</b>	The results of counted batch SN detection are being saved in counter memory	Wait until the message is closed.
	To prevent counter memory overflow while saving banknote SN	Three actions are possible: 1 Save stored SN data to PC and clean counter memory from PC. 2 Clean counter memory from PC. 3 Touch « <b>PLEASE DELETE PREVIOUS RESULTS</b> » to clean counter memory
<b>FTP ERROR Failed to connect to server Check Ethernet settings and IP address and FTP server port</b>	Incorrect FTP client or local network settings. FTP server not connected.	Make all the necessary settings and connections* in the <b>FTP</b> tab of the <b>SN CONFIG</b> menu, check the local network settings (see the section «Saving the data about the counted banknotes to the computer»)
<b>FTP ERROR (530) Failed to log in to the server. Check login and password.</b>	Login or password in the FTP tab of the SN CONFIG menu does not match FTP server data.	Check and, if necessary, change the settings of the FTP server* (in case of changing the settings reconnect the Ethernet cable (see pos. 19 Fig. 2)). Enter the correct username and password in the <b>FTP</b> tab of the <b>SN CONFIG</b> menu.
<b>FTP ERROR (550) The specified folder was not found. Make sure it exists and reconnect the network cable.</b>	A destination folder to save the archives is missing on the server.	Check and, if necessary, change the settings of the <b>FTP server</b> * (in case of changing the settings reconnect the Ethernet cable (see pos. 19 Fig. 2)). Enter the correct route to destination folder.

\* – Local network and FTP server settings must be adjusted by administrator.

## CONNECTION OF EXTERNAL DEVICES

The following external devices for information output can be connected to the counter:

- External display;
- Receipt printer;
- CCTV.

The external display is connected by built-in cable to the connector for external display (pos. 17 Fig. 2). The receipt printer or **CCTV** is connected by the direct **RS-232 cable** (not supplied in delivery set) to **DE9 connector** (pos. 15 Fig. 2).

Before connecting external devices, the counter must be switched off. To set the connection speed please follow the instructions given in paragraph **PRINT**. The counter allows you to output information simultaneously to the external display and receipt printer or to external display and **CCTV**.

## MAINTENANCE

According to experience of the world vendors, we suggest calling the technician for the professional maintenance every 90 days. If you use the machine for more than one shift a day or the most of counted banknotes are dirty and soiled, then more frequent maintenance is required.

### On a daily basis:

- 1 Switch off the banknote counter if you do not use it.
- 2 Wipe the counter external parts with a dry clean lint-free tissue.
- 3 After work is completed and the counter is switched off, clean the sensors from dust with a soft lint-free tissue or a soft brush. The sensors 1...10 shown in Fig. 4, Fig. 5, Fig. 6 and Fig. 7 should be cleaned. In case of strong soiling, it is allowed to wipe the sensors with the lint-free tissue moistened with alcohol.

**WARNING: Before cleaning the sensors, make sure that counter is switched off and the power cord is disconnected from the power supply!**

## TROUBLESHOOTING

Table 5

Problem description	Action required
<b>The counter won't turn on</b>	Check the power cable is connected to <b>AC</b> mains outlet and to AC mains connector in the rear cover of the counter. Check AC mains switch is in «I» position. If these If these terms are observed but the machine still fails switching on, then call the technician.
<b>The message not described in «Error Messages» tables appears</b>	Restart the counter. If the operation is impossible, then call the technician.
<b>An abnormal noise level or foreign sounds inside the machine</b>	Switch off the machine. Call the technician.

## TRANSPORTATION AND STORAGE

The machine in the original package can be shipped by sea (in containers), by railway (in closed carriage), by air (in the pressurized modules) and by cargo (in covered truck or in container with water-resistant top) along the paved roads. Transportation conditions: temperature from - 30 to + 50°C, relative humidity up to 98% without water condensation at 25°C and atmosphere pressure 84 to 107 kPa (630 to 800 mm Hg).

The machine in the original package can be stored in a heated and ventilated warehouse, at the temperature of +5°C to +40°C and relative humidity not exceeding 80% at +25°C. A warehouse should be free of the aggressive agents (acid and alkali vapours) that might cause corrosion.

## WARRANTY AND SUPPORT

DORS authorizes the local distributors to provide after-sales technical support to the customers. In case of machine's malfunctioning, please contact your local supplier. If you fail to get support from your supplier, please inform us at web site [www.dors.com](http://www.dors.com).

To avoid any misunderstanding, we ask you to read the terms and conditions of the machine's operation, its transportation and storage, the warranty conditions.


## FIRMWARE UPDATE

Among the advantages of DORS 820 there is the remote way of firmware (FW) update via Internet. If a customer has Internet connection, there is no need to call technician for the update. Your machine will be updated with new counterfeit and authentic notes detection as well as with other improvements automatically. We recommend checking for new update every two weeks.

The computer, to which the counter would be connected for firmware update, should match the following requirements:

- OS WinXP or higher;
- Display resolution 800x600 or higher;
- Internet connection;
- Drivers «Drivers\_CP210x\_VCP\_Win\_XP\_S2K3\_Vista\_7.exe» and «BVS Update» utility installed (can be downloaded from the site: <http://dors.com/oe/service/download/>);
- USB socket to connect USB cable from counter delivery set.

### FW upgrading procedure:

- Connect USB port of DORS 820 (pos. 16 in Fig. 2) to your PC by USB cable. **Warning:** don't try connecting USB cable to the external display connector (pos. 17 in Fig. 2), it may cause its damage!
- Switch the counter on.
- Launch BVS Update application on your PC, the icon with logo  appears in the taskbar.

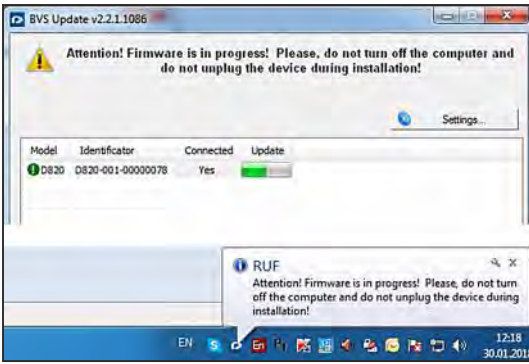
Click this icon to open program main window.



Fig. 106

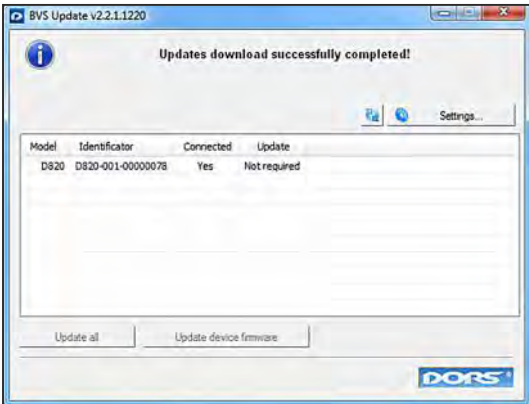
- Select the counter by clicking its line, then click «Update device firmware» (Fig. 106). Firmware update will start and a progress bar will appear in Update column (Fig. 107). A progress bar will also appear on the counter's display.

**WARNING: Don't disconnect USB cable; don't turn off the counter or the computer, don't unplug the power cords from AC mains while firmware update is in progress. This may lead to counter failure; service maintenance will be required.**



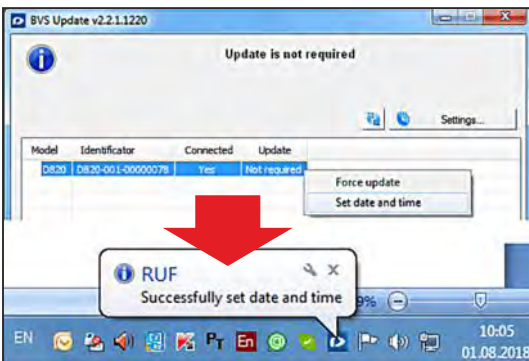
**Fig. 107**

- Wait until a message «**Updates download successfully completed!**» appears in the program window. The counter will run self-test (see **OPERATION**, p. 2). The utility will check available updates and report that update is not required (**Fig. 108**);



**Fig. 108**

- Adjust counter system time shown in the upper right corner of the display. Right-click the line with the counter in the utility window, then click Set date and time. Check the computer reports that date and time are set (**Fig. 109**).



**Fig. 109**

- Close BVS Update utility;
- Wait until the counter passes self-test and turn it off by the mains switch;
- Disconnect USB cable;
- Switch on the counter and wait until the counter passes self-test. Now the counter is ready for operation.