

100 / 100U / 100UM / 100 MULTI

PRO 100 SERIES



Contents

1. Main functions	4
2. Appearance	5
3. Specification	5
4. Control panel operation	6
5. Safety precautions	7
6. Banknote authenticity test	8
7. Counter operation	9
8. Function settings.	11
9. Service.	12
Warranty	15

PRO Intellect Technology offers the PRO 100 series of banknote counters as reliable, fast and accurate devices for counting and authenticating medium to large volumes of banknotes from a variety of currencies, including USD, EURO, and others. The high counting speed provides quick and accurate processing of banknotes as well as 4 types of counterfeit detection that work simultaneously to authenticate banknotes: size detection, UV reflection, MG detection, optical density detection, and Infrared detection. The auto filter allows for more accurate testing of EURO and USD. This model contains a backlit LCD display and clock. The batch mode is preset at 100 banknotes by default. The external display allows the device to be seamlessly integrated into the workplace with maximum convenience for the operator. These devices are ideal for use in banks, payroll offices, exchanges, and other organizations with high counting and authentication requirements.

1

Main functions

- This device is designed for counting banknotes, creating batches of banknotes, keeping a running sum total of all counted banknotes
- IR detection for EURO and face value recognition (PRO 100MULTI)
- Magnetic detection for recognition of suspicious banknotes (PRO 100MULTI, PRO 100UM)
- UV detection for recognition of suspicious banknotes (PRO 100MULTI, PRO 100UM, PRO 100U)
- Banknote width detection
- Optical density and double ("chained") banknote detection

Distinctive features

- The CDA filter ensures the proper recognition of the characteristics of Rubles, USD, EURO, and other currencies
- Counting speeds: 800/1000/1200/1500 banknotes per minute
- Hopper capacity/stacker capacity: 600/300 banknotes
- LCD display with backlight, clock and calendar
- IR detection for EURO with face value recognition (PRO 100MULTI)
- MG detection for Rubles, USD and EURO: 9 levels (PRO 100MULTI, PRO 100UM)
- UV detection: 9 levels (PRO 100MULTI, PRO 100UM, PRO 100U)
- Banknote size detection: 7 levels
- Detection of optical density: 9 levels
- Preset batch mode: buttons 0-9, set to 100 banknotes by default
- Summation mode
- Manual and automatic start
- Audio confirmation of operation mode
- External display option

Appearance

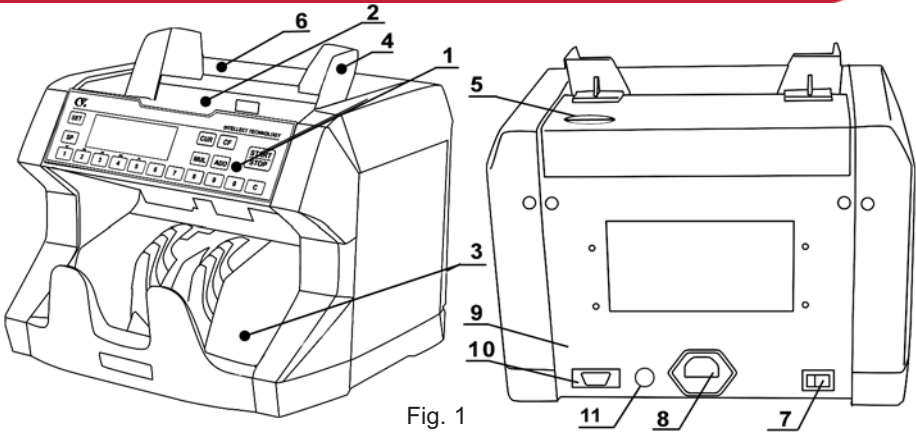


Fig. 1

1. Control panel
2. Hopper
3. Stacker
4. Auxiliary hopper plates
5. Paper thickness adjustment strew
6. Carrying handle
7. Power switch
8. Power cord
9. Rear cover
10. Port RS-232
11. Port for External Display

3

Specification

- Counting speed 800/1000/1200/1500 banknote/min
- Hopper capacity600 banknotes
- Stacker capacity300 banknotes
- Default capacity0-9999
- Range of specific counting1-999
- Power consumption:70W
- Power:110-220V/50-60Hz
- Net weight:5.5kg (12.1lb)
- Gross weight:6.5kg (14.3lb)
- Overall dimensions: 270x235x240 mm (10 3/5"(L) x 9 1/4"(W) x 9 2/5"(H))

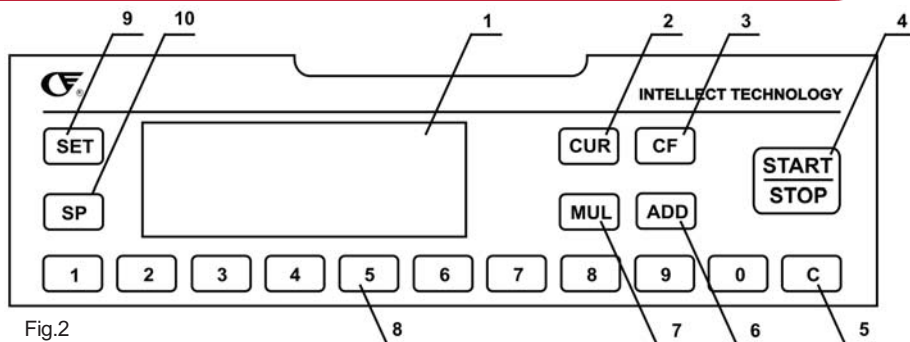


Fig.2

Operator display

1. Main count display

On the display (see Fig. 2) shows the following information:

A – counting results

B – target number of banknotes in batch mode

C – counting speed (banknotes / minute)

D – “ED” indicates optical density detection is on

E – “DD” indicates size detection is on

F – “UV” indicates ultraviolet light detection is on

G – “MG” indicates magnetic detection is on; “IR” indicates both magnetic and infrared detection are on (for EURO only)

H – “+” indicates the device is in summation mode

I – “ ” indicates the device is in manual start mode

J – Currency types: “RUR” – Russian Rubles, “USD”- American dollars, “EURO” –European €, “ ” (Space) – other currency.

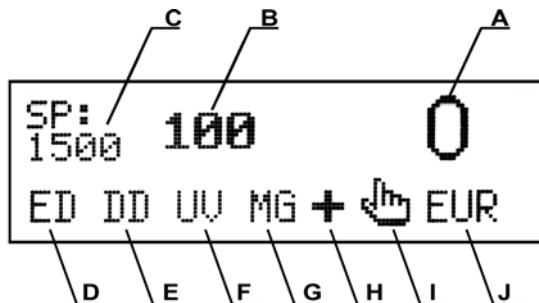


Fig.3

2. The “CUR” button allows toggling the device for the different types of supported currencies: RUR, USD, EURO, or other. Each pressing of the “CUR” button changes the currency type, with the current currency shown on the display (see Fig. 2-J). A blank space in position J indicates the device is set for other currencies.

3. The “CF” button toggles the device between counterfeit detection modes. After pressing the button, modes are displayed in this order: “ED”, “DD”, “UV”, “MG”, “IR”, and the display will show the correspon-

ding detections at their specified places (see Fig. 2-D, 2-E, 2-F, 2-G).

4. The **"START/STOP"** button starts and continues counting and clears the counting results. During counting, pressing this button will stop the counting process.

5. The **"CLR"** button resets all the figures. After pressing this button, the counting results (see Fig. 2-B) will be cleared and the device will exit batch mode.

6. **"ADD"** button – turns ON/OFF summation mode.

Pressing this button will put the device in summation mode, and the symbol "+" (see Fig. 2-H) will light up. Press a second time and the counter will exit from summation mode.

7. The **"MUL"** button toggles the device between manual and automatic starting mode. Press the **"START/STOP"** button to start counting in the manual mode and the symbol " " will light up (see Fig. 2-I). In automatic mode the counter starts automatically when you place a stack of banknotes in the hopper.

8. The digit buttons "0" to "9" are used for entering number values (see Fig. 2-B) in batch mode (counting of a specified number of banknotes). Press any button (0-9) to enter batch mode automatically.

9. The **"SET"** button puts the device into the settings changing mode.

10. The **"SP"** button changes the counting speed. Each pressing of the "SP" button changes the speed, with the display showing the value: 800/1000/1200/1500 banknotes/min.

5

Safety precautions

- Read this manual before operation
- The manual should be available to operator
- The device should be installed on an even horizontal surface, away from water and dangerous objects
- Don't use the device under the following conditions:
 - The device is not resting on a level surface
 - The device will be exposed to vibration while in use
 - The device is in an excessively dusty or polluted room
 - The device is exposed to direct sunlight or strong directional interior lighting
 - The device is near other dangerous objects
- Do not operate the device with wet hands
- Do not expose to water (or other liquid). Avoid foreign objects
- Avoid dropping the device
- During operation:

When finished be sure there are no banknotes in the hopper or transport system

- Clean the device regularly and service the device as needed at a licensed service center to ensure the device will function within its specified parameters
- Do not disassemble, repair or attempt to update the counter on your own. This can result in damage to the device or injury to the operator
- If the device was exposed to cold for an extensive period of time, it is necessary to keep it at the room temperature for no less than 4 hours, when the device has not been stored in a box. If the device has been stored in a box while exposed to cold temperature, allow the device to sit at room temperature for 12 hours prior to use.
- Use the carrying handle when transporting the device. During transport, it is necessary to set the auxiliary hopper plates (Fig. 1-4) to the middle position, so that the handle will not come into contact with the auxiliary hopper plates.

Remember! The producer is in no way responsible for damage to the device or injury to the operator in the event of incorrect operation /care of the device.

6.1. Optical density detection

This detection is designed to authenticate the density of each banknote and will prevent doubled or chained banknotes from being counted as one. It should be noted that a stack of banknotes can contain both new and worn bills, which have different densities. In the event that the optical density sensitivity is set to a high level, worn banknotes will result in an error. Optical density detection is switched on by default for all counters. Press the “CF” button until the “ED” sign appears on the display (Fig. 2-D) to turn on optical density detection.

6.2. Banknote width detection

Detecting the width of a banknote aids in authenticating that note. If the counter recognizes the size of a banknote is smaller (for example, a sensitivity level of $dd = 3$ corresponds to 4 mm) than the previously counted banknotes, the counter will alert the operator to the presence of a suspicious note. This can also be used to sort banknotes by detecting the size differences between different face values of a given currency. For example EURO 500 and EURO 50 banknotes differ in size by 5mm. Width detection is on by default for all counters in this series. Press the “CF” button until “DD” appears on the display (Fig. 2-E) to switch on this detection.

6.3. UV detection (For the PRO 100U, PRO 100UM, PRO 100 MULTI models)

UV detection is designed for various currencies and all kinds of banknotes. The counter automatically tests the UV reflection level of the banknotes. If the level is incorrect, the device stops counting and an error message is displayed. Suspicious banknotes will always be placed on top of the output stack. Such a banknote should be verified for authenticity. Remember that original banknotes accidentally exposed to hostile environment can also have an incorrect UV-level. Press the “CF” button until “UV” appears on the display (Fig. 2-F).

6.4. Magnetic detection (For the PRO 100UM and PRO 100 MULTI models)

MG detection is designed for testing Russian rubles (except banknotes of face value 5 and 10), EURO, and USD. When a suspicious banknote is recognized without the proper magnetic marks, the counter stops and an error message will be shown on the display. Suspicious banknote will be placed on the top of the stack of banknotes. Such a banknote should be verified for authenticity. Press the “CF” button until “MG” appears on the display (Fig. 2-G) to switch on this detection. The “CUR” button is used to set the currency type (RUR, EURO, or USD). When magnetic detection is on, it is necessary to align banknotes in the middle of the auxiliary hopper plates (Fig. 1-4).

ATTENTION: Counterfeit banknotes can imitate magnetic ink by spreading a magnetic substance across the surface of the bill. Such banknotes will cause the MG sensor to detect a magnetic substance where none should be found.

ATTENTION: Some types of copiers, laser printers, and other similar devices also contain magnetic substances which can cause the MG sensor to sound an alert.

6.5. Infrared detection (For the PRO 100 MULTI model)

Infrared detection is designed for authenticating EURO. The counter will automatically check for IR marks on the banknote when this mode is on. In the event that no IR mark is detected, the device will stop counting and will display an error message. Suspicious banknotes will be placed on top of the stack and should be checked via other authentication methods. Press the “CF” button until “IR” is displayed to switch on this mode. Press the “CUR” button to set the currency type to EURO. Banknotes should be aligned in the middle of the auxiliary hopper plates (Fig. 1-4) before counting begins.

6.6. Currency Detection Auto filter (CDA)

The CDA filter is designed for more thorough testing of Russian Rubles, USD and EURO. Currencies will differ according to banknote size, paper density, fluorescence under UV light, and locations of MG and IR marks. The relevant data for each supported currency is stored in the device's memory. While other counters use average figures when authenticating banknotes, the PRO 100 series uses currency-specific figures. The CDA filter allows for more accurate counting and decreases mistakes during authentication. During counting, any parameter that does not match the data stored in the device's memory will result in the counting procedure being stopped and an error message being shown on the display (Table 9). For each currency, the operator can specify desired levels for UV and MG detection. If the currency type is not specified, the PRO 100 series will use average parameters during authentication. Press the "CUR" button to toggle between the supported currencies (RUR, USD, EURO).

7

Counter operation

7.1. Preparation

- Connect the power cord to the device
- Turn power switch ON
- Counter starts and the display turns on
- If an error message occurs, see Table 9
- When the device is used for the first time, the operator should set the date and time (see Table 8.2.)
- Following detection modes are ON by default:
 - For the PRO100 model, optical density detection and banknote width detection are ON (see Fig. 4)
 - For models PRO 100U, PRO 100UM, PRO 100 MULTI, optical density detection, banknote width detection and UV detection are switched ON, (see Fig. 5)

Remember! When magnetic detection is ON, it is necessary to select the currency type. For example, "RUR" corresponds to Russian Rubles.

Remember! When magnetic detection is ON, it is necessary to align the banknote stack in the middle by using the auxiliary hopper plates (Fig. 1-4).

- In "CF" mode, set the detection modes according to the following recommendations (Fig. 4 to Fig. 6):

- For PRO 100, see Fig. 4
- For PRO 100U, see Fig. 5
- For PRO 100UM, PRO 100 MULTI, see Fig. 6

- For more accurate verification of USD, EURO, or RUR, use the CDA filter mode. Use the "CUR" button to set the currency type.

• If the currency was not set before counting, the CDA filter will be OFF. In the "other currency" position, any kind of currency can be counted.

- If the counter is not in use for more than 15 minutes the counter will enter into standby mode and the clock will appear on the display. When there are banknotes placed on the hopper or any buttons are pressed, the counter will exit standby mode after one second.

7.2. Counting procedure

ATTENTION! In order to avoid errors during counting, examine banknotes and put aside the following:

- any banknote that has been repaired with white paper, tape, or another foreign substance
- any banknote that has been exposed to water or "washed"
- any banknote that is excessively dirty or worn

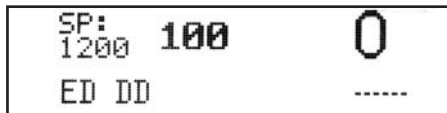


Fig. 4

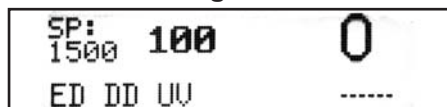


Fig. 5

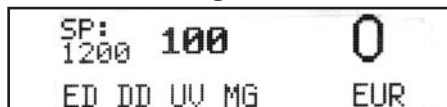


Fig. 6

•any banknote that is torn

Banknotes should be placed in a neat stack before being placed into the hopper!

- Banknotes are to be placed in the hopper
- The counter will start automatically after one second
- Display (Fig 2-A) will show the results
- Repeat again up to Table 7.2., when necessary
- Press “**START/STOP**” button to reset display when finished
- If an error occurs during counting, see Table 9

7.3. Batch mode

- Enter a number corresponding to the amount of banknotes for the desired batch size on the display (see Fig. 2-B) by pressing the digit buttons (see Fig. 3-8)
- Repeat from the beginning of Table 7.2., when necessary
- Remove banknotes from the stacker
- Add banknotes if necessary
- Press “**CLR**” button to reset the display and exit batch mode
- If an error occurs during counting, see Table 8
- Repeat all these operations from the beginning of Table 7.2.

7.4. Summation mode

- Press “**ADD**” button and the LED indicator will light up
 - Repeat operations up to Table 7.2.
 - When there are no more banknotes in the hopper, remove banknotes from the stacker
 - Put a new stack of banknotes into the hopper
 - Repeat these operations from the beginning, when necessary
 - The display will show the total result of counted banknotes
 - Press “**START/STOP**” button to reset results when finished
 - If an error occurs during counting, see Table 9
- Repeat the summation according to Table 7.4.

ATTENTION! Follow these guidelines carefully to avoid errors during operation.

8.1. Adjustment of the slot size

Remember! Adjusting the feeder slot size is possible by using the paper thickness adjustment screw (Fig. 1-5) on the rear panel. Turn the screw counterclockwise to decrease the feeder slot size and clockwise to increase the size.

The feeder slot should be larger for excessively worn banknotes, dirty banknotes and USD. The feeder slot should be smaller for “new” banknotes.

Adjusting the feeder slot size should be done slowly and smoothly, with adjustments of no more than 5 degrees. The counter speed should be 1200 banknotes per minute.

- If adjusting the feeder slot size results in the sensor responding slowly, slow separation of joined banknotes, irregular stacking of banknotes, error “half note detected” and/or “double notes detected”, then the slot size should be smoothly increased without exceeding a rotation of more than 5 degrees.
- If adjusting the feeder slot size results in “Undersized note detected” and/or “Chained notes detected” or other error codes occurring frequently, then the slot size should be smoothly decreased without exceeding a rotation of more than 5 degrees.

8.2. Set Date and Time

Press the “**SET**” button (see Fig. 7)

Press “2” (see Fig. 8) and move the cursor by pressing “**SET**”. Using the digit buttons (“0” to “9”) to set the

parameters:

- day of week (buttons 0-7)
- time: hours, minutes, seconds
- date: day, month, year

Press the **"START/STOP"** button twice to exit the mode. If the counter is not in use for more than 15 minutes, the clock will be shown on the display.

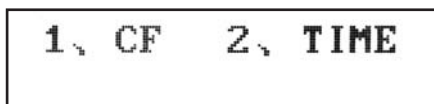


Fig. 7

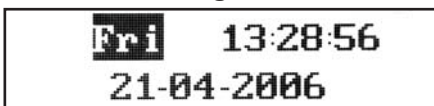


Fig. 8

8.3. Change the settings

Press the **"SET"** button (see Fig. 7) and then press "1" (see Fig. 9)

• Change the optical density - "ED" sensitivity level by pressing "1"

The optical density sensitivity level can be set between 0 and 8, with higher figures corresponding to higher levels of sensitivity. Higher levels should be used with new or mint condition banknotes. Lower figures should be used with older or worn banknotes. "0" indicates that optical density detection is OFF.

It should be noted that a stack of banknotes can contain both new and worn bills, which have different densities. In the event that the optical density sensitivity is set to a high level, worn banknotes will result in an error.

•Change the banknote width –"DD" sensitivity level by pressing "2".

The banknote width sensitivity level can be set between 3 and 8, which corresponds to sensitivity limits between 4 and 10mm. A level of "3" corresponds to a limit of 4mm while "0" indicates that width detection is OFF. In the event that banknotes are excessively worn or torn, the counter may reject the note and return an error message "undersized note detected".

Attention! Settings for ED and DD are changed for all currencies simultaneously.

Attention! Each type of currency (RUR, EURO, USD, other), will have different settings for UV and MG authentication.

Before entering the settings mode, set the currency type first.

•Change the UV sensitivity level by pressing "3". Settings range from 0 to 8, with higher figures corresponding to higher levels of sensitivity. "0" indicates the mode is OFF.

•Change the MG sensitivity level by pressing "4". Settings range from 0 to 8, with higher figures corresponding to higher levels of sensitivity. "0" indicates the mode is OFF.

Attention! UV and MG settings are changed for the chosen currency type.

Attention! If level of the sensitivity is equal to "0", corresponding detection is OFF and the signs are not displayed.

•Recommended setting corresponded to average figures, see Fig. 9

•For automatic setting of average figures, it is necessary to do the following:

- Switch off the counter
- Press and hold **"SET"**
- Switch on the counter
- Release the **"SET"** button after hearing the beep

After these steps, "Factory setting loaded" will appear on the display. Settings will equal to average figures. See Fig. 9.

Attention! New settings are stored for future use.

Remember! Wrong settings can cause failures and frequent error messages. Error messages listed in Table 9.

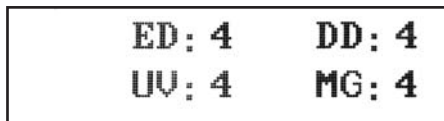


Fig. 9

In order to provide the best functioning of the device, it is necessary to comply with the following simple requirements:

Switch off the device, when not in use

Use protective cover, when not in use

Clean the hopper and stacker with a clean dry cloth. Sensors can cause errors when dirty.

It is recommended to carry out preventive measures, including partial disassembling of the counter each 30 days by an engineer in the service center.

Code	Reason	Solution
<p>Half note detected. Press the start key</p>	<p>1. Passing of half banknote 2. Failure of left or right sensors of the counter</p>	<p>1. Remove the banknotes from the stacker and take away the suspicious banknote (lying on the top). Repeat the counting procedure 2. Contact the service center</p>
<p>Chained notes detected. Move the notes on stacker to hopper and press the start key</p>	<p>Banknotes have passed through without being properly separated</p>	<p>1. Remove the banknotes from the stacker and repeat the counting procedure 2. Adjust the slot (see Table 8.1.)</p>
<p>Double notes detected. Move the notes on stacker to hopper and press the start key</p>	<p>The device has detected a banknote with a different density than expected, indicating a possible counterfeit or two banknotes are stuck together</p>	<p>1. Remove the banknotes from the stacker and take away the suspicious banknote (lying on the top). Repeat the counting procedure 2. Adjust the slot, see Table 8.1. 3. Set a lower ED sensitivity level, (see Table 8.3.)</p>
<p>Move the notes on stacker to hopper and press the START key</p>		<p>Remove banknotes from the stacker, and press "START" button.</p>
<p>Undersized note detected. Press the start key</p>	<p>1. Banknote with different width detected 2. Wrong banknote position</p>	<p>Remove the suspicious banknote (lying on the top), and press START button to continue the counting procedure</p>
<p>Suspected note detected by UV</p>	<p>The banknote has exhibited suspicious UV properties</p>	<p>Remove the suspicious banknote (lying on the top), and press START button to continue the counting procedure</p>
<p>Suspected note detected by MG</p>	<p>The banknote does not have MG marks as expected</p>	<p>1. Check the selected currency type (RUR, USD or EURO, with the corresponding currency sign showing on the display) 2. Put the banknotes in the middle of the hopper by using the auxiliary hopper guide plates (Fig. 1-4) 3. Remove the banknotes from the stacker and take away the suspicious banknote (lying on the top). Repeat the counting procedure</p>

Code	Reason	Solution
Suspected note detected by IR	The banknote has exhibited suspicious IR properties	<ol style="list-style-type: none"> 1. Check the selected currency type (EURO) 2. Put the banknotes in the middle of the hopper by using the auxiliary hopper guide plates (Fig. 1-4) 3. Remove the banknotes from the stacker and take away the suspicious banknote (lying on the top). Repeat the counting procedure
Please wait	The counter is processing information	Wait until the operation is completed

System errors

Code	Reason	Solution
please check right count sensor	Right sensor is either blocked or failed	Clean or replace the sensor
please check left count sensor	Left sensor is either blocked or failed	Clean or replace the sensor
please check stacker sensor	Stacker sensor is blocked by banknotes or is dirty	Remove banknotes from the stacker, clean or replace the sensor
please check feed sensor	Starting sensor is blocked by banknotes, is dirty, or failed	Remove banknotes from the hopper, clean or replace the sensor
please check speed sensor	Speed sensor is either dirty or failed	Clean or replace the sensor

In case of system errors contact service centre

Manufacturer guarantees proper functioning of the device during the warranty period since the date of sale under condition of compliance with maintenance and storage procedures described in this manual. After unpacking the device please keep the package and technical description. Warranties are canceled in the event that the device was not transported in the original packaging or maintenance procedures were violated. Manufacturer is not responsible for device malfunction as a result of improper maintenance, storage and transportation including mechanical failures.

In case of the device failure during the warranty period, the customer has the right to have it repaired in our service center for free. The service center accepts equipment for cleaning due to dust and mud, however cleaning equipment from dust and mud is not included in the warranty and is charged separately.

Warranty service does not include any training for equipment maintenance or other use of the device (connection, testing, customizing, preventive works etc.) which the customer can complete on their own by referencing the attached manual.

Producer is entitled to introduce updated software, not described in the current manual.

Warranty service is not available in the following cases:

- Absence of a warranty card, an incorrectly filed warranty card, or other invalid card
- If operation or maintenance rules mentioned in the manual were violated
- If there is mechanical damage to the equipment
- If there are foreign objects or liquid inside of the device

The present warranty does not apply to lamps, batteries, belts, network adaptors, power units, safety fuses, brushes, parts of the body of the product or any other parts which have a naturally limited period of service including failures caused by power supply failures. Replaced defective parts are to be considered the property of the producer. The owner delivers faulty equipment to the service center at their own expense.

