

Digital Voice Recorder

**Defence**

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# Overlook

Digital Recorder Defence is a professional device intended for making high quality record of voice messages into a built-in flash memory. The recordings can be further uploaded onto the PC to be presented as evidence in court. The expert examination can identify the type of recorder to have performed the recording; the time the recording was made as well as the attempts to modify it or change record nodes. All these increase the possibility to acknowledge the recording as the evidence of the event that really took place.

## Characteristics:

- low energy consumption
- broad frequency range
- broad dynamic range
- built-in real time clock and calendar
- owing to the absence of movable parts the Recorder operates at wide temperature range when shaken or dust-laden
- inaudible markers are added to the record allowing it to identify the record's time and date as well as the Recorder's type and its serial number; and the attempts to modify it.
- there is no option in the recorder to record a file into it, which means one can't make a fabrication by uploading other files into the Recorder. One can either play it back or delete it.
- the printed board of the Recorder is covered by special lacquer allowing it to identify whether flash-memory has been changed.
- high quality of recording format without compression and applying AGC and VAS systems adding distortions to the recording.

## Specifications:

With the help of the cable (which is on the delivery set) the Recorder is connected to USB port of the computer. The supplied software operating under operating systems Windows XP(SP2, SP3)/ Windows Vista/Windows 7 enables the user to save recorded messages as standard sound files. The Software for the PC is located in the Recorder itself, so the user doesn't have to worry about the fact that the PC to play back the record doesn't have software for smooth operation of the Recorder. The LED located at the front edge of the Recorder indicates operating modes of the device. To protect the information located in the Recorder there is an option to apply password protection preventing another user from getting access to the Recorder's contents and settings. Each record has inaudible markers allowing it to identify the record's time and date as well as the Recorder's type and its serial number; and the attempts to modify it. Recording format: 20KHz; 16b; without compression, built-in microphone sensitivity 10-12 meters without AGC system adding distortions to the record. All these enhance the possibility to go through expert testimony on the record's originality in court successfully. The Recorder's Software offers multi-language support.

## Technical Characteristics:

- Control by a switch
- Built-in flash memory — 4 Gb
- Record time — 28h
- Battery life in record mode (8 KHz, without compression) with fully charged battery 1000 mAh — up to 40 hours
- Case — metal, durable and resistant to electromagnetic noises and suppressors, which will protect the recorder from mechanical damage.
- Signal-to-noise ratio — -80 dB
- Recording format — mono
- Compression method - without compression
- Frequency band when recording 100 — 10000 Hz
- Sample rate — 20 kHz
- Interface — USB 1.1 (up to 0.7 Mb/sec)
- Audio codec — 16 bits
- Battery life in stand-by mode — up to 12 months;
- Built-in microphone sensitivity — 10–12 m
- Storage life of built-in flash memory — up to 10 years
- Power supply — AAA (batteries or rechargeable batteries)\*
- Dimensions — 85x13x13 mm
- Weight (batteries not included) — 11 g
- Operating temperature range — 0–40 °C
- Operating lifetime — 5 years.
- OS supported — Windows XP (SP2, SP3), Windows Vista, Windows 7.

\*when using rechargeable battery the charging is carried out through an external charging device. It is not included into the delivery set.

## Working with the Recorder

### Preparing the recorder for work

Before starting install the battery into the Recorder. The Recorder is activated which is signified by three flashes of LED. The flash to follow checks the Recorder's flash memory its duration depending on the Recorder's memory. Now the Recorder is ready to start operating. To install batteries unscrew the round lid with a special device which is on the delivery set. Insert the battery into the case (carefully observe the polarity – the positive battery contact is to be upward). Screw the lid. When replacing the battery the built-in clock and calendar don't reset its settings up to five minutes

**Attention!** Install the battery observing the polarity. Otherwise the recorder may malfunction.

## Making the recordings

Move the switcher to position “record”. After you start recording, the recorder flashes 5 times and then starts recording. While recording, the recorder’s LED indicates the recorder’s о заряде батарейки и оставшейся памяти. While recording, the recorder’s LED indicates the recorder’s operating modes by two successions.

**The first succession** corresponds to the battery charge at the moment when recording begins (for models with the power supply from a battery). 1 flash means that the charge is close to maximum, 2 flashes – the charge is enough for work, 3 flashes – you need to change the battery.

**The second succession** corresponds to the amount of the recorder free Flash memory space. 4 flashes mean 0...25% memory is free, 3 flashes – 25-50%, 2 flashes -50-75%, 1 flash – 75-100% is free.

When you recorded all you need, stop recording. When you stop recording, the recorder LED flashes once, but this flash duration can lasts for some seconds depending on recorder’s memory capacity.

After you stop recording, the recorder is in a stand-by mode. In this mode, the recorder power consumption is very low so the recorder can remain without charging (or changing the battery) for a long period of time (depending on the recorder model).

If while recording the free memory space ends or the battery (rechargeable battery) is discharged, the recorder stops automatically and switches into stand-by mode. The recording made will be saved.

If power supply is already discharged or the Recorder’s memory is full the Recorder signifies the discharged power supply or full memory by a series of LED flashes when it’s started. When the battery is discharged the LED flashes three times and gradually goes out. Then it switches to stand-by mode. When the Recorder’s memory is full the LED flashes three times quickly. Then it switches to stand-by mode.

## Playing Back the Recordings

You can play your recordings back on a PC using any program of audio playback (for instance, Windows Media Player). For this, upload the recordings to the computer using the RecManager program, which is in the built-in memory of the recorder. You’ll find more details about the uploading of the recordings to PC in the Manual to RecManager.

## Linear Recording

The Recorder features the option to perform linear recording which records information until there is enough memory or it is stopped by the switch. This is set by default and operates until circular recording is activated.

## Loop Recording Mode

You can choose a loop recording mode if you don’t want to stop your recording when recorder does not have free memory space. In this mode, the newest data are recorded over the oldest one. So at the moment when you stop recording, your recorder will save the newest data that were recorded just before turning off.

You can use recorder memory space for a loop recording partly or fully. The amount of memory space defines the duration of loop recording.

# Recorder Settings

**Attention!** After any of the settings have been modified, remember to press “Apply the Settings to the Recorder”

Use the RecManager program to change the recorder’s settings. This program provides settings of:

- Turning on and adjusting of the loop recording
- Password setting
- Synchronization of the date and time with a PC
- Recordings’ downloading and uploading

To set the Recorder’s parameters connect it with the help of the cable which is on the delivery set. The PC recognizes a removable storage. Launch “RecManager” program and set the desired parameters. The description of “RecManager” program is located in the internal memory of the Recorder.

## Connecting to a Computer

**Please note! Don’t turn off the recorder with RecManager being busy with some operation (the LED is flashing during this). This may lead to data damage.**

**When the recorder is connected to PC, simultaneous recording is impossible. If**

**the recorder is in the mode of recording, and recorder is connected to PC, the recording stops for the time of the connection.**

Connect the recorder to a computer USB port using the supplied USB cable. While connecting, the recorder LED will flash. The system will recognize removable disc. Open it and run the program “RecManager”.

Select the connection type “Standard (USB 1.1) (Tab “Recorder” ► Connection Type ► Standard (USB 1.1))

After the programs loads, the recorder will be detected by the PC and recorder’s contents will be shown in the program’s window.

Make all the operations you need. Then close the program and disconnect the recorder from the computer.

For the full information about the program, read the Manual to RecManager, which is situated in the internal memory of the recorder.

## Firmware Update

**Firmware – a program that provides the recorder operation (kept in FLASH memory)**

The Recorder operates in correspondence with its firmware which determines all its functions and options. Upgrading firmware enlarges functional opportunities of the Recorder and enhances its operational reliability.

You are welcome to download new firmware versions from our website [www.ts-market.com](http://www.ts-market.com) for free.

To upgrade the firmware, follow these instructions:

1. Choose and download the necessary firmware from [www.ts-market.com](http://www.ts-market.com): *Defence\_FW\_Updater\_X\_X*, where “x\_x” is the number of the firmware version.
2. Insert the battery
3. Prove “RecManager” isn’t launched. Otherwise close it.
4. Run the updater program. Follow program’s instructions. The firmware will be upgraded, a corresponding message will be shown on the screen.  
**Please note!** All the recordings will be erased from the recorder’s memory.
5. After the firmware upgrade it is necessary to do Image recording, you’ll find the instructions below:

## Image recording

1. Download the archive: ImageWriter program from our site [www.ts-market.com](http://www.ts-market.com) or from the CD to the recorder Defence, if the CD is available.
2. From the downloaded archive run *ETS16\_ImgWriter.exe*, which will record RecManager program into the built-in memory of the recorder. If your operational system is Windows Vista, run this program “as an Administrator”.
3. Follow program’s instructions.
4. When image recording has been completed connect the Recorder off the computer. After that connect it again. Now when connecting to the PC the Recorder will be recognized as a removable media to store RecManager program.
5. After the connection with the Recorder has been performed the status bar of RecManager program displays information on new firmware version.
6. Format the Recorder’s memory with the help of RecManager program
7. Restore factory settings with the help of RecManager program.

## Multilanguage Support

The RecManager program is available in both Russian and English. However, you can translate the button names, messages, and etc. into other languages.

To do this download the Recorder’s CD image from our website <http://www.ts-market.com> *RM\_ETS16(Defence)\_X\_X\_XX*.

For this, edit *RecManager\_rus.lng* (or *RecManager\_eng.lng*) file in the following way:

1. In the first file line, change the number of the page code into the code of your language.
2. Translate all the messages and names from this file into your language and change them.
3. Rename *RecManeger\_xxx.lng* file (xxx- an abbreviation for the language).
4. Then send the acquired file *RecManager\_eng.lng* to Image files and launch image rewriting as described in “Image Recording”.

After you run the program next time, your language will be available.

If you want your language to be in the program installation, send the edited file to [support@ts-market.com](mailto:support@ts-market.com). The installation with your language support will be available on the TS-Market website.

# Troubleshooting

Trouble symptom	Reasons and possible solutions
When connecting a rechargeable battery after a long period of storing the Recorder without power supply, three-time flash of LED doesn't occur. There is faint lighting, chaotic flashing or even the absence of respond instead.	Power supply is considerably discharged and inapplicable to serve the Recorder. Replace power supply with a fully charged one.
When supplying power the LED is flashing incessantly	Damaged or absent firmware Carry out firmware upgrade procedure, using the corresponding program
When attempting to start recording from stand-by mode the LED flashes three times and gradually goes out.	There isn't enough power supply to carry out recording. Replace power supply
When attempting to start recording from stand-by mode the LED flashes quickly three times	The Recorder's sound memory is full. Connect the Recorder to the PC and free all necessary memory by deleting some of the records (if necessary upload them onto the PC beforehand).

## Technical Support

Our engineers constantly work improving the software and documentation. You can always download the last version of the program from our website for free.

Address: TS-Market Ltd. Building 10/1 Sosnovaya Alleya, Zelenograd, Moscow, The Russian Federation, 124489

Tel: +7 (495) 638-8800; +7 (499) 940-95-75

(Cell) +7(903) 530-10-01, +7 (909)638-88-00

Fax: +7 (499) 735-0491

E-mail: [support@ts-market.com](mailto:support@ts-market.com)

<http://www.ts-market.com>