

# **EDIC-mini Ray A36**

Digital Recorder

***OPERATION MANUAL***

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## **Overlook**

Recorders of the Edic-mini Ray family are professional devices intended for making high quality record of voice messages into a built-in flash memory. The recordings can be further uploaded onto the PC and played back with headphones or internal speaker.

## **Specifications**

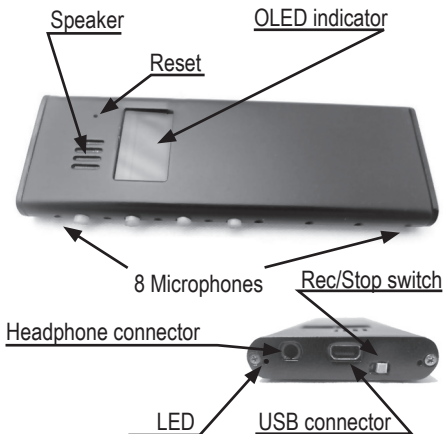
- Sampling rate while recording up to 40 kHz;
- Record duration 300, 1200 hours;
- Extremely low current consumption 1,6 mA in the As in profile Mode;
- Wide frequency band 100Hz.....6000Hz;
- Wide dynamic range (in the Mode High S/N 74dB);
- Built-in clock and calendar and the option to start recording at the preset time;
- Due to the absence of removable elements the Recorder is operational under wide temperature ranges when shaking or dusted
- English self-teaching guide;

- The option to record while charging and the option to play records both with headphones and the Recorder's speaker;
- There are 8 independent sound recording channels (microphones), and five;

options to record with microphones:

- Recording with all 8 microphones (8-ch RAW)
- Recording with one microphone (As in profile)
- Recording with two extreme microphones (Stereo 1)
- The signal is summarized from every 4 microphones to be recorded as 2 single-channel (Stereo2)
- The signal is summarized from all of the microphones to be recorded as a single-channel (High S/N)
- 8 microphones allow you to:
  - to cut off interference from unnecessary directions and increase the sensitivity from the desired areas reducing total noise of their own microphones, which enables it to record from 15 - 17 meters.

## Brief description and Recorder's Appearance for Edic-Mini-Ray-A36



### Edic-Mini-Ray A36

The Recorder has four control buttons:

- the K1 button to select Menu items;
- the K2 button to start/stop recording;
- the K3 button go to Setup Control Menu;
- the K4 button to call for additional menu to select one of four options for recording with microphones and to exit the Menu.

Switch option is set from Setup Menu: either key lock or start/stop recording.

The indication of operation is performed by red LED and OLED indicator with the main blue colour and yellow upper line. There is a micro-USB connector to connect the Recorder to the PC and connector for headphones for playing back. Using USB-SPI adapter (included into the delivery set) the Recorder is connected to the USB port of the PC.

## **Software**

The software located on the supplied CD operating under Windows XP, Windows Vista, Windows 7 operating systems enables the user to save recorded messages as sound files in wav format, as well as to program Recorder's parameters, apply it as a flash drive to store and transmit files. The capacity of the files uploaded depends on marking: 300h – up to 2 Gb, 1200h - up to 8 Gb.

The Recorder is equipped with VAS (Voice Activation System) to compress pauses efficiently in messages therefore enhancing real record duration. When applying this system pauses save memory, while time intervals are preserved.

When uploading records onto the PC the duration of pauses can be restored (in the form of silence) or omitted depending on the settings specified.

The Recorder enables it to perform recording by timer: either daily (with record start and end time specified) or once (date-and-start time and date-and-end time are specified).

To protect the Recorder's information there is the option to set password forbidding access to the Recorder's contents and settings without entering the password. Each record performed by the Recorder has a mark of time and date of start time supplied with "digital signature" to identify the model of the Recorder to have performed the recording and the attempts to modify it. The software of the Recorder provides multilingual support.

***Please note:*** software upgrade can cause recorder's breakdown. This is not a warranty case. All the new recorders have the latest software version and there is no necessity to upgrade software after buying the recorder. Don't take the risk. In case there are problems with audio recorder operation please apply to our technical support specialist: [support@ts-market.com](mailto:support@ts-market.com)

## Technical Characteristics

Analog-to-digital converter	16 bit
Control Indication	4 buttons OLED 96x46 and LED
Record Mode	mono, stereo1, stereo2 8-ch RAW, As in profile
Sampling rate	4000, 8000, 13300, 20000, 40000 Hz (ADPCM up to 8kHz, u-Law – up to 20kHz) in the As in profile Mode
Sound compression types	without compression, u-Law (2/1), ADPCM 4 bit (4/1), ADPCM 2 bit(8/1) in the As in profile Mode
Sampling rate in the 8-ch RAW, Stereo, High S/N Modes	16000Hz
Signal-to-noise ratio of built-in microphone	65±2 dB
Signal-to-noise of ADC audio codec up to 80 dB	
Voice Activation System (VAS)	in the As in profile Mode only



Circular recording mode	
Built-in real time clock	
Recording by Timer	once and daily
Record Profiles	8 adjustable profiles in the As in profile Mode
Battery level monitoring	
Interface with the PC	HiSpeed USB-SPI adapter
Maximum exchange rate from flash memory	7700 kbs
Maximum exchange rate into flash memory	2800 kbs
Rechargeable battery capacity	420 mAh
Charging time	no more than 3 hours
Battery life in Standby Mode (under 20°C)	1 year
Battery life (record mode: without compression, 8000 Hz)	240 hours
Battery life in record mode with VAS (without signal)	290 hours
Operating temperature range	0+40°C

# Operating the Recorder

## Getting Started

Before starting make sure the rechargeable battery is charged. When necessary charge the rechargeable battery by connecting HiSpeed USB-SPI adapter to the USB port of the PC, and then to the Recorder. Full charging takes 2,5 hours. While charging the LED is flashing with the interval of 1 second.

## Recording

**Press the K4 button and using K2 and K3 select Record Type:**

- 8-ch RAW – recording with 8 microphones (memory consumption is 8 times larger than in As in profile);
- High S/N – the average signal from the 8 microphones with high signal-to-noise ratio;
- Stereo 1 – recording with two extreme microphones (memory consumption is twice as big as in As in profile);
- Stereo2 – recording with a smaller base than in Stereo1, but higher signal-to-noise ratio;
- As in profile – recording with one microphone applying parameters specified within the current profile.

Press the K1 button

To start recording, press K2. The OLED display shows:

with the selected As in profile - a record symbol (● REC), record number and record duration.

To pause recording, press K3.

The OLED display will show a pause symbol (○ PAUSE) and record duration before pause.

To resume recording, press K3. To stop recording, press K2.

With the selected modes of 8-ch RAW, High S/N, Stereo 1, Stereo2 - Rec, record number and within 2 seconds the LED goes off. To stop recording, press K2.

## Record Types

**As in profile** – record mode in which you can use RecManager to set sampling rate, AGC, VAS, amplification, timers, circular recording, and password.

**8-ch RAW** – recording that requires processing on the PC (sound processor) to obtain high-quality recording.

**High S/N** – the mode enabling you to obtain a high recognizability from big distances.

**Stereo1** – recording onto 2 extreme microphones

**Stereo2** – recording with a smaller base than stereo1, but with a better signal-to-noise ratio.

Playing back and deleting records (Records Explorer)

Connect headphones to the corresponding connector. Press K3 – Records Explorer Menu appears. Press K1, then K2 or K3 and select record number. Press K1 – a message “Play or delete?” appears.

If you press K3 the Recorder will start playing back the selected record. To stop playing back press K1.

If you press K2 the message reads “Delete? No or yes”. When pressing K1 the selected record will be deleted and confirmative message on deleting record appears “Delete successful”. To play the record use built-in speaker of the Recorder.

## Recorder's Operation Indication

### LED indication

Mode	Indication
Waiting	No flash
Recording	Short flash once in 3 seconds
Pause, waiting in VAS	No flash
USB charging	Flash once in 1 second
PC exchange	Synchronously flashing with command processing duration seems to be chaotic

### OLED indication in Standby Mode

The yellow line (status line) displays (left to right) free memory capacity (in hours at current compression mode), day of the week/date followed by the temperature inside the case and the battery charge level. The clock (type depending on the current clock type configuration) is displayed in the blue area of the screen.

After some time (depending on the configuration) the LED goes off.

### OLED indication in Record Mode (As in profile)

The yellow line (status line) displays (left to right) free memory capacity (in hours at current

compression mode) sampling rate/compression mode followed by the current time (hours: minutes) and battery charge level.

***The blue area of the screen displays:***

- the first line – Record symbol (circle), «REC», a record number.
- Second line – the current record time. When pause and VAS standby appears, there is a circle and «PAUSE» in the first line.

**OLED indication in Playback Mode**

The yellow line (status line) displays rewind symbol, fast forward symbol, playback stop symbol.

***The blue area of the screen displays:***

- The first line - «Play», a record number
- The second line - playback time

**OLED indication in Menu**

The yellow line displays tips by the motion of the buttons K1, K2, K3.



The Menu is in the blue area.

**Battery charge / discharge indication**

If the battery is discharging, there is a symbol “-” inside the battery symbol, if the battery is charging there is a “+” symbol.

## Record Types

### **Voice Activation System (only in As in profile mode)**

Voice Activation System (VAS) can significantly (up to 100 times) reduce both memory consumption and energy consumption from the power source.

The principle of VAS is as follows: after the user starts recording, the Recorder starts tracing signal from the microphone.

If the signal is less than the one specified in settings (VAS level), it is not the sound from a microphone that is stored in memory, but only the time value during which the threshold is not exceeded (the duration of silence).

When signal level exceeds the preset threshold recording of sound into memory starts. When the signal from the microphone is less than the preset threshold, after some time (which is set at VAS time setting) the Recorder stops recording sound into memory and only saves silence duration. That continues until recording stops.

Indication while standby recording from VAS: LED is not on.

When uploading record onto the PC, you can specify the operations with pauses (silence): store them in the file uploaded or not. If you save pauses, the duration of the resulting record will correspond to the time during which the recording was performed, and the moments when the signal was below threshold will be played back silent. The duration of silence corresponds to the time when the signal was below the configured threshold. If the pauses are not saved, then the resulting record will consist of written parts (when the signal exceeds the threshold) without counting pauses. These parts will be played one after another without interruption.

You can copy and listen to some voice parts in the records using VAS.

### **Recording by Timer**

Recording can start automatically, without user's control. This is possible when using built-in timers. The Recorder has two timers: daily, once.

***When using timers forced starting the Recorder is not necessary.***

When using Daily Timer the Recorder records every day starting and ending at times specified during setup. For example, the recording starts at 12:50 and ends at 13:20.



If you use Once Timer, only one record will be performed, which will start and end at the specified date and record's start and end time. For example, December 31, 2011 at 23:50 recording starts, and January 3, 2012 at 00:10 ends.

Recording will be carried out as long as the Recorder has free memory and its battery charge is enough to perform the operation.

Recording by timer can be stopped by pressing K2.

### **Circular Recording**

The Recorder has the option of circular recording. This method enables it not to stop recording when the Recorder runs out of memory. After there is no more free memory the Recorder begins to record new data over old ones. Thus, the memory will always contain the most recent records that are no longer written off at the time of writing.

The user can devote to circular recording the whole or only a part of the Recorder's memory. The volume of the memory specified determines the duration of the resulting circular record.

## Recorder Setup

### Profile Selection

Profile Selection is available through the RecManager software, but one of eight preset profiles is selected directly on the Recorder.

Profile record consists of the following options:

#### ***Coder type – type of compression***

- No compress;
- uLaw;
- ADPCM 2bit;
- ADPCM 4bit.

#### ***Frequency – sampling rate***

You can choose one of these values:

- No compress - 4, 8, 13.3, 20, 40 kHz;
- ADPCM - 4 and 8 kHz;
- u-Law – 4; 8; 13,3; 20 kHz.

#### ***Cycle – circular type of record***

When choosing circular recording, you can set the buffer size in percentage of the Recorder's total memory.

#### ***Timer***

You can select the type of timer (Daily, Once)

### **VAS – Voice Activation System**

When turning VAS on you can set threshold above which the recording starts from 0 to -60 dB.

And the time during which (after the recording level is below the threshold of record) recording continues - from 0 to 255 seconds

### **Gain - amplification**

from -1 to 40 dB with steps of 0,5 dB

### **AGC - Automatic Gain Control**

When you select the AGC four parameters characterizing the work of AGC can be set

- ft attack (fast attack speed AGC) -
- ft release (Rapid release AGC) -
- sl attack (slow attack speed AGC) -
- sl release (slow release rate of AGC) -

For all of the four options the following values to be set are available: 2.44, 4.88, 9.77, 19.53, 39.1, 78.13, 156.25, 312.5, 625; 1250, 2500; 5000; 10000 20000; 40 000, 80 000 dB / sec.

By pressing K3 select Profile selection. By pressing K1 enter this menu. With K2 or K3 select the desired profile number and press K1. A message appears, Profile set OK.

## **Setup Control**

This section includes settings that may only be set directly on the Recorder.

Press K3 and select Setup Control. Press K1.

## **Time and Date setting**

Using K2 or K3 select Time and date setting, and then press K1. Using K2 or K3 set the desired value, and by K1 move the cursor (a rectangle). After selecting the last value a message "Time and date set OK" appears. Press K1 to save values. A message Time and date setting appears.

## **Viewing System Information**

Using K3 or K2 select System info and press K1 to view. To go to other part of the settings, press K1.

## **Restart the Recorder**

Using K2 or K3 select Device restart, and then press K1. A message appears "Restart? Yes or no." Press K1 to cancel restarting the PC and K3 to restart the Recorder. In this case the indicator reads the software version number.

## **Volume Setting**

Using K2 or K3 select Play volume. Press K1. Using K2 or K3 set the desired volume level and press K1.

### **Watch Type Select**

Using K1 or K2 select Watch type and then press K1. Using K3 select one of the watch types (analog, digital, etc.). Press K1.

### **Setting OLED display brightness**

Using K2 or K3 select OLED bright and then press K1. Using K2 or K3 select the desired brightness level and press K1. A message appears OLED bright set. Press K1.

### **Setting operational time of OLED display in the absence of pressing buttons**

Using K2 or K3 select OLED off time. Press K1. Using K2 or K3 select the time from 5 to 200 seconds, or put Always on (Never turn off). Press K1. A message appears OLED off time set. Press any button.

### **Switch Programming**

Using K2 or K3 select Switch function. Press K1. Using K2 or K3 select the desired function: either Switch for keys lock (key lock) or Switch for rec on/off (starting recording by Switch). A message Switch set appears.

## **Erasing Flash Memory**

Using K2 or K3 select Flash erase. Press K1. A message appears "Erase all? Yes or no." Press K3 to clear the memory and K1 to cancel deletion.

## **English Dictionary**

The recorders with OLED-indicator are equipped with self-teaching guide of English words. The word base of the guide is uploaded from the PC by a special utility. The base has a format compatible with the format used in the program BX Language acquisition <http://bxmemo.narod.ru/> with some limitations:

- The length of an English word should not exceed 12 symbols;
- The length of the Russian word should not exceed 16 symbols;
- The letter "Е" should be replaced with the letter 'E';
- The base can contain up to 1,024 words;
- The file name of the uploaded base must be Lex.bxd.

To form the dictionary for reading texts of particular field it's also convenient to use the software provided at the above site (read the license agreement carefully!).

## **Lexicon Training**

Using K3 select Lexicon Training. Press K1. A message will appear 1000 words training.

Press K1 - an English word appears. To have the translation of the word, press K1. To delete the word, press K2. To have the next word, press K3.

Deleted words ("learned") can be returned to the list of words. To do this, when entering Lexicon Training and after pressing K1 when the message 1000 words training appears press K2 or K3. A message appears "Reset? No or yes." To return to the list of words press K1.

## **Connecting to the PC**

When connecting to the PC carefully observe the consistency: first connect USB-SPI to USB port, and then connect the adapter to the Recorder. The Recorder switches automatically to charging mode. Flashing LED states that the charging is in progress.

To connect the Recorder to the PC and to work with the software see Operational Manual for RecManager.

## **Firmware Update**

To update firmware:

- Connect the Recorder to the PC via a USB-SPI adapter as described in Connecting to the PC
- Fully charge the rechargeable battery (until LED stops flashing).
- Press and hold any button on the Recorder.
- Run the firmware update program and follow its instructions (after the corresponding message the button can be released).

## **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.

[www.ts-market.com](http://www.ts-market.com)

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