Gnome-Nano II

—

Ultra-Small Digital Stereo Recorder
STC-H713

—

Operation Manual

Speech
Technology
Center

Note to Customer

Before getting started, please read this Operation Manual carefully. The Operation Manual will allow you to use this device properly and safely.

In case you have any questions regarding device operation and use, please feel free to contact STC Support or local resellers.

To contact Technical Support, use the following email: support@speechpro.com

Saint Petersburg

Phone: +7 (812) 325-88-48

Fax +7 (812) 327-92-97

Moscow

Phone: +7 (495) 669-74-40

Fax +7 (495) 669-74-44

You can also open a support ticket with us via our web portal: http://www.speechpro.com/support_form/

The manufacturer retains the right to issue amendments to this Operation Manual following any improvements to device design without any prior notification.

Speech Technology Center does not warrant that this Manual is error free. This Manual may not include some last-minute upgrades.

Any such amendments will be published in a new Operation Manual edition, as well as on STC website: http://www.speechpro.com.

Recent version of the Operation Manual is supplied on CD.

CONTENTS

INTRODUCTION

Typographic Conventions

The following typographic conventions are applicable to this Manual:

Formatting	Description
Normal	Guide body text
Bold	Used for marking out **software component names**, as well as interface element **names** (**headers**, **buttons**, etc.).
Bold Italic	Indicates file names and access paths.

Menu selection is marked with an arrow → (**Menu** → **Option)**, meaning you should access the **Menu** first and then select an **Option**.

Below there is a notification layout used in the Manual according to notification severity level.

Links to other documents in the body text.

Notes, important notices, and instructions obligatory for fulfilling.

Not fulfilling these requirements may potentially lead to hardware and software malfunctions and failures.

Trademarks

Windows® is a trademark of Microsoft® Corporation.

Other company and product names mentioned in this document are the property of their respective owners.

1 BASIC DETAILS

1.1 Manufacturer Contacts

Title **Gnome-Nano II** Ultra-Small Digital Stereo Recorder STC-H713

Manufacturer: Speech Technology Center Limited

Address: 4A Ul. Krasutskogo, 196084, Saint Petersburg

Phone: (812) 325-88-48

Fax: (812) 327-92-97

1.2 Service Maintenance and Technical Support

To contact Technical Support, use the following methods:

Email: support@speechpro.com

Web Portal: http://www.speechpro.com/support_form

When contacting our Technical Support, please include the following details into your call/ticket:

- Device name and serial number;
- Supplementary hardware: microphone set, headphones, etc.;
- Firmware version;
- Detailed issue description.

2 DEVICE PURPOSE

2.1   Purpose and Scope of Use

Gnome-Nano II Ultra-Small Digital Stereo Recorder STC-H713 is a professional sound recording unit providing high-quality mono and stereo speech signal recording under difficult acoustic conditions.

The device ensures perfect recording quality in any environment, both indoors (meetings, conferences, interviews) and outdoors.

Its small dimensions and weight, as well as user-friendly controls, make it usable for a wide range of customers.

Recording process can be performed via either one onboard or two external microphones as well as from third-party hardware line outputs.

You can select a source signal manually. The recorded sound is stored on the device internal flash memory.

Recording process may be controlled both manually and automatically.

Connecting the device to a PC enables recorded data playback, copying recordings to PC hard drive and changing recorder options.

2.2   Legal Warning

Recordings made with the device are acceptable for speaker identification or other forensic purposes.

Before using the device, you are encouraged to make yourself familiar with any laws and regulations regarding voice recording applicable to your country.

3 DATA PROTECTION

To protect recorded data from unauthorized access, key recorder features (deleting recorded data, modifying recording options, saving and playing recordings on a PC) can only be performed by means of special software.

If required, the access to recorded data stored on device may also be protected with a password. It is recommended using at least four digits for password. Password is set and changed by a user. By default, password is not set. Moreover, the user can enable the option of deleting all recordings from device memory after entering invalid password five times in a row. For more information on password settings, please refer to Section 9.4.14.

After copying data to PC hard drive, recorded data authentication is enabled via digital signature (see Section 9.3.3).

4 SCOPE OF SUPPLY

4.1   Standard Package

Title	Quantity
Gnome-Nano II Ultra-Small Digital Stereo Recorder STC-H713	1
AC power supply	1
Micro USB cable	1
Line-in cable	1
Headphone adapter	1
Microphone set with a remote control	1
Compact headphones	1
Specialized Manager software for **Gnome-Nano II** recorder STC-H713	1
Operation Manual	1
Shipping box	1

5 SPECIFICATIONS

Spec			Value/Description
Number of channels			2
Number of built-in microphones			1
Internal hard drive space			16 GB
Number of microphone inputs			2
Number of line inputs			2
Recording standard			mono/stereo 16 or 24 bit PCM
Data compression			µ- law/A- law
Sampling rate			8000, 11025, 16000, 22050, 32000, 44100 Hz
Nonlinear distortion coefficient (at 1 kHz, with 16 kHz sampling rate, with no compression 24 bit PCM)		line input	0.01 ± 0.009 %
		microphone input	0.01 ± 0.009 %
Signal-to-noise ratio (at 1 kHz, with 16 kHz sampling rate, with no compression 24 bit PCM)		line input	93 ± 3 dB
		microphone input	83 ± 5 dB
Dynamic range of recorded signals (at 1 kHz, with 16 kHz sampling rate, with no compression 24 bit PCM)		line input	93 ± 3 dB
		microphone input	83 ± 5 dB
Frequency response unevenness			1 ± 0.8 dB
Depth of AGC			35 ± 5 dB
Internal microphone type			Electret
Battery life	Recording duration with settings 8 kHz, mono, 16 bit PCM		24 h
	in the	VOX	70 h
		Standby mode (schedule)	4000 h
Maximum recording duration into a built-in 16 GB memory (Mono mode, 16 bit PCM, 32 kHz sampling rate)			64 h
Maximum recording duration into a built-in 16 GB memory (Stereo mode, 24 bit PCM, 16 kHz sampling rate)			44 h
PC connection interface			USB 2.0
USB mode			High-speed
Dimensions			51.7x34.7x8.8 mm, ± 1.0 mm
Case			metal
Weight (battery included)			30 ± 5 g
OS Compatibility			Microsoft® Windows XP, 7, 8, 10

6 RECORDER DESIGN

6.1 Control Units, Indicators and Switches

The recorder comes in a black metal case. Device overall view with indication of parts is shown on Figure 1. Device part description is listed in Table 1.
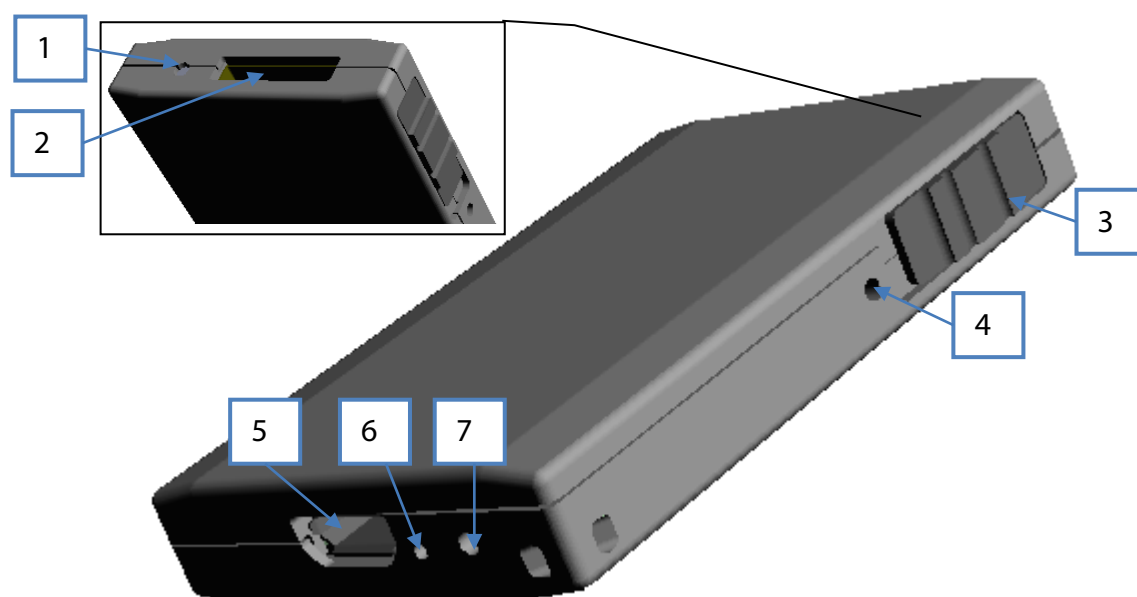

Figure 1: Indication of parts and controls.

Table 1: Device part description.

No	Marking	Title
1		Built-in microphone
2		Mic connector
3	● ▢	Recording slide switch
4		Multifunction button (erase or playback)
5		Micro USB connector
6		LED
7	**RST**	RESET button

6.2 Device Memory

For data storage, the 16GB embedded non-volatile memory system **eMMC** is used in the device. The storage keeps audio data for at least 10 years when the device is shut down.

Device storage is divided into 2 sections: a section with pre-recorded device driver and the application, and a section for storing audio data. You can delete all recordings from the device manually or use supplied software for selecting and erasing files (Section 7.4.2).

6.3   Microphone set
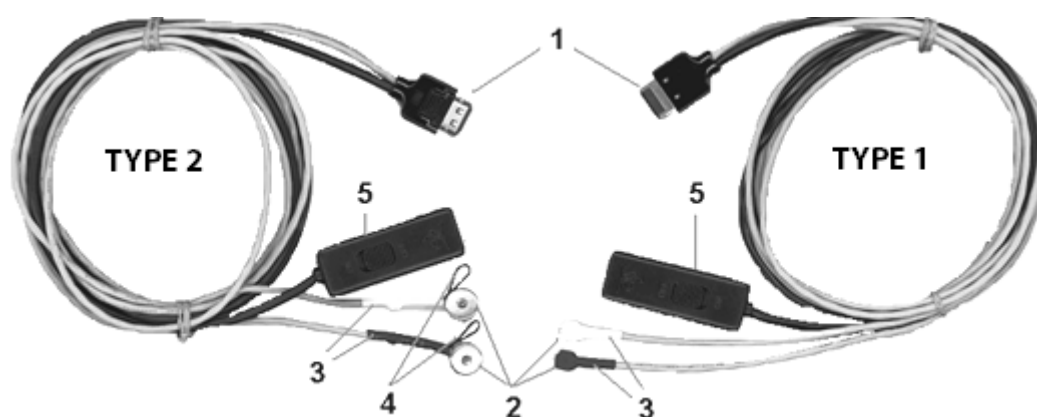
There are two microphone set options (Figure 2).

Figure 2: Microphone sets.

Both microphone sets include two mics (**2**) and a remote control (**5**). Mic cables of left and right channels (**3**) are marked with different colors: left channel mic is marked with a darker color.

To prevent accidental disconnection from the device connector (**2** in Figure 1), the microphone plug (**1**) is fitted up with plunger pin. Each **Type 2** microphone is also supplied with a wire loop (**4**) for fastening it to clothes.

External microphones can be connected to the voice recorder to increase stereo base and recording quality.
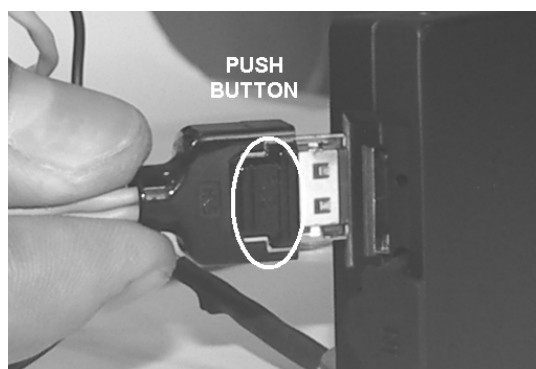

Figure 3: Connecting external microphones.

While connecting external mics, make sure the **PUSH** sign (Figure 3) on the plug faces the special symbol ▼.

When disconnecting the cable from the recorder, first press the **PUSH** button on the plug and then pull the plug out.

Non-compliance with the instructions above when plugging in/out external microphones may lead to jack failure and recorder malfunction.

6.4   USB Connecting Cable

Figure 4: USB connection cable.

The recorder is connected to PC with a standard MicroUSB cable (as shown on Figure 4).

6.5   Headphone Adapter

A standard headphone set can be connected to the device by means of a micro USB jack 3.5mm adapter (shown in Figure 5).

Figure 5: Headphone adapter.

6.6   Power supply

6.6.1 Built-in Battery

The voice recorder is powered by a built-in 320 mAh Li-ion battery. While recording, power consumption amounts to 13 mA; in the Volume-Triggered (VOX) Recording mode, power consumption is up to 4 mA. Minimum power consumption amounts up to 50 µA in the timer mode.

After approximately a year of continuous usage, you might need to replace the battery due to the battery wear-out. To replace the battery, please contact Speech Technology Center technical support.

6.6.2 Battery Charge

The voice recorder battery is charged from an external power source (AC/DC 220V/5V) or PC USB port.

Maximum battery charge current is 300 mA; full charge may take up to 5 hours.

When charging the recorder from your PC USB port, you need to consider the following: in case the current in the port is lower than expected or several devices are connected to a port at the same time, you may experience temporary connection issues.

The red LED (**6** in Figure 1) will light up and remain on continuously until the battery is fully charged.

After the battery is fully charged, the process will be automatically finished and the LED indicator will go down.

In case the charger is still plugged, after certain battery discharge (or if the battery is not fully charged) additional charging will start automatically.

In case the external power supply is powered on and off cyclically, an attempt to start additional charge will be performed.

> Charge your device after the purchase or if you have not used your recorder for a long time.

> To prevent battery failure due to over-discharging, follow these simple rules:
> If you do not use **Gnome-Nano II** for an extended period of time, fully charge the battery at least once a month.
> Recharge the battery after each intensive recording session.

7 OPERATING THE DEVICE

7.1 Default Configuration

Voice recorder comes complete with an integrated fully charged battery, so that you can get started immediately using manual (active) mode or connecting it to PC. In the manual mode, the voice recorder can only perform data recording, playback and deletion. Once enabled for the first time, **Gnome-Nano II** starts recording with the following default settings:

- Mono recording;
- 16 kHz sampling rate;
- PCM 16;
- 0 dB input gain control (manual);
- Signal input via internal microphone;
- Password not enabled, date/time not set.

7.2 Getting Started

Before using your **Gnome-Nano II**, please do the following:

- Connect the device to PC using a PC connection cable (see Section 6.5);
- Install the software from the installation CD (see Section 8.2);
- Set current date/time;
- Configure recording options in accordance with the acoustic environment (see Section 9.4.15);
- Enable and enter your password to protect **Gnome-Nano II** settings from unauthorized access, if required (see Section 9.4.14);
- Plug in external microphone, if required (see Section 6.3).

> ⬣ Before connecting your voice recorder to PC, make sure the PC case is effectively grounded. Grounding is strictly recommended if you intend to connect your voice recorder to the PC and an external signal source at the same time.

> ⬣ It is not recommended connecting multiple **Gnome-Nano II** recorders to the PC at a time. This may cause the **Manager** application failures and malfunction.
> Before connecting the second voice recorder you should disconnect the first one.

7.3 Audio Recording

7.3.1 Recording Hints

Voice can be recorded in the PCM* 16 or 24 bit format without compression or with A-law or µ-law compression.

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* Pulse-code modulation (PCM) is a digital representation of an analog signal that takes samples of the amplitude of the analog signal at regular intervals.

To obtain high-quality audio recording, we suggest you follow the guidelines below.

> You are not recommended starting recording while the device is connected to PC USB port. Otherwise, the recorder disconnects from PC and the recording process will be enabled. Because of PC interference of 5 V, you may experience poor audio recording quality.

> After the device memory is 50%-100% full, you are recommended formatting the device memory instead of deleting recordings one by one in order to extend flash memory life (see Section 9.3.5).

The best mic recording performance can be achieved with PCM 24 bit and 22050 Hz sampling rate. Stereo recording with high sampling rate provides speech intelligibility and excellent audio quality even in noisy environment.

Mono recording mode involves audio recording through only one internal or external mic input (left channel).

To prevent data losses, use volume-triggered recording mode only if input signal level is stable and predictable.

Place microphones as close to the signal (speech) source as possible (but not closer than 0.5 m) and as far from the acoustic and electromagnetic noise sources as possible. The closer the microphones are placed to the acoustic signal (speech) source, the smaller the reverberation (echo) will be and the higher gain level and speech intelligibility will be achieved.

During stereo recording, external microphones must be placed at least 15 cm away from each other. Try to place the microphones in such a way as to avoid vibration, and rubbing against other surfaces.

External microphones are more sensitive and at the same time can be easily concealed (under a jacket lapel, shirt collar, on the cuff). At the same time, they are subject to external electromagnetic interferences.

Avoid permanent contact of the device or external microphones with rough surfaces (such as table, car body, walls, etc.).

7.3.2 Manual Recording

Recording can be started/stopped both manually and automatically.

To start recording manually, move the **ON**/**OFF** slide switch (**3** in Figure 1) to the ●**REC** position (or the remote control switch in the **ON** position). To stop recording, move back the **ON**/**OFF** switch to the ■ **STOP** position or remote control to the **OFF** position.

The remote control replicates the positions of the **ON/OFF** slide switch (**3** in Figure 1). See the description in the table below:

The remote control position	Position of the switch (**3** in Figure **1**)	Recording mode
ON	REC	Recording is on
ON	STOP	Recording is on
OFF	REC	Recording is on
OFF	STOP	Stopped

7.3.3 Volume-Triggered Recording (VOX)

To enable the volume-triggered recording mode (VOX), do the following:

- Enable this mode while configuring recording parameters and set recording volume thresholds (see Section 9.4.5);

- Move the recording slide switch located on the device case (**3** in Figure 1) to the ● **REC** position or the remote control switch to the **ON** position.

- Recording session will begin once the input signal level exceeds the specified start/stop threshold. Recording stops once the volume level drops below the threshold and remains low over a specified time.

- To stop a volume-triggered recording, move the slide switch to the ▢ **STOP** position or move remote control switch to the **OFF** position. The volume-triggered recording mode can be used in combination with the scheduled recording mode (see Section 7.3.4).

7.3.4 Scheduled Recording Mode

Use scheduled recording mode when the exact start and stop time of a recording session is known beforehand. It is useful for recording conferences, meetings, etc. This mode is especially handy if the recording situation does not allow you to operate the device manually.

This mode allows you to start a recording session automatically at any desired time using built-in timers. To enable the scheduled recording mode, while configuring the device parameters (see Section 9.4.10), do the following:

- Activate one or several timers;
- Set the desired start and stop time for each recording session.

> If multiple timers are enabled and the end of one recording session overlaps the beginning of the next recording session, the device will record both sessions into one audio file.

In this case, manual recording controls usually have higher priority over the timer settings. If the button is not locked, you can stop a scheduled recording by moving the switch button (**3** in Figure 1) first to the **REC**, and then into the **STOP** position.

If the switch is disabled, you cannot stop the scheduled recording manually. Thus, the scheduled recording will be stopped according to the timer, after the memory gets full or if the battery gets fully discharged. This option is especially helpful while recording crucial information or important data as it ensures the **STOP** switch will not be accidentally moved.

Scheduled recording mode can be used in combination with the volume-triggered recording mode (see Section 7.3.3).

> When both scheduled and volume-triggered recording modes are on, recording session starts as soon as the volume level exceeds the specified threshold within the time frame set in the timer settings.

7.3.5 Loop Recording

In the loop-recording mode, audio data is recorded into a specified flash memory segment in the loop. Once this segment is full, the data recorded in the very beginning of the recording session will start being replaced with the new data. Loop recording duration can be specified in hours and minutes (see Section 9.4.7).

Maximum loop duration cannot exceed 2 GB.

Loop recording may be used in combination with any other recording mode.

7.3.6 Recording Duration

Recording duration depends on the specified parameters and available memory. Table 2 lists approximate recording time for different recording modes and sampling rate values.

Table 2: Recording duration for various modes and sampling rate values.

Mode	Recording duration with the sampling rate	
	22050 Hz	8000 Hz
μ-law 8 bit, mono	196 h	541 h
μ-law 8 bit, stereo	98 h	270 h
PCM 24 bit, mono	64 h	180 h
PCM 24 bit, stereo	32 h	90 h

> Note, that any recording exceeding 2 GB will be divided into 2 files automatically. Maximum recording size is 2 GB.

7.4 Recording Playback and Deletion

You can delete and play back recordings stored in the device memory either using device controls or by means of the managing application.

Playback and deletion process with Voice Recorder Manager is described in Section 9.5.

To play back or delete recording with multifunction button on the device case (**4** in Figure 1), you must assign the relevant function in the application (see Section 9.4.11).

This way, you can play back only the last recorded audio file.

By default, the button **4** in Figure 1 performs playback.

7.4.1 Recording Playback

If the playback function is enabled, to listen to the last recording stored in the memory, plug in the adapter (Figure 5) and earphones into the jack on the device case and press the button (**4** in Figure 1). To stop playback, press the button again.

7.4.2 Deleting Recordings

If the erase function is selected, to quickly erase all recordings from the voice recorder memory, press the multifunction button (**4** in Figure 1) and hold it down for about 3 seconds. The red LED (**6** in Figure 1) will indicate the process of file deletion and will go down as soon as all files are erased. All recordings will be removed from the voice recorder memory.

> ⬡❗ Deleted data cannot be recovered.
>
> In case the password is enabled, you cannot delete recordings from the device storage with the multifunction button.

7.5   The RESET Button

The **RESET** button located on the device case (**7** in Figure 1), is used for recorder reboot. The **RESET** button is located in the small pin sized hole. You will need a paper clip to actually press the button. After pressing **RESET**, all user settings will remain intact.

> ⬡❗ Do not use needles and other sharp objects as they can damage the button and its functions will no longer be available.

8 SOFTWARE

8.1 Gnome-Nano II Software Features

After connecting the device to the PC, you can use it as a FAT32 external memory unit. Nevertheless, to access all functions, you will need the software that comes with the recorder: device drivers and the **Voice Recorder Manager** application.

The device configuration is performed via **Manager**.

Voice Recorder Manager enables the following:

- Viewing device information (serial number, available memory size, battery charge level, etc.).
- Setting recording options (recording format, signal source, gain control, etc.).
- Viewing the list of recordings and performing standard set of operations (playback, deletion and copying).

8.2 Software Installation

8.2.1 System Requirements

The minimum system requirements for **Manager** are:

- PC with available USB port and a CD drive;
- CPU: Intel Pentium III;
- RAM: 256 Mbyte;
- Audio I/O sound card;
- Headphones;
- Mouse, keyboard;
- At least 16 GB of free hard disk space to store recorded data.

8.2.2 Driver Installation

To be able to work with the **Voice Recorder Manager** application, first you must install the drivers that come with the device on the CD. The drivers can also be recorded in the device storage.

> Only a user with administrator rights can install the drivers.

> Password must be disabled before installing the drivers. Before installing the drivers, make sure the recorder is not protected with a password.

Connect your device to your PC and, if required, insert the installation CD or open the relevant section on the device storage once the system detects the recorder.

The following instruction describes installation process for **Windows 7**.
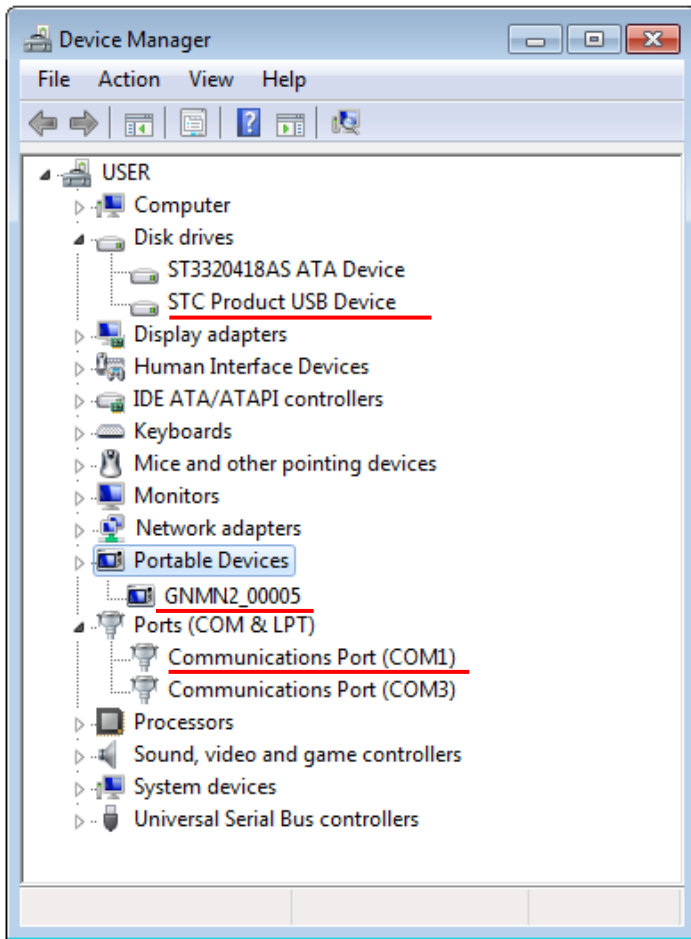
Figure 6: Device manager.

- Select the relevant driver (it must be compatible with your OS) from the CD or recorder storage and launch it.
- Once the driver is installed, you must restart your OS to apply the changes.
- Run **Device manager**. To do so, open the **Start** menu, select **Control Panel** → **Hardware and Sound** → **Device Manager**.
- If the driver is installed successfully, the device will show up in the **Device Manager** dialog (Figure **6**):

1. In the **Disk drivers** section as **STC Product USB Device**;

2. In the **Portable devices** section as **GNMN2_XXXXX**, where XXXXX stands for device serial number;

3. In the **Ports (COM & LTP)** section as **Communications Port**.

It is not required to install **Voice Recorder Manager**. To run the application, double-click on the *Manager.exe* file.

9 VOICE RECORDER MANAGER

9.1 Getting Started

To run **Voice Recorder Manager**, click the ***Manager.exe*** file located on the supplied CD or device flash memory.

9.2 Application Main Screen

Voice Recorder Manager main screen (Figure 7) is composed of application title and three client areas arranged the following way:

1 Main menu;

2 Device state area;

3 Area displaying one of the three operation modes: **Overview**, **Settings** and **Recordings**.
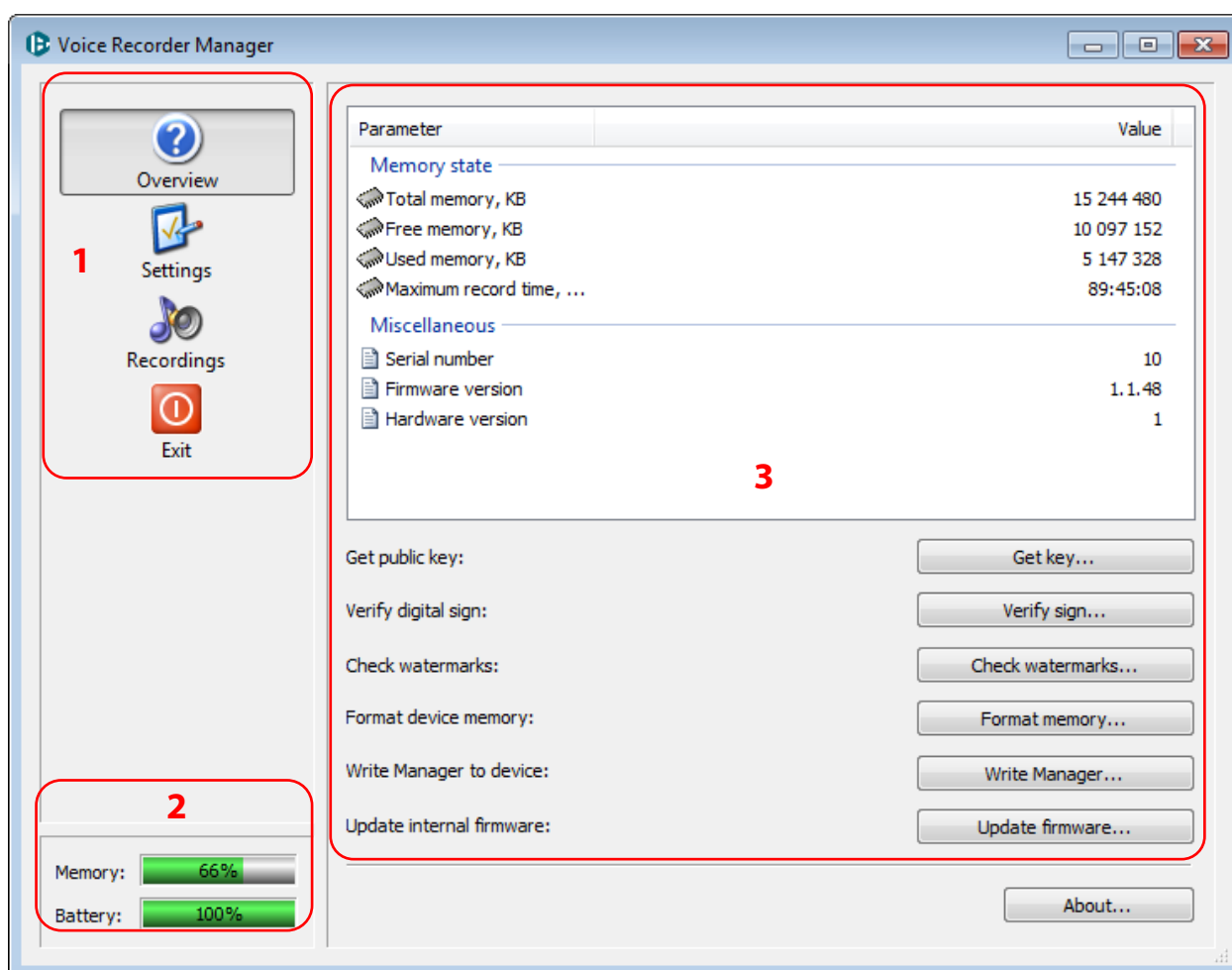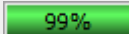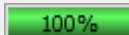
Figure 7: Main screen: Overview area.

Application main screen is composed of the following icons:

Icon	Description
	Opens the **Overview** area (see Section 9.3)
	Opens the **Settings** area (see Section 9.4)
	Opens the **Recordings** area (see Section 9.5)
	Closes the application (see Section 9.6)

In the **Device state** area, there are two indicators, **Memory** and **Battery**:

Indicator	Purpose
Memory `99%`	Displays device free memory
Battery `100%`	Displays battery charge level

9.3 Overview

To open the **Overview** area, click ⓘ located in the application main menu (Figure 7).

9.3.1 Main Screen: Overview Area

The **Overview** area (**3** in Figure 7) displays device info and a set of controls.

The **Overview** area contains the following device information (Figure 8).

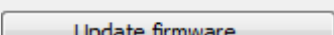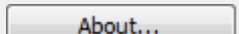| Parameter	Value
Memory state	
Total memory, KB	15 244 480
Free memory, KB	10 097 152
Used memory, KB	5 147 328
Maximum record time, ...	89:45:08
Miscellaneous	
Serial number	10
Firmware version	1.1.48
Hardware version	1

Figure 8: Overview area: Device information.
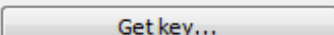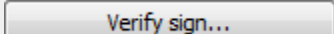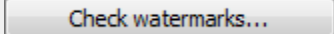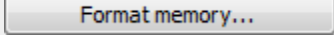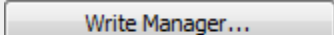
The **Memory state** section lists the following parameters:

- **Total memory, KB**: total device memory capacity in kilobytes;
- **Free memory, KB**: the amount of free memory in kilobytes;
- **Used memory, KB**: the amount of used memory;
- **Maximum record time, h:m:s**: estimated recording duration with specified device operation parameters.

The **Miscellaneous** section contains the following data:

- **Serial number**: device serial number;
- **Firmware version**: device firmware version;
- **Hardware version**: device version.

The **Overview** area also contains the following controls:

Name	Description
Get key...	Generate public key file (see Section 9.3.2)
Verify sign...	Verifies file authenticity (see Section 9.3.3)
Check watermarks...	Verifies audio file integrity (see Section 9.3.4)
Format memory...	Formats device memory (see Section 9.3.5)
Write Manager...	Is used to write **Voice Recorder Manager** to device memory (see Section 9.3.6)
Update firmware...	Updates device firmware (see Section 9.3.7)
About...	Opens the dialog with information about the application (see Section 9.3.8)

9.3.2 Getting Public Key

The **Get key** button is used for creating public key file on your PC. Public key is needed for audio recording authenticity verification using digital signature. A public key (public and private), generated with **Manager** can be obtained by one OS user.

Click **Get key** (Figure 7). In the **Save as** dialog, specify folder you want to save file to.

The default public key name is *PublicKey*. You can change file name.

9.3.3 Digital Signature Verification

The **Verify sign** button allows you to verify recording authenticity thus, to make sure audio file has not been altered after being copied to PC hard drive.

If a digital signature has been created for a recording (see Section 9.5.7), you can verify its authenticity by analyzing this recording and digital signature file. To perform verification, apart from audio recording, you need a digital signature file and a public key file. You are recommended locating public key files *(.key)*, digital signature files *(.dsg)* and audio recordings (*.wav*, *.rng*) in the same folder (Figure 9).

Name	Date Modified	Type	Size
PublicKey.key	19.03.2012 14:27	"KEY" File	1 KB
rec_0000.wav.dsg	19.03.2012 14:27	"DSG" File	1 KB
rec_0000	14.03.2012 18:59	WAVE File	392 KB

Figure 9: Files prepared for verification.
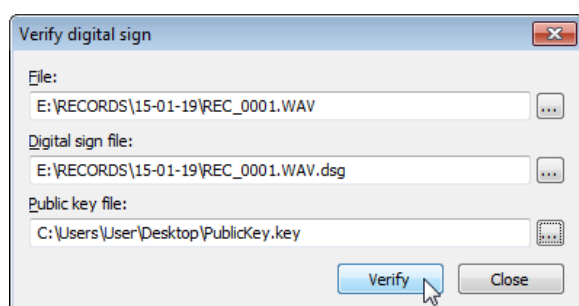
To start verification, click **Verify sign** (Figure 7).

In the **Verify digital sign** dialog (Figure 10), specify assess path to the file, its digital signature and public key files. Click **Verify**.

Verification results are displayed in the dialog, as shown on Figure 11.
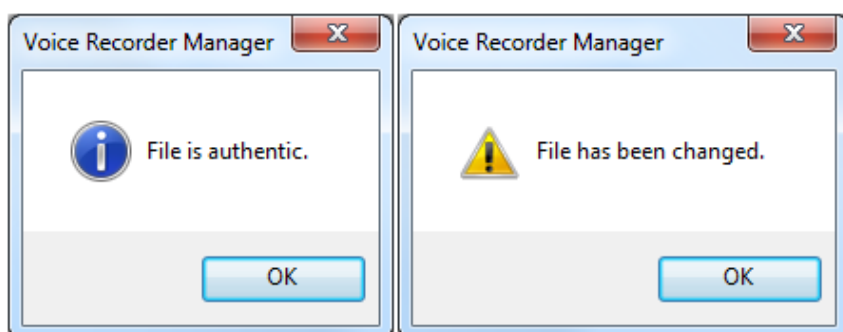
Figure 10: Specifying access paths.

If a file has been modified, you will see the following message: *File has been changed.*

If a file has not been modified, the following message will appear: *File is authentic.*

Figure 11: Verification results.

The **Get key** and **Verify sign** options are always accessible, which allows you to perform verification without connecting the device to PC.
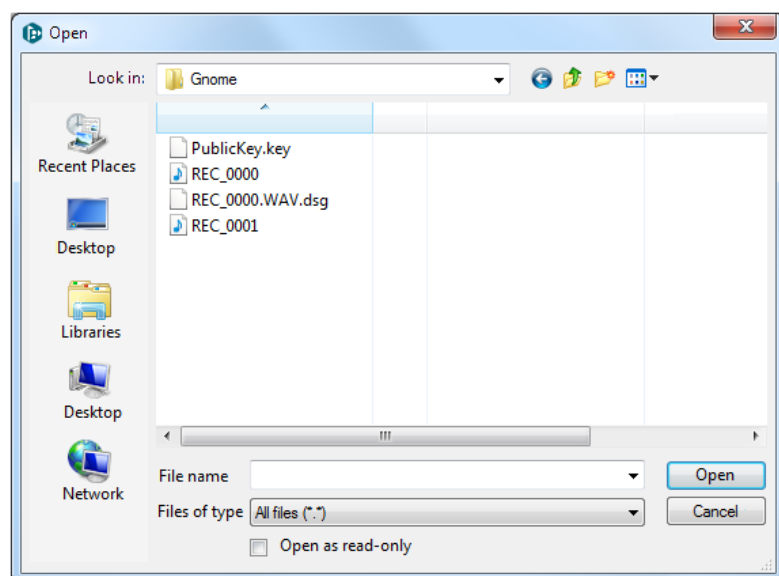
9.3.4 Watermark Check

Figure 12: Selecting files for the integrity check.

To perform integrity check, click **Check watermarks** in the main screen (Figure 7).

In the **Open** dialog (Figure 12), select either **.rng** or **.wav** file.

Click **Open** to start the process. Click **Cancel** to close the **Open** dialog.

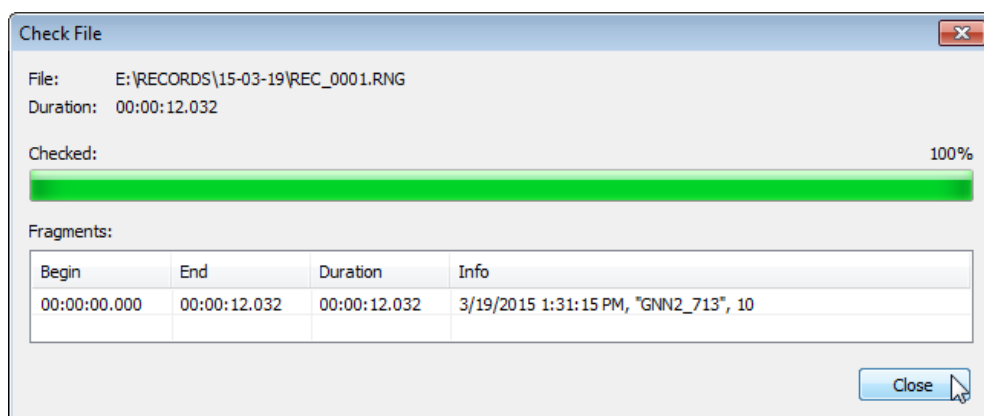The results are displayed in the **Check file** dialog (Figure 13) in a table. Number of lines in the table depends on the number of fragments detected in the file.

Figure 13: Watermark check results.

The table displays the following parameters for each fragment:

Begin: fragment start time;

End: fragment end time;

Duration: total fragment duration;

Info: watermark check results.

The **Info** column contains data on the detected fragment or whole file. Watermark consists of the following information:

Date and time the fragment or file has been created;

Device name, for example **GNN2_713**;

Device serial number, for example **10**.

If no watermarks are detected in the **.wav** or **.rng** file, the **Info** column will display the following message: **Watermarks not found**.

If watermarks are found in a **.wav** file, the **Info** column will display watermark text for the entire audio file.

If a **.wav** file with watermarks has been modified, the **Info** column will display one or more messages: **Watermarks not found**.

Info
Continue of record loop
8/29/2014 3:59:32 PM, "GNN2_713", 10
Begin of record loop
8/29/2014 3:58:53 PM, "GNN2_713", 10

When checking a **.rng** file with watermarks, recorded in the loop mode, the **Info** column will show messages marking the beginning of each recoding loop: **Begin of record loop** and **Continue of record loop.**

Info
Continue of record loop
8/29/2014 3:59:32 PM, "GNN2_713", 10
Watermarks not found
8/29/2014 3:58:53 PM, "GNN2_713", 10

If an **.rng** file with watermarks has been modified, apart from recording loop beginning and continuation, the **Info** column will display one or more **Watermarks not found** messages.

.wav file integrity check can detect not only intentional file modifications but also interferences caused by recorder malfunctions during the recording process or storage. The duration of a corrupted audio file fragment is measured in milliseconds while intentionally modified recording part can last several seconds or minutes. Click **Close** to exit **Check file** dialog.

9.3.5 Formatting Device Memory
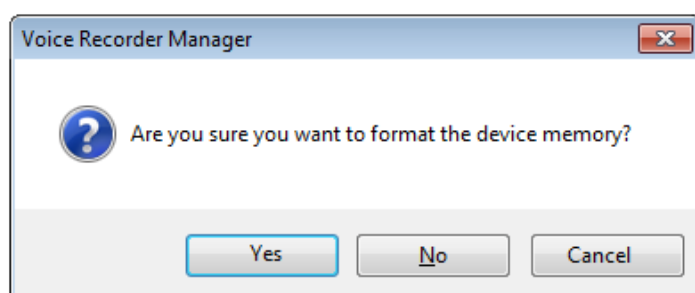
Figure 14: Memory formatting dialog.

In order to format device storage section the files are recorded to, click **Format memory** (Figure 7).

In the dialog (Figure 14), click **Yes**. To cancel formatting device memory, click **No** or **Cancel**.

> After device memory is 50%-100% full, you are recommended formatting the device memory instead of deleting recordings one by one in order to extend flash memory life. Please note that formatting will delete all data on the device.
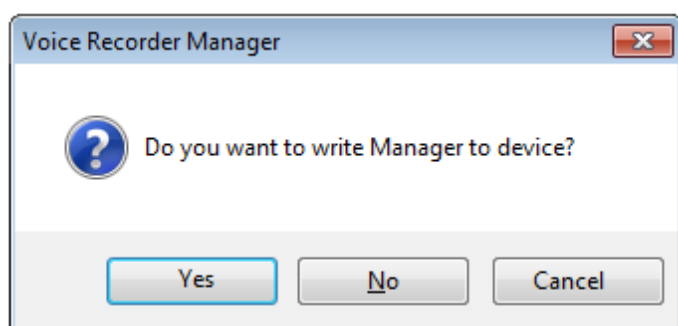
9.3.6 Writing Manager to the Device

Figure 15: Copying Manager to the device.

If you want to copy current **Voice Recorder Manager** to device memory, click **Write manager** (Figure 7).

To confirm, click **Yes** in the dialog (Figure 15). Click **No** or **Cancel** if you do not want to write application to the device.
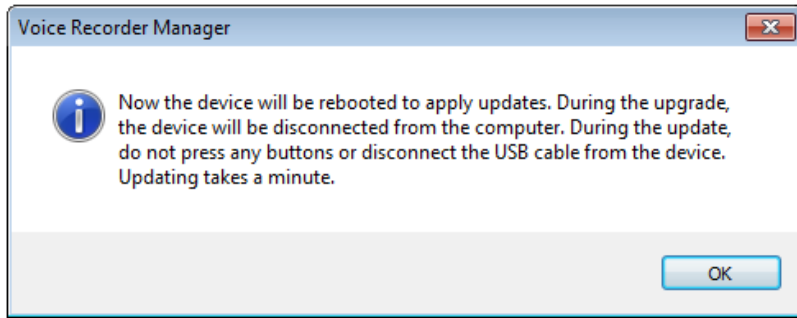
9.3.7 Updating Device Firmware

Figure 16: The device must be restarted.

To update device firmware, click **Update firmware** (Figure **7**).

In the Explorer dialog, select the *.bin* firmware file and click **Open**.

New firmware version will be applied to the device. A message suggesting rebooting the device (Figure 16) will show up. Click **OK**.
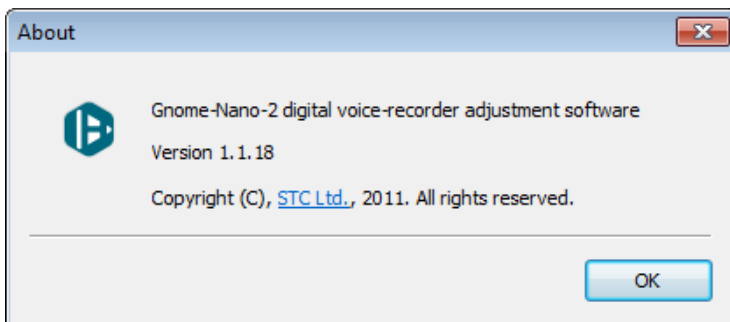
9.3.8 The About Option

Figure 17: The About dialog.

To view the **Voice Recorder Manager** information, click **About** (Figure 7).

To close the **About** dialog (Figure 17), click **OK**.

9.4 Device Settings

The **Settings** area is used for configuring device parameters.

To open the **Settings** area, click in the main menu.

9.4.1 The Settings Area
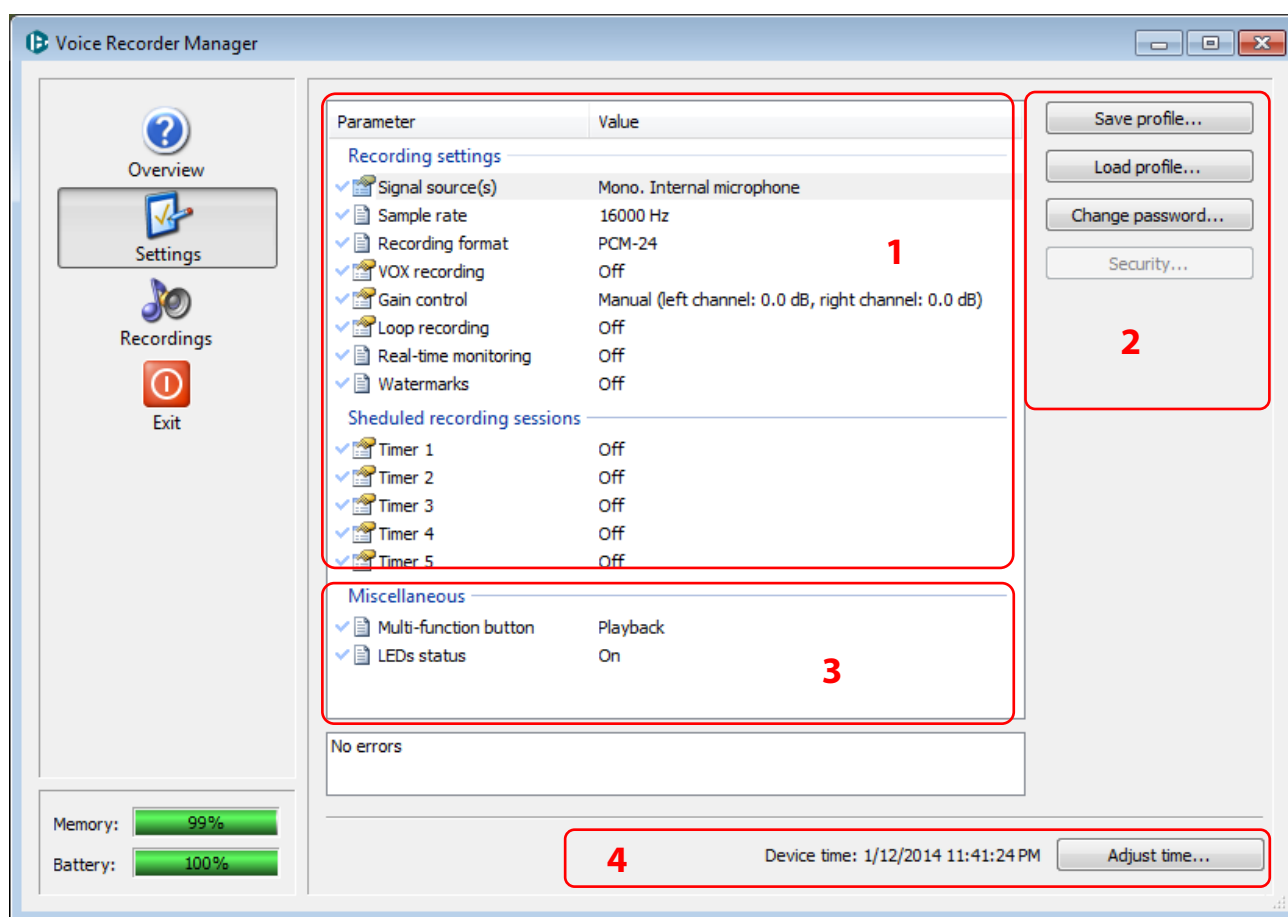
Figure 18: The Settings area.

Apart from main menu and device state, the **Settings** area contains the following controls (Figure 18):

     1 Device settings;

     2 Profile loading and saving buttons;

     3 Error message area;

     4 Setting and changing password;

     5 The **Adjust time** button.

Configuration is performed via shortcut menu or a dialog of each parameter. To open a shortcut menu, right-click the parameter title.

To open a parameter dialog, double-click its title.

Below you can see a complete list of adjustable parameters.

There is an error section in the **Settings** area. This section displays errors that may occur while configuring the device. If no errors have been detected, this section will display the **No errors** message.
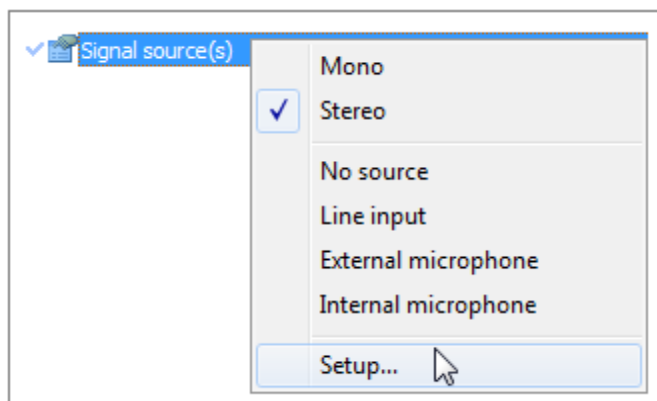
9.4.2 Signal Source

Figure 19: Signal source shortcut menu.

Source signal shortcut menu (Figure 19) is used for selecting recording source for the left and right channel.

A signal can be recorded in either mono or stereo mode.

Stereo recording involves recording onto two separate channels, one channel for the left sound input and the other channel for the right sound input. Mono recording involves recording onto left sound input only.

The range of audio sources includes the following:

    Built-in microphone;
    External microphone;
    Line input.

To set recording signal source, click **Setup** of the shortcut menu (Figure 19).
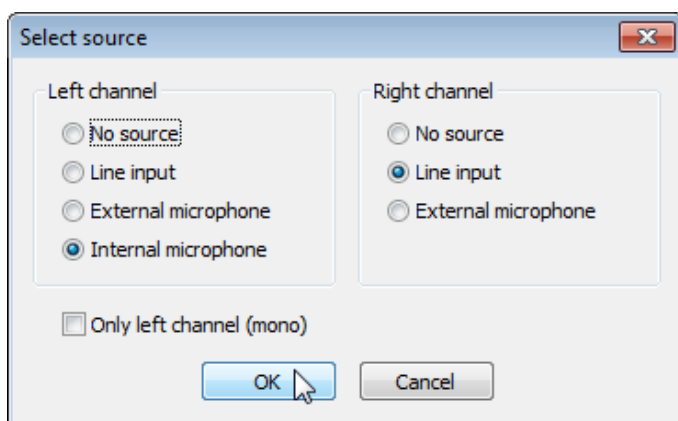
Figure 20: Selecting signal source.

Use the **Left channel** and **Right channel** areas to set signal sources for recording (Figure 20).

For mono recordings, tick the **Only left channel (mono)** option.

> If the signal source for both channels is not specified, the application will display the error message in the area **3** of the main screen (Figure 18).

To apply settings to the recorder, click **OK**.

To close the **Signal Source** dialog and cancel the current selections, click **Cancel**.
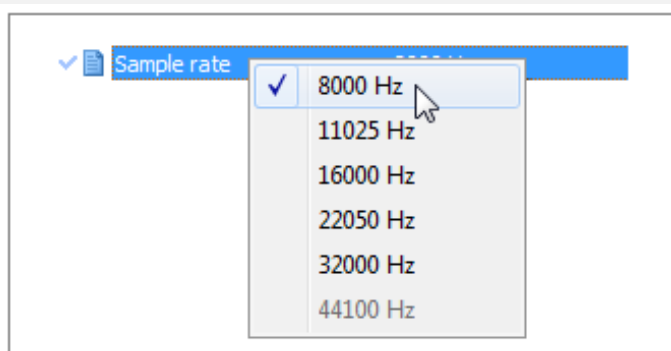
9.4.3 The Sampling Rate Area

Figure 21: The Sampling rate shortcut menu.

Use the **Sample rate** shortcut menu (Figure 21) to select recording sampling rate: 8000, 11025, 16000, 22050, 32000 or 44100 Hz.
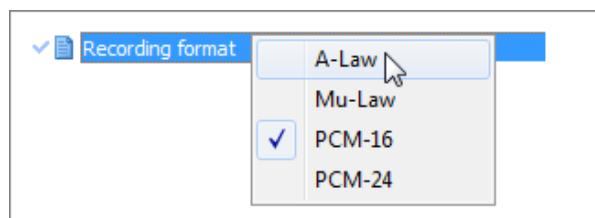
9.4.4 Recording Format

Figure 22: The Recording format shortcut menu.

The **Recording format** shortcut menu (Figure 22) is used for setting audio compression format:

- PCM 16 bits, no compression (cannot be used for 44100 Hz sampling rate);
- PCM 24 bits, no compression (cannot be used for 32000 Hz and 44100 Hz sampling rates);
- A-law compression;
- µ-law compression.

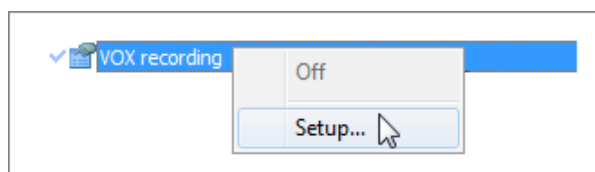## 9.4.5 Volume-Triggered (VOX) Recording

Figure 23: The Volume-triggered (VOX) recording shortcut menu.

To open the **VOX setting** dialog (Figure 24), click **Setup** of the **VOX recording** shortcut menu (Figure 23).

With this mode enabled, the recording process begins as soon as volume level reaches the specified threshold (triggering threshold). To make the process of threshold setting more convenient, the application features an indicator displaying the **Current signal level**. The 🟢 indicator marks when the signal reaches the threshold.

> The Volume-triggered recording mode (VOX) operates only left channel signal sources. If source signal for the left channel is not set, the application will display the error message in the area **3** (Figure 18) and the recording will not begin.
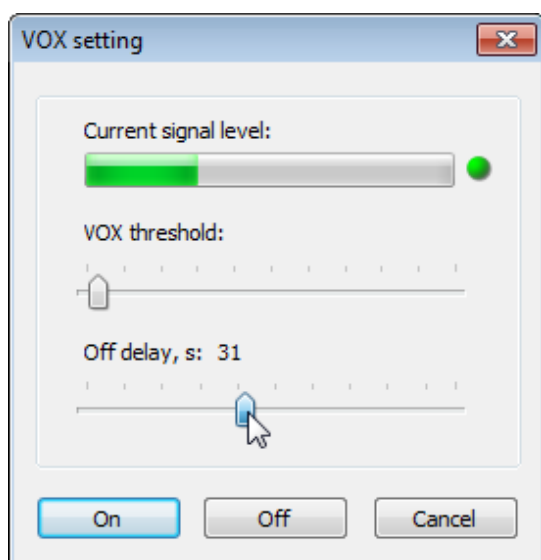

Figure 24: The Volume-activated recording dialog.

Use **VOX threshold** slider to set the recording threshold.

Use the **Off delay, s** slider to specify the time during which the device will keep on recording after the volume level falls down below the triggering threshold. The set value is shown in the title: the default value is 10 seconds.

Click **On** to apply changes and enable the Volume-triggered (VOX) recording mode.

Click **Off** to close the dialog, cancel the current selection and disable the Volume-triggered (VOX) recording mode.

To close the dialog and cancel the current selection, click **Cancel**.
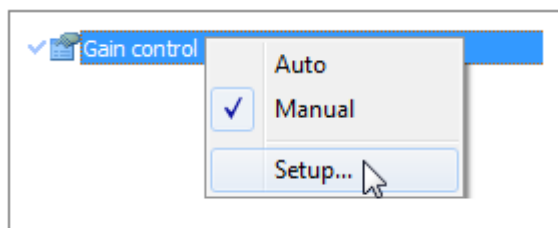
9.4.6 Gain Control

Figure 25: The Gain control shortcut menu.

The **Gain control** shortcut menu (Figure 25) is used for selecting gain control type and specifying manual control parameters.
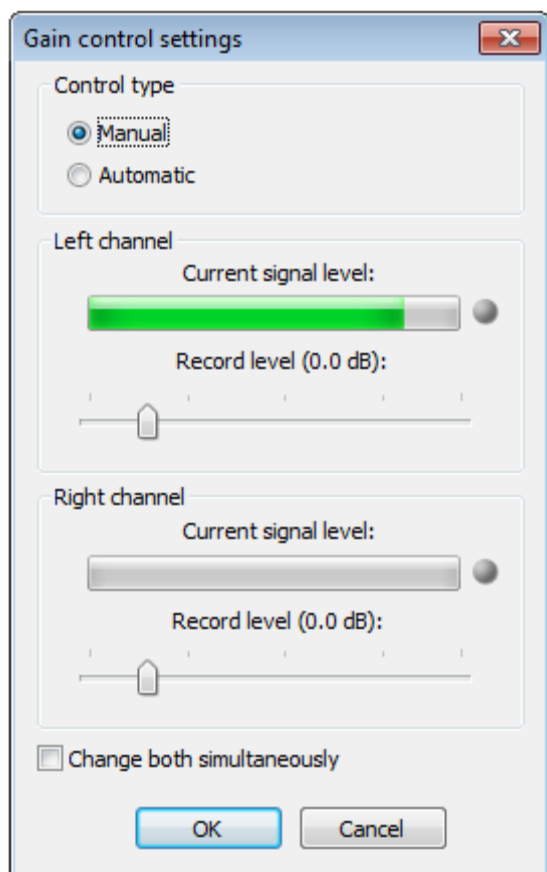

Figure 26: The Gain control settings dialog.

Select one of the control types in the **Control type** area of the **Gain control settings** dialog (Figure 26).

Tick the **Manual** option to enable the **Left channel** and **Right channel** setting areas for manual adjustment. Tick the **Change both simultaneously** checkbox to adjust both channels at the same time.

The **Current signal level** indicator shows the current input signal level.

The ● indicator also informs on the possible input signal overload that might result in signal distortions.

Set the gain level for one or both channels using the slider. Possible values for this parameter range from - 6 dB to + 32 dB.

If you want the device to carry out gain control automatically, select the **Automatic** control type. Manual adjustment for the right and left channels will be unavailable.

Click **OK** to apply changes.

To close the dialog and cancel the current selection, click **Cancel**.
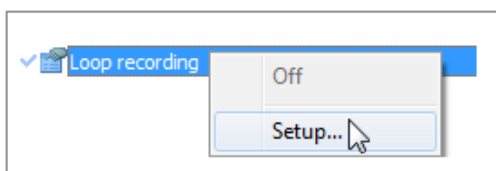
9.4.7 Loop Recording

Figure 27: The Loop recording shortcut menu.

The **Loop recording** shortcut menu (Figure 27) is used for enabling the loop-recording mode and setting recording duration. Once the recording have reached the specified time limit, the device will overwrite previously recorded data starting from the beginning.
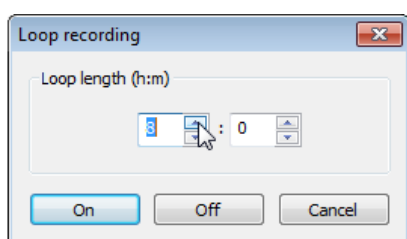

Figure 28: The Loop recording dialog.

Select the Setup option from the shortcut menu to open the **Loop recording** dialog (Figure 28). Configure the **Loop length (hh:mm)** parameter. Click **OK** to enable loop recording mode with specified settings. Click **Off** to disable this mode. Click **Cancel** to cancel the current selection and close the dialog.

> With this mode enabled, the recording session will not exceed specified time limits. If a recording with specified parameters exceeds 2 GB, you will see a message informing you the file will have shorter duration. Loop recording size cannot exceed 2 GB .
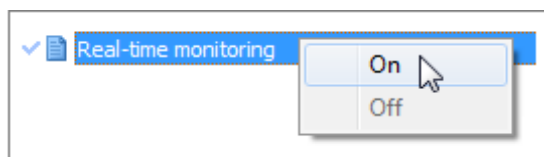
9.4.8 Real-Time Monitoring

Figure 29: The Real-time monitoring shortcut menu.

The **Real-time monitoring** shortcut menu (Figure 29) is used for enabling and disabling the real-time monitoring mode.
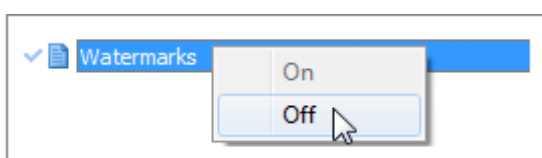
9.4.9 Watermarks

Figure 30: The Watermarks shortcut menu.

The **Watermarks** shortcut menu (Figure 30) is used for embedding watermarks into audio files.

> With the **Watermarks** mode enabled, SNR becomes 3 dB lower and the battery discharges 10 % -15 % faster while recording.
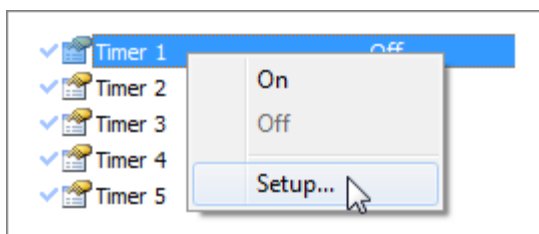
9.4.10 Scheduled Recording

Figure 31: The Scheduled recording shortcut menu.

The **Scheduled recording sessions** area allows you to enable or disable timer triggered recording. Five timers enable up to five recording sessions that can set in advance.

Adjust the timer before enabling. Click the **Setup** option from the selected timer (for example, **Timer 1**) shortcut menu (Figure 31).
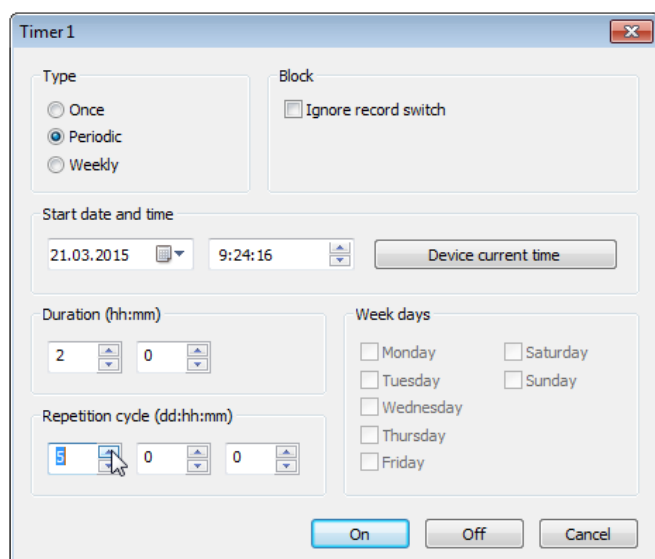
Figure 32: Adjusting timer recording options.

In the **Timer 1** dialog (Figure 32), select one of the recording **Types**: **Once, Periodic** or **Weekly**.

If the **Once** option is selected, specify start date (DD:MM:YYYY), time (hh:mm:ss) and duration (hh:mm) in the relevant setting areas.

The **Device current time** option enables quick current device time setting for further time adjustment.

When setting the **Periodic** recording type, apart from the start date/time and duration parameters, you also need to set the **Repetition cycle (dd:hh:mm)**: a period of time after which the device must start recording again.

When selecting **Weekly**, apart from the start time and duration options tick days on which you want the device to start recording.

To prevent accidental recording stop, set the timer recording priority over the recording switch. To do so, tick the **Ignore record switch** checkbox. After doing so the recording process will be impossible to stop with the switch button located on the device case or with the remote control.

Once all parameters are set, click **OK** to enable the timer.

To disable the timer, click **Off**.

To close the dialog without saving the changes, click **Cancel**.

> If the time set for the timer matches the current time, the recording session will be enabled immediately,

> In case you set two periodic timers with the exact same parameters or if the device detects errors while setting timer parameters, you will see the error message in the relevant area 3 of the application main screen (Figure 18).

> In the recording pauses the battery accumulates the charge. That is why, if during periodic recording the battery discharges, audio files might be of shorter duration.

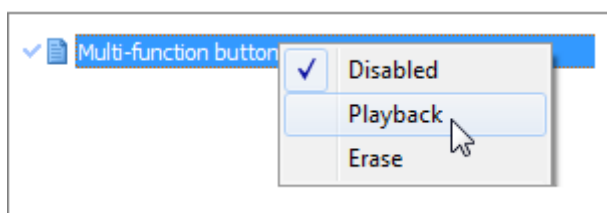## 9.4.11 Multifunction Button

Figure 33: Multifunction button shortcut menu.

Use the Multifunction button shortcut menu (Figure 33) to set one of the following options for this button (**4** in Figure 1):

Disabled;

Playback (to play the last recorded audio file);

Erase (for quick device memory formatting).

> By default, the multifunction button performs recording playback.
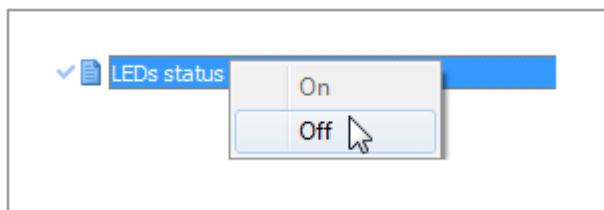
9.4.12 LEDs Status

Figure 34: The LEDs status shortcut menu.

The **LEDs status** shortcut menu (Figure 34) is used for enabling and disabling LED indicator located on the device case (**6** in Figure 1).

9.4.13 Profiles

A **Profile** is a set of pre-configured device parameters that are stored in the device memory.

There are 3 types of profiles: **default profile**, **current profile** and **user profile**.

Default profile: a set device parameters configured by manufacturer that cannot be changed.

Current profile: a profile that is loaded automatically after switching the device on, after replacing the battery or after pressing the **RST** button (**7** in Figure 1).

All user settings configured in **Voice Recorder Manager** are saved automatically to the current profile and device memory.

Current profile is not included into any of the three user profiles.

User profile involves user-defined parameters only. User profile can be saved and loaded by means of the **Save profile** and **Load profile** options.
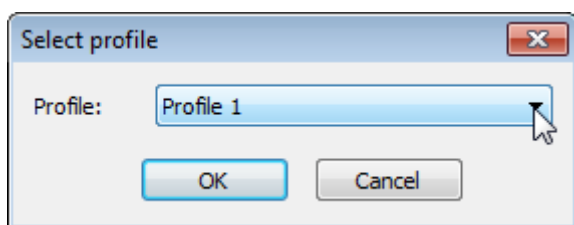
You can generate up to three user profiles.

Figure 35: Saving a profile.

To create and save a profile, configure needed parameters and click **Save profile**.

A dialog will show up (Figure 35).

Use the drop-down list to select one of the three profile names: **Profile 1**, **Profile 2** or **Profile 3**.

Click **OK** to save the profile to the device memory and apply it as a current profile.
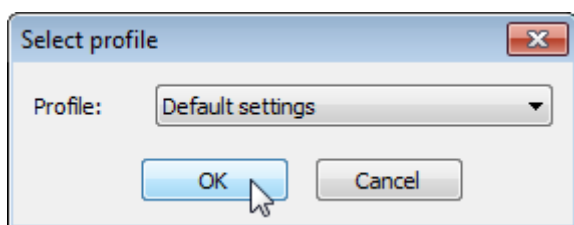

Figure 36: Loading a profile.

To apply one of the profiles to the device, do the following:

- Click **Load profile**. In the dialog (Figure 36), select one of the profiles.
- Click **OK** to confirm. The selected profile settings will be applied to the device.

If you want to change a previously created profile, you need to load this profile first to the **Voice Recorder Manager**. To do so, click **Load profile**.

Follow the profile generation instructions described in this section above.

9.4.14 Change Password

> Password is not set by default.

You can set a password to secure the access to device and its settings.

In order to set, change or disable password, click **Change password...**.

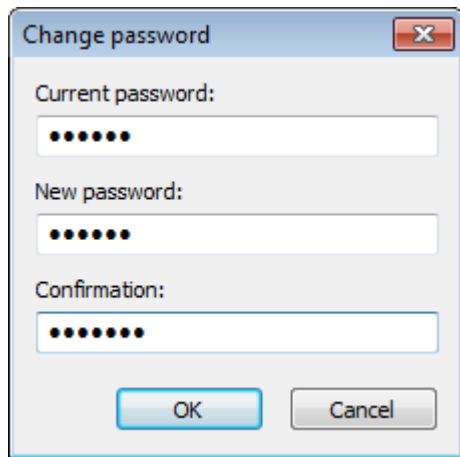The **Change password** dialog will show up (Figure 37).

Figure 37: Changing password.

While setting password for the first time, leave the **Current password** input box empty. In the **New password** box, specify digits (from 1 to 8) you want to use as password, confirm the password by entering the same set of digits in the **Confirmation** input box, and click **OK**.

To change password, fill in all input boxes in the dialog (Figure 37).

To disable password, leave the **New password** and the **Confirmation** boxes empty.
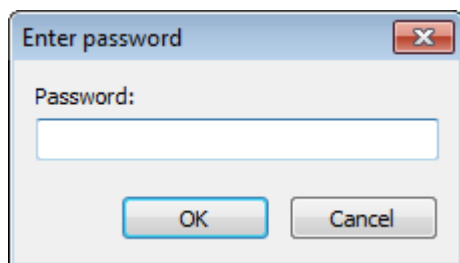

Figure 38: The Change password dialog.

After the password is set, the application will require entering password the next time you connect the device to PC.

In the dialog (Figure 38), enter your password in the relevant box and click **OK**.

For security purposes you are recommended to use at least four digits for password.
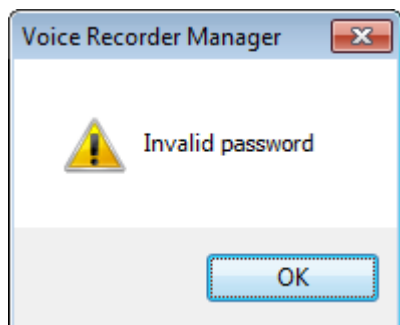

Figure 39: Invalid password.

If the device is not connected or password is wrong (Figure 39), you cannot access the device and configure device settings.

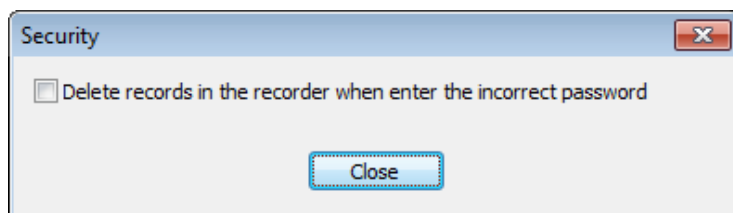## 9.4.15 Deleting Recordings after Entering Invalid Password

Figure 40: The Security dialog

There is an opportunity to delete all recordings from device memory by clicking the **Security** button located in the application main screen. In the opened dialog box tick the **Delete records in the recorder when enter the incorrect password** option and click **Close** (Figure 40).
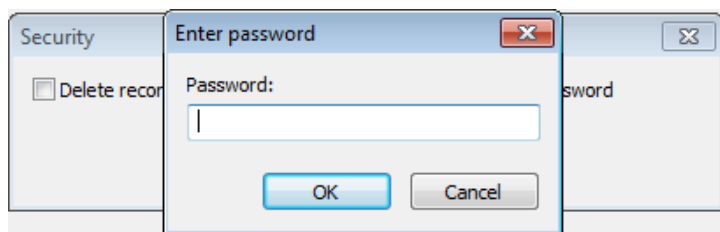

Figure 41: Confirming the Security option

When enabling or disabling this option, enter password to confirm this action (Figure 41).
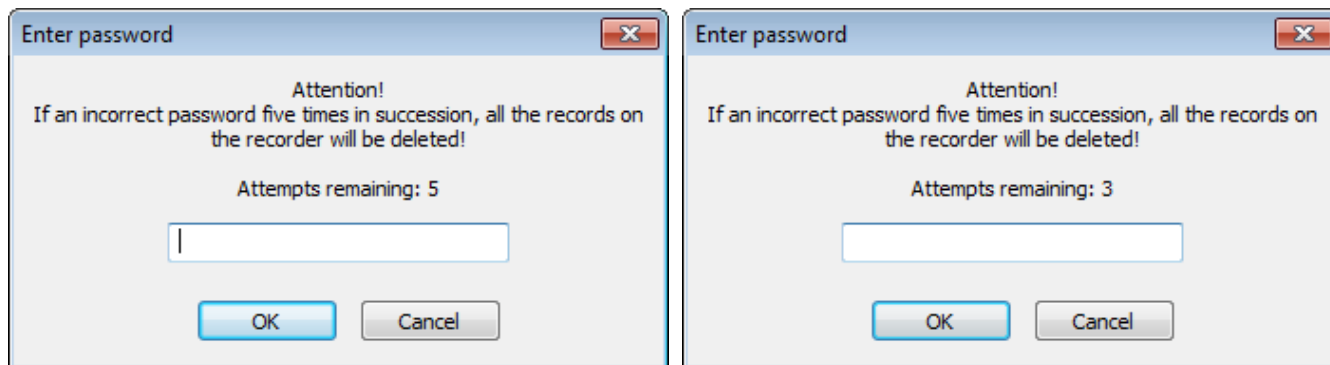
Figure 42: Recording deletion warning

If you enable this option, you will have only five attempts to enter correct password after running the **Voice Recorder Manager** (Figure 42).

> If you enter invalid password five times in a row, all recordings stored in the device memory will be deleted.

9.4.16 Setting Device Time

Device time and date are displayed in the **Device time** area 5 of the **Voice Recorder Manager** (Figure 18).
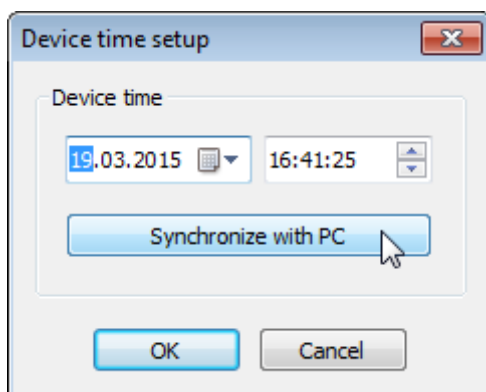

Figure 43: Setting device time.

To set device time and date, click the **Adjust** option, located in the application main screen (the **Settings** area).

In the **Device time dialog** (Figure 43), specify current time and date in the **Device time** input box.

Click **Synchronize with PC** if you want to synchronize device time with the time on your PC.

To save changes and apply them to your device, click **OK**; to cancel the current selection, click **Cancel**.

> If your device shuts down due to battery discharge, the date and time settings may be reset.

9.5 Recordings

The **Recordings** area is used for playing back and deleting recordings (*.wav* files) stored in the device memory.

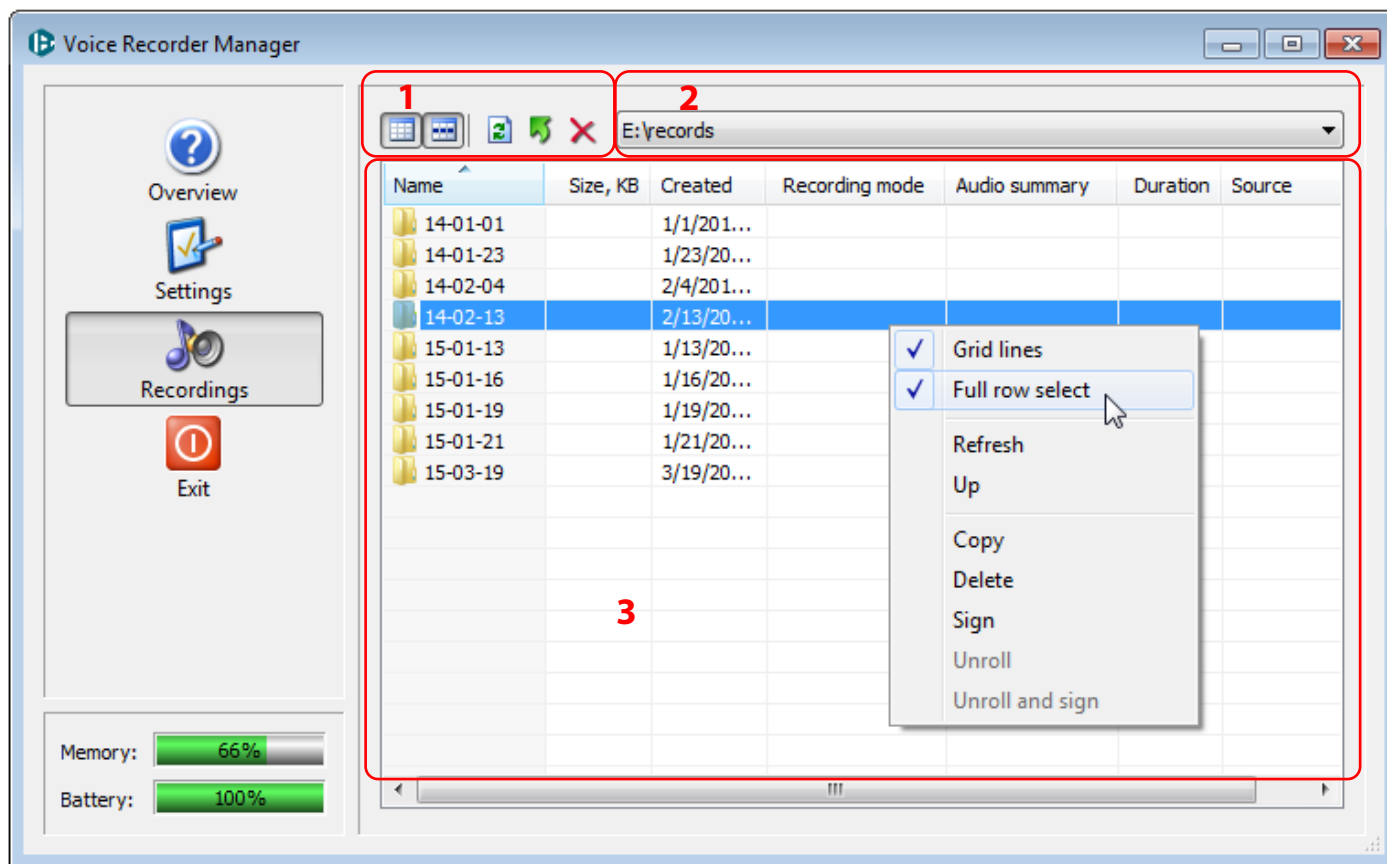To open the **Recordings area**, click 🔊 in the main screen (Figure 44).

Figure 44: The Recordings area shortcut menu.

9.5.1 The Recordings Area

Apart from **Overview** and **Device state**, the **Recordings** area contains the following controls (Figure 44):

   1 Tool bar;

   2 Folder selection drop-down list;

   3 List of recordings.

9.5.2 Toolbar

Below you can see a table with icons, their description and relevant shortcut menu options:

Icon	Shortcut menu option	Description and purpose
▦	Grid	Display grid of the recording list
⚏	Select string	Select the whole string
🔃	Refresh	Refresh recording list
↰	Up	Go one level up
✖	Delete	Delete selected recordings

Figure 44 shows the **Recordings** area with the **Grid** and **Full row select** options enabled.

9.5.3 Recording List

PC detects connected recorder as FAT32 external memory.

The **records** folder is created automatically in the device memory and contains recorded audio files. Files are located in the internal folders that are named in the **yy-mm-dd** format, for example **08-10-31**.

To operate audio files, open the **records** folder and then click on the folder with the file you want to open. Once the needed folder is open, the list of recordings and their main features will be displayed:

- **Name**: recording name, for example **rec_0000.wav** or **rec_00011.rng** (for loop recordings)
- **Size, KB**: recording size in kilobytes
- **Created**: date and time of the recording
- **Recording mode**: the way the recording was triggered:

    M: Manually

    T: Scheduled Recording

    V: Volume-activated recording

    L: Loop recording

- **Audio summary**: sampling rate, mono/stereo, compression type
- **Duration**: recording duration
- **Source**: recording source

9.5.4 Recording Playback

> The **.rng** recordings cannot be played back before their conversion.
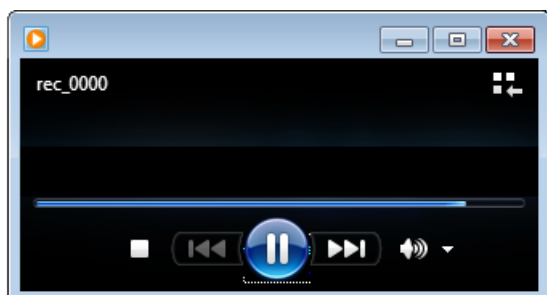
Figure 45: Windows Media player dialog.

Double-click on a recording you want to play (Figure 44).

Your OS default media player will start playing back the recording. For example, default Microsoft Windows media player for **.wav** files is Windows Media (Figure 45).

9.5.5 Deleting Recordings

Figure 46: Deleting files from device memory.

To delete a recording, select it in the list and click the ✖ icon located in the tool bar or click **Delete** in the shortcut menu (Figure 44).

Confirm or cancel the deletion in the dialog (Figure 46).

> Make sure the recording is not in progress when deleting files. This may cause application malfunctions.

9.5.6 Copying Files to PC

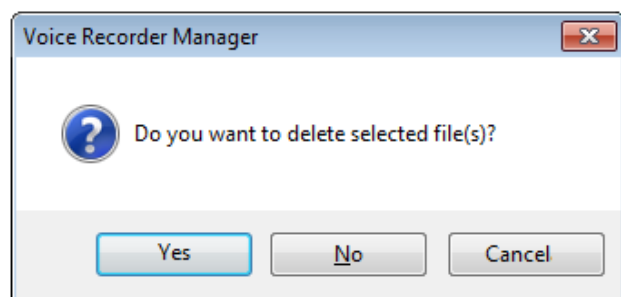Copying files that are not protected with password can be performed with OS native tools.

In case files are protected with password, you can access the recordings only after entering password in **Voice Recorder Manager**.

> You can copy selected audio files or the entire folder with recordings.

Select a file or folder you want to export to PC via **Voice Recorder Manager**, open shortcut menu, and click **Copy** (Figure 44). You can also select an object and drag it to another folder on your PC.

The *.rng* files are files recorded in the loop mode. In these files, the recording time does not always match the recorded data time. To avoid this issue, convert your *.rng* file to *.wav* so that the recording time matches the data time. To do so, while copying your files to PC, select **Unroll** from the shortcut menu (Figure 44).

9.5.7 Digital Signature

You can generate digital signature for an audio file while copying it to PC hard drive. To do so, open shortcut menu of a file you want to create digital signature for and click **Sign** (Figure 44).

To create digital signature for *.rng* files, open shortcut menu, and click **Unroll and sign** (Figure 44).

In the **Save as** dialog (Figure 47), specify folder you want to save the digital signature file to. Digital signature file has the same name is the recording except having the *.dsg* extension.
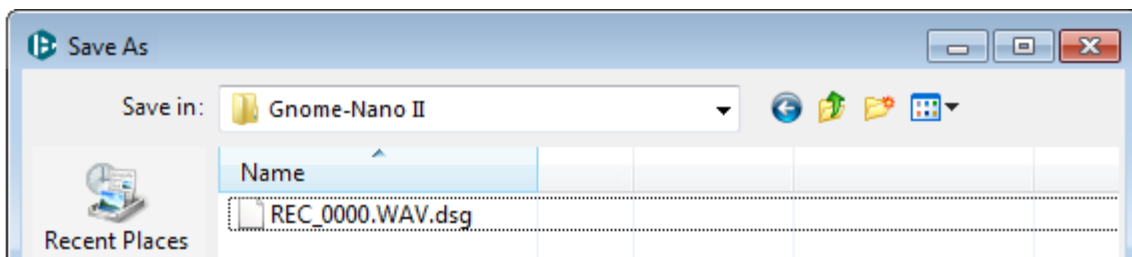

Figure 47: Saving a digital signature file.

9.6   Exiting the Application

To close the application, click 🔘 **Exit** in the tool bar, click ❎ in the application title or press **Alt+F4**.

> You must close the **Voice Recorder Manager** application before recording.

10 KNOWN ISSUES AND TROUBLESHOOTING

While installing the driver or updating your firmware, some error messages may show up: "This driver cannot be installed on your PC" or "The driver you are trying to install is not compatible with your Windows version".

Errors may occur if:

While installing the driver, you have selected a file with wrong bitness.

Previous driver versions that are not compatible with your Windows version were tried to be installed on your PC.

If you face any of the mentioned errors, first of all make sure the driver you have installed is compatible with your Windows version.

If the wrong driver has been installed, you need to reinstall the driver (make sure to select the one compatible with your OS).

If the driver has been installed correctly but error messages still show up, delete the driver, reboot your PC, and try to reinstall the driver.

11 OPERATING CONDITIONS

The recorder is designed to be used under the following operating conditions:

Environment temperature: minus 10 to plus 40 ℃;

Relative humidity: up to 93% at plus 25° C.

> The most fragile recorder part is the microphone. Avoid storing and operating the device in humid or dusty conditions. Keep the device away from liquids.

12 TANSPORTATION AND STORAGE CONDITIONS

The recorder may be transported in original manufacturer package by automobiles, railway boxcars or cargo vessels, according to shipping rules for respective type of transport.

Ambient temperature for storing the recorder in manufacturer package in an enclosed, heated and ventilated industrial facility or other areas should range from 5 to 40° C. Relative humidity may not exceed 80 %.

13 MANUFACTURER WARRANTY

The recorder liability amounts to at least 10000 h.

The device service life amounts to at least 5 years (without regard to battery service life).

The device must be used strictly in accordance with operating, storage and transportation conditions described above.

The Manufacturer guarantees product conformity with the specifications unless any of the operating, storage and transportation conditions was violated.

The warranty period is 12 months from the date of delivery.

The Manufacturer shall perform product warranty maintenance with no extra cost for the Customer. Warranty maintenance means product performance recovery in case of product failure that is not in any way related to product misuse within the warranty period.

In case of any defects and/or inconsistencies discovered within the Warranty Period, please send a complaint letter to: STC Ltd, PO Box 124, Saint Petersburg, 196084, Russian Federation.

14 CERTIFICATE OF ACCEPTANCE

Gnome-Nano II Ultra-Small Digital Stereo Recorder STC-H713

No _____,

has been manufactured and accepted in compliance with required standards and valid technical documentation and classified as fit for use.

Head of Quality Control Dept.

Stamp Here   _____   _____

Signature   *Print Full Name*

_____

Day, Month, Year

Shipping Date

_____   _____   _____

Day, Month, Year   *Signature*   *Print Full Name*

Batch Number and Device Number Breakdown

004-110518