NanoPen

User Guide

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Introduction

NanoPen is a self-contained covert digital camcorder concealed inside a fully functioning standard profile ballpoint pen. The pen has a hidden camera, microphone and micro-USB socket.
The camera records events, incidents and the persons concerned. This is supplemented by an audio recording. If required, an audio only recording can be selected, and still images can be taken at any time.
The pen can be either carried or concealed in worn clothing, with due care taken not to obstruct the camera lens or microphone. The pen can also be left unattended if required, and will still function normally.
The Pen is operated remotely and covertly, using a remote control, disguised as normal car key fob.
All NanoPen files are time and date stamped and stored in the internal flash memory in the following formats:

- Movie = MPEG4 (QVGA 320 x 240)
- Audio Only = AMR
- Snapshots = JPEG, UXGA (2M Pixels)

All NanoPen digital files are exported by Micro-USB and are easily viewed, renamed, edited and transferred using Windows© Explorer.

PC Minimum Requirements

- USB 1.1 or higher
- Windows 2000/XP/Vista
- QuickTime Player

Box Contents

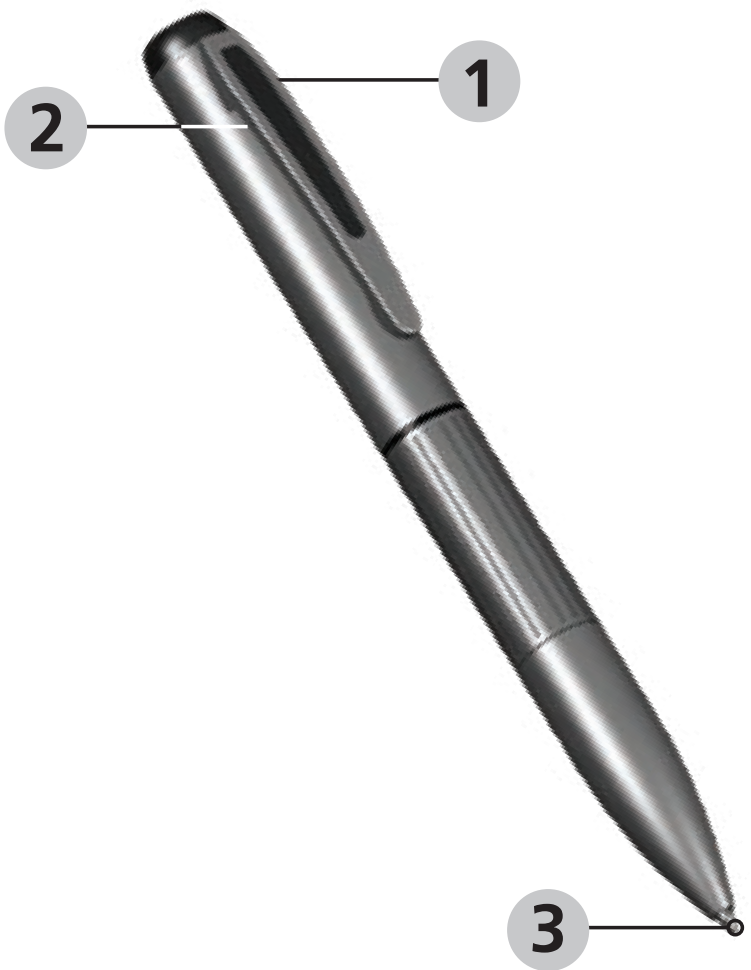
1. NanoPen
2. Remote Control key fob
3. Multi-Charger
4. USB Cable
5. Spare ink refills
6. User Guide
7. Reference Card
8. Carrying Case

Parts and Control

Closed View

This view shows the pen in its normal state.

1. Lens location (do not obscure)
2. Microphone location (do not block)
3. Nib



Open View

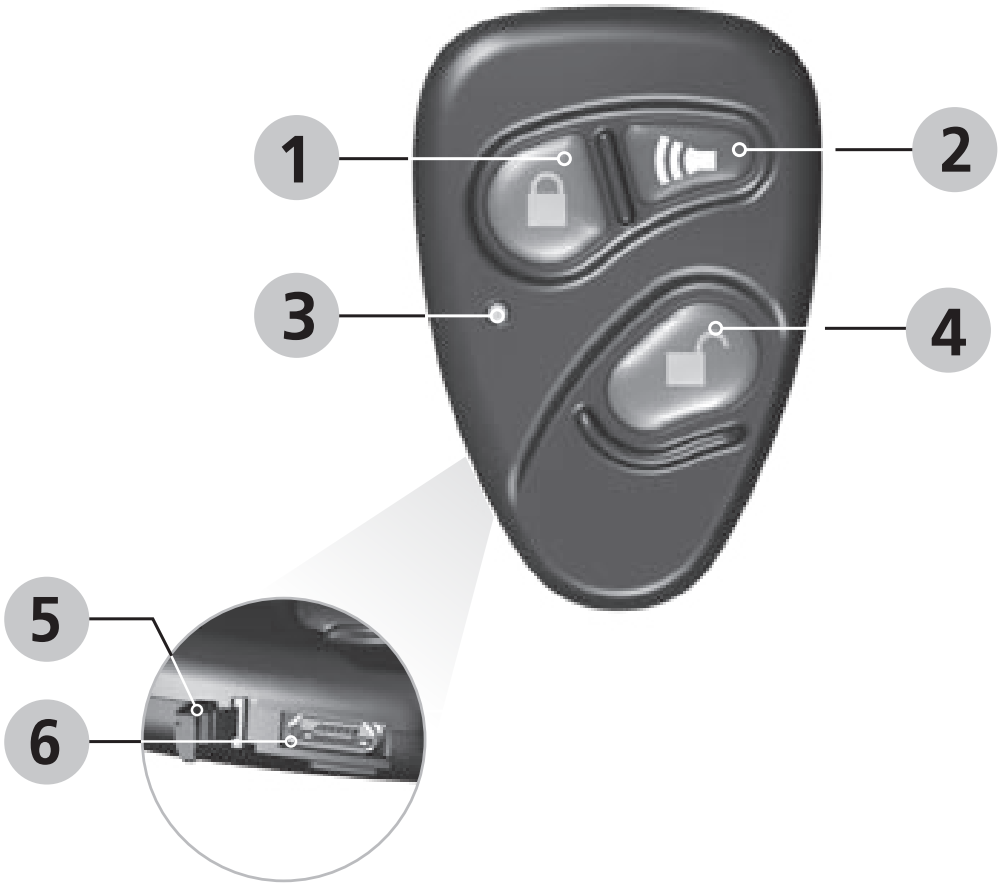
This view shows the pen in its open state. All components listed here, are concealed when the pen is closed.

1. Power on/off button
2. LEDs indicators
3. Micro-USB socket

Remote Control Reference

This view shows the remote control.

1. Lock button (Taking snapshot)
2. Alarm button (Audio only recording)
3. LED indicator
4. Unlock button (A/V recording)
5. Socket cover
6. Micro-USB socket



Function Table

Function		Press	Vibration (Remote)	Remote Control LEDs	NanoPen LEDs	Ref. Page
Power	On	Power Button			Five times	11
	Off	Power Button			Twice	
Lock	Locking		Four times	Four times		15
	Unlocking		Twice	Twice		
Audio/Video	Begin		Once	Once	Memory level indication	17
	End	Any	Twice	Twice	Twice	
Audio Only	Begin		Once	Once	Battery level indication	18
	End	Any	Twice	Twice	Twice	
Take snapshots			Twice	Twice	Twice	19

Getting Started

When you get the NanoPen, check that the box contents are complete, and undamaged. Also take time to read the instructions and familiarize yourself with the basic functions. Then take the following action

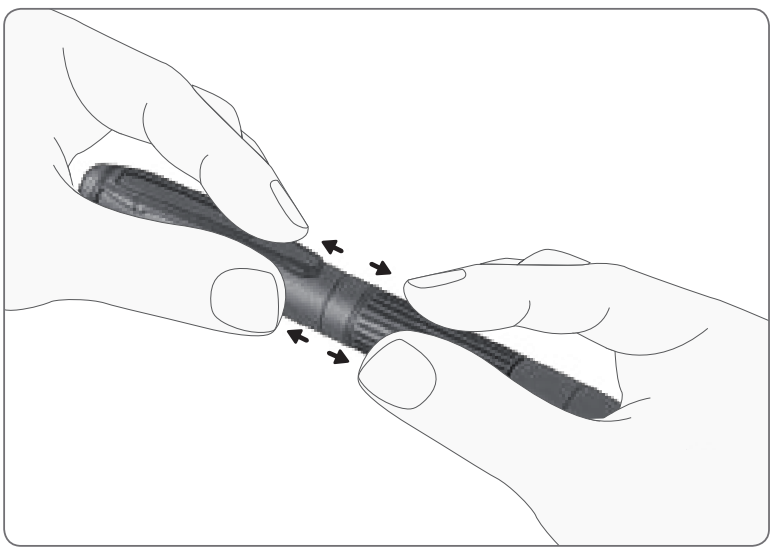
1. Charge the NanoPen using the process described on page 13.
   Charging process can take up to 3 hours.
2. Charge the Remote Control using the process described on page 16.
3. Adjust the time stamp using the process described on page 25.

WARNING: The NanoPen must only be formatted using the procedure and software described on page 27. Failure to do this will result in irreparable damage.

Pen

Opening and Closing

To locate the power button and the Micro-USB socket, as shown on open view picture (page 7), take the pen in both hands and pull gently on each end as shown.



Power On/Off

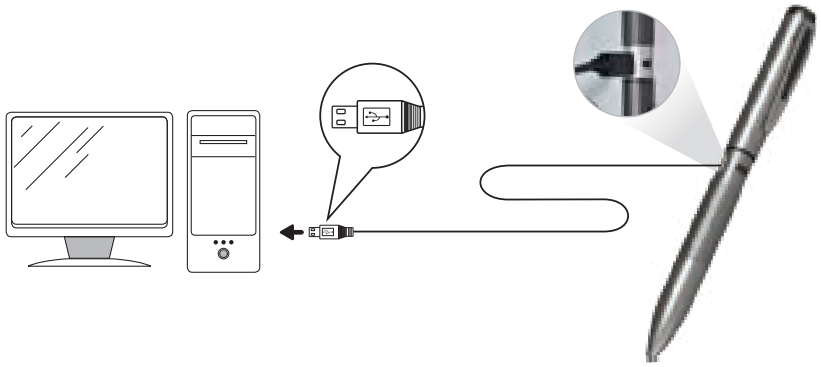
Press on the power button indicated in the open view picture (page 7). When the LEDs flash 5 times, the pen is on. To switch the Pen off, press the button again until the LEDs flash 2 times.

Charging the NanoPen Battery

1. Open the NanoPen to access the Micro-USB socket.
2. Connect the Micro-USB plug into the socket on the NanoPen, and connect the other end of the cable to standard PC USB port, or to a portable USB charger.

During charging, the green LED will blink once per second. When fully charged, the green LED will remain on. This can take up to 3 hours.

Do not use force or attempt to insert the USB plugs at an angle.



Note: The supplied charger allows charging from main power (110V-220V AC) or from car cigarette lighter socket (12V DC).

Memory Availability

Open the pen and look at the LED indicators. Press button on the Remote control. The LEDs will then indicate the following

Red and Green = maximum recording time available

Green = ½ to ¾ recording time available

Red = ¼ to ½ recording time available

No indication = little to no memory available

Battery Level

This process is the same as checking the memory; except that you need press button on the remote control. The LEDs will then indicate the following

Red and Green = battery full

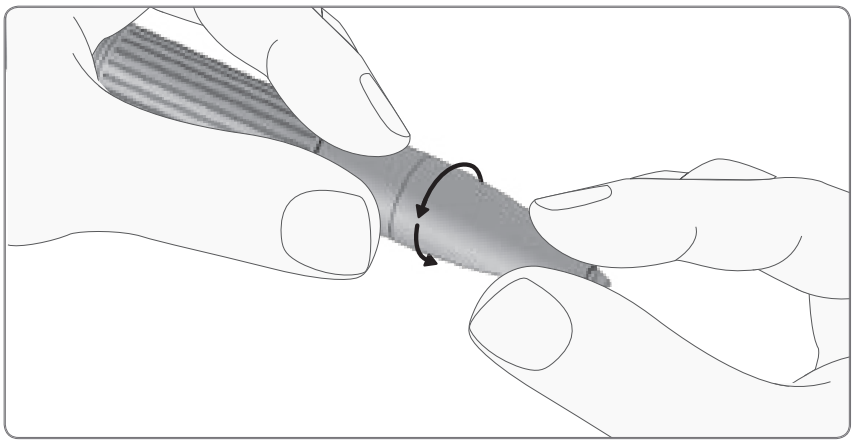
Green = ½ to ¾ battery available

Red = ¼ to ½ battery available

No indication = little to no battery power available

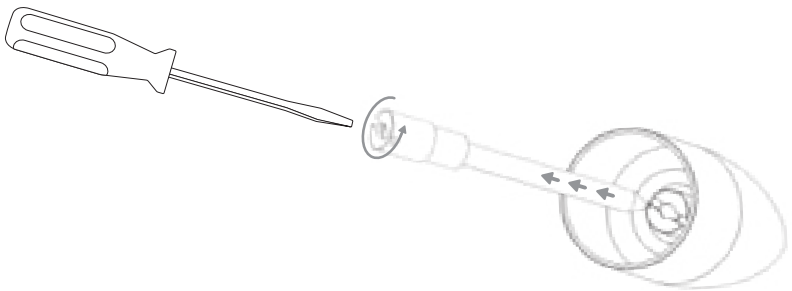
Writing

To write, twist the tip collar of the pen till the nib appears. You can then write normally. To retract the nib, twist the collar in the opposite direction.



Changing the Ink Cartridge

Twist and pull off the nib end of the NanoPen until it seperates. Inside the tip, locate the slot and, using a small screwdriver, turn the screw counter clock wise until the ink cartridge falls free. Replace the empty cartridge and reverse the procedure.



Remote Control

Note: The pen needs to be within 1 meter of the remote control to ensure consistent and effective operation. Operation beyond this distance, is not guaranteed.

Locking and Unlocking

To ensure against the accidental activation of the NanoPen the remote control can be locked, by pressing buttons and together. Locking is confirmed by 4 vibrations.

To unlock the NanoPen, press buttons and together. Unlocking is confirmed by 2 vibrations.

Note: Once the NanoPen start recording, it won't stop, even if the remote battery become empty.

Charging the Remote Control Battery

1. Open the connector cover to access the Micro-USB charging socket.
2. Connect the micro-USB plug into the socket on the Remote Control, and connect the other end of the cable to standard PC USB port, or to a portable USB charger.

During charging, the green LED will blink once per second. When fully charged, the green LED will remain on. This can take up to 3 hours.

Do not use force or attempt to insert the USB plugs at an angle.

Remote Control Side View

Note: The supplied charger allows charging from main power (110V-220V AC) or from car cigarette lighter socket (12V DC).

Video and Audio Recording

Note: Firstly, make sure that the pen is switched on and the lens of the pen and the microphone are not obstructed.

1. To begin recording press button on the remote control.
   The remote control will vibrate once.

   During recording the remote control will vibrate once per 30 seconds.

2. To cease recording press any button on the remote control.
   The remote control will then vibrate twice.

Alternatively, if the remote control has been lost or damaged, it is possible to start A/V recording by pressing the power button for 10 seconds.

Audio only Recording

Note: Firstly, make sure that the pen is switched on and the lens of the pen and the microphone are not obstructed.

1. To begin audio recording only, press button on the remote control.
   The remote control will vibrate once.

   During recording the remote control will vibrate once per 30 seconds.
2. To cease recording press any button on the remote control.
   The remote control will then vibrate twice.

Note: Once the NanoPen start recording, it won't stop, even if the remote battery become empty.

Taking a Snapshot

Note: Firstly, make sure that the pen is switched on and the lens of the pen and the microphone are not obstructed.

To take a snap shot, ensure the pen lens is pointed at the subject and press button on the remote control.
The remote control will vibrate twice.

Indications

The NanoPen confirms its reception of each command via vibrations felt in the remote control.

Green LED

Green LEDs confirm normal functions combined with vibrations. For more information see page 9. However, if the memory of the NanoPen is full, trying to start recording will cause the Green LED to flash once, and then immediately twice.

Yellow LED

Any flashing of Yellow LEDs warn the user that the Remote Control is not paired with any NanoPen. For more information see page 31.

Red LED

Any flashing Red LEDs indicates problem. Generally they will indicate that the NanoPen is out of range of the remote control or that the memory has become full. For more information see page 34.

PC Functions

File Management

The NanoPen files are of three format types:

- **3GP** — Audio/Video (AV) recordings
- **AMR** – Audio recordings
- **JPEG** — Snapshots

When the NanoPen is connected to your PC using the supplied USB cable, Windows recognizes it as a mass storage device. Both the AV and the audio files can be viewed, listened to and otherwise managed from Windows Explorer, as follows:

1. Right-click on the Windows **Start** button, and select **Explore**. Windows Explorer opens.
2. Navigate to the NanoPen drive, and do any of the following:
   - Click and drag a file to copy it from the NanoPen to another location.
   - Right-click a file and select **Cut** to remove it from the NanoPen, then right-click the destination file and select **Paste**.
   - Right-click a file and select **Rename** to change the file name.
   - Right-click a file and select **Delete** to delete the file.

Disconnecting the NanoPen

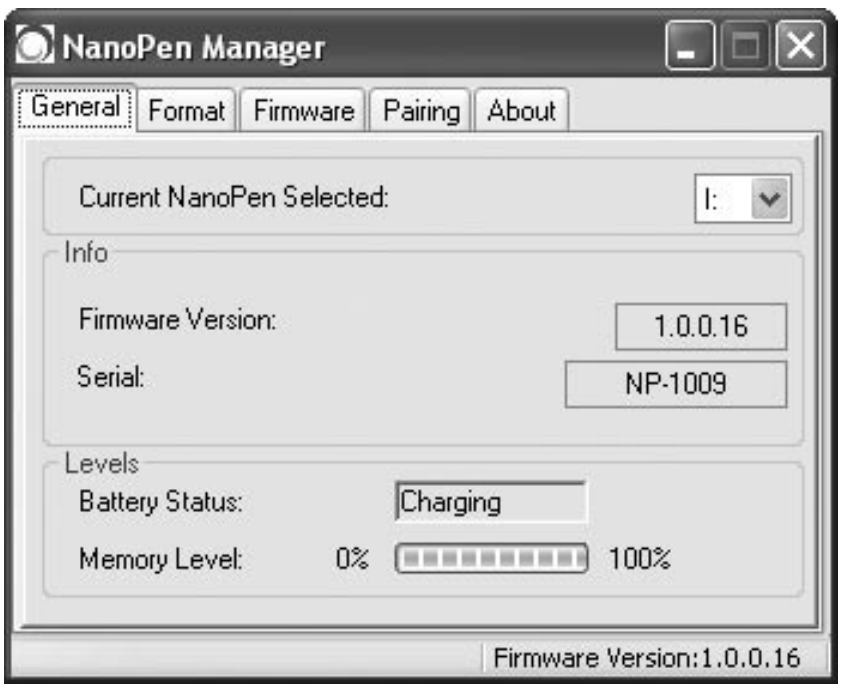
To disconnect NanoPen:

1. Click the **Safely Remove Hardware** icon in the Windows task bar. A pop-up opens that lists all removable devices currently connected to the PC.
2. In the pop-up, click NanoPen. The pop-up opens informing you that it is safe to remove the hardware.
3. Disconnect the NanoPen from the USB cable.

NanoPen Manager

WARNING: The NanoPen must only be formatted using the procedure and software described on page 27. Failure to do this will result in irreparable damage.

The NanoPen Manager is a utility used primarily for managing the NanoPen Memory utilization, pairing between the NanoPen and a remote control and for updating the Firmware. Special indicator panes display the currently installed firmware version, the serial number of the device, the % Memory Utilization and the status of the NanoPen battery.



The NanoPen Manager Tab consists of the following elements:

Element	Description
USB Drive	The location of the PC where the NanoPen USB port is mapped.
Info	Read-only information, including the Firmware version and the NanoPen unique serial number.
Levels	Indicators for the NanoPen battery status and the percentage of memory used.
	Battery Status is either Full, **Charging**, or **Empty**.
	Available memory level is indicated on a scale between 0-100%. 0% = memory full.
Status Bar	The status bar indicates the following: - Whether the NanoPen device is connected to the PC. - Whether the NanoPen clock has been synchronized to the PC clock upon connection to the PC USB drive. - The current version of the Firmware.

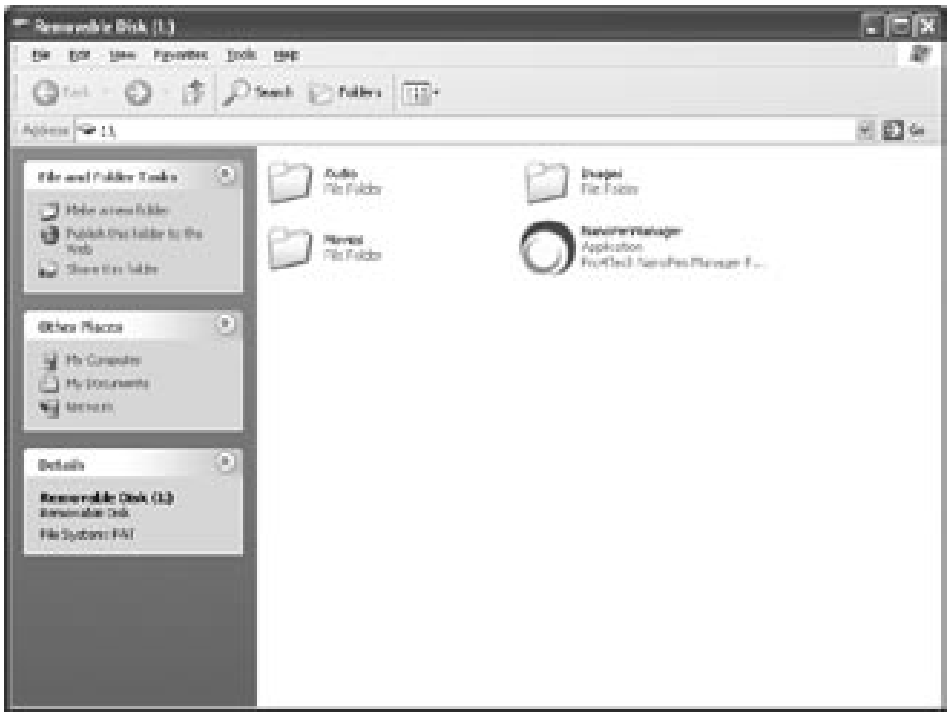
Synchronizing the NanoPen Date and Timestamp

The NanoPen Date and Timestamp are automatically synchronized with the PC clock when you connect the NanoPen device to the PC USB drive.

To Set the NanoPen Date and Timestamp:

1. Connect the NanoPen device to a PC USB port. A **New Hardware Device** dialog box appears.

2. Select **Open Folder**.
   The NanoPen directory dialog is displayed.



3. Double-click on the NanoPen Manager Icon . The NanoPen Manager application is opened and the Date and Timestamp are automatically synchronized with the PC clock.
4. Verify that the Status bar displays **Clock Updated**, indicating that the NanoPen clock and the PC clock are synchronized.

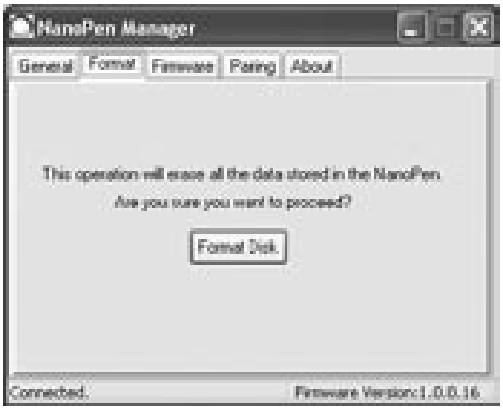
Formatting the NanoPen Memory

You have the option to format the internal memory of the NanoPen device. This operation should only be performed when the NanoPen file system becomes corrupted.

Note: Do not format the NanoPen using any external application, except the NanoPen Manager.

To Format the NanoPen Memory:

1. In the NanoPen Manager, select the **Format Memory** tab. The **Format Memory** pane is displayed.



2. You are prompted whether you wish to erase all of the data stored in the NanoPen.
3. Select the **Format Disk** button to confirm operation. You are prompted to disconnect the NanoPen from the PC USB drive.
4. Disconnect the NanoPen from the PC USB drive. NanoPen internal memory is formatted.

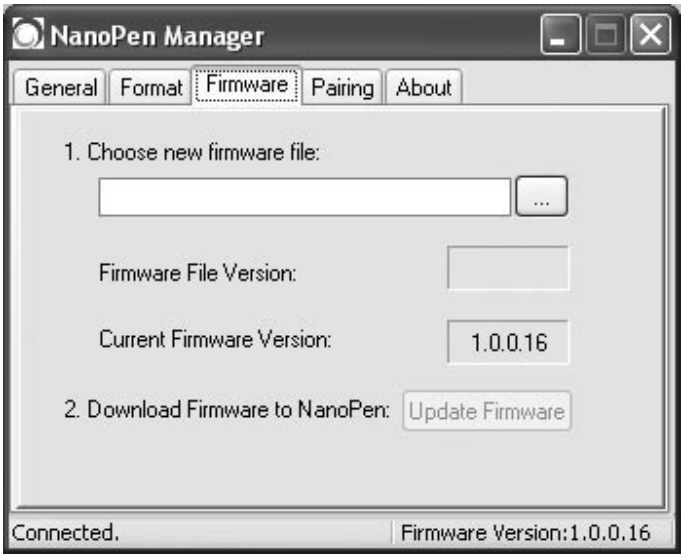
Updating the NanoPen Firmware

From time to time, new versions of the NanoPen Firmware will be released.

To upgrade the NanoPen Firmware:

1. Connect the NanoPen to the PC USB port.
2. Select the Firmware Update tab.

The **Firmware Update** pane is displayed.



3. In the Choose new firmware file field, click ... and browse to and select the new firmware file.
   The new firmware's version number is displayed in the
   Note this version number for future reference.

4. Click the Update Firmware button. The new firmware version will now be downloaded and installed in the NanoPen. The progress bar in at the bottom of the NanoPen Manager window (status bar indicator) will fill from left to right. This will happen twice. You will then be instructed to push any button on the remote control within a 30 second time period.You should then be notified that the update has been successful.
5. Disconnect the NanoPen from the PC USB port.
   The NanoPen has now been reset and will start with the new firmware.
   Note that the NanoPen LEDs will blink 5 times after disconnection. In case there is no indication repeat the firmware process.

Verifying Firmware

6. To verify the new firmware is installed correctly, reconnect the NanoPen to the PC USB drive.
7. Double-click to open the NanoPen Manager.
8. The NanoPen Manager is opened. Verify the following :
   The Status bar displays Clock Updated (indicating that the NanoPen clock and the PC clock are synchronized).
   The Current NanoPen Firmware Version field displays the current version number

Pairing and Un-Pairning

NanoPen and Remote Control must be paired in order to operate together. Use the following process to pair between an un-paired Remote Control and the NanoPen.

Note: It is possible to pair several remote controls with a single NanoPen.

1. Connect the NanoPen to the PC.
2. Open the pairing tab in the NanoPen manager.
   The **Pairing** pane is displayed.

3. Click on the **pair** button.

Note: During the following 30 seconds, you will have to press on any button on the remote control, in order to complete the pairing process.

4. Take the remote control, and press on any button.

5. You should then be notified that the update has been successful.
6. Disconnect the NanoPen from the USB cable and test that the NanoPen and the remote control are paired. If not, then repeat the process.

Un-Pairing

Un-pairing is the same process as paring, expect:

1. Press on the **Unpair** button on the pairing tab
2. Repeat the process as from step 4 in pairing

Note: Before a Remote Control can be paired with another NanoPen, it must be un-paired from any existing NanoPens.

Care and Maintenance

The NanoPen is a precision piece of equipment, and thus should not be subjected to sudden impacts, immersion in water, electrical current, or sources of direct heat. The NanoPen requires little maintenance but should be stored at normal room temperatures in a clean dry environment.

The following outlines all maintenance recommendations and procedures:

- Recharge whenever not in use. Charging can be performed either via PC or any portable USB charging unit.
- Keeping the NanoPen close whenever possible will keep the USB connector free of dust and moisture.
- Store the NanoPen in the original box (closed) in a cool, dry and dust-free place.
- Basic cleaning of the NanoPen should be performed with a clean, damp cloth, with the NanoPen turned off.
- Great care should be taken not to scratch or damage the outer surface of the clip, as this will degrade the performance of the lens.
- Never clean the NanoPen or any of its components with acetone, benzene or other liquids or solvents. No abrasive cleaning solutions should be used.

Troubleshooting

Problem	Probable Cause	Solution
Recording and/ or snapshot are of poor quality.	Lens and/or microphone is obstructed or dirty.	Verify that you are holding the NanoPen correctly and that clothing or position is not obstructing the lens/ microphone. Clean the lens with a dry cotton swab and always store the NanoPen in its original container.
Nothing happens when I try to record of take snapshots	NanoPen is locked	Follow the unlocking procedure described on Page 15.
Nothing happens when I try to record of take snapshots. NanoPen is unlocked.	Battery is discharge	Charge the Battery.
Nothing happens when I try to record of take snapshots. Red LEDs blink 3 times, but the battery is charged and there is spare memory.	Firmware failure	contact your distributor.
Nothing happens when I connect the NanoPen to the PC or Portable USB charger.	USB connector is dirty or damaged.	Replace the USB cable. If the problem persists, contact your distributor.

Technical Specification

Image Sensor	1/3.2" CMOS
Storage	512MB
Control	Wireless Two-Way Remote control
Case	Classic BallPoint Pen
Snapshot Recording	
Resolution	2 Megapixels (1,600X1,200)
Compression	JPEG
Capacity	Over 4,000 images
Video Recording	
Resolution	QVGA
Compression	MPEG4
Frame Rate	15-24 fps
Recording Time	Over 2 hours
Audio Recording	
Compression	AMR, 12.2 Kbps; Digital AGC
Sample Rate	8 KHz
Recording Time	Up to 9.5 hours
Internal Battery	Li-ion 360 mAh
Auto Shutdown	3 Hours
Charging	Via USB
Remote Control	
Two-Way RF	ISM Band
Indication	Vibrations, LED
PC interface	USB 1.1 or higher
Time Stamp	Date, Time
Dimensions	
Weight	35 gr.
Size	144mm X Ø13.1mm

Warranty

The device registered below is guaranteed to operate properly according to Pro4Tech's specifications for a period of 12 months from date of purchase or we shall repair or replace the same to operate properly. In the event that this device requires any repair or service you must contact your distributor. The device will be restored to proper operating condition at no charge to you. This includes warranted parts and labor for Pro4Tech defects. Such service, repair or adjustment of the device is assured to the customer, provided the device has not been misused, tampered with, modified or damaged as a result of accident, liquid, sand, grit, impact, physically broken parts or lack of proper care as indicated in the manual of operations. This limited warranty applies only to the device specified herein. It does not cover power adapter, digital media, software and additional accessories or any consequential damage or expense. If the device cannot be repaired by Pro4Tech, replacement will be made with the same or an equivalent model based on the warranted device current market value at our discretion. Pro4Tech will not be liable under any circumstances whatsoever, for any loss of data, mission failure, loss of revenues or profits, inconvenience, expense of substitute equipment, incidental or consequential or indirect damages howsoever caused. Except as required by applicable law, no warranties of any kind, either express or implied, including but not limited to, the implied warranty of merchantability and fitness for particular purpose, are made in relation to the accuracy, reliability or contents of this document. Pro4Tech reserves the right to revise this document at any time without prior notice. This warranty applies only to the product specified herein.

FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. **This device may not cause harmful interference, and**
2. **this device must accept any interference received, including interference that may cause undesired operation.**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning: Changes or modifications to this equipment not expressly approved by the party responsible for compliance (Pro4Tech Ltd.) could void the user's authority to operate the equipment.