

# STING Digital Video Recorder

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User's Guide



Electronic Security Products, Inc.

# Table of Contents

<b>Introduction .....</b>	<b>2</b>
STING Package Contents .....	2
STING Views.....	3
<b>Getting Started .....</b>	<b>5</b>
First-Time Charging .....	5
Installing the STING Media Center .....	6
Setting the Current Time .....	6
Formatting the Compact Flash Card.....	7
Connecting a Camera or a Microphone.....	8
<b>Recording with STING.....</b>	<b>10</b>
Before Recording.....	10
Starting and Stopping a Recording .....	12
Memory Status Indication .....	12
Recording with the Remote Control .....	14
Recording with the Alarm Trigger Switch.....	15
Viewing and Managing Recordings.....	15
<b>Using the STING Media Center .....</b>	<b>17</b>
Installing the STING Media Center .....	18
Accessing the STING Media Center.....	18
Media Center Tab Options.....	18
Configuration Options in the Media Center.....	20
<b>Technical Specs .....</b>	<b>23</b>
<b>Maintenance and Troubleshooting .....</b>	<b>24</b>
Troubleshooting .....	24
About ESP.....	25

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## Introduction

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STING is a wearable digital video recorder capable of recording video and audio in MPEG-2 format. Recordings are stored on Compact Flash plug-in cards and can then be played back using the STING or can be downloaded from the Compact Flash card to a personal computer.



STING is designed mainly for surveillance purposes by law-enforcement and government organizations, for portable video/audio recording featuring the highest quality available.

The STING accepts composite video input from any video camera and enables the user to discreetly start and end recording sessions. It can be configured to record with or without a date and time stamp.

In addition, the Media Center application enables you to connect the STING directly to your laptop or personal computer to view images and files.

### STING Package Contents

- A/V cable
- Vibrating remote control (R/C) cable
- 6-foot USB cable
- 5-inch USB cable
- Compact Flash card

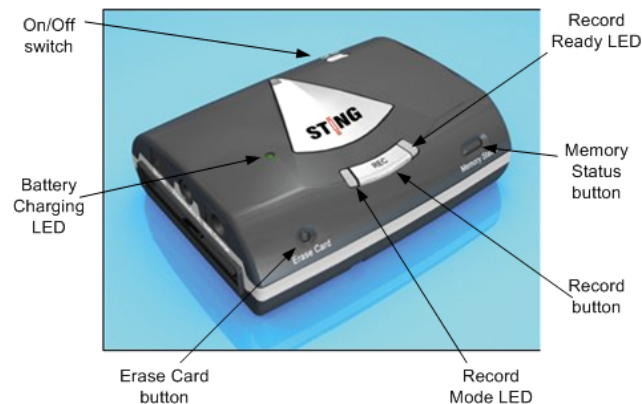
- PCMCIA Adapter
- Multi-standard universal battery wall charger
- Car battery charger
- STING Media Center installation CD

## STING Views

### Top View

On the top of the STING, there are several buttons and LEDs that enable you to quickly and easily use the device. These include:

- **Record (REC) button** – Enables you to start or stop a recording or to change the recording mode. For more information, see *Recording with STING*.
- **Record Mode LED** – Together with the Record Ready LED, displays whether or not the STING is ready to record and also displays which recording mode is selected. For more information, see *Recording with STING*.
- **Record Ready LED** – Together with the Record Mode LED, displays whether or not the STING is ready to record and also displays the amount of memory remaining on the Flash card. For more information, see *Recording with STING*.
- **Erase card button** – Enables you to format the STING's Flash card. For more information, see *Formatting the Compact Flash Card*.
- **Memory Status button** – Enables you to determine the amount of memory available on the Flash card. For more information, see *Memory Status Indication*.
- **Battery charging LED** – Indicates when the battery is charging.

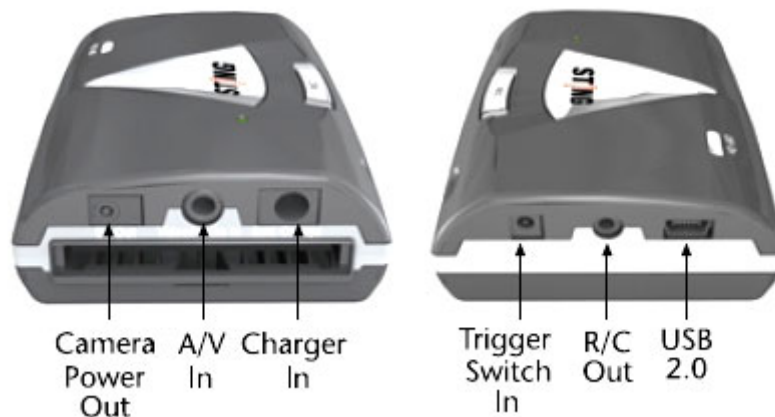


The upper-right corner of the top of the device contains the ON/OFF switch. When you switch the device on, the Record Ready LED appears as a solid red and the Record Mode LED flashes green as the device starts up. When

it is ready to record, the flashing lights stop and the Record Ready LED appears as a single, solid green.

Once you begin recording (either through the device or through the remote control cable), the Record Ready LED will flash red until the recording process is stopped.

## Side View



The left and right side panels contain several connection ports, including the following:

- **Camera Power Out port** – Enables you to provide power to a camera using the same power source as the device. For more information, see page 8.
- **Audio/Visual (A/V) In port** – Enables you to connect a camera or a microphone to the device. For more information, see page 8.
- **Charger In port** – Enables you to connect a wall charger in order to charge the device. For more information, see page 5.
- **Trigger Switch In port** - Enables you to connect security or surveillance devices to trigger automatic recordings. For more information, see page 15.
- **Remote control (R/C) Out port** – Enables you to connect a remote control equipped with a push-button to start/stop recordings. For more information, see page 14.
- **USB 2.0 port** – Enables you to connect the STING directly to a PC using a USB cable.

The left-side panel also contains a slot for a Compact Flash memory card.

## Getting Started

When you receive your STING, remove it from the packaging, check that you have all the accessories (see page 2), and then follow the instructions below. Each step is explained in more detail in a following section.

### To use the STING:

1. Charge the unit.
2. Install STING Media Center.
3. Set the current time.
4. Format the Compact Flash card.
5. Insert the Compact Flash card.
6. Connect the A/V cable to the STING.
7. Connect a camera or microphone to the A/V cable.

## First-Time Charging

The STING ships with its battery uncharged. The first time you charge the unit, an 8-hour charging period is required before turning the unit on. Afterwards, the unit charges fully in approximately 3 hours.

### To charge the STING's battery:

1. Insert the charger plug into the unit, as shown in the image below. The Battery Charging LED illuminates, indicating that the battery is being charged.



2. Charge the battery for the required amount of time.

Once the device has been charged the first time, you can connect it to the STING Media Center to set its time and date. To accomplish this, you must install the STING Media Center on a laptop or personal computer. The Media Center is also used to view video clips and capture single images. Details for working with the Media Center are contained in a separate chapter later in the manual.

## Installing the STING Media Center

The STING Media Center is an application that communicates with your STING to enable you to preview previously recorded clips, download the clips to your computer, capture individual frames, and delete recordings. The program also allows you to set the current date and time used during the recording process.

To install the STING Media Center:

1. Insert the STING™ CD into your CD-ROM drive in your computer.

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**Note:** The CD contains files for both the STING as well as other STING products. Before installing the Media Center, verify that you are accessing the appropriate sub-folder.

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2. Double click on the sting.exe file. The application is installed in a default location and an icon is placed on your desktop for quick access.

For more information on the Media Center, see [Using the STING Media Center](#).

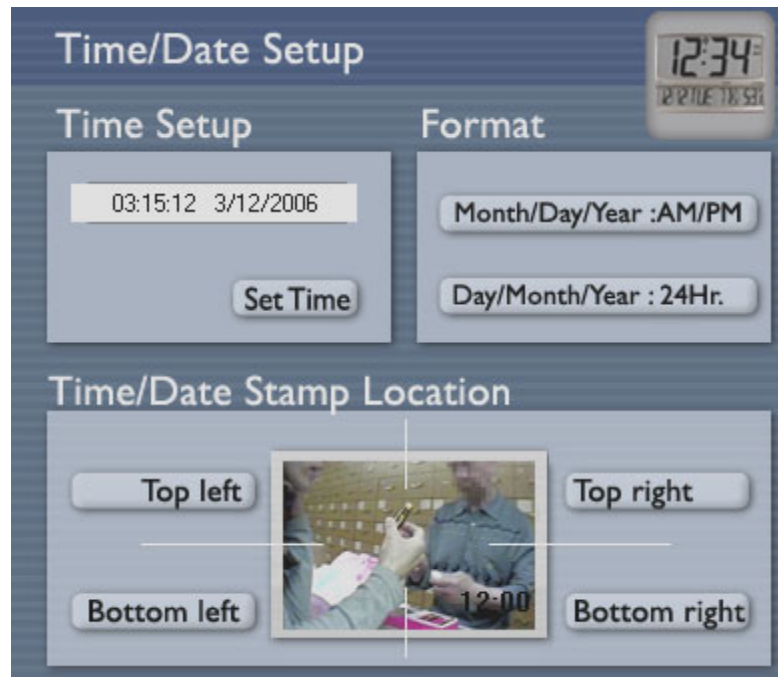
## Setting the Current Time

The memory chip in the STING contains a real-time clock, used to attach a timestamp to each recording. You must set the current time after receiving the unit, using the instructions below. The time is saved to persistent memory, so there is no need to set it again, unless you move to another time zone.

To set the current time on the STING:

1. Connect the USB cable (supplied) to the STING device.
2. Turn on the STING using the **On/Off** switch.
3. Connect the other end of the USB cable to a vacant USB port on your PC.
4. Wait for the device to be recognized by Windows. Usually, this is indicated by a message box indicating that Windows has recognized a new device.
5. Start the STING Media Center by clicking its desktop icon.

6. Verify that your Windows clock is accurate. To change it, double-click the clock at the bottom-right of the screen.
7. In the STING Media Center, in the **Time/Date** area, click the **Setup** button. The Time/Date Setup window opens with the current time and date of your computer already configured in the appropriate field.



8. Click **Format** to toggle between date and time formats.
9. To set the location of the time/date stamp for the recording sessions, select from one of the following options:
  - Top left
  - Top right
  - Bottom left
  - Bottom right
10. Click **Set Time** to set the current time on the STING device.
11. Restart the STING.

## Formatting the Compact Flash Card

The STING ships with a Compact Flash card. Before you can record, you must format the card, as explained below.

If you switch to another card in the future, you must repeat this procedure to erase the new card.



To format the Flash card:

1. Insert the Flash card, with the printed side facing down, as shown in the image below. Push it in until it latches.



2. With the tip of a pen or a pencil, gently press the **ERASE Card** button (see page 4).
3. The green light, located to the right of the **REC** button, flashes for 10 seconds as the disk is erased. Wait for the light to turn off.

## Connecting a Camera or a Microphone

You can connect any video camera to the STING. If the camera operates on 5VDC, it can draw its power from the **Camera Power Out** socket (see page 4, left-side view), as long as the current consumption does not exceed 500 mA. If the camera does not comply with these requirements, it should be powered by its own battery. Alternatively, you can connect an amplified microphone, or any other device that sends out a line-level signal. An amplified button microphone is sold separately.

The STING A/V cable has two RCA-type sockets:

- Video socket (yellow)
- Audio socket (red)



To connect a camera or microphone:

1. Plug the camera or microphone into the A/V In slot while the STING is turned off.



2. If your camera operates on 5V, and its power consumption does not exceed 500mA, plug its power cable into the **Camera Power Out** socket (see page 4).
3. Power on the STING.

## Recording with STING

This chapter explains how to start and stop a recording session, receive status indications, and review the buttons and lights on the STING device.

There are two ways to start or stop a recording session:

- Via the remote control cable included with the STING package.
- Via the Record (**REC**) button on the device.

**Note:** The STING's lights may show through thin fabrics. When wearing the STING under your clothing, it is advisable to have the lights facing the body, or to cover them with masking-tape.

### Before Recording

Before using the STING to record, it is likely that you will want to do the following:

- Set the time and date (see page 6).
- Set the recording mode and quality (see page 11)

### Recording Readiness Indication

When the STING turns on, there is a 25-second warm-up period. You cannot record until the warm-up is finished. You also cannot record while the device is connected to the STING Media Center. When the Record Ready LED (to the right of the Record button) appears solid green, this indicates that the device is ready to record.



If the Record Ready LED is solid red and the Record Mode LED flashes green, this indicates that the STING is still warming up and is not yet ready

for recording. If the Record Ready LED is flashing red, this indicates the unit is already recording.

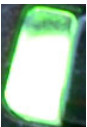

### Setting Recording Mode and Quality

During the time that the STING is preparing to start recording, you can change the recording quality. The main impact of this action is to enable the STING to record for a longer period of time. The higher the quality, the shorter the recording period.

To set recording mode/quality on the unit:

While STING is booting up the Record Ready LED is solid red and the Record Mode LED flashes green.

After approximately 25 seconds, the Record Ready LED changes to green (if there is a media card inserted in the STING, otherwise it is red), and the Record Mode LED indicates the current setting for the recording mode, according to the following color scheme:

LED	Color	Description
	Green	High quality video. Allows two hours of recording.
	Yellow	Medium quality video. Allows 4 hours of recording.
	White	Low quality video. Allows 6 hours of recording.
	Red	Very low quality video. Suitable for static operation (if the device is not worn on the body) or for recordings triggered by a motion detector. Allows 8 hours of recording.
	Blue	Audio only. Allows 75 hours of recording.

Once the Record Mode LED indicates the current recording mode, you have up to 10 seconds to change it, by pressing Record button. Each time you

press the button, the Record Mode LED changes to a different color to indicate the new recording quality mode.

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**Note:** If you wait more than 10 seconds, you will not be able to change the recording quality mode. In this case, power down the unit, turn it back on, and repeat the above procedure.

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## Starting and Stopping a Recording

To start a recording:

1. Verify that the Record Ready LED is a solid green (and not flashing red or showing any other color).
2. On the device, press the Record button three times, in quick succession. The Record Ready LED will continue flashing for the duration of the recording session.
3. Alternatively, on the remote control cable, press and hold the Record button. The cable will vibrate for approximately 2 seconds and the Record Ready LED will begin flashing red.

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**Note:** If the STING is set to record both video and audio, recording will only work if a camera is plugged to the A/V Cable's RCA sockets (see page 8).

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To stop or pause a recording:

- On the device, press the Record button three times, in quick succession. (Alternatively, on the remote control cable, press and hold the record button.) The cable gives three short vibrations and the Record Ready LED returns to a solid green, indicating that it is ready to record again.

To resume a recording:

Press the Record button on the device three times in quick succession. (Alternatively, on the remote control cable, press and hold the Record button.) The Record Ready LED will begin flashing red.



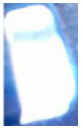


## Memory Status Indication

You should occasionally check the Flash card's available memory, to avoid running out of storage space during a recording. The same procedure verifies that the Flash Card is present and functioning.

You can only check the memory status if the STING is set to record video and audio (not audio only or video only), and only if it is not currently recording.

To check the Flash card for available space:

When the STING is not recording, press the **Memory Status** button (see page 4). The Record Ready LED uses color coding to indicate how much memory is available:

LED	Color	Percentage Used
	Green	0 - 25%
	Yellow	26 - 50%
	White	51 - 75%
	Red	76 - 100%
	Blue	Flash card is absent or faulty, or the recording mode is set to audio only

## Recording with the Remote Control

The remote control is composed of a push-button and a cable connected to a vibrating motor. It can be used for:

- Starting and stopping the recording.
- Getting indications, by vibration, for low battery, low memory, a disconnected video cable, or any other malfunction.

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**Note:** While the vibrating remote is attached to the STING, all buttons on the STING are not operational. This prevents you from accidentally starting or stopping a recording session. Only the button on the vibrating remote can start or stop a session while the cable is plugged into the STING.

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### Starting and Stopping a Recording

You can use the remote control cable to start and stop recording. The button at the end of the cable acts as a toggle switch, alternating between starting and stopping the STING. For more information, see page 12.

### Low Battery / Low Memory Indication

About ten (10) minutes before the battery reaches a low level, the remote control motor will vibrate in ten short pulses and the LEDs will flash red. The same warning is given if remaining space on the Flash card becomes too low.

When you receive this signal, you should prepare to leave the recording location and to recharge and/or replace the Flash card.

### Alarm Indication

When the remote control cable vibrates continuously, this is an *alarm*. Press the remote control button to stop the vibration.

An alarm indicates one of the following:

- The camera cable has been disconnected (lost video-sync).
- The Flash card has been removed or dislodged.
- The STING has suffered a severe malfunction and cannot continue recording.

To resume recording after an alarm indication:

1. Reconnect the camera cable and/or reinsert the Flash card.
2. Turn the STING off and on again using the **On/Off** switch.
3. To resume recording, press and hold the remote control button for approximately two seconds.

## Recording with the Alarm Trigger Switch

The STING is equipped with an analog input that triggers a 30-second recording session. This input is mainly used to connect the STING to security systems and other surveillance devices. These can send a signal to automatically start a recording.

The alarm trigger switch is normally open. When the switch is closed, the STING immediately starts recording and stops recording after 30 seconds. If an additional signal is received during a recording, it adds 30 seconds more to the recording time.

### To connect the alarm trigger switch:

1. Mount the STING in a stable position and connect it to a camera or microphone (see page 8).
2. Run a two-wire cable from an external device (usually an alarm system) to the STING. The wire should be fitted with a 0.7mm DC power plug (Mouser part #171-3218).
3. Connect the 0.7mm plug into the **Trigger Switch In** socket (see page 4).

The connected device can now close the circuit to start a 30-second recording.

### To stop an automatic recording:

Press the **REC** button three times, in quick succession. The recording stops immediately, even if 30 seconds have not yet elapsed.

## Viewing and Managing Recordings

There are two ways to view and manage recordings stored on the STING:

- Using Windows Explorer and a generic video player that supports MPEG-2.
- Using the STING Media Center (For more information, see page 17.).

Before you can use either of these options, you must connect the STING or the Flash card, to a PC.

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**Note:** STING no longer supports the use of Microdrive cards.

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### To connect the STING to the PC directly:

1. Turn on the PC and the STING.
2. Connect the USB cable (supplied) to the STING, and then to a USB port on the PC.



3. Wait for the device to be recognized by Windows. Usually, this is indicated by a message box and, depending on your system configuration, may also include a bell or other sound.

**To connect the Flash card to the PC:**

1. Ensure the STING is turned off.
2. Remove the Flash card from the STING.
3. Insert the Flash card into the PCMCIA adapter (supplied).
4. Turn on the PC and wait for Windows to start.
5. Insert the PCMCIA card.



6. Wait for the card to be recognized by Windows. Usually, this is indicated by a bell sound and a message box.

**To access STING files using Windows Explorer:**

1. Connect the STING's Flash card to the PC, as described above.
2. Open **Windows Explorer** or **My Computer**.
3. Navigate to the STING's removable drive.
4. You can now do any of the following:
  - Copy files from the STING to folders on your PC.
  - Delete files on the STING.
  - Open a file in a generic player. The player must support MPEG-2.

## Using the STING Media Center

The STING Media Center is a software program that communicates with your STING, and enables you to preview, upload and delete recordings.



The main window of the STING Media Center is divided into two main sections:

**File Browser area:** enables you to view all the files currently on the STING (or browse through your computer to view files that were previously recorded and saved to another location), extract a single frame from within a video file, etc.

**STING configuration area:** enables you to set the video quality that is used by the STING, view system messages, set whether the STING records audio, video, or both, set the time and date, and upgrade the firmware.

## Installing the STING Media Center

The STING Media Center is included on the product CD shipped with each unit. To install the Media Center, double-click on Sting.exe. The STING Media Center opens.

## Accessing the STING Media Center

- Click the program's desktop icon, or click the **Start** button and select **Programs > STING > STING Media Center**.

If the STING unit is already connected to the computer when you open the STING Media Center, "Found Sting Media" will be displayed in the upper right corner of the window.



## Media Center Tab Options

**About:** Enables you to determine what version of the Sting Media Center you are using.

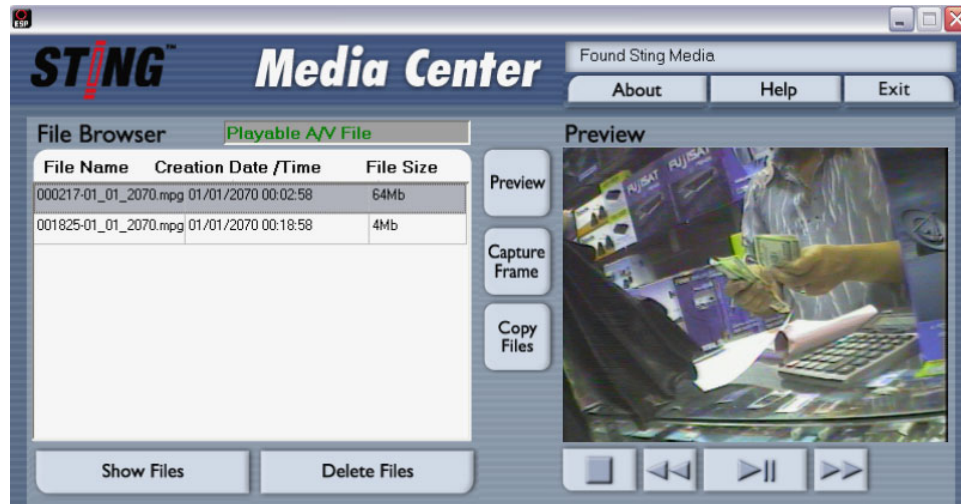
**Help:** Enables you to access the application's online help, offering information and instructions on working with STING.

**Exit:** Closes the Media Center.



## File Browser Area

The File Browser area displays a list of files that are currently stored on the Sting. Once the STING is connected (typically via USB cable) to the computer on which the STING Media Center has been installed, click **Show Files** to update the display.







On the left side of the screen, the file name, creation date and time, and the file size are displayed for each file. You can use your mouse to navigate through the list.

**To delete files via the Media Center:**

Highlight one or more files and click **Delete Files**. You are prompted to confirm your request before the file(s) are deleted.

**To preview a file:**

Select a file on the left side of the screen and click **Preview**. The first frame will be automatically displayed in the Preview Pane. You can use the media controls to navigate through the file:

	Pause the display.
	Review/reverse the direction of the display.
	Continue displaying the current file.
	Fast forward through the file.

**To capture a single frame of a file:**

- Click **Capture Frame**. The file is saved as a jpeg image and can be viewed by any standard graphics tool or application that enables the displaying of .jpeg files.

## Configuration Options in the Media Center

Configuration options in the Media Center include:

- Setting the video quality
- Viewing any system messages related to actions in the Media Center
- Selecting a recording setting
- Setting the time and date
- Viewing the current firmware version



### Video Quality

The current video quality of each recording session is configured in the Media Center in the Video Quality section. Select from High, Medium, Low or Very Low. In general, the higher the quality setting, the larger the file will be. If there is no storage problem, you may choose to set the video quality at a higher level. On the other hand, if space on the compact disk may be a problem, you may choose to record at a lower quality and thus be able to record for a longer period of time.



To set the video quality:

1. Select an option from the list of possible video quality levels.
2. Click **Set Video Quality**.

## System Messages

This is a read-only field that displays system messages as appropriate.

## Record Settings

In the **Record Settings** section, you can enable the Record Settings for the STING.

You can select one of the following record settings:

- **Audio/Video**
- **Video only**
- **Audio only**



## Firmware Version

You can check what Firmware version is installed on the STING by connecting the Sting via the USB cable to your computer and opening the STING Media Center. Click **Firmware Version**. The version number will be displayed.

The firmware file name is sys.bif. Typically, a standard upgrade will take at least 7 minutes. A progress bar is displayed in the browser, indicating the progress of the upgrade process. You should not disconnect the STING until the upgrade process is completed.



## Time/Date

Initially, you should set the time and date of the device. This is accomplished via the Media Center.

To set the time/date:

1. Open the Media Center and in the Time/Date area, click **Setup**. The Time/Date window opens.



2. The time and date setting is taken from your computer. Verify that it is correct and click **Set Time**.



3. If you would like to change the format of the date or time, you can toggle to a different format in the Format section.
4. If you would like to change the location of the time and date stamp, you can click on one of the following options:
  - Top left
  - Top right
  - Bottom left
  - Bottom right





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## Technical Specs

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<b>Physical dimensions</b>	78mm X 60mm X 32mm (3.07" X 2.36" X 1.26")
<b>Weight</b>	Recorder net: 98g (3.45 oz) Recorder w/drive: 114g (4 oz)
<b>Memory type</b>	Compact Flash plug-in cards.
<b>Storage capacity</b>	Accepts any Compact Flash card.
<b>Video storage format</b>	Digital MPEG-2.
<b>Recording time</b>	2-8 hours video (depending on quality) or 75 hours audio.
<b>Video download time</b>	Approx. 15 minutes for 4GB, with USB 2.0 connection.
<b>Memory erase time</b>	10 seconds.
<b>Internal battery</b>	Lithium-iron. Provides approx. 3 hours of operation.
<b>External charger</b>	Accepts 90-240 VAC. Connectors for Europe, US, UK.
<b>Camera power source</b>	5V, 500mA output for a 5-V camera (2 hours recording time). 1.3 mm connector.
<b>External power input</b>	7-12V (min. 800mA), 1.7 mm connector (center +).
<b>Video input</b>	PAL / NTSC std. composite video. RCA / 3.5mm connector.
<b>Audio Input</b>	Line-level audio. RCA connector.
<b>PC interface</b>	USB 1.1 or USB 2.0 (USB 2.0 recommended).
<b>Video/audio playback</b>	MPEG-2 compatible players (e.g. Windows Media Player).



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## Maintenance and Troubleshooting

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The STING does not require special maintenance. Other than keeping the unit away from moisture, dirt or excessive heat, and occasionally cleaning it with a damp cloth and wiping it dry, it needs no regular maintenance other than recharging the battery. Do not use Acetone, Benzene or any other alcoholic agents when cleaning the unit. Following are some troubleshooting hints, should you have some difficulty with the unit:

### Troubleshooting

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#### Unit Does Not Turn On

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**Probable cause:** Dead or uncharged battery

**Corrective Action:** Charge the battery (see page 5). If the problem persists, send in for service.

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#### Cannot Start Recording

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Probable causes:

- A/V cable disconnected
- No sync signal detected

**Corrective Action:** Verify that the A/V cable is connected to the RCA sockets and to the camera, and verify that a Flash card is plugged in. If this does not solve the problem, replace the camera.

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#### R/C cable vibrates 10 consecutive times

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**Probable Cause:** Low memory or low battery

**Corrective Action:** Charge battery and/or replace

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#### R/C Cable Vibrates Continuously

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Probable Causes:

- Disconnected video cable
- Disconnected card

**Corrective Action:** Turn the STING off. Verify that the video cable is plugged in and that the card is fully inserted. Turn the STING on again.

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Electronic Security Products, Inc.

## About ESP

Electronic Security Products, Inc. (ESP) is an internationally-based manufacturer of high technology video surveillance equipment. The company is comprised of engineers and technicians who specialize in investigative tools and all aspects of investigative photography.

Established in 1993 and headquartered in New York, ESP has been the choice manufacturer and supplier of high quality video surveillance products for over a decade. The company caters exclusively and directly to many Law Enforcement & Government Investigative Units worldwide, striving to maintain a high standard of service, quality and consistency throughout the production, design and manufacturing process to ensure customer satisfaction.

## Contact Information

Tel: +1.212.929.9914  
Fax: +1.212.937.2362  
[www.espinc.com](http://www.espinc.com)

ESP Inc.  
185 Franklin Street  
New York, NY, 10013  
**USA**