

Infrared Digital Scouting Camera

User's Manual

SG968D/S-10M



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1 Instruction


1.1 General Description

This camera is a surveillance device working automatically.

It can be triggered by any movement of human (or animals) in a certain region of interest (ROI) monitored by a highly sensitive Passive Infra-Red (PIR) motion sensor, and then take high quality pictures (up to 10 mega pixels) or video clips.

It can also be triggered by a timer which means the camera can capture pictures or video clips at specified time intervals regardless of whether there is a motion of human or animal.

SG968D-10M integrates infrared 940nm LED lights and Xenon flash , so to take full color picture & video at daytime , while B&W night video, as to picture at night, it depends on you with a removable filter. SG968S-10M integrates full color white LED lights and Xenon flash. It takes full color video both day and night, B&W or color night picture at choice with a removable filter. The Xenon flash will be turned to infrared light after filter as a result of which it can reduce time of exposure. This own function leads to **no motion blur** in the video clips.

The device is designed for outdoor use and is resistant against water and snow. Furthermore, the camera can be used as a portable digital camera. Pictures or videos can be taken manually by pressing  on the operation panel.

1.2 Application

This camera can be used as an automatic surveillance device for guarding and recording unexpected intrusion to

homes, shops, schools, depots, offices, taxis, work sites etc. It can also be used as a trail camera for hunting or monitoring animals by recording the traces of wild animals. It can be left alone for weeks and months and will save event records automatically in digital format.

1.3 Camera Overview

1.3.1 Diagram of Camera functional indicators

The camera has the following interfaces: a 2.0" TFT LCD display screen, operation panel, USB connector, SD card slot and external DC power connector. Fig. 1 shows the front view of the camera and its function parts. Fig. 2 shows the operation panel and display screen. Fig. 3 shows the bottom view of the camera and its I/O interface.

Take a few moments to familiarize with the camera controls and displays. It is helpful to bookmark this section and refer to it when reading through the rest of the manual.

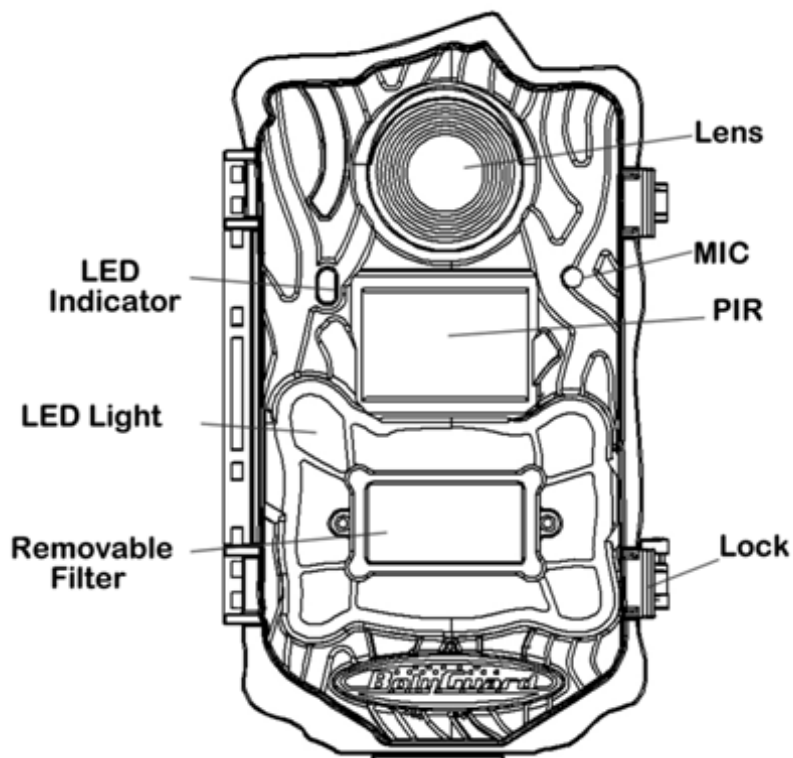


Fig. 1: Front view

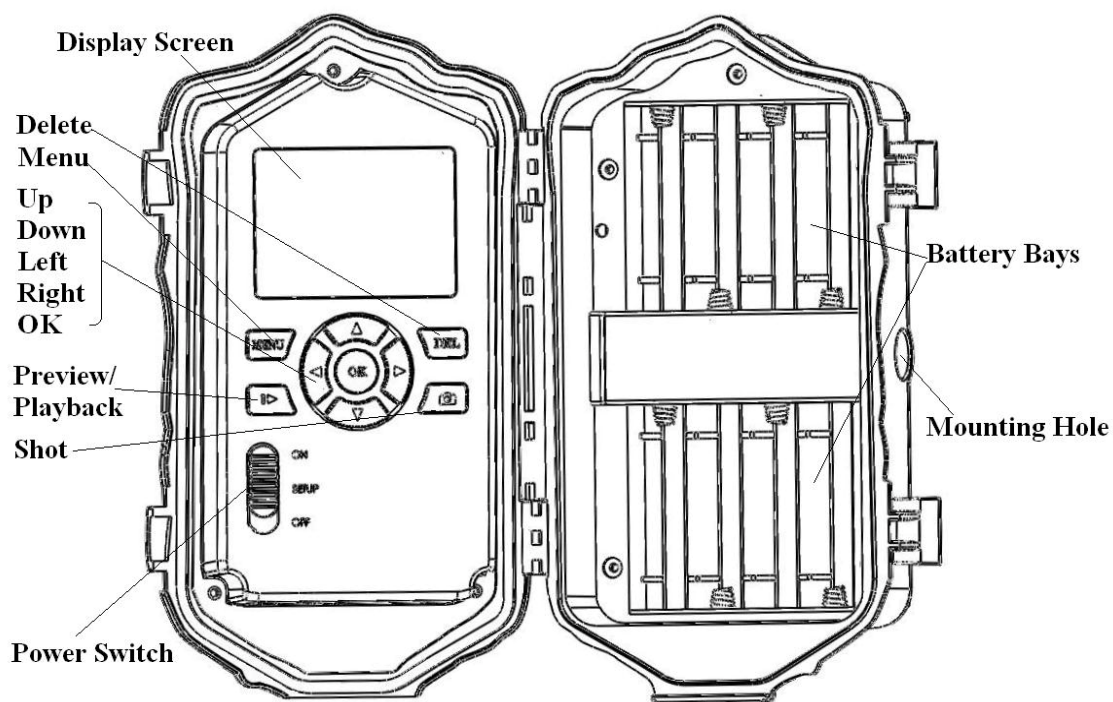


Fig. 2: Inner panel view

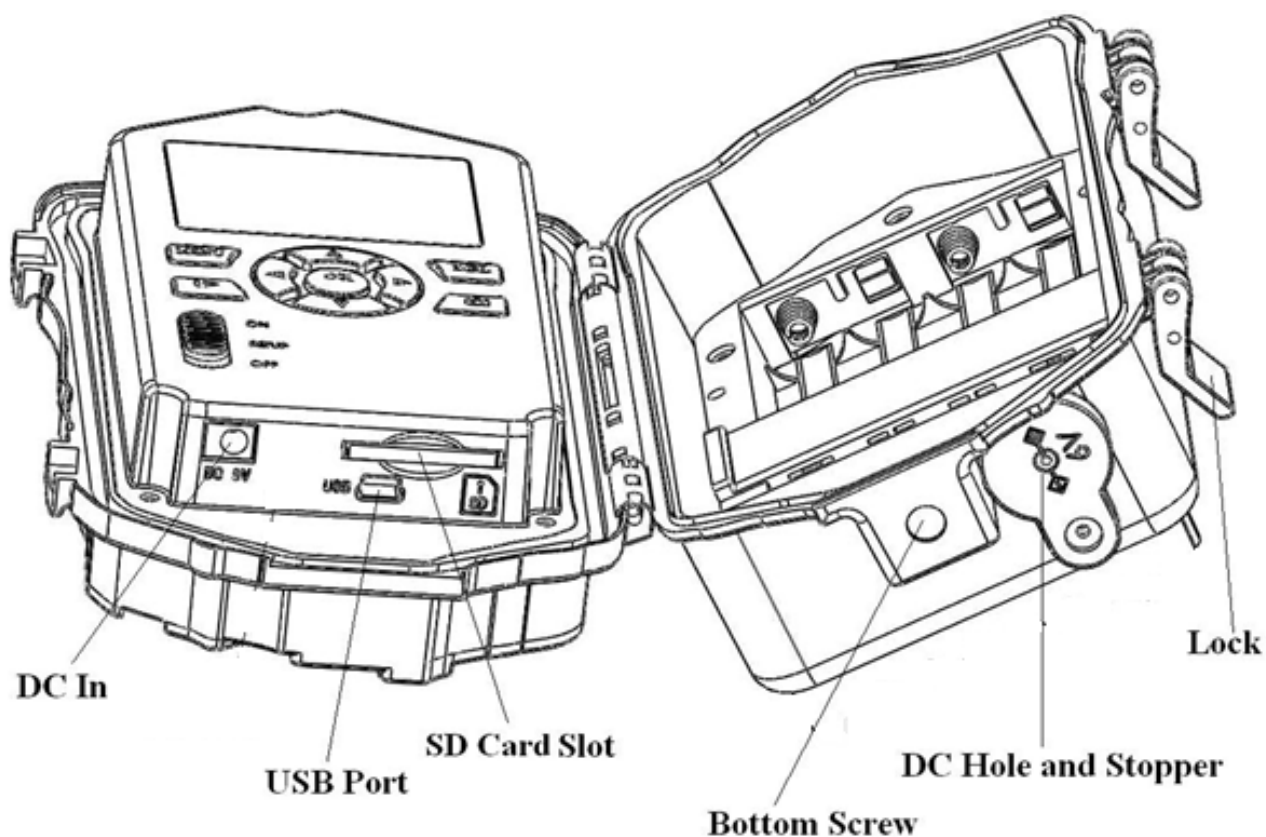


Fig. 3: Bottom view

1.3.2 Key Notes

“MENU”: to enter the program menu in preview mode;

“▲”“▼”“◀”“▶”: for parameter settings as described in the user’s manual.

“OK”: to save parameter settings and play videos.

“▶”: to exchange between playback and preview.

“DEL”: to delete an image.

“📷”: to capture a photo or record a video manually.

1.3.3 Shooting Information Display

Fig. 4 shows a sample of the LCD Display of the Programming Menu.

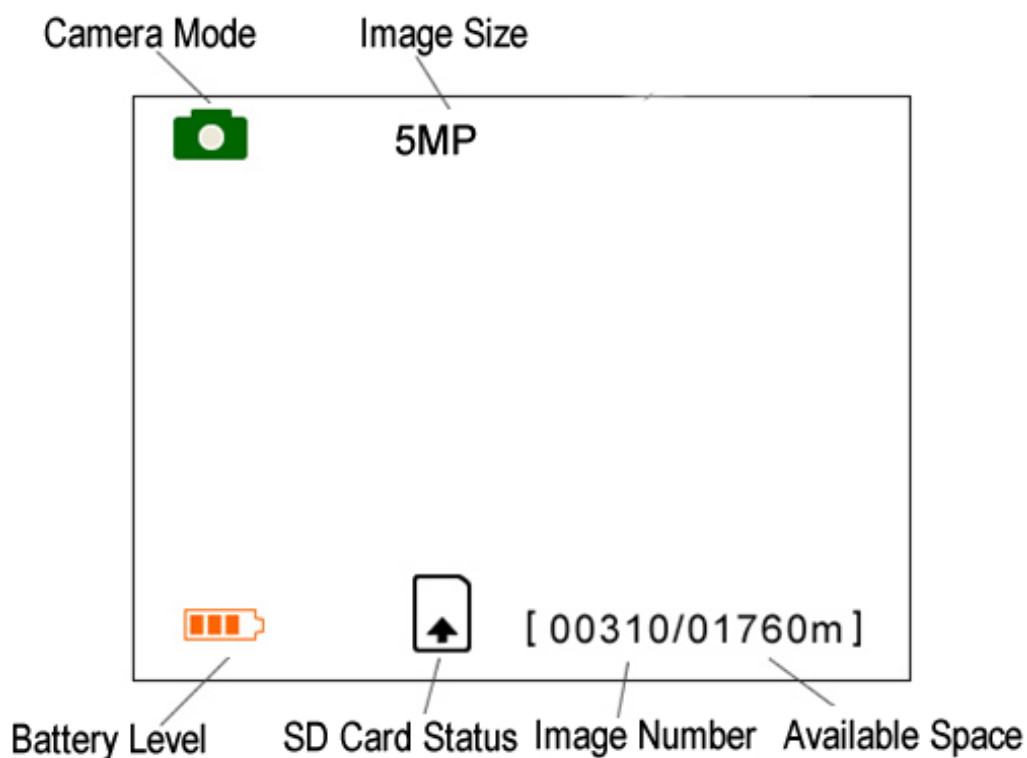


Fig. 4: LCD Display

1.4 Saving Images or Videos

The camera uses a standard SD (Secure Digital) memory card to save images (in .jpg format) and videos (in .avi format). SD and SDHC (High Capacity) cards up to a maximum 32 GB capacity are supported. Before inserting the SD card be sure that the SD card is unlocked.

2 Cautions

- ★The working voltage of the camera is 6V. The camera is supplied by four or eight AA batteries.
- ★Please install batteries according to shown polarity.
- ★Must insert the SD card before power on camera. The camera will not work properly unless a working SD card is detected by the camera
- ★Please unlock the write-protect before inserting the SD card.
- ★Please insert the SD card when the power switch is at OFF position before testing the camera. The camera has no internal memory for saving images or videos. If no SD card is inserted, the camera will shut down automatically after an indication.
- ★Please do not insert or take out the SD card when the power switch is at ON position.
- ★It is recommended to format the SD card by the camera when used for the first time. Many other SD cards formatted by other cameras have poor compatibility with different brands of cameras. So it is best to format the SD card with this camera or on a computer.
- ★In SETUP mode, the camera will shut down automatically after 3 minutes if no operation is done. Please turn on the power again if you want to continue to work with the control.

3 Easy Operations

3.1 Loading batteries

Use 8 or 4 AA batteries or 6V external battery for power supply (Fig. 5).

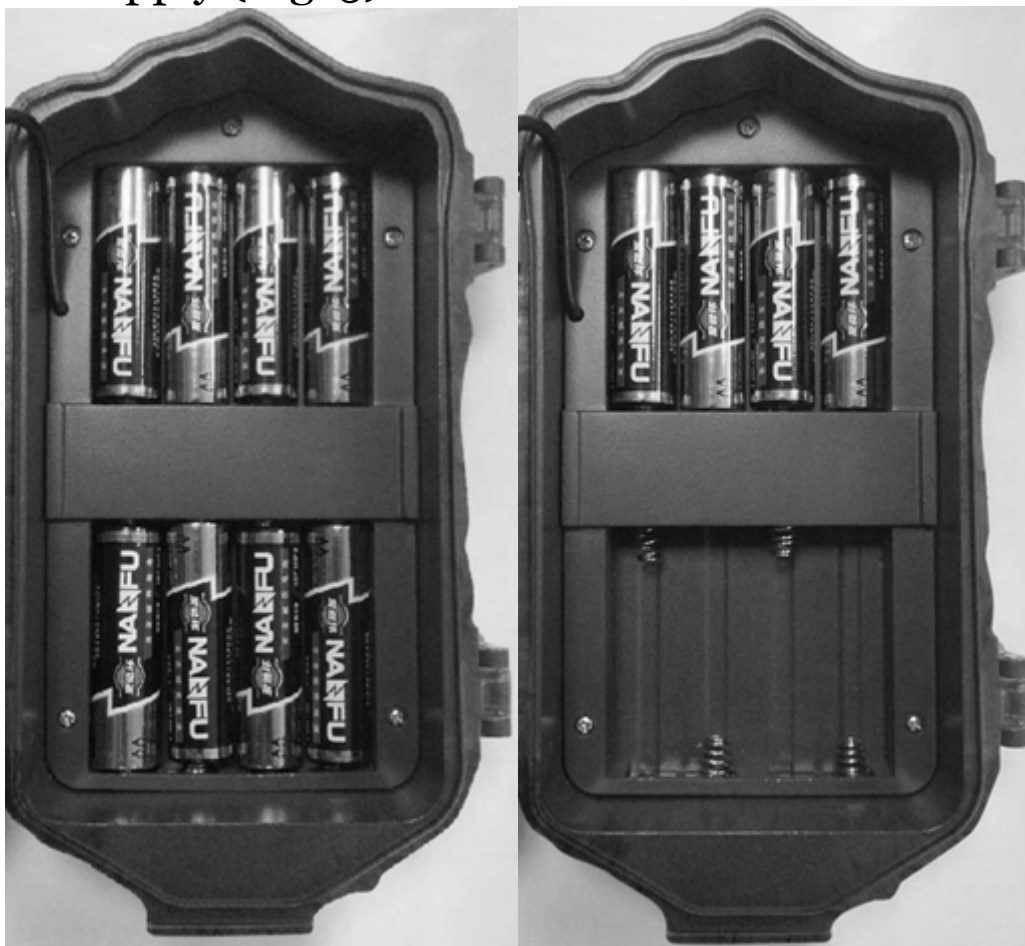


Fig. 5: Battery Configurations of 8 or 4 batteries

Please use high-capacity and high-performance alkaline batteries (recommended), rechargeable Lithium batteries or rechargeable NiMH batteries.

3.2 Inserting the SD card

The camera has no internal memory for saving images or videos. If no SD card is inserted, the camera will shut down automatically.

3.3 Dismantling the external filter

The camera has a specific function that you can dismantle the covered external filter to take color night picture at Mount Off.

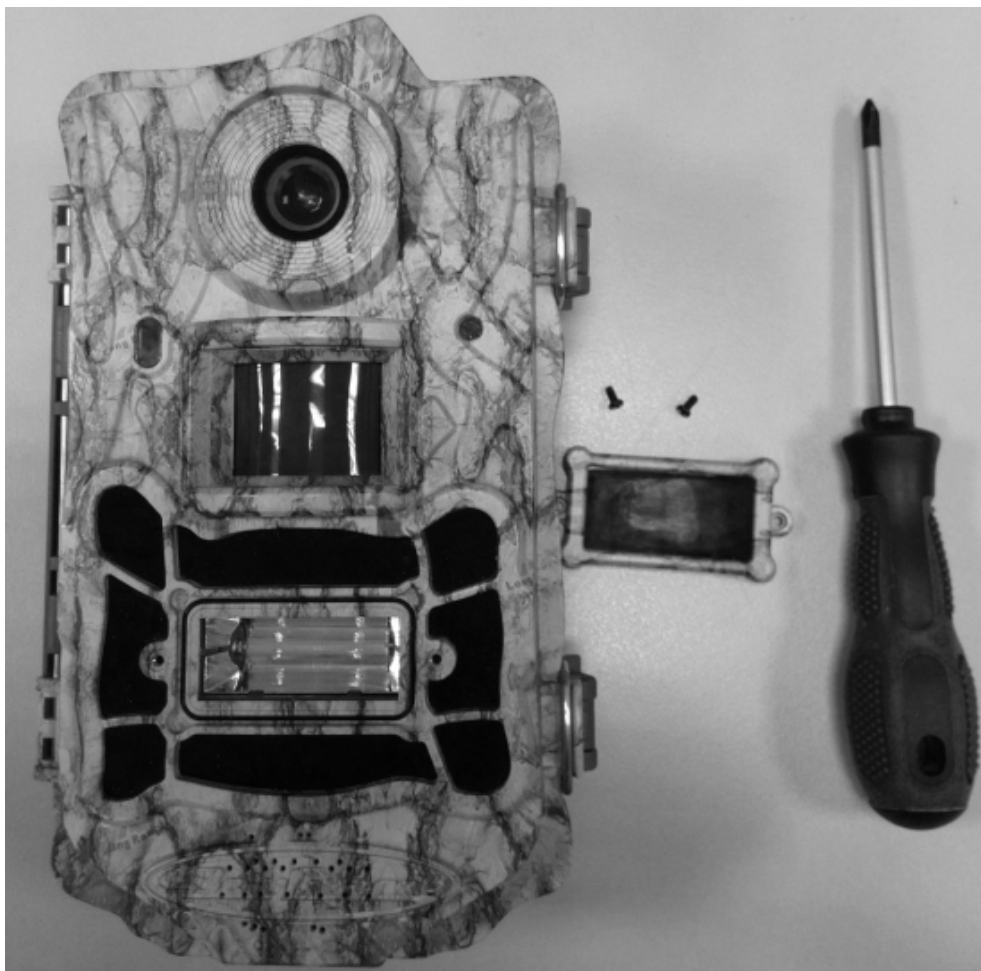


Fig. 6: Dismantle the external filter

3.4 Powering on and Entering into the ON Mode

The camera has three basic operation modes:

1. **OFF mode:** to turn off the camera.
2. **SETUP mode:** to set up camera or to playback the photos or video clips.
3. **ON mode:** the camera will take pictures or videos automatically according to the previous programmed settings when human or animals enter into the monitoring

region.

After switching the camera to ON position, the motion indication LED (red) will blink for about 10 seconds. This time interval is for you to make the camera ready for automatic surveillance operation, e.g., to close the bottom cover and to lock it, to fix the camera on a tree and to walk away.

3.5 Power Off

Switch the camera to OFF position to power off the camera. Please note that even in the OFF mode, the camera still consumes certain power at μA level. Therefore, please remove the battery if the camera will not be used for a long time.

4 Advanced Operations


After you are familiar with the basic operations of the camera, you are now ready for advanced operations, and the options and parameters of the camera are explained in more detail.

4.1 Enter into the SETUP mode

There are 3 states in the SETUP mode: preview state (preview the scene in the front of the camera), setting state (make customer settings), and playback state (view photos or videos via the 2.0" LCD display).

4.1.1 Preview

After switching the camera to SETUP mode, it enters into the preview state.

Press  to exchange between playback mode and preview mode.


4.1.2 Customer Settings

Press **MENU** to manually customize the camera settings displayed on the LCD screen. The detailed operations will be described in this “Advanced Operations” chapter.

4.1.3 Manual Capturing

Press  to manually capture photos or record videos. Press  again to stop the manual capturing of a video.

4.1.4 View Images or Videos

Press  to view images or videos; the latest image or video will be shown in the screen. Press “▲” or “▼” to view the previous or next image or video.

4.1.5 Delete Images or Videos

Press **DEL** to delete images or videos. Note the **DEL**

button just works in Playback state. So if it's in Preview state, you should press  to enter into Playback state first.

4.2 Triggering modes

There are 3 triggering modes of the camera: PIR trigger, Time lapse (i.e. Timer trigger) and both PIR trigger & Time lapse.

4.2.1 PIR trigger

PIR trigger is the default setting. The camera works only when motions are detected. If PIR trigger is set as **PIR Off**, the camera stops PIR trigger.

4.2.2 Time lapse

The **Time lapse** default setting is **Off**, which means the Timer trigger is disabled. When Timer trigger interval is changed to a non-zero value, the camera starts to work at a preset interval. User needs to set the PIR trigger to **Off** if only the Time lapse trigger mode is desired.

4.2.3 PIR trigger & Time lapse

If both PIR trigger and time lapse trigger are desired, user needs go to **PIR trigger** to set “normal, high or low” sensitivities according to the external environments, and needs to set the **Time lapse** to a desired non-zero value. The camera will capture pictures or videos in a preset time interval even if no motion gets detected; the camera will also capture pictures and videos when a motion gets detected.

4.3 Settings Menu

To view the camera settings menu, press **MENU** in the **SETUP** mode (Power switch is at **SETUP** position).

Use “▲” or “▼” key to select the sub-menu, use “▶” or “◀” key to select the different options, then press “OK” to save the setting and the option will be un-highlighted.

4.3.1 Setting Items

Setting Items	Description
External Filte	<p>Choose dismantling the external filter or not.</p> <p>If you have dismantled the external filter, please choose this submenu as Mount Off. Otherwise, select Mount On.</p> <p>When you choose Mount On, the camera will take B&W pictures at night, in Mount Off, camera takes color pictures at night.</p> <p>Both cameras will take color pictures and videos at daytime.</p>
Camera Mode	<p>There are three camera modes: Photo, Video and Pic+Video. You can enter the Setup interface to set the camera mode or use shortcut key to switch the camera mode.</p> <p>Via shortcut key: press “▲” key to set to Video and press “▼” key to set to Photo in SETUP mode.</p>
Set Clock	<p>You can change the date and time when necessary, e.g., after every battery change. The date format is month/day/year, the time format is hour: minute: second. Press “▶” to select item,</p>

	press “▲” or “▼” to change the value.
Photo Size	5MP (mega pixels) or 10MP (mega pixels).
Photo Burst	It means the shooting number of each triggering in Photo mode. You can choose from 1 to 6 Photos.
Video Size	Choose the video size: 1280x720 or 640x480.
Video Length	It extends from 10 to 180 seconds with a step of 10s.
Work Hour	<p>This parameter defines a certain time quantum in a day when the camera can be triggered, while in the rest of the time quantum the device is shut off. The effective value ranges from 00:00 to 23:59.</p> <p>The default set is Off which means the camera works all long.</p>
Time Lapse	<p>Time lapse means the camera can capture photo or video at a preset time interval regardless of whether motions are detected. The default parameter is Off, which means the time trigger function is disabled. Changing this parameter to a non-zero value turns on the Time Lapse mode, and camera will take photo or video at given time interval.</p> <p><i>Please note that if the PIR Trigger is set to Off,</i></p>

	<i>then the Time Lapse can't be set to Off.</i>
PIR Trigger	<p>This parameter defines the sensitivity of the PIR. There are four parameters: High, Normal, Low and Off. The default value is “Normal”. The higher degree indicates that the camera is more easily triggered by motion, taking more pictures or recording more videos. It is recommended to use high sensitivity degree in a room or environment with little interference, and to use lower sensitivity for outdoor or environment with lots of interference like hot wind, smoke, near window etc. Furthermore, the sensitivity of the PIR is strongly related to the temperature. Higher temperature leads to lower sensitivity. Therefore it is suggested to set a higher sensitivity for high temperature environment.</p> <p><i>Please note that if the time lapse is set to Off, then the PIR trigger can't be set to Off.</i></p>
PIR Interval	<p>This parameter means how long the PIR sensor will be inactive after each triggering in ON mode. During this time the PIR of the device will not react to the motion of human (or animals). The minimum interval is 0 second (meaning the PIR works all the time). The maximum interval is 1 hour (meaning the PIR will be disabled for 1</p>

	hour after each triggering). Please note that there are a few seconds of internal processing delay between each trigger, even if 0 second is set.
Camera Posit	It means camera position. You can set A-Z position for your camera, so that you can distinguish which photo is taken by which camera.
Format SD	If you choose “Enter”, the system will delete all images or videos stored in the SD card. So make sure that you have made a backup of important data.
Default Set	Restore all parameters to the factory default settings.
Version	It shows the information of software and hardware.

4.3.2 Default Set

Choose **Default**, all the settings will be changed to the factory default settings.

Parameter name	Default	Other settings
External Filte	Mount On	Mount Off
Camera Mode	Photo	Video,Pic+Video
Set Clock	Enter	Adjust Clock
Photo Size	5MP	10MP

Photo Burst	1 Photo	2~6 Photos
Video Size	1280x720	640x480
Video Length	10 Sec	20~180 Sec
Work Hour	Off	On (00:00~23:59)
Time Lapse	Off	5 Min to 8 Hour
PIR Trigger	Normal	High, Low, Off
PIR Interval	5 Sec	0-55 sec, 1-5 Min, 10-60 Min
Camera Posit	Off	A~Z Position
Format SD	Enter	
Default Set	Save	
Version	Enter	

4.4 Firmware upgrade

This camera provides an upgrading function for the users. Upgrading is needed only when an improved firmware is available.

5 Mounting the Camera

When using the camera in outdoor environment, such as scouting or monitoring the living habits of wild animals, you need to mount the device on a certain place properly. It is recommended to mount the camera on a tree with diameter about 5.9 inches (15cm). To get the optimal picture quality, the recommended distance is 5m from the tree to the target monitoring area and recommended height from the ground is 4.9ft~6.5ft (1.5m~2m). Adjust the viewing angel properly.

There are three ways to mount the camera: using a band shaped belt, python lock or mounting bracket.

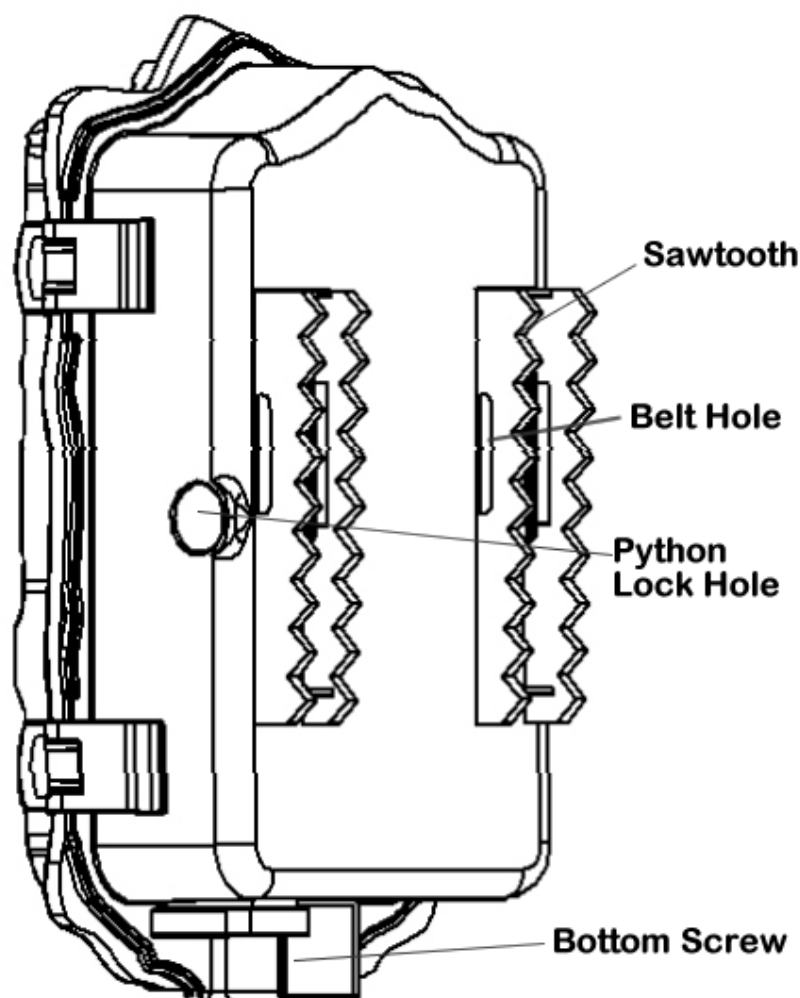


Fig. 7: The back panel of the camera

Appendix I: PIR Detection Zone

Fig. 8 shows Bolymedia's 4 kinds of detection range at different detection angles. This camera is super long range.

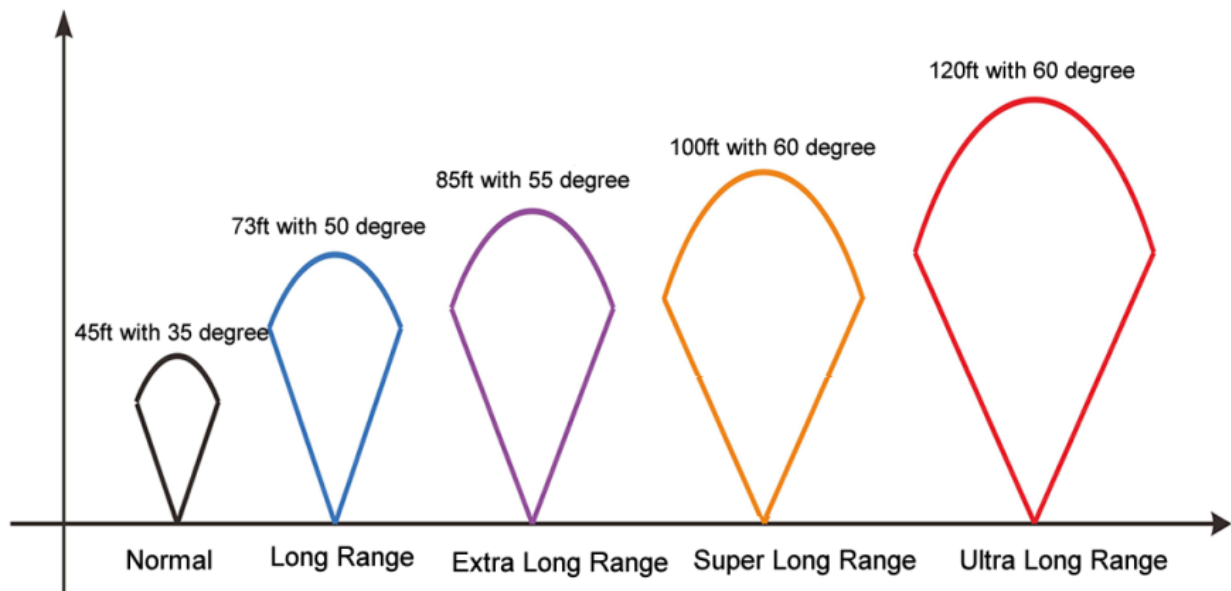


Fig. 8: PIR Detection Zone

The PIR detection angle (α) is just smaller than the field of view (FOV) angle (β). The advantage of this design is to reduce empty picture rate and capture most, if not all, motions.

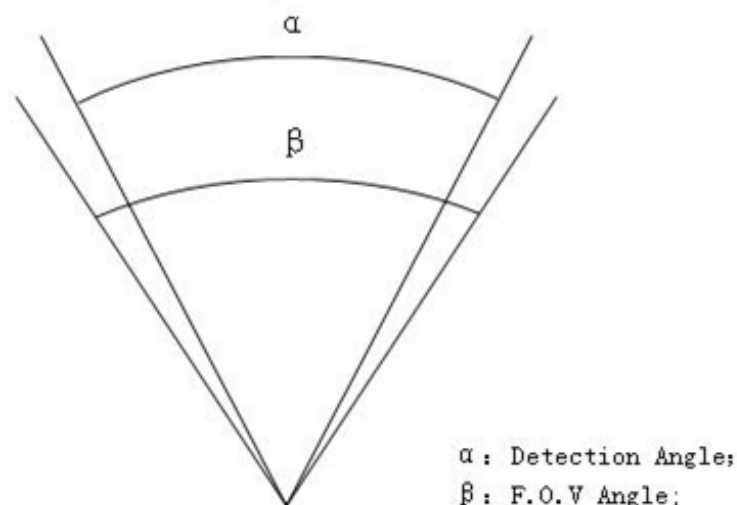


Fig.9: Detection angle vs. FOV angle

This camera has a new, patented design of PIR. The new patented PIR's detection range can reach to 100ft (in good environments). Fig. 10 shows the comparison of the detection zones between normal PIR and the new patented PIR.

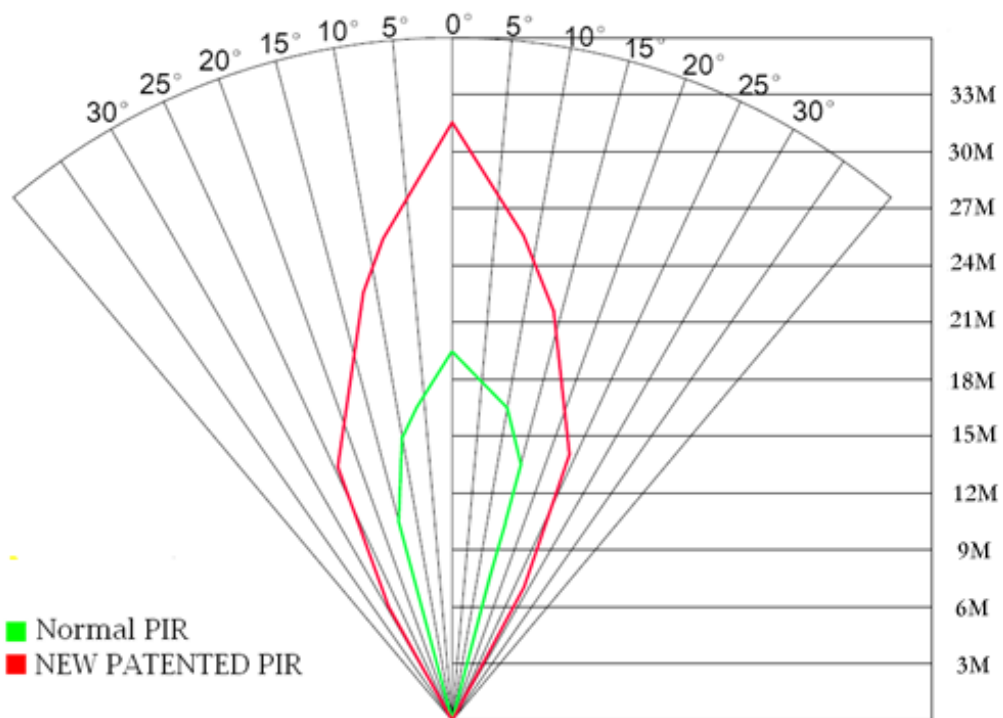


Fig. 10: Comparison of Detection Zones of new and existing PIRs

Appendix II : Technical Specifications

Image Sensor	5MP Color CMOS, 10MP interpolation	
Lens	SG968D-10M	FOV=100°
	SG968S-10M	FOV =70°
Lighting Range (with Flash)	Up to 80ft	
Detection Range	Up to 100ft	
Display Screen	2.0" TFT	
Memory Card	Up to 32 GB	
Picture Resolution	10MP = 3648 × 2736 5MP = 2560 × 1920	
Video Resolution	1280x720(20 or 30fps) 640×480 (30fps)	
PIR Sensor	SG968D-10M	70°
	SG968S-10M	60°
PIR Sensitivity	Adjustable (High/Normal/Low)	
Trigger Time	< 1.2 s	
Weight	0.35kg	
Operation/Storage Temperature	-20 - +60°C / -30 - +70°C	
Interval	0s – 60 min.	
Photo Burst	1 – 6	
Video Length	10 – 180s	
Power Supply	8× AA (recommended) or 4× AA (minimum)	
Stand-by Current	< 0.3 mA (<7mAh/Day)	
Display Screen	LCD display	
Mounting	Rope/Belt/Python lock	
Dimensions	173x103x79mm	
Operation Humidity	5% - 90%	
Security authentication	FCC, CE, RoHS	

*without battery

Appendix III: Parts List

Part Name	Quantity
Digital Camera	One
USB Cable	One
Belt	One
User's Manual	One
Warranty Card	One
Security Box	Option

(Version 1.0)