LTL ACORN®

Infrared Digital Scouting Camera
Ltl-6510 MC
1080P video
0.8 Second Trigger Time

USER'S MANUAL

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GENERAL INFORMATION

Introduction

Ltl-6510MC is the second generation of 6510 series scouting camera. With its highly sensitive Passive Infra-Red (PIR) sensor the camera detects the sudden change of ambient temperature caused by moving game in a region of interest (ROI), triggered to take pictures/videos.

1.1 Features:

- Programmable 2 or 5 or 12-Megapixel high-quality resolution.
- There are two selects of IR LED on the Ltl-6510MC camera, 850nm and 940nm. The former provides up to 25 meters flash range whereas the latter up to 13 meters flash range.
- In "Cam + Video" mode, camera takes both pictures and video at every trigger event.
- Ultra low standby power consumption. Extremely long in-field life (in standby mode, up to 6 months with 12 x AA batteries).
- LTL ACORN unique two horizontal PIR patented design comes up with a 100° angle of induction, makes our camera activated in advance and gets ready to shoot, this split-second process could be short as 0.2 second.
- Two horizontal PIR design improves accuracy on shooting, decrease shoots happening by mistake.
- Perform in the most extreme temperatures from -22°F to 158°F.
- Compact size. Well designed to deploy covertly.
- Rapid trigger time (0.8 second).
- In Time Lapse setting, the camera automatically and constantly takes pictures/videos at specified interval. This is very useful when observing plants flowering, birds building nest, or when monitoring unattended properties such as parking lots.
- With Timer setting on, the camera can be programmed to only work in specified period every day. This feature can work together with Time Lapse feature.
- Convenient to be mounted on trunk or tripod.
- Serial Number setting enables you to code locations in the photos. This helps multi-camera users identify the location when reviewing the photos.
- Built-in 2.36" TFT color display to review images and videos.
- Date, time, temperature and moon phase would be stamped on the bottom of the pictures.
- Lockable and password protected.
- Users can configure the Camera on the computer, or directly on the built-in TFT screen.

1.2 Application

- Trail camera for hunting
- Animal or event observation
- Motion-triggered security camera, for home, office and community

1.3 Illustration

- Figure 1.1 shows the front view of the camera (Part # Ltl-6510MC)
- Figure 1.2 shows the bottom view of the camera (Part # Ltl-6510M)
- Figure 1.3 shows the back view of the camera (Part # Ltl-6510M) and front view of the battery box (Part # Ltl-BM2)

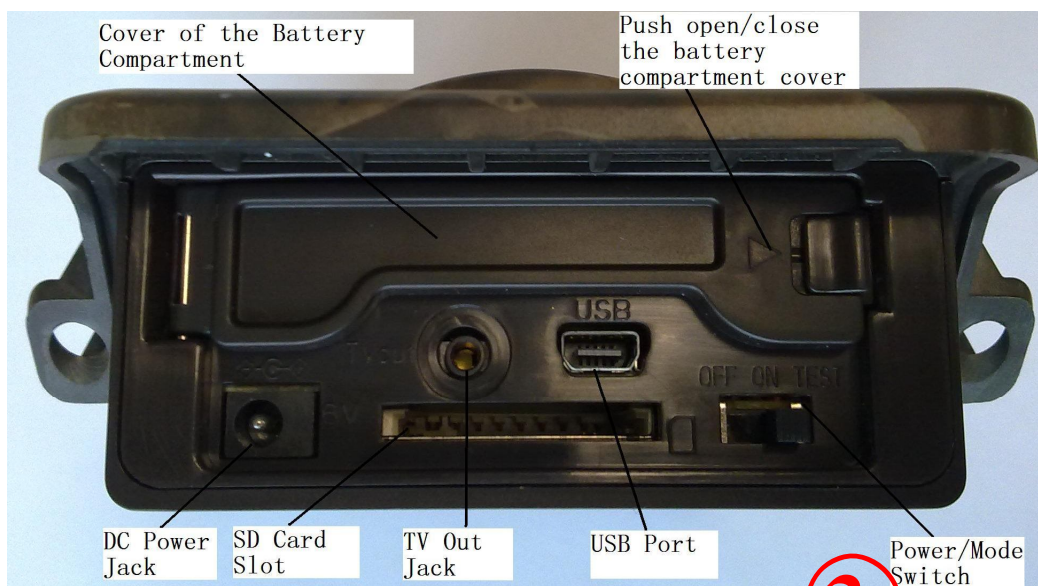
Figure 1.1: Front View of Ltl-6510MC

Figure 1.2: Bottom View of Ltl-6510M

The camera provides the following connections for external devices: USB 2.0 port, SD card slot, TV out jack, and external DC power in jack. The 3-way Power/Mode Switch is used to select the main operation modes: **OFF**, **ON** and **TEST**.

To power up the camera, install four **NEW** high-performance alkaline or lithium AA batteries in the camera. FOR BETTER PERFORMANCE, WE RECOMMEND USING **ENERGIZER LITHIUM AA BATTERIES.** To achieve longer in-field life, always install the additional battery box which contains four more AA batteries. (Please refer to Appendix III: Instruction For Installing Battery Box)

Figure 1.3: Back View of Ltl-651xM and Front View of Battery Box

CAUTION: If you are not using the camera for an extended period of time, it is highly recommended to remove batteries from the camera to avoid possible acid leak that may damage the camera which would void the warranty.

In addition, battery is not included in our package, be sure to purchase a qualified battery, please pay attention to following instructions especially for lithium battery:

First, the specification of battery is 18650 3.7V rechargeable lithium battery.

Second, to avoid short-circuit faults please note the polarity of the battery when installing, you can refer to the sign on the battery compartment.

Third, to prevent the environment from damaging .Please do not throw battery away casually. The battery may explode if damaged or disposed in high temperature.

Fourth, use specified charger only, charging time depends on battery capacity and current of charger.

QUICK START

2.1 Load Batteries

To install batteries on the camera (Part # Ltl-6510M), please follow the instructions below.

- Follow direction of arrow, push left slip switch, it will pop out.
- Install 4 AA batteries. Make sure the polarity matches the sign on the cover.
- Replace the cover.

To install the additional battery box (Part # Ltl-BM2), please refer to Appendix III: Instructions For Installing Battery Box)

Alternatively the camera can run on an external 6V~12V DC power source (optional). When both external power and batteries are connected, the camera will be powered by the external one preferentially. Bundled with our external solar power supply (purchased separately), the camera could work in the field over one year without changing batteries.

When battery level gets low, on the TEST mode, the message "Low Battery" will show on the TFT screen. On live mode, the Motion Indicator in the LED array will flash blue.

2.2 Insert SD Card

The camera does not come with internal memory. So it will not work without a SD (Secure Digital) memory card or SDHC (High Capacity) card. Before inserting the SD card into the card slot, please make sure the write-protect switch on the side of the SD card is "off" (NOT in the "Lock" position). The supported memory capacity is up to 32GB. If you use a card which capacity is larger than 32GB, make sure you test it in advance.
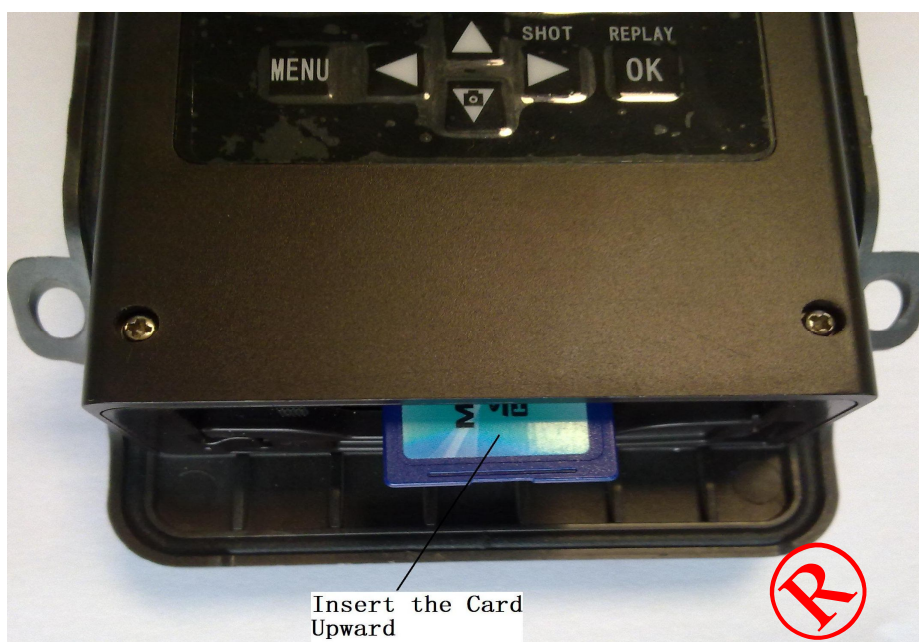
Insert the Card Upward

Figure 2-2

CAUTION: ALWAYS SWITCH THE CAMERA TO OFF MODE BEFORE YOU INSTALL OR REMOVE THE BATTERIES OR THE SD CARD.

2.3 Enter Test Mode

Switch to the **TEST** position to enter the Test mode. In this mode you can take pictures or video clips like a regular digital camera, or enter the Menu to set up parameters. On the keypad there are four "shortcut" functional keys (see Figure 2-3) working as below:

Figure 2-3

- Press the ▲ 📹 key to set the camera to shoot video clips.
- Press the ▼ 📷 key to set the camera to take pictures.
- Press the ▶ **SHOT** key to manually trigger the shutter. A photo or video (depending on the camera setting) will be taken and saved to the SD card. If the display shows "CARD PROTECTED" when you press the **SHOT** key, switch the power OFF, remove the SD card and slide its write-protect switch to off.
- Press the **OK REPLAY** key to review/playback photos/videos on the TFT screen, or a

connected TV monitor. Use ▲ and ▼ key to navigate.Use ◄ and ► key to zoom in and out on the pictures.Under zoom in,short press ▲ to move picture leftwards, long press ▲ to move picture upwards, short press ▼ to move rightwards, long press ▼ to move downwards.

There is another key **MENU**, on the keypad that allows you to program the camera to work the way you want. Please refer to **3.1 Parameter Settings** in Advanced Operation section.

Under the test mode, one useful function you would like is testing the work area of the PIR (Passive Infrared) sensor, specifically the sensing angle and distance. To perform the test:

- First strap the camera on a tree aiming the region of interest (ROI).
- Walk slowly from one side of the ROI to the other parallel to the camera. Try different distances and angles from the camera.
- If the Motion Indicator flashes red, it indicates the position from where you are detected by one of the right PIR sensor. If the Motion Indicator flashes blue, it indicates the position from where you are detected by the left PIR sensor. When Motion Indicator both flashes red and blue ,it indicates the position where you are detected by overlapping area of left and right PIR sensors, it is the region where camera is ready to shoot.

Through the test, you can find the best placement when mounting and aiming the LTL ACORN camera. In general, you are recommended to place the camera 3 to 6 feet (1 to 2 meters) above the ground.

To avoid potential false triggers due to temperature and motion disturbances, please do not aim the camera at a heat source (i.e. the sun) or nearby tree branches and limbs. The ideal direction to aim at is North or South. Also, remove any limbs close to the front of the camera.
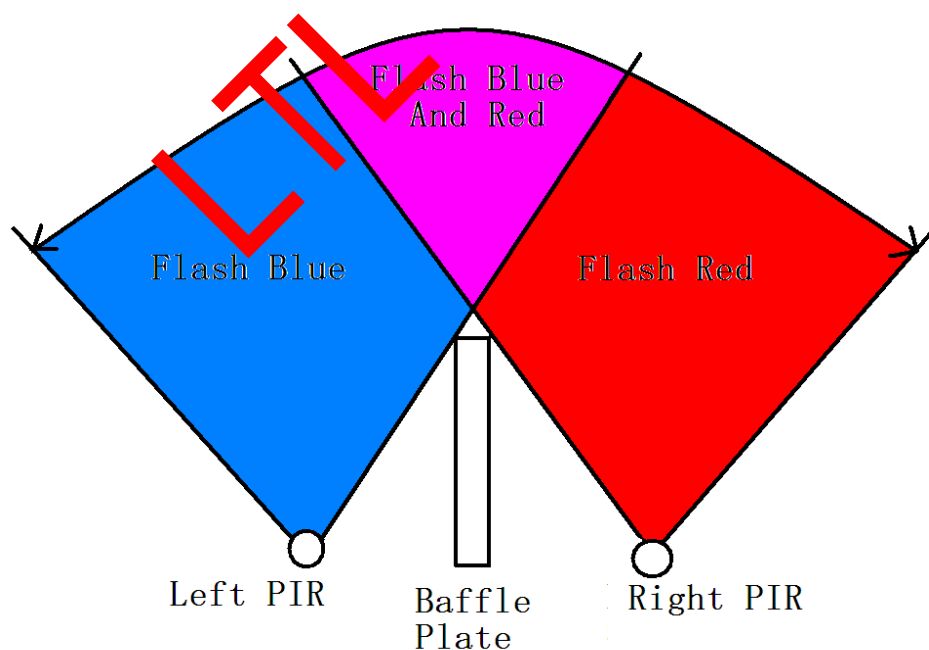
2.4 Enter Live Mode

Switch to the ON position to enter the live mode. The Motion Indicator will flash red for about 10 seconds and the camera starts working by itself without any manual handling. When game first crosses the PIR area of the PIR sensor, the related PIR sensor will detect and activate. If the game continually enters into the overlapping area of left and right sensor, the camera takes picture or video immediately. If the game turns back instead of enter into overlapping area, the camera will turn off goes on sleep mode.

**2.5** Advantages of two horizontal PIR design

In general, to save battery power, an Infer-Red camera is in "sleep" mode, with only the PIR sensor working. When game is detected by the PIR sensor, the camera is powered on and starts shooting pictures. The period from being activated to start firing is called trigger time. The trigger time varies from different scouting camera brands in the market, generally from 1.3 to 5 plus seconds. Our LTL ACORN scouting camera has an impressive 0.8 second trigger time.

Ltl-6510MC infrared camera is our latest product with new patented design of two horizontal PIR sensors. This design has the following advantages:

Minimize the time for shooting. Two side PIR come up with a 100° angle of induction, a very wide scope far outweighing the 52 ° angle of the camera lens. When game first crosses the PIR area of the PIR sensor, the camera is activated and ready to shoot. If the game continually enters into the overlapping area of left and right sensor, the camera takes pictures immediately, therefore catching the whole body of the game. This split-second process could be short as 0.2 second. However, when game passes quickly, traditional camera may only capture the rear part of the game, and possibly nothing at all .While our LTL ACORN scouting camera can catch the complete picture.

Enhance the capacity of resisting disturbance. Since the camera would be influenced by different levels of electromagnetic interference in different environment. Our LTL ACORN scouting camera designed with two horizontal PIR sensors, it takes picture or video only when two side PIR both been triggered, thus to avoid wrong shoot by the shortage of anti-interference capability on single PIR.

Detect the position of the game. When game comes into detective area from random direction, related PIR will feedback to Camera Processor. The system would judge if there is game into PIR area, whether it is in one side of PIR sensing area (Left PIR/Right PIR) or in shooting area.

100° angle

Shoot

55° angle

Activate

Activate

Left PIR

Baffle
Plate

Right PIR
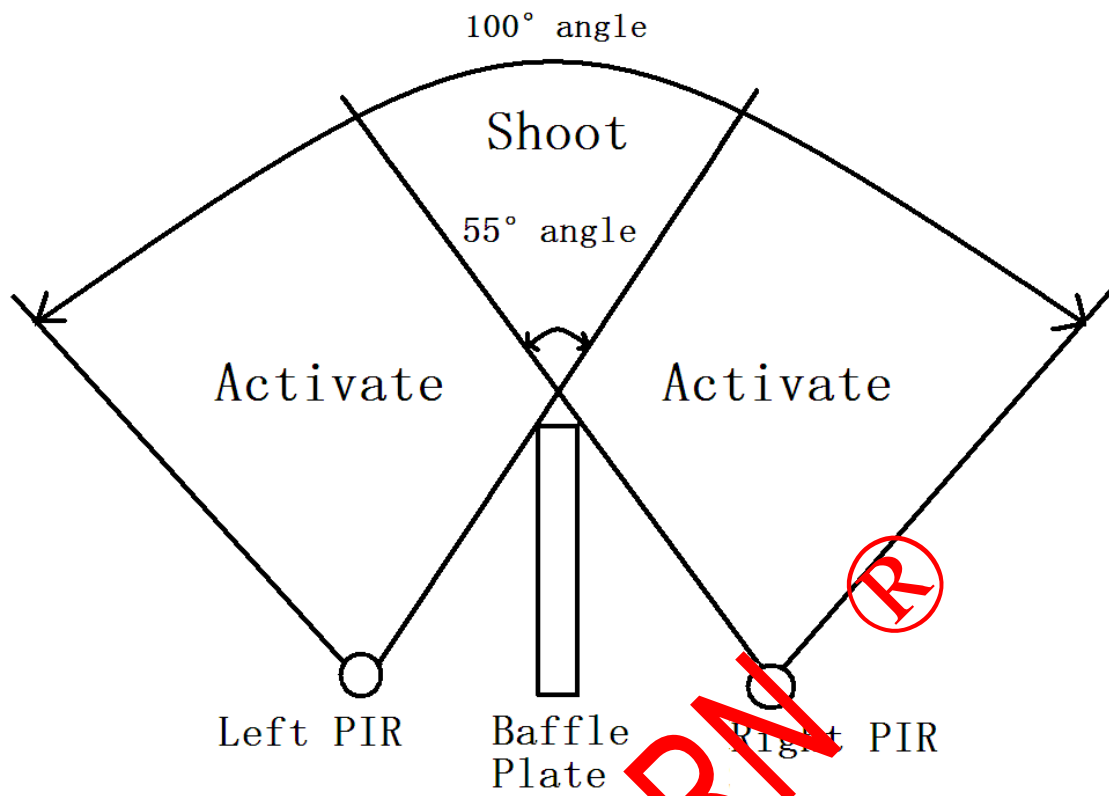
ADVANCED SETTINGS

The LTL ACORN trail camera comes with preset manufacturer settings. You can change the settings to meet your requirements. Please make sure the camera is in the TEST mode.

3.1 Parameter Settings

Press "MENU" key to enter/exit the menu. Press ▲, ▼ to move the marker, ◄ , ► to change the setting, and **OK** to confirm the change. Always remember to press **OK** to save the change. Otherwise you will lose your new setting.

Parameter	Settings (**Bold** = default)	Description
Mode	**Camera**, Video, Cam+Video	Select whether photos or video clips are taken. In **Camera+Video** mode, camera first takes photos and then shoots videos immediately.
Format	**Enter**	All files will be deleted after formatting the SD card. Highly recommend to format the SD card if it has been used previously on other devices. *Caution: make sure wanted files on the SD card have been backed up first!*
Photo Size (affects photos only)	**12MP**, 5MP, 2MP	Select desired resolution for photos from 2 to 12 megapixels. Higher resolution produces better quality photos, but creates larger files that take more of the SD card capacity. Besides, larger files require longer time to write to the SD card, which will slightly slow the shutter speed. **5MP** is recommended.
Video Size (affects video clips only)	**720P** VGA 1080P	Select video resolution (pixels per frame). Higher resolution produces better quality videos, but creates larger files that take more of the SD card capacity. **720P** is recommended. 720P=1280x720; VGA=640x480; 1080P=1440x1080;
Set Clock	**Enter**	Press **Enter** to set up date and time. Internal capacitor will retain the clock time for up to 7 minutes when changing batteries.
Picture No. (affects photos only)	**01 Photo**, 02 Photo, 03 Photo	Select the number of photo taken in at every trigger in Camera mode. *Please also refer to the* **Interval** *parameter.*
Video Length (affects video clips only)	**AVI 10 s**, optional from 1s to 60s	Videos are in AVI format that can be played back on most media players.
Interval	**1 Min**, optional from 0S to 60M	Select the length of time that the camera will wait from when the last picture was taken and written in the SD card, until it responds to any new triggers

		from the PIR sensor. During the selected interval, the camera will not take pictures/videos. This prevents the SD card from filling up with too many redundant images.
Sense Level	High, **Normal**, Low, Off	Select the sensitivity of the PIR sensor. The High setting suits indoors and environments with little interference, while the Normal/Low suits outdoors and environments with more interference, Off which turns the function off(Note: in this mode, the PIR sensor is closed.)Temperature also affects the sensitivity. The High setting is suitable when the ambient temperature is warm, and the Low setting is helpful in cold weather.
Time Stamp (affects photos only)	**On**, Off	Select **On** if you want the date & time imprinted on every photo.
Timer	**Off**, On	Select **On** if you only want the camera to work within a specified time period every day. For instance, if the starting time is set at 18:35 and the ending time at 8:25, the camera will function from 18:35 the current day to 8:25 the next day. Outside the time period, the camera will not be triggered or take photos/videos. This feature can be used together with **Time Lapse** feature.
Timer 2	**Off**, On	Select **On** if you only want the camera to work within a specified time period every day. For instance, if the starting time is set at 18:35 and the ending time at 8:25, the camera will function from 18:35 the current day to 8:25 the next day. The camera won't be triggered or takes photos/videos outside the time set. This feature can be used together with **Time Lapse** feature.
Password Set	**Off**, On	Set up a password to protect your camera from unauthorized users. **(THE PASSWORD CAN ONLY BE SET UP ON THE CAMERA, NOT ON THE PC.)**
Serial NO	**Off**, On	Select **On** to assign a serial number to each camera you have. You can use the combination of 4 digits (0~9) and/or alphabets (A~Z) to record the location in the photos (e.g. YSP1 for Yellow Stone Park). This helps multi-camera users identify the location when reviewing the photos.
Time Lapse	**Off**, On	If set **On**, the camera will automatically take photos/videos at the set interval. It would be helpful when observing cold-blooded animals like snakes, or

		the process of flowering, etc. This feature can work together with **Timer** feature.
Beep Sound	**On**, off	Choose OFF to turn off the sounds made by pressing the keys.
SD Cycle	**Off**, On	Choosing ON enables the "cycling save" function, which automatically deletes the oldest files when the SD card becomes full to make room for the latest pictures and/or videos.
Default Set		Press **OK Enter** to return all your camera settings back to the manufacturer default setting.

3.2 File Format

The SD card stores all original pictures and videos in the folder \DCIM\100IMAGE. Pictures are saved with filenames like IMAG0001.JPG and videos like IMAG0001.AVI.

In the **OFF** mode, you can use the provided USB cable to download the files to a computer. Or you can put the SD card to a SD card reader, plug in a computer, and browse the files on the computer without downloading.

The AVI video files can be played back on most popular media players, such as Windows Media Player, etc.

3.3 Set up Camera on PC

After formatting the SD card on the camera, pop the SD card out and insert it into your computer. (If your computer cannot read SD cards, you may need to purchase a SD card reader) Of course, you can also directly connect the camera with your PC using a USB cable.

Find the enclosed compact CD from the packaging box and put it on the CD tray. (If your PC does not have a disc drive then you would need an external disc drive.) Run the Setup.exe file.

You can also access the same setup file by visiting the LTL ACORN national distributor's website to download and following the link http://www.ltlacorn.cn/about/downloaden.html (download→classification→software→PC Setup→Setup.exe)

The following Setup.exe illustration:

Click on Setup.exe, and you will see the following interface:

Select your language and model. For model selection, Ltl-6510MC shares the **Camera setup** function with other models of 6510 series .Then click on **Camera Setup**, and you will see the following interface:

Set up the camera based on your own need. Please refer to S**ection 3.1 Parameter Settings** in Advanced Settings to find detailed explanations for each setting.

Set up the camera based on your need. Click on   GetTime   to retrieve the computer time.

Click on   Select   to choose the directory to save your settings, usually under the root

directory of the SD card (You need to insert the SD card in the SD card reader and plug it in your computer.)

You can use the manufacturer default settings by clicking on Default if needed.

Then, click on Generate . A message window will pop out as below.

A file named **menu.dat** will be created and saved in the directory you just selected. If you selected a directory other than the SD card, you need to move the **menu.dat** file to the root directory of the SD card before inserting the card into camera.

Retrieve the SD card and insert it in the camera. Switch to the **TEST** position to enter the TEST mode. Message "Updated menu.dat Successfully" show up on the TFT display, indicating the setup file has been successfully installed on the camera.

ATTENTION: THE PASSWORD CAN ONLY BE SET UP IN THE CAMERA, NOT ON THE PC.

Ltl-6510MC PRODUCTS

4.1 Ltl-6510MC Consists of Two Parts:

1. **Ltl-6510M** Camera
2. **Ltl-BM2** Standard battery box (without MMS-module)

4.2 Models for Purchase:

Ltl-6510M Camera   **Ltl-BM2** Standard battery box

IMPORTANT INFORMATION

5.1 Prevent From Short-Circuits

There are electric contacts on the TFT display of the camera and on the battery compartment of the battery box, respectively. Never contact these electric contacts with any metallic materials. Otherwise it would cause a short circuit and therefore irreversible damage to the camera.

5.2 Power Supply and Battery Box

Ltl-6510MC camera can work on up to 12 voltages. 4xAA batteries in the camera, 4xAA batteries (Or 8xAA alkaline batteries. Or 2 cells of 18650 size lithium battery) in the battery box (Batteries must lean to one side without empty in the middle), and the external power supply form a three-path parallel circuit. Each path is isolated and does not charge nor discharge others. As a result, the working time of camera in the field would be extended by powered by an external solar panel. To install the additional battery box (Part # Ltl-BM2), please refer to **Appendix III: Instructions For Installing Battery Box.**

5.3 SD Card

There are plenty of different brand SD cards on the market. We tested on our camera as many brands as we can. However, we cannot guarantee every brand SD card will work compatibly with our camera. Please format the SD card on the camera before use. If it doesn't work, please try another brand SD card.

5.4 Auto Adjustment on Video Length

To extend the battery life, we strongly suggest to use additional battery box when having the camera running in Video mode or Cam+Video mode. Compared to other brand hunting camera on the market, our camera takes thirty percent more full-length video clips. Besides that, when battery power gets low, our camera automatically shortens the video length so as to take more clips of more game. As a result, the total number of video clips is twice or three times as other brand camera, it provides users with more useful information.

Note: Our camera performs at extreme cold environment as low as -30°C (-22°F), in which the battery power capacity deteriorates drastically. Therefore, the number of video clips decreases accordingly.

5.5 850nm and 940nm IR LED

There are two selects of IR LED on the Ltl-6510MC camera, 850nm and 940nm. The former provides up to 25 meters flash range whereas the latter up to 13 meters flash range. The benefit of 940nm IR LED, however, is it emits black flash that is invisible in the dark.

FIRMWARE UPGRADES

6.1 Firmware Upgrades

The manufacturer reserves the right to upgrade the camera and the firmware. Follow the steps below to implement the upgrades:

- Back up the contents on the SD card on your computer
- Install batteries and the SD card in the camera.
- Format the SD card on the camera.
- Retrieve the SD card and insert it in your computer (SD card reader may needed). Copy the FW6510.bin file into root directory of the SD card. (Consult with the national distributor if there is an upgrade available and where to download it.).
- Retrieve the SD card, insert SD card back in the camera. Switch camera to TEST position. Until the logo "Updated Firmware Successfully" appears on the TFT screen.
- Enter **MENU,** navigate the marker to **DEFAULT SET,** and press **OK**.
- Re-format the SD card on the camera. The upgrade will have been installed successfully.

Attention: A firmware upgrade program for one model is not compatible on other models. In other word, an upgrade for Model Ltl-6510MC only applies to this model. If a camera is accidently upgraded by a non-compatible program, it will quit working and needs to be sent back for repair. This issue is not covered under warranty.

LIMITED WARRANTY

We take great pride in our products. We always stand behind our promises. We provide leading warranty term and service. Every LTL ACORN trail camera comes with a limited times warranty.

We guarantee our trail cameras to be free of defects in materials and workmanship under normal use and service for a period of a limited time after the registered date of purchase. This warranty does not cover damages caused by misuse, abuse, or improper handling or installation, by user installed batteries, or by repair attempts of someone other than our authorized technicians.

In the event of a defect under this warranty, we will, at our option, repair your camera or replace it with the same or comparable model free of charge, provided the product is returned postage paid. This warranty only extends to the original retail buyer from our authorized dealer. Purchase receipt or other proof of the date of the original purchase is required to receive warranty benefits. The warranty on any replacement product provided under the original warranty shall be for the remaining portion of the warranty period applicable to the original product.

This warranty extends solely to failures due to defects in materials or workmanship under normal use. It does not cover normal wear of the product.

Please contact our tech support department to determine the nature of the problem before you return a LTL ACORN product under this warranty for repair or exchange.

Appendix I: TECHNICAL SPECIFICATION

Item	Parameters	Ltl-6510MC
Image Sensor	5 Mega Pixels Color CMOS	Yes
Max. Pixel Size	2560x1920	Yes
Lens	FOV=52°; Auto IR-Cut	Yes
IR Flash	850nm LED: 25Meters 940nm LED:13Meters	Yes
TFT Screen	48x35.69mm(2.36"); 480(RGB)*234DOT; 16.7M Color	Yes
Operation Keypad	6 Keys	Yes
Memory	SD Card (8MB ~32GB)	Yes
Picture Size	5MP/12MP/2MP = 2560X1920/4000X3000/1600 X1200;	Yes
Video Size	1440x1080: 15 fps; 1280x720: 30fps; 640x480: 30fps;	Yes
PIR Sensitivity	High/Normal/Low/Off	Yes
PIR Sensing Distance	13~15Meters	Yes
PIR Sensing Angle	100°	Yes
PIR shooting angle	55°	Yes
Operation Mode	Day/Night	Yes
Trigger Time	0.8 Second	Yes
Trigger Interval	0sec. - 60min; Programmable	Yes
Shooting Numbers	1~3	Yes
Video Length	1-60sec.; Programmable	Yes
Camera + Video	First take Picture then Video	Yes
Playback Zoom In	1~16 Times	Yes
Time Stamp	On/Off; Include serial No., temperature and moon phase	Yes
Timer	On/Off; Programmable	Yes
Timer 2	On/Off; Programmable	Yes
Password	4-Digit Numbers(0~9);	Yes
Device Serial No.	4 digits(0~9) and/or alphabets(A~Z) set by yourself;	Yes
Time Lapse	On/Off , Programmable; 0 Second ~ 23 hours 59 minutes and 59 seconds	Yes
Power Supply	4xAA alkaline batteries in the camera; 4xAA alkaline batteries (Or 8AA alkaline	Yes

	batteries, Or 2 cells of 18650 size lithium battery) in the battery box (Batteries must lean to one side without empty in the middle).	
External DC Power Supply	Plug Size: 4.0x1.7 6 ~ 12V (1 ~ 2A)	Yes
Stand-by Current	0.4mA	Yes
Stand-by Time	3~6 Months(4xAA~12xAA)	Yes
Auto Power Off	Auto power off in 3 minutes while no keypad controlling	Yes
Power Consumption	150mA (+400mA when IR LED lights up)	Yes
Low Battery Alarm	4.2~4.3V	Yes
Interface	TV out (NTSC); USB; SD Card Slot; 6V DC External	Yes
Mounting	Strap; Tripod	Yes
Waterproof	IP54	Yes
Operation Temperature	-22~+158°F/-30 ~+70°C	Yes
Operation Humidity	5% ~ 95%	Yes
Certificate	FCC & CE & ROHS	Yes

Appendix II: PACKAGE CONTENTS

Part Name	Quantity (Ltl-6510MC)
Digital Camera	1
Additional Battery Box	1 (Standard)
TV AV IN Cable	1
USB Cable	1
Strap	1
External DC Cable (optional)	1
CD	1
Warranty Card	1
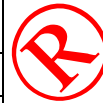
ATTENTION: BATTERY IS NOT INCLUDED IN OUR PACKAGE.
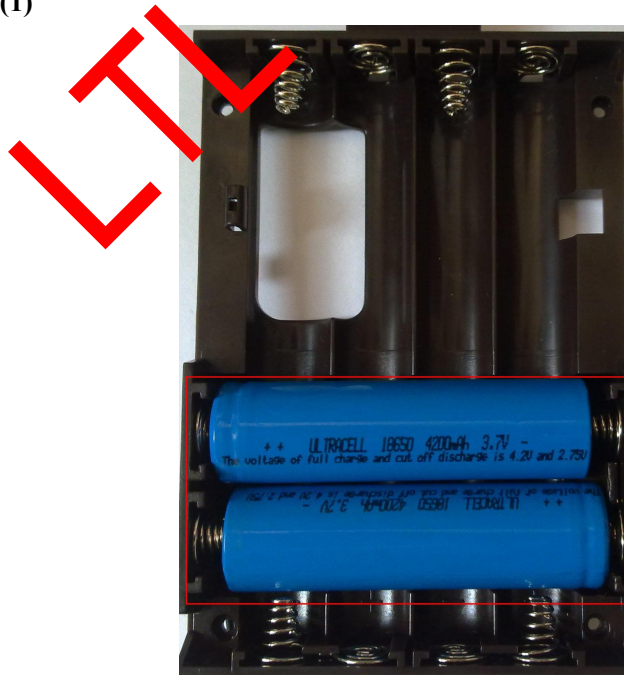
Appendix III: INSTRUCTION FOR INSTALLING BATTERY BOX

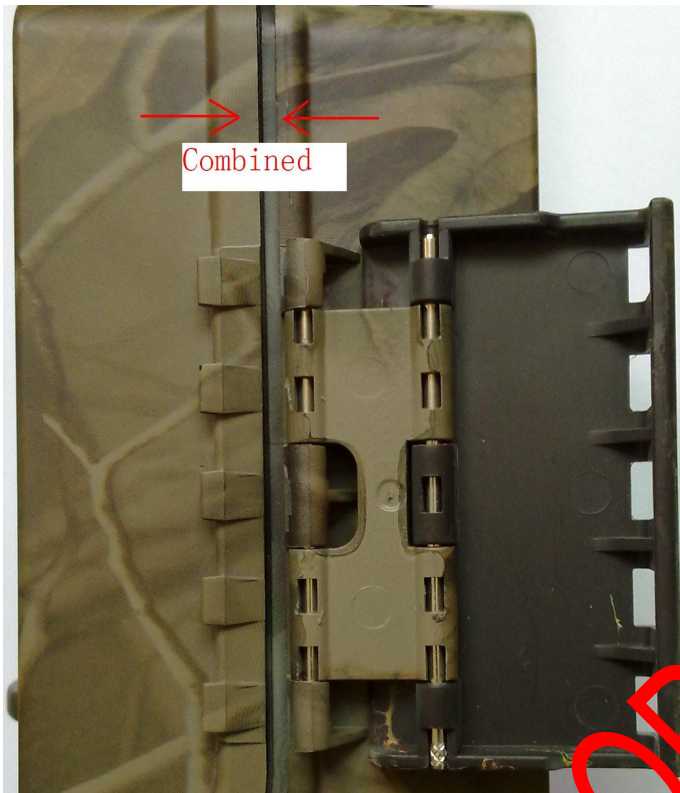**1. Below pictures are 3 different battery installations (Do not mix lithium battery with AA alkaline battery)**
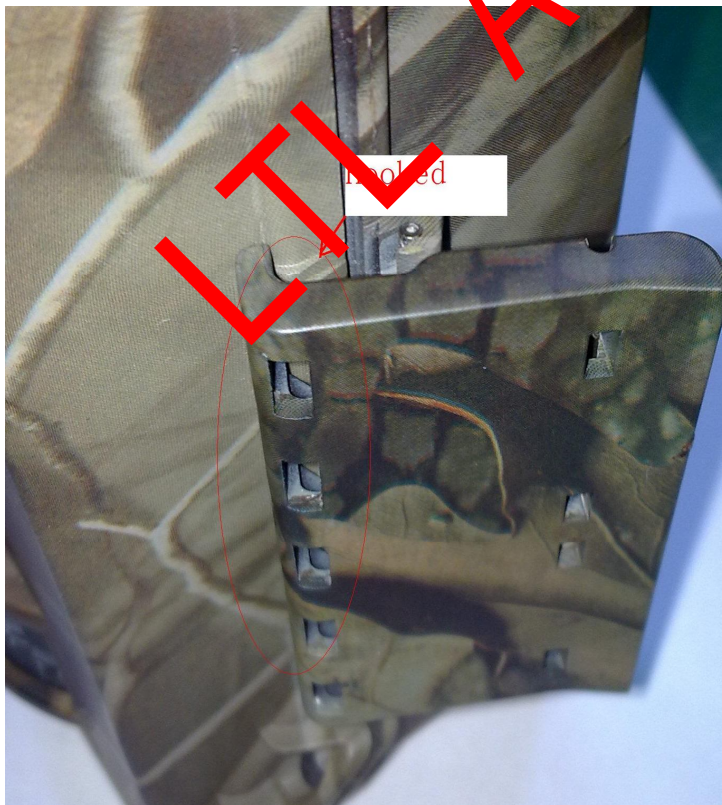

(1)

(2)

(3)

2. Combine the two parts

Combined

3. Hook camera body with two lock buckles on side of battery box

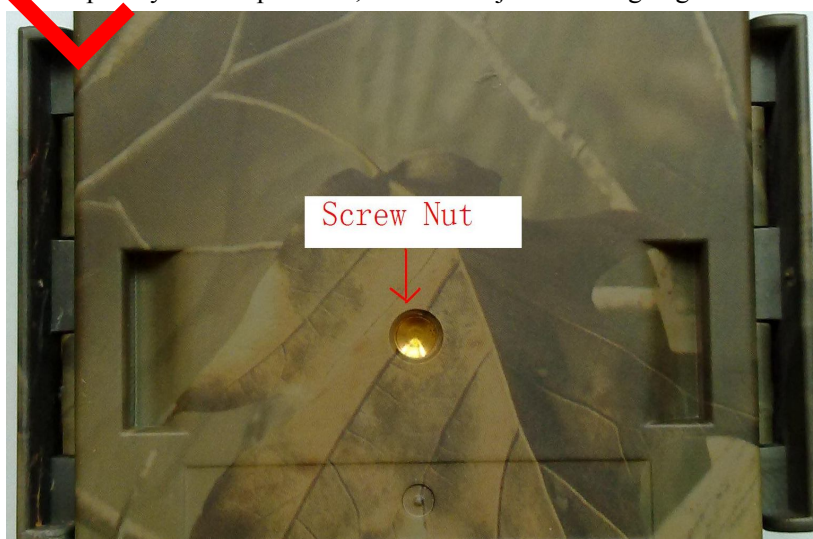
Hooked

4. Snap on lock buckles

Snap On

Appendix IV: INSTRUCTION FOR INSTALLING CAMERA WITH BATTERY BOX

1. Mount on tripod

The camera can be mounted on a 1/4" tripod.
Fix the camera to tripod by screw up the nut, and then adjust shooting angle.

Screw Nut

2. Mount on tree trunk

Fits holes on battery box with four tiny plastic bolts can avoid cameras being slipped off from tree and loose. Then across stripe holes with a strap, mount the camera on tree trunk.

Besides, to avoid cameras being stolen and damaged, use a chain and lock to keep it safe if possible.

(1)

(2)

(3)