

LTL ACORN[®]

Ltl-5210 Series

1080P HD Video Product

Ultra Low Standby Current Infrared Digital Camera

Less Than 0.2S Trigger Time in Actual Application



USER'S MANUAL

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ATTENTION : ' * ' marked content, the contents related to MMS module such as MMS, SMTP parameters and SMS remote control is for Ltl-5210MG model only.	

GENERAL INFORMATION

This manual applies to model Ltl-5210A, Ltl-5210MC, Ltl-5210MG. The series of cameras use low-power dual PIR sensor wireless module which belong to our company's latest research and development. Working in the camera, low-power dual PIR sensor has the characteristics of high accuracy and sensitivity, which avoid the camera mistaken or missed, as well as low standby current. Camera standby current has reduced to 60~180uA, far lower than the line's other brands of hunting cameras standby current 400 ~ 2000uA, which greatly extends the camera standby time.

Bundled with the MMS-module (Multimedia messaging service) battery box (part#LTL-MM1), standard scouting camera (part#Ltl-5210MC) can be upgraded to work as a remote cellular camera. The basic principle of our infrared camera, with its Passive Infrared(PIR) sensor, detects the infrared signal from animal or human body, triggers to take pictures/videos automatically, and sends MMS to mobile or email to users E-mail address. The well-developed SMS remote control function for users realizes to change camera parameters, control camera shooting and send back pictures by a simple message when stay at home, which makes it easier to use with more flexibility.

Please read the USER'S MANUAL in details before starting for better understanding and operation.

1.1 Features

- 5M/12M/1.3Mega pixel high-quality resolution.
- Text your camera to change its parameters, made possible by the new SMS RCP (remote control program). Also, instruct your camera to send pictures it has taken to you using SMS order CODE 60 (see the list of order codes in Section 2.7 **SMS Remote Control & Table of Command Code**).
- 1920 x 1080 / 1280 x 720 / 640x480 / 320x240 MJPEG format real HD video with audio record.
- Ltl-5210 series Infrared night vision LEDs 850nm flash range as far as 75 feet / 25 m, Low-grow 940nm 39 feet / 13 m.
- "Cam + Video" mode enables camera to take both picture and video every time it triggers.
- Ultra-long standby time of 1 year with 8 AA alkaline batteries.

- Low power double PIR(Passive Infrared) induction technology, detect the animal in advance with wide angle in 2 stages, ultra fast trigger to take photos, camera standby time current is about 60~180uA which makes us stand on the top in the industry.
- Perform in the most extreme temperatures from -45°C to 70°C
- Compact size (5 ½ x 3 ½ x 3 inches). Well designed to deploy covertly.
- Programmable to work as Time-Lapse camera taking pictures/videos in long range day and night.
- When Timer setting is turned on, programmable to only work in specified period every day. This feature can be used together with Time Lapse feature to meet your timetable.
- Built-in 2.4 inch TFT color screen to review images and videos at the back of the camera.
- Tight waterproof housing: IP54
- Patent technology of Low Power Dual PIR Pyroelectric Infrared Sensor, the camera detects animals in advance from wide scope in two stages, then quickly trigger to shoot, standby current is about 60~180uA, makes it to be the pioneer in the industry.
- Fast trigger time(0.8 seconds). The actual trigger time is less than 0.2 seconds when animals pass by the camera from two sides of the camera..
- ID number is set freely, file prefix can be the same as the ID, make it easy to classify the pictures from multi-places, will not be mixed up with other camera photos.
- Lockable and password protected.
- Abundant photo watermark information, shooting date, time, temperature and moon phase could be shown on the picture stamp.
- Photo can be sent via MMS and email at resolution 640*480.
- Setup is a snap. Just run the user-friendly software on the enclosed CD on the computer, or do it directly on the built-in TFT screen.
- SD card can be set in "Cycling Save" mode, which automatically deletes the earliest photos or videos and makes room for new ones.
- Advanced Remote Cellular Technology transmits images to your cell phone and/or email account constantly at lower battery consumption and shorter transmission time, compared to similar products on the market.

- Get SMS Text alert when battery power level goes low.
- The local mobile signal can be checked in field.
- Operates globally via 2G GSM/GPRS network. Supports four bands: 850 / 900 / 1800 / 1900MHz.

1.2 Application

- Trail camera for hunting
- Animal or event observation
- Motion-triggered security camera, for home, office and community
- All other indoor/outdoor surveillance where intrusion evidence and live alerts are needed

1.3 Illustration

- Figure 1.1 shows the front view of the camera (Part # Ltl-5210M)
- Figure 1.2 shows the bottom view of the camera (Part # Ltl-5210M)
- Figure 1.3 shows the back view of the camera (Part # Ltl-5210M)



Figure 1.1: Front View of Ltl-5210M



Figure 1.2: Bottom View of Ltl-5210M

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. High energy and low temperature resistant AA disposable lithium battery and low self-consuming AA NI-MH

rechargeable battery are recommended to use. To achieve longer in-field life, always install 8 AA batteries.



Figure 1.3: Back View of Ltl-5210M

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

Getting Started

2.1 Insert SIM Card (Only for Model Ltl-5210MG)

Please buy the SIM card from the local mobile operator, make sure they can provide the MMS of GSM 2G network and data service. Ask them for data information of MMS configuration.



Figure 2.1 Wireless module battery box

Open standby battery compartment, you can see the SIM card slot, insert SIM card as the sign aside to finish SIM card insertion.

Pay attention to the right direction to insert SIM card when insertion.

2.2 Load Batteries

- Open the bottom cover by pulling down the lock hole.
- Push to open the front battery door and load 4 AA batteries. Open the battery door of standby battery compartment and load 4 AA batteries (make sure the polarity matches the sign on the cover).
- Push to close the battery door.
- Make sure the 8 new and full AA alkaline batteries are loaded.

As a choice, the external DC power supply (optional) of 6V~12V with output current higher than 2A can be used in camera. The camera will choose the external DC power supply as priority when the external power supply and battery are connected at the same time. Our Ltl-SUN external solar panel(optional for purchase)is recommended, the camera may work for more than 1 years in the wild without changing batteries.

MMS camera will send “Low Battery” alarm text to user’s mobile automatically when the power is too low (only for camera models with MMS module). Meanwhile, the battery level will be shown as Code **B1/B2/B3** on the received MMS pictures. **B3** stands for high level and **B1** indicates the level is low and you may need to change the batteries soon.

2.3 Insert SD Card

The camera does not come with internal memory. It will not work without a SD (Secure Digital) memory card or SDHC (High Capacity) card. Before inserting the SD card, please make sure the write-protect switch is in “OFF” side (NOT in the “LOCK” position). The supported memory capacity is up to 32GB. If you use a SD card which capacity is larger than 32GB, please make sure that you test it in advance.



Figure 2-2

Attention: Please switch to OFF mode before loading or removing batteries/ SD card.

2.4 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 on its own, you

would 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

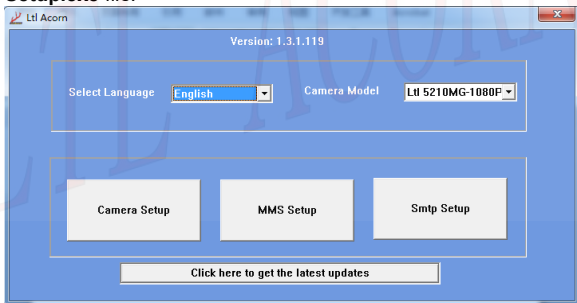
<http://www.ltlacorn.cn/about/downloaden.html>

(download→classification→software→PC Setup→Setup.exe)

Setup.exe icon:



The following window prompt would show up once you double-click the **Setup.exe** file:



Select your language and model. Click on **Camera Setup**, and you will see the following menu:

Ltl Acorn 5210 1080P

Mode	Camera	Image Size	12MP
Video Size	1280x720	Picture No.	01 Photo
Time Stamp	On	Sensor Level	Normal
Side PIR	On	Video Length	10 Seco
Interval	Minu 1	Date Format	MMDDYY
SD Cycle	Off		

Set Clock: 2017/11/03 14:00:16 Get Time

Timer	Start	Hour	Minut	Stop	Hour	Minut	
Off		0	:	0	0	:	0

Timer2	Start	Hour	Minut	Stop	Hour	Minut	
Off		0	:	0	0	:	0

Serial No. Off 0 0 0 0

Time Lapse	Hour	Minut	Seco
Off	0	:	0 : 0

Select C:\

Generate Default Exit

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

Click on **GetTime** to retrieve the computer time. Click on

Select to find and choose the drive where the SD card is placed, usually denoted by a letter after E (F drive or G drive). For example, if the SD

card is inserted into the F drive, then you should click on "F:\". **DO NOT choose any folder under F:\.**

If you like, you can use the manufacturer default settings by clicking

on **Default**

Click on **Generate**. A message window will pop out as below. Click **OK**. A file named **menu.dat** will be created and saved in the root directory of the SD card.



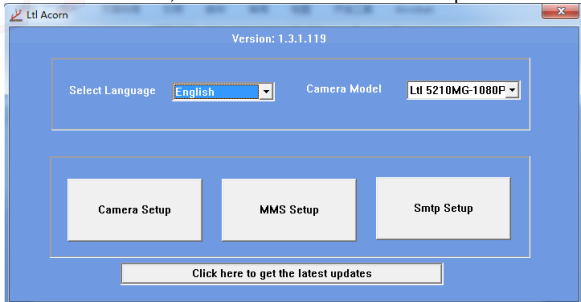
Retrieve the SD card and insert it in the camera. Switch to the **TEST** position to enter the TEST mode. Message "Updated menu.dat Successfully" show up on the TFT display, indicating the setup file has been successfully installed on the camera.

Click **Exit** and go back to the main menu.

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

2.5 Set up MMS Function on PC

On the main menu, Select Ltl 5210MG-1080P and press **MMS Setup**.



Display below:

The screenshot shows a configuration window titled "Ltl Acorn 5210 1080P". The window contains the following settings:

- MMS Mode:** Auto
- MMS Status:** VGA
- Picture No./day:** 0 (Note: 0=Unlimited)
- Country:** China
- Operator:** China Mobile
- SMS Remote Control:** Off
- Hour:** (empty)
- URL:** (empty)
- APN:** (empty)
- Gateway:** (empty)
- Port:** (empty)
- Phone No:** (empty)
- Country:** China
- Email:** (empty)
- Account:** (empty)
- Password:** (empty)
- Phone or Email:** (empty)
- Phone or Email:** (empty)
- Select:** C:\
- Buttons:** Generate, Exit

An important first step is to determine the format of the files that the camera will send you. On the right of the first row where it says **MMS Status**, choose

among three options: “VGA”, “SMS”, and “OFF”.

- **VGA:** the camera will send 640X480 pictures to your phone or e-mail account
- **SMS:** the camera will send only texts to you
- **OFF:** the camera will not send anything

Then you need to choose how you like to set up the MMS Mode

MMS Mode	Auto
	Auto
	Manual

Auto or Manual. Choose **Auto**

Country	China
	China
	United States
	Deutschland
	United Kingdom

(recommended), then select the country and the Mobile Phone Network Operator (MPNO). With **Auto** setup, the URL, APN, Gateway, and Port sections will be in gray. You would only need to input the **phone number and/or email address** you'd like to receive MMS pictures. You can enter up to three different **phone numbers and/or email accounts**.

NOTE: At least one valid phone number needs to be put in. Otherwise the camera would not be able to send data. The phone number cannot start with 0. If used locally, the country code needs not be included; if absolutely necessary, please replace the initial zero(s) with “+”. For example: “001” would become “+1”.

If you choose **Manual** to manually input all the parameters, you need to contact your Mobile Phone Network Operator (MPNO) to have them provide you all the required information such as URL, APN, Gateway, and Port.

NOTE: The MMS parameters of the major MPNO's in each country have been pre-stored in the setup program. You're recommended to choose **Auto** to let the system to set up the MMS. However, because each local MPNO has their own settings for their MMS service, and those settings can change over time, you may need to acquire the settings from your MPNO if the **Auto**-selected settings fail to work. If you find out those settings have changed according to the information provided by your MPNO, or you have settings from your MPNO that is not on our Operators list, please notify us so we can update our program.

Click on **Select** to find and choose the drive where the SD card is placed. For example, the SD card is inserted on Drive F:\. Then you select only F:\. **DO NOT choose any folder under F:\.**

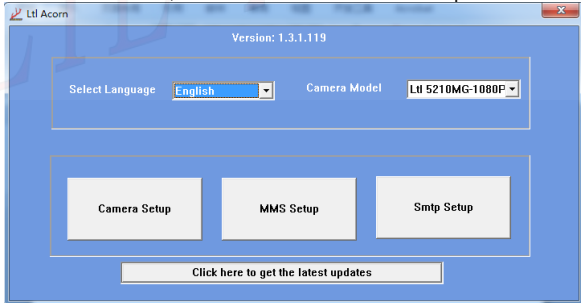
Click on **Generate**. A message window pops out as below. Click **OK**. A file named **setup.dat** has been created and saved in the root directory of the SD card.



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

2.6 Set up SMTP Function on PC

On the main menu, Select Ltl 5210MG-1080P and press **SMTP Setup**.



Display below:

Ltl Acorn 5210 1080P

SmtP Mode SmtP Status

Picture No./day Note: 0=Unlimited

Country Operator

SMS Remote Control Hour

GPRS Setting

APN

Account

Password

Sender

SmtP Server

Port

Sender Email

Password

Recipients

Email01

SMS

Phone No

Select

Generate Exit

For the camera to send pictures, SMTP status must be set to "VGA". "SMS" indicates sending texts and "OFF" means nothing will be sent.

In **Auto** mode, first select country and operator. In **Manual** mode, you fill in **APN / Account / Password**. This parameter you can find from your mobile operator. Fill in your **E-mail server / port / sender E-mail / Password / Recipients E-mail**

and **SMS Phone NO.**

Smtp Mode	Auto	SMTP Status	VGA
Picture No./ day	0	Note: 0 = Unlimited	
Country	China	Operator	China Mobile
SMS Remote Control	Off	H	
GPRS Setting			
APN			
Account			
Password			
Sender			
Smtp Server			
Port			
Sender Email			

Under SMS remote control, the value ranges from “0” to “off” and denotes the frequency the camera wakes up to either receive or execute the commands. “0” indicates that the camera will wake up and search for commands automatically every 10 minutes, and send feedback once it receives them. “1~24” indicates search intervals of 1~24 hours. “off”, on the other hand, means SMS remote control is turned off. This design with the waking intervals helps conserve battery.

Select value based on your own need. To learn more about SMS remote control please refer to **2.7 SMS Remote Control & Table of Command Code**, you can set it up by MMS or SMTP Setup)

Click on **Select** to find and choose the drive where the SD card is under. (For example, F:/)

Click on **Generate**. A message window pops out as below. Click **OK**. A file named **smtp.dat** will be created and saved in the root directory of the SD card.



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

2.7 SMS Remote Control & Table of Command Code

In order to communicate with your camera via text message/SMS, you need to format your texts in a certain way, essentially speaking the same language as the camera.

- All the SMS commands should start with “LTL(ltl)” and end with “AA(aa)”.
- Between “ltl” and “aa”, insert the specific instructions you want the camera to follow. You can choose to give one instruction at a time, but it saves time to combine them together.
- A specific instruction is made up with four parts in the following sequence: a two-digit order code, an asterisk (*), a code value (a number or a combination of numbers and letters), and lastly a pound/hash sign (#). See the “Example” column for illustrations.
- Both capitalized and non-capitalized letters can be used in a command.
- Do NOT leave any spaces between any of the letters and symbols.
- Do NOT put a comma or a period at the end of the text. Again, a command starts with “ltl” and ends with “aa”. Do NOT include any quotation marks in a command; they are used here just for explanation purposes.
- The maximum for text messages is 60 bytes. If you want to send multiple commands, please do so in separate texts.

An example of a command would be **LTL01*0#02*2#06*S30#07*10A3Z#60*1#AA** Which asks the camera to 1) be in camera mode and take only pictures, 2) set image size to 1.3MP, 3) take pictures with an interval of 30 seconds, 4) turn on serial number and set it to “0A3Z”, and 5) immediately take a picture and send it to you.

- For SMS remote control setting, different value comes with different extra power consumption:“0” the highest and “off” zero.
- If your phone number is put in properly during setup, once the camera receives the command, it will send you a text message saying “Message format OK”. If the code 60 function is turned on, the camera will also send a picture that it takes after executing the command along with the text message.

Note: When using order code 12 and 13 to set additional phone numbers or email addresses, make sure to fill in code 12 first before 13. The number or e-mail added by using code 13 will not be accepted if the code 12 slot is empty.

Command Code	Code Value	Example	Meaning
01	Mode: camera(0), video (1), camera+ video (2)	01*1#	Set to video mode
02	Image size: 12MP (0), 5MP (1), 1.3MP (2)	02*1#	5MP
03	Video size: 1080P(0), 720P (1), VGA(2), QVGA(2)	03*1#	720P
04	Number of Pictures per Trigger: one photo (0), two photos (1), three photos (2)	04*2#	3 photos
05	Video length: 1-60 for the number of seconds	05*59#	59 seconds
06	Interval: beginning with S(s) represents Second, with M (m) represents minute 1-60 indicates different value	06*s30#	Interval:30s
07	Serial Number: off (0), on (1), take camera setting for reference, numbers and letters	07*1AbCD#	Serial number: ABCD
08	PIR sensitivity level: Low (0), normal (1), High (2), off (3)	08*1#	normal
09	Time Stamp: off (0), on (1)	09*0#	off
10	Side PIR: off (0), on (1)	10*1#	on
11	MMS status: off (0), VGA (1), SMS (2)	11*2#	SMS

12	Phone No 2 or Email: Maximum 48 symbols	12*1988888 8888#	Phone number 19888888888
13	Phone No 3 or Email: Maximum 48 symbols	13*info@ltla corn.cn#	Email info@ltlacorn.cn
14	Additional Email: Maximum 48 symbols	14*info@ltla corn.cn#	Email info@ltlacorn.cn
15	Maximum number of photos sent by camera per day. 0 means no limit	15*0#	Camera sends as many pictures as it takes.
16	Time lapse: off (0), on (1), Time indicated by numbers. Example: 1h 30m 0s becomes 01 30 00.	16*1013000 #	The camera takes a picture every one and a half hours whether triggered or not
17	Timer : off (0), on (1). Time indicated by 2 digits, Example: 13h 30m becomes 13 30.	17*1133015 30#	Camera functions only between 1:30pm ~3:30pm when triggered.
18	Timer 2: off (0), on (1). Time indicated by 2 digits, Example: 13h 30m becomes 13 30.	18*1133015 30#	Camera functions only between 1:30pm ~3:30pm when triggered.
19	SMS command receiving time. 0: every 10 minutes; 1-24: every 1 to 24 hours; 25: off	19*2#	Camera wakes up every two hours and search for text message commands.
60	Whether or not the camera takes a picture and sends it back to you once text commands are received: off (0), on (1) This code works under CAMERA and VIDEO and CAMERA + VIDEO Mode.	60*1#	Camera takes a picture and sends it back upon command.

Note: Order 12 and 13 are ineffective in SMTP mode

2. 8 View Local MPNO name and Signal Strength on TFT Screen

You can find your local Mobile Phone Network Operator's name and the signal strength on the TFT display screen on the camera, just like you can see the reception on a regular cell phone.

Install the SIM card and 8 AA batteries. Switch to the TEST position. If you like, you can connect the camera to a TV, using the provided TV/AV IN cable. Wait for up to 1 minute or until you hear of a short beep, and then you will be able to see the MPNO symbol and the signal strength on the TV. If you don't have access to a TV, wait for 1 minute or until you hear a short beep. Then you can see the information on the TFT display.

Note: During the process, slightly move the camera to make sure the LED light in the front keeps flashing. If you wait too long (over three minute), the screen may power off to save battery. If that happens, you'll need to switch to OFF and then TEST to start over.

Mobile Operators **Signal Strength**



Signal strength can be full 6 columns. To make the MMS module to work, at least two bars are required. If you only see one bar, the reception is too weak for the MMS to function.

Some U.S. AT&T customers will see a six-digit number (310410), instead of the operator's symbol, next to the signal bars. It is normal. If a code other than the MPNO symbol shows up on the screen, it indicates something is wrong. Specifically,

- **SIM:** No SIM card or installed incorrectly.
- **CSQ:** No signals.

- **CREG:** SIM card is password-protected, or deactivated due to low balance in the account, or not able to register with the GSM system.
- **CGREG:** Not able to register with GPRS network.
- **COPS:** Searching for the MPNO of the SIM card. Once found, the operator's symbol and the signal strength will show on the display.

If **No MM1** shows on the screen, it means the MMS-module is not found or not installed. If your camera is a standard Model Ltl-5210MC, then it is OK because your camera is not equipped with MMS-module. If it is a MMS Model Ltl-5210MG, you can take out from the battery box one of the batteries and replace it and re-check the MPNO signal by following the aforementioned steps.



2.9 Camera Working with MMS

When all of the following conditions are met, the camera should start sending pictures to your cell phone and/or e-mail account. If you encounter any problems, it is highly recommend that you go through this list first.

- The camera is ON and functional. The SD card has enough space. The 8 AA batteries are installed matching the polarity symbols on the camera and has enough power capacity. The camera is in Cam mode or Camera + Video mode and not Video mode.
- SIM card is installed. The MMS/messaging service is activated (some MMS services need pre-paid balance in the account.) The SIM card is not password-protected.
- The signal is sufficiently strong in the field. The recipient's phone number and/or email account is entered correctly. It is recommended that you take the receiving phone with you and perform a test on site.

- The Timer function is OFF. Or if you have the Timer ON, make sure you are in the specified time period when expecting incoming MMS pictures.

MMS Status	VGA
	Off
Note: 0 = Unlimited	VGA
	SMS

- Make sure MMS Status is not set to OFF.

Picture No./ day	0	Note: 0 = Unlimited
------------------	---	---------------------

- Make sure that the setting is "0", or the daily limit has not been reached. If the daily limit has been reached, you can reset that number on your computer or on the TFT screen.
- The camera is stationary while sending MMS pictures.

2. 10 Enter Test Mode

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

- First position the camera at proper height aiming at 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 blue, it means that the position you are right now can be detected by one of the side Prep PIR sensors. If the Motion Indicator flashes red, it indicates that particular position is captured by the main PIR sensor.

By conducting this test, you can identify the best placement when mounting and aiming the LTL ACORN camera. In general, we recommend placing 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 twigs. The ideal direction to aim at is the North or South. Also, remove any twigs close to the front of the camera.

2. 11 Enter Live Mode

Switch camera to the ON position to enter the live mode. After

entering this mode, the red indicator light on the front of the camera will flash for five times. When the red light goes out, the camera enters the automatic shooting state. It will immediately take pictures or record videos when person or animal enters the area of the PIR sensor.

The camera with the double area remote infrared sensing technology and is able to be triggered and powered on before the object entering the shooting area, it will shoot immediately when the object enters the shooting area. It makes the camera is able to capture the objects which passing by quickly and object would be in the centre of the picture. If, however the object roams away after a while and never alert the main sensor, the camera will power off and resume standby mode, wait to activate to shoot till the object pass by again.

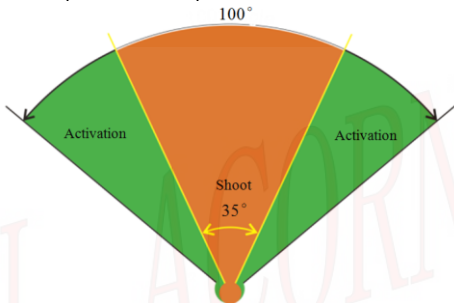
Caution: To avoid potential false triggers due to temperature and motion disturbances, please do not aim the camera at a heat source (e.g.: the sun, heated stone or metal) or nearby tree branches and twigs. The ideal direction to aim at is the north and the open place without heat source. Also, remove any twigs close to the front of the camera.

2. 12 Advantages of Prep Sensors

In order to extend the working hours of the camera battery, our company has developed the low power dual PIR sensor based on the original dual PIR infrared sensor. The low power dual PIR sensor optimizes the accuracy and anti-jamming capability of the camera, avoiding the mistaken shot and missed shot, and reducing the camera's standby current, moreover, it will automatically adjust the sensitivity of PIR sensing. Camera will enter Sleep mode when it is working, with only the PIR sensor working, at this time, the whole camera only consumes ultra low current at 60~180uA. When the person or animal is detected by the PIR sensor, the camera will automatically start and shoot photo, then enters Sleep mode again after shooting as settings. The period from animal or human entering PIR sensing area to shooting photo, we call it as trigger time. The different brand hunting camera on the market may has different definition of their trigger time and sensing time to us, actually is from 1 to 5 plus seconds, but they may claim only 0.3 seconds. The shorter of the trigger time, the higher of the possibility to capture the animal.

With the unique side prep PIR sensors design, our LTL ACORN cameras reduce the trigger time greatly. The combination of the two

side prep sensors and the middle main PIR sensor comes up with a 100 degrees induction range, usually the animal will enter this large induction range from the two sides of camera, then camera will start immediately. The induction angle of middle PIR sensor almost equals to the shooting angle of the lens, if the animal continue to enter to the induction scope of middle PIR sensor, camera would take photos immediately, which trigger time is less than 0.2 seconds, and it is the actual sensing time of our double PIR technology, usually the animal is in the middle position of the photo which is taken at this time.



There is one condition that the animal only enters the induction scope of side prep PIR sensor but not middle PIR sensor, camera would turn off after 5 seconds as it's out of the camera lens shooting scope.

Note: The side PIR function is only available for the cameras that are not wide-angle lens.

2. 13 Brightness adjustment of night picture

Switch the camera to TEST mode and enter Camera mode, press ▼ key to adjust the brightness of night picture which will apply to ON mode, it's good to avoid overexposure when the object is too close to the camera and brightness is high.

Three settings of brightness are available for night picture, **High**, **Medium** and **Low**:

High: the highest brightness of night picture between three settings.

Medium: the brightness is slightly weaker than High settings.

Low: the lowest brightness of night picture between three settings.

Default setting of the brightness of night picture is **High**. When adjust brightness in the TEST mode, first press ▼ key to check the present status of the night picture brightness, press again to adjust the brightness to **High**, **Medium** or **Low**, the camera will automatically save the brightness setting you selected, exit the brightness setting in 4 seconds if no operation.

2. 14 Connect to PC

You can connect the camera to PC with the USB cable to enter storage mode to read and write the files in SD card inserted in camera.

First switch camera to TEST mode, then connect camera to PC with USB cable, the camera enters storage mode when it starts and the PC is able to read and write the files in SD card inserted in camera.

Advanced Settings

















The LTL ACORN trail camera comes with preset manufacturer settings. You can change the settings to meet your requirements, by manually operating on the camera or programming on your computer.

3.1 Parameter Settings

Switch to the **TEST** position to enter the Test mode. In this mode you can take pictures or video clips like using a regular digital camera, or enter the Menu to set up parameters.



Figure 3-1

- 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 LCD 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.
- Press “MENU” key to enter/exit the Camera Setup menu. .Press ,  to move the marker.

- Press ◀ key to toggle the language.

List of Parameters

Parameter	Settings	Description
Mode	Camera, Video, Cam+Video	Select to take photo or video clips. In Cam+Video mode, camera takes photos first then video.
Format	Enter	All files will be deleted after formatting the SD card. Highly recommended to format the SD card on the camera at the first using. Caution: make sure the important files on the SD card are backed up before formatting.
Photo Size	5MP, 12MP , 1.3MP	Select desired resolution for photo from 2 to 12 megapixels. Higher resolution produces higher quality photo, but occupies more space and slightly affects the shooting interval.
Video Size	(1080P)1920x1080 (720P)1280x720 (VGA)640x480 (QVGA)320x240	Higher resolution produces better quality of video, but occupies more space of the SD card.
Set Clock	Enter	Press OK key to set up date and time.
Picture No.	01 Photo , 02 Photos, 03 Photos	Select the number of burst shooting at per trigger.
Video Length	AVI 10s, optional from 1s to 60s	Select the duration of recording a video.
Interval	1 Min, optional from 1 second to 60 minutes	Select the length of time that the camera will wait from when the last picture was taken and written on the SD card, to when it responds to any new triggers. It prevents the SD card from filling up with too many redundant images of the same object, save power and SD card space.

<p>Sense Level (Sensitivity)</p>	<p>High, Normal, Low, Off</p>	<p>Select the sensitivity of the PIR sensor. The PIR would stop sensing with Off setting (usually used in time lapse mode when the sensing shooting is not needed). Higher sense level with longer sensing distance, but easier to be interfered. The Normal/Low setting suits outdoors while the High setting suits indoors or environment with higher temperature.</p>
<p>Time Stamp</p>	<p>On, Off</p>	<p>Select On if you want the camera ID, temperature, moon phase, date & time to be imprinted on photo. Notice: The temperature shown is internal temperature of the camera, the camera will heat at work, it makes the difference between internal and external temperature, and the difference will be small if the camera does not work long time in the field.</p>
<p>Timer1</p>	<p>Off, On</p>	<p>Select On and the camera will automatically work within a specified period of the day. For instance, if the starting time is set at 7:00 and the ending time at 9:00, the camera can be triggered from 7:00 a.m. to 9:00 a.m. Outside this period the camera will not be triggered even animal passes by.</p>
<p>Timer2</p>	<p>Off, On</p>	<p>Select On and the camera will automatically work within a specified period of the day. For instance, if the starting time is set at 10:00 and the ending time at 11:00, the camera can be triggered from 10:00 a.m. to 11:00 a.m. Outside this period the camera will not be triggered even animal passes by.</p>

Password Set	Off, On	Set up a password with 4 digits to protect your camera from unauthorized users with On setting. Notice: Please take note and remember the password well, or the camera should be returned to factory to unlock.
Serial No.	Off, On	Select On to assign an ID for the camera with 4 digits and/ or alphabets, 0~9 and A~Z, the ID will be imprinted on photo with time stamp On.
Time Lapse	Off, On	Select On, you can set the time period of automatic cycle shooting, and the camera will automatically take pictures/videos without triggering according to the time period set. This feature is useful for shooting cold-blooded animals or observing the growth of plants. This function can be used with timer settings.
Side PIR	Off, On	The default setting is On. The two side PIR sensors provide wider sensing range, activate and power on the camera before game entering shooting area so as to catch the game at quick speed when it enter shooting area, especially for those games move fast. Note: This menu is only applicable to the cameras that are not wide-angle lens.
MMS Status	Off, VGA, SMS	Default setting is Off. Choose VGA or SMS to turn on the function. VGA: the camera will send 640x480 picture. SMS: send text (date, time and serial no.)
Phone No.	On	One mobile number could be set on the camera only, please refer to the section 3.4 for setting more mobile number or E-mail account. 11 digits

		is max limitation for mobile number. The daily max limitation of sending MMS could be set on menu too, 00 stands no limited , 1~99/Day stands 1~99 photo(s) could be sent daily.
Recycle	Off ,On	Choosing On enables the SD card overwrites function, which automatically deletes the oldest files when the SD card becomes full to make room for the latest pictures or videos.
TV Mode	NTSC, PAL	Set the TV system of the TV out.
Version	Enter	Show the software version of the camera.
Default Set	Enter	Press OK key to return all settings to default setting

3.2 File Format

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

In the **TEST** mode, you can use the provided USB cable to download the files to a computer. Or you can insert the SD card into 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.

Ltl-5210 Series Products

Ltl-5210 series cameras contain Ltl-5210MG and Ltl-5210A.

4.1 Ltl-5210 series model:

Ltl-5210MG

(Ltl-MM1 MMS-module battery box)

Ltl-5210MC

(Standard battery box)

Ltl-5210A

(Standard battery box)



Ltl-5210MG



Ltl-5210MC



Ltl-5210A



Ltl-MM1 MMS-module battery box



Standard battery box

IMPORTANT INFORMATION

5.1 Power Supply

The working voltage of Ltl-5210 Series is up to 12V. The 4 AA batteries in the camera main unit, 4 or 8 AA batteries in the battery box and the external power source form a four-path parallel circuit. Each path is isolated and does not charge or discharge each others. In addition, the camera can be powered by an external solar panel, Ltl-SUN, to extend working time in the field.

5.2 SD Card

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

5.3 Auto Adjustment on Video Length

To extend battery life, we strongly recommend using 8 AA alkaline batteries when operating the camera in Video mode or Cam+Video mode. Compared to similar products on the market, our camera takes thirty percent more video clips. Moreover, when battery power gets low, our camera automatically shortens the video length so as to take more clips of more events. As a result, the total number of video clips doubles, even triples that of other products, which provides users with more useful records.

Due to the large power consumption during the night video shooting, our camera LED current would drop automatically after the video exceeds 10 seconds, the brightness would also become darker at the same time.

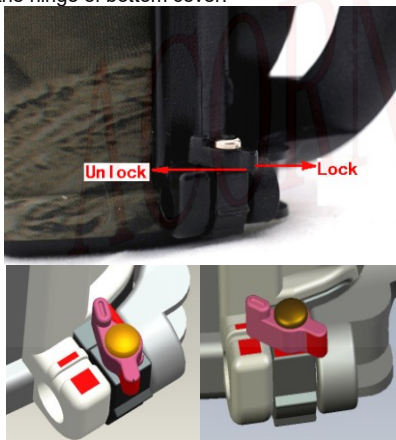
Note: although the product can work under -30°C, but the battery capacity would drop greatly under the cold environment, the video record would also decrease accordingly.

5.4 850nm and 940nm IR LED

There are two types of IR LED on the Ltl-5210 series camera: 850nm and 940nm. For Ltl-5210 series camera, the former provides up to 75 feet/ 25m flash range whereas the latter up to 39 feet / 13m flash range. The benefit of 940nm IR LED, however, is it emits black flash that is invisible in the dark.

5.5 Mount on Tripod

The camera can be mounted on a 1/4" tripod. But please note and ensure the knob of bottom cover is locked in position to avoid the breakage of the hinge of bottom cover.



5.6 FAQs on MMS Function

- *I set up a new receiving phone number. But the MMS pictures are still being sent to the old number. What should I do?*

Switch the camera OFF. Wait for at least two minutes. Then switch it ON.

Or, switch the camera OFF, take all battery out of the camera, and then reinstall it.

- *Why did it take so long to receive the MMS pictures / why didn't I receive any MMS pictures?*
The most common reason is that the signal was too weak. Try different spots. Or the batteries ran out.
- *I programmed the camera to constantly take pictures. But some pictures were not sent to my phone. How?*
The Ltl-5210 series camera is designed to constantly send MMS pictures to the recipient's phone. However, if the signal is too weak, it may not work stably.
- *Why did I receive some pictures with partial image, and some with red "X"?*
The camera was in motion when sending pictures. Or the signal was unstable. Besides, the SD card may be damaged.
- *I was pretty sure the battery was quite low. But I didn't get any text alert. Why?*
The camera "assumes" you install new batteries when you start the camera. It tracks the usage of the batteries and texts you when the power is low. However, if you replace the present batteries with some "used" ones at a point before receiving a text alert, the camera will get "confused" and not send a text alert later on.
- *My cell phone shows strong signal. Why does the display on the camera not show the MPNO's name or signal?*
Take all of the batteries out from the camera, and then reinstall it. Switch to TEST mode. Wait for about 45 – 60 seconds, and then check the signal on the LCD display.
- *I just installed the upgrading firmware. Do I need to set up the camera and the MMS function?*

Yes. After you upgrade the camera, all previous settings of the camera and the MMS are gone. You need to run the **setup.exe** file on the enclosed CD or visiting the LTL ACORN national distributor's website to download to set up the camera again. Refer to **2.4 Set up Camera on PC** and **2.5 Set up MMS Function on PC**.

5.7 Battery Level Indication

The camera shows the battery level on each MMS picture. When the battery level is high, a code **B3** shows on the bottom left corner of the image. After the battery level drops, the code changes to **B2**. When the battery level gets very low, the code changes to **B1**, which means it's time to change the batteries. So you can decide from home when to change batteries.

You will receive a text alert message from the camera when the battery level is low.

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 in the SD card to your computer.
- Insert SD card into the camera and load batteries.
- Format the SD card.
- Obtain the firmware from LTL ACORN's website <http://www.ltlacorn.cn/about/downloaden.html> (Download→Classification→Software→Ltl-5210), or from authorized distributor.
- Retrieve the SD card and insert it into the computer (SD card reader may be needed). Copy and paste the FW5210.bin and ENA.BIN file to the root directory of the SD card, both files are necessary.
- Retrieve the SD card and lock it, insert it into the camera. Switch camera to TEST mode, till the "UPDATE..." shown and camera is off. Don't turn off or disconnect power before blank screen, otherwise it might be upgraded unsuccessfully and need to return factory for repair.
- Switch the camera to the OFF mode, then retrieve SD card and switch the SD card to the normal position to unlock it. Enter MENU, navigate the marker to DEFAULT SET, and press OK.
- Re-format the SD card on the camera. The upgrade will have been completed.

Attention: A firmware upgrade program for one model is not compatible on other models. In other word, an upgrade for Model Ltl-5210M only applies to that model. If a camera is accidentally upgraded by running 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

Model	Parameters	Lti-5210A	Lti-5210M C	Lti-5210MG
Image Sensor	5 Mega Pixels Color CMOS	Yes	Yes	Yes
Lens	F=2.2; FOV=55°; Auto IR-Cut	Yes	Yes	Yes
IR Flash	850nm	25meters / 75 feet	25meters / 75 feet	25meters / 75 feet
	940nm	13meters / 39feet	13meters / 39feet	13meters / 39feet
LCD Screen	2.4";480(RGB)*234DOT; 16M Color	Yes	Yes	Yes
Operation Keypad	6 Keys	Yes	Yes	Yes
Memory	SD Card (8MB ~ 32GB)	Yes	Yes	Yes
Picture Size	12MP(4000X3000) 5MP(2560X1920) 1.3MP(1280X960)	Yes	Yes	Yes
Video Size	1920x1080:15 fps; 1280x720: 30fps; 640x480: 30fps; 320x240:30fps;	Yes	Yes	Yes
PIR Sensitivity	High/Normal/Low/Off	Yes	Yes	Yes
PIR Sensing Distance	18meters (Below 77°F / 25°C at the Normal Level)	Yes	Yes	Yes
Prep PIR Sensing Angle	Left and right light beams form an angle of 100°;	Yes	Yes	Yes
Main PIR Sensing Angle	35°	Yes	Yes	Yes

Operation Mode	Day/Night	Yes	Yes	Yes
Trigger Time	0.8 Seconds	Yes	Yes	Yes
Trigger Interval	0sec. - 60min; Programmable	Yes	Yes	Yes
Shooting Numbers	1~3	Yes	Yes	Yes
Video Length	1-60sec.; Programmable	Yes	Yes	Yes
Camera + Video	First take Picture then Video	Yes	Yes	Yes
Playback Zoom In	1~16 Times	Yes	Yes	Yes
Time Stamp	On/Off; Include serial No., temperature and moon phase, date and time.	Yes	Yes	Yes
Timer1	On/Off; Programmable	Yes	Yes	Yes
Timer2	On/Off; Programmable	Yes	Yes	Yes
Password	4-Digit Numbers (0~9)	Yes	Yes	Yes
Device Serial No.	4 digits and alphabets (0~9, A~Z)	Yes	Yes	Yes
Time Lapse	On/Off; 0 Second ~ 23Hours59Min59Sec ; Programmable	Yes	Yes	Yes
Beep Sound	On/Off;	Yes	Yes	Yes
SD Cycle	On/Off;	Yes	Yes	Yes
MMS Options	OFF; VGA = 640x480; SMS = Text Msg.; Programmable	N/A	Upgradeable	Yes
MMS Numbers	"0" = Unlimited; 1 ~ 99/Day	N/A	Upgradeable	Yes

MMS Phone No.	1 ~ 3 Phone Numbers	N/A	Upgradeable	Yes
MMS E-mail	1 ~ 3 E-mail addresses	N/A	Upgradeable	Yes
SMTP E-mail	Sender :1 E-mail address Recipient :1 E-mail address	N/A	Upgradeable	Yes
Low-Battery SMS Alert	"Low battery " text alert sent	N/A	Upgradeable	Yes
language setting	Change Country Can Setting Language	Yes	Yes	Yes
Power Supply	8xAA;	Yes	Yes	Yes
External DC Power Supply	Plug Size: 4.0mmx1.7mm 6 ~ 12V (2 ~ 1A)	Yes	Yes	Yes
Stand-by Current	60~180uA	Yes	Yes	Yes
MMS-module Stand-by Current	30uA	/	/	Yes
Stand-by Time	1 year (8xAA)	Yes	Yes	Yes
Auto Power Off	Auto power off in 3 minutes if no keypad input	Yes	Yes	Yes
Power Consumption	180mA (+520mA when 850nm IR LED lights up); 180mA (+620mA when 940nm IR LED lights up).	Yes	Yes	Yes
Low Battery Alert	4.2~4.3V	Yes	Yes	Yes
Interface	TV out; USB; SD Card Slot; 6V DC External	Yes	Yes	Yes
Mounting	Strap; Tripod	Yes	Yes	Yes
Ingress Protection	IP54	Yes	Yes	Yes

Operation Temperature	-45 ~ +70°C	Yes	Yes	Yes
Operation Humidity	5% ~ 95%	Yes	Yes	Yes
Certificate	FCC & CE & RoHS	Yes	Yes	Yes

Appendix II: PACKAGE CONTENTS

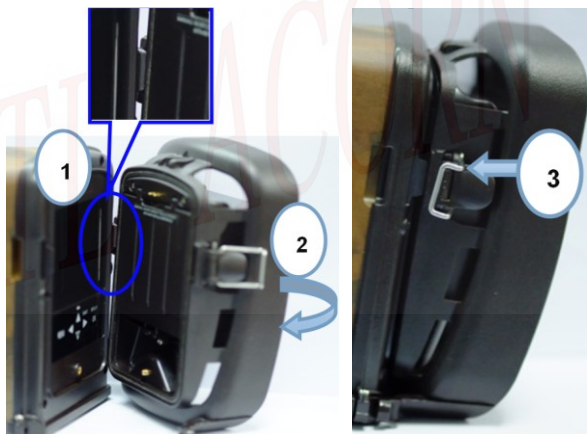
Part name	Quantity Ltl-5210A	Quantity Ltl-5210MC	Quantity Ltl-5210MG
Digital camera	1	1	1
Standard battery box	1	1	0
Ltl-MM1 MMS-module battery box	0	0	1
TV AV IN cable	1	1	1
USB cable	1	1	1
Strap	1	1	1
External DC cable (optional)	1	1	1
CD	0	1	1
Warranty Card	1	1	1
User's Manual	1	1	1

Appendix III: Install Battery Box

Load 4xAA battery in battery box.



Install the battery box to camera unit as below:





Unload the batteries as below:

1. Pull the drawstring to unload batteries.

