



**MK CONTROLS**

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*Please note: MK Controls Inc. is not liable for any damage or injury associated with the use of the Lightning Bug™. Lightning Bug™ is a trademark of MK Controls, Inc.*



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## **Introduction:**

The Lightning Bug™ 'automates' the process of taking pictures of lightning (or other similar events\*\*) by sensing changes in the infrared light, and snapping your camera shutter at exactly the right moment.

To help you get the most out of your purchase please take a few minutes to read this manual, or at the least skim over it for the good parts. If you still have questions about using your Lightning Bug™, feel free to email our technical support team at [support@mkcontrols.com](mailto:support@mkcontrols.com). We'll be happy to assist.

\*\* The Lightning Bug™ can be used to take photos of fireworks, cannon shots, virtually anything that produces a fast-acting rise of light formed by a high-temperature event.



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## **Features:**

- **Water resistant overlay with soft-touch controls protects the Lightning Bug™ from inclement weather, and ensures that it won't be accidentally turned on or off.**
- **Highly visible orange LED display shows at a glance the current configuration settings.**
- **Bright yellow LED flashes when the unit detects an event within its field of view.**
- **Allows testing of your camera connection.**
- **26 Levels of sensitivity adjustment.**
- **Allows limiting of frames per second – can be adjusted from a 1 to 10 FPS.**
- **Retains user settings, even with battery removed.**
- **Incorporates power saving features to prolong battery life.**
- **Allows removal and replacement of battery without removal from your camera.**
- **Attaches to your camera via an industry standard hot-shoe mount.**
- **Cables are available to fit a wide range of cameras from a variety of manufacturers.**
- **Allows synchronizing of an external flash unit for unique 'foreground-fill' shots.**
- **Provides electrical isolation between the unit, and your camera via MOSFET technology.**
- **Three simple buttons control all of the features.**
- **Power On Self Test (POST) insures that the unit is operational every time you turn it on.**



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## Specifications:

<b>Front overhang from center of camera shoe:</b>	<b>3.51" / 89.15 mm</b>
<b>Rear overhang from center of camera shoe:</b>	<b>0.74" / 18.80 mm</b>
<b>Overall Height not including shoe mount:</b>	<b>1.13" / 28.70 mm</b>
<b>Overall Height including shoe mount:</b>	<b>2.10" / 53.34 mm</b>
<b>Overall Length:</b>	<b>4.25" / 107.95 mm</b>
<b>Overall Width:</b>	<b>2.60" / 66.04 mm</b>
<b>Weight without battery:</b>	<b>2.96 oz / 83.9 g</b>
<b>Weight with battery:</b>	<b>4.48 oz / 127.0 g</b>
<b>Camera connector port~:</b>	<b>2.5mm Stereo</b>
<b>Battery*:</b>	<b>Standard 9 Volt</b>

\* MK Controls recommends either an Alkaline or General Purpose battery. Rechargeable Lithium, NICAD or NiMH batteries are not recommended.

~Please contact MK Controls Technical Support if you intend to make your own cables for more information.



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## **Battery Installation/Removal:**

The Lightning Bug™ case incorporates a battery compartment at the rear of the unit. A small latch unlocks a removable battery compartment door.

A standard 9 Volt battery is required for operation. To insert it, gently pull the 9V connector wires out from the compartment and attach a battery. The leads will only allow the battery to be connected in one direction, and snap in place.

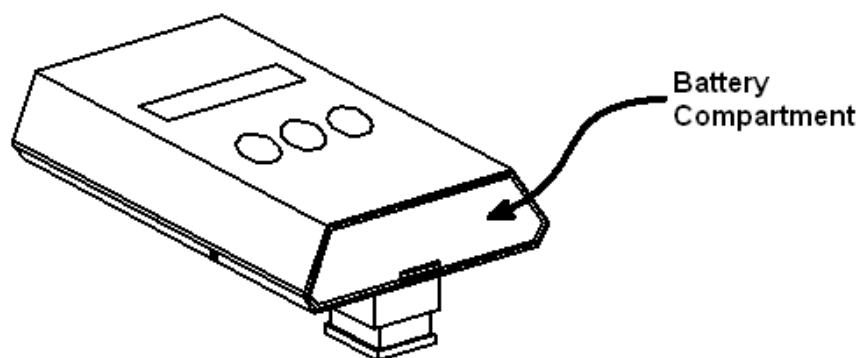
After installation of the battery, the compartment door should be replaced – it snaps into position with an audible click.

To remove the battery, reverse the process.

Please note:

MK Controls does not recommend leaving the battery in place during long periods of disuse. There is a slight current draw whenever the battery is inserted in the unit, and after a period of months, the battery may no longer have sufficient operating power. In addition, batteries can, on occasion, leak electrolytes. This fluid is corrosive, and can damage the circuitry of the Lightning Bug™, in addition to the battery connector. The Warranty does not cover damage due to a leaking battery.

Rechargeable batteries are not recommended for use in the Lightning Bug™ due to the current consumption characteristics of the circuitry during operation.



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## Camera Connection:

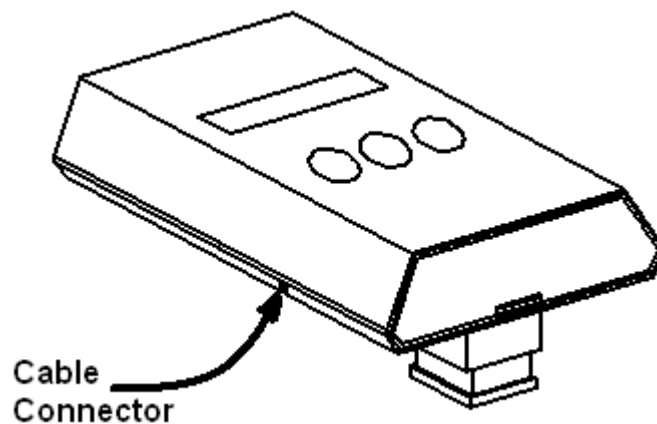
Each Lightning Bug™ purchased includes one cable for connection to your camera. Additional and/or replacement cables are available from MK Controls, or your chosen reseller.

The camera connector has a 2.5mm stereo male plug on one end, and the appropriate connector for your specific camera on the other. The 2.5mm female socket is located at the lower right on the unit. When inserting the cable, please make sure it is fully seated for proper operation.

The camera side connector is specific for the model camera you're using – please follow manufacturer's recommendations for insertion of this connector.




When the Lightning Bug™ is powered on, it will automatically activate your camera's meter (on cameras that support this feature). Turning the unit 'off' automatically will release the meter.

The Lightning Bug™ is designed to fit an industry standard shoe mount, and is self-explanatory.



## Operation:

The Lightning Bug™ has three ‘soft-touch’ buttons that are used to operate all of the features:

-  On/Off
-  Decrease Sensitivity
-  Increase Sensitivity

**On/Off:** Press and hold this button for approximately 2 seconds turns the Lightning Bug™ on or off. When the unit is first turned on, it will execute a Power On Self-Test (POST), which will light up all of the LED’s and perform an internal function verification. If during the POST you notice that any LED’s fail to illuminate, please contact MK Controls Technical Support for troubleshooting your unit.

**Decrease Sensitivity:** Tap this button to decrease the sensitivity of the Lightning Bug™. When this button is pressed, the bargraph display (orange LED’s) will be show the current sensitivity level. There are a total of 26 levels of available sensitivity\*\*. The factory default setting is level 12.

**Increase Sensitivity:** Tap this button to increase the sensitivity of the Lightning Bug™. When this button is pressed, the bargraph display (orange LED’s) will be show the current sensitivity level. There are a total of 26 levels of available sensitivity\*\*. The factory default setting is level 12.

**\*\* Determining the sensitivity level:**

The orange LEDs will always display the current sensitivity level when the unit is powered on, 1 being the least sensitive, and 26 being the highest. See Table 6.1 for more details.



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**Additional Features:**

**Adjust Frames Per Second:**

You can adjust the maximum~ number of frames per second that the Lightning Bug™ will cause a shutter trip. This can be adjusted from as few as 1 per second, to as many as 10 per second. The factory default setting is 4 FPS.

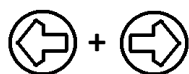
To adjust the FPS, the unit must be powered on. Simultaneously press the On/Off Button, and either the Decrease or Increase Sensitivity Buttons and hold them for approximately 1 second.



The yellow detection light will flash at a rate of approximately 2 times per second when this mode is correctly entered. Use the Sensitivity Buttons to decrease or increase the number of frames per second. The orange LED display will be updated to show the current setting. If no keystrokes are detected within approximately 3 seconds, the FPS setting is stored, and the unit returns to the normal operating mode (the yellow detection light will cease to flash).

**Verify Shutter Trip:**

You can verify that the unit is properly tripping your cameras shutter, and also verify the FPS rate, by holding down both the Decrease and Increase Sensitivity Buttons simultaneously.



While holding these buttons, the Lightning Bug™ will continuously trip your camera shutter at the current FPS setting~. Release both buttons to return the unit to the normal operating mode.

~ The Lightning Bug™ is not capable of exceeding your camera capacity for frames per second – this setting reflects the number of times per second that the unit will ‘attempt’ to trip your shutter.



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**Displayed Information:**

The orange LED display reflects the current sensitivity level, or when in FPS adjust mode, the frames per second (see Table 6.1). When adjusting the sensitivity, all the LED's to the leftmost side will illuminate to allow easier visualization of the setting. Within approximately 1 second of no further adjustments, the display will return to the normal display mode, as shown in Table 6.1.

The yellow LED (shaped like a lightning bolt) illuminates whenever the unit has detected an event and has tripped the shutter. When adjusting the FPS, this LED flashes at a rate of approximately 2 times per second.

**Operating Information:**

To operate the Lightning Bug™, make sure that both the unit, and your camera are powered off. Attach the unit to your hot-shoe, and install the shutter cable. You can then power both units on – either can be turned on first.

Point your camera, and the let the Lightning Bug™ do the rest!





## **Photography Tips:**

### **Camera Settings Day or night:**

Set your lens to manual focus. Set the lens on the infinity setting  $\infty$  or use the hyperfocal method to ensure enough depth of field. If you are unaware of how to use hyperfocal focusing, the internet is a valuable resource; there is ample information available.

### **For daytime use:**

Set the camera to aperture priority (A mode) and set the aperture to f16 or f22. The camera will calculate the proper shutter speed. Set the Lightning Bug™ to match the frames per second (FPS) that the camera is using (see your camera manual for more information). This will allow the Lightning Bug™ to drive the camera quickly in case of repeated lightning strikes. In the right conditions with a fast camera, you can capture up to 10 lightning strikes per second. You can increase or decrease the sensitivity as the conditions dictate.

### **For nighttime use:**

Set the camera to Manual Mode (M mode) and set the aperture to f16 or f22. Set the shutter speed to 1/4 second or longer. Set the Lightning Bug to match the frames per second (FPS) that the camera is using (See your camera manual for more information). You can increase or decrease the sensitivity of the Lightning Bug™ to suit the conditions. Be sure to experiment with shutter speeds.



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## **Synchronize External Flash:**

The Lightning Bug™ allows integration of external flashes that are synchronized with your shutter trip. This can be used for unique foreground 'fill' effects, by lighting up elements in the near field.

Using a standard PC cable, attach your external flash device to the PC connector on the Lightning Bug™ hot-shoe adaptor.

For examples of shots using this effect, please visit [www.mkcontrols.com](http://www.mkcontrols.com).



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## **Lightning Safety:**

MK Controls Inc. recommends that you follow all lightning safety tips that can be found at:

<http://www.lightningsafety.noaa.gov/>

<http://www.lightningsafety.com/>

<http://www.fema.gov/hazard/thunderstorm/index.shtm>

Please remember that safety is much more important than getting the shot. MK Controls is not liable for any injuries or damage that occurs while using our products.



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## **Warranty:**

**MK Controls, Inc. provides the following limited warranty on all products:**

### **What Does This Warranty Cover?**

**This warranty covers any defects in materials or workmanship in your new product.**

### **How Long Does The Coverage Last?**

**This warranty lasts three years from the date of purchase. Please save your original sales receipt, it will be needed for any warranty repairs.**

### **What Will MK Controls Inc. Do?**

**During the warranty period, MK Controls Inc. will repair or replace any defective or malfunctioning product at no charge to you (including shipping charges).**

### **What Does This Warranty Not Cover?**

**Any problem that is caused by abuse, misuse, or an act of God (such as a flood) is not covered. Battery leakage is not covered.**

**Consequential and incidental damages are not recoverable under this warranty. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.**

**If something goes wrong with your product, please send it along with a written description of the problem, including the make/model of the camera to:**

**MK Controls Inc.  
419 S. Davis St.  
Nashville, GA 31639**

***You must include a copy of your original sales receipt.***

**We will inspect and repair or replace the product at no charge to you once we have determined that the product is under warranty.**

**How Does State Law Apply? This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.**



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**What if my product is not covered by this warranty?**

**MK controls is proud to offer a no-fault replacement policy.**

**If you damage your product beyond repair i.e. Back your car over it, drop it in the ocean, your puppy chews it to pieces, etc. we will repair or replace it for \$49.00 + shipping.**

**Send your product (or what is left of it), postage paid to:**

**MK Controls Inc.  
419 S. Davis St.  
Nashville, GA 31639**

**Please include a story of how the damage occurred. We reserve the right to use these stories on our website. Your name will not be revealed.**

**We must be able to indentify that the pieces were indeed our product; the internal circuit board must be identifiable for us to replace the unit under our replacement policy. Your damaged unit will not be returned.**

**Why do we offer a no-fault replacement policy?**

**We want you to actually use and enjoy our products, and not have to worry about accidental damage. We are very confident that our products will provide you with years of trouble free service, but if something bad happens, we've got you covered.**



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## **Company Information:**

The Lightning Bug™ is produced and warranted by MK Controls, Inc., an Ohio Corporation. MK Controls is based in Harrison, OH, and has manufacturing facilities located in Nashville, GA.

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