

MK CONTROLS



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*Lightning Bug
Plus*

LIGHTNING BUG PLUS™

FIRMWARE UPDATE 1.7

INSTRUCTION MANUAL



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Introduction

The Lightning Bug Plus™ contains a small microprocessor with embedded operational software that controls all working functions of the product. This software can be user-updated should bug fixes or additional features be added by the manufacturer. MK Controls, Inc. recommends that users sign up to be notified of any firmware updates using this link:

<http://www.mkcontrols.com/lightningbug/firmware>. MK Controls, Inc. will never sell or share your information. Any email sent regarding updates or new product information will always include an opt-out link that will allow users to be removed from further automatic notifications.

As of the writing of this manual, the current firmware version in the Lightning Bug Plus™ is version 1.7. Firmware upgrades are not required, however we always recommend them to allow customers to access all features of the product.

The original Lightning Bug™ product is no longer supported by MK Controls, Inc. other than for warranty purposes. Users of this product can choose to upgrade to the current Lightning Bug Plus™ unit by following this link:

<http://www.mkcontrols.com/lightningbug/upgrade>. Your existing Lightning Bug™ product will continue to work, however! Upgrading is not required.



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Requirements

The current Lightning Bug Plus™ upgrade utility is compatible with computers running either Windows 10 or Windows 11. If you do not have access to a system meeting this requirement, please create an RMA following this link:

<http://www.mkcontrols.com/lightningbug/rma> and follow the instructions.

Each Lightning Bug Plus™ ships with a small (1 foot long) USB-C interface cable. This is used when upgrading firmware and connects the unit to any USB port on your computer.

A 9 Volt battery is not required to complete the firmware upgrade, however accessing advanced features after upgrading may require it.

The upgrade utility can be downloaded by following the link found on the bottom of the following page:

<http://www.mkcontrols.com/lightningbug/firmwareupdate>.



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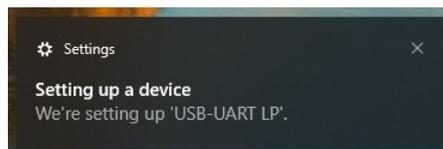
Install Drivers for Lightning Bug Plus™

A small driver will need to be installed on your system to allow communications between our firmware update software and your computer. This driver is built into Windows 10 and Windows 11, and does not need to be downloaded.

Installation is automatic. The first time you connect your Lightning Bug Plus™ to your computer via the USB-C cable, the necessary driver will automatically load and be installed on your system. This process only needs to occur ONCE – anytime you subsequently attach the Lightning Bug Plus™ to your computer, the drivers are already loaded.

Prior to downloading and running the firmware update utility, make certain to connect your Lightning Bug Plus™ to your computer and allow the drivers to be installed using the following steps:

- Remove the 9V end panel from the rear of the unit.
- If installed, remove your 9V battery.
- Attach the USC-C cable to the unit – the connector is visible inside of the battery compartment.
- Attach the other end of the USB-C cable to any open USB port on your computer.
- There are two drivers that will automatically load. A message similar to the one shown below will appear:



- Leave the cable connected until BOTH drivers (USB-UART and Virtual COM Port) are installed.
- Remove the USB-C cable from both the unit and your computer.



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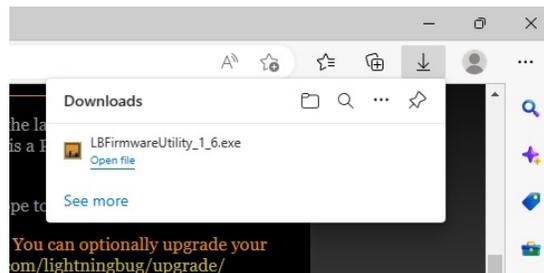
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Using the Firmware Update Utility

Download the current firmware update utility using the link found at the bottom of this webpage: <http://www.mkcontrols.com/lightningbug/firmwareupdate>.

You MAY receive a warning stating “this file is not commonly downloaded and may be dangerous”. Please rest assured that our utility is not dangerous and contains no nefarious code. It does not request personal information, and is never installed as a local application on your computer. You must choose to keep and continue with the download to access the firmware update utility.

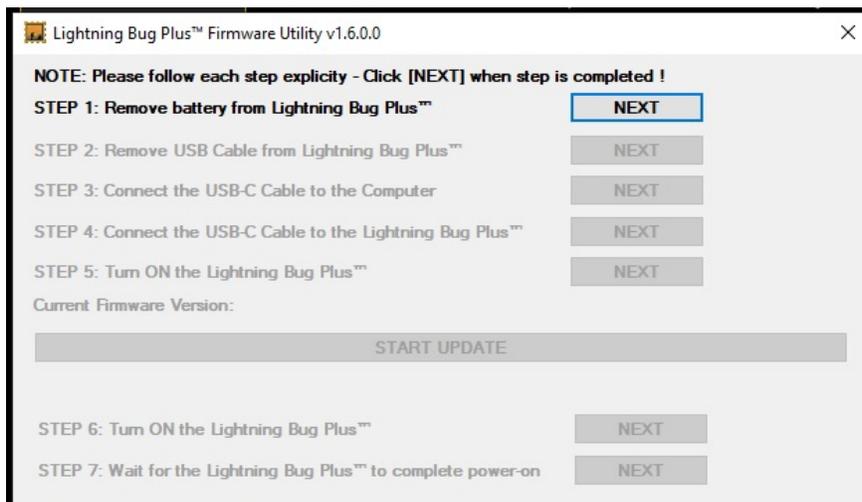
The download will start, and a dialog box similar to this will be displayed:



Upon completion, you'll need to run the utility as follows:

- For EDGE browsers, click on 'Open File'
- For CHROME or FIREFOX browsers, click on the 'Open File' icon 

The utility will start up and will display the following screen:



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The firmware update utility takes you through the process step by step. If anything should go wrong, your Lightning Bug Plus™ unit will not be damaged, simply remove all cables and start over again.

Step 1: Remove battery from Lightning Bug Plus™. The firmware update process requires that the unit be powered only by the USB-C connector. When complete, click the [Next] button to move onto the next step.

Step 2: Remove USB Cable from Lightning Bug Plus™. If the cable was already installed, make certain to remove it then click the [Next] button to move onto the next step.

Step 3: Connect the USB-C Cable to the Computer. If the cable was already connected to the computer, you can leave it in place. Once connected ONLY to the computer, click the [Next] button to move onto the next step.

Step 4: Connect the USB-C Cable to the Lightning Bug Plus™. Locate the USB-C socket in the rear of the battery compartment, and insert the USB-C cable into the unit. Click the [Next] button to move onto the next step.

Step 5: Turn ON the Lightning Bug Plus™. Press and hold the Power On button for approximately 2 seconds until the unit powers on. If for some reason the firmware update failed, you may not be able to power on the unit – the utility will recognize this and automatically allow you to continue. Click the [Next] button to move onto the next step.

Click [Start Update] to begin the update process. The update process takes about 2 minutes, and a progress bar will appear on your screen. Your Lightning Bug Plus™ will power down during the update process.

Step 6: Turn ON the Lightning Bug Plus™. Press and hold the Power On button until the unit powers up. Click the [Next] button to move onto the next step.

Step 7: Wait for the Lightning Bug Plus™ to complete power-on. At this stage, the update is complete. You may remove all cables, or if desired, can continue to Advanced Settings, which is described in the next section.



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Advanced Settings

Once updated, you can access Advanced Settings if desired. To complete this process, you will be asked to install a 9 Volt battery. This is optional – see the section below on “Read Battery Voltage”.

IMPORTANT NOTE: The USB-C cable MUST remain attached to the computer and your Lightning Bug Plus™ to use Advanced Features. If you chose to connect a 9 Volt battery, please insure that the USB-C cable stays in place – the 9 Volt battery does NOT need to be inserted into the battery compartment.

CRITICAL NOTE: Making changes to Advanced Settings can render your Lightning Bug Plus™ unit inoperable! Settings are NEVER overwritten during a firmware update. The “Reset Defaults” function will allow you to reset settings back to factory defaults.

Serial Number: Each Lightning Bug Plus™ is assigned a unique serial number from the factory. This cannot be modified by users, and is displayed for informational purposes only.

Meter Default: Options are On or Off. Determines if the camera meter is always held in the On position or Off position at startup. Default is On. This setting can also be changed from within the Lightning Bug Plus™ user interface.

Sensitivity: Adjustable from 1 to 26. Sets the level of sensitivity to lightning to determine if the shutter should be tripped. Default is 12. This setting can also be changed from within the Lightning Bug Plus™ user interface.

Post Trigger Delay: Adjustable from 0 to 90 milliseconds in 10 millisecond increments. Sets the amount of delay time between a lightning bolt being sensed to tripping your camera shutter. Default is 0. This setting can also be changed from within the Lightning Bug Plus™ user interface.



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Max Frames Per Second: Adjustable from 1 to 10. Sets the maximum number of times the camera shutter trip will be attempted in any given second. Prevents useless ‘shutter hammering’. Default is 4. This setting can also be changed from within the Lightning Bug Plus™ user interface.

Depress Shutter For: Adjustable from 10 to 10000 milliseconds in 1 millisecond increments. Sets the amount of time the shutter release is held open when triggering the camera when taking a photograph. Default is 25 milliseconds.

Test Trip Shutter Time: Adjustable from 10 to 99 milliseconds in 1 millisecond increments. Sets the amount of time the shutter release is held open when triggering the camera during POST and testing using the Left and Right button press. Default is 25 milliseconds. NOT used during photographic events.

Turn Off Meter After: Adjustable from 0 to 99 minutes in 1 minute increments. Sets the length of time until the camera meter is automatically turned off, regardless of other settings. Setting this value to 0 disables this feature. Useful to improve battery life. Once a lightning strike is sensed, the unit fires the camera and restarts this timer. Default is 15 minutes.

Display Battery Warning At: Adjustable from 6.10 volts to 8.00 volts in 0.01 volt increments. Determines at what voltage the low battery warning is displayed on the Lightning Bug Plus™. Default is 6.80 volts.

Check Battery Voltage Every: Adjustable from 0 to 99 minutes in 1 minute increments. Sets the time period between voltage checks. Setting this value to 0 disables this feature. Default is 10 minutes.

Exit Post Delay Adjustment After: Adjustable from 3 to 30 seconds in 1 second increments. Sets the length of time before reverting back to normal operation after no user activity when changing the Post Trigger Delay function during operation of the Lightning Bug Plus™. Default is 3 seconds.



Exit Meter Adjustment After: Adjustable from 3 to 30 seconds in 1 second increments. Sets the length of time before reverting back to normal operation after no user activity when changing the Meter On/Off function during operation of the Lightning Bug Plus™. Default is 3 seconds.

The following settings marked * can cause erratic behavior, and should generally not be modified without consulting with MK Controls, Inc. customer support first.

***Reactivate Meter Every:** Adjustable from 0 to 60 minutes in 1 minute increments. Setting to 0 disables this function. Default is 0. Consult with MK Controls, Inc. customer support prior to making any changes to this setting.

***Half Depress Shutter For:** Adjustable from 1 to 99 milliseconds in 1 millisecond increments. Works in conjunction with the 'Reactivate Meter' function described above. Default is 10. Consult with MK Controls, Inc. customer support prior to making any changes to this setting.

***Disregard Sensor Readings:** Adjustable from 1 to 99 readings. Default is 25. Consult with MK Controls, Inc. customer support prior to making any changes to this setting.

Function Buttons include:

[Reset Defaults]: Click to reset all settings on this screen to factory defaults.

NOTE: The settings must be updated into the unit to be saved.

[Update Settings in LB+]: Saves all settings current displayed on the screen to the Lightning Bug Plus™. The updates will be applied immediately.

[Re-Read Settings]: Requests that all current settings be re-read from the Lightning Bug Plus™ and the screen settings updated accordingly.

[Read Battery Voltage]: Reads and displays the current voltage of the battery if connected to the unit.

The utility is closed by clicking the X in the upper-right hand corner.



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Lightning Safety

Please remember that your safety is much more important than getting the shot. MK Controls, Inc. is not liable for any injuries or damage that may occur while using our products. Being safe should always be your primary concern.

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.ready.gov/thunderstorms-lightning>

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



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Warranty

MK CONTROLS, INC. LIMITED WARRANTY AND NON-WARRANTY REPLACEMENT POLICY

LIMITED WARRANTY INFORMATION

MK Controls, Inc. (the “Company”) warrants its products against defects in material and workmanship for the lifetime of the product. This limited warranty applies only if you are the original purchaser and the limited warranty is non-transferable. As a condition of warranty service, warranty service requests must be accompanied by a valid proof of purchase, and a full written description of the problem. The Company will, at its sole discretion, repair or replace any defective part or product with a functionally-equivalent, new or factory-reconditioned part or product. Replacement parts and products are warranted to be free from defects in material and workmanship for the lifetime of the product. The Company will have no obligation to repair or replace any part or product until you return the allegedly-defective item to the Company.

In order to submit a valid warranty claim, you must complete the RMA form located at: <http://www.mkcontrols.com/lightningbugplus/rma/> prior to shipping your product back to MK Controls, Inc. Complete instructions are given during the creation of the RMA.

EXCLUSIONS

This limited warranty does not apply to (1) normal wear from regular use of the product, (2) any product with the serial number (or equivalent) removed, (3) any product that has been operated in a manner inconsistent with its intended purpose, or (5) any part or machine/product if damaged or defective due to: (a) abuse, accidental misuse, improper or inadequate operation, maintenance or calibration or other external causes; (b) failure to properly maintain the product including, but not limited to, damage from battery leakage; (c) software, interfacing parts and supplies not supported by the Company; (d) loss resulting from an act of God; (e) loss or damage in transit; or, (f) modification or service by a party other than the Company.

LIMITATION OF WARRANTY

EXCEPT AS EXPRESSLY SET FORTH IN THE LIMITED WARRANTY, THE COMPANY MAKES NO WARRANTIES, COVENANTS OR CONDITIONS, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE COMPANY EXPRESSLY DISCLAIMS ALL WARRANTIES, COVENANTS AND CONDITIONS NOT STATED IN THIS LIMITED WARRANTY TO THE MAXIMUM EXTENT PERMITTED BY LAW. ANY IMPLIED WARRANTY THAT MAY BE



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IMPOSED BY LAW IS LIMITED IN DURATION TO THE APPLICABLE LIMITED WARRANTY PERIOD. SOME JURISDICTIONS MAY ALLOW A LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS OR ON THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGE TO CONSUMER PRODUCTS, OR OF A CONSUMER'S STATUTORY RIGHTS. IN SUCH JURISDICTIONS, SOME EXCLUSION OR LIMITATION OF THIS LIMITED WARRANTY MAY NOT APPLY TO YOU. THIS LIMITED WARRANTY, IS APPLICABLE IN ALL JURISDICTIONS AND MAY BE ENFORCED IN ANY JURISDICTION WHERE THE COMPANY OR ITS AUTHORIZED SERVICE PROVIDER OFFERS WARRANTY SERVICE. ALL DISPUTES ARISING UNDER THIS LIMITED WARRANTY SHALL BE RESOLVED BEFORE A COURT OF COMPETENT JURISDICTION IN HAMILTON COUNTY, OHIO.

ANY ACTION FOR BREACH OF WARRANTY OR OTHERWISE AGAINST THE COMPANY SHALL BE LIMITED TO, AND THE SOLE REMEDY AFFORDED BY THE COMPANY SHALL BE, THE REPAIR OR REPLACEMENT OF ANY DEFECTIVE PART OR PRODUCT AS STATED IN THIS LIMITED WARRANTY AND THE COMPANY SHALL HAVE NO LIABILITY FOR CLAIMS, LOSSES, COSTS, LIABILITIES, DAMAGES OR EXPENSES (WHETHER INCIDENTAL, CONSEQUENTIAL OR SPECIAL) ARISING FROM OR IN CONNECTION WITH THE USE OR MISUSE OF ANY PART OR MACHINE/PRODUCT OR FOR BREACH OF WARRANTY, STRICT LIABILITY IN TORT OR OTHERWISE.

THE INFORMATION IN THIS LIMITED WARRANTY IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. IN THE EVENT THAT THERE ARE DIFFERENCES BETWEEN THIS WARRANTY AND THE PROVISIONS OF ANY ADVERTISEMENT, DOCUMENTATION, PRODUCT BROCHURE, OR PACKAGING CARTONS, THE TERMS OF THIS LIMITED WARRANTY WILL PREVAIL.

NON-WARRANTY REPLACEMENT POLICY

In the event that your product is not eligible for the limited warranty listed above, the Company will repair or replace the product for the cost of \$99.00, plus any applicable shipping charges. The non-warranty replacement price is subject to change without notice. To take advantage of the Company's non-warranty replacement policy, please follow the instructions in this link: <http://www.mkcontrols.com/lightningbugplus/rma/> prior to shipping your product back to the Company. Complete instructions are given during the creation of the RMA. If the unit is damaged, we'd like to hear your story of how the damage occurred. We reserve the right to use these stories on our website. Your name will not be revealed. Prior to returning your unit, we will contact you for billing instructions.

We must be able to identify 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. Please note that interface cables are NOT covered under the non-warranty replacement policy.



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Company Information

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

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