

Multitrigger – operation manual

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1. General information

1.1. Specifications

	Multitrigger Small	Multitrigger Large
Camera outputs	6	12
Battery	1x AAA rechargeable (Eneloop)	2x AAA rechargeable (Eneloop)
Dimensions	50mm x 45mm x 40mm	116mm x 99mm x 49mm
Weight	65 g	115 g

1.2. Function description

The Multitrigger enables you to trigger multiply cameras with one input signal. All cameras will be triggered at the exact same time.

The Multitrigger is equipped without optocouplers. This will mean, that each output has its own electric circuit and that the different outputs are not connected to each other. Due to this design, there are no interferences between the outputs. It is also possible to connect different camera brands or even other electric circuits at the same time.

The input and output connections are made with 2.5mm audio jacks. Those are very common for remote triggers and there are already all different kinds of shutter cables available for most cameras. The Multitrigger is compatible with those cables, so you can choose any 2.5mm trigger cable for your camera.

The signals for auto-focus and shutter release are separated. This gives you the ability to use the auto-focus for your application.

The input port is also a 2.5mm audio jack and compatible with a standard Canon remote trigger button.

1.3. Multitrigger hardware description

1.3.1. Battery

The Multitrigger has an easy detachable bottom cover, where the battery is located.

The Multitrigger is powered by one AAA battery inside the housing. The power consumption is very low, so one battery should last a very long time. To minimize self-discharge, you should only use Eneloop batteries, since they will hold their charge for a very long time.

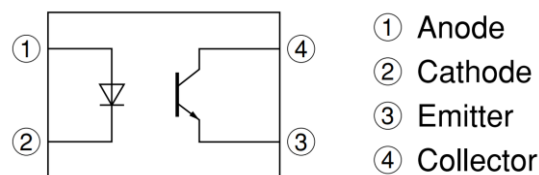
You should only use rechargeable batteries, since they will have a lower voltage (1.2-1.4V) compared to standard batteries (1.5V-1.6V).

During shipping or transport at cold temperatures, the battery will lose its charge. So after you have received the Multitrigger, you should charge the battery to make sure proper functionality. Please keep this also in mind when using the Multitrigger in cold environments.

1.3.2. Output

As mentioned above, all outputs are build up with optocouplers to separate different circuits. The optocoupler has an “input” and an “output”.

The input circuit (Anode & Cathode) is connected internally and will react to the trigger input. The output (Emitter & Collector) is connected to the 2.5mm audio jack.



Each output consists of two optocouplers. One for the focus signal and one for the shutter signal. The ground signals of the camera is always connected between both optocouplers (common Emitter).

The build-in optocouplers are capable of switching max. 80V and max. 50 mA. So it is possible to not only connect camera signals, but also other circuits like LEDs etc. if they don't exceed the max. ratings.

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1.3.3. Input

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2. Shooting synchronous pictures

The Multitrigger has many fields of application. But mostly you want to trigger multiply cameras at the same time.

If you are shooting still-standing objects in a studio environment, it is not very important that the cameras are triggered at the exact same time. But if you have some dynamic motion, you want that all cameras are perfectly in synchronisation. To achieve this, you have to consider the behaviour of your camera as well. The Multitrigger will output all signals at the exact same time (less than XXXX). But your camera will take some time to react to this trigger signal.

2.1. Auto-Focus

The biggest influence on the delay time between trigger and capture of the picture is the auto-focus. If you want to achieve synchronous pictures, you have to use manual focus. The auto-focus is not really reliable and multiply cameras will take different time amounts to get in focus. If the light is not perfect or if your autofocus-point not aligned properly, it can happen that some of you camera will trigger and some not (because they could not get the focus right).

To avoid this, please only use manual focus while using the Multitrigger.

2.2. Shutter lag

When dealing with DSLRs, you have two different mechanical steps which the camera has to perform: the movement of the mirror mechanism and the shutter movement. Those movements will takes some time and so you have to keep this in mind.

Mirrorless cameras don't have a mirror and it is also possible to use an electronic shutter. So without any mechanical movement, the shutter lag should be always lower with mirrorless cameras than with DSLRs.

The shutter lag will vary from camera model to camera model. There are also differences between the manufacturers. So if you are planning a camera setup for dynamic objects, you should always try to use the exact same camera model. Otherwise you will risk that camera model A has for example a shutter lag of 0.08 seconds and camera model B a lag of 0.20 seconds. Your shots will not be in sync and there is not much you can do about this. (We are currently developing an advanced Multitrigger, where you will be able to set delays for each output individually.)

So please only use the exact same camera model when time synchronisation is important to you.

2.3. Shutter lag distribution

As mentioned above, each camera model has a specific shutter lag. But this shutter lag is not always exactly the same, even while using the same camera. There are many factors which are influencing the delay time between trigger and actual capture of the picture. We have performed some extensive evaluation of the shutter behaviour and have come to some conclusions.

Conclusion 1:

Even if the camera is set to manual focus, the focus signal is still required.

When “half-pressing” the shutter button, the camera will be set to into “more awareness mode”. This will prepare the camera for a picture release. If there is no focus-signal (half press), the shutter lag will fluctuate more. So it can happen that sometimes the lag time is higher or lower, which will lead to not in sync pictures. This is the case with one camera. If you are using multiply cameras, each camera might have a different delay.

So you should always keep the shutter button half-pressed for 2-3 seconds before pressing it completely. This will result in more consistent shutter times.

Conclusion 2:

Using mirror-lockup will reduce the fluctuation even more.

When using mirror-lockup with DSLRs, the fluctuation of the shutter lag will be reduced even more and the delay time will be very consistent. This should always be combined with “half-pressing” the shutter button