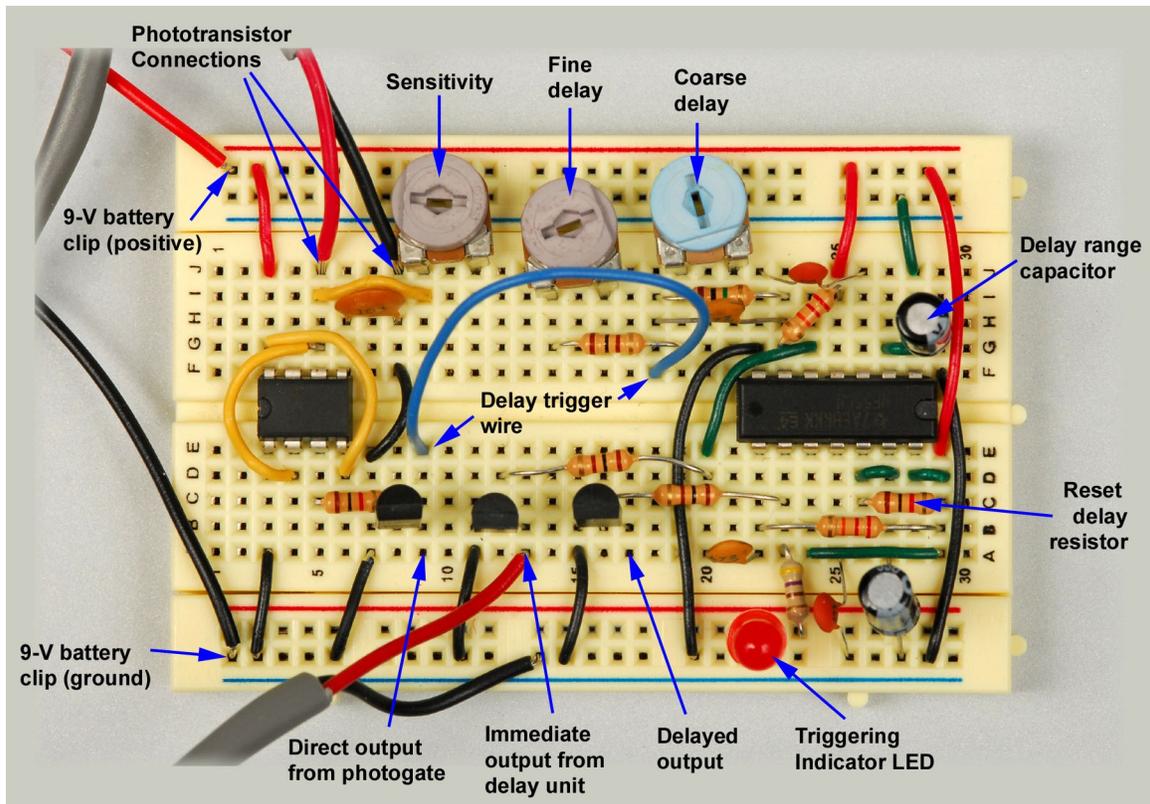


Instructions for Using the Assembled Light-Activated Trigger with Delay (LAT-DU-A)



Supplied components

Circuit board with light-activated trigger and delay unit
 Phototransistor cable
 3-foot, 2-conductor output cable

Small bag with these components:
 0.01- μ f capacitor (103)
 0.1- μ f capacitor (104)
 100-kohm resistor (brown-black-yellow)

Battery cable connection

The entire column of holes on the bottom along the blue line is negative (ground). Likewise, the entire column along the red line on the top is +9 V. These two columns are where the red and black cables from the battery clip are connected.

Connecting the phototransistor cable

The phototransistor cable has 2 wires: red and black. The phototransistor has already been soldered onto one end of the cable. The other end is connected to your circuit as shown to the right in case you need to reconnect the cable:

Wire	Location
Red	5J
Black	8J

Connecting the output cable

The output cable has 2 wires: red and black. Make the following connections, depending on which mode of output you would like to use:

Output Mode	Red Wire	Black Wire
LAT direct*	9A	(-)
from the immediate output of the delay unit	13A	(-)
from the delayed output	17A	(-)

Connect the other end of the output cable to the PC cord from your flash unit. See the following link for illustrated instructions on splicing the output cable to a PC cord or Flash-to-PC adapter:

http://hiviz.com/kits/instructions/flash_info.htm.

*If you're connecting the output cable directly to the LAT output (no delay), be sure to disconnect the wire from 9E to 18F first.

Connecting the output cable to a camera or wireless trigger

If you wish to trigger either a wireless transmitter or your camera shutter instead of a flash unit, see this page:

http://hiviz.com/kits/instructions/camera_wireless_info.htm.

Powering the unit

The circuit runs on a 9-V battery. Connect the wires from the battery clip to the +9 V and ground columns. Disconnect the battery when the circuit is not in use. You may also choose to use a 9-V AC/DC adapter to power the unit. Any AC/DC adapter that provides up to an ampere of direct current at 9 V should do. Here's an example:

http://hiviz.com/kits/ACDC_adapter.htm.

Connecting the trigger to the delay unit

The jumper wire connecting the trigger to the delay unit runs from 9E (trigger output) to 18F (delay unit input). For testing the delay unit without the trigger, you can remove the jumper wire from 9E and touch it momentarily to ground. The triggering indicator LED should light momentarily if the delay unit is working correctly.

Adjusting the delay time

The 1M potentiometer (blue knob) provides coarse delay control. Rotate it clockwise to increase the delay time up to about half a second. The 100k potentiometer (brown knob just to the left of the blue knob) provides fine delay control. Set the coarse delay first and then tune it with the fine delay.

Adjusting the sensitivity of the phototransistor

With a 9-V battery connected to the battery clip and your flash unit connected to the breadboard, you can now test your circuit. Turn the 100-k Ω potentiometer to about its midway position. Place the phototransistor as far from the flash as possible and shaded from it. Shine a flashlight, laser pointer, or other bright light source at the phototransistor to activate the trigger. If your flash cable is connected directly to the LAT direct output or to the immediate output of the delay circuit, you should notice an immediate discharge of your flash unit. If your flash cable is connected to the delayed output, you may notice a short delay before discharge, depending on the setting of your delay circuit. If your flash unit doesn't discharge, try adjusting the sensitivity. Turn the 100-k Ω potentiometer clockwise to increase sensitivity.

Note about repeated discharges: A single triggering event can lead to repeated discharges of the flash. This can occur if the phototransistor is positioned so that it picks up the light from the flash. This can create a feedback loop in which the circuit self triggers. This can happen even if the phototransistor is shaded from the flash. If the phototransistor is too close to the flash, radio-frequency noise from the flash unit can trigger the LAT. The solution is to keep the flash as far from the trigger circuit as possible. Also, see below about increasing the reset delay.

Replacing the timing capacitor to change the delay range

The timing capacitor connected into the circuit is a 0.47- μ f capacitor. This provides up to a half second delay. This is ideal for photographing drops and splashes but may be too long for other situations. You can change the delay range by replacing the 0.47- μ f capacitor with one of smaller value. An extra 0.1- μ f and 0.01- μ f capacitor have been provided for this purpose, and will yield the following time delays.

Capacitor	Time Delay	Location
0.47- μ f (cylindrical)	Half second	(+) to 28H, (-) to 29G
0.1- μ f (labeled "104")	Up to ~1/10 second	28H-29G (nonpolar)
0.01- μ f (labeled "103")	Up to ~1/100 second	28H-29G (nonpolar)

Replacing the 1-kohm resistor with a 100-kohm resistor to increase the reset delay

The 1-kohm resistor from 26C to 29C can be replaced with the extra 100-kohm resistor in order to increase the dead time after a triggering event. During this dead time, the circuit won't trigger. This is useful to prevent secondary events such as a second drop from actuating the circuit. The dead time is approximately equal to the value of the resistor in kilohms divided by 100. For example, the dead time for a 100-kohm resistor would be 1 second.

Replacing components

Due to the nature of an open circuit on a breadboard, components may become dislodged and need to be resealed. Complete instructions for component placement can be found at the link below.

<http://hiviz.com/kits/instructions/lat-du-manual2.htm>