

The 556 timer Burglar Alarm/Wildlife sensor¹

© Steve Lee, Christmas 2014

EpiphanyBySteveLee.com

Introduction:

This circuit offers a simple example of the 556 Dual Timer IC (along with a handful of discrete components) to form a simple Burglar Alarm/trip sensor. With appropriate battery power and weatherization, this system could even be mounted in the wild near a water hole or across a frequently traveled trail/path to capture candid shots of wildlife in the area. Who knows, with a “little” luck (and the appropriate IR camera system attached), you might even catch a few rare night shots of Bigfoot or Elvis himself on one of their late night walkabouts.

How it works:

The heart of this circuit is the 556 Dual Timer IC (the 556 IC is simply a pair of 555 timers in a single IC package), coupled with a simple IR LED and photo-transistor pair that serve as an electric eye sensor (e.g. aimed across a footpath, or animal trail in the wild, etc.). When any person or animal crosses between the IR LED and photo-transistor, it obscures the path between the IR LED and the photo-transistor. This triggers the start of both timers in the 556 IC (both being configured as single shot pulse generators).

Timer 1 provides a single 1 second pulse that can be used to fire a brief/pulsed event (e.g. snap a single still photo via a solenoid, issue a brief “beep” chirp alarm, click a counter, etc.). Timer 2 produces a longer 30 second pulse that can be used to turn on a video camera recording system, alarm buzzer, etc. The output of timer 2 is connected to a relay (K1), providing high isolation between this circuit and whatever recorder/alarm circuit is used via the dry contacts. With plenty of old Video Tape Recorder as well as the more modern digital recording system now available, a very effective system can be setup with multiple recording devices if needed, controlled/activated via multiple dry relay contacts.

The bottom section incorporating the TTL chips (the 7493 and 7447) can be used here or in the other 555 / 556 projects listed on this website to count and display the number of triggering events that occur during a particular session/day. CAUTION: these TTL chips can not tolerate the full 6.2 volts DC applied to them, therefore be sure to use the decreased V+ by attaching them to what is marked as the “TTL GND”. Applying the full 6.2 volts (i.e. using V+ and the 556 ground) will very likely damage these chips.

One other CAUTION: since it is possible to damage a photo-transistor through prolonged exposure to a bright light source such as the sun (not to mention generate a number of false triggers), it is a good idea to shield the photo-transistor from all light sources other than the IR LED. To shield the sensor, simply mount it at the end of a short plastic tube and aim the tube at the IR LED (making sure no other light source such as the sun will appear behind the IR LED).

¹ See “EpiphanyBySteveLee.com” for additional information to be added over time.

