

# Terror By Design

Route 1 Box 141 Hamburg, IL. 62045

## UNIVERSAL DUAL TIMER II INSTRUCTIONS

**Overview:** *The Universal Dual Timer II starts a cascade timing action when the test button is pushed or an external, normally open, momentary contact switch is -closed-. The external switch can be a push button, switch mat or relay contacts as used in the T-Sense or other sensing device. In its' most common use, the timer will turn a device on for the desired length of time and then hold the device off to avoid re-tripping or accidental tripping of the same device. The UDT II can also delay when the -On- time starts.*

**Timer Power Requirements-** *Uses included power supply, 120 AC adapter to 9VDC @ 200 to 300 mA. This only runs the timer it does not supply power to the intended effect being timed.*

**Internal Relay Switching Capabilities-** *10 Amps. maximum @ 24 to 120 volts Alternating or Direct Current. Reduce current by one half for inductive loads. A terminal block with Common, Normally Open and Normally Closed positions is provided for wiring to the device to be controlled.*

**Timing Ranges-** *Low Range 0 to 45 seconds, High Range 0 to 225 seconds- for all three timing sequences. Settable timing resolution is 1/4 second.*

**Warning:** **A basic understanding of electricity and electrical circuits is required to utilize this timer. The potential of injury and property damage from the use of line voltages and high current lower voltages is ever present. If you are not knowledgeable about, or comfortable with electrical circuitry, obtain professional help before proceeding. At no time should the internal relay contacts be subjected to more than their rated capacity, 10 amps. Never apply external power or voltage to the two position terminal block used for an external switch hook-up, permanent damage will result. Never use the timer or the wall adapter power supply in damp or wet locations. Always unplug the timer when not in use. We strongly suggest a Ground Fault Interrupter be used with any line voltage application. Disconnect all power sources before wiring to terminal blocks.**

Please contact us at- [support@terrorbydesign.com](mailto:support@terrorbydesign.com) if you have any questions or problems.

1. Two ranges of timing are available. The Low Range of 0 to 45 seconds is the most useful in haunts and is the easiest to set to low numbers. The High Range of 0 to 225 seconds should cover just about any timing application encountered but is more difficult to set to low number because of the limited sweep of the knobs and potentiometers. UDT II's are sent with the **Low Range as default.**

**To set the High Range:** With the power adapter plugged in turn all three knobs clockwise to their maximum setting. Momentarily press and release the Test button, all three LED's will flash 5 times to indicate the High Range is set. Setting the knobs to any other time setting will now run the High Range until it is manually changed.

**To set the Low Range:** With the power adapter plugged in- turn all three knobs

counterclockwise to their lowest setting. Momentarily press and release the test button, all three LED's will flash 1 time to indicate the Low Range has been set. The Range settings are held in memory until manually changed using the above procedures, the Range settings are not lost if power is removed.

2. In both ranges the timing resolution is  $\frac{1}{4}$  second. The LED's will flash and the timer will tick to indicate each  $\frac{1}{4}$  second passed. Extremely small adjustments of the knobs can change the timing by  $\frac{1}{4}$  second.
3. Initial Single Shot Timing experiments with the timer can be performed as soon as the Instructions are read and the timer is hooked up to the wall power adapter. By setting the knobs and pushing the Test Cycle button a quick understanding of how it works will become evident.
4. To avoid risk of injury from electrical shock and/or moving mechanical devices **always disconnect effect power sources before attempting any wiring** or initial testing. Do not operate in areas of high humidity or moisture.
5. Due to the tolerances of the numerous electronic components, plastic case, case machining, label printing and registration, the second markings around the knobs should be considered approximate.
6. Wires going into the terminal blocks should be stripped as close as possible to  $\frac{1}{4}$  inch. Do not over-tighten the screws while clamping the wire. After clamping the wire, wrap the three position terminal block with electrical tape for additional insulation when running 120 VAC.
7. **Never run external voltage to the 2 position "To N/O Switch" terminal block, permanent damage will result.** A switch closure action is all the timer needs to start the timing cycle.
8. **The timer can be set to run continuously, or loop the timing sequence, by adding a wire jumper between the 2 terminals on the 2 position terminal block.**
9. The three position terminal block is the access to the internal relay. This terminal block is wired as a switch would be, to one leg of the power directly to the target effect, the other leg going through the timer. While most applications will use the Common and Normally Open Positions, the Normally Closed position can be used to turn a device -Off- such as a light when the timing cycle starts. Following this thought, sharing the Common position would allow a light wired to Normally Closed to turn off as the scare-device wired to Normally Open is activated. Or... general area illumination is killed just as the scare happens.

### Countdown Repeat Cycle

- a. With **Countdown Repeat Cycle** the timer will activate for a set number of cycles. Before starting, Disconnect the power connector plug at the timer and for safety make sure no power is supplied to your effect if one is hooked up.
- b. With the power off, hold down the Red Button and plug the power connector back in to the socket. All three Led's will light red. Release the Red Button and all three LED's will change to green.
- c. As soon as the LED's turn green start pressing the Red Button the number of times you wish the effect to repeat. The timer can repeat cycles 1 to 65,000 times (not 13, see below). Example: Press three times and the effect will trip three times from one trigger. Each time the button is pressed the LED's will flash red. After your last button push do not touch the button again for about 5 seconds, five seconds after the last button press the

LED's will turn red indicating the timer is ready to go. The chosen number of repeats is held in memory if power is removed. For Continuous Repeat Cycles with no Countdown feature press the Red Button 13 times. A count of 13 actually stores 65,000 in memory which will run the timer for many days of continuous repeating cycles.

- d. After the repeat number is programmed in and the LED's return to red after 5 seconds, a trigger from a switch mat, external switch or pressing the red button will start the timing cycle and repeats.
- e. **Under Countdown Repeat Cycle the timing action starts with On-Time (center knob) for an instant start to an effect.** The off timing is handled by Delay-Time (left knob). The reason for this is simple, under Continuous Repeat Cycle the two normally off timer sequences would be repetitious and a poor use of resources. This fact allows us to use the Off-Time (right knob) to set a delay after the repeat sequence runs that keeps the effect from being re-triggered before you want it to. To see how this works set both the center On-Time and the left hand Delay-Time knobs to about five seconds, set the right Off-Time knob to 20 seconds. Now run a number of cycles under the Countdown Repeat Cycle function. You'll see the timer toggle between On-Time and Delay-Time for the number of cycles you programmed, at the end of the cycles the Off-Time will keep the timer from being re-triggered.
- f. For a continuous doorknocker or hanging man type action of say- 5 seconds of kicking or knocking, 10 seconds rest, 5 seconds kicking, 10 seconds rest and so on, use an on-off toggle switch from Radio Shack wired to the 2 position terminal block. For the above example: With the toggle switch -off- enter Countdown Repeat Cycle and program 5 repeats, set the three knobs to the timing you wish such as ½ second On, ½ second Delay and 10 seconds Off. Flip the toggle switch on and the timer will run a doorknocker or hanging man until you flip the toggle off again.
- g. **To return to the Countdown Repeat Cycle function if power has been off**, or the Universal Dual Timer was unplugged and not change the number of repeats previously programmed simply hold down the Red Button, plug the power plug in to the socket and release the Red Button. The LED's will turn green and then red in 5 seconds. The original number of repeats will still be in memory. Do not press the Red Button again after it is released and while the LED's are green this will save the stored count.
- h. If power is removed and restored with the Red Button not being held down the timer will default to the Single Shot setting for safety. The stored repeat count is still in memory should you want to return to Countdown Repeat Cycle.
- i. More simply put- Do not hold the Red Button down when power is applied for Single Shot Timing. Hold the button down when power is applied for Countdown Repeat Cycle.

### Glossary

**Delay Time or Before On-** A settable time delay before the internal relay is energized and the intended device is turned on. Useful for delaying when an action starts and useful for cascading multiple timers in one area.

**On Time-** Time sequence when the internal relay is energized and held On.

**Off Time-** Time sequence when everything is held Off. This helps avoid constant re-tripping of a device until ready. Once the UDT II is tripped and timing starts, the time settings cannot be stopped or changed unless power is removed.

**Cascade Timing** or Cascade Timer- Two or more timers that are set off sequentially, each timer depending on the preceding one for a starting point. The Universal Dual Timer is actually three timers in one package.

**Common-** On the terminal block it provides a single hook-up to access either set of contacts in the relay.

**Contacts-** The parts of a switch or relay that make a physical connection and allow current to flow.

**Momentary Contact-** A switch that does not stay in the actuated position unless held. Door bell buttons and switch mats are good examples.

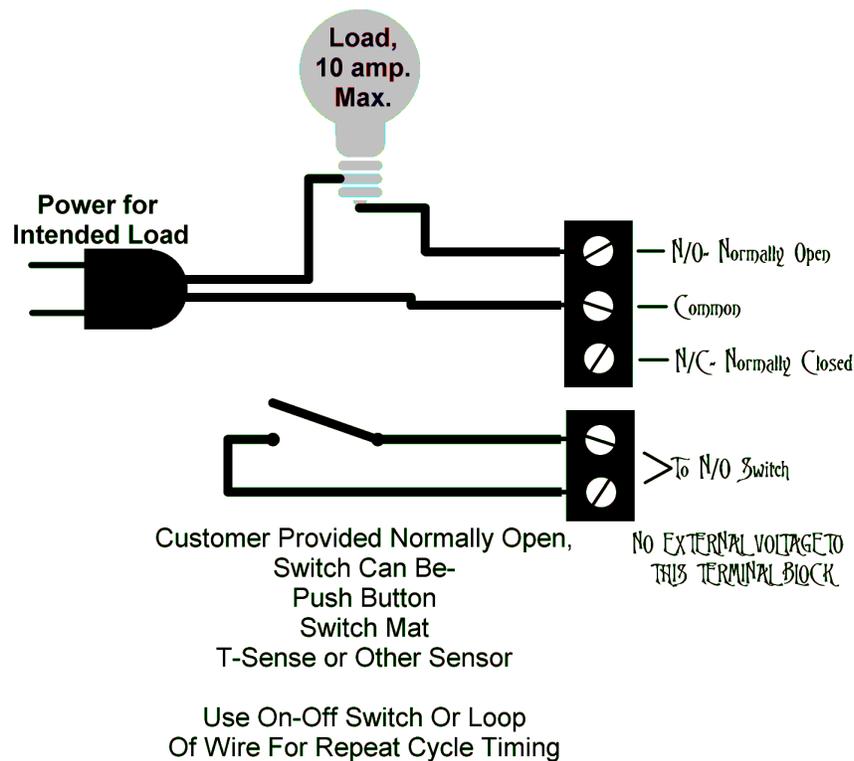
**Normally Open-** A switch or relay contact set that is not making contact in the normal resting position, no current is flowing, or it can be considered -off-.

Switch mats and doorbell buttons are good examples of manually operated, normally open switches.

**Normally Closed-** A switch or set of relay contacts that are making contact in the normal state, or it can be considered -On-.

**Relay-** In this case an electro-mechanical switching device that takes an electrical signal to open or close its' switch contacts.

### Typical Terminal Block Hook-Ups



*B.T. Productions' Terror By Design warranties the Universal Dual Timer and power supply for 120 days from the date of purchase against material and manufacturing defects. This covers replacement or repair, as needed, the decision being made upon our inspection of the failed unit upon our premises. Should the timer fail to operate, return it to Terror By Design for immediate inspection and repair. This warranty does not cover or insure, in any way, against abuse or misuse, water damage, physical damage, opened cases, shipping costs, lost time and revenues, or damage to connecting equipment, resulting from the failure of this device.*