Puppet Master Extreme Instructions

Overview: *The Puppet Master is an effect control that can work as a cascade timer with a countdown repeat or it can mimic the user's input and play it back whenever triggered.*
Power Requirements- *9 VDC included wall power adapter*
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.*

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 or experienced help before proceeding.

At no time should the internal relay contacts be subjected to more than their rated capacity, 10 amps resistive or 5 amps inductive load. Never apply external power or voltage to the bottom 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 applications. <u>*Disconnect all power sources before wiring to terminal blocks.*</u>

1. Wires going into the terminal blocks should be stripped as close as possible to ¼ inch. Do not over-tighten the screws while clamping the wire. After clamping the wire, wrap the top three position terminal block with electrical tape for additional insulation when running 120 VAC.
Never run external voltage to the bottom terminal block used for sensor or switch hookup, permanent damage will result. A switch closure across terminals 1 and 3 is all the timer needs to start the timing cycle.

2. The <u>top</u> three position terminal block is the access to the internal relay. This terminal block is wired into a circuit as a switch would be, one leg of the power to the target effect, the other leg to the timer and then to the effect. See the following drawing for a typical example.

Typical Terminal Block Hook-Ups
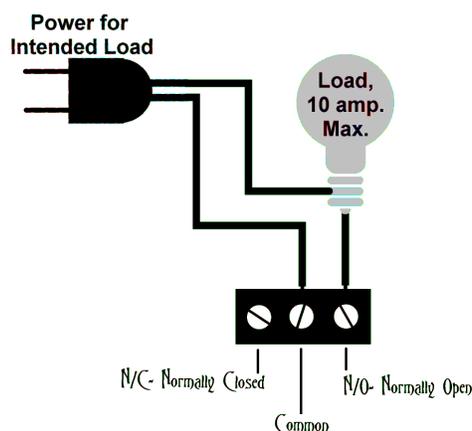
3. While most applications will use the Common and Normally Open Positions, the Normally Closed position can be used to turn a device -Off- such as a light when the timing cycle starts. Following this thought, sharing the Common position would allow a light wired to Normally Closed to turn off as the scare-device wired to Normally Open is activated. Or… general area illumination is killed just as the scare happens.

4. The <u>bottom</u> terminal block is provided for external hook-up to a normally open switch such as a pushbutton, switch mat or Terror By Design's T-Sense. (see 5 and 6 below for IR sensor versions)

On the bottom terminal block only terminals 1 and 3 are used to connect to an external switch. The terminal block only needs to see a switch closure across terminals 1 and 3 for activation. **<u>Never run any external voltage or current to this terminal block.</u>** Never connect anything to terminal 2 other than an IR sensor supplied by Terror By Design. Do not attempt to use home-center type (porch light) infrared sensors, permanent damage will result.

5. Infrared sensor supplied Puppet Masters will have the sensor already attached and tested. The sensor head has a range up to 15 to 20 feet. **After initial power up of the Puppet Master it will take 45 seconds for the IR sensor to become active.** After the 45 second delay the sensor will react immediately to human activity unless power has been removed and re-applied. Depending on the surroundings **it may take a minute or two for the IR Sensor to settle down and become stable after being powered up.** Killing power to the effect being controlled may be a good idea while the IR sensor settles down. **Disconnecting one wire of the sensor can help avoid running and tripping confusion during programming.**
Keep the IR sensor away from sunlight and heating or air-conditioning ducts to avoid false triggering.

6. **Should it become necessary to detach the IR Sensor wires from the bottom terminal block be careful to mark or identify the wires so they can be replaced in exactly the same positions. Failure to reattach the wires in the correct positions may lead to internal damage.**

7. In either the Effect Timer or Puppet mode the Puppet Master can be set to continuously loop the timing sequence by adding a wire jumper between terminals 1 and 3 on the bottom terminal block.

<u>Programming Instructions</u>

Programming <u>Effect Timer Mode</u> With Countdown Repeat:
1. Do not plug the power adapter in to the Puppet Master just yet. Have the transformer plugged into a wall socket but <u>do not</u> plug the male connector in to the timer. **For Effect Timer operation move the jumper on the faceplate to the top two positions marked Event Timer.**

2. To enter the programming phase hold down Button A and plug the male power connector into the timer. The LED will light.

3. Release Button A, the LED will flash off momentarily and then back on.

4. The timer is ready to program the Delay-Before-On time if any is needed. Press Button A one time for each ½ second of Delay-Before-On time desired (if no Delay-Before-On is wanted do not enter any presses with Button A). As soon as the amount of desired delay is entered momentarily press button B. The LED will turn off for 1½ seconds and then back on.

5. The timer is now in the On-Time programming mode. Press Button A one time for each ½ second of On-Time required. On-Time can not be set to zero, entering no button presses will call the last stored On-Time from memory. When the desired On-Time is entered press button B momentarily, the LED will go off for 11/2 seconds and then back on.

6. The timer is now in Off-Time programming mode. Press Button A one time for each ½ second of Off-Time required. Off-Time can not be set to zero, entering no button presses will call the last stored Off-Time from memory. When the desired Off-Time is entered press button B momentarily, the LED will go off for 11/2 seconds and then back on.

7. The timer is now ready to record how many times/cycles you want the timing to repeat when triggered. Press Button A as many times as you want the cycle to run. One press will run the timer through one complete cycle, also called single-shot timing. With multiple cycle repeats or Countdown Repeat Cycles the Delay-Before-On will only be used the first time through the repeated cycles since after that first time it's simply appears as an off cycle like the normal Off-Time.
After the cycle times are entered momentarily press Button B, the LED will flash a few times and then start flashing very quickly. This quick flash indicates the timer is ready to be tripped.
If you got lost and things don't look right, unplug the timer with the male connector and start over at number 1 above. **Please note: If you do not press Button B after entering times or repeat cycles as described above the timer will automatically move in to the next programming mode after about 20 seconds.**

8. To test the programmed sequence press Button B. With the optional Infrared sensor the Puppet Master will trigger by detecting a warm moving body after the IR sensor has had about 45 seconds to warm up.

9. After testing, if you're happy with the timing sequence you've entered, you're good to go. If not, unplug the connector and start at number 1 above. (Puppet Master will save your timing sequence automatically when power is removed. Do not hold down Button A when power is reapplied and Puppet Master will recall your settings and wait for the first trigger)

When the Puppet Master is running in Effect Timer Mode, Off times will be indicated by the LED being off and flashing briefly on at the ½ second marks. When the timer is On and the relay activated the LED will be on and will briefly flash off to indicate the ½ seconds.

Programming <u>Puppet/Mimic Mode</u>:

1. Do not plug the power adapter in to the Puppet Master yet. Have the transformer plugged into a wall socket but <u>do not</u> plug the male connector in to the timer. **For Puppet Mode operation move the jumper on the faceplate to the bottom two positions marked Puppet Timer.**

2. To enter the programming phase Hold down Button A and plug the male power connector into the timer. The LED will light.

3. Release Button A, the LED will turn off momentarily and then back on.

4. To start entering your timing sequence hold Button B down and tap in your timing with Button A. When you've finished entering your timing sequence release Button B and the LED will flash rapidly to indicate it's ready to be triggered. Press Button B to play back your programming.

5. If you're happy with the timing sequence you've entered, you're good to go. If not, unplug the power connector and start over at number 1 above.
(Once you have an acceptable timing sequence it will be automatically saved by Puppet Master if and when power is removed. Reapply power but **do not** hold down Button A as is done for programming, Puppet Master will recall your settings and wait for the first trigger.)

6. On-Times are indicated by the LED being lit, Off-Times by the LED being off.

7. The Puppet Mode can also have a **Countdown Repeat** where the timer replays the recorded sequence a

chosen number of times from a single trigger and it can have an **Off-Time** that is independent of the user recorded Puppet sequence. This may seem confusing at first but it will get easier after a full review of the instructions. **Simply put, to add Repeats and Off-Times independent of the recorded sequence the Puppet/Mimic Mode uses the Off-Time and Countdown Repeat numbers that are entered when the timer is in Effect Timer Mode.**

Here's how:

Follow the Effect Timer programming instructions described above this section and under the title Programming Effect Timer Mode With Countdown Repeat and enter the following-

Program Delay-Before-On with one button push, or ½ second.

For On-Time enter one button push.

For Off-Time enter the number of seconds you want to hold everything Off by pressing Button A one time for each ½ second required. That is, 10 presses would be 5 seconds of Off time. If you don't need an Off-Time done this way enter one button press.

Finally, program the number of times to play the sequence, just as the Effect Timer instructions describe. If only one play of the recorded sequence with no repeats is desired just enter one button press.

Now When the Puppet Master is placed back in Puppet Mode by removing power, replacing the jumper on the bottom two positions and restoring power, the Puppet Mode will use the Off-Time and the Countdown Repeat number as programmed under the Effect timer Mode.

Remember: If no Countdown Repeating or Off-Time, independent of the recorded sequence, is needed make sure those functions are entered as one button press under Effect Timer Mode. Having Repeats and Off-Times entered and forgetting they're there will result in very confusing results under Puppet Mode.

Some notes about Puppet Mode:

In Puppet mode always begin and end a complete "Puppet" sequence with an Off (Button A not pressed). Use the last Off as a Hold-Off to keep your effect from being re-tripped by patrons before you want it to be. 15 to 20 seconds is usually a sufficient Hold Off-Time.

Of course an Off-Time independent of the programmed sequence can be done as described above.

The maximum total number of On and Off cycles the Puppet Master Extreme will remember is 125 depending on memory usage. That's 125 On's and 125 Off's. The maximum record time is about 40 minutes if each On and Off is 10 seconds long. Overrunning the available memory may give results you may not recognize. Using an independent Off-Time by entering it in Effect Timer Mode can save memory space for the Puppet sequence.

The minimum timing resolution is 40 milliseconds. Time entered that goes over the 40 millisecond resolution is rounded up to the next 40 milliseconds. Or... if you press Button A for 132 milliseconds it will be remembered as 160 milliseconds. This resolution can give a slightly slower mechanical feel to fast rhythms you may enter. The best way to correct this is to emphasize or express the rhythm more than may feel normal.

The Effect Timer Mode and the Puppet Mode share memory space, switching the timer back and forth from the Effect Timer Mode to the Puppet Mode by changing the jumper on the face plate and entering a new program may delete the time settings from the previous mode of operation. You can always go back and re-enter your program, the original just won't be there. The exception to this is when Off-Time and Countdown Repeat numbers are entered under Effect Timer Mode to be used in the Puppet Mode.

Glossary

Delay 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.

Hold Off Time or Off Time- Time sequence when everything is held Off. This helps avoid constant re-tripping of a device until ready..

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.

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.

Countdown Repeat- Repeat a programmed time event for a set number of cycles.

Infrared- A spectrum of light/thermal radiation outside the range of human sight.

Momentary Contact- A switch that does not stay in the actuated position unless held. Doorbell 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- also referred to as **N/O**.

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- also referred as **N/C**.

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

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