The CVM-60 is a general purpose multifunction timer capable of timing from 1 second to 4 hours in 4 selectable ranges. The unit provides the ability to trip from power-up, or from a normally open or normally closed contact with positive or negative trip. The CVM-60 provides one single pole double throw (SPDT - Form C) dry contact output. The timer may be powered from 12 or 24V DC or AC (limited functionality when powered by AC) - selectable by cutting jumpers.

**Terminal Usage**

Terminals 1 (+) and 2 (-) are the power input to the timer and may be connected to a voltage source of 12V or 24V DC or AC after cutting the proper jumpers.

Terminal 3 is used to start (trip) or restart the timer.

Terminals 4, 5, and 6 are the dry relay contacts and are rated for 3 amps @ 30VDC or 120VAC resistive.

**Switch Usage**

- **S1-1** and **S1-2** are used to select the start (trip) mode of the timer.
- **S1-3** enables the pulse mode of the timer, causing the output relay to alternately transfer for the duration of the time delay.
- **S2-1** and **S2-2** are used to select the desired timing range.
- **S2-3** is used to select either a momentary or maintained trip as a condition for starting the time delay.
- **S2-4** is used to select single cycle or recycle mode.
- **S2-5** is used to determine whether the relay is pulled in or dropped out during the time delay.
- **S2-6** is used to select the timing range for the CVM-60.

**Potentiometer Usage**

The Time Delay potentiometer is used to fine-tune the time delay. The Pulse Speed potentiometer is used to control the speed of the pulsing. The Time Delay potentiometer and Range Selection switches control the amount of time the relay pulses for. Note that recycle mode and pulse mode are not the same - pulse mode gives a timed series of pulses, while recycle mode pulses the entire time power is present.

**Jumper Usage**

<table>
<thead>
<tr>
<th>For Use With:</th>
<th>Cut</th>
<th>White</th>
<th>Blue (If Present)</th>
<th>Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-16 VDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-24 VDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-16 VAC</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-24 VAC</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**S1-4** selects momentary or maintained trip. The relay activates immediately in either mode, but the setting of this switch will determine when the unit begins timing.

- **Momentary Trip** - The CVM-60 begins timing when the trip signal is first applied. The unit will time out, even if the trip signal remains or is reapplied.
- **Maintained Trip** - The CVM-60 begins timing when the trip signal is removed. The unit will remain active for the entire time the trip signal is present plus the time delay. If the trip signal is removed, then reapplied before the unit times out, the timing will restart after the removal of the last trip signal.

**Example:**

1. One and a half hours is required. The closest time is 1.56 hours in Range 4. Looking across to Range 1, the corresponding time is 23.02 seconds.
2. Set the CVM-60 to Range 1. Trip the timer and time the pulse. Adjust the Time Delay potentiometer in the appropriate direction and re-trip the timer. Repeat this process until 23.02 seconds is achieved.
3. Set the timer for Range 4. The timer should now be set for 1.56 hours. The Time Delay potentiometer can now be "fine-tuned" to achieve exactly 1.50 hours if desired.
S2-3 sets Single Cycle or Recycle Mode

Single Cycle mode is the most common mode. When power is applied to the timer, it goes through the power-up trip, then waits for a valid signal on the trip terminal. Recycle mode allows for a continuous pulsing of the relay. It begins as soon as power is applied to the timer, and continues until power is removed. The duty cycle of the pulsing is 50% (i.e. 1 second on, one second off). Note that recycle mode and pulse mode are not the same – pulse mode gives a timed series of pulses, while recycle mode pulses the entire time power is present.

S2-4 sets the normal state of the output relay.

Delay In - Relay activates during time delay
Delay Out - Relay drops out during time delay

Miscellaneous Notes

1. The momentary trip mode does not work when the CVM-60 is being powered/tripped with AC power.

2. Power-up trip can not be disabled. The timer will activate when power is first applied - wait for it to time out before attempting to trip the timer. If it is necessary for the application to use the trip terminal of the CVM-60, you must keep power applied to the timer. If this is not possible, consider the AlarmSaf UT-10 or UT-20 timers, which do not have the power-up trip function.

3. Some applications may require multiple timers. For example, use an Alarm Verifier to trip a One Shot timer to give a 5 second pulse after a 30 second delay. Through combinations of timers (CVM-60, UT-10, UT-20, FT-100/200/247) and relays, most applications can be solved.

4. The CVM-60 has no provisions for resetting during the time delay. If a reset feature is required, consider the AlarmSaf UT-10 or UT-20, which have a reset terminal.

5. The voltage being used to trip the timer MUST be common grounded with the voltage powering the CVM-60.

6. The CVM-60 has no built-in method for delaying its output. It can be "tricked" into delaying by reversing the relay (S2-4), and holding the timer tripped normally, removing or overriding the trip signal to start the delay. The trip must be removed for the entire length of the delay, at which time the relay will activate and remain active until the trip is reapplied. See the Delay on Operate (Alarm Verifier) applications for examples.

7. The CVM-60 provides a DRY-CONTACT output. No voltage is supplied from the CVM-60.

Applications

Alarm Verification

Timers may be used in conjunction with two or more detector types in order to minimize or eliminate the possibility of false alarms due to the relationship of the detector type chosen to the environment. For example, proximity detectors tend to be false alarm prone; however by using a PIR in conjunction with a proximity detector, the combination may be made essentially foolproof. The accepted method is to utilize the most unstable detector to initiate a "time window" during which the second detector "looks" for a disturbance upon which an alarm may be initiated. It is possible to use the CVM-60 timer as an alarm verifier to eliminate "swingers" by forcing the alarm detector to hold in the alarm mode for a specific time frame.

Delay on Operate - N.O. Contact (Alarm Verifier For N.O. Loop)

For this application, the timer is set for a negative maintained trip. The N.O. contact from the detector type chosen to the environment is closed or open. Since the tripping of the timer is not active during the time delay, the relay never activates the timer resets and awaits the next contact closure.

For this application, the timer is set for a negative maintained trip. The N.O. contact from the detector type chosen to the environment is closed or open. Since the tripping of the timer is not active during the time delay, the relay never activates the timer resets and awaits the next contact closure.

Delay on Operate - N.C. Contact (Alarm Verifier For N.C. Loop)

For this application, the timer is set for a negative maintained trip. The N.C. contact from the detector type chosen to the environment is closed or open. Since the tripping of the timer is not active during the time delay, the relay never activates the timer resets and awaits the next contact closure.

One Shot Timer Tripped from N.O. Contact

Momentary closure of N.O. Contacts connected between positive and trip will initiate timer operation. Relay contacts will transfer at the closure of the N.O. Trip contacts and remain until the end of the time delay selected by S2-1, S2-2, and the Time Delay potentiometer. Holding the O. Switch closed or opening then reclosing the N.O. Switch during the time delay will not affect the timeout of the CVM-60.

One Shot Timer Tripped from N.C. Contact

Momentary opening of N.C. Contacts connected between positive and trip will initiate timer operation. Relay contacts will transfer at the opening of the N.C. Trip contacts and remain until the end of the time delay selected by S2-1, S2-2, and the Time Delay potentiometer. Holding the N.C. Switch open or closing then reopening the N.C. Switch during the time delay will not affect the timeout of the CVM-60.

Combination Applications

Timers may be combined to achieve functions that a single timer cannot perform on its own. For example, the application below combines a Delay on Operate timer with a One Shot timer, to give a 5 second pulse after a 30 second delay.

Note: The application is for use with AC powering and/or tripping the CVM-60. It WILL NOT work with DC powering and/or tripping the CVM-60.

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