COLLECTION BOTTLE ROTATOR-- MODEL 1512

Instructions

Description

The Collection Bottle Rotator (Model 1512) is a device which allows segregating the catch of any of our miniature mechanical or pheromone traps or a collection device of your design into 8 bottles over periods of time determined by a programmable timer. The design permits almost complete flexibility in the collection schedule which may range in total length from a few hours (or even minutes) to weeks. Timer accuracy is ±4 minutes per year. An internal backup battery maintains the current date/time and switching program for several days without external power. The Collection Bottle Rotator requires 12 VDC and supplies timer-switched 12 VDC power to the trap.

Electrical Requirements and Connections

The timer circuit and the gearmotor of the Collection Bottle Rotator (CBR) require 12 VDC and only a few mAmps per hour to operate. The size, i.e., the amp-hour rating, of the battery is determined by the requirement of the attached trap.

The external gray cord set with its red and black leads is used to attach the unit to the battery. The color-coded terminals on the top of the unit provide timer-switched 12 VDC power to the trap which is installed into the top of the Collection Bottle Rotator. This 12 VDC is appropriate for any of our 12 volt blacklight traps. The standard CDC Miniature Light Trap, Model 512, however, requires 6 VDC. Users can order a Model 512 modified to operate on 12 VDC from us for use with the Collection Bottle Rotator or modify one of their own by using a 12-volt/330-mAmps bulb (CM-1816) and installing a 10-wt/50-Ω resistor in series with the motor— call if you need parts and/or some help.

The CBR and power supply terminals are protected with a 10-amp fuse that is mounted in-line at the battery-terminal end of the power cord.

Operation

Outdoor mounting

The central stainless steel rod extending from underneath the Collection Bottle Rotator is used to support the unit and associated trap; the diameter is 0.50" (18 mm). This should be inserted into a user-supplied piece of pipe or wood which has been driven into the ground. It is important that the platen of the CBR is horizontal and that the power supply cord and the support do interfere with the rotation of the bottles.

Installing the trap and filling collection bottles

Insert the base of your trap into the screened holder located on the top of the CBR unit; the inside diameter of the holder is 3.87" (98 mm). Secure the trap with the thumb screws. You can fill the 8 collection bottles with a few ounces of water or a water and alcohol solution and then screw them into the jar lids fastened to the bottom side of the platen; some users collect into dry bottles by using a DDVP-based material (Hercon Vaportape, Great Lakes IPM, (517) 268-5693) to provide knock-down. However, in early 2005, we modified the mechanism so that after collecting into a bottle, and the program calls for power to be shut off to the trap, the platen will rotate to the next bottle and stop; the previous catch is prevented from flying out, the bottle now being covered with the internal cover over all bottles except the one under the trap. Note that after collecting into the eighth bottle, bottle one will be brought under the inactivated trap, possibly permitting the loss of catch from this bottle.

Electrical connections

If your collection device requires 12 VDC power, connect it to the switched power supply terminals on the top of the CBR. The gray power supply cord of the CBR is connected to a 12 VDC battery. The red lead is positive (+) and the black lead in negative (-); connecting the CBR to the battery with reversed polarity will not harm the unit, but, it will not run either.

Manual movement of bottles

The bottle positions are marked consecutively from 1 to 8 on the underside of the bottle platen. There is a small push button switch located near the trap holder on the top of the CBR. With the CBR connected to power, momentarily pressing this for about one second will rotate the platen one bottle. Each time the switch is pressed and held closed for ca. 1 second, the platen will rotate, automatically stopping when the next bottle comes into position under the trap.

Operation of the timer unit

Battery backup of timer data

The timer module is located in the small white screw-top container on top of the CBR. If the CBR is disconnected from an external power source for several days, the internal nickel-cadmium battery will completely discharge and the LCD display, the switching program and the date/time information will be lost. Once the unit is reconnected to a 12 VDC source, it may take a few moments for the timer display to become visible. The internal ni-cad battery alone will not run the CBR; even if you do not need power for your trap, the CBR requires 12 VDC to operate the gearmotor and to energize the switch relay in the timer module. *Be careful to keep the timer enclosure tightly closed when in operation, the circuitry can stand humidity but not rainfall on to the face of the timer itself.*

Setting the time

1. Connect the CBR to an external power source and wait for the display to become visible.

2. Depress the *Reset* button (labeled "**Res.**" at the 10:30 position on the timer face) with a pen or other small object.

3. Select military (24:00hr) or AM/PM (12:00) time mode by holding the **h** button (2:00 position) down and toggling between the 2 modes by pressing the +**1h** button (1:30 position). "AM" appears in the display when the AM/PM mode is selected.

4. Then press and hold the ⊕ button (8:00 position) down during the entire timer-setting procedure.

5. If setting the time when daylight savings time is in effect, press the +**h** button once ("+1h" will appear in the display).

6. Press the **->Day** button (5:00 position) to identify the current day of the week into the display.

7. Use the **h** and **m** buttons (positions 2:00 and 3:00, respectively) to set the correct time. If the buttons are depressed for >1 second, counting will continue automatically.

8. When the correct time and day are shown in the LCD display, release the ⊕ button. The colon between the hours and minutes will be flashing. If the days are flashing, the day of the week was not entered (see step 4 above).

The ON/OFF bar

The semi-circular bar with the ⬚ symbol (above the days of the week) is the ON/OFF switch. Pressing this bar switches the unit through 4 states, one after another:

1. OFF— symbols at lower left of screen are ⏰ O. The red/black trap terminals on the top of the CBR are off. In this state, the trap terminals can be turned on with an ON command in the program.

2. ON— symbol is ⊙ ⬚. The trap terminals are energized. In this state, the trap terminals can be turned off with an OFF command in the program.

3. LOCKED ON— **[⊙]**. The trap terminals are energized AND will stay on until the ON/OFF bar is pressed again. An OFF program command will NOT turn the trap terminals off.

4. LOCKED OFF— **[O]**. The trap terminals are off and will remain off until the ON/OFF bar (⬚) is pressed manually. An ON command in the program will not turn on the terminals. Pressing the ON/OFF bar again will take you back to OFF, number 1 above.

Basically, the LOCKED state is a manual override of the timer's program. Usually, before entering a program (see below) you should rotate bottle 1 under the trap using the momentary switch button and then set the ON/OFF state to number 1 above, OFF with symbols ⏰ O.

Entering programs—background information

The timer unit can store up to 42 pairs of ON/OFF commands. You may specify the day, hour, and minute when the ON or OFF event will occur. When the switch goes to ON, the power supply terminals for the trap will become energized. When the associated OFF command is encountered, the platen moves to the next bottle, and the power supply terminals for the trap are de-energized.

When using light traps which collect only when energized, it is possible to intersperse collection periods with breaks of no collections. For example, you could program the first bottle to contain material caught from 6:00 PM to 12:00 PM on Monday, bottle 2 to contain material caught from 6:00 PM to 12:00 PM on Tuesday, etc. During the 18 hours between collection periods, the trap would not be energized by the terminals in the top of the CBR. For traps that cannot be shut off, e.g., pheromone traps, the contents of a bottle represent everything captured since the last OFF was encountered and a new bottle was moved beneath the trap.

The timer has a 7-day time base and will repeat your ON/OFF program each week even if your last program command was OFF. Thus, for example, if your program consisted of only a single ON followed by an OFF 12 hours later on, lets say for the day of Monday, the bottles would contain specimens captured on each the subsequent 8 Mondays captured over the course of the next 2 months.

The following outline will help you enter your program of ON and OFF events. Remember, when the timer encounters an ON command, it energizes the trap terminals on the top of the CBR until an OFF is encountered causing the platen to rotate one bottle location. The timer does not move sequentially through the program steps, rather, the unit scans all program commands every minute, and if the current time corresponds to a time in one of the program steps, it simply sets the switch to what is called for in that command. For many users, they first enter all of the ON commands and their times, then they enter all of the off steps.

To enter a program.

1. If you have not done so, press the ON/OFF (⬚) bar at the top of the timer one or more times as necessary to set the unit to OFF. The symbol in the lower left portion of the LCD will show the OFF symbols— ⏰ O.

2. Press the **Prog.** button once-- do not keep it pressed. The display will show "**--:--**" if no event is programmed or, it will show the time for an ON or OFF event. The unit is now in the programming mode. Pressing this key again will either show the next programmed event or the number of available programs- **Fr 42**. Press again to advance to the first program or "--:--" if no event is programmed. Pressing the ⏰ button will take you out of program mode and return you to a display of the current time. If you want to erase all programmed ON's and OFF's, press the square reset button. Note that this will require you re-entering the day/time data again.

3. Press the ☞ bar at the top of the timer to program an ON event, the symbol in the lower left portion of the LCD will show the ON symbol- ☉. Pressing the ☞ bar at the top of the timer again will program an OFF condition, and the LCD will display the OFF symbol- ○.

4. Set the hour and the minute times using the **h**+ and the +**m** buttons, respectively.

5. If the programmed switch is to occur every day of the week, ignore the **Day** button, and press the **Prog.** button to advance to the next switching time. If you want to select a particular day for the event to occur, you will need to select the days of the week when the event is NOT to occur (this seems backwards to us too!). Here is how to do it: Use the **'day** key to advance to a day of the week to be omitted from the switching event and press the **Sel.** (i.e., select) button, the day will flash. Continue pressing the **Day** and **Sel.** buttons to omit days until only the desired days remain and are not flashing.

6. Press the **Prog.** key again and repeat steps 1-4 for each ON or OFF event.

7. When finished with programming in all ON and OFF events, press the ⊕ button to enter the run mode.

   Viewing, editing, and canceling the schedule of ON/OFF events. By repeatedly pressing the **Prog.** button, the sequences of ON and OFF events can be brought into the display, beginning with the first event. If you want to edit a particular event, simply alter the days and hours/minutes, using the keys as described above. If you want to delete an event, simply use the **h** and **m** buttons until "**--:--**" appears in the display, then press either the **Prog.** or the ⊕ button and the event will be deleted from the program after a few seconds.

Traps available for use with the Collection Bottle Rotator

1. The **CDC Miniature Light Trap, Model 512.** The **Model 512** is an improved version of the mosquito light trap developed by scientists from the Centers for Disease Control (CDC) . The trap was designed for mosquito abatement operations and arbovirus survey purposes. It is constructed of an acrylic cylinder housing a small motor/fan. Attraction is from an incandescent bulb. The trap is covered by a rainshield. The unit can be supplied for 12 VDC operation for use with the CBR.

2. The **Miniature DownDraft Blacklight Trap, Model 912.** Similar in construction to the **Model 512**, this trap employs a 4-wt blacklight tube and a very efficient transistorized inverter-ballast to provide radiation in the near-UV range (ca. 320-420 nm). Blacklight is attractive to a great diversity of insects of medical, veterinarian, and agricultural importance. The trap requires 12 VDC and ca. 500 mAmps/hour to operate.

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