

**canfield connector**  
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## MODEL MBT

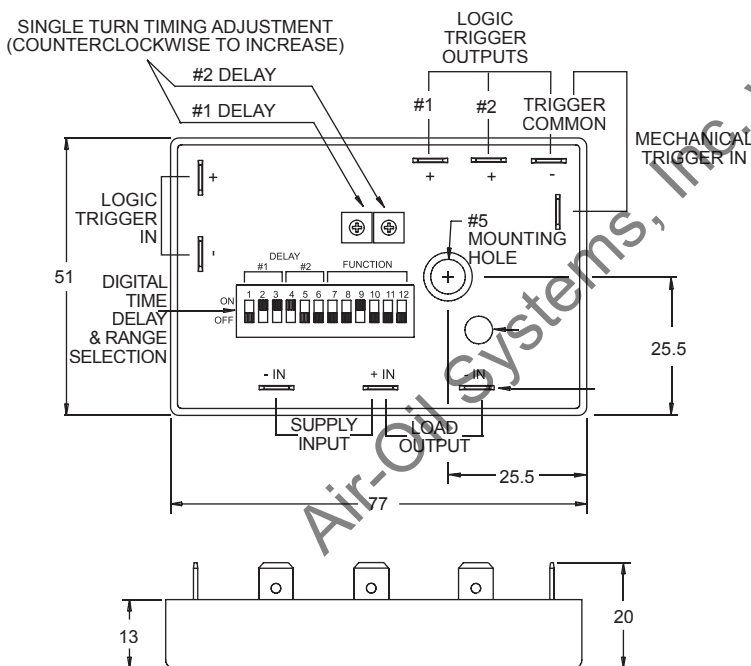
## MULTIFUNCTION BLOCK TIMER 12 FUNCTIONS IN 1 TIMER

### General Description

The Canfield Connector model MBT Multifunction Block Timer is designed as a full featured multiple mode of operation, multiple voltage, all-in-one timer. The unit is offered in a small epoxy encapsulated housing with on board mode switches and adjustments. The unit has a time range adjustable from 0.1 seconds to 33.3 hours. Features include twelve modes of operation including a multitude of logic function possibilities and an indicator light for fast troubleshooting. The unit can be used to trigger another MBT in a cascade type arrangement, to meet complex functions or longer time ranges. With a voltage range of 12-240 VDC / 24-240 VAC 50/60 Hz, the MBT can instantly handle all mobile, industrial and automation applications right off the shelf. Each timer is 100% tested for function and quality and is resistant to dust, vibration and humidity. Mounting is accomplished by use of a through hole able to accommodate up to a 6mm diameter screw. Electrical connections are .250" AMP Faston posts for crimp type push-on connectors.

### Dimensional Data

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

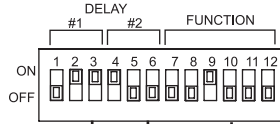


### Features

- All solid state
- 12-240 Volts in one unit
- Time range .1 sec. to 33.3 hours
- Indicator light
- Transient protection
- Stock one timer for all functions
- Faston connections
- Cascade trigger
- 12 timing modes in one unit
- On board adjustment

### Technical Data

- Maximum timer current draw: 2 mA (No Load)
- Absolute max. input voltage: 240V AC/DC
- Input voltage range: 24-240 VAC (50/60Hz)  
12-240 VDC
- Maximum output current: 1 Amp
- Logic trigger in: 5-48 VDC (10k input impedance)
- Logic trigger out: 5.5 V @ .55 mA max.
- Mechanical trigger in: 80 mA max. current draw
- Ambient temp. range: -20° to +60°C
- Max. reset time: 50 ms
- Repeat accuracy: ± 0.1% or 10 ms.  
(whichever is greater)
- Time delay variable over ambient temp. range: +/- 2%
- Enclosure material: ABS
- Potting: Epoxy



Switch Symbols

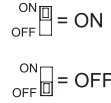


Chart 1

#1 Delay Range (seconds) All Function	Switch Settings
.10 - 4.70	ON 1 2 OFF 1 2
0.36 - 18.0	ON 1 2 OFF 1 2
2.80 - 150	ON 1 2 OFF 1 2
23.0 - 1200	ON 1 2 OFF 1 2
Delay = range X 1	ON 3 OFF 3
Delay = range X 100	ON 3 OFF 3

Chart 2

#2 Delay Range (seconds) Cycle Function Only	Switch Settings
0.10 - 4.70	ON 4 5 OFF 4 5
0.36 - 18.0	ON 4 5 OFF 4 5
2.80 - 150	ON 4 5 OFF 4 5
23.0 - 1200	ON 4 5 OFF 4 5
Delay = range X 1	ON 6 OFF 6
Delay = range X 100	ON 6 OFF 6

Chart 3

Function	Switch Settings
#1 Off Delay (Retriggerable)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12
#2 On Delay (Retriggerable)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12
#3a Cycle (On First)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12
#3b Cycle (Off First)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12
#4a Square Wave (On First)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12
#4b Square Wave (Off First)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12
#5 Delay on Break (Normally Off)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12
#6 Delay on Break (Normally On)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12
#7 Delay on Make (Normally Off)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12
#8 Delay on Make (Normally On)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12
#9a Toggle (On First)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12
#9b Toggle (Off First)	ON 7 8 9 10 11 12 OFF 7 8 9 10 11 12

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Operation

**General Description** - The MBT is a solid state timer/toggle latch, programmable in 12 modes of operation (refer to chart 3). It can be operated individually or cascaded to perform virtually any timing sequence desired.

**Mechanical Trigger Input** - A switch closure at this input begins or resets the timing period of any non-cycling MBT function. Refer to pages 70-71 for timing diagrams.

**Logic Trigger Input** - A sourcing or sinking voltage signal (5 - 48 volts) at this input begins or resets the timing period of any non-cycling MBT function. Refer to pages 70-71 for timing diagrams.

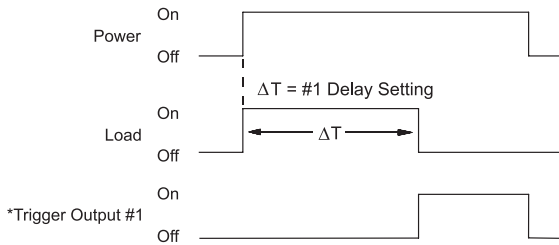
**Logic Trigger Outputs** - The logic output produces a voltage signal in sync with the timing cycle (see timing diagrams, pages 78-79). Timers can be cascaded when the logic output of one timer is connected to the logic input of other timers. The logic signal output is inactive when power is initially applied to the timer. The #1 logic output produces a voltage level opposite the #2 logic output.

**Cascading Multiple Timers** - There is no limit to the number of MBTs that can be cascaded in series (the logic output of one MBT connected to the logic input of another MBT). However the number of parallel MBTs (the same logic output connected to the logic input of more than one other MBT) should be limited to 10 MBTs.

## Timing Diagrams

### Off Delay (Retriggerable)

Function #1



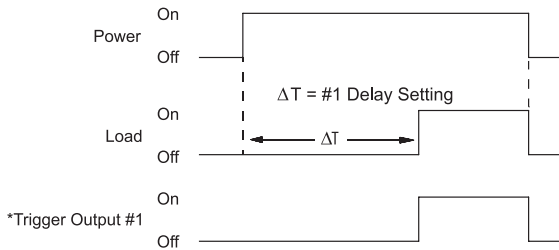
Load is energized for  $\Delta T$  upon application of power. Reset occurs when power is removed or trigger is applied.

Refer to charts 1 and 3 on page 69 for switch settings.

\*Trigger Output #2 level is always opposite of Trigger Output #1.

### On Delay (Retriggerable)

Function #2



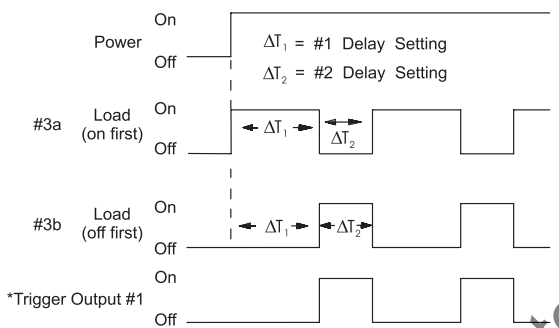
Load remains Off for  $\Delta T$  upon application of power. Reset occurs when power is removed or trigger is applied.

Refer to charts 1 and 3 on page 69 for switch settings.

\*Trigger Output #2 level is always opposite of Trigger Output #1.

### Cycle

Function #3a / 3b



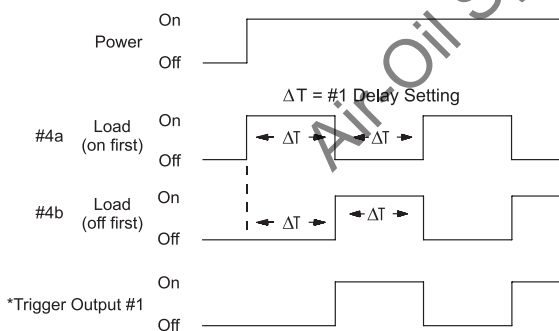
Load cycles  $\Delta T_1$  and  $\Delta T_2$  when power is applied. Reset occurs when power is removed.

Refer to charts 1, 2 and 3 on page 69 for switch settings.

\*Trigger Output #2 level is always opposite of Trigger Output #1.

### Square Wave

Function #4a / 4b



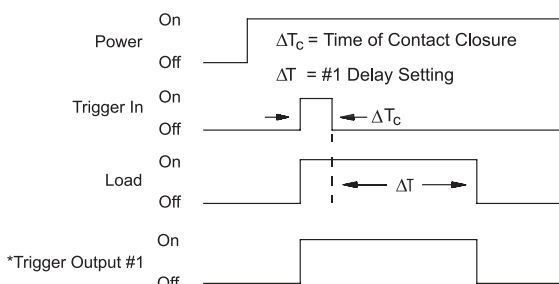
Load cycles with equal On and Off times when power is applied. Reset occurs when power is removed.

Refer to charts 1 and 3 on page 69 for switch settings.

\*Trigger Output #2 level is always opposite of Trigger Output #1.

### Delay On Break (Normally Off)

Function #5



When power is applied, load remains Off. Load is energized when trigger switch is closed. When trigger switch is opened,  $\Delta T$  begins. The load de-energizes at completion of  $\Delta T$ . Reset occurs when load is Off and trigger is re-applied.

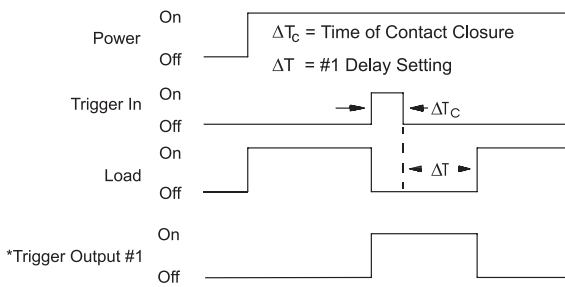
Refer to charts 1 and 3 on page 69 for switch settings.

\*Trigger Output #2 level is always opposite of Trigger Output #1.

## Timing Diagrams con't

### Delay On Break (Normally On)

Function #6



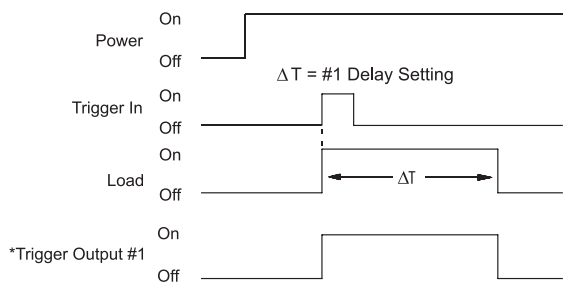
When power is applied, load is energized and remains energized until the trigger switch is closed. Load is then Off for  $\Delta T_C + \Delta T$ . Reset occurs when load is On and the trigger is re-applied.

Refer to charts 1 and 3 on page 69 for switch settings.

\*Trigger Output #2 level is always opposite of Trigger Output #1.

### Delay On Make (Normally Off)

Function #7



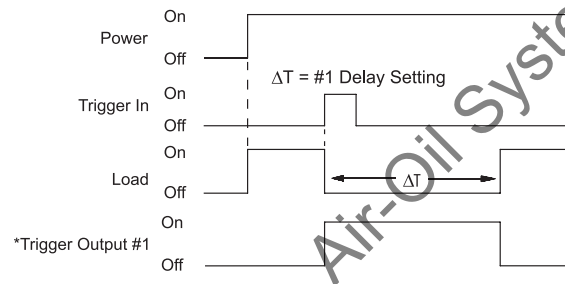
When power is applied, load remains Off. Load is energized for  $\Delta T$  only upon closure of a normally open momentary contact switch (trigger). Reset occurs when load is Off and the trigger switch is closed.

Refer to charts 1 and 3 on page 69 for switch settings.

\*Trigger Output #2 level is always opposite of Trigger Output #1.

### Delay On Make (Normally On)

Function #8



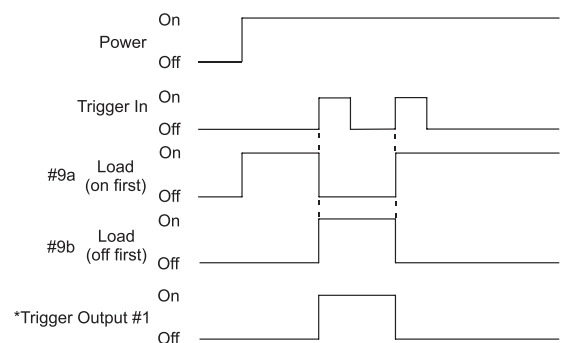
When power is applied, load is energized. Load de-energizes for  $\Delta T$  only upon closure of a normally open momentary contact switch (trigger). Reset occurs when load is On and the trigger switch is closed.

Refer to charts 1 and 3 on page 69 for switch settings.

\*Trigger Output #2 level is always opposite of Trigger Output #1.

### Toggle

Function #9a / 9b

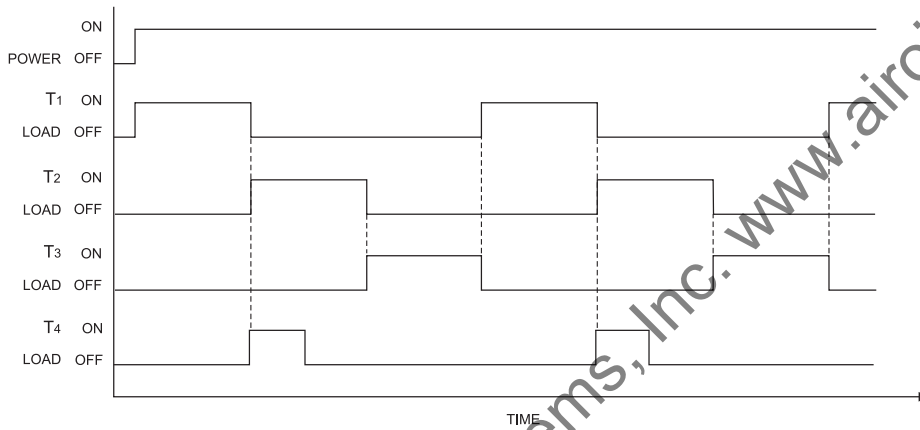
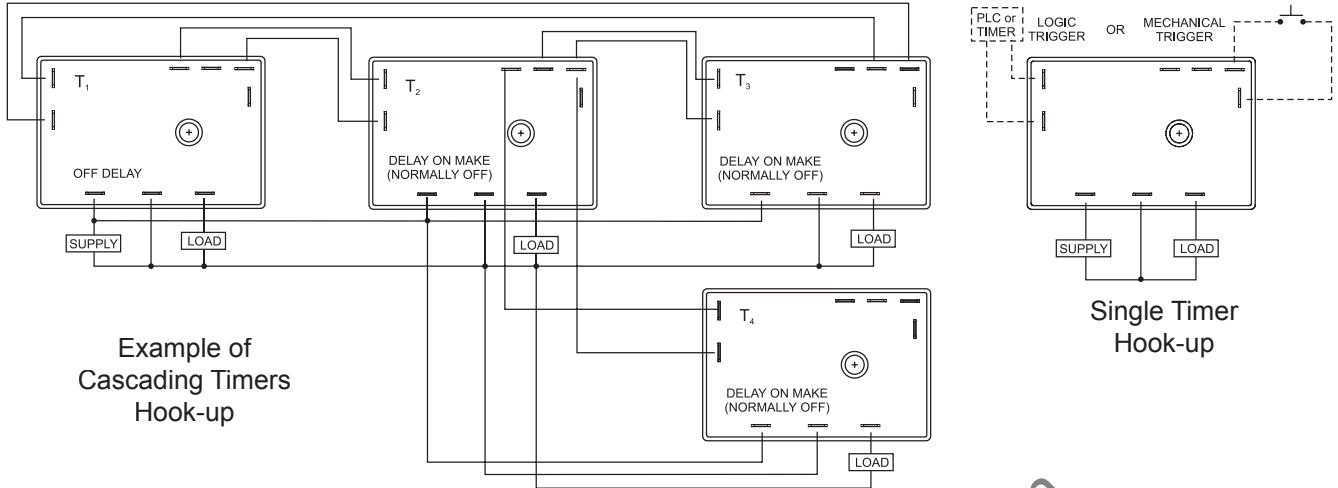


When power is applied, load is On. Load switches state (On/Off) with each application of trigger

Refer to chart 3 on page 69 for switch settings.

\*Trigger Output #2 level is always opposite of Trigger Output #1.

# Hook-Up



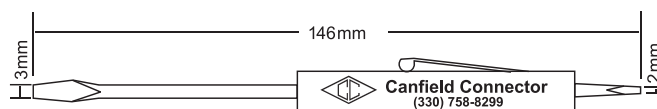
MBT



Consult factory for available versions listed by Canadian Standards Association for use with certified electrical equipment.

## Ordering Information

**Model # MBT-1000-00**



Optional Adjustment Tool  
part # 5000-TOOL