

## INSTRUCTION MANUAL

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# TIMER -X

## UNIVERSAL TIMER

(DUTY CYCLE, DODO,DOPI)



**MODEL # 091-214-12**

**INPUT: 12VDC or 110-250 VAC 50/60 Hz**

**OUTPUT: 30 AMPERES**

**3 YEAR WARRANTY**

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# INTRODUCTION

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The TIMER-X universal timer may be configured to operate in any of three modes; delay-on-pull-in (DOPI), delay-on-drop-out (DODO), or duty cycle timer (CYCLE). The three modes share common features within the timer. The timer uses a quartz crystal for precise interval timing. Switches are used (instead of potentiometers) for simple and accurate mode, time interval and units programming. The interval(s) can be set over a broad range of time from 1 second to 99 hours. The heavy-duty, 30 Ampere output relay provides both normally open and normally closed contacts for load switching. An on-board LED indicates when the output relay is energized. The timer may be operated from 12 Volts DC or from an external, wide input range (100-240 VAC, 50/60 Hz) AC adapter, Kussmaul Electronics model number 091-214-120.

When TIMER-X has been configured for use in DOPI or DODO modes, its flexible input triggering circuitry accepts either +12 VDC or a contact closure to ground for timing cycle initiation.

## **Delay-on-pull-in (DOPI) mode:**

When configured for use in DOPI mode, TIMER-X delays the application of power to the load by the preset interval. The timer's +12V trigger input is normally wired to the vehicle's "ignition-on" or "engine running" circuit. When the ignition switch is turned on, +12 Volts is applied to the trigger input and TIMER-X initiates its timing interval. When the timing interval expires, the relay in TIMER-X energizes, applying power to the connected load.

When the ignition is switched off, +12 Volts is removed from the trigger input and the relay opens immediately, removing power from the connected load.

## **Delay-on-drop-out (DODO) mode:**

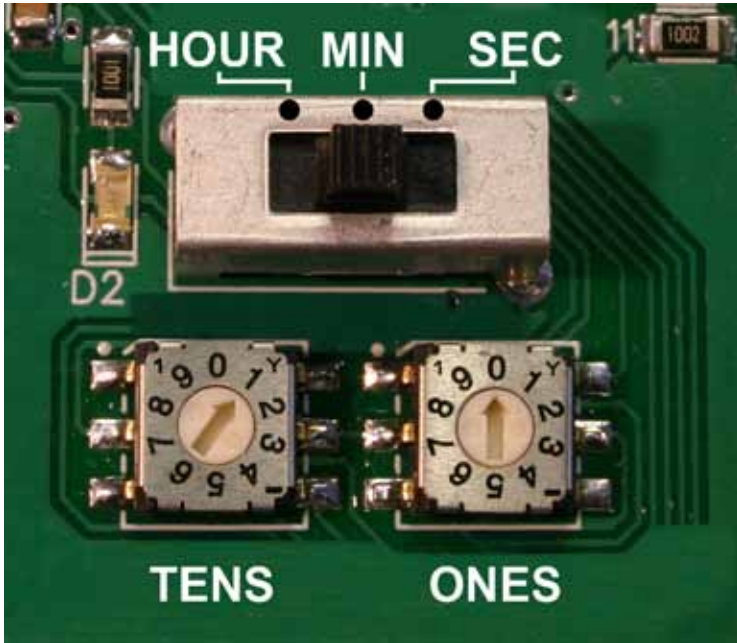
When configured for use in DODO mode, TIMER-X delays the removal of power from the load by the preset interval. The timer's +12V trigger input is normally wired to the vehicle's "ignition-on" or "engine running" circuit. When the ignition switch is turned on, +12 Volts is applied to the trigger input. This causes the relay in TIMER-X to energize immediately, applying power to the connected load.

When the ignition is switched off, +12 Volts is removed from the trigger input and TIMER-X initiates its timing interval. The relay opens to remove power from the connected load after the preset interval has elapsed.

## **Duty cycle timer (CYCLE) mode:**

The duty cycle timer mode in TIMER-X differs from the DOPI and DODO modes in two important ways. First, cycle mode employs two interval settings, one for relay off period and another for relay on period. Secondly, no trigger input is used. The timer continuously alternates between the off period (relay de-energized) and the on period (relay energized). The off period begins as soon as power is applied to the timer. The off period also initializes when any switch changes are made.

# SETTING AND CONFIGURING TIMERS



## SELECTOR SWITCH

Set 3 position switch to select time increments in hours, mins or secs.

## ROTARY SWITCHES

Set 10 position rotary switches to select time increments from 1 to 99.

Example: TENS:2 & ONES:5 = 25 units

Example: TENS:0 & ONES:7 = 7 units

Example: TENS:4 & ONES:0 = 40 units

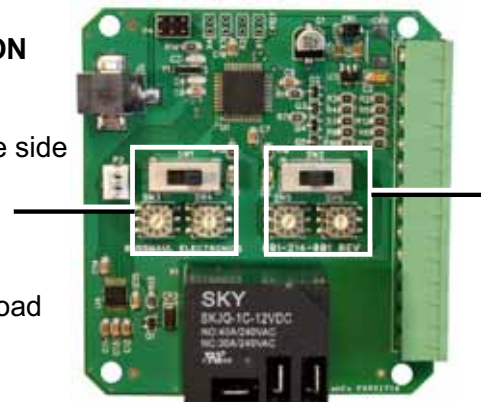
Example: Photo shows selector switch set to minutes and rotary switches set to 10 for 10 minutes delay

## DODO CONFIGURATION

Set the TENS to "0" and the ONES to "0"  
Then adjust the opposite side to the time required

### Duty Cycle time

This side is set for the load off time.



## DOPI CONFIGURATION

Set the TENS to "0" and the ONES to "0"  
Then adjust the opposite side to the time required

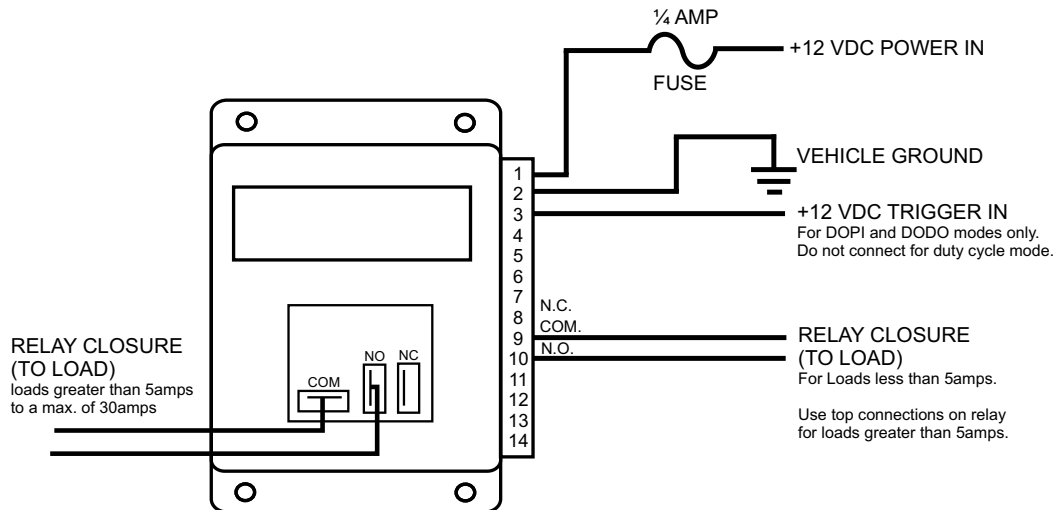
### Duty Cycle time

This side is set for the load on time.

# INSTALLATION

1. The Timer-X should be installed in a dry area.
2. Mount the Timer -X with the four holes provided.

## TIMER-X WIRING DIAGRAM FOR +12 V TRIGGERING APPLICATIONS



PIN	DESCRIPTION
1	+12 VDC INPUT
2	GROUND
3	+12 VDC TRIGGER INPUT
4	GROUND TRIGGER INPUT
5	NC
6	NC
7	GROUND
8	RELAY NORMALLY CLOSED
9	RELAY COMMON
10	RELAY NORMALLY OPEN

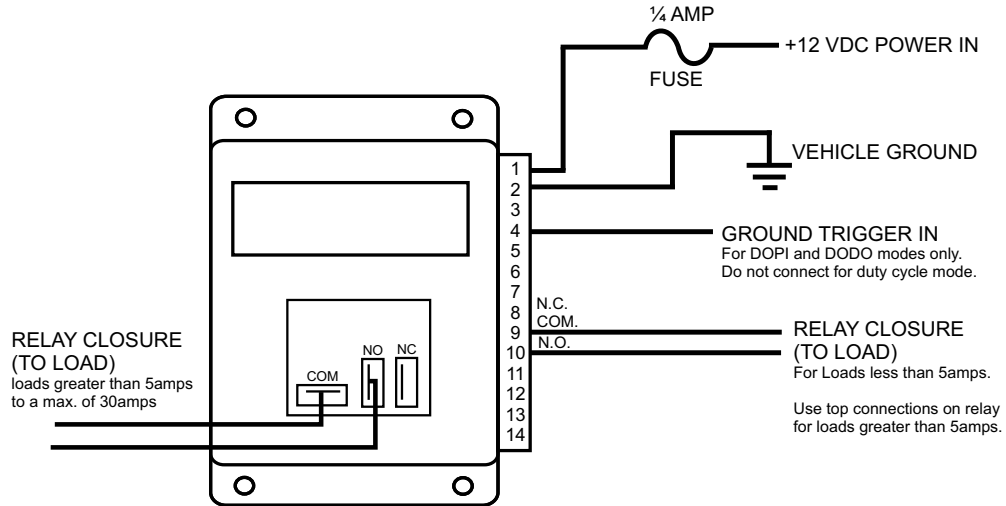
Note: When using the optional 091-214-120 AC Adapter, do not connect an external source of +12V to Pin 1 of the terminal block.

Pin 1 can be wired with a switch to Pin 3 to initiate the timer in DOPI or DODO modes.

\*Note: An external power adapter, part number 091-214-120 is required for 100 to 240 VAC operation.

# TIMER-X WIRING DIAGRAM

## FOR GROUND TRIGGERING APPLICATIONS



PIN	DESCRIPTION
1	+12 VDC INPUT
2	GROUND
3	+12 VDC TRIGGER INPUT
4	GROUND TRIGGER INPUT
5	NC
6	NC
7	GROUND
8	RELAY NORMALLY CLOSED
9	RELAY COMMON
10	RELAY NORMALLY OPEN

Note: When using the optional 091-214-120 AC Adapter, do not connect an external source of +12V to Pin 1 of the terminal block.

Pin 1 can be wired with a switch to Pin 3 to initiate the timer in DOPI or DODO modes.

\*Note: An external power adapter, part number 091-214-120 is required for 100 to 240 VAC operation.

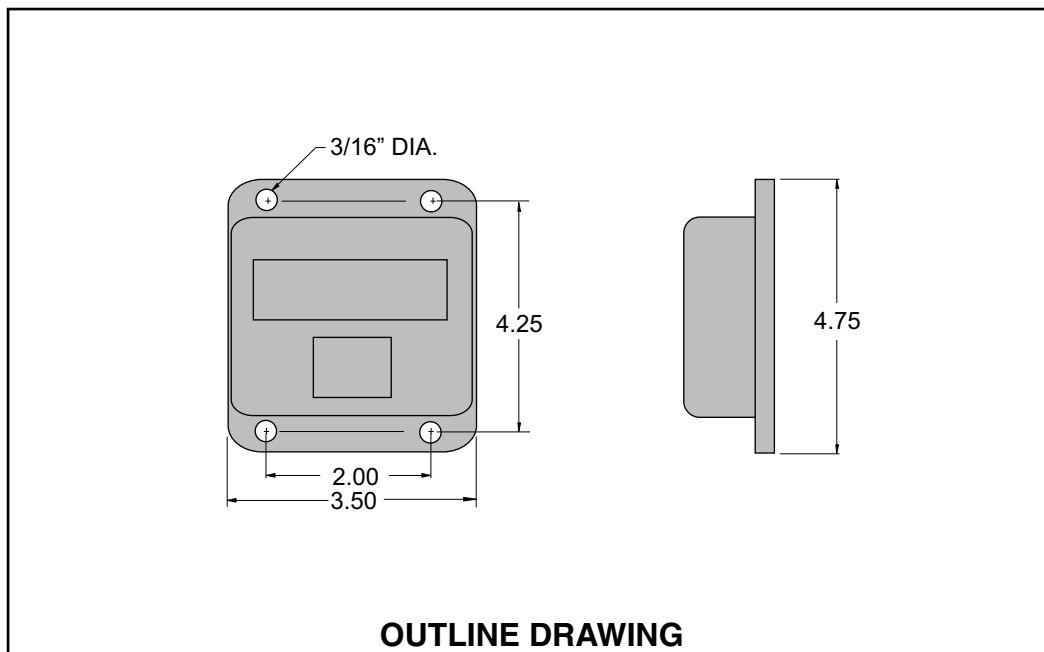
## SPECIFICATIONS & WARRANTY

**Power Requirement:** 12-15 VDC at 0.12 A (120 mA with relay energized)

**Operating Temperature Range:** -30 to 50 degrees C (-22 to 122 degrees F)

**Trigger Input:** 12-15 VDC (pin 3) or contact closure to ground (pin 4)

**Output Current (Relay Contact Rating):** 30 Amps (12 VDC or 120/240 VAC)



## WARRANTY

All products of Kussmaul Electronics Company Inc. are warranted to be free of defects of material or workmanship. Liability is limited to repairing or replacing at our factory, without charge, any material or defects which become apparent in normal use within 3 years from the date the equipment was shipped. Equipment is to be returned, shipping charges prepaid and will be returned, after repair, shipping charges paid.

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