



# XC-4 DIGITAL EVENT COUNTER

## INSTRUCTIONS



### INTRODUCTION.

The XC-4 Digital Event Counter is a 4-digit, 10000-count electronic counter, designed for panel mounting. The XC-4 accommodates inputs from either contact-closures or electronic waveforms. The count, reset, and latch inputs are conditioned to provide high noise immunity.

The XC-4 features a behind-panel depth of less than one half inch. The display consists of 0.56-inch high, red numerals. A +5 VDC  $\pm 5\%$  regulated power supply is recommended to operate the counter. A typical configuration for a suitable power supply is shown in figure 1.

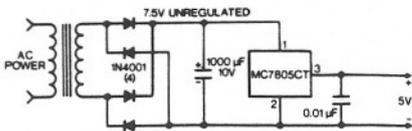


Figure 1. Typical Power Supply

### SPECIFICATIONS.

RANGE: 0000 to 9999 counts

#### COUNT RATE:

Logic Level\* - 0-1,000,000/sec  
Contact Closure - 0-50/sec

\*This speed is achieved by removal of internal capacitors which normally provide filtering of contact bounce.

COUNT THRESHOLD: Approximately 2V

MINIMUM LOGIC LEVEL SWING: 0 to +3V

MAXIMUM LOGIC LEVEL SWING: 0 to +15V

CONTACT-CLOSURE OPERATION: Between ground and open

DISPLAY: 0.56" high (14.22 mm) LED

OVERFLOW INDICATION: Blinking decimals

POWER: +5 VDC  $\pm 5\%$  @ 150 mA

OPERATING TEMPERATURE: 0 TO 50°C

SIZE: See figure 2.

WEIGHT: Approx. 2 oz (56.7 gr)

DECIMAL: Positioned by internal jumper to any one of four locations

COUNT INPUT: The count input threshold is approximately 2 volts. Any positive-going signal crossing this threshold will cause the XC-4 to register a count, provided that the frequency limits are observed. The signal may be derived from an electronic source or from a contact breaking a connection to ground. Input impedance is 100 kilohms.

RESET: Refer to paragraph 3 under Operation

LATCH ENABLE: Refer to 5 paragraph under Operation

CARRY: The carry output is a positive-going pulse occurring typically 500 milliseconds after the positive-going edge of the count input signal. It occurs when the counter counts from 9999 to 0000.

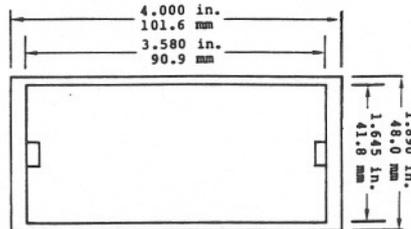
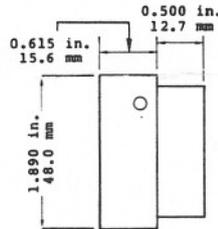


Figure 2. Outline Drawing

### INSTALLATION.

1. Mount the XC-4 as follows:

a. Cut hole in panel 3.62" (92 mm) W x 1.69" (43 mm) H.

b. Insert meter from the front through panel cutout.

c. Fit mounting clips (2) into slots located on top and bottom of meter. The foot of the clip should face forward.

d. Thread the screws (2) and tighten them against the rear surface of the panel.

2. If you have purchased the mating connector option (53-124), install a keying tab in connector at position 2, and attach the hookup wire to the individual sockets into the connector block making sure that the keying tab is in the proper position to latch into the rectangular holes on the block. Refer to table I.

Table I. Connector Pin Information

1. Count Input	5. Latch Enable
2. Key	6. Reset
3. +5V	7. Carry
4. Common	

### OPERATION

1. Power Supply. Connect the negative side of your +5V power supply to pin 4 of the connector and the positive side to pin 3.

2. Count Input. Connect signal HI to pin 1. Connect signal LO to pin 4. Note that signal LO will be at the same potential as the negative terminal of the 5V power supply. If the source is electronic (not contact closure) capacitor C7 (0.1  $\mu$ F) should be removed to permit operation at counting rates above 50 counts per second. To remove the capacitor, perform the following steps:

a. Remove filter in front of display by pressing in on sides of bezel and pulling filter out by bowed center. Remove two screws located at either end of display.

b. Carefully remove meter from front of case.

c. Locate capacitor C7 (See figure 3).

d. Cut or unsolder capacitor leads and remove capacitor.

e. Reassemble meter.

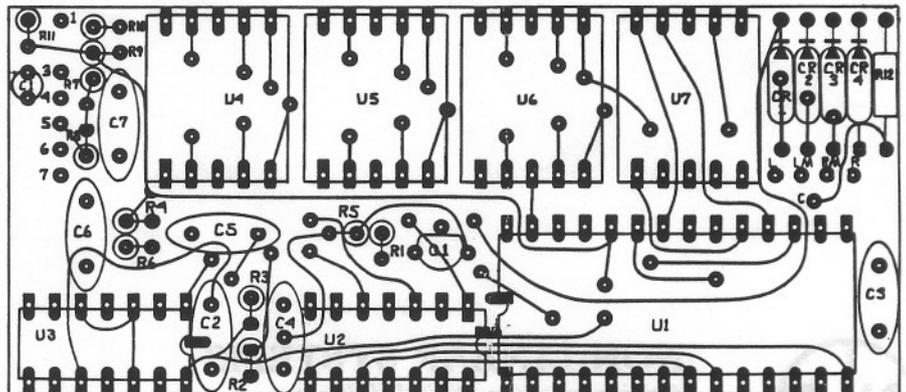


Figure 3. Component Location

3. **Reset.** A negative-going pulse (+5V to 0V) or a contact closure to ground on pin 6 resets the counter to 0000. If a pulse is used, the duration must be at least 20 milliseconds unless capacitor C5 is removed, in which case the duration must be at least one microsecond. To remove the capacitor, refer to the procedure under Count Input, above. Reset input impedance is 100 kilohms.

4. **Decimal Point.** If a decimal point is to be displayed, jumper between terminal C and terminals L, LM, RM, or R, located on the printed circuit board. See below:

DECIMAL LOCATION	X . X . X . X .
TERMINAL DESIG.	L LM RM R

For access to these terminals, disassemble meter as described under Count Input.

5. **Latch Enable.** Connecting pin 5

to ground causes the display to follow the input. The counter and display will be incremented by one for each input pulse.

Opening the connection effectively disconnects the display from the counter. The counter will continue to count each input pulse, but the display will not change. It will continue to show the number in the counter at the time of the opening of the connection to ground.

When the latch enable is re-connected to ground, the display will immediately change to the number that the counter has reached in the interim.

The latch enable may be derived from an electronic source or a contact closure. If an electronic source is used, and latching speeds higher than 50 per second are desired, capacitor C6 should be removed. To remove this capacitor,

refer to the procedure under Count Input above.

Input impedance of the latch enable is 100 kilohms.

6. **Cascading Counters.** The XC-4 Counters may be operated in cascade to increase the total number of counts which can be accommodated. Two XC-4 counters in cascade provide a count range of 00000000 to 99999999.

To obtain cascade operation, connect the carry output, pin 7, of the lower order counter to the count input, pin 1, of the higher order counter. Also, pin 4 on the lower order counter must be connected to pin 4 of the higher order counter.

**CALIBRATION**

Calibration is not required. There are no adjustments in the counter.



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