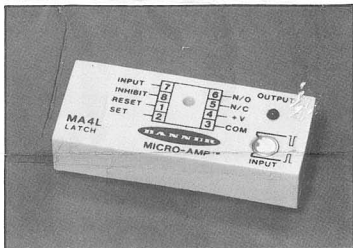


## FEATURES:

- Functions as set/reset latch, or edge-triggered "D" flip-flop latch
- Complementary NPN (sinking) outputs (N/O and N/C)
- Ideal for registration control, product inspection, edge-guiding, and diverter control
- 10 to 30 VDC operation
- Can be wired for divide-by-two operation (alternate-action)
- Responds to both high-going and low-going logic level input signals



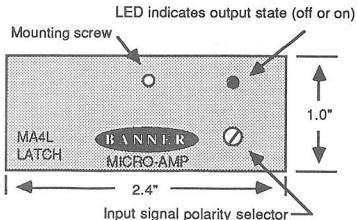
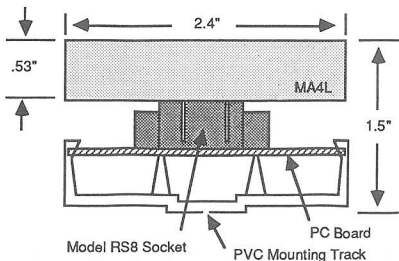
- Rugged, encapsulated construction; compact and self-contained
- Compatible with most programmable controllers

## DESCRIPTION:

The MA4L is a latching logic module similar to a "D" flip-flop. It can be latched and unlatched with logic-level signals via the SET and RESET terminals, or it can be latched through its INPUT terminal, provided its INHIBIT terminal is in a logic-high state. This latter mode is very useful in applications which require that the input signal be "interrogated". Refer to the logic "truth table" and specifications on the back of this page for the specifics of MA4L operation.

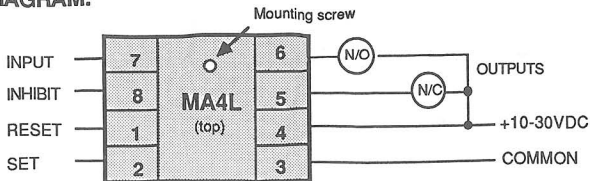
The Input Signal Polarity Selector allows the MA4L to be set to respond to either a low-going or a high-going logic level input signal. MA4L inputs and outputs are compatible with all Banner DC amplified sensors and logic modules and with most programmable controllers.

## MA4L DIMENSIONS:



The MA4L may be soldered directly to a PC board. It may also be mounted using the model RS8 socket, which is supplied mounted on a PC board and a 1-inch length of special PVC mounting track (shown). This option includes board-mounted screw terminals for connecting the MA4L to other components. PVC track may be ordered in longer lengths: TR100-6 (6 inches) and TR100-12 (12 inches) for track-mounting several modules in large sensing systems. Socket model RS8K (socket only with pins for PC-board mounting) is also available.



## HOOKUP DIAGRAM:











## TRUTH TABLE:

This table lists various combinations of SET, RESET, INPUT, and INHIBIT signals along with the resultant output state and LED indicator state. The key to reading the table is at the left, below. Logic statements in the table read down the columns. For example, in the first column, if SET is high and RESET is low, regardless of the INPUT state and regardless of the INHIBIT state, the N/O output will be high, the N/C output will be low, and the indicator LED will be off.

### KEY TO TRUTH TABLE

H = logic HIGH  
 L = logic LOW  
 X = "don't care" (input setting has no effect)  
 = high-to-low transition  
 = low-to-high transition  
 NC = no change

### MA4L LOGIC TRUTH TABLE

INPUT POLARITY SELECTOR:									
	SET	RESET	INPUT	INHIBIT	N/O OUTPUT	N/C OUTPUT	Indicator LED		
SET	H	L	L	H	H	H	H	H	H
RESET	L	H	L	H	H	H	H	H	H
INPUT	X	X	X						
INHIBIT	X	X	X	H	L	X	H	L	X
N/O OUTPUT	H	L	L	L	H	NC	L	H	NC
N/C OUTPUT	L	H	L	H	L	NC	H	L	NC
Indicator LED	Off	On	On	On	Off	NC	On	Off	NC

## SPECIFICATIONS:

**SUPPLY VOLTAGE:** 10-30 VDC at less than 20 milliamps (exclusive of load); 10% maximum ripple.

**OUTPUTS:** Two open-collector NPN transistors (complementary outputs: one normally open, one normally closed). Maximum sinking current 150 milliamps (each output). Saturation voltage less than .5 VDC at 10 milliamps. Off-state leakage current less than 1 microamp.

**INPUTS:** INPUT, INHIBIT, RESET, AND SET signals are buffered for 1 millisecond response time. A logic "low" must be less than 2 VDC and a logic "high" must be at least 6 VDC or an open circuit. Inputs must be capable of sinking at least 4 milliamps. INPUT signal "polarity" is selectable: system can respond to either a low-going or a high-going logic-level INPUT signal.

**CONSTRUCTION:** Totally encapsulated plug-in package with gold-flashed pins. Hold-down screw ensures correct contact polarity.

**OPERATING TEMPERATURE RANGE:** -40 to 70 degrees C (-40 to 158 degrees F).

**PROTECTION:** Reverse-polarity protected; latch comes up reset after power-up.

## WARRANTY:

Banner Engineering Corporation warrants its products to be free from defects for one year. Banner Engineering Corporation will repair or replace, free of charge, any product of its manufacture found to be defective at the time it is returned to the factory during the warranty period. This warranty does not cover damage or liability for the improper use of Banner products. This warranty is in lieu of any other warranty either expressed or implied.

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