

BEAR BONES  
ANALOG TIMER CARD

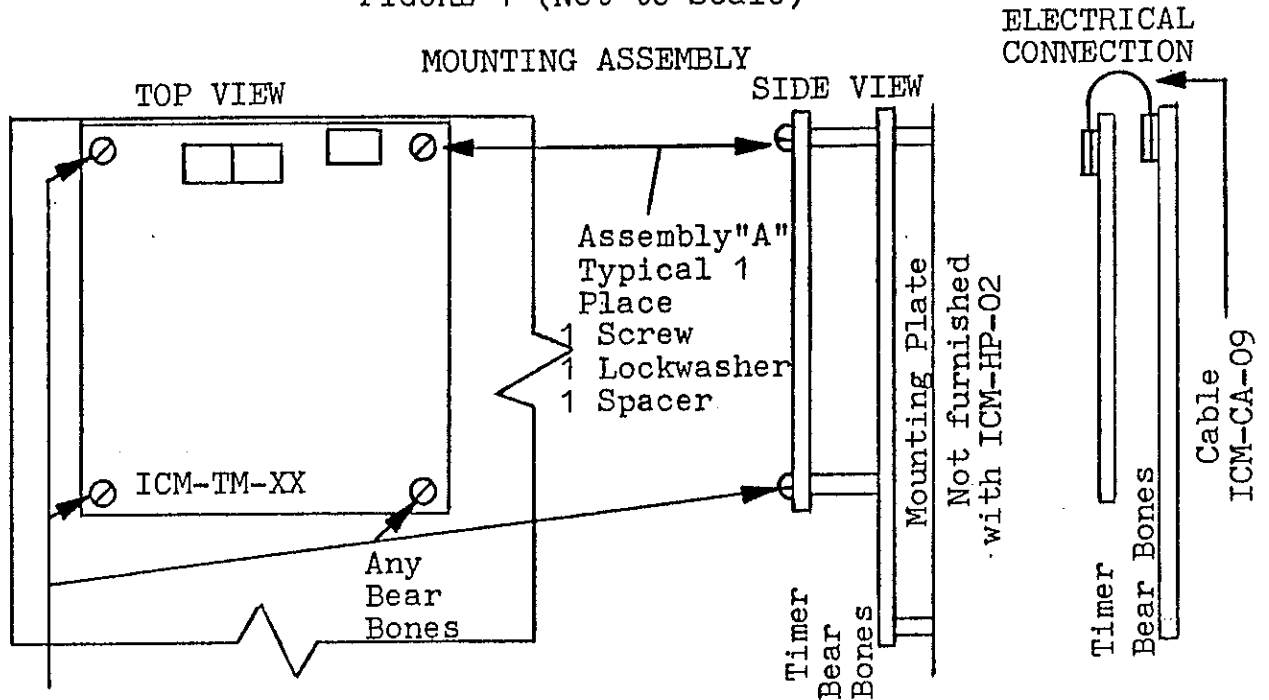
DESCRIPTION

The ICM-TM-01 timer card provides timing functions to the Bear Bones controller with 5 separate timers. Each timer can be selected in one of four ranges. Each timer is provided with an independent set point and 2 light emitting diodes (LEDs). One diode indicates that the timer is energized. The other diode indicates that the timer has timed out. This timer card mounts directly above the Bear Bones and is electrically connected with a ribbon cable, see Figure 1.

SPECIFICATIONS

Ranges	Set Points		Voltage Required 5.0 VDC
	Min.	Max.	
1	0.3s	2.7s	Minimum Current Drain 5.1 MADC Maximum Current Drain 98.3 MADC
2	1.3s	10.7s	
3	10.3s	85.6s	
4	1.4m	11.4m	

FIGURE 1 (Not to Scale)



Assembly "B"  
Typical 3 Places  
6 Screws  
6 Lockwashers  
3 Spacers

Assemblies A & B are parts of ICM-HP-02 which is furnished.  
Cable ICM-CA-09 is furnished.

Note: Timer set points are given as worst case. Your actual set point could be less than the minimums or more than the maximums listed above.

Current Rev. 01 10/7/83

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**Divebiss** CORPORATION

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APPLICATION

These timers are on-delay in function. They can be programmed to function as off-delay. Only one timer card can be connected to the Bear Bones. It is dedicated to page 1, I/O 3 through 7. This timer card can be used with a Bear Bones controller even if programmable timers and counters are used.

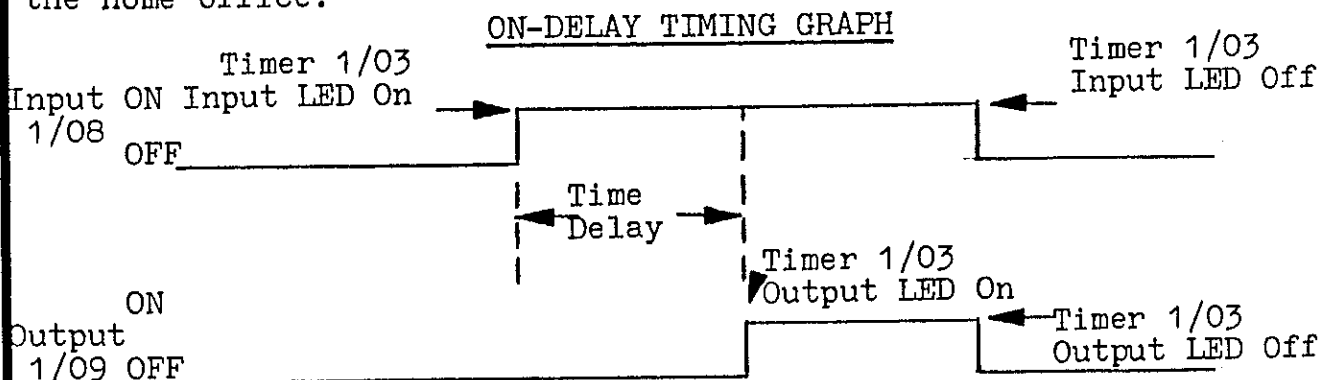
OPERATION

The set point for any of the five times is established with a pot located on the timer board. See Fig. 2. A given timer must receive a logic "one" from the Bear Bones. When the timer is energized the input LED will illuminate. When the time cycle is complete the output LED will illuminate.

When the timer input is de-energized both LEDs will extinguish.

OPTIONS

Should you desire a remote set point install the remote pot adapter kit ICM-AK-01 as shown in Fig. 3. Remember to make the trace cut(s). The single turn pot can be replaced with a multiturn pot. For this option or one designed to your specifications please consult the home office.



NOTE: I/O addresses taken from sample programs shown on pages 3 & 4. The timer LED's for the off delay timer will turn off when CR3 is energized.

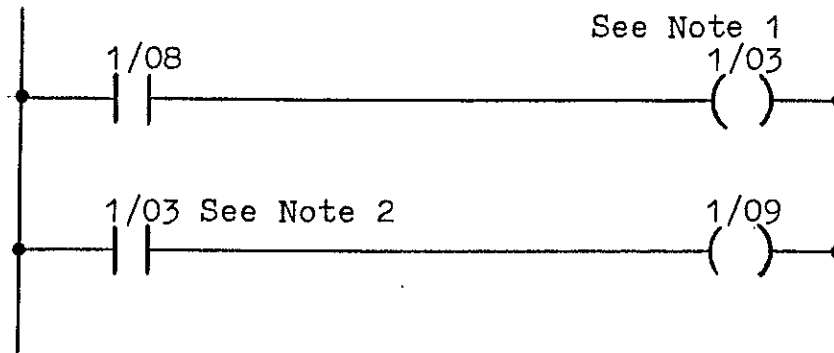
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PROGRAMMING

Two examples of timer programming will be given. This program is for an on-delay timer.

ON-DELAY LADDER DIAGRAM



ON-DELAY PROGRAM

Programming Equipment

PR-02	CRT	Comments
C1		
18	108	Load the data at input 1/08.
83	103	Energize timer 1/03 if logic is true.
13	103	Load the data from timer 1/03.
89	109	Energize output 1/09 if logic is true.

DESCRIPTION

Closing input 1/08 energizes timer 1/03. The input LED for timer 1/03 will illuminate. When the timer set point is reached timer output 1/03 will energize, the output LED for timer 1/03 will illuminate, and output 1/09 will energize.

Both of the timer LEDs will remain on until 1/08 is deenergized.

Note 2: Timer 1/03 is an input to the Bear Bones. The ICM-TM-01 card provides this signal as an OUTPUT hence the output LED 1/03 will illuminate, output 1/09 will also illuminate.

Note 1: Timer 1/03 is an output from the Bear Bones. The ICM-TM-01 card will see this as an INPUT hence the input LED 1/03 will illuminate, input 1/08 will also illuminate.

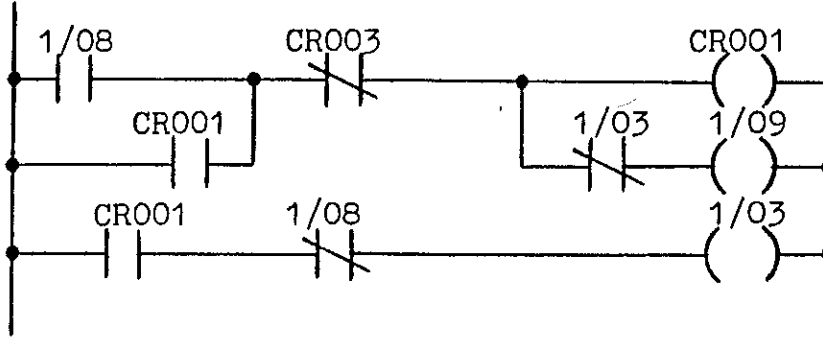
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PROGRAMMING (CON'T)

This program is for an off-delay timer.

OFF-DELAY LADDER DIAGRAM



Programming Equipment

PR-02	CRT	Comments
C1		
18	108	Load the data input 1/08,
C8		
50	CRO01	or enter the data from CRO01.
42	CRO03	and not CRO03 energized. See Note 2
80	CRO01	Energize CRO01 if logic is true,
C1		
43	103	and not timer 1/03 timed out.
89	109	Energize output 1/09 if logic is true.
C8		
10	CRO01	Load the data at CRO01,
C1		
48	108	and not input 1/08.
83	103	Energize timer 1/03.

DESCRIPTION

Closing input 1/08 picks up CRO01 which seals itself in providing CRO03 contact is not open. If the timer 1/03 has not timed out output 1/09 will energize. A N.O. contact of CRO01 is in series with a N/C contact of input 1/08. When 1/08 is deenergized timer 1/03 will be energized and its input LED will illuminate. When the timer set point is reached timer 1/03 output will energize. The output LED for timer 1/03 will illuminate and output 1/09 will extinguish.

Both of the timer LEDs will remain on until CRO03 is energized. The coil for CRO03 is not shown, it must be energized to reset the timer. It could be put in parallel with output 1/03.

Note 2: CRO01 & 8/0 are the same bit

Note 1: See Notes 1 & 2 on page 3.

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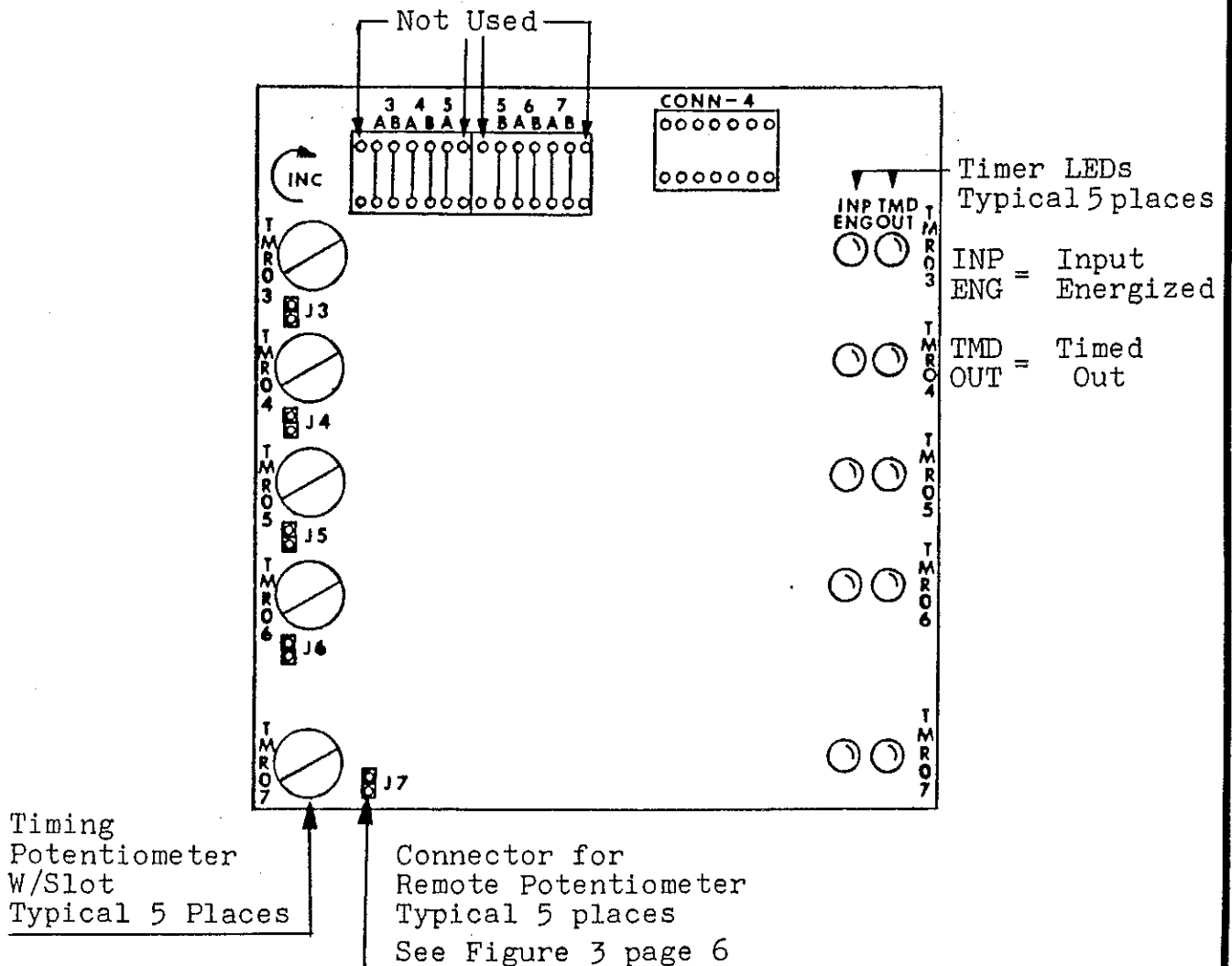
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LINK TABLE				
LINK		RANGE	TIME SET POINT	
A	B		LOW	HIGH
0	X	1	0.3 Sec.	2.7 Sec.
X	0	2	1.3 Sec.	10.7 Sec.
X	X	3	10.3 Sec.	85.6 Sec.
0	0	4	1.4 Min.	11.4 Min.

0 = Link Removed; X = Link Installed

There is a link A and a link B for each timer. The link table shows which links are to be installed and/or removed to produce a given time range. Each timer is to be ranged separately. The card is shipped with all timers set at Range 3.

FIGURE 2



BEAR BONES  
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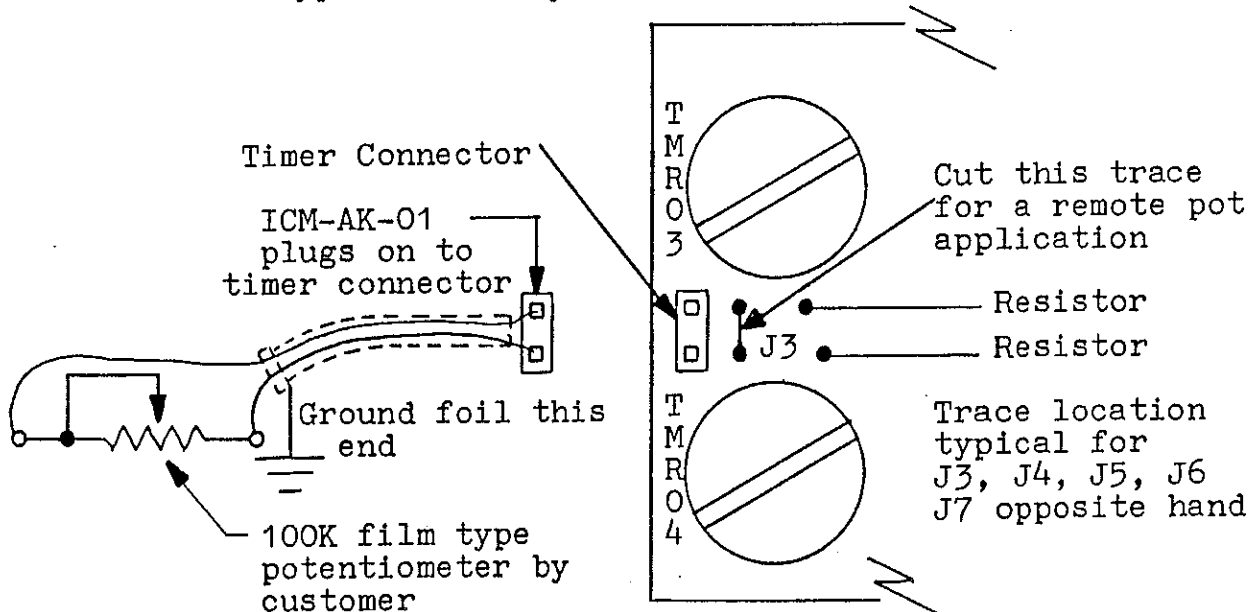
FURNISHED HARDWARE

A hardware kit (ICM-HP-02) is furnished with each timer card. Figure 1 sheet 1 shows how this hardware is applied.

A cable assembly (ICM-CA-09) is furnished with each timer card. Figure 1 sheet 1 shows how this assembly is to be connected.

Figure 3 (Not to Scale)

This figure illustrates how the timer (1/03) can be modified for a remote potentiometer. Adapter kit ICM-AK-01 is required plus you must make a trace cut and furnish a 100K potentiometer, film type. This format is typical for any of the five timers.



WARNING

The ICM Timer Card, as with other solid state controls, must not be used in applications which would be hazardous to personnel in the event of a failure of the timer. Precautions must be taken to provide mechanical and/or electrical safeguards external to the timer.

NOTE: Specifications subject to change without notice.

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