BEAR BONES SINGLE SETPOINT COMPARATOR CARD

DESCRIPTION

The ICM-SP-XX comparator card provides the Bear Bones controller the capacity of up to 25 analog inputs. Each comparator card can be connected to 5 real world analog signals. With proper programming and address selection you can use 5 of these comparator cards. A light emitting diode (LED) is provided on each input to indicate when the input signal has reached your setpoint. The first comparator card mounts directly above the Bear Bones and is electrically connected with a ribbon cable, see Figure 1. If more than one card is required refer to Addendum #1.

Table 1

ICM-SP-01	0.0 to 5.0 VDC
ICM-SP-02	0.0 to 10.0VDC
ICM-SP-03	4.0 to 20.0MADC

SPECIFICATIONS

INPUTS	(See Table 1)
POWER	5VDC at 25°C 23MADC all I/O Off 45MADC all I/O On
TEMPERATURE RANGE	0 to 60°C
DIMENSIONS	3 7/8"Hx 2 3/4"Wx 1 1/8"H (with spacers)
FIELD TERMINATIONS	18 AWG Max, without lugs
ACCURACY OF SETPOINT	Determined by operator
REPEATABILITY	Better than 1%
DEADBAND	Approximately .06VDC

APPLICATION

This comparator card needs no additional components. You need only select which output is to address this card and plug it into the Bear Bones. This comparator card contains all the hardware to receive analog signals from the real world. With appropriate calibration these analog signals will be converted to contact closures for use by you in your control program. This card receives instructions from and transmits data to the Bear Bones via cable 4.

NOTE: Analog setpoints are operator dependent. See CALIBRATION section on sheet 6.

NOTE: Power consumption is for one card.

BEAR BONES
SINGLE SETPOINT
COMPARATOR CARD

OPERATION

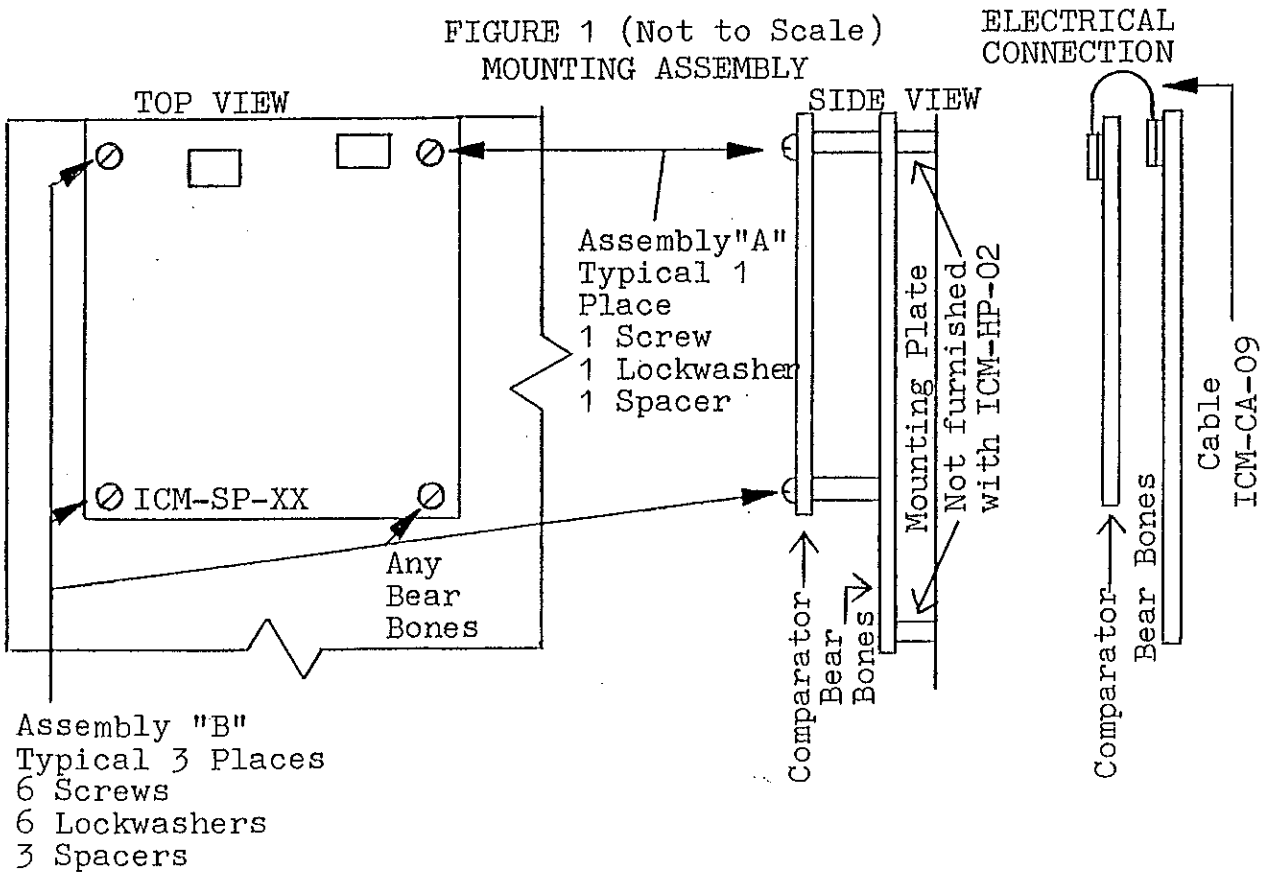
This comparator operates on instructions from the Bear Bones controller. It must be connected to it either directly or through another comparator. This card will accept the analog signals listed in Table 1 and convert them to digital signals. The signal level at which this conversion takes place is determined by the setpoint potentiometer.

When an analog signal is equal to or above the setpoint the setpoint LED will illuminate. The LED will extinguish when the analog signal is less than the setpoint, see DEADBAND specification.

OPTIONS

Should you desire a remote setpoint install the remote pot adapter kit ICM-AK-03 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.

FIGURE 1 (Not to Scale)
MOUNTING ASSEMBLY



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

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BEAR BONES
SINGLE SETPOINT
COMPARATOR CARD

FIGURE 2 (Not to Scale)

REMOTE POTENTIOMETER CONNECTIONS

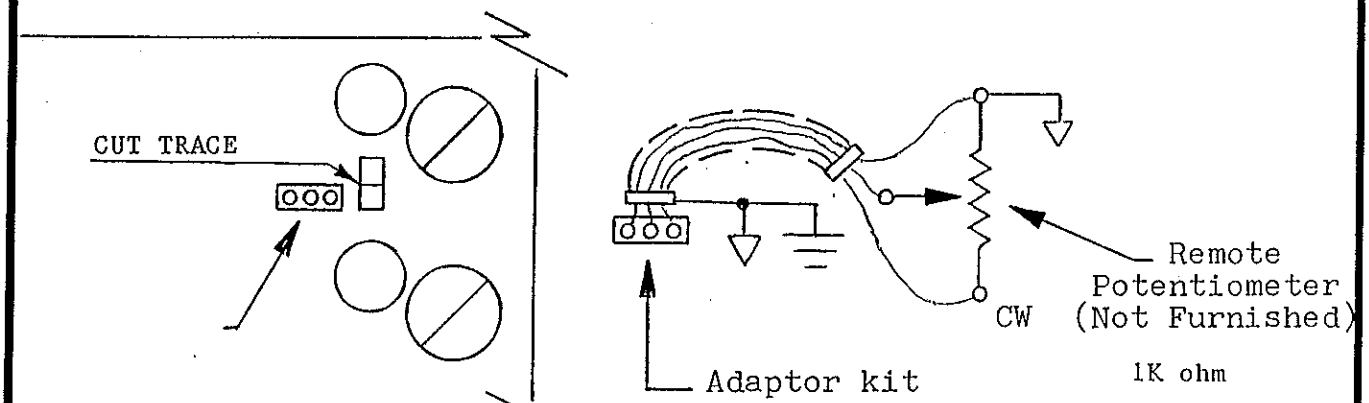
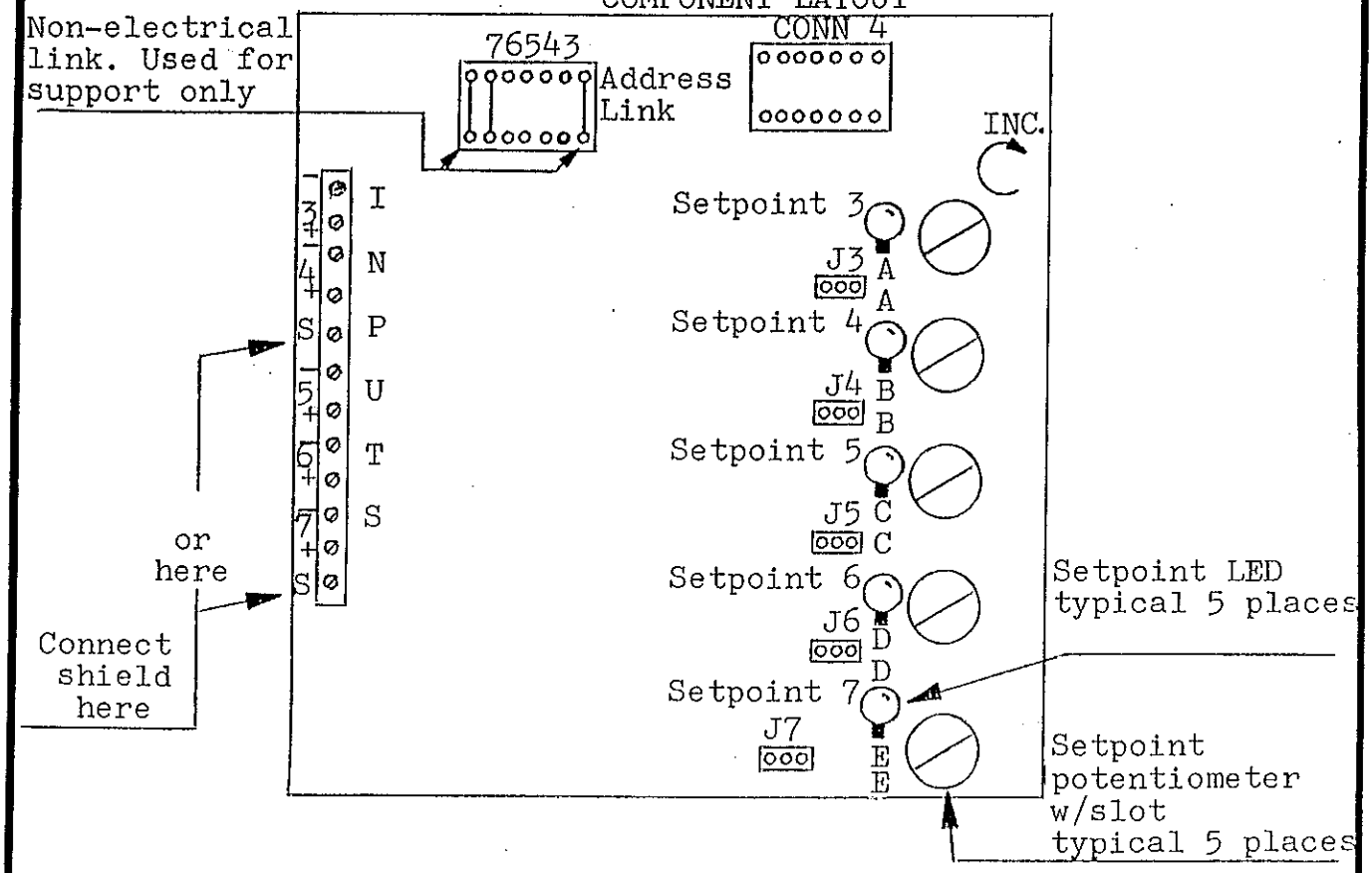


FIGURE 3 (Not to Scale)
COMPONENT LAYOUT



NOTE: You must select an output for each comparator card with the ADDRESS link. The output selected must appear in your program, See PROGRAM section. Each card is shipped selected for output 1/07 unless otherwise specified.

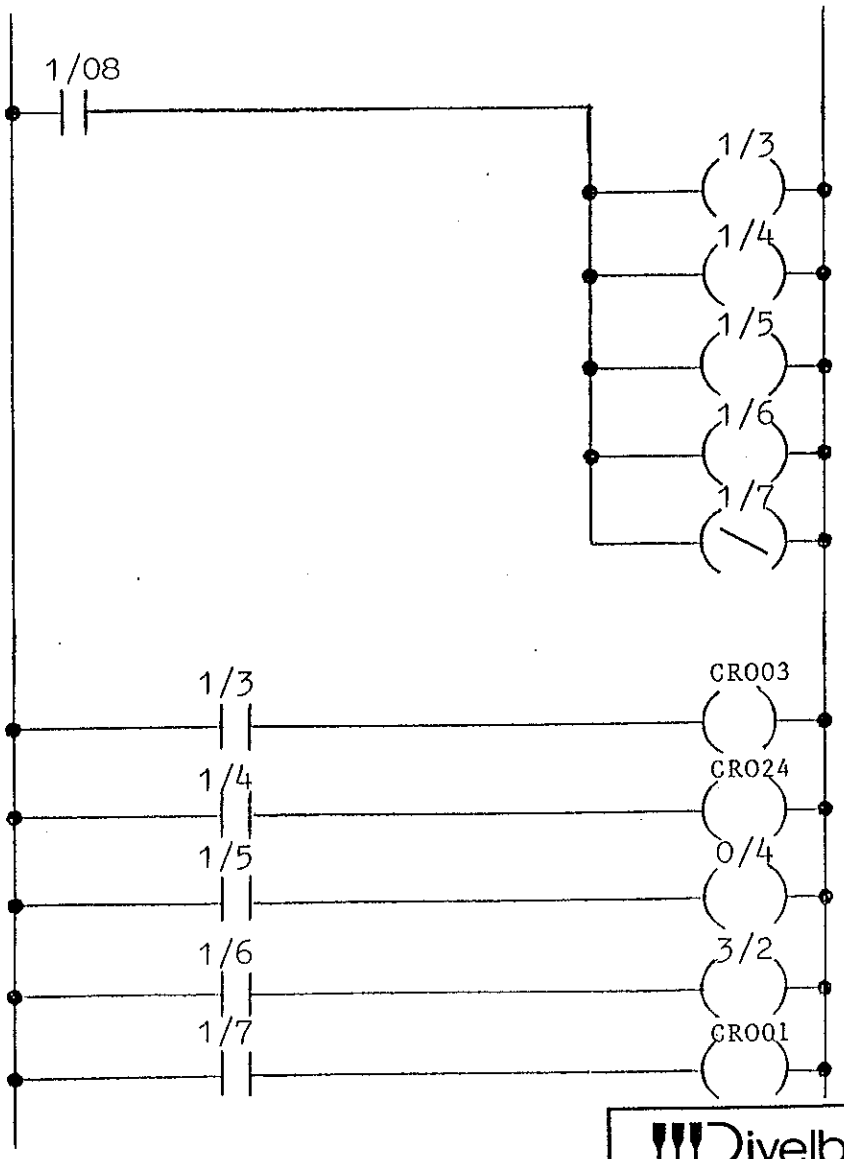
BEAR BONES SINGLE SETPOINT COMPARATOR CARD

PROGRAMMING

To program this card the ADDRESS LINK must be selected, see FIG. 3. After selecting the ADDRESS you must program this ADDRESS as an output. You should program the other four ADDRESSES as a matter of practice. Once the address is selected you may examine any input.

In the example program 1 input 1/08, selects the comparator card whose ADDRESS LINK is set at 1/07. Data read from inputs 1/03, 1/04, 1/05, 1/06, and 1/07 will come from comparator card 1/07 only.

EXAMPLE PROGRAM 1



BEAR BONES
SINGLE SETPOINT
COMPARATOR CARD

PROGRAMMING EQUIPMENT

PR-02 CRT

Program Instructions

		COMMENTS
C1		
18	108	Load input 1/08
83	103	Energize output 1/03
94	104	Energize output 1/04
95	105	Energize output 1/05
96	106	Energize output 1/06
97	107	De-energize output 1/07
13	103	Load input 1/03
C8		
82	CR003	Energize CR003
C1		
14	104	Load input 1/04
C9		
87	CR024	Energize CR024
C1		
15	105	Load input 1/05
C0		
84	0/04	Energize output 0/04
C1		
16	106	Load input 1/06
C3		
82	3/02	Energize output 3/02
C1		
17	1/07	Load input 1/07
C8		
80	CR001	Energize CR001

BEAR BONES
SINGLE SETPOINT
COMPARATOR CARD

CALIBRATION

Set the potentiometer of the input to be calibrated to maximum. Select a stable, low noise, well filtered power supply suitable for the input range, see table 1. Adjust the power supply to your setpoint level. Now turn the setpoint potentiometer counter clockwise until the input LED illuminates.

Decrease the power supply signal until the setpoint LED extinguishes. Record this value as "setpoint off". Increase the power supply signal until the setpoint LED illuminates. Record this value as "setpoint on". The difference between setpoint off and setpoint on is "DEADBAND".

Each setpoint may require re-adjustment to arrive at the optimum setpoint level.

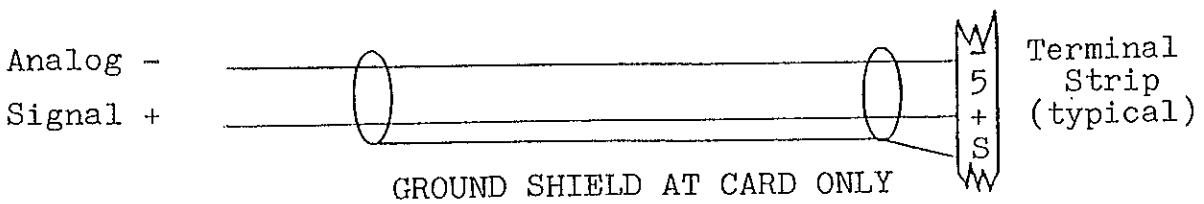
W A R N I N G

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

TABLE 2

PART NUMBER	INPUT RANGE	MAX. SIG.	IMPEDENCE	CIRCUIT TYPE
ICM-SP-01	0 to 5VDC	5.3 VDC	28K Ohm	Differential Non Isolated
ICM-SP-02	0 to 10VDC	10.3VDC	230K Ohm	Differential Non Isolated
ICM-SP-03	4 to 20MADC	5.3 VDC	245 Ohm	Differential Non Isolated

FIELD TERMINATION
(Typical)



NOTE: Specifications subject to change without notice.