

**TM 990/510  
CARD CHASSIS**

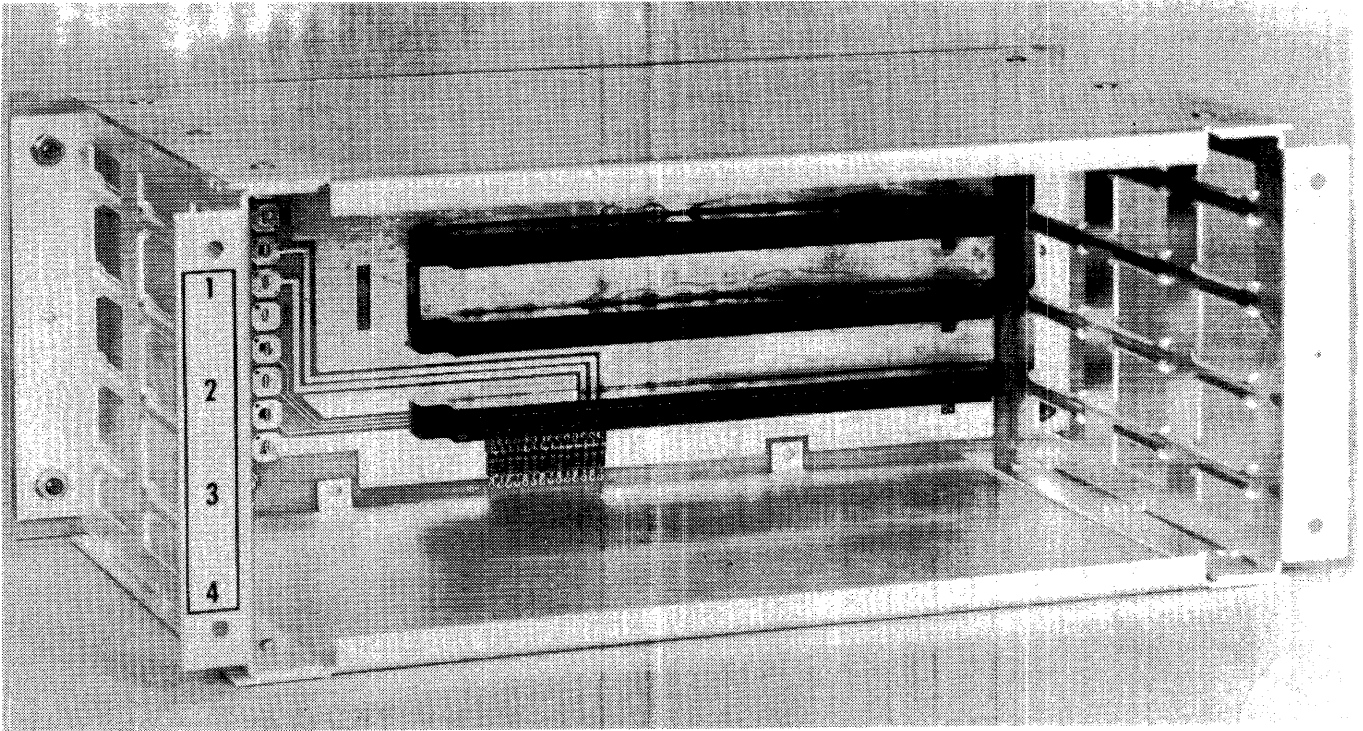
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**TEXAS INSTRUMENTS**  
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**TM 990/510 CARD CHASSIS**

## **1. GENERAL**

The TM 990/510 card chassis contains the following features:

- Four-board capacity, slots one-inch apart.
- 100-pin bus interface to the standard TM 990/XXX series boards.
- External terminal strip at rear provides secure connections to operating voltages and external signals (paragraph 4). Two ground connections are provided (facilitates daisy-chaining).
- Pullup and pulldown resistors are supplied on the backplane for the seven bus signals that use open-collector drivers.
- Drilled holes are provided at the front of the chassis for custom mounting in user's equipment.

## **2. DIMENSIONS**

See Figure 1.

## **3. INSTALLATION**

### **CAUTION**

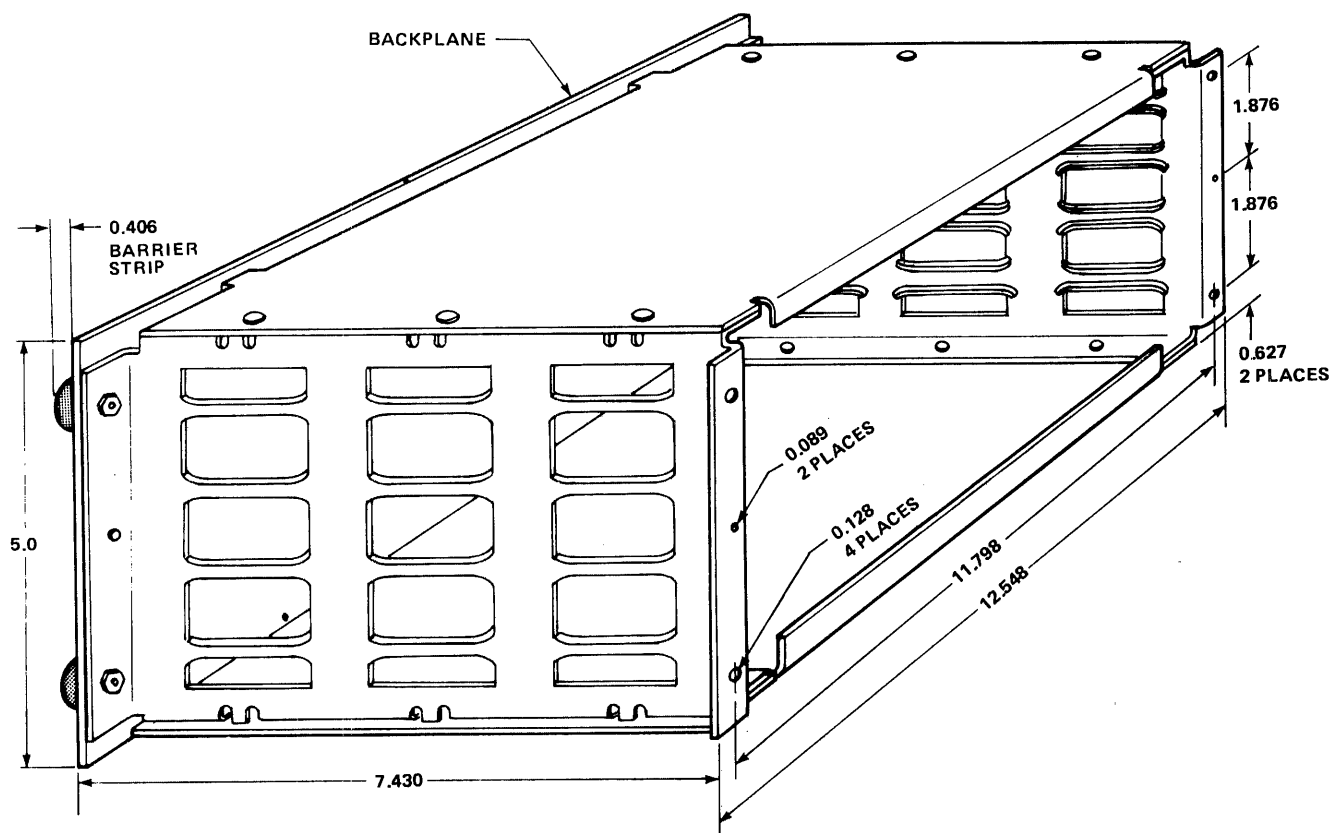
Connect a power supply only to a chassis in which all boards have been removed. Install the boards only after all power connections have been made and verified.

- (1) At the terminal block at the back of the chassis, locate the ground connections, +12, -12, and +5 V. Connect the power supply ground connection first, then connect the voltage supplies. (A #6 crimp-on spade lug is suggested for connection to the terminal block screws.) See Figure 2.

### CAUTION

Always verify that the power supply is off before making the connections.

- (2) Apply power and verify correct voltage levels at the chassis terminal block. Use a voltmeter with reference to power ground.



- NOTES:
1. DIMENSIONS IN INCHES
  2. DISTANCE BETWEEN SLOTS IS 1 INCH
  3. ALL DIMENSIONS  $\pm 0.010$ .

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FIGURE 1 – CARD CHASSIS DIMENSIONS

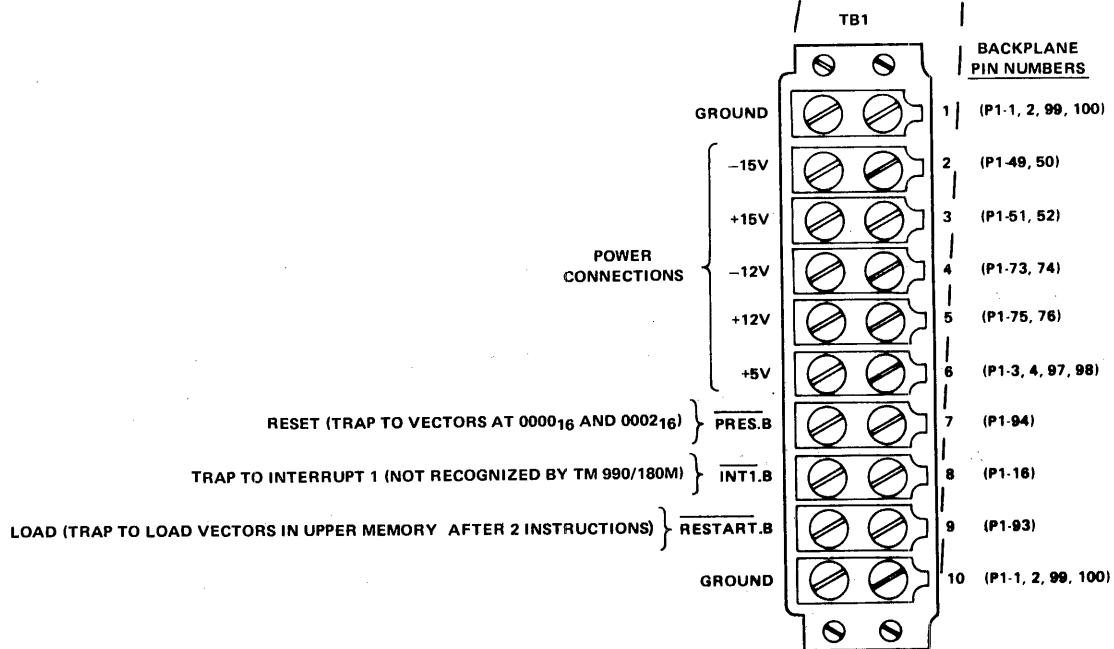
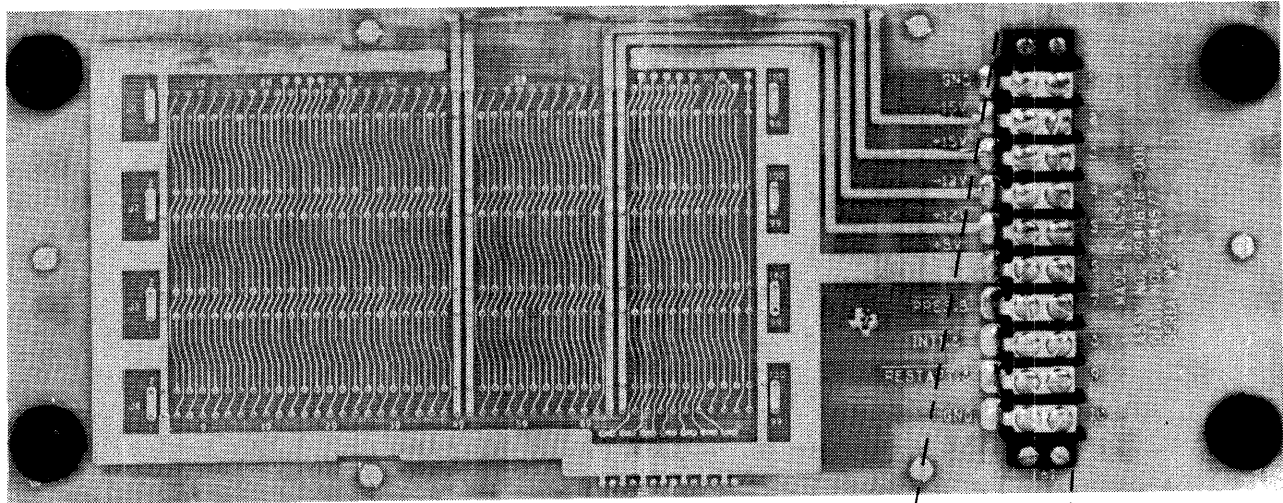


FIGURE 2 – BACKPLANE TERMINAL BLOCK TB1

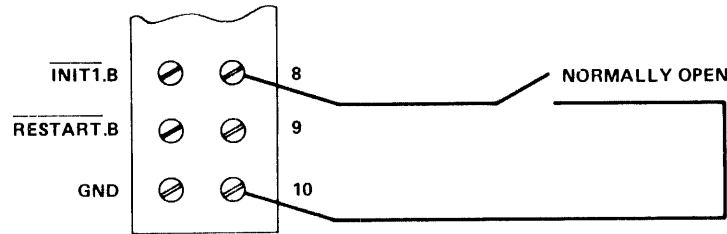
- (3) Make any other desired connections to the terminal strip (e.g., pushbutton to cause a RESTART or LOAD as shown in paragraph 4).
- (4) Slide the microcomputer board into the top slot (number 1). Press in slowly until the board connector takes the firmly seated in the backplane socket. Only one CPU board should reside in the card chassis at one time.
- (5) Install additional boards into the card chassis. Verify secure seating within the backplane socket.
- (6) Turn on the power and begin startup sequence.

#### 4. EXTERNAL RESET, INTERRUPT, AND LOAD

On the rear terminal strip are three active-low signals that can be enabled by an external pushbutton switch:

- $\overline{\text{PRES.B}}$
- $\overline{\text{INIT1.B}}$
- $\overline{\text{RESTART.B}}$

A simple circuit to enable one of these signals is shown below:



These signals are interpreted by the TM 990/1XXM microcomputers.

$\overline{\text{PRES.B}}$  causes a reset of the microprocessor with workspace pointer (WP) and program counter (PC) values obtained from memory addresses (M.A.)  $0000_{16}$  and  $0002_{16}$ .

$\overline{\text{INIT1.B}}$  causes an interrupt request to interrupt trap 1. This interrupt signal is not interpreted by the TM 990/180M microcomputer.

$\overline{\text{RESTART.B}}$  causes a trap to the WP and PC values in M.A.  $\text{FFFC}_{16}$  and  $\text{FFFE}_{16}$  respectively ( $\text{3FFC}_{16}$  and  $\text{3FFE}_{16}$  in the TM 990/180M microcomputer) after execution of two instructions.

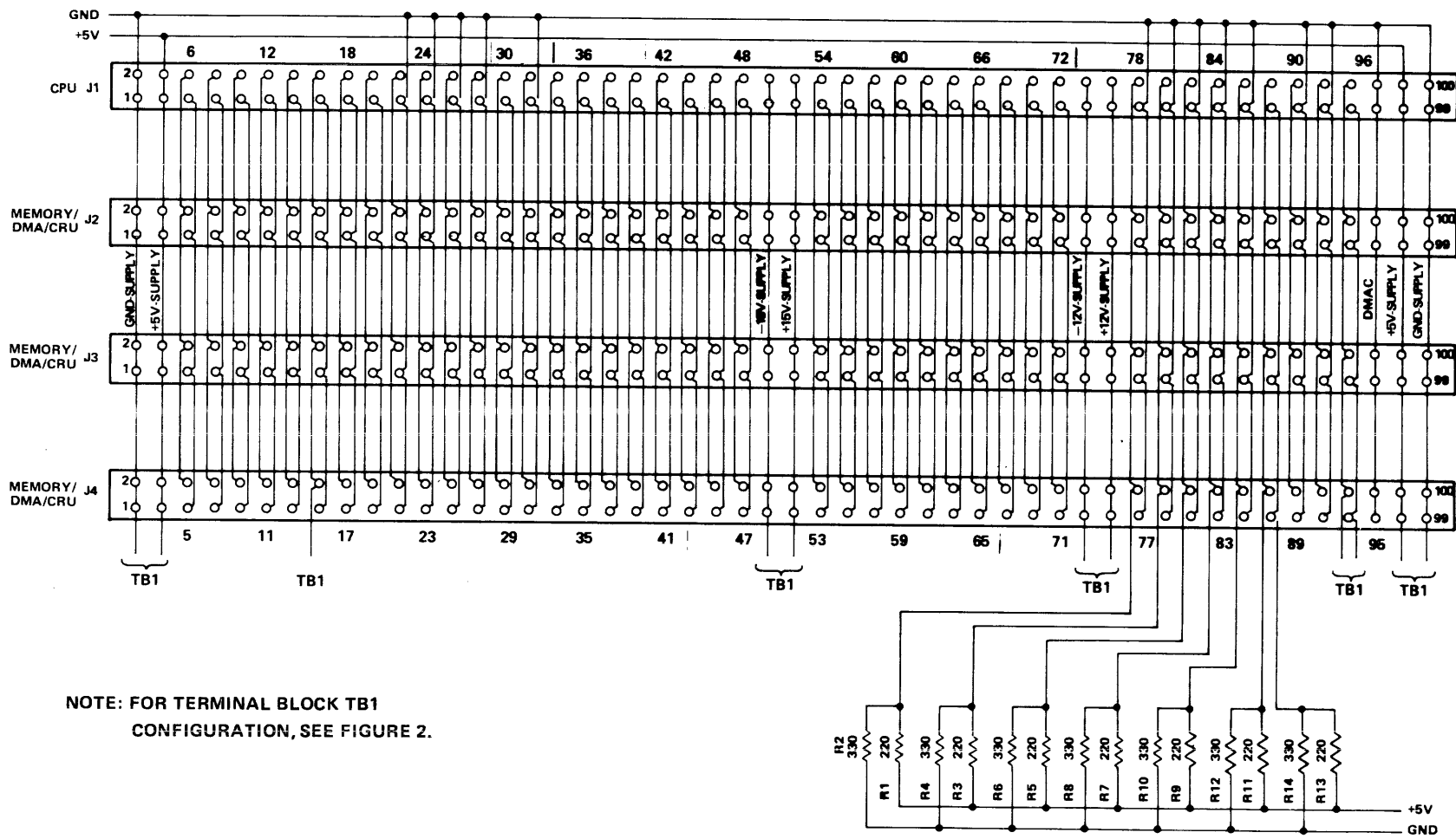
#### 5. USER-AVAILABLE BUS LINES

The following are signal lines on the backplane available for the user (also see Figure 3).

Pin Numbers	Intended Future Use
32	Spare
49, 50 and 51, 52	Future power buses
53 to 56	Memory address expansion

#### 6. WIRE-WRAP LEAD CONSIDERATION

The space between card slots is one inch; thus, the user must take into consideration any interference that may result with the use of a prototyping board that contains wire-wrap leads which may interfere with other installed boards. It is recommended that prototyping boards (such as the TM 990/512) be used with wire-wrap pins of a half-inch or less in length. If wire-wrap pins of a longer length are used, they may touch components on the board immediately below the prototyping board. In any case, the user must take care in inserting or removing wire-wrap prototyping boards or boards adjacent to the wire-wrap pin side of such boards.



NOTE: FOR TERMINAL BLOCK TB1  
CONFIGURATION, SEE FIGURE 2.

FIGURE 3 -- BACKPLANE SCHEMATIC



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