

INSTRUCTION MANUAL

POWER MODULE

TM 501

Serial Number _____

TABLE OF CONTENTS

	Page
INSTALLATION PROCEDURE	1
OPERATING INSTRUCTIONS	4
POWERING UP	4
BUILDING A SYSTEM	5
SPECIFICATIONS	6
SYSTEM MAINTENANCE	7
GENERAL	7
TROUBLESHOOTING AIDS	8
TROUBLESHOOTING TECHNIQUES	8
PARTS ORDERING AND REPLACEMENT	10
SERVICE INFORMATION	14
INTERFACE PIN ASSIGNMENTS	15
DETAILED BLOCK DIAGRAM	15
PARTS LOCATION GRID	16
ELECTRICAL PARTS LIST	17
SCHEMATIC	
MECHANICAL PARTS LIST	20
EXPLODED VIEW DRAWING	
FIELD OFFICE LISTINGS	

INSTALLATION PROCEDURE

Before you start...

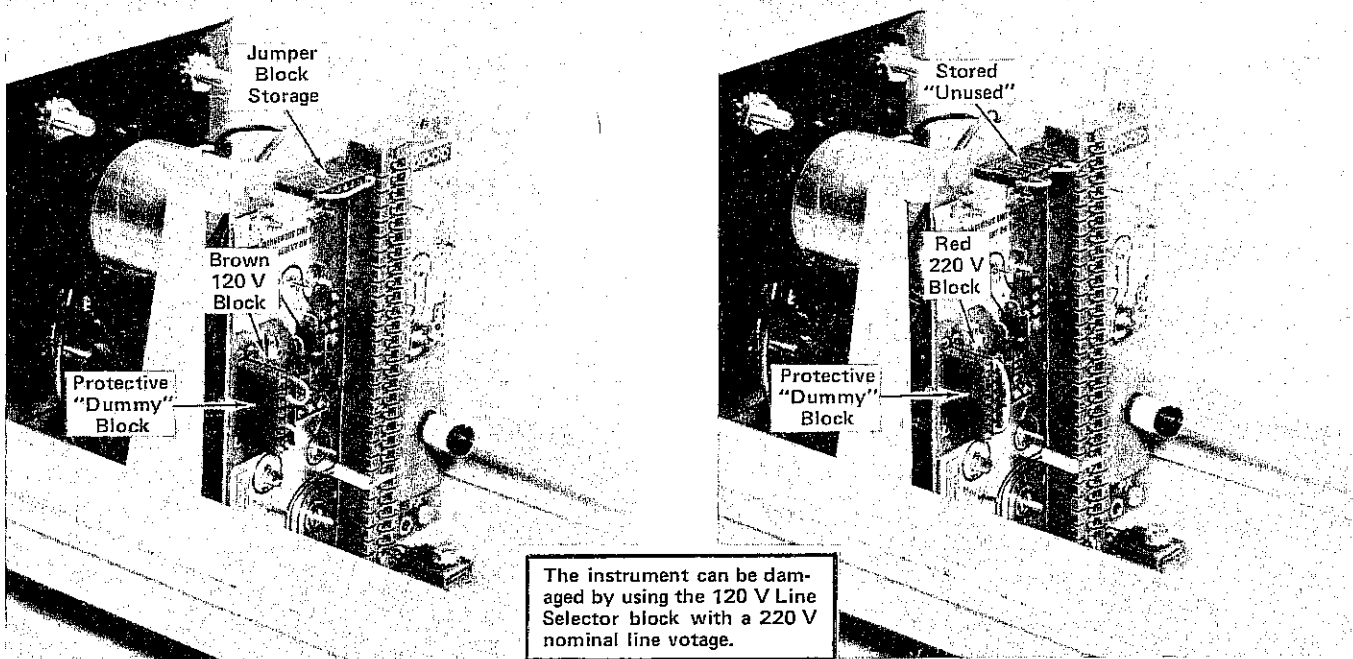
1. Check the rear panel markings. If the factory settings are compatible with the available line voltage and frequency, insert the desired plug-ins. Use the bail to raise the front of the instrument.

...go to Operating Instructions...

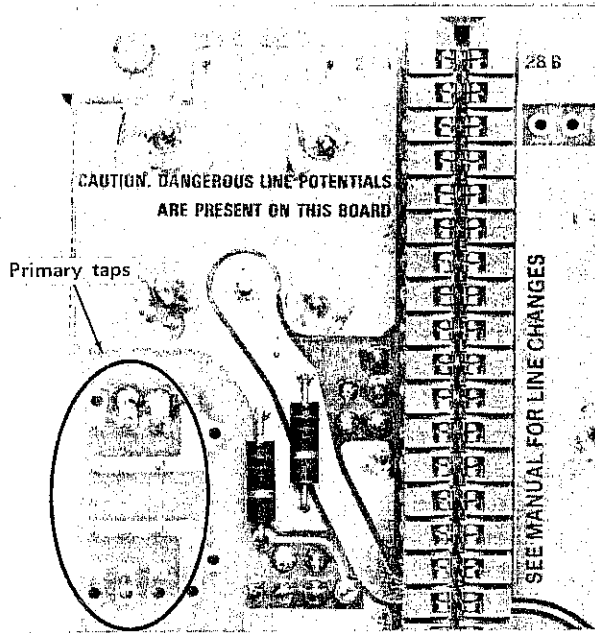
2. If a change is needed, follow these steps:

a. Line Selector Block(s)

Remove the two hold-down screws on the top of the dust cover cabinet and lift the cabinet off. This gives easy access to the Line Selector blocks located on the main circuit board.



b. Line Range Taps



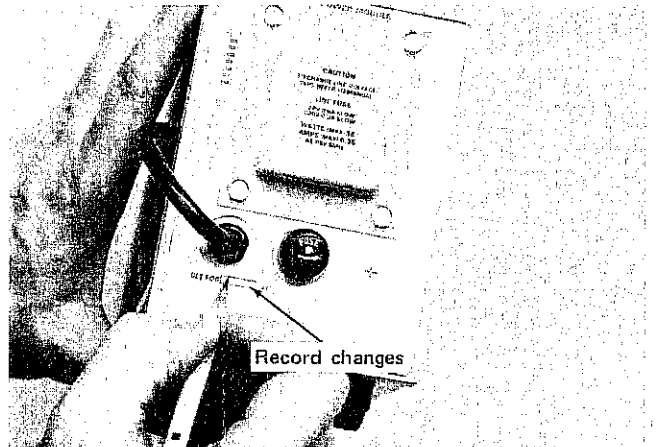
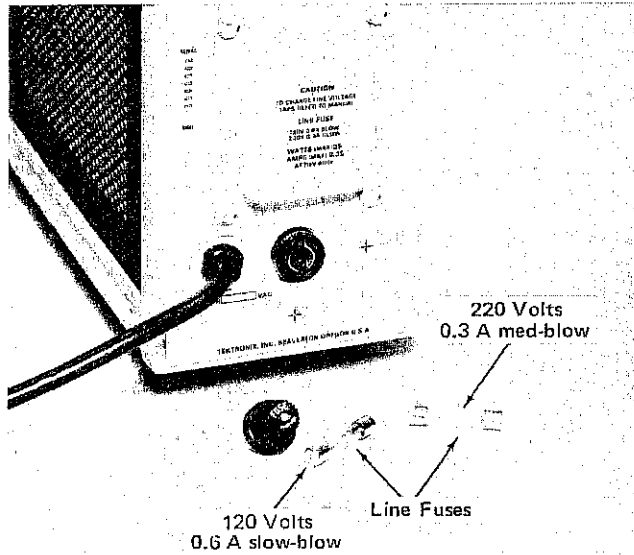
Standard Transformer (SN BO50000 - below)

Line Selector Block Position	Regulating Ranges
L Do not use	Internally disconnected
M (110 V Nominal)	99 VAC to 121 VAC
H (120 V Nominal)	108 VAC to 132 VAC

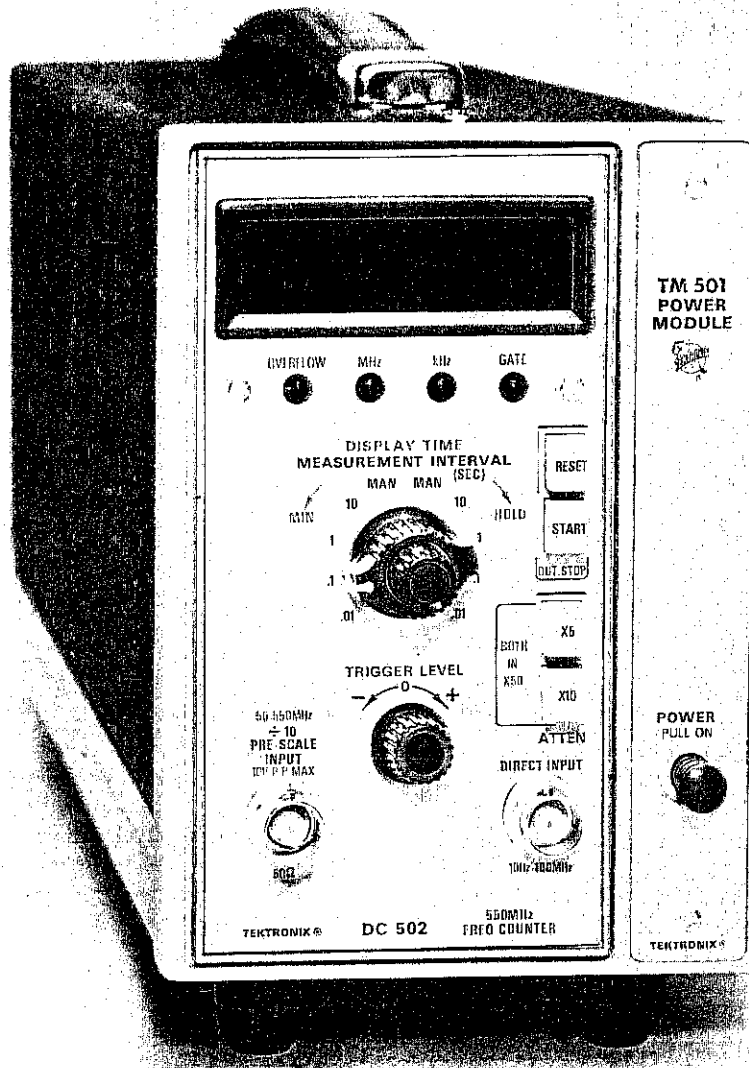
Universal Transformer (SN BO50000-up)

Line Selector Block Position	Regulating Ranges	
	120-Volts Nominal	220-Volts Nominal
L	90 VAC to 110 VAC	180 VAC to 220 VAC
M	99 VAC to 121 VAC	198 VAC to 242 VAC
H	108 VAC to 132 VAC	216 VAC to 264 VAC
Line Fuse Data	0.6 A slow-blow	0.3 A med-blow

c. Rear Panel



3. Replace the cabinet.
4. If necessary, change the line cord power plug to match the power source receptacle or use an adapter.
5. Plug the cord into the power source.
6. Insert the desired plug-ins.
7. Use the bail to raise the front of the instrument. **...go to Operating Instructions...**



TM 501 Power Module with plug-in.

TM 501 OPERATING INSTRUCTIONS

INTRODUCTION

Description

The TEKTRONIX TM 501 Power Module is a single-compartment wide mainframe for the TM 500 Series of Modular Instrumentation. It is a basic power source for the many plug-in module members of the TM 500 Series family. Factory options allow customer modification using signal access at the plug-in module/power module interface to provide rear panel inputs and outputs.

Power Source

This instrument is designed to operate from a power source with its neutral at or near earth (ground) potential with a separate safety-earth conductor. It is not intended for operation from two phases of a multi-phase system, or across the legs of a single-phase, three-wire system.

Power Usage

The TM 501 can require up to 35 W of power at the upper limits of the high line voltage ranges. Actual power consumption depends on the particular module and operating mode selected.

Operating Temperatures

The TM 501 is designed to operate in ambient temperatures between 0°C and +50°C. Before operating the TM 501 after storage in temperatures within the specified storage range, allow the chassis to return to room ambient before applying power.

POWERING UP

Plug-in Modules



Turn the Power Module off before inserting the plug-in; otherwise, damage may occur to the plug-in circuitry.

Module Installation

1. Check the location of the white plastic barriers on the interconnecting jack to insure that their locations match the slots in the edge of the plug-in module's circuit board.

2. Align the plug-in module chassis with the upper and lower guides of the compartment. Push the module in and press firmly to seat the circuit board in the interconnecting jack. (Remove the plug-in module by pulling on the white release latch located in the lower left corner of each module.)

3. Pull the POWER button on the right side of the TM 501. Some plug-in modules have independent power switches, usually labeled OUTPUT, controlling application of mainframe power to the module itself. Push this button to activate the plug-in module.

Loading Considerations

The TM 501 can require up to 35 W of power from the line at high-line voltage range settings. Actual power consumed, of course, depends on the particular module selected. This power capability can best be utilized by carefully planning the external loads and the resulting power distributions. Optimum conditions would dissipated as much power as possible in external loads in an ambient temperature around +25°C.

The TM 501 provides the plug-in module with access to a pair of heat-sinked, chassis-mounted transistors, one NPN and one PNP. These Series-Pass transistors allow plug-in modules to operate in power ranges not possible if the power had to be dissipated in the modules themselves.

BUILDING A SYSTEM

Family Compatibility

Mechanically, the plug-in modules are very similar to other TEKTRONIX product families. However, they are not electrically compatible. Therefore, the TM 501 interface has barriers on the mating connectors between pins 6 and 7 to insure that incompatible plug-ins cannot be inserted. See Figure 1. A compatible module will have a matching slot between pins 6 and 7 of its main circuit board edge connector. This slot and barrier combination is the primary keying assignment.

Another identifier for TM 500-compatible plug-in modules is the white color of the release latch.

Customizing the Interface

The modularity of this instrumentation system provides for a host of functions to be performed by the plug-in modules. Specific functions are grouped into families or classes, of which there may be several plug-in module members. For instance, some classes are Power Supplies,

Signal Sources, Measurement and so forth. Each modular member of a functional family will have a second slot peculiar to its family assignment located in its edge connector. The TM 501 user can "program" the Power Module to accept only members of a certain family by installing a second barrier in the interface connector to match the module's slot location. For extra barriers, order TEKTRONIX Part Number 214-1543-02.

Rear Panel

The rear sub-panel is punched for BNC and multi-pin connector mountings. Customer- or factory-installed connectors and wiring (see following description of catalog Option 2) could provide external access to the interface for external I/O control. This feature makes the TM 500 Series Modular Instrumentation System very flexible.

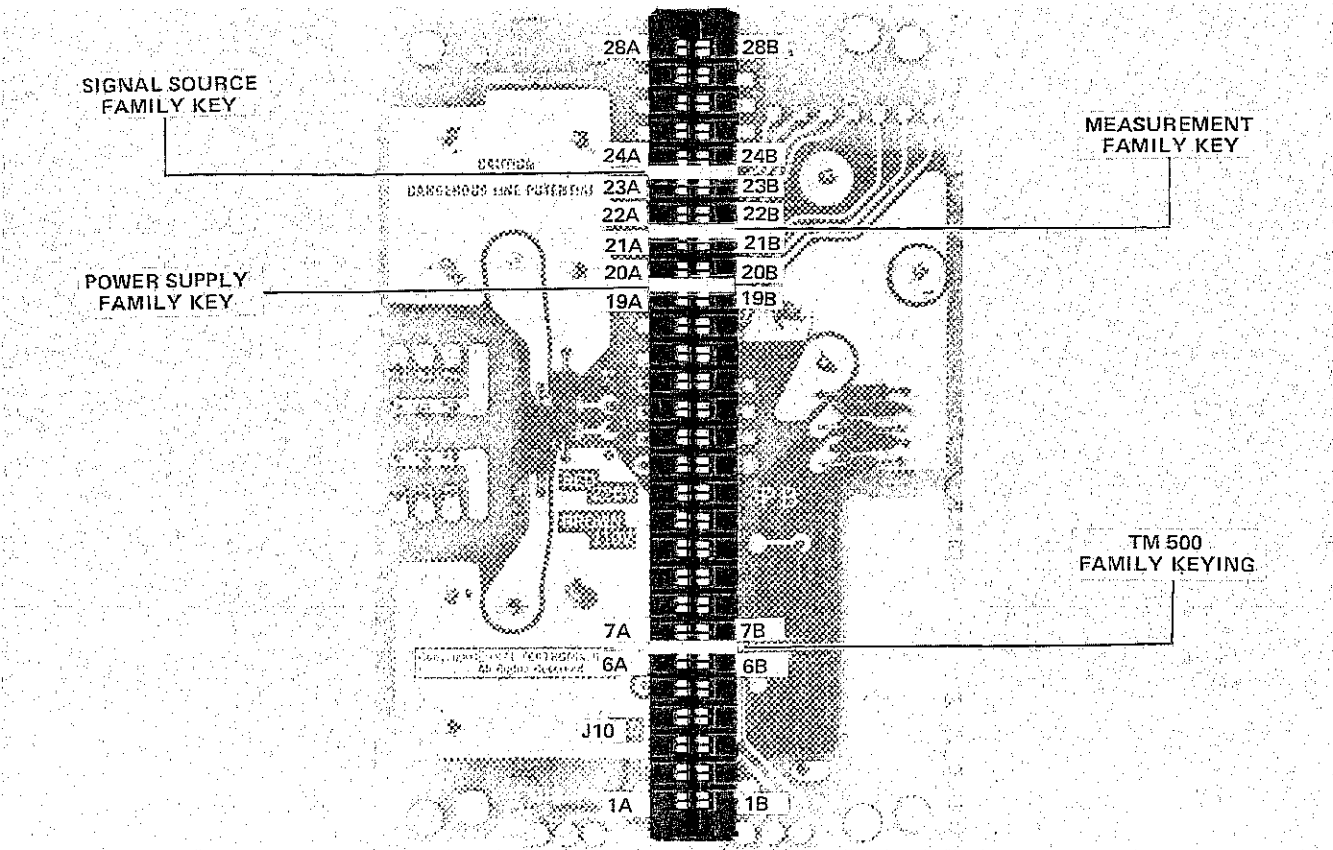


Figure 1. Keying assignments for family functions.

Option 2. This factory-installed option adds 25-mil squarepin connectors to the rear of the interconnecting jack at all pin locations from pins 14A and B through pins 28A and B. This will keep the interface flexible by making it easy and fast to change customized wiring using prepared wires with squarepin receptacles and long-nose pliers or

tweezers. It also protects the circuit board from damage by repeated soldering and unsoldering of jumper wires. This option also adds a BNC connector and a 50-pin connector to the rear panel. These connectors are **not** pre-wired in order to give a system designer as much flexibility as possible. Instead, prepared jumpers, coax cables, and interconnection jack barriers are included in a kit.

SPECIFICATIONS

Power Requirements

Line Voltage Ranges. Universal Transformer. 100, 110, 120, 200, 220, 240 VAC, all within 10%. Range changing for transformer accomplished with quick-change line-selector blocks.

Power Cord Conductor Identification

Conductor	Color	Alternate Color
Ungrounded (Line)	Brown	Black
Grounded (Neutral)	Blue	White
Grounding (Earthing)	Green-Yellow	Green-Yellow

Line Frequency Ranges. Universal Transformer: 48 Hz to 440 Hz.

Power Consumption. Maximum primary power approximately 35 W at high line. Actual power consumption depends on plug-in selection and operating modes.

Supplies (Unregulated)

Two 25 VAC windings, 500 mA each.

+33.5 V and -33.5 V, 500 mA, maximum.

17.5 VAC and +11.5 V, 1.0 A, maximum, shared in any combination between these two supplies.

NOTE

Current and voltage ratings are for main frame maintenance only. In practice, not all available power may be used at once. More detailed information is supplied with kit 040-0652-02 (TM 500-plug-in).

Temperature Range

Operating: 0°C to +50°C. Nonoperating: -40°C to +75°C.

Altitude Range

Operating: To 15,000 feet. Nonoperating: To 50,000 feet.

Other

Dimensions with Feet and Bail: H 6.0 in., W 3.9 in., L 15.3 in.

Weight without Plug-ins: Approximately 6.0 lb.