

TM 500 / 5000

MODULAR TEST INSTRUMENTS

- TM 5006A
- TM 5003
- TM 502A
- TM 503B
- TM 506A

Power module mainframes provide the framework for TEGAM's modular instrument architecture. They can be used with over 50 TEGAM plug-ins and many more from other manufacturers, to configure literally hundreds of multifunction or application specific packages for manual or automated testing.

Combine your instruments with the mainframe that fits your environment: standard mainframes for convenience in bench or desktop applications; rackmount models for production and test; and portable mainframes for service work and field testing.

Plug-in compatibility extends across manual and programmable plug-in instrument families. TEGAM TM 500 manual plug-ins operate in any of the available mainframes which accept instruments in combinations of up to six single-wide plug-ins.

The six-wide TM 5006A and three-wide TM 5003 were designed specifically for use with TEGAM TM 5000 programmable, IEEE-488 compatible instruments. All modules — manual and programmable — are interchangeable in both mainframes.

Put a compact test set together for bench, rack or field. The TM 5003, TM 503B, and TM 502A are compact, portable benchtop mainframes. The larger TM 5006A and TM 506A mainframes

Mainframes And Accessory Products For TEGAM Plug-In Instruments

include a high-power compartment to supply higher current levels to instruments providing higher performance or higher output levels. All benchtop models have carry handles and some have optional protective covers for portable applications.

The TM 5006A and TM 506A are available with rackmount mainframes featuring slide assemblies and handles, plus a higher-power fan to accommodate the higher ambient temperatures found in enclosed racks and consoles.

TEGAM mainframes open the door to unsurpassed economy — and high levels of performance. The modular concept represented by TEGAM TM 500/5000 mainframes and plug-ins means low cost-per-test in multifunction usage.

Since fixed packaging costs for frames, covers, primary power circuits and other items are shared by many functional instruments in the TM 500/5000 lines, the cost-per-function is typically lower than that offered by comparable, one- or two-function monolithic instruments.

Compatibility between the TM 500 and TM 5000 lines makes it possible to upgrade to a higher-performance system while protecting your current investment. Reduced cabling costs, the need for fewer GPIB cables, and the ease with which a system can be reconfigured all contribute to rising economy as test and measurement needs change and grow.



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AND MEASUREMENT TECHNOLOGY.

Rear interface capability lets you add function and keep connections fast, clean and simple. Most TM 500 plug-in modules contain a duplication of the front-panel input and output connections in the back. These interface lines are built into the rear-edge circuit card connector of each plug-in. Some plug-in modules also have additional signal or control lines that are present only at the back of the instrument. In either case, you can interconnect modules to reduce front-panel clutter or to perform functions not otherwise available.

For example, the trigger output of a signal source can be interconnected to the rear panel of a counter for instant frequency checks at the touch of a front-panel switch. Or, a digital multimeter and power supply can be interconnected to implement voltage setups without the need to move test leads. Any module can be internally connected through the mainframe and can also be externally interfaced out the rear panel.

Mainframes can be interfaced by soldering together the appropriate connectors on a standard mainframe, or by including the rear interface option in your purchase. The rear interface option provides square-pin connectors at the rear interface between the mainframe and plug-ins, plus a multi-pin connector and one or more BNC connectors mounted on the rear panel of the mainframe. BNC connectors are not pre-wired to maintain flexibility.

A wire kit consisting of specially prepared jumper wires and coax cables and pins is provided with the option.

Then, interfacing between instruments within a mainframe and with external devices is simply a matter of connecting the appropriate terminals together.

In cases where the interfacing within the mainframe must be changed frequently,

the rear panel multi-pin connector can also be used to provide a means of quick-change interfacing. To do this, instead of connecting the rear interface wiring from one plug-in compartment to another, the user can connect all of the rear interface functions that he/she expects to use directly to individual pins on the rear-panel multi-pin connector. Then, he/she can wire up a number of female connector plugs with jumper wires to provide the connections between plug-ins that he/she desires. One female connector plug can be wired up for each system configuration desired. Changing configurations is then as simple as removing one pre-wired connector plug and connecting another.

TM Mainframe Comparison Of Characteristics

| | TM 5006A | | TM 5003 | | TM 506A | | TM 503B | | TM 502A | |
|----------------------------------|--|------|------------|------|------------|------|------------|------|------------|-------|
| | mm | in | mm | in | mm | in | mm | in | mm | in |
| Dimensions | | | | | | | | | | |
| Width | 445 | 17.5 | 230 | 9 | 445 | 17.5 | 214 | 8.4 | 145 | 5.7 |
| Height | 194 | 7.6 | 194 | 7.6 | 194 | 7.6 | 140 | 5.5 | 140 | 5.5 |
| Depth | 488 | 19.2 | 488 | 19.2 | 488 | 19.2 | 452 | 16.8 | 407 | 16.6 |
| Weight = | kg | lb | kg | lb | kg | lb | kg | lb | kg | lb |
| Net | 14.5 | 32 | 8.6 | 19 | 14.5 | 32 | 4.7 | 10.3 | 4.0 | 8.75 |
| Shipping | 20.9 | 46 | 12 | 26.5 | 20.9 | 46 | 7.45 | 16.3 | 6.75 | 14.75 |
| Line Voltage Ranges | 100, 110, 120, 200, 220 and 240 Vac (not to exceed 250 Vac on 240 Vac range); selectable via internal jumper or rear panel | | | | | | | | | |
| Line Frequency Hz | 48 to 66 | | 48 to 66 | | 48 to 66 | | 48 to 400 | | 48 to 400 | |
| Power Consumption VA maximum* | ≈650VA | | ≈300VA | | ≈650VA | | ≈250VA | | ≈120VA | |
| Cooling | Forced Air | | Forced Air | | Forced Air | | Convection | | Convection | |
| Temperature Range | Operating 0°C to +50°C. Non-Operating -55°C to +75°C. | | | | | | | | | |

*Actual power consumption depends on plug-in selection and operating modes.

TM 5006A

- Six Compartment Mainframe
- High Power Compartment
- Switching dc Power Supply
- Forced Air Cooling
- Rear Interface Connections
- Rackmount Capability
- Additional EMI Shielding Availability
- IEEE Standard 488 Compatibility

The TM 5006A mainframe can accept and provide power for up to six single-wide TM 500 and/or TM 5000 plug-ins. It includes a high power compartment at its right-hand side to supply higher current levels to those instruments providing higher performance or higher output levels.

The TM 5006A features a switching dc supply, plus electronically regulated dc voltages. Forced air cooling is standard.

Available options: Rear Interface, Rackmount, Increased EMC, and most North American and International power plugs. Cabinet-to-rackmount conversion kit, equipped with slide out assembly, required to convert a TM 5006A to rackmount capability (040-0982-00).

Rackmount-to-cabinet conversion kit, equipped to convert a TM 5006A with rackmount configuration to cabinet style (040-0983-00).

TM 5003

- Three Compartment Mainframe
- Switching dc Power Supply
- Forced Air Cooling
- Rear Interface Connections
- IEEE Standard 488 Compatibility

The TM 5003 mainframe can accept and provide power for up to three single-wide TM 500 and/or TM 5000 plug-ins. Features include a switching dc power supply and quiet fan for optimum cooling. All dc voltages are electronically regulated.

Available options: Rear Interface and most North American and International power plugs.

TM 502A

- Two Compartment Mainframe

The TM 502A is a lightweight, benchtop mainframe which accepts one or two single-wide TM 500 plug-ins. It includes a tilt bail handle and rear panel power entry, switch and line selector assembly. An optional Toolbox plug-in is available.

Available options: Toolbox Plug-In (016-0362-02) and most North American and International power plugs.

TM 503B

- Three Compartment Mainframe
- Rear Interface Connections

The TM 503B accepts up to three single-wide TM 500 plug-ins. This lightweight, benchtop mainframe includes a tilt bail handle and rear-panel power entry, switch and line selector assembly.

Available options: Rear Interface and most North American and International power plugs.

TM 506A

- Six Compartment Mainframe
- High Power Compartment
- Switching dc Power Supply
- Forced Air Cooling
- Rear Interface Connection
- Rackmount Capability

The TM 506A mainframe accepts up to six different single-wide TM 500 plug-ins, providing a complete test station with one power cord. Like most TM 500 mainframes, the TM 506A is available with optional rear interfacing of different modules, reducing front-panel clutter.

Available options: Rear Interface, Rackmount and most North American and International power plugs.

Cabinet-to-rackmount conversion kit equipped with slide out assembly, required to convert a TM 506A to rackmount capability (040-0982-00).

Rackmount-to-cabinet conversion kit, equipped to convert a TM 506A with rackmount configuration to cabinet style (040-0983-00).

CUSTOM PLUG-IN KITS

THE MISSING LINK

Test engineers often require custom interfaces such as specialized signal or timing generators, amplifiers or converters, and signal routers to complete a test system. Design engineers frequently need to prototype a component manufacturer's "suggested circuit" or integrate an evaluation board when selecting a new component. Educators need sturdy demonstration aids and circuit construction tools for senior lab projects that do not tie up power supplies and valuable bench space. Instrument and equipment manufacturers in focused applications require a platform that does not require the development of new electrical and mechanical packages. This is why the modular instruments line includes custom plug-in kits. The kits provide a mechanical package and development boards that allow rapid construction and wiring of circuits. The plug-ins are compatible with both TM 500 and TM 5000 mainframe power modules.

POWER WHERE IT'S NEEDED

Each 56-conductor slot connector (up to 6 in a TM 506A or TM 5006 mainframe) supplies a wide assortment of dc voltages and isolated ac voltages to generate +5 V supplies, dual analog supplies, and other specialized sources. In addition, each mainframe slot has a dedicated pair of series pass NPN and PNP power transistors internal to the mainframe to simplify power supply design. Approximately 10 Watts can be dissipated per slot of a TM 500 mainframe (15 Watts for a TM 5000 mainframe). Specific technical information on power sources is available in power module mainframe instruction manuals.

SIGNALS TO GO

In addition to delivering power to the plug-ins, each 56-conductor slot edge-connector includes uncommitted conductors to transfer signals to and from other slots, or to and from the rear panel of power module mainframes. A Rear Interface Data Book (070-2088-04) describes the rear-interface system in greater detail and lists rear interface signals for existing instruments. An Extender Cable (067-0645-00) for the 56-conductor edge connector is available to extend the plug-in kit outside of the mainframe housing. A series of construction notes provides direction for building custom circuits.

SINGLE COMPARTMENT WITH POWER SUPPLY BOARD

This kit includes parts and a pre-etched circuit board layout for (1) a ground-referenced positive and negative supply, capable of 7 to 20 V at up to 400 mA, and (2) a ground-reference supply, nominally 5 V, not adjustable, with up to 1 amp current capability. The circuit board includes the edge-connector interface and has about 30 square inches of 0.1" grid perforated board with plated holes for circuit development.

SINGLE COMPARTMENT WITH DEVELOPMENT BOARD

This kit comes without the power supply components or the pre-etched power supply circuit. The board includes the edge-connector interface and has about 35 square inches of board development area.

SINGLE COMPARTMENT WITHOUT BOARD

This kit comes without a board for applications where custom circuit boards are fabricated.

DUAL COMPARTMENT WITH DEVELOPMENT BOARDS

This kit has two development boards (30 and 35 square inches of development area) for applications requiring additional power, circuit area, or front panel space.

Mainframe Accessories

Extender Cables

Designed to couple a TM 500/TM 5000 plug-in with the mainframe rear interface or GPIB board connections outside the mainframe for calibration and/or customer plug-in design.

Standard Extender Cable (067-0645-02)

GPIB Extender Cable (067-0996-00)

Plug-In Toolbox

The plug-in toolbox provides space within your TM mainframe for storing probes, cables, “tees”, accessories, and small tools. Inside dimensions: 250 mm long x 51 mm wide x 106 mm high (9 7/8 x 2 x 4 1/4 inches).

Plug-in Toolbox (016-0362-02)

Blank Plug-In Panel

When operating TM 500/TM 5000 instruments with less than the full complement of plug-ins, the blank plug-in panel can be used to cover unused compartments.

Blank Plug-in Panel (016-0195-05)

Protective Front Cover

A snap-on front cover, molded of high-impact plastic, is available for the TM 503B and TM 5003 mainframes. The TM 503B cover will also fit TM 5000 monolithic packages.

Protective Front Cover TM 503B
(200-3554-00)

Protective Front Cover TM 5003
(200-3252-00)

Mainframe Plug-In Retainers

TM 5003 and TM 5006A use Retainer Clips (354-1085-00) TM 502A, TM 503B (407-3658-00)

Rear Interface Data Book

The Rear Interface Data Book provides diagrams and related interface information for most of the TM 500/TM 5000 plug-ins.

Rear Interface Data Book (070-2088-04)

Ordering Information

| | |
|---------------|-------------------------------------|
| TM 502A | 2 Wide Power Module Mainframe |
| TM 502A/TB | TM 502A w/Tool Box Plug-In |
| TM 503B | 3 Wide Power Module Mainframe |
| TM 5003 | 3 Wide Power Module Mainframe, GPIB |
| TM 5003/RI | TM 5003 w/Rear Interface |
| TM 5006A | 6 Wide Power Module Mainframe, GPIB |
| TM 5006A/R | TM 5006A w/Rack Mount |
| TM 5006A/RI | TM 5006A w/Rear Interface |
| TM 5006A/R/RI | TM 5006A w/Rack Mt & Rear Interface |
| TM 5006A/EMC | TM 5006A w/EMC Shielding |

(All mainframes include an Instruction Manual.)

Optional Accessories

| | |
|-------------|--------------------------------|
| 016-0195-05 | Blank Plug-In Panel |
| 016-0362-02 | Tool Box Plug-In |
| 020-1611-00 | Rear Interface Kit 1-3 Wide |
| 020-1746-01 | Rear Interface Kit 4-6 Wide |
| 040-0982-02 | Rackmount Kit for TM 506/5006A |
| 067-0645-02 | Standard Extender Cable |
| 067-0996-00 | GPIB Extender Cable |
| 070-2088-04 | Rear Interface Databook |
| 200-3554-00 | Protective Front Cover TM 503B |
| 200-3252-00 | Protective Front Cover TM 5003 |
| 343-1085-01 | Retainer Clips for TM 5000 |
| 407-3658-00 | Retainer Clips for TM 5000 |

Custom Plug-In Kits

| | |
|-------------|---|
| 040-0652-06 | Single Compartment w/Uncommitted Board |
| 040-0754-07 | Double Compartment w/Two Boards |
| 040-0803-03 | Single Compartment w/Power Supply Board |
| 040-0821-04 | Single Compartment w/o Board |

Mainframe Power Plug Options

| | |
|----------|-----------------------------------|
| Standard | 120V North American |
| UE220 | 220V Universal Euro & Switzerland |
| UK240 | 240V United Kingdom |
| A240 | 240V Australian |
| NA240 | 240V North American |
| S220 | 220V Switzerland |

Warranty

One year on materials and workmanship.

Calibration Documentation

Contact TEGAM for OPTION Z540 NIST Traceable Compliance Certificate and Test Data.

Calibration & Technical Services

For warranty and remedial repair, calibration services and spare parts, or for additional information on TEGAM sales and service offices around the world, contact us at 440-466-6100 (ph) or 440-466-6110 (fx).



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