Model 1750

RESISTANCE MEASUREMENT SYSTEM

- **"TRUE-SPEED" high speed testing capability fast and accurate**
- **Automatic thermal and electromagnetic noise rejection**
- **Programmable reference currents**
- **GPIB, RS-232 & RS-422 compatibility**
- **Unbelievably easy to program**

Model 1750 Resistance Measurement System

The TEGAM Model 1750 Resistance Measurement System is the first breakthrough in high-speed production test since the laser trimmer. The 1750 is the first fully integrated, multi-mode, bus controllable, high-speed, digital ohmmeter designed to outperform all other ohmmeters and enhance the performance of the world's fastest laser trimmers and material handlers.

It's Fast:

The 1750 accelerates the high-speed production line with "TRUE-SPEED" performance. In the Fast Mode the 1750 can set-up, zero-out thermal errors, acquire data and make its first reading in less than 12 milliseconds with an accuracy of up to 0.05%! That's "TRUE-SPEED" performance. Subsequent readings are provided every 10 milliseconds at a true rate of 100 readings per second! "TRUE-SPEED" allows you to maximize the speed of your PLC's, material handlers and production line machinery.

The 1750 is fast because it provides speed and accuracy while automatically rejecting thermal and line noise. Patented circuitry eliminates thermal and electromagnetic measurement errors caused by contact between device handlers and the device-under-test. The 1750 rejects DC and AC noise offsets while maintaining its high speed test performance. This unique feature is only found on the TEGAM 1750.

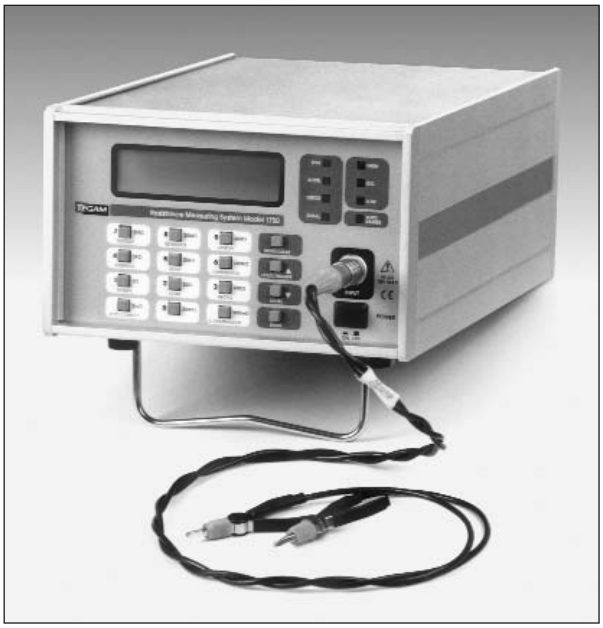
It's High Powered:

The 1750's power is in the user's ability to quickly configure it through a selection of standard setup menus. With the 1750 you select your measurement mode, (Resistance, Ohms Comparator or Percentage Comparator), and measurement ranges, (from 2 mΩ to 20 MΩ). You have your choice of reference currents and triggering methods. You can also configure delay times, settling times and automatic thermal and noise rejection.

If you don't need all this flexibility, just hit the AUTO RANGE button and enjoy the ride!

It's Easy to Operate:

The 1750 is the state-of-the-art programmable ohmmeter that operates via front-panel or over the bus. Clearly labeled multi-function keys provide front panel control of range selection, reading modes, delays, triggers and measurement HOLD. Clear menu driven options provide easy setup for more sophisticated operation, too! Front panel includes a manual TRIGGER and HOLD function and HI/GO/LO indicators for the open collector TTL output.



It's Easy to Integrate:

The 1750 is unbelievably easy to program. The 1750 contains a full complement of bus interfaces including IEEE-488, RS-232 and RS-422. To maximize your programming efficiency, each of these interfaces is operated using the same programming command set and front panel indicators to provide continuous status of all bus operations.

It's Easy to Calibrate:

The 1750 is calibrated using the NIST traceable TEGAM calibration standard Model 17508 and a simple keypad entry procedure. Front panel calibration makes it easy to maintain the 1750 traceability right on the product floor and in less time than it takes to reload a resistor reel.

It's Ready for Any Job:

The 1750 provides the speed and accuracy desired for automated production test requirements as well as bench top quality control and inspection applications. Not only is the 1750 perfect for high speed production test of low resistance electronic components, but the selectable test currents, controllable test pulses, and "TRUE-SPEED" performance make the 1750 excellent for applications that require minimal component heating. The 1750 fits most resistor, wire, fuse, thermistor, surface, and bond testing applications.

For more information contact TEGAM at 800-666-1010.

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Prices and specifications subject to change without notice.

TABLE 1:

Full Scale Voltage and Maximum Lead Resistance as a Function of Reference Current

RANGE	RESOLUTION	REFERENCE CURRENT (AVAILABLE SELECTION)							
		1 A	100 mA	10 mA	1 mA	100 µA	10 µA	1 µA	100 nA
2 mΩ	100 nΩ	2 mV							
20 mΩ	1 µΩ	20 mV	2 mV						
200 mΩ	10 µΩ	200 mV	20 mV						
2 Ω	100 µΩ		200 mV	20 mV					
20 Ω	1 mΩ			200 mV	20 mV				
200 Ω	10 mΩ			2 V	200 mV	20 mV			
2 kΩ	100 mΩ				2 V	200 mV			
20 kΩ	1 Ω					2 V	200 mV		
200 kΩ	10 Ω						2 V		
2 MΩ	100 Ω							2 V	
20 MΩ	1 kΩ								2 V
MAX. LEAD RESISTANCE:		500 mΩ	5 Ω	50 Ω	100 Ω	100 Ω	100 Ω	100 Ω	100 Ω

TABLE 2

Delayed Mode Accuracy (In terms of FULL SCALE VOLTAGE)

FULL SCALE VOLTAGE	(±) ACCURACY (18-28°C, 1 yr.)
2 mV	0.02% RDG + 5 COUNTS
20 mV	0.02% RDG + 4 COUNTS
200 mV	0.02% RDG + 2 COUNTS
2 V	0.02% RDG + 2 COUNTS
2V (2 MΩ & 20 MΩ ranges)	0.04% RDG + 2 COUNTS

TABLE 3

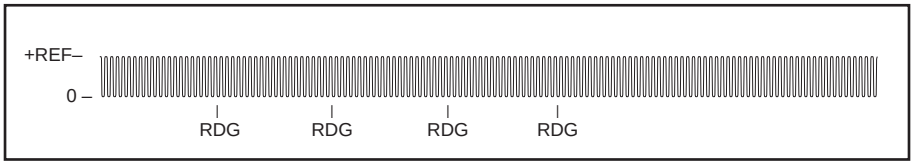
Temperature Coefficients (In terms of FULL SCALE VOLTAGE)

FULL SCALE VOLTAGE	(±) TEMPERATURE COEFFICIENT (0-18°C and 28-50°C)
2 mV	0.004% RDG + 1 COUNT
20 mV	0.004% RDG + 0.5 COUNTS
200 mV	0.002% RDG + 0.1 COUNTS
2V	0.002% RDG + 0.1 COUNTS
2 V (2 MΩ & 20 MΩ RANGES)	0.008% RDG + 0.5 COUNTS

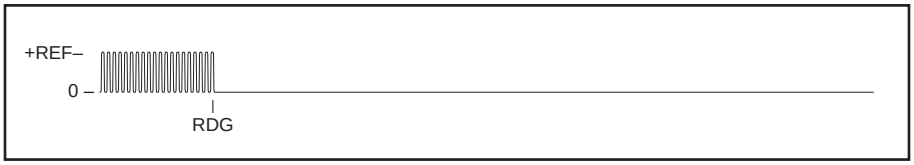
FAST MODE ACCURACY is ± (0.05% + 5 COUNTS)

Reference Current Modes:

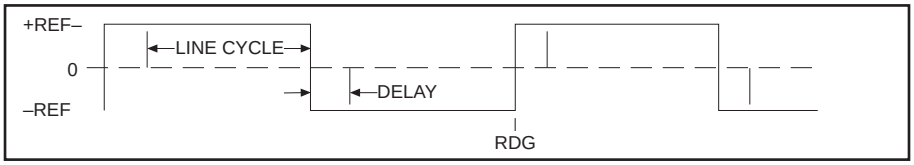
Fast Continuous:
Alternating reference current (+REF/0), with automatic thermal and noise rejection.



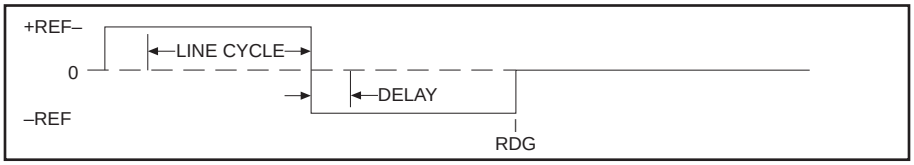
Fast One-Shot:
Triggered single cycle of Fast Continuous Mode.



Delayed Continuous:
Alternating reference current (+REF/-REF) with programmable settling time for reference current and line-cycle digitization.



Delayed One-Shot:
Triggered single cycle of Delayed Continuous Mode.



 NOTE: Due to the nature of the 1750 test current, use may be limited in some inductor, transformer, motor, cable and other inductive test applications.

TABLE 4:

Measurement Times:

FAST MODE v. FULL SCALE VOLTAGE					DELAYED MODE v. FULL SCALE VOLTAGE			
RANGE	**2 mV**	**20 mV**	**200 mV**	**2 V**	**2 mV**	**20 mV**	**200 mV**	**2V**
2 mΩ					D			
20 mΩ					D	D		
200 mΩ			10 msec			D	D	
2 Ω			10 msec			D	D	
20 Ω			10 msec			D	D	
200 Ω			10 msec	10 msec		D	D	D
2 kΩ			10 msec	10 msec			D	D
20 kΩ				10 msec			D	D
200 kΩ								D
2 MΩ								D
20 MΩ								D

NOTES:

1. Fast Mode available on range and full scale voltage combinations shown, (10 msec).
2. Delayed Mode available on combinations shown, (D).
3. Delayed Mode Measurement Times = 2x (Line Period + Programmed Delay + 1.7 ms Processing Time). e.g. 60 Hz line frequency and 10 ms delay, Time = 55.0 ms.
4. Delays are programmable from 1 ms to 250 ms in 1 ms increments.

TABLE 5:

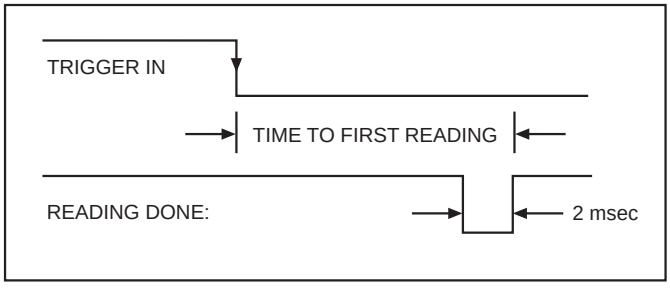
Reading Rates:

	MEASUREMENT TIMES	READING RATE	TIME TO FIRST READING
FAST MODE	10 msec	100 rdg/sec	12 msec
DELAYED MODE			
Delay = 1 msec	36 msec	27 rdg/sec	38 msec
Delay = 5 msec	45 msec	22 rdg/sec	47 msec
Delay = 10 msec	55 msec	18 rdg/sec	57 msec

Miscellaneous

- **Display Modes:**
  Resistance, Ohms Comparator, % Comparator (Autoranging available in Resistance Mode).
- **Digital Interfaces:**
  IEEE-488.1, RS-232, RS-422, TRIGGER IN and READING DONE via BNC connectors.
- **Display:**
  4 1/2 digit alpha numeric readout, 2x16 characters, backlighted LCD.
- **Measurement Method:**
  4 - terminal connection to the Device-Under-Test, (DUT).
- **Input Connector:**
  Heavy duty LEMO type for interface integrity and long life.
- **Input Protection:**
  ± 15V continuous. ESD protected per IEC-801-2, Level 1.
- **Overload Current:**
  Delay Mode: 100% overshoot, <25 µ sec.
  Fast Mode: 200% overshoot, <30 µ sec.
- **Noise Rejection:**
  60 dB typical at line frequency.

Time to First Reading:



- **Environmental:**
  Operating: 0 to 50°C, <80% RH; Storage: -35 to 60°C, <95% RH.
- **EMC:**
  CE Class A: EN 55011, IEC; 801-2, IEC801-3.
- **Power:**
  <50 VA, 120/240 VAC ± 10%.
- **Dimensions:**
  Height, 5.2" (13.3 cm); Width 8.5" (21.7 cm); Depth, 13.0" (33.0 cm).
- **Weight:**
  9 lb. 4 oz. (4.2 kg).

- **Calibration:**
  Full front panel calibration requires no internal adjustments and can be easily achieved on the production floor. Recommended calibration equipment is TEGAM Model 17508 Calibration Standard or equivalent. Calibration requires temporary addition of a jumper on internal PC board.

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Accessories:

17501 Kelvin Klips allow you to make solid four-terminal connections to leaded components. This set is provided as a standard accessory with the 1750 and is particularly useful for hand testing resistors. Four-terminal measurement techniques allow precision measurements by avoiding the effects of lead resistance. Gold-plated, hardened beryllium-copper jaws ensure low contact resistance, low thermal emf to copper, high corrosion resistance and long life.

17502 Spade Lug Adapter is an optional cable set for the 1750. Instead of clips it has spade lugs for connection to binding posts and peripheral equipment.

17503 Sorting Fixture holds components for test while providing four-terminal connection. Its holding clips rotate 90 degrees to accommodate axial and radial leaded components alike. Holders may also be adjusted from 0.75", (1.90cm) to 3.0", (7.62cm) apart allowing use of the fixture with many component sizes and configurations. Terminal contact pressure is also adjustable. Pressure may be reduced for easy insertion of components with small gauge leads. Contacts are gold-plated beryllium-copper.

17505 Male LEMO Connector and Strain Relief is an optional accessory that allows you to interface your existing handlers or probe sets to the new 1750 Resistance Measuring System.

17508 Calibration Standard is a convenient calibration standard that makes calibrating your 1750 quick, easy and accurate. The NIST traceable 17508 provides easy connections and provides a discrete standard for each of the 1750's 11 resistance ranges.

Ordering Information:

- **1750** Resistance Measuring System includes: Model 17509 Operation & Service Manual, 17501 Kelvin Klip Set and NIST Traceable Certificate of Calibration.
- **17501** Kelvin Klip Set
- **17502** Spade Lug Adapter
- **17503** Sorting Fixture
- **17505** Male LEMO Connector & Strain Relief
- **17508** Calibration Standard
- **17509** Operation & Service Manual
- **Opt. Z540** Calibration Data Report & NIST Traceable Certificate of Calibration

Call us toll-free at TEGAM at 800-666-1010 for more information on the 1750 or to schedule a FREE 30 Day Evaluation!

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