TEGAM

Model 1750

HIGH SPEED MICROOHMMETER

High Speed Microohmmeter

- "TRUE-SPEED" high speed testing capability fast and accurate
- 100 nΩ resolution
- Automatic thermal and electromagnetic noise rejection
- Programmable reference currents
- GPIB, RS-232C and RS-422 compatibility
- **Optional Battery Power (Model 1750/BAT)**

The TEGAM Model 1750 High Speed Microohmmeter 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 highspeed production line with "TRUESPEED" 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! "TRUESPEED" allows you to maximize the speed of your PLC's, material handlers and production line machinery.

The 1750 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 stateof-the-art programmable ohmmeter that operates via front-panel or over the bus. Clearly labeled multifunction 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! The 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 interfaces including IEEE-488, RS-232C 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 operations.

It's Easy to Calibrate

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 low current capability and "TRUE-SPEED" performance make the 1750 excellent for dry circuit testing of switches, relays and connector contacts without disturbing the device's contact surfaces. 1750 fits most resistor, wire, fuse, thermistor and trimmer testing applications.

Prices and specifications subject to change without notice.
1750-909-01 Rev. A

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

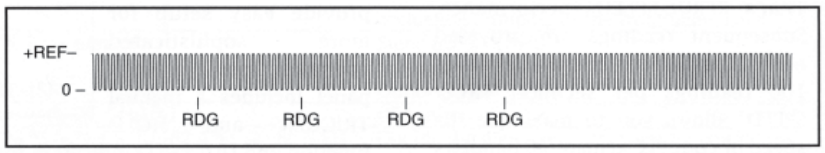
TABLE 3
Temperature Coefficients (In terms of FULL SCALE VOLTAGE)

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
2 V	0.002 % RDG + 0.1 COUNTS
2 V (2 MΩ & 20 MΩ ranges)	0.008 % RDG + 0.5 COUNTS

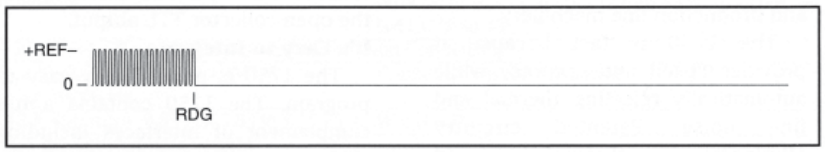
FASTMODE ACCURACY is ± (0.05 % + 5 COUNTS)

REFERENCE CURRENT MODES:

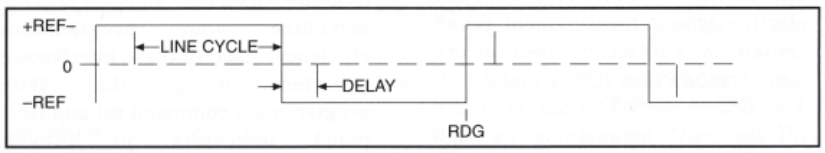
Fast Continuous:
Pulsing reference current (+REF/0), with automatic thermal and noise rejection.



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.

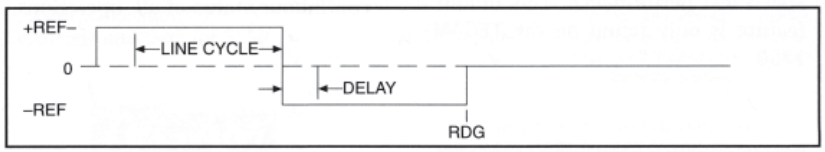


TABLE 4: Measurement Times

RANGE	FAST MODE v. FULL SCALE VOLTAGE				DELAYED MODE v. FULL SCALE VOLTAGE			
	2 mV	20 mV	200 mV	2 V	2 mV	20 mV	200 mV	2 V
2 mΩ					D			
20 mΩ					D	D		
200 mΩ			10 ms			D	D	
2 Ω			10 ms			D	D	
20 Ω			10 ms			D	D	
200 Ω			10 ms	10 ms		D	D	D
2 kΩ			10 ms	10 ms			D	D
20 kΩ				10 ms			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 ms).
2. Delayed Mode available on combinations shown, (D).
3. Delayed Mode Measurement Times = 2 x (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.

MISCELLANEOUS

Display Modes
Resistance, Ohms Comparator, % Comparator (Autoranging available in Resistance Mode)

Digital Interfaces
IEEE-488.1, RS-232C, RS-422, TRIGGER IN and READING DONE via BNC connectors

Display
4-1/2 digit alpha numeric readout, 2 x16 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
± 15 V continuous. ESD protected per IEC-801-2, Level 1

Overload Current
Delay Mode: 100 % overshoot, <25 µs
Fast Mode: 200 % overshoot, <30 µs

Noise Rejection
60 dB typical at line frequency

Environmental
Operating: 0 °C to +50 °C, <80 % RH;
Storage: -35 °C to +60 °C, <95 % RH

EMC
CE Class A: EN 55011, IEC; 801-2, IEC801-3

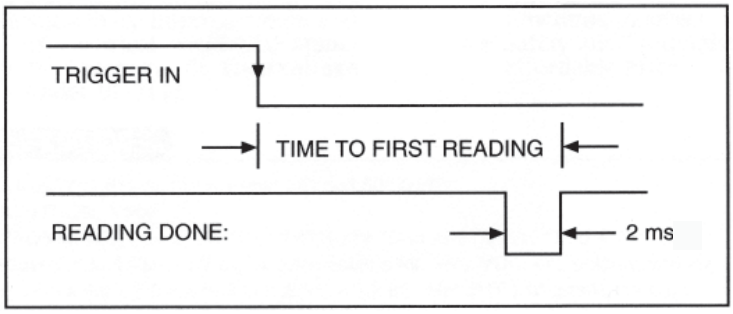
Power
120/240 VAC ± 10 %, 50/60 Hz, < 50 VA

Weight
4.2 kg (9 lb. 4 oz)

TABLE 5: Reading Rates

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

Time to First Reading:



Dimensions
13.3 cm x 21.7 cm x 33.0 cm
(5.2 x 8.5 x 13.0 in) H X W X D

Calibration
Full front panel calibration requires no internal adjustments and can be easily achieved on the production floor.

Battery Option (Model 1750/BAT)
Battery Life: 1-4 hours continuous opertion depending on range
Charging Time: 8 hours for full charge
Battery Type: Lithium Ion
Battery Power: 90 to 250 VAC, 50/60 Hz < 100 VA
User Replaceable Battery: Yes *(See Manual)*

Accessories

Included Accessories

Manual CD	P/N 17509-CD
Power Cord	Specify Country
Kelvin Klip Set	P/N 17501
or Spade Lug Adapter	P/N 17502 (neither included with 1750/BAT)

Optional Accessories

Kelvin Klip Set	P/N 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.
Spade Lug Adapter	P/N 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.
Sorting Fixture	P/N 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", (1.90 cm) to 3.0", (7.62 cm) 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.
Kelvin Probes	P/N 17504 Kelvin probes allow the measurement of surface resistance. Each probe has two spring loaded pins spaced 1/8" apart. Pins are replaceable.
Male LEMO Connector and Strain Relief	P/N 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.
Chip Tweezers	P/N 17510 The tweezers make solid connections to chip components in manual sorting applications. Capacity of jaws is 12.7 mm (0.5 in). The tweezers include a 5 ft cable. Contact tips are replaceable.
Chip Tweezer Replacement Kit	P/N 47422 Tweezer tips are intended to last 100,000 to 500,000 operations. This kit includes 12 replacement tips, 2 screws and 1 wrench.
Z540 Compliant Calibration with Certificate and Data for 1750	P/N OPT-Z540

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