Model VM-7

ATTENUATOR AND SIGNAL CALIBRATOR   30 MHz

IEEE - 488

CE

Advanced 30 MHz Receiver

The TEGAM Model VM-7 offers the user great flexibility in configuring a measuring system in a cost effective manner. Since the VM-7 is a 30 MHz receiver, it may be adapted easily to any frequency range with the addition of an appropriate external mixer, and local oscillator. Other features include:

ADVANCED TECHNIQUES: The Model VM-7 uses advanced digital and analog techniques in a series IF substitution configuration, offering in excess of 100 dB dynamic range, plus the unit is fully bus controllable.

A combination of switched gain and attenuation stages are distributed throughout the receiver. In place of the classic piston attenuator an A/D is used to provide the receiver's unique linearity and accuracy.

The unit is configured as a dual-conversion receiver. A digitally-controlled phase lock loop at the first conversion allows the receiver to deal effectively with less desirable signals, as well as clean, synthesized signals.

Final synchronous detection is handled digitally allowing the receiver to achieve resolution down to 0.001 dB. Variations in signal-to-noise ratio are not handled by injection of noise as in previous receivers of this type. This is now handled in the post detection signal processing using a noise algorithm.

RELIABILITY: The VM-7 has undergone extensive testing on production units so that customers will be ensured excellent reliability in service. Special attention has been paid to cooling requirements, significantly extending component life.

USER FRIENDLY: Through the use of "soft key" user interface, the operator is guided through the use of the instrument. A "Help" function provides information on key operation, precluding the need to refer to the manual in most cases.

PERFORMANCE: The VM-7 offers dynamic range of 127 dB when using the synthesized signal sources. Single step measurements are possible over the full dynamic range because the receiver is not encumbered by mechanically switched range changes. With the excellent accuracy built into the receiver, this translates into an accuracy of ±0.060 dB for a single-step 100 dB measurement.

SPEED OF OPERATION: Advanced digital detection and processing techniques means that measurements are available instantaneously, no matter what the dynamic range or resolution.

SELF CALIBRATION: A built-in self calibration routine allows for automatic calibration of the switched gain and attenuator stages in order to maintain the exceptional accuracy of the instrument.

DIAGNOSTICS & SERVICE: Complete diagnostic software has been built into the instrument to allow a technician to easily find a fault. Should repair become necessary, every module is easily removed through the rear panel, including the power supply.

RACK MOUNTING: This instrument can be stacked easily with other TEGAM instruments or mounted in any cabinet or rack designed according to MIL-STD-189 or EIA RS-310 using the appropriate rack mounting kit.

SYSTEM CONFIGURATION: The Model VM-7 is easily configured into an attenuation measuring system with the addition of the Model 8852 Frequency Converter and an RF signal source. This system is capable of performing attenuation measurements from 0.01 to 18 GHz. The Frequency range can be extended even further to 40 GHz with the addition of the Model 8853 Frequency Converter. For detailed specifications and a block diagram of such a system refer to the Model 8850 Attenuation Measurement System data sheet.

SPECIFICATIONS

SPECIFICATION	DESCRIPTION
INPUT FREQUENCY	30 MHz + 2 MHz
SENSITIVITY	-110 dBm wideband -127 dBm narrow band
DYNAMIC RANGE	110 dB wideband 127 dB narrow band
INCREMENTAL ACCURACY @ 30 MHz	RANGE (dBm) ACCURACY (dB)* (Repeatability) ±0.005 dB 0 to -10 ±0.01 dB/10 dB -10 to -100 ±0.005 dB/l0 dB -100 to -110 ±0.02 dB/10 dB -110 to -120 ±0.08 dB/10 dB * Exclusive of Signal Source effects
AUTOMATIC FREQ CONTROL	Output level, ±10 V maximum
CALIBRATION SOURCE	Internal or External, 30 MHz, at -55 dBm typical
INT 10 MHz REF OSCILLATOR	Frequency Accuracy: 0.0025%
EXT 10 MHz REF OSCILLATOR REQUIREMENTS	Frequency Accuracy: 0.0050%(0 dBm Input level)
INPUT CONNECTORS	30 MHz Input: Type N Female 10 MHz Reference Input/Output: BNC Female
REMOTE OPERATION	All front panel functions except powerline operation can be programmed on the IEEE-488 interface bus.
POWER REQUIREMENTS	100, 120, 220, 240 Vac ±10% @ 50 to 60 Hz
POWER CONSUMPTION	90 Watts
REMOTE PROGRAMMABILITY	Compatible with IEEE-488 STD-1987.1
EMI	Designed to meet MIL-STD-461 for radiated emission and susceptibility.
DESIGN AND CONSTRUCTION	Designed to meet requirements of MIL-STD-28800D TYPE III, CLASS 5, STYLE E
ENVIRONMENTAL	Operating 0 to 50°C Storage -40 to +75°C Humidity 95 %
PHYSICAL DIMENSIONS	Height: 133.4 mm (5.25 in) Width: 425.5 mm (16.75 in) Depth: 444.5 mm (17.5 in) Weight: Net 12.7 kg (28 lbs)

ACCESSORIES:

RACK MOUNTING - This instrument can be rack mounted in any cabinet or rack designed according to MIL-STD-189 or EIA RS-310 using rack mounting kit P/N 187-1007 (adapter ears only) or 187-1008 (contains chassis slides for racks up to 18-24 inches deep).

MAINTENANCE EXTENDER CARDS: To make it easier to verify the performance of the VM-7, TEGAM offers two maintenance extender cards as follows:

Part Number	Type
187-1020-000	Digital
187-1021-000	Analog

SPARE MODULE KIT, P/N 187-1030: This kit includes all replaceable module assemblies that can be easily replaced at any location.

Calibration, Attenuation Measurement Lab (CAMLab) Software Program - This system software operates with the Windows™ 3.1 operating environment. The major improvement over other DOS based and HTB programs is that this software provides all the features found in other windows programs such as point and click user operation, dialog boxes for easy instrumentation setup, enhanced measurement data collection, online help and the ability to generate and printout measurement data and graphs from almost any printer. Refer to the CAMLab data sheet for more information.