

Models M-1011A, M-1012A

AC STANDARDS AND MEASUREMENT INSTRUMENTS

- Resolution 0.1 ppm
- Terminal linearity 1.0 ppm
- M-1011A — band width 50 to 10,000 Hz
- M-1012A — band width 30 to 1,000 Hz
- Front and rear panel connectors
- Fused input and output circuits
- Parallel switches reduce contact resistance
- Switch Resistors virtually eliminate switching transients
- Ratio range from 1.111111 to -0.0111111

Precision AC Ratio Transformer Standards

Models M-1011A and M-1012A AC Ratio Standards are inductive voltage dividers that meet or exceed all of the requirements for a calibration standard in precision measurement applications. They are easily integrated into systems for calibration of voltage dividers, transformer standards, synchro/resolver standards, transformers, calibrators, ammeters, and voltmeters. The ratio accuracy is traceable to the National Institute of Standards and Technology.

The M-1011A operates over a frequency range of 50 to 10,000 Hz, and the M-1012A from 30 to 1,000 Hz. The M-1012A, being a low frequency unit, has a voltage rating of 2.5 V/Hz to a maximum of 350 Volts.

These variable AC voltage dividers demonstrate extreme precision in the measurement and generation of voltage ratios. Seven decades of tapped transformer windings are selected using special low resistance switches providing 0.1 ppm

resolution and 1.0 ppm terminal linearity. The key to these standards is extremely stable toroidal transformers, resulting in precision and outstanding long term stability over a wide range of environmental conditions.

The seven in-line control knobs permit quick, easy setting of the required ratios. The dials rotate independently through 360 degrees of rotation to simplify the settings. The switch settings are easily read from the large-numeral in-line presentation above the knobs.

Switching transients are virtually eliminated due to unique circuitry that maintains the output connections while settings are being changed. The range overlap between decades is $\pm 10\%$, permitting accurate voltage ratios from 1.1 to -0.1.

The standard configuration for both instruments is bench models. If you prefer rack mount, specify the instruments with OPT-11.



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AND MEASUREMENT TECHNOLOGY.

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Characteristic	M-1011A Specifications	M-1012A Specifications
Frequency Range	50 to 10,000 Hz	30 to 1,000 Hz
Maximum rms Input Voltage	0.35f (f in Hz) or 350 volts, whichever is less.	2.5 f (f in Hz) or 350 volts, whichever is less.
Ratio Range: Maximum Minimum	1.111111 -0.0111111	1.111111 -0.0111111
Resolution	0.00001% (0.1 ppm)	0.00001% (0.1 ppm)
Accuracy of Indicated Ratio 50 to 1,000 Hz Above 1 kHz 30 to 400 Hz	(0.0001 + 0.000025/ratio)% (0.0001 + 0.000025/ratio)% * F ² (where F is in kHz)	(0.0001%+0.00005%/ratio)
Terminal Linearity	0.0001% (1 ppm) or better (above 1 kHz, multiply by F ² in kHz)	0.0001% (1 ppm) or better
Maximum Effective Series Output Impedance:	R: 3.5 ohms L: 75 µH	R: 5 ohms L: 350 µH
Input Impedance at 20 V and 400 Hz	200 k ohms minimum	
Input Impedance at 20 V and 60 Hz		200 k ohms minimum
Dimensions: Bench Operation	17" (43.2 cm) wide 5-7/8" (14.9 cm) high 16-7/8" (42.8 cm) deep (including feet and handles)	17" (43.2 cm) wide 5-7/8" (14.9 cm) high 16-7/8" (42.8 cm) deep (including feet and handles)
Rack Mounted:	19" (48.3 cm) wide 5-1/4" (13.3 cm) high 15-1/8" (38.4 cm) deep (depth from back of rack mounting ears to the end of back panel terminals)	19" (48.3 cm) wide 5-1/4" (13.3 cm) high 15-1/8" (38.4 cm) deep (depth from back of rack mounting ears to the end of back panel terminals)
Weight:	18 lbs.	26 lbs.

Standard Equipment

The M-1011A and M-1012A come with a 500783-360 instruction manual and the M-1012A also includes a 500783-360-1 differential data sheet.

Optional Equipment

The M-1011A and M-1012A can use the OPT-11 Rack Mount Adapter.

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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