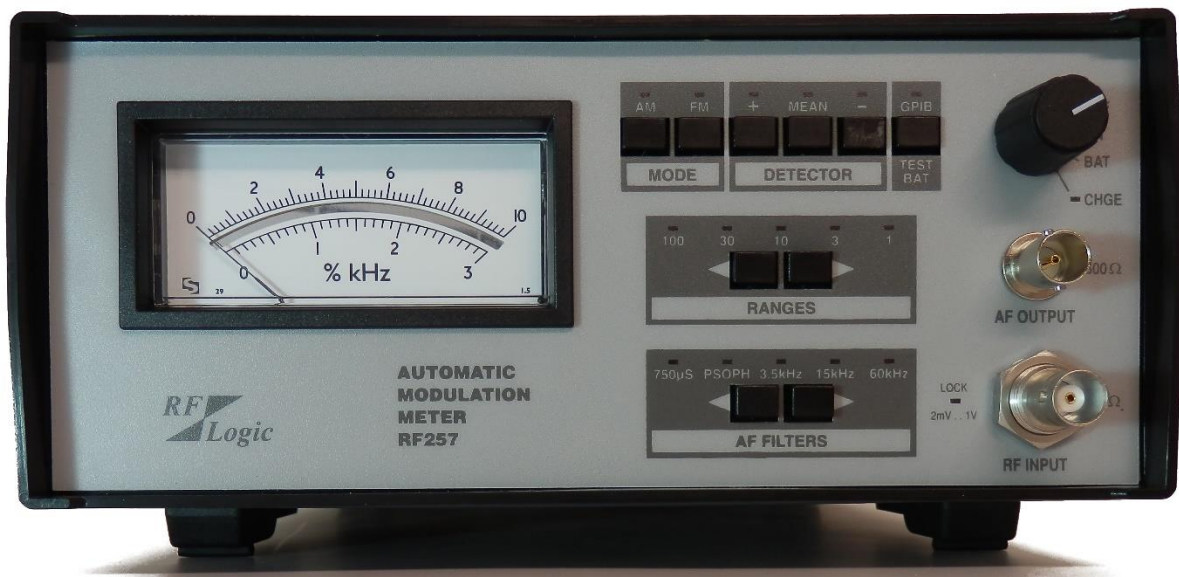## *RF Logic Limited.*

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RF Logic

Electronic Product Design

Model 257 Automatic Modulation Meter

The model 257 modulation meter has been designed to simplify the task of modulation measurement. The model 257 always locks to the highest level signal available, ignoring spurious signals and harmonics. AM and FM measurements can be made over the full frequency range of 1.5MHz to 2.0GHz. The unit operates usefully with reduced sensitivity to at least 4GHz.

FM measurement of peak positive, peak negative or mean deviation, with 5 deviation ranges from 1kHz to 100kHz full scale. AM measurement of peak, trough or mean in percentage modulation with 5 ranges from 1% to 100% full scale. The audio measurement bandwidth is selectable and the demodulated audio is available at the front panel. The IF is available on a BNC connector on the rear panel.

The unit is small and lightweight, making it ideal for the bench or field work, especially with the internal battery option installed.

SPECIFICATION

RF Input

Frequency Range	1.5MHz to 2.0GHz and a useful response, with reduced sensitivity, to at least 4GHz.
Impedance	50 Ω nominal.
Level	2mV to 1V rms Full specification for noise, accuracy etc applies over the input range 10mV to 1.0V
Max Input	0.5W continuous.
Tuning	Automatic tuning selects the largest available signal. Correct operation requires spurious signals to be >10dB below the wanted signal.
Acquisition	Typically < 100ms. Settling time for the AF circuits is additional and is typically 1s for a reading > 75% of meter range.
Local Oscillator Feedout	-60dBm typically.

FM Measurement

FSD Ranges	Five ranges with full scale deviations of 1kHz, 3kHz, 10kHz, 30kHz and 100kHz.
Modes	Peak Positive, Peak Negative and Mean deviation.
Accuracy	± 2% of Full scale ± 1% of reading with a 1kHz tone. See audio filter specification for additional error due to AF response. Residual FM is additional.
Residual FM	<20Hz at 100MHz <100Hz at 500MHz <200Hz at 1000MHz Measured with 3.5kHz AF bandwidth.
Distortion	<1% at 100kHz deviation with a 1kHz tone.

AM Measurement

FSD Ranges	Five ranges with full scale indications of 1%, 3%, 10%, 30%, 100%.
Modes	Peak, Trough and Mean of peak and trough.
Accuracy	± 2% of Full scale ± 2% of reading with a 1kHz tone. See audio filter specification for additional error due to AF response. Residual AM is additional.
Residual	AM <0.5% (15kHz bandwidth selected)
Distortion	<1% for 80% AM with a 1kHz tone.

Audio Filters

60kHz Filter	250Hz - 60kHz ± 0.5 dB 12Hz - 72kHz ± 3 dB typically. HF roll off at 80 dB/decade.
15kHz Filter	250Hz - 15kHz ± 0.5 dB 12Hz - 19.5kHz ± 3 dB typically. HF roll off at 60 dB/decade.
3.5kHz Filter	250Hz - 3.5kHz ± 0.5 dB 12Hz - 4.0kHz ± 3 dB typically. HF roll off at 100 dB/decade.
Psophometric	Complies with CCITT Volume V P53

De-emphasis	750µs de-emphasis. 3 dB bandwidth typically 12Hz - 212Hz. HF roll off at 12dB/decade.

Front Panel

AF Output	Front panel BNC. Level 0dBm approx. for FSD. Impedance 600 Ω nominal.
Display Type	Moving coil meter with 60mm mirror scale.
Overload	Fully protected against over-ranging.

Rear Panel

IF Output	Rear panel BNC. Level 100mV, 50 Ω nominal. Frequency is approximately 420kHz.

Power Requirements

AC Line	Internal selection of line voltage
115V	102V to 130V
230V	205V to 265V
Power	6VA Approx.
Frequency	48 to 60Hz.
Fuse	100mA fast blow on rear panel.

Environmental

Temperature

Operating	0°C to 55°C. Full specification over the range 5°C to 45°C.
Storage	-20°C to 55°C.
Humidity	Max 95% RH at 30°C.

Mechanical

Size	H105, W215, D305 mm
Weight	Approx 1.7kg. Approx. 2.6kg with battery option.

Internal Battery (Option -03)

Discharge Time	>8 hours. Typically 10 hours for a fully charged battery.
Recharge Time	14 hours.
Battery Test	Pressing the Bat Chk push button displays the battery condition on the display. A reading of between 8 and 10 is required for normal operation.
Fuse	1A slow blow on rear panel.