



## AM Modulation Monitor

### Features & Benefits

- 125% positive modulation meter
- 100% negative modulation or carrier level deviation meter
- No overshoot linear phase filtering for high accuracy
- 500 kHz to 40 MHz bandwidth to cover standard AM Broadcast and MW
- Built-in P.M.D.D. circuit for digital peak indicator modulation
- Built-in voltmeter simplifies proof-of-performance measurements
- NRSC compliant
- Built-in modulation calibrator eliminates need for external calibration
- Optional frequency agile AM band preselector for off-air monitoring

### General Description

The TFT Model 923 AM Modulation Monitor is a precision broadband demodulator which permits extremely accurate proof-of-performance measurements for an AM transmitter and for monitoring the modulation level of an off-air broadcast signal when it is used

in conjunction with the optional AM broadcast band RF preselector.

### Multiple Meters

Two large front panel meters are standard for simultaneous display of positive and negative modulation. The left meter can be switched to monitor modulation or carrier level shift. The right meter can be switched to measure SNR or frequency response.

### Digital Peak Modulation Indicators

Model 923 contains three peak flashers for quick visual monitoring. These indicators "catch" modulation peaks which cannot be observed on the Modulation Meter. The "+" 125% indicator is factory set, the "+" and "-" indicators are digitally programmable from the front panel for peaks from 50 to 150% in 1.0% increments.

TFT's exclusive microprocessor based Peak Modulation Duration Different-

iation (P.M.D.D.) circuit measures true modulation peaks and separates peak modulation from transients for accurate measurement and display.

### Internal Self-Calibration

The 923 also contains a built-in-modulation calibration circuit which provides both the "±" 100% and "+" 125% peak modulation reference levels. The signal used for calibration is a true amplitude modulated RF carrier generated internally. The AM calibrator provides an accurate validation of the 923's modulation measurement.

### Built-in AC Voltmeter

The 923 includes a built-in 50 dB attenuator calibrated in 10 dB steps for making measurements of frequency response as well as signal to noise ratio to -70 dB below 100% modulation.

### RF Preselector Expansion

Although the basic 923 is designed for

high level RF feed directly from a transmitter, it can be used for off-air monitoring by adding a preselector module. The preselector is frequency synthesized from 500 kHz to 1,990 kHz and tunable digitally in 1 kHz steps from the front panel. The only requirement for off-air modulation monitoring is an antenna; no external RF amplifier is needed. 50 dB of AGC

insures that adequate input signal is available for AM transmitters at different powers and patterns.

## Audio Outputs

The rear panel audio outputs conform to NRSC response for studio monitoring systems.

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## Specifications

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### RF INPUT, WIDEBAND DEMODULATOR

Frequency Range.....500 kHz to 40 MHz  
 High-Level RF Input.....1 V to 5 Vrms  
 Impedance.....50 ohms

### MODULATION AND TEST METER

Meter Range.....0 to 133% with "dB" scale for measurements of positive modulation or the right channel  
 Attenuator Range.....0 to -50 dB in 10 dB steps  
 Accuracy.....± 2.0% at 100% modulation, sinusoidal test tone 400 Hz  
 Frequency Response.....50 Hz to 15 kHz, ± 2.0%  
 30 Hz to 25 kHz, ± 5.0%

### MODULATION METER

Meter Range.....0 to 133% and "dB" scale for monitoring negative modulation or carrier level deviation

### PEAK MODULATION INDICATORS

\*+ 125% Peak Indicator.....Internally set to flash when modulation exceeds +125%  
 Variable Peak Indicator.....Set by the front panel 3-digit switch in 1% steps from 50% to 150% on both positive and negative peaks  
 Accuracy (400 Hz Tone).....± 2% at 98% modulation  
 Frequency Response (high level RF input).....± 3%, 50 Hz to 15 kHz at 98% modulation  
 Response Time Accuracy.....Approximately 10 cycles of 10 kHz

### MODULATION CALIBRATOR

Type.....Built-in modulation calibrator generates a "-" 100%, "+" 125% AM modulated carrier which is switched into the detector input by the front panel "CAL" button  
 Accuracy.....± 1.0%

### AUDIO OUTPUTS, REAR PANEL

Impedance.....600 ohms, balanced,  
 5K ohms, unbalanced  
 Balanced Output Level.....0 dBm (.775 Vrms)  
 Unbalanced Output Level.....5 Vrms  
 THD.....0.15% typical, 0.25% max. at 99% modulation, 400 Hz tone  
 Signal-to-Noise Ratio (high level RF input).....>75 dB Below 100%  
 Transient Response.....(high level RF input) <1.0% overshoot  
 Baseband Frequency Response.....± 0.5 dB from NRSC response

### ALARM OUTPUT

Relay contact closures for activation of an external alarm upon loss of modulation or carrier.

### RF PRESELECTOR OPTION

Frequency Range.....500 kHz to 1,990 kHz, in 1 kHz tuning steps  
 RF Sensitivity.....100 µV for 40 dB SNR, 1.0 mV for 55 dB SNR below 100% Modulation  
 Input Impedance.....50 ohms nominal  
 IF Bandwidth.....± 40 kHz, 40 dB  
 Image Rejection.....> 60 dB  
 AGC Range.....50 dB (approximately 100 µV to 50 mV)  
 Output.....455 kHz, 1.0 Vrms into 50 ohms

### PHYSICAL AND ENVIRONMENTAL

Size.....5 1/4" (35.7 cm) H x  
 19" (48.3 cm) W x  
 14" (35.6 cm) D  
 Shipping weight.....Approximately 13 lbs.  
 Power.....115/230 VAC, 50/60 Hz,  
 30 watts maximum  
 Operating Temperature.....0° to +50°C

