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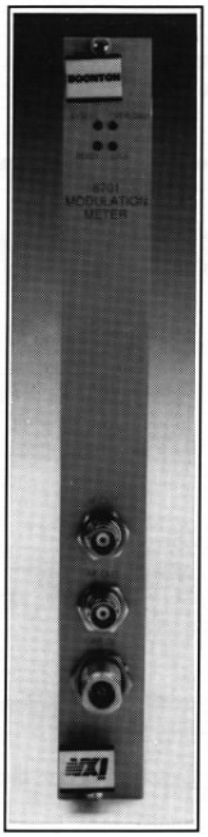
Find the *Boonton 8701* at our website: ***Click HERE***

BOONTON ™

MODULATION METER

MODEL 8701 - VXI

- **Carrier Frequency Range, 100 kHz to 2.5 GHz**
- **Measures AM/FM/ØM**
- **Provides Versatile Audio Filters**
- **Peak RMS Detector**
- **Measures Carrier Frequency and Level**
- **Internal Calibrators (AM/FM/ØM) Standard**



Description

The Boonton Model 8701 Modulation Meter offers a unique combination of measurement capabilities. Not only does it measure AM/FM/ØM with unprecedented accuracy, it also measures carrier frequency and level. This combination can eliminate the need for several additional pieces of test equipment by integrating them in one convenient package, at the price of a modulation meter alone.

The Model 8701 measures AM and FM to 1% of reading and phase modulation to 3%, carrier frequencies with 10 Hz resolution and levels to 0.01 dB and selects from 4 low-pass filters, Butterworth or Bessel, 4 high-pass filters, and 4 de-emphasis networks.

Modulation measurements are made with true peak detectors (plus, minus, or peak-to-peak divided by 2), residuals are measured with true RMS detection and displayed as a ratio to a selected reference level in either percent or dB. A peak HOLD function allows a running display of the highest measurement.

Operation can be completely automatic with internal frequency and level acquisition, or the carrier frequency and level can be entered remotely over the bus.

The Model 8701 is especially useful for ATE applications because of its high measurement speed.

The Model 8701 is a cost effective measurement tool that can be used for signal generator calibration or mobile radio production testing.

Specifications

RF Input
Frequency Range: 100 kHz to 2.5 GHz.

Tuning: Automatic, typical acquisition time one second.

Sensitivity:
10 mV, 100 kHz to 520 MHz.
15 mV, 520 MHz to 1.0 GHz.
28 mV, 1.0 GHz to 1.5 GHv.
50 mV, 1.5 GHz to 2.5 GHz.
Carrier acquisition level is typically -40 dBm (2.3 mV).

Level Set: Automatic, typical acquisition time is one second for levels up to 7 V RMS.

Maximum Input: 1 Watt (7V RMS, +30 dBm).

Maximum Safe Input: 40 Vdc, 35 VRMS (25 W for source SWR < 4).

Input Impedance: 50 Ω nominal, SWR < 1.5.

Carrier Frequency
Resolution: 10 Hz for carriers < 1.0 GHz, 100 Hz for carriers > 1.0 GHz.

Accuracy: Reference accuracy +/- 3 digits.

Carrier Level
Range: -47.0 to +30.0 dBm (1 mV to 7 V).

Resolution: 0.01 dBm or 0.1 mV.

Accuracy: +/- 1 dB from 100 kHz to 520 MHz, +/- 2 dB from 520 MHz to 1500 MHz, +/- 3 dB from 1500 MHz to 2500 MHz.

FM Modulation

Carrier Range	0.2 MHz to 0.5 MHz	0.5 MHz to 10 MHz	10 MHz to 2.5 GHz
Deviation Range (6)	0 to C.F./10 kHz	0 to 150 kHz	0 to 500 kHz
Deviation Accuracy (1)(2) at specified mod. rates	1% of reading 30 Hz to 5 kHz 2% of reading 5 kHz to 7.5 kHz	1% of reading 30 Hz to 15 kHz 2% of reading 15 kHz to 30 kHz	1% of reading 30 Hz to 100 kHz 2% of reading 10 Hz to 30 Hz 100 kHz to 150 kHz
Mod. F Range	20 Hz to 15 kHz	20 Hz to 50 kHz	20 Hz to 220 kHz
AF output distortion	<0.1% at <30 kHz dev.	<0.1% at <75 kHz dev.	<0.1% at <100 kHz dev.

BOONTON ELECTRONICS CORPORATION 25 Eastmans Road, P.O. Box 465, Parsippany, New Jersey 07054-0465
Tel: (201) 386-9696 FAX: (201) 386-9191 E-mail: boonton @ boonton.com

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MODULATION METER
MODEL 8701 - VXI (continued)

Residual FM: <60 Hz RMS at 2.0 GHz decreasing linearly to a floor of <2 Hz RMS at 100 MHz, with a 3 kHz low-pass filter.
<120 Hz RMS at 2.0 GHz decreasing linearly to a floor of <4 Hz RMS at 100 MHz with a 15 kHz low-pass filter.

Incidental FM: <20 Hz peak deviation at 50% AM, 30 Hz to 3 kHz filter.

Display Resolution: (7)
1 Hz for deviations from 0 to 5 kHz.
10 Hz for deviations from 5 to 50 kHz.
100 Hz for deviations above 50 kHz.

Stereo Separation: (3) >48 dB, 50 Hz to 15 kHz modulation rates.

ØM Modulation

Measurement: + peak, - peak, peak average and rms.

Carrier Range	0.2 MHz to 0.5 MHz	0.5 MHz to 10 MHz	10 MHz to 2.5 GHz
Deviation Range (4)	0 to C.F./10 rad.	0 to 150 rad.	0 to 500 rad.
Deviation Accuracy (1)(2) at specified mod. rates	3% of reading 200 Hz to 30 kHz rates	3% of reading 200 Hz to 30 kHz rates	3% of reading 200 Hz to 30 kHz rates
Mod. F Range	100 Hz to 15 kHz	20 Hz to 50 kHz	20 Hz to 100 kHz
AF output distortion	<0.1% at <30 rad dev.	<0.1% at <75 rad dev.	<0.1% at <100 rad dev.

Residual PM: <0.1 rad RMS at 2.0 GHz decreasing linearly to a floor of less than 0.005 rad RMS at 100 MHz.

Incidental PM: <0.02 rad deviation at 50% AM, 30 Hz to 3 kHz filter.

Display Resolution: (5)
0.001 rad for deviations from 0 to 5 rad.
0.01 rad for deviations from 5 to 50 rad.
0.1 rad for deviations above 50 rad.

AM Modulation

Measurement: + peak, - peak, peak average and rms.

Carrier Range	0.1 MHz to 0.5 MHz	0.5 MHz to 10 MHz	10 MHz to 2.5 GHz
Depth Range	0 to 99%	0 to 99%	0 to 99%
Depth Accuracy (1)(2) at specified mod. rates	1% of reading 30 Hz to 5 kHz	1% of reading 30 Hz to 15 kHz	1% of reading 30 Hz to 100 kHz
	2% of reading 10 to 30 Hz 5 to 7.5 kHz	2% of reading 10 to 30 Hz 15 to 30 kHz	2% of reading 10 to 30 Hz 100 to 150 kHz
Mod. F Range	20 Hz to 15 kHz	20 Hz to 50 kHz	20 Hz to 220 kHz
AF output distortion	<0.3% for 90% AM	<0.3% for 90% AM	<0.3% for 90% AM

Residual AM: <0.05% RMS for input levels >100 mV, 15 kHz low-pass filter; <0.02% RMS for input levels > 100 mV, 3 kHz low-pass filter, carrier frequency <520 MHz. Above 520 MHz, residuals increase linearly with frequency.

Incidental AM (3 kHz low-pass)
Carrier: >10 MHz <0.2% AM peak at 50 kHz peak deviation
<10 MHz <0.2% AM peak at 5 kHz deviation.

Display Resolution:
0.001% for depths from 0 to 5%.
0.01% for depths from 5 to 50%.
0.1% for depths above 50 %.

Audio Filters
High-pass: <10 Hz gaussian response and 30, 300 and 3,000 Hz three pole Butterworth response.

Low-pass: 220 kHz and 50 kHz seven pole Butterworth response, 20 kHz three pole Bessel response and 3 and 15 kHz three pole Butterworth response.

De-emphasis: 25, 50, 75 and 750 µs.

Filter Response: 3 dB corner and time constant accuracy +/- 4%.

Square Wave Response <10 Hz High-pass: <10% droop with 5 Hz square wave.

Internal Calibrator: The Model 8701 may be calibrated to its full accuracy for AM/FM/ØM through the use of internal calibrators.

Calibrator Accuracy: AM, 50% depth, 0.1%; FM, 125.0 kHz deviation, 0.1%; PM, 136.3 rad deviation, 1.0%.

Audio Frequency Output
Range: Uncalibrated, approximately 1 V RMS into 600 ohms at 5,000 counts. Source impedance 600 ohms.

Power Requirements: +5 V, 0.68 A; +24 V, 0.6 A; -24 V, 0.43 A; +12 V, <1 mA; -12 V, <3 mA.

Operating Temperature: 0 to 55 °C.

Weight: 5 lbs.

Dimensions: C - size, single - slot VXI bus module.

Accessories Available:
Test Modulator P/N 96400501A.

Options
01 Avionics Specification Certification.

Notes:
(1) Peak residuals must be accounted for to obtain above accuracy.
(2) For RMS detector, add 1% of reading.
(3) <10 Hz - 220 kHz filters.
(4) Up to 1 kHz modulation rate. Above 1 kHz range, decreases linearly with modulation frequency.
(5) Up to 1 kHz modulation rate. Above 1 kHz, resolution is determined by product of deviation and modulation rate.
(6) With 750 µs de-emphasis and pre-display selected the deviation is limited to 50 kHz peak.
(7) Resolution is ten times greater with 750 µs de-emphasis and pre-display selected.

Form 5.5.008 6/96

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