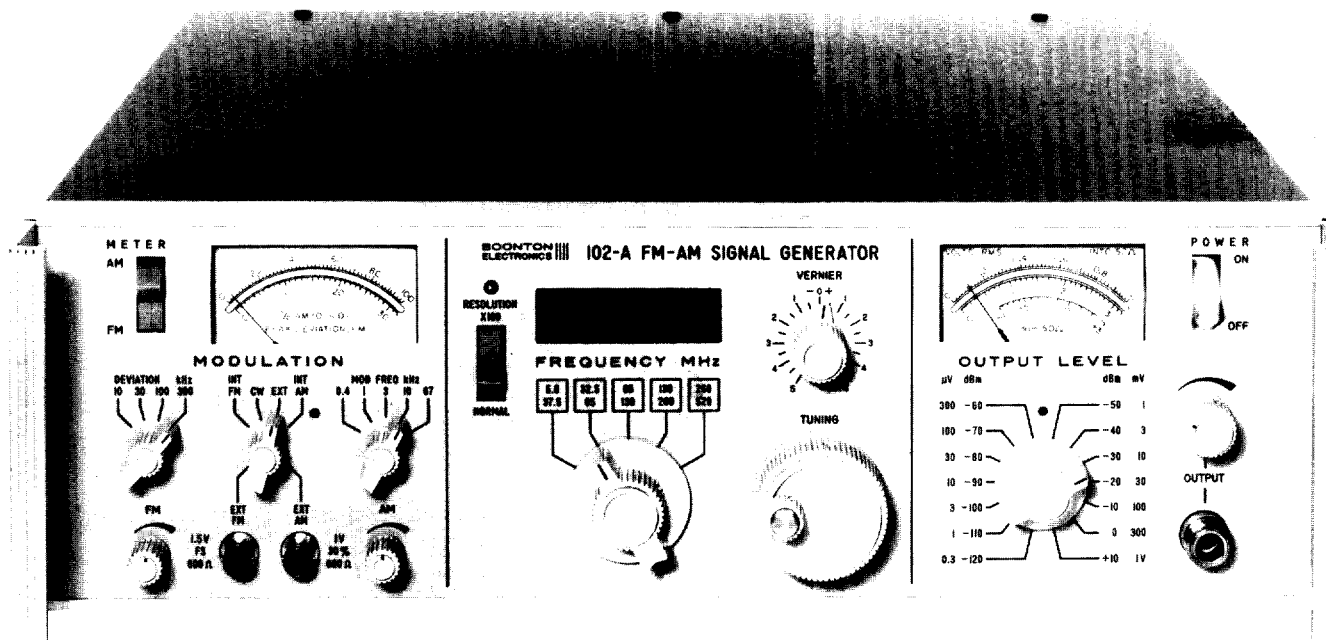


**BOONTON  
ELECTRONICS**  
CORPORATION  
PARSIPPANY, NEW JERSEY U.S.A.



## Model 102A Signal Generator

### Highly Versatile FM/AM VHF Signal Generator with Digital Frequency Display.



#### FEATURES

- ☐ Frequency range, 5 MHz to 520 MHz.
- ☐ LED frequency display, 1 kHz resolution.
- ☐ RF output,  $-130$  dBm to  $+13$  dBm.
- ☐ Output leveled  $\pm 0.5$  dB.
- ☐ Low microphonism, residual and incidental FM.
- ☐ Electronic band-switching; no range stabilization required.
- ☐ External frequency-control input.
- ☐ Simultaneous FM and AM.
- ☐ Exceptionally wide FM deviation.
- ☐ Low distortion FM and AM.
- ☐ Wide modulation bandwidths.

#### INTRODUCTION

Model 102A Signal Generator provides most of the features and performance characteristics of the several available generators combined in one solid-state unit at a reasonable price.

#### FREQUENCY

The output frequency is derived from an inductively tuned VFO with inherently low microphonism. Electronic band-switching using PIN diodes eliminates a frequent source of instability in many generators and allows immediate use of each band without further stabilization. Its wide-band circuits do not require tracked tuning and, therefore, give the benefits of easy maintenance and good long-term stability.

Tuning mechanics have not been neglected in the Model 102A. Careful attention to bearings and reduction drives has resulted in a zero backlash system that is velvet smooth. A flywheel permits spinning the tuning control from one end of each band to the other. Drive friction is adjustable to suit the user's preference thus giving perfect "feel" without any trace of stickiness.

In addition to the smooth main tuning drive, an electronic vernier control is provided giving the utmost in fine tuning ease.

The 4 digit LED frequency display normally gives 100 kHz resolution, but may be switched to an expand mode where the first two digits overflow, thus providing a readout with 1 kHz resolution.

For maximum frequency accuracy and stability, a direct-coupled frequency-control input is provided to allow use of an external signal generator synchronizer.

## MODULATION

Careful attention has been paid to optimum coupling of the varactor FM modulator to the VFO. This has achieved the low distortion necessary for wide band measurements such as required in the broadest FM and telemetry fields. Despite these capabilities the 102A also exhibits low residual and incidental FM to satisfy the stringent requirements of narrow-band applications.

FM deviation is calibrated to an exceptionally wide 300 kHz in four ranges and can be increased to over 1 MHz, uncalibrated. The FM bandwidth extends to 200 kHz, also unusual for a generator in this price range.

The output leveling loop has been additionally designed to provide negative feed-back over a portion of the AM bandwidth thus reducing distortion at the lower modulating frequencies.

Simultaneous FM and AM using both internal and external modulation sources is a useful capability of the 102A.

## RF OUTPUT

The rf output level is switched in 13 steps of 10 dB each from — 130 dBm to + 10 dBm. Settings between these steps are read on the output meter which is calibrated over a 10 dB range. Output level may be set to as high as + 13 dBm for FM, CW and restricted AM use.

Output leveling is a great convenience and in this generator the output level changes less than  $\pm 0.5$  dB from one end of each band to the other.

The Model 102A is attractively packaged with convenient and easy to use controls. It offers an excellent value for its thoroughly competent and versatile performance.

## SPECIFICATIONS

### FREQUENCY

**Ranges:** 5 to 37.5 MHz  
32.5 to 65 MHz  
65 to 130 MHz  
130 to 260 MHz  
260 to 520 MHz

**Accuracy:**  $\pm (1 \text{ kHz} + 0.001\%)$

**Resolution:** 1 kHz

**Display:** Four-digit LED with normal resolution to 0.1 MHz, and x100 expansion to 1 kHz.

**Stability:** Drift  $< 30 \text{ ppm}/10 \text{ min.}$  after 1 hour warmup.

**Fine Tuning:** Electronic vernier, approx. 0.1% range.

**External Control:** DC FM input permits frequency shift with external dc level. Can be used with most signal generator synchronizers. Impedance is 5000  $\Omega$  nominal. Input levels from + 40 V to — 40V. Sensitivity approximately 25 kHz/V.

**Residual FM:** Band 1  $< 15 \text{ Hz}$ ;  
Bands 2 - 5  $< 0.25 \text{ ppm}$ .

### RF OUTPUT

**Power Level:** — 130 dBm to + 10 dBm (Reserve output calibrated to + 13 dBm).

**Attenuator:** 13 steps at 10 dB/step plus variable 10 dB calibrated on output meter.

**Accuracy:**  $\pm (1.0 \text{ dB} + 0.15 \text{ dB}/10 \text{ dB step})$

**Leveling:**  $\pm 0.5 \text{ dB max.}$  variation across each band.

**Spurious Outputs:** Harmonics  $< -30 \text{ dB}$ .  
Sub-harmonically related  $< -40 \text{ dB}$ .  
Mixing products (Band 1)  $< -30 \text{ dB}$ .

### MODULATION

#### INTERNAL MODULATION OSCILLATOR

**Frequencies:** 400 Hz, 1 kHz, 3 kHz, 10 kHz and 67 kHz.

**Accuracy:**  $\pm 3\%$

**Distortion:**  $< 0.5\% \text{ THD}$

**Output:** Nominal 1.0 V rms into 600  $\Omega$  (rear panel BNC connector)

#### FREQUENCY MODULATION

**Deviation:** 0 - 300 kHz peak, calibrated; 0 - 1 MHz peak, uncalibrated.

**Ranges:** 0 to 10 kHz peak  
0 to 30 kHz peak  
0 to 100 kHz peak  
0 to 300 kHz peak

**Deviation Accuracy:**  $\pm 10\% \text{ fs}$

**Bandwidth:** 20 Hz to 200 kHz; + 0.5 dB, — 2.0 dB (ref. to 10 kHz)

**Distortion:**  $< 1\% \text{ THD}$  at 100 kHz peak deviation  
 $< 3\% \text{ THD}$  at 300 kHz peak deviation  
 $< 0.5\% \text{ THD}$  at 75 kHz peak deviation (100 MHz)

**Ext. Mod. Input:** Nominal 1.5 V rms into 600  $\Omega$  for fs deviation.

#### Incidental AM with

**FM:** — 55 dB at 100 kHz deviation ( $f_{\text{mod.}}$  to 1 kHz)

### AMPLITUDE MODULATION

**Percent:** 0 to 60 minimum.

**Calibrated Range:** 0 to 100%

**Accuracy:**  $\pm 10\%$  of reading at 30% and 50% AM

**Bandwidth:** 20 Hz to 20 kHz; + 0.5 dB, — 2.0 dB (ref. to 1 kHz)

**Distortion:**  $< 1\% \text{ THD}$  at 30% AM ( $f_{\text{mod.}}$  to 5 kHz)  
 $< 3\% \text{ THD}$  at 30% AM ( $f_{\text{mod.}}$  to 20 kHz)

**Ext. Mod. Input:** Nominal 1.0 V rms into 600  $\Omega$  for 30% AM.

**Incidental FM with AM:** Band 1,  $< 20 \text{ Hz peak}$  at 30% AM  
Bands 2 - 5,  $< 0.5 \text{ ppm}$  at 30% AM

### SIMULTANEOUS

**MODULATION CAPABILITY:** External FM, internal AM  
Internal FM, external AM  
External FM, external AM

### GENERAL

**Power:** 115/230 V, 50 to 400 Hz, 30 W.

**Dimensions:** 5¼ h, 17¼ w, 18¼ d  
(13.4 cm, 43.9 cm, 46.4 cm).

**Weight:** 30 lbs. (13.6 kg)

**Temperature:** 0°C to + 50°C, operating

**Accessories available:** Rack Mounting Kit

**Options:** — 01 Modulation and RF output connectors  
on rear panel  
— 02 Special internal modulation frequencies.