

Model 4402B

1Hz to 110kHz

Ultra-Low Distortion RC Oscillator

- Frequency Range: 1Hz to 110kHz
- Distortion: Typically <0.0002%
- Output Amplitude: 7Vrms o.c., 3.5V rms into 50 ohms, +48dBm
- Balanced 50 ohm Output
- Amplitude Flatness: 0.02dB
- Calibrated Pushbutton Attenuator
- Simultaneous Main, Quadrature and Inverted Outputs



DESCRIPTION

The Model 4402B is an ultra-pure sinewave, stable amplitude oscillator designed to meet the needs of today's high precision 16 to 18 bit A/D converter testing, and audio test and measurement technology.

Covering the frequency range from 1Hz to 110kHz, with precise 3 digit frequency tuning, the 4402B produces a virtually "distortion-free" (<0.0005%) sinewave for measuring A/D converter accuracy, audio preamplifier and power amplifier harmonic distortion. With its exceptionally flat response (0.02dB), the 4402B eliminates the need to constantly monitor voltage levels, during frequency response testing.

OUTPUT

The 4402B provides a 7Vrms sinewave output (balanced output, 14Vrms end-to-end), 3.5Vrms into 50 ohms, and has no loss in performance when loaded with a linear 50 ohm load. A 3-position, push-button attenuator calibrated in 20dB steps, along with a 30dB vernier, provides a total dynamic range of 90dB.

Simultaneous fixed and quadrature (90°) outputs are provided. Each output is 7Vrms with a 600 ohm source impedance.

The 4402B is the perfect addition to your present test and/or precision measurement set-up.

SPECIFICATIONS

FREQUENCY RANGE: 1Hz to 110kHz.

Accuracy: ±0.5% of frequency setting.

Stability:

Vs. Time: 0.01% in 1hr or less.

Vs. Temperature: 0.05%/°C.

Vs. Line: <0.001% for a 10% change in line voltage.

Control: 2 digits of frequency, calibrated in 1Hz and 0.1Hz steps, with a calibrated vernier providing continuous coverage between the 0.1Hz steps, plus a 5 decade push-button multiplier with overlapping ranges.

MAIN OUTPUT

(specifications apply to each output to ground)

Maximum Amplitude: 7V rms open circuit; 3.5Vrms (+48dBm) into 50 ohm load.

Impedance: constant 50 ohms.

Maximum Current: 75mA rms.

Minimum Amplitude: <0.2mV.

Amplitude Flatness: ±0.02dB, 1Hz to 110kHz.

Amplitude Stability:

Vs. Time: 0.01% in 1hr or less.

Vs. Temperature: 0.05%/°C.

Vs. Line: <0.001% for a 10% change in line voltage.

Amplitude Control: A 4-position push-button attenuator calibrated in 20dB steps from 0dB to -60dB, accuracy $\pm 0.25\text{dB}/20\text{dB}$ step; volts rms control with greater than 30dB of coverage calibrated in volts.

Accuracy: $\pm 20\%$ of setting.

Main Output Distortion:

Frequency	Distortion (%)	Distortion (dB)
1Hz to 10kHz	<0.0005	-106
10kHz to 20kHz	<0.0018	-95
20kHz to 50kHz	<0.0056	-85
50kHz to 110kHz	<0.01	-80

Hum and Noise: Greater than 110dB below signal (10Hz to 20kHz detector bandwidth).

FIXED OUTPUT

Amplitude: 7V rms open circuit; 3.5V rms (+13dBm) into 600 ohm load.

Impedance: Constant 600 ohms.

Amplitude Flatness: $\pm 0.02\text{dB}$, 1Hz to 110kHz.

Amplitude Stability:

Vs. Time: 0.01% in 1hr or less.

Vs. Temperature: 0.05%/°C.

Vs. Line: <0.001% for a 10% change in line voltage.

Distortion:

Frequency	Distortion (%)	Distortion (dB)
1Hz to 10kHz	<0.0005	-106
10kHz to 20kHz	<0.0018	-95
20kHz to 50kHz	<0.0056	-85
50kHz to 110kHz	<0.01	-80

Phase Accuracy (180° from Main Output): 1Hz to 10kHz, $\pm 0.2^\circ$; 10kHz to 110kHz, $\pm 1^\circ$.

QUADRATURE OUTPUT

Amplitude: 7V rms open circuit; 3.5V rms (+13dBm) into 600 ohm load.

Impedance: Constant 600 ohms.

Amplitude Flatness: $\pm 2\text{dB}$, 1Hz to 110kHz.

Amplitude Stability:

Vs. Time: 0.01% in 1hr or less.

Vs. Temperature: 0.05%/°C.

Vs. Line: <0.001% for a 10% change in line voltage.

Distortion:

Frequency	Distortion (%)	Distortion (dB)
1Hz to 10kHz	<0.0031	-90
10kHz to 20kHz	<0.0056	-85
20kHz to 50kHz	<0.0174	-75
50kHz to 110kHz	<0.031	-70

Phase Accuracy (-90°): 1Hz to 1kHz, $\pm 0.2^\circ$; 1kHz to 10kHz, $\pm 1^\circ$; 10kHz to 110kHz, $\pm 10^\circ$.

GENERAL

Ambient Temperature Range: 0°C to 50°C.

Power Requirements: Switch selectable, 90-132 or 180-264 volts, single phase, 50-60Hz, 18 watts.

Floating Ground: Rear panel switch floats circuit ground from chassis ground up to 100V.

Dimensions: 3.5" (8.9cm) high, 9" (23cm) wide, 8.5" (21.6cm) deep.

Weights: 5 lbs (2.3kg) net; 7 lbs (3.2kg) shipping.

Accessories: 3-terminal line cord; operating manual.

OPTIONS

Rack Mounting Kit: Part No. RK-39 permits the installation of the Model 4402B into a standard 19" rack spacing.

Extended 1 Year Warranty: Part No. EW4402B.

OPTIONAL ACCESSORIES

CAB-025: Cable, BNC, 3ft, Low Noise.

Specifications are subject to change without notice.