KROHN-HITE CORPORATION

"Quality" in Test and Measurement Since 1949

DC Source/Calibrators, Tunable Electronic Filters,
Wideband Power Amplifiers
Precision Phasemeters, Distortion Analyzers
Function Generators, RC Oscillators

Model 7500

Wideband Power Amplifier

- DC to 1MHz
- Output Power: 75 Watts
- Maximum Voltage: 140Vrms, O.C.
- Frequency Range: DC to 1MHz
- Variable DC Offset: 0V to 200V Peak
- Frequency Response: <±0.1dB
- Distortion: <0.1%
- Voltage Gain: 0dB to 40dB
- Short-Circuit Protection

DESCRIPTION

The Krohn-Hite Model 7500 was the first direct-coupled, wideband amplifier that offered extended output power and voltage capabilities, low distortion, an advanced, all solid state design, and performance features not previously available.

The Model 7500 provides more than 75 watts of continuous power (150 watts at dc), and 125Vrms from dc to 100kHz. Frequency response of the 7500 is typically flat to within 0.05dB over most of its range. In addition, the 7500 typically contributes <0.05% of total harmonic distortion, at full power output, up to 10kHz. The voltage gain of the 7500 is non-inverting, and can be selected for either 20dB (10) or 40dB (100) of fixed gain, or continuously adjustable from 0dB to 40dB. The 7500 also provides either direct (dc) or capacitive (ac) input coupling.

ADDITIONAL FEATURES

In addition; the Model 7500 has a variable output dc offset control. With an ac input signal, the amplifier's combined ac plus dc offset output is adjustable from 0V to ±200V peak, open circuit. With no input signal applied, the 7500 provides an adjustable dc voltage of 0V to ±200V open circuit, for use as an auxiliary DC supply, within the amplifier's voltage and current limitations.

OUTSTANDING PERFORMANCE

The outstanding performance of the Model 7500 is the result of improved techniques in circuit design. The input stages are designed to provide a high input impedance, extended bandwidth, and excellent dc and thermal stability. The output stage is designed with high voltage transistors, in place of conventional transformer coupling, to provide the 7500 with its high output and voltage capability, and direct output coupling. The output is protected from short circuits or other abnormal conditions on the amplifier's output, by the use of a modified, fold-back current-limiting technique. This technique permits limiting current to vary as a function of output voltage, load, and frequency. The output stage is convection cooled, by the use of a unique heat sink arrangement, which provides freedom from noise caused by conventional fans or blowers.

APPLICATIONS

The Model 7500 is one of the few amplifiers on the market today that offer a combination of power, performance and versatility. Its power and voltage capability, low distortion and flat response, make the 7500 well suited for use in precision meter calibration, transducer driving, bridging applications requiring high input and low output impedance, and as a low distortion ac power source, when used with a suitable low distortion oscillator.

SPECIFICATIONS

OUTPUT (Specifications apply using a 200 ohm resistive load)

Frequency Range: dc to 1MHz.

Power: 75 watts, dc to 100kHz; 40 watts at 500kHz; 10 watts at 1MHz.

Voltage: 125Vrms, dc to 100kHz; 90Vrms at 500kHz; 45Vrms at 1MHz.

Current: 625mArms, dc to 100kHz; 450mArms at 500kHz; 225mArms at 1MHz.

Frequency Response: Flat to within ±0.1dB, dc to 10kHz; ±1.5dB to 500kHz; –3dB at approximately 1MHz.

Harmonic Distortion (at 75 watts into 200 ohms): <0.1% to 10kHz, approximately 1.5% at 100kHz.

Voltage Gain: Fixed, 20dB ±0.2dB (X10) or 40dB ±0.2dB (X100), or continuously variable 0dB to 40dB.

Gain Stability: <±0.001dB change for a 10% change in line voltage.

Dynamic Range: >85dB.

Phase Shift: 0° ±1° from dc to 10kHz. Phase shift increases linearly to 100° (lagging) at 1MHz.

Squarewave Response (at 100Vp-p into 200 ohms)

Rise Time: <600ns.

Overshoot: <5%. Zero droop in dc coupled mode.

Regulation: No load to 200 ohms, <0.5%, dc to 10kHz.

Hum and Noise (1MHz bandwidth): <4mVrms with input shorted; <10mV rms with input open and shielded.

Coupling: Direct.

DC Level: Nominal zero volts.

DC Offset (no load): Variable, 0V to ±200V. Combined ac plus dc offset limited to ±200V.

DC Level Stability (After 30 minute warm-up):

Vs. Line (short term): <1mV for 10% line voltage change.

Vs. Time: <2mV/8hrs.

Vs. Temperature: < 5mV/°C.

Internal Impedance: <1 ohm, dc to 10kHz; <10 ohms at 100kHz; <80 ohms at 1MHz.

INPUT

Maximum Voltage: ±20V peak in the variable and the X100 GAIN positions; ±200V peak in the X10 GAIN position.

Maximum DC Component: ±200V (except VARIABLE GAIN position) in the ac position of the INPUT COUPLING switch.

Sensitivity: 1.5V rms at maximum gain setting.

Coupling: Either direct (dc), or capacitive (ac) with low frequency cutoff at approximately 1Hz.

Impedance:

Fixed Gain Modes: 1M ohm in parallel with 5pF.

Variable Gain Mode: 5k ohms.

GENERAL

Load Impedance: Capable of driving any load within the current and voltage limitations of the amplifier.

Load Power Factor: 1.0 to zero, leading or lagging.

Temperature Range: 0°C to 45°C.

Controls:

Front Panel: POWER switch, 3-position push-button GAIN selector, variable GAIN control, 3-position pushbutton DC OFFSET selector, variable OFFSET control, screwdriver control for DC output level.

Rear Panel: CHASSIS/FLOATING ground switch.

Front Panel Indicators: Power ON, Output OVERLOAD.

Terminals:

Front Panel: BNC for INPUT, binding posts for OUTPUT.

Rear Panel: BNC for INPUT, binding posts for OUTPUT, ac power receptacle, chassis ground post.

Power Requirements: 105-125 or 210-250 volts, single phase, 50-400Hz, 85 watts quiescent, 400 watts.

Fuse Protection: ac line, 5A slow-blow (115V), 2.5A slow-blow (230V); output stage unregulated supplies, 1A fast-blow (each supply).

Dimensions and Weights: 5.25" (13.3cm) high, 16.63" (42.2cm) wide, 17" (43.2cm) deep; 35 lbs. (15.8kg) net, 40 lbs. (18.1kg) shipping.

Accessories: 3 terminal line cord; operating manual.

OPTIONS

011: Remote Gain Control, VC Input ±10Vdc, gain is proportional to the VC input setting.

Rack Mounting Kit: Part No. RK-519 permits the installation of the Model 7500 into a standard 19" rack spacing.

Extended 1 Year Warranty: Part No. EW7500.

OPTIONAL ACCESSORIES

CAB-005: Cable, Two Conductor Shielded Balance Line

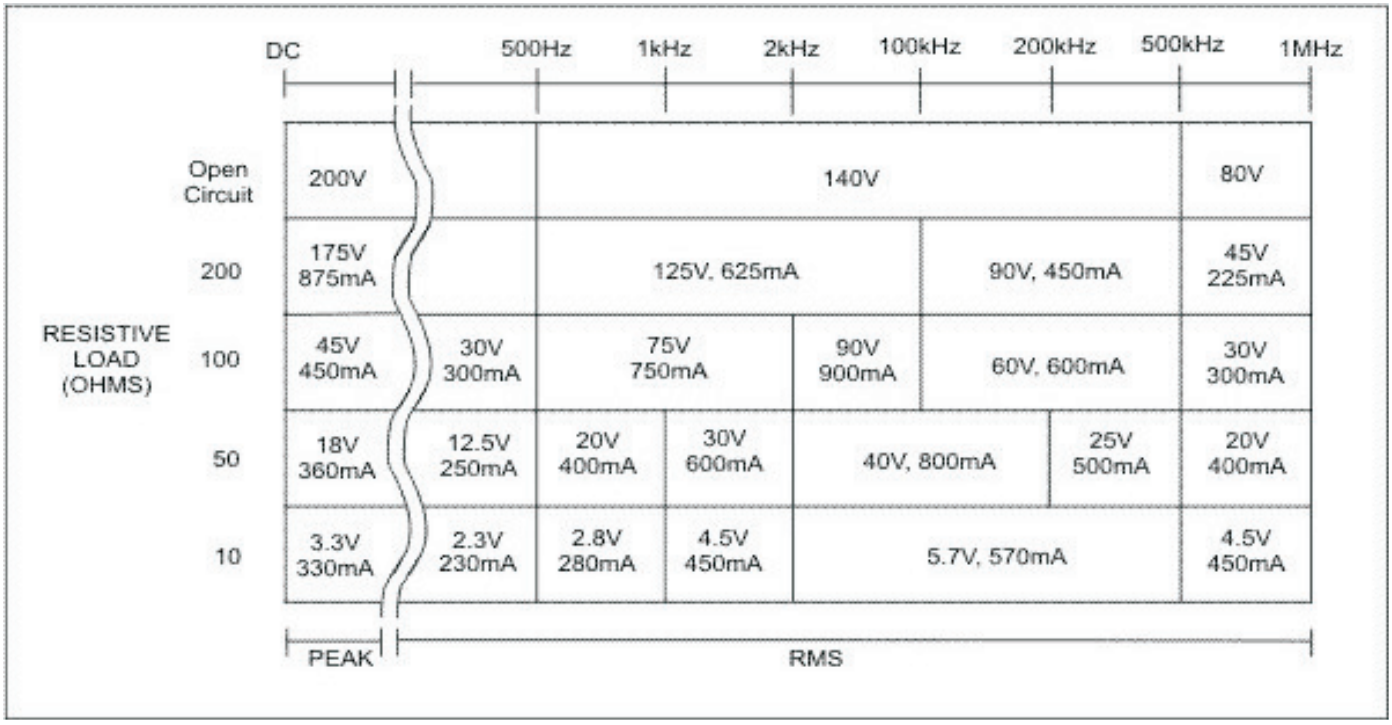
CAB-018: Cable, Multi-stacking Double Banana plug

CAB-023: Cable Set, Low Thermal EMF Retractable Banana

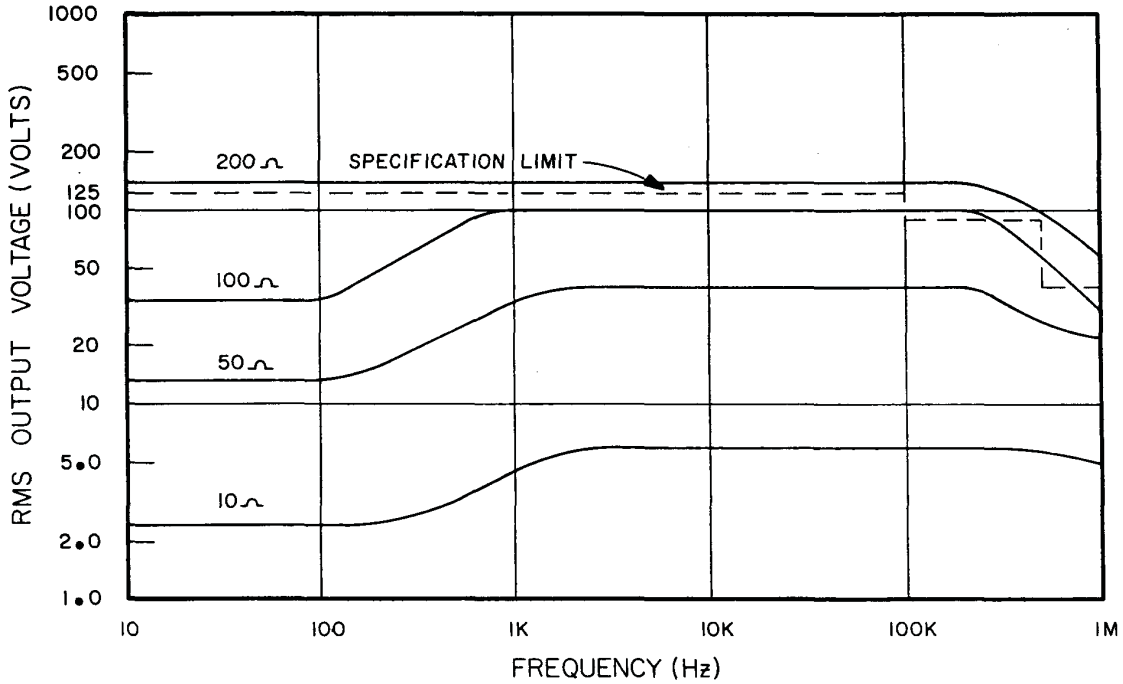
CAB-024: Cable Set, Low Thermal EMF Spade Lug

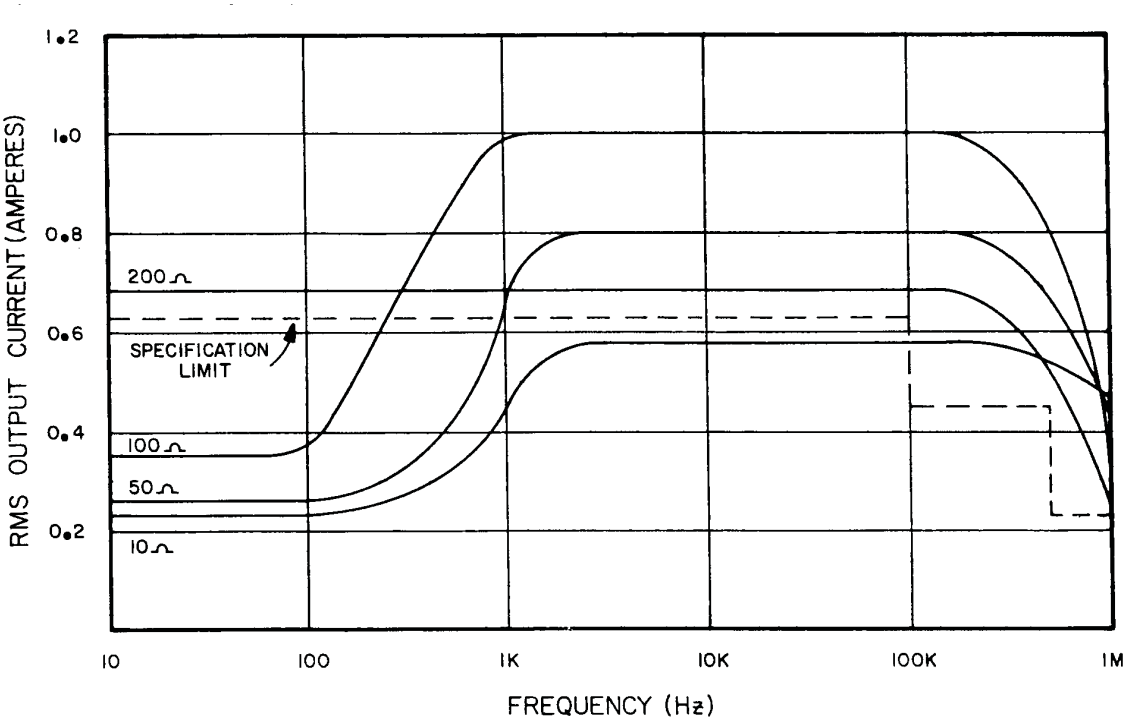
CAB-025: Cable, BNC, 3ft, Low Noise

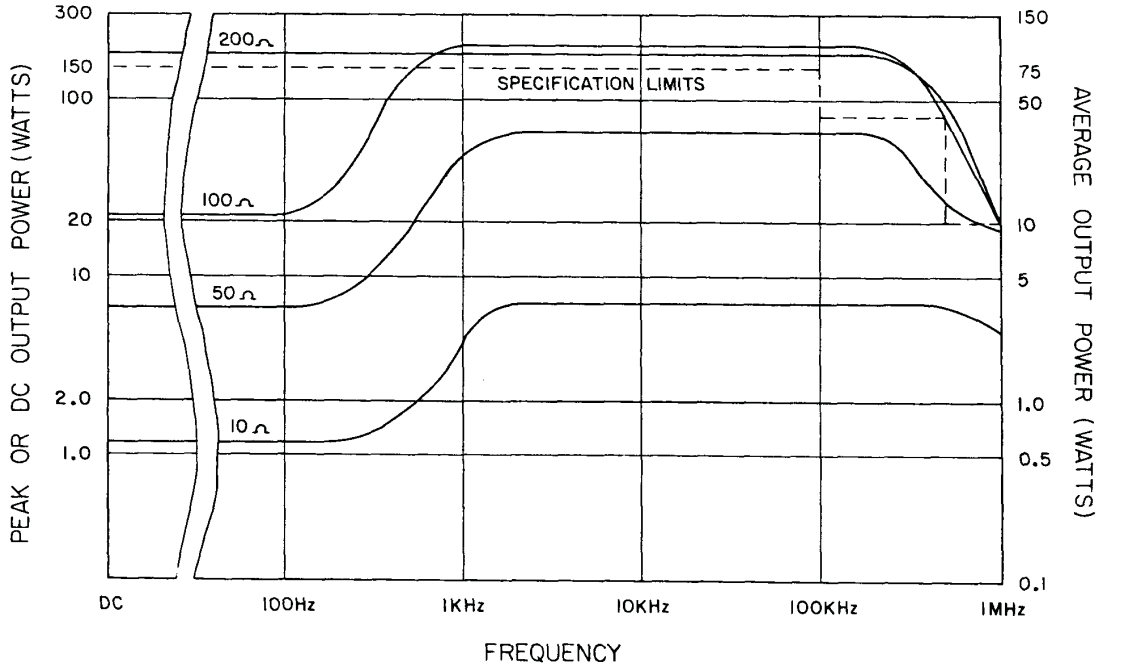
Specifications subject to change without notice.

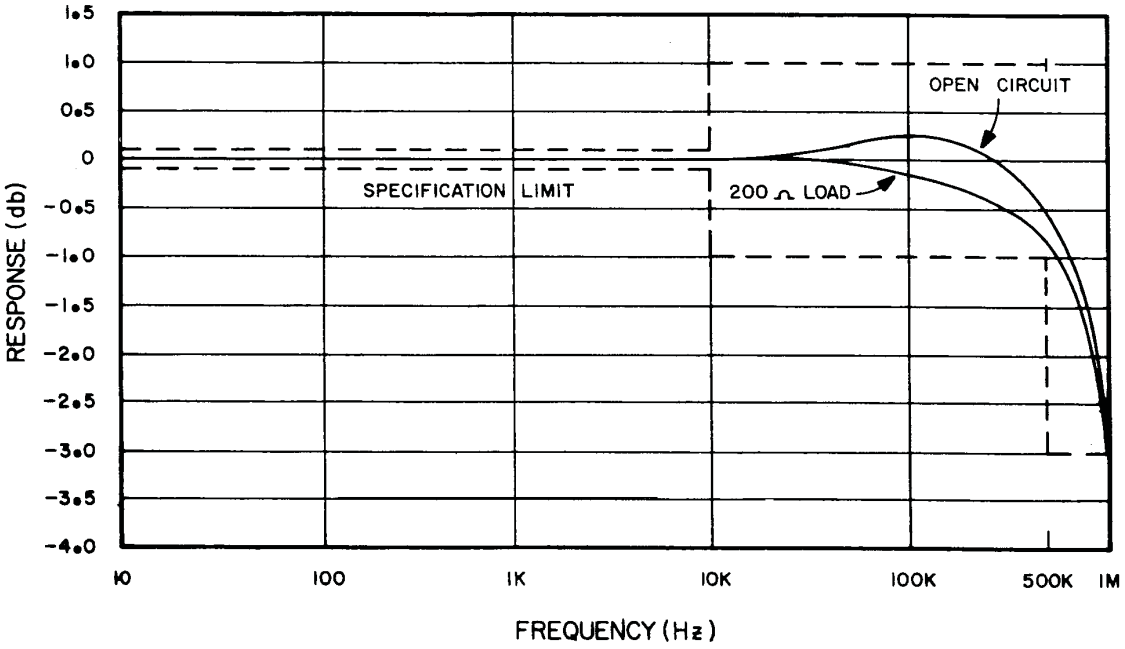


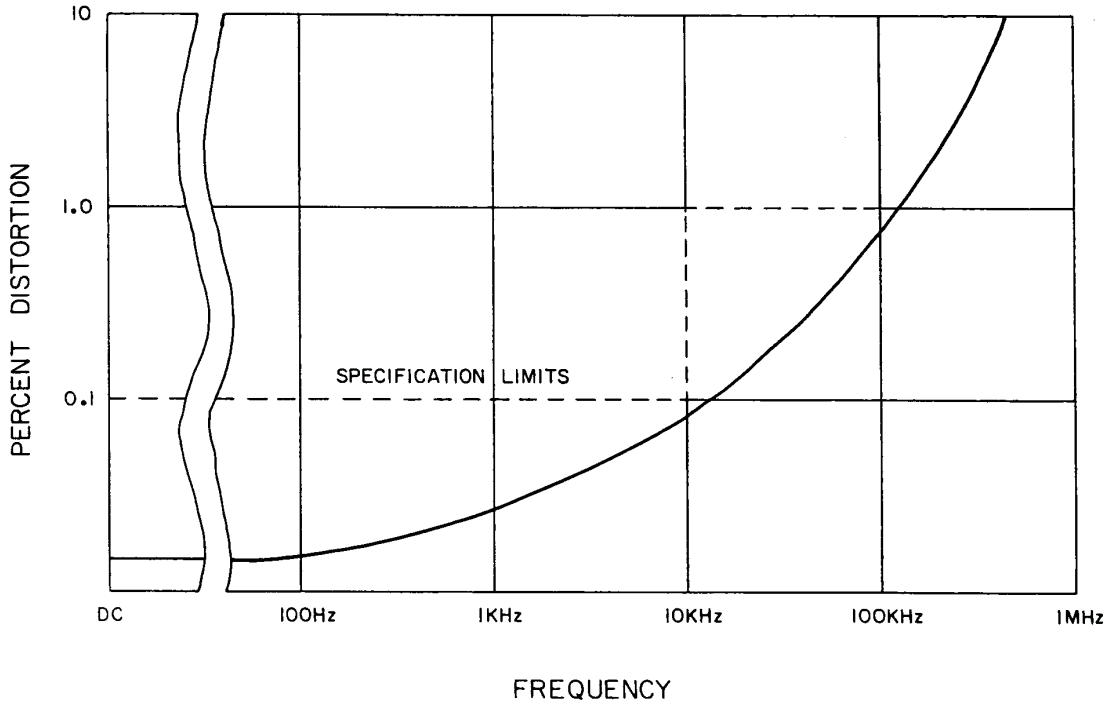
Typical Performance




RMS OUTPUT CURRENT (AMPERES)
1.2
1.0
0.8
0.6
0.4
0.2
200Ω
SPECIFICATION LIMIT
100Ω
50Ω
10Ω
10
100
1K
10K
100K
1M
FREQUENCY (Hz)


PEAK OR DC OUTPUT POWER (WATTS)
300
150
100
20
10
2.0
1.0
200Ω
SPECIFICATION LIMITS
100Ω
50Ω
10Ω
AVERAGE OUTPUT POWER (WATTS)
150
75
50
10
5
1.0
0.5
0.1
DC
100Hz
1KHz
10KHz
100KHz
1MHz
FREQUENCY


1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
RESPONSE (db)
OPEN CIRCUIT
SPECIFICATION LIMIT
200 Ω LOAD
10
100
1K
10K
100K
500K
1M
FREQUENCY (Hz)


10
1.0
0.1
PERCENT DISTORTION
SPECIFICATION LIMITS
DC
100Hz
1KHz
10KHz
100KHz
1MHz
FREQUENCY