PA-141 Linear Power Amplifier

High quality audio power for vibration test systems.

GENERAL DESCRIPTION

The Labworks PA-141 Linear Power Amplifier is a high quality, air-cooled, direct-coupled audio amplifier primarily intended for use with vibration systems. Although this amplifier has been designed to directly drive low impedance loads, it can be used in any application requiring continuous duty, high quality, audio power.

There are two operational modes. The amplifier can be used as either a wide-band, highly damped voltage source, or as a high impedance current source. DC and AC coupled signal inputs are provided.

In order to insure long term reliability, the PA-141 features protection from both over current and over temperature.

Full interlock circuitry is also included. Peak voltage and RMS current bar graphs monitor output conditions.

Optional, internal DC field power supplies are available for use in conjunction with Labworks Shakers. These options provide the convenience of a single chassis power source, as well as fully integrated power-up and cooling interlock circuitry with the power amplifier. Switched 115 Vac power is provided for shaker cooling blower and control instrument requirements.

The PA-141 is designed for standard 19 in. rack mounted installation and can be operated on 100, 120, 200, 220 or 240V, 48 to 62 Hz power.

FEATURES

- Linear output stage provides low noise and distortion.
- Automatic over temperature and over current protection.
- Direct coupled input and output allows DC operation.
- External interlock circuitry.
- Two operational modes, voltage or current source.
- Optional internal shaker field supplies.
### PA-141 SPECIFICATIONS*

**Output Voltage (continuous)**
- **10 Hz to 20 KHz**
  - open circuit: 62.0 V rms
  - 4Ω load: 49.0
  - 2Ω load: 40.0
  - 1Ω load: 20.0
- **DC to .1 Hz**
  - open circuit: 87.5 Vdc/pk
  - 4Ω load: 69.0
  - 2Ω load: 56.5
  - 1Ω load: 28.0

**Random Voltage Output**
- 2.5 sigma peak volts
  - open circuit: 36.0 V rms
  - 4Ω load: 30.0
  - 2Ω load: 28.0
  - 1Ω load: 20.0
- 3.0 sigma peak volts
  - open circuit: 30.0 V rms
  - 4Ω load: 25.0
  - 2Ω load: 23.0
  - 1Ω load: 20.0

**Maximum continuous dissipation**
- Ambient Temp = 40°C: 900W
- 50°C: 450W
- 60°C: 0W

**Frequency response (DC coupled input)**
- DC to 10 KHz: -0.6 dB
- DC to 20 KHz: -2.5 dB
- AC coupling @ 1.0 Hz: -0.5 dB

**Slew rate**
- 6.0 V/µsec

**Harmonic distortion**
- (10V, DC-10K) <0.65% @ 1Ω

**Signal/noise ratio**
- (ref 50V out): 100 dB minimum

**Input impedance**
- DC coupled: 10 kΩ
- AC coupled: 47 uF in series with 10 kΩ

**DC offset**
- Voltage mode: 5 mV max
- Current mode: 3 mA max

**Voltage mode gain**
- 96 (40 dB) max

**Current mode gain**
- 22 Amps/Volt max

**Voltage source regulation**
- <0.1 dB (∞ - 2Ω load, 30 Hz/20 V rms)

**Current source regulation**
- <0.1 dB (0-2Ω load, 30 Hz/10 A rms)

**Front panel metering**
- Type: (2) 19 seg. horiz. bar graphs
- Scale: Voltage 0-72V pk
- Current: 0-20 A rms
- Peak voltage: 5% of full scale
- True rms current: 5% of full scale
- Accuracy (voltage & current): ±5% absolute

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### Performance Graphs

#### Output Capability
- Voltage: 30V, 60V, 90V, 120V
- Current: 0-20 A rms
- Frequency: 10 Hz to 20 KHz

#### Current Source Mode Performance
- Voltage: 0-72V pk
- Current: 0-20 A rms
- Frequency: 10 Hz to 20 KHz

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*Specifications subject to change. Consult factory for latest specifications.*