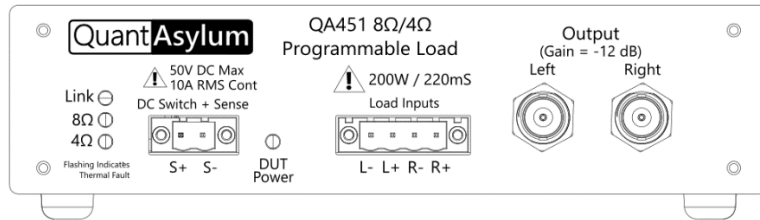


QA451/QA451B

4/8 Ohm Programmable Load

QuantAsylum



- ✓ Programmable 4/8Ω load
- ✓ Fully isolated from PC
- ✓ USB Powered
- ✓ Up to 200W for 220 mS
- ✓ DC Current Sensing
- ✓ Integrated 6th-order LPF

Introduction

The QA451(B)¹ is a companion product to the QA40x Audio Analyzers. When combined, the products work together to ensure fast, repeatable automated measurements of audio power amplifiers up to several hundred watts.

REST Interface

The QA451 can be controlled manually from a PC application or controlled using a web-based REST interface. Chances are, your favorite development language already has rich support for REST.

Measuring Current

The QA451 allows low-cost external fixed-voltage supplies to be used to power your amplifier during test—dramatically reducing your investment per test bay. The QA451 integrates a high-side switch, enabling on/off control of the supply to the amplifier. When turning on the supply, a momentary soft-start circuit ensures the amplifier-under-test isn't exposed to high currents that might overstress components. And during operation, the QA451 provides an isolated current measurement, allowing up to 15A (peak) of DC current to be measured with 10-20 mA of resolution. This permits automated efficiency measurements to be easily made—a primary

predictor of whether the amplifier was assembled correctly.

4 and 8Ω Loads

The QA451 provides both 4 and 8 ohm resistive loads (as well as “open”). If your factory tests require other values, let us know. The loads are thermally protected using fast, high-accuracy digital thermal sensors ensuring that fault conditions won't damage the QA451.

Driven by TRACTOR

Tractor is our open-source application for controlling our hardware. With it, you can quickly assemble a sequence of tests for your product. The data can be logged automatically to a database, and as you'd expect, there is lots of flexibility for setting product-specific options. It's fast, too: Knock out 10 tests in 30 seconds. From barcode scanning to THD, IM, efficiency, output impedance, amplitude, noise and more. It's almost turnkey.

Are You Ready?

Are you testing your products thoroughly before they leave your factory? If not, you should be. Contact: sales@QuantAsylum.com

¹ The QA451 and QA451B are the same product, with the QA451B having 10-20mA of current sense resolution, and the QA451 having 5-10mA of current

sense resolution. Collectively they are referred to as the QA451.

Specifications

The following specifications are subject to change.

Current Sense Inputs (S+/S-)	
Maximum Voltage (normal operation) ²	50V, relative to DUT GND
Maximum Current	10A RMS continuous, 15A peak
Current Sense Resolution	QA451: 5-10 mA QA451B: 10-20 mA
Trip Current	>15A for 2 mS
Soft Start ³	10 ohms for 1 second
Load Inputs (L+/L-/R+/R-) Relative to DUT GND	
Load Options ⁴	Open, 4 and 8 ohms
Maximum DC ⁵	-5V to 35V
Absolute Maximum Input ⁶	60Vrms AC
Maximum Input ⁷	32 dBV = 40Vrms
Max Current on any pin	10Arms
Max Power into Load Inputs ⁸	200W per channel for 220mS
Load Tolerance	+/- 5%
Output	
Attenuation	12 dB
Frequency Response	F3db = 70 kHz
Output Impedance	~50 ohms
General	
Measurement CAT Rating ⁹	CAT I, 40VAC, 250V transient
Maximum Isolation Voltage	+/-100V (USB GND to DUT GND)
USB Isolation ¹⁰	>10 GΩ @ 1KV
Interface	USB, 12Mbps
Power	USB, < 500 mA
Ambient Operating Temperature	15 to 35C
Case Size (mm, WxHxD)	177 x 44 x 97, 116mm deep with BNC
Case Material	Powder-coated Aluminum

² The MOSFET used for high-side switching is an 80V V_{DSS} MOSFET with a 17.6mJ avalanche rating. It is expected that S+ will always be higher than S-. That is, when switch is off, S- will be near ground. And when switch is on, S- will be equal to S+. The switch is not bidirectional. If S- exceeds S+, then current will begin to flow through the MOSFET body diode.

³ Soft-start is provided to allow power supplies with large output capacitors to charge DUTs with large input capacitors. Without the soft-start, turning on the supply could result in hundreds of amps flowing as the output capacitors charge the input capacitors.

⁴ When "open" the QA451 will present a ~10K load to the DUT on the Load Inputs.

⁵ Some Class D amplifiers that are powered from a single rail will "idle" at a DC voltage that is half of the supply rail. For example, a Class D amp running at 50V will have outputs that idle at 25V DC.

⁶ Do not subject the QA451 to extended periods with input levels exceeding the Maximum Input.

⁷ Operation beyond these levels will result in increasing distortion due to input overload.

⁸ See the QA451 User's Manual for de-rating curves

⁹ The CAT I rating is the weakest designation for measurement equipment. This requires that your DUT is NOT directly connected to the mains or other high-energy circuit without protection, and that the DUT can protect against momentary overload conditions (such as lightning strike) on the mains.

¹⁰ This is not measured on all units. A DVM impedance reading between BNC shell (DUT GND) and USB ground should indicate an "open" or infinite impedance.