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Programmable DC Loads Deliver Fast Transient Performance

QuadTech's 44000 series programmable dc electronic loads offer slew rates of up to 10 A/µs and rise times as short as 10 µs, enabling users to simulate real-world conditions for power supplies. This combination of high slew rates and fast rise times, equals or exceeds industry-best performance, according to the vendor.

These electronics loads are well suited for testing and evaluation of multi-output ac-dc power supplies, dc-dc converters, Li-ion batteries and power electronic components. The series offers eight different modules with power ratings from 100 W to 1200 W, current ratings from 0.5 mA to 240 A and voltage ratings from 0.5 mV to 500 V (Table 1.) One module, the 44008, features LED simulation for testing of LED drivers.

Designed for applications in research and development, production and incoming inspection, the system is configured by plugging the user-selectable load modules into the system mainframe (see the figure). The loads can be operated in constant-current, constant-voltage, constant-power and constant-resistance modes, and may be placed in parallel for increased current and power.

The 44000 series can simulate a wide range of dynamic loading applications. The waveform's programmable parameters include: up to 10 A/µs slew rate, load level, and duration. Up to 100 sets of system operating status can be stored in memory and recalled instantly for automated testing applications. Table 2 shows a comparison of the 44000 series' slew rate and rise-time performance with comparable models that are currently available.

The 44000 loads user interfaces include an ergonomically designed, user-friendly keypad on the front panel and the following computer interfaces: RS-232 standard, optional USB or GPIB for automated production lines. Pricing ranges from $970 to $4350 for the modules and from $995 to $1250 for the mainframes.

Table 1. Key features and specifications for modules in 44000 series.

Module	Number of inputs	Voltage (V)	Current (A)	Power (W)	Width
44001	1	80	40	200	1
44002	2	80/80	20/20	100 x 2	1
44003	1	80	60	300	1
44004	1	500	10	300	1
44005	1	80	120	600	2
44006	2	80/80	5/40	30/250	2
44007	1	500	20	600	2
44009	1	80	240	1200	4

(a)

(b)

Figure. The 44000 series programmable dc electronic loads offers eight different modules with power ratings from 100 W to 1200 W, current ratings from 0.5 mA to 240 A and voltage ratings from 0.5 mV to 500 V (a). These modules plug into either of two mainframes available for this series (b).

Table 2. Comparison of slew rates and rise times for electronic loads (per QuadTech).

Model	Max. Slew Rate	Min. Rise Time
QuadTech's 44000 Series	10 A/µs	10 µs
Elgar SLM 60-60-300	2.5 A/µs	50 µs
Agilent N3300	10 A/µs (=10 MA/s shown on datasheet)	50 µs
Kikusui PLZ-U Series	2.4 A/µs	10 µs