4700 Series
High-Current DC Electronic Loads

Relatively Low-Voltage Electronic Load (120V) with High Current Capability

Features
- Eight (8) 120V Models between 1kW/200A & 36kW/7200A
- Automated test station or stand-alone bench-top use
- 7” Touch-Panel with Graphic User Interface (GUI)
- Micro-second transient load profile simulation
- Precision Voltage, Current, Power, & Timing Measurements
- Full current at 1V & operation down to 0.15V
- Air-cooled, linear design

Applications
The 4700 Series Electronic Loads are designed for a wide variety of electronic loading from either within an automatic test station or as a stand-alone, bench-top set-up. The Loads are particularly well suited for testing applications that require a full current at low voltages, fast-transient simulation capability and comprehensive internal measurements. The 4700 can be operated manually through the large, touch-panel-enabled GUI or automatically through a remote controller and any number of standard test programming languages. Typical applications include the testing of power conversion/storage products such as DC power supplies, telecom rectifiers and batteries.

Complex & Fast-Transient Load Profiles
4700 Loads are capable of creating a wide variety of complex dynamic load profiles including micro-second pulses, multiple pulses of varying width, stepped responses, variable slew rates and even an AC component on the DC waveform (Fig. 1). The key to this capability is called a Macro, each of which contains up to 100-steps and is executed directly by the Load to achieve the fastest possible transition speed. Once created, Macros can be stored in the system controller for downloading to the Load when execution is required.
An Next Generation User Interface

The touch-panel-based GUI on the 4700 Series Loads is the ideal solution to the more extensive information and control needed in today’s power-stimulus/measurement test instruments. The Load interface is organized through 6 tabs, each providing a full screen for a function with complete display and control of related information. For instance, the Monitor Tab (Fig. 2) displays continuous actual measurements of voltage, current, power and resistance even when the 4700 is being controlled remotely. The Control Tab (Fig. 3) allows manual settings of CC, CV, CR and CP operating modes and limits. A Scope Tab (Fig. 4) provides a graphical view of the voltage/current relationships along with markers where measurements are needed. This interface is particularly useful for engineering characterization and Unit-Under-Test (UUT) troubleshooting as well as test program development.

Precision Internal Measurements

The 4700 Loads frequently eliminate the need for separate external instruments such as a DMM, Power Meter or DSO to make precision measurements and display waveforms. Especially valuable are dynamic timing measurements such as Rise-Time, Turn-On-Time, Settle-Time and Overshoot. Built-in measurements provide faster testing throughput in addition to the initial cost savings gained by eliminating external measurement instruments.
**Advanced Safety Features**

In addition to the basic UUT OV, OT, OC & OP protections, 4700 Loads provide programmable safety limits to prevent damage that could occur due to operator error, programming errors, external and internal faults. When a safety limit is triggered, the load automatically disables the output, generates an error message and prevents further operation until the fault is cleared. Safety limits may be set using any of the control options.

**Field Expandable**

4700 Series Loads are modular and allow for expansion with other like-modules in the field. Future addition of auxiliary modules creates a virtual larger load with all the same functionality, only more current and power. Through this capability, the test engineer can select a load that meets current requirements without concerns that future higher loading demands will require an entirely new, higher power load.

**Wide Constant-Power Operating Envelopes**

The 4700 Series Loads have a broad constant-power operating envelope (Fig. 5) to provide rated power anywhere between 5V and 120V volts. Below 5V the load maintains full current capability down to 1V and then linearly reduced current down to 0.15V.

![Figure 5 - Constant Power Operating Envelopes](image)

**4700 Series Panel Overview**

![Panel Overview](image)
## 4700 Series High-Current DC Electronic Load Specifications

### Specifications apply at 23°C ± 5°C after a 10 minute warm up.

#### Power

<table>
<thead>
<tr>
<th>4700 Ratings</th>
<th>4700-1</th>
<th>4700-2</th>
<th>4700-3</th>
<th>4700-6</th>
<th>4700-12</th>
<th>4700-18</th>
<th>4700-24</th>
<th>4700-36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>1kW</td>
<td>2kW</td>
<td>3kW</td>
<td>6kW</td>
<td>12kW</td>
<td>18kW</td>
<td>24kW</td>
<td>36kW</td>
</tr>
<tr>
<td>Maximum Current 2</td>
<td>200A</td>
<td>400A</td>
<td>600A</td>
<td>1200A</td>
<td>2400A</td>
<td>3600A</td>
<td>4800A</td>
<td>7200A</td>
</tr>
<tr>
<td>Voltage Range 3</td>
<td>1-120V</td>
<td>1-120V</td>
<td>1-120V</td>
<td>1-120V</td>
<td>1-120V</td>
<td>1-120V</td>
<td>1-120V</td>
<td>1-120V</td>
</tr>
</tbody>
</table>

### Programmable Modes

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>Resolution</th>
<th>Delay</th>
<th>Resolution</th>
<th>Slew Rate (10 - 90%)</th>
<th>Accuracy</th>
<th>Resolution</th>
<th>Delay</th>
<th>Resolution</th>
<th>Slew Rate (10 - 90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Set + % of Range</td>
<td>% of Range</td>
<td>% of Set + % of Range</td>
<td>% of Range</td>
<td>10µs - 20s</td>
<td>1% +/- 5µs</td>
<td>% of Set + % of Range</td>
<td>% of Range</td>
<td>10µs - 20s</td>
<td>1% +/- 5µs</td>
</tr>
</tbody>
</table>

### Additional Features

- **Remote Sense**: 2 VDC maximum drop between sense and load input terminals.
- **Self Test**: Power-up self test of all major functions including status of input, output, control, & protection circuits.
- **Performance Monitoring**: Continuous checking of performance parameters including internal over-voltage, over-current, over-voltage, & over-temperature.
- **Calibration**: Closed, cover, all adjustments made in software & stored in EEPROM.
- **Trigger Output/Input**: Synchronizes external devices to programmed load step. Synchronized programmed load step to an external device.
- **Analog Control/ Monitor**: 0 - 10V external signal appropriate to 100% current for the selected range.
- **Fan Noise Reduction**: Automatic fan speed control.

---

© Copyright 2018, NH Research Incorporated. Pub 02-15-18 JC
All rights reserved. Specifications subject to change without notice.