

HP Series of Programmable Electronic Loads



INTEPRO
SYSTEMS

THE POWER TEST EXPERTS

www.InteproATE.com

HIGH POWER PROGRAMMABLE DC ELECTRONIC LOADS

■ 2500W LOAD

■ 5000W LOAD

Overview

Intepro Systems ML Series of DC Electronic Loads are designed for ultimate flexibility and configuration in providing the ideal load solution for testing multi-output AC/DC power supplies, DC/DC converters, chargers, batteries, adapters, and power electronic components. These loads can be used for research, development, production, and incoming inspection applications.

The ML Series state-of-the-art microprocessor design with 16-bit DAC control is used to simulate a wide range of dynamic loading applications including independent slew rates and durations for rise and fall transitions and the ability to simulate non-linear loads using RC and RL operation modes. The 4K pattern depth allows for programming of complex load waveforms and dynamic sweeping of a load profile.

The ML Series offers the widest range of load voltages that can be mixed within a single 10 module chassis. Loads are rated to a maximum of 100VDC, 500VDC or 750VDC. Each 300W load can draw its full rated current to very low voltage (0.5V specified) to deliver its superior performance for modern Point-of-Load conditions and fuel cells.

Dual range 16-bit resolution measurements of voltage (V), current (I) and resistance (R) provide the accuracy of a DMM with the convenience of a single connection. Power (P) Measurement has three ranges to accommodate the even higher accuracy required for Energy Star testing. The loads are capable of taking measurements every 30 μ Secs to enable fast test scenarios.

Intepro's modular loads are designed for easy integration into automated test systems or simple front panel operation. Every load comes standard with an Ethernet interface and CAN bus support (USB and GPIB optional). Each load is configured with a back drive relay to connect an OVP source to back drive the output. All loads have power up self-diagnostic and calibration routines and full protections against OP, OC, OV, OT and reverse polarity. This ensures the quality and reliability of the loads and provides protection of units under test.

Modular Design

The 3000W load mainframe holds up to 10 loads making it ideal for testing multiple-output power supplies and batteries as well as other power products. All modules on the mainframe share a common address and can be synchronized with other loads or test instruments.

Dynamic Loading

Intepro ML Series loads operate at the high speeds necessary to meet the demanding transient and dynamic response characteristics required for today's modern PSU. All ML Loads have independent control of the positive and negative slew rates. Two ranges provide full scale transitions from 10 μ Secs to 5mSec in 10 μ Sec steps. This provides ultimate load simulation and control capability. Standard waveforms include sine, triangle, saw tooth, square and pulse.

Load Modules

Independent of the voltage level, each Intepro ML Series load module is capable of 300W. Load modules can be paralleled to create loads of 600W, 900W or 1200W capability. The ML Series unique control design does not sacrifice low power accuracy when modules are paralleled, thus a 1200W loads has the same low current accuracy as a 300W load.



Key Features

- 2500 Watt load in one mainframe
- 16-bit program and measurement resolution
- 100V, 500V or 750V maximum voltage
- Maximum current to 0.5V; operates to 0.3V
- CC, CR, CV, CP and Short Circuit modes
- Capacitive (RC) and Inductive (RL) simulation
- 4K sequence depth
- Graphical Web Interface

HIGH POWER PROGRAMMABLE DC ELECTRONIC LOADS

■ SPECIFICATIONS

Model	722-0071	722-0072	722-0073	722-0081	722-0082	722-0083
Transistor type	FET	FET	FET	FET	FET	FET
Modes	CC, CR, CV, CP	CC, CR, CV, CP	CC, CR, CV, CP	CC, CR, CV, CP	CC, CR, CV, CP	CC, CR, CV, CP
Special modes	L,C Simulation	L,C Simulation	L,C Simulation	L,C Simulation	L,C Simulation	L,C Simulation
Parallel capability	yes (CC,CR,CP only)	yes (CC,CR,CP only)	yes (CC,CR,CP only)	yes (CC,CR,CP only)	yes (CC,CR,CP only)	yes (CC,CR,CP only)
Maximum Voltage (Vdc)	100	500	750	100	500	750
Maximum Current (Amps)	500	500	500	500	500	500
Maximum Power (Watts)	2500	2500	2500	5000	5000	5000
Minimum Operation Voltage (at full load)	0.50	3.00	3.00	0.50	3.00	3.00
Lowest Resistance Value (Ω)	0.01	0.01	0.01	0.02	0.02	0.02
Short circuit resistance (Ω)	0.00026	0.00251	0.004698	0.000130	0.001255	0.002349
ADC Bit Count	16	16	16	16	16	16
ADC Error in bits	3	3	3	3	3	3
DAC Bit Count	16	16	16	16	16	16
DAC Error in bits	3	3	3	3	3	3
Constant Current (CC) Mode						
Current Range 1 (A)	0-500 Amps	0-500 Amps	0-500 Amps	0-1000 Amps	0-1000 Amps	0-1000 Amps
Accuracy (A)	0.022888	0.022888	0.022888	0.045776	0.045776	0.045776
Resolution (A)	0.007629	0.007629	0.007629	0.015259	0.015259	0.015259
Current Range 2 (A)	0-250 Amp	0-250 Amps	0-250 Amps	0-500 Amps	0-500 Amps	0-500 Amps
Accuracy (A)	0.011444	0.011444	0.011444	0.022888	0.022888	0.022888
Resolution (A)	0.003815	0.003815	0.003815	0.07629	0.07629	0.07629
Current Range 3 (A)	0-50 Amp	0-50 Amps	0-50 Amps	0-100 Amps	0-100 Amps	0-100 Amps
Accuracy (A)	0.002289	0.002289	0.002289	0.004578	0.004578	0.004578
Resolution (A)	0.000763	0.000763	0.000763	0.001526	0.001526	0.001526
Constant Resistance (CR) Mode						
Resistance Range 1 (max_V/min_I)	43,691	218,453	327,680	21,845	109,227	163,840
Accuracy (Ω)	2.83	14.14	21.21	2.83	14.14	21.21
Resolution (Ω)	2.00	10.00	15.00	2.00	10.00	15.00
Resistance Range 2 (min_V/max_I)	0.001	0.01	0.01	0.0005	0.003	0.003
Accuracy (Ω)	0.020	0.10	0.20	0.02	0.10	0.20
Resolution (Ω)	0.00001	0.0005	0.001	0.00001	0.0005	0.001
Constant Voltage (CV) Mode						
Voltage Range 1 (VDC)	100	500	750	100	500	750
Accuracy (VDC)	0.004578	0.022888	0.034332	0.004578	0.022888	0.034332
Resolution (VDC)	0.001526	0.007629	0.011444	0.001526	0.007629	0.011444
Voltage Range 2 (VDC)	50	250	500	50	250	500
Accuracy (VDC)	0.002289	0.011444	0.022888	0.002289	0.011444	0.022888
Resolution (VDC)	0.000763	0.003815	0.007629	0.000763	0.003815	0.007629
Voltage Range 3 (VDC)	10	50	100	10	50	100
Accuracy (VDC)	0.000458	0.002289	0.004578	0.000458	0.002289	0.004578
Resolution (VDC)	0.000153	0.000763	0.001526	0.000153	0.000763	0.001526

MODULAR PROGRAMMABLE DC ELECTRONIC LOADS

■ SPECIFICATIONS

Model	722-0071	722-0072	722-0073	722-0081	722-0082	722-0083
Constant Power (CP) Mode						
Power Range 1 (max_V/min_I) (W)	0.228882	0.114441	0.171661			
Accuracy (W)	0.000015	0.000007	0.000011	0.000015	0.000074	0.000011
Resolution (W)	0.0000010	0.0000060	0.000012	0.0000010	0.0000060	0.000012
Power Range 2 (min_V/max_I) (W)	0.228882	0.114441	0.171661			
Accuracy (W)	0.000015	0.000006	0.000012	0.000015	0.000074	0.000148
Resolution (W)	0.0000010	0.000001	0.000001	0.0000010	0.0000060	0.000012
Power Range 3 (mid_V/mid_I) (W)	2500.0	300.00	300.00			
Accuracy (W)	0.161844	0.161844	0.161844	0.323688	0.323688	0.323688
Resolution (W)	0.000003	0.000015	0.000029	0.000003	0.000015	0.000029
Measurement						
Voltage Range 1	0-100VDC	0-500VDC	0-750VDC	0-100VDC	0-500VDC	0-750VDC
Accuracy %	0.005	0.005	0.005	0.005	0.005	0.005
Voltage Range 2	0-50VDC	0-250VDC	0-500VDC	0-50VDC	0-250VDC	0-500VDC
Accuracy %	0.005	0.005	0.005	0.005	0.005	0.005
Voltage Range 2	0-10VDC	0-50VDC	0-100VDC	0-10VDC	0-50VDC	0-100VDC
Accuracy %	0.005	0.005	0.005	0.005	0.005	0.005
Current Range 1	0-500A	0-500A	0-500A	0-1000A	0-1000A	0-1000A
Accuracy %	0.005	0.005	0.005	0.005	0.005	0.005
Current Range 2	0-250A	0-250A	0-250A	0-500A	0-500A	0-500A
Accuracy %	0.005	0.005	0.005	0.005	0.005	0.005
Current Range 3	0-50A	0-50A	0-50A	0-100A	0-100A	0-100A
Accuracy %	0.005	0.005	0.005	0.005	0.005	0.005
Resistance Range 1						
Accuracy %	0.006	0.006	0.006	0.006	0.006	0.006
Resistance Range 2						
Accuracy %	0.006	0.006	0.006	0.006	0.006	0.006
Power Range 1						
Accuracy %	0.006	0.006	0.006	0.006	0.006	0.006
Power Range 2						
Accuracy %	0.006	0.006	0.006	0.006	0.006	0.006
Power Range 3						
Accuracy %	0.006	0.006	0.006	0.006	0.006	0.006

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