

4 SERIES MODULAR LOADS

Key features:

- Max. Power 300W per Module
- Wide Voltage Range, 0 - 500 Vdc
- Max. Current Range 60 Adc
- Single Load, Dual Load and LED Load Modules Available
- Up to 8 Load Inputs per Mainframe
- Parallel Modules to 1200W for High Power Applications
- Synchronized Operation of Multiple Loads
- Operating Modes: CC, CP, CR, CV and LED
- Built-in Short Circuit Test
- Built-in Power Supply Over Current Protection Test Mode
- Built-in Power Supply Over Power Protection Test Mode
- Static and Dynamic CC Modes
- Fast Current Slew Rates
- 1, 2 or 4 slot Mainframes
- Available Interface Options are USB, RS232, GPIB and LAN



Model 42L0860, Dual Load Module



OVERVIEW

The ADAPTIVE POWER 4 Series of Programmable DC Electronic Load Modules are ideally suited for testing multiple output AC/DC power supplies, DC/DC converters, battery chargers and other power products.

Target applications for these loads are research & development, production test, incoming inspection, quality control and service.

The high power density of the 4 Series allows up to 8 loads to be installed in a single 19" wide rack-mount mainframe. For lesser demands, mainframes with two slots or a single slot are available as well.

The 4 Series consists of a total of 12 different modules types providing a wide variation of possible voltage, current, power and feature choices. Starting at 75 Watt and ranging to 300 Watt per module, all modules offer dual range capability for optimal accuracy and resolution. Voltage ranges start at 60Vdc and extend up to 500Vdc.

LED LOAD SIMULATION

For LED power supply testing, the 41D and 42D modules offer single or dual channel LED simulation with support for PWM dimming control.

Synchronized operation of loads allows multichannel loads to be configured easily. Easy to read LCD displays show settings and read back data at a quick glance. Available remote control interfaces facilitate integration into automated power supply test systems.

All 4 Series modules provide protection against over-voltage (OV), over-current (OC), over-power (OP) and over-temperature (OT) to safeguard the loads from any damage.

The 4 Series offers excellent performance and durability at an affordable price point.

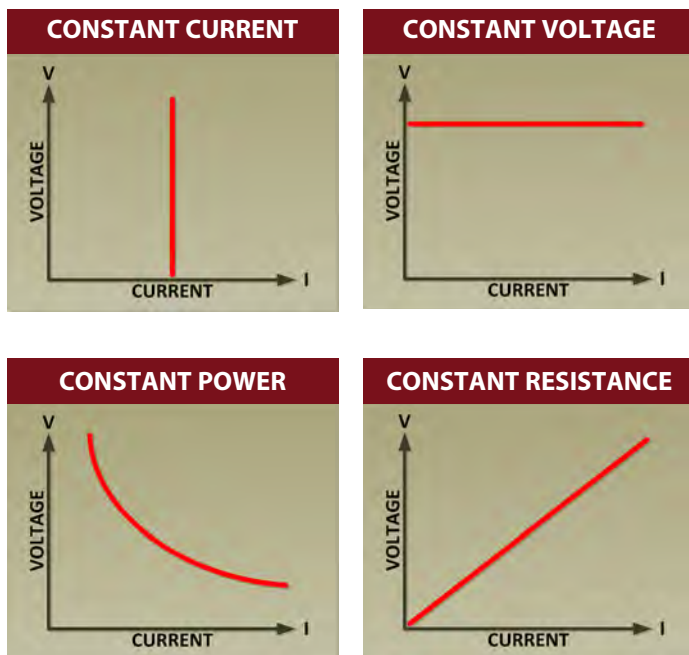


4 SERIES MODULAR DC LOADS

OPERATING MODES

All 4 Series load modules support several modes of operation to accommodate a wide range of test requirements. Voltage sources like AC/DC power supplies are best tested using Constant Current (CC) mode. Battery chargers on the other hand can be tested using an E-load in Constant Voltage mode.

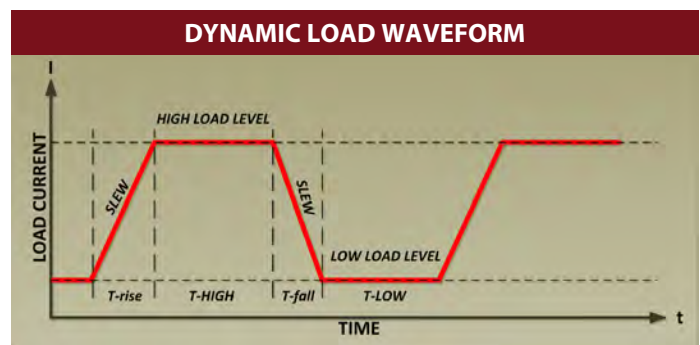
The available operating modes are Constant Current, Constant Voltage, Constant Power and Constant Resistance. A graphical representation of these modes of operation is shown here.



STATIC & DYNAMIC MODES

The demands put on power supplies to support increasingly complex electronics systems continue to escalate. It is no longer sufficient to test power supplies for static load conditions. Instead, dynamic load conditions requiring rapid changes in current demanded from the power supply need to be evaluated and tested. The 4 Series Load modules serve this purpose by offering high speed programmable dynamic load control programmability.

The diagram below illustrates the variable load current slew rates and dwell times that can be programmed on the 4 Series loads.



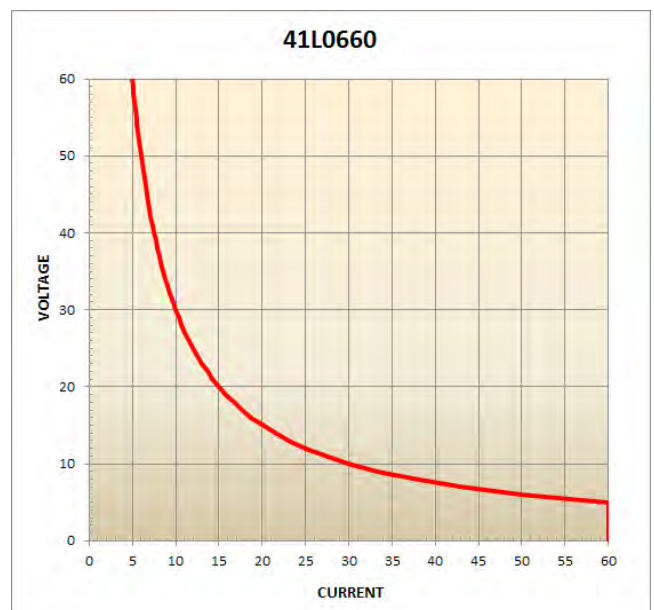
Sequences of variable slew rates and test levels can be stored in non-volatile memory for recall during dynamic transient load test execution. This makes it possible to simulate real-world demanding load conditions on power supplies driving modern electronics. With current slew rates ranging up to several Amps per microsecond and dwell times down to 50 microseconds, thorough transient stability testing of power supply designs is possible. Advanced remote sense and control feedback loops ensure stable and repeatable testing with little or no distortion during load transitions.

FLEXIBLE INPUT CAPABILITIES

4 Series load modules are designed to accommodate a wide range of voltage and current input combinations within their maximum power capability. This allows the same load modules to be used for higher voltage and low current requirements as well as low voltage higher current applications. A typical V-I operating curve is shown on the right for load model 41L0660. Bounded by the maximum voltage of 60Vdc and maximum current of 60A, the input range follows a 300W power curve as shown.

Each load module continuously tracks its input voltage current and power and safeguards against any operation outside of its operating limits.

This flexible operating range allows the same load module to be used for a wide range of EUTs and provides great flexibility in configuring high channel count load test systems.



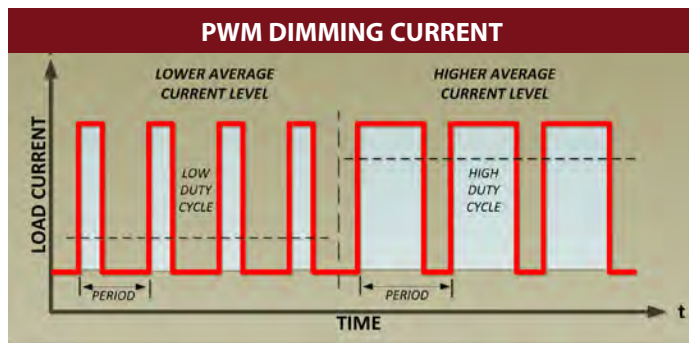
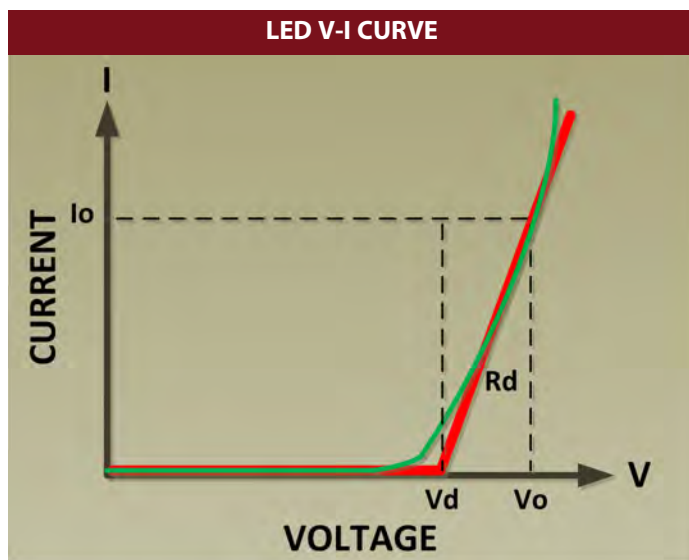
LED SIMULATION

Significant advances are being made in solid state lighting technologies that promise greatly reduced worldwide power consumption as a result of using light emitting diodes instead of incandescent light bulbs. However, the electrical behavior of LEDs is considerably different from that of a light bulb, which can be viewed as a resistive load. Consequently, testing LED driver designs using CR or even CV mode is typically inadequate. While it is possible to use actual LEDs to test such products, given the variety of LEDs that exist, this is not very practical for either development or production test.

The 41D and 42D single and dual channel LED load simulator modules available as part of the 4 Series modular load family address this unique requirement in an effective way.

When LED mode of operation is selected, the load will simulate the forward bias V-I characteristic of an LED or a string of LEDs, which is very different from that of a resistor. Values for the LED driver's output Current (I_o) and Voltage (V_o) as well as the LEDs forward Voltage (V_d) and Resistance (R_d) can be programmed on the load.

A built in **dimming control** circuit with a DC to 1KHz frequency range and 1% to 99% duty cycle is included with each LED Load module. Also available is an optional external shorting relay controlled by the shorting output of the LED load. This option allows zero ohm shorts to be applied.



MAINFRAMES



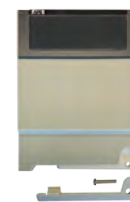
44M01 Mainframe



44M02 Mainframe



44M04 Mainframe



44MBP Filler Panel

The 44M04 Mainframe provides the necessary bias supplies and air cooling to the load modules installed. It also isolates modules from each other so each load is floating and can be used to test multi-output power supplies that are not referenced to a single common.

Mainframes are available with either one, two or four slot positions accommodating up to 8 independent load channels and 1200 Watts of power dissipation. Common controls on the mainframe allow synchronous operation of 2 or more loads and store up to 150 setting configurations. A filler panel is available to cover up any empty slot position.

The single slot 44M01 and dual slot 44M02 mainframe are ideally suited for bench operation while the 44M04 four slot mainframe can be used on the bench or installed in a 19" cabi-

net. Rack ears and handles are including for rack mount use. All mainframes have tilt stands for optimal viewing angles during bench use.

Mainframe	44M01	44M02	44M04
No. of Slots	1	2	4
Supports	41L0630, 41L0660, 41L2512, 41:5012, 41L0616 42L0860, 42L0824, 42L0803 41D3002, 41D1020, 41D5002, 42D5003		
Max. Power	300W	600W	1200W
AC Input	100-115Vac \pm 10% or 200-230Vac \pm 10%		
Frequency	50 / 60 Hz \pm 3Hz		
Power (max.)	40W	60W	150W
Dimensions (HxWxD)	177x160x452mm 7.0x6.3x17.8"	177x269x452mm 7.0x10.6x17.8"	177x440x445mm 7.0x17.3x17.5"
Weight	5.5 kg / 12.2 lbs	7.5 kg / 16.5 lbs	9.3 kg / 20.5 lbs
Shipping: -size	13x12x24"	13x16x24"	13x23x24"
- weight	24 lbs incl one 41L Load	31 lbs incl two 41L Loads	52 lbs incl four 41L Loads

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LOAD MODULE FRONT PANEL OPERATION

Each load module has its own front panel keypad, rotary shuttle and white LED back-lit LCD display for easy of operation. Dual channel load modules have individual displays for channels A and B.

1. Model Number and ranges
 2. Go/NoGo indicator illuminates if upper or lower limit settings are exceeded.
 3. Operating Mode Indicators
 4. REMOTE state indicator
 5. Multi-purpose 5 digit display - Voltage
 6. Multi-purpose 5 digit display - Current
 7. Multi-purpose 5 digit display - Power
 8. CHAN A or B Control Selection
 9. MODE toggle buttons
 10. LOAD ON/OFF button and indicator
 11. DYNAMIC mode button and indicator
 12. High or Low Range Selection
 13. High or Low Load Setting Selection
 14. Preset Mode ON/OFF
 15. Limit Setup Menu
 16. DYNAMIC mode settings
 17. Configuration Menu
 18. Short Circuit Test key and indicator
 19. OCP (Over Current Protection) Test key
 20. OPP (Over Power Protection) Test key
 21. SHORT, OCP & OPP Start/Stop
 22. Shuttle Knob, parameter selection, slew and cursor keys
 23. DC Input Terminals
 24. Voltage Sense Terminals
 25. Module Pull-Out Lever and screw

REAR PANEL

483 mm / 19"
 426 mm / 16.75"
 177 mm / 7.0"

Remote Control Interface
 Analog Programming Inputs
 Remote Controller I/O
 AC Line Selector
 AC Input

CAUTION: BEST RESULTS AND PROTECTION ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REPAIR AND REWIND UNLESS YOU ARE QUALIFIED TO DO SO. ADAPTIVE POWER SYSTEMS MADE IN TAIWAN

41L AND 41D SERIES USE ONLY. ANALOG PROGRAMMING INPUT: 0-10 Volts

100V~/115V~
 200V~/230V~

4 SERIES MODULAR DC LOADS

SPECIFICATIONS - 41L SINGLE CHANNEL MODULES

MODEL	41L0630		41L0660		41L2512		41L5012		41L0615	
OPERATING RANGES										
Power Ranges	0-15 W	0-150 W	0-30 W	0-300 W	0-30 W	0-300 W	0-30 W	0-300 W	0-7.5 W	0-75 W
Current Ranges	0-3 A	0-30 A	0-6 A	0-60 A	0-1.2 A	0-12 A	0-1.2 A	0-12 A	0-1.5 A	0-15 A
Voltage Range	60 V		60 V		250 V		500 V		60 V	
Minimum Voltage	0.6V @ 30A		0.6V @ 60A		1.0V @ 12A		6.0V @ 12A		0.3V @ 15A	
OPERATING MODES										
CC Mode Range	0-3 A	0-30 A	0-6 A	0-60 A	0-1.2 A	0-12 A	0-1.2 A	0-12 A	0-1.5 A	0-15 A
Resolution	0.05 mA	0.5 mA	0.1 mA	1 mA	0.02 mA	0.2 mA	0.02 mA	0.2 mA	0.0254 mA	0.25 mA
Accuracy	± 0.1% OF (SETTING + RANGE)									
CR Mode Range	2-120kΩ	0.02-2Ω	1-60kΩ	0.00833-1Ω	25-1500kΩ	0.08~25Ω	50~3000kΩ	0.5~50Ω	4~240kΩ	0.02~4Ω
Resolution	0.00833mS	33.334μΩ	0.01666mS	16.667μΩ	0.000666mS	416.667μΩ	0.000333mS	833.334μΩ	0.04166mS	66.667μΩ
Accuracy	± 0.2% OF (SETTING + RANGE)									
CV Mode Range	0-6 V	0-60 V	0-6V	0-60V	0-30V	0-250 V	0-60 V	0-500 V	0-6 V	0-60 V
Resolution	0.1 mV	1 mV	0.1 mV	1 mV	1 mV	10 mV	1 mV	10 mV	0.1 mV	1 mV
Accuracy	± 0.05% OF (SETTING + RANGE)									
CP Mode Range	0-15 W	0-150 W	0-30 W	0-300 W	0-30 W	0-300 W	0-30 W	0-300 W	0-7.5 W	0-75 W
Resolution	0.25 mW	2.5 mW	1 mW	10 mW	1 mW	10 mW	1 mW	10 mW	0.125 mW	1.25 mW
Accuracy	± 0.5% OF (SETTING + RANGE)									
PROTECTION										
Over Power (OP)	157.5 W		315.0 W		315.0 W		315.0 W		78.75 W	
Over Current (OC)	31.5 A		63.0 A		12.6 A		12.6 A		15.75 A	
Over Voltage (OV)	63.0 V		63.0 V		262.5 V		525.0 V		63.0 V	
Over Temperature (OT)	+85° C / +185° F									
DYNAMIC OPERATION										
T high & T low	50 μs TO 9.999 s (20 kHz)									
Slew Rate	2.0-125 mA/μs	20-1250 mA/μs	4-250 mA/μs	40-2500 mA/μs	0.8-50 mA/μs	8-500 mA/μs	0.8-50 mA/μs	8.0-500 mA/μs	1.0-62.5 mA/μs	10.0-625 mA/μs
Accuracy	± 5% OF SETTING ± 10 μs									
METERING										
Voltage Range	0 - 6.0 V	0 - 60.0 V	0 - 6.0 V	0 - 60.0 V	0 - 30.0 V	0 - 250.0 V	0 - 60.0 V	0 - 500.0 V	0 - 6.0 V	0 - 60.0 V
Resolution	0.1 mV	1 mV	0.1 mV	1 mV	0.1 mV	1 mV	0.1 mV	1 mV	0.1 mV	1 mV
Accuracy	± 0.025% OF (READING + RANGE)									
Current Range	0- 3.0 A	0- 30.0 A	0 - 6.0 A	0 - 60.0 A	0 - 1.2 A	0 - 12.0 A	0 - 1.2 A	0 - 12.0 A	0 - 1.5 A	0 - 15.0 A
Resolution	0.1 mA	1 mA	0.1 mA	1 mA	0.02 mA	0.2 mA	0.02 mA	0.2 mA	0.025 mA	0.25 mA
Accuracy	± 0.1% OF (READING + RANGE)									
Power Range	0-15 W	0-150 W	0-30 W	0-300 W	0-30 W	0-300 W	0-30 W	0-300 W	0-7.5 W	0-75 W
Accuracy	± 0.125% OF (READING + RANGE)									
SHORT CIRCUIT										
Typical Short Resistance	20 mΩ		8.3 mΩ		80 mΩ		0.5 Ω		20 mΩ	
Max. Short Current	30 A		60 A		12 A		12 A		15 A	
ANALOG I/O										
Current Monitor Out	0 - 10 V FULL SCALE									
Accuracy	± 0.5% OF (SETTING + RANGE)									
Current Programming In	0 - 10 V FULL SCALE									
GENERAL										
Power & Cooling	Supplied by 44M00 Mainframe									
Dimensions (H x W x D)	143 x 108 x 412 mm / 5.6" x 4.25" x 16.2"									
Module Weight (Net)	3.7 kg / 8.2 lbs		3.7 kg / 8.2 lbs		3.7 kg / 8.2 lbs		3.7 kg / 8.2 lbs		3.7 kg / 8.2 lbs	
Operating Range	0 - 40° C / 32 - 104° F		0 - 40° C / 32 - 104° F		0 - 40° C / 32 - 104° F		0 - 40° C / 32 - 104° F		0 - 40° C / 32 - 104° F	
EMC & Safety	CE Mark									

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SPECIFICATIONS - 42L DUAL CHANNEL MODULES

MODEL	42L0860		42L0824		42L0803	
OPERATING RANGES						
Power Ranges	0-25 W / 0-250 W	0-5 W / 0-50 W	0-12 W / 0-120 W	0-12W / 0-120 W	0-4 W / 0-40 W	0-4 W / 0-40 W
Current Ranges	0-6 A / 0-60 A	0-0.6 A / 0-6 A	0-2.4 A / 0-24 A	0-2.4 A / 0-24 A	0-0.3 A / 0-3 A	0-0.3 A / 0-3 A
Voltage Range	0-80 V	0-80 V	0-80 V	0-80 V	0-80 V	0-80 V
Minimum Voltage	0.8 V @ 60 A	0.8 V @ 6 A	0.8 V @ 24 A	0.8 V @ 24 A	0.3 V @ 3 A	0.3 V @ 3 A
OPERATING MODES						
CC Mode Range	0-6 A / 0-60 A	0-0.6 A / 0-6 A	0-2.4 A / 0-24 A	0-2.4 A / 0-24 A	0-0.3 A / 0-3 A	0-0.3 A / 0-3 A
Resolution	0.1 / 1mA	0.01 / 0.1mA	0.04 / 0.4mA		0.005mA / 0.05mA	
Accuracy	± 0.1% OF (SETTING + RANGE)					
CR Mode Range	0.01335 / 1.335 / 80.1kΩ	0.1335 / 13.35 / 801kΩ	0.0333 / 3.33 / 199.8kΩ	0.0333 / 3.33 / 199.8kΩ	0.267 / 26.7 / 1602kΩ	0.267 / 26.7 / 1602kΩ
Resolution	0.21μΩ / 0.0125mS	2.1μΩ / 0.00125mS	0.5μΩ / 0.005mS	0.5μΩ / 0.005mS	4.1μΩ / 0.000625mS	4.1μΩ / 0.000625mS
Accuracy	± 0.2% OF (SETTING + RANGE)					
CV Mode Range	0 - 6.0V / 0 - 80.0V	0 - 6.0V / 0 - 80.0V	0 - 6.0V / 0 - 80.0V	0 - 6.0V / 0 - 80.0V	0 - 6.0V / 0 - 80.0V	0 - 6.0V / 0 - 80.0V
Resolution	0.135mV / 1.35mV	0.135mV / 1.35mV	0.135mV / 1.35mV	0.135mV / 1.35mV	0.135mV / 1.35mV	0.135mV / 1.35mV
Accuracy	± 0.05% OF (SETTING + RANGE)					
CP Mode Range	0-25 W / 0-250 W	0-5 W / 0-50 W	0-12 W / 0-120 W	0-12 W / 0-120 W	0-4 W / 0-40 W	0-4 W / 0-40 W
Resolution	0.417mW / 4.17mW	0.084mW / 0.84mW	0.2mW / 2mW	0.2mW / 2mW	0.067mW / 0.67mW	0.067mW / 0.67mW
Accuracy	± 0.5% OF (SETTING + RANGE)					
PROTECTION						
Over Power (OP)	262.5 W	52.5 W	126.0 W	126.0	42.0 W	42.0 W
Over Current (OC)	63.0 A	6.3 A	25.2 A	25.2 A	3.15 A	3.15 A
Over Voltage (OV)	84.0 V	84.0 V	84.0 V	84.0 V	84.0 V	84.0 V
Over Temperature (OT)	+85° C / +185° F					
DYNAMIC OPERATION						
T high & T low	0.050 - 9.999 / 0.50 - 99.99 / 5.0 - 999.9 / 50 - 9999ms (20 kHz)					
Resolution	1 μs / 10 μs / 0.1 ms / 1.0 ms					
Accuracy	resolution + 50 ppm					
Slew Rate	4mA - 250mA/μs	0.4mA - 25mA/μs	1.6mA - 100mA/μs		0.2mA - 12.5mA/μs	
	40mA - 2500mA/μs	4mA - 250mA/μs	16mA - 1000mA/μs		2mA - 125mA/μs	
Accuracy	± 5% OF SETTING ± 10 μs					
Min. Rise Time	24 μs Typical					
METERING						
Voltage Range	0 - 6.0V / 0 - 81.0V	0 - 6.0V / 0 - 81.0V	0 - 6.0V / 0 - 81.0V	0 - 6.0V / 0 - 81.0V	0 - 6.0V / 0 - 81.0V	0 - 6.0V / 0 - 81.0V
Resolution	0.1 mV / 1.35 mV	0.1 mV / 1.35 mV	0.1 mV / 1.35 mV	0.1 mV / 1.35 mV	0.1 mV / 1.35 mV	0.1 mV / 1.35 mV
Accuracy	± 0.025% OF (READING + RANGE)					
Current Range	0 - 6.0 A / 0 - 60.0 A	0 - 0.6 A / 0 - 6.0 A	0 - 2.4 A / 0 - 24.0 A		0 - 0.3 A / 0 - 3.0 A	
Resolution	0.1 mA / 1.0 mA	0.01 mA / 0.1 mA	0.04 mA / 0.4 mA		5 μA / 50 μA	
Accuracy	± 0.1% OF (READING + RANGE)					
Power Range	0 - 250.0 W	0 - 50.0 W	0 - 120.0 W		0 - 40.0 W	
Accuracy	± 0.125% OF (READING + RANGE)					
SHORT CURRENT						
Typical Short Resistance	13.33 mΩ	1.33 mΩ	33.33 mΩ	33.33 mΩ	0.1 Ω	0.1 Ω
Max. Short Current	60 A	6 A	24 A	24 A	3 A	3 A
GENERAL						
Power & Cooling	Supplied by 44M00 Mainframe					
Dimensions (H x W x D)	143 x 108 x 405 mm / 5.6" x 4.25" x 16.0"					
Module Weight (Net)	3.5 kg / 7.7 lbs		3.7 kg / 7.7 lbs		3.7 kg / 7.7 lbs	
Operating Range	0 - 40° C / 32 - 104° F		0 - 40° C / 32 - 104° F		0 - 40° C / 32 - 104° F	
EMC & Safety	CE Mark					



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SPECIFICATIONS - 41D & 42D LED SIMULATION MODULES

MODEL	41D3024		41D5012		41D5024		42D5006		
OPERATING RANGES									
Power Ranges	0-300 W		0-300 W		0-300 W		0-150 W	0-150 W	
Current Ranges	0 - 6.0 A	0 - 24 A	0 - 3.0 A	0 - 12 A	0 - 6.0 A	0 - 24 A	0-1.5A	0-6A	
Voltage Range	0 - 300 V		0 - 500 V		0 - 500 V		0 - 500 V	0 - 500 V	
Minimum Voltage	3 V @ 24 A		6 V @ 12 A		6 V @ 24 A		4 V @ 6 A	4 V @ 6 A	
OPERATING MODES									
CC Mode	Range	0 - 6.0 A	0 - 24 A	0 - 3.0 A	0 - 12 A	0 - 6.0 A	0 - 24 A	0 - 1.5 A	0 - 6.0 A
	Resolution	0.1mA	0.4mA	0.05mA	0.2mA	0.1mA	0.4mA	0.025mA	0.1mA
	Accuracy	± 0.1% OF (SETTING + RANGE)							
CR Mode	Range	Low:125Ω - 1.5kΩ 150V	High:0.25Ω - 3kΩ 300V	Low:0.5Ω - 1.5kΩ 300V	High:1Ω - 3kΩ 500V	Low:0.25Ω - 3kΩ 300V	High:0.5Ω - 6kΩ 500V	Low:1Ω - 3kΩ 300V	High:2Ω - 6kΩ 500V
	Resolution	133.33 μS	66.666 μS	33.333 μS	16.666 μS	66.666 μS	33.333 μS	16.666 μS	8.333 μS
	Accuracy	± 0.2% OF (SETTING + RANGE)							
CV Mode	Range	30 V / 150 V / 300 V		60 V / 300 V / 500 V		60 V / 300 V / 500 V		60 V / 300 V / 500 V	
	Resolution	0.5 mV / 0.25 mV / 5 mV		1 mV / 5 mV / 10 mV		1 mV / 5 mV / 10 mV		1 mV / 5 mV / 10 mV	
	Accuracy	± 0.05% OF (SETTING + RANGE)							
CP Mode	Range	0 - 300 W		0 - 300 W		0 - 300 W		N/A	
	Resolution	5 mW		5 mW		5 mW		N/A	
	Accuracy	± 0.5% OF (SETTING + RANGE)							
LED Mode	Vo Range	30 V / 150 V / 300 V		60 V / 300 V / 500 V		60 V / 300 V / 500 V		60 V / 300 V / 500 V	
	Rd Res. Range - Low	0.125-125Ω @ Vo-Vd= 0 - 3V		0.5-100Ω @ Vo-Vd= 0 - 6V		0.25-125Ω @ Vo-Vd= 0 - 6V		1-200Ω @ Vo-Vd= 0 - 6V	
		1.25-1.25kΩ @ Vo-Vd= 3 - 30V		5-1kΩ @ Vo-Vd= 6 - 60V		2.5-1.25kΩ @ Vo-Vd= 6 - 60V		10-2kΩ @ Vo-Vd= 6 - 60V	
	Rd Res. Range - Med.	0.625-625Ω @ Vo-Vd= 0 - 15V		2.5-500Ω @ Vo-Vd= 0 - 30V		1.25-625Ω @ Vo-Vd= 0 - 30V		5-1k0Ω @ Vo-Vd= 0 - 30V	
		6.25-6.25kΩ @ Vo-Vd= 15-150V		25-5kΩ @ Vo-Vd= 30-300V		12.5-6.25kΩ @ Vo-Vd=30-300V		50-10kΩ @ Vo-Vd= 30-300V	
	Rd Res. Range - High	1.25-1.25kΩ @ Vo-Vd= 0 - 30V		5-1kΩ @ Vo-Vd= 0 - 60V		2.5-1.25kΩ @ Vo-Vd= 0 - 60V		10-2kΩ @ Vo-Vd= 0 - 60V	
		12.5-12.5kΩ @ Vo-Vd= 30-300V		50-10kΩ @ Vo-Vd= 60-500V		25-12.5kΩ @ Vo-Vd= 60-500V		100-20kΩ @ Vo-Vd= 60-500V	
	Resolution	16 bits							
	Accuracy	Vd : ± (0.05% OF SETTING + 0.1% OF RANGE), Rd : ± (0.05% OF SETTING + 0.1% OF RANGE)							
PROTECTION									
	Over Power (OP)	315.0 W		315.0 W		315.0 W		157.5 W	157.5 W
	Over Current (OC)	25.2 A		12.6 A		25.2 A		6.3 A	6.3 A
	Over Voltage (OV)	315.0 V		525.0 V		525.0 V		525.0 V	525.0 V
	Over Temperature (OT)	+90° C / +194° F							
DYNAMIC OPERATION									
	T high & T low	0.050 ~ 9.999 / 99.99 / 999.9 / 9999ms (20 kHz)							N/A
	Resolution	1 μs / 10 μs / 0.1 ms / 1.0 ms							N/A
	Accuracy	resolution + 50 ppm							N/A
	Slew Rate	4.8 - 300 mA/μs	19.2 - 1200 mA/μs	2.4 - 150 mA/μs	9.6 - 600 mA/μs	4.8 - 300 mA/μs	19.2 - 1200 mA/μs	N/A	
	Resolution	1.2mA/μs	4.8mA/μs	0.6mA/μs	2.4mA/μs	1.2mA/μs	4.8mA/μs	N/A	
	Accuracy	± 5% OF SETTING ± 10 μs							N/A
	Min. Rise Time	20 μs Typical							N/A
METERING									
Voltage	Range	0-30V / 0-150V / 0-300V		0-60V / 0-300V / 0-500V		0-60V / 0-300V / 0-500V		0-60V / 0-300V / 0-500V	
	Resolution	0.5 mV / 2.5 mV / 5 mV		1 mV / 5 mV / 10 mV		1 mV / 5 mV / 10 mV		1 mV / 5 mV / 10 mV	
	Accuracy	± 0.025% OF (READING + RANGE)							
Current	Range	0 - 6.0 A	0 - 24 A	0 - 3.0 A	0 - 12 A	0 - 6.0 A	0 - 24 A	0 - 1.5 A	0 - 6.0 A
	Resolution	0.1 mA	0.4 mA	0.05 mA	0.2 mA	0.1 mA	0.4 mA	0.025 mA	0.1 mA
	Accuracy	± 0.1% OF (READING + RANGE)							
Power	Range	0 - 300.0 W		0 - 300.0 W		0 - 300.0 W		0 - 300.0 W	
	Accuracy	± 0.1% OF (READING + RANGE)							
PWM DIMMING CONTROL									
	Level	Range: 0 - 12 V, Resolution: 48 mV, Accuracy: ± 1% OF (SETTING + RANGE)							
	Frequency	Range: DC to 1000 Hz, Resolution: 10 Hz							
	Duty Cycle	Range: 0.01 - 0.99 (1% - 99%), Resolution: 0.01 (1%)							
GENERAL									
	Current Monitor Out	2.4 A/V		1.2 A/V		2.4 A/V		0.6 A/V	
	Shorting Relay Drive	12 V @ 100 mA max							
	Power & Cooling	Supplied by 44M00 Mainframe, Temp. Coefficient: 100 ppm / °C typical							
	Dimensions (H x W x D)	143 x 108 x 412 mm / 5.6" x 4.25" x 16.2"							
	Module Weight (Net)	3.7 kg / 8.2 lbs		3.7 kg / 8.2 lbs		3.7 kg / 8.2 lbs		3.7 kg / 8.2 lbs	
	Operating Range	0 - 40° C / 32 - 104° F		0 - 40° C / 32 - 104° F		0 - 40° C / 32 - 104° F		0 - 40° C / 32 - 104° F	
	EMC & Safety	CE Mark							

4 SERIES MODULAR DC LOADS

ORDERING INFORMATION:

Line 1: Specify Mainframe Model:

One Slot	Two Slots	Four Slots
44M01	44M02	44M04

Line 2: Specify Remote Control Option:

None, Opt GPIB, Opt RS232, Opt USB or Opt LAN

Line 3: Specify up to four Load Modules:

41L Single Load	42L Dual Load	41D LED Load
41L0630	42L0860	41D3024
41L0660	42L0824	41D5012
41L2512	42L0803	41D5024
41L5012		42D LED Load
41L0615		42D5006

Line 4: Specify External Shorting Relay option for LED Load:

Relay Option	Description	Compatible with
Opt R006	Shorting Relay Fixture	42D5006
Opt R012	Shorting Relay Fixture	41D5012
Opt R024	Shorting Relay Fixture	41D3024 & 41D5024

AC Input Voltage

Please specify AC Line input voltage at the ship to location on the order as either 120Vac or 230Vac.

Included in Mainframe Ship kit:

User Manuals in PDF Format on CD ROM.
AC Line Cord.
LAN/USB Driver CD ROM (with Opt USB or Opt LAN).
Certificate of Conformance

Included with each 4 Series Load Module:

Item	41L	42L	41D	42D
Banana plug, 4 mm, Red	1	2	1	-
Banana plug, 4 mm, Black	1	2	1	-
Banana plug, 2 mm, Red	1	2	3	8
Banana plug, 2 mm, Black	1	2	3	8
Y-hook Terminal, Large	4	4	4	-
Y-hook Terminal, Small	2	-	-	4
BNC Cable, 3 feet	1	-	1	-

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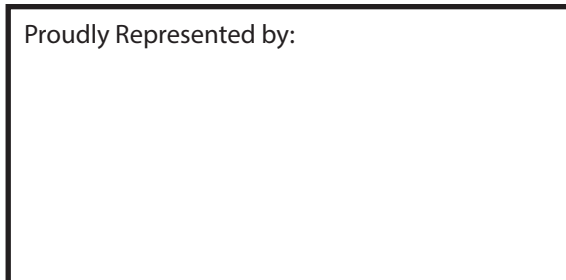
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