



产品快速安装指南

EL系列 高密度可编程直流电子负载

18950-731-00(F)

引言

尊敬的用户，非常感谢您使用全天自动化能源科技(东莞)有限公司(以下简称“全天科技”)研制的EL系列高密度可编程直流电子负载，我们由衷地希望本产品可以满足您的需求。

资料下载

为了便于您更好地使用此设备，所有机型对应的相关资料及监控软件请到全天科技官网下载，留待以后随时参阅。

尺寸	功率	200V	600V	1200V
2U	600W	60A	40A	*
	1200W	130A	90A	45A
	1800W	190A	130A	*
	2400W	260A	180A	90A
	3000W	320A	220A	*
3U	3400W	370A	250A	125A
	4400W	480A	320A	160A
	5600W	610A	410A	205A
4U	6600W	720A	480A	240A
7U	8800W	960A	640A	320A
	11000W	1200A	800A	400A
	13200W	1440A	960A	480A
10U	15400W	1680A	1120A	560A
	17600W	1920A	1280A	640A
	19800W	2160A	1440A	720A
13U	22000W	2400A	1600A	800A
	24200W	2640A	1760A	880A
	26400W	2880A	1920A	960A

*客户自定义主从系统可达528kW (20台26.4kW负载并联)

EL系列高密度可编程直流电子负载根据应用领域的特殊性，划分为Advanced Version(高级版本)，以及Professional Version(专业版本)，下表列举两个版本的区别概览。

序号	功能描述	单机(专业版本)	单机(高级版本)
1	扫频功能	支持	不支持
2	Sine功能	支持	不支持
3	高速采样功能	支持	不支持
4	非线性负载	支持	不支持
5	用户自定义曲线	支持	不支持
6	MPPT跟踪	支持	不支持
7	外部波形控制	支持	支持
8	并联数量	20pcs	20pcs

开箱检查

请您在收到设备的第一时间内对其进行全面检查，如有发现可能导致设备损坏的包装损坏，请立即通知运输公司或与全天科技联系，并提供破损处的照片。

待您打开包装后，请对照此清单检查附件内容，如有任何缺失，请尽快联系您的代理或者全天科技，以便保证您正常的使用。

装箱清单

物件	说明	数量	备注
A	EL系列高密度可编程直流电子负载	1台	客户选定型号
B	握把	2个	标配
C	直流输入防护罩	1个	标配
D	固定螺丝组	1包	固定握把与防护罩
E	应力消除支架	2个, 13U(4个)	支撑直流输出线
F	扎线带	2根, 13U(4根)	固定应力支架
G	BNC 线缆	2根	标配
H	USB 通讯线缆	1根	标配
I	RS-232 通讯线缆	1根	标配
J	远端电压采样线(红)	1根	标配
K	远端电压采样线(黑)	1根	标配
L	系统总线通讯线缆	1根	标配
M	GPIB 通讯线缆	1根	选配
N	LAN 通讯线缆	1根	选配
O	电源线	1根	标配
P	GPIB&LAN卡	1个	选配
Q	脚垫	4个	适用于(2U,3U,4U机型)
R	快速安装指南	1份	中文

故障返修

若电子负载出现故障，请及时联系全天科技或者经销商，提供故障电子负载的条形码，详细的故障信息或者图片以便及时确认故障原因。如果电子负载需送修，请用原来的包装材料包装。在未得到全天科技通知前，请勿自行寄回产品。

重要说明

使用环境

- 请在温度为0~40°C，相对湿度为5%~90%的实验室或测试车间使用此精密电子负载。
- 请勿在高温条件下长时间使用电子负载，长时间过温运行会触发过温保护，请采取措施，待其温度下降至正常温度后再使用。
- 电子负载的冷却方式为强制风冷，请勿遮挡电源背后的通风口，保证电子负载前后面板与墙壁或物体有1m以上的间距。
- 请勿在含有大量粉尘、震动剧烈、日光直射或有腐蚀性气体的环境下使用电子负载。

保存

请将本机储存在-20°C~80°C，0%~90%RH无结露的环境中，若长时间不使用，请以原包装或其他类似的包装保存于干燥阴凉处。

维护与清洁

清洁前，必须移除机器的输入电源线，可用毛刷或者纱布轻轻地擦去机器外部的灰尘。当外壳的污渍用毛刷等无法清除时，可用挥发性液体(如去渍油)擦拭机壳，不可用腐蚀性液体以免破坏机壳。前面板LCD可用纱布沾肥皂水或软性清洁剂清洁。机器内部的清洁必须使用低压力空气枪将机器内部的灰尘清除，最好送给经销商代为清洁。

电源电压

在接上电源之前，请务必确认电源的输入电压满足其要求，且开关处于OFF状态。



注意!

- 断开输入电源线前不可以断开保护地线，接通输入电源前要先接通保护地线。

保险丝

安装于本机内部的电源保险丝，属于硬件多重保护设计，正常使用时极不易断开，若有熔断现象代表机内其他故障而导致提前保护，建议回厂检修。



警告!

- 不建议使用者自行拆卸机壳更换保险丝，以免误装导致危险!

使用注意事项



注意!

在进行负载连接时需考虑以下因素:

- 导线的载流能力;
- 最大线长以及压降;
- 负载线的噪声及阻抗效应。

兼顾导线的温度与压降,可参照以下表格选择线缆:

安全电流(A)	最小线缆规格		安全电流(A)	最小线缆规格	
	截面积(mm ²)	AWG		截面积(mm ²)	AWG
13~16	1.5	14	125~160	50	0
16~25	2.5	12	160~190	70	000
25~32	4	10	190~230	95	0000
32~40	6	8	230~260	120	250 kcmil
40~63	10	6	260~300	150	300 kcmil
63~80	16	4	300~340	185	400 kcmil
80~100	25	2	340~400	240	500 kcmil
100~125	35	1	400~460	300	600 kcmil

质保期限

- 全天科技EL系列高密度可编程直流电子负载产品(以下简称“产品”)的质保期限为1年，或参考相应的销售合同条款执行。
- 质保期限不因产品或部件的更换而延长或重新计算，您仍可在原质保期限内继续享受质保服务。



EL Series High-density Programmable DC Electronic Load

Preface

Dear Customer,
Thank you for using EL Series High-density Programmable DC Electronic Load, a product developed & manufactured by APM Technologies. We sincerely hope this product can meet your needs.

Data Download

Please kindly download the detailed user manual from APM website and keep it for your reference at any time.

Height	Power	200V	600V	1200V
2U	600W	60A	40A	*
	1200W	130A	90A	45A
	1800W	190A	130A	*
	2400W	260A	180A	90A
	3000W	320A	220A	*
3U	3400W	370A	250A	125A
	4400W	480A	320A	160A
	5600W	610A	410A	205A
4U	6600W	720A	480A	240A
7U	8800W	960A	640A	320A
	11000W	1200A	800A	400A
	13200W	1440A	960A	480A
10U	15400W	1680A	1120A	560A
	17600W	1920A	1280A	640A
	19800W	2160A	1440A	720A
13U	22000W	2400A	1600A	800A
	24200W	2640A	1760A	880A
	26400W	2880A	1920A	960A

*Custom master slave system could extend to 528KW(20 units 26.4KW E-load parallel connect).

EL Series High-density Programmable DC Electronic Load are divided into Advanced Version and Professional Version according to different application area. Below is the difference between two versions.

NO.	Description	Single unit (Professional Version)	Single unit(Advanced Version)
1	Dynamic frequency sweep function	Supported	Not supported
2	Sine wave dynamic load	Supported	Not supported
3	High speed sampling rate	Supported	Not supported
4	Non linear load	Supported	Not supported
5	User defined waveform	Supported	Not supported
6	MPPT	Supported	Not supported
7	External waveform control	Supported	supported
8	Parallel mode	20pcs	20pcs

Unpacking

Once you receive the product, please immediately check if there is any packaging damage that may indicate damage to the product. If you find damage related to product delivery, please immediately notify the transport company. Make sure to take photos documenting the damage to the product, and send them to us so that we can provide you with the best service.

Make sure that you receive the EL Series High-density Programmable DC Electronic Load and the following accessories at the same time, if any missing, please contact your agent or APM Technologies.

Packing List

Item	Description	Quantity	Remarks
A	EL Series High-density Programmable DC Electronic Load	1	As ordered
B	Rack Mount Brackets	2	Standard
C	DC Input Protective Cover	1	Standard
D	Screws	1set	Fasten item B and C
E	Strain relief bracket	2, 13U(4)	Support DC output cables
F	Cable ties	2, 13U(4)	Fix output cables
G	BNC Cable	2	Standard
H	USB Communication Cable	1	Standard
I	RS-232 Communication Cable	1	Standard
J	Sense Line (Red)	1	Standard
K	Sense Line (Black)	1	Standard
L	System Bus Cable	1	Standard
M	GPIB Communication Cable	1	Optional
N	LAN Communication Cable	1	Optional
O	AC Power Cable	1	Standard
P	GPIB&LAN Card	1	Optional
Q	Pads(applicable in 2U, 3U, 4U)	4	Standard
R	Quick Guide	1	English Version

Failure Repair

If the E-load fails, please contact APM Technologies or its dealer quickly to provide the serial number of the faulty E-load, detailed faulty information and pictures in order to identify the cause of the failure. If the E-load required to repair, please use the original packing material. Shipment should not be made without prior authorization by APM.

Important Notes

Operating Environments

1. This series E-Loads must be used in a clean and dry lab or testing environment with an ambient temperature of between 0°C and 40°C and a relative humidity of between 5% and 95%.
2. Do not use this load in a high temperature ambient for a prolonged period. Long term operation at a high ambient temperature may cause OTP action.
3. It is suggested that the distance between the load and wall or other objects should be 1 meter at least due to fan forced cooling.
4. Do not operate this product in an environment that contains large amounts of dust or corrosive gases. Please do not subject the unit to strong shock and vibration or expose it to intense direct sunlight.

Product Storage

Please store this product in an area with a temperature between -20°C and 80°C and with a relative humidity of between 0% and 90% non-condensing. If the product is not in use for a long time, please keep it in the original carton or other similar packaging and store it in a cool & dry place.

Maintenance and Cleaning

Before cleaning, you must disconnect the input power cord of this power supply. Using a brush or sponge, gently wipe off any dust from the units exterior. To clean the products exterior use only a small amount of non-aqueous cleaning solution such as isopropyl alcohol on a clean cloth. Do not use a corrosive or abrasive cleaning solution to clean this product. The display front panel can be cleaned with gauze damped in soft detergent. Cleaning of dust from the interior of this product must be carried out with a low pressure air gun, and we prefer that such a clean work be performed by an authorized dealer on behalf of the user.

Power Supply Voltage

Make sure that the front panel switch is in the OFF state and the AC input mains voltage is within the product's operating specification before plugging in or connecting to the AC mains.



Caution!

- The protective safety earth/ground connection must be connected first and disconnected after the AC mains line and neutral wires.

Fuse

The AC mains fuses installed inside the product are designed to protect the input from major failures, and should not fail under normal operating conditions. Therefore, any sign of fuse failure is an indication that other part(s) of the product is damaged. If fuse melting happens, we recommend that the product be sent back to us for repair.



Warning!

- No user serviceable components enclosed. Do not disassemble the power's enclosure/case to replace the fuse, as there is a danger of sustaining an electric shock.

Operation Precautions



Attention!

Consider the following issues when connecting the load.

- Assure that the wire used is rated to handle the maximum output current of the power supply in the maximum expected ambient temperature.
- The maximum wire length and voltage drop.
- Load noise and impedance effect.

Please refer to the table below to select cable size.

Rated Current of equipment (A)	Minimum Conduct Sizes		Rated Current of equipment (A)	Minimum Conduct Sizes	
	Nominal Cross-sectional Area (mm ²)	AWG or kcmil		Nominal Cross-sectional Area (mm ²)	AWG or kcmil
13~16	1.5	14	125~160	50	0
16~25	2.5	12	160~190	70	000
25~32	4	10	190~230	95	0000
32~40	6	8	230~260	120	250 kcmil
40~63	10	6	260~300	150	300 kcmil
63~80	16	4	300~340	185	400 kcmil
80~100	25	2	340~400	240	500 kcmil
100~125	35	1	400~460	300	600 kcmil

Warranty Period

1. The warranty period of APM EL Series High-density Programmable DC Electronic Load is 1 (one) year, or refer to relevant Distributor Agreement terms.
2. The warranty period will not be extended or recalculated after a product or component replacement, repaired or replaced products are covered for the remainder of the original warranty period and subject to the conditions outlined in the original warranty.