

ESA系列

彩色多功能安规综合分析仪

旗舰七合一彩色安规综合分析仪，选配内建 500VA 交流电源，同时兼容多种通讯控制接口。一站多任务，解决所有安全顾虑，是系统整合、实验研发的优先解决方案。



产品特点

- 一台满足所有安规测试。
- DualCHEK 功能：耐压 (AC/DC) 与接地阻抗 (GB) 可同步进行测试。
- EEC 独有专利之快速放电装置 (Fast Discharge)，能使待测物在测试后 50ms 的极短时间内放电，避免残余电压造成人员触电风险。
- 热态耐压测试：能够在 DUT 开机的情况下运行耐压测试。
- 7 组人体模拟线路 (MD)。
- 可量测 AC/DC/AC+DC 电流值，以及支援患者漏电流，患者辅助漏电流量测 (医疗设备 IEC60601 标准)。
- MD 配备 BNC 测量端子可连接示波器或电压表，以实现更加人性化的 MD 校准。

安全特性 & 产品特点



同步测试



自我检测



外部扩展器
连接



快速放电



电弧侦测



智慧防高压
触电线路



缓升上限



充电下限

通讯介面



USB 接口



RS-232 接口



以太网网卡
(选购)



GPIB 卡
(选购)

	交流耐压 (ACW)	直流耐压 (DCW)	绝缘阻抗 (IR)	交流接地阻抗 (AC GB)	导通检测 (GC)	电源泄漏电流 (LLT/TCT)	电气性能测试 (Run)	内建隔离电源
ESA-140A	√	√	√	√	√	√	√	选购
ESA-150A	500VA*	√	√	√	√	√	√	选购

* 符合 200mA 短路电流要求

ESA 系列规格		
型号	ESA-140A	ESA-150A
输入电源		
电压 (交流)	115/230V \pm 15% Auto Range	
频率	50/60Hz \pm 5%	
交流耐压测试		
额定输出 (交流)	5kV/50mA	5kV/100mA
输出电压范围	0-5.00kV	
电压解析度	0.01kV	
电压精确度	输出 50/60Hz \pm (1.5% of setting + 5V)	
电流量测范围 (总和)	0.000-50.00mA	0.000-100.00mA
电流解析度 (总和)	0.001/0.01mA	
电流精确度 (总和)	0.000-3.500mA	\pm (2% of reading + 2 counts)
	3.00-100.00mA	
电流量测范围 (真实)	0.000-50.00mA	0.000-100.00mA
电流解析度 (真实)	0.001/0.01mA	
电流精确度 (真实)	0.000-9.999mA	\pm (3% of reading + 50uA)
	10.00-99.99mA	
输出频率	50/60Hz \pm 0.1%	
缓升时间	0.1-999.9s	
缓降时间	0.0-999.9s	
测试时间	0, 0.3-999.9s (0 = continuous)	
时间解析度	0.1s	
时间精确度	\pm (0.1% of setting + 0.05s)	
导通检测	Current: DC 0.1A \pm 0.01A, Ground Resistance: 1.0 Ω \pm 0.1 Ω	
电流归零调整	0.000-50.00mA (Total current + current offset \leq 50mA)	0.000-99.99mA (Total current + current offset \leq 100mA)
直流耐压测试		
额定输出 (直流)	6kV/20mA	
输出电压范围	0-6.00kV	
电压解析度	0.01kV	
电压精确度	\pm (1.5% of setting + 5V)	
电流量测范围	0.0uA-20.00mA	
电流解析度	0.1uA/0.001mA/0.01mA	
电流精确度	0.0 -350.0uA	\pm (2% of reading + 2 counts)
	0.300-3.500mA	
	3.00-20.00mA	
缓升时间	0.4-999.9s	
缓降时间	0.0, 1.0-999.9s	
测试时间	0, 0.3-999.9s (0 = continuous)	
时间解析度	0.1s	
时间精确度	\pm (0.1% of setting + 0.05s)	
电流缓升上限	> 20mApeak maximum, ON/OFF User Selectable	



型号		ESA-140A	ESA-150A
直流耐压测试			
放电时间	Less than 100msec for capacitor load		
最大容性负载	1uF < 1KV, 0.75uF < 2KV, 0.5uF < 3KV 0.08uF < 4KV, 0.04uF < 5KV, 0.015uF < 6KV		
电流归零调整	0.0-20mA (Total current + current offset ≤ 20mA)		
电弧侦测	The range is from 1-9 (9 is the most sensitive)		
充电下限电流	0.0-350.0uA		
放电时间	< 50ms for no load, < 100ms for capacitor load (all capacitance values in max load spec below)		
导通检测	Current: DC 0.1 A ± 0.01 A, fixed, Max. Ground Resistance: 1.0Ω ± 0.1Ω		
绝缘阻抗测试			
额定输出 (直流)	1kv/50GΩ		
输出电压范围	30-1000V		
电压解析度	1V		
电压精确度	±(1.5% of setting + 2 counts)		
阻抗量测范围	0.050MΩ-50GΩ		
阻抗解析度	0.001/0.01/0.1/1MΩ		
阻抗精确度	0.050-999.9MΩ 输出 30-499V 内	±(7% of reading + 2 counts)	
	0.050-999.9MΩ 输出 500-1kV 内	±(2% of reading + 2 counts)	
	1G-9.999GΩ 输出 500-1kV 内	±(5% of reading + 2 counts)	
	10G-50GΩ 输出 500-1kV 内	±(15% of reading + 2 counts)	
缓升时间	0.1-999.9s		
缓降时间	0.0, 1.0-999.9s		
测试时间	0, 0.5-999.9s (0 = continuous)		
延迟时间	0.5-999.9s		
时间解析度	0.1s		
时间精确度	±(0.1% of setting + 0.05s)		
充电下限电流	0.000-3.500uA		
交流接地阻抗			
额定输出 (交流)	40 A/600mΩ/8V		
输出电流	1.00-40.00A		
电流解析度	0.01A		
电流精确度	±(2% of setting + 2 counts)		
输出电压	3.00-8.00V		
电压解析度	0.01V		
电压精确度	±(2% of setting + 3 counts)		
线材阻抗归零调整范围	0-200mΩ		
线材阻抗归零调整解析度	1mΩ		
线材阻抗归零调整精确度	±(1% of reading + 3 counts)		
阻抗量测范围	0-600mΩ		
阻抗解析度	1mΩ		
阻抗精确度	1.00-2.99A	±(3% of reading + 3 counts)	
	3.00-40.00A	±(2% of reading + 2 counts)	

型号		ESA-140A	ESA-150A
交流接地阻抗			
输出频率		50/60Hz \pm 0.1%	
输出调整率		\pm (1% of output + 0.02A), Within maximum load limits, and over input voltage range	
测试时间		0, 0.5-999.9s (0 = continuous)	
时间解析度		0.1s	
时间精确度		\pm (0.1% of setting + 0.05s)	
导通检测			
额定输出 (直流)		0.1A for 0-10.00 Ω , 0.01A for 10.1-100.0 Ω , 0.001A for 101-1k Ω , 0.0001A for 1.001-10k Ω , 0.1A is Max.	
阻抗归零调整		0.00-10.00 Ω	
阻抗归零调整解析度		0.01 Ω	
阻抗归零调整精确度		\pm (1% of reading + 3 counts)	
阻抗量测范围		0.00-10k Ω	
阻抗解析度		0.01/0.1/1 Ω	
阻抗精确度	0.00-10.00 Ω	\pm (1 % of reading + 3 counts)	
	10.1-100.0 Ω		
	101-1000 Ω	\pm (1 % of reading + 10 counts)	
	1001-10000 Ω		
测试时间		0.0, 0.3-999.9s (0 = continuous)	
时间解析度		0.1s	
时间精确度		\pm (0.1% of setting + 0.05s)	
接触电流测试			
测试棒设定		G-L, PH-PL, PH-L (Use HV relay and HV terminal connector)	
泄漏电流范围 1 (有效值)		0.0uA-10.00mA	
泄漏电流解析度 (有效值)	0.0-999.9uA	0.1uA	
	1000-8399uA	1uA	
	8.40-10.00mA	0.01mA	
泄漏电流精确度 (有效值) (交流 + 直流)	DC	\pm (2% of reading + 3 counts) ²	
	15Hz < f < 100kHz	\pm (2% of reading + 3 counts) ²	
	100kHz < f < 1MHz	\pm (5% of reading) (> 10.0uA)	
泄漏电流精确度 3 (有效值) (交流)	15Hz < f < 30Hz	\pm (3% of reading + 5 counts) ²	
	30Hz < f < 100kHz	\pm (2% of reading + 3 counts) ²	
	100kHz < f < 1MHz	\pm (5% of reading) (> 10.0uA)	
泄漏电流精确度 4 (峰值) (直流)		\pm (2% of reading + 3 counts) ² (> 10.0uA)	
泄漏电流范围 1 (峰值)		0.0uA-10.00mA	
泄漏电流解析度 (峰值)	0.0-999.9uA	0.1uA	
	1000-8399uA	1uA	
	8.40-10.00mA	0.01mA	
泄漏电流精确度 (峰值) (交流 + 直流)	DC	\pm (2% of reading + 3 counts)	
	15Hz < f < 1MHz	\pm (10% of reading + 2uA) ⁵	
泄漏电流精确度 2 (峰值) (交流)	15Hz < f < 1MHz	\pm (10% of reading + 2uA) ⁵	



型号		ESA-140A	ESA-150A
接触电流测试			
泄漏电压范围 1 (有效值)	MD Resistance is 0.5kΩ	0.0mV - 10.00V	
	MD Resistance is 1kΩ	0.0mV - 20.00V	
	MD Resistance is 1.5kΩ	0.0mV - 30.00V	
泄漏电压解析度 (有效值)	0.0-999.9mV	0.1mV	
	1000-8399mV	1mV	
	8.40-10.00V	1V	
泄漏电压精确度 (有效值) (交流 + 直流)	DC	±(2% of reading + 3 counts) ⁶	
	15Hz < f < 100kHz	±(2% of reading + 3 counts) ⁶	
	100kHz < f < 1MHz	±(5% of reading) (> 10.0mV)	
泄漏电压精确度 2 (有效值) (交流)	15Hz < f < 30Hz	±(3% of reading + 5 counts) ⁶	
	30Hz < f < 100kHz	±(2% of reading + 3 counts) ⁶	
	100kHz < f < 1MHz	±(5% of reading) (> 10.0mV)	
泄漏电压精确度 3 (有效值) (直流)		±(2% of reading + 3 counts) ⁶	
泄漏电压范围 1 (峰值)	MD Resistance is 0.5kΩ	0.0mV - 5.00V	
	MD Resistance is 1kΩ	0.0mV - 10.00V	
	MD Resistance is 1.5kΩ	0.0mV - 15.00V	
泄漏电压解析度 (峰值)	0.0-999.9mV	0.1mV - 5.00V	
	1000-8399mV	1mV	
	8.40-15.00V	1V	
泄漏电压精确度 (峰值) (交流 + 直流)	DC	±(2% of reading + 3 counts)	
	15Hz < f < 1MHz	±(10% of reading + 2mV) ⁷	
泄漏电压精确度 2 (峰值) (交流)		±(10% of reading + 2mV) ⁷	
人体模拟线路 (MD)	MD A.	UL544 Non Patient, UL484, IEC60598, UL1363, UL923, UL471, UL867, UL697	
	MD B.	UL544 Patient Care	
	MD C.	IEC60601-1, EN60601-1	
	MD D.	UL1563	
	MD E.	IEC60990 Fig4 U2, IEC 60950-1, IEC 62368-1, IEC60335-1, IEC60598-1, UL484, IEC60065, IEC61010, IEC60065, IEC 62368-1	
	MD F.	IEC60990 Fig5 U3, IEC60598-1, IEC 62368-1	
	MD G.	Basic measuring element 1k ohm of frequency check	
	External MD	User can add one extra MD for his application.	
MD 元件精确度		Capacitance: ± 1%; Resistance: ± 1%	
MD 电压限制		Maximum 30Vpeak or 30Vdc	
电流量测		The leakage current is fitting range by leakage current Hi-limit setting value	
频率范围		DC, 15Hz ≤ F ≤ 1MHz	
内部漏电流		1. Internal Leakage current = 65uA, 2. 277V applied to PH max leakage current = 70uA	
待测物功率 (交流)		277V/16A	
短路电流保护		23Arms or Inrush Current 68Apeak, Response time RMS < 3s; Peak < 10uS	
延迟时间	交流 + 直流	0.5-999.9s	
	交流 / 直流在自动档位下	1.8-999.9s	
	交流 / 直流在固定档位下	1.3-999.9s	
测试时间	交流 + 直流	0, 0.5-999.9s	
	交流 / 直流	0.1-999.9s (0 = continuous)	
时间解析度		0.1s	
时间精确度		±(0.1% of reading + 0.05s)	
功率量测范围		0 - 4500W	
功率精确度		± (5% of reading + 3 counts)	
功率因素		0.000 - 1.000	
功率因素精确度		± (8% of reading + 2 counts)	

型号	ESA-140A	ESA-150A
电气性能测试		
电压量测范围 (交流)	0.0 - 277.0V, 1ø	
电压精确度	± (1.5% of reading + 2 counts)	
电流量测范围 (交流)	0.00 - 16.00A	
电流精确度	± (2% of reading + 2 counts)	
泄漏电流量测范围	0.00 - 10.00 mA	
泄漏电流精确度	± (2% of reading + 2 counts)	
MD (L-G)	Resistor 2kΩ ± 1%	
一般规格		
远端控制输入讯号	Test, Reset, Interlock, Recall File 1 through 3, Recall File 1 through 7	
远端控制输出讯号	Pass, Fail, Test-in-Process	
记忆组	It has 10000 steps and allow the user to create different memories and steps	
显示器	800 x 480 resolution digital TFT LCD/Contrast 9 Levels 1-9	
接口 8	Standard USB & RS232, Optional Ethernet, GPIB	
外部扩展器连接	Yes	
同步测试	5kVac/25mAac and 25Aac/150mΩ	5kVac/50mAac and 30Aac/150mΩ
热态 (动态) 耐压测试	To detect the line input voltage to produce a simultaneous sine wave of line power at hipot output	
语言	English/Traditional Chinese/Simplified Chinese	
操作温度 / 储存温度 / 湿度	0 to 40° C/-40 to 75° C/20 to 80%RH	
尺寸 (宽 x 高 x 深), mm	430 × 133 × 500	
重量	41kg	
标准配件		
Power Cable (10A)*1; Power Cable (16A)*1; Fuse*1; 1101 Hipot Output Lead - Alligator Clip*3; 1137 Ground Bond Output Lead - Alligator Clip (40A)*1; 1138 Ground Bond Return Lead - Alligator Clip (40A); 1224 USB Cable*1; 1402 Rack Mount Kit for 3U Instrument (with handle)*2; 1505 Interlock Disable Key*1; 1905 Touch Current Testing Fixture Socket*1; Signal Cable*1		

产品规格如有变更恕不另行通知

- For Leakage Current: if the final measured signal is > 5.3mA, then the maximum composite signal can be measured is 28Vpeak. If the final measured signal is ≤ 5.3mA, then the maximum composite signal can be measured is 12Vpeak. For Leakage Voltage: if the final measured signal is > 8V, then the maximum composite signal can be measured is 28Vpeak. If the final measured signal is ≤ 8V, then the maximum composite signal can be measured is 12Vpeak.
- When current > 5.3mA, the accuracy is ±(5% of reading).
- AC cutoff frequency for High Pass Filter is 15Hz on AC only mode.
- AC cutoff frequency for Low Pass Filter is 15Hz on DC only mode.
- When current > 5.3mA & 15Hz < f < 100kHz, the accuracy is ±(10% of reading + 2 counts).
- When voltage > 8V, the accuracy is ±(5% of reading).
- When voltage > 8V & 15Hz < f < 100kHz, the accuracy is ±(10% of reading + 2 counts).
- Only one interface can be selected among RS232 & USB, GPIB & Ethernet interface card.

产品型号

- ESA-140A Electrical Safety Compliance Analyzer
- ESA-150A Electrical Safety Compliance Analyzer (500VA)

选购功能

- OPT.109 Replace RS232 Interface by GPIB Interface
- OPT.769 AC Source (500VA)
- OPT.790 IR Output 6kV
- OPT.7020 MD 1k ohm (non-inductive resistor)
- OPT.7022 MD IEC60974
- OPT.7023 MD IEC60598-1
- OPT.7024 MD NFPA99 Figure A.4.3.3.1.3b
- OPT.7025 MD NFPA99 Figure A.4.3.3.1.3a
- OPT.7027 MD 2k ohm (non-inductive resistor)
- OPT.7030 Touch Current Measurement (AC/DC/AC + DC) & Cold Resistance Function
- 6700 Series Programmable AC Power Source (6705, 6710, 6720, 6730, 6750)
- EAL-5000 Series Programmable AC Power Source (EAL-5005, EAL-5012, EAL-5020, EAL-5030, EAL-5040, EAL-5060)

选购配件

- 1929 远端控制盒 (含 LED 显示)
- 1933 点检治具盒
- 1950 TCT 点检治具盒

Note: OPT.7020 to OPT.7027 are mutually exclusive, only one Option can be selected.