

ESA 系列彩色全功能安規綜合分析儀



世界第一台七合一彩色安規綜合分析儀，選配內建 500VA 交流電源，同時兼容多種通訊控制介面。一站多工，解決所有安全顧慮，是系統整合、實驗研發最佳的解決方案。

產品特色

- 一台滿足所有安規測試。
- DualCHEK 功能：耐壓 (AC/DC) 與接地阻抗 (GB) 可同步進行測試。
- EEC 獨有專利之快速放電裝置 (Fast Discharge)，能使待測物在測試後 50ms 的極短時間內放電，減低避免殘餘電壓造成人員觸電風險。
- 熱態耐壓測試：能夠在 DUT 開機的情況下運行耐壓測試。
- 7 組人體模擬線路 (MD)。
- 可量測 AC/DC/AC+DC 電流值，以及支援患者漏電流，患者輔助漏電流量測 (醫療設備 IEC60601 標準)。
- MD 配備 BNC 測量端子可連接示波器或電壓表，以實現更加人性化的 MD 校準。

通訊介面



USB 介面



RS-232 介面



乙太網路卡
(選購)



GPIB 卡
(選購)

安全特性與產品特點



同步測試



自我檢測



緩升上限



充電下限



快速放電



電弧偵測



智慧防高壓觸
電線路



外部掃描器連
接

	交流耐壓 (ACW)	直流耐壓 (DCW)	絕緣阻抗 (IR)	交流接地阻抗 (AC GB)	導通檢測 (GC)	電源洩漏電流 (LLT/TCT)	性能監控 (Run)	內建隔離電源
ESA-140A	✓	✓	✓	✓	✓	✓	✓	選購
ESA-150A	500VA	✓	✓	✓	✓	✓	✓	選購

ESA 系列規格		
型號	ESA-140A	ESA-150A
輸入電源		
電壓 (交流)	115/230V ± 15% Auto Range	
頻率	50/60Hz ± 5%	
交流耐壓測試		
額定輸出 (交流)	5kV/50mA	5kV/100mA
輸出電壓範圍	0-5.00kV	
電壓解析度	0.01kV	
電壓精確度	輸出 50/60Hz ±(1.5% of setting + 5V)	
電流量測範圍 (總和)	0.000-50.00mA	0.000-100.00mA
電流解析度 (總和)	0.001/0.01mA	
電流精確度 (總和)	0.000-3.500mA	±(2% of reading + 2 counts)
	3.00-100.00mA	
電流量測範圍 (真實)	0.000-50.00mA	0.000-100.00mA
電流解析度 (真實)	0.001/0.01mA	
電流精確度 (真實)	0.000-9.999mA	±(3% of reading + 50uA)
	10.00-99.99mA	
輸出頻率	50/60Hz ± 0.1%	
緩升時間	0.1-999.9s	
緩降時間	0.0-999.9s	
測試時間	0, 0.3-999.9s (0 = continuous)	
時間解析度	0.1s	
時間精確度	±(0.1% of setting + 0.05s)	
導通檢測	Current: DC 0.1A ± 0.01A, Ground Resistance: 1.0Ω ± 0.1Ω	
電流歸零調整	0.000-50.00mA (Total current + current offset ≤50mA)	0.000-99.99mA (Total current + current offset ≤100mA)
直流耐壓測試		
額定輸出 (直流)	6kV/20mA	
輸出電壓範圍	0-6.00kV	
電壓解析度	0.01kV	
電壓精確度	±(1.5% of setting + 5V)	
電流量測範圍	0.0uA-20.00mA	
電流解析度	0.1uA/0.001mA/0.01mA	
電流精確度	0.0 -350.0uA	±(2% of reading + 2 counts)
	0.300-3.500mA	
	3.00-20.00mA	
緩升時間	0.4-999.9s	
緩降時間	0.0, 1.0-999.9s	
測試時間	0, 0.3-999.9s (0 = continuous)	
時間解析度	0.1s	
時間精確度	±(0.1% of setting + 0.05s)	
電流緩升上限	> 20mApeak maximum, ON/OFF User Selectable	
放電時間	Less than 100msec for capacitor load	
最大容性負載	1uF < 1KV, 0.75uF < 2KV, 0.5uF < 3KV 0.08uF < 4KV, 0.04uF < 5KV, 0.015uF < 6KV	
電流歸零調整	0.0-20mA (Total current + current offset ≤20mA)	
電弧偵測	The range is from 1-9 (9 is the most sensitive)	
充電下限電流	0.0-350.0uA	
放電時間	< 50ms for no load, < 100ms for capacitor load (all capacitance values in max load spec below)	
導通檢測	Current: DC 0.1 A ± 0.01 A, fixed, Max. Ground Resistance: 1.0Ω ± 0.1Ω	

型號		ESA-140A	ESA-150A
絕緣阻抗測試			
額定輸出 (直流)		1kV/50GΩ	
輸出電壓範圍		30-1000V	
電壓解析度		1V	
電壓精確度		±(1.5% of setting + 2 counts)	
阻抗量測範圍		0.050MΩ-50GΩ	
阻抗解析度		0.001/0.01/0.1/1MΩ	
阻抗精確度	0.050-999.9MΩ 輸出 30-499V 內	±(7% of reading + 2 counts)	
	0.050-999.9MΩ 輸出 500-1kV 內	±(2% of reading + 2 counts)	
	1G-9.999GΩ 輸出 500-1kV 內	±(5% of reading + 2 counts)	
	10G-50GΩ 輸出 500-1kV 內	±(15% of reading + 2 counts)	
緩升時間		0.1-999.9s	
緩降時間		0.0 , 1.0-999.9s	
測試時間		0, 0.5-999.9s (0 = continuous)	
延遲時間		0.5-999.9s	
時間解析度		0.1s	
時間精確度		±(0.1% of setting + 0.05s)	
充電下限電流		0.000-3.500uA	
交流接地阻抗			
額定輸出 (交流)		40 A/600mΩ/8V	
輸出電流		1.00-40.00A	
電流解析度		0.01A	
電流精確度		±(2% of setting + 2 counts)	
輸出電壓		3.00-8.00V	
電壓解析度		0.01V	
電壓精確度		±(2% of setting + 3 counts)	
線材阻抗歸零調整範圍		0-200mΩ	
線材阻抗歸零調整解析度		1mΩ	
線材阻抗歸零調整精確度		±(1% of reading + 3 counts)	
阻抗量測範圍		0-600mΩ	
阻抗解析度		1mΩ	
阻抗精確度	1.00-2.99A	±(3% of reading + 3 counts)	
	3.00-40.00A	±(2% of reading + 2 counts)	
輸出頻率		50/60Hz ± 0.1%	
輸出調整率		±(1% of output + 0.02A), Within maximum load limits, and over input voltage range	
測試時間		0, 0.5-999.9s (0 = continuous)	
時間解析度		0.1s	
時間精確度		±(0.1% of setting + 0.05s)	
導通檢測			
額定輸出 (直流)		0.1A for 0-10.00Ω, 0.01A for 10.1-100.0Ω, 0.001A for 101-1kΩ, 0.0001A for 1.001-10kΩ, 0.1A is Max.	
阻抗歸零調整		0.00-10.00Ω	
阻抗歸零調整解析度		0.01Ω	
阻抗歸零調整精確度		±(1% of reading + 3 counts)	
阻抗量測範圍		0.00-10kΩ	
阻抗解析度		0.01/0.1/1Ω	
阻抗精確度	0.00-10.00Ω	±(1 % of reading + 3 counts)	
	10.1-100.0Ω		
	101-1000Ω	±(1 % of reading + 10 counts)	
	1001-10000Ω		
測試時間		0.0, 0.3-999.9s (0 = continuous)	
時間解析度		0.1s	
時間精確度		±(0.1% of setting + 0.05s)	

型號		ESA-140A	ESA-150A
接觸電流測試			
測試棒設定		G-L, PH-PL, PH-L (Use HV relay and HV terminal connector)	
洩漏電流範圍 1 (有效值)		0.0uA-10.00mA	
洩漏電流解析度 (有效值)	0.0-999.9uA	0.1uA	
	1000-8399uA	1uA	
	8.40-10.00mA	0.01mA	
洩漏電流精確度 (有效值) (交流 + 直流)	DC	$\pm(2\% \text{ of reading} + 3 \text{ counts})^2$	
	15Hz < f < 100kHz	$\pm(2\% \text{ of reading} + 3 \text{ counts})^2$	
	100kHz < f < 1MHz	$\pm(5\% \text{ of reading}) (> 10.0uA)$	
洩漏電流精確度 3 (有效值) (交流)	15Hz < f < 30Hz	$\pm(3\% \text{ of reading} + 5 \text{ counts})^2$	
	30Hz < f < 100kHz	$\pm(2\% \text{ of reading} + 3 \text{ counts})^2$	
	100kHz < f < 1MHz	$\pm(5\% \text{ of reading}) (> 10.0uA)$	
洩漏電流精確度 4 (峰值) (直流)		$\pm(2\% \text{ of reading} + 3 \text{ counts})^2 (> 10.0uA)$	
洩漏電流範圍 1 (峰值)		0.0uA-10.00mA	
洩漏電流解析度 (峰值)	0.0-999.9uA	0.1uA	
	1000-8399uA	1uA	
	8.40-10.00mA	0.01mA	
洩漏電流精確度 (峰值) (交流 + 直流)	DC	$\pm(2\% \text{ of reading} + 3 \text{ counts})$	
	15Hz < f < 1MHz	$\pm(10\% \text{ of reading} + 2uA)^5$	
洩漏電流精確度 2 (峰值) (交流)	15Hz < f < 1MHz	$\pm(10\% \text{ of reading} + 2uA)^5$	
洩漏電壓範圍 1 (有效值)	MD Resistance is 0.5k Ω	0.0mV - 10.00V	
	MD Resistance is 1k Ω	0.0mV - 20.00V	
	MD Resistance is 1.5k Ω	0.0mV - 30.00V	
洩漏電壓解析度 (有效值)	0.0-999.9mV	0.1mV	
	1000-8399mV	1mV	
	8.40-10.00V	1V	
洩漏電壓精確度 (有效值) (交流 + 直流)	DC	$\pm(2\% \text{ of reading} + 3 \text{ counts})^6$	
	15Hz < f < 100kHz	$\pm(2\% \text{ of reading} + 3 \text{ counts})^6$	
	100kHz < f < 1MHz	$\pm(5\% \text{ of reading}) (> 10.0mV)$	
洩漏電壓精確度 2 (有效值) (交流)	15Hz < f < 30Hz	$\pm(3\% \text{ of reading} + 5 \text{ counts})^6$	
	30Hz < f < 100kHz	$\pm(2\% \text{ of reading} + 3 \text{ counts})^6$	
	100kHz < f < 1MHz	$\pm(5\% \text{ of reading}) (> 10.0mV)$	
洩漏電壓精確度 3 (有效值) (直流)		$\pm(2\% \text{ of reading} + 3 \text{ counts})^6$	
洩漏電壓範圍 1 (峰值)	MD Resistance is 0.5k Ω	0.0mV - 5.00V	
	MD Resistance is 1k Ω	0.0mV - 10.00V	
	MD Resistance is 1.5k Ω	0.0mV - 15.00V	
洩漏電壓解析度 (峰值)	0.0-999.9mV	0.1mV - 5.00V	
	1000-8399mV	1mV	
	8.40-15.00V	1V	
洩漏電壓精確度 (峰值) (交流 + 直流)	DC	$\pm(2\% \text{ of reading} + 3 \text{ counts})$	
	15Hz < f < 1MHz	$\pm(10\% \text{ of reading} + 2mV)^7$	
洩漏電壓精確度 2 (峰值) (交流)		$\pm(10\% \text{ of reading} + 2mV)^7$	
人體模擬線路 (MD)	MD A.	UL544 Non Patient, UL484, IEC60598, UL1363, UL923, UL471, UL867, UL697	
	MD B.	UL544 Patient Care	
	MD C.	UL2601-1, 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	
	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.	

型號	ESA-140A	ESA-150A
MD 元件精確度	Capacitance: $\pm 1\%$; Resistance: $\pm 1\%$	
MD 電壓限制	Maximum 30Vpeak or 30Vdc	
電流量測	The leakage current is fitting range by leakage current Hi-limit setting value	
頻率範圍	DC, 15Hz \leq F \leq 1MHz	
內部漏電流	1. Internal Leakage current = 65uA, 2. 277V applied to PH max leakage current = 70uA.	
待測物功率 (交流)	277V/16A	
短路電流保護	23Arms or Inrush Current 68Apeak, Response time RMS $<$ 3s ; Peak $<$ 10uS	
延遲時間	交流 + 直流	0.5-999.9s
	交流 / 直流在自動檔位下	1.8-999.9s
	交流 / 直流在固定檔位下	1.3-999.9s
測試時間	交流 + 直流	0, 0.5-999.9s
	交流 / 直流	0.1-999.9s (0 = continuous)
時間解析度	0.1s	
時間精確度	$\pm(0.1\%$ of reading + 0.05s)	

電氣性能測試	
功率量測範圍	0 - 4500W
功率精確度	\pm (5% of reading + 3 counts)
功率因素	0.000 - 1.000
功率因素精確度	\pm (8% of reading + 2 counts)
電壓量測範圍 (交流)	0.0 - 277.0V , 1 \emptyset
電壓精確度	\pm (1.5% of reading + 2 counts)
電流量測範圍 (交流)	0.00 - 16.00A
電流精確度	\pm (2% of reading + 2 counts)
洩漏電流量測範圍	0.00 - 10.00 mA
洩漏電流精確度	\pm (2% of reading + 2 counts)
MD (L-G)	Resistor 2k Ω \pm 1%

一般規格	
遠端控制輸入訊號	Test, Reset, Interlock, Recall File 1 through 3, Recall File 1 through 7
遠端控制輸出訊號	Pass, Fail, Test-in-Process
記憶組	It has 10000 steps and allow the user to create different memories and steps
顯示器	800 x 480 resolution digital TFT LCD/Contrast 9 Levels 1-9
介面 8	Standard USB & RS232, Optional Ethernet, GPIB
外部掃描器連接	Yes
同步測試	5kVac/25mAac and 25Aac/150m Ω 5kVac/50mAac and 30Aac/150m Ω
熱態 (動態) 耐壓測試	To detect the line input voltage to produce a simultaneous sine wave of line power at hipot output
語言	English/Traditional Chinese/Simplified Chinese
操作溫度 / 儲存溫度 / 濕度	0 to 40°C/-40 to 75°C/20 to 80%RH
尺寸 (寬 x 高 x 深), mm	430 x 133 x 500
重量	36kg 41kg

標準配件

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

*Product specifications are subject to change without notice

- 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 \leq 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 \leq 8V, then the maximum composite signal can be measured is 12Vpeak.
- When current $>$ 5.3mA, the accuracy is \pm (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 \pm (10% of reading + 2 counts).
- When voltage $>$ 8V, the accuracy is \pm (5% of reading).
- When voltage $>$ 8V & 15Hz $<$ f $<$ 100kHz, the accuracy is \pm (10% of reading + 2 counts).
- Only one interface can be selected among RS232 & USB, GPIB & Ethernet interface card.

產品型號

● ESA-140A Electrical Safety Compliance Analyzer

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

選購功能

- OPT.109 Replace RS232 Interface by GPIB Interface
- OPT.769 AC Source (500VA)
- PT.790 IR Output 6kV
- OPT.7020 MD 1k ohm (non-inductive resistor)
- OPT.7021 MD NFPA99 Figure A.8.4.1.3.3
- 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 External HV (P-G/S-G/P-S), Touch Current Measurement (AC/DC/AC + DC) & Cold Resistance Function
- 6600 Series Programmable AC Power Source (6605, 6610, 6620, 6630, 6650)
- 6700 Series Programmable AC Power Source (6705, 6710, 6720, 6730, 6740)

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