ESA710 Electrical Safety Analyzer

Our easiest-to-use electrical safety analyzer, ever.

Redefining automated testing in a compact format, the ESA710 Electrical Safety Analyzer is an essential tool for healthcare technology management professionals looking for portability without compromising functionality. This high-functioning device enables users to perform from basic troubleshooting to comprehensive analysis, ensuring electrical safety testing on medical equipment complies with key electrical safety standards, such as ANSI/AAMI ES1 and NFPA 99, whether on-field or within facilities.

Key features

- 5" Touchscreen with intuitive user interface
- Small, portable, ergonomic design with an integrated handle
- OneQA-enabled workflow automation eliminates need for laptop
- Wireless capability allows you to run test procedures in the field and automatically sync results
- Ten applied parts posts with innovative LED lighting guidance (ECG & Banana)
- Insulation resistance from 50V, 100V, 250V and 500V
- On-board automation with automated test sequences for compliance to key electrical safety standards (ANSI/AAMI ES1, NFPA 99)
- ECG waveform tests and dual-lead measurements combine the functionality of a simulator and safety analyzer in a single test tool

- Ability to upload pictures, instructions, and text to procedures
- Easy data entry through barcode scanner, external keyboard or on-screen keyboard
- 20 A at 120 V equipment current capability
- Replaceable mains fuses keep your unit in the field and out of the repair shop
- Rigorously tested for rugged field applications with CE and CSA in addition to Fluke-quality ruggedness for long-term reliability
- Enjoy precision, compliance, and total peace of mind through our comprehensive service and coverage program, eliminating unexpected costs with our Protect+ Program
- Global support network delivering prompt service and peace of mind to Fluke Biomedical customers worldwide

Integrated OneQA workflow automation software allows you to:

- Improve productivity, efficiency and accuracy by automating the execution and analysis of tests
- Standardize testing procedures across all technicians – have everybody work like your senior technicians
- Ditch the laptop – execute OneQA right from the ESA710, keeping you mobile
- Reduce confusion around related to connections and testing with onboard guidance instructions
- Reduce onboarding time standardized test procedures and an intuitive user-friendly interface
- Build, organize and share reports and data on a centralized platform
- Achieve compliance with regulatory agencies with improved traceability
- Collaborate real-time with your team on procedures, data analysis and reporting
- Lower the cost of and improvement to Quality Assurance programs

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General Specifications

Safety standard compliance	IEC 61010-1: Overvoltage category II, pollution degree 2 IEC 61010-2-034: Measurement CAT II 300 V
Dimensions (w x d x h)	214 x 207 x 92 mm (8.4 x 8.1 x 3.6 inches)
Weight	1.3 kg (2.7 pounds)
Ingress protection	IP40 per IEC 60529, excluding equipment outlet
Operating temperature	0 to +35 °C (+50 to +95 °F)
Operating humidity	10-90 %, non-condensing
Storage temperature	-20 to +60 °C (-4 to+ 140 °F)
Storage humidity	5-95 %, non-condensing
Altitude	100-127 V ac mains voltage and ≤5 150 V on input jacks: ≤ 5000 m
	200-240 V ac mains voltage and ≤5 300 V on input jacks: ≤ 2000 m
Battery life	Up to 2 h
Connectivity	1 x USB-C for PC communication, 2 x USB-A for peripherals
Display	5-inch touchscreen
Data storage	> 10 000 measurements
Power (region dependent)	90-132 V ac, 20 A MAX, 47-63 Hz
	90-132 V ac & 180-264 V ac, 15 A MAX, 47-63 Hz
	90-132 V ac & 180-264 V ac, 16 A MAX, 47-63 Hz

CSA approval

US version, 90-132 V ac, 20 A MAX, 47-63 Hz	CSA approved
NEMA 6-15 version, 90-132 V ac & 180-264 V ac, 15 A MAX, 47-63 Hz	CSA approved

Electromagnetic Compatibility (EMC)

See users manual for more information.

Measurement Specifications

Mains voltage

Range	0-264 V ac rms, limited by power specification
Accuracy	±(2 % + 0.2 V)

Point to point voltage

Range	0-300 V ac rms, limited by altitude specification
Accuracy	±(2 % + 0.2 V)

Protective earth resistance & Point to point resistance

Range	0-20 Ω
Accuracy	±(1 % + 0.01 Ω) at ≤ 2 Ω
	±(1 % + 0.1 Ω) at >2 Ω
Test current	Square wave of at least ±200 mA for ≤ 2 Ω
Open circuit voltage	Max ±24 V

Measurement Specifications (continued)

Equipment Current	
Range	0-20 A ac rms, limited by power specification
Accuracy	±(5 % + 0.05 A)
Max duty cycle	0-10 A: continuous
	0-15 A: 5 min on/5 min off
	15-20 A: 3 min on/7 min off

Note: Equipment outlet will be turned off if max duty cycle is exceeded.

Leakage Current	
Modes	ac + dc (true rms), ac only, dc only Mains on applied part leakage test: ac only
Patient load	AAMI ES1: 1993
Crest factor	≤2
Range	0 µA - 20 mA
Accuracy	dc & 20 Hz - 0.5 kHz: ±(1 % + 1 µA)
	0.5 kHz - 50 kHz: ±(2.5 % + 1 µA)
	50 kHz - 1 MHz: ±(5 % + 1 µA)

Mains on applied part

Test voltage	Mains voltage ±5 %
Current limit	1 mA ± 25 % at 115 V for AAMI ES1, NFPA 99
Additional uncertainty	Up to ±2 µA for 120 V, up to ±4 µA for 230 V

Insulation Resistance		
Test voltage 250 V dc and 500 V dc	Range	0.1-100 MΩ
	Accuracy	±(2 % + 0.2 MΩ) at ≤ 10 MΩ ±(7.5 % + 0.2 MΩ) at >10 MΩ
	Test voltage accuracy	+20 % / -0 %
Test voltage 50 V dc and 100 V dc	Range	0.1-20 MΩ
	Accuracy	±(10 % + 0.2 MΩ)
	Test voltage accuracy	+30 % / -0 %
Short-circuit current	2 mA ± 0.25 mA	
Maximum load capacitance	2 µF	

Measurement Specifications (continued)

ECG simulation		
Frequency accuracy	±2 %	
Amplitude accuracy	±5 %, for 2 Hz square wave	
Waveforms	ECG complex	30, 60, 120, 180 and 240 BPM
	Square wave	0.125 and 2 Hz, 50 % duty cycle
	Triangle wave	2 Hz
	Pulse, 63 ms	30 and 60 BPM
	Ventricular fibrillation	

Respiration simulation	
Rate	Apnea (0 BrPM) and 10-100 BrPM in 10 BrPM steps
Waveforms	Normal
Inspiration : expiration ratio	1:1
Impedance baseline	1000 Ω ± 5 % between leads
Impedance variation	1 ± 0.15 Ω
Respiration lead	LL or LA, user selectable

Ordering information

Models/descriptions

5577713	ESA710-US Electrical Safety Analyzer
6028740	ESA710-02-NA220 Electrical Safety Analyzer
6046116	ESA710-03-NEMA615 Electrical Safety Analyzer

Standard accessories

5517611	Getting started guide
5517610	OneQA quick guide
5579600	USB C to USB A cable
3111008	USA accessory kit: test lead set, TP1 test probe set, AC285 alligator clip set
2427138	Probe test banana jack 4MM tip black w/cap 175-290-001 EVZFTP74SW00
2099044	Probe test banana jack 4MM tip red w/cap 175-290-003 EVZFTP74RT00
3326842	Null post adapter
2248650	Carrying case
2238644	Power cord

Optional accessories

| 6078258 | Barcode scanner |
| 6078184 | USB Wi-Fi dongle |

About Fluke Biomedical

Fluke Biomedical is the world's leading manufacturer of quality biomedical test and simulation products. In addition, Fluke Biomedical provides the latest medical imaging and oncology quality-assurance solutions for regulatory compliance. Highly credentialed and equipped with a NVLAP Lab Code 200566-0 accredited laboratory, Fluke Biomedical also offers the best in quality and customer service for all your equipment calibration needs.

Today, biomedical personnel must meet the increasing regulatory pressures, higher quality standards, and rapid technological growth, while performing their work faster and more efficiently than ever. Fluke Biomedical provides a diverse range of software and hardware tools to meet today's challenges.

Fluke Biomedical regulatory commitment

As a medical test device manufacturer, we recognize and follow certain quality standards and certifications when developing our products. We are ISO 9001 and ISO 13485 medical device certified and our products are:

- CE Certified, where required
- NIST Traceable and Calibrated
- UL, CSA, ETL Certified, where required
- NRC Compliant, where required

Fluke Biomedical

We empower our everyday heroes to focus only on protecting lives.