FLUKE®
Biomedical

Technical data

ESA609
Electrical Safety Analyzer

The on-the-go analyzer

The ESA609 Electrical Safety Analyzer is a rugged, portable and easy-to-use analyzer designed for general electrical safety testing. Engineered for on-the-go technicians, the ESA609 requires no training to use and has a rubberized case that allows it to sustain the rigor of transportation, and helps prevent damage when accidentally dropped. Additionally, its functional strap and featherweight design make it one of the most portable electrical safety analyzers in its class. Heavy-duty switches allow users to effortlessly change polarity and configuration of the neutral connection between open and closed, while push-button operation ensures fast transition between tests for complete basic testing in minutes. The ESA609 integrates all functions needed to test medical devices when patient lead testing is notrequired, including: line (mains) voltage, ground wire (protective earth) resistance, equipment current, leakage current and point-to point tests. Versatile to global electrical safety standards of choice, the ESA609 tests to ANSI/ AAMI ES1, NFPA-99, and parts of IEC62353 and IEC60601-1.

Key features

- Standards compliance include: ANSI/AAMI ES1, NFPA-99, and parts of IEC62353 and IEC60601-1
- Test current consumption up to 20 A for a diverse set of medical devices
- All parameters needed for basic electrical safety testing: Line (mains) voltage, ground wire (or protective earth) resistance, equipment current, ground wire (earth) leakage, chassis (enclosure) leakage, direct equipment leakage, and point to point leakage and resistance
- Global use: the ESA609 will operate at 120 Vand 230 V
- Rugged: Rubberized case and Ingress Protectionrating of IP30 help prevent damage whendropped
- User-friendly: Quick push-button operation forrapid testing
- Portable: Featherweight (1.5 lb) design, functional strap, and tilt stand make it easy for transportationand operation on-the-go (onsite or offsite)
- Rigorously tested for safety and reliability, withCE, CSA and Australia RCM in addition to Fluke quality
- Two-year extended warranty (no-cost, availableafter first-year calibration at any authorized Fluke Biomedical Service Center)
- Global support network delivering prompt service and peace of mind to Fluke Biomedical customers worldwide

Specifications

Test standard selections	Test standard selections ANSI/AAMI ES-1/NFPA99, IEC62353, IEC60601-1
Mains voltage measurement	
Range	90.0 to 264.0 V ac rms
Accuracy	± (2 % of reading + 0.2 V)
Earth resistance	
Modes	Two-Wire
Test current	> 200 mA ac
Range	0.000 Ω to 20.000 Ω
Accuracy	± (1 % of reading + 0.010 Ω)
Resistance tests	Earth resistance and point to point
Equipment current	
Mode	AC rms
Range	0.0 A to 20.0 A
Accuracy	± (5 % of reading + (2 counts or 0.2 A, whichever is greater))
Duty cycle	15 A to 20 A, 5 min. on/5 min. off 10 A to 15 A, 7 min. on/3 min. off 0 A to 10 A continuous
Leakage current	
Modes	True-rms
Patient load selection	AAMI ES1-1993 Fig.1 IEC 60601: Fig 15
Crest factor	Less than or equal to 3
Ranges	0.0 µA to 199.9 µA
DC to 1 kHz	± (1 % of reading + 1 µA)
1 kHz to 100 kHz	± (2.5 % of reading + 1 µA)
100 kHz to 1 MHz	± (5 % of reading + 1 µA)
Leakage tests	Ground wire (earth) Chassis (enclosure) Direct equipment Point to point

Specifications continued

Temperature	
Operating	0 °C to 50 °C (32 °F to 122 °F)
Storage	-20 °C to 60 °C (-4 °F to 140 °F)
Humidity	10 % to 90 % non-condensing
Altitude	
120 V ac mains supply voltage	5000 m
230 V ac mains supply voltage	2000 m
Display	LCD display
Modes of operation	Manual
Power ratings	
115 volt power outlet	90 V to 132 V ac rms, 47 Hz to 63 Hz, 20 A maximum
230 volt power outlet	180 V to 264 V ac rms, 47 Hz to 63 Hz, 16 A maximum
Power input	115 V 20 A to 2.6 kVA and 230 V at 16 A to 4.2 kVA
Physical case	
Weight	0.7 kg (1.5 lb)
Dimensions	22.9 cm x 17.8 cm x 6.4 cm (9 in x 7 in x 2.5 in)
Warranty	Two-year extended warranty (no-cost, available after first-year calibration at any authorized Fluke Biomedical Service Center, otherwise standard one year warranty applies)
Agency Approvals: CE, CSA, Australia RCM	
Safety	IEC 61010-1: Overvoltage Category II, Measurement 300 V CAT II, Pollution Degree 2
Electromagnetic environment	IEC 61326-1: Portable
Emissions classification	IEC CISPR 11: Group 1, Class A

Group 1 have intentionally generated and/or use conductively coupled radio-frequency energy which is necessary for the internal functioning of the equipment itself. Class A equipment is suitable for use in nondomestic locations and/or directly connected to a low-voltage power supply network.

Ordering information

Models/descriptions

4375516	ESA609-US, Electrical Safety Analyzer, United States
4375525	ESA609-02-EUR, Electrical Safety Analyzer, Europe
4375533	ESA609-01-FR, Electrical Safety Analyzer France
4375540	ESA609-06-UK, Electrical Safety Analyzer, United Kingdom
4375557	ESA609-05-AUS, Electrical Safety Analyzer, Australia
4375569	ESA609-07-SWISS, Electrical Safety Analyzer, Switzerland
4375578	ESA609-03-ISR, Electrical Safety Analyzer, Israel
4375584	ESA609-11-BRAZIL, Electrical Safety Analyzer, Brazil 230 V
4375591	ESA609-12-INDIA, Electrical Safety Analyzer, India
4485645	ESA609-09-Japan, Electrical Safety Analyzer, Japan
4485661	ESA609-08-THAI, Electrical Safety Analyzer, Thailand 230 V
4551169	ESA609-US W/ADAPT, ESA609-US W/ADAPT, Electrical Safety Analyzers, United States

Standard accessories

4370092	Safety sheet
3111008	USA/AUS/ISR Accessory Kit: Test lead set, TP1 test probe set, AC285 alligator clip set (ESA T/L kit, USA)
3111024	EUR Accessory Kit: Test lead set, TP74 test probe set, AC285 alligator clip set (ESA T/L kit, EUR)
4151242	USA/NEMA outlet to NBR14136 socket (Brazil only)
3326842	Null post adapter
2248650	Carrying case
Line Cord	Country-specific power cord

Optional accessories

2195732	15 A to 20 A adapter (2719-0154)

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.

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