

# ESA609

## Electrical Safety Analyzer

### Technical Data



### 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 not required, 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 V and 230 V
- Rugged: Rubberized case and Ingress Protection rating of IP30 help prevent damage when dropped
- User-friendly: Quick push-button operation for rapid testing
- Portable: Featherweight (1.5 lb) design, functional strap, and tilt stand make it easy for transportation and operation on-the-go (onsite or offsite)
- Rigorously tested for safety and reliability, with CE, CSA and Australia RCM in addition to Fluke quality
- Two-year extended warranty (no-cost, available after 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

|                                  |   |
|----------------------------------|---|
| <b>Test standard selections</b>  | ANSI/AAMI ES-1/NFPA99, IEC62353, IEC60601-1   |
| <b>Mains voltage measurement</b> |   |
| <b>Range</b>                     | 90.0 to 264.0 V ac rms  |
| <b>Accuracy</b>                  | ± (2 % of reading + 0.2 V)  |
| <b>Earth resistance</b>          |   |
| <b>Modes</b>                     | Two wire  |
| <b>Test current</b>              | > 200 mA dc   |
| <b>Range</b>                     | 0.000 Ω to 20.000 Ω   |
| <b>Accuracy</b>                  | ± (1 % of reading + 0.010 Ω)  |
| <b>Resistance tests</b>          | Earth resistance and point to point   |
| <b>Equipment current</b>         |   |
| <b>Mode</b>                      | AC RMS  |
| <b>Range</b>                     | 0.0 A to 20.0 A   |
| <b>Accuracy</b>                  | ± (5 % of reading + (2 counts or 0.2 A, whichever is greater))                                      |
| <b>Duty cycle</b>                | 15 A to 20 A, 5 min on / 5 min off<br>10 A to 15 A, 7 min on / 3 min off<br>0 A to 10 A, continuous |
| <b>Leakage current</b>           |   |
| <b>Modes</b>                     | True-rms  |
| <b>Patient load selection</b>    | AAMI ES1-1993 Fig. 1<br>IEC 60601: Fig. 15  |
| <b>Crest factor</b>              | Less than or equal to 3   |
| <b>Ranges</b>                    | 0.0 μA to 1999.9 μA aAccuracy   |
| <b>DC to 1 kHz</b>               | ± (1 % of reading + (1 μA , whichever is greater))  |
| <b>1 kHz to 100 kHz</b>          | ± (2.5 % of reading + (1 μA, whichever is greater))   |
| <b>100 kHz to 1 MHz</b>          | ± (5 % of reading + (1 μA, whichever is greater))   |
| <b>Leakage tests</b>             | Ground wire (earth)<br>Chassis (enclosure)<br>Direct equipment<br>Point to point                    |

**Specifications cont.**

|  |  |
|--|--|
| <b>Temperature</b>   |  |
| 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  |
| <b>Altitude</b>  |  |
| 120 V ac mains supply voltage  | 5000 m   |
| 230 V ac mains supply voltage  | 2000 m   |
| Display  | LCD display  |
| Modes of operation   | Manual   |
| <b>Power ratings</b>   |  |
| 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   |
| <b>Physical case</b>   |  |
| 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) |
| <b>Agency Approvals: CE, CSA, Australia RCM</b>  |  |
| 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

- 4370089** Operator's manual (multilingual CD-ROM)
- 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)
- 4466975** 1 Year Gold CarePlan
- 4466982** 3 Year Gold CarePlan
- 4466994** 1 Year Silver CarePlan
- 4467001** 3 Year Silver CarePlan
- 4467012** 1 Year Bronze CarePlan
- 4467020** 3 Year Bronze CarePlan

### 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.

*Trusted for the measurements that matter.*

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