

# ESA609

## *Electrical Safety Analyzer*

### *Safety Sheet*









Go to [www.flukebiomedical.com](http://www.flukebiomedical.com) to register your product and find more information.

### **Safety Information**

A **Warning** identifies hazardous conditions and actions that could cause bodily harm or death.

The table below is a list of symbols used on the product and in this document.

#### Symbols

Symbol	Description
	Risk of Danger. Important information. See Manual.
	Hazardous voltage. Risk of electric shock.
	Fuse
	Conforms to relevant North American Safety Standards.
	Conforms to European Union directives.
	Conforms to relevant Australian EMC standards
	Conforms to relevant South Korean EMC Standards.
	This product complies with the WEEE Directive (2002/96/EC) marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as category 9 "Monitoring and Control Instrumentation" product. Do not dispose of this product as unsorted municipal waste. Go to Fluke's website for recycling information.

## Warning

To prevent possible electrical shock, fire, or personal injury:

- Read all safety information before you use the Product.
- Use the Product only as specified, or the protection supplied by the Product can be compromised.
- Do not connect to live output terminals. The Product can supply voltages that can cause death. Standby mode is not sufficient to prevent electrical shock.
- Do not apply more than the rated voltage, between the terminals or between each terminal and earth ground.
- Limit operation to the specified measurement category, voltage, or amperage ratings.
- Use Product-approved measurement category (CAT), voltage, and amperage rated accessories (probes, test leads, and adapters) for all measurements.
- Measure a known voltage first to make sure that the Product operates correctly.
- Use the correct terminals, function, and range for measurements.
- Do not touch voltages > 30 V ac rms, 42 V ac peak, or 60 V dc.
- Do not use the Product around explosive gas, vapor, or in damp or wet environments.
- Do not use the Product if it is damaged.
- Disable the Product if it is damaged, by removing the power cord and fuses.
- Do not use the Product if it operates incorrectly.
- Examine the case before you use the Product. Look for cracks or missing plastic. Carefully look at the insulation around the terminals.

- **Do not use test leads if they are damaged. Examine the test leads for damaged insulation, exposed metal, or if the wear indicator shows. Check test lead continuity.**
- **Use this Product indoors only.**
- **Do not use an extension cord or adapter plug.**
- **Do not touch exposed metal on banana plugs, they can have voltages that could cause death.**
- **Remove circuit power before you connect the Product in the circuit when you measure current. Connect the Product in series with the circuit.**
- **Connect an approved three-conductor mains power cord to a grounded power outlet.**
- **Do not put the Product where access to the mains power cord is blocked.**
- **Do not put metal objects into connectors.**
- **Remove the null post adapter from the test receptacle after a test lead zero is performed. The test receptacle becomes potentially hazardous during some of the test conditions.**
- **Remove the mains power cord. Stop for two minutes to let the power assemblies discharge before you open the fuse door.**
- **Replace a blown fuse with exact replacement only for continued protection against arc flash.**
- **Do not operate the Product with covers removed or the case open. Hazardous voltage exposure is possible.**
- **Disconnect the mains power cord before you remove the Product covers.**
- **Remove the input signals before you clean the Product.**
- **Use only specified replacement parts.**
- **Use only specified replacement fuses.**
- **Have an approved technician repair the Product.**

- **Use only the mains power cord and connector approved for the voltage and plug configuration in your country and rated for the Product.**
- **Make sure the ground conductor in the mains power cord is connected to a protective earth ground. Disruption of the protective earth could put voltage on the chassis that could cause death.**
- **Replace the mains power cord if the insulation is damaged or if the insulation shows signs of wear.**
- **Connect the common test lead before the live test lead and remove the live test lead before the common test lead.**
- **Keep fingers behind the finger guards on the probes.**
- **Do not use test leads if they are damaged. Examine the test leads for damaged insulation and measure a known voltage.**
- **Do not use a current measurement as an indication that a circuit is safe to touch. A voltage measurement is necessary to know if a circuit is hazardous.**
- **Do not clean the Product plugged into mains or attached to a DUT.**

## Specifications

### 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

### Power

115 Volt power outlet .....	90 V ac rms to 132 V ac rms, 47 Hz to 63 Hz, 20 A maximum
230 Volt power outlet .....	180 V ac rms to 264 V ac rms, 47 Hz to 63 Hz, 16 A maximum
Power input .....	115 V 20 A - 2.6 kVA and 230V at 16 A - 4.2 kVA

**Weight** ..... 0.7 kg (1.5 lb)

**Size** ..... 22.9 cm x 17.8 cm x 6.4 cm (9 in x  
7 in x 2.5 in)

## Detailed Specifications

Test Standard Selections ..... ANSI/AAMI ES-1/NFPA99,  
IEC 62353, and IEC 60601-1

### Mains Voltage Measurement

Range.....	90.0 V ac rms to 264.0 V ac rms
Accuracy .....	±(2 % of reading + 0.2 V)

### Earth Resistance

Modes .....	Two wire
Test Current .....	>200 mA dc
Range.....	0.000 Ω to 20.000 Ω
Accuracy .....	±(1 % of reading + 0.010 Ω)

### Equipment Current

Range.....	0.0 A ac rms to 20.0 A ac rms
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.....	≤3
Ranges.....	0.0 μA to 1999.9 μA
Accuracy	
DC to 1 kHz .....	±(1 % of reading + (1 μA, whichever is greater))
1 kHz to 100 kHz .....	±(2.5 % of reading + (1 μA, whichever is greater))
100 kHz to 1 MHz.....	±(5 % of reading + (1 μA, whichever is greater))

## Warranty and Product Support

Fluke Biomedical warrants this instrument against defects in materials and workmanship for one year from the date of original purchase OR two years if at the end of your first year you send the instrument to a Fluke Biomedical service center for calibration. You will be charged our customary fee for such calibration. During the warranty period, we will repair or at our option replace, at no charge, a product that proves to be defective, provided you return the product, shipping prepaid, to Fluke Biomedical. This warranty covers the original purchaser only and is not transferable. The warranty does not apply if the product has been damaged by accident or misuse or has been serviced or modified by anyone other than an authorized Fluke Biomedical service facility. NO OTHER WARRANTIES, SUCH AS FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSED OR IMPLIED. FLUKE SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE OR THEORY.

This warranty covers only serialized products and their accessory items that bear a distinct serial number tag. Recalibration of instruments is not covered under the warranty.

This warranty gives you specific legal rights and you may also have other rights that vary in different jurisdictions. Since some jurisdictions do not allow the exclusion or limitation of an implied warranty or of incidental or consequential damages, this limitation of liability may not apply to you. If any provision of this warranty is held invalid or unenforceable by a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision.

7/07

Fluke Biomedical  
6920 Seaway Blvd.  
Everett, WA, 98203  
U.S.A.

To find the nearest service center, go to [www.flukebiomedical.com/service](http://www.flukebiomedical.com/service) or:

In the U.S.A.:

Cleveland Calibration Lab  
Tel: 1-800-850-4608 x2564  
Email:  
[globalcal@flukebiomedical.com](mailto:globalcal@flukebiomedical.com)

Everett Calibration Lab  
Tel: 1-888-99 FLUKE  
(1-888-993-5853)  
Email: [service.status@fluke.com](mailto:service.status@fluke.com)

In Europe, Middle East, and Africa:

Eindhoven Calibration Lab  
Tel: +31-40-2675300  
Email: [ServiceDesk@fluke.com](mailto:ServiceDesk@fluke.com)

In Asia:

Everett Calibration Lab  
Tel: +425-446-6945  
Email:  
[service.international@fluke.com](mailto:service.international@fluke.com)