

Technical data

# QA-ES III Electrosurgical Analyzer



The QA-ES III Electrosurgical Analyzer simplifies testing to ensure the performance and safety of electrosurgical units. With generator output current accuracy as low as  $\pm 2.5\%$ , the QA-ES III is capable of testing all modern high power electrosurgical units.

Collect all measurements including vessel sealing, contact quality monitor (CQM), high frequency (HF) leakage and output power distribution in single or continuous mode. The QA-ES III has all hardware and software needed for complete testing, so you don't need to carry additional accessories or cables.

With all-in-one features, the QA-ES III is one of the most user-friendly electrosurgical analyzers on the market today. Additionally, Ansur test automation software allows users to create and automatically run tests, capture data, and produce easy-to-read reports.

### Key features

- Test all critical ESU functions with precise power, current, frequency, crest factor and load resistance ranges
- Collect measurements in single and continuous mode
- Automatic power distribution measurement, including power, current, peak-to-peak voltage, and crest factor
- All-in-one tool: all hardware and software necessary to complete preventive maintenance and troubleshooting is built in to the unit, eliminating the need to purchase or transport additional cables, leads, switch boxes and RECM box
- User-friendly interface: large buttons and LCD screen guide the user through test sequences
- Memory storage of up to 5,000 test records, eliminating the need to download data after the completion of each preventive maintenance or troubleshooting session
- Complies to all global standards, including ANSI/AAMI and IEC\*

\*Bipolar leakage testing performed with 200 ohm fixed load.

## Modes of operation

### Continuous operation

Continuous measurement of power, current, peak-to-peak voltage (closed load only), and crest factor.

### Single operation

Single measurement after the set delay time of the ESU output of power, current, peak-to-peak voltage (closed load only), and crest factor.

### Power distribution

Automatic measurement of power, current, peak-to-peak voltage (closed load only), and crest factor through a user-selectable load range.

### HF leakage current

Provides connections and load configurations to measure HF leakage from both grounded and isolated equipment.

### CQM

Perform “contact quality monitor” tests using the QA-ES internal loads.

## Specifications

Physical	
Housing	Metal case
Size (HxWxL)	14.5 cm x 35 cm x 47 cm (5.75 in x 13.75 in x 18.5 in)
Weight	7.5 kg (16.5 lbs)
Power	
Power Requirements	100 V ac, 115 V ac, 230 V ac, 50 Hz / 60 Hz, universal input 100 V/115 V: 20 VA 230 V: 30 VA
User interface	
LCD	Monochrome 240 pixels x 64 pixels, 8 lines x 40 characters, white LED backlight
Keys	6 (1 fixed, 5 soft-defined) and rotary selector knob
Environmental specifications	
Operating temperature	10 °C to 40 °C (50 °F to 104 °F)
Storage temperature	-20 °C to 60 °C (-4 °F to 140 °F)
Humidity	10 % to 90 % non-condensing
Altitude	2000 m maximum
IP rating	IEC60529:IP20
Electromagnetic Compatibility (EMC)	
IEC 61326-1: Basic Emissions Classification	IEC CISPR11: 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
USA (FCC)	Intentional Radiators: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. (15.19) Changes or modifications not expressly approved by Fluke could void the user’s authority to operate the equipment. (15.21)

## Specifications (continued)

Safety	
IEC 61010-1	Overtoltage category II, pollution degree 2
IEC 61010-2-030	Measurement 5,000 V
Wireless module listing	
FCC (United States) compliant (Class A)	FCC ID: X3ZBTMOD3
IC (Industry Canada) compliant	IC: 8828A-MOD3
CE (European) certified	CE0051
Measurements and tests specifications	
Measures	Cut and coag waveforms, monopolar and bipolar outputs
Power and current measurements	True-rms
Bandwidth	30 Hz to 3MHz at -3 dB including loads
Delay time for single measurements	0.2 seconds to 4.0 seconds from Foot Switch activation to start of measurement
Duty cycle	
Variable load	10 seconds on, 30 seconds off, at 100 W, all loads
Fixed 200 $\Omega$ load	10 seconds on, 30 seconds off, at 400 W
Generator output measurements	
Load resistance	
Variable	0 $\Omega$ , 10 $\Omega$ , 20 $\Omega$ , 25 $\Omega$ to 2500 $\Omega$ (by 25 $\Omega$ ), 2500 $\Omega$ to 5200 $\Omega$ (by 100 $\Omega$ )
DC Accuracy	$\pm 2.5\%$
Power	
Ranges	0.0 W to 99.9 W 100 W to 500 W
Accuracy	< 50 W: $\pm (6.25\% + 1\text{ W})$ $\geq 50\text{ W}$ : $\pm 6.25\%$
Maximum: At 25 % duty cycle (10 seconds on, 30 seconds off)	10 $\Omega$ : 300 W, 20 $\Omega$ to 2900 $\Omega$ : 400 W, 3000 $\Omega$ to 5200 $\Omega$ : 200 W
At 10 % duty cycle (5 seconds on, 45 seconds off)	10 $\Omega$ : 300 W, 20 $\Omega$ to 2400 $\Omega$ : 500 W, 2425 $\Omega$ to 2900 $\Omega$ : 400 W, 3000 $\Omega$ to 5200 $\Omega$ : 200 W
Current	
RMS	0 mA to 5,500 mA
Accuracy	< 50 mA: $\pm (3.5\% + 1\text{ mA})$ $\geq 50\text{ mA}$ : $\pm (2.5\% + 1\text{ mA})$
Voltage	
Peak	10 kV Peak to Peak
Accuracy	$\pm (10\% \text{ of reading} + 50\text{ V})$
Crest factor	1.4 to 16.0 Defined as the ratio of Peak voltage to RMS voltage ( $V_{pk} / V_{rms}$ ), using the larger of the 2 peaks (positive or negative)
Vessel sealing measurement	
Loop current, RMS	0 mA to 5500 mA
Accuracy	< 50 mA: $\pm (3.5\% + 1\text{ mA})$ $\geq 50\text{ mA}$ : $\pm (2.5\% + 1\text{ mA})$

## Specifications (continued)

HF leakage current	
Fixed load	200 Ω
V Accuracy	±2.5 %
Power rating	400 W
Additional fixed load	200 Ω
Current, RMS	0 mA to 5500 mA
Accuracy	< 50 mA: +/- (3.5 % + 1 mA) ≥ 50 mA: +/- (2.5 % + 1 mA)
CQM test (Contact Quality Monitor)	
Resistances	0 Ω to 475 Ω (by 1 Ω)
Accuracy	0 Ω to 10 Ω ±0.5 Ω, 11 Ω and above ±5 %
Power rating	0.5 W
Auto time interval	1 to 5 seconds
Oscilloscope Output	
1 V per ampere of input current, typical	
Footswitch simulations	
Cut and Coag	
Communications	
USB device port	Micro B connector, full speed
Memory	
Test records	5,000
Non-volatile	retained through power cycling
Calibration	
Recommended cycle	Traceable to the International System of Units (SI) through the appropriate National Metrology Institutes such as NIST or through intrinsic standards.

## Ordering information

Part number	Model	Description
4632363	QA-ES MK III-06	QA-ES MK III Electrosurgery analyzer, US, non-wireless
4632374	QA-ES MK III-07	QA-ES MK III Electrosurgery analyzer, SCHUKO, non-wireless
4632388	QA-ES MK III-08	QA-ES MK III Electrosurgery analyzer, UK, non-wireless
4632395	QA-ES MK III-09	QA-ES MK III Electrosurgery analyzer, Japan, non-wireless
4632407	QA-ES MK III-10	QA-ES MK III Electrosurgery analyzer, Australia, non-wireless
4632418	QA-ES MK III-11	QA-ES MK III Electrosurgery analyzer, Brazil, non-wireless
4634405	QA-ES MK III-13	QA-ES MK III Electrosurgery analyzer, Brazil, 230, non-wireless
4680841	TA-QA-ES MK III 06	QA-ES MK III Electrosurgery analyzer, US, non-wireless with Ansur Automation Software
4680852	TA-QA-ES MK III 07	QA-ES MK III Electrosurgery analyzer, SCHUKO, non-wireless with Ansur Automation Software
4680865	TA-QA-ES MK III 08	QA-ES MK III Electrosurgery analyzer, UK, non-wireless with Ansur Automation Software
4680876	TA-QA-ES MK III 09	QA-ES MK III Electrosurgery analyzer, Japan, non-wireless with Ansur Automation Software
4680883	TA-QA-ES MK III 10	QA-ES MK III Electrosurgery analyzer, Australia, non-wireless with Ansur Automation Software

## Ordering information (continued)

Part number	Model	Description
4680890	TA-QA-ES MK III 11	QA-ES MK III Electrosurgery analyzer, Brazil, non-wireless with Ansur Automation Software
4680911	TA-QA-ES MK III 13	QA-ES MK III Electrosurgery analyzer, Brazil, 230, non-wireless with Ansur Automation Software

### Standard Accessories

Part number	Model	Description
4635167	ESU disp. lead	ESU dispersive safety lead
4635171	ESU CQM lead	ESU CQM safety lead
4635180	ESU safety lead	Safety retractable lead, 40 inch, blue
4635198	ESU safety lead	Safety retractable lead, 40 inch, yellow
4635209	ESU safety lead	Safety retractable lead, 40 inch, green
4635211	ESU safety lead	Safety retractable lead, 20 inch, black
4635227	ESU safety lead	Safety retractable lead, 20 inch, red
4635230	ESU safety lead	Safety retractable lead, 40 inch, black
1610159	ESU alligator clip	AC285 large alligator clips, black, red
2772209	ESU safety lead	Jumper safety lead
2772159	ESU safety lead	Safety retractable lead, 40 inch, black, red (2)
4114833	ESU USB cable	Micro USB cable, 2 m
4605232	Test lead	Multi-stacking 4mm banana plug patch cord, 2 m
4635253	ESU RECM lead	RECM alarm disabling lead
4635266	ESU Bipolar lead	Bipolar activation lead

### Optional Accessories

Part number	Model	Description
4635248	ESU disp. lead	International dispersive lead (1/4 inch phono plug)
1909216	Test probe set	0.080 brass tip
4704312	Ansur QA-ES MKIII	QA-ES MK III Plug-In license

## 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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2/2023 6005151f-en

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