

QA-ES III Electrosurgical Analyzer

Technical Data



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, and wireless functionality*, 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
- Connect wirelessly via Bluetooth for easy record retrieval without interference or limitation by cables and wires*
- 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

*Wireless capabilities not available in all countries. Ask your regional sales professional for more details.



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

RF 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 nondo-mestic 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 follow-ing 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 | Overvoltage 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 5 MHz 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 Ω load | 10 seconds on, 30 seconds off, at 400 W |
| Generator output measurements | |
| Load resistance | |
| Variable | 0 Ω , 10 Ω , 20 Ω , 25 Ω to 2500 Ω (by 25 Ω), 2500 Ω to 5200 Ω (by 100 Ω) |
| Accuracy | $\pm 2.5\%$ |
| Power (0 W to 9.90 W $\pm 5\%$ + 1W, 10 W to 500 W $\pm 5\%$) | |
| Maximum: At 25 % duty cycle (10 seconds on, 30 seconds off) | 10 Ω : 300 W, 20 Ω to 2900 Ω : 400 W, 3000 Ω to 5200 Ω : 200 W |
| At 10 % duty cycle (5 seconds on, 45 seconds off) | 10 Ω : 300 W, 20 Ω to 2400 Ω : 500 W, 2425 Ω to 2900 Ω : 400 W, 3000 Ω to 5200 Ω : 200 W |
| Current | |
| RMS | 0 mA to 5,500 mA |
| Accuracy | $\pm (2.5\% \text{ of reading} + 1 \text{ mA})$ |
| 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 | $\pm (2.5\% \text{ of reading} + 1 \text{ mA})$ |

Specifications (continued)

| HF leakage current | |
|--|--|
| Fixed load | 200 Ω |
| V Accuracy | $\pm 2.5\%$ |
| Power rating | 400 W |
| Additional fixed load | 200 Ω |
| Current, RMS | 0 mA to 5500 mA |
| Accuracy | $\pm (2.5\% \text{ of reading} + 1 \text{ mA})$ |
| CQM test (Contact Quality Monitor) | |
| Resistances | 0 Ω to 475 Ω (by 1 Ω) |
| Accuracy | 0 Ω to 10 Ω $\pm 0.5\%$, 11 Ω and above $\pm 5\%$ |
| 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 |
| Wireless port | 802.15, Speed: 115,200 baud |
| 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 |
|-------------|-----------------|--|
| 4502257 | QA-ES MK III | QA-ES MK III Electrosurgery analyzer, US |
| 4530503 | QA-ES MK III-01 | QA-ES MK III Electrosurgery analyzer, SCHUKO |
| 4530515 | QA-ES MK III-02 | QA-ES MK III Electrosurgery analyzer, UK |
| 4530526 | QA-ES MK III-03 | QA-ES MK III Electrosurgery analyzer, Japan |
| 4530532 | QA-ES MK III-04 | QA-ES MK III Electrosurgery analyzer, Australia |
| 4530544 | QA-ES MK III-05 | QA-ES MK III Electrosurgery analyzer, Brazil |
| 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 |
| 4634398 | QA-ES MK III-12 | QA-ES MK III Electrosurgery analyzer, Brazil, 230 |
| 4634405 | QA-ES MK III-13 | QA-ES MK III Electrosurgery analyzer, Brazil, 230, non-wireless |
| 4680301 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, US, with Ansur Automation Software |
| 4680644 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, SCHUKO, with Ansur Automation Software |
| 4680807 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, UK, with Ansur Automation Software |

Ordering information (continued)

| | | |
|---------|-----------------|--|
| 4680818 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, Japan, with Ansur Automation Software |
| 4680829 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, Australia, with Ansur Automation Software |
| 4680834 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, Brazil, with Ansur Automation Software |
| 4680841 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, US, non-wireless with Ansur Automation Software |
| 4680852 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, SCHUKO, non-wireless with Ansur Automation Software |
| 4680865 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, UK, non-wireless with Ansur Automation Software |
| 4680876 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, Japan, non-wireless with Ansur Automation Software |
| 4680883 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, Australia, non-wireless with Ansur Automation Software |
| 4680890 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, Brazil, non-wireless with Ansur Automation Software |
| 4680909 | TA-QA-ES MK III | QA-ES MK III Electrosurgery analyzer, Brazil, 230, with Ansur Automation Software |
| 4680911 | TA-QA-ES MK III | 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.

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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