

# RF303<sub>RS</sub> Electrosurgery Analyzer



## Technical Data

RF303<sub>RS</sub> Electrosurgery Analyzer provides enough user-selectable test loads to do routine maintenance checks on most electrosurgery units on the market today. Compact and portable, the device is so simple to use that technicians can become proficient with the RF303<sub>RS</sub> within minutes.

The unit measures ESU output and high-frequency leakage, allows for verification tests on the return electrode contact quality monitors, and has an oscilloscope output for waveform viewing. Instantaneous output or selectable sample times provide extra versatility. The instantaneous mode is sufficient for most units, but if output readings are variable and require stabilizing, the signal-averaging mode allows users to manually select two additional, slower sampling times to produce an accurate average reading.

## Key Features

- Simple configuration for easy use
- Oscilloscope output, high-frequency leakage, and return electrode contact quality monitor tests
- Instantaneous and signal-averaging measurement mode
- Ability to connect with Fluke Biomedical's medTester 5000C for automated solution
- RS232 port for computer control
- Battery powered
- 4-digit numeric LCD with backlight and power-save mode

## Technical Specifications

### Modes of Operation

Line powered, battery powered, offline (battery maintenance charge)

### Test Parameters

Power (W), HF current (mA), test load ( $\Omega$ )

### Tests Performed

#### Generator Output

HF leakage (Performs to IEC 601 2-2, 1289-2, ANSI/AAMI standards)

Type BF Test 1: Earth-referenced monopolar output

Type BF Test 2: Earth-referenced monopolar output

Type CF/Bipolar: Isolated monopolar or bipolar output

#### Current Measurement (Leakage)

Range: 30 mA to 2500 mA RMS

Resolution: 1 mA

Accuracy:  $\pm 2.5\%$  of reading or  $\pm 15$  mA (whichever is greater)

#### Power Measurement (Output)

Range: 1 W to 400 W

Resolution: 0.1 W

Accuracy:  $\pm 5\%$  of reading or  $\pm 3$  W (whichever is greater)

#### Bandwidth of RMS Converter Circuit (1 % Accuracy)

Flat Response: 10 kHz to 10 MHz

-3 dB points: 1 kHz to 20 MHz

#### Frequency Response

System Response: -3 dB points, 1 kHz to 10 MHz at 300  $\Omega$

#### CQM Test

50  $\Omega$  to 750  $\Omega$ , 50- $\Omega$  steps

#### Test Load Section

Number of selections: 15

Range: 50  $\Omega$  to 750  $\Omega$

Step Size: 50  $\Omega$

Accuracy (DC to 500 KHz):  $\pm 4\%$  of selected value measured at calibration to  $\pm 1\%$

(across the entire operating temperature range)

Duty Cycle: 50 % @ 400 W (max 30 sec ON during any 1-minute period)

Resonance Impedance Variation:  $\pm 0.5$  dB max (< 10 MHz)

#### Auxiliary Leakage Test Load

Fixed: 200  $\Omega$

Accuracy:  $\pm 4\%$

Power Rating: 225 W

#### Input Capacitance (Nominal)

Active to Dispersive: 30 pF

Active or Dispersive to Earth Ground: 40 pF

#### Oscilloscope Output

Transformer coupled output, uncalibrated

Connector Type: BNC

#### Battery

Type: Sealed lead-acid

Time Between Recharge: 2 hours

(continuous use)

Time to Full Charge: 8 hrs

Number of Cycles: 200

Capacity: 2.2 A H

Field Serviceable: No

Recharging: Internal, automatic charger; power cord required.

#### Front-Panel Controls/Push buttons

Measurement select (1)

Load Select: Increment test load (+) one step; decrement test load (-) one step

#### Top-Panel Input Connections

##### Designations:

- Generator output-active (1)
- Generator output-dispersive (2)
- Signal earth/ground reference (2)
- Auxiliary HF leakage load (2)

Connector Type: 4 mm (0.16 in.) diameter safety sockets

Input Voltage Limit: 10,000 V peak

Input Current Limit: 3 A RMS

Installation Category: II

#### Side Input Connection

Designation: Signal reference

#### Calibration Period

Recommended Calibration: Every 12 months

#### Power Requirements

Universal input switching supply (12 VDC output)

Operating Voltages:

- Specified: 115 VAC/230 VAC
- Max Range: 83 VAC to 264 VAC

Operating Frequencies:

- Specified: 50 Hz / 60Hz
- Max Range: 47 Hz to 63 Hz

Maximum Input Requirement: 60 VA

Fusing External (User-Replaceable):

- Quantity: 2; 250 V, 3.15 A, Type F, L1 and L2

#### Temperature

Operating: 59 °F to 95 °F (15 °C to 35 °C)

Storage: 32 °F to 122 °F (0 °C to 50 °C)

#### Humidity range

90 % non-condensing

#### Altitude

to 6,562 ft (2,000 meters)

#### Ventilation

Internal fan with variable speed control; over-temperature detector; magnetic tachometer sensor to detect blocked fan rotor

#### Display

LCD, 7-segment, 4 full digits, 2 in x 0.75 in

#### Case Construction

High-impact plastic, UL94-V0

#### Dimensions

11.5 in L x 13.25 in W x 6 in H (29.2 cm x 33.7 cm x 15.2 cm)

#### Weight

14.2 lb (5.6 kg)

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## Ordering Information

### Model

2251504: ESU303RS-US120V

2394461: ESU303RS-AUS250V

2394477: ESU303RS-DEN250V

2394489: ESU303RS-SHK250V

2394492: ESU303RS-ISR250V

2394509: ESU303RS-ITAL250V

2394511: ESU303RS-IND250V

2394527: ESU303RS-SWZ250V

2394530: ESU303RS-UK250V

### Standard accessories

2202027: User/service manual

2202009: Accessory kit

### Accessory kit includes the following

2200904: Active safety lead

2200872: ESU dispersive safety lead

2200860: ESU CQM safety lead

2200885: ESU case safety lead

2200897: ESU jumper safety leads (2)

2196071: Active safety clip yellow

2196080: Case safety clip green

2183792: Fuses (2) 5X20 F3.15A 250V CE

2242165: Ground pin adapter

Detachable power cord (country specific)

### Optional accessories

2248587: Multipurpose hard-sided, watertight carrying case

2204472: Serial cable for D9F-D9F

2238659: Interface cable, medTester to RF303RS (RS232; male DB9 to female DB9; adapter required, p/n 2391789)

2391789: Adapter for interface cable, medTester to RF303RS (male DB9 to female DB25; used with interface cable, p/n 2238659)

## Fluke Biomedical.

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### 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.

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 device manufacturer, we recognize and follow certain quality standards and certifications when developing our products. We are ISO 9001 certified and our products are:

- FDA Compliant
- CE Certified, where required
- NIST Traceable and Calibrated
- UL, CSA, ETL Certified, where required