

266 Plus Electrical Medical Safety Analyser



Technical Data Sheet 2009

Tried. Tested. Trusted.



A compact, easy-to-use electrical medical safety analyser designed to test in accordance with IEC/EN 60601-1, MDA DB9801, and AS/NZ 3200.

The Rigel 266 plus electrical medical safety analyser, when used in the Semi Automatic mode, will automatically run through the applicable Single Fault Conditions for each individual Leakage Test.

In addition to the semi-automatic test, the Rigel 266 plus provides fully manual test routines. Test routines are easily selectable via the rotary selector switch and dedicated push buttons are provided for setting individual Single Fault Conditions.

A large LCD display provides clear indication of test results, Single Fault Condition, AC or DC measurements and pass/fail limits.

IEC test leads are easily tested with the dedicated IEC lead test socket. A serial output allows for data transfer to printer or PC.

With its compact design and full IEC 60601-1 features, the Rigel 266 plus provides the user with a highly effective and portable test solutions.

Semi Automatic or Fully Manual?

Conventional safety testing on medical equipment can often result in a number of power breaks caused by the various test conditions set by local or international standards.

Power breaks are not always without

danger to the equipment under test, for example PC based equipment / systems or imaging equipment such as ultrasound.

By using the Rigel 266 plus in full manual mode, the user is not only in control of when the power breaks occurs, the user can also limit the number of power breaks to a minimum of just two when testing in full compliance with IEC 60601-1.

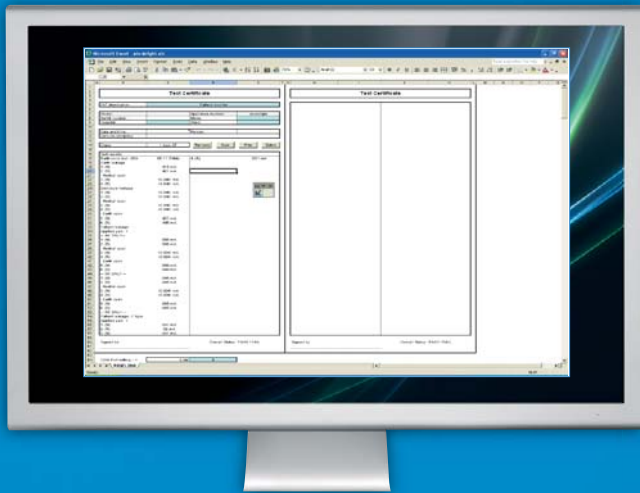
Dedicated buttons provide an easy means of selecting the required fault condition or mains reversal.

The semi-automatic mode automatically activates each single fault condition in a logic sequence for each individual leakage setting, thus speeding up your test routine when testing most common medical and non medical devices.

Key features

- **Portable & Lightweight**
Small and lightweight design for easy transportation and fast operation
- **Full IEC 60601 Leakage Tests**
Earth, Enclosure, Patient, Patient Auxiliary, F-type and SIP/SOP leakage tests
- **Up to 25A AC Test Current**
Unique choice of 1A, 10A and 25A test current
- **Large LCD Display**
Fast and Easy interpretation of test results, PASS/FAIL limits, test condition and more
- **Separate AC & DC Values**
Measures both the AC and DC leakage as per IEC 60601-1 requirements
- **Full Manual Control**
Fast and Accurate control and Safety Tests
- **Insulation Test**
On device under test or applied parts to earth
- **5 Patient Connections**
Provide an easy and fast way of testing medical electronic equipment with patient connections
- **Dedicated IEC Lead Test**
For easy testing of IEC power cables

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Preset Test Limits in the Rigel 266 plus

	TYPE B		TYPE BF		TYPE CF	
Leakage Current	NC	SFC	NC	SFC	NC	SFC
Earth	500µA	1000µA	500µA	1000µA	500µA	1000µA
Enclosure	100µA	500µA	100µA	500µA	100µA	500µA
Patient (dc)	10µA	50µA	10µA	50µA	10µA	50µA
Patient (ac)	100µA	500µA	100µA	500µA	10µA	50µA
Patient Auxiliary (dc)	10µA	50µA	10µA	50µA	10µA	50µA
Patient Auxiliary (ac)	100µA	500µA	100µA	500µA	10µA	50µA
SIP / SOP	5000µA		NA		NA	
F-Type	NA		5000µA		50µA	

Table T1; IEC 60601-1 limits for equipment designed to IEC 60601

Rigel 266 plus Design Philosophy

The Rigel 266 plus was designed to address the increasing demand for smaller test equipment in the healthcare industry. The challenge was not to compromise the full IEC 60601-1 leakage measurements and flexibility in test currents up to 25A.

Most available menu driven or switch operated safety testers are cumbersome in use and for this reason, great attention was given to providing an easy and fast means of operating the Rigel 266. A large rotary switch and LCD display give the

Rigel 266 plus its unique identity. After more than 9 years, the Rigel 266 plus has become an industry standard and is widely considered as the easiest and fastest IEC60601 tester currently on the market.

Applications

In-service Safety Testing of:

patient monitors, infusion pumps, hospital beds, X-ray and ultrasound equipment, video equipment, PC based medical systems, defibrillators and many other medical and non-medical electrical equipment and systems.

Fast & Efficient Testing of IEC leads

Earth bond testing on (medical) installations and non-medical equipment

Portable Appliance Testing

What comes in the box?

- Calibration Certificate
- Earthbond Test Lead + Clip
- Applied Part Harness
- 5 x Applied Part Adaptor
- Instruction Manual
- Rugged Carrying Case

SPECIFICATIONS

AC Earth Bond Test

Open Test Voltage	6V rms nominal
Test Current	1A, 10A, 25A AC
Range	40mohms – 19.99ohms
Resolution	0.01ohms
Accuracy	+/- 5% of reading, +/- 2 counts
Measurement	4-wire measurement, floating earth

Insulation Test

Test Voltage	500V d.c. nominal (0.5Mohms load)
Range	100kohms - 100 Mohms
Resolution	0.01 Mohms (<100 Mohms)
Accuracy	+/- 5% of reading, +/- 2 counts (100kohms - 20Mohms)

All Leakage Tests

Input Impedance	>1Mohm
Frequency Response	as per IEC 60601-1 requirements
Accuracy	+/- 5% of reading, +/- 10 counts

Range

Earth Leakage	0.04mA – 9.999mA
Enclosure Leakage	0.04mA – 9.999mA
Patient Leakage	0.004mA – 9.999mA
Patient Auxiliary Leakage	0.004mA – 9.999mA
Patient SIP / SOP Leakage	0.04mA – 9.999mA
Patient F-Type Leakage	0.025mA – 9.999mA
F-Type Open Circuit Voltage	110% +/-20% of Mains Input Voltage

Load Test

Measured Load	0.06 - 4kVA
Measured Voltage	Mains Supply +/-10%

IEC Lead Test

Test	40V a.c., 1mA nominal
Detects	Good, Open, Short, Reverse

Mechanical

Size	310mm x 210mm x 80mm
Weight	4kg

Environmental

Operating	0°C to 40°C (non condensing)
Storage	-10°C to 50°C (non condensing)
Maximum R.H	90%

Part number: 350A910	UK (13A)
350A913	Schuko (16A)
350A915	Danish (10A)
350A917	French (16A)
350A918	Czech / Polish (16A)

Also available

Accessories:

- Mini Thermal Printer
- Rubber Holster
- PASS / FAIL Labels
- ASSET ID Labels
- Rigel 601 Checkbox

From Rigel Medical

- Rigel 277 Plus Automatic Safety Analyser
- Rigel 288 Plus Hand-held Safety Analyser
- Rigel 601 Checkbox
- Rigel BP-Sim NIBP Simulator
- Rigel SP-Sim SpO2 Simulator
- Rigel 333 Patient Simulator
- Rigel 344 Defibrillator Tester
- Rigel 355 Ventilator Tester
- Rigel 377 Electrosurgical Analyser
- Med-eBase – Software Application

From the Seaward Group

- Portable Appliance Testers
- IEC Lead Tester
- Insulation Resistance Testers
- RCD Testers
- Earth Loop Impedance Testers
- Installation Testers
- Multimeters
- Current Clamps
- Hipot Testers
- Earthbond Testers
- Micro Ohmmeters

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