

RIGEL 277 PLUS

Electrical Medical Safety Analyser



The new Rigel 277 plus is a portable electrical medical safety analyser combining IEC/EN 60601-1 compliance with additional test facilities for IEC/EN 61010 (Laboratory Equipment) including Touch Leakage, Voltage Measurement and dedicated IEC 61010 Measuring Device (Body Model). In addition, test routines are preset for MDA DB9801 and VDE 0751. Customised test routines can be created to group Applied Parts, measure multi class Medical Equipment in one single test routine (eg Defibrillators Bf/Cf), meet local standards and variants of safety test standards such as EN60601-2-4, AS/NZ 3200 and previous editions of IEC / EN 60601 standards.

The Rigel 277 plus performs manual, automatic and semi automatic test routines allowing full control of power up and power down delay times. The combination of a full graphics display, large internal memory and integral QWERTY- keyboard provides a complete stand alone test system to prove the electrical safety of both medical and laboratory equipment.

The Rigel 277 plus is designed to increase the efficiency of test routines and to reduce the overall test time.

Key Features

■ Full IEC 60601 Leakage Tests

Earth, Enclosure, Patient, Patient Auxiliary and F-type leakage tests

■ Full IEC 61010 Leakage Tests

Earth and Touch leakage tests via dedicated Measuring device

■ Up to 25A AC Test Current

Unique choice of 100mA, 1A, 10A or 25A Regulated Test Current

■ Multi Class Applied Part

Single Test Routines for Equipment with both BF & CF Applied Parts

■ Large Graphic LCD

Fast and Easy interpretation of test results, PASS/FAIL limits, test condition and more

■ Automatic & Manual Control

Fast and Accurate control of Safety Tests when most required

■ Integral QWERTY Keyboard

For easy and fast data entry

■ On-board Database System

Stores test results and sequences of over 2500 Medical Devices

■ Built-in Printer

For easy printing of test results, PASS / FAIL labels and summary

■ 11 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

Applications

Electrical Safety testing During:

Pre-compliance & R&D
Type Testing
End of Production Line testing
In-Service Safety Testing
Preventive Product Maintenance (PPM)

Of Portable and Fixed Wired:

Medical, Non-Medical & Laboratory Electronic Equipment



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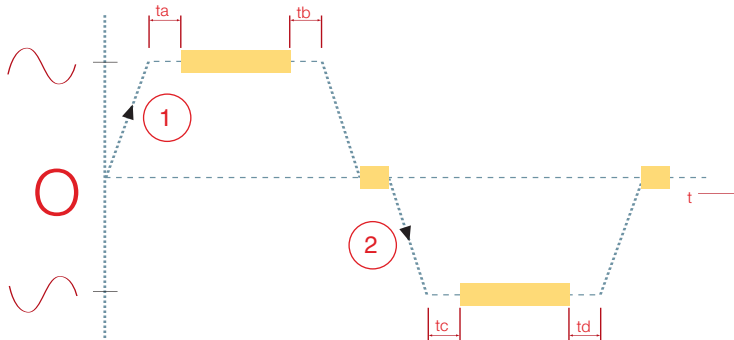
Semi Automatic Mode Explained.

When testing Medical Devices, it is important that measurements are taken once the Device Under Test (DUT) is fully operational as required by the IEC 60601-1 and subsequent standards. To ensure measurements are taken during this condition, the safety analyser must first power-up the DUT and delay the measurements until the right conditions are met.

The Rigel 277 plus has a unique Semi Automatic Mode that allows manual control of power-up and power-down of the DUT as well as controlling the automatic test sequence. This ensures that correct measurements are performed and provide sufficient time to power-down any device which is sensitive to power-breaks e.g. Ultrasound Equipment and PC based ME Equipment.

By grouping the Single Fault Conditions, the DUT is only powered-up twice and will significantly reduce test times on equipment with a long start-up time such as Dialyse and Imaging Equipment.

Below is a graph highlighting the Grouping of Single Fault Conditions (in Yellow) and the delays which are manually controlled by the User (t_a , t_b , t_c & t_d) and the time in which the safety analyser performs the automatic test routines.



Rigel 277 plus Design Philosophy

The Rigel 277 plus is designed to provide the Industry with a full IEC 60601-1 compliant International Leakage Tester combined with full 25A regulated Earth Bond Test Current to meet the most demanding test environments and requirements yet not compromising the portability of such tester. The outset of the design was to make sure such tester would not rely on any external PC control to ensure its portability would be guaranteed in practise.

The enclosure used on the Rigel 277 plus was designed by the Seaward Group as part of a Navy Contract who required a rugged portable tester with small footprint to test in confined spaces but with full Integrated Electronics, Keyboard and Data Storage Capability.

The design of the Rigel 277 plus won several awards for its functionality and innovation. Today over 11,000 testers have been manufactured using this design, a true Industry standard.

Today, the Rigel 277 plus remains one of the few Electrical Medical Safety Analysers able to fully meet the test requirements as described in the IEC 60601-1 standard. Its portable design is favoured by Users demanding full portability and ease of use.

Also Available from Rigel Medical:

- Rigel 266 Plus Manual Safety Analyser
- Rigel 288 Plus Hand-held Safety Analyser
- Rigel 601 Calibration Checkbox
- Rigel 311 NIBP Simulator
- Rigel 322 SPO2 Simulator
- Rigel 333 Patient Simulator
- Rigel 344 Defibrillator Tester
- Rigel 355 Ventilator Tester
- MediGuard – Software Application

Also Available 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 Ohm meters

To find out more about these products, please

email sales@rigelmedical.com,

call +44(0)191 5878730 or visit

www.rigelmedical.com



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MEDIGUARD – Medical Appliance Testing Software

Each Rigel 277 plus is supplied with a 30 day trial version of our Mediguard Medical Appliance Testing software.

Test Software has never been easier to use due to MEDIGuard's unique presentational program layout and extensive schematic display. MEDIGuard allows automatic creation of a powerful device database direct from the downloaded data of the Rigel 277 plus.

The database enables a full historical record of testing to be maintained including acceptance tests and routine maintenance tests, as well as full device details such as manufacturer, model, serial number, purchase and warranty details and electrical information.

Retesting schedules for PPM testing can easily be created to ensure full compliance to safety procedures and plan workloads. Information about devices can also be reported by a number of different filters including device ID number, site, location or test date range.

The drag and drop action within the software also allows for easy relocation of assets from one location to another as in accordance with the movement of appliances.

HAVE YOU GOT BRAINCELLS?

The innovative new BRAINCELL technology uses 'smart' RF data tags to store test information and ensure that a test data record stays with an appliance throughout its lifetime.

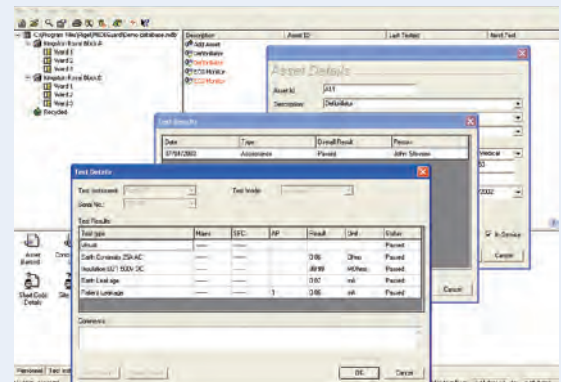
The new BRAINCELL Smart Tag Technology works with the Rigel 277 plus and extends the concept of conventional barcode labels. Simply scan the BRAINCELL using the read / write module and start testing without the need of entering any further data.

Thanks to the RFID technology, the BRAINCELL does not rely on line of sight and can therefore be placed within the Medical Device to ensure the information is kept safely for future reference.

The BRAINCELL is two-way programmable and has the capacity to store test data transmitted back onto the tag directly from the Rigel 277 plus. As a result, test data can be easily updated after each test routine.

Features:

- Network compatible
- Comprehensive acceptance record linked to test record
- Unique presentational layout
- Creates complete record system automatically from download
- Test schedule to plan re-tests



The BRAINCELL can store:

- Asset ID Number
- Asset Description, Make, Model & Serial Number
- Test Class & Program
- Location and Site information
- Previous Test Data
- Applied Part Configuration



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RIGEL 277 PLUS SPECIFICATIONS

AC Earth Bond Test

Test Current	100mA, 1A, 10A, 25A
Current Source	Regulated
Open Test Voltage	6V rms nominal
Range	0.01ohms - 19.99ohms / 0.01ohms counts
Accuracy	± 5% of reading, ± 2 counts
Measurement	4-wire, floating earth

Insulation Test

Test Voltage	350 / 500V d.c. nominal
Auto Ranging	100kohms - 20 Mohms (L) / 0.01Mohms counts 20Mohms - 100Mohms (H) / 0.01Mohms counts
Accuracy	± 5% of reading, ± 2 counts (L) ±10% of reading, ± 2 counts (H)
Open Circuit Voltage	<750VDC

IEC 60601 Leakage Test

Supply Voltage	Incoming mains (230/110VAC)
F-Type Open Circuit Voltage	110% +/-20% of Mains Input Voltage
Maximum Load	16A (13A for UK model)
Input Impedance	1Kohm - as per 60601 MD
Frequency Response	as per IEC 60601-1 requirements
Range	0.000mA - 9.999mA / 0.001 counts
Accuracy.	± 3% of reading, ± 4 counts

IEC 61010 Leakage Test

Supply Voltage	Incoming mains (230/110VAC)
Maximum Load	16A (13A for UK model)
Input Impedance	2Kohms - as per 61010 MD
Frequency Response	DC - 2.5kHz (as per IEC 61010)
Range	0.10mA - 3.50 mA / 0.01 counts
Accuracy.	± 3% of reading, ± 4 counts

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

General

Size	400mm x 320mm x 160 mm
Weight	appr. 9 kg
Operating	0°C to 40°C (non condensing)
Storage	-10°C to 50°C (non condensing)
Maximum R.H	90%

Benefits

Fast and Accurate Testing of Medical and Non-Medical Electronic Devices saves YOU time & money.

Portable and Stand-alone tester gives greater flexibility to the test engineer thus improving productivity.

No PC required whilst operating or controlling the Safety Analyser.

4-wire Resistance measurements eliminate lead calibration time.

Rigel 277 plus includes:

Calibration certificate
Operation manual
Earth bond lead + clip
11 Applied part adaptors
RS 232 download lead
3 rolls of Printer Paper
2 rolls of labels
MediGuard 30 day trial software

How to Order

UK / Ireland	350A910
Euro - Schuko	350A913
French	350A917
Danish	350A915
Czech / Polish	350A918
US (110V - 60Hz)	350A914
Australian	350A912

Other variants available upon request

Accessories:

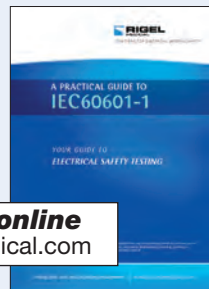
MediGuard Download Software
Carry Case
Barcode scanner
RFID scanner
BrainCell RFID Chips
Blue Tooth Converter
PASS / FAIL Labels
ASSET ID Labels
BARCODE Labels
Rigel 601 Checkbox

Shipping Information:

Packaging	Corrugated cardboard box
Weight	11.7 Kg
Size	490 * 390 * 190 mm

Related Interest

Rigel 601 Calibration Checkbox
Rigel 266+ Manual Safety Analyser
IEC 60601-1 Practical Guide



Available online
www.rigelmedical.com



WORLD LEADERS IN SAFETY TEST AND MEASUREMENT

Seaward test and measurement companies include:

CLARE
INDUSTRIAL SAFETY INSTRUMENTS

RIGEL
MEDICAL

CROPICO
PRECISION INSTRUMENTS

SEAWARD
PORTABLE ELECTRICAL SAFETY INSTRUMENTS