

# Sentinel Series

**Simple and affordable electrical safety testing for production and conformance testing environments.**

The Sentinel series of test instruments has been built to provide a cost effective, yet powerful solution to hipot testing, whether on a production line or in a laboratory environment for compliance testing purposes. With the ability to perform either 5kV AC or 6kV DC dielectric strength tests and up to 500VA AC power output the Sentinel series can aid testing to many international safety standards including IEC, EN, UL and CSA to name but a few. With many features, the Sentinel series ensures testing is performed accurately, efficiently and safely.

### Key Features

- 500 VA capability (Sentinel 500 series)
- Earth bond / insulation resistance (Sentinel 501)
- Sweep function for test analysis
- Flexible / high resolution test parameters
- Manual / automatic test modes
- Remote and PLC control
- Fast cut off and automatic discharge

### Key Users

- R&D Departments
- Compliance Laboratories
- Design Engineers
- QA Departments
- Production and Manufacturing Engineers

Sentinel	200	500	501
AC dielectric strength - 5kV	■	■	■
DC dielectric strength - 6kV	■	■	■
200VA (40mA)	■		
500VA (100mA)		■	■
Earth Bond			■
Insulation Resistance			■



### ► Sweep function (Sentinel 500 / 501)

When used in manual mode the sweep function plots measured values, current or resistance against the test time, represented as a trace graph. This allows the user to view changes in the measured parameter throughout the entire test process instead of one final value at the end of a test, perfect for research and development laboratories who want to assess the electrical safety properties of equipment over a period of time.



### ► Flexible parameters and high resolution performance

With adjustable ramp and hold times (0.1 - 999.9s) the test time can be set to appropriately rise to the correct output voltage in order to comply with international test standards and to reduce the risk of damaging the equipment under test. Highly accurate measurement characteristics such as a 2V resolution on output voltage allow for precise measurement output, and  $1\mu\text{A} \pm(1.5\% +30\mu\text{A})$  resolution for the trip current ensures that the smallest of leakage currents can be accurately measured.



### ► Automatic testing and remote control

Up to 100 test conditions can be saved and recalled for single test purposes, or for those that require sequential testing, manual test settings can be linked together to create up to 100 automatic test sequences, ensuring simple recall for repeat testing. For those looking for automation in the test area, the Sentinel series has many tools to aid this. A remote start terminal and signal I/O port allow for remote starting, safety interlocking and PLC Control. In addition, the Sentinel series is fitted with RS-232, USB and GPIB (option) to allow PC control of the test instrument and retrieval of test results.



### ► Enhanced safety features

Designed with safety in mind, the Sentinel series will automatically cut out the output voltage within  $150\mu\text{s}$  where abnormal output voltages are detected or when the upper or lower current trip limits are reached whilst under test. Furthermore, to protect the user from any potential hazard due to stored charge, the Sentinel will automatically discharge the item under test within 200ms on completion of the performed test. High intensity LEDs will alert the user when voltage is present on the test outputs.



## Technical Specifications

### Sentinel 500/501

#### AC Dielectric Strength

Programmable Voltage Range:	0.100 kV - 5.000 kV (2V/Step Resolution)
Frequency Independent of Supply:	50 or 60 Hz Selectable
Output Voltage Accuracy:	±1% + 5 Volts (No Load)
Voltage Display Resolution:	0.001kV
Current Measurement:	0.001mA - 100.0mA
Range and Accuracy:	±1.5% + 30 Counts when trip limit <1.11mA ±1.5% ± 3 Counts when trip limit >1.11mA
Current Display Resolution:	0.001mA / 0.001mA / 0.1mA
Selectable Range of Pass/Fail Levels:	0.001mA - 100.00mA
Maximum Rated Current:	100mA (0.5kV ≤ V ≤ 5kV) 10mA (0.1kV ≤ V ≤ 0.5kV)
Arc Detection:	Yes
Ramp time:	0.1 - 999.9s
Test Time:	Off / 0.5s - 999.9s

#### DC Dielectric Strength

Programmable Voltage Range:	0.100 kV - 6.000 kV (2V/Step Resolution)
Frequency Independent of Supply:	50 or 60 Hz Selectable
Output Voltage Accuracy:	±1% + 5 Volts (No Load)
Voltage Display Resolution:	0.001kV
Current Measurement:	0.001mA - 20.0mA
Range and Accuracy:	±1.5% + 30 Counts when trip limit <1.11mA ±1.5% + 3 Counts when trip limit >1.11mA
Current Display Resolution:	0.001mA / 0.001mA / 0.1mA
Selectable Range of Pass/Fail Levels:	0.001mA - 20.00mA
Maximum Rated Current:	20mA (0.5kV ≤ V ≤ 5kV) 2mA (0.1kV ≤ V ≤ 0.5kV)
Arc Detection:	Yes
Ramp time:	0.1 - 999.9s
Test Time:	Off / 0.5s - 999.9s

### Sentinel 501 Only

#### Earth Bond

Programmable Test Current:	03.00A - 32.00A ac
Test Current Resolution:	0.01A
Test Current Accuracy:	3A - 8A: (1% of rdg+0.2A), 8A - 32A: (1% of rdg+0.05A)
Test Voltage:	6V AC max (open circuit)
Test Voltage Frequency:	50Hz/60Hz selectable
Resistance Measurement Range:	10mΩ - 650.0mΩ
Resistance Measurement Resolution:	0.1mΩ
Resistance Measurement Accuracy:	(1% of rdg + 2mΩ)
Test Time:	0.5 - 999.9s

### Sentinel 501 Only

#### Insulation Resistance

Output Voltage:	50V - 1000V
Output-Voltage Resolution:	50V / Step
Output-Voltage Accuracy:	±(1% of setting +5V)[no load]
Resistance Measurement Range:	0.001GΩ - 50.00GΩ
Test Voltage:	50V - 450V
	0.001 - 0.050GΩ
	0.001 - 0.500GΩ
	0.051 - 2.000GΩ
	0.501 - 9.999GΩ
	10.00 - 50.00GΩ
Output Impedance:	Yes
RAMP (Ramp-Up Time):	600kΩ
TIMER (Test Time):	1s~999.9s

### Sentinel 200

#### AC Dielectric Strength

Programmable Voltage Range:	0.100 kV-5.000 kV (2V/Step Resolution)
Frequency Independent of Supply:	50 or 60 Hz Selectable
Output Voltage Accuracy:	±1% + 5 Volts (No Load)
Voltage Display Resolution:	0.001kV
Current Measurement:	0.001mA-40.0mA
Range and Accuracy:	±(1.5% + 30 counts) when trip limit <1.00mA ±(1.5% + 30 counts) when trip limit ≥1.00mA
Current Display Resolution:	0.001mA / 0.001mA / 0.1mA
Selectable Range of Pass/Fail Levels:	0.001mA-40.00mA
Maximum Rated Current:	40mA (0.5kV ≤ V ≤ 5kV) 10mA (0.1kV ≤ V ≤ 0.5kV)
Arc Detection:	Yes
Ramp time:	0.1 - 999.9s
Test Time:	Off / 0.5s - 999.9s

#### DC Dielectric Strength

Programmable Voltage Range:	0.100 kV-6.000 kV (2V/Step Resolution)
Frequency Independent of Supply:	50 or 60 Hz Selectable
Voltage Display Range and Accuracy:	±1% + 5 Volts (No Load)
Voltage Display Resolution:	0.001kV
Current Measurement:	0.001mA - 10.0mA
Range and Accuracy:	±(1.5% + 30 counts) when trip limit <1.00mA ±(1.5% + 30 counts) when trip limit ≥1.00mA
Current Display Resolution:	0.001mA / 0.001mA / 0.1mA
Selectable Range of Pass/Fail Levels:	0.001mA - 10.00mA
Maximum Rated Current:	10mA (0.5kV ≤ V ≤ 6kV) 2mA (0.1kV ≤ V ≤ 0.5kV)
Arc Detection:	Yes
Ramp time:	0.1 - 999.9s
Test Time:	Off / 0.5s - 999.9s

## General Specifications

### Case Dimensions and Weight

<b>Sentinel 500</b>	330W x 140H x 482D mm Approx 24kg
<b>Sentinel 501</b>	330W x 148H x 587D mm Approx 27kg
<b>Sentinel 200</b>	330W x 150H x 460D mm Approx 15kg

### Services

1 year warranty subject to product registration with Seaward, visit [www.seaward.co.uk/register-product](http://www.seaward.co.uk/register-product)

Service and Calibration by Calibrationhouse

### Standard Accessories

Instruction Manual  
Test Lead Set (High Voltage Cables x 2)  
Interlock Key  
Remote Terminal Plug  
Power Cord  
Test Lead Set (Earth Bond Cables x 2) Sentinel 501 Only

### Part Number

<b>Sentinel 500</b>	489A920
<b>Sentinel 501</b>	489A921
<b>Sentinel 200</b>	489A910

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