

# Novaris

# Surge Protection Tester



## SPT-02

### Digital Multifunction Tester

Insulation Resistance  
Continuity  
Voltmeter (AC & DC)  
MOV Tester  
Gas Discharge Tube Tester  
Diode Tester



CAUTION - RISK OF ELECTRIC SHOCK



CAUTION - READ THE MANUAL BEFORE OPERATION



## CAUTION - RISK OF ELECTRIC SHOCK

### Safety Information

The SPT-02 has been designed with safety in mind but does not guard against misuse. Exercise caution when connecting the leads to an external circuit. Never touch exposed conductors. Never use the tester during a lightning storm. Always wear appropriate protective clothing such as rubber gloves and shoes.

During Insulation, Voltage Switching and Limiting tests, high voltages are emitted from the device. Never touch the conductors during these tests. For added protection use the alligator clips provided to ensure the unit is properly connected.

Always disconnect the tester when checking the fuse or batteries. Before use, check the condition of the test leads and internal fuses. Only use 20mm 250V 500mA fuses.

**For accurate results this unit should be calibrated annually.**

### Operation

To start up the SPT-02 press the **ON** key. The unit will perform a battery test upon start up and inform the user of the current battery voltage. To power down the unit press the **OFF** key.

### Voltmeter

The voltmeter is selected by pressing the **V** key on the SPT-02. The voltmeter is an Automatic AC/DC meter with a DC range of 950V and a AC range of 750V.

### Smart Hold

The smart hold feature is enabled by pressing the **V** key when the voltmeter is enabled. The smart hold feature will hold the last value present at the leads while the unit is disconnected. This allows the operator to concentrate on the leads during inspection.

### 250V, 500V, 1kV Insulation Resistance Tests

The insulated resistance tests are enabled by pressing the respective **250V**, **500V** or **1kV** keys. The Insulation resistance tests require the circuit to be voltage free. Once the meter is connected to the circuit press the **TEST** key to begin the resistance test. The insulation resistance (IR) results are displayed on the LCD. The Dielectric Absorption Ratio (DAR) is the ratio of IR at 1 minute divided by the IR at 30 seconds. The Polarisation Index (PI) is the ratio of IR at 10 minutes divided by the IR at 1 minute. For safety the unit displays a bar graph to indicate when the unit has been discharged. To stop the test, press the **TEST** key again.

## Continuity Tests

The continuity tests are enabled by pressing the respective  $\Omega$  or  $k\Omega$  keys. The range of the  $\Omega$  test is between  $0.01\Omega$  and  $2k\Omega$  and the range of the  $k\Omega$  is between  $1\Omega$  and  $400k\Omega$ . To measure the continuity simply connect the leads to the circuit.

## Auto Null

To re-null the device's leads and fuse for continuity testing connect the leads together and press the **Auto Null** key. The result of this is stored in non-volatile memory and therefore only needs to be performed when the leads or the fuses are changed.

## Buzzer

To enable the buzzer function, press the **Buzzer** key. In this mode the unit will produce an audible tone when the resistance between the leads is less than 3 ohms. This function is helpful for circuit tracing.

## Diode Test

The diode test function is enabled by pressing the **Diode** key. This test injects a current of about 1mA into the circuit. The forward voltage is displayed on the LCD.

## Voltage Limiting Test

The voltage limiting test function is enabled by pressing the **MOV** key. This test measures the rating of voltage limiting devices such as Metal Oxide Varactors or Silicon Avalanche Diodes at a current of 1mA and a voltage up to 1020V.

To test the device, remove it from its circuit and place the leads across the mode of protection for testing. Press the **TEST** key to begin the test. The unit will increase the voltage until the leakage current of the device reaches 1mA. The 1mA rating and the maximum AC and DC operating voltage will be displayed on the LCD.

*Note: Measurements of SPDs with intact display hardware will be inaccurate due to the current required to drive the hardware.*

## Voltage Switching Test

The voltage switching test function is enabled by pressing the **GAZ** key. This test measures the rating of voltage switching devices such as Gas Discharge Tubes and Thyristor Surge Protection Devices at a current of 1mA and a voltage up to 1020V.

To test the device, remove it from its circuit and place the leads across the mode of protection for testing. Press the **TEST** key to begin the test. The unit will increase the voltage until the trigger voltage is reached. The trigger voltage and the maximum AC and DC operating voltage will be displayed on the LCD.

## Limited Warranty

We guarantee that this product is free from defective materials or production issues for 12 months and agree to repair or replace a product which is found defective during normal use. Consult this manual for instructions for correct use of this device.

This warranty does not apply to products that have been repaired or altered by unauthorised persons. The purchaser agrees to assume all liability for any damages or injury which may result from use or misuse of this device.

Product specifications may change without notice

MOV Test	
Measuring Range	5 -- 1020 V DC
Voltage Accuracy	± 3%

GDT Test	
Measuring Range	5 -- 1020 V DC
Voltage Accuracy	± 3%

Voltmeter	
DC Voltage	0 -- 950 V
AC Voltage	0 -- 700V
Resolution	1V
Voltage Accuracy	± 3%

Insulation Resistance	
Test voltage	250, 500, 1000V
Measuring Ranges	250V: 0.2MΩ -- 2GΩ 500V: 0.2MΩ -- 4GΩ 1000V: 0.2MΩ -- 8GΩ
Accuracy	0.2MΩ - 4GΩ : ± 3% 4GΩ -- 8GΩ : ± 5%
Short Circuit Current	1.2mA
Polarisation Index (PI)	on all ranges
Dialectric Absorbtion Ratio (DAR)	on all ranges

KΩ Test	
Ranges	1 -- 400kΩ
Short Circuit Test Current	≥ 1.3mA

Continuity	
Ranges	0.01 -- 100Ω 100 -- 300Ω 300 -- 1999Ω
Accuracy	0.01 -- 100Ω : ± 1.0% 100 -- 300Ω : ± 1.5% 300 -- 1999Ω : ± 2.0%
Auto Null	up to 5Ω
Buzzer	up to 3Ω

Diode Test	
Test Voltage	5V DC
Max Test Current	1.5 mA
Resolution	0.1V
Measurement Voltage	0 -- 4.5V
Accuracy	± 3%

General	
Fuse	500mA 250V Fast Blow
Display	2 Line x 16 Character LCD
Dimensions	205 (L) x 90 (W) x 55 (D)
Weight	1.5kg
Power Source	1.5V AA x 6
Storage Temperature	-20°C to 70°C
Accessories	Test Leads Fuse (0.5A 250V) Heavy Duty Case Instruction Manual Batteries