

# Clamp-On Ground Resistance Tester

Models 3711/3731

## Applications

The ground resistance tester Models 3711 and 3731 measure ground rod and small grid resistance through any season, without the use of auxiliary ground rods. Clamp-on ground resistance testers are used in multi-grounded systems without disconnecting the ground under test. The Models 3711 and 3731 simply clamp around the ground conductor or rod and measure the resistance to ground. By performing measurements on intact ground systems, the user also verifies the quality of the grounding connections and bonds. Resistance and continuity of grounding loops around pads and buildings may also be measured.

Both models include a current measurement function. The probe's high sensitivity enables measurement of leakage current flowing to ground or circulating in ground loops down to 1 mA and neutral currents to 30 Arms. This feature provides additional information which is becoming vital as distribution ground networks carry higher levels of noise and harmonics which affect power quality.

For convenience, both models offer battery life information at power-up and Auto-Off for power management. Additional features are also displayed on the large LCD to ensure precise measurements. The Buzzer and Auto-Off features may be disabled from the push-buttons at any time.

The Model 3731 offers an alarm function and a memory (logging) function. In the Alarm mode, the probe will audibly and visually indicate if the reading is beyond an input set point. The user may also have the alarm initiated above or below the set point. This alarm feature permits quick field checks where only "pass" or "fail" readings will suffice.

The memory function logs up to 99 measurements (Ohms or Amperes). This enables the user to conduct field surveys, and to retrieve and analyze the readings at a later time. The alarm settings and stored memory information are saved when the ground tester is turned off.

## Features

- Simple and fast clamp-on operation - no leads, no auxiliary rods or spacing requirements
- Direct reading of ground resistance from 1W to 1200W
- Direct reading of continuity and ground loop resistance
- Direct reading of ground leakage current from 1 mA to 30 Arms
- New jaw design with large 32 mm (1.25") window accommodates up to 1000 MCM cables.
- Alarm function with adjustable set point and buzzer for quick field checks (Model 3731)
- Memory function to store 99 field measurements (Model 3731)
- UL, CSA, and GC approvals pending, meets IEC 1010-2-032
- Rugged Lexan® head and body construction with free three-year warranty

## Product Construction

The Ground Resistance Tester Models 3711 and 3731 are the new generation of Clamp-ons. They replace the model 3700 and provide superior user and product features.

The Models 3711 and 3731 bodies are built of Lexan® for rugged use. The probe heads are encapsulated in a double-walled shell for extra strength and are reinforced at the body interfaces for enhanced field reliability. Overall construction and mechanical design ratings such as drop test, shock and vibration, weatherproofing against water projections or dust, meet or exceed IEC (International Electrotechnical Commission) standards. The products have also been designed to meet UL, CSA and GS safety approvals.

A standard one-year warranty covers the instruments.

## Jaw Design

The probe head, or jaw, is a key component in the measurement and overall product performance. Considerable research and development were dedicated to ensuring its performance, reliability and versatility.

The large jaw has an inner opening diameter of 1.25" (32 mm) - double its predecessor's diameter - while retaining the same overall jaw thickness, permitting use on tight ground conductors on poles and in manholes. The large opening accommodates not only ground rods, but larger ground conductors (up to 1000 MCM) typically found in telecommunication buildings or railroad applications.

The inner jaw is composed of two independent and individually shielded magnetic cores permitting the injection of a test signal and accurate return signal measurement without noise interference or cross talk common to separate probe instruments.

Thorough mechanical design, including small winglets, ensures repetitive jaw alignment for accuracy and prevents undesirable insertions into the jaw spring assembly.

## Body Design

The ergonomic body permits one-handed operation. The guard provides additional strength, and prevents the hand from slipping or coming into contact with conductors under test. The Lexan® body construction provides strength. The LCD lens cover may be easily replaced if scratched. The sealed push-buttons directly access all test functions and are easily operated even with gloved hands.



Athens Technical Specialists, Inc.  
8157 US Route 50  
Athens, OH 45701  
Phone: (740) 592-ATSI (2874)  
Fax: (740) 594-2875  
E-mail: sales@atsi-tester.com

Visit our website: [www.atsi-tester.com](http://www.atsi-tester.com)

**ELECTRICAL SPECIFICATIONS**

Ground Resistance			
Measurement Range	Range	Resolution	Accuracy*
Autoranging 1.0 to 1200Ω	1 to 50Ω	0.1Ω	+/- (1.5% + 0.1Ω)
	50 to 100Ω	0.5Ω	+/- (2.0% + 0.5Ω)
	100 to 200Ω	1Ω	+/- (3.0% + 1Ω)
	200 to 400Ω	5Ω	+/- (6.0% + 5Ω)
	400 to 600Ω	10Ω	+/- (10% + 10Ω)
	600 to 1200Ω	50Ω	n / a
Ground or Leakage Current			
Measurement Range	Range	Resolution	Accuracy*
Autoranging, 1 mA to 30.00 A rms	1 to 300 mA	1 mA	+/- (2.5% + 2 mA)
	0.300 to 3.00 A	0.001 A	+/- (2.5% + 2 mA)
	3.00 A to 30.00 A	0.01 A	+/- (2.5% + 20 mA)

**Resistance Measurement Frequency:**  
1.689 kHz

**Current Measurement Frequency:**  
45 to 800 Hz

**Current Overload:**  
100 A, 50/60 Hz ("OL" displayed above 30 A)

**Power Supply:**  
9V alkaline (IEC 6LF22 OR NEDA 1604A)

**Battery Life:**  
typical, 8 hours or approx. 1000 30-second measurements

\* Reference conditions: 23° C +/- 3° K, 50% RH +/- 10%, battery at 8 V +/- 0.2 V, external magnetic field <40 A/m, external electrical field < 1 V/m, conductor centered, loop resistance noninductive. Accuracy % of reading.

**MECHANICAL SPECIFICATIONS**

<b>LCD:</b> 3-3/4 digit, 1.73 x 1.10" (44 x 28 mm)	<b>Dimensions:</b> 9.25 x 3.94 x 2.17" (235 x 100 x 55 mm)	<b>Case Material:</b> Lexan 920A (UL94V2)
<b>Operating Temperature:</b> -10° to 55°C	<b>Weight:</b> 2.2 lbs (1kg)	<b>Jaw Cover Materials:</b> Lexan 500R with 10% fiberglass charge (UL94V0)
<b>Operating Humidity:</b> 0 to 90% RH @ -10° to 40°C, 75% RH @ 55°C	<b>Jaw Diameter:</b> 1.25" (32 mm)	<b>LCD Cover Material:</b> Lexan 920A (UL94V1)
<b>Storage Temperature:</b> -40° to 70°C	<b>Jaw Opening:</b> 1.38" (35 mm)	<b>Color:</b> Gray body, red jaws

**SAFETY SPECIFICATIONS**

<b>SAFETY:</b> - UL, CSA, GS approvals pending - IEC 1010-1 double insulation - Double insulated	<b>Working Voltage:</b> 150 V IEC 1010-1, Cat. III, Pollution degree 2 300 V IEC 1010-1, Cat. III, Pollution degree 1
<b>Environmental:</b> IP30	<b>Dielectric Test:</b> 2500 V AC
<b>Vibration Test:</b> IEC 68-2-6	<b>Drop Test (1 m):</b> IEC 68-2-32
<b>Shock Test:</b> IEC 68-2-27	<b>Max Overload (A or Ω function):</b> 100 A continuous, 200 A (<5 s)