

# FALL-OF-POTENTIAL GROUND RESISTANCE TESTER

## Models 3620, 3640 & 4610



- Measures soil resistivity (4-Point) (Model 4610)
- Measures ground resistance (2- and 3-Point) Fall-of-Potential Method
- Large analog display (Model 3620)
- Large LCD digital display (Models 3640 and 4610)
- Designed to reject high levels of noise and interference
- Auto-Ranging: automatically selects the optimum range (Models 3640 and 4610)
- Battery powered
- Extremely simple to operate: connect – press – read
- Indicator error lights
- Rugged dustproof and rainproof case
- Color-coded terminals and lead identification

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INDUSTRIES

# Ground Resistance Tester Model 3620 & 3620 Kit



Model 3620 Kit

The Analog Ground Resistance Tester Model 3620 performs ground resistance measurements from 0.5 to 1000 $\Omega$  with speed and accuracy.

The Model 3620 features three-terminal operation for Fall-of-Potential earth/ground resistance and also may be used for 2-Point tests.

The large 3.1" logarithmic analog scale is easy-to-read, with a separate marking for 25 $\Omega$ . A large Press-to-Measure button allows for easy measurements. A manual zero adjust is provided for accurate readings. Color-coded binding post terminals are easy-to-use with banana plug and spade lug inputs.

The heavy duty ABS case is O-ring sealed against dust and water, and the Press-to-Measure button is also sealed. The Ground Tester Model 3620 is battery powered, for convenient use in remote field applications. Mechanical and safety specifications, such as vibration and drop test, meet or exceed IEC standards, to ensure safe and reliable field use.

The Ground Resistance Tester Model 3620 is the ideal instrument for electrical contractors, power utilities, REAs, telephone and CATV technicians, and inspectors who must check ground to determine compliance with NEC<sup>®</sup>, OSHA and other specifications.

The Model 3620 kit includes meter, one 16 ft lead, two 150 ft leads on reels with wind-up handles, two 16" auxiliary ground electrodes, soft carrying case, batteries and user manual.

## FEATURES

- Measures ground resistance (2- and 3-Point) Fall-of-Potential Method
- Direct reading on large analog display 0.5 to 1000 $\Omega$  and easy 25 $\Omega$  readings
- Large 3.1" (77mm), analog display for accurate readings
- Built-in battery check
- Color-coded terminals and lead identification
- Large Press-to-Measure button
- Portable and compact
- Extremely simple to operate: connect – press – read
- Designed to reject high levels of noise and interference

## APPLICATIONS

- Measuring earth resistance of the type of single rod or small ground grids often found in remote telecommunication switching sites
- Measuring ground electrode resistance of lightning protection equipment
- Measuring the earth electrode resistance of equipment in recreational areas
- Testing electrode resistance of ground rods and grids at new construction sites, when utility supplied power has not been supplied
- Testing earth electrode resistance of grounded towers at cellular phone remote installations



# SPECIFICATIONS

<b>MODEL</b>	<b>3620</b>
<b>ELECTRICAL</b>	
Range	0.5 to 1000Ω
Resolution	10mΩ
Resistance Measurement Frequency	128Hz square wave
Test Current	10mA
Accuracy	±5% of Reading + 0.1% of galvanometer scale length
Auxiliary Electrode Influence	Rz 3000 times the reading up to 50kΩ Ry 50kΩ
Withstanding Voltage	250Vrms with spikes of 3000VAc or 1000Vdc
Power Source	Eight 1.5V AA Alkaline batteries
Battery Life	1680 15-second tests (approximately)
Fuse Protection	High breaking capacity 0.1A, 250V, 0.25 x 1.25"
<b>MECHANICAL</b>	
Display	Analog Pivot movement
Connection	Color-coded terminals accept spade lugs with minimum gap of 6mm or standard 4mm banana jacks
Scale	3.1" (77mm) white scale with black pointer; one scale per range
Operating Temperature	14° to 131°F (-10° to 55°C)
Storage Temperature	-40° to 158°F (-40° to 70°C), 0 to 90% RH with batteries removed
Temperature Influence	5% per 10°C
Relative Humidity	20 to 90% maximum
Dimensions	8.7 x 5.4 x 5.9" (220 x 136 x 150mm)
Weight	2 lbs (1.3kg)
Case	Heavy-duty, ABS
Colors	Case safety yellow; Front panel gray
Mechanical Shock	IEC 68-2-27
Vibration Test	IEC 68-2-6
Drop Test	IEC 68-2-32
Environmental	O-ring sealed against dust and water to IP50
<b>SAFETY</b>	
Rating	EN 61010-1, Cat. III, Pollution Degree 2, 24V
Double Insulation <input type="checkbox"/>	Yes
Agency Approval	Emission: EN 50081-1 Immunity: EN 50082-1
CE Mark	Yes

# Ground Resistance Tester Model 3640 & 3640 Kit



Model 3640 Kit

The Digital Ground Resistance Tester Model 3640 performs ground resistance measurement. This direct reading tester measures from 10mΩ to 1999Ω and is Auto-Ranging, so it automatically seeks out the optimum measurement range. Easy-to-use — simply connect the leads, Press-to-Measure and read.

The large LCD (nearly 3/4" high) is easy-to-read, and also indicates low battery status, overrange and lead reversals. The Model 3640 comes with three color-coded terminals to aid in easy hookup. Three LED indicators on the front panel continuously warn the user of any measurement problems to ensure accurate and reliable tests.

The Model 3640 is fuse protected up to 250VAC to protect the instrument against voltage into the test leads. In the event of a system fault, it can withstand 250VAC with spikes of 3000VAC or 1000VDC.

The heavy duty ABS case is O-ring sealed against dust and water and the Press-to-Measure button is also sealed. Model 3640 is battery powered, for convenient use in remote field applications. Mechanical and safety specifications, such as vibration and drop test, meet or exceed IEC standards, to ensure safe and reliable field use.

Ground Resistance Tester Model 3640 is a rugged, easy-to-use instrument ideal for maintenance crews performing numerous tests. The Model 3640 is designed to reject high levels of interference, therefore it can be used under difficult conditions such as high stray currents that normally affect measurement accuracy.

The Ground Resistance Tester Model 3640 kit includes one 16 ft lead, two 150 ft leads on reels with wind-up handles, two 16" auxiliary ground electrodes, soft carrying case, batteries and user manual.

## FEATURES

- Fall-of-Potential method
- Measures ground resistance (2- and 3-Point)
- Auto-Ranging: automatically selects the optimum range
- Designed to reject high levels of noise and interference
- Extremely simple to operate: connect – press – read
- LED on faceplate informs operator of high input noise, high auxiliary rod resistance and fault connections
- Battery powered
- Rugged dustproof and rainproof field case
- Color-coded terminals
- May also be used for continuity tests on bonding

## APPLICATIONS

- Three-point measurements for measuring resistance to ground of ground rods and grids. Three-point measurements are generally used when the electrode or grid is easily disconnected, if corrosion is suspected, or where ground faults are unlikely to occur.
- Two-point tests for continuity tests on bonding or on pre-established grounds. This test is commonly performed in urban environments where proper auxiliary electrode placement may be obscured by confined real estate. Measurements are referenced against a good local ground conductor.



# SPECIFICATIONS

MODEL	3640		
<b>ELECTRICAL</b>			
Range (Auto-Ranging 0 to 2000Ω)	20Ω	200Ω	2000Ω
Measurement	0.00 to 19.99Ω	20.0 to 199.9Ω	200 to 1999Ω
Resolution	10mΩ	100mΩ	1Ω
Open Voltage	≤42V peak		
Resistance Measurement Frequency	128Hz square wave		
Test Current	10mA	1mA	0.1mA
Accuracy	±2% of Reading + 1ct	±2% of Reading + 1ct	±3% of Reading + 3cts
Auxiliary Electrode Influence			
Range	20Ω	3kΩ	50kΩ
Current Circuit	200Ω	30kΩ	50kΩ
Voltage Circuit	2000Ω	50kΩ	50kΩ
Interference	Rejects high levels of interference voltage (DC, 50/60Hz, harmonics) DC voltage in series with X 20V <sub>AC</sub> voltage in series with Y 13V peak AC voltage in series with Z 32V peak		
Response Time	Approximately six seconds for a stabilized measurement		
Withstanding Voltage	50V <sub>AC</sub> with spikes of 3000V <sub>AC</sub> or 1000V <sub>DC</sub>		
Power Source	Eight 1.5V AA batteries; Alkaline recommended; "LO BAT" indication on LCD		
Battery Life	1800 15-second measurements (approximate)		
Fuse Protection	High breaking capacity 0.1A, 250V, 0.25 x 1.25"		
<b>MECHANICAL</b>			
Display	7-segment LCD, 0.71" (18mm) high (3 1/2 digit); 2000-counts; LCD also indicates overrange, test lead shorts and lead reversals		
Connection	Color-coded terminals accept spade lugs with min. gap of 6mm or standard 4mm banana jacks		
LED Indication	Three LEDs indicate high input noise, high auxiliary rod resistance, open leads, blown fuse		
Operating Temperature	14° to 131°F (-10° to 55°C), 0 to 90% RH		
Storage Temperature	-40° to 158°F (-40° to 70°C), 0 to 90% RH with batteries removed		
Dimensions	8.7 x 5.4 x 5.9" (220 x 136 x 150mm)		
Weight	2.9 lbs (1.3kg)		
Case	Heavy-duty ABS		
Colors	Case safety yellow; Front panel gray		
Mechanical Shock	IEC 68-2-27		
Vibration Test	IEC 68-2-6		
Drop Test	IEC 68-2-32		
Dielectric Test	3kV, 50/60Hz, one min. between four interconnected measuring terminals and any external metal ground		
Environmental	O-ring sealed against dust and water to IP50 (Protection Index)		
Electrostatic	IEC 801-2		
Electromagnetic	IEC 801-3		
Electric Shock	IEC 801-5		
<b>SAFETY</b>			
Rating	EN 61010-1, Cat III., Pollution Degree 2, 42V		
Double Insulation <input type="checkbox"/>	Yes		
Agency Approval	Emission (EN 50081-1) Immunity (EN 50082-1)		
CE Mark	Yes		

Accuracies and specifications are given for an ambient temperature of 23°C ± 3°K, RH of 45 to 55%, battery power at 8V, auxiliary resistance at the measurement terminals <200Ω, no stray voltage and a magnetic field from 0 to 40Å/m.

# Ground Resistance Tester Model 4610 & 4610 Kit



Model 4610 Kit

Digital Ground Resistance Tester Model 4610 performs ground resistance and soil resistivity tests. Direct reading tester measures from 10mΩ to 1999Ω, and is Auto-Ranging, so it automatically seeks out the optimum measurement range. Easy-to-use — simply connect the leads, Press-to-Measure and read.

The large LCD (nearly  $\frac{3}{4}$ " high) is easy-to-read, and also indicates low battery status, overrange, and test lead shorts and lead reversals. Three LED indicators on the front panel continuously warn the user of measurement problems to ensure accurate and reliable tests.

The Model 4610 is fuse protected up to 250VAC against Accidental connection to live circuits. In the event of a system fault, it can withstand 250VAC with spikes of 3000VAC or 1000VDC.

The heavy duty ABS case is O-ring sealed against dust and water and the Press-to-Measure button is also sealed. Model 4610 is battery powered for convenient use in remote field applications. Mechanical and safety specifications, such as vibration and drop test, meet or exceed IEC standards, to ensure safe and reliable field use.

The Ground Resistance Tester Model 4610 is a rugged, easy-to-use instrument ideal for maintenance crews performing numerous tests. The Model 4610 is designed to reject high levels of interference, so it can be used under difficult conditions such as high stray currents that normally affect accuracy.

The Ground Resistance Tester Model 4610 kit includes meter, one 16 ft color-coded lead, two 100 ft color-coded leads, two 300 ft leads on reels, four 16" auxiliary ground electrodes, soft carrying case, batteries and user manual.

## FEATURES

- Fall-of-Potential method
- Measures ground resistance (2- and 3-Point) and soil resistivity (4-Point)
- Step voltage tests and touch potential measurements
- Auto-Ranging: automatically selects the optimum range
- Designed to reject high levels of noise and interference
- Extremely simple to operate: connect – press – read
- LED on faceplate informs operator of high input noise, high auxiliary rod resistance and fault connections
- Battery powered
- Rugged dustproof and rainproof field case
- May be used also for continuity tests on bonding
- Color-coded terminals

## APPLICATIONS

- Three-point measurements of resistance to ground of ground rods and grids. Three-point measurements are generally used when the electrode or grid can be easily disconnected, if corrosion is suspected, or in circumstances where ground faults are unlikely to occur.
- Four-point tests, or soil resistivity measurements. Locating areas of lowest soil resistivity is essential for achieving an economical grounding installation.
- Touch potential measurements, an alternative to 3-Point tests in evaluating electrical safety. This test is recommended when the ground cannot be disconnected, where ground faults are highly likely to occur, or when the "footprint" of grounded equipment (the outline of the part of equipment in contact with the earth) is comparable to the size of the ground to be tested.
- Two-point tests for continuity tests on bonding or on pre-established grounds. This test is commonly performed in urban environments where proper auxiliary electrode placement may be obscured by confined real estate. Measurements are referenced against a good local ground conductor.

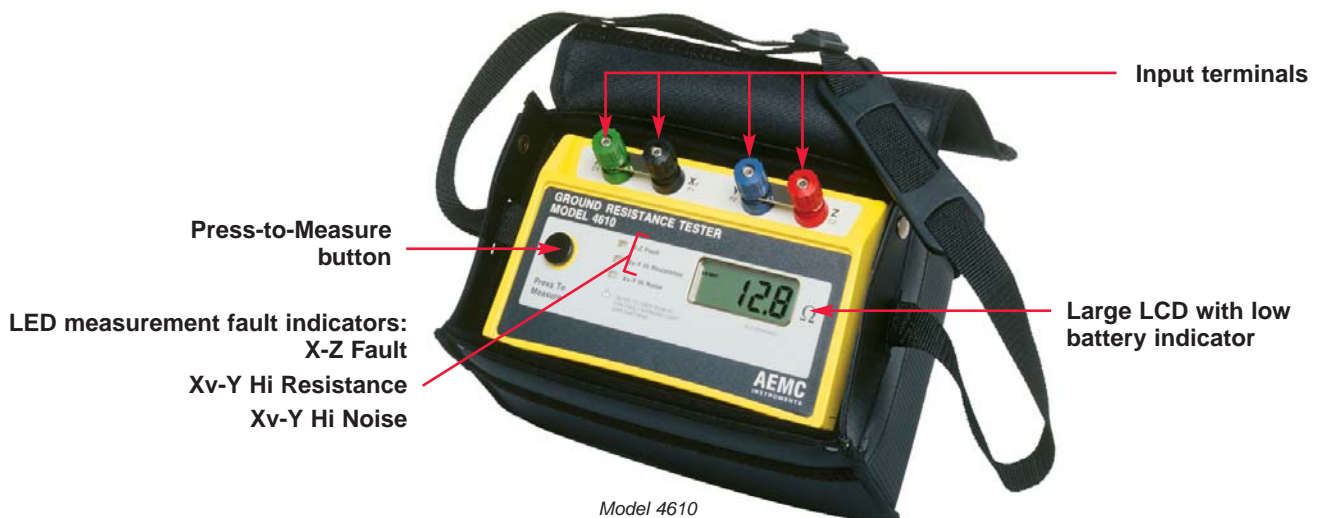
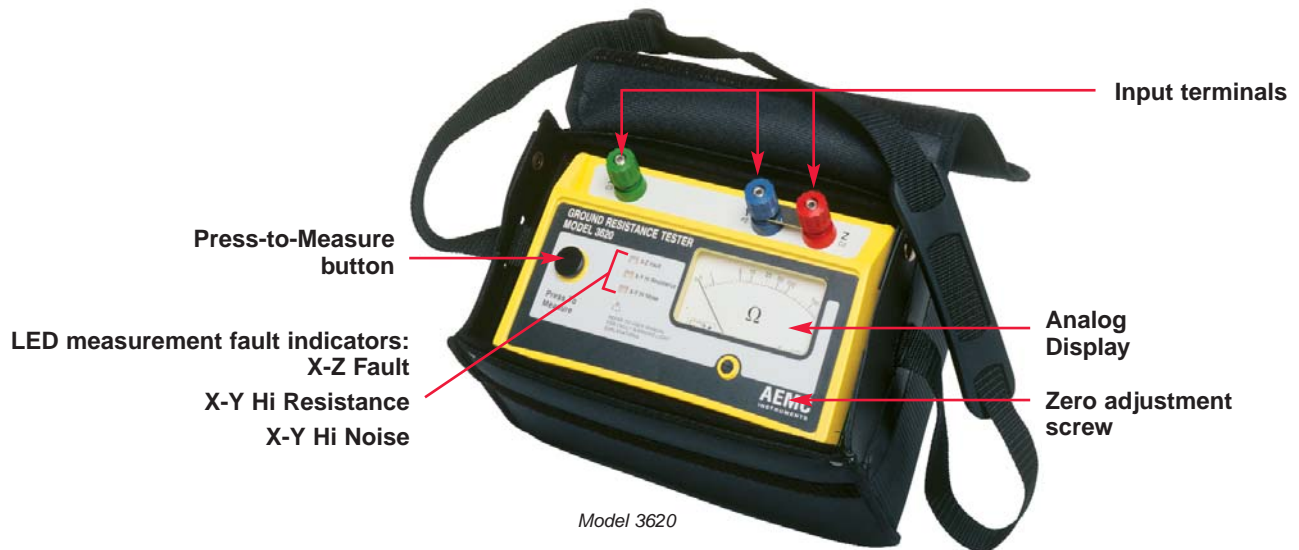
# SPECIFICATIONS

MODEL	4610		
<b>ELECTRICAL</b>			
Ranges (Auto-Ranging 0 to 2000Ω)	20Ω	200Ω	2000Ω
Measurement	0.00 to 19.99Ω	20.0 to 199.9Ω	200 to 1999Ω
Resolution	10mΩ	100mΩ	1Ω
Open Voltage	≤42V peak	≤42V peak	≤42V peak
Resistance Measurement Frequency	128Hz square wave	128Hz square wave	128Hz square wave
Test Current	10mA	1mA	0.1mA
Accuracy	±2% of Reading + 1ct	±2% of Reading + 1ct	±3% of Reading + 3cts
Auxiliary Electrode Influence			
Range	20Ω	3kΩ	50kΩ
Current Circuit	200Ω	30kΩ	50kΩ
Voltage Circuit	2000Ω	50kΩ	50kΩ
Interference	Model 4610 rejects high levels of interference voltage (DC, 50 to 60Hz, harmonics): DC voltage in series with X: 20V; AC voltage in series with Y: 13V peak; AC voltage in series with Z: 32V peak		
Response Time	Approximately six seconds for a stabilized measurement		
Withstanding Voltage	250V <sub>AC</sub> with spikes of 3000V <sub>AC</sub> or 1000V <sub>DC</sub>		
Power Source	Eight 1.5V AA batteries; Alkaline recommended; "LO BAT" indication on LCD		
Battery Life	1800 15-second measurements		
Fuse Protection	High breaking capacity 0.1A, 250V, 0.25 x 1.25"		
<b>MECHANICAL</b>			
Display	7-segment LCD, 0.71" (18mm) high (3 1/2 digit); 2000-counts; LCD also indicates overrange, test lead shorts and lead reversals		
Connection	Color-coded terminals accept spade lugs with min. gap of 6mm or standard 4mm banana jacks		
LED Indication	Three LEDs indicate high input noise, high auxiliary rod resistance, open leads, blown fuse		
Operating Temperature	14° to 131°F (-10° to 55°C), 0 to 90% RH		
Storage Temperature	-40° to 158°F (-40° to 70°C), 0 to 90% RH with batteries removed		
Dimensions	8.7 x 5.4 x 5.9" (220 x 136 x 150mm)		
Weight	2.9 lbs (1.3kg)		
Case	Heavy-duty ABS		
Colors	Case: safety yellow; Front panel: gray		
Mechanical Shock	IEC 68-2-27		
Vibration Test	IEC 68-2-6		
Drop Test	IEC 68-2-32		
Dielectric Test	3kV, 50/60Hz, one min. between four interconnected measuring terminals and any external metal ground		
Environmental	O-ring sealed against dust and water to IP50 (Protection Index)		
Electrostatic	IEC 801-2		
Electromagnetic	IEC 801-3		
Electric Shock	IEC 801-5		
<b>SAFETY</b>			
Rating	EN 61010-1, Cat. III, Pollution Degree 2, 42V		
Double Insulation <input type="checkbox"/>	Yes		
Agency Approval	Emission (EN 50081-1); Immunity (EN 50082-1)		
CE Mark	Yes		

Accuracies and specifications are given for an ambient temperature of 23°C ± 3°K, RH of 45 to 55%, battery power at 8V, auxiliary resistance at the measurement terminals <200Ω, no stray voltage and a magnetic field from 0 to 40A/m.



# CONSTRUCTION





# ACCESSORIES



Ground Test Kit – 3-Point (supplemental 4-Point) includes carrying bag, two 100 ft color-coded leads, one 16 ft lead and two 16" auxiliary ground electrodes  
Catalog No. 2130.62

Ground Test Kit for 3-Point testing (supplemental for 4-Point testing) includes carrying bag, two 100 ft color-coded leads, one 16 ft lead and two 16" auxiliary ground electrodes  
Catalog No. 2130.61



Ground Test Kit for 4-Point testing includes carrying bag, two 300 ft color-coded leads on spools, two 100 ft color-coded leads, four 16" auxiliary ground electrodes, one 16 ft lead with Mueller® clip and one 100 ft tape measure  
Catalog No. 2130.63



ORDERING INFORMATION	CATALOG NO.
<b>Ground Resistance Tester Model 3620</b> (3-Point Analog).....	<b>Cat. #2114.90</b>
Includes soft carrying case, batteries and user manual	
<b>Ground Resistance Tester Model 3640</b> (3-Point Digital) .....	<b>Cat. #2114.92</b>
Includes soft carrying case, batteries and user manual	
<b>Ground Resistance Tester Model 4610</b> (4-Point Digital) .....	<b>Cat. #2114.94</b>
Includes soft carrying case, batteries and user manual	
<b>Ground Resistance Tester Model 3620 Kit</b> .....	<b>Cat. #2114.91</b>
Includes meter, one 16 ft lead, two 150 ft leads on reels with wind-up handles, two 16" auxiliary ground electrodes, soft carrying case, batteries and user manual	
<b>Ground Resistance Tester Model 3640 Kit</b> .....	<b>Cat. #2114.93</b>
Includes meter, one 16 ft lead, two 150 ft leads on reels with wind-up handles, two 16" auxiliary ground electrodes, soft carrying case, batteries and user manual	
<b>Ground Resistance Tester Model 4610 Kit</b> .....	<b>Cat. #2114.95</b>
Includes meter, one 16 ft color-coded lead, two 100 ft color-coded leads, two 300 ft leads on reels, four 16" auxiliary ground electrodes, soft carrying case, batteries and user manual	
<b>Accessories (Optional)</b>	
Tape Measure (100 ft) .....	Cat. #2130.60
Ground Test Kit for 3-Point testing (supplemental for 4-Point testing) includes carrying bag, two 100 ft color-coded leads, one 16 ft lead and two 16" auxiliary ground electrodes.....	Cat. #2130.61
Ground Test Kit – 3-Point (supplemental 4-Point) includes carrying bag, two 100 ft color-coded leads, one 16 ft lead and two 16" auxiliary ground electrodes.....	Cat. #2130.62
Ground Test Kit for 4-Point testing includes carrying bag, two 300 ft color-coded leads on spools, two 100 ft color-coded leads, four 16" auxiliary ground electrodes, one 16 ft lead with Mueller® clip and one 100 ft tape measure.....	Cat. #2130.63

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