Model 152-1
Resistance Meter

Model 152-1 Surface / Volume Resistance Meter

The Trek Model 152-1 Surface/Volume Resistance Meter is designed to precisely measure surface or volume resistance on a wide variety of conductive, dissipative, and insulative materials. The Model 152-1 employs a measurement technique which conforms to ANSI/ESD Association standards for measuring surface resistance, resistivity, and volume resistance including STM2.1 for garments, S4.1 for work surfaces, S7.1 for flooring, STM9.1 for footwear, STM11.11 for planar materials, STM11.12 for volume resistance (IEC 61340-2-3), STM12.1 for seating, STM11.13 for two point resistance measurement and STM97.1 for floor materials/footwear. A variety of measuring probe electrode configurations are available and are purchased separately.

The Model 152-1 features exceptional measurement accuracy and wide measurement ranges of 10^3 to $10^{13}\Omega$ using point-to-point probes or the two-point resistance probe for small surface area measurements. When used with the exclusive 152P-CR-1 concentric ring probe that contains a pre-amplifier, the usual noise, stray pickup and long settling time associated with other concentric ring probe designs is eliminated, thus providing ease of operation even at very high resistance values.

The electrode test voltage for the measurement probe(s) is switch selectable for 10 V or 100 V operation to conform to the individual requirements of the ANSI/ESD Association standards and testing conditions. The selected test voltage is indicated on the LCD display. The light-weight portable unit is operable via batteries or an AC line power source with a battery eliminator.

Resistance Probes


Model 152BP-5P Point-to-Point Probes


Model 152P-2P Two Point Resistance Probe

- Concentric ring probe pre-amplfier eliminates interference and enables reliable operation at high resistance values
- Exceptional accuracy, stability, & repeatability
- Complies with ANSI/ESD Association standards
- Wide measurement ranges of 10^3 to $10^{13}\Omega$
- Elastomer electrodes for excellent surface contact
- Battery or AC line operated with automatic shutoff
- Light-weight and portable
- Variety of probe types available
- Optional Accessories include Walking Test Adapter and Test Plate Set
- CE compliant

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Model 152-1 Resistance Meter (cont.)

Performance

Measurement Range

10^{3} to 10^{13} Ω.

Measurement Accuracy (of reading) at 25 °C ±10 °C and 20% to 70% RH:

Point-to-point probes [152BP-5P]

10^{3} to 10^{12} Ω range, ±5%,
10^{13} Ω range, ±8%.

Concentric Ring Probe [152P-CR-1] and Two-point resistance probe [152P-2P]

10^{3} to 10^{11} Ω range, ±5 %,
10^{12} to 10^{13} Ω range, ±10 %.

Probe Electrode Test Voltage

User selectable: 10 V or 100 V, ±2%.

Test Current Limit

Limited to less than 13 mA in the 10 V range and less than 1.7 mA in the 100 V range.

Features

LCD Display

Three digits plus two digit exponent (scientific notation).

Low Battery Indicator

LCD message for low battery.

Test Voltage Range Indicator

Indicates the test voltage selected, either 10 V or 100 V.

Automatic Shutoff

If the unit is left idle for longer than 10 minutes, the unit automatically turns off.

Test Probes/Accessories

Model 152BP-5P Test Probes 2.27 kg (5 lb) (set of two probes) Available for performing resistance measurements including ANSI/ESDSTM4.1 standards (point-to-point or esistance to ground measurement)

Probes/Accessories (cont)

Model 152P-2P Two Point Resistance Probe

Performs measurements on surface areas too small to be measured with conventional probes.

Model 152P-CR-1 Surface/Volume Concentric Ring Probe*

Measures surface and volume resistance of materials as per IEC or ESDA standards. A three (3) position switch on the probe selects either SURFACE resistance or VOLUME resistance measurements with either a GUARDED or UNGUARDED outer electrode. Uses an exclusive built-in pre-amplifier design.

Resistance Probes, 3mm x 25.4mm

Set of two miniature probes [Model 152AP-3mm x 25.4mm Resistance Probe (pair)] can be handheld and randomly positioned.

Test Plate Set (consists of two separate plates)

The use of these plates is described in the ESD STM11.12 (IEC 61340-2-3) standard.

Conductive Plate

(5" x 5"/127 mm x 127 mm) A stainless steel conductive plate (with a mini banana plug connector).

Insulative Plate

(5.4" x 5.4"/ 137 mm x 137 mm) Acts as an insulative surface.

Walking Test Adapter Kit

The Walking Test Adapter allows analysis of resistance levels on the human body [STM 97.1].

*The Model 152-CR-1 will operate with the previous Model 152 resistivity meter in "surface" mode, just as the Model 152-CR probe did. The 152-CR will operate with the Model 152-1 Resistance Meter with the measurement being in "ohms," not "ohms/sq."

General

Battery Operation

Two (2) 9 Volt batteries (NEDA 1604 Alkaline, or equivalent) provide 6 hours of power for portable operation.

AC Line Operation

The use of a AC battery eliminator allows for AC line operation. The eliminator output connector is a female type 2.1 mm DC power plug.

ANSI/ESD Association Standards

The Model 152-1 conforms to the following IEC and ANSI/ESD Association Standards for measuring surface resistance and surface resistivity:

IEC 61340-2-3 Electrostatics Part 2 and 3
STM2.1 Garments.
S4.1 Work surfaces - resistive characterization.
S7.1 Flooring materials.
STM9.1 Footwear resistive characteristics.
STM11.11 Surface resistance measurements of static dissipative planar materials.
STM11.12 Measurements for volume resistance (IEC 61340-2-3).
STM12.1 Seating - resistive measurements.
STM11.13 Two-point resistance measurement.
STM97.1 Floor materials / footwear - resistance measurements in combination with active user.

Instrument Dimensions

180 mm H x 100 mm W x 44 mm D (7″ H x 4″ W x 1.75″ D).

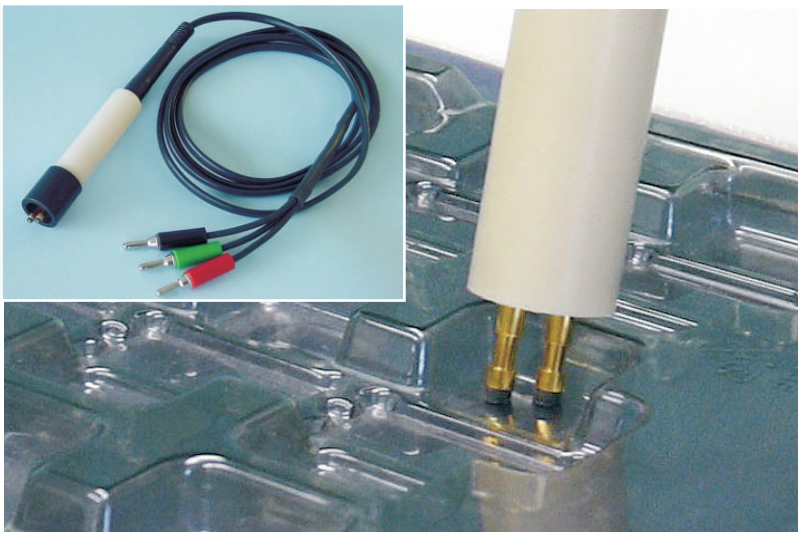
Instrument Weight

Approximately 0.5 kg (1 lb) with batteries.

Supplied Accessories • Operator's Manual [23426] • Ground Cord [N9044]
Optional Accessories • Battery Eliminator/Charger (115 V AC) [L5111] • Test Plate Set [17530] • Universal AC Adapter Kit (90 to 265 V AC) [1K010] • Carrying Case [43378] • Test Probes purchased separately • Walking Adapter Kit [1K039]

Model 152P-2P

Two Point Resistance Probe



The Trek Model 152P-2P probe is used to perform accurate two point resistance measurements in the range of 10^3 to 10^{13} ohms.

The Model 152P-2P probe is designed to perform resistance measurements on objects too small to be measured using the concentric ring probe specified in ANSI/ESD Association standard STM11.11, or too small to be measured using the point-to-point probes specified in other ANSI/ESD Association standards.

Items such as thermo-formed trays, tape and reel carriers, and similar objects can now be accurately measured for their resistance characteristics.

The Model 152P-2P probe housing is made from a dissipative, low-sloughing material for optimum performance in ESD areas.

Additional features include Elastomer electrodes, which provide excellent surface contact, a compact probe design which is lightweight and portable, and probe electrode pins which can be removed for easy replacement.

A removable probe cap permits tests to be quickly performed using a precise 90° angle on flat surfaces. With the probe cap removed, the two independent probe electrodes can be placed in extremely small or recessed spaces. Independent spring action of each probe electrode allows measurements of uneven surfaces.

The Model 152P-2P operates with the Trek Model 152 Surface Resistance Meter and most other brands of resistance meters with banana plug inputs.

- Performs measurements on areas too small to measure with other standard probes
- Exceptional accuracy, stability, and repeatability
- Wide measurement range of 10^3 to 10^{13} ohms
- Elastomer electrodes for excellent surface contact
- Efficient and compact probe design
- Six (6) ft. cable length
- Operates with most resistance meters including the Trek Model 152
- Independent spring probe action for uneven surfaces
- Probe cap can insure rapid, 90° right angle measurements

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Model 152 P-2P Probe Specifications

Probe Dimensions
6.4″ length x 0.75″ diameter (163 mm x 19 mm).

Cable Length
6 ft (1829 mm).

Probe Contacts
0.125″ (3.2 mm) diameter conductive silicon elastomer.

Distance Between Probe Contacts (center to center)
0.25″ (6.4 mm).

Contact Travel
0.170 ″ (4.3 mm).

Contact Force
16 oz (454 g), nominal at 0.170″ (4.3 mm) contact in-travel.

CERTIFICATION

TREK, INC. certifies that each Model 152P-2P probe is tested and calibrated to specifications using measurement equipment traceable to the National Institute of Standards and Technology or traceable to consensus standards.

Model 152 Resistance Meter using the 152P-2P Probe

Performance

Resistance/Resistivity Measurement Ranges

10^3 to 10^{13} ohms
(extends to 10^{14} ohms using the Concentric Ring probe).

Measurement Accuracy (of reading)

At 25 °C ±10 °C at 20% to 70% RH:

10^3 to 10^{11} Ω range, ±5 %,
10^{12} to 10^{13} Ω range, ±10 %.

General

ANSI/ESD Association Standards
The Model 152 conforms to the following ANSI/ESD Association Standards for measuring surface resistance and surface resistivity:

STM2.1	Garments.
STM4.1	Work surfaces - resistive characterization.
STM7.1	Flooring materials.
STM9.1	Footwear resistive characteristics.
STM11.11	Surface resistance measurements of static dissipative planar materials.
STM12.1	Seating - resistive measurements.
STM11.13	Two-point resistance measurement.
STM97.1	Floor materials/footwear-resistance measurements in combination with active user.

General (cont.)

Battery Operation
Two (2) 9 Volt batteries (NEDA 1604 Alkaline, or equivalent) provide 6 hours of power for portable operation.

AC Line Operation
Use the AC battery eliminator. The eliminator output connector is a female type 2.1 mm DC power plug.

Instrument Dimensions
180 mm H x 100 mm W x 44 mm D
(7″ H x 4″ W x 1.75″ D)

Instrument Weight
Approximately 0.5 kg (1 lb) with batteries.

Environmental Operating Range
Temperature
15 °C to 35 °C.
Relative Humidity
5% to 80%, noncondensing.

Probes Available

TREK, INC. 2.27 kg (5 lb.) Concentric Ring Probe, (2) 2.27 kg. (5 lb.) point-to-point probes, and the two-point resistance 152P-2P probe.

Features

Test current Limit
Limited to less than 13 mA in the 10 V range and less than 1.7 mA in the 100 V range.

Probe Electrode Test Voltage
User selectable for 10 V or 100 V, ±2%.

LCD Display
Three digits plus two digit exponent (scientific notation).

Low Battery Indicator
LCD message for low battery.

Test Voltage Range Indicator
User selectable, either 10 V or 100 V.

Automatic Shutoff
If the unit is left idle for longer than 10 minutes, the unit automatically turns off.

Certification

TREK, INC. certifies that each Model 152 Surface Resistance Meter is tested and calibrated to specifications using measurement equipment traceable to the National Institute of Standards and Technology or traceable to consensus standards.

Please contact TREK, INC. for information about additional EOS/ESD probes and instruments

Trek Model 152P-CR-1
Surface/Volume Concentric Ring Probe

The Trek Model 152P-CR-1 Concentric Ring Probe is capable of measuring surface and volume resistance in materials as per IEC or ESDA standards. A three (3) position switch on the probe selects surface resistance or volume resistance measurements with either a guarded or unguarded outer electrode. (See page 2.)

An optional Test Plate Set [CN 17530] consists of two separate plates. A stainless steel conductive plate can act as a second electrode to apply the test voltage to the sample under test and also provides a mini-banana plug connection for a secure ground connection. An insulative plate is utilized as needed. The use of these plates are described in the ESD STM11.12 and in IEC 61340-2-3 standards.

The Trek Model 152-1 Resistance Meter used with the 152P-CR-1 system, is designed to precisely measure surface resistance on a wide variety of conductive, dissipative, and insulative materials.

The Model 152-1 Resistance Meter employs a measurement technique which conforms to ANSI/ESD Association standards for measuring surface resistance, resistivity, and volume resistance and features exceptional measurement accuracy and wide measurement ranges of 10^3 to 10^{13} ohms using either a point-to-point probe or the two-point probe. Measured resistance values are clearly displayed on a high-contrast LCD display. Various probes are available and accessory options include a Walking Test Adapter which allows analysis of resistance levels on the human body [STM 97.1].

Trek MODEL 152-1 Resistance Meter

Measurement Range

10^3 to 10^{13} ohms

Probe Electrode Test Voltage

User selectable for 10 V or 100 V, ±2%.

Test Current Limit

Limited to less than 13 mA in the 10 V range and less than 1.7 mA in the 100 V range.

MODEL 152P-CR-1 Surface / Volume Resistance Probe

A three (3) position switch on the probe selects performance options.

Optional Test Plate Set

These plates provide additional ESD STM standard options for guarded and unguarded resistance and volume measurements.

Optional Probe Calibration Fixture

Provides measurement accuracy verification of resistance/resistivity probes.

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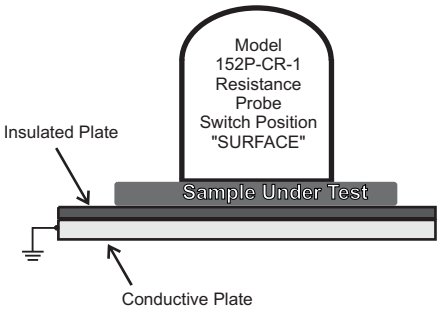
Model 152-CR-1 Concentric Ring Probe and Test Plate Set

The Trek Model 152P-CR-1 Concentric Ring Probe, when used with the Trek Model 152-1 Resistance Meter, is capable of measuring surface and volume resistance in materials as per IEC or ESDA standards. A three (3) position switch on the probe selects for SURFACE resistance measurements or VOLUME resistance measurements either with a GUARDED or UNGUARDED outer electrode.

In addition to the Model 152P-CR-1 Concentric Ring Probe [CN 17529], Trek offers a Test Plate Set [CN 17530] that consist of two separate plates, each approximately 5 inches square. A stainless steel conductive plate acts as a second electrode for the application of the test voltage to the sample under test. An insulative plate is utilized as needed. The use of the plates are described in the ESD STM11.12 and IEC 61340-2-3 standards.

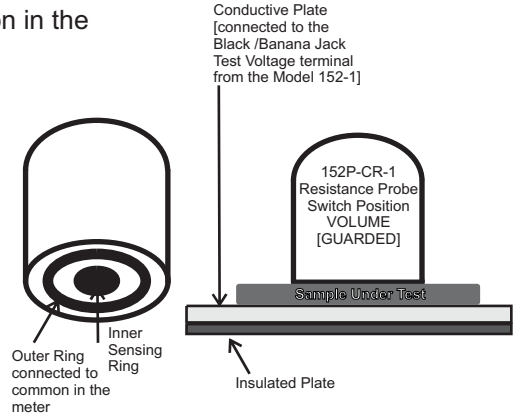
Test Position SURFACE

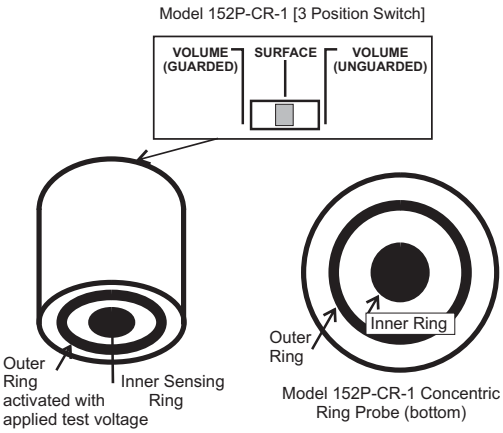
The test voltage is applied to the outer ring during surface measurements. Model 152P-CR-1 switch is positioned at SURFACE designation.



Test Position VOLUME [GUARDED]

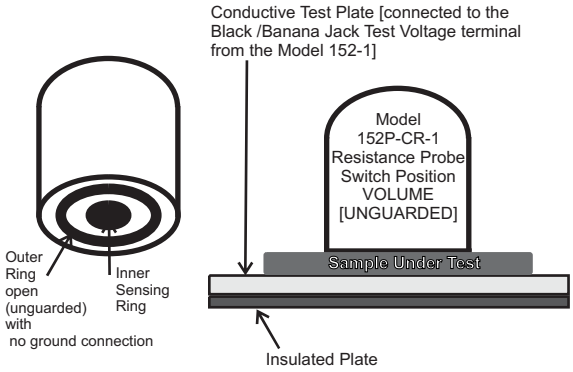
The outer ring is connected to common in the 152-1 meter (guarded) during volume measurements. As per IEC 61340-2 standard, when performing volume measurements the outer ring is guarded (connected to common in the meter).





Test Position VOLUME [UNGUARDED]

The test voltage is removed and outer ring is open (unguarded) during volume measurements. Model 152P-CR-1 switch is positioned at VOLUME [UNGUARDED] designation. As per ESD STM11.12 standard, the outer ring is unguarded with no ground connection.



Optional Accessories

CR Probe Calibration Fixture [CN 16160]

Surface Resistance Calibration Test Fixture

This surface resistance calibration test fixture is designed to check the electrode alignment of resistance/resistivity probes, the electrification time of the probe/cable meter test setup and verify overall measurent accuracy of the test setup at both ends of the static dissipative measurement range. It consists of a 502K ohm test surface and a teraohm test surface.

Test Plate Set [CN 17530]

Includes two separate plates, approx. 5” X 5”:

Stainless Steel Conductive Plate
Insulative Test Plate