

# SGT-200

safety ground tester



**Vanguard Instruments**  
A DOBLE COMPANY



# SGT-200

## safety ground tester

### Product Overview

The SGT-200 can measure resistance value from 1 micro-ohm to 1000 milliohms. A typical test requires the two ends of the safety ground cable to be connected to the terminals of the SGT-200. The resistance of the cable and ferrules can then be measured. If the cable size, cable length and temperature are provided, the SGT-200 will determine if the cables passes or fails the test and a pass/fail indicator will be printed on the test report.

Test results are printed on the unit's built-in 2.5" thermal printer. A 44-key QWERTY-style rugged membrane keypad is used to input information and control the SGT-200. A back-lit graphic LCD screen (128 x 64 pixels) is used to display menus and test results.

The SGT-200 can store up to 100 test records in its internal memory. It also features a USB Flash drive interface port that can be used to store test data in a USB flash drive (not included). The SGT-200 also features an RS-232C port that is used for factory diagnostics and calibration.

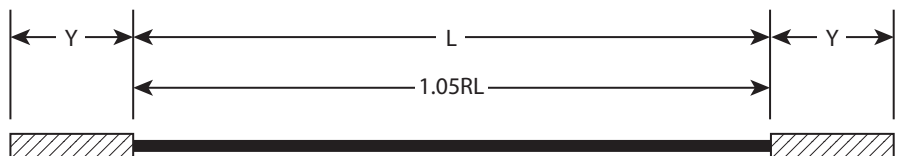
Test records can be reviewed and printed on a PC using the provided Vanguard VUS software.

The Vanguard SGT-200 Safety Ground Tester is a 200A DC micro-ohmmeter designed specifically to measure the resistance of protective in-service grounding and jumper cable assemblies. The SGT-200 can measure the resistance of the grounding cables, clamps and ferrules. The measured resistance values can be compared against the calculated values (using the ASTM 2249-03 standard) and a Pass/Fail result can be printed along with the measured resistance values. Since the SGT-200 uses a DC current, there is no need to uncoil the cable under test. It can be conveniently tested in its coiled state in a much smaller testing environment.

### In-Service Cable Testing

The SGT-200 measures the total resistance value of the cable under test and then compares it to the calculated value to determine the Pass or Fail result. In order to calculate the total resistance value, the user is first prompted for the cable size, cable length, and cable temperature. Total resistance (Rm) is calculated in accordance with the ASTM F2249-03 standard using the formula below:

$$R_m = 1.05 RL + 2Y = 1.05 RL + 320 \mu\Omega^*$$



Where:

Y = Resistance of clamps, ferrule, and portions of the cable inside the ferrule, in milliohms\*

L = Cable length in feet (ferrule to ferrule measurement to the nearest inch)

R = Cable resistance, in milliohms/foot

\* **NOTE:** The clamp and ferrule resistance value of 160  $\mu\Omega$  is used per the ASTM-F2249-03 standard.

### Test Cable Sizes and Length

Typical Safety Ground Cable sizes are #2, 1/0, 2/0, and 4/0. The test cable length, ranging from 1' to 50' per table 2 in the F2249-03 standard, is entered by the user.

### Test Record Storage

The SGT-200 can store 100 test records internally. Each test record contains test header information, test cable size, test cable length, temperature, test current, and cable resistance. Test records can also be stored on a USB flash drive via the unit's USB flash drive interface.

### ordering information

Part No.	Description
9133-UC	SGT-200 unit and cables
9133-SC	SGT-200 shipping case
8000-0228	standard cable stud set, 1" diameter (2 pcs)
8000-0229	elbow adapter, female, 1/2" diameter (1 pc)
8000-0230	bushing adapter, male, 1/2" diameter (1 pc)
TP3-CS	TP3 thermal printer paper (36 rolls)

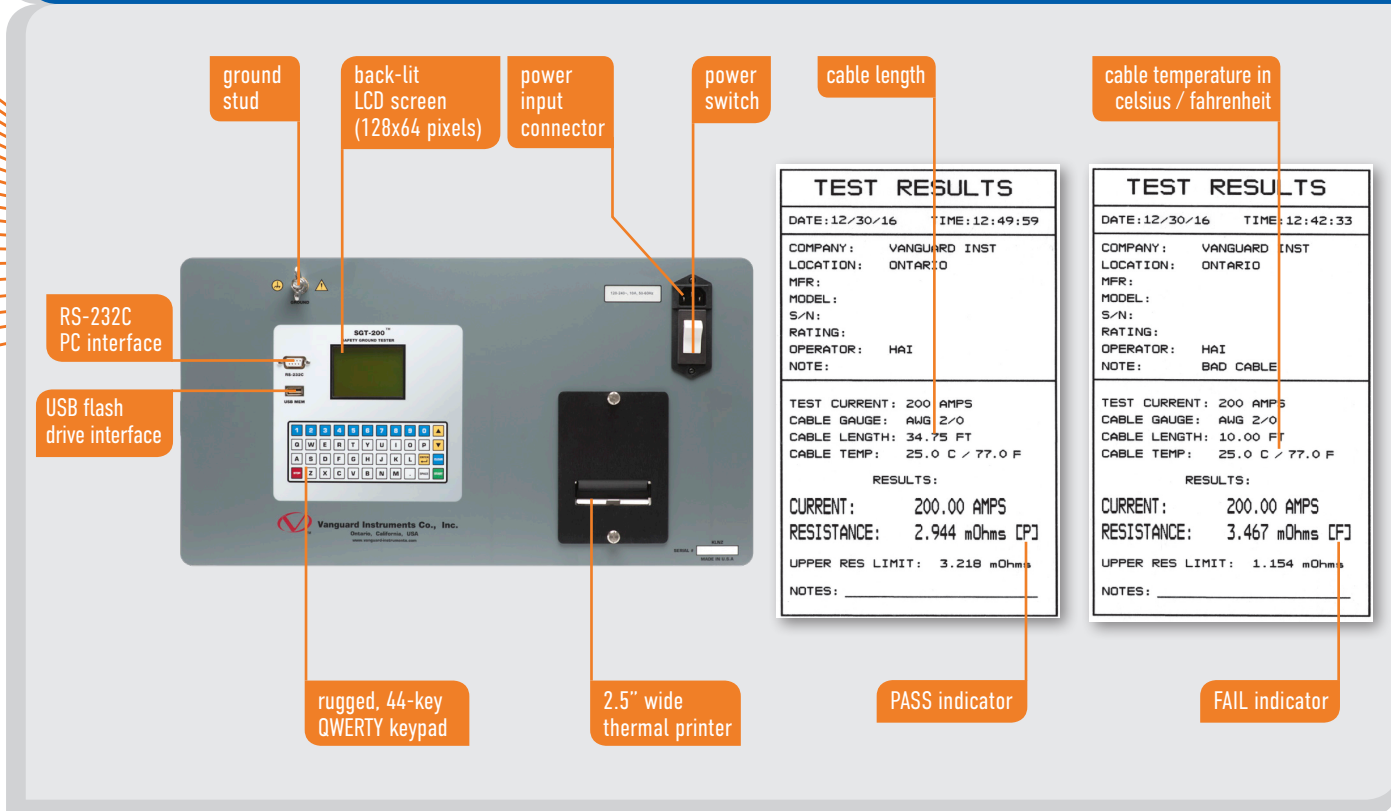
### Sample Test Results Screen























### Included Connection Posts



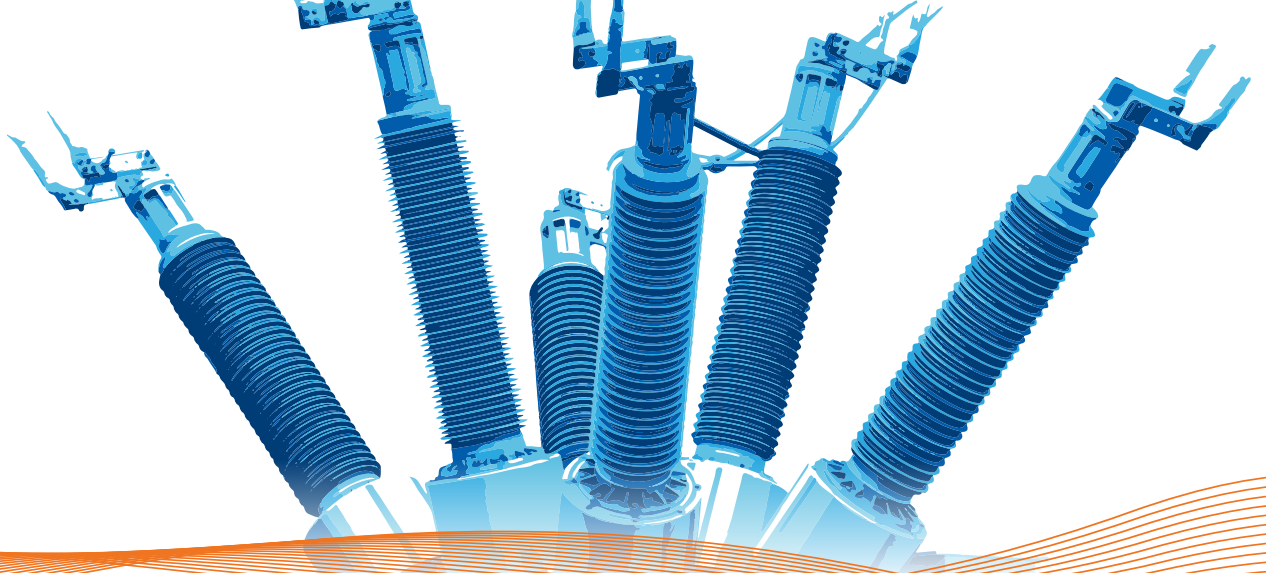
# SGT-200 Features



## SGT-200 technical specifications

 <b>physical specifications</b>	<b>Dimensions:</b> 21"W x 8"H x 14" D (53.3 cm x 20.3 cm x 35.6 cm) <b>Weight:</b> 31 lbs. (14.1 Kg)	 <b>input power</b>	100 – 240 Vac, 50/60 Hz
 <b>resistance reading range</b>	1 micro-ohm to 1000 milliohms (max 1.5 milliohms @ 200A, 450 milliohms @ 10A, 1000 milliohms @ 1A)	 <b>test current range</b>	10A – 200A (selectable in 1A steps); thermally protected DC power supply
 <b>accuracy</b>	<b>10A – 49.9A:</b> 1% ±2 micro-ohms, <b>50A – 200A:</b> 1% ±1 micro-ohm	 <b>test voltage</b>	5 Vdc
 <b>display</b>	back-lit LCD screen (128 x 64 pixels) viewable in bright sunlight and low-light levels	 <b>keypad</b>	rugged, 44-key "QWERTY" membrane keypad
 <b>internal test record storage</b>	100 test records	 <b>external test record storage</b>	up to 999 test records on external USB flash drive
 <b>pc software</b>	Windows®-based analysis software is included with purchase price	 <b>computer interfaces</b>	one RS-232C PC interface, one USB flash drive interface
 <b>safety</b>	designed to meet IEC 61010 (1995), UL 61010-a, and CAS-C22.2 standards	 <b>printer</b>	built-in 2½" wide thermal printer
 <b>temperature</b>	<b>Operating:</b> -10°C to +50°C (+15°F to +122°F) <b>Storage:</b> -30°C to +70°C (-22°F to +158°F)	 <b>humidity</b>	90% RH @ 40°C (104°F) non-condensing
 <b>cables and accessories</b>	power cord, ground cable, standard cable stud (1" dia, 2 pcs), elbow adapter (female, ½" dia, 1 pc), bushing adapter (male, ½" dia, 1 pc)	 <b>altitude</b>	2,000 m (6,562 ft) to full safety specifications
 <b>options</b>	shipping case	 <b>warranty</b>	one year on parts and labor

**NOTE :** the above specifications are valid at nominal voltage and ambient temperature of +25°C (+77°F). Specifications are subject to change without notice.



## Instruments designed and developed by the hearts and minds of utility electricians around the world.

Founded in 1991 and located in Ontario, California, USA, Vanguard Instruments™ offers a wide range of diagnostic test equipment that accurately and efficiently measures the health of critical substation equipment, such as transformers, circuit breakers, and protective relays.

Our first product was a computerized, extra high voltage (EHV) circuit breaker analyzer, which became the forerunner of an entire line of EHV circuit breaker test equipment. Over the years, our portfolio has grown tremendously to include microcomputer-based precision micro-ohmmeters; single- and three-phase transformer winding turns-ratio testers; transformer winding-resistance meters; mega-ohm resistance meters; and a variety of other application-specific products.

Our instruments are rugged, reliable, accurate, and user friendly. They eliminate tedious and time-consuming operations, while providing fast, complex test-result calculations. Using our equipment helps reduce errors and eliminates the need to memorize long sequences of procedural steps.

In 2017, Vanguard Instruments became a part of Doble Engineering Company, an energy industry leader in hardware, software, and services that diagnose and monitor the health of critical assets.



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