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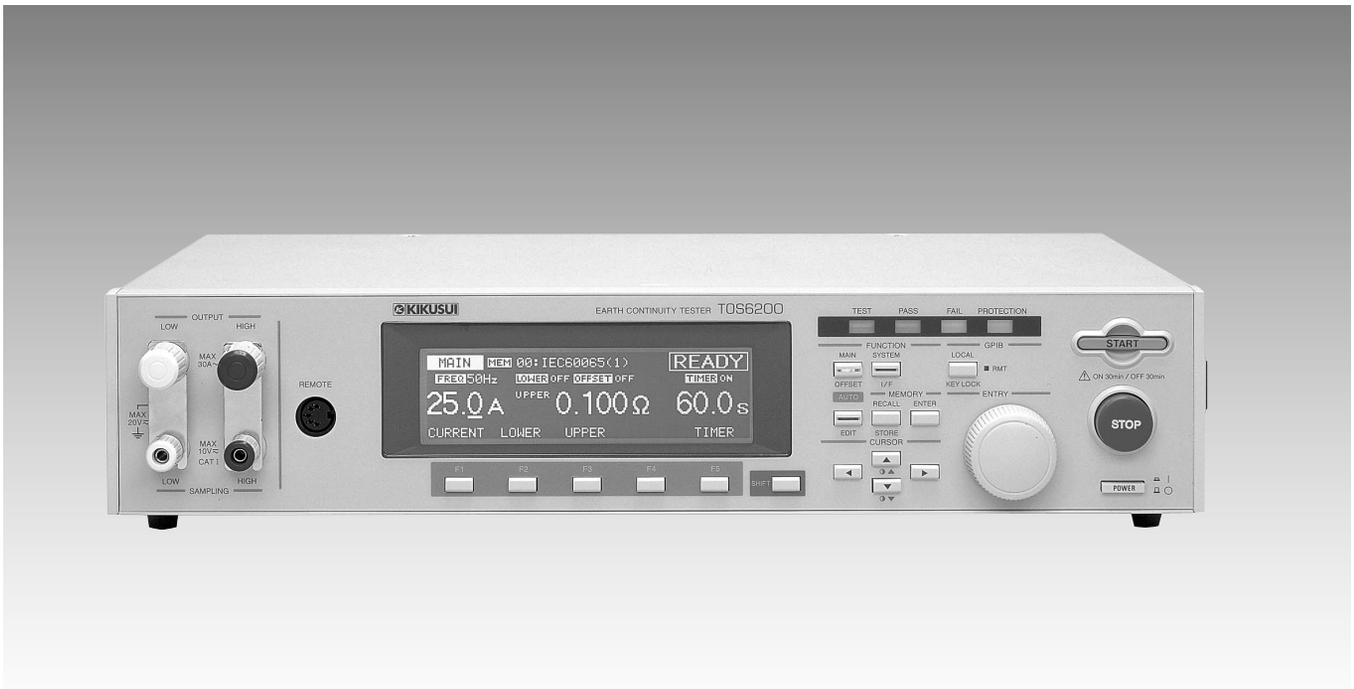
TOS6200

Earth Continuity Tester



Resistance value: 0.001 to 1.200Ω
Test Current: 3 to 30 A AC
Stores 100 test conditions in memory
Incorporates conditions into program

Outline

The TOS6200 tester is designed to perform the earth continuity tests required for class-I devices by safety standards such as IEC, EN, VDE, BS, UL, JIS, and the Electrical Appliance and Material Safety Low (Japan).

Equipped with a new high-efficiency power supply, it is compact and lightweight, about half the size and weight of our conventional products, while achieving a large output of 150 VA.

Use of the constant current method eliminates the need to reset test currents even in the face of fluctuating resistance values for the device being tested. The test duration can also be set from 0.3 s, making the tester suitable for production line testing, which requires reduced cycle time.

This tester is also designed for ease of use, featuring a large, easy-to-read display, memory capacity for storage of 100 types of test conditions, and incorporation of test conditions into programs to enable automatic testing. Standard GPIB and RS-232C interfaces allow the user to use PCs or other devices to control test conditions such as test current, resistance value for judgement, and test duration, and enables read-back of measured values and test results.

The tester is also provided with test leads as standard and provides high cost effectiveness.

Features

❑ Making a test current constant
A test current for earth continuity testing has been made constant. Thus, the test current does not need to be reset even in the face of fluctuating resistance values for the device being tested.

❑ High accuracy
The tester is equipped with an ammeter of ±(1% of reading + 0.2 A), a voltmeter of ±(1% of reading + 0.02 V), and an ohmmeter of ±(2% of reading + 0.003 Ω) that calculate resistance values based on measured current and voltage.

❑ Offset canceling function
The tester is provided with an offset canceling function that cancels resistance values, such as the contact resistance at alligator-clip and the resistance of measurement leads when in two terminals testing method is used.

❑ Provided with a contact check function
The tester has a contact check function that identifies the connection of the device being tested (by current detection) before testing.

❑ Memo function
The tester has a memo function with a capacity of 60 characters of 20 digits by 3 lines. You can use it to save a serial number, calibration date, and/or comments.

❑ Equipped with standard GPIB and RS-232C interfaces
The tester comes with standard GPIB and RS-232C interfaces, allowing external control of test conditions such as test current, judgement resistance value, and test duration. It also permits read-back of measured values and test results.

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Specifications

■ Output block
- Current setting range (*1): 3.0 to 30.0 A AC (With respect to resistance resulting in output power of the maximum rated Output or less and an output terminal voltage of 5.4 V or less)
  - Resolution: 0.1A
  - Accuracy: ± (1% of setting + 0.2A)
- Maximum rated output: 150 VA (at the output terminals)
- Distortion factor: 2% or less (with respect to 0.1 Ω pure resistance load of 10 A or greater)
- Frequency: 50/60 Hz, sine wave (selectable)
  - Accuracy: ±200ppm
- Open terminal voltage: 6 Vrms or less
- Output method: PWM switching method

■ Output ammeter
- Measurement range: 0.0 to 33.0 A AC
- Resolution: 0.1A
- Accuracy: ± (1% of reading + 0.2A)
- Response: Mean value response/rms value display (response time: 200 ms)
- Holding function: The current measured at the end of test is held during the PASS or FAIL inteval

■ Output voltmeter
- Measurement range: 0.00 to 6.00 V AC
- Resolution: 0.01V
- Accuracy: ± (1% of reading + 0.02A)
- Response: Mean value response/rms value display (response time: 200 ms)
- Holding function: The voltage measured at the end of test is held during the PASS or FAIL inteval

■ Ohmmeter
- Measurement range: 0.001 to 1.200 Ω
- Resolution: 0.001 Ω
- Offset cancel function: 0.000 to 1.200 Ω (Offset ON/OFF function provided)
- Accuracy: ± (2% of reading + 0.003 Ω)
- Holding function: The resistance measured at the end of test is held during the PASS or FAIL inteval

■ Pass/fail judgement function
- Judgement system: Window comparator system
  - If a resistance value equal to or greater than the upper reference value is detected, a FAIL determination is returned.
  - If a resistance value equal to or less than the lower reference value is detected, a FAIL determination is returned.
  - If a resistance value has been judged as FAIL, the tester shuts off the output and generates a FAIL signal.
  - If the set time elapses without abnormalities, the tester shuts off the output and generates a PASS signal.
- Setting range for the upper reference value (UPPER): 0.001 to 1.200 Ω
- Setting range for the lower reference value (LOWER): 0.001 to 1.200 Ω
- Judgement accuracy: ± (2% of UPPER + 0.003 Ω)
- Calibration: Calibration is performed with the rms value of the sine wave, using a pure resistance load.
- LED
  - PASS: Lights for approximately 0.2 sec when the measured value has been judged as PASS. It is lit continuously when the PASS holding time is set to HOLD.
  - UPPER FAIL: Lights if a resistance value equal to or greater than the upper reference value is detected and judged FAIL.
  - LOWER FAIL: Lights if the resistance value equal to or less than the lower reference value is detected and judged FAIL.
  - Buzzer:
    - The buzzer sounds for approximately 0.2 sec if the measured value has been judged as PASS.
    - The buzzer sounds continuously under the following condition:
      The measured value has been judged as PASS when the PASS holding time is set to HOLD.
      The measured value has been judged as UPPER FAIL.
      The measured value has been judged as LOWER FAIL.

    The buzzer volume for FAIL or PASS judgment are adjustable. Note that it cannot be adjusted individually since setting is shared with the setting for PASS.

■ Time
- Test time
  - Setting range: 0.3 to 999 s Timer ON/OFF function is available.
  - Accuracy: ± (100ppm of setting + 20ms)

■ Environment
- Installation: Indoors and the altitude is less than 2,000 m
- Warranty range
  - Temperature: 5° to 35°C
  - Humidity: 20% to 80% R.H (non condensing)
- Operating range
  - Temperature: 0° to 40°C
  - Humidity: 20% to 80% R.H (non condensing)
- Storage range
  - Temperature: -20° to 70°C
  - Humidity: 90% or less R.H (non condensing)

■ Power requirement
- Allowable voltage range: 100 V model : 85 to 132 V AC
  100 V/200 V model : 85 to 132 V AC/170 to 250 V AC
- Power consumption
  - At no load (READY): 100 V model : 70 VA or less
    100 V/200 V model : 45 VA or less
  - At rated load: 100 V model : 450 VA max.
    100 V/200 V model : 330 VA max.
- Allowable frequency range: 45 Hz to 65 Hz

■ Insulation resistance: 30MΩ min. (500 V dc), between AC line and chassis

■ Withstanding voltage: 1350 V AC (1 second), between AC line and chassis

■ Earth continuity: 25 A AC/0.1 Ω max.

■ EMC

Complied with the following standards

IEC61362-1: 1997-03/A1:1998-05
Electrical Equipment for Measurement, Control and Laboratory Use - EMC requirements
Radiated Emissions Class A
Conducted Emissions Class A

IEC61000-4-2:1995-01 /A1:1998-01	Electro-static Discharge
IEC61000-4-3:1995-02	Radiated, radio-frequency, electromagnetic field
IEC61000-4-4:1995-01	Electrical fast transient / Burst
IEC61000-4-5:1995-02	Surge
IEC61000-4-6:1996-04	Conducted disturbances
IEC61000-4-11:1994-06	Voltage dips, short interruptions and voltage variations

Under following conditions
1. Used test leadwires (TL11-TOS) which is supplied.
2. Used the shielded cable which length is less than three meters when the SIGNAL I/O is used.

■ Safety

Complied with the following standards

IEC61010-1: 1990-09/A2:1995-07
Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use TOS6200 is designed so that it is connected to a power supply of overvoltage category II as Class I equipment in environment of pollution degree 2.

■ Physical dimensions (maximum): 430(450)W × 88(140)H × 270(345)Dmm

■ Weight: Approx. 9kg

■ Accessories
- AC power cord: 1 piece
- Test leadwire TL11-TOS: 1 set
- Short bar: 2 pieces (These are inserted between the OUTPUT and SAMPLING terminals.)
- AC power fuse: 2 pieces (2, including one spare in the fuse holder)
- Operation manual: 1 copy

*1: Time limitation with respect to output

The heat radiation capacity at the output block of the tester is designed to be half the rated output, accounting for size, weight, cost, and other factors. Always use the tester within the limitation values given below. Use of the tester beyond these limits will cause the temperature of the output block to rise excessively, potentially tripping the internal protection circuit. In this case, suspend testing for approximately 30 minutes, then press the STOP switch. When temperatures fall to normal levels, the tester will revert to ready status.

Output time limitation			
Ambient temperature t (°C)	Test current I (A)	Quiescent time	Maximum test duration
t ≤ 40°	15 < I ≤ 30	Equal to or greater than test duration	30 minutes or less
	I ≤ 15	Not required	Continuous output possibl

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