

1 . GENERAL

Models TOS8650 and TOS8651 Withstanding Voltage Testers are AC-voltage testers with an output of 5kV, 100mA, 500VA, and can be used for withstanding voltage test in compliance with JIS, Electrical Appliance Control Ordinance, UL, CSA, BS and other major electrical standards and ordinances. They can be used for withstanding voltage test (dielectric strength test) of the various types of electrical and electronic equipment and components.

The Testers have a GO-NOGO judgement function, a test result output function, and a remote control function. The GO-NOGO judgement function is with a window comparator system. It generates an NG signal when a leak current larger than the judgement reference value set on the front panel has flowed and it also can generate an NG signal when the detected current is less than 1/10 of the set value. With these features, GO-NOGO judgement can be made including to some extent such abnormal states as open circuiting or imperfect contacting of test leads. Regarding the test result output function, the Testers deliver a test signal, a GOOD signal or an NG signal, all of which are contact signals. By employing the GO-NOGO judgement function in conjunction with the remote control function, an automated and labor-saving withstanding voltage test system can be realized.

In addition the sequence circuit is designed to be free from erroneous operations caused by noise, making the Testers highly reliable instruments.

Although many safety features are incorporated in the Testers, a deadly accident may occur when the operator touches the device under test (D.U.T.) or the probe.

Safety guards around D.U.T. should be considered for safe operation. Also, other precaution, which deemed necessary for the tester and the devices, shall be maintained under positive control.

This instruction manual is applicable to both TOS8650 and TOS8651. Read the items relevant to respective models.

2. SPECIFICATIONS

Model		TOS8650	TOS8651
Test voltage	Applied voltage (AC)	0 - 1.5/0 - 5 kV	
	Output	500 VA (5 kV, 100 mA), when operated on 100-V AC line. (Note 1)	
	Waveform	AC line voltage waveform	
	Voltage regulation (with 100-V AC line)	20 % or better	15% or better (Note 2)
	Switching	Zero-turn-on switch (zero-start switch) is used.	
Current limiting		<ul style="list-style-type: none"> ○ A limiting resistor is inserted in the primary circuit of high voltage transformer. ○ When cut-off current setting is 100 mA, current limiting is released unconditionally. When it is 0.5 - 10 mA, current limiting is selectable. 	
Output voltmeter	Scales	1.5/5 kV FS	2.5/5 kV FS
	Class	JIS Class 1.5	JIS Class 1
	Accuracy	±3% FS	
	Response/graduation	Mean-value response/rms-value graduation	
	Calibration		Can be calibrated from rear panel
Judgement of test result (Shut-off of output by leak current detection)	Judgement system	<ul style="list-style-type: none"> ○ Window comparator system ○ NG judgement when current larger than the set value is detected ○ NG judgement when detected current is less than 1/10 of the set value ○ When NG judgement is made, the output is cut out and an NG alarm is generated. ○ If no abnormal state is found during the set period, the GOOD signal is generated. 	

	Model	TOS8650	TOS8651
Judgement of test result (Cont'd)	Reference value setting	0.5, 1, 2, 5, 10, or 100 mA	
	Multiplier	<ul style="list-style-type: none"> ○ Each of the above setting values can be multiplied up to 2.5 times continuously variably, except the 100 mA range. ○ The scales are non-calibrated. 	
	Accuracy of judgement (Note 3)	<ul style="list-style-type: none"> ○ With reference to high limit (set value): $\pm 5\%$ ○ With reference to low limit (1/10 of set value): $\pm(20\% + 20 \mu\text{A})$ 	
	Detection system	Absolute value of leakage current is integrated and compared with the reference value.	
	Calibration	Calibrated for rms value of sine wave, using pure resistive load.	
			Can be calibrated for individual ranges from the rear panel.
	No-load output voltage needed for detection (Note 4)	500 V when at 100-mA setting	300 V when at 100-mA setting
Dimensions (Maximum dimensions)	350 W × 200 H × 300 D mm (13.78 W × 7.87 H × 11.81 D in.) 360 W × 220 H × 355 D mm (14.17 W × 8.66 H × 13.98 D in.)		
Weight (Note 7)	Approx. 19 kg (42 lb)	Approx. 17 kg (38 lb)	

Note 1: The period during which the Testers can be continuously operated with their maximum rated currents are as follows:

- TOS8650: Up to 30 minutes
- TOS8651: Up to 60 minutes

Note 2: Model TOS8651 Tester is a special model for special voltage regulation specifications, which are as follows when the Tester is operated on a 100-V AC line with its current limiting switch set to the OFF state.

- At 5-kV range, 5-kV output, for current change from 100 mA to no load: 15% or better
- At 5-kV range, 5-kV output, for current change from 10 mA to no load: 2% or better
- At 2.5-kV range, 1-kV output, for current change from 5 mA to no load: 3% or better

Note 3: When a test is actually done, the current which flows through the stray capacitances of the output circuit and measuring leads also causes measuring errors. The overall judgement error is the sum of this current and the above-mentioned judgement accuracy. Approximate values of such currents are shown in the following table. Note that, at high-sensitivity high-voltage test, the current which flows through the stray capacitances becomes larger than the low-limit judgement value and low-limit judgement may not be successfully made.

Output Voltage	1 kV	2 kV	3 kV	4 kV	5 kV
Main unit only (without measuring leads)	4 μ A	8 μ A	12 μ A	16 μ A	20 μ A
When 300-mm-long leads are used being suspended in air	6 μ A	12 μ A	18 μ A	24 μ A	30 μ A
When the accessory lead-wires (HTL-1.5W) are used	20 μ A	40 μ A	60 μ A	80 μ A	100 μ A

Note 4: Due to the internal resistance of the output circuit, to make NG judgement with the output terminals shorted, a certain level of no-load output voltage is needed. The values of such voltages are shown in the preceding table.

