

Insulation Resistance Tester

High cost performance, compact size with full features of Insulation Resistance Tester



TOS7200

Testing voltage range -25 to -1,000V, Resistance measurement range $0.01M\Omega$ to $5,000M\Omega$

The TOS7200 is an insulation resistance tester available for a wide range of various electric and electronic components, as well as electric and electronic equipment. Output voltage can be optionally set in the range of 25 to 1000 V (negative polarity) with a resolution of 1 V. As it is fitted with a window comparator and timer function, the tester is capable of efficiently conducting insulation resistance tests based on various safety standards. In addition, this product is equipped with panel memory as standard feature, which can be recalled by remote control, SIGNAL I/O connector, and the RS-232C interface for easy automatic testing system construction.



- Provided with the discharge function
- Equipped with the window comparator
- Hold function (which holds the measured resistance at the end of testing while PASS judgment is being output)
- Provided with the timer function
- Rear output terminals
- Measured-value monitoring terminals
- Equipped with the panel memory (enabling 10 different settings to be stored)
- Equipped with the SIGNAL I/O connector and remote control terminal
- Equipped with the RS-232C interface as standard

TOS7200

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Hipot test mode

Output section									
Output section									
Output voltage rang	ge	-25 V to -1000 V							
	Resolution	1 V							
	Accuracy	±(1.5 % of setting	g + 2 V)						
Maximum rated load		1 W (-1000 V DC/1 mA)							
Maximum rated cur	rrent	1 mA							
Output terminals	Output type	Floating							
	Isolation voltage	±1000 VDC							
Ripple	1000 V / under no load	2 Vp-p or less							
Rippie	Maximum rated load	10 Vp-p or less							
Voltono appulation	Waximum fated load		mum noted load a no	lood)					
Voltage regulation		1% or less (maximum rated load \rightarrow no load)							
Short-circuiting current		12 mA or less							
Output rise time		50 ms or less (10 % to 90 %) [no load] Forced discharge at the end of test (discharge resistance: 25 k Ω)							
Discharge function		Forced discharge	at the end of test (disc	tharge resistance: 25 k Ω)					
Voltmeter									
Measurement range	;	0 V to -1200 V							
Resolution		1 V							
Accuracy		±(1 % of reading	+1 V)						
Resistance meter									
Measurement range	;	0.01 M Ω to 5000) M Ω (In the range of	over 100 nA to a maximum	m rated current of 1 m.	A)			
Display		$0.01 \text{ M} \Omega$ to 5000 M Ω (In the range of over 100 nA to a maximum rated current of 1 mA)							
1 5			$\begin{vmatrix} R < 10.0 \text{ M}\Omega & 10.0 \text{M}\Omega \le R < 100.0 \text{M}\Omega & 100.0 \text{M}\Omega \le R < 1000 \text{M}\Omega & 1000 \text{M}\Omega \le R \le 5000 \text{M}\Omega \\ \hline R = \text{measured insulation resistance} \\ R = meas$						
		\Box . \Box \Box $M\Omega$	Δ.Δ.ΜΩ	$\Box \Box \Box M\Omega$		R = measurements	ired insu	lation resistance	
Accuracy					г				
recuracy		$100 \text{ nA} < i \le 2$		· · ·					
		± (10 % of rea	ading) $\pm (5\% \text{ of read})$	ding) $\pm (2\% \text{ of reading})$	i =measured output-v	oltage value/measured	l resistan	ce value	
		[In the humidity	range of 20 %rh to 70) %rh (no condensation), w	vith no disturbance suc	h as swinging of the	test leady	wire]	
Measurement range	<u> </u>	-	-	table between AUTO and I		0.0		-	
Weasurement range			-			6 1			
	AUTO		-	surement range according t			OFF.		
	FIX			ised on the output voltage			OFF sta	tus).	
Holding function		Holds the resistar	ice value obtained at th	he end of testing while a PA	ASS judgment is being	output.			
Judgment function									
Judgement method/a	action	Judgement	Judgement method			Display	Buzzer	SIGNAL I/O	
		UPPER FAIL	If a resistance value ec	ual or higher than the upper	resistance is detected.	FAIL LED lights.	ON	Outputs an	
				e output and returns an UP		UPPER LED lights		U FAIL signal	
		LOWER FAIL		qual or less than the lower		FAIL LED	ON	Outputs a	
		Downline		e output and returns a LOW		lights.	011	L FAIL signal	
				it is made within the judgm		LOWER LED		E T THE signal	
			The mat no judgmen	it is made within the judgit	iont wait time				
			(WAIT TIME) offers t	he stort of the test		lights.			
			(WAIT TIME) after t				-		
		PASS	If no abnormality is f	ound when the set test time		PASS LED	ON	Outputs a	
			If no abnormality is for the tester shuts off the	ound when the set test time e output and returns a PAS	S judgment.	lights.		PASS signal	
		• A PASS signal	If no abnormality is for the tester shuts off the is output for approx. 20	ound when the set test time	S judgment.	lights.		PASS signal	
		• A PASS signal i output until a ST	If no abnormality is f the tester shuts off the is output for approx. 20 'OP signal is input.	ound when the set test time e output and returns a PAS 00 ms. However, if the PA	S judgment. SS HOLD function is	lights. set to "HOLD," the s		PASS signal	
		• A PASS signal i output until a ST • An UPPER FAI	If no abnormality is f the tester shuts off the is output for approx. 2 OP signal is input. IL or LOWER FAIL si	ound when the set test time e output and returns a PAS 00 ms. However, if the PA gnal is continuously outpu	S judgment. SS HOLD function is t until a STOP signal i	lights. set to "HOLD," the si	ignal is c	PASS signal	
		• A PASS signal i output until a ST • An UPPER FAI	If no abnormality is f the tester shuts off the is output for approx. 2 OP signal is input. IL or LOWER FAIL si	ound when the set test time e output and returns a PAS 00 ms. However, if the PA	S judgment. SS HOLD function is t until a STOP signal i	lights. set to "HOLD," the si	ignal is c	PASS signal	
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	wer resistance (LOWER)	 A PASS signal i output until a ST An UPPER FAI The FAIL and F 0.01 M Ω to 5000 0.01 M Ω to 5000 	If no abnormality is f the tester shuts off the is output for approx. 2 'OP signal is input. IL or LOWER FAIL si 'ASS buzzer volumes $\Omega \ M \ \Omega$ [In the range of $\Omega \ M \ \Omega$ [In the range of	ound when the set test time e output and returns a PAS 00 ms. However, if the PA gnal is continuously outpu are adjustable. However, th the maximum rated curren 'the maximum rated curren	S judgment. SS HOLD function is t until a STOP signal i hey cannot be adjusted it or less] it or less]	lights. set to "HOLD," the s s input. individually, as they	ignal is c	PASS signal continuously	
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TOS7200

Insulation Resistance Tester

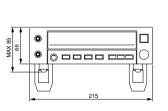
Interface and Other Functions

	MOTE		The optional rem connected to rem	connector on the front panel note controller RC01-TOS or RC02-TOS is notely control starting/stopping of a test -mini DIN adapter is required).
SIG	SNAL I/O		-	onnector on the rear panel escriptions of connector signals.
No.S	Signal name	e I/O	Description of signal	
1	PM0		LSB *1	[Pin Configuration for the
2	PM1		*1	
3	PM2		*1	SIGNAL I/O Connector]
4	PM3		MSB *1	
5	N.C			13 12 11 10 9 8 7 6 5 4 3 2 1
<u>6</u> 7	N.C N.C			25 24 23 22 21 20 19 18 17 16 15 14 /
8	N.C			
9	STB	1	Input terminal for the	strobe signal of the panel memory
10	N.C		input terminal for the	strobe signal of the parter memory
11	N.C			
12	N.C			
13	COM		Circuit common (chas	ssis potential)
14	HV ON	0	ON during a test or w	while a voltage remains between the output
			terminals	
15	TEST	0	ON during a test	
16	PASS	0		econds when PASS judgment is made, or
	11 5 4 11			le PASS HOLD is activated
17	U FAIL	0		n insulation resistance equal to or exceed-ing
18	L FAIL	0		is detected, resulting in FAIL judgment n insulation resistance equal to or falling
10		0		stance is detected, resulting in FAIL judg-ment
19	READY	0	ON during standby	
20	N.C		ett daning danaby	
21	START	I	Input terminal for the	START signal
22	STOP	Ι	Input terminal for the	STOP signal
23	ENABLE		Remote control enab	le signal input terminal
24	N.C			
25	COM		Circuit common (chas	ssis potential)
	digit BCD a			
			ection signal input ter	
Me	emory recal	l by lat	ching this selection si	ignal at the rise of the strobe signal
Inn	ut specifica	tions		
				All insuct size all and active Transporter list
H	ligh-level inpu	it voltag	e 11 V to 15 V	All input signals are active Low controlled.
L	low-level inpu	it voltag	ge 0 V to 4 V	The input terminal is pulled up to +12 V using a resistor.
L	low-level inpu	it currei	nt -5 mA maximum	
	nput time v		5 ms minimum	inputting a high-level signal.
	-			
	tput specific		3	
0	Dutput meth	nod	Open collector of	utput (4.5 V to 30 V DC)
C	Output withstar	nd voltas	ge 30 V DC	
	Output saturation			at 25°C)
		· · · ·		
	Aaximum outp			
AN	ALOG OU	Т	Outputs a logarit	thmically compressed voltage corresponding
			1 0	· · · · · · · · · · · · · · · · · · ·
	-		to the measured i	resistance value
1+			to the measured i	
+			to the measured n Vo = log $(1 + Rx)$	x / 1MΩ)
+			to the measured in Vo = log (1 + Rx) where $Rx = measurements$	(1 M Ω) sured resistance value (1 M Ω: 0.30 V;
+			to the measured a Vo = log (1 + Rx) where $Rx = meas$ $10 M \Omega$: 1.04 V;	x / 1MΩ) sured resistance value (1 M Ω: 0.30 V; 100 M Ω: 2.00 V; 1000 M Ω: 3.00 V;
+			to the measured a Vo = log (1 + Rx) where $Rx = meas$ $10 M \Omega$: 1.04 V;	(1 M Ω) sured resistance value (1 M Ω: 0.30 V;
	СОМ		to the measured a Vo = log (1 + Rx) where $Rx = meas$ $10 M \Omega$: 1.04 V;	x / 1MΩ) sured resistance value (1 M Ω: 0.30 V; 100 M Ω: 2.00 V; 1000 M Ω: 3.00 V; tore: 4.00 V). Output impedance: 1 k Ω
			to the measured to Vo = log (1 + Rx) where $Rx = measilon = 10 M \Omega$: 1.04 V; 10000 M Ω or m Analog output-ci	 (1 MΩ) sured resistance value (1 M Ω: 0.30 V; 100 M Ω: 2.00 V; 1000 M Ω: 3.00 V; tore: 4.00 V). Output impedance: 1 k Ω ircuit common
A	Accuracy		to the measured f Vo = log (1 + Rx where Rx = meas 10 M Ω : 1.04 V; 10000 M Ω or m Analog output-ci \pm (2 % of full sca	 (1 MΩ) sured resistance value (1 M Ω: 0.30 V; 100 M Ω: 2.00 V; 1000 M Ω: 3.00 V; hore: 4.00 V). Output impedance: 1 k Ω ircuit common ile)
A			to the measured f Vo = log (1 + Rx where Rx = measured f 10 M Ω : 1.04 V; 10000 M Ω or m Analog output-ci ±(2 % of full sca D-SUB 9-pin conner	$(x / 1M\Omega)$ sured resistance value (1 M Ω: 0.30 V; 100 M Ω: 2.00 V; 1000 M Ω: 3.00 V; hore: 4.00 V). Output impedance: 1 k Ω ircuit common le) ector on the rear panel (compliant with EIA-232-D)
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A	Accuracy -232C		to the measured f Vo = log (1 + Rx where Rx = measured f 10 M Ω : 1.04 V; 10000 M Ω or m Analog output-ci ±(2 % of full sca D-SUB 9-pin conner All functions oth function are removed 9600 bps/19200	$(x + 1M\Omega)$ sured resistance value (1 M Ω: 0.30 V; 100 M Ω: 2.00 V; 1000 M Ω: 3.00 V; nore: 4.00 V). Output impedance: 1 k Ω ircuit common le) sector on the rear panel (compliant with EIA-232-D) ter than the POWER switch and KEY-LOCK otely controllable. bps/38400 bps
RS-	Accuracy -232C Baud rate		to the measured f Vo = log (1 + Rx where Rx = measured f 10 M Ω : 1.04 V; 10000 M Ω or m Analog output-ci ±(2 % of full sca D-SUB 9-pin conner All functions oth function are remul 9600 bps/19200 (data: 8 bits; par	$(x / 1M\Omega)$ sured resistance value (1 M Ω: 0.30 V; 100 M Ω: 2.00 V; 1000 M Ω: 3.00 V; iore: 4.00 V). Output impedance: 1 k Ω ircuit common le) ector on the rear panel (compliant with EIA-232-D) ter than the POWER switch and KEY-LOCK otely controllable. bps/38400 bps rity: none; stop bit: 2 bits fixed)
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RS- RS- Disj Men TES	Accuracy -232C Baud rate play mory funct 	y life ARY E ACTIO	to the measured to Vo = log (1 + Rx where Rx = measured to No Ω or m Analog output-ci \pm (2 % of full sca D-SUB 9-pin conne All functions oth function are remu- 9600 bps/19200 (data: 8 bits; par 7-segment LED, resistance display A maximum of 1 in memory. 3 years or more (A test is conduct Disables cancella via remote control N Starts a test only START switch is	
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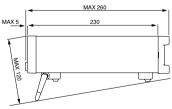
General Specifications

Environment Installation location	Indoors and at altitudes up to 2000 m				
Warranty range	Temperature 5 °C to 35 °C				
warranty range	Humidity 20 %rh to 80 %rh (no condensation)				
0	· · · · · · · · · · · · · · · · · · ·				
Operating range	Temperature 0 °C to 40 °C				
C	Humidity 20 %rh to 80 %rh (no condensation)				
Storage range	Temperature -20 °C to 70 °C				
D	Humidity 90 %rh or less (no condensation)				
Power requirements	100 X to 240 X A C				
Nominal voltage range	100 V to 240 V AC				
(allowable voltage range)					
Power consumption	30 VA maximum				
At rated load					
Allowable frequency range	47 Hz to 63 Hz				
Insulation resistance	30 M Ω or more (500 V DC) [AC LINE to chassis]				
Hipot	1390 V AC for 2 seconds, 10 mA or less [AC LINE to chassis				
Ground bond	$25 \text{ A AC}/0.1 \Omega \text{ or less}$				
Electromagnetic comp	atibility (EMC)*1 ments of the following directive and standard.				
2. No discharge occurs	rires TL08-TOS which is supplied. s at outside of the tester. able which length is less than three meters when the				
Safety*1, 2					
Conforms to the require: Low Voltage Directive EN61010-1 Class I Pollution degree 2					
Dimensions (max.)	215 (215) W x 66 (85) H x 230 (260) Dmm				
Weight	Approx. 2 kg				
Accessories	AC power cable 1 pc. TL08-TOS high-voltage test leadwires (1.5 m) 1 set Operation Manual 1 copy				
models.	have CE marking on the panel. Not applicable to custom order Class I equipment. Be sure to ground the protective conductor				

External dimensional diagrams



instrument is grounded properly.



Unit: mm



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