TH9110 Series

AC/DC Withstand Voltage & Insulation Resistance Tester

A digitally controlled hipot and insulation-resistance test platform for transformers, motors, windings, passive components and finished electrical products. Closed-loop digital output regulation keeps the test voltage stable regardless of mains fluctuation, while ARC detection, open/short (OSC) contact checking and breakdown-voltage ramp testing improve both safety-test reliability and throughput. Five models — TH9110, TH9110A, TH9111, TH9111A and the high-current TH9112A — share the same platform and differ in output power, current range and the availability of high-voltage floating output or CK pin/contact detection.



TH9110 shown

430(W) × 132(H) × 500(D) mm · 21 kg (TH9110 / TH9110A / TH9112A) · 20 kg (TH9111 / TH9111A)

- **High power output** — up to 5 kV / 100 mA / 500 VA AC/DC (TH9110 / TH9110A / TH9112A)
- Digitally controlled, closed-loop output regulation — test voltage unaffected by mains fluctuation
- 7" 800×480 TFT-LCD display, clear English-language interface, large-character PASS/FAIL readout
- **High-voltage floating output** design (TH9110 / TH9111), meeting EN 50191 safety requirements
- Electric-shock protection function, selectable on all five models
- **ARC detection** for early insulation-degradation and arc-discharge detection
- Contact check (OSC) function — flags open or shorted test leads before they cause false results
- **CK pin/contact detection** (TH9112A) — confirms a reliable DUT connection before the HV test begins
- Breakdown-voltage ramp test mode for dielectric-strength analysis on passive components
- One-key screen capture; rear-panel HV output; storage: 100 files, up to 50 test steps per file

Five models, one platform

	TH9110	TH9110A	TH9111	TH9111A	TH9112A
	High power, floating output	High power, standard output	Compact power, floating output	Compact power, standard output	High-current, CK pin detection
AC power	500 VA	500 VA	200 VA	200 VA	500 VA
Floating	Yes	—	Yes	—	—
Leakage	< 3.5 mA	—	< 3.5 mA	—	—
Weight	21 kg	21 kg	20 kg	20 kg	21 kg

TH9110/TH9110A/TH9111/TH9111A cover 0.05–5.00 kV AC / 0.05–6.00 kV DC withstand-voltage and 0.05–5.00 kV insulation-resistance testing (0.1 MΩ–50.0 GΩ); TH9110/TH9111 add high-voltage floating output for extra operator protection. TH9112A is the high-current variant — same 0.05–5.00 kV AC range and 0.05–6.00 kV DC range, but 500 VA output power in both AC and DC modes, insulation resistance to 100 GΩ, and a dedicated CK pin/contact-detection function instead of floating output. All five models include selectable electric-shock protection.

Applications

Windings & high-power products

Transformers, generators/motors and other winding products — e.g. motor stators and rotors — with high parasitic capacitance, requiring high-power withstand-voltage testing.

Components & electrical products

Capacitors, coils, cores, choke coils and filters; household appliances, information and audio-visual products, electric heating appliances and lighting equipment (TH9112A: aligned with GB/T 7000.1-2023); wire, non-woven fabric and insulation materials.

Automated & specialised testing

Production-line automation via rear-panel HV output; automated test systems; new-energy vehicle components; medical equipment.

Technical specifications

Parameter	TH9110	TH9110A	TH9111	TH9111A	TH9112A
Withstand voltage test (ACW / DCW)					
AC output voltage	0.05 – 5.00 kV, 50/60 Hz ±0.1% sine wave				
Output power	500 VA		200 VA		500 VA
DC output voltage	0.05 – 6.00 kV				
DC output ripple	—				−2% / +3% of avg. (5 kV/100 mA res. load)
Load variance	±(1% setting + 0.2% F.S.), at rated power				
Voltage resolution	2 V				
Voltage accuracy	±(1% setting + 0.1% F.S.)				
AC current range	0.001–120 mA (≤4 kV) 0.001–100 mA (>4 kV)		0.001–40 mA		0.001–120 mA (≤4 kV) 0.001–100 mA (>4 kV)
— resolution / accuracy	1 µA / ±(1% reading + 0.5% F.S.)				
DC current range	0.0001–25 mA (≥1.5 kV) 0.0001–20 mA (<1.5 kV)		0.0001–20 mA (<1.5 kV)		0.0001–100 mA (≤5 kV) 0.0001–90 mA (5–5.5 kV) 0.0001–80 mA (>5.5 kV)
— resolution / accuracy	0.1 µA / ±(1% reading + 0.5% F.S.)				
Max. short-circuit current	200 mA (AC test only)		80 mA (AC test only)		200 mA
Fast discharge	Automatic discharge after DCW test ends				
Insulation resistance test (IR)					
Output voltage	DC 0.05–5.00 kV, resolution 2 V, accuracy ±(1% reading + 0.1% F.S.)				DC 0.05–6.00 kV, resolution 2 V, accuracy ±(1% reading + 0.1% F.S.)
Resistance range	0.1 MΩ – 50.0 GΩ, resolution 0.1 MΩ				0.1 MΩ – 100.0 GΩ, resolution 0.1 MΩ
Accuracy ≥1 kV	1–1000 MΩ: ±(3% rdg+0.1% F.S.) | 1–10 GΩ: ±(7% rdg+2% F.S.) | 10–50 GΩ: ±(10% rdg+1% F.S.)				1–1000 MΩ: ±(3% rdg+1 MΩ) | 1–10 GΩ: ±(7% rdg+0.2 GΩ) | 10–100 GΩ: ±(10% rdg+0.5 GΩ)
Accuracy 500 V–1 kV	0.1–1000 MΩ: ±(3% rdg+0.1% F.S.) | 1–10 GΩ: ±(7% rdg+2% F.S.) | 10–50 GΩ: ±(10% rdg+1% F.S.)				0.1–1000 MΩ: ±(3% rdg+1 MΩ) | 1–10 GΩ: ±(7% rdg+0.2 GΩ) | 10–100 GΩ: ±(10% rdg+0.5 GΩ)
Accuracy <500 V	0.1–1000 MΩ: ±(5% rdg+2% F.S.)				0.1–1000 MΩ: ±(5% rdg+100V/Vs×10 MΩ)*
Fast discharge	Automatic discharge after test ends				
ARC detection, contact check (OSC) & CK pin detection					
ARC detection level	AC 1.0 – 20.0 mA / DC 1.0 – 10.0 mA				
OSC sample capacitance	0.001 – 40 nF				
OSC open / short threshold	Open: 10% – 100% / Short: 100% – 500% (test signal 600 Hz, 1 s)				
CK pin/contact detection	—				Test voltage 0.1–0.5 kV, current lower limit 0.001–5 mA
Breakdown-voltage test	AC / DC; start 0.05 kV to end 5 kV; step mode (2–999 steps) or voltage-step mode (5–500 V); 0.3–999 s per step				
Timing					
Test time	0.3 – 999 s (0 = continuous)				
Rise / fall time	0.1 – 999.9 s (0 = off)				
Waiting time (DC/IR only)	0.1 – 999 s (0 = off)				
Time accuracy	±(1% + 0.1 s)				
Safety & protection					
High-voltage floating output	ACW/DCW/IR, leakage <3.5 mA	—	ACW/DCW/IR, leakage <3.5 mA	—	—
Electric-shock protection	0.5 mA ± 0.25 mA, selectable On/Off				
Start / Interlock protection	Interlock pin must be pulled low to enable HV output				
Panel protection	Key lock, password				
Alarm indication	PASS: short tone, green light FAIL: long tone, red light				
Storage & general					
Internal storage	100 files, up to 50 steps per file				
Calibration temperature	18–28°C, 30–70% RH				
Operating temperature	0–45°C, 20–90% RH				
Storage temperature	−10–55°C, <80% RH				
Warm-up time	≥ 20 minutes				—
Power supply	100 – 240 VAC, 47 – 63 Hz				
Power consumption	Idle < 100 W / Rated 1000 W				
Dimensions (W×H×D)	430 × 132 × 500 mm				
Weight	21 kg		20 kg		21 kg

*Vs = test voltage. "-" = not applicable to this model.

Interfaces

RS232	USB Host	USB Device	LAN	Handler	SCPI	GPIB
standard	standard	standard	standard	standard	standard	optional

Interlock connector standard on all models; rear-panel HV output for automated line integration.

Standard accessories

Item	Description
—	EU power cable (Schuko, CEE 7/7)
TH90018	Withstand-voltage test lead (TH9110 / TH9111 only)
TH90015	Withstand-voltage test lead (TH9110A / TH9111A / TH9112A only)
TH90003R/B	Withstand-voltage test lead (TH9112A only)

Optional accessories

Item	Description
TH90015	Test cable
TH90003R/B	Test cable with clips

More accessories available on request — ask your Techmize contact or authorized distributor.

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