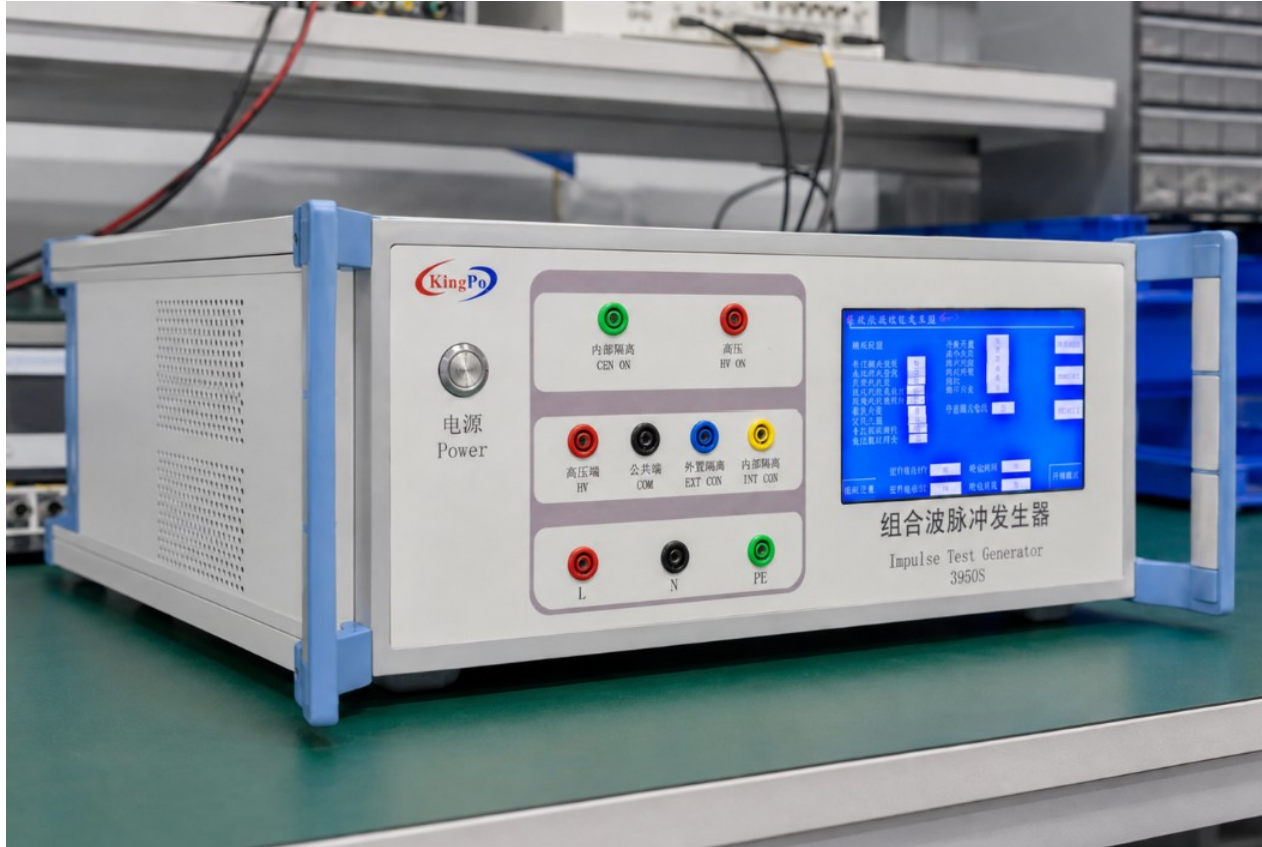


SURGE IMMUNITY TEST EQUIPMENT

IEC 61000-4-5 Combination Wave Surge Generator

KINGPO KP-3950S | IEC 61000-4-5 | GB/T 17626.5



SURGE VOLTAGE 0.5-6 kV	VOLTAGE WAVE 1.2/50 μs	CURRENT WAVE 8/20 μs	BUILT-IN CDN 300 V / 10 A
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Product Overview

The KINGPO KP-3950S Combination Wave Surge Generator is designed for surge immunity testing in accordance with IEC 61000-4-5 and GB/T 17626.5. It generates a 1.2/50 μ s open-circuit voltage waveform and an 8/20 μ s short-circuit current waveform for evaluating electrical and electronic equipment against transient overvoltages associated with switching and lightning-related effects.

The generator provides adjustable surge output from 0.5 kV to 6 kV, positive and negative polarity, phase-synchronized triggering, programmable surge sequences, and a built-in single-phase AC/DC coupling network. Source impedance and coupling configuration should be selected according to the EUT port and applicable test requirement.

Typical Applications

EMC & Certification Surge immunity testing where IEC 61000-4-5 or an equivalent national standard is referenced.	R&D / Pre-Compliance Evaluation of EUT behavior and surge-protection design before formal compliance testing.
QA Verification Repeatable design-change, comparative and internal engineering verification.	Typical DUT AC/DC powered electrical and electronic equipment within the selected CDN and port configuration.

Technical Specifications

Item	Specification
Model	KP-3950S
Open-Circuit Voltage Waveform	1.2/50 μ s
Voltage Front Time	1.2 μ s $\pm$ 30%
Voltage Time to Half Value	50 μ s $\pm$ 20%
Surge Voltage Range	0.5-6 kV
Voltage Setting Resolution	0.01 kV
Voltage Indication Accuracy	$\pm$ 10%
Short-Circuit Current Waveform	8/20 μ s
Maximum Short-Circuit Current	500 A $\pm$ 10% (12 Ω configuration)
Output Impedance	12 Ω $\pm$ 10%
2 Ω Configuration	Available according to test requirement; current capability to be confirmed
Output Polarity	Positive / negative
Synchronous Trigger Phase	0-360°
Phase Setting Resolution	1°
Surge Count	1-9,999
Surge Interval	20-60 s
Built-in AC Network Capacity	Single-phase 300 V, 10 A, 50/60 Hz
Built-in DC Network Capacity	300 V, 10 A
Coupling Paths	L-N, L-E, N-E, L+N-E
Power Supply	AC 220 V $\pm$ 10%, 50/60 Hz
Dimensions	580 $\times$ 460 $\times$ 200 mm
Weight	Approx. 20 kg

Configuration Note: The 500 A rating applies to the stated 12 Ω configuration. For a 2 Ω test configuration, confirm the required surge-current capability before quotation.

Combination Wave Test Principle

OPEN-CIRCUIT VOLTAGE

1.2/50 μ s

Voltage waveform characterized with the generator output open.

SHORT-CIRCUIT CURRENT

8/20 μ s

Current waveform characterized with the generator output shorted.

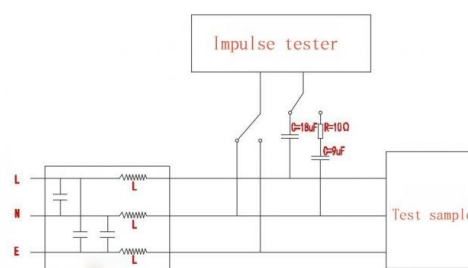
These two waveforms describe the same combination-wave generator under different load conditions. With an actual EUT connected, the resulting surge voltage and current depend on the EUT impedance, generator source impedance and coupling arrangement.

Source Impedance and Configuration

The KP-3950S is specified with a 12 Ω $\pm$ 10% configuration, while a 2 Ω configuration can be provided for applications that require it.

Because source impedance affects the available short-circuit surge current, the required impedance and current capability should be confirmed together.

For power-port testing, the surge is applied to the selected EUT conductors through a coupling/decoupling network while the auxiliary power source is decoupled.



Typical coupling concept - reference schematic

Built-in Coupling/Decoupling Network

The KP-3950S includes a built-in single-phase coupling network for power-port surge testing. The network couples the surge into the selected EUT conductors while helping isolate the auxiliary power source.

AC EUT SUPPLY Single-phase, up to 300 V / 10 A, 50/60 Hz	DC EUT SUPPLY Up to 300 V / 10 A	COUPLING PATHS L-N, L-E, N-E, L+N-E
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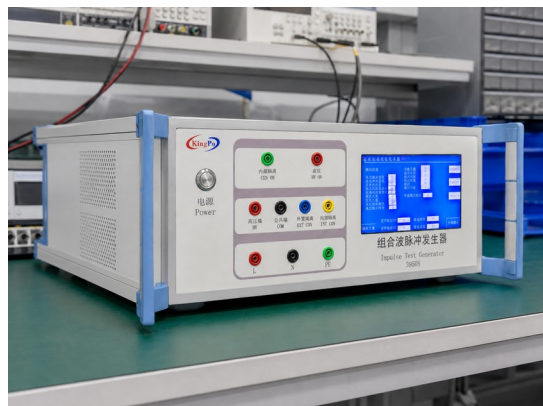
An external or customized CDN should be considered for:

• Three-phase equipment	• EUT current above 10 A
• EUT supply voltage above 300 V	• Special source-impedance requirements
• Communication or signal ports	• Other standard-specific coupling arrangements

Configuration Guide

TEST REQUIREMENT	EUT INFORMATION	SYSTEM & DOCUMENTATION
- Applicable standard and edition - Required surge voltage - Line-to-line / line-to-ground coupling - Required source impedance	- AC or DC supply - EUT voltage and current - EUT port to be tested - Single-phase or three-phase system	- Required external CDN - Calibration points - Certificate / traceability requirements

Typical Laboratory Test Setup



A typical power-port surge test setup includes:

- KP-3950S surge generator
- Equipment under test (EUT)
- Suitable coupling/decoupling network
- EUT power supply
- Monitoring equipment
- Protective grounding

The exact test sequence and acceptance criteria should follow the applicable standard and product-specific test plan.

Compliance & Regulatory Assurance

The KP-3950S is designed for surge immunity testing according to IEC 61000-4-5 and GB/T 17626.5 when the appropriate source impedance and coupling configuration are selected.

For laboratory use, calibration and verification documentation can be specified according to project requirements. The equipment should be described as designed for testing according to the standard, not as independently IEC certified.

Technical Inquiry & Configuration Support

To confirm the appropriate KP-3950S configuration, please provide:

• Applicable standard and edition	• Required surge voltage / source impedance
• EUT supply voltage and current	• EUT port and coupling requirement
• Calibration or documentation requirement	

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