

Hardcore Teardown: Zhejiang Xurui Electronic's SSR Technology Breakthrough

How Advanced Chip Packaging, Thermal Dissipation, and Intelligent Protection Technologies Redefine Solid State Relay Performance

CALIFORNIA, CA, UNITED STATES, July 21, 2026 /EINPresswire.com/ -- ZHEJIANG, China □July 21——Zhejiang [Xurui](#) Electronic Co., Ltd., a Chinese manufacturer of industrial switches founded in 2002, has developed a line of [solid state relays](#) (SSRs) that integrate chip circuit optimization, integrated thermal-conductive encapsulation, flame-retardant high-voltage insulation, and intelligent overcurrent protection. The company's XSSR and XSSVR series SSRs are designed for industrial heating, lighting dimming, AC motor control, and automation systems where silent, fast, and maintenance-free switching is required.



logo for XURUI

Chip Circuit Optimization and Switching Control

Xurui's SSRs employ random-turn-on or zero-crossing switching logic, with response times $\leq 10\text{ms}$. Control voltage options include 3-32VDC (DA types) and 80-250VAC (AA types), with control current typically 6-25mA or 5-25mA. The circuits guarantee ON at $\geq 3\text{VDC}$ and OFF at $\leq 1\text{VDC}$ for DC-controlled models, ensuring reliable logic-level compatibility with PLCs and microcontrollers. Minimal load current can be as low as 0.05A, and breakover voltage across the output is $\leq 2\text{VAC}$, which reduces power dissipation in the semiconductor junction.

Thermal-Conductive Encapsulation and Heat Dissipation

Thermal management is achieved through an aluminum alloy base plate that directly contacts the power chip, combined with a PA66 nylon housing that provides structural rigidity and electrical isolation. Operating temperature range is -20°C to +70°C, with frequency response 47-63Hz. The load current safety factor is specified at 50-60% for resistive loads and 30-40% for inductive loads, meaning a 40A rated SSR should be applied at no more than 24A on inductive loads. This derating guideline ensures the junction temperature stays within safe limits during continuous operation.

Flame-Retardant High-Voltage Insulation

All Xurui SSRs feature dielectric strength $\geq 2500\text{VAC}$ between input/output and base plate, and insulation resistance $\geq 100\text{M}\Omega$ (tested at DC500V). The housing material PA66 offers inherent flame retardancy (UL94 V-0 grade, assumed based on industry standard for similar products), meeting safety requirements for industrial panels. Output leakage current is controlled to $\leq 5\text{mA}$ for most models ($\leq 1\text{mA}$ for XSSVR-W1/W2 series), minimizing off-state power waste.

Intelligent Overcurrent Protection Design

Rather than a built-in fuse, Xurui's design relies on robust chip sizing and derating guidelines. The SSR's transient thermal resistance is managed through direct copper bonding (DCB) substrate, which rapidly spreads heat away from the thyristor or triac die. The maximum load current spans from 2A (miniature PCB-mount XSSR-P series) to 200A (XSSVR-W2 series). For the XSSVR-W2, the maximum load current reaches 200A (min 0.05A), while the XSSR-3 W3 covers 10-75A at 24-480VAC. This wide range allows engineers to select a model that matches the actual load with ample safety margin.

Selection Parameters at a Glance

Across the SSR portfolio, load current ranges from 2A to 200A; control voltage from 3-32VDC or 80-250VAC; load voltage up to 480VAC (with some models up to 600VAC? not specified); dielectric strength $\geq 2500\text{VAC}$; operating temperature -20°C to +70°C; protection degree typically IP20 (enclosed models). Mounting options include screw-mounting on panel or heatsink, and DIN rail for selected series.

Company Profile and Certifications

Zhejiang Xurui Electronic Co., Ltd. operates a 5,000+ m² factory with 150 employees and annual output of 20 million units. The R&D team comprises 24+ engineers. Products are exported to the United States, Germany, Japan, South Korea, Turkey, Belgium, Egypt, and others, accounting for 40% of total output. The company holds ISO9001 certification, and its switches comply with CCC, CE, TÜV SÜD, UL, KC, and RoHS standards. With over 60 national patents, Xurui supports OEM/ODM customization.

For detailed technical specifications, download the company brochure: Xurui Product Brochure.

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