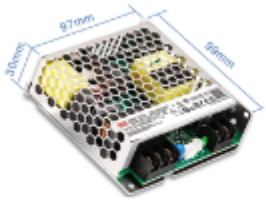
Powering More with Less â€” The MEAN WELL NSP Series

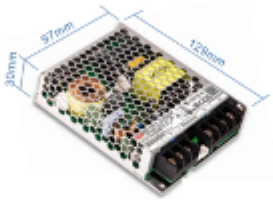
Description

In todayâ€™s connected world, electronic systems are expected to do more with less, less space, less energy, and less noise, while maintaining uncompromising reliability. Engineers designing industrial automation, medical devices, telecommunications, and next-generation embedded systems face escalating pressure to balance compact form factors with robust, standards-compliant performance. The MEAN WELL NSP Series meets these demands directly and helps accelerate product development by combining high efficiency, intelligent protection, and advanced thermal management in a compact design.

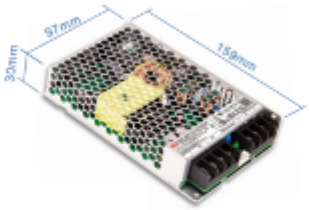
Representing the next evolution of MEAN WELLâ€™s NSP power-supply platform, the NSP-75, NSP-100, NSP-150, NSP-200, and NSP-320 establish a new benchmark for compact AC/DC conversion. The NSP family delivers exceptional reliability across a wide range of environments and applications by uniting cutting-edge conversion efficiency, thoughtful engineering with comprehensive protections.



NSP-75, NSP-100



NSP-150



NSP-200

From RSP to NSP: A Seamless Upgrade with Tangible Gains

For more than a decade, MEAN WELLâ€™s RSP family has been its flagship product line, widely adopted for its dependable performance and attractive costâ€“performance ratio. To keep pace with industry trends, customer requirements, and evolving certifications, MEAN WELL created the NSP family as the natural successor. The NSP platform brings a broad wattage roadmap reaching up to 2400 watts across the extended series, making it the ideal replacement path for legacy RSP designs in a smaller footprint.

Migration from RSP to NSP is intentionally straightforward. The NSP series retains the same or near similar mounting hole patterns as RSP models, allowing drop-in mechanical compatibility while delivering immediate space savings. Depending on the model, the NSP can reduce occupied volume by as much as 75%. In applications that previously used the RSP-75, the equivalent NSP-75 typically frees up to 40% of enclosure space while adding power headroom and improved thermal margin, enabling either more functionality in the same product or a slimmer overall footprint. The NSP-100 preserves the RSP-100 mounting pattern yet occupies nearly half the space, which means more power and more features in a much smaller package. Even the NSP-200 reaches higher power density in an enclosure envelope comparable to earlier, lower-power RSP units. In short: more power and more functionality in far less space, without re-drilling a single hole.

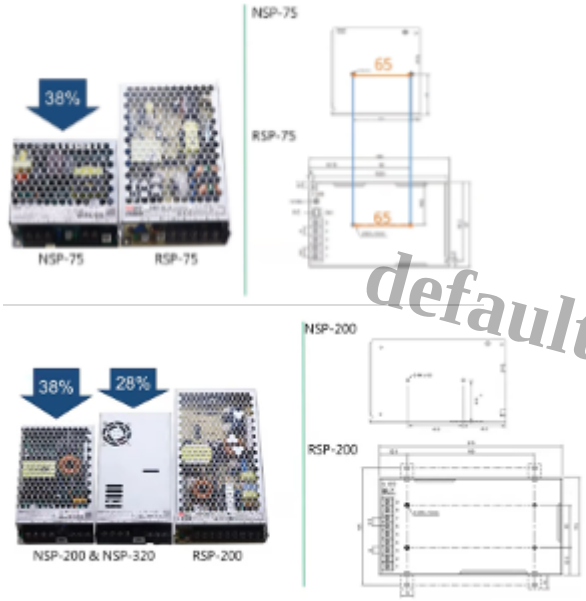
Addressing Customer Challenges with Proven Solutions

Design engineers and end users share consistent pain points: limited space, thermal inefficiency, environmental volatility, excessive noise, certification complexity, and lifecycle risk. The NSP transforms each into an advantage. Its compact footprint frees enclosure space; its higher efficiency reduces heat and operating cost; its environmental hardening and OVC III resilience maintain uptime in harsh sites; its smart-fan cooling lowers noise and maintenance; its global certifications compress approval timelines; and its five-year warranty plus comprehensive protections improves the total cost of ownership.

For designers, the platform simplifies development, reduces component count, and accelerates time-to-market. For end customers, it delivers cooler, quieter, more reliable systems that cost less to operate and last longer. That combination defines the NSP value proposition: Power Without Compromise.

Delivering More Power in a Smaller Footprint

Space is at a premium in modern control panels, embedded systems, and diagnostic instruments. Traditional supplies can overrun enclosure volume, add heat, and limit layout flexibility. The NSP family addresses these constraints with an approximate 25% reduction in footprint versus legacy designs while preserving output capability and reliability. The NSP-75 measures just 99 Ã— 97 Ã— 30 mm, and the NSP-320 delivers 320 watts in a compact 179 Ã— 99 Ã— 30 mm package. This reduction allows engineers to maximize usable space, streamline integration, and improve airflow, all while maintaining MEAN WELLâ€™s hallmark safety and efficiency standards. For end customers, the result is smaller solutions, reduced installation space, easier handling, and lower overall equipment costs.



Reduced Cost of Ownership through Efficiency and Extended Life

Every watt saved extends component longevity and improves profitability. Depending on model, the NSP achieves 89% to 95% efficiency, with the mainstream models reaching up to 94.5%. Standby consumption remains below 0.5 watts. Higher efficiency simplifies thermal design by reducing the need for large heatsinks or forced ventilation, which also reduces acoustic and service burdens. For end users, the benefits are long-term and measurable: cooler operation, longer maintenance intervals, and lower operating expenses. This performance-plus-sustainability profile makes the NSP a key enabler of energy-conscious, next-generation system design.

Performance Across Extreme Conditions

Real-world deployments demand resilience. Every NSP model operates from â€“40 Â°C to +85 Â°C, with full-load capability maintained up to +60 Â°C. A wide 85â€“305 VAC input window ensures seamless use on global mains, including 277 VAC commonly encountered in industrial three-phase environments, eliminating the added cost and complexity of external converters. Additional feature such as compliance with Overvoltage Category III (OVC III) improves robustness against line disturbances and electrical surges, making the NSP an excellent choice for automation lines, outdoor and remote

enclosures and industrial applications.

Noise and moving parts are liabilities in many applications. NSP models up to 200 Wâ€”NSP-75, NSP-100, NSP-150, and NSP-200â€”use convection cooling only, eliminating fans and delivering silent operation with minimal maintenance. For higher power, the NSP-320 integrates a temperature-controlled fan that activates only when required, making this power supply very quiet yet extending fan and power supply life. This intelligent approach reduces dust ingestion and mechanical wear, which in turn improves field reliability.

Model		New Generation NEW	Old Generation
		NSP-75~320 AC-DC High-Reliability Compact Size With PFC Enclosed Type Power	RSP-75~320 AC-DC Built-in PFC Enclosed Type Power
Vin		85 ~ 305Vac	85 ~ 264Vac
No Load Power Consumption		0.3W~0.5W	-
Output Wattage		75W / 100W / 150W / 200W / 320W 200% Peak Power	75W / 100W / 150W / 200W / 320W
Vout		5V / 7.5V / 12V / 15V / 24V 27V / 36V / 48V / 60V (by series)	2.5V / 3.3V / 4V / 5V / 7.5V / 12V / 13.5V 15V / 24V / 27V / 36V / 48V (by series)
Efficiency		90% ~ 94.5% (by model)	75.5% ~ 90% (by model)
Operating Temp.		-40~+85°C (>+60°C derating)	-30~+70°C (>+50°C derating)
DC OK Relay Contact		V (NSP-150~320)	-
Remote Control (R.C)		V	V
Remote Sense (R.S)		V (NSP-150~320)	-
Fan Noise		NSP-320 <40dB (NSP-75~200 fanless design)	RSP-320 <[illegible] (RSP-75~200 fanless design)
Leakage Current		350μA / 277 Vac (by model)	<1~2 mA / 240Vac (by model)
Isolation Protection		2 x MOPP	-
OVC Level		OVC III	-
PCB Conformal Coating		V	-
Safety Certification		CB / DEKRA / UL / RCM / BSMI / CCC EAC / BIS / KC / CE / UKCA / SEMI47 (BIS/KC certified , no stock by request)	CB / TÜV / UL / RCM / BSMI / CCC EAC / BIS / KC / CE / UKCA
		62368-1 / 61558-1 / 60335-1 60601-1 / 61010-1 / 62477-1	62368-1 / 61558-1
Withstand Voltage (I/P - O/P)		4.2KVac	3KVac
EMC Immunity (ESD)		Contact ± 8KV Air ± 15KV	Contact ± 4KV Air ± 8KV
Dimensions (L x W x H)	75W	99 x 97 x 30 mm (-38%)	159 x 97 x 30 mm
	100W	99 x 97 x 30 mm (-46%)	179 x 99 x 30 mm
	150W	129 x 97 x 30 mm (-36%)	199 x 99 x 30 mm
	200W	159 x 97 x 30 mm (-38%)	215 x 115 x 30 mm
	320W	179 x 99 x 30 mm (-28%)	215 x 115 x 30 mm
Warranty		5 years	3 years

※ The new NSP series outperforms the RSP series with enhanced features, better safety certifications, a more compact design, and an extended warranty. For new projects , please adopt NSP series.

Intelligent Protection and Programmable Flexibility

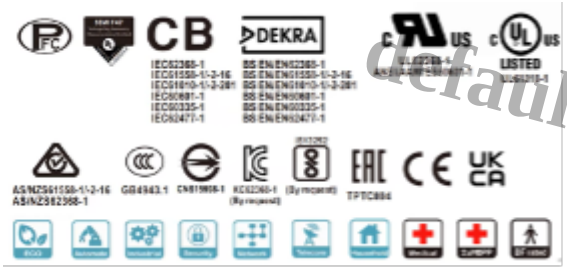
The MEAN WELL NSP protects itself and downstream loads with comprehensive safeguards against short circuit, overload, overvoltage, and overtemperature. Beyond protection, the platform offers programmable voltage and current. Engineers can adjust voltage up to approximately 120% and current up to 100%, and can also be programmed remotely down to 0%, effectively performing a remote shutdown without extra control lines. Uniquely, the same communications cable used for control, whether Modbus or CANbus, can be used to issue the shutdown, removing the need for an auxiliary interface. The wide programmable range also means a single 5 V model can cover 2.5 to 5.0 V requirements, simplifying BOMs for devices that target 2.5 V, 3.3 V, and 5 V rails.

For dynamic loads, the NSP provides 200% peak-power capability for up to five seconds. That additional headroom handles motor starts, solenoid pulls, and inrush events gracefully. Without

sufficient peak capacity, designers must oversize the supply, or install additional power supplies or components to ride through transients. With the MEAN WELL NSP, a single properly sized power supply can start the motor or actuate the load, then quickly return to nominal operation.

Safety and Medical Certification Leadership

Power system safety is a critical factor in both industrial and medical applications. The NSP Series meets or exceeds the worldâ€™s most demanding certification standards, including IEC/EN/UL 62368-1, IEC/EN 60601-1, IEC/EN 61558, IEC/EN 61010-1, and IEC/EN 62477-1. With 2Ã—MOPP insulation and leakage current below 350 ÂµA, the NSP Series complies with BF-grade medical safety requirements, ensuring safe use in patient-contact environments such as diagnostic analyzers, monitoring equipment, and laboratory devices. This level of certification not only simplifies global product compliance but also enables manufacturers to enter both industrial and medical markets with a single unified design platform, saving months of regulatory effort and certification cost.



Built for Global Reliability

Reliability has always been central to MEAN WELLâ€™s engineering philosophy. The NSP Series achieves Mean Time Between Failures (MTBF) ratings exceeding 1.7 million hours, validating its endurance in real-world applications. Each power supply is protected with reinforced insulation, conformal coating, and surge immunity up to 4 kV line-to-earth, ensuring performance in environments prone to humidity, vibration, or electrical noise. All NSP models undergo rigorous testing in accordance with EN61000-4-2 through EN61000-4-11, guaranteeing immunity to electrostatic discharge, conducted interference, and voltage fluctuations commonly encountered in industrial and medical facilities. This robust design allows the NSP Series to maintain continuous operation even under unpredictable conditions, making it a trusted foundation for mission-critical systems worldwide.

Portfolio Breadth and System Fit

The NSP roadmap spans output power from 75 watts to 2400 watts across the broader series, with output voltages from 5 to 60 V and model-specific peak efficiencies up to 95%. Compared with prior-generation RSP units, the NSP delivers higher efficiency, a wider operating temperature range up to 85 Â°C, expanded input tolerance to 305 VAC, and dramatically higher power density. For designers, a single platform can now cover low-voltage logic rails, mid-voltage motor drives, and higher-voltage applications with fewer part numbers, simplifying selection and inventory.

Applications Across Industries

The NSPâ€™s versatility enables broad adoption. In industrial automation, it supplies stable, surge-tolerant power for PLCs, sensors, servos, and robotics where uptime and precision are paramount. In medical and laboratory equipment, silent operation and low leakage current suit patient monitors, analyzers, and test instruments. In lighting and smart infrastructure, high efficiency and reliability support LED control and building IoT nodes with minimal maintenance. In renewable energy and outdoor systems, rugged construction, wide temperature range, and extended input tolerance deliver dependable operation. Across these sectors, the NSP consistently combines smaller size, greater performance and global reliability with cost savings.

Partnering for Success: MEAN WELL and CDI

Component Distributors Inc. (CDI) enhances the value of the NSP Series through deep technical expertise and local support. As MEAN WELLâ€™s authorized distribution and engineering partner, CDI provides design guidance, rapid prototyping, and supply-chain reliability tailored to OEM and integrator needs. CDIâ€™s engineering team helps customers match the right NSP model to their specific requirements, configure custom harnessing or mounting, and maintain continuity through bonded inventory programs.

By combining MEAN WELLâ€™s global excellence with CDIâ€™s responsive service and application knowledge, customers receive not just a power supply, but a complete, optimized power solution, designed, supported, and delivered for long-term success.

Power Without Compromise

In a marketplace where innovation depends on compact, efficient, and reliable power, the MEAN WELL NSP Series stands out as the definitive solution. It solves the most common design and operational challenges faced by engineers and system operators alike, addressing space, heat, noise, certification, and reliability with precision and intelligence. Through CDI, this technology is now closer than ever to your next project.

The full NSP lineup â€” 75 W, 100 W, 150 W, 200 W, and 320 W models â€” is available today from Component Distributors, Inc. (CDI), MEAN WELLâ€™s authorized partner for North America providing you with technical consultation, engineering assistance, and fast delivery to accelerate your product development and integration.

Shop MEAN WELL NSP Series at CDI

Category

1. Ewave
2. MEAN WELL USA
3. Power Electronics

Date Created
November 21, 2025
Author

eisha-khalidcdiweb-com