

Spine Plug & Play

Automatic Load Management for Generators

TECHNICAL DESCRIPTION

The Spine Plug & Play device is an intelligent, easy-to-install module designed to ensure safe and efficient generator operation by preventing low-load running conditions. As part of the Spine remote monitoring ecosystem, the Plug&Play unit provides automatic load control for temporary power systems on construction sites, events, and industrial applications.

PLUG & PLAY INTEGRATION

Ready for immediate use with no complex commissioning. Designed for seamless connection to temporary power distribution systems and compatible with the Spine real-time monitoring platform.

In the Plug & Play concept, the Spine device is simply connected to the generator using the socket through which the generator's full output current normally passes. This means all electrical power produced by the generator flows through the Spine unit.

Structurally, the Spine Plug & Play device is a compact enclosure with:

- **One incoming supply cable with a 32A or 63A plug, depending on the model**
- **Two outgoing sockets 16A or 32A depending on model**

One socket is used to feed the normal operational equipment, i.e., the load that the generator is primarily intended to supply.

The second socket is reserved for an auxiliary load, such as an electric heater, which is automatically activated by the Spine unit only when the normal load drops too low.

This architecture ensures extremely simple installation: plug the Spine unit into the generator, plug your standard equipment into one socket, and the auxiliary heater into the other. No rewiring, no site-specific commissioning.

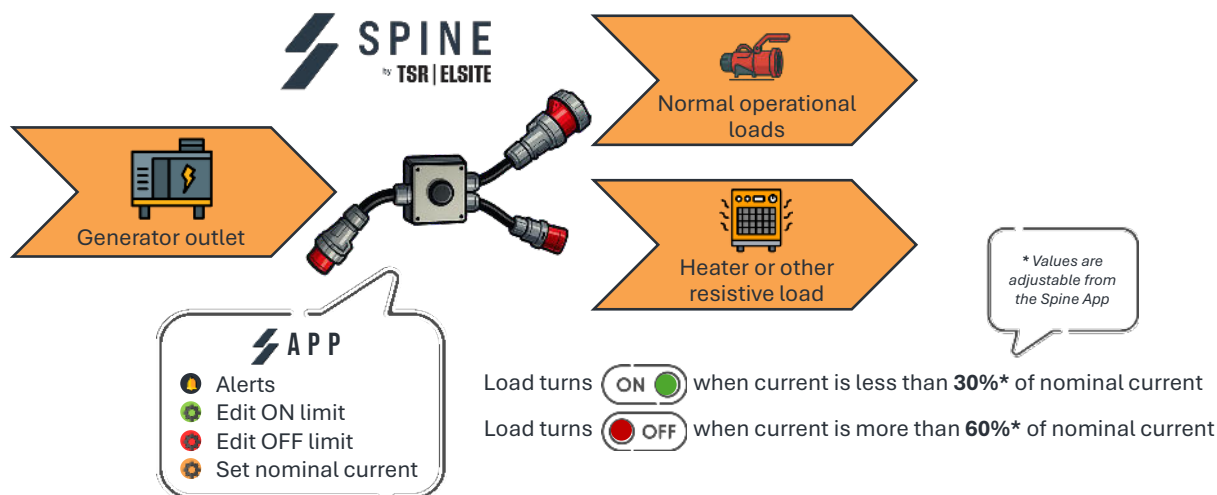
Controlled auxiliary load

Normal operational load

Input from generator

AUTOMATIC LOAD CONTROL

When the main load of the generator drops too low, the Spine Plug&Play device automatically activates the auxiliary load via a contactor-controlled output. This ensures that the generator never operates under harmful low-load conditions. When the main load rises again, the Spine unit automatically disconnects the auxiliary load, keeping overall power use efficient and safe.



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MODEL VARIANTS

32A Plug & Play Model

- Includes a contactor-controlled 16A auxiliary output
- Suitable for powering an electric heater or similar load to maintain minimum generator loading

63A Plug & Play Model

- Includes a contactor-controlled 32A auxiliary output
- Supports higher supplemental loads for larger generators

OPERATING PRINCIPLE

The Spine Plug & Play module continuously measures the generator's operating load. If the primary (normal) load falls below a predefined threshold, the unit automatically activates the auxiliary output to connect the heater or other resistive load, and once the load returns to a set level, the Spine automatically disconnects the auxiliary load.

This maintains a stable minimum generator load at all times and prevents the harmful operating conditions associated with running a generator under too light load.

WHY LOW LOAD IS HARMFUL FOR GENERATORS

Running a generator with insufficient load can cause several operational and mechanical problems, such as:

- **Wet stacking / carbon buildup:** Diesel generators running at low load do not reach proper combustion temperature, causing unburned fuel, soot, and carbon deposits to accumulate in the exhaust system and engine components.
- **Poor combustion and increased smoke:** Insufficient load leads to incomplete combustion, producing visible black smoke and harmful emissions.
- **Reduced engine efficiency:** The generator runs at suboptimal temperature and pressure levels, reducing overall efficiency and increasing fuel consumption over time.
- **Oil dilution and engine wear:** Low exhaust temperatures allow unburned fuel to mix with engine oil, accelerating wear and shortening service intervals.
- **Unstable generator behavior:** Voltage and frequency regulation can become unstable at very low load levels, affecting sensitive connected equipment.

By maintaining a stable minimum load, the Spine Plug&Play unit significantly improves generator reliability, efficiency, and lifespan.

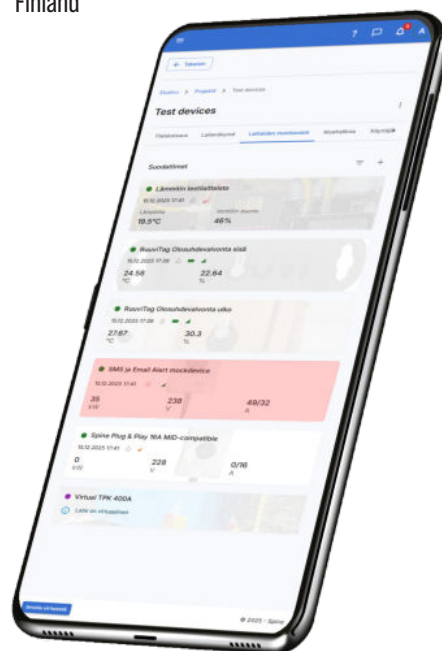
LOGISTICS AND OTHER INFORMATION

Product codes: 501310016 Spine Plug & Play 32A automatic load management

501310017 Spine Plug & Play 63A automatic load management

Warranty period: 2 years

Country of origin: Finland



Review the Spine terms of use at www.tsr-elsite.fi/en