Vertiv™ PowerNexus MV SST

Solid-State Transformer technology for data center power conversion

Solid-State Transformer (SST) technology provides a direct Medium Voltage AC (MVAC) to Low Voltage DC (LVDC) conversion using high-frequency power electronics and medium-frequency transformer isolation. This architecture reduces the number of conversion stages and enables higher efficiency, improved power density, and tighter control of power quality.

Key benefits

- **Higher efficiency:** Up to 98% AC/DC efficiency, reducing energy losses and improving PUE
- **Space optimization:** Compact, containerized design frees up space for IT load
- **800 VDC native output:** Directly supports next-generation AI infrastructure
- **Fault ride through capabilities[2]:** Advanced power quality, near-unity power factor, and grid compliance
- **AI power smoothing[2]:** Manages rapid load fluctuations and protects critical systems
- **Modular scalability:** Flexible, fast deployment aligned with evolving capacity needs

5MW 13.8kV 3W+G Vertiv™ SST

Vertiv™ PowerNexus MV SST is a high-capacity system designed for AI-driven and high-density data centers. It delivers reliable power conversion from MV (AC) to LV (DC) while maximizing floor space and reducing TCO.

The 5MW Vertiv™ SST configuration provides:

- Medium-voltage AC to low-voltage DC direct conversion platform
- Stable DC output with galvanic isolation
- High power density
- Up to 98% efficiency
- Parallel operation
- Ride through: globally compliant with TSO requirements
- Bidirectional power flow capability. Grid power quality improvement and active power support[1]
- High reliability thanks to +N redundancy architecture and internal bypass
- Batteries communication ports for coordination with energy storage systems to support AI-ready operation for managing rapid load fluctuations
- Efficient installation, operation and maintenance

Applications

- Data Center Hyperscaler & Neo Cloud High-performance Computing equipment



For illustrative purposes only

Power frame

- **Starter cabinet control** MV Input cable connection terminals
- **SST Power Modules:** Houses the core solid-state components for power conversion including Medium Frequency transformer
- **Harmonic filtering:** Integrates filters for grid compliance and clean power

Output DC

800 VDC power connections routed through a dedicated cabinet:

- Cables
- Dual outputs

[1] Conditions apply

[2] Conditions apply, Energy Storage integration through external DC/DC converters

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