



The electronic systems in today's datacenters, manufacturing facilities, medical care centers, power generation and distribution facilities, and other critical commercial and government infrastructure are increasingly sensitive to damage from conducted or radiated electrical transient signals that produce surges on power supply, communication, control, and monitoring circuits. These surges are often related to direct or nearby lightning strikes to the external power grid. Electro-mechanical systems at some facilities are also exposed to frequent internally-generated switching transients from the operation of inductive loads, or even from short-circuit currents due to equipment failures. As the production dependency on fully-automated, robotic systems and processes increases, there is an elevated risk for downtime due to electro-mechanical system failures.

- ⚡ **How can the sources of harmful transient signals be accurately pinpointed? Are transients being conducted from the external power utility or are they internally generated?**
- ⚡ **How are transient signals affecting the short-term and long-term operation of electro-mechanical systems?**
- ⚡ **When system failures do occur resulting from damaging transient signals, what are the proper mitigation steps to prevent recurring damage?**
- ⚡ **Are there preventative measures that can be implemented to reduce the risk of downtime due to transient-related electro-mechanical system failures?**

The Jupiter Transient Monitoring System (TMS)

provides a rugged, portable, high-speed data acquisition solution for continuous electrical transient monitoring for power systems, control systems, communication networks, and monitoring circuits. Jupiter TMS immediately alerts users when monitored systems are subjected to harmful transient signals, providing users the ability to quickly trigger preventative procedures before catastrophic failures occur. In some cases, the sources of electro-mechanical equipment damage or failure are ambiguous. Jupiter TMS serves as a troubleshooting instrument for quickly identifying the deleterious signals that compromised system operation, and based on accurate waveform characterization, efficiently pinpointing the sources.



JUPITER TMS Benefits

Facility Entrance Power Monitoring:

Jupiter TMS provides 24/7 monitoring for transient currents on the phase conductors within the main facility switchgear, in addition to the ground current of the switchgear SPD.

High-Speed: Conventional power quality monitors are blind to ultra-fast lightning transients- Jupiter TMS has the speed and bandwidth to capture 100% of lightning transients on the incoming power mains.

Instant Alerting: Jupiter TMS instantly and automatically alerts the operators by email or text when any harmful transients are detected on the facility power.

Precision Timestamping: Jupiter TMS timestamps detected transient with microsecond accuracy. When insurance claims are filed for damaged assets, Jupiter TMS provides the ground-truth proof that lightning was the source.

Non-Intrusive Measurements: Jupiter TMS utilizes high-bandwidth, flexible Rogowski current monitors to continuously sense transient signals on high-voltage phase conductors without impacting facility power.

Subpanel Power Monitoring: Jupiter TMS continuously monitors three-phase power on low/medium voltage sub-panels that directly feed critical electro-mechanical assets.

Transient Characterization: When Jupiter TMS triggers on a transient signal, the user instantly receives a real-time report including the measured current amplitudes, which phase conductor(s) were impacted, and immediate access to the raw current waveforms for further analysis.

SPD Monitoring: Jupiter TMS monitors the SPD ground current and triggers anytime the SPD is activated due to an over-voltage. When SPD ground current is detected, Jupiter TMS immediately provides the user with an accurate estimate of the energy dissipated by the SPD.

SPD Health: Jupiter TMS can be used to alert operators when SPDs have failed, triggering preventative maintenance actions before catastrophic failures occur.

Rugged Portability: Jupiter TMS is designed to provide robust, high-speed data acquisition capability in a compact, portable package that can operate reliably in the industrial environment.

Troubleshooting & Monitoring: Jupiter TMS can be used for both persistent power monitoring for critical facilities and as a troubleshooting instrument where known power-related issues exist.

NASA Pedigree: Jupiter TMS was designed and verified to exceed NASA's stringent requirements for transient monitoring of launch pads, launch vehicles, and space payloads.

