

UPS Systems – Protecting your investment

The purchase of a UPS system for a critical power installation is just one step toward protecting your investment. According to IEEE's recommended design/installation practices, "facilities housing major electronic computer/data processing systems or other major sensitive electronic equipment should have service entrances equipped with effective lightning protection". The purpose of the surge protection as service entrance is to protect the facility from the damaging effects of transient surges originating outside the facility (lightning / utility switching).

Furthermore, transient voltage surges are "harmful to most UPS equipment and to the sensitive electronic load equipment (i.e. via an unprotected static-switch bypass path around a UPS). Therefore, it is recommended practice that both the rectifier charger input circuit to the UPS and the associated UPS bypass circuits (including the manual maintenance bypass circuit) be equipped with effective Category "B" TVSS protection".

The General Electric Company supports the IEEE recommended practices stated above. While we recognize that several UPS products are offered with internal surge protection, this is typically in the form of a secondary surge arrester. The secondary surge arresters do not have the demonstrated repetitive surge current ratings of a TVSS, and do not typically clamp as tight as a TVSS device. In addition, the TVSS products have audible alarms, indicating lights and dry contacts for remote signaling of failure. We recommend installing the following GE Transient Voltage Surge Suppressors within the facility.

Service Entrance Location:

Good:

GE Tranquell HE 100kA per mode TVSS

Better:

GE Tranquell HE 150kA per mode TVSS

Best:

GE Tranquell HE 200kA per mode TVSS

UPS Location:

Good:

GE Tranquell ME 65kA per mode TVSS

Better:

GE Tranquell ME 80kA per mode TVSS

Best:

GE Tranquell HE 100kA per mode TVSS

The criteria for selecting “good”, “better” and “best” protection is based on the jobsite details. For service entrance, particular attention should be given to geographic location as well as the facilities risk tolerance for damage. Geographic location is key, as certain locations have a higher likelihood for lightning surge activity. For the TVSS at the UPS, consideration should be given to size of the UPS as well as relative location within the facility – closer to service entrance will increase exposure to larger residual surges. The Tranquell ME and HE are both available with integral surge rated disconnects, specifically designed for surge protection devices.

The combination of the Tranquell HE at service entrance, with the Tranquell ME 65kA at the UPS will provide protection for the UPS and connected load, providing a cascaded approach to surge protection. The service entrance device will reduce the larger surges from outside the facility and the downstream device will clamp those surges tighter, as well as protect from transients originating from within the facility. The TVSS devices need to be installed properly, which requires a solid ground path – equipment ground, not an isolated ground.