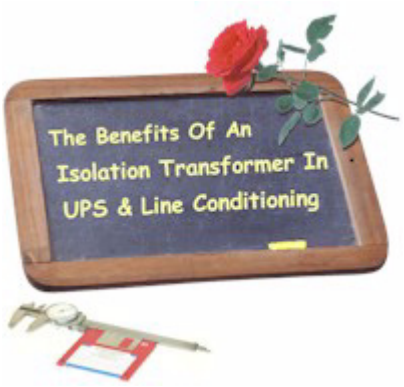
White Paper

Benefits Provided by UPS/Line Conditioners with Isolation Transformers

Author
Nam Paik
Director of Engineering
TSi Power

The Benefits Provided by UPS and Line Conditioners with an Isolation Transformer



Dedication And Isolation

With the recent proliferation of low-cost standby UPS products which claim to "solve all the ac power problems", a false sense of security seems to exist among users who purchased and installed these basic non-isolated UPS for their PCs, fileservers, network/telecommunication equipment, point-of-sale terminals, etc.

Such a false sense of security and confidence is often rudely challenged by equipment glitches, crashes, and malfunctions that persist even after installation of these non-isolated UPS products. The answer to this unexplainable failure of UPS to provide 100% protection against ac power problems can be found in an "Isolation Transformer" based UPS or Line Conditioner.

Experienced electrical engineers have known this limitation of non-isolated UPS, line conditioners, surge protection devices and EMI/RFI noise filters for a long time - and their answer has been a "dedicated circuit" which is a separate ac wire run all the way to the main electrical panel located next to the building's power transformer. Since the high neutral line voltage and high levels of spikes and transients are caused by devices such as air conditioners, heaters, elevators, copiers, laser printers, etc., bypassing all the sub-panels that feed these "dirty" devices by installing and using a "dedicated circuit" usually solved the problems.However, installation of a dedicated circuit can be very expensive and time-consuming, especially when it is a large or high-rise building. Installation of a dedicated circuit also requires an approval and permit from a licensed professional engineer (PE.), the building wiring diagram and the final drawing and work must be inspected and approved by a local county or city electrical inspector. The cost of a single dedicated circuit can be several thousand dollars and may require several weeks (or months) from start to finish.

The high cost and long installation time of installing a dedicated circuit can be eliminated by using an isolation line conditioner or isolation UPS system, however. Because of the integral isolation transformer, each isolation line conditioner or UPS qualifies as a "Separately derived power source" under National Electrical Code 250-5D. Isolation conditioner and UPS also complies with the U.S. federal government's FIPS Publication 94 requirement of neutral and ground bonding for elimination of any problems caused by the presence of neutral voltage or common-mode noise/transients.

TSi Power Corporation
Represented by
CareBase
Michael Gibson
Post Office Box 2987
Glenwood Springs, CO
81602-2987 USA
Phone +1 970 945 2770
800 430 2770 (USA.CAN)
michaelg@carebase.com
www.carebase.com

Additional benefits provided by an isolation line conditioner (or UPS with isolation transformer):

1. Regeneration of power using the isolation transformer at the point of use means that it is a truly ideal power source (It is like moving the building transformer to within a few feet of sensitive equipment). The power from an isolation transformer is both DEDICATED and ISOLATED.
2. Multi-stage surge protectors and EMI/RFI noise filters are also built-in.
3. Isolation conditioner sizes ranging from 90 VA to 5.5 kVA allows optimized performance vs. cost product selection. UPS size ranges from 400VA to 2100 VA.
4. Installation is immediate and no permit or approval is required. (Conditioners are also available in sizes up to 36 kVA, and it is recommended they be installed by a licensed electrician).
5. Cost of the unit is only a small fraction of a dedicated circuit installation cost.

About the author

Nam Paik ~ Director of Engineering, TSi Power Corporation

Mr. Paik has over 15 years experience in the power electronics industry. He was with Northern Telecom (now Nortel Networks) for 4 years prior to joining TSi Power in 1988. Nam has focused on UPS, Line Conditioner and dc to ac inverter products and most recently has developed a number of customized power protection and conversion systems for several U.S. government agencies and international applications.

TSi Power Corporation
Represented by
CareBase
Michael Gibson
Post Office Box 2987
Glenwood Springs, CO
81602-2987 USA
Phone +1 970 945 2770
800 430 2770 (USA.CAN)
michaelg@carebase.com
www.carebase.com