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Application Note
DWG# 11090208
Subject: 6kv surge protection

Many manufacturers have added 6kV or 6000 Volt surge protection to their drop passives and some have added these to cable line passives such as power inserters, splitters and DCs.

What is 6KV surge protection?

The 6kv standard is derived from the IEEE standard of 6KV/3000amps. This was calculated by determining the protection needed to prevent household electrical wiring from burning during a surge and causing a fire.

6kv is an internal electrical wiring standard

In most products the manufacturers are using TVS diodes, avalanche diodes or surge gap technology. All these have the advantage of being very economical and meeting the IEEE standard.

Limitations of 6kv surge protection

6kv protection has significant problems when used to protect RF actives and passives. 6kv protectors are very slow in activating during a surge, usually several milliseconds

6kV protection components are both current and voltage limited. What that means is that when large currents enter the device, the clamping voltage increases as well, so there will be a large amount of destructive let thru energy getting passed the 6kv protection.

Cable Innovation's Sidactor technology fires in 1 nanosecond, over 1000 times faster than 6kv protection. The Sidactor is voltage limited, therefore it's trigger voltage never varies.

During a surge, pitting occurs on the plates of the 6kv surge protectors, consequently 6kv protectors degrade after each surge.

Cable Innovations Sidactor technology does not degrade.

6kv units only handle 6000 volts. A lightning strike can have over 1,000,000 volts and 40,000 amps. Although no protector can protect against a direct hit, 6KV protection offers little protection.

Cable Innovations Sidactor technology handles as much as 10,000 amps and unlimited voltage.

Conclusion

CATV passives and actives are far more sensitive to surges than electrical wiring. 6KV protection for RF applications is very limited and should not be relied on to protect CATV actives or passives.

For questions or comments please contact:
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