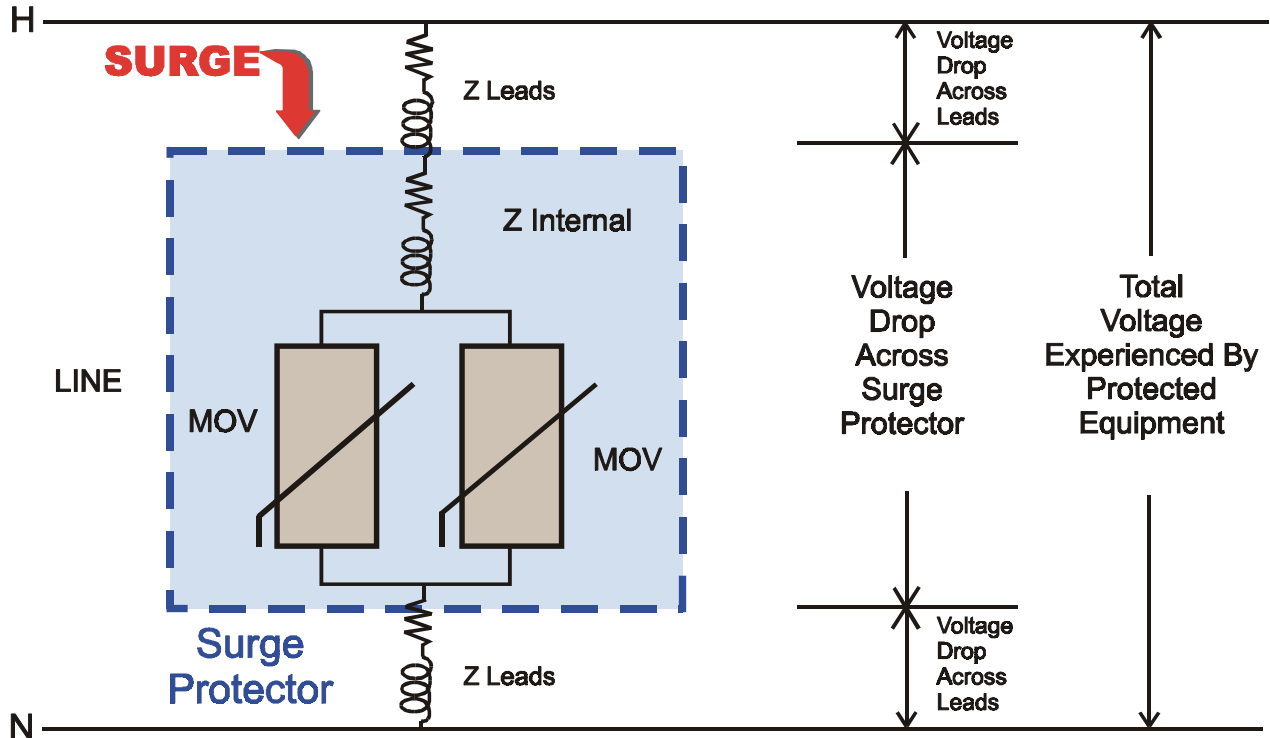


Micro-Z Concept

A Better Surge Path to Ground

One of the things we have learned over the years is that the inductance of wiring presents a relatively high impedance path to ground. This can produce unwanted voltage drops which cause high "let-through" transient voltages to appear across your sensitive equipment.

The diagram below illustrates the distribution of voltage drops and how the sum of the voltage drops appears across the load.



Undesirable inductance is present in the wiring from the AC power line to the protector as well as within the protector itself.

Conventional surge protectors attempt to minimize inductive impedance by:

1. Using short and straight wiring - minimum slack, no extra turns, no loops.
2. By using very large diameter conductors for connection to the AC power line.
3. By dressing all leads tightly together, taping or tie wrapping over their full length.

While these steps provide some benefits - they fall short of what can be accomplished.

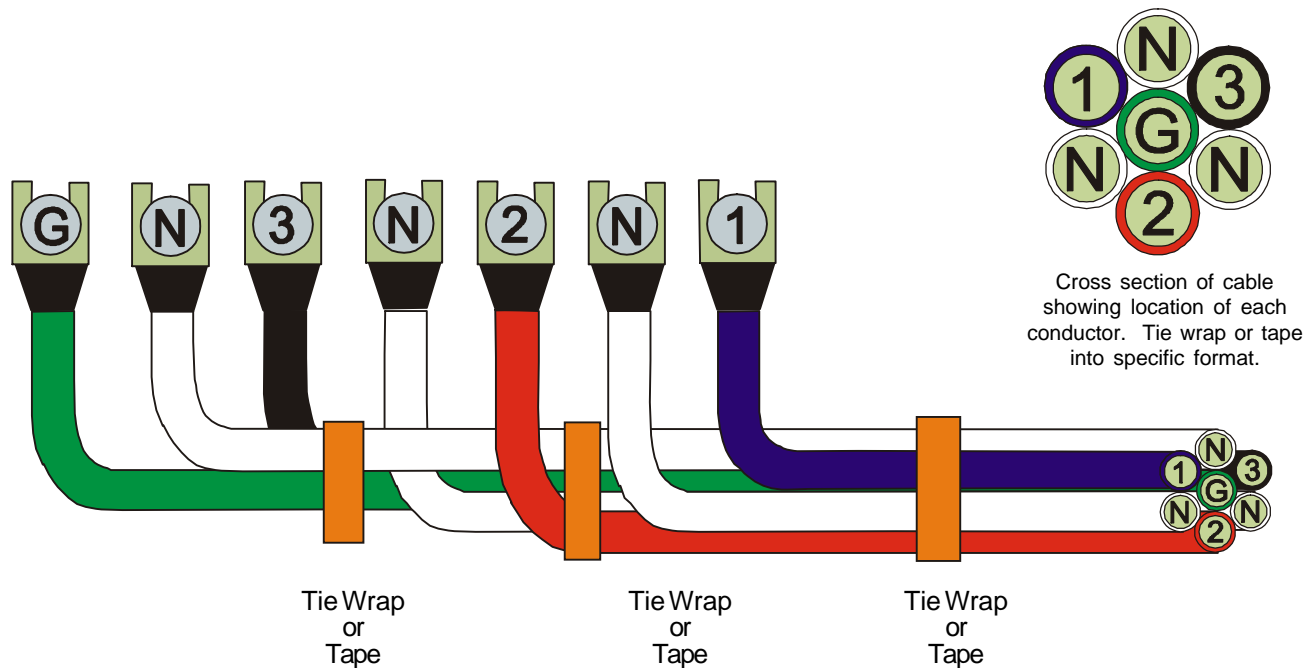
Micro-Z Concept

For Better Performance

MCG has coordinated the protector design and its related wiring to provide a significantly lower "let-through" voltage across the load. We call this approach the Micro-Z concept and a patent has been granted for the design. The concept is a two step procedure.

FIRST: The internal impedance of the protector was reduced by very close attention to the physical layout to create cancelling magnetic fields. These techniques, in conjunction with carefully designed low impedance surge current paths, have resulted in significantly lower voltage drops across the Micro-Z's internal wiring.

SECOND: MCG's breakthrough axial power cabling approach forces magnetic field cancellation within this cable. This results in a correspondingly low "inductive" voltage drop along the cable length.



Dress out wires so a phase conductor is adjacent to the ground and the two neutrals for the length of the cable run which should be as short and straight as possible.

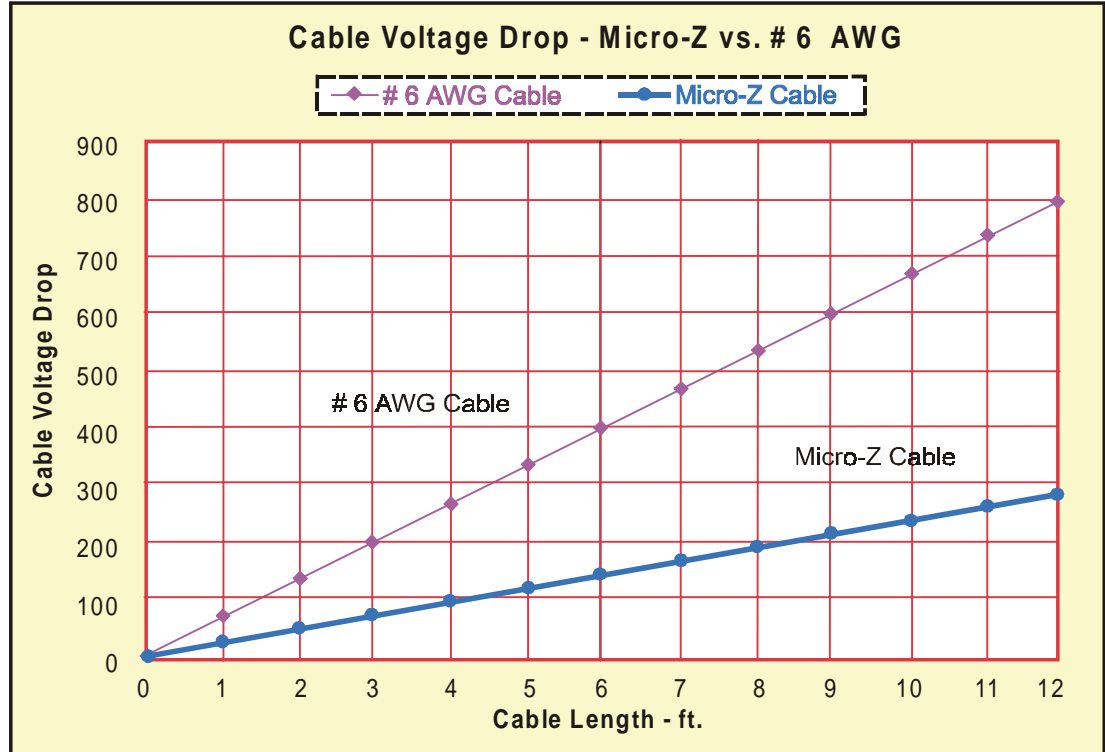
CONCLUSION: The Micro-Z concept of integrating the surge protector design with the connecting cabling significantly reduces the "let-through" voltage appearing across your equipment.

Voltage Drops Along Power Cabling

Cable Voltage Drop - Micro-Z vs. #6 AWG

Micro-Z Cable

axial power cabling configuration from the Protector to the Service panel forces magnetic field cancellation within the cable. This results in a correspondingly low "inductive" voltage drop along the cable, that is from 30 to 50% lower than conventional cabling approaches.



Test Conditions: Velonix Pulse Generator, delivered a Standard ANSI C62.41 waveform (6kv/3kA, 3/20 μ s) into a 12 foot cable pair, consisting of two #6 AWG power cables, tightly taped along its full length.

Measurements: Voltage drop measurements were made at 1 foot intervals along the cable length to illustrate the necessity of keeping the cable length short and thus the cable voltage drop to a minimum.

Observation: Your sensitive equipment will be exposed to a peak transient voltage which is the sum of the TVSS unit's "Clamp Voltage" + the cable voltage drop, which is a function of its length.

Conclusion: For good performance keep cabling should not to exceed 3 ft. For the best performance-use Micro-Z cabling.

Example: A SF400M Model, designed for use on 120 VAC Service, will limit a 6kv/3kA (8/20 μ s) transient to a Clamp Voltage of 376V at its terminals,

with 3 ft. of #6 AWG cable, equipment exposure totals 376V + 200V = 576V

with 3 ft. of Micro-Z cable, equipment exposure totals 376V + 69V = only 445V

note: with 9ft. of Micro-Z cable, equipment exposure totals 376V + 207V = 583V, or the same as 3ft. of #6 AWG cable.