Product Application Note

Connection Method for Models without a Shielded Output Cable

Most test equipment users prefer a shielded output cable for convenience and safety. At High Voltage, Inc. we produce ac hipots to 50 kV and dc hipots to 200 kV that include a shielded output cable.

Shielded output cables have their limits and grow too large and inflexible at higher voltages and can consume too much of the limited output power (in the case of ac hipots).

As an alternative, some products are designed with an output bushing (phenolic or ceramic) or have an insulated tank design, where the high voltage section is contained within an oil-filled fiberglass cylinder (yellow) and the output point is the top cover of the cylinder.

Such products are bus-connected to the load using a bare wire or conductive pipe, connecting from the output point of the test set to the device under test. There are several design considerations for this connection:

-The current is very low, typically in the range of milliamps. Conductor cross section requirements are minimal.

-This connection needs to be isolated from ground by a distance at least equal to the height of the insulated portion of the bushing or insulated tank.

-If elimination of partial discharge (or "spitting") from this connection is important a smooth pipe should be used with a diameter of at least 1 inch per 50 kV. Terminations at both ends should not have sharp points, etc.

-Be careful using an insulated wire. The insulation may be rated 600 v while the test voltage is 75 kV. You do not want personnel to misunderstand and touch the "insulated" wire.

-Be creative. Use aluminum dryer vent for higher voltage applications. Run a small wire within a pvc pipe for rigidity. Use orange safety cones or a fiberglass ladder to support changes of direction. Search pictures of high voltage laboratories on the internet for ideas. Feel free to contact us to discuss.

High Voltage, Inc. www.hvinc.com sales@hvinc.com **518-329-3275 Copake, NY**